

# ALMANAC LIII TRANSITS VISIBLE FROM SATURN IN BCE

The almanac LIII contains a list of transits visible from Saturn from the 125th millennium BCE to the 1st millennium BCE.

During the period of 250 000 years, the total number of transits visible from Saturn is 194 432 transits visible from Saturn (73 583 transits of Mercury, 55 349 transits of Venus, 28 373 transits of Earth, 28 360 transits of Moon, 8 607 transits of Mars, 160 transits of Jupiter).

## 125TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 125th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-124999-08-04 18:44 J		-43934245.92	-43934245.72	-43934245.51	0.0272	0.0062	
Venus	-124998-03-21 18:30 J		-43934016.92	-43934016.73	-43934016.53	0.0269	0.0084	
Venus	-124998-11-05 17:03 J		-43933787.98	-43933787.79	-43933787.59	0.0267	0.0104	
Venus	-124997-06-21 15:08 J		-43933559.06	-43933558.87	-43933558.68	0.0265	0.0122	
Venus	-124996-02-05 12:30 J		-43933330.15	-43933329.98	-43933329.80	0.0263	0.0138	
Earth	-124996-06-27 14:11 J		-43933188.02	-43933187.91	-43933187.78	0.0262	0.0229	
Moon	-124996-06-27 17:32 J		-43933187.89	-43933187.77	-43933187.63	0.0262	0.0225	*
Venus	-124996-09-22 09:51 J		-43933101.26	-43933101.09	-43933100.92	0.0262	0.0152	
Venus	-124995-05-09 07:13 J		-43932872.36	-43932872.20	-43932872.03	0.0260	0.0165	
Venus	-124995-12-24 04:49 J		-43932643.46	-43932643.30	-43932643.14	0.0259	0.0175	
Mars	-124994-02-13 16:49 J		-43932591.98	-43932591.80	-43932591.58	0.0259	0.0182	
Venus	-124994-08-10 02:25 J		-43932414.54	-43932414.40	-43932414.24	0.0259	0.0183	
Mercury	-124994-11-08 11:18 J		-43932324.13	-43932324.03	-43932323.91	0.0259	0.0202	
Mercury	-124993-02-05 06:44 J		-43932235.39	-43932235.22	-43932235.04	0.0259	0.0092	
Venus	-124993-03-26 00:59 J		-43932185.60	-43932185.46	-43932185.31	0.0259	0.0189	
Mercury	-124993-05-04 02:25 J		-43932146.59	-43932146.40	-43932146.22	0.0258	0.0019	
Mercury	-124993-07-31 21:51 J		-43932057.75	-43932057.59	-43932057.42	0.0258	0.0130	
Mercury	-124993-10-28 17:32 J		-43931968.82	-43931968.77	-43931968.70	0.0258	0.0242	
Venus	-124993-11-10 00:01 J		-43931956.64	-43931956.50	-43931956.35	0.0258	0.0192	
Venus	-124992-06-27 00:01 J		-43931727.63	-43931727.50	-43931727.34	0.0259	0.0194	
Venus	-124991-02-11 01:27 J		-43931498.58	-43931498.44	-43931498.29	0.0259	0.0193	

Venus	-124991-09-28 03:51 J	-43931269.49	-43931269.34	-43931269.19	0.0260	0.0189
Venus	-124990-05-15 07:42 J	-43931040.33	-43931040.18	-43931040.02	0.0261	0.0183
Venus	-124990-12-30 12:59 J	-43930811.11	-43930810.96	-43930810.79	0.0263	0.0175
Venus	-124989-08-15 20:11 J	-43930581.83	-43930581.66	-43930581.48	0.0264	0.0163
Venus	-124988-04-02 05:03 J	-43930352.47	-43930352.29	-43930352.10	0.0266	0.0149
Venus	-124988-11-17 16:06 J	-43930123.02	-43930122.83	-43930122.64	0.0268	0.0132
Venus	-124987-07-05 05:18 J	-43929893.48	-43929893.28	-43929893.08	0.0271	0.0113
Venus	-124986-02-19 20:11 J	-43929663.86	-43929663.66	-43929663.45	0.0273	0.0091
Venus	-124986-10-07 13:13 J	-43929434.16	-43929433.95	-43929433.73	0.0276	0.0067
Venus	-124985-05-24 08:39 J	-43929204.36	-43929204.14	-43929203.92	0.0279	0.0040
Venus	-124984-01-09 05:47 J	-43928974.48	-43928974.26	-43928974.04	0.0282	0.0013
Venus	-124984-08-27 05:03 J	-43928744.50	-43928744.29	-43928744.07	0.0285	0.0019
Venus	-124983-04-14 06:01 J	-43928514.46	-43928514.25	-43928514.03	0.0288	0.0049
Venus	-124983-11-30 08:25 J	-43928284.36	-43928284.15	-43928283.94	0.0291	0.0079
Venus	-124982-07-18 11:47 J	-43928054.20	-43928054.01	-43928053.80	0.0294	0.0108
Venus	-124981-03-04 16:06 J	-43927824.01	-43927823.83	-43927823.63	0.0296	0.0136
Venus	-124981-10-20 21:23 J	-43927593.79	-43927593.61	-43927593.43	0.0299	0.0160
Earth	-124980-01-03 14:39 J	-43927519.07	-43927518.89	-43927518.70	0.0299	0.0193
Moon	-124980-01-03 17:47 J	-43927518.94	-43927518.76	-43927518.57	0.0299	0.0186 *
Venus	-124980-06-08 02:11 J	-43927363.57	-43927363.41	-43927363.24	0.0301	0.0181
Venus	-124979-01-24 06:59 J	-43927133.37	-43927133.21	-43927133.06	0.0302	0.0197
Mercury	-124979-09-05 15:51 J	-43926908.91	-43926908.84	-43926908.76	0.0303	0.0250
Venus	-124979-09-11 10:35 J	-43926903.20	-43926903.06	-43926902.90	0.0303	0.0209
Mercury	-124979-12-03 05:32 J	-43926820.39	-43926820.27	-43926820.15	0.0303	0.0123
Mercury	-124978-03-01 18:59 J	-43926731.84	-43926731.71	-43926731.58	0.0303	0.0007
Venus	-124978-04-29 13:27 J	-43926673.08	-43926672.94	-43926672.79	0.0303	0.0214
Mercury	-124978-05-29 08:25 J	-43926643.27	-43926643.15	-43926643.03	0.0303	0.0129
Mercury	-124978-08-25 21:37 J	-43926554.67	-43926554.60	-43926554.53	0.0303	0.0253
Venus	-124978-12-15 15:08 J	-43926443.02	-43926442.87	-43926442.73	0.0303	0.0214
Venus	-124977-08-01 14:39 J	-43926213.03	-43926212.89	-43926212.74	0.0302	0.0209

Venus -124976-03-19 12:15 J -43925983.13 -43925982.99 -43925982.83 0.0301 0.0199  
 Venus -124976-11-04 08:11 J -43925753.32 -43925753.16 -43925753.00 0.0300 0.0183  
 Venus -124975-06-22 01:42 J -43925523.60 -43925523.43 -43925523.26 0.0298 0.0164  
 Venus -124974-02-06 17:03 J -43925293.96 -43925293.79 -43925293.60 0.0295 0.0142  
 Venus -124974-09-24 06:15 J -43925064.42 -43925064.24 -43925064.05 0.0293 0.0117  
 Venus -124973-05-10 17:18 J -43924834.97 -43924834.78 -43924834.59 0.0290 0.0090  
 Venus -124973-12-26 02:11 J -43924605.61 -43924605.41 -43924605.21 0.0287 0.0063  
 Venus -124972-08-12 09:08 J -43924376.33 -43924376.12 -43924375.92 0.0284 0.0037  
 Venus -124971-03-29 14:11 J -43924147.11 -43924146.91 -43924146.70 0.0281 0.0010  
 Venus -124971-11-13 17:32 J -43923917.97 -43923917.77 -43923917.56 0.0278 0.0017  
 Venus -124970-06-30 19:27 J -43923688.89 -43923688.69 -43923688.48 0.0275 0.0042  
 Venus -124969-02-14 20:11 J -43923459.86 -43923459.66 -43923459.45 0.0272 0.0065  
 Venus -124969-09-30 19:56 J -43923230.87 -43923230.67 -43923230.47 0.0270 0.0086  
 Venus -124968-05-17 18:30 J -43923001.91 -43923001.73 -43923001.53 0.0267 0.0107  
 Venus -124967-01-01 16:49 J -43922772.98 -43922772.80 -43922772.61 0.0265 0.0124  
 Moon -124967-06-22 14:39 J -43922601.13 -43922600.89 -43922600.64 0.0264 0.0082  
 Earth -124967-06-22 14:39 J -43922601.12 -43922600.89 -43922600.65 0.0264 0.0096 \*  
 Venus -124967-08-18 14:25 J -43922544.07 -43922543.90 -43922543.72 0.0264 0.0141  
 Venus -124966-04-04 12:01 J -43922315.17 -43922315.00 -43922314.82 0.0262 0.0155  
 Mars -124966-04-08 18:30 J -43922310.95 -43922310.73 -43922310.49 0.0262 0.0151  
 Venus -124966-11-19 09:37 J -43922086.27 -43922086.10 -43922085.94 0.0261 0.0166  
 Venus -124965-07-05 06:59 J -43921857.36 -43921857.21 -43921857.05 0.0260 0.0176  
 Venus -124964-02-19 05:03 J -43921628.44 -43921628.29 -43921628.14 0.0259 0.0183  
 Mercury -124964-03-27 10:49 J -43921592.12 -43921592.05 -43921591.97 0.0259 0.0234  
 Mercury -124964-06-24 06:01 J -43921503.40 -43921503.25 -43921503.08 0.0259 0.0125  
 Mercury -124964-09-21 01:42 J -43921414.62 -43921414.43 -43921414.25 0.0259 0.0015  
 Venus -124964-10-06 03:23 J -43921399.50 -43921399.36 -43921399.20 0.0259 0.0189  
 Mercury -124964-12-18 21:08 J -43921325.79 -43921325.62 -43921325.44 0.0259 0.0097  
 Mercury -124963-03-17 16:49 J -43921236.90 -43921236.80 -43921236.68 0.0259 0.0209  
 Venus -124963-05-23 02:54 J -43921170.51 -43921170.38 -43921170.22 0.0259 0.0192



Venus	-124962-01-07 03:23 J	-43920941.50	-43920941.36	-43920941.21	0.0259	0.0192
Venus	-124962-08-24 04:49 J	-43920712.44	-43920712.30	-43920712.15	0.0259	0.0190
Venus	-124961-04-09 07:27 J	-43920483.34	-43920483.19	-43920483.03	0.0260	0.0186
Venus	-124961-11-24 11:32 J	-43920254.17	-43920254.02	-43920253.85	0.0261	0.0179
Venus	-124960-07-11 17:32 J	-43920024.94	-43920024.77	-43920024.60	0.0262	0.0170
Venus	-124959-02-26 00:59 J	-43919795.63	-43919795.46	-43919795.28	0.0264	0.0158
Venus	-124959-10-13 10:06 J	-43919566.26	-43919566.08	-43919565.89	0.0266	0.0144
Venus	-124958-05-30 21:23 J	-43919336.80	-43919336.61	-43919336.41	0.0268	0.0127
Venus	-124957-01-15 10:35 J	-43919107.26	-43919107.06	-43919106.86	0.0271	0.0107
Venus	-124957-09-01 01:42 J	-43918877.63	-43918877.43	-43918877.21	0.0273	0.0086
Venus	-124956-04-18 19:13 J	-43918647.91	-43918647.70	-43918647.48	0.0276	0.0060
Venus	-124956-12-04 14:39 J	-43918418.11	-43918417.89	-43918417.67	0.0279	0.0034
Venus	-124955-07-22 12:15 J	-43918188.21	-43918187.99	-43918187.78	0.0282	0.0008
Venus	-124954-03-09 11:32 J	-43917958.24	-43917958.02	-43917957.81	0.0285	0.0024
Venus	-124954-10-25 12:15 J	-43917728.20	-43917727.99	-43917727.77	0.0288	0.0054
Venus	-124953-06-11 14:39 J	-43917498.09	-43917497.89	-43917497.68	0.0291	0.0084
Venus	-124952-01-27 18:15 J	-43917267.94	-43917267.74	-43917267.54	0.0294	0.0113
Venus	-124952-09-14 22:35 J	-43917037.74	-43917037.56	-43917037.37	0.0297	0.0140
Earth	-124952-12-28 12:44 J	-43916933.05	-43916932.97	-43916932.86	0.0298	0.0272
Moon	-124952-12-28 15:51 J	-43916932.95	-43916932.84	-43916932.70	0.0298	0.0255 *
Venus	-124951-05-03 03:23 J	-43916807.53	-43916807.36	-43916807.18	0.0299	0.0164
Venus	-124951-12-19 08:11 J	-43916577.32	-43916577.16	-43916576.99	0.0301	0.0184
Mars	-124950-04-04 19:27 J	-43916471.00	-43916470.69	-43916470.38	0.0302	0.0024
Venus	-124950-08-06 12:30 J	-43916347.12	-43916346.98	-43916346.81	0.0302	0.0201
Mercury	-124949-01-23 17:18 J	-43916176.82	-43916176.78	-43916176.74	0.0303	0.0288
Venus	-124949-03-23 16:35 J	-43916116.96	-43916116.81	-43916116.66	0.0303	0.0211
Mercury	-124949-04-21 06:59 J	-43916088.32	-43916088.21	-43916088.10	0.0303	0.0161
Mercury	-124949-07-18 20:25 J	-43915999.78	-43915999.65	-43915999.52	0.0304	0.0035
Mercury	-124949-10-15 09:51 J	-43915911.22	-43915911.09	-43915910.96	0.0304	0.0092
Venus	-124949-11-08 19:13 J	-43915886.84	-43915886.70	-43915886.55	0.0304	0.0216

Mercury -124948-01-11 23:03 J -43915822.63 -43915822.54 -43915822.45 0.0304 0.0217

Venus -124948-06-26 20:25 J -43915656.79 -43915656.65 -43915656.50 0.0304 0.0215

Venus -124947-02-11 19:56 J -43915426.81 -43915426.67 -43915426.52 0.0303 0.0209

Venus -124947-09-29 17:32 J -43915196.92 -43915196.77 -43915196.62 0.0302 0.0198

Venus -124946-05-17 12:59 J -43914967.12 -43914966.96 -43914966.80 0.0300 0.0182

Venus -124945-01-02 06:30 J -43914737.40 -43914737.23 -43914737.06 0.0298 0.0162

Venus -124945-08-18 21:23 J -43914507.78 -43914507.61 -43914507.43 0.0295 0.0139

Venus -124944-04-05 10:20 J -43914278.26 -43914278.07 -43914277.89 0.0292 0.0114

Venus -124944-11-20 20:54 J -43914048.82 -43914048.63 -43914048.43 0.0289 0.0087

Venus -124943-07-08 05:32 J -43913819.47 -43913819.27 -43913819.07 0.0286 0.0060

Venus -124942-02-22 12:15 J -43913590.19 -43913589.99 -43913589.78 0.0283 0.0033

Venus -124942-10-09 17:18 J -43913360.99 -43913360.78 -43913360.58 0.0280 0.0007

Venus -124941-05-25 20:25 J -43913131.85 -43913131.65 -43913131.44 0.0277 0.0020

Venus -124940-01-09 22:20 J -43912902.78 -43912902.57 -43912902.37 0.0274 0.0044

Venus -124940-08-26 22:49 J -43912673.75 -43912673.55 -43912673.35 0.0272 0.0067

Venus -124939-04-12 22:35 J -43912444.76 -43912444.56 -43912444.36 0.0269 0.0088

Venus -124939-11-27 21:23 J -43912215.80 -43912215.61 -43912215.42 0.0267 0.0108

Venus -124938-07-14 19:27 J -43911986.88 -43911986.69 -43911986.51 0.0265 0.0125

Venus -124937-02-28 16:49 J -43911757.97 -43911757.80 -43911757.61 0.0263 0.0141

Venus -124937-10-14 14:25 J -43911529.06 -43911528.90 -43911528.72 0.0262 0.0154

Mars -124936-05-24 13:56 J -43911307.20 -43911306.92 -43911306.64 0.0260 0.0024

Venus -124936-05-31 12:01 J -43911300.16 -43911300.00 -43911299.83 0.0260 0.0166

Venus -124935-01-15 09:51 J -43911071.25 -43911071.09 -43911070.93 0.0260 0.0175

Venus -124935-09-01 07:56 J -43910842.32 -43910842.17 -43910842.02 0.0259 0.0182

Mercury -124935-11-11 05:47 J -43910771.41 -43910771.26 -43910771.12 0.0259 0.0157

Mercury -124934-02-08 00:59 J -43910682.64 -43910682.46 -43910682.27 0.0259 0.0048

Venus -124934-04-18 06:44 J -43910613.37 -43910613.22 -43910613.07 0.0259 0.0187

Mercury -124934-05-07 20:39 J -43910593.82 -43910593.64 -43910593.46 0.0259 0.0063

Mercury -124934-08-04 16:06 J -43910504.95 -43910504.83 -43910504.68 0.0259 0.0176

Venus -124934-12-03 06:01 J -43910384.39 -43910384.25 -43910384.10 0.0259 0.0190

Venus	-124933-07-19 06:30 J	-43910155.37	-43910155.23	-43910155.08	0.0259	0.0190
Venus	-124932-03-05 07:56 J	-43909926.31	-43909926.17	-43909926.02	0.0259	0.0189
Venus	-124932-10-20 10:35 J	-43909697.20	-43909697.06	-43909696.90	0.0260	0.0185
Venus	-124931-06-06 15:08 J	-43909468.03	-43909467.87	-43909467.71	0.0261	0.0178
Venus	-124930-01-21 20:39 J	-43909238.79	-43909238.64	-43909238.46	0.0263	0.0169
Venus	-124930-09-08 04:20 J	-43909009.49	-43909009.32	-43909009.14	0.0265	0.0157
Venus	-124929-04-24 13:42 J	-43908780.12	-43908779.93	-43908779.74	0.0266	0.0142
Venus	-124929-12-10 00:44 J	-43908550.66	-43908550.47	-43908550.27	0.0269	0.0125
Venus	-124928-07-27 14:11 J	-43908321.11	-43908320.91	-43908320.70	0.0271	0.0105
Venus	-124927-03-14 05:32 J	-43908091.47	-43908091.27	-43908091.05	0.0274	0.0083
Venus	-124927-10-29 23:03 J	-43907861.76	-43907861.54	-43907861.32	0.0276	0.0058
Venus	-124926-06-16 18:30 J	-43907631.95	-43907631.73	-43907631.51	0.0279	0.0031
Venus	-124925-02-01 15:51 J	-43907402.06	-43907401.84	-43907401.62	0.0282	0.0003
Venus	-124925-09-18 15:08 J	-43907172.08	-43907171.87	-43907171.65	0.0285	0.0027
Venus	-124924-05-06 16:06 J	-43906942.04	-43906941.83	-43906941.62	0.0288	0.0056
Venus	-124924-12-22 18:15 J	-43906711.94	-43906711.74	-43906711.53	0.0291	0.0086
Venus	-124923-08-09 21:51 J	-43906481.79	-43906481.59	-43906481.39	0.0294	0.0114
Venus	-124922-03-28 01:56 J	-43906251.60	-43906251.42	-43906251.22	0.0297	0.0141
Venus	-124922-11-13 06:44 J	-43906021.39	-43906021.22	-43906021.03	0.0299	0.0164
Moon	-124921-01-05 12:59 J	-43905968.03	-43905967.96	-43905967.86	0.0299	0.0278
Earth	-124921-01-05 16:49 J	-43905967.86	-43905967.80	-43905967.71	0.0299	0.0284 *
Venus	-124921-06-30 11:32 J	-43905791.18	-43905791.02	-43905790.85	0.0301	0.0183
Venus	-124920-02-15 15:51 J	-43905560.99	-43905560.84	-43905560.68	0.0302	0.0198
Mercury	-124920-09-08 07:27 J	-43905356.28	-43905356.19	-43905356.09	0.0303	0.0208
Venus	-124920-10-03 19:27 J	-43905330.83	-43905330.69	-43905330.53	0.0303	0.0208
Mercury	-124920-12-05 21:08 J	-43905267.75	-43905267.62	-43905267.49	0.0303	0.0081
Mercury	-124919-03-04 10:35 J	-43905179.19	-43905179.06	-43905178.93	0.0303	0.0045
Venus	-124919-05-21 21:51 J	-43905100.73	-43905100.59	-43905100.43	0.0303	0.0212
Mercury	-124919-05-31 23:47 J	-43905090.61	-43905090.51	-43905090.40	0.0303	0.0170
Mercury	-124919-08-28 12:59 J	-43905001.98	-43905001.96	-43905001.93	0.0303	0.0294

Venus	-124918-01-06 23:03 J	-43904870.68	-43904870.54	-43904870.39	0.0303	0.0210
Venus	-124918-08-24 22:20 J	-43904640.72	-43904640.57	-43904640.42	0.0302	0.0204
Venus	-124917-04-10 19:27 J	-43904410.84	-43904410.69	-43904410.53	0.0301	0.0192
Venus	-124917-11-26 14:54 J	-43904181.04	-43904180.88	-43904180.71	0.0299	0.0176
Venus	-124916-07-14 07:56 J	-43903951.34	-43903951.17	-43903950.99	0.0297	0.0156
Venus	-124915-02-28 23:03 J	-43903721.72	-43903721.54	-43903721.36	0.0295	0.0133
Venus	-124915-10-16 11:47 J	-43903492.20	-43903492.01	-43903491.82	0.0292	0.0108
Venus	-124914-06-02 22:20 J	-43903262.76	-43903262.57	-43903262.37	0.0289	0.0082
Venus	-124913-01-18 07:13 J	-43903033.40	-43903033.20	-43903033.00	0.0286	0.0055
Venus	-124913-09-03 13:42 J	-43902804.13	-43902803.93	-43902803.72	0.0283	0.0030
Venus	-124912-04-20 18:44 J	-43902574.92	-43902574.72	-43902574.51	0.0280	0.0003
Venus	-124912-12-05 22:06 J	-43902345.78	-43902345.58	-43902345.38	0.0277	0.0023
Venus	-124911-07-23 00:01 J	-43902116.70	-43902116.50	-43902116.30	0.0275	0.0048
Venus	-124910-03-09 00:59 J	-43901887.66	-43901887.46	-43901887.26	0.0272	0.0070
Venus	-124910-10-24 00:30 J	-43901658.67	-43901658.48	-43901658.28	0.0270	0.0091
Venus	-124909-06-08 23:18 J	-43901429.72	-43901429.53	-43901429.33	0.0267	0.0111
Venus	-124908-01-23 21:23 J	-43901200.78	-43901200.61	-43901200.42	0.0265	0.0129
Earth	-124908-06-23 15:23 J	-43901050.11	-43901049.86	-43901049.61	0.0264	0.0021
Moon	-124908-06-23 16:06 J	-43901050.07	-43901049.83	-43901049.59	0.0264	0.0024 *
Venus	-124908-09-09 19:13 J	-43900971.87	-43900971.70	-43900971.51	0.0264	0.0144
Venus	-124907-04-26 17:18 J	-43900742.95	-43900742.78	-43900742.61	0.0262	0.0156
Venus	-124907-12-11 14:54 J	-43900514.04	-43900513.88	-43900513.71	0.0261	0.0168
Mars	-124906-07-10 05:32 J	-43900303.44	-43900303.27	-43900303.08	0.0260	0.0199
Venus	-124906-07-28 12:44 J	-43900285.12	-43900284.97	-43900284.81	0.0260	0.0177
Venus	-124905-03-13 10:49 J	-43900056.19	-43900056.05	-43900055.89	0.0259	0.0184
Mercury	-124905-03-30 05:18 J	-43900039.40	-43900039.28	-43900039.15	0.0259	0.0188
Mercury	-124905-06-27 00:44 J	-43899950.65	-43899950.47	-43899950.29	0.0259	0.0078
Mercury	-124905-09-23 20:11 J	-43899861.84	-43899861.66	-43899861.47	0.0259	0.0033
Venus	-124905-10-28 09:51 J	-43899827.23	-43899827.09	-43899826.94	0.0259	0.0188
Mercury	-124905-12-21 15:51 J	-43899772.99	-43899772.84	-43899772.68	0.0259	0.0144

Mercury -124904-03-20 11:47 J -43899684.03 -43899684.01 -43899683.98 0.0259 0.0256

Venus -124904-06-14 09:37 J -43899598.24 -43899598.10 -43899597.94 0.0259 0.0190

Venus -124903-01-29 10:20 J -43899369.21 -43899369.07 -43899368.92 0.0259 0.0189

Venus -124903-09-15 12:15 J -43899140.14 -43899139.99 -43899139.84 0.0260 0.0187

Venus -124902-05-02 15:08 J -43898911.02 -43898910.87 -43898910.70 0.0260 0.0182

Venus -124902-12-17 19:42 J -43898681.83 -43898681.68 -43898681.51 0.0262 0.0174

Venus -124901-08-03 01:56 J -43898452.58 -43898452.42 -43898452.24 0.0263 0.0164

Venus -124900-03-20 09:51 J -43898223.27 -43898223.09 -43898222.91 0.0265 0.0152

Venus -124900-11-04 19:27 J -43897993.88 -43897993.69 -43897993.50 0.0266 0.0137

Venus -124899-06-22 07:13 J -43897764.40 -43897764.20 -43897764.00 0.0269 0.0119

Venus -124898-02-06 20:39 J -43897534.84 -43897534.64 -43897534.43 0.0271 0.0099

Venus -124898-09-24 12:15 J -43897305.20 -43897304.99 -43897304.78 0.0274 0.0076

Venus -124897-05-11 05:47 J -43897075.47 -43897075.26 -43897075.04 0.0276 0.0052

Venus -124897-12-27 01:27 J -43896845.66 -43896845.44 -43896845.22 0.0279 0.0025

Venus -124896-08-13 23:18 J -43896615.75 -43896615.53 -43896615.31 0.0282 0.0003

Venus -124895-03-31 22:35 J -43896385.77 -43896385.56 -43896385.34 0.0285 0.0033

Venus -124895-11-16 23:47 J -43896155.72 -43896155.51 -43896155.30 0.0289 0.0061

Venus -124894-07-05 01:56 J -43895925.62 -43895925.42 -43895925.21 0.0292 0.0091

Venus -124893-02-20 05:32 J -43895695.47 -43895695.27 -43895695.07 0.0294 0.0118

Venus -124893-10-07 09:51 J -43895465.27 -43895465.09 -43895464.90 0.0297 0.0144

Moon -124893-12-29 15:37 J -43895382.03 -43895381.85 -43895381.66 0.0298 0.0181

Earth -124893-12-29 17:32 J -43895381.96 -43895381.77 -43895381.57 0.0298 0.0174 \*

Venus -124892-05-25 14:25 J -43895235.07 -43895234.90 -43895234.72 0.0299 0.0167

Mars -124892-07-04 20:11 J -43895194.77 -43895194.66 -43895194.54 0.0300 0.0277

Venus -124891-01-10 18:59 J -43895004.87 -43895004.71 -43895004.54 0.0301 0.0186

Venus -124891-08-28 23:03 J -43894774.69 -43894774.54 -43894774.38 0.0302 0.0201

Mercury -124890-01-26 09:23 J -43894624.19 -43894624.11 -43894624.03 0.0303 0.0242

Venus -124890-04-16 02:25 J -43894544.54 -43894544.40 -43894544.24 0.0303 0.0210

Mercury -124890-04-24 23:03 J -43894535.67 -43894535.54 -43894535.42 0.0303 0.0116

Mercury -124890-07-22 12:30 J -43894447.12 -43894446.98 -43894446.85 0.0303 0.0013

Mercury -124890-10-19 01:42 J -43894358.54 -43894358.43 -43894358.31 0.0304 0.0136

Venus -124890-12-02 04:49 J -43894314.44 -43894314.30 -43894314.15 0.0304 0.0214

Mercury -124889-01-15 14:54 J -43894269.94 -43894269.88 -43894269.81 0.0304 0.0260

Venus -124889-07-19 05:47 J -43894084.40 -43894084.26 -43894084.11 0.0303 0.0211

Venus -124888-03-06 04:49 J -43893854.45 -43893854.30 -43893854.15 0.0303 0.0204

Venus -124888-10-22 01:56 J -43893624.57 -43893624.42 -43893624.26 0.0301 0.0191

Venus -124887-06-08 20:54 J -43893394.79 -43893394.63 -43893394.46 0.0299 0.0175

Venus -124886-01-24 13:56 J -43893165.09 -43893164.92 -43893164.74 0.0297 0.0154

Venus -124886-09-11 04:35 J -43892935.48 -43892935.31 -43892935.12 0.0295 0.0131

Venus -124885-04-27 17:03 J -43892705.97 -43892705.79 -43892705.60 0.0292 0.0105

Venus -124885-12-13 03:23 J -43892476.55 -43892476.36 -43892476.16 0.0289 0.0079

Venus -124884-07-30 11:47 J -43892247.21 -43892247.01 -43892246.81 0.0286 0.0052

Venus -124883-03-16 18:15 J -43892017.94 -43892017.74 -43892017.53 0.0283 0.0026

Venus -124883-10-31 23:03 J -43891788.74 -43891788.54 -43891788.33 0.0280 0.0002

Venus -124882-06-18 02:11 J -43891559.61 -43891559.41 -43891559.20 0.0277 0.0027

Venus -124881-02-02 03:51 J -43891330.54 -43891330.34 -43891330.13 0.0274 0.0051

Venus -124881-09-18 04:35 J -43891101.51 -43891101.31 -43891101.11 0.0271 0.0073

Venus -124880-05-05 04:20 J -43890872.52 -43890872.32 -43890872.13 0.0269 0.0093

Venus -124880-12-20 03:08 J -43890643.56 -43890643.37 -43890643.18 0.0267 0.0112

Venus -124879-08-06 01:13 J -43890414.63 -43890414.45 -43890414.26 0.0265 0.0129

Venus -124878-03-22 23:18 J -43890185.71 -43890185.53 -43890185.35 0.0263 0.0143

Mars -124878-09-02 08:39 J -43890022.38 -43890022.14 -43890021.90 0.0262 0.0135

Venus -124878-11-06 20:39 J -43889956.80 -43889956.64 -43889956.46 0.0262 0.0157

Venus -124877-06-22 18:30 J -43889727.89 -43889727.73 -43889727.56 0.0260 0.0167

Venus -124876-02-06 16:20 J -43889498.97 -43889498.82 -43889498.65 0.0260 0.0176

Mercury -124876-08-17 05:32 J -43889307.37 -43889307.27 -43889307.18 0.0259 0.0218

Venus -124876-09-23 14:39 J -43889270.03 -43889269.89 -43889269.72 0.0259 0.0182

Mercury -124876-11-14 00:44 J -43889218.64 -43889218.47 -43889218.30 0.0259 0.0108

Mercury -124875-02-10 20:11 J -43889129.84 -43889129.66 -43889129.47 0.0259 0.0004

Venus -124875-05-10 13:56 J -43889041.06 -43889040.92 -43889040.76 0.0259 0.0186

Mercury -124875-05-10 15:51 J -43889041.01 -43889040.84 -43889040.67 0.0259 0.0113 \*

Mercury -124875-08-07 11:32 J -43888952.10 -43888952.02 -43888951.92 0.0259 0.0226

Venus -124875-12-25 13:56 J -43888812.07 -43888811.92 -43888811.77 0.0259 0.0188

Venus -124874-08-11 14:39 J -43888583.04 -43888582.89 -43888582.74 0.0259 0.0188

Venus -124873-03-27 16:35 J -43888353.96 -43888353.81 -43888353.66 0.0260 0.0185

Venus -124873-11-11 19:42 J -43888124.83 -43888124.68 -43888124.52 0.0261 0.0180

Venus -124872-06-29 00:30 J -43887895.64 -43887895.48 -43887895.31 0.0262 0.0173

Venus -124871-02-13 06:44 J -43887666.39 -43887666.22 -43887666.04 0.0263 0.0163

Venus -124871-09-30 14:39 J -43887437.06 -43887436.89 -43887436.70 0.0265 0.0150

Venus -124870-05-18 00:30 J -43887207.67 -43887207.48 -43887207.29 0.0267 0.0135

Venus -124869-01-02 12:01 J -43886978.19 -43886978.00 -43886977.79 0.0269 0.0117

Venus -124869-08-19 01:56 J -43886748.62 -43886748.42 -43886748.21 0.0272 0.0097

Venus -124868-04-05 17:32 J -43886518.97 -43886518.77 -43886518.55 0.0274 0.0075

Venus -124868-11-21 11:32 J -43886289.24 -43886289.02 -43886288.80 0.0277 0.0049

Venus -124867-07-09 07:13 J -43886059.42 -43886059.20 -43886058.98 0.0280 0.0022

Venus -124866-02-24 05:03 J -43885829.51 -43885829.29 -43885829.07 0.0283 0.0007

Venus -124866-10-12 04:35 J -43885599.53 -43885599.31 -43885599.10 0.0286 0.0035

Venus -124865-05-29 05:32 J -43885369.48 -43885369.27 -43885369.06 0.0289 0.0064

Venus -124864-01-14 07:56 J -43885139.37 -43885139.17 -43885138.97 0.0292 0.0093

Venus -124864-09-01 11:18 J -43884909.22 -43884909.03 -43884908.83 0.0295 0.0121

Venus -124863-04-19 15:37 J -43884679.03 -43884678.85 -43884678.66 0.0297 0.0146

Venus -124863-12-05 20:11 J -43884448.83 -43884448.66 -43884448.48 0.0299 0.0168

Venus -124862-07-24 00:44 J -43884218.63 -43884218.47 -43884218.30 0.0301 0.0185

Mars -124862-08-29 01:27 J -43884182.74 -43884182.44 -43884182.13 0.0301 0.0039

Venus -124861-03-10 04:49 J -43883988.45 -43883988.30 -43883988.14 0.0302 0.0198

Mercury -124861-06-14 10:35 J -43883892.10 -43883892.06 -43883892.01 0.0302 0.0282

Mercury -124861-09-11 00:15 J -43883803.60 -43883803.49 -43883803.37 0.0303 0.0156

Venus -124861-10-26 07:56 J -43883758.31 -43883758.17 -43883758.01 0.0303 0.0207

Mercury -124861-12-08 13:42 J -43883715.06 -43883714.93 -43883714.79 0.0303 0.0031

Mercury -124860-03-07 03:08 J -43883626.49 -43883626.37 -43883626.24 0.0303 0.0096

Mercury -124860-06-03 16:20 J -43883537.91 -43883537.82 -43883537.73 0.0303 0.0220

Venus -124860-06-13 10:06 J -43883528.22 -43883528.08 -43883527.92 0.0303 0.0209

Venus -124859-01-29 10:35 J -43883298.20 -43883298.06 -43883297.90 0.0303 0.0207

Venus -124859-09-16 09:23 J -43883068.26 -43883068.11 -43883067.95 0.0302 0.0198

Venus -124858-05-04 06:15 J -43882838.40 -43882838.24 -43882838.08 0.0300 0.0185

Venus -124858-12-20 00:59 J -43882608.62 -43882608.46 -43882608.29 0.0299 0.0168

Venus -124857-08-05 17:32 J -43882378.94 -43882378.77 -43882378.59 0.0296 0.0148

Venus -124856-03-23 07:56 J -43882149.35 -43882149.17 -43882148.98 0.0294 0.0125

Venus -124856-11-07 20:11 J -43881919.85 -43881919.66 -43881919.47 0.0291 0.0100

Venus -124855-06-25 06:30 J -43881690.43 -43881690.23 -43881690.03 0.0289 0.0074

Venus -124854-02-09 14:54 J -43881461.08 -43881460.88 -43881460.68 0.0286 0.0047

Venus -124854-09-26 21:08 J -43881231.82 -43881231.62 -43881231.41 0.0283 0.0021

Venus -124853-05-13 01:56 J -43881002.63 -43881002.42 -43881002.22 0.0280 0.0007

Venus -124853-12-28 04:49 J -43880773.50 -43880773.30 -43880773.09 0.0277 0.0031

Venus -124852-08-14 06:44 J -43880544.42 -43880544.22 -43880544.02 0.0274 0.0054

Venus -124851-03-31 07:27 J -43880315.39 -43880315.19 -43880314.99 0.0272 0.0076

Venus -124851-11-15 07:13 J -43880086.40 -43880086.20 -43880086.01 0.0269 0.0096

Venus -124850-07-02 06:01 J -43879857.44 -43879857.25 -43879857.06 0.0267 0.0115

Venus -124849-02-16 04:20 J -43879628.50 -43879628.32 -43879628.14 0.0265 0.0131

Moon -124849-06-24 16:35 J -43879499.06 -43879498.81 -43879498.55 0.0264 0.0057

Earth -124849-06-24 18:44 J -43879498.96 -43879498.72 -43879498.47 0.0264 0.0062 \*

Venus -124849-10-02 02:11 J -43879399.58 -43879399.41 -43879399.23 0.0263 0.0146

Venus -124848-05-19 00:15 J -43879170.66 -43879170.49 -43879170.32 0.0262 0.0158

Mars -124848-10-18 06:59 J -43879018.49 -43879018.21 -43879017.93 0.0261 0.0045

Venus -124847-01-02 22:06 J -43878941.74 -43878941.58 -43878941.41 0.0261 0.0169

Venus -124847-08-19 20:11 J -43878712.81 -43878712.66 -43878712.50 0.0260 0.0177

Mercury -124846-01-04 05:18 J -43878575.33 -43878575.28 -43878575.22 0.0260 0.0247

Mercury -124846-04-03 00:30 J -43878486.63 -43878486.48 -43878486.31 0.0260 0.0138

Venus -124846-04-05 18:44 J -43878483.86 -43878483.72 -43878483.56 0.0260 0.0183

Mercury -124846-06-30 20:11 J -43878397.85 -43878397.66 -43878397.47 0.0259 0.0027



Mercury -124846-09-27 15:51 J -43878309.02 -43878308.84 -43878308.67 0.0259 0.0084

Venus -124846-11-20 18:01 J -43878254.89 -43878254.75 -43878254.59 0.0259 0.0187

Mercury -124846-12-25 11:32 J -43878220.14 -43878220.02 -43878219.90 0.0259 0.0196

Venus -124845-07-06 18:15 J -43878025.89 -43878025.74 -43878025.59 0.0259 0.0188

Venus -124844-02-20 19:13 J -43877796.85 -43877796.70 -43877796.55 0.0259 0.0187

Venus -124844-10-07 21:23 J -43877567.76 -43877567.61 -43877567.45 0.0260 0.0183

Venus -124843-05-25 00:59 J -43877338.61 -43877338.46 -43877338.29 0.0261 0.0178

Venus -124842-01-09 06:01 J -43877109.41 -43877109.25 -43877109.07 0.0262 0.0169

Venus -124842-08-26 12:44 J -43876880.14 -43876879.97 -43876879.79 0.0263 0.0159

Venus -124841-04-11 21:08 J -43876650.80 -43876650.62 -43876650.44 0.0265 0.0145

Venus -124841-11-27 07:13 J -43876421.39 -43876421.20 -43876421.00 0.0267 0.0130

Venus -124840-07-14 19:27 J -43876191.89 -43876191.69 -43876191.48 0.0269 0.0112

Venus -124839-03-01 09:37 J -43875962.31 -43875962.10 -43875961.89 0.0272 0.0091

Venus -124839-10-17 01:42 J -43875732.65 -43875732.43 -43875732.22 0.0274 0.0068

Venus -124838-06-03 19:42 J -43875502.90 -43875502.68 -43875502.47 0.0277 0.0043

Venus -124837-01-19 15:37 J -43875273.07 -43875272.85 -43875272.63 0.0280 0.0016

Venus -124837-09-05 13:42 J -43875043.15 -43875042.93 -43875042.71 0.0283 0.0012

Venus -124836-04-23 13:13 J -43874813.16 -43874812.95 -43874812.73 0.0286 0.0041

Venus -124836-12-09 14:25 J -43874583.10 -43874582.90 -43874582.68 0.0289 0.0070

Venus -124835-07-27 17:03 J -43874352.99 -43874352.79 -43874352.59 0.0292 0.0098

Venus -124834-03-14 20:25 J -43874122.84 -43874122.65 -43874122.45 0.0295 0.0125

Venus -124834-10-31 00:44 J -43873892.65 -43873892.47 -43873892.28 0.0297 0.0150

Earth -124833-01-01 04:20 J -43873830.56 -43873830.32 -43873830.08 0.0298 0.0058

Moon -124833-01-01 05:18 J -43873830.52 -43873830.28 -43873830.03 0.0298 0.0063 \*

Venus -124833-06-17 05:03 J -43873662.45 -43873662.29 -43873662.11 0.0299 0.0171

Venus -124832-02-02 09:37 J -43873432.27 -43873432.10 -43873431.94 0.0301 0.0189

Venus -124832-09-20 13:13 J -43873202.10 -43873201.95 -43873201.79 0.0302 0.0202

Mercury -124831-01-29 02:25 J -43873071.50 -43873071.40 -43873071.29 0.0303 0.0187

Mercury -124831-04-27 15:51 J -43872982.96 -43872982.84 -43872982.70 0.0303 0.0062

Venus -124831-05-08 16:20 J -43872971.96 -43872971.82 -43872971.67 0.0303 0.0209

Mercury -124831-07-25 05:18 J -43872894.41 -43872894.28 -43872894.15 0.0303 0.0065

Mercury -124831-10-21 18:44 J -43872805.82 -43872805.72 -43872805.62 0.0303 0.0189

Venus -124831-12-24 18:15 J -43872741.88 -43872741.74 -43872741.59 0.0303 0.0211

Venus -124830-08-11 18:30 J -43872511.87 -43872511.73 -43872511.58 0.0303 0.0207

Venus -124829-03-28 17:03 J -43872281.94 -43872281.79 -43872281.64 0.0302 0.0198

Venus -124829-11-13 13:42 J -43872052.09 -43872051.93 -43872051.77 0.0301 0.0185

Venus -124828-07-01 08:11 J -43871822.33 -43871822.16 -43871821.99 0.0299 0.0167

Venus -124827-02-16 00:30 J -43871592.65 -43871592.48 -43871592.30 0.0297 0.0146

Venus -124827-10-03 14:39 J -43871363.07 -43871362.89 -43871362.71 0.0294 0.0122

Venus -124826-05-21 02:25 J -43871133.58 -43871133.40 -43871133.20 0.0291 0.0097

Venus -124825-01-05 12:30 J -43870904.18 -43870903.98 -43870903.78 0.0288 0.0070

Venus -124825-08-21 20:25 J -43870674.85 -43870674.65 -43870674.45 0.0285 0.0044

Venus -124824-04-08 02:25 J -43870445.60 -43870445.40 -43870445.19 0.0282 0.0018

Venus -124824-11-23 06:59 J -43870216.42 -43870216.21 -43870216.01 0.0279 0.0010

Venus -124823-07-10 09:51 J -43869987.30 -43869987.09 -43869986.89 0.0276 0.0033

Venus -124822-02-24 11:32 J -43869758.22 -43869758.02 -43869757.82 0.0274 0.0057

Venus -124822-10-11 12:01 J -43869529.20 -43869529.00 -43869528.80 0.0271 0.0078

Venus -124821-05-27 11:32 J -43869300.21 -43869300.02 -43869299.82 0.0269 0.0098

Venus -124820-01-11 10:20 J -43869071.25 -43869071.07 -43869070.88 0.0266 0.0116

Moon -124820-06-19 18:30 J -43868911.76 -43868911.73 -43868911.69 0.0265 0.0262

Earth -124820-06-19 22:35 J -43868911.61 -43868911.56 -43868911.50 0.0265 0.0258

Venus -124820-08-28 08:39 J -43868842.31 -43868842.14 -43868841.95 0.0265 0.0132

Venus -124819-04-14 06:59 J -43868613.38 -43868613.21 -43868613.03 0.0263 0.0146

Venus -124819-11-29 04:35 J -43868384.46 -43868384.31 -43868384.13 0.0262 0.0159

Venus -124818-07-16 02:54 J -43868155.55 -43868155.38 -43868155.22 0.0260 0.0168

Mars -124818-12-04 04:49 J -43868014.44 -43868014.30 -43868014.14 0.0260 0.0218

Venus -124817-03-01 00:44 J -43867926.62 -43867926.47 -43867926.30 0.0260 0.0176

Mercury -124817-08-20 01:13 J -43867754.59 -43867754.45 -43867754.31 0.0259 0.0164

Venus -124817-10-15 23:32 J -43867697.67 -43867697.52 -43867697.36 0.0259 0.0181

Mercury -124817-11-16 20:39 J -43867665.82 -43867665.64 -43867665.46 0.0259 0.0054

Mercury -124816-02-13 16:06 J -43867577.01 -43867576.83 -43867576.64 0.0259 0.0057

Mercury -124816-05-13 12:01 J -43867488.14 -43867488.00 -43867487.86 0.0259 0.0168

Venus -124816-06-01 23:03 J -43867468.68 -43867468.54 -43867468.38 0.0259 0.0185

Venus -124815-01-16 23:18 J -43867239.67 -43867239.53 -43867239.37 0.0259 0.0186

Venus -124815-09-03 00:44 J -43867010.62 -43867010.47 -43867010.32 0.0259 0.0185

Venus -124814-04-20 02:54 J -43866781.53 -43866781.38 -43866781.21 0.0260 0.0182

Venus -124814-12-05 06:44 J -43866552.38 -43866552.22 -43866552.05 0.0261 0.0176

Venus -124813-07-21 12:01 J -43866323.16 -43866323.00 -43866322.83 0.0262 0.0167

Venus -124812-03-07 18:44 J -43866093.89 -43866093.72 -43866093.53 0.0264 0.0157

Venus -124812-10-23 03:08 J -43865864.54 -43865864.37 -43865864.17 0.0266 0.0144

Venus -124811-06-09 13:42 J -43865635.12 -43865634.93 -43865634.73 0.0268 0.0127

Venus -124810-01-25 01:56 J -43865405.62 -43865405.42 -43865405.21 0.0270 0.0109

Venus -124810-09-11 16:20 J -43865176.03 -43865175.82 -43865175.61 0.0272 0.0088

Venus -124809-04-28 08:25 J -43864946.36 -43864946.15 -43864945.93 0.0275 0.0065

Venus -124809-12-14 02:39 J -43864716.61 -43864716.39 -43864716.17 0.0278 0.0040

Venus -124808-07-31 23:03 J -43864486.76 -43864486.54 -43864486.32 0.0281 0.0013

Venus -124807-03-18 21:08 J -43864256.84 -43864256.62 -43864256.40 0.0284 0.0016

Venus -124807-11-03 20:54 J -43864026.85 -43864026.63 -43864026.42 0.0287 0.0044

Venus -124806-06-21 22:06 J -43863796.79 -43863796.58 -43863796.37 0.0290 0.0073

Venus -124805-02-07 00:30 J -43863566.68 -43863566.48 -43863566.28 0.0292 0.0101

Venus -124805-09-24 04:06 J -43863336.52 -43863336.33 -43863336.13 0.0295 0.0127

Venus -124804-05-12 08:11 J -43863106.34 -43863106.16 -43863105.97 0.0297 0.0151

Mars -124804-11-28 23:47 J -43862905.67 -43862905.51 -43862905.32 0.0299 0.0247

Venus -124804-12-28 12:30 J -43862876.15 -43862875.98 -43862875.80 0.0299 0.0172

Venus -124803-08-15 16:35 J -43862645.96 -43862645.81 -43862645.63 0.0301 0.0188

Venus -124802-04-02 20:25 J -43862415.80 -43862415.65 -43862415.49 0.0302 0.0199

Mercury -124802-06-18 04:20 J -43862339.41 -43862339.32 -43862339.23 0.0302 0.0223

Mercury -124802-09-14 17:47 J -43862250.88 -43862250.76 -43862250.63 0.0303 0.0097

Venus -124802-11-18 23:18 J -43862185.67 -43862185.53 -43862185.37 0.0303 0.0206

Mercury -124802-12-12 07:13 J -43862162.33 -43862162.20 -43862162.07 0.0303 0.0029

Mercury -124801-03-09 20:25 J -43862073.76 -43862073.65 -43862073.53 0.0303 0.0154

Mercury -124801-06-06 09:51 J -43861985.15 -43861985.09 -43861985.04 0.0303 0.0276

Venus -124801-07-06 00:59 J -43861955.60 -43861955.46 -43861955.31 0.0303 0.0207

Venus -124800-02-21 00:59 J -43861725.61 -43861725.46 -43861725.31 0.0302 0.0202

Venus -124800-10-08 23:18 J -43861495.69 -43861495.53 -43861495.38 0.0301 0.0193

Venus -124799-05-26 19:13 J -43861265.85 -43861265.70 -43861265.53 0.0300 0.0179

Venus -124798-01-11 13:27 J -43861036.10 -43861035.94 -43861035.76 0.0298 0.0161

Venus -124798-08-29 05:32 J -43860806.45 -43860806.27 -43860806.09 0.0296 0.0140

Venus -124797-04-14 19:13 J -43860576.88 -43860576.70 -43860576.51 0.0293 0.0117

Venus -124797-11-30 06:59 J -43860347.40 -43860347.21 -43860347.02 0.0291 0.0091

Venus -124796-07-17 16:35 J -43860118.00 -43860117.81 -43860117.61 0.0288 0.0065

Venus -124795-03-04 00:30 J -43859888.68 -43859888.48 -43859888.27 0.0285 0.0039

Venus -124795-10-19 06:30 J -43859659.43 -43859659.23 -43859659.02 0.0282 0.0013

Venus -124794-06-05 10:49 J -43859430.25 -43859430.05 -43859429.84 0.0279 0.0013

Venus -124793-01-20 13:42 J -43859201.14 -43859200.93 -43859200.73 0.0276 0.0037

Venus -124793-09-05 15:08 J -43858972.07 -43858971.87 -43858971.66 0.0274 0.0060

Venus -124792-04-22 15:51 J -43858743.04 -43858742.84 -43858742.64 0.0271 0.0081

Venus -124792-12-07 15:23 J -43858514.05 -43858513.86 -43858513.67 0.0269 0.0101

Venus -124791-07-24 14:11 J -43858285.09 -43858284.91 -43858284.72 0.0267 0.0119

Venus -124790-03-10 12:30 J -43858056.15 -43858055.98 -43858055.79 0.0265 0.0135

Earth -124790-06-27 00:44 J -43857947.66 -43857947.47 -43857947.25 0.0264 0.0152

Moon -124790-06-27 03:51 J -43857947.52 -43857947.34 -43857947.15 0.0264 0.0166 \*

Venus -124790-10-25 10:35 J -43857827.23 -43857827.06 -43857826.88 0.0263 0.0149

Mars -124789-01-27 07:27 J -43857733.44 -43857733.19 -43857732.93 0.0263 0.0111

Venus -124789-06-10 08:39 J -43857598.30 -43857598.14 -43857597.97 0.0262 0.0160

Venus -124788-01-25 06:44 J -43857369.38 -43857369.22 -43857369.05 0.0261 0.0170

Venus -124788-09-11 05:03 J -43857140.44 -43857140.29 -43857140.13 0.0260 0.0178

Mercury -124787-01-07 01:27 J -43857022.56 -43857022.44 -43857022.32 0.0260 0.0192

Mercury -124787-04-05 20:54 J -43856933.81 -43856933.63 -43856933.46 0.0260 0.0082

Venus -124787-04-28 04:06 J -43856911.48 -43856911.33 -43856911.17 0.0260 0.0183

Mercury -124787-07-03 16:20 J -43856845.00 -43856844.82 -43856844.63 0.0260 0.0029

Mercury -124787-09-30 12:01 J -43856756.15 -43856756.00 -43856755.84 0.0259 0.0141

Venus -124787-12-13 03:37 J -43856682.49 -43856682.35 -43856682.19 0.0259 0.0186

Mercury -124787-12-28 07:42 J -43856667.20 -43856667.18 -43856667.13 0.0259 0.0254

Venus -124786-07-30 03:51 J -43856453.48 -43856453.34 -43856453.17 0.0259 0.0187

Venus -124785-03-15 05:32 J -43856224.42 -43856224.27 -43856224.11 0.0260 0.0184

Venus -124785-10-30 07:56 J -43855995.31 -43855995.17 -43855995.00 0.0260 0.0181

Venus -124784-06-16 12:30 J -43855766.14 -43855765.98 -43855765.81 0.0261 0.0174

Venus -124783-01-31 18:01 J -43855536.91 -43855536.75 -43855536.57 0.0263 0.0165

Venus -124783-09-18 01:13 J -43855307.62 -43855307.45 -43855307.27 0.0264 0.0153

Venus -124782-05-05 10:20 J -43855078.26 -43855078.07 -43855077.89 0.0266 0.0139

Venus -124782-12-20 20:54 J -43854848.82 -43854848.63 -43854848.43 0.0268 0.0123

Venus -124781-08-06 09:51 J -43854619.29 -43854619.09 -43854618.89 0.0270 0.0104

Venus -124780-03-24 00:30 J -43854389.69 -43854389.48 -43854389.27 0.0272 0.0083

Venus -124780-11-08 17:03 J -43854160.00 -43854159.79 -43854159.57 0.0275 0.0060

Venus -124779-06-26 11:32 J -43853930.24 -43853930.02 -43853929.80 0.0278 0.0035

Venus -124778-02-11 08:11 J -43853700.38 -43853700.16 -43853699.94 0.0281 0.0008

Venus -124778-09-29 06:30 J -43853470.45 -43853470.23 -43853470.01 0.0284 0.0020

Venus -124777-05-16 06:30 J -43853240.44 -43853240.23 -43853240.02 0.0287 0.0049

Venus -124776-01-01 07:56 J -43853010.38 -43853010.17 -43853009.96 0.0290 0.0078

Venus -124776-08-19 10:35 J -43852780.25 -43852780.06 -43852779.85 0.0293 0.0105

Venus -124775-04-06 14:11 J -43852550.09 -43852549.91 -43852549.71 0.0295 0.0132

Venus -124775-11-22 18:30 J -43852319.90 -43852319.73 -43852319.54 0.0298 0.0155

Moon -124774-01-02 19:13 J -43852278.92 -43852278.70 -43852278.48 0.0298 0.0089

Earth -124774-01-02 19:42 J -43852278.91 -43852278.68 -43852278.44 0.0298 0.0073 \*

Venus -124774-07-10 22:49 J -43852089.71 -43852089.55 -43852089.37 0.0300 0.0175

Mars -124773-01-23 20:39 J -43851892.93 -43851892.64 -43851892.33 0.0301 0.0086

Venus -124773-02-26 03:08 J -43851859.53 -43851859.37 -43851859.21 0.0301 0.0190

Venus -124773-10-13 06:44 J -43851629.37 -43851629.22 -43851629.06 0.0302 0.0201

Mercury -124773-11-04 06:59 J -43851607.29 -43851607.21 -43851607.14 0.0303 0.0250

Mercury -124772-01-31 20:25 J -43851518.77 -43851518.65 -43851518.53 0.0303 0.0124

Mercury -124772-04-30 09:51 J -43851430.22 -43851430.09 -43851429.96 0.0303 0.0006

Venus -124772-05-31 09:23 J -43851399.26 -43851399.11 -43851398.96 0.0303 0.0207

Mercury -124772-07-27 23:18 J -43851341.65 -43851341.53 -43851341.41 0.0303 0.0127

Mercury -124772-10-24 12:30 J -43851253.05 -43851252.98 -43851252.91 0.0303 0.0250

Venus -124771-01-16 10:49 J -43851169.20 -43851169.05 -43851168.90 0.0303 0.0207

Venus -124771-09-03 10:20 J -43850939.21 -43850939.07 -43850938.91 0.0303 0.0203

Venus -124770-04-21 08:25 J -43850709.30 -43850709.15 -43850708.99 0.0302 0.0193

Venus -124770-12-07 04:20 J -43850479.48 -43850479.32 -43850479.15 0.0300 0.0178

Venus -124769-07-23 22:20 J -43850249.74 -43850249.57 -43850249.40 0.0298 0.0160

Venus -124768-03-10 13:56 J -43850020.10 -43850019.92 -43850019.74 0.0296 0.0138

Venus -124768-10-26 03:23 J -43849790.55 -43849790.36 -43849790.17 0.0293 0.0114

Venus -124767-06-12 14:39 J -43849561.08 -43849560.89 -43849560.69 0.0291 0.0089

Venus -124766-01-28 00:01 J -43849331.69 -43849331.50 -43849331.29 0.0288 0.0063

Venus -124766-09-14 07:42 J -43849102.39 -43849102.18 -43849101.98 0.0285 0.0036

Venus -124765-04-30 13:13 J -43848873.16 -43848872.95 -43848872.75 0.0282 0.0010

Venus -124765-12-15 17:03 J -43848643.99 -43848643.79 -43848643.58 0.0279 0.0017

Venus -124764-08-01 19:42 J -43848414.88 -43848414.68 -43848414.47 0.0276 0.0040

Venus -124763-03-18 21:08 J -43848185.81 -43848185.62 -43848185.41 0.0273 0.0063

Venus -124763-11-02 21:37 J -43847956.80 -43847956.60 -43847956.40 0.0271 0.0084

Venus -124762-06-19 20:54 J -43847727.82 -43847727.63 -43847727.43 0.0268 0.0103

Venus -124761-02-03 19:42 J -43847498.86 -43847498.68 -43847498.49 0.0266 0.0120

Earth -124761-06-21 06:30 J -43847360.42 -43847360.23 -43847360.03 0.0265 0.0163

Moon -124761-06-21 10:06 J -43847360.26 -43847360.08 -43847359.88 0.0265 0.0175 \*

Venus -124761-09-19 18:01 J -43847269.93 -43847269.75 -43847269.56 0.0264 0.0135

Venus -124760-05-06 16:20 J -43847040.99 -43847040.82 -43847040.64 0.0263 0.0149

Venus -124760-12-21 14:25 J -43846812.07 -43846811.90 -43846811.73 0.0261 0.0160

Mars -124759-03-14 13:13 J -43846729.22 -43846728.95 -43846728.68 0.0261 0.0069

Venus -124759-08-07 12:30 J -43846583.14 -43846582.98 -43846582.81 0.0260 0.0169

Venus -124758-03-24 10:49 J -43846354.20 -43846354.05 -43846353.88 0.0260 0.0176

Mercury -124758-05-27 02:11 J -43846290.50 -43846290.41 -43846290.30 0.0260 0.0217

Mercury -124758-08-23 21:37 J -43846201.76 -43846201.60 -43846201.42 0.0259 0.0107

Venus -124758-11-08 10:06 J -43846125.24 -43846125.08 -43846124.93 0.0259 0.0181

Mercury -124758-11-20 17:18 J -43846112.97 -43846112.78 -43846112.59 0.0259 0.0004

Mercury -124757-02-17 12:59 J -43846024.12 -43846023.96 -43846023.79 0.0259 0.0115

Mercury -124757-05-16 08:54 J -43845935.22 -43845935.13 -43845935.04 0.0259 0.0228

Venus -124757-06-24 09:37 J -43845896.24 -43845896.10 -43845895.94 0.0259 0.0183

Venus -124756-02-08 10:20 J -43845667.22 -43845667.07 -43845666.91 0.0259 0.0184

Venus -124756-09-25 12:01 J -43845438.15 -43845438.00 -43845437.84 0.0260 0.0182

Venus -124755-05-12 14:54 J -43845209.03 -43845208.88 -43845208.71 0.0260 0.0178

Venus -124755-12-27 19:27 J -43844979.86 -43844979.69 -43844979.53 0.0262 0.0171

Venus -124754-08-14 00:59 J -43844750.62 -43844750.46 -43844750.28 0.0263 0.0162

Venus -124753-03-30 08:25 J -43844521.32 -43844521.15 -43844520.96 0.0264 0.0151

Venus -124753-11-14 17:47 J -43844291.95 -43844291.76 -43844291.57 0.0266 0.0137

Venus -124752-07-02 04:49 J -43844062.50 -43844062.30 -43844062.10 0.0268 0.0120

Venus -124751-02-16 17:47 J -43843832.96 -43843832.76 -43843832.55 0.0271 0.0101

Venus -124751-10-04 08:39 J -43843603.35 -43843603.14 -43843602.93 0.0273 0.0080

Venus -124750-05-22 01:27 J -43843373.66 -43843373.44 -43843373.22 0.0276 0.0056

Venus -124749-01-06 20:11 J -43843143.87 -43843143.66 -43843143.44 0.0279 0.0031

Venus -124749-08-23 17:03 J -43842914.01 -43842913.79 -43842913.57 0.0281 0.0007

Venus -124748-04-10 15:37 J -43842684.06 -43842683.85 -43842683.63 0.0284 0.0025

Venus -124748-11-26 15:51 J -43842454.05 -43842453.84 -43842453.63 0.0287 0.0053

Venus -124747-07-14 17:18 J -43842223.99 -43842223.78 -43842223.57 0.0290 0.0081

Venus -124746-03-01 20:11 J -43841993.86 -43841993.66 -43841993.46 0.0293 0.0108

Venus -124746-10-17 23:47 J -43841763.70 -43841763.51 -43841763.32 0.0296 0.0134

Venus -124745-06-04 03:51 J -43841533.52 -43841533.34 -43841533.16 0.0298 0.0156

Venus -124744-01-20 08:11 J -43841303.33 -43841303.16 -43841302.99 0.0300 0.0175

Venus -124744-09-07 12:01 J -43841073.16 -43841073.00 -43841072.83 0.0301 0.0190

Mercury -124743-03-24 09:08 J -43840875.16 -43840875.12 -43840875.07 0.0302 0.0281

Venus -124743-04-25 15:23 J -43840843.01 -43840842.86 -43840842.70 0.0302 0.0200

Mercury -124743-06-20 22:49 J -43840786.67 -43840786.55 -43840786.44 0.0302 0.0155

Mercury -124743-09-17 12:15 J -43840698.12 -43840697.99 -43840697.86 0.0303 0.0030

Venus -124743-12-11 18:01 J -43840612.90 -43840612.75 -43840612.60 0.0303 0.0204

Mercury -124743-12-15 01:27 J -43840609.56 -43840609.44 -43840609.31 0.0303 0.0096

Mercury -124742-03-13 14:39 J -43840520.97 -43840520.89 -43840520.79 0.0303 0.0219

Venus -124742-07-29 18:59 J -43840382.86 -43840382.71 -43840382.55 0.0303 0.0204

Venus -124741-03-15 18:15 J -43840152.88 -43840152.74 -43840152.58 0.0302 0.0198

Venus -124741-10-31 15:51 J -43839922.99 -43839922.84 -43839922.67 0.0301 0.0187

Venus -124740-06-18 11:32 J -43839693.18 -43839693.02 -43839692.85 0.0299 0.0172

Venus -124739-02-03 05:03 J -43839463.46 -43839463.29 -43839463.11 0.0297 0.0153

Venus -124739-09-20 20:11 J -43839233.83 -43839233.66 -43839233.47 0.0295 0.0132

Venus -124738-05-08 09:23 J -43839004.30 -43839004.11 -43839003.92 0.0292 0.0108

Venus -124738-12-23 20:25 J -43838774.85 -43838774.65 -43838774.46 0.0290 0.0083

Venus -124737-08-09 05:18 J -43838545.48 -43838545.28 -43838545.08 0.0287 0.0057

Venus -124736-03-26 12:30 J -43838316.18 -43838315.98 -43838315.77 0.0284 0.0031

Venus -124736-11-10 18:01 J -43838086.95 -43838086.75 -43838086.54 0.0281 0.0005

Venus -124735-06-27 21:51 J -43837857.79 -43837857.59 -43837857.38 0.0278 0.0020

Venus -124734-02-12 00:30 J -43837628.69 -43837628.48 -43837628.28 0.0275 0.0044

Venus -124734-09-29 01:42 J -43837399.63 -43837399.43 -43837399.23 0.0273 0.0066

Venus -124733-05-15 01:42 J -43837170.62 -43837170.43 -43837170.22 0.0270 0.0087

Venus -124733-12-30 01:13 J -43836941.64 -43836941.45 -43836941.25 0.0268 0.0105

Venus -124732-08-16 00:01 J -43836712.68 -43836712.50 -43836712.31 0.0266 0.0122

Venus -124731-04-01 22:35 J -43836483.74 -43836483.56 -43836483.38 0.0265 0.0137

Moon -124731-06-28 06:15 J -43836396.34 -43836396.24 -43836396.11 0.0264 0.0235

Earth -124731-06-28 09:37 J -43836396.17 -43836396.10 -43836396.00 0.0264 0.0248 \*

Venus -124731-11-16 20:25 J -43836254.81 -43836254.65 -43836254.46 0.0263 0.0151

Venus -124730-07-03 18:30 J -43836025.89 -43836025.73 -43836025.55 0.0262 0.0162

Venus -124729-02-17 16:49 J -43835796.95 -43835796.80 -43835796.63 0.0261 0.0171

Mars -124729-04-29 10:06 J -43835725.15 -43835725.08 -43835724.98 0.0261 0.0248

Venus -124729-10-03 15:23 J -43835568.01 -43835567.86 -43835567.69 0.0260 0.0178



Mercury -124729-10-13 02:39 J -43835558.44 -43835558.39 -43835558.32 0.0260 0.0243

Mercury -124728-01-09 22:06 J -43835469.73 -43835469.58 -43835469.42 0.0260 0.0134

Mercury -124728-04-08 17:32 J -43835380.95 -43835380.77 -43835380.58 0.0260 0.0024

Venus -124728-05-20 14:54 J -43835339.03 -43835338.88 -43835338.72 0.0260 0.0182

Mercury -124728-07-06 13:13 J -43835292.12 -43835291.95 -43835291.77 0.0260 0.0089

Mercury -124728-10-03 09:08 J -43835203.24 -43835203.12 -43835203.00 0.0260 0.0201

Venus -124727-01-04 14:54 J -43835110.03 -43835109.88 -43835109.73 0.0260 0.0184

Venus -124727-08-21 15:37 J -43834881.00 -43834880.85 -43834880.70 0.0260 0.0184

Venus -124726-04-07 17:32 J -43834651.93 -43834651.77 -43834651.62 0.0260 0.0181

Venus -124726-11-22 20:25 J -43834422.80 -43834422.65 -43834422.48 0.0261 0.0177

Venus -124725-07-09 01:27 J -43834193.61 -43834193.44 -43834193.27 0.0262 0.0169

Venus -124724-02-23 07:13 J -43833964.36 -43833964.20 -43833964.01 0.0263 0.0161

Venus -124724-10-10 15:08 J -43833735.04 -43833734.87 -43833734.68 0.0265 0.0148

Venus -124723-05-28 00:59 J -43833505.65 -43833505.46 -43833505.27 0.0266 0.0133

Venus -124722-01-12 12:30 J -43833276.18 -43833275.98 -43833275.78 0.0268 0.0116

Venus -124722-08-30 01:42 J -43833046.63 -43833046.43 -43833046.22 0.0271 0.0097

Venus -124721-04-15 17:03 J -43832817.00 -43832816.79 -43832816.57 0.0273 0.0075

Venus -124721-12-01 10:20 J -43832587.28 -43832587.07 -43832586.85 0.0276 0.0051

Venus -124720-07-19 05:32 J -43832357.48 -43832357.27 -43832357.05 0.0279 0.0027

Venus -124719-03-06 02:39 J -43832127.61 -43832127.39 -43832127.17 0.0282 0.0004

Venus -124719-10-22 01:27 J -43831897.65 -43831897.44 -43831897.22 0.0285 0.0029

Venus -124718-06-09 01:56 J -43831667.63 -43831667.42 -43831667.21 0.0288 0.0057

Venus -124717-01-25 03:37 J -43831437.55 -43831437.35 -43831437.14 0.0290 0.0085

Venus -124717-09-11 06:44 J -43831207.42 -43831207.22 -43831207.02 0.0293 0.0112

Venus -124716-04-29 10:35 J -43830977.25 -43830977.06 -43830976.87 0.0296 0.0137

Venus -124716-12-15 14:39 J -43830747.06 -43830746.89 -43830746.71 0.0298 0.0159

Earth -124715-01-04 14:54 J -43830727.05 -43830726.88 -43830726.72 0.0298 0.0214

Moon -124715-01-04 15:23 J -43830727.04 -43830726.86 -43830726.68 0.0298 0.0202 \*

Mars -124715-04-26 08:54 J -43830615.35 -43830615.13 -43830614.88 0.0299 0.0194

Venus -124715-08-02 18:59 J -43830516.88 -43830516.71 -43830516.54 0.0300 0.0177

Venus -124714-03-20 22:49 J -43830286.70 -43830286.55 -43830286.38 0.0302 0.0192  
 Venus -124714-11-06 02:11 J -43830056.56 -43830056.41 -43830056.25 0.0303 0.0201  
 Mercury -124714-11-08 01:42 J -43830054.54 -43830054.43 -43830054.33 0.0303 0.0181  
 Mercury -124713-02-04 15:08 J -43829966.00 -43829965.87 -43829965.74 0.0303 0.0055  
 Mercury -124713-05-03 04:20 J -43829877.44 -43829877.32 -43829877.19 0.0303 0.0071  
 Venus -124713-06-23 04:35 J -43829826.46 -43829826.31 -43829826.16 0.0303 0.0205  
 Mercury -124713-07-30 17:32 J -43829788.86 -43829788.77 -43829788.66 0.0303 0.0194  
 Venus -124712-02-08 05:18 J -43829596.43 -43829596.28 -43829596.13 0.0303 0.0204  
 Venus -124712-09-26 04:35 J -43829366.47 -43829366.31 -43829366.16 0.0302 0.0198  
 Venus -124711-05-14 01:42 J -43829136.58 -43829136.43 -43829136.27 0.0301 0.0187  
 Venus -124711-12-29 21:08 J -43828906.78 -43828906.62 -43828906.45 0.0300 0.0171  
 Venus -124710-08-16 14:11 J -43828677.08 -43828676.91 -43828676.73 0.0297 0.0152  
 Venus -124709-04-02 05:18 J -43828447.46 -43828447.28 -43828447.10 0.0295 0.0130  
 Venus -124709-11-17 18:01 J -43828217.94 -43828217.75 -43828217.56 0.0293 0.0105  
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 Venus -124706-05-24 01:27 J -43827300.64 -43827300.44 -43827300.23 0.0281 0.0006  
 Venus -124705-01-08 05:03 J -43827071.49 -43827071.29 -43827071.08 0.0278 0.0023  
 Venus -124705-08-24 07:13 J -43826842.40 -43826842.20 -43826841.99 0.0275 0.0047  
 Venus -124704-04-10 08:25 J -43826613.35 -43826613.15 -43826612.95 0.0272 0.0068  
 Venus -124704-11-25 08:25 J -43826384.34 -43826384.15 -43826383.95 0.0270 0.0089  
 Venus -124703-07-12 07:42 J -43826155.37 -43826155.18 -43826154.99 0.0268 0.0107  
 Venus -124702-02-26 06:15 J -43825926.42 -43825926.24 -43825926.05 0.0266 0.0124  
 Moon -124702-06-23 13:27 J -43825809.18 -43825808.94 -43825808.70 0.0265 0.0051  
 Earth -124702-06-23 16:35 J -43825809.04 -43825808.81 -43825808.56 0.0265 0.0065 \*  
 Venus -124702-10-13 04:35 J -43825697.48 -43825697.31 -43825697.12 0.0264 0.0138  
 Venus -124701-05-29 02:54 J -43825468.55 -43825468.38 -43825468.20 0.0262 0.0150  
 Mars -124701-06-22 18:44 J -43825443.98 -43825443.72 -43825443.45 0.0262 0.0084  
 Venus -124700-01-13 00:44 J -43825239.62 -43825239.47 -43825239.29 0.0261 0.0162

Venus -124700-08-29 23:18 J -43825010.69 -43825010.53 -43825010.36 0.0260 0.0169  
 Venus -124699-04-15 21:51 J -43824781.74 -43824781.59 -43824781.42 0.0260 0.0176  
 Mercury -124699-05-29 23:18 J -43824737.67 -43824737.53 -43824737.38 0.0260 0.0157  
 Mercury -124699-08-26 18:59 J -43824648.90 -43824648.71 -43824648.53 0.0259 0.0047  
 Mercury -124699-11-23 14:25 J -43824560.08 -43824559.90 -43824559.71 0.0259 0.0065  
 Venus -124699-11-30 21:23 J -43824552.76 -43824552.61 -43824552.45 0.0259 0.0179  
 Mercury -124698-02-20 10:20 J -43824471.21 -43824471.07 -43824470.93 0.0259 0.0177  
 Venus -124698-07-17 21:23 J -43824323.76 -43824323.61 -43824323.45 0.0259 0.0181  
 Venus -124697-03-02 22:06 J -43824094.72 -43824094.58 -43824094.41 0.0260 0.0182  
 Venus -124697-10-18 00:30 J -43823865.64 -43823865.48 -43823865.32 0.0260 0.0179  
 Venus -124696-06-04 03:51 J -43823636.49 -43823636.34 -43823636.17 0.0261 0.0174  
 Venus -124695-01-19 08:54 J -43823407.30 -43823407.13 -43823406.96 0.0262 0.0166  
 Venus -124695-09-05 14:54 J -43823178.04 -43823177.88 -43823177.69 0.0263 0.0158  
 Venus -124694-04-22 23:03 J -43822948.72 -43822948.54 -43822948.35 0.0265 0.0145  
 Venus -124694-12-08 08:54 J -43822719.32 -43822719.13 -43822718.93 0.0267 0.0130  
 Venus -124693-07-24 20:54 J -43822489.83 -43822489.63 -43822489.43 0.0269 0.0113  
 Venus -124692-03-11 10:35 J -43822260.27 -43822260.06 -43822259.85 0.0271 0.0094  
 Venus -124692-10-27 01:56 J -43822030.63 -43822030.42 -43822030.20 0.0274 0.0072  
 Venus -124691-06-13 19:27 J -43821800.90 -43821800.69 -43821800.47 0.0277 0.0048  
 Venus -124690-01-29 14:54 J -43821571.09 -43821570.88 -43821570.66 0.0280 0.0023  
 Venus -124690-09-16 12:30 J -43821341.20 -43821340.98 -43821340.76 0.0282 0.0006  
 Venus -124689-05-03 11:32 J -43821111.24 -43821111.02 -43821110.80 0.0285 0.0033  
 Venus -124689-12-19 12:01 J -43820881.21 -43820881.00 -43820880.79 0.0288 0.0061  
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 Venus -124687-03-24 17:03 J -43820420.99 -43820420.79 -43820420.59 0.0294 0.0115  
 Venus -124687-11-09 20:54 J -43820190.81 -43820190.63 -43820190.44 0.0296 0.0140  
 Moon -124687-12-29 17:32 J -43820140.93 -43820140.77 -43820140.59 0.0297 0.0212  
 Earth -124687-12-29 20:54 J -43820140.78 -43820140.63 -43820140.48 0.0297 0.0227 \*  
 Venus -124686-06-28 00:59 J -43819960.63 -43819960.46 -43819960.28 0.0299 0.0161  
 Venus -124685-02-13 05:18 J -43819730.45 -43819730.28 -43819730.11 0.0300 0.0179

Mars -124685-06-20 06:44 J -43819602.48 -43819602.22 -43819601.93 0.0301 0.0137  
 Venus -124685-09-30 09:08 J -43819500.28 -43819500.12 -43819499.96 0.0302 0.0191  
 Mercury -124684-03-27 04:06 J -43819322.42 -43819322.33 -43819322.23 0.0302 0.0209  
 Venus -124684-05-18 12:15 J -43819270.14 -43819269.99 -43819269.83 0.0302 0.0200  
 Mercury -124684-06-23 17:47 J -43819233.89 -43819233.76 -43819233.63 0.0303 0.0084  
 Mercury -124684-09-20 07:13 J -43819145.33 -43819145.20 -43819145.07 0.0303 0.0042  
 Mercury -124684-12-17 20:25 J -43819056.76 -43819056.65 -43819056.54 0.0303 0.0165  
 Venus -124683-01-03 14:11 J -43819040.05 -43819039.91 -43819039.75 0.0303 0.0203  
 Mercury -124683-03-16 09:37 J -43818968.14 -43818968.10 -43818968.06 0.0303 0.0288  
 Venus -124683-08-21 14:54 J -43818810.03 -43818809.88 -43818809.73 0.0302 0.0200  
 Venus -124682-04-08 13:42 J -43818580.08 -43818579.93 -43818579.77 0.0302 0.0193  
 Venus -124682-11-24 10:49 J -43818350.21 -43818350.05 -43818349.89 0.0300 0.0180  
 Venus -124681-07-11 05:32 J -43818120.43 -43818120.27 -43818120.09 0.0299 0.0165  
 Venus -124680-02-25 22:20 J -43817890.74 -43817890.57 -43817890.39 0.0297 0.0145  
 Venus -124680-10-13 12:59 J -43817661.14 -43817660.96 -43817660.78 0.0294 0.0123  
 Venus -124679-05-31 01:13 J -43817431.64 -43817431.45 -43817431.25 0.0291 0.0099  
 Venus -124678-01-15 11:47 J -43817202.21 -43817202.01 -43817201.82 0.0289 0.0074  
 Venus -124678-09-01 19:56 J -43816972.87 -43816972.67 -43816972.47 0.0286 0.0049  
 Venus -124677-04-18 02:25 J -43816743.60 -43816743.40 -43816743.19 0.0283 0.0024  
 Venus -124677-12-03 07:27 J -43816514.40 -43816514.19 -43816513.99 0.0280 0.0005  
 Venus -124676-07-20 10:49 J -43816285.26 -43816285.05 -43816284.85 0.0277 0.0027  
 Venus -124675-03-06 12:59 J -43816056.17 -43816055.96 -43816055.76 0.0275 0.0050  
 Venus -124675-10-21 13:42 J -43815827.13 -43815826.93 -43815826.73 0.0272 0.0071  
 Venus -124674-06-07 13:42 J -43815598.13 -43815597.93 -43815597.74 0.0270 0.0091  
 Venus -124673-01-22 12:44 J -43815369.16 -43815368.97 -43815368.78 0.0268 0.0109  
 Venus -124673-09-07 11:18 J -43815140.21 -43815140.03 -43815139.84 0.0266 0.0125  
 Venus -124672-04-24 09:37 J -43814911.27 -43814911.10 -43814910.91 0.0264 0.0140  
 Venus -124672-12-09 07:42 J -43814682.34 -43814682.18 -43814682.00 0.0263 0.0153  
 Venus -124671-07-26 05:47 J -43814453.42 -43814453.26 -43814453.08 0.0261 0.0163  
 Mars -124671-08-08 20:39 J -43814439.89 -43814439.64 -43814439.37 0.0261 0.0099

Venus -124670-03-12 04:06 J -43814224.48 -43814224.33 -43814224.16 0.0261 0.0171

Mercury -124670-10-16 23:47 J -43814005.63 -43814005.51 -43814005.37 0.0260 0.0183

Venus -124670-10-27 02:54 J -43813995.53 -43813995.38 -43813995.22 0.0260 0.0177

Mercury -124669-01-13 19:13 J -43813916.87 -43813916.70 -43813916.51 0.0260 0.0073

Mercury -124669-04-11 14:54 J -43813828.06 -43813827.88 -43813827.69 0.0260 0.0039

Venus -124669-06-12 02:25 J -43813766.55 -43813766.40 -43813766.24 0.0260 0.0181

Mercury -124669-07-09 10:35 J -43813739.21 -43813739.06 -43813738.90 0.0260 0.0151

Venus -124668-01-27 02:25 J -43813537.54 -43813537.40 -43813537.23 0.0260 0.0183

Venus -124668-09-13 03:37 J -43813308.50 -43813308.35 -43813308.18 0.0260 0.0182

Venus -124667-04-30 06:01 J -43813079.40 -43813079.25 -43813079.09 0.0260 0.0178

Venus -124667-12-15 09:37 J -43812850.26 -43812850.10 -43812849.93 0.0261 0.0173

Venus -124666-08-01 14:39 J -43812621.05 -43812620.89 -43812620.71 0.0262 0.0165

Venus -124665-03-17 21:23 J -43812391.78 -43812391.61 -43812391.42 0.0264 0.0155

Venus -124665-11-02 05:47 J -43812162.44 -43812162.26 -43812162.07 0.0265 0.0142

Venus -124664-06-19 16:06 J -43811933.02 -43811932.83 -43811932.63 0.0267 0.0127

Venus -124663-02-04 04:20 J -43811703.52 -43811703.32 -43811703.11 0.0269 0.0109

Venus -124663-09-21 18:30 J -43811473.94 -43811473.73 -43811473.52 0.0272 0.0089

Venus -124662-05-09 10:35 J -43811244.28 -43811244.06 -43811243.85 0.0274 0.0068

Venus -124662-12-25 04:20 J -43811014.53 -43811014.32 -43811014.10 0.0277 0.0044

Venus -124661-08-11 00:30 J -43810784.70 -43810784.48 -43810784.26 0.0280 0.0018

Venus -124660-03-28 22:06 J -43810554.80 -43810554.58 -43810554.36 0.0282 0.0010

Venus -124660-11-13 21:23 J -43810324.82 -43810324.61 -43810324.39 0.0285 0.0038

Venus -124659-07-01 22:20 J -43810094.78 -43810094.57 -43810094.36 0.0288 0.0065

Venus -124658-02-17 00:30 J -43809864.68 -43809864.48 -43809864.27 0.0291 0.0092

Venus -124658-10-05 03:51 J -43809634.53 -43809634.34 -43809634.14 0.0294 0.0118

Venus -124657-05-22 07:56 J -43809404.36 -43809404.17 -43809403.98 0.0297 0.0142

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Venus -124656-08-25 16:20 J -43808943.98 -43808943.82 -43808943.65 0.0300 0.0180

Venus -124655-04-12 20:11 J -43808713.82 -43808713.66 -43808713.50 0.0302 0.0192

Mercury -124655-08-14 06:59 J -43808590.29 -43808590.21 -43808590.12 0.0302 0.0234

Mercury -124655-11-10 20:39 J -43808501.76 -43808501.64 -43808501.52 0.0303 0.0108

Venus -124655-11-28 23:18 J -43808483.68 -43808483.53 -43808483.37 0.0303 0.0200

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Mercury -124654-05-06 23:32 J -43808324.64 -43808324.52 -43808324.41 0.0303 0.0141

Venus -124654-07-17 00:59 J -43808253.60 -43808253.46 -43808253.30 0.0303 0.0203

Mercury -124654-08-03 12:30 J -43808236.04 -43808235.98 -43808235.91 0.0303 0.0264

Venus -124653-03-03 01:27 J -43808023.59 -43808023.44 -43808023.28 0.0303 0.0200

Venus -124653-10-19 00:01 J -43807793.65 -43807793.50 -43807793.34 0.0302 0.0192

Venus -124652-06-05 20:54 J -43807563.79 -43807563.63 -43807563.47 0.0301 0.0180

Venus -124651-01-21 15:37 J -43807334.02 -43807333.85 -43807333.68 0.0299 0.0163

Venus -124651-09-08 07:56 J -43807104.34 -43807104.17 -43807103.99 0.0297 0.0143

Venus -124650-04-25 22:06 J -43806874.76 -43806874.58 -43806874.39 0.0294 0.0121

Venus -124650-12-11 10:20 J -43806645.26 -43806645.07 -43806644.88 0.0292 0.0097

Venus -124649-07-27 20:25 J -43806415.85 -43806415.65 -43806415.45 0.0289 0.0071

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Venus -124648-10-29 10:49 J -43805957.26 -43805957.05 -43805956.85 0.0283 0.0020

Venus -124647-06-15 15:23 J -43805728.07 -43805727.86 -43805727.66 0.0280 0.0007

Venus -124646-01-30 18:15 J -43805498.94 -43805498.74 -43805498.53 0.0277 0.0030

Venus -124646-09-16 20:11 J -43805269.87 -43805269.66 -43805269.46 0.0274 0.0052

Venus -124645-05-02 20:39 J -43805040.84 -43805040.64 -43805040.44 0.0272 0.0073

Venus -124645-12-17 20:25 J -43804811.84 -43804811.65 -43804811.45 0.0269 0.0093

Venus -124644-08-03 19:27 J -43804582.88 -43804582.69 -43804582.50 0.0267 0.0111

Venus -124643-03-20 18:01 J -43804353.93 -43804353.75 -43804353.56 0.0265 0.0126

Earth -124643-06-25 04:06 J -43804257.57 -43804257.33 -43804257.08 0.0264 0.0038

Moon -124643-06-25 07:13 J -43804257.46 -43804257.20 -43804256.95 0.0264 0.0030 \*

Mars -124643-10-01 21:37 J -43804158.70 -43804158.60 -43804158.47 0.0264 0.0241

Venus -124643-11-04 16:20 J -43804125.00 -43804124.82 -43804124.64 0.0264 0.0140

Venus -124642-06-21 14:11 J -43803896.08 -43803895.91 -43803895.73 0.0262 0.0152

Venus -124641-02-05 12:30 J -43803667.15 -43803666.98 -43803666.81 0.0261 0.0161

Venus -124641-09-21 10:35 J -43803438.21 -43803438.06 -43803437.89 0.0260 0.0170

Mercury -124640-03-05 01:13 J -43803273.56 -43803273.45 -43803273.33 0.0260 0.0205

Venus -124640-05-08 09:37 J -43803209.25 -43803209.10 -43803208.93 0.0260 0.0175

Mercury -124640-06-01 20:39 J -43803184.81 -43803184.64 -43803184.46 0.0260 0.0095

Mercury -124640-08-29 16:20 J -43803096.01 -43803095.82 -43803095.64 0.0259 0.0016

Mercury -124640-11-26 11:47 J -43803007.16 -43803007.01 -43803006.84 0.0259 0.0127

Venus -124640-12-23 09:08 J -43802980.27 -43802980.12 -43802979.95 0.0259 0.0178

Mercury -124639-02-23 07:42 J -43802918.24 -43802918.18 -43802918.10 0.0259 0.0239

Venus -124639-08-09 09:23 J -43802751.26 -43802751.11 -43802750.94 0.0259 0.0180

Venus -124638-03-26 10:35 J -43802522.20 -43802522.06 -43802521.89 0.0260 0.0179

Venus -124638-11-10 13:13 J -43802293.10 -43802292.95 -43802292.78 0.0260 0.0175

Venus -124637-06-26 17:18 J -43802063.94 -43802063.78 -43802063.61 0.0261 0.0170

Venus -124636-02-10 22:35 J -43801834.73 -43801834.56 -43801834.38 0.0262 0.0162

Venus -124636-09-28 05:32 J -43801605.45 -43801605.27 -43801605.08 0.0264 0.0152

Venus -124635-05-15 14:11 J -43801376.09 -43801375.91 -43801375.72 0.0266 0.0139

Venus -124635-12-31 00:44 J -43801146.67 -43801146.47 -43801146.27 0.0268 0.0124

Venus -124634-08-17 13:13 J -43800917.15 -43800916.95 -43800916.75 0.0270 0.0106

Venus -124633-04-03 03:23 J -43800687.56 -43800687.36 -43800687.14 0.0272 0.0086

Venus -124633-11-18 19:42 J -43800457.89 -43800457.68 -43800457.46 0.0275 0.0064

Venus -124632-07-06 13:56 J -43800228.13 -43800227.92 -43800227.70 0.0278 0.0040

Venus -124631-02-21 10:06 J -43799998.30 -43799998.08 -43799997.86 0.0280 0.0015

Venus -124631-10-09 08:11 J -43799768.38 -43799768.16 -43799767.94 0.0283 0.0013

Venus -124630-05-27 07:42 J -43799538.39 -43799538.18 -43799537.96 0.0286 0.0041

Venus -124629-01-12 08:54 J -43799308.34 -43799308.13 -43799307.92 0.0289 0.0069

Venus -124629-08-29 11:18 J -43799078.23 -43799078.03 -43799077.82 0.0292 0.0096

Venus -124628-04-16 14:39 J -43798848.08 -43798847.89 -43798847.69 0.0295 0.0122

Venus -124628-12-02 18:30 J -43798617.91 -43798617.73 -43798617.54 0.0297 0.0145

Earth -124628-12-31 18:15 J -43798588.97 -43798588.74 -43798588.51 0.0297 0.0080

Moon -124628-12-31 21:37 J -43798588.82 -43798588.60 -43798588.37 0.0297 0.0091 \*

Venus -124627-07-20 22:49 J -43798387.72 -43798387.55 -43798387.37 0.0299 0.0165

Mars -124627-09-22 01:13 J -43798324.72 -43798324.45 -43798324.17 0.0300 0.0141

Venus -124626-03-08 02:54 J -43798157.54 -43798157.38 -43798157.21 0.0301 0.0181

Venus -124626-10-24 06:44 J -43797927.38 -43797927.22 -43797927.06 0.0302 0.0192

Mercury -124625-01-01 09:51 J -43797858.16 -43797858.09 -43797858.03 0.0302 0.0262

Mercury -124625-03-29 23:18 J -43797769.64 -43797769.53 -43797769.41 0.0302 0.0136

Venus -124625-06-10 09:37 J -43797697.26 -43797697.10 -43797696.95 0.0303 0.0199

Mercury -124625-06-26 12:44 J -43797681.10 -43797680.97 -43797680.83 0.0303 0.0014

Mercury -124625-09-23 02:11 J -43797592.53 -43797592.41 -43797592.29 0.0303 0.0113

Mercury -124625-12-20 15:23 J -43797503.94 -43797503.86 -43797503.78 0.0303 0.0236

Venus -124624-01-26 11:03 J -43797467.19 -43797467.04 -43797466.88 0.0303 0.0200

Venus -124624-09-13 11:03 J -43797237.19 -43797237.04 -43797236.88 0.0302 0.0196

Venus -124623-05-01 09:23 J -43797007.26 -43797007.11 -43797006.94 0.0301 0.0187

Venus -124623-12-17 06:01 J -43796777.42 -43796777.25 -43796777.09 0.0300 0.0174

Venus -124622-08-04 00:01 J -43796547.66 -43796547.50 -43796547.32 0.0298 0.0157

Venus -124621-03-20 16:06 J -43796318.00 -43796317.83 -43796317.64 0.0296 0.0137

Venus -124621-11-05 06:01 J -43796088.43 -43796088.25 -43796088.06 0.0293 0.0115

Venus -124620-06-22 17:47 J -43795858.95 -43795858.76 -43795858.57 0.0291 0.0090

Venus -124619-02-07 03:37 J -43795629.55 -43795629.35 -43795629.15 0.0288 0.0066

Venus -124619-09-24 11:18 J -43795400.23 -43795400.03 -43795399.83 0.0285 0.0040

Venus -124618-05-11 17:03 J -43795170.99 -43795170.79 -43795170.59 0.0282 0.0015

Venus -124618-12-26 21:23 J -43794941.82 -43794941.61 -43794941.41 0.0279 0.0010

Venus -124617-08-12 00:01 J -43794712.70 -43794712.50 -43794712.29 0.0276 0.0033

Venus -124616-03-29 01:42 J -43794483.63 -43794483.43 -43794483.22 0.0274 0.0056

Venus -124616-11-13 02:11 J -43794254.60 -43794254.41 -43794254.21 0.0271 0.0076

Venus -124615-06-30 01:42 J -43794025.62 -43794025.43 -43794025.23 0.0269 0.0095

Venus -124614-02-14 00:44 J -43793796.66 -43793796.47 -43793796.28 0.0267 0.0112

Venus -124614-09-30 22:49 J -43793567.72 -43793567.55 -43793567.35 0.0265 0.0129

Venus -124613-05-16 21:08 J -43793338.79 -43793338.62 -43793338.43 0.0263 0.0141

Mars -124613-11-17 05:47 J -43793154.53 -43793154.26 -43793153.98 0.0262 0.0055

Venus -124613-12-31 19:13 J -43793109.87 -43793109.70 -43793109.52 0.0262 0.0153

Venus -124612-08-17 17:03 J -43792880.94 -43792880.79 -43792880.61 0.0261 0.0164



Venus -124611-04-03 15:37 J -43792652.00 -43792651.85 -43792651.68 0.0260 0.0170  
 Mercury -124611-07-23 01:42 J -43792541.50 -43792541.43 -43792541.34 0.0260 0.0231  
 Mercury -124611-10-19 21:08 J -43792452.78 -43792452.62 -43792452.45 0.0260 0.0122  
 Venus -124611-11-18 14:25 J -43792423.05 -43792422.90 -43792422.73 0.0260 0.0176  
 Mercury -124610-01-16 16:35 J -43792363.99 -43792363.81 -43792363.62 0.0260 0.0012  
 Mercury -124610-04-15 12:15 J -43792275.16 -43792274.99 -43792274.82 0.0260 0.0100  
 Venus -124610-07-05 14:11 J -43792194.06 -43792193.91 -43792193.75 0.0260 0.0179  
 Mercury -124610-07-13 07:56 J -43792186.27 -43792186.17 -43792186.06 0.0260 0.0213  
 Venus -124609-02-19 14:25 J -43791965.05 -43791964.90 -43791964.74 0.0260 0.0180  
 Venus -124609-10-05 15:51 J -43791735.99 -43791735.84 -43791735.68 0.0260 0.0179  
 Venus -124608-05-22 18:30 J -43791506.88 -43791506.73 -43791506.56 0.0261 0.0175  
 Venus -124607-01-06 22:35 J -43791277.72 -43791277.56 -43791277.39 0.0262 0.0169  
 Venus -124607-08-24 03:51 J -43791048.50 -43791048.34 -43791048.15 0.0263 0.0161  
 Venus -124606-04-10 11:18 J -43790819.21 -43790819.03 -43790818.85 0.0264 0.0150  
 Venus -124606-11-25 20:11 J -43790589.85 -43790589.66 -43790589.47 0.0266 0.0136  
 Venus -124605-07-12 06:59 J -43790360.40 -43790360.21 -43790360.00 0.0268 0.0121  
 Venus -124604-02-26 19:56 J -43790130.87 -43790130.67 -43790130.46 0.0270 0.0103  
 Venus -124604-10-14 10:35 J -43789901.27 -43789901.06 -43789900.84 0.0272 0.0083  
 Venus -124603-06-01 03:23 J -43789671.58 -43789671.36 -43789671.15 0.0275 0.0060  
 Venus -124602-01-16 21:51 J -43789441.80 -43789441.59 -43789441.37 0.0278 0.0036  
 Venus -124602-09-03 18:44 J -43789211.94 -43789211.72 -43789211.50 0.0281 0.0011  
 Venus -124601-04-20 17:03 J -43788982.01 -43788981.79 -43788981.57 0.0283 0.0017  
 Venus -124601-12-06 16:49 J -43788752.01 -43788751.80 -43788751.58 0.0286 0.0044  
 Venus -124600-07-24 18:15 J -43788521.95 -43788521.74 -43788521.53 0.0289 0.0072  
 Venus -124599-03-11 20:54 J -43788291.83 -43788291.63 -43788291.43 0.0292 0.0098  
 Venus -124599-10-28 00:15 J -43788061.67 -43788061.49 -43788061.29 0.0295 0.0124  
 Venus -124598-06-15 04:35 J -43787831.49 -43787831.31 -43787831.12 0.0297 0.0146  
 Venus -124597-01-31 08:54 J -43787601.30 -43787601.13 -43787600.95 0.0299 0.0166  
 Venus -124597-09-17 13:13 J -43787371.11 -43787370.95 -43787370.78 0.0301 0.0181  
 Mars -124597-11-15 23:32 J -43787311.76 -43787311.52 -43787311.28 0.0301 0.0190

Venus -124596-05-05 17:03 J -43787140.95 -43787140.79 -43787140.63 0.0302 0.0192  
 Mercury -124596-05-20 12:30 J -43787126.02 -43787125.98 -43787125.94 0.0302 0.0289  
 Mercury -124596-08-17 01:56 J -43787037.52 -43787037.42 -43787037.30 0.0303 0.0164  
 Mercury -124596-11-13 15:37 J -43786948.98 -43786948.85 -43786948.72 0.0303 0.0037  
 Venus -124596-12-21 19:56 J -43786910.82 -43786910.67 -43786910.51 0.0303 0.0198  
 Mercury -124595-02-10 05:03 J -43786860.42 -43786860.29 -43786860.17 0.0303 0.0087  
 Mercury -124595-05-09 18:15 J -43786771.83 -43786771.74 -43786771.65 0.0303 0.0211  
 Venus -124595-08-08 21:23 J -43786680.76 -43786680.61 -43786680.45 0.0303 0.0199  
 Venus -124594-03-26 21:23 J -43786450.76 -43786450.61 -43786450.45 0.0303 0.0195  
 Venus -124594-11-11 19:42 J -43786220.84 -43786220.68 -43786220.52 0.0302 0.0186  
 Venus -124593-06-28 15:51 J -43785991.01 -43785990.84 -43785990.67 0.0300 0.0172  
 Venus -124592-02-13 09:51 J -43785761.26 -43785761.09 -43785760.91 0.0298 0.0155  
 Venus -124592-10-01 01:42 J -43785531.61 -43785531.43 -43785531.25 0.0296 0.0135  
 Venus -124591-05-18 15:08 J -43785302.05 -43785301.87 -43785301.67 0.0293 0.0113  
 Venus -124590-01-03 02:54 J -43785072.58 -43785072.38 -43785072.19 0.0291 0.0088  
 Venus -124590-08-20 12:15 J -43784843.19 -43784842.99 -43784842.79 0.0288 0.0063  
 Venus -124589-04-05 19:42 J -43784613.88 -43784613.68 -43784613.48 0.0285 0.0037  
 Venus -124589-11-21 01:13 J -43784384.65 -43784384.45 -43784384.24 0.0282 0.0013  
 Venus -124588-07-08 05:18 J -43784155.49 -43784155.28 -43784155.08 0.0279 0.0012  
 Venus -124587-02-22 07:56 J -43783926.38 -43783926.17 -43783925.97 0.0276 0.0035  
 Venus -124587-10-09 09:08 J -43783697.32 -43783697.12 -43783696.92 0.0273 0.0058  
 Venus -124586-05-26 09:23 J -43783468.31 -43783468.11 -43783467.91 0.0271 0.0078  
 Venus -124585-01-10 08:39 J -43783239.33 -43783239.14 -43783238.94 0.0269 0.0097  
 Venus -124585-08-26 07:13 J -43783010.38 -43783010.20 -43783010.00 0.0266 0.0114  
 Venus -124584-04-12 05:47 J -43782781.44 -43782781.26 -43782781.07 0.0265 0.0128  
 Moon -124584-06-26 13:27 J -43782706.14 -43782705.94 -43782705.72 0.0264 0.0135  
 Earth -124584-06-26 15:51 J -43782706.04 -43782705.84 -43782705.62 0.0264 0.0141 \*  
 Venus -124584-11-27 03:51 J -43782552.52 -43782552.34 -43782552.16 0.0263 0.0141  
 Venus -124583-07-14 01:42 J -43782323.60 -43782323.43 -43782323.25 0.0262 0.0152  
 Mars -124582-01-03 13:13 J -43782150.19 -43782149.95 -43782149.70 0.0261 0.0126

Venus -124582-02-27 23:32 J -43782094.67 -43782094.52 -43782094.34 0.0261 0.0162  
 Venus -124582-10-14 22:20 J -43781865.74 -43781865.57 -43781865.41 0.0260 0.0168  
 Mercury -124582-12-10 03:08 J -43781809.40 -43781809.37 -43781809.33 0.0260 0.0254  
 Mercury -124581-03-07 22:35 J -43781720.72 -43781720.56 -43781720.41 0.0260 0.0145  
 Venus -124581-05-30 21:08 J -43781636.77 -43781636.62 -43781636.45 0.0259 0.0173  
 Mercury -124581-06-04 18:01 J -43781631.94 -43781631.75 -43781631.57 0.0259 0.0035  
 Mercury -124581-09-01 13:27 J -43781543.11 -43781542.94 -43781542.76 0.0259 0.0077  
 Mercury -124581-11-29 09:08 J -43781454.24 -43781454.12 -43781453.98 0.0259 0.0188  
 Venus -124580-01-14 20:39 J -43781407.79 -43781407.64 -43781407.47 0.0259 0.0177  
 Venus -124580-08-31 21:23 J -43781178.77 -43781178.61 -43781178.45 0.0259 0.0177  
 Venus -124579-04-17 22:49 J -43780949.71 -43780949.55 -43780949.38 0.0260 0.0175  
 Venus -124579-12-03 01:27 J -43780720.59 -43780720.44 -43780720.26 0.0260 0.0172  
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 Venus -124577-03-05 11:32 J -43780262.19 -43780262.02 -43780261.84 0.0263 0.0157  
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 Venus -124575-01-22 15:08 J -43779574.06 -43779573.87 -43779573.66 0.0268 0.0118  
 Venus -124575-09-09 04:20 J -43779344.52 -43779344.32 -43779344.11 0.0270 0.0099  
 Venus -124574-04-26 19:13 J -43779114.91 -43779114.70 -43779114.49 0.0273 0.0079  
 Venus -124574-12-12 12:01 J -43778885.21 -43778885.00 -43778884.78 0.0276 0.0057  
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 Moon -124568-01-02 10:20 J -43777037.31 -43777037.07 -43777036.83 0.0298 0.0055  
 Earth -124568-01-02 13:56 J -43777037.15 -43777036.92 -43777036.68 0.0298 0.0062 \*

Venus -124568-08-12 19:27 J -43776814.86 -43776814.69 -43776814.51 0.0300 0.0168  
 Venus -124567-03-30 23:47 J -43776584.67 -43776584.51 -43776584.34 0.0301 0.0182  
 Venus -124567-11-16 03:23 J -43776354.51 -43776354.36 -43776354.19 0.0302 0.0192  
 Mercury -124566-01-04 04:49 J -43776305.40 -43776305.30 -43776305.20 0.0303 0.0190  
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 Mercury -124566-09-26 20:54 J -43776039.73 -43776039.63 -43776039.52 0.0303 0.0184  
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 Venus -124562-04-13 09:51 J -43774745.27 -43774745.09 -43774744.91 0.0295 0.0129  
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 Venus -124558-01-18 11:18 J -43773369.24 -43773369.03 -43773368.83 0.0278 0.0017  
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 Venus -124555-03-08 12:30 J -43772224.17 -43772223.98 -43772223.79 0.0266 0.0114  
 Earth -124555-06-21 20:11 J -43772118.83 -43772118.66 -43772118.46 0.0265 0.0178  
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 Mars -124554-02-26 10:06 J -43771869.24 -43771869.08 -43771868.91 0.0263 0.0214  
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Venus -124552-04-26 02:39 J -43771079.54 -43771079.39 -43771079.22 0.0260 0.0169

Mercury -124552-07-25 22:49 J -43770988.69 -43770988.55 -43770988.41 0.0260 0.0172

Mercury -124552-10-22 18:15 J -43770899.92 -43770899.74 -43770899.56 0.0260 0.0062

Venus -124552-12-11 01:42 J -43770850.59 -43770850.43 -43770850.27 0.0260 0.0174

Mercury -124551-01-19 13:42 J -43770811.11 -43770810.93 -43770810.75 0.0260 0.0048

Mercury -124551-04-18 09:23 J -43770722.25 -43770722.11 -43770721.96 0.0260 0.0160

Venus -124551-07-28 01:13 J -43770621.60 -43770621.45 -43770621.29 0.0260 0.0176

Venus -124550-03-14 01:42 J -43770392.58 -43770392.43 -43770392.27 0.0260 0.0177

Venus -124550-10-29 03:08 J -43770163.52 -43770163.37 -43770163.20 0.0260 0.0175

Venus -124549-06-14 06:15 J -43769934.39 -43769934.24 -43769934.06 0.0261 0.0171

Venus -124548-01-29 10:49 J -43769705.22 -43769705.05 -43769704.88 0.0262 0.0164

Venus -124548-09-15 16:35 J -43769475.98 -43769475.81 -43769475.63 0.0263 0.0156

Venus -124547-05-03 00:15 J -43769246.68 -43769246.49 -43769246.31 0.0265 0.0144

Venus -124547-12-18 09:23 J -43769017.29 -43769017.11 -43769016.91 0.0266 0.0131

Venus -124546-08-04 20:54 J -43768787.82 -43768787.63 -43768787.42 0.0269 0.0115

Venus -124545-03-21 10:20 J -43768558.28 -43768558.07 -43768557.86 0.0271 0.0096

Venus -124545-11-06 01:42 J -43768328.64 -43768328.43 -43768328.22 0.0273 0.0076

Venus -124544-06-23 18:59 J -43768098.93 -43768098.71 -43768098.49 0.0276 0.0053

Venus -124543-02-08 14:11 J -43767869.13 -43767868.91 -43767868.69 0.0279 0.0029

Venus -124543-09-26 11:32 J -43767639.24 -43767639.02 -43767638.80 0.0282 0.0004

Venus -124542-05-14 10:20 J -43767409.29 -43767409.07 -43767408.85 0.0284 0.0024

Venus -124542-12-30 10:49 J -43767179.26 -43767179.05 -43767178.83 0.0287 0.0051

Venus -124541-08-16 12:44 J -43766949.18 -43766948.97 -43766948.76 0.0290 0.0078

Venus -124540-04-03 15:37 J -43766719.04 -43766718.85 -43766718.64 0.0293 0.0104

Venus -124540-11-19 19:27 J -43766488.87 -43766488.69 -43766488.49 0.0296 0.0128

Venus -124539-07-08 00:01 J -43766258.68 -43766258.50 -43766258.32 0.0298 0.0149

Mars -124538-02-17 07:42 J -43766034.47 -43766034.18 -43766033.88 0.0300 0.0098

Venus -124538-02-23 04:35 J -43766028.49 -43766028.31 -43766028.14 0.0300 0.0167

Venus -124538-10-11 08:39 J -43765798.30 -43765798.14 -43765797.97 0.0301 0.0182  
 Mercury -124537-05-23 06:59 J -43765573.29 -43765573.21 -43765573.11 0.0302 0.0222  
 Venus -124537-05-28 12:30 J -43765568.14 -43765567.98 -43765567.82 0.0302 0.0191  
 Mercury -124537-08-19 20:39 J -43765484.76 -43765484.64 -43765484.51 0.0303 0.0096  
 Mercury -124537-11-16 10:06 J -43765396.21 -43765396.08 -43765395.94 0.0303 0.0031  
 Venus -124536-01-13 15:08 J -43765338.03 -43765337.87 -43765337.71 0.0303 0.0195  
 Mercury -124536-02-12 23:32 J -43765307.63 -43765307.52 -43765307.41 0.0303 0.0154  
 Mercury -124536-05-12 12:44 J -43765219.02 -43765218.97 -43765218.92 0.0303 0.0276  
 Venus -124536-08-31 16:20 J -43765107.97 -43765107.82 -43765107.66 0.0303 0.0195  
 Venus -124535-04-18 15:51 J -43764877.99 -43764877.84 -43764877.68 0.0302 0.0189  
 Venus -124535-12-04 13:42 J -43764648.09 -43764647.93 -43764647.76 0.0301 0.0179  
 Venus -124534-07-22 09:23 J -43764418.28 -43764418.11 -43764417.94 0.0300 0.0165  
 Venus -124533-03-08 02:54 J -43764188.56 -43764188.38 -43764188.20 0.0298 0.0147  
 Venus -124533-10-23 18:01 J -43763958.93 -43763958.75 -43763958.56 0.0295 0.0126  
 Venus -124532-06-10 06:59 J -43763729.39 -43763729.21 -43763729.01 0.0293 0.0104  
 Venus -124531-01-25 18:01 J -43763499.94 -43763499.75 -43763499.55 0.0290 0.0080  
 Venus -124531-09-12 02:54 J -43763270.58 -43763270.38 -43763270.18 0.0287 0.0055  
 Venus -124530-04-29 09:51 J -43763041.30 -43763041.09 -43763040.89 0.0284 0.0030  
 Venus -124530-12-14 14:54 J -43762812.09 -43762811.88 -43762811.68 0.0281 0.0006  
 Venus -124529-07-30 18:15 J -43762582.94 -43762582.74 -43762582.53 0.0278 0.0019  
 Venus -124528-03-16 20:39 J -43762353.85 -43762353.64 -43762353.44 0.0275 0.0041  
 Venus -124528-10-31 21:23 J -43762124.81 -43762124.61 -43762124.41 0.0273 0.0062  
 Venus -124527-06-17 21:08 J -43761895.82 -43761895.62 -43761895.42 0.0270 0.0082  
 Venus -124526-02-01 19:56 J -43761666.86 -43761666.67 -43761666.47 0.0268 0.0100  
 Venus -124526-09-18 18:30 J -43761437.92 -43761437.73 -43761437.54 0.0266 0.0116  
 Venus -124525-05-04 16:35 J -43761208.99 -43761208.81 -43761208.62 0.0264 0.0130  
 Earth -124525-06-28 02:39 J -43761154.49 -43761154.39 -43761154.28 0.0264 0.0238  
 Moon -124525-06-28 05:03 J -43761154.35 -43761154.29 -43761154.21 0.0264 0.0252 \*  
 Venus -124525-12-19 14:39 J -43760980.07 -43760979.89 -43760979.72 0.0262 0.0142  
 Mars -124524-04-13 21:08 J -43760864.90 -43760864.62 -43760864.34 0.0262 0.0029

Venus -124524-08-05 12:15 J -43760751.16 -43760750.99 -43760750.81 0.0261 0.0152  
 Venus -124523-03-22 10:20 J -43760522.24 -43760522.07 -43760521.90 0.0260 0.0160  
 Venus -124523-11-06 08:39 J -43760293.30 -43760293.14 -43760292.97 0.0260 0.0167  
 Mercury -124523-12-12 23:47 J -43760256.62 -43760256.51 -43760256.38 0.0259 0.0196  
 Mercury -124522-03-11 19:13 J -43760167.87 -43760167.70 -43760167.52 0.0259 0.0087  
 Mercury -124522-06-08 14:39 J -43760079.07 -43760078.89 -43760078.70 0.0259 0.0024  
 Venus -124522-06-23 07:27 J -43760064.34 -43760064.19 -43760064.01 0.0259 0.0171  
 Mercury -124522-09-05 10:20 J -43759990.23 -43759990.07 -43759989.91 0.0259 0.0134  
 Mercury -124522-12-03 06:01 J -43759901.30 -43759901.25 -43759901.19 0.0259 0.0246  
 Venus -124521-02-07 07:13 J -43759835.35 -43759835.20 -43759835.03 0.0259 0.0173  
 Venus -124521-09-23 07:56 J -43759606.33 -43759606.17 -43759606.00 0.0259 0.0173  
 Venus -124520-05-10 09:37 J -43759377.25 -43759377.10 -43759376.92 0.0260 0.0171  
 Venus -124520-12-25 12:44 J -43759148.13 -43759147.97 -43759147.80 0.0261 0.0166  
 Venus -124519-08-11 17:18 J -43758918.95 -43758918.78 -43758918.61 0.0262 0.0160  
 Venus -124518-03-28 23:03 J -43758689.71 -43758689.54 -43758689.35 0.0263 0.0151  
 Venus -124518-11-13 06:59 J -43758460.40 -43758460.21 -43758460.02 0.0265 0.0140  
 Venus -124517-06-29 16:35 J -43758231.00 -43758230.81 -43758230.61 0.0267 0.0127  
 Venus -124516-02-14 04:06 J -43758001.52 -43758001.33 -43758001.12 0.0269 0.0111  
 Venus -124516-10-01 17:47 J -43757771.97 -43757771.76 -43757771.55 0.0271 0.0092  
 Venus -124515-05-19 09:08 J -43757542.33 -43757542.12 -43757541.91 0.0274 0.0072  
 Venus -124514-01-04 02:39 J -43757312.61 -43757312.39 -43757312.17 0.0276 0.0049  
 Venus -124514-08-21 22:20 J -43757082.79 -43757082.57 -43757082.35 0.0279 0.0026  
 Venus -124513-04-07 19:42 J -43756852.90 -43756852.68 -43756852.46 0.0282 0.0004  
 Venus -124513-11-23 18:44 J -43756622.94 -43756622.72 -43756622.50 0.0285 0.0027  
 Venus -124512-07-11 19:27 J -43756392.91 -43756392.69 -43756392.48 0.0288 0.0055  
 Venus -124511-02-26 21:23 J -43756162.81 -43756162.61 -43756162.40 0.0291 0.0081  
 Venus -124511-10-15 00:44 J -43755932.67 -43755932.47 -43755932.27 0.0294 0.0107  
 Venus -124510-06-02 04:49 J -43755702.49 -43755702.30 -43755702.11 0.0296 0.0131  
 Earth -124509-01-05 05:32 J -43755485.45 -43755485.27 -43755485.08 0.0299 0.0190  
 Moon -124509-01-05 08:54 J -43755485.29 -43755485.13 -43755484.95 0.0299 0.0209 \*

Venus -124509-01-18 09:08 J -43755472.30 -43755472.12 -43755471.93 0.0299 0.0152  
 Venus -124509-09-04 13:42 J -43755242.10 -43755241.93 -43755241.75 0.0301 0.0169  
 Mars -124508-04-13 04:20 J -43755021.50 -43755021.32 -43755021.12 0.0302 0.0236  
 Venus -124508-04-22 17:47 J -43755011.92 -43755011.76 -43755011.59 0.0302 0.0183  
 Mercury -124508-10-10 09:23 J -43754841.18 -43754841.11 -43754841.03 0.0303 0.0252  
 Venus -124508-12-08 21:23 J -43754781.76 -43754781.61 -43754781.44 0.0303 0.0191  
 Mercury -124507-01-06 23:03 J -43754752.66 -43754752.54 -43754752.42 0.0303 0.0126  
 Mercury -124507-04-05 12:30 J -43754664.11 -43754663.98 -43754663.84 0.0303 0.0006  
 Mercury -124507-07-03 01:56 J -43754575.54 -43754575.42 -43754575.30 0.0303 0.0124  
 Venus -124507-07-27 00:01 J -43754551.66 -43754551.50 -43754551.34 0.0303 0.0194  
 Mercury -124507-09-29 15:08 J -43754486.94 -43754486.87 -43754486.79 0.0303 0.0247  
 Venus -124506-03-14 00:44 J -43754321.62 -43754321.47 -43754321.30 0.0303 0.0193  
 Venus -124506-10-30 00:15 J -43754091.64 -43754091.49 -43754091.32 0.0302 0.0186  
 Venus -124505-06-15 21:51 J -43753861.75 -43753861.59 -43753861.42 0.0301 0.0175  
 Venus -124504-01-31 17:18 J -43753631.95 -43753631.78 -43753631.61 0.0299 0.0160  
 Venus -124504-09-18 10:35 J -43753402.24 -43753402.06 -43753401.88 0.0297 0.0141  
 Venus -124503-05-06 01:27 J -43753172.62 -43753172.44 -43753172.25 0.0295 0.0120  
 Venus -124503-12-21 14:11 J -43752943.10 -43752942.91 -43752942.72 0.0292 0.0098  
 Venus -124502-08-08 00:44 J -43752713.66 -43752713.47 -43752713.27 0.0289 0.0074  
 Venus -124501-03-24 09:23 J -43752484.31 -43752484.11 -43752483.91 0.0286 0.0049  
 Venus -124501-11-08 15:51 J -43752255.04 -43752254.84 -43752254.64 0.0283 0.0025  
 Venus -124500-06-25 20:39 J -43752025.85 -43752025.64 -43752025.44 0.0280 0.0002  
 Venus -124499-02-09 23:47 J -43751796.71 -43751796.51 -43751796.30 0.0277 0.0023  
 Venus -124499-09-27 01:42 J -43751567.63 -43751567.43 -43751567.23 0.0274 0.0044  
 Venus -124498-05-14 02:11 J -43751338.61 -43751338.41 -43751338.20 0.0272 0.0065  
 Venus -124498-12-29 01:56 J -43751109.62 -43751109.42 -43751109.22 0.0269 0.0083  
 Venus -124497-08-14 00:44 J -43750880.66 -43750880.47 -43750880.27 0.0267 0.0101  
 Venus -124496-03-30 23:03 J -43750651.72 -43750651.54 -43750651.34 0.0265 0.0117  
 Moon -124496-06-23 05:18 J -43750567.52 -43750567.28 -43750567.03 0.0265 0.0088  
 Earth -124496-06-23 06:44 J -43750567.45 -43750567.22 -43750566.98 0.0265 0.0080 \*



Venus -124496-11-14 21:08 J -43750422.80 -43750422.62 -43750422.43 0.0264 0.0130  
 Venus -124495-07-01 18:44 J -43750193.89 -43750193.72 -43750193.54 0.0262 0.0142  
 Venus -124494-02-15 16:20 J -43749964.99 -43749964.82 -43749964.64 0.0261 0.0152  
 Mars -124494-05-30 19:56 J -43749860.90 -43749860.67 -43749860.44 0.0261 0.0149  
 Venus -124494-10-02 14:25 J -43749736.07 -43749735.90 -43749735.73 0.0260 0.0160  
 Mercury -124493-05-01 00:01 J -43749524.59 -43749524.50 -43749524.41 0.0260 0.0225  
 Venus -124493-05-18 12:44 J -43749507.13 -43749506.97 -43749506.80 0.0260 0.0167  
 Mercury -124493-07-28 19:13 J -43749435.86 -43749435.70 -43749435.53 0.0260 0.0116  
 Mercury -124493-10-25 14:39 J -43749347.07 -43749346.89 -43749346.70 0.0259 0.0006  
 Venus -124492-01-02 11:32 J -43749278.17 -43749278.02 -43749277.85 0.0259 0.0171  
 Mercury -124492-01-22 10:20 J -43749258.24 -43749258.07 -43749257.90 0.0259 0.0105  
 Mercury -124492-04-21 05:47 J -43749169.35 -43749169.26 -43749169.15 0.0259 0.0217  
 Venus -124492-08-19 11:03 J -43749049.19 -43749049.04 -43749048.86 0.0259 0.0174  
 Venus -124491-04-05 11:47 J -43748820.17 -43748820.01 -43748819.84 0.0260 0.0173  
 Venus -124491-11-20 13:27 J -43748591.10 -43748590.94 -43748590.77 0.0260 0.0171  
 Venus -124490-07-07 16:35 J -43748361.97 -43748361.81 -43748361.63 0.0261 0.0166  
 Venus -124489-02-21 21:08 J -43748132.79 -43748132.62 -43748132.44 0.0262 0.0159  
 Venus -124489-10-08 03:08 J -43747903.54 -43747903.37 -43747903.18 0.0263 0.0151  
 Venus -124488-05-25 11:18 J -43747674.22 -43747674.03 -43747673.84 0.0265 0.0138  
 Venus -124487-01-09 20:54 J -43747444.82 -43747444.63 -43747444.43 0.0267 0.0124  
 Venus -124487-08-27 08:39 J -43747215.34 -43747215.14 -43747214.93 0.0269 0.0108  
 Venus -124486-04-13 22:20 J -43746985.78 -43746985.57 -43746985.36 0.0271 0.0090  
 Venus -124486-11-29 14:11 J -43746756.13 -43746755.91 -43746755.70 0.0274 0.0069  
 Venus -124485-07-16 07:56 J -43746526.38 -43746526.17 -43746525.95 0.0277 0.0047  
 Venus -124484-03-03 03:51 J -43746296.56 -43746296.34 -43746296.12 0.0279 0.0022  
 Venus -124484-10-19 01:27 J -43746066.66 -43746066.44 -43746066.22 0.0282 0.0005  
 Venus -124483-06-06 00:59 J -43745836.68 -43745836.46 -43745836.25 0.0285 0.0030  
 Venus -124482-01-22 01:56 J -43745606.64 -43745606.42 -43745606.21 0.0288 0.0056  
 Venus -124482-09-09 04:20 J -43745376.53 -43745376.32 -43745376.11 0.0291 0.0082  
 Venus -124481-04-26 07:42 J -43745146.38 -43745146.18 -43745145.98 0.0294 0.0107

Venus -124481-12-12 11:47 J -43744916.20 -43744916.01 -43744915.82 0.0296 0.0131  
 Earth -124481-12-29 05:47 J -43744899.35 -43744899.26 -43744899.15 0.0297 0.0268  
 Moon -124481-12-29 07:42 J -43744899.27 -43744899.18 -43744899.09 0.0297 0.0274 \*  
 Venus -124480-07-30 16:20 J -43744686.00 -43744685.82 -43744685.64 0.0299 0.0151  
 Venus -124479-03-17 20:54 J -43744455.80 -43744455.63 -43744455.45 0.0300 0.0168  
 Venus -124479-11-03 01:27 J -43744225.61 -43744225.44 -43744225.28 0.0302 0.0180  
 Mercury -124478-02-27 11:03 J -43744109.07 -43744109.04 -43744108.99 0.0302 0.0288  
 Mercury -124478-05-27 00:59 J -43744020.57 -43744020.46 -43744020.35 0.0303 0.0161  
 Venus -124478-06-21 04:49 J -43743995.45 -43743995.30 -43743995.13 0.0303 0.0189  
 Mercury -124478-08-23 14:25 J -43743932.03 -43743931.90 -43743931.76 0.0303 0.0036  
 Mercury -124478-11-20 03:51 J -43743843.46 -43743843.34 -43743843.21 0.0303 0.0090  
 Venus -124477-02-06 07:27 J -43743765.35 -43743765.19 -43743765.03 0.0303 0.0191  
 Mercury -124477-02-16 17:18 J -43743754.87 -43743754.78 -43743754.69 0.0303 0.0213  
 Venus -124477-09-23 08:25 J -43743535.30 -43743535.15 -43743534.99 0.0303 0.0190  
 Venus -124476-05-11 07:42 J -43743305.33 -43743305.18 -43743305.01 0.0302 0.0183  
 Venus -124476-12-27 05:18 J -43743075.44 -43743075.28 -43743075.11 0.0301 0.0172  
 Venus -124475-08-14 00:44 J -43742845.64 -43742845.47 -43742845.30 0.0299 0.0157  
 Venus -124474-03-31 17:47 J -43742615.94 -43742615.76 -43742615.58 0.0297 0.0138  
 Venus -124474-11-16 08:25 J -43742386.33 -43742386.15 -43742385.96 0.0295 0.0118  
 Venus -124473-07-02 21:08 J -43742156.81 -43742156.62 -43742156.43 0.0292 0.0095  
 Venus -124472-02-17 07:42 J -43741927.37 -43741927.18 -43741926.98 0.0289 0.0071  
 Venus -124472-10-04 16:06 J -43741698.03 -43741697.83 -43741697.63 0.0286 0.0047  
 Venus -124471-05-21 22:20 J -43741468.77 -43741468.57 -43741468.36 0.0283 0.0023  
 Venus -124470-01-06 03:08 J -43741239.58 -43741239.37 -43741239.17 0.0280 0.0004  
 Venus -124470-08-23 06:01 J -43741010.45 -43741010.25 -43741010.04 0.0277 0.0025  
 Venus -124469-04-08 07:56 J -43740781.38 -43740781.17 -43740780.97 0.0274 0.0046  
 Venus -124469-11-23 08:11 J -43740552.35 -43740552.16 -43740551.95 0.0272 0.0067  
 Venus -124468-07-10 07:42 J -43740323.37 -43740323.18 -43740322.98 0.0269 0.0085  
 Venus -124467-02-24 06:30 J -43740094.42 -43740094.23 -43740094.04 0.0267 0.0102  
 Venus -124467-10-11 04:35 J -43739865.50 -43739865.31 -43739865.12 0.0265 0.0117

Venus -124466-05-28 02:25 J -43739636.58 -43739636.40 -43739636.21 0.0263 0.0130

Mars -124466-07-23 20:54 J -43739579.82 -43739579.63 -43739579.43 0.0263 0.0190

Venus -124465-01-12 00:01 J -43739407.67 -43739407.50 -43739407.32 0.0262 0.0142

Venus -124465-08-27 21:37 J -43739178.77 -43739178.60 -43739178.42 0.0261 0.0151

Venus -124464-04-13 19:42 J -43738949.85 -43738949.68 -43738949.51 0.0260 0.0159

Mercury -124464-09-18 00:44 J -43738792.51 -43738792.47 -43738792.42 0.0259 0.0250

Venus -124464-11-28 18:01 J -43738720.91 -43738720.75 -43738720.58 0.0259 0.0164

Mercury -124464-12-15 19:56 J -43738703.82 -43738703.67 -43738703.51 0.0259 0.0142

Mercury -124463-03-14 15:23 J -43738615.04 -43738614.86 -43738614.68 0.0259 0.0033

Mercury -124463-06-11 10:49 J -43738526.22 -43738526.05 -43738525.87 0.0259 0.0077

Venus -124463-07-15 16:49 J -43738491.95 -43738491.80 -43738491.63 0.0259 0.0168

Mercury -124463-09-08 06:30 J -43738437.35 -43738437.23 -43738437.10 0.0259 0.0188

Venus -124462-03-01 16:20 J -43738262.97 -43738262.82 -43738262.64 0.0259 0.0170

Venus -124462-10-16 17:18 J -43738033.94 -43738033.78 -43738033.61 0.0259 0.0169

Venus -124461-06-01 19:13 J -43737804.86 -43737804.70 -43737804.52 0.0260 0.0166

Venus -124460-01-16 22:20 J -43737575.73 -43737575.57 -43737575.39 0.0261 0.0162

Venus -124460-09-03 02:54 J -43737346.55 -43737346.38 -43737346.19 0.0262 0.0155

Venus -124459-04-20 09:08 J -43737117.29 -43737117.12 -43737116.93 0.0263 0.0146

Venus -124459-12-05 17:18 J -43736887.97 -43736887.78 -43736887.59 0.0265 0.0134

Venus -124458-07-23 03:23 J -43736658.55 -43736658.36 -43736658.16 0.0267 0.0120

Venus -124457-03-08 15:08 J -43736429.07 -43736428.87 -43736428.66 0.0269 0.0104

Venus -124457-10-24 05:03 J -43736199.49 -43736199.29 -43736199.07 0.0272 0.0086

Venus -124456-06-10 20:54 J -43735969.84 -43735969.63 -43735969.41 0.0274 0.0065

Venus -124455-01-26 14:54 J -43735740.09 -43735739.88 -43735739.66 0.0277 0.0043

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Venus -124454-12-17 08:25 J -43735050.37 -43735050.15 -43735049.93 0.0286 0.0033

Venus -124453-08-03 09:37 J -43734820.31 -43734820.10 -43734819.89 0.0289 0.0060

Venus -124452-03-21 12:01 J -43734590.20 -43734590.00 -43734589.79 0.0292 0.0086

Venus -124452-11-06 15:37 J -43734360.04 -43734359.85 -43734359.65 0.0295 0.0111

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 Venus -124450-02-10 00:30 J -43733899.66 -43733899.48 -43733899.29 0.0299 0.0154  
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 Venus -124449-05-15 09:37 J -43733439.27 -43733439.10 -43733438.94 0.0302 0.0182  
 Mercury -124449-10-13 02:54 J -43733288.48 -43733288.38 -43733288.27 0.0303 0.0194  
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 Earth -124437-06-24 14:25 J -43729016.15 -43729015.90 -43729015.65 0.0264 0.0011

Moon -124437-06-24 16:20 J -43729016.06 -43729015.82 -43729015.58 0.0264 0.0024 \*  
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 Venus -124434-06-10 21:08 J -43727934.78 -43727934.62 -43727934.45 0.0259 0.0164  
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 Venus -124428-09-18 18:15 J -43725642.94 -43725642.74 -43725642.53 0.0269 0.0102  
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 Venus -124427-12-22 00:15 J -43725183.70 -43725183.49 -43725183.27 0.0274 0.0062  
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Moon -124422-12-31 12:01 J -43723348.20 -43723348.00 -43723347.79 0.0297 0.0150  
 Earth -124422-12-31 13:27 J -43723348.14 -43723347.94 -43723347.74 0.0297 0.0166 \*  
 Venus -124421-01-05 00:30 J -43723343.66 -43723343.48 -43723343.28 0.0297 0.0133  
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 Mercury -124419-03-02 04:06 J -43722556.41 -43722556.33 -43722556.25 0.0303 0.0236  
 Mercury -124419-05-29 17:47 J -43722467.88 -43722467.76 -43722467.64 0.0303 0.0110  
 Venus -124419-07-13 17:47 J -43722422.92 -43722422.76 -43722422.59 0.0303 0.0186  
 Mercury -124419-08-26 07:13 J -43722379.33 -43722379.20 -43722379.07 0.0303 0.0017  
 Mercury -124419-11-22 20:39 J -43722290.76 -43722290.64 -43722290.52 0.0303 0.0140  
 Mercury -124418-02-19 09:51 J -43722202.15 -43722202.09 -43722202.02 0.0303 0.0264  
 Venus -124418-02-28 20:11 J -43722192.82 -43722192.66 -43722192.50 0.0303 0.0187  
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 Venus -124417-06-02 20:25 J -43721732.82 -43721732.65 -43721732.49 0.0302 0.0176  
 Venus -124416-01-18 17:32 J -43721502.93 -43721502.77 -43721502.59 0.0301 0.0165  
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 Venus -124414-07-26 08:11 J -43720584.35 -43720584.16 -43720583.96 0.0292 0.0087  
 Venus -124413-03-11 18:15 J -43720354.93 -43720354.74 -43720354.54 0.0289 0.0064  
 Venus -124413-10-27 02:25 J -43720125.60 -43720125.40 -43720125.20 0.0286 0.0039  
 Venus -124412-06-13 08:25 J -43719896.35 -43719896.15 -43719895.94 0.0283 0.0016  
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 Venus -124411-09-14 15:37 J -43719438.05 -43719437.85 -43719437.65 0.0277 0.0030  
 Venus -124410-05-01 17:03 J -43719209.00 -43719208.79 -43719208.59 0.0274 0.0050  
 Venus -124410-12-16 17:03 J -43718979.98 -43718979.79 -43718979.58 0.0271 0.0070  
 Venus -124409-08-01 16:20 J -43718751.01 -43718750.82 -43718750.62 0.0269 0.0088  
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Venus -124408-11-02 12:44 J -43718293.15 -43718292.97 -43718292.77 0.0265 0.0119

Venus -124407-06-19 10:20 J -43718064.25 -43718064.07 -43718063.88 0.0263 0.0131

Venus -124406-02-03 07:42 J -43717835.35 -43717835.18 -43717834.99 0.0262 0.0142

Venus -124406-09-20 05:18 J -43717606.45 -43717606.28 -43717606.10 0.0260 0.0150

Mars -124406-10-24 22:06 J -43717571.79 -43717571.58 -43717571.36 0.0260 0.0166

Venus -124405-05-06 03:23 J -43717377.52 -43717377.36 -43717377.18 0.0259 0.0157

Mercury -124405-09-20 19:56 J -43717239.78 -43717239.67 -43717239.55 0.0259 0.0201

Mercury -124405-12-18 15:08 J -43717151.04 -43717150.87 -43717150.69 0.0259 0.0093

Venus -124405-12-21 01:42 J -43717148.59 -43717148.43 -43717148.26 0.0259 0.0162

Mercury -124404-03-17 10:35 J -43717062.24 -43717062.06 -43717061.87 0.0259 0.0017

Mercury -124404-06-14 06:01 J -43716973.40 -43716973.25 -43716973.08 0.0259 0.0127

Venus -124404-08-07 00:30 J -43716919.64 -43716919.48 -43716919.31 0.0259 0.0165

Mercury -124404-09-11 01:42 J -43716884.49 -43716884.43 -43716884.35 0.0259 0.0238

Venus -124403-03-24 00:15 J -43716690.65 -43716690.49 -43716690.32 0.0259 0.0165

Venus -124403-11-08 00:59 J -43716461.63 -43716461.46 -43716461.29 0.0259 0.0164

Venus -124402-06-25 02:54 J -43716232.54 -43716232.38 -43716232.20 0.0260 0.0162

Venus -124401-02-09 06:01 J -43716003.41 -43716003.25 -43716003.06 0.0260 0.0157

Venus -124401-09-25 10:49 J -43715774.22 -43715774.05 -43715773.86 0.0262 0.0149

Venus -124400-05-12 17:18 J -43715544.96 -43715544.78 -43715544.59 0.0263 0.0139

Venus -124400-12-28 01:27 J -43715315.63 -43715315.44 -43715315.24 0.0265 0.0127

Venus -124399-08-14 11:32 J -43715086.21 -43715086.02 -43715085.81 0.0267 0.0114

Venus -124398-03-31 23:32 J -43714856.72 -43714856.52 -43714856.30 0.0269 0.0098

Venus -124398-11-16 13:42 J -43714627.13 -43714626.93 -43714626.71 0.0272 0.0079

Venus -124397-07-03 06:01 J -43714397.46 -43714397.25 -43714397.03 0.0275 0.0058

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Venus -124394-01-08 18:30 J -43713477.94 -43713477.73 -43713477.51 0.0287 0.0039

Venus -124394-08-26 20:11 J -43713247.87 -43713247.66 -43713247.45 0.0290 0.0065

Venus -124393-04-12 22:49 J -43713017.75 -43713017.55 -43713017.34 0.0293 0.0090

Venus -124393-11-29 02:39 J -43712787.58 -43712787.39 -43712787.19 0.0295 0.0114  
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 Venus -124391-03-04 12:01 J -43712327.18 -43712327.00 -43712326.82 0.0300 0.0154  
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 Mercury -124390-07-20 05:47 J -43711824.32 -43711824.26 -43711824.21 0.0303 0.0272  
 Mercury -124390-10-16 19:27 J -43711735.81 -43711735.69 -43711735.58 0.0303 0.0146  
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 Venus -124389-01-24 00:30 J -43711636.64 -43711636.48 -43711636.32 0.0304 0.0186  
 Mercury -124389-04-10 22:20 J -43711558.69 -43711558.57 -43711558.44 0.0304 0.0105  
 Mercury -124389-07-08 11:32 J -43711470.10 -43711470.02 -43711469.93 0.0304 0.0229  
 Venus -124389-09-10 02:39 J -43711406.55 -43711406.39 -43711406.23 0.0304 0.0187  
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 Venus -124388-12-14 02:25 J -43710946.57 -43710946.40 -43710946.23 0.0302 0.0174  
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 Venus -124378-05-15 15:37 J -43707507.04 -43707506.85 -43707506.66 0.0264 0.0118  
 Moon -124378-06-26 16:35 J -43707465.05 -43707464.81 -43707464.56 0.0264 0.0084



Earth -124378-06-26 18:44 J -43707464.95 -43707464.72 -43707464.48 0.0264 0.0092 \*  
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 Venus -124377-08-15 10:20 J -43707049.24 -43707049.07 -43707048.88 0.0261 0.0141  
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 Venus -124376-11-16 05:32 J -43706591.43 -43706591.27 -43706591.09 0.0259 0.0156  
 Mercury -124375-02-07 19:13 J -43706507.77 -43706507.70 -43706507.62 0.0259 0.0234  
 Mercury -124375-05-07 14:25 J -43706419.06 -43706418.90 -43706418.74 0.0259 0.0127  
 Venus -124375-07-03 03:51 J -43706362.50 -43706362.34 -43706362.17 0.0259 0.0161  
 Mercury -124375-08-04 09:51 J -43706330.28 -43706330.09 -43706329.91 0.0259 0.0018  
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 Mercury -124374-01-29 00:44 J -43706152.58 -43706152.47 -43706152.35 0.0259 0.0203  
 Venus -124374-02-17 02:39 J -43706133.55 -43706133.39 -43706133.22 0.0259 0.0164  
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 Venus -124373-05-20 02:54 J -43705675.54 -43705675.38 -43705675.20 0.0259 0.0164  
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 Venus -124370-07-10 03:23 J -43704529.55 -43704529.36 -43704529.16 0.0265 0.0126  
 Venus -124369-02-24 13:42 J -43704300.13 -43704299.93 -43704299.73 0.0267 0.0112  
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Moon -124349-06-20 17:32 J -43696877.90 -43696877.77 -43696877.62 0.0265 0.0219  
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Venus -124332-11-12 00:59 J -43690524.63 -43690524.46 -43690524.28 0.0302 0.0168

Mars -124331-01-31 02:39 J -43690444.52 -43690444.39 -43690444.24 0.0302 0.0268

Venus -124331-06-30 05:03 J -43690294.45 -43690294.29 -43690294.11 0.0303 0.0178

Mercury -124331-07-22 21:08 J -43690271.70 -43690271.62 -43690271.53 0.0303 0.0233

Mercury -124331-10-19 10:49 J -43690183.17 -43690183.05 -43690182.92 0.0304 0.0106

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Venus -124330-02-15 08:25 J -43690064.31 -43690064.15 -43690063.98 0.0304 0.0183

Mercury -124330-04-14 13:56 J -43690006.04 -43690005.92 -43690005.81 0.0304 0.0144

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Venus -124330-10-03 10:35 J -43689834.22 -43689834.06 -43689833.89 0.0304 0.0182

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Venus -124273-04-18 01:56 J -43669182.60 -43669182.42 -43669182.24 0.0301 0.0154

Mars -124273-05-01 06:15 J -43669169.55 -43669169.24 -43669168.94 0.0301 0.0055

Venus -124273-12-04 06:44 J -43668952.39 -43668952.22 -43668952.04 0.0302 0.0167

Venus -124272-07-22 10:49 J -43668722.21 -43668722.05 -43668721.87 0.0303 0.0175

Mercury -124272-07-25 12:01 J -43668719.10 -43668719.00 -43668718.90 0.0303 0.0199

Mercury -124272-10-22 01:42 J -43668630.56 -43668630.43 -43668630.30 0.0304 0.0073

Mercury -124271-01-18 15:08 J -43668542.00 -43668541.87 -43668541.74 0.0304 0.0053

Venus -124271-03-09 14:11 J -43668492.07 -43668491.91 -43668491.74 0.0304 0.0179

Mercury -124271-04-17 04:35 J -43668453.42 -43668453.31 -43668453.20 0.0304 0.0177

Mercury -124271-07-14 17:47 J -43668364.77 -43668364.76 -43668364.74 0.0304 0.0300

Venus -124271-10-25 16:20 J -43668261.99 -43668261.82 -43668261.65 0.0304 0.0177

Venus -124270-06-12 16:49 J -43668031.97 -43668031.80 -43668031.63 0.0303 0.0172

Venus -124269-01-28 15:23 J -43667802.03 -43667801.86 -43667801.68 0.0302 0.0162

Venus -124269-09-14 12:01 J -43667572.18 -43667572.00 -43667571.82 0.0301 0.0148

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Venus -124266-11-06 09:23 J -43666424.31 -43666424.11 -43666423.90 0.0287 0.0045

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Venus -124264-02-06 22:35 J -43665965.76 -43665965.56 -43665965.35 0.0281 0.0001

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Venus -124262-08-12 05:18 J -43665049.47 -43665049.28 -43665049.08 0.0270 0.0077

Venus -124261-03-28 04:20 J -43664820.51 -43664820.32 -43664820.12 0.0267 0.0092

Venus -124261-11-12 02:39 J -43664591.58 -43664591.39 -43664591.20 0.0265 0.0106

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Earth -124260-06-28 17:47 J -43664362.87 -43664362.76 -43664362.63 0.0263 0.0230 \*

Venus -124260-06-29 00:15 J -43664362.68 -43664362.49 -43664362.30 0.0263 0.0119 \*

Venus -124259-02-12 21:37 J -43664133.79 -43664133.60 -43664133.42 0.0262 0.0129

Mars -124259-06-27 22:20 J -43663998.85 -43663998.57 -43663998.29 0.0261 0.0011

Venus -124259-09-29 18:44 J -43663904.89 -43663904.72 -43663904.53 0.0260 0.0138

Venus -124258-05-16 16:20 J -43663675.99 -43663675.82 -43663675.64 0.0260 0.0145

Venus -124258-12-31 13:56 J -43663447.08 -43663446.92 -43663446.74 0.0259 0.0151

Mercury -124257-02-14 06:15 J -43663402.38 -43663402.24 -43663402.08 0.0259 0.0155

Mercury -124257-05-13 01:42 J -43663313.61 -43663313.43 -43663313.25 0.0259 0.0047

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Venus -124257-08-16 12:15 J -43663218.16 -43663217.99 -43663217.81 0.0258 0.0154

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Venus -124256-04-02 11:03 J -43662989.21 -43662989.04 -43662988.86 0.0258 0.0156

Venus -124256-11-17 10:35 J -43662760.22 -43662760.06 -43662759.88 0.0258 0.0157

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Venus -124252-01-06 04:06 J -43661614.52 -43661614.33 -43661614.13 0.0264 0.0126

Venus -124252-08-23 12:30 J -43661385.17 -43661384.98 -43661384.77 0.0265 0.0113

Venus -124251-04-09 22:49 J -43661155.75 -43661155.55 -43661155.34 0.0268 0.0099

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 Mercury -124243-12-12 11:47 J -43657987.08 -43657987.01 -43657986.93 0.0303 0.0251  
 Venus -124242-02-01 11:18 J -43657936.19 -43657936.03 -43657935.85 0.0303 0.0171  
 Mercury -124242-03-11 01:27 J -43657898.56 -43657898.44 -43657898.31 0.0303 0.0126  
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 Mercury -124242-12-01 18:01 J -43657632.83 -43657632.75 -43657632.68 0.0304 0.0248  
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 Venus -124241-12-22 17:03 J -43657245.96 -43657245.79 -43657245.62 0.0303 0.0167  
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Venus -124234-11-21 05:47 J -43654721.46 -43654721.26 -43654721.05 0.0275 0.0044

Venus -124233-07-07 06:59 J -43654492.41 -43654492.21 -43654492.01 0.0273 0.0062

Venus -124232-02-21 06:44 J -43654263.41 -43654263.22 -43654263.02 0.0270 0.0079

Venus -124232-10-08 05:47 J -43654034.45 -43654034.26 -43654034.06 0.0268 0.0094

Venus -124231-05-25 04:06 J -43653805.52 -43653805.33 -43653805.14 0.0266 0.0108

Moon -124231-06-23 13:42 J -43653776.16 -43653775.93 -43653775.70 0.0265 0.0111

Earth -124231-06-23 17:18 J -43653776.00 -43653775.78 -43653775.54 0.0265 0.0098 \*

Venus -124230-01-09 01:42 J -43653576.61 -43653576.43 -43653576.24 0.0264 0.0120

Venus -124230-08-25 23:03 J -43653347.72 -43653347.54 -43653347.35 0.0262 0.0130

Venus -124229-04-10 20:39 J -43653118.82 -43653118.64 -43653118.46 0.0261 0.0138

Mars -124229-08-12 13:56 J -43652995.11 -43652994.92 -43652994.71 0.0260 0.0183

Venus -124229-11-25 18:01 J -43652889.92 -43652889.75 -43652889.56 0.0260 0.0145

Mercury -124228-07-03 05:32 J -43652670.39 -43652670.27 -43652670.14 0.0259 0.0189

Venus -124228-07-12 15:37 J -43652661.01 -43652660.85 -43652660.66 0.0259 0.0150

Mercury -124228-09-30 00:44 J -43652581.65 -43652581.47 -43652581.30 0.0259 0.0082

Mercury -124228-12-27 19:56 J -43652492.85 -43652492.67 -43652492.48 0.0258 0.0027

Venus -124227-02-26 13:56 J -43652432.08 -43652431.92 -43652431.74 0.0258 0.0153

Mercury -124227-03-26 15:23 J -43652404.01 -43652403.86 -43652403.70 0.0258 0.0136

Mercury -124227-06-23 10:49 J -43652315.09 -43652315.05 -43652314.98 0.0258 0.0246

Venus -124227-10-13 12:59 J -43652203.13 -43652202.96 -43652202.78 0.0258 0.0154

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Venus -124225-08-30 16:06 J -43651516.01 -43651515.83 -43651515.65 0.0259 0.0146

Venus -124224-04-16 19:13 J -43651286.88 -43651286.70 -43651286.50 0.0260 0.0140

Venus -124224-12-02 00:15 J -43651057.67 -43651057.49 -43651057.29 0.0262 0.0131

Venus -124223-07-19 07:13 J -43650828.40 -43650828.20 -43650828.00 0.0263 0.0120

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Venus -124222-10-21 01:56 J -43650369.63 -43650369.42 -43650369.21 0.0267 0.0094

Venus -124221-06-06 14:11 J -43650140.12 -43650139.91 -43650139.69 0.0270 0.0077

Venus -124220-01-22 04:35 J -43649910.52 -43649910.31 -43649910.09 0.0272 0.0060

Venus -124220-09-08 21:23 J -43649680.83 -43649680.61 -43649680.39 0.0275 0.0039

Venus -124219-04-26 15:51 J -43649451.06 -43649450.84 -43649450.62 0.0278 0.0018

Venus -124219-12-12 12:30 J -43649221.20 -43649220.98 -43649220.76 0.0281 0.0006

Venus -124218-07-30 11:03 J -43648991.26 -43648991.04 -43648990.82 0.0284 0.0028

Venus -124217-03-16 11:18 J -43648761.24 -43648761.03 -43648760.81 0.0288 0.0052

Venus -124217-11-01 13:13 J -43648531.16 -43648530.95 -43648530.74 0.0291 0.0076

Venus -124216-06-19 16:06 J -43648301.03 -43648300.83 -43648300.62 0.0294 0.0099

Venus -124215-02-04 20:11 J -43648070.85 -43648070.66 -43648070.46 0.0296 0.0119

Venus -124215-09-23 00:44 J -43647840.65 -43647840.47 -43647840.28 0.0299 0.0138

Venus -124214-05-11 05:47 J -43647610.44 -43647610.26 -43647610.08 0.0301 0.0153

Venus -124214-12-27 10:20 J -43647380.24 -43647380.07 -43647379.89 0.0302 0.0165

Mercury -124213-04-30 12:15 J -43647255.01 -43647254.99 -43647254.96 0.0303 0.0297

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Venus -124213-08-13 14:25 J -43647150.07 -43647149.90 -43647149.72 0.0304 0.0172

Mercury -124213-10-24 15:51 J -43647077.97 -43647077.84 -43647077.71 0.0304 0.0045

Mercury -124212-01-21 05:18 J -43646989.41 -43646989.28 -43646989.15 0.0304 0.0081

Venus -124212-03-31 17:32 J -43646919.93 -43646919.77 -43646919.59 0.0304 0.0175

Mercury -124212-04-19 18:30 J -43646900.82 -43646900.73 -43646900.63 0.0304 0.0205

Venus -124212-11-16 19:27 J -43646689.85 -43646689.69 -43646689.51 0.0304 0.0173

Venus -124211-07-04 19:56 J -43646459.84 -43646459.67 -43646459.50 0.0303 0.0166

Venus -124210-02-19 18:15 J -43646229.91 -43646229.74 -43646229.56 0.0302 0.0156

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Venus -124208-01-09 00:59 J -43645540.64 -43645540.46 -43645540.27 0.0296 0.0105

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Venus -124201-07-21 02:25 J -43642790.59 -43642790.40 -43642790.21 0.0263 0.0119

Mars -124201-10-05 02:11 J -43642714.62 -43642714.41 -43642714.18 0.0263 0.0159

Venus -124200-03-06 23:47 J -43642561.69 -43642561.51 -43642561.32 0.0262 0.0129

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Venus -124193-01-29 07:13 J -43640042.39 -43640042.20 -43640042.00 0.0264 0.0120

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Venus -124191-08-04 04:49 J -43639124.51 -43639124.30 -43639124.08 0.0273 0.0058

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 Mercury -124183-03-13 15:37 J -43636345.97 -43636345.85 -43636345.72 0.0303 0.0098  
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 Mercury -124183-09-06 18:44 J -43636168.84 -43636168.72 -43636168.61 0.0304 0.0152  
 Venus -124183-10-11 17:47 J -43636133.92 -43636133.76 -43636133.58 0.0304 0.0170  
 Mercury -124183-12-04 07:56 J -43636080.22 -43636080.17 -43636080.11 0.0304 0.0275  
 Venus -124182-05-29 19:42 J -43635903.85 -43635903.68 -43635903.51 0.0304 0.0168  
 Venus -124181-01-14 19:56 J -43635673.84 -43635673.67 -43635673.49 0.0303 0.0161  
 Venus -124181-08-31 18:30 J -43635443.91 -43635443.73 -43635443.56 0.0302 0.0150  
 Venus -124180-04-18 14:39 J -43635214.06 -43635213.89 -43635213.70 0.0300 0.0137  
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 Venus -124178-03-08 15:08 J -43634525.06 -43634524.87 -43634524.67 0.0293 0.0079  
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 Venus -124176-09-11 01:27 J -43633607.65 -43633607.44 -43633607.24 0.0281 0.0009

Venus	-124175-04-28 05:18 J	-43633378.49	-43633378.28	-43633378.08	0.0278	0.0028
Venus	-124175-12-13 07:42 J	-43633149.39	-43633149.18	-43633148.98	0.0275	0.0047
Venus	-124174-07-30 08:39 J	-43632920.34	-43632920.14	-43632919.94	0.0272	0.0065
Venus	-124173-03-15 08:39 J	-43632691.34	-43632691.14	-43632690.94	0.0270	0.0081
Venus	-124173-10-30 07:42 J	-43632462.37	-43632462.18	-43632461.98	0.0267	0.0096
Venus	-124172-06-16 06:01 J	-43632233.44	-43632233.25	-43632233.06	0.0265	0.0109
Earth	-124172-06-24 12:30 J	-43632225.23	-43632224.98	-43632224.73	0.0265	0.0038
Moon	-124172-06-24 16:20 J	-43632225.07	-43632224.82	-43632224.57	0.0265	0.0025 *
Venus	-124171-01-31 03:37 J	-43632004.54	-43632004.35	-43632004.16	0.0264	0.0120
Venus	-124171-09-17 00:59 J	-43631775.64	-43631775.46	-43631775.27	0.0262	0.0130
Mars	-124171-11-20 23:03 J	-43631710.82	-43631710.54	-43631710.26	0.0262	0.0018
Venus	-124170-05-03 22:35 J	-43631546.73	-43631546.56	-43631546.37	0.0261	0.0138
Venus	-124170-12-18 20:11 J	-43631317.83	-43631317.66	-43631317.48	0.0260	0.0143
Mercury	-124169-07-05 21:51 J	-43631117.73	-43631117.59	-43631117.43	0.0259	0.0155
Venus	-124169-08-03 17:47 J	-43631088.92	-43631088.76	-43631088.57	0.0259	0.0148
Mercury	-124169-10-02 17:18 J	-43631028.97	-43631028.78	-43631028.60	0.0259	0.0047
Mercury	-124169-12-30 12:30 J	-43630940.16	-43630939.98	-43630939.80	0.0258	0.0062
Venus	-124168-03-20 16:20 J	-43630859.99	-43630859.82	-43630859.64	0.0258	0.0150
Mercury	-124168-03-29 07:56 J	-43630851.30	-43630851.17	-43630851.03	0.0258	0.0171
Venus	-124168-11-04 15:23 J	-43630631.03	-43630630.86	-43630630.68	0.0258	0.0150
Venus	-124167-06-21 15:37 J	-43630402.03	-43630401.85	-43630401.67	0.0258	0.0149
Venus	-124166-02-05 16:20 J	-43630172.99	-43630172.82	-43630172.63	0.0259	0.0146
Venus	-124166-09-22 18:44 J	-43629943.90	-43629943.72	-43629943.53	0.0259	0.0141
Venus	-124165-05-08 22:20 J	-43629714.76	-43629714.57	-43629714.38	0.0260	0.0134
Venus	-124165-12-24 03:23 J	-43629485.55	-43629485.36	-43629485.16	0.0262	0.0125
Venus	-124164-08-10 10:06 J	-43629256.27	-43629256.08	-43629255.88	0.0263	0.0114
Venus	-124163-03-27 18:44 J	-43629026.92	-43629026.72	-43629026.52	0.0265	0.0102
Venus	-124163-11-12 05:03 J	-43628797.49	-43628797.29	-43628797.08	0.0267	0.0087
Venus	-124162-06-29 17:32 J	-43628567.98	-43628567.77	-43628567.55	0.0270	0.0071
Venus	-124161-02-14 08:11 J	-43628338.37	-43628338.16	-43628337.94	0.0272	0.0053

Venus -124161-10-01 00:44 J -43628108.68 -43628108.47 -43628108.25 0.0275 0.0034

Venus -124160-05-18 19:27 J -43627878.91 -43627878.69 -43627878.47 0.0278 0.0012

Venus -124159-01-03 16:06 J -43627649.05 -43627648.83 -43627648.61 0.0281 0.0011

Venus -124159-08-21 14:54 J -43627419.10 -43627418.88 -43627418.66 0.0285 0.0033

Venus -124158-04-08 15:08 J -43627189.08 -43627188.87 -43627188.65 0.0288 0.0056

Venus -124158-11-24 17:03 J -43626959.00 -43626958.79 -43626958.58 0.0291 0.0079

Venus -124157-07-11 19:56 J -43626728.87 -43626728.67 -43626728.47 0.0294 0.0101

Venus -124156-02-26 23:47 J -43626498.70 -43626498.51 -43626498.31 0.0297 0.0121

Venus -124156-10-15 04:35 J -43626268.50 -43626268.31 -43626268.12 0.0299 0.0138

Venus -124155-06-02 09:08 J -43626038.29 -43626038.12 -43626037.93 0.0301 0.0153

Mars -124155-11-16 12:44 J -43625871.13 -43625870.97 -43625870.78 0.0302 0.0248

Venus -124154-01-18 13:56 J -43625808.10 -43625807.92 -43625807.75 0.0303 0.0163

Mercury -124154-05-04 02:25 J -43625702.46 -43625702.40 -43625702.34 0.0303 0.0269

Mercury -124154-07-31 16:06 J -43625613.94 -43625613.83 -43625613.71 0.0304 0.0143

Venus -124154-09-05 17:32 J -43625577.93 -43625577.77 -43625577.59 0.0304 0.0170

Mercury -124154-10-28 05:47 J -43625525.39 -43625525.26 -43625525.12 0.0304 0.0018

Mercury -124153-01-24 19:13 J -43625436.82 -43625436.70 -43625436.57 0.0304 0.0108

Mercury -124153-04-22 08:39 J -43625348.22 -43625348.14 -43625348.05 0.0304 0.0231

Venus -124153-04-22 20:39 J -43625347.80 -43625347.64 -43625347.46 0.0304 0.0171

Venus -124153-12-08 22:35 J -43625117.73 -43625117.56 -43625117.39 0.0304 0.0168

Venus -124152-07-26 22:35 J -43624887.73 -43624887.56 -43624887.38 0.0303 0.0161

Venus -124151-03-13 20:54 J -43624657.81 -43624657.63 -43624657.45 0.0302 0.0150

Venus -124151-10-29 17:03 J -43624427.97 -43624427.79 -43624427.61 0.0301 0.0135

Venus -124150-06-16 11:03 J -43624198.22 -43624198.04 -43624197.85 0.0298 0.0117

Venus -124149-02-01 03:08 J -43623968.56 -43623968.37 -43623968.18 0.0296 0.0098

Venus -124149-09-17 16:35 J -43623739.00 -43623738.81 -43623738.61 0.0293 0.0077

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Venus -124148-12-20 13:13 J -43623280.15 -43623279.95 -43623279.74 0.0287 0.0033

Venus -124147-08-06 20:39 J -43623050.84 -43623050.64 -43623050.44 0.0284 0.0011

Venus -124146-03-24 02:11 J -43622821.61 -43622821.41 -43622821.20 0.0281 0.0011



Venus -124146-11-08 06:01 J -43622592.45 -43622592.25 -43622592.04 0.0278 0.0030  
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 Mars -124140-01-05 10:49 J -43620707.23 -43620707.05 -43620706.84 0.0260 0.0185  
 Venus -124140-06-29 20:39 J -43620531.81 -43620531.64 -43620531.46 0.0259 0.0141  
 Mercury -124140-11-22 20:25 J -43620385.77 -43620385.65 -43620385.52 0.0259 0.0193  
 Venus -124139-02-13 18:30 J -43620302.90 -43620302.73 -43620302.55 0.0259 0.0146  
 Mercury -124139-02-19 15:37 J -43620297.02 -43620296.85 -43620296.67 0.0259 0.0085  
 Mercury -124139-05-19 10:49 J -43620208.23 -43620208.05 -43620207.86 0.0258 0.0024  
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 Mercury -124139-11-13 01:56 J -43620030.48 -43620030.42 -43620030.36 0.0258 0.0241  
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 Moon -124126-01-05 18:01 J -43615593.95 -43615593.75 -43615593.55 0.0298 0.0174 \*  
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 Mercury -124125-12-17 16:06 J -43614881.93 -43614881.83 -43614881.73 0.0303 0.0195  
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 Mars -124112-02-27 23:47 J -43610426.73 -43610426.51 -43610426.27 0.0263 0.0152  
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 Mercury -124110-04-11 19:27 J -43609653.77 -43609653.69 -43609653.60 0.0259 0.0227  
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Venus -124102-03-08 12:15 J -43606766.20 -43606765.99 -43606765.77 0.0273 0.0047  
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 Mercury -124094-04-25 22:49 J -43603795.61 -43603795.55 -43603795.48 0.0304 0.0259  
 Venus -124094-05-16 00:15 J -43603775.66 -43603775.49 -43603775.32 0.0304 0.0167  
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 Venus -124093-08-18 01:42 J -43603315.60 -43603315.43 -43603315.25 0.0303 0.0156  
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 Venus -124091-07-08 13:27 J -43602626.12 -43602625.94 -43602625.74 0.0298 0.0111  
 Venus -124090-02-23 05:18 J -43602396.47 -43602396.28 -43602396.08 0.0296 0.0091  
 Venus -124090-10-10 18:44 J -43602166.91 -43602166.72 -43602166.52 0.0293 0.0070  
 Venus -124089-05-27 06:01 J -43601937.45 -43601937.25 -43601937.05 0.0290 0.0048

Venus -124088-01-11 15:08 J -43601708.07 -43601707.87 -43601707.66 0.0287 0.0027  
 Venus -124088-08-28 22:35 J -43601478.77 -43601478.56 -43601478.36 0.0284 0.0008  
 Venus -124087-04-15 03:51 J -43601249.54 -43601249.34 -43601249.13 0.0280 0.0015  
 Venus -124087-11-30 07:42 J -43601020.38 -43601020.18 -43601019.98 0.0277 0.0034  
 Venus -124086-07-17 10:06 J -43600791.29 -43600791.08 -43600790.88 0.0274 0.0053  
 Venus -124085-03-02 11:03 J -43600562.24 -43600562.04 -43600561.84 0.0272 0.0069  
 Venus -124085-10-17 11:03 J -43600333.24 -43600333.04 -43600332.84 0.0269 0.0084  
 Venus -124084-06-03 09:51 J -43600104.28 -43600104.09 -43600103.89 0.0267 0.0098  
 Venus -124083-01-18 08:11 J -43599875.34 -43599875.16 -43599874.96 0.0265 0.0110  
 Venus -124083-09-04 06:01 J -43599646.43 -43599646.25 -43599646.05 0.0263 0.0120  
 Mars -124082-04-15 20:11 J -43599422.94 -43599422.66 -43599422.38 0.0261 0.0022  
 Venus -124082-04-21 03:51 J -43599417.52 -43599417.34 -43599417.15 0.0261 0.0128  
 Venus -124082-12-06 01:27 J -43599188.62 -43599188.44 -43599188.25 0.0260 0.0135  
 Venus -124081-07-21 23:03 J -43598959.71 -43598959.54 -43598959.35 0.0259 0.0140  
 Mercury -124081-11-25 13:13 J -43598833.09 -43598832.95 -43598832.80 0.0259 0.0157  
 Mercury -124080-02-22 08:25 J -43598744.33 -43598744.15 -43598743.97 0.0259 0.0049  
 Venus -124080-03-07 21:08 J -43598730.79 -43598730.62 -43598730.43 0.0259 0.0143  
 Mercury -124080-05-22 03:51 J -43598655.52 -43598655.34 -43598655.16 0.0258 0.0059  
 Mercury -124080-08-18 23:03 J -43598566.67 -43598566.54 -43598566.39 0.0258 0.0169  
 Venus -124080-10-22 19:42 J -43598501.85 -43598501.68 -43598501.49 0.0258 0.0145  
 Venus -124079-06-08 19:13 J -43598272.88 -43598272.70 -43598272.52 0.0258 0.0145  
 Venus -124078-01-23 19:13 J -43598043.87 -43598043.70 -43598043.51 0.0258 0.0144  
 Venus -124078-09-09 20:25 J -43597814.82 -43597814.65 -43597814.46 0.0259 0.0140  
 Venus -124077-04-25 22:49 J -43597585.73 -43597585.55 -43597585.35 0.0260 0.0135  
 Venus -124077-12-11 02:39 J -43597356.58 -43597356.39 -43597356.19 0.0261 0.0127  
 Venus -124076-07-28 07:56 J -43597127.36 -43597127.17 -43597126.96 0.0262 0.0119  
 Venus -124075-03-14 15:08 J -43596898.07 -43596897.87 -43596897.67 0.0264 0.0107  
 Venus -124075-10-29 23:47 J -43596668.72 -43596668.51 -43596668.30 0.0266 0.0094  
 Venus -124074-06-16 10:20 J -43596439.28 -43596439.07 -43596438.85 0.0268 0.0080  
 Venus -124073-01-31 23:03 J -43596209.75 -43596209.54 -43596209.32 0.0270 0.0063

Venus	-124073-09-17 13:42 J	-43595980.15	-43595979.93	-43595979.71	0.0273	0.0045
Venus	-124072-05-05 06:30 J	-43595750.45	-43595750.23	-43595750.01	0.0276	0.0025
Venus	-124072-12-21 01:13 J	-43595520.67	-43595520.45	-43595520.23	0.0279	0.0004
Venus	-124071-08-07 22:06 J	-43595290.80	-43595290.58	-43595290.36	0.0282	0.0018
Venus	-124070-03-25 20:39 J	-43595060.85	-43595060.64	-43595060.42	0.0285	0.0040
Venus	-124070-11-10 21:08 J	-43594830.83	-43594830.62	-43594830.41	0.0288	0.0062
Venus	-124069-06-27 22:49 J	-43594600.75	-43594600.55	-43594600.34	0.0291	0.0083
Venus	-124068-02-13 01:56 J	-43594370.62	-43594370.42	-43594370.22	0.0294	0.0103
Venus	-124068-10-01 05:47 J	-43594140.45	-43594140.26	-43594140.06	0.0297	0.0122
Earth	-124067-01-06 12:59 J	-43594043.08	-43594042.96	-43594042.82	0.0298	0.0250
Moon	-124067-01-06 12:30 J	-43594043.07	-43594042.98	-43594042.87	0.0298	0.0268 *
Venus	-124067-05-19 10:20 J	-43593910.25	-43593910.07	-43593909.88	0.0299	0.0137
Venus	-124066-01-04 14:54 J	-43593680.06	-43593679.88	-43593679.69	0.0301	0.0149
Mars	-124066-04-10 03:23 J	-43593584.54	-43593584.36	-43593584.15	0.0301	0.0232
Venus	-124066-08-22 18:59 J	-43593449.87	-43593449.71	-43593449.52	0.0302	0.0159
Mercury	-124066-09-23 16:49 J	-43593417.83	-43593417.80	-43593417.76	0.0302	0.0289
Mercury	-124066-12-21 06:30 J	-43593329.34	-43593329.23	-43593329.11	0.0303	0.0164
Mercury	-124065-03-18 20:11 J	-43593240.79	-43593240.66	-43593240.52	0.0303	0.0039
Venus	-124065-04-08 22:49 J	-43593219.72	-43593219.55	-43593219.37	0.0303	0.0162
Mercury	-124065-06-15 09:37 J	-43593152.22	-43593152.10	-43593151.97	0.0303	0.0087
Mercury	-124065-09-11 23:03 J	-43593063.63	-43593063.54	-43593063.44	0.0303	0.0209
Venus	-124065-11-25 01:27 J	-43592989.61	-43592989.44	-43592989.26	0.0304	0.0163
Venus	-124064-07-13 02:39 J	-43592759.56	-43592759.39	-43592759.21	0.0303	0.0159
Venus	-124063-02-28 02:25 J	-43592529.57	-43592529.40	-43592529.22	0.0303	0.0150
Venus	-124063-10-16 00:15 J	-43592299.67	-43592299.49	-43592299.31	0.0302	0.0138
Venus	-124062-06-02 20:11 J	-43592069.85	-43592069.66	-43592069.48	0.0300	0.0123
Venus	-124061-01-18 13:56 J	-43591840.10	-43591839.92	-43591839.73	0.0298	0.0106
Venus	-124061-09-04 05:32 J	-43591610.46	-43591610.27	-43591610.07	0.0295	0.0087
Venus	-124060-04-21 18:59 J	-43591380.90	-43591380.71	-43591380.51	0.0293	0.0066
Venus	-124060-12-07 06:15 J	-43591151.44	-43591151.24	-43591151.04	0.0290	0.0045

Venus -124059-07-24 15:37 J -43590922.05 -43590921.85 -43590921.65 0.0287 0.0023  
 Venus -124058-03-10 23:03 J -43590692.74 -43590692.54 -43590692.34 0.0284 0.0002  
 Venus -124058-10-26 04:35 J -43590463.52 -43590463.31 -43590463.11 0.0281 0.0018  
 Venus -124057-06-11 08:11 J -43590234.36 -43590234.16 -43590233.95 0.0278 0.0038  
 Venus -124056-01-26 10:35 J -43590005.26 -43590005.06 -43590004.85 0.0275 0.0055  
 Venus -124056-09-12 11:47 J -43589776.21 -43589776.01 -43589775.81 0.0272 0.0071  
 Venus -124055-04-29 11:47 J -43589547.20 -43589547.01 -43589546.81 0.0270 0.0087  
 Venus -124055-12-14 11:03 J -43589318.23 -43589318.04 -43589317.84 0.0267 0.0100  
 Earth -124054-06-27 02:39 J -43589123.62 -43589123.39 -43589123.15 0.0265 0.0083  
 Moon -124054-06-27 06:15 J -43589123.48 -43589123.24 -43589123.00 0.0265 0.0069 \*  
 Venus -124054-07-31 09:37 J -43589089.29 -43589089.10 -43589088.91 0.0265 0.0111  
 Venus -124053-03-16 07:27 J -43588860.37 -43588860.19 -43588860.00 0.0263 0.0121  
 Venus -124053-10-31 05:18 J -43588631.46 -43588631.28 -43588631.09 0.0262 0.0129  
 Mars -124052-05-31 12:30 J -43588419.15 -43588418.98 -43588418.78 0.0261 0.0196  
 Venus -124052-06-17 03:08 J -43588402.55 -43588402.37 -43588402.19 0.0261 0.0136  
 Venus -124051-02-01 00:44 J -43588173.64 -43588173.47 -43588173.28 0.0260 0.0141  
 Mercury -124051-04-14 12:15 J -43588101.11 -43588100.99 -43588100.86 0.0259 0.0191  
 Mercury -124051-07-12 07:27 J -43588012.36 -43588012.19 -43588012.01 0.0259 0.0084  
 Venus -124051-09-17 23:03 J -43587944.71 -43587944.54 -43587944.35 0.0259 0.0143  
 Mercury -124051-10-09 02:39 J -43587923.57 -43587923.39 -43587923.20 0.0259 0.0026  
 Mercury -124050-01-05 22:06 J -43587834.73 -43587834.58 -43587834.41 0.0259 0.0134  
 Mercury -124050-04-04 17:32 J -43587745.82 -43587745.77 -43587745.70 0.0259 0.0244  
 Venus -124050-05-04 21:51 J -43587715.76 -43587715.59 -43587715.40 0.0258 0.0144  
 Venus -124050-12-19 21:23 J -43587486.79 -43587486.61 -43587486.42 0.0258 0.0144  
 Venus -124049-08-04 21:37 J -43587257.77 -43587257.60 -43587257.41 0.0259 0.0142  
 Venus -124048-03-21 23:03 J -43587028.72 -43587028.54 -43587028.35 0.0259 0.0137  
 Venus -124048-11-06 01:42 J -43586799.61 -43586799.43 -43586799.23 0.0260 0.0131  
 Venus -124047-06-23 05:47 J -43586570.44 -43586570.26 -43586570.05 0.0261 0.0124  
 Venus -124046-02-07 11:32 J -43586341.21 -43586341.02 -43586340.82 0.0262 0.0114  
 Venus -124046-09-24 18:44 J -43586111.92 -43586111.72 -43586111.51 0.0264 0.0103

Venus	-124045-05-11 03:37 J	-43585882.55	-43585882.35	-43585882.14	0.0266	0.0090
Venus	-124045-12-26 14:25 J	-43585653.11	-43585652.90	-43585652.68	0.0268	0.0075
Venus	-124044-08-13 03:23 J	-43585423.57	-43585423.36	-43585423.14	0.0270	0.0058
Venus	-124043-03-30 18:15 J	-43585193.96	-43585193.74	-43585193.52	0.0273	0.0040
Venus	-124043-11-15 11:03 J	-43584964.26	-43584964.04	-43584963.82	0.0276	0.0021
Venus	-124042-07-03 06:01 J	-43584734.47	-43584734.25	-43584734.03	0.0279	0.0000
Venus	-124041-02-18 02:54 J	-43584504.60	-43584504.38	-43584504.16	0.0282	0.0022
Venus	-124041-10-05 01:42 J	-43584274.65	-43584274.43	-43584274.22	0.0285	0.0043
Venus	-124040-05-23 01:56 J	-43584044.63	-43584044.42	-43584044.21	0.0288	0.0065
Venus	-124039-01-08 03:51 J	-43583814.55	-43583814.34	-43583814.14	0.0291	0.0087
Venus	-124039-08-26 06:44 J	-43583584.42	-43583584.22	-43583584.02	0.0294	0.0106
Earth	-124039-12-31 10:20 J	-43583457.23	-43583457.07	-43583456.89	0.0296	0.0209
Moon	-124039-12-31 13:27 J	-43583457.10	-43583456.94	-43583456.78	0.0296	0.0218 *
Venus	-124038-04-13 10:35 J	-43583354.25	-43583354.06	-43583353.87	0.0297	0.0124
Venus	-124038-11-29 14:54 J	-43583124.06	-43583123.88	-43583123.69	0.0299	0.0140
Venus	-124037-07-16 19:27 J	-43582893.87	-43582893.69	-43582893.51	0.0301	0.0152
Venus	-124036-03-03 23:32 J	-43582663.70	-43582663.52	-43582663.34	0.0303	0.0160
Mercury	-124036-05-09 07:27 J	-43582597.28	-43582597.19	-43582597.09	0.0303	0.0205
Mercury	-124036-08-05 21:08 J	-43582508.74	-43582508.62	-43582508.49	0.0303	0.0080
Venus	-124036-10-20 03:08 J	-43582433.54	-43582433.37	-43582433.20	0.0304	0.0164
Mercury	-124036-11-02 10:49 J	-43582420.18	-43582420.05	-43582419.92	0.0304	0.0045
Mercury	-124035-01-30 00:15 J	-43582331.60	-43582331.49	-43582331.38	0.0304	0.0169
Mercury	-124035-04-28 13:27 J	-43582242.97	-43582242.94	-43582242.90	0.0304	0.0291
Venus	-124035-06-07 05:32 J	-43582203.44	-43582203.27	-43582203.09	0.0304	0.0164
Venus	-124034-01-23 06:44 J	-43581973.39	-43581973.22	-43581973.04	0.0304	0.0159
Venus	-124034-09-10 06:15 J	-43581743.41	-43581743.24	-43581743.06	0.0303	0.0150
Venus	-124033-04-27 04:06 J	-43581513.51	-43581513.33	-43581513.15	0.0302	0.0138
Venus	-124033-12-12 23:47 J	-43581283.69	-43581283.51	-43581283.32	0.0300	0.0122
Venus	-124032-07-30 17:18 J	-43581053.97	-43581053.78	-43581053.59	0.0298	0.0104
Venus	-124031-03-17 08:39 J	-43580824.33	-43580824.14	-43580823.94	0.0295	0.0085



Venus	-124031-11-01 21:51 J	-43580594.79	-43580594.59	-43580594.39	0.0293	0.0064
Venus	-124030-06-19 08:54 J	-43580365.33	-43580365.13	-43580364.93	0.0290	0.0042
Venus	-124029-02-03 18:01 J	-43580135.95	-43580135.75	-43580135.54	0.0287	0.0021
Venus	-124029-09-20 01:13 J	-43579906.66	-43579906.45	-43579906.25	0.0283	0.0002
Venus	-124028-05-07 06:30 J	-43579677.44	-43579677.23	-43579677.03	0.0280	0.0020
Venus	-124028-12-22 10:06 J	-43579448.28	-43579448.08	-43579447.87	0.0277	0.0039
Venus	-124027-08-08 12:30 J	-43579219.18	-43579218.98	-43579218.78	0.0274	0.0056
Venus	-124026-03-25 13:42 J	-43578990.13	-43578989.93	-43578989.73	0.0272	0.0072
Venus	-124026-11-09 13:42 J	-43578761.13	-43578760.93	-43578760.73	0.0269	0.0087
Earth	-124025-06-21 00:44 J	-43578536.53	-43578536.47	-43578536.37	0.0267	0.0252
Moon	-124025-06-21 02:54 J	-43578536.47	-43578536.38	-43578536.27	0.0267	0.0243 *
Venus	-124025-06-25 12:44 J	-43578532.16	-43578531.97	-43578531.77	0.0267	0.0099
Venus	-124024-02-09 11:03 J	-43578303.23	-43578303.04	-43578302.84	0.0265	0.0111
Mars	-124024-07-23 23:47 J	-43578138.74	-43578138.51	-43578138.27	0.0263	0.0146
Venus	-124024-09-26 09:08 J	-43578074.30	-43578074.12	-43578073.93	0.0263	0.0120
Venus	-124023-05-13 07:13 J	-43577845.39	-43577845.20	-43577845.01	0.0261	0.0128
Venus	-124023-12-28 04:49 J	-43577616.48	-43577616.30	-43577616.11	0.0260	0.0134
Venus	-124022-08-14 02:54 J	-43577387.56	-43577387.38	-43577387.20	0.0259	0.0138
Mercury	-124022-09-01 11:18 J	-43577369.11	-43577369.03	-43577368.93	0.0259	0.0225
Mercury	-124022-11-29 06:30 J	-43577280.39	-43577280.23	-43577280.06	0.0259	0.0118
Mercury	-124021-02-26 01:56 J	-43577191.61	-43577191.42	-43577191.24	0.0259	0.0011
Venus	-124021-03-30 00:59 J	-43577158.63	-43577158.46	-43577158.27	0.0259	0.0141
Mercury	-124021-05-24 21:08 J	-43577102.79	-43577102.62	-43577102.44	0.0259	0.0099
Mercury	-124021-08-21 16:35 J	-43577013.91	-43577013.81	-43577013.69	0.0258	0.0208
Venus	-124021-11-13 23:47 J	-43576929.68	-43576929.51	-43576929.32	0.0258	0.0143
Venus	-124020-06-30 23:32 J	-43576700.70	-43576700.52	-43576700.34	0.0258	0.0142
Venus	-124019-02-14 23:47 J	-43576471.68	-43576471.51	-43576471.32	0.0259	0.0140
Venus	-124019-10-02 01:27 J	-43576242.63	-43576242.44	-43576242.25	0.0259	0.0135
Venus	-124018-05-19 04:06 J	-43576013.52	-43576013.33	-43576013.13	0.0260	0.0130
Venus	-124017-01-03 08:11 J	-43575784.35	-43575784.16	-43575783.96	0.0261	0.0122

Venus -124017-08-19 13:42 J -43575555.12 -43575554.93 -43575554.72 0.0263 0.0113

Venus -124016-04-05 20:54 J -43575325.83 -43575325.63 -43575325.42 0.0264 0.0101

Venus -124016-11-21 06:01 J -43575096.46 -43575096.25 -43575096.04 0.0266 0.0088

Venus -124015-07-08 17:03 J -43574867.00 -43574866.79 -43574866.58 0.0268 0.0073

Venus -124014-02-23 05:47 J -43574637.47 -43574637.26 -43574637.04 0.0271 0.0057

Venus -124014-10-10 20:54 J -43574407.85 -43574407.63 -43574407.41 0.0273 0.0038

Venus -124013-05-27 13:42 J -43574178.15 -43574177.93 -43574177.71 0.0276 0.0019

Venus -124012-01-12 08:39 J -43573948.36 -43573948.14 -43573947.92 0.0279 0.0003

Venus -124012-08-30 05:32 J -43573718.48 -43573718.27 -43573718.05 0.0282 0.0024

Venus -124011-04-17 04:20 J -43573488.53 -43573488.32 -43573488.10 0.0285 0.0045

Venus -124011-12-03 04:49 J -43573258.51 -43573258.30 -43573258.09 0.0289 0.0066

Venus -124010-07-21 06:30 J -43573028.43 -43573028.23 -43573028.02 0.0292 0.0087

Venus -124009-03-07 09:37 J -43572798.30 -43572798.10 -43572797.90 0.0294 0.0106

Venus -124009-10-23 13:27 J -43572568.13 -43572567.94 -43572567.74 0.0297 0.0124

Venus -124008-06-10 17:47 J -43572337.94 -43572337.76 -43572337.57 0.0299 0.0138

Mars -124008-07-09 17:18 J -43572309.07 -43572308.78 -43572308.47 0.0299 0.0077

Venus -124007-01-26 22:06 J -43572107.76 -43572107.58 -43572107.39 0.0301 0.0149

Venus -124007-09-14 02:11 J -43571877.58 -43571877.41 -43571877.23 0.0302 0.0157

Mercury -124007-09-26 08:11 J -43571865.24 -43571865.16 -43571865.09 0.0302 0.0252

Mercury -124007-12-23 21:51 J -43571776.71 -43571776.59 -43571776.47 0.0303 0.0127

Mercury -124006-03-22 11:18 J -43571688.16 -43571688.03 -43571687.89 0.0303 0.0006

Venus -124006-05-02 05:32 J -43571647.44 -43571647.27 -43571647.08 0.0303 0.0160

Mercury -124006-06-19 00:44 J -43571599.59 -43571599.47 -43571599.35 0.0303 0.0122

Mercury -124006-09-15 14:11 J -43571510.99 -43571510.91 -43571510.83 0.0303 0.0245

Venus -124006-12-18 08:11 J -43571417.33 -43571417.16 -43571416.98 0.0304 0.0159

Venus -124005-08-04 09:08 J -43571187.29 -43571187.12 -43571186.94 0.0303 0.0154

Venus -124004-03-22 08:25 J -43570957.33 -43570957.15 -43570956.97 0.0303 0.0145

Venus -124004-11-07 05:47 J -43570727.44 -43570727.26 -43570727.07 0.0301 0.0133

Venus -124003-06-25 01:27 J -43570497.63 -43570497.44 -43570497.25 0.0300 0.0117

Venus -124002-02-09 18:59 J -43570267.90 -43570267.71 -43570267.52 0.0297 0.0099

Venus	-124002-09-27 10:06 J	-43570038.27	-43570038.08	-43570037.88	0.0295	0.0080
Venus	-124001-05-13 23:18 J	-43569808.73	-43569808.53	-43569808.33	0.0292	0.0059
Venus	-124001-12-29 10:20 J	-43569579.27	-43569579.07	-43569578.87	0.0289	0.0038

# 124TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 124th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-124000-08-15 19:27 J	-43569349.89	-43569349.69	-43569349.49	0.0286	0.0017		
Venus	-123999-04-02 02:39 J	-43569120.59	-43569120.39	-43569120.19	0.0283	0.0003		
Venus	-123999-11-17 07:56 J	-43568891.37	-43568891.17	-43568890.96	0.0280	0.0024		
Venus	-123998-07-04 11:47 J	-43568662.21	-43568662.01	-43568661.81	0.0277	0.0042		
Venus	-123997-02-18 14:11 J	-43568433.11	-43568432.91	-43568432.71	0.0275	0.0059		
Venus	-123997-10-04 15:08 J	-43568204.06	-43568203.87	-43568203.66	0.0272	0.0075		
Venus	-123996-05-21 15:23 J	-43567975.06	-43567974.86	-43567974.66	0.0269	0.0089		
Venus	-123995-01-05 14:39 J	-43567746.09	-43567745.89	-43567745.70	0.0267	0.0102		
Moon	-123995-06-27 21:37 J	-43567572.80	-43567572.60	-43567572.41	0.0266	0.0163		
Earth	-123995-06-28 00:59 J	-43567572.66	-43567572.46	-43567572.25	0.0266	0.0152	*	
Venus	-123995-08-22 13:13 J	-43567517.14	-43567516.95	-43567516.76	0.0265	0.0113		
Venus	-123994-04-08 11:32 J	-43567288.21	-43567288.02	-43567287.83	0.0263	0.0122		
Mars	-123994-09-09 00:15 J	-43567134.77	-43567134.49	-43567134.21	0.0262	0.0036		

Venus -123994-11-23 09:23 J -43567059.29 -43567059.11 -43567058.92 0.0262 0.0129

Venus -123993-07-09 06:59 J -43566830.38 -43566830.21 -43566830.02 0.0261 0.0136

Mercury -123992-01-18 10:49 J -43566637.07 -43566637.05 -43566637.02 0.0260 0.0257

Venus -123992-02-23 05:03 J -43566601.46 -43566601.29 -43566601.10 0.0260 0.0140

Mercury -123992-04-17 06:01 J -43566548.40 -43566548.25 -43566548.10 0.0259 0.0150

Mercury -123992-07-15 01:13 J -43566459.63 -43566459.45 -43566459.27 0.0259 0.0042

Venus -123992-10-10 03:23 J -43566372.53 -43566372.36 -43566372.17 0.0259 0.0142

Mercury -123992-10-11 20:25 J -43566370.82 -43566370.65 -43566370.46 0.0259 0.0067

Mercury -123991-01-08 16:06 J -43566281.96 -43566281.83 -43566281.69 0.0259 0.0176

Venus -123991-05-27 02:54 J -43566143.56 -43566143.38 -43566143.20 0.0259 0.0142

Venus -123990-01-11 02:39 J -43565914.57 -43565914.39 -43565914.21 0.0259 0.0141

Venus -123990-08-28 03:08 J -43565685.55 -43565685.37 -43565685.18 0.0259 0.0138

Venus -123989-04-13 04:49 J -43565456.48 -43565456.30 -43565456.11 0.0259 0.0133

Venus -123989-11-28 07:42 J -43565227.36 -43565227.18 -43565226.98 0.0260 0.0127

Venus -123988-07-15 12:15 J -43564998.18 -43564997.99 -43564997.79 0.0261 0.0119

Venus -123987-03-01 18:15 J -43564768.94 -43564768.74 -43564768.54 0.0263 0.0109

Venus -123987-10-17 01:42 J -43564539.63 -43564539.43 -43564539.22 0.0264 0.0097

Venus -123986-06-03 11:03 J -43564310.25 -43564310.04 -43564309.83 0.0266 0.0083

Venus -123985-01-18 22:20 J -43564080.79 -43564080.57 -43564080.36 0.0268 0.0068

Venus -123985-09-04 11:32 J -43563851.24 -43563851.02 -43563850.81 0.0271 0.0052

Venus -123984-04-22 02:25 J -43563621.61 -43563621.40 -43563621.18 0.0273 0.0034

Venus -123984-12-07 19:42 J -43563391.90 -43563391.68 -43563391.46 0.0276 0.0014

Venus -123983-07-25 14:54 J -43563162.10 -43563161.88 -43563161.66 0.0279 0.0008

Venus -123982-03-12 11:47 J -43562932.22 -43562932.01 -43562931.79 0.0282 0.0028

Venus -123982-10-28 10:49 J -43562702.27 -43562702.05 -43562701.84 0.0285 0.0049

Venus -123981-06-14 11:18 J -43562472.24 -43562472.03 -43562471.82 0.0289 0.0070

Venus -123980-01-30 12:59 J -43562242.16 -43562241.96 -43562241.75 0.0292 0.0091

Venus -123980-09-17 16:06 J -43562012.03 -43562011.83 -43562011.63 0.0295 0.0109

Moon -123979-01-01 08:54 J -43561906.36 -43561906.13 -43561905.90 0.0296 0.0104

Earth -123979-01-01 12:15 J -43561906.20 -43561905.99 -43561905.76 0.0296 0.0121 \*

Venus -123979-05-05 19:56 J -43561781.86 -43561781.67 -43561781.48 0.0297 0.0126  
 Venus -123979-12-22 00:01 J -43561551.68 -43561551.50 -43561551.31 0.0299 0.0141  
 Venus -123978-08-09 04:20 J -43561321.50 -43561321.32 -43561321.14 0.0301 0.0151  
 Mars -123978-09-02 22:06 J -43561296.75 -43561296.58 -43561296.40 0.0302 0.0249  
 Mercury -123977-02-13 09:23 J -43561133.14 -43561133.11 -43561133.07 0.0303 0.0289  
 Venus -123977-03-26 08:25 J -43561091.33 -43561091.15 -43561090.98 0.0303 0.0158  
 Mercury -123977-05-11 23:03 J -43561044.65 -43561044.54 -43561044.42 0.0303 0.0164  
 Mercury -123977-08-08 12:44 J -43560956.10 -43560955.97 -43560955.83 0.0303 0.0039  
 Mercury -123977-11-05 02:11 J -43560867.53 -43560867.41 -43560867.28 0.0304 0.0086  
 Venus -123977-11-11 11:47 J -43560861.19 -43560861.01 -43560860.84 0.0304 0.0161  
 Mercury -123976-02-01 15:37 J -43560778.94 -43560778.85 -43560778.75 0.0304 0.0209  
 Venus -123976-06-29 13:42 J -43560631.10 -43560630.93 -43560630.75 0.0304 0.0160  
 Venus -123975-02-14 14:39 J -43560401.06 -43560400.89 -43560400.71 0.0304 0.0154  
 Venus -123975-10-02 13:42 J -43560171.10 -43560170.93 -43560170.74 0.0303 0.0145  
 Venus -123974-05-20 11:03 J -43559941.22 -43559941.04 -43559940.85 0.0302 0.0132  
 Venus -123973-01-05 06:30 J -43559711.41 -43559711.23 -43559711.04 0.0300 0.0116  
 Venus -123973-08-21 23:47 J -43559481.70 -43559481.51 -43559481.32 0.0298 0.0098  
 Venus -123972-04-08 14:39 J -43559252.08 -43559251.89 -43559251.69 0.0295 0.0078  
 Venus -123972-11-24 03:37 J -43559022.55 -43559022.35 -43559022.15 0.0292 0.0057  
 Venus -123971-07-11 14:25 J -43558793.11 -43558792.90 -43558792.70 0.0289 0.0036  
 Venus -123970-02-25 23:18 J -43558563.74 -43558563.53 -43558563.33 0.0286 0.0015  
 Venus -123970-10-13 06:01 J -43558334.45 -43558334.25 -43558334.04 0.0283 0.0008  
 Venus -123969-05-29 11:18 J -43558105.24 -43558105.03 -43558104.83 0.0280 0.0026  
 Venus -123968-01-13 14:39 J -43557876.09 -43557875.89 -43557875.68 0.0277 0.0044  
 Venus -123968-08-30 17:03 J -43557646.99 -43557646.79 -43557646.59 0.0274 0.0060  
 Venus -123967-04-16 18:15 J -43557417.94 -43557417.74 -43557417.54 0.0271 0.0076  
 Venus -123967-12-01 18:01 J -43557188.94 -43557188.75 -43557188.54 0.0269 0.0090  
 Moon -123966-06-22 22:35 J -43556985.71 -43556985.56 -43556985.39 0.0267 0.0195  
 Earth -123966-06-23 00:30 J -43556985.65 -43556985.48 -43556985.28 0.0267 0.0179 \*  
 Venus -123966-07-18 17:18 J -43556959.97 -43556959.78 -43556959.58 0.0267 0.0102

Venus -123965-03-03 15:51 J -43556731.03 -43556730.84 -43556730.64 0.0265 0.0112

Venus -123965-10-18 13:56 J -43556502.10 -43556501.92 -43556501.72 0.0263 0.0121

Venus -123964-06-04 12:01 J -43556273.18 -43556273.00 -43556272.81 0.0261 0.0128

Mars -123964-10-24 21:23 J -43556130.78 -43556130.61 -43556130.44 0.0261 0.0206

Venus -123963-01-19 10:06 J -43556044.26 -43556044.08 -43556043.89 0.0260 0.0133

Mercury -123963-09-04 05:32 J -43555816.39 -43555816.27 -43555816.13 0.0259 0.0182

Venus -123963-09-05 08:11 J -43555815.34 -43555815.16 -43555814.97 0.0259 0.0137

Mercury -123963-12-02 00:44 J -43555727.64 -43555727.47 -43555727.29 0.0259 0.0074

Mercury -123962-02-28 20:11 J -43555638.84 -43555638.66 -43555638.48 0.0259 0.0034

Venus -123962-04-22 06:59 J -43555586.39 -43555586.21 -43555586.03 0.0259 0.0139

Mercury -123962-05-28 15:37 J -43555550.00 -43555549.85 -43555549.69 0.0259 0.0143

Mercury -123962-08-25 11:18 J -43555461.06 -43555461.03 -43555460.99 0.0259 0.0253

Venus -123962-12-07 06:01 J -43555357.43 -43555357.25 -43555357.07 0.0258 0.0140

Venus -123961-07-23 05:47 J -43555128.44 -43555128.26 -43555128.07 0.0258 0.0139

Venus -123960-03-09 06:30 J -43554899.41 -43554899.23 -43554899.04 0.0259 0.0136

Venus -123960-10-24 08:25 J -43554670.34 -43554670.15 -43554669.96 0.0259 0.0131

Venus -123959-06-10 11:32 J -43554441.20 -43554441.02 -43554440.82 0.0260 0.0125

Venus -123958-01-25 16:20 J -43554212.02 -43554211.82 -43554211.63 0.0261 0.0117

Venus -123958-09-11 22:06 J -43553982.78 -43553982.58 -43553982.37 0.0263 0.0107

Venus -123957-04-28 05:32 J -43553753.47 -43553753.27 -43553753.05 0.0265 0.0096

Venus -123957-12-13 15:08 J -43553524.08 -43553523.87 -43553523.66 0.0267 0.0082

Venus -123956-07-31 02:39 J -43553294.60 -43553294.39 -43553294.17 0.0269 0.0067

Venus -123955-03-17 15:51 J -43553065.05 -43553064.84 -43553064.62 0.0271 0.0050

Venus -123955-11-02 07:13 J -43552835.42 -43552835.20 -43552834.98 0.0274 0.0032

Venus -123954-06-20 00:15 J -43552605.71 -43552605.49 -43552605.27 0.0277 0.0013

Venus -123953-02-04 19:27 J -43552375.91 -43552375.69 -43552375.47 0.0280 0.0010

Venus -123953-09-21 16:49 J -43552146.02 -43552145.80 -43552145.58 0.0283 0.0030

Venus -123952-05-09 15:37 J -43551916.06 -43551915.85 -43551915.63 0.0286 0.0051

Venus -123952-12-25 16:06 J -43551686.04 -43551685.83 -43551685.62 0.0289 0.0072

Venus -123951-08-12 18:01 J -43551455.95 -43551455.75 -43551455.55 0.0292 0.0092

Venus	-123950-03-30 20:54 J	-43551225.82	-43551225.63	-43551225.43	0.0295	0.0110
Venus	-123950-11-16 00:44 J	-43550995.66	-43550995.47	-43550995.27	0.0297	0.0126
Venus	-123949-07-03 04:49 J	-43550765.48	-43550765.30	-43550765.10	0.0299	0.0140
Venus	-123948-02-18 09:08 J	-43550535.30	-43550535.12	-43550534.94	0.0301	0.0149
Mercury	-123948-09-29 00:15 J	-43550312.59	-43550312.49	-43550312.39	0.0302	0.0205
Venus	-123948-10-06 12:59 J	-43550305.13	-43550304.96	-43550304.78	0.0302	0.0155
Mercury	-123948-12-26 13:56 J	-43550224.05	-43550223.92	-43550223.79	0.0303	0.0081
Mercury	-123947-03-25 03:23 J	-43550135.49	-43550135.36	-43550135.23	0.0303	0.0044
Venus	-123947-05-24 16:06 J	-43550075.00	-43550074.83	-43550074.65	0.0303	0.0157
Mercury	-123947-06-21 16:49 J	-43550046.91	-43550046.80	-43550046.69	0.0303	0.0167
Mercury	-123947-09-18 06:15 J	-43549958.28	-43549958.24	-43549958.21	0.0303	0.0289
Venus	-123946-01-09 18:15 J	-43549844.91	-43549844.74	-43549844.56	0.0303	0.0155
Venus	-123946-08-27 18:44 J	-43549614.89	-43549614.72	-43549614.54	0.0303	0.0149
Venus	-123945-04-13 17:32 J	-43549384.94	-43549384.77	-43549384.58	0.0302	0.0140
Venus	-123945-11-29 14:39 J	-43549155.07	-43549154.89	-43549154.70	0.0301	0.0126
Venus	-123944-07-17 09:37 J	-43548925.28	-43548925.10	-43548924.91	0.0299	0.0110
Venus	-123943-03-04 02:39 J	-43548695.58	-43548695.39	-43548695.20	0.0297	0.0092
Venus	-123943-10-19 17:18 J	-43548465.97	-43548465.78	-43548465.58	0.0294	0.0073
Venus	-123942-06-06 06:01 J	-43548236.44	-43548236.25	-43548236.04	0.0292	0.0053
Venus	-123941-01-21 16:49 J	-43548007.00	-43548006.80	-43548006.60	0.0289	0.0032
Venus	-123941-09-07 01:27 J	-43547777.64	-43547777.44	-43547777.23	0.0286	0.0013
Venus	-123940-04-24 08:25 J	-43547548.35	-43547548.15	-43547547.95	0.0283	0.0009
Venus	-123940-12-09 13:27 J	-43547319.14	-43547318.94	-43547318.73	0.0280	0.0028
Venus	-123939-07-26 17:03 J	-43547089.99	-43547089.79	-43547089.58	0.0277	0.0046
Venus	-123938-03-12 19:27 J	-43546860.89	-43546860.69	-43546860.48	0.0274	0.0063
Venus	-123938-10-27 20:39 J	-43546631.84	-43546631.64	-43546631.44	0.0272	0.0078
Venus	-123937-06-12 20:39 J	-43546402.84	-43546402.64	-43546402.44	0.0269	0.0091
Venus	-123936-01-27 19:42 J	-43546173.87	-43546173.68	-43546173.48	0.0267	0.0104
Earth	-123936-06-29 01:56 J	-43546021.53	-43546021.42	-43546021.28	0.0266	0.0228
Moon	-123936-06-29 05:47 J	-43546021.38	-43546021.26	-43546021.13	0.0266	0.0230 *

Venus -123936-09-13 18:30 J -43545944.92 -43545944.73 -43545944.54 0.0265 0.0114

Mars -123936-12-17 10:06 J -43545850.32 -43545850.08 -43545849.83 0.0264 0.0128

Venus -123935-04-30 17:03 J -43545715.98 -43545715.79 -43545715.60 0.0263 0.0122

Venus -123935-12-15 15:08 J -43545487.05 -43545486.87 -43545486.68 0.0262 0.0129

Venus -123934-08-01 13:13 J -43545258.13 -43545257.95 -43545257.76 0.0261 0.0135

Mercury -123933-01-22 05:18 J -43545084.38 -43545084.28 -43545084.17 0.0260 0.0212

Venus -123933-03-17 11:32 J -43545029.20 -43545029.02 -43545028.84 0.0260 0.0138

Mercury -123933-04-20 00:30 J -43544995.65 -43544995.48 -43544995.31 0.0260 0.0104

Mercury -123933-07-17 19:56 J -43544906.86 -43544906.67 -43544906.49 0.0259 0.0006

Mercury -123933-10-14 15:23 J -43544818.03 -43544817.86 -43544817.69 0.0259 0.0113

Venus -123933-11-01 10:06 J -43544800.26 -43544800.08 -43544799.89 0.0259 0.0140

Mercury -123932-01-11 10:49 J -43544729.14 -43544729.05 -43544728.95 0.0259 0.0223

Venus -123932-06-18 09:23 J -43544571.28 -43544571.11 -43544570.92 0.0259 0.0140

Venus -123931-02-02 09:37 J -43544342.28 -43544342.10 -43544341.91 0.0259 0.0138

Venus -123931-09-19 10:49 J -43544113.24 -43544113.05 -43544112.87 0.0259 0.0135

Venus -123930-05-06 12:30 J -43543884.16 -43543883.98 -43543883.78 0.0260 0.0130

Venus -123930-12-21 16:06 J -43543655.02 -43543654.83 -43543654.63 0.0260 0.0122

Venus -123929-08-06 20:54 J -43543425.82 -43543425.63 -43543425.43 0.0262 0.0114

Venus -123928-03-24 03:23 J -43543196.56 -43543196.36 -43543196.16 0.0263 0.0103

Venus -123928-11-08 11:18 J -43542967.24 -43542967.03 -43542966.82 0.0265 0.0091

Venus -123927-06-25 21:08 J -43542737.83 -43542737.62 -43542737.41 0.0267 0.0077

Venus -123926-02-10 08:54 J -43542508.35 -43542508.13 -43542507.92 0.0269 0.0062

Venus -123926-09-27 22:20 J -43542278.79 -43542278.57 -43542278.35 0.0271 0.0045

Venus -123925-05-14 13:42 J -43542049.15 -43542048.93 -43542048.71 0.0274 0.0027

Venus -123925-12-30 07:13 J -43541819.42 -43541819.20 -43541818.98 0.0277 0.0008

Venus -123924-08-17 02:39 J -43541589.61 -43541589.39 -43541589.17 0.0280 0.0013

Venus -123923-04-04 00:01 J -43541359.71 -43541359.50 -43541359.28 0.0283 0.0033

Venus -123923-11-19 23:03 J -43541129.75 -43541129.54 -43541129.32 0.0286 0.0054

Venus -123922-07-07 23:32 J -43540899.72 -43540899.52 -43540899.30 0.0289 0.0075

Venus -123921-02-23 01:42 J -43540669.63 -43540669.43 -43540669.23 0.0292 0.0094



Venus -123921-10-10 04:49 J -43540439.50 -43540439.30 -43540439.10 0.0295 0.0112  
 Earth -123920-01-02 19:13 J -43540354.94 -43540354.70 -43540354.45 0.0296 0.0018  
 Moon -123920-01-02 22:35 J -43540354.79 -43540354.56 -43540354.32 0.0296 0.0022 \*  
 Venus -123920-05-28 08:25 J -43540209.33 -43540209.15 -43540208.95 0.0297 0.0128  
 Mars -123920-12-03 08:11 J -43540020.46 -43540020.16 -43540019.85 0.0299 0.0048  
 Venus -123919-01-13 12:30 J -43539979.16 -43539978.98 -43539978.79 0.0300 0.0141  
 Venus -123919-08-31 16:35 J -43539748.99 -43539748.81 -43539748.62 0.0301 0.0151  
 Mercury -123918-02-16 01:56 J -43539580.49 -43539580.42 -43539580.33 0.0303 0.0239  
 Venus -123918-04-18 20:11 J -43539518.83 -43539518.66 -43539518.47 0.0303 0.0157  
 Mercury -123918-05-15 15:37 J -43539491.97 -43539491.85 -43539491.72 0.0303 0.0115  
 Mercury -123918-08-12 05:18 J -43539403.41 -43539403.28 -43539403.15 0.0303 0.0010  
 Mercury -123918-11-08 18:44 J -43539314.84 -43539314.72 -43539314.60 0.0304 0.0134  
 Venus -123918-12-04 23:18 J -43539288.70 -43539288.53 -43539288.35 0.0304 0.0159  
 Mercury -123917-02-05 08:11 J -43539226.23 -43539226.16 -43539226.10 0.0304 0.0256  
 Venus -123917-07-22 01:13 J -43539058.62 -43539058.45 -43539058.27 0.0304 0.0156  
 Venus -123916-03-09 01:27 J -43538828.61 -43538828.44 -43538828.26 0.0304 0.0150  
 Venus -123916-10-25 00:15 J -43538598.67 -43538598.49 -43538598.31 0.0303 0.0139  
 Venus -123915-06-11 21:08 J -43538368.80 -43538368.62 -43538368.43 0.0301 0.0126  
 Venus -123914-01-27 16:06 J -43538139.01 -43538138.83 -43538138.64 0.0299 0.0109  
 Venus -123914-09-14 08:54 J -43537909.32 -43537909.13 -43537908.94 0.0297 0.0091  
 Venus -123913-04-30 23:18 J -43537679.72 -43537679.53 -43537679.33 0.0295 0.0071  
 Venus -123913-12-16 11:47 J -43537450.21 -43537450.01 -43537449.81 0.0292 0.0050  
 Venus -123912-08-02 22:20 J -43537220.78 -43537220.57 -43537220.37 0.0289 0.0030  
 Venus -123911-03-20 06:44 J -43536991.42 -43536991.22 -43536991.01 0.0286 0.0009  
 Venus -123911-11-04 13:27 J -43536762.15 -43536761.94 -43536761.74 0.0283 0.0012  
 Venus -123910-06-21 18:15 J -43536532.94 -43536532.74 -43536532.53 0.0279 0.0030  
 Venus -123909-02-05 21:37 J -43536303.80 -43536303.60 -43536303.39 0.0276 0.0048  
 Venus -123909-09-21 23:47 J -43536074.71 -43536074.51 -43536074.31 0.0274 0.0064  
 Venus -123908-05-09 00:44 J -43535845.67 -43535845.47 -43535845.27 0.0271 0.0079  
 Venus -123908-12-24 00:44 J -43535616.66 -43535616.47 -43535616.27 0.0269 0.0092

Earth	-123907-06-24 03:51 J	-43535434.56	-43535434.34	-43535434.10	0.0267	0.0097
Moon	-123907-06-24 06:15 J	-43535434.47	-43535434.24	-43535433.99	0.0267	0.0093 *
Venus	-123907-08-10 00:01 J	-43535387.69	-43535387.50	-43535387.30	0.0266	0.0103
Venus	-123906-03-26 22:49 J	-43535158.74	-43535158.55	-43535158.36	0.0264	0.0113
Venus	-123906-11-10 20:54 J	-43534929.81	-43534929.63	-43534929.43	0.0263	0.0122
Mars	-123905-02-02 17:47 J	-43534846.03	-43534845.76	-43534845.48	0.0262	0.0052
Venus	-123905-06-26 18:59 J	-43534700.88	-43534700.71	-43534700.51	0.0261	0.0129
Venus	-123904-02-10 17:18 J	-43534471.96	-43534471.78	-43534471.59	0.0260	0.0133
Mercury	-123904-06-10 05:32 J	-43534352.33	-43534352.27	-43534352.19	0.0260	0.0240
Mercury	-123904-09-07 00:44 J	-43534263.62	-43534263.47	-43534263.31	0.0259	0.0133
Venus	-123904-09-27 15:37 J	-43534243.02	-43534242.85	-43534242.66	0.0259	0.0136
Mercury	-123904-12-04 20:11 J	-43534174.85	-43534174.66	-43534174.48	0.0259	0.0025
Mercury	-123903-03-03 15:23 J	-43534086.03	-43534085.86	-43534085.68	0.0259	0.0085
Venus	-123903-05-14 14:39 J	-43534014.07	-43534013.89	-43534013.70	0.0259	0.0138
Mercury	-123903-05-31 11:03 J	-43533997.16	-43533997.04	-43533996.92	0.0259	0.0194
Venus	-123903-12-29 14:11 J	-43533785.09	-43533784.91	-43533784.72	0.0259	0.0137
Venus	-123902-08-15 14:11 J	-43533556.09	-43533555.91	-43533555.71	0.0259	0.0136
Venus	-123901-03-31 15:23 J	-43533327.04	-43533326.86	-43533326.67	0.0259	0.0132
Venus	-123901-11-15 17:47 J	-43533097.95	-43533097.76	-43533097.57	0.0260	0.0127
Venus	-123900-07-02 21:23 J	-43532868.80	-43532868.61	-43532868.41	0.0261	0.0120
Venus	-123899-02-17 02:25 J	-43532639.60	-43532639.40	-43532639.20	0.0262	0.0112
Venus	-123899-10-04 08:54 J	-43532410.33	-43532410.13	-43532409.93	0.0263	0.0101
Venus	-123898-05-21 17:03 J	-43532181.00	-43532180.79	-43532180.58	0.0265	0.0089
Venus	-123897-01-06 02:54 J	-43531951.59	-43531951.38	-43531951.17	0.0267	0.0076
Venus	-123897-08-22 14:39 J	-43531722.10	-43531721.89	-43531721.67	0.0269	0.0060
Venus	-123896-04-09 04:20 J	-43531492.53	-43531492.32	-43531492.10	0.0272	0.0044
Venus	-123896-11-24 20:11 J	-43531262.88	-43531262.66	-43531262.44	0.0275	0.0025
Venus	-123895-07-12 13:42 J	-43531033.15	-43531032.93	-43531032.71	0.0277	0.0006
Venus	-123894-02-27 09:23 J	-43530803.33	-43530803.11	-43530802.89	0.0280	0.0015
Venus	-123894-10-15 06:44 J	-43530573.43	-43530573.22	-43530573.00	0.0283	0.0036

Venus -123893-06-01 06:01 J -43530343.47 -43530343.25 -43530343.04 0.0287 0.0057  
 Venus -123892-01-17 06:30 J -43530113.43 -43530113.23 -43530113.02 0.0290 0.0077  
 Venus -123892-09-04 08:39 J -43529883.34 -43529883.14 -43529882.93 0.0292 0.0096  
 Venus -123891-04-22 11:47 J -43529653.21 -43529653.01 -43529652.81 0.0295 0.0113  
 Venus -123891-12-08 15:23 J -43529423.04 -43529422.86 -43529422.66 0.0298 0.0129  
 Venus -123890-07-26 19:27 J -43529192.87 -43529192.69 -43529192.50 0.0300 0.0141  
 Mars -123889-01-27 15:23 J -43529007.97 -43529007.86 -43529007.71 0.0301 0.0271  
 Venus -123889-03-12 23:32 J -43528962.70 -43528962.52 -43528962.34 0.0301 0.0149  
 Mercury -123889-07-05 03:37 J -43528848.40 -43528848.35 -43528848.29 0.0302 0.0275  
 Mercury -123889-10-01 17:32 J -43528759.89 -43528759.77 -43528759.66 0.0302 0.0151  
 Venus -123889-10-29 03:08 J -43528732.54 -43528732.37 -43528732.18 0.0303 0.0154  
 Mercury -123889-12-29 06:59 J -43528671.34 -43528671.21 -43528671.08 0.0303 0.0027  
 Mercury -123888-03-27 20:25 J -43528582.77 -43528582.65 -43528582.52 0.0303 0.0097  
 Venus -123888-06-16 06:01 J -43528502.42 -43528502.25 -43528502.07 0.0303 0.0155  
 Mercury -123888-06-24 09:51 J -43528494.18 -43528494.09 -43528494.00 0.0303 0.0220  
 Venus -123887-02-01 07:42 J -43528272.36 -43528272.18 -43528272.00 0.0303 0.0151  
 Venus -123887-09-19 07:56 J -43528042.35 -43528042.17 -43528041.99 0.0303 0.0144  
 Venus -123886-05-07 06:15 J -43527812.42 -43527812.24 -43527812.06 0.0302 0.0134  
 Venus -123886-12-23 02:39 J -43527582.57 -43527582.39 -43527582.20 0.0300 0.0121  
 Venus -123885-08-08 21:23 J -43527352.80 -43527352.61 -43527352.42 0.0298 0.0104  
 Venus -123884-03-26 13:42 J -43527123.13 -43527122.93 -43527122.74 0.0296 0.0086  
 Venus -123884-11-11 03:51 J -43526893.54 -43526893.34 -43526893.14 0.0294 0.0066  
 Venus -123883-06-28 16:06 J -43526664.03 -43526663.83 -43526663.63 0.0291 0.0046  
 Venus -123882-02-13 02:25 J -43526434.60 -43526434.40 -43526434.20 0.0288 0.0025  
 Venus -123882-09-30 10:35 J -43526205.26 -43526205.06 -43526204.85 0.0285 0.0008  
 Venus -123881-05-16 17:03 J -43525975.99 -43525975.79 -43525975.58 0.0282 0.0015  
 Venus -123881-12-31 21:51 J -43525746.79 -43525746.59 -43525746.38 0.0279 0.0033  
 Venus -123880-08-18 01:13 J -43525517.65 -43525517.45 -43525517.24 0.0276 0.0050  
 Venus -123879-04-04 03:23 J -43525288.55 -43525288.36 -43525288.15 0.0274 0.0067  
 Venus -123879-11-19 04:20 J -43525059.51 -43525059.32 -43525059.12 0.0271 0.0081

Venus -123878-07-06 04:20 J -43524830.51 -43524830.32 -43524830.12 0.0269 0.0094  
 Venus -123877-02-20 03:37 J -43524601.54 -43524601.35 -43524601.16 0.0267 0.0105  
 Venus -123877-10-06 02:25 J -43524372.59 -43524372.40 -43524372.21 0.0265 0.0115  
 Venus -123876-05-23 00:44 J -43524143.65 -43524143.47 -43524143.28 0.0263 0.0123  
 Venus -123875-01-06 23:03 J -43523914.72 -43523914.54 -43523914.35 0.0262 0.0129  
 Mars -123875-03-20 17:32 J -43523841.88 -43523841.77 -43523841.62 0.0261 0.0230  
 Venus -123875-08-23 21:08 J -43523685.79 -43523685.62 -43523685.42 0.0261 0.0135  
 Mercury -123874-01-25 00:59 J -43523531.60 -43523531.46 -43523531.31 0.0260 0.0160  
 Venus -123874-04-09 19:56 J -43523456.85 -43523456.67 -43523456.48 0.0260 0.0137  
 Mercury -123874-04-23 20:11 J -43523442.84 -43523442.66 -43523442.48 0.0260 0.0052  
 Mercury -123874-07-21 15:37 J -43523354.03 -43523353.85 -43523353.67 0.0260 0.0057  
 Mercury -123874-10-18 11:03 J -43523265.18 -43523265.04 -43523264.89 0.0259 0.0166  
 Venus -123874-11-24 18:44 J -43523227.89 -43523227.72 -43523227.53 0.0259 0.0139  
 Venus -123873-07-10 18:15 J -43522998.91 -43522998.74 -43522998.54 0.0259 0.0139  
 Venus -123872-02-24 18:59 J -43522769.89 -43522769.71 -43522769.52 0.0259 0.0135  
 Venus -123872-10-11 20:11 J -43522540.84 -43522540.66 -43522540.46 0.0259 0.0132  
 Venus -123871-05-28 23:03 J -43522311.73 -43522311.54 -43522311.35 0.0260 0.0125  
 Venus -123870-01-13 02:54 J -43522082.58 -43522082.38 -43522082.18 0.0261 0.0118  
 Venus -123870-08-30 07:56 J -43521853.36 -43521853.17 -43521852.96 0.0262 0.0110  
 Venus -123869-04-15 14:54 J -43521624.08 -43521623.88 -43521623.67 0.0264 0.0098  
 Venus -123869-11-30 23:32 J -43521394.73 -43521394.52 -43521394.31 0.0265 0.0086  
 Venus -123868-07-18 10:06 J -43521165.30 -43521165.08 -43521164.87 0.0267 0.0072  
 Venus -123867-03-04 22:06 J -43520935.79 -43520935.58 -43520935.36 0.0270 0.0057  
 Venus -123867-10-20 12:15 J -43520706.21 -43520705.99 -43520705.77 0.0272 0.0039  
 Venus -123866-06-07 04:06 J -43520476.54 -43520476.33 -43520476.10 0.0275 0.0022  
 Venus -123865-01-22 22:06 J -43520246.80 -43520246.58 -43520246.36 0.0277 0.0004  
 Venus -123865-09-08 18:01 J -43520016.96 -43520016.75 -43520016.53 0.0280 0.0020  
 Venus -123864-04-26 15:51 J -43519787.06 -43519786.84 -43519786.62 0.0284 0.0039  
 Venus -123864-12-12 15:08 J -43519557.08 -43519556.87 -43519556.65 0.0287 0.0060  
 Venus -123863-07-30 16:06 J -43519327.04 -43519326.83 -43519326.62 0.0290 0.0080

Venus -123862-03-17 18:01 J -43519096.94 -43519096.75 -43519096.54 0.0293 0.0099  
 Venus -123862-11-02 21:23 J -43518866.80 -43518866.61 -43518866.41 0.0295 0.0115  
 Moon -123861-01-05 05:47 J -43518803.49 -43518803.26 -43518803.02 0.0296 0.0090  
 Earth -123861-01-05 08:54 J -43518803.35 -43518803.13 -43518802.90 0.0296 0.0105 \*  
 Venus -123861-06-20 01:13 J -43518636.64 -43518636.45 -43518636.26 0.0298 0.0130  
 Venus -123860-02-05 05:03 J -43518406.47 -43518406.29 -43518406.10 0.0300 0.0142  
 Venus -123860-09-23 08:54 J -43518176.30 -43518176.13 -43518175.94 0.0302 0.0151  
 Mercury -123859-02-18 19:42 J -43518027.78 -43518027.68 -43518027.57 0.0302 0.0180  
 Venus -123859-05-11 12:30 J -43517946.16 -43517945.98 -43517945.80 0.0303 0.0155  
 Mercury -123859-05-18 09:23 J -43517939.24 -43517939.11 -43517938.98 0.0303 0.0055  
 Mercury -123859-08-14 22:49 J -43517850.67 -43517850.55 -43517850.42 0.0303 0.0069  
 Mercury -123859-11-11 12:15 J -43517762.09 -43517761.99 -43517761.89 0.0303 0.0191  
 Venus -123859-12-27 15:08 J -43517716.05 -43517715.87 -43517715.69 0.0304 0.0155  
 Venus -123858-08-14 16:35 J -43517485.99 -43517485.81 -43517485.64 0.0304 0.0152  
 Venus -123857-03-31 16:20 J -43517256.00 -43517255.82 -43517255.64 0.0303 0.0145  
 Venus -123857-11-16 14:39 J -43517026.08 -43517025.89 -43517025.71 0.0302 0.0133  
 Venus -123856-07-04 10:49 J -43516796.23 -43516796.05 -43516795.86 0.0301 0.0119  
 Venus -123855-02-19 05:03 J -43516566.48 -43516566.29 -43516566.09 0.0299 0.0103  
 Venus -123855-10-06 21:08 J -43516336.81 -43516336.62 -43516336.42 0.0296 0.0084  
 Venus -123854-05-24 11:18 J -43516107.23 -43516107.03 -43516106.83 0.0294 0.0064  
 Venus -123853-01-08 23:03 J -43515877.74 -43515877.54 -43515877.34 0.0291 0.0044  
 Venus -123853-08-25 08:54 J -43515648.33 -43515648.13 -43515647.92 0.0288 0.0024  
 Venus -123852-04-11 17:03 J -43515419.00 -43515418.79 -43515418.59 0.0285 0.0005  
 Venus -123852-11-26 23:03 J -43515189.74 -43515189.54 -43515189.33 0.0282 0.0018  
 Venus -123851-07-14 03:51 J -43514960.55 -43514960.34 -43514960.14 0.0279 0.0035  
 Venus -123850-02-28 06:59 J -43514731.41 -43514731.21 -43514731.01 0.0276 0.0052  
 Venus -123850-10-15 08:54 J -43514502.33 -43514502.13 -43514501.93 0.0273 0.0068  
 Venus -123849-05-31 09:37 J -43514273.30 -43514273.10 -43514272.90 0.0271 0.0082  
 Venus -123848-01-15 09:23 J -43514044.30 -43514044.11 -43514043.91 0.0268 0.0094  
 Moon -123848-06-25 08:54 J -43513883.37 -43513883.13 -43513882.89 0.0267 0.0005

Earth -123848-06-25 11:03 J -43513883.29 -43513883.04 -43513882.79 0.0267 0.0006 \*  
 Venus -123848-09-01 08:39 J -43513815.33 -43513815.14 -43513814.94 0.0266 0.0105  
 Venus -123847-04-18 07:27 J -43513586.37 -43513586.19 -43513585.99 0.0264 0.0115  
 Mars -123847-05-13 12:15 J -43513561.24 -43513560.99 -43513560.73 0.0264 0.0107  
 Venus -123847-12-03 06:01 J -43513357.44 -43513357.25 -43513357.06 0.0263 0.0122  
 Venus -123846-07-20 04:20 J -43513128.51 -43513128.32 -43513128.13 0.0261 0.0128  
 Venus -123845-03-05 02:25 J -43512899.58 -43512899.40 -43512899.21 0.0260 0.0132  
 Mercury -123845-06-13 01:42 J -43512799.55 -43512799.43 -43512799.30 0.0260 0.0186  
 Mercury -123845-09-09 20:54 J -43512710.80 -43512710.63 -43512710.45 0.0259 0.0078  
 Venus -123845-10-20 01:13 J -43512670.63 -43512670.45 -43512670.26 0.0259 0.0134  
 Mercury -123845-12-07 16:20 J -43512622.00 -43512621.82 -43512621.63 0.0259 0.0031  
 Mercury -123844-03-06 11:47 J -43512533.16 -43512533.01 -43512532.85 0.0259 0.0140  
 Mercury -123844-06-03 07:27 J -43512444.23 -43512444.19 -43512444.14 0.0259 0.0250  
 Venus -123844-06-06 00:15 J -43512441.66 -43512441.49 -43512441.29 0.0259 0.0136  
 Venus -123843-01-21 00:15 J -43512212.67 -43512212.49 -43512212.30 0.0259 0.0135  
 Venus -123843-09-07 00:44 J -43511983.65 -43511983.47 -43511983.27 0.0259 0.0133  
 Venus -123842-04-24 02:25 J -43511754.59 -43511754.40 -43511754.21 0.0259 0.0128  
 Venus -123842-12-09 05:03 J -43511525.48 -43511525.29 -43511525.09 0.0260 0.0123  
 Venus -123841-07-25 09:23 J -43511296.31 -43511296.11 -43511295.91 0.0261 0.0115  
 Venus -123840-03-11 14:39 J -43511067.08 -43511066.89 -43511066.68 0.0262 0.0107  
 Venus -123840-10-26 21:51 J -43510837.80 -43510837.59 -43510837.38 0.0264 0.0096  
 Venus -123839-06-13 06:30 J -43510608.44 -43510608.23 -43510608.02 0.0266 0.0083  
 Venus -123838-01-28 17:03 J -43510379.00 -43510378.79 -43510378.57 0.0268 0.0069  
 Venus -123838-09-15 05:18 J -43510149.49 -43510149.28 -43510149.06 0.0270 0.0054  
 Venus -123837-05-01 19:42 J -43509919.90 -43509919.68 -43509919.46 0.0273 0.0037  
 Venus -123837-12-17 11:47 J -43509690.23 -43509690.01 -43509689.79 0.0275 0.0019  
 Venus -123836-08-04 06:01 J -43509460.47 -43509460.25 -43509460.03 0.0278 0.0005  
 Venus -123835-03-22 02:11 J -43509230.63 -43509230.41 -43509230.19 0.0281 0.0021  
 Venus -123835-11-07 00:01 J -43509000.72 -43509000.50 -43509000.28 0.0284 0.0042  
 Venus -123834-06-24 23:18 J -43508770.74 -43508770.53 -43508770.31 0.0287 0.0063

Venus -123833-02-10 00:15 J -43508540.69 -43508540.49 -43508540.28 0.0290 0.0082

Venus -123833-09-27 02:39 J -43508310.59 -43508310.39 -43508310.19 0.0293 0.0100

Venus -123832-05-15 05:47 J -43508080.46 -43508080.26 -43508080.06 0.0296 0.0117

Venus -123832-12-31 09:23 J -43507850.30 -43507850.11 -43507849.92 0.0298 0.0131

Mars -123831-04-29 22:20 J -43507730.88 -43507730.57 -43507730.27 0.0299 0.0012

Venus -123831-08-18 13:27 J -43507620.13 -43507619.94 -43507619.76 0.0300 0.0142

Venus -123830-04-05 17:03 J -43507389.97 -43507389.79 -43507389.60 0.0302 0.0149

Mercury -123830-07-08 21:51 J -43507295.69 -43507295.59 -43507295.50 0.0302 0.0212

Mercury -123830-10-05 11:32 J -43507207.15 -43507207.02 -43507206.90 0.0303 0.0088

Venus -123830-11-21 20:25 J -43507159.82 -43507159.65 -43507159.47 0.0303 0.0152

Mercury -123829-01-02 00:59 J -43507118.59 -43507118.46 -43507118.33 0.0303 0.0035

Mercury -123829-03-30 14:25 J -43507030.01 -43507029.90 -43507029.79 0.0303 0.0158

Mercury -123829-06-27 03:37 J -43506941.39 -43506941.35 -43506941.30 0.0303 0.0280

Venus -123829-07-08 22:49 J -43506929.72 -43506929.55 -43506929.37 0.0303 0.0152

Venus -123828-02-24 00:01 J -43506699.68 -43506699.50 -43506699.32 0.0303 0.0147

Venus -123828-10-11 23:32 J -43506469.69 -43506469.52 -43506469.33 0.0303 0.0140

Venus -123827-05-29 21:37 J -43506239.78 -43506239.60 -43506239.42 0.0301 0.0128

Venus -123826-01-14 17:32 J -43506009.95 -43506009.77 -43506009.58 0.0300 0.0114

Venus -123826-09-01 11:32 J -43505780.21 -43505780.02 -43505779.83 0.0298 0.0097

Venus -123825-04-18 03:08 J -43505550.56 -43505550.37 -43505550.17 0.0296 0.0079

Venus -123825-12-03 16:49 J -43505321.00 -43505320.80 -43505320.60 0.0293 0.0059

Venus -123824-07-21 04:35 J -43505091.52 -43505091.31 -43505091.11 0.0290 0.0039

Venus -123823-03-07 14:11 J -43504862.11 -43504861.91 -43504861.70 0.0287 0.0020

Venus -123823-10-22 22:06 J -43504632.79 -43504632.58 -43504632.38 0.0284 0.0002

Venus -123822-06-09 04:06 J -43504403.54 -43504403.33 -43504403.13 0.0281 0.0020

Venus -123821-01-24 08:25 J -43504174.35 -43504174.15 -43504173.94 0.0278 0.0038

Venus -123821-09-09 11:32 J -43503945.22 -43503945.02 -43503944.82 0.0276 0.0054

Venus -123820-04-26 13:27 J -43503716.14 -43503715.94 -43503715.74 0.0273 0.0070

Venus -123820-12-11 14:11 J -43503487.10 -43503486.91 -43503486.71 0.0271 0.0084

Venus -123819-07-28 13:56 J -43503258.11 -43503257.92 -43503257.72 0.0268 0.0097

Venus -123818-03-14 13:27 J -43503029.14 -43503028.94 -43503028.75 0.0266 0.0107  
 Venus -123818-10-29 12:15 J -43502800.18 -43502799.99 -43502799.80 0.0264 0.0116  
 Venus -123817-06-14 10:35 J -43502571.25 -43502571.06 -43502570.87 0.0263 0.0123  
 Mars -123817-06-28 19:56 J -43502556.92 -43502556.67 -43502556.39 0.0263 0.0080  
 Venus -123816-01-29 08:54 J -43502342.31 -43502342.13 -43502341.94 0.0262 0.0129  
 Venus -123816-09-15 07:27 J -43502113.37 -43502113.19 -43502113.01 0.0261 0.0133  
 Mercury -123816-10-31 02:11 J -43502067.51 -43502067.41 -43502067.30 0.0260 0.0212  
 Mercury -123815-01-27 21:37 J -43501978.77 -43501978.60 -43501978.43 0.0260 0.0104  
 Mercury -123815-04-26 16:49 J -43501889.98 -43501889.80 -43501889.61 0.0260 0.0006  
 Venus -123815-05-02 06:01 J -43501884.42 -43501884.25 -43501884.05 0.0260 0.0136  
 Mercury -123815-07-24 12:15 J -43501801.15 -43501800.99 -43501800.82 0.0260 0.0115  
 Mercury -123815-10-21 07:56 J -43501712.26 -43501712.17 -43501712.08 0.0259 0.0224  
 Venus -123815-12-17 05:18 J -43501655.45 -43501655.28 -43501655.08 0.0259 0.0137  
 Venus -123814-08-03 05:18 J -43501426.46 -43501426.28 -43501426.09 0.0259 0.0135  
 Venus -123813-03-19 06:01 J -43501197.43 -43501197.25 -43501197.05 0.0259 0.0133  
 Venus -123813-11-03 07:56 J -43500968.36 -43500968.17 -43500967.98 0.0260 0.0128  
 Venus -123812-06-20 11:03 J -43500739.23 -43500739.04 -43500738.84 0.0260 0.0122  
 Venus -123811-02-04 15:37 J -43500510.05 -43500509.85 -43500509.66 0.0261 0.0114  
 Venus -123811-09-21 21:08 J -43500280.82 -43500280.62 -43500280.41 0.0263 0.0104  
 Venus -123810-05-09 04:35 J -43500051.51 -43500051.31 -43500051.10 0.0264 0.0093  
 Venus -123810-12-24 13:42 J -43499822.14 -43499821.93 -43499821.72 0.0266 0.0080  
 Venus -123809-08-10 00:44 J -43499592.68 -43499592.47 -43499592.25 0.0268 0.0066  
 Venus -123808-03-27 13:27 J -43499363.15 -43499362.94 -43499362.72 0.0270 0.0051  
 Venus -123808-11-12 04:20 J -43499133.54 -43499133.32 -43499133.10 0.0273 0.0033  
 Venus -123807-06-29 20:54 J -43498903.85 -43498903.63 -43498903.41 0.0275 0.0015  
 Venus -123806-02-14 15:23 J -43498674.08 -43498673.86 -43498673.64 0.0278 0.0006  
 Venus -123806-10-02 11:47 J -43498444.23 -43498444.01 -43498443.79 0.0281 0.0025  
 Venus -123805-05-19 09:37 J -43498214.31 -43498214.10 -43498213.88 0.0284 0.0046  
 Venus -123804-01-04 09:23 J -43497984.32 -43497984.11 -43497983.89 0.0287 0.0065  
 Venus -123804-08-22 10:35 J -43497754.26 -43497754.06 -43497753.85 0.0290 0.0084



Venus -123803-04-09 12:59 J -43497524.16 -43497523.96 -43497523.75 0.0293 0.0102  
 Venus -123803-11-25 16:20 J -43497294.01 -43497293.82 -43497293.62 0.0296 0.0118  
 Earth -123802-01-07 02:11 J -43497251.55 -43497251.41 -43497251.26 0.0296 0.0238  
 Moon -123802-01-07 04:20 J -43497251.43 -43497251.32 -43497251.18 0.0296 0.0250 \*  
 Venus -123802-07-13 20:11 J -43497063.85 -43497063.66 -43497063.47 0.0298 0.0132  
 Venus -123801-02-29 00:01 J -43496833.68 -43496833.50 -43496833.31 0.0300 0.0142  
 Venus -123801-10-16 03:51 J -43496603.52 -43496603.34 -43496603.16 0.0302 0.0149  
 Mercury -123801-11-25 00:30 J -43496563.56 -43496563.48 -43496563.40 0.0302 0.0238  
 Mercury -123800-02-21 14:11 J -43496475.03 -43496474.91 -43496474.78 0.0303 0.0114  
 Mercury -123800-05-21 03:51 J -43496386.48 -43496386.34 -43496386.21 0.0303 0.0012  
 Venus -123800-06-03 06:59 J -43496373.39 -43496373.21 -43496373.03 0.0303 0.0153  
 Mercury -123800-08-17 17:03 J -43496297.90 -43496297.79 -43496297.66 0.0303 0.0134  
 Mercury -123800-11-14 06:30 J -43496209.30 -43496209.23 -43496209.16 0.0303 0.0255  
 Venus -123799-01-19 09:23 J -43496143.29 -43496143.11 -43496142.94 0.0303 0.0152  
 Venus -123799-09-06 10:06 J -43495913.26 -43495913.08 -43495912.90 0.0303 0.0147  
 Venus -123798-04-24 09:23 J -43495683.28 -43495683.11 -43495682.92 0.0303 0.0139  
 Venus -123798-12-10 07:13 J -43495453.38 -43495453.20 -43495453.01 0.0302 0.0127  
 Venus -123797-07-27 02:54 J -43495223.57 -43495223.38 -43495223.19 0.0300 0.0113  
 Venus -123796-03-13 20:25 J -43494993.84 -43494993.65 -43494993.45 0.0298 0.0096  
 Venus -123796-10-29 12:01 J -43494764.20 -43494764.00 -43494763.81 0.0296 0.0077  
 Venus -123795-06-16 01:27 J -43494534.64 -43494534.44 -43494534.24 0.0293 0.0057  
 Venus -123794-01-31 12:44 J -43494305.17 -43494304.97 -43494304.77 0.0290 0.0037  
 Venus -123794-09-17 22:06 J -43494075.78 -43494075.58 -43494075.38 0.0287 0.0017  
 Venus -123793-05-04 05:32 J -43493846.48 -43493846.27 -43493846.07 0.0284 0.0003  
 Venus -123793-12-19 11:18 J -43493617.24 -43493617.03 -43493616.83 0.0281 0.0022  
 Venus -123792-08-05 15:23 J -43493388.06 -43493387.86 -43493387.65 0.0278 0.0039  
 Venus -123791-03-22 18:15 J -43493158.94 -43493158.74 -43493158.53 0.0275 0.0056  
 Venus -123791-11-06 19:56 J -43492929.87 -43492929.67 -43492929.47 0.0273 0.0071  
 Venus -123790-06-23 20:25 J -43492700.85 -43492700.65 -43492700.45 0.0270 0.0084  
 Venus -123789-02-07 20:11 J -43492471.86 -43492471.66 -43492471.46 0.0268 0.0096

Earth	-123789-06-26 21:08 J	-43492331.85	-43492331.62	-43492331.38	0.0266	0.0093
Moon	-123789-06-26 23:32 J	-43492331.76	-43492331.52	-43492331.27	0.0266	0.0081 *
Venus	-123789-09-23 19:13 J	-43492242.89	-43492242.70	-43492242.50	0.0266	0.0107
Venus	-123788-05-10 18:01 J	-43492013.93	-43492013.75	-43492013.55	0.0264	0.0115
Venus	-123788-12-25 16:35 J	-43491784.99	-43491784.81	-43491784.62	0.0262	0.0122
Venus	-123787-08-11 14:54 J	-43491556.06	-43491555.88	-43491555.69	0.0261	0.0127
Mars	-123787-08-15 03:08 J	-43491552.42	-43491552.37	-43491552.30	0.0261	0.0254
Mercury	-123786-03-20 03:37 J	-43491335.43	-43491335.35	-43491335.27	0.0260	0.0234
Venus	-123786-03-28 13:27 J	-43491327.12	-43491326.94	-43491326.75	0.0260	0.0131
Mercury	-123786-06-16 22:49 J	-43491246.71	-43491246.55	-43491246.39	0.0260	0.0127
Mercury	-123786-09-13 18:01 J	-43491157.93	-43491157.75	-43491157.57	0.0260	0.0019
Venus	-123786-11-12 12:30 J	-43491098.17	-43491097.98	-43491097.80	0.0259	0.0133
Mercury	-123786-12-11 13:27 J	-43491069.11	-43491068.94	-43491068.76	0.0259	0.0090
Mercury	-123785-03-09 08:54 J	-43490980.24	-43490980.13	-43490980.00	0.0259	0.0200
Venus	-123785-06-28 11:47 J	-43490869.19	-43490869.01	-43490868.82	0.0259	0.0133
Venus	-123784-02-12 12:01 J	-43490640.19	-43490640.00	-43490639.81	0.0259	0.0132
Venus	-123784-09-29 12:59 J	-43490411.15	-43490410.96	-43490410.77	0.0259	0.0129
Venus	-123783-05-16 14:54 J	-43490182.07	-43490181.88	-43490181.68	0.0260	0.0125
Venus	-123783-12-31 18:15 J	-43489952.94	-43489952.74	-43489952.54	0.0260	0.0119
Venus	-123782-08-17 22:49 J	-43489723.75	-43489723.55	-43489723.35	0.0262	0.0111
Venus	-123781-04-03 04:35 J	-43489494.50	-43489494.31	-43489494.10	0.0263	0.0102
Venus	-123781-11-18 12:15 J	-43489265.19	-43489264.99	-43489264.77	0.0265	0.0091
Venus	-123780-07-05 21:51 J	-43489035.80	-43489035.59	-43489035.37	0.0266	0.0078
Venus	-123779-02-20 09:08 J	-43488806.34	-43488806.12	-43488805.90	0.0269	0.0063
Venus	-123779-10-07 22:06 J	-43488576.80	-43488576.58	-43488576.36	0.0271	0.0048
Venus	-123778-05-25 12:59 J	-43488347.18	-43488346.96	-43488346.74	0.0274	0.0031
Venus	-123777-01-10 05:47 J	-43488117.48	-43488117.26	-43488117.04	0.0276	0.0013
Venus	-123777-08-27 00:44 J	-43487887.69	-43487887.47	-43487887.25	0.0279	0.0008
Venus	-123776-04-13 21:23 J	-43487657.83	-43487657.61	-43487657.39	0.0282	0.0028
Venus	-123776-11-29 19:42 J	-43487427.89	-43487427.68	-43487427.46	0.0285	0.0048

Venus -123775-07-17 19:42 J -43487197.89 -43487197.68 -43487197.47 0.0288 0.0068  
 Venus -123774-03-04 20:54 J -43486967.83 -43486967.63 -43486967.42 0.0291 0.0087  
 Venus -123774-10-20 23:32 J -43486737.72 -43486737.52 -43486737.32 0.0294 0.0104  
 Earth -123773-01-01 09:23 J -43486665.29 -43486665.11 -43486664.92 0.0295 0.0190  
 Moon -123773-01-01 12:44 J -43486665.14 -43486664.97 -43486664.79 0.0295 0.0206 \*  
 Venus -123773-06-07 02:39 J -43486507.58 -43486507.39 -43486507.19 0.0296 0.0120  
 Mars -123773-08-01 05:47 J -43486452.37 -43486452.26 -43486452.14 0.0297 0.0272  
 Venus -123772-01-23 06:15 J -43486277.42 -43486277.24 -43486277.04 0.0299 0.0133  
 Venus -123772-09-10 10:20 J -43486047.26 -43486047.07 -43486046.89 0.0301 0.0142  
 Mercury -123771-04-14 03:08 J -43485831.43 -43485831.37 -43485831.31 0.0302 0.0266  
 Venus -123771-04-28 13:56 J -43485817.10 -43485816.92 -43485816.74 0.0302 0.0148  
 Mercury -123771-07-11 16:49 J -43485742.92 -43485742.80 -43485742.68 0.0302 0.0142  
 Mercury -123771-10-08 06:30 J -43485654.37 -43485654.23 -43485654.10 0.0303 0.0019  
 Venus -123771-12-14 17:03 J -43485586.97 -43485586.79 -43485586.61 0.0303 0.0150  
 Mercury -123770-01-04 19:56 J -43485565.80 -43485565.67 -43485565.55 0.0303 0.0105  
 Mercury -123770-04-03 09:08 J -43485477.20 -43485477.12 -43485477.03 0.0303 0.0227  
 Venus -123770-08-01 18:59 J -43485356.89 -43485356.71 -43485356.53 0.0303 0.0149  
 Venus -123769-03-18 19:27 J -43485126.86 -43485126.69 -43485126.50 0.0303 0.0143  
 Venus -123769-11-03 18:30 J -43484896.90 -43484896.73 -43484896.54 0.0302 0.0135  
 Venus -123768-06-21 15:51 J -43484667.02 -43484666.84 -43484666.65 0.0301 0.0122  
 Venus -123767-02-06 11:18 J -43484437.21 -43484437.03 -43484436.83 0.0299 0.0107  
 Venus -123767-09-24 04:35 J -43484207.50 -43484207.31 -43484207.11 0.0297 0.0090  
 Venus -123766-05-11 19:42 J -43483977.88 -43483977.68 -43483977.49 0.0295 0.0072  
 Venus -123766-12-27 08:39 J -43483748.34 -43483748.14 -43483747.94 0.0292 0.0052  
 Venus -123765-08-12 19:27 J -43483518.89 -43483518.69 -43483518.49 0.0289 0.0033  
 Venus -123764-03-30 04:35 J -43483289.51 -43483289.31 -43483289.11 0.0286 0.0013  
 Venus -123764-11-14 11:47 J -43483060.22 -43483060.01 -43483059.81 0.0283 0.0007  
 Venus -123763-07-01 17:03 J -43482830.99 -43482830.79 -43482830.58 0.0280 0.0026  
 Venus -123762-02-15 21:08 J -43482601.82 -43482601.62 -43482601.41 0.0278 0.0042  
 Venus -123762-10-02 23:47 J -43482372.71 -43482372.51 -43482372.30 0.0275 0.0058

Venus -123761-05-19 01:13 J -43482143.65 -43482143.45 -43482143.25 0.0272 0.0072  
 Venus -123760-01-03 01:42 J -43481914.62 -43481914.43 -43481914.23 0.0270 0.0086  
 Moon -123760-06-21 23:32 J -43481744.66 -43481744.52 -43481744.35 0.0268 0.0213  
 Earth -123760-06-22 00:30 J -43481744.61 -43481744.48 -43481744.36 0.0268 0.0229 \*  
 Venus -123760-08-20 01:27 J -43481685.63 -43481685.44 -43481685.24 0.0268 0.0097  
 Venus -123759-04-06 00:30 J -43481456.66 -43481456.48 -43481456.28 0.0266 0.0108  
 Mars -123759-10-07 21:08 J -43481271.88 -43481271.62 -43481271.35 0.0264 0.0077  
 Venus -123759-11-20 23:18 J -43481227.72 -43481227.53 -43481227.34 0.0264 0.0116  
 Venus -123758-07-07 21:37 J -43480998.78 -43480998.60 -43480998.40 0.0262 0.0123  
 Venus -123757-02-21 19:56 J -43480769.85 -43480769.67 -43480769.47 0.0261 0.0128  
 Mercury -123757-08-06 04:20 J -43480603.33 -43480603.32 -43480603.30 0.0261 0.0259  
 Venus -123757-10-07 18:44 J -43480540.90 -43480540.72 -43480540.53 0.0260 0.0132  
 Mercury -123757-11-02 23:18 J -43480514.67 -43480514.53 -43480514.37 0.0260 0.0152  
 Mercury -123756-01-30 18:44 J -43480425.90 -43480425.72 -43480425.54 0.0260 0.0044  
 Mercury -123756-04-29 14:11 J -43480337.09 -43480336.91 -43480336.73 0.0260 0.0066  
 Venus -123756-05-24 17:47 J -43480311.94 -43480311.76 -43480311.57 0.0260 0.0134  
 Mercury -123756-07-27 09:37 J -43480248.23 -43480248.10 -43480247.96 0.0260 0.0175  
 Venus -123755-01-08 17:18 J -43480082.96 -43480082.78 -43480082.59 0.0259 0.0134  
 Venus -123755-08-25 17:32 J -43479853.95 -43479853.77 -43479853.58 0.0259 0.0132  
 Venus -123754-04-11 18:30 J -43479624.91 -43479624.73 -43479624.53 0.0260 0.0129  
 Venus -123754-11-26 20:54 J -43479395.82 -43479395.63 -43479395.44 0.0260 0.0124  
 Venus -123753-07-13 00:15 J -43479166.68 -43479166.49 -43479166.28 0.0261 0.0118  
 Venus -123752-02-27 05:18 J -43478937.48 -43478937.28 -43478937.08 0.0262 0.0109  
 Venus -123752-10-14 11:32 J -43478708.22 -43478708.02 -43478707.81 0.0263 0.0100  
 Venus -123751-05-31 19:42 J -43478478.89 -43478478.68 -43478478.47 0.0265 0.0088  
 Venus -123750-01-16 05:18 J -43478249.49 -43478249.28 -43478249.06 0.0267 0.0075  
 Venus -123750-09-02 17:03 J -43478020.01 -43478019.79 -43478019.57 0.0269 0.0060  
 Venus -123749-04-19 06:30 J -43477790.45 -43477790.23 -43477790.01 0.0271 0.0044  
 Venus -123749-12-04 21:51 J -43477560.81 -43477560.59 -43477560.37 0.0274 0.0027  
 Venus -123748-07-22 15:08 J -43477331.09 -43477330.87 -43477330.65 0.0276 0.0009

Venus -123747-03-09 10:20 J -43477101.29 -43477101.07 -43477100.85 0.0279 0.0011

Venus -123747-10-25 07:13 J -43476871.42 -43476871.20 -43476870.98 0.0282 0.0030

Venus -123746-06-12 05:47 J -43476641.48 -43476641.26 -43476641.05 0.0285 0.0050

Venus -123745-01-28 05:47 J -43476411.47 -43476411.26 -43476411.05 0.0288 0.0069

Venus -123745-09-14 07:27 J -43476181.39 -43476181.19 -43476180.98 0.0291 0.0088

Venus -123744-05-02 10:06 J -43475951.28 -43475951.08 -43475950.88 0.0294 0.0105

Venus -123744-12-18 13:27 J -43475721.13 -43475720.94 -43475720.74 0.0297 0.0120

Venus -123743-08-05 17:18 J -43475490.97 -43475490.78 -43475490.59 0.0299 0.0132

Mars -123743-09-25 12:15 J -43475440.29 -43475439.99 -43475439.68 0.0299 0.0042

Venus -123742-03-23 20:54 J -43475260.81 -43475260.63 -43475260.44 0.0301 0.0142

Mercury -123742-09-01 05:47 J -43475099.28 -43475099.26 -43475099.22 0.0302 0.0292

Venus -123742-11-09 00:44 J -43475030.65 -43475030.47 -43475030.29 0.0302 0.0147

Mercury -123742-11-28 19:42 J -43475010.79 -43475010.68 -43475010.57 0.0302 0.0168

Mercury -123741-02-25 09:08 J -43474922.25 -43474922.12 -43474921.98 0.0303 0.0045

Mercury -123741-05-23 22:49 J -43474833.68 -43474833.55 -43474833.43 0.0303 0.0080

Venus -123741-06-26 03:23 J -43474800.53 -43474800.36 -43474800.17 0.0303 0.0150

Mercury -123741-08-20 12:01 J -43474745.09 -43474745.00 -43474744.90 0.0303 0.0202

Venus -123740-02-11 05:18 J -43474570.45 -43474570.28 -43474570.10 0.0303 0.0148

Venus -123740-09-29 05:47 J -43474340.44 -43474340.26 -43474340.08 0.0303 0.0142

Venus -123739-05-17 04:35 J -43474110.49 -43474110.31 -43474110.12 0.0302 0.0133

Venus -123738-01-02 01:42 J -43473880.61 -43473880.43 -43473880.24 0.0301 0.0121

Venus -123738-08-19 20:54 J -43473650.82 -43473650.63 -43473650.44 0.0299 0.0106

Venus -123737-04-05 13:42 J -43473421.12 -43473420.93 -43473420.74 0.0297 0.0089

Venus -123737-11-21 04:35 J -43473191.51 -43473191.31 -43473191.12 0.0295 0.0070

Venus -123736-07-08 17:03 J -43472961.98 -43472961.79 -43472961.58 0.0292 0.0051

Venus -123735-02-23 04:06 J -43472732.53 -43472732.33 -43472732.13 0.0289 0.0031

Venus -123735-10-10 12:44 J -43472503.17 -43472502.97 -43472502.77 0.0286 0.0011

Venus -123734-05-27 19:27 J -43472273.89 -43472273.69 -43472273.48 0.0283 0.0010

Venus -123733-01-12 00:44 J -43472044.67 -43472044.47 -43472044.27 0.0280 0.0026

Venus -123733-08-28 04:20 J -43471815.52 -43471815.32 -43471815.11 0.0277 0.0044

Venus -123732-04-14 06:59 J -43471586.41 -43471586.21 -43471586.01 0.0274 0.0059  
 Venus -123732-11-29 08:11 J -43471357.36 -43471357.16 -43471356.96 0.0272 0.0074  
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Venus -123703-03-10 10:49 J -43461029.25 -43461029.05 -43461028.84 0.0277 0.0045  
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 Mercury -123698-11-06 20:39 J -43458961.81 -43458961.64 -43458961.46 0.0260 0.0092  
 Mercury -123697-02-03 16:06 J -43458873.01 -43458872.83 -43458872.64 0.0260 0.0018  
 Mercury -123697-05-02 11:32 J -43458784.18 -43458784.02 -43458783.85 0.0260 0.0127  
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 Venus -123691-02-07 21:08 J -43456676.84 -43456676.62 -43456676.41 0.0267 0.0070  
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 Venus -123690-05-12 23:18 J -43456217.75 -43456217.53 -43456217.31 0.0272 0.0039



Venus -123690-12-28 15:22 J -43455988.08 -43455987.86 -43455987.64 0.0275 0.0022  
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 Venus -123683-04-15 18:44 J -43453687.90 -43453687.72 -43453687.53 0.0301 0.0141  
 Mercury -123683-09-04 01:13 J -43453546.54 -43453546.45 -43453546.36 0.0302 0.0220  
 Mercury -123683-12-01 14:54 J -43453458.01 -43453457.88 -43453457.75 0.0302 0.0096  
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 Mercury -123682-05-27 17:46 J -43453280.87 -43453280.76 -43453280.64 0.0303 0.0150  
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Venus -123674-02-03 15:08 J -43450472.07 -43450471.87 -43450471.66 0.0279 0.0031

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Venus -123672-08-07 21:08 J -43449555.82 -43449555.62 -43449555.42 0.0269 0.0088

Venus -123671-03-24 20:25 J -43449326.84 -43449326.65 -43449326.45 0.0267 0.0098

Venus -123671-11-08 19:13 J -43449097.89 -43449097.70 -43449097.50 0.0265 0.0107

Mars -123670-03-04 16:06 J -43448982.10 -43448981.83 -43448981.55 0.0264 0.0049

Venus -123670-06-25 17:46 J -43448868.95 -43448868.76 -43448868.57 0.0263 0.0114

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Mercury -123669-12-27 02:54 J -43448318.47 -43448318.38 -43448318.28 0.0260 0.0221

Mercury -123668-03-25 22:06 J -43448229.74 -43448229.58 -43448229.41 0.0260 0.0114

Venus -123668-05-12 13:27 J -43448182.13 -43448181.94 -43448181.75 0.0260 0.0127

Mercury -123668-06-22 17:32 J -43448140.96 -43448140.77 -43448140.59 0.0260 0.0006

Mercury -123668-09-19 12:58 J -43448052.13 -43448051.96 -43448051.79 0.0259 0.0103

Mercury -123668-12-17 08:25 J -43447963.25 -43447963.15 -43447963.04 0.0259 0.0213

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Venus -123667-08-13 12:30 J -43447724.17 -43447723.98 -43447723.79 0.0259 0.0127

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Venus -123664-02-14 21:22 J -43446807.80 -43446807.61 -43446807.40 0.0261 0.0110

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Venus -123663-05-19 10:06 J -43446349.29 -43446349.08 -43446348.87 0.0264 0.0091

Venus -123662-01-03 18:44 J -43446119.92 -43446119.72 -43446119.50 0.0266 0.0080

Venus -123662-08-21 05:32 J -43445890.48 -43445890.27 -43445890.05 0.0268 0.0067

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 Mercury -123652-01-10 09:51 J -43442460.16 -43442460.09 -43442460.01 0.0303 0.0245  
 Venus -123652-01-29 11:03 J -43442441.21 -43442441.04 -43442440.85 0.0303 0.0144  
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 Venus -123650-08-07 06:15 J -43441521.43 -43441521.24 -43441521.05 0.0300 0.0109  
 Venus -123649-03-24 00:15 J -43441291.68 -43441291.49 -43441291.29 0.0298 0.0093  
 Venus -123649-11-08 16:06 J -43441062.02 -43441061.83 -43441061.63 0.0296 0.0077  
 Venus -123648-06-26 06:01 J -43440832.45 -43440832.25 -43440832.05 0.0293 0.0058  
 Venus -123647-02-10 17:46 J -43440602.96 -43440602.76 -43440602.56 0.0290 0.0039  
 Venus -123647-09-28 03:22 J -43440373.56 -43440373.36 -43440373.16 0.0287 0.0020  
 Venus -123646-05-15 11:03 J -43440144.24 -43440144.04 -43440143.84 0.0284 0.0002

Venus	-123646-12-30 16:49 J	-43439915.00	-43439914.80	-43439914.59	0.0281	0.0017
Venus	-123645-08-15 21:22 J	-43439685.82	-43439685.61	-43439685.41	0.0278	0.0033
Venus	-123644-04-02 00:30 J	-43439456.69	-43439456.48	-43439456.28	0.0276	0.0049
Venus	-123644-11-17 02:10 J	-43439227.61	-43439227.41	-43439227.21	0.0273	0.0063
Venus	-123643-07-04 02:39 J	-43438998.58	-43438998.39	-43438998.18	0.0270	0.0077
Venus	-123642-02-18 02:25 J	-43438769.59	-43438769.40	-43438769.20	0.0268	0.0088
Earth	-123642-06-26 01:42 J	-43438641.67	-43438641.43	-43438641.18	0.0267	0.0020
Moon	-123642-06-26 02:25 J	-43438641.65	-43438641.40	-43438641.14	0.0267	0.0031 *
Venus	-123642-10-05 01:42 J	-43438540.62	-43438540.43	-43438540.23	0.0266	0.0098
Venus	-123641-05-21 00:30 J	-43438311.67	-43438311.48	-43438311.28	0.0264	0.0107
Venus	-123640-01-04 23:03 J	-43438082.74	-43438082.54	-43438082.35	0.0263	0.0114
Mars	-123640-04-20 00:44 J	-43437977.70	-43437977.47	-43437977.22	0.0262	0.0134
Venus	-123640-08-21 21:22 J	-43437853.80	-43437853.61	-43437853.42	0.0262	0.0120
Venus	-123639-04-07 19:42 J	-43437624.87	-43437624.68	-43437624.49	0.0261	0.0124
Mercury	-123639-05-16 03:37 J	-43437586.40	-43437586.35	-43437586.29	0.0260	0.0246
Mercury	-123639-08-12 22:49 J	-43437497.70	-43437497.55	-43437497.39	0.0260	0.0139
Mercury	-123639-11-09 18:01 J	-43437408.93	-43437408.75	-43437408.56	0.0260	0.0031
Venus	-123639-11-22 18:15 J	-43437395.92	-43437395.74	-43437395.55	0.0260	0.0127
Mercury	-123638-02-06 13:27 J	-43437320.12	-43437319.94	-43437319.76	0.0260	0.0078
Mercury	-123638-05-06 09:08 J	-43437231.25	-43437231.12	-43437231.00	0.0260	0.0187
Venus	-123638-07-09 17:32 J	-43437166.96	-43437166.77	-43437166.58	0.0259	0.0128
Venus	-123637-02-23 17:18 J	-43436937.97	-43436937.78	-43436937.59	0.0259	0.0127
Venus	-123637-10-09 17:46 J	-43436708.94	-43436708.76	-43436708.56	0.0259	0.0126
Venus	-123636-05-26 19:42 J	-43436479.87	-43436479.68	-43436479.48	0.0260	0.0121
Venus	-123635-01-10 22:34 J	-43436250.75	-43436250.56	-43436250.36	0.0261	0.0116
Venus	-123635-08-28 02:39 J	-43436021.58	-43436021.39	-43436021.18	0.0262	0.0109
Venus	-123634-04-14 08:25 J	-43435792.35	-43435792.15	-43435791.94	0.0263	0.0100
Venus	-123634-11-29 15:51 J	-43435563.05	-43435562.84	-43435562.64	0.0264	0.0090
Venus	-123633-07-16 00:58 J	-43435333.67	-43435333.46	-43435333.25	0.0266	0.0078
Venus	-123632-03-02 12:01 J	-43435104.22	-43435104.00	-43435103.79	0.0268	0.0065

Venus -123632-10-18 00:44 J -43434874.69 -43434874.47 -43434874.26 0.0270 0.0050  
 Venus -123631-06-04 15:22 J -43434645.08 -43434644.86 -43434644.64 0.0273 0.0034  
 Venus -123630-01-20 07:56 J -43434415.39 -43434415.17 -43434414.95 0.0275 0.0016  
 Venus -123630-09-07 02:39 J -43434185.61 -43434185.39 -43434185.17 0.0278 0.0002  
 Venus -123629-04-23 23:03 J -43433955.76 -43433955.54 -43433955.32 0.0281 0.0021  
 Venus -123629-12-09 21:08 J -43433725.83 -43433725.62 -43433725.40 0.0284 0.0039  
 Venus -123628-07-27 20:54 J -43433495.84 -43433495.63 -43433495.42 0.0287 0.0058  
 Venus -123627-03-14 21:51 J -43433265.79 -43433265.59 -43433265.38 0.0290 0.0076  
 Venus -123627-10-31 00:15 J -43433035.69 -43433035.49 -43433035.28 0.0293 0.0093  
 Venus -123626-06-18 03:22 J -43432805.55 -43432805.36 -43432805.16 0.0296 0.0108  
 Venus -123625-02-03 07:13 J -43432575.39 -43432575.20 -43432575.01 0.0298 0.0121  
 Venus -123625-09-20 11:18 J -43432345.22 -43432345.03 -43432344.85 0.0300 0.0131  
 Venus -123624-05-08 14:54 J -43432115.06 -43432114.88 -43432114.69 0.0302 0.0139  
 Mercury -123624-06-10 06:15 J -43432082.29 -43432082.24 -43432082.18 0.0302 0.0276  
 Mercury -123624-09-06 20:10 J -43431993.78 -43431993.66 -43431993.55 0.0302 0.0152  
 Mercury -123624-12-04 09:37 J -43431905.23 -43431905.10 -43431904.96 0.0303 0.0029  
 Venus -123624-12-24 18:15 J -43431884.91 -43431884.74 -43431884.55 0.0303 0.0142  
 Mercury -123623-03-02 23:03 J -43431816.66 -43431816.54 -43431816.41 0.0303 0.0096  
 Mercury -123623-05-30 12:30 J -43431728.07 -43431727.98 -43431727.88 0.0303 0.0217  
 Venus -123623-08-11 20:54 J -43431654.81 -43431654.63 -43431654.45 0.0303 0.0141  
 Venus -123622-03-29 22:06 J -43431424.77 -43431424.58 -43431424.40 0.0303 0.0138  
 Venus -123622-11-14 21:37 J -43431194.78 -43431194.60 -43431194.41 0.0303 0.0130  
 Venus -123621-07-01 19:27 J -43430964.87 -43430964.69 -43430964.50 0.0302 0.0120  
 Venus -123620-02-16 15:37 J -43430735.04 -43430734.85 -43430734.66 0.0300 0.0106  
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 Venus -123619-05-22 00:58 J -43430275.65 -43430275.46 -43430275.26 0.0296 0.0074  
 Venus -123618-01-06 14:39 J -43430046.09 -43430045.89 -43430045.69 0.0293 0.0056  
 Venus -123618-08-24 02:10 J -43429816.62 -43429816.41 -43429816.21 0.0290 0.0038  
 Venus -123617-04-09 11:32 J -43429587.23 -43429587.02 -43429586.82 0.0287 0.0019  
 Venus -123617-11-24 18:58 J -43429357.92 -43429357.71 -43429357.51 0.0284 0.0001

Venus -123616-07-12 00:44 J -43429128.68 -43429128.47 -43429128.27 0.0281 0.0018  
 Venus -123615-02-26 04:49 J -43428899.50 -43428899.30 -43428899.09 0.0278 0.0035  
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 Venus -123614-05-30 09:08 J -43428441.33 -43428441.12 -43428440.92 0.0273 0.0064  
 Venus -123613-01-14 09:22 J -43428212.31 -43428212.11 -43428211.91 0.0270 0.0077  
 Venus -123613-08-30 09:08 J -43427983.32 -43427983.12 -43427982.92 0.0268 0.0088  
 Venus -123612-04-16 08:10 J -43427754.35 -43427754.16 -43427753.96 0.0266 0.0098  
 Mars -123612-06-12 12:15 J -43427697.16 -43427696.99 -43427696.82 0.0265 0.0211  
 Venus -123612-12-01 06:44 J -43427525.41 -43427525.22 -43427525.02 0.0264 0.0106  
 Venus -123611-07-18 05:03 J -43427296.48 -43427296.29 -43427296.10 0.0262 0.0113  
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 Venus -123610-10-19 01:42 J -43426838.62 -43426838.43 -43426838.24 0.0260 0.0122  
 Mercury -123610-12-31 00:01 J -43426765.64 -43426765.50 -43426765.36 0.0260 0.0163  
 Mercury -123609-03-28 19:13 J -43426676.88 -43426676.70 -43426676.52 0.0260 0.0056  
 Venus -123609-06-04 00:30 J -43426609.67 -43426609.48 -43426609.29 0.0259 0.0124  
 Mercury -123609-06-25 14:25 J -43426588.08 -43426587.90 -43426587.71 0.0259 0.0053  
 Mercury -123609-09-22 09:51 J -43426499.23 -43426499.09 -43426498.94 0.0259 0.0162  
 Venus -123608-01-18 23:46 J -43426380.70 -43426380.51 -43426380.32 0.0259 0.0124  
 Venus -123608-09-04 23:32 J -43426151.71 -43426151.52 -43426151.32 0.0259 0.0124  
 Venus -123607-04-22 00:15 J -43425922.68 -43425922.49 -43425922.29 0.0259 0.0121  
 Venus -123607-12-07 01:56 J -43425693.61 -43425693.42 -43425693.21 0.0260 0.0118  
 Venus -123606-07-24 05:18 J -43425464.48 -43425464.28 -43425464.08 0.0260 0.0112  
 Venus -123605-03-09 09:37 J -43425235.30 -43425235.10 -43425234.90 0.0261 0.0105  
 Venus -123605-10-24 15:22 J -43425006.06 -43425005.86 -43425005.65 0.0263 0.0096  
 Venus -123604-06-10 23:03 J -43424776.75 -43424776.54 -43424776.33 0.0264 0.0086  
 Venus -123603-01-26 08:10 J -43424547.37 -43424547.16 -43424546.94 0.0266 0.0074  
 Venus -123603-09-12 19:27 J -43424317.91 -43424317.69 -43424317.48 0.0268 0.0061  
 Venus -123602-04-30 08:25 J -43424088.37 -43424088.15 -43424087.93 0.0271 0.0047  
 Venus -123602-12-15 23:18 J -43423858.75 -43423858.53 -43423858.31 0.0273 0.0031  
 Venus -123601-08-01 16:20 J -43423629.04 -43423628.82 -43423628.60 0.0276 0.0014

Venus -123600-03-19 11:03 J -43423399.26 -43423399.04 -43423398.82 0.0279 0.0006  
 Venus -123600-11-04 07:42 J -43423169.40 -43423169.18 -43423168.96 0.0282 0.0023  
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 Venus -123598-02-07 06:01 J -43422709.46 -43422709.25 -43422709.04 0.0288 0.0061  
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 Moon -123596-01-06 17:46 J -43422009.92 -43422009.76 -43422009.59 0.0296 0.0216  
 Earth -123596-01-06 21:08 J -43422009.76 -43422009.62 -43422009.46 0.0297 0.0228 \*  
 Mars -123596-05-25 04:49 J -43421871.55 -43421871.30 -43421871.06 0.0298 0.0178  
 Venus -123596-08-15 17:03 J -43421788.98 -43421788.79 -43421788.59 0.0299 0.0123  
 Venus -123595-04-02 21:08 J -43421558.80 -43421558.62 -43421558.43 0.0301 0.0132  
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 Mercury -123594-01-24 22:34 J -43421261.66 -43421261.56 -43421261.45 0.0302 0.0179  
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 Mercury -123594-07-21 01:42 J -43421084.55 -43421084.43 -43421084.30 0.0303 0.0068  
 Mercury -123594-10-17 15:08 J -43420995.97 -43420995.87 -43420995.76 0.0303 0.0190  
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 Venus -123591-08-30 00:01 J -43419948.69 -43419948.50 -43419948.30 0.0300 0.0102  
 Venus -123590-04-16 17:32 J -43419718.96 -43419718.77 -43419718.57 0.0297 0.0086  
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 Venus -123589-07-18 22:06 J -43419259.78 -43419259.58 -43419259.38 0.0292 0.0051  
 Venus -123588-03-05 09:22 J -43419030.31 -43419030.11 -43419029.91 0.0289 0.0033  
 Venus -123588-10-20 18:30 J -43418800.94 -43418800.73 -43418800.53 0.0286 0.0016  
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 Venus -123586-01-22 06:44 J -43418342.42 -43418342.22 -43418342.01 0.0280 0.0021

Venus -123586-09-08 10:34 J -43418113.26 -43418113.06 -43418112.85 0.0277 0.0037  
 Venus -123585-04-24 13:13 J -43417884.15 -43417883.95 -43417883.75 0.0275 0.0051  
 Venus -123585-12-09 14:25 J -43417655.10 -43417654.90 -43417654.70 0.0272 0.0065  
 Venus -123584-07-26 14:39 J -43417426.09 -43417425.89 -43417425.69 0.0270 0.0077  
 Venus -123583-03-12 14:10 J -43417197.11 -43417196.91 -43417196.71 0.0267 0.0088  
 Moon -123583-06-27 12:30 J -43417090.21 -43417089.98 -43417089.76 0.0266 0.0093  
 Earth -123583-06-27 13:13 J -43417090.18 -43417089.95 -43417089.71 0.0266 0.0081 \*  
 Venus -123583-10-27 12:58 J -43416968.15 -43416967.96 -43416967.76 0.0265 0.0098  
 Venus -123582-06-13 11:18 J -43416739.22 -43416739.03 -43416738.83 0.0264 0.0106  
 Mars -123582-07-30 01:56 J -43416692.70 -43416692.42 -43416692.14 0.0263 0.0024  
 Venus -123581-01-28 09:37 J -43416510.29 -43416510.10 -43416509.91 0.0262 0.0112  
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 Venus -123580-04-30 06:15 J -43416052.43 -43416052.24 -43416052.05 0.0260 0.0121  
 Mercury -123580-05-19 00:15 J -43416033.61 -43416033.49 -43416033.36 0.0260 0.0190  
 Mercury -123580-08-15 19:27 J -43415944.86 -43415944.69 -43415944.51 0.0260 0.0083  
 Mercury -123580-11-12 14:54 J -43415856.07 -43415855.88 -43415855.70 0.0260 0.0026  
 Venus -123580-12-15 04:49 J -43415823.48 -43415823.30 -43415823.10 0.0260 0.0123  
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 Mercury -123579-05-09 05:46 J -43415678.32 -43415678.26 -43415678.20 0.0259 0.0243  
 Venus -123579-08-01 03:51 J -43415594.52 -43415594.34 -43415594.14 0.0259 0.0124  
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 Venus -123577-06-18 06:30 J -43414907.42 -43414907.23 -43414907.03 0.0260 0.0117  
 Venus -123576-02-02 09:37 J -43414678.29 -43414678.10 -43414677.90 0.0261 0.0111  
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 Venus -123575-05-06 19:56 J -43414219.87 -43414219.67 -43414219.46 0.0263 0.0095  
 Venus -123575-12-22 03:37 J -43413990.55 -43413990.35 -43413990.13 0.0265 0.0085  
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 Venus -123573-03-25 00:44 J -43413531.69 -43413531.47 -43413531.26 0.0269 0.0059  
 Venus -123573-11-09 13:56 J -43413302.14 -43413301.92 -43413301.70 0.0271 0.0044



Venus -123572-06-27 05:03 J -43413072.51 -43413072.29 -43413072.07 0.0274 0.0029  
 Venus -123571-02-11 22:20 J -43412842.79 -43412842.57 -43412842.35 0.0276 0.0012  
 Venus -123571-09-29 17:32 J -43412612.99 -43412612.77 -43412612.55 0.0279 0.0006  
 Venus -123570-05-17 14:25 J -43412383.11 -43412382.90 -43412382.68 0.0282 0.0025  
 Venus -123569-01-02 13:13 J -43412153.17 -43412152.95 -43412152.73 0.0285 0.0043  
 Venus -123569-08-19 13:27 J -43411923.15 -43411922.94 -43411922.73 0.0288 0.0061  
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 Moon -123568-12-31 21:51 J -43411423.76 -43411423.59 -43411423.42 0.0294 0.0198  
 Earth -123567-01-01 00:01 J -43411423.65 -43411423.50 -43411423.32 0.0294 0.0214 \*  
 Venus -123567-07-10 21:08 J -43411232.82 -43411232.62 -43411232.42 0.0296 0.0109  
 Venus -123566-02-26 00:58 J -43411002.65 -43411002.46 -43411002.26 0.0299 0.0121  
 Mars -123566-07-19 04:49 J -43410859.58 -43410859.30 -43410859.02 0.0300 0.0130  
 Venus -123566-10-14 05:03 J -43410772.47 -43410772.29 -43410772.09 0.0300 0.0130  
 Venus -123565-05-31 09:08 J -43410542.31 -43410542.12 -43410541.93 0.0302 0.0135  
 Mercury -123565-06-13 00:30 J -43410529.57 -43410529.48 -43410529.38 0.0302 0.0213  
 Mercury -123565-09-09 14:25 J -43410441.03 -43410440.90 -43410440.77 0.0302 0.0089  
 Mercury -123565-12-07 03:51 J -43410352.47 -43410352.34 -43410352.20 0.0303 0.0035  
 Venus -123564-01-16 12:30 J -43410312.17 -43410311.98 -43410311.80 0.0303 0.0137  
 Mercury -123564-03-05 17:18 J -43410263.89 -43410263.78 -43410263.66 0.0303 0.0157  
 Mercury -123564-06-02 06:44 J -43410175.27 -43410175.22 -43410175.17 0.0303 0.0278  
 Venus -123564-09-03 14:25 J -43410082.07 -43410081.90 -43410081.71 0.0303 0.0137  
 Venus -123563-04-21 15:22 J -43409852.04 -43409851.86 -43409851.67 0.0303 0.0132  
 Venus -123563-12-07 14:54 J -43409622.06 -43409621.88 -43409621.69 0.0303 0.0123  
 Venus -123562-07-25 12:15 J -43409392.17 -43409391.99 -43409391.79 0.0301 0.0113  
 Venus -123561-03-11 07:56 J -43409162.36 -43409162.17 -43409161.98 0.0300 0.0099  
 Venus -123561-10-27 01:13 J -43408932.65 -43408932.45 -43408932.26 0.0298 0.0084  
 Venus -123560-06-13 16:20 J -43408703.02 -43408702.82 -43408702.62 0.0295 0.0067  
 Venus -123559-01-29 05:32 J -43408473.47 -43408473.27 -43408473.07 0.0292 0.0049  
 Venus -123559-09-15 16:20 J -43408244.02 -43408243.82 -43408243.62 0.0289 0.0031

Venus -123558-05-03 01:13 J -43408014.65 -43408014.45 -43408014.25 0.0286 0.0013  
 Venus -123558-12-18 08:10 J -43407785.37 -43407785.16 -43407784.96 0.0283 0.0005  
 Venus -123557-08-03 13:27 J -43407556.15 -43407555.94 -43407555.74 0.0280 0.0022  
 Venus -123556-03-20 17:18 J -43407326.99 -43407326.78 -43407326.58 0.0277 0.0038  
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 Venus -123520-01-06 13:42 J -43394251.12 -43394250.93 -43394250.73 0.0259 0.0120  
 Mercury -123520-02-12 06:01 J -43394214.37 -43394214.25 -43394214.11 0.0259 0.0186  
 Venus -123520-08-23 12:44 J -43394022.15 -43394021.97 -43394021.77 0.0259 0.0120  
 Venus -123519-04-09 12:30 J -43393793.16 -43393792.98 -43393792.77 0.0259 0.0119  
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 Venus -123506-06-23 23:32 J -43388969.70 -43388969.52 -43388969.33 0.0302 0.0132  
 Mercury -123506-09-13 07:42 J -43388888.32 -43388888.18 -43388888.05 0.0303 0.0036  
 Mercury -123506-12-10 21:08 J -43388799.75 -43388799.62 -43388799.49 0.0303 0.0088  
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 Mercury -123505-03-08 10:34 J -43388711.15 -43388711.06 -43388710.97 0.0303 0.0210  
 Venus -123505-09-26 04:49 J -43388509.48 -43388509.30 -43388509.11 0.0304 0.0131  
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 Venus -123504-12-30 04:49 J -43388049.48 -43388049.30 -43388049.11 0.0302 0.0117  
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 Venus -123479-06-27 14:25 J -43379104.10 -43379103.90 -43379103.70 0.0295 0.0097  
 Venus -123478-02-12 18:15 J -43378873.93 -43378873.74 -43378873.54 0.0298 0.0110  
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 Mars -123478-12-13 06:58 J -43378570.47 -43378570.21 -43378569.95 0.0301 0.0159  
 Venus -123477-05-18 02:54 J -43378413.57 -43378413.38 -43378413.19 0.0302 0.0128  
 Mercury -123477-11-02 19:42 J -43378244.78 -43378244.68 -43378244.58 0.0303 0.0193  
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 Mercury -123476-01-30 09:22 J -43378156.24 -43378156.11 -43378155.98 0.0303 0.0069  
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 Venus -123476-08-21 09:51 J -43377953.28 -43377953.09 -43377952.90 0.0304 0.0133  
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 Venus -123472-05-31 19:42 J -43376573.87 -43376573.68 -43376573.48 0.0297 0.0073

Venus	-123471-01-16 10:20 J	-43376344.27	-43376344.07	-43376343.87	0.0294	0.0056
Venus	-123471-09-02 22:49 J	-43376114.75	-43376114.55	-43376114.35	0.0291	0.0039
Venus	-123470-04-20 08:54 J	-43375885.33	-43375885.13	-43375884.92	0.0288	0.0022
Venus	-123470-12-05 17:03 J	-43375655.99	-43375655.79	-43375655.58	0.0285	0.0008
Venus	-123469-07-21 23:32 J	-43375426.73	-43375426.52	-43375426.32	0.0282	0.0012
Venus	-123468-03-08 04:20 J	-43375197.53	-43375197.32	-43375197.12	0.0279	0.0027
Venus	-123468-10-23 07:13 J	-43374968.40	-43374968.20	-43374967.99	0.0276	0.0042
Venus	-123467-06-09 08:54 J	-43374739.33	-43374739.13	-43374738.92	0.0273	0.0055
Venus	-123466-01-24 09:22 J	-43374510.31	-43374510.11	-43374509.90	0.0270	0.0067
Venus	-123466-09-10 08:54 J	-43374281.32	-43374281.13	-43374280.92	0.0268	0.0079
Venus	-123465-04-26 08:10 J	-43374052.36	-43374052.16	-43374051.96	0.0266	0.0087
Moon	-123465-06-30 02:10 J	-43373987.50	-43373987.41	-43373987.31	0.0265	0.0243
Earth	-123465-06-30 03:22 J	-43373987.42	-43373987.36	-43373987.30	0.0265	0.0257 *
Venus	-123465-12-11 06:30 J	-43373823.43	-43373823.23	-43373823.03	0.0264	0.0095
Venus	-123464-07-28 04:20 J	-43373594.51	-43373594.32	-43373594.12	0.0262	0.0102
Mars	-123463-02-08 08:25 J	-43373399.36	-43373399.15	-43373398.93	0.0261	0.0171
Venus	-123463-03-14 02:10 J	-43373365.60	-43373365.41	-43373365.21	0.0261	0.0107
Venus	-123463-10-29 00:15 J	-43373136.69	-43373136.49	-43373136.30	0.0260	0.0111
Mercury	-123462-02-25 20:10 J	-43373016.77	-43373016.66	-43373016.54	0.0260	0.0197
Mercury	-123462-05-25 15:08 J	-43372928.04	-43372927.87	-43372927.69	0.0259	0.0091
Venus	-123462-06-14 22:20 J	-43372907.76	-43372907.57	-43372907.37	0.0259	0.0114
Mercury	-123462-08-22 10:20 J	-43372839.25	-43372839.07	-43372838.88	0.0259	0.0017
Mercury	-123462-11-19 05:46 J	-43372750.42	-43372750.26	-43372750.10	0.0259	0.0124
Venus	-123461-01-29 20:54 J	-43372678.82	-43372678.63	-43372678.43	0.0259	0.0115
Mercury	-123461-02-16 00:58 J	-43372661.53	-43372661.46	-43372661.37	0.0259	0.0233
Venus	-123461-09-14 19:56 J	-43372449.86	-43372449.67	-43372449.47	0.0259	0.0115
Venus	-123460-05-01 19:42 J	-43372220.87	-43372220.68	-43372220.47	0.0259	0.0114
Venus	-123460-12-16 20:54 J	-43371991.83	-43371991.63	-43371991.44	0.0259	0.0111
Venus	-123459-08-02 22:49 J	-43371762.75	-43371762.55	-43371762.35	0.0260	0.0106
Venus	-123458-03-20 01:56 J	-43371533.62	-43371533.42	-43371533.21	0.0261	0.0100



Venus -123458-11-04 06:44 J -43371304.43 -43371304.22 -43371304.01 0.0262 0.0093  
 Venus -123457-06-20 13:13 J -43371075.16 -43371074.95 -43371074.74 0.0263 0.0084  
 Venus -123456-02-04 21:08 J -43370845.83 -43370845.62 -43370845.40 0.0265 0.0074  
 Venus -123456-09-22 07:13 J -43370616.42 -43370616.20 -43370615.99 0.0267 0.0062  
 Venus -123455-05-09 18:58 J -43370386.93 -43370386.71 -43370386.49 0.0270 0.0049  
 Venus -123455-12-25 08:54 J -43370157.35 -43370157.13 -43370156.91 0.0272 0.0034  
 Venus -123454-08-12 00:58 J -43369927.68 -43369927.46 -43369927.24 0.0275 0.0019  
 Venus -123453-03-28 18:44 J -43369697.94 -43369697.72 -43369697.49 0.0277 0.0007  
 Venus -123453-11-13 14:39 J -43369468.11 -43369467.89 -43369467.67 0.0280 0.0015  
 Venus -123452-07-01 12:30 J -43369238.20 -43369237.98 -43369237.77 0.0283 0.0031  
 Venus -123451-02-16 11:46 J -43369008.22 -43369008.01 -43369007.79 0.0287 0.0049  
 Venus -123451-10-04 12:58 J -43368778.17 -43368777.96 -43368777.75 0.0290 0.0065  
 Venus -123450-05-22 15:22 J -43368548.07 -43368547.86 -43368547.65 0.0292 0.0081  
 Moon -123449-01-04 10:49 J -43368321.29 -43368321.05 -43368320.81 0.0295 0.0029  
 Earth -123449-01-04 13:56 J -43368321.16 -43368320.92 -43368320.67 0.0295 0.0016 \*  
 Venus -123449-01-07 18:30 J -43368317.93 -43368317.73 -43368317.52 0.0295 0.0095  
 Venus -123449-08-24 22:20 J -43368087.76 -43368087.57 -43368087.37 0.0298 0.0107  
 Venus -123448-04-12 02:39 J -43367857.58 -43367857.39 -43367857.19 0.0300 0.0117  
 Venus -123448-11-28 06:58 J -43367627.40 -43367627.21 -43367627.02 0.0301 0.0124  
 Mercury -123447-03-22 20:25 J -43367512.73 -43367512.65 -43367512.56 0.0302 0.0237  
 Mercury -123447-06-19 10:20 J -43367424.20 -43367424.07 -43367423.95 0.0303 0.0113  
 Venus -123447-07-16 10:49 J -43367397.24 -43367397.05 -43367396.86 0.0303 0.0128  
 Mercury -123447-09-16 00:01 J -43367335.64 -43367335.50 -43367335.37 0.0303 0.0015  
 Mercury -123447-12-13 13:27 J -43367247.06 -43367246.94 -43367246.82 0.0303 0.0134  
 Venus -123446-03-03 13:42 J -43367167.11 -43367166.93 -43367166.73 0.0303 0.0129  
 Mercury -123446-03-12 02:39 J -43367158.45 -43367158.39 -43367158.31 0.0303 0.0256  
 Venus -123446-10-19 15:51 J -43366937.02 -43366936.84 -43366936.65 0.0304 0.0125  
 Venus -123445-06-05 16:20 J -43366707.00 -43366706.82 -43366706.62 0.0303 0.0120  
 Venus -123444-01-21 15:37 J -43366477.04 -43366476.85 -43366476.66 0.0302 0.0110  
 Venus -123444-09-08 12:30 J -43366247.17 -43366246.98 -43366246.79 0.0301 0.0098

Venus -123443-04-26 07:27 J -43366017.39 -43366017.19 -43366017.00 0.0299 0.0084  
 Venus -123443-12-12 00:01 J -43365787.69 -43365787.50 -43365787.30 0.0297 0.0069  
 Venus -123442-07-29 14:39 J -43365558.09 -43365557.89 -43365557.69 0.0294 0.0053  
 Venus -123441-03-15 03:08 J -43365328.57 -43365328.37 -43365328.17 0.0291 0.0036  
 Venus -123441-10-30 13:13 J -43365099.15 -43365098.95 -43365098.74 0.0288 0.0019  
 Venus -123440-06-16 21:22 J -43364869.81 -43364869.61 -43364869.40 0.0285 0.0004  
 Venus -123439-02-01 03:51 J -43364640.55 -43364640.34 -43364640.14 0.0282 0.0015  
 Venus -123439-09-18 08:25 J -43364411.36 -43364411.15 -43364410.95 0.0279 0.0030  
 Venus -123438-05-05 11:18 J -43364182.23 -43364182.03 -43364181.82 0.0276 0.0043  
 Venus -123438-12-20 12:58 J -43363953.16 -43363952.96 -43363952.75 0.0273 0.0056  
 Venus -123437-08-05 13:27 J -43363724.14 -43363723.94 -43363723.73 0.0271 0.0068  
 Venus -123436-03-22 13:13 J -43363495.15 -43363494.95 -43363494.75 0.0268 0.0078  
 Earth -123436-06-25 05:03 J -43363400.52 -43363400.29 -43363400.04 0.0267 0.0067  
 Moon -123436-06-25 06:30 J -43363400.46 -43363400.23 -43363399.99 0.0267 0.0056 \*  
 Venus -123436-11-06 12:01 J -43363266.20 -43363266.00 -43363265.80 0.0266 0.0088  
 Mars -123435-04-02 16:49 J -43363119.01 -43363118.80 -43363118.58 0.0265 0.0172  
 Venus -123435-06-23 10:06 J -43363037.27 -43363037.08 -43363036.88 0.0264 0.0095  
 Venus -123434-02-07 07:56 J -43362808.36 -43362808.17 -43362807.97 0.0262 0.0102  
 Venus -123434-09-24 05:46 J -43362579.45 -43362579.26 -43362579.06 0.0261 0.0106  
 Venus -123433-05-10 03:37 J -43362350.53 -43362350.35 -43362350.14 0.0260 0.0110  
 Mercury -123433-07-14 20:10 J -43362284.74 -43362284.66 -43362284.57 0.0260 0.0227  
 Mercury -123433-10-11 15:08 J -43362196.03 -43362195.87 -43362195.71 0.0259 0.0121  
 Venus -123433-12-25 01:56 J -43362121.61 -43362121.42 -43362121.22 0.0259 0.0111  
 Mercury -123432-01-08 10:20 J -43362107.26 -43362107.07 -43362106.89 0.0259 0.0015  
 Mercury -123432-04-07 05:32 J -43362018.44 -43362018.27 -43362018.09 0.0259 0.0093  
 Mercury -123432-07-05 00:58 J -43361929.57 -43361929.46 -43361929.34 0.0259 0.0201  
 Venus -123432-08-11 00:15 J -43361892.68 -43361892.49 -43361892.29 0.0259 0.0113  
 Venus -123431-03-27 23:32 J -43361663.72 -43361663.52 -43361663.32 0.0258 0.0111  
 Venus -123431-11-11 23:32 J -43361434.72 -43361434.52 -43361434.32 0.0258 0.0109  
 Venus -123430-06-29 00:30 J -43361205.68 -43361205.48 -43361205.28 0.0259 0.0106

Venus -123429-02-13 02:39 J -43360976.59 -43360976.39 -43360976.19 0.0259 0.0101  
 Venus -123429-09-29 05:46 J -43360747.46 -43360747.26 -43360747.05 0.0260 0.0096  
 Venus -123428-05-16 10:34 J -43360518.26 -43360518.06 -43360517.85 0.0262 0.0088  
 Venus -123428-12-31 17:03 J -43360289.00 -43360288.79 -43360288.58 0.0263 0.0079  
 Venus -123427-08-18 01:13 J -43360059.66 -43360059.45 -43360059.23 0.0265 0.0069  
 Venus -123426-04-04 11:18 J -43359830.25 -43359830.03 -43359829.81 0.0267 0.0057  
 Venus -123426-11-19 23:18 J -43359600.75 -43359600.53 -43359600.31 0.0269 0.0044  
 Venus -123425-07-06 13:13 J -43359371.17 -43359370.95 -43359370.73 0.0272 0.0030  
 Venus -123424-02-21 05:18 J -43359141.50 -43359141.28 -43359141.06 0.0275 0.0016  
 Venus -123424-10-08 23:18 J -43358911.75 -43358911.53 -43358911.31 0.0278 0.0003  
 Venus -123423-05-26 19:13 J -43358681.92 -43358681.70 -43358681.48 0.0281 0.0017  
 Venus -123422-01-11 16:49 J -43358452.01 -43358451.80 -43358451.58 0.0284 0.0035  
 Venus -123422-08-29 16:34 J -43358222.02 -43358221.81 -43358221.60 0.0287 0.0051  
 Venus -123421-04-15 17:46 J -43357991.97 -43357991.76 -43357991.55 0.0290 0.0068  
 Venus -123421-12-01 19:56 J -43357761.87 -43357761.67 -43357761.46 0.0293 0.0083  
 Venus -123420-07-19 23:18 J -43357531.73 -43357531.53 -43357531.32 0.0296 0.0097  
 Venus -123419-03-07 03:22 J -43357301.55 -43357301.36 -43357301.16 0.0298 0.0109  
 Mars -123419-03-14 14:39 J -43357294.16 -43357293.89 -43357293.62 0.0298 0.0143  
 Venus -123419-10-23 07:56 J -43357071.36 -43357071.17 -43357070.98 0.0300 0.0118  
 Venus -123418-06-10 12:15 J -43356841.18 -43356840.99 -43356840.80 0.0302 0.0125  
 Mercury -123418-08-09 21:37 J -43356780.65 -43356780.60 -43356780.54 0.0303 0.0276  
 Mercury -123418-11-06 11:32 J -43356692.14 -43356692.02 -43356691.91 0.0303 0.0152  
 Venus -123417-01-26 16:06 J -43356611.01 -43356610.83 -43356610.64 0.0303 0.0128  
 Mercury -123417-02-03 01:13 J -43356603.58 -43356603.45 -43356603.32 0.0303 0.0028  
 Mercury -123417-05-01 14:39 J -43356515.01 -43356514.89 -43356514.76 0.0304 0.0096  
 Mercury -123417-07-29 04:06 J -43356426.42 -43356426.33 -43356426.24 0.0304 0.0218  
 Venus -123417-09-12 19:13 J -43356380.89 -43356380.70 -43356380.51 0.0304 0.0128  
 Venus -123416-04-30 21:08 J -43356150.81 -43356150.62 -43356150.43 0.0304 0.0124  
 Venus -123416-12-16 21:37 J -43355920.78 -43355920.60 -43355920.41 0.0304 0.0118  
 Venus -123415-08-03 20:25 J -43355690.84 -43355690.65 -43355690.46 0.0302 0.0108

Venus -123414-03-21 17:03 J -43355460.98 -43355460.79 -43355460.59 0.0301 0.0096  
 Venus -123414-11-06 11:46 J -43355231.20 -43355231.01 -43355230.81 0.0299 0.0082  
 Venus -123413-06-23 04:20 J -43355001.52 -43355001.32 -43355001.12 0.0296 0.0066  
 Venus -123412-02-07 18:44 J -43354771.92 -43354771.72 -43354771.52 0.0294 0.0050  
 Venus -123412-09-25 06:44 J -43354542.42 -43354542.22 -43354542.01 0.0291 0.0034  
 Venus -123411-05-12 16:49 J -43354313.00 -43354312.80 -43354312.60 0.0288 0.0016  
 Venus -123411-12-28 00:44 J -43354083.67 -43354083.47 -43354083.26 0.0284 0.0004  
 Venus -123410-08-14 06:58 J -43353854.42 -43353854.21 -43353854.01 0.0281 0.0016  
 Venus -123409-03-30 11:32 J -43353625.23 -43353625.02 -43353624.82 0.0278 0.0031  
 Venus -123409-11-14 14:25 J -43353396.11 -43353395.90 -43353395.70 0.0275 0.0045  
 Venus -123408-07-01 15:37 J -43353167.05 -43353166.85 -43353166.64 0.0272 0.0057  
 Venus -123407-02-15 16:06 J -43352938.03 -43352937.83 -43352937.63 0.0270 0.0068  
 Venus -123407-10-02 15:22 J -43352709.06 -43352708.86 -43352708.66 0.0268 0.0078  
 Venus -123406-05-19 14:10 J -43352480.10 -43352479.91 -43352479.71 0.0265 0.0087  
 Venus -123405-01-03 12:30 J -43352251.18 -43352250.98 -43352250.78 0.0264 0.0094  
 Mars -123405-05-18 22:06 J -43352114.86 -43352114.58 -43352114.30 0.0263 0.0007  
 Venus -123405-08-19 10:06 J -43352022.27 -43352022.08 -43352021.87 0.0262 0.0100  
 Venus -123404-04-05 07:56 J -43351793.36 -43351793.17 -43351792.97 0.0261 0.0105  
 Venus -123404-11-20 05:46 J -43351564.45 -43351564.26 -43351564.06 0.0260 0.0108  
 Mercury -123403-02-28 14:10 J -43351464.05 -43351463.91 -43351463.75 0.0259 0.0155  
 Mercury -123403-05-28 09:22 J -43351375.29 -43351375.11 -43351374.93 0.0259 0.0049  
 Venus -123403-07-07 03:51 J -43351335.54 -43351335.34 -43351335.14 0.0259 0.0110  
 Mercury -123403-08-25 04:34 J -43351286.49 -43351286.31 -43351286.13 0.0259 0.0059  
 Mercury -123403-11-21 23:46 J -43351197.64 -43351197.51 -43351197.36 0.0259 0.0167  
 Venus -123402-02-21 02:10 J -43351106.60 -43351106.41 -43351106.21 0.0258 0.0111  
 Venus -123402-10-08 01:13 J -43350877.64 -43350877.45 -43350877.25 0.0258 0.0110  
 Venus -123401-05-24 01:13 J -43350648.64 -43350648.45 -43350648.25 0.0258 0.0109  
 Venus -123400-01-08 02:10 J -43350419.61 -43350419.41 -43350419.21 0.0259 0.0105  
 Venus -123400-08-25 04:06 J -43350190.53 -43350190.33 -43350190.13 0.0260 0.0100  
 Venus -123399-04-11 07:13 J -43349961.40 -43349961.20 -43349960.99 0.0261 0.0095

Venus	-123399-11-26 12:01 J	-43349732.20	-43349732.00	-43349731.79	0.0262	0.0087
Venus	-123398-07-13 18:30 J	-43349502.93	-43349502.73	-43349502.51	0.0263	0.0078
Venus	-123397-02-28 02:54 J	-43349273.60	-43349273.38	-43349273.17	0.0265	0.0068
Venus	-123397-10-14 12:44 J	-43349044.18	-43349043.97	-43349043.75	0.0267	0.0056
Venus	-123396-06-01 00:44 J	-43348814.69	-43348814.47	-43348814.25	0.0270	0.0043
Venus	-123395-01-16 14:39 J	-43348585.11	-43348584.89	-43348584.67	0.0272	0.0029
Venus	-123395-09-03 06:58 J	-43348355.43	-43348355.21	-43348354.99	0.0275	0.0014
Venus	-123394-04-21 00:58 J	-43348125.68	-43348125.46	-43348125.24	0.0278	0.0004
Venus	-123394-12-06 21:08 J	-43347895.84	-43347895.62	-43347895.40	0.0281	0.0018
Venus	-123393-07-23 18:58 J	-43347665.92	-43347665.71	-43347665.49	0.0284	0.0035
Venus	-123392-03-10 18:44 J	-43347435.93	-43347435.72	-43347435.50	0.0287	0.0051
Venus	-123392-10-26 20:10 J	-43347205.87	-43347205.66	-43347205.45	0.0290	0.0067
Venus	-123391-06-13 22:34 J	-43346975.76	-43346975.56	-43346975.35	0.0293	0.0082
Earth	-123390-01-05 13:13 J	-43346770.19	-43346769.95	-43346769.72	0.0295	0.0061
Moon	-123390-01-05 16:34 J	-43346770.05	-43346769.81	-43346769.57	0.0295	0.0076 *
Venus	-123390-01-30 02:10 J	-43346745.62	-43346745.41	-43346745.21	0.0296	0.0095
Venus	-123390-09-17 06:15 J	-43346515.44	-43346515.24	-43346515.04	0.0298	0.0106
Venus	-123389-05-04 10:34 J	-43346285.25	-43346285.06	-43346284.86	0.0300	0.0115
Mars	-123389-05-06 20:54 J	-43346282.88	-43346282.63	-43346282.36	0.0300	0.0155
Venus	-123389-12-20 14:54 J	-43346055.07	-43346054.88	-43346054.68	0.0302	0.0121
Mercury	-123388-03-25 12:01 J	-43345960.10	-43345960.00	-43345959.90	0.0302	0.0198
Mercury	-123388-06-22 01:42 J	-43345871.56	-43345871.43	-43345871.30	0.0303	0.0074
Venus	-123388-08-07 18:44 J	-43345824.91	-43345824.72	-43345824.53	0.0303	0.0124
Mercury	-123388-09-18 15:22 J	-43345782.99	-43345782.86	-43345782.73	0.0303	0.0049
Mercury	-123388-12-16 04:49 J	-43345694.41	-43345694.30	-43345694.19	0.0303	0.0171
Mercury	-123387-03-14 18:01 J	-43345605.78	-43345605.75	-43345605.71	0.0304	0.0293
Venus	-123387-03-25 21:51 J	-43345594.78	-43345594.59	-43345594.40	0.0304	0.0123
Venus	-123387-11-10 23:46 J	-43345364.70	-43345364.51	-43345364.32	0.0304	0.0119
Venus	-123386-06-29 00:15 J	-43345134.68	-43345134.49	-43345134.30	0.0303	0.0113
Venus	-123385-02-13 23:03 J	-43344904.73	-43344904.54	-43344904.34	0.0302	0.0103

Venus -123385-09-30 19:56 J -43344674.86 -43344674.67 -43344674.47 0.0301 0.0091  
 Venus -123384-05-18 14:39 J -43344445.08 -43344444.89 -43344444.69 0.0299 0.0077  
 Venus -123383-01-03 07:13 J -43344215.39 -43344215.20 -43344215.00 0.0297 0.0062  
 Venus -123383-08-20 21:37 J -43343985.80 -43343985.60 -43343985.40 0.0294 0.0046  
 Venus -123382-04-07 09:37 J -43343756.30 -43343756.10 -43343755.89 0.0291 0.0031  
 Venus -123382-11-22 19:42 J -43343526.88 -43343526.68 -43343526.47 0.0288 0.0014  
 Venus -123381-07-09 03:51 J -43343297.55 -43343297.34 -43343297.14 0.0285 0.0007  
 Venus -123380-02-23 09:51 J -43343068.29 -43343068.09 -43343067.88 0.0282 0.0019  
 Venus -123380-10-10 14:25 J -43342839.11 -43342838.90 -43342838.70 0.0279 0.0033  
 Venus -123379-05-27 17:03 J -43342609.99 -43342609.79 -43342609.58 0.0276 0.0046  
 Venus -123378-01-11 18:30 J -43342380.93 -43342380.73 -43342380.52 0.0273 0.0058  
 Venus -123378-08-28 18:58 J -43342151.91 -43342151.71 -43342151.51 0.0270 0.0069  
 Venus -123377-04-13 18:30 J -43341922.93 -43341922.73 -43341922.53 0.0268 0.0079  
 Moon -123377-06-26 04:49 J -43341849.56 -43341849.30 -43341849.05 0.0267 0.0007  
 Earth -123377-06-26 06:15 J -43341849.49 -43341849.24 -43341848.99 0.0267 0.0008 \*  
 Venus -123377-11-28 17:03 J -43341693.98 -43341693.79 -43341693.59 0.0266 0.0087  
 Venus -123376-07-15 15:08 J -43341465.06 -43341464.87 -43341464.67 0.0264 0.0094  
 Venus -123375-03-01 12:58 J -43341236.16 -43341235.96 -43341235.76 0.0262 0.0100  
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 Venus -123374-06-02 08:25 J -43340778.34 -43340778.15 -43340777.95 0.0260 0.0107  
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Venus -123326-03-08 03:37 J -43323332.54 -43323332.35 -43323332.15 0.0302 0.0097  
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Venus -123313-12-26 07:42 J -43318290.38 -43318290.18 -43318289.98 0.0258 0.0100  
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 Mercury -123285-08-30 15:08 J -43308181.02 -43308180.87 -43308180.71 0.0258 0.0133  
 Mercury -123285-11-27 10:20 J -43308092.12 -43308092.07 -43308091.99 0.0258 0.0241  
 Venus -123284-04-06 09:22 J -43307962.31 -43307962.11 -43307961.91 0.0258 0.0102  
 Venus -123284-11-21 08:25 J -43307733.35 -43307733.15 -43307732.94 0.0258 0.0101

Venus -123283-07-08 08:39 J -43307504.35 -43307504.14 -43307503.94 0.0258 0.0098  
 Venus -123282-02-22 09:22 J -43307275.31 -43307275.11 -43307274.90 0.0259 0.0095  
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 Venus -123281-05-25 14:54 J -43306817.09 -43306816.88 -43306816.67 0.0261 0.0083  
 Venus -123280-01-09 19:42 J -43306587.89 -43306587.68 -43306587.47 0.0262 0.0075  
 Venus -123280-08-27 02:10 J -43306358.62 -43306358.41 -43306358.19 0.0264 0.0067  
 Venus -123279-04-13 10:20 J -43306129.28 -43306129.07 -43306128.85 0.0265 0.0057  
 Venus -123279-11-28 20:39 J -43305899.86 -43305899.64 -43305899.43 0.0268 0.0045  
 Venus -123278-07-16 08:39 J -43305670.36 -43305670.14 -43305669.92 0.0270 0.0033  
 Venus -123277-03-01 22:49 J -43305440.77 -43305440.55 -43305440.33 0.0273 0.0019  
 Venus -123277-10-17 15:08 J -43305211.09 -43305210.87 -43305210.65 0.0275 0.0006  
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 Venus -123275-01-20 05:32 J -43304751.49 -43304751.27 -43304751.06 0.0281 0.0026  
 Venus -123275-09-07 03:37 J -43304521.56 -43304521.35 -43304521.13 0.0285 0.0041  
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 Moon -123272-01-07 04:49 J -43303668.49 -43303668.30 -43303668.10 0.0296 0.0175 \*  
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 Venus -123270-09-22 03:51 J -43302680.53 -43302680.34 -43302680.14 0.0303 0.0116  
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 Venus -123259-05-29 00:30 J -43298778.67 -43298778.48 -43298778.27 0.0267 0.0080  
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 Earth -123259-06-29 00:44 J -43298747.67 -43298747.47 -43298747.25 0.0267 0.0139 \*  
 Venus -123258-01-12 23:18 J -43298549.73 -43298549.53 -43298549.33 0.0265 0.0086  
 Mars -123258-01-20 01:13 J -43298542.67 -43298542.45 -43298542.21 0.0265 0.0154  
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 Venus -123257-04-14 19:27 J -43298091.89 -43298091.69 -43298091.50 0.0262 0.0096  
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 Mercury -123256-04-26 05:03 J -43297715.38 -43297715.29 -43297715.19 0.0260 0.0219  
 Venus -123256-07-16 14:54 J -43297634.08 -43297633.88 -43297633.68 0.0259 0.0101  
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 Mercury -123255-01-17 14:10 J -43297449.08 -43297448.91 -43297448.73 0.0259 0.0099  
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Venus -123255-10-17 11:18 J -43297176.23 -43297176.03 -43297175.83 0.0258 0.0101  
 Venus -123254-06-03 10:49 J -43296947.25 -43296947.05 -43296946.85 0.0258 0.0098  
 Venus -123253-01-18 10:49 J -43296718.25 -43296718.05 -43296717.85 0.0258 0.0095  
 Venus -123253-09-03 11:46 J -43296489.21 -43296489.01 -43296488.80 0.0258 0.0091  
 Venus -123252-04-20 13:56 J -43296260.13 -43296259.92 -43296259.71 0.0259 0.0085  
 Venus -123252-12-05 17:32 J -43296030.98 -43296030.77 -43296030.56 0.0260 0.0079  
 Venus -123251-07-22 22:34 J -43295801.77 -43295801.56 -43295801.35 0.0262 0.0071  
 Venus -123250-03-09 05:03 J -43295572.50 -43295572.29 -43295572.07 0.0263 0.0062  
 Venus -123250-10-24 13:27 J -43295343.16 -43295342.94 -43295342.72 0.0265 0.0052  
 Venus -123249-06-09 23:32 J -43295113.74 -43295113.52 -43295113.30 0.0267 0.0040  
 Venus -123248-01-25 11:32 J -43294884.23 -43294884.02 -43294883.79 0.0270 0.0029  
 Venus -123248-09-12 01:56 J -43294654.64 -43294654.42 -43294654.20 0.0272 0.0015  
 Venus -123247-04-29 18:01 J -43294424.97 -43294424.75 -43294424.53 0.0275 0.0004  
 Venus -123247-12-15 12:15 J -43294195.21 -43294194.99 -43294194.77 0.0278 0.0014  
 Venus -123246-08-02 08:25 J -43293965.36 -43293965.15 -43293964.93 0.0281 0.0029  
 Venus -123245-03-19 06:30 J -43293735.44 -43293735.23 -43293735.01 0.0285 0.0044  
 Venus -123245-11-04 06:30 J -43293505.45 -43293505.23 -43293505.02 0.0288 0.0058  
 Venus -123244-06-22 07:42 J -43293275.39 -43293275.18 -43293274.97 0.0291 0.0072  
 Moon -123244-12-31 20:10 J -43293082.76 -43293082.66 -43293082.54 0.0294 0.0264  
 Earth -123244-12-31 20:54 J -43293082.73 -43293082.63 -43293082.53 0.0294 0.0267 \*  
 Venus -123243-02-07 10:06 J -43293045.28 -43293045.08 -43293044.87 0.0294 0.0085  
 Venus -123243-09-25 13:42 J -43292815.13 -43292814.93 -43292814.73 0.0297 0.0096  
 Mars -123243-12-29 12:15 J -43292720.24 -43292719.99 -43292719.72 0.0298 0.0153  
 Venus -123242-05-13 17:46 J -43292584.95 -43292584.76 -43292584.56 0.0299 0.0105  
 Venus -123242-12-29 22:20 J -43292354.77 -43292354.57 -43292354.38 0.0301 0.0112  
 Venus -123241-08-16 02:25 J -43292124.59 -43292124.40 -43292124.20 0.0303 0.0116  
 Mercury -123241-08-17 17:18 J -43292122.89 -43292122.78 -43292122.67 0.0303 0.0184  
 Mercury -123241-11-14 06:58 J -43292034.34 -43292034.21 -43292034.08 0.0303 0.0060  
 Mercury -123240-02-10 20:39 J -43291945.77 -43291945.64 -43291945.51 0.0304 0.0064  
 Venus -123240-04-03 06:15 J -43291894.43 -43291894.24 -43291894.05 0.0304 0.0116

Mercury -123240-05-10 10:06 J -43291857.18 -43291857.08 -43291856.97 0.0304 0.0186

Venus -123240-11-19 09:08 J -43291664.31 -43291664.12 -43291663.92 0.0305 0.0114

Venus -123239-07-07 10:49 J -43291434.24 -43291434.05 -43291433.85 0.0304 0.0109

Venus -123238-02-22 11:03 J -43291204.23 -43291204.04 -43291203.85 0.0304 0.0100

Venus -123238-10-10 09:22 J -43290974.30 -43290974.11 -43290973.91 0.0303 0.0090

Venus -123237-05-27 05:46 J -43290744.46 -43290744.26 -43290744.06 0.0301 0.0077

Venus -123236-01-12 00:15 J -43290514.69 -43290514.49 -43290514.29 0.0299 0.0063

Venus -123236-08-29 16:20 J -43290285.02 -43290284.82 -43290284.62 0.0296 0.0048

Venus -123235-04-16 06:15 J -43290055.44 -43290055.24 -43290055.04 0.0293 0.0032

Venus -123235-12-01 18:01 J -43289825.95 -43289825.75 -43289825.55 0.0290 0.0017

Venus -123234-07-19 03:37 J -43289596.55 -43289596.35 -43289596.14 0.0287 0.0005

Venus -123233-03-04 11:32 J -43289367.22 -43289367.02 -43289366.81 0.0284 0.0014

Venus -123233-10-19 17:32 J -43289137.98 -43289137.77 -43289137.57 0.0281 0.0027

Venus -123232-06-05 21:37 J -43288908.80 -43288908.60 -43288908.39 0.0278 0.0040

Venus -123231-01-21 00:15 J -43288679.69 -43288679.49 -43288679.28 0.0275 0.0052

Venus -123231-09-07 01:42 J -43288450.63 -43288450.43 -43288450.22 0.0272 0.0062

Venus -123230-04-24 02:10 J -43288221.61 -43288221.41 -43288221.21 0.0269 0.0071

Moon -123230-06-23 17:03 J -43288160.94 -43288160.79 -43288160.63 0.0268 0.0209

Earth -123230-06-23 20:25 J -43288160.80 -43288160.65 -43288160.48 0.0268 0.0203 \*

Venus -123230-12-09 01:27 J -43287992.64 -43287992.44 -43287992.23 0.0267 0.0079

Venus -123229-07-25 00:15 J -43287763.69 -43287763.49 -43287763.29 0.0265 0.0085

Mars -123228-03-07 04:06 J -43287538.61 -43287538.33 -43287538.04 0.0263 0.0023

Venus -123228-03-10 22:20 J -43287534.77 -43287534.57 -43287534.37 0.0263 0.0090

Venus -123228-10-25 19:56 J -43287305.86 -43287305.67 -43287305.46 0.0261 0.0095

Venus -123227-06-11 17:46 J -43287076.95 -43287076.76 -43287076.55 0.0260 0.0097

Mercury -123227-09-13 03:51 J -43286983.37 -43286983.34 -43286983.31 0.0260 0.0255

Mercury -123227-12-10 22:34 J -43286894.70 -43286894.56 -43286894.41 0.0259 0.0150

Venus -123226-01-26 15:37 J -43286848.04 -43286847.85 -43286847.64 0.0259 0.0099

Mercury -123226-03-09 17:46 J -43286805.94 -43286805.76 -43286805.58 0.0259 0.0045

Mercury -123226-06-06 12:44 J -43286717.14 -43286716.97 -43286716.78 0.0259 0.0062



Mercury -123226-09-03 07:56 J -43286628.30 -43286628.17 -43286628.02 0.0258 0.0170

Venus -123226-09-12 13:42 J -43286619.12 -43286618.93 -43286618.72 0.0258 0.0100

Venus -123225-04-28 12:15 J -43286390.18 -43286389.99 -43286389.78 0.0258 0.0099

Venus -123225-12-13 11:32 J -43286161.22 -43286161.02 -43286160.81 0.0258 0.0097

Venus -123224-07-30 11:32 J -43285932.22 -43285932.02 -43285931.81 0.0258 0.0094

Venus -123223-03-16 12:44 J -43285703.18 -43285702.97 -43285702.77 0.0259 0.0090

Venus -123223-10-31 14:39 J -43285474.09 -43285473.89 -43285473.67 0.0259 0.0085

Venus -123222-06-17 18:30 J -43285244.94 -43285244.73 -43285244.52 0.0261 0.0078

Venus -123221-02-01 23:18 J -43285015.74 -43285015.53 -43285015.31 0.0262 0.0070

Venus -123221-09-18 06:01 J -43284786.47 -43284786.25 -43284786.04 0.0264 0.0061

Venus -123220-05-05 14:10 J -43284557.13 -43284556.91 -43284556.69 0.0266 0.0051

Venus -123220-12-21 00:15 J -43284327.71 -43284327.49 -43284327.27 0.0268 0.0039

Venus -123219-08-07 12:30 J -43284098.20 -43284097.98 -43284097.76 0.0270 0.0027

Venus -123218-03-25 02:39 J -43283868.61 -43283868.39 -43283868.17 0.0273 0.0015

Venus -123218-11-09 18:58 J -43283638.93 -43283638.71 -43283638.49 0.0276 0.0004

Venus -123217-06-26 12:58 J -43283409.18 -43283408.96 -43283408.74 0.0279 0.0015

Venus -123216-02-11 09:08 J -43283179.33 -43283179.12 -43283178.90 0.0282 0.0030

Venus -123216-09-29 07:27 J -43282949.40 -43282949.19 -43282948.97 0.0285 0.0044

Venus -123215-05-17 07:13 J -43282719.41 -43282719.20 -43282718.98 0.0288 0.0058

Venus -123214-01-02 08:39 J -43282489.35 -43282489.14 -43282488.93 0.0291 0.0071

Venus -123214-08-20 11:03 J -43282259.24 -43282259.04 -43282258.83 0.0294 0.0084

Moon -123213-01-08 16:20 J -43282117.93 -43282117.82 -43282117.72 0.0296 0.0264

Earth -123213-01-08 18:44 J -43282117.84 -43282117.72 -43282117.58 0.0296 0.0248 \*

Venus -123213-04-06 14:54 J -43282029.09 -43282028.88 -43282028.68 0.0297 0.0094

Venus -123213-11-22 18:58 J -43281798.90 -43281798.71 -43281798.51 0.0299 0.0102

Mars -123212-02-20 10:34 J -43281709.32 -43281709.06 -43281708.78 0.0300 0.0139

Venus -123212-07-10 23:18 J -43281568.72 -43281568.53 -43281568.33 0.0301 0.0108

Mercury -123211-01-04 17:03 J -43281390.87 -43281390.79 -43281390.70 0.0302 0.0235

Venus -123211-02-26 03:37 J -43281338.55 -43281338.35 -43281338.16 0.0303 0.0112

Mercury -123211-04-03 06:58 J -43281302.33 -43281302.21 -43281302.08 0.0303 0.0110

Mercury -123211-06-30 20:39 J -43281213.77 -43281213.64 -43281213.50 0.0303 0.0014

Mercury -123211-09-27 10:20 J -43281125.19 -43281125.07 -43281124.96 0.0303 0.0136

Venus -123211-10-14 07:13 J -43281108.39 -43281108.20 -43281108.01 0.0304 0.0112

Mercury -123211-12-24 23:32 J -43281036.58 -43281036.52 -43281036.44 0.0304 0.0257

Venus -123210-06-01 09:51 J -43280878.28 -43280878.09 -43280877.89 0.0304 0.0109

Venus -123209-01-17 11:32 J -43280648.21 -43280648.02 -43280647.83 0.0304 0.0103

Venus -123209-09-03 11:32 J -43280418.21 -43280418.02 -43280417.82 0.0303 0.0095

Venus -123208-04-21 09:51 J -43280188.29 -43280188.09 -43280187.90 0.0302 0.0084

Venus -123208-12-07 06:15 J -43279958.44 -43279958.24 -43279958.04 0.0301 0.0072

Venus -123207-07-25 00:30 J -43279728.68 -43279728.48 -43279728.28 0.0298 0.0058

Venus -123206-03-11 16:49 J -43279499.00 -43279498.80 -43279498.60 0.0296 0.0043

Venus -123206-10-27 06:44 J -43279269.42 -43279269.22 -43279269.01 0.0293 0.0029

Venus -123205-06-12 18:44 J -43279039.93 -43279039.72 -43279039.52 0.0290 0.0013

Venus -123204-01-28 04:34 J -43278810.52 -43278810.31 -43278810.11 0.0287 0.0004

Venus -123204-09-14 12:15 J -43278581.19 -43278580.99 -43278580.78 0.0284 0.0017

Venus -123203-05-01 18:15 J -43278351.94 -43278351.74 -43278351.53 0.0281 0.0029

Venus -123203-12-16 22:34 J -43278122.76 -43278122.56 -43278122.35 0.0278 0.0042

Venus -123202-08-03 01:27 J -43277893.64 -43277893.44 -43277893.24 0.0275 0.0053

Venus -123201-03-19 03:08 J -43277664.58 -43277664.37 -43277664.17 0.0272 0.0063

Venus -123201-11-03 03:22 J -43277435.56 -43277435.36 -43277435.16 0.0270 0.0072

Venus -123200-06-20 02:39 J -43277206.58 -43277206.39 -43277206.18 0.0267 0.0080

Earth -123200-06-29 20:25 J -43277196.81 -43277196.65 -43277196.49 0.0267 0.0200

Moon -123200-06-29 21:51 J -43277196.75 -43277196.59 -43277196.41 0.0267 0.0188 \*

Venus -123199-02-04 01:27 J -43276977.64 -43276977.44 -43276977.24 0.0265 0.0086

Venus -123199-09-20 23:46 J -43276748.71 -43276748.51 -43276748.31 0.0263 0.0091

Mars -123198-04-23 02:25 J -43276534.58 -43276534.40 -43276534.21 0.0262 0.0198

Venus -123198-05-07 21:51 J -43276519.79 -43276519.59 -43276519.39 0.0262 0.0095

Venus -123198-12-22 19:42 J -43276290.88 -43276290.68 -43276290.48 0.0260 0.0097

Mercury -123197-04-28 21:37 J -43276162.72 -43276162.60 -43276162.46 0.0260 0.0184

Mercury -123197-07-26 16:49 J -43276073.98 -43276073.80 -43276073.63 0.0259 0.0078

Venus -123197-08-07 17:32 J -43276061.97 -43276061.77 -43276061.57 0.0259 0.0098  
 Mercury -123197-10-23 11:46 J -43275985.19 -43275985.01 -43275984.82 0.0259 0.0028  
 Mercury -123196-01-20 06:58 J -43275896.36 -43275896.21 -43275896.05 0.0259 0.0135  
 Venus -123196-03-24 15:37 J -43275833.05 -43275832.85 -43275832.65 0.0259 0.0098  
 Mercury -123196-04-19 02:10 J -43275807.46 -43275807.41 -43275807.33 0.0258 0.0243  
 Venus -123196-11-08 14:10 J -43275604.11 -43275603.91 -43275603.70 0.0258 0.0097  
 Venus -123195-06-25 13:42 J -43275375.13 -43275374.93 -43275374.72 0.0258 0.0095  
 Venus -123194-02-09 13:56 J -43275146.12 -43275145.92 -43275145.71 0.0258 0.0091  
 Venus -123194-09-26 15:08 J -43274917.08 -43274916.87 -43274916.66 0.0259 0.0086  
 Venus -123193-05-12 17:32 J -43274687.98 -43274687.77 -43274687.56 0.0259 0.0081  
 Venus -123193-12-27 21:08 J -43274458.83 -43274458.62 -43274458.41 0.0260 0.0074  
 Venus -123192-08-14 02:10 J -43274229.62 -43274229.41 -43274229.19 0.0262 0.0066  
 Venus -123191-03-31 08:54 J -43274000.34 -43274000.13 -43273999.91 0.0263 0.0057  
 Venus -123191-11-15 17:32 J -43273770.99 -43273770.77 -43273770.56 0.0265 0.0047  
 Venus -123190-07-03 03:37 J -43273541.56 -43273541.35 -43273541.12 0.0267 0.0036  
 Venus -123189-02-17 15:51 J -43273312.06 -43273311.84 -43273311.61 0.0270 0.0024  
 Venus -123189-10-04 06:15 J -43273082.46 -43273082.24 -43273082.02 0.0273 0.0010  
 Venus -123188-05-21 22:20 J -43272852.79 -43272852.57 -43272852.35 0.0275 0.0005  
 Venus -123187-01-06 16:34 J -43272623.02 -43272622.81 -43272622.59 0.0278 0.0018  
 Venus -123187-08-24 12:58 J -43272393.17 -43272392.96 -43272392.74 0.0282 0.0032  
 Venus -123186-04-11 11:03 J -43272163.25 -43272163.04 -43272162.82 0.0285 0.0047  
 Venus -123186-11-27 11:03 J -43271933.25 -43271933.04 -43271932.83 0.0288 0.0060  
 Venus -123185-07-14 12:15 J -43271703.20 -43271702.99 -43271702.78 0.0291 0.0073  
 Earth -123184-01-01 15:22 J -43271532.04 -43271531.86 -43271531.69 0.0294 0.0202  
 Moon -123184-01-01 15:37 J -43271532.01 -43271531.85 -43271531.70 0.0294 0.0218 \*  
 Venus -123184-03-01 14:39 J -43271473.09 -43271472.89 -43271472.68 0.0294 0.0085  
 Venus -123184-10-17 18:15 J -43271242.94 -43271242.74 -43271242.54 0.0297 0.0096  
 Venus -123183-06-04 22:06 J -43271012.77 -43271012.58 -43271012.37 0.0299 0.0105  
 Venus -123182-01-21 02:39 J -43270782.59 -43270782.39 -43270782.20 0.0301 0.0110  
 Mercury -123182-05-24 17:46 J -43270658.81 -43270658.76 -43270658.71 0.0302 0.0278

Mercury -123182-08-21 07:42 J -43270570.30 -43270570.18 -43270570.07 0.0303 0.0154

Venus -123182-09-08 06:30 J -43270552.42 -43270552.23 -43270552.03 0.0303 0.0113

Mercury -123182-11-17 21:22 J -43270481.75 -43270481.61 -43270481.48 0.0303 0.0031

Mercury -123181-02-14 10:49 J -43270393.17 -43270393.05 -43270392.92 0.0304 0.0093

Venus -123181-04-25 10:06 J -43270322.27 -43270322.08 -43270321.88 0.0304 0.0113

Mercury -123181-05-13 00:30 J -43270304.58 -43270304.48 -43270304.39 0.0304 0.0214

Venus -123181-12-11 12:58 J -43270092.15 -43270091.96 -43270091.76 0.0305 0.0110

Venus -123180-07-29 14:25 J -43269862.09 -43269861.90 -43269861.70 0.0304 0.0104

Venus -123179-03-16 14:25 J -43269632.09 -43269631.90 -43269631.71 0.0304 0.0095

Venus -123179-11-01 12:30 J -43269402.17 -43269401.98 -43269401.78 0.0303 0.0084

Venus -123178-06-19 08:39 J -43269172.33 -43269172.14 -43269171.94 0.0301 0.0072

Venus -123177-02-04 02:54 J -43268942.57 -43268942.38 -43268942.18 0.0299 0.0057

Venus -123177-09-20 18:58 J -43268712.91 -43268712.71 -43268712.51 0.0296 0.0042

Venus -123176-05-08 08:39 J -43268483.34 -43268483.14 -43268482.94 0.0293 0.0027

Venus -123176-12-23 20:25 J -43268253.86 -43268253.65 -43268253.45 0.0290 0.0013

Venus -123175-08-10 06:01 J -43268024.46 -43268024.25 -43268024.05 0.0287 0.0006

Venus -123174-03-27 13:42 J -43267795.13 -43267794.93 -43267794.72 0.0284 0.0017

Venus -123174-11-11 19:42 J -43267565.89 -43267565.68 -43267565.48 0.0280 0.0031

Venus -123173-06-27 23:46 J -43267336.71 -43267336.51 -43267336.31 0.0277 0.0042

Venus -123172-02-12 02:25 J -43267107.60 -43267107.40 -43267107.19 0.0274 0.0054

Venus -123172-09-29 03:51 J -43266878.54 -43266878.34 -43266878.13 0.0272 0.0063

Venus -123171-05-16 04:20 J -43266649.52 -43266649.32 -43266649.12 0.0269 0.0071

Earth -123171-06-24 16:06 J -43266610.03 -43266609.83 -43266609.61 0.0269 0.0141

Moon -123171-06-24 19:42 J -43266609.89 -43266609.68 -43266609.46 0.0269 0.0126 \*

Venus -123171-12-31 03:51 J -43266420.54 -43266420.34 -43266420.14 0.0267 0.0079

Mars -123170-06-14 22:06 J -43266254.80 -43266254.58 -43266254.33 0.0265 0.0149

Venus -123170-08-17 02:25 J -43266191.59 -43266191.40 -43266191.19 0.0264 0.0085

Venus -123169-04-02 00:44 J -43265962.67 -43265962.47 -43265962.27 0.0263 0.0089

Venus -123169-11-16 22:49 J -43265733.75 -43265733.55 -43265733.35 0.0261 0.0093

Venus -123168-07-03 20:39 J -43265504.84 -43265504.64 -43265504.44 0.0260 0.0095

Mercury -123168-09-15 20:25 J -43265430.73 -43265430.65 -43265430.54 0.0260 0.0220

Mercury -123168-12-13 15:37 J -43265342.02 -43265341.85 -43265341.69 0.0259 0.0114

Venus -123167-02-17 18:30 J -43265275.93 -43265275.73 -43265275.52 0.0259 0.0096

Mercury -123167-03-12 10:34 J -43265253.24 -43265253.06 -43265252.87 0.0259 0.0009

Mercury -123167-06-09 05:46 J -43265164.43 -43265164.26 -43265164.09 0.0259 0.0098

Mercury -123167-09-06 00:58 J -43265075.56 -43265075.46 -43265075.34 0.0258 0.0206

Venus -123167-10-04 16:49 J -43265047.00 -43265046.80 -43265046.60 0.0258 0.0096

Venus -123166-05-21 15:37 J -43264818.05 -43264817.85 -43264817.64 0.0258 0.0095

Venus -123165-01-05 15:08 J -43264589.07 -43264588.87 -43264588.66 0.0258 0.0093

Venus -123165-08-21 15:22 J -43264360.07 -43264359.86 -43264359.66 0.0258 0.0089

Venus -123164-04-07 16:34 J -43264131.02 -43264130.81 -43264130.61 0.0259 0.0085

Venus -123164-11-22 18:44 J -43263901.93 -43263901.72 -43263901.51 0.0260 0.0079

Venus -123163-07-09 22:34 J -43263672.77 -43263672.56 -43263672.34 0.0261 0.0073

Venus -123162-02-24 03:37 J -43263443.56 -43263443.35 -43263443.13 0.0262 0.0065

Venus -123162-10-11 10:20 J -43263214.28 -43263214.07 -43263213.85 0.0264 0.0056

Venus -123161-05-27 18:44 J -43262984.93 -43262984.72 -43262984.49 0.0266 0.0046

Venus -123160-01-12 05:18 J -43262755.50 -43262755.28 -43262755.06 0.0268 0.0034

Venus -123160-08-29 17:32 J -43262525.99 -43262525.77 -43262525.55 0.0270 0.0022

Venus -123159-04-16 07:42 J -43262296.40 -43262296.18 -43262295.96 0.0273 0.0010

Venus -123159-12-02 00:01 J -43262066.72 -43262066.50 -43262066.28 0.0276 0.0005

Venus -123158-07-19 18:15 J -43261836.96 -43261836.74 -43261836.52 0.0279 0.0019

Venus -123157-03-05 14:25 J -43261607.11 -43261606.90 -43261606.68 0.0282 0.0033

Venus -123157-10-21 12:44 J -43261377.19 -43261376.97 -43261376.76 0.0285 0.0047

Venus -123156-06-08 12:15 J -43261147.20 -43261146.99 -43261146.77 0.0288 0.0061

Venus -123155-01-24 13:42 J -43260917.14 -43260916.93 -43260916.72 0.0291 0.0073

Venus -123155-09-11 16:06 J -43260687.03 -43260686.83 -43260686.62 0.0294 0.0085

Venus -123154-04-29 19:42 J -43260456.88 -43260456.68 -43260456.48 0.0297 0.0094

Mars -123154-05-23 06:30 J -43260433.47 -43260433.23 -43260432.96 0.0297 0.0161

Venus -123154-12-15 23:46 J -43260226.71 -43260226.51 -43260226.31 0.0299 0.0101

Venus -123153-08-02 03:51 J -43259996.53 -43259996.34 -43259996.14 0.0301 0.0106

Mercury -123152-01-07 07:42 J -43259838.28 -43259838.18 -43259838.08 0.0302 0.0204

Venus -123152-03-20 07:56 J -43259766.37 -43259766.17 -43259765.98 0.0303 0.0109

Mercury -123152-04-05 21:22 J -43259749.74 -43259749.61 -43259749.48 0.0303 0.0081

Mercury -123152-07-03 11:03 J -43259661.17 -43259661.04 -43259660.91 0.0303 0.0042

Mercury -123152-09-30 00:30 J -43259572.59 -43259572.48 -43259572.37 0.0303 0.0164

Venus -123152-11-05 11:18 J -43259536.22 -43259536.03 -43259535.83 0.0304 0.0108

Mercury -123152-12-27 13:56 J -43259483.96 -43259483.92 -43259483.88 0.0304 0.0285

Venus -123151-06-23 13:42 J -43259306.11 -43259305.93 -43259305.73 0.0304 0.0105

Venus -123150-02-08 15:08 J -43259076.06 -43259075.87 -43259075.68 0.0304 0.0098

Venus -123150-09-26 14:39 J -43258846.08 -43258845.89 -43258845.69 0.0303 0.0090

Venus -123149-05-13 12:44 J -43258616.16 -43258615.97 -43258615.77 0.0302 0.0079

Venus -123149-12-29 08:54 J -43258386.33 -43258386.13 -43258385.93 0.0300 0.0066

Venus -123148-08-16 02:54 J -43258156.57 -43258156.38 -43258156.17 0.0298 0.0053

Venus -123147-04-02 18:58 J -43257926.91 -43257926.71 -43257926.51 0.0296 0.0038

Venus -123147-11-18 08:54 J -43257697.34 -43257697.13 -43257696.93 0.0293 0.0024

Venus -123146-07-05 20:39 J -43257467.85 -43257467.64 -43257467.44 0.0290 0.0010

Venus -123145-02-20 06:15 J -43257238.44 -43257238.24 -43257238.03 0.0287 0.0009

Venus -123145-10-06 14:10 J -43257009.12 -43257008.91 -43257008.71 0.0284 0.0020

Venus -123144-05-23 20:10 J -43256779.87 -43256779.66 -43256779.46 0.0281 0.0033

Venus -123143-01-08 00:15 J -43256550.69 -43256550.49 -43256550.28 0.0278 0.0045

Venus -123143-08-25 03:08 J -43256321.57 -43256321.37 -43256321.16 0.0275 0.0055

Venus -123142-04-11 04:49 J -43256092.49 -43256092.30 -43256092.09 0.0272 0.0065

Venus -123142-11-26 05:18 J -43255863.47 -43255863.28 -43255863.07 0.0269 0.0074

Moon -123141-06-30 14:10 J -43255645.95 -43255645.91 -43255645.83 0.0267 0.0260

Earth -123141-06-30 15:37 J -43255645.88 -43255645.85 -43255645.79 0.0267 0.0262 \*

Venus -123141-07-12 05:03 J -43255634.49 -43255634.29 -43255634.09 0.0267 0.0080

Venus -123140-02-26 03:51 J -43255405.54 -43255405.34 -43255405.14 0.0265 0.0086

Mars -123140-07-31 03:22 J -43255250.64 -43255250.36 -43255250.08 0.0264 0.0034

Venus -123140-10-13 02:10 J -43255176.61 -43255176.41 -43255176.21 0.0263 0.0090

Venus -123139-05-30 00:15 J -43254947.68 -43254947.49 -43254947.28 0.0262 0.0094

Venus -123138-01-13 22:20 J -43254718.76 -43254718.57 -43254718.37 0.0260 0.0096  
 Mercury -123138-02-02 19:42 J -43254698.71 -43254698.68 -43254698.63 0.0260 0.0253  
 Mercury -123138-05-02 14:39 J -43254610.04 -43254609.89 -43254609.74 0.0260 0.0148  
 Mercury -123138-07-30 09:37 J -43254521.28 -43254521.10 -43254520.92 0.0259 0.0042  
 Venus -123138-08-30 20:25 J -43254489.85 -43254489.65 -43254489.45 0.0259 0.0096  
 Mercury -123138-10-27 04:49 J -43254432.48 -43254432.30 -43254432.12 0.0259 0.0065  
 Mercury -123137-01-24 00:01 J -43254343.63 -43254343.50 -43254343.35 0.0259 0.0172  
 Venus -123137-04-15 18:44 J -43254260.91 -43254260.72 -43254260.51 0.0259 0.0096  
 Venus -123137-11-30 17:46 J -43254031.96 -43254031.76 -43254031.56 0.0258 0.0094  
 Venus -123136-07-17 17:18 J -43253802.98 -43253802.78 -43253802.57 0.0258 0.0091  
 Venus -123135-03-03 17:46 J -43253573.97 -43253573.76 -43253573.55 0.0258 0.0087  
 Venus -123135-10-18 18:58 J -43253344.91 -43253344.71 -43253344.49 0.0259 0.0083  
 Venus -123134-06-04 21:37 J -43253115.80 -43253115.60 -43253115.38 0.0259 0.0077  
 Venus -123133-01-20 01:42 J -43252886.64 -43252886.43 -43252886.22 0.0261 0.0069  
 Venus -123133-09-05 06:58 J -43252657.42 -43252657.21 -43252656.99 0.0262 0.0061  
 Venus -123132-04-22 13:56 J -43252428.14 -43252427.92 -43252427.70 0.0263 0.0051  
 Venus -123132-12-07 22:34 J -43252198.78 -43252198.56 -43252198.34 0.0265 0.0041  
 Venus -123131-07-25 09:08 J -43251969.34 -43251969.12 -43251968.90 0.0268 0.0030  
 Venus -123130-03-11 21:22 J -43251739.83 -43251739.61 -43251739.38 0.0270 0.0019  
 Venus -123130-10-27 11:46 J -43251510.23 -43251510.01 -43251509.79 0.0273 0.0006  
 Venus -123129-06-13 04:06 J -43251280.55 -43251280.33 -43251280.11 0.0276 0.0008  
 Venus -123128-01-28 22:20 J -43251050.78 -43251050.57 -43251050.35 0.0279 0.0022  
 Venus -123128-09-15 18:44 J -43250820.93 -43250820.72 -43250820.50 0.0282 0.0036  
 Venus -123127-05-03 17:03 J -43250591.01 -43250590.79 -43250590.58 0.0285 0.0049  
 Venus -123127-12-19 16:49 J -43250361.01 -43250360.80 -43250360.59 0.0288 0.0063  
 Venus -123126-08-06 17:46 J -43250130.96 -43250130.76 -43250130.55 0.0291 0.0075  
 Moon -123125-01-03 11:03 J -43249981.27 -43249981.04 -43249980.81 0.0293 0.0121  
 Earth -123125-01-03 11:32 J -43249981.23 -43249981.02 -43249980.80 0.0293 0.0132 \*  
 Venus -123125-03-23 20:10 J -43249900.86 -43249900.66 -43249900.45 0.0294 0.0087  
 Venus -123125-11-08 23:46 J -43249670.71 -43249670.51 -43249670.31 0.0297 0.0096

Venus -123124-06-27 03:37 J -43249440.55 -43249440.35 -43249440.15 0.0300 0.0103  
 Mars -123124-07-15 12:15 J -43249422.26 -43249421.99 -43249421.72 0.0300 0.0144  
 Venus -123123-02-12 07:42 J -43249210.38 -43249210.18 -43249209.99 0.0302 0.0108  
 Mercury -123123-05-27 08:10 J -43249106.23 -43249106.16 -43249106.07 0.0302 0.0247  
 Mercury -123123-08-23 22:06 J -43249017.70 -43249017.58 -43249017.45 0.0303 0.0123  
 Venus -123123-09-30 11:32 J -43248980.21 -43248980.02 -43248979.83 0.0303 0.0110  
 Mercury -123123-11-20 11:46 J -43248929.14 -43248929.01 -43248928.87 0.0303 0.0007  
 Mercury -123122-02-17 01:27 J -43248840.56 -43248840.44 -43248840.32 0.0304 0.0123  
 Mercury -123122-05-16 14:54 J -43248751.96 -43248751.88 -43248751.80 0.0304 0.0244  
 Venus -123122-05-18 14:54 J -43248750.07 -43248749.88 -43248749.69 0.0304 0.0109  
 Venus -123121-01-03 17:18 J -43248519.97 -43248519.78 -43248519.58 0.0304 0.0106  
 Venus -123121-08-20 18:30 J -43248289.92 -43248289.73 -43248289.53 0.0304 0.0099  
 Venus -123120-04-07 18:15 J -43248059.94 -43248059.74 -43248059.55 0.0304 0.0090  
 Venus -123120-11-23 16:06 J -43247830.03 -43247829.83 -43247829.63 0.0302 0.0079  
 Venus -123119-07-11 12:01 J -43247600.20 -43247600.00 -43247599.80 0.0301 0.0066  
 Venus -123118-02-26 06:01 J -43247370.45 -43247370.25 -43247370.05 0.0298 0.0052  
 Venus -123118-10-13 21:37 J -43247140.80 -43247140.60 -43247140.39 0.0296 0.0038  
 Venus -123117-05-30 11:18 J -43246911.23 -43246911.03 -43246910.83 0.0293 0.0022  
 Venus -123116-01-14 22:49 J -43246681.75 -43246681.55 -43246681.35 0.0290 0.0007  
 Venus -123116-09-01 08:25 J -43246452.36 -43246452.15 -43246451.95 0.0287 0.0009  
 Venus -123115-04-18 15:51 J -43246223.04 -43246222.84 -43246222.63 0.0283 0.0021  
 Venus -123115-12-03 21:51 J -43245993.80 -43245993.59 -43245993.39 0.0280 0.0034  
 Venus -123114-07-21 01:56 J -43245764.62 -43245764.42 -43245764.21 0.0277 0.0045  
 Venus -123113-03-06 04:49 J -43245535.50 -43245535.30 -43245535.10 0.0274 0.0055  
 Venus -123113-10-21 06:15 J -43245306.44 -43245306.24 -43245306.03 0.0271 0.0065  
 Venus -123112-06-07 06:44 J -43245077.42 -43245077.22 -43245077.02 0.0269 0.0072  
 Moon -123112-06-25 08:54 J -43245059.37 -43245059.13 -43245058.90 0.0269 0.0087  
 Earth -123112-06-25 12:30 J -43245059.22 -43245058.98 -43245058.74 0.0269 0.0077 \*  
 Venus -123111-01-22 06:15 J -43244848.44 -43244848.24 -43244848.04 0.0267 0.0079  
 Venus -123111-09-08 05:03 J -43244619.48 -43244619.29 -43244619.08 0.0264 0.0085



Venus -123110-04-25 03:37 J -43244390.54 -43244390.35 -43244390.14 0.0263 0.0089  
 Mars -123110-09-16 02:25 J -43244246.57 -43244246.40 -43244246.22 0.0262 0.0204  
 Venus -123110-12-10 01:56 J -43244161.62 -43244161.42 -43244161.22 0.0261 0.0091  
 Venus -123109-07-25 23:46 J -43243932.71 -43243932.51 -43243932.30 0.0260 0.0093  
 Mercury -123109-09-18 13:27 J -43243878.06 -43243877.94 -43243877.80 0.0260 0.0183  
 Mercury -123109-12-16 08:39 J -43243789.31 -43243789.14 -43243788.96 0.0259 0.0077  
 Venus -123108-03-11 21:51 J -43243703.78 -43243703.59 -43243703.38 0.0259 0.0094  
 Mercury -123108-03-15 03:51 J -43243700.53 -43243700.34 -43243700.16 0.0259 0.0029  
 Mercury -123108-06-11 22:49 J -43243611.70 -43243611.55 -43243611.38 0.0259 0.0137  
 Mercury -123108-09-08 18:15 J -43243522.79 -43243522.74 -43243522.67 0.0258 0.0244  
 Venus -123108-10-26 20:25 J -43243474.85 -43243474.65 -43243474.44 0.0258 0.0093  
 Venus -123107-06-12 19:27 J -43243245.89 -43243245.69 -43243245.48 0.0258 0.0092  
 Venus -123106-01-27 19:13 J -43243016.90 -43243016.70 -43243016.49 0.0258 0.0089  
 Venus -123106-09-13 19:42 J -43242787.88 -43242787.68 -43242787.47 0.0258 0.0086  
 Venus -123105-04-29 21:08 J -43242558.83 -43242558.62 -43242558.41 0.0259 0.0081  
 Venus -123105-12-14 23:46 J -43242329.72 -43242329.51 -43242329.30 0.0260 0.0075  
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Mars -123066-10-15 23:46 J -43228145.76 -43228145.51 -43228145.23 0.0297 0.0147  
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 Venus -123008-02-02 12:01 J -43207216.20 -43207216.00 -43207215.78 0.0289 0.0067  
 Venus -123008-09-20 13:27 J -43206986.14 -43206985.94 -43206985.73 0.0292 0.0078  
 Moon -123007-01-05 17:03 J -43206879.04 -43206878.79 -43206878.54 0.0293 0.0030

Earth	-123007-01-05 17:18 J	-43206879.02	-43206878.78	-43206878.54	0.0293	0.0046	*
Venus	-123007-05-08 16:06 J	-43206756.04	-43206755.83	-43206755.63	0.0295	0.0087	
Venus	-123007-12-24 19:13 J	-43206525.90	-43206525.70	-43206525.50	0.0298	0.0095	
Venus	-123006-08-11 22:34 J	-43206295.75	-43206295.56	-43206295.35	0.0300	0.0101	
Mercury	-123005-03-05 02:10 J	-43206089.45	-43206089.41	-43206089.37	0.0302	0.0284	
Venus	-123005-03-29 02:25 J	-43206065.60	-43206065.40	-43206065.20	0.0302	0.0104	
Mercury	-123005-06-01 15:51 J	-43206000.95	-43206000.84	-43206000.72	0.0302	0.0162	
Mercury	-123005-08-29 05:46 J	-43205912.39	-43205912.26	-43205912.13	0.0303	0.0040	
Venus	-123005-11-14 05:46 J	-43205835.45	-43205835.26	-43205835.06	0.0303	0.0104	
Mercury	-123005-11-25 19:13 J	-43205823.82	-43205823.70	-43205823.57	0.0303	0.0083	
Mercury	-123004-02-22 08:39 J	-43205735.23	-43205735.14	-43205735.04	0.0303	0.0204	
Venus	-123004-07-02 08:39 J	-43205605.34	-43205605.14	-43205604.95	0.0304	0.0102	
Venus	-123003-02-17 10:20 J	-43205375.26	-43205375.07	-43205374.88	0.0304	0.0097	
Venus	-123003-10-05 10:34 J	-43205145.25	-43205145.06	-43205144.86	0.0304	0.0090	
Venus	-123002-05-23 09:37 J	-43204915.30	-43204915.10	-43204914.91	0.0303	0.0080	
Venus	-123001-01-08 06:44 J	-43204685.42	-43204685.22	-43204685.02	0.0302	0.0069	
Venus	-123001-08-25 01:42 J	-43204455.63	-43204455.43	-43204455.23	0.0300	0.0056	

# 123RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 123rd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
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Venus	-123000-04-11 18:44 J	-43204225.92	-43204225.72	-43204225.52	0.0297	0.0042
Venus	-123000-11-27 09:51 J	-43203996.30	-43203996.09	-43203995.89	0.0295	0.0028
Venus	-122999-07-14 22:34 J	-43203766.76	-43203766.56	-43203766.35	0.0292	0.0015
Venus	-122998-03-01 09:37 J	-43203537.30	-43203537.10	-43203536.89	0.0289	0.0007
Venus	-122998-10-16 18:44 J	-43203307.93	-43203307.72	-43203307.52	0.0286	0.0015
Venus	-122997-06-02 01:42 J	-43203078.63	-43203078.43	-43203078.22	0.0283	0.0028
Venus	-122996-01-17 07:13 J	-43202849.40	-43202849.20	-43202849.00	0.0280	0.0039
Venus	-122996-09-03 11:03 J	-43202620.24	-43202620.04	-43202619.83	0.0277	0.0050
Venus	-122995-04-20 13:56 J	-43202391.12	-43202390.92	-43202390.71	0.0274	0.0059
Venus	-122995-12-05 15:22 J	-43202162.06	-43202161.86	-43202161.65	0.0271	0.0067
Moon	-122994-06-28 07:42 J	-43201957.42	-43201957.18	-43201956.94	0.0269	0.0082
Earth	-122994-06-28 11:18 J	-43201957.26	-43201957.03	-43201956.78	0.0269	0.0067 *
Venus	-122994-07-22 15:51 J	-43201933.04	-43201932.84	-43201932.63	0.0269	0.0074
Venus	-122993-03-07 15:37 J	-43201704.05	-43201703.85	-43201703.65	0.0266	0.0079
Mars	-122993-04-02 08:54 J	-43201678.37	-43201678.13	-43201677.87	0.0266	0.0125
Venus	-122993-10-22 14:39 J	-43201475.08	-43201474.89	-43201474.68	0.0264	0.0084
Venus	-122992-06-08 13:27 J	-43201246.13	-43201245.94	-43201245.73	0.0263	0.0087
Venus	-122991-01-23 12:01 J	-43201017.20	-43201017.00	-43201016.79	0.0261	0.0089
Mercury	-122991-06-28 06:44 J	-43200861.33	-43200861.22	-43200861.10	0.0260	0.0203
Venus	-122991-09-09 10:34 J	-43200788.26	-43200788.06	-43200787.86	0.0260	0.0089
Mercury	-122991-09-25 01:56 J	-43200772.59	-43200772.42	-43200772.25	0.0260	0.0097
Mercury	-122991-12-22 20:54 J	-43200683.81	-43200683.63	-43200683.44	0.0260	0.0011
Mercury	-122990-03-21 16:20 J	-43200594.99	-43200594.82	-43200594.66	0.0259	0.0116
Venus	-122990-04-26 09:08 J	-43200559.32	-43200559.12	-43200558.91	0.0259	0.0089
Mercury	-122990-06-18 11:32 J	-43200506.10	-43200506.02	-43200505.92	0.0259	0.0224
Venus	-122990-12-11 08:25 J	-43200330.36	-43200330.15	-43200329.95	0.0259	0.0088
Venus	-122989-07-27 07:56 J	-43200101.38	-43200101.17	-43200100.97	0.0258	0.0086
Venus	-122988-03-13 08:10 J	-43199872.37	-43199872.16	-43199871.95	0.0258	0.0082
Venus	-122988-10-28 09:22 J	-43199643.32	-43199643.11	-43199642.90	0.0259	0.0078

Venus -122987-06-14 11:46 J -43199414.22 -43199414.01 -43199413.80 0.0259 0.0073  
 Venus -122986-01-29 15:08 J -43199185.08 -43199184.87 -43199184.65 0.0260 0.0066  
 Venus -122986-09-15 19:56 J -43198955.89 -43198955.67 -43198955.46 0.0262 0.0059  
 Venus -122985-05-02 01:56 J -43198726.63 -43198726.42 -43198726.20 0.0263 0.0051  
 Venus -122985-12-17 09:51 J -43198497.31 -43198497.09 -43198496.87 0.0265 0.0041  
 Venus -122984-08-03 19:27 J -43198267.90 -43198267.69 -43198267.46 0.0267 0.0032  
 Venus -122983-03-21 06:58 J -43198038.43 -43198038.21 -43198037.99 0.0269 0.0020  
 Venus -122983-11-05 20:10 J -43197808.88 -43197808.66 -43197808.44 0.0272 0.0009  
 Venus -122982-06-23 11:03 J -43197579.26 -43197579.04 -43197578.82 0.0274 0.0007  
 Venus -122981-02-08 04:06 J -43197349.55 -43197349.33 -43197349.11 0.0277 0.0018  
 Venus -122981-09-24 23:18 J -43197119.75 -43197119.53 -43197119.31 0.0280 0.0031  
 Venus -122980-05-12 19:56 J -43196889.88 -43196889.67 -43196889.45 0.0283 0.0044  
 Venus -122980-12-28 18:30 J -43196659.94 -43196659.73 -43196659.52 0.0286 0.0056  
 Venus -122979-08-15 18:30 J -43196429.94 -43196429.73 -43196429.52 0.0289 0.0067  
 Venus -122978-04-02 19:42 J -43196199.88 -43196199.68 -43196199.47 0.0292 0.0078  
 Venus -122978-11-18 22:20 J -43195969.77 -43195969.57 -43195969.37 0.0295 0.0087  
 Mars -122977-03-10 12:58 J -43195857.23 -43195856.96 -43195856.68 0.0296 0.0127  
 Venus -122977-07-06 01:27 J -43195739.64 -43195739.44 -43195739.24 0.0298 0.0094  
 Venus -122976-02-21 04:49 J -43195509.49 -43195509.30 -43195509.09 0.0300 0.0099  
 Venus -122976-10-09 08:39 J -43195279.34 -43195279.14 -43195278.94 0.0302 0.0101  
 Mercury -122976-10-19 17:32 J -43195268.87 -43195268.77 -43195268.67 0.0302 0.0199  
 Mercury -122975-01-16 07:13 J -43195180.33 -43195180.20 -43195180.07 0.0302 0.0077  
 Mercury -122975-04-14 20:54 J -43195091.77 -43195091.63 -43195091.50 0.0303 0.0046  
 Venus -122975-05-27 11:46 J -43195049.20 -43195049.01 -43195048.81 0.0303 0.0101  
 Mercury -122975-07-12 10:20 J -43195003.18 -43195003.07 -43195002.96 0.0303 0.0166  
 Mercury -122975-10-08 23:32 J -43194914.55 -43194914.52 -43194914.47 0.0303 0.0286  
 Venus -122974-01-12 14:39 J -43194819.09 -43194818.89 -43194818.70 0.0303 0.0098  
 Venus -122974-08-30 16:06 J -43194589.03 -43194588.83 -43194588.64 0.0304 0.0092  
 Venus -122973-04-16 16:06 J -43194359.02 -43194358.83 -43194358.63 0.0303 0.0085  
 Venus -122973-12-02 14:39 J -43194129.09 -43194128.89 -43194128.69 0.0302 0.0075

Venus -122972-07-20 11:18 J -43193899.22 -43193899.03 -43193898.83 0.0301 0.0064  
 Venus -122971-03-07 06:15 J -43193669.44 -43193669.24 -43193669.04 0.0299 0.0051  
 Venus -122971-10-22 22:49 J -43193439.75 -43193439.55 -43193439.35 0.0297 0.0038  
 Venus -122970-06-09 13:27 J -43193210.14 -43193209.94 -43193209.73 0.0294 0.0024  
 Venus -122969-01-25 02:10 J -43192980.61 -43192980.41 -43192980.20 0.0291 0.0011  
 Venus -122969-09-10 12:58 J -43192751.16 -43192750.96 -43192750.76 0.0288 0.0004  
 Venus -122968-04-27 21:51 J -43192521.80 -43192521.59 -43192521.39 0.0285 0.0017  
 Venus -122968-12-13 04:49 J -43192292.50 -43192292.30 -43192292.09 0.0282 0.0029  
 Venus -122967-07-30 10:20 J -43192063.27 -43192063.07 -43192062.87 0.0279 0.0040  
 Venus -122966-03-16 14:25 J -43191834.10 -43191833.90 -43191833.70 0.0276 0.0050  
 Venus -122966-10-31 17:03 J -43191604.99 -43191604.79 -43191604.59 0.0274 0.0060  
 Venus -122965-06-16 18:30 J -43191375.93 -43191375.73 -43191375.53 0.0271 0.0068  
 Earth -122965-06-22 08:54 J -43191370.14 -43191370.13 -43191370.10 0.0271 0.0270  
 Venus -122964-01-31 18:44 J -43191146.91 -43191146.72 -43191146.51 0.0269 0.0075  
 Venus -122964-09-17 18:44 J -43190917.92 -43190917.72 -43190917.52 0.0267 0.0080  
 Venus -122963-05-04 18:01 J -43190688.95 -43190688.75 -43190688.55 0.0265 0.0084  
 Mars -122963-05-19 21:08 J -43190673.89 -43190673.62 -43190673.34 0.0264 0.0063  
 Venus -122963-12-19 16:49 J -43190460.00 -43190459.80 -43190459.59 0.0263 0.0088  
 Venus -122962-08-05 15:22 J -43190231.06 -43190230.86 -43190230.65 0.0262 0.0090  
 Mercury -122962-11-15 06:30 J -43190129.30 -43190129.23 -43190129.14 0.0261 0.0232  
 Mercury -122961-02-12 01:42 J -43190040.59 -43190040.43 -43190040.27 0.0261 0.0126  
 Venus -122961-03-21 13:56 J -43190002.12 -43190001.92 -43190001.71 0.0260 0.0090  
 Mercury -122961-05-10 20:54 J -43189951.81 -43189951.63 -43189951.45 0.0260 0.0020  
 Mercury -122961-08-07 16:06 J -43189863.00 -43189862.83 -43189862.65 0.0260 0.0088  
 Mercury -122961-11-04 11:18 J -43189774.14 -43189774.03 -43189773.90 0.0260 0.0196  
 Venus -122961-11-05 12:44 J -43189773.17 -43189772.97 -43189772.76 0.0260 0.0090  
 Venus -122960-06-22 12:15 J -43189544.20 -43189543.99 -43189543.79 0.0259 0.0088  
 Venus -122959-02-06 11:46 J -43189315.21 -43189315.01 -43189314.80 0.0259 0.0086  
 Venus -122959-09-23 12:30 J -43189086.19 -43189085.98 -43189085.77 0.0259 0.0082  
 Venus -122958-05-10 13:42 J -43188857.13 -43188856.93 -43188856.71 0.0259 0.0077

Venus -122958-12-25 16:20 J -43188628.03 -43188627.82 -43188627.61 0.0260 0.0071  
 Venus -122957-08-10 19:56 J -43188398.88 -43188398.67 -43188398.45 0.0261 0.0065  
 Venus -122956-03-28 01:13 J -43188169.67 -43188169.45 -43188169.24 0.0262 0.0057  
 Venus -122956-11-12 07:42 J -43187940.39 -43187940.18 -43187939.96 0.0263 0.0048  
 Venus -122955-06-29 15:51 J -43187711.05 -43187710.84 -43187710.61 0.0265 0.0039  
 Venus -122954-02-14 01:56 J -43187481.64 -43187481.42 -43187481.20 0.0267 0.0028  
 Venus -122954-10-01 13:42 J -43187252.15 -43187251.93 -43187251.71 0.0269 0.0018  
 Venus -122953-05-18 03:08 J -43187022.59 -43187022.37 -43187022.15 0.0272 0.0006  
 Venus -122952-01-02 18:30 J -43186792.95 -43186792.73 -43186792.51 0.0274 0.0008  
 Venus -122952-08-20 11:46 J -43186563.23 -43186563.01 -43186562.79 0.0277 0.0020  
 Venus -122951-04-07 06:58 J -43186333.43 -43186333.21 -43186332.99 0.0280 0.0032  
 Venus -122951-11-23 03:51 J -43186103.55 -43186103.34 -43186103.12 0.0283 0.0045  
 Venus -122950-07-11 02:39 J -43185873.61 -43185873.39 -43185873.18 0.0286 0.0057  
 Venus -122949-02-26 02:39 J -43185643.60 -43185643.39 -43185643.18 0.0290 0.0068  
 Venus -122949-10-13 04:20 J -43185413.53 -43185413.32 -43185413.11 0.0293 0.0078  
 Moon -122948-01-07 03:22 J -43185327.55 -43185327.36 -43185327.16 0.0294 0.0162  
 Earth -122948-01-07 03:51 J -43185327.54 -43185327.34 -43185327.13 0.0294 0.0157 \*  
 Venus -122948-05-31 06:44 J -43185183.42 -43185183.22 -43185183.02 0.0295 0.0087  
 Venus -122947-01-16 09:51 J -43184953.29 -43184953.09 -43184952.89 0.0298 0.0094  
 Mars -122947-05-04 06:44 J -43184845.45 -43184845.22 -43184844.97 0.0299 0.0182  
 Venus -122947-09-03 13:13 J -43184723.14 -43184722.95 -43184722.75 0.0300 0.0099  
 Mercury -122946-03-08 19:27 J -43184536.77 -43184536.69 -43184536.60 0.0301 0.0230  
 Venus -122946-04-21 16:49 J -43184493.00 -43184492.80 -43184492.61 0.0302 0.0101  
 Mercury -122946-06-05 09:08 J -43184448.24 -43184448.12 -43184447.99 0.0302 0.0108  
 Mercury -122946-09-01 22:49 J -43184359.68 -43184359.55 -43184359.41 0.0303 0.0015  
 Mercury -122946-11-29 12:15 J -43184271.10 -43184270.99 -43184270.87 0.0303 0.0135  
 Venus -122946-12-07 19:56 J -43184262.86 -43184262.67 -43184262.47 0.0303 0.0101  
 Mercury -122945-02-26 01:42 J -43184182.50 -43184182.43 -43184182.36 0.0303 0.0255  
 Venus -122945-07-24 22:20 J -43184032.77 -43184032.57 -43184032.38 0.0304 0.0098  
 Venus -122944-03-11 23:32 J -43183802.72 -43183802.52 -43183802.32 0.0304 0.0093

Venus	-122944-10-27 23:18 J	-43183572.72	-43183572.53	-43183572.33	0.0303	0.0085
Venus	-122943-06-14 21:37 J	-43183342.79	-43183342.60	-43183342.40	0.0303	0.0076
Venus	-122942-01-30 18:15 J	-43183112.93	-43183112.74	-43183112.54	0.0301	0.0064
Venus	-122942-09-17 12:58 J	-43182883.16	-43182882.96	-43182882.76	0.0299	0.0051
Venus	-122941-05-04 05:18 J	-43182653.48	-43182653.28	-43182653.08	0.0297	0.0037
Venus	-122941-12-19 19:42 J	-43182423.88	-43182423.68	-43182423.47	0.0294	0.0024
Venus	-122940-08-06 08:10 J	-43182194.36	-43182194.16	-43182193.95	0.0291	0.0010
Venus	-122939-03-23 18:44 J	-43181964.92	-43181964.72	-43181964.51	0.0288	0.0006
Venus	-122939-11-08 03:22 J	-43181735.57	-43181735.36	-43181735.16	0.0285	0.0018
Venus	-122938-06-25 10:06 J	-43181506.28	-43181506.08	-43181505.88	0.0282	0.0030
Venus	-122937-02-09 15:22 J	-43181277.07	-43181276.86	-43181276.66	0.0279	0.0041
Venus	-122937-09-25 18:58 J	-43181047.91	-43181047.71	-43181047.51	0.0276	0.0051
Venus	-122936-05-12 21:37 J	-43180818.81	-43180818.60	-43180818.40	0.0273	0.0060
Venus	-122936-12-27 22:49 J	-43180589.75	-43180589.55	-43180589.34	0.0271	0.0067
Earth	-122935-06-29 15:37 J	-43180406.05	-43180405.85	-43180405.64	0.0269	0.0151
Moon	-122935-06-29 18:58 J	-43180405.91	-43180405.71	-43180405.51	0.0269	0.0151 *
Venus	-122935-08-13 23:18 J	-43180360.73	-43180360.53	-43180360.32	0.0268	0.0073
Venus	-122934-03-30 23:03 J	-43180131.74	-43180131.54	-43180131.33	0.0266	0.0078
Venus	-122934-11-14 22:20 J	-43179902.77	-43179902.57	-43179902.37	0.0264	0.0082
Venus	-122933-06-30 21:08 J	-43179673.82	-43179673.62	-43179673.42	0.0262	0.0085
Mars	-122933-07-05 06:01 J	-43179669.35	-43179669.25	-43179669.11	0.0262	0.0238
Venus	-122932-02-14 19:42 J	-43179444.88	-43179444.68	-43179444.47	0.0261	0.0087
Mercury	-122932-04-03 07:13 J	-43179397.22	-43179397.20	-43179397.18	0.0261	0.0259
Mercury	-122932-07-01 01:56 J	-43179308.56	-43179308.42	-43179308.26	0.0260	0.0154
Mercury	-122932-09-27 21:08 J	-43179219.80	-43179219.62	-43179219.44	0.0260	0.0048
Venus	-122932-10-01 18:30 J	-43179215.93	-43179215.73	-43179215.53	0.0260	0.0087
Mercury	-122932-12-25 16:20 J	-43179130.99	-43179130.82	-43179130.63	0.0260	0.0060
Mercury	-122931-03-24 11:46 J	-43179042.15	-43179042.01	-43179041.87	0.0259	0.0167
Venus	-122931-05-18 17:32 J	-43178986.97	-43178986.77	-43178986.56	0.0259	0.0087
Venus	-122930-01-02 16:49 J	-43178758.00	-43178757.80	-43178757.59	0.0259	0.0085

Venus -122930-08-19 16:49 J -43178529.01 -43178528.80 -43178528.60 0.0259 0.0083  
 Venus -122929-04-04 17:18 J -43178299.99 -43178299.78 -43178299.57 0.0259 0.0079  
 Venus -122929-11-19 18:58 J -43178070.92 -43178070.71 -43178070.50 0.0259 0.0074  
 Venus -122928-07-06 21:51 J -43177841.80 -43177841.59 -43177841.38 0.0260 0.0069  
 Venus -122927-02-21 01:42 J -43177612.64 -43177612.43 -43177612.21 0.0261 0.0062  
 Venus -122927-10-08 06:58 J -43177383.43 -43177383.21 -43177382.99 0.0262 0.0055  
 Venus -122926-05-25 13:42 J -43177154.15 -43177153.93 -43177153.71 0.0264 0.0046  
 Venus -122925-01-09 22:06 J -43176924.80 -43176924.58 -43176924.36 0.0265 0.0037  
 Venus -122925-08-26 08:10 J -43176695.38 -43176695.16 -43176694.94 0.0268 0.0027  
 Venus -122924-04-12 20:10 J -43176465.88 -43176465.66 -43176465.44 0.0270 0.0016  
 Venus -122924-11-28 09:51 J -43176236.31 -43176236.09 -43176235.87 0.0272 0.0004  
 Venus -122923-07-16 01:27 J -43176006.66 -43176006.44 -43176006.22 0.0275 0.0008  
 Venus -122922-03-02 18:58 J -43175776.93 -43175776.71 -43175776.49 0.0278 0.0021  
 Venus -122922-10-18 14:25 J -43175547.12 -43175546.90 -43175546.68 0.0281 0.0034  
 Venus -122921-06-04 11:32 J -43175317.24 -43175317.02 -43175316.81 0.0284 0.0046  
 Venus -122920-01-20 10:20 J -43175087.28 -43175087.07 -43175086.86 0.0287 0.0058  
 Venus -122920-09-07 10:34 J -43174857.27 -43174857.06 -43174856.85 0.0290 0.0069  
 Earth -122919-01-01 09:08 J -43174741.21 -43174741.12 -43174741.02 0.0292 0.0265  
 Moon -122919-01-01 11:32 J -43174741.08 -43174741.02 -43174740.94 0.0292 0.0279 \*  
 Venus -122919-04-25 12:01 J -43174627.20 -43174627.00 -43174626.79 0.0293 0.0079  
 Venus -122919-12-11 14:39 J -43174397.09 -43174396.89 -43174396.68 0.0296 0.0087  
 Venus -122918-07-29 17:46 J -43174166.96 -43174166.76 -43174166.56 0.0298 0.0093  
 Venus -122917-03-15 21:08 J -43173936.81 -43173936.62 -43173936.42 0.0300 0.0097  
 Mercury -122917-07-25 21:22 J -43173804.67 -43173804.61 -43173804.54 0.0301 0.0262  
 Mercury -122917-10-22 11:18 J -43173716.15 -43173716.03 -43173715.91 0.0302 0.0141  
 Venus -122917-11-01 00:44 J -43173706.67 -43173706.47 -43173706.27 0.0302 0.0099  
 Mercury -122916-01-19 00:58 J -43173627.60 -43173627.46 -43173627.33 0.0302 0.0021  
 Mercury -122916-04-17 14:25 J -43173539.02 -43173538.90 -43173538.78 0.0303 0.0102  
 Venus -122916-06-19 03:37 J -43173476.54 -43173476.35 -43173476.15 0.0303 0.0098  
 Mercury -122916-07-15 03:51 J -43173450.43 -43173450.34 -43173450.25 0.0303 0.0222

Venus	-122915-02-04 06:01 J	-43173246.45	-43173246.25	-43173246.05	0.0303	0.0094
Venus	-122915-09-22 06:58 J	-43173016.40	-43173016.21	-43173016.01	0.0303	0.0088
Venus	-122914-05-10 06:44 J	-43172786.42	-43172786.22	-43172786.02	0.0303	0.0080
Venus	-122914-12-26 04:49 J	-43172556.50	-43172556.30	-43172556.10	0.0302	0.0070
Venus	-122913-08-12 00:58 J	-43172326.66	-43172326.46	-43172326.26	0.0300	0.0059
Venus	-122912-03-29 19:13 J	-43172096.90	-43172096.70	-43172096.50	0.0298	0.0046
Venus	-122912-11-14 11:18 J	-43171867.23	-43171867.03	-43171866.83	0.0296	0.0033
Venus	-122911-07-02 01:27 J	-43171637.65	-43171637.44	-43171637.24	0.0293	0.0020
Venus	-122910-02-16 13:42 J	-43171408.14	-43171407.93	-43171407.73	0.0290	0.0008
Venus	-122910-10-03 23:46 J	-43171178.71	-43171178.51	-43171178.31	0.0288	0.0007
Venus	-122909-05-20 08:10 J	-43170949.37	-43170949.16	-43170948.96	0.0285	0.0021
Venus	-122908-01-04 14:39 J	-43170720.09	-43170719.89	-43170719.69	0.0282	0.0031
Venus	-122908-08-21 19:42 J	-43170490.88	-43170490.68	-43170490.47	0.0279	0.0042
Venus	-122907-04-07 23:32 J	-43170261.72	-43170261.52	-43170261.32	0.0276	0.0052
Venus	-122907-11-23 01:56 J	-43170032.62	-43170032.42	-43170032.22	0.0273	0.0060
Earth	-122906-06-24 15:08 J	-43169819.04	-43169818.87	-43169818.67	0.0271	0.0181
Moon	-122906-06-24 18:44 J	-43169818.91	-43169818.72	-43169818.52	0.0271	0.0170 *
Venus	-122906-07-10 03:08 J	-43169803.57	-43169803.37	-43169803.16	0.0271	0.0068
Venus	-122905-02-24 03:22 J	-43169574.55	-43169574.36	-43169574.15	0.0268	0.0075
Mars	-122905-08-27 05:03 J	-43169389.55	-43169389.29	-43169389.03	0.0267	0.0103
Venus	-122905-10-10 03:08 J	-43169345.57	-43169345.37	-43169345.16	0.0266	0.0079
Venus	-122904-05-27 02:25 J	-43169116.59	-43169116.40	-43169116.19	0.0264	0.0083
Venus	-122903-01-11 01:27 J	-43168887.64	-43168887.44	-43168887.24	0.0263	0.0086
Venus	-122903-08-28 00:01 J	-43168658.69	-43168658.50	-43168658.29	0.0261	0.0088
Mercury	-122903-11-18 02:10 J	-43168576.53	-43168576.41	-43168576.27	0.0261	0.0181
Mercury	-122902-02-14 21:22 J	-43168487.78	-43168487.61	-43168487.43	0.0261	0.0075
Venus	-122902-04-13 23:03 J	-43168429.75	-43168429.54	-43168429.34	0.0260	0.0088
Mercury	-122902-05-14 16:49 J	-43168398.99	-43168398.80	-43168398.62	0.0260	0.0033
Mercury	-122902-08-11 12:01 J	-43168310.15	-43168310.00	-43168309.84	0.0260	0.0140
Mercury	-122902-11-08 07:42 J	-43168221.23	-43168221.18	-43168221.13	0.0260	0.0248

Venus	-122902-11-28 21:51 J	-43168200.79	-43168200.59	-43168200.38	0.0260	0.0087
Venus	-122901-07-14 21:22 J	-43167971.81	-43167971.61	-43167971.40	0.0259	0.0085
Venus	-122900-02-28 21:22 J	-43167742.81	-43167742.61	-43167742.40	0.0259	0.0083
Venus	-122900-10-15 22:20 J	-43167513.78	-43167513.57	-43167513.36	0.0259	0.0079
Venus	-122899-06-02 00:15 J	-43167284.70	-43167284.49	-43167284.28	0.0259	0.0074
Venus	-122898-01-17 03:08 J	-43167055.58	-43167055.37	-43167055.15	0.0260	0.0068
Venus	-122898-09-03 07:13 J	-43166826.41	-43166826.20	-43166825.98	0.0261	0.0061
Venus	-122897-04-19 12:44 J	-43166597.18	-43166596.97	-43166596.75	0.0262	0.0053
Venus	-122897-12-04 19:56 J	-43166367.89	-43166367.67	-43166367.45	0.0264	0.0044
Venus	-122896-07-22 05:03 J	-43166138.51	-43166138.29	-43166138.07	0.0266	0.0035
Venus	-122895-03-08 15:22 J	-43165909.08	-43165908.86	-43165908.64	0.0268	0.0025
Venus	-122895-10-24 03:37 J	-43165679.57	-43165679.35	-43165679.12	0.0270	0.0015
Venus	-122894-06-10 17:46 J	-43165449.98	-43165449.76	-43165449.54	0.0272	0.0002
Venus	-122893-01-26 09:51 J	-43165220.31	-43165220.09	-43165219.87	0.0275	0.0011
Venus	-122893-09-12 03:37 J	-43164990.56	-43164990.35	-43164990.13	0.0278	0.0023
Venus	-122892-04-29 23:18 J	-43164760.74	-43164760.53	-43164760.31	0.0281	0.0035
Venus	-122892-12-15 20:39 J	-43164530.85	-43164530.64	-43164530.42	0.0284	0.0047
Venus	-122891-08-02 19:42 J	-43164300.89	-43164300.68	-43164300.47	0.0287	0.0058
Venus	-122890-03-20 20:10 J	-43164070.87	-43164070.66	-43164070.45	0.0290	0.0069
Venus	-122890-11-05 21:51 J	-43163840.79	-43163840.59	-43163840.38	0.0293	0.0079
Earth	-122889-01-09 19:13 J	-43163775.76	-43163775.70	-43163775.62	0.0294	0.0281
Venus	-122889-06-23 00:30 J	-43163610.68	-43163610.48	-43163610.27	0.0296	0.0087
Mars	-122889-08-05 06:58 J	-43163567.49	-43163567.21	-43163566.91	0.0296	0.0088
Venus	-122888-02-08 03:37 J	-43163380.55	-43163380.35	-43163380.14	0.0298	0.0093
Venus	-122888-09-26 07:13 J	-43163150.40	-43163150.20	-43163150.00	0.0300	0.0097
Mercury	-122888-12-12 23:46 J	-43163072.54	-43163072.51	-43163072.47	0.0301	0.0290
Mercury	-122887-03-11 13:42 J	-43162984.04	-43162983.93	-43162983.82	0.0302	0.0168
Venus	-122887-05-14 10:34 J	-43162920.26	-43162920.06	-43162919.87	0.0302	0.0098
Mercury	-122887-06-08 03:22 J	-43162895.49	-43162895.36	-43162895.23	0.0302	0.0046
Mercury	-122887-09-04 17:03 J	-43162806.92	-43162806.79	-43162806.66	0.0303	0.0075



Mercury -122887-12-02 06:30 J -43162718.33 -43162718.23 -43162718.13 0.0303 0.0195

Venus -122887-12-30 13:27 J -43162690.14 -43162689.94 -43162689.74 0.0303 0.0097

Venus -122886-08-17 15:22 J -43162460.05 -43162459.86 -43162459.66 0.0304 0.0094

Venus -122885-04-03 16:06 J -43162230.02 -43162229.83 -43162229.63 0.0304 0.0088

Venus -122885-11-19 15:37 J -43162000.04 -43161999.85 -43161999.65 0.0303 0.0080

Venus -122884-07-07 13:27 J -43161770.14 -43161769.94 -43161769.74 0.0302 0.0070

Venus -122883-02-22 09:22 J -43161540.31 -43161540.11 -43161539.91 0.0300 0.0058

Venus -122883-10-10 03:22 J -43161310.56 -43161310.36 -43161310.16 0.0298 0.0046

Venus -122882-05-27 19:13 J -43161080.91 -43161080.70 -43161080.50 0.0296 0.0032

Venus -122881-01-12 08:54 J -43160851.33 -43160851.13 -43160850.92 0.0293 0.0019

Venus -122881-08-28 20:54 J -43160621.84 -43160621.63 -43160621.43 0.0290 0.0008

Venus -122880-04-15 06:44 J -43160392.43 -43160392.22 -43160392.02 0.0287 0.0009

Venus -122880-11-30 14:39 J -43160163.09 -43160162.89 -43160162.68 0.0284 0.0021

Venus -122879-07-17 21:08 J -43159933.83 -43159933.62 -43159933.42 0.0281 0.0033

Venus -122878-03-04 01:56 J -43159704.63 -43159704.42 -43159704.22 0.0278 0.0043

Venus -122878-10-19 05:18 J -43159475.49 -43159475.28 -43159475.08 0.0275 0.0052

Venus -122877-06-04 07:27 J -43159246.40 -43159246.19 -43159245.99 0.0273 0.0060

Venus -122876-01-19 08:25 J -43159017.35 -43159017.15 -43159016.94 0.0270 0.0067

Moon -122876-06-30 20:54 J -43158854.75 -43158854.63 -43158854.49 0.0268 0.0230

Earth -122876-07-01 00:01 J -43158854.60 -43158854.50 -43158854.40 0.0268 0.0244 \*

Venus -122876-09-05 08:54 J -43158788.33 -43158788.13 -43158787.93 0.0268 0.0073

Venus -122875-04-22 08:39 J -43158559.34 -43158559.14 -43158558.94 0.0266 0.0077

Mars -122875-10-14 00:58 J -43158384.72 -43158384.46 -43158384.19 0.0264 0.0083

Venus -122875-12-07 07:42 J -43158330.38 -43158330.18 -43158329.97 0.0264 0.0081

Venus -122874-07-24 06:30 J -43158101.42 -43158101.23 -43158101.02 0.0262 0.0084

Venus -122873-03-09 05:18 J -43157872.48 -43157872.28 -43157872.07 0.0261 0.0085

Mercury -122873-04-06 03:08 J -43157844.47 -43157844.37 -43157844.25 0.0261 0.0206

Mercury -122873-07-03 22:20 J -43157755.74 -43157755.57 -43157755.40 0.0260 0.0100

Mercury -122873-09-30 17:32 J -43157666.95 -43157666.77 -43157666.59 0.0260 0.0007

Venus -122873-10-24 04:06 J -43157643.53 -43157643.33 -43157643.12 0.0260 0.0085

Mercury -122873-12-28 12:44 J -43157578.13 -43157577.97 -43157577.80 0.0260 0.0114

Mercury -122872-03-27 08:10 J -43157489.25 -43157489.16 -43157489.06 0.0259 0.0222

Venus -122872-06-10 03:22 J -43157414.56 -43157414.36 -43157414.15 0.0259 0.0084

Venus -122871-01-25 03:08 J -43157185.57 -43157185.37 -43157185.16 0.0259 0.0082

Venus -122871-09-11 03:08 J -43156956.57 -43156956.37 -43156956.15 0.0259 0.0080

Venus -122870-04-28 04:20 J -43156727.53 -43156727.32 -43156727.11 0.0259 0.0075

Venus -122870-12-13 06:30 J -43156498.45 -43156498.23 -43156498.02 0.0259 0.0071

Venus -122869-07-29 09:37 J -43156269.31 -43156269.10 -43156268.88 0.0260 0.0065

Venus -122868-03-15 14:10 J -43156040.13 -43156039.91 -43156039.70 0.0261 0.0058

Venus -122868-10-30 19:56 J -43155810.89 -43155810.67 -43155810.45 0.0263 0.0051

Venus -122867-06-17 03:22 J -43155581.58 -43155581.36 -43155581.14 0.0264 0.0042

Venus -122866-02-01 12:15 J -43155352.21 -43155351.99 -43155351.77 0.0266 0.0033

Venus -122866-09-18 23:03 J -43155122.76 -43155122.54 -43155122.32 0.0268 0.0023

Venus -122865-05-05 11:32 J -43154893.24 -43154893.02 -43154892.80 0.0271 0.0012

Venus -122865-12-21 01:56 J -43154663.64 -43154663.42 -43154663.20 0.0273 0.0005

Venus -122864-08-07 18:15 J -43154433.96 -43154433.74 -43154433.52 0.0276 0.0012

Venus -122863-03-25 12:15 J -43154204.21 -43154203.99 -43154203.77 0.0279 0.0024

Venus -122863-11-10 08:10 J -43153974.37 -43153974.16 -43153973.94 0.0282 0.0036

Venus -122862-06-28 05:46 J -43153744.47 -43153744.26 -43153744.04 0.0285 0.0048

Venus -122861-02-13 05:03 J -43153514.50 -43153514.29 -43153514.08 0.0288 0.0060

Venus -122861-09-30 05:46 J -43153284.47 -43153284.26 -43153284.05 0.0291 0.0070

Moon -122860-01-03 00:30 J -43153189.69 -43153189.48 -43153189.25 0.0292 0.0138

Earth -122860-01-03 02:54 J -43153189.59 -43153189.38 -43153189.16 0.0292 0.0135 \*

Venus -122860-05-18 07:27 J -43153054.39 -43153054.19 -43153053.98 0.0294 0.0079

Venus -122859-01-03 10:06 J -43152824.28 -43152824.08 -43152823.88 0.0296 0.0087

Venus -122859-08-21 13:13 J -43152594.15 -43152593.95 -43152593.75 0.0299 0.0092

Mars -122859-09-29 06:30 J -43152555.42 -43152555.23 -43152555.02 0.0299 0.0224

Venus -122858-04-08 16:34 J -43152364.01 -43152363.81 -43152363.61 0.0301 0.0095

Mercury -122858-07-29 16:06 J -43152251.93 -43152251.83 -43152251.73 0.0301 0.0197

Mercury -122858-10-26 05:46 J -43152163.39 -43152163.26 -43152163.13 0.0302 0.0075

Venus -122858-11-24 19:56 J -43152133.87 -43152133.67 -43152133.47 0.0302 0.0096  
 Mercury -122857-01-22 19:27 J -43152074.82 -43152074.69 -43152074.56 0.0302 0.0046  
 Mercury -122857-04-20 08:54 J -43151986.24 -43151986.13 -43151986.02 0.0303 0.0166  
 Venus -122857-07-11 22:34 J -43151903.75 -43151903.56 -43151903.36 0.0303 0.0094  
 Mercury -122857-07-17 22:20 J -43151897.61 -43151897.57 -43151897.53 0.0303 0.0286  
 Venus -122856-02-27 00:15 J -43151673.68 -43151673.49 -43151673.29 0.0303 0.0091  
 Venus -122856-10-15 00:58 J -43151443.65 -43151443.46 -43151443.26 0.0303 0.0084  
 Venus -122855-06-02 00:01 J -43151213.69 -43151213.50 -43151213.29 0.0303 0.0076  
 Venus -122854-01-17 21:37 J -43150983.79 -43150983.60 -43150983.40 0.0301 0.0066  
 Venus -122854-09-04 17:18 J -43150753.98 -43150753.78 -43150753.58 0.0300 0.0054  
 Venus -122853-04-21 10:49 J -43150524.25 -43150524.05 -43150523.85 0.0297 0.0041  
 Venus -122853-12-07 02:10 J -43150294.61 -43150294.41 -43150294.21 0.0295 0.0028  
 Venus -122852-07-24 15:37 J -43150065.05 -43150064.85 -43150064.64 0.0292 0.0016  
 Venus -122851-03-11 03:22 J -43149835.57 -43149835.36 -43149835.16 0.0290 0.0005  
 Venus -122851-10-26 12:44 J -43149606.17 -43149605.97 -43149605.76 0.0287 0.0012  
 Venus -122850-06-12 20:39 J -43149376.85 -43149376.64 -43149376.44 0.0284 0.0023  
 Venus -122849-01-28 02:39 J -43149147.59 -43149147.39 -43149147.19 0.0281 0.0033  
 Venus -122849-09-13 07:13 J -43148918.40 -43148918.20 -43148917.99 0.0278 0.0043  
 Venus -122848-04-30 10:34 J -43148689.26 -43148689.06 -43148688.85 0.0275 0.0052  
 Venus -122848-12-15 12:44 J -43148460.17 -43148459.97 -43148459.77 0.0272 0.0060  
 Moon -122847-06-25 21:51 J -43148267.82 -43148267.59 -43148267.35 0.0270 0.0076  
 Earth -122847-06-26 01:27 J -43148267.68 -43148267.44 -43148267.21 0.0270 0.0083 \*  
 Venus -122847-08-01 13:42 J -43148231.13 -43148230.93 -43148230.73 0.0270 0.0067  
 Venus -122846-03-18 13:56 J -43148002.12 -43148001.92 -43148001.72 0.0268 0.0073  
 Venus -122846-11-02 13:27 J -43147773.14 -43147772.94 -43147772.73 0.0266 0.0078  
 Venus -122845-06-18 12:44 J -43147544.17 -43147543.97 -43147543.77 0.0264 0.0081  
 Venus -122844-02-02 11:32 J -43147315.22 -43147315.02 -43147314.81 0.0262 0.0083  
 Mercury -122844-08-24 03:51 J -43147112.42 -43147112.34 -43147112.25 0.0261 0.0231  
 Venus -122844-09-19 10:20 J -43147086.27 -43147086.07 -43147085.86 0.0261 0.0085  
 Mercury -122844-11-20 23:03 J -43147023.70 -43147023.54 -43147023.38 0.0261 0.0125

Mercury -122843-02-17 18:01 J -43146934.93 -43146934.75 -43146934.56 0.0261 0.0020

Venus -122843-05-06 09:22 J -43146857.31 -43146857.11 -43146856.90 0.0260 0.0085

Mercury -122843-05-17 13:13 J -43146846.11 -43146845.95 -43146845.77 0.0260 0.0090

Mercury -122843-08-14 08:39 J -43146757.25 -43146757.14 -43146757.01 0.0260 0.0197

Venus -122843-12-21 08:39 J -43146628.34 -43146628.14 -43146627.93 0.0260 0.0084

Venus -122842-08-07 08:10 J -43146399.36 -43146399.16 -43146398.95 0.0259 0.0082

Venus -122841-03-23 08:25 J -43146170.35 -43146170.15 -43146169.93 0.0259 0.0079

Venus -122841-11-07 09:37 J -43145941.30 -43145941.10 -43145940.88 0.0259 0.0075

Venus -122840-06-24 12:01 J -43145712.21 -43145712.00 -43145711.78 0.0260 0.0070

Venus -122839-02-08 15:37 J -43145483.07 -43145482.85 -43145482.64 0.0261 0.0064

Venus -122839-09-25 20:10 J -43145253.88 -43145253.66 -43145253.45 0.0262 0.0057

Venus -122838-05-13 02:10 J -43145024.63 -43145024.41 -43145024.19 0.0263 0.0049

Venus -122838-12-28 09:51 J -43144795.31 -43144795.09 -43144794.87 0.0265 0.0040

Venus -122837-08-13 19:27 J -43144565.91 -43144565.69 -43144565.47 0.0266 0.0031

Venus -122836-03-31 06:30 J -43144336.45 -43144336.23 -43144336.01 0.0268 0.0021

Venus -122836-11-15 19:27 J -43144106.91 -43144106.69 -43144106.47 0.0271 0.0010

Venus -122835-07-03 10:06 J -43143877.30 -43143877.08 -43143876.86 0.0273 0.0004

Venus -122834-02-18 02:39 J -43143647.60 -43143647.39 -43143647.17 0.0276 0.0015

Venus -122834-10-05 21:22 J -43143417.83 -43143417.61 -43143417.39 0.0279 0.0026

Venus -122833-05-22 17:32 J -43143187.99 -43143187.77 -43143187.56 0.0282 0.0037

Venus -122832-01-07 15:22 J -43142958.08 -43142957.86 -43142957.65 0.0285 0.0049

Venus -122832-08-25 14:39 J -43142728.10 -43142727.89 -43142727.67 0.0288 0.0060

Venus -122831-04-12 15:37 J -43142498.06 -43142497.85 -43142497.64 0.0291 0.0070

Venus -122831-11-28 17:32 J -43142267.97 -43142267.77 -43142267.56 0.0294 0.0078

Venus -122830-07-16 20:25 J -43142037.85 -43142037.65 -43142037.45 0.0297 0.0085

Venus -122829-03-02 23:32 J -43141807.72 -43141807.52 -43141807.31 0.0299 0.0091

Venus -122829-10-19 03:08 J -43141577.57 -43141577.37 -43141577.17 0.0301 0.0094

Mercury -122829-12-15 18:44 J -43141519.80 -43141519.72 -43141519.63 0.0301 0.0223

Mercury -122828-03-14 08:39 J -43141431.27 -43141431.14 -43141431.02 0.0302 0.0102

Venus -122828-06-06 06:15 J -43141347.43 -43141347.24 -43141347.04 0.0302 0.0095

Mercury -122828-06-10 22:06 J -43141342.71 -43141342.58 -43141342.44 0.0302 0.0021

Mercury -122828-09-07 11:32 J -43141254.13 -43141254.02 -43141253.90 0.0303 0.0141

Mercury -122828-12-05 00:58 J -43141165.52 -43141165.46 -43141165.39 0.0303 0.0260

Venus -122827-01-22 08:54 J -43141117.32 -43141117.13 -43141116.93 0.0303 0.0093

Venus -122827-09-09 10:34 J -43140887.25 -43140887.06 -43140886.86 0.0304 0.0089

Venus -122826-04-27 11:03 J -43140657.23 -43140657.04 -43140656.84 0.0303 0.0082

Venus -122826-12-13 10:06 J -43140427.28 -43140427.08 -43140426.88 0.0303 0.0074

Venus -122825-07-30 07:13 J -43140197.40 -43140197.20 -43140197.00 0.0302 0.0064

Venus -122824-03-17 02:39 J -43139967.59 -43139967.39 -43139967.19 0.0300 0.0053

Venus -122824-11-01 19:56 J -43139737.87 -43139737.67 -43139737.47 0.0298 0.0040

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Venus -122822-09-21 11:32 J -43139049.22 -43139049.02 -43139048.81 0.0290 0.0004

Venus -122821-05-07 20:54 J -43138819.84 -43138819.63 -43138819.43 0.0287 0.0012

Venus -122821-12-23 04:20 J -43138590.53 -43138590.32 -43138590.12 0.0283 0.0023

Venus -122820-08-09 10:06 J -43138361.28 -43138361.08 -43138360.88 0.0280 0.0034

Venus -122819-03-26 14:39 J -43138132.10 -43138131.89 -43138131.69 0.0277 0.0044

Venus -122819-11-10 17:32 J -43137902.97 -43137902.77 -43137902.57 0.0275 0.0052

Venus -122818-06-27 19:13 J -43137673.90 -43137673.70 -43137673.49 0.0272 0.0060

Venus -122817-02-11 20:10 J -43137444.87 -43137444.66 -43137444.46 0.0269 0.0066

Venus -122817-09-27 20:10 J -43137215.86 -43137215.66 -43137215.46 0.0267 0.0072

Mars -122816-01-21 18:15 J -43137100.01 -43137099.74 -43137099.47 0.0266 0.0078

Venus -122816-05-14 19:42 J -43136986.88 -43136986.68 -43136986.47 0.0265 0.0076

Venus -122816-12-29 18:58 J -43136757.91 -43136757.71 -43136757.51 0.0263 0.0079

Venus -122815-08-15 17:46 J -43136528.96 -43136528.76 -43136528.55 0.0262 0.0081

Mercury -122814-01-11 05:03 J -43136380.32 -43136380.29 -43136380.24 0.0261 0.0254

Venus -122814-04-01 16:34 J -43136300.01 -43136299.81 -43136299.60 0.0261 0.0082

Mercury -122814-04-10 00:01 J -43136291.64 -43136291.50 -43136291.34 0.0261 0.0149

Mercury -122814-07-07 19:13 J -43136202.88 -43136202.70 -43136202.51 0.0260 0.0043

Mercury -122814-10-04 14:39 J -43136114.07 -43136113.89 -43136113.71 0.0260 0.0065

Venus -122814-11-16 15:37 J -43136071.06 -43136070.85 -43136070.65 0.0260 0.0082

Mercury -122813-01-01 09:51 J -43136025.22 -43136025.09 -43136024.95 0.0260 0.0173

Venus -122813-07-02 14:54 J -43135842.08 -43135841.88 -43135841.67 0.0259 0.0081

Venus -122812-02-16 14:39 J -43135613.09 -43135612.89 -43135612.68 0.0259 0.0079

Venus -122812-10-03 15:08 J -43135384.07 -43135383.87 -43135383.66 0.0259 0.0076

Venus -122811-05-20 16:34 J -43135155.02 -43135154.81 -43135154.60 0.0259 0.0072

Venus -122810-01-04 18:58 J -43134925.92 -43134925.71 -43134925.49 0.0260 0.0067

Venus -122810-08-21 22:34 J -43134696.77 -43134696.56 -43134696.34 0.0261 0.0061

Venus -122809-04-07 03:37 J -43134467.57 -43134467.35 -43134467.14 0.0262 0.0054

Venus -122809-11-22 09:51 J -43134238.31 -43134238.09 -43134237.87 0.0263 0.0046

Venus -122808-07-09 18:01 J -43134008.97 -43134008.75 -43134008.53 0.0265 0.0038

Venus -122807-02-24 03:37 J -43133779.57 -43133779.35 -43133779.13 0.0267 0.0029

Venus -122807-10-11 14:54 J -43133550.10 -43133549.88 -43133549.66 0.0269 0.0019

Venus -122806-05-29 04:06 J -43133320.55 -43133320.33 -43133320.11 0.0271 0.0009

Venus -122805-01-13 18:58 J -43133090.93 -43133090.71 -43133090.49 0.0274 0.0005

Venus -122805-08-30 12:01 J -43132861.22 -43132861.00 -43132860.78 0.0277 0.0016

Venus -122804-04-17 06:44 J -43132631.43 -43132631.22 -43132631.00 0.0280 0.0028

Venus -122804-12-03 03:22 J -43132401.58 -43132401.36 -43132401.14 0.0283 0.0039

Venus -122803-07-21 01:27 J -43132171.65 -43132171.44 -43132171.22 0.0286 0.0050

Venus -122802-03-08 01:13 J -43131941.66 -43131941.45 -43131941.24 0.0289 0.0061

Venus -122802-10-24 02:10 J -43131711.61 -43131711.41 -43131711.20 0.0292 0.0071

Earth -122801-01-05 23:18 J -43131637.77 -43131637.53 -43131637.28 0.0293 0.0003

Moon -122801-01-06 01:13 J -43131637.69 -43131637.45 -43131637.22 0.0293 0.0018 \*

Venus -122801-06-10 04:20 J -43131481.52 -43131481.32 -43131481.11 0.0295 0.0079

Mars -122801-12-31 18:01 J -43131277.05 -43131276.75 -43131276.44 0.0297 0.0039

Venus -122800-01-26 07:13 J -43131251.40 -43131251.20 -43131251.00 0.0297 0.0086

Venus -122800-09-13 10:20 J -43131021.27 -43131021.07 -43131020.86 0.0299 0.0091

Venus -122799-05-01 13:42 J -43130791.12 -43130790.93 -43130790.73 0.0301 0.0093

Mercury -122799-05-04 21:37 J -43130787.68 -43130787.60 -43130787.53 0.0301 0.0248

Mercury -122799-08-01 11:18 J -43130699.15 -43130699.03 -43130698.91 0.0302 0.0127

Mercury -122799-10-29 00:58 J -43130610.59 -43130610.46 -43130610.33 0.0302 0.0006

Venus -122799-12-17 17:03 J -43130560.99 -43130560.79 -43130560.59 0.0302 0.0093

Mercury -122798-01-25 14:25 J -43130522.02 -43130521.90 -43130521.77 0.0303 0.0115

Mercury -122798-04-24 03:51 J -43130433.42 -43130433.34 -43130433.26 0.0303 0.0235

Venus -122798-08-04 19:27 J -43130330.89 -43130330.69 -43130330.49 0.0303 0.0090

Venus -122797-03-21 20:54 J -43130100.83 -43130100.63 -43130100.43 0.0303 0.0086

Venus -122797-11-06 21:08 J -43129870.82 -43129870.62 -43129870.42 0.0303 0.0078

Venus -122796-06-24 19:42 J -43129640.87 -43129640.68 -43129640.48 0.0302 0.0070

Venus -122795-02-09 16:49 J -43129411.00 -43129410.80 -43129410.60 0.0301 0.0059

Venus -122795-09-27 11:46 J -43129181.21 -43129181.01 -43129180.81 0.0299 0.0048

Venus -122794-05-15 04:34 J -43128951.51 -43128951.31 -43128951.11 0.0297 0.0036

Venus -122794-12-30 19:27 J -43128721.89 -43128721.69 -43128721.49 0.0294 0.0023

Venus -122793-08-16 08:10 J -43128492.36 -43128492.16 -43128491.95 0.0291 0.0012

Venus -122792-04-02 19:13 J -43128262.91 -43128262.70 -43128262.50 0.0289 0.0007

Venus -122792-11-18 04:06 J -43128033.54 -43128033.33 -43128033.13 0.0286 0.0015

Venus -122791-07-05 11:03 J -43127804.24 -43127804.04 -43127803.83 0.0283 0.0025

Venus -122790-02-19 16:34 J -43127575.01 -43127574.81 -43127574.60 0.0280 0.0035

Venus -122790-10-06 20:39 J -43127345.84 -43127345.64 -43127345.43 0.0277 0.0045

Venus -122789-05-22 23:32 J -43127116.72 -43127116.52 -43127116.32 0.0274 0.0052

Venus -122788-01-07 01:13 J -43126887.65 -43126887.45 -43126887.25 0.0271 0.0060

Earth -122788-06-27 14:10 J -43126716.16 -43126715.91 -43126715.67 0.0270 0.0023

Moon -122788-06-27 18:01 J -43126716.00 -43126715.75 -43126715.50 0.0270 0.0007 \*

Venus -122788-08-24 01:56 J -43126658.62 -43126658.42 -43126658.22 0.0269 0.0066

Venus -122787-04-10 01:56 J -43126429.62 -43126429.42 -43126429.21 0.0267 0.0072

Venus -122787-11-25 01:27 J -43126200.64 -43126200.44 -43126200.24 0.0265 0.0075

Mars -122786-03-10 13:27 J -43126095.19 -43126094.94 -43126094.68 0.0264 0.0111

Venus -122786-07-12 00:30 J -43125971.69 -43125971.48 -43125971.28 0.0263 0.0079

Venus -122785-02-25 23:03 J -43125742.74 -43125742.54 -43125742.33 0.0262 0.0081

Mercury -122785-08-27 01:13 J -43125559.59 -43125559.45 -43125559.32 0.0261 0.0173

Venus -122785-10-11 21:51 J -43125513.79 -43125513.59 -43125513.38 0.0261 0.0082

Mercury -122785-11-23 20:10 J -43125470.84 -43125470.66 -43125470.48 0.0261 0.0066

Mercury -122784-02-20 15:22 J -43125382.04 -43125381.86 -43125381.68 0.0260 0.0041

Mercury -122784-05-20 10:34 J -43125293.20 -43125293.06 -43125292.90 0.0260 0.0149

Venus -122784-05-28 21:08 J -43125284.82 -43125284.62 -43125284.41 0.0260 0.0082

Mercury -122784-08-17 06:15 J -43125204.27 -43125204.24 -43125204.21 0.0260 0.0256

Venus -122783-01-12 20:25 J -43125055.85 -43125055.65 -43125055.44 0.0260 0.0081

Venus -122783-08-29 20:25 J -43124826.86 -43124826.65 -43124826.44 0.0259 0.0078

Venus -122782-04-15 20:54 J -43124597.84 -43124597.63 -43124597.42 0.0259 0.0075

Venus -122782-11-30 22:20 J -43124368.78 -43124368.57 -43124368.36 0.0260 0.0071

Venus -122781-07-17 00:58 J -43124139.67 -43124139.46 -43124139.24 0.0260 0.0066

Venus -122780-03-03 04:49 J -43123910.51 -43123910.30 -43123910.08 0.0261 0.0060

Venus -122780-10-18 09:51 J -43123681.30 -43123681.09 -43123680.87 0.0262 0.0053

Venus -122779-06-04 16:34 J -43123452.03 -43123451.81 -43123451.59 0.0264 0.0045

Venus -122778-01-20 00:44 J -43123222.68 -43123222.47 -43123222.25 0.0265 0.0037

Venus -122778-09-06 10:49 J -43122993.27 -43122993.05 -43122992.83 0.0267 0.0027

Venus -122777-04-22 22:34 J -43122763.78 -43122763.56 -43122763.34 0.0269 0.0017

Venus -122777-12-08 12:15 J -43122534.21 -43122533.99 -43122533.77 0.0272 0.0007

Venus -122776-07-26 03:37 J -43122304.57 -43122304.35 -43122304.12 0.0274 0.0008

Venus -122775-03-12 21:08 J -43122074.84 -43122074.62 -43122074.40 0.0277 0.0017

Venus -122775-10-28 16:06 J -43121845.04 -43121844.83 -43121844.61 0.0280 0.0028

Venus -122774-06-15 12:58 J -43121615.18 -43121614.96 -43121614.74 0.0283 0.0039

Venus -122773-01-31 11:18 J -43121385.24 -43121385.03 -43121384.81 0.0286 0.0050

Venus -122773-09-17 11:32 J -43121155.23 -43121155.02 -43121154.81 0.0289 0.0060

Venus -122772-05-05 12:44 J -43120925.18 -43120924.97 -43120924.76 0.0292 0.0069

Venus -122772-12-21 14:54 J -43120695.08 -43120694.88 -43120694.67 0.0295 0.0077

Venus -122771-08-08 17:46 J -43120464.96 -43120464.76 -43120464.55 0.0297 0.0084

Mars -122770-02-24 22:06 J -43120264.69 -43120264.58 -43120264.44 0.0299 0.0273

Venus -122770-03-26 21:08 J -43120234.82 -43120234.62 -43120234.41 0.0299 0.0088

Mercury -122770-09-22 00:15 J -43120055.54 -43120055.49 -43120055.43 0.0301 0.0274

Venus -122770-11-12 00:44 J -43120004.67 -43120004.47 -43120004.27 0.0301 0.0090



Mercury -122770-12-19 14:10 J -43119967.03 -43119966.91 -43119966.80 0.0301 0.0153

Mercury -122769-03-17 03:51 J -43119878.48 -43119878.34 -43119878.21 0.0302 0.0032

Mercury -122769-06-13 17:18 J -43119789.90 -43119789.78 -43119789.65 0.0302 0.0090

Venus -122769-06-29 03:51 J -43119774.54 -43119774.34 -43119774.14 0.0303 0.0090

Mercury -122769-09-10 06:44 J -43119701.31 -43119701.22 -43119701.12 0.0303 0.0210

Venus -122768-02-14 06:15 J -43119544.44 -43119544.24 -43119544.04 0.0303 0.0088

Venus -122768-10-02 07:27 J -43119314.38 -43119314.19 -43119313.99 0.0304 0.0084

Venus -122767-05-20 07:27 J -43119084.38 -43119084.19 -43119083.99 0.0303 0.0077

Venus -122766-01-05 06:01 J -43118854.44 -43118854.25 -43118854.05 0.0302 0.0069

Venus -122766-08-23 02:39 J -43118624.59 -43118624.39 -43118624.19 0.0301 0.0058

Venus -122765-04-08 21:22 J -43118394.81 -43118394.61 -43118394.41 0.0299 0.0047

Venus -122765-11-24 13:56 J -43118165.12 -43118164.92 -43118164.72 0.0297 0.0035

Venus -122764-07-12 04:34 J -43117935.51 -43117935.31 -43117935.11 0.0294 0.0022

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Venus -122763-10-14 03:51 J -43117476.55 -43117476.34 -43117476.14 0.0289 0.0006

Venus -122762-05-31 12:15 J -43117247.19 -43117246.99 -43117246.78 0.0286 0.0015

Venus -122761-01-15 19:13 J -43117017.91 -43117017.70 -43117017.50 0.0283 0.0025

Venus -122761-09-01 00:30 J -43116788.69 -43116788.48 -43116788.28 0.0279 0.0036

Venus -122760-04-18 04:20 J -43116559.52 -43116559.32 -43116559.11 0.0277 0.0045

Venus -122760-12-03 06:58 J -43116330.42 -43116330.21 -43116330.01 0.0274 0.0053

Venus -122759-07-20 08:10 J -43116101.36 -43116101.16 -43116100.95 0.0271 0.0060

Venus -122758-03-06 08:39 J -43115872.34 -43115872.14 -43115871.93 0.0269 0.0066

Mars -122758-05-02 05:46 J -43115815.36 -43115815.26 -43115815.13 0.0268 0.0244

Venus -122758-10-21 08:25 J -43115643.35 -43115643.15 -43115642.94 0.0267 0.0071

Venus -122757-06-06 07:56 J -43115414.37 -43115414.17 -43115413.97 0.0265 0.0074

Venus -122756-01-21 06:58 J -43115185.42 -43115185.21 -43115185.01 0.0263 0.0076

Venus -122756-09-07 05:46 J -43114956.47 -43114956.26 -43114956.06 0.0262 0.0078

Mercury -122755-01-14 02:25 J -43114827.52 -43114827.40 -43114827.28 0.0261 0.0195

Mercury -122755-04-12 21:22 J -43114738.78 -43114738.61 -43114738.43 0.0260 0.0090

Venus -122755-04-24 04:34 J -43114727.51 -43114727.31 -43114727.10 0.0260 0.0078

Mercury -122755-07-10 16:34 J -43114649.99 -43114649.81 -43114649.62 0.0260 0.0018

Mercury -122755-10-07 11:46 J -43114561.16 -43114561.01 -43114560.84 0.0260 0.0125

Venus -122755-12-09 03:37 J -43114498.55 -43114498.35 -43114498.14 0.0260 0.0078

Mercury -122754-01-04 07:13 J -43114472.27 -43114472.20 -43114472.11 0.0259 0.0233

Venus -122754-07-26 02:54 J -43114269.58 -43114269.38 -43114269.17 0.0259 0.0077

Venus -122753-03-11 02:54 J -43114040.59 -43114040.38 -43114040.17 0.0259 0.0075

Venus -122753-10-26 03:37 J -43113811.56 -43113811.35 -43113811.14 0.0259 0.0071

Venus -122752-06-12 05:32 J -43113582.48 -43113582.27 -43113582.06 0.0259 0.0067

Venus -122751-01-27 08:10 J -43113353.37 -43113353.16 -43113352.94 0.0260 0.0062

Venus -122751-09-13 12:01 J -43113124.21 -43113124.00 -43113123.78 0.0261 0.0057

Venus -122750-04-30 17:18 J -43112894.99 -43112894.78 -43112894.56 0.0262 0.0050

Venus -122750-12-16 00:15 J -43112665.71 -43112665.49 -43112665.27 0.0264 0.0042

Venus -122749-08-01 08:54 J -43112436.35 -43112436.13 -43112435.91 0.0265 0.0034

Venus -122748-03-18 19:13 J -43112206.92 -43112206.70 -43112206.48 0.0267 0.0025

Venus -122748-11-03 06:58 J -43111977.43 -43111977.21 -43111976.98 0.0270 0.0016

Venus -122747-06-20 20:54 J -43111747.85 -43111747.63 -43111747.41 0.0272 0.0005

Venus -122746-02-05 12:30 J -43111518.20 -43111517.98 -43111517.76 0.0275 0.0007

Venus -122746-09-23 06:15 J -43111288.46 -43111288.24 -43111288.02 0.0278 0.0018

Venus -122745-05-10 01:27 J -43111058.65 -43111058.44 -43111058.22 0.0281 0.0030

Venus -122745-12-25 22:34 J -43110828.77 -43110828.56 -43110828.34 0.0284 0.0041

Venus -122744-08-12 21:22 J -43110598.82 -43110598.61 -43110598.40 0.0287 0.0052

Venus -122743-03-30 21:37 J -43110368.81 -43110368.60 -43110368.39 0.0290 0.0062

Venus -122743-11-15 23:03 J -43110138.75 -43110138.54 -43110138.33 0.0293 0.0071

Moon -122742-01-07 18:44 J -43110085.94 -43110085.72 -43110085.50 0.0293 0.0136

Earth -122742-01-07 19:27 J -43110085.89 -43110085.69 -43110085.46 0.0293 0.0140 \*

Mars -122742-04-05 19:13 J -43109997.75 -43109997.70 -43109997.64 0.0295 0.0289

Venus -122742-07-04 01:27 J -43109908.65 -43109908.44 -43109908.24 0.0296 0.0078

Venus -122741-02-19 04:20 J -43109678.52 -43109678.32 -43109678.11 0.0298 0.0084

Venus -122741-10-06 07:56 J -43109448.37 -43109448.17 -43109447.97 0.0300 0.0088

Mercury -122740-02-08 02:54 J -43109323.38 -43109323.38 -43109323.37 0.0301 0.0300

Mercury -122740-05-07 16:49 J -43109234.91 -43109234.80 -43109234.69 0.0302 0.0178

Venus -122740-05-24 11:18 J -43109218.23 -43109218.03 -43109217.83 0.0302 0.0089

Mercury -122740-08-04 06:30 J -43109146.36 -43109146.23 -43109146.10 0.0302 0.0057

Mercury -122740-10-31 20:10 J -43109057.79 -43109057.66 -43109057.53 0.0303 0.0064

Venus -122739-01-09 14:25 J -43108988.10 -43108987.90 -43108987.70 0.0303 0.0089

Mercury -122739-01-28 09:37 J -43108969.20 -43108969.10 -43108969.00 0.0303 0.0184

Mercury -122739-04-26 22:49 J -43108880.55 -43108880.55 -43108880.54 0.0303 0.0303

Venus -122739-08-27 16:34 J -43108758.01 -43108757.81 -43108757.61 0.0303 0.0086

Venus -122738-04-14 17:46 J -43108527.96 -43108527.76 -43108527.56 0.0303 0.0080

Venus -122738-11-30 17:32 J -43108297.96 -43108297.77 -43108297.57 0.0303 0.0073

Venus -122737-07-17 15:51 J -43108068.04 -43108067.84 -43108067.64 0.0302 0.0064

Venus -122736-03-04 12:15 J -43107838.19 -43107837.99 -43107837.79 0.0300 0.0054

Venus -122736-10-20 06:30 J -43107608.43 -43107608.23 -43107608.02 0.0298 0.0043

Venus -122735-06-06 22:49 J -43107378.75 -43107378.55 -43107378.34 0.0296 0.0031

Venus -122734-01-22 13:13 J -43107149.15 -43107148.95 -43107148.75 0.0293 0.0019

Venus -122734-09-09 01:27 J -43106919.65 -43106919.44 -43106919.24 0.0291 0.0007

Venus -122733-04-25 11:32 J -43106690.22 -43106690.02 -43106689.82 0.0288 0.0005

Venus -122733-12-10 19:42 J -43106460.88 -43106460.68 -43106460.47 0.0285 0.0018

Venus -122732-07-28 02:25 J -43106231.61 -43106231.40 -43106231.20 0.0282 0.0027

Venus -122731-03-14 07:27 J -43106002.39 -43106002.19 -43106001.98 0.0279 0.0036

Venus -122731-10-29 11:03 J -43105773.24 -43105773.04 -43105772.84 0.0276 0.0045

Venus -122730-06-15 13:13 J -43105544.15 -43105543.95 -43105543.74 0.0273 0.0053

Venus -122729-01-30 14:25 J -43105315.10 -43105314.90 -43105314.69 0.0271 0.0060

Moon -122729-06-29 00:15 J -43105164.70 -43105164.49 -43105164.26 0.0269 0.0128

Earth -122729-06-29 04:20 J -43105164.54 -43105164.32 -43105164.10 0.0269 0.0129 \*

Venus -122729-09-15 14:54 J -43105086.08 -43105085.88 -43105085.67 0.0268 0.0065

Venus -122728-05-02 14:54 J -43104857.09 -43104856.88 -43104856.68 0.0266 0.0069

Mars -122728-06-18 10:20 J -43104810.35 -43104810.07 -43104809.79 0.0266 0.0048

Venus -122728-12-17 13:56 J -43104628.12 -43104627.92 -43104627.71 0.0264 0.0073

Venus -122727-08-03 12:44 J -43104399.17 -43104398.97 -43104398.76 0.0263 0.0076

Venus -122726-03-20 11:18 J -43104170.23 -43104170.03 -43104169.82 0.0262 0.0078  
 Mercury -122726-06-03 03:22 J -43104095.45 -43104095.36 -43104095.25 0.0261 0.0219  
 Mercury -122726-08-30 22:20 J -43104006.73 -43104006.57 -43104006.40 0.0261 0.0113  
 Venus -122726-11-04 10:06 J -43103941.28 -43103941.08 -43103940.87 0.0261 0.0078  
 Mercury -122726-11-27 17:32 J -43103917.95 -43103917.77 -43103917.58 0.0260 0.0008  
 Mercury -122725-02-24 12:44 J -43103829.13 -43103828.97 -43103828.79 0.0260 0.0101  
 Mercury -122725-05-23 08:25 J -43103740.26 -43103740.15 -43103740.04 0.0260 0.0208  
 Venus -122725-06-20 09:22 J -43103712.32 -43103712.11 -43103711.90 0.0260 0.0078  
 Venus -122724-02-04 08:39 J -43103483.34 -43103483.14 -43103482.93 0.0259 0.0077  
 Venus -122724-09-21 08:39 J -43103254.35 -43103254.14 -43103253.93 0.0259 0.0074  
 Venus -122723-05-08 09:22 J -43103025.32 -43103025.11 -43103024.89 0.0259 0.0071  
 Venus -122723-12-23 11:03 J -43102796.25 -43102796.04 -43102795.82 0.0260 0.0067  
 Venus -122722-08-09 13:56 J -43102567.13 -43102566.92 -43102566.70 0.0260 0.0062  
 Venus -122721-03-25 18:01 J -43102337.96 -43102337.75 -43102337.53 0.0261 0.0056  
 Venus -122721-11-09 23:32 J -43102108.73 -43102108.52 -43102108.30 0.0263 0.0049  
 Venus -122720-06-27 06:44 J -43101879.44 -43101879.22 -43101879.00 0.0264 0.0041  
 Venus -122719-02-11 15:22 J -43101650.07 -43101649.86 -43101649.63 0.0266 0.0033  
 Venus -122719-09-29 01:56 J -43101420.64 -43101420.42 -43101420.20 0.0268 0.0023  
 Venus -122718-05-16 14:10 J -43101191.13 -43101190.91 -43101190.69 0.0270 0.0014  
 Venus -122717-01-01 04:20 J -43100961.54 -43100961.32 -43100961.10 0.0273 0.0006  
 Venus -122717-08-17 20:39 J -43100731.86 -43100731.64 -43100731.42 0.0275 0.0008  
 Venus -122716-04-04 14:39 J -43100502.11 -43100501.89 -43100501.67 0.0278 0.0019  
 Venus -122716-11-20 10:20 J -43100272.29 -43100272.07 -43100271.85 0.0281 0.0030  
 Venus -122715-07-08 07:42 J -43100042.39 -43100042.18 -43100041.96 0.0284 0.0040  
 Venus -122714-02-23 06:44 J -43099812.43 -43099812.22 -43099812.00 0.0287 0.0051  
 Venus -122714-10-11 07:13 J -43099582.41 -43099582.20 -43099581.98 0.0290 0.0060  
 Moon -122713-01-02 00:30 J -43099499.57 -43099499.48 -43099499.37 0.0291 0.0264  
 Earth -122713-01-02 03:51 J -43099499.41 -43099499.34 -43099499.26 0.0291 0.0275 \*  
 Venus -122713-05-28 08:54 J -43099352.34 -43099352.13 -43099351.92 0.0293 0.0069  
 Venus -122712-01-13 11:32 J -43099122.23 -43099122.02 -43099121.82 0.0296 0.0076

Mars -122712-05-29 06:15 J -43098986.55 -43098986.24 -43098985.94 0.0297 0.0004  
 Venus -122712-08-31 14:39 J -43098892.09 -43098891.89 -43098891.69 0.0298 0.0081  
 Venus -122711-04-18 18:01 J -43098661.94 -43098661.75 -43098661.54 0.0300 0.0085  
 Mercury -122711-09-24 19:27 J -43098502.78 -43098502.69 -43098502.59 0.0301 0.0206  
 Venus -122711-12-04 21:51 J -43098431.79 -43098431.59 -43098431.39 0.0302 0.0086  
 Mercury -122711-12-22 09:08 J -43098414.24 -43098414.12 -43098413.99 0.0302 0.0085  
 Mercury -122710-03-20 22:49 J -43098325.68 -43098325.55 -43098325.41 0.0302 0.0037  
 Mercury -122710-06-17 12:15 J -43098237.10 -43098236.99 -43098236.87 0.0303 0.0158  
 Venus -122710-07-23 00:44 J -43098201.67 -43098201.47 -43098201.27 0.0303 0.0085  
 Mercury -122710-09-14 01:42 J -43098148.48 -43098148.43 -43098148.37 0.0303 0.0277  
 Venus -122709-03-09 02:54 J -43097971.57 -43097971.38 -43097971.18 0.0304 0.0083  
 Venus -122709-10-25 04:06 J -43097741.53 -43097741.33 -43097741.13 0.0304 0.0077  
 Venus -122708-06-12 03:51 J -43097511.54 -43097511.34 -43097511.14 0.0303 0.0070  
 Venus -122707-01-28 01:56 J -43097281.62 -43097281.42 -43097281.22 0.0302 0.0062  
 Venus -122707-09-14 22:06 J -43097051.78 -43097051.58 -43097051.38 0.0300 0.0052  
 Venus -122706-05-02 16:06 J -43096822.03 -43096821.83 -43096821.62 0.0299 0.0041  
 Venus -122706-12-18 08:10 J -43096592.36 -43096592.16 -43096591.95 0.0296 0.0030  
 Venus -122705-08-03 22:20 J -43096362.78 -43096362.57 -43096362.37 0.0294 0.0018  
 Venus -122704-03-21 10:20 J -43096133.27 -43096133.07 -43096132.87 0.0291 0.0005  
 Venus -122704-11-05 20:10 J -43095903.86 -43095903.66 -43095903.45 0.0288 0.0007  
 Venus -122703-06-23 04:20 J -43095674.53 -43095674.32 -43095674.12 0.0285 0.0018  
 Venus -122702-02-07 10:34 J -43095445.26 -43095445.06 -43095444.86 0.0282 0.0027  
 Venus -122702-09-24 15:08 J -43095216.07 -43095215.87 -43095215.66 0.0279 0.0038  
 Venus -122701-05-10 18:30 J -43094986.93 -43094986.73 -43094986.52 0.0276 0.0045  
 Venus -122701-12-25 20:39 J -43094757.84 -43094757.64 -43094757.44 0.0273 0.0052  
 Moon -122700-06-24 06:15 J -43094577.39 -43094577.24 -43094577.07 0.0271 0.0199  
 Earth -122700-06-24 08:54 J -43094577.30 -43094577.13 -43094576.96 0.0271 0.0191 \*  
 Venus -122700-08-11 21:37 J -43094528.80 -43094528.60 -43094528.39 0.0270 0.0059  
 Venus -122699-03-28 21:51 J -43094299.79 -43094299.59 -43094299.38 0.0268 0.0064  
 Venus -122699-11-12 21:22 J -43094070.81 -43094070.61 -43094070.40 0.0266 0.0068

Venus -122698-06-29 20:25 J -43093841.85 -43093841.65 -43093841.45 0.0264 0.0071  
 Mars -122698-08-05 07:56 J -43093805.41 -43093805.17 -43093804.92 0.0264 0.0138  
 Venus -122697-02-13 18:58 J -43093612.91 -43093612.71 -43093612.50 0.0262 0.0074  
 Venus -122697-09-29 17:46 J -43093383.96 -43093383.76 -43093383.55 0.0261 0.0074  
 Mercury -122697-10-20 04:49 J -43093363.36 -43093363.30 -43093363.23 0.0261 0.0241  
 Mercury -122696-01-16 23:46 J -43093274.66 -43093274.51 -43093274.35 0.0261 0.0136  
 Mercury -122696-04-15 18:58 J -43093185.90 -43093185.71 -43093185.53 0.0260 0.0030  
 Venus -122696-05-16 16:34 J -43093155.01 -43093154.81 -43093154.60 0.0260 0.0075  
 Mercury -122696-07-13 14:10 J -43093097.09 -43093096.91 -43093096.74 0.0260 0.0077  
 Mercury -122696-10-10 09:22 J -43093008.23 -43093008.11 -43093007.97 0.0260 0.0184  
 Venus -122696-12-31 15:37 J -43092926.05 -43092925.85 -43092925.64 0.0259 0.0074  
 Venus -122695-08-17 15:08 J -43092697.08 -43092696.87 -43092696.66 0.0259 0.0073  
 Venus -122694-04-03 15:08 J -43092468.08 -43092467.87 -43092467.66 0.0259 0.0070  
 Venus -122694-11-18 16:06 J -43092239.04 -43092238.83 -43092238.62 0.0259 0.0067  
 Venus -122693-07-04 18:01 J -43092009.96 -43092009.75 -43092009.53 0.0259 0.0063  
 Venus -122692-02-18 20:54 J -43091780.84 -43091780.63 -43091780.41 0.0260 0.0058  
 Venus -122692-10-06 01:13 J -43091551.66 -43091551.45 -43091551.23 0.0261 0.0052  
 Venus -122691-05-23 06:58 J -43091322.43 -43091322.21 -43091321.99 0.0262 0.0045  
 Venus -122690-01-07 14:10 J -43091093.12 -43091092.91 -43091092.69 0.0264 0.0038  
 Venus -122690-08-24 23:18 J -43090863.75 -43090863.53 -43090863.31 0.0266 0.0030  
 Venus -122689-04-10 10:06 J -43090634.30 -43090634.08 -43090633.86 0.0268 0.0021  
 Venus -122689-11-25 22:34 J -43090404.78 -43090404.56 -43090404.34 0.0270 0.0011  
 Venus -122688-07-13 12:58 J -43090175.18 -43090174.96 -43090174.74 0.0273 0.0003  
 Venus -122687-02-28 05:18 J -43089945.50 -43089945.28 -43089945.06 0.0276 0.0010  
 Venus -122687-10-15 23:32 J -43089715.74 -43089715.52 -43089715.30 0.0279 0.0020  
 Venus -122686-06-02 19:27 J -43089485.90 -43089485.69 -43089485.47 0.0282 0.0031  
 Venus -122685-01-18 17:18 J -43089256.00 -43089255.78 -43089255.57 0.0285 0.0042  
 Venus -122685-09-04 16:34 J -43089026.02 -43089025.81 -43089025.60 0.0288 0.0052  
 Venus -122684-04-22 17:18 J -43088795.99 -43088795.78 -43088795.57 0.0291 0.0062  
 Venus -122684-12-08 19:13 J -43088565.91 -43088565.70 -43088565.49 0.0294 0.0070

Moon -122683-01-09 14:39 J -43088533.99 -43088533.89 -43088533.77 0.0294 0.0259  
 Earth -122683-01-09 14:54 J -43088533.96 -43088533.88 -43088533.79 0.0294 0.0274 \*  
 Venus -122683-07-26 21:51 J -43088335.79 -43088335.59 -43088335.38 0.0296 0.0077  
 Venus -122682-03-14 01:13 J -43088105.65 -43088105.45 -43088105.25 0.0299 0.0082  
 Venus -122682-10-30 04:49 J -43087875.50 -43087875.30 -43087875.10 0.0301 0.0085  
 Mercury -122681-02-11 22:06 J -43087770.66 -43087770.58 -43087770.49 0.0301 0.0232  
 Mercury -122681-05-10 12:01 J -43087682.13 -43087682.00 -43087681.88 0.0302 0.0110  
 Venus -122681-06-16 08:10 J -43087645.36 -43087645.16 -43087644.96 0.0302 0.0086  
 Mercury -122681-08-07 01:42 J -43087593.57 -43087593.43 -43087593.30 0.0302 0.0014  
 Mercury -122681-11-03 15:08 J -43087504.99 -43087504.87 -43087504.75 0.0303 0.0132  
 Mercury -122680-01-31 04:34 J -43087416.38 -43087416.31 -43087416.24 0.0303 0.0251  
 Venus -122680-02-01 11:03 J -43087415.23 -43087415.04 -43087414.84 0.0303 0.0084  
 Venus -122680-09-19 13:13 J -43087185.15 -43087184.95 -43087184.75 0.0304 0.0080  
 Venus -122679-05-07 14:10 J -43086955.11 -43086954.91 -43086954.71 0.0304 0.0075  
 Venus -122679-12-23 13:27 J -43086725.13 -43086724.94 -43086724.73 0.0303 0.0068  
 Venus -122678-08-10 11:18 J -43086495.23 -43086495.03 -43086494.83 0.0302 0.0058  
 Venus -122677-03-27 07:13 J -43086265.40 -43086265.20 -43086265.00 0.0300 0.0048  
 Venus -122677-11-12 00:58 J -43086035.66 -43086035.46 -43086035.26 0.0298 0.0037  
 Venus -122676-06-29 16:49 J -43085806.00 -43085805.80 -43085805.60 0.0295 0.0026  
 Venus -122675-02-14 06:30 J -43085576.43 -43085576.23 -43085576.02 0.0293 0.0015  
 Venus -122675-10-01 18:01 J -43085346.95 -43085346.75 -43085346.54 0.0290 0.0007  
 Venus -122674-05-19 03:37 J -43085117.55 -43085117.35 -43085117.14 0.0287 0.0008  
 Venus -122673-01-03 11:18 J -43084888.23 -43084888.03 -43084887.82 0.0284 0.0019  
 Venus -122673-08-19 17:18 J -43084658.98 -43084658.78 -43084658.57 0.0281 0.0028  
 Venus -122672-04-05 21:51 J -43084429.79 -43084429.59 -43084429.38 0.0278 0.0037  
 Venus -122672-11-21 00:58 J -43084200.66 -43084200.46 -43084200.26 0.0275 0.0045  
 Venus -122671-07-08 02:39 J -43083971.59 -43083971.39 -43083971.18 0.0272 0.0052  
 Venus -122670-02-22 03:37 J -43083742.56 -43083742.35 -43083742.15 0.0270 0.0058  
 Earth -122670-07-01 17:32 J -43083612.88 -43083612.77 -43083612.64 0.0268 0.0234  
 Moon -122670-07-01 20:54 J -43083612.70 -43083612.63 -43083612.53 0.0268 0.0250 \*

Mars -122670-09-26 23:03 J -43083525.70 -43083525.54 -43083525.36 0.0268 0.0215  
 Venus -122670-10-09 03:37 J -43083513.56 -43083513.35 -43083513.15 0.0267 0.0063  
 Venus -122669-05-25 03:08 J -43083284.58 -43083284.37 -43083284.17 0.0265 0.0067  
 Venus -122668-01-09 01:56 J -43083055.62 -43083055.42 -43083055.21 0.0264 0.0070  
 Venus -122668-08-26 00:44 J -43082826.68 -43082826.47 -43082826.27 0.0262 0.0072  
 Venus -122667-04-11 23:18 J -43082597.74 -43082597.53 -43082597.33 0.0261 0.0073  
 Mercury -122667-06-06 00:30 J -43082542.62 -43082542.48 -43082542.33 0.0261 0.0161  
 Mercury -122667-09-02 19:42 J -43082453.86 -43082453.68 -43082453.50 0.0260 0.0055  
 Venus -122667-11-26 21:51 J -43082368.79 -43082368.59 -43082368.38 0.0260 0.0074  
 Mercury -122667-11-30 14:54 J -43082365.06 -43082364.88 -43082364.70 0.0260 0.0052  
 Mercury -122666-02-27 10:06 J -43082276.22 -43082276.08 -43082275.93 0.0260 0.0159  
 Venus -122666-07-13 20:54 J -43082139.84 -43082139.63 -43082139.42 0.0259 0.0073  
 Venus -122665-02-27 20:10 J -43081910.86 -43081910.66 -43081910.44 0.0259 0.0072  
 Venus -122665-10-13 20:25 J -43081681.86 -43081681.65 -43081681.44 0.0259 0.0069  
 Venus -122664-05-30 21:22 J -43081452.82 -43081452.61 -43081452.40 0.0259 0.0066  
 Venus -122663-01-14 23:18 J -43081223.74 -43081223.53 -43081223.32 0.0260 0.0062  
 Venus -122663-09-01 02:25 J -43080994.62 -43080994.40 -43080994.19 0.0260 0.0057  
 Venus -122662-04-18 06:30 J -43080765.44 -43080765.23 -43080765.01 0.0262 0.0051  
 Venus -122662-12-03 12:30 J -43080536.20 -43080535.98 -43080535.77 0.0263 0.0044  
 Venus -122661-07-19 19:56 J -43080306.89 -43080306.67 -43080306.45 0.0264 0.0036  
 Venus -122660-03-06 05:03 J -43080077.51 -43080077.29 -43080077.07 0.0266 0.0029  
 Venus -122660-10-21 16:06 J -43079848.05 -43079847.83 -43079847.61 0.0268 0.0019  
 Venus -122659-06-08 04:49 J -43079618.52 -43079618.30 -43079618.08 0.0271 0.0010  
 Venus -122658-01-23 19:27 J -43079388.91 -43079388.69 -43079388.47 0.0273 0.0002  
 Venus -122658-09-10 12:15 J -43079159.21 -43079158.99 -43079158.77 0.0276 0.0011  
 Venus -122657-04-27 06:44 J -43078929.44 -43078929.22 -43078929.00 0.0279 0.0021  
 Venus -122657-12-13 02:54 J -43078699.59 -43078699.38 -43078699.16 0.0282 0.0032  
 Venus -122656-07-31 00:58 J -43078469.68 -43078469.46 -43078469.25 0.0285 0.0041  
 Venus -122655-03-18 00:30 J -43078239.69 -43078239.48 -43078239.27 0.0288 0.0051  
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Earth -122654-01-03 20:10 J -43077947.86 -43077947.66 -43077947.44 0.0292 0.0152  
 Moon -122654-01-03 23:18 J -43077947.73 -43077947.53 -43077947.32 0.0292 0.0144 \*  
 Venus -122654-06-21 03:22 J -43077779.57 -43077779.36 -43077779.15 0.0294 0.0067  
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 Venus -122652-05-11 13:13 J -43077089.15 -43077088.95 -43077088.75 0.0301 0.0081  
 Mercury -122652-07-01 00:15 J -43077038.55 -43077038.49 -43077038.43 0.0301 0.0263  
 Mercury -122652-09-27 14:10 J -43076950.03 -43076949.91 -43076949.79 0.0302 0.0142  
 Mercury -122652-12-25 03:51 J -43076861.48 -43076861.34 -43076861.21 0.0302 0.0022  
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 Venus -122645-04-13 01:42 J -43074560.63 -43074560.43 -43074560.23 0.0290 0.0001  
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Moon -122641-06-26 00:44 J -43073025.70 -43073025.47 -43073025.23 0.0270 0.0095 \*  
 Venus -122641-09-03 10:06 J -43072956.29 -43072956.08 -43072955.88 0.0270 0.0058  
 Venus -122640-04-20 09:51 J -43072727.29 -43072727.09 -43072726.88 0.0267 0.0063  
 Mars -122640-11-13 04:20 J -43072520.60 -43072520.32 -43072520.04 0.0265 0.0021  
 Venus -122640-12-05 09:08 J -43072498.32 -43072498.12 -43072497.91 0.0265 0.0066  
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 Venus -122638-03-08 06:30 J -43072040.44 -43072040.23 -43072040.02 0.0262 0.0070  
 Venus -122638-10-23 05:03 J -43071811.50 -43071811.29 -43071811.08 0.0261 0.0071  
 Mercury -122638-10-24 01:42 J -43071810.55 -43071810.43 -43071810.30 0.0261 0.0184  
 Mercury -122637-01-20 20:39 J -43071721.81 -43071721.64 -43071721.46 0.0260 0.0079  
 Mercury -122637-04-18 15:51 J -43071633.02 -43071632.84 -43071632.66 0.0260 0.0027  
 Venus -122637-06-08 03:51 J -43071582.55 -43071582.34 -43071582.13 0.0260 0.0071  
 Mercury -122637-07-16 11:03 J -43071544.19 -43071544.04 -43071543.88 0.0260 0.0134  
 Mercury -122637-10-13 06:15 J -43071455.29 -43071455.24 -43071455.16 0.0259 0.0242  
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 Venus -122635-04-26 02:25 J -43070895.61 -43070895.40 -43070895.19 0.0259 0.0065  
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 Venus -122634-07-28 05:32 J -43070437.49 -43070437.27 -43070437.06 0.0259 0.0058  
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 Venus -122633-10-28 12:58 J -43069979.17 -43069978.96 -43069978.74 0.0261 0.0047  
 Venus -122632-06-14 18:58 J -43069749.92 -43069749.71 -43069749.49 0.0263 0.0040  
 Venus -122631-01-30 02:39 J -43069520.61 -43069520.39 -43069520.17 0.0264 0.0033  
 Venus -122631-09-16 12:01 J -43069291.22 -43069291.00 -43069290.78 0.0266 0.0025  
 Venus -122630-05-03 23:03 J -43069061.76 -43069061.54 -43069061.32 0.0269 0.0016  
 Venus -122630-12-19 12:01 J -43068832.22 -43068832.00 -43068831.78 0.0271 0.0007  
 Venus -122629-08-05 03:08 J -43068602.59 -43068602.37 -43068602.15 0.0274 0.0005  
 Venus -122628-03-22 19:56 J -43068372.89 -43068372.67 -43068372.45 0.0277 0.0013  
 Venus -122628-11-07 14:25 J -43068143.11 -43068142.90 -43068142.68 0.0280 0.0023  
 Venus -122627-06-25 10:49 J -43067913.26 -43067913.05 -43067912.83 0.0283 0.0034

Venus -122626-02-10 09:08 J -43067683.34 -43067683.12 -43067682.91 0.0286 0.0043

Venus -122626-09-28 08:54 J -43067453.34 -43067453.13 -43067452.91 0.0289 0.0053

Venus -122625-05-15 10:06 J -43067223.29 -43067223.08 -43067222.87 0.0292 0.0061

Venus -122625-12-31 12:15 J -43066993.19 -43066992.99 -43066992.78 0.0295 0.0069

Venus -122624-08-18 15:22 J -43066763.07 -43066762.86 -43066762.66 0.0297 0.0074

Mars -122624-10-24 07:56 J -43066696.47 -43066696.17 -43066695.87 0.0298 0.0046

Venus -122623-04-05 18:44 J -43066532.92 -43066532.72 -43066532.51 0.0299 0.0079

Mercury -122623-11-18 02:25 J -43066306.42 -43066306.40 -43066306.36 0.0301 0.0292

Venus -122623-11-21 22:34 J -43066302.76 -43066302.56 -43066302.36 0.0301 0.0081

Mercury -122622-02-14 16:20 J -43066217.93 -43066217.82 -43066217.70 0.0302 0.0171

Mercury -122622-05-14 06:15 J -43066129.38 -43066129.24 -43066129.11 0.0302 0.0049

Venus -122622-07-10 01:56 J -43066072.61 -43066072.42 -43066072.21 0.0303 0.0082

Mercury -122622-08-10 19:42 J -43066040.81 -43066040.68 -43066040.55 0.0303 0.0073

Mercury -122622-11-07 09:22 J -43065952.22 -43065952.11 -43065952.01 0.0303 0.0192

Venus -122621-02-25 04:49 J -43065842.50 -43065842.30 -43065842.10 0.0304 0.0079

Venus -122621-10-12 06:44 J -43065612.42 -43065612.22 -43065612.02 0.0304 0.0075

Venus -122620-05-30 07:27 J -43065382.39 -43065382.19 -43065381.99 0.0304 0.0069

Venus -122619-01-15 06:44 J -43065152.42 -43065152.22 -43065152.02 0.0303 0.0061

Venus -122619-09-02 04:06 J -43064922.53 -43064922.33 -43064922.13 0.0301 0.0052

Venus -122618-04-19 23:32 J -43064692.72 -43064692.52 -43064692.32 0.0300 0.0042

Venus -122618-12-05 16:49 J -43064463.00 -43064462.80 -43064462.59 0.0297 0.0032

Venus -122617-07-22 08:10 J -43064233.36 -43064233.16 -43064232.95 0.0295 0.0021

Venus -122616-03-08 21:37 J -43064003.80 -43064003.60 -43064003.40 0.0292 0.0010

Venus -122616-10-24 08:39 J -43063774.34 -43063774.14 -43063773.93 0.0289 0.0004

Venus -122615-06-10 17:46 J -43063544.96 -43063544.76 -43063544.55 0.0286 0.0012

Venus -122614-01-26 00:58 J -43063315.66 -43063315.46 -43063315.25 0.0283 0.0021

Venus -122614-09-12 06:30 J -43063086.43 -43063086.23 -43063086.02 0.0280 0.0030

Venus -122613-04-28 10:34 J -43062857.26 -43062857.06 -43062856.85 0.0277 0.0038

Venus -122613-12-13 13:13 J -43062628.15 -43062627.95 -43062627.74 0.0274 0.0045

Venus -122612-07-30 14:39 J -43062399.09 -43062398.89 -43062398.68 0.0271 0.0051

Venus -122611-03-16 15:08 J -43062170.07 -43062169.87 -43062169.66 0.0269 0.0057  
 Venus -122611-10-31 14:54 J -43061941.08 -43061940.88 -43061940.67 0.0267 0.0061  
 Venus -122610-06-17 13:56 J -43061712.12 -43061711.92 -43061711.71 0.0265 0.0064  
 Mars -122610-12-30 18:58 J -43061515.92 -43061515.71 -43061515.48 0.0263 0.0161  
 Venus -122609-02-01 12:44 J -43061483.18 -43061482.97 -43061482.76 0.0263 0.0067  
 Venus -122609-09-17 11:03 J -43061254.24 -43061254.04 -43061253.83 0.0262 0.0069  
 Mercury -122608-03-12 02:10 J -43061078.51 -43061078.41 -43061078.30 0.0261 0.0211  
 Venus -122608-05-04 09:37 J -43061025.30 -43061025.10 -43061024.89 0.0261 0.0070  
 Mercury -122608-06-08 21:08 J -43060989.78 -43060989.62 -43060989.45 0.0260 0.0106  
 Mercury -122608-09-05 16:20 J -43060901.01 -43060900.82 -43060900.64 0.0260 0.0003  
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Venus -122596-04-09 15:37 J -43056667.06 -43056666.85 -43056666.63 0.0289 0.0051  
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 Earth -122595-01-05 08:54 J -43056396.37 -43056396.13 -43056395.89 0.0292 0.0038 \*  
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 Mercury -122593-07-03 18:15 J -43055485.84 -43055485.74 -43055485.64 0.0301 0.0205  
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 Venus -122592-09-06 12:15 J -43055056.19 -43055055.99 -43055055.79 0.0303 0.0074  
 Venus -122591-04-24 14:10 J -43054826.11 -43054825.91 -43054825.71 0.0304 0.0070  
 Venus -122591-12-10 14:54 J -43054596.08 -43054595.88 -43054595.68 0.0304 0.0065  
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 Venus -122588-06-17 00:01 J -43053676.70 -43053676.50 -43053676.30 0.0297 0.0029  
 Venus -122587-02-01 15:22 J -43053447.06 -43053446.86 -43053446.66 0.0295 0.0019  
 Venus -122587-09-19 04:20 J -43053217.52 -43053217.32 -43053217.12 0.0292 0.0008  
 Venus -122586-05-06 15:22 J -43052988.07 -43052987.86 -43052987.66 0.0289 0.0006  
 Venus -122586-12-22 00:15 J -43052758.69 -43052758.49 -43052758.29 0.0286 0.0013  
 Venus -122585-08-07 07:27 J -43052529.40 -43052529.19 -43052528.99 0.0283 0.0022  
 Venus -122584-03-24 12:58 J -43052300.17 -43052299.96 -43052299.76 0.0280 0.0031  
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 Venus -122583-06-25 19:13 J -43051841.90 -43051841.70 -43051841.50 0.0274 0.0045  
 Venus -122582-02-09 20:25 J -43051612.85 -43051612.65 -43051612.44 0.0271 0.0051

Moon -122582-06-28 05:03 J -43051474.53 -43051474.29 -43051474.04 0.0270 0.0027  
 Earth -122582-06-28 08:25 J -43051474.40 -43051474.15 -43051473.90 0.0270 0.0012 \*  
 Venus -122582-09-26 20:39 J -43051383.84 -43051383.64 -43051383.43 0.0269 0.0056  
 Mars -122581-02-21 12:58 J -43051236.15 -43051235.96 -43051235.75 0.0267 0.0188  
 Venus -122581-05-12 20:25 J -43051154.85 -43051154.65 -43051154.44 0.0267 0.0060  
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 Venus -122575-01-02 12:58 J -43049094.18 -43049093.96 -43049093.75 0.0259 0.0057  
 Venus -122575-08-19 14:54 J -43048865.09 -43048864.88 -43048864.66 0.0259 0.0053  
 Venus -122574-04-05 18:15 J -43048635.96 -43048635.74 -43048635.52 0.0260 0.0047  
 Venus -122574-11-20 22:49 J -43048406.77 -43048406.55 -43048406.33 0.0261 0.0042  
 Venus -122573-07-07 05:03 J -43048177.50 -43048177.29 -43048177.06 0.0263 0.0036  
 Venus -122572-02-21 12:58 J -43047948.18 -43047947.96 -43047947.74 0.0265 0.0028  
 Venus -122572-10-08 22:34 J -43047718.78 -43047718.56 -43047718.34 0.0267 0.0021  
 Venus -122571-05-26 09:51 J -43047489.31 -43047489.09 -43047488.86 0.0269 0.0014  
 Venus -122570-01-10 23:18 J -43047259.75 -43047259.53 -43047259.31 0.0272 0.0004  
 Venus -122570-08-28 14:39 J -43047030.11 -43047029.89 -43047029.67 0.0274 0.0006  
 Venus -122569-04-14 07:56 J -43046800.39 -43046800.17 -43046799.95 0.0277 0.0015  
 Venus -122569-11-30 02:54 J -43046570.60 -43046570.38 -43046570.16 0.0280 0.0025

Venus -122568-07-17 23:46 J -43046340.73 -43046340.51 -43046340.29 0.0283 0.0034  
 Venus -122567-03-04 22:20 J -43046110.78 -43046110.57 -43046110.35 0.0286 0.0044  
 Venus -122567-10-20 22:34 J -43045880.77 -43045880.56 -43045880.35 0.0290 0.0052  
 Venus -122566-06-08 00:01 J -43045650.71 -43045650.50 -43045650.29 0.0293 0.0060  
 Venus -122565-01-24 02:25 J -43045420.60 -43045420.40 -43045420.19 0.0295 0.0067  
 Mars -122565-01-26 06:15 J -43045418.43 -43045418.24 -43045418.04 0.0295 0.0224  
 Venus -122565-09-10 05:46 J -43045190.47 -43045190.26 -43045190.06 0.0298 0.0072  
 Venus -122564-04-28 09:22 J -43044960.31 -43044960.11 -43044959.90 0.0300 0.0075  
 Mercury -122564-11-20 19:56 J -43044753.75 -43044753.67 -43044753.59 0.0302 0.0238  
 Venus -122564-12-14 13:13 J -43044730.15 -43044729.95 -43044729.75 0.0302 0.0077  
 Mercury -122563-02-17 09:51 J -43044665.22 -43044665.09 -43044664.97 0.0302 0.0117  
 Mercury -122563-05-16 23:32 J -43044576.65 -43044576.52 -43044576.39 0.0303 0.0005  
 Venus -122563-08-01 16:49 J -43044500.00 -43044499.80 -43044499.60 0.0303 0.0077  
 Mercury -122563-08-13 12:58 J -43044488.08 -43044487.96 -43044487.84 0.0303 0.0126  
 Mercury -122563-11-10 02:25 J -43044399.47 -43044399.40 -43044399.32 0.0304 0.0245  
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 Venus -122560-02-06 20:39 J -43043579.84 -43043579.64 -43043579.43 0.0303 0.0056  
 Venus -122560-09-24 17:46 J -43043349.96 -43043349.76 -43043349.56 0.0301 0.0046  
 Venus -122559-05-12 12:44 J -43043120.17 -43043119.97 -43043119.76 0.0299 0.0037  
 Venus -122559-12-28 06:01 J -43042890.46 -43042890.25 -43042890.05 0.0297 0.0027  
 Venus -122558-08-14 20:54 J -43042660.83 -43042660.63 -43042660.43 0.0294 0.0016  
 Venus -122557-03-31 09:37 J -43042431.30 -43042431.10 -43042430.89 0.0291 0.0009  
 Venus -122557-11-15 20:25 J -43042201.85 -43042201.65 -43042201.44 0.0288 0.0005  
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 Venus -122555-10-04 17:18 J -43041513.98 -43041513.78 -43041513.57 0.0279 0.0031  
 Venus -122554-05-21 20:54 J -43041284.83 -43041284.63 -43041284.42 0.0276 0.0038  
 Venus -122553-01-05 23:18 J -43041055.74 -43041055.53 -43041055.33 0.0273 0.0044

Venus -122553-08-22 00:30 J -43040826.69 -43040826.48 -43040826.28 0.0271 0.0050

Venus -122552-04-08 00:44 J -43040597.67 -43040597.47 -43040597.26 0.0268 0.0055

Venus -122552-11-23 00:15 J -43040368.70 -43040368.49 -43040368.28 0.0266 0.0058

Mars -122551-04-09 08:54 J -43040231.41 -43040231.13 -43040230.85 0.0265 0.0002

Venus -122551-07-09 23:03 J -43040139.75 -43040139.54 -43040139.33 0.0264 0.0061

Venus -122550-02-23 21:22 J -43039910.81 -43039910.61 -43039910.40 0.0262 0.0064

Venus -122550-10-10 19:42 J -43039681.88 -43039681.68 -43039681.47 0.0261 0.0065

Mercury -122549-03-14 21:51 J -43039525.73 -43039525.59 -43039525.44 0.0260 0.0161

Venus -122549-05-26 18:15 J -43039452.94 -43039452.74 -43039452.53 0.0260 0.0065

Mercury -122549-06-11 16:49 J -43039436.98 -43039436.80 -43039436.62 0.0260 0.0056

Mercury -122549-09-08 12:01 J -43039348.18 -43039348.00 -43039347.82 0.0260 0.0050

Mercury -122549-12-06 06:58 J -43039259.35 -43039259.21 -43039259.05 0.0259 0.0157

Venus -122548-01-10 16:49 J -43039224.01 -43039223.80 -43039223.59 0.0259 0.0065

Venus -122548-08-27 15:37 J -43038995.06 -43038994.85 -43038994.64 0.0259 0.0064

Venus -122547-04-13 14:54 J -43038766.09 -43038765.88 -43038765.67 0.0259 0.0062

Venus -122547-11-28 14:54 J -43038537.09 -43038536.88 -43038536.66 0.0259 0.0060

Venus -122546-07-15 16:06 J -43038308.04 -43038307.83 -43038307.61 0.0259 0.0056

Venus -122545-02-29 18:15 J -43038078.96 -43038078.74 -43038078.52 0.0260 0.0052

Venus -122545-10-15 21:37 J -43037849.82 -43037849.60 -43037849.39 0.0261 0.0047

Venus -122544-06-02 02:10 J -43037620.63 -43037620.41 -43037620.19 0.0262 0.0041

Venus -122543-01-17 08:25 J -43037391.37 -43037391.15 -43037390.93 0.0263 0.0034

Venus -122543-09-03 16:20 J -43037162.04 -43037161.82 -43037161.60 0.0265 0.0027

Venus -122542-04-21 01:56 J -43036932.64 -43036932.42 -43036932.20 0.0267 0.0020

Venus -122542-12-06 13:27 J -43036703.16 -43036702.94 -43036702.72 0.0269 0.0012

Venus -122541-07-23 02:54 J -43036473.60 -43036473.38 -43036473.16 0.0272 0.0003

Venus -122540-03-09 18:15 J -43036243.96 -43036243.74 -43036243.52 0.0274 0.0008

Venus -122540-10-25 11:46 J -43036014.23 -43036014.01 -43036013.79 0.0277 0.0016

Venus -122539-06-12 06:58 J -43035784.43 -43035784.21 -43035783.99 0.0280 0.0025

Venus -122538-01-28 04:06 J -43035554.55 -43035554.33 -43035554.11 0.0283 0.0034

Venus -122538-09-15 03:08 J -43035324.59 -43035324.37 -43035324.16 0.0286 0.0042



Venus -122537-05-02 03:22 J -43035094.57 -43035094.36 -43035094.15 0.0289 0.0050  
 Venus -122537-12-18 05:03 J -43034864.50 -43034864.29 -43034864.08 0.0292 0.0057  
 Earth -122536-01-06 15:08 J -43034845.11 -43034844.87 -43034844.63 0.0293 0.0057  
 Moon -122536-01-06 17:46 J -43034844.99 -43034844.76 -43034844.52 0.0293 0.0061 \*  
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 Mars -122535-03-20 02:54 J -43034407.68 -43034407.38 -43034407.08 0.0298 0.0060  
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 Mercury -122534-04-09 21:08 J -43034021.67 -43034021.62 -43034021.57 0.0301 0.0278  
 Venus -122534-06-26 18:15 J -43033943.93 -43033943.74 -43033943.53 0.0302 0.0073  
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 Mercury -122534-10-04 00:44 J -43033844.60 -43033844.47 -43033844.34 0.0302 0.0036  
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 Venus -122533-09-29 00:44 J -43033483.67 -43033483.47 -43033483.27 0.0304 0.0069  
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 Venus -122531-01-02 03:08 J -43033023.57 -43033023.37 -43033023.17 0.0304 0.0058  
 Venus -122531-08-20 02:10 J -43032793.61 -43032793.41 -43032793.21 0.0303 0.0051  
 Venus -122530-04-06 23:03 J -43032563.74 -43032563.54 -43032563.33 0.0301 0.0043  
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 Venus -122528-10-11 14:54 J -43031645.08 -43031644.88 -43031644.67 0.0292 0.0008  
 Venus -122527-05-29 01:42 J -43031415.64 -43031415.43 -43031415.23 0.0289 0.0008  
 Venus -122526-01-13 10:20 J -43031186.28 -43031186.07 -43031185.87 0.0285 0.0016  
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 Venus -122525-04-15 22:20 J -43030727.77 -43030727.57 -43030727.36 0.0279 0.0032  
 Venus -122525-12-01 01:56 J -43030498.63 -43030498.42 -43030498.22 0.0276 0.0039  
 Venus -122524-07-18 04:06 J -43030269.53 -43030269.33 -43030269.12 0.0273 0.0045

Venus -122523-03-04 05:03 J -43030040.49 -43030040.29 -43030040.08 0.0271 0.0050  
 Earth -122523-06-29 14:10 J -43029923.13 -43029922.91 -43029922.67 0.0269 0.0101  
 Moon -122523-06-29 18:15 J -43029922.97 -43029922.74 -43029922.51 0.0269 0.0104 \*  
 Venus -122523-10-19 05:03 J -43029811.49 -43029811.29 -43029811.08 0.0268 0.0055  
 Venus -122522-06-05 04:34 J -43029582.52 -43029582.31 -43029582.10 0.0266 0.0058  
 Venus -122521-01-20 03:22 J -43029353.57 -43029353.36 -43029353.16 0.0264 0.0060  
 Mars -122521-05-25 22:06 J -43029226.77 -43029226.58 -43029226.36 0.0263 0.0180  
 Venus -122521-09-05 01:42 J -43029124.64 -43029124.43 -43029124.22 0.0262 0.0062  
 Venus -122520-04-22 00:01 J -43028895.71 -43028895.50 -43028895.29 0.0261 0.0063  
 Mercury -122520-08-01 21:51 J -43028793.70 -43028793.59 -43028793.45 0.0260 0.0190  
 Mercury -122520-10-29 17:03 J -43028704.96 -43028704.79 -43028704.62 0.0260 0.0084  
 Venus -122520-12-06 22:06 J -43028666.78 -43028666.58 -43028666.36 0.0260 0.0063  
 Mercury -122519-01-26 12:01 J -43028616.18 -43028616.00 -43028615.81 0.0260 0.0021  
 Mercury -122519-04-25 07:13 J -43028527.36 -43028527.20 -43028527.04 0.0259 0.0127  
 Mercury -122519-07-23 02:25 J -43028438.47 -43028438.40 -43028438.31 0.0259 0.0233  
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 Venus -122517-06-09 19:13 J -43027750.91 -43027750.70 -43027750.49 0.0258 0.0055  
 Venus -122516-01-24 20:10 J -43027521.87 -43027521.66 -43027521.44 0.0259 0.0052  
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 Venus -122515-04-28 01:42 J -43027063.65 -43027063.43 -43027063.21 0.0260 0.0042  
 Venus -122515-12-13 06:15 J -43026834.45 -43026834.24 -43026834.02 0.0261 0.0037  
 Venus -122514-07-30 12:44 J -43026605.19 -43026604.97 -43026604.75 0.0263 0.0031  
 Venus -122513-03-15 20:54 J -43026375.85 -43026375.63 -43026375.41 0.0265 0.0024  
 Venus -122513-10-31 06:30 J -43026146.45 -43026146.23 -43026146.01 0.0267 0.0016  
 Venus -122512-06-17 18:01 J -43025916.97 -43025916.75 -43025916.53 0.0269 0.0009  
 Venus -122511-02-02 07:42 J -43025687.40 -43025687.18 -43025686.96 0.0272 0.0002  
 Venus -122511-09-19 23:18 J -43025457.75 -43025457.53 -43025457.31 0.0275 0.0009  
 Venus -122510-05-07 16:49 J -43025228.02 -43025227.80 -43025227.58 0.0278 0.0018

Venus -122510-12-23 12:01 J -43024998.22 -43024998.00 -43024997.78 0.0281 0.0027  
 Venus -122509-08-09 09:08 J -43024768.33 -43024768.12 -43024767.90 0.0284 0.0036  
 Venus -122508-03-27 08:10 J -43024538.37 -43024538.16 -43024537.95 0.0287 0.0044  
 Venus -122508-11-12 08:39 J -43024308.35 -43024308.14 -43024307.93 0.0290 0.0052  
 Venus -122507-06-30 10:20 J -43024078.28 -43024078.07 -43024077.86 0.0293 0.0059  
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 Mercury -122505-11-23 12:15 J -43023201.09 -43023200.99 -43023200.88 0.0302 0.0194  
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 Mercury -122504-08-16 05:18 J -43022935.39 -43022935.28 -43022935.17 0.0303 0.0170  
 Venus -122504-08-24 03:51 J -43022927.54 -43022927.34 -43022927.14 0.0304 0.0071  
 Mercury -122504-11-12 18:44 J -43022846.76 -43022846.72 -43022846.68 0.0304 0.0289  
 Venus -122503-04-11 06:30 J -43022697.43 -43022697.23 -43022697.02 0.0304 0.0069  
 Venus -122503-11-27 08:25 J -43022467.35 -43022467.15 -43022466.95 0.0304 0.0064  
 Venus -122502-07-15 08:39 J -43022237.34 -43022237.14 -43022236.93 0.0304 0.0057  
 Venus -122501-03-01 07:27 J -43022007.39 -43022007.19 -43022006.99 0.0303 0.0049  
 Venus -122501-10-17 04:20 J -43021777.52 -43021777.32 -43021777.12 0.0301 0.0041  
 Venus -122500-06-03 23:03 J -43021547.74 -43021547.54 -43021547.33 0.0299 0.0032  
 Venus -122499-01-19 16:06 J -43021318.04 -43021317.83 -43021317.63 0.0297 0.0021  
 Venus -122499-09-06 06:44 J -43021088.43 -43021088.22 -43021088.02 0.0294 0.0012  
 Venus -122498-04-23 19:13 J -43020858.91 -43020858.70 -43020858.50 0.0291 0.0004  
 Venus -122498-12-09 05:32 J -43020629.47 -43020629.27 -43020629.06 0.0288 0.0008  
 Venus -122497-07-25 14:10 J -43020400.12 -43020399.91 -43020399.71 0.0285 0.0017  
 Venus -122496-03-11 20:54 J -43020170.84 -43020170.63 -43020170.43 0.0281 0.0025  
 Venus -122496-10-27 01:42 J -43019941.63 -43019941.43 -43019941.22 0.0278 0.0032  
 Venus -122495-06-13 05:03 J -43019712.49 -43019712.29 -43019712.08 0.0275 0.0039  
 Venus -122494-01-28 06:58 J -43019483.41 -43019483.21 -43019483.00 0.0273 0.0045

Earth -122494-06-24 12:15 J -43019336.10 -43019335.99 -43019335.87 0.0271 0.0238  
 Moon -122494-06-24 13:13 J -43019336.07 -43019335.95 -43019335.81 0.0271 0.0231 \*  
 Venus -122494-09-14 07:56 J -43019254.37 -43019254.17 -43019253.96 0.0270 0.0049  
 Venus -122493-04-30 08:10 J -43019025.37 -43019025.16 -43019024.95 0.0268 0.0053  
 Mars -122493-07-17 07:27 J -43018947.39 -43018947.19 -43018946.96 0.0267 0.0173  
 Venus -122493-12-15 07:13 J -43018796.40 -43018796.20 -43018795.99 0.0265 0.0057  
 Venus -122492-08-01 06:01 J -43018567.46 -43018567.25 -43018567.04 0.0264 0.0058  
 Venus -122491-03-18 04:20 J -43018338.53 -43018338.32 -43018338.11 0.0262 0.0060  
 Venus -122491-11-02 02:25 J -43018109.61 -43018109.40 -43018109.19 0.0261 0.0061  
 Mercury -122491-12-19 21:37 J -43018061.69 -43018061.60 -43018061.50 0.0260 0.0220  
 Mercury -122490-03-18 16:34 J -43017972.97 -43017972.81 -43017972.65 0.0260 0.0116  
 Mercury -122490-06-15 11:32 J -43017884.20 -43017884.02 -43017883.84 0.0260 0.0012  
 Venus -122490-06-19 00:44 J -43017880.68 -43017880.47 -43017880.26 0.0260 0.0061  
 Mercury -122490-09-12 06:30 J -43017795.40 -43017795.23 -43017795.05 0.0259 0.0094  
 Mercury -122490-12-10 01:42 J -43017706.54 -43017706.43 -43017706.30 0.0259 0.0200  
 Venus -122489-02-02 23:18 J -43017651.74 -43017651.53 -43017651.32 0.0259 0.0060  
 Venus -122489-09-18 21:51 J -43017422.80 -43017422.59 -43017422.37 0.0258 0.0059  
 Venus -122488-05-05 21:08 J -43017193.82 -43017193.62 -43017193.40 0.0258 0.0058  
 Venus -122488-12-20 21:22 J -43016964.82 -43016964.61 -43016964.39 0.0258 0.0054  
 Venus -122487-08-06 22:20 J -43016735.78 -43016735.57 -43016735.35 0.0259 0.0051  
 Venus -122486-03-24 00:30 J -43016506.69 -43016506.48 -43016506.26 0.0260 0.0046  
 Venus -122486-11-08 03:51 J -43016277.56 -43016277.34 -43016277.12 0.0261 0.0041  
 Venus -122485-06-24 08:39 J -43016048.36 -43016048.14 -43016047.92 0.0262 0.0036  
 Venus -122484-02-08 14:54 J -43015819.10 -43015818.88 -43015818.66 0.0263 0.0030  
 Venus -122484-09-25 23:03 J -43015589.76 -43015589.54 -43015589.32 0.0265 0.0023  
 Venus -122483-05-13 08:39 J -43015360.36 -43015360.14 -43015359.92 0.0267 0.0015  
 Venus -122483-12-28 20:25 J -43015130.87 -43015130.65 -43015130.43 0.0270 0.0008  
 Venus -122482-08-15 10:06 J -43014901.30 -43014901.08 -43014900.86 0.0272 0.0003  
 Venus -122481-04-01 01:42 J -43014671.65 -43014671.43 -43014671.21 0.0275 0.0011  
 Venus -122481-11-16 19:27 J -43014441.91 -43014441.69 -43014441.47 0.0278 0.0018

Venus -122480-07-04 14:54 J -43014212.10 -43014211.88 -43014211.66 0.0281 0.0026  
 Venus -122479-02-19 12:15 J -43013982.21 -43013981.99 -43013981.78 0.0284 0.0035  
 Venus -122479-10-07 11:18 J -43013752.24 -43013752.03 -43013751.81 0.0287 0.0043  
 Venus -122478-05-25 12:01 J -43013522.21 -43013522.00 -43013521.79 0.0290 0.0050  
 Moon -122477-01-08 13:27 J -43013294.14 -43013293.94 -43013293.72 0.0293 0.0152  
 Earth -122477-01-08 16:20 J -43013294.02 -43013293.82 -43013293.60 0.0293 0.0139 \*  
 Venus -122477-01-10 13:56 J -43013292.13 -43013291.92 -43013291.71 0.0293 0.0056  
 Mars -122477-06-20 06:15 J -43013130.43 -43013130.24 -43013130.03 0.0295 0.0220  
 Venus -122477-08-27 16:34 J -43013062.02 -43013061.81 -43013061.60 0.0296 0.0061  
 Venus -122476-04-14 19:56 J -43012831.87 -43012831.67 -43012831.46 0.0298 0.0066  
 Venus -122476-12-01 00:01 J -43012601.71 -43012601.50 -43012601.30 0.0300 0.0067  
 Mercury -122475-04-12 12:58 J -43012469.04 -43012468.96 -43012468.88 0.0301 0.0238  
 Mercury -122475-07-10 02:39 J -43012380.51 -43012380.39 -43012380.26 0.0302 0.0117  
 Venus -122475-07-19 03:37 J -43012371.55 -43012371.35 -43012371.14 0.0302 0.0068  
 Mercury -122475-10-06 16:34 J -43012291.95 -43012291.81 -43012291.68 0.0302 0.0010  
 Mercury -122474-01-03 06:01 J -43012203.37 -43012203.25 -43012203.13 0.0303 0.0125  
 Venus -122474-03-06 06:58 J -43012141.41 -43012141.21 -43012141.00 0.0303 0.0067  
 Mercury -122474-04-01 19:27 J -43012114.76 -43012114.69 -43012114.61 0.0303 0.0245  
 Venus -122474-10-22 09:51 J -43011911.29 -43011911.09 -43011910.89 0.0304 0.0063  
 Venus -122473-06-08 11:32 J -43011681.22 -43011681.02 -43011680.82 0.0304 0.0058  
 Venus -122472-01-24 12:01 J -43011451.20 -43011451.00 -43011450.80 0.0304 0.0052  
 Venus -122472-09-11 10:49 J -43011221.25 -43011221.05 -43011220.85 0.0303 0.0045  
 Venus -122471-04-29 07:27 J -43010991.39 -43010991.19 -43010990.98 0.0301 0.0037  
 Venus -122471-12-15 02:25 J -43010761.60 -43010761.40 -43010761.19 0.0299 0.0028  
 Venus -122470-08-01 19:13 J -43010531.90 -43010531.70 -43010531.49 0.0297 0.0018  
 Venus -122469-03-18 10:06 J -43010302.29 -43010302.08 -43010301.88 0.0294 0.0009  
 Venus -122469-11-02 22:34 J -43010072.77 -43010072.56 -43010072.36 0.0291 0.0004  
 Venus -122468-06-20 08:54 J -43009843.33 -43009843.13 -43009842.93 0.0288 0.0010  
 Venus -122467-02-04 17:18 J -43009613.98 -43009613.78 -43009613.57 0.0285 0.0019  
 Venus -122467-09-22 00:01 J -43009384.71 -43009384.50 -43009384.30 0.0282 0.0026

Venus -122466-05-09 04:49 J -43009155.50 -43009155.30 -43009155.09 0.0279 0.0033  
 Venus -122466-12-24 08:10 J -43008926.36 -43008926.16 -43008925.95 0.0276 0.0040  
 Venus -122465-08-09 10:20 J -43008697.28 -43008697.07 -43008696.86 0.0273 0.0045  
 Venus -122464-03-26 11:18 J -43008468.24 -43008468.03 -43008467.82 0.0270 0.0049  
 Moon -122464-06-30 12:58 J -43008372.15 -43008371.96 -43008371.76 0.0269 0.0163  
 Earth -122464-06-30 16:20 J -43008372.00 -43008371.82 -43008371.63 0.0269 0.0177 \*  
 Venus -122464-11-10 11:18 J -43008239.24 -43008239.03 -43008238.83 0.0268 0.0053  
 Venus -122463-06-27 10:20 J -43008010.28 -43008010.07 -43008009.86 0.0266 0.0056  
 Mars -122463-09-03 01:42 J -43007942.71 -43007942.43 -43007942.15 0.0265 0.0015  
 Venus -122462-02-11 08:54 J -43007781.33 -43007781.13 -43007780.92 0.0264 0.0058  
 Venus -122462-09-28 07:13 J -43007552.41 -43007552.20 -43007551.99 0.0262 0.0059  
 Mercury -122461-05-07 21:22 J -43007329.65 -43007329.61 -43007329.56 0.0261 0.0251  
 Venus -122461-05-14 05:32 J -43007323.48 -43007323.27 -43007323.06 0.0261 0.0059  
 Mercury -122461-08-04 16:06 J -43007240.97 -43007240.83 -43007240.68 0.0260 0.0148  
 Mercury -122461-11-01 11:03 J -43007152.22 -43007152.04 -43007151.86 0.0260 0.0043  
 Venus -122461-12-29 03:37 J -43007094.56 -43007094.35 -43007094.14 0.0260 0.0059  
 Mercury -122460-01-29 06:15 J -43007063.42 -43007063.24 -43007063.06 0.0259 0.0062  
 Mercury -122460-04-28 01:13 J -43006974.58 -43006974.45 -43006974.30 0.0259 0.0168  
 Venus -122460-08-15 01:56 J -43006865.63 -43006865.42 -43006865.20 0.0259 0.0058  
 Venus -122459-04-01 00:44 J -43006636.68 -43006636.47 -43006636.25 0.0258 0.0056  
 Venus -122459-11-16 00:15 J -43006407.71 -43006407.49 -43006407.28 0.0258 0.0053  
 Venus -122458-07-03 00:30 J -43006178.69 -43006178.48 -43006178.26 0.0258 0.0050  
 Venus -122457-02-17 01:42 J -43005949.65 -43005949.43 -43005949.22 0.0258 0.0047  
 Venus -122457-10-03 03:51 J -43005720.56 -43005720.34 -43005720.13 0.0259 0.0042  
 Venus -122456-05-20 07:13 J -43005491.42 -43005491.20 -43005490.98 0.0260 0.0037  
 Venus -122455-01-04 11:46 J -43005262.22 -43005262.01 -43005261.78 0.0261 0.0033  
 Venus -122455-08-21 18:15 J -43005032.96 -43005032.74 -43005032.51 0.0263 0.0026  
 Venus -122454-04-08 02:25 J -43004803.62 -43004803.40 -43004803.18 0.0265 0.0019  
 Venus -122454-11-23 12:15 J -43004574.21 -43004573.99 -43004573.77 0.0267 0.0012  
 Venus -122453-07-10 00:01 J -43004344.72 -43004344.50 -43004344.28 0.0269 0.0004

Venus -122452-02-24 13:42 J -43004115.15 -43004114.93 -43004114.71 0.0272 0.0004  
 Venus -122452-10-12 05:18 J -43003885.50 -43003885.28 -43003885.06 0.0275 0.0013  
 Venus -122451-05-29 23:03 J -43003655.76 -43003655.54 -43003655.32 0.0278 0.0020  
 Venus -122450-01-14 18:30 J -43003425.95 -43003425.73 -43003425.51 0.0281 0.0028  
 Venus -122450-09-01 15:51 J -43003196.05 -43003195.84 -43003195.62 0.0284 0.0037  
 Venus -122449-04-18 14:54 J -43002966.09 -43002965.88 -43002965.66 0.0287 0.0045  
 Venus -122449-12-04 15:37 J -43002736.06 -43002735.85 -43002735.64 0.0291 0.0051  
 Venus -122448-07-22 17:18 J -43002505.98 -43002505.78 -43002505.56 0.0294 0.0058  
 Venus -122447-03-09 20:10 J -43002275.86 -43002275.66 -43002275.45 0.0296 0.0063  
 Mars -122447-08-12 22:06 J -43002119.87 -43002119.58 -43002119.28 0.0298 0.0072  
 Venus -122447-10-26 00:01 J -43002045.71 -43002045.50 -43002045.30 0.0299 0.0066  
 Venus -122446-06-13 03:51 J -43001815.54 -43001815.34 -43001815.13 0.0301 0.0068  
 Mercury -122446-08-30 13:42 J -43001736.98 -43001736.93 -43001736.88 0.0302 0.0279  
 Mercury -122446-11-27 03:37 J -43001648.46 -43001648.35 -43001648.24 0.0302 0.0157  
 Venus -122445-01-29 07:42 J -43001585.38 -43001585.18 -43001584.97 0.0303 0.0068  
 Mercury -122445-02-23 17:18 J -43001559.91 -43001559.78 -43001559.64 0.0303 0.0037  
 Mercury -122445-05-22 06:58 J -43001471.34 -43001471.21 -43001471.08 0.0303 0.0085  
 Mercury -122445-08-18 20:25 J -43001382.74 -43001382.65 -43001382.55 0.0304 0.0205  
 Venus -122445-09-15 11:03 J -43001355.24 -43001355.04 -43001354.83 0.0304 0.0067  
 Venus -122444-05-03 13:56 J -43001125.12 -43001124.92 -43001124.72 0.0304 0.0063  
 Venus -122444-12-19 15:37 J -43000895.05 -43000894.85 -43000894.65 0.0304 0.0058  
 Venus -122443-08-06 15:51 J -43000665.04 -43000664.84 -43000664.64 0.0304 0.0052  
 Venus -122442-03-24 14:25 J -43000435.10 -43000434.90 -43000434.70 0.0303 0.0044  
 Venus -122442-11-09 11:03 J -43000205.24 -43000205.04 -43000204.84 0.0301 0.0035  
 Venus -122441-06-26 05:46 J -42999975.46 -42999975.26 -42999975.06 0.0299 0.0026  
 Venus -122440-02-10 22:34 J -42999745.77 -42999745.56 -42999745.36 0.0296 0.0017  
 Venus -122440-09-28 12:58 J -42999516.16 -42999515.96 -42999515.76 0.0294 0.0007  
 Venus -122439-05-16 01:13 J -42999286.65 -42999286.45 -42999286.25 0.0291 0.0002  
 Venus -122439-12-31 11:32 J -42999057.23 -42999057.02 -42999056.82 0.0288 0.0012  
 Venus -122438-08-17 19:42 J -42998827.88 -42998827.68 -42998827.47 0.0284 0.0020

Venus -122437-04-03 02:25 J -42998598.60 -42998598.40 -42998598.20 0.0281 0.0026  
 Venus -122437-11-18 07:13 J -42998369.41 -42998369.20 -42998369.00 0.0278 0.0033  
 Venus -122436-07-05 10:20 J -42998140.27 -42998140.07 -42998139.86 0.0275 0.0039  
 Venus -122435-02-19 12:15 J -42997911.20 -42997910.99 -42997910.78 0.0272 0.0044  
 Earth -122435-06-25 12:15 J -42997785.17 -42997784.99 -42997784.78 0.0271 0.0166  
 Moon -122435-06-25 12:44 J -42997785.15 -42997784.97 -42997784.77 0.0271 0.0163 \*  
 Venus -122435-10-06 12:58 J -42997682.16 -42997681.96 -42997681.75 0.0269 0.0048  
 Venus -122434-05-23 12:58 J -42997453.17 -42997452.96 -42997452.75 0.0267 0.0051  
 Venus -122433-01-07 12:01 J -42997224.20 -42997224.00 -42997223.79 0.0265 0.0054  
 Venus -122433-08-23 10:34 J -42996995.26 -42996995.06 -42996994.85 0.0263 0.0056  
 Mars -122433-10-19 06:30 J -42996938.42 -42996938.23 -42996938.03 0.0263 0.0188  
 Venus -122432-04-09 08:54 J -42996766.34 -42996766.13 -42996765.92 0.0262 0.0057  
 Venus -122432-11-24 06:58 J -42996537.42 -42996537.21 -42996537.00 0.0260 0.0057  
 Mercury -122432-12-22 15:08 J -42996508.99 -42996508.87 -42996508.73 0.0260 0.0182  
 Mercury -122431-03-21 10:06 J -42996420.25 -42996420.08 -42996419.90 0.0260 0.0078  
 Mercury -122431-06-18 05:03 J -42996331.47 -42996331.29 -42996331.10 0.0259 0.0028  
 Venus -122431-07-11 05:03 J -42996308.50 -42996308.29 -42996308.08 0.0259 0.0057  
 Mercury -122431-09-15 00:01 J -42996242.65 -42996242.50 -42996242.33 0.0259 0.0133  
 Mercury -122431-12-12 19:27 J -42996153.75 -42996153.69 -42996153.62 0.0259 0.0239  
 Venus -122430-02-25 03:22 J -42996079.57 -42996079.36 -42996079.14 0.0259 0.0056  
 Venus -122430-10-12 02:10 J -42995850.62 -42995850.41 -42995850.19 0.0258 0.0054  
 Venus -122429-05-28 01:42 J -42995621.64 -42995621.43 -42995621.22 0.0258 0.0052  
 Venus -122428-01-12 01:42 J -42995392.64 -42995392.43 -42995392.21 0.0258 0.0049  
 Venus -122428-08-29 02:39 J -42995163.60 -42995163.39 -42995163.17 0.0259 0.0046  
 Venus -122427-04-15 04:49 J -42994934.52 -42994934.30 -42994934.08 0.0259 0.0041  
 Venus -122427-11-30 08:10 J -42994705.38 -42994705.16 -42994704.94 0.0260 0.0036  
 Venus -122426-07-17 13:13 J -42994476.17 -42994475.95 -42994475.73 0.0262 0.0031  
 Venus -122425-03-02 19:27 J -42994246.91 -42994246.69 -42994246.47 0.0263 0.0025  
 Venus -122425-10-18 03:22 J -42994017.58 -42994017.36 -42994017.13 0.0265 0.0019  
 Venus -122424-06-04 13:13 J -42993788.17 -42993787.95 -42993787.73 0.0267 0.0011



Venus	-122423-01-20 00:58 J	-42993558.68	-42993558.46	-42993558.24	0.0270	0.0004
Venus	-122423-09-06 14:54 J	-42993329.10	-42993328.88	-42993328.66	0.0272	0.0004
Venus	-122422-04-24 06:30 J	-42993099.45	-42993099.23	-42993099.01	0.0275	0.0013
Venus	-122422-12-10 00:15 J	-42992869.71	-42992869.49	-42992869.27	0.0278	0.0020
Venus	-122421-07-26 19:56 J	-42992639.89	-42992639.67	-42992639.45	0.0281	0.0028
Venus	-122420-03-13 17:18 J	-42992409.99	-42992409.78	-42992409.56	0.0284	0.0036
Venus	-122420-10-29 16:34 J	-42992180.02	-42992179.81	-42992179.59	0.0287	0.0043
Venus	-122419-06-16 17:18 J	-42991949.99	-42991949.78	-42991949.56	0.0290	0.0050
Earth	-122418-01-09 12:44 J	-42991743.14	-42991742.97	-42991742.79	0.0293	0.0207
Moon	-122418-01-09 15:51 J	-42991743.01	-42991742.84	-42991742.65	0.0293	0.0191 *
Venus	-122418-02-01 19:13 J	-42991719.90	-42991719.70	-42991719.48	0.0293	0.0056
Venus	-122418-09-19 22:20 J	-42991489.78	-42991489.57	-42991489.36	0.0296	0.0059
Venus	-122417-05-07 01:56 J	-42991259.62	-42991259.42	-42991259.21	0.0299	0.0062
Venus	-122417-12-23 06:01 J	-42991029.46	-42991029.25	-42991029.05	0.0301	0.0063
Mercury	-122416-04-15 03:51 J	-42990916.44	-42990916.34	-42990916.24	0.0301	0.0205
Mercury	-122416-07-12 17:32 J	-42990827.89	-42990827.77	-42990827.64	0.0302	0.0084
Venus	-122416-08-10 09:51 J	-42990799.30	-42990799.09	-42990798.89	0.0302	0.0063
Mercury	-122416-10-09 07:27 J	-42990739.33	-42990739.19	-42990739.06	0.0303	0.0038
Mercury	-122415-01-05 20:54 J	-42990650.74	-42990650.63	-42990650.51	0.0303	0.0158
Venus	-122415-03-28 13:13 J	-42990569.16	-42990568.95	-42990568.75	0.0303	0.0062
Mercury	-122415-04-04 10:20 J	-42990562.12	-42990562.07	-42990562.02	0.0303	0.0277
Venus	-122415-11-13 15:51 J	-42990339.04	-42990338.84	-42990338.64	0.0304	0.0058
Venus	-122414-07-01 17:32 J	-42990108.97	-42990108.77	-42990108.57	0.0304	0.0053
Venus	-122413-02-16 17:46 J	-42989878.96	-42989878.76	-42989878.56	0.0304	0.0046
Venus	-122413-10-03 16:20 J	-42989649.02	-42989648.82	-42989648.62	0.0303	0.0039
Venus	-122412-05-21 13:13 J	-42989419.16	-42989418.95	-42989418.75	0.0301	0.0031
Venus	-122411-01-06 07:56 J	-42989189.37	-42989189.17	-42989188.97	0.0299	0.0022
Venus	-122411-08-24 00:30 J	-42988959.68	-42988959.48	-42988959.28	0.0296	0.0013
Venus	-122410-04-10 15:08 J	-42988730.08	-42988729.87	-42988729.67	0.0294	0.0008
Venus	-122410-11-26 03:22 J	-42988500.56	-42988500.36	-42988500.16	0.0291	0.0005

Venus	-122409-07-12 13:42 J	-42988271.13	-42988270.93	-42988270.73	0.0288	0.0013
Venus	-122408-02-26 22:06 J	-42988041.78	-42988041.58	-42988041.38	0.0285	0.0021
Venus	-122408-10-14 04:34 J	-42987812.51	-42987812.31	-42987812.11	0.0281	0.0028
Venus	-122407-05-31 09:22 J	-42987583.32	-42987583.11	-42987582.91	0.0278	0.0034
Venus	-122406-01-15 12:30 J	-42987354.18	-42987353.98	-42987353.77	0.0275	0.0040
Venus	-122406-09-01 14:25 J	-42987125.10	-42987124.90	-42987124.69	0.0272	0.0045
Venus	-122405-04-17 15:22 J	-42986896.06	-42986895.86	-42986895.65	0.0270	0.0049
Earth	-122405-07-01 14:54 J	-42986820.97	-42986820.88	-42986820.77	0.0269	0.0245
Moon	-122405-07-01 17:18 J	-42986820.84	-42986820.78	-42986820.70	0.0269	0.0258 *
Venus	-122405-12-02 15:22 J	-42986667.07	-42986666.86	-42986666.66	0.0267	0.0052
Mars	-122405-12-10 15:22 J	-42986659.09	-42986658.86	-42986658.63	0.0267	0.0160
Venus	-122404-07-19 14:10 J	-42986438.11	-42986437.91	-42986437.70	0.0265	0.0054
Venus	-122403-03-05 12:44 J	-42986209.18	-42986208.97	-42986208.76	0.0263	0.0056
Venus	-122403-10-20 10:49 J	-42985980.25	-42985980.05	-42985979.83	0.0262	0.0057
Mercury	-122402-05-11 14:39 J	-42985776.99	-42985776.89	-42985776.79	0.0260	0.0214
Venus	-122402-06-06 09:08 J	-42985751.33	-42985751.12	-42985750.91	0.0260	0.0056
Mercury	-122402-08-08 09:22 J	-42985688.27	-42985688.11	-42985687.94	0.0260	0.0110
Mercury	-122402-11-05 04:20 J	-42985599.50	-42985599.32	-42985599.14	0.0260	0.0006
Venus	-122401-01-21 07:13 J	-42985522.41	-42985522.20	-42985521.98	0.0259	0.0056
Mercury	-122401-02-01 23:32 J	-42985510.69	-42985510.52	-42985510.35	0.0259	0.0099
Mercury	-122401-04-30 18:30 J	-42985421.83	-42985421.73	-42985421.61	0.0259	0.0205
Venus	-122401-09-06 05:46 J	-42985293.48	-42985293.26	-42985293.05	0.0258	0.0054
Venus	-122400-04-23 04:20 J	-42985064.53	-42985064.32	-42985064.10	0.0258	0.0052
Venus	-122400-12-08 03:51 J	-42984835.56	-42984835.34	-42984835.13	0.0258	0.0049
Venus	-122399-07-25 04:06 J	-42984606.55	-42984606.33	-42984606.12	0.0258	0.0046
Venus	-122398-03-11 05:03 J	-42984377.50	-42984377.29	-42984377.07	0.0258	0.0042
Venus	-122398-10-26 07:13 J	-42984148.41	-42984148.20	-42984147.98	0.0259	0.0038
Venus	-122397-06-11 10:49 J	-42983919.27	-42983919.05	-42983918.83	0.0260	0.0032
Venus	-122396-01-26 15:37 J	-42983690.07	-42983689.85	-42983689.63	0.0261	0.0027
Venus	-122396-09-12 22:06 J	-42983460.80	-42983460.58	-42983460.36	0.0263	0.0021

Venus	-122395-04-30 06:01 J	-42983231.47	-42983231.25	-42983231.02	0.0265	0.0016
Venus	-122395-12-15 16:06 J	-42983002.05	-42983001.83	-42983001.61	0.0267	0.0008
Venus	-122394-08-02 04:06 J	-42982772.56	-42982772.33	-42982772.11	0.0270	0.0005
Venus	-122393-03-18 17:46 J	-42982542.98	-42982542.76	-42982542.54	0.0272	0.0007
Venus	-122393-11-03 09:37 J	-42982313.32	-42982313.10	-42982312.88	0.0275	0.0015
Venus	-122392-06-21 03:08 J	-42982083.59	-42982083.37	-42982083.15	0.0278	0.0022
Venus	-122391-02-05 22:49 J	-42981853.77	-42981853.55	-42981853.33	0.0281	0.0030
Venus	-122391-09-23 20:25 J	-42981623.86	-42981623.65	-42981623.43	0.0285	0.0037
Venus	-122390-05-11 19:42 J	-42981393.89	-42981393.68	-42981393.47	0.0288	0.0044
Venus	-122390-12-27 20:10 J	-42981163.86	-42981163.66	-42981163.44	0.0291	0.0051
Earth	-122389-01-03 09:51 J	-42981157.23	-42981157.09	-42981156.94	0.0291	0.0231
Moon	-122389-01-03 12:01 J	-42981157.16	-42981157.00	-42981156.83	0.0291	0.0221 *
Venus	-122389-08-13 22:20 J	-42980933.78	-42980933.57	-42980933.36	0.0294	0.0056
Mars	-122389-11-12 12:58 J	-42980843.16	-42980842.96	-42980842.75	0.0295	0.0216
Venus	-122388-04-01 01:13 J	-42980703.66	-42980703.45	-42980703.24	0.0297	0.0060
Venus	-122388-11-17 04:49 J	-42980473.50	-42980473.30	-42980473.09	0.0299	0.0063
Venus	-122387-07-05 08:54 J	-42980243.34	-42980243.13	-42980242.93	0.0301	0.0064
Mercury	-122387-09-02 04:20 J	-42980184.39	-42980184.32	-42980184.24	0.0302	0.0248
Mercury	-122387-11-29 18:15 J	-42980095.86	-42980095.74	-42980095.62	0.0302	0.0127
Venus	-122386-02-20 12:44 J	-42980013.18	-42980012.97	-42980012.77	0.0303	0.0064
Mercury	-122386-02-26 07:56 J	-42980007.30	-42980007.17	-42980007.04	0.0303	0.0006
Mercury	-122386-05-25 21:37 J	-42979918.73	-42979918.60	-42979918.48	0.0303	0.0115
Mercury	-122386-08-22 11:03 J	-42979830.12	-42979830.04	-42979829.96	0.0304	0.0235
Venus	-122386-10-08 16:06 J	-42979783.03	-42979782.83	-42979782.63	0.0304	0.0062
Venus	-122385-05-25 18:44 J	-42979552.92	-42979552.72	-42979552.52	0.0305	0.0058
Venus	-122384-01-10 20:25 J	-42979322.85	-42979322.65	-42979322.45	0.0305	0.0053
Venus	-122384-08-28 20:25 J	-42979092.85	-42979092.65	-42979092.44	0.0304	0.0047
Venus	-122383-04-15 18:58 J	-42978862.91	-42978862.71	-42978862.51	0.0303	0.0038
Venus	-122383-12-01 15:22 J	-42978633.06	-42978632.86	-42978632.65	0.0301	0.0030
Venus	-122382-07-19 10:06 J	-42978403.29	-42978403.08	-42978402.88	0.0299	0.0021

Venus -122381-03-05 02:39 J -42978173.60 -42978173.39 -42978173.19 0.0296 0.0013  
 Venus -122381-10-20 16:49 J -42977944.00 -42977943.80 -42977943.60 0.0293 0.0003  
 Venus -122380-06-07 05:03 J -42977714.50 -42977714.29 -42977714.09 0.0290 0.0008  
 Venus -122379-01-22 15:08 J -42977485.08 -42977484.87 -42977484.67 0.0287 0.0014  
 Venus -122379-09-08 23:18 J -42977255.74 -42977255.53 -42977255.33 0.0284 0.0021  
 Venus -122378-04-26 05:46 J -42977026.47 -42977026.26 -42977026.06 0.0281 0.0028  
 Venus -122378-12-11 10:20 J -42976797.27 -42976797.07 -42976796.86 0.0278 0.0034  
 Venus -122377-07-27 13:27 J -42976568.14 -42976567.94 -42976567.73 0.0275 0.0040  
 Venus -122376-03-13 15:22 J -42976339.06 -42976338.86 -42976338.65 0.0272 0.0043  
 Moon -122376-06-26 07:56 J -42976234.40 -42976234.17 -42976233.93 0.0271 0.0113  
 Earth -122376-06-26 09:37 J -42976234.33 -42976234.10 -42976233.87 0.0271 0.0100 \*  
 Venus -122376-10-28 16:06 J -42976110.03 -42976109.83 -42976109.62 0.0269 0.0047  
 Venus -122375-06-14 15:51 J -42975881.04 -42975880.84 -42975880.63 0.0267 0.0050  
 Mars -122374-01-27 02:54 J -42975654.67 -42975654.38 -42975654.10 0.0265 0.0020  
 Venus -122374-01-29 14:54 J -42975652.08 -42975651.88 -42975651.67 0.0265 0.0052  
 Venus -122374-09-15 13:27 J -42975423.15 -42975422.94 -42975422.73 0.0263 0.0053  
 Venus -122373-05-01 11:46 J -42975194.21 -42975194.01 -42975193.80 0.0261 0.0054  
 Mercury -122373-09-27 13:27 J -42975044.99 -42975044.94 -42975044.89 0.0260 0.0250  
 Venus -122373-12-16 09:51 J -42974965.30 -42974965.09 -42974964.88 0.0260 0.0054  
 Mercury -122373-12-25 07:56 J -42974956.31 -42974956.17 -42974956.01 0.0260 0.0147  
 Mercury -122372-03-24 02:54 J -42974867.56 -42974867.38 -42974867.20 0.0260 0.0043  
 Mercury -122372-06-20 22:06 J -42974778.76 -42974778.58 -42974778.40 0.0259 0.0062  
 Venus -122372-08-02 07:56 J -42974736.38 -42974736.17 -42974735.95 0.0259 0.0053  
 Mercury -122372-09-17 17:03 J -42974689.92 -42974689.79 -42974689.64 0.0259 0.0168  
 Venus -122371-03-19 06:15 J -42974507.45 -42974507.24 -42974507.02 0.0258 0.0052  
 Venus -122371-11-03 05:03 J -42974278.50 -42974278.29 -42974278.07 0.0258 0.0050  
 Venus -122370-06-20 04:34 J -42974049.52 -42974049.31 -42974049.09 0.0258 0.0047  
 Venus -122369-02-04 04:49 J -42973820.52 -42973820.30 -42973820.08 0.0258 0.0044  
 Venus -122369-09-20 05:46 J -42973591.47 -42973591.26 -42973591.04 0.0259 0.0041  
 Venus -122368-05-07 07:56 J -42973362.39 -42973362.17 -42973361.95 0.0259 0.0036

Venus	-122368-12-22 11:18 J	-42973133.25	-42973133.03	-42973132.81	0.0260	0.0032
Venus	-122367-08-08 16:20 J	-42972904.04	-42972903.82	-42972903.60	0.0262	0.0026
Venus	-122366-03-25 22:49 J	-42972674.77	-42972674.55	-42972674.33	0.0263	0.0021
Venus	-122366-11-10 06:44 J	-42972445.44	-42972445.22	-42972445.00	0.0265	0.0014
Venus	-122365-06-26 16:34 J	-42972216.03	-42972215.81	-42972215.59	0.0268	0.0008
Venus	-122364-02-11 04:20 J	-42971986.54	-42971986.32	-42971986.09	0.0270	0.0006
Venus	-122364-09-28 18:15 J	-42971756.96	-42971756.74	-42971756.52	0.0273	0.0008
Venus	-122363-05-16 10:06 J	-42971527.30	-42971527.08	-42971526.86	0.0275	0.0016
Venus	-122362-01-01 03:37 J	-42971297.56	-42971297.35	-42971297.13	0.0278	0.0024
Venus	-122362-08-18 23:32 J	-42971067.74	-42971067.52	-42971067.30	0.0281	0.0030
Venus	-122361-04-04 21:08 J	-42970837.84	-42970837.62	-42970837.41	0.0285	0.0037
Venus	-122361-11-20 20:25 J	-42970607.86	-42970607.65	-42970607.44	0.0288	0.0043
Venus	-122360-07-08 21:08 J	-42970377.83	-42970377.62	-42970377.41	0.0291	0.0049
Moon	-122359-01-10 02:39 J	-42970192.45	-42970192.39	-42970192.31	0.0293	0.0278
Earth	-122359-01-10 06:01 J	-42970192.33	-42970192.25	-42970192.13	0.0293	0.0268 *
Venus	-122359-02-23 23:03 J	-42970147.75	-42970147.54	-42970147.33	0.0294	0.0054
Venus	-122359-10-12 02:10 J	-42969917.61	-42969917.41	-42969917.20	0.0296	0.0057
Mars	-122358-01-04 18:01 J	-42969833.04	-42969832.75	-42969832.45	0.0297	0.0059
Venus	-122358-05-30 06:01 J	-42969687.46	-42969687.25	-42969687.05	0.0299	0.0059
Venus	-122357-01-15 09:51 J	-42969457.30	-42969457.09	-42969456.88	0.0301	0.0060
Mercury	-122357-01-20 04:06 J	-42969452.34	-42969452.33	-42969452.31	0.0301	0.0298
Mercury	-122357-04-17 18:01 J	-42969363.85	-42969363.75	-42969363.64	0.0302	0.0177
Mercury	-122357-07-15 07:56 J	-42969275.30	-42969275.17	-42969275.04	0.0302	0.0055
Venus	-122357-09-01 13:27 J	-42969227.14	-42969226.94	-42969226.73	0.0302	0.0060
Mercury	-122357-10-11 21:37 J	-42969186.73	-42969186.60	-42969186.47	0.0303	0.0065
Mercury	-122356-01-08 11:03 J	-42969098.14	-42969098.04	-42969097.93	0.0303	0.0185
Venus	-122356-04-19 16:49 J	-42968997.00	-42968996.80	-42968996.59	0.0304	0.0057
Venus	-122356-12-05 19:27 J	-42968766.89	-42968766.69	-42968766.48	0.0304	0.0053
Venus	-122355-07-23 20:54 J	-42968536.83	-42968536.63	-42968536.42	0.0304	0.0048
Venus	-122354-03-10 21:08 J	-42968306.83	-42968306.62	-42968306.42	0.0304	0.0041

Venus -122354-10-26 19:27 J -42968076.89 -42968076.69 -42968076.49 0.0302 0.0034  
 Venus -122353-06-12 16:06 J -42967847.03 -42967846.83 -42967846.63 0.0301 0.0026  
 Venus -122352-01-28 10:49 J -42967617.25 -42967617.05 -42967616.85 0.0299 0.0017  
 Venus -122352-09-15 03:22 J -42967387.57 -42967387.36 -42967387.16 0.0296 0.0009  
 Venus -122351-05-02 17:32 J -42967157.97 -42967157.77 -42967157.56 0.0294 0.0007  
 Venus -122351-12-18 05:46 J -42966928.46 -42966928.26 -42966928.05 0.0291 0.0011  
 Venus -122350-08-04 16:06 J -42966699.03 -42966698.83 -42966698.62 0.0287 0.0016  
 Venus -122349-03-21 00:30 J -42966469.68 -42966469.48 -42966469.27 0.0284 0.0023  
 Venus -122349-11-05 06:58 J -42966240.41 -42966240.21 -42966240.01 0.0281 0.0029  
 Venus -122348-06-22 11:32 J -42966011.22 -42966011.02 -42966010.81 0.0278 0.0036  
 Venus -122347-02-06 14:54 J -42965782.09 -42965781.88 -42965781.68 0.0275 0.0040  
 Venus -122347-09-23 16:49 J -42965553.01 -42965552.80 -42965552.60 0.0272 0.0044  
 Venus -122346-05-10 17:46 J -42965323.97 -42965323.76 -42965323.56 0.0270 0.0048  
 Venus -122346-12-25 17:32 J -42965094.98 -42965094.77 -42965094.56 0.0267 0.0050  
 Venus -122345-08-10 16:34 J -42964866.02 -42964865.81 -42964865.60 0.0265 0.0052  
 Mars -122344-03-14 08:39 J -42964650.32 -42964650.14 -42964649.95 0.0263 0.0198  
 Venus -122344-03-27 15:08 J -42964637.08 -42964636.87 -42964636.66 0.0263 0.0053  
 Venus -122344-11-11 13:13 J -42964408.15 -42964407.95 -42964407.73 0.0262 0.0054  
 Mercury -122343-05-14 06:58 J -42964224.33 -42964224.21 -42964224.07 0.0260 0.0181  
 Venus -122343-06-28 11:18 J -42964179.23 -42964179.03 -42964178.81 0.0260 0.0054  
 Mercury -122343-08-11 01:56 J -42964135.59 -42964135.42 -42964135.24 0.0260 0.0077  
 Mercury -122343-11-07 20:54 J -42964046.81 -42964046.63 -42964046.44 0.0260 0.0028  
 Mercury -122342-02-04 16:06 J -42963957.99 -42963957.83 -42963957.67 0.0259 0.0133  
 Venus -122342-02-12 09:37 J -42963950.31 -42963950.10 -42963949.89 0.0259 0.0052  
 Mercury -122342-05-04 11:03 J -42963869.10 -42963869.04 -42963868.96 0.0259 0.0239  
 Venus -122342-09-29 07:56 J -42963721.38 -42963721.17 -42963720.95 0.0258 0.0050  
 Venus -122341-05-15 06:44 J -42963492.43 -42963492.22 -42963492.00 0.0258 0.0048  
 Venus -122341-12-30 06:15 J -42963263.45 -42963263.24 -42963263.02 0.0258 0.0045  
 Venus -122340-08-16 06:30 J -42963034.45 -42963034.23 -42963034.01 0.0258 0.0041  
 Venus -122339-04-02 07:42 J -42962805.40 -42962805.18 -42962804.97 0.0258 0.0037

Venus	-122339-11-17 09:51 J	-42962576.31	-42962576.09	-42962575.87	0.0259	0.0033
Venus	-122338-07-04 13:27 J	-42962347.16	-42962346.94	-42962346.72	0.0260	0.0028
Venus	-122337-02-18 18:30 J	-42962117.95	-42962117.73	-42962117.51	0.0261	0.0022
Venus	-122337-10-05 00:58 J	-42961888.68	-42961888.46	-42961888.24	0.0263	0.0017
Venus	-122336-05-22 08:54 J	-42961659.35	-42961659.13	-42961658.91	0.0265	0.0011
Venus	-122335-01-06 18:58 J	-42961429.94	-42961429.71	-42961429.49	0.0267	0.0006
Venus	-122335-08-24 06:58 J	-42961200.43	-42961200.21	-42961199.99	0.0270	0.0005
Venus	-122334-04-10 20:39 J	-42960970.86	-42960970.64	-42960970.42	0.0272	0.0010
Venus	-122334-11-26 12:30 J	-42960741.20	-42960740.98	-42960740.76	0.0275	0.0017
Venus	-122333-07-13 06:15 J	-42960511.46	-42960511.24	-42960511.02	0.0278	0.0024
Venus	-122332-02-28 01:56 J	-42960281.64	-42960281.42	-42960281.20	0.0281	0.0031
Venus	-122332-10-15 23:32 J	-42960051.74	-42960051.52	-42960051.30	0.0285	0.0038
Venus	-122331-06-02 22:34 J	-42959821.77	-42959821.56	-42959821.34	0.0288	0.0045
Moon	-122330-01-04 01:13 J	-42959606.62	-42959606.45	-42959606.26	0.0291	0.0191
Earth	-122330-01-04 02:25 J	-42959606.59	-42959606.40	-42959606.20	0.0291	0.0174 *
Venus	-122330-01-18 23:18 J	-42959591.74	-42959591.53	-42959591.31	0.0291	0.0050
Venus	-122330-09-06 01:13 J	-42959361.65	-42959361.45	-42959361.23	0.0294	0.0055
Venus	-122329-04-23 04:20 J	-42959131.53	-42959131.32	-42959131.11	0.0297	0.0058
Venus	-122329-12-09 07:56 J	-42958901.37	-42958901.17	-42958900.96	0.0299	0.0060
Venus	-122328-07-27 11:46 J	-42958671.21	-42958671.01	-42958670.80	0.0302	0.0061
Mercury	-122328-09-04 18:15 J	-42958631.82	-42958631.74	-42958631.64	0.0302	0.0222
Mercury	-122328-12-02 08:10 J	-42958543.28	-42958543.16	-42958543.03	0.0302	0.0101
Mercury	-122327-02-28 21:51 J	-42958454.72	-42958454.59	-42958454.45	0.0303	0.0023
Venus	-122327-03-14 15:37 J	-42958441.05	-42958440.85	-42958440.64	0.0303	0.0060
Mercury	-122327-05-28 11:32 J	-42958366.14	-42958366.02	-42958365.90	0.0304	0.0141
Mercury	-122327-08-25 00:58 J	-42958277.52	-42958277.46	-42958277.39	0.0304	0.0260
Venus	-122327-10-30 19:13 J	-42958210.91	-42958210.70	-42958210.50	0.0304	0.0058
Venus	-122326-06-17 21:37 J	-42957980.80	-42957980.60	-42957980.39	0.0305	0.0054
Venus	-122325-02-02 23:18 J	-42957750.73	-42957750.53	-42957750.33	0.0305	0.0048
Venus	-122325-09-19 23:18 J	-42957520.73	-42957520.53	-42957520.33	0.0304	0.0041

Venus	-122324-05-07 21:37 J	-42957290.80	-42957290.60	-42957290.40	0.0303	0.0033
Venus	-122324-12-23 18:01 J	-42957060.95	-42957060.75	-42957060.55	0.0301	0.0025
Venus	-122323-08-10 12:30 J	-42956831.18	-42956830.98	-42956830.78	0.0299	0.0016
Venus	-122322-03-28 04:49 J	-42956601.50	-42956601.30	-42956601.10	0.0296	0.0008
Venus	-122322-11-12 18:58 J	-42956371.91	-42956371.71	-42956371.50	0.0293	0.0004
Venus	-122321-06-29 07:13 J	-42956142.41	-42956142.20	-42956142.00	0.0290	0.0010
Venus	-122320-02-13 17:18 J	-42955912.99	-42955912.78	-42955912.58	0.0287	0.0017
Venus	-122320-10-01 01:27 J	-42955683.65	-42955683.44	-42955683.24	0.0284	0.0024
Venus	-122319-05-18 07:42 J	-42955454.38	-42955454.18	-42955453.98	0.0281	0.0029
Venus	-122318-01-02 12:15 J	-42955225.19	-42955224.99	-42955224.78	0.0277	0.0035
Venus	-122318-08-19 15:37 J	-42954996.06	-42954995.85	-42954995.65	0.0274	0.0039
Venus	-122317-04-04 17:32 J	-42954766.98	-42954766.77	-42954766.56	0.0272	0.0043
Earth	-122317-06-27 04:34 J	-42954683.56	-42954683.31	-42954683.07	0.0271	0.0040
Moon	-122317-06-27 06:44 J	-42954683.46	-42954683.22	-42954682.98	0.0271	0.0026 *
Venus	-122317-11-19 18:15 J	-42954537.95	-42954537.74	-42954537.53	0.0269	0.0046
Mars	-122316-05-05 10:06 J	-42954371.30	-42954371.08	-42954370.84	0.0267	0.0158
Venus	-122316-07-06 18:01 J	-42954308.96	-42954308.75	-42954308.54	0.0267	0.0048
Venus	-122315-02-20 17:03 J	-42954080.00	-42954079.79	-42954079.58	0.0264	0.0050
Venus	-122315-10-07 15:37 J	-42953851.06	-42953850.85	-42953850.64	0.0263	0.0051
Venus	-122314-05-24 13:56 J	-42953622.13	-42953621.92	-42953621.71	0.0261	0.0051
Mercury	-122314-10-01 05:32 J	-42953492.36	-42953492.27	-42953492.16	0.0260	0.0218
Mercury	-122314-12-29 00:30 J	-42953403.64	-42953403.48	-42953403.31	0.0260	0.0114
Venus	-122313-01-08 12:01 J	-42953393.21	-42953393.00	-42953392.79	0.0260	0.0050
Mercury	-122313-03-26 19:27 J	-42953314.87	-42953314.69	-42953314.51	0.0259	0.0010
Mercury	-122313-06-23 14:25 J	-42953226.07	-42953225.90	-42953225.72	0.0259	0.0096
Venus	-122313-08-24 10:06 J	-42953164.29	-42953164.08	-42953163.86	0.0259	0.0050
Mercury	-122313-09-20 09:37 J	-42953137.21	-42953137.10	-42953136.98	0.0259	0.0201
Venus	-122312-04-10 08:25 J	-42952935.36	-42952935.15	-42952934.93	0.0258	0.0048
Venus	-122312-11-25 07:27 J	-42952706.41	-42952706.19	-42952705.98	0.0258	0.0046
Venus	-122311-07-12 06:58 J	-42952477.43	-42952477.21	-42952477.00	0.0258	0.0043



Venus	-122310-02-26 07:13 J	-42952248.42	-42952248.20	-42952247.99	0.0258	0.0040
Venus	-122310-10-13 08:10 J	-42952019.37	-42952019.16	-42952018.94	0.0258	0.0036
Venus	-122309-05-29 10:20 J	-42951790.28	-42951790.07	-42951789.84	0.0259	0.0033
Venus	-122308-01-13 13:56 J	-42951561.14	-42951560.92	-42951560.70	0.0260	0.0027
Venus	-122308-08-30 18:58 J	-42951331.93	-42951331.71	-42951331.49	0.0262	0.0022
Venus	-122307-04-17 01:27 J	-42951102.67	-42951102.44	-42951102.22	0.0263	0.0017
Venus	-122307-12-02 09:22 J	-42950873.33	-42950873.11	-42950872.88	0.0265	0.0011
Venus	-122306-07-19 19:27 J	-42950643.91	-42950643.69	-42950643.47	0.0268	0.0005
Venus	-122305-03-05 07:27 J	-42950414.41	-42950414.19	-42950413.97	0.0270	0.0005
Venus	-122305-10-20 21:08 J	-42950184.84	-42950184.62	-42950184.40	0.0273	0.0011
Venus	-122304-06-07 12:58 J	-42949955.18	-42949954.96	-42949954.74	0.0276	0.0018
Venus	-122303-01-23 06:44 J	-42949725.44	-42949725.22	-42949725.00	0.0279	0.0025
Venus	-122303-09-10 02:39 J	-42949495.61	-42949495.39	-42949495.17	0.0282	0.0031
Venus	-122302-04-28 00:15 J	-42949265.71	-42949265.49	-42949265.28	0.0285	0.0038
Venus	-122302-12-13 23:32 J	-42949035.73	-42949035.52	-42949035.31	0.0288	0.0043
Venus	-122301-07-31 00:15 J	-42948805.70	-42948805.49	-42948805.28	0.0291	0.0048
Venus	-122300-03-18 02:25 J	-42948575.61	-42948575.40	-42948575.19	0.0294	0.0052
Mars	-122300-04-06 04:06 J	-42948556.51	-42948556.33	-42948556.13	0.0294	0.0227
Venus	-122300-11-03 05:32 J	-42948345.48	-42948345.27	-42948345.06	0.0297	0.0055
Venus	-122299-06-21 09:08 J	-42948115.33	-42948115.12	-42948114.91	0.0299	0.0057
Mercury	-122298-01-22 18:15 J	-42947899.79	-42947899.74	-42947899.68	0.0301	0.0271
Venus	-122298-02-06 12:58 J	-42947885.17	-42947884.96	-42947884.76	0.0301	0.0057
Mercury	-122298-04-21 08:10 J	-42947811.27	-42947811.16	-42947811.04	0.0302	0.0150
Mercury	-122298-07-18 22:06 J	-42947722.72	-42947722.58	-42947722.45	0.0302	0.0030
Venus	-122298-09-24 16:34 J	-42947655.01	-42947654.81	-42947654.60	0.0303	0.0056
Mercury	-122298-10-15 11:32 J	-42947634.14	-42947634.02	-42947633.89	0.0303	0.0092
Mercury	-122297-01-12 01:13 J	-42947545.54	-42947545.45	-42947545.36	0.0303	0.0210
Venus	-122297-05-11 19:56 J	-42947424.87	-42947424.67	-42947424.46	0.0304	0.0053
Venus	-122297-12-27 22:34 J	-42947194.77	-42947194.56	-42947194.36	0.0304	0.0049
Venus	-122296-08-14 23:46 J	-42946964.71	-42946964.51	-42946964.31	0.0304	0.0043

Venus -122295-04-01 23:32 J -42946734.72 -42946734.52 -42946734.31 0.0303 0.0037

Venus -122295-11-17 21:51 J -42946504.79 -42946504.59 -42946504.39 0.0302 0.0029

Venus -122294-07-05 18:15 J -42946274.94 -42946274.74 -42946274.53 0.0301 0.0021

Venus -122293-02-20 12:58 J -42946045.17 -42946044.96 -42946044.76 0.0299 0.0013

Venus -122293-10-07 05:18 J -42945815.48 -42945815.28 -42945815.08 0.0296 0.0005

Venus -122292-05-24 19:27 J -42945585.89 -42945585.69 -42945585.49 0.0293 0.0004

Venus -122291-01-09 07:42 J -42945356.39 -42945356.18 -42945355.98 0.0290 0.0012

Venus -122291-08-26 17:46 J -42945126.96 -42945126.76 -42945126.56 0.0287 0.0019

Venus -122290-04-13 01:56 J -42944897.62 -42944897.42 -42944897.21 0.0284 0.0026

Venus -122290-11-28 08:25 J -42944668.35 -42944668.15 -42944667.94 0.0281 0.0031

Venus -122289-07-14 13:13 J -42944439.16 -42944438.95 -42944438.75 0.0278 0.0036

Venus -122288-02-28 16:20 J -42944210.02 -42944209.82 -42944209.61 0.0275 0.0041

Venus -122288-10-15 18:15 J -42943980.94 -42943980.74 -42943980.53 0.0272 0.0044

Venus -122287-06-01 19:13 J -42943751.91 -42943751.70 -42943751.50 0.0269 0.0047

Venus -122286-01-16 18:58 J -42943522.91 -42943522.71 -42943522.50 0.0267 0.0049

Mars -122286-06-21 23:03 J -42943366.82 -42943366.54 -42943366.26 0.0266 0.0029

Venus -122286-09-02 18:01 J -42943293.95 -42943293.75 -42943293.53 0.0265 0.0051

Venus -122285-04-18 16:49 J -42943065.01 -42943064.80 -42943064.59 0.0263 0.0051

Venus -122285-12-03 15:08 J -42942836.08 -42942835.87 -42942835.66 0.0261 0.0051

Mercury -122284-02-17 04:49 J -42942760.35 -42942760.30 -42942760.26 0.0261 0.0251

Mercury -122284-05-16 23:18 J -42942671.67 -42942671.53 -42942671.37 0.0260 0.0148

Venus -122284-07-20 13:13 J -42942607.16 -42942606.95 -42942606.73 0.0260 0.0050

Mercury -122284-08-13 18:15 J -42942582.92 -42942582.74 -42942582.56 0.0260 0.0044

Mercury -122284-11-10 13:13 J -42942494.12 -42942493.95 -42942493.77 0.0260 0.0061

Mercury -122283-02-07 08:25 J -42942405.29 -42942405.15 -42942405.00 0.0259 0.0166

Venus -122283-03-06 11:32 J -42942378.23 -42942378.02 -42942377.81 0.0259 0.0049

Venus -122283-10-21 09:51 J -42942149.30 -42942149.09 -42942148.87 0.0258 0.0047

Venus -122282-06-07 09:08 J -42941920.34 -42941920.12 -42941919.91 0.0258 0.0044

Venus -122281-01-22 08:39 J -42941691.36 -42941691.14 -42941690.93 0.0258 0.0041

Venus -122281-09-07 08:54 J -42941462.35 -42941462.13 -42941461.91 0.0258 0.0037

Venus	-122280-04-24 10:06 J	-42941233.30	-42941233.08	-42941232.86	0.0258	0.0033
Venus	-122280-12-09 12:30 J	-42941004.20	-42941003.98	-42941003.76	0.0259	0.0029
Venus	-122279-07-26 16:20 J	-42940775.04	-42940774.82	-42940774.60	0.0260	0.0024
Venus	-122278-03-12 21:22 J	-42940545.83	-42940545.61	-42940545.39	0.0262	0.0018
Venus	-122278-10-28 03:51 J	-42940316.56	-42940316.34	-42940316.12	0.0263	0.0013
Venus	-122277-06-13 12:01 J	-42940087.22	-42940087.00	-42940086.78	0.0265	0.0007
Venus	-122276-01-28 22:06 J	-42939857.80	-42939857.58	-42939857.36	0.0267	0.0001
Venus	-122276-09-15 10:06 J	-42939628.30	-42939628.08	-42939627.86	0.0270	0.0006
Venus	-122275-05-03 00:01 J	-42939398.72	-42939398.50	-42939398.28	0.0272	0.0014
Venus	-122275-12-18 15:37 J	-42939169.06	-42939168.85	-42939168.63	0.0275	0.0021
Venus	-122274-08-05 09:37 J	-42938939.32	-42938939.10	-42938938.88	0.0278	0.0026
Venus	-122273-03-22 05:18 J	-42938709.50	-42938709.28	-42938709.06	0.0282	0.0033
Venus	-122273-11-07 02:54 J	-42938479.59	-42938479.38	-42938479.16	0.0285	0.0039
Venus	-122272-06-25 02:10 J	-42938249.63	-42938249.41	-42938249.20	0.0288	0.0045
Moon	-122271-01-04 19:13 J	-42938055.93	-42938055.70	-42938055.46	0.0291	0.0102
Earth	-122271-01-04 19:27 J	-42938055.91	-42938055.69	-42938055.47	0.0291	0.0115 *
Venus	-122271-02-10 02:39 J	-42938019.60	-42938019.39	-42938019.17	0.0291	0.0050
Venus	-122271-09-28 04:49 J	-42937789.51	-42937789.30	-42937789.09	0.0294	0.0053
Venus	-122270-05-16 07:42 J	-42937559.39	-42937559.18	-42937558.97	0.0297	0.0056
Mars	-122270-05-29 10:34 J	-42937546.35	-42937546.06	-42937545.75	0.0297	0.0057
Venus	-122269-01-01 11:18 J	-42937329.24	-42937329.03	-42937328.83	0.0300	0.0057
Venus	-122269-08-18 14:54 J	-42937099.08	-42937098.88	-42937098.67	0.0302	0.0058
Mercury	-122269-09-07 08:25 J	-42937079.25	-42937079.15	-42937079.05	0.0302	0.0196
Mercury	-122269-12-04 22:20 J	-42936990.70	-42936990.57	-42936990.44	0.0302	0.0075
Mercury	-122268-03-03 12:01 J	-42936902.13	-42936902.00	-42936901.87	0.0303	0.0046
Venus	-122268-04-05 18:44 J	-42936868.93	-42936868.72	-42936868.52	0.0303	0.0056
Mercury	-122268-05-31 01:27 J	-42936813.55	-42936813.44	-42936813.32	0.0304	0.0166
Mercury	-122268-08-27 14:54 J	-42936724.92	-42936724.88	-42936724.83	0.0304	0.0285
Venus	-122268-11-21 22:06 J	-42936638.79	-42936638.58	-42936638.38	0.0304	0.0053
Venus	-122267-07-10 00:30 J	-42936408.68	-42936408.48	-42936408.28	0.0305	0.0049

Venus	-122266-02-25 01:42 J	-42936178.63	-42936178.43	-42936178.22	0.0305	0.0043
Venus	-122266-10-13 01:27 J	-42935948.64	-42935948.44	-42935948.23	0.0304	0.0037
Venus	-122265-05-29 23:46 J	-42935718.71	-42935718.51	-42935718.31	0.0303	0.0029
Venus	-122264-01-14 20:10 J	-42935488.87	-42935488.66	-42935488.46	0.0301	0.0021
Venus	-122264-09-01 14:25 J	-42935259.11	-42935258.90	-42935258.70	0.0299	0.0013
Venus	-122263-04-19 06:30 J	-42935029.43	-42935029.23	-42935029.03	0.0296	0.0004
Venus	-122263-12-04 20:39 J	-42934799.85	-42934799.64	-42934799.44	0.0293	0.0007
Venus	-122262-07-22 08:39 J	-42934570.35	-42934570.14	-42934569.94	0.0290	0.0013
Venus	-122261-03-07 18:44 J	-42934340.93	-42934340.72	-42934340.52	0.0287	0.0019
Venus	-122261-10-23 02:39 J	-42934111.59	-42934111.39	-42934111.18	0.0284	0.0026
Venus	-122260-06-09 08:54 J	-42933882.33	-42933882.13	-42933881.92	0.0280	0.0031
Venus	-122259-01-24 13:42 J	-42933653.14	-42933652.93	-42933652.73	0.0277	0.0035
Venus	-122259-09-10 16:49 J	-42933424.00	-42933423.80	-42933423.59	0.0274	0.0039
Venus	-122258-04-27 18:58 J	-42933194.92	-42933194.71	-42933194.51	0.0271	0.0043
Moon	-122258-06-28 19:13 J	-42933132.95	-42933132.70	-42933132.45	0.0271	0.0008
Earth	-122258-06-28 22:34 J	-42933132.81	-42933132.56	-42933132.31	0.0271	0.0018 *
Venus	-122258-12-12 19:42 J	-42932965.89	-42932965.68	-42932965.47	0.0269	0.0045
Venus	-122257-07-28 19:27 J	-42932736.89	-42932736.69	-42932736.48	0.0266	0.0047
Venus	-122256-03-14 18:30 J	-42932507.93	-42932507.73	-42932507.51	0.0264	0.0049
Mars	-122256-08-07 02:39 J	-42932362.58	-42932362.39	-42932362.21	0.0263	0.0200
Venus	-122256-10-29 17:18 J	-42932278.99	-42932278.78	-42932278.57	0.0263	0.0048
Venus	-122255-06-15 15:37 J	-42932050.06	-42932049.85	-42932049.63	0.0261	0.0048
Mercury	-122255-10-03 21:51 J	-42931939.71	-42931939.59	-42931939.46	0.0260	0.0185
Mercury	-122255-12-31 16:49 J	-42931850.97	-42931850.80	-42931850.62	0.0260	0.0081
Venus	-122254-01-30 13:56 J	-42931821.13	-42931820.92	-42931820.71	0.0260	0.0047
Mercury	-122254-03-30 11:46 J	-42931762.19	-42931762.01	-42931761.83	0.0259	0.0023
Mercury	-122254-06-27 06:58 J	-42931673.37	-42931673.21	-42931673.05	0.0259	0.0128
Venus	-122254-09-16 12:15 J	-42931592.20	-42931591.99	-42931591.78	0.0259	0.0046
Mercury	-122254-09-24 01:56 J	-42931584.49	-42931584.42	-42931584.33	0.0259	0.0234
Venus	-122253-05-02 10:49 J	-42931363.27	-42931363.05	-42931362.84	0.0258	0.0044

Venus -122253-12-17 09:37 J -42931134.31 -42931134.10 -42931133.88 0.0258 0.0042

Venus -122252-08-03 09:22 J -42930905.33 -42930905.11 -42930904.90 0.0258 0.0039

Venus -122251-03-20 09:37 J -42930676.32 -42930676.10 -42930675.88 0.0258 0.0036

Venus -122251-11-04 10:49 J -42930447.27 -42930447.05 -42930446.83 0.0259 0.0032

Venus -122250-06-21 13:13 J -42930218.16 -42930217.95 -42930217.73 0.0259 0.0028

Venus -122249-02-05 16:49 J -42929989.01 -42929988.80 -42929988.57 0.0260 0.0024

Venus -122249-09-21 21:51 J -42929759.81 -42929759.59 -42929759.37 0.0262 0.0018

Venus -122248-05-09 04:20 J -42929530.54 -42929530.32 -42929530.09 0.0264 0.0013

Venus -122248-12-24 12:44 J -42929301.19 -42929300.97 -42929300.75 0.0266 0.0006

Venus -122247-08-10 22:49 J -42929071.77 -42929071.55 -42929071.33 0.0268 0.0004

Venus -122246-03-28 10:49 J -42928842.27 -42928842.05 -42928841.83 0.0270 0.0007

Venus -122246-11-13 00:44 J -42928612.69 -42928612.47 -42928612.25 0.0273 0.0014

Venus -122245-06-29 16:20 J -42928383.03 -42928382.82 -42928382.60 0.0276 0.0021

Venus -122244-02-14 10:20 J -42928153.29 -42928153.07 -42928152.85 0.0279 0.0027

Venus -122244-10-02 06:15 J -42927923.46 -42927923.24 -42927923.03 0.0282 0.0033

Venus -122243-05-20 03:37 J -42927693.56 -42927693.35 -42927693.13 0.0285 0.0039

Venus -122242-01-05 02:54 J -42927463.59 -42927463.38 -42927463.16 0.0288 0.0044

Venus -122242-08-23 03:37 J -42927233.56 -42927233.35 -42927233.13 0.0291 0.0048

Venus -122241-04-09 05:46 J -42927003.47 -42927003.26 -42927003.05 0.0294 0.0051

Venus -122241-11-25 08:39 J -42926773.34 -42926773.14 -42926772.93 0.0297 0.0054

Venus -122240-07-13 12:15 J -42926543.19 -42926542.99 -42926542.78 0.0299 0.0054

Mercury -122239-01-25 08:25 J -42926347.23 -42926347.15 -42926347.07 0.0301 0.0244

Venus -122239-02-28 16:06 J -42926313.03 -42926312.83 -42926312.62 0.0301 0.0054

Mercury -122239-04-23 22:20 J -42926258.69 -42926258.57 -42926258.45 0.0302 0.0124

Mercury -122239-07-21 12:01 J -42926170.13 -42926170.00 -42926169.86 0.0302 0.0004

Venus -122239-10-16 19:42 J -42926082.88 -42926082.68 -42926082.47 0.0303 0.0052

Mercury -122239-10-18 01:42 J -42926081.55 -42926081.43 -42926081.31 0.0303 0.0117

Mercury -122238-01-14 15:08 J -42925992.95 -42925992.87 -42925992.79 0.0303 0.0236

Venus -122238-06-03 23:03 J -42925852.75 -42925852.54 -42925852.34 0.0304 0.0049

Venus -122237-01-20 01:27 J -42925622.64 -42925622.44 -42925622.24 0.0304 0.0044

Venus	-122237-09-06 02:25 J	-42925392.60	-42925392.40	-42925392.19	0.0304	0.0039
Venus	-122236-04-24 02:10 J	-42925162.61	-42925162.41	-42925162.21	0.0303	0.0032
Venus	-122236-12-10 00:15 J	-42924932.69	-42924932.49	-42924932.29	0.0302	0.0024
Venus	-122235-07-27 20:25 J	-42924702.85	-42924702.65	-42924702.44	0.0300	0.0017
Venus	-122234-03-14 14:54 J	-42924473.09	-42924472.88	-42924472.68	0.0298	0.0009
Venus	-122234-10-30 06:58 J	-42924243.41	-42924243.21	-42924243.00	0.0296	0.0004
Venus	-122233-06-15 21:08 J	-42924013.82	-42924013.62	-42924013.42	0.0293	0.0007
Venus	-122232-01-31 09:22 J	-42923784.32	-42923784.11	-42923783.91	0.0290	0.0015
Venus	-122232-09-17 19:13 J	-42923554.90	-42923554.70	-42923554.49	0.0287	0.0022
Venus	-122231-05-05 03:22 J	-42923325.56	-42923325.36	-42923325.15	0.0284	0.0028
Venus	-122231-12-20 09:51 J	-42923096.29	-42923096.09	-42923095.88	0.0281	0.0032
Venus	-122230-08-06 14:39 J	-42922867.10	-42922866.89	-42922866.69	0.0278	0.0037
Venus	-122229-03-22 18:01 J	-42922637.96	-42922637.75	-42922637.54	0.0275	0.0041
Venus	-122229-11-06 19:56 J	-42922408.87	-42922408.67	-42922408.46	0.0272	0.0044
Venus	-122228-06-23 20:54 J	-42922179.84	-42922179.63	-42922179.43	0.0269	0.0046
Mars	-122228-09-28 03:22 J	-42922083.59	-42922083.36	-42922083.12	0.0268	0.0149
Venus	-122227-02-07 20:39 J	-42921950.84	-42921950.64	-42921950.43	0.0267	0.0048
Venus	-122227-09-24 19:56 J	-42921721.88	-42921721.67	-42921721.46	0.0265	0.0049
Venus	-122226-05-11 18:58 J	-42921492.92	-42921492.71	-42921492.50	0.0263	0.0049
Venus	-122226-12-26 17:18 J	-42921263.99	-42921263.78	-42921263.57	0.0261	0.0048
Mercury	-122225-02-20 21:08 J	-42921207.72	-42921207.62	-42921207.52	0.0261	0.0218
Mercury	-122225-05-19 15:51 J	-42921119.00	-42921118.84	-42921118.67	0.0261	0.0115
Venus	-122225-08-11 15:22 J	-42921035.07	-42921034.86	-42921034.64	0.0260	0.0048
Mercury	-122225-08-16 10:49 J	-42921030.23	-42921030.05	-42921029.87	0.0260	0.0010
Mercury	-122225-11-13 05:46 J	-42920941.43	-42920941.26	-42920941.08	0.0260	0.0095
Mercury	-122224-02-10 00:58 J	-42920852.57	-42920852.46	-42920852.34	0.0259	0.0200
Venus	-122224-03-28 13:42 J	-42920806.14	-42920805.93	-42920805.71	0.0259	0.0046
Venus	-122224-11-12 12:30 J	-42920577.20	-42920576.98	-42920576.77	0.0258	0.0044
Venus	-122223-06-29 11:32 J	-42920348.23	-42920348.02	-42920347.80	0.0258	0.0041
Venus	-122222-02-13 11:18 J	-42920119.25	-42920119.03	-42920118.81	0.0258	0.0037

Venus -122222-09-30 11:46 J -42919890.23 -42919890.01 -42919889.79 0.0258 0.0034  
 Venus -122221-05-16 12:58 J -42919661.17 -42919660.96 -42919660.74 0.0258 0.0030  
 Venus -122221-12-31 15:37 J -42919432.07 -42919431.85 -42919431.63 0.0259 0.0025  
 Venus -122220-08-17 19:27 J -42919202.91 -42919202.69 -42919202.47 0.0260 0.0020  
 Venus -122219-04-04 00:44 J -42918973.69 -42918973.47 -42918973.25 0.0262 0.0014  
 Venus -122219-11-19 07:27 J -42918744.41 -42918744.19 -42918743.97 0.0263 0.0009  
 Venus -122218-07-06 15:51 J -42918515.06 -42918514.84 -42918514.62 0.0265 0.0003  
 Venus -122217-02-21 01:56 J -42918285.64 -42918285.42 -42918285.19 0.0267 0.0005  
 Venus -122217-10-07 13:56 J -42918056.14 -42918055.92 -42918055.69 0.0270 0.0011  
 Venus -122216-05-25 03:51 J -42917826.56 -42917826.34 -42917826.12 0.0273 0.0016  
 Venus -122215-01-09 19:42 J -42917596.89 -42917596.68 -42917596.45 0.0276 0.0023  
 Venus -122215-08-27 13:42 J -42917367.14 -42917366.93 -42917366.71 0.0279 0.0029  
 Venus -122214-04-14 09:37 J -42917137.31 -42917137.10 -42917136.88 0.0282 0.0034  
 Venus -122214-11-30 07:13 J -42916907.41 -42916907.20 -42916906.98 0.0285 0.0039  
 Venus -122213-07-17 06:30 J -42916677.45 -42916677.23 -42916677.02 0.0288 0.0044  
 Earth -122212-01-05 13:42 J -42916505.16 -42916504.93 -42916504.68 0.0291 0.0052  
 Moon -122212-01-05 15:37 J -42916505.08 -42916504.85 -42916504.62 0.0291 0.0057 \*  
 Venus -122212-03-04 07:13 J -42916447.42 -42916447.20 -42916446.99 0.0292 0.0049  
 Mars -122212-08-29 04:06 J -42916269.52 -42916269.33 -42916269.13 0.0294 0.0224  
 Venus -122212-10-20 09:08 J -42916217.33 -42916217.12 -42916216.91 0.0295 0.0052  
 Venus -122211-06-07 12:01 J -42915987.21 -42915987.00 -42915986.79 0.0297 0.0054  
 Venus -122210-01-23 15:22 J -42915757.06 -42915756.86 -42915756.65 0.0300 0.0055  
 Mercury -122210-06-14 08:54 J -42915615.17 -42915615.13 -42915615.09 0.0301 0.0287  
 Venus -122210-09-10 18:58 J -42915526.91 -42915526.71 -42915526.50 0.0302 0.0055  
 Mercury -122210-09-10 22:49 J -42915526.66 -42915526.55 -42915526.44 0.0302 0.0167 \*  
 Mercury -122210-12-08 12:30 J -42915438.11 -42915437.98 -42915437.84 0.0302 0.0047  
 Mercury -122209-03-06 02:10 J -42915349.54 -42915349.41 -42915349.28 0.0303 0.0075  
 Venus -122209-04-27 22:34 J -42915296.76 -42915296.56 -42915296.35 0.0303 0.0053  
 Mercury -122209-06-02 15:51 J -42915260.94 -42915260.84 -42915260.74 0.0304 0.0194  
 Venus -122209-12-14 01:56 J -42915066.63 -42915066.42 -42915066.22 0.0304 0.0049

Venus	-122208-08-01 04:06 J	-42914836.53	-42914836.33	-42914836.13	0.0305	0.0045
Venus	-122207-03-19 05:03 J	-42914606.49	-42914606.29	-42914606.08	0.0305	0.0039
Venus	-122207-11-04 04:49 J	-42914376.50	-42914376.30	-42914376.10	0.0304	0.0032
Venus	-122206-06-22 02:39 J	-42914146.59	-42914146.39	-42914146.18	0.0303	0.0026
Venus	-122205-02-06 23:03 J	-42913916.75	-42913916.54	-42913916.34	0.0301	0.0017
Venus	-122205-09-23 17:03 J	-42913686.99	-42913686.79	-42913686.59	0.0298	0.0008
Venus	-122204-05-11 08:54 J	-42913457.33	-42913457.13	-42913456.92	0.0296	0.0007
Venus	-122204-12-26 22:49 J	-42913227.75	-42913227.55	-42913227.34	0.0293	0.0009
Venus	-122203-08-13 10:49 J	-42912998.25	-42912998.05	-42912997.85	0.0290	0.0015
Venus	-122202-03-30 20:54 J	-42912768.84	-42912768.63	-42912768.43	0.0287	0.0021
Venus	-122202-11-15 04:49 J	-42912539.50	-42912539.30	-42912539.10	0.0283	0.0027
Venus	-122201-07-01 11:03 J	-42912310.25	-42912310.04	-42912309.84	0.0280	0.0032
Venus	-122200-02-15 15:37 J	-42912081.05	-42912080.85	-42912080.64	0.0277	0.0036
Venus	-122200-10-02 18:44 J	-42911851.92	-42911851.72	-42911851.51	0.0274	0.0040
Venus	-122199-05-19 20:54 J	-42911622.84	-42911622.63	-42911622.42	0.0271	0.0042
Earth	-122199-06-29 17:32 J	-42911582.01	-42911581.77	-42911581.53	0.0271	0.0078
Moon	-122199-06-29 21:08 J	-42911581.85	-42911581.62	-42911581.38	0.0271	0.0079 *
Venus	-122198-01-03 21:37 J	-42911393.80	-42911393.60	-42911393.39	0.0269	0.0045
Venus	-122198-08-20 21:37 J	-42911164.80	-42911164.60	-42911164.39	0.0266	0.0046
Mars	-122198-11-14 18:30 J	-42911079.01	-42911078.73	-42911078.45	0.0266	0.0032
Venus	-122197-04-05 20:54 J	-42910935.83	-42910935.63	-42910935.42	0.0264	0.0046
Venus	-122197-11-20 19:42 J	-42910706.89	-42910706.68	-42910706.47	0.0262	0.0046
Venus	-122196-07-07 18:01 J	-42910477.95	-42910477.75	-42910477.53	0.0261	0.0046
Mercury	-122196-07-09 19:56 J	-42910475.71	-42910475.67	-42910475.63	0.0261	0.0254
Mercury	-122196-10-06 14:39 J	-42910387.04	-42910386.89	-42910386.74	0.0260	0.0151
Mercury	-122195-01-03 09:37 J	-42910298.28	-42910298.10	-42910297.92	0.0260	0.0047
Venus	-122195-02-21 16:34 J	-42910249.02	-42910248.81	-42910248.60	0.0260	0.0045
Mercury	-122195-04-02 04:34 J	-42910209.49	-42910209.31	-42910209.13	0.0260	0.0058
Mercury	-122195-06-29 23:46 J	-42910120.65	-42910120.51	-42910120.37	0.0259	0.0163
Venus	-122195-10-08 14:54 J	-42910020.09	-42910019.88	-42910019.66	0.0259	0.0043



Venus	-122194-05-25 13:42 J	-42909791.14	-42909790.93	-42909790.71	0.0258	0.0041
Venus	-122193-01-09 12:58 J	-42909562.18	-42909561.96	-42909561.75	0.0258	0.0038
Venus	-122193-08-25 12:30 J	-42909333.19	-42909332.98	-42909332.76	0.0258	0.0036
Venus	-122192-04-11 12:58 J	-42909104.17	-42909103.96	-42909103.74	0.0258	0.0033
Venus	-122192-11-26 14:39 J	-42908875.11	-42908874.89	-42908874.67	0.0259	0.0028
Venus	-122191-07-13 17:18 J	-42908646.00	-42908645.78	-42908645.56	0.0259	0.0024
Venus	-122190-02-27 21:08 J	-42908416.84	-42908416.62	-42908416.40	0.0261	0.0020
Venus	-122190-10-15 02:25 J	-42908187.62	-42908187.40	-42908187.18	0.0262	0.0014
Venus	-122189-05-31 09:08 J	-42907958.34	-42907958.12	-42907957.90	0.0264	0.0008
Venus	-122188-01-15 17:32 J	-42907728.99	-42907728.77	-42907728.55	0.0266	0.0004
Venus	-122188-09-02 03:51 J	-42907499.56	-42907499.34	-42907499.11	0.0268	0.0006
Venus	-122187-04-19 16:06 J	-42907270.05	-42907269.83	-42907269.61	0.0271	0.0010
Venus	-122187-12-05 06:01 J	-42907040.47	-42907040.25	-42907040.03	0.0273	0.0016
Venus	-122186-07-22 21:51 J	-42906810.80	-42906810.59	-42906810.37	0.0276	0.0023
Venus	-122185-03-08 15:51 J	-42906581.06	-42906580.84	-42906580.62	0.0279	0.0029
Venus	-122185-10-24 11:46 J	-42906351.23	-42906351.01	-42906350.79	0.0282	0.0034
Venus	-122184-06-11 09:22 J	-42906121.33	-42906121.11	-42906120.90	0.0285	0.0039
Venus	-122183-01-27 08:25 J	-42905891.36	-42905891.15	-42905890.93	0.0289	0.0045
Venus	-122183-09-14 09:22 J	-42905661.32	-42905661.11	-42905660.90	0.0292	0.0047
Venus	-122182-05-02 11:18 J	-42905431.24	-42905431.03	-42905430.82	0.0295	0.0050
Mars	-122182-10-21 09:08 J	-42905259.42	-42905259.12	-42905258.82	0.0297	0.0051
Venus	-122182-12-18 14:10 J	-42905201.11	-42905200.91	-42905200.70	0.0297	0.0052
Venus	-122181-08-04 17:46 J	-42904970.97	-42904970.76	-42904970.56	0.0300	0.0052
Mercury	-122180-01-27 23:03 J	-42904794.63	-42904794.54	-42904794.44	0.0301	0.0213
Venus	-122180-03-22 21:22 J	-42904740.82	-42904740.61	-42904740.41	0.0301	0.0051
Mercury	-122180-04-26 12:58 J	-42904706.09	-42904705.96	-42904705.83	0.0302	0.0092
Mercury	-122180-07-24 02:39 J	-42904617.52	-42904617.39	-42904617.26	0.0302	0.0028
Mercury	-122180-10-20 16:06 J	-42904528.94	-42904528.83	-42904528.71	0.0303	0.0148
Venus	-122180-11-08 00:58 J	-42904510.67	-42904510.46	-42904510.26	0.0303	0.0048
Mercury	-122179-01-17 05:32 J	-42904440.32	-42904440.27	-42904440.20	0.0303	0.0266

Venus	-122179-06-26 03:51 J	-42904280.54	-42904280.34	-42904280.13	0.0304	0.0045
Venus	-122178-02-11 06:01 J	-42904050.45	-42904050.25	-42904050.04	0.0304	0.0040
Venus	-122178-09-29 06:58 J	-42903820.42	-42903820.21	-42903820.01	0.0304	0.0034
Venus	-122177-05-16 06:15 J	-42903590.44	-42903590.24	-42903590.04	0.0303	0.0028
Venus	-122176-01-01 04:06 J	-42903360.53	-42903360.33	-42903360.13	0.0302	0.0020
Venus	-122176-08-19 00:01 J	-42903130.70	-42903130.50	-42903130.30	0.0300	0.0013
Venus	-122175-04-05 18:01 J	-42902900.96	-42902900.75	-42902900.55	0.0298	0.0006
Venus	-122175-11-21 09:51 J	-42902671.29	-42902671.09	-42902670.89	0.0295	0.0004
Venus	-122174-07-08 23:46 J	-42902441.71	-42902441.51	-42902441.30	0.0293	0.0010
Venus	-122173-02-23 11:46 J	-42902212.21	-42902212.01	-42902211.80	0.0290	0.0017
Venus	-122173-10-09 21:37 J	-42901982.80	-42901982.60	-42901982.39	0.0287	0.0024
Venus	-122172-05-27 05:46 J	-42901753.46	-42901753.26	-42901753.06	0.0283	0.0028
Venus	-122171-01-11 12:01 J	-42901524.20	-42901524.00	-42901523.79	0.0280	0.0033
Venus	-122171-08-28 16:49 J	-42901295.01	-42901294.80	-42901294.60	0.0277	0.0037
Venus	-122170-04-14 20:10 J	-42901065.86	-42901065.66	-42901065.45	0.0274	0.0041
Earth	-122170-06-24 10:20 J	-42900995.09	-42900995.07	-42900995.02	0.0274	0.0271
Venus	-122170-11-29 22:20 J	-42900836.78	-42900836.57	-42900836.37	0.0272	0.0043
Venus	-122169-07-15 23:03 J	-42900607.74	-42900607.54	-42900607.33	0.0269	0.0046
Venus	-122168-03-01 23:03 J	-42900378.74	-42900378.54	-42900378.33	0.0267	0.0047
Venus	-122168-10-16 22:34 J	-42900149.77	-42900149.56	-42900149.35	0.0265	0.0047
Mars	-122168-12-31 02:25 J	-42900074.57	-42900074.40	-42900074.23	0.0264	0.0213
Venus	-122167-06-02 21:37 J	-42899920.81	-42899920.60	-42899920.39	0.0263	0.0047
Venus	-122166-01-17 20:10 J	-42899691.87	-42899691.66	-42899691.45	0.0261	0.0046
Mercury	-122166-02-23 13:42 J	-42899655.05	-42899654.93	-42899654.79	0.0261	0.0184
Mercury	-122166-05-23 08:39 J	-42899566.31	-42899566.14	-42899565.96	0.0261	0.0079
Mercury	-122166-08-20 03:51 J	-42899477.53	-42899477.34	-42899477.16	0.0260	0.0026
Venus	-122166-09-03 18:30 J	-42899462.94	-42899462.73	-42899462.51	0.0260	0.0045
Mercury	-122166-11-16 22:49 J	-42899388.71	-42899388.55	-42899388.39	0.0260	0.0131
Mercury	-122165-02-13 18:01 J	-42899299.82	-42899299.75	-42899299.67	0.0259	0.0236
Venus	-122165-04-19 17:03 J	-42899234.00	-42899233.79	-42899233.58	0.0259	0.0043

Venus	-122165-12-04 15:51 J	-42899005.05	-42899004.84	-42899004.62	0.0258	0.0040
Venus	-122164-07-21 15:08 J	-42898776.08	-42898775.87	-42898775.65	0.0258	0.0037
Venus	-122163-03-07 15:08 J	-42898547.09	-42898546.87	-42898546.65	0.0258	0.0034
Venus	-122163-10-22 15:51 J	-42898318.06	-42898317.84	-42898317.63	0.0258	0.0030
Venus	-122162-06-08 17:32 J	-42898088.99	-42898088.77	-42898088.55	0.0259	0.0026
Venus	-122161-01-23 20:10 J	-42897859.88	-42897859.66	-42897859.44	0.0259	0.0022
Venus	-122161-09-09 00:15 J	-42897630.71	-42897630.49	-42897630.27	0.0261	0.0016
Venus	-122160-04-26 05:46 J	-42897401.48	-42897401.26	-42897401.04	0.0262	0.0011
Venus	-122160-12-11 12:44 J	-42897172.19	-42897171.97	-42897171.75	0.0264	0.0006
Venus	-122159-07-28 21:22 J	-42896942.83	-42896942.61	-42896942.39	0.0266	0.0004
Venus	-122158-03-15 07:56 J	-42896713.40	-42896713.17	-42896712.95	0.0268	0.0008
Venus	-122158-10-30 19:56 J	-42896483.89	-42896483.67	-42896483.45	0.0270	0.0012
Venus	-122157-06-16 10:06 J	-42896254.30	-42896254.08	-42896253.86	0.0273	0.0018
Venus	-122156-02-01 01:56 J	-42896024.63	-42896024.42	-42896024.20	0.0276	0.0024
Venus	-122156-09-18 20:10 J	-42895794.88	-42895794.66	-42895794.44	0.0279	0.0030
Venus	-122155-05-06 16:06 J	-42895565.05	-42895564.83	-42895564.62	0.0282	0.0035
Venus	-122155-12-22 13:42 J	-42895335.15	-42895334.93	-42895334.72	0.0285	0.0040
Venus	-122154-08-09 12:44 J	-42895105.18	-42895104.97	-42895104.75	0.0289	0.0044
Moon	-122153-01-07 08:25 J	-42894954.40	-42894954.15	-42894953.90	0.0291	0.0017
Earth	-122153-01-07 11:46 J	-42894954.26	-42894954.01	-42894953.77	0.0291	0.0022 *
Venus	-122153-03-26 13:27 J	-42894875.15	-42894874.94	-42894874.73	0.0292	0.0048
Venus	-122153-11-11 15:22 J	-42894645.07	-42894644.86	-42894644.65	0.0295	0.0051
Venus	-122152-06-29 18:01 J	-42894414.95	-42894414.75	-42894414.53	0.0297	0.0053
Venus	-122151-02-14 21:22 J	-42894184.81	-42894184.61	-42894184.40	0.0300	0.0052
Mercury	-122151-06-16 23:46 J	-42894062.58	-42894062.51	-42894062.44	0.0301	0.0254
Mercury	-122151-09-13 13:42 J	-42893974.05	-42893973.93	-42893973.81	0.0302	0.0133
Venus	-122151-10-03 00:58 J	-42893954.67	-42893954.46	-42893954.26	0.0302	0.0051
Mercury	-122151-12-11 03:22 J	-42893885.49	-42893885.36	-42893885.22	0.0302	0.0014
Mercury	-122150-03-09 17:03 J	-42893796.91	-42893796.79	-42893796.67	0.0303	0.0106
Venus	-122150-05-21 04:20 J	-42893724.52	-42893724.32	-42893724.11	0.0303	0.0049

Mercury -122150-06-06 06:30 J -42893708.31 -42893708.23 -42893708.14 0.0303 0.0225

Venus -122149-01-06 07:13 J -42893494.40 -42893494.20 -42893493.99 0.0304 0.0046

Venus -122149-08-23 09:22 J -42893264.32 -42893264.11 -42893263.91 0.0305 0.0041

Venus -122148-04-10 10:06 J -42893034.28 -42893034.08 -42893033.88 0.0304 0.0035

Venus -122148-11-26 09:22 J -42892804.31 -42892804.11 -42892803.90 0.0304 0.0028

Venus -122147-07-14 07:13 J -42892574.40 -42892574.20 -42892574.00 0.0302 0.0020

Venus -122146-03-01 03:08 J -42892344.57 -42892344.37 -42892344.17 0.0301 0.0013

Venus -122146-10-16 20:54 J -42892114.83 -42892114.63 -42892114.43 0.0298 0.0005

Venus -122145-06-02 12:44 J -42891885.18 -42891884.97 -42891884.77 0.0296 0.0004

Venus -122144-01-18 02:25 J -42891655.60 -42891655.40 -42891655.20 0.0293 0.0010

Venus -122144-09-04 14:10 J -42891426.12 -42891425.91 -42891425.71 0.0290 0.0017

Venus -122143-04-22 00:01 J -42891196.71 -42891196.50 -42891196.30 0.0286 0.0023

Venus -122143-12-07 07:56 J -42890967.38 -42890967.17 -42890966.97 0.0283 0.0029

Venus -122142-07-24 13:56 J -42890738.12 -42890737.92 -42890737.71 0.0280 0.0033

Venus -122141-03-09 18:44 J -42890508.93 -42890508.72 -42890508.52 0.0277 0.0036

Venus -122141-10-24 21:51 J -42890279.79 -42890279.59 -42890279.38 0.0274 0.0040

Venus -122140-06-11 00:01 J -42890050.71 -42890050.50 -42890050.30 0.0271 0.0042

Moon -122140-06-30 10:49 J -42890031.24 -42890031.05 -42890030.84 0.0271 0.0155

Earth -122140-06-30 14:39 J -42890031.10 -42890030.89 -42890030.68 0.0271 0.0143 \*

Venus -122139-01-26 00:44 J -42889821.67 -42889821.47 -42889821.26 0.0269 0.0044

Mars -122139-02-21 02:10 J -42889795.65 -42889795.41 -42889795.17 0.0268 0.0144

Venus -122139-09-12 00:58 J -42889592.67 -42889592.46 -42889592.25 0.0266 0.0044

Venus -122138-04-29 00:30 J -42889363.69 -42889363.48 -42889363.27 0.0264 0.0044

Venus -122138-12-13 23:18 J -42889134.74 -42889134.53 -42889134.31 0.0262 0.0045

Mercury -122137-07-12 12:58 J -42888923.05 -42888922.96 -42888922.85 0.0261 0.0217

Venus -122137-07-29 21:51 J -42888905.80 -42888905.59 -42888905.37 0.0261 0.0044

Mercury -122137-10-09 07:56 J -42888834.33 -42888834.17 -42888834.00 0.0260 0.0113

Mercury -122136-01-06 02:54 J -42888745.56 -42888745.38 -42888745.20 0.0260 0.0009

Venus -122136-03-15 20:25 J -42888676.86 -42888676.65 -42888676.44 0.0260 0.0042

Mercury -122136-04-04 21:51 J -42888656.75 -42888656.59 -42888656.41 0.0260 0.0097

Mercury -122136-07-02 17:03 J -42888567.89 -42888567.79 -42888567.67 0.0259 0.0202

Venus -122136-10-30 18:58 J -42888447.92 -42888447.71 -42888447.49 0.0259 0.0040

Venus -122135-06-16 18:01 J -42888218.96 -42888218.75 -42888218.53 0.0258 0.0039

Venus -122134-01-31 17:32 J -42887989.98 -42887989.77 -42887989.55 0.0258 0.0035

Venus -122134-09-17 17:32 J -42887760.99 -42887760.77 -42887760.55 0.0258 0.0032

Venus -122133-05-03 18:15 J -42887531.96 -42887531.74 -42887531.52 0.0258 0.0028

Venus -122133-12-18 19:56 J -42887302.88 -42887302.67 -42887302.45 0.0259 0.0025

Venus -122132-08-04 23:03 J -42887073.76 -42887073.54 -42887073.32 0.0260 0.0020

Venus -122131-03-22 03:08 J -42886844.59 -42886844.37 -42886844.15 0.0261 0.0015

Venus -122131-11-06 08:39 J -42886615.36 -42886615.14 -42886614.92 0.0262 0.0010

Venus -122130-06-23 15:37 J -42886386.07 -42886385.85 -42886385.62 0.0264 0.0008

Venus -122129-02-08 00:30 J -42886156.70 -42886156.48 -42886156.26 0.0266 0.0003

Venus -122129-09-24 11:03 J -42885927.27 -42885927.04 -42885926.82 0.0268 0.0009

Venus -122128-05-11 23:18 J -42885697.75 -42885697.53 -42885697.31 0.0271 0.0013

Venus -122128-12-27 13:27 J -42885468.16 -42885467.94 -42885467.72 0.0274 0.0019

Venus -122127-08-14 05:32 J -42885238.49 -42885238.27 -42885238.05 0.0276 0.0025

Venus -122126-03-31 23:32 J -42885008.73 -42885008.52 -42885008.30 0.0280 0.0031

Venus -122126-11-16 19:27 J -42884778.90 -42884778.69 -42884778.47 0.0283 0.0036

Venus -122125-07-03 17:18 J -42884549.00 -42884548.78 -42884548.57 0.0286 0.0040

Venus -122124-02-18 16:34 J -42884319.03 -42884318.81 -42884318.60 0.0289 0.0044

Venus -122124-10-06 17:18 J -42884088.99 -42884088.78 -42884088.57 0.0292 0.0047

Mars -122123-01-21 18:30 J -42883981.93 -42883981.73 -42883981.53 0.0293 0.0218

Venus -122123-05-24 19:13 J -42883858.91 -42883858.70 -42883858.49 0.0295 0.0049

Venus -122122-01-09 22:06 J -42883628.79 -42883628.58 -42883628.37 0.0298 0.0050

Venus -122122-08-28 01:13 J -42883398.65 -42883398.45 -42883398.24 0.0300 0.0050

Mercury -122122-11-04 00:30 J -42883330.50 -42883330.48 -42883330.45 0.0300 0.0295

Mercury -122121-01-31 14:25 J -42883242.01 -42883241.90 -42883241.79 0.0301 0.0175

Venus -122121-04-14 04:49 J -42883168.50 -42883168.30 -42883168.09 0.0302 0.0048

Mercury -122121-04-29 04:20 J -42883153.45 -42883153.32 -42883153.19 0.0302 0.0056

Mercury -122121-07-26 18:01 J -42883064.88 -42883064.75 -42883064.62 0.0302 0.0065

Mercury -122121-10-23 07:27 J -42882976.29 -42882976.19 -42882976.08 0.0303 0.0183

Venus -122121-11-30 08:25 J -42882938.36 -42882938.15 -42882937.95 0.0303 0.0045

Mercury -122120-01-19 20:54 J -42882887.64 -42882887.63 -42882887.62 0.0303 0.0301

Venus -122120-07-18 11:03 J -42882708.24 -42882708.04 -42882707.83 0.0304 0.0041

Venus -122119-03-05 12:58 J -42882478.17 -42882477.96 -42882477.76 0.0304 0.0036

Venus -122119-10-21 13:27 J -42882248.14 -42882247.94 -42882247.74 0.0304 0.0030

Venus -122118-06-08 12:30 J -42882018.18 -42882017.98 -42882017.77 0.0303 0.0024

Venus -122117-01-24 10:06 J -42881788.28 -42881788.08 -42881787.88 0.0302 0.0017

Venus -122117-09-10 05:46 J -42881558.47 -42881558.26 -42881558.06 0.0300 0.0011

Venus -122116-04-27 23:18 J -42881328.73 -42881328.53 -42881328.33 0.0298 0.0003

Venus -122116-12-13 14:54 J -42881099.08 -42881098.88 -42881098.68 0.0295 0.0006

Venus -122115-07-31 04:34 J -42880869.52 -42880869.31 -42880869.11 0.0292 0.0013

Venus -122114-03-17 16:20 J -42880640.02 -42880639.82 -42880639.62 0.0289 0.0019

Venus -122114-11-02 01:56 J -42880410.62 -42880410.42 -42880410.21 0.0286 0.0025

Venus -122113-06-18 09:51 J -42880181.29 -42880181.09 -42880180.88 0.0283 0.0029

Venus -122112-02-02 16:06 J -42879952.04 -42879951.83 -42879951.63 0.0280 0.0034

Venus -122112-09-19 20:39 J -42879722.84 -42879722.64 -42879722.43 0.0277 0.0037

Venus -122111-05-07 00:01 J -42879493.70 -42879493.50 -42879493.29 0.0274 0.0040

Moon -122111-06-25 08:10 J -42879444.31 -42879444.16 -42879444.00 0.0274 0.0203

Earth -122111-06-25 08:39 J -42879444.29 -42879444.14 -42879443.96 0.0274 0.0202 \*

Venus -122111-12-22 02:10 J -42879264.62 -42879264.41 -42879264.20 0.0271 0.0042

Venus -122110-08-08 03:08 J -42879035.58 -42879035.37 -42879035.16 0.0269 0.0044

Venus -122109-03-24 03:22 J -42878806.57 -42878806.36 -42878806.16 0.0267 0.0045

Mars -122109-04-08 21:37 J -42878790.88 -42878790.60 -42878790.32 0.0267 0.0047

Venus -122109-11-08 02:39 J -42878577.59 -42878577.39 -42878577.18 0.0265 0.0045

Venus -122108-06-25 01:42 J -42878348.63 -42878348.43 -42878348.21 0.0263 0.0045

Mercury -122108-11-29 12:44 J -42878191.03 -42878190.97 -42878190.91 0.0262 0.0247

Venus -122107-02-09 00:30 J -42878119.69 -42878119.48 -42878119.27 0.0261 0.0044

Mercury -122107-02-26 07:27 J -42878102.34 -42878102.19 -42878102.04 0.0261 0.0144

Mercury -122107-05-26 02:25 J -42878013.58 -42878013.40 -42878013.22 0.0261 0.0039

Mercury -122107-08-22 21:22 J -42877924.78 -42877924.61 -42877924.43 0.0260 0.0066

Venus -122107-09-25 23:18 J -42877890.75 -42877890.53 -42877890.32 0.0260 0.0042

Mercury -122107-11-19 16:34 J -42877835.94 -42877835.81 -42877835.67 0.0260 0.0172

Venus -122106-05-12 22:06 J -42877661.80 -42877661.58 -42877661.37 0.0259 0.0040

Venus -122106-12-27 21:08 J -42877432.84 -42877432.62 -42877432.41 0.0259 0.0037

Venus -122105-08-12 20:39 J -42877203.86 -42877203.64 -42877203.43 0.0258 0.0035

Venus -122104-03-29 20:39 J -42876974.86 -42876974.64 -42876974.42 0.0258 0.0031

Venus -122104-11-13 21:37 J -42876745.82 -42876745.60 -42876745.38 0.0258 0.0027

Venus -122103-06-30 23:46 J -42876516.73 -42876516.51 -42876516.29 0.0259 0.0023

Venus -122102-02-15 02:54 J -42876287.60 -42876287.38 -42876287.16 0.0260 0.0019

Venus -122102-10-02 07:27 J -42876058.42 -42876058.19 -42876057.97 0.0261 0.0014

Venus -122101-05-18 12:58 J -42875829.18 -42875828.96 -42875828.73 0.0262 0.0010

Venus -122100-01-02 20:25 J -42875599.87 -42875599.65 -42875599.43 0.0264 0.0003

Venus -122100-08-20 05:32 J -42875370.49 -42875370.27 -42875370.05 0.0266 0.0004

Venus -122099-04-06 16:20 J -42875141.04 -42875140.82 -42875140.60 0.0268 0.0008

Venus -122099-11-22 04:49 J -42874911.52 -42874911.30 -42874911.08 0.0271 0.0014

Venus -122098-07-09 19:13 J -42874681.92 -42874681.70 -42874681.48 0.0273 0.0020

Venus -122097-02-24 11:18 J -42874452.24 -42874452.03 -42874451.81 0.0276 0.0026

Venus -122097-10-11 05:46 J -42874222.48 -42874222.26 -42874222.05 0.0279 0.0031

Venus -122096-05-29 01:42 J -42873992.65 -42873992.43 -42873992.21 0.0283 0.0035

Venus -122095-01-13 23:32 J -42873762.74 -42873762.52 -42873762.31 0.0286 0.0040

Venus -122095-08-31 22:49 J -42873532.76 -42873532.55 -42873532.34 0.0289 0.0043

Earth -122094-01-08 15:08 J -42873403.09 -42873402.87 -42873402.64 0.0291 0.0109

Moon -122094-01-08 18:30 J -42873402.94 -42873402.73 -42873402.51 0.0291 0.0127 \*

Venus -122094-04-18 23:32 J -42873302.73 -42873302.52 -42873302.31 0.0292 0.0047

Venus -122094-12-05 01:27 J -42873072.65 -42873072.44 -42873072.23 0.0295 0.0048

Mars -122093-03-15 09:22 J -42872971.40 -42872971.11 -42872970.81 0.0296 0.0067

Venus -122093-07-22 04:06 J -42872842.54 -42872842.33 -42872842.12 0.0298 0.0050

Venus -122092-03-09 07:13 J -42872612.40 -42872612.20 -42872611.99 0.0300 0.0050

Mercury -122092-06-19 15:51 J -42872509.94 -42872509.84 -42872509.75 0.0301 0.0211

Mercury -122092-09-16 05:32 J -42872421.39 -42872421.27 -42872421.14 0.0302 0.0092

Venus -122092-10-25 10:34 J -42872382.26 -42872382.06 -42872381.85 0.0302 0.0048

Mercury -122092-12-13 19:13 J -42872332.83 -42872332.70 -42872332.56 0.0302 0.0030

Mercury -122091-03-12 08:54 J -42872244.25 -42872244.13 -42872244.01 0.0303 0.0147

Mercury -122091-06-08 22:20 J -42872155.63 -42872155.57 -42872155.51 0.0303 0.0265

Venus -122091-06-12 13:56 J -42872152.13 -42872151.92 -42872151.72 0.0303 0.0046

Venus -122090-01-28 16:20 J -42871922.02 -42871921.82 -42871921.61 0.0304 0.0042

Venus -122090-09-15 18:01 J -42871691.95 -42871691.75 -42871691.54 0.0305 0.0037

Venus -122089-05-02 18:30 J -42871461.93 -42871461.73 -42871461.53 0.0304 0.0030

Venus -122089-12-18 17:32 J -42871231.97 -42871231.77 -42871231.57 0.0303 0.0024

Venus -122088-08-05 14:54 J -42871002.09 -42871001.88 -42871001.68 0.0302 0.0017

Venus -122087-03-23 10:20 J -42870772.28 -42870772.07 -42870771.87 0.0300 0.0011

Venus -122087-11-08 03:37 J -42870542.55 -42870542.35 -42870542.14 0.0298 0.0003

Venus -122086-06-25 18:58 J -42870312.91 -42870312.71 -42870312.50 0.0295 0.0008

Venus -122085-02-10 08:25 J -42870083.35 -42870083.15 -42870082.94 0.0292 0.0014

Venus -122085-09-26 19:56 J -42869853.87 -42869853.67 -42869853.47 0.0289 0.0018

Venus -122084-05-14 05:18 J -42869624.48 -42869624.28 -42869624.07 0.0286 0.0024

Venus -122084-12-29 12:58 J -42869395.16 -42869394.96 -42869394.75 0.0283 0.0029

Venus -122083-08-15 18:58 J -42869165.91 -42869165.71 -42869165.50 0.0280 0.0033

Venus -122082-04-01 23:46 J -42868936.72 -42868936.51 -42868936.31 0.0277 0.0036

Venus -122082-11-17 02:54 J -42868707.59 -42868707.38 -42868707.17 0.0274 0.0039

Earth -122081-07-01 14:10 J -42868480.05 -42868479.91 -42868479.75 0.0271 0.0216

Moon -122081-07-01 17:32 J -42868479.94 -42868479.77 -42868479.60 0.0271 0.0201 \*

Venus -122081-07-03 04:49 J -42868478.51 -42868478.30 -42868478.09 0.0271 0.0041

Venus -122080-02-17 05:46 J -42868249.47 -42868249.26 -42868249.05 0.0268 0.0042

Venus -122080-10-04 06:01 J -42868020.46 -42868020.25 -42868020.04 0.0266 0.0043

Venus -122079-05-21 05:32 J -42867791.48 -42867791.27 -42867791.06 0.0264 0.0043

Mars -122079-05-26 10:34 J -42867786.20 -42867786.06 -42867785.90 0.0264 0.0223

Venus -122078-01-05 04:34 J -42867562.51 -42867562.31 -42867562.09 0.0262 0.0043

Mercury -122078-07-16 06:58 J -42867370.33 -42867370.21 -42867370.07 0.0261 0.0175



Venus -122078-08-22 03:22 J -42867333.57 -42867333.36 -42867333.14 0.0261 0.0041

Mercury -122078-10-13 02:10 J -42867281.59 -42867281.41 -42867281.24 0.0261 0.0071

Mercury -122077-01-09 21:08 J -42867192.80 -42867192.62 -42867192.44 0.0260 0.0034

Venus -122077-04-07 02:10 J -42867104.62 -42867104.41 -42867104.20 0.0260 0.0039

Mercury -122077-04-07 16:06 J -42867103.98 -42867103.83 -42867103.67 0.0260 0.0140

Mercury -122077-07-05 11:32 J -42867015.07 -42867015.02 -42867014.96 0.0259 0.0245

Venus -122077-11-22 00:58 J -42866875.67 -42866875.46 -42866875.24 0.0259 0.0037

Venus -122076-07-09 00:15 J -42866646.70 -42866646.49 -42866646.27 0.0258 0.0035

Venus -122075-02-23 00:01 J -42866417.71 -42866417.50 -42866417.28 0.0258 0.0032

Venus -122075-10-10 00:15 J -42866188.70 -42866188.49 -42866188.27 0.0258 0.0029

Venus -122074-05-27 01:27 J -42865959.65 -42865959.44 -42865959.22 0.0258 0.0025

Venus -122073-01-11 03:37 J -42865730.57 -42865730.35 -42865730.13 0.0259 0.0021

Venus -122073-08-27 06:58 J -42865501.43 -42865501.21 -42865500.99 0.0260 0.0017

Venus -122072-04-13 11:32 J -42865272.24 -42865272.02 -42865271.80 0.0261 0.0012

Venus -122072-11-28 17:18 J -42865043.00 -42865042.78 -42865042.56 0.0263 0.0008

Venus -122071-07-16 00:58 J -42864813.68 -42864813.46 -42864813.24 0.0265 0.0002

Venus -122070-03-02 10:06 J -42864584.30 -42864584.08 -42864583.86 0.0267 0.0004

Venus -122070-10-17 20:54 J -42864354.85 -42864354.63 -42864354.41 0.0269 0.0009

Venus -122069-06-03 09:22 J -42864125.33 -42864125.11 -42864124.89 0.0271 0.0015

Venus -122068-01-19 00:01 J -42863895.72 -42863895.50 -42863895.28 0.0274 0.0021

Venus -122068-09-05 16:34 J -42863666.03 -42863665.81 -42863665.59 0.0277 0.0026

Venus -122067-04-23 10:49 J -42863436.27 -42863436.05 -42863435.83 0.0280 0.0031

Venus -122067-12-09 06:58 J -42863206.43 -42863206.21 -42863206.00 0.0283 0.0036

Venus -122066-07-27 04:34 J -42862976.52 -42862976.31 -42862976.09 0.0286 0.0040

Venus -122065-03-13 04:06 J -42862746.55 -42862746.33 -42862746.12 0.0289 0.0044

Venus -122065-10-29 04:49 J -42862516.51 -42862516.30 -42862516.09 0.0292 0.0046

Venus -122064-06-16 06:44 J -42862286.43 -42862286.22 -42862286.01 0.0295 0.0047

Venus -122063-02-01 09:22 J -42862056.32 -42862056.11 -42862055.90 0.0298 0.0048

Venus -122063-09-19 12:30 J -42861826.19 -42861825.98 -42861825.77 0.0300 0.0047

Mercury -122063-11-06 16:49 J -42861777.87 -42861777.80 -42861777.72 0.0300 0.0250

Mercury -122062-02-03 06:44 J -42861689.34 -42861689.22 -42861689.10 0.0301 0.0130

Mercury -122062-05-02 20:25 J -42861600.78 -42861600.65 -42861600.51 0.0302 0.0014

Venus -122062-05-07 15:51 J -42861596.05 -42861595.84 -42861595.64 0.0302 0.0045

Mercury -122062-07-30 10:06 J -42861512.20 -42861512.08 -42861511.95 0.0302 0.0108

Mercury -122062-10-26 23:32 J -42861423.60 -42861423.52 -42861423.43 0.0303 0.0227

Venus -122062-12-23 18:58 J -42861365.92 -42861365.71 -42861365.51 0.0303 0.0042

Venus -122061-08-09 21:22 J -42861135.81 -42861135.61 -42861135.41 0.0304 0.0037

Venus -122060-03-27 22:49 J -42860905.75 -42860905.55 -42860905.35 0.0304 0.0032

Venus -122060-11-12 23:03 J -42860675.74 -42860675.54 -42860675.34 0.0304 0.0026

Venus -122059-06-30 21:51 J -42860445.80 -42860445.59 -42860445.39 0.0303 0.0020

Venus -122058-02-15 18:58 J -42860215.92 -42860215.71 -42860215.51 0.0301 0.0014

Venus -122058-10-03 13:56 J -42859986.12 -42859985.92 -42859985.72 0.0299 0.0006

Venus -122057-05-20 07:13 J -42859756.41 -42859756.20 -42859756.00 0.0297 0.0007

Venus -122056-01-04 22:20 J -42859526.77 -42859526.57 -42859526.37 0.0294 0.0008

Venus -122056-08-22 11:32 J -42859297.22 -42859297.02 -42859296.82 0.0292 0.0014

Venus -122055-04-08 23:03 J -42859067.75 -42859067.54 -42859067.34 0.0289 0.0021

Venus -122055-11-24 08:25 J -42858838.35 -42858838.15 -42858837.95 0.0286 0.0025

Venus -122054-07-11 16:06 J -42858609.04 -42858608.83 -42858608.63 0.0283 0.0030

Venus -122053-02-25 22:06 J -42858379.78 -42858379.58 -42858379.37 0.0280 0.0033

Venus -122053-10-12 02:39 J -42858150.60 -42858150.39 -42858150.19 0.0277 0.0037

Venus -122052-05-29 05:46 J -42857921.46 -42857921.26 -42857921.05 0.0274 0.0039

Moon -122052-06-26 09:08 J -42857893.35 -42857893.12 -42857892.89 0.0273 0.0115

Earth -122052-06-26 10:06 J -42857893.29 -42857893.08 -42857892.86 0.0273 0.0125 \*

Venus -122051-01-13 07:56 J -42857692.38 -42857692.17 -42857691.97 0.0271 0.0041

Mars -122051-07-17 10:06 J -42857507.32 -42857507.08 -42857506.82 0.0269 0.0127

Venus -122051-08-30 08:54 J -42857463.34 -42857463.13 -42857462.92 0.0269 0.0042

Venus -122050-04-16 09:08 J -42857234.32 -42857234.12 -42857233.91 0.0266 0.0043

Venus -122050-12-01 08:54 J -42857005.34 -42857005.13 -42857004.92 0.0265 0.0043

Venus -122049-07-17 07:56 J -42856776.38 -42856776.17 -42856775.96 0.0263 0.0042

Mercury -122049-12-02 06:58 J -42856638.32 -42856638.21 -42856638.09 0.0262 0.0204

Mercury -122048-03-01 01:56 J -42856549.59 -42856549.42 -42856549.25 0.0261 0.0099

Venus -122048-03-03 06:44 J -42856547.43 -42856547.22 -42856547.00 0.0261 0.0042

Mercury -122048-05-28 20:54 J -42856460.81 -42856460.63 -42856460.44 0.0261 0.0008

Mercury -122048-08-25 16:06 J -42856371.99 -42856371.83 -42856371.66 0.0260 0.0111

Venus -122048-10-18 05:46 J -42856318.47 -42856318.26 -42856318.05 0.0260 0.0040

Mercury -122048-11-22 11:18 J -42856283.12 -42856283.03 -42856282.92 0.0260 0.0217

Venus -122047-06-04 04:49 J -42856089.51 -42856089.30 -42856089.08 0.0259 0.0038

Venus -122046-01-19 04:20 J -42855860.54 -42855860.32 -42855860.11 0.0259 0.0035

Venus -122046-09-05 04:06 J -42855631.55 -42855631.33 -42855631.11 0.0258 0.0032

Venus -122045-04-21 04:20 J -42855402.53 -42855402.32 -42855402.10 0.0258 0.0029

Venus -122045-12-06 05:46 J -42855173.48 -42855173.26 -42855173.04 0.0259 0.0024

Venus -122044-07-23 08:25 J -42854944.37 -42854944.15 -42854943.93 0.0259 0.0020

Venus -122043-03-09 11:46 J -42854715.23 -42854715.01 -42854714.78 0.0260 0.0016

Venus -122043-10-24 16:34 J -42854486.03 -42854485.81 -42854485.58 0.0261 0.0011

Venus -122042-06-10 22:49 J -42854256.77 -42854256.55 -42854256.33 0.0263 0.0006

Venus -122041-01-26 06:44 J -42854027.45 -42854027.22 -42854027.00 0.0265 0.0005

Venus -122041-09-11 16:06 J -42853798.05 -42853797.83 -42853797.61 0.0267 0.0005

Venus -122040-04-29 03:08 J -42853568.59 -42853568.37 -42853568.14 0.0269 0.0012

Venus -122040-12-14 16:06 J -42853339.05 -42853338.83 -42853338.61 0.0271 0.0016

Venus -122039-08-01 06:58 J -42853109.43 -42853109.21 -42853108.99 0.0274 0.0021

Venus -122038-03-18 23:32 J -42852879.74 -42852879.52 -42852879.30 0.0277 0.0026

Venus -122038-11-03 18:01 J -42852649.97 -42852649.75 -42852649.53 0.0280 0.0031

Venus -122037-06-20 14:10 J -42852420.12 -42852419.91 -42852419.69 0.0283 0.0036

Venus -122036-02-05 12:15 J -42852190.21 -42852189.99 -42852189.78 0.0286 0.0039

Venus -122036-09-23 11:46 J -42851960.22 -42851960.01 -42851959.80 0.0289 0.0042

Moon -122035-01-09 19:27 J -42851851.86 -42851851.69 -42851851.50 0.0291 0.0196

Earth -122035-01-09 23:18 J -42851851.70 -42851851.53 -42851851.36 0.0291 0.0210 \*

Venus -122035-05-11 12:30 J -42851730.19 -42851729.98 -42851729.76 0.0292 0.0045

Mars -122035-06-17 12:58 J -42851693.19 -42851692.96 -42851692.73 0.0293 0.0192

Venus -122035-12-27 14:25 J -42851500.11 -42851499.90 -42851499.69 0.0295 0.0046

Venus -122034-08-14 17:03 J -42851270.00 -42851269.79 -42851269.58 0.0298 0.0047  
 Mercury -122033-03-25 18:44 J -42851045.76 -42851045.72 -42851045.67 0.0300 0.0281  
 Venus -122033-03-31 20:10 J -42851039.87 -42851039.66 -42851039.46 0.0300 0.0046  
 Mercury -122033-06-22 08:39 J -42850957.25 -42850957.14 -42850957.03 0.0301 0.0162  
 Mercury -122033-09-18 22:20 J -42850868.70 -42850868.57 -42850868.43 0.0302 0.0043  
 Venus -122033-11-16 23:18 J -42850809.74 -42850809.53 -42850809.32 0.0302 0.0044  
 Mercury -122033-12-16 12:01 J -42850780.13 -42850780.00 -42850779.87 0.0302 0.0076  
 Mercury -122032-03-15 01:27 J -42850691.54 -42850691.44 -42850691.34 0.0303 0.0195  
 Venus -122032-07-05 02:10 J -42850579.61 -42850579.41 -42850579.20 0.0303 0.0041  
 Venus -122031-02-20 04:20 J -42850349.52 -42850349.32 -42850349.11 0.0304 0.0038  
 Venus -122031-10-08 05:32 J -42850119.47 -42850119.27 -42850119.06 0.0304 0.0033  
 Venus -122030-05-26 05:46 J -42849889.47 -42849889.26 -42849889.06 0.0304 0.0027  
 Venus -122029-01-11 04:20 J -42849659.52 -42849659.32 -42849659.12 0.0303 0.0020  
 Venus -122029-08-28 01:13 J -42849429.66 -42849429.45 -42849429.25 0.0302 0.0014  
 Venus -122028-04-14 19:56 J -42849199.87 -42849199.67 -42849199.46 0.0300 0.0009  
 Venus -122028-11-30 12:58 J -42848970.16 -42848969.96 -42848969.76 0.0297 0.0002  
 Venus -122027-07-18 04:06 J -42848740.54 -42848740.33 -42848740.13 0.0295 0.0009  
 Venus -122026-03-04 17:03 J -42848510.99 -42848510.79 -42848510.58 0.0292 0.0015  
 Venus -122026-10-20 04:06 J -42848281.53 -42848281.33 -42848281.12 0.0289 0.0020  
 Venus -122025-06-05 13:13 J -42848052.15 -42848051.95 -42848051.74 0.0285 0.0025  
 Venus -122024-01-20 20:39 J -42847822.85 -42847822.64 -42847822.44 0.0282 0.0029  
 Venus -122024-09-07 02:25 J -42847593.61 -42847593.40 -42847593.19 0.0279 0.0033  
 Venus -122023-04-24 06:58 J -42847364.42 -42847364.21 -42847364.01 0.0276 0.0036  
 Venus -122023-12-09 09:51 J -42847135.29 -42847135.09 -42847134.88 0.0273 0.0038  
 Venus -122022-07-26 11:46 J -42846906.21 -42846906.01 -42846905.80 0.0271 0.0039  
 Venus -122021-03-11 12:44 J -42846677.18 -42846676.97 -42846676.76 0.0268 0.0040  
 Mars -122021-09-02 12:15 J -42846502.26 -42846501.99 -42846501.70 0.0266 0.0062  
 Venus -122021-10-26 12:58 J -42846448.17 -42846447.96 -42846447.75 0.0266 0.0040  
 Venus -122020-06-12 12:44 J -42846219.18 -42846218.97 -42846218.76 0.0264 0.0040  
 Venus -122019-01-27 12:01 J -42845990.21 -42845990.00 -42845989.79 0.0262 0.0039

Mercury -122019-04-21 06:58 J -42845906.28 -42845906.21 -42845906.11 0.0262 0.0233

Mercury -122019-07-19 02:10 J -42845817.57 -42845817.41 -42845817.25 0.0261 0.0128

Venus -122019-09-13 10:49 J -42845761.26 -42845761.05 -42845760.83 0.0261 0.0038

Mercury -122019-10-15 21:08 J -42845728.80 -42845728.62 -42845728.44 0.0261 0.0024

Mercury -122018-01-12 16:20 J -42845640.00 -42845639.82 -42845639.65 0.0260 0.0082

Mercury -122018-04-11 11:32 J -42845551.15 -42845551.02 -42845550.89 0.0260 0.0187

Venus -122018-04-30 09:51 J -42845532.30 -42845532.09 -42845531.87 0.0260 0.0036

Venus -122018-12-15 09:08 J -42845303.34 -42845303.12 -42845302.91 0.0259 0.0034

Venus -122017-07-31 08:25 J -42845074.36 -42845074.15 -42845073.93 0.0258 0.0032

Venus -122016-03-17 08:25 J -42844845.36 -42844845.15 -42844844.93 0.0258 0.0029

Venus -122016-11-01 09:08 J -42844616.34 -42844616.12 -42844615.90 0.0258 0.0025

Venus -122015-06-18 10:49 J -42844387.27 -42844387.05 -42844386.83 0.0259 0.0022

Venus -122014-02-02 13:27 J -42844158.16 -42844157.94 -42844157.72 0.0259 0.0018

Venus -122014-09-19 17:03 J -42843929.01 -42843928.79 -42843928.57 0.0260 0.0014

Venus -122013-05-05 22:06 J -42843699.80 -42843699.58 -42843699.36 0.0262 0.0010

Venus -122013-12-21 04:20 J -42843470.54 -42843470.32 -42843470.09 0.0263 0.0006

Venus -122012-08-07 12:30 J -42843241.20 -42843240.98 -42843240.76 0.0265 0.0003

Venus -122011-03-24 22:06 J -42843011.80 -42843011.58 -42843011.35 0.0267 0.0007

Venus -122011-11-09 09:22 J -42842782.33 -42842782.11 -42842781.88 0.0269 0.0012

Venus -122010-06-26 22:34 J -42842552.78 -42842552.56 -42842552.34 0.0272 0.0016

Venus -122009-02-11 13:27 J -42842323.16 -42842322.94 -42842322.72 0.0275 0.0022

Venus -122009-09-28 06:30 J -42842093.45 -42842093.23 -42842093.01 0.0278 0.0027

Venus -122008-05-16 01:13 J -42841863.67 -42841863.45 -42841863.24 0.0281 0.0032

Venus -122008-12-31 21:37 J -42841633.82 -42841633.60 -42841633.39 0.0284 0.0036

Venus -122007-08-18 19:27 J -42841403.90 -42841403.69 -42841403.47 0.0287 0.0040

Moon -122006-01-04 04:20 J -42841265.50 -42841265.32 -42841265.13 0.0289 0.0183

Earth -122006-01-04 05:46 J -42841265.43 -42841265.26 -42841265.08 0.0289 0.0197 \*

Venus -122006-04-05 19:13 J -42841173.91 -42841173.70 -42841173.49 0.0290 0.0042

Venus -122006-11-21 20:10 J -42840943.87 -42840943.66 -42840943.45 0.0293 0.0044

Venus -122005-07-08 22:06 J -42840713.79 -42840713.58 -42840713.37 0.0296 0.0046

Mars	-122005-08-09 08:54 J	-42840682.41	-42840682.13	-42840681.83	0.0296	0.0095
Venus	-122004-02-24 00:30 J	-42840483.68	-42840483.48	-42840483.27	0.0298	0.0046
Venus	-122004-10-12 03:37 J	-42840253.55	-42840253.35	-42840253.14	0.0300	0.0044
Mercury	-122004-11-09 10:34 J	-42840225.16	-42840225.06	-42840224.96	0.0301	0.0195
Mercury	-122003-02-06 00:15 J	-42840136.62	-42840136.49	-42840136.36	0.0301	0.0076
Mercury	-122003-05-05 13:56 J	-42840048.05	-42840047.92	-42840047.79	0.0302	0.0043
Venus	-122003-05-30 06:44 J	-42840023.42	-42840023.22	-42840023.01	0.0302	0.0042
Mercury	-122003-08-02 03:22 J	-42839959.47	-42839959.36	-42839959.24	0.0302	0.0162
Mercury	-122003-10-29 16:49 J	-42839870.84	-42839870.80	-42839870.75	0.0303	0.0279
Venus	-122002-01-15 09:37 J	-42839793.30	-42839793.10	-42839792.89	0.0303	0.0038
Venus	-122002-09-02 11:46 J	-42839563.22	-42839563.01	-42839562.81	0.0304	0.0034
Venus	-122001-04-19 12:44 J	-42839333.17	-42839332.97	-42839332.76	0.0304	0.0029
Venus	-122001-12-05 12:44 J	-42839103.18	-42839102.97	-42839102.77	0.0303	0.0023

# 122ND MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 122nd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-122000-07-23 10:49 J	-42838873.25	-42838873.05	-42838872.84	0.0302	0.0017		
Venus	-121999-03-10 07:27 J	-42838643.39	-42838643.19	-42838642.99	0.0301	0.0010		
Venus	-121999-10-26 01:56 J	-42838413.62	-42838413.42	-42838413.22	0.0299	0.0004		

Venus	-121998-06-12 18:30 J	-42838183.93	-42838183.73	-42838183.52	0.0296	0.0005
Venus	-121997-01-28 09:08 J	-42837954.32	-42837954.12	-42837953.91	0.0294	0.0012
Venus	-121997-09-13 21:51 J	-42837724.79	-42837724.59	-42837724.38	0.0291	0.0016
Venus	-121996-05-01 08:39 J	-42837495.34	-42837495.14	-42837494.93	0.0288	0.0021
Venus	-121996-12-16 17:46 J	-42837265.97	-42837265.76	-42837265.56	0.0285	0.0025
Venus	-121995-08-03 00:58 J	-42837036.66	-42837036.46	-42837036.25	0.0282	0.0029
Venus	-121994-03-20 06:44 J	-42836807.42	-42836807.22	-42836807.01	0.0279	0.0033
Venus	-121994-11-04 11:03 J	-42836578.24	-42836578.04	-42836577.83	0.0276	0.0035
Venus	-121993-06-20 13:56 J	-42836349.12	-42836348.92	-42836348.71	0.0273	0.0038
Earth	-121993-06-27 15:22 J	-42836342.10	-42836341.86	-42836341.61	0.0273	0.0039
Moon	-121993-06-27 17:18 J	-42836342.01	-42836341.78	-42836341.55	0.0273	0.0054 *
Venus	-121992-02-04 15:51 J	-42836120.05	-42836119.84	-42836119.63	0.0271	0.0039
Venus	-121992-09-21 16:49 J	-42835891.01	-42835890.80	-42835890.59	0.0268	0.0040
Venus	-121991-05-08 17:18 J	-42835661.99	-42835661.78	-42835661.57	0.0266	0.0040
Mars	-121991-10-20 05:32 J	-42835497.37	-42835497.27	-42835497.16	0.0265	0.0245
Venus	-121991-12-23 16:49 J	-42835433.01	-42835432.80	-42835432.59	0.0264	0.0041
Venus	-121990-08-09 16:06 J	-42835204.04	-42835203.83	-42835203.62	0.0263	0.0040
Mercury	-121990-09-08 07:27 J	-42835174.21	-42835174.19	-42835174.16	0.0262	0.0259
Mercury	-121990-12-06 02:25 J	-42835085.54	-42835085.40	-42835085.25	0.0262	0.0155
Mercury	-121989-03-03 21:22 J	-42834996.79	-42834996.61	-42834996.43	0.0261	0.0050
Venus	-121989-03-25 15:08 J	-42834975.08	-42834974.87	-42834974.66	0.0261	0.0038
Mercury	-121989-05-31 16:34 J	-42834907.99	-42834907.81	-42834907.63	0.0261	0.0055
Mercury	-121989-08-28 11:32 J	-42834819.15	-42834819.02	-42834818.86	0.0261	0.0162
Venus	-121989-11-09 14:10 J	-42834746.12	-42834745.91	-42834745.69	0.0260	0.0037
Venus	-121988-06-26 13:42 J	-42834517.15	-42834516.93	-42834516.72	0.0259	0.0034
Venus	-121987-02-10 13:13 J	-42834288.16	-42834287.95	-42834287.73	0.0259	0.0032
Venus	-121987-09-27 13:27 J	-42834059.16	-42834058.94	-42834058.72	0.0259	0.0029
Venus	-121986-05-14 14:10 J	-42833830.13	-42833829.91	-42833829.69	0.0259	0.0025
Venus	-121986-12-29 16:05 J	-42833601.05	-42833600.83	-42833600.62	0.0259	0.0022
Venus	-121985-08-14 18:44 J	-42833371.94	-42833371.72	-42833371.50	0.0260	0.0018

Venus -121984-03-31 22:49 J -42833142.77 -42833142.55 -42833142.33 0.0261 0.0012  
 Venus -121984-11-16 04:05 J -42832913.55 -42832913.33 -42832913.11 0.0262 0.0008  
 Venus -121983-07-03 11:03 J -42832684.27 -42832684.04 -42832683.82 0.0263 0.0006  
 Venus -121982-02-17 19:13 J -42832454.92 -42832454.70 -42832454.48 0.0265 0.0004  
 Venus -121982-10-05 05:17 J -42832225.50 -42832225.28 -42832225.06 0.0267 0.0007  
 Venus -121981-05-21 16:49 J -42831996.02 -42831995.80 -42831995.58 0.0270 0.0013  
 Venus -121980-01-06 06:15 J -42831766.46 -42831766.24 -42831766.02 0.0272 0.0018  
 Venus -121980-08-23 21:37 J -42831536.81 -42831536.60 -42831536.38 0.0275 0.0023  
 Venus -121979-04-10 14:53 J -42831307.10 -42831306.88 -42831306.66 0.0278 0.0026  
 Venus -121979-11-26 09:37 J -42831077.31 -42831077.10 -42831076.88 0.0281 0.0031  
 Venus -121978-07-14 06:15 J -42830847.46 -42830847.24 -42830847.02 0.0284 0.0035  
 Venus -121977-02-29 04:34 J -42830617.53 -42830617.31 -42830617.10 0.0287 0.0038  
 Venus -121977-10-16 04:20 J -42830387.53 -42830387.32 -42830387.11 0.0290 0.0041  
 Venus -121976-06-03 05:17 J -42830157.49 -42830157.28 -42830157.07 0.0293 0.0042  
 Venus -121975-01-19 07:13 J -42829927.41 -42829927.20 -42829926.99 0.0296 0.0043  
 Venus -121975-09-06 09:37 J -42829697.30 -42829697.10 -42829696.89 0.0298 0.0044  
 Mercury -121974-03-29 12:44 J -42829493.06 -42829492.97 -42829492.88 0.0300 0.0224  
 Venus -121974-04-24 12:44 J -42829467.18 -42829466.97 -42829466.77 0.0300 0.0043  
 Mercury -121974-06-26 02:25 J -42829404.52 -42829404.40 -42829404.27 0.0301 0.0105  
 Mercury -121974-09-22 16:05 J -42829315.96 -42829315.83 -42829315.69 0.0302 0.0018  
 Venus -121974-12-10 15:37 J -42829237.05 -42829236.85 -42829236.64 0.0302 0.0040  
 Mercury -121974-12-20 05:46 J -42829227.38 -42829227.26 -42829227.14 0.0302 0.0133  
 Mercury -121973-03-17 19:13 J -42829138.77 -42829138.70 -42829138.63 0.0303 0.0250  
 Venus -121973-07-27 18:15 J -42829006.95 -42829006.74 -42829006.54 0.0303 0.0037  
 Venus -121972-03-14 19:56 J -42828776.87 -42828776.67 -42828776.46 0.0304 0.0033  
 Venus -121972-10-30 20:53 J -42828546.84 -42828546.63 -42828546.43 0.0304 0.0029  
 Venus -121971-06-17 20:25 J -42828316.86 -42828316.65 -42828316.45 0.0303 0.0023  
 Venus -121970-02-02 18:29 J -42828086.94 -42828086.73 -42828086.53 0.0302 0.0017  
 Venus -121970-09-20 14:39 J -42827857.09 -42827856.89 -42827856.69 0.0301 0.0010  
 Venus -121969-05-07 08:53 J -42827627.33 -42827627.13 -42827626.92 0.0299 0.0004



Venus -121969-12-23 01:13 J -42827397.65 -42827397.45 -42827397.24 0.0297 0.0007

Venus -121968-08-09 15:37 J -42827168.05 -42827167.85 -42827167.64 0.0294 0.0012

Venus -121967-03-27 04:20 J -42826938.52 -42826938.32 -42826938.12 0.0291 0.0015

Venus -121967-11-11 14:53 J -42826709.09 -42826708.88 -42826708.68 0.0288 0.0021

Venus -121966-06-28 23:32 J -42826479.73 -42826479.52 -42826479.32 0.0285 0.0025

Venus -121965-02-13 06:29 J -42826250.43 -42826250.23 -42826250.02 0.0282 0.0029

Venus -121965-09-29 12:01 J -42826021.21 -42826021.00 -42826020.80 0.0279 0.0032

Venus -121964-05-16 16:05 J -42825792.04 -42825791.83 -42825791.62 0.0276 0.0034

Venus -121964-12-31 18:58 J -42825562.92 -42825562.71 -42825562.50 0.0273 0.0036

Venus -121963-08-17 20:39 J -42825333.85 -42825333.64 -42825333.43 0.0270 0.0037

Mars -121963-12-11 10:34 J -42825218.31 -42825218.06 -42825217.79 0.0269 0.0109

Venus -121962-04-03 21:37 J -42825104.81 -42825104.60 -42825104.39 0.0268 0.0038

Venus -121962-11-18 21:51 J -42824875.80 -42824875.59 -42824875.38 0.0266 0.0038

Venus -121961-07-04 21:37 J -42824646.81 -42824646.60 -42824646.39 0.0264 0.0037

Venus -121960-02-18 20:53 J -42824417.84 -42824417.63 -42824417.42 0.0262 0.0036

Mercury -121960-04-24 02:53 J -42824353.50 -42824353.38 -42824353.25 0.0262 0.0182

Mercury -121960-07-21 21:51 J -42824264.76 -42824264.59 -42824264.41 0.0261 0.0078

Venus -121960-10-05 19:56 J -42824188.88 -42824188.67 -42824188.45 0.0261 0.0035

Mercury -121960-10-18 17:03 J -42824175.97 -42824175.79 -42824175.61 0.0261 0.0028

Mercury -121959-01-15 12:15 J -42824087.15 -42824086.99 -42824086.83 0.0260 0.0134

Mercury -121959-04-14 07:27 J -42823998.25 -42823998.19 -42823998.11 0.0260 0.0240

Venus -121959-05-22 19:13 J -42823959.91 -42823959.70 -42823959.48 0.0260 0.0033

Venus -121958-01-06 18:44 J -42823730.94 -42823730.72 -42823730.50 0.0259 0.0031

Venus -121958-08-23 18:29 J -42823501.95 -42823501.73 -42823501.52 0.0259 0.0028

Venus -121957-04-08 18:44 J -42823272.94 -42823272.72 -42823272.50 0.0258 0.0025

Venus -121957-11-23 19:41 J -42823043.90 -42823043.68 -42823043.46 0.0259 0.0022

Venus -121956-07-10 21:51 J -42822814.81 -42822814.59 -42822814.37 0.0259 0.0019

Venus -121955-02-25 00:58 J -42822585.68 -42822585.46 -42822585.24 0.0260 0.0015

Venus -121955-10-12 05:03 J -42822356.51 -42822356.29 -42822356.06 0.0261 0.0012

Venus -121954-05-29 10:34 J -42822127.28 -42822127.06 -42822126.84 0.0262 0.0007

Venus	-121953-01-13 17:32 J	-42821897.99	-42821897.77	-42821897.55	0.0264	0.0004
Venus	-121953-08-30 02:10 J	-42821668.63	-42821668.41	-42821668.18	0.0266	0.0005
Venus	-121952-04-16 12:29 J	-42821439.20	-42821438.98	-42821438.76	0.0268	0.0008
Venus	-121952-12-02 00:15 J	-42821209.71	-42821209.49	-42821209.27	0.0270	0.0013
Venus	-121951-07-19 13:56 J	-42820980.14	-42820979.92	-42820979.70	0.0273	0.0018
Venus	-121950-03-06 05:32 J	-42820750.49	-42820750.27	-42820750.05	0.0276	0.0022
Venus	-121950-10-21 22:49 J	-42820520.76	-42820520.55	-42820520.33	0.0278	0.0028
Venus	-121949-06-07 18:01 J	-42820290.97	-42820290.75	-42820290.53	0.0282	0.0031
Venus	-121948-01-23 14:39 J	-42820061.10	-42820060.89	-42820060.67	0.0285	0.0036
Venus	-121948-09-10 13:13 J	-42819831.16	-42819830.95	-42819830.73	0.0288	0.0038
Earth	-121947-01-05 21:37 J	-42819713.83	-42819713.60	-42819713.36	0.0289	0.0075
Moon	-121947-01-05 23:03 J	-42819713.78	-42819713.54	-42819713.30	0.0289	0.0088 *
Venus	-121947-04-28 13:13 J	-42819601.17	-42819600.95	-42819600.74	0.0291	0.0041
Mars	-121947-11-12 06:58 J	-42819403.46	-42819403.21	-42819402.95	0.0293	0.0155
Venus	-121947-12-14 14:10 J	-42819371.12	-42819370.91	-42819370.70	0.0294	0.0042
Venus	-121946-08-01 16:05 J	-42819141.04	-42819140.83	-42819140.62	0.0296	0.0043
Venus	-121945-03-18 18:44 J	-42818910.93	-42818910.72	-42818910.51	0.0299	0.0042
Mercury	-121945-08-15 14:53 J	-42818760.95	-42818760.88	-42818760.80	0.0300	0.0253
Venus	-121945-11-03 21:37 J	-42818680.80	-42818680.60	-42818680.39	0.0301	0.0041
Mercury	-121945-11-12 04:49 J	-42818672.42	-42818672.30	-42818672.18	0.0301	0.0134
Mercury	-121944-02-08 18:29 J	-42818583.86	-42818583.73	-42818583.60	0.0301	0.0015
Mercury	-121944-05-08 08:10 J	-42818495.29	-42818495.16	-42818495.04	0.0302	0.0104
Venus	-121944-06-22 00:29 J	-42818450.68	-42818450.48	-42818450.27	0.0302	0.0038
Mercury	-121944-08-04 21:37 J	-42818406.69	-42818406.60	-42818406.51	0.0302	0.0221
Venus	-121943-02-07 03:08 J	-42818220.58	-42818220.37	-42818220.17	0.0303	0.0034
Venus	-121943-09-25 04:49 J	-42817990.51	-42817990.30	-42817990.10	0.0304	0.0030
Venus	-121942-05-13 05:17 J	-42817760.48	-42817760.28	-42817760.07	0.0304	0.0026
Venus	-121942-12-29 04:49 J	-42817530.50	-42817530.30	-42817530.10	0.0303	0.0019
Venus	-121941-08-15 02:25 J	-42817300.60	-42817300.40	-42817300.19	0.0302	0.0014
Venus	-121940-04-01 22:20 J	-42817070.77	-42817070.57	-42817070.37	0.0300	0.0007

Venus	-121940-11-17 16:20 J	-42816841.02	-42816840.82	-42816840.62	0.0298	0.0001
Venus	-121939-07-05 08:25 J	-42816611.36	-42816611.15	-42816610.95	0.0296	0.0006
Venus	-121938-02-19 22:34 J	-42816381.77	-42816381.56	-42816381.36	0.0293	0.0012
Venus	-121938-10-07 10:34 J	-42816152.26	-42816152.06	-42816151.86	0.0290	0.0016
Venus	-121937-05-23 20:39 J	-42815922.84	-42815922.64	-42815922.43	0.0287	0.0022
Venus	-121936-01-08 05:17 J	-42815693.49	-42815693.28	-42815693.08	0.0284	0.0025
Venus	-121936-08-25 12:01 J	-42815464.20	-42815464.00	-42815463.79	0.0281	0.0029
Venus	-121935-04-11 17:32 J	-42815234.98	-42815234.77	-42815234.56	0.0278	0.0031
Venus	-121935-11-26 21:22 J	-42815005.81	-42815005.61	-42815005.40	0.0275	0.0034
Moon	-121934-06-29 21:51 J	-42814790.84	-42814790.59	-42814790.35	0.0273	0.0063
Earth	-121934-06-30 00:01 J	-42814790.74	-42814790.50	-42814790.26	0.0273	0.0055 *
Venus	-121934-07-14 00:15 J	-42814776.70	-42814776.49	-42814776.29	0.0273	0.0036
Venus	-121933-02-28 01:41 J	-42814547.63	-42814547.43	-42814547.22	0.0270	0.0037
Venus	-121933-10-14 02:39 J	-42814318.60	-42814318.39	-42814318.18	0.0268	0.0037
Mars	-121932-01-27 15:37 J	-42814213.11	-42814212.85	-42814212.57	0.0267	0.0086
Venus	-121932-05-31 02:53 J	-42814089.59	-42814089.38	-42814089.17	0.0266	0.0037
Venus	-121931-01-15 02:39 J	-42813860.61	-42813860.39	-42813860.18	0.0264	0.0037
Venus	-121931-09-01 01:56 J	-42813631.64	-42813631.42	-42813631.21	0.0262	0.0036
Mercury	-121931-09-11 03:22 J	-42813621.46	-42813621.36	-42813621.24	0.0262	0.0208
Mercury	-121931-12-08 22:34 J	-42813532.73	-42813532.56	-42813532.39	0.0262	0.0102
Mercury	-121930-03-07 17:32 J	-42813443.95	-42813443.77	-42813443.58	0.0261	0.0007
Venus	-121930-04-18 00:58 J	-42813402.67	-42813402.46	-42813402.24	0.0261	0.0035
Mercury	-121930-06-04 12:44 J	-42813355.13	-42813354.97	-42813354.80	0.0261	0.0109
Mercury	-121930-09-01 08:10 J	-42813266.26	-42813266.16	-42813266.05	0.0261	0.0215
Venus	-121930-12-03 00:15 J	-42813173.70	-42813173.49	-42813173.27	0.0260	0.0033
Venus	-121929-07-18 23:46 J	-42812944.72	-42812944.51	-42812944.29	0.0259	0.0031
Venus	-121928-03-04 23:46 J	-42812715.73	-42812715.51	-42812715.30	0.0259	0.0028
Venus	-121928-10-20 00:01 J	-42812486.71	-42812486.50	-42812486.28	0.0259	0.0026
Venus	-121927-06-06 01:27 J	-42812257.66	-42812257.44	-42812257.22	0.0259	0.0022
Venus	-121926-01-21 03:37 J	-42812028.57	-42812028.35	-42812028.13	0.0260	0.0018

Venus -121926-09-07 06:44 J -42811799.44 -42811799.22 -42811799.00 0.0260 0.0014  
 Venus -121925-04-23 11:17 J -42811570.25 -42811570.03 -42811569.81 0.0261 0.0010  
 Venus -121925-12-08 17:03 J -42811341.01 -42811340.79 -42811340.57 0.0263 0.0005  
 Venus -121924-07-26 00:29 J -42811111.70 -42811111.48 -42811111.26 0.0264 0.0001  
 Venus -121923-03-12 09:22 J -42810882.33 -42810882.11 -42810881.89 0.0266 0.0005  
 Venus -121923-10-27 19:56 J -42810652.89 -42810652.67 -42810652.45 0.0268 0.0009  
 Venus -121922-06-14 08:10 J -42810423.38 -42810423.16 -42810422.94 0.0270 0.0013  
 Venus -121921-01-29 22:20 J -42810193.79 -42810193.57 -42810193.35 0.0273 0.0018  
 Venus -121921-09-15 14:25 J -42809964.12 -42809963.90 -42809963.68 0.0276 0.0022  
 Venus -121920-05-03 07:56 J -42809734.38 -42809734.17 -42809733.95 0.0279 0.0027  
 Venus -121920-12-19 03:22 J -42809504.58 -42809504.36 -42809504.14 0.0282 0.0030  
 Venus -121919-08-06 00:29 J -42809274.70 -42809274.48 -42809274.27 0.0285 0.0033  
 Venus -121918-03-23 23:03 J -42809044.75 -42809044.54 -42809044.33 0.0288 0.0036  
 Venus -121918-11-08 23:03 J -42808814.75 -42808814.54 -42808814.32 0.0291 0.0039  
 Venus -121917-06-26 00:15 J -42808584.70 -42808584.49 -42808584.27 0.0294 0.0040  
 Mars -121916-01-04 11:32 J -42808392.29 -42808392.02 -42808391.74 0.0296 0.0134  
 Venus -121916-02-11 02:25 J -42808354.61 -42808354.40 -42808354.19 0.0296 0.0040  
 Venus -121916-09-29 05:03 J -42808124.50 -42808124.29 -42808124.08 0.0299 0.0039  
 Mercury -121915-01-02 17:32 J -42808028.81 -42808028.77 -42808028.72 0.0300 0.0278  
 Mercury -121915-04-01 07:27 J -42807940.30 -42807940.19 -42807940.07 0.0300 0.0160  
 Venus -121915-05-17 07:56 J -42807894.37 -42807894.17 -42807893.96 0.0301 0.0038  
 Mercury -121915-06-28 21:08 J -42807851.75 -42807851.62 -42807851.48 0.0301 0.0042  
 Mercury -121915-09-25 10:49 J -42807763.18 -42807763.05 -42807762.92 0.0302 0.0077  
 Mercury -121915-12-23 00:15 J -42807674.59 -42807674.49 -42807674.39 0.0302 0.0195  
 Venus -121914-01-02 10:49 J -42807664.25 -42807664.05 -42807663.84 0.0302 0.0036  
 Venus -121914-08-20 13:13 J -42807434.16 -42807433.95 -42807433.75 0.0303 0.0032  
 Venus -121913-04-06 14:39 J -42807204.09 -42807203.89 -42807203.69 0.0304 0.0028  
 Venus -121913-11-22 15:08 J -42806974.08 -42806973.87 -42806973.67 0.0304 0.0024  
 Venus -121912-07-10 14:10 J -42806744.12 -42806743.91 -42806743.71 0.0303 0.0018  
 Venus -121911-02-25 11:32 J -42806514.22 -42806514.02 -42806513.81 0.0302 0.0014

Venus	-121911-10-13 07:13 J	-42806284.40	-42806284.20	-42806284.00	0.0300	0.0006
Venus	-121910-05-31 00:58 J	-42806054.67	-42806054.46	-42806054.26	0.0298	0.0003
Venus	-121909-01-15 16:34 J	-42805825.01	-42805824.81	-42805824.60	0.0296	0.0009
Venus	-121909-09-01 06:29 J	-42805595.43	-42805595.23	-42805595.03	0.0293	0.0011
Venus	-121908-04-18 18:15 J	-42805365.94	-42805365.74	-42805365.53	0.0290	0.0016
Venus	-121908-12-04 04:20 J	-42805136.53	-42805136.32	-42805136.12	0.0287	0.0021
Venus	-121907-07-21 12:29 J	-42804907.19	-42804906.98	-42804906.78	0.0284	0.0025
Venus	-121906-03-07 18:58 J	-42804677.91	-42804677.71	-42804677.50	0.0281	0.0028
Venus	-121906-10-23 00:01 J	-42804448.71	-42804448.50	-42804448.30	0.0278	0.0030
Venus	-121905-06-08 03:37 J	-42804219.56	-42804219.35	-42804219.14	0.0275	0.0032
Venus	-121904-01-23 06:01 J	-42803990.45	-42803990.25	-42803990.04	0.0272	0.0034
Venus	-121904-09-09 07:41 J	-42803761.39	-42803761.18	-42803760.97	0.0270	0.0035
Venus	-121903-04-26 08:25 J	-42803532.36	-42803532.15	-42803531.94	0.0267	0.0035
Venus	-121903-12-11 08:25 J	-42803303.35	-42803303.15	-42803302.93	0.0265	0.0035
Venus	-121902-07-28 08:10 J	-42803074.37	-42803074.16	-42803073.95	0.0263	0.0034
Mercury	-121901-01-29 04:34 J	-42802889.39	-42802889.31	-42802889.22	0.0262	0.0231
Venus	-121901-03-13 07:27 J	-42802845.40	-42802845.19	-42802844.98	0.0262	0.0033
Mercury	-121901-04-26 23:32 J	-42802800.68	-42802800.52	-42802800.36	0.0262	0.0127
Mercury	-121901-07-24 18:29 J	-42802711.91	-42802711.73	-42802711.54	0.0261	0.0023
Mercury	-121901-10-21 13:41 J	-42802623.10	-42802622.93	-42802622.75	0.0261	0.0084
Venus	-121901-10-28 06:29 J	-42802616.44	-42802616.23	-42802616.01	0.0261	0.0032
Mercury	-121900-01-18 08:53 J	-42802534.25	-42802534.13	-42802534.00	0.0260	0.0190
Venus	-121900-06-14 06:01 J	-42802387.46	-42802387.25	-42802387.03	0.0260	0.0030
Venus	-121899-01-29 05:46 J	-42802158.48	-42802158.26	-42802158.05	0.0259	0.0027
Venus	-121899-09-15 05:46 J	-42801929.48	-42801929.26	-42801929.05	0.0259	0.0025
Venus	-121898-05-02 06:15 J	-42801700.46	-42801700.24	-42801700.02	0.0259	0.0022
Venus	-121898-12-17 07:41 J	-42801471.40	-42801471.18	-42801470.96	0.0259	0.0019
Venus	-121897-08-02 10:05 J	-42801242.30	-42801242.08	-42801241.86	0.0259	0.0016
Venus	-121896-03-19 13:41 J	-42801013.15	-42801012.93	-42801012.71	0.0260	0.0012
Venus	-121896-11-03 18:29 J	-42800783.95	-42800783.73	-42800783.51	0.0261	0.0009

Venus	-121895-06-21 00:29 J	-42800554.70	-42800554.48	-42800554.26	0.0263	0.0004
Venus	-121894-02-05 08:10 J	-42800325.39	-42800325.16	-42800324.94	0.0265	0.0004
Venus	-121894-09-22 17:17 J	-42800096.00	-42800095.78	-42800095.56	0.0266	0.0005
Venus	-121893-05-09 04:05 J	-42799866.55	-42799866.33	-42799866.11	0.0269	0.0009
Venus	-121893-12-24 16:34 J	-42799637.03	-42799636.81	-42799636.59	0.0271	0.0014
Venus	-121892-08-11 06:58 J	-42799407.43	-42799407.21	-42799406.99	0.0274	0.0019
Venus	-121891-03-28 23:17 J	-42799177.75	-42799177.53	-42799177.31	0.0277	0.0022
Venus	-121891-11-13 17:17 J	-42798948.00	-42798947.78	-42798947.56	0.0279	0.0027
Venus	-121890-07-01 12:58 J	-42798718.18	-42798717.96	-42798717.75	0.0282	0.0031
Venus	-121889-02-16 10:05 J	-42798488.29	-42798488.08	-42798487.86	0.0286	0.0034
Venus	-121889-10-03 09:08 J	-42798258.33	-42798258.12	-42798257.90	0.0289	0.0036
Earth	-121888-01-07 17:17 J	-42798162.02	-42798161.78	-42798161.54	0.0290	0.0056
Moon	-121888-01-07 17:46 J	-42798161.99	-42798161.76	-42798161.53	0.0290	0.0061 *
Venus	-121888-05-21 09:22 J	-42798028.32	-42798028.11	-42798027.90	0.0292	0.0038
Venus	-121887-01-06 10:49 J	-42797798.26	-42797798.05	-42797797.84	0.0294	0.0039
Venus	-121887-08-24 12:44 J	-42797568.18	-42797567.97	-42797567.76	0.0297	0.0039
Venus	-121886-04-11 15:22 J	-42797338.07	-42797337.86	-42797337.65	0.0299	0.0038
Mercury	-121886-08-19 10:05 J	-42797208.18	-42797208.08	-42797207.97	0.0300	0.0185
Mercury	-121886-11-15 23:46 J	-42797119.64	-42797119.51	-42797119.37	0.0301	0.0067
Venus	-121886-11-27 18:15 J	-42797107.94	-42797107.74	-42797107.53	0.0301	0.0037
Mercury	-121885-02-12 13:27 J	-42797031.07	-42797030.94	-42797030.81	0.0302	0.0052
Mercury	-121885-05-11 03:08 J	-42796942.48	-42796942.37	-42796942.26	0.0302	0.0169
Venus	-121885-07-14 21:08 J	-42796877.83	-42796877.62	-42796877.42	0.0302	0.0034
Mercury	-121885-08-07 16:34 J	-42796853.85	-42796853.81	-42796853.77	0.0303	0.0286
Venus	-121884-03-01 23:03 J	-42796647.74	-42796647.54	-42796647.33	0.0303	0.0031
Venus	-121884-10-18 00:29 J	-42796417.68	-42796417.48	-42796417.28	0.0304	0.0025
Venus	-121883-06-05 00:44 J	-42796187.68	-42796187.47	-42796187.27	0.0303	0.0020
Venus	-121882-01-20 23:32 J	-42795957.72	-42795957.52	-42795957.32	0.0303	0.0015
Venus	-121882-09-07 20:39 J	-42795727.84	-42795727.64	-42795727.44	0.0301	0.0009
Venus	-121881-04-24 15:51 J	-42795498.04	-42795497.84	-42795497.64	0.0299	0.0004

Venus	-121881-12-10 09:08 J	-42795268.32	-42795268.12	-42795267.91	0.0297	0.0005
Venus	-121880-07-28 00:29 J	-42795038.68	-42795038.48	-42795038.27	0.0295	0.0009
Venus	-121879-03-14 14:10 J	-42794809.12	-42794808.91	-42794808.71	0.0292	0.0013
Venus	-121879-10-30 01:27 J	-42794579.64	-42794579.44	-42794579.23	0.0289	0.0017
Venus	-121878-06-16 11:03 J	-42794350.25	-42794350.04	-42794349.84	0.0286	0.0021
Venus	-121877-01-31 18:44 J	-42794120.92	-42794120.72	-42794120.51	0.0283	0.0025
Venus	-121877-09-17 01:13 J	-42793891.66	-42793891.45	-42793891.25	0.0280	0.0028
Venus	-121876-05-04 06:01 J	-42793662.45	-42793662.25	-42793662.04	0.0277	0.0030
Venus	-121876-12-19 09:37 J	-42793433.31	-42793433.10	-42793432.89	0.0274	0.0031
Earth	-121875-07-01 11:32 J	-42793239.21	-42793239.02	-42793238.81	0.0272	0.0156
Moon	-121875-07-01 15:08 J	-42793239.07	-42793238.87	-42793238.66	0.0272	0.0154 *
Venus	-121875-08-05 12:01 J	-42793204.21	-42793204.00	-42793203.80	0.0272	0.0033
Venus	-121874-03-22 13:27 J	-42792975.15	-42792974.94	-42792974.74	0.0269	0.0034
Mars	-121874-05-07 21:22 J	-42792928.88	-42792928.61	-42792928.34	0.0269	0.0082
Venus	-121874-11-06 13:56 J	-42792746.13	-42792745.92	-42792745.71	0.0267	0.0034
Venus	-121873-06-22 13:56 J	-42792517.13	-42792516.92	-42792516.71	0.0265	0.0034
Venus	-121872-02-06 13:27 J	-42792288.15	-42792287.94	-42792287.72	0.0264	0.0033
Mercury	-121872-06-17 05:17 J	-42792157.30	-42792157.28	-42792157.23	0.0263	0.0256
Mercury	-121872-09-14 00:29 J	-42792068.63	-42792068.48	-42792068.33	0.0262	0.0151
Venus	-121872-09-23 12:58 J	-42792059.18	-42792058.96	-42792058.75	0.0262	0.0032
Mercury	-121872-12-11 19:27 J	-42791979.87	-42791979.69	-42791979.51	0.0262	0.0046
Mercury	-121871-03-10 14:39 J	-42791891.07	-42791890.89	-42791890.72	0.0261	0.0059
Venus	-121871-05-10 12:15 J	-42791830.20	-42791829.99	-42791829.78	0.0261	0.0031
Mercury	-121871-06-07 09:51 J	-42791802.23	-42791802.09	-42791801.95	0.0261	0.0165
Venus	-121871-12-25 11:32 J	-42791601.23	-42791601.02	-42791600.80	0.0260	0.0029
Venus	-121870-08-11 11:03 J	-42791372.25	-42791372.04	-42791371.82	0.0259	0.0028
Venus	-121869-03-27 11:17 J	-42791143.25	-42791143.03	-42791142.81	0.0259	0.0024
Venus	-121869-11-11 12:01 J	-42790914.22	-42790914.00	-42790913.78	0.0259	0.0021
Venus	-121868-06-28 13:41 J	-42790685.15	-42790684.93	-42790684.71	0.0259	0.0018
Venus	-121867-02-12 16:20 J	-42790456.04	-42790455.82	-42790455.60	0.0260	0.0015

Venus -121867-09-29 19:56 J -42790226.89 -42790226.67 -42790226.45 0.0261 0.0011

Venus -121866-05-17 00:44 J -42789997.69 -42789997.47 -42789997.25 0.0262 0.0007

Venus -121865-01-01 07:13 J -42789768.42 -42789768.20 -42789767.98 0.0263 0.0004

Venus -121865-08-17 15:08 J -42789539.09 -42789538.87 -42789538.65 0.0265 0.0003

Venus -121864-04-04 00:44 J -42789309.69 -42789309.47 -42789309.25 0.0267 0.0006

Venus -121864-11-19 12:01 J -42789080.23 -42789080.00 -42789079.78 0.0269 0.0011

Venus -121863-07-07 00:44 J -42788850.69 -42788850.47 -42788850.25 0.0271 0.0015

Venus -121862-02-21 15:37 J -42788621.07 -42788620.85 -42788620.63 0.0274 0.0018

Venus -121862-10-09 08:10 J -42788391.38 -42788391.16 -42788390.94 0.0277 0.0022

Venus -121861-05-26 02:25 J -42788161.61 -42788161.40 -42788161.18 0.0279 0.0026

Venus -121860-01-10 22:20 J -42787931.78 -42787931.57 -42787931.35 0.0282 0.0029

Venus -121860-08-28 19:56 J -42787701.88 -42787701.67 -42787701.45 0.0286 0.0032

Venus -121859-04-15 19:13 J -42787471.92 -42787471.70 -42787471.49 0.0289 0.0034

Venus -121859-12-01 19:27 J -42787241.90 -42787241.69 -42787241.47 0.0292 0.0035

Mars -121858-04-09 17:03 J -42787113.06 -42787112.79 -42787112.50 0.0293 0.0116

Venus -121858-07-19 20:53 J -42787011.84 -42787011.63 -42787011.42 0.0294 0.0036

Venus -121857-03-05 23:17 J -42786781.74 -42786781.53 -42786781.32 0.0297 0.0036

Venus -121857-10-22 01:56 J -42786551.63 -42786551.42 -42786551.21 0.0299 0.0035

Mercury -121856-01-05 12:44 J -42786476.06 -42786475.97 -42786475.87 0.0300 0.0211

Mercury -121856-04-04 02:39 J -42786387.52 -42786387.39 -42786387.26 0.0301 0.0092

Venus -121856-06-09 04:49 J -42786321.50 -42786321.30 -42786321.09 0.0301 0.0033

Mercury -121856-07-01 16:20 J -42786298.95 -42786298.82 -42786298.69 0.0301 0.0026

Mercury -121856-09-28 05:46 J -42786210.37 -42786210.26 -42786210.14 0.0302 0.0144

Mercury -121856-12-25 19:13 J -42786121.76 -42786121.70 -42786121.63 0.0302 0.0261

Venus -121855-01-25 07:41 J -42786091.39 -42786091.18 -42786090.98 0.0303 0.0030

Venus -121855-09-12 09:37 J -42785861.30 -42785861.10 -42785860.89 0.0303 0.0027

Venus -121854-04-30 10:49 J -42785631.25 -42785631.05 -42785630.84 0.0304 0.0023

Venus -121854-12-16 10:49 J -42785401.25 -42785401.05 -42785400.84 0.0303 0.0019

Venus -121853-08-02 09:22 J -42785171.31 -42785171.11 -42785170.91 0.0303 0.0014

Venus -121852-03-20 06:15 J -42784941.44 -42784941.24 -42784941.04 0.0301 0.0008



Venus -121852-11-05 01:13 J -42784711.65 -42784711.45 -42784711.25 0.0300 0.0003  
 Venus -121851-06-22 18:15 J -42784481.94 -42784481.74 -42784481.53 0.0297 0.0005  
 Venus -121850-02-07 09:37 J -42784252.31 -42784252.10 -42784251.90 0.0295 0.0010  
 Venus -121850-09-24 22:34 J -42784022.76 -42784022.56 -42784022.35 0.0292 0.0012  
 Venus -121849-05-11 09:51 J -42783793.30 -42783793.09 -42783792.89 0.0289 0.0017  
 Venus -121849-12-26 18:58 J -42783563.91 -42783563.71 -42783563.50 0.0286 0.0021  
 Venus -121848-08-13 02:39 J -42783334.59 -42783334.39 -42783334.18 0.0283 0.0024  
 Venus -121847-03-30 08:53 J -42783105.34 -42783105.13 -42783104.93 0.0280 0.0027  
 Venus -121847-11-14 13:13 J -42782876.15 -42782875.95 -42782875.74 0.0277 0.0029  
 Earth -121846-06-26 13:41 J -42782652.12 -42782651.93 -42782651.74 0.0274 0.0173  
 Moon -121846-06-26 14:39 J -42782652.10 -42782651.89 -42782651.68 0.0274 0.0158 \*  
 Venus -121846-07-01 16:34 J -42782647.02 -42782646.81 -42782646.61 0.0274 0.0030  
 Venus -121845-02-15 18:29 J -42782417.94 -42782417.73 -42782417.52 0.0271 0.0031  
 Venus -121845-10-01 19:41 J -42782188.89 -42782188.68 -42782188.47 0.0269 0.0032  
 Venus -121844-05-18 20:25 J -42781959.86 -42781959.65 -42781959.44 0.0267 0.0031  
 Mars -121844-06-24 06:15 J -42781923.50 -42781923.24 -42781922.98 0.0266 0.0110  
 Venus -121843-01-02 20:10 J -42781730.87 -42781730.66 -42781730.44 0.0265 0.0031  
 Venus -121843-08-19 19:41 J -42781501.89 -42781501.68 -42781501.47 0.0263 0.0030  
 Mercury -121842-02-01 01:27 J -42781336.57 -42781336.44 -42781336.30 0.0262 0.0175  
 Venus -121842-04-05 18:58 J -42781272.92 -42781272.71 -42781272.50 0.0262 0.0029  
 Mercury -121842-04-30 20:25 J -42781247.82 -42781247.65 -42781247.47 0.0261 0.0071  
 Mercury -121842-07-28 15:37 J -42781159.03 -42781158.85 -42781158.67 0.0261 0.0035  
 Mercury -121842-10-25 10:49 J -42781070.20 -42781070.05 -42781069.89 0.0261 0.0141  
 Venus -121842-11-20 18:15 J -42781043.95 -42781043.74 -42781043.52 0.0260 0.0027  
 Mercury -121841-01-22 06:01 J -42780981.29 -42780981.25 -42780981.18 0.0260 0.0248  
 Venus -121841-07-06 17:46 J -42780814.98 -42780814.76 -42780814.54 0.0260 0.0025  
 Venus -121840-02-20 17:32 J -42780585.99 -42780585.77 -42780585.55 0.0259 0.0023  
 Venus -121840-10-07 17:46 J -42780356.98 -42780356.76 -42780356.55 0.0259 0.0021  
 Venus -121839-05-24 18:29 J -42780127.94 -42780127.73 -42780127.51 0.0259 0.0018  
 Venus -121838-01-08 20:25 J -42779898.87 -42779898.65 -42779898.43 0.0259 0.0015

Venus	-121838-08-25 23:03 J	-42779669.76	-42779669.54	-42779669.32	0.0260	0.0011
Venus	-121837-04-11 02:53 J	-42779440.60	-42779440.38	-42779440.16	0.0261	0.0008
Venus	-121837-11-26 08:10 J	-42779211.38	-42779211.16	-42779210.94	0.0262	0.0006
Venus	-121836-07-13 14:53 J	-42778982.10	-42778981.88	-42778981.66	0.0263	0.0003
Venus	-121835-02-27 23:03 J	-42778752.76	-42778752.54	-42778752.32	0.0265	0.0004
Venus	-121835-10-15 08:39 J	-42778523.36	-42778523.14	-42778522.92	0.0267	0.0007
Venus	-121834-06-01 20:10 J	-42778293.88	-42778293.66	-42778293.44	0.0269	0.0011
Venus	-121833-01-17 09:22 J	-42778064.33	-42778064.11	-42778063.89	0.0272	0.0015
Venus	-121833-09-03 00:29 J	-42777834.70	-42777834.48	-42777834.26	0.0275	0.0018
Venus	-121832-04-20 17:17 J	-42777605.00	-42777604.78	-42777604.56	0.0277	0.0022
Venus	-121832-12-06 11:46 J	-42777375.22	-42777375.01	-42777374.79	0.0280	0.0027
Venus	-121831-07-24 08:10 J	-42777145.38	-42777145.16	-42777144.94	0.0284	0.0029
Venus	-121830-03-11 06:01 J	-42776915.46	-42776915.25	-42776915.03	0.0287	0.0032
Venus	-121830-10-27 05:32 J	-42776685.48	-42776685.27	-42776685.06	0.0290	0.0034
Moon	-121829-01-10 09:51 J	-42776610.27	-42776610.09	-42776609.89	0.0291	0.0184
Earth	-121829-01-10 13:13 J	-42776610.12	-42776609.95	-42776609.75	0.0291	0.0190 *
Venus	-121829-06-13 06:15 J	-42776455.46	-42776455.24	-42776455.03	0.0293	0.0035
Venus	-121828-01-29 07:41 J	-42776225.39	-42776225.18	-42776224.97	0.0295	0.0036
Mars	-121828-06-02 01:56 J	-42776101.65	-42776101.42	-42776101.17	0.0297	0.0185
Venus	-121828-09-16 10:05 J	-42775995.29	-42775995.08	-42775994.87	0.0298	0.0035
Venus	-121827-05-04 12:44 J	-42775765.17	-42775764.97	-42775764.76	0.0300	0.0035
Mercury	-121827-05-25 15:37 J	-42775743.93	-42775743.85	-42775743.76	0.0300	0.0235
Mercury	-121827-08-22 05:32 J	-42775655.40	-42775655.27	-42775655.15	0.0301	0.0117
Mercury	-121827-11-18 19:13 J	-42775566.84	-42775566.70	-42775566.57	0.0301	0.0006
Venus	-121827-12-20 15:51 J	-42775535.05	-42775534.84	-42775534.63	0.0302	0.0032
Mercury	-121826-02-15 08:39 J	-42775478.26	-42775478.14	-42775478.01	0.0302	0.0120
Mercury	-121826-05-14 22:05 J	-42775389.66	-42775389.58	-42775389.49	0.0302	0.0237
Venus	-121826-08-07 18:15 J	-42775304.94	-42775304.74	-42775304.53	0.0303	0.0030
Venus	-121825-03-24 20:10 J	-42775074.86	-42775074.66	-42775074.45	0.0303	0.0026
Venus	-121825-11-09 21:22 J	-42774844.82	-42774844.61	-42774844.41	0.0304	0.0021

Venus -121824-06-27 21:08 J -42774614.83 -42774614.62 -42774614.42 0.0303 0.0016  
 Venus -121823-02-12 19:27 J -42774384.89 -42774384.69 -42774384.48 0.0302 0.0011  
 Venus -121823-09-30 16:05 J -42774155.04 -42774154.83 -42774154.63 0.0301 0.0006  
 Venus -121822-05-18 10:49 J -42773925.26 -42773925.05 -42773924.85 0.0299 0.0006  
 Venus -121821-01-03 03:22 J -42773695.56 -42773695.36 -42773695.15 0.0296 0.0007  
 Venus -121821-08-19 18:15 J -42773465.95 -42773465.74 -42773465.54 0.0294 0.0010  
 Venus -121820-04-06 06:58 J -42773236.41 -42773236.21 -42773236.01 0.0291 0.0013  
 Venus -121820-11-21 17:46 J -42773006.96 -42773006.76 -42773006.56 0.0288 0.0017  
 Venus -121819-07-09 02:39 J -42772777.59 -42772777.39 -42772777.18 0.0285 0.0021  
 Venus -121818-02-23 09:51 J -42772548.29 -42772548.09 -42772547.88 0.0282 0.0024  
 Venus -121818-10-10 15:37 J -42772319.05 -42772318.85 -42772318.64 0.0279 0.0026  
 Venus -121817-05-26 19:56 J -42772089.88 -42772089.67 -42772089.46 0.0276 0.0027  
 Venus -121816-01-10 23:03 J -42771860.75 -42771860.54 -42771860.34 0.0273 0.0029  
 Moon -121816-07-02 23:32 J -42771687.56 -42771687.52 -42771687.46 0.0271 0.0265  
 Earth -121816-07-03 01:41 J -42771687.49 -42771687.43 -42771687.37 0.0271 0.0262 \*  
 Mars -121816-08-14 20:10 J -42771644.74 -42771644.66 -42771644.56 0.0271 0.0256  
 Venus -121816-08-28 00:58 J -42771631.67 -42771631.46 -42771631.25 0.0271 0.0029  
 Venus -121815-04-14 02:10 J -42771402.62 -42771402.41 -42771402.20 0.0269 0.0030  
 Venus -121815-11-29 02:25 J -42771173.61 -42771173.40 -42771173.19 0.0266 0.0030  
 Venus -121814-07-16 02:10 J -42770944.62 -42770944.41 -42770944.20 0.0265 0.0029  
 Venus -121813-03-01 01:27 J -42770715.65 -42770715.44 -42770715.22 0.0263 0.0029  
 Mercury -121813-06-20 02:39 J -42770604.50 -42770604.39 -42770604.27 0.0262 0.0198  
 Mercury -121813-09-16 21:37 J -42770515.77 -42770515.60 -42770515.43 0.0262 0.0094  
 Venus -121813-10-16 00:44 J -42770486.68 -42770486.47 -42770486.26 0.0262 0.0028  
 Mercury -121813-12-14 16:34 J -42770426.99 -42770426.81 -42770426.62 0.0261 0.0013  
 Mercury -121812-03-13 11:46 J -42770338.17 -42770338.01 -42770337.84 0.0261 0.0117  
 Venus -121812-06-02 00:15 J -42770257.71 -42770257.49 -42770257.28 0.0261 0.0027  
 Mercury -121812-06-10 06:58 J -42770249.29 -42770249.21 -42770249.11 0.0261 0.0224  
 Venus -121811-01-16 23:32 J -42770028.74 -42770028.52 -42770028.30 0.0260 0.0024  
 Venus -121811-09-02 23:17 J -42769799.75 -42769799.53 -42769799.32 0.0259 0.0023

Venus -121810-04-19 23:17 J -42769570.74 -42769570.53 -42769570.31 0.0259 0.0021  
 Venus -121810-12-05 00:15 J -42769341.70 -42769341.49 -42769341.27 0.0259 0.0018  
 Venus -121809-07-21 02:25 J -42769112.62 -42769112.40 -42769112.18 0.0260 0.0015  
 Venus -121808-03-07 05:17 J -42768883.50 -42768883.28 -42768883.06 0.0260 0.0012  
 Venus -121808-10-22 09:08 J -42768654.34 -42768654.12 -42768653.90 0.0261 0.0009  
 Venus -121807-06-08 14:39 J -42768425.12 -42768424.89 -42768424.67 0.0262 0.0006  
 Venus -121806-01-23 21:22 J -42768195.83 -42768195.61 -42768195.39 0.0264 0.0001  
 Venus -121806-09-10 05:46 J -42767966.48 -42767966.26 -42767966.03 0.0266 0.0006  
 Venus -121805-04-26 15:51 J -42767737.06 -42767736.84 -42767736.62 0.0268 0.0009  
 Venus -121805-12-12 03:51 J -42767507.57 -42767507.34 -42767507.12 0.0270 0.0012  
 Venus -121804-07-29 17:17 J -42767278.00 -42767277.78 -42767277.55 0.0272 0.0016  
 Venus -121803-03-16 08:53 J -42767048.35 -42767048.13 -42767047.91 0.0275 0.0018  
 Venus -121803-11-01 02:10 J -42766818.63 -42766818.41 -42766818.19 0.0278 0.0021  
 Venus -121802-06-18 21:08 J -42766588.84 -42766588.62 -42766588.41 0.0281 0.0025  
 Venus -121801-02-03 17:32 J -42766358.98 -42766358.77 -42766358.55 0.0284 0.0027  
 Venus -121801-09-20 15:51 J -42766129.05 -42766128.84 -42766128.62 0.0287 0.0029  
 Moon -121800-01-03 22:34 J -42766023.73 -42766023.56 -42766023.38 0.0288 0.0192  
 Earth -121800-01-04 00:01 J -42766023.65 -42766023.50 -42766023.32 0.0288 0.0208 \*  
 Venus -121800-05-08 15:37 J -42765899.07 -42765898.85 -42765898.64 0.0290 0.0031  
 Venus -121800-12-24 16:20 J -42765669.03 -42765668.82 -42765668.61 0.0293 0.0031  
 Venus -121799-08-11 18:01 J -42765438.96 -42765438.75 -42765438.54 0.0295 0.0031  
 Venus -121798-03-29 20:25 J -42765208.86 -42765208.65 -42765208.44 0.0298 0.0031  
 Mercury -121798-10-12 18:15 J -42765011.80 -42765011.74 -42765011.67 0.0300 0.0261  
 Venus -121798-11-14 23:32 J -42764978.73 -42764978.52 -42764978.31 0.0300 0.0029  
 Mercury -121797-01-09 08:10 J -42764923.28 -42764923.16 -42764923.04 0.0300 0.0143  
 Mercury -121797-04-06 21:51 J -42764834.72 -42764834.59 -42764834.45 0.0301 0.0025  
 Venus -121797-07-02 02:25 J -42764748.61 -42764748.40 -42764748.19 0.0302 0.0027  
 Mercury -121797-07-04 11:32 J -42764746.15 -42764746.02 -42764745.89 0.0302 0.0094  
 Mercury -121797-10-01 00:58 J -42764657.55 -42764657.46 -42764657.36 0.0302 0.0211  
 Venus -121796-02-17 05:03 J -42764518.50 -42764518.29 -42764518.09 0.0303 0.0025

Venus	-121796-10-05 06:44 J	-42764288.42	-42764288.22	-42764288.01	0.0304	0.0022
Venus	-121795-05-23 07:41 J	-42764058.38	-42764058.18	-42764057.97	0.0304	0.0018
Venus	-121794-01-08 07:27 J	-42763828.39	-42763828.19	-42763827.99	0.0303	0.0013
Venus	-121794-08-26 05:32 J	-42763598.48	-42763598.27	-42763598.07	0.0302	0.0010
Venus	-121793-04-12 01:41 J	-42763368.63	-42763368.43	-42763368.23	0.0301	0.0004
Venus	-121793-11-27 20:10 J	-42763138.87	-42763138.66	-42763138.46	0.0299	0.0004
Venus	-121792-07-15 12:29 J	-42762909.18	-42762908.98	-42762908.77	0.0296	0.0007
Venus	-121791-03-02 03:08 J	-42762679.57	-42762679.37	-42762679.16	0.0294	0.0010
Venus	-121791-10-17 15:37 J	-42762450.05	-42762449.85	-42762449.65	0.0291	0.0013
Venus	-121790-06-04 02:10 J	-42762220.62	-42762220.41	-42762220.21	0.0288	0.0018
Venus	-121789-01-19 10:49 J	-42761991.26	-42761991.05	-42761990.85	0.0285	0.0020
Venus	-121789-09-04 17:46 J	-42761761.97	-42761761.76	-42761761.56	0.0282	0.0023
Venus	-121788-04-21 23:17 J	-42761532.73	-42761532.53	-42761532.32	0.0279	0.0025
Venus	-121788-12-07 03:22 J	-42761303.57	-42761303.36	-42761303.16	0.0276	0.0027
Earth	-121787-06-28 04:05 J	-42761100.57	-42761100.33	-42761100.09	0.0273	0.0064
Moon	-121787-06-28 06:15 J	-42761100.46	-42761100.24	-42761100.00	0.0273	0.0078 *
Venus	-121787-07-24 06:01 J	-42761074.46	-42761074.25	-42761074.04	0.0273	0.0027
Venus	-121786-03-10 07:41 J	-42760845.39	-42760845.18	-42760844.97	0.0271	0.0028
Mars	-121786-10-02 16:05 J	-42760639.11	-42760638.83	-42760638.55	0.0268	0.0054
Venus	-121786-10-25 08:25 J	-42760616.35	-42760616.15	-42760615.94	0.0268	0.0029
Venus	-121785-06-10 08:39 J	-42760387.35	-42760387.14	-42760386.92	0.0266	0.0028
Venus	-121784-01-25 08:25 J	-42760158.36	-42760158.15	-42760157.94	0.0264	0.0027
Venus	-121784-09-11 07:41 J	-42759929.39	-42759929.18	-42759928.96	0.0263	0.0026
Mercury	-121784-11-07 03:51 J	-42759872.43	-42759872.34	-42759872.24	0.0262	0.0221
Mercury	-121783-02-03 22:34 J	-42759783.71	-42759783.56	-42759783.39	0.0262	0.0118
Venus	-121783-04-28 06:58 J	-42759700.42	-42759700.21	-42759700.00	0.0261	0.0024
Mercury	-121783-05-03 17:46 J	-42759694.94	-42759694.76	-42759694.58	0.0261	0.0013
Mercury	-121783-07-31 12:58 J	-42759606.13	-42759605.96	-42759605.79	0.0261	0.0093
Mercury	-121783-10-28 08:10 J	-42759517.27	-42759517.16	-42759517.04	0.0260	0.0199
Venus	-121783-12-13 06:15 J	-42759471.46	-42759471.24	-42759471.03	0.0260	0.0022

Venus -121782-07-30 05:32 J -42759242.48 -42759242.27 -42759242.05 0.0259 0.0021  
 Venus -121781-03-15 05:17 J -42759013.49 -42759013.28 -42759013.06 0.0259 0.0019  
 Venus -121781-10-30 05:46 J -42758784.48 -42758784.26 -42758784.04 0.0259 0.0016  
 Venus -121780-06-16 06:58 J -42758555.43 -42758555.21 -42758554.99 0.0259 0.0013  
 Venus -121779-01-31 08:53 J -42758326.35 -42758326.13 -42758325.91 0.0259 0.0011  
 Venus -121779-09-17 12:01 J -42758097.22 -42758097.00 -42758096.78 0.0260 0.0009  
 Venus -121778-05-04 16:05 J -42757868.05 -42757867.83 -42757867.61 0.0261 0.0005  
 Venus -121778-12-19 21:37 J -42757638.82 -42757638.60 -42757638.38 0.0262 0.0004  
 Venus -121777-08-05 04:49 J -42757409.52 -42757409.30 -42757409.07 0.0264 0.0006  
 Venus -121776-03-22 13:41 J -42757180.15 -42757179.93 -42757179.71 0.0266 0.0006  
 Venus -121776-11-07 00:01 J -42756950.73 -42756950.50 -42756950.28 0.0268 0.0010  
 Venus -121775-06-24 11:46 J -42756721.23 -42756721.01 -42756720.78 0.0270 0.0013  
 Venus -121774-02-09 01:41 J -42756491.65 -42756491.43 -42756491.21 0.0273 0.0015  
 Venus -121774-09-26 17:32 J -42756261.99 -42756261.77 -42756261.55 0.0276 0.0019  
 Venus -121773-05-13 11:03 J -42756032.26 -42756032.04 -42756031.82 0.0278 0.0022  
 Venus -121773-12-29 06:15 J -42755802.46 -42755802.24 -42755802.03 0.0281 0.0025  
 Venus -121772-08-16 03:08 J -42755572.59 -42755572.37 -42755572.16 0.0285 0.0027  
 Venus -121771-04-03 01:27 J -42755342.65 -42755342.44 -42755342.22 0.0288 0.0029  
 Venus -121771-11-19 01:27 J -42755112.65 -42755112.44 -42755112.23 0.0291 0.0031  
 Venus -121770-07-07 02:25 J -42754882.61 -42754882.40 -42754882.19 0.0293 0.0032  
 Mars -121770-09-05 05:32 J -42754822.56 -42754822.27 -42754821.97 0.0294 0.0068  
 Venus -121769-02-22 04:20 J -42754652.53 -42754652.32 -42754652.11 0.0296 0.0032  
 Venus -121769-10-09 06:58 J -42754422.42 -42754422.21 -42754422.00 0.0299 0.0031  
 Mercury -121768-02-28 20:53 J -42754279.66 -42754279.63 -42754279.59 0.0300 0.0286  
 Venus -121768-05-27 09:51 J -42754192.29 -42754192.09 -42754191.88 0.0301 0.0029  
 Mercury -121768-05-28 10:49 J -42754191.16 -42754191.05 -42754190.93 0.0301 0.0168  
 Mercury -121768-08-25 00:44 J -42754102.61 -42754102.47 -42754102.34 0.0301 0.0050  
 Mercury -121768-11-21 14:10 J -42754014.04 -42754013.91 -42754013.78 0.0302 0.0069  
 Venus -121767-01-12 12:58 J -42753962.17 -42753961.96 -42753961.76 0.0302 0.0027  
 Mercury -121767-02-18 03:37 J -42753925.45 -42753925.35 -42753925.24 0.0302 0.0187

Mercury -121767-05-17 17:03 J -42753836.79 -42753836.79 -42753836.78 0.0303 0.0303

Venus -121767-08-30 15:22 J -42753732.07 -42753731.86 -42753731.66 0.0303 0.0024

Venus -121766-04-17 17:03 J -42753502.00 -42753501.79 -42753501.59 0.0304 0.0020

Venus -121766-12-03 17:46 J -42753271.96 -42753271.76 -42753271.55 0.0304 0.0015

Venus -121765-07-20 17:17 J -42753041.99 -42753041.78 -42753041.58 0.0303 0.0013

Venus -121764-03-07 15:08 J -42752812.08 -42752811.87 -42752811.67 0.0302 0.0008

Venus -121764-10-23 11:03 J -42752582.24 -42752582.04 -42752581.84 0.0300 0.0002

Venus -121763-06-10 05:17 J -42752352.49 -42752352.28 -42752352.08 0.0298 0.0007

Venus -121762-01-25 21:22 J -42752122.81 -42752122.61 -42752122.41 0.0296 0.0007

Venus -121762-09-12 11:32 J -42751893.22 -42751893.02 -42751892.82 0.0293 0.0011

Venus -121761-04-28 23:32 J -42751663.72 -42751663.52 -42751663.31 0.0290 0.0016

Venus -121761-12-14 09:51 J -42751434.29 -42751434.09 -42751433.89 0.0287 0.0017

Venus -121760-07-31 18:15 J -42751204.95 -42751204.74 -42751204.54 0.0284 0.0020

Venus -121759-03-18 00:58 J -42750975.66 -42750975.46 -42750975.25 0.0281 0.0022

Venus -121759-11-02 06:01 J -42750746.45 -42750746.25 -42750746.04 0.0278 0.0024

Venus -121758-06-19 09:51 J -42750517.30 -42750517.09 -42750516.88 0.0275 0.0025

Venus -121757-02-03 12:15 J -42750288.19 -42750287.99 -42750287.78 0.0272 0.0026

Venus -121757-09-19 13:56 J -42750059.13 -42750058.92 -42750058.71 0.0270 0.0026

Venus -121756-05-06 14:39 J -42749830.09 -42749829.89 -42749829.67 0.0268 0.0027

Mars -121756-11-18 21:51 J -42749633.83 -42749633.59 -42749633.34 0.0266 0.0136

Venus -121756-12-21 14:53 J -42749601.09 -42749600.88 -42749600.67 0.0266 0.0026

Venus -121755-08-07 14:10 J -42749372.12 -42749371.91 -42749371.69 0.0264 0.0025

Venus -121754-03-24 13:27 J -42749143.15 -42749142.94 -42749142.73 0.0262 0.0024

Mercury -121754-03-27 05:03 J -42749140.35 -42749140.29 -42749140.23 0.0262 0.0245

Mercury -121754-06-23 23:46 J -42749051.66 -42749051.51 -42749051.36 0.0262 0.0141

Mercury -121754-09-20 18:44 J -42748962.90 -42748962.72 -42748962.54 0.0261 0.0037

Venus -121754-11-08 12:29 J -42748914.19 -42748913.98 -42748913.76 0.0261 0.0023

Mercury -121754-12-18 13:41 J -42748874.10 -42748873.93 -42748873.75 0.0261 0.0069

Mercury -121753-03-16 08:53 J -42748785.26 -42748785.13 -42748784.98 0.0261 0.0175

Venus -121753-06-24 11:46 J -42748685.22 -42748685.01 -42748684.79 0.0260 0.0021

Venus	-121752-02-08 11:03 J	-42748456.25	-42748456.04	-42748455.82	0.0259	0.0020
Venus	-121752-09-25 10:49 J	-42748227.26	-42748227.05	-42748226.83	0.0259	0.0018
Venus	-121751-05-12 11:17 J	-42747998.25	-42747998.03	-42747997.81	0.0259	0.0016
Venus	-121751-12-27 12:15 J	-42747769.21	-42747768.99	-42747768.77	0.0259	0.0013
Venus	-121750-08-13 14:25 J	-42747540.12	-42747539.90	-42747539.68	0.0260	0.0010
Venus	-121749-03-29 17:32 J	-42747310.99	-42747310.77	-42747310.55	0.0260	0.0008
Venus	-121749-11-13 21:51 J	-42747081.81	-42747081.59	-42747081.37	0.0261	0.0005
Venus	-121748-07-01 03:37 J	-42746852.57	-42746852.35	-42746852.13	0.0263	0.0002
Venus	-121747-02-15 10:49 J	-42746623.27	-42746623.05	-42746622.83	0.0264	0.0003
Venus	-121747-10-02 19:41 J	-42746393.90	-42746393.68	-42746393.46	0.0266	0.0006
Venus	-121746-05-20 06:15 J	-42746164.47	-42746164.24	-42746164.02	0.0268	0.0010
Venus	-121745-01-04 18:29 J	-42745934.95	-42745934.73	-42745934.51	0.0271	0.0012
Venus	-121745-08-21 08:53 J	-42745705.35	-42745705.13	-42745704.91	0.0273	0.0016
Venus	-121744-04-08 00:44 J	-42745475.68	-42745475.47	-42745475.25	0.0276	0.0019
Venus	-121744-11-23 18:44 J	-42745245.94	-42745245.72	-42745245.50	0.0279	0.0021
Venus	-121743-07-11 14:10 J	-42745016.13	-42745015.91	-42745015.69	0.0282	0.0023
Venus	-121742-02-26 11:17 J	-42744786.24	-42744786.03	-42744785.81	0.0285	0.0026
Venus	-121742-10-14 10:20 J	-42744556.29	-42744556.07	-42744555.86	0.0288	0.0026
Moon	-121741-01-06 15:22 J	-42744472.10	-42744471.86	-42744471.63	0.0289	0.0100
Earth	-121741-01-06 17:17 J	-42744472.01	-42744471.78	-42744471.54	0.0289	0.0085 *
Venus	-121741-05-31 10:20 J	-42744326.28	-42744326.07	-42744325.85	0.0291	0.0027
Venus	-121740-01-16 11:32 J	-42744096.23	-42744096.02	-42744095.81	0.0293	0.0027
Venus	-121740-09-03 13:41 J	-42743866.14	-42743865.93	-42743865.72	0.0296	0.0027
Mars	-121740-10-28 10:20 J	-42743811.26	-42743811.07	-42743810.85	0.0297	0.0221
Venus	-121739-04-21 16:20 J	-42743636.03	-42743635.82	-42743635.61	0.0298	0.0026
Mercury	-121739-10-15 13:13 J	-42743459.05	-42743458.95	-42743458.85	0.0300	0.0197
Venus	-121739-12-07 19:27 J	-42743405.90	-42743405.69	-42743405.48	0.0301	0.0024
Mercury	-121738-01-12 03:08 J	-42743370.50	-42743370.37	-42743370.24	0.0301	0.0079
Mercury	-121738-04-10 16:49 J	-42743281.94	-42743281.80	-42743281.67	0.0301	0.0040
Mercury	-121738-07-08 06:15 J	-42743193.35	-42743193.24	-42743193.12	0.0302	0.0157



Venus -121738-07-25 22:20 J -42743175.77 -42743175.57 -42743175.36 0.0302 0.0022

Mercury -121738-10-04 19:41 J -42743104.73 -42743104.68 -42743104.62 0.0302 0.0274

Venus -121737-03-12 00:58 J -42742945.67 -42742945.46 -42742945.26 0.0303 0.0019

Venus -121737-10-28 02:39 J -42742715.60 -42742715.39 -42742715.18 0.0304 0.0015

Venus -121736-06-15 03:22 J -42742485.56 -42742485.36 -42742485.16 0.0304 0.0012

Venus -121735-01-31 02:53 J -42742255.59 -42742255.38 -42742255.18 0.0303 0.0010

Venus -121735-09-18 00:29 J -42742025.69 -42742025.48 -42742025.28 0.0302 0.0005

Venus -121734-05-05 20:10 J -42741795.86 -42741795.66 -42741795.45 0.0300 0.0006

Venus -121734-12-21 14:10 J -42741566.11 -42741565.91 -42741565.71 0.0298 0.0005

Venus -121733-08-07 06:01 J -42741336.45 -42741336.25 -42741336.04 0.0296 0.0011

Venus -121732-03-24 20:10 J -42741106.86 -42741106.66 -42741106.46 0.0293 0.0012

Venus -121732-11-09 07:56 J -42740877.37 -42740877.17 -42740876.96 0.0290 0.0017

Venus -121731-06-26 18:01 J -42740647.95 -42740647.75 -42740647.55 0.0287 0.0018

Venus -121730-02-11 02:10 J -42740418.62 -42740418.41 -42740418.21 0.0284 0.0020

Venus -121730-09-28 08:39 J -42740189.35 -42740189.14 -42740188.94 0.0281 0.0022

Venus -121729-05-14 13:27 J -42739960.14 -42739959.94 -42739959.73 0.0278 0.0023

Venus -121729-12-29 17:03 J -42739731.00 -42739730.79 -42739730.58 0.0275 0.0024

Moon -121728-06-29 14:53 J -42739549.11 -42739548.88 -42739548.64 0.0273 0.0059

Earth -121728-06-29 18:15 J -42739548.98 -42739548.74 -42739548.49 0.0273 0.0045 \*

Venus -121728-08-15 19:13 J -42739501.90 -42739501.70 -42739501.49 0.0272 0.0026

Mars -121727-01-09 17:32 J -42739354.91 -42739354.77 -42739354.60 0.0271 0.0226

Venus -121727-04-01 20:39 J -42739272.85 -42739272.64 -42739272.43 0.0270 0.0025

Venus -121727-11-16 21:08 J -42739043.83 -42739043.62 -42739043.41 0.0267 0.0024

Venus -121726-07-03 20:53 J -42738814.84 -42738814.63 -42738814.42 0.0265 0.0023

Venus -121725-02-17 20:10 J -42738585.87 -42738585.66 -42738585.44 0.0264 0.0023

Venus -121725-10-03 19:27 J -42738356.91 -42738356.69 -42738356.48 0.0262 0.0021

Mercury -121725-11-10 00:44 J -42738319.60 -42738319.47 -42738319.32 0.0262 0.0165

Mercury -121724-02-06 19:41 J -42738230.85 -42738230.68 -42738230.50 0.0261 0.0061

Mercury -121724-05-06 14:53 J -42738142.06 -42738141.88 -42738141.70 0.0261 0.0044

Venus -121724-05-20 18:29 J -42738127.94 -42738127.73 -42738127.51 0.0261 0.0020

Mercury -121724-08-03 10:05 J -42738053.23 -42738053.08 -42738052.93 0.0260 0.0149

Mercury -121724-10-31 05:17 J -42737964.31 -42737964.28 -42737964.24 0.0260 0.0255

Venus -121723-01-04 17:32 J -42737898.98 -42737898.77 -42737898.55 0.0260 0.0019

Venus -121723-08-21 17:03 J -42737670.01 -42737669.79 -42737669.58 0.0259 0.0016

Venus -121722-04-07 16:49 J -42737441.02 -42737440.80 -42737440.59 0.0259 0.0014

Venus -121722-11-22 17:03 J -42737212.01 -42737211.79 -42737211.57 0.0259 0.0012

Venus -121721-07-08 18:29 J -42736982.95 -42736982.73 -42736982.51 0.0259 0.0009

Venus -121720-02-22 20:39 J -42736753.86 -42736753.64 -42736753.42 0.0259 0.0007

Venus -121720-10-09 23:46 J -42736524.73 -42736524.51 -42736524.29 0.0260 0.0004

Venus -121719-05-27 04:05 J -42736295.55 -42736295.33 -42736295.10 0.0261 0.0005

Venus -121718-01-11 10:05 J -42736066.30 -42736066.08 -42736065.86 0.0263 0.0002

Venus -121718-08-28 17:32 J -42735836.99 -42735836.77 -42735836.55 0.0264 0.0006

Venus -121717-04-14 02:39 J -42735607.61 -42735607.39 -42735607.17 0.0266 0.0008

Venus -121717-11-29 13:27 J -42735378.16 -42735377.94 -42735377.72 0.0268 0.0011

Venus -121716-07-17 01:56 J -42735148.64 -42735148.42 -42735148.20 0.0271 0.0014

Venus -121715-03-03 16:20 J -42734919.04 -42734918.82 -42734918.60 0.0274 0.0016

Venus -121715-10-19 08:39 J -42734689.36 -42734689.14 -42734688.92 0.0276 0.0019

Venus -121714-06-06 02:39 J -42734459.61 -42734459.39 -42734459.17 0.0279 0.0021

Venus -121713-01-21 22:20 J -42734229.78 -42734229.57 -42734229.35 0.0282 0.0024

Venus -121713-09-07 19:56 J -42733999.88 -42733999.67 -42733999.45 0.0285 0.0025

Venus -121712-04-25 18:58 J -42733769.92 -42733769.71 -42733769.49 0.0289 0.0026

Venus -121712-12-11 19:27 J -42733539.91 -42733539.69 -42733539.48 0.0292 0.0027

Venus -121711-07-29 20:53 J -42733309.85 -42733309.63 -42733309.42 0.0294 0.0028

Venus -121710-03-16 23:03 J -42733079.75 -42733079.54 -42733079.33 0.0297 0.0027

Venus -121710-11-02 02:10 J -42732849.62 -42732849.41 -42732849.20 0.0299 0.0026

Mercury -121709-03-03 15:51 J -42732726.93 -42732726.84 -42732726.75 0.0300 0.0224

Mercury -121709-05-31 05:32 J -42732638.39 -42732638.27 -42732638.14 0.0301 0.0105

Venus -121709-06-19 05:17 J -42732619.49 -42732619.28 -42732619.08 0.0301 0.0024

Mercury -121709-08-27 19:13 J -42732549.83 -42732549.70 -42732549.56 0.0302 0.0015

Mercury -121709-11-24 08:53 J -42732461.25 -42732461.13 -42732461.01 0.0302 0.0131

Venus -121708-02-04 08:10 J -42732389.37 -42732389.16 -42732388.95 0.0303 0.0021

Mercury -121708-02-20 22:20 J -42732372.64 -42732372.57 -42732372.49 0.0303 0.0248

Venus -121708-09-22 10:34 J -42732159.27 -42732159.06 -42732158.85 0.0304 0.0018

Venus -121707-05-10 12:15 J -42731929.20 -42731928.99 -42731928.79 0.0304 0.0014

Venus -121707-12-26 12:44 J -42731699.17 -42731698.97 -42731698.76 0.0304 0.0010

Venus -121706-08-13 11:46 J -42731469.21 -42731469.01 -42731468.80 0.0303 0.0007

Venus -121705-03-30 09:08 J -42731239.32 -42731239.12 -42731238.91 0.0302 0.0006

Venus -121705-11-15 04:49 J -42731009.50 -42731009.30 -42731009.10 0.0300 0.0002

Venus -121704-07-02 22:34 J -42730779.77 -42730779.56 -42730779.36 0.0298 0.0008

Venus -121703-02-17 14:10 J -42730550.11 -42730549.91 -42730549.70 0.0295 0.0011

Venus -121703-10-05 03:51 J -42730320.54 -42730320.34 -42730320.14 0.0292 0.0013

Venus -121702-05-22 15:22 J -42730091.06 -42730090.86 -42730090.66 0.0289 0.0015

Venus -121701-01-07 00:58 J -42729861.66 -42729861.46 -42729861.25 0.0286 0.0018

Venus -121701-08-23 08:53 J -42729632.34 -42729632.13 -42729631.93 0.0283 0.0019

Venus -121700-04-09 15:08 J -42729403.07 -42729402.87 -42729402.66 0.0280 0.0021

Venus -121700-11-24 19:41 J -42729173.88 -42729173.68 -42729173.47 0.0277 0.0022

Venus -121699-07-11 23:03 J -42728944.75 -42728944.54 -42728944.34 0.0274 0.0022

Venus -121698-02-26 00:58 J -42728715.67 -42728715.46 -42728715.25 0.0272 0.0023

Venus -121698-10-13 02:10 J -42728486.62 -42728486.41 -42728486.20 0.0269 0.0022

Mars -121697-02-27 07:56 J -42728349.46 -42728349.17 -42728348.89 0.0268 0.0029

Venus -121697-05-29 02:39 J -42728257.60 -42728257.39 -42728257.18 0.0267 0.0022

Venus -121696-01-13 02:25 J -42728028.61 -42728028.40 -42728028.19 0.0265 0.0021

Venus -121696-08-30 01:27 J -42727799.65 -42727799.44 -42727799.22 0.0263 0.0021

Mercury -121695-03-30 01:41 J -42727587.55 -42727587.43 -42727587.30 0.0262 0.0190

Venus -121695-04-16 00:29 J -42727570.69 -42727570.48 -42727570.26 0.0262 0.0020

Mercury -121695-06-26 20:25 J -42727498.82 -42727498.65 -42727498.47 0.0261 0.0086

Mercury -121695-09-23 15:37 J -42727410.04 -42727409.85 -42727409.67 0.0261 0.0019

Venus -121695-11-30 23:32 J -42727341.74 -42727341.52 -42727341.31 0.0261 0.0018

Mercury -121695-12-21 10:34 J -42727321.22 -42727321.06 -42727320.89 0.0261 0.0124

Mercury -121694-03-20 05:46 J -42727232.34 -42727232.26 -42727232.16 0.0260 0.0229

Venus	-121694-07-17 22:34 J	-42727112.78	-42727112.56	-42727112.34	0.0260	0.0016
Venus	-121693-03-02 21:51 J	-42726883.81	-42726883.59	-42726883.37	0.0259	0.0014
Venus	-121693-10-17 21:37 J	-42726654.82	-42726654.60	-42726654.38	0.0259	0.0013
Venus	-121692-06-03 22:05 J	-42726425.80	-42726425.58	-42726425.36	0.0259	0.0010
Venus	-121691-01-18 23:17 J	-42726196.75	-42726196.53	-42726196.31	0.0259	0.0008
Venus	-121691-09-05 01:27 J	-42725967.66	-42725967.44	-42725967.22	0.0260	0.0008
Venus	-121690-04-22 04:34 J	-42725738.53	-42725738.31	-42725738.09	0.0260	0.0003
Venus	-121690-12-07 09:08 J	-42725509.34	-42725509.12	-42725508.90	0.0262	0.0002
Venus	-121689-07-23 15:08 J	-42725280.09	-42725279.87	-42725279.64	0.0263	0.0006
Venus	-121688-03-09 22:49 J	-42725050.77	-42725050.55	-42725050.33	0.0265	0.0005
Venus	-121688-10-25 07:56 J	-42724821.39	-42724821.17	-42724820.95	0.0267	0.0008
Venus	-121687-06-11 18:58 J	-42724591.94	-42724591.71	-42724591.49	0.0269	0.0012
Venus	-121686-01-27 07:41 J	-42724362.40	-42724362.18	-42724361.96	0.0271	0.0014
Venus	-121686-09-13 22:20 J	-42724132.79	-42724132.57	-42724132.35	0.0274	0.0017
Venus	-121685-04-30 14:53 J	-42723903.10	-42723902.88	-42723902.66	0.0277	0.0019
Venus	-121685-12-16 09:22 J	-42723673.33	-42723673.11	-42723672.89	0.0279	0.0020
Venus	-121684-08-03 05:17 J	-42723443.49	-42723443.28	-42723443.06	0.0282	0.0022
Venus	-121683-03-21 03:08 J	-42723213.59	-42723213.37	-42723213.15	0.0286	0.0023
Venus	-121683-11-06 02:25 J	-42722983.61	-42722983.40	-42722983.18	0.0289	0.0024
Earth	-121682-01-08 07:13 J	-42722920.45	-42722920.20	-42722919.96	0.0289	0.0029
Moon	-121682-01-08 10:49 J	-42722920.29	-42722920.05	-42722919.80	0.0289	0.0046 *
Venus	-121682-06-24 02:53 J	-42722753.59	-42722753.38	-42722753.16	0.0291	0.0024
Mars	-121681-01-31 00:29 J	-42722532.78	-42722532.48	-42722532.18	0.0294	0.0041
Venus	-121681-02-09 04:34 J	-42722523.52	-42722523.31	-42722523.10	0.0294	0.0023
Venus	-121681-09-26 06:58 J	-42722293.42	-42722293.21	-42722293.00	0.0297	0.0022
Venus	-121680-05-14 09:51 J	-42722063.30	-42722063.09	-42722062.88	0.0299	0.0021
Mercury	-121680-07-21 17:46 J	-42721994.83	-42721994.76	-42721994.70	0.0300	0.0256
Mercury	-121680-10-18 07:27 J	-42721906.31	-42721906.19	-42721906.07	0.0300	0.0138
Venus	-121680-12-30 12:58 J	-42721833.16	-42721832.96	-42721832.75	0.0301	0.0020
Mercury	-121679-01-14 21:22 J	-42721817.75	-42721817.61	-42721817.48	0.0301	0.0021

Mercury -121679-04-13 10:49 J -42721729.17 -42721729.05 -42721728.92 0.0302 0.0099

Mercury -121679-07-11 00:29 J -42721640.57 -42721640.48 -42721640.39 0.0302 0.0216

Venus -121679-08-17 16:05 J -42721603.04 -42721602.83 -42721602.62 0.0303 0.0016

Venus -121678-04-04 18:29 J -42721372.93 -42721372.73 -42721372.52 0.0303 0.0013

Venus -121678-11-20 20:10 J -42721142.86 -42721142.66 -42721142.45 0.0304 0.0010

Venus -121677-07-07 20:39 J -42720912.84 -42720912.64 -42720912.43 0.0304 0.0007

Venus -121676-02-22 19:56 J -42720682.88 -42720682.67 -42720682.47 0.0303 0.0006

Venus -121676-10-10 17:03 J -42720452.99 -42720452.79 -42720452.58 0.0302 0.0007

Venus -121675-05-28 12:44 J -42720223.18 -42720222.97 -42720222.77 0.0300 0.0008

Venus -121674-01-13 06:15 J -42719993.45 -42719993.24 -42719993.04 0.0298 0.0009

Venus -121674-08-30 21:37 J -42719763.80 -42719763.60 -42719763.40 0.0295 0.0011

Venus -121673-04-16 11:03 J -42719534.24 -42719534.04 -42719533.83 0.0292 0.0014

Venus -121673-12-01 22:34 J -42719304.77 -42719304.56 -42719304.36 0.0289 0.0016

Venus -121672-07-19 07:56 J -42719075.37 -42719075.17 -42719074.96 0.0286 0.0019

Venus -121671-03-05 15:51 J -42718846.05 -42718845.84 -42718845.64 0.0283 0.0020

Venus -121671-10-20 21:51 J -42718616.80 -42718616.59 -42718616.39 0.0280 0.0021

Venus -121670-06-07 02:10 J -42718387.62 -42718387.41 -42718387.20 0.0277 0.0021

Venus -121669-01-22 05:17 J -42718158.49 -42718158.28 -42718158.07 0.0274 0.0022

Earth -121669-07-01 06:15 J -42717997.44 -42717997.24 -42717997.03 0.0272 0.0147

Moon -121669-07-01 07:27 J -42717997.41 -42717997.19 -42717996.97 0.0272 0.0134 \*

Venus -121669-09-07 07:13 J -42717929.41 -42717929.20 -42717928.99 0.0271 0.0022

Venus -121668-04-24 08:10 J -42717700.37 -42717700.16 -42717699.95 0.0269 0.0022

Venus -121668-12-09 08:25 J -42717471.36 -42717471.15 -42717470.94 0.0267 0.0020

Mars -121667-04-15 12:44 J -42717344.19 -42717343.97 -42717343.74 0.0266 0.0161

Venus -121667-07-26 07:56 J -42717242.38 -42717242.17 -42717241.96 0.0265 0.0020

Venus -121666-03-12 06:58 J -42717013.43 -42717013.21 -42717013.00 0.0263 0.0018

Mercury -121666-08-17 02:39 J -42716855.49 -42716855.39 -42716855.29 0.0262 0.0214

Venus -121666-10-27 05:46 J -42716784.47 -42716784.26 -42716784.04 0.0261 0.0016

Mercury -121666-11-13 21:22 J -42716766.77 -42716766.61 -42716766.45 0.0261 0.0111

Mercury -121665-02-10 16:20 J -42716678.00 -42716677.82 -42716677.64 0.0261 0.0007

Mercury -121665-05-09 11:17 J -42716589.20 -42716589.03 -42716588.86 0.0260 0.0098

Venus -121665-06-12 04:49 J -42716555.52 -42716555.30 -42716555.08 0.0260 0.0015

Mercury -121665-08-06 06:44 J -42716500.34 -42716500.22 -42716500.11 0.0260 0.0202

Venus -121664-01-27 03:51 J -42716326.56 -42716326.34 -42716326.13 0.0259 0.0013

Venus -121664-09-13 03:08 J -42716097.59 -42716097.37 -42716097.16 0.0259 0.0011

Venus -121663-04-30 02:39 J -42715868.60 -42715868.39 -42715868.17 0.0258 0.0010

Venus -121663-12-15 03:08 J -42715639.59 -42715639.37 -42715639.15 0.0258 0.0007

Venus -121662-08-01 04:34 J -42715410.53 -42715410.31 -42715410.09 0.0259 0.0005

Venus -121661-03-17 06:44 J -42715181.44 -42715181.22 -42715181.00 0.0259 0.0002

Venus -121661-11-01 10:05 J -42714952.30 -42714952.08 -42714951.86 0.0260 0.0004

Venus -121660-06-18 14:39 J -42714723.11 -42714722.89 -42714722.67 0.0261 0.0003

Venus -121659-02-02 20:39 J -42714493.86 -42714493.64 -42714493.41 0.0263 0.0007

Venus -121659-09-20 04:20 J -42714264.54 -42714264.32 -42714264.10 0.0265 0.0009

Venus -121658-05-07 13:41 J -42714035.15 -42714034.93 -42714034.71 0.0267 0.0011

Venus -121658-12-23 00:44 J -42713805.69 -42713805.47 -42713805.25 0.0269 0.0013

Venus -121657-08-08 13:56 J -42713576.14 -42713575.92 -42713575.70 0.0271 0.0016

Venus -121656-03-26 04:34 J -42713346.53 -42713346.31 -42713346.09 0.0274 0.0017

Venus -121656-11-10 21:22 J -42713116.83 -42713116.61 -42713116.39 0.0277 0.0019

Venus -121655-06-28 15:37 J -42712887.06 -42712886.85 -42712886.63 0.0280 0.0021

Venus -121654-02-13 12:01 J -42712657.22 -42712657.00 -42712656.79 0.0283 0.0022

Venus -121654-10-01 10:05 J -42712427.30 -42712427.08 -42712426.87 0.0286 0.0023

Venus -121653-05-18 09:22 J -42712197.32 -42712197.11 -42712196.89 0.0289 0.0024

Venus -121652-01-03 10:05 J -42711967.29 -42711967.08 -42711966.86 0.0292 0.0024

Venus -121652-08-21 12:01 J -42711737.21 -42711737.00 -42711736.79 0.0295 0.0023

Mars -121651-03-25 01:56 J -42711521.57 -42711521.42 -42711521.27 0.0298 0.0257

Venus -121651-04-08 14:39 J -42711507.10 -42711506.89 -42711506.68 0.0298 0.0022

Venus -121651-11-24 17:46 J -42711276.97 -42711276.76 -42711276.55 0.0300 0.0021

Mercury -121651-12-08 19:27 J -42711262.72 -42711262.69 -42711262.65 0.0300 0.0287

Mercury -121650-03-07 09:22 J -42711174.22 -42711174.11 -42711173.99 0.0301 0.0169

Mercury -121650-06-03 23:17 J -42711085.66 -42711085.53 -42711085.40 0.0302 0.0050

Venus -121650-07-12 21:08 J -42711046.83 -42711046.62 -42711046.41 0.0302 0.0019  
 Mercury -121650-08-31 12:58 J -42710997.09 -42710996.96 -42710996.83 0.0302 0.0068  
 Mercury -121650-11-28 02:25 J -42710908.50 -42710908.40 -42710908.29 0.0303 0.0186  
 Mercury -121649-02-24 15:51 J -42710819.84 -42710819.84 -42710819.83 0.0303 0.0302  
 Venus -121649-02-28 00:01 J -42710816.71 -42710816.50 -42710816.29 0.0303 0.0016  
 Venus -121649-10-15 02:25 J -42710586.60 -42710586.40 -42710586.19 0.0304 0.0013  
 Venus -121648-06-02 04:05 J -42710356.54 -42710356.33 -42710356.13 0.0304 0.0009  
 Venus -121647-01-18 04:34 J -42710126.52 -42710126.31 -42710126.11 0.0304 0.0005  
 Venus -121647-09-05 03:22 J -42709896.56 -42709896.36 -42709896.16 0.0303 0.0001  
 Venus -121646-04-23 00:29 J -42709666.68 -42709666.48 -42709666.28 0.0301 0.0003  
 Venus -121646-12-08 19:41 J -42709436.88 -42709436.68 -42709436.47 0.0300 0.0007  
 Venus -121645-07-25 12:58 J -42709207.16 -42709206.96 -42709206.75 0.0297 0.0012  
 Venus -121644-03-12 04:34 J -42708977.52 -42708977.31 -42708977.11 0.0295 0.0013  
 Venus -121644-10-27 17:46 J -42708747.97 -42708747.76 -42708747.56 0.0292 0.0015  
 Venus -121643-06-14 04:49 J -42708518.50 -42708518.30 -42708518.09 0.0289 0.0017  
 Venus -121642-01-29 14:10 J -42708289.12 -42708288.91 -42708288.71 0.0285 0.0018  
 Venus -121642-09-15 21:37 J -42708059.81 -42708059.60 -42708059.40 0.0282 0.0019  
 Venus -121641-05-02 03:22 J -42707830.56 -42707830.36 -42707830.15 0.0279 0.0019  
 Venus -121641-12-17 07:41 J -42707601.39 -42707601.18 -42707600.98 0.0276 0.0020  
 Moon -121640-06-26 02:10 J -42707410.59 -42707410.41 -42707410.22 0.0274 0.0179  
 Earth -121640-06-26 05:32 J -42707410.43 -42707410.27 -42707410.08 0.0274 0.0189 \*  
 Venus -121640-08-03 10:34 J -42707372.27 -42707372.06 -42707371.86 0.0273 0.0020  
 Venus -121639-03-20 12:15 J -42707143.20 -42707142.99 -42707142.78 0.0271 0.0019  
 Mars -121639-06-06 04:34 J -42707065.49 -42707065.31 -42707065.11 0.0270 0.0201  
 Venus -121639-11-04 12:58 J -42706914.17 -42706913.96 -42706913.75 0.0268 0.0019  
 Venus -121638-06-21 12:58 J -42706685.17 -42706684.96 -42706684.75 0.0266 0.0018  
 Venus -121637-02-05 12:29 J -42706456.19 -42706455.98 -42706455.77 0.0264 0.0017  
 Venus -121637-09-21 11:32 J -42706227.23 -42706227.02 -42706226.81 0.0263 0.0016  
 Mercury -121636-01-03 02:53 J -42706123.44 -42706123.38 -42706123.30 0.0262 0.0241  
 Mercury -121636-04-01 21:37 J -42706034.74 -42706034.60 -42706034.44 0.0261 0.0139

Venus -121636-05-08 10:20 J -42705998.28 -42705998.07 -42705997.85 0.0261 0.0015

Mercury -121636-06-29 16:34 J -42705945.99 -42705945.81 -42705945.62 0.0261 0.0035

Mercury -121636-09-26 11:46 J -42705857.19 -42705857.01 -42705856.84 0.0260 0.0070

Venus -121636-12-23 09:08 J -42705769.33 -42705769.12 -42705768.90 0.0260 0.0013

Mercury -121636-12-24 06:44 J -42705768.35 -42705768.22 -42705768.08 0.0260 0.0175

Venus -121635-08-09 07:56 J -42705540.38 -42705540.17 -42705539.95 0.0259 0.0011

Venus -121634-03-26 07:13 J -42705311.42 -42705311.20 -42705310.99 0.0259 0.0010

Venus -121634-11-10 06:44 J -42705082.44 -42705082.22 -42705082.00 0.0259 0.0008

Venus -121633-06-26 07:27 J -42704853.41 -42704853.19 -42704852.98 0.0259 0.0007

Venus -121632-02-10 08:39 J -42704624.36 -42704624.14 -42704623.92 0.0259 0.0006

Venus -121632-09-27 10:34 J -42704395.28 -42704395.06 -42704394.84 0.0260 0.0005

Venus -121631-05-14 13:56 J -42704166.14 -42704165.92 -42704165.70 0.0260 0.0001

Venus -121631-12-29 18:29 J -42703936.95 -42703936.73 -42703936.50 0.0262 0.0006

Venus -121630-08-16 00:58 J -42703707.69 -42703707.46 -42703707.24 0.0263 0.0008

Venus -121629-04-01 08:39 J -42703478.36 -42703478.14 -42703477.92 0.0265 0.0009

Venus -121629-11-16 18:01 J -42703248.97 -42703248.75 -42703248.53 0.0267 0.0011

Venus -121628-07-04 05:17 J -42703019.51 -42703019.28 -42703019.06 0.0269 0.0014

Venus -121627-02-18 18:15 J -42702789.96 -42702789.74 -42702789.52 0.0272 0.0015

Venus -121627-10-06 09:22 J -42702560.33 -42702560.11 -42702559.89 0.0274 0.0017

Venus -121626-05-24 02:10 J -42702330.63 -42702330.41 -42702330.19 0.0277 0.0018

Venus -121625-01-08 20:53 J -42702100.85 -42702100.63 -42702100.41 0.0280 0.0020

Venus -121625-08-25 17:32 J -42701870.99 -42701870.77 -42701870.55 0.0283 0.0020

Venus -121624-04-12 15:37 J -42701641.06 -42701640.85 -42701640.63 0.0286 0.0021

Venus -121624-11-28 15:22 J -42701411.07 -42701410.86 -42701410.64 0.0289 0.0021

Moon -121623-01-09 13:56 J -42701369.13 -42701368.92 -42701368.70 0.0290 0.0114

Earth -121623-01-09 15:37 J -42701369.07 -42701368.85 -42701368.63 0.0290 0.0128 \*

Mars -121623-05-04 17:17 J -42701253.78 -42701253.78 -42701253.74 0.0291 0.0291

Venus -121623-07-16 16:20 J -42701181.03 -42701180.82 -42701180.61 0.0292 0.0020

Venus -121622-03-03 18:15 J -42700950.95 -42700950.74 -42700950.53 0.0295 0.0019

Venus -121622-10-19 21:08 J -42700720.83 -42700720.62 -42700720.41 0.0298 0.0018



Venus -121621-06-06 00:15 J -42700490.70 -42700490.49 -42700490.28 0.0300 0.0016  
 Mercury -121621-07-24 10:49 J -42700442.14 -42700442.05 -42700441.94 0.0300 0.0205  
 Mercury -121621-10-21 00:44 J -42700353.60 -42700353.47 -42700353.34 0.0301 0.0087  
 Mercury -121620-01-17 14:25 J -42700265.03 -42700264.90 -42700264.76 0.0302 0.0034  
 Venus -121620-01-22 03:37 J -42700260.56 -42700260.35 -42700260.15 0.0302 0.0014  
 Mercury -121620-04-16 04:05 J -42700176.44 -42700176.33 -42700176.21 0.0302 0.0150  
 Mercury -121620-07-13 17:32 J -42700087.83 -42700087.77 -42700087.70 0.0303 0.0266  
 Venus -121620-09-09 06:29 J -42700030.44 -42700030.23 -42700030.02 0.0303 0.0010  
 Venus -121619-04-27 08:53 J -42699800.33 -42699800.13 -42699799.92 0.0304 0.0010  
 Venus -121619-12-13 10:34 J -42699570.26 -42699570.06 -42699569.85 0.0304 0.0008  
 Venus -121618-07-31 11:03 J -42699340.24 -42699340.04 -42699339.83 0.0304 0.0001  
 Venus -121617-03-17 09:51 J -42699110.29 -42699110.09 -42699109.88 0.0303 0.0005  
 Venus -121617-11-02 06:58 J -42698880.41 -42698880.21 -42698880.00 0.0301 0.0007  
 Venus -121616-06-20 02:10 J -42698650.61 -42698650.41 -42698650.20 0.0299 0.0011  
 Venus -121615-02-04 19:41 J -42698420.89 -42698420.68 -42698420.48 0.0297 0.0013  
 Venus -121615-09-22 10:49 J -42698191.26 -42698191.05 -42698190.85 0.0295 0.0014  
 Venus -121614-05-09 23:46 J -42697961.71 -42697961.51 -42697961.31 0.0292 0.0016  
 Venus -121614-12-25 10:49 J -42697732.25 -42697732.05 -42697731.84 0.0289 0.0017  
 Venus -121613-08-10 19:56 J -42697502.87 -42697502.67 -42697502.46 0.0286 0.0019  
 Venus -121612-03-28 03:22 J -42697273.56 -42697273.36 -42697273.15 0.0282 0.0020  
 Venus -121612-11-12 09:08 J -42697044.33 -42697044.12 -42697043.92 0.0279 0.0020  
 Venus -121611-06-29 13:13 J -42696815.16 -42696814.95 -42696814.75 0.0276 0.0020  
 Venus -121610-02-13 15:51 J -42696586.05 -42696585.84 -42696585.63 0.0273 0.0020  
 Earth -121610-07-03 15:22 J -42696445.96 -42696445.86 -42696445.74 0.0272 0.0242  
 Moon -121610-07-03 18:01 J -42696445.81 -42696445.75 -42696445.65 0.0272 0.0256 \*  
 Venus -121610-09-30 17:32 J -42696356.98 -42696356.77 -42696356.57 0.0271 0.0020  
 Venus -121609-05-16 18:15 J -42696127.95 -42696127.74 -42696127.53 0.0268 0.0018  
 Mars -121609-07-23 16:20 J -42696060.10 -42696059.82 -42696059.53 0.0268 0.0005  
 Venus -121609-12-31 18:01 J -42695898.96 -42695898.75 -42695898.54 0.0266 0.0017  
 Venus -121608-08-17 17:17 J -42695669.99 -42695669.78 -42695669.57 0.0264 0.0015

Venus -121607-04-03 16:05 J -42695441.04 -42695440.83 -42695440.61 0.0262 0.0014  
 Mercury -121607-08-19 22:20 J -42695302.71 -42695302.57 -42695302.43 0.0262 0.0164  
 Mercury -121607-11-16 17:03 J -42695213.96 -42695213.79 -42695213.61 0.0261 0.0062  
 Venus -121607-11-18 14:53 J -42695212.10 -42695211.88 -42695211.67 0.0261 0.0013  
 Mercury -121606-02-13 12:01 J -42695125.18 -42695125.00 -42695124.82 0.0260 0.0043  
 Mercury -121606-05-13 07:13 J -42695036.35 -42695036.20 -42695036.05 0.0260 0.0147  
 Venus -121606-07-05 13:27 J -42694983.15 -42694982.94 -42694982.72 0.0260 0.0012  
 Mercury -121606-08-10 02:25 J -42694947.44 -42694947.40 -42694947.35 0.0260 0.0252  
 Venus -121605-02-19 12:29 J -42694754.20 -42694753.98 -42694753.77 0.0259 0.0009  
 Venus -121605-10-05 11:32 J -42694525.23 -42694525.02 -42694524.80 0.0258 0.0007  
 Venus -121604-05-22 11:17 J -42694296.25 -42694296.03 -42694295.81 0.0258 0.0005  
 Venus -121603-01-06 11:46 J -42694067.23 -42694067.01 -42694066.79 0.0258 0.0002  
 Venus -121603-08-23 12:58 J -42693838.18 -42693837.96 -42693837.74 0.0258 0.0001  
 Venus -121602-04-09 15:08 J -42693609.09 -42693608.87 -42693608.65 0.0259 0.0004  
 Venus -121602-11-24 18:29 J -42693379.95 -42693379.73 -42693379.51 0.0260 0.0006  
 Venus -121601-07-10 23:32 J -42693150.74 -42693150.52 -42693150.30 0.0261 0.0008  
 Venus -121600-02-25 05:46 J -42692921.49 -42692921.26 -42692921.04 0.0263 0.0010  
 Venus -121600-10-12 13:27 J -42692692.16 -42692691.94 -42692691.72 0.0265 0.0011  
 Venus -121599-05-29 23:03 J -42692462.77 -42692462.54 -42692462.32 0.0267 0.0014  
 Venus -121598-01-14 10:20 J -42692233.29 -42692233.07 -42692232.85 0.0269 0.0015  
 Venus -121598-08-31 23:32 J -42692003.74 -42692003.52 -42692003.30 0.0272 0.0017  
 Venus -121597-04-17 14:39 J -42691774.11 -42691773.89 -42691773.67 0.0275 0.0018  
 Venus -121597-12-03 07:41 J -42691544.40 -42691544.18 -42691543.96 0.0278 0.0019  
 Venus -121596-07-21 02:25 J -42691314.62 -42691314.40 -42691314.18 0.0281 0.0020  
 Venus -121595-03-07 23:03 J -42691084.76 -42691084.54 -42691084.32 0.0284 0.0021  
 Venus -121595-10-23 21:22 J -42690854.82 -42690854.61 -42690854.39 0.0287 0.0022  
 Earth -121594-01-03 19:13 J -42690782.74 -42690782.70 -42690782.63 0.0288 0.0280  
 Moon -121594-01-03 23:03 J -42690782.61 -42690782.54 -42690782.46 0.0288 0.0273  
 Venus -121594-06-10 21:08 J -42690624.83 -42690624.62 -42690624.40 0.0290 0.0022  
 Venus -121593-01-26 22:20 J -42690394.79 -42690394.57 -42690394.36 0.0293 0.0021

Mars -121593-06-25 20:53 J -42690243.93 -42690243.63 -42690243.32 0.0295 0.0015  
 Venus -121593-09-13 00:15 J -42690164.70 -42690164.49 -42690164.27 0.0296 0.0020  
 Venus -121592-05-01 03:08 J -42689934.58 -42689934.37 -42689934.16 0.0298 0.0018  
 Mercury -121592-12-11 12:15 J -42689710.06 -42689709.99 -42689709.90 0.0301 0.0240  
 Venus -121592-12-17 06:44 J -42689704.43 -42689704.22 -42689704.02 0.0301 0.0017  
 Mercury -121591-03-10 02:10 J -42689621.53 -42689621.41 -42689621.28 0.0301 0.0122  
 Mercury -121591-06-06 16:05 J -42689532.96 -42689532.83 -42689532.69 0.0302 0.0003  
 Venus -121591-08-04 09:51 J -42689474.29 -42689474.09 -42689473.88 0.0302 0.0015  
 Mercury -121591-09-03 05:46 J -42689444.38 -42689444.26 -42689444.14 0.0303 0.0116  
 Mercury -121591-11-30 19:13 J -42689355.78 -42689355.70 -42689355.61 0.0303 0.0233  
 Venus -121590-03-22 12:58 J -42689244.17 -42689243.96 -42689243.75 0.0304 0.0010  
 Venus -121590-11-07 15:22 J -42689014.06 -42689013.86 -42689013.65 0.0304 0.0010  
 Venus -121589-06-24 17:03 J -42688784.00 -42688783.79 -42688783.59 0.0304 0.0004  
 Venus -121588-02-09 17:17 J -42688553.98 -42688553.78 -42688553.57 0.0304 0.0002  
 Venus -121588-09-27 15:51 J -42688324.04 -42688323.84 -42688323.63 0.0303 0.0008  
 Venus -121587-05-15 12:44 J -42688094.17 -42688093.97 -42688093.76 0.0301 0.0010  
 Venus -121587-12-31 07:56 J -42687864.38 -42687864.17 -42687863.97 0.0299 0.0011  
 Venus -121586-08-18 00:58 J -42687634.67 -42687634.46 -42687634.26 0.0297 0.0014  
 Venus -121585-04-03 15:51 J -42687405.04 -42687404.84 -42687404.64 0.0294 0.0015  
 Venus -121585-11-19 04:49 J -42687175.51 -42687175.30 -42687175.10 0.0291 0.0016  
 Venus -121584-07-06 15:37 J -42686946.05 -42686945.85 -42686945.64 0.0288 0.0017  
 Venus -121583-02-21 00:44 J -42686716.68 -42686716.47 -42686716.27 0.0285 0.0019  
 Venus -121583-10-08 07:41 J -42686487.38 -42686487.18 -42686486.97 0.0282 0.0019  
 Venus -121582-05-25 13:13 J -42686258.16 -42686257.95 -42686257.74 0.0278 0.0018  
 Venus -121581-01-09 17:03 J -42686028.99 -42686028.79 -42686028.58 0.0275 0.0018  
 Earth -121581-06-27 12:58 J -42685859.18 -42685858.96 -42685858.73 0.0273 0.0097  
 Moon -121581-06-27 15:37 J -42685859.07 -42685858.85 -42685858.61 0.0273 0.0109 \*  
 Venus -121581-08-25 19:41 J -42685799.89 -42685799.68 -42685799.47 0.0273 0.0017  
 Venus -121580-04-11 21:22 J -42685570.82 -42685570.61 -42685570.40 0.0270 0.0017  
 Venus -121580-11-26 21:51 J -42685341.80 -42685341.59 -42685341.38 0.0268 0.0015

Venus -121579-07-13 21:37 J -42685112.81 -42685112.60 -42685112.39 0.0265 0.0014  
 Mars -121579-09-09 12:58 J -42685055.17 -42685054.96 -42685054.75 0.0265 0.0177  
 Venus -121578-02-27 20:39 J -42684883.85 -42684883.64 -42684883.43 0.0264 0.0013  
 Venus -121578-10-14 19:27 J -42684654.90 -42684654.69 -42684654.47 0.0262 0.0012  
 Mercury -121577-01-06 22:20 J -42684570.69 -42684570.57 -42684570.45 0.0261 0.0194  
 Mercury -121577-04-04 17:03 J -42684481.96 -42684481.79 -42684481.62 0.0261 0.0091  
 Venus -121577-05-30 18:15 J -42684425.95 -42684425.74 -42684425.52 0.0261 0.0011  
 Mercury -121577-07-02 12:01 J -42684393.18 -42684393.00 -42684392.82 0.0260 0.0013  
 Mercury -121577-09-29 06:58 J -42684304.37 -42684304.21 -42684304.04 0.0260 0.0117  
 Mercury -121577-12-27 01:56 J -42684215.50 -42684215.42 -42684215.31 0.0260 0.0222  
 Venus -121576-01-14 17:03 J -42684197.01 -42684196.79 -42684196.58 0.0260 0.0009  
 Venus -121576-08-31 15:37 J -42683968.06 -42683967.85 -42683967.63 0.0259 0.0008  
 Venus -121575-04-17 14:39 J -42683739.10 -42683738.89 -42683738.67 0.0258 0.0007  
 Venus -121575-12-02 14:25 J -42683510.12 -42683509.90 -42683509.68 0.0258 0.0003  
 Venus -121574-07-19 14:53 J -42683281.10 -42683280.88 -42683280.66 0.0258 0.0002  
 Venus -121573-03-04 16:05 J -42683052.05 -42683051.83 -42683051.61 0.0259 0.0003  
 Venus -121573-10-19 18:15 J -42682822.96 -42682822.74 -42682822.52 0.0259 0.0004  
 Venus -121572-06-05 21:37 J -42682593.82 -42682593.60 -42682593.38 0.0260 0.0006  
 Venus -121571-01-21 02:10 J -42682364.63 -42682364.41 -42682364.18 0.0262 0.0010  
 Venus -121571-09-07 08:25 J -42682135.37 -42682135.15 -42682134.92 0.0263 0.0012  
 Venus -121570-04-24 16:20 J -42681906.04 -42681905.82 -42681905.60 0.0265 0.0012  
 Venus -121570-12-10 01:56 J -42681676.64 -42681676.42 -42681676.20 0.0267 0.0014  
 Venus -121569-07-26 13:13 J -42681447.17 -42681446.95 -42681446.73 0.0270 0.0016  
 Venus -121568-03-13 02:39 J -42681217.61 -42681217.39 -42681217.17 0.0272 0.0017  
 Venus -121568-10-28 17:46 J -42680987.98 -42680987.76 -42680987.54 0.0275 0.0018  
 Venus -121567-06-15 10:49 J -42680758.27 -42680758.05 -42680757.83 0.0278 0.0019  
 Venus -121566-01-31 05:46 J -42680528.48 -42680528.26 -42680528.04 0.0281 0.0019  
 Venus -121566-09-18 02:39 J -42680298.60 -42680298.39 -42680298.17 0.0284 0.0019  
 Venus -121565-05-05 01:13 J -42680068.67 -42680068.45 -42680068.23 0.0287 0.0019  
 Venus -121565-12-21 01:13 J -42679838.67 -42679838.45 -42679838.24 0.0290 0.0018

Moon -121564-01-10 15:37 J -42679817.99 -42679817.85 -42679817.69 0.0290 0.0229  
 Earth -121564-01-10 18:29 J -42679817.89 -42679817.73 -42679817.56 0.0290 0.0214 \*  
 Venus -121564-08-08 02:10 J -42679608.62 -42679608.41 -42679608.19 0.0293 0.0018  
 Venus -121563-03-26 04:34 J -42679378.52 -42679378.31 -42679378.10 0.0296 0.0015  
 Mars -121563-08-18 11:03 J -42679233.16 -42679233.04 -42679232.89 0.0297 0.0265  
 Venus -121563-11-11 07:27 J -42679148.40 -42679148.19 -42679147.98 0.0298 0.0014  
 Mercury -121562-04-30 13:13 J -42678977.99 -42678977.95 -42678977.90 0.0300 0.0280  
 Venus -121562-06-29 10:49 J -42678918.26 -42678918.05 -42678917.84 0.0300 0.0011  
 Mercury -121562-07-28 03:08 J -42678889.48 -42678889.37 -42678889.25 0.0301 0.0162  
 Mercury -121562-10-24 17:03 J -42678800.92 -42678800.79 -42678800.66 0.0301 0.0044  
 Mercury -121561-01-21 06:44 J -42678712.35 -42678712.22 -42678712.09 0.0302 0.0074  
 Venus -121561-02-14 14:10 J -42678688.12 -42678687.91 -42678687.70 0.0302 0.0008  
 Mercury -121561-04-18 20:25 J -42678623.76 -42678623.65 -42678623.55 0.0302 0.0192  
 Venus -121561-10-01 17:03 J -42678457.99 -42678457.79 -42678457.58 0.0303 0.0008  
 Venus -121560-05-19 19:41 J -42678227.89 -42678227.68 -42678227.48 0.0304 0.0004  
 Venus -121559-01-04 21:22 J -42677997.82 -42677997.61 -42677997.41 0.0304 0.0006  
 Venus -121559-08-22 21:37 J -42677767.81 -42677767.60 -42677767.40 0.0304 0.0007  
 Venus -121558-04-09 20:10 J -42677537.86 -42677537.66 -42677537.45 0.0303 0.0009  
 Venus -121558-11-25 17:17 J -42677307.99 -42677307.78 -42677307.58 0.0301 0.0012  
 Venus -121557-07-12 12:15 J -42677078.19 -42677077.99 -42677077.79 0.0299 0.0013  
 Venus -121556-02-27 05:32 J -42676848.48 -42676848.27 -42676848.07 0.0297 0.0015  
 Venus -121556-10-14 20:25 J -42676618.85 -42676618.65 -42676618.45 0.0294 0.0017  
 Venus -121555-06-01 09:08 J -42676389.32 -42676389.12 -42676388.91 0.0291 0.0019  
 Venus -121554-01-16 20:10 J -42676159.87 -42676159.66 -42676159.46 0.0288 0.0019  
 Venus -121554-09-03 05:03 J -42675930.50 -42675930.29 -42675930.09 0.0285 0.0019  
 Venus -121553-04-19 12:15 J -42675701.19 -42675700.99 -42675700.78 0.0282 0.0019  
 Venus -121553-12-04 17:46 J -42675471.97 -42675471.76 -42675471.56 0.0279 0.0019  
 Venus -121552-07-21 21:37 J -42675242.81 -42675242.60 -42675242.40 0.0276 0.0019  
 Venus -121551-03-08 00:01 J -42675013.70 -42675013.50 -42675013.29 0.0273 0.0018  
 Venus -121551-10-23 01:27 J -42674784.65 -42674784.44 -42674784.23 0.0270 0.0017

Mars -121551-10-31 04:34 J -42674776.51 -42674776.31 -42674776.08 0.0270 0.0179  
 Venus -121550-06-09 01:56 J -42674555.63 -42674555.42 -42674555.21 0.0268 0.0015  
 Venus -121549-01-24 01:41 J -42674326.64 -42674326.43 -42674326.22 0.0266 0.0014  
 Venus -121549-09-09 00:44 J -42674097.68 -42674097.47 -42674097.26 0.0264 0.0012  
 Venus -121548-04-25 23:32 J -42673868.73 -42673868.52 -42673868.31 0.0262 0.0010  
 Mercury -121548-05-25 22:20 J -42673838.65 -42673838.57 -42673838.47 0.0262 0.0222  
 Mercury -121548-08-22 17:03 J -42673749.94 -42673749.79 -42673749.62 0.0261 0.0120  
 Mercury -121548-11-19 12:01 J -42673661.18 -42673661.00 -42673660.82 0.0261 0.0016  
 Venus -121548-12-10 22:05 J -42673639.80 -42673639.58 -42673639.37 0.0261 0.0008  
 Mercury -121547-02-16 06:58 J -42673572.38 -42673572.21 -42673572.03 0.0260 0.0088  
 Mercury -121547-05-16 02:10 J -42673483.53 -42673483.41 -42673483.29 0.0260 0.0192  
 Venus -121547-07-27 20:39 J -42673410.86 -42673410.64 -42673410.43 0.0259 0.0006  
 Venus -121546-03-13 19:13 J -42673181.91 -42673181.70 -42673181.48 0.0259 0.0006  
 Venus -121546-10-28 18:29 J -42672952.95 -42672952.73 -42672952.52 0.0258 0.0004  
 Venus -121545-06-13 18:15 J -42672723.96 -42672723.74 -42672723.52 0.0258 0.0002  
 Venus -121544-01-28 18:29 J -42672494.95 -42672494.73 -42672494.51 0.0258 0.0004  
 Venus -121544-09-14 19:41 J -42672265.90 -42672265.68 -42672265.46 0.0258 0.0005  
 Venus -121543-05-01 21:51 J -42672036.81 -42672036.59 -42672036.37 0.0259 0.0007  
 Venus -121543-12-17 01:13 J -42671807.67 -42671807.45 -42671807.23 0.0260 0.0010  
 Venus -121542-08-03 06:15 J -42671578.46 -42671578.24 -42671578.02 0.0261 0.0011  
 Venus -121541-03-19 12:29 J -42671349.20 -42671348.98 -42671348.76 0.0263 0.0013  
 Venus -121541-11-03 20:25 J -42671119.87 -42671119.65 -42671119.43 0.0265 0.0015  
 Venus -121540-06-21 05:46 J -42670890.48 -42670890.26 -42670890.04 0.0267 0.0016  
 Venus -121539-02-05 17:17 J -42670661.00 -42670660.78 -42670660.56 0.0269 0.0017  
 Venus -121539-09-23 06:44 J -42670431.44 -42670431.22 -42670431.00 0.0272 0.0018  
 Venus -121538-05-10 21:51 J -42670201.80 -42670201.59 -42670201.37 0.0275 0.0020  
 Venus -121538-12-26 15:08 J -42669972.09 -42669971.87 -42669971.65 0.0278 0.0020  
 Venus -121537-08-12 10:05 J -42669742.30 -42669742.08 -42669741.86 0.0281 0.0020  
 Venus -121536-03-30 06:58 J -42669512.43 -42669512.21 -42669512.00 0.0284 0.0020  
 Venus -121536-11-15 05:32 J -42669282.49 -42669282.27 -42669282.06 0.0287 0.0020

Moon -121535-01-04 17:17 J -42669231.93 -42669231.78 -42669231.60 0.0288 0.0211  
 Earth -121535-01-04 20:10 J -42669231.83 -42669231.66 -42669231.49 0.0288 0.0201 \*  
 Venus -121535-07-03 05:17 J -42669052.49 -42669052.28 -42669052.06 0.0291 0.0019  
 Mars -121535-09-27 21:08 J -42668965.70 -42668965.62 -42668965.50 0.0292 0.0275  
 Venus -121534-02-18 06:29 J -42668822.44 -42668822.23 -42668822.01 0.0294 0.0019  
 Venus -121534-10-06 08:53 J -42668592.34 -42668592.13 -42668591.91 0.0296 0.0016  
 Venus -121533-05-23 12:01 J -42668362.21 -42668362.00 -42668361.79 0.0299 0.0013  
 Mercury -121533-12-14 04:05 J -42668157.42 -42668157.33 -42668157.22 0.0301 0.0201  
 Venus -121532-01-08 15:37 J -42668132.06 -42668131.85 -42668131.64 0.0301 0.0012  
 Mercury -121532-03-12 18:01 J -42668068.88 -42668068.75 -42668068.62 0.0302 0.0082  
 Mercury -121532-06-09 07:56 J -42667980.31 -42667980.17 -42667980.04 0.0302 0.0038  
 Venus -121532-08-26 18:58 J -42667901.92 -42667901.71 -42667901.50 0.0303 0.0008  
 Mercury -121532-09-05 21:22 J -42667891.72 -42667891.61 -42667891.49 0.0303 0.0155  
 Mercury -121532-12-03 11:03 J -42667803.10 -42667803.04 -42667802.99 0.0303 0.0271  
 Venus -121531-04-13 22:05 J -42667671.79 -42667671.58 -42667671.37 0.0304 0.0005  
 Venus -121531-11-30 00:44 J -42667441.68 -42667441.47 -42667441.27 0.0305 0.0005  
 Venus -121530-07-18 02:10 J -42667211.62 -42667211.41 -42667211.21 0.0305 0.0003  
 Venus -121529-03-04 02:25 J -42666981.61 -42666981.40 -42666981.20 0.0304 0.0007  
 Venus -121529-10-20 00:58 J -42666751.67 -42666751.46 -42666751.26 0.0303 0.0010  
 Venus -121528-06-06 21:37 J -42666521.80 -42666521.60 -42666521.39 0.0301 0.0012  
 Venus -121527-01-22 16:34 J -42666292.01 -42666291.81 -42666291.61 0.0299 0.0014  
 Venus -121527-09-09 09:22 J -42666062.31 -42666062.11 -42666061.90 0.0297 0.0016  
 Venus -121526-04-27 00:15 J -42665832.70 -42665832.49 -42665832.29 0.0294 0.0017  
 Venus -121526-12-12 12:58 J -42665603.17 -42665602.96 -42665602.76 0.0291 0.0019  
 Venus -121525-07-28 23:32 J -42665373.72 -42665373.52 -42665373.31 0.0288 0.0019  
 Venus -121524-03-15 08:25 J -42665144.35 -42665144.15 -42665143.94 0.0284 0.0019  
 Venus -121524-10-30 15:22 J -42664915.06 -42664914.86 -42664914.65 0.0281 0.0018  
 Venus -121523-06-16 20:39 J -42664685.85 -42664685.64 -42664685.43 0.0278 0.0017  
 Venus -121522-02-01 00:29 J -42664456.69 -42664456.48 -42664456.28 0.0275 0.0017  
 Earth -121522-06-29 16:34 J -42664308.05 -42664307.81 -42664307.56 0.0273 0.0016

Moon	-121522-06-29 18:01 J	-42664307.99	-42664307.75	-42664307.51	0.0273	0.0005	*
Venus	-121522-09-18 02:53 J	-42664227.59	-42664227.38	-42664227.17	0.0272	0.0016	
Venus	-121521-05-04 04:20 J	-42663998.53	-42663998.32	-42663998.11	0.0270	0.0014	
Mars	-121521-12-17 08:53 J	-42663771.41	-42663771.13	-42663770.84	0.0267	0.0011	
Venus	-121521-12-19 04:34 J	-42663769.52	-42663769.31	-42663769.10	0.0267	0.0013	
Venus	-121520-08-05 04:05 J	-42663540.54	-42663540.33	-42663540.11	0.0265	0.0012	
Venus	-121519-03-22 03:08 J	-42663311.58	-42663311.37	-42663311.16	0.0263	0.0009	
Mercury	-121519-10-12 22:05 J	-42663106.62	-42663106.58	-42663106.54	0.0262	0.0253	
Venus	-121519-11-06 01:56 J	-42663082.64	-42663082.42	-42663082.21	0.0262	0.0008	
Mercury	-121518-01-09 16:34 J	-42663017.95	-42663017.81	-42663017.66	0.0261	0.0151	
Mercury	-121518-04-08 11:32 J	-42662929.20	-42662929.02	-42662928.84	0.0261	0.0048	
Venus	-121518-06-23 00:29 J	-42662853.69	-42662853.48	-42662853.26	0.0260	0.0005	
Mercury	-121518-07-06 06:29 J	-42662840.41	-42662840.23	-42662840.05	0.0260	0.0055	
Mercury	-121518-10-03 01:27 J	-42662751.58	-42662751.44	-42662751.29	0.0260	0.0159	
Venus	-121517-02-06 23:03 J	-42662624.76	-42662624.54	-42662624.32	0.0259	0.0003	
Venus	-121517-09-22 21:37 J	-42662395.81	-42662395.60	-42662395.38	0.0259	0.0005	
Venus	-121516-05-09 20:39 J	-42662166.85	-42662166.64	-42662166.42	0.0258	0.0005	
Venus	-121516-12-24 20:25 J	-42661937.87	-42661937.65	-42661937.43	0.0258	0.0004	
Venus	-121515-08-10 20:39 J	-42661708.86	-42661708.64	-42661708.42	0.0258	0.0004	
Venus	-121514-03-27 21:51 J	-42661479.81	-42661479.59	-42661479.37	0.0259	0.0006	
Venus	-121514-11-12 00:01 J	-42661250.72	-42661250.50	-42661250.28	0.0259	0.0008	
Venus	-121513-06-28 03:22 J	-42661021.58	-42661021.36	-42661021.13	0.0260	0.0012	
Venus	-121512-02-12 08:10 J	-42660792.38	-42660792.16	-42660791.94	0.0262	0.0012	
Venus	-121512-09-29 14:25 J	-42660563.12	-42660562.90	-42660562.68	0.0263	0.0014	
Venus	-121511-05-16 22:20 J	-42660333.79	-42660333.57	-42660333.35	0.0265	0.0015	
Venus	-121510-01-01 07:56 J	-42660104.39	-42660104.17	-42660103.95	0.0267	0.0016	
Venus	-121510-08-18 19:27 J	-42659874.91	-42659874.69	-42659874.46	0.0270	0.0018	
Venus	-121509-04-04 08:53 J	-42659645.35	-42659645.13	-42659644.91	0.0272	0.0019	
Venus	-121509-11-20 00:15 J	-42659415.71	-42659415.49	-42659415.27	0.0275	0.0019	
Venus	-121508-07-07 17:32 J	-42659185.99	-42659185.77	-42659185.56	0.0278	0.0019	



Venus -121507-02-22 12:29 J -42658956.19 -42658955.98 -42658955.76 0.0281 0.0019  
 Venus -121507-10-10 09:37 J -42658726.31 -42658726.10 -42658725.88 0.0284 0.0019  
 Venus -121506-05-28 08:25 J -42658496.37 -42658496.15 -42658495.94 0.0287 0.0017  
 Earth -121505-01-12 17:32 J -42658266.78 -42658266.77 -42658266.73 0.0291 0.0289  
 Moon -121505-01-12 21:08 J -42658266.70 -42658266.62 -42658266.53 0.0291 0.0271  
 Venus -121505-01-13 08:25 J -42658266.36 -42658266.15 -42658265.93 0.0291 0.0016  
 Venus -121505-08-30 09:51 J -42658036.30 -42658036.09 -42658035.88 0.0293 0.0014  
 Mars -121505-11-18 14:53 J -42657956.18 -42657955.88 -42657955.57 0.0294 0.0015  
 Venus -121504-04-17 12:15 J -42657806.20 -42657805.99 -42657805.78 0.0296 0.0012  
 Venus -121504-12-03 15:22 J -42657576.07 -42657575.86 -42657575.65 0.0299 0.0009  
 Mercury -121503-05-03 04:49 J -42657425.38 -42657425.30 -42657425.22 0.0300 0.0243  
 Venus -121503-07-21 18:44 J -42657345.93 -42657345.72 -42657345.51 0.0301 0.0006  
 Mercury -121503-07-30 18:44 J -42657336.84 -42657336.72 -42657336.60 0.0301 0.0125  
 Mercury -121503-10-27 08:25 J -42657248.28 -42657248.15 -42657248.01 0.0301 0.0009  
 Mercury -121502-01-23 22:05 J -42657159.70 -42657159.58 -42657159.45 0.0302 0.0111  
 Venus -121502-03-08 22:05 J -42657115.79 -42657115.58 -42657115.37 0.0302 0.0003  
 Mercury -121502-04-22 11:46 J -42657071.10 -42657071.01 -42657070.93 0.0303 0.0228  
 Venus -121502-10-25 01:13 J -42656885.66 -42656885.45 -42656885.25 0.0304 0.0003  
 Venus -121501-06-11 03:37 J -42656655.56 -42656655.35 -42656655.15 0.0304 0.0004  
 Venus -121500-01-27 05:03 J -42656425.49 -42656425.29 -42656425.08 0.0304 0.0008  
 Venus -121500-09-14 05:17 J -42656195.49 -42656195.28 -42656195.08 0.0304 0.0010  
 Venus -121499-05-02 03:51 J -42655965.55 -42655965.34 -42655965.14 0.0303 0.0013  
 Venus -121499-12-18 00:44 J -42655735.68 -42655735.47 -42655735.27 0.0301 0.0016  
 Venus -121498-08-04 19:27 J -42655505.89 -42655505.69 -42655505.48 0.0299 0.0018  
 Venus -121497-03-21 12:29 J -42655276.18 -42655275.98 -42655275.77 0.0297 0.0018  
 Venus -121497-11-06 03:22 J -42655046.56 -42655046.36 -42655046.16 0.0294 0.0019  
 Venus -121496-06-23 16:05 J -42654817.04 -42654816.83 -42654816.63 0.0291 0.0020  
 Venus -121495-02-08 02:39 J -42654587.59 -42654587.39 -42654587.18 0.0288 0.0020  
 Venus -121495-09-25 11:32 J -42654358.23 -42654358.02 -42654357.82 0.0285 0.0020  
 Venus -121494-05-12 18:29 J -42654128.94 -42654128.73 -42654128.53 0.0281 0.0019

Venus	-121494-12-27 23:46 J	-42653899.72	-42653899.51	-42653899.31	0.0278	0.0018
Venus	-121493-08-13 03:22 J	-42653670.56	-42653670.36	-42653670.15	0.0275	0.0018
Venus	-121492-03-30 06:01 J	-42653441.46	-42653441.25	-42653441.04	0.0272	0.0015
Venus	-121492-11-14 07:13 J	-42653212.41	-42653212.20	-42653211.99	0.0270	0.0015
Venus	-121491-07-01 07:27 J	-42652983.40	-42652983.19	-42652982.97	0.0267	0.0014
Mars	-121490-02-03 04:05 J	-42652766.51	-42652766.33	-42652766.13	0.0265	0.0195
Venus	-121490-02-15 07:13 J	-42652754.42	-42652754.20	-42652753.99	0.0265	0.0011
Venus	-121490-10-02 06:01 J	-42652525.46	-42652525.25	-42652525.03	0.0263	0.0010
Venus	-121489-05-18 04:49 J	-42652296.51	-42652296.30	-42652296.08	0.0262	0.0008
Mercury	-121489-05-28 16:20 J	-42652285.94	-42652285.82	-42652285.69	0.0262	0.0181
Mercury	-121489-08-25 11:03 J	-42652197.21	-42652197.04	-42652196.86	0.0261	0.0079
Mercury	-121489-11-22 06:01 J	-42652108.43	-42652108.25	-42652108.07	0.0260	0.0025
Venus	-121488-01-02 03:22 J	-42652067.57	-42652067.36	-42652067.14	0.0260	0.0004
Mercury	-121488-02-19 00:58 J	-42652019.62	-42652019.46	-42652019.30	0.0260	0.0128
Mercury	-121488-05-18 19:56 J	-42651930.74	-42651930.67	-42651930.58	0.0260	0.0233
Venus	-121488-08-19 01:41 J	-42651838.64	-42651838.43	-42651838.21	0.0259	0.0006
Venus	-121487-04-05 00:29 J	-42651609.70	-42651609.48	-42651609.27	0.0258	0.0003
Venus	-121487-11-19 23:32 J	-42651380.74	-42651380.52	-42651380.30	0.0258	0.0004
Venus	-121486-07-06 23:17 J	-42651151.75	-42651151.53	-42651151.31	0.0258	0.0005
Venus	-121485-02-20 23:32 J	-42650922.73	-42650922.52	-42650922.30	0.0258	0.0009
Venus	-121485-10-07 00:44 J	-42650693.69	-42650693.47	-42650693.25	0.0258	0.0011
Venus	-121484-05-24 03:08 J	-42650464.59	-42650464.37	-42650464.15	0.0259	0.0012
Venus	-121483-01-08 06:29 J	-42650235.45	-42650235.23	-42650235.01	0.0260	0.0013
Venus	-121483-08-25 11:17 J	-42650006.25	-42650006.03	-42650005.80	0.0261	0.0015
Venus	-121482-04-11 17:32 J	-42649776.99	-42649776.77	-42649776.54	0.0263	0.0017
Venus	-121482-11-27 01:27 J	-42649547.66	-42649547.44	-42649547.21	0.0265	0.0018
Venus	-121481-07-13 11:17 J	-42649318.25	-42649318.03	-42649317.81	0.0267	0.0019
Venus	-121480-02-27 22:34 J	-42649088.78	-42649088.56	-42649088.33	0.0269	0.0020
Venus	-121480-10-15 12:01 J	-42648859.22	-42648859.00	-42648858.78	0.0272	0.0020
Venus	-121479-06-02 03:22 J	-42648629.58	-42648629.36	-42648629.14	0.0275	0.0020

Venus -121478-01-17 20:39 J -42648399.86 -42648399.64 -42648399.43 0.0278 0.0020  
 Venus -121478-09-04 15:51 J -42648170.06 -42648169.84 -42648169.63 0.0281 0.0020  
 Venus -121477-04-21 12:44 J -42647940.19 -42647939.97 -42647939.76 0.0284 0.0019  
 Venus -121477-12-07 11:17 J -42647710.25 -42647710.03 -42647709.82 0.0288 0.0018  
 Moon -121476-01-05 14:53 J -42647681.10 -42647680.88 -42647680.65 0.0288 0.0130  
 Earth -121476-01-05 17:03 J -42647681.00 -42647680.79 -42647680.57 0.0288 0.0133 \*  
 Venus -121476-07-25 11:17 J -42647480.25 -42647480.03 -42647479.82 0.0291 0.0016  
 Venus -121475-03-12 12:29 J -42647250.19 -42647249.98 -42647249.76 0.0294 0.0015  
 Venus -121475-10-28 15:08 J -42647020.09 -42647019.87 -42647019.66 0.0297 0.0013  
 Mars -121474-01-10 23:17 J -42646945.63 -42646945.53 -42646945.40 0.0298 0.0274  
 Venus -121474-06-15 18:01 J -42646789.96 -42646789.75 -42646789.54 0.0299 0.0011  
 Mercury -121474-09-20 05:03 J -42646693.32 -42646693.29 -42646693.25 0.0300 0.0286  
 Mercury -121474-12-17 19:13 J -42646604.81 -42646604.70 -42646604.59 0.0301 0.0168  
 Venus -121473-01-31 21:37 J -42646559.81 -42646559.60 -42646559.39 0.0301 0.0008  
 Mercury -121473-03-15 08:53 J -42646516.26 -42646516.13 -42646515.99 0.0302 0.0050  
 Mercury -121473-06-11 22:34 J -42646427.69 -42646427.56 -42646427.42 0.0302 0.0070  
 Mercury -121473-09-08 12:15 J -42646339.09 -42646338.99 -42646338.88 0.0303 0.0186  
 Venus -121473-09-18 00:58 J -42646329.67 -42646329.46 -42646329.25 0.0303 0.0004  
 Mercury -121473-12-06 01:41 J -42646250.43 -42646250.43 -42646250.42 0.0304 0.0303  
 Venus -121472-05-06 04:05 J -42646099.54 -42646099.33 -42646099.12 0.0304 0.0002  
 Venus -121472-12-22 06:29 J -42645869.43 -42645869.23 -42645869.02 0.0305 0.0006  
 Venus -121471-08-09 07:56 J -42645639.37 -42645639.17 -42645638.96 0.0305 0.0007  
 Venus -121470-03-27 07:56 J -42645409.37 -42645409.17 -42645408.96 0.0304 0.0010  
 Venus -121470-11-12 06:29 J -42645179.44 -42645179.23 -42645179.03 0.0303 0.0013  
 Venus -121469-06-29 03:08 J -42644949.57 -42644949.37 -42644949.17 0.0301 0.0015  
 Venus -121468-02-13 21:51 J -42644719.79 -42644719.59 -42644719.38 0.0299 0.0018  
 Venus -121468-10-01 14:39 J -42644490.09 -42644489.89 -42644489.69 0.0297 0.0018  
 Venus -121467-05-19 05:17 J -42644260.48 -42644260.28 -42644260.08 0.0294 0.0019  
 Venus -121466-01-03 17:46 J -42644030.96 -42644030.76 -42644030.55 0.0291 0.0020  
 Venus -121466-08-21 04:20 J -42643801.52 -42643801.32 -42643801.11 0.0287 0.0020

Venus -121465-04-06 13:13 J -42643572.15 -42643571.95 -42643571.74 0.0284 0.0019  
 Venus -121465-11-21 20:10 J -42643342.87 -42643342.66 -42643342.45 0.0281 0.0018  
 Venus -121464-07-09 01:13 J -42643113.65 -42643113.45 -42643113.24 0.0278 0.0018  
 Venus -121463-02-23 05:03 J -42642884.50 -42642884.29 -42642884.08 0.0275 0.0015  
 Moon -121463-06-30 12:15 J -42642757.23 -42642756.99 -42642756.75 0.0273 0.0047  
 Earth -121463-06-30 15:51 J -42642757.08 -42642756.84 -42642756.60 0.0273 0.0056 \*  
 Venus -121463-10-10 07:27 J -42642655.40 -42642655.19 -42642654.98 0.0272 0.0014  
 Mars -121462-03-26 11:17 J -42642488.25 -42642488.03 -42642487.80 0.0270 0.0169  
 Venus -121462-05-27 08:39 J -42642426.35 -42642426.14 -42642425.93 0.0269 0.0012  
 Venus -121461-01-11 09:08 J -42642197.33 -42642197.12 -42642196.91 0.0267 0.0011  
 Venus -121461-08-27 08:39 J -42641968.36 -42641968.14 -42641967.93 0.0265 0.0008  
 Venus -121460-04-13 07:41 J -42641739.40 -42641739.18 -42641738.97 0.0263 0.0007  
 Mercury -121460-10-15 15:22 J -42641553.95 -42641553.86 -42641553.75 0.0262 0.0216  
 Venus -121460-11-28 06:15 J -42641510.45 -42641510.24 -42641510.03 0.0261 0.0003  
 Mercury -121459-01-12 10:05 J -42641465.24 -42641465.08 -42641464.91 0.0261 0.0113  
 Mercury -121459-04-11 05:03 J -42641376.47 -42641376.29 -42641376.11 0.0260 0.0011  
 Mercury -121459-07-09 00:01 J -42641287.67 -42641287.50 -42641287.33 0.0260 0.0093  
 Venus -121459-07-15 04:49 J -42641281.52 -42641281.30 -42641281.09 0.0260 0.0002  
 Mercury -121459-10-05 18:58 J -42641198.82 -42641198.71 -42641198.59 0.0260 0.0197  
 Venus -121458-03-01 03:22 J -42641052.58 -42641052.36 -42641052.15 0.0259 0.0005  
 Venus -121458-10-16 01:56 J -42640823.64 -42640823.42 -42640823.20 0.0258 0.0003  
 Venus -121457-06-01 01:13 J -42640594.67 -42640594.45 -42640594.24 0.0258 0.0007  
 Venus -121456-01-16 00:44 J -42640365.69 -42640365.47 -42640365.25 0.0258 0.0007  
 Venus -121456-09-02 00:58 J -42640136.68 -42640136.46 -42640136.24 0.0258 0.0008  
 Venus -121455-04-19 02:10 J -42639907.63 -42639907.41 -42639907.19 0.0258 0.0011  
 Venus -121455-12-04 04:20 J -42639678.54 -42639678.32 -42639678.10 0.0259 0.0012  
 Venus -121454-07-21 07:56 J -42639449.39 -42639449.17 -42639448.95 0.0260 0.0013  
 Venus -121453-03-06 12:44 J -42639220.19 -42639219.97 -42639219.75 0.0262 0.0015  
 Venus -121453-10-21 18:58 J -42638990.93 -42638990.71 -42638990.49 0.0263 0.0016  
 Venus -121452-06-08 02:39 J -42638761.61 -42638761.39 -42638761.17 0.0265 0.0018

Venus -121451-01-23 12:15 J -42638532.21 -42638531.99 -42638531.76 0.0267 0.0020  
 Venus -121451-09-10 00:01 J -42638302.72 -42638302.50 -42638302.28 0.0270 0.0019  
 Venus -121450-04-27 13:27 J -42638073.16 -42638072.94 -42638072.72 0.0273 0.0020  
 Venus -121450-12-13 04:49 J -42637843.52 -42637843.30 -42637843.09 0.0275 0.0020  
 Venus -121449-07-29 21:51 J -42637613.80 -42637613.59 -42637613.37 0.0278 0.0020  
 Venus -121448-03-16 17:03 J -42637384.00 -42637383.79 -42637383.57 0.0281 0.0019  
 Venus -121448-11-01 14:10 J -42637154.13 -42637153.91 -42637153.69 0.0285 0.0017  
 Venus -121447-06-19 12:44 J -42636924.18 -42636923.97 -42636923.75 0.0288 0.0017  
 Venus -121446-02-04 12:58 J -42636694.17 -42636693.96 -42636693.74 0.0291 0.0014  
 Mars -121446-02-20 04:20 J -42636678.41 -42636678.32 -42636678.22 0.0291 0.0276  
 Venus -121446-09-22 14:25 J -42636464.11 -42636463.90 -42636463.68 0.0294 0.0012  
 Venus -121445-05-09 17:03 J -42636234.01 -42636233.79 -42636233.58 0.0297 0.0010  
 Venus -121445-12-25 20:10 J -42636003.87 -42636003.66 -42636003.45 0.0299 0.0006  
 Mercury -121444-05-05 19:13 J -42635872.79 -42635872.70 -42635872.60 0.0300 0.0214  
 Mercury -121444-08-02 09:08 J -42635784.24 -42635784.12 -42635783.99 0.0301 0.0096  
 Venus -121444-08-12 23:32 J -42635773.73 -42635773.52 -42635773.31 0.0301 0.0002  
 Mercury -121444-10-29 23:03 J -42635695.68 -42635695.54 -42635695.41 0.0302 0.0023  
 Mercury -121443-01-26 12:44 J -42635607.09 -42635606.97 -42635606.85 0.0302 0.0140  
 Venus -121443-03-31 02:53 J -42635543.59 -42635543.38 -42635543.17 0.0303 0.0002  
 Mercury -121443-04-25 02:10 J -42635518.48 -42635518.41 -42635518.34 0.0303 0.0256  
 Venus -121443-11-16 06:01 J -42635313.46 -42635313.25 -42635313.05 0.0304 0.0006  
 Venus -121442-07-04 08:10 J -42635083.36 -42635083.16 -42635082.95 0.0304 0.0011  
 Venus -121441-02-19 09:37 J -42634853.30 -42634853.10 -42634852.89 0.0304 0.0012  
 Venus -121441-10-06 09:37 J -42634623.30 -42634623.10 -42634622.89 0.0304 0.0015  
 Venus -121440-05-24 08:10 J -42634393.37 -42634393.16 -42634392.96 0.0303 0.0017  
 Venus -121439-01-09 04:49 J -42634163.50 -42634163.30 -42634163.09 0.0301 0.0019  
 Venus -121439-08-26 23:46 J -42633933.72 -42633933.51 -42633933.31 0.0299 0.0021  
 Venus -121438-04-13 16:34 J -42633704.02 -42633703.81 -42633703.61 0.0296 0.0021  
 Venus -121438-11-29 07:13 J -42633474.40 -42633474.20 -42633474.00 0.0294 0.0021  
 Venus -121437-07-15 19:56 J -42633244.88 -42633244.67 -42633244.47 0.0291 0.0022

Venus -121436-03-02 06:29 J -42633015.43 -42633015.23 -42633015.02 0.0288 0.0021  
 Venus -121436-10-17 15:08 J -42632786.07 -42632785.87 -42632785.66 0.0284 0.0021  
 Venus -121435-06-03 22:05 J -42632556.79 -42632556.58 -42632556.37 0.0281 0.0019  
 Venus -121434-01-19 03:22 J -42632327.57 -42632327.36 -42632327.16 0.0278 0.0017  
 Venus -121434-09-05 06:58 J -42632098.41 -42632098.21 -42632098.00 0.0275 0.0017  
 Venus -121433-04-21 09:37 J -42631869.31 -42631869.10 -42631868.89 0.0272 0.0014  
 Venus -121433-12-06 10:49 J -42631640.26 -42631640.05 -42631639.84 0.0270 0.0013  
 Mars -121432-05-12 14:25 J -42631483.18 -42631482.90 -42631482.61 0.0268 0.0026  
 Venus -121432-07-23 11:03 J -42631411.25 -42631411.04 -42631410.82 0.0267 0.0011  
 Venus -121431-03-09 10:34 J -42631182.27 -42631182.06 -42631181.84 0.0265 0.0009  
 Venus -121431-10-24 09:37 J -42630953.31 -42630953.10 -42630952.89 0.0263 0.0006  
 Mercury -121430-03-04 14:53 J -42630821.93 -42630821.88 -42630821.82 0.0262 0.0247  
 Mercury -121430-06-01 09:22 J -42630733.25 -42630733.11 -42630732.95 0.0261 0.0145  
 Venus -121430-06-10 08:25 J -42630724.36 -42630724.15 -42630723.93 0.0261 0.0003  
 Mercury -121430-08-29 04:20 J -42630644.50 -42630644.32 -42630644.14 0.0261 0.0043  
 Mercury -121430-11-25 23:03 J -42630555.71 -42630555.54 -42630555.36 0.0260 0.0061  
 Venus -121429-01-25 06:58 J -42630495.43 -42630495.21 -42630495.00 0.0260 0.0003  
 Mercury -121429-02-22 18:01 J -42630466.88 -42630466.75 -42630466.60 0.0260 0.0165  
 Venus -121429-09-10 05:17 J -42630266.49 -42630266.28 -42630266.06 0.0259 0.0004  
 Venus -121428-04-27 04:05 J -42630037.55 -42630037.33 -42630037.12 0.0258 0.0006  
 Venus -121428-12-12 03:08 J -42629808.59 -42629808.37 -42629808.15 0.0258 0.0007  
 Venus -121427-07-29 02:53 J -42629579.60 -42629579.38 -42629579.16 0.0258 0.0010  
 Venus -121426-03-15 03:08 J -42629350.59 -42629350.37 -42629350.15 0.0258 0.0011  
 Venus -121426-10-30 04:20 J -42629121.54 -42629121.32 -42629121.10 0.0258 0.0014  
 Venus -121425-06-15 06:44 J -42628892.44 -42628892.22 -42628892.00 0.0259 0.0015  
 Venus -121424-01-30 10:20 J -42628663.29 -42628663.07 -42628662.85 0.0260 0.0017  
 Venus -121424-09-16 15:08 J -42628434.09 -42628433.87 -42628433.65 0.0261 0.0018  
 Venus -121423-05-03 21:22 J -42628204.83 -42628204.61 -42628204.39 0.0263 0.0019  
 Venus -121423-12-19 05:17 J -42627975.50 -42627975.28 -42627975.06 0.0265 0.0020  
 Venus -121422-08-05 15:08 J -42627746.09 -42627745.87 -42627745.65 0.0267 0.0020

Venus	-121421-03-22 02:39 J	-42627516.61	-42627516.39	-42627516.17	0.0270	0.0021
Venus	-121421-11-06 16:05 J	-42627287.05	-42627286.83	-42627286.61	0.0272	0.0021
Venus	-121420-06-24 07:13 J	-42627057.41	-42627057.20	-42627056.98	0.0275	0.0021
Venus	-121419-02-09 00:29 J	-42626827.69	-42626827.48	-42626827.26	0.0278	0.0020
Venus	-121419-09-26 19:56 J	-42626597.89	-42626597.67	-42626597.45	0.0281	0.0019
Venus	-121418-05-14 16:49 J	-42626368.01	-42626367.80	-42626367.58	0.0285	0.0018
Venus	-121418-12-30 15:22 J	-42626138.07	-42626137.86	-42626137.64	0.0288	0.0016
Earth	-121417-01-07 11:32 J	-42626130.25	-42626130.02	-42626129.78	0.0288	0.0071
Moon	-121417-01-07 15:22 J	-42626130.10	-42626129.86	-42626129.62	0.0288	0.0073 *
Venus	-121417-08-16 15:22 J	-42625908.07	-42625907.86	-42625907.64	0.0291	0.0016
Venus	-121416-04-03 16:49 J	-42625678.01	-42625677.80	-42625677.58	0.0294	0.0012
Mars	-121416-04-12 16:34 J	-42625669.11	-42625668.81	-42625668.51	0.0294	0.0011
Venus	-121416-11-19 19:27 J	-42625447.91	-42625447.69	-42625447.48	0.0297	0.0010
Venus	-121415-07-07 22:20 J	-42625217.78	-42625217.57	-42625217.36	0.0300	0.0007
Mercury	-121415-09-22 19:41 J	-42625140.75	-42625140.68	-42625140.61	0.0300	0.0257
Mercury	-121415-12-20 09:37 J	-42625052.22	-42625052.10	-42625051.98	0.0301	0.0139
Venus	-121414-02-23 01:41 J	-42624987.64	-42624987.43	-42624987.22	0.0302	0.0006
Mercury	-121414-03-18 23:17 J	-42624963.66	-42624963.53	-42624963.39	0.0302	0.0023
Mercury	-121414-06-15 12:58 J	-42624875.08	-42624874.96	-42624874.83	0.0303	0.0097
Mercury	-121414-09-12 02:39 J	-42624786.48	-42624786.39	-42624786.30	0.0303	0.0214
Venus	-121414-10-11 05:17 J	-42624757.49	-42624757.28	-42624757.08	0.0303	0.0006
Venus	-121413-05-28 08:10 J	-42624527.36	-42624527.16	-42624526.95	0.0304	0.0007
Venus	-121412-01-13 10:49 J	-42624297.26	-42624297.05	-42624296.85	0.0305	0.0009
Venus	-121412-08-31 12:01 J	-42624067.20	-42624067.00	-42624066.80	0.0305	0.0011
Venus	-121411-04-18 12:01 J	-42623837.21	-42623837.00	-42623836.80	0.0304	0.0015
Venus	-121411-12-04 10:20 J	-42623607.28	-42623607.07	-42623606.87	0.0303	0.0017
Venus	-121410-07-22 06:44 J	-42623377.42	-42623377.22	-42623377.01	0.0301	0.0019
Venus	-121409-03-08 01:27 J	-42623147.64	-42623147.44	-42623147.23	0.0299	0.0021
Venus	-121409-10-23 18:15 J	-42622917.95	-42622917.74	-42622917.54	0.0296	0.0021
Venus	-121408-06-10 08:39 J	-42622688.34	-42622688.14	-42622687.94	0.0293	0.0021

Venus	-121407-01-25 21:08 J	-42622458.82	-42622458.62	-42622458.42	0.0290	0.0021
Venus	-121407-09-12 07:41 J	-42622229.39	-42622229.18	-42622228.98	0.0287	0.0020
Venus	-121406-04-29 16:20 J	-42622000.03	-42621999.82	-42621999.62	0.0284	0.0019
Venus	-121406-12-14 23:03 J	-42621770.74	-42621770.54	-42621770.33	0.0281	0.0017
Venus	-121405-07-31 04:20 J	-42621541.53	-42621541.32	-42621541.12	0.0277	0.0016
Venus	-121404-03-17 07:56 J	-42621312.38	-42621312.17	-42621311.96	0.0274	0.0014
Earth	-121404-07-01 12:15 J	-42621206.21	-42621205.99	-42621205.77	0.0273	0.0119
Moon	-121404-07-01 13:13 J	-42621206.16	-42621205.95	-42621205.71	0.0273	0.0129 *
Venus	-121404-11-01 10:20 J	-42621083.28	-42621083.07	-42621082.86	0.0272	0.0011
Venus	-121403-06-18 11:32 J	-42620854.23	-42620854.02	-42620853.81	0.0269	0.0010
Venus	-121402-02-02 11:46 J	-42620625.22	-42620625.01	-42620624.79	0.0267	0.0008
Mars	-121402-06-29 03:37 J	-42620478.52	-42620478.35	-42620478.15	0.0265	0.0200
Venus	-121402-09-19 11:32 J	-42620396.24	-42620396.02	-42620395.81	0.0264	0.0007
Venus	-121401-05-05 10:34 J	-42620167.27	-42620167.06	-42620166.85	0.0263	0.0002
Mercury	-121401-10-18 08:10 J	-42620001.29	-42620001.16	-42620001.03	0.0261	0.0181
Venus	-121401-12-20 09:08 J	-42619938.33	-42619938.12	-42619937.90	0.0261	0.0004
Mercury	-121400-01-15 02:53 J	-42619912.55	-42619912.38	-42619912.21	0.0261	0.0079
Mercury	-121400-04-13 21:51 J	-42619823.77	-42619823.59	-42619823.41	0.0260	0.0024
Mercury	-121400-07-11 16:49 J	-42619734.96	-42619734.80	-42619734.64	0.0260	0.0128
Venus	-121400-08-06 07:41 J	-42619709.40	-42619709.18	-42619708.97	0.0260	0.0003
Mercury	-121400-10-08 11:46 J	-42619646.08	-42619646.01	-42619645.92	0.0259	0.0232
Venus	-121399-03-23 06:15 J	-42619480.46	-42619480.24	-42619480.03	0.0259	0.0007
Venus	-121399-11-07 04:49 J	-42619251.52	-42619251.30	-42619251.08	0.0258	0.0007
Venus	-121398-06-24 04:05 J	-42619022.55	-42619022.33	-42619022.11	0.0258	0.0009
Venus	-121397-02-08 03:51 J	-42618793.56	-42618793.34	-42618793.12	0.0258	0.0010
Venus	-121397-09-24 04:05 J	-42618564.55	-42618564.33	-42618564.11	0.0258	0.0012
Venus	-121396-05-11 05:17 J	-42618335.50	-42618335.28	-42618335.06	0.0258	0.0014
Venus	-121396-12-26 07:41 J	-42618106.40	-42618106.18	-42618105.96	0.0259	0.0016
Venus	-121395-08-12 11:17 J	-42617877.25	-42617877.03	-42617876.81	0.0260	0.0017
Venus	-121394-03-29 16:05 J	-42617648.05	-42617647.83	-42617647.61	0.0262	0.0018



Venus -121394-11-13 22:20 J -42617418.79 -42617418.57 -42617418.35 0.0263 0.0020

Venus -121393-06-30 06:15 J -42617189.46 -42617189.24 -42617189.02 0.0265 0.0020

Venus -121392-02-14 16:05 J -42616960.05 -42616959.83 -42616959.61 0.0268 0.0021

Venus -121392-10-02 03:37 J -42616730.57 -42616730.35 -42616730.13 0.0270 0.0021

Venus -121391-05-19 17:03 J -42616501.01 -42616500.79 -42616500.57 0.0273 0.0021

Venus -121390-01-04 08:25 J -42616271.37 -42616271.15 -42616270.93 0.0276 0.0021

Venus -121390-08-22 01:41 J -42616041.65 -42616041.43 -42616041.21 0.0279 0.0020

Venus -121389-04-07 20:53 J -42615811.85 -42615811.63 -42615811.41 0.0282 0.0018

Venus -121389-11-23 18:01 J -42615581.97 -42615581.75 -42615581.54 0.0285 0.0017

Venus -121388-07-11 16:34 J -42615352.03 -42615351.81 -42615351.60 0.0288 0.0014

Venus -121387-02-26 16:34 J -42615122.02 -42615121.81 -42615121.59 0.0291 0.0013

Venus -121387-10-14 18:15 J -42614891.95 -42614891.74 -42614891.53 0.0294 0.0008

Venus -121386-06-01 20:39 J -42614661.85 -42614661.64 -42614661.43 0.0297 0.0005

Mars -121386-06-04 17:46 J -42614658.89 -42614658.76 -42614658.60 0.0297 0.0262

Venus -121385-01-17 23:46 J -42614431.72 -42614431.51 -42614431.30 0.0299 0.0002

Mercury -121385-05-08 09:37 J -42614320.21 -42614320.10 -42614319.99 0.0300 0.0187

Mercury -121385-08-04 23:32 J -42614231.65 -42614231.52 -42614231.39 0.0301 0.0069

Venus -121385-09-04 03:08 J -42614201.58 -42614201.37 -42614201.16 0.0301 0.0003

Mercury -121385-11-01 13:13 J -42614143.08 -42614142.95 -42614142.82 0.0302 0.0049

Mercury -121384-01-29 02:39 J -42614054.49 -42614054.39 -42614054.27 0.0302 0.0167

Venus -121384-04-22 06:29 J -42613971.44 -42613971.23 -42613971.03 0.0303 0.0008

Mercury -121384-04-27 16:20 J -42613965.86 -42613965.82 -42613965.77 0.0303 0.0282

Venus -121384-12-08 09:22 J -42613741.32 -42613741.11 -42613740.90 0.0304 0.0009

Venus -121383-07-26 11:32 J -42613511.22 -42613511.02 -42613510.81 0.0304 0.0012

Venus -121382-03-13 12:44 J -42613281.18 -42613280.97 -42613280.77 0.0304 0.0016

Venus -121382-10-29 12:29 J -42613051.19 -42613050.98 -42613050.78 0.0304 0.0018

Venus -121381-06-15 10:49 J -42612821.26 -42612821.05 -42612820.85 0.0302 0.0021

Venus -121380-01-31 07:27 J -42612591.40 -42612591.19 -42612590.99 0.0301 0.0022

Venus -121380-09-18 01:56 J -42612361.62 -42612361.42 -42612361.21 0.0299 0.0023

Venus -121379-05-05 18:29 J -42612131.93 -42612131.73 -42612131.52 0.0296 0.0024

Venus -121379-12-21 09:08 J -42611902.32 -42611902.12 -42611901.91 0.0293 0.0023  
 Venus -121378-08-07 21:51 J -42611672.80 -42611672.59 -42611672.39 0.0290 0.0023  
 Venus -121377-03-24 08:25 J -42611443.35 -42611443.15 -42611442.94 0.0287 0.0022  
 Venus -121377-11-08 17:03 J -42611213.99 -42611213.79 -42611213.58 0.0284 0.0021  
 Venus -121376-06-26 00:01 J -42610984.71 -42610984.50 -42610984.30 0.0281 0.0018  
 Venus -121375-02-10 05:17 J -42610755.49 -42610755.28 -42610755.08 0.0278 0.0017  
 Moon -121375-06-25 23:46 J -42610619.65 -42610619.51 -42610619.36 0.0276 0.0223  
 Earth -121375-06-26 03:08 J -42610619.48 -42610619.37 -42610619.23 0.0276 0.0235 \*  
 Venus -121375-09-27 08:53 J -42610526.34 -42610526.13 -42610525.92 0.0275 0.0015  
 Venus -121374-05-14 11:32 J -42610297.23 -42610297.02 -42610296.81 0.0272 0.0012  
 Mars -121374-08-19 06:58 J -42610200.44 -42610200.21 -42610199.97 0.0271 0.0158  
 Venus -121374-12-29 12:58 J -42610068.17 -42610067.96 -42610067.75 0.0269 0.0011  
 Venus -121373-08-14 13:13 J -42609839.16 -42609838.95 -42609838.74 0.0267 0.0007  
 Venus -121372-03-31 12:44 J -42609610.18 -42609609.97 -42609609.75 0.0265 0.0006  
 Venus -121372-11-15 11:46 J -42609381.22 -42609381.01 -42609380.79 0.0263 0.0006  
 Mercury -121371-03-07 07:13 J -42609269.30 -42609269.20 -42609269.09 0.0262 0.0215  
 Mercury -121371-06-04 01:56 J -42609180.58 -42609180.42 -42609180.26 0.0262 0.0112  
 Venus -121371-07-02 10:34 J -42609152.27 -42609152.06 -42609151.84 0.0261 0.0004  
 Mercury -121371-08-31 20:39 J -42609091.82 -42609091.64 -42609091.45 0.0261 0.0012  
 Mercury -121371-11-28 15:37 J -42609003.02 -42609002.85 -42609002.67 0.0260 0.0094  
 Venus -121370-02-16 09:08 J -42608923.33 -42608923.12 -42608922.90 0.0260 0.0005  
 Mercury -121370-02-25 10:49 J -42608914.17 -42608914.05 -42608913.93 0.0260 0.0198  
 Venus -121370-10-03 07:41 J -42608694.39 -42608694.18 -42608693.96 0.0259 0.0006  
 Venus -121369-05-19 06:29 J -42608465.44 -42608465.23 -42608465.01 0.0258 0.0009  
 Venus -121368-01-03 05:46 J -42608236.48 -42608236.26 -42608236.04 0.0258 0.0010  
 Venus -121368-08-20 05:32 J -42608007.49 -42608007.27 -42608007.05 0.0258 0.0013  
 Venus -121367-04-06 05:46 J -42607778.47 -42607778.26 -42607778.04 0.0258 0.0015  
 Venus -121367-11-21 07:13 J -42607549.42 -42607549.20 -42607548.98 0.0258 0.0016  
 Venus -121366-07-08 09:51 J -42607320.31 -42607320.09 -42607319.87 0.0259 0.0018  
 Venus -121365-02-22 13:27 J -42607091.16 -42607090.94 -42607090.72 0.0260 0.0019

Venus	-121365-10-08 18:15 J	-42606861.96	-42606861.74	-42606861.52	0.0261	0.0020
Venus	-121364-05-26 00:29 J	-42606632.70	-42606632.48	-42606632.25	0.0263	0.0022
Venus	-121363-01-10 08:39 J	-42606403.36	-42606403.14	-42606402.92	0.0265	0.0022
Venus	-121363-08-27 18:29 J	-42606173.95	-42606173.73	-42606173.51	0.0267	0.0022
Venus	-121362-04-14 06:01 J	-42605944.47	-42605944.25	-42605944.03	0.0270	0.0022
Venus	-121362-11-29 19:27 J	-42605714.91	-42605714.69	-42605714.47	0.0272	0.0022
Venus	-121361-07-16 10:49 J	-42605485.27	-42605485.05	-42605484.83	0.0275	0.0021
Venus	-121360-03-03 04:05 J	-42605255.55	-42605255.33	-42605255.12	0.0278	0.0020
Venus	-121360-10-18 23:17 J	-42605025.75	-42605025.53	-42605025.31	0.0282	0.0018
Venus	-121359-06-05 20:10 J	-42604795.88	-42604795.66	-42604795.44	0.0285	0.0016
Moon	-121358-01-08 04:34 J	-42604579.55	-42604579.31	-42604579.08	0.0288	0.0012
Earth	-121358-01-08 04:49 J	-42604579.54	-42604579.30	-42604579.05	0.0288	0.0013 *
Venus	-121358-01-21 18:44 J	-42604565.94	-42604565.72	-42604565.50	0.0288	0.0014
Mars	-121358-07-15 03:37 J	-42604391.43	-42604391.35	-42604391.24	0.0291	0.0274
Venus	-121358-09-08 18:44 J	-42604335.93	-42604335.72	-42604335.50	0.0291	0.0012
Venus	-121357-04-25 20:10 J	-42604105.88	-42604105.66	-42604105.45	0.0294	0.0009
Venus	-121357-12-11 22:34 J	-42603875.78	-42603875.56	-42603875.35	0.0297	0.0008
Venus	-121356-07-30 01:27 J	-42603645.65	-42603645.44	-42603645.23	0.0300	0.0003
Mercury	-121356-09-25 09:51 J	-42603588.18	-42603588.09	-42603588.01	0.0300	0.0232
Mercury	-121356-12-22 23:32 J	-42603499.64	-42603499.52	-42603499.39	0.0301	0.0114
Venus	-121355-03-17 04:34 J	-42603415.51	-42603415.31	-42603415.10	0.0302	0.0006
Mercury	-121355-03-21 13:27 J	-42603411.08	-42603410.94	-42603410.81	0.0302	0.0006
Mercury	-121355-06-18 03:08 J	-42603322.50	-42603322.37	-42603322.25	0.0302	0.0122
Mercury	-121355-09-14 16:34 J	-42603233.89	-42603233.81	-42603233.73	0.0303	0.0238
Venus	-121355-11-02 07:56 J	-42603185.37	-42603185.17	-42603184.96	0.0303	0.0007
Venus	-121354-06-20 11:03 J	-42602955.25	-42602955.04	-42602954.84	0.0304	0.0010
Venus	-121353-02-05 13:13 J	-42602725.15	-42602724.95	-42602724.74	0.0305	0.0012
Venus	-121353-09-22 14:25 J	-42602495.11	-42602494.90	-42602494.70	0.0305	0.0015
Venus	-121352-05-10 14:10 J	-42602265.12	-42602264.91	-42602264.71	0.0304	0.0018
Venus	-121352-12-26 12:15 J	-42602035.19	-42602034.99	-42602034.78	0.0303	0.0021

Venus	-121351-08-13 08:53 J	-42601805.34	-42601805.13	-42601804.93	0.0301	0.0022
Venus	-121350-03-31 03:22 J	-42601575.56	-42601575.36	-42601575.16	0.0299	0.0022
Venus	-121350-11-15 19:41 J	-42601345.88	-42601345.68	-42601345.47	0.0296	0.0023
Venus	-121349-07-02 10:05 J	-42601116.28	-42601116.08	-42601115.87	0.0293	0.0024
Venus	-121348-02-16 22:34 J	-42600886.76	-42600886.56	-42600886.35	0.0290	0.0023
Venus	-121348-10-04 09:08 J	-42600657.32	-42600657.12	-42600656.92	0.0287	0.0020
Venus	-121347-05-21 17:46 J	-42600427.97	-42600427.76	-42600427.56	0.0284	0.0019
Venus	-121346-01-06 00:29 J	-42600198.69	-42600198.48	-42600198.27	0.0280	0.0016
Venus	-121346-08-23 05:46 J	-42599969.47	-42599969.26	-42599969.06	0.0277	0.0015
Venus	-121345-04-08 09:37 J	-42599740.31	-42599740.10	-42599739.89	0.0274	0.0012
Earth	-121345-07-02 06:01 J	-42599655.43	-42599655.25	-42599655.06	0.0273	0.0177
Moon	-121345-07-02 09:22 J	-42599655.29	-42599655.11	-42599654.92	0.0273	0.0174 *
Venus	-121345-11-23 12:01 J	-42599511.21	-42599511.00	-42599510.79	0.0271	0.0009
Venus	-121344-07-10 13:13 J	-42599282.16	-42599281.95	-42599281.74	0.0269	0.0007
Mars	-121344-10-05 07:13 J	-42599195.49	-42599195.20	-42599194.92	0.0268	0.0027
Venus	-121343-02-24 13:27 J	-42599053.15	-42599052.94	-42599052.72	0.0266	0.0007
Venus	-121343-10-11 13:13 J	-42598824.16	-42598823.95	-42598823.74	0.0264	0.0003
Venus	-121342-05-28 12:29 J	-42598595.20	-42598594.98	-42598594.77	0.0262	0.0002
Mercury	-121342-07-25 05:46 J	-42598537.30	-42598537.26	-42598537.21	0.0262	0.0251
Mercury	-121342-10-22 00:29 J	-42598448.63	-42598448.48	-42598448.33	0.0261	0.0149
Venus	-121341-01-12 11:17 J	-42598366.25	-42598366.03	-42598365.82	0.0261	0.0005
Mercury	-121341-01-18 19:13 J	-42598359.88	-42598359.70	-42598359.52	0.0261	0.0047
Mercury	-121341-04-16 14:10 J	-42598271.09	-42598270.91	-42598270.73	0.0260	0.0056
Mercury	-121341-07-14 09:08 J	-42598182.26	-42598182.12	-42598181.97	0.0260	0.0160
Venus	-121341-08-28 09:51 J	-42598137.31	-42598137.09	-42598136.88	0.0260	0.0007
Venus	-121340-04-14 08:25 J	-42597908.37	-42597908.15	-42597907.94	0.0259	0.0009
Venus	-121340-11-29 07:13 J	-42597679.42	-42597679.20	-42597678.99	0.0258	0.0011
Venus	-121339-07-16 06:29 J	-42597450.45	-42597450.23	-42597450.01	0.0258	0.0012
Venus	-121338-03-02 06:15 J	-42597221.46	-42597221.24	-42597221.02	0.0258	0.0014
Venus	-121338-10-17 06:44 J	-42596992.44	-42596992.22	-42596992.00	0.0258	0.0016

Venus	-121337-06-02 08:10 J	-42596763.38	-42596763.16	-42596762.94	0.0258	0.0018
Venus	-121336-01-17 10:34 J	-42596534.28	-42596534.06	-42596533.84	0.0259	0.0019
Venus	-121336-09-03 14:10 J	-42596305.13	-42596304.91	-42596304.69	0.0260	0.0020
Venus	-121335-04-20 18:58 J	-42596075.93	-42596075.71	-42596075.49	0.0262	0.0021
Venus	-121335-12-06 01:27 J	-42595846.66	-42595846.44	-42595846.22	0.0263	0.0022
Venus	-121334-07-23 09:37 J	-42595617.32	-42595617.10	-42595616.88	0.0265	0.0022
Venus	-121333-03-08 19:13 J	-42595387.91	-42595387.70	-42595387.47	0.0268	0.0023
Venus	-121333-10-24 06:58 J	-42595158.43	-42595158.21	-42595157.99	0.0270	0.0022
Venus	-121332-06-10 20:25 J	-42594928.87	-42594928.65	-42594928.43	0.0273	0.0022
Venus	-121331-01-26 11:32 J	-42594699.23	-42594699.02	-42594698.79	0.0276	0.0022
Venus	-121331-09-13 05:03 J	-42594469.50	-42594469.29	-42594469.07	0.0279	0.0020
Venus	-121330-05-01 00:15 J	-42594239.70	-42594239.49	-42594239.27	0.0282	0.0018
Venus	-121330-12-16 21:22 J	-42594009.83	-42594009.61	-42594009.40	0.0285	0.0015
Venus	-121329-08-02 19:56 J	-42593779.89	-42593779.67	-42593779.45	0.0288	0.0012
Venus	-121328-03-20 19:56 J	-42593549.88	-42593549.67	-42593549.45	0.0291	0.0012
Mars	-121328-09-04 10:49 J	-42593382.35	-42593382.05	-42593381.75	0.0294	0.0019
Venus	-121328-11-05 21:37 J	-42593319.81	-42593319.60	-42593319.39	0.0294	0.0006
Venus	-121327-06-24 00:01 J	-42593089.71	-42593089.50	-42593089.29	0.0297	0.0004
Venus	-121326-02-09 02:53 J	-42592859.59	-42592859.38	-42592859.17	0.0299	0.0003
Mercury	-121326-02-12 09:51 J	-42592856.14	-42592856.09	-42592856.05	0.0299	0.0278
Mercury	-121326-05-11 23:46 J	-42592767.63	-42592767.51	-42592767.40	0.0300	0.0161
Mercury	-121326-08-08 13:27 J	-42592679.07	-42592678.94	-42592678.80	0.0301	0.0044
Venus	-121326-09-27 06:15 J	-42592629.45	-42592629.24	-42592629.03	0.0301	0.0006
Mercury	-121326-11-05 03:22 J	-42592590.49	-42592590.36	-42592590.23	0.0302	0.0075
Mercury	-121325-02-01 16:49 J	-42592501.90	-42592501.80	-42592501.70	0.0302	0.0191
Venus	-121325-05-14 09:22 J	-42592399.31	-42592399.11	-42592398.90	0.0303	0.0011
Venus	-121325-12-30 12:15 J	-42592169.19	-42592168.99	-42592168.78	0.0304	0.0015
Venus	-121324-08-17 14:25 J	-42591939.11	-42591938.90	-42591938.70	0.0304	0.0016
Venus	-121323-04-04 15:22 J	-42591709.07	-42591708.86	-42591708.66	0.0304	0.0019
Venus	-121323-11-20 14:53 J	-42591479.08	-42591478.88	-42591478.68	0.0304	0.0021

Venus	-121322-07-08 12:58 J	-42591249.16	-42591248.96	-42591248.76	0.0302	0.0023
Venus	-121321-02-23 09:22 J	-42591019.31	-42591019.11	-42591018.90	0.0301	0.0025
Venus	-121321-10-10 03:51 J	-42590789.54	-42590789.34	-42590789.13	0.0298	0.0025
Venus	-121320-05-27 20:25 J	-42590559.85	-42590559.65	-42590559.45	0.0296	0.0024
Venus	-121319-01-12 10:49 J	-42590330.25	-42590330.05	-42590329.85	0.0293	0.0024
Venus	-121319-08-29 23:17 J	-42590100.73	-42590100.53	-42590100.33	0.0290	0.0023
Venus	-121318-04-16 09:51 J	-42589871.29	-42589871.09	-42589870.88	0.0287	0.0022
Venus	-121318-12-01 18:29 J	-42589641.93	-42589641.73	-42589641.52	0.0284	0.0020
Venus	-121317-07-18 01:27 J	-42589412.65	-42589412.44	-42589412.24	0.0281	0.0017
Venus	-121316-03-04 06:44 J	-42589183.43	-42589183.22	-42589183.02	0.0278	0.0016
Earth	-121316-06-26 20:53 J	-42589068.82	-42589068.63	-42589068.44	0.0276	0.0177
Moon	-121316-06-26 22:05 J	-42589068.76	-42589068.58	-42589068.39	0.0276	0.0190 *
Venus	-121316-10-19 10:20 J	-42588954.27	-42588954.07	-42588953.86	0.0275	0.0014
Venus	-121315-06-05 12:58 J	-42588725.17	-42588724.96	-42588724.75	0.0272	0.0010
Venus	-121314-01-20 14:25 J	-42588496.11	-42588495.90	-42588495.69	0.0269	0.0008
Venus	-121314-09-06 14:53 J	-42588267.10	-42588266.88	-42588266.67	0.0267	0.0007
Mars	-121314-11-21 22:34 J	-42588190.71	-42588190.56	-42588190.37	0.0266	0.0211
Venus	-121313-04-22 14:39 J	-42588038.11	-42588037.89	-42588037.68	0.0265	0.0004
Venus	-121313-12-07 13:41 J	-42587809.14	-42587808.93	-42587808.71	0.0263	0.0002
Mercury	-121312-03-09 23:17 J	-42587716.65	-42587716.53	-42587716.39	0.0262	0.0183
Mercury	-121312-06-06 18:15 J	-42587627.91	-42587627.74	-42587627.57	0.0262	0.0080
Venus	-121312-07-24 12:29 J	-42587580.19	-42587579.98	-42587579.76	0.0261	0.0003
Mercury	-121312-09-03 12:58 J	-42587539.14	-42587538.96	-42587538.77	0.0261	0.0024
Mercury	-121312-12-01 07:56 J	-42587450.32	-42587450.17	-42587450.00	0.0260	0.0127
Mercury	-121311-02-28 03:08 J	-42587361.45	-42587361.37	-42587361.28	0.0260	0.0230
Venus	-121311-03-10 11:03 J	-42587351.25	-42587351.04	-42587350.82	0.0260	0.0007
Venus	-121311-10-25 09:51 J	-42587122.31	-42587122.09	-42587121.88	0.0259	0.0009
Venus	-121310-06-11 08:53 J	-42586893.35	-42586893.13	-42586892.91	0.0258	0.0011
Venus	-121309-01-26 08:10 J	-42586664.38	-42586664.16	-42586663.94	0.0258	0.0013
Venus	-121309-09-11 07:56 J	-42586435.39	-42586435.17	-42586434.95	0.0258	0.0016

Venus	-121308-04-28 08:25 J	-42586206.37	-42586206.15	-42586205.93	0.0258	0.0018
Venus	-121308-12-13 10:05 J	-42585977.30	-42585977.08	-42585976.86	0.0258	0.0019
Venus	-121307-07-30 12:44 J	-42585748.19	-42585747.97	-42585747.75	0.0259	0.0021
Venus	-121306-03-16 16:34 J	-42585519.03	-42585518.81	-42585518.59	0.0260	0.0022
Venus	-121306-10-31 21:37 J	-42585289.82	-42585289.60	-42585289.38	0.0262	0.0023
Venus	-121305-06-17 04:05 J	-42585060.55	-42585060.33	-42585060.11	0.0263	0.0023
Venus	-121304-02-01 12:15 J	-42584831.21	-42584830.99	-42584830.77	0.0265	0.0024
Venus	-121304-09-18 22:05 J	-42584601.80	-42584601.58	-42584601.36	0.0267	0.0024
Venus	-121303-05-06 09:51 J	-42584372.31	-42584372.09	-42584371.87	0.0270	0.0023
Venus	-121303-12-21 23:17 J	-42584142.75	-42584142.53	-42584142.31	0.0273	0.0022
Venus	-121302-08-08 14:39 J	-42583913.11	-42583912.89	-42583912.67	0.0275	0.0021
Venus	-121301-03-25 07:56 J	-42583683.38	-42583683.17	-42583682.95	0.0279	0.0020
Venus	-121301-11-10 03:08 J	-42583453.58	-42583453.37	-42583453.15	0.0282	0.0018
Venus	-121300-06-28 00:15 J	-42583223.71	-42583223.49	-42583223.28	0.0285	0.0015
Moon	-121299-01-08 19:13 J	-42583028.93	-42583028.70	-42583028.45	0.0288	0.0060
Earth	-121299-01-08 23:03 J	-42583028.78	-42583028.54	-42583028.30	0.0288	0.0048 *
Venus	-121299-02-12 22:49 J	-42582993.77	-42582993.55	-42582993.34	0.0288	0.0013
Venus	-121299-09-30 22:49 J	-42582763.76	-42582763.55	-42582763.34	0.0292	0.0009
Venus	-121298-05-19 00:01 J	-42582533.71	-42582533.50	-42582533.28	0.0295	0.0007
Mars	-121298-10-27 13:13 J	-42582372.08	-42582371.95	-42582371.80	0.0297	0.0261
Venus	-121297-01-04 02:25 J	-42582303.61	-42582303.40	-42582303.19	0.0297	0.0005
Venus	-121297-08-21 05:03 J	-42582073.50	-42582073.29	-42582073.08	0.0300	0.0005
Mercury	-121297-09-28 00:01 J	-42582035.60	-42582035.50	-42582035.40	0.0300	0.0204
Mercury	-121297-12-25 13:56 J	-42581947.05	-42581946.92	-42581946.79	0.0301	0.0087
Mercury	-121296-03-24 03:37 J	-42581858.48	-42581858.35	-42581858.22	0.0302	0.0031
Venus	-121296-04-08 08:10 J	-42581843.36	-42581843.16	-42581842.95	0.0302	0.0008
Mercury	-121296-06-20 17:17 J	-42581769.90	-42581769.78	-42581769.67	0.0302	0.0148
Mercury	-121296-09-17 06:44 J	-42581681.28	-42581681.22	-42581681.16	0.0303	0.0264
Venus	-121296-11-24 11:32 J	-42581613.23	-42581613.02	-42581612.81	0.0303	0.0010
Venus	-121295-07-12 14:10 J	-42581383.11	-42581382.91	-42581382.70	0.0304	0.0013

Venus	-121294-02-27 16:05 J	-42581153.03	-42581152.83	-42581152.62	0.0305	0.0017
Venus	-121294-10-15 17:03 J	-42580922.99	-42580922.79	-42580922.58	0.0305	0.0019
Venus	-121293-06-01 16:34 J	-42580693.01	-42580692.81	-42580692.60	0.0304	0.0021
Venus	-121292-01-17 14:39 J	-42580463.09	-42580462.89	-42580462.68	0.0303	0.0023
Venus	-121292-09-04 10:49 J	-42580233.25	-42580233.05	-42580232.84	0.0301	0.0024
Venus	-121291-04-22 05:03 J	-42580003.49	-42580003.29	-42580003.08	0.0299	0.0025
Venus	-121291-12-07 21:22 J	-42579773.81	-42579773.61	-42579773.40	0.0296	0.0024
Venus	-121290-07-25 11:46 J	-42579544.21	-42579544.01	-42579543.81	0.0293	0.0023
Venus	-121289-03-11 00:15 J	-42579314.70	-42579314.49	-42579314.29	0.0290	0.0022
Venus	-121289-10-26 10:34 J	-42579085.27	-42579085.06	-42579084.86	0.0287	0.0021
Venus	-121288-06-12 18:58 J	-42578855.92	-42578855.71	-42578855.51	0.0284	0.0018
Venus	-121287-01-28 01:41 J	-42578626.64	-42578626.43	-42578626.22	0.0280	0.0016
Venus	-121287-09-14 06:58 J	-42578397.42	-42578397.21	-42578397.01	0.0277	0.0014
Venus	-121286-05-01 10:49 J	-42578168.26	-42578168.05	-42578167.84	0.0274	0.0010
Moon	-121286-07-03 22:05 J	-42578104.69	-42578104.58	-42578104.44	0.0273	0.0229
Earth	-121286-07-03 23:32 J	-42578104.65	-42578104.52	-42578104.40	0.0273	0.0233 *
Venus	-121286-12-16 13:13 J	-42577939.16	-42577938.95	-42577938.74	0.0271	0.0009
Mars	-121285-01-11 20:10 J	-42577912.88	-42577912.66	-42577912.42	0.0271	0.0159
Venus	-121285-08-01 14:39 J	-42577710.10	-42577709.89	-42577709.68	0.0269	0.0005
Venus	-121284-03-18 15:08 J	-42577481.08	-42577480.87	-42577480.66	0.0266	0.0004
Venus	-121284-11-02 14:53 J	-42577252.10	-42577251.88	-42577251.67	0.0264	0.0005
Venus	-121283-06-19 14:10 J	-42577023.13	-42577022.91	-42577022.70	0.0262	0.0004
Mercury	-121283-07-27 21:51 J	-42576984.68	-42576984.59	-42576984.49	0.0262	0.0220
Mercury	-121283-10-24 16:34 J	-42576895.97	-42576895.81	-42576895.64	0.0261	0.0118
Mercury	-121282-01-21 11:32 J	-42576807.20	-42576807.02	-42576806.84	0.0261	0.0015
Venus	-121282-02-03 12:58 J	-42576794.17	-42576793.96	-42576793.74	0.0261	0.0007
Mercury	-121282-04-20 06:29 J	-42576718.40	-42576718.23	-42576718.06	0.0260	0.0088
Mercury	-121282-07-18 01:41 J	-42576629.55	-42576629.43	-42576629.31	0.0260	0.0192
Venus	-121282-09-20 11:46 J	-42576565.23	-42576565.01	-42576564.79	0.0260	0.0009
Venus	-121281-05-06 10:34 J	-42576336.28	-42576336.06	-42576335.84	0.0259	0.0011



Venus -121281-12-21 09:37 J -42576107.32 -42576107.10 -42576106.88 0.0258 0.0014

Venus -121280-08-07 08:53 J -42575878.34 -42575878.13 -42575877.91 0.0258 0.0016

Venus -121279-03-24 08:53 J -42575649.35 -42575649.13 -42575648.91 0.0258 0.0017

Venus -121279-11-08 09:37 J -42575420.32 -42575420.10 -42575419.88 0.0258 0.0019

Venus -121278-06-25 11:17 J -42575191.25 -42575191.03 -42575190.81 0.0258 0.0020

Venus -121277-02-09 13:56 J -42574962.14 -42574961.92 -42574961.70 0.0259 0.0021

Venus -121277-09-25 17:32 J -42574732.99 -42574732.77 -42574732.54 0.0261 0.0023

Venus -121276-05-12 22:49 J -42574503.77 -42574503.55 -42574503.33 0.0262 0.0023

Venus -121276-12-28 05:17 J -42574274.50 -42574274.28 -42574274.06 0.0264 0.0023

Venus -121275-08-14 13:41 J -42574045.15 -42574044.93 -42574044.71 0.0266 0.0024

Venus -121274-03-31 23:32 J -42573815.74 -42573815.52 -42573815.30 0.0268 0.0024

Venus -121274-11-16 11:17 J -42573586.25 -42573586.03 -42573585.81 0.0270 0.0023

Venus -121273-07-03 00:44 J -42573356.69 -42573356.47 -42573356.25 0.0273 0.0022

Venus -121272-02-17 16:05 J -42573127.05 -42573126.83 -42573126.61 0.0276 0.0021

Venus -121272-10-05 09:37 J -42572897.32 -42572897.10 -42572896.88 0.0279 0.0019

Venus -121271-05-23 04:49 J -42572667.51 -42572667.30 -42572667.08 0.0282 0.0017

Venus -121270-01-08 01:41 J -42572437.64 -42572437.43 -42572437.21 0.0285 0.0015

Venus -121270-08-26 00:29 J -42572207.70 -42572207.48 -42572207.27 0.0289 0.0012

Mars -121270-12-07 05:46 J -42572104.34 -42572104.26 -42572104.15 0.0290 0.0275

Venus -121269-04-12 00:29 J -42571977.70 -42571977.48 -42571977.27 0.0292 0.0007

Venus -121269-11-28 01:56 J -42571747.64 -42571747.42 -42571747.21 0.0295 0.0005

Venus -121268-07-16 04:05 J -42571517.54 -42571517.33 -42571517.12 0.0297 0.0001

Mercury -121267-02-15 00:01 J -42571303.57 -42571303.50 -42571303.42 0.0299 0.0250

Venus -121267-03-03 06:58 J -42571287.42 -42571287.21 -42571287.00 0.0300 0.0006

Mercury -121267-05-14 14:10 J -42571215.04 -42571214.91 -42571214.79 0.0300 0.0133

Mercury -121267-08-11 03:51 J -42571126.47 -42571126.34 -42571126.20 0.0301 0.0015

Venus -121267-10-19 10:05 J -42571057.29 -42571057.08 -42571056.87 0.0302 0.0009

Mercury -121267-11-07 17:32 J -42571037.90 -42571037.77 -42571037.64 0.0302 0.0101

Mercury -121266-02-04 06:58 J -42570949.30 -42570949.21 -42570949.11 0.0302 0.0218

Venus -121266-06-06 13:13 J -42570827.16 -42570826.95 -42570826.74 0.0303 0.0013

Venus	-121265-01-22 15:51 J	-42570597.04	-42570596.84	-42570596.63	0.0304	0.0017
Venus	-121265-09-08 17:46 J	-42570366.97	-42570366.76	-42570366.56	0.0304	0.0020
Venus	-121264-04-26 18:29 J	-42570136.94	-42570136.73	-42570136.53	0.0304	0.0022
Venus	-121264-12-12 17:46 J	-42569906.96	-42569906.76	-42569906.56	0.0303	0.0024
Venus	-121263-07-30 15:37 J	-42569677.05	-42569676.85	-42569676.65	0.0302	0.0025
Venus	-121262-03-17 11:46 J	-42569447.21	-42569447.01	-42569446.81	0.0300	0.0026
Venus	-121262-11-02 06:01 J	-42569217.45	-42569217.25	-42569217.05	0.0298	0.0026
Venus	-121261-06-18 22:05 J	-42568987.78	-42568987.58	-42568987.37	0.0296	0.0027
Venus	-121260-02-03 12:29 J	-42568758.18	-42568757.98	-42568757.77	0.0293	0.0024
Venus	-121260-09-21 00:58 J	-42568528.67	-42568528.46	-42568528.26	0.0290	0.0023
Venus	-121259-05-08 11:17 J	-42568299.23	-42568299.03	-42568298.83	0.0287	0.0020
Venus	-121259-12-23 19:56 J	-42568069.88	-42568069.67	-42568069.47	0.0284	0.0019
Venus	-121258-08-10 02:39 J	-42567840.59	-42567840.39	-42567840.18	0.0280	0.0016
Venus	-121257-03-26 07:56 J	-42567611.37	-42567611.17	-42567610.96	0.0277	0.0014
Earth	-121257-06-27 14:10 J	-42567518.13	-42567517.91	-42567517.69	0.0276	0.0122
Moon	-121257-06-27 17:32 J	-42567517.99	-42567517.77	-42567517.53	0.0276	0.0107 *
Venus	-121257-11-10 11:46 J	-42567382.22	-42567382.01	-42567381.80	0.0274	0.0011
Venus	-121256-06-27 14:25 J	-42567153.11	-42567152.90	-42567152.69	0.0272	0.0008
Venus	-121255-02-11 15:51 J	-42566924.05	-42566923.84	-42566923.63	0.0269	0.0006
Mars	-121255-02-27 23:46 J	-42566907.79	-42566907.51	-42566907.22	0.0269	0.0036
Venus	-121255-09-28 16:20 J	-42566695.03	-42566694.82	-42566694.61	0.0267	0.0002
Venus	-121254-05-15 16:20 J	-42566466.03	-42566465.82	-42566465.61	0.0265	0.0002
Mercury	-121254-12-14 21:08 J	-42566252.67	-42566252.62	-42566252.58	0.0263	0.0253
Venus	-121254-12-30 15:37 J	-42566237.06	-42566236.85	-42566236.63	0.0263	0.0004
Mercury	-121253-03-12 15:37 J	-42566163.99	-42566163.85	-42566163.70	0.0262	0.0151
Mercury	-121253-06-09 10:34 J	-42566075.24	-42566075.06	-42566074.88	0.0262	0.0048
Venus	-121253-08-15 14:39 J	-42566008.11	-42566007.89	-42566007.68	0.0261	0.0007
Mercury	-121253-09-06 05:32 J	-42565986.45	-42565986.27	-42565986.09	0.0261	0.0055
Mercury	-121253-12-04 00:29 J	-42565897.62	-42565897.48	-42565897.33	0.0261	0.0159
Venus	-121252-04-01 13:13 J	-42565779.16	-42565778.95	-42565778.73	0.0260	0.0010

Venus	-121252-11-16 12:15 J	-42565550.21	-42565549.99	-42565549.78	0.0259	0.0012
Venus	-121251-07-03 11:17 J	-42565321.24	-42565321.03	-42565320.81	0.0258	0.0015
Venus	-121250-02-17 10:49 J	-42565092.26	-42565092.05	-42565091.83	0.0258	0.0017
Venus	-121250-10-04 10:49 J	-42564863.26	-42564863.05	-42564862.83	0.0258	0.0019
Venus	-121249-05-20 11:46 J	-42564634.23	-42564634.01	-42564633.79	0.0258	0.0020
Venus	-121248-01-04 13:27 J	-42564405.16	-42564404.94	-42564404.72	0.0259	0.0022
Venus	-121248-08-21 16:20 J	-42564176.04	-42564175.82	-42564175.60	0.0259	0.0023
Venus	-121247-04-07 20:10 J	-42563946.88	-42563946.66	-42563946.44	0.0260	0.0024
Venus	-121247-11-23 01:27 J	-42563717.66	-42563717.44	-42563717.22	0.0262	0.0025
Venus	-121246-07-10 08:25 J	-42563488.37	-42563488.15	-42563487.93	0.0263	0.0025
Venus	-121245-02-24 16:34 J	-42563259.02	-42563258.81	-42563258.58	0.0265	0.0025
Venus	-121245-10-11 02:39 J	-42563029.61	-42563029.39	-42563029.17	0.0268	0.0024
Venus	-121244-05-28 14:25 J	-42562800.12	-42562799.90	-42562799.68	0.0270	0.0023
Venus	-121243-01-13 04:05 J	-42562570.55	-42562570.33	-42562570.11	0.0273	0.0022
Venus	-121243-08-30 19:41 J	-42562340.90	-42562340.68	-42562340.46	0.0276	0.0020
Venus	-121242-04-17 13:13 J	-42562111.17	-42562110.95	-42562110.73	0.0279	0.0018
Venus	-121242-12-03 08:25 J	-42561881.37	-42561881.15	-42561880.93	0.0282	0.0015
Venus	-121241-07-20 05:17 J	-42561651.49	-42561651.28	-42561651.06	0.0285	0.0013
Moon	-121240-01-09 17:46 J	-42561477.99	-42561477.76	-42561477.52	0.0288	0.0100
Earth	-121240-01-09 18:58 J	-42561477.93	-42561477.71	-42561477.48	0.0288	0.0115 *
Venus	-121240-03-07 03:51 J	-42561421.55	-42561421.34	-42561421.12	0.0289	0.0010
Venus	-121240-10-23 04:05 J	-42561191.55	-42561191.33	-42561191.12	0.0292	0.0006
Mars	-121239-01-27 16:20 J	-42561095.12	-42561094.82	-42561094.52	0.0293	0.0016
Venus	-121239-06-10 05:17 J	-42560961.49	-42560961.28	-42560961.07	0.0295	0.0003
Venus	-121238-01-26 07:27 J	-42560731.40	-42560731.19	-42560730.98	0.0297	0.0005
Mercury	-121238-07-05 00:44 J	-42560571.50	-42560571.47	-42560571.44	0.0299	0.0291
Venus	-121238-09-13 10:05 J	-42560501.29	-42560501.08	-42560500.87	0.0300	0.0006
Mercury	-121238-10-01 14:39 J	-42560483.00	-42560482.89	-42560482.78	0.0300	0.0174
Mercury	-121238-12-29 04:20 J	-42560394.45	-42560394.32	-42560394.18	0.0301	0.0058
Mercury	-121237-03-26 18:15 J	-42560305.88	-42560305.74	-42560305.61	0.0302	0.0061

Venus -121237-04-30 12:58 J -42560271.16 -42560270.96 -42560270.75 0.0302 0.0010  
 Mercury -121237-06-23 07:41 J -42560217.29 -42560217.18 -42560217.07 0.0302 0.0177  
 Mercury -121237-09-19 21:08 J -42560128.65 -42560128.62 -42560128.58 0.0303 0.0292  
 Venus -121237-12-16 16:05 J -42560041.04 -42560040.83 -42560040.62 0.0303 0.0013  
 Venus -121236-08-03 18:29 J -42559810.93 -42559810.73 -42559810.52 0.0304 0.0018  
 Venus -121235-03-21 20:25 J -42559580.86 -42559580.65 -42559580.45 0.0305 0.0020  
 Venus -121235-11-06 20:53 J -42559350.83 -42559350.63 -42559350.42 0.0305 0.0022  
 Venus -121234-06-24 20:25 J -42559120.86 -42559120.65 -42559120.45 0.0304 0.0024  
 Venus -121233-02-09 18:15 J -42558890.95 -42558890.74 -42558890.54 0.0302 0.0025  
 Venus -121233-09-26 14:10 J -42558661.11 -42558660.91 -42558660.71 0.0301 0.0025  
 Venus -121232-05-14 08:10 J -42558431.36 -42558431.16 -42558430.96 0.0298 0.0025  
 Venus -121232-12-30 00:15 J -42558201.70 -42558201.49 -42558201.29 0.0296 0.0025  
 Venus -121231-08-16 14:10 J -42557972.11 -42557971.91 -42557971.70 0.0293 0.0024  
 Venus -121230-04-03 02:25 J -42557742.60 -42557742.40 -42557742.19 0.0290 0.0023  
 Venus -121230-11-18 12:44 J -42557513.17 -42557512.97 -42557512.76 0.0287 0.0020  
 Venus -121229-07-04 21:08 J -42557283.83 -42557283.62 -42557283.42 0.0283 0.0017  
 Venus -121228-02-19 03:51 J -42557054.55 -42557054.34 -42557054.14 0.0280 0.0015  
 Venus -121228-10-06 08:53 J -42556825.34 -42556825.13 -42556824.92 0.0277 0.0012  
 Venus -121227-05-23 12:44 J -42556596.18 -42556595.97 -42556595.76 0.0274 0.0009  
 Venus -121226-01-07 15:22 J -42556367.07 -42556366.86 -42556366.65 0.0271 0.0005  
 Venus -121226-08-24 16:49 J -42556138.01 -42556137.80 -42556137.59 0.0269 0.0002  
 Venus -121225-04-09 17:17 J -42555908.99 -42555908.78 -42555908.56 0.0266 0.0005  
 Mars -121225-04-15 17:17 J -42555902.94 -42555902.78 -42555902.60 0.0266 0.0212  
 Venus -121225-11-24 17:17 J -42555679.99 -42555679.78 -42555679.57 0.0264 0.0005  
 Venus -121224-07-11 16:34 J -42555451.02 -42555450.81 -42555450.59 0.0262 0.0007  
 Mercury -121224-07-30 14:25 J -42555432.02 -42555431.90 -42555431.77 0.0262 0.0187  
 Mercury -121224-10-27 09:08 J -42555343.28 -42555343.12 -42555342.94 0.0262 0.0085  
 Mercury -121223-01-24 04:05 J -42555254.51 -42555254.33 -42555254.14 0.0261 0.0020  
 Venus -121223-02-25 15:37 J -42555222.06 -42555221.85 -42555221.63 0.0261 0.0009  
 Mercury -121223-04-22 23:17 J -42555165.69 -42555165.53 -42555165.37 0.0260 0.0123

Mercury -121223-07-20 18:29 J -42555076.82 -42555076.73 -42555076.64 0.0260 0.0226

Venus -121223-10-12 14:25 J -42554993.11 -42554992.90 -42554992.68 0.0260 0.0013

Venus -121222-05-29 13:41 J -42554764.15 -42554763.93 -42554763.72 0.0259 0.0015

Venus -121221-01-13 12:44 J -42554535.18 -42554534.97 -42554534.75 0.0258 0.0017

Venus -121221-08-29 12:15 J -42554306.20 -42554305.99 -42554305.77 0.0258 0.0019

Venus -121220-04-15 12:29 J -42554077.20 -42554076.98 -42554076.76 0.0258 0.0020

Venus -121220-11-30 13:27 J -42553848.16 -42553847.94 -42553847.72 0.0258 0.0022

Venus -121219-07-17 15:22 J -42553619.08 -42553618.86 -42553618.64 0.0259 0.0023

Venus -121218-03-03 18:15 J -42553389.96 -42553389.74 -42553389.52 0.0260 0.0023

Venus -121218-10-18 22:20 J -42553160.79 -42553160.57 -42553160.35 0.0261 0.0024

Venus -121217-06-04 03:37 J -42552931.57 -42552931.35 -42552931.13 0.0262 0.0025

Venus -121216-01-19 10:20 J -42552702.29 -42552702.07 -42552701.84 0.0264 0.0025

Venus -121216-09-05 18:58 J -42552472.93 -42552472.71 -42552472.49 0.0266 0.0025

Venus -121215-04-23 05:17 J -42552243.50 -42552243.28 -42552243.06 0.0268 0.0025

Venus -121215-12-08 17:03 J -42552014.01 -42552013.79 -42552013.57 0.0271 0.0023

Venus -121214-07-26 06:44 J -42551784.44 -42551784.22 -42551784.00 0.0273 0.0022

Venus -121213-03-11 22:20 J -42551554.79 -42551554.57 -42551554.35 0.0276 0.0020

Venus -121213-10-27 15:51 J -42551325.05 -42551324.84 -42551324.62 0.0279 0.0018

Venus -121212-06-14 11:17 J -42551095.25 -42551095.03 -42551094.82 0.0283 0.0016

Venus -121211-01-30 08:10 J -42550865.37 -42550865.16 -42550864.94 0.0286 0.0012

Venus -121211-09-17 06:58 J -42550635.43 -42550635.21 -42550635.00 0.0289 0.0008

Venus -121210-05-05 06:58 J -42550405.42 -42550405.21 -42550404.99 0.0292 0.0005

Venus -121210-12-21 08:25 J -42550175.37 -42550175.15 -42550174.94 0.0295 0.0004

Mars -121209-03-20 19:13 J -42550084.83 -42550084.70 -42550084.54 0.0296 0.0259

Venus -121209-08-07 10:34 J -42549945.28 -42549945.06 -42549944.85 0.0298 0.0007

Mercury -121208-02-17 15:08 J -42549750.96 -42549750.87 -42549750.77 0.0299 0.0216

Venus -121208-03-25 13:13 J -42549715.16 -42549714.95 -42549714.74 0.0300 0.0009

Mercury -121208-05-17 05:03 J -42549662.42 -42549662.29 -42549662.16 0.0300 0.0099

Mercury -121208-08-13 18:44 J -42549573.85 -42549573.72 -42549573.58 0.0301 0.0019

Mercury -121208-11-10 08:25 J -42549485.27 -42549485.15 -42549485.03 0.0302 0.0134

Venus -121208-11-10 16:20 J -42549485.03 -42549484.82 -42549484.61 0.0302 0.0013 \*

Mercury -121207-02-06 21:51 J -42549396.66 -42549396.59 -42549396.51 0.0302 0.0250

Venus -121207-06-28 19:13 J -42549254.91 -42549254.70 -42549254.49 0.0303 0.0017

Venus -121206-02-13 21:37 J -42549024.80 -42549024.60 -42549024.39 0.0304 0.0020

Venus -121206-10-01 23:17 J -42548794.74 -42548794.53 -42548794.33 0.0304 0.0023

Venus -121205-05-18 23:32 J -42548564.72 -42548564.52 -42548564.31 0.0304 0.0026

Venus -121204-01-03 22:49 J -42548334.75 -42548334.55 -42548334.35 0.0303 0.0026

Venus -121204-08-21 20:10 J -42548104.86 -42548104.66 -42548104.46 0.0302 0.0027

Venus -121203-04-08 15:51 J -42547875.04 -42547874.84 -42547874.63 0.0300 0.0028

Venus -121203-11-24 09:51 J -42547645.30 -42547645.09 -42547644.89 0.0298 0.0027

Venus -121202-07-12 01:41 J -42547415.63 -42547415.43 -42547415.23 0.0295 0.0026

Venus -121201-02-26 15:51 J -42547186.04 -42547185.84 -42547185.64 0.0292 0.0024

Venus -121201-10-13 03:51 J -42546956.54 -42546956.34 -42546956.13 0.0289 0.0023

Venus -121200-05-30 14:10 J -42546727.12 -42546726.91 -42546726.71 0.0286 0.0020

Venus -121199-01-14 22:34 J -42546497.77 -42546497.56 -42546497.36 0.0283 0.0018

Venus -121199-09-01 05:17 J -42546268.49 -42546268.28 -42546268.08 0.0280 0.0014

Venus -121198-04-18 10:34 J -42546039.27 -42546039.06 -42546038.85 0.0277 0.0011

Earth -121198-06-29 09:37 J -42545967.34 -42545967.10 -42545966.86 0.0276 0.0060

Moon -121198-06-29 10:20 J -42545967.29 -42545967.07 -42545966.83 0.0276 0.0069 \*

Venus -121198-12-03 14:25 J -42545810.11 -42545809.90 -42545809.69 0.0274 0.0008

Mars -121197-06-05 13:56 J -42545625.16 -42545624.92 -42545624.68 0.0272 0.0150

Venus -121197-07-19 16:49 J -42545581.01 -42545580.80 -42545580.59 0.0271 0.0006

Venus -121196-03-05 18:15 J -42545351.95 -42545351.74 -42545351.53 0.0269 0.0005

Venus -121196-10-20 18:58 J -42545122.92 -42545122.71 -42545122.50 0.0267 0.0001

Venus -121195-06-06 19:13 J -42544893.92 -42544893.70 -42544893.49 0.0265 0.0006

Mercury -121195-12-17 13:41 J -42544700.02 -42544699.93 -42544699.83 0.0263 0.0219

Venus -121194-01-21 18:29 J -42544664.94 -42544664.73 -42544664.51 0.0263 0.0008

Mercury -121194-03-16 08:25 J -42544611.31 -42544611.15 -42544610.99 0.0262 0.0117

Mercury -121194-06-13 03:22 J -42544522.54 -42544522.36 -42544522.18 0.0262 0.0013

Venus -121194-09-07 17:46 J -42544435.98 -42544435.76 -42544435.55 0.0261 0.0010

Mercury -121194-09-09 22:20 J -42544433.74 -42544433.57 -42544433.40 0.0261 0.0091

Mercury -121194-12-07 17:32 J -42544344.89 -42544344.77 -42544344.65 0.0261 0.0195

Venus -121193-04-23 16:34 J -42544207.02 -42544206.81 -42544206.59 0.0260 0.0013

Venus -121193-12-08 15:37 J -42543978.06 -42543977.85 -42543977.63 0.0259 0.0015

Venus -121192-07-25 15:08 J -42543749.09 -42543748.87 -42543748.65 0.0258 0.0017

Venus -121191-03-11 14:53 J -42543520.10 -42543519.88 -42543519.66 0.0258 0.0019

Venus -121191-10-26 15:08 J -42543291.09 -42543290.87 -42543290.65 0.0258 0.0021

Venus -121190-06-12 16:20 J -42543062.04 -42543061.82 -42543061.60 0.0258 0.0023

Venus -121189-01-27 18:15 J -42542832.96 -42542832.74 -42542832.52 0.0259 0.0024

Venus -121189-09-12 21:22 J -42542603.83 -42542603.61 -42542603.39 0.0260 0.0025

Venus -121188-04-30 01:41 J -42542374.65 -42542374.43 -42542374.21 0.0261 0.0026

Venus -121188-12-15 07:13 J -42542145.42 -42542145.20 -42542144.98 0.0262 0.0026

Venus -121187-08-01 14:25 J -42541916.12 -42541915.90 -42541915.68 0.0264 0.0026

Venus -121186-03-18 23:03 J -42541686.76 -42541686.54 -42541686.32 0.0266 0.0026

Venus -121186-11-03 09:22 J -42541457.33 -42541457.11 -42541456.89 0.0268 0.0024

Venus -121185-06-19 21:22 J -42541227.83 -42541227.61 -42541227.39 0.0270 0.0023

Jupiter -121185-08-07 20:25 J -42541178.97 -42541178.65 -42541178.30 0.0271 0.0189

Venus -121184-02-04 11:17 J -42540998.25 -42540998.03 -42540997.81 0.0273 0.0021

Venus -121184-09-22 03:08 J -42540768.59 -42540768.37 -42540768.15 0.0276 0.0019

Venus -121183-05-09 20:39 J -42540538.85 -42540538.64 -42540538.42 0.0279 0.0017

Venus -121183-12-25 16:05 J -42540309.05 -42540308.83 -42540308.61 0.0282 0.0013

Venus -121182-08-12 12:58 J -42540079.17 -42540078.96 -42540078.74 0.0286 0.0012

Earth -121181-01-11 19:27 J -42539926.87 -42539926.69 -42539926.51 0.0288 0.0191

Moon -121181-01-11 22:05 J -42539926.74 -42539926.58 -42539926.40 0.0288 0.0206 \*

Venus -121181-03-29 11:46 J -42539849.23 -42539849.01 -42539848.80 0.0289 0.0007

Mars -121181-05-01 00:58 J -42539816.57 -42539816.46 -42539816.33 0.0289 0.0265

Venus -121181-11-14 11:46 J -42539619.22 -42539619.01 -42539618.79 0.0292 0.0005

Venus -121180-07-02 12:58 J -42539389.17 -42539388.96 -42539388.75 0.0295 0.0002

Venus -121179-02-17 14:53 J -42539159.09 -42539158.88 -42539158.67 0.0298 0.0007

Mercury -121179-07-07 16:05 J -42539018.90 -42539018.83 -42539018.76 0.0299 0.0254

Mercury -121179-10-04 06:01 J -42538930.37 -42538930.25 -42538930.13 0.0300 0.0138

Venus -121179-10-05 17:32 J -42538928.98 -42538928.77 -42538928.56 0.0300 0.0009

Mercury -121179-12-31 19:41 J -42538841.81 -42538841.68 -42538841.54 0.0301 0.0022

Mercury -121178-03-30 09:22 J -42538753.23 -42538753.11 -42538752.98 0.0302 0.0095

Venus -121178-05-23 20:25 J -42538698.86 -42538698.65 -42538698.44 0.0302 0.0013

Mercury -121178-06-26 22:49 J -42538664.64 -42538664.55 -42538664.45 0.0302 0.0211

Venus -121177-01-08 23:17 J -42538468.74 -42538468.53 -42538468.33 0.0303 0.0018

Venus -121177-08-26 01:27 J -42538238.65 -42538238.44 -42538238.24 0.0304 0.0020

Venus -121176-04-13 02:53 J -42538008.59 -42538008.38 -42538008.18 0.0305 0.0023

Venus -121176-11-29 03:08 J -42537778.57 -42537778.37 -42537778.17 0.0304 0.0024

Venus -121175-07-17 02:10 J -42537548.61 -42537548.41 -42537548.21 0.0304 0.0026

Venus -121174-03-03 23:32 J -42537318.72 -42537318.52 -42537318.31 0.0302 0.0027

Venus -121174-10-19 19:13 J -42537088.90 -42537088.70 -42537088.50 0.0300 0.0027

Venus -121173-06-05 12:44 J -42536859.17 -42536858.97 -42536858.76 0.0298 0.0027

Venus -121172-01-21 04:34 J -42536629.51 -42536629.31 -42536629.10 0.0295 0.0025

Venus -121172-09-07 18:29 J -42536399.93 -42536399.73 -42536399.53 0.0292 0.0023

Venus -121171-04-25 06:29 J -42536170.44 -42536170.23 -42536170.03 0.0289 0.0021

Venus -121171-12-10 16:20 J -42535941.02 -42535940.82 -42535940.61 0.0286 0.0019

Venus -121170-07-28 00:44 J -42535711.68 -42535711.47 -42535711.27 0.0283 0.0016

Venus -121169-03-13 07:13 J -42535482.40 -42535482.20 -42535481.99 0.0280 0.0012

Venus -121169-10-28 12:15 J -42535253.19 -42535252.99 -42535252.78 0.0277 0.0010

Venus -121168-06-14 16:05 J -42535024.04 -42535023.83 -42535023.62 0.0274 0.0006

Venus -121167-01-29 18:29 J -42534794.94 -42534794.73 -42534794.52 0.0271 0.0006

Mars -121167-07-23 21:22 J -42534619.89 -42534619.61 -42534619.32 0.0269 0.0040

Venus -121167-09-15 20:10 J -42534565.87 -42534565.66 -42534565.45 0.0268 0.0002

Venus -121166-05-02 20:53 J -42534336.84 -42534336.63 -42534336.42 0.0266 0.0005

Venus -121166-12-17 20:53 J -42534107.84 -42534107.63 -42534107.42 0.0264 0.0007

Mercury -121165-05-05 12:58 J -42533968.00 -42533967.96 -42533967.91 0.0263 0.0253

Mercury -121165-08-02 07:41 J -42533879.33 -42533879.18 -42533879.03 0.0262 0.0151

Venus -121165-08-02 20:25 J -42533878.87 -42533878.65 -42533878.44 0.0262 0.0010



Mercury -121165-10-30 02:25 J -42533790.57 -42533790.40 -42533790.22 0.0262 0.0048

Mercury -121164-01-26 21:22 J -42533701.78 -42533701.61 -42533701.43 0.0261 0.0057

Venus -121164-03-19 19:27 J -42533649.90 -42533649.69 -42533649.47 0.0261 0.0013

Mercury -121164-04-25 16:34 J -42533612.95 -42533612.81 -42533612.66 0.0261 0.0160

Venus -121164-11-03 18:44 J -42533420.94 -42533420.72 -42533420.51 0.0260 0.0016

Venus -121163-06-20 18:01 J -42533191.97 -42533191.75 -42533191.53 0.0259 0.0017

Venus -121162-02-04 17:32 J -42532962.99 -42532962.77 -42532962.56 0.0258 0.0020

Venus -121162-09-21 17:17 J -42532734.00 -42532733.78 -42532733.56 0.0258 0.0021

Venus -121161-05-07 17:46 J -42532504.98 -42532504.76 -42532504.54 0.0258 0.0023

Venus -121161-12-22 18:58 J -42532275.93 -42532275.71 -42532275.49 0.0258 0.0024

Venus -121160-08-08 21:08 J -42532046.84 -42532046.62 -42532046.40 0.0259 0.0025

Venus -121159-03-26 00:29 J -42531817.70 -42531817.48 -42531817.26 0.0260 0.0026

Venus -121159-11-10 04:49 J -42531588.52 -42531588.30 -42531588.08 0.0261 0.0026

Venus -121158-06-27 10:20 J -42531359.28 -42531359.07 -42531358.84 0.0263 0.0027

Venus -121157-02-11 17:32 J -42531129.98 -42531129.77 -42531129.54 0.0264 0.0027

Venus -121157-09-28 02:25 J -42530900.62 -42530900.40 -42530900.18 0.0266 0.0025

Venus -121156-05-15 12:58 J -42530671.18 -42530670.96 -42530670.74 0.0269 0.0024

Venus -121156-12-31 00:58 J -42530441.67 -42530441.46 -42530441.24 0.0271 0.0024

Venus -121155-08-17 15:08 J -42530212.09 -42530211.87 -42530211.65 0.0274 0.0021

Venus -121154-04-04 06:58 J -42529982.43 -42529982.21 -42529981.99 0.0277 0.0019

Venus -121154-11-20 00:44 J -42529752.69 -42529752.47 -42529752.25 0.0280 0.0016

Venus -121153-07-06 20:10 J -42529522.88 -42529522.66 -42529522.44 0.0283 0.0013

Moon -121152-01-04 20:10 J -42529340.82 -42529340.66 -42529340.47 0.0286 0.0203

Earth -121152-01-04 23:32 J -42529340.68 -42529340.52 -42529340.35 0.0286 0.0211 \*

Venus -121152-02-21 17:17 J -42529292.99 -42529292.78 -42529292.56 0.0286 0.0010

Venus -121152-10-09 16:05 J -42529063.04 -42529062.83 -42529062.61 0.0289 0.0008

Venus -121151-05-27 16:20 J -42528833.03 -42528832.82 -42528832.61 0.0292 0.0001

Mars -121151-06-22 13:41 J -42528807.23 -42528806.93 -42528806.62 0.0293 0.0007

Venus -121150-01-12 17:32 J -42528602.98 -42528602.77 -42528602.56 0.0295 0.0004

Venus -121150-08-30 19:41 J -42528372.89 -42528372.68 -42528372.47 0.0298 0.0010

Mercury -121150-11-24 17:03 J -42528286.81 -42528286.79 -42528286.76 0.0299 0.0292

Mercury -121149-02-21 06:58 J -42528198.32 -42528198.21 -42528198.10 0.0300 0.0176

Venus -121149-04-16 22:05 J -42528142.78 -42528142.58 -42528142.37 0.0300 0.0014

Mercury -121149-05-19 20:53 J -42528109.76 -42528109.63 -42528109.50 0.0300 0.0060

Mercury -121149-08-16 10:34 J -42528021.19 -42528021.06 -42528020.93 0.0301 0.0057

Mercury -121149-11-13 00:01 J -42527932.60 -42527932.50 -42527932.39 0.0302 0.0172

Venus -121149-12-03 01:13 J -42527912.66 -42527912.45 -42527912.24 0.0302 0.0017

Mercury -121148-02-09 13:27 J -42527843.97 -42527843.94 -42527843.90 0.0302 0.0287

Venus -121148-07-21 03:51 J -42527682.55 -42527682.34 -42527682.13 0.0303 0.0020

Venus -121147-03-08 06:01 J -42527452.46 -42527452.25 -42527452.05 0.0304 0.0023

Venus -121147-10-24 07:13 J -42527222.40 -42527222.20 -42527221.99 0.0304 0.0026

Venus -121146-06-11 07:27 J -42526992.39 -42526992.19 -42526991.99 0.0304 0.0027

Venus -121145-01-27 06:15 J -42526762.44 -42526762.24 -42526762.04 0.0303 0.0028

Venus -121145-09-13 03:22 J -42526532.56 -42526532.36 -42526532.16 0.0301 0.0029

Venus -121144-04-30 22:34 J -42526302.76 -42526302.56 -42526302.36 0.0299 0.0028

Venus -121144-12-16 16:05 J -42526073.03 -42526072.83 -42526072.63 0.0297 0.0027

Venus -121143-08-03 07:41 J -42525843.38 -42525843.18 -42525842.98 0.0295 0.0026

Venus -121142-03-20 21:22 J -42525613.81 -42525613.61 -42525613.40 0.0292 0.0024

Venus -121142-11-05 09:08 J -42525384.32 -42525384.12 -42525383.91 0.0289 0.0022

Venus -121141-06-21 19:13 J -42525154.91 -42525154.70 -42525154.50 0.0286 0.0018

Venus -121140-02-06 03:22 J -42524925.57 -42524925.36 -42524925.16 0.0283 0.0015

Venus -121140-09-23 09:51 J -42524696.30 -42524696.09 -42524695.88 0.0280 0.0012

Venus -121139-05-10 15:08 J -42524467.08 -42524466.87 -42524466.66 0.0277 0.0009

Moon -121139-06-30 05:46 J -42524416.50 -42524416.26 -42524416.02 0.0276 0.0007

Earth -121139-06-30 08:25 J -42524416.39 -42524416.15 -42524415.90 0.0276 0.0010 \*

Venus -121139-12-25 18:44 J -42524237.93 -42524237.72 -42524237.51 0.0274 0.0007

Venus -121138-08-11 21:22 J -42524008.82 -42524008.61 -42524008.40 0.0271 0.0003

Venus -121137-03-27 22:49 J -42523779.76 -42523779.55 -42523779.34 0.0269 0.0003

Mars -121137-09-08 20:25 J -42523614.78 -42523614.65 -42523614.49 0.0267 0.0227

Venus -121137-11-11 23:32 J -42523550.73 -42523550.52 -42523550.31 0.0266 0.0005

Venus -121136-06-28 23:46 J -42523321.73 -42523321.51 -42523321.30 0.0264 0.0009  
 Mercury -121136-12-20 07:13 J -42523147.32 -42523147.20 -42523147.07 0.0263 0.0181  
 Venus -121135-02-12 23:17 J -42523092.75 -42523092.53 -42523092.32 0.0263 0.0010  
 Mercury -121135-03-19 02:10 J -42523058.58 -42523058.41 -42523058.24 0.0262 0.0078  
 Mercury -121135-06-15 21:08 J -42522969.80 -42522969.62 -42522969.44 0.0262 0.0026  
 Mercury -121135-09-12 16:05 J -42522880.98 -42522880.83 -42522880.67 0.0261 0.0131  
 Venus -121135-09-29 22:34 J -42522863.78 -42522863.56 -42522863.35 0.0261 0.0013  
 Mercury -121135-12-10 11:17 J -42522792.10 -42522792.03 -42522791.94 0.0261 0.0235  
 Venus -121134-05-16 21:51 J -42522634.81 -42522634.59 -42522634.37 0.0260 0.0015  
 Venus -121134-12-31 21:08 J -42522405.84 -42522405.62 -42522405.40 0.0259 0.0018  
 Venus -121133-08-16 20:39 J -42522176.86 -42522176.64 -42522176.42 0.0259 0.0020  
 Venus -121132-04-02 20:39 J -42521947.86 -42521947.64 -42521947.42 0.0258 0.0022  
 Venus -121132-11-17 21:08 J -42521718.84 -42521718.62 -42521718.40 0.0258 0.0023  
 Venus -121131-07-04 22:49 J -42521489.77 -42521489.55 -42521489.33 0.0259 0.0025  
 Venus -121130-02-19 00:58 J -42521260.67 -42521260.46 -42521260.23 0.0259 0.0027  
 Venus -121130-10-06 04:34 J -42521031.53 -42521031.31 -42521031.09 0.0260 0.0026  
 Venus -121129-05-22 09:08 J -42520802.34 -42520802.12 -42520801.90 0.0261 0.0027  
 Venus -121128-01-06 15:08 J -42520573.09 -42520572.87 -42520572.65 0.0263 0.0027  
 Venus -121128-08-23 22:49 J -42520343.77 -42520343.55 -42520343.33 0.0264 0.0026  
 Venus -121127-04-10 07:56 J -42520114.39 -42520114.17 -42520113.95 0.0266 0.0026  
 Venus -121127-11-25 18:29 J -42519884.95 -42519884.73 -42519884.51 0.0269 0.0024  
 Venus -121126-07-13 06:58 J -42519655.43 -42519655.21 -42519654.99 0.0271 0.0022  
 Venus -121125-02-27 21:08 J -42519425.84 -42519425.62 -42519425.40 0.0274 0.0020  
 Venus -121125-10-14 13:13 J -42519196.17 -42519195.95 -42519195.73 0.0277 0.0017  
 Venus -121124-06-01 06:58 J -42518966.43 -42518966.21 -42518965.99 0.0280 0.0015  
 Venus -121123-01-17 02:39 J -42518736.61 -42518736.39 -42518736.18 0.0283 0.0011  
 Venus -121123-09-03 23:46 J -42518506.72 -42518506.51 -42518506.29 0.0286 0.0009  
 Earth -121122-01-13 00:29 J -42518375.52 -42518375.48 -42518375.42 0.0288 0.0281  
 Moon -121122-01-13 02:53 J -42518375.44 -42518375.38 -42518375.30 0.0288 0.0273 \*  
 Venus -121122-04-21 22:34 J -42518276.77 -42518276.56 -42518276.34 0.0289 0.0007

Venus -121122-12-07 22:49 J -42518046.76 -42518046.55 -42518046.33 0.0292 0.0005  
 Venus -121121-07-25 00:01 J -42517816.71 -42517816.50 -42517816.29 0.0295 0.0007  
 Mars -121121-08-14 01:41 J -42517796.53 -42517796.43 -42517796.31 0.0296 0.0276  
 Venus -121120-03-12 01:56 J -42517586.63 -42517586.42 -42517586.20 0.0298 0.0012  
 Mercury -121120-07-10 08:25 J -42517466.24 -42517466.15 -42517466.05 0.0299 0.0210  
 Mercury -121120-10-06 22:20 J -42517377.70 -42517377.57 -42517377.44 0.0300 0.0094  
 Venus -121120-10-28 04:34 J -42517356.52 -42517356.31 -42517356.10 0.0300 0.0014  
 Mercury -121119-01-03 12:01 J -42517289.13 -42517289.00 -42517288.86 0.0301 0.0023  
 Mercury -121119-04-02 01:41 J -42517200.55 -42517200.43 -42517200.31 0.0302 0.0138  
 Venus -121119-06-15 07:13 J -42517126.40 -42517126.20 -42517125.99 0.0302 0.0018  
 Mercury -121119-06-29 15:08 J -42517111.94 -42517111.87 -42517111.80 0.0302 0.0253  
 Venus -121118-01-31 09:51 J -42516896.30 -42516896.09 -42516895.88 0.0303 0.0021  
 Venus -121118-09-18 11:46 J -42516666.21 -42516666.01 -42516665.80 0.0304 0.0023  
 Venus -121117-05-05 12:58 J -42516436.17 -42516435.96 -42516435.76 0.0304 0.0026  
 Venus -121117-12-21 12:58 J -42516206.17 -42516205.96 -42516205.76 0.0304 0.0027  
 Venus -121116-08-08 11:32 J -42515976.23 -42515976.02 -42515975.82 0.0303 0.0028  
 Venus -121115-03-26 08:25 J -42515746.35 -42515746.15 -42515745.95 0.0302 0.0028  
 Venus -121115-11-11 03:37 J -42515516.55 -42515516.35 -42515516.15 0.0300 0.0027  
 Venus -121114-06-28 20:53 J -42515286.83 -42515286.63 -42515286.43 0.0297 0.0026  
 Venus -121113-02-13 12:15 J -42515057.19 -42515056.99 -42515056.79 0.0295 0.0024  
 Venus -121113-09-30 01:41 J -42514827.63 -42514827.43 -42514827.23 0.0292 0.0022  
 Venus -121112-05-17 13:13 J -42514598.16 -42514597.95 -42514597.75 0.0289 0.0020  
 Venus -121111-01-01 22:49 J -42514368.75 -42514368.55 -42514368.34 0.0286 0.0016  
 Venus -121111-08-19 06:44 J -42514139.42 -42514139.22 -42514139.01 0.0282 0.0014  
 Venus -121110-04-05 13:13 J -42513910.15 -42513909.95 -42513909.74 0.0279 0.0010  
 Venus -121110-11-20 18:15 J -42513680.95 -42513680.74 -42513680.54 0.0276 0.0007  
 Venus -121109-07-06 21:37 J -42513451.80 -42513451.60 -42513451.39 0.0273 0.0007  
 Mars -121109-10-29 20:10 J -42513336.90 -42513336.66 -42513336.41 0.0272 0.0142  
 Venus -121108-02-21 00:15 J -42513222.70 -42513222.49 -42513222.28 0.0271 0.0006  
 Venus -121108-10-08 01:41 J -42512993.64 -42512993.43 -42512993.22 0.0268 0.0005

Venus -121107-05-25 02:39 J -42512764.61 -42512764.39 -42512764.18 0.0266 0.0009  
 Venus -121106-01-09 02:39 J -42512535.60 -42512535.39 -42512535.18 0.0264 0.0011  
 Mercury -121106-05-09 06:58 J -42512415.31 -42512415.21 -42512415.10 0.0263 0.0212  
 Mercury -121106-08-06 01:41 J -42512326.59 -42512326.43 -42512326.26 0.0262 0.0109  
 Venus -121106-08-26 02:10 J -42512306.62 -42512306.41 -42512306.19 0.0262 0.0014  
 Mercury -121106-11-02 20:39 J -42512237.82 -42512237.64 -42512237.46 0.0262 0.0007  
 Mercury -121105-01-30 15:51 J -42512149.01 -42512148.84 -42512148.67 0.0261 0.0098  
 Venus -121105-04-11 01:27 J -42512077.65 -42512077.44 -42512077.22 0.0261 0.0017  
 Mercury -121105-04-28 10:49 J -42512060.15 -42512060.05 -42512059.93 0.0261 0.0203  
 Venus -121105-11-26 00:58 J -42511848.68 -42511848.46 -42511848.25 0.0260 0.0019  
 Venus -121104-07-13 00:29 J -42511619.70 -42511619.48 -42511619.27 0.0259 0.0021  
 Venus -121103-02-27 00:01 J -42511390.71 -42511390.50 -42511390.28 0.0258 0.0023  
 Venus -121103-10-14 00:15 J -42511161.71 -42511161.49 -42511161.27 0.0258 0.0024  
 Venus -121102-05-31 00:58 J -42510932.67 -42510932.46 -42510932.24 0.0258 0.0026  
 Venus -121101-01-15 02:39 J -42510703.61 -42510703.39 -42510703.17 0.0259 0.0026  
 Venus -121101-08-31 05:17 J -42510474.50 -42510474.28 -42510474.06 0.0259 0.0027  
 Venus -121100-04-17 08:53 J -42510245.35 -42510245.13 -42510244.91 0.0260 0.0027  
 Venus -121100-12-02 13:41 J -42510016.15 -42510015.93 -42510015.71 0.0262 0.0027  
 Venus -121099-07-19 19:56 J -42509786.89 -42509786.67 -42509786.45 0.0263 0.0027  
 Venus -121098-03-06 03:37 J -42509557.57 -42509557.35 -42509557.13 0.0265 0.0026  
 Venus -121098-10-21 12:44 J -42509328.19 -42509327.97 -42509327.75 0.0267 0.0025  
 Venus -121097-06-06 23:32 J -42509098.73 -42509098.52 -42509098.29 0.0269 0.0024  
 Venus -121096-01-22 12:15 J -42508869.21 -42508868.99 -42508868.77 0.0272 0.0022  
 Venus -121096-09-09 02:53 J -42508639.60 -42508639.38 -42508639.16 0.0275 0.0019  
 Venus -121095-04-26 19:13 J -42508409.92 -42508409.70 -42508409.49 0.0277 0.0017  
 Venus -121095-12-12 13:13 J -42508180.17 -42508179.95 -42508179.74 0.0281 0.0015  
 Venus -121094-07-30 08:53 J -42507950.35 -42507950.13 -42507949.92 0.0284 0.0011  
 Earth -121093-01-07 07:41 J -42507789.40 -42507789.18 -42507788.95 0.0286 0.0113  
 Moon -121093-01-07 08:53 J -42507789.35 -42507789.13 -42507788.89 0.0286 0.0128 \*  
 Venus -121093-03-16 06:15 J -42507720.46 -42507720.24 -42507720.03 0.0287 0.0007

Mars -121093-09-24 17:32 J -42507527.92 -42507527.77 -42507527.60 0.0289 0.0244  
 Venus -121093-11-01 05:17 J -42507490.50 -42507490.28 -42507490.07 0.0290 0.0005  
 Venus -121092-06-19 05:17 J -42507260.49 -42507260.28 -42507260.06 0.0293 0.0007  
 Venus -121091-02-04 06:44 J -42507030.44 -42507030.22 -42507030.01 0.0296 0.0010  
 Venus -121091-09-22 08:39 J -42506800.35 -42506800.14 -42506799.93 0.0298 0.0012  
 Mercury -121091-11-27 10:05 J -42506734.16 -42506734.08 -42506734.00 0.0299 0.0244  
 Mercury -121090-02-24 00:01 J -42506645.62 -42506645.50 -42506645.38 0.0300 0.0128  
 Venus -121090-05-10 11:03 J -42506570.25 -42506570.04 -42506569.83 0.0300 0.0017  
 Mercury -121090-05-23 13:41 J -42506557.06 -42506556.93 -42506556.79 0.0300 0.0012  
 Mercury -121090-08-20 03:22 J -42506468.49 -42506468.36 -42506468.24 0.0301 0.0104  
 Mercury -121090-11-16 16:49 J -42506379.89 -42506379.80 -42506379.71 0.0302 0.0219  
 Venus -121090-12-26 13:56 J -42506340.13 -42506339.92 -42506339.71 0.0302 0.0020  
 Venus -121089-08-12 16:20 J -42506110.03 -42506109.82 -42506109.62 0.0303 0.0024  
 Venus -121088-03-30 18:01 J -42505879.95 -42505879.75 -42505879.54 0.0304 0.0027  
 Venus -121088-11-15 18:58 J -42505649.91 -42505649.71 -42505649.50 0.0304 0.0029  
 Venus -121087-07-03 18:44 J -42505419.92 -42505419.72 -42505419.51 0.0303 0.0030  
 Venus -121086-02-18 17:17 J -42505189.98 -42505189.78 -42505189.58 0.0302 0.0030  
 Venus -121086-10-06 13:56 J -42504960.13 -42504959.92 -42504959.72 0.0301 0.0030  
 Venus -121085-05-23 08:39 J -42504730.34 -42504730.14 -42504729.94 0.0299 0.0029  
 Venus -121084-01-08 01:41 J -42504500.64 -42504500.43 -42504500.23 0.0297 0.0028  
 Venus -121084-08-25 16:34 J -42504271.01 -42504270.81 -42504270.60 0.0294 0.0025  
 Venus -121083-04-12 06:01 J -42504041.46 -42504041.25 -42504041.05 0.0291 0.0022  
 Venus -121083-11-27 17:17 J -42503811.98 -42503811.78 -42503811.58 0.0288 0.0019  
 Venus -121082-07-15 02:53 J -42503582.59 -42503582.38 -42503582.18 0.0285 0.0016  
 Venus -121081-02-29 10:49 J -42503353.26 -42503353.05 -42503352.85 0.0282 0.0013  
 Venus -121081-10-15 17:03 J -42503124.00 -42503123.79 -42503123.58 0.0279 0.0009  
 Venus -121080-06-01 21:51 J -42502894.80 -42502894.59 -42502894.38 0.0276 0.0006  
 Moon -121080-07-01 08:25 J -42502865.37 -42502865.15 -42502864.90 0.0276 0.0100  
 Earth -121080-07-01 11:17 J -42502865.26 -42502865.03 -42502864.80 0.0276 0.0088 \*  
 Venus -121079-01-17 01:27 J -42502665.65 -42502665.44 -42502665.23 0.0273 0.0002

Venus -121079-09-03 03:51 J -42502436.55 -42502436.34 -42502436.13 0.0271 0.0005

Mars -121079-12-17 09:51 J -42502331.36 -42502331.09 -42502330.80 0.0270 0.0057

Venus -121078-04-20 05:32 J -42502207.48 -42502207.27 -42502207.06 0.0268 0.0005

Venus -121078-12-05 06:15 J -42501978.45 -42501978.24 -42501978.03 0.0266 0.0008

Venus -121077-07-21 06:15 J -42501749.45 -42501749.24 -42501749.02 0.0264 0.0012

Mercury -121077-09-25 07:13 J -42501683.27 -42501683.20 -42501683.13 0.0264 0.0240

Mercury -121077-12-23 01:41 J -42501594.58 -42501594.43 -42501594.27 0.0263 0.0138

Venus -121076-03-07 06:01 J -42501520.47 -42501520.25 -42501520.04 0.0263 0.0014

Mercury -121076-03-21 20:39 J -42501505.82 -42501505.64 -42501505.46 0.0263 0.0034

Mercury -121076-06-18 15:51 J -42501417.02 -42501416.84 -42501416.67 0.0262 0.0071

Mercury -121076-09-15 10:49 J -42501328.18 -42501328.05 -42501327.91 0.0261 0.0176

Venus -121076-10-22 05:17 J -42501291.49 -42501291.28 -42501291.06 0.0261 0.0018

Venus -121075-06-08 05:03 J -42501062.51 -42501062.29 -42501062.08 0.0260 0.0019

Venus -121074-01-23 04:34 J -42500833.53 -42500833.31 -42500833.10 0.0259 0.0021

Venus -121074-09-09 04:20 J -42500604.54 -42500604.32 -42500604.10 0.0259 0.0023

Venus -121073-04-25 04:34 J -42500375.53 -42500375.31 -42500375.09 0.0259 0.0024

Venus -121073-12-10 05:32 J -42500146.49 -42500146.27 -42500146.06 0.0259 0.0026

Venus -121072-07-27 07:27 J -42499917.41 -42499917.19 -42499916.97 0.0259 0.0027

Venus -121071-03-13 10:05 J -42499688.30 -42499688.08 -42499687.86 0.0260 0.0028

Venus -121071-10-28 13:56 J -42499459.14 -42499458.92 -42499458.70 0.0260 0.0028

Venus -121070-06-14 18:58 J -42499229.93 -42499229.71 -42499229.49 0.0262 0.0028

Venus -121069-01-30 01:27 J -42499000.66 -42499000.44 -42499000.22 0.0263 0.0027

Venus -121069-09-15 09:22 J -42498771.33 -42498771.11 -42498770.88 0.0265 0.0027

Venus -121068-05-02 18:58 J -42498541.93 -42498541.71 -42498541.49 0.0267 0.0025

Venus -121068-12-18 06:15 J -42498312.46 -42498312.24 -42498312.02 0.0269 0.0023

Venus -121067-08-04 18:58 J -42498082.92 -42498082.71 -42498082.48 0.0272 0.0022

Venus -121066-03-22 09:51 J -42497853.31 -42497853.09 -42497852.87 0.0274 0.0018

Venus -121066-11-07 02:10 J -42497623.63 -42497623.41 -42497623.19 0.0277 0.0015

Venus -121065-06-23 20:25 J -42497393.87 -42497393.65 -42497393.43 0.0280 0.0011

Venus -121064-02-08 16:20 J -42497164.04 -42497163.82 -42497163.61 0.0284 0.0008

Venus	-121064-09-26 13:56 J	-42496934.14	-42496933.92	-42496933.71	0.0287	0.0003
Venus	-121063-05-14 12:58 J	-42496704.18	-42496703.96	-42496703.75	0.0290	0.0003
Mars	-121063-11-16 15:37 J	-42496518.15	-42496517.85	-42496517.55	0.0292	0.0019
Venus	-121063-12-30 13:13 J	-42496474.16	-42496473.95	-42496473.74	0.0293	0.0006
Venus	-121062-08-17 14:25 J	-42496244.11	-42496243.90	-42496243.69	0.0296	0.0011
Venus	-121061-04-03 16:34 J	-42496014.02	-42496013.81	-42496013.60	0.0298	0.0015
Mercury	-121061-04-15 12:01 J	-42496002.05	-42496002.00	-42496001.95	0.0298	0.0274
Mercury	-121061-07-13 01:56 J	-42495913.54	-42495913.42	-42495913.31	0.0299	0.0159
Mercury	-121061-10-09 15:37 J	-42495824.98	-42495824.85	-42495824.71	0.0300	0.0043
Venus	-121061-11-19 18:58 J	-42495783.92	-42495783.71	-42495783.50	0.0300	0.0019
Mercury	-121060-01-06 05:17 J	-42495736.41	-42495736.28	-42495736.15	0.0301	0.0073
Mercury	-121060-04-04 18:44 J	-42495647.82	-42495647.72	-42495647.61	0.0302	0.0189
Venus	-121060-07-07 21:37 J	-42495553.81	-42495553.60	-42495553.39	0.0302	0.0022
Venus	-121059-02-22 23:46 J	-42495323.71	-42495323.51	-42495323.30	0.0303	0.0025
Venus	-121059-10-11 01:27 J	-42495093.64	-42495093.44	-42495093.24	0.0304	0.0027
Venus	-121058-05-29 02:10 J	-42494863.61	-42494863.41	-42494863.21	0.0304	0.0029
Venus	-121057-01-14 01:56 J	-42494633.63	-42494633.42	-42494633.22	0.0304	0.0030
Venus	-121057-08-31 00:01 J	-42494403.70	-42494403.50	-42494403.30	0.0303	0.0030
Venus	-121056-04-17 20:25 J	-42494173.85	-42494173.65	-42494173.45	0.0301	0.0029
Venus	-121056-12-03 15:08 J	-42493944.08	-42493943.87	-42493943.67	0.0299	0.0028
Venus	-121055-07-21 07:56 J	-42493714.38	-42493714.17	-42493713.97	0.0297	0.0026
Venus	-121054-03-07 22:49 J	-42493484.75	-42493484.55	-42493484.34	0.0294	0.0024
Venus	-121054-10-23 11:46 J	-42493255.21	-42493255.01	-42493254.80	0.0291	0.0021
Venus	-121053-06-08 22:49 J	-42493025.75	-42493025.55	-42493025.34	0.0288	0.0018
Venus	-121052-01-24 08:10 J	-42492796.37	-42492796.16	-42492795.96	0.0285	0.0014
Venus	-121052-09-10 15:51 J	-42492567.05	-42492566.84	-42492566.64	0.0282	0.0012
Venus	-121051-04-27 21:51 J	-42492337.79	-42492337.59	-42492337.38	0.0279	0.0009
Moon	-121051-06-26 04:49 J	-42492278.34	-42492278.30	-42492278.25	0.0278	0.0272
Earth	-121051-06-26 06:29 J	-42492278.31	-42492278.23	-42492278.15	0.0278	0.0261 *
Venus	-121051-12-13 02:39 J	-42492108.60	-42492108.39	-42492108.18	0.0276	0.0003



Venus -121050-07-30 06:01 J -42491879.46 -42491879.25 -42491879.04 0.0273 0.0001

Venus -121049-03-15 08:25 J -42491650.37 -42491650.15 -42491649.94 0.0270 0.0008

Venus -121049-10-30 09:37 J -42491421.31 -42491421.10 -42491420.88 0.0268 0.0010

Mars -121048-02-02 15:37 J -42491325.96 -42491325.85 -42491325.72 0.0267 0.0240

Venus -121048-06-16 10:34 J -42491192.27 -42491192.06 -42491191.85 0.0266 0.0012

Venus -121047-01-31 10:34 J -42490963.27 -42490963.06 -42490962.84 0.0264 0.0015

Mercury -121047-05-12 02:10 J -42490862.55 -42490862.41 -42490862.27 0.0263 0.0165

Mercury -121047-08-08 20:53 J -42490773.80 -42490773.63 -42490773.45 0.0262 0.0063

Venus -121047-09-17 10:20 J -42490734.28 -42490734.07 -42490733.85 0.0262 0.0017

Mercury -121047-11-05 16:05 J -42490685.01 -42490684.83 -42490684.65 0.0262 0.0042

Mercury -121046-02-02 11:17 J -42490596.18 -42490596.03 -42490595.88 0.0261 0.0146

Mercury -121046-05-02 06:29 J -42490507.27 -42490507.23 -42490507.18 0.0261 0.0251

Venus -121046-05-04 09:51 J -42490505.30 -42490505.09 -42490504.87 0.0261 0.0020

Venus -121046-12-19 09:22 J -42490276.33 -42490276.11 -42490275.89 0.0260 0.0022

Venus -121045-08-04 08:53 J -42490047.34 -42490047.13 -42490046.91 0.0259 0.0025

Venus -121044-03-21 08:53 J -42489818.34 -42489818.13 -42489817.91 0.0258 0.0026

Venus -121044-11-05 09:22 J -42489589.33 -42489589.11 -42489588.89 0.0258 0.0027

Venus -121043-06-22 10:34 J -42489360.27 -42489360.06 -42489359.84 0.0258 0.0028

Venus -121042-02-06 12:29 J -42489131.19 -42489130.98 -42489130.75 0.0259 0.0029

Venus -121042-09-23 15:37 J -42488902.07 -42488901.85 -42488901.63 0.0260 0.0029

Venus -121041-05-09 19:27 J -42488672.91 -42488672.69 -42488672.47 0.0261 0.0029

Venus -121041-12-25 00:44 J -42488443.69 -42488443.47 -42488443.25 0.0262 0.0028

Venus -121040-08-11 07:41 J -42488214.40 -42488214.18 -42488213.96 0.0264 0.0027

Venus -121039-03-28 15:51 J -42487985.06 -42487984.84 -42487984.62 0.0265 0.0026

Venus -121039-11-13 01:27 J -42487755.66 -42487755.44 -42487755.22 0.0268 0.0025

Venus -121038-06-30 12:58 J -42487526.18 -42487525.96 -42487525.74 0.0270 0.0023

Venus -121037-02-15 01:56 J -42487296.64 -42487296.42 -42487296.20 0.0273 0.0020

Venus -121037-10-01 17:03 J -42487067.01 -42487066.79 -42487066.57 0.0275 0.0017

Venus -121036-05-19 09:51 J -42486837.31 -42486837.09 -42486836.88 0.0278 0.0015

Venus -121035-01-04 04:05 J -42486607.54 -42486607.33 -42486607.11 0.0281 0.0011

Venus -121035-08-22 00:15 J -42486377.71 -42486377.49 -42486377.27 0.0284 0.0007  
 Earth -121034-01-08 20:39 J -42486237.88 -42486237.64 -42486237.39 0.0286 0.0004  
 Moon -121034-01-09 00:01 J -42486237.74 -42486237.50 -42486237.25 0.0286 0.0014 \*  
 Venus -121034-04-08 22:05 J -42486147.80 -42486147.58 -42486147.37 0.0288 0.0006  
 Venus -121034-11-24 21:08 J -42485917.83 -42485917.62 -42485917.40 0.0291 0.0006  
 Venus -121033-07-11 21:37 J -42485687.81 -42485687.60 -42485687.39 0.0294 0.0007  
 Venus -121032-02-26 22:49 J -42485457.76 -42485457.55 -42485457.33 0.0296 0.0013  
 Venus -121032-10-15 00:58 J -42485227.67 -42485227.46 -42485227.25 0.0299 0.0017  
 Mercury -121032-11-30 04:05 J -42485181.44 -42485181.33 -42485181.23 0.0299 0.0188  
 Mercury -121031-02-26 17:46 J -42485092.89 -42485092.76 -42485092.63 0.0300 0.0072  
 Mercury -121031-05-26 07:27 J -42485004.32 -42485004.19 -42485004.05 0.0301 0.0044  
 Venus -121031-06-02 03:22 J -42484997.56 -42484997.36 -42484997.15 0.0301 0.0022  
 Mercury -121031-08-22 20:53 J -42484915.73 -42484915.63 -42484915.51 0.0301 0.0160  
 Mercury -121031-11-19 10:34 J -42484827.11 -42484827.06 -42484827.01 0.0302 0.0273  
 Venus -121030-01-18 06:01 J -42484767.45 -42484767.25 -42484767.04 0.0302 0.0025  
 Venus -121030-09-05 08:10 J -42484537.36 -42484537.16 -42484536.95 0.0303 0.0028  
 Venus -121029-04-22 09:51 J -42484307.30 -42484307.09 -42484306.89 0.0304 0.0030  
 Venus -121029-12-08 10:20 J -42484077.27 -42484077.07 -42484076.86 0.0304 0.0032  
 Venus -121028-07-26 09:51 J -42483847.29 -42483847.09 -42483846.89 0.0303 0.0032  
 Venus -121027-03-13 07:41 J -42483617.38 -42483617.18 -42483616.98 0.0302 0.0032  
 Venus -121027-10-29 03:51 J -42483387.54 -42483387.34 -42483387.14 0.0300 0.0031  
 Venus -121026-06-15 22:05 J -42483157.78 -42483157.58 -42483157.37 0.0298 0.0030  
 Venus -121025-01-31 14:39 J -42482928.09 -42482927.89 -42482927.69 0.0296 0.0026  
 Venus -121025-09-17 05:03 J -42482698.49 -42482698.29 -42482698.08 0.0293 0.0024  
 Venus -121024-05-04 17:46 J -42482468.96 -42482468.76 -42482468.56 0.0290 0.0020  
 Venus -121024-12-20 04:34 J -42482239.51 -42482239.31 -42482239.10 0.0287 0.0017  
 Venus -121023-08-06 13:41 J -42482010.14 -42482009.93 -42482009.73 0.0284 0.0013  
 Venus -121022-03-23 21:08 J -42481780.82 -42481780.62 -42481780.41 0.0281 0.0010  
 Venus -121022-11-08 03:08 J -42481551.58 -42481551.37 -42481551.16 0.0278 0.0005  
 Venus -121021-06-24 07:41 J -42481322.39 -42481322.18 -42481321.97 0.0275 0.0002

Earth	-121021-07-02 18:44 J	-42481313.90	-42481313.72	-42481313.53	0.0275	0.0180
Moon	-121021-07-02 20:39 J	-42481313.83	-42481313.64	-42481313.43	0.0275	0.0165 *
Venus	-121020-02-08 11:03 J	-42481093.25	-42481093.04	-42481092.84	0.0273	0.0006
Mars	-121020-03-25 19:13 J	-42481047.95	-42481047.70	-42481047.43	0.0272	0.0122
Venus	-121020-09-25 13:13 J	-42480864.16	-42480863.95	-42480863.74	0.0270	0.0006
Venus	-121019-05-12 14:39 J	-42480635.10	-42480634.89	-42480634.67	0.0268	0.0011
Venus	-121019-12-27 15:22 J	-42480406.07	-42480405.86	-42480405.65	0.0266	0.0013
Venus	-121018-08-13 15:22 J	-42480177.07	-42480176.86	-42480176.64	0.0264	0.0016
Mercury	-121018-09-29 02:39 J	-42480130.51	-42480130.39	-42480130.26	0.0264	0.0191
Mercury	-121018-12-26 21:37 J	-42480041.77	-42480041.60	-42480041.43	0.0263	0.0087
Mercury	-121017-03-24 16:34 J	-42479952.99	-42479952.81	-42479952.63	0.0262	0.0017
Venus	-121017-03-29 15:08 J	-42479948.08	-42479947.87	-42479947.66	0.0262	0.0018
Mercury	-121017-06-21 11:46 J	-42479864.17	-42479864.01	-42479863.85	0.0262	0.0121
Mercury	-121017-09-18 06:58 J	-42479775.30	-42479775.21	-42479775.12	0.0261	0.0226
Venus	-121017-11-13 14:39 J	-42479719.10	-42479718.89	-42479718.67	0.0261	0.0020
Venus	-121016-06-30 14:25 J	-42479490.12	-42479489.90	-42479489.68	0.0260	0.0022
Venus	-121015-02-14 14:10 J	-42479261.13	-42479260.91	-42479260.69	0.0259	0.0024
Venus	-121015-10-01 14:10 J	-42479032.13	-42479031.91	-42479031.69	0.0259	0.0026
Venus	-121014-05-18 14:39 J	-42478803.10	-42478802.89	-42478802.67	0.0259	0.0027
Venus	-121013-01-02 15:51 J	-42478574.05	-42478573.84	-42478573.61	0.0259	0.0029
Venus	-121013-08-18 18:15 J	-42478344.96	-42478344.74	-42478344.52	0.0259	0.0029
Venus	-121012-04-04 21:22 J	-42478115.83	-42478115.61	-42478115.39	0.0260	0.0029
Venus	-121012-11-20 01:41 J	-42477886.65	-42477886.43	-42477886.21	0.0261	0.0029
Venus	-121011-07-07 07:13 J	-42477657.42	-42477657.20	-42477656.98	0.0262	0.0029
Venus	-121010-02-21 14:10 J	-42477428.13	-42477427.91	-42477427.68	0.0264	0.0028
Venus	-121010-10-08 22:49 J	-42477198.77	-42477198.55	-42477198.33	0.0266	0.0026
Venus	-121009-05-25 08:53 J	-42476969.35	-42476969.13	-42476968.91	0.0268	0.0024
Venus	-121008-01-09 20:39 J	-42476739.86	-42476739.64	-42476739.42	0.0270	0.0022
Venus	-121008-08-27 10:20 J	-42476510.29	-42476510.07	-42476509.85	0.0273	0.0019
Venus	-121007-04-14 01:27 J	-42476280.66	-42476280.44	-42476280.22	0.0275	0.0016

Venus -121007-11-29 18:29 J -42476050.95 -42476050.73 -42476050.51 0.0278 0.0011

Venus -121006-07-17 13:13 J -42475821.17 -42475820.95 -42475820.74 0.0281 0.0009

Venus -121005-03-03 09:22 J -42475591.32 -42475591.11 -42475590.89 0.0284 0.0004

Venus -121005-10-19 07:27 J -42475361.41 -42475361.19 -42475360.97 0.0288 0.0002

Mars -121004-02-19 11:46 J -42475238.21 -42475238.01 -42475237.81 0.0289 0.0214

Venus -121004-06-06 06:44 J -42475131.43 -42475131.22 -42475131.00 0.0291 0.0007

Venus -121003-01-22 07:13 J -42474901.41 -42474901.20 -42474900.99 0.0294 0.0011

Venus -121003-09-09 08:39 J -42474671.35 -42474671.14 -42474670.93 0.0296 0.0016

Mercury -121002-04-19 06:29 J -42474449.32 -42474449.23 -42474449.13 0.0299 0.0214

Venus -121002-04-27 10:34 J -42474441.26 -42474441.06 -42474440.85 0.0299 0.0021

Mercury -121002-07-16 20:25 J -42474360.78 -42474360.65 -42474360.52 0.0299 0.0099

Mercury -121002-10-13 10:05 J -42474272.22 -42474272.08 -42474271.95 0.0300 0.0017

Venus -121002-12-13 13:13 J -42474211.16 -42474210.95 -42474210.74 0.0301 0.0024

Mercury -121001-01-09 23:32 J -42474183.64 -42474183.52 -42474183.40 0.0301 0.0132

Mercury -121001-04-07 12:58 J -42474095.03 -42474094.96 -42474094.88 0.0302 0.0247

Venus -121001-07-30 15:37 J -42473981.06 -42473980.85 -42473980.64 0.0302 0.0027

# 121ST MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 121st millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
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Venus	-121000-03-17 17:32 J	-42473750.97	-42473750.77	-42473750.56	0.0303	0.0029
Venus	-121000-11-02 18:58 J	-42473520.92	-42473520.71	-42473520.51	0.0304	0.0031
Venus	-120999-06-20 19:13 J	-42473290.90	-42473290.70	-42473290.50	0.0304	0.0032
Venus	-120998-02-05 18:29 J	-42473060.93	-42473060.73	-42473060.53	0.0303	0.0032
Venus	-120998-09-23 15:51 J	-42472831.04	-42472830.84	-42472830.63	0.0302	0.0033
Venus	-120997-05-10 11:46 J	-42472601.21	-42472601.01	-42472600.80	0.0301	0.0030
Venus	-120997-12-26 06:01 J	-42472371.46	-42472371.25	-42472371.05	0.0298	0.0028
Venus	-120996-08-12 22:05 J	-42472141.78	-42472141.58	-42472141.38	0.0296	0.0025
Venus	-120995-03-30 12:29 J	-42471912.18	-42471911.98	-42471911.77	0.0293	0.0023
Venus	-120995-11-15 00:58 J	-42471682.67	-42471682.46	-42471682.26	0.0290	0.0019
Venus	-120994-07-02 11:32 J	-42471453.23	-42471453.02	-42471452.82	0.0287	0.0016
Venus	-120993-02-16 20:10 J	-42471223.86	-42471223.66	-42471223.45	0.0284	0.0011
Venus	-120993-10-03 03:22 J	-42470994.57	-42470994.36	-42470994.15	0.0281	0.0007
Venus	-120992-05-20 09:08 J	-42470765.33	-42470765.12	-42470764.91	0.0278	0.0004
Moon	-120992-06-27 12:58 J	-42470727.15	-42470726.96	-42470726.75	0.0278	0.0160
Earth	-120992-06-27 16:20 J	-42470727.01	-42470726.82	-42470726.61	0.0278	0.0164 *
Venus	-120991-01-04 13:27 J	-42470536.15	-42470535.94	-42470535.73	0.0275	0.0003
Venus	-120991-08-21 16:34 J	-42470307.02	-42470306.81	-42470306.60	0.0272	0.0006
Venus	-120990-04-07 18:44 J	-42470077.93	-42470077.72	-42470077.51	0.0270	0.0010
Mars	-120990-05-13 15:08 J	-42470042.13	-42470041.87	-42470041.59	0.0269	0.0077
Venus	-120990-11-22 19:56 J	-42469848.88	-42469848.67	-42469848.46	0.0267	0.0013
Venus	-120989-07-08 20:25 J	-42469619.86	-42469619.65	-42469619.43	0.0265	0.0017
Mercury	-120988-02-15 03:22 J	-42469398.45	-42469398.36	-42469398.25	0.0264	0.0217
Venus	-120988-02-22 20:39 J	-42469390.85	-42469390.64	-42469390.43	0.0263	0.0019
Mercury	-120988-05-14 22:20 J	-42469309.73	-42469309.57	-42469309.41	0.0263	0.0113
Mercury	-120988-08-11 17:17 J	-42469220.96	-42469220.78	-42469220.60	0.0262	0.0010
Venus	-120988-10-09 20:25 J	-42469161.86	-42469161.65	-42469161.44	0.0262	0.0022
Mercury	-120988-11-08 12:15 J	-42469132.15	-42469131.99	-42469131.81	0.0262	0.0095
Mercury	-120987-02-05 07:27 J	-42469043.30	-42469043.19	-42469043.06	0.0261	0.0200
Venus	-120987-05-26 20:10 J	-42468932.87	-42468932.66	-42468932.44	0.0261	0.0024

Venus	-120986-01-10 19:41 J	-42468703.89	-42468703.68	-42468703.46	0.0260	0.0027
Venus	-120986-08-27 19:27 J	-42468474.90	-42468474.69	-42468474.47	0.0259	0.0028
Venus	-120985-04-12 19:41 J	-42468245.90	-42468245.68	-42468245.46	0.0259	0.0029
Venus	-120985-11-27 20:25 J	-42468016.87	-42468016.65	-42468016.43	0.0258	0.0030
Venus	-120984-07-14 22:05 J	-42467787.80	-42467787.58	-42467787.36	0.0259	0.0031
Venus	-120983-03-01 00:29 J	-42467558.70	-42467558.48	-42467558.26	0.0259	0.0031
Venus	-120983-10-16 03:51 J	-42467329.56	-42467329.34	-42467329.12	0.0260	0.0031
Venus	-120982-06-02 08:10 J	-42467100.38	-42467100.16	-42467099.94	0.0261	0.0030
Venus	-120981-01-17 13:56 J	-42466871.13	-42466870.92	-42466870.69	0.0263	0.0030
Venus	-120981-09-02 21:22 J	-42466641.83	-42466641.61	-42466641.39	0.0264	0.0028
Venus	-120980-04-20 06:15 J	-42466412.46	-42466412.24	-42466412.02	0.0266	0.0026
Venus	-120980-12-05 16:20 J	-42466183.03	-42466182.82	-42466182.59	0.0268	0.0024
Venus	-120979-07-23 04:20 J	-42465953.54	-42465953.32	-42465953.10	0.0271	0.0022
Venus	-120978-03-09 18:01 J	-42465723.96	-42465723.75	-42465723.53	0.0273	0.0019
Venus	-120978-10-25 09:37 J	-42465494.32	-42465494.10	-42465493.88	0.0276	0.0015
Venus	-120977-06-11 02:53 J	-42465264.60	-42465264.38	-42465264.16	0.0279	0.0011
Venus	-120976-01-26 21:51 J	-42465034.81	-42465034.59	-42465034.38	0.0282	0.0009
Venus	-120976-09-13 18:29 J	-42464804.95	-42464804.73	-42464804.52	0.0285	0.0006
Moon	-120975-01-10 13:27 J	-42464686.15	-42464685.94	-42464685.71	0.0287	0.0107
Earth	-120975-01-10 13:41 J	-42464686.14	-42464685.93	-42464685.70	0.0287	0.0119 *
Venus	-120975-05-01 16:34 J	-42464575.03	-42464574.81	-42464574.60	0.0288	0.0004
Venus	-120975-12-17 16:05 J	-42464345.05	-42464344.83	-42464344.62	0.0291	0.0008
Mars	-120974-04-13 16:05 J	-42464228.12	-42464227.83	-42464227.53	0.0293	0.0060
Venus	-120974-08-04 16:34 J	-42464115.02	-42464114.81	-42464114.60	0.0294	0.0012
Venus	-120973-03-21 18:01 J	-42463884.96	-42463884.75	-42463884.54	0.0297	0.0017
Mercury	-120973-09-05 08:53 J	-42463717.21	-42463717.13	-42463717.05	0.0299	0.0241
Venus	-120973-11-06 20:10 J	-42463654.87	-42463654.66	-42463654.45	0.0299	0.0022
Mercury	-120973-12-02 22:49 J	-42463628.67	-42463628.55	-42463628.43	0.0299	0.0125
Mercury	-120972-03-01 12:29 J	-42463540.11	-42463539.98	-42463539.84	0.0300	0.0010
Mercury	-120972-05-29 02:10 J	-42463451.54	-42463451.41	-42463451.29	0.0301	0.0105

Venus -120972-06-24 22:34 J -42463424.76 -42463424.56 -42463424.35 0.0301 0.0026

Mercury -120972-08-25 15:37 J -42463362.94 -42463362.85 -42463362.76 0.0302 0.0220

Venus -120971-02-10 00:58 J -42463194.66 -42463194.46 -42463194.25 0.0303 0.0029

Venus -120971-09-28 02:53 J -42462964.58 -42462964.38 -42462964.17 0.0303 0.0032

Venus -120970-05-16 04:05 J -42462734.53 -42462734.33 -42462734.12 0.0304 0.0034

Venus -120969-01-01 04:20 J -42462504.52 -42462504.32 -42462504.11 0.0304 0.0035

Venus -120969-08-18 03:22 J -42462274.56 -42462274.36 -42462274.16 0.0303 0.0034

Venus -120968-04-05 00:44 J -42462044.67 -42462044.47 -42462044.27 0.0302 0.0033

Venus -120968-11-20 20:10 J -42461814.86 -42461814.66 -42461814.45 0.0300 0.0032

Venus -120967-07-08 14:10 J -42461585.12 -42461584.91 -42461584.71 0.0298 0.0029

Venus -120966-02-23 06:01 J -42461355.45 -42461355.25 -42461355.04 0.0295 0.0026

Venus -120966-10-10 19:56 J -42461125.87 -42461125.67 -42461125.46 0.0292 0.0022

Venus -120965-05-27 07:56 J -42460896.37 -42460896.17 -42460895.96 0.0289 0.0018

Venus -120964-01-11 18:15 J -42460666.95 -42460666.74 -42460666.54 0.0286 0.0014

Venus -120964-08-29 02:53 J -42460437.59 -42460437.38 -42460437.18 0.0283 0.0011

Venus -120963-04-15 09:51 J -42460208.29 -42460208.09 -42460207.88 0.0280 0.0007

Venus -120963-11-30 15:22 J -42459979.07 -42459978.86 -42459978.65 0.0277 0.0003

Venus -120962-07-17 19:27 J -42459749.89 -42459749.69 -42459749.48 0.0275 0.0007

Venus -120961-03-02 22:34 J -42459520.77 -42459520.56 -42459520.35 0.0272 0.0007

Venus -120961-10-18 00:29 J -42459291.69 -42459291.48 -42459291.27 0.0270 0.0012

Venus -120960-06-04 01:56 J -42459062.63 -42459062.42 -42459062.21 0.0267 0.0014

Mars -120960-06-29 23:46 J -42459036.52 -42459036.51 -42459036.46 0.0267 0.0266

Venus -120959-01-19 02:25 J -42458833.61 -42458833.40 -42458833.18 0.0265 0.0018

Mercury -120959-07-05 04:20 J -42458666.38 -42458666.32 -42458666.23 0.0264 0.0240

Venus -120959-09-05 02:25 J -42458604.61 -42458604.40 -42458604.18 0.0264 0.0021

Mercury -120959-10-01 23:17 J -42458577.68 -42458577.53 -42458577.37 0.0263 0.0137

Mercury -120959-12-29 18:15 J -42458488.92 -42458488.74 -42458488.56 0.0263 0.0033

Mercury -120958-03-28 13:27 J -42458400.12 -42458399.94 -42458399.77 0.0262 0.0072

Venus -120958-04-22 02:10 J -42458375.62 -42458375.41 -42458375.19 0.0262 0.0023

Mercury -120958-06-25 08:39 J -42458311.28 -42458311.14 -42458311.01 0.0262 0.0176

Venus	-120958-12-07 01:56 J	-42458146.64	-42458146.42	-42458146.21	0.0261	0.0025
Venus	-120957-07-23 01:27 J	-42457917.65	-42457917.44	-42457917.22	0.0260	0.0027
Venus	-120956-03-09 01:27 J	-42457688.66	-42457688.44	-42457688.22	0.0259	0.0028
Venus	-120956-10-24 01:41 J	-42457459.65	-42457459.43	-42457459.21	0.0259	0.0029
Venus	-120955-06-10 02:39 J	-42457230.61	-42457230.39	-42457230.17	0.0259	0.0030
Venus	-120954-01-25 04:20 J	-42457001.54	-42457001.32	-42457001.11	0.0259	0.0031
Venus	-120954-09-11 06:44 J	-42456772.44	-42456772.22	-42456772.00	0.0260	0.0031
Venus	-120953-04-27 10:05 J	-42456543.29	-42456543.08	-42456542.86	0.0260	0.0031
Venus	-120953-12-12 14:53 J	-42456314.10	-42456313.88	-42456313.66	0.0262	0.0030
Venus	-120952-07-29 21:08 J	-42456084.84	-42456084.62	-42456084.40	0.0263	0.0029
Venus	-120951-03-16 04:34 J	-42455855.52	-42455855.31	-42455855.08	0.0265	0.0028
Venus	-120951-10-31 13:41 J	-42455626.15	-42455625.93	-42455625.71	0.0266	0.0025
Venus	-120950-06-18 00:15 J	-42455396.71	-42455396.49	-42455396.27	0.0269	0.0023
Venus	-120949-02-02 12:44 J	-42455167.19	-42455166.97	-42455166.75	0.0271	0.0020
Venus	-120949-09-19 02:53 J	-42454937.60	-42454937.38	-42454937.16	0.0273	0.0017
Venus	-120948-05-06 18:44 J	-42454707.94	-42454707.72	-42454707.50	0.0276	0.0013
Venus	-120948-12-22 12:15 J	-42454478.20	-42454477.99	-42454477.77	0.0279	0.0009
Venus	-120947-08-09 07:27 J	-42454248.41	-42454248.19	-42454247.97	0.0282	0.0004
Earth	-120946-01-05 03:22 J	-42454099.45	-42454099.36	-42454099.24	0.0284	0.0258
Moon	-120946-01-05 07:13 J	-42454099.28	-42454099.20	-42454099.11	0.0284	0.0265 *
Venus	-120946-03-27 04:20 J	-42454018.54	-42454018.32	-42454018.11	0.0285	0.0003
Venus	-120946-11-12 02:39 J	-42453788.60	-42453788.39	-42453788.17	0.0288	0.0007
Venus	-120945-06-29 02:10 J	-42453558.62	-42453558.41	-42453558.19	0.0291	0.0014
Venus	-120944-02-14 02:53 J	-42453328.59	-42453328.38	-42453328.16	0.0294	0.0018
Venus	-120944-10-02 04:34 J	-42453098.52	-42453098.31	-42453098.10	0.0297	0.0022
Mercury	-120943-01-23 11:46 J	-42452985.07	-42452985.01	-42452984.95	0.0298	0.0266
Mercury	-120943-04-22 01:27 J	-42452896.55	-42452896.44	-42452896.32	0.0299	0.0151
Venus	-120943-05-20 06:44 J	-42452868.43	-42452868.22	-42452868.01	0.0299	0.0026
Mercury	-120943-07-19 15:22 J	-42452808.00	-42452807.86	-42452807.73	0.0300	0.0035
Mercury	-120943-10-16 05:03 J	-42452719.42	-42452719.29	-42452719.16	0.0301	0.0080



Venus -120942-01-05 09:22 J -42452638.32 -42452638.11 -42452637.90 0.0301 0.0029  
 Mercury -120942-01-12 18:29 J -42452630.83 -42452630.73 -42452630.63 0.0301 0.0195  
 Venus -120942-08-23 11:32 J -42452408.22 -42452408.02 -42452407.81 0.0303 0.0032  
 Venus -120941-04-09 13:27 J -42452178.15 -42452177.94 -42452177.74 0.0304 0.0034  
 Venus -120941-11-25 14:25 J -42451948.10 -42451947.90 -42451947.69 0.0304 0.0036  
 Venus -120940-07-13 14:25 J -42451718.10 -42451717.90 -42451717.69 0.0304 0.0036  
 Venus -120939-02-28 13:13 J -42451488.15 -42451487.95 -42451487.75 0.0303 0.0035  
 Venus -120939-10-16 10:20 J -42451258.27 -42451258.07 -42451257.87 0.0302 0.0033  
 Venus -120938-06-03 05:32 J -42451028.47 -42451028.27 -42451028.06 0.0300 0.0031  
 Venus -120937-01-18 23:03 J -42450798.74 -42450798.54 -42450798.33 0.0298 0.0029  
 Venus -120937-09-04 14:39 J -42450569.09 -42450568.89 -42450568.68 0.0295 0.0025  
 Venus -120936-04-22 04:34 J -42450339.52 -42450339.31 -42450339.11 0.0292 0.0021  
 Venus -120936-12-07 16:20 J -42450110.03 -42450109.82 -42450109.62 0.0289 0.0017  
 Venus -120935-07-25 02:10 J -42449880.61 -42449880.41 -42449880.20 0.0286 0.0013  
 Venus -120934-03-11 10:34 J -42449651.27 -42449651.06 -42449650.85 0.0283 0.0008  
 Venus -120934-10-26 17:17 J -42449421.99 -42449421.78 -42449421.58 0.0280 0.0005  
 Venus -120933-06-11 22:20 J -42449192.78 -42449192.57 -42449192.36 0.0277 0.0003  
 Earth -120933-06-29 06:15 J -42449175.48 -42449175.24 -42449175.00 0.0277 0.0055  
 Moon -120933-06-29 07:13 J -42449175.45 -42449175.20 -42449174.95 0.0277 0.0049 \*  
 Venus -120932-01-27 02:10 J -42448963.61 -42448963.41 -42448963.20 0.0274 0.0008  
 Mars -120932-08-20 09:51 J -42448758.36 -42448758.09 -42448757.82 0.0272 0.0095  
 Venus -120932-09-13 05:03 J -42448734.50 -42448734.29 -42448734.08 0.0272 0.0010  
 Venus -120931-04-30 06:58 J -42448505.42 -42448505.21 -42448505.00 0.0269 0.0014  
 Venus -120931-12-15 08:10 J -42448276.38 -42448276.16 -42448275.95 0.0267 0.0018  
 Venus -120930-08-01 08:25 J -42448047.36 -42448047.15 -42448046.94 0.0265 0.0021  
 Mercury -120930-11-22 05:46 J -42447934.27 -42447934.26 -42447934.25 0.0264 0.0263  
 Mercury -120929-02-19 00:29 J -42447845.62 -42447845.48 -42447845.34 0.0263 0.0161  
 Venus -120929-03-17 08:25 J -42447818.36 -42447818.15 -42447817.94 0.0263 0.0024  
 Mercury -120929-05-17 19:13 J -42447756.87 -42447756.70 -42447756.52 0.0263 0.0058  
 Mercury -120929-08-14 14:25 J -42447668.08 -42447667.90 -42447667.72 0.0262 0.0047

Venus -120929-11-01 08:10 J -42447589.38 -42447589.16 -42447588.95 0.0262 0.0026  
 Mercury -120929-11-11 09:22 J -42447579.25 -42447579.11 -42447578.95 0.0262 0.0152  
 Mercury -120928-02-08 04:49 J -42447490.33 -42447490.30 -42447490.26 0.0261 0.0256  
 Venus -120928-06-18 07:56 J -42447360.38 -42447360.17 -42447359.95 0.0260 0.0028  
 Venus -120927-02-02 07:41 J -42447131.39 -42447131.18 -42447130.96 0.0259 0.0030  
 Venus -120927-09-19 07:41 J -42446902.40 -42446902.18 -42446901.97 0.0259 0.0031  
 Venus -120926-05-06 07:56 J -42446673.38 -42446673.17 -42446672.95 0.0259 0.0033  
 Venus -120926-12-21 08:53 J -42446444.34 -42446444.13 -42446443.91 0.0259 0.0033  
 Venus -120925-08-06 10:49 J -42446215.27 -42446215.05 -42446214.83 0.0259 0.0034  
 Venus -120924-03-23 13:27 J -42445986.15 -42445985.94 -42445985.72 0.0260 0.0034  
 Venus -120924-11-07 17:17 J -42445757.00 -42445756.78 -42445756.56 0.0260 0.0033  
 Venus -120923-06-24 22:20 J -42445527.79 -42445527.57 -42445527.35 0.0262 0.0031  
 Venus -120922-02-09 04:34 J -42445298.53 -42445298.31 -42445298.09 0.0263 0.0030  
 Venus -120922-09-26 12:29 J -42445069.20 -42445068.98 -42445068.76 0.0265 0.0028  
 Venus -120921-05-12 21:51 J -42444839.81 -42444839.59 -42444839.37 0.0267 0.0026  
 Venus -120921-12-28 08:39 J -42444610.36 -42444610.14 -42444609.92 0.0269 0.0023  
 Venus -120920-08-14 21:22 J -42444380.83 -42444380.61 -42444380.39 0.0272 0.0019  
 Venus -120919-04-01 11:46 J -42444151.23 -42444151.01 -42444150.79 0.0274 0.0016  
 Venus -120919-11-17 03:51 J -42443921.56 -42443921.34 -42443921.12 0.0277 0.0012  
 Venus -120918-07-04 21:37 J -42443691.81 -42443691.60 -42443691.38 0.0280 0.0010  
 Venus -120917-02-19 17:17 J -42443462.00 -42443461.78 -42443461.56 0.0283 0.0003  
 Venus -120917-10-06 14:25 J -42443232.11 -42443231.90 -42443231.68 0.0286 0.0006  
 Moon -120916-01-12 06:29 J -42443134.34 -42443134.23 -42443134.12 0.0288 0.0255  
 Earth -120916-01-12 09:51 J -42443134.20 -42443134.09 -42443133.96 0.0288 0.0248 \*  
 Venus -120916-05-24 13:13 J -42443002.17 -42443001.95 -42443001.74 0.0289 0.0009  
 Mars -120916-07-17 20:25 J -42442947.88 -42442947.65 -42442947.40 0.0290 0.0170  
 Venus -120915-01-09 12:58 J -42442772.17 -42442771.96 -42442771.75 0.0292 0.0013  
 Venus -120915-08-27 13:56 J -42442542.14 -42442541.92 -42442541.71 0.0295 0.0019  
 Venus -120914-04-14 15:37 J -42442312.06 -42442311.85 -42442311.64 0.0298 0.0023  
 Mercury -120914-06-12 14:25 J -42442252.93 -42442252.90 -42442252.86 0.0298 0.0289

Mercury -120914-09-09 04:20 J -42442164.43 -42442164.32 -42442164.21 0.0299 0.0174

Venus -120914-11-30 17:46 J -42442081.96 -42442081.76 -42442081.55 0.0300 0.0027

Mercury -120914-12-06 18:15 J -42442075.87 -42442075.74 -42442075.61 0.0300 0.0058

Mercury -120913-03-04 07:56 J -42441987.31 -42441987.17 -42441987.04 0.0301 0.0057

Mercury -120913-05-31 21:22 J -42441898.72 -42441898.61 -42441898.50 0.0301 0.0172

Venus -120913-07-17 20:10 J -42441851.86 -42441851.66 -42441851.45 0.0302 0.0031

Mercury -120913-08-28 10:49 J -42441810.09 -42441810.05 -42441810.01 0.0302 0.0285

Venus -120912-03-04 22:20 J -42441621.77 -42441621.57 -42441621.36 0.0303 0.0034

Venus -120912-10-21 00:01 J -42441391.70 -42441391.50 -42441391.29 0.0304 0.0036

Venus -120911-06-08 00:58 J -42441161.66 -42441161.46 -42441161.25 0.0304 0.0037

Venus -120910-01-24 00:58 J -42440931.66 -42440931.46 -42440931.26 0.0303 0.0037

Venus -120910-09-10 23:17 J -42440701.73 -42440701.53 -42440701.33 0.0302 0.0036

Venus -120909-04-27 20:10 J -42440471.86 -42440471.66 -42440471.46 0.0301 0.0034

Venus -120909-12-13 15:08 J -42440242.07 -42440241.87 -42440241.67 0.0299 0.0032

Venus -120908-07-31 08:25 J -42440012.35 -42440012.15 -42440011.95 0.0297 0.0028

Venus -120907-03-17 23:46 J -42439782.71 -42439782.51 -42439782.31 0.0294 0.0024

Venus -120907-11-02 12:58 J -42439553.16 -42439552.96 -42439552.75 0.0291 0.0020

Venus -120906-06-20 00:29 J -42439323.69 -42439323.48 -42439323.28 0.0288 0.0016

Venus -120905-02-04 09:51 J -42439094.29 -42439094.09 -42439093.88 0.0285 0.0013

Venus -120905-09-20 18:01 J -42438864.96 -42438864.75 -42438864.55 0.0282 0.0008

Venus -120904-05-08 00:29 J -42438635.69 -42438635.48 -42438635.28 0.0279 0.0003

Venus -120904-12-23 05:32 J -42438406.48 -42438406.27 -42438406.07 0.0276 0.0006

Venus -120903-08-09 09:08 J -42438177.33 -42438177.12 -42438176.91 0.0274 0.0008

Venus -120902-03-26 11:46 J -42437948.22 -42437948.01 -42437947.80 0.0271 0.0012

Mars -120902-10-08 07:13 J -42437752.46 -42437752.20 -42437751.93 0.0269 0.0104

Venus -120902-11-10 13:27 J -42437719.15 -42437718.94 -42437718.73 0.0269 0.0016

Venus -120901-06-26 14:25 J -42437490.11 -42437489.90 -42437489.69 0.0267 0.0020

Venus -120900-02-10 14:53 J -42437261.10 -42437260.88 -42437260.67 0.0265 0.0023

Mercury -120900-07-08 01:41 J -42437113.55 -42437113.43 -42437113.30 0.0264 0.0183

Venus -120900-09-27 14:39 J -42437032.10 -42437031.89 -42437031.67 0.0263 0.0026

Mercury -120900-10-04 20:39 J -42437024.81 -42437024.64 -42437024.47 0.0263 0.0079

Mercury -120899-01-01 15:37 J -42436936.03 -42436935.85 -42436935.67 0.0262 0.0025

Mercury -120899-03-31 10:49 J -42436847.21 -42436847.05 -42436846.89 0.0262 0.0129

Venus -120899-05-14 14:25 J -42436803.11 -42436802.90 -42436802.68 0.0262 0.0028

Mercury -120899-06-28 06:01 J -42436758.33 -42436758.25 -42436758.17 0.0261 0.0234

Venus -120899-12-29 14:10 J -42436574.13 -42436573.91 -42436573.70 0.0261 0.0029

Venus -120898-08-15 13:41 J -42436345.14 -42436344.93 -42436344.71 0.0260 0.0032

Venus -120897-03-31 13:41 J -42436116.14 -42436115.93 -42436115.71 0.0259 0.0032

Venus -120897-11-15 14:10 J -42435887.12 -42435886.91 -42435886.69 0.0259 0.0033

Venus -120896-07-02 15:22 J -42435658.07 -42435657.86 -42435657.64 0.0259 0.0034

Venus -120895-02-16 17:17 J -42435428.99 -42435428.78 -42435428.56 0.0259 0.0034

Venus -120895-10-03 20:10 J -42435199.88 -42435199.66 -42435199.44 0.0260 0.0033

Venus -120894-05-21 00:01 J -42434970.72 -42434970.50 -42434970.28 0.0261 0.0033

Venus -120893-01-05 05:03 J -42434741.50 -42434741.29 -42434741.06 0.0262 0.0032

Venus -120893-08-21 11:46 J -42434512.22 -42434512.01 -42434511.78 0.0263 0.0030

Venus -120892-04-07 19:56 J -42434282.89 -42434282.67 -42434282.45 0.0265 0.0028

Venus -120892-11-23 05:32 J -42434053.49 -42434053.27 -42434053.05 0.0267 0.0025

Venus -120891-07-10 16:49 J -42433824.02 -42433823.80 -42433823.58 0.0269 0.0022

Venus -120890-02-25 05:46 J -42433594.48 -42433594.26 -42433594.04 0.0272 0.0018

Venus -120890-10-12 20:39 J -42433364.86 -42433364.64 -42433364.42 0.0274 0.0014

Venus -120889-05-29 12:58 J -42433135.17 -42433134.96 -42433134.74 0.0277 0.0010

Venus -120888-01-14 07:13 J -42432905.42 -42432905.20 -42432904.98 0.0280 0.0004

Venus -120888-09-01 02:53 J -42432675.59 -42432675.38 -42432675.16 0.0283 0.0007

Earth -120887-01-06 23:17 J -42432547.74 -42432547.53 -42432547.31 0.0285 0.0132

Moon -120887-01-07 00:15 J -42432547.71 -42432547.49 -42432547.27 0.0285 0.0117 \*

Venus -120887-04-19 00:15 J -42432445.70 -42432445.49 -42432445.27 0.0286 0.0009

Venus -120887-12-04 23:03 J -42432215.75 -42432215.54 -42432215.32 0.0289 0.0013

Venus -120886-07-22 23:03 J -42431985.75 -42431985.54 -42431985.33 0.0292 0.0018

Mars -120886-09-09 05:17 J -42431937.56 -42431937.28 -42431936.99 0.0293 0.0099

Venus -120885-03-09 00:01 J -42431755.71 -42431755.50 -42431755.29 0.0295 0.0023

Venus -120885-10-25 01:56 J -42431525.63 -42431525.42 -42431525.21 0.0298 0.0028  
 Mercury -120884-01-26 06:58 J -42431432.30 -42431432.21 -42431432.10 0.0299 0.0200  
 Mercury -120884-04-24 20:53 J -42431343.76 -42431343.63 -42431343.50 0.0299 0.0084  
 Venus -120884-06-12 04:20 J -42431295.53 -42431295.32 -42431295.12 0.0300 0.0032  
 Mercury -120884-07-22 10:34 J -42431255.19 -42431255.06 -42431254.92 0.0300 0.0031  
 Mercury -120884-10-19 00:15 J -42431166.61 -42431166.49 -42431166.38 0.0301 0.0146  
 Mercury -120883-01-15 13:41 J -42431078.00 -42431077.93 -42431077.87 0.0301 0.0260  
 Venus -120883-01-28 06:44 J -42431065.43 -42431065.22 -42431065.01 0.0302 0.0035  
 Venus -120883-09-15 08:53 J -42430835.34 -42430835.13 -42430834.93 0.0303 0.0038  
 Venus -120882-05-03 10:20 J -42430605.27 -42430605.07 -42430604.86 0.0304 0.0040  
 Venus -120882-12-19 11:17 J -42430375.23 -42430375.03 -42430374.83 0.0304 0.0039  
 Venus -120881-08-05 10:49 J -42430145.25 -42430145.05 -42430144.84 0.0303 0.0039  
 Venus -120880-03-23 09:08 J -42429915.32 -42429915.12 -42429914.92 0.0303 0.0037  
 Venus -120880-11-08 05:32 J -42429685.47 -42429685.27 -42429685.06 0.0301 0.0035  
 Venus -120879-06-26 00:29 J -42429455.69 -42429455.48 -42429455.28 0.0299 0.0032  
 Venus -120878-02-10 17:17 J -42429225.98 -42429225.78 -42429225.57 0.0297 0.0028  
 Venus -120878-09-28 08:25 J -42428996.35 -42428996.15 -42428995.95 0.0294 0.0023  
 Venus -120877-05-14 21:22 J -42428766.81 -42428766.61 -42428766.40 0.0291 0.0019  
 Venus -120877-12-30 08:39 J -42428537.35 -42428537.14 -42428536.94 0.0288 0.0014  
 Venus -120876-08-16 18:01 J -42428307.96 -42428307.75 -42428307.54 0.0285 0.0009  
 Venus -120875-04-03 01:56 J -42428078.63 -42428078.42 -42428078.22 0.0282 0.0006  
 Venus -120875-11-18 07:56 J -42427849.37 -42427849.17 -42427848.96 0.0279 0.0004  
 Earth -120874-07-01 21:37 J -42427623.84 -42427623.60 -42427623.36 0.0276 0.0057  
 Moon -120874-07-02 01:13 J -42427623.69 -42427623.45 -42427623.21 0.0276 0.0045 \*  
 Venus -120874-07-05 12:44 J -42427620.18 -42427619.97 -42427619.76 0.0276 0.0007  
 Mars -120874-11-27 21:22 J -42427474.61 -42427474.61 -42427474.59 0.0274 0.0274  
 Venus -120873-02-19 16:05 J -42427391.04 -42427390.83 -42427390.62 0.0273 0.0010  
 Venus -120873-10-05 18:29 J -42427161.94 -42427161.73 -42427161.52 0.0271 0.0015  
 Venus -120872-05-22 20:10 J -42426932.87 -42426932.66 -42426932.45 0.0268 0.0019  
 Venus -120871-01-06 20:53 J -42426703.84 -42426703.63 -42426703.41 0.0266 0.0023

Venus -120871-08-23 21:08 J -42426474.83 -42426474.62 -42426474.41 0.0264 0.0026

Mercury -120871-11-25 02:53 J -42426381.48 -42426381.38 -42426381.26 0.0264 0.0206

Mercury -120870-02-21 21:51 J -42426292.76 -42426292.59 -42426292.42 0.0263 0.0103

Venus -120870-04-09 20:53 J -42426245.84 -42426245.63 -42426245.41 0.0263 0.0029

Mercury -120870-05-21 16:49 J -42426203.98 -42426203.80 -42426203.62 0.0262 0.0001

Mercury -120870-08-18 12:01 J -42426115.17 -42426115.00 -42426114.84 0.0262 0.0105

Mercury -120870-11-15 06:58 J -42426026.31 -42426026.21 -42426026.09 0.0261 0.0210

Venus -120870-11-24 20:39 J -42426016.85 -42426016.64 -42426016.43 0.0261 0.0031

Venus -120869-07-10 20:25 J -42425787.86 -42425787.65 -42425787.43 0.0260 0.0033

Venus -120868-02-24 20:10 J -42425558.87 -42425558.66 -42425558.44 0.0259 0.0035

Venus -120868-10-11 20:10 J -42425329.87 -42425329.66 -42425329.44 0.0259 0.0036

Venus -120867-05-28 20:53 J -42425100.85 -42425100.63 -42425100.41 0.0259 0.0037

Venus -120866-01-12 22:05 J -42424871.80 -42424871.58 -42424871.36 0.0259 0.0037

Venus -120866-08-30 00:01 J -42424642.71 -42424642.50 -42424642.28 0.0259 0.0037

Venus -120865-04-15 03:08 J -42424413.59 -42424413.37 -42424413.15 0.0260 0.0036

Venus -120865-11-30 07:13 J -42424184.42 -42424184.20 -42424183.98 0.0261 0.0035

Venus -120864-07-17 12:44 J -42423955.19 -42423954.97 -42423954.75 0.0262 0.0033

Venus -120863-03-03 19:27 J -42423725.91 -42423725.69 -42423725.47 0.0264 0.0031

Venus -120863-10-19 03:37 J -42423496.57 -42423496.35 -42423496.13 0.0265 0.0028

Venus -120862-06-05 13:27 J -42423267.16 -42423266.94 -42423266.72 0.0268 0.0025

Venus -120861-01-21 00:58 J -42423037.68 -42423037.46 -42423037.24 0.0270 0.0021

Venus -120861-09-06 14:25 J -42422808.12 -42422807.90 -42422807.68 0.0272 0.0017

Venus -120860-04-24 05:17 J -42422578.49 -42422578.28 -42422578.06 0.0275 0.0014

Venus -120860-12-09 22:05 J -42422348.80 -42422348.58 -42422348.36 0.0278 0.0008

Venus -120859-07-27 16:34 J -42422119.03 -42422118.81 -42422118.60 0.0281 0.0007

Venus -120858-03-14 12:29 J -42421889.19 -42421888.98 -42421888.76 0.0284 0.0003

Venus -120858-10-30 10:20 J -42421659.29 -42421659.07 -42421658.86 0.0287 0.0008

Venus -120857-06-16 09:22 J -42421429.33 -42421429.11 -42421428.90 0.0290 0.0013

Venus -120856-02-01 09:37 J -42421199.31 -42421199.10 -42421198.89 0.0293 0.0019

Venus -120856-09-19 10:49 J -42420969.26 -42420969.05 -42420968.84 0.0296 0.0024

Venus -120855-05-07 12:44 J -42420739.18 -42420738.97 -42420738.76 0.0298 0.0029  
 Mercury -120855-06-15 09:51 J -42420700.18 -42420700.09 -42420700.00 0.0299 0.0223  
 Mercury -120855-09-11 23:46 J -42420611.64 -42420611.51 -42420611.38 0.0300 0.0107  
 Mercury -120855-12-09 13:27 J -42420523.08 -42420522.94 -42420522.81 0.0300 0.0008  
 Venus -120855-12-23 15:08 J -42420509.08 -42420508.87 -42420508.66 0.0300 0.0033  
 Mercury -120854-03-08 03:08 J -42420434.50 -42420434.37 -42420434.25 0.0301 0.0123  
 Mercury -120854-06-04 16:34 J -42420345.89 -42420345.81 -42420345.73 0.0302 0.0237  
 Venus -120854-08-10 17:32 J -42420278.98 -42420278.77 -42420278.57 0.0302 0.0036  
 Venus -120853-03-27 19:27 J -42420048.89 -42420048.69 -42420048.48 0.0303 0.0039  
 Venus -120853-11-12 21:08 J -42419818.83 -42419818.62 -42419818.42 0.0304 0.0040  
 Venus -120852-06-30 21:51 J -42419588.80 -42419588.59 -42419588.39 0.0304 0.0041  
 Venus -120851-02-15 21:22 J -42419358.82 -42419358.61 -42419358.41 0.0303 0.0040  
 Venus -120851-10-03 19:13 J -42419128.90 -42419128.70 -42419128.50 0.0302 0.0038  
 Venus -120850-05-21 15:22 J -42418899.06 -42418898.86 -42418898.65 0.0301 0.0036  
 Venus -120849-01-06 10:05 J -42418669.28 -42418669.08 -42418668.88 0.0299 0.0032  
 Venus -120849-08-23 02:39 J -42418439.59 -42418439.39 -42418439.19 0.0296 0.0028  
 Venus -120848-04-09 17:32 J -42418209.98 -42418209.77 -42418209.57 0.0293 0.0023  
 Venus -120848-11-25 06:15 J -42417980.45 -42417980.24 -42417980.04 0.0290 0.0018  
 Venus -120847-07-12 17:03 J -42417751.00 -42417750.79 -42417750.59 0.0287 0.0013  
 Venus -120846-02-27 02:10 J -42417521.62 -42417521.41 -42417521.21 0.0284 0.0009  
 Venus -120846-10-14 09:22 J -42417292.31 -42417292.11 -42417291.90 0.0281 0.0004  
 Venus -120845-05-30 15:22 J -42417063.07 -42417062.86 -42417062.66 0.0278 0.0005  
 Moon -120845-06-25 20:39 J -42417036.68 -42417036.64 -42417036.58 0.0278 0.0272  
 Venus -120844-01-14 19:41 J -42416833.88 -42416833.68 -42416833.47 0.0275 0.0010  
 Venus -120844-08-31 23:03 J -42416604.75 -42416604.54 -42416604.33 0.0273 0.0013  
 Mars -120843-01-15 07:13 J -42416468.47 -42416468.20 -42416467.91 0.0271 0.0067  
 Venus -120843-04-18 01:27 J -42416375.65 -42416375.44 -42416375.23 0.0270 0.0018  
 Venus -120843-12-03 02:53 J -42416146.59 -42416146.38 -42416146.17 0.0268 0.0022  
 Venus -120842-07-20 03:22 J -42415917.57 -42415917.36 -42415917.15 0.0266 0.0025  
 Venus -120841-03-05 03:22 J -42415688.57 -42415688.36 -42415688.14 0.0264 0.0028

Mercury -120841-04-13 04:20 J -42415649.40 -42415649.32 -42415649.23 0.0264 0.0228

Mercury -120841-07-10 23:03 J -42415560.69 -42415560.54 -42415560.38 0.0263 0.0125

Mercury -120841-10-07 18:01 J -42415471.93 -42415471.75 -42415471.57 0.0263 0.0022

Venus -120841-10-20 03:22 J -42415459.58 -42415459.36 -42415459.15 0.0262 0.0031

Mercury -120840-01-04 12:58 J -42415383.13 -42415382.96 -42415382.78 0.0262 0.0083

Mercury -120840-04-03 08:10 J -42415294.28 -42415294.16 -42415294.03 0.0262 0.0187

Venus -120840-06-06 02:53 J -42415230.59 -42415230.38 -42415230.16 0.0261 0.0033

Venus -120839-01-21 02:39 J -42415001.61 -42415001.39 -42415001.18 0.0260 0.0034

Venus -120839-09-07 02:10 J -42414772.62 -42414772.41 -42414772.19 0.0259 0.0036

Venus -120838-04-24 02:10 J -42414543.62 -42414543.41 -42414543.19 0.0259 0.0037

Venus -120838-12-09 02:53 J -42414314.60 -42414314.38 -42414314.17 0.0259 0.0037

Venus -120837-07-25 04:20 J -42414085.54 -42414085.32 -42414085.11 0.0259 0.0037

Venus -120836-03-11 06:15 J -42413856.45 -42413856.24 -42413856.02 0.0259 0.0037

Venus -120836-10-26 09:22 J -42413627.33 -42413627.11 -42413626.89 0.0260 0.0036

Venus -120835-06-12 13:27 J -42413398.15 -42413397.94 -42413397.71 0.0261 0.0035

Venus -120834-01-27 19:13 J -42413168.92 -42413168.70 -42413168.48 0.0262 0.0033

Venus -120834-09-14 02:10 J -42412939.63 -42412939.41 -42412939.19 0.0264 0.0030

Venus -120833-04-30 10:34 J -42412710.27 -42412710.06 -42412709.83 0.0266 0.0028

Venus -120833-12-15 20:39 J -42412480.85 -42412480.64 -42412480.41 0.0268 0.0025

Venus -120832-08-02 08:39 J -42412251.36 -42412251.14 -42412250.92 0.0270 0.0020

Venus -120831-03-19 22:20 J -42412021.79 -42412021.57 -42412021.35 0.0273 0.0016

Venus -120831-11-04 13:41 J -42411792.15 -42411791.93 -42411791.71 0.0275 0.0011

Venus -120830-06-22 06:44 J -42411562.44 -42411562.22 -42411562.00 0.0278 0.0006

Venus -120829-02-07 01:27 J -42411332.66 -42411332.44 -42411332.22 0.0281 0.0001

Venus -120829-09-23 22:05 J -42411102.80 -42411102.58 -42411102.37 0.0284 0.0008

Moon -120828-01-08 14:25 J -42410996.15 -42410995.90 -42410995.66 0.0286 0.0025

Earth -120828-01-08 18:01 J -42410996.00 -42410995.75 -42410995.51 0.0286 0.0009 \*

Venus -120828-05-11 19:56 J -42410872.89 -42410872.67 -42410872.45 0.0287 0.0012

Mars -120828-12-13 05:32 J -42410657.53 -42410657.27 -42410657.00 0.0290 0.0135

Venus -120828-12-27 19:13 J -42410642.91 -42410642.70 -42410642.49 0.0290 0.0018



Venus	-120827-08-14 19:27 J	-42410412.90	-42410412.69	-42410412.47	0.0293	0.0024
Venus	-120826-04-01 20:53 J	-42410182.84	-42410182.63	-42410182.42	0.0296	0.0029
Mercury	-120826-11-02 12:29 J	-42409968.05	-42409967.98	-42409967.90	0.0298	0.0249
Venus	-120826-11-17 23:03 J	-42409952.75	-42409952.54	-42409952.33	0.0298	0.0034
Mercury	-120825-01-30 02:25 J	-42409879.52	-42409879.40	-42409879.28	0.0299	0.0134
Mercury	-120825-04-27 16:05 J	-42409790.96	-42409790.83	-42409790.69	0.0300	0.0020
Venus	-120825-07-05 01:27 J	-42409722.65	-42409722.44	-42409722.23	0.0300	0.0038
Mercury	-120825-07-25 05:46 J	-42409702.39	-42409702.26	-42409702.13	0.0301	0.0096
Mercury	-120825-10-21 19:13 J	-42409613.79	-42409613.70	-42409613.60	0.0301	0.0211
Venus	-120824-02-20 03:51 J	-42409492.55	-42409492.34	-42409492.13	0.0302	0.0041
Venus	-120824-10-08 06:01 J	-42409262.46	-42409262.25	-42409262.05	0.0303	0.0043
Venus	-120823-05-26 07:27 J	-42409032.39	-42409032.19	-42409031.99	0.0304	0.0044
Venus	-120822-01-11 08:10 J	-42408802.37	-42408802.16	-42408801.96	0.0304	0.0044
Venus	-120822-08-29 07:27 J	-42408572.40	-42408572.19	-42408571.99	0.0303	0.0043
Venus	-120821-04-15 05:03 J	-42408342.49	-42408342.29	-42408342.09	0.0302	0.0040
Venus	-120821-12-01 01:13 J	-42408112.65	-42408112.45	-42408112.25	0.0301	0.0036
Venus	-120820-07-18 19:27 J	-42407882.89	-42407882.69	-42407882.49	0.0298	0.0032
Venus	-120819-03-05 12:01 J	-42407653.21	-42407653.00	-42407652.80	0.0296	0.0028
Venus	-120819-10-21 02:10 J	-42407423.61	-42407423.41	-42407423.20	0.0293	0.0024
Venus	-120818-06-07 14:39 J	-42407194.09	-42407193.89	-42407193.68	0.0290	0.0017
Venus	-120817-01-23 01:13 J	-42406964.65	-42406964.45	-42406964.24	0.0287	0.0012
Venus	-120817-09-08 10:05 J	-42406735.28	-42406735.08	-42406734.87	0.0284	0.0006
Venus	-120816-04-25 17:32 J	-42406505.98	-42406505.77	-42406505.57	0.0281	0.0006
Venus	-120816-12-10 23:03 J	-42406276.75	-42406276.54	-42406276.33	0.0278	0.0005
Earth	-120815-07-03 13:13 J	-42406072.14	-42406071.95	-42406071.75	0.0276	0.0169
Moon	-120815-07-03 12:58 J	-42406072.13	-42406071.96	-42406071.78	0.0276	0.0183 *
Venus	-120815-07-28 03:08 J	-42406047.58	-42406047.37	-42406047.16	0.0275	0.0011
Venus	-120814-03-14 06:15 J	-42405818.45	-42405818.24	-42405818.03	0.0273	0.0015
Venus	-120814-10-29 08:10 J	-42405589.37	-42405589.16	-42405588.95	0.0270	0.0019
Mars	-120813-03-04 05:17 J	-42405462.52	-42405462.28	-42405462.03	0.0269	0.0133

Venus -120813-06-14 09:22 J -42405360.32 -42405360.11 -42405359.90 0.0268 0.0024

Venus -120812-01-29 09:51 J -42405131.30 -42405131.09 -42405130.88 0.0266 0.0027

Mercury -120812-08-31 05:46 J -42404917.31 -42404917.26 -42404917.21 0.0264 0.0250

Venus -120812-09-15 09:51 J -42404902.30 -42404902.09 -42404901.88 0.0264 0.0031

Mercury -120812-11-28 00:15 J -42404828.63 -42404828.49 -42404828.34 0.0263 0.0148

Mercury -120811-02-24 19:13 J -42404739.88 -42404739.70 -42404739.52 0.0263 0.0045

Venus -120811-05-02 09:22 J -42404673.32 -42404673.11 -42404672.89 0.0262 0.0034

Mercury -120811-05-24 14:10 J -42404651.09 -42404650.91 -42404650.73 0.0262 0.0059

Mercury -120811-08-21 09:22 J -42404562.25 -42404562.11 -42404561.97 0.0261 0.0163

Venus -120811-12-17 08:53 J -42404444.34 -42404444.13 -42404443.91 0.0261 0.0037

Venus -120810-08-03 08:39 J -42404215.36 -42404215.14 -42404214.93 0.0260 0.0038

Venus -120809-03-19 08:25 J -42403986.37 -42403986.15 -42403985.94 0.0259 0.0039

Venus -120809-11-03 08:25 J -42403757.36 -42403757.15 -42403756.93 0.0259 0.0040

Venus -120808-06-20 09:08 J -42403528.33 -42403528.12 -42403527.90 0.0258 0.0041

Venus -120807-02-04 10:34 J -42403299.28 -42403299.06 -42403298.84 0.0259 0.0040

Venus -120807-09-21 12:44 J -42403070.19 -42403069.97 -42403069.75 0.0259 0.0039

Venus -120806-05-08 15:51 J -42402841.06 -42402840.84 -42402840.62 0.0260 0.0038

Venus -120806-12-23 20:10 J -42402611.87 -42402611.66 -42402611.44 0.0261 0.0037

Venus -120805-08-09 02:10 J -42402382.63 -42402382.41 -42402382.19 0.0262 0.0034

Venus -120804-03-26 09:22 J -42402153.33 -42402153.11 -42402152.89 0.0264 0.0031

Venus -120804-11-10 18:01 J -42401923.97 -42401923.75 -42401923.53 0.0266 0.0028

Venus -120803-06-28 04:20 J -42401694.54 -42401694.32 -42401694.10 0.0268 0.0024

Venus -120802-02-12 16:20 J -42401465.04 -42401464.82 -42401464.60 0.0271 0.0021

Venus -120802-09-30 06:15 J -42401235.45 -42401235.24 -42401235.02 0.0273 0.0016

Venus -120801-05-16 21:51 J -42401005.81 -42401005.59 -42401005.37 0.0276 0.0011

Venus -120800-01-01 15:08 J -42400776.09 -42400775.87 -42400775.65 0.0279 0.0006

Venus -120800-08-19 10:05 J -42400546.29 -42400546.08 -42400545.86 0.0282 0.0005

Venus -120799-04-06 06:44 J -42400316.43 -42400316.22 -42400316.00 0.0285 0.0009

Venus -120799-11-22 05:03 J -42400086.50 -42400086.29 -42400086.07 0.0288 0.0013

Venus -120798-07-10 04:34 J -42399856.52 -42399856.31 -42399856.10 0.0291 0.0019

Mars -120797-02-04 14:53 J -42399647.14 -42399646.88 -42399646.61 0.0294 0.0145  
 Venus -120797-02-25 05:03 J -42399626.50 -42399626.29 -42399626.07 0.0294 0.0025  
 Venus -120797-10-12 06:44 J -42399396.43 -42399396.22 -42399396.01 0.0297 0.0030  
 Mercury -120796-03-21 14:53 J -42399235.92 -42399235.88 -42399235.82 0.0298 0.0274  
 Venus -120796-05-30 08:53 J -42399166.34 -42399166.13 -42399165.92 0.0299 0.0035  
 Mercury -120796-06-18 04:49 J -42399147.41 -42399147.30 -42399147.18 0.0299 0.0160  
 Mercury -120796-09-14 18:44 J -42399058.85 -42399058.72 -42399058.59 0.0300 0.0044  
 Mercury -120796-12-12 08:25 J -42398970.28 -42398970.15 -42398970.02 0.0301 0.0071  
 Venus -120795-01-15 11:32 J -42398936.23 -42398936.02 -42398935.82 0.0301 0.0039  
 Mercury -120795-03-10 21:51 J -42398881.69 -42398881.59 -42398881.48 0.0301 0.0186  
 Mercury -120795-06-07 11:17 J -42398793.04 -42398793.03 -42398793.01 0.0302 0.0299  
 Venus -120795-09-02 13:41 J -42398706.13 -42398705.93 -42398705.72 0.0303 0.0042  
 Venus -120794-04-20 15:51 J -42398476.05 -42398475.84 -42398475.64 0.0304 0.0044  
 Venus -120794-12-06 17:17 J -42398245.99 -42398245.78 -42398245.58 0.0304 0.0045  
 Venus -120793-07-23 17:32 J -42398015.97 -42398015.77 -42398015.57 0.0304 0.0045  
 Venus -120792-03-10 16:34 J -42397786.01 -42397785.81 -42397785.60 0.0303 0.0043  
 Venus -120792-10-26 14:10 J -42397556.11 -42397555.91 -42397555.71 0.0302 0.0040  
 Venus -120791-06-13 10:05 J -42397326.29 -42397326.08 -42397325.88 0.0300 0.0037  
 Venus -120790-01-29 04:05 J -42397096.53 -42397096.33 -42397096.13 0.0298 0.0032  
 Venus -120790-09-15 20:10 J -42396866.86 -42396866.66 -42396866.46 0.0295 0.0027  
 Venus -120789-05-02 10:20 J -42396637.28 -42396637.07 -42396636.87 0.0293 0.0022  
 Venus -120789-12-17 22:20 J -42396407.77 -42396407.57 -42396407.36 0.0290 0.0016  
 Venus -120788-08-04 08:39 J -42396178.34 -42396178.14 -42396177.93 0.0286 0.0011  
 Venus -120787-03-21 17:17 J -42395948.98 -42395948.78 -42395948.57 0.0283 0.0005  
 Venus -120787-11-06 00:15 J -42395719.70 -42395719.49 -42395719.29 0.0280 0.0004  
 Venus -120786-06-23 05:32 J -42395490.48 -42395490.27 -42395490.06 0.0277 0.0008  
 Earth -120786-06-28 12:15 J -42395485.18 -42395484.99 -42395484.80 0.0277 0.0170  
 Moon -120786-06-28 16:05 J -42395485.02 -42395484.83 -42395484.64 0.0277 0.0176 \*  
 Venus -120785-02-07 09:22 J -42395261.31 -42395261.11 -42395260.90 0.0274 0.0014  
 Mars -120785-04-23 19:41 J -42395184.81 -42395184.68 -42395184.55 0.0274 0.0244

Venus -120785-09-23 12:15 J -42395032.20 -42395031.99 -42395031.78 0.0272 0.0019  
 Venus -120784-05-10 14:25 J -42394803.11 -42394802.90 -42394802.69 0.0269 0.0023  
 Venus -120784-12-25 15:22 J -42394574.07 -42394573.86 -42394573.65 0.0267 0.0027  
 Venus -120783-08-11 15:37 J -42394345.06 -42394344.85 -42394344.64 0.0265 0.0030  
 Venus -120782-03-28 15:37 J -42394116.07 -42394115.85 -42394115.64 0.0263 0.0034  
 Mercury -120782-04-17 01:27 J -42394096.58 -42394096.44 -42394096.31 0.0263 0.0172  
 Mercury -120782-07-14 20:10 J -42394007.83 -42394007.66 -42394007.48 0.0263 0.0069  
 Mercury -120782-10-11 15:08 J -42393919.05 -42393918.87 -42393918.69 0.0262 0.0035  
 Venus -120782-11-12 15:08 J -42393887.08 -42393886.87 -42393886.66 0.0262 0.0036  
 Mercury -120781-01-08 10:05 J -42393830.23 -42393830.08 -42393829.92 0.0262 0.0139  
 Mercury -120781-04-06 05:32 J -42393741.33 -42393741.27 -42393741.20 0.0261 0.0242  
 Venus -120781-06-28 14:39 J -42393658.10 -42393657.89 -42393657.67 0.0261 0.0038  
 Venus -120780-02-12 14:10 J -42393429.12 -42393428.91 -42393428.69 0.0260 0.0039  
 Venus -120780-09-29 13:56 J -42393200.14 -42393199.92 -42393199.71 0.0259 0.0040  
 Venus -120779-05-16 13:56 J -42392971.14 -42392970.92 -42392970.70 0.0259 0.0041  
 Venus -120779-12-31 14:39 J -42392742.11 -42392741.89 -42392741.68 0.0259 0.0041  
 Venus -120778-08-17 15:51 J -42392513.05 -42392512.84 -42392512.62 0.0259 0.0041  
 Venus -120777-04-02 18:15 J -42392283.96 -42392283.74 -42392283.52 0.0260 0.0040  
 Venus -120777-11-17 21:37 J -42392054.82 -42392054.60 -42392054.38 0.0260 0.0039  
 Venus -120776-07-05 02:10 J -42391825.63 -42391825.41 -42391825.19 0.0261 0.0037  
 Venus -120775-02-19 07:56 J -42391596.39 -42391596.17 -42391595.95 0.0263 0.0034  
 Venus -120775-10-06 15:08 J -42391367.09 -42391366.87 -42391366.65 0.0264 0.0032  
 Venus -120774-05-24 00:01 J -42391137.72 -42391137.50 -42391137.28 0.0266 0.0028  
 Venus -120773-01-08 10:34 J -42390908.28 -42390908.06 -42390907.84 0.0269 0.0024  
 Venus -120773-08-24 23:03 J -42390678.76 -42390678.54 -42390678.32 0.0271 0.0019  
 Venus -120772-04-11 13:13 J -42390449.17 -42390448.95 -42390448.73 0.0273 0.0014  
 Venus -120772-11-27 05:03 J -42390219.51 -42390219.29 -42390219.07 0.0276 0.0009  
 Venus -120771-07-14 22:34 J -42389989.78 -42389989.56 -42389989.34 0.0279 0.0003  
 Venus -120770-03-01 17:46 J -42389759.97 -42389759.76 -42389759.54 0.0282 0.0006  
 Venus -120770-10-17 14:53 J -42389530.09 -42389529.88 -42389529.66 0.0285 0.0011

Moon -120769-01-11 07:27 J -42389444.42 -42389444.19 -42389443.95 0.0286 0.0118  
 Earth -120769-01-11 08:53 J -42389444.35 -42389444.13 -42389443.90 0.0286 0.0107 \*  
 Venus -120769-06-03 13:27 J -42389300.16 -42389299.94 -42389299.73 0.0288 0.0018  
 Venus -120768-01-19 12:58 J -42389070.17 -42389069.96 -42389069.74 0.0291 0.0024  
 Venus -120768-09-06 13:41 J -42388840.14 -42388839.93 -42388839.72 0.0294 0.0030  
 Venus -120767-04-24 15:22 J -42388610.07 -42388609.86 -42388609.65 0.0297 0.0035  
 Mercury -120767-11-05 07:13 J -42388415.31 -42388415.20 -42388415.10 0.0299 0.0189  
 Venus -120767-12-10 17:32 J -42388379.97 -42388379.77 -42388379.56 0.0299 0.0041  
 Mercury -120766-02-01 20:53 J -42388326.76 -42388326.63 -42388326.49 0.0299 0.0074  
 Mercury -120766-05-01 10:34 J -42388238.19 -42388238.06 -42388237.92 0.0300 0.0042  
 Venus -120766-07-28 20:10 J -42388149.87 -42388149.66 -42388149.45 0.0301 0.0044  
 Mercury -120766-07-29 00:15 J -42388149.60 -42388149.49 -42388149.38 0.0301 0.0156 \*  
 Mercury -120766-10-25 13:41 J -42388060.98 -42388060.93 -42388060.87 0.0302 0.0269  
 Venus -120765-03-14 22:34 J -42387919.76 -42387919.56 -42387919.35 0.0302 0.0047  
 Venus -120765-10-31 00:44 J -42387689.68 -42387689.47 -42387689.27 0.0303 0.0049  
 Venus -120764-06-18 01:56 J -42387459.62 -42387459.42 -42387459.21 0.0304 0.0049  
 Venus -120763-02-03 02:25 J -42387229.60 -42387229.40 -42387229.20 0.0304 0.0048  
 Venus -120763-09-21 01:27 J -42386999.64 -42386999.44 -42386999.24 0.0303 0.0046  
 Venus -120762-05-08 22:49 J -42386769.75 -42386769.55 -42386769.35 0.0302 0.0042  
 Venus -120762-12-24 18:29 J -42386539.93 -42386539.73 -42386539.53 0.0300 0.0038  
 Venus -120761-08-10 12:15 J -42386310.19 -42386309.99 -42386309.78 0.0298 0.0034  
 Venus -120760-03-28 04:20 J -42386080.52 -42386080.32 -42386080.11 0.0295 0.0027  
 Venus -120760-11-12 18:15 J -42385850.94 -42385850.74 -42385850.53 0.0293 0.0021  
 Venus -120759-06-30 06:15 J -42385621.44 -42385621.24 -42385621.04 0.0290 0.0015  
 Venus -120758-02-14 16:20 J -42385392.02 -42385391.82 -42385391.62 0.0287 0.0009  
 Venus -120758-10-02 00:44 J -42385162.68 -42385162.47 -42385162.27 0.0283 0.0005  
 Venus -120757-05-18 07:27 J -42384933.40 -42384933.19 -42384932.99 0.0280 0.0005  
 Venus -120756-01-02 12:29 J -42384704.19 -42384703.98 -42384703.77 0.0277 0.0009  
 Moon -120756-07-04 23:03 J -42384520.60 -42384520.54 -42384520.46 0.0275 0.0261  
 Venus -120756-08-19 16:20 J -42384475.03 -42384474.82 -42384474.61 0.0274 0.0015

Venus -120755-04-05 18:58 J -42384245.92 -42384245.71 -42384245.50 0.0272 0.0020  
 Mars -120755-06-12 02:53 J -42384178.66 -42384178.38 -42384178.09 0.0271 0.0035  
 Venus -120755-11-20 20:39 J -42384016.85 -42384016.64 -42384016.43 0.0269 0.0025  
 Venus -120754-07-07 21:22 J -42383787.82 -42383787.61 -42383787.40 0.0267 0.0029  
 Venus -120753-02-21 21:22 J -42383558.82 -42383558.61 -42383558.39 0.0265 0.0033  
 Mercury -120753-09-03 02:25 J -42383364.52 -42383364.40 -42383364.28 0.0263 0.0196  
 Venus -120753-10-07 21:08 J -42383329.83 -42383329.62 -42383329.40 0.0263 0.0036  
 Mercury -120753-11-30 21:08 J -42383275.79 -42383275.62 -42383275.45 0.0263 0.0093  
 Mercury -120752-02-27 16:05 J -42383187.01 -42383186.83 -42383186.65 0.0262 0.0010  
 Venus -120752-05-24 20:53 J -42383100.85 -42383100.63 -42383100.42 0.0262 0.0039  
 Mercury -120752-05-27 11:03 J -42383098.20 -42383098.04 -42383097.87 0.0262 0.0113  
 Mercury -120752-08-24 06:15 J -42383009.34 -42383009.24 -42383009.14 0.0261 0.0217  
 Venus -120751-01-08 20:10 J -42382871.87 -42382871.66 -42382871.45 0.0260 0.0041  
 Venus -120751-08-25 19:27 J -42382642.90 -42382642.69 -42382642.47 0.0259 0.0043  
 Venus -120750-04-11 19:13 J -42382413.92 -42382413.70 -42382413.49 0.0259 0.0044  
 Venus -120750-11-26 19:13 J -42382184.91 -42382184.70 -42382184.48 0.0258 0.0044  
 Venus -120749-07-12 20:10 J -42381955.88 -42381955.66 -42381955.45 0.0258 0.0044  
 Venus -120748-02-26 21:37 J -42381726.82 -42381726.60 -42381726.38 0.0259 0.0044  
 Venus -120748-10-13 23:46 J -42381497.72 -42381497.51 -42381497.29 0.0259 0.0043  
 Venus -120747-05-31 03:08 J -42381268.59 -42381268.37 -42381268.15 0.0260 0.0041  
 Venus -120746-01-15 07:41 J -42381039.40 -42381039.18 -42381038.96 0.0261 0.0039  
 Venus -120746-09-01 13:56 J -42380810.14 -42380809.92 -42380809.70 0.0263 0.0036  
 Venus -120745-04-17 21:22 J -42380580.83 -42380580.61 -42380580.39 0.0264 0.0032  
 Venus -120745-12-03 06:15 J -42380351.46 -42380351.24 -42380351.02 0.0266 0.0029  
 Venus -120744-07-20 17:03 J -42380122.01 -42380121.79 -42380121.57 0.0269 0.0024  
 Venus -120743-03-07 05:32 J -42379892.49 -42379892.27 -42379892.05 0.0271 0.0019  
 Venus -120743-10-22 19:56 J -42379662.89 -42379662.67 -42379662.45 0.0274 0.0014  
 Venus -120742-06-09 11:46 J -42379433.23 -42379433.01 -42379432.79 0.0277 0.0008  
 Venus -120741-01-25 05:32 J -42379203.49 -42379203.27 -42379203.05 0.0280 0.0004  
 Venus -120741-09-11 01:13 J -42378973.67 -42378973.45 -42378973.23 0.0283 0.0006

Moon -120740-01-04 16:49 J -42378857.88 -42378857.80 -42378857.70 0.0284 0.0262  
 Earth -120740-01-04 18:15 J -42378857.78 -42378857.74 -42378857.66 0.0284 0.0275 \*  
 Venus -120740-04-28 22:20 J -42378743.79 -42378743.57 -42378743.35 0.0286 0.0012  
 Venus -120740-12-14 20:53 J -42378513.84 -42378513.63 -42378513.41 0.0289 0.0019  
 Mars -120739-05-09 23:17 J -42378367.80 -42378367.53 -42378367.24 0.0291 0.0099  
 Venus -120739-08-01 20:53 J -42378283.84 -42378283.63 -42378283.42 0.0292 0.0025  
 Venus -120738-03-19 21:51 J -42378053.80 -42378053.59 -42378053.38 0.0295 0.0031  
 Venus -120738-11-04 23:46 J -42377823.71 -42377823.51 -42377823.30 0.0298 0.0037  
 Mercury -120737-03-24 09:22 J -42377683.20 -42377683.11 -42377683.02 0.0299 0.0217  
 Mercury -120737-06-20 23:03 J -42377594.66 -42377594.54 -42377594.41 0.0300 0.0102  
 Venus -120737-06-22 02:25 J -42377593.61 -42377593.40 -42377593.20 0.0300 0.0041  
 Mercury -120737-09-17 12:58 J -42377506.10 -42377505.96 -42377505.83 0.0301 0.0015  
 Mercury -120737-12-15 02:39 J -42377417.52 -42377417.39 -42377417.27 0.0301 0.0129  
 Venus -120736-02-07 05:03 J -42377363.50 -42377363.29 -42377363.09 0.0302 0.0045  
 Mercury -120736-03-13 16:05 J -42377328.91 -42377328.83 -42377328.75 0.0302 0.0242  
 Venus -120736-09-25 07:27 J -42377133.40 -42377133.19 -42377132.99 0.0303 0.0047  
 Venus -120735-05-13 09:22 J -42376903.31 -42376903.11 -42376902.90 0.0304 0.0049  
 Venus -120735-12-29 10:49 J -42376673.25 -42376673.05 -42376672.85 0.0304 0.0049  
 Venus -120734-08-16 10:49 J -42376443.25 -42376443.05 -42376442.84 0.0304 0.0049  
 Venus -120733-04-02 09:37 J -42376213.30 -42376213.10 -42376212.90 0.0303 0.0046  
 Venus -120733-11-18 06:58 J -42375983.41 -42375983.21 -42375983.01 0.0302 0.0043  
 Venus -120732-07-06 02:25 J -42375753.60 -42375753.40 -42375753.20 0.0300 0.0038  
 Venus -120731-02-20 19:56 J -42375523.87 -42375523.67 -42375523.46 0.0297 0.0033  
 Venus -120731-10-08 11:46 J -42375294.22 -42375294.01 -42375293.81 0.0295 0.0027  
 Venus -120730-05-26 01:13 J -42375064.65 -42375064.45 -42375064.24 0.0292 0.0021  
 Venus -120729-01-10 12:58 J -42374835.16 -42374834.96 -42374834.75 0.0289 0.0014  
 Venus -120729-08-26 22:49 J -42374605.75 -42374605.55 -42374605.34 0.0286 0.0008  
 Venus -120728-04-13 07:13 J -42374376.41 -42374376.20 -42374376.00 0.0282 0.0005  
 Venus -120728-11-28 13:27 J -42374147.14 -42374146.94 -42374146.73 0.0279 0.0007  
 Earth -120727-06-30 01:13 J -42373933.69 -42373933.45 -42373933.21 0.0277 0.0064

Moon -120727-06-30 04:05 J -42373933.55 -42373933.33 -42373933.09 0.0277 0.0078 \*  
 Venus -120727-07-15 18:15 J -42373917.94 -42373917.74 -42373917.53 0.0276 0.0013  
 Venus -120726-03-01 21:51 J -42373688.80 -42373688.59 -42373688.38 0.0274 0.0018  
 Venus -120726-10-17 00:15 J -42373459.70 -42373459.49 -42373459.28 0.0271 0.0023  
 Venus -120725-06-02 01:56 J -42373230.63 -42373230.42 -42373230.21 0.0269 0.0028  
 Mars -120725-07-29 17:32 J -42373173.00 -42373172.77 -42373172.53 0.0268 0.0156  
 Venus -120724-01-17 02:39 J -42373001.60 -42373001.39 -42373001.18 0.0266 0.0032  
 Venus -120724-09-03 02:39 J -42372772.60 -42372772.39 -42372772.18 0.0264 0.0035  
 Mercury -120723-01-21 02:53 J -42372632.46 -42372632.38 -42372632.27 0.0263 0.0222  
 Mercury -120723-04-19 21:51 J -42372543.75 -42372543.59 -42372543.43 0.0263 0.0119  
 Venus -120723-04-20 02:10 J -42372543.62 -42372543.41 -42372543.20 0.0263 0.0039 \*  
 Mercury -120723-07-17 16:49 J -42372454.99 -42372454.80 -42372454.62 0.0262 0.0017  
 Mercury -120723-10-14 11:32 J -42372366.18 -42372366.02 -42372365.84 0.0262 0.0088  
 Venus -120723-12-05 01:27 J -42372314.65 -42372314.44 -42372314.22 0.0261 0.0042  
 Mercury -120722-01-11 06:44 J -42372277.34 -42372277.22 -42372277.09 0.0261 0.0191  
 Venus -120722-07-22 00:58 J -42372085.67 -42372085.46 -42372085.25 0.0260 0.0043  
 Venus -120721-03-07 00:15 J -42371856.70 -42371856.49 -42371856.27 0.0259 0.0044  
 Venus -120721-10-22 00:01 J -42371627.72 -42371627.50 -42371627.29 0.0259 0.0045  
 Venus -120720-06-08 00:01 J -42371398.71 -42371398.50 -42371398.28 0.0259 0.0045  
 Venus -120719-01-23 00:44 J -42371169.69 -42371169.47 -42371169.26 0.0259 0.0045  
 Venus -120719-09-09 01:56 J -42370940.63 -42370940.42 -42370940.20 0.0259 0.0045  
 Venus -120718-04-26 04:20 J -42370711.54 -42370711.32 -42370711.10 0.0260 0.0043  
 Venus -120718-12-11 07:41 J -42370482.40 -42370482.18 -42370481.96 0.0260 0.0041  
 Venus -120717-07-27 12:29 J -42370253.20 -42370252.98 -42370252.76 0.0262 0.0039  
 Venus -120716-03-13 18:29 J -42370023.94 -42370023.73 -42370023.50 0.0263 0.0036  
 Venus -120716-10-29 02:10 J -42369794.63 -42369794.41 -42369794.19 0.0265 0.0032  
 Venus -120715-06-15 11:17 J -42369565.25 -42369565.03 -42369564.81 0.0267 0.0028  
 Venus -120714-01-30 22:05 J -42369335.80 -42369335.58 -42369335.36 0.0269 0.0023  
 Venus -120714-09-17 10:49 J -42369106.27 -42369106.05 -42369105.83 0.0272 0.0019  
 Venus -120713-05-04 01:27 J -42368876.66 -42368876.44 -42368876.22 0.0274 0.0012



Venus -120713-12-19 17:46 J -42368646.98 -42368646.76 -42368646.55 0.0277 0.0008

Venus -120712-08-06 11:46 J -42368417.23 -42368417.01 -42368416.80 0.0280 0.0005

Venus -120711-03-24 07:27 J -42368187.41 -42368187.19 -42368186.97 0.0283 0.0009

Venus -120711-11-09 05:03 J -42367957.51 -42367957.29 -42367957.08 0.0286 0.0016

Earth -120710-01-12 19:27 J -42367892.84 -42367892.69 -42367892.51 0.0287 0.0210

Moon -120710-01-12 20:10 J -42367892.82 -42367892.66 -42367892.49 0.0287 0.0217 \*

Venus -120710-06-27 03:51 J -42367727.55 -42367727.34 -42367727.13 0.0289 0.0023

Venus -120709-02-12 03:51 J -42367497.55 -42367497.34 -42367497.12 0.0292 0.0030

Mars -120709-07-01 01:56 J -42367357.65 -42367357.42 -42367357.16 0.0294 0.0168

Venus -120709-09-29 05:03 J -42367267.50 -42367267.29 -42367267.08 0.0295 0.0036

Venus -120708-05-17 06:58 J -42367037.42 -42367037.21 -42367037.00 0.0297 0.0041

Mercury -120708-08-11 11:03 J -42366951.11 -42366951.04 -42366950.97 0.0298 0.0250

Mercury -120708-11-08 00:58 J -42366862.58 -42366862.46 -42366862.34 0.0299 0.0135

Venus -120707-01-02 09:37 J -42366807.31 -42366807.10 -42366806.90 0.0300 0.0047

Mercury -120707-02-04 14:39 J -42366774.02 -42366773.89 -42366773.75 0.0300 0.0021

Mercury -120707-05-04 04:20 J -42366685.44 -42366685.32 -42366685.19 0.0301 0.0095

Mercury -120707-07-31 17:46 J -42366596.85 -42366596.76 -42366596.66 0.0301 0.0209

Venus -120707-08-20 12:01 J -42366577.20 -42366577.00 -42366576.79 0.0301 0.0050

Venus -120706-04-07 14:39 J -42366347.10 -42366346.89 -42366346.69 0.0303 0.0053

Venus -120706-11-23 16:34 J -42366117.01 -42366116.81 -42366116.60 0.0304 0.0054

Venus -120705-07-10 17:46 J -42365886.96 -42365886.76 -42365886.55 0.0304 0.0054

Venus -120704-02-25 18:01 J -42365656.95 -42365656.75 -42365656.54 0.0304 0.0053

Venus -120704-10-13 16:49 J -42365427.00 -42365426.80 -42365426.60 0.0303 0.0049

Venus -120703-05-31 13:56 J -42365197.12 -42365196.92 -42365196.72 0.0301 0.0045

Venus -120702-01-16 09:22 J -42364967.31 -42364967.11 -42364966.91 0.0300 0.0039

Venus -120702-09-03 02:53 J -42364737.58 -42364737.38 -42364737.18 0.0297 0.0034

Venus -120701-04-19 18:15 J -42364507.94 -42364507.74 -42364507.53 0.0295 0.0028

Venus -120701-12-05 07:56 J -42364278.38 -42364278.17 -42364277.97 0.0292 0.0020

Venus -120700-07-22 19:27 J -42364048.90 -42364048.69 -42364048.49 0.0289 0.0013

Venus -120699-03-09 05:17 J -42363819.49 -42363819.28 -42363819.08 0.0286 0.0009

Venus -120699-10-24 12:58 J -42363590.16 -42363589.96 -42363589.75 0.0283 0.0006

Venus -120698-06-10 19:13 J -42363360.90 -42363360.70 -42363360.49 0.0280 0.0009

Venus -120697-01-26 00:01 J -42363131.71 -42363131.50 -42363131.29 0.0277 0.0013

Venus -120697-09-11 03:22 J -42362902.56 -42362902.36 -42362902.15 0.0274 0.0020

Mars -120697-09-18 08:39 J -42362895.31 -42362895.14 -42362894.95 0.0274 0.0214

Venus -120696-04-28 05:46 J -42362673.46 -42362673.26 -42362673.05 0.0271 0.0025

Venus -120696-12-13 07:13 J -42362444.41 -42362444.20 -42362443.99 0.0269 0.0029

Venus -120695-07-30 07:41 J -42362215.39 -42362215.18 -42362214.97 0.0266 0.0034

Venus -120694-03-16 07:27 J -42361986.40 -42361986.19 -42361985.98 0.0264 0.0037

Mercury -120694-06-10 03:37 J -42361900.40 -42361900.35 -42361900.28 0.0264 0.0247

Mercury -120694-09-06 22:20 J -42361811.71 -42361811.57 -42361811.42 0.0263 0.0145

Venus -120694-10-31 06:58 J -42361757.42 -42361757.21 -42361757.00 0.0263 0.0041

Mercury -120694-12-04 17:17 J -42361722.96 -42361722.78 -42361722.60 0.0262 0.0043

Mercury -120693-03-02 12:01 J -42361634.17 -42361634.00 -42361633.82 0.0262 0.0061

Mercury -120693-05-30 07:13 J -42361545.34 -42361545.20 -42361545.06 0.0261 0.0164

Venus -120693-06-16 06:15 J -42361528.45 -42361528.24 -42361528.02 0.0261 0.0044

Venus -120692-01-31 05:32 J -42361299.48 -42361299.27 -42361299.06 0.0260 0.0046

Venus -120692-09-17 04:49 J -42361070.51 -42361070.30 -42361070.09 0.0259 0.0047

Venus -120691-05-04 04:20 J -42360841.53 -42360841.32 -42360841.10 0.0258 0.0048

Venus -120691-12-19 04:20 J -42360612.53 -42360612.32 -42360612.10 0.0258 0.0049

Venus -120690-08-05 05:17 J -42360383.50 -42360383.28 -42360383.07 0.0258 0.0048

Venus -120689-03-21 06:44 J -42360154.44 -42360154.22 -42360154.00 0.0259 0.0047

Venus -120689-11-05 09:08 J -42359925.34 -42359925.12 -42359924.90 0.0259 0.0046

Venus -120688-06-22 12:29 J -42359696.19 -42359695.98 -42359695.76 0.0260 0.0044

Venus -120687-02-06 17:17 J -42359467.00 -42359466.78 -42359466.56 0.0261 0.0041

Venus -120687-09-23 23:17 J -42359237.74 -42359237.53 -42359237.30 0.0263 0.0038

Venus -120686-05-11 06:58 J -42359008.42 -42359008.21 -42359007.99 0.0265 0.0034

Venus -120686-12-26 16:20 J -42358779.04 -42358778.82 -42358778.60 0.0267 0.0029

Venus -120685-08-12 03:22 J -42358549.58 -42358549.36 -42358549.14 0.0269 0.0024

Venus -120684-03-29 16:05 J -42358320.04 -42358319.83 -42358319.60 0.0272 0.0019

Venus -120684-11-14 06:44 J -42358090.44 -42358090.22 -42358090.00 0.0274 0.0012  
 Venus -120683-07-01 23:03 J -42357860.76 -42357860.54 -42357860.32 0.0277 0.0006  
 Venus -120682-02-16 17:17 J -42357631.00 -42357630.78 -42357630.56 0.0280 0.0003  
 Venus -120682-10-04 13:13 J -42357401.16 -42357400.95 -42357400.73 0.0284 0.0010  
 Moon -120681-01-06 23:03 J -42357306.71 -42357306.54 -42357306.35 0.0285 0.0188  
 Earth -120681-01-07 01:56 J -42357306.60 -42357306.42 -42357306.22 0.0285 0.0180 \*  
 Venus -120681-05-21 10:49 J -42357171.27 -42357171.05 -42357170.83 0.0287 0.0016  
 Venus -120680-01-06 09:51 J -42356941.31 -42356941.09 -42356940.88 0.0290 0.0024  
 Venus -120680-08-24 09:51 J -42356711.30 -42356711.09 -42356710.87 0.0293 0.0031  
 Venus -120679-04-11 11:17 J -42356481.24 -42356481.03 -42356480.82 0.0296 0.0036  
 Venus -120679-11-27 13:27 J -42356251.15 -42356250.94 -42356250.73 0.0298 0.0042  
 Mercury -120679-12-29 12:29 J -42356219.02 -42356218.98 -42356218.94 0.0299 0.0283  
 Mercury -120678-03-28 02:25 J -42356130.51 -42356130.40 -42356130.28 0.0299 0.0168  
 Mercury -120678-06-24 16:20 J -42356041.95 -42356041.82 -42356041.69 0.0300 0.0053  
 Venus -120678-07-15 16:05 J -42356021.04 -42356020.83 -42356020.62 0.0300 0.0047  
 Mercury -120678-09-21 06:01 J -42355953.38 -42355953.25 -42355953.12 0.0301 0.0062  
 Mercury -120678-12-18 19:41 J -42355864.79 -42355864.68 -42355864.57 0.0302 0.0177  
 Venus -120677-03-01 18:44 J -42355790.92 -42355790.72 -42355790.51 0.0302 0.0050  
 Mercury -120677-03-16 09:08 J -42355776.15 -42355776.12 -42355776.09 0.0302 0.0290  
 Venus -120677-10-17 21:22 J -42355560.82 -42355560.61 -42355560.41 0.0303 0.0053  
 Venus -120676-06-04 23:17 J -42355330.73 -42355330.53 -42355330.33 0.0304 0.0054  
 Venus -120675-01-21 00:44 J -42355100.68 -42355100.47 -42355100.27 0.0304 0.0054  
 Venus -120675-09-08 00:29 J -42354870.68 -42354870.48 -42354870.27 0.0304 0.0052  
 Venus -120674-04-25 23:03 J -42354640.74 -42354640.54 -42354640.33 0.0303 0.0049  
 Venus -120674-12-11 20:10 J -42354410.86 -42354410.66 -42354410.46 0.0301 0.0044  
 Venus -120673-07-28 15:22 J -42354181.06 -42354180.86 -42354180.66 0.0299 0.0039  
 Venus -120672-03-15 08:39 J -42353951.34 -42353951.14 -42353950.94 0.0297 0.0033  
 Venus -120672-10-31 00:01 J -42353721.70 -42353721.50 -42353721.30 0.0294 0.0026  
 Venus -120671-06-17 13:13 J -42353492.15 -42353491.95 -42353491.74 0.0291 0.0019  
 Venus -120670-02-02 00:44 J -42353262.68 -42353262.47 -42353262.27 0.0288 0.0012

Venus -120670-09-19 10:05 J -42353033.28 -42353033.08 -42353032.87 0.0285 0.0006  
 Venus -120669-05-05 18:01 J -42352803.96 -42352803.75 -42352803.54 0.0282 0.0003  
 Venus -120669-12-21 00:01 J -42352574.70 -42352574.50 -42352574.29 0.0279 0.0011  
 Earth -120668-07-01 09:51 J -42352382.33 -42352382.09 -42352381.85 0.0276 0.0031  
 Moon -120668-07-01 11:32 J -42352382.26 -42352382.02 -42352381.79 0.0276 0.0039 \*  
 Venus -120668-08-07 04:34 J -42352345.51 -42352345.31 -42352345.10 0.0276 0.0017  
 Venus -120667-03-24 07:56 J -42352116.38 -42352116.17 -42352115.96 0.0273 0.0022  
 Mars -120667-11-06 08:10 J -42351889.45 -42351889.16 -42351888.87 0.0270 0.0015  
 Venus -120667-11-08 10:05 J -42351887.29 -42351887.08 -42351886.87 0.0270 0.0028  
 Venus -120666-06-25 11:17 J -42351658.24 -42351658.03 -42351657.82 0.0268 0.0033  
 Venus -120665-02-09 11:32 J -42351429.23 -42351429.02 -42351428.81 0.0266 0.0037  
 Venus -120665-09-25 11:32 J -42351200.23 -42351200.02 -42351199.81 0.0264 0.0041  
 Mercury -120664-01-23 22:34 J -42351079.69 -42351079.56 -42351079.42 0.0263 0.0173  
 Mercury -120664-04-22 17:17 J -42350990.95 -42350990.78 -42350990.60 0.0262 0.0071  
 Venus -120664-05-12 10:49 J -42350971.25 -42350971.05 -42350970.83 0.0262 0.0044  
 Mercury -120664-07-20 12:15 J -42350902.17 -42350901.99 -42350901.81 0.0262 0.0032  
 Mercury -120664-10-17 07:13 J -42350813.35 -42350813.20 -42350813.04 0.0261 0.0135  
 Venus -120664-12-27 10:05 J -42350742.29 -42350742.08 -42350741.87 0.0261 0.0046  
 Mercury -120663-01-14 02:25 J -42350724.47 -42350724.40 -42350724.32 0.0261 0.0238  
 Venus -120663-08-13 09:08 J -42350513.33 -42350513.12 -42350512.90 0.0260 0.0048  
 Venus -120662-03-30 08:25 J -42350284.36 -42350284.15 -42350283.94 0.0259 0.0049  
 Venus -120662-11-14 07:56 J -42350055.38 -42350055.17 -42350054.95 0.0258 0.0049  
 Venus -120661-06-30 08:10 J -42349826.38 -42349826.16 -42349825.95 0.0258 0.0049  
 Venus -120660-02-14 08:39 J -42349597.35 -42349597.14 -42349596.92 0.0258 0.0049  
 Venus -120660-10-01 10:05 J -42349368.29 -42349368.08 -42349367.86 0.0259 0.0048  
 Venus -120659-05-18 12:15 J -42349139.20 -42349138.99 -42349138.77 0.0259 0.0047  
 Venus -120658-01-02 15:51 J -42348910.06 -42348909.84 -42348909.62 0.0260 0.0044  
 Venus -120658-08-19 20:53 J -42348680.85 -42348680.63 -42348680.42 0.0262 0.0041  
 Venus -120657-04-05 02:53 J -42348451.60 -42348451.38 -42348451.16 0.0263 0.0038  
 Venus -120657-11-20 10:34 J -42348222.28 -42348222.06 -42348221.84 0.0265 0.0033

Venus -120656-07-07 19:56 J -42347992.89 -42347992.67 -42347992.45 0.0267 0.0028

Venus -120655-02-22 06:58 J -42347763.43 -42347763.21 -42347762.99 0.0269 0.0023

Venus -120655-10-09 19:56 J -42347533.89 -42347533.67 -42347533.45 0.0272 0.0017

Venus -120654-05-27 10:34 J -42347304.27 -42347304.06 -42347303.84 0.0275 0.0012

Venus -120653-01-12 03:08 J -42347074.58 -42347074.37 -42347074.15 0.0278 0.0006

Venus -120653-08-28 21:37 J -42346844.82 -42346844.60 -42346844.38 0.0281 0.0005

Venus -120652-04-15 17:46 J -42346614.98 -42346614.76 -42346614.54 0.0284 0.0012

Venus -120652-12-01 15:37 J -42346385.07 -42346384.85 -42346384.64 0.0287 0.0020

Moon -120651-01-14 02:10 J -42346341.43 -42346341.41 -42346341.36 0.0287 0.0285

Venus -120651-07-19 14:39 J -42346155.10 -42346154.89 -42346154.67 0.0290 0.0028

Mars -120651-10-03 17:17 J -42346079.06 -42346078.78 -42346078.49 0.0291 0.0085

Venus -120650-03-06 15:08 J -42345925.08 -42345924.87 -42345924.66 0.0293 0.0035

Venus -120650-10-22 16:49 J -42345695.01 -42345694.80 -42345694.59 0.0296 0.0041

Venus -120649-06-08 18:58 J -42345464.92 -42345464.71 -42345464.50 0.0298 0.0047

Mercury -120649-08-14 03:51 J -42345398.44 -42345398.34 -42345398.25 0.0299 0.0205

Mercury -120649-11-10 17:32 J -42345309.89 -42345309.77 -42345309.64 0.0299 0.0090

Venus -120648-01-24 21:37 J -42345234.81 -42345234.60 -42345234.39 0.0300 0.0052

Mercury -120648-02-07 07:27 J -42345221.33 -42345221.19 -42345221.06 0.0300 0.0026

Mercury -120648-05-06 20:53 J -42345132.74 -42345132.63 -42345132.51 0.0301 0.0140

Mercury -120648-08-03 10:34 J -42345044.13 -42345044.06 -42345043.99 0.0302 0.0253

Venus -120648-09-12 00:15 J -42345004.69 -42345004.49 -42345004.28 0.0302 0.0056

Venus -120647-04-30 02:39 J -42344774.59 -42344774.39 -42344774.18 0.0303 0.0058

Venus -120647-12-16 04:49 J -42344544.50 -42344544.30 -42344544.09 0.0304 0.0059

Venus -120646-08-03 06:01 J -42344314.45 -42344314.25 -42344314.05 0.0304 0.0058

Venus -120645-03-20 06:01 J -42344084.45 -42344084.25 -42344084.04 0.0304 0.0056

Venus -120645-11-05 04:49 J -42343854.50 -42343854.30 -42343854.10 0.0303 0.0052

Venus -120644-06-23 01:41 J -42343624.63 -42343624.43 -42343624.23 0.0301 0.0047

Venus -120643-02-07 20:53 J -42343394.83 -42343394.63 -42343394.43 0.0299 0.0041

Venus -120643-09-25 14:10 J -42343165.11 -42343164.91 -42343164.71 0.0297 0.0034

Venus -120642-05-13 05:17 J -42342935.48 -42342935.28 -42342935.08 0.0294 0.0027

Venus -120642-12-28 18:29 J -42342705.93 -42342705.73 -42342705.52 0.0291 0.0020  
 Venus -120641-08-14 05:46 J -42342476.46 -42342476.26 -42342476.05 0.0288 0.0012  
 Venus -120640-03-31 15:22 J -42342247.06 -42342246.86 -42342246.65 0.0285 0.0004  
 Venus -120640-11-15 23:03 J -42342017.75 -42342017.54 -42342017.34 0.0282 0.0004  
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 Venus -120638-02-17 09:22 J -42341559.32 -42341559.11 -42341558.90 0.0276 0.0017  
 Venus -120638-10-04 12:29 J -42341330.19 -42341329.98 -42341329.77 0.0273 0.0023  
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 Mercury -120634-06-03 02:25 J -42339992.51 -42339992.40 -42339992.29 0.0261 0.0209  
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Venus -120626-01-17 23:46 J -42337206.73 -42337206.51 -42337206.29 0.0267 0.0029  
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Venus -120599-09-11 03:08 J -42327108.59 -42327108.37 -42327108.16 0.0262 0.0043  
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Venus -120584-10-17 22:05 J -42321592.79 -42321592.58 -42321592.38 0.0297 0.0035  
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 Mars -120548-05-19 05:32 J -42308595.47 -42308595.27 -42308595.06 0.0268 0.0188  
 Venus -120548-08-08 23:32 J -42308513.72 -42308513.52 -42308513.31 0.0267 0.0041  
 Venus -120547-03-25 23:32 J -42308284.72 -42308284.52 -42308284.31 0.0265 0.0046  
 Mercury -120547-11-02 16:05 J -42308062.94 -42308062.83 -42308062.71 0.0263 0.0193  
 Venus -120547-11-09 23:03 J -42308055.74 -42308055.54 -42308055.32 0.0263 0.0049  
 Mercury -120546-01-30 10:49 J -42307974.22 -42307974.05 -42307973.88 0.0262 0.0092  
 Mercury -120546-04-29 05:32 J -42307885.45 -42307885.27 -42307885.09 0.0262 0.0011  
 Venus -120546-06-26 22:20 J -42307826.77 -42307826.57 -42307826.35 0.0261 0.0053  
 Mercury -120546-07-27 00:29 J -42307796.64 -42307796.48 -42307796.31 0.0261 0.0112  
 Mercury -120546-10-23 19:41 J -42307707.78 -42307707.68 -42307707.58 0.0261 0.0215  
 Venus -120545-02-10 21:22 J -42307597.82 -42307597.61 -42307597.40 0.0260 0.0055  
 Venus -120545-09-26 20:25 J -42307368.86 -42307368.65 -42307368.44 0.0259 0.0056  
 Venus -120544-05-13 19:27 J -42307139.90 -42307139.69 -42307139.48 0.0258 0.0057  
 Venus -120544-12-28 18:44 J -42306910.93 -42306910.72 -42306910.50 0.0258 0.0057

Venus -120543-08-14 18:44 J -42306681.93 -42306681.72 -42306681.51 0.0258 0.0057  
 Venus -120542-03-31 19:13 J -42306452.91 -42306452.70 -42306452.48 0.0258 0.0056  
 Venus -120542-11-15 20:39 J -42306223.85 -42306223.64 -42306223.42 0.0258 0.0054  
 Venus -120541-07-01 23:03 J -42305994.75 -42305994.54 -42305994.32 0.0259 0.0052  
 Venus -120540-02-16 02:39 J -42305765.61 -42305765.39 -42305765.17 0.0260 0.0048  
 Venus -120540-10-03 07:27 J -42305536.41 -42305536.19 -42305535.97 0.0262 0.0045  
 Venus -120539-05-20 13:27 J -42305307.15 -42305306.94 -42305306.72 0.0263 0.0041  
 Venus -120538-01-04 21:22 J -42305077.83 -42305077.61 -42305077.39 0.0265 0.0035  
 Venus -120538-08-22 06:58 J -42304848.43 -42304848.21 -42304847.99 0.0267 0.0029  
 Venus -120537-04-07 18:15 J -42304618.96 -42304618.74 -42304618.52 0.0270 0.0023  
 Venus -120537-11-23 07:13 J -42304389.41 -42304389.20 -42304388.97 0.0273 0.0017  
 Venus -120536-07-10 22:20 J -42304159.79 -42304159.57 -42304159.35 0.0275 0.0009  
 Venus -120535-02-25 15:08 J -42303930.09 -42303929.87 -42303929.65 0.0278 0.0003  
 Venus -120535-10-13 09:51 J -42303700.30 -42303700.09 -42303699.87 0.0281 0.0010  
 Venus -120534-05-31 06:29 J -42303470.45 -42303470.23 -42303470.02 0.0285 0.0019  
 Venus -120533-01-16 04:20 J -42303240.53 -42303240.32 -42303240.10 0.0288 0.0028  
 Venus -120533-09-02 03:51 J -42303010.55 -42303010.34 -42303010.12 0.0291 0.0036  
 Mars -120532-04-18 21:22 J -42302781.84 -42302781.61 -42302781.37 0.0294 0.0184  
 Venus -120532-04-20 04:49 J -42302780.51 -42302780.30 -42302780.09 0.0294 0.0043  
 Venus -120532-12-06 06:44 J -42302550.43 -42302550.22 -42302550.01 0.0297 0.0051  
 Mercury -120531-05-23 20:10 J -42302381.72 -42302381.66 -42302381.58 0.0298 0.0252  
 Venus -120531-07-24 09:08 J -42302320.32 -42302320.12 -42302319.91 0.0299 0.0057  
 Mercury -120531-08-20 10:20 J -42302293.19 -42302293.07 -42302292.95 0.0299 0.0136  
 Mercury -120531-11-17 00:15 J -42302204.63 -42302204.49 -42302204.36 0.0300 0.0023  
 Mercury -120530-02-13 13:56 J -42302116.05 -42302115.92 -42302115.79 0.0301 0.0093  
 Venus -120530-03-11 12:01 J -42302090.20 -42302090.00 -42302089.79 0.0301 0.0061  
 Mercury -120530-05-13 03:22 J -42302027.45 -42302027.36 -42302027.26 0.0301 0.0207  
 Venus -120530-10-27 14:53 J -42301860.08 -42301859.88 -42301859.68 0.0303 0.0065  
 Venus -120529-06-13 17:32 J -42301629.97 -42301629.77 -42301629.57 0.0304 0.0066  
 Venus -120528-01-29 19:27 J -42301399.89 -42301399.69 -42301399.49 0.0304 0.0067

Venus	-120528-09-16 20:25 J	-42301169.84	-42301169.65	-42301169.44	0.0304	0.0065
Venus	-120527-05-04 20:10 J	-42300939.85	-42300939.66	-42300939.45	0.0304	0.0062
Venus	-120527-12-20 18:44 J	-42300709.92	-42300709.72	-42300709.52	0.0303	0.0056
Venus	-120526-08-07 15:22 J	-42300480.06	-42300479.86	-42300479.66	0.0301	0.0050
Venus	-120525-03-24 10:20 J	-42300250.27	-42300250.07	-42300249.87	0.0299	0.0043
Venus	-120525-11-09 03:22 J	-42300020.56	-42300020.36	-42300020.16	0.0296	0.0035
Venus	-120524-06-26 18:15 J	-42299790.94	-42299790.74	-42299790.54	0.0294	0.0026
Venus	-120523-02-11 07:13 J	-42299561.41	-42299561.20	-42299561.00	0.0291	0.0018
Venus	-120523-09-28 18:01 J	-42299331.95	-42299331.75	-42299331.54	0.0287	0.0011
Venus	-120522-05-16 03:22 J	-42299102.57	-42299102.36	-42299102.16	0.0284	0.0006
Venus	-120522-12-31 10:34 J	-42298873.27	-42298873.06	-42298872.85	0.0281	0.0008
Earth	-120521-06-28 06:29 J	-42298693.42	-42298693.23	-42298693.03	0.0279	0.0163
Moon	-120521-06-28 09:37 J	-42298693.28	-42298693.10	-42298692.90	0.0279	0.0178 *
Venus	-120521-08-16 16:20 J	-42298644.03	-42298643.82	-42298643.61	0.0278	0.0016
Venus	-120520-04-02 20:39 J	-42298414.85	-42298414.64	-42298414.44	0.0275	0.0023
Mars	-120520-07-08 10:05 J	-42298318.28	-42298318.08	-42298317.85	0.0274	0.0181
Venus	-120520-11-17 23:32 J	-42298185.73	-42298185.52	-42298185.31	0.0272	0.0030
Venus	-120519-07-05 01:13 J	-42297956.66	-42297956.45	-42297956.24	0.0270	0.0036
Venus	-120518-02-19 01:56 J	-42297727.63	-42297727.42	-42297727.21	0.0267	0.0041
Venus	-120518-10-06 01:56 J	-42297498.62	-42297498.42	-42297498.21	0.0265	0.0046
Mercury	-120517-03-21 15:22 J	-42297330.94	-42297330.86	-42297330.75	0.0264	0.0225
Venus	-120517-05-22 01:41 J	-42297269.64	-42297269.43	-42297269.22	0.0263	0.0050
Mercury	-120517-06-18 10:20 J	-42297242.23	-42297242.07	-42297241.92	0.0263	0.0123
Mercury	-120517-09-15 05:03 J	-42297153.47	-42297153.29	-42297153.11	0.0262	0.0022
Mercury	-120517-12-12 23:46 J	-42297064.68	-42297064.51	-42297064.33	0.0262	0.0081
Venus	-120516-01-06 00:44 J	-42297040.68	-42297040.47	-42297040.26	0.0261	0.0053
Mercury	-120516-03-11 18:58 J	-42296975.84	-42296975.71	-42296975.58	0.0261	0.0183
Venus	-120516-08-22 23:32 J	-42296811.73	-42296811.52	-42296811.31	0.0260	0.0056
Venus	-120515-04-08 22:20 J	-42296582.78	-42296582.57	-42296582.36	0.0259	0.0058
Venus	-120515-11-23 21:22 J	-42296353.82	-42296353.61	-42296353.39	0.0258	0.0059

Venus	-120514-07-10 20:53 J	-42296124.84	-42296124.63	-42296124.41	0.0258	0.0060
Venus	-120513-02-24 20:53 J	-42295895.84	-42295895.63	-42295895.41	0.0258	0.0059
Venus	-120513-10-10 21:37 J	-42295666.82	-42295666.60	-42295666.39	0.0258	0.0058
Venus	-120512-05-27 22:49 J	-42295437.76	-42295437.55	-42295437.33	0.0258	0.0056
Venus	-120511-01-12 01:13 J	-42295208.66	-42295208.45	-42295208.23	0.0259	0.0054
Venus	-120511-08-29 05:03 J	-42294979.51	-42294979.29	-42294979.07	0.0260	0.0050
Venus	-120510-04-15 09:51 J	-42294750.31	-42294750.09	-42294749.87	0.0261	0.0046
Venus	-120510-11-30 16:05 J	-42294521.05	-42294520.83	-42294520.61	0.0263	0.0041
Venus	-120509-07-17 00:01 J	-42294291.72	-42294291.50	-42294291.28	0.0265	0.0036
Venus	-120508-03-03 09:22 J	-42294062.33	-42294062.11	-42294061.89	0.0267	0.0030
Venus	-120508-10-18 20:39 J	-42293832.86	-42293832.64	-42293832.42	0.0270	0.0023
Venus	-120507-06-05 09:51 J	-42293603.31	-42293603.09	-42293602.87	0.0272	0.0015
Venus	-120506-01-21 00:44 J	-42293373.69	-42293373.47	-42293373.25	0.0275	0.0007
Venus	-120506-09-07 17:32 J	-42293143.98	-42293143.77	-42293143.55	0.0278	0.0006
Venus	-120505-04-24 12:15 J	-42292914.20	-42292913.99	-42292913.77	0.0281	0.0011
Venus	-120505-12-10 08:39 J	-42292684.35	-42292684.14	-42292683.92	0.0285	0.0020
Moon	-120504-01-09 18:01 J	-42292653.99	-42292653.75	-42292653.51	0.0285	0.0050
Earth	-120504-01-09 21:51 J	-42292653.83	-42292653.59	-42292653.35	0.0285	0.0033 *
Venus	-120504-07-28 06:44 J	-42292454.44	-42292454.22	-42292454.01	0.0288	0.0028
Venus	-120503-03-15 06:15 J	-42292224.46	-42292224.24	-42292224.03	0.0291	0.0036
Venus	-120503-10-31 06:58 J	-42291994.42	-42291994.21	-42291994.00	0.0294	0.0044
Venus	-120502-06-18 08:39 J	-42291764.34	-42291764.14	-42291763.93	0.0297	0.0052
Mercury	-120502-10-10 20:39 J	-42291649.66	-42291649.64	-42291649.62	0.0298	0.0294
Mercury	-120501-01-07 10:34 J	-42291561.17	-42291561.06	-42291560.95	0.0299	0.0179
Venus	-120501-02-03 11:17 J	-42291534.24	-42291534.03	-42291533.82	0.0300	0.0057
Mercury	-120501-04-05 00:29 J	-42291472.61	-42291472.48	-42291472.35	0.0300	0.0064
Mercury	-120501-07-02 14:10 J	-42291384.04	-42291383.91	-42291383.78	0.0301	0.0051
Venus	-120501-09-20 13:56 J	-42291304.12	-42291303.92	-42291303.71	0.0302	0.0062
Mercury	-120501-09-29 03:51 J	-42291295.45	-42291295.34	-42291295.23	0.0302	0.0165
Mercury	-120501-12-26 17:17 J	-42291206.82	-42291206.78	-42291206.73	0.0302	0.0278

Venus	-120500-05-08 17:03 J	-42291074.00	-42291073.79	-42291073.59	0.0303	0.0065
Venus	-120500-12-24 19:41 J	-42290843.88	-42290843.68	-42290843.48	0.0304	0.0066
Venus	-120499-08-11 21:37 J	-42290613.80	-42290613.60	-42290613.40	0.0305	0.0066
Venus	-120498-03-29 22:34 J	-42290383.76	-42290383.56	-42290383.36	0.0305	0.0064
Venus	-120498-11-14 22:20 J	-42290153.77	-42290153.57	-42290153.37	0.0304	0.0061
Venus	-120497-07-01 20:39 J	-42289923.84	-42289923.64	-42289923.44	0.0303	0.0055
Venus	-120496-02-16 17:17 J	-42289693.98	-42289693.78	-42289693.58	0.0301	0.0049
Venus	-120496-10-04 12:01 J	-42289464.20	-42289464.00	-42289463.80	0.0299	0.0042
Venus	-120495-05-22 04:49 J	-42289234.50	-42289234.30	-42289234.10	0.0296	0.0033
Venus	-120494-01-06 19:27 J	-42289004.89	-42289004.69	-42289004.48	0.0293	0.0025
Venus	-120494-08-24 08:25 J	-42288775.36	-42288775.15	-42288774.95	0.0290	0.0016
Venus	-120493-04-09 19:27 J	-42288545.90	-42288545.69	-42288545.49	0.0287	0.0007
Venus	-120493-11-25 04:20 J	-42288316.52	-42288316.32	-42288316.11	0.0284	0.0005
Venus	-120492-07-12 11:32 J	-42288087.22	-42288087.02	-42288086.81	0.0281	0.0012
Venus	-120491-02-26 17:17 J	-42287857.99	-42287857.78	-42287857.57	0.0277	0.0019
Moon	-120491-07-05 10:20 J	-42287729.18	-42287729.07	-42287728.95	0.0276	0.0241
Earth	-120491-07-05 12:01 J	-42287729.08	-42287729.00	-42287728.90	0.0276	0.0255 *
Venus	-120491-10-13 21:22 J	-42287628.81	-42287628.61	-42287628.40	0.0274	0.0026
Venus	-120490-05-31 00:29 J	-42287399.69	-42287399.48	-42287399.27	0.0272	0.0033
Mars	-120490-08-26 00:29 J	-42287312.77	-42287312.48	-42287312.19	0.0271	0.0012
Venus	-120489-01-15 02:10 J	-42287170.62	-42287170.41	-42287170.20	0.0269	0.0039
Venus	-120489-08-31 02:53 J	-42286941.59	-42286941.38	-42286941.17	0.0267	0.0044
Venus	-120488-04-17 02:53 J	-42286712.58	-42286712.38	-42286712.17	0.0264	0.0049
Mercury	-120488-08-08 14:25 J	-42286598.92	-42286598.90	-42286598.87	0.0263	0.0260
Mercury	-120488-11-05 08:53 J	-42286510.27	-42286510.13	-42286509.98	0.0263	0.0159
Venus	-120488-12-02 02:25 J	-42286483.61	-42286483.40	-42286483.19	0.0263	0.0053
Mercury	-120487-02-02 03:37 J	-42286421.52	-42286421.35	-42286421.17	0.0262	0.0058
Mercury	-120487-05-01 22:34 J	-42286332.74	-42286332.56	-42286332.38	0.0262	0.0045
Venus	-120487-07-19 01:41 J	-42286254.64	-42286254.43	-42286254.22	0.0261	0.0056
Mercury	-120487-07-29 17:32 J	-42286243.92	-42286243.77	-42286243.62	0.0261	0.0147



Mercury -120487-10-26 12:29 J -42286155.02 -42286154.98 -42286154.92 0.0260 0.0250

Venus -120486-03-05 00:29 J -42286025.69 -42286025.48 -42286025.27 0.0260 0.0059

Venus -120486-10-19 23:32 J -42285796.73 -42285796.52 -42285796.31 0.0259 0.0060

Venus -120485-06-04 22:34 J -42285567.77 -42285567.56 -42285567.34 0.0258 0.0061

Venus -120484-01-19 22:05 J -42285338.79 -42285338.58 -42285338.37 0.0258 0.0061

Venus -120484-09-05 21:51 J -42285109.80 -42285109.59 -42285109.37 0.0258 0.0060

Venus -120483-04-22 22:20 J -42284880.78 -42284880.57 -42284880.35 0.0258 0.0059

Venus -120483-12-07 23:46 J -42284651.72 -42284651.51 -42284651.29 0.0258 0.0057

Venus -120482-07-25 02:25 J -42284422.61 -42284422.40 -42284422.18 0.0259 0.0054

Venus -120481-03-10 06:01 J -42284193.47 -42284193.25 -42284193.03 0.0260 0.0050

Venus -120481-10-25 10:49 J -42283964.27 -42283964.05 -42283963.83 0.0262 0.0046

Venus -120480-06-11 16:49 J -42283735.01 -42283734.80 -42283734.58 0.0263 0.0042

Venus -120479-01-27 00:44 J -42283505.69 -42283505.47 -42283505.25 0.0265 0.0036

Venus -120479-09-13 10:20 J -42283276.29 -42283276.07 -42283275.85 0.0268 0.0029

Venus -120478-04-30 21:37 J -42283046.82 -42283046.60 -42283046.38 0.0270 0.0022

Venus -120478-12-16 10:49 J -42282817.27 -42282817.05 -42282816.83 0.0273 0.0016

Venus -120477-08-02 01:41 J -42282587.65 -42282587.43 -42282587.21 0.0276 0.0007

Venus -120476-03-19 18:29 J -42282357.95 -42282357.73 -42282357.51 0.0279 0.0002

Venus -120476-11-04 13:13 J -42282128.16 -42282127.95 -42282127.73 0.0282 0.0012

Venus -120475-06-22 09:37 J -42281898.31 -42281898.10 -42281897.88 0.0285 0.0022

Venus -120474-02-07 07:56 J -42281668.39 -42281668.17 -42281667.96 0.0288 0.0030

Mars -120474-07-21 12:15 J -42281504.28 -42281503.99 -42281503.70 0.0290 0.0078

Venus -120474-09-25 07:27 J -42281438.40 -42281438.19 -42281437.98 0.0291 0.0039

Venus -120473-05-12 08:25 J -42281208.36 -42281208.15 -42281207.94 0.0294 0.0047

Venus -120473-12-28 10:20 J -42280978.28 -42280978.07 -42280977.87 0.0297 0.0055

Mercury -120472-05-26 10:34 J -42280829.14 -42280829.06 -42280828.97 0.0299 0.0225

Venus -120472-08-15 12:44 J -42280748.17 -42280747.97 -42280747.76 0.0299 0.0061

Mercury -120472-08-23 00:29 J -42280740.60 -42280740.48 -42280740.35 0.0299 0.0110

Mercury -120472-11-19 14:25 J -42280652.04 -42280651.90 -42280651.77 0.0300 0.0005

Mercury -120471-02-16 04:05 J -42280563.45 -42280563.33 -42280563.21 0.0301 0.0119

Venus -120471-04-02 15:37 J -42280518.05 -42280517.85 -42280517.65 0.0301 0.0066  
 Mercury -120471-05-15 17:32 J -42280474.85 -42280474.77 -42280474.68 0.0302 0.0233  
 Venus -120471-11-18 18:29 J -42280287.93 -42280287.73 -42280287.52 0.0303 0.0069  
 Venus -120470-07-06 21:08 J -42280057.82 -42280057.62 -42280057.42 0.0304 0.0070  
 Venus -120469-02-21 23:03 J -42279827.74 -42279827.54 -42279827.34 0.0304 0.0070  
 Venus -120469-10-09 00:01 J -42279597.70 -42279597.50 -42279597.30 0.0304 0.0068  
 Venus -120468-05-26 23:46 J -42279367.71 -42279367.51 -42279367.31 0.0304 0.0064  
 Venus -120467-01-11 21:51 J -42279137.78 -42279137.59 -42279137.38 0.0303 0.0059  
 Venus -120467-08-29 18:29 J -42278907.93 -42278907.73 -42278907.52 0.0301 0.0052  
 Venus -120466-04-16 13:27 J -42278678.14 -42278677.94 -42278677.74 0.0299 0.0043  
 Venus -120466-12-02 06:15 J -42278448.44 -42278448.24 -42278448.04 0.0296 0.0035  
 Venus -120465-07-18 21:08 J -42278218.82 -42278218.62 -42278218.42 0.0293 0.0026  
 Venus -120464-03-05 10:05 J -42277989.28 -42277989.08 -42277988.88 0.0290 0.0016  
 Venus -120464-10-20 21:08 J -42277759.83 -42277759.62 -42277759.42 0.0287 0.0008  
 Venus -120463-06-07 06:01 J -42277530.45 -42277530.25 -42277530.04 0.0284 0.0005  
 Venus -120462-01-22 13:27 J -42277301.15 -42277300.94 -42277300.74 0.0281 0.0011  
 Earth -120462-06-30 02:25 J -42277142.62 -42277142.40 -42277142.17 0.0279 0.0100  
 Moon -120462-06-30 06:01 J -42277142.47 -42277142.25 -42277142.02 0.0279 0.0105 \*  
 Venus -120462-09-08 18:58 J -42277071.91 -42277071.71 -42277071.50 0.0278 0.0020  
 Venus -120461-04-24 23:32 J -42276842.73 -42276842.52 -42276842.31 0.0275 0.0026  
 Venus -120461-12-10 02:25 J -42276613.61 -42276613.40 -42276613.19 0.0272 0.0033  
 Venus -120460-07-27 04:05 J -42276384.54 -42276384.33 -42276384.12 0.0269 0.0039  
 Mars -120460-10-12 05:32 J -42276307.44 -42276307.27 -42276307.07 0.0268 0.0202  
 Venus -120459-03-13 04:49 J -42276155.51 -42276155.30 -42276155.09 0.0267 0.0044  
 Venus -120459-10-28 04:49 J -42275926.50 -42275926.30 -42275926.09 0.0265 0.0049  
 Mercury -120458-03-25 08:10 J -42275778.27 -42275778.16 -42275778.03 0.0263 0.0191  
 Venus -120458-06-14 04:34 J -42275697.52 -42275697.31 -42275697.10 0.0263 0.0053  
 Mercury -120458-06-22 02:53 J -42275689.55 -42275689.38 -42275689.21 0.0263 0.0089  
 Mercury -120458-09-18 21:51 J -42275600.78 -42275600.59 -42275600.41 0.0262 0.0014  
 Mercury -120458-12-16 16:34 J -42275511.97 -42275511.81 -42275511.64 0.0262 0.0115

Venus -120457-01-29 03:37 J -42275468.56 -42275468.35 -42275468.14 0.0261 0.0056  
 Mercury -120457-03-14 11:46 J -42275423.11 -42275423.01 -42275422.91 0.0261 0.0217  
 Venus -120457-09-14 02:25 J -42275239.60 -42275239.40 -42275239.18 0.0260 0.0059  
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 Venus -120456-12-16 00:29 J -42274781.69 -42274781.48 -42274781.27 0.0258 0.0062  
 Venus -120455-08-02 00:01 J -42274552.71 -42274552.50 -42274552.29 0.0258 0.0062  
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 Venus -120454-11-03 00:29 J -42274094.69 -42274094.48 -42274094.26 0.0258 0.0060  
 Venus -120453-06-19 01:56 J -42273865.63 -42273865.42 -42273865.20 0.0258 0.0059  
 Venus -120452-02-03 04:20 J -42273636.53 -42273636.32 -42273636.10 0.0259 0.0056  
 Venus -120452-09-20 08:10 J -42273407.38 -42273407.16 -42273406.95 0.0260 0.0052  
 Venus -120451-05-07 12:58 J -42273178.18 -42273177.96 -42273177.74 0.0261 0.0047  
 Venus -120451-12-22 19:13 J -42272948.92 -42272948.70 -42272948.48 0.0263 0.0042  
 Venus -120450-08-09 03:08 J -42272719.59 -42272719.37 -42272719.15 0.0265 0.0036  
 Venus -120449-03-25 12:44 J -42272490.19 -42272489.97 -42272489.75 0.0267 0.0029  
 Venus -120449-11-09 23:46 J -42272260.72 -42272260.51 -42272260.28 0.0270 0.0023  
 Venus -120448-06-27 12:58 J -42272031.18 -42272030.96 -42272030.74 0.0272 0.0014  
 Venus -120447-02-12 03:51 J -42271801.56 -42271801.34 -42271801.12 0.0275 0.0006  
 Venus -120447-09-29 20:53 J -42271571.85 -42271571.63 -42271571.41 0.0278 0.0004  
 Venus -120446-05-17 15:37 J -42271342.07 -42271341.85 -42271341.64 0.0282 0.0013  
 Venus -120445-01-02 12:01 J -42271112.22 -42271112.00 -42271111.79 0.0285 0.0023  
 Moon -120445-01-11 11:17 J -42271103.26 -42271103.03 -42271102.79 0.0285 0.0096  
 Earth -120445-01-11 14:53 J -42271103.11 -42271102.88 -42271102.64 0.0285 0.0090 \*  
 Venus -120445-08-19 09:51 J -42270882.30 -42270882.09 -42270881.87 0.0288 0.0031  
 Venus -120444-04-06 09:22 J -42270652.32 -42270652.11 -42270651.90 0.0291 0.0040  
 Mars -120444-09-10 18:15 J -42270494.97 -42270494.74 -42270494.50 0.0294 0.0184  
 Venus -120444-11-22 10:20 J -42270422.28 -42270422.07 -42270421.86 0.0294 0.0048  
 Venus -120443-07-10 12:01 J -42270192.21 -42270192.00 -42270191.79 0.0297 0.0055  
 Mercury -120443-10-13 10:49 J -42270097.11 -42270097.05 -42270096.99 0.0298 0.0268  
 Mercury -120442-01-10 00:44 J -42270008.59 -42270008.47 -42270008.35 0.0299 0.0153

Venus -120442-02-25 14:25 J -42269962.10 -42269961.90 -42269961.69 0.0300 0.0061

Mercury -120442-04-08 14:39 J -42269920.03 -42269919.89 -42269919.76 0.0300 0.0039

Mercury -120442-07-06 04:20 J -42269831.45 -42269831.32 -42269831.19 0.0301 0.0076

Mercury -120442-10-02 17:46 J -42269742.86 -42269742.76 -42269742.65 0.0302 0.0190

Venus -120442-10-13 17:17 J -42269731.99 -42269731.78 -42269731.58 0.0302 0.0065

Venus -120441-05-30 20:10 J -42269501.86 -42269501.66 -42269501.46 0.0303 0.0068

Venus -120440-01-15 22:49 J -42269271.75 -42269271.55 -42269271.35 0.0305 0.0070

Venus -120440-09-03 00:44 J -42269041.67 -42269041.47 -42269041.27 0.0305 0.0069

Venus -120439-04-21 01:41 J -42268811.63 -42268811.43 -42268811.23 0.0305 0.0067

Venus -120439-12-07 01:13 J -42268581.64 -42268581.45 -42268581.24 0.0304 0.0064

Venus -120438-07-24 23:32 J -42268351.72 -42268351.52 -42268351.32 0.0303 0.0057

Venus -120437-03-10 20:10 J -42268121.86 -42268121.66 -42268121.46 0.0301 0.0050

Venus -120437-10-26 14:53 J -42267892.08 -42267891.88 -42267891.68 0.0299 0.0042

Venus -120436-06-13 07:27 J -42267662.39 -42267662.19 -42267661.99 0.0296 0.0033

Venus -120435-01-28 22:05 J -42267432.78 -42267432.58 -42267432.37 0.0293 0.0025

Venus -120435-09-15 10:49 J -42267203.25 -42267203.05 -42267202.84 0.0290 0.0016

Venus -120434-05-02 21:51 J -42266973.80 -42266973.59 -42266973.38 0.0287 0.0005

Venus -120434-12-18 06:44 J -42266744.42 -42266744.22 -42266744.01 0.0284 0.0007

Venus -120433-08-03 14:10 J -42266515.12 -42266514.91 -42266514.71 0.0280 0.0014

Venus -120432-03-20 19:41 J -42266285.89 -42266285.68 -42266285.47 0.0277 0.0022

Venus -120432-11-05 00:01 J -42266056.71 -42266056.50 -42266056.30 0.0274 0.0029

Mars -120432-12-01 02:39 J -42266030.60 -42266030.39 -42266030.16 0.0274 0.0179

Venus -120431-06-22 02:53 J -42265827.59 -42265827.38 -42265827.17 0.0271 0.0036

Venus -120430-02-06 04:34 J -42265598.52 -42265598.31 -42265598.10 0.0269 0.0042

Venus -120430-09-23 05:17 J -42265369.48 -42265369.28 -42265369.07 0.0266 0.0048

Venus -120429-05-09 05:32 J -42265140.48 -42265140.27 -42265140.06 0.0264 0.0053

Mercury -120429-08-11 06:44 J -42265046.30 -42265046.22 -42265046.12 0.0263 0.0228

Mercury -120429-11-08 01:27 J -42264957.59 -42264957.44 -42264957.28 0.0263 0.0126

Venus -120429-12-24 05:03 J -42264911.50 -42264911.29 -42264911.08 0.0262 0.0056

Mercury -120428-02-04 20:10 J -42264868.84 -42264868.66 -42264868.48 0.0262 0.0025

Mercury -120428-05-04 15:08 J -42264780.04 -42264779.87 -42264779.69 0.0261 0.0078

Mercury -120428-08-01 10:05 J -42264691.21 -42264691.08 -42264690.94 0.0261 0.0180

Venus -120428-08-10 04:05 J -42264682.53 -42264682.33 -42264682.12 0.0261 0.0060

Venus -120427-03-27 03:08 J -42264453.58 -42264453.37 -42264453.16 0.0260 0.0062

Venus -120427-11-11 02:10 J -42264224.62 -42264224.41 -42264224.20 0.0259 0.0063

Venus -120426-06-28 01:27 J -42263995.65 -42263995.44 -42263995.23 0.0258 0.0064

Venus -120425-02-12 00:58 J -42263766.67 -42263766.46 -42263766.25 0.0258 0.0064

Venus -120425-09-28 00:44 J -42263537.68 -42263537.47 -42263537.25 0.0258 0.0063

Venus -120424-05-15 01:27 J -42263308.65 -42263308.44 -42263308.23 0.0258 0.0061

Venus -120424-12-30 02:53 J -42263079.59 -42263079.38 -42263079.16 0.0258 0.0059

Venus -120423-08-16 05:32 J -42262850.49 -42262850.27 -42262850.05 0.0259 0.0055

Venus -120422-04-02 09:08 J -42262621.34 -42262621.12 -42262620.90 0.0260 0.0052

Venus -120422-11-17 13:56 J -42262392.13 -42262391.92 -42262391.70 0.0262 0.0047

Venus -120421-07-03 20:10 J -42262162.87 -42262162.66 -42262162.44 0.0263 0.0042

Venus -120420-02-18 04:05 J -42261933.55 -42261933.33 -42261933.11 0.0265 0.0036

Venus -120420-10-05 13:41 J -42261704.15 -42261703.93 -42261703.71 0.0268 0.0029

Venus -120419-05-23 00:58 J -42261474.68 -42261474.46 -42261474.24 0.0270 0.0022

Venus -120418-01-07 14:10 J -42261245.13 -42261244.91 -42261244.69 0.0273 0.0014

Venus -120418-08-25 05:17 J -42261015.50 -42261015.28 -42261015.07 0.0276 0.0007

Venus -120417-04-10 22:05 J -42260785.80 -42260785.58 -42260785.36 0.0279 0.0005

Venus -120417-11-26 16:49 J -42260556.02 -42260555.80 -42260555.58 0.0282 0.0014

Venus -120416-07-14 13:13 J -42260326.16 -42260325.95 -42260325.73 0.0285 0.0024

Venus -120415-03-01 11:17 J -42260096.24 -42260096.03 -42260095.81 0.0288 0.0033

Venus -120415-10-17 11:03 J -42259866.25 -42259866.04 -42259865.83 0.0291 0.0043

Venus -120414-06-04 11:46 J -42259636.21 -42259636.01 -42259635.80 0.0294 0.0052

Venus -120413-01-20 13:41 J -42259406.13 -42259405.93 -42259405.72 0.0297 0.0059

Mercury -120413-05-29 00:58 J -42259276.56 -42259276.46 -42259276.36 0.0299 0.0198

Mercury -120413-08-25 14:39 J -42259188.01 -42259187.89 -42259187.75 0.0299 0.0085

Venus -120413-09-06 16:05 J -42259176.03 -42259175.83 -42259175.62 0.0300 0.0065

Mercury -120413-11-22 04:34 J -42259099.44 -42259099.31 -42259099.18 0.0300 0.0031

Mercury -120412-02-18 18:15 J -42259010.86 -42259010.74 -42259010.62 0.0301 0.0144

Venus -120412-04-24 18:58 J -42258945.91 -42258945.71 -42258945.50 0.0302 0.0070

Mercury -120412-05-18 07:41 J -42258922.24 -42258922.18 -42258922.11 0.0302 0.0258

Venus -120412-12-10 21:51 J -42258715.79 -42258715.59 -42258715.38 0.0303 0.0073

Venus -120411-07-29 00:29 J -42258485.68 -42258485.48 -42258485.28 0.0304 0.0073

Venus -120410-03-16 02:10 J -42258255.61 -42258255.41 -42258255.21 0.0304 0.0072

Venus -120410-11-01 02:53 J -42258025.58 -42258025.38 -42258025.18 0.0304 0.0070

Venus -120409-06-18 02:25 J -42257795.60 -42257795.40 -42257795.20 0.0304 0.0065

Venus -120408-02-03 00:44 J -42257565.67 -42257565.47 -42257565.27 0.0302 0.0059

Venus -120408-09-20 21:08 J -42257335.82 -42257335.62 -42257335.42 0.0301 0.0052

Venus -120407-05-08 15:37 J -42257106.05 -42257105.85 -42257105.65 0.0299 0.0043

Venus -120407-12-24 08:25 J -42256876.35 -42256876.15 -42256875.95 0.0296 0.0034

Venus -120406-08-10 23:03 J -42256646.74 -42256646.54 -42256646.33 0.0293 0.0025

Venus -120405-03-27 12:01 J -42256417.20 -42256417.00 -42256416.79 0.0290 0.0016

Venus -120405-11-11 23:03 J -42256187.75 -42256187.54 -42256187.34 0.0287 0.0006

Venus -120404-06-29 07:56 J -42255958.37 -42255958.17 -42255957.96 0.0284 0.0005

Venus -120403-02-13 15:08 J -42255729.07 -42255728.87 -42255728.66 0.0281 0.0015

Earth -120403-06-30 20:25 J -42255591.89 -42255591.65 -42255591.41 0.0279 0.0042

Moon -120403-07-01 00:01 J -42255591.74 -42255591.50 -42255591.26 0.0279 0.0029 \*

Venus -120403-09-30 20:53 J -42255499.83 -42255499.63 -42255499.42 0.0278 0.0022

Venus -120402-05-18 01:27 J -42255270.65 -42255270.44 -42255270.24 0.0275 0.0030

Venus -120401-01-02 04:20 J -42255041.53 -42255041.32 -42255041.11 0.0272 0.0036

Mars -120401-01-18 19:13 J -42255024.98 -42255024.70 -42255024.41 0.0272 0.0023

Venus -120401-08-18 06:01 J -42254812.45 -42254812.25 -42254812.04 0.0269 0.0043

Venus -120400-04-04 06:58 J -42254583.42 -42254583.21 -42254583.00 0.0267 0.0048

Venus -120400-11-19 06:58 J -42254354.41 -42254354.21 -42254353.99 0.0265 0.0053

Mercury -120400-12-29 05:46 J -42254314.27 -42254314.26 -42254314.22 0.0264 0.0261

Mercury -120399-03-28 00:44 J -42254225.61 -42254225.47 -42254225.33 0.0264 0.0159

Mercury -120399-06-24 19:13 J -42254136.87 -42254136.70 -42254136.52 0.0263 0.0058

Venus -120399-07-06 06:44 J -42254125.43 -42254125.22 -42254125.01 0.0263 0.0056

Mercury -120399-09-21 14:10 J -42254048.09 -42254047.91 -42254047.73 0.0262 0.0045

Mercury -120399-12-19 09:08 J -42253959.27 -42253959.12 -42253958.97 0.0262 0.0147

Venus -120398-02-20 06:01 J -42253896.46 -42253896.25 -42253896.04 0.0261 0.0060

Mercury -120398-03-18 04:05 J -42253870.37 -42253870.33 -42253870.27 0.0261 0.0250

Venus -120398-10-07 05:03 J -42253667.50 -42253667.29 -42253667.08 0.0260 0.0062

Venus -120397-05-23 03:51 J -42253438.54 -42253438.34 -42253438.12 0.0259 0.0064

Venus -120396-01-07 03:08 J -42253209.58 -42253209.37 -42253209.16 0.0258 0.0065

Venus -120396-08-24 02:39 J -42252980.60 -42252980.39 -42252980.18 0.0258 0.0065

Venus -120395-04-10 02:39 J -42252751.60 -42252751.39 -42252751.18 0.0258 0.0064

Venus -120395-11-25 03:22 J -42252522.57 -42252522.36 -42252522.15 0.0258 0.0062

Venus -120394-07-12 05:03 J -42252293.50 -42252293.29 -42252293.07 0.0258 0.0060

Venus -120393-02-26 07:41 J -42252064.40 -42252064.18 -42252063.96 0.0259 0.0057

Venus -120393-10-12 11:17 J -42251835.24 -42251835.03 -42251834.81 0.0260 0.0053

Venus -120392-05-29 16:20 J -42251606.04 -42251605.82 -42251605.61 0.0261 0.0048

Venus -120391-01-13 22:34 J -42251376.78 -42251376.56 -42251376.34 0.0263 0.0042

Venus -120391-08-31 06:44 J -42251147.44 -42251147.22 -42251147.00 0.0265 0.0036

Venus -120390-04-17 16:05 J -42250918.04 -42250917.83 -42250917.60 0.0267 0.0030

Venus -120390-12-03 03:22 J -42250688.58 -42250688.36 -42250688.14 0.0270 0.0021

Venus -120389-07-19 16:34 J -42250459.03 -42250458.81 -42250458.59 0.0273 0.0013

Venus -120388-03-06 07:27 J -42250229.41 -42250229.19 -42250228.97 0.0275 0.0003

Venus -120388-10-22 00:15 J -42249999.70 -42249999.49 -42249999.27 0.0279 0.0009

Venus -120387-06-08 18:58 J -42249769.93 -42249769.71 -42249769.49 0.0282 0.0016

Moon -120386-01-12 05:32 J -42249552.48 -42249552.27 -42249552.03 0.0285 0.0134

Earth -120386-01-12 08:39 J -42249552.35 -42249552.14 -42249551.93 0.0285 0.0148 \*

Venus -120386-01-24 15:22 J -42249540.08 -42249539.86 -42249539.65 0.0285 0.0025

Venus -120386-09-11 13:13 J -42249310.16 -42249309.95 -42249309.73 0.0288 0.0035

Mars -120386-12-13 12:58 J -42249217.25 -42249216.96 -42249216.67 0.0290 0.0077

Venus -120385-04-28 12:44 J -42249080.18 -42249079.97 -42249079.76 0.0292 0.0043

Venus -120385-12-14 13:27 J -42248850.15 -42248849.94 -42248849.73 0.0295 0.0052

Venus -120384-08-01 15:08 J -42248620.08 -42248619.87 -42248619.66 0.0297 0.0059

Mercury -120384-10-16 00:58 J -42248544.54 -42248544.46 -42248544.38 0.0298 0.0242

Mercury -120383-01-12 14:53 J -42248456.00 -42248455.88 -42248455.76 0.0299 0.0128

Venus -120383-03-19 17:17 J -42248389.98 -42248389.78 -42248389.57 0.0300 0.0065

Mercury -120383-04-11 04:34 J -42248367.44 -42248367.31 -42248367.17 0.0300 0.0017

Mercury -120383-07-08 18:15 J -42248278.86 -42248278.74 -42248278.61 0.0301 0.0101

Mercury -120383-10-05 07:56 J -42248190.26 -42248190.17 -42248190.08 0.0302 0.0214

Venus -120383-11-04 20:10 J -42248159.86 -42248159.66 -42248159.46 0.0302 0.0069

Venus -120382-06-22 22:49 J -42247929.74 -42247929.55 -42247929.34 0.0304 0.0073

Venus -120381-02-08 01:27 J -42247699.64 -42247699.44 -42247699.24 0.0305 0.0073

Venus -120381-09-25 03:08 J -42247469.56 -42247469.37 -42247469.17 0.0305 0.0072

Venus -120380-05-13 04:05 J -42247239.53 -42247239.33 -42247239.13 0.0305 0.0069

Venus -120380-12-29 03:37 J -42247009.55 -42247009.35 -42247009.15 0.0304 0.0064

Venus -120379-08-16 01:41 J -42246779.63 -42246779.43 -42246779.23 0.0303 0.0058

Venus -120378-04-02 22:05 J -42246549.78 -42246549.58 -42246549.38 0.0301 0.0051

Venus -120378-11-18 16:34 J -42246320.01 -42246319.81 -42246319.61 0.0299 0.0042

Venus -120377-07-05 09:08 J -42246090.32 -42246090.12 -42246089.91 0.0296 0.0033

Venus -120376-02-20 00:01 J -42245860.71 -42245860.50 -42245860.30 0.0293 0.0023

Venus -120376-10-07 12:44 J -42245631.18 -42245630.97 -42245630.77 0.0290 0.0014

Venus -120375-05-24 23:32 J -42245401.73 -42245401.52 -42245401.32 0.0287 0.0006

Venus -120374-01-09 08:25 J -42245172.36 -42245172.15 -42245171.94 0.0284 0.0007

Venus -120374-08-26 15:37 J -42244943.05 -42244942.85 -42244942.64 0.0280 0.0016

Venus -120373-04-11 21:37 J -42244713.81 -42244713.60 -42244713.40 0.0277 0.0025

Venus -120373-11-27 01:41 J -42244484.63 -42244484.43 -42244484.22 0.0274 0.0033

Venus -120372-07-14 04:34 J -42244255.51 -42244255.31 -42244255.10 0.0271 0.0040

Venus -120371-02-28 06:29 J -42244026.44 -42244026.23 -42244026.02 0.0269 0.0046

Mars -120371-03-06 22:34 J -42244019.75 -42244019.56 -42244019.38 0.0269 0.0203

Venus -120371-10-15 07:27 J -42243797.40 -42243797.19 -42243796.98 0.0266 0.0051

Venus -120370-06-01 07:41 J -42243568.38 -42243568.18 -42243567.96 0.0264 0.0056

Mercury -120370-08-14 23:03 J -42243493.65 -42243493.54 -42243493.41 0.0264 0.0196

Mercury -120370-11-11 17:46 J -42243404.92 -42243404.76 -42243404.59 0.0263 0.0095



Venus -120369-01-16 07:27 J -42243339.40 -42243339.19 -42243338.98 0.0262 0.0060  
 Mercury -120369-02-08 12:44 J -42243316.15 -42243315.97 -42243315.79 0.0262 0.0008  
 Mercury -120369-05-07 07:27 J -42243227.35 -42243227.19 -42243227.02 0.0262 0.0111  
 Mercury -120369-08-04 02:39 J -42243138.49 -42243138.39 -42243138.28 0.0261 0.0213  
 Venus -120369-09-01 06:29 J -42243110.43 -42243110.23 -42243110.01 0.0261 0.0063  
 Venus -120368-04-18 05:46 J -42242881.47 -42242881.26 -42242881.05 0.0260 0.0065  
 Venus -120368-12-03 04:49 J -42242652.51 -42242652.30 -42242652.09 0.0259 0.0066  
 Venus -120367-07-20 04:05 J -42242423.54 -42242423.33 -42242423.11 0.0258 0.0067  
 Venus -120366-03-06 03:51 J -42242194.55 -42242194.34 -42242194.13 0.0258 0.0066  
 Venus -120366-10-21 03:51 J -42241965.55 -42241965.34 -42241965.12 0.0258 0.0065  
 Venus -120365-06-06 04:34 J -42241736.52 -42241736.31 -42241736.09 0.0258 0.0063  
 Venus -120364-01-21 06:15 J -42241507.45 -42241507.24 -42241507.02 0.0258 0.0060  
 Venus -120364-09-07 08:53 J -42241278.34 -42241278.13 -42241277.91 0.0259 0.0057  
 Venus -120363-04-24 12:44 J -42241049.19 -42241048.97 -42241048.76 0.0260 0.0053  
 Venus -120363-12-09 17:32 J -42240819.98 -42240819.77 -42240819.55 0.0262 0.0048  
 Venus -120362-07-27 00:01 J -42240590.71 -42240590.50 -42240590.28 0.0264 0.0042  
 Venus -120361-03-12 07:56 J -42240361.38 -42240361.17 -42240360.95 0.0266 0.0036  
 Venus -120361-10-27 17:32 J -42240131.98 -42240131.77 -42240131.55 0.0268 0.0029  
 Venus -120360-06-14 04:49 J -42239902.51 -42239902.30 -42239902.08 0.0270 0.0021  
 Venus -120359-01-29 18:01 J -42239672.97 -42239672.75 -42239672.53 0.0273 0.0012  
 Venus -120359-09-16 09:08 J -42239443.34 -42239443.12 -42239442.90 0.0276 0.0004  
 Venus -120358-05-04 02:10 J -42239213.63 -42239213.41 -42239213.20 0.0279 0.0009  
 Venus -120358-12-19 20:39 J -42238983.85 -42238983.64 -42238983.42 0.0282 0.0017  
 Earth -120357-01-06 10:20 J -42238966.17 -42238966.07 -42238965.94 0.0282 0.0248  
 Moon -120357-01-06 11:17 J -42238966.11 -42238966.03 -42238965.94 0.0282 0.0262 \*  
 Venus -120357-08-05 17:03 J -42238754.00 -42238753.79 -42238753.57 0.0285 0.0027  
 Venus -120356-03-23 15:08 J -42238524.08 -42238523.87 -42238523.66 0.0289 0.0037  
 Venus -120356-11-08 14:39 J -42238294.10 -42238293.89 -42238293.67 0.0292 0.0046  
 Mars -120355-02-02 16:49 J -42238208.02 -42238207.80 -42238207.55 0.0293 0.0179  
 Venus -120355-06-26 15:37 J -42238064.06 -42238063.85 -42238063.65 0.0295 0.0055

Venus -120354-02-11 17:17 J -42237833.99 -42237833.78 -42237833.58 0.0297 0.0062

Mercury -120354-03-05 00:58 J -42237812.49 -42237812.46 -42237812.41 0.0298 0.0286

Mercury -120354-06-01 15:08 J -42237723.98 -42237723.87 -42237723.76 0.0299 0.0172

Mercury -120354-08-29 05:03 J -42237635.43 -42237635.29 -42237635.16 0.0299 0.0058

Venus -120354-09-29 19:27 J -42237603.89 -42237603.69 -42237603.48 0.0300 0.0069

Mercury -120354-11-25 18:44 J -42237546.85 -42237546.72 -42237546.59 0.0300 0.0056

Mercury -120353-02-22 08:25 J -42237458.26 -42237458.15 -42237458.04 0.0301 0.0170

Venus -120353-05-16 22:20 J -42237373.77 -42237373.57 -42237373.37 0.0302 0.0073

Mercury -120353-05-20 21:51 J -42237369.63 -42237369.59 -42237369.54 0.0302 0.0282

Venus -120352-01-02 01:13 J -42237143.65 -42237143.45 -42237143.25 0.0303 0.0076

Venus -120352-08-20 03:37 J -42236913.55 -42236913.35 -42236913.15 0.0304 0.0076

Venus -120351-04-07 05:03 J -42236683.49 -42236683.29 -42236683.09 0.0304 0.0075

Venus -120351-11-23 05:46 J -42236453.46 -42236453.26 -42236453.06 0.0304 0.0071

Venus -120350-07-11 05:03 J -42236223.49 -42236223.29 -42236223.09 0.0304 0.0067

Venus -120349-02-26 03:08 J -42235993.57 -42235993.37 -42235993.17 0.0302 0.0060

Venus -120349-10-12 23:17 J -42235763.73 -42235763.53 -42235763.33 0.0300 0.0052

Venus -120348-05-30 17:46 J -42235533.96 -42235533.76 -42235533.56 0.0298 0.0043

Venus -120347-01-15 10:20 J -42235304.27 -42235304.07 -42235303.87 0.0296 0.0033

Venus -120347-09-02 00:58 J -42235074.66 -42235074.46 -42235074.25 0.0293 0.0024

Venus -120346-04-19 13:56 J -42234845.12 -42234844.92 -42234844.72 0.0290 0.0013

Venus -120346-12-05 00:44 J -42234615.67 -42234615.47 -42234615.26 0.0287 0.0004

Venus -120345-07-21 09:51 J -42234386.30 -42234386.09 -42234385.89 0.0284 0.0008

Venus -120344-03-07 17:03 J -42234156.99 -42234156.79 -42234156.58 0.0280 0.0017

Earth -120344-07-01 14:10 J -42234041.15 -42234040.91 -42234040.66 0.0279 0.0016

Moon -120344-07-01 17:46 J -42234041.00 -42234040.76 -42234040.52 0.0279 0.0024 \*

Venus -120344-10-22 22:49 J -42233927.76 -42233927.55 -42233927.34 0.0277 0.0025

Mars -120343-04-25 17:03 J -42233743.01 -42233742.79 -42233742.56 0.0275 0.0171

Venus -120343-06-09 03:08 J -42233698.57 -42233698.37 -42233698.16 0.0274 0.0033

Venus -120342-01-24 06:15 J -42233469.45 -42233469.24 -42233469.03 0.0272 0.0040

Venus -120342-09-10 08:10 J -42233240.37 -42233240.16 -42233239.95 0.0269 0.0046

Venus -120341-04-26 09:08 J -42233011.32 -42233011.12 -42233010.91 0.0267 0.0052

Venus -120341-12-11 09:22 J -42232782.31 -42232782.11 -42232781.90 0.0265 0.0056

Mercury -120341-12-31 22:20 J -42232761.65 -42232761.57 -42232761.48 0.0264 0.0228

Mercury -120340-03-30 17:03 J -42232672.95 -42232672.79 -42232672.63 0.0264 0.0127

Mercury -120340-06-27 11:46 J -42232584.19 -42232584.01 -42232583.83 0.0263 0.0025

Venus -120340-07-28 09:08 J -42232553.33 -42232553.12 -42232552.91 0.0263 0.0060

Mercury -120340-09-24 06:44 J -42232495.39 -42232495.22 -42232495.05 0.0262 0.0078

Mercury -120340-12-22 01:41 J -42232406.56 -42232406.43 -42232406.29 0.0262 0.0181

Venus -120339-03-14 08:25 J -42232324.36 -42232324.15 -42232323.94 0.0261 0.0063

Venus -120339-10-29 07:27 J -42232095.39 -42232095.19 -42232094.97 0.0260 0.0065

Venus -120338-06-15 06:58 J -42231866.42 -42231866.21 -42231866.00 0.0259 0.0066

Venus -120337-01-30 06:01 J -42231637.45 -42231637.25 -42231637.03 0.0258 0.0068

Venus -120337-09-15 05:46 J -42231408.47 -42231408.26 -42231408.05 0.0258 0.0067

Venus -120336-05-02 06:01 J -42231179.46 -42231179.25 -42231179.04 0.0258 0.0066

Venus -120336-12-17 06:44 J -42230950.43 -42230950.22 -42230950.00 0.0258 0.0064

Venus -120335-08-03 08:39 J -42230721.35 -42230721.14 -42230720.92 0.0258 0.0061

Venus -120334-03-20 11:32 J -42230492.23 -42230492.02 -42230491.80 0.0259 0.0057

Venus -120334-11-04 15:22 J -42230263.08 -42230262.86 -42230262.64 0.0260 0.0053

Venus -120333-06-20 20:25 J -42230033.86 -42230033.65 -42230033.43 0.0262 0.0048

Venus -120332-02-05 02:53 J -42229804.59 -42229804.38 -42229804.16 0.0263 0.0042

Venus -120332-09-22 11:03 J -42229575.25 -42229575.04 -42229574.81 0.0265 0.0036

Venus -120331-05-09 20:53 J -42229345.85 -42229345.63 -42229345.41 0.0268 0.0027

Venus -120331-12-25 08:10 J -42229116.38 -42229116.16 -42229115.94 0.0270 0.0019

Venus -120330-08-11 21:22 J -42228886.83 -42228886.61 -42228886.39 0.0273 0.0010

Venus -120329-03-28 12:29 J -42228657.20 -42228656.98 -42228656.76 0.0276 0.0002

Venus -120329-11-13 05:17 J -42228427.49 -42228427.28 -42228427.06 0.0279 0.0010

Venus -120328-07-01 00:01 J -42228197.72 -42228197.50 -42228197.28 0.0282 0.0019

Moon -120327-01-13 02:25 J -42228001.57 -42228001.40 -42228001.21 0.0285 0.0202

Earth -120327-01-13 04:34 J -42228001.46 -42228001.31 -42228001.13 0.0285 0.0213 \*

Venus -120327-02-15 20:25 J -42227967.87 -42227967.65 -42227967.44 0.0285 0.0029

Venus -120327-10-03 18:29 J -42227737.95 -42227737.73 -42227737.52 0.0289 0.0039

Venus -120326-05-21 17:46 J -42227507.97 -42227507.76 -42227507.55 0.0292 0.0048

Venus -120325-01-06 18:29 J -42227277.94 -42227277.73 -42227277.52 0.0295 0.0056

Venus -120325-08-23 19:56 J -42227047.87 -42227047.67 -42227047.46 0.0298 0.0063

Mercury -120325-10-18 15:37 J -42226991.94 -42226991.85 -42226991.75 0.0298 0.0212

Mercury -120324-01-15 05:32 J -42226903.40 -42226903.27 -42226903.14 0.0299 0.0099

Venus -120324-04-10 22:05 J -42226817.78 -42226817.58 -42226817.37 0.0300 0.0069

Mercury -120324-04-13 19:13 J -42226814.83 -42226814.70 -42226814.56 0.0300 0.0015

Mercury -120324-07-11 08:53 J -42226726.25 -42226726.13 -42226726.01 0.0301 0.0128

Mercury -120324-10-07 22:20 J -42226637.64 -42226637.57 -42226637.49 0.0302 0.0241

Venus -120324-11-27 00:58 J -42226587.67 -42226587.46 -42226587.26 0.0302 0.0073

Venus -120323-07-15 03:22 J -42226357.56 -42226357.36 -42226357.16 0.0304 0.0076

Venus -120322-03-02 05:46 J -42226127.46 -42226127.26 -42226127.06 0.0305 0.0076

Venus -120322-10-18 07:13 J -42225897.40 -42225897.20 -42225897.00 0.0305 0.0074

Venus -120321-06-04 07:41 J -42225667.37 -42225667.18 -42225666.98 0.0305 0.0071

Venus -120320-01-20 07:13 J -42225437.40 -42225437.20 -42225437.00 0.0304 0.0065

Venus -120320-09-07 05:03 J -42225207.49 -42225207.29 -42225207.09 0.0303 0.0058

Venus -120319-04-25 01:13 J -42224977.65 -42224977.45 -42224977.25 0.0301 0.0050

Venus -120319-12-10 19:27 J -42224747.89 -42224747.69 -42224747.49 0.0299 0.0041

Venus -120318-07-28 11:46 J -42224518.21 -42224518.01 -42224517.80 0.0296 0.0032

Venus -120317-03-14 02:25 J -42224288.60 -42224288.40 -42224288.19 0.0293 0.0021

Venus -120317-10-29 15:08 J -42224059.08 -42224058.87 -42224058.67 0.0290 0.0012

Venus -120316-06-16 01:41 J -42223829.64 -42223829.43 -42223829.23 0.0287 0.0001

Venus -120315-01-31 10:34 J -42223600.27 -42223600.06 -42223599.86 0.0283 0.0010

Venus -120315-09-17 17:46 J -42223370.97 -42223370.76 -42223370.55 0.0280 0.0019

Venus -120314-05-04 23:32 J -42223141.72 -42223141.52 -42223141.31 0.0277 0.0029

Venus -120314-12-20 03:51 J -42222912.54 -42222912.34 -42222912.13 0.0274 0.0036

Mars -120313-06-12 09:51 J -42222737.37 -42222737.09 -42222736.80 0.0272 0.0024

Venus -120313-08-05 06:58 J -42222683.42 -42222683.21 -42222683.00 0.0271 0.0043

Venus -120312-03-22 08:53 J -42222454.34 -42222454.13 -42222453.92 0.0269 0.0049

Venus -120312-11-06 09:51 J -42222225.30 -42222225.09 -42222224.88 0.0266 0.0055

Mercury -120311-05-20 21:08 J -42222029.62 -42222029.62 -42222029.62 0.0264 0.0264

Venus -120311-06-23 10:20 J -42221996.28 -42221996.07 -42221995.86 0.0264 0.0059

Mercury -120311-08-17 15:37 J -42221940.98 -42221940.85 -42221940.71 0.0264 0.0163

Mercury -120311-11-14 10:20 J -42221852.24 -42221852.07 -42221851.89 0.0263 0.0062

Venus -120310-02-07 10:05 J -42221767.29 -42221767.08 -42221766.87 0.0262 0.0063

Mercury -120310-02-11 05:17 J -42221763.46 -42221763.28 -42221763.10 0.0262 0.0041

Mercury -120310-05-11 00:15 J -42221674.64 -42221674.49 -42221674.33 0.0262 0.0144

Mercury -120310-08-07 19:27 J -42221585.74 -42221585.69 -42221585.63 0.0261 0.0246

Venus -120310-09-24 09:22 J -42221538.31 -42221538.11 -42221537.89 0.0261 0.0066

Venus -120309-05-10 08:39 J -42221309.34 -42221309.14 -42221308.93 0.0260 0.0068

Venus -120309-12-25 07:56 J -42221080.37 -42221080.17 -42221079.96 0.0259 0.0069

Venus -120308-08-11 07:27 J -42220851.40 -42220851.19 -42220850.98 0.0258 0.0069

Venus -120307-03-28 07:13 J -42220622.41 -42220622.20 -42220621.98 0.0258 0.0069

Venus -120307-11-12 07:41 J -42220393.39 -42220393.18 -42220392.97 0.0258 0.0067

Venus -120306-06-29 08:39 J -42220164.35 -42220164.14 -42220163.92 0.0258 0.0065

Venus -120305-02-13 10:34 J -42219935.27 -42219935.06 -42219934.84 0.0259 0.0061

Venus -120305-09-29 13:27 J -42219706.16 -42219705.94 -42219705.73 0.0259 0.0057

Venus -120304-05-16 17:17 J -42219477.00 -42219476.78 -42219476.56 0.0261 0.0053

Venus -120304-12-31 22:34 J -42219247.78 -42219247.56 -42219247.34 0.0262 0.0047

Venus -120303-08-18 05:17 J -42219018.50 -42219018.28 -42219018.06 0.0264 0.0041

Venus -120302-04-04 13:27 J -42218789.16 -42218788.94 -42218788.72 0.0266 0.0034

Venus -120302-11-19 23:03 J -42218559.75 -42218559.54 -42218559.32 0.0268 0.0027

Venus -120301-07-06 10:34 J -42218330.28 -42218330.06 -42218329.84 0.0271 0.0018

Venus -120300-02-20 23:46 J -42218100.73 -42218100.51 -42218100.29 0.0273 0.0010

Venus -120300-10-08 15:08 J -42217871.09 -42217870.87 -42217870.65 0.0276 0.0004

Venus -120299-05-26 07:56 J -42217641.39 -42217641.17 -42217640.95 0.0279 0.0010

Earth -120298-01-07 08:10 J -42217415.34 -42217415.16 -42217414.96 0.0282 0.0180

Moon -120298-01-07 08:25 J -42217415.33 -42217415.15 -42217414.95 0.0282 0.0176 \*

Venus -120298-01-11 02:39 J -42217411.61 -42217411.39 -42217411.17 0.0282 0.0020

Venus -120298-08-28 23:03 J -42217181.76 -42217181.54 -42217181.33 0.0286 0.0031  
 Venus -120297-04-14 20:53 J -42216951.84 -42216951.63 -42216951.41 0.0289 0.0041  
 Mars -120297-05-06 21:51 J -42216929.87 -42216929.59 -42216929.30 0.0289 0.0074  
 Venus -120297-11-30 20:25 J -42216721.86 -42216721.65 -42216721.44 0.0292 0.0050  
 Venus -120296-07-18 21:08 J -42216491.83 -42216491.62 -42216491.41 0.0295 0.0059  
 Venus -120295-03-05 22:34 J -42216261.76 -42216261.56 -42216261.35 0.0298 0.0066  
 Mercury -120295-03-07 16:05 J -42216259.90 -42216259.83 -42216259.76 0.0298 0.0254  
 Mercury -120295-06-04 06:01 J -42216171.37 -42216171.25 -42216171.13 0.0298 0.0141  
 Mercury -120295-08-31 19:41 J -42216082.81 -42216082.68 -42216082.54 0.0299 0.0028  
 Venus -120295-10-22 00:58 J -42216031.67 -42216031.46 -42216031.26 0.0300 0.0072  
 Mercury -120295-11-28 09:22 J -42215994.24 -42215994.11 -42215993.98 0.0300 0.0086  
 Mercury -120294-02-24 23:03 J -42215905.64 -42215905.54 -42215905.44 0.0301 0.0199  
 Venus -120294-06-09 03:22 J -42215801.56 -42215801.36 -42215801.15 0.0302 0.0077  
 Venus -120293-01-25 06:01 J -42215571.45 -42215571.25 -42215571.05 0.0303 0.0079  
 Venus -120293-09-11 08:10 J -42215341.36 -42215341.16 -42215340.96 0.0304 0.0079  
 Venus -120292-04-29 09:37 J -42215111.30 -42215111.10 -42215110.90 0.0304 0.0077  
 Venus -120292-12-15 09:51 J -42214881.28 -42214881.09 -42214880.89 0.0304 0.0073  
 Venus -120291-08-02 09:08 J -42214651.32 -42214651.12 -42214650.92 0.0303 0.0067  
 Venus -120290-03-20 06:44 J -42214421.42 -42214421.22 -42214421.02 0.0302 0.0060  
 Venus -120290-11-05 02:39 J -42214191.59 -42214191.39 -42214191.19 0.0300 0.0051  
 Venus -120289-06-21 20:53 J -42213961.83 -42213961.63 -42213961.43 0.0298 0.0041  
 Venus -120288-02-06 13:13 J -42213732.15 -42213731.95 -42213731.75 0.0295 0.0031  
 Venus -120288-09-24 03:37 J -42213502.55 -42213502.35 -42213502.14 0.0293 0.0021  
 Venus -120287-05-11 16:20 J -42213273.03 -42213272.82 -42213272.62 0.0290 0.0010  
 Venus -120287-12-27 02:53 J -42213043.58 -42213043.38 -42213043.17 0.0286 0.0007  
 Venus -120286-08-13 12:01 J -42212814.21 -42212814.00 -42212813.80 0.0283 0.0011  
 Venus -120285-03-29 19:27 J -42212584.90 -42212584.69 -42212584.49 0.0280 0.0021  
 Earth -120285-07-02 08:39 J -42212490.37 -42212490.14 -42212489.90 0.0279 0.0074  
 Moon -120285-07-02 12:15 J -42212490.22 -42212489.99 -42212489.75 0.0279 0.0064 \*  
 Venus -120285-11-14 01:13 J -42212355.66 -42212355.45 -42212355.25 0.0277 0.0029

Venus -120284-07-01 05:17 J -42212126.48 -42212126.28 -42212126.07 0.0274 0.0037

Venus -120283-02-15 08:25 J -42211897.35 -42211897.15 -42211896.94 0.0271 0.0044

Mars -120283-07-30 17:17 J -42211731.93 -42211731.78 -42211731.59 0.0270 0.0215

Venus -120283-10-02 10:34 J -42211668.27 -42211668.06 -42211667.85 0.0269 0.0050

Venus -120282-05-19 11:46 J -42211439.21 -42211439.01 -42211438.80 0.0267 0.0055

Venus -120281-01-03 12:15 J -42211210.20 -42211209.99 -42211209.78 0.0265 0.0059

Mercury -120281-01-04 14:53 J -42211209.00 -42211208.88 -42211208.76 0.0265 0.0195

Mercury -120281-04-02 09:37 J -42211120.27 -42211120.10 -42211119.93 0.0264 0.0093

Mercury -120281-06-30 04:34 J -42211031.49 -42211031.31 -42211031.13 0.0263 0.0010

Venus -120281-08-19 12:15 J -42210981.20 -42210980.99 -42210980.79 0.0263 0.0063

Mercury -120281-09-26 23:32 J -42210942.69 -42210942.52 -42210942.36 0.0262 0.0112

Mercury -120281-12-24 18:29 J -42210853.82 -42210853.73 -42210853.62 0.0262 0.0215

Venus -120280-04-05 11:32 J -42210752.23 -42210752.02 -42210751.81 0.0261 0.0066

Venus -120280-11-20 10:49 J -42210523.25 -42210523.05 -42210522.84 0.0260 0.0068

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Venus -120276-01-08 11:17 J -42209378.24 -42209378.03 -42209377.81 0.0258 0.0065

Venus -120276-08-25 13:27 J -42209149.15 -42209148.94 -42209148.72 0.0259 0.0062

Venus -120275-04-11 16:34 J -42208920.03 -42208919.81 -42208919.60 0.0259 0.0058

Venus -120275-11-26 20:39 J -42208690.86 -42208690.64 -42208690.42 0.0261 0.0053

Venus -120274-07-14 02:10 J -42208461.63 -42208461.41 -42208461.20 0.0262 0.0047

Venus -120273-02-28 08:53 J -42208232.35 -42208232.13 -42208231.91 0.0264 0.0041

Venus -120273-10-14 17:03 J -42208003.00 -42208002.79 -42208002.56 0.0266 0.0034

Venus -120272-06-01 03:08 J -42207773.59 -42207773.37 -42207773.15 0.0268 0.0025

Venus -120271-01-16 14:39 J -42207544.11 -42207543.89 -42207543.67 0.0270 0.0016

Venus -120271-09-03 04:05 J -42207314.55 -42207314.33 -42207314.11 0.0273 0.0007

Venus -120270-04-20 19:13 J -42207084.92 -42207084.70 -42207084.48 0.0276 0.0003

Venus -120270-12-06 12:01 J -42206855.21 -42206855.00 -42206854.78 0.0279 0.0015

Venus -120269-07-23 06:44 J -42206625.43 -42206625.22 -42206625.00 0.0282 0.0024  
 Earth -120268-01-14 03:51 J -42206450.36 -42206450.34 -42206450.31 0.0285 0.0283  
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 Mercury -120266-07-25 16:49 J -42205527.82 -42205527.80 -42205527.78 0.0297 0.0292  
 Venus -120266-09-16 02:25 J -42205475.60 -42205475.40 -42205475.19 0.0298 0.0068  
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 Mercury -120265-01-18 20:39 J -42205350.78 -42205350.64 -42205350.51 0.0299 0.0066  
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 Venus -120265-05-03 04:34 J -42205245.51 -42205245.31 -42205245.11 0.0300 0.0073  
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 Mercury -120265-10-10 13:13 J -42205085.00 -42205084.95 -42205084.89 0.0301 0.0273  
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 Venus -120259-01-01 23:17 J -42203175.73 -42203175.53 -42203175.33 0.0298 0.0040  
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 Venus -120256-10-09 20:39 J -42201798.84 -42201798.64 -42201798.43 0.0280 0.0024



Venus -120255-05-27 02:39 J -42201569.60 -42201569.39 -42201569.19 0.0277 0.0032  
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 Venus -120252-07-15 13:41 J -42200424.14 -42200423.93 -42200423.72 0.0264 0.0063  
 Mercury -120252-08-20 08:25 J -42200388.30 -42200388.15 -42200387.99 0.0264 0.0129  
 Mercury -120252-11-17 03:22 J -42200299.54 -42200299.36 -42200299.18 0.0263 0.0027  
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 Mercury -120251-05-13 17:32 J -42200121.90 -42200121.77 -42200121.64 0.0262 0.0179  
 Venus -120251-10-16 13:13 J -42199966.16 -42199965.95 -42199965.74 0.0261 0.0069  
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Venus -120240-06-17 16:05 J -42196069.05 -42196068.83 -42196068.62 0.0280 0.0015  
 Moon -120239-01-08 08:39 J -42195864.36 -42195864.14 -42195863.91 0.0283 0.0089  
 Earth -120239-01-08 10:05 J -42195864.31 -42195864.08 -42195863.85 0.0283 0.0102 \*  
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 Venus -120239-09-20 07:13 J -42195609.41 -42195609.20 -42195608.98 0.0286 0.0036  
 Venus -120238-05-08 05:17 J -42195379.49 -42195379.28 -42195379.06 0.0289 0.0045  
 Venus -120238-12-24 04:49 J -42195149.51 -42195149.30 -42195149.09 0.0292 0.0055  
 Venus -120237-08-10 05:32 J -42194919.48 -42194919.27 -42194919.07 0.0295 0.0063  
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 Venus -120236-03-28 06:44 J -42194689.42 -42194689.22 -42194689.01 0.0298 0.0071  
 Mercury -120236-06-06 21:37 J -42194618.73 -42194618.60 -42194618.47 0.0299 0.0104  
 Mercury -120236-09-03 11:17 J -42194530.16 -42194530.03 -42194529.89 0.0299 0.0010  
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 Mercury -120236-12-01 00:58 J -42194441.58 -42194441.46 -42194441.34 0.0300 0.0122  
 Mercury -120235-02-27 14:25 J -42194352.98 -42194352.90 -42194352.81 0.0301 0.0234  
 Venus -120235-07-01 11:32 J -42194229.22 -42194229.02 -42194228.82 0.0302 0.0080  
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 Venus -120232-08-24 15:37 J -42193079.04 -42193078.85 -42193078.65 0.0303 0.0067  
 Venus -120231-04-11 12:58 J -42192849.16 -42192848.96 -42192848.76 0.0302 0.0059  
 Venus -120231-11-27 08:25 J -42192619.35 -42192619.15 -42192618.94 0.0300 0.0050  
 Venus -120230-07-15 02:25 J -42192389.60 -42192389.40 -42192389.20 0.0297 0.0039  
 Venus -120229-02-29 18:29 J -42192159.94 -42192159.73 -42192159.53 0.0295 0.0028  
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 Venus -120228-06-02 20:53 J -42191700.84 -42191700.63 -42191700.43 0.0289 0.0008  
 Venus -120227-01-18 07:13 J -42191471.40 -42191471.20 -42191470.99 0.0286 0.0006  
 Venus -120227-09-04 16:05 J -42191242.04 -42191241.83 -42191241.62 0.0283 0.0015  
 Venus -120226-04-21 23:17 J -42191012.73 -42191012.53 -42191012.32 0.0280 0.0025

Earth	-120226-07-04 06:01 J	-42190939.45	-42190939.25	-42190939.02	0.0279	0.0140
Moon	-120226-07-04 09:08 J	-42190939.32	-42190939.12	-42190938.89	0.0279	0.0126 *
Venus	-120226-12-07 05:03 J	-42190783.50	-42190783.29	-42190783.08	0.0277	0.0033
Venus	-120225-07-23 09:22 J	-42190554.32	-42190554.11	-42190553.91	0.0274	0.0041
Mars	-120225-11-05 08:53 J	-42190449.42	-42190449.13	-42190448.85	0.0273	0.0033
Venus	-120224-03-09 12:15 J	-42190325.19	-42190324.99	-42190324.78	0.0271	0.0048
Venus	-120224-10-24 14:25 J	-42190096.11	-42190095.90	-42190095.69	0.0269	0.0054
Venus	-120223-06-10 15:51 J	-42189867.05	-42189866.84	-42189866.63	0.0266	0.0059
Mercury	-120223-10-10 13:13 J	-42189744.96	-42189744.95	-42189744.91	0.0265	0.0262
Mercury	-120222-01-07 07:56 J	-42189656.30	-42189656.17	-42189656.02	0.0265	0.0160
Venus	-120222-01-25 16:20 J	-42189638.02	-42189637.82	-42189637.61	0.0264	0.0063
Mercury	-120222-04-06 02:53 J	-42189567.55	-42189567.38	-42189567.20	0.0264	0.0057
Mercury	-120222-07-03 21:51 J	-42189478.77	-42189478.59	-42189478.41	0.0263	0.0046
Venus	-120222-09-11 16:20 J	-42189409.02	-42189408.82	-42189408.61	0.0263	0.0067
Mercury	-120222-09-30 16:49 J	-42189389.94	-42189389.80	-42189389.64	0.0263	0.0149
Mercury	-120222-12-28 12:15 J	-42189301.04	-42189300.99	-42189300.95	0.0262	0.0252
Venus	-120221-04-27 16:05 J	-42189180.04	-42189179.83	-42189179.62	0.0261	0.0069
Venus	-120221-12-12 15:37 J	-42188951.06	-42188950.85	-42188950.64	0.0260	0.0071
Venus	-120220-07-29 15:22 J	-42188722.07	-42188721.86	-42188721.65	0.0259	0.0072
Venus	-120219-03-15 14:53 J	-42188493.08	-42188492.88	-42188492.66	0.0258	0.0072
Venus	-120219-10-30 15:08 J	-42188264.07	-42188263.87	-42188263.65	0.0258	0.0071
Venus	-120218-06-16 16:05 J	-42188035.04	-42188034.83	-42188034.62	0.0258	0.0069
Venus	-120217-01-31 17:32 J	-42187805.98	-42187805.77	-42187805.56	0.0258	0.0066
Venus	-120217-09-16 19:41 J	-42187576.89	-42187576.68	-42187576.46	0.0259	0.0062
Venus	-120216-05-03 23:03 J	-42187347.75	-42187347.54	-42187347.32	0.0260	0.0058
Venus	-120216-12-19 03:37 J	-42187118.57	-42187118.35	-42187118.13	0.0261	0.0052
Venus	-120215-08-05 09:22 J	-42186889.32	-42186889.11	-42186888.89	0.0262	0.0046
Venus	-120214-03-22 16:34 J	-42186660.02	-42186659.81	-42186659.59	0.0264	0.0039
Venus	-120214-11-07 01:13 J	-42186430.66	-42186430.45	-42186430.23	0.0266	0.0031
Venus	-120213-06-23 11:32 J	-42186201.24	-42186201.02	-42186200.80	0.0268	0.0022

Venus -120212-02-07 23:17 J -42185971.75 -42185971.53 -42185971.31 0.0271 0.0014  
 Venus -120212-09-25 13:13 J -42185742.17 -42185741.95 -42185741.73 0.0274 0.0004  
 Venus -120211-05-13 04:34 J -42185512.53 -42185512.31 -42185512.09 0.0276 0.0007  
 Venus -120211-12-28 21:37 J -42185282.81 -42185282.60 -42185282.38 0.0280 0.0018  
 Venus -120210-08-15 16:34 J -42185053.03 -42185052.81 -42185052.60 0.0283 0.0029  
 Venus -120209-04-01 12:58 J -42184823.17 -42184822.96 -42184822.74 0.0286 0.0039  
 Mars -120209-09-30 03:37 J -42184641.64 -42184641.35 -42184641.06 0.0288 0.0062  
 Venus -120209-11-17 11:03 J -42184593.25 -42184593.04 -42184592.82 0.0289 0.0049  
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 Venus -120207-02-20 11:03 J -42184133.25 -42184133.04 -42184132.84 0.0295 0.0066  
 Mercury -120207-07-28 08:53 J -42183975.20 -42183975.13 -42183975.05 0.0297 0.0252  
 Venus -120207-10-08 12:15 J -42183903.19 -42183902.99 -42183902.78 0.0298 0.0073  
 Mercury -120207-10-24 22:49 J -42183886.67 -42183886.55 -42183886.43 0.0298 0.0139  
 Mercury -120206-01-21 12:29 J -42183798.11 -42183797.98 -42183797.84 0.0299 0.0028  
 Mercury -120206-04-20 02:10 J -42183709.54 -42183709.41 -42183709.28 0.0300 0.0087  
 Venus -120206-05-26 14:10 J -42183673.11 -42183672.91 -42183672.71 0.0300 0.0078  
 Mercury -120206-07-17 15:51 J -42183620.94 -42183620.84 -42183620.74 0.0301 0.0199  
 Venus -120205-01-11 16:20 J -42183443.01 -42183442.82 -42183442.61 0.0302 0.0081  
 Venus -120205-08-28 18:29 J -42183212.93 -42183212.73 -42183212.53 0.0303 0.0082  
 Venus -120204-04-15 20:10 J -42182982.86 -42182982.66 -42182982.46 0.0304 0.0081  
 Venus -120204-12-01 21:08 J -42182752.82 -42182752.62 -42182752.42 0.0305 0.0078  
 Venus -120203-07-19 20:53 J -42182522.82 -42182522.63 -42182522.43 0.0304 0.0073  
 Venus -120202-03-06 19:41 J -42182292.88 -42182292.68 -42182292.48 0.0303 0.0066  
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 Venus -120200-01-24 05:46 J -42181603.46 -42181603.26 -42181603.05 0.0298 0.0037  
 Venus -120200-09-10 21:37 J -42181373.80 -42181373.60 -42181373.40 0.0295 0.0026  
 Venus -120199-04-28 11:32 J -42181144.22 -42181144.02 -42181143.81 0.0292 0.0016  
 Venus -120199-12-13 23:46 J -42180914.72 -42180914.51 -42180914.31 0.0289 0.0005  
 Venus -120198-07-31 09:51 J -42180685.29 -42180685.09 -42180684.88 0.0286 0.0010

Venus -120197-03-16 18:29 J -42180455.93 -42180455.73 -42180455.52 0.0283 0.0019  
 Moon -120197-06-27 18:29 J -42180352.87 -42180352.73 -42180352.58 0.0281 0.0230  
 Earth -120197-06-27 18:58 J -42180352.83 -42180352.71 -42180352.55 0.0281 0.0230 \*  
 Venus -120197-11-01 01:41 J -42180226.64 -42180226.43 -42180226.23 0.0280 0.0028  
 Venus -120196-06-18 07:13 J -42179997.41 -42179997.20 -42179997.00 0.0276 0.0037  
 Venus -120195-02-02 11:17 J -42179768.23 -42179768.03 -42179767.82 0.0274 0.0045  
 Venus -120195-09-19 14:25 J -42179539.10 -42179538.90 -42179538.69 0.0271 0.0052  
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 Venus -120194-12-21 18:01 J -42179080.96 -42179080.75 -42179080.55 0.0266 0.0063  
 Mercury -120193-05-26 07:27 J -42178924.31 -42178924.19 -42178924.07 0.0265 0.0193  
 Venus -120193-08-06 18:29 J -42178851.94 -42178851.73 -42178851.52 0.0264 0.0067  
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 Mercury -120192-02-16 16:05 J -42178657.99 -42178657.83 -42178657.66 0.0263 0.0115  
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 Mercury -120104-04-11 16:05 J -42146462.01 -42146461.83 -42146461.65 0.0264 0.0029  
 Mercury -120104-07-09 11:03 J -42146373.19 -42146373.04 -42146372.88 0.0263 0.0132  
 Mercury -120104-10-06 06:29 J -42146284.31 -42146284.23 -42146284.15 0.0263 0.0236  
 Venus -120104-10-26 06:01 J -42146264.45 -42146264.25 -42146264.04 0.0262 0.0075  
 Venus -120103-06-12 06:15 J -42146035.45 -42146035.24 -42146035.03 0.0261 0.0077  
 Venus -120102-01-27 06:15 J -42145806.45 -42145806.24 -42145806.03 0.0260 0.0077  
 Venus -120102-09-13 06:15 J -42145577.45 -42145577.24 -42145577.03 0.0259 0.0077  
 Venus -120101-04-29 06:29 J -42145348.44 -42145348.23 -42145348.02 0.0259 0.0076  
 Venus -120101-12-14 07:13 J -42145119.41 -42145119.20 -42145118.99 0.0259 0.0074  
 Venus -120100-07-31 08:53 J -42144890.34 -42144890.13 -42144889.92 0.0259 0.0071  
 Venus -120099-03-17 11:03 J -42144661.25 -42144661.04 -42144660.82 0.0259 0.0067

Venus -120099-11-01 14:10 J -42144432.12 -42144431.91 -42144431.69 0.0260 0.0062  
 Venus -120098-06-18 18:15 J -42144202.95 -42144202.74 -42144202.52 0.0261 0.0056  
 Venus -120097-02-02 23:32 J -42143973.73 -42143973.52 -42143973.29 0.0262 0.0050  
 Venus -120097-09-19 06:29 J -42143744.45 -42143744.23 -42143744.01 0.0264 0.0042  
 Venus -120096-05-06 14:39 J -42143515.11 -42143514.89 -42143514.67 0.0265 0.0034  
 Venus -120096-12-22 00:15 J -42143285.71 -42143285.49 -42143285.27 0.0267 0.0024  
 Venus -120095-08-08 11:32 J -42143056.24 -42143056.02 -42143055.80 0.0270 0.0014  
 Venus -120094-03-26 00:29 J -42142826.70 -42142826.48 -42142826.26 0.0272 0.0005  
 Venus -120094-11-10 15:08 J -42142597.09 -42142596.87 -42142596.66 0.0275 0.0009  
 Venus -120093-06-27 07:13 J -42142367.42 -42142367.20 -42142366.98 0.0278 0.0019  
 Earth -120092-01-05 17:03 J -42142174.83 -42142174.79 -42142174.73 0.0280 0.0274  
 Venus -120092-02-12 00:58 J -42142137.67 -42142137.46 -42142137.24 0.0281 0.0030  
 Venus -120092-09-29 20:39 J -42141907.85 -42141907.64 -42141907.43 0.0284 0.0041  
 Venus -120091-05-17 17:46 J -42141677.97 -42141677.76 -42141677.55 0.0287 0.0052  
 Venus -120090-01-02 16:05 J -42141448.03 -42141447.83 -42141447.62 0.0290 0.0062  
 Mars -120090-04-18 03:22 J -42141342.54 -42141342.36 -42141342.16 0.0292 0.0226  
 Venus -120090-08-20 15:51 J -42141218.05 -42141217.84 -42141217.64 0.0293 0.0071  
 Venus -120089-04-06 16:20 J -42140988.02 -42140987.82 -42140987.61 0.0296 0.0079  
 Mercury -120089-05-06 06:15 J -42140958.30 -42140958.24 -42140958.18 0.0296 0.0261  
 Mercury -120089-08-02 19:56 J -42140869.78 -42140869.67 -42140869.55 0.0297 0.0150  
 Mercury -120089-10-30 09:51 J -42140781.23 -42140781.09 -42140780.96 0.0298 0.0038  
 Venus -120089-11-22 17:46 J -42140757.96 -42140757.76 -42140757.55 0.0298 0.0084  
 Mercury -120088-01-26 23:32 J -42140692.65 -42140692.52 -42140692.39 0.0299 0.0074  
 Mercury -120088-04-25 12:58 J -42140604.06 -42140603.96 -42140603.85 0.0300 0.0186  
 Venus -120088-07-10 19:41 J -42140527.88 -42140527.68 -42140527.48 0.0301 0.0088  
 Mercury -120088-07-23 02:10 J -42140515.42 -42140515.41 -42140515.38 0.0301 0.0297  
 Venus -120087-02-25 21:22 J -42140297.80 -42140297.61 -42140297.41 0.0302 0.0090  
 Venus -120087-10-13 23:03 J -42140067.74 -42140067.54 -42140067.34 0.0303 0.0088  
 Venus -120086-06-01 00:01 J -42139837.69 -42139837.50 -42139837.30 0.0304 0.0086  
 Venus -120085-01-17 00:15 J -42139607.68 -42139607.49 -42139607.29 0.0304 0.0080

Venus	-120085-09-02 23:17 J	-42139377.72	-42139377.53	-42139377.33	0.0303	0.0073
Venus	-120084-04-20 20:53 J	-42139147.82	-42139147.63	-42139147.43	0.0302	0.0064
Venus	-120084-12-06 17:03 J	-42138917.99	-42138917.79	-42138917.59	0.0301	0.0053
Venus	-120083-07-24 11:32 J	-42138688.22	-42138688.02	-42138687.82	0.0299	0.0042
Venus	-120082-03-11 04:20 J	-42138458.53	-42138458.32	-42138458.12	0.0296	0.0031
Venus	-120082-10-26 18:58 J	-42138228.91	-42138228.71	-42138228.50	0.0294	0.0018
Venus	-120081-06-12 07:56 J	-42137999.38	-42137999.17	-42137998.97	0.0291	0.0006
Venus	-120080-01-27 18:58 J	-42137769.91	-42137769.71	-42137769.50	0.0288	0.0008
Venus	-120080-09-14 04:34 J	-42137540.52	-42137540.31	-42137540.11	0.0284	0.0018
Venus	-120079-05-01 12:29 J	-42137311.18	-42137310.98	-42137310.77	0.0281	0.0029
Earth	-120079-07-01 06:15 J	-42137250.47	-42137250.24	-42137249.99	0.0281	0.0056
Moon	-120079-07-01 06:29 J	-42137250.47	-42137250.23	-42137249.98	0.0281	0.0046 *
Venus	-120079-12-16 18:58 J	-42137081.92	-42137081.71	-42137081.51	0.0278	0.0038
Mars	-120078-07-08 11:03 J	-42136878.28	-42136878.04	-42136877.78	0.0276	0.0145
Venus	-120078-08-02 23:46 J	-42136852.71	-42136852.51	-42136852.30	0.0275	0.0048
Venus	-120077-03-19 03:37 J	-42136623.55	-42136623.35	-42136623.14	0.0273	0.0055
Venus	-120077-11-03 06:29 J	-42136394.44	-42136394.23	-42136394.03	0.0270	0.0062
Venus	-120076-06-20 08:25 J	-42136165.35	-42136165.15	-42136164.94	0.0268	0.0068
Venus	-120075-02-04 09:37 J	-42135936.30	-42135936.10	-42135935.89	0.0265	0.0073
Mercury	-120075-03-05 02:25 J	-42135907.50	-42135907.40	-42135907.28	0.0265	0.0205
Mercury	-120075-06-01 21:22 J	-42135818.77	-42135818.61	-42135818.44	0.0264	0.0103
Mercury	-120075-08-29 16:20 J	-42135730.00	-42135729.82	-42135729.64	0.0264	0.0001
Venus	-120075-09-21 10:20 J	-42135707.27	-42135707.07	-42135706.86	0.0264	0.0076
Mercury	-120075-11-26 11:17 J	-42135641.19	-42135641.03	-42135640.86	0.0263	0.0104
Mercury	-120074-02-23 06:44 J	-42135552.33	-42135552.22	-42135552.11	0.0262	0.0207
Venus	-120074-05-08 10:34 J	-42135478.26	-42135478.06	-42135477.85	0.0262	0.0079
Venus	-120074-12-23 10:34 J	-42135249.26	-42135249.06	-42135248.85	0.0261	0.0081
Venus	-120073-08-08 10:49 J	-42135020.26	-42135020.05	-42135019.84	0.0260	0.0081
Venus	-120072-03-25 10:49 J	-42134791.25	-42134791.05	-42134790.84	0.0259	0.0080
Venus	-120072-11-09 11:17 J	-42134562.23	-42134562.03	-42134561.82	0.0259	0.0079

Venus -120071-06-26 12:29 J -42134333.19 -42134332.98 -42134332.77 0.0258 0.0076  
 Venus -120070-02-10 13:56 J -42134104.12 -42134103.92 -42134103.70 0.0259 0.0073  
 Venus -120070-09-27 16:20 J -42133875.03 -42133874.82 -42133874.60 0.0259 0.0068  
 Venus -120069-05-13 19:41 J -42133645.89 -42133645.68 -42133645.46 0.0260 0.0062  
 Venus -120069-12-29 00:15 J -42133416.71 -42133416.49 -42133416.28 0.0261 0.0056  
 Venus -120068-08-15 06:01 J -42133187.47 -42133187.25 -42133187.03 0.0262 0.0049  
 Venus -120067-04-01 12:58 J -42132958.18 -42132957.96 -42132957.74 0.0264 0.0041  
 Venus -120067-11-16 21:08 J -42132728.83 -42132728.62 -42132728.40 0.0266 0.0032  
 Venus -120066-07-04 06:58 J -42132499.43 -42132499.21 -42132498.99 0.0268 0.0023  
 Venus -120065-02-18 18:29 J -42132269.95 -42132269.73 -42132269.51 0.0270 0.0012  
 Venus -120065-10-05 07:41 J -42132040.40 -42132040.18 -42132039.96 0.0273 0.0005  
 Venus -120064-05-22 22:34 J -42131810.78 -42131810.56 -42131810.34 0.0276 0.0009  
 Venus -120063-01-07 15:08 J -42131581.09 -42131580.87 -42131580.65 0.0279 0.0020  
 Venus -120063-08-25 09:08 J -42131351.33 -42131351.12 -42131350.90 0.0282 0.0032  
 Moon -120062-01-13 14:39 J -42131210.06 -42131209.89 -42131209.71 0.0284 0.0196  
 Earth -120062-01-13 17:46 J -42131209.92 -42131209.76 -42131209.58 0.0284 0.0200 \*  
 Venus -120062-04-12 05:03 J -42131121.50 -42131121.29 -42131121.08 0.0285 0.0043  
 Mars -120062-05-31 22:34 J -42131071.68 -42131071.56 -42131071.40 0.0286 0.0251  
 Venus -120062-11-28 02:25 J -42130891.61 -42130891.40 -42130891.19 0.0288 0.0054  
 Venus -120061-07-15 00:58 J -42130661.67 -42130661.46 -42130661.25 0.0291 0.0064  
 Venus -120060-03-02 00:44 J -42130431.67 -42130431.47 -42130431.26 0.0294 0.0073  
 Mercury -120060-09-23 08:25 J -42130226.17 -42130226.15 -42130226.11 0.0296 0.0288  
 Venus -120060-10-18 01:27 J -42130201.64 -42130201.44 -42130201.23 0.0297 0.0081  
 Mercury -120060-12-20 22:20 J -42130137.67 -42130137.57 -42130137.46 0.0297 0.0176  
 Mercury -120059-03-19 12:15 J -42130049.12 -42130048.99 -42130048.86 0.0298 0.0064  
 Venus -120059-06-05 02:53 J -42129971.57 -42129971.38 -42129971.17 0.0299 0.0086  
 Mercury -120059-06-16 01:56 J -42129960.56 -42129960.42 -42129960.29 0.0299 0.0048  
 Mercury -120059-09-12 15:22 J -42129871.97 -42129871.86 -42129871.74 0.0300 0.0159  
 Mercury -120059-12-10 04:49 J -42129783.35 -42129783.30 -42129783.24 0.0301 0.0270  
 Venus -120058-01-21 04:49 J -42129741.49 -42129741.30 -42129741.10 0.0301 0.0090

Venus -120058-09-08 06:44 J -42129511.42 -42129511.22 -42129511.02 0.0302 0.0091  
 Venus -120057-04-25 08:10 J -42129281.35 -42129281.16 -42129280.96 0.0303 0.0090  
 Venus -120057-12-11 09:08 J -42129051.31 -42129051.12 -42129050.92 0.0304 0.0087  
 Venus -120056-07-29 09:22 J -42128821.31 -42128821.11 -42128820.91 0.0304 0.0081  
 Venus -120055-03-16 08:10 J -42128591.35 -42128591.16 -42128590.96 0.0303 0.0074  
 Venus -120055-11-01 05:46 J -42128361.46 -42128361.26 -42128361.06 0.0302 0.0064  
 Venus -120054-06-19 01:27 J -42128131.64 -42128131.44 -42128131.24 0.0300 0.0053  
 Venus -120053-02-03 19:41 J -42127901.88 -42127901.68 -42127901.48 0.0298 0.0041  
 Venus -120053-09-20 11:46 J -42127672.21 -42127672.01 -42127671.80 0.0295 0.0029  
 Venus -120052-05-08 02:25 J -42127442.61 -42127442.40 -42127442.20 0.0293 0.0017  
 Venus -120052-12-23 14:53 J -42127213.08 -42127212.88 -42127212.68 0.0290 0.0003  
 Venus -120051-08-10 01:41 J -42126983.63 -42126983.43 -42126983.22 0.0287 0.0010  
 Venus -120050-03-27 11:03 J -42126754.25 -42126754.04 -42126753.83 0.0284 0.0021  
 Venus -120050-11-11 18:44 J -42126524.93 -42126524.72 -42126524.52 0.0281 0.0032  
 Venus -120049-06-28 00:44 J -42126295.67 -42126295.47 -42126295.26 0.0278 0.0042  
 Venus -120048-02-12 05:32 J -42126066.47 -42126066.27 -42126066.06 0.0275 0.0051  
 Mars -120048-08-25 22:20 J -42125871.85 -42125871.57 -42125871.29 0.0273 0.0063  
 Venus -120048-09-29 09:22 J -42125837.31 -42125837.11 -42125836.90 0.0272 0.0058  
 Venus -120047-05-16 12:15 J -42125608.19 -42125607.99 -42125607.78 0.0270 0.0065  
 Venus -120047-12-31 13:56 J -42125379.12 -42125378.92 -42125378.71 0.0267 0.0071  
 Mercury -120046-07-23 03:22 J -42125175.44 -42125175.36 -42125175.27 0.0266 0.0229  
 Venus -120046-08-17 15:08 J -42125150.07 -42125149.87 -42125149.66 0.0265 0.0075  
 Mercury -120046-10-19 22:05 J -42125086.73 -42125086.58 -42125086.42 0.0265 0.0127  
 Mercury -120045-01-16 17:03 J -42124997.97 -42124997.79 -42124997.61 0.0264 0.0024  
 Venus -120045-04-02 15:37 J -42124921.05 -42124920.85 -42124920.64 0.0264 0.0078  
 Mercury -120045-04-14 12:01 J -42124909.17 -42124909.00 -42124908.82 0.0264 0.0080  
 Mercury -120045-07-12 07:13 J -42124820.32 -42124820.20 -42124820.06 0.0263 0.0183  
 Venus -120045-11-17 15:51 J -42124692.04 -42124691.84 -42124691.63 0.0262 0.0080  
 Venus -120044-07-04 16:20 J -42124463.03 -42124462.82 -42124462.62 0.0261 0.0081  
 Venus -120043-02-18 16:20 J -42124234.02 -42124233.82 -42124233.61 0.0260 0.0081

Venus	-120043-10-05 16:34 J	-42124005.02	-42124004.81	-42124004.60	0.0259	0.0080
Venus	-120042-05-22 17:03 J	-42123776.00	-42123775.79	-42123775.58	0.0259	0.0079
Venus	-120041-01-06 18:01 J	-42123546.95	-42123546.75	-42123546.53	0.0259	0.0076
Venus	-120041-08-22 19:56 J	-42123317.88	-42123317.67	-42123317.46	0.0259	0.0072
Venus	-120040-04-08 22:34 J	-42123088.77	-42123088.56	-42123088.35	0.0260	0.0068
Venus	-120040-11-24 01:56 J	-42122859.63	-42122859.42	-42122859.20	0.0260	0.0062
Venus	-120039-07-11 06:44 J	-42122630.44	-42122630.22	-42122630.01	0.0261	0.0055
Venus	-120038-02-25 12:29 J	-42122401.19	-42122400.98	-42122400.76	0.0263	0.0048
Venus	-120038-10-12 19:41 J	-42122171.89	-42122171.68	-42122171.46	0.0264	0.0040
Venus	-120037-05-29 04:20 J	-42121942.53	-42121942.32	-42121942.09	0.0266	0.0031
Venus	-120036-01-13 14:39 J	-42121713.11	-42121712.89	-42121712.67	0.0268	0.0020
Venus	-120036-08-31 02:39 J	-42121483.61	-42121483.39	-42121483.17	0.0271	0.0009
Venus	-120035-04-17 16:05 J	-42121254.05	-42121253.83	-42121253.61	0.0273	0.0005
Venus	-120035-12-03 07:13 J	-42121024.41	-42121024.20	-42121023.98	0.0276	0.0015
Venus	-120034-07-21 00:01 J	-42120794.71	-42120794.50	-42120794.28	0.0279	0.0025
Earth	-120033-01-08 09:22 J	-42120623.31	-42120623.11	-42120622.91	0.0281	0.0161
Moon	-120033-01-08 12:58 J	-42120623.16	-42120622.96	-42120622.75	0.0281	0.0150 *
Venus	-120033-03-06 18:29 J	-42120564.95	-42120564.73	-42120564.52	0.0282	0.0037
Venus	-120033-10-22 14:39 J	-42120335.10	-42120334.89	-42120334.68	0.0285	0.0048
Venus	-120032-06-09 12:01 J	-42120105.21	-42120105.00	-42120104.79	0.0288	0.0059
Mars	-120032-07-22 06:29 J	-42120062.53	-42120062.23	-42120061.93	0.0289	0.0006
Venus	-120031-01-25 10:49 J	-42119875.25	-42119875.05	-42119874.84	0.0291	0.0069
Venus	-120031-09-12 10:49 J	-42119645.26	-42119645.05	-42119644.85	0.0294	0.0078
Venus	-120030-04-30 11:32 J	-42119415.22	-42119415.02	-42119414.82	0.0297	0.0085
Mercury	-120030-05-10 00:58 J	-42119405.56	-42119405.46	-42119405.36	0.0297	0.0201
Mercury	-120030-08-06 14:53 J	-42119317.01	-42119316.88	-42119316.75	0.0298	0.0090
Mercury	-120030-11-03 04:34 J	-42119228.45	-42119228.31	-42119228.18	0.0299	0.0022
Venus	-120030-12-16 13:13 J	-42119185.15	-42119184.95	-42119184.75	0.0299	0.0090
Mercury	-120029-01-30 18:01 J	-42119139.86	-42119139.75	-42119139.62	0.0299	0.0134
Mercury	-120029-04-28 07:41 J	-42119051.26	-42119051.18	-42119051.11	0.0300	0.0245



Venus	-120029-08-02 14:53 J	-42118955.08	-42118954.88	-42118954.68	0.0301	0.0093
Venus	-120028-03-20 16:34 J	-42118725.00	-42118724.81	-42118724.61	0.0302	0.0094
Venus	-120028-11-05 18:01 J	-42118494.95	-42118494.75	-42118494.55	0.0303	0.0092
Venus	-120027-06-23 18:44 J	-42118264.91	-42118264.72	-42118264.52	0.0304	0.0088
Venus	-120026-02-08 18:29 J	-42118034.92	-42118034.73	-42118034.53	0.0304	0.0082
Venus	-120026-09-26 17:17 J	-42117804.98	-42117804.78	-42117804.58	0.0303	0.0073
Venus	-120025-05-13 14:25 J	-42117575.10	-42117574.90	-42117574.70	0.0302	0.0063
Venus	-120025-12-29 09:51 J	-42117345.29	-42117345.09	-42117344.89	0.0300	0.0051
Venus	-120024-08-16 03:37 J	-42117115.55	-42117115.35	-42117115.15	0.0298	0.0039
Venus	-120023-04-02 19:56 J	-42116885.88	-42116885.67	-42116885.47	0.0295	0.0027
Venus	-120023-11-18 10:05 J	-42116656.29	-42116656.08	-42116655.88	0.0293	0.0015
Venus	-120022-07-05 22:20 J	-42116426.78	-42116426.57	-42116426.37	0.0290	0.0002
Venus	-120021-02-20 08:53 J	-42116197.34	-42116197.13	-42116196.93	0.0287	0.0012
Venus	-120021-10-06 17:46 J	-42115967.97	-42115967.76	-42115967.55	0.0284	0.0024
Venus	-120020-05-24 01:13 J	-42115738.66	-42115738.45	-42115738.24	0.0280	0.0035
Earth	-120020-07-02 18:29 J	-42115698.96	-42115698.73	-42115698.49	0.0280	0.0049
Moon	-120020-07-02 20:10 J	-42115698.90	-42115698.66	-42115698.40	0.0280	0.0037 *
Venus	-120019-01-08 07:13 J	-42115509.41	-42115509.20	-42115509.00	0.0277	0.0045
Venus	-120019-08-25 11:46 J	-42115280.22	-42115280.01	-42115279.81	0.0275	0.0054
Venus	-120018-04-11 15:08 J	-42115051.07	-42115050.87	-42115050.66	0.0272	0.0062
Mars	-120018-10-13 21:22 J	-42114865.69	-42114865.61	-42114865.51	0.0270	0.0255
Venus	-120018-11-26 17:46 J	-42114821.97	-42114821.76	-42114821.56	0.0269	0.0068
Venus	-120017-07-12 19:27 J	-42114592.90	-42114592.69	-42114592.49	0.0267	0.0074
Mercury	-120017-12-09 04:05 J	-42114443.37	-42114443.33	-42114443.27	0.0266	0.0255
Venus	-120016-02-26 20:25 J	-42114363.85	-42114363.65	-42114363.44	0.0265	0.0078
Mercury	-120016-03-07 22:49 J	-42114354.69	-42114354.55	-42114354.40	0.0265	0.0153
Mercury	-120016-06-04 17:46 J	-42114265.93	-42114265.76	-42114265.58	0.0264	0.0050
Mercury	-120016-09-01 12:44 J	-42114177.14	-42114176.97	-42114176.79	0.0264	0.0053
Venus	-120016-10-13 21:08 J	-42114134.83	-42114134.62	-42114134.42	0.0263	0.0082
Mercury	-120016-11-29 07:56 J	-42114088.31	-42114088.17	-42114088.02	0.0263	0.0156

Mercury -120015-02-26 03:08 J -42113999.38 -42113999.37 -42113999.34 0.0262 0.0260

Venus -120015-05-30 21:22 J -42113905.81 -42113905.61 -42113905.40 0.0262 0.0084

Venus -120014-01-14 21:37 J -42113676.80 -42113676.60 -42113676.40 0.0261 0.0085

Venus -120014-08-31 21:37 J -42113447.80 -42113447.60 -42113447.39 0.0260 0.0085

Venus -120013-04-16 22:05 J -42113218.79 -42113218.58 -42113218.38 0.0259 0.0083

Venus -120013-12-01 22:34 J -42112989.76 -42112989.56 -42112989.35 0.0259 0.0081

Venus -120012-07-19 00:01 J -42112760.71 -42112760.50 -42112760.29 0.0259 0.0078

Venus -120011-03-05 01:56 J -42112531.63 -42112531.42 -42112531.20 0.0259 0.0074

Venus -120011-10-20 04:49 J -42112302.51 -42112302.30 -42112302.09 0.0259 0.0068

Venus -120010-06-06 08:25 J -42112073.36 -42112073.15 -42112072.93 0.0260 0.0062

Venus -120009-01-21 13:13 J -42111844.16 -42111843.95 -42111843.73 0.0261 0.0055

Venus -120009-09-06 19:41 J -42111614.90 -42111614.68 -42111614.47 0.0263 0.0047

Venus -120008-04-24 03:08 J -42111385.59 -42111385.37 -42111385.15 0.0265 0.0038

Venus -120008-12-09 12:01 J -42111156.22 -42111156.00 -42111155.78 0.0267 0.0029

Venus -120007-07-26 22:34 J -42110926.78 -42110926.56 -42110926.34 0.0269 0.0019

Venus -120006-03-13 10:34 J -42110697.28 -42110697.06 -42110696.84 0.0271 0.0008

Venus -120006-10-29 00:29 J -42110467.70 -42110467.48 -42110467.26 0.0274 0.0006

Venus -120005-06-14 15:51 J -42110238.06 -42110237.84 -42110237.62 0.0277 0.0015

Venus -120004-01-30 08:53 J -42110008.35 -42110008.13 -42110007.91 0.0280 0.0027

Venus -120004-09-17 03:37 J -42109778.56 -42109778.35 -42109778.13 0.0283 0.0039

Venus -120003-05-05 00:01 J -42109548.71 -42109548.50 -42109548.29 0.0286 0.0050

Venus -120003-12-20 21:51 J -42109318.80 -42109318.59 -42109318.38 0.0289 0.0061

Venus -120002-08-07 20:39 J -42109088.84 -42109088.64 -42109088.43 0.0292 0.0071

Mars -120002-09-13 09:37 J -42109052.21 -42109052.10 -42109051.98 0.0292 0.0269

Venus -120001-03-24 20:39 J -42108858.84 -42108858.64 -42108858.43 0.0295 0.0080

Mercury -120001-09-26 03:37 J -42108673.43 -42108673.35 -42108673.26 0.0297 0.0225

Venus -120001-11-09 21:51 J -42108628.79 -42108628.59 -42108628.39 0.0297 0.0087

Mercury -120001-12-23 17:32 J -42108584.89 -42108584.77 -42108584.64 0.0298 0.0113

# 120TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 120th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-120000-03-22 07:13 J	-42108496.33	-42108496.20	-42108496.06	0.0299	0.0005		
Mercury	-120000-06-18 20:53 J	-42108407.76	-42108407.63	-42108407.51	0.0299	0.0110		
Venus	-120000-06-27 23:17 J	-42108398.73	-42108398.53	-42108398.33	0.0300	0.0092		
Mercury	-120000-09-15 10:20 J	-42108319.16	-42108319.07	-42108318.98	0.0300	0.0221		
Venus	-119999-02-13 01:13 J	-42108168.65	-42108168.45	-42108168.26	0.0301	0.0095		
Venus	-119999-10-01 02:53 J	-42107938.58	-42107938.38	-42107938.19	0.0303	0.0095		
Venus	-119998-05-19 04:05 J	-42107708.52	-42107708.33	-42107708.13	0.0304	0.0093		
Venus	-119997-01-04 04:49 J	-42107478.49	-42107478.30	-42107478.10	0.0304	0.0088		
Venus	-119997-08-21 04:34 J	-42107248.51	-42107248.31	-42107248.12	0.0303	0.0082		
Venus	-119996-04-08 02:53 J	-42107018.58	-42107018.38	-42107018.18	0.0303	0.0073		
Venus	-119996-11-23 23:46 J	-42106788.71	-42106788.51	-42106788.31	0.0301	0.0062		
Venus	-119995-07-11 18:58 J	-42106558.91	-42106558.71	-42106558.51	0.0299	0.0050		
Venus	-119994-02-26 12:44 J	-42106329.17	-42106328.97	-42106328.77	0.0297	0.0037		
Venus	-119994-10-14 04:20 J	-42106099.52	-42106099.32	-42106099.12	0.0294	0.0024		
Venus	-119993-05-30 18:01 J	-42105869.95	-42105869.75	-42105869.54	0.0292	0.0011		
Venus	-119992-01-15 06:01 J	-42105640.45	-42105640.25	-42105640.04	0.0289	0.0004		
Venus	-119992-09-01 16:20 J	-42105411.03	-42105410.82	-42105410.61	0.0286	0.0015		

Venus -119991-04-19 01:13 J -42105181.66 -42105181.45 -42105181.25 0.0283 0.0028  
 Venus -119991-12-04 08:10 J -42104952.36 -42104952.16 -42104951.95 0.0280 0.0038  
 Venus -119990-07-21 13:56 J -42104723.13 -42104722.92 -42104722.72 0.0277 0.0048  
 Mars -119990-12-03 01:56 J -42104588.68 -42104588.42 -42104588.16 0.0275 0.0119  
 Venus -119989-03-06 18:15 J -42104493.94 -42104493.74 -42104493.53 0.0274 0.0057  
 Venus -119989-10-21 21:37 J -42104264.80 -42104264.60 -42104264.39 0.0271 0.0065  
 Venus -119988-06-08 00:15 J -42104035.70 -42104035.49 -42104035.29 0.0269 0.0071  
 Venus -119987-01-23 01:41 J -42103806.63 -42103806.43 -42103806.22 0.0267 0.0077  
 Mercury -119987-07-26 00:15 J -42103622.62 -42103622.49 -42103622.36 0.0265 0.0176  
 Venus -119987-09-09 02:39 J -42103577.59 -42103577.39 -42103577.18 0.0265 0.0081  
 Mercury -119987-10-22 18:58 J -42103533.88 -42103533.71 -42103533.54 0.0265 0.0073  
 Mercury -119986-01-19 13:56 J -42103445.10 -42103444.92 -42103444.74 0.0264 0.0030  
 Mercury -119986-04-18 09:08 J -42103356.28 -42103356.12 -42103355.97 0.0263 0.0133  
 Venus -119986-04-26 03:08 J -42103348.57 -42103348.37 -42103348.16 0.0263 0.0083  
 Mercury -119986-07-16 04:20 J -42103267.39 -42103267.32 -42103267.24 0.0263 0.0237  
 Venus -119986-12-11 03:22 J -42103119.56 -42103119.36 -42103119.15 0.0262 0.0085  
 Venus -119985-07-27 03:37 J -42102890.55 -42102890.35 -42102890.14 0.0261 0.0086  
 Venus -119984-03-13 03:51 J -42102661.55 -42102661.34 -42102661.14 0.0260 0.0085  
 Venus -119984-10-28 04:05 J -42102432.53 -42102432.33 -42102432.12 0.0259 0.0084  
 Venus -119983-06-14 04:49 J -42102203.50 -42102203.30 -42102203.09 0.0259 0.0082  
 Venus -119982-01-29 06:15 J -42101974.45 -42101974.24 -42101974.03 0.0259 0.0078  
 Venus -119982-09-15 08:10 J -42101745.37 -42101745.16 -42101744.95 0.0259 0.0074  
 Venus -119981-05-01 11:03 J -42101516.25 -42101516.04 -42101515.83 0.0260 0.0068  
 Venus -119981-12-16 14:53 J -42101287.09 -42101286.88 -42101286.66 0.0261 0.0062  
 Venus -119980-08-02 20:10 J -42101057.88 -42101057.66 -42101057.44 0.0262 0.0054  
 Venus -119979-03-20 02:25 J -42100828.61 -42100828.40 -42100828.18 0.0263 0.0046  
 Venus -119979-11-04 10:20 J -42100599.29 -42100599.07 -42100598.86 0.0265 0.0037  
 Venus -119978-06-21 19:27 J -42100369.91 -42100369.69 -42100369.47 0.0267 0.0027  
 Venus -119977-02-06 06:15 J -42100140.46 -42100140.24 -42100140.02 0.0269 0.0016  
 Venus -119977-09-22 18:44 J -42099910.94 -42099910.72 -42099910.50 0.0272 0.0007

Venus -119976-05-10 08:53 J -42099681.35 -42099681.13 -42099680.91 0.0274 0.0008  
 Venus -119976-12-26 00:44 J -42099451.69 -42099451.47 -42099451.25 0.0277 0.0020  
 Venus -119975-08-12 18:01 J -42099221.96 -42099221.75 -42099221.53 0.0280 0.0032  
 Earth -119974-01-10 03:08 J -42099071.61 -42099071.37 -42099071.12 0.0282 0.0044  
 Moon -119974-01-10 06:29 J -42099071.47 -42099071.23 -42099070.98 0.0282 0.0029 \*  
 Venus -119974-03-30 12:58 J -42098992.17 -42098991.96 -42098991.74 0.0283 0.0045  
 Mars -119974-10-27 04:34 J -42098781.49 -42098781.31 -42098781.11 0.0286 0.0219  
 Venus -119974-11-15 09:37 J -42098762.31 -42098762.10 -42098761.88 0.0286 0.0056  
 Venus -119973-07-02 07:41 J -42098532.39 -42098532.18 -42098531.97 0.0289 0.0067  
 Venus -119972-02-17 06:44 J -42098302.42 -42098302.22 -42098302.01 0.0292 0.0077  
 Venus -119972-10-05 06:58 J -42098072.41 -42098072.21 -42098072.00 0.0295 0.0086  
 Mercury -119971-02-13 06:29 J -42097941.30 -42097941.23 -42097941.16 0.0296 0.0250  
 Mercury -119971-05-12 20:10 J -42097852.78 -42097852.66 -42097852.53 0.0297 0.0139  
 Venus -119971-05-23 08:10 J -42097842.36 -42097842.16 -42097841.96 0.0297 0.0092  
 Mercury -119971-08-09 10:05 J -42097764.22 -42097764.08 -42097763.95 0.0298 0.0027  
 Mercury -119971-11-05 23:46 J -42097675.64 -42097675.51 -42097675.38 0.0299 0.0085  
 Venus -119970-01-08 09:51 J -42097612.29 -42097612.09 -42097611.89 0.0300 0.0097  
 Mercury -119970-02-02 13:13 J -42097587.05 -42097586.95 -42097586.85 0.0300 0.0196  
 Venus -119970-08-26 11:32 J -42097382.21 -42097382.02 -42097381.82 0.0301 0.0099  
 Venus -119969-04-12 13:13 J -42097152.14 -42097151.95 -42097151.75 0.0303 0.0099  
 Venus -119969-11-28 14:39 J -42096922.09 -42096921.89 -42096921.70 0.0304 0.0096  
 Venus -119968-07-16 15:08 J -42096692.07 -42096691.87 -42096691.68 0.0304 0.0090  
 Venus -119967-03-03 14:39 J -42096462.08 -42096461.89 -42096461.69 0.0304 0.0082  
 Venus -119967-10-19 12:44 J -42096232.16 -42096231.97 -42096231.77 0.0303 0.0073  
 Venus -119966-06-06 09:22 J -42096002.31 -42096002.11 -42096001.91 0.0301 0.0062  
 Venus -119965-01-22 04:20 J -42095772.51 -42095772.32 -42095772.11 0.0299 0.0050  
 Venus -119965-09-07 21:37 J -42095542.80 -42095542.60 -42095542.39 0.0297 0.0036  
 Venus -119964-04-25 13:13 J -42095313.15 -42095312.95 -42095312.75 0.0295 0.0022  
 Venus -119964-12-11 02:39 J -42095083.59 -42095083.39 -42095083.18 0.0292 0.0010  
 Venus -119963-07-28 14:25 J -42094854.10 -42094853.90 -42094853.69 0.0289 0.0007

Venus -119962-03-15 00:29 J -42094624.68 -42094624.48 -42094624.27 0.0286 0.0018  
 Venus -119962-10-30 08:53 J -42094395.33 -42094395.13 -42094394.92 0.0283 0.0030  
 Venus -119961-06-15 15:37 J -42094166.05 -42094165.85 -42094165.64 0.0280 0.0041  
 Earth -119961-07-04 10:05 J -42094147.28 -42094147.08 -42094146.88 0.0279 0.0160  
 Moon -119961-07-04 12:29 J -42094147.19 -42094146.98 -42094146.77 0.0279 0.0147 \*  
 Venus -119960-01-30 21:08 J -42093936.83 -42093936.62 -42093936.42 0.0277 0.0051  
 Venus -119960-09-17 01:13 J -42093707.65 -42093707.45 -42093707.24 0.0274 0.0060  
 Mars -119959-01-20 16:34 J -42093582.08 -42093581.81 -42093581.54 0.0272 0.0090  
 Venus -119959-05-04 04:20 J -42093478.52 -42093478.32 -42093478.11 0.0271 0.0068  
 Venus -119959-12-19 06:29 J -42093249.43 -42093249.23 -42093249.02 0.0269 0.0075  
 Venus -119958-08-05 07:56 J -42093020.37 -42093020.17 -42093019.96 0.0266 0.0080  
 Mercury -119958-12-13 01:13 J -42092890.56 -42092890.45 -42092890.33 0.0265 0.0199  
 Mercury -119957-03-10 20:10 J -42092801.83 -42092801.66 -42092801.50 0.0265 0.0097  
 Venus -119957-03-21 08:53 J -42092791.34 -42092791.13 -42092790.93 0.0264 0.0084  
 Mercury -119957-06-07 15:08 J -42092713.05 -42092712.87 -42092712.69 0.0264 0.0009  
 Mercury -119957-09-04 09:51 J -42092624.24 -42092624.09 -42092623.91 0.0263 0.0110  
 Venus -119957-11-05 09:08 J -42092562.32 -42092562.12 -42092561.91 0.0263 0.0087  
 Mercury -119957-12-02 05:17 J -42092535.38 -42092535.28 -42092535.17 0.0263 0.0212  
 Venus -119956-06-22 09:37 J -42092333.30 -42092333.10 -42092332.90 0.0261 0.0088  
 Venus -119955-02-06 09:37 J -42092104.30 -42092104.10 -42092103.89 0.0260 0.0089  
 Venus -119955-09-23 09:51 J -42091875.29 -42091875.09 -42091874.89 0.0259 0.0088  
 Venus -119954-05-10 10:05 J -42091646.28 -42091646.08 -42091645.87 0.0259 0.0087  
 Venus -119954-12-25 11:03 J -42091417.25 -42091417.04 -42091416.83 0.0259 0.0084  
 Venus -119953-08-10 12:29 J -42091188.19 -42091187.98 -42091187.77 0.0259 0.0080  
 Venus -119952-03-27 14:39 J -42090959.10 -42090958.89 -42090958.68 0.0259 0.0075  
 Venus -119952-11-11 17:46 J -42090729.97 -42090729.76 -42090729.55 0.0260 0.0069  
 Venus -119951-06-28 21:51 J -42090500.80 -42090500.59 -42090500.37 0.0261 0.0062  
 Venus -119950-02-13 03:08 J -42090271.58 -42090271.37 -42090271.15 0.0262 0.0054  
 Venus -119950-09-30 09:51 J -42090042.31 -42090042.09 -42090041.87 0.0263 0.0046  
 Venus -119949-05-16 17:46 J -42089812.98 -42089812.76 -42089812.54 0.0265 0.0036

Venus -119948-01-01 03:08 J -42089583.58 -42089583.37 -42089583.15 0.0267 0.0026  
 Venus -119948-08-18 14:25 J -42089354.12 -42089353.90 -42089353.68 0.0270 0.0014  
 Venus -119947-04-05 03:08 J -42089124.59 -42089124.37 -42089124.15 0.0272 0.0003  
 Venus -119947-11-20 17:32 J -42088894.99 -42088894.77 -42088894.55 0.0275 0.0010  
 Venus -119946-07-08 09:22 J -42088665.32 -42088665.11 -42088664.89 0.0278 0.0023  
 Venus -119945-02-23 03:08 J -42088435.58 -42088435.37 -42088435.15 0.0281 0.0034  
 Venus -119945-10-09 22:34 J -42088205.77 -42088205.56 -42088205.34 0.0284 0.0047  
 Venus -119944-05-27 19:27 J -42087975.90 -42087975.69 -42087975.47 0.0287 0.0058  
 Mars -119944-12-17 15:51 J -42087772.14 -42087771.84 -42087771.54 0.0290 0.0038  
 Venus -119943-01-12 17:46 J -42087745.97 -42087745.76 -42087745.55 0.0290 0.0069  
 Venus -119943-08-30 17:03 J -42087515.99 -42087515.79 -42087515.58 0.0293 0.0079  
 Venus -119942-04-17 17:46 J -42087285.97 -42087285.76 -42087285.56 0.0296 0.0087  
 Mercury -119942-07-03 09:08 J -42087209.17 -42087209.12 -42087209.06 0.0297 0.0272  
 Mercury -119942-09-29 23:03 J -42087120.65 -42087120.54 -42087120.42 0.0298 0.0161  
 Venus -119942-12-03 18:58 J -42087055.91 -42087055.71 -42087055.51 0.0298 0.0093  
 Mercury -119942-12-27 12:58 J -42087032.10 -42087031.96 -42087031.83 0.0298 0.0049  
 Mercury -119941-03-25 02:39 J -42086943.53 -42086943.39 -42086943.26 0.0299 0.0063  
 Mercury -119941-06-21 16:05 J -42086854.94 -42086854.83 -42086854.72 0.0300 0.0174  
 Venus -119941-07-20 20:39 J -42086825.84 -42086825.64 -42086825.44 0.0300 0.0098  
 Mercury -119941-09-18 05:32 J -42086766.31 -42086766.27 -42086766.23 0.0301 0.0284  
 Venus -119940-03-07 22:20 J -42086595.76 -42086595.57 -42086595.37 0.0302 0.0100  
 Venus -119940-10-24 00:01 J -42086365.69 -42086365.50 -42086365.30 0.0303 0.0099  
 Venus -119939-06-11 01:13 J -42086135.64 -42086135.45 -42086135.25 0.0304 0.0096  
 Venus -119938-01-27 01:41 J -42085905.62 -42085905.43 -42085905.23 0.0304 0.0090  
 Venus -119938-09-14 00:58 J -42085675.65 -42085675.46 -42085675.26 0.0303 0.0082  
 Venus -119937-04-30 22:49 J -42085445.74 -42085445.55 -42085445.34 0.0302 0.0073  
 Venus -119937-12-16 19:27 J -42085215.89 -42085215.69 -42085215.49 0.0301 0.0060  
 Venus -119936-08-03 14:10 J -42084986.11 -42084985.91 -42084985.71 0.0299 0.0047  
 Venus -119935-03-21 07:13 J -42084756.40 -42084756.20 -42084755.99 0.0296 0.0034  
 Venus -119935-11-05 22:20 J -42084526.77 -42084526.57 -42084526.36 0.0294 0.0019

Venus -119934-06-23 11:32 J -42084297.22 -42084297.02 -42084296.81 0.0291 0.0005  
 Venus -119933-02-07 22:49 J -42084067.75 -42084067.55 -42084067.34 0.0288 0.0011  
 Venus -119933-09-24 08:39 J -42083838.35 -42083838.14 -42083837.94 0.0285 0.0022  
 Venus -119932-05-11 16:49 J -42083609.01 -42083608.80 -42083608.60 0.0282 0.0034  
 Moon -119932-06-29 04:20 J -42083560.49 -42083560.32 -42083560.13 0.0281 0.0184  
 Earth -119932-06-29 07:41 J -42083560.35 -42083560.18 -42083559.99 0.0281 0.0184 \*  
 Venus -119932-12-26 23:17 J -42083379.74 -42083379.53 -42083379.33 0.0279 0.0045  
 Venus -119931-08-13 04:20 J -42083150.52 -42083150.32 -42083150.11 0.0276 0.0055  
 Venus -119930-03-30 08:25 J -42082921.35 -42082921.15 -42082920.95 0.0273 0.0064  
 Venus -119930-11-14 11:17 J -42082692.23 -42082692.03 -42082691.83 0.0270 0.0071  
 Venus -119929-06-30 13:27 J -42082463.14 -42082462.94 -42082462.74 0.0268 0.0078  
 Venus -119928-02-14 14:39 J -42082234.09 -42082233.89 -42082233.69 0.0266 0.0082  
 Mercury -119928-05-01 02:39 J -42082158.48 -42082158.39 -42082158.29 0.0265 0.0221  
 Mercury -119928-07-28 21:22 J -42082069.76 -42082069.61 -42082069.45 0.0265 0.0119  
 Venus -119928-10-01 15:22 J -42082005.06 -42082004.86 -42082004.66 0.0264 0.0086  
 Mercury -119928-10-25 16:20 J -42081981.00 -42081980.82 -42081980.64 0.0264 0.0016  
 Mercury -119927-01-22 11:17 J -42081892.20 -42081892.03 -42081891.86 0.0263 0.0087  
 Mercury -119927-04-21 06:29 J -42081803.35 -42081803.23 -42081803.10 0.0263 0.0190  
 Venus -119927-05-18 15:51 J -42081776.04 -42081775.84 -42081775.64 0.0263 0.0089  
 Venus -119926-01-02 15:51 J -42081547.04 -42081546.84 -42081546.63 0.0261 0.0090  
 Venus -119926-08-19 15:51 J -42081318.04 -42081317.84 -42081317.63 0.0260 0.0090  
 Venus -119925-04-04 16:05 J -42081089.04 -42081088.83 -42081088.63 0.0260 0.0089  
 Venus -119925-11-19 16:20 J -42080860.02 -42080859.82 -42080859.61 0.0259 0.0087  
 Venus -119924-07-06 17:32 J -42080630.98 -42080630.77 -42080630.56 0.0259 0.0084  
 Venus -119923-02-20 18:58 J -42080401.92 -42080401.71 -42080401.50 0.0259 0.0080  
 Venus -119923-10-07 21:08 J -42080172.83 -42080172.62 -42080172.41 0.0259 0.0075  
 Venus -119922-05-25 00:15 J -42079943.70 -42079943.49 -42079943.28 0.0260 0.0069  
 Venus -119921-01-09 04:20 J -42079714.53 -42079714.32 -42079714.10 0.0261 0.0062  
 Venus -119921-08-25 10:05 J -42079485.29 -42079485.08 -42079484.86 0.0262 0.0054  
 Venus -119920-04-11 16:49 J -42079256.01 -42079255.80 -42079255.58 0.0264 0.0045



Venus -119920-11-27 01:13 J -42079026.67 -42079026.45 -42079026.23 0.0266 0.0035  
 Venus -119919-07-14 10:49 J -42078797.27 -42078797.05 -42078796.83 0.0268 0.0024  
 Venus -119918-02-28 22:20 J -42078567.79 -42078567.57 -42078567.35 0.0270 0.0013  
 Venus -119918-10-16 11:17 J -42078338.24 -42078338.03 -42078337.81 0.0272 0.0006  
 Venus -119917-06-02 02:10 J -42078108.63 -42078108.41 -42078108.19 0.0275 0.0013  
 Venus -119916-01-17 18:29 J -42077878.94 -42077878.73 -42077878.51 0.0278 0.0026  
 Venus -119916-09-04 12:44 J -42077649.19 -42077648.97 -42077648.76 0.0281 0.0039  
 Earth -119915-01-11 21:37 J -42077519.83 -42077519.60 -42077519.36 0.0283 0.0077  
 Moon -119915-01-11 23:46 J -42077519.74 -42077519.51 -42077519.27 0.0283 0.0070 \*  
 Venus -119915-04-22 08:10 J -42077419.37 -42077419.16 -42077418.94 0.0284 0.0052  
 Venus -119915-12-08 05:17 J -42077189.48 -42077189.28 -42077189.06 0.0287 0.0064  
 Venus -119914-07-26 03:51 J -42076959.55 -42076959.34 -42076959.13 0.0290 0.0075  
 Venus -119913-03-12 03:22 J -42076729.56 -42076729.36 -42076729.15 0.0293 0.0085  
 Venus -119913-10-28 04:05 J -42076499.53 -42076499.33 -42076499.13 0.0296 0.0093  
 Mercury -119912-02-16 01:41 J -42076388.53 -42076388.43 -42076388.32 0.0297 0.0186  
 Mercury -119912-05-15 15:37 J -42076299.98 -42076299.85 -42076299.72 0.0298 0.0074  
 Venus -119912-06-15 05:17 J -42076269.47 -42076269.28 -42076269.08 0.0298 0.0099  
 Mercury -119912-08-12 05:17 J -42076211.41 -42076211.28 -42076211.14 0.0299 0.0038  
 Mercury -119912-11-08 18:58 J -42076122.83 -42076122.71 -42076122.60 0.0299 0.0149  
 Venus -119911-01-31 07:13 J -42076039.40 -42076039.20 -42076039.01 0.0300 0.0103  
 Mercury -119911-02-05 08:25 J -42076034.22 -42076034.15 -42076034.09 0.0300 0.0259  
 Venus -119911-09-18 08:53 J -42075809.32 -42075809.13 -42075808.93 0.0302 0.0105  
 Venus -119910-05-06 10:34 J -42075579.25 -42075579.06 -42075578.86 0.0303 0.0103  
 Venus -119910-12-22 11:46 J -42075349.20 -42075349.01 -42075348.81 0.0304 0.0099  
 Venus -119909-08-08 12:01 J -42075119.19 -42075119.00 -42075118.80 0.0304 0.0092  
 Venus -119908-03-26 11:17 J -42074889.23 -42074889.03 -42074888.83 0.0303 0.0083  
 Venus -119908-11-11 08:53 J -42074659.32 -42074659.13 -42074658.93 0.0302 0.0072  
 Venus -119907-06-29 05:03 J -42074429.48 -42074429.29 -42074429.08 0.0301 0.0060  
 Venus -119906-02-13 23:46 J -42074199.71 -42074199.51 -42074199.31 0.0299 0.0046  
 Venus -119906-10-01 16:20 J -42073970.02 -42073969.82 -42073969.61 0.0296 0.0032

Venus -119905-05-18 07:13 J -42073740.40 -42073740.20 -42073740.00 0.0294 0.0017

Venus -119904-01-02 20:10 J -42073510.86 -42073510.66 -42073510.46 0.0291 0.0003

Venus -119904-08-20 07:13 J -42073281.40 -42073281.20 -42073280.99 0.0288 0.0013

Venus -119903-04-06 16:49 J -42073052.00 -42073051.80 -42073051.59 0.0285 0.0025

Venus -119903-11-22 00:44 J -42072822.68 -42072822.47 -42072822.27 0.0282 0.0036

Earth -119902-07-07 02:10 J -42072595.44 -42072595.41 -42072595.35 0.0279 0.0274

Venus -119902-07-09 06:58 J -42072593.42 -42072593.21 -42072593.01 0.0279 0.0048

Venus -119901-02-23 11:46 J -42072364.21 -42072364.01 -42072363.81 0.0276 0.0057

Mars -119901-04-29 02:53 J -42072298.65 -42072298.38 -42072298.10 0.0275 0.0085

Venus -119901-10-09 15:22 J -42072135.06 -42072134.86 -42072134.65 0.0273 0.0066

Venus -119900-05-26 18:15 J -42071905.94 -42071905.74 -42071905.53 0.0270 0.0074

Venus -119899-01-10 20:10 J -42071676.86 -42071676.66 -42071676.46 0.0268 0.0080

Venus -119899-08-27 21:08 J -42071447.82 -42071447.62 -42071447.42 0.0266 0.0085

Mercury -119899-09-18 03:51 J -42071426.40 -42071426.34 -42071426.26 0.0266 0.0244

Mercury -119899-12-15 22:34 J -42071337.70 -42071337.56 -42071337.40 0.0265 0.0142

Mercury -119898-03-14 17:32 J -42071248.95 -42071248.77 -42071248.59 0.0264 0.0040

Venus -119898-04-13 21:37 J -42071218.80 -42071218.60 -42071218.40 0.0264 0.0089

Mercury -119898-06-11 12:29 J -42071160.15 -42071159.98 -42071159.80 0.0263 0.0063

Mercury -119898-09-08 07:27 J -42071071.32 -42071071.19 -42071071.04 0.0263 0.0166

Venus -119898-11-28 21:51 J -42070989.79 -42070989.59 -42070989.39 0.0262 0.0092

Venus -119897-07-14 22:05 J -42070760.78 -42070760.58 -42070760.38 0.0261 0.0093

Venus -119896-02-28 22:05 J -42070531.78 -42070531.58 -42070531.38 0.0260 0.0093

Venus -119896-10-15 22:05 J -42070302.78 -42070302.58 -42070302.37 0.0259 0.0093

Venus -119895-06-01 22:49 J -42070073.76 -42070073.55 -42070073.35 0.0259 0.0090

Venus -119894-01-16 23:32 J -42069844.72 -42069844.52 -42069844.31 0.0259 0.0087

Venus -119894-09-03 01:13 J -42069615.66 -42069615.45 -42069615.24 0.0259 0.0082

Venus -119893-04-19 03:22 J -42069386.56 -42069386.36 -42069386.14 0.0259 0.0077

Venus -119893-12-04 06:44 J -42069157.43 -42069157.22 -42069157.01 0.0260 0.0070

Venus -119892-07-21 11:17 J -42068928.25 -42068928.03 -42068927.82 0.0261 0.0062

Venus -119891-03-07 16:49 J -42068699.01 -42068698.80 -42068698.58 0.0262 0.0054

Venus	-119891-10-22 23:46 J	-42068469.73	-42068469.51	-42068469.29	0.0264	0.0044
Venus	-119890-06-09 08:10 J	-42068240.38	-42068240.16	-42068239.94	0.0266	0.0034
Venus	-119889-01-24 18:01 J	-42068010.96	-42068010.75	-42068010.52	0.0268	0.0023
Venus	-119889-09-10 06:01 J	-42067781.47	-42067781.25	-42067781.03	0.0270	0.0012
Venus	-119888-04-27 19:13 J	-42067551.92	-42067551.70	-42067551.48	0.0273	0.0003
Venus	-119888-12-13 10:05 J	-42067322.30	-42067322.08	-42067321.86	0.0276	0.0015
Venus	-119887-07-31 02:39 J	-42067092.61	-42067092.39	-42067092.17	0.0279	0.0028
Earth	-119886-01-06 11:46 J	-42066933.02	-42066933.01	-42066933.00	0.0281	0.0280
Venus	-119886-03-17 20:53 J	-42066862.84	-42066862.63	-42066862.41	0.0282	0.0041
Venus	-119886-11-02 16:49 J	-42066633.01	-42066632.80	-42066632.58	0.0285	0.0054
Mars	-119885-03-23 08:53 J	-42066491.35	-42066491.13	-42066490.89	0.0287	0.0179
Venus	-119885-06-19 14:25 J	-42066403.11	-42066402.90	-42066402.69	0.0288	0.0065
Venus	-119884-02-04 12:58 J	-42066173.16	-42066172.96	-42066172.75	0.0291	0.0076
Venus	-119884-09-22 12:58 J	-42065943.17	-42065942.96	-42065942.76	0.0294	0.0086
Venus	-119883-05-10 13:41 J	-42065713.13	-42065712.93	-42065712.73	0.0297	0.0094
Mercury	-119883-07-06 04:20 J	-42065656.41	-42065656.32	-42065656.22	0.0297	0.0210
Mercury	-119883-10-02 18:15 J	-42065567.87	-42065567.74	-42065567.61	0.0298	0.0098
Venus	-119883-12-26 15:22 J	-42065483.06	-42065482.86	-42065482.66	0.0299	0.0100
Mercury	-119883-12-30 07:56 J	-42065479.30	-42065479.17	-42065479.03	0.0299	0.0013
Mercury	-119882-03-28 21:37 J	-42065390.72	-42065390.60	-42065390.48	0.0300	0.0125
Mercury	-119882-06-25 11:03 J	-42065302.12	-42065302.04	-42065301.96	0.0301	0.0235
Venus	-119882-08-13 17:03 J	-42065252.98	-42065252.79	-42065252.59	0.0301	0.0104
Venus	-119881-03-30 18:58 J	-42065022.90	-42065022.71	-42065022.51	0.0302	0.0105
Venus	-119881-11-15 20:39 J	-42064792.83	-42064792.64	-42064792.44	0.0303	0.0103
Venus	-119880-07-03 21:37 J	-42064562.79	-42064562.60	-42064562.40	0.0304	0.0099
Venus	-119879-02-18 22:05 J	-42064332.78	-42064332.58	-42064332.39	0.0304	0.0092
Venus	-119879-10-06 21:08 J	-42064102.82	-42064102.62	-42064102.43	0.0303	0.0082
Venus	-119878-05-24 18:44 J	-42063872.92	-42063872.72	-42063872.53	0.0302	0.0071
Venus	-119877-01-09 14:39 J	-42063643.09	-42063642.89	-42063642.69	0.0300	0.0058
Venus	-119877-08-26 08:53 J	-42063413.33	-42063413.13	-42063412.92	0.0298	0.0045

Venus -119876-04-13 01:27 J -42063183.64 -42063183.44 -42063183.23 0.0296 0.0030  
 Venus -119876-11-28 16:05 J -42062954.03 -42062953.83 -42062953.62 0.0293 0.0015  
 Venus -119875-07-16 04:49 J -42062724.50 -42062724.30 -42062724.09 0.0290 0.0002  
 Venus -119874-03-02 15:51 J -42062495.05 -42062494.84 -42062494.64 0.0287 0.0016  
 Venus -119874-10-18 00:44 J -42062265.67 -42062265.47 -42062265.26 0.0284 0.0029  
 Venus -119873-06-03 08:25 J -42062036.36 -42062036.15 -42062035.95 0.0281 0.0040  
 Moon -119873-06-30 21:37 J -42062008.84 -42062008.60 -42062008.35 0.0280 0.0051  
 Earth -119873-07-01 01:13 J -42062008.69 -42062008.45 -42062008.21 0.0280 0.0066 \*  
 Venus -119872-01-18 14:25 J -42061807.10 -42061806.90 -42061806.70 0.0278 0.0051  
 Venus -119872-09-04 18:58 J -42061577.91 -42061577.71 -42061577.50 0.0275 0.0062  
 Venus -119871-04-21 22:49 J -42061348.76 -42061348.55 -42061348.35 0.0272 0.0070  
 Mars -119871-06-17 15:08 J -42061292.13 -42061291.87 -42061291.61 0.0271 0.0119  
 Venus -119871-12-07 01:13 J -42061119.65 -42061119.45 -42061119.25 0.0270 0.0078  
 Venus -119870-07-24 02:53 J -42060890.58 -42060890.38 -42060890.18 0.0267 0.0084  
 Mercury -119869-02-05 05:32 J -42060694.28 -42060694.27 -42060694.25 0.0266 0.0265  
 Venus -119869-03-09 03:51 J -42060661.54 -42060661.34 -42060661.14 0.0265 0.0088  
 Mercury -119869-05-04 00:01 J -42060605.63 -42060605.50 -42060605.35 0.0265 0.0164  
 Mercury -119869-07-31 18:58 J -42060516.89 -42060516.71 -42060516.54 0.0264 0.0062  
 Venus -119869-10-24 04:20 J -42060432.52 -42060432.32 -42060432.12 0.0264 0.0092  
 Mercury -119869-10-28 13:56 J -42060428.10 -42060427.92 -42060427.74 0.0264 0.0041  
 Mercury -119868-01-25 08:53 J -42060339.28 -42060339.13 -42060338.98 0.0263 0.0144  
 Mercury -119868-04-24 04:05 J -42060250.38 -42060250.33 -42060250.27 0.0262 0.0247  
 Venus -119868-06-10 04:34 J -42060203.51 -42060203.31 -42060203.11 0.0262 0.0094  
 Venus -119867-01-25 04:20 J -42059974.51 -42059974.32 -42059974.11 0.0261 0.0095  
 Venus -119867-09-11 04:20 J -42059745.52 -42059745.32 -42059745.11 0.0260 0.0094  
 Venus -119866-04-28 04:20 J -42059516.52 -42059516.32 -42059516.11 0.0259 0.0093  
 Venus -119866-12-13 04:49 J -42059287.50 -42059287.30 -42059287.09 0.0259 0.0090  
 Venus -119865-07-29 05:46 J -42059058.46 -42059058.26 -42059058.05 0.0259 0.0087  
 Venus -119864-03-15 07:27 J -42058829.40 -42058829.19 -42058828.98 0.0259 0.0082  
 Venus -119864-10-30 09:37 J -42058600.30 -42058600.10 -42058599.88 0.0260 0.0077

Venus -119863-06-16 13:13 J -42058371.17 -42058370.95 -42058370.74 0.0260 0.0070  
 Venus -119862-01-31 17:32 J -42058141.98 -42058141.77 -42058141.55 0.0261 0.0062  
 Venus -119862-09-17 23:17 J -42057912.74 -42057912.53 -42057912.31 0.0263 0.0053  
 Venus -119861-05-04 06:29 J -42057683.45 -42057683.23 -42057683.01 0.0264 0.0043  
 Venus -119861-12-19 15:08 J -42057454.09 -42057453.87 -42057453.65 0.0266 0.0032  
 Venus -119860-08-06 01:13 J -42057224.67 -42057224.45 -42057224.23 0.0268 0.0021  
 Venus -119859-03-23 13:13 J -42056995.17 -42056994.95 -42056994.73 0.0271 0.0009  
 Venus -119859-11-08 02:39 J -42056765.61 -42056765.39 -42056765.17 0.0273 0.0006  
 Venus -119858-06-25 18:01 J -42056535.97 -42056535.75 -42056535.53 0.0276 0.0018  
 Venus -119857-02-10 10:49 J -42056306.26 -42056306.05 -42056305.83 0.0279 0.0032  
 Venus -119857-09-27 05:32 J -42056076.48 -42056076.27 -42056076.05 0.0282 0.0046  
 Earth -119856-01-13 13:27 J -42055968.12 -42055967.94 -42055967.76 0.0283 0.0191  
 Moon -119856-01-13 15:08 J -42055968.06 -42055967.87 -42055967.69 0.0283 0.0176 \*  
 Venus -119856-05-15 01:56 J -42055846.63 -42055846.42 -42055846.21 0.0285 0.0059  
 Venus -119856-12-30 23:32 J -42055616.73 -42055616.52 -42055616.31 0.0288 0.0071  
 Mars -119855-05-14 19:27 J -42055481.98 -42055481.69 -42055481.40 0.0290 0.0071  
 Venus -119855-08-17 22:20 J -42055386.77 -42055386.57 -42055386.36 0.0291 0.0083  
 Venus -119854-04-04 22:20 J -42055156.77 -42055156.57 -42055156.36 0.0294 0.0092  
 Venus -119854-11-20 23:17 J -42054926.72 -42054926.53 -42054926.32 0.0296 0.0101  
 Mercury -119854-11-23 06:44 J -42054924.29 -42054924.22 -42054924.13 0.0296 0.0237  
 Mercury -119853-02-19 20:39 J -42054835.76 -42054835.64 -42054835.51 0.0297 0.0125  
 Mercury -119853-05-18 10:34 J -42054747.20 -42054747.06 -42054746.93 0.0298 0.0014  
 Venus -119853-07-08 00:58 J -42054696.65 -42054696.46 -42054696.26 0.0299 0.0106  
 Mercury -119853-08-15 00:15 J -42054658.62 -42054658.49 -42054658.37 0.0299 0.0098  
 Mercury -119853-11-11 13:41 J -42054570.02 -42054569.93 -42054569.83 0.0300 0.0209  
 Venus -119852-02-23 02:53 J -42054466.57 -42054466.38 -42054466.18 0.0301 0.0109  
 Venus -119852-10-11 04:49 J -42054236.49 -42054236.30 -42054236.10 0.0302 0.0110  
 Venus -119851-05-29 06:29 J -42054006.42 -42054006.23 -42054006.03 0.0303 0.0107  
 Venus -119850-01-14 07:41 J -42053776.37 -42053776.18 -42053775.98 0.0304 0.0102  
 Venus -119850-09-01 07:56 J -42053546.37 -42053546.17 -42053545.98 0.0304 0.0094

Venus	-119849-04-18 06:44 J	-42053316.41	-42053316.22	-42053316.02	0.0303	0.0083
Venus	-119849-12-04 04:05 J	-42053086.52	-42053086.33	-42053086.13	0.0302	0.0072
Venus	-119848-07-22 00:01 J	-42052856.70	-42052856.50	-42052856.30	0.0300	0.0058
Venus	-119847-03-08 18:15 J	-42052626.94	-42052626.74	-42052626.54	0.0298	0.0043
Venus	-119847-10-24 10:34 J	-42052397.27	-42052397.06	-42052396.86	0.0296	0.0028
Venus	-119846-06-11 00:44 J	-42052167.67	-42052167.47	-42052167.26	0.0293	0.0013
Venus	-119845-01-26 13:13 J	-42051938.15	-42051937.95	-42051937.75	0.0290	0.0002
Venus	-119845-09-11 23:46 J	-42051708.71	-42051708.51	-42051708.30	0.0287	0.0017
Venus	-119844-04-29 08:53 J	-42051479.33	-42051479.13	-42051478.92	0.0284	0.0030
Venus	-119844-12-14 16:05 J	-42051250.03	-42051249.83	-42051249.62	0.0281	0.0043
Venus	-119843-07-31 21:51 J	-42051020.79	-42051020.59	-42051020.38	0.0278	0.0054
Mars	-119843-08-06 01:13 J	-42051015.52	-42051015.45	-42051015.36	0.0278	0.0267
Venus	-119842-03-18 02:25 J	-42050791.61	-42050791.40	-42050791.20	0.0275	0.0063
Venus	-119842-11-02 05:32 J	-42050562.47	-42050562.27	-42050562.06	0.0272	0.0072
Venus	-119841-06-18 07:56 J	-42050333.37	-42050333.17	-42050332.97	0.0269	0.0080
Venus	-119840-02-02 09:22 J	-42050104.31	-42050104.11	-42050103.91	0.0267	0.0086
Venus	-119840-09-19 10:05 J	-42049875.28	-42049875.08	-42049874.88	0.0265	0.0091
Mercury	-119840-09-21 01:13 J	-42049873.57	-42049873.45	-42049873.32	0.0265	0.0187
Mercury	-119840-12-18 20:10 J	-42049784.83	-42049784.66	-42049784.49	0.0264	0.0085
Mercury	-119839-03-17 14:53 J	-42049696.06	-42049695.88	-42049695.70	0.0264	0.0018
Venus	-119839-05-06 10:20 J	-42049646.26	-42049646.07	-42049645.86	0.0263	0.0095
Mercury	-119839-06-14 09:51 J	-42049607.25	-42049607.09	-42049606.92	0.0263	0.0120
Mercury	-119839-09-11 05:03 J	-42049518.38	-42049518.29	-42049518.19	0.0262	0.0223
Venus	-119839-12-21 10:20 J	-42049417.27	-42049417.07	-42049416.87	0.0262	0.0097
Venus	-119838-08-07 10:20 J	-42049188.27	-42049188.07	-42049187.87	0.0260	0.0098
Venus	-119837-03-23 10:05 J	-42048959.28	-42048959.08	-42048958.88	0.0260	0.0097
Venus	-119837-11-07 10:05 J	-42048730.28	-42048730.08	-42048729.87	0.0259	0.0096
Venus	-119836-06-24 10:34 J	-42048501.25	-42048501.06	-42048500.85	0.0258	0.0094
Venus	-119835-02-08 11:32 J	-42048272.22	-42048272.02	-42048271.81	0.0258	0.0090
Venus	-119835-09-25 13:13 J	-42048043.15	-42048042.95	-42048042.74	0.0259	0.0084

Venus -119834-05-12 15:37 J -42047814.06 -42047813.85 -42047813.64 0.0259 0.0078  
 Venus -119834-12-27 18:58 J -42047584.92 -42047584.71 -42047584.49 0.0260 0.0071  
 Venus -119833-08-12 23:46 J -42047355.72 -42047355.51 -42047355.29 0.0261 0.0062  
 Venus -119832-03-30 05:46 J -42047126.48 -42047126.26 -42047126.04 0.0263 0.0053  
 Venus -119832-11-14 12:58 J -42046897.18 -42046896.96 -42046896.74 0.0264 0.0042  
 Venus -119831-07-01 21:51 J -42046667.81 -42046667.59 -42046667.37 0.0266 0.0031  
 Venus -119830-02-16 08:10 J -42046438.38 -42046438.16 -42046437.94 0.0269 0.0019  
 Venus -119830-10-03 20:25 J -42046208.87 -42046208.65 -42046208.43 0.0271 0.0008  
 Venus -119829-05-20 10:05 J -42045979.30 -42045979.08 -42045978.86 0.0274 0.0007  
 Venus -119828-01-05 01:27 J -42045749.66 -42045749.44 -42045749.22 0.0277 0.0020  
 Venus -119828-08-22 18:29 J -42045519.94 -42045519.73 -42045519.51 0.0280 0.0034  
 Earth -119827-01-08 01:56 J -42045381.60 -42045381.42 -42045381.21 0.0281 0.0172  
 Moon -119827-01-08 02:53 J -42045381.58 -42045381.38 -42045381.18 0.0281 0.0176 \*  
 Venus -119827-04-09 13:27 J -42045290.15 -42045289.94 -42045289.73 0.0283 0.0047  
 Venus -119827-11-25 09:51 J -42045060.30 -42045060.09 -42045059.88 0.0286 0.0061  
 Venus -119826-07-13 07:41 J -42044830.38 -42044830.18 -42044829.97 0.0289 0.0073  
 Venus -119825-02-28 06:58 J -42044600.41 -42044600.21 -42044600.01 0.0292 0.0084  
 Venus -119825-10-15 07:13 J -42044370.40 -42044370.20 -42044370.00 0.0295 0.0093  
 Mercury -119824-04-11 09:08 J -42044192.18 -42044192.12 -42044192.06 0.0297 0.0263  
 Venus -119824-06-02 08:25 J -42044140.35 -42044140.15 -42044139.95 0.0297 0.0101  
 Mercury -119824-07-08 23:03 J -42044103.65 -42044103.54 -42044103.42 0.0298 0.0151  
 Mercury -119824-10-05 12:58 J -42044015.10 -42044014.96 -42044014.83 0.0299 0.0040  
 Mercury -119823-01-02 02:39 J -42043926.52 -42043926.39 -42043926.26 0.0300 0.0073  
 Venus -119823-01-18 10:05 J -42043910.27 -42043910.08 -42043909.88 0.0300 0.0107  
 Mercury -119823-03-31 16:05 J -42043837.93 -42043837.83 -42043837.72 0.0300 0.0184  
 Mercury -119823-06-28 05:32 J -42043749.29 -42043749.27 -42043749.24 0.0301 0.0294  
 Venus -119823-09-05 12:15 J -42043680.18 -42043679.99 -42043679.79 0.0302 0.0109  
 Venus -119822-04-23 14:10 J -42043450.10 -42043449.91 -42043449.71 0.0303 0.0109  
 Venus -119822-12-09 15:51 J -42043220.03 -42043219.84 -42043219.64 0.0304 0.0107  
 Venus -119821-07-26 16:49 J -42042989.99 -42042989.80 -42042989.60 0.0304 0.0101

Venus	-119820-03-13 17:03 J	-42042759.99	-42042759.79	-42042759.60	0.0304	0.0093
Venus	-119820-10-29 15:37 J	-42042530.04	-42042529.85	-42042529.65	0.0303	0.0083
Venus	-119819-06-16 12:58 J	-42042300.16	-42042299.96	-42042299.76	0.0302	0.0070
Venus	-119818-02-01 08:39 J	-42042070.34	-42042070.14	-42042069.94	0.0300	0.0056
Venus	-119818-09-19 02:25 J	-42041840.60	-42041840.40	-42041840.20	0.0298	0.0041
Venus	-119817-05-05 18:29 J	-42041610.93	-42041610.73	-42041610.53	0.0295	0.0025
Venus	-119817-12-21 08:39 J	-42041381.35	-42041381.14	-42041380.94	0.0292	0.0011
Venus	-119816-08-07 20:53 J	-42041151.84	-42041151.63	-42041151.43	0.0289	0.0007
Venus	-119815-03-25 07:13 J	-42040922.40	-42040922.20	-42040921.99	0.0286	0.0021
Venus	-119815-11-09 15:51 J	-42040693.04	-42040692.84	-42040692.63	0.0283	0.0034
Venus	-119814-06-26 22:49 J	-42040463.75	-42040463.55	-42040463.34	0.0280	0.0047
Moon	-119814-07-03 12:58 J	-42040457.20	-42040456.96	-42040456.71	0.0280	0.0050
Earth	-119814-07-03 16:34 J	-42040457.05	-42040456.81	-42040456.57	0.0280	0.0046 *
Venus	-119813-02-11 04:20 J	-42040234.52	-42040234.32	-42040234.11	0.0277	0.0058
Mars	-119813-09-24 00:29 J	-42040008.76	-42040008.48	-42040008.19	0.0274	0.0054
Venus	-119813-09-27 08:39 J	-42040005.34	-42040005.14	-42040004.93	0.0274	0.0068
Venus	-119812-05-14 12:01 J	-42039776.20	-42039776.00	-42039775.80	0.0271	0.0076
Venus	-119812-12-29 13:56 J	-42039547.11	-42039546.92	-42039546.71	0.0269	0.0084
Venus	-119811-08-15 15:22 J	-42039318.06	-42039317.86	-42039317.66	0.0267	0.0089
Mercury	-119810-02-08 02:39 J	-42039141.50	-42039141.39	-42039141.29	0.0265	0.0209
Venus	-119810-04-01 16:05 J	-42039089.03	-42039088.83	-42039088.63	0.0265	0.0094
Mercury	-119810-05-07 21:08 J	-42039052.78	-42039052.62	-42039052.45	0.0264	0.0108
Mercury	-119810-08-04 16:05 J	-42038964.01	-42038963.83	-42038963.65	0.0264	0.0008
Mercury	-119810-11-01 10:49 J	-42038875.21	-42038875.05	-42038874.87	0.0263	0.0096
Venus	-119810-11-16 16:05 J	-42038860.02	-42038859.83	-42038859.63	0.0263	0.0097
Mercury	-119809-01-29 06:01 J	-42038786.36	-42038786.25	-42038786.13	0.0262	0.0199
Venus	-119809-07-02 16:20 J	-42038631.02	-42038630.82	-42038630.62	0.0261	0.0099
Venus	-119808-02-16 16:05 J	-42038402.03	-42038401.83	-42038401.63	0.0260	0.0099
Venus	-119808-10-03 15:51 J	-42038173.04	-42038172.84	-42038172.64	0.0259	0.0098
Venus	-119807-05-20 15:37 J	-42037944.04	-42037943.85	-42037943.64	0.0259	0.0097



Venus	-119806-01-04 16:05 J	-42037715.03	-42037714.83	-42037714.62	0.0259	0.0094
Venus	-119806-08-21 17:03 J	-42037485.99	-42037485.79	-42037485.58	0.0259	0.0090
Venus	-119805-04-06 18:44 J	-42037256.92	-42037256.72	-42037256.51	0.0259	0.0084
Venus	-119805-11-21 21:08 J	-42037027.82	-42037027.62	-42037027.40	0.0260	0.0078
Venus	-119804-07-09 00:44 J	-42036798.68	-42036798.47	-42036798.25	0.0260	0.0070
Venus	-119803-02-23 05:17 J	-42036569.49	-42036569.28	-42036569.06	0.0262	0.0062
Venus	-119803-10-10 11:17 J	-42036340.24	-42036340.03	-42036339.81	0.0263	0.0052
Venus	-119802-05-27 18:44 J	-42036110.94	-42036110.72	-42036110.50	0.0265	0.0042
Venus	-119801-01-12 03:22 J	-42035881.57	-42035881.36	-42035881.13	0.0267	0.0031
Venus	-119801-08-28 14:10 J	-42035652.13	-42035651.91	-42035651.69	0.0269	0.0018
Venus	-119800-04-15 02:25 J	-42035422.62	-42035422.40	-42035422.18	0.0271	0.0004
Venus	-119800-11-30 16:20 J	-42035193.04	-42035192.82	-42035192.60	0.0274	0.0009
Venus	-119799-07-18 07:56 J	-42034963.39	-42034963.17	-42034962.95	0.0277	0.0023
Venus	-119798-03-05 01:27 J	-42034733.66	-42034733.44	-42034733.23	0.0280	0.0038
Venus	-119798-10-20 20:39 J	-42034503.86	-42034503.64	-42034503.43	0.0283	0.0052
Venus	-119797-06-06 17:17 J	-42034273.99	-42034273.78	-42034273.57	0.0286	0.0065
Mars	-119797-08-18 01:27 J	-42034201.69	-42034201.44	-42034201.19	0.0287	0.0152
Venus	-119796-01-22 15:22 J	-42034044.07	-42034043.86	-42034043.65	0.0289	0.0078
Venus	-119796-09-09 14:39 J	-42033814.09	-42033813.89	-42033813.69	0.0292	0.0089
Venus	-119795-04-27 14:53 J	-42033584.07	-42033583.88	-42033583.67	0.0295	0.0099
Mercury	-119795-08-29 11:03 J	-42033460.05	-42033460.04	-42033460.02	0.0296	0.0293
Mercury	-119795-11-26 00:58 J	-42033371.56	-42033371.46	-42033371.35	0.0297	0.0182
Venus	-119795-12-13 16:20 J	-42033354.02	-42033353.82	-42033353.62	0.0297	0.0106
Mercury	-119794-02-22 14:53 J	-42033283.01	-42033282.88	-42033282.75	0.0298	0.0070
Mercury	-119794-05-22 04:34 J	-42033194.44	-42033194.31	-42033194.17	0.0299	0.0042
Venus	-119794-07-31 18:01 J	-42033123.94	-42033123.75	-42033123.55	0.0299	0.0112
Mercury	-119794-08-18 18:15 J	-42033105.86	-42033105.74	-42033105.63	0.0300	0.0152
Mercury	-119794-11-15 07:41 J	-42033017.24	-42033017.18	-42033017.12	0.0300	0.0263
Venus	-119793-03-17 19:56 J	-42032893.85	-42032893.67	-42032893.47	0.0301	0.0115
Venus	-119793-11-02 22:05 J	-42032663.77	-42032663.58	-42032663.39	0.0303	0.0114

Venus	-119792-06-20 23:46 J	-42032433.70	-42032433.51	-42032433.32	0.0304	0.0110
Venus	-119791-02-06 00:58 J	-42032203.66	-42032203.46	-42032203.27	0.0304	0.0104
Venus	-119791-09-24 00:44 J	-42031973.66	-42031973.47	-42031973.27	0.0304	0.0096
Venus	-119790-05-11 23:32 J	-42031743.71	-42031743.52	-42031743.32	0.0303	0.0084
Venus	-119790-12-27 20:39 J	-42031513.83	-42031513.64	-42031513.44	0.0302	0.0071
Venus	-119789-08-13 16:20 J	-42031284.02	-42031283.82	-42031283.62	0.0300	0.0056
Venus	-119788-03-31 10:20 J	-42031054.28	-42031054.07	-42031053.87	0.0298	0.0041
Venus	-119788-11-16 02:10 J	-42030824.62	-42030824.41	-42030824.21	0.0295	0.0025
Venus	-119787-07-03 16:05 J	-42030595.04	-42030594.83	-42030594.63	0.0292	0.0010
Venus	-119786-02-18 04:05 J	-42030365.54	-42030365.33	-42030365.13	0.0289	0.0007
Venus	-119786-10-05 14:25 J	-42030136.11	-42030135.90	-42030135.70	0.0286	0.0022
Venus	-119785-05-21 22:49 J	-42029906.75	-42029906.55	-42029906.34	0.0283	0.0036
Venus	-119784-01-06 05:46 J	-42029677.46	-42029677.26	-42029677.05	0.0280	0.0048
Venus	-119784-08-23 11:17 J	-42029448.24	-42029448.03	-42029447.83	0.0277	0.0059
Venus	-119783-04-09 15:22 J	-42029219.06	-42029218.86	-42029218.66	0.0274	0.0069
Mars	-119783-11-12 09:08 J	-42029002.35	-42029002.12	-42029001.87	0.0271	0.0151
Venus	-119783-11-24 18:15 J	-42028989.94	-42028989.74	-42028989.54	0.0271	0.0078
Venus	-119782-07-11 19:56 J	-42028760.86	-42028760.67	-42028760.46	0.0269	0.0086
Venus	-119781-02-25 21:08 J	-42028531.81	-42028531.62	-42028531.42	0.0266	0.0091
Mercury	-119781-06-27 03:37 J	-42028409.43	-42028409.35	-42028409.27	0.0265	0.0233
Mercury	-119781-09-23 22:05 J	-42028320.73	-42028320.58	-42028320.42	0.0265	0.0132
Venus	-119781-10-11 21:37 J	-42028302.79	-42028302.60	-42028302.40	0.0264	0.0096
Mercury	-119781-12-21 16:49 J	-42028231.97	-42028231.80	-42028231.62	0.0264	0.0031
Mercury	-119780-03-20 11:46 J	-42028143.18	-42028143.01	-42028142.83	0.0263	0.0072
Venus	-119780-05-28 21:51 J	-42028073.79	-42028073.59	-42028073.39	0.0263	0.0099
Mercury	-119780-06-17 06:44 J	-42028054.35	-42028054.22	-42028054.08	0.0263	0.0174
Venus	-119779-01-12 21:37 J	-42027844.80	-42027844.60	-42027844.40	0.0261	0.0101
Venus	-119779-08-29 21:08 J	-42027615.81	-42027615.62	-42027615.41	0.0260	0.0102
Venus	-119778-04-15 20:53 J	-42027386.83	-42027386.63	-42027386.43	0.0259	0.0101
Venus	-119778-11-30 20:53 J	-42027157.83	-42027157.63	-42027157.43	0.0259	0.0099

Venus -119777-07-16 21:22 J -42026928.81 -42026928.61 -42026928.40 0.0258 0.0096  
 Venus -119776-03-02 22:20 J -42026699.77 -42026699.57 -42026699.36 0.0258 0.0092  
 Venus -119776-10-18 00:01 J -42026470.71 -42026470.50 -42026470.29 0.0259 0.0086  
 Venus -119775-06-04 02:25 J -42026241.61 -42026241.40 -42026241.19 0.0259 0.0079  
 Venus -119774-01-19 06:01 J -42026012.46 -42026012.25 -42026012.04 0.0260 0.0071  
 Venus -119774-09-05 10:49 J -42025783.26 -42025783.05 -42025782.84 0.0261 0.0062  
 Venus -119773-04-21 16:49 J -42025554.02 -42025553.80 -42025553.58 0.0263 0.0052  
 Venus -119773-12-07 00:15 J -42025324.71 -42025324.49 -42025324.27 0.0265 0.0041  
 Venus -119772-07-24 09:08 J -42025095.34 -42025095.12 -42025094.90 0.0267 0.0029  
 Venus -119771-03-10 19:56 J -42024865.89 -42024865.67 -42024865.45 0.0269 0.0017  
 Venus -119771-10-26 08:10 J -42024636.38 -42024636.16 -42024635.94 0.0271 0.0005  
 Venus -119770-06-12 22:20 J -42024406.79 -42024406.57 -42024406.35 0.0274 0.0011  
 Venus -119769-01-28 13:56 J -42024177.13 -42024176.92 -42024176.70 0.0277 0.0026  
 Venus -119769-09-14 07:41 J -42023947.40 -42023947.18 -42023946.97 0.0280 0.0040  
 Earth -119768-01-09 11:46 J -42023830.25 -42023830.01 -42023829.77 0.0282 0.0074  
 Moon -119768-01-09 13:56 J -42023830.17 -42023829.92 -42023829.67 0.0282 0.0059 \*  
 Venus -119768-05-02 02:53 J -42023717.59 -42023717.38 -42023717.17 0.0283 0.0053  
 Venus -119768-12-17 23:32 J -42023487.72 -42023487.52 -42023487.30 0.0287 0.0068  
 Venus -119767-08-04 21:51 J -42023257.79 -42023257.59 -42023257.38 0.0290 0.0079  
 Mars -119767-10-09 05:17 J -42023192.55 -42023192.28 -42023192.00 0.0291 0.0103  
 Venus -119766-03-22 21:22 J -42023027.81 -42023027.61 -42023027.41 0.0293 0.0091  
 Venus -119766-11-07 22:05 J -42022797.78 -42022797.58 -42022797.38 0.0296 0.0100  
 Mercury -119765-04-14 02:53 J -42022639.48 -42022639.38 -42022639.29 0.0297 0.0212  
 Venus -119765-06-24 23:32 J -42022567.71 -42022567.52 -42022567.32 0.0298 0.0107  
 Mercury -119765-07-11 16:49 J -42022550.93 -42022550.80 -42022550.67 0.0298 0.0100  
 Mercury -119765-10-08 06:29 J -42022462.37 -42022462.23 -42022462.09 0.0299 0.0012  
 Mercury -119764-01-04 20:10 J -42022373.78 -42022373.66 -42022373.54 0.0300 0.0123  
 Venus -119764-02-10 01:27 J -42022337.63 -42022337.44 -42022337.24 0.0300 0.0112  
 Mercury -119764-04-03 09:37 J -42022285.18 -42022285.10 -42022285.01 0.0301 0.0234  
 Venus -119764-09-28 03:37 J -42022107.54 -42022107.35 -42022107.15 0.0302 0.0115

Venus -119763-05-16 05:46 J -42021877.45 -42021877.26 -42021877.07 0.0303 0.0114  
 Venus -119762-01-01 07:27 J -42021647.38 -42021647.19 -42021646.99 0.0304 0.0110  
 Venus -119762-08-19 08:25 J -42021417.34 -42021417.15 -42021416.95 0.0304 0.0103  
 Venus -119761-04-05 08:25 J -42021187.35 -42021187.15 -42021186.96 0.0304 0.0094  
 Venus -119761-11-21 06:58 J -42020957.41 -42020957.21 -42020957.02 0.0303 0.0082  
 Venus -119760-07-09 03:51 J -42020727.53 -42020727.34 -42020727.14 0.0302 0.0069  
 Venus -119759-02-23 23:17 J -42020497.72 -42020497.53 -42020497.32 0.0300 0.0055  
 Venus -119759-10-11 17:03 J -42020267.99 -42020267.79 -42020267.59 0.0297 0.0038  
 Venus -119758-05-29 08:39 J -42020038.34 -42020038.14 -42020037.94 0.0294 0.0022  
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 Venus -119577-05-11 12:44 J -41953945.17 -41953944.97 -41953944.76 0.0274 0.0078  
 Venus -119577-12-26 16:20 J -41953716.02 -41953715.82 -41953715.62 0.0272 0.0088  
 Venus -119576-08-12 18:29 J -41953486.92 -41953486.73 -41953486.53 0.0269 0.0096  
 Venus -119575-03-29 19:56 J -41953257.87 -41953257.67 -41953257.48 0.0267 0.0103



Mercury -119575-08-26 15:37 J -41953107.91 -41953107.85 -41953107.76 0.0265 0.0239

Venus -119575-11-13 20:25 J -41953028.84 -41953028.65 -41953028.45 0.0264 0.0108

Mercury -119575-11-23 10:20 J -41953019.22 -41953019.07 -41953018.91 0.0264 0.0138

Mercury -119574-02-20 05:03 J -41952930.46 -41952930.29 -41952930.11 0.0264 0.0037

Mercury -119574-05-20 00:01 J -41952841.68 -41952841.50 -41952841.33 0.0263 0.0064

Venus -119574-06-30 20:39 J -41952799.83 -41952799.64 -41952799.44 0.0263 0.0111

Mercury -119574-08-16 18:58 J -41952752.85 -41952752.71 -41952752.57 0.0262 0.0166

Venus -119573-02-14 20:25 J -41952570.85 -41952570.65 -41952570.46 0.0261 0.0113

Venus -119573-09-30 19:41 J -41952341.87 -41952341.68 -41952341.48 0.0260 0.0114

Venus -119572-05-17 19:13 J -41952112.90 -41952112.70 -41952112.51 0.0259 0.0113

Venus -119571-01-01 18:29 J -41951883.92 -41951883.73 -41951883.53 0.0258 0.0111

Venus -119571-08-18 18:15 J -41951654.93 -41951654.74 -41951654.53 0.0258 0.0108

Venus -119570-04-04 18:29 J -41951425.92 -41951425.73 -41951425.52 0.0258 0.0103

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Venus -119566-01-08 14:10 J -41950051.12 -41950050.91 -41950050.69 0.0263 0.0048

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Moon -119562-01-07 20:53 J -41948590.77 -41948590.63 -41948590.47 0.0280 0.0221 \*

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Earth -119532-01-14 07:41 J -41937626.34 -41937626.18 -41937626.01 0.0282 0.0207  
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 Venus -119394-10-25 01:13 J -41886938.64 -41886938.45 -41886938.25 0.0258 0.0112  
 Venus -119393-06-10 01:41 J -41886709.62 -41886709.43 -41886709.22 0.0258 0.0106  
 Venus -119392-01-25 02:53 J -41886480.58 -41886480.38 -41886480.17 0.0258 0.0098  
 Venus -119392-09-11 05:03 J -41886251.50 -41886251.29 -41886251.08 0.0259 0.0089  
 Venus -119391-04-28 07:56 J -41886022.38 -41886022.17 -41886021.96 0.0259 0.0079

Venus	-119391-12-13 11:46 J	-41885793.22	-41885793.01	-41885792.79	0.0261	0.0067
Venus	-119390-07-30 16:49 J	-41885564.01	-41885563.80	-41885563.58	0.0262	0.0055
Venus	-119389-03-15 23:17 J	-41885334.74	-41885334.53	-41885334.31	0.0264	0.0042
Venus	-119389-10-31 07:13 J	-41885105.41	-41885105.20	-41885104.97	0.0266	0.0028
Venus	-119388-06-17 16:49 J	-41884876.02	-41884875.80	-41884875.58	0.0268	0.0012
Venus	-119387-02-02 03:51 J	-41884646.56	-41884646.34	-41884646.12	0.0271	0.0004
Venus	-119387-09-19 16:49 J	-41884417.02	-41884416.80	-41884416.58	0.0273	0.0021
Venus	-119386-05-07 07:27 J	-41884187.40	-41884187.19	-41884186.97	0.0276	0.0038
Venus	-119386-12-22 23:46 J	-41883957.72	-41883957.51	-41883957.29	0.0279	0.0055
Earth	-119385-01-10 23:32 J	-41883938.76	-41883938.52	-41883938.28	0.0280	0.0059
Moon	-119385-01-10 23:32 J	-41883938.75	-41883938.52	-41883938.28	0.0280	0.0046 *
Venus	-119385-08-08 18:01 J	-41883727.96	-41883727.75	-41883727.54	0.0282	0.0071
Venus	-119384-03-26 13:41 J	-41883498.13	-41883497.93	-41883497.72	0.0286	0.0087
Venus	-119384-11-11 11:17 J	-41883268.23	-41883268.03	-41883267.83	0.0289	0.0101
Venus	-119383-06-29 10:05 J	-41883038.27	-41883038.08	-41883037.88	0.0292	0.0114
Venus	-119382-02-14 10:05 J	-41882808.27	-41882808.08	-41882807.89	0.0295	0.0125
Mercury	-119382-03-25 17:03 J	-41882768.81	-41882768.79	-41882768.76	0.0295	0.0289
Mercury	-119382-06-22 06:58 J	-41882680.31	-41882680.21	-41882680.10	0.0296	0.0179
Mercury	-119382-09-18 20:53 J	-41882591.76	-41882591.63	-41882591.50	0.0297	0.0069
Venus	-119382-10-02 11:03 J	-41882578.23	-41882578.04	-41882577.85	0.0298	0.0133
Mercury	-119382-12-16 10:34 J	-41882503.19	-41882503.06	-41882502.92	0.0298	0.0041
Mercury	-119381-03-14 00:15 J	-41882414.60	-41882414.49	-41882414.37	0.0299	0.0150
Venus	-119381-05-19 12:44 J	-41882348.15	-41882347.97	-41882347.78	0.0300	0.0138
Mercury	-119381-06-10 13:41 J	-41882325.99	-41882325.93	-41882325.86	0.0300	0.0259
Venus	-119380-01-04 14:53 J	-41882118.06	-41882117.88	-41882117.69	0.0302	0.0139
Venus	-119380-08-22 16:49 J	-41881887.98	-41881887.80	-41881887.61	0.0303	0.0138
Venus	-119379-04-09 18:44 J	-41881657.90	-41881657.72	-41881657.54	0.0304	0.0131
Venus	-119379-11-25 19:41 J	-41881427.86	-41881427.68	-41881427.49	0.0304	0.0122
Venus	-119378-07-13 19:56 J	-41881197.85	-41881197.67	-41881197.47	0.0304	0.0110
Venus	-119377-02-28 19:13 J	-41880967.89	-41880967.70	-41880967.51	0.0303	0.0094

Venus	-119377-10-15 16:49 J	-41880738.00	-41880737.80	-41880737.60	0.0302	0.0077
Venus	-119376-06-02 12:44 J	-41880508.17	-41880507.97	-41880507.77	0.0300	0.0059
Venus	-119375-01-18 07:13 J	-41880278.40	-41880278.20	-41880278.00	0.0298	0.0039
Venus	-119375-09-04 23:46 J	-41880048.71	-41880048.51	-41880048.31	0.0295	0.0019
Venus	-119374-04-22 14:39 J	-41879819.09	-41879818.89	-41879818.68	0.0293	0.0004
Venus	-119374-12-08 03:37 J	-41879589.55	-41879589.35	-41879589.14	0.0290	0.0020
Venus	-119373-07-24 14:53 J	-41879360.09	-41879359.88	-41879359.68	0.0286	0.0038
Venus	-119372-03-11 00:15 J	-41879130.69	-41879130.49	-41879130.29	0.0283	0.0054
Earth	-119372-07-06 02:39 J	-41879013.56	-41879013.39	-41879013.20	0.0282	0.0189
Moon	-119372-07-06 06:29 J	-41879013.42	-41879013.23	-41879013.04	0.0282	0.0174 *
Venus	-119372-10-26 07:56 J	-41878901.37	-41878901.17	-41878900.97	0.0280	0.0069
Venus	-119371-06-12 14:10 J	-41878672.10	-41878671.91	-41878671.70	0.0277	0.0082
Mars	-119371-09-24 20:53 J	-41878567.92	-41878567.63	-41878567.34	0.0276	0.0006
Venus	-119370-01-27 18:58 J	-41878442.90	-41878442.71	-41878442.50	0.0274	0.0094
Venus	-119370-09-13 22:34 J	-41878213.74	-41878213.56	-41878213.35	0.0271	0.0103
Venus	-119369-04-30 01:13 J	-41877984.64	-41877984.45	-41877984.25	0.0269	0.0110
Venus	-119369-12-15 02:53 J	-41877755.57	-41877755.38	-41877755.18	0.0267	0.0116
Mercury	-119368-01-21 14:53 J	-41877718.00	-41877717.88	-41877717.75	0.0266	0.0182
Mercury	-119368-04-20 09:37 J	-41877629.26	-41877629.10	-41877628.93	0.0265	0.0081
Mercury	-119368-07-18 04:34 J	-41877540.49	-41877540.31	-41877540.13	0.0265	0.0021
Venus	-119368-08-01 03:51 J	-41877526.53	-41877526.34	-41877526.15	0.0264	0.0120
Mercury	-119368-10-14 23:32 J	-41877451.68	-41877451.52	-41877451.36	0.0264	0.0123
Mercury	-119367-01-11 18:44 J	-41877362.81	-41877362.72	-41877362.63	0.0263	0.0225
Venus	-119367-03-18 04:05 J	-41877297.52	-41877297.33	-41877297.14	0.0263	0.0122
Venus	-119367-11-02 03:51 J	-41877068.52	-41877068.34	-41877068.14	0.0261	0.0123
Venus	-119366-06-19 03:51 J	-41876839.53	-41876839.34	-41876839.15	0.0260	0.0122
Venus	-119365-02-03 03:37 J	-41876610.54	-41876610.35	-41876610.16	0.0259	0.0120
Venus	-119365-09-19 03:22 J	-41876381.55	-41876381.36	-41876381.17	0.0258	0.0116
Venus	-119364-05-06 03:22 J	-41876152.55	-41876152.36	-41876152.16	0.0258	0.0111
Venus	-119364-12-21 04:05 J	-41875923.53	-41875923.33	-41875923.13	0.0258	0.0105

Venus -119363-08-07 05:32 J -41875694.48 -41875694.27 -41875694.07 0.0258 0.0097

Venus -119362-03-24 07:27 J -41875465.39 -41875465.19 -41875464.98 0.0259 0.0088

Venus -119362-11-08 10:34 J -41875236.27 -41875236.06 -41875235.85 0.0259 0.0078

Venus -119361-06-24 14:25 J -41875007.11 -41875006.90 -41875006.68 0.0260 0.0066

Venus -119360-02-08 19:41 J -41874777.89 -41874777.68 -41874777.46 0.0262 0.0054

Venus -119360-09-26 02:25 J -41874548.61 -41874548.40 -41874548.18 0.0264 0.0040

Venus -119359-05-13 10:34 J -41874319.28 -41874319.06 -41874318.84 0.0266 0.0025

Venus -119359-12-28 20:10 J -41874089.88 -41874089.66 -41874089.44 0.0268 0.0009

Venus -119358-08-15 07:13 J -41873860.42 -41873860.20 -41873859.98 0.0270 0.0008

Venus -119357-03-31 20:10 J -41873630.88 -41873630.66 -41873630.44 0.0273 0.0024

Venus -119357-11-16 10:49 J -41873401.26 -41873401.05 -41873400.83 0.0276 0.0041

Venus -119356-07-04 03:08 J -41873171.58 -41873171.37 -41873171.15 0.0279 0.0058

Venus -119355-02-18 21:08 J -41872941.82 -41872941.62 -41872941.40 0.0282 0.0075

Mars -119355-08-16 07:56 J -41872763.43 -41872763.17 -41872762.89 0.0285 0.0121

Venus -119355-10-06 17:03 J -41872711.99 -41872711.79 -41872711.58 0.0285 0.0091

Venus -119354-05-24 14:25 J -41872482.09 -41872481.90 -41872481.70 0.0289 0.0105

Venus -119353-01-09 13:13 J -41872252.14 -41872251.95 -41872251.75 0.0292 0.0117

Venus -119353-08-26 12:58 J -41872022.14 -41872021.96 -41872021.76 0.0295 0.0128

Mercury -119353-11-08 07:41 J -41871948.27 -41871948.18 -41871948.09 0.0296 0.0218

Mercury -119352-02-04 21:37 J -41871859.73 -41871859.60 -41871859.48 0.0297 0.0109

Venus -119352-04-13 13:56 J -41871792.11 -41871791.92 -41871791.73 0.0298 0.0135

Mercury -119352-05-04 11:17 J -41871771.17 -41871771.03 -41871770.89 0.0298 0.0002

Mercury -119352-08-01 00:58 J -41871682.59 -41871682.46 -41871682.34 0.0299 0.0111

Mercury -119352-10-28 14:25 J -41871593.99 -41871593.90 -41871593.81 0.0300 0.0220

Venus -119352-11-29 15:22 J -41871562.04 -41871561.86 -41871561.67 0.0300 0.0139

Venus -119351-07-17 17:17 J -41871331.96 -41871331.78 -41871331.59 0.0302 0.0140

Venus -119350-03-04 19:13 J -41871101.88 -41871101.70 -41871101.51 0.0303 0.0137

Venus -119350-10-20 20:53 J -41870871.81 -41870871.63 -41870871.44 0.0304 0.0131

Venus -119349-06-06 21:51 J -41870641.77 -41870641.59 -41870641.40 0.0305 0.0121

Venus -119348-01-22 22:05 J -41870411.77 -41870411.58 -41870411.39 0.0305 0.0108



Venus -119348-09-09 20:53 J -41870181.82 -41870181.63 -41870181.43 0.0304 0.0093

Venus -119347-04-27 18:29 J -41869951.92 -41869951.73 -41869951.53 0.0302 0.0075

Venus -119347-12-13 14:25 J -41869722.09 -41869721.90 -41869721.70 0.0301 0.0056

Venus -119346-07-31 08:39 J -41869492.34 -41869492.14 -41869491.93 0.0298 0.0037

Venus -119345-03-17 01:27 J -41869262.65 -41869262.44 -41869262.24 0.0296 0.0017

Venus -119345-11-01 15:51 J -41869033.04 -41869032.84 -41869032.63 0.0293 0.0007

Venus -119344-06-19 04:34 J -41868803.51 -41868803.31 -41868803.10 0.0290 0.0024

Venus -119343-02-03 15:37 J -41868574.05 -41868573.85 -41868573.64 0.0286 0.0041

Moon -119343-06-30 07:27 J -41868427.35 -41868427.19 -41868427.02 0.0284 0.0208

Earth -119343-06-30 10:49 J -41868427.22 -41868427.05 -41868426.87 0.0284 0.0193 \*

Venus -119343-09-21 00:58 J -41868344.66 -41868344.46 -41868344.26 0.0283 0.0057

Venus -119342-05-08 08:53 J -41868115.33 -41868115.13 -41868114.93 0.0280 0.0072

Venus -119342-12-23 14:53 J -41867886.07 -41867885.88 -41867885.68 0.0277 0.0085

Venus -119341-08-08 19:41 J -41867656.87 -41867656.68 -41867656.48 0.0274 0.0096

Mars -119341-11-11 17:32 J -41867561.96 -41867561.77 -41867561.56 0.0273 0.0196

Venus -119340-03-25 23:17 J -41867427.72 -41867427.53 -41867427.33 0.0271 0.0106

Venus -119340-11-10 01:41 J -41867198.61 -41867198.43 -41867198.23 0.0268 0.0114

Mercury -119339-06-10 13:27 J -41866986.03 -41866985.94 -41866985.83 0.0266 0.0219

Venus -119339-06-27 03:37 J -41866969.54 -41866969.35 -41866969.16 0.0266 0.0119

Mercury -119339-09-07 08:10 J -41866897.31 -41866897.16 -41866897.00 0.0265 0.0118

Mercury -119339-12-05 03:08 J -41866808.55 -41866808.37 -41866808.19 0.0265 0.0017

Venus -119338-02-11 04:34 J -41866740.49 -41866740.31 -41866740.12 0.0264 0.0123

Mercury -119338-03-03 22:05 J -41866719.75 -41866719.58 -41866719.41 0.0264 0.0085

Mercury -119338-05-31 17:03 J -41866630.91 -41866630.79 -41866630.66 0.0263 0.0187

Venus -119338-09-28 04:49 J -41866511.48 -41866511.30 -41866511.10 0.0262 0.0126

Venus -119337-05-14 04:49 J -41866282.48 -41866282.30 -41866282.10 0.0261 0.0126

Venus -119337-12-29 04:49 J -41866053.49 -41866053.30 -41866053.11 0.0260 0.0125

Venus -119336-08-15 04:49 J -41865824.50 -41865824.30 -41865824.11 0.0259 0.0122

Venus -119335-04-01 04:34 J -41865595.50 -41865595.31 -41865595.11 0.0258 0.0118

Venus -119335-11-16 04:49 J -41865366.49 -41865366.30 -41865366.10 0.0258 0.0113

Venus -119334-07-03 05:46 J -41865137.46 -41865137.26 -41865137.06 0.0258 0.0105  
 Venus -119333-02-17 07:13 J -41864908.40 -41864908.20 -41864907.99 0.0258 0.0097  
 Venus -119333-10-03 09:22 J -41864679.32 -41864679.11 -41864678.90 0.0259 0.0088  
 Venus -119332-05-20 12:29 J -41864450.19 -41864449.98 -41864449.77 0.0260 0.0077  
 Venus -119331-01-04 16:34 J -41864221.02 -41864220.81 -41864220.59 0.0261 0.0065  
 Venus -119331-08-21 22:05 J -41863991.79 -41863991.58 -41863991.36 0.0262 0.0052  
 Venus -119330-04-08 04:49 J -41863762.51 -41863762.30 -41863762.08 0.0264 0.0038  
 Venus -119330-11-23 12:58 J -41863533.18 -41863532.96 -41863532.74 0.0266 0.0023  
 Venus -119329-07-09 22:34 J -41863303.78 -41863303.56 -41863303.34 0.0268 0.0008  
 Venus -119328-02-24 10:05 J -41863074.30 -41863074.08 -41863073.86 0.0271 0.0011  
 Venus -119328-10-11 23:03 J -41862844.75 -41862844.54 -41862844.32 0.0274 0.0027  
 Venus -119327-05-29 13:56 J -41862615.13 -41862614.92 -41862614.70 0.0277 0.0043  
 Earth -119326-01-11 22:34 J -41862387.81 -41862387.56 -41862387.31 0.0280 0.0010  
 Moon -119326-01-12 02:10 J -41862387.65 -41862387.41 -41862387.16 0.0280 0.0024 \*  
 Venus -119326-01-14 06:15 J -41862385.44 -41862385.24 -41862385.02 0.0280 0.0061  
 Venus -119326-09-01 00:29 J -41862155.68 -41862155.48 -41862155.27 0.0283 0.0077  
 Venus -119325-04-17 20:25 J -41861925.85 -41861925.65 -41861925.44 0.0286 0.0093  
 Mars -119325-10-05 16:49 J -41861755.07 -41861754.80 -41861754.53 0.0288 0.0119  
 Venus -119325-12-03 17:46 J -41861695.95 -41861695.76 -41861695.55 0.0289 0.0108  
 Venus -119324-07-21 16:49 J -41861466.00 -41861465.80 -41861465.61 0.0292 0.0120  
 Venus -119323-03-08 16:34 J -41861235.99 -41861235.81 -41861235.62 0.0295 0.0130  
 Mercury -119323-03-28 08:25 J -41861216.22 -41861216.15 -41861216.08 0.0295 0.0256  
 Mercury -119323-06-24 22:20 J -41861127.69 -41861127.57 -41861127.45 0.0296 0.0147  
 Mercury -119323-09-21 12:01 J -41861039.13 -41861039.00 -41861038.86 0.0297 0.0038  
 Venus -119323-10-24 17:32 J -41861005.95 -41861005.77 -41861005.58 0.0298 0.0137  
 Mercury -119323-12-19 01:41 J -41860950.56 -41860950.43 -41860950.30 0.0298 0.0072  
 Mercury -119322-03-17 15:22 J -41860861.97 -41860861.86 -41860861.76 0.0299 0.0181  
 Venus -119322-06-11 19:13 J -41860775.89 -41860775.70 -41860775.52 0.0300 0.0141  
 Mercury -119322-06-14 04:34 J -41860773.33 -41860773.31 -41860773.27 0.0300 0.0290  
 Venus -119321-01-27 21:08 J -41860545.80 -41860545.62 -41860545.44 0.0302 0.0142

Venus -119321-09-13 22:49 J -41860315.73 -41860315.55 -41860315.36 0.0303 0.0139  
 Venus -119320-05-02 00:29 J -41860085.66 -41860085.48 -41860085.29 0.0304 0.0132  
 Venus -119320-12-18 01:13 J -41859855.63 -41859855.45 -41859855.25 0.0304 0.0123  
 Venus -119319-08-05 01:27 J -41859625.63 -41859625.44 -41859625.25 0.0304 0.0108  
 Venus -119318-03-23 00:15 J -41859395.69 -41859395.49 -41859395.30 0.0303 0.0092  
 Venus -119318-11-07 21:22 J -41859165.80 -41859165.61 -41859165.41 0.0302 0.0074  
 Venus -119317-06-24 17:03 J -41858935.99 -41858935.79 -41858935.59 0.0300 0.0055  
 Venus -119316-02-09 11:17 J -41858706.23 -41858706.03 -41858705.83 0.0298 0.0034  
 Venus -119316-09-27 03:37 J -41858476.56 -41858476.35 -41858476.15 0.0295 0.0014  
 Venus -119315-05-14 18:01 J -41858246.95 -41858246.75 -41858246.54 0.0292 0.0009  
 Venus -119315-12-30 06:44 J -41858017.42 -41858017.22 -41858017.01 0.0289 0.0026  
 Venus -119314-08-16 17:46 J -41857787.96 -41857787.76 -41857787.55 0.0286 0.0044  
 Venus -119313-04-02 03:08 J -41857558.57 -41857558.37 -41857558.17 0.0283 0.0060  
 Moon -119313-07-06 21:37 J -41857462.72 -41857462.60 -41857462.46 0.0282 0.0237  
 Earth -119313-07-06 22:05 J -41857462.69 -41857462.58 -41857462.46 0.0282 0.0248 \*  
 Venus -119313-11-17 10:49 J -41857329.25 -41857329.05 -41857328.85 0.0280 0.0075  
 Mars -119313-12-29 23:03 J -41857286.73 -41857286.54 -41857286.32 0.0279 0.0203  
 Venus -119312-07-04 17:03 J -41857099.99 -41857099.79 -41857099.59 0.0277 0.0087  
 Venus -119311-02-18 21:51 J -41856870.78 -41856870.59 -41856870.39 0.0274 0.0098  
 Venus -119311-10-06 01:27 J -41856641.63 -41856641.44 -41856641.24 0.0271 0.0108  
 Venus -119310-05-23 04:20 J -41856412.51 -41856412.32 -41856412.13 0.0269 0.0115  
 Mercury -119310-10-28 12:44 J -41856254.02 -41856253.97 -41856253.90 0.0267 0.0251  
 Venus -119309-01-07 05:46 J -41856183.44 -41856183.26 -41856183.06 0.0266 0.0121  
 Mercury -119309-01-25 07:27 J -41856165.33 -41856165.19 -41856165.04 0.0266 0.0150  
 Mercury -119309-04-23 02:25 J -41856076.58 -41856076.40 -41856076.23 0.0265 0.0048  
 Mercury -119309-07-20 21:22 J -41855987.79 -41855987.61 -41855987.44 0.0265 0.0054  
 Venus -119309-08-23 06:58 J -41855954.40 -41855954.21 -41855954.02 0.0264 0.0124  
 Mercury -119309-10-17 16:20 J -41855898.96 -41855898.82 -41855898.67 0.0264 0.0156  
 Mercury -119308-01-14 11:32 J -41855810.05 -41855810.02 -41855809.98 0.0263 0.0258  
 Venus -119308-04-09 07:13 J -41855725.38 -41855725.20 -41855725.00 0.0263 0.0126

Venus	-119308-11-24 07:27 J	-41855496.38	-41855496.19	-41855496.00	0.0261	0.0126
Venus	-119307-07-11 07:27 J	-41855267.37	-41855267.19	-41855266.99	0.0260	0.0125
Venus	-119306-02-25 07:27 J	-41855038.38	-41855038.19	-41855038.00	0.0259	0.0122
Venus	-119306-10-12 07:27 J	-41854809.38	-41854809.19	-41854808.99	0.0258	0.0118
Venus	-119305-05-28 07:41 J	-41854580.37	-41854580.18	-41854579.98	0.0258	0.0112
Venus	-119304-01-12 08:39 J	-41854351.34	-41854351.14	-41854350.94	0.0258	0.0105
Venus	-119304-08-29 10:20 J	-41854122.27	-41854122.07	-41854121.87	0.0258	0.0097
Venus	-119303-04-15 12:29 J	-41853893.18	-41853892.98	-41853892.77	0.0259	0.0087
Venus	-119303-11-30 15:51 J	-41853664.05	-41853663.84	-41853663.63	0.0260	0.0076
Venus	-119302-07-17 20:10 J	-41853434.87	-41853434.66	-41853434.44	0.0261	0.0064
Venus	-119301-03-03 01:41 J	-41853205.64	-41853205.43	-41853205.21	0.0262	0.0050
Venus	-119301-10-18 08:39 J	-41852976.36	-41852976.14	-41852975.92	0.0264	0.0036
Venus	-119300-06-04 17:03 J	-41852747.01	-41852746.79	-41852746.57	0.0266	0.0020
Venus	-119299-01-20 02:53 J	-41852517.60	-41852517.38	-41852517.16	0.0268	0.0006
Venus	-119299-09-06 14:25 J	-41852288.12	-41852287.90	-41852287.68	0.0271	0.0014
Venus	-119298-04-24 03:22 J	-41852058.58	-41852058.36	-41852058.14	0.0273	0.0030
Venus	-119298-12-09 18:15 J	-41851828.96	-41851828.74	-41851828.53	0.0276	0.0048
Venus	-119297-07-26 10:34 J	-41851599.27	-41851599.06	-41851598.84	0.0279	0.0065
Venus	-119296-03-13 04:49 J	-41851369.50	-41851369.30	-41851369.09	0.0283	0.0082
Venus	-119296-10-29 00:58 J	-41851139.67	-41851139.46	-41851139.26	0.0286	0.0097
Venus	-119295-06-15 22:20 J	-41850909.77	-41850909.57	-41850909.37	0.0289	0.0111
Venus	-119294-01-31 20:53 J	-41850679.82	-41850679.63	-41850679.43	0.0292	0.0123
Mercury	-119294-08-15 09:22 J	-41850484.13	-41850484.11	-41850484.10	0.0295	0.0292
Venus	-119294-09-18 20:39 J	-41850449.82	-41850449.64	-41850449.45	0.0295	0.0133
Mercury	-119294-11-11 23:03 J	-41850395.64	-41850395.54	-41850395.43	0.0296	0.0184
Mercury	-119293-02-08 12:58 J	-41850307.09	-41850306.96	-41850306.83	0.0297	0.0074
Venus	-119293-05-05 21:22 J	-41850219.79	-41850219.61	-41850219.42	0.0298	0.0140
Mercury	-119293-05-07 02:39 J	-41850218.52	-41850218.39	-41850218.25	0.0298	0.0035
Mercury	-119293-08-03 16:20 J	-41850129.94	-41850129.82	-41850129.70	0.0299	0.0144
Mercury	-119293-10-31 05:46 J	-41850041.33	-41850041.26	-41850041.19	0.0300	0.0252

Venus -119293-12-21 22:49 J -41849989.72 -41849989.55 -41849989.36 0.0300 0.0144  
 Venus -119292-08-09 00:29 J -41849759.65 -41849759.48 -41849759.29 0.0302 0.0143  
 Venus -119291-03-27 02:10 J -41849529.58 -41849529.41 -41849529.22 0.0303 0.0139  
 Venus -119291-11-12 03:37 J -41849299.53 -41849299.35 -41849299.16 0.0304 0.0132  
 Venus -119290-06-30 04:20 J -41849069.50 -41849069.32 -41849069.13 0.0305 0.0121  
 Venus -119289-02-15 04:20 J -41848839.51 -41848839.32 -41848839.12 0.0304 0.0107  
 Venus -119289-10-02 03:08 J -41848609.57 -41848609.37 -41848609.18 0.0303 0.0090  
 Venus -119288-05-20 00:15 J -41848379.69 -41848379.49 -41848379.29 0.0302 0.0072  
 Venus -119287-01-04 19:56 J -41848149.87 -41848149.67 -41848149.47 0.0300 0.0052  
 Venus -119287-08-22 13:56 J -41847920.12 -41847919.92 -41847919.72 0.0298 0.0032  
 Venus -119286-04-09 06:15 J -41847690.44 -41847690.24 -41847690.03 0.0295 0.0011  
 Venus -119286-11-24 20:39 J -41847460.84 -41847460.64 -41847460.44 0.0292 0.0009  
 Venus -119285-07-11 09:08 J -41847231.32 -41847231.12 -41847230.91 0.0289 0.0028  
 Venus -119284-02-25 19:56 J -41847001.87 -41847001.67 -41847001.47 0.0286 0.0047  
 Earth -119284-07-01 08:10 J -41846876.37 -41846876.16 -41846875.94 0.0284 0.0127  
 Moon -119284-07-01 08:39 J -41846876.33 -41846876.14 -41846875.93 0.0284 0.0140 \*  
 Venus -119284-10-13 05:03 J -41846772.49 -41846772.29 -41846772.09 0.0283 0.0063  
 Venus -119283-05-30 12:44 J -41846543.17 -41846542.97 -41846542.77 0.0280 0.0078  
 Venus -119282-01-14 18:44 J -41846313.91 -41846313.72 -41846313.52 0.0277 0.0091  
 Mars -119282-02-17 15:22 J -41846280.15 -41846279.86 -41846279.57 0.0276 0.0007  
 Venus -119282-08-31 23:46 J -41846084.71 -41846084.51 -41846084.32 0.0274 0.0102  
 Venus -119281-04-17 03:22 J -41845855.55 -41845855.36 -41845855.17 0.0271 0.0111  
 Venus -119281-12-02 06:01 J -41845626.44 -41845626.25 -41845626.06 0.0268 0.0118  
 Mercury -119280-06-13 06:29 J -41845433.35 -41845433.23 -41845433.10 0.0266 0.0185  
 Venus -119280-07-19 07:41 J -41845397.37 -41845397.18 -41845396.99 0.0266 0.0124  
 Mercury -119280-09-10 01:27 J -41845344.61 -41845344.44 -41845344.27 0.0266 0.0083  
 Mercury -119280-12-07 20:25 J -41845255.83 -41845255.65 -41845255.48 0.0265 0.0020  
 Venus -119279-03-05 08:53 J -41845168.32 -41845168.13 -41845167.95 0.0264 0.0127  
 Mercury -119279-03-06 15:22 J -41845167.02 -41845166.86 -41845166.70 0.0264 0.0121  
 Mercury -119279-06-03 10:20 J -41845078.15 -41845078.07 -41845077.97 0.0263 0.0224

Venus	-119279-10-20 09:08 J	-41844939.30	-41844939.12	-41844938.92	0.0262	0.0129
Venus	-119278-06-06 09:37 J	-41844710.29	-41844710.10	-41844709.91	0.0261	0.0129
Venus	-119277-01-21 09:22 J	-41844481.29	-41844481.11	-41844480.91	0.0260	0.0128
Venus	-119277-09-06 09:37 J	-41844252.29	-41844252.10	-41844251.91	0.0259	0.0124
Venus	-119276-04-23 09:37 J	-41844023.29	-41844023.10	-41844022.90	0.0258	0.0119
Venus	-119276-12-08 10:20 J	-41843794.27	-41843794.07	-41843793.87	0.0258	0.0113
Venus	-119275-07-25 11:32 J	-41843565.22	-41843565.02	-41843564.82	0.0258	0.0105
Venus	-119274-03-11 13:13 J	-41843336.15	-41843335.95	-41843335.74	0.0258	0.0096
Venus	-119274-10-26 15:37 J	-41843107.05	-41843106.85	-41843106.64	0.0259	0.0086
Venus	-119273-06-11 18:58 J	-41842877.92	-41842877.71	-41842877.50	0.0260	0.0075
Venus	-119272-01-26 23:32 J	-41842648.74	-41842648.52	-41842648.31	0.0261	0.0062
Venus	-119272-09-13 05:17 J	-41842419.49	-41842419.28	-41842419.06	0.0263	0.0048
Venus	-119271-04-30 12:29 J	-41842190.20	-41842189.98	-41842189.76	0.0265	0.0034
Venus	-119271-12-15 20:53 J	-41841960.85	-41841960.63	-41841960.41	0.0267	0.0018
Venus	-119270-08-02 06:44 J	-41841731.44	-41841731.22	-41841731.00	0.0269	0.0003
Venus	-119269-03-18 18:15 J	-41841501.95	-41841501.74	-41841501.52	0.0271	0.0016
Venus	-119269-11-03 07:41 J	-41841272.40	-41841272.18	-41841271.96	0.0274	0.0032
Venus	-119268-06-20 22:34 J	-41841042.77	-41841042.56	-41841042.34	0.0277	0.0050
Earth	-119267-01-13 01:56 J	-41840836.66	-41840836.42	-41840836.19	0.0280	0.0088
Moon	-119267-01-13 02:25 J	-41840836.63	-41840836.40	-41840836.15	0.0280	0.0099 *
Venus	-119267-02-05 15:22 J	-41840813.07	-41840812.86	-41840812.65	0.0280	0.0067
Venus	-119267-09-23 09:51 J	-41840583.30	-41840583.09	-41840582.89	0.0283	0.0084
Mars	-119266-01-09 12:58 J	-41840475.22	-41840474.96	-41840474.67	0.0285	0.0108
Venus	-119266-05-11 05:46 J	-41840353.46	-41840353.26	-41840353.06	0.0286	0.0099
Venus	-119266-12-27 03:08 J	-41840123.56	-41840123.37	-41840123.17	0.0290	0.0114
Venus	-119265-08-13 01:56 J	-41839893.60	-41839893.42	-41839893.22	0.0293	0.0126
Venus	-119264-03-31 01:56 J	-41839663.60	-41839663.42	-41839663.23	0.0295	0.0135
Mercury	-119264-03-31 00:15 J	-41839663.57	-41839663.49	-41839663.39	0.0295	0.0218 *
Mercury	-119264-06-27 14:10 J	-41839575.03	-41839574.91	-41839574.78	0.0296	0.0109
Mercury	-119264-09-24 04:05 J	-41839486.47	-41839486.33	-41839486.20	0.0297	0.0005

Venus -119264-11-16 02:53 J -41839433.56 -41839433.38 -41839433.19 0.0298 0.0142  
 Mercury -119264-12-21 17:32 J -41839397.89 -41839397.77 -41839397.64 0.0298 0.0110  
 Mercury -119263-03-20 07:13 J -41839309.29 -41839309.20 -41839309.11 0.0299 0.0218  
 Venus -119263-07-04 04:20 J -41839203.50 -41839203.32 -41839203.14 0.0300 0.0145  
 Venus -119262-02-19 06:01 J -41838973.42 -41838973.25 -41838973.06 0.0302 0.0145  
 Venus -119262-10-07 07:56 J -41838743.36 -41838743.17 -41838742.99 0.0303 0.0141  
 Venus -119261-05-24 09:08 J -41838513.30 -41838513.12 -41838512.93 0.0304 0.0133  
 Venus -119260-01-09 09:51 J -41838283.27 -41838283.09 -41838282.90 0.0304 0.0121  
 Venus -119260-08-27 09:37 J -41838053.29 -41838053.10 -41838052.91 0.0304 0.0106  
 Venus -119259-04-14 07:56 J -41837823.36 -41837823.17 -41837822.97 0.0303 0.0089  
 Venus -119259-11-30 05:03 J -41837593.49 -41837593.29 -41837593.10 0.0301 0.0070  
 Venus -119258-07-18 00:15 J -41837363.69 -41837363.49 -41837363.28 0.0299 0.0050  
 Venus -119257-03-03 18:01 J -41837133.95 -41837133.75 -41837133.54 0.0297 0.0030  
 Venus -119257-10-19 10:05 J -41836904.28 -41836904.08 -41836903.88 0.0294 0.0008  
 Venus -119256-06-06 00:15 J -41836674.70 -41836674.49 -41836674.29 0.0292 0.0013  
 Venus -119255-01-21 12:44 J -41836445.18 -41836444.97 -41836444.77 0.0289 0.0032  
 Venus -119255-09-07 23:17 J -41836215.73 -41836215.53 -41836215.32 0.0286 0.0050  
 Venus -119254-04-25 08:39 J -41835986.34 -41835986.14 -41835985.94 0.0282 0.0066  
 Venus -119254-12-10 16:05 J -41835757.03 -41835756.83 -41835756.63 0.0279 0.0081  
 Venus -119253-07-26 22:05 J -41835527.77 -41835527.58 -41835527.38 0.0276 0.0094  
 Venus -119252-03-13 02:53 J -41835298.57 -41835298.38 -41835298.18 0.0274 0.0104  
 Mars -119252-04-06 21:08 J -41835273.80 -41835273.62 -41835273.42 0.0273 0.0206  
 Venus -119252-10-28 06:29 J -41835069.42 -41835069.23 -41835069.03 0.0271 0.0113  
 Venus -119251-06-14 09:22 J -41834840.30 -41834840.11 -41834839.92 0.0268 0.0120  
 Mercury -119251-10-31 06:15 J -41834701.33 -41834701.24 -41834701.13 0.0267 0.0214  
 Mercury -119250-01-28 01:13 J -41834612.61 -41834612.45 -41834612.29 0.0266 0.0112  
 Venus -119250-01-29 11:03 J -41834611.22 -41834611.04 -41834610.85 0.0266 0.0125  
 Mercury -119250-04-26 19:56 J -41834523.84 -41834523.67 -41834523.49 0.0265 0.0013  
 Mercury -119250-07-24 15:08 J -41834435.04 -41834434.87 -41834434.70 0.0265 0.0092  
 Venus -119250-09-15 12:15 J -41834382.18 -41834381.99 -41834381.80 0.0264 0.0128

Mercury -119250-10-21 10:05 J -41834346.19 -41834346.08 -41834345.95 0.0264 0.0194

Venus -119249-05-01 12:44 J -41834153.15 -41834152.97 -41834152.78 0.0263 0.0129

Venus -119249-12-16 12:58 J -41833924.14 -41833923.96 -41833923.77 0.0261 0.0129

Venus -119248-08-02 13:13 J -41833695.14 -41833694.95 -41833694.76 0.0260 0.0127

Venus -119247-03-19 13:13 J -41833466.13 -41833465.95 -41833465.75 0.0259 0.0124

Venus -119247-11-03 13:41 J -41833237.13 -41833236.93 -41833236.74 0.0259 0.0119

Venus -119246-06-20 14:10 J -41833008.10 -41833007.91 -41833007.71 0.0258 0.0113

Venus -119245-02-04 15:22 J -41832779.06 -41832778.86 -41832778.66 0.0258 0.0105

Venus -119245-09-20 17:17 J -41832549.98 -41832549.78 -41832549.58 0.0259 0.0096

Venus -119244-05-07 19:56 J -41832320.88 -41832320.67 -41832320.46 0.0259 0.0085

Venus -119244-12-22 23:32 J -41832091.73 -41832091.52 -41832091.31 0.0260 0.0073

Venus -119243-08-09 04:20 J -41831862.53 -41831862.32 -41831862.10 0.0261 0.0060

Venus -119242-03-26 10:20 J -41831633.29 -41831633.07 -41831632.85 0.0263 0.0046

Venus -119242-11-10 17:32 J -41831403.99 -41831403.77 -41831403.55 0.0265 0.0031

Venus -119241-06-27 02:10 J -41831174.63 -41831174.41 -41831174.19 0.0267 0.0015

Venus -119240-02-11 12:29 J -41830945.20 -41830944.98 -41830944.76 0.0269 0.0003

Venus -119240-09-29 00:29 J -41830715.70 -41830715.48 -41830715.26 0.0271 0.0020

Venus -119239-05-16 13:56 J -41830486.14 -41830485.92 -41830485.71 0.0274 0.0037

Venus -119238-01-01 05:03 J -41830256.51 -41830256.29 -41830256.08 0.0277 0.0055

Moon -119238-01-07 14:53 J -41830249.97 -41830249.88 -41830249.77 0.0277 0.0252

Earth -119238-01-07 15:08 J -41830249.93 -41830249.87 -41830249.78 0.0277 0.0264 \*

Venus -119238-08-18 21:37 J -41830026.81 -41830026.60 -41830026.39 0.0280 0.0073

Venus -119237-04-04 16:05 J -41829797.03 -41829796.83 -41829796.62 0.0283 0.0089

Venus -119237-11-20 12:15 J -41829567.19 -41829566.99 -41829566.79 0.0286 0.0105

Mars -119236-03-01 05:17 J -41829466.54 -41829466.28 -41829466.01 0.0288 0.0130

Venus -119236-07-08 09:51 J -41829337.29 -41829337.09 -41829336.90 0.0289 0.0118

Venus -119235-02-23 08:25 J -41829107.33 -41829107.15 -41829106.95 0.0293 0.0130

Mercury -119235-08-18 01:56 J -41828931.49 -41828931.42 -41828931.34 0.0295 0.0249

Venus -119235-10-11 08:25 J -41828877.33 -41828877.15 -41828876.96 0.0295 0.0139

Mercury -119235-11-14 15:51 J -41828842.96 -41828842.84 -41828842.72 0.0296 0.0140



Mercury -119234-02-11 05:46 J -41828754.40 -41828754.26 -41828754.13 0.0297 0.0033

Mercury -119234-05-10 19:13 J -41828665.83 -41828665.70 -41828665.57 0.0298 0.0078

Venus -119234-05-29 09:08 J -41828647.30 -41828647.12 -41828646.94 0.0298 0.0145

Mercury -119234-08-07 08:39 J -41828577.24 -41828577.14 -41828577.03 0.0299 0.0186

Mercury -119234-11-03 22:05 J -41828488.60 -41828488.58 -41828488.55 0.0300 0.0294

Venus -119233-01-14 10:34 J -41828417.24 -41828417.06 -41828416.88 0.0300 0.0147

Venus -119233-08-31 12:01 J -41828187.18 -41828187.00 -41828186.82 0.0302 0.0146

Venus -119232-04-18 13:27 J -41827957.12 -41827956.94 -41827956.76 0.0303 0.0141

Venus -119232-12-04 14:39 J -41827727.08 -41827726.89 -41827726.71 0.0304 0.0132

Venus -119231-07-22 14:53 J -41827497.06 -41827496.88 -41827496.69 0.0304 0.0120

Venus -119230-03-09 14:39 J -41827267.08 -41827266.89 -41827266.70 0.0304 0.0105

Venus -119230-10-25 12:44 J -41827037.16 -41827036.97 -41827036.77 0.0303 0.0087

Venus -119229-06-11 09:37 J -41826807.30 -41826807.10 -41826806.90 0.0302 0.0068

Venus -119228-01-27 04:49 J -41826577.50 -41826577.30 -41826577.10 0.0300 0.0047

Venus -119228-09-13 22:20 J -41826347.77 -41826347.57 -41826347.36 0.0297 0.0027

Venus -119227-05-01 14:10 J -41826118.11 -41826117.91 -41826117.70 0.0295 0.0008

Venus -119227-12-17 04:20 J -41825888.53 -41825888.32 -41825888.12 0.0292 0.0016

Venus -119226-08-03 16:20 J -41825659.02 -41825658.82 -41825658.61 0.0289 0.0036

Venus -119225-03-20 02:53 J -41825429.58 -41825429.38 -41825429.17 0.0285 0.0054

Earth -119225-07-02 10:05 J -41825325.32 -41825325.08 -41825324.84 0.0284 0.0050

Moon -119225-07-02 13:27 J -41825325.17 -41825324.94 -41825324.70 0.0284 0.0061 \*

Venus -119225-11-04 11:46 J -41825200.21 -41825200.01 -41825199.81 0.0282 0.0070

Mars -119224-05-25 02:39 J -41824998.58 -41824998.39 -41824998.17 0.0280 0.0196

Venus -119224-06-21 18:58 J -41824970.90 -41824970.71 -41824970.50 0.0279 0.0086

Venus -119223-02-06 01:13 J -41824741.65 -41824741.45 -41824741.26 0.0276 0.0098

Venus -119223-09-23 05:46 J -41824512.45 -41824512.26 -41824512.07 0.0273 0.0108

Venus -119222-05-10 09:22 J -41824283.29 -41824283.11 -41824282.91 0.0271 0.0117

Venus -119222-12-25 12:01 J -41824054.18 -41824054.00 -41824053.81 0.0268 0.0124

Mercury -119221-03-19 05:46 J -41823969.31 -41823969.26 -41823969.18 0.0267 0.0247

Mercury -119221-06-16 00:29 J -41823880.62 -41823880.48 -41823880.32 0.0266 0.0145

Venus -119221-08-10 13:41 J -41823825.11 -41823824.93 -41823824.74 0.0266 0.0129

Mercury -119221-09-12 19:27 J -41823791.86 -41823791.69 -41823791.51 0.0266 0.0043

Mercury -119221-12-10 14:25 J -41823703.07 -41823702.90 -41823702.72 0.0265 0.0059

Mercury -119220-03-09 09:37 J -41823614.24 -41823614.10 -41823613.96 0.0264 0.0161

Venus -119220-03-27 14:53 J -41823596.06 -41823595.88 -41823595.69 0.0264 0.0132

Venus -119220-11-11 15:37 J -41823367.03 -41823366.85 -41823366.66 0.0262 0.0133

Venus -119219-06-28 16:05 J -41823138.01 -41823137.83 -41823137.64 0.0261 0.0132

Venus -119218-02-12 16:20 J -41822909.00 -41822908.82 -41822908.63 0.0260 0.0130

Venus -119218-09-29 16:34 J -41822680.00 -41822679.81 -41822679.62 0.0259 0.0126

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Venus -119217-12-30 17:46 J -41822221.95 -41822221.76 -41822221.56 0.0258 0.0113

Venus -119216-08-16 19:13 J -41821992.89 -41821992.70 -41821992.49 0.0258 0.0105

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Venus -119214-07-05 03:51 J -41821305.54 -41821305.34 -41821305.12 0.0260 0.0073

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Venus -119210-04-11 05:46 J -41819929.48 -41819929.26 -41819929.04 0.0272 0.0022

Venus -119210-11-26 19:27 J -41819699.91 -41819699.69 -41819699.47 0.0275 0.0040

Venus -119209-07-13 10:34 J -41819470.27 -41819470.06 -41819469.84 0.0278 0.0058

Moon -119208-01-14 06:29 J -41819285.40 -41819285.23 -41819285.03 0.0280 0.0187

Earth -119208-01-14 10:05 J -41819285.26 -41819285.08 -41819284.88 0.0280 0.0180 \*

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Venus -119206-09-05 14:53 J -41818321.06 -41818320.88 -41818320.69 0.0293 0.0132

Mercury -119205-01-05 03:37 J -41818199.39 -41818199.35 -41818199.31 0.0295 0.0279

Mercury -119205-04-02 17:32 J -41818110.88 -41818110.77 -41818110.66 0.0296 0.0171

Venus -119205-04-22 14:53 J -41818091.06 -41818090.88 -41818090.69 0.0296 0.0141

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Mercury -119205-09-26 20:53 J -41817933.76 -41817933.63 -41817933.49 0.0298 0.0047

Venus -119205-12-08 15:51 J -41817861.02 -41817860.84 -41817860.66 0.0298 0.0147

Mercury -119205-12-24 10:34 J -41817845.18 -41817845.06 -41817844.95 0.0299 0.0154

Mercury -119204-03-23 00:01 J -41817756.56 -41817756.50 -41817756.44 0.0299 0.0262

Venus -119204-07-26 17:03 J -41817630.97 -41817630.79 -41817630.61 0.0300 0.0149

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Venus -119202-06-16 20:53 J -41816940.80 -41816940.63 -41816940.44 0.0304 0.0133

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Venus -119201-09-18 20:53 J -41816480.82 -41816480.63 -41816480.44 0.0303 0.0104

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Venus -119194-01-01 23:46 J -41814184.71 -41814184.51 -41814184.31 0.0279 0.0088

Mars -119194-07-14 02:53 J -41813991.67 -41813991.38 -41813991.08 0.0276 0.0020

Venus -119194-08-19 05:32 J -41813955.46 -41813955.27 -41813955.07 0.0276 0.0101

Venus -119193-04-04 10:20 J -41813726.26 -41813726.07 -41813725.88 0.0273 0.0111

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Mercury -119191-01-30 19:41 J -41813059.85 -41813059.68 -41813059.50 0.0266 0.0070

Venus -119191-02-20 18:15 J -41813038.92 -41813038.74 -41813038.55 0.0266 0.0130

Mercury -119191-04-29 14:39 J -41812971.06 -41812970.89 -41812970.71 0.0265 0.0033

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Venus -119191-10-07 19:27 J -41812809.87 -41812809.69 -41812809.50 0.0264 0.0133

Mercury -119191-10-24 04:49 J -41812793.36 -41812793.30 -41812793.21 0.0264 0.0238

Venus -119190-05-24 20:10 J -41812580.84 -41812580.66 -41812580.47 0.0263 0.0134

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Venus -119188-04-10 21:22 J -41811893.80 -41811893.61 -41811893.42 0.0259 0.0126

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Venus -119186-02-27 00:15 J -41811206.68 -41811206.49 -41811206.28 0.0259 0.0105

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Venus -119182-07-20 13:56 J -41809602.14 -41809601.92 -41809601.70 0.0267 0.0010

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Venus -119181-10-21 12:58 J -41809143.17 -41809142.96 -41809142.74 0.0272 0.0027

Venus -119180-06-08 02:53 J -41808913.59 -41808913.38 -41808913.16 0.0275 0.0045

Earth -119179-01-09 01:41 J -41808698.62 -41808698.43 -41808698.22 0.0277 0.0169

Moon -119179-01-09 05:32 J -41808698.46 -41808698.27 -41808698.06 0.0277 0.0159 \*

Venus -119179-01-23 18:15 J -41808683.95 -41808683.74 -41808683.52 0.0278 0.0063

Venus -119179-09-10 11:32 J -41808454.23 -41808454.02 -41808453.81 0.0281 0.0081

Venus -119178-04-28 06:01 J -41808224.44 -41808224.25 -41808224.04 0.0284 0.0098

Mars -119178-06-05 17:46 J -41808186.04 -41808185.76 -41808185.47 0.0284 0.0088

Venus -119178-12-14 02:25 J -41807994.59 -41807994.40 -41807994.20 0.0287 0.0113

Venus -119177-07-31 00:15 J -41807764.68 -41807764.49 -41807764.30 0.0290 0.0126  
 Venus -119176-03-17 23:03 J -41807534.72 -41807534.54 -41807534.35 0.0293 0.0137  
 Mercury -119176-08-20 19:41 J -41807378.78 -41807378.68 -41807378.58 0.0295 0.0199  
 Venus -119176-11-02 23:03 J -41807304.72 -41807304.54 -41807304.35 0.0296 0.0146  
 Mercury -119176-11-17 09:22 J -41807290.24 -41807290.11 -41807289.98 0.0296 0.0092  
 Mercury -119175-02-13 23:03 J -41807201.67 -41807201.54 -41807201.40 0.0297 0.0019  
 Mercury -119175-05-13 12:44 J -41807113.09 -41807112.97 -41807112.85 0.0298 0.0126  
 Venus -119175-06-20 23:46 J -41807074.69 -41807074.51 -41807074.33 0.0298 0.0151  
 Mercury -119175-08-10 02:10 J -41807024.49 -41807024.41 -41807024.33 0.0299 0.0233  
 Venus -119174-02-06 01:13 J -41806844.63 -41806844.45 -41806844.27 0.0301 0.0152  
 Venus -119174-09-24 02:25 J -41806614.58 -41806614.40 -41806614.22 0.0302 0.0149  
 Venus -119173-05-11 03:37 J -41806384.53 -41806384.35 -41806384.16 0.0303 0.0143  
 Venus -119173-12-27 04:34 J -41806154.49 -41806154.31 -41806154.12 0.0304 0.0132  
 Venus -119172-08-14 04:34 J -41805924.49 -41805924.31 -41805924.12 0.0304 0.0119  
 Venus -119171-04-01 03:51 J -41805694.53 -41805694.34 -41805694.15 0.0304 0.0102  
 Venus -119171-11-17 01:27 J -41805464.63 -41805464.44 -41805464.24 0.0303 0.0084  
 Venus -119170-07-04 21:51 J -41805234.78 -41805234.59 -41805234.39 0.0301 0.0063  
 Venus -119169-02-19 16:49 J -41805005.00 -41805004.80 -41805004.60 0.0299 0.0041  
 Venus -119169-10-06 09:51 J -41804775.29 -41804775.09 -41804774.89 0.0297 0.0019  
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 Venus -119167-01-08 14:39 J -41804316.09 -41804315.89 -41804315.68 0.0291 0.0023  
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 Venus -119166-04-12 12:44 J -41803857.17 -41803856.97 -41803856.77 0.0285 0.0061  
 Earth -119166-07-04 16:34 J -41803774.05 -41803773.81 -41803773.57 0.0284 0.0039  
 Moon -119166-07-04 17:03 J -41803774.04 -41803773.79 -41803773.54 0.0284 0.0033 \*  
 Venus -119166-11-27 21:08 J -41803627.81 -41803627.62 -41803627.41 0.0282 0.0078  
 Venus -119165-07-14 04:20 J -41803398.52 -41803398.32 -41803398.13 0.0279 0.0092  
 Venus -119164-02-28 09:51 J -41803169.28 -41803169.09 -41803168.89 0.0276 0.0104  
 Mars -119164-08-31 13:41 J -41802985.10 -41802984.93 -41802984.75 0.0273 0.0219  
 Venus -119164-10-15 14:25 J -41802940.09 -41802939.90 -41802939.71 0.0273 0.0115

Venus -119163-06-01 18:01 J -41802710.93 -41802710.75 -41802710.56 0.0270 0.0123  
 Venus -119162-01-16 20:25 J -41802481.83 -41802481.65 -41802481.46 0.0268 0.0130  
 Mercury -119162-03-23 00:58 J -41802416.57 -41802416.46 -41802416.34 0.0267 0.0201  
 Mercury -119162-06-19 19:41 J -41802327.84 -41802327.68 -41802327.51 0.0266 0.0100  
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 Mercury -119162-09-16 14:39 J -41802239.07 -41802238.89 -41802238.71 0.0265 0.0006  
 Mercury -119162-12-14 09:51 J -41802150.26 -41802150.09 -41802149.93 0.0265 0.0105  
 Mercury -119161-03-12 05:03 J -41802061.40 -41802061.29 -41802061.18 0.0264 0.0207  
 Venus -119161-04-18 23:32 J -41802023.70 -41802023.52 -41802023.34 0.0264 0.0136  
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 Venus -119157-09-08 05:03 J -41800420.48 -41800420.29 -41800420.08 0.0259 0.0105  
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 Venus -119154-03-13 20:39 J -41799503.86 -41799503.64 -41799503.43 0.0262 0.0054  
 Venus -119154-10-29 03:08 J -41799274.59 -41799274.37 -41799274.15 0.0264 0.0039  
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 Venus -119152-09-16 07:27 J -41798586.41 -41798586.19 -41798585.97 0.0270 0.0013  
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Mars -119148-07-26 16:34 J -41797177.05 -41797176.81 -41797176.56 0.0288 0.0161  
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 Venus -119147-09-28 07:41 J -41796748.36 -41796748.18 -41796747.99 0.0294 0.0139  
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 Mercury -119146-04-06 11:46 J -41796558.14 -41796558.01 -41796557.88 0.0296 0.0117  
 Venus -119146-05-16 07:41 J -41796518.36 -41796518.18 -41796517.99 0.0296 0.0147  
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 Venus -119137-10-22 18:44 J -41793070.92 -41793070.72 -41793070.52 0.0284 0.0066  
 Venus -119136-06-09 03:08 J -41792841.56 -41792841.37 -41792841.17 0.0281 0.0082  
 Mars -119136-10-19 03:22 J -41792709.57 -41792709.36 -41792709.12 0.0279 0.0177  
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 Venus -119135-09-10 15:37 J -41792383.04 -41792382.85 -41792382.65 0.0275 0.0108  
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Venus -119133-07-29 01:56 J -41791695.60 -41791695.42 -41791695.23 0.0268 0.0132  
 Mercury -119133-08-09 01:56 J -41791684.51 -41791684.42 -41791684.33 0.0268 0.0226  
 Mercury -119133-11-05 20:25 J -41791595.80 -41791595.65 -41791595.49 0.0267 0.0125  
 Mercury -119132-02-02 15:22 J -41791507.03 -41791506.86 -41791506.68 0.0266 0.0023  
 Venus -119132-03-15 03:37 J -41791466.53 -41791466.35 -41791466.16 0.0266 0.0136  
 Mercury -119132-05-02 10:34 J -41791418.23 -41791418.06 -41791417.89 0.0265 0.0080  
 Mercury -119132-07-30 05:46 J -41791329.39 -41791329.26 -41791329.13 0.0265 0.0183  
 Venus -119132-10-30 04:49 J -41791237.48 -41791237.30 -41791237.11 0.0264 0.0138  
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 Venus -119130-01-31 06:15 J -41790779.42 -41790779.24 -41790779.05 0.0261 0.0136  
 Venus -119130-09-17 06:44 J -41790550.40 -41790550.22 -41790550.03 0.0260 0.0132  
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 Venus -119129-12-18 07:56 J -41790092.36 -41790092.17 -41790091.97 0.0259 0.0121  
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 Venus -119127-03-21 11:03 J -41789634.23 -41789634.04 -41789633.83 0.0259 0.0104  
 Venus -119127-11-05 13:56 J -41789405.13 -41789404.92 -41789404.72 0.0259 0.0093  
 Venus -119126-06-22 17:17 J -41789175.99 -41789175.78 -41789175.57 0.0260 0.0081  
 Venus -119125-02-06 21:37 J -41788946.81 -41788946.60 -41788946.38 0.0261 0.0067  
 Venus -119125-09-23 03:22 J -41788717.58 -41788717.36 -41788717.14 0.0262 0.0052  
 Venus -119124-05-10 10:20 J -41788488.29 -41788488.07 -41788487.85 0.0264 0.0036  
 Venus -119124-12-25 18:29 J -41788258.95 -41788258.73 -41788258.51 0.0266 0.0020  
 Venus -119123-08-12 04:20 J -41788029.54 -41788029.32 -41788029.10 0.0268 0.0005  
 Venus -119122-03-29 15:22 J -41787800.08 -41787799.86 -41787799.64 0.0270 0.0017  
 Venus -119122-11-14 04:20 J -41787570.54 -41787570.32 -41787570.10 0.0273 0.0035  
 Venus -119121-06-30 18:44 J -41787340.94 -41787340.72 -41787340.51 0.0276 0.0054  
 Earth -119120-01-10 16:49 J -41787147.04 -41787146.80 -41787146.56 0.0278 0.0062  
 Moon -119120-01-10 18:58 J -41787146.96 -41787146.71 -41787146.45 0.0278 0.0053 \*  
 Venus -119120-02-15 10:34 J -41787111.27 -41787111.06 -41787110.85 0.0278 0.0072  
 Venus -119120-10-03 04:05 J -41786881.53 -41786881.33 -41786881.12 0.0281 0.0091  
 Venus -119119-05-20 23:32 J -41786651.72 -41786651.52 -41786651.32 0.0285 0.0107



Venus	-119118-01-05 20:10 J	-41786421.86	-41786421.66	-41786421.47	0.0288	0.0122
Venus	-119118-08-23 18:01 J	-41786191.94	-41786191.75	-41786191.56	0.0291	0.0135
Venus	-119117-04-09 16:49 J	-41785961.97	-41785961.80	-41785961.61	0.0294	0.0146
Mercury	-119117-05-27 00:29 J	-41785914.55	-41785914.48	-41785914.41	0.0294	0.0251
Mercury	-119117-08-23 14:10 J	-41785826.03	-41785825.91	-41785825.79	0.0295	0.0143
Mercury	-119117-11-20 03:51 J	-41785737.47	-41785737.34	-41785737.20	0.0296	0.0036
Venus	-119117-11-25 17:17 J	-41785731.96	-41785731.78	-41785731.60	0.0296	0.0153
Mercury	-119116-02-16 17:32 J	-41785648.90	-41785648.77	-41785648.64	0.0297	0.0073
Mercury	-119116-05-16 06:58 J	-41785560.31	-41785560.21	-41785560.10	0.0298	0.0181
Venus	-119116-07-13 18:01 J	-41785501.93	-41785501.75	-41785501.57	0.0299	0.0156
Mercury	-119116-08-12 20:25 J	-41785471.68	-41785471.65	-41785471.61	0.0299	0.0288
Venus	-119115-02-28 19:13 J	-41785271.88	-41785271.70	-41785271.53	0.0301	0.0156
Venus	-119115-10-16 20:10 J	-41785041.83	-41785041.66	-41785041.47	0.0302	0.0152
Venus	-119114-06-03 21:22 J	-41784811.79	-41784811.61	-41784811.43	0.0303	0.0144
Venus	-119113-01-19 21:51 J	-41784581.77	-41784581.59	-41784581.40	0.0304	0.0132
Venus	-119113-09-05 21:37 J	-41784351.79	-41784351.60	-41784351.41	0.0304	0.0117
Venus	-119112-04-23 20:10 J	-41784121.85	-41784121.66	-41784121.47	0.0303	0.0099
Venus	-119112-12-09 17:32 J	-41783891.97	-41783891.77	-41783891.58	0.0302	0.0079
Venus	-119111-07-27 13:13 J	-41783662.14	-41783661.95	-41783661.74	0.0300	0.0058
Venus	-119110-03-14 07:41 J	-41783432.38	-41783432.18	-41783431.98	0.0298	0.0035
Venus	-119110-10-30 00:15 J	-41783202.70	-41783202.49	-41783202.29	0.0296	0.0013
Venus	-119109-06-15 14:53 J	-41782973.08	-41782972.88	-41782972.68	0.0293	0.0010
Venus	-119108-01-31 03:51 J	-41782743.54	-41782743.34	-41782743.14	0.0290	0.0031
Venus	-119108-09-17 15:08 J	-41782514.07	-41782513.87	-41782513.67	0.0287	0.0051
Venus	-119107-05-05 00:58 J	-41782284.66	-41782284.46	-41782284.26	0.0284	0.0069
Moon	-119107-07-06 00:01 J	-41782222.71	-41782222.50	-41782222.27	0.0283	0.0131
Earth	-119107-07-06 03:08 J	-41782222.57	-41782222.37	-41782222.15	0.0283	0.0139 *
Venus	-119107-12-20 09:08 J	-41782055.32	-41782055.12	-41782054.92	0.0281	0.0085
Venus	-119106-08-06 15:37 J	-41781826.04	-41781825.85	-41781825.65	0.0278	0.0100
Mars	-119106-12-08 08:10 J	-41781702.44	-41781702.16	-41781701.87	0.0276	0.0039

Venus -119105-03-22 20:53 J -41781596.81 -41781596.63 -41781596.43 0.0275 0.0112  
 Venus -119105-11-07 01:13 J -41781367.64 -41781367.45 -41781367.26 0.0272 0.0122  
 Venus -119104-06-24 04:34 J -41781138.49 -41781138.31 -41781138.12 0.0270 0.0130  
 Mercury -119104-12-27 02:25 J -41780952.45 -41780952.40 -41780952.34 0.0268 0.0253  
 Venus -119103-02-08 06:58 J -41780909.39 -41780909.21 -41780909.02 0.0267 0.0135  
 Mercury -119103-03-25 20:53 J -41780863.77 -41780863.63 -41780863.48 0.0267 0.0152  
 Mercury -119103-06-22 15:51 J -41780775.01 -41780774.84 -41780774.66 0.0266 0.0050  
 Mercury -119103-09-19 10:49 J -41780686.22 -41780686.05 -41780685.87 0.0265 0.0053  
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 Mercury -119103-12-17 06:01 J -41780597.39 -41780597.25 -41780597.10 0.0265 0.0155  
 Mercury -119102-03-16 01:13 J -41780508.48 -41780508.45 -41780508.41 0.0264 0.0258  
 Venus -119102-05-12 09:37 J -41780451.27 -41780451.10 -41780450.91 0.0263 0.0142  
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 Venus -119098-02-14 14:53 J -41779077.07 -41779076.88 -41779076.68 0.0259 0.0114  
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 Venus -119092-05-26 12:15 J -41776784.21 -41776783.99 -41776783.78 0.0274 0.0038  
 Venus -119091-01-11 02:39 J -41776554.60 -41776554.39 -41776554.17 0.0276 0.0058  
 Venus -119091-08-28 18:58 J -41776324.92 -41776324.71 -41776324.50 0.0279 0.0075

Venus -119090-04-15 12:58 J -41776095.16 -41776094.96 -41776094.76 0.0282 0.0093  
 Mars -119090-10-31 17:17 J -41775896.07 -41775895.78 -41775895.49 0.0285 0.0052  
 Venus -119090-12-01 08:25 J -41775865.35 -41775865.15 -41775864.95 0.0286 0.0109  
 Venus -119089-07-18 05:03 J -41775635.47 -41775635.29 -41775635.09 0.0289 0.0125  
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 Venus -119088-10-21 02:39 J -41775175.57 -41775175.39 -41775175.20 0.0294 0.0147  
 Mercury -119087-01-10 16:49 J -41775093.91 -41775093.80 -41775093.69 0.0295 0.0167  
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 Venus -119087-06-08 02:53 J -41774945.56 -41774945.38 -41774945.20 0.0297 0.0154  
 Mercury -119087-07-06 20:10 J -41774916.79 -41774916.66 -41774916.52 0.0297 0.0050  
 Mercury -119087-10-03 09:51 J -41774828.21 -41774828.09 -41774827.98 0.0298 0.0157  
 Mercury -119087-12-30 23:17 J -41774739.59 -41774739.53 -41774739.47 0.0299 0.0265  
 Venus -119086-01-24 03:51 J -41774715.52 -41774715.34 -41774715.16 0.0299 0.0157  
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 Venus -119083-03-19 07:13 J -41773565.38 -41773565.20 -41773565.00 0.0304 0.0116  
 Venus -119083-11-04 05:46 J -41773335.45 -41773335.26 -41773335.07 0.0303 0.0097  
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 Earth -119078-06-30 21:22 J -41771635.75 -41771635.61 -41771635.44 0.0285 0.0217  
 Moon -119078-07-01 00:44 J -41771635.60 -41771635.47 -41771635.32 0.0285 0.0228 \*  
 Venus -119078-11-15 08:10 J -41771498.36 -41771498.16 -41771497.96 0.0283 0.0074

Venus -119077-07-01 16:05 J -41771269.03 -41771268.83 -41771268.64 0.0280 0.0090  
 Venus -119076-02-15 22:20 J -41771039.76 -41771039.57 -41771039.37 0.0277 0.0105  
 Venus -119076-10-03 03:37 J -41770810.53 -41770810.35 -41770810.15 0.0274 0.0116  
 Mars -119075-01-26 00:44 J -41770695.59 -41770695.47 -41770695.32 0.0273 0.0240  
 Venus -119075-05-20 07:56 J -41770581.35 -41770581.17 -41770580.98 0.0272 0.0126  
 Venus -119074-01-04 11:03 J -41770352.22 -41770352.04 -41770351.85 0.0269 0.0133  
 Mercury -119074-08-12 22:20 J -41770131.70 -41770131.57 -41770131.44 0.0267 0.0175  
 Venus -119074-08-21 13:13 J -41770123.12 -41770122.95 -41770122.76 0.0267 0.0138  
 Mercury -119074-11-09 17:03 J -41770042.96 -41770042.79 -41770042.62 0.0266 0.0073  
 Mercury -119073-02-06 12:01 J -41769954.18 -41769954.00 -41769953.82 0.0266 0.0030  
 Venus -119073-04-06 14:53 J -41769894.06 -41769893.88 -41769893.70 0.0265 0.0141  
 Mercury -119073-05-05 07:13 J -41769865.36 -41769865.20 -41769865.05 0.0265 0.0132  
 Mercury -119073-08-02 02:10 J -41769776.48 -41769776.41 -41769776.32 0.0264 0.0236  
 Venus -119073-11-21 15:51 J -41769665.01 -41769664.84 -41769664.65 0.0263 0.0143  
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 Venus -119070-05-26 18:29 J -41768748.91 -41768748.73 -41768748.53 0.0259 0.0130  
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Venus -119062-07-24 11:46 J -41765768.22 -41765768.01 -41765767.79 0.0277 0.0063  
 Moon -119061-01-13 07:27 J -41765595.43 -41765595.19 -41765594.93 0.0279 0.0057  
 Earth -119061-01-13 10:05 J -41765595.32 -41765595.08 -41765594.84 0.0279 0.0051 \*  
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 Mercury -119058-11-23 23:03 J -41764184.67 -41764184.54 -41764184.40 0.0297 0.0026  
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 Mercury -119057-05-19 01:56 J -41764007.49 -41764007.42 -41764007.33 0.0299 0.0241  
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Venus -119048-05-27 15:22 J -41760712.05 -41760711.86 -41760711.65 0.0283 0.0078  
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 Venus -119045-07-16 17:03 J -41759565.97 -41759565.79 -41759565.61 0.0269 0.0136  
 Mercury -119045-12-29 23:03 J -41759399.65 -41759399.54 -41759399.42 0.0267 0.0199  
 Venus -119044-03-02 18:58 J -41759336.88 -41759336.71 -41759336.52 0.0267 0.0142  
 Mercury -119044-03-28 18:01 J -41759310.92 -41759310.75 -41759310.59 0.0267 0.0098  
 Mercury -119044-06-25 12:58 J -41759222.14 -41759221.96 -41759221.78 0.0266 0.0006  
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 Venus -119044-10-17 20:25 J -41759107.82 -41759107.65 -41759107.46 0.0265 0.0145  
 Mercury -119044-12-20 03:08 J -41759044.48 -41759044.37 -41759044.26 0.0264 0.0209  
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 Venus -119042-01-18 22:34 J -41758649.74 -41758649.56 -41758649.38 0.0262 0.0145  
 Venus -119042-09-04 22:49 J -41758420.72 -41758420.55 -41758420.36 0.0260 0.0143  
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 Venus -119039-10-24 05:32 J -41757275.47 -41757275.27 -41757275.06 0.0259 0.0103  
 Venus -119038-06-10 08:39 J -41757046.35 -41757046.14 -41757045.93 0.0260 0.0090  
 Venus -119037-01-25 12:44 J -41756817.18 -41756816.97 -41756816.76 0.0261 0.0077  
 Venus -119037-09-10 18:01 J -41756587.96 -41756587.75 -41756587.53 0.0262 0.0062  
 Venus -119036-04-28 00:29 J -41756358.70 -41756358.48 -41756358.27 0.0263 0.0046  
 Venus -119036-12-13 07:56 J -41756129.39 -41756129.17 -41756128.95 0.0265 0.0029  
 Venus -119035-07-30 17:03 J -41755900.01 -41755899.79 -41755899.57 0.0267 0.0010

Venus -119034-03-17 03:37 J -41755670.57 -41755670.35 -41755670.13 0.0269 0.0009  
 Venus -119034-11-01 15:37 J -41755441.06 -41755440.85 -41755440.63 0.0272 0.0028  
 Venus -119033-06-18 05:17 J -41755211.49 -41755211.28 -41755211.06 0.0275 0.0047  
 Moon -119032-01-07 06:01 J -41755008.26 -41755008.25 -41755008.22 0.0277 0.0276  
 Venus -119032-02-02 20:25 J -41754981.85 -41754981.65 -41754981.43 0.0277 0.0067  
 Venus -119032-09-20 13:27 J -41754752.14 -41754751.94 -41754751.73 0.0280 0.0085  
 Mars -119031-02-05 12:29 J -41754614.11 -41754613.98 -41754613.84 0.0282 0.0249  
 Venus -119031-05-08 07:56 J -41754522.37 -41754522.17 -41754521.97 0.0283 0.0103  
 Venus -119031-12-24 03:51 J -41754292.53 -41754292.34 -41754292.14 0.0287 0.0119  
 Venus -119030-08-11 01:13 J -41754062.64 -41754062.45 -41754062.26 0.0290 0.0134  
 Venus -119029-03-27 23:46 J -41753832.69 -41753832.51 -41753832.33 0.0293 0.0146  
 Mercury -119029-10-16 22:20 J -41753629.66 -41753629.57 -41753629.47 0.0295 0.0212  
 Venus -119029-11-12 23:17 J -41753602.70 -41753602.53 -41753602.34 0.0295 0.0155  
 Mercury -119028-01-13 12:15 J -41753541.12 -41753540.99 -41753540.86 0.0296 0.0105  
 Mercury -119028-04-12 01:56 J -41753452.56 -41753452.42 -41753452.28 0.0297 0.0004  
 Venus -119028-06-30 23:46 J -41753372.68 -41753372.51 -41753372.33 0.0298 0.0161  
 Mercury -119028-07-09 15:22 J -41753363.98 -41753363.86 -41753363.73 0.0298 0.0112  
 Mercury -119028-10-06 04:49 J -41753275.38 -41753275.30 -41753275.20 0.0299 0.0219  
 Venus -119027-02-16 00:44 J -41753142.64 -41753142.47 -41753142.29 0.0300 0.0163  
 Venus -119027-10-04 01:56 J -41752912.59 -41752912.42 -41752912.24 0.0302 0.0161  
 Venus -119026-05-22 03:08 J -41752682.55 -41752682.37 -41752682.19 0.0303 0.0154  
 Venus -119025-01-07 03:51 J -41752452.52 -41752452.34 -41752452.15 0.0304 0.0144  
 Venus -119025-08-24 04:05 J -41752222.51 -41752222.33 -41752222.15 0.0304 0.0130  
 Venus -119024-04-11 03:08 J -41751992.55 -41751992.37 -41751992.17 0.0303 0.0113  
 Venus -119024-11-27 01:13 J -41751762.64 -41751762.45 -41751762.25 0.0302 0.0092  
 Venus -119023-07-14 21:51 J -41751532.79 -41751532.59 -41751532.39 0.0301 0.0070  
 Venus -119022-03-01 17:03 J -41751302.99 -41751302.79 -41751302.59 0.0299 0.0047  
 Venus -119022-10-17 10:20 J -41751073.27 -41751073.07 -41751072.86 0.0297 0.0023  
 Venus -119021-06-03 01:56 J -41750843.62 -41750843.42 -41750843.21 0.0294 0.0002  
 Venus -119020-01-18 15:51 J -41750614.05 -41750613.84 -41750613.64 0.0291 0.0024

Venus -119020-09-05 03:51 J -41750384.54 -41750384.34 -41750384.14 0.0288 0.0045  
 Venus -119019-04-22 14:25 J -41750155.10 -41750154.90 -41750154.70 0.0285 0.0065  
 Earth -119019-07-02 13:41 J -41750084.15 -41750083.93 -41750083.70 0.0284 0.0102  
 Moon -119019-07-02 16:34 J -41750084.04 -41750083.81 -41750083.58 0.0284 0.0111 \*  
 Venus -119019-12-07 23:03 J -41749925.73 -41749925.54 -41749925.34 0.0282 0.0083  
 Venus -119018-07-25 06:15 J -41749696.43 -41749696.24 -41749696.04 0.0279 0.0099  
 Venus -119017-03-10 12:15 J -41749467.17 -41749466.99 -41749466.79 0.0276 0.0112  
 Mars -119017-05-04 04:20 J -41749412.60 -41749412.32 -41749412.03 0.0276 0.0066  
 Venus -119017-10-25 17:03 J -41749237.97 -41749237.79 -41749237.60 0.0273 0.0124  
 Venus -119016-06-11 20:53 J -41749008.81 -41749008.63 -41749008.44 0.0271 0.0133  
 Venus -119015-01-26 23:46 J -41748779.69 -41748779.51 -41748779.32 0.0269 0.0140  
 Mercury -119015-05-19 00:29 J -41748667.57 -41748667.48 -41748667.38 0.0268 0.0221  
 Mercury -119015-08-15 19:13 J -41748578.85 -41748578.70 -41748578.54 0.0267 0.0120  
 Venus -119015-09-13 01:41 J -41748550.60 -41748550.43 -41748550.24 0.0266 0.0145  
 Mercury -119015-11-12 14:10 J -41748490.09 -41748489.91 -41748489.73 0.0266 0.0018  
 Mercury -119014-02-09 09:08 J -41748401.29 -41748401.12 -41748400.94 0.0265 0.0085  
 Venus -119014-04-30 03:08 J -41748321.54 -41748321.37 -41748321.19 0.0265 0.0147  
 Mercury -119014-05-09 04:20 J -41748312.44 -41748312.32 -41748312.19 0.0265 0.0187  
 Venus -119014-12-15 04:20 J -41748092.50 -41748092.32 -41748092.14 0.0263 0.0147  
 Venus -119013-07-31 05:03 J -41747863.47 -41747863.29 -41747863.11 0.0262 0.0146  
 Venus -119012-03-17 05:32 J -41747634.45 -41747634.27 -41747634.08 0.0261 0.0143  
 Venus -119012-11-01 06:01 J -41747405.42 -41747405.25 -41747405.06 0.0260 0.0138  
 Venus -119011-06-18 06:58 J -41747176.39 -41747176.21 -41747176.02 0.0259 0.0131  
 Venus -119010-02-02 08:10 J -41746947.35 -41746947.16 -41746946.96 0.0259 0.0123  
 Venus -119010-09-19 09:51 J -41746718.28 -41746718.09 -41746717.89 0.0259 0.0113  
 Venus -119009-05-05 12:15 J -41746489.19 -41746488.99 -41746488.79 0.0259 0.0102  
 Venus -119009-12-20 15:22 J -41746260.06 -41746259.86 -41746259.65 0.0260 0.0089  
 Venus -119008-08-06 19:41 J -41746030.89 -41746030.68 -41746030.46 0.0261 0.0075  
 Venus -119007-03-24 00:58 J -41745801.67 -41745801.46 -41745801.24 0.0262 0.0060  
 Venus -119007-11-08 07:41 J -41745572.40 -41745572.18 -41745571.96 0.0264 0.0043



Venus	-119006-06-25 15:22 J	-41745343.08	-41745342.86	-41745342.64	0.0265	0.0026
Venus	-119005-02-10 00:44 J	-41745113.69	-41745113.47	-41745113.25	0.0267	0.0007
Venus	-119005-09-26 11:46 J	-41744884.23	-41744884.01	-41744883.79	0.0270	0.0012
Venus	-119004-05-14 00:15 J	-41744654.71	-41744654.49	-41744654.27	0.0272	0.0032
Venus	-119004-12-29 14:10 J	-41744425.12	-41744424.91	-41744424.69	0.0275	0.0052
Venus	-119003-08-16 05:46 J	-41744195.47	-41744195.26	-41744195.05	0.0278	0.0072
Moon	-119002-01-15 00:15 J	-41744043.67	-41744043.49	-41744043.28	0.0279	0.0172
Earth	-119002-01-15 04:05 J	-41744043.53	-41744043.33	-41744043.13	0.0279	0.0166 *
Venus	-119002-04-02 22:49 J	-41743965.75	-41743965.55	-41743965.34	0.0280	0.0091
Venus	-119002-11-18 17:46 J	-41743735.96	-41743735.76	-41743735.56	0.0283	0.0109
Mars	-119001-03-28 01:27 J	-41743605.74	-41743605.44	-41743605.15	0.0285	0.0020
Venus	-119001-07-05 13:56 J	-41743506.11	-41743505.92	-41743505.72	0.0287	0.0126

# 119TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 119th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-119000-02-20 11:32 J	-41743276.21	-41743276.02	-41743275.84	0.0290	0.0140		
Venus	-119000-10-08 10:05 J	-41743046.26	-41743046.08	-41743045.90	0.0292	0.0152		
Mercury	-118999-03-06 01:13 J	-41742897.53	-41742897.45	-41742897.37	0.0294	0.0236		
Venus	-118999-05-26 09:51 J	-41742816.27	-41742816.09	-41742815.92	0.0295	0.0161		

Mercury -118999-06-02 14:53 J -41742809.00 -41742808.88 -41742808.75 0.0295 0.0129

Mercury -118999-08-30 04:49 J -41742720.44 -41742720.30 -41742720.17 0.0296 0.0023

Mercury -118999-11-26 18:15 J -41742631.87 -41742631.74 -41742631.61 0.0297 0.0087

Venus -118998-01-11 10:20 J -41742586.24 -41742586.07 -41742585.89 0.0298 0.0166

Mercury -118998-02-23 07:41 J -41742543.28 -41742543.18 -41742543.07 0.0298 0.0195

Venus -118998-08-29 11:17 J -41742356.20 -41742356.03 -41742355.86 0.0300 0.0167

Venus -118997-04-15 12:29 J -41742126.15 -41742125.98 -41742125.81 0.0302 0.0164

Venus -118997-12-01 13:41 J -41741896.11 -41741895.93 -41741895.76 0.0303 0.0157

Venus -118996-07-19 14:25 J -41741666.08 -41741665.90 -41741665.72 0.0304 0.0145

Venus -118995-03-06 14:25 J -41741436.08 -41741435.90 -41741435.71 0.0304 0.0130

Venus -118995-10-22 13:27 J -41741206.13 -41741205.94 -41741205.75 0.0303 0.0112

Venus -118994-06-09 11:03 J -41740976.23 -41740976.04 -41740975.84 0.0302 0.0092

Venus -118993-01-25 07:41 J -41740746.38 -41740746.18 -41740745.98 0.0301 0.0068

Venus -118993-09-11 02:25 J -41740516.60 -41740516.40 -41740516.20 0.0299 0.0044

Venus -118992-04-28 19:27 J -41740286.89 -41740286.69 -41740286.48 0.0297 0.0021

Venus -118992-12-14 10:49 J -41740057.25 -41740057.05 -41740056.84 0.0294 0.0005

Venus -118991-08-01 00:29 J -41739827.69 -41739827.48 -41739827.28 0.0291 0.0027

Venus -118990-03-18 12:15 J -41739598.19 -41739597.99 -41739597.79 0.0288 0.0048

Venus -118990-11-02 22:20 J -41739368.77 -41739368.57 -41739368.37 0.0285 0.0068

Venus -118989-06-19 06:58 J -41739139.41 -41739139.21 -41739139.01 0.0282 0.0086

Venus -118988-02-03 13:56 J -41738910.11 -41738909.92 -41738909.72 0.0279 0.0102

Venus -118988-09-20 19:41 J -41738680.87 -41738680.68 -41738680.49 0.0276 0.0115

Venus -118987-05-08 00:15 J -41738451.67 -41738451.49 -41738451.30 0.0273 0.0127

Mars -118987-06-22 20:39 J -41738405.67 -41738405.64 -41738405.57 0.0273 0.0269

Venus -118987-12-23 03:37 J -41738222.53 -41738222.35 -41738222.16 0.0271 0.0136

Venus -118986-08-09 06:15 J -41737993.42 -41737993.24 -41737993.06 0.0268 0.0142

Mercury -118986-10-06 01:41 J -41737935.49 -41737935.43 -41737935.35 0.0268 0.0244

Mercury -118985-01-02 20:25 J -41737846.80 -41737846.65 -41737846.50 0.0267 0.0143

Venus -118985-03-25 07:56 J -41737764.34 -41737764.17 -41737763.99 0.0266 0.0147

Mercury -118985-03-31 15:22 J -41737758.04 -41737757.86 -41737757.69 0.0266 0.0042

Mercury -118985-06-28 10:20 J -41737669.25 -41737669.07 -41737668.90 0.0265 0.0060

Mercury -118985-09-25 05:17 J -41737580.42 -41737580.28 -41737580.13 0.0265 0.0163

Venus -118985-11-09 09:22 J -41737535.29 -41737535.11 -41737534.94 0.0264 0.0150

Venus -118984-06-26 10:20 J -41737306.24 -41737306.07 -41737305.89 0.0263 0.0150

Venus -118983-02-10 11:03 J -41737077.22 -41737077.04 -41737076.86 0.0261 0.0149

Venus -118983-09-27 11:17 J -41736848.20 -41736848.03 -41736847.84 0.0260 0.0145

Venus -118982-05-14 12:01 J -41736619.18 -41736619.00 -41736618.82 0.0259 0.0140

Venus -118982-12-29 12:44 J -41736390.15 -41736389.97 -41736389.78 0.0259 0.0133

Venus -118981-08-14 14:10 J -41736161.10 -41736160.91 -41736160.71 0.0259 0.0124

Venus -118980-03-31 15:51 J -41735932.03 -41735931.84 -41735931.63 0.0259 0.0114

Venus -118980-11-15 18:29 J -41735702.93 -41735702.73 -41735702.53 0.0259 0.0102

Venus -118979-07-02 21:51 J -41735473.80 -41735473.59 -41735473.38 0.0260 0.0089

Venus -118978-02-17 02:10 J -41735244.62 -41735244.41 -41735244.20 0.0261 0.0074

Venus -118978-10-04 07:41 J -41735015.39 -41735015.18 -41735014.96 0.0262 0.0058

Venus -118977-05-20 14:25 J -41734786.11 -41734785.90 -41734785.68 0.0264 0.0041

Venus -118976-01-04 22:34 J -41734556.78 -41734556.56 -41734556.34 0.0266 0.0023

Venus -118976-08-22 08:10 J -41734327.38 -41734327.16 -41734326.94 0.0268 0.0005

Venus -118975-04-08 19:13 J -41734097.91 -41734097.70 -41734097.48 0.0270 0.0017

Venus -118975-11-24 07:56 J -41733868.38 -41733868.17 -41733867.95 0.0273 0.0036

Venus -118974-07-11 22:05 J -41733638.79 -41733638.58 -41733638.36 0.0275 0.0056

Earth -118973-01-09 20:39 J -41733456.83 -41733456.64 -41733456.44 0.0278 0.0174

Moon -118973-01-10 00:01 J -41733456.69 -41733456.50 -41733456.29 0.0278 0.0163 \*

Venus -118973-02-26 13:56 J -41733409.12 -41733408.92 -41733408.70 0.0278 0.0076

Venus -118973-10-13 07:41 J -41733179.38 -41733179.18 -41733178.98 0.0281 0.0094

Venus -118972-05-31 02:39 J -41732949.58 -41732949.39 -41732949.19 0.0284 0.0112

Venus -118971-01-15 23:03 J -41732719.72 -41732719.54 -41732719.34 0.0288 0.0129

Mars -118971-05-19 06:29 J -41732596.39 -41732596.23 -41732596.04 0.0289 0.0236

Venus -118971-09-02 20:53 J -41732489.81 -41732489.63 -41732489.44 0.0291 0.0143

Venus -118970-04-20 19:56 J -41732259.85 -41732259.67 -41732259.49 0.0293 0.0154

Mercury -118970-07-24 03:51 J -41732165.40 -41732165.34 -41732165.28 0.0295 0.0259

Mercury -118970-10-20 17:46 J -41732076.88 -41732076.76 -41732076.64 0.0296 0.0151

Venus -118970-12-06 19:56 J -41732029.84 -41732029.67 -41732029.49 0.0296 0.0162

Mercury -118969-01-17 07:27 J -41731988.32 -41731988.19 -41731988.05 0.0297 0.0043

Mercury -118969-04-14 21:08 J -41731899.75 -41731899.62 -41731899.49 0.0298 0.0065

Mercury -118969-07-12 10:34 J -41731811.17 -41731811.06 -41731810.95 0.0298 0.0172

Venus -118969-07-23 20:39 J -41731799.81 -41731799.64 -41731799.46 0.0299 0.0167

Mercury -118969-10-09 00:01 J -41731722.54 -41731722.50 -41731722.45 0.0299 0.0279

Venus -118968-03-10 21:37 J -41731569.76 -41731569.60 -41731569.42 0.0301 0.0168

Venus -118968-10-26 22:49 J -41731339.71 -41731339.55 -41731339.37 0.0302 0.0164

Venus -118967-06-14 00:01 J -41731109.67 -41731109.50 -41731109.32 0.0303 0.0156

Venus -118966-01-30 00:44 J -41730879.64 -41730879.47 -41730879.28 0.0304 0.0144

Venus -118966-09-17 00:44 J -41730649.65 -41730649.47 -41730649.28 0.0304 0.0128

Venus -118965-05-03 23:32 J -41730419.71 -41730419.52 -41730419.33 0.0303 0.0109

Venus -118965-12-19 21:08 J -41730189.81 -41730189.62 -41730189.42 0.0302 0.0088

Venus -118964-08-06 17:32 J -41729959.97 -41729959.77 -41729959.58 0.0300 0.0065

Venus -118963-03-24 12:01 J -41729730.20 -41729730.00 -41729729.79 0.0298 0.0041

Venus -118963-11-09 05:03 J -41729500.50 -41729500.29 -41729500.09 0.0296 0.0016

Venus -118962-06-26 19:56 J -41729270.87 -41729270.67 -41729270.46 0.0293 0.0009

Venus -118961-02-11 09:08 J -41729041.32 -41729041.12 -41729040.91 0.0290 0.0032

Venus -118961-09-27 20:39 J -41728811.84 -41728811.64 -41728811.43 0.0287 0.0054

Venus -118960-05-15 06:44 J -41728582.42 -41728582.22 -41728582.02 0.0284 0.0073

Moon -118960-07-04 05:46 J -41728532.51 -41728532.26 -41728532.01 0.0283 0.0010

Earth -118960-07-04 07:27 J -41728532.43 -41728532.19 -41728531.95 0.0283 0.0017 \*

Venus -118960-12-30 14:53 J -41728353.07 -41728352.88 -41728352.68 0.0281 0.0091

Mars -118959-08-10 22:05 J -41728129.85 -41728129.58 -41728129.31 0.0278 0.0116

Venus -118959-08-16 21:37 J -41728123.79 -41728123.60 -41728123.41 0.0278 0.0107

Venus -118958-04-03 03:08 J -41727894.56 -41727894.37 -41727894.18 0.0275 0.0120

Venus -118958-11-18 07:27 J -41727665.37 -41727665.19 -41727665.01 0.0272 0.0131

Venus -118957-07-04 10:34 J -41727436.23 -41727436.06 -41727435.87 0.0270 0.0140

Venus -118956-02-18 13:13 J -41727207.13 -41727206.95 -41727206.77 0.0268 0.0146

Mercury -118956-02-22 03:08 J -41727203.38 -41727203.37 -41727203.34 0.0268 0.0266

Mercury -118956-05-21 21:51 J -41727114.72 -41727114.59 -41727114.45 0.0267 0.0165

Mercury -118956-08-18 16:34 J -41727025.98 -41727025.81 -41727025.63 0.0266 0.0064

Venus -118956-10-05 14:53 J -41726978.05 -41726977.88 -41726977.70 0.0266 0.0150

Mercury -118956-11-15 11:32 J -41726937.19 -41726937.02 -41726936.84 0.0265 0.0039

Mercury -118955-02-12 06:44 J -41726848.37 -41726848.22 -41726848.07 0.0265 0.0140

Mercury -118955-05-12 01:41 J -41726759.49 -41726759.43 -41726759.35 0.0264 0.0243

Venus -118955-05-22 16:05 J -41726749.00 -41726748.83 -41726748.65 0.0264 0.0152

Venus -118954-01-06 16:49 J -41726519.97 -41726519.80 -41726519.62 0.0262 0.0152

Venus -118954-08-23 17:17 J -41726290.95 -41726290.78 -41726290.60 0.0261 0.0150

Venus -118953-04-08 17:46 J -41726061.93 -41726061.76 -41726061.57 0.0260 0.0146

Venus -118953-11-23 18:29 J -41725832.91 -41725832.73 -41725832.55 0.0259 0.0140

Venus -118952-07-10 19:27 J -41725603.88 -41725603.69 -41725603.50 0.0259 0.0132

Venus -118951-02-24 20:39 J -41725374.83 -41725374.64 -41725374.44 0.0259 0.0123

Venus -118951-10-11 22:20 J -41725145.76 -41725145.57 -41725145.37 0.0259 0.0113

Venus -118950-05-29 00:58 J -41724916.66 -41724916.46 -41724916.26 0.0260 0.0101

Venus -118949-01-13 04:20 J -41724687.52 -41724687.32 -41724687.11 0.0260 0.0087

Venus -118949-08-29 08:53 J -41724458.33 -41724458.13 -41724457.91 0.0261 0.0073

Venus -118948-04-15 14:39 J -41724229.10 -41724228.89 -41724228.67 0.0263 0.0056

Venus -118948-11-30 21:37 J -41723999.82 -41723999.60 -41723999.38 0.0264 0.0039

Venus -118947-07-18 05:46 J -41723770.48 -41723770.26 -41723770.04 0.0266 0.0021

Venus -118946-03-04 15:37 J -41723541.07 -41723540.85 -41723540.63 0.0268 0.0003

Venus -118946-10-20 03:08 J -41723311.59 -41723311.37 -41723311.15 0.0271 0.0019

Venus -118945-06-05 16:05 J -41723082.05 -41723081.83 -41723081.61 0.0273 0.0040

Venus -118944-01-21 06:44 J -41722852.43 -41722852.22 -41722852.01 0.0276 0.0060

Venus -118944-09-07 22:49 J -41722622.75 -41722622.55 -41722622.34 0.0279 0.0081

Earth -118943-01-16 20:39 J -41722491.66 -41722491.64 -41722491.62 0.0280 0.0279

Venus -118943-04-25 16:34 J -41722393.00 -41722392.81 -41722392.60 0.0282 0.0101

Mars -118943-07-03 15:37 J -41722324.03 -41722323.85 -41722323.66 0.0282 0.0218

Venus -118943-12-11 12:01 J -41722163.19 -41722163.00 -41722162.80 0.0285 0.0119

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 Mercury -118940-03-08 20:25 J -41721344.76 -41721344.65 -41721344.54 0.0295 0.0175  
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 Venus -118856-08-26 03:37 J -41690493.56 -41690493.35 -41690493.14 0.0277 0.0071  
 Moon -118855-01-12 19:13 J -41690353.95 -41690353.70 -41690353.45 0.0279 0.0040

Earth -118855-01-12 22:34 J -41690353.81 -41690353.56 -41690353.32 0.0279 0.0032 \*  
 Venus -118855-04-12 20:25 J -41690263.85 -41690263.65 -41690263.44 0.0280 0.0092  
 Mars -118855-11-28 02:53 J -41690034.60 -41690034.38 -41690034.16 0.0283 0.0187  
 Venus -118855-11-28 15:08 J -41690034.07 -41690033.87 -41690033.67 0.0283 0.0111  
 Venus -118854-07-16 11:03 J -41689804.23 -41689804.04 -41689803.85 0.0286 0.0129  
 Venus -118853-03-02 08:25 J -41689574.33 -41689574.15 -41689573.96 0.0289 0.0145  
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 Venus -118851-01-21 07:27 J -41688884.35 -41688884.19 -41688884.01 0.0298 0.0176  
 Mercury -118851-01-22 20:10 J -41688882.79 -41688882.66 -41688882.52 0.0298 0.0068  
 Mercury -118851-04-21 09:51 J -41688794.20 -41688794.09 -41688793.98 0.0299 0.0175  
 Mercury -118851-07-18 23:17 J -41688705.57 -41688705.53 -41688705.49 0.0300 0.0282  
 Venus -118851-09-08 08:39 J -41688654.30 -41688654.14 -41688653.96 0.0300 0.0178  
 Venus -118850-04-26 10:05 J -41688424.24 -41688424.08 -41688423.90 0.0302 0.0176  
 Venus -118850-12-12 11:46 J -41688194.18 -41688194.01 -41688193.84 0.0303 0.0169  
 Venus -118849-07-29 12:58 J -41687964.13 -41687963.96 -41687963.78 0.0304 0.0158  
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Moon -118842-07-08 12:29 J -41685429.10 -41685428.98 -41685428.84 0.0282 0.0235  
 Earth -118842-07-08 13:13 J -41685429.07 -41685428.95 -41685428.81 0.0282 0.0239 \*  
 Venus -118841-02-14 18:58 J -41685207.90 -41685207.71 -41685207.51 0.0279 0.0107  
 Venus -118841-10-01 00:58 J -41684978.65 -41684978.46 -41684978.27 0.0276 0.0122  
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 Venus -118840-05-18 05:32 J -41684749.44 -41684749.27 -41684749.08 0.0273 0.0135  
 Venus -118839-01-02 09:08 J -41684520.29 -41684520.12 -41684519.94 0.0271 0.0144  
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 Mercury -118838-02-28 20:39 J -41684097.77 -41684097.64 -41684097.49 0.0266 0.0159  
 Venus -118838-04-05 13:13 J -41684062.11 -41684061.95 -41684061.77 0.0266 0.0157  
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 Venus -118838-11-20 14:10 J -41683833.07 -41683832.91 -41683832.73 0.0264 0.0161  
 Mercury -118838-11-22 05:17 J -41683831.42 -41683831.28 -41683831.12 0.0264 0.0145  
 Mercury -118837-02-19 00:29 J -41683742.53 -41683742.48 -41683742.41 0.0264 0.0246  
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 Venus -118834-08-25 17:03 J -41682458.97 -41682458.79 -41682458.60 0.0259 0.0135  
 Venus -118833-04-10 18:15 J -41682229.92 -41682229.74 -41682229.54 0.0259 0.0125  
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 Venus -118829-01-15 20:53 J -41680854.85 -41680854.63 -41680854.41 0.0265 0.0030  
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Venus -118828-04-18 16:20 J -41680396.04 -41680395.82 -41680395.60 0.0269 0.0012  
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 Venus -118823-04-30 14:25 J -41678558.07 -41678557.90 -41678557.72 0.0292 0.0164  
 Mercury -118823-09-19 04:49 J -41678416.33 -41678416.30 -41678416.27 0.0294 0.0285  
 Venus -118823-12-16 14:25 J -41678328.07 -41678327.90 -41678327.73 0.0295 0.0174  
 Mercury -118823-12-16 18:44 J -41678327.83 -41678327.72 -41678327.61 0.0295 0.0178 \*  
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 Venus -118822-08-03 15:08 J -41678098.03 -41678097.87 -41678097.70 0.0298 0.0180  
 Mercury -118822-09-08 11:46 J -41678062.12 -41678062.01 -41678061.89 0.0298 0.0145  
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 Venus -118814-02-21 10:49 J -41675339.26 -41675339.05 -41675338.85 0.0292 0.0027

Venus -118814-10-08 22:49 J -41675109.75 -41675109.55 -41675109.34 0.0289 0.0050  
 Venus -118813-05-25 09:22 J -41674880.31 -41674880.11 -41674879.91 0.0285 0.0072  
 Earth -118813-07-02 06:29 J -41674842.44 -41674842.23 -41674842.00 0.0285 0.0111  
 Moon -118813-07-02 07:41 J -41674842.40 -41674842.18 -41674841.95 0.0285 0.0120 \*  
 Venus -118812-01-09 18:15 J -41674650.94 -41674650.74 -41674650.55 0.0282 0.0091  
 Mars -118812-04-12 18:58 J -41674557.76 -41674557.71 -41674557.62 0.0281 0.0272  
 Venus -118812-08-27 01:27 J -41674421.63 -41674421.44 -41674421.25 0.0279 0.0109  
 Venus -118811-04-13 07:13 J -41674192.39 -41674192.20 -41674192.02 0.0276 0.0124  
 Venus -118811-11-28 11:32 J -41673963.20 -41673963.02 -41673962.84 0.0273 0.0136  
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 Venus -118809-02-29 17:03 J -41673504.96 -41673504.79 -41673504.61 0.0268 0.0154  
 Mercury -118809-07-17 21:37 J -41673365.72 -41673365.60 -41673365.47 0.0267 0.0182  
 Mercury -118809-10-14 16:20 J -41673276.99 -41673276.82 -41673276.65 0.0266 0.0082  
 Venus -118809-10-15 18:44 J -41673275.89 -41673275.72 -41673275.55 0.0266 0.0159  
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 Venus -118808-06-01 19:41 J -41673046.85 -41673046.68 -41673046.51 0.0264 0.0162  
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 Venus -118807-01-16 19:56 J -41672817.83 -41672817.67 -41672817.49 0.0262 0.0163  
 Venus -118807-09-02 20:10 J -41672588.82 -41672588.66 -41672588.49 0.0261 0.0161  
 Venus -118806-04-19 20:10 J -41672359.83 -41672359.66 -41672359.48 0.0260 0.0158  
 Venus -118806-12-04 20:25 J -41672130.83 -41672130.65 -41672130.47 0.0259 0.0152  
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 Venus -118804-03-06 21:22 J -41671672.79 -41671672.61 -41671672.41 0.0258 0.0136  
 Venus -118804-10-21 22:34 J -41671443.74 -41671443.56 -41671443.36 0.0258 0.0125  
 Venus -118803-06-08 00:29 J -41671214.67 -41671214.48 -41671214.28 0.0259 0.0113  
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 Venus -118801-04-25 12:01 J -41670527.22 -41670527.00 -41670526.79 0.0261 0.0066  
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Venus -118800-07-28 01:27 J -41670068.66 -41670068.44 -41670068.22 0.0265 0.0028  
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 Venus -118798-06-16 09:08 J -41669380.34 -41669380.12 -41669379.91 0.0272 0.0035  
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 Moon -118796-01-14 02:10 J -41668802.62 -41668802.41 -41668802.19 0.0279 0.0126  
 Earth -118796-01-14 04:34 J -41668802.52 -41668802.31 -41668802.08 0.0279 0.0119 \*  
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 Venus -118796-12-21 02:25 J -41668461.59 -41668461.40 -41668461.20 0.0284 0.0119  
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 Venus -118794-11-10 19:27 J -41667771.85 -41667771.69 -41667771.51 0.0293 0.0166  
 Mercury -118793-05-04 19:56 J -41667595.76 -41667595.67 -41667595.57 0.0295 0.0211  
 Venus -118793-06-27 19:41 J -41667541.84 -41667541.68 -41667541.51 0.0296 0.0175  
 Mercury -118793-08-01 09:51 J -41667507.22 -41667507.09 -41667506.96 0.0296 0.0103  
 Mercury -118793-10-28 23:32 J -41667418.65 -41667418.52 -41667418.38 0.0297 0.0008  
 Mercury -118792-01-25 13:13 J -41667330.07 -41667329.95 -41667329.82 0.0298 0.0112  
 Venus -118792-02-12 20:39 J -41667311.80 -41667311.64 -41667311.47 0.0298 0.0181  
 Mercury -118792-04-24 02:53 J -41667241.47 -41667241.38 -41667241.29 0.0299 0.0220  
 Venus -118792-09-30 22:05 J -41667081.75 -41667081.58 -41667081.42 0.0301 0.0182  
 Venus -118791-05-18 23:32 J -41666851.68 -41666851.52 -41666851.35 0.0302 0.0179  
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 Venus -118786-06-01 10:34 J -41665012.27 -41665012.06 -41665011.86 0.0297 0.0021



Venus -118785-01-17 02:10 J -41664782.61 -41664782.41 -41664782.21 0.0294 0.0006  
 Venus -118785-09-02 16:05 J -41664553.03 -41664552.83 -41664552.63 0.0291 0.0031  
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 Venus -118784-12-05 14:39 J -41664094.09 -41664093.89 -41664093.69 0.0285 0.0077  
 Venus -118783-07-22 23:03 J -41663864.73 -41663864.54 -41663864.34 0.0282 0.0097  
 Venus -118782-03-09 06:15 J -41663635.43 -41663635.24 -41663635.05 0.0278 0.0113  
 Mars -118782-06-02 06:44 J -41663550.51 -41663550.22 -41663549.93 0.0277 0.0054  
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 Venus -118780-01-24 19:13 J -41662947.86 -41662947.70 -41662947.51 0.0270 0.0150  
 Venus -118780-09-10 21:37 J -41662718.77 -41662718.60 -41662718.43 0.0268 0.0157  
 Mercury -118780-12-04 21:51 J -41662633.69 -41662633.59 -41662633.47 0.0267 0.0210  
 Mercury -118779-03-03 16:34 J -41662544.97 -41662544.81 -41662544.65 0.0266 0.0110  
 Venus -118779-04-27 23:03 J -41662489.71 -41662489.54 -41662489.37 0.0266 0.0162  
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 Mercury -118779-11-25 01:13 J -41662278.57 -41662278.45 -41662278.32 0.0264 0.0193  
 Venus -118779-12-12 23:46 J -41662260.67 -41662260.51 -41662260.34 0.0264 0.0164  
 Venus -118778-07-30 00:29 J -41662031.65 -41662031.48 -41662031.32 0.0262 0.0165  
 Venus -118777-03-15 00:29 J -41661802.65 -41661802.48 -41661802.31 0.0261 0.0163  
 Venus -118777-10-30 00:29 J -41661573.65 -41661573.48 -41661573.31 0.0260 0.0159  
 Venus -118776-06-16 00:29 J -41661344.65 -41661344.48 -41661344.30 0.0259 0.0153  
 Venus -118775-01-31 00:58 J -41661115.64 -41661115.46 -41661115.28 0.0258 0.0145  
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Venus -118770-02-07 05:32 J -41659282.49 -41659282.27 -41659282.05 0.0265 0.0026  
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 Venus -118769-12-26 13:27 J -41658594.15 -41658593.94 -41658593.72 0.0272 0.0038  
 Venus -118768-08-13 03:22 J -41658364.57 -41658364.36 -41658364.14 0.0275 0.0060  
 Earth -118767-01-08 15:51 J -41658215.97 -41658215.84 -41658215.70 0.0277 0.0233  
 Moon -118767-01-08 18:15 J -41658215.89 -41658215.74 -41658215.58 0.0277 0.0222 \*  
 Venus -118767-03-30 18:58 J -41658134.91 -41658134.71 -41658134.50 0.0278 0.0082  
 Venus -118767-11-15 12:44 J -41657905.17 -41657904.97 -41657904.77 0.0281 0.0103  
 Mars -118766-04-23 19:56 J -41657745.90 -41657745.67 -41657745.43 0.0283 0.0169  
 Venus -118766-07-03 07:41 J -41657675.37 -41657675.18 -41657674.98 0.0284 0.0123  
 Venus -118765-02-18 04:20 J -41657445.51 -41657445.32 -41657445.14 0.0287 0.0142  
 Venus -118765-10-05 02:10 J -41657215.58 -41657215.41 -41657215.23 0.0290 0.0158  
 Venus -118764-05-23 01:27 J -41656985.61 -41656985.44 -41656985.27 0.0293 0.0170  
 Mercury -118764-09-21 21:22 J -41656863.68 -41656863.61 -41656863.53 0.0295 0.0243  
 Mercury -118764-12-19 11:17 J -41656775.15 -41656775.03 -41656774.91 0.0296 0.0136  
 Venus -118763-01-08 01:41 J -41656755.59 -41656755.43 -41656755.26 0.0296 0.0180  
 Mercury -118763-03-18 01:13 J -41656686.59 -41656686.45 -41656686.32 0.0297 0.0029  
 Mercury -118763-06-14 14:53 J -41656598.01 -41656597.88 -41656597.75 0.0297 0.0079  
 Venus -118763-08-26 02:39 J -41656525.55 -41656525.39 -41656525.22 0.0298 0.0185  
 Mercury -118763-09-11 04:20 J -41656509.42 -41656509.32 -41656509.21 0.0298 0.0186  
 Mercury -118763-12-08 17:46 J -41656420.78 -41656420.76 -41656420.73 0.0299 0.0293  
 Venus -118762-04-13 04:05 J -41656295.49 -41656295.33 -41656295.16 0.0300 0.0186  
 Venus -118762-11-29 05:46 J -41656065.42 -41656065.26 -41656065.09 0.0302 0.0182  
 Venus -118761-07-16 07:27 J -41655835.36 -41655835.19 -41655835.02 0.0303 0.0173  
 Venus -118760-03-03 08:25 J -41655605.31 -41655605.15 -41655604.97 0.0304 0.0161  
 Venus -118760-10-19 09:08 J -41655375.30 -41655375.12 -41655374.94 0.0304 0.0143  
 Venus -118759-06-06 08:25 J -41655145.33 -41655145.15 -41655144.96 0.0304 0.0123  
 Venus -118758-01-22 06:44 J -41654915.41 -41654915.22 -41654915.02 0.0303 0.0099  
 Venus -118758-09-09 03:37 J -41654685.54 -41654685.35 -41654685.15 0.0301 0.0073

Venus	-118757-04-25 22:49 J	-41654455.75	-41654455.55	-41654455.34	0.0299	0.0046
Venus	-118757-12-11 16:20 J	-41654226.02	-41654225.82	-41654225.62	0.0297	0.0019
Venus	-118756-07-29 07:56 J	-41653996.37	-41653996.17	-41653995.96	0.0294	0.0008
Venus	-118755-03-15 21:51 J	-41653766.79	-41653766.59	-41653766.39	0.0291	0.0033
Venus	-118755-10-31 09:51 J	-41653537.29	-41653537.09	-41653536.89	0.0288	0.0057
Venus	-118754-06-17 19:56 J	-41653307.87	-41653307.67	-41653307.47	0.0285	0.0079
Moon	-118754-07-04 12:01 J	-41653291.25	-41653291.00	-41653290.76	0.0285	0.0023
Earth	-118754-07-04 14:53 J	-41653291.12	-41653290.88	-41653290.64	0.0285	0.0016 *
Venus	-118753-02-02 04:20 J	-41653078.51	-41653078.32	-41653078.12	0.0282	0.0098
Venus	-118753-09-18 11:17 J	-41652849.22	-41652849.03	-41652848.84	0.0279	0.0115
Venus	-118752-05-05 16:49 J	-41652619.98	-41652619.80	-41652619.61	0.0276	0.0130
Mars	-118752-07-21 02:25 J	-41652543.63	-41652543.40	-41652543.16	0.0275	0.0157
Venus	-118752-12-20 20:53 J	-41652390.80	-41652390.63	-41652390.44	0.0273	0.0142
Venus	-118751-08-07 00:01 J	-41652161.67	-41652161.50	-41652161.32	0.0270	0.0151
Venus	-118750-03-24 02:10 J	-41651932.58	-41651932.41	-41651932.24	0.0268	0.0158
Mercury	-118750-04-23 22:20 J	-41651901.64	-41651901.57	-41651901.48	0.0267	0.0236
Mercury	-118750-07-21 17:03 J	-41651812.94	-41651812.79	-41651812.64	0.0267	0.0136
Mercury	-118750-10-18 11:46 J	-41651724.19	-41651724.01	-41651723.84	0.0266	0.0036
Venus	-118750-11-08 03:22 J	-41651703.52	-41651703.36	-41651703.19	0.0266	0.0163
Mercury	-118749-01-15 06:29 J	-41651635.40	-41651635.23	-41651635.05	0.0265	0.0065
Mercury	-118749-04-13 01:27 J	-41651546.58	-41651546.44	-41651546.30	0.0264	0.0166
Venus	-118749-06-24 04:20 J	-41651474.48	-41651474.32	-41651474.15	0.0264	0.0165
Venus	-118748-02-08 04:34 J	-41651245.47	-41651245.31	-41651245.14	0.0262	0.0165
Venus	-118748-09-25 04:20 J	-41651016.48	-41651016.32	-41651016.14	0.0261	0.0164
Venus	-118747-05-12 04:05 J	-41650787.49	-41650787.33	-41650787.15	0.0259	0.0160
Venus	-118747-12-27 04:05 J	-41650558.49	-41650558.33	-41650558.14	0.0259	0.0154
Venus	-118746-08-13 04:20 J	-41650329.49	-41650329.32	-41650329.13	0.0258	0.0147
Venus	-118745-03-29 05:03 J	-41650100.47	-41650100.29	-41650100.09	0.0258	0.0136
Venus	-118745-11-13 06:29 J	-41649871.42	-41649871.23	-41649871.04	0.0258	0.0124
Venus	-118744-06-30 08:10 J	-41649642.35	-41649642.16	-41649641.96	0.0258	0.0111

Venus -118743-02-14 10:49 J -41649413.25 -41649413.05 -41649412.84 0.0259 0.0097  
 Venus -118743-10-01 14:39 J -41649184.10 -41649183.89 -41649183.68 0.0260 0.0080  
 Venus -118742-05-18 19:27 J -41648954.90 -41648954.69 -41648954.47 0.0261 0.0063  
 Venus -118741-01-03 01:41 J -41648725.65 -41648725.43 -41648725.21 0.0263 0.0044  
 Venus -118741-08-19 09:08 J -41648496.34 -41648496.12 -41648495.90 0.0265 0.0024  
 Venus -118740-04-05 18:15 J -41648266.96 -41648266.74 -41648266.52 0.0267 0.0003  
 Venus -118740-11-21 04:49 J -41648037.52 -41648037.30 -41648037.08 0.0269 0.0019  
 Venus -118739-07-08 17:03 J -41647808.00 -41647807.79 -41647807.57 0.0272 0.0041  
 Venus -118738-02-23 07:13 J -41647578.42 -41647578.20 -41647577.99 0.0275 0.0063  
 Venus -118738-10-10 23:03 J -41647348.75 -41647348.54 -41647348.33 0.0278 0.0085  
 Earth -118737-01-16 06:58 J -41647251.37 -41647251.21 -41647251.02 0.0279 0.0197  
 Moon -118737-01-16 09:08 J -41647251.28 -41647251.12 -41647250.95 0.0279 0.0201 \*  
 Venus -118737-05-27 16:20 J -41647119.02 -41647118.82 -41647118.61 0.0281 0.0106  
 Venus -118736-01-12 11:17 J -41646889.21 -41646889.03 -41646888.83 0.0284 0.0126  
 Mars -118736-06-12 17:03 J -41646738.07 -41646737.79 -41646737.49 0.0286 0.0061  
 Venus -118736-08-30 07:56 J -41646659.35 -41646659.17 -41646658.98 0.0288 0.0144  
 Venus -118735-04-17 05:46 J -41646429.43 -41646429.26 -41646429.07 0.0291 0.0160  
 Venus -118735-12-03 05:17 J -41646199.45 -41646199.28 -41646199.10 0.0294 0.0172  
 Mercury -118734-02-08 22:05 J -41646131.61 -41646131.58 -41646131.53 0.0295 0.0280  
 Mercury -118734-05-08 12:01 J -41646043.10 -41646043.00 -41646042.88 0.0296 0.0173  
 Venus -118734-07-21 05:32 J -41645969.43 -41645969.27 -41645969.10 0.0296 0.0181  
 Mercury -118734-08-05 01:56 J -41645954.55 -41645954.42 -41645954.28 0.0297 0.0065  
 Mercury -118734-11-01 15:37 J -41645865.98 -41645865.85 -41645865.71 0.0298 0.0045  
 Mercury -118733-01-29 05:17 J -41645777.39 -41645777.28 -41645777.16 0.0299 0.0151  
 Venus -118733-03-07 06:44 J -41645739.38 -41645739.22 -41645739.06 0.0299 0.0185  
 Mercury -118733-04-26 18:44 J -41645688.78 -41645688.72 -41645688.65 0.0299 0.0258  
 Venus -118733-10-23 08:10 J -41645509.32 -41645509.16 -41645508.99 0.0301 0.0186  
 Venus -118732-06-10 09:51 J -41645279.25 -41645279.09 -41645278.92 0.0303 0.0182  
 Venus -118731-01-26 11:46 J -41645049.18 -41645049.01 -41645048.84 0.0304 0.0172  
 Venus -118731-09-13 12:58 J -41644819.13 -41644818.96 -41644818.79 0.0305 0.0158

Venus -118730-05-01 13:27 J -41644589.12 -41644588.94 -41644588.76 0.0305 0.0141

Venus -118730-12-17 12:44 J -41644359.15 -41644358.97 -41644358.78 0.0304 0.0120

Venus -118729-08-03 10:49 J -41644129.23 -41644129.05 -41644128.85 0.0303 0.0096

Venus -118728-03-21 07:56 J -41643899.37 -41643899.17 -41643898.98 0.0301 0.0070

Venus -118728-11-06 02:53 J -41643669.58 -41643669.38 -41643669.18 0.0299 0.0042

Venus -118727-06-23 20:10 J -41643439.86 -41643439.66 -41643439.46 0.0297 0.0015

Venus -118726-02-08 11:32 J -41643210.22 -41643210.02 -41643209.81 0.0294 0.0014

Venus -118726-09-26 01:13 J -41642980.65 -41642980.45 -41642980.24 0.0291 0.0038

Venus -118725-05-12 13:13 J -41642751.15 -41642750.95 -41642750.74 0.0288 0.0062

Venus -118725-12-27 23:17 J -41642521.72 -41642521.53 -41642521.33 0.0284 0.0084

Venus -118724-08-14 07:41 J -41642292.37 -41642292.18 -41642291.98 0.0281 0.0103

Mars -118724-09-06 14:53 J -41642268.98 -41642268.88 -41642268.73 0.0281 0.0254

Venus -118723-03-31 14:39 J -41642063.08 -41642062.89 -41642062.70 0.0278 0.0120

Venus -118723-11-15 19:56 J -41641833.85 -41641833.67 -41641833.48 0.0275 0.0134

Venus -118722-07-03 00:01 J -41641604.67 -41641604.50 -41641604.31 0.0272 0.0146

Venus -118721-02-17 03:08 J -41641375.54 -41641375.37 -41641375.19 0.0269 0.0155

Mercury -118721-09-09 22:05 J -41641169.58 -41641169.58 -41641169.56 0.0267 0.0266

Venus -118721-10-03 05:03 J -41641146.45 -41641146.29 -41641146.11 0.0267 0.0162

Mercury -118721-12-07 16:34 J -41641080.94 -41641080.81 -41641080.67 0.0266 0.0167

Mercury -118720-03-06 11:17 J -41640992.20 -41640992.03 -41640991.86 0.0266 0.0067

Venus -118720-05-20 06:29 J -41640917.39 -41640917.23 -41640917.06 0.0265 0.0166

Mercury -118720-06-03 06:01 J -41640903.42 -41640903.25 -41640903.07 0.0265 0.0034

Mercury -118720-08-31 00:58 J -41640814.61 -41640814.46 -41640814.30 0.0264 0.0134

Mercury -118720-11-27 19:56 J -41640725.74 -41640725.67 -41640725.58 0.0263 0.0235

Venus -118719-01-04 06:58 J -41640688.36 -41640688.21 -41640688.03 0.0263 0.0169

Venus -118719-08-21 07:27 J -41640459.35 -41640459.19 -41640459.02 0.0262 0.0168

Venus -118718-04-07 07:13 J -41640230.36 -41640230.20 -41640230.02 0.0260 0.0166

Venus -118718-11-22 07:13 J -41640001.36 -41640001.20 -41640001.02 0.0259 0.0161

Venus -118717-07-08 07:27 J -41639772.36 -41639772.19 -41639772.01 0.0259 0.0154

Venus -118716-02-22 07:41 J -41639543.36 -41639543.18 -41639543.00 0.0258 0.0146

Venus	-118716-10-09 08:10 J	-41639314.34	-41639314.16	-41639313.97	0.0258	0.0135
Venus	-118715-05-26 09:22 J	-41639085.31	-41639085.11	-41639084.92	0.0258	0.0124
Venus	-118714-01-10 10:49 J	-41638856.24	-41638856.05	-41638855.84	0.0259	0.0111
Venus	-118714-08-27 13:56 J	-41638627.12	-41638626.92	-41638626.71	0.0259	0.0095
Venus	-118713-04-12 17:32 J	-41638397.98	-41638397.77	-41638397.55	0.0261	0.0079
Venus	-118713-11-27 22:20 J	-41638168.78	-41638168.57	-41638168.35	0.0262	0.0062
Venus	-118712-07-15 04:34 J	-41637939.53	-41637939.31	-41637939.10	0.0263	0.0043
Venus	-118711-03-01 12:01 J	-41637710.22	-41637710.00	-41637709.78	0.0265	0.0022
Venus	-118711-10-16 21:08 J	-41637480.84	-41637480.62	-41637480.40	0.0268	0.0002
Venus	-118710-06-03 07:56 J	-41637251.39	-41637251.17	-41637250.96	0.0270	0.0021
Venus	-118709-01-18 20:10 J	-41637021.88	-41637021.66	-41637021.44	0.0273	0.0043
Venus	-118709-09-04 10:05 J	-41636792.29	-41636792.08	-41636791.86	0.0275	0.0066
Moon	-118708-01-09 12:58 J	-41636665.16	-41636664.96	-41636664.74	0.0277	0.0156
Earth	-118708-01-09 15:37 J	-41636665.04	-41636664.85	-41636664.64	0.0277	0.0162 *
Venus	-118708-04-22 01:56 J	-41636562.62	-41636562.42	-41636562.21	0.0278	0.0088
Venus	-118708-12-07 19:27 J	-41636332.88	-41636332.69	-41636332.48	0.0281	0.0110
Venus	-118707-07-25 14:39 J	-41636103.07	-41636102.89	-41636102.69	0.0284	0.0130
Venus	-118706-03-12 11:32 J	-41635873.20	-41635873.02	-41635872.84	0.0288	0.0148
Venus	-118706-10-28 09:37 J	-41635643.27	-41635643.10	-41635642.92	0.0291	0.0164
Venus	-118705-06-14 08:53 J	-41635413.28	-41635413.13	-41635412.95	0.0294	0.0177
Mercury	-118705-09-24 12:58 J	-41635311.05	-41635310.96	-41635310.86	0.0295	0.0209
Mercury	-118705-12-22 02:53 J	-41635222.51	-41635222.38	-41635222.25	0.0296	0.0102
Venus	-118704-01-30 09:22 J	-41635183.26	-41635183.11	-41635182.93	0.0296	0.0186
Mercury	-118704-03-20 16:34 J	-41635133.94	-41635133.81	-41635133.67	0.0297	0.0012
Mercury	-118704-06-17 06:15 J	-41635045.36	-41635045.24	-41635045.11	0.0298	0.0113
Mercury	-118704-09-13 19:56 J	-41634956.76	-41634956.67	-41634956.58	0.0299	0.0220
Venus	-118704-09-17 10:34 J	-41634953.21	-41634953.06	-41634952.89	0.0299	0.0190
Venus	-118703-05-05 12:15 J	-41634723.15	-41634722.99	-41634722.83	0.0301	0.0189
Venus	-118703-12-21 13:56 J	-41634493.07	-41634492.92	-41634492.75	0.0302	0.0185
Venus	-118702-08-08 15:37 J	-41634263.01	-41634262.85	-41634262.68	0.0303	0.0175

Venus -118701-03-25 16:49 J -41634032.97 -41634032.80 -41634032.62 0.0304 0.0160  
 Venus -118701-11-10 17:17 J -41633802.96 -41633802.78 -41633802.60 0.0304 0.0142  
 Venus -118700-06-28 16:49 J -41633572.99 -41633572.80 -41633572.61 0.0304 0.0120  
 Venus -118699-02-13 15:08 J -41633343.06 -41633342.87 -41633342.68 0.0303 0.0095  
 Venus -118699-10-01 11:46 J -41633113.21 -41633113.01 -41633112.81 0.0301 0.0069  
 Venus -118698-05-19 06:58 J -41632883.41 -41632883.21 -41632883.01 0.0299 0.0041  
 Venus -118697-01-04 00:15 J -41632653.69 -41632653.49 -41632653.29 0.0296 0.0013  
 Venus -118697-08-20 15:51 J -41632424.05 -41632423.84 -41632423.64 0.0294 0.0014  
 Venus -118696-04-07 05:32 J -41632194.47 -41632194.27 -41632194.06 0.0291 0.0040  
 Venus -118696-11-22 17:32 J -41631964.97 -41631964.77 -41631964.57 0.0288 0.0063  
 Moon -118695-07-05 14:53 J -41631740.10 -41631739.88 -41631739.64 0.0284 0.0060  
 Earth -118695-07-05 17:46 J -41631739.99 -41631739.76 -41631739.52 0.0284 0.0066 \*  
 Venus -118695-07-10 03:22 J -41631735.55 -41631735.36 -41631735.16 0.0284 0.0085  
 Venus -118694-02-24 11:46 J -41631506.20 -41631506.01 -41631505.82 0.0281 0.0104  
 Venus -118694-10-11 18:29 J -41631276.91 -41631276.73 -41631276.54 0.0278 0.0121  
 Mars -118694-10-26 23:46 J -41631261.80 -41631261.51 -41631261.22 0.0278 0.0030  
 Venus -118693-05-28 00:01 J -41631047.67 -41631047.50 -41631047.31 0.0275 0.0136  
 Venus -118692-01-12 04:20 J -41630818.50 -41630818.32 -41630818.15 0.0272 0.0147  
 Venus -118692-08-29 06:58 J -41630589.37 -41630589.21 -41630589.03 0.0270 0.0156  
 Venus -118691-04-15 08:53 J -41630360.29 -41630360.13 -41630359.95 0.0267 0.0162  
 Mercury -118691-04-26 16:49 J -41630348.92 -41630348.80 -41630348.68 0.0267 0.0194  
 Mercury -118691-07-24 11:17 J -41630260.19 -41630260.03 -41630259.86 0.0266 0.0095  
 Mercury -118691-10-21 06:01 J -41630171.43 -41630171.25 -41630171.07 0.0266 0.0007  
 Venus -118691-11-30 10:05 J -41630131.24 -41630131.08 -41630130.91 0.0265 0.0167  
 Mercury -118690-01-18 00:58 J -41630082.62 -41630082.46 -41630082.30 0.0265 0.0106  
 Mercury -118690-04-16 19:56 J -41629993.78 -41629993.67 -41629993.56 0.0264 0.0207  
 Venus -118690-07-17 10:49 J -41629902.21 -41629902.05 -41629901.88 0.0263 0.0168  
 Venus -118689-03-02 11:03 J -41629673.20 -41629673.04 -41629672.88 0.0262 0.0168  
 Venus -118689-10-17 10:49 J -41629444.21 -41629444.05 -41629443.88 0.0260 0.0165  
 Venus -118688-06-03 10:34 J -41629215.22 -41629215.06 -41629214.89 0.0259 0.0161

Venus -118687-01-18 10:20 J -41628986.23 -41628986.07 -41628985.89 0.0258 0.0155  
 Venus -118687-09-04 10:34 J -41628757.23 -41628757.06 -41628756.88 0.0258 0.0146  
 Venus -118686-04-21 11:03 J -41628528.22 -41628528.04 -41628527.85 0.0258 0.0136  
 Venus -118686-12-06 12:01 J -41628299.18 -41628299.00 -41628298.80 0.0258 0.0124  
 Venus -118685-07-22 13:56 J -41628070.11 -41628069.92 -41628069.71 0.0258 0.0111  
 Venus -118684-03-08 16:49 J -41627841.00 -41627840.80 -41627840.59 0.0259 0.0095  
 Venus -118684-10-23 20:25 J -41627611.86 -41627611.65 -41627611.43 0.0260 0.0078  
 Venus -118683-06-10 01:13 J -41627382.66 -41627382.45 -41627382.23 0.0261 0.0060  
 Venus -118682-01-25 07:13 J -41627153.41 -41627153.20 -41627152.98 0.0263 0.0041  
 Venus -118682-09-11 14:53 J -41626924.10 -41626923.88 -41626923.66 0.0265 0.0020  
 Venus -118681-04-28 00:01 J -41626694.72 -41626694.50 -41626694.28 0.0267 0.0003  
 Venus -118681-12-13 10:34 J -41626465.28 -41626465.06 -41626464.84 0.0270 0.0024  
 Venus -118680-07-30 22:49 J -41626235.76 -41626235.55 -41626235.33 0.0272 0.0047  
 Venus -118679-03-17 12:58 J -41626006.17 -41626005.96 -41626005.75 0.0275 0.0069  
 Venus -118679-11-02 04:49 J -41625776.50 -41625776.30 -41625776.09 0.0278 0.0091  
 Earth -118678-01-17 05:17 J -41625700.36 -41625700.28 -41625700.20 0.0279 0.0263  
 Moon -118678-01-17 08:53 J -41625700.21 -41625700.13 -41625700.05 0.0279 0.0264 \*  
 Venus -118678-06-19 22:20 J -41625546.76 -41625546.57 -41625546.37 0.0281 0.0112  
 Mars -118678-09-16 16:20 J -41625458.05 -41625457.82 -41625457.57 0.0283 0.0159  
 Venus -118677-02-04 17:32 J -41625316.96 -41625316.77 -41625316.58 0.0285 0.0132  
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 Venus -118676-05-09 12:15 J -41624857.16 -41624856.99 -41624856.81 0.0291 0.0165  
 Venus -118676-12-25 11:46 J -41624627.18 -41624627.01 -41624626.84 0.0294 0.0177  
 Mercury -118675-02-11 13:27 J -41624579.01 -41624578.94 -41624578.87 0.0295 0.0248  
 Mercury -118675-05-11 03:22 J -41624490.48 -41624490.36 -41624490.24 0.0296 0.0141  
 Mercury -118675-08-07 17:03 J -41624401.92 -41624401.79 -41624401.65 0.0297 0.0035  
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Mercury -118674-04-30 10:05 J -41624136.12 -41624136.08 -41624136.05 0.0300 0.0288

Venus -118674-11-15 14:53 J -41623937.04 -41623936.88 -41623936.72 0.0301 0.0189

Venus -118673-07-02 16:49 J -41623706.96 -41623706.80 -41623706.63 0.0303 0.0183

Venus -118672-02-17 18:29 J -41623476.89 -41623476.73 -41623476.56 0.0304 0.0173

Venus -118672-10-05 19:41 J -41623246.85 -41623246.68 -41623246.50 0.0305 0.0159

Venus -118671-05-23 20:10 J -41623016.84 -41623016.66 -41623016.47 0.0305 0.0140

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Venus -118670-08-26 17:46 J -41622556.95 -41622556.76 -41622556.56 0.0303 0.0093

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Venus -118668-07-16 02:53 J -41621867.59 -41621867.38 -41621867.18 0.0296 0.0011

Venus -118667-03-02 18:15 J -41621637.94 -41621637.74 -41621637.54 0.0294 0.0018

Venus -118667-10-18 07:41 J -41621408.38 -41621408.18 -41621407.97 0.0290 0.0044

Venus -118666-06-04 19:27 J -41621178.89 -41621178.69 -41621178.49 0.0287 0.0068

Venus -118665-01-20 05:32 J -41620949.46 -41620949.27 -41620949.07 0.0284 0.0090

Venus -118665-09-05 13:56 J -41620720.11 -41620719.92 -41620719.73 0.0281 0.0109

Venus -118664-04-22 20:39 J -41620490.82 -41620490.64 -41620490.45 0.0278 0.0126

Venus -118664-12-08 01:56 J -41620261.59 -41620261.42 -41620261.23 0.0275 0.0140

Mars -118664-12-14 11:17 J -41620255.25 -41620255.03 -41620254.79 0.0274 0.0167

Venus -118663-07-25 06:01 J -41620032.42 -41620032.25 -41620032.07 0.0272 0.0151

Venus -118662-03-11 08:39 J -41619803.30 -41619803.14 -41619802.96 0.0269 0.0160

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Venus -118662-10-26 10:49 J -41619574.21 -41619574.05 -41619573.88 0.0267 0.0166

Mercury -118662-12-11 10:20 J -41619528.22 -41619528.07 -41619527.91 0.0266 0.0129

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Mercury -118661-06-06 00:01 J -41619350.67 -41619350.50 -41619350.33 0.0265 0.0072

Venus -118661-06-11 12:01 J -41619345.16 -41619345.00 -41619344.83 0.0265 0.0170

Mercury -118661-09-02 18:44 J -41619261.84 -41619261.72 -41619261.57 0.0264 0.0173

Venus -118660-01-26 12:44 J -41619116.13 -41619115.97 -41619115.81 0.0263 0.0171

Venus -118660-09-12 12:44 J -41618887.13 -41618886.97 -41618886.80 0.0261 0.0170

Venus -118659-04-29 12:29 J -41618658.14 -41618657.98 -41618657.81 0.0260 0.0167  
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 Venus -118654-05-05 22:34 J -41616825.77 -41616825.56 -41616825.35 0.0260 0.0076  
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 Moon -118649-01-11 09:51 J -41615114.31 -41615114.09 -41615113.86 0.0277 0.0096  
 Earth -118649-01-11 12:58 J -41615114.19 -41615113.96 -41615113.72 0.0277 0.0097 \*  
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 Mars -118648-11-05 10:20 J -41614450.36 -41614450.07 -41614449.78 0.0286 0.0065  
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 Mercury -118646-07-01 13:56 J -41613846.94 -41613846.92 -41613846.88 0.0294 0.0286  
 Venus -118646-07-07 14:53 J -41613841.04 -41613840.88 -41613840.71 0.0294 0.0181  
 Mercury -118646-09-28 03:51 J -41613758.44 -41613758.34 -41613758.22 0.0295 0.0180  
 Mercury -118646-12-25 18:01 J -41613669.89 -41613669.75 -41613669.62 0.0296 0.0072  
 Venus -118645-02-22 15:37 J -41613611.02 -41613610.85 -41613610.69 0.0297 0.0189  
 Mercury -118645-03-23 07:41 J -41613581.32 -41613581.18 -41613581.05 0.0297 0.0036

Mercury -118645-06-19 21:08 J -41613492.73 -41613492.62 -41613492.50 0.0298 0.0143  
 Mercury -118645-09-16 10:49 J -41613404.12 -41613404.05 -41613403.98 0.0299 0.0249  
 Venus -118645-10-09 16:34 J -41613380.96 -41613380.81 -41613380.65 0.0299 0.0193  
 Venus -118644-05-27 18:15 J -41613150.89 -41613150.74 -41613150.58 0.0301 0.0192  
 Venus -118643-01-12 20:10 J -41612920.82 -41612920.66 -41612920.49 0.0303 0.0186  
 Venus -118643-08-30 21:51 J -41612690.76 -41612690.59 -41612690.42 0.0304 0.0175  
 Venus -118642-04-17 22:49 J -41612460.72 -41612460.55 -41612460.37 0.0304 0.0159  
 Venus -118642-12-03 23:03 J -41612230.71 -41612230.54 -41612230.35 0.0304 0.0140  
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 Venus -118635-03-18 16:34 J -41609933.99 -41609933.81 -41609933.61 0.0281 0.0111  
 Venus -118635-11-02 23:32 J -41609704.70 -41609704.52 -41609704.33 0.0278 0.0127  
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 Venus -118633-02-04 08:53 J -41609246.30 -41609246.13 -41609245.95 0.0272 0.0152  
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 Mercury -118632-04-29 10:05 J -41608796.22 -41608796.08 -41608795.94 0.0267 0.0159  
 Venus -118632-05-07 13:41 J -41608788.09 -41608787.93 -41608787.76 0.0267 0.0166  
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 Mercury -118632-10-23 23:32 J -41608618.70 -41608618.52 -41608618.35 0.0265 0.0042

Venus -118632-12-22 14:53 J -41608559.04 -41608558.88 -41608558.72 0.0265 0.0170

Mercury -118631-01-20 18:15 J -41608529.88 -41608529.74 -41608529.58 0.0265 0.0143

Mercury -118631-04-19 13:27 J -41608441.00 -41608440.94 -41608440.87 0.0264 0.0243

Venus -118631-08-08 15:22 J -41608330.02 -41608329.86 -41608329.70 0.0263 0.0171

Venus -118630-03-25 15:22 J -41608101.02 -41608100.86 -41608100.69 0.0261 0.0170

Venus -118630-11-09 15:08 J -41607872.03 -41607871.87 -41607871.70 0.0260 0.0168

Venus -118629-06-25 15:08 J -41607643.04 -41607642.87 -41607642.70 0.0259 0.0162

Venus -118628-02-09 14:53 J -41607414.05 -41607413.88 -41607413.70 0.0258 0.0155

Venus -118628-09-26 14:53 J -41607185.05 -41607184.88 -41607184.69 0.0258 0.0146

Venus -118627-05-13 15:37 J -41606956.04 -41606955.85 -41606955.66 0.0258 0.0135

Venus -118627-12-28 16:34 J -41606727.00 -41606726.81 -41606726.61 0.0258 0.0122

Venus -118626-08-14 18:29 J -41606497.92 -41606497.73 -41606497.52 0.0258 0.0108

Venus -118625-03-30 21:22 J -41606268.82 -41606268.61 -41606268.40 0.0259 0.0092

Venus -118625-11-15 00:58 J -41606039.67 -41606039.46 -41606039.25 0.0260 0.0075

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Venus -118623-10-03 19:27 J -41605351.91 -41605351.69 -41605351.47 0.0265 0.0015

Venus -118622-05-21 04:34 J -41605122.53 -41605122.31 -41605122.09 0.0267 0.0008

Venus -118621-01-05 15:08 J -41604893.09 -41604892.87 -41604892.65 0.0270 0.0029

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Venus -118618-02-26 21:51 J -41603744.78 -41603744.59 -41603744.40 0.0285 0.0138

Venus -118618-10-14 18:29 J -41603514.90 -41603514.73 -41603514.55 0.0288 0.0156

Venus -118617-05-31 16:49 J -41603284.97 -41603284.80 -41603284.63 0.0291 0.0171

Venus -118616-01-16 16:05 J -41603054.99 -41603054.83 -41603054.66 0.0294 0.0182

Mercury -118616-02-14 04:05 J -41603026.42 -41603026.33 -41603026.24 0.0295 0.0220

Mercury -118616-05-13 18:01 J -41602937.88 -41602937.75 -41602937.62 0.0296 0.0113

Mercury -118616-08-10 07:41 J -41602849.32 -41602849.18 -41602849.04 0.0297 0.0007

Venus -118616-09-03 16:20 J -41602824.97 -41602824.82 -41602824.65 0.0297 0.0190  
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 Mercury -118615-02-03 10:49 J -41602672.14 -41602672.05 -41602671.95 0.0299 0.0208  
 Venus -118615-04-21 17:32 J -41602594.93 -41602594.77 -41602594.61 0.0300 0.0193  
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 Venus -118603-04-02 12:29 J -41598231.14 -41598230.98 -41598230.81 0.0269 0.0164  
 Mercury -118603-09-16 08:39 J -41598064.26 -41598064.14 -41598064.02 0.0267 0.0195  
 Venus -118603-11-17 14:25 J -41598002.06 -41598001.90 -41598001.73 0.0266 0.0170  
 Mercury -118603-12-14 03:08 J -41597975.53 -41597975.37 -41597975.20 0.0266 0.0096  
 Mercury -118602-03-12 22:05 J -41597886.76 -41597886.58 -41597886.40 0.0265 0.0006

Mercury -118602-06-09 17:03 J -41597797.96 -41597797.79 -41597797.63 0.0265 0.0106

Venus -118602-07-04 15:37 J -41597773.00 -41597772.85 -41597772.68 0.0264 0.0174

Mercury -118602-09-06 11:46 J -41597709.11 -41597709.01 -41597708.89 0.0264 0.0207

Venus -118601-02-18 16:20 J -41597543.97 -41597543.82 -41597543.65 0.0263 0.0174

Venus -118601-10-04 16:34 J -41597314.97 -41597314.81 -41597314.65 0.0261 0.0172

Venus -118600-05-21 16:20 J -41597085.98 -41597085.82 -41597085.65 0.0260 0.0169

Venus -118599-01-05 16:20 J -41596856.99 -41596856.82 -41596856.65 0.0259 0.0163

Venus -118599-08-22 16:20 J -41596627.99 -41596627.82 -41596627.65 0.0258 0.0155

Venus -118598-04-08 16:20 J -41596398.99 -41596398.82 -41596398.63 0.0258 0.0146

Venus -118598-11-23 16:49 J -41596169.98 -41596169.80 -41596169.60 0.0258 0.0135

Venus -118597-07-09 18:01 J -41595940.94 -41595940.75 -41595940.55 0.0258 0.0122

Venus -118596-02-23 19:56 J -41595711.87 -41595711.67 -41595711.47 0.0258 0.0107

Venus -118596-10-10 22:34 J -41595482.76 -41595482.56 -41595482.35 0.0259 0.0091

Venus -118595-05-28 02:10 J -41595253.62 -41595253.41 -41595253.19 0.0260 0.0073

Venus -118594-01-12 06:58 J -41595024.42 -41595024.21 -41595023.99 0.0262 0.0055

Venus -118594-08-29 13:27 J -41594795.16 -41594794.94 -41594794.72 0.0264 0.0034

Venus -118593-04-14 20:53 J -41594565.85 -41594565.63 -41594565.41 0.0266 0.0013

Venus -118593-11-30 06:01 J -41594336.47 -41594336.25 -41594336.03 0.0268 0.0009

Venus -118592-07-17 16:34 J -41594107.03 -41594106.81 -41594106.59 0.0270 0.0031

Venus -118591-03-04 04:49 J -41593877.51 -41593877.30 -41593877.08 0.0273 0.0054

Venus -118591-10-19 19:13 J -41593647.91 -41593647.70 -41593647.49 0.0276 0.0077

Earth -118590-01-12 07:56 J -41593563.42 -41593563.17 -41593562.92 0.0277 0.0039

Moon -118590-01-12 09:08 J -41593563.36 -41593563.12 -41593562.88 0.0277 0.0041 \*

Venus -118590-06-06 10:49 J -41593418.24 -41593418.05 -41593417.84 0.0279 0.0100

Venus -118589-01-22 04:34 J -41593188.50 -41593188.31 -41593188.11 0.0282 0.0121

Mars -118589-02-09 04:05 J -41593170.57 -41593170.33 -41593170.08 0.0282 0.0155

Venus -118589-09-07 23:46 J -41592958.70 -41592958.51 -41592958.32 0.0285 0.0141

Venus -118588-04-25 20:25 J -41592728.82 -41592728.65 -41592728.46 0.0288 0.0159

Venus -118588-12-11 18:44 J -41592498.88 -41592498.72 -41592498.54 0.0291 0.0175

Mercury -118587-07-04 04:20 J -41592294.38 -41592294.32 -41592294.25 0.0294 0.0260

Venus -118587-07-29 18:29 J -41592268.89 -41592268.73 -41592268.57 0.0294 0.0186  
 Mercury -118587-09-30 18:15 J -41592205.85 -41592205.74 -41592205.62 0.0295 0.0154  
 Mercury -118587-12-28 08:10 J -41592117.29 -41592117.16 -41592117.02 0.0296 0.0047  
 Venus -118586-03-16 18:44 J -41592038.87 -41592038.72 -41592038.55 0.0297 0.0193  
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 Mercury -118586-09-20 00:58 J -41591851.51 -41591851.46 -41591851.41 0.0299 0.0273  
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 Venus -118584-09-22 01:13 J -41591118.61 -41591118.45 -41591118.28 0.0304 0.0175  
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 Moon -118577-07-07 15:08 J -41588638.05 -41588637.87 -41588637.69 0.0284 0.0194 \*  
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Mercury -118573-02-03 07:56 J -41587332.26 -41587332.17 -41587332.07 0.0268 0.0227

Mercury -118573-05-02 02:25 J -41587243.55 -41587243.40 -41587243.24 0.0267 0.0127

Venus -118573-05-29 16:34 J -41587215.96 -41587215.81 -41587215.64 0.0267 0.0171

Mercury -118573-07-29 21:08 J -41587154.79 -41587154.62 -41587154.44 0.0266 0.0028

Mercury -118573-10-26 16:05 J -41587066.00 -41587065.83 -41587065.66 0.0265 0.0074

Venus -118572-01-13 17:46 J -41586986.91 -41586986.76 -41586986.59 0.0265 0.0174

Mercury -118572-01-23 11:03 J -41586977.17 -41586977.04 -41586976.90 0.0265 0.0175

Venus -118572-08-30 18:29 J -41586757.89 -41586757.73 -41586757.57 0.0263 0.0174

Venus -118571-04-16 18:29 J -41586528.89 -41586528.73 -41586528.56 0.0261 0.0172

Venus -118571-12-01 18:15 J -41586299.89 -41586299.74 -41586299.57 0.0260 0.0169

Venus -118570-07-18 18:15 J -41586070.90 -41586070.74 -41586070.56 0.0259 0.0163

Venus -118569-03-03 18:15 J -41585841.91 -41585841.74 -41585841.56 0.0258 0.0155

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Venus -118567-01-19 19:56 J -41585154.86 -41585154.67 -41585154.47 0.0258 0.0121

Venus -118567-09-05 21:51 J -41584925.78 -41584925.59 -41584925.38 0.0258 0.0106

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Venus -118564-10-25 23:03 J -41583779.76 -41583779.54 -41583779.32 0.0265 0.0010

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Venus -118562-01-27 18:29 J -41583320.94 -41583320.73 -41583320.51 0.0270 0.0036

Venus -118562-09-14 06:58 J -41583091.42 -41583091.21 -41583090.99 0.0273 0.0058

Venus -118561-04-30 20:53 J -41582861.83 -41582861.63 -41582861.41 0.0275 0.0082

Venus -118561-12-16 12:44 J -41582632.17 -41582631.97 -41582631.76 0.0279 0.0104

Venus -118560-08-03 06:15 J -41582402.43 -41582402.24 -41582402.04 0.0282 0.0125

Venus -118559-03-21 01:27 J -41582172.63 -41582172.44 -41582172.26 0.0285 0.0144

Mars -118559-03-30 14:24 J -41582163.18 -41582162.90 -41582162.61 0.0285 0.0064

Venus -118559-11-05 22:05 J -41581942.75 -41581942.58 -41581942.40 0.0288 0.0162



Venus -118558-06-23 20:10 J -41581712.82 -41581712.66 -41581712.48 0.0291 0.0177  
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 Mercury -118557-05-16 08:10 J -41581385.29 -41581385.16 -41581385.02 0.0296 0.0089  
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 Mercury -118557-11-09 11:32 J -41581208.14 -41581208.02 -41581207.89 0.0298 0.0126  
 Mercury -118556-02-06 01:12 J -41581119.53 -41581119.45 -41581119.37 0.0299 0.0231  
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 Venus -118548-07-19 01:27 J -41578034.64 -41578034.44 -41578034.24 0.0287 0.0080  
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Venus -118544-04-24 14:53 J -41576659.04 -41576658.88 -41576658.71 0.0269 0.0169  
 Mercury -118544-06-22 06:15 J -41576600.26 -41576600.24 -41576600.21 0.0268 0.0265  
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Venus -118530-02-13 07:56 J -41571616.36 -41571616.17 -41571615.97 0.0282 0.0127  
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Mars -118517-08-13 06:44 J -41566686.51 -41566686.22 -41566685.93 0.0279 0.0021  
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 Venus -118503-10-06 10:48 J -41561519.27 -41561519.05 -41561518.84 0.0273 0.0065  
 Venus -118502-05-24 00:44 J -41561289.67 -41561289.47 -41561289.26 0.0276 0.0088

Venus -118501-01-08 16:20 J -41561060.01 -41561059.82 -41561059.61 0.0279 0.0111  
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 Venus -118501-08-25 09:51 J -41560830.28 -41560830.09 -41560829.90 0.0282 0.0132  
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 Mercury -118498-02-20 08:39 J -41559921.25 -41559921.14 -41559921.02 0.0294 0.0170  
 Venus -118498-03-02 22:48 J -41559910.70 -41559910.55 -41559910.39 0.0295 0.0192  
 Mercury -118498-05-19 22:34 J -41559832.70 -41559832.56 -41559832.43 0.0296 0.0064  
 Mercury -118498-08-16 12:15 J -41559744.13 -41559743.99 -41559743.86 0.0297 0.0042  
 Venus -118498-10-18 23:03 J -41559680.69 -41559680.54 -41559680.38 0.0297 0.0198  
 Mercury -118498-11-13 01:41 J -41559655.54 -41559655.43 -41559655.31 0.0298 0.0149  
 Mercury -118497-02-09 15:08 J -41559566.93 -41559566.87 -41559566.79 0.0299 0.0255  
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 Venus -118493-11-01 02:24 J -41557840.59 -41557840.40 -41557840.20 0.0303 0.0081  
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 Venus -118489-08-10 02:39 J -41556462.58 -41556462.39 -41556462.19 0.0287 0.0087

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 Mars -118487-10-01 16:20 J -41555680.04 -41555679.82 -41555679.60 0.0276 0.0175  
 Venus -118486-02-13 09:08 J -41555545.29 -41555545.12 -41555544.94 0.0274 0.0156  
 Venus -118486-09-30 13:12 J -41555316.11 -41555315.95 -41555315.78 0.0271 0.0167  
 Venus -118485-05-16 16:20 J -41555086.97 -41555086.82 -41555086.65 0.0269 0.0174  
 Mercury -118485-06-24 21:51 J -41555047.66 -41555047.59 -41555047.50 0.0268 0.0238  
 Mercury -118485-09-21 16:34 J -41554958.95 -41554958.81 -41554958.65 0.0267 0.0137  
 Mercury -118485-12-19 11:32 J -41554870.20 -41554870.02 -41554869.85 0.0266 0.0036  
 Venus -118485-12-31 18:29 J -41554857.88 -41554857.73 -41554857.56 0.0266 0.0178  
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 Venus -118483-04-03 20:39 J -41554399.79 -41554399.64 -41554399.48 0.0262 0.0180  
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 Venus -118482-07-05 21:22 J -41553941.77 -41553941.61 -41553941.45 0.0260 0.0172  
 Venus -118481-02-19 21:22 J -41553712.77 -41553712.61 -41553712.44 0.0259 0.0165  
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 Venus -118479-01-06 22:34 J -41553025.75 -41553025.56 -41553025.37 0.0258 0.0132  
 Venus -118479-08-24 00:00 J -41552796.69 -41552796.50 -41552796.30 0.0258 0.0118  
 Venus -118478-04-10 02:10 J -41552567.61 -41552567.41 -41552567.21 0.0259 0.0102  
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 Venus -118475-05-30 04:05 J -41551421.55 -41551421.33 -41551421.11 0.0266 0.0003  
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 Venus -118474-09-01 00:00 J -41550962.72 -41550962.50 -41550962.28 0.0271 0.0044

Venus -118473-04-17 12:15 J -41550733.20 -41550732.99 -41550732.77 0.0273 0.0067  
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 Earth -118472-01-13 21:51 J -41550461.83 -41550461.59 -41550461.35 0.0277 0.0075  
 Moon -118472-01-13 22:34 J -41550461.80 -41550461.56 -41550461.31 0.0277 0.0070 \*  
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 Mercury -118469-07-09 09:08 J -41549189.21 -41549189.12 -41549189.02 0.0294 0.0209  
 Venus -118469-09-12 01:12 J -41549124.60 -41549124.45 -41549124.29 0.0295 0.0195  
 Mercury -118469-10-05 23:03 J -41549100.67 -41549100.54 -41549100.41 0.0295 0.0103  
 Mercury -118468-01-02 12:44 J -41549012.11 -41549011.97 -41549011.83 0.0296 0.0003  
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 Venus -118468-04-30 01:41 J -41548894.59 -41548894.43 -41548894.28 0.0297 0.0201  
 Mercury -118468-06-28 15:51 J -41548834.93 -41548834.84 -41548834.75 0.0298 0.0215  
 Venus -118468-12-16 02:39 J -41548664.54 -41548664.39 -41548664.23 0.0300 0.0202  
 Venus -118467-08-03 04:05 J -41548434.48 -41548434.33 -41548434.17 0.0302 0.0198  
 Venus -118466-03-21 05:46 J -41548204.42 -41548204.26 -41548204.10 0.0303 0.0188  
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 Venus -118464-02-08 07:56 J -41547514.35 -41547514.17 -41547513.98 0.0304 0.0132  
 Venus -118464-09-26 06:44 J -41547284.41 -41547284.22 -41547284.02 0.0303 0.0106  
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 Venus -118463-12-30 00:29 J -41546824.68 -41546824.48 -41546824.28 0.0300 0.0048  
 Venus -118462-08-16 19:12 J -41546594.91 -41546594.70 -41546594.50 0.0298 0.0019  
 Venus -118461-04-02 12:15 J -41546365.20 -41546364.99 -41546364.79 0.0295 0.0012  
 Venus -118461-11-18 03:22 J -41546135.57 -41546135.36 -41546135.16 0.0293 0.0040  
 Venus -118460-07-05 16:34 J -41545906.01 -41545905.81 -41545905.61 0.0290 0.0066

Venus -118459-02-20 04:20 J -41545676.52 -41545676.32 -41545676.13 0.0286 0.0090  
 Venus -118459-10-07 14:10 J -41545447.10 -41545446.91 -41545446.72 0.0283 0.0111  
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 Venus -118458-05-24 22:34 J -41545217.74 -41545217.56 -41545217.37 0.0280 0.0130  
 Venus -118457-01-09 05:32 J -41544988.45 -41544988.27 -41544988.09 0.0277 0.0145  
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 Mercury -118455-02-08 15:36 J -41544226.98 -41544226.85 -41544226.71 0.0268 0.0170  
 Mercury -118455-05-08 10:34 J -41544138.23 -41544138.06 -41544137.89 0.0267 0.0069  
 Venus -118455-07-13 20:24 J -41544071.80 -41544071.65 -41544071.49 0.0267 0.0179  
 Mercury -118455-08-05 05:17 J -41544049.45 -41544049.28 -41544049.10 0.0266 0.0032  
 Mercury -118455-11-02 00:15 J -41543960.64 -41543960.49 -41543960.33 0.0266 0.0133  
 Mercury -118454-01-29 19:12 J -41543871.77 -41543871.70 -41543871.60 0.0265 0.0235  
 Venus -118454-02-27 21:36 J -41543842.74 -41543842.60 -41543842.43 0.0265 0.0181  
 Venus -118454-10-14 22:34 J -41543613.71 -41543613.56 -41543613.40 0.0263 0.0180  
 Venus -118453-05-30 22:48 J -41543384.69 -41543384.55 -41543384.38 0.0261 0.0177  
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 Venus -118452-08-31 23:17 J -41542926.69 -41542926.53 -41542926.36 0.0259 0.0164  
 Venus -118451-04-17 23:17 J -41542697.70 -41542697.53 -41542697.35 0.0258 0.0155  
 Venus -118451-12-02 23:46 J -41542468.68 -41542468.51 -41542468.32 0.0258 0.0144  
 Venus -118450-07-20 00:44 J -41542239.65 -41542239.47 -41542239.27 0.0258 0.0131  
 Venus -118449-03-05 02:10 J -41542010.60 -41542010.41 -41542010.21 0.0258 0.0117  
 Venus -118449-10-20 04:20 J -41541781.52 -41541781.32 -41541781.11 0.0259 0.0100  
 Venus -118448-06-06 07:12 J -41541552.40 -41541552.20 -41541551.98 0.0259 0.0083  
 Venus -118447-01-21 11:17 J -41541323.24 -41541323.03 -41541322.81 0.0260 0.0063  
 Venus -118447-09-07 16:48 J -41541094.02 -41541093.80 -41541093.58 0.0262 0.0042  
 Venus -118446-04-24 23:17 J -41540864.75 -41540864.53 -41540864.31 0.0264 0.0021  
 Venus -118446-12-10 06:58 J -41540635.43 -41540635.21 -41540634.99 0.0266 0.0002  
 Venus -118445-07-26 16:05 J -41540406.05 -41540405.83 -41540405.61 0.0268 0.0025



Venus -118444-03-13 02:53 J -41540176.60 -41540176.38 -41540176.16 0.0270 0.0048  
 Venus -118444-10-28 15:22 J -41539947.07 -41539946.86 -41539946.65 0.0273 0.0072  
 Earth -118443-01-08 08:24 J -41539875.16 -41539875.15 -41539875.13 0.0274 0.0273  
 Venus -118443-06-15 05:17 J -41539717.47 -41539717.28 -41539717.07 0.0276 0.0096  
 Venus -118442-01-30 21:08 J -41539487.81 -41539487.62 -41539487.42 0.0279 0.0118  
 Venus -118442-09-17 14:39 J -41539258.07 -41539257.89 -41539257.70 0.0282 0.0139  
 Venus -118441-05-04 09:36 J -41539028.27 -41539028.10 -41539027.91 0.0285 0.0159  
 Venus -118441-12-20 06:29 J -41538798.40 -41538798.23 -41538798.06 0.0289 0.0175  
 Venus -118440-08-07 04:20 J -41538568.48 -41538568.32 -41538568.15 0.0292 0.0188  
 Mercury -118440-11-26 09:22 J -41538457.17 -41538457.11 -41538457.03 0.0293 0.0249  
 Mercury -118439-02-22 23:32 J -41538368.64 -41538368.52 -41538368.40 0.0294 0.0143  
 Venus -118439-03-25 03:22 J -41538338.51 -41538338.36 -41538338.20 0.0295 0.0198  
 Mercury -118439-05-22 13:12 J -41538280.09 -41538279.95 -41538279.81 0.0295 0.0037  
 Mercury -118439-08-19 02:53 J -41538191.51 -41538191.38 -41538191.25 0.0296 0.0069  
 Venus -118439-11-10 03:36 J -41538108.50 -41538108.35 -41538108.19 0.0297 0.0203  
 Mercury -118439-11-15 16:20 J -41538102.93 -41538102.82 -41538102.71 0.0297 0.0174  
 Mercury -118438-02-12 05:46 J -41538014.30 -41538014.26 -41538014.21 0.0298 0.0279  
 Venus -118438-06-28 04:20 J -41537878.46 -41537878.32 -41537878.16 0.0300 0.0203  
 Venus -118437-02-13 05:46 J -41537648.41 -41537648.26 -41537648.10 0.0302 0.0198  
 Venus -118437-09-30 06:58 J -41537418.36 -41537418.21 -41537418.04 0.0303 0.0188  
 Venus -118436-05-18 08:10 J -41537188.32 -41537188.16 -41537187.99 0.0304 0.0173  
 Venus -118435-01-03 08:53 J -41536958.30 -41536958.13 -41536957.95 0.0305 0.0154  
 Venus -118435-08-21 08:53 J -41536728.31 -41536728.13 -41536727.94 0.0304 0.0130  
 Venus -118434-04-08 07:41 J -41536498.37 -41536498.18 -41536497.98 0.0304 0.0104  
 Venus -118434-11-24 05:17 J -41536268.48 -41536268.28 -41536268.08 0.0302 0.0075  
 Venus -118433-07-11 01:27 J -41536038.64 -41536038.44 -41536038.24 0.0300 0.0045  
 Venus -118432-02-25 19:56 J -41535808.88 -41535808.67 -41535808.47 0.0298 0.0015  
 Venus -118432-10-13 12:44 J -41535579.18 -41535578.97 -41535578.77 0.0296 0.0016  
 Venus -118431-05-31 03:36 J -41535349.55 -41535349.35 -41535349.15 0.0293 0.0043  
 Venus -118430-01-15 16:48 J -41535120.00 -41535119.80 -41535119.60 0.0290 0.0070

Earth	-118430-07-04 01:12 J	-41534950.68	-41534950.45	-41534950.22	0.0287	0.0091
Moon	-118430-07-04 04:48 J	-41534950.53	-41534950.30	-41534950.07	0.0287	0.0084 *
Venus	-118430-09-02 04:20 J	-41534890.51	-41534890.32	-41534890.12	0.0286	0.0094
Venus	-118429-04-18 14:10 J	-41534661.09	-41534660.91	-41534660.72	0.0283	0.0116
Venus	-118429-12-03 22:20 J	-41534431.74	-41534431.57	-41534431.38	0.0280	0.0135
Mars	-118428-01-05 12:00 J	-41534399.29	-41534399.00	-41534398.70	0.0280	0.0029
Venus	-118428-07-21 05:03 J	-41534202.45	-41534202.29	-41534202.10	0.0277	0.0150
Venus	-118427-03-07 10:34 J	-41533973.22	-41533973.06	-41533972.88	0.0274	0.0162
Venus	-118427-10-22 14:39 J	-41533744.04	-41533743.89	-41533743.71	0.0271	0.0173
Venus	-118426-06-08 18:15 J	-41533514.89	-41533514.74	-41533514.58	0.0269	0.0178
Mercury	-118426-06-28 13:56 J	-41533495.02	-41533494.92	-41533494.81	0.0268	0.0209
Mercury	-118426-09-25 08:39 J	-41533406.30	-41533406.14	-41533405.98	0.0267	0.0109
Mercury	-118426-12-23 03:36 J	-41533317.53	-41533317.35	-41533317.18	0.0267	0.0010
Venus	-118425-01-23 20:24 J	-41533285.79	-41533285.65	-41533285.49	0.0266	0.0183
Mercury	-118425-03-20 22:20 J	-41533228.73	-41533228.57	-41533228.40	0.0266	0.0094
Mercury	-118425-06-17 17:32 J	-41533139.89	-41533139.77	-41533139.64	0.0265	0.0195
Venus	-118425-09-08 22:05 J	-41533056.73	-41533056.58	-41533056.43	0.0264	0.0184
Venus	-118424-04-25 22:48 J	-41532827.70	-41532827.55	-41532827.39	0.0262	0.0183
Venus	-118424-12-10 23:17 J	-41532598.68	-41532598.53	-41532598.37	0.0261	0.0179
Venus	-118423-07-27 23:46 J	-41532369.67	-41532369.51	-41532369.34	0.0260	0.0173
Venus	-118422-03-14 00:00 J	-41532140.66	-41532140.50	-41532140.33	0.0259	0.0166
Venus	-118422-10-29 00:29 J	-41531911.66	-41531911.48	-41531911.31	0.0258	0.0156
Venus	-118421-06-14 00:58 J	-41531682.64	-41531682.46	-41531682.28	0.0258	0.0144
Venus	-118420-01-29 01:56 J	-41531453.61	-41531453.42	-41531453.23	0.0258	0.0131
Venus	-118420-09-15 03:36 J	-41531224.54	-41531224.35	-41531224.15	0.0258	0.0115
Venus	-118419-05-02 05:46 J	-41530995.46	-41530995.26	-41530995.05	0.0259	0.0099
Venus	-118419-12-17 08:53 J	-41530766.33	-41530766.13	-41530765.91	0.0260	0.0081
Venus	-118418-08-03 13:12 J	-41530537.16	-41530536.95	-41530536.73	0.0261	0.0061
Venus	-118417-03-19 18:29 J	-41530307.95	-41530307.73	-41530307.51	0.0262	0.0040
Venus	-118417-11-04 00:58 J	-41530078.68	-41530078.46	-41530078.24	0.0264	0.0018

Venus	-118416-06-21 08:53 J	-41529849.35	-41529849.13	-41529848.91	0.0266	0.0005
Venus	-118415-02-05 18:15 J	-41529619.96	-41529619.74	-41529619.52	0.0268	0.0028
Venus	-118415-09-23 05:17 J	-41529390.50	-41529390.28	-41529390.07	0.0271	0.0051
Venus	-118414-05-10 17:46 J	-41529160.97	-41529160.76	-41529160.55	0.0274	0.0075
Venus	-118414-12-26 07:56 J	-41528931.37	-41528931.17	-41528930.97	0.0276	0.0098
Moon	-118413-01-15 15:51 J	-41528911.05	-41528910.84	-41528910.61	0.0277	0.0128
Earth	-118413-01-15 19:41 J	-41528910.90	-41528910.68	-41528910.47	0.0277	0.0138 *
Venus	-118413-08-11 23:46 J	-41528701.70	-41528701.51	-41528701.31	0.0280	0.0120
Mars	-118413-11-26 03:22 J	-41528595.59	-41528595.36	-41528595.10	0.0281	0.0150
Venus	-118412-03-29 17:17 J	-41528471.96	-41528471.78	-41528471.59	0.0283	0.0142
Venus	-118412-11-14 12:29 J	-41528242.15	-41528241.98	-41528241.80	0.0286	0.0161
Venus	-118411-07-02 09:22 J	-41528012.28	-41528012.11	-41528011.94	0.0289	0.0177
Venus	-118410-02-17 07:27 J	-41527782.35	-41527782.19	-41527782.03	0.0292	0.0190
Mercury	-118410-04-15 10:05 J	-41527725.10	-41527725.08	-41527725.05	0.0293	0.0285
Mercury	-118410-07-13 00:00 J	-41527636.61	-41527636.50	-41527636.39	0.0294	0.0180
Venus	-118410-10-05 06:29 J	-41527552.38	-41527552.23	-41527552.07	0.0295	0.0200
Mercury	-118410-10-09 13:56 J	-41527548.06	-41527547.92	-41527547.79	0.0295	0.0075
Mercury	-118409-01-06 03:36 J	-41527459.49	-41527459.35	-41527459.22	0.0296	0.0032
Mercury	-118409-04-03 17:03 J	-41527370.91	-41527370.79	-41527370.67	0.0297	0.0137
Venus	-118409-05-22 06:44 J	-41527322.37	-41527322.22	-41527322.07	0.0298	0.0205
Mercury	-118409-07-01 06:29 J	-41527282.30	-41527282.23	-41527282.15	0.0298	0.0242
Venus	-118408-01-07 07:41 J	-41527092.33	-41527092.18	-41527092.03	0.0300	0.0204
Venus	-118408-08-25 09:08 J	-41526862.28	-41526862.12	-41526861.97	0.0302	0.0199
Venus	-118407-04-12 10:20 J	-41526632.23	-41526632.07	-41526631.91	0.0303	0.0188
Venus	-118407-11-28 11:17 J	-41526402.19	-41526402.03	-41526401.85	0.0304	0.0173
Venus	-118406-07-16 12:00 J	-41526172.17	-41526172.00	-41526171.82	0.0304	0.0153
Venus	-118405-03-02 11:46 J	-41525942.19	-41525942.01	-41525941.82	0.0304	0.0129
Venus	-118405-10-18 10:34 J	-41525712.25	-41525712.06	-41525711.87	0.0303	0.0101
Venus	-118404-06-05 07:41 J	-41525482.37	-41525482.18	-41525481.98	0.0302	0.0073
Venus	-118403-01-21 03:36 J	-41525252.55	-41525252.35	-41525252.14	0.0300	0.0042

Venus	-118403-09-07 22:05 J	-41525022.79	-41525022.58	-41525022.38	0.0298	0.0012
Venus	-118402-04-25 14:53 J	-41524793.09	-41524792.88	-41524792.68	0.0295	0.0019
Venus	-118402-12-11 05:46 J	-41524563.46	-41524563.26	-41524563.06	0.0292	0.0047
Venus	-118401-07-27 18:58 J	-41524333.91	-41524333.71	-41524333.51	0.0289	0.0073
Venus	-118400-03-14 06:29 J	-41524104.43	-41524104.23	-41524104.04	0.0286	0.0098
Venus	-118400-10-29 16:05 J	-41523875.01	-41523874.83	-41523874.63	0.0283	0.0119
Venus	-118399-06-16 00:29 J	-41523645.65	-41523645.48	-41523645.29	0.0280	0.0137
Venus	-118398-01-31 07:27 J	-41523416.36	-41523416.19	-41523416.01	0.0277	0.0152
Mars	-118398-02-24 05:46 J	-41523392.47	-41523392.26	-41523392.03	0.0277	0.0179
Venus	-118398-09-17 12:58 J	-41523187.13	-41523186.96	-41523186.79	0.0274	0.0164
Venus	-118397-05-03 17:03 J	-41522957.94	-41522957.79	-41522957.62	0.0271	0.0174
Mercury	-118397-11-14 13:12 J	-41522763.02	-41522762.95	-41522762.87	0.0269	0.0241
Venus	-118397-12-18 20:24 J	-41522728.80	-41522728.65	-41522728.49	0.0269	0.0180
Mercury	-118396-02-11 07:41 J	-41522674.32	-41522674.18	-41522674.02	0.0268	0.0141
Mercury	-118396-05-11 02:39 J	-41522585.56	-41522585.39	-41522585.21	0.0267	0.0040
Venus	-118396-08-04 22:34 J	-41522499.71	-41522499.56	-41522499.40	0.0267	0.0183
Mercury	-118396-08-07 21:36 J	-41522496.77	-41522496.60	-41522496.43	0.0267	0.0062
Mercury	-118396-11-04 16:48 J	-41522407.94	-41522407.80	-41522407.66	0.0266	0.0163
Mercury	-118395-02-01 11:46 J	-41522319.01	-41522319.01	-41522318.99	0.0265	0.0265
Venus	-118395-03-22 00:00 J	-41522270.64	-41522270.50	-41522270.34	0.0265	0.0185
Venus	-118395-11-06 01:12 J	-41522041.60	-41522041.45	-41522041.29	0.0263	0.0183
Venus	-118394-06-23 01:41 J	-41521812.57	-41521812.43	-41521812.26	0.0261	0.0179
Venus	-118393-02-07 02:10 J	-41521583.57	-41521583.41	-41521583.24	0.0260	0.0173
Venus	-118393-09-23 02:24 J	-41521354.56	-41521354.40	-41521354.23	0.0259	0.0165
Venus	-118392-05-10 02:53 J	-41521125.56	-41521125.38	-41521125.21	0.0258	0.0155
Venus	-118392-12-25 03:22 J	-41520896.54	-41520896.36	-41520896.17	0.0258	0.0143
Venus	-118391-08-11 04:34 J	-41520667.49	-41520667.31	-41520667.11	0.0258	0.0129
Venus	-118390-03-28 06:29 J	-41520438.43	-41520438.23	-41520438.04	0.0258	0.0114
Venus	-118390-11-12 08:39 J	-41520209.34	-41520209.14	-41520208.93	0.0259	0.0097
Venus	-118389-06-28 12:00 J	-41519980.21	-41519980.00	-41519979.79	0.0260	0.0078

Venus	-118388-02-12 16:20 J	-41519751.04	-41519750.82	-41519750.61	0.0261	0.0058
Venus	-118388-09-29 21:51 J	-41519521.81	-41519521.59	-41519521.37	0.0262	0.0037
Venus	-118387-05-17 04:34 J	-41519292.53	-41519292.31	-41519292.09	0.0264	0.0015
Venus	-118386-01-01 12:29 J	-41519063.20	-41519062.98	-41519062.76	0.0266	0.0009
Venus	-118386-08-18 21:51 J	-41518833.81	-41518833.59	-41518833.37	0.0268	0.0032
Venus	-118385-04-04 08:53 J	-41518604.34	-41518604.13	-41518603.92	0.0271	0.0056
Venus	-118385-11-19 21:22 J	-41518374.81	-41518374.61	-41518374.40	0.0273	0.0081
Earth	-118384-01-09 07:41 J	-41518324.34	-41518324.18	-41518324.01	0.0274	0.0207
Moon	-118384-01-09 10:48 J	-41518324.19	-41518324.05	-41518323.88	0.0274	0.0212 *
Venus	-118384-07-07 11:46 J	-41518145.21	-41518145.01	-41518144.81	0.0276	0.0104
Venus	-118383-02-22 03:22 J	-41517915.54	-41517915.36	-41517915.16	0.0279	0.0127
Venus	-118383-10-09 21:08 J	-41517685.80	-41517685.62	-41517685.43	0.0282	0.0147
Mars	-118382-01-15 16:05 J	-41517588.11	-41517587.83	-41517587.54	0.0284	0.0066
Venus	-118382-05-27 16:20 J	-41517455.99	-41517455.82	-41517455.64	0.0286	0.0166
Venus	-118381-01-12 12:58 J	-41517226.12	-41517225.96	-41517225.79	0.0289	0.0182
Venus	-118381-08-29 10:48 J	-41516996.20	-41516996.05	-41516995.89	0.0292	0.0195
Mercury	-118381-11-29 00:58 J	-41516904.56	-41516904.46	-41516904.37	0.0293	0.0216
Mercury	-118380-02-25 14:39 J	-41516816.02	-41516815.89	-41516815.76	0.0294	0.0111
Venus	-118380-04-16 09:51 J	-41516766.23	-41516766.09	-41516765.93	0.0295	0.0203
Mercury	-118380-05-25 04:20 J	-41516727.45	-41516727.32	-41516727.18	0.0295	0.0008
Mercury	-118380-08-21 18:00 J	-41516638.88	-41516638.75	-41516638.62	0.0296	0.0099
Mercury	-118380-11-18 07:27 J	-41516550.29	-41516550.19	-41516550.09	0.0297	0.0204
Venus	-118380-12-02 10:05 J	-41516536.22	-41516536.08	-41516535.93	0.0298	0.0207
Venus	-118379-07-20 10:48 J	-41516306.20	-41516306.05	-41516305.90	0.0300	0.0206
Venus	-118378-03-07 11:46 J	-41516076.15	-41516076.01	-41516075.84	0.0302	0.0200
Venus	-118378-10-23 12:58 J	-41515846.11	-41515845.96	-41515845.79	0.0303	0.0188
Venus	-118377-06-09 13:56 J	-41515616.08	-41515615.92	-41515615.74	0.0304	0.0172
Venus	-118376-01-25 14:39 J	-41515386.07	-41515385.89	-41515385.71	0.0304	0.0151
Venus	-118376-09-12 14:10 J	-41515156.09	-41515155.91	-41515155.72	0.0304	0.0126
Venus	-118375-04-30 12:44 J	-41514926.16	-41514925.97	-41514925.78	0.0303	0.0098

Venus	-118375-12-16 09:51 J	-41514696.28	-41514696.09	-41514695.89	0.0302	0.0069
Venus	-118374-08-03 05:46 J	-41514466.46	-41514466.26	-41514466.06	0.0300	0.0038
Venus	-118373-03-20 00:00 J	-41514236.70	-41514236.50	-41514236.29	0.0298	0.0009
Venus	-118373-11-04 16:34 J	-41514007.01	-41514006.81	-41514006.61	0.0295	0.0022
Venus	-118372-06-22 07:12 J	-41513777.40	-41513777.20	-41513777.00	0.0292	0.0051
Venus	-118371-02-06 20:10 J	-41513547.85	-41513547.66	-41513547.46	0.0289	0.0078
Earth	-118371-07-04 20:53 J	-41513399.87	-41513399.63	-41513399.39	0.0287	0.0031
Moon	-118371-07-04 21:36 J	-41513399.85	-41513399.60	-41513399.35	0.0287	0.0021 *
Venus	-118371-09-24 07:41 J	-41513318.37	-41513318.18	-41513317.99	0.0286	0.0101
Mars	-118370-04-11 16:48 J	-41513118.93	-41513118.80	-41513118.64	0.0283	0.0247
Venus	-118370-05-11 17:17 J	-41513088.96	-41513088.78	-41513088.58	0.0283	0.0123
Venus	-118370-12-27 01:41 J	-41512859.61	-41512859.43	-41512859.25	0.0280	0.0141
Venus	-118369-08-12 08:24 J	-41512630.32	-41512630.15	-41512629.98	0.0277	0.0156
Venus	-118368-03-29 13:41 J	-41512401.09	-41512400.93	-41512400.76	0.0274	0.0168
Venus	-118368-11-13 18:00 J	-41512171.91	-41512171.75	-41512171.59	0.0271	0.0177
Venus	-118367-06-30 21:08 J	-41511942.76	-41511942.62	-41511942.46	0.0268	0.0184
Mercury	-118367-07-01 06:15 J	-41511942.36	-41511942.24	-41511942.10	0.0268	0.0179
Mercury	-118367-09-28 01:12 J	-41511853.62	-41511853.45	-41511853.28	0.0268	0.0077
Mercury	-118367-12-25 20:10 J	-41511764.84	-41511764.66	-41511764.49	0.0267	0.0024
Venus	-118366-02-14 23:32 J	-41511713.66	-41511713.52	-41511713.36	0.0266	0.0187
Mercury	-118366-03-24 15:08 J	-41511676.03	-41511675.87	-41511675.71	0.0266	0.0126
Mercury	-118366-06-21 10:20 J	-41511587.16	-41511587.07	-41511586.98	0.0265	0.0227
Venus	-118366-10-02 01:12 J	-41511484.60	-41511484.45	-41511484.30	0.0264	0.0187
Venus	-118365-05-18 02:10 J	-41511255.55	-41511255.41	-41511255.25	0.0262	0.0186
Venus	-118364-01-02 02:53 J	-41511026.53	-41511026.38	-41511026.22	0.0261	0.0181
Venus	-118364-08-19 03:22 J	-41510797.51	-41510797.36	-41510797.19	0.0260	0.0175
Venus	-118363-04-05 03:51 J	-41510568.50	-41510568.34	-41510568.17	0.0259	0.0166
Venus	-118363-11-20 04:20 J	-41510339.49	-41510339.32	-41510339.14	0.0258	0.0156
Venus	-118362-07-07 05:17 J	-41510110.46	-41510110.28	-41510110.09	0.0258	0.0143
Venus	-118361-02-21 06:44 J	-41509881.41	-41509881.22	-41509881.03	0.0258	0.0129

Venus -118361-10-07 08:24 J -41509652.35 -41509652.15 -41509651.95 0.0258 0.0112  
 Venus -118360-05-24 10:48 J -41509423.25 -41509423.05 -41509422.84 0.0259 0.0095  
 Venus -118359-01-08 14:24 J -41509194.11 -41509193.90 -41509193.69 0.0260 0.0076  
 Venus -118359-08-25 18:58 J -41508964.92 -41508964.71 -41508964.49 0.0261 0.0055  
 Venus -118358-04-12 00:29 J -41508735.69 -41508735.48 -41508735.26 0.0263 0.0034  
 Venus -118358-11-27 07:27 J -41508506.41 -41508506.19 -41508505.97 0.0264 0.0012  
 Venus -118357-07-13 15:22 J -41508277.08 -41508276.86 -41508276.64 0.0267 0.0013  
 Venus -118356-02-28 00:58 J -41508047.67 -41508047.46 -41508047.24 0.0269 0.0036  
 Venus -118356-10-15 12:15 J -41507818.20 -41507817.99 -41507817.77 0.0271 0.0060  
 Venus -118355-06-02 01:12 J -41507588.66 -41507588.45 -41507588.24 0.0274 0.0083  
 Moon -118354-01-16 18:29 J -41507359.89 -41507359.73 -41507359.56 0.0277 0.0199  
 Earth -118354-01-16 20:39 J -41507359.79 -41507359.64 -41507359.47 0.0277 0.0209 \*  
 Venus -118354-01-17 15:22 J -41507359.05 -41507358.86 -41507358.65 0.0277 0.0107  
 Venus -118354-09-04 07:27 J -41507129.38 -41507129.19 -41507128.99 0.0280 0.0129  
 Venus -118353-04-21 00:58 J -41506899.63 -41506899.46 -41506899.27 0.0283 0.0151  
 Venus -118353-12-06 20:39 J -41506669.81 -41506669.64 -41506669.47 0.0286 0.0168  
 Venus -118352-07-24 17:17 J -41506439.94 -41506439.78 -41506439.61 0.0289 0.0184  
 Venus -118351-03-11 15:22 J -41506210.01 -41506209.86 -41506209.70 0.0292 0.0197  
 Mercury -118351-04-18 01:56 J -41506172.49 -41506172.42 -41506172.35 0.0293 0.0250  
 Mercury -118351-07-15 15:51 J -41506083.96 -41506083.84 -41506083.72 0.0294 0.0145  
 Mercury -118351-10-12 05:32 J -41505995.41 -41505995.27 -41505995.13 0.0295 0.0040  
 Venus -118351-10-27 14:24 J -41505980.04 -41505979.90 -41505979.74 0.0295 0.0205  
 Mercury -118350-01-08 19:12 J -41505906.84 -41505906.70 -41505906.57 0.0296 0.0065  
 Mercury -118350-04-07 08:39 J -41505818.25 -41505818.14 -41505818.03 0.0297 0.0170  
 Venus -118350-06-14 14:39 J -41505750.03 -41505749.89 -41505749.74 0.0298 0.0209  
 Mercury -118350-07-04 22:05 J -41505729.63 -41505729.58 -41505729.53 0.0298 0.0274  
 Venus -118349-01-30 15:36 J -41505520.00 -41505519.85 -41505519.70 0.0300 0.0207  
 Venus -118349-09-16 16:34 J -41505289.96 -41505289.81 -41505289.65 0.0302 0.0201  
 Venus -118348-05-04 17:46 J -41505059.92 -41505059.76 -41505059.60 0.0303 0.0188  
 Venus -118348-12-20 18:44 J -41504829.89 -41504829.72 -41504829.55 0.0304 0.0171

Venus	-118347-08-07 18:58 J	-41504599.88	-41504599.71	-41504599.53	0.0304	0.0150
Venus	-118346-03-25 18:29 J	-41504369.91	-41504369.73	-41504369.54	0.0304	0.0124
Venus	-118346-11-10 17:03 J	-41504139.99	-41504139.79	-41504139.60	0.0303	0.0096
Venus	-118345-06-27 13:56 J	-41503910.12	-41503909.92	-41503909.72	0.0301	0.0066
Venus	-118344-02-12 09:22 J	-41503680.31	-41503680.11	-41503679.91	0.0299	0.0035
Venus	-118344-09-30 03:22 J	-41503450.56	-41503450.36	-41503450.16	0.0297	0.0004
Venus	-118343-05-17 19:41 J	-41503220.88	-41503220.68	-41503220.48	0.0294	0.0027
Venus	-118342-01-02 10:20 J	-41502991.27	-41502991.07	-41502990.87	0.0292	0.0056
Venus	-118342-08-19 23:17 J	-41502761.73	-41502761.53	-41502761.34	0.0289	0.0082
Venus	-118341-04-05 10:34 J	-41502532.25	-41502532.06	-41502531.87	0.0286	0.0106
Venus	-118341-11-20 20:10 J	-41502302.84	-41502302.66	-41502302.47	0.0283	0.0127
Mars	-118340-05-31 05:17 J	-41502111.57	-41502111.28	-41502110.98	0.0280	0.0025
Venus	-118340-07-08 04:20 J	-41502073.50	-41502073.32	-41502073.14	0.0280	0.0145
Venus	-118339-02-22 10:48 J	-41501844.21	-41501844.05	-41501843.87	0.0277	0.0160
Venus	-118339-10-09 16:34 J	-41501614.98	-41501614.81	-41501614.65	0.0274	0.0171
Venus	-118338-05-26 20:53 J	-41501385.79	-41501385.63	-41501385.47	0.0271	0.0180
Mercury	-118338-11-18 06:00 J	-41501210.36	-41501210.25	-41501210.14	0.0269	0.0210
Venus	-118337-01-11 00:00 J	-41501156.65	-41501156.50	-41501156.34	0.0269	0.0185
Mercury	-118337-02-15 00:44 J	-41501121.63	-41501121.47	-41501121.31	0.0268	0.0109
Mercury	-118337-05-13 19:27 J	-41501032.86	-41501032.69	-41501032.51	0.0267	0.0008
Mercury	-118337-08-10 14:39 J	-41500944.06	-41500943.89	-41500943.73	0.0267	0.0095
Venus	-118337-08-27 02:10 J	-41500927.55	-41500927.41	-41500927.25	0.0266	0.0189
Mercury	-118337-11-07 09:36 J	-41500855.21	-41500855.10	-41500854.97	0.0266	0.0197
Venus	-118336-04-13 03:51 J	-41500698.48	-41500698.34	-41500698.18	0.0264	0.0189
Venus	-118336-11-28 05:03 J	-41500469.43	-41500469.29	-41500469.13	0.0263	0.0186
Venus	-118335-07-15 06:00 J	-41500240.40	-41500240.25	-41500240.09	0.0261	0.0181
Venus	-118334-03-01 06:44 J	-41500011.38	-41500011.22	-41500011.06	0.0260	0.0174
Venus	-118334-10-16 06:58 J	-41499782.37	-41499782.21	-41499782.03	0.0259	0.0166
Venus	-118333-06-01 07:41 J	-41499553.35	-41499553.18	-41499553.00	0.0259	0.0155
Venus	-118332-01-16 08:39 J	-41499324.32	-41499324.14	-41499323.96	0.0258	0.0142



Venus -118332-09-02 10:05 J -41499095.27 -41499095.08 -41499094.89 0.0258 0.0127  
 Venus -118331-04-19 12:00 J -41498866.19 -41498866.00 -41498865.80 0.0259 0.0111  
 Venus -118331-12-04 14:39 J -41498637.09 -41498636.89 -41498636.68 0.0259 0.0093  
 Venus -118330-07-21 18:29 J -41498407.95 -41498407.73 -41498407.52 0.0260 0.0073  
 Venus -118329-03-06 23:03 J -41498178.76 -41498178.54 -41498178.32 0.0261 0.0053  
 Venus -118329-10-22 04:48 J -41497949.52 -41497949.30 -41497949.08 0.0263 0.0030  
 Venus -118328-06-08 11:46 J -41497720.23 -41497720.01 -41497719.79 0.0264 0.0008  
 Venus -118327-01-23 20:10 J -41497490.88 -41497490.66 -41497490.44 0.0266 0.0016  
 Venus -118327-09-10 06:00 J -41497261.46 -41497261.25 -41497261.03 0.0269 0.0041  
 Venus -118326-04-27 17:17 J -41497031.99 -41497031.78 -41497031.56 0.0271 0.0065  
 Venus -118326-12-13 06:00 J -41496802.45 -41496802.25 -41496802.03 0.0274 0.0090  
 Earth -118325-01-11 11:03 J -41496773.25 -41496773.04 -41496772.81 0.0274 0.0132  
 Moon -118325-01-11 13:41 J -41496773.15 -41496772.93 -41496772.70 0.0274 0.0137 \*  
 Venus -118325-07-29 20:39 J -41496572.84 -41496572.64 -41496572.44 0.0277 0.0113  
 Venus -118324-03-16 12:29 J -41496343.16 -41496342.98 -41496342.78 0.0280 0.0136  
 Mars -118324-04-21 11:32 J -41496307.27 -41496307.02 -41496306.76 0.0280 0.0143  
 Venus -118324-11-01 06:29 J -41496113.40 -41496113.23 -41496113.05 0.0283 0.0156  
 Venus -118323-06-19 01:56 J -41495883.59 -41495883.42 -41495883.25 0.0286 0.0174  
 Venus -118322-02-03 22:20 J -41495653.72 -41495653.57 -41495653.40 0.0289 0.0190  
 Mercury -118322-09-05 03:08 J -41495440.40 -41495440.37 -41495440.33 0.0292 0.0283  
 Venus -118322-09-21 20:24 J -41495423.80 -41495423.65 -41495423.49 0.0292 0.0202  
 Mercury -118322-12-02 17:03 J -41495351.90 -41495351.79 -41495351.68 0.0293 0.0179  
 Mercury -118321-02-29 06:44 J -41495263.35 -41495263.22 -41495263.08 0.0294 0.0075  
 Venus -118321-05-08 19:27 J -41495193.83 -41495193.69 -41495193.54 0.0295 0.0209  
 Mercury -118321-05-27 20:24 J -41495174.78 -41495174.65 -41495174.51 0.0295 0.0031  
 Mercury -118321-08-24 09:51 J -41495086.20 -41495086.09 -41495085.96 0.0296 0.0136  
 Mercury -118321-11-20 23:17 J -41494997.60 -41494997.53 -41494997.45 0.0297 0.0240  
 Venus -118321-12-24 19:27 J -41494963.83 -41494963.69 -41494963.53 0.0298 0.0212  
 Venus -118320-08-11 20:10 J -41494733.80 -41494733.66 -41494733.51 0.0300 0.0209  
 Venus -118319-03-29 21:08 J -41494503.77 -41494503.62 -41494503.47 0.0302 0.0201

Venus -118319-11-14 21:51 J -41494273.74 -41494273.59 -41494273.42 0.0303 0.0188  
 Venus -118318-07-02 22:34 J -41494043.72 -41494043.56 -41494043.38 0.0304 0.0170  
 Venus -118317-02-17 23:03 J -41493813.72 -41493813.54 -41493813.37 0.0304 0.0148  
 Venus -118317-10-04 22:05 J -41493583.76 -41493583.58 -41493583.39 0.0304 0.0122  
 Venus -118316-05-22 20:10 J -41493353.85 -41493353.66 -41493353.46 0.0303 0.0093  
 Venus -118315-01-07 17:03 J -41493123.98 -41493123.79 -41493123.58 0.0302 0.0063  
 Venus -118315-08-25 12:44 J -41492894.18 -41492893.97 -41492893.77 0.0300 0.0031  
 Venus -118314-04-12 06:29 J -41492664.43 -41492664.23 -41492664.02 0.0297 0.0007  
 Venus -118314-11-27 22:48 J -41492434.76 -41492434.55 -41492434.35 0.0295 0.0031  
 Venus -118313-07-14 12:58 J -41492205.15 -41492204.96 -41492204.75 0.0292 0.0060  
 Venus -118312-03-01 01:56 J -41491975.62 -41491975.42 -41491975.23 0.0289 0.0086  
 Moon -118312-07-05 16:34 J -41491849.05 -41491848.81 -41491848.57 0.0287 0.0051  
 Earth -118312-07-05 19:56 J -41491848.91 -41491848.67 -41491848.43 0.0287 0.0038 \*  
 Venus -118312-10-16 12:58 J -41491746.15 -41491745.96 -41491745.77 0.0286 0.0110  
 Venus -118311-06-02 22:34 J -41491516.75 -41491516.56 -41491516.38 0.0282 0.0131  
 Venus -118310-01-18 06:29 J -41491287.41 -41491287.23 -41491287.05 0.0279 0.0149  
 Mars -118310-07-20 01:12 J -41491104.65 -41491104.45 -41491104.21 0.0277 0.0180  
 Venus -118310-09-04 12:58 J -41491058.12 -41491057.96 -41491057.79 0.0276 0.0163  
 Venus -118309-04-20 18:15 J -41490828.89 -41490828.74 -41490828.57 0.0273 0.0175  
 Venus -118309-12-05 22:34 J -41490599.71 -41490599.56 -41490599.40 0.0271 0.0184  
 Mercury -118308-04-06 04:48 J -41490478.36 -41490478.30 -41490478.22 0.0269 0.0244  
 Mercury -118308-07-03 23:32 J -41490389.66 -41490389.52 -41490389.37 0.0268 0.0144  
 Venus -118308-07-23 01:41 J -41490370.57 -41490370.43 -41490370.27 0.0268 0.0189  
 Mercury -118308-09-30 18:29 J -41490300.91 -41490300.73 -41490300.56 0.0268 0.0042  
 Mercury -118308-12-28 13:27 J -41490212.11 -41490211.94 -41490211.77 0.0267 0.0059  
 Venus -118307-03-09 04:05 J -41490141.47 -41490141.33 -41490141.17 0.0266 0.0192  
 Mercury -118307-03-27 08:39 J -41490123.28 -41490123.14 -41490123.00 0.0266 0.0161  
 Mercury -118307-06-24 03:36 J -41490034.36 -41490034.35 -41490034.31 0.0265 0.0263  
 Venus -118307-10-24 06:00 J -41489912.39 -41489912.25 -41489912.10 0.0264 0.0191  
 Venus -118306-06-10 07:27 J -41489683.34 -41489683.19 -41489683.04 0.0262 0.0189

Venus	-118305-01-25 07:56 J	-41489454.31	-41489454.17	-41489454.01	0.0261	0.0184
Venus	-118305-09-10 08:53 J	-41489225.29	-41489225.13	-41489224.97	0.0260	0.0176
Venus	-118304-04-27 09:08 J	-41488996.27	-41488996.12	-41488995.94	0.0259	0.0167
Venus	-118304-12-12 09:51 J	-41488767.25	-41488767.09	-41488766.90	0.0258	0.0156
Venus	-118303-07-29 11:32 J	-41488538.21	-41488538.02	-41488537.84	0.0258	0.0142
Venus	-118302-03-15 12:58 J	-41488309.15	-41488308.96	-41488308.77	0.0258	0.0126
Venus	-118302-10-30 14:53 J	-41488080.07	-41488079.88	-41488079.67	0.0259	0.0110
Venus	-118301-06-15 18:00 J	-41487850.96	-41487850.75	-41487850.54	0.0259	0.0091
Venus	-118300-01-30 21:36 J	-41487621.81	-41487621.60	-41487621.38	0.0260	0.0071
Venus	-118300-09-17 02:39 J	-41487392.60	-41487392.39	-41487392.17	0.0262	0.0050
Venus	-118299-05-04 08:39 J	-41487163.36	-41487163.14	-41487162.92	0.0263	0.0027
Venus	-118299-12-19 15:51 J	-41486934.06	-41486933.84	-41486933.62	0.0265	0.0004
Venus	-118298-08-06 00:15 J	-41486704.71	-41486704.49	-41486704.27	0.0267	0.0020
Venus	-118297-03-22 10:20 J	-41486475.29	-41486475.07	-41486474.86	0.0269	0.0044
Venus	-118297-11-06 21:51 J	-41486245.80	-41486245.59	-41486245.38	0.0272	0.0068
Venus	-118296-06-24 10:48 J	-41486016.25	-41486016.05	-41486015.84	0.0275	0.0093
Venus	-118295-02-09 01:41 J	-41485786.63	-41485786.43	-41485786.24	0.0278	0.0116
Venus	-118295-09-26 17:46 J	-41485556.94	-41485556.76	-41485556.56	0.0281	0.0139
Venus	-118294-05-14 11:46 J	-41485327.18	-41485327.01	-41485326.83	0.0284	0.0159
Mars	-118294-06-11 04:20 J	-41485299.60	-41485299.32	-41485299.03	0.0284	0.0082
Venus	-118294-12-30 07:27 J	-41485097.36	-41485097.19	-41485097.03	0.0287	0.0177
Venus	-118293-08-16 04:05 J	-41484867.48	-41484867.33	-41484867.17	0.0290	0.0192
Venus	-118292-04-03 02:10 J	-41484637.55	-41484637.41	-41484637.25	0.0293	0.0204
Mercury	-118292-04-20 18:29 J	-41484619.82	-41484619.73	-41484619.63	0.0293	0.0210
Mercury	-118292-07-18 08:24 J	-41484531.28	-41484531.15	-41484531.02	0.0294	0.0105
Mercury	-118292-10-14 22:05 J	-41484442.72	-41484442.58	-41484442.45	0.0295	0.0005
Venus	-118292-11-19 01:27 J	-41484407.58	-41484407.44	-41484407.29	0.0296	0.0211
Mercury	-118291-01-11 11:32 J	-41484354.14	-41484354.02	-41484353.89	0.0296	0.0105
Mercury	-118291-04-10 00:58 J	-41484265.55	-41484265.46	-41484265.36	0.0297	0.0209
Venus	-118291-07-07 01:27 J	-41484177.57	-41484177.44	-41484177.28	0.0298	0.0213

Venus -118290-02-22 02:10 J -41483947.55 -41483947.41 -41483947.25 0.0300 0.0211  
 Venus -118290-10-10 03:08 J -41483717.51 -41483717.37 -41483717.21 0.0302 0.0202  
 Venus -118289-05-27 04:05 J -41483487.48 -41483487.33 -41483487.16 0.0303 0.0188  
 Venus -118288-01-12 05:03 J -41483257.46 -41483257.29 -41483257.12 0.0304 0.0169  
 Venus -118288-08-30 05:03 J -41483027.46 -41483027.29 -41483027.11 0.0304 0.0146  
 Venus -118287-04-17 04:20 J -41482797.51 -41482797.32 -41482797.13 0.0303 0.0119  
 Venus -118287-12-03 02:10 J -41482567.60 -41482567.41 -41482567.21 0.0302 0.0090  
 Venus -118286-07-20 22:48 J -41482337.74 -41482337.55 -41482337.34 0.0301 0.0059  
 Venus -118285-03-06 18:15 J -41482107.95 -41482107.74 -41482107.54 0.0299 0.0026  
 Venus -118285-10-22 11:46 J -41481878.22 -41481878.01 -41481877.81 0.0296 0.0007  
 Venus -118284-06-09 03:36 J -41481648.56 -41481648.35 -41481648.15 0.0294 0.0036  
 Venus -118283-01-24 17:46 J -41481418.96 -41481418.76 -41481418.56 0.0291 0.0065  
 Venus -118283-09-11 06:15 J -41481189.43 -41481189.24 -41481189.04 0.0288 0.0091  
 Venus -118282-04-28 17:17 J -41480959.96 -41480959.78 -41480959.59 0.0285 0.0115  
 Mars -118282-09-04 19:27 J -41480830.83 -41480830.69 -41480830.52 0.0283 0.0241  
 Venus -118282-12-14 02:39 J -41480730.56 -41480730.39 -41480730.20 0.0282 0.0136  
 Venus -118281-07-30 10:34 J -41480501.23 -41480501.06 -41480500.88 0.0279 0.0153  
 Venus -118280-03-16 17:03 J -41480271.95 -41480271.79 -41480271.62 0.0276 0.0167  
 Venus -118280-10-31 22:20 J -41480042.72 -41480042.57 -41480042.40 0.0273 0.0178  
 Venus -118279-06-18 02:53 J -41479813.53 -41479813.38 -41479813.23 0.0271 0.0186  
 Mercury -118279-11-20 23:32 J -41479657.65 -41479657.52 -41479657.38 0.0269 0.0172  
 Venus -118278-02-02 05:46 J -41479584.39 -41479584.26 -41479584.10 0.0268 0.0192  
 Mercury -118278-02-17 18:29 J -41479568.90 -41479568.73 -41479568.56 0.0268 0.0071  
 Mercury -118278-05-17 13:27 J -41479480.12 -41479479.94 -41479479.76 0.0267 0.0031  
 Mercury -118278-08-14 08:39 J -41479391.30 -41479391.14 -41479390.99 0.0266 0.0133  
 Venus -118278-09-19 08:10 J -41479355.29 -41479355.16 -41479355.00 0.0266 0.0193  
 Mercury -118278-11-11 03:51 J -41479302.42 -41479302.34 -41479302.26 0.0266 0.0235  
 Venus -118277-05-05 09:51 J -41479126.22 -41479126.09 -41479125.93 0.0264 0.0193  
 Venus -118277-12-20 11:17 J -41478897.18 -41478897.03 -41478896.88 0.0263 0.0189  
 Venus -118276-08-06 12:15 J -41478668.14 -41478667.99 -41478667.83 0.0261 0.0184

Venus -118275-03-23 12:44 J -41478439.11 -41478438.97 -41478438.80 0.0260 0.0177  
 Venus -118275-11-07 13:27 J -41478210.09 -41478209.94 -41478209.76 0.0259 0.0167  
 Venus -118274-06-24 14:39 J -41477981.07 -41477980.89 -41477980.72 0.0259 0.0154  
 Venus -118273-02-08 15:36 J -41477752.03 -41477751.85 -41477751.66 0.0259 0.0141  
 Venus -118273-09-24 17:17 J -41477522.96 -41477522.78 -41477522.58 0.0259 0.0125  
 Venus -118272-05-11 19:41 J -41477293.88 -41477293.68 -41477293.48 0.0259 0.0107  
 Venus -118272-12-26 22:48 J -41477064.76 -41477064.55 -41477064.34 0.0260 0.0089  
 Venus -118271-08-13 02:53 J -41476835.59 -41476835.38 -41476835.17 0.0261 0.0068  
 Venus -118270-03-30 07:56 J -41476606.39 -41476606.17 -41476605.95 0.0262 0.0046  
 Venus -118270-11-14 13:56 J -41476377.13 -41476376.92 -41476376.69 0.0263 0.0024  
 Venus -118269-06-30 21:22 J -41476147.83 -41476147.61 -41476147.39 0.0265 0.0003  
 Venus -118268-02-15 06:15 J -41475918.46 -41475918.24 -41475918.02 0.0267 0.0025  
 Venus -118268-10-02 16:34 J -41475689.02 -41475688.81 -41475688.59 0.0269 0.0050  
 Venus -118267-05-20 04:20 J -41475459.53 -41475459.32 -41475459.11 0.0272 0.0075  
 Venus -118266-01-04 17:32 J -41475229.97 -41475229.77 -41475229.56 0.0274 0.0099  
 Moon -118266-01-12 16:20 J -41475222.07 -41475221.82 -41475221.57 0.0275 0.0058  
 Earth -118266-01-12 18:44 J -41475221.96 -41475221.72 -41475221.47 0.0275 0.0047 \*  
 Venus -118266-08-22 08:24 J -41475000.34 -41475000.15 -41474999.95 0.0277 0.0123  
 Venus -118265-04-08 00:44 J -41474770.65 -41474770.47 -41474770.28 0.0280 0.0145  
 Venus -118265-11-23 18:58 J -41474540.88 -41474540.71 -41474540.54 0.0283 0.0166  
 Venus -118264-07-11 14:24 J -41474311.06 -41474310.90 -41474310.73 0.0287 0.0184  
 Venus -118263-02-26 11:17 J -41474081.18 -41474081.03 -41474080.87 0.0290 0.0198  
 Mercury -118263-09-07 20:24 J -41473887.73 -41473887.65 -41473887.57 0.0292 0.0238  
 Venus -118263-10-14 09:22 J -41473851.25 -41473851.11 -41473850.96 0.0293 0.0209  
 Mercury -118263-12-05 10:20 J -41473799.19 -41473799.07 -41473798.95 0.0293 0.0134  
 Mercury -118262-03-04 00:00 J -41473710.64 -41473710.50 -41473710.37 0.0295 0.0030  
 Mercury -118262-05-31 13:27 J -41473622.07 -41473621.94 -41473621.81 0.0296 0.0075  
 Venus -118262-06-01 08:39 J -41473621.28 -41473621.14 -41473621.00 0.0296 0.0215  
 Mercury -118262-08-28 02:53 J -41473533.48 -41473533.38 -41473533.27 0.0297 0.0179  
 Mercury -118262-11-24 16:20 J -41473444.86 -41473444.82 -41473444.78 0.0298 0.0283

Venus	-118261-01-17 08:39 J	-41473391.28	-41473391.14	-41473390.99	0.0298	0.0216
Venus	-118261-09-03 09:08 J	-41473161.26	-41473161.12	-41473160.97	0.0300	0.0212
Venus	-118260-04-21 10:05 J	-41472931.23	-41472931.08	-41472930.93	0.0302	0.0202
Venus	-118260-12-07 10:48 J	-41472701.21	-41472701.05	-41472700.89	0.0303	0.0187
Venus	-118259-07-25 11:03 J	-41472471.20	-41472471.04	-41472470.86	0.0304	0.0168
Venus	-118258-03-12 11:03 J	-41472241.22	-41472241.04	-41472240.86	0.0304	0.0144
Venus	-118258-10-28 09:51 J	-41472011.27	-41472011.09	-41472010.90	0.0304	0.0117
Venus	-118257-06-14 07:41 J	-41471781.37	-41471781.18	-41471780.98	0.0303	0.0086
Venus	-118256-01-30 04:05 J	-41471551.53	-41471551.33	-41471551.13	0.0301	0.0055
Venus	-118256-09-16 23:03 J	-41471321.74	-41471321.54	-41471321.33	0.0299	0.0023
Venus	-118255-05-04 16:34 J	-41471092.01	-41471091.81	-41471091.61	0.0297	0.0010
Venus	-118255-12-20 08:10 J	-41470862.36	-41470862.16	-41470861.95	0.0294	0.0041
Venus	-118254-08-06 22:05 J	-41470632.77	-41470632.58	-41470632.37	0.0291	0.0070
Venus	-118253-03-23 10:34 J	-41470403.25	-41470403.06	-41470402.86	0.0288	0.0095
Moon	-118253-07-06 22:20 J	-41470297.77	-41470297.57	-41470297.35	0.0287	0.0135
Earth	-118253-07-07 00:15 J	-41470297.71	-41470297.49	-41470297.27	0.0287	0.0121 *
Venus	-118253-11-07 21:08 J	-41470173.80	-41470173.62	-41470173.43	0.0285	0.0119
Venus	-118252-06-25 06:15 J	-41469944.41	-41469944.24	-41469944.05	0.0282	0.0140
Mars	-118252-10-24 13:27 J	-41469823.23	-41469822.94	-41469822.64	0.0280	0.0017
Venus	-118251-02-09 14:10 J	-41469715.08	-41469714.91	-41469714.74	0.0279	0.0157
Venus	-118251-09-26 20:24 J	-41469485.81	-41469485.65	-41469485.48	0.0276	0.0171
Venus	-118250-05-14 01:41 J	-41469256.58	-41469256.43	-41469256.27	0.0273	0.0182
Venus	-118250-12-29 05:46 J	-41469027.41	-41469027.26	-41469027.11	0.0270	0.0190
Mercury	-118249-04-08 23:03 J	-41468925.64	-41468925.54	-41468925.42	0.0269	0.0205
Mercury	-118249-07-06 18:00 J	-41468836.91	-41468836.75	-41468836.59	0.0268	0.0103
Venus	-118249-08-14 08:39 J	-41468798.27	-41468798.14	-41468797.98	0.0268	0.0195
Mercury	-118249-10-03 12:58 J	-41468748.14	-41468747.96	-41468747.78	0.0267	0.0003
Mercury	-118249-12-31 07:56 J	-41468659.33	-41468659.17	-41468659.00	0.0267	0.0100
Mercury	-118248-03-30 03:08 J	-41468570.48	-41468570.37	-41468570.25	0.0266	0.0202
Venus	-118248-03-31 11:03 J	-41468569.17	-41468569.04	-41468568.88	0.0266	0.0197

Venus	-118248-11-15 13:12 J	-41468340.10	-41468339.95	-41468339.81	0.0264	0.0195
Venus	-118247-07-02 14:39 J	-41468111.04	-41468110.89	-41468110.75	0.0262	0.0192
Venus	-118246-02-16 15:22 J	-41467882.00	-41467881.86	-41467881.70	0.0261	0.0186
Venus	-118246-10-03 16:20 J	-41467652.98	-41467652.82	-41467652.66	0.0260	0.0177
Venus	-118245-05-19 17:03 J	-41467423.95	-41467423.79	-41467423.62	0.0259	0.0167
Venus	-118244-01-03 18:00 J	-41467194.92	-41467194.75	-41467194.57	0.0259	0.0154
Venus	-118244-08-20 19:41 J	-41466965.86	-41466965.68	-41466965.50	0.0258	0.0140
Venus	-118243-04-06 21:36 J	-41466736.79	-41466736.60	-41466736.41	0.0259	0.0124
Venus	-118243-11-22 00:00 J	-41466507.70	-41466507.50	-41466507.30	0.0259	0.0106
Venus	-118242-07-09 03:22 J	-41466278.57	-41466278.36	-41466278.15	0.0260	0.0086
Venus	-118241-02-23 07:27 J	-41466049.40	-41466049.19	-41466048.97	0.0261	0.0065
Venus	-118241-10-09 12:44 J	-41465820.18	-41465819.97	-41465819.75	0.0262	0.0044
Venus	-118240-05-26 19:12 J	-41465590.92	-41465590.70	-41465590.48	0.0264	0.0020
Venus	-118239-01-11 02:53 J	-41465361.60	-41465361.38	-41465361.16	0.0266	0.0004
Venus	-118239-08-28 12:00 J	-41465132.22	-41465132.00	-41465131.79	0.0268	0.0029
Venus	-118238-04-14 22:20 J	-41464902.78	-41464902.57	-41464902.35	0.0270	0.0054
Venus	-118238-11-30 10:20 J	-41464673.28	-41464673.07	-41464672.86	0.0273	0.0078
Venus	-118237-07-16 23:46 J	-41464443.71	-41464443.51	-41464443.31	0.0275	0.0103
Venus	-118236-03-03 14:53 J	-41464214.07	-41464213.88	-41464213.69	0.0278	0.0126
Mars	-118236-09-15 14:10 J	-41464018.17	-41464017.91	-41464017.64	0.0281	0.0120
Venus	-118236-10-19 07:41 J	-41463984.36	-41463984.18	-41463984.00	0.0281	0.0149
Venus	-118235-06-06 01:56 J	-41463754.59	-41463754.42	-41463754.24	0.0284	0.0169
Venus	-118234-01-21 21:36 J	-41463524.76	-41463524.60	-41463524.43	0.0288	0.0186
Venus	-118234-09-08 18:29 J	-41463294.87	-41463294.73	-41463294.57	0.0291	0.0201
Mercury	-118233-01-25 22:20 J	-41463155.62	-41463155.57	-41463155.51	0.0292	0.0265
Mercury	-118233-04-23 12:15 J	-41463067.10	-41463066.99	-41463066.87	0.0293	0.0161
Venus	-118233-04-25 16:48 J	-41463064.94	-41463064.80	-41463064.65	0.0293	0.0211
Mercury	-118233-07-21 01:56 J	-41462978.55	-41462978.42	-41462978.28	0.0294	0.0057
Mercury	-118233-10-17 15:36 J	-41462889.99	-41462889.85	-41462889.72	0.0296	0.0048
Venus	-118233-12-11 16:20 J	-41462834.96	-41462834.82	-41462834.67	0.0296	0.0216

Mercury -118232-01-14 05:03 J -41462801.40 -41462801.29 -41462801.17 0.0297 0.0152

Mercury -118232-04-12 18:29 J -41462712.80 -41462712.73 -41462712.66 0.0297 0.0256

Venus -118232-07-29 16:34 J -41462604.95 -41462604.81 -41462604.67 0.0299 0.0217

Venus -118231-03-16 16:48 J -41462374.94 -41462374.80 -41462374.64 0.0301 0.0213

Venus -118231-11-01 17:46 J -41462144.91 -41462144.76 -41462144.60 0.0302 0.0202

Venus -118230-06-19 18:29 J -41461914.89 -41461914.73 -41461914.56 0.0303 0.0186

Venus -118229-02-04 18:58 J -41461684.88 -41461684.71 -41461684.53 0.0304 0.0166

Venus -118229-09-21 18:44 J -41461454.90 -41461454.72 -41461454.54 0.0304 0.0141

Venus -118228-05-09 17:32 J -41461224.96 -41461224.77 -41461224.58 0.0303 0.0112

Venus -118228-12-25 15:08 J -41460995.07 -41460994.87 -41460994.67 0.0302 0.0082

Venus -118227-08-12 11:17 J -41460765.23 -41460765.03 -41460764.83 0.0300 0.0050

Venus -118226-03-30 06:15 J -41460535.45 -41460535.24 -41460535.04 0.0298 0.0017

Venus -118226-11-14 23:17 J -41460305.74 -41460305.53 -41460305.33 0.0296 0.0016

Venus -118225-07-01 14:24 J -41460076.10 -41460075.90 -41460075.69 0.0293 0.0047

Venus -118224-02-16 04:05 J -41459846.52 -41459846.33 -41459846.13 0.0290 0.0075

Earth -118224-07-01 13:12 J -41459711.07 -41459710.95 -41459710.83 0.0288 0.0250

Moon -118224-07-01 14:53 J -41459711.02 -41459710.88 -41459710.74 0.0288 0.0238 \*

Venus -118224-10-03 16:20 J -41459617.01 -41459616.82 -41459616.63 0.0287 0.0101

Venus -118223-05-21 03:08 J -41459387.56 -41459387.37 -41459387.19 0.0284 0.0125

Venus -118222-01-05 12:00 J -41459158.18 -41459158.00 -41459157.82 0.0281 0.0145

Venus -118222-08-22 19:41 J -41458928.85 -41458928.68 -41458928.51 0.0278 0.0162

Mars -118222-12-13 19:56 J -41458815.86 -41458815.67 -41458815.45 0.0277 0.0193

Venus -118221-04-08 01:41 J -41458699.58 -41458699.43 -41458699.26 0.0275 0.0176

Venus -118221-11-23 06:44 J -41458470.36 -41458470.22 -41458470.06 0.0273 0.0186

Venus -118220-07-10 10:48 J -41458241.18 -41458241.05 -41458240.89 0.0270 0.0193

Mercury -118220-08-26 23:46 J -41458193.59 -41458193.51 -41458193.42 0.0270 0.0230

Mercury -118220-11-23 18:29 J -41458104.88 -41458104.73 -41458104.57 0.0269 0.0129

Mercury -118219-02-20 13:27 J -41458016.12 -41458015.94 -41458015.76 0.0268 0.0028

Venus -118219-02-24 14:10 J -41458012.05 -41458011.91 -41458011.76 0.0268 0.0197

Mercury -118219-05-20 08:24 J -41457927.32 -41457927.15 -41457926.97 0.0267 0.0075



Mercury -118219-08-17 03:36 J -41457838.48 -41457838.35 -41457838.21 0.0266 0.0176

Venus -118219-10-11 16:34 J -41457782.95 -41457782.81 -41457782.67 0.0266 0.0198

Venus -118218-05-28 18:00 J -41457553.88 -41457553.75 -41457553.59 0.0264 0.0197

Venus -118217-01-12 19:27 J -41457324.83 -41457324.69 -41457324.54 0.0262 0.0193

Venus -118217-08-28 20:24 J -41457095.79 -41457095.65 -41457095.49 0.0261 0.0186

Venus -118216-04-14 21:22 J -41456866.76 -41456866.61 -41456866.45 0.0260 0.0177

Venus -118216-11-29 22:20 J -41456637.73 -41456637.57 -41456637.40 0.0259 0.0166

Venus -118215-07-16 23:32 J -41456408.69 -41456408.52 -41456408.34 0.0259 0.0153

Venus -118214-03-03 00:58 J -41456179.64 -41456179.46 -41456179.27 0.0259 0.0139

Venus -118214-10-18 02:53 J -41455950.57 -41455950.38 -41455950.18 0.0259 0.0122

Venus -118213-06-03 05:32 J -41455721.47 -41455721.27 -41455721.07 0.0259 0.0104

Venus -118212-01-18 08:53 J -41455492.33 -41455492.13 -41455491.92 0.0260 0.0084

Venus -118212-09-04 13:27 J -41455263.15 -41455262.94 -41455262.72 0.0261 0.0063

Venus -118211-04-21 18:58 J -41455033.93 -41455033.71 -41455033.49 0.0262 0.0040

Venus -118211-12-07 01:41 J -41454804.65 -41454804.43 -41454804.21 0.0264 0.0017

Venus -118210-07-24 09:22 J -41454575.33 -41454575.11 -41454574.89 0.0266 0.0009

Venus -118209-03-09 18:44 J -41454345.94 -41454345.72 -41454345.50 0.0268 0.0034

Venus -118209-10-25 05:32 J -41454116.48 -41454116.27 -41454116.05 0.0270 0.0059

Venus -118208-06-11 17:46 J -41453886.97 -41453886.76 -41453886.55 0.0273 0.0085

Moon -118207-01-14 03:08 J -41453670.61 -41453670.37 -41453670.13 0.0275 0.0035

Earth -118207-01-14 06:15 J -41453670.48 -41453670.24 -41453669.99 0.0275 0.0049 \*

Venus -118207-01-27 07:27 J -41453657.38 -41453657.19 -41453656.99 0.0275 0.0110

Venus -118207-09-13 22:48 J -41453427.74 -41453427.55 -41453427.36 0.0278 0.0133

Venus -118206-05-01 15:36 J -41453198.02 -41453197.85 -41453197.67 0.0281 0.0156

Mars -118206-11-05 15:22 J -41453010.13 -41453009.86 -41453009.58 0.0284 0.0101

Venus -118206-12-17 10:05 J -41452968.25 -41452968.08 -41452967.91 0.0284 0.0176

Venus -118205-08-03 05:46 J -41452738.41 -41452738.26 -41452738.10 0.0287 0.0193

Venus -118204-03-21 02:53 J -41452508.52 -41452508.38 -41452508.22 0.0290 0.0207

Mercury -118204-06-14 00:44 J -41452423.47 -41452423.47 -41452423.47 0.0292 0.0291

Mercury -118204-09-10 14:39 J -41452335.00 -41452334.89 -41452334.79 0.0293 0.0188

Venus -118204-11-06 01:12 J -41452278.58 -41452278.45 -41452278.30 0.0293 0.0217  
 Mercury -118204-12-08 04:20 J -41452246.45 -41452246.32 -41452246.19 0.0294 0.0084  
 Mercury -118203-03-06 18:00 J -41452157.89 -41452157.75 -41452157.62 0.0295 0.0023  
 Mercury -118203-06-03 07:27 J -41452069.31 -41452069.19 -41452069.07 0.0296 0.0125  
 Venus -118203-06-24 00:44 J -41452048.61 -41452048.47 -41452048.33 0.0296 0.0221  
 Mercury -118203-08-30 20:39 J -41451980.72 -41451980.64 -41451980.55 0.0297 0.0229  
 Venus -118202-02-09 00:44 J -41451818.60 -41451818.47 -41451818.32 0.0299 0.0221  
 Venus -118202-09-27 01:12 J -41451588.59 -41451588.45 -41451588.30 0.0301 0.0215  
 Venus -118201-05-14 01:56 J -41451358.56 -41451358.42 -41451358.26 0.0302 0.0203  
 Venus -118201-12-30 02:39 J -41451128.55 -41451128.39 -41451128.22 0.0303 0.0186  
 Venus -118200-08-17 02:53 J -41450898.55 -41450898.38 -41450898.21 0.0304 0.0165  
 Venus -118199-04-04 02:24 J -41450668.58 -41450668.40 -41450668.22 0.0304 0.0139  
 Venus -118199-11-20 00:58 J -41450438.65 -41450438.46 -41450438.27 0.0303 0.0110  
 Venus -118198-07-07 22:20 J -41450208.77 -41450208.57 -41450208.37 0.0302 0.0078  
 Venus -118197-02-22 18:15 J -41449978.94 -41449978.74 -41449978.53 0.0300 0.0046  
 Venus -118197-10-09 12:58 J -41449749.17 -41449748.96 -41449748.76 0.0298 0.0014  
 Venus -118196-05-27 05:46 J -41449519.47 -41449519.26 -41449519.06 0.0296 0.0020  
 Venus -118195-01-11 20:53 J -41449289.83 -41449289.63 -41449289.43 0.0293 0.0050  
 Venus -118195-08-29 10:20 J -41449060.26 -41449060.07 -41449059.87 0.0290 0.0079  
 Venus -118194-04-15 22:20 J -41448830.76 -41448830.57 -41448830.37 0.0287 0.0106  
 Earth -118194-07-09 09:22 J -41448746.25 -41448746.11 -41448745.94 0.0286 0.0217  
 Moon -118194-07-09 12:29 J -41448746.12 -41448745.98 -41448745.84 0.0286 0.0232 \*  
 Venus -118194-12-01 08:39 J -41448601.32 -41448601.14 -41448600.95 0.0284 0.0129  
 Mars -118193-01-29 19:12 J -41448541.87 -41448541.70 -41448541.50 0.0283 0.0221  
 Venus -118193-07-17 17:17 J -41448371.95 -41448371.78 -41448371.60 0.0281 0.0149  
 Venus -118192-03-04 00:44 J -41448142.64 -41448142.47 -41448142.30 0.0278 0.0165  
 Venus -118192-10-19 06:29 J -41447913.38 -41447913.23 -41447913.06 0.0275 0.0179  
 Venus -118191-06-05 11:32 J -41447684.16 -41447684.02 -41447683.86 0.0272 0.0190  
 Mercury -118190-01-14 00:00 J -41447461.54 -41447461.50 -41447461.44 0.0270 0.0258  
 Venus -118190-01-20 15:36 J -41447454.99 -41447454.85 -41447454.70 0.0270 0.0196

Mercury -118190-04-12 18:44 J -41447372.86 -41447372.72 -41447372.57 0.0269 0.0158

Mercury -118190-07-10 13:41 J -41447284.11 -41447283.93 -41447283.76 0.0268 0.0056

Venus -118190-09-06 18:44 J -41447225.86 -41447225.72 -41447225.58 0.0268 0.0200

Mercury -118190-10-07 08:39 J -41447195.32 -41447195.14 -41447194.97 0.0267 0.0046

Mercury -118189-01-04 03:36 J -41447106.49 -41447106.35 -41447106.19 0.0266 0.0148

Mercury -118189-04-01 22:48 J -41447017.60 -41447017.55 -41447017.48 0.0266 0.0250

Venus -118189-04-22 20:39 J -41446996.77 -41446996.64 -41446996.49 0.0265 0.0202

Venus -118189-12-07 22:20 J -41446767.69 -41446767.57 -41446767.42 0.0264 0.0200

Venus -118188-07-25 00:00 J -41446538.64 -41446538.50 -41446538.35 0.0262 0.0195

Venus -118187-03-11 00:58 J -41446309.60 -41446309.46 -41446309.30 0.0261 0.0188

Venus -118187-10-26 01:56 J -41446080.57 -41446080.42 -41446080.25 0.0260 0.0179

Venus -118186-06-12 02:53 J -41445851.54 -41445851.38 -41445851.20 0.0259 0.0167

Venus -118185-01-27 04:05 J -41445622.49 -41445622.33 -41445622.14 0.0259 0.0154

Venus -118185-09-12 06:00 J -41445393.44 -41445393.25 -41445393.06 0.0259 0.0138

Venus -118184-04-29 07:56 J -41445164.35 -41445164.17 -41445163.97 0.0259 0.0121

Venus -118184-12-14 10:48 J -41444935.25 -41444935.05 -41444934.84 0.0259 0.0102

Venus -118183-07-31 14:39 J -41444706.10 -41444705.89 -41444705.68 0.0260 0.0081

Venus -118182-03-17 19:12 J -41444476.91 -41444476.70 -41444476.48 0.0261 0.0060

Venus -118182-11-02 00:58 J -41444247.68 -41444247.46 -41444247.24 0.0263 0.0036

Venus -118181-06-18 07:41 J -41444018.40 -41444018.18 -41444017.95 0.0264 0.0013

Venus -118180-02-02 15:51 J -41443789.06 -41443788.84 -41443788.62 0.0266 0.0013

Venus -118180-09-20 01:41 J -41443559.65 -41443559.43 -41443559.22 0.0268 0.0038

Venus -118179-05-07 12:29 J -41443330.19 -41443329.98 -41443329.76 0.0271 0.0064

Venus -118179-12-23 00:58 J -41443100.66 -41443100.46 -41443100.25 0.0273 0.0089

Venus -118178-08-09 14:53 J -41442871.07 -41442870.88 -41442870.68 0.0276 0.0114

Venus -118177-03-26 06:29 J -41442641.41 -41442641.23 -41442641.04 0.0279 0.0138

Venus -118177-11-10 23:46 J -41442411.68 -41442411.51 -41442411.32 0.0282 0.0160

Venus -118176-06-28 18:29 J -41442181.89 -41442181.73 -41442181.56 0.0285 0.0179

Venus -118175-02-13 14:39 J -41441952.04 -41441951.89 -41441951.73 0.0288 0.0196

Venus -118175-10-01 11:46 J -41441722.14 -41441722.01 -41441721.85 0.0291 0.0209

Mercury -118174-01-28 16:48 J -41441602.89 -41441602.80 -41441602.70 0.0293 0.0212

Mercury -118174-04-27 06:44 J -41441514.35 -41441514.22 -41441514.09 0.0294 0.0107

Venus -118174-05-19 10:20 J -41441492.20 -41441492.07 -41441491.92 0.0294 0.0218

Mercury -118174-07-24 20:24 J -41441425.79 -41441425.65 -41441425.51 0.0295 0.0004

Mercury -118174-10-21 09:51 J -41441337.21 -41441337.09 -41441336.96 0.0296 0.0102

Venus -118173-01-04 10:05 J -41441262.21 -41441262.08 -41441261.94 0.0297 0.0222

Mercury -118173-01-17 23:32 J -41441248.62 -41441248.52 -41441248.43 0.0297 0.0205

Venus -118173-08-21 10:05 J -41441032.21 -41441032.08 -41441031.93 0.0299 0.0221

Venus -118172-04-08 10:48 J -41440802.19 -41440802.05 -41440801.90 0.0301 0.0214

Venus -118172-11-24 11:17 J -41440572.17 -41440572.03 -41440571.86 0.0302 0.0203

Venus -118171-07-12 12:00 J -41440342.15 -41440342.00 -41440341.83 0.0303 0.0185

Venus -118170-02-27 12:29 J -41440112.15 -41440111.98 -41440111.81 0.0304 0.0162

Venus -118170-10-15 11:46 J -41439882.19 -41439882.01 -41439881.82 0.0303 0.0135

Venus -118169-06-01 10:05 J -41439652.27 -41439652.08 -41439651.88 0.0303 0.0106

Venus -118168-01-17 07:27 J -41439422.39 -41439422.19 -41439421.99 0.0301 0.0073

Venus -118168-09-04 03:08 J -41439192.57 -41439192.37 -41439192.17 0.0300 0.0040

Venus -118167-04-21 21:36 J -41438962.81 -41438962.60 -41438962.40 0.0297 0.0008

Venus -118167-12-07 13:56 J -41438733.12 -41438732.92 -41438732.71 0.0295 0.0027

Venus -118166-07-25 04:48 J -41438503.50 -41438503.30 -41438503.10 0.0292 0.0057

Venus -118165-03-10 18:00 J -41438273.94 -41438273.75 -41438273.55 0.0289 0.0085

Moon -118165-07-02 22:34 J -41438159.77 -41438159.56 -41438159.33 0.0288 0.0130

Earth -118165-07-03 01:27 J -41438159.64 -41438159.44 -41438159.22 0.0288 0.0145 \*

Venus -118165-10-26 05:32 J -41438044.46 -41438044.27 -41438044.08 0.0286 0.0112

Venus -118164-06-12 15:36 J -41437815.03 -41437814.85 -41437814.66 0.0283 0.0135

Venus -118163-01-28 00:00 J -41437585.66 -41437585.50 -41437585.32 0.0280 0.0155

Mars -118163-03-20 22:20 J -41437533.86 -41437533.57 -41437533.27 0.0280 0.0005

Venus -118163-09-14 07:12 J -41437356.36 -41437356.20 -41437356.03 0.0277 0.0171

Venus -118162-05-01 13:12 J -41437127.10 -41437126.95 -41437126.79 0.0275 0.0184

Venus -118162-12-16 18:00 J -41436897.89 -41436897.75 -41436897.60 0.0272 0.0193

Venus -118161-08-01 21:51 J -41436668.73 -41436668.59 -41436668.44 0.0270 0.0199

Mercury -118161-08-29 19:41 J -41436640.80 -41436640.68 -41436640.54 0.0269 0.0181

Mercury -118161-11-26 14:39 J -41436552.06 -41436551.89 -41436551.72 0.0268 0.0080

Mercury -118160-02-23 09:36 J -41436463.28 -41436463.10 -41436462.92 0.0268 0.0022

Venus -118160-03-19 00:44 J -41436439.60 -41436439.47 -41436439.33 0.0267 0.0203

Mercury -118160-05-23 04:48 J -41436374.46 -41436374.30 -41436374.14 0.0267 0.0124

Mercury -118160-08-19 23:46 J -41436285.59 -41436285.51 -41436285.40 0.0266 0.0226

Venus -118160-11-03 03:08 J -41436210.51 -41436210.37 -41436210.23 0.0265 0.0203

Venus -118159-06-20 04:48 J -41435981.43 -41435981.30 -41435981.16 0.0264 0.0200

Venus -118158-02-04 06:00 J -41435752.38 -41435752.25 -41435752.10 0.0262 0.0196

Venus -118158-09-21 06:58 J -41435523.35 -41435523.21 -41435523.05 0.0261 0.0188

Venus -118157-05-07 07:56 J -41435294.32 -41435294.17 -41435294.00 0.0260 0.0178

Venus -118157-12-22 08:53 J -41435065.28 -41435065.13 -41435064.95 0.0259 0.0167

Venus -118156-08-08 10:34 J -41434836.23 -41434836.06 -41434835.88 0.0259 0.0152

Venus -118155-03-25 12:29 J -41434607.17 -41434606.98 -41434606.80 0.0259 0.0136

Venus -118155-11-09 14:39 J -41434378.09 -41434377.89 -41434377.70 0.0259 0.0119

Venus -118154-06-26 17:17 J -41434148.97 -41434148.78 -41434148.57 0.0260 0.0100

Venus -118153-02-10 21:22 J -41433919.82 -41433919.61 -41433919.40 0.0261 0.0079

Venus -118153-09-27 02:10 J -41433690.62 -41433690.41 -41433690.19 0.0262 0.0056

Venus -118152-05-14 08:10 J -41433461.38 -41433461.16 -41433460.94 0.0263 0.0033

Venus -118152-12-29 15:22 J -41433232.08 -41433231.86 -41433231.64 0.0265 0.0009

Venus -118151-08-15 23:46 J -41433002.73 -41433002.51 -41433002.29 0.0267 0.0018

Venus -118150-04-02 09:36 J -41432773.32 -41432773.10 -41432772.88 0.0269 0.0043

Venus -118150-11-17 20:53 J -41432543.84 -41432543.63 -41432543.42 0.0271 0.0070

Venus -118149-07-04 09:36 J -41432314.30 -41432314.10 -41432313.89 0.0274 0.0096

Earth -118148-01-15 21:36 J -41432118.79 -41432118.60 -41432118.38 0.0276 0.0155

Moon -118148-01-15 23:17 J -41432118.73 -41432118.53 -41432118.32 0.0276 0.0140 \*

Venus -118148-02-19 00:00 J -41432084.69 -41432084.50 -41432084.30 0.0276 0.0121

Venus -118148-10-06 15:51 J -41431855.02 -41431854.84 -41431854.65 0.0279 0.0145

Mars -118147-02-10 12:00 J -41431728.26 -41431728.00 -41431727.71 0.0281 0.0095

Venus -118147-05-24 09:22 J -41431625.28 -41431625.11 -41431624.93 0.0282 0.0167

Venus -118146-01-09 04:05 J -41431395.48 -41431395.33 -41431395.16 0.0285 0.0187  
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 Mercury -118145-06-16 19:41 J -41430870.76 -41430870.68 -41430870.60 0.0292 0.0235  
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 Venus -118145-11-28 20:39 J -41430705.78 -41430705.64 -41430705.50 0.0294 0.0224  
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 Venus -118140-12-12 19:12 J -41428865.89 -41428865.70 -41428865.51 0.0303 0.0102  
 Venus -118139-07-30 16:05 J -41428636.03 -41428635.83 -41428635.63 0.0301 0.0069  
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 Venus -118134-08-10 06:44 J -41426799.39 -41426799.22 -41426799.05 0.0280 0.0158  
 Venus -118133-03-26 13:27 J -41426570.09 -41426569.94 -41426569.77 0.0277 0.0174  
 Mars -118133-05-09 07:41 J -41426526.35 -41426526.18 -41426525.99 0.0277 0.0217  
 Venus -118133-11-10 19:12 J -41426340.85 -41426340.70 -41426340.54 0.0274 0.0187

Venus -118132-06-28 00:00 J -41426111.64 -41426111.50 -41426111.35 0.0272 0.0196  
 Mercury -118131-01-16 20:24 J -41425908.75 -41425908.65 -41425908.53 0.0270 0.0207  
 Venus -118131-02-12 03:22 J -41425882.49 -41425882.36 -41425882.21 0.0269 0.0203  
 Mercury -118131-04-15 15:22 J -41425820.02 -41425819.86 -41425819.70 0.0269 0.0106  
 Mercury -118131-07-13 10:20 J -41425731.25 -41425731.07 -41425730.89 0.0268 0.0005  
 Venus -118131-09-29 06:15 J -41425653.37 -41425653.24 -41425653.10 0.0267 0.0205  
 Mercury -118131-10-10 05:17 J -41425642.44 -41425642.28 -41425642.11 0.0267 0.0098  
 Mercury -118130-01-07 00:29 J -41425553.59 -41425553.48 -41425553.36 0.0266 0.0199  
 Venus -118130-05-16 08:10 J -41425424.28 -41425424.16 -41425424.01 0.0265 0.0206  
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 Mercury -118115-04-30 01:41 J -41419961.56 -41419961.43 -41419961.29 0.0294 0.0050  
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 Mercury -118114-01-20 18:15 J -41419695.80 -41419695.74 -41419695.68 0.0297 0.0262  
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Venus -118105-07-05 06:29 J -41416242.41 -41416242.23 -41416242.05 0.0282 0.0145  
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 Mercury -118102-06-05 22:05 J -41415176.66 -41415176.58 -41415176.48 0.0270 0.0228  
 Venus -118102-08-25 10:34 J -41415096.19 -41415096.06 -41415095.91 0.0269 0.0206  
 Mercury -118102-09-02 16:48 J -41415087.95 -41415087.80 -41415087.64 0.0269 0.0127  
 Mercury -118102-11-30 11:46 J -41414999.19 -41414999.01 -41414998.83 0.0268 0.0026  
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 Venus -118101-04-10 13:12 J -41414867.07 -41414866.95 -41414866.81 0.0267 0.0208  
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 Venus -118099-10-13 19:12 J -41413950.84 -41413950.70 -41413950.54 0.0261 0.0190  
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Earth -118089-01-18 14:24 J -41410566.95 -41410566.90 -41410566.81 0.0277 0.0265  
 Moon -118089-01-18 18:15 J -41410566.83 -41410566.74 -41410566.61 0.0277 0.0249 \*  
 Venus -118089-03-13 17:17 J -41410511.96 -41410511.78 -41410511.58 0.0277 0.0132  
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 Venus -118069-04-25 01:12 J -41403164.60 -41403164.45 -41403164.30 0.0260 0.0191  
 Venus -118069-12-10 02:10 J -41402935.56 -41402935.41 -41402935.25 0.0259 0.0179  
 Venus -118068-07-27 03:22 J -41402706.52 -41402706.36 -41402706.18 0.0259 0.0166  
 Venus -118067-03-13 05:03 J -41402477.46 -41402477.29 -41402477.11 0.0259 0.0150  
 Venus -118067-10-28 06:58 J -41402248.39 -41402248.21 -41402248.02 0.0259 0.0133  
 Venus -118066-06-14 09:36 J -41402019.30 -41402019.10 -41402018.90 0.0259 0.0114  
 Venus -118065-01-29 12:58 J -41401790.16 -41401789.96 -41401789.75 0.0260 0.0093  
 Venus -118065-09-14 17:32 J -41401560.98 -41401560.77 -41401560.56 0.0261 0.0070  
 Venus -118064-05-01 23:03 J -41401331.76 -41401331.54 -41401331.33 0.0262 0.0047  
 Venus -118064-12-17 05:32 J -41401102.49 -41401102.27 -41401102.05 0.0264 0.0022  
 Venus -118063-08-03 13:12 J -41400873.17 -41400872.95 -41400872.73 0.0266 0.0005  
 Venus -118062-03-20 22:20 J -41400643.79 -41400643.57 -41400643.35 0.0268 0.0031

Venus -118062-11-05 09:08 J -41400414.34 -41400414.12 -41400413.91 0.0270 0.0058

Venus -118061-06-21 21:08 J -41400184.83 -41400184.62 -41400184.41 0.0272 0.0085

Moon -118060-01-12 06:00 J -41399980.48 -41399980.25 -41399980.01 0.0275 0.0076

Earth -118060-01-12 09:36 J -41399980.34 -41399980.10 -41399979.85 0.0275 0.0060 \*

Venus -118060-02-06 10:34 J -41399955.25 -41399955.06 -41399954.85 0.0275 0.0111

Venus -118060-09-24 01:56 J -41399725.61 -41399725.42 -41399725.23 0.0278 0.0136

Venus -118059-05-11 18:29 J -41399495.90 -41399495.73 -41399495.54 0.0281 0.0160

Mars -118059-07-08 14:39 J -41399438.17 -41399437.89 -41399437.60 0.0282 0.0056

Venus -118059-12-27 12:58 J -41399266.12 -41399265.96 -41399265.79 0.0284 0.0181

Venus -118058-08-14 08:39 J -41399036.29 -41399036.14 -41399035.99 0.0287 0.0200

Venus -118057-03-31 05:32 J -41398806.41 -41398806.27 -41398806.12 0.0290 0.0215

Mercury -118057-11-06 17:46 J -41398585.86 -41398585.76 -41398585.66 0.0293 0.0197

Venus -118057-11-16 03:51 J -41398576.47 -41398576.34 -41398576.21 0.0293 0.0226

Mercury -118056-02-03 07:27 J -41398497.32 -41398497.19 -41398497.06 0.0294 0.0093

Mercury -118056-05-02 21:08 J -41398408.75 -41398408.62 -41398408.48 0.0295 0.0012

Venus -118056-07-04 02:53 J -41398346.50 -41398346.38 -41398346.24 0.0296 0.0232

Mercury -118056-07-30 10:48 J -41398320.18 -41398320.05 -41398319.93 0.0296 0.0115

Mercury -118056-10-27 00:15 J -41398231.58 -41398231.49 -41398231.40 0.0297 0.0218

Venus -118055-02-19 02:53 J -41398116.50 -41398116.38 -41398116.24 0.0298 0.0232

Venus -118055-10-07 03:22 J -41397886.49 -41397886.36 -41397886.22 0.0300 0.0227

Venus -118054-05-25 04:05 J -41397656.47 -41397656.33 -41397656.19 0.0302 0.0216

Venus -118053-01-10 04:34 J -41397426.45 -41397426.31 -41397426.15 0.0303 0.0200

Venus -118053-08-27 05:03 J -41397196.45 -41397196.29 -41397196.12 0.0304 0.0178

Venus -118052-04-14 04:48 J -41396966.48 -41396966.30 -41396966.12 0.0304 0.0152

Venus -118052-11-30 03:36 J -41396736.54 -41396736.35 -41396736.17 0.0303 0.0121

Venus -118051-07-18 01:12 J -41396506.64 -41396506.45 -41396506.25 0.0302 0.0089

Venus -118050-03-04 21:36 J -41396276.80 -41396276.60 -41396276.40 0.0300 0.0054

Venus -118050-10-20 16:20 J -41396047.02 -41396046.82 -41396046.61 0.0298 0.0021

Venus -118049-06-06 09:36 J -41395817.30 -41395817.10 -41395816.90 0.0296 0.0016

Venus -118048-01-22 01:12 J -41395587.65 -41395587.45 -41395587.25 0.0293 0.0049

Venus -118048-09-08 14:53 J -41395358.07 -41395357.88 -41395357.68 0.0290 0.0080  
 Venus -118047-04-26 03:08 J -41395128.56 -41395128.37 -41395128.17 0.0287 0.0108  
 Earth -118047-07-07 12:29 J -41395056.21 -41395055.98 -41395055.75 0.0286 0.0091  
 Moon -118047-07-07 13:41 J -41395056.14 -41395055.93 -41395055.71 0.0286 0.0108 \*  
 Venus -118047-12-11 13:41 J -41394899.11 -41394898.93 -41394898.75 0.0284 0.0133  
 Venus -118046-07-28 22:34 J -41394669.73 -41394669.56 -41394669.39 0.0281 0.0154  
 Venus -118045-03-14 06:00 J -41394440.41 -41394440.25 -41394440.09 0.0278 0.0173  
 Mars -118045-10-04 08:39 J -41394236.26 -41394236.14 -41394236.00 0.0276 0.0246  
 Venus -118045-10-29 12:15 J -41394211.14 -41394210.99 -41394210.84 0.0276 0.0187  
 Venus -118044-06-15 17:17 J -41393981.91 -41393981.78 -41393981.63 0.0273 0.0199  
 Venus -118043-01-30 21:36 J -41393752.74 -41393752.60 -41393752.47 0.0270 0.0207  
 Mercury -118043-06-08 19:41 J -41393623.81 -41393623.68 -41393623.54 0.0269 0.0171  
 Mercury -118043-09-05 14:24 J -41393535.07 -41393534.90 -41393534.73 0.0268 0.0070  
 Venus -118043-09-17 00:29 J -41393523.60 -41393523.48 -41393523.34 0.0268 0.0211  
 Mercury -118043-12-03 09:22 J -41393446.29 -41393446.11 -41393445.93 0.0267 0.0031  
 Mercury -118042-03-02 04:20 J -41393357.47 -41393357.32 -41393357.16 0.0267 0.0133  
 Venus -118042-05-04 02:53 J -41393294.50 -41393294.38 -41393294.25 0.0266 0.0213  
 Mercury -118042-05-29 23:32 J -41393268.59 -41393268.52 -41393268.43 0.0266 0.0234  
 Venus -118042-12-19 04:34 J -41393065.43 -41393065.31 -41393065.17 0.0264 0.0212  
 Venus -118041-08-04 06:15 J -41392836.37 -41392836.24 -41392836.11 0.0263 0.0207  
 Venus -118040-03-21 07:27 J -41392607.33 -41392607.19 -41392607.05 0.0261 0.0200  
 Venus -118040-11-05 08:10 J -41392378.30 -41392378.16 -41392378.00 0.0260 0.0191  
 Venus -118039-06-22 09:22 J -41392149.27 -41392149.11 -41392148.95 0.0260 0.0179  
 Venus -118038-02-06 10:20 J -41391920.23 -41391920.07 -41391919.89 0.0259 0.0165  
 Venus -118038-09-23 12:00 J -41391691.17 -41391691.00 -41391690.82 0.0259 0.0149  
 Venus -118037-05-09 13:56 J -41391462.10 -41391461.92 -41391461.72 0.0259 0.0132  
 Venus -118037-12-24 16:48 J -41391233.00 -41391232.80 -41391232.60 0.0260 0.0112  
 Venus -118036-08-10 20:24 J -41391003.85 -41391003.65 -41391003.44 0.0260 0.0090  
 Venus -118035-03-28 00:44 J -41390774.68 -41390774.47 -41390774.25 0.0261 0.0068  
 Venus -118035-11-12 06:15 J -41390545.45 -41390545.24 -41390545.02 0.0263 0.0043

Venus -118034-06-29 12:58 J -41390316.18 -41390315.96 -41390315.74 0.0264 0.0018

Venus -118033-02-13 20:53 J -41390086.85 -41390086.63 -41390086.41 0.0266 0.0010

Venus -118033-09-30 06:29 J -41389857.45 -41389857.23 -41389857.01 0.0268 0.0036

Venus -118032-05-17 17:17 J -41389627.99 -41389627.78 -41389627.56 0.0270 0.0063

Venus -118031-01-02 05:32 J -41389398.47 -41389398.27 -41389398.05 0.0273 0.0091

Venus -118031-08-19 19:27 J -41389168.88 -41389168.69 -41389168.48 0.0275 0.0117

Venus -118030-04-06 11:03 J -41388939.22 -41388939.04 -41388938.85 0.0278 0.0143

Venus -118030-11-22 04:20 J -41388709.49 -41388709.32 -41388709.15 0.0281 0.0166

Venus -118029-07-08 22:34 J -41388479.71 -41388479.56 -41388479.39 0.0284 0.0188

Mars -118029-08-28 00:58 J -41388429.68 -41388429.46 -41388429.21 0.0285 0.0173

Venus -118028-02-23 18:29 J -41388249.87 -41388249.73 -41388249.58 0.0287 0.0206

Venus -118028-10-11 15:36 J -41388019.98 -41388019.85 -41388019.71 0.0290 0.0221

Mercury -118027-03-26 20:24 J -41387853.73 -41387853.65 -41387853.55 0.0292 0.0220

Venus -118027-05-29 13:56 J -41387790.05 -41387789.92 -41387789.79 0.0293 0.0231

Mercury -118027-06-23 10:20 J -41387765.20 -41387765.07 -41387764.94 0.0293 0.0116

Mercury -118027-09-20 00:00 J -41387676.64 -41387676.50 -41387676.36 0.0294 0.0013

Mercury -118027-12-17 13:27 J -41387588.07 -41387587.94 -41387587.81 0.0295 0.0092

Venus -118026-01-14 12:58 J -41387560.07 -41387559.96 -41387559.82 0.0296 0.0237

Mercury -118026-03-16 03:08 J -41387499.48 -41387499.37 -41387499.27 0.0296 0.0195

Venus -118026-09-01 13:12 J -41387330.07 -41387329.95 -41387329.82 0.0298 0.0236

Venus -118025-04-18 13:27 J -41387100.06 -41387099.94 -41387099.80 0.0300 0.0230

Venus -118025-12-04 14:24 J -41386870.04 -41386869.90 -41386869.76 0.0302 0.0218

Venus -118024-07-22 14:53 J -41386640.03 -41386639.88 -41386639.72 0.0303 0.0201

Venus -118023-03-09 15:22 J -41386410.03 -41386409.86 -41386409.70 0.0303 0.0178

Venus -118023-10-25 14:39 J -41386180.06 -41386179.89 -41386179.70 0.0304 0.0151

Venus -118022-06-12 13:27 J -41385950.12 -41385949.94 -41385949.75 0.0303 0.0119

Venus -118021-01-28 10:48 J -41385720.24 -41385720.05 -41385719.85 0.0302 0.0086

Venus -118021-09-14 06:58 J -41385490.41 -41385490.21 -41385490.00 0.0300 0.0051

Venus -118020-05-02 01:41 J -41385260.63 -41385260.43 -41385260.22 0.0298 0.0015

Venus -118020-12-17 18:44 J -41385030.93 -41385030.72 -41385030.52 0.0296 0.0020

Venus -118019-08-04 09:51 J -41384801.29 -41384801.09 -41384800.88 0.0293 0.0053

Venus -118018-03-21 23:32 J -41384571.71 -41384571.52 -41384571.32 0.0290 0.0084

Moon -118018-07-02 03:36 J -41384469.46 -41384469.35 -41384469.21 0.0289 0.0246

Earth -118018-07-02 05:46 J -41384469.35 -41384469.26 -41384469.16 0.0289 0.0262 \*

Venus -118018-11-06 11:17 J -41384342.21 -41384342.03 -41384341.83 0.0287 0.0112

Venus -118017-06-22 21:36 J -41384112.78 -41384112.60 -41384112.41 0.0284 0.0137

Mars -118017-11-20 22:48 J -41383961.80 -41383961.55 -41383961.30 0.0282 0.0150

Venus -118016-02-07 06:15 J -41383883.40 -41383883.24 -41383883.06 0.0281 0.0158

Venus -118016-09-24 13:27 J -41383654.09 -41383653.94 -41383653.77 0.0278 0.0176

Venus -118015-05-11 19:41 J -41383424.83 -41383424.68 -41383424.53 0.0275 0.0190

Venus -118015-12-27 00:15 J -41383195.62 -41383195.49 -41383195.33 0.0273 0.0202

Venus -118014-08-13 04:05 J -41382966.45 -41382966.33 -41382966.19 0.0270 0.0209

Mercury -118014-10-26 20:53 J -41382891.74 -41382891.63 -41382891.50 0.0269 0.0193

Mercury -118013-01-23 15:36 J -41382803.01 -41382802.85 -41382802.68 0.0268 0.0093

Venus -118013-03-29 06:58 J -41382737.33 -41382737.21 -41382737.07 0.0268 0.0214

Mercury -118013-04-21 10:34 J -41382714.24 -41382714.06 -41382713.88 0.0268 0.0008

Mercury -118013-07-19 05:32 J -41382625.43 -41382625.27 -41382625.10 0.0267 0.0109

Mercury -118013-10-16 00:29 J -41382536.58 -41382536.48 -41382536.36 0.0266 0.0211

Venus -118013-11-13 09:08 J -41382508.23 -41382508.12 -41382507.99 0.0266 0.0215

Venus -118012-06-30 11:03 J -41382279.16 -41382279.04 -41382278.91 0.0264 0.0213

Venus -118011-02-14 12:15 J -41382050.11 -41382049.99 -41382049.85 0.0262 0.0209

Venus -118011-10-01 13:12 J -41381821.08 -41381820.95 -41381820.80 0.0261 0.0201

Venus -118010-05-18 14:10 J -41381592.05 -41381591.91 -41381591.76 0.0260 0.0191

Venus -118009-01-02 15:08 J -41381363.02 -41381362.87 -41381362.71 0.0259 0.0179

Venus -118009-08-18 16:34 J -41381133.97 -41381133.81 -41381133.64 0.0259 0.0165

Venus -118008-04-04 18:00 J -41380904.92 -41380904.75 -41380904.56 0.0259 0.0149

Venus -118008-11-19 20:10 J -41380675.84 -41380675.66 -41380675.46 0.0259 0.0130

Venus -118007-07-06 23:03 J -41380446.74 -41380446.54 -41380446.34 0.0259 0.0110

Venus -118006-02-21 02:24 J -41380217.60 -41380217.40 -41380217.18 0.0260 0.0088

Venus -118006-10-08 07:12 J -41379988.41 -41379988.20 -41379987.99 0.0261 0.0064

Venus	-118005-05-24 12:58 J	-41379759.18	-41379758.96	-41379758.75	0.0263	0.0040
Venus	-118004-01-08 19:41 J	-41379529.90	-41379529.68	-41379529.46	0.0264	0.0014
Venus	-118004-08-26 03:51 J	-41379300.56	-41379300.34	-41379300.12	0.0266	0.0014
Venus	-118003-04-12 13:27 J	-41379071.15	-41379070.94	-41379070.72	0.0268	0.0041
Venus	-118003-11-28 00:29 J	-41378841.69	-41378841.48	-41378841.26	0.0271	0.0068
Venus	-118002-07-15 12:58 J	-41378612.16	-41378611.96	-41378611.75	0.0273	0.0095
Earth	-118001-01-15 01:12 J	-41378428.69	-41378428.45	-41378428.20	0.0275	0.0047
Moon	-118001-01-15 01:27 J	-41378428.68	-41378428.44	-41378428.20	0.0275	0.0032 *
Venus	-118001-03-01 03:08 J	-41378382.56	-41378382.37	-41378382.17	0.0276	0.0122
Mars	-118001-10-13 22:20 J	-41378155.70	-41378155.57	-41378155.41	0.0279	0.0239
Venus	-118001-10-16 18:58 J	-41378152.89	-41378152.71	-41378152.52	0.0279	0.0147

# 118TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 118th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-118000-06-03 12:15 J	-41377923.16	-41377922.99	-41377922.81	0.0282	0.0170		
Venus	-117999-01-19 06:58 J	-41377693.36	-41377693.21	-41377693.05	0.0285	0.0192		
Venus	-117999-09-06 03:08 J	-41377463.51	-41377463.37	-41377463.22	0.0288	0.0209		
Venus	-117998-04-24 00:29 J	-41377233.61	-41377233.48	-41377233.34	0.0291	0.0223		
Mercury	-117998-08-13 22:48 J	-41377121.62	-41377121.55	-41377121.47	0.0293	0.0244		



Mercury -117998-11-10 12:44 J -41377033.09 -41377032.97 -41377032.85 0.0294 0.0140

Venus -117998-12-09 23:03 J -41377003.66 -41377003.54 -41377003.40 0.0294 0.0233

Mercury -117997-02-07 02:39 J -41376944.53 -41376944.39 -41376944.26 0.0295 0.0037

Mercury -117997-05-05 16:05 J -41376855.96 -41376855.83 -41376855.69 0.0296 0.0069

Venus -117997-07-26 22:34 J -41376773.68 -41376773.56 -41376773.43 0.0297 0.0238

Mercury -117997-08-02 05:32 J -41376767.37 -41376767.27 -41376767.16 0.0297 0.0172

Mercury -117997-10-29 18:58 J -41376678.75 -41376678.71 -41376678.66 0.0298 0.0275

Venus -117996-03-13 22:48 J -41376543.67 -41376543.55 -41376543.42 0.0299 0.0236

Venus -117996-10-29 23:32 J -41376313.65 -41376313.52 -41376313.39 0.0301 0.0229

Venus -117995-06-17 00:00 J -41376083.63 -41376083.50 -41376083.35 0.0302 0.0217

Venus -117994-02-02 00:58 J -41375853.61 -41375853.46 -41375853.30 0.0303 0.0198

Venus -117994-09-20 01:12 J -41375623.62 -41375623.45 -41375623.28 0.0304 0.0174

Venus -117993-05-07 00:29 J -41375393.65 -41375393.48 -41375393.29 0.0304 0.0146

Venus -117993-12-22 23:03 J -41375163.72 -41375163.54 -41375163.35 0.0303 0.0114

Venus -117992-08-09 20:39 J -41374933.84 -41374933.64 -41374933.45 0.0302 0.0080

Venus -117991-03-27 16:34 J -41374704.01 -41374703.81 -41374703.61 0.0300 0.0044

Venus -117991-11-12 11:03 J -41374474.24 -41374474.04 -41374473.84 0.0298 0.0009

Venus -117990-06-30 03:51 J -41374244.55 -41374244.34 -41374244.14 0.0295 0.0027

Venus -117989-02-14 18:44 J -41374014.92 -41374014.72 -41374014.52 0.0293 0.0060

Venus -117989-10-01 08:10 J -41373785.35 -41373785.16 -41373784.96 0.0290 0.0090

Venus -117988-05-18 19:56 J -41373555.85 -41373555.67 -41373555.48 0.0286 0.0118

Earth -117988-07-09 06:29 J -41373504.39 -41373504.23 -41373504.07 0.0286 0.0210

Moon -117988-07-09 10:05 J -41373504.22 -41373504.08 -41373503.93 0.0286 0.0228 \*

Venus -117987-01-03 06:00 J -41373326.43 -41373326.25 -41373326.07 0.0283 0.0143

Venus -117987-08-20 14:24 J -41373097.07 -41373096.90 -41373096.73 0.0280 0.0164

Mars -117986-01-11 01:27 J -41372953.72 -41372953.44 -41372953.15 0.0278 0.0072

Venus -117986-04-06 21:22 J -41372867.76 -41372867.61 -41372867.45 0.0277 0.0181

Venus -117986-11-22 02:53 J -41372638.51 -41372638.38 -41372638.22 0.0275 0.0196

Venus -117985-07-08 07:41 J -41372409.31 -41372409.18 -41372409.04 0.0272 0.0206

Venus -117984-02-22 11:32 J -41372180.15 -41372180.02 -41372179.89 0.0269 0.0213

Mercury -117984-03-14 22:34 J -41372159.66 -41372159.56 -41372159.46 0.0269 0.0214

Mercury -117984-06-11 17:03 J -41372070.94 -41372070.79 -41372070.63 0.0268 0.0115

Mercury -117984-09-08 12:00 J -41371982.18 -41371982.00 -41371981.82 0.0268 0.0014

Venus -117984-10-09 14:10 J -41371951.03 -41371950.91 -41371950.78 0.0267 0.0217

Mercury -117984-12-06 06:58 J -41371893.38 -41371893.21 -41371893.04 0.0267 0.0087

Mercury -117983-03-05 02:10 J -41371804.54 -41371804.41 -41371804.28 0.0266 0.0188

Venus -117983-05-26 16:05 J -41371721.94 -41371721.83 -41371721.69 0.0265 0.0218

Venus -117982-01-10 17:46 J -41371492.87 -41371492.76 -41371492.63 0.0264 0.0215

Venus -117982-08-27 18:58 J -41371263.83 -41371263.71 -41371263.57 0.0262 0.0209

Venus -117981-04-12 20:10 J -41371034.80 -41371034.66 -41371034.53 0.0261 0.0201

Venus -117981-11-27 20:39 J -41370805.77 -41370805.64 -41370805.48 0.0260 0.0191

Venus -117980-07-14 21:51 J -41370576.74 -41370576.59 -41370576.42 0.0259 0.0178

Venus -117979-02-28 23:17 J -41370347.70 -41370347.53 -41370347.36 0.0259 0.0163

Venus -117979-10-16 00:44 J -41370118.65 -41370118.47 -41370118.29 0.0259 0.0146

Venus -117978-06-02 02:39 J -41369889.58 -41369889.39 -41369889.19 0.0259 0.0128

Venus -117977-01-17 05:17 J -41369660.47 -41369660.28 -41369660.07 0.0260 0.0108

Venus -117977-09-02 09:22 J -41369431.32 -41369431.11 -41369430.90 0.0261 0.0085

Venus -117976-04-19 13:56 J -41369202.13 -41369201.92 -41369201.70 0.0262 0.0062

Venus -117976-12-04 19:41 J -41368972.89 -41368972.68 -41368972.46 0.0263 0.0037

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Venus -117974-03-08 11:03 J -41368514.26 -41368514.04 -41368513.82 0.0267 0.0017

Venus -117974-10-23 20:53 J -41368284.84 -41368284.63 -41368284.41 0.0269 0.0045

Venus -117973-06-09 08:10 J -41368055.36 -41368055.16 -41368054.94 0.0271 0.0073

Venus -117972-01-24 20:53 J -41367825.82 -41367825.63 -41367825.42 0.0274 0.0101

Venus -117972-09-11 11:32 J -41367596.21 -41367596.02 -41367595.82 0.0276 0.0127

Venus -117971-04-29 03:22 J -41367366.53 -41367366.36 -41367366.17 0.0279 0.0153

Mars -117971-12-03 15:51 J -41367148.13 -41367147.84 -41367147.55 0.0282 0.0025

Venus -117971-12-14 21:08 J -41367136.78 -41367136.62 -41367136.45 0.0282 0.0177

Venus -117970-08-01 16:05 J -41366906.98 -41366906.83 -41366906.67 0.0285 0.0198

Venus -117969-03-18 12:29 J -41366677.11 -41366676.98 -41366676.83 0.0288 0.0216

Venus -117969-11-03 10:05 J -41366447.20 -41366447.08 -41366446.94 0.0291 0.0230  
 Mercury -117969-12-31 01:27 J -41366389.49 -41366389.44 -41366389.38 0.0292 0.0267  
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 Venus -117964-04-01 11:03 J -41364837.20 -41364837.04 -41364836.87 0.0304 0.0173  
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 Venus -117963-07-05 08:53 J -41364377.31 -41364377.13 -41364376.94 0.0303 0.0112  
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Mercury -117955-08-01 23:46 J -41361427.59 -41361427.51 -41361427.42 0.0270 0.0236

Venus -117955-09-04 18:00 J -41361393.87 -41361393.75 -41361393.61 0.0269 0.0215

Mercury -117955-10-29 18:15 J -41361338.88 -41361338.74 -41361338.58 0.0269 0.0137

Mercury -117954-01-26 13:12 J -41361250.13 -41361249.95 -41361249.78 0.0268 0.0036

Venus -117954-04-21 20:24 J -41361164.76 -41361164.65 -41361164.52 0.0267 0.0218

Mercury -117954-04-25 07:56 J -41361161.34 -41361161.17 -41361160.99 0.0267 0.0066

Mercury -117954-07-23 03:08 J -41361072.51 -41361072.37 -41361072.23 0.0266 0.0166

Venus -117954-12-06 22:20 J -41360935.68 -41360935.57 -41360935.44 0.0265 0.0218

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Venus -117951-06-10 02:24 J -41360019.54 -41360019.40 -41360019.25 0.0260 0.0192

Venus -117950-01-25 03:08 J -41359790.51 -41359790.37 -41359790.20 0.0259 0.0179

Venus -117950-09-11 04:34 J -41359561.47 -41359561.31 -41359561.13 0.0259 0.0163

Venus -117949-04-27 06:15 J -41359332.42 -41359332.24 -41359332.06 0.0259 0.0146

Venus -117949-12-12 08:10 J -41359103.34 -41359103.16 -41359102.96 0.0259 0.0127

Venus -117948-07-29 11:17 J -41358874.23 -41358874.03 -41358873.82 0.0259 0.0105

Venus -117947-03-15 15:08 J -41358645.08 -41358644.87 -41358644.66 0.0260 0.0083

Venus -117947-10-30 19:41 J -41358415.89 -41358415.68 -41358415.46 0.0261 0.0059

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Venus -117945-02-01 08:39 J -41357957.36 -41357957.14 -41357956.92 0.0265 0.0008

Venus -117945-09-17 17:17 J -41357728.00 -41357727.78 -41357727.56 0.0267 0.0022

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Venus -117943-08-07 03:36 J -41357039.55 -41357039.35 -41357039.14 0.0274 0.0105

Earth -117942-01-16 14:10 J -41356877.11 -41356876.91 -41356876.69 0.0276 0.0148

Moon -117942-01-16 17:46 J -41356876.97 -41356876.76 -41356876.54 0.0276 0.0133 \*

Venus -117942-03-24 18:15 J -41356809.93 -41356809.74 -41356809.55 0.0277 0.0132

Venus -117942-11-09 10:34 J -41356580.24 -41356580.06 -41356579.88 0.0280 0.0157

Venus -117941-06-26 04:20 J -41356350.49 -41356350.32 -41356350.16 0.0283 0.0180

Mars -117940-01-22 19:27 J -41356139.88 -41356139.69 -41356139.48 0.0286 0.0209  
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 Venus -117938-08-19 16:20 J -41355200.93 -41355200.82 -41355200.69 0.0297 0.0243  
 Venus -117937-04-05 16:48 J -41354970.92 -41354970.80 -41354970.67 0.0300 0.0239  
 Venus -117937-11-21 17:32 J -41354740.89 -41354740.77 -41354740.63 0.0301 0.0231  
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 Venus -117934-05-30 18:29 J -41353820.90 -41353820.73 -41353820.54 0.0304 0.0140  
 Venus -117933-01-15 16:48 J -41353590.98 -41353590.80 -41353590.60 0.0303 0.0107  
 Venus -117933-09-01 13:56 J -41353361.11 -41353360.92 -41353360.72 0.0301 0.0071  
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 Venus -117932-12-05 03:51 J -41352901.55 -41352901.34 -41352901.14 0.0297 0.0006  
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 Mars -117928-04-18 00:44 J -41351671.74 -41351671.47 -41351671.20 0.0281 0.0117  
 Venus -117928-09-12 04:34 J -41351524.47 -41351524.31 -41351524.14 0.0279 0.0173  
 Venus -117927-04-29 11:17 J -41351295.18 -41351295.03 -41351294.88 0.0277 0.0190  
 Venus -117927-12-14 16:34 J -41351065.95 -41351065.81 -41351065.67 0.0274 0.0203

Venus -117926-07-31 20:39 J -41350836.76 -41350836.64 -41350836.50 0.0271 0.0213  
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 Venus -117925-11-01 02:39 J -41350378.51 -41350378.39 -41350378.27 0.0267 0.0221  
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 Venus -117924-06-18 04:20 J -41350149.42 -41350149.32 -41350149.19 0.0265 0.0221  
 Venus -117923-02-02 05:46 J -41349920.37 -41349920.26 -41349920.13 0.0263 0.0217  
 Venus -117923-09-19 06:58 J -41349691.34 -41349691.21 -41349691.09 0.0262 0.0211  
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Mars -117912-03-10 11:46 J -41345866.19 -41345866.01 -41345865.81 0.0279 0.0212  
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Earth -117883-01-17 22:34 J -41335325.68 -41335325.56 -41335325.43 0.0276 0.0237  
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Moon -117854-01-12 11:46 J -41324739.22 -41324739.01 -41324738.78 0.0274 0.0110  
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Venus -117771-10-05 12:15 J -41294157.19 -41294156.99 -41294156.78 0.0259 0.0092

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Venus -117769-01-06 20:53 J -41293698.84 -41293698.63 -41293698.41 0.0262 0.0041

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Venus -117767-07-12 05:32 J -41292781.47 -41292781.27 -41292781.05 0.0270 0.0074

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Venus -117764-01-15 15:36 J -41291863.01 -41291862.85 -41291862.69 0.0281 0.0183

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Mars -117764-11-11 19:41 J -41291562.82 -41291562.68 -41291562.51 0.0286 0.0241

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Venus -117762-07-24 01:56 J -41290943.52 -41290943.42 -41290943.31 0.0294 0.0250

Mercury -117762-08-25 18:58 J -41290910.84 -41290910.71 -41290910.57 0.0294 0.0071

Mercury -117762-11-22 08:39 J -41290822.27 -41290822.14 -41290822.00 0.0295 0.0035

Mercury -117761-02-18 22:20 J -41290733.69 -41290733.57 -41290733.45 0.0296 0.0136

Venus -117761-03-10 01:41 J -41290713.54 -41290713.43 -41290713.33 0.0297 0.0254

Mercury -117761-05-17 11:46 J -41290645.09 -41290645.01 -41290644.93 0.0297 0.0239

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Venus -117759-01-29 03:51 J -41290023.46 -41290023.34 -41290023.20 0.0303 0.0232

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Venus -117758-05-04 05:46 J -41289563.42 -41289563.26 -41289563.10 0.0304 0.0186

Venus -117758-12-20 05:46 J -41289333.43 -41289333.26 -41289333.08 0.0304 0.0156

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 Venus -117749-10-06 22:34 J -41286119.66 -41286119.56 -41286119.44 0.0269 0.0227  
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 Venus -117709-05-01 14:53 J -41271668.10 -41271667.88 -41271667.66 0.0265 0.0022  
 Venus -117709-12-16 23:46 J -41271438.73 -41271438.51 -41271438.30 0.0267 0.0051  
 Venus -117708-08-03 10:05 J -41271209.29 -41271209.08 -41271208.87 0.0270 0.0081  
 Venus -117707-03-20 22:05 J -41270979.78 -41270979.58 -41270979.38 0.0272 0.0110  
 Venus -117707-11-05 11:46 J -41270750.20 -41270750.01 -41270749.82 0.0275 0.0138  
 Venus -117706-06-23 02:53 J -41270520.54 -41270520.38 -41270520.20 0.0278 0.0166  
 Venus -117705-02-07 19:41 J -41270290.82 -41270290.68 -41270290.51 0.0282 0.0191  
 Mars -117705-02-15 19:41 J -41270282.97 -41270282.68 -41270282.38 0.0282 0.0022  
 Venus -117705-09-24 14:24 J -41270061.04 -41270060.90 -41270060.75 0.0285 0.0212  
 Venus -117704-05-12 10:20 J -41269831.19 -41269831.07 -41269830.93 0.0288 0.0231  
 Venus -117704-12-28 07:56 J -41269601.28 -41269601.17 -41269601.05 0.0291 0.0245  
 Mercury -117703-03-04 06:00 J -41269535.31 -41269535.25 -41269535.17 0.0292 0.0250  
 Mercury -117703-05-31 19:56 J -41269446.79 -41269446.67 -41269446.55 0.0293 0.0147  
 Venus -117703-08-15 06:29 J -41269371.32 -41269371.23 -41269371.12 0.0294 0.0255  
 Mercury -117703-08-28 09:51 J -41269358.23 -41269358.09 -41269357.96 0.0294 0.0044  
 Mercury -117703-11-24 23:32 J -41269269.66 -41269269.52 -41269269.39 0.0295 0.0060  
 Mercury -117702-02-21 12:58 J -41269181.07 -41269180.96 -41269180.85 0.0296 0.0163  
 Venus -117702-04-02 06:15 J -41269141.34 -41269141.24 -41269141.13 0.0297 0.0258  
 Mercury -117702-05-21 02:24 J -41269092.46 -41269092.40 -41269092.34 0.0297 0.0265  
 Venus -117702-11-18 06:44 J -41268911.32 -41268911.22 -41268911.11 0.0299 0.0255

Venus	-117701-07-05 07:41 J	-41268681.29	-41268681.18	-41268681.06	0.0301	0.0246
Venus	-117700-02-20 08:53 J	-41268451.26	-41268451.13	-41268450.99	0.0303	0.0231
Venus	-117700-10-08 09:51 J	-41268221.23	-41268221.09	-41268220.93	0.0304	0.0210
Venus	-117699-05-26 10:48 J	-41267991.21	-41267991.05	-41267990.89	0.0305	0.0183
Venus	-117698-01-11 10:34 J	-41267761.22	-41267761.06	-41267760.87	0.0304	0.0152
Venus	-117698-08-29 09:51 J	-41267531.27	-41267531.09	-41267530.90	0.0304	0.0116
Venus	-117697-04-15 07:56 J	-41267301.37	-41267301.17	-41267300.97	0.0303	0.0078
Venus	-117697-12-01 04:20 J	-41267071.52	-41267071.32	-41267071.11	0.0301	0.0040
Venus	-117696-07-18 23:17 J	-41266841.73	-41266841.53	-41266841.32	0.0299	0.0005
Venus	-117695-03-05 16:34 J	-41266612.01	-41266611.81	-41266611.60	0.0296	0.0038
Venus	-117695-10-21 08:10 J	-41266382.35	-41266382.16	-41266381.96	0.0293	0.0074
Venus	-117694-06-07 22:05 J	-41266152.77	-41266152.58	-41266152.39	0.0290	0.0107
Earth	-117694-07-04 07:41 J	-41266126.37	-41266126.18	-41266125.98	0.0290	0.0167
Moon	-117694-07-04 11:03 J	-41266126.24	-41266126.04	-41266125.84	0.0290	0.0154 *
Venus	-117693-01-23 10:05 J	-41265923.25	-41265923.08	-41265922.89	0.0287	0.0136
Venus	-117693-09-08 20:39 J	-41265693.81	-41265693.64	-41265693.47	0.0284	0.0162
Venus	-117692-04-26 05:32 J	-41265464.42	-41265464.27	-41265464.11	0.0281	0.0184
Venus	-117692-12-11 12:44 J	-41265235.11	-41265234.97	-41265234.82	0.0277	0.0202
Venus	-117691-07-28 18:29 J	-41265005.85	-41265005.73	-41265005.59	0.0274	0.0216
Venus	-117690-03-14 23:03 J	-41264776.64	-41264776.54	-41264776.41	0.0272	0.0226
Mercury	-117690-10-04 07:56 J	-41264573.28	-41264573.17	-41264573.04	0.0269	0.0194
Venus	-117690-10-30 02:39 J	-41264547.49	-41264547.39	-41264547.28	0.0269	0.0232
Mercury	-117689-01-01 02:39 J	-41264484.55	-41264484.39	-41264484.22	0.0268	0.0095
Mercury	-117689-03-29 21:22 J	-41264395.78	-41264395.61	-41264395.43	0.0267	0.0007
Venus	-117689-06-15 05:17 J	-41264318.37	-41264318.28	-41264318.17	0.0267	0.0235
Mercury	-117689-06-26 16:20 J	-41264306.98	-41264306.82	-41264306.65	0.0267	0.0105
Mercury	-117689-09-23 11:32 J	-41264218.13	-41264218.02	-41264217.91	0.0266	0.0205
Venus	-117688-01-30 07:12 J	-41264089.29	-41264089.20	-41264089.10	0.0265	0.0234
Venus	-117688-09-16 08:10 J	-41263860.25	-41263860.16	-41263860.05	0.0263	0.0230
Venus	-117687-05-03 08:53 J	-41263631.23	-41263631.13	-41263631.01	0.0261	0.0223

Venus -117687-12-18 09:22 J -41263402.23 -41263402.11 -41263401.98 0.0260 0.0214  
 Venus -117686-08-04 09:51 J -41263173.22 -41263173.09 -41263172.95 0.0259 0.0202  
 Venus -117685-03-20 10:20 J -41262944.22 -41262944.07 -41262943.92 0.0258 0.0187  
 Venus -117685-11-04 10:48 J -41262715.21 -41262715.05 -41262714.88 0.0258 0.0171  
 Venus -117684-06-21 11:32 J -41262486.19 -41262486.02 -41262485.83 0.0258 0.0152  
 Venus -117683-02-05 12:58 J -41262257.14 -41262256.96 -41262256.76 0.0258 0.0132  
 Venus -117683-09-22 15:22 J -41262028.06 -41262027.86 -41262027.66 0.0259 0.0109  
 Venus -117682-05-09 18:15 J -41261798.95 -41261798.74 -41261798.53 0.0260 0.0084  
 Venus -117682-12-24 22:05 J -41261569.80 -41261569.58 -41261569.37 0.0261 0.0059  
 Venus -117681-08-10 02:53 J -41261340.60 -41261340.38 -41261340.16 0.0262 0.0032  
 Venus -117680-03-27 09:08 J -41261111.34 -41261111.12 -41261110.90 0.0264 0.0005  
 Venus -117680-11-11 16:34 J -41260882.03 -41260881.81 -41260881.59 0.0266 0.0025  
 Venus -117679-06-29 01:27 J -41260652.66 -41260652.44 -41260652.23 0.0268 0.0054  
 Venus -117678-02-13 11:46 J -41260423.22 -41260423.01 -41260422.80 0.0270 0.0084  
 Venus -117678-09-30 23:46 J -41260193.70 -41260193.51 -41260193.30 0.0273 0.0113  
 Moon -117677-01-16 05:03 J -41260086.53 -41260086.29 -41260086.05 0.0274 0.0089  
 Earth -117677-01-16 07:56 J -41260086.40 -41260086.17 -41260085.94 0.0274 0.0098 \*  
 Venus -117677-05-17 13:41 J -41259964.12 -41259963.93 -41259963.74 0.0276 0.0141  
 Venus -117676-01-02 04:48 J -41259734.46 -41259734.30 -41259734.12 0.0279 0.0169  
 Venus -117676-08-19 21:51 J -41259504.74 -41259504.59 -41259504.42 0.0282 0.0194  
 Mars -117675-04-06 06:44 J -41259275.36 -41259275.22 -41259275.06 0.0285 0.0242  
 Venus -117675-04-06 16:34 J -41259274.94 -41259274.81 -41259274.66 0.0285 0.0216  
 Venus -117675-11-22 12:58 J -41259045.08 -41259044.96 -41259044.83 0.0288 0.0234  
 Venus -117674-07-10 10:34 J -41258815.16 -41258815.06 -41258814.95 0.0291 0.0248  
 Mercury -117674-07-22 06:29 J -41258803.25 -41258803.23 -41258803.20 0.0291 0.0287  
 Mercury -117674-10-18 20:24 J -41258714.75 -41258714.65 -41258714.54 0.0293 0.0185  
 Mercury -117673-01-15 10:20 J -41258626.20 -41258626.07 -41258625.93 0.0294 0.0081  
 Venus -117673-02-25 09:22 J -41258585.21 -41258585.11 -41258585.01 0.0294 0.0257  
 Mercury -117673-04-13 00:00 J -41258537.63 -41258537.50 -41258537.36 0.0295 0.0023  
 Mercury -117673-07-10 13:41 J -41258449.05 -41258448.93 -41258448.81 0.0296 0.0125

Mercury -117673-10-07 03:08 J -41258360.45 -41258360.37 -41258360.28 0.0297 0.0227  
 Venus -117673-10-12 08:53 J -41258355.21 -41258355.13 -41258355.02 0.0297 0.0261  
 Venus -117672-05-30 09:36 J -41258125.20 -41258125.10 -41258124.99 0.0299 0.0257  
 Venus -117671-01-15 10:48 J -41257895.16 -41257895.05 -41257894.93 0.0301 0.0248  
 Venus -117671-09-02 11:46 J -41257665.13 -41257665.01 -41257664.87 0.0303 0.0232  
 Venus -117670-04-20 12:58 J -41257435.11 -41257434.96 -41257434.81 0.0304 0.0209  
 Venus -117670-12-06 13:27 J -41257205.10 -41257204.94 -41257204.77 0.0304 0.0181  
 Venus -117669-07-23 13:27 J -41256975.12 -41256974.94 -41256974.76 0.0304 0.0149  
 Venus -117668-03-10 12:29 J -41256745.17 -41256744.98 -41256744.79 0.0303 0.0113  
 Venus -117668-10-26 10:20 J -41256515.27 -41256515.07 -41256514.87 0.0302 0.0075  
 Venus -117667-06-13 06:44 J -41256285.42 -41256285.22 -41256285.02 0.0300 0.0036  
 Venus -117666-01-29 01:41 J -41256055.63 -41256055.43 -41256055.23 0.0298 0.0004  
 Venus -117666-09-15 18:58 J -41255825.91 -41255825.71 -41255825.51 0.0296 0.0042  
 Venus -117665-05-02 10:48 J -41255596.25 -41255596.05 -41255595.85 0.0293 0.0077  
 Venus -117665-12-18 00:29 J -41255366.66 -41255366.48 -41255366.28 0.0290 0.0110  
 Earth -117664-07-10 23:17 J -41255161.56 -41255161.53 -41255161.50 0.0287 0.0285  
 Venus -117664-08-04 12:44 J -41255137.15 -41255136.97 -41255136.79 0.0287 0.0139  
 Venus -117663-03-21 23:03 J -41254907.71 -41254907.54 -41254907.37 0.0284 0.0165  
 Mars -117663-07-01 13:56 J -41254806.21 -41254805.92 -41254805.63 0.0282 0.0061  
 Venus -117663-11-06 07:56 J -41254678.33 -41254678.17 -41254678.02 0.0281 0.0186  
 Venus -117662-06-23 15:08 J -41254449.01 -41254448.87 -41254448.72 0.0278 0.0204  
 Venus -117661-02-07 21:08 J -41254219.75 -41254219.62 -41254219.49 0.0275 0.0217  
 Venus -117661-09-24 01:27 J -41253990.54 -41253990.44 -41253990.31 0.0272 0.0227  
 Mercury -117660-02-20 07:12 J -41253841.29 -41253841.20 -41253841.10 0.0270 0.0226  
 Venus -117660-05-11 05:03 J -41253761.39 -41253761.29 -41253761.18 0.0269 0.0233  
 Mercury -117660-05-20 01:56 J -41253752.57 -41253752.42 -41253752.27 0.0269 0.0126  
 Mercury -117660-08-16 20:39 J -41253663.82 -41253663.64 -41253663.46 0.0268 0.0027  
 Mercury -117660-11-13 15:36 J -41253575.02 -41253574.85 -41253574.68 0.0267 0.0074  
 Venus -117660-12-26 07:27 J -41253532.28 -41253532.19 -41253532.08 0.0267 0.0235  
 Mercury -117659-02-10 10:34 J -41253486.19 -41253486.06 -41253485.92 0.0266 0.0174



Venus	-117659-08-12 09:22 J	-41253303.20	-41253303.11	-41253303.01	0.0265	0.0234
Venus	-117658-03-29 10:20 J	-41253074.16	-41253074.07	-41253073.96	0.0263	0.0230
Venus	-117658-11-13 11:17 J	-41252845.14	-41252845.03	-41252844.92	0.0261	0.0223
Venus	-117657-06-29 11:32 J	-41252616.13	-41252616.02	-41252615.89	0.0260	0.0213
Venus	-117656-02-13 11:46 J	-41252387.14	-41252387.01	-41252386.86	0.0259	0.0201
Venus	-117656-09-30 12:00 J	-41252158.14	-41252158.00	-41252157.84	0.0258	0.0187
Venus	-117655-05-17 12:44 J	-41251929.13	-41251928.97	-41251928.80	0.0258	0.0169
Venus	-117654-01-01 13:41 J	-41251700.11	-41251699.93	-41251699.75	0.0258	0.0150
Venus	-117654-08-18 15:08 J	-41251471.06	-41251470.87	-41251470.68	0.0258	0.0129
Venus	-117653-04-03 17:17 J	-41251241.98	-41251241.78	-41251241.58	0.0258	0.0106
Venus	-117653-11-18 20:10 J	-41251012.87	-41251012.66	-41251012.45	0.0259	0.0082
Venus	-117652-07-06 00:00 J	-41250783.72	-41250783.50	-41250783.29	0.0260	0.0056
Venus	-117651-02-20 04:48 J	-41250554.52	-41250554.30	-41250554.08	0.0262	0.0028
Venus	-117651-10-07 11:03 J	-41250325.26	-41250325.04	-41250324.82	0.0263	0.0000
Venus	-117650-05-24 18:29 J	-41250095.95	-41250095.73	-41250095.51	0.0265	0.0029
Venus	-117649-01-09 03:08 J	-41249866.58	-41249866.37	-41249866.15	0.0267	0.0059
Venus	-117649-08-25 13:27 J	-41249637.14	-41249636.94	-41249636.73	0.0270	0.0089
Earth	-117648-01-09 18:00 J	-41249499.85	-41249499.75	-41249499.62	0.0271	0.0242
Moon	-117648-01-09 21:08 J	-41249499.69	-41249499.62	-41249499.51	0.0271	0.0253 *
Venus	-117648-04-12 01:27 J	-41249407.63	-41249407.44	-41249407.24	0.0273	0.0118
Venus	-117648-11-27 15:08 J	-41249178.05	-41249177.87	-41249177.68	0.0276	0.0146
Mars	-117647-05-22 11:46 J	-41249002.22	-41249002.01	-41249001.79	0.0278	0.0182
Venus	-117647-07-15 06:29 J	-41248948.40	-41248948.23	-41248948.06	0.0279	0.0173
Venus	-117646-03-01 23:17 J	-41248718.68	-41248718.53	-41248718.37	0.0282	0.0198
Venus	-117646-10-17 18:00 J	-41248488.88	-41248488.75	-41248488.61	0.0285	0.0219
Venus	-117645-06-03 13:56 J	-41248259.03	-41248258.92	-41248258.79	0.0288	0.0237
Venus	-117644-01-19 11:32 J	-41248029.12	-41248029.02	-41248028.91	0.0291	0.0251
Mercury	-117644-03-06 20:24 J	-41247982.73	-41247982.65	-41247982.55	0.0292	0.0225
Mercury	-117644-06-03 10:20 J	-41247894.19	-41247894.07	-41247893.94	0.0293	0.0122
Mercury	-117644-08-31 00:00 J	-41247805.63	-41247805.50	-41247805.36	0.0294	0.0022

Venus -117644-09-06 09:51 J -41247799.17 -41247799.09 -41247798.98 0.0294 0.0259  
 Mercury -117644-11-27 13:41 J -41247717.06 -41247716.93 -41247716.80 0.0295 0.0084  
 Mercury -117643-02-24 03:08 J -41247628.47 -41247628.37 -41247628.26 0.0296 0.0187  
 Venus -117643-04-24 09:36 J -41247569.19 -41247569.10 -41247569.00 0.0297 0.0261  
 Mercury -117643-05-23 16:34 J -41247539.83 -41247539.81 -41247539.77 0.0297 0.0289  
 Venus -117643-12-10 10:05 J -41247339.18 -41247339.08 -41247338.97 0.0300 0.0258  
 Venus -117642-07-28 11:17 J -41247109.15 -41247109.03 -41247108.92 0.0302 0.0247  
 Venus -117641-03-14 12:15 J -41246879.12 -41246878.99 -41246878.85 0.0303 0.0230  
 Venus -117641-10-30 13:12 J -41246649.09 -41246648.95 -41246648.79 0.0304 0.0208  
 Venus -117640-06-17 13:56 J -41246419.08 -41246418.92 -41246418.75 0.0305 0.0179  
 Venus -117639-02-02 13:56 J -41246189.10 -41246188.92 -41246188.74 0.0304 0.0146  
 Venus -117639-09-20 12:58 J -41245959.15 -41245958.96 -41245958.77 0.0304 0.0110  
 Venus -117638-05-08 10:48 J -41245729.25 -41245729.05 -41245728.85 0.0302 0.0071  
 Venus -117638-12-24 07:12 J -41245499.40 -41245499.20 -41245499.00 0.0301 0.0032  
 Venus -117637-08-10 01:56 J -41245269.62 -41245269.42 -41245269.21 0.0299 0.0011  
 Venus -117636-03-27 19:27 J -41245039.90 -41245039.69 -41245039.49 0.0296 0.0046  
 Venus -117636-11-12 10:48 J -41244810.24 -41244810.05 -41244809.85 0.0293 0.0082  
 Venus -117635-06-30 00:29 J -41244580.66 -41244580.48 -41244580.29 0.0290 0.0115  
 Earth -117635-07-05 01:41 J -41244575.64 -41244575.43 -41244575.20 0.0290 0.0110  
 Moon -117635-07-05 03:22 J -41244575.59 -41244575.36 -41244575.12 0.0290 0.0102 \*  
 Venus -117634-02-14 12:29 J -41244351.15 -41244350.98 -41244350.80 0.0287 0.0144  
 Venus -117634-10-01 22:48 J -41244121.71 -41244121.55 -41244121.38 0.0284 0.0170  
 Venus -117633-05-18 07:41 J -41243892.32 -41243892.18 -41243892.02 0.0280 0.0192  
 Mars -117633-08-19 15:51 J -41243799.09 -41243798.84 -41243798.59 0.0279 0.0143  
 Venus -117632-01-02 15:08 J -41243663.00 -41243662.87 -41243662.73 0.0277 0.0208  
 Venus -117632-08-19 20:53 J -41243433.74 -41243433.63 -41243433.50 0.0274 0.0222  
 Venus -117631-04-06 01:41 J -41243204.54 -41243204.43 -41243204.32 0.0271 0.0230  
 Mercury -117631-07-10 05:32 J -41243109.30 -41243109.27 -41243109.23 0.0270 0.0264  
 Mercury -117631-10-07 00:00 J -41243020.63 -41243020.50 -41243020.35 0.0269 0.0165  
 Venus -117631-11-21 05:03 J -41242975.38 -41242975.29 -41242975.18 0.0269 0.0236

Mercury -117630-01-03 18:58 J -41242931.88 -41242931.71 -41242931.54 0.0268 0.0066

Mercury -117630-04-02 13:41 J -41242843.10 -41242842.93 -41242842.75 0.0267 0.0035

Mercury -117630-06-30 08:39 J -41242754.29 -41242754.14 -41242753.98 0.0267 0.0135

Venus -117630-07-08 07:56 J -41242746.26 -41242746.17 -41242746.07 0.0266 0.0238

Mercury -117630-09-27 03:51 J -41242665.42 -41242665.34 -41242665.26 0.0266 0.0235

Venus -117629-02-22 09:36 J -41242517.18 -41242517.10 -41242517.00 0.0264 0.0237

Venus -117629-10-08 10:48 J -41242288.14 -41242288.05 -41242287.94 0.0263 0.0232

Venus -117628-05-25 11:32 J -41242059.12 -41242059.02 -41242058.90 0.0261 0.0224

Venus -117627-01-09 12:00 J -41241830.12 -41241830.00 -41241829.87 0.0260 0.0214

Venus -117627-08-26 12:29 J -41241601.11 -41241600.98 -41241600.84 0.0259 0.0201

Venus -117626-04-12 12:44 J -41241372.11 -41241371.97 -41241371.81 0.0258 0.0186

Venus -117626-11-27 13:27 J -41241143.10 -41241142.94 -41241142.77 0.0258 0.0169

Venus -117625-07-13 14:24 J -41240914.07 -41240913.90 -41240913.71 0.0258 0.0149

Venus -117624-02-27 16:05 J -41240685.02 -41240684.83 -41240684.64 0.0258 0.0127

Venus -117624-10-14 18:15 J -41240455.95 -41240455.74 -41240455.54 0.0259 0.0104

Venus -117623-05-31 20:53 J -41240226.83 -41240226.63 -41240226.41 0.0260 0.0080

Venus -117622-01-16 00:44 J -41239997.68 -41239997.47 -41239997.25 0.0261 0.0053

Venus -117622-09-02 05:46 J -41239768.47 -41239768.26 -41239768.04 0.0262 0.0026

Venus -117621-04-18 12:00 J -41239539.22 -41239539.00 -41239538.78 0.0264 0.0003

Venus -117621-12-03 19:27 J -41239309.91 -41239309.69 -41239309.47 0.0266 0.0032

Venus -117620-07-21 04:05 J -41239080.54 -41239080.33 -41239080.11 0.0268 0.0062

Venus -117619-03-07 14:39 J -41238851.10 -41238850.89 -41238850.68 0.0270 0.0091

Venus -117619-10-23 02:53 J -41238621.58 -41238621.38 -41238621.19 0.0273 0.0121

Moon -117618-01-16 22:48 J -41238535.74 -41238535.55 -41238535.33 0.0274 0.0147

Earth -117618-01-17 01:41 J -41238535.64 -41238535.43 -41238535.22 0.0274 0.0150 \*

Venus -117618-06-09 16:20 J -41238391.99 -41238391.82 -41238391.63 0.0276 0.0149

Venus -117617-01-25 07:41 J -41238162.34 -41238162.18 -41238162.00 0.0279 0.0176

Mars -117617-07-10 03:08 J -41237995.66 -41237995.37 -41237995.07 0.0281 0.0024

Venus -117617-09-11 00:44 J -41237932.62 -41237932.47 -41237932.31 0.0282 0.0200

Venus -117616-04-28 19:12 J -41237702.82 -41237702.70 -41237702.56 0.0285 0.0223

Venus -117616-12-14 15:22 J -41237472.96 -41237472.86 -41237472.73 0.0288 0.0241  
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Mercury -117601-05-22 18:00 J -41232199.91 -41232199.75 -41232199.59 0.0269 0.0097

Venus -117601-06-02 07:12 J -41232189.28 -41232189.20 -41232189.09 0.0269 0.0237

Mercury -117601-08-19 12:44 J -41232111.14 -41232110.97 -41232110.79 0.0268 0.0007

Mercury -117601-11-16 07:41 J -41232022.34 -41232022.18 -41232022.01 0.0267 0.0103

Venus -117600-01-17 10:05 J -41231960.17 -41231960.08 -41231959.98 0.0267 0.0238

Mercury -117600-02-13 02:53 J -41231933.49 -41231933.38 -41231933.26 0.0267 0.0203

Venus -117600-09-03 11:32 J -41231731.10 -41231731.02 -41231730.91 0.0265 0.0237

Venus -117599-04-20 12:44 J -41231502.06 -41231501.97 -41231501.86 0.0263 0.0232

Venus -117599-12-05 13:41 J -41231273.04 -41231272.93 -41231272.82 0.0261 0.0224

Venus -117598-07-22 14:10 J -41231044.02 -41231043.91 -41231043.78 0.0260 0.0213

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Venus -117595-01-23 16:20 J -41230128.00 -41230127.82 -41230127.64 0.0258 0.0147

Venus -117595-09-09 18:00 J -41229898.94 -41229898.75 -41229898.56 0.0258 0.0125

Venus -117594-04-26 20:10 J -41229669.86 -41229669.66 -41229669.46 0.0258 0.0101

Venus -117594-12-11 23:03 J -41229440.75 -41229440.54 -41229440.33 0.0259 0.0076

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Venus -117592-03-14 07:56 J -41228982.39 -41228982.17 -41228981.95 0.0262 0.0022

Venus -117592-10-29 13:56 J -41228753.14 -41228752.92 -41228752.70 0.0263 0.0009

Venus -117591-06-15 21:22 J -41228523.83 -41228523.61 -41228523.39 0.0265 0.0037

Venus -117590-01-31 06:15 J -41228294.45 -41228294.24 -41228294.03 0.0268 0.0067

Venus -117590-09-17 16:34 J -41228065.01 -41228064.81 -41228064.60 0.0270 0.0097

Earth -117589-01-11 12:29 J -41227949.15 -41227948.98 -41227948.79 0.0271 0.0188

Moon -117589-01-11 14:39 J -41227949.06 -41227948.89 -41227948.69 0.0271 0.0193 \*

Venus -117589-05-04 04:34 J -41227835.50 -41227835.31 -41227835.11 0.0273 0.0126

Venus -117589-12-19 18:00 J -41227605.92 -41227605.75 -41227605.56 0.0276 0.0155

Venus -117588-08-06 09:22 J -41227376.27 -41227376.11 -41227375.94 0.0279 0.0181

Venus -117587-03-24 02:24 J -41227146.55 -41227146.40 -41227146.25 0.0282 0.0205

Mars -117587-08-29 08:53 J -41226988.29 -41226988.13 -41226987.96 0.0284 0.0236

Venus -117587-11-08 20:53 J -41226916.75 -41226916.63 -41226916.49 0.0285 0.0227  
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 Venus -117585-02-11 14:10 J -41226456.99 -41226456.91 -41226456.80 0.0292 0.0257  
 Mercury -117585-03-09 10:48 J -41226430.15 -41226430.05 -41226429.95 0.0292 0.0201  
 Mercury -117585-06-06 00:44 J -41226341.60 -41226341.47 -41226341.34 0.0293 0.0099  
 Mercury -117585-09-02 14:24 J -41226253.04 -41226252.90 -41226252.77 0.0294 0.0008  
 Venus -117585-09-28 12:44 J -41226227.05 -41226226.97 -41226226.86 0.0295 0.0264  
 Mercury -117585-11-30 03:51 J -41226164.46 -41226164.34 -41226164.21 0.0295 0.0106  
 Mercury -117584-02-26 17:17 J -41226075.87 -41226075.78 -41226075.68 0.0296 0.0208  
 Venus -117584-05-16 12:29 J -41225997.07 -41225996.98 -41225996.88 0.0297 0.0265  
 Venus -117583-01-01 12:58 J -41225767.05 -41225766.96 -41225766.85 0.0300 0.0259  
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 Venus -117582-04-06 14:53 J -41225307.01 -41225306.88 -41225306.74 0.0303 0.0229  
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 Venus -117577-04-18 21:22 J -41223467.81 -41223467.61 -41223467.41 0.0296 0.0054  
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 Moon -117576-07-05 15:36 J -41223025.09 -41223024.85 -41223024.61 0.0290 0.0055  
 Earth -117576-07-05 18:44 J -41223024.95 -41223024.72 -41223024.48 0.0290 0.0057 \*  
 Venus -117576-07-22 02:24 J -41223008.58 -41223008.40 -41223008.21 0.0290 0.0123  
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 Venus -117575-10-24 00:44 J -41222549.63 -41222549.47 -41222549.30 0.0283 0.0177  
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Venus -117573-09-10 22:48 J -41221861.66 -41221861.55 -41221861.43 0.0274 0.0227  
 Venus -117572-04-28 03:36 J -41221632.45 -41221632.35 -41221632.24 0.0271 0.0236  
 Mercury -117572-07-12 21:22 J -41221556.69 -41221556.61 -41221556.52 0.0270 0.0237  
 Mercury -117572-10-09 16:05 J -41221467.98 -41221467.83 -41221467.68 0.0269 0.0137  
 Venus -117572-12-13 06:58 J -41221403.29 -41221403.21 -41221403.10 0.0269 0.0241  
 Mercury -117571-01-06 10:48 J -41221379.22 -41221379.05 -41221378.87 0.0268 0.0037  
 Mercury -117571-04-05 05:46 J -41221290.43 -41221290.26 -41221290.09 0.0267 0.0063  
 Mercury -117571-07-03 00:44 J -41221201.61 -41221201.47 -41221201.32 0.0267 0.0164  
 Venus -117571-07-30 09:51 J -41221174.17 -41221174.09 -41221173.99 0.0266 0.0242  
 Mercury -117571-09-29 19:56 J -41221112.68 -41221112.67 -41221112.65 0.0266 0.0264  
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Venus -117559-07-01 19:56 J -41216819.84 -41216819.67 -41216819.49 0.0276 0.0157  
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 Venus -117536-02-14 19:27 J -41208555.87 -41208555.69 -41208555.51 0.0258 0.0143  
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 Venus -117531-02-22 10:05 J -41206722.29 -41206722.08 -41206721.87 0.0268 0.0075  
 Venus -117531-10-09 20:39 J -41206492.84 -41206492.64 -41206492.44 0.0270 0.0105

Moon -117530-01-12 05:17 J -41206398.50 -41206398.28 -41206398.05 0.0271 0.0129  
 Earth -117530-01-12 08:24 J -41206398.36 -41206398.15 -41206397.92 0.0271 0.0131 \*  
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 Venus -117529-01-11 22:05 J -41206033.75 -41206033.58 -41206033.40 0.0276 0.0163  
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Moon -117517-07-06 09:22 J -41201474.34 -41201474.11 -41201473.88 0.0290 0.0009  
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 Mercury -117484-12-02 12:29 J -41189272.05 -41189271.98 -41189271.90 0.0271 0.0242  
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 Mercury -117483-05-29 01:56 J -41189094.59 -41189094.42 -41189094.24 0.0269 0.0042  
 Venus -117483-07-17 11:46 J -41189045.09 -41189045.01 -41189044.92 0.0269 0.0246  
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 Mercury -117482-02-19 11:17 J -41188828.05 -41188828.03 -41188827.99 0.0267 0.0262  
 Venus -117482-03-03 14:24 J -41188815.97 -41188815.90 -41188815.81 0.0267 0.0246  
 Venus -117482-10-18 16:34 J -41188586.89 -41188586.81 -41188586.72 0.0265 0.0242  
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 Venus -117480-01-18 18:58 J -41188128.81 -41188128.71 -41188128.59 0.0261 0.0226  
 Venus -117480-09-04 19:41 J -41187899.79 -41187899.68 -41187899.55 0.0260 0.0213  
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 Venus -117477-10-24 01:12 J -41186754.65 -41186754.45 -41186754.26 0.0258 0.0116  
 Venus -117476-06-10 03:36 J -41186525.56 -41186525.35 -41186525.15 0.0259 0.0090  
 Venus -117475-01-25 06:44 J -41186296.43 -41186296.22 -41186296.00 0.0260 0.0064

Venus -117475-09-11 11:03 J -41186067.25 -41186067.04 -41186066.82 0.0261 0.0036  
 Venus -117474-04-28 16:34 J -41185838.03 -41185837.81 -41185837.59 0.0262 0.0007  
 Venus -117474-12-13 22:48 J -41185608.77 -41185608.55 -41185608.33 0.0264 0.0024  
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 Venus -117472-11-01 02:10 J -41184920.60 -41184920.41 -41184920.20 0.0271 0.0115  
 Moon -117471-01-13 04:48 J -41184847.53 -41184847.30 -41184847.06 0.0271 0.0063  
 Earth -117471-01-13 07:27 J -41184847.43 -41184847.19 -41184846.95 0.0271 0.0069 \*  
 Venus -117471-06-18 14:24 J -41184691.08 -41184690.90 -41184690.71 0.0273 0.0144  
 Venus -117470-02-03 04:05 J -41184461.50 -41184461.33 -41184461.16 0.0276 0.0172  
 Mars -117470-03-09 18:58 J -41184426.92 -41184426.71 -41184426.48 0.0277 0.0179  
 Venus -117470-09-20 19:27 J -41184231.84 -41184231.69 -41184231.54 0.0279 0.0199  
 Venus -117469-05-07 12:00 J -41184002.12 -41184002.00 -41184001.85 0.0282 0.0223  
 Venus -117469-12-23 06:58 J -41183772.32 -41183772.21 -41183772.10 0.0286 0.0242  
 Venus -117468-08-10 02:53 J -41183542.47 -41183542.38 -41183542.29 0.0289 0.0257  
 Mercury -117468-12-17 02:39 J -41183413.46 -41183413.39 -41183413.32 0.0291 0.0248  
 Mercury -117467-03-15 16:34 J -41183324.93 -41183324.81 -41183324.69 0.0292 0.0147  
 Venus -117467-03-28 00:00 J -41183312.57 -41183312.50 -41183312.41 0.0292 0.0268  
 Mercury -117467-06-12 06:15 J -41183236.38 -41183236.24 -41183236.11 0.0293 0.0045  
 Mercury -117467-09-08 19:41 J -41183147.81 -41183147.68 -41183147.54 0.0294 0.0057  
 Venus -117467-11-12 22:20 J -41183082.63 -41183082.57 -41183082.48 0.0295 0.0273  
 Mercury -117467-12-06 09:08 J -41183059.23 -41183059.12 -41183059.00 0.0295 0.0158  
 Mercury -117466-03-04 22:34 J -41182970.62 -41182970.56 -41182970.49 0.0296 0.0259  
 Venus -117466-06-30 21:51 J -41182852.66 -41182852.59 -41182852.50 0.0297 0.0271  
 Venus -117465-02-15 22:05 J -41182622.67 -41182622.58 -41182622.48 0.0300 0.0263  
 Venus -117465-10-02 22:34 J -41182392.67 -41182392.56 -41182392.44 0.0302 0.0248  
 Venus -117464-05-20 23:17 J -41182162.66 -41182162.53 -41182162.39 0.0303 0.0226  
 Venus -117463-01-06 00:00 J -41181932.65 -41181932.50 -41181932.34 0.0304 0.0199  
 Venus -117463-08-24 00:15 J -41181702.66 -41181702.49 -41181702.32 0.0304 0.0166  
 Venus -117462-04-10 23:46 J -41181472.69 -41181472.51 -41181472.33 0.0304 0.0129

Venus	-117462-11-26 22:20 J	-41181242.77	-41181242.57	-41181242.38	0.0303	0.0089
Venus	-117461-07-13 19:27 J	-41181012.89	-41181012.69	-41181012.49	0.0302	0.0048
Venus	-117460-02-28 15:36 J	-41180783.06	-41180782.85	-41180782.65	0.0300	0.0009
Venus	-117460-10-16 09:51 J	-41180553.29	-41180553.09	-41180552.88	0.0298	0.0035
Venus	-117459-06-03 02:39 J	-41180323.58	-41180323.39	-41180323.19	0.0295	0.0073
Venus	-117458-01-18 17:46 J	-41180093.94	-41180093.76	-41180093.56	0.0292	0.0109
Earth	-117458-07-08 06:15 J	-41179923.48	-41179923.24	-41179923.00	0.0290	0.0053
Moon	-117458-07-08 09:08 J	-41179923.35	-41179923.12	-41179922.89	0.0290	0.0044 *
Venus	-117458-09-05 07:12 J	-41179864.37	-41179864.20	-41179864.01	0.0289	0.0142
Venus	-117457-04-21 19:12 J	-41179634.86	-41179634.70	-41179634.53	0.0286	0.0170
Venus	-117457-12-07 05:17 J	-41179405.42	-41179405.28	-41179405.12	0.0283	0.0194
Mars	-117456-06-06 10:34 J	-41179224.31	-41179224.06	-41179223.81	0.0280	0.0142
Venus	-117456-07-24 13:56 J	-41179176.04	-41179175.92	-41179175.77	0.0280	0.0214
Venus	-117455-03-10 21:22 J	-41178946.72	-41178946.61	-41178946.49	0.0277	0.0229
Venus	-117455-10-26 03:22 J	-41178717.45	-41178717.36	-41178717.25	0.0274	0.0240
Venus	-117454-06-12 08:39 J	-41178488.23	-41178488.14	-41178488.06	0.0271	0.0247
Mercury	-117454-07-19 05:32 J	-41178451.40	-41178451.27	-41178451.14	0.0271	0.0180
Mercury	-117454-10-16 00:15 J	-41178362.65	-41178362.49	-41178362.32	0.0270	0.0080
Mercury	-117453-01-12 19:12 J	-41178273.87	-41178273.70	-41178273.52	0.0269	0.0021
Venus	-117453-01-27 12:15 J	-41178259.06	-41178258.99	-41178258.91	0.0269	0.0249
Mercury	-117453-04-10 14:24 J	-41178185.06	-41178184.90	-41178184.74	0.0268	0.0122
Mercury	-117453-07-08 09:36 J	-41178096.20	-41178096.10	-41178096.00	0.0267	0.0223
Venus	-117453-09-12 15:08 J	-41178029.94	-41178029.87	-41178029.79	0.0266	0.0249
Venus	-117452-04-29 17:17 J	-41177800.86	-41177800.78	-41177800.70	0.0264	0.0244
Venus	-117452-12-14 18:58 J	-41177571.80	-41177571.71	-41177571.62	0.0262	0.0237
Venus	-117451-07-31 19:56 J	-41177342.77	-41177342.67	-41177342.55	0.0261	0.0227
Venus	-117450-03-17 20:39 J	-41177113.75	-41177113.64	-41177113.50	0.0260	0.0214
Venus	-117450-11-01 21:36 J	-41176884.73	-41176884.60	-41176884.45	0.0259	0.0198
Venus	-117449-06-17 22:34 J	-41176655.72	-41176655.56	-41176655.40	0.0258	0.0180
Venus	-117448-02-01 23:32 J	-41176426.69	-41176426.52	-41176426.34	0.0258	0.0160

Venus -117448-09-19 00:58 J -41176197.64 -41176197.46 -41176197.27 0.0258 0.0138  
 Venus -117447-05-06 02:53 J -41175968.57 -41175968.38 -41175968.17 0.0258 0.0114  
 Venus -117447-12-21 05:46 J -41175739.47 -41175739.26 -41175739.05 0.0259 0.0087  
 Venus -117446-08-07 09:08 J -41175510.33 -41175510.12 -41175509.90 0.0260 0.0060  
 Venus -117445-03-23 13:27 J -41175281.15 -41175280.94 -41175280.72 0.0261 0.0032  
 Venus -117445-11-07 18:58 J -41175051.93 -41175051.71 -41175051.49 0.0263 0.0003  
 Venus -117444-06-25 01:27 J -41174822.66 -41174822.44 -41174822.22 0.0264 0.0028  
 Venus -117443-02-09 09:08 J -41174593.33 -41174593.12 -41174592.90 0.0266 0.0059  
 Venus -117443-09-26 18:29 J -41174363.93 -41174363.73 -41174363.52 0.0269 0.0089  
 Venus -117442-05-14 05:17 J -41174134.47 -41174134.28 -41174134.08 0.0271 0.0119  
 Venus -117442-12-29 17:32 J -41173904.95 -41173904.77 -41173904.58 0.0274 0.0148  
 Venus -117441-08-15 07:12 J -41173675.36 -41173675.20 -41173675.03 0.0277 0.0176  
 Venus -117440-04-01 22:34 J -41173445.70 -41173445.56 -41173445.40 0.0280 0.0202  
 Mars -117440-04-27 12:00 J -41173420.29 -41173420.00 -41173419.71 0.0280 0.0027  
 Venus -117440-11-17 15:51 J -41173215.96 -41173215.84 -41173215.71 0.0283 0.0225  
 Venus -117439-07-05 10:34 J -41172986.17 -41172986.06 -41172985.95 0.0286 0.0244  
 Venus -117438-02-20 06:29 J -41172756.32 -41172756.23 -41172756.14 0.0289 0.0260  
 Mercury -117438-05-06 03:36 J -41172681.38 -41172681.35 -41172681.32 0.0290 0.0281  
 Mercury -117438-08-02 17:32 J -41172592.88 -41172592.77 -41172592.66 0.0291 0.0181  
 Venus -117438-10-08 03:51 J -41172526.42 -41172526.34 -41172526.26 0.0292 0.0270  
 Mercury -117438-10-30 07:12 J -41172504.33 -41172504.20 -41172504.07 0.0293 0.0079  
 Mercury -117437-01-26 20:39 J -41172415.77 -41172415.64 -41172415.50 0.0294 0.0024  
 Mercury -117437-04-24 10:20 J -41172327.20 -41172327.07 -41172326.95 0.0295 0.0123  
 Venus -117437-05-25 02:10 J -41172296.48 -41172296.41 -41172296.32 0.0295 0.0274  
 Mercury -117437-07-21 23:32 J -41172238.60 -41172238.52 -41172238.43 0.0296 0.0225  
 Venus -117436-01-10 01:41 J -41172066.50 -41172066.43 -41172066.34 0.0298 0.0272  
 Venus -117436-08-28 01:56 J -41171836.51 -41171836.42 -41171836.31 0.0300 0.0263  
 Venus -117435-04-15 02:39 J -41171606.50 -41171606.39 -41171606.27 0.0302 0.0247  
 Venus -117435-12-01 03:08 J -41171376.49 -41171376.37 -41171376.22 0.0303 0.0225  
 Venus -117434-07-19 03:51 J -41171146.49 -41171146.34 -41171146.18 0.0304 0.0196



Venus -117433-03-05 04:05 J -41170916.50 -41170916.33 -41170916.15 0.0304 0.0163  
 Venus -117433-10-21 03:22 J -41170686.54 -41170686.36 -41170686.17 0.0304 0.0125  
 Venus -117432-06-08 01:41 J -41170456.62 -41170456.43 -41170456.23 0.0303 0.0085  
 Venus -117431-01-23 22:48 J -41170226.75 -41170226.55 -41170226.35 0.0301 0.0043  
 Venus -117431-09-10 18:29 J -41169996.93 -41169996.73 -41169996.52 0.0299 0.0006  
 Venus -117430-04-28 12:58 J -41169767.16 -41169766.96 -41169766.76 0.0297 0.0040  
 Venus -117430-12-14 05:32 J -41169537.46 -41169537.27 -41169537.07 0.0295 0.0079  
 Venus -117429-07-30 20:39 J -41169307.83 -41169307.64 -41169307.45 0.0292 0.0114  
 Venus -117428-03-17 10:05 J -41169078.26 -41169078.08 -41169077.90 0.0289 0.0147  
 Venus -117428-11-01 21:51 J -41168848.75 -41168848.59 -41168848.42 0.0286 0.0175  
 Venus -117427-06-19 08:10 J -41168619.30 -41168619.16 -41168619.01 0.0283 0.0199  
 Venus -117426-02-03 17:03 J -41168389.92 -41168389.79 -41168389.66 0.0280 0.0218  
 Venus -117426-09-21 00:15 J -41168160.59 -41168160.49 -41168160.37 0.0277 0.0232  
 Venus -117425-05-07 06:15 J -41167931.32 -41167931.24 -41167931.13 0.0274 0.0243  
 Mercury -117425-12-05 05:03 J -41167719.40 -41167719.29 -41167719.18 0.0271 0.0212  
 Venus -117425-12-22 11:03 J -41167702.11 -41167702.04 -41167701.94 0.0271 0.0250  
 Mercury -117424-03-03 23:46 J -41167630.67 -41167630.51 -41167630.35 0.0270 0.0111  
 Mercury -117424-05-31 18:44 J -41167541.90 -41167541.72 -41167541.55 0.0269 0.0011  
 Venus -117424-08-08 15:08 J -41167472.94 -41167472.87 -41167472.79 0.0269 0.0251  
 Mercury -117424-08-28 13:41 J -41167453.10 -41167452.93 -41167452.76 0.0269 0.0091  
 Mercury -117424-11-25 08:53 J -41167364.25 -41167364.13 -41167364.00 0.0268 0.0192  
 Venus -117423-03-25 18:00 J -41167243.81 -41167243.75 -41167243.67 0.0267 0.0250  
 Venus -117423-11-09 20:24 J -41167014.73 -41167014.65 -41167014.57 0.0265 0.0245  
 Venus -117422-06-26 22:05 J -41166785.67 -41166785.58 -41166785.49 0.0263 0.0237  
 Venus -117421-02-10 23:03 J -41166556.63 -41166556.54 -41166556.42 0.0261 0.0227  
 Venus -117421-09-27 00:15 J -41166327.61 -41166327.49 -41166327.37 0.0260 0.0213  
 Venus -117420-05-14 00:58 J -41166098.60 -41166098.46 -41166098.32 0.0259 0.0196  
 Venus -117420-12-29 01:56 J -41165869.58 -41165869.42 -41165869.26 0.0259 0.0178  
 Venus -117419-08-15 03:08 J -41165640.54 -41165640.37 -41165640.19 0.0258 0.0157  
 Venus -117418-04-01 04:48 J -41165411.49 -41165411.30 -41165411.11 0.0258 0.0135

Venus	-117418-11-16 06:29 J	-41165182.42	-41165182.23	-41165182.02	0.0259	0.0111
Venus	-117417-07-02 09:22 J	-41164953.32	-41164953.11	-41164952.90	0.0259	0.0084
Venus	-117416-02-16 12:58 J	-41164724.18	-41164723.96	-41164723.75	0.0260	0.0056
Venus	-117416-10-03 17:32 J	-41164494.99	-41164494.77	-41164494.55	0.0261	0.0027
Venus	-117415-05-20 23:03 J	-41164265.76	-41164265.54	-41164265.32	0.0263	0.0004
Venus	-117414-01-05 05:46 J	-41164036.48	-41164036.26	-41164036.04	0.0264	0.0033
Venus	-117414-08-22 13:41 J	-41163807.14	-41163806.93	-41163806.71	0.0266	0.0064
Venus	-117413-04-07 23:03 J	-41163577.74	-41163577.54	-41163577.33	0.0268	0.0095
Venus	-117413-11-23 09:51 J	-41163348.28	-41163348.09	-41163347.89	0.0271	0.0126
Earth	-117412-01-14 09:36 J	-41163296.35	-41163296.10	-41163295.85	0.0272	0.0004
Moon	-117412-01-14 12:00 J	-41163296.25	-41163296.00	-41163295.76	0.0272	0.0012 *
Venus	-117412-07-10 22:20 J	-41163118.75	-41163118.57	-41163118.39	0.0274	0.0155
Venus	-117411-02-25 12:00 J	-41162889.16	-41162889.00	-41162888.84	0.0277	0.0183
Venus	-117411-10-13 03:22 J	-41162659.49	-41162659.36	-41162659.21	0.0280	0.0209
Venus	-117410-05-30 20:24 J	-41162429.76	-41162429.65	-41162429.52	0.0283	0.0232
Mars	-117410-06-16 22:48 J	-41162412.69	-41162412.55	-41162412.38	0.0283	0.0240
Venus	-117409-01-15 14:53 J	-41162199.97	-41162199.88	-41162199.77	0.0286	0.0251
Venus	-117409-09-01 10:48 J	-41161970.12	-41161970.05	-41161969.96	0.0289	0.0265
Mercury	-117409-12-19 18:29 J	-41161860.82	-41161860.73	-41161860.63	0.0291	0.0214
Mercury	-117408-03-18 08:24 J	-41161772.28	-41161772.15	-41161772.02	0.0292	0.0113
Venus	-117408-04-19 08:10 J	-41161740.22	-41161740.16	-41161740.08	0.0292	0.0274
Mercury	-117408-06-14 21:51 J	-41161683.72	-41161683.59	-41161683.45	0.0293	0.0016
Mercury	-117408-09-11 11:32 J	-41161595.15	-41161595.02	-41161594.89	0.0294	0.0089
Venus	-117408-12-05 06:44 J	-41161510.28	-41161510.22	-41161510.15	0.0295	0.0277
Mercury	-117408-12-09 00:58 J	-41161506.57	-41161506.46	-41161506.36	0.0295	0.0190
Mercury	-117407-03-07 14:10 J	-41161417.93	-41161417.91	-41161417.88	0.0296	0.0291
Venus	-117407-07-23 06:00 J	-41161280.32	-41161280.25	-41161280.16	0.0298	0.0274
Venus	-117406-03-10 06:00 J	-41161050.34	-41161050.25	-41161050.15	0.0300	0.0264
Venus	-117406-10-26 06:29 J	-41160820.35	-41160820.23	-41160820.11	0.0302	0.0247
Venus	-117405-06-12 06:58 J	-41160590.35	-41160590.21	-41160590.07	0.0303	0.0223

Venus -117404-01-28 07:27 J -41160360.35 -41160360.19 -41160360.03 0.0304 0.0194  
 Venus -117404-09-15 07:12 J -41160130.37 -41160130.20 -41160130.02 0.0304 0.0160  
 Venus -117403-05-03 06:15 J -41159900.42 -41159900.24 -41159900.04 0.0304 0.0122  
 Venus -117403-12-19 04:34 J -41159670.50 -41159670.31 -41159670.11 0.0303 0.0081  
 Venus -117402-08-06 01:41 J -41159440.63 -41159440.43 -41159440.23 0.0302 0.0039  
 Venus -117401-03-22 21:22 J -41159210.81 -41159210.61 -41159210.41 0.0300 0.0004  
 Venus -117401-11-07 15:22 J -41158981.06 -41158980.86 -41158980.65 0.0297 0.0045  
 Venus -117400-06-25 07:56 J -41158751.36 -41158751.17 -41158750.97 0.0295 0.0084  
 Venus -117399-02-09 22:48 J -41158521.73 -41158521.55 -41158521.36 0.0292 0.0119  
 Earth -117399-07-09 04:05 J -41158372.55 -41158372.33 -41158372.11 0.0290 0.0118  
 Moon -117399-07-09 06:44 J -41158372.45 -41158372.22 -41158371.99 0.0290 0.0105 \*  
 Venus -117399-09-27 12:15 J -41158292.17 -41158291.99 -41158291.82 0.0289 0.0151  
 Venus -117398-05-15 00:00 J -41158062.66 -41158062.50 -41158062.34 0.0286 0.0179  
 Mars -117398-09-10 14:24 J -41157944.19 -41157943.90 -41157943.61 0.0284 0.0071  
 Venus -117398-12-30 09:51 J -41157833.22 -41157833.09 -41157832.94 0.0283 0.0203  
 Venus -117397-08-15 18:29 J -41157603.85 -41157603.73 -41157603.60 0.0279 0.0222  
 Venus -117396-04-02 01:41 J -41157374.53 -41157374.43 -41157374.32 0.0276 0.0236  
 Venus -117396-11-17 07:41 J -41157145.26 -41157145.18 -41157145.09 0.0274 0.0246  
 Mercury -117395-04-24 03:36 J -41156987.41 -41156987.35 -41156987.27 0.0272 0.0248  
 Venus -117395-07-04 12:29 J -41156916.04 -41156915.98 -41156915.89 0.0271 0.0253  
 Mercury -117395-07-21 22:20 J -41156898.71 -41156898.57 -41156898.42 0.0271 0.0148  
 Mercury -117395-10-18 17:17 J -41156809.95 -41156809.78 -41156809.60 0.0270 0.0047  
 Mercury -117394-01-15 12:15 J -41156721.16 -41156720.99 -41156720.81 0.0269 0.0055  
 Venus -117394-02-18 16:34 J -41156686.87 -41156686.81 -41156686.74 0.0268 0.0254  
 Mercury -117394-04-14 07:27 J -41156632.33 -41156632.19 -41156632.04 0.0268 0.0156  
 Mercury -117394-07-12 02:39 J -41156543.43 -41156543.39 -41156543.33 0.0267 0.0257  
 Venus -117394-10-05 19:41 J -41156457.75 -41156457.68 -41156457.62 0.0266 0.0252  
 Venus -117393-05-21 21:51 J -41156228.66 -41156228.59 -41156228.51 0.0264 0.0247  
 Venus -117392-01-05 23:32 J -41155999.60 -41155999.52 -41155999.43 0.0262 0.0239  
 Venus -117392-08-23 00:58 J -41155770.56 -41155770.46 -41155770.35 0.0261 0.0227

Venus -117391-04-09 01:56 J -41155541.54 -41155541.42 -41155541.29 0.0260 0.0213  
 Venus -117391-11-24 02:53 J -41155312.52 -41155312.38 -41155312.23 0.0259 0.0196  
 Venus -117390-07-11 03:51 J -41155083.49 -41155083.34 -41155083.17 0.0258 0.0178  
 Venus -117389-02-25 05:17 J -41154854.45 -41154854.28 -41154854.10 0.0258 0.0156  
 Venus -117389-10-11 06:58 J -41154625.39 -41154625.21 -41154625.01 0.0258 0.0133  
 Venus -117388-05-28 09:08 J -41154396.31 -41154396.12 -41154395.91 0.0259 0.0108  
 Venus -117387-01-12 12:15 J -41154167.20 -41154166.99 -41154166.78 0.0259 0.0081  
 Venus -117387-08-29 16:05 J -41153938.04 -41153937.83 -41153937.61 0.0260 0.0053  
 Venus -117386-04-15 20:53 J -41153708.85 -41153708.63 -41153708.41 0.0262 0.0023  
 Venus -117386-12-01 02:24 J -41153479.62 -41153479.40 -41153479.17 0.0263 0.0009  
 Venus -117385-07-17 09:22 J -41153250.33 -41153250.11 -41153249.89 0.0265 0.0038  
 Venus -117384-03-03 17:32 J -41153020.98 -41153020.77 -41153020.56 0.0267 0.0069  
 Venus -117384-10-19 03:08 J -41152791.57 -41152791.37 -41152791.16 0.0269 0.0100  
 Venus -117383-06-05 14:10 J -41152562.10 -41152561.91 -41152561.72 0.0272 0.0130  
 Venus -117382-01-21 02:24 J -41152332.56 -41152332.40 -41152332.21 0.0274 0.0160  
 Mars -117382-08-03 05:03 J -41152138.51 -41152138.29 -41152138.05 0.0277 0.0165  
 Venus -117382-09-07 16:48 J -41152102.96 -41152102.80 -41152102.64 0.0277 0.0187  
 Venus -117381-04-24 08:10 J -41151873.29 -41151873.16 -41151873.01 0.0280 0.0212  
 Venus -117381-12-10 01:27 J -41151643.55 -41151643.44 -41151643.31 0.0283 0.0235  
 Venus -117380-07-27 20:24 J -41151413.75 -41151413.65 -41151413.55 0.0287 0.0253  
 Venus -117379-03-14 16:20 J -41151183.89 -41151183.82 -41151183.73 0.0290 0.0267  
 Mercury -117379-05-08 19:56 J -41151128.74 -41151128.67 -41151128.59 0.0290 0.0244  
 Mercury -117379-08-05 09:36 J -41151040.21 -41151040.10 -41151039.97 0.0292 0.0144  
 Venus -117379-10-30 13:41 J -41150953.99 -41150953.93 -41150953.86 0.0293 0.0276  
 Mercury -117379-11-01 23:32 J -41150951.66 -41150951.52 -41150951.39 0.0293 0.0043  
 Mercury -117378-01-29 12:58 J -41150863.09 -41150862.96 -41150862.82 0.0294 0.0059  
 Mercury -117378-04-28 02:24 J -41150774.51 -41150774.40 -41150774.28 0.0295 0.0160  
 Venus -117378-06-17 12:00 J -41150724.05 -41150724.00 -41150723.92 0.0295 0.0279  
 Mercury -117378-07-25 15:51 J -41150685.90 -41150685.84 -41150685.78 0.0296 0.0260  
 Venus -117377-02-02 11:46 J -41150494.08 -41150494.01 -41150493.93 0.0298 0.0274

Venus -117377-09-19 11:46 J -41150264.10 -41150264.01 -41150263.91 0.0300 0.0263  
 Venus -117376-05-07 12:00 J -41150034.11 -41150034.00 -41150033.87 0.0302 0.0246  
 Venus -117376-12-23 12:44 J -41149804.10 -41149803.97 -41149803.83 0.0303 0.0221  
 Venus -117375-08-10 13:12 J -41149574.11 -41149573.95 -41149573.79 0.0304 0.0191  
 Venus -117374-03-28 12:58 J -41149344.13 -41149343.96 -41149343.78 0.0304 0.0156  
 Venus -117374-11-13 12:00 J -41149114.18 -41149114.00 -41149113.81 0.0303 0.0117  
 Venus -117373-06-30 10:05 J -41148884.28 -41148884.08 -41148883.88 0.0302 0.0075  
 Venus -117372-02-15 06:58 J -41148654.41 -41148654.21 -41148654.01 0.0301 0.0033  
 Venus -117372-10-03 02:10 J -41148424.61 -41148424.41 -41148424.20 0.0299 0.0012  
 Venus -117371-05-20 20:10 J -41148194.86 -41148194.66 -41148194.46 0.0297 0.0051  
 Venus -117370-01-05 12:29 J -41147965.18 -41147964.98 -41147964.79 0.0294 0.0090  
 Moon -117370-07-03 09:36 J -41147786.15 -41147786.10 -41147786.03 0.0292 0.0281  
 Earth -117370-07-03 11:32 J -41147786.11 -41147786.02 -41147785.92 0.0292 0.0267 \*  
 Venus -117370-08-23 03:08 J -41147735.55 -41147735.37 -41147735.18 0.0291 0.0126  
 Venus -117369-04-08 16:20 J -41147505.99 -41147505.82 -41147505.65 0.0288 0.0158  
 Venus -117369-11-24 03:51 J -41147276.49 -41147276.34 -41147276.18 0.0285 0.0185  
 Venus -117368-07-11 13:41 J -41147047.06 -41147046.93 -41147046.78 0.0282 0.0209  
 Mars -117368-10-30 11:32 J -41146936.27 -41146936.02 -41146935.77 0.0281 0.0146  
 Venus -117367-02-25 22:20 J -41146817.68 -41146817.57 -41146817.44 0.0279 0.0227  
 Venus -117367-10-13 05:32 J -41146588.36 -41146588.27 -41146588.16 0.0276 0.0241  
 Venus -117366-05-30 11:46 J -41146359.09 -41146359.01 -41146358.92 0.0273 0.0250  
 Mercury -117366-12-08 22:20 J -41146166.70 -41146166.57 -41146166.44 0.0271 0.0177  
 Venus -117365-01-14 16:34 J -41146129.87 -41146129.81 -41146129.74 0.0271 0.0255  
 Mercury -117365-03-06 17:03 J -41146077.95 -41146077.79 -41146077.62 0.0270 0.0077  
 Mercury -117365-06-03 12:15 J -41145989.17 -41145988.99 -41145988.82 0.0269 0.0025  
 Venus -117365-08-30 20:10 J -41145900.71 -41145900.66 -41145900.58 0.0269 0.0257  
 Mercury -117365-08-31 07:12 J -41145900.35 -41145900.20 -41145900.04 0.0269 0.0127  
 Mercury -117365-11-28 02:39 J -41145811.48 -41145811.39 -41145811.30 0.0268 0.0228  
 Venus -117364-04-16 23:17 J -41145671.58 -41145671.53 -41145671.46 0.0266 0.0254  
 Venus -117364-12-02 01:41 J -41145442.50 -41145442.43 -41145442.35 0.0264 0.0248

Venus	-117363-07-19 03:36 J	-41145213.43	-41145213.35	-41145213.26	0.0263	0.0239
Venus	-117362-03-05 05:03 J	-41144984.39	-41144984.29	-41144984.18	0.0261	0.0227
Venus	-117362-10-20 06:00 J	-41144755.37	-41144755.25	-41144755.12	0.0260	0.0212
Venus	-117361-06-05 07:12 J	-41144526.34	-41144526.20	-41144526.06	0.0259	0.0195
Venus	-117360-01-20 08:24 J	-41144297.31	-41144297.15	-41144296.99	0.0259	0.0175
Venus	-117360-09-06 09:51 J	-41144068.26	-41144068.09	-41144067.91	0.0259	0.0154
Venus	-117359-04-23 11:32 J	-41143839.20	-41143839.02	-41143838.82	0.0259	0.0130
Venus	-117359-12-08 14:10 J	-41143610.12	-41143609.91	-41143609.71	0.0259	0.0104
Venus	-117358-07-25 17:03 J	-41143381.00	-41143380.79	-41143380.58	0.0260	0.0077
Venus	-117357-03-10 20:53 J	-41143151.84	-41143151.63	-41143151.41	0.0261	0.0049
Venus	-117357-10-26 01:56 J	-41142922.64	-41142922.42	-41142922.20	0.0262	0.0019
Venus	-117356-06-12 07:41 J	-41142693.40	-41142693.18	-41142692.95	0.0263	0.0013
Venus	-117355-01-27 14:53 J	-41142464.10	-41142463.88	-41142463.66	0.0265	0.0043
Venus	-117355-09-13 23:17 J	-41142234.74	-41142234.53	-41142234.32	0.0267	0.0075
Venus	-117354-05-01 09:08 J	-41142005.32	-41142005.12	-41142004.92	0.0269	0.0106
Venus	-117354-12-16 20:10 J	-41141775.84	-41141775.66	-41141775.47	0.0272	0.0137
Earth	-117353-01-16 15:36 J	-41141745.08	-41141744.85	-41141744.60	0.0272	0.0081
Moon	-117353-01-16 18:58 J	-41141744.94	-41141744.71	-41141744.47	0.0272	0.0094 *
Venus	-117353-08-02 08:39 J	-41141546.30	-41141546.14	-41141545.96	0.0274	0.0167
Venus	-117352-03-19 23:03 J	-41141316.69	-41141316.54	-41141316.39	0.0277	0.0194
Mars	-117352-09-21 05:46 J	-41141131.54	-41141131.26	-41141130.96	0.0280	0.0037
Venus	-117352-11-04 14:39 J	-41141087.01	-41141086.89	-41141086.75	0.0280	0.0220
Venus	-117351-06-22 08:10 J	-41140857.27	-41140857.16	-41140857.05	0.0283	0.0242
Venus	-117350-02-07 02:39 J	-41140627.47	-41140627.39	-41140627.30	0.0286	0.0260
Venus	-117350-09-24 22:48 J	-41140397.62	-41140397.55	-41140397.48	0.0289	0.0273
Mercury	-117350-09-25 21:36 J	-41140396.64	-41140396.60	-41140396.55	0.0289	0.0273
Mercury	-117350-12-23 11:32 J	-41140308.13	-41140308.02	-41140307.91	0.0291	0.0173
Mercury	-117349-03-21 01:12 J	-41140219.58	-41140219.45	-41140219.32	0.0292	0.0072
Venus	-117349-05-11 19:56 J	-41140167.72	-41140167.67	-41140167.61	0.0292	0.0281
Mercury	-117349-06-17 14:39 J	-41140131.02	-41140130.89	-41140130.75	0.0293	0.0030

Mercury -117349-09-14 04:05 J -41140042.45 -41140042.33 -41140042.20 0.0294 0.0129

Mercury -117349-12-11 17:32 J -41139953.85 -41139953.77 -41139953.68 0.0295 0.0229

Venus -117349-12-27 18:15 J -41139937.78 -41139937.74 -41139937.67 0.0295 0.0283

Venus -117348-08-14 17:32 J -41139707.83 -41139707.77 -41139707.68 0.0298 0.0277

Venus -117347-04-01 17:32 J -41139477.86 -41139477.77 -41139477.67 0.0300 0.0264

Venus -117347-11-17 17:32 J -41139247.88 -41139247.77 -41139247.64 0.0302 0.0246

Venus -117346-07-05 18:00 J -41139017.89 -41139017.75 -41139017.61 0.0303 0.0220

Venus -117345-02-20 18:15 J -41138787.90 -41138787.74 -41138787.58 0.0304 0.0189

Venus -117345-10-07 17:32 J -41138557.94 -41138557.77 -41138557.58 0.0304 0.0153

Venus -117344-05-25 16:20 J -41138328.00 -41138327.82 -41138327.62 0.0303 0.0113

Venus -117343-01-10 14:10 J -41138098.10 -41138097.91 -41138097.71 0.0302 0.0071

Venus -117343-08-28 10:48 J -41137868.25 -41137868.05 -41137867.85 0.0301 0.0028

Venus -117342-04-15 06:15 J -41137638.45 -41137638.24 -41137638.04 0.0299 0.0015

Venus -117342-11-30 23:46 J -41137408.71 -41137408.51 -41137408.31 0.0297 0.0056

Venus -117341-07-17 15:51 J -41137179.03 -41137178.84 -41137178.64 0.0294 0.0095

Venus -117340-03-04 06:29 J -41136949.41 -41136949.23 -41136949.05 0.0291 0.0130

Moon -117340-07-10 03:36 J -41136821.54 -41136821.35 -41136821.15 0.0290 0.0177

Earth -117340-07-10 06:15 J -41136821.42 -41136821.24 -41136821.06 0.0290 0.0194 \*

Venus -117340-10-19 19:12 J -41136719.86 -41136719.70 -41136719.52 0.0288 0.0162

Venus -117339-06-06 06:44 J -41136490.37 -41136490.22 -41136490.06 0.0285 0.0190

Venus -117338-01-21 16:34 J -41136260.94 -41136260.81 -41136260.67 0.0282 0.0212

Venus -117338-09-08 00:58 J -41136031.57 -41136031.46 -41136031.34 0.0279 0.0230

Venus -117337-04-24 08:10 J -41135802.25 -41135802.16 -41135802.06 0.0276 0.0244

Venus -117337-12-09 13:56 J -41135572.99 -41135572.92 -41135572.84 0.0273 0.0253

Mercury -117336-04-26 21:36 J -41135434.71 -41135434.60 -41135434.49 0.0272 0.0211

Mercury -117336-07-24 16:20 J -41135345.98 -41135345.82 -41135345.66 0.0271 0.0111

Venus -117336-07-26 18:44 J -41135343.77 -41135343.72 -41135343.65 0.0271 0.0259

Mercury -117336-10-21 11:17 J -41135257.21 -41135257.03 -41135256.86 0.0270 0.0010

Mercury -117335-01-18 06:15 J -41135168.40 -41135168.24 -41135168.07 0.0269 0.0092

Venus -117335-03-12 22:34 J -41135114.60 -41135114.56 -41135114.50 0.0268 0.0260

Mercury -117335-04-17 01:41 J -41135079.56 -41135079.43 -41135079.31 0.0268 0.0193

Venus -117335-10-28 01:27 J -41134885.48 -41134885.44 -41134885.37 0.0266 0.0257

Venus -117334-06-14 04:05 J -41134656.39 -41134656.33 -41134656.26 0.0264 0.0250

Venus -117333-01-29 06:00 J -41134427.33 -41134427.25 -41134427.16 0.0262 0.0241

Venus -117333-09-14 07:27 J -41134198.29 -41134198.19 -41134198.08 0.0261 0.0228

Venus -117332-05-01 08:24 J -41133969.26 -41133969.15 -41133969.01 0.0260 0.0213

Venus -117332-12-16 10:05 J -41133740.23 -41133740.08 -41133739.94 0.0259 0.0195

Venus -117331-08-02 11:32 J -41133511.18 -41133511.02 -41133510.86 0.0259 0.0174

Venus -117330-03-19 12:58 J -41133282.13 -41133281.96 -41133281.78 0.0258 0.0152

Venus -117330-11-03 14:53 J -41133053.06 -41133052.88 -41133052.68 0.0259 0.0128

Venus -117329-06-19 17:32 J -41132823.97 -41132823.77 -41132823.56 0.0259 0.0101

Venus -117328-02-03 20:53 J -41132594.84 -41132594.63 -41132594.42 0.0260 0.0073

Venus -117328-09-21 01:12 J -41132365.67 -41132365.45 -41132365.23 0.0261 0.0044

Venus -117327-05-08 06:15 J -41132136.46 -41132136.24 -41132136.02 0.0262 0.0015

Venus -117327-12-23 12:29 J -41131907.20 -41131906.98 -41131906.76 0.0264 0.0017

Venus -117326-08-09 19:41 J -41131677.90 -41131677.68 -41131677.46 0.0265 0.0048

Venus -117325-03-26 04:20 J -41131448.53 -41131448.32 -41131448.11 0.0268 0.0080

Venus -117325-11-10 14:10 J -41131219.11 -41131218.91 -41131218.71 0.0270 0.0111

Moon -117324-01-10 06:15 J -41131158.36 -41131158.24 -41131158.09 0.0271 0.0225

Earth -117324-01-10 09:22 J -41131158.22 -41131158.11 -41131157.97 0.0271 0.0234 \*

Venus -117324-06-28 01:41 J -41130989.62 -41130989.43 -41130989.25 0.0272 0.0142

Venus -117323-02-12 14:24 J -41130760.07 -41130759.90 -41130759.73 0.0275 0.0171

Venus -117323-09-30 04:34 J -41130530.45 -41130530.31 -41130530.15 0.0278 0.0199

Venus -117322-05-17 20:39 J -41130300.76 -41130300.64 -41130300.50 0.0281 0.0223

Mars -117322-11-10 21:51 J -41130123.70 -41130123.59 -41130123.48 0.0283 0.0261

Venus -117321-01-02 14:10 J -41130071.01 -41130070.91 -41130070.80 0.0284 0.0245

Venus -117321-08-19 09:08 J -41129841.20 -41129841.12 -41129841.03 0.0287 0.0262

Venus -117320-04-06 05:03 J -41129611.34 -41129611.29 -41129611.21 0.0290 0.0276

Mercury -117320-05-11 13:27 J -41129576.04 -41129575.94 -41129575.84 0.0291 0.0200

Mercury -117320-08-08 03:08 J -41129487.50 -41129487.37 -41129487.24 0.0292 0.0100



Mercury -117320-11-04 16:34 J -41129398.94 -41129398.81 -41129398.67 0.0293 0.0006

Venus -117320-11-22 02:39 J -41129381.43 -41129381.39 -41129381.32 0.0293 0.0282

Mercury -117319-02-01 06:00 J -41129310.37 -41129310.25 -41129310.12 0.0294 0.0102

Mercury -117319-04-30 19:27 J -41129221.78 -41129221.69 -41129221.59 0.0295 0.0202

Venus -117319-07-10 01:12 J -41129151.50 -41129151.45 -41129151.38 0.0296 0.0283

Venus -117318-02-25 00:44 J -41128921.54 -41128921.47 -41128921.39 0.0298 0.0277

Venus -117318-10-13 00:44 J -41128691.56 -41128691.47 -41128691.37 0.0300 0.0263

Venus -117317-05-30 00:44 J -41128461.58 -41128461.47 -41128461.34 0.0302 0.0244

Venus -117316-01-15 01:12 J -41128231.58 -41128231.45 -41128231.30 0.0303 0.0217

Venus -117316-09-02 01:27 J -41128001.60 -41128001.44 -41128001.28 0.0304 0.0185

Venus -117315-04-20 00:58 J -41127771.64 -41127771.46 -41127771.28 0.0304 0.0148

Venus -117315-12-05 23:32 J -41127541.71 -41127541.52 -41127541.33 0.0303 0.0107

Venus -117314-07-23 21:08 J -41127311.81 -41127311.62 -41127311.42 0.0302 0.0065

Venus -117313-03-09 17:46 J -41127081.96 -41127081.76 -41127081.56 0.0300 0.0021

Venus -117313-10-25 12:44 J -41126852.18 -41126851.97 -41126851.77 0.0298 0.0022

Venus -117312-06-12 06:00 J -41126622.45 -41126622.25 -41126622.05 0.0296 0.0064

Venus -117311-01-27 21:51 J -41126392.78 -41126392.59 -41126392.40 0.0293 0.0102

Earth -117311-07-04 16:20 J -41126234.99 -41126234.82 -41126234.62 0.0291 0.0183

Moon -117311-07-04 19:27 J -41126234.86 -41126234.69 -41126234.51 0.0291 0.0198 \*

Venus -117311-09-14 12:15 J -41126163.17 -41126162.99 -41126162.81 0.0290 0.0137

Venus -117310-05-02 00:58 J -41125933.62 -41125933.46 -41125933.29 0.0288 0.0169

Venus -117310-12-17 12:15 J -41125704.14 -41125703.99 -41125703.84 0.0285 0.0196

Mars -117309-02-04 02:53 J -41125655.66 -41125655.38 -41125655.08 0.0284 0.0063

Venus -117309-08-02 21:51 J -41125474.72 -41125474.59 -41125474.46 0.0282 0.0218

Venus -117308-03-20 06:00 J -41125245.35 -41125245.25 -41125245.13 0.0279 0.0236

Venus -117308-11-04 12:58 J -41125016.04 -41125015.96 -41125015.86 0.0276 0.0249

Venus -117307-06-21 18:58 J -41124786.77 -41124786.71 -41124786.63 0.0273 0.0257

Mercury -117307-09-13 21:51 J -41124702.66 -41124702.59 -41124702.50 0.0272 0.0238

Mercury -117307-12-11 16:34 J -41124613.95 -41124613.81 -41124613.65 0.0271 0.0138

Venus -117306-02-06 00:00 J -41124557.55 -41124557.50 -41124557.45 0.0270 0.0261

Mercury -117306-03-10 11:32 J -41124525.19 -41124525.02 -41124524.84 0.0270 0.0037

Mercury -117306-06-07 06:44 J -41124436.40 -41124436.22 -41124436.05 0.0269 0.0065

Mercury -117306-09-04 01:56 J -41124347.56 -41124347.42 -41124347.28 0.0268 0.0166

Venus -117306-09-23 03:36 J -41124328.39 -41124328.35 -41124328.30 0.0268 0.0261

Venus -117305-05-09 06:29 J -41124099.27 -41124099.23 -41124099.17 0.0266 0.0258

Venus -117305-12-24 09:08 J -41123870.19 -41123870.12 -41123870.06 0.0264 0.0251

Venus -117304-08-10 10:48 J -41123641.12 -41123641.05 -41123640.95 0.0263 0.0241

Venus -117303-03-27 12:29 J -41123412.08 -41123411.98 -41123411.87 0.0261 0.0227

Venus -117303-11-11 13:41 J -41123183.05 -41123182.93 -41123182.80 0.0260 0.0212

Venus -117302-06-28 14:53 J -41122954.01 -41122953.88 -41122953.72 0.0260 0.0194

Venus -117301-02-12 16:34 J -41122724.97 -41122724.81 -41122724.65 0.0259 0.0172

Venus -117301-09-28 18:00 J -41122495.92 -41122495.75 -41122495.56 0.0259 0.0150

Venus -117300-05-15 20:10 J -41122266.84 -41122266.66 -41122266.46 0.0259 0.0125

Venus -117300-12-30 23:03 J -41122037.74 -41122037.54 -41122037.33 0.0259 0.0098

Venus -117299-08-17 02:39 J -41121808.60 -41121808.39 -41121808.18 0.0260 0.0070

Venus -117298-04-03 06:58 J -41121579.43 -41121579.21 -41121578.99 0.0261 0.0040

Venus -117298-11-18 12:15 J -41121350.21 -41121349.99 -41121349.77 0.0262 0.0010

Venus -117297-07-04 18:29 J -41121120.95 -41121120.73 -41121120.51 0.0264 0.0022

Venus -117296-02-19 01:56 J -41120891.63 -41120891.42 -41120891.20 0.0266 0.0055

Venus -117296-10-06 11:03 J -41120662.25 -41120662.04 -41120661.83 0.0268 0.0087

Venus -117295-05-23 21:08 J -41120432.81 -41120432.62 -41120432.42 0.0270 0.0119

Venus -117294-01-08 08:53 J -41120203.31 -41120203.13 -41120202.95 0.0272 0.0149

Moon -117294-01-18 00:15 J -41120193.67 -41120193.49 -41120193.29 0.0272 0.0182

Earth -117294-01-18 01:27 J -41120193.63 -41120193.44 -41120193.24 0.0272 0.0170 \*

Venus -117294-08-25 21:51 J -41119973.75 -41119973.59 -41119973.42 0.0275 0.0179

Mars -117294-12-28 11:32 J -41119849.25 -41119849.02 -41119848.76 0.0277 0.0150

Venus -117293-04-11 12:29 J -41119744.12 -41119743.98 -41119743.84 0.0278 0.0206

Venus -117293-11-27 04:34 J -41119514.43 -41119514.31 -41119514.18 0.0281 0.0231

Venus -117292-07-14 22:05 J -41119284.67 -41119284.58 -41119284.48 0.0284 0.0252

Venus -117291-03-01 17:03 J -41119054.86 -41119054.79 -41119054.71 0.0287 0.0269

Mercury -117291-09-28 15:36 J -41118843.94 -41118843.85 -41118843.77 0.0290 0.0226

Venus -117291-10-17 13:12 J -41118824.99 -41118824.95 -41118824.89 0.0290 0.0281

Mercury -117291-12-26 05:17 J -41118755.40 -41118755.28 -41118755.15 0.0291 0.0126

Mercury -117290-03-24 18:58 J -41118666.85 -41118666.71 -41118666.57 0.0292 0.0026

Venus -117290-06-04 10:34 J -41118595.08 -41118595.06 -41118595.00 0.0293 0.0287

Mercury -117290-06-21 08:24 J -41118578.28 -41118578.15 -41118578.02 0.0293 0.0075

Mercury -117290-09-17 21:36 J -41118489.70 -41118489.60 -41118489.48 0.0294 0.0176

Mercury -117290-12-15 11:03 J -41118401.08 -41118401.04 -41118400.99 0.0295 0.0275

Venus -117289-01-20 09:36 J -41118365.15 -41118365.10 -41118365.05 0.0296 0.0286

Venus -117289-09-06 08:39 J -41118135.20 -41118135.14 -41118135.06 0.0298 0.0279

Venus -117288-04-24 08:24 J -41117905.24 -41117905.15 -41117905.05 0.0300 0.0265

Venus -117288-12-10 08:39 J -41117675.26 -41117675.14 -41117675.02 0.0302 0.0243

Venus -117287-07-28 08:39 J -41117445.28 -41117445.14 -41117444.99 0.0303 0.0216

Venus -117286-03-15 08:24 J -41117215.30 -41117215.15 -41117214.98 0.0304 0.0183

Venus -117286-10-31 07:41 J -41116985.35 -41116985.18 -41116984.99 0.0304 0.0145

Venus -117285-06-17 06:15 J -41116755.43 -41116755.24 -41116755.05 0.0303 0.0103

Venus -117284-02-02 03:36 J -41116525.55 -41116525.35 -41116525.15 0.0302 0.0060

Venus -117284-09-19 23:46 J -41116295.71 -41116295.51 -41116295.31 0.0300 0.0016

Venus -117283-05-07 18:29 J -41116065.93 -41116065.73 -41116065.52 0.0298 0.0028

Venus -117283-12-23 11:46 J -41115836.21 -41115836.01 -41115835.81 0.0296 0.0069

Venus -117282-08-10 03:22 J -41115606.55 -41115606.36 -41115606.17 0.0293 0.0107

Venus -117281-03-26 17:32 J -41115376.95 -41115376.77 -41115376.59 0.0291 0.0142

Moon -117281-07-11 10:48 J -41115270.14 -41115270.05 -41115269.96 0.0289 0.0268

Earth -117281-07-11 13:56 J -41115269.96 -41115269.92 -41115269.88 0.0289 0.0285 \*

Venus -117281-11-11 06:00 J -41115147.41 -41115147.25 -41115147.09 0.0288 0.0173

Venus -117280-06-28 16:48 J -41114917.94 -41114917.80 -41114917.65 0.0284 0.0200

Venus -117279-02-13 02:10 J -41114688.52 -41114688.41 -41114688.27 0.0281 0.0222

Mars -117279-03-26 02:39 J -41114647.62 -41114647.39 -41114647.14 0.0281 0.0159

Venus -117279-09-30 10:20 J -41114459.17 -41114459.07 -41114458.96 0.0278 0.0239

Venus -117278-05-17 17:03 J -41114229.86 -41114229.79 -41114229.69 0.0275 0.0253

Venus -117277-01-01 23:03 J -41114000.60 -41114000.54 -41114000.48 0.0273 0.0260  
 Mercury -117277-01-31 21:36 J -41113970.62 -41113970.60 -41113970.56 0.0272 0.0269  
 Mercury -117277-04-29 16:20 J -41113881.95 -41113881.82 -41113881.68 0.0271 0.0168  
 Mercury -117277-07-27 11:17 J -41113793.20 -41113793.03 -41113792.86 0.0270 0.0067  
 Venus -117277-08-18 03:22 J -41113771.39 -41113771.36 -41113771.31 0.0270 0.0264  
 Mercury -117277-10-24 06:15 J -41113704.41 -41113704.24 -41113704.06 0.0269 0.0034  
 Mercury -117276-01-21 01:27 J -41113615.59 -41113615.44 -41113615.28 0.0269 0.0135  
 Venus -117276-04-04 07:12 J -41113542.23 -41113542.20 -41113542.16 0.0268 0.0264  
 Mercury -117276-04-19 20:39 J -41113526.71 -41113526.64 -41113526.55 0.0268 0.0237  
 Venus -117276-11-19 10:05 J -41113313.11 -41113313.08 -41113313.03 0.0266 0.0260  
 Venus -117275-07-06 12:29 J -41113084.02 -41113083.98 -41113083.91 0.0264 0.0253  
 Venus -117274-02-20 14:39 J -41112854.97 -41112854.89 -41112854.80 0.0262 0.0242  
 Venus -117274-10-07 16:05 J -41112625.93 -41112625.83 -41112625.72 0.0261 0.0228  
 Venus -117273-05-23 17:32 J -41112396.89 -41112396.77 -41112396.64 0.0260 0.0211  
 Venus -117272-01-07 18:58 J -41112167.85 -41112167.71 -41112167.56 0.0259 0.0192  
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 Venus -117271-04-10 22:20 J -41111709.74 -41111709.57 -41111709.38 0.0259 0.0148  
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 Earth -117265-01-12 20:53 J -41109606.83 -41109606.63 -41109606.41 0.0271 0.0142  
 Moon -117265-01-12 21:36 J -41109606.81 -41109606.60 -41109606.39 0.0271 0.0133 \*  
 Venus -117265-07-20 15:22 J -41109417.04 -41109416.86 -41109416.68 0.0273 0.0155  
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Venus -117264-10-22 19:41 J -41108957.82 -41108957.68 -41108957.54 0.0279 0.0211  
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 Venus -117240-09-08 14:10 J -41100236.13 -41100235.91 -41100235.70 0.0261 0.0062  
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Earth -117235-01-19 15:08 J -41098641.92 -41098641.87 -41098641.82 0.0273 0.0267  
 Venus -117235-01-30 23:32 J -41098630.69 -41098630.52 -41098630.34 0.0273 0.0162  
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 Mercury -117232-10-01 10:05 J -41097291.19 -41097291.08 -41097290.97 0.0290 0.0174  
 Venus -117232-11-09 06:29 J -41097252.24 -41097252.23 -41097252.19 0.0291 0.0289  
 Mercury -117232-12-28 23:46 J -41097202.64 -41097202.51 -41097202.37 0.0291 0.0074  
 Mercury -117231-03-27 13:27 J -41097114.08 -41097113.94 -41097113.81 0.0292 0.0027  
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 Venus -117231-06-27 04:20 J -41097022.32 -41097022.32 -41097022.30 0.0294 0.0293  
 Mercury -117231-09-20 16:05 J -41096936.91 -41096936.83 -41096936.74 0.0295 0.0226  
 Venus -117230-02-12 03:08 J -41096792.40 -41096792.37 -41096792.33 0.0296 0.0290  
 Venus -117230-09-30 02:24 J -41096562.46 -41096562.40 -41096562.32 0.0299 0.0281  
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 Venus -117222-04-19 07:12 J -41093804.37 -41093804.20 -41093804.03 0.0290 0.0155

Venus -117222-12-04 18:58 J -41093574.86 -41093574.71 -41093574.55 0.0287 0.0185  
 Mars -117221-06-30 08:10 J -41093366.45 -41093366.16 -41093365.87 0.0284 0.0038  
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 Venus -117220-10-22 22:05 J -41092886.67 -41092886.58 -41092886.48 0.0278 0.0248  
 Venus -117219-06-09 04:34 J -41092657.36 -41092657.31 -41092657.23 0.0275 0.0260  
 Venus -117218-01-24 09:51 J -41092428.12 -41092428.09 -41092428.04 0.0272 0.0267  
 Mercury -117218-02-03 17:46 J -41092417.86 -41092417.76 -41092417.66 0.0272 0.0220  
 Mercury -117218-05-03 12:29 J -41092329.14 -41092328.98 -41092328.82 0.0271 0.0120  
 Mercury -117218-07-31 07:27 J -41092240.37 -41092240.19 -41092240.02 0.0270 0.0020  
 Venus -117218-09-10 14:24 J -41092198.90 -41092198.90 -41092198.89 0.0270 0.0269  
 Mercury -117218-10-28 02:24 J -41092151.57 -41092151.40 -41092151.23 0.0269 0.0082  
 Mercury -117217-01-24 21:36 J -41092062.72 -41092062.60 -41092062.47 0.0268 0.0184  
 Venus -117217-12-11 20:24 J -41091740.66 -41091740.65 -41091740.61 0.0265 0.0264  
 Venus -117216-07-28 23:03 J -41091511.58 -41091511.54 -41091511.48 0.0264 0.0255  
 Venus -117215-03-15 00:44 J -41091282.53 -41091282.47 -41091282.37 0.0262 0.0244  
 Venus -117215-10-30 02:24 J -41091053.49 -41091053.40 -41091053.28 0.0261 0.0228  
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 Venus -117213-01-31 05:32 J -41090595.41 -41090595.27 -41090595.11 0.0259 0.0190  
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 Venus -117212-05-03 09:22 J -41090137.28 -41090137.11 -41090136.91 0.0259 0.0143  
 Venus -117212-12-18 12:00 J -41089908.19 -41089908.00 -41089907.79 0.0259 0.0117  
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 Venus -117207-12-26 18:29 J -41088073.91 -41088073.73 -41088073.54 0.0271 0.0137



Earth	-117206-01-14 10:48 J	-41088055.29	-41088055.05	-41088054.80	0.0272	0.0044
Moon	-117206-01-14 14:24 J	-41088055.14	-41088054.90	-41088054.65	0.0272	0.0034 *
Venus	-117206-08-13 06:58 J	-41087844.38	-41087844.21	-41087844.04	0.0274	0.0167
Venus	-117205-03-29 20:39 J	-41087614.78	-41087614.64	-41087614.48	0.0277	0.0197
Mars	-117205-05-24 04:05 J	-41087559.58	-41087559.33	-41087559.06	0.0278	0.0119
Venus	-117205-11-14 12:00 J	-41087385.11	-41087385.00	-41087384.86	0.0280	0.0224
Venus	-117204-07-02 05:03 J	-41087155.39	-41087155.29	-41087155.18	0.0283	0.0247
Venus	-117203-02-16 23:32 J	-41086925.60	-41086925.52	-41086925.45	0.0286	0.0266
Venus	-117203-10-04 18:58 J	-41086695.75	-41086695.71	-41086695.66	0.0289	0.0281
Mercury	-117202-02-18 12:29 J	-41086559.07	-41086558.98	-41086558.87	0.0291	0.0197
Mercury	-117202-05-18 02:24 J	-41086470.53	-41086470.40	-41086470.27	0.0292	0.0096
Venus	-117202-05-22 15:36 J	-41086465.85	-41086465.85	-41086465.82	0.0292	0.0291
Mercury	-117202-08-14 16:05 J	-41086381.97	-41086381.83	-41086381.70	0.0293	0.0010
Mercury	-117202-11-11 05:32 J	-41086293.40	-41086293.27	-41086293.14	0.0294	0.0104
Venus	-117201-01-07 13:41 J	-41086235.93	-41086235.93	-41086235.91	0.0295	0.0294
Mercury	-117201-02-07 18:58 J	-41086204.81	-41086204.71	-41086204.62	0.0295	0.0204
Venus	-117201-08-24 12:29 J	-41086006.01	-41086005.98	-41086005.93	0.0297	0.0290
Venus	-117200-04-11 12:00 J	-41085776.06	-41085776.00	-41085775.92	0.0299	0.0279
Venus	-117200-11-27 12:00 J	-41085546.10	-41085546.00	-41085545.90	0.0301	0.0261
Venus	-117199-07-15 12:00 J	-41085316.12	-41085316.00	-41085315.87	0.0302	0.0237
Venus	-117198-03-02 12:15 J	-41085086.14	-41085085.99	-41085085.84	0.0303	0.0205
Venus	-117198-10-18 11:32 J	-41084856.18	-41084856.02	-41084855.84	0.0303	0.0169
Venus	-117197-06-04 10:34 J	-41084626.25	-41084626.06	-41084625.88	0.0303	0.0128
Venus	-117196-01-20 08:24 J	-41084396.34	-41084396.15	-41084395.95	0.0302	0.0085
Venus	-117196-09-07 05:17 J	-41084166.48	-41084166.28	-41084166.08	0.0301	0.0040
Venus	-117195-04-25 00:58 J	-41083936.67	-41083936.46	-41083936.26	0.0299	0.0008
Venus	-117195-12-10 18:44 J	-41083706.92	-41083706.72	-41083706.51	0.0297	0.0050
Venus	-117194-07-28 11:17 J	-41083477.22	-41083477.03	-41083476.84	0.0294	0.0090
Venus	-117193-03-14 01:56 J	-41083247.60	-41083247.42	-41083247.23	0.0292	0.0129
Moon	-117193-07-07 16:34 J	-41083132.06	-41083131.81	-41083131.57	0.0290	0.0013

Earth -117193-07-07 17:46 J -41083132.00 -41083131.76 -41083131.52 0.0290 0.0027 \*  
 Venus -117193-10-29 15:08 J -41083018.03 -41083017.87 -41083017.69 0.0289 0.0163  
 Venus -117192-06-16 02:53 J -41082788.52 -41082788.38 -41082788.22 0.0286 0.0193  
 Venus -117191-01-31 13:12 J -41082559.08 -41082558.95 -41082558.82 0.0283 0.0218  
 Mars -117191-08-20 16:20 J -41082358.04 -41082357.82 -41082357.59 0.0280 0.0181  
 Venus -117191-09-17 21:51 J -41082329.69 -41082329.59 -41082329.47 0.0280 0.0238  
 Venus -117190-05-05 05:32 J -41082100.35 -41082100.27 -41082100.18 0.0277 0.0253  
 Venus -117190-12-20 11:46 J -41081871.06 -41081871.01 -41081870.95 0.0274 0.0264  
 Mercury -117189-06-22 19:12 J -41081685.78 -41081685.70 -41081685.63 0.0272 0.0243  
 Venus -117189-08-05 16:48 J -41081641.80 -41081641.80 -41081641.77 0.0272 0.0271  
 Mercury -117189-09-19 13:41 J -41081597.07 -41081596.93 -41081596.78 0.0271 0.0143  
 Mercury -117189-12-17 08:39 J -41081508.31 -41081508.14 -41081507.97 0.0270 0.0042  
 Mercury -117188-03-16 03:36 J -41081419.52 -41081419.35 -41081419.17 0.0269 0.0060  
 Mercury -117188-06-12 22:48 J -41081330.69 -41081330.55 -41081330.40 0.0268 0.0161  
 Mercury -117188-09-09 18:15 J -41081241.77 -41081241.74 -41081241.70 0.0268 0.0262  
 Venus -117187-06-24 03:36 J -41080954.36 -41080954.35 -41080954.33 0.0265 0.0264  
 Venus -117186-02-08 05:46 J -41080725.30 -41080725.26 -41080725.20 0.0264 0.0255  
 Venus -117186-09-25 07:27 J -41080496.26 -41080496.19 -41080496.10 0.0262 0.0243  
 Venus -117185-05-11 08:53 J -41080267.22 -41080267.13 -41080267.01 0.0261 0.0227  
 Venus -117185-12-26 10:48 J -41080038.18 -41080038.05 -41080037.92 0.0260 0.0208  
 Venus -117184-08-12 12:29 J -41079809.13 -41079808.98 -41079808.83 0.0260 0.0188  
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 Venus -117182-06-30 18:58 J -41079121.90 -41079121.71 -41079121.50 0.0260 0.0113  
 Venus -117181-02-14 22:20 J -41078892.77 -41078892.57 -41078892.35 0.0260 0.0084  
 Venus -117181-10-01 02:39 J -41078663.60 -41078663.39 -41078663.17 0.0261 0.0054  
 Venus -117180-05-18 07:56 J -41078434.39 -41078434.17 -41078433.95 0.0262 0.0022  
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 Venus -117178-04-06 06:00 J -41077746.46 -41077746.25 -41077746.04 0.0267 0.0078

Venus -117178-11-21 15:51 J -41077517.04 -41077516.84 -41077516.64 0.0269 0.0111  
 Venus -117177-07-08 03:08 J -41077287.55 -41077287.37 -41077287.18 0.0272 0.0144  
 Venus -117176-02-22 15:36 J -41077058.00 -41077057.85 -41077057.67 0.0274 0.0176  
 Venus -117176-10-10 06:15 J -41076828.39 -41076828.24 -41076828.10 0.0277 0.0204  
 Venus -117175-05-27 21:51 J -41076598.71 -41076598.59 -41076598.47 0.0280 0.0231  
 Mars -117175-07-13 17:32 J -41076552.05 -41076551.77 -41076551.50 0.0280 0.0091  
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 Venus -117173-04-16 05:03 J -41075909.30 -41075909.29 -41075909.27 0.0289 0.0288  
 Mercury -117173-07-07 15:36 J -41075826.94 -41075826.85 -41075826.76 0.0290 0.0217  
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 Venus -117169-01-25 22:34 J -41074529.69 -41074529.56 -41074529.43 0.0302 0.0235  
 Venus -117169-09-11 22:20 J -41074299.72 -41074299.57 -41074299.42 0.0303 0.0203  
 Venus -117168-04-29 21:36 J -41074069.77 -41074069.60 -41074069.43 0.0303 0.0165  
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 Mars -117163-10-05 07:41 J -41072085.33 -41072085.18 -41072085.01 0.0287 0.0242

Venus -117163-12-27 10:34 J -41072002.21 -41072002.06 -41072001.91 0.0286 0.0197  
 Venus -117162-08-13 20:10 J -41071772.78 -41071772.66 -41071772.52 0.0283 0.0222  
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 Mercury -117158-01-27 18:44 J -41070509.80 -41070509.72 -41070509.63 0.0268 0.0236  
 Venus -117157-08-20 10:48 J -41069939.08 -41069939.05 -41069938.99 0.0263 0.0257  
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 Venus -117149-03-01 04:05 J -41067189.55 -41067189.33 -41067189.12 0.0265 0.0050  
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 Venus -117148-06-02 23:03 J -41066730.73 -41066730.54 -41066730.34 0.0270 0.0117  
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 Mercury -117144-11-24 18:15 J -41065094.82 -41065094.74 -41065094.67 0.0290 0.0239  
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 Mercury -117143-11-14 00:29 J -41064740.59 -41064740.48 -41064740.36 0.0294 0.0161  
 Mercury -117142-02-10 13:41 J -41064651.98 -41064651.93 -41064651.86 0.0295 0.0261  
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 Venus -117141-05-04 08:24 J -41064203.22 -41064203.15 -41064203.07 0.0300 0.0279  
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 Venus -117139-03-25 08:10 J -41063513.30 -41063513.16 -41063513.00 0.0303 0.0199  
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 Moon -117134-07-10 07:41 J -41061580.39 -41061580.18 -41061579.96 0.0289 0.0129  
 Earth -117134-07-10 11:03 J -41061580.23 -41061580.04 -41061579.82 0.0289 0.0146 \*  
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 Mars -117133-11-25 10:34 J -41061076.35 -41061076.06 -41061075.76 0.0283 0.0007  
 Venus -117132-02-23 04:20 J -41060986.43 -41060986.32 -41060986.19 0.0282 0.0228  
 Venus -117132-10-10 12:44 J -41060757.06 -41060756.97 -41060756.87 0.0279 0.0247

Venus -117131-05-27 19:41 J -41060527.73 -41060527.68 -41060527.61 0.0276 0.0262  
 Venus -117130-01-12 01:27 J -41060298.45 -41060298.44 -41060298.40 0.0273 0.0272  
 Mercury -117130-06-26 16:05 J -41060132.95 -41060132.83 -41060132.70 0.0271 0.0189  
 Mercury -117130-09-23 10:48 J -41060044.21 -41060044.05 -41060043.88 0.0271 0.0089  
 Mercury -117130-12-21 05:46 J -41059955.43 -41059955.26 -41059955.08 0.0270 0.0014  
 Mercury -117129-03-19 00:58 J -41059866.62 -41059866.46 -41059866.30 0.0269 0.0113  
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 Venus -117127-03-02 18:15 J -41059152.78 -41059152.74 -41059152.69 0.0263 0.0256  
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 Venus -117120-01-25 04:05 J -41056632.55 -41056632.33 -41056632.11 0.0264 0.0021  
 Venus -117120-09-11 11:46 J -41056403.22 -41056403.01 -41056402.79 0.0266 0.0055  
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 Venus -117119-12-14 07:12 J -41055944.39 -41055944.20 -41055944.00 0.0270 0.0123  
 Moon -117118-01-10 23:03 J -41055916.65 -41055916.54 -41055916.41 0.0270 0.0236  
 Earth -117118-01-11 00:44 J -41055916.56 -41055916.47 -41055916.35 0.0270 0.0244 \*  
 Venus -117118-07-31 19:12 J -41055714.88 -41055714.70 -41055714.52 0.0273 0.0156  
 Venus -117117-03-17 08:24 J -41055485.31 -41055485.15 -41055484.99 0.0275 0.0187  
 Mars -117117-10-19 06:58 J -41055269.48 -41055269.21 -41055268.93 0.0278 0.0089  
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 Venus -117116-06-19 15:36 J -41055025.95 -41055025.85 -41055025.74 0.0281 0.0243  
 Venus -117115-02-04 09:22 J -41054796.18 -41054796.11 -41054796.04 0.0284 0.0265

Venus -117115-09-22 04:20 J -41054566.35 -41054566.32 -41054566.29 0.0287 0.0283  
 Mercury -117114-04-13 20:53 J -41054362.68 -41054362.63 -41054362.56 0.0289 0.0260  
 Mercury -117114-07-11 10:48 J -41054274.16 -41054274.05 -41054273.93 0.0291 0.0161  
 Mercury -117114-10-08 00:29 J -41054185.61 -41054185.48 -41054185.34 0.0292 0.0061  
 Mercury -117113-01-04 14:10 J -41054097.05 -41054096.91 -41054096.78 0.0293 0.0040  
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 Mercury -117113-06-29 16:48 J -41053919.88 -41053919.80 -41053919.72 0.0295 0.0238  
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 Venus -117112-11-14 18:58 J -41053416.77 -41053416.71 -41053416.63 0.0300 0.0281  
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 Venus -117108-08-25 13:56 J -41052037.12 -41052036.92 -41052036.72 0.0302 0.0067  
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 Venus -117107-11-28 04:48 J -41051577.50 -41051577.30 -41051577.09 0.0298 0.0026  
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 Venus -117105-03-01 13:41 J -41051118.12 -41051117.93 -41051117.74 0.0293 0.0110  
 Earth -117105-07-04 02:53 J -41050993.53 -41050993.38 -41050993.21 0.0292 0.0211  
 Moon -117105-07-04 06:15 J -41050993.38 -41050993.24 -41050993.08 0.0292 0.0226 \*  
 Venus -117105-10-17 03:36 J -41050888.52 -41050888.35 -41050888.17 0.0291 0.0147  
 Venus -117104-06-03 16:05 J -41050658.98 -41050658.83 -41050658.66 0.0288 0.0181  
 Venus -117103-01-19 02:53 J -41050429.51 -41050429.38 -41050429.23 0.0285 0.0209  
 Venus -117103-09-05 12:29 J -41050200.09 -41050199.98 -41050199.86 0.0282 0.0232  
 Mars -117102-01-15 17:46 J -41050067.93 -41050067.76 -41050067.57 0.0280 0.0218  
 Venus -117102-04-22 20:24 J -41049970.73 -41049970.65 -41049970.55 0.0279 0.0251  
 Venus -117102-12-08 03:08 J -41049741.42 -41049741.37 -41049741.31 0.0276 0.0264  
 Mercury -117101-11-12 17:32 J -41049400.88 -41049400.77 -41049400.66 0.0272 0.0210  
 Mercury -117100-02-09 12:00 J -41049312.15 -41049312.00 -41049311.83 0.0271 0.0111

Mercury -117100-05-09 06:58 J -41049223.38 -41049223.21 -41049223.03 0.0270 0.0011

Mercury -117100-08-06 01:56 J -41049134.58 -41049134.42 -41049134.25 0.0269 0.0091

Mercury -117100-11-02 21:08 J -41049045.74 -41049045.62 -41049045.49 0.0268 0.0191

Venus -117098-09-12 23:46 J -41048366.54 -41048366.51 -41048366.45 0.0263 0.0257

Venus -117097-04-29 01:27 J -41048137.50 -41048137.44 -41048137.35 0.0261 0.0243

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Venus -117095-03-17 06:29 J -41047450.38 -41047450.23 -41047450.07 0.0259 0.0182

Venus -117095-11-01 08:10 J -41047221.32 -41047221.16 -41047220.97 0.0259 0.0158

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Venus -117093-02-02 13:41 J -41046763.13 -41046762.93 -41046762.72 0.0259 0.0102

Venus -117093-09-18 17:32 J -41046533.98 -41046533.77 -41046533.55 0.0260 0.0072

Venus -117092-05-05 22:20 J -41046304.79 -41046304.57 -41046304.35 0.0261 0.0040

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Venus -117089-06-25 14:24 J -41045158.09 -41045157.90 -41045157.71 0.0271 0.0129

Moon -117088-01-17 14:39 J -41044952.08 -41044951.89 -41044951.69 0.0273 0.0174

Earth -117088-01-17 17:17 J -41044951.97 -41044951.78 -41044951.57 0.0273 0.0161 \*

Venus -117088-02-10 02:24 J -41044928.57 -41044928.40 -41044928.22 0.0273 0.0162

Venus -117088-09-27 15:51 J -41044698.99 -41044698.84 -41044698.68 0.0276 0.0193

Venus -117087-05-15 06:58 J -41044469.33 -41044469.21 -41044469.07 0.0279 0.0222

Mars -117087-12-08 17:03 J -41044262.05 -41044261.79 -41044261.53 0.0281 0.0128

Venus -117087-12-30 23:17 J -41044239.62 -41044239.53 -41044239.41 0.0282 0.0248

Venus -117086-08-17 17:32 J -41044009.84 -41044009.77 -41044009.70 0.0285 0.0269

Venus -117085-04-03 12:29 J -41043779.98 -41043779.98 -41043779.95 0.0288 0.0287

Mercury -117085-08-30 23:32 J -41043630.55 -41043630.52 -41043630.50 0.0290 0.0283

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Mercury -117084-05-23 16:34 J -41043364.94 -41043364.81 -41043364.67 0.0293 0.0018

Mercury -117084-08-20 06:00 J -41043276.37 -41043276.25 -41043276.12 0.0294 0.0117

Mercury -117084-11-16 19:27 J -41043187.78 -41043187.69 -41043187.59 0.0295 0.0217

Venus -117083-10-10 04:48 J -41042860.32 -41042860.30 -41042860.25 0.0299 0.0295

Venus -117082-05-28 04:48 J -41042630.37 -41042630.30 -41042630.22 0.0300 0.0279

Venus -117081-01-13 05:03 J -41042400.39 -41042400.29 -41042400.17 0.0302 0.0255

Venus -117081-08-30 05:17 J -41042170.42 -41042170.28 -41042170.14 0.0303 0.0225

Venus -117080-04-17 05:03 J -41041940.45 -41041940.29 -41041940.13 0.0303 0.0190

Venus -117080-12-03 04:05 J -41041710.51 -41041710.33 -41041710.15 0.0303 0.0149

Venus -117079-07-21 02:24 J -41041480.59 -41041480.40 -41041480.21 0.0303 0.0105

Venus -117078-03-07 23:46 J -41041250.71 -41041250.51 -41041250.31 0.0302 0.0059

Venus -117078-10-23 19:41 J -41041020.88 -41041020.68 -41041020.47 0.0300 0.0012

Venus -117077-06-09 14:10 J -41040791.11 -41040790.91 -41040790.70 0.0298 0.0034

Venus -117076-01-25 07:12 J -41040561.39 -41040561.20 -41040561.00 0.0295 0.0078

Venus -117076-09-11 22:34 J -41040331.74 -41040331.56 -41040331.36 0.0293 0.0119

Venus -117075-04-29 12:29 J -41040102.14 -41040101.98 -41040101.80 0.0290 0.0156

Moon -117075-07-12 04:48 J -41040028.41 -41040028.30 -41040028.18 0.0289 0.0252

Earth -117075-07-12 06:15 J -41040028.33 -41040028.24 -41040028.15 0.0289 0.0266 \*

Venus -117075-12-15 00:44 J -41039872.62 -41039872.47 -41039872.31 0.0287 0.0188

Mars -117074-03-02 18:29 J -41039794.94 -41039794.73 -41039794.52 0.0286 0.0204

Venus -117074-08-01 11:17 J -41039643.15 -41039643.03 -41039642.89 0.0284 0.0216

Venus -117073-03-17 20:39 J -41039413.75 -41039413.64 -41039413.53 0.0281 0.0238

Venus -117073-11-02 04:20 J -41039184.40 -41039184.32 -41039184.24 0.0278 0.0256

Venus -117072-06-19 10:48 J -41038955.08 -41038955.05 -41038955.00 0.0275 0.0269

Mercury -117071-04-01 18:58 J -41038668.79 -41038668.71 -41038668.62 0.0272 0.0232

Mercury -117071-06-29 13:41 J -41038580.08 -41038579.93 -41038579.78 0.0271 0.0132

Mercury -117071-09-26 08:24 J -41038491.32 -41038491.15 -41038490.97 0.0270 0.0033

Mercury -117071-12-24 03:22 J -41038402.53 -41038402.36 -41038402.18 0.0269 0.0069

Mercury -117070-03-22 22:34 J -41038313.69 -41038313.56 -41038313.42 0.0268 0.0169

Venus -117068-03-25 06:58 J -41037580.24 -41037580.21 -41037580.15 0.0262 0.0257

Venus	-117068-11-09 08:39 J	-41037351.21	-41037351.14	-41037351.05	0.0261	0.0241
Venus	-117067-06-26 10:05 J	-41037122.18	-41037122.08	-41037121.96	0.0260	0.0224
Venus	-117066-02-10 11:46 J	-41036893.14	-41036893.01	-41036892.87	0.0260	0.0203
Venus	-117066-09-27 13:12 J	-41036664.10	-41036663.95	-41036663.78	0.0259	0.0180
Venus	-117065-05-13 15:08 J	-41036435.04	-41036434.87	-41036434.69	0.0259	0.0155
Venus	-117065-12-28 17:46 J	-41036205.95	-41036205.76	-41036205.57	0.0259	0.0128
Venus	-117064-08-14 20:39 J	-41035976.83	-41035976.64	-41035976.42	0.0260	0.0099
Venus	-117063-04-01 00:44 J	-41035747.68	-41035747.47	-41035747.26	0.0261	0.0068
Venus	-117063-11-16 05:17 J	-41035518.49	-41035518.28	-41035518.06	0.0262	0.0036
Venus	-117062-07-03 11:03 J	-41035289.26	-41035289.04	-41035288.82	0.0263	0.0003
Venus	-117061-02-17 18:00 J	-41035059.97	-41035059.75	-41035059.53	0.0265	0.0032
Venus	-117061-10-04 02:10 J	-41034830.62	-41034830.41	-41034830.19	0.0267	0.0066
Venus	-117060-05-21 11:46 J	-41034601.21	-41034601.01	-41034600.81	0.0269	0.0101
Venus	-117059-01-05 22:34 J	-41034371.75	-41034371.56	-41034371.37	0.0271	0.0135
Earth	-117059-01-12 15:08 J	-41034365.08	-41034364.87	-41034364.65	0.0271	0.0144
Moon	-117059-01-12 18:00 J	-41034364.96	-41034364.75	-41034364.53	0.0271	0.0133 *
Venus	-117059-08-23 10:34 J	-41034142.22	-41034142.06	-41034141.88	0.0273	0.0169
Mars	-117058-01-26 06:44 J	-41033986.31	-41033986.22	-41033986.10	0.0275	0.0256
Venus	-117058-04-10 00:29 J	-41033912.62	-41033912.48	-41033912.32	0.0276	0.0200
Venus	-117058-11-25 16:05 J	-41033682.95	-41033682.83	-41033682.70	0.0279	0.0228
Venus	-117057-07-12 08:53 J	-41033453.22	-41033453.13	-41033453.03	0.0282	0.0254
Venus	-117056-02-27 02:53 J	-41033223.42	-41033223.38	-41033223.32	0.0285	0.0276
Mercury	-117055-04-16 16:05 J	-41032809.93	-41032809.83	-41032809.73	0.0290	0.0205
Mercury	-117055-07-14 05:46 J	-41032721.39	-41032721.26	-41032721.13	0.0291	0.0106
Mercury	-117055-10-10 19:27 J	-41032632.83	-41032632.69	-41032632.55	0.0292	0.0007
Mercury	-117054-01-07 08:53 J	-41032544.25	-41032544.13	-41032544.00	0.0293	0.0095
Mercury	-117054-04-05 22:20 J	-41032455.67	-41032455.57	-41032455.46	0.0294	0.0194
Mercury	-117054-07-03 11:46 J	-41032367.02	-41032367.01	-41032367.00	0.0295	0.0293
Venus	-117053-04-21 15:22 J	-41032073.88	-41032073.86	-41032073.83	0.0298	0.0296
Venus	-117053-12-07 15:22 J	-41031843.94	-41031843.86	-41031843.79	0.0300	0.0279

Venus	-117052-07-25 15:08 J	-41031613.97	-41031613.87	-41031613.75	0.0302	0.0255
Venus	-117051-03-12 15:22 J	-41031383.99	-41031383.86	-41031383.72	0.0303	0.0224
Venus	-117051-10-28 15:08 J	-41031154.03	-41031153.87	-41031153.71	0.0303	0.0187
Venus	-117050-06-15 14:10 J	-41030924.09	-41030923.91	-41030923.73	0.0303	0.0145
Venus	-117049-01-31 12:15 J	-41030694.17	-41030693.99	-41030693.79	0.0303	0.0101
Venus	-117049-09-17 09:36 J	-41030464.30	-41030464.10	-41030463.90	0.0301	0.0054
Venus	-117048-05-05 05:17 J	-41030234.48	-41030234.28	-41030234.07	0.0300	0.0009
Venus	-117048-12-20 23:46 J	-41030004.71	-41030004.51	-41030004.31	0.0298	0.0040
Venus	-117047-08-07 16:34 J	-41029775.01	-41029774.81	-41029774.62	0.0295	0.0083
Venus	-117046-03-25 07:41 J	-41029545.36	-41029545.18	-41029544.99	0.0293	0.0124
Earth	-117046-07-06 22:05 J	-41029441.80	-41029441.58	-41029441.35	0.0291	0.0087
Moon	-117046-07-06 23:46 J	-41029441.74	-41029441.51	-41029441.28	0.0291	0.0101 *
Venus	-117046-11-09 21:08 J	-41029315.79	-41029315.62	-41029315.44	0.0290	0.0160
Venus	-117045-06-26 08:53 J	-41029086.27	-41029086.13	-41029085.96	0.0287	0.0193
Venus	-117044-02-10 19:27 J	-41028856.81	-41028856.69	-41028856.55	0.0284	0.0219
Mars	-117044-04-22 17:32 J	-41028786.06	-41028785.77	-41028785.47	0.0283	0.0037
Venus	-117044-09-28 04:20 J	-41028627.42	-41028627.32	-41028627.21	0.0281	0.0242
Venus	-117043-05-15 12:00 J	-41028398.07	-41028398.00	-41028397.92	0.0278	0.0259
Venus	-117043-12-30 18:15 J	-41028168.77	-41028168.74	-41028168.70	0.0275	0.0271
Mercury	-117042-08-19 20:10 J	-41027936.71	-41027936.66	-41027936.58	0.0272	0.0254
Mercury	-117042-11-16 15:08 J	-41027848.02	-41027847.87	-41027847.73	0.0271	0.0154
Mercury	-117041-02-13 09:51 J	-41027759.26	-41027759.09	-41027758.92	0.0270	0.0054
Mercury	-117041-05-12 04:34 J	-41027670.48	-41027670.31	-41027670.13	0.0269	0.0047
Mercury	-117041-08-08 23:46 J	-41027581.66	-41027581.51	-41027581.36	0.0268	0.0147
Mercury	-117041-11-05 18:58 J	-41027492.77	-41027492.71	-41027492.64	0.0268	0.0247
Venus	-117039-10-05 12:58 J	-41026793.99	-41026793.96	-41026793.91	0.0262	0.0256
Venus	-117038-05-22 14:10 J	-41026564.97	-41026564.91	-41026564.81	0.0261	0.0241
Venus	-117037-01-06 15:51 J	-41026335.95	-41026335.84	-41026335.73	0.0260	0.0222
Venus	-117037-08-22 17:17 J	-41026106.91	-41026106.78	-41026106.64	0.0259	0.0202
Venus	-117036-04-08 18:58 J	-41025877.86	-41025877.71	-41025877.55	0.0259	0.0178

Venus -117036-11-23 20:39 J -41025648.80 -41025648.64 -41025648.45 0.0259 0.0153  
 Venus -117035-07-10 23:03 J -41025419.72 -41025419.54 -41025419.33 0.0259 0.0125  
 Venus -117034-02-25 02:24 J -41025190.61 -41025190.40 -41025190.19 0.0260 0.0095  
 Venus -117034-10-12 06:15 J -41024961.45 -41024961.24 -41024961.02 0.0260 0.0064  
 Venus -117033-05-28 11:03 J -41024732.26 -41024732.04 -41024731.82 0.0261 0.0031  
 Venus -117032-01-12 16:48 J -41024503.02 -41024502.80 -41024502.58 0.0263 0.0004  
 Venus -117032-08-29 23:46 J -41024273.72 -41024273.51 -41024273.29 0.0265 0.0037  
 Venus -117031-04-16 08:10 J -41024044.37 -41024044.16 -41024043.95 0.0267 0.0072  
 Venus -117031-12-01 17:32 J -41023814.96 -41023814.77 -41023814.56 0.0269 0.0107  
 Venus -117030-07-19 04:48 J -41023585.49 -41023585.30 -41023585.12 0.0271 0.0141  
 Earth -117029-01-20 06:44 J -41023400.30 -41023400.22 -41023400.14 0.0273 0.0259  
 Venus -117029-03-04 17:03 J -41023355.95 -41023355.79 -41023355.62 0.0274 0.0173  
 Venus -117029-10-20 07:12 J -41023126.34 -41023126.20 -41023126.05 0.0277 0.0204  
 Mars -117028-03-15 22:48 J -41022979.83 -41022979.55 -41022979.26 0.0278 0.0057  
 Venus -117028-06-06 22:48 J -41022896.67 -41022896.55 -41022896.43 0.0280 0.0233  
 Venus -117027-01-22 15:51 J -41022666.93 -41022666.84 -41022666.76 0.0283 0.0258  
 Venus -117027-09-09 10:05 J -41022437.12 -41022437.08 -41022437.03 0.0286 0.0279  
 Mercury -117026-09-03 18:00 J -41022077.83 -41022077.75 -41022077.66 0.0290 0.0231  
 Mercury -117026-12-01 07:56 J -41021989.29 -41021989.17 -41021989.05 0.0292 0.0131  
 Mercury -117025-02-27 21:36 J -41021900.74 -41021900.60 -41021900.46 0.0293 0.0031  
 Mercury -117025-05-26 11:17 J -41021812.17 -41021812.03 -41021811.90 0.0294 0.0070  
 Mercury -117025-08-23 00:29 J -41021723.58 -41021723.48 -41021723.36 0.0295 0.0170  
 Mercury -117025-11-19 13:56 J -41021634.97 -41021634.92 -41021634.86 0.0296 0.0269  
 Venus -117024-11-01 23:32 J -41021287.54 -41021287.52 -41021287.48 0.0299 0.0295  
 Venus -117023-06-19 23:46 J -41021057.59 -41021057.51 -41021057.43 0.0301 0.0276  
 Venus -117022-02-05 00:00 J -41020827.61 -41020827.50 -41020827.38 0.0302 0.0251  
 Venus -117022-09-23 00:15 J -41020597.63 -41020597.49 -41020597.35 0.0303 0.0219  
 Venus -117021-05-09 23:46 J -41020367.67 -41020367.51 -41020367.34 0.0304 0.0181  
 Venus -117021-12-25 22:48 J -41020137.73 -41020137.55 -41020137.36 0.0303 0.0139  
 Venus -117020-08-12 21:08 J -41019907.82 -41019907.62 -41019907.43 0.0303 0.0093

Venus	-117019-03-30 18:15 J	-41019677.94	-41019677.74	-41019677.54	0.0301	0.0046
Venus	-117019-11-15 13:56 J	-41019448.13	-41019447.92	-41019447.72	0.0299	0.0002
Venus	-117018-07-03 07:56 J	-41019218.36	-41019218.17	-41019217.96	0.0297	0.0049
Venus	-117017-02-18 00:44 J	-41018988.66	-41018988.47	-41018988.27	0.0295	0.0092
Venus	-117017-10-04 15:51 J	-41018759.02	-41018758.84	-41018758.66	0.0292	0.0132
Venus	-117016-05-22 05:17 J	-41018529.44	-41018529.28	-41018529.11	0.0289	0.0168
Venus	-117015-01-06 17:03 J	-41018299.93	-41018299.79	-41018299.64	0.0286	0.0200
Venus	-117015-08-24 03:22 J	-41018070.48	-41018070.36	-41018070.24	0.0283	0.0226
Venus	-117014-04-10 11:46 J	-41017841.09	-41017841.01	-41017840.90	0.0280	0.0248
Mars	-117014-06-12 21:22 J	-41017777.72	-41017777.61	-41017777.46	0.0279	0.0249
Venus	-117014-11-25 19:12 J	-41017611.75	-41017611.70	-41017611.63	0.0277	0.0264
Mercury	-117012-04-04 16:20 J	-41017115.95	-41017115.82	-41017115.68	0.0271	0.0176
Mercury	-117012-07-02 11:03 J	-41017027.20	-41017027.04	-41017026.87	0.0270	0.0077
Mercury	-117012-09-29 06:00 J	-41016938.43	-41016938.25	-41016938.07	0.0269	0.0024
Mercury	-117012-12-27 00:58 J	-41016849.61	-41016849.46	-41016849.30	0.0268	0.0124
Mercury	-117011-03-25 20:10 J	-41016760.75	-41016760.66	-41016760.56	0.0267	0.0224
Venus	-117009-04-16 19:56 J	-41016007.72	-41016007.67	-41016007.63	0.0262	0.0255
Venus	-117009-12-01 20:53 J	-41015778.70	-41015778.63	-41015778.53	0.0261	0.0240
Venus	-117008-07-18 22:20 J	-41015549.67	-41015549.57	-41015549.44	0.0260	0.0221
Venus	-117007-03-04 23:46 J	-41015320.64	-41015320.51	-41015320.36	0.0259	0.0199
Venus	-117007-10-20 01:12 J	-41015091.60	-41015091.45	-41015091.28	0.0259	0.0176
Venus	-117006-06-06 03:08 J	-41014862.54	-41014862.37	-41014862.18	0.0259	0.0149
Venus	-117005-01-21 05:32 J	-41014633.46	-41014633.27	-41014633.07	0.0259	0.0121
Venus	-117005-09-06 08:53 J	-41014404.33	-41014404.13	-41014403.92	0.0260	0.0091
Venus	-117004-04-23 12:44 J	-41014175.18	-41014174.97	-41014174.75	0.0261	0.0060
Venus	-117004-12-08 17:46 J	-41013945.98	-41013945.76	-41013945.54	0.0262	0.0027
Venus	-117003-07-25 23:32 J	-41013716.74	-41013716.52	-41013716.30	0.0263	0.0007
Venus	-117002-03-12 06:29 J	-41013487.44	-41013487.23	-41013487.01	0.0265	0.0042
Venus	-117002-10-27 15:08 J	-41013258.08	-41013257.87	-41013257.66	0.0267	0.0077
Venus	-117001-06-13 00:58 J	-41013028.66	-41013028.46	-41013028.26	0.0269	0.0112

# 117TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 117th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-117000-01-14 02:39 J	-41012813.64	-41012813.39	-41012813.14	0.0271	0.0050		
Moon	-117000-01-14 05:46 J	-41012813.51	-41012813.26	-41012813.00	0.0271	0.0037	*	
Venus	-117000-01-28 12:00 J	-41012799.18	-41012799.00	-41012798.81	0.0272	0.0146		
Venus	-117000-09-15 00:44 J	-41012569.63	-41012569.47	-41012569.30	0.0274	0.0179		
Venus	-116999-05-02 15:08 J	-41012340.01	-41012339.87	-41012339.73	0.0277	0.0210		
Venus	-116999-12-18 06:44 J	-41012110.32	-41012110.22	-41012110.10	0.0280	0.0239		
Mars	-116998-05-05 11:32 J	-41011972.26	-41011972.02	-41011971.77	0.0282	0.0158		
Venus	-116998-08-05 00:00 J	-41011880.57	-41011880.50	-41011880.42	0.0283	0.0264		
Venus	-116997-03-21 18:44 J	-41011650.73	-41011650.72	-41011650.70	0.0286	0.0285		
Mercury	-116996-01-20 20:39 J	-41011345.71	-41011345.64	-41011345.57	0.0290	0.0254		
Mercury	-116996-04-19 10:34 J	-41011257.18	-41011257.06	-41011256.94	0.0291	0.0154		
Mercury	-116996-07-17 00:15 J	-41011168.63	-41011168.49	-41011168.36	0.0292	0.0054		
Mercury	-116996-10-13 13:41 J	-41011080.06	-41011079.93	-41011079.79	0.0293	0.0047		
Mercury	-116995-01-10 03:22 J	-41010991.48	-41010991.36	-41010991.24	0.0294	0.0145		
Mercury	-116995-04-08 16:34 J	-41010902.88	-41010902.81	-41010902.73	0.0295	0.0245		
Venus	-116994-05-15 08:53 J	-41010501.14	-41010501.13	-41010501.09	0.0299	0.0296		

Venus -116994-12-31 09:22 J -41010271.19 -41010271.11 -41010271.03 0.0301 0.0276

Venus -116993-08-17 09:36 J -41010041.21 -41010041.10 -41010040.98 0.0302 0.0250

Venus -116992-04-04 09:36 J -41009811.23 -41009811.10 -41009810.95 0.0303 0.0216

Venus -116992-11-20 09:22 J -41009581.27 -41009581.11 -41009580.94 0.0303 0.0177

Venus -116991-07-08 08:24 J -41009351.33 -41009351.15 -41009350.97 0.0303 0.0134

Venus -116990-02-23 06:29 J -41009121.42 -41009121.23 -41009121.03 0.0302 0.0088

Venus -116990-10-11 03:22 J -41008891.56 -41008891.36 -41008891.15 0.0301 0.0041

Venus -116989-05-27 23:03 J -41008661.74 -41008661.54 -41008661.34 0.0299 0.0008

Venus -116988-01-12 17:03 J -41008431.99 -41008431.79 -41008431.59 0.0297 0.0054

Venus -116988-08-30 09:22 J -41008202.30 -41008202.11 -41008201.91 0.0295 0.0098

Venus -116987-04-17 00:29 J -41007972.66 -41007972.48 -41007972.30 0.0292 0.0137

Moon -116987-07-08 12:44 J -41007890.21 -41007889.97 -41007889.72 0.0291 0.0015

Earth -116987-07-08 15:22 J -41007890.09 -41007889.86 -41007889.62 0.0291 0.0032 \*

Venus -116987-12-02 13:27 J -41007743.10 -41007742.94 -41007742.77 0.0289 0.0173

Venus -116986-07-20 00:58 J -41007513.60 -41007513.46 -41007513.31 0.0286 0.0204

Mars -116986-07-28 22:48 J -41007504.78 -41007504.55 -41007504.29 0.0286 0.0159

Venus -116985-03-05 10:48 J -41007284.16 -41007284.05 -41007283.92 0.0283 0.0230

Venus -116985-10-20 19:12 J -41007054.78 -41007054.70 -41007054.59 0.0280 0.0251

Venus -116984-06-07 02:53 J -41006825.44 -41006825.38 -41006825.33 0.0277 0.0266

Mercury -116983-08-22 17:32 J -41006383.88 -41006383.77 -41006383.64 0.0272 0.0198

Mercury -116983-11-19 12:15 J -41006295.15 -41006294.99 -41006294.82 0.0271 0.0098

Mercury -116982-02-16 07:12 J -41006206.38 -41006206.20 -41006206.03 0.0270 0.0005

Mercury -116982-05-16 02:10 J -41006117.58 -41006117.41 -41006117.25 0.0269 0.0102

Mercury -116982-08-12 21:08 J -41006028.73 -41006028.62 -41006028.50 0.0268 0.0202

Venus -116980-10-28 01:12 J -41005221.48 -41005221.45 -41005221.39 0.0262 0.0255

Venus -116979-06-14 02:24 J -41004992.47 -41004992.40 -41004992.31 0.0260 0.0239

Venus -116978-01-29 03:22 J -41004763.46 -41004763.36 -41004763.23 0.0260 0.0220

Venus -116978-09-15 05:03 J -41004534.43 -41004534.29 -41004534.15 0.0259 0.0197

Venus -116977-05-01 06:29 J -41004305.39 -41004305.23 -41004305.06 0.0259 0.0173

Venus -116977-12-16 08:10 J -41004076.33 -41004076.16 -41004075.97 0.0259 0.0147

Venus -116976-08-02 10:48 J -41003847.24 -41003847.05 -41003846.85 0.0259 0.0118  
 Venus -116975-03-19 13:56 J -41003618.12 -41003617.92 -41003617.71 0.0260 0.0087  
 Venus -116975-11-03 17:46 J -41003388.97 -41003388.76 -41003388.54 0.0260 0.0056  
 Venus -116974-06-20 22:48 J -41003159.77 -41003159.55 -41003159.33 0.0262 0.0022  
 Venus -116973-02-05 04:48 J -41002930.52 -41002930.30 -41002930.08 0.0263 0.0013  
 Venus -116973-09-21 12:00 J -41002701.22 -41002701.00 -41002700.78 0.0265 0.0047  
 Venus -116972-05-08 20:24 J -41002471.85 -41002471.65 -41002471.44 0.0267 0.0083  
 Venus -116972-12-24 06:15 J -41002242.43 -41002242.24 -41002242.04 0.0269 0.0118  
 Venus -116971-08-10 17:32 J -41002012.95 -41002012.77 -41002012.59 0.0272 0.0152  
 Venus -116970-03-28 06:15 J -41001783.39 -41001783.24 -41001783.07 0.0274 0.0185  
 Mars -116970-06-22 13:27 J -41001697.09 -41001696.94 -41001696.78 0.0275 0.0229  
 Venus -116970-11-12 20:53 J -41001553.76 -41001553.63 -41001553.49 0.0277 0.0215  
 Venus -116969-06-29 12:44 J -41001324.07 -41001323.97 -41001323.86 0.0280 0.0244  
 Venus -116968-02-14 06:15 J -41001094.31 -41001094.24 -41001094.17 0.0283 0.0268  
 Mercury -116967-06-09 22:05 J -41000613.60 -41000613.58 -41000613.54 0.0290 0.0282  
 Mercury -116967-09-06 12:15 J -41000525.10 -41000524.99 -41000524.88 0.0291 0.0182  
 Mercury -116967-12-04 01:56 J -41000436.55 -41000436.42 -41000436.29 0.0292 0.0082  
 Mercury -116966-03-02 15:36 J -41000347.99 -41000347.85 -41000347.71 0.0293 0.0018  
 Mercury -116966-05-30 05:03 J -41000259.41 -41000259.29 -41000259.16 0.0294 0.0118  
 Mercury -116966-08-26 18:29 J -41000170.82 -41000170.73 -41000170.64 0.0295 0.0217  
 Venus -116965-11-24 16:05 J -40999714.86 -40999714.83 -40999714.79 0.0300 0.0294  
 Venus -116964-07-12 16:20 J -40999484.90 -40999484.82 -40999484.73 0.0302 0.0274  
 Venus -116963-02-27 16:48 J -40999254.91 -40999254.80 -40999254.67 0.0303 0.0246  
 Venus -116963-10-15 17:03 J -40999024.93 -40999024.79 -40999024.64 0.0304 0.0212  
 Venus -116962-06-02 16:34 J -40998794.97 -40998794.81 -40998794.63 0.0304 0.0172  
 Venus -116961-01-18 15:51 J -40998565.03 -40998564.84 -40998564.66 0.0303 0.0128  
 Venus -116961-09-04 13:41 J -40998335.12 -40998334.93 -40998334.73 0.0302 0.0081  
 Venus -116960-04-22 10:34 J -40998105.26 -40998105.06 -40998104.85 0.0301 0.0033  
 Venus -116960-12-08 06:00 J -40997875.45 -40997875.25 -40997875.05 0.0299 0.0015  
 Venus -116959-07-25 23:46 J -40997645.70 -40997645.51 -40997645.30 0.0297 0.0062



Venus	-116958-03-12 16:05 J	-40997416.01	-40997415.83	-40997415.63	0.0294	0.0106
Venus	-116958-10-28 06:58 J	-40997186.39	-40997186.21	-40997186.03	0.0291	0.0145
Venus	-116957-06-13 19:56 J	-40996956.82	-40996956.67	-40996956.50	0.0288	0.0181
Venus	-116956-01-29 07:12 J	-40996727.32	-40996727.20	-40996727.05	0.0285	0.0212
Venus	-116956-09-15 17:17 J	-40996497.89	-40996497.78	-40996497.66	0.0282	0.0236
Mars	-116956-09-17 15:08 J	-40996496.16	-40996495.87	-40996495.58	0.0282	0.0067
Venus	-116955-05-03 01:41 J	-40996268.50	-40996268.43	-40996268.34	0.0279	0.0256
Venus	-116955-12-18 08:39 J	-40996039.17	-40996039.14	-40996039.10	0.0276	0.0271
Mercury	-116953-01-09 18:29 J	-40995651.82	-40995651.73	-40995651.63	0.0271	0.0222
Mercury	-116953-04-07 12:58 J	-40995563.11	-40995562.96	-40995562.80	0.0270	0.0124
Mercury	-116953-07-05 07:56 J	-40995474.35	-40995474.17	-40995474.00	0.0270	0.0024
Mercury	-116953-10-02 02:53 J	-40995385.55	-40995385.38	-40995385.21	0.0269	0.0076
Mercury	-116953-12-29 21:51 J	-40995296.72	-40995296.59	-40995296.45	0.0268	0.0176
Venus	-116950-05-10 06:44 J	-40994435.26	-40994435.22	-40994435.16	0.0261	0.0254
Venus	-116950-12-25 07:56 J	-40994206.25	-40994206.17	-40994206.07	0.0260	0.0237
Venus	-116949-08-10 09:08 J	-40993977.22	-40993977.12	-40993976.99	0.0260	0.0218
Venus	-116948-03-27 10:34 J	-40993748.20	-40993748.06	-40993747.91	0.0259	0.0195
Venus	-116948-11-11 12:00 J	-40993519.16	-40993519.00	-40993518.83	0.0259	0.0170
Venus	-116947-06-28 13:56 J	-40993290.10	-40993289.92	-40993289.74	0.0259	0.0143
Venus	-116946-02-12 16:05 J	-40993061.02	-40993060.83	-40993060.62	0.0259	0.0115
Venus	-116946-09-29 19:27 J	-40992831.89	-40992831.69	-40992831.48	0.0260	0.0084
Venus	-116945-05-15 23:32 J	-40992602.74	-40992602.52	-40992602.30	0.0261	0.0051
Venus	-116945-12-31 04:20 J	-40992373.54	-40992373.32	-40992373.10	0.0262	0.0018
Venus	-116944-08-17 10:20 J	-40992144.29	-40992144.07	-40992143.85	0.0264	0.0017
Venus	-116943-04-03 17:32 J	-40991914.98	-40991914.77	-40991914.55	0.0265	0.0052
Venus	-116943-11-19 02:10 J	-40991685.62	-40991685.41	-40991685.20	0.0267	0.0087
Venus	-116942-07-06 12:00 J	-40991456.19	-40991456.00	-40991455.80	0.0270	0.0122
Moon	-116941-01-16 09:08 J	-40991262.37	-40991262.12	-40991261.86	0.0272	0.0051
Earth	-116941-01-16 10:48 J	-40991262.30	-40991262.05	-40991261.80	0.0272	0.0036 *
Venus	-116941-02-20 23:32 J	-40991226.70	-40991226.52	-40991226.34	0.0272	0.0157

Venus -116941-10-07 12:29 J -40990997.13 -40990996.98 -40990996.82 0.0275 0.0190  
 Venus -116940-05-25 03:08 J -40990767.50 -40990767.37 -40990767.24 0.0278 0.0221  
 Mars -116940-08-10 06:58 J -40990690.50 -40990690.21 -40990689.92 0.0279 0.0030  
 Venus -116939-01-09 19:12 J -40990537.79 -40990537.70 -40990537.60 0.0281 0.0249  
 Venus -116939-08-27 12:58 J -40990308.02 -40990307.96 -40990307.91 0.0284 0.0273  
 Mercury -116937-01-24 13:56 J -40989793.01 -40989792.92 -40989792.81 0.0290 0.0210  
 Mercury -116937-04-22 03:51 J -40989704.47 -40989704.34 -40989704.21 0.0291 0.0110  
 Mercury -116937-07-19 17:32 J -40989615.90 -40989615.77 -40989615.63 0.0292 0.0012  
 Mercury -116937-10-16 07:12 J -40989527.33 -40989527.20 -40989527.07 0.0294 0.0090  
 Mercury -116936-01-12 20:39 J -40989438.74 -40989438.64 -40989438.54 0.0295 0.0190  
 Mercury -116936-04-11 09:51 J -40989350.11 -40989350.09 -40989350.06 0.0296 0.0289  
 Venus -116935-06-06 23:46 J -40988928.54 -40988928.51 -40988928.47 0.0300 0.0295  
 Venus -116934-01-23 00:00 J -40988698.58 -40988698.50 -40988698.41 0.0301 0.0273  
 Venus -116934-09-10 00:29 J -40988468.60 -40988468.48 -40988468.36 0.0303 0.0244  
 Venus -116933-04-27 00:29 J -40988238.62 -40988238.48 -40988238.33 0.0303 0.0209  
 Venus -116933-12-13 00:15 J -40988008.66 -40988008.49 -40988008.32 0.0304 0.0168  
 Venus -116932-07-30 23:17 J -40987778.72 -40987778.53 -40987778.35 0.0303 0.0123  
 Venus -116931-03-17 21:22 J -40987548.81 -40987548.61 -40987548.41 0.0302 0.0076  
 Venus -116931-11-02 18:00 J -40987318.95 -40987318.75 -40987318.54 0.0301 0.0028  
 Venus -116930-06-20 13:27 J -40987089.14 -40987088.94 -40987088.74 0.0299 0.0021  
 Venus -116929-02-05 07:12 J -40986859.40 -40986859.20 -40986859.00 0.0297 0.0067  
 Venus -116929-09-21 23:32 J -40986629.71 -40986629.52 -40986629.33 0.0294 0.0110  
 Venus -116928-05-09 14:10 J -40986400.08 -40986399.91 -40986399.73 0.0291 0.0150  
 Moon -116928-07-10 00:58 J -40986338.68 -40986338.46 -40986338.25 0.0290 0.0121  
 Earth -116928-07-10 03:51 J -40986338.55 -40986338.34 -40986338.12 0.0290 0.0138 \*  
 Venus -116928-12-25 03:08 J -40986170.52 -40986170.37 -40986170.21 0.0288 0.0184  
 Venus -116927-08-11 14:10 J -40985941.03 -40985940.91 -40985940.76 0.0285 0.0215  
 Venus -116926-03-29 00:00 J -40985711.60 -40985711.50 -40985711.39 0.0282 0.0239  
 Venus -116926-11-13 07:56 J -40985482.23 -40985482.17 -40985482.08 0.0279 0.0259  
 Venus -116925-06-29 15:08 J -40985252.89 -40985252.87 -40985252.84 0.0276 0.0273

Mercury -116924-05-28 19:27 J -40984919.76 -40984919.69 -40984919.61 0.0272 0.0245

Mercury -116924-08-25 14:10 J -40984831.06 -40984830.91 -40984830.77 0.0271 0.0146

Mercury -116924-11-22 08:53 J -40984742.31 -40984742.13 -40984741.96 0.0270 0.0047

Mercury -116923-02-19 03:36 J -40984653.52 -40984653.35 -40984653.17 0.0269 0.0053

Mercury -116923-05-18 22:48 J -40984564.70 -40984564.55 -40984564.41 0.0268 0.0153

Mercury -116923-08-15 17:46 J -40984475.81 -40984475.76 -40984475.70 0.0267 0.0252

Venus -116921-11-19 11:46 J -40983649.05 -40983649.01 -40983648.95 0.0261 0.0253

Venus -116920-07-06 13:12 J -40983420.04 -40983419.95 -40983419.86 0.0260 0.0235

Venus -116919-02-20 13:56 J -40983191.03 -40983190.92 -40983190.79 0.0259 0.0216

Venus -116919-10-07 14:53 J -40982962.01 -40982961.88 -40982961.72 0.0259 0.0193

Venus -116918-05-24 16:20 J -40982732.98 -40982732.82 -40982732.64 0.0258 0.0168

Venus -116917-01-08 18:15 J -40982503.92 -40982503.74 -40982503.55 0.0258 0.0140

Venus -116917-08-24 20:53 J -40982274.83 -40982274.63 -40982274.43 0.0259 0.0110

Venus -116916-04-10 23:46 J -40982045.71 -40982045.51 -40982045.29 0.0259 0.0080

Venus -116916-11-26 03:51 J -40981816.56 -40981816.34 -40981816.12 0.0260 0.0047

Venus -116915-07-13 08:39 J -40981587.36 -40981587.14 -40981586.92 0.0262 0.0013

Venus -116914-02-27 14:39 J -40981358.11 -40981357.89 -40981357.67 0.0263 0.0022

Venus -116914-10-14 21:51 J -40981128.80 -40981128.59 -40981128.37 0.0265 0.0058

Venus -116913-05-31 06:29 J -40980899.43 -40980899.23 -40980899.02 0.0267 0.0093

Moon -116912-01-10 04:20 J -40980675.34 -40980675.32 -40980675.28 0.0269 0.0267

Venus -116912-01-15 16:34 J -40980670.01 -40980669.81 -40980669.62 0.0269 0.0128

Venus -116912-09-02 03:51 J -40980440.51 -40980440.34 -40980440.16 0.0272 0.0162

Venus -116911-04-19 16:48 J -40980210.95 -40980210.80 -40980210.64 0.0275 0.0195

Venus -116911-12-05 07:27 J -40979981.31 -40979981.19 -40979981.06 0.0278 0.0226

Venus -116910-07-22 23:32 J -40979751.60 -40979751.52 -40979751.42 0.0281 0.0253

Mars -116910-09-29 07:41 J -40979683.39 -40979683.18 -40979682.95 0.0282 0.0180

Venus -116909-03-08 17:17 J -40979521.82 -40979521.78 -40979521.73 0.0284 0.0276

Mercury -116908-06-12 15:22 J -40979060.94 -40979060.86 -40979060.79 0.0290 0.0240

Mercury -116908-09-09 05:03 J -40978972.41 -40978972.29 -40978972.17 0.0291 0.0141

Mercury -116908-12-06 18:44 J -40978883.85 -40978883.72 -40978883.58 0.0293 0.0042

Mercury -116907-03-05 08:24 J -40978795.28 -40978795.15 -40978795.01 0.0294 0.0059

Mercury -116907-06-01 21:51 J -40978706.70 -40978706.59 -40978706.47 0.0295 0.0159

Mercury -116907-08-29 11:17 J -40978618.09 -40978618.03 -40978617.96 0.0296 0.0258

Venus -116906-12-18 04:48 J -40978142.34 -40978142.30 -40978142.25 0.0300 0.0293

Venus -116905-08-04 05:17 J -40977912.36 -40977912.28 -40977912.19 0.0302 0.0271

Venus -116904-03-22 06:00 J -40977682.37 -40977682.25 -40977682.13 0.0303 0.0241

Venus -116904-11-07 06:15 J -40977452.39 -40977452.24 -40977452.09 0.0304 0.0204

Venus -116903-06-25 05:46 J -40977222.43 -40977222.26 -40977222.08 0.0304 0.0163

Venus -116902-02-10 04:48 J -40976992.48 -40976992.30 -40976992.11 0.0304 0.0117

Venus -116902-09-28 02:53 J -40976762.58 -40976762.38 -40976762.19 0.0302 0.0070

Venus -116901-05-14 23:32 J -40976532.72 -40976532.52 -40976532.32 0.0301 0.0020

Venus -116901-12-30 18:44 J -40976302.92 -40976302.72 -40976302.52 0.0299 0.0028

Venus -116900-08-17 12:29 J -40976073.18 -40976072.98 -40976072.78 0.0296 0.0074

Venus -116899-04-04 04:34 J -40975843.49 -40975843.31 -40975843.12 0.0294 0.0118

Earth -116899-07-04 12:29 J -40975752.10 -40975751.98 -40975751.83 0.0293 0.0242

Moon -116899-07-04 15:22 J -40975751.96 -40975751.86 -40975751.74 0.0293 0.0258 \*

Venus -116899-11-19 18:58 J -40975613.87 -40975613.71 -40975613.53 0.0291 0.0157

Venus -116898-07-07 07:41 J -40975384.32 -40975384.18 -40975384.01 0.0288 0.0192

Mars -116898-12-23 07:56 J -40975215.42 -40975215.17 -40975214.89 0.0285 0.0135

Venus -116897-02-21 19:12 J -40975154.83 -40975154.70 -40975154.57 0.0285 0.0221

Venus -116897-10-08 04:34 J -40974925.40 -40974925.31 -40974925.20 0.0281 0.0245

Venus -116896-05-25 12:58 J -40974696.02 -40974695.96 -40974695.89 0.0278 0.0264

Mercury -116894-01-12 14:10 J -40974099.03 -40974098.91 -40974098.77 0.0271 0.0175

Mercury -116894-04-11 08:53 J -40974010.29 -40974010.13 -40974009.96 0.0270 0.0076

Mercury -116894-07-09 03:51 J -40973921.52 -40973921.34 -40973921.17 0.0269 0.0024

Mercury -116894-10-05 22:48 J -40973832.71 -40973832.55 -40973832.39 0.0268 0.0124

Mercury -116893-01-02 17:46 J -40973743.85 -40973743.76 -40973743.66 0.0267 0.0223

Venus -116891-06-01 16:20 J -40972862.87 -40972862.82 -40972862.77 0.0261 0.0252

Venus -116890-01-16 17:17 J -40972633.87 -40972633.78 -40972633.68 0.0260 0.0234

Venus -116890-09-02 18:15 J -40972404.85 -40972404.74 -40972404.61 0.0259 0.0214

Venus -116889-04-18 19:27 J -40972175.83 -40972175.69 -40972175.54 0.0259 0.0190  
 Venus -116889-12-03 20:39 J -40971946.80 -40971946.64 -40971946.46 0.0259 0.0165  
 Venus -116888-07-20 22:34 J -40971717.74 -40971717.56 -40971717.37 0.0259 0.0137  
 Venus -116887-03-07 00:58 J -40971488.65 -40971488.46 -40971488.25 0.0259 0.0107  
 Venus -116887-10-22 04:05 J -40971259.54 -40971259.33 -40971259.11 0.0260 0.0076  
 Venus -116886-06-08 08:10 J -40971030.38 -40971030.16 -40971029.95 0.0261 0.0043  
 Venus -116885-01-23 12:58 J -40970801.18 -40970800.96 -40970800.74 0.0262 0.0009  
 Venus -116885-09-08 19:12 J -40970571.92 -40970571.70 -40970571.48 0.0264 0.0026  
 Venus -116884-04-26 02:24 J -40970342.61 -40970342.40 -40970342.18 0.0266 0.0062  
 Venus -116884-12-11 11:03 J -40970113.24 -40970113.04 -40970112.83 0.0268 0.0097  
 Venus -116883-07-28 21:08 J -40969883.81 -40969883.62 -40969883.43 0.0270 0.0132  
 Moon -116882-01-17 11:46 J -40969711.23 -40969711.01 -40969710.79 0.0272 0.0129  
 Earth -116882-01-17 15:08 J -40969711.09 -40969710.87 -40969710.63 0.0272 0.0114 \*  
 Venus -116882-03-15 08:39 J -40969654.31 -40969654.14 -40969653.96 0.0273 0.0167  
 Venus -116882-10-30 22:05 J -40969424.73 -40969424.58 -40969424.43 0.0275 0.0200  
 Mars -116882-11-16 10:05 J -40969408.26 -40969408.08 -40969407.89 0.0276 0.0208  
 Venus -116881-06-16 12:44 J -40969195.08 -40969194.97 -40969194.85 0.0278 0.0230  
 Venus -116880-02-01 04:48 J -40968965.37 -40968965.30 -40968965.20 0.0281 0.0258  
 Venus -116880-09-18 22:48 J -40968735.57 -40968735.55 -40968735.52 0.0284 0.0281  
 Mercury -116879-10-30 16:48 J -40968328.85 -40968328.80 -40968328.75 0.0290 0.0269  
 Mercury -116878-01-27 06:44 J -40968240.33 -40968240.22 -40968240.11 0.0291 0.0170  
 Mercury -116878-04-25 20:24 J -40968151.78 -40968151.65 -40968151.51 0.0292 0.0071  
 Mercury -116878-07-23 10:05 J -40968063.21 -40968063.08 -40968062.94 0.0293 0.0030  
 Mercury -116878-10-19 23:46 J -40967974.63 -40967974.51 -40967974.39 0.0294 0.0129  
 Mercury -116877-01-16 13:12 J -40967886.04 -40967885.95 -40967885.87 0.0295 0.0228  
 Venus -116876-06-29 11:17 J -40967356.06 -40967356.03 -40967355.98 0.0300 0.0293  
 Venus -116875-02-14 11:46 J -40967126.09 -40967126.01 -40967125.91 0.0302 0.0270  
 Venus -116875-10-02 12:00 J -40966896.11 -40966896.00 -40966895.86 0.0303 0.0239  
 Venus -116874-05-20 12:15 J -40966666.13 -40966665.99 -40966665.83 0.0304 0.0202  
 Venus -116873-01-05 12:00 J -40966436.17 -40966436.00 -40966435.82 0.0304 0.0159

Venus	-116873-08-22 11:03 J	-40966206.23	-40966206.04	-40966205.85	0.0303	0.0112
Venus	-116872-04-09 09:08 J	-40965976.32	-40965976.12	-40965975.92	0.0302	0.0064
Venus	-116872-11-25 05:46 J	-40965746.47	-40965746.26	-40965746.06	0.0301	0.0015
Venus	-116871-07-13 00:58 J	-40965516.67	-40965516.46	-40965516.26	0.0299	0.0034
Venus	-116870-02-27 18:29 J	-40965286.92	-40965286.73	-40965286.53	0.0296	0.0080
Venus	-116870-10-15 10:34 J	-40965057.24	-40965057.06	-40965056.87	0.0294	0.0123
Venus	-116869-06-01 00:58 J	-40964827.62	-40964827.46	-40964827.28	0.0291	0.0162
Earth	-116869-07-11 11:32 J	-40964787.16	-40964787.02	-40964786.87	0.0290	0.0230
Moon	-116869-07-11 13:12 J	-40964787.10	-40964786.95	-40964786.79	0.0290	0.0214 *
Venus	-116868-01-16 13:41 J	-40964598.07	-40964597.93	-40964597.77	0.0288	0.0196
Venus	-116868-09-03 00:44 J	-40964368.59	-40964368.47	-40964368.34	0.0285	0.0224
Mars	-116867-02-11 20:53 J	-40964206.90	-40964206.63	-40964206.35	0.0282	0.0099
Venus	-116867-04-20 10:20 J	-40964139.16	-40964139.07	-40964138.97	0.0281	0.0248
Venus	-116867-12-05 18:15 J	-40963909.79	-40963909.74	-40963909.68	0.0278	0.0266
Mercury	-116865-05-31 14:39 J	-40963367.00	-40963366.89	-40963366.77	0.0272	0.0200
Mercury	-116865-08-28 09:22 J	-40963278.27	-40963278.11	-40963277.95	0.0271	0.0101
Mercury	-116865-11-25 04:05 J	-40963189.50	-40963189.33	-40963189.15	0.0270	0.0006
Mercury	-116864-02-21 23:03 J	-40963100.70	-40963100.54	-40963100.37	0.0269	0.0098
Mercury	-116864-05-21 18:00 J	-40963011.86	-40963011.75	-40963011.62	0.0268	0.0198
Venus	-116862-12-12 20:24 J	-40962076.70	-40962076.65	-40962076.59	0.0261	0.0251
Venus	-116861-07-28 21:08 J	-40961847.70	-40961847.62	-40961847.51	0.0260	0.0233
Venus	-116860-03-14 22:20 J	-40961618.69	-40961618.57	-40961618.44	0.0259	0.0211
Venus	-116860-10-29 23:17 J	-40961389.68	-40961389.53	-40961389.38	0.0258	0.0187
Venus	-116859-06-16 00:29 J	-40961160.65	-40961160.48	-40961160.31	0.0258	0.0161
Venus	-116858-01-31 02:10 J	-40960931.59	-40960931.41	-40960931.22	0.0258	0.0133
Venus	-116858-09-17 04:48 J	-40960702.50	-40960702.30	-40960702.10	0.0259	0.0103
Venus	-116857-05-03 07:41 J	-40960473.38	-40960473.18	-40960472.96	0.0259	0.0072
Venus	-116857-12-18 11:46 J	-40960244.23	-40960244.01	-40960243.79	0.0260	0.0038
Venus	-116856-08-04 16:34 J	-40960015.03	-40960014.81	-40960014.59	0.0262	0.0004
Venus	-116855-03-21 22:34 J	-40959785.78	-40959785.56	-40959785.34	0.0263	0.0032

Venus -116855-11-06 05:46 J -40959556.47 -40959556.26 -40959556.04 0.0265 0.0067  
 Venus -116854-06-23 14:10 J -40959327.10 -40959326.91 -40959326.70 0.0267 0.0104  
 Earth -116853-01-12 05:31 J -40959124.42 -40959124.27 -40959124.10 0.0269 0.0206  
 Moon -116853-01-12 09:07 J -40959124.29 -40959124.12 -40959123.94 0.0269 0.0192 \*  
 Venus -116853-02-08 00:29 J -40959097.67 -40959097.48 -40959097.29 0.0270 0.0138  
 Venus -116853-09-24 12:00 J -40958868.17 -40958868.00 -40958867.83 0.0272 0.0172  
 Venus -116852-05-12 00:58 J -40958638.59 -40958638.46 -40958638.31 0.0275 0.0205  
 Venus -116852-12-27 15:51 J -40958408.95 -40958408.84 -40958408.72 0.0278 0.0235  
 Mars -116851-01-03 16:19 J -40958402.11 -40958401.82 -40958401.53 0.0278 0.0017  
 Venus -116851-08-14 07:55 J -40958179.24 -40958179.17 -40958179.09 0.0281 0.0262  
 Mercury -116849-06-15 07:12 J -40957508.29 -40957508.20 -40957508.09 0.0290 0.0206  
 Mercury -116849-09-11 21:07 J -40957419.75 -40957419.62 -40957419.49 0.0292 0.0106  
 Mercury -116849-12-09 10:48 J -40957331.19 -40957331.05 -40957330.91 0.0293 0.0008  
 Mercury -116848-03-08 00:29 J -40957242.61 -40957242.48 -40957242.35 0.0294 0.0094  
 Mercury -116848-06-04 13:55 J -40957154.02 -40957153.92 -40957153.82 0.0295 0.0193  
 Mercury -116848-09-01 03:07 J -40957065.38 -40957065.37 -40957065.35 0.0296 0.0292  
 Venus -116846-01-09 14:10 J -40956569.95 -40956569.91 -40956569.85 0.0301 0.0292  
 Venus -116846-08-27 14:39 J -40956339.97 -40956339.89 -40956339.79 0.0302 0.0267  
 Venus -116845-04-13 15:07 J -40956109.99 -40956109.87 -40956109.73 0.0304 0.0236  
 Venus -116845-11-29 15:36 J -40955880.00 -40955879.85 -40955879.70 0.0304 0.0197  
 Venus -116844-07-17 15:07 J -40955650.04 -40955649.87 -40955649.69 0.0304 0.0154  
 Venus -116843-03-04 14:10 J -40955420.10 -40955419.91 -40955419.71 0.0304 0.0107  
 Venus -116843-10-20 12:00 J -40955190.20 -40955190.00 -40955189.80 0.0302 0.0059  
 Venus -116842-06-07 08:39 J -40954960.34 -40954960.14 -40954959.94 0.0301 0.0009  
 Venus -116841-01-23 03:51 J -40954730.55 -40954730.34 -40954730.14 0.0299 0.0040  
 Venus -116841-09-08 21:22 J -40954500.80 -40954500.61 -40954500.41 0.0296 0.0086  
 Venus -116840-04-26 13:27 J -40954271.12 -40954270.94 -40954270.75 0.0293 0.0129  
 Moon -116840-07-05 14:24 J -40954201.09 -40954200.90 -40954200.70 0.0293 0.0174  
 Earth -116840-07-05 16:48 J -40954201.00 -40954200.80 -40954200.60 0.0293 0.0158 \*  
 Venus -116840-12-12 03:51 J -40954041.51 -40954041.34 -40954041.17 0.0290 0.0168

Venus -116839-07-29 16:19 J -40953811.96 -40953811.82 -40953811.67 0.0287 0.0202  
 Venus -116838-03-16 03:22 J -40953582.47 -40953582.36 -40953582.23 0.0284 0.0230  
 Venus -116838-10-31 12:58 J -40953353.04 -40953352.96 -40953352.87 0.0281 0.0253  
 Venus -116837-06-16 20:53 J -40953123.66 -40953123.63 -40953123.58 0.0278 0.0272  
 Mercury -116836-10-18 13:55 J -40952634.99 -40952634.92 -40952634.82 0.0272 0.0233  
 Mercury -116835-01-15 08:39 J -40952546.28 -40952546.14 -40952545.98 0.0271 0.0134  
 Mercury -116835-04-14 03:36 J -40952457.53 -40952457.35 -40952457.18 0.0270 0.0035  
 Mercury -116835-07-11 22:19 J -40952368.74 -40952368.57 -40952368.39 0.0269 0.0065  
 Mercury -116835-10-08 17:17 J -40952279.91 -40952279.78 -40952279.63 0.0268 0.0165  
 Mercury -116834-01-05 12:43 J -40952190.99 -40952190.97 -40952190.95 0.0267 0.0264  
 Venus -116832-06-23 23:17 J -40951290.58 -40951290.53 -40951290.46 0.0260 0.0251  
 Venus -116831-02-08 00:15 J -40951061.58 -40951061.49 -40951061.38 0.0260 0.0231  
 Venus -116831-09-25 00:58 J -40950832.57 -40950832.46 -40950832.32 0.0259 0.0210  
 Venus -116830-05-12 02:10 J -40950603.55 -40950603.41 -40950603.25 0.0258 0.0185  
 Venus -116830-12-27 03:36 J -40950374.52 -40950374.35 -40950374.17 0.0258 0.0159  
 Venus -116829-08-12 05:31 J -40950145.46 -40950145.27 -40950145.08 0.0259 0.0130  
 Venus -116828-03-29 07:55 J -40949916.38 -40949916.17 -40949915.97 0.0259 0.0099  
 Venus -116828-11-13 10:48 J -40949687.26 -40949687.05 -40949686.83 0.0260 0.0067  
 Venus -116827-06-30 14:39 J -40949458.11 -40949457.89 -40949457.67 0.0261 0.0034  
 Venus -116826-02-14 19:41 J -40949228.90 -40949228.68 -40949228.46 0.0262 0.0004  
 Venus -116826-10-02 01:41 J -40948999.64 -40948999.43 -40948999.21 0.0264 0.0036  
 Venus -116825-05-18 09:07 J -40948770.33 -40948770.12 -40948769.91 0.0266 0.0071  
 Venus -116824-01-02 17:46 J -40948540.96 -40948540.76 -40948540.56 0.0268 0.0107  
 Venus -116824-08-20 03:36 J -40948311.53 -40948311.35 -40948311.16 0.0270 0.0143  
 Earth -116823-01-18 15:22 J -40948160.04 -40948159.86 -40948159.66 0.0272 0.0181  
 Moon -116823-01-18 15:51 J -40948160.00 -40948159.84 -40948159.66 0.0272 0.0195 \*  
 Venus -116823-04-06 15:07 J -40948082.02 -40948081.87 -40948081.69 0.0273 0.0177  
 Venus -116823-11-22 04:48 J -40947852.44 -40947852.30 -40947852.16 0.0276 0.0209  
 Venus -116822-07-09 19:27 J -40947622.79 -40947622.69 -40947622.57 0.0279 0.0239  
 Mars -116821-02-22 15:07 J -40947395.07 -40947394.87 -40947394.64 0.0282 0.0194



Venus -116821-02-24 12:00 J -40947393.07 -40947393.00 -40947392.93 0.0282 0.0266

Mercury -116820-11-02 08:24 J -40946776.22 -40946776.15 -40946776.07 0.0290 0.0237

Mercury -116819-01-29 22:19 J -40946687.69 -40946687.57 -40946687.45 0.0291 0.0138

Mercury -116819-04-28 12:00 J -40946599.14 -40946599.00 -40946598.86 0.0292 0.0039

Mercury -116819-07-26 01:41 J -40946510.57 -40946510.43 -40946510.30 0.0293 0.0061

Mercury -116819-10-22 15:07 J -40946421.98 -40946421.87 -40946421.75 0.0294 0.0160

Mercury -116818-01-19 04:34 J -40946333.37 -40946333.31 -40946333.25 0.0295 0.0259

Venus -116817-07-21 18:58 J -40945783.75 -40945783.71 -40945783.65 0.0301 0.0292

Venus -116816-03-08 19:27 J -40945553.77 -40945553.69 -40945553.58 0.0302 0.0267

Venus -116816-10-24 19:55 J -40945323.79 -40945323.67 -40945323.53 0.0303 0.0233

Venus -116815-06-11 20:24 J -40945093.81 -40945093.65 -40945093.50 0.0304 0.0194

Venus -116814-01-27 19:55 J -40944863.84 -40944863.67 -40944863.49 0.0304 0.0150

Venus -116814-09-14 18:43 J -40944633.91 -40944633.72 -40944633.52 0.0303 0.0103

Venus -116813-05-01 16:48 J -40944404.00 -40944403.80 -40944403.60 0.0302 0.0053

Venus -116813-12-17 13:12 J -40944174.15 -40944173.95 -40944173.74 0.0300 0.0006

Venus -116812-08-04 08:24 J -40943944.35 -40943944.15 -40943943.95 0.0298 0.0045

Venus -116811-03-22 01:55 J -40943714.61 -40943714.42 -40943714.22 0.0296 0.0092

Venus -116811-11-06 18:00 J -40943484.93 -40943484.75 -40943484.57 0.0293 0.0134

Venus -116810-06-24 08:24 J -40943255.32 -40943255.15 -40943254.99 0.0290 0.0173

Venus -116809-02-08 20:39 J -40943025.77 -40943025.64 -40943025.48 0.0287 0.0207

Mars -116809-05-17 21:22 J -40942926.87 -40942926.61 -40942926.32 0.0286 0.0113

Venus -116809-09-25 07:41 J -40942796.28 -40942796.18 -40942796.05 0.0284 0.0234

Venus -116808-05-12 17:31 J -40942566.85 -40942566.77 -40942566.69 0.0281 0.0256

Venus -116808-12-28 01:12 J -40942337.47 -40942337.45 -40942337.41 0.0278 0.0274

Mercury -116806-03-07 14:24 J -40941902.95 -40941902.90 -40941902.85 0.0273 0.0260

Mercury -116806-06-04 08:39 J -40941814.27 -40941814.14 -40941813.99 0.0272 0.0162

Mercury -116806-09-01 03:22 J -40941725.53 -40941725.36 -40941725.19 0.0271 0.0063

Mercury -116806-11-28 22:19 J -40941636.74 -40941636.57 -40941636.40 0.0270 0.0037

Mercury -116805-02-25 17:17 J -40941547.93 -40941547.78 -40941547.62 0.0269 0.0137

Mercury -116805-05-24 12:29 J -40941459.06 -40941458.98 -40941458.90 0.0268 0.0237

Venus	-116802-01-04 02:39 J	-40940504.45	-40940504.39	-40940504.32	0.0260	0.0248
Venus	-116802-08-21 03:22 J	-40940275.45	-40940275.36	-40940275.25	0.0259	0.0230
Venus	-116801-04-06 04:19 J	-40940046.44	-40940046.32	-40940046.19	0.0259	0.0207
Venus	-116801-11-21 05:17 J	-40939817.43	-40939817.28	-40939817.12	0.0258	0.0182
Venus	-116800-07-08 06:29 J	-40939588.40	-40939588.23	-40939588.05	0.0258	0.0156
Venus	-116799-02-22 08:10 J	-40939359.35	-40939359.16	-40939358.97	0.0258	0.0127
Venus	-116799-10-09 10:34 J	-40939130.27	-40939130.06	-40939129.86	0.0259	0.0096
Venus	-116798-05-26 13:27 J	-40938901.15	-40938900.94	-40938900.72	0.0259	0.0063
Venus	-116797-01-10 17:17 J	-40938671.99	-40938671.78	-40938671.56	0.0260	0.0030
Venus	-116797-08-26 22:19 J	-40938442.79	-40938442.57	-40938442.35	0.0262	0.0006
Venus	-116796-04-13 04:19 J	-40938213.54	-40938213.32	-40938213.10	0.0263	0.0041
Venus	-116796-11-28 11:31 J	-40937984.23	-40937984.02	-40937983.81	0.0265	0.0077
Venus	-116795-07-15 20:10 J	-40937754.86	-40937754.66	-40937754.46	0.0267	0.0113
Moon	-116794-01-13 04:05 J	-40937573.55	-40937573.33	-40937573.09	0.0269	0.0129
Earth	-116794-01-13 04:48 J	-40937573.51	-40937573.30	-40937573.08	0.0269	0.0142 *
Venus	-116794-03-02 06:00 J	-40937525.43	-40937525.25	-40937525.06	0.0270	0.0148
Venus	-116794-10-17 17:46 J	-40937295.92	-40937295.76	-40937295.59	0.0273	0.0182
Mars	-116793-04-10 09:22 J	-40937120.30	-40937120.11	-40937119.90	0.0275	0.0201
Venus	-116793-06-03 06:58 J	-40937066.34	-40937066.21	-40937066.07	0.0275	0.0215
Venus	-116792-01-18 21:36 J	-40936836.69	-40936836.60	-40936836.49	0.0278	0.0244
Venus	-116792-09-05 13:55 J	-40936606.97	-40936606.92	-40936606.86	0.0282	0.0270
Mercury	-116790-03-22 08:39 J	-40936044.17	-40936044.14	-40936044.09	0.0289	0.0274
Mercury	-116790-06-18 22:34 J	-40935955.67	-40935955.56	-40935955.44	0.0290	0.0175
Mercury	-116790-09-15 12:29 J	-40935867.12	-40935866.98	-40935866.85	0.0292	0.0076
Mercury	-116790-12-13 02:10 J	-40935778.55	-40935778.41	-40935778.28	0.0293	0.0025
Mercury	-116789-03-10 15:36 J	-40935689.98	-40935689.85	-40935689.73	0.0294	0.0123
Mercury	-116789-06-07 04:48 J	-40935601.38	-40935601.30	-40935601.20	0.0295	0.0222
Venus	-116787-01-31 20:39 J	-40934997.68	-40934997.64	-40934997.58	0.0301	0.0291
Venus	-116787-09-18 21:22 J	-40934767.70	-40934767.61	-40934767.51	0.0303	0.0264
Venus	-116786-05-06 21:51 J	-40934537.72	-40934537.59	-40934537.45	0.0304	0.0230

Venus	-116786-12-22 22:05 J	-40934307.73	-40934307.58	-40934307.42	0.0304	0.0190
Venus	-116785-08-08 21:51 J	-40934077.77	-40934077.59	-40934077.41	0.0304	0.0146
Venus	-116784-03-26 20:53 J	-40933847.82	-40933847.63	-40933847.44	0.0304	0.0098
Venus	-116784-11-11 18:29 J	-40933617.93	-40933617.73	-40933617.52	0.0302	0.0049
Venus	-116783-06-29 15:07 J	-40933388.08	-40933387.87	-40933387.67	0.0301	0.0004
Venus	-116782-02-14 10:05 J	-40933158.28	-40933158.08	-40933157.88	0.0299	0.0051
Venus	-116782-10-02 03:36 J	-40932928.54	-40932928.35	-40932928.16	0.0296	0.0097
Venus	-116781-05-18 19:27 J	-40932698.86	-40932698.69	-40932698.50	0.0293	0.0141
Moon	-116781-07-06 13:27 J	-40932650.16	-40932649.94	-40932649.72	0.0293	0.0102
Earth	-116781-07-06 16:19 J	-40932650.04	-40932649.82	-40932649.59	0.0293	0.0087 *
Venus	-116780-01-03 09:51 J	-40932469.25	-40932469.09	-40932468.93	0.0290	0.0178
Venus	-116780-08-20 22:19 J	-40932239.70	-40932239.57	-40932239.43	0.0287	0.0211
Venus	-116779-04-07 09:22 J	-40932010.22	-40932010.11	-40932010.00	0.0284	0.0239
Mars	-116779-07-07 21:36 J	-40931918.87	-40931918.60	-40931918.32	0.0283	0.0105
Venus	-116779-11-22 18:29 J	-40931780.79	-40931780.73	-40931780.65	0.0281	0.0262
Mercury	-116777-10-21 07:27 J	-40931082.30	-40931082.19	-40931082.07	0.0272	0.0197
Mercury	-116776-01-18 02:10 J	-40930993.57	-40930993.41	-40930993.24	0.0271	0.0098
Mercury	-116776-04-16 21:07 J	-40930904.80	-40930904.62	-40930904.45	0.0270	0.0006
Mercury	-116776-07-14 16:05 J	-40930816.00	-40930815.83	-40930815.67	0.0269	0.0101
Mercury	-116776-10-11 11:03 J	-40930727.15	-40930727.04	-40930726.92	0.0268	0.0201
Venus	-116773-07-16 04:19 J	-40929718.37	-40929718.32	-40929718.25	0.0260	0.0248
Venus	-116772-03-02 05:03 J	-40929489.38	-40929489.29	-40929489.17	0.0259	0.0229
Venus	-116772-10-17 06:00 J	-40929260.37	-40929260.25	-40929260.11	0.0259	0.0205
Venus	-116771-06-03 06:58 J	-40929031.36	-40929031.21	-40929031.05	0.0258	0.0180
Venus	-116770-01-18 08:24 J	-40928802.33	-40928802.15	-40928801.97	0.0258	0.0153
Venus	-116770-09-04 10:05 J	-40928573.26	-40928573.08	-40928572.88	0.0258	0.0124
Venus	-116769-04-20 12:43 J	-40928344.18	-40928343.97	-40928343.77	0.0259	0.0092
Venus	-116769-12-05 15:36 J	-40928115.06	-40928114.85	-40928114.63	0.0260	0.0060
Venus	-116768-07-22 19:27 J	-40927885.91	-40927885.69	-40927885.47	0.0261	0.0026
Venus	-116767-03-09 00:29 J	-40927656.70	-40927656.48	-40927656.26	0.0262	0.0010

Venus -116767-10-24 06:29 J -40927427.44 -40927427.23 -40927427.01 0.0264 0.0045  
 Venus -116766-06-10 13:55 J -40927198.13 -40927197.92 -40927197.71 0.0266 0.0081  
 Venus -116765-01-25 22:19 J -40926968.76 -40926968.57 -40926968.36 0.0268 0.0117  
 Venus -116765-09-11 08:39 J -40926739.32 -40926739.14 -40926738.96 0.0270 0.0152  
 Earth -116764-01-19 12:43 J -40926609.08 -40926608.97 -40926608.85 0.0272 0.0240  
 Moon -116764-01-19 16:19 J -40926608.90 -40926608.82 -40926608.72 0.0272 0.0253 \*  
 Venus -116764-04-28 20:10 J -40926509.81 -40926509.66 -40926509.49 0.0273 0.0186  
 Venus -116764-12-14 09:36 J -40926280.23 -40926280.10 -40926279.97 0.0276 0.0218  
 Mars -116763-05-29 13:41 J -40926114.22 -40926113.93 -40926113.64 0.0278 0.0008  
 Venus -116763-08-01 00:15 J -40926050.58 -40926050.49 -40926050.38 0.0279 0.0248  
 Venus -116762-03-18 16:34 J -40925820.84 -40925820.81 -40925820.75 0.0282 0.0274  
 Mercury -116761-11-04 23:17 J -40925223.62 -40925223.53 -40925223.43 0.0290 0.0210  
 Mercury -116760-02-01 13:12 J -40925135.08 -40925134.95 -40925134.82 0.0291 0.0111  
 Mercury -116760-05-01 02:53 J -40925046.52 -40925046.38 -40925046.24 0.0292 0.0012  
 Mercury -116760-07-28 16:34 J -40924957.94 -40924957.81 -40924957.68 0.0293 0.0088  
 Mercury -116760-10-25 06:00 J -40924869.36 -40924869.25 -40924869.15 0.0294 0.0186  
 Mercury -116759-01-21 19:12 J -40924780.73 -40924780.70 -40924780.66 0.0295 0.0285  
 Venus -116758-08-14 00:15 J -40924211.53 -40924211.49 -40924211.43 0.0301 0.0290  
 Venus -116757-03-31 00:43 J -40923981.56 -40923981.47 -40923981.36 0.0302 0.0263  
 Venus -116757-11-16 01:12 J -40923751.58 -40923751.45 -40923751.31 0.0303 0.0228  
 Venus -116756-07-04 01:27 J -40923521.60 -40923521.44 -40923521.28 0.0304 0.0187  
 Venus -116755-02-19 00:58 J -40923291.63 -40923291.46 -40923291.27 0.0304 0.0142  
 Venus -116755-10-06 23:46 J -40923061.70 -40923061.51 -40923061.31 0.0303 0.0093  
 Venus -116754-05-24 21:22 J -40922831.81 -40922831.61 -40922831.40 0.0302 0.0043  
 Venus -116753-01-09 18:00 J -40922601.96 -40922601.75 -40922601.55 0.0300 0.0009  
 Venus -116753-08-26 12:58 J -40922372.16 -40922371.96 -40922371.76 0.0298 0.0057  
 Venus -116752-04-13 06:43 J -40922142.41 -40922142.22 -40922142.03 0.0296 0.0103  
 Venus -116752-11-28 22:34 J -40921912.74 -40921912.56 -40921912.38 0.0293 0.0145  
 Venus -116751-07-16 12:29 J -40921683.13 -40921682.98 -40921682.81 0.0290 0.0183  
 Venus -116750-03-03 00:58 J -40921453.58 -40921453.46 -40921453.31 0.0287 0.0216

Venus -116750-10-18 12:00 J -40921224.10 -40921224.00 -40921223.89 0.0284 0.0243  
 Venus -116749-06-03 21:36 J -40920994.66 -40920994.60 -40920994.53 0.0281 0.0265  
 Mercury -116747-03-10 06:58 J -40920350.30 -40920350.21 -40920350.11 0.0273 0.0228  
 Mercury -116747-06-07 01:27 J -40920261.58 -40920261.44 -40920261.28 0.0271 0.0130  
 Mercury -116747-09-03 20:24 J -40920172.82 -40920172.65 -40920172.48 0.0270 0.0030  
 Mercury -116747-12-01 15:22 J -40920084.03 -40920083.86 -40920083.69 0.0270 0.0070  
 Mercury -116746-02-28 10:19 J -40919995.20 -40919995.07 -40919994.93 0.0269 0.0170  
 Venus -116743-01-26 06:58 J -40918932.28 -40918932.21 -40918932.14 0.0260 0.0247  
 Venus -116743-09-12 07:27 J -40918703.28 -40918703.19 -40918703.07 0.0259 0.0227  
 Venus -116742-04-29 08:10 J -40918474.28 -40918474.16 -40918474.01 0.0259 0.0204  
 Venus -116742-12-14 09:22 J -40918245.26 -40918245.11 -40918244.95 0.0258 0.0178  
 Venus -116741-07-30 10:34 J -40918016.23 -40918016.06 -40918015.87 0.0258 0.0150  
 Venus -116740-03-16 12:15 J -40917787.18 -40917786.99 -40917786.79 0.0258 0.0120  
 Venus -116740-10-31 14:39 J -40917558.09 -40917557.89 -40917557.68 0.0259 0.0088  
 Venus -116739-06-17 17:31 J -40917328.98 -40917328.77 -40917328.55 0.0259 0.0056  
 Venus -116738-02-01 21:36 J -40917099.82 -40917099.60 -40917099.38 0.0260 0.0021  
 Venus -116738-09-19 02:39 J -40916870.61 -40916870.39 -40916870.17 0.0262 0.0015  
 Venus -116737-05-05 08:39 J -40916641.36 -40916641.14 -40916640.93 0.0263 0.0051  
 Venus -116737-12-20 15:51 J -40916412.05 -40916411.84 -40916411.63 0.0265 0.0087  
 Venus -116736-08-07 00:15 J -40916182.68 -40916182.49 -40916182.29 0.0268 0.0123  
 Moon -116735-01-13 21:51 J -40916022.83 -40916022.59 -40916022.35 0.0269 0.0072  
 Earth -116735-01-14 01:27 J -40916022.68 -40916022.44 -40916022.20 0.0269 0.0085 \*  
 Venus -116735-03-24 10:05 J -40915953.25 -40915953.08 -40915952.89 0.0270 0.0158  
 Venus -116735-11-08 21:51 J -40915723.74 -40915723.59 -40915723.43 0.0273 0.0192  
 Venus -116734-06-26 11:03 J -40915494.16 -40915494.04 -40915493.91 0.0276 0.0224  
 Venus -116733-02-11 01:55 J -40915264.51 -40915264.42 -40915264.33 0.0279 0.0253  
 Mars -116733-07-17 02:10 J -40915107.62 -40915107.41 -40915107.19 0.0281 0.0192  
 Venus -116733-09-27 17:46 J -40915034.77 -40915034.76 -40915034.72 0.0282 0.0279  
 Mercury -116731-03-24 23:31 J -40914491.59 -40914491.52 -40914491.45 0.0289 0.0249  
 Mercury -116731-06-21 13:12 J -40914403.06 -40914402.95 -40914402.83 0.0290 0.0150

Mercury -116731-09-18 02:53 J -40914314.51 -40914314.38 -40914314.24 0.0292 0.0052

Mercury -116731-12-15 16:34 J -40914225.94 -40914225.81 -40914225.67 0.0293 0.0048

Mercury -116730-03-14 06:00 J -40914137.37 -40914137.25 -40914137.13 0.0294 0.0147

Mercury -116730-06-10 19:27 J -40914048.76 -40914048.69 -40914048.62 0.0295 0.0245

Venus -116728-02-23 00:43 J -40913425.52 -40913425.47 -40913425.41 0.0301 0.0289

Venus -116728-10-11 01:12 J -40913195.55 -40913195.45 -40913195.34 0.0303 0.0260

Venus -116727-05-29 01:41 J -40912965.56 -40912965.43 -40912965.29 0.0304 0.0225

Venus -116726-01-14 01:55 J -40912735.58 -40912735.42 -40912735.26 0.0304 0.0184

Venus -116726-09-01 01:27 J -40912505.62 -40912505.44 -40912505.25 0.0304 0.0138

Venus -116725-04-18 00:29 J -40912275.68 -40912275.48 -40912275.29 0.0304 0.0089

Venus -116725-12-03 22:05 J -40912045.78 -40912045.58 -40912045.38 0.0302 0.0038

Venus -116724-07-21 18:29 J -40911815.93 -40911815.73 -40911815.53 0.0301 0.0013

Venus -116723-03-08 13:27 J -40911586.14 -40911585.94 -40911585.74 0.0298 0.0062

Venus -116723-10-24 06:58 J -40911356.40 -40911356.21 -40911356.02 0.0296 0.0108

Venus -116722-06-10 22:34 J -40911126.72 -40911126.56 -40911126.37 0.0293 0.0151

Earth -116722-07-08 11:03 J -40911099.27 -40911099.04 -40911098.80 0.0293 0.0030

Moon -116722-07-08 13:12 J -40911099.18 -40911098.95 -40911098.72 0.0293 0.0038 \*

Venus -116721-01-26 12:58 J -40910897.11 -40910896.96 -40910896.80 0.0290 0.0188

Venus -116721-09-12 01:27 J -40910667.57 -40910667.44 -40910667.31 0.0287 0.0221

Mars -116721-10-10 06:29 J -40910639.50 -40910639.23 -40910638.95 0.0286 0.0116

Venus -116720-04-29 12:29 J -40910438.08 -40910437.98 -40910437.88 0.0284 0.0248

Venus -116720-12-14 21:36 J -40910208.64 -40910208.60 -40910208.53 0.0280 0.0270

Mercury -116718-07-28 05:17 J -40909618.31 -40909618.28 -40909618.24 0.0273 0.0266

Mercury -116718-10-24 23:46 J -40909529.64 -40909529.51 -40909529.37 0.0272 0.0168

Mercury -116717-01-21 18:29 J -40909440.89 -40909440.73 -40909440.56 0.0271 0.0069

Mercury -116717-04-19 13:27 J -40909352.11 -40909351.94 -40909351.76 0.0270 0.0031

Mercury -116717-07-17 08:24 J -40909263.30 -40909263.15 -40909262.99 0.0269 0.0131

Mercury -116717-10-14 03:36 J -40909174.43 -40909174.35 -40909174.26 0.0268 0.0231

Venus -116714-08-08 07:27 J -40908146.24 -40908146.19 -40908146.11 0.0260 0.0246

Venus -116713-03-24 08:24 J -40907917.25 -40907917.15 -40907917.03 0.0259 0.0225

Venus	-116713-11-08 09:07 J	-40907688.24	-40907688.12	-40907687.97	0.0258	0.0202
Venus	-116712-06-25 10:19 J	-40907459.23	-40907459.07	-40907458.91	0.0258	0.0175
Venus	-116711-02-09 11:31 J	-40907230.19	-40907230.02	-40907229.83	0.0258	0.0147
Venus	-116711-09-26 13:27 J	-40907001.13	-40907000.94	-40907000.74	0.0258	0.0117
Venus	-116710-05-13 15:51 J	-40906772.05	-40906771.84	-40906771.63	0.0259	0.0085
Venus	-116710-12-28 18:58 J	-40906542.93	-40906542.71	-40906542.49	0.0260	0.0052
Venus	-116709-08-13 22:48 J	-40906313.77	-40906313.55	-40906313.33	0.0261	0.0017
Venus	-116708-03-31 03:51 J	-40906084.56	-40906084.34	-40906084.12	0.0262	0.0018
Venus	-116708-11-15 09:51 J	-40905855.30	-40905855.09	-40905854.87	0.0264	0.0054
Venus	-116707-07-02 17:03 J	-40905625.99	-40905625.79	-40905625.58	0.0266	0.0091
Venus	-116706-02-17 01:41 J	-40905396.62	-40905396.43	-40905396.23	0.0268	0.0126
Venus	-116706-10-04 12:00 J	-40905167.17	-40905167.00	-40905166.82	0.0271	0.0162
Venus	-116705-05-20 23:31 J	-40904937.66	-40904937.52	-40904937.36	0.0273	0.0196
Mars	-116705-09-03 02:10 J	-40904832.60	-40904832.41	-40904832.20	0.0275	0.0195
Venus	-116704-01-05 12:58 J	-40904708.08	-40904707.96	-40904707.84	0.0276	0.0227
Venus	-116704-08-23 03:36 J	-40904478.43	-40904478.35	-40904478.26	0.0279	0.0256
Venus	-116703-04-09 19:55 J	-40904248.67	-40904248.67	-40904248.66	0.0282	0.0282
Mercury	-116702-08-12 00:00 J	-40903759.52	-40903759.50	-40903759.48	0.0289	0.0284
Mercury	-116702-11-08 13:55 J	-40903671.03	-40903670.92	-40903670.82	0.0290	0.0186
Mercury	-116701-02-05 03:36 J	-40903582.48	-40903582.35	-40903582.22	0.0291	0.0087
Mercury	-116701-05-03 17:17 J	-40903493.92	-40903493.78	-40903493.64	0.0292	0.0012
Mercury	-116701-07-31 06:43 J	-40903405.34	-40903405.22	-40903405.09	0.0293	0.0110
Mercury	-116701-10-27 20:10 J	-40903316.75	-40903316.66	-40903316.56	0.0294	0.0209
Venus	-116699-09-05 03:36 J	-40902639.40	-40902639.35	-40902639.29	0.0301	0.0288
Venus	-116698-04-23 04:05 J	-40902409.43	-40902409.33	-40902409.22	0.0302	0.0258
Venus	-116698-12-09 04:19 J	-40902179.45	-40902179.32	-40902179.17	0.0303	0.0223
Venus	-116697-07-26 04:34 J	-40901949.47	-40901949.31	-40901949.14	0.0304	0.0180
Venus	-116696-03-13 04:19 J	-40901719.50	-40901719.32	-40901719.14	0.0304	0.0133
Venus	-116696-10-29 02:53 J	-40901489.57	-40901489.38	-40901489.18	0.0303	0.0083
Venus	-116695-06-16 00:29 J	-40901259.68	-40901259.48	-40901259.28	0.0302	0.0033

Venus	-116694-01-31 20:39 J	-40901029.84	-40901029.64	-40901029.43	0.0300	0.0020
Venus	-116694-09-18 15:36 J	-40900800.04	-40900799.85	-40900799.65	0.0298	0.0068
Venus	-116693-05-05 09:22 J	-40900570.30	-40900570.11	-40900569.92	0.0295	0.0114
Venus	-116693-12-21 01:12 J	-40900340.62	-40900340.45	-40900340.28	0.0293	0.0156
Venus	-116692-08-07 15:22 J	-40900111.01	-40900110.86	-40900110.71	0.0290	0.0193
Venus	-116691-03-25 03:36 J	-40899881.47	-40899881.35	-40899881.21	0.0287	0.0226
Venus	-116691-11-09 14:39 J	-40899651.98	-40899651.89	-40899651.79	0.0284	0.0252
Mars	-116691-11-30 11:17 J	-40899631.29	-40899631.03	-40899630.74	0.0283	0.0110
Venus	-116690-06-27 00:00 J	-40899422.54	-40899422.50	-40899422.44	0.0280	0.0273
Mercury	-116688-03-12 22:48 J	-40898797.65	-40898797.55	-40898797.42	0.0273	0.0201
Mercury	-116688-06-09 17:46 J	-40898708.92	-40898708.76	-40898708.60	0.0271	0.0101
Mercury	-116688-09-06 12:29 J	-40898620.15	-40898619.98	-40898619.80	0.0270	0.0006
Mercury	-116688-12-04 07:27 J	-40898531.35	-40898531.19	-40898531.02	0.0270	0.0099
Mercury	-116687-03-03 02:39 J	-40898442.50	-40898442.39	-40898442.27	0.0269	0.0199
Venus	-116684-02-17 09:36 J	-40897360.16	-40897360.10	-40897360.02	0.0260	0.0245
Venus	-116684-10-04 10:19 J	-40897131.17	-40897131.07	-40897130.95	0.0259	0.0223
Venus	-116683-05-21 11:17 J	-40896902.17	-40896902.03	-40896901.89	0.0259	0.0199
Venus	-116682-01-05 12:15 J	-40896673.15	-40896672.99	-40896672.83	0.0258	0.0173
Venus	-116682-08-22 13:27 J	-40896444.11	-40896443.94	-40896443.75	0.0258	0.0144
Venus	-116681-04-07 15:22 J	-40896215.05	-40896214.86	-40896214.66	0.0258	0.0113
Venus	-116681-11-22 17:46 J	-40895985.97	-40895985.76	-40895985.55	0.0259	0.0081
Venus	-116680-07-09 20:39 J	-40895756.85	-40895756.64	-40895756.42	0.0259	0.0047
Venus	-116679-02-24 00:43 J	-40895527.69	-40895527.47	-40895527.25	0.0261	0.0012
Venus	-116679-10-11 05:46 J	-40895298.48	-40895298.26	-40895298.04	0.0262	0.0024
Venus	-116678-05-28 11:46 J	-40895069.22	-40895069.01	-40895068.79	0.0264	0.0060
Venus	-116677-01-12 18:58 J	-40894839.91	-40894839.71	-40894839.50	0.0265	0.0097
Venus	-116677-08-29 03:36 J	-40894610.54	-40894610.35	-40894610.16	0.0268	0.0133
Earth	-116676-01-14 20:39 J	-40894471.89	-40894471.64	-40894471.39	0.0269	0.0032
Moon	-116676-01-14 20:39 J	-40894471.88	-40894471.64	-40894471.40	0.0269	0.0022 *
Venus	-116676-04-15 13:27 J	-40894381.10	-40894380.94	-40894380.76	0.0270	0.0168



Venus -116676-12-01 01:12 J -40894151.59 -40894151.45 -40894151.30 0.0273 0.0202  
 Venus -116675-07-18 14:10 J -40893922.01 -40893921.91 -40893921.79 0.0276 0.0234  
 Mars -116675-10-22 00:15 J -40893826.78 -40893826.49 -40893826.20 0.0277 0.0011  
 Venus -116674-03-05 05:03 J -40893692.36 -40893692.29 -40893692.22 0.0279 0.0262  
 Mercury -116672-03-27 13:55 J -40892939.01 -40892938.92 -40892938.83 0.0289 0.0225  
 Mercury -116672-06-24 03:36 J -40892850.47 -40892850.35 -40892850.22 0.0290 0.0127  
 Mercury -116672-09-20 17:17 J -40892761.92 -40892761.78 -40892761.64 0.0291 0.0029  
 Mercury -116672-12-18 06:58 J -40892673.35 -40892673.21 -40892673.08 0.0293 0.0071  
 Mercury -116671-03-16 20:24 J -40892584.76 -40892584.65 -40892584.54 0.0294 0.0169  
 Mercury -116671-06-13 09:36 J -40892496.15 -40892496.10 -40892496.04 0.0295 0.0267  
 Venus -116669-03-17 03:22 J -40891853.40 -40891853.36 -40891853.28 0.0301 0.0288  
 Venus -116669-11-02 03:51 J -40891623.44 -40891623.34 -40891623.22 0.0303 0.0257  
 Venus -116668-06-20 04:19 J -40891393.45 -40891393.32 -40891393.17 0.0304 0.0220  
 Venus -116667-02-05 04:19 J -40891163.47 -40891163.32 -40891163.14 0.0304 0.0178  
 Venus -116667-09-23 04:05 J -40890933.51 -40890933.33 -40890933.15 0.0304 0.0130  
 Venus -116666-05-11 02:39 J -40890703.58 -40890703.39 -40890703.19 0.0303 0.0080  
 Venus -116666-12-27 00:15 J -40890473.69 -40890473.49 -40890473.29 0.0302 0.0028  
 Venus -116665-08-12 20:39 J -40890243.85 -40890243.64 -40890243.44 0.0300 0.0023  
 Venus -116664-03-30 15:36 J -40890014.05 -40890013.85 -40890013.66 0.0298 0.0073  
 Venus -116664-11-15 08:53 J -40889784.32 -40889784.13 -40889783.94 0.0296 0.0119  
 Venus -116663-07-03 00:29 J -40889554.65 -40889554.48 -40889554.31 0.0293 0.0161  
 Earth -116663-07-09 03:36 J -40889548.59 -40889548.35 -40889548.11 0.0293 0.0022  
 Moon -116663-07-09 06:29 J -40889548.47 -40889548.23 -40889547.98 0.0293 0.0019 \*  
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 Venus -116662-10-05 03:07 J -40889095.49 -40889095.37 -40889095.25 0.0287 0.0230  
 Venus -116661-05-21 13:55 J -40888866.00 -40888865.92 -40888865.83 0.0283 0.0257  
 Venus -116660-01-05 23:17 J -40888636.55 -40888636.53 -40888636.49 0.0280 0.0277  
 Mercury -116659-07-30 20:53 J -40888065.71 -40888065.63 -40888065.55 0.0273 0.0241  
 Mercury -116659-10-27 15:22 J -40887977.00 -40887976.86 -40887976.70 0.0272 0.0142  
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Mercury -116658-04-23 05:17 J -40887799.45 -40887799.28 -40887799.11 0.0270 0.0058

Mercury -116658-07-21 00:29 J -40887710.63 -40887710.48 -40887710.34 0.0269 0.0158

Mercury -116658-10-17 19:41 J -40887621.72 -40887621.68 -40887621.63 0.0268 0.0258

Venus -116655-08-30 09:36 J -40886574.16 -40886574.10 -40886574.02 0.0260 0.0244

Venus -116654-04-16 10:34 J -40886345.16 -40886345.06 -40886344.94 0.0259 0.0222

Venus -116654-12-01 11:31 J -40886116.15 -40886116.02 -40886115.87 0.0258 0.0198

Venus -116653-07-17 12:43 J -40885887.13 -40885886.97 -40885886.80 0.0258 0.0170

Venus -116652-03-03 14:10 J -40885658.09 -40885657.91 -40885657.72 0.0258 0.0141

Venus -116652-10-18 15:51 J -40885429.03 -40885428.84 -40885428.63 0.0258 0.0111

Venus -116651-06-04 18:29 J -40885199.94 -40885199.73 -40885199.52 0.0259 0.0077

Venus -116650-01-19 21:36 J -40884970.82 -40884970.60 -40884970.38 0.0260 0.0043

Venus -116650-09-06 01:41 J -40884741.65 -40884741.43 -40884741.21 0.0261 0.0009

Venus -116649-04-22 06:43 J -40884512.44 -40884512.22 -40884512.00 0.0262 0.0028

Venus -116649-12-07 12:43 J -40884283.18 -40884282.97 -40884282.75 0.0264 0.0064

Venus -116648-07-24 20:10 J -40884053.86 -40884053.66 -40884053.46 0.0266 0.0100

Venus -116647-03-11 04:48 J -40883824.49 -40883824.30 -40883824.11 0.0268 0.0136

Venus -116647-10-26 14:53 J -40883595.04 -40883594.88 -40883594.70 0.0271 0.0172

Venus -116646-06-13 02:39 J -40883365.53 -40883365.39 -40883365.24 0.0273 0.0205

Venus -116645-01-28 15:51 J -40883135.94 -40883135.84 -40883135.73 0.0276 0.0237

Venus -116645-09-14 06:29 J -40882906.29 -40882906.23 -40882906.16 0.0279 0.0265

Mars -116645-12-09 12:15 J -40882820.19 -40882819.99 -40882819.77 0.0280 0.0193

Mercury -116643-08-14 14:10 J -40882206.96 -40882206.91 -40882206.85 0.0289 0.0261

Mercury -116643-11-11 04:05 J -40882118.44 -40882118.33 -40882118.21 0.0290 0.0163

Mercury -116642-02-07 17:46 J -40882029.89 -40882029.76 -40882029.62 0.0291 0.0065

Mercury -116642-05-07 07:27 J -40881941.33 -40881941.19 -40881941.05 0.0292 0.0033

Mercury -116642-08-03 20:53 J -40881852.75 -40881852.63 -40881852.51 0.0293 0.0132

Mercury -116642-10-31 10:19 J -40881764.15 -40881764.07 -40881763.99 0.0294 0.0230

Venus -116640-09-27 05:46 J -40881067.31 -40881067.26 -40881067.18 0.0301 0.0287

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Venus -116639-12-31 06:43 J -40880607.35 -40880607.22 -40880607.07 0.0303 0.0217

Venus -116638-08-18 06:43 J -40880377.38 -40880377.22 -40880377.04 0.0304 0.0173  
 Venus -116637-04-04 06:29 J -40880147.42 -40880147.23 -40880147.05 0.0304 0.0125  
 Venus -116637-11-20 04:48 J -40879917.50 -40879917.30 -40879917.10 0.0303 0.0074  
 Venus -116636-07-08 02:10 J -40879687.61 -40879687.41 -40879687.20 0.0302 0.0023  
 Venus -116635-02-22 22:19 J -40879457.77 -40879457.57 -40879457.36 0.0300 0.0030  
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 Venus -116634-05-28 10:34 J -40878998.24 -40878998.06 -40878997.87 0.0295 0.0125  
 Venus -116633-01-13 02:24 J -40878768.57 -40878768.40 -40878768.23 0.0292 0.0167  
 Venus -116633-08-29 16:19 J -40878538.96 -40878538.82 -40878538.67 0.0289 0.0204  
 Mars -116632-03-04 10:19 J -40878352.34 -40878352.07 -40878351.80 0.0287 0.0120  
 Venus -116632-04-16 04:48 J -40878309.40 -40878309.30 -40878309.17 0.0286 0.0236  
 Venus -116632-12-01 16:05 J -40878079.91 -40878079.83 -40878079.75 0.0283 0.0261  
 Mercury -116629-03-15 14:24 J -40877245.02 -40877244.90 -40877244.76 0.0273 0.0176  
 Mercury -116629-06-12 09:22 J -40877156.28 -40877156.11 -40877155.94 0.0272 0.0075  
 Mercury -116629-09-09 04:19 J -40877067.50 -40877067.32 -40877067.15 0.0271 0.0025  
 Mercury -116629-12-06 23:17 J -40876978.69 -40876978.53 -40876978.37 0.0270 0.0125  
 Mercury -116628-03-05 18:15 J -40876889.82 -40876889.74 -40876889.63 0.0269 0.0226  
 Venus -116625-03-11 11:46 J -40875788.08 -40875788.01 -40875787.93 0.0260 0.0243  
 Venus -116625-10-26 12:29 J -40875559.08 -40875558.98 -40875558.86 0.0259 0.0220  
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 Venus -116623-01-27 14:39 J -40875101.06 -40875100.89 -40875100.73 0.0258 0.0168  
 Venus -116623-09-13 16:05 J -40874872.01 -40874871.83 -40874871.64 0.0258 0.0138  
 Venus -116622-04-30 18:00 J -40874642.95 -40874642.75 -40874642.55 0.0258 0.0107  
 Venus -116622-12-15 20:10 J -40874413.86 -40874413.66 -40874413.44 0.0259 0.0074  
 Venus -116621-07-31 23:31 J -40874184.74 -40874184.52 -40874184.30 0.0260 0.0039  
 Venus -116620-03-18 03:36 J -40873955.57 -40873955.35 -40873955.13 0.0261 0.0005  
 Venus -116620-11-02 08:39 J -40873726.36 -40873726.14 -40873725.92 0.0262 0.0033  
 Venus -116619-06-19 14:39 J -40873497.10 -40873496.89 -40873496.67 0.0264 0.0070  
 Venus -116618-02-03 22:05 J -40873267.78 -40873267.58 -40873267.38 0.0266 0.0107  
 Venus -116618-09-21 06:43 J -40873038.40 -40873038.22 -40873038.03 0.0268 0.0143

Earth -116617-01-16 15:22 J -40872921.11 -40872920.86 -40872920.60 0.0269 0.0021  
 Moon -116617-01-16 19:12 J -40872920.95 -40872920.70 -40872920.45 0.0269 0.0028 \*  
 Venus -116617-05-07 16:48 J -40872808.96 -40872808.80 -40872808.63 0.0270 0.0178  
 Venus -116617-12-23 04:19 J -40872579.45 -40872579.32 -40872579.18 0.0273 0.0212  
 Mars -116616-01-26 15:36 J -40872545.03 -40872544.85 -40872544.64 0.0273 0.0199  
 Venus -116616-08-09 17:31 J -40872349.87 -40872349.77 -40872349.67 0.0276 0.0243  
 Venus -116615-03-27 08:10 J -40872120.20 -40872120.16 -40872120.11 0.0279 0.0271  
 Mercury -116613-03-30 04:19 J -40871386.42 -40871386.32 -40871386.22 0.0289 0.0202  
 Mercury -116613-06-26 18:00 J -40871297.88 -40871297.75 -40871297.62 0.0290 0.0104  
 Mercury -116613-09-23 07:41 J -40871209.32 -40871209.18 -40871209.04 0.0291 0.0007  
 Mercury -116613-12-20 21:07 J -40871120.75 -40871120.62 -40871120.49 0.0293 0.0092  
 Mercury -116612-03-19 10:34 J -40871032.16 -40871032.06 -40871031.96 0.0294 0.0190  
 Mercury -116612-06-15 23:46 J -40870943.53 -40870943.51 -40870943.48 0.0295 0.0288  
 Venus -116610-04-09 06:29 J -40870281.30 -40870281.23 -40870281.17 0.0301 0.0285  
 Venus -116610-11-25 06:29 J -40870051.33 -40870051.23 -40870051.11 0.0303 0.0253  
 Venus -116609-07-12 06:58 J -40869821.35 -40869821.21 -40869821.07 0.0304 0.0214  
 Venus -116608-02-27 06:43 J -40869591.38 -40869591.22 -40869591.04 0.0304 0.0171  
 Venus -116608-10-15 06:15 J -40869361.42 -40869361.24 -40869361.05 0.0304 0.0121  
 Venus -116607-06-02 04:48 J -40869131.50 -40869131.30 -40869131.10 0.0303 0.0070  
 Venus -116606-01-18 02:10 J -40868901.61 -40868901.41 -40868901.20 0.0302 0.0018  
 Venus -116606-09-04 22:19 J -40868671.77 -40868671.57 -40868671.36 0.0300 0.0034  
 Venus -116605-04-21 17:17 J -40868441.98 -40868441.78 -40868441.58 0.0298 0.0083  
 Venus -116605-12-07 10:19 J -40868212.25 -40868212.07 -40868211.88 0.0295 0.0130  
 Moon -116604-07-09 17:17 J -40867998.01 -40867997.78 -40867997.54 0.0293 0.0076  
 Earth -116604-07-09 19:27 J -40867997.92 -40867997.69 -40867997.46 0.0293 0.0071 \*  
 Venus -116604-07-25 01:55 J -40867982.58 -40867982.42 -40867982.25 0.0293 0.0172  
 Venus -116603-03-11 15:51 J -40867752.97 -40867752.84 -40867752.69 0.0290 0.0209  
 Venus -116603-10-27 04:19 J -40867523.42 -40867523.32 -40867523.20 0.0286 0.0240  
 Mars -116602-04-24 09:07 J -40867344.38 -40867344.12 -40867343.83 0.0284 0.0099  
 Venus -116602-06-13 15:22 J -40867293.92 -40867293.86 -40867293.78 0.0283 0.0265

Mercury -116600-08-02 12:15 J -40866513.09 -40866512.99 -40866512.88 0.0273 0.0216

Mercury -116600-10-30 06:58 J -40866424.36 -40866424.21 -40866424.05 0.0272 0.0117

Mercury -116599-01-27 01:55 J -40866335.59 -40866335.42 -40866335.24 0.0271 0.0016

Mercury -116599-04-25 20:53 J -40866246.79 -40866246.63 -40866246.46 0.0270 0.0084

Mercury -116599-07-23 16:05 J -40866157.95 -40866157.83 -40866157.70 0.0269 0.0184

Venus -116596-09-21 11:46 J -40865002.09 -40865002.01 -40865001.93 0.0260 0.0242

Venus -116595-05-08 12:43 J -40864773.08 -40864772.97 -40864772.85 0.0259 0.0219

Venus -116595-12-23 13:41 J -40864544.07 -40864543.93 -40864543.78 0.0258 0.0193

Venus -116594-08-09 15:07 J -40864315.03 -40864314.87 -40864314.70 0.0258 0.0165

Venus -116593-03-25 16:34 J -40864085.99 -40864085.81 -40864085.62 0.0258 0.0135

Venus -116593-11-09 18:29 J -40863856.92 -40863856.73 -40863856.52 0.0258 0.0103

Venus -116592-06-26 21:07 J -40863627.83 -40863627.62 -40863627.41 0.0259 0.0070

Venus -116591-02-11 00:29 J -40863398.70 -40863398.48 -40863398.26 0.0260 0.0035

Venus -116591-09-28 04:48 J -40863169.52 -40863169.30 -40863169.08 0.0261 0.0003

Venus -116590-05-15 09:51 J -40862940.31 -40862940.09 -40862939.87 0.0263 0.0037

Venus -116590-12-30 16:05 J -40862711.04 -40862710.83 -40862710.62 0.0264 0.0074

Venus -116589-08-15 23:17 J -40862481.72 -40862481.53 -40862481.32 0.0266 0.0111

Venus -116588-04-02 08:10 J -40862252.34 -40862252.16 -40862251.97 0.0269 0.0147

Venus -116588-11-17 18:29 J -40862022.89 -40862022.73 -40862022.57 0.0271 0.0182

Venus -116587-07-05 06:00 J -40861793.37 -40861793.25 -40861793.11 0.0274 0.0216

Venus -116586-02-19 19:12 J -40861563.78 -40861563.70 -40861563.59 0.0277 0.0247

Mars -116586-03-16 13:12 J -40861539.24 -40861538.95 -40861538.66 0.0277 0.0009

Venus -116586-10-07 10:05 J -40861334.11 -40861334.08 -40861334.03 0.0280 0.0275

Mercury -116584-08-17 04:48 J -40860654.38 -40860654.30 -40860654.22 0.0289 0.0237

Mercury -116584-11-13 18:29 J -40860565.85 -40860565.73 -40860565.60 0.0290 0.0140

Mercury -116583-02-10 08:24 J -40860477.29 -40860477.15 -40860477.02 0.0291 0.0042

Mercury -116583-05-09 21:51 J -40860388.73 -40860388.59 -40860388.45 0.0292 0.0057

Mercury -116583-08-06 11:17 J -40860300.15 -40860300.03 -40860299.91 0.0293 0.0155

Mercury -116583-11-03 00:29 J -40860211.54 -40860211.48 -40860211.41 0.0294 0.0252

Venus -116581-10-19 09:22 J -40859495.18 -40859495.11 -40859495.04 0.0301 0.0283

Venus	-116580-06-06 09:36 J	-40859265.21	-40859265.10	-40859264.98	0.0303	0.0250
Venus	-116579-01-22 09:51 J	-40859035.23	-40859035.09	-40859034.94	0.0303	0.0211
Venus	-116579-09-09 09:36 J	-40858805.26	-40858805.10	-40858804.92	0.0304	0.0166
Venus	-116578-04-27 09:07 J	-40858575.31	-40858575.12	-40858574.93	0.0303	0.0116
Venus	-116578-12-13 07:27 J	-40858345.39	-40858345.19	-40858344.99	0.0303	0.0064
Venus	-116577-07-30 04:34 J	-40858115.51	-40858115.31	-40858115.10	0.0301	0.0012
Venus	-116576-03-17 00:43 J	-40857885.67	-40857885.47	-40857885.27	0.0299	0.0040
Venus	-116576-11-01 19:12 J	-40857655.89	-40857655.70	-40857655.50	0.0297	0.0090
Venus	-116575-06-19 12:29 J	-40857426.16	-40857425.98	-40857425.80	0.0295	0.0136
Venus	-116574-02-04 03:51 J	-40857196.49	-40857196.34	-40857196.17	0.0292	0.0178
Venus	-116574-09-21 18:00 J	-40856966.88	-40856966.75	-40856966.61	0.0289	0.0214
Venus	-116573-05-08 06:29 J	-40856737.33	-40856737.23	-40856737.12	0.0286	0.0245
Venus	-116573-12-23 17:17 J	-40856507.83	-40856507.78	-40856507.71	0.0283	0.0270
Mercury	-116571-12-20 11:17 J	-40855781.09	-40855781.03	-40855780.95	0.0274	0.0250
Mercury	-116570-03-19 06:00 J	-40855692.39	-40855692.25	-40855692.10	0.0273	0.0150
Mercury	-116570-06-16 00:58 J	-40855603.63	-40855603.46	-40855603.29	0.0272	0.0050
Mercury	-116570-09-12 19:55 J	-40855514.84	-40855514.67	-40855514.50	0.0271	0.0050
Mercury	-116570-12-10 15:07 J	-40855426.02	-40855425.87	-40855425.73	0.0270	0.0151
Mercury	-116569-03-08 10:05 J	-40855337.13	-40855337.08	-40855337.01	0.0269	0.0252
Venus	-116566-04-03 14:10 J	-40854215.99	-40854215.91	-40854215.83	0.0260	0.0241
Venus	-116566-11-18 14:53 J	-40853986.99	-40853986.88	-40853986.75	0.0259	0.0217
Venus	-116565-07-04 16:05 J	-40853757.97	-40853757.83	-40853757.68	0.0259	0.0191
Venus	-116564-02-18 17:17 J	-40853528.95	-40853528.78	-40853528.61	0.0258	0.0163
Venus	-116564-10-05 18:43 J	-40853299.90	-40853299.72	-40853299.52	0.0258	0.0132
Venus	-116563-05-22 20:53 J	-40853070.83	-40853070.63	-40853070.42	0.0259	0.0100
Venus	-116562-01-06 23:31 J	-40852841.73	-40852841.52	-40852841.30	0.0259	0.0066
Venus	-116562-08-24 02:53 J	-40852612.59	-40852612.38	-40852612.16	0.0260	0.0031
Venus	-116561-04-09 07:12 J	-40852383.42	-40852383.20	-40852382.98	0.0261	0.0006
Venus	-116561-11-24 12:29 J	-40852154.20	-40852153.98	-40852153.76	0.0262	0.0043
Venus	-116560-07-11 18:29 J	-40851924.93	-40851924.73	-40851924.51	0.0264	0.0081

Venus -116559-02-26 01:55 J -40851695.61 -40851695.42 -40851695.21 0.0266 0.0118  
 Venus -116559-10-13 11:03 J -40851466.21 -40851466.04 -40851465.86 0.0268 0.0154  
 Earth -116558-01-17 12:15 J -40851370.23 -40851369.99 -40851369.74 0.0269 0.0076  
 Moon -116558-01-17 12:29 J -40851370.22 -40851369.98 -40851369.72 0.0269 0.0078 \*  
 Venus -116558-05-30 21:07 J -40851236.77 -40851236.62 -40851236.46 0.0271 0.0189  
 Venus -116557-01-15 08:53 J -40851007.25 -40851007.13 -40851007.00 0.0273 0.0223  
 Venus -116557-08-31 21:51 J -40850777.66 -40850777.59 -40850777.50 0.0276 0.0254  
 Mars -116556-05-04 00:43 J -40850532.69 -40850532.47 -40850532.25 0.0279 0.0186  
 Mercury -116554-01-04 05:17 J -40849922.32 -40849922.28 -40849922.23 0.0288 0.0273  
 Mercury -116554-04-02 19:12 J -40849833.81 -40849833.70 -40849833.59 0.0289 0.0176  
 Mercury -116554-06-30 08:53 J -40849745.27 -40849745.13 -40849745.00 0.0290 0.0079  
 Mercury -116554-09-26 22:19 J -40849656.71 -40849656.57 -40849656.43 0.0291 0.0019  
 Mercury -116554-12-24 11:46 J -40849568.13 -40849568.01 -40849567.88 0.0292 0.0117  
 Mercury -116553-03-22 00:58 J -40849479.54 -40849479.46 -40849479.36 0.0294 0.0215  
 Venus -116551-05-01 10:05 J -40848709.14 -40848709.08 -40848709.00 0.0301 0.0283  
 Venus -116551-12-17 10:19 J -40848479.18 -40848479.07 -40848478.95 0.0303 0.0249  
 Venus -116550-08-04 10:34 J -40848249.21 -40848249.06 -40848248.91 0.0304 0.0208  
 Venus -116549-03-21 10:19 J -40848019.24 -40848019.07 -40848018.89 0.0304 0.0162  
 Venus -116549-11-06 09:22 J -40847789.29 -40847789.11 -40847788.91 0.0304 0.0113  
 Venus -116548-06-24 07:41 J -40847559.38 -40847559.18 -40847558.98 0.0303 0.0060  
 Venus -116547-02-09 05:03 J -40847329.50 -40847329.29 -40847329.09 0.0302 0.0009  
 Venus -116547-09-27 00:58 J -40847099.66 -40847099.46 -40847099.26 0.0300 0.0045  
 Venus -116546-05-14 19:41 J -40846869.88 -40846869.68 -40846869.49 0.0298 0.0095  
 Venus -116546-12-30 12:29 J -40846640.15 -40846639.98 -40846639.79 0.0295 0.0141  
 Moon -116545-07-10 09:07 J -40846447.33 -40846447.12 -40846446.91 0.0293 0.0132  
 Earth -116545-07-10 12:00 J -40846447.21 -40846447.00 -40846446.78 0.0293 0.0122 \*  
 Venus -116545-08-16 04:05 J -40846410.49 -40846410.33 -40846410.17 0.0292 0.0182  
 Venus -116544-04-02 18:00 J -40846180.88 -40846180.75 -40846180.62 0.0289 0.0219  
 Mars -116544-07-27 06:00 J -40846065.51 -40846065.25 -40846064.98 0.0288 0.0131  
 Venus -116544-11-18 06:15 J -40845951.33 -40845951.24 -40845951.14 0.0286 0.0249

Venus -116543-07-05 17:03 J -40845721.83 -40845721.79 -40845721.74 0.0283 0.0274  
 Mercury -116541-08-05 04:05 J -40844960.45 -40844960.33 -40844960.21 0.0273 0.0191  
 Mercury -116541-11-01 22:48 J -40844871.72 -40844871.55 -40844871.39 0.0272 0.0091  
 Mercury -116540-01-29 17:46 J -40844782.94 -40844782.76 -40844782.59 0.0271 0.0010  
 Mercury -116540-04-28 12:43 J -40844694.13 -40844693.97 -40844693.80 0.0270 0.0111  
 Mercury -116540-07-26 07:55 J -40844605.27 -40844605.17 -40844605.05 0.0269 0.0211  
 Venus -116537-10-13 14:10 J -40843429.98 -40843429.91 -40843429.82 0.0260 0.0240  
 Venus -116536-05-30 15:22 J -40843200.97 -40843200.86 -40843200.74 0.0259 0.0216  
 Venus -116535-01-14 16:19 J -40842971.95 -40842971.82 -40842971.66 0.0259 0.0190  
 Venus -116535-08-31 18:00 J -40842742.91 -40842742.75 -40842742.57 0.0258 0.0161  
 Venus -116534-04-17 19:55 J -40842513.86 -40842513.67 -40842513.48 0.0258 0.0129  
 Venus -116534-12-02 22:05 J -40842284.78 -40842284.58 -40842284.37 0.0259 0.0096  
 Venus -116533-07-19 00:43 J -40842055.68 -40842055.47 -40842055.25 0.0259 0.0062  
 Venus -116532-03-05 04:19 J -40841826.54 -40841826.32 -40841826.10 0.0260 0.0026  
 Venus -116532-10-20 08:39 J -40841597.36 -40841597.14 -40841596.91 0.0261 0.0012  
 Venus -116531-06-06 13:55 J -40841368.13 -40841367.92 -40841367.70 0.0263 0.0048  
 Venus -116530-01-21 20:24 J -40841138.86 -40841138.65 -40841138.44 0.0265 0.0085  
 Venus -116530-09-08 04:05 J -40840909.52 -40840909.33 -40840909.14 0.0267 0.0122  
 Earth -116529-01-12 02:39 J -40840783.49 -40840783.39 -40840783.25 0.0268 0.0236  
 Moon -116529-01-12 03:07 J -40840783.48 -40840783.37 -40840783.24 0.0268 0.0233 \*  
 Venus -116529-04-24 12:58 J -40840680.13 -40840679.96 -40840679.78 0.0269 0.0158  
 Venus -116529-12-09 23:17 J -40840450.68 -40840450.53 -40840450.37 0.0271 0.0193  
 Mars -116528-06-21 10:48 J -40840257.25 -40840257.05 -40840256.85 0.0274 0.0193  
 Venus -116528-07-27 11:03 J -40840221.15 -40840221.04 -40840220.91 0.0274 0.0226  
 Venus -116527-03-14 00:15 J -40839991.56 -40839991.49 -40839991.40 0.0277 0.0257  
 Mercury -116525-08-19 19:55 J -40839101.77 -40839101.67 -40839101.58 0.0289 0.0210  
 Mercury -116525-11-16 09:36 J -40839013.23 -40839013.10 -40839012.97 0.0290 0.0112  
 Mercury -116524-02-12 23:17 J -40838924.67 -40838924.53 -40838924.39 0.0291 0.0016  
 Mercury -116524-05-12 12:43 J -40838836.10 -40838835.97 -40838835.84 0.0292 0.0083  
 Mercury -116524-08-09 01:55 J -40838747.52 -40838747.42 -40838747.31 0.0293 0.0181



Mercury -116524-11-05 15:22 J -40838658.90 -40838658.86 -40838658.82 0.0294 0.0277  
 Venus -116522-11-11 13:55 J -40837922.99 -40837922.92 -40837922.84 0.0301 0.0281  
 Venus -116521-06-28 14:10 J -40837693.02 -40837692.91 -40837692.79 0.0303 0.0246  
 Venus -116520-02-13 14:10 J -40837463.05 -40837462.91 -40837462.75 0.0303 0.0205  
 Venus -116520-10-01 14:10 J -40837233.08 -40837232.91 -40837232.74 0.0304 0.0157  
 Venus -116519-05-19 13:12 J -40837003.14 -40837002.95 -40837002.76 0.0303 0.0106  
 Venus -116518-01-04 11:17 J -40836773.23 -40836773.03 -40836772.83 0.0302 0.0054  
 Venus -116518-08-22 08:24 J -40836543.36 -40836543.15 -40836542.95 0.0301 0.0002  
 Venus -116517-04-08 04:19 J -40836313.52 -40836313.32 -40836313.12 0.0299 0.0052  
 Venus -116517-11-23 22:34 J -40836083.75 -40836083.56 -40836083.37 0.0297 0.0102  
 Earth -116516-07-04 15:22 J -40835860.94 -40835860.86 -40835860.77 0.0295 0.0273  
 Moon -116516-07-04 18:00 J -40835860.84 -40835860.75 -40835860.64 0.0295 0.0267 \*  
 Venus -116516-07-11 15:22 J -40835854.03 -40835853.86 -40835853.68 0.0294 0.0148  
 Venus -116515-02-26 06:58 J -40835624.37 -40835624.21 -40835624.06 0.0292 0.0189  
 Venus -116515-10-13 20:39 J -40835394.76 -40835394.64 -40835394.51 0.0289 0.0225  
 Venus -116514-05-31 09:07 J -40835165.20 -40835165.12 -40835165.02 0.0286 0.0255  
 Mars -116514-09-16 18:00 J -40835057.02 -40835056.75 -40835056.46 0.0284 0.0095  
 Venus -116513-01-15 19:55 J -40834935.69 -40834935.67 -40834935.64 0.0283 0.0279  
 Mercury -116512-12-23 03:22 J -40834228.46 -40834228.36 -40834228.26 0.0274 0.0223  
 Mercury -116511-03-21 22:05 J -40834139.73 -40834139.58 -40834139.42 0.0273 0.0123  
 Mercury -116511-06-18 17:03 J -40834050.97 -40834050.79 -40834050.62 0.0272 0.0022  
 Mercury -116511-09-15 12:00 J -40833962.16 -40833962.00 -40833961.83 0.0271 0.0079  
 Mercury -116511-12-13 07:12 J -40833873.33 -40833873.20 -40833873.06 0.0270 0.0179  
 Venus -116508-09-08 15:51 J -40832872.85 -40832872.84 -40832872.82 0.0262 0.0261  
 Venus -116507-04-25 17:17 J -40832643.86 -40832643.78 -40832643.69 0.0260 0.0239  
 Venus -116507-12-10 18:15 J -40832414.85 -40832414.74 -40832414.61 0.0259 0.0214  
 Venus -116506-07-27 19:41 J -40832185.82 -40832185.68 -40832185.52 0.0259 0.0187  
 Venus -116505-03-12 21:22 J -40831956.79 -40831956.61 -40831956.44 0.0259 0.0157  
 Venus -116505-10-27 22:48 J -40831727.73 -40831727.55 -40831727.35 0.0258 0.0126  
 Venus -116504-06-14 01:12 J -40831498.66 -40831498.45 -40831498.24 0.0259 0.0092

Venus	-116503-01-29 03:51 J	-40831269.55	-40831269.34	-40831269.12	0.0259	0.0058
Venus	-116503-09-15 07:41 J	-40831040.40	-40831040.18	-40831039.96	0.0260	0.0021
Venus	-116502-05-02 12:15 J	-40830811.21	-40830810.99	-40830810.77	0.0261	0.0016
Venus	-116502-12-17 17:31 J	-40830581.98	-40830581.77	-40830581.55	0.0263	0.0054
Venus	-116501-08-03 00:00 J	-40830352.70	-40830352.50	-40830352.29	0.0264	0.0092
Venus	-116500-03-20 07:41 J	-40830123.37	-40830123.18	-40830122.98	0.0266	0.0129
Venus	-116500-11-04 16:48 J	-40829893.96	-40829893.80	-40829893.62	0.0269	0.0166
Moon	-116499-01-18 07:55 J	-40829819.38	-40829819.17	-40829818.95	0.0269	0.0133
Earth	-116499-01-18 11:31 J	-40829819.22	-40829819.02	-40829818.79	0.0269	0.0139 *
Venus	-116499-06-22 03:07 J	-40829664.50	-40829664.37	-40829664.21	0.0271	0.0201
Venus	-116498-02-06 15:07 J	-40829434.98	-40829434.87	-40829434.76	0.0274	0.0234
Mars	-116498-08-09 12:29 J	-40829251.27	-40829250.98	-40829250.69	0.0276	0.0010
Venus	-116498-09-24 04:05 J	-40829205.37	-40829205.33	-40829205.25	0.0276	0.0265
Mercury	-116495-01-06 20:53 J	-40828369.70	-40828369.63	-40828369.56	0.0288	0.0243
Mercury	-116495-04-05 10:34 J	-40828281.18	-40828281.06	-40828280.94	0.0289	0.0146
Mercury	-116495-07-03 00:15 J	-40828192.63	-40828192.49	-40828192.35	0.0290	0.0049
Mercury	-116495-09-29 13:41 J	-40828104.06	-40828103.93	-40828103.79	0.0291	0.0049
Mercury	-116495-12-27 03:07 J	-40828015.49	-40828015.37	-40828015.25	0.0292	0.0146
Mercury	-116494-03-25 16:19 J	-40827926.89	-40827926.82	-40827926.74	0.0294	0.0243
Venus	-116492-05-23 16:48 J	-40827136.87	-40827136.80	-40827136.72	0.0301	0.0279
Venus	-116491-01-08 16:34 J	-40826906.92	-40826906.81	-40826906.68	0.0303	0.0244
Venus	-116491-08-26 16:34 J	-40826676.95	-40826676.81	-40826676.65	0.0304	0.0202
Venus	-116490-04-13 16:05 J	-40826446.99	-40826446.83	-40826446.64	0.0304	0.0154
Venus	-116490-11-29 15:07 J	-40826217.06	-40826216.87	-40826216.68	0.0304	0.0102
Venus	-116489-07-16 13:12 J	-40825987.15	-40825986.95	-40825986.75	0.0303	0.0049
Venus	-116488-03-03 10:05 J	-40825757.28	-40825757.08	-40825756.87	0.0301	0.0008
Venus	-116488-10-19 05:46 J	-40825527.46	-40825527.26	-40825527.05	0.0300	0.0057
Venus	-116487-06-06 00:00 J	-40825297.68	-40825297.50	-40825297.30	0.0297	0.0108
Venus	-116486-01-21 16:48 J	-40825067.97	-40825067.80	-40825067.62	0.0295	0.0153
Earth	-116486-07-12 08:24 J	-40824896.33	-40824896.15	-40824895.96	0.0293	0.0183

Moon	-116486-07-12 09:51 J	-40824896.25	-40824896.09	-40824895.91	0.0293	0.0197	*
Venus	-116486-09-08 08:10 J	-40824838.31	-40824838.16	-40824838.00	0.0292	0.0194	
Venus	-116485-04-24 21:51 J	-40824608.71	-40824608.59	-40824608.46	0.0289	0.0230	
Venus	-116485-12-10 09:51 J	-40824379.16	-40824379.09	-40824378.99	0.0286	0.0260	
Mercury	-116482-05-12 01:27 J	-40823496.48	-40823496.44	-40823496.38	0.0274	0.0261	
Mercury	-116482-08-08 20:24 J	-40823407.79	-40823407.65	-40823407.51	0.0273	0.0161	
Mercury	-116482-11-05 15:07 J	-40823319.04	-40823318.87	-40823318.70	0.0272	0.0061	
Mercury	-116481-02-02 10:19 J	-40823230.25	-40823230.07	-40823229.90	0.0271	0.0040	
Mercury	-116481-05-01 05:31 J	-40823141.42	-40823141.27	-40823141.12	0.0270	0.0140	
Mercury	-116481-07-29 00:43 J	-40823052.54	-40823052.47	-40823052.39	0.0269	0.0241	
Venus	-116478-03-21 16:48 J	-40822086.80	-40822086.80	-40822086.78	0.0261	0.0261	
Venus	-116478-11-05 18:15 J	-40821857.82	-40821857.74	-40821857.65	0.0260	0.0238	
Venus	-116477-06-21 19:41 J	-40821628.80	-40821628.68	-40821628.55	0.0259	0.0212	
Venus	-116476-02-05 20:53 J	-40821399.77	-40821399.63	-40821399.46	0.0259	0.0185	
Venus	-116476-09-22 22:48 J	-40821170.72	-40821170.55	-40821170.37	0.0258	0.0154	
Venus	-116475-05-10 00:58 J	-40820941.66	-40820941.46	-40820941.27	0.0258	0.0122	
Venus	-116475-12-25 03:22 J	-40820712.57	-40820712.36	-40820712.16	0.0259	0.0088	
Venus	-116474-08-11 06:15 J	-40820483.45	-40820483.24	-40820483.02	0.0259	0.0053	
Venus	-116473-03-27 10:05 J	-40820254.30	-40820254.08	-40820253.86	0.0260	0.0016	
Venus	-116473-11-11 14:39 J	-40820025.11	-40820024.89	-40820024.67	0.0262	0.0022	
Venus	-116472-06-28 20:10 J	-40819795.87	-40819795.66	-40819795.44	0.0263	0.0059	
Venus	-116471-02-13 02:53 J	-40819566.58	-40819566.38	-40819566.17	0.0265	0.0097	
Venus	-116471-09-30 11:03 J	-40819337.23	-40819337.04	-40819336.85	0.0267	0.0134	
Earth	-116470-01-13 04:19 J	-40819232.51	-40819232.32	-40819232.12	0.0268	0.0169	
Moon	-116470-01-13 08:24 J	-40819232.35	-40819232.15	-40819231.96	0.0268	0.0170	*
Venus	-116470-05-17 20:10 J	-40819107.83	-40819107.66	-40819107.49	0.0269	0.0171	
Venus	-116469-01-02 06:29 J	-40818878.36	-40818878.23	-40818878.08	0.0272	0.0206	
Venus	-116469-08-18 18:29 J	-40818648.82	-40818648.73	-40818648.61	0.0274	0.0239	
Venus	-116468-04-05 08:10 J	-40818419.21	-40818419.16	-40818419.10	0.0277	0.0268	
Mars	-116468-09-27 03:36 J	-40818244.55	-40818244.35	-40818244.14	0.0280	0.0196	

Mercury -116466-05-26 22:05 J -40817637.62 -40817637.58 -40817637.54 0.0288 0.0273  
 Mercury -116466-08-23 11:46 J -40817549.12 -40817549.01 -40817548.90 0.0289 0.0177  
 Mercury -116466-11-20 01:27 J -40817460.57 -40817460.44 -40817460.30 0.0290 0.0080  
 Mercury -116465-02-16 15:07 J -40817372.01 -40817371.87 -40817371.74 0.0291 0.0020  
 Mercury -116465-05-15 04:19 J -40817283.44 -40817283.32 -40817283.19 0.0292 0.0115  
 Mercury -116465-08-11 17:46 J -40817194.85 -40817194.76 -40817194.67 0.0293 0.0212  
 Venus -116463-12-03 21:36 J -40816350.67 -40816350.60 -40816350.51 0.0301 0.0277  
 Venus -116462-07-21 21:36 J -40816120.71 -40816120.60 -40816120.47 0.0303 0.0240  
 Venus -116461-03-07 21:36 J -40815890.74 -40815890.60 -40815890.43 0.0303 0.0197  
 Venus -116461-10-23 21:07 J -40815660.79 -40815660.62 -40815660.43 0.0303 0.0148  
 Venus -116460-06-10 19:55 J -40815430.86 -40815430.67 -40815430.47 0.0303 0.0096  
 Venus -116459-01-26 18:00 J -40815200.95 -40815200.75 -40815200.55 0.0302 0.0042  
 Venus -116459-09-13 14:39 J -40814971.09 -40814970.89 -40814970.68 0.0301 0.0013  
 Venus -116458-05-01 10:19 J -40814741.27 -40814741.07 -40814740.87 0.0299 0.0065  
 Venus -116458-12-17 04:19 J -40814511.51 -40814511.32 -40814511.13 0.0296 0.0115  
 Moon -116457-07-05 11:17 J -40814310.20 -40814310.03 -40814309.83 0.0294 0.0196  
 Earth -116457-07-05 13:27 J -40814310.10 -40814309.94 -40814309.77 0.0294 0.0207 \*  
 Venus -116457-08-02 20:53 J -40814281.80 -40814281.63 -40814281.46 0.0294 0.0160  
 Venus -116456-03-20 11:46 J -40814052.15 -40814052.01 -40814051.85 0.0291 0.0202  
 Venus -116456-11-05 01:27 J -40813822.55 -40813822.44 -40813822.32 0.0288 0.0236  
 Mars -116456-12-19 23:31 J -40813777.78 -40813777.52 -40813777.25 0.0288 0.0132  
 Venus -116455-06-22 13:27 J -40813593.00 -40813592.94 -40813592.85 0.0285 0.0267  
 Mercury -116453-12-25 20:10 J -40812675.78 -40812675.66 -40812675.54 0.0274 0.0192  
 Mercury -116452-03-24 14:53 J -40812587.04 -40812586.88 -40812586.72 0.0273 0.0092  
 Mercury -116452-06-21 09:51 J -40812498.26 -40812498.09 -40812497.91 0.0272 0.0009  
 Mercury -116452-09-18 05:03 J -40812409.45 -40812409.29 -40812409.13 0.0271 0.0110  
 Mercury -116452-12-16 00:15 J -40812320.59 -40812320.49 -40812320.37 0.0270 0.0211  
 Venus -116449-09-30 20:24 J -40811300.66 -40811300.65 -40811300.62 0.0262 0.0260  
 Venus -116448-05-17 21:51 J -40811071.67 -40811071.59 -40811071.49 0.0260 0.0237  
 Venus -116447-01-01 23:17 J -40810842.64 -40810842.53 -40810842.39 0.0260 0.0211

Venus -116447-08-19 00:58 J -40810613.60 -40810613.46 -40810613.29 0.0259 0.0182  
 Venus -116446-04-05 02:53 J -40810384.56 -40810384.38 -40810384.20 0.0259 0.0151  
 Venus -116446-11-20 04:34 J -40810155.49 -40810155.31 -40810155.10 0.0259 0.0119  
 Venus -116445-07-06 07:12 J -40809926.41 -40809926.20 -40809925.99 0.0259 0.0084  
 Venus -116444-02-20 10:19 J -40809697.28 -40809697.07 -40809696.85 0.0260 0.0048  
 Venus -116444-10-07 14:24 J -40809468.12 -40809467.90 -40809467.68 0.0261 0.0011  
 Venus -116443-05-24 19:12 J -40809238.92 -40809238.70 -40809238.48 0.0262 0.0027  
 Venus -116442-01-09 00:43 J -40809009.68 -40809009.47 -40809009.25 0.0263 0.0066  
 Venus -116442-08-26 07:27 J -40808780.38 -40808780.19 -40808779.98 0.0265 0.0104  
 Venus -116441-04-11 15:36 J -40808551.03 -40808550.85 -40808550.66 0.0267 0.0141  
 Venus -116441-11-27 00:58 J -40808321.62 -40808321.46 -40808321.29 0.0269 0.0178  
 Moon -116440-01-19 13:55 J -40808268.07 -40808267.92 -40808267.75 0.0270 0.0201  
 Earth -116440-01-19 14:53 J -40808268.03 -40808267.88 -40808267.72 0.0270 0.0209 \*  
 Venus -116440-07-14 11:31 J -40808092.14 -40808092.02 -40808091.87 0.0271 0.0214  
 Mars -116440-11-14 22:48 J -40807968.75 -40807968.55 -40807968.33 0.0273 0.0187  
 Venus -116439-02-28 23:31 J -40807862.60 -40807862.52 -40807862.41 0.0274 0.0246  
 Venus -116439-10-16 13:12 J -40807632.96 -40807632.95 -40807632.92 0.0277 0.0276  
 Mercury -116436-01-09 13:12 J -40806817.05 -40806816.95 -40806816.85 0.0288 0.0207  
 Mercury -116436-04-08 02:53 J -40806728.51 -40806728.38 -40806728.25 0.0289 0.0111  
 Mercury -116436-07-05 16:19 J -40806639.95 -40806639.82 -40806639.68 0.0290 0.0017  
 Mercury -116436-10-02 06:00 J -40806551.39 -40806551.25 -40806551.12 0.0291 0.0083  
 Mercury -116436-12-29 19:12 J -40806462.80 -40806462.70 -40806462.59 0.0292 0.0180  
 Mercury -116435-03-28 08:24 J -40806374.19 -40806374.15 -40806374.10 0.0294 0.0276  
 Venus -116433-06-15 01:55 J -40805564.49 -40805564.42 -40805564.33 0.0301 0.0276  
 Venus -116432-01-31 01:41 J -40805334.54 -40805334.43 -40805334.29 0.0303 0.0238  
 Venus -116432-09-18 01:41 J -40805104.59 -40805104.43 -40805104.27 0.0303 0.0193  
 Venus -116431-05-06 00:43 J -40804874.64 -40804874.47 -40804874.28 0.0304 0.0144  
 Venus -116431-12-21 23:31 J -40804644.71 -40804644.52 -40804644.33 0.0303 0.0091  
 Venus -116430-08-08 21:07 J -40804414.82 -40804414.62 -40804414.41 0.0302 0.0038  
 Venus -116429-03-25 18:00 J -40804184.95 -40804184.75 -40804184.55 0.0301 0.0018

Venus	-116429-11-10 13:27 J	-40803955.14	-40803954.94	-40803954.74	0.0299	0.0070
Venus	-116428-06-28 07:12 J	-40803725.38	-40803725.20	-40803725.01	0.0297	0.0120
Venus	-116427-02-12 23:46 J	-40803495.68	-40803495.51	-40803495.34	0.0294	0.0166
Earth	-116427-07-13 09:07 J	-40803345.24	-40803345.12	-40803345.00	0.0292	0.0254
Moon	-116427-07-13 12:15 J	-40803345.08	-40803344.99	-40803344.89	0.0292	0.0269 *
Venus	-116427-09-30 14:39 J	-40803266.03	-40803265.89	-40803265.74	0.0291	0.0206
Venus	-116426-05-18 04:05 J	-40803036.43	-40803036.33	-40803036.21	0.0288	0.0242
Venus	-116425-01-02 16:05 J	-40802806.89	-40802806.83	-40802806.76	0.0285	0.0270
Mars	-116425-02-09 12:43 J	-40802769.25	-40802768.97	-40802768.69	0.0285	0.0097
Mercury	-116423-05-14 18:58 J	-40801943.80	-40801943.71	-40801943.61	0.0274	0.0227
Mercury	-116423-08-11 13:41 J	-40801855.08	-40801854.93	-40801854.77	0.0273	0.0127
Mercury	-116423-11-08 08:39 J	-40801766.31	-40801766.14	-40801765.96	0.0272	0.0027
Mercury	-116422-02-05 03:51 J	-40801677.51	-40801677.34	-40801677.17	0.0271	0.0074
Mercury	-116422-05-04 23:03 J	-40801588.67	-40801588.54	-40801588.40	0.0270	0.0175
Venus	-116419-04-12 22:34 J	-40800514.57	-40800514.56	-40800514.53	0.0261	0.0259
Venus	-116419-11-28 00:15 J	-40800285.57	-40800285.49	-40800285.39	0.0260	0.0235
Venus	-116418-07-15 01:55 J	-40800056.54	-40800056.42	-40800056.29	0.0259	0.0208
Venus	-116417-02-29 03:36 J	-40799827.50	-40799827.35	-40799827.19	0.0259	0.0179
Venus	-116417-10-15 05:17 J	-40799598.45	-40799598.28	-40799598.09	0.0259	0.0148
Venus	-116416-06-01 07:27 J	-40799369.38	-40799369.19	-40799368.98	0.0259	0.0115
Venus	-116415-01-16 10:19 J	-40799140.28	-40799140.07	-40799139.86	0.0259	0.0079
Venus	-116415-09-02 13:55 J	-40798911.14	-40798910.92	-40798910.71	0.0260	0.0043
Venus	-116414-04-19 18:00 J	-40798681.97	-40798681.75	-40798681.53	0.0261	0.0006
Venus	-116414-12-04 22:48 J	-40798452.77	-40798452.55	-40798452.33	0.0262	0.0033
Venus	-116413-07-21 04:34 J	-40798223.52	-40798223.31	-40798223.09	0.0264	0.0071
Venus	-116412-03-07 11:31 J	-40797994.21	-40797994.02	-40797993.81	0.0265	0.0110
Venus	-116412-10-22 20:10 J	-40797764.84	-40797764.66	-40797764.48	0.0267	0.0147
Earth	-116411-01-14 09:07 J	-40797681.35	-40797681.12	-40797680.88	0.0268	0.0096
Moon	-116411-01-14 09:36 J	-40797681.34	-40797681.10	-40797680.86	0.0268	0.0102 *
Venus	-116411-06-09 05:31 J	-40797535.42	-40797535.27	-40797535.11	0.0270	0.0184

Venus -116410-01-24 16:19 J -40797305.94 -40797305.82 -40797305.68 0.0272 0.0218

Venus -116410-09-11 04:34 J -40797076.39 -40797076.31 -40797076.21 0.0275 0.0251

Mars -116409-01-03 03:36 J -40796962.64 -40796962.35 -40796962.06 0.0276 0.0006

Mercury -116407-05-29 14:53 J -40796084.96 -40796084.88 -40796084.80 0.0288 0.0235

Mercury -116407-08-26 04:34 J -40795996.43 -40795996.31 -40795996.19 0.0289 0.0138

Mercury -116407-11-22 18:15 J -40795907.88 -40795907.74 -40795907.60 0.0290 0.0042

Mercury -116406-02-19 07:41 J -40795819.32 -40795819.18 -40795819.05 0.0291 0.0056

Mercury -116406-05-18 21:07 J -40795730.74 -40795730.62 -40795730.51 0.0292 0.0153

Mercury -116406-08-15 10:19 J -40795642.14 -40795642.07 -40795642.00 0.0294 0.0249

Venus -116404-12-26 08:39 J -40794778.22 -40794778.14 -40794778.05 0.0302 0.0272

Venus -116403-08-13 08:24 J -40794548.27 -40794548.15 -40794548.01 0.0303 0.0233

Venus -116402-03-31 08:24 J -40794318.31 -40794318.15 -40794317.99 0.0303 0.0187

Venus -116402-11-16 07:41 J -40794088.36 -40794088.18 -40794088.00 0.0303 0.0137

Venus -116401-07-03 06:15 J -40793858.44 -40793858.24 -40793858.04 0.0303 0.0083

Venus -116400-02-18 03:51 J -40793628.54 -40793628.34 -40793628.14 0.0302 0.0028

Venus -116400-10-06 00:15 J -40793398.69 -40793398.49 -40793398.28 0.0300 0.0027

Venus -116399-05-23 19:27 J -40793168.88 -40793168.69 -40793168.49 0.0298 0.0080

Venus -116398-01-08 13:12 J -40792939.13 -40792938.95 -40792938.76 0.0296 0.0129

Moon -116398-07-07 13:55 J -40792759.13 -40792758.92 -40792758.70 0.0294 0.0113

Earth -116398-07-07 17:03 J -40792759.00 -40792758.79 -40792758.57 0.0294 0.0127 \*

Venus -116398-08-26 05:17 J -40792709.44 -40792709.28 -40792709.11 0.0293 0.0174

Venus -116397-04-11 20:10 J -40792479.79 -40792479.66 -40792479.52 0.0291 0.0214

Venus -116397-11-27 09:22 J -40792250.20 -40792250.11 -40792250.00 0.0288 0.0249

Venus -116396-07-14 21:07 J -40792020.66 -40792020.62 -40792020.57 0.0285 0.0277

Mercury -116394-10-01 19:12 J -40791211.76 -40791211.70 -40791211.63 0.0274 0.0255

Mercury -116394-12-29 13:55 J -40791123.06 -40791122.92 -40791122.77 0.0273 0.0155

Mercury -116393-03-27 08:53 J -40791034.30 -40791034.13 -40791033.96 0.0272 0.0055

Mercury -116393-06-24 03:51 J -40790945.51 -40790945.34 -40790945.16 0.0271 0.0047

Mercury -116393-09-20 23:03 J -40790856.68 -40790856.54 -40790856.39 0.0271 0.0148

Mercury -116393-12-18 18:29 J -40790767.79 -40790767.73 -40790767.66 0.0270 0.0249

Venus -116390-10-24 03:22 J -40789728.38 -40789728.36 -40789728.32 0.0262 0.0258  
 Venus -116389-06-09 05:03 J -40789499.38 -40789499.29 -40789499.19 0.0260 0.0233  
 Venus -116388-01-24 06:43 J -40789270.34 -40789270.22 -40789270.08 0.0260 0.0206  
 Venus -116388-09-10 08:39 J -40789041.30 -40789041.14 -40789040.98 0.0259 0.0176  
 Venus -116387-04-27 10:34 J -40788812.24 -40788812.06 -40788811.87 0.0259 0.0144  
 Venus -116387-12-12 12:58 J -40788583.16 -40788582.96 -40788582.76 0.0259 0.0110  
 Venus -116386-07-29 15:36 J -40788354.06 -40788353.85 -40788353.63 0.0259 0.0075  
 Venus -116385-03-14 19:12 J -40788124.92 -40788124.70 -40788124.48 0.0260 0.0038  
 Venus -116385-10-29 23:31 J -40787895.74 -40787895.52 -40787895.30 0.0261 0.0004  
 Venus -116384-06-16 04:34 J -40787666.53 -40787666.31 -40787666.09 0.0262 0.0039  
 Venus -116383-01-31 10:34 J -40787437.27 -40787437.06 -40787436.84 0.0264 0.0078  
 Venus -116383-09-17 18:00 J -40787207.95 -40787207.75 -40787207.55 0.0266 0.0116  
 Venus -116382-05-05 02:24 J -40786978.57 -40786978.40 -40786978.22 0.0268 0.0155  
 Venus -116382-12-20 12:00 J -40786749.14 -40786749.00 -40786748.84 0.0270 0.0192  
 Venus -116381-08-05 23:17 J -40786519.65 -40786519.53 -40786519.41 0.0272 0.0227  
 Venus -116380-03-23 11:31 J -40786290.08 -40786290.02 -40786289.94 0.0275 0.0259  
 Mars -116379-02-21 03:51 J -40785955.53 -40785955.34 -40785955.14 0.0279 0.0206  
 Mercury -116378-10-16 17:03 J -40785352.85 -40785352.79 -40785352.74 0.0287 0.0260  
 Mercury -116377-01-13 06:43 J -40785264.34 -40785264.22 -40785264.11 0.0288 0.0164  
 Mercury -116377-04-10 20:10 J -40785175.79 -40785175.66 -40785175.52 0.0289 0.0069  
 Mercury -116377-07-08 09:51 J -40785087.23 -40785087.09 -40785086.95 0.0290 0.0029  
 Mercury -116377-10-04 23:03 J -40784998.66 -40784998.54 -40784998.41 0.0292 0.0126  
 Mercury -116376-01-01 12:29 J -40784910.07 -40784909.98 -40784909.89 0.0293 0.0221  
 Venus -116374-07-08 15:22 J -40783991.94 -40783991.86 -40783991.76 0.0302 0.0270  
 Venus -116373-02-23 14:53 J -40783762.00 -40783761.88 -40783761.73 0.0303 0.0230  
 Venus -116373-10-10 14:39 J -40783532.05 -40783531.89 -40783531.73 0.0303 0.0183  
 Venus -116372-05-28 13:27 J -40783302.12 -40783301.94 -40783301.75 0.0303 0.0132  
 Venus -116371-01-13 11:46 J -40783072.20 -40783072.01 -40783071.81 0.0303 0.0078  
 Venus -116371-08-31 09:07 J -40782842.32 -40782842.12 -40782841.92 0.0302 0.0023  
 Venus -116370-04-18 05:31 J -40782612.47 -40782612.27 -40782612.07 0.0300 0.0032



Venus -116370-12-04 00:29 J -40782382.68 -40782382.48 -40782382.29 0.0298 0.0085  
 Venus -116369-07-20 18:00 J -40782152.93 -40782152.75 -40782152.57 0.0296 0.0134  
 Venus -116368-03-07 09:51 J -40781923.24 -40781923.09 -40781922.92 0.0293 0.0180  
 Venus -116368-10-23 00:15 J -40781693.61 -40781693.49 -40781693.34 0.0291 0.0220  
 Mars -116367-05-15 08:10 J -40781489.43 -40781489.16 -40781488.88 0.0288 0.0119  
 Venus -116367-06-09 13:27 J -40781464.02 -40781463.94 -40781463.83 0.0288 0.0254  
 Venus -116366-01-25 01:12 J -40781234.47 -40781234.45 -40781234.42 0.0285 0.0281  
 Mercury -116364-05-17 13:27 J -40780391.06 -40780390.94 -40780390.81 0.0274 0.0187  
 Mercury -116364-08-14 08:10 J -40780302.32 -40780302.16 -40780301.99 0.0273 0.0087  
 Mercury -116364-11-11 03:22 J -40780213.54 -40780213.36 -40780213.19 0.0272 0.0015  
 Mercury -116363-02-07 22:19 J -40780124.72 -40780124.57 -40780124.40 0.0271 0.0115  
 Mercury -116363-05-07 17:46 J -40780035.86 -40780035.76 -40780035.65 0.0270 0.0216  
 Venus -116360-05-05 06:29 J -40778942.26 -40778942.23 -40778942.18 0.0261 0.0257  
 Venus -116360-12-20 08:39 J -40778713.24 -40778713.14 -40778713.05 0.0260 0.0232  
 Venus -116359-08-06 10:19 J -40778484.20 -40778484.07 -40778483.93 0.0259 0.0204  
 Venus -116358-03-23 12:15 J -40778255.15 -40778254.99 -40778254.82 0.0259 0.0173  
 Venus -116358-11-07 14:10 J -40778026.08 -40778025.91 -40778025.72 0.0259 0.0141  
 Venus -116357-06-23 16:48 J -40777797.00 -40777796.80 -40777796.60 0.0259 0.0106  
 Venus -116356-02-07 19:41 J -40777567.89 -40777567.68 -40777567.46 0.0259 0.0070  
 Venus -116356-09-24 23:31 J -40777338.73 -40777338.52 -40777338.29 0.0260 0.0033  
 Venus -116355-05-12 04:05 J -40777109.55 -40777109.33 -40777109.11 0.0261 0.0006  
 Venus -116355-12-27 09:22 J -40776880.32 -40776880.11 -40776879.89 0.0263 0.0045  
 Venus -116354-08-13 15:36 J -40776651.05 -40776650.85 -40776650.64 0.0264 0.0084  
 Venus -116353-03-29 23:03 J -40776421.73 -40776421.54 -40776421.34 0.0266 0.0123  
 Venus -116353-11-14 07:55 J -40776192.35 -40776192.17 -40776192.00 0.0268 0.0161  
 Moon -116352-01-15 14:53 J -40776130.13 -40776129.88 -40776129.63 0.0269 0.0023  
 Earth -116352-01-15 18:43 J -40776129.97 -40776129.72 -40776129.47 0.0269 0.0011 \*  
 Venus -116352-07-01 17:31 J -40775962.90 -40775962.77 -40775962.61 0.0270 0.0198  
 Venus -116351-02-16 04:48 J -40775733.40 -40775733.30 -40775733.17 0.0273 0.0232  
 Mars -116351-04-11 00:29 J -40775679.69 -40775679.48 -40775679.24 0.0274 0.0167

Venus -116351-10-03 17:46 J -40775503.82 -40775503.76 -40775503.70 0.0276 0.0264  
 Mercury -116348-03-04 18:58 J -40774620.72 -40774620.71 -40774620.70 0.0287 0.0285  
 Mercury -116348-06-01 08:39 J -40774532.24 -40774532.14 -40774532.03 0.0288 0.0190  
 Mercury -116348-08-28 22:19 J -40774443.70 -40774443.57 -40774443.44 0.0289 0.0093  
 Mercury -116348-11-25 11:46 J -40774355.15 -40774355.01 -40774354.87 0.0291 0.0007  
 Mercury -116347-02-22 01:12 J -40774266.58 -40774266.45 -40774266.32 0.0292 0.0100  
 Mercury -116347-05-21 14:39 J -40774177.99 -40774177.89 -40774177.79 0.0293 0.0196  
 Mercury -116347-08-18 03:51 J -40774089.35 -40774089.34 -40774089.33 0.0294 0.0292  
 Venus -116345-06-01 23:31 J -40773435.53 -40773435.52 -40773435.51 0.0300 0.0300  
 Venus -116344-01-17 23:17 J -40773205.63 -40773205.53 -40773205.44 0.0302 0.0265  
 Venus -116344-09-04 22:48 J -40772975.68 -40772975.55 -40772975.41 0.0303 0.0224  
 Venus -116343-04-22 22:19 J -40772745.73 -40772745.57 -40772745.40 0.0303 0.0176  
 Venus -116343-12-08 21:07 J -40772515.80 -40772515.62 -40772515.43 0.0303 0.0125  
 Venus -116342-07-26 19:27 J -40772285.88 -40772285.69 -40772285.49 0.0303 0.0070  
 Venus -116341-03-12 16:48 J -40772056.00 -40772055.80 -40772055.59 0.0301 0.0014  
 Venus -116341-10-28 12:58 J -40771826.16 -40771825.96 -40771825.76 0.0300 0.0042  
 Venus -116340-06-15 07:41 J -40771596.37 -40771596.18 -40771595.98 0.0298 0.0095  
 Venus -116339-01-31 00:58 J -40771366.63 -40771366.46 -40771366.28 0.0295 0.0144  
 Earth -116339-07-09 01:41 J -40771207.67 -40771207.43 -40771207.19 0.0293 0.0033  
 Moon -116339-07-09 02:53 J -40771207.61 -40771207.38 -40771207.15 0.0293 0.0018 \*  
 Venus -116339-09-17 16:48 J -40771136.95 -40771136.80 -40771136.64 0.0293 0.0188  
 Venus -116338-05-05 07:12 J -40770907.32 -40770907.20 -40770907.07 0.0290 0.0228  
 Venus -116338-12-20 19:55 J -40770677.74 -40770677.67 -40770677.58 0.0287 0.0261  
 Mars -116337-07-05 09:36 J -40770480.36 -40770480.10 -40770479.82 0.0284 0.0111  
 Mercury -116335-10-04 14:10 J -40769659.01 -40769658.91 -40769658.80 0.0274 0.0213  
 Mercury -116334-01-01 09:07 J -40769570.28 -40769570.12 -40769569.96 0.0273 0.0112  
 Mercury -116334-03-31 04:05 J -40769481.51 -40769481.33 -40769481.16 0.0272 0.0012  
 Mercury -116334-06-27 23:17 J -40769392.70 -40769392.53 -40769392.37 0.0271 0.0090  
 Mercury -116334-09-24 18:29 J -40769303.85 -40769303.73 -40769303.60 0.0270 0.0190  
 Venus -116331-11-15 12:29 J -40768156.01 -40768155.98 -40768155.92 0.0261 0.0255

Venus -116330-07-02 14:24 J -40767926.99 -40767926.90 -40767926.79 0.0260 0.0229  
 Venus -116329-02-16 16:19 J -40767697.95 -40767697.82 -40767697.68 0.0260 0.0201  
 Venus -116329-10-02 18:29 J -40767468.90 -40767468.73 -40767468.57 0.0259 0.0170  
 Venus -116328-05-19 20:39 J -40767239.83 -40767239.64 -40767239.46 0.0259 0.0137  
 Venus -116327-01-03 23:03 J -40767010.74 -40767010.54 -40767010.33 0.0259 0.0102  
 Venus -116327-08-21 02:24 J -40766781.62 -40766781.40 -40766781.19 0.0260 0.0065  
 Venus -116326-04-07 06:00 J -40766552.46 -40766552.25 -40766552.03 0.0261 0.0028  
 Venus -116326-11-22 10:48 J -40766323.28 -40766323.05 -40766322.83 0.0262 0.0013  
 Venus -116325-07-08 16:05 J -40766094.04 -40766093.83 -40766093.61 0.0263 0.0051  
 Venus -116324-02-22 22:34 J -40765864.76 -40765864.56 -40765864.35 0.0264 0.0091  
 Venus -116324-10-10 06:29 J -40765635.42 -40765635.23 -40765635.04 0.0266 0.0130  
 Venus -116323-05-27 15:22 J -40765406.03 -40765405.86 -40765405.69 0.0268 0.0169  
 Venus -116322-01-12 01:27 J -40765176.57 -40765176.44 -40765176.29 0.0271 0.0206  
 Venus -116322-08-29 12:58 J -40764947.05 -40764946.96 -40764946.85 0.0273 0.0240  
 Venus -116321-04-15 01:41 J -40764717.44 -40764717.43 -40764717.38 0.0276 0.0273  
 Mars -116321-05-29 15:22 J -40764673.14 -40764672.86 -40764672.57 0.0276 0.0026  
 Mercury -116319-10-19 11:03 J -40763800.13 -40763800.04 -40763799.94 0.0287 0.0213  
 Mercury -116318-01-16 00:58 J -40763711.59 -40763711.46 -40763711.34 0.0289 0.0117  
 Mercury -116318-04-14 14:24 J -40763623.04 -40763622.90 -40763622.76 0.0290 0.0020  
 Mercury -116318-07-12 03:51 J -40763534.47 -40763534.34 -40763534.21 0.0291 0.0076  
 Mercury -116318-10-08 17:17 J -40763445.89 -40763445.78 -40763445.67 0.0292 0.0172  
 Mercury -116317-01-05 06:15 J -40763357.28 -40763357.24 -40763357.18 0.0293 0.0268  
 Venus -116316-12-13 08:10 J -40762649.17 -40762649.16 -40762649.14 0.0300 0.0299  
 Venus -116315-07-31 07:41 J -40762419.27 -40762419.18 -40762419.08 0.0302 0.0263  
 Venus -116314-03-18 07:12 J -40762189.33 -40762189.20 -40762189.05 0.0303 0.0220  
 Venus -116314-11-03 06:29 J -40761959.39 -40761959.23 -40761959.06 0.0303 0.0171  
 Venus -116313-06-20 05:17 J -40761729.47 -40761729.28 -40761729.09 0.0303 0.0119  
 Venus -116312-02-05 03:07 J -40761499.57 -40761499.37 -40761499.17 0.0303 0.0063  
 Venus -116312-09-23 00:15 J -40761269.70 -40761269.49 -40761269.29 0.0301 0.0008  
 Venus -116311-05-10 20:10 J -40761039.86 -40761039.66 -40761039.46 0.0300 0.0048

Venus -116311-12-26 14:39 J -40760810.08 -40760809.89 -40760809.70 0.0298 0.0101  
 Venus -116310-08-13 07:27 J -40760580.36 -40760580.19 -40760580.00 0.0295 0.0151  
 Venus -116309-03-29 23:03 J -40760350.68 -40760350.54 -40760350.38 0.0293 0.0195  
 Venus -116309-11-14 13:12 J -40760121.06 -40760120.95 -40760120.82 0.0290 0.0233  
 Venus -116308-07-02 01:55 J -40759891.49 -40759891.42 -40759891.34 0.0287 0.0266  
 Mercury -116305-02-21 14:24 J -40758926.98 -40758926.90 -40758926.82 0.0275 0.0240  
 Mercury -116305-05-20 09:07 J -40758838.27 -40758838.12 -40758837.97 0.0273 0.0141  
 Mercury -116305-08-17 04:05 J -40758749.50 -40758749.33 -40758749.16 0.0272 0.0040  
 Mercury -116305-11-13 23:03 J -40758660.71 -40758660.54 -40758660.36 0.0271 0.0061  
 Mercury -116304-02-10 18:15 J -40758571.87 -40758571.74 -40758571.59 0.0271 0.0162  
 Mercury -116304-05-10 13:55 J -40758482.96 -40758482.92 -40758482.88 0.0270 0.0262  
 Venus -116301-05-27 16:34 J -40757369.84 -40757369.81 -40757369.75 0.0261 0.0254  
 Venus -116300-01-11 18:43 J -40757140.82 -40757140.72 -40757140.61 0.0260 0.0227  
 Venus -116300-08-28 20:53 J -40756911.77 -40756911.63 -40756911.49 0.0259 0.0198  
 Venus -116299-04-14 22:48 J -40756682.71 -40756682.55 -40756682.37 0.0259 0.0166  
 Venus -116299-11-30 01:12 J -40756453.64 -40756453.45 -40756453.26 0.0259 0.0132  
 Venus -116298-07-17 03:51 J -40756224.54 -40756224.34 -40756224.13 0.0259 0.0097  
 Venus -116297-03-02 07:12 J -40755995.41 -40755995.20 -40755994.98 0.0260 0.0060  
 Venus -116297-10-17 11:17 J -40755766.25 -40755766.03 -40755765.81 0.0261 0.0022  
 Venus -116296-06-03 16:19 J -40755537.04 -40755536.82 -40755536.60 0.0262 0.0019  
 Venus -116295-01-18 21:51 J -40755307.80 -40755307.59 -40755307.37 0.0263 0.0058  
 Venus -116295-09-05 04:34 J -40755078.51 -40755078.31 -40755078.10 0.0265 0.0098  
 Venus -116294-04-22 12:29 J -40754849.16 -40754848.98 -40754848.78 0.0267 0.0137  
 Venus -116294-12-07 21:51 J -40754619.75 -40754619.59 -40754619.42 0.0269 0.0175  
 Moon -116293-01-18 06:15 J -40754578.47 -40754578.24 -40754578.00 0.0269 0.0069  
 Earth -116293-01-18 07:27 J -40754578.43 -40754578.19 -40754577.95 0.0269 0.0082 \*  
 Venus -116293-07-24 07:55 J -40754390.29 -40754390.17 -40754390.02 0.0271 0.0213  
 Venus -116292-03-10 19:55 J -40754160.76 -40754160.67 -40754160.57 0.0274 0.0246  
 Mars -116291-07-18 18:00 J -40753665.89 -40753665.75 -40753665.58 0.0280 0.0237  
 Mercury -116289-03-07 13:41 J -40753068.01 -40753067.93 -40753067.85 0.0288 0.0235

Mercury -116289-06-04 03:22 J -40752979.48 -40752979.36 -40752979.24 0.0289 0.0139

Mercury -116289-08-31 17:03 J -40752890.93 -40752890.79 -40752890.66 0.0290 0.0043

Mercury -116289-11-28 06:29 J -40752802.37 -40752802.23 -40752802.10 0.0291 0.0054

Mercury -116288-02-24 19:41 J -40752713.79 -40752713.68 -40752713.56 0.0292 0.0151

Mercury -116288-05-24 08:53 J -40752625.19 -40752625.13 -40752625.05 0.0293 0.0247

Venus -116286-06-25 17:17 J -40751862.80 -40751862.78 -40751862.73 0.0301 0.0295

Venus -116285-02-10 17:03 J -40751632.89 -40751632.79 -40751632.68 0.0302 0.0257

Venus -116285-09-27 16:34 J -40751402.95 -40751402.81 -40751402.66 0.0303 0.0213

Venus -116284-05-15 15:51 J -40751173.01 -40751172.84 -40751172.67 0.0303 0.0163

Venus -116284-12-31 14:24 J -40750943.08 -40750942.90 -40750942.70 0.0303 0.0110

Venus -116283-08-18 12:29 J -40750713.18 -40750712.98 -40750712.78 0.0302 0.0054

Venus -116282-04-05 09:22 J -40750483.31 -40750483.11 -40750482.90 0.0301 0.0006

Venus -116282-11-21 05:03 J -40750253.49 -40750253.29 -40750253.09 0.0299 0.0059

Venus -116281-07-07 23:17 J -40750023.72 -40750023.53 -40750023.34 0.0297 0.0111

Venus -116280-02-22 16:05 J -40749794.00 -40749793.83 -40749793.65 0.0294 0.0160

Earth -116280-07-10 15:36 J -40749656.08 -40749655.85 -40749655.61 0.0293 0.0075

Moon -116280-07-10 19:27 J -40749655.92 -40749655.69 -40749655.46 0.0293 0.0092 \*

Venus -116280-10-10 07:27 J -40749564.33 -40749564.19 -40749564.04 0.0292 0.0203

Venus -116279-05-27 21:36 J -40749334.71 -40749334.60 -40749334.49 0.0289 0.0241

Mars -116279-10-09 22:19 J -40749199.86 -40749199.57 -40749199.29 0.0287 0.0095

Venus -116278-01-12 09:51 J -40749105.15 -40749105.09 -40749105.03 0.0286 0.0273

Mercury -116276-07-10 15:36 J -40748194.89 -40748194.85 -40748194.80 0.0275 0.0264

Mercury -116276-10-07 10:19 J -40748106.20 -40748106.07 -40748105.93 0.0274 0.0164

Mercury -116275-01-04 05:17 J -40748017.45 -40748017.28 -40748017.11 0.0273 0.0064

Mercury -116275-04-03 00:15 J -40747928.66 -40747928.49 -40747928.31 0.0272 0.0037

Mercury -116275-06-30 19:27 J -40747839.84 -40747839.69 -40747839.53 0.0271 0.0138

Mercury -116275-09-27 14:53 J -40747750.96 -40747750.88 -40747750.80 0.0270 0.0239

Venus -116272-12-07 23:31 J -40746583.57 -40746583.52 -40746583.46 0.0261 0.0252

Venus -116271-07-25 01:41 J -40746354.53 -40746354.43 -40746354.32 0.0260 0.0224

Venus -116270-03-11 03:36 J -40746125.49 -40746125.35 -40746125.20 0.0260 0.0195

Venus	-116270-10-26 05:46 J	-40745896.43	-40745896.26	-40745896.09	0.0260	0.0162
Venus	-116269-06-11 07:55 J	-40745667.35	-40745667.17	-40745666.97	0.0259	0.0129
Venus	-116268-01-26 11:03 J	-40745438.25	-40745438.04	-40745437.84	0.0260	0.0092
Venus	-116268-09-12 14:39 J	-40745209.11	-40745208.89	-40745208.68	0.0260	0.0054
Venus	-116267-04-29 18:43 J	-40744979.94	-40744979.72	-40744979.50	0.0261	0.0016
Venus	-116267-12-14 23:46 J	-40744750.73	-40744750.51	-40744750.29	0.0262	0.0024
Venus	-116266-08-01 05:31 J	-40744521.48	-40744521.27	-40744521.05	0.0264	0.0064
Venus	-116265-03-17 12:29 J	-40744292.18	-40744291.98	-40744291.77	0.0265	0.0105
Venus	-116265-11-01 20:53 J	-40744062.81	-40744062.63	-40744062.45	0.0267	0.0144
Earth	-116264-01-12 07:55 J	-40743991.32	-40743991.17	-40743991.00	0.0268	0.0207
Moon	-116264-01-12 09:07 J	-40743991.26	-40743991.12	-40743990.96	0.0268	0.0215 *
Venus	-116264-06-19 06:15 J	-40743833.40	-40743833.24	-40743833.08	0.0269	0.0183
Venus	-116263-02-03 17:03 J	-40743603.92	-40743603.79	-40743603.66	0.0271	0.0220
Mars	-116263-09-05 21:36 J	-40743389.83	-40743389.60	-40743389.34	0.0274	0.0141
Venus	-116263-09-21 04:48 J	-40743374.37	-40743374.30	-40743374.21	0.0274	0.0255
Mercury	-116260-07-25 16:34 J	-40742335.87	-40742335.81	-40742335.75	0.0287	0.0255
Mercury	-116260-10-22 06:15 J	-40742247.36	-40742247.24	-40742247.13	0.0288	0.0160
Mercury	-116259-01-18 19:41 J	-40742158.81	-40742158.68	-40742158.54	0.0289	0.0065
Mercury	-116259-04-17 09:22 J	-40742070.25	-40742070.11	-40742069.98	0.0290	0.0033
Mercury	-116259-07-14 22:34 J	-40741981.68	-40741981.56	-40741981.43	0.0291	0.0128
Mercury	-116259-10-11 12:00 J	-40741893.09	-40741893.00	-40741892.92	0.0292	0.0224
Venus	-116256-01-05 03:22 J	-40741076.40	-40741076.36	-40741076.31	0.0300	0.0293
Venus	-116256-08-23 02:39 J	-40740846.49	-40740846.39	-40740846.27	0.0302	0.0254
Venus	-116255-04-10 02:10 J	-40740616.56	-40740616.41	-40740616.26	0.0303	0.0209
Venus	-116255-11-26 00:58 J	-40740386.63	-40740386.46	-40740386.28	0.0303	0.0158
Venus	-116254-07-13 23:31 J	-40740156.71	-40740156.52	-40740156.33	0.0303	0.0103
Venus	-116253-02-28 21:07 J	-40739926.82	-40739926.62	-40739926.42	0.0302	0.0047
Venus	-116253-10-15 17:46 J	-40739696.96	-40739696.76	-40739696.56	0.0301	0.0010
Venus	-116252-06-02 12:58 J	-40739467.15	-40739466.96	-40739466.75	0.0299	0.0066
Venus	-116251-01-18 06:58 J	-40739237.39	-40739237.21	-40739237.02	0.0297	0.0118

Moon -116251-07-04 23:03 J -40739069.61 -40739069.54 -40739069.46 0.0295 0.0277  
 Earth -116251-07-05 02:24 J -40739069.40 -40739069.40 -40739069.37 0.0295 0.0295  
 Venus -116251-09-04 23:31 J -40739007.68 -40739007.52 -40739007.34 0.0294 0.0167  
 Venus -116250-04-22 14:39 J -40738778.02 -40738777.89 -40738777.74 0.0292 0.0210  
 Venus -116250-12-08 04:19 J -40738548.42 -40738548.32 -40738548.21 0.0289 0.0247  
 Venus -116249-07-24 16:19 J -40738318.85 -40738318.82 -40738318.76 0.0286 0.0278  
 Mars -116249-11-30 00:00 J -40738190.75 -40738190.50 -40738190.24 0.0284 0.0141  
 Mercury -116246-02-24 11:03 J -40737374.16 -40737374.04 -40737373.92 0.0274 0.0189  
 Mercury -116246-05-24 05:46 J -40737285.42 -40737285.26 -40737285.09 0.0273 0.0090  
 Mercury -116246-08-21 00:43 J -40737196.64 -40737196.47 -40737196.29 0.0272 0.0013  
 Mercury -116246-11-17 19:55 J -40737107.83 -40737107.67 -40737107.51 0.0271 0.0112  
 Mercury -116245-02-14 15:07 J -40737018.97 -40737018.87 -40737018.75 0.0270 0.0213  
 Venus -116242-06-20 04:34 J -40735797.36 -40735797.31 -40735797.24 0.0261 0.0250  
 Venus -116241-02-04 06:29 J -40735568.33 -40735568.23 -40735568.11 0.0260 0.0222  
 Venus -116241-09-20 08:39 J -40735339.28 -40735339.14 -40735338.98 0.0259 0.0192  
 Venus -116240-05-07 11:03 J -40735110.21 -40735110.04 -40735109.86 0.0259 0.0159  
 Jupiter -116240-10-09 12:29 J -40734955.27 -40734954.98 -40734954.69 0.0259 0.0204  
 Venus -116240-12-22 13:27 J -40734881.13 -40734880.94 -40734880.74 0.0259 0.0124  
 Venus -116239-08-08 16:34 J -40734652.02 -40734651.81 -40734651.60 0.0259 0.0087  
 Venus -116238-03-25 20:10 J -40734422.87 -40734422.66 -40734422.44 0.0260 0.0049  
 Venus -116238-11-10 00:29 J -40734193.70 -40734193.48 -40734193.26 0.0261 0.0010  
 Venus -116237-06-26 05:46 J -40733964.48 -40733964.26 -40733964.04 0.0262 0.0031  
 Venus -116236-02-10 11:46 J -40733735.22 -40733735.01 -40733734.79 0.0264 0.0071  
 Venus -116236-09-27 19:12 J -40733505.90 -40733505.70 -40733505.50 0.0265 0.0112  
 Venus -116235-05-15 03:22 J -40733276.53 -40733276.36 -40733276.17 0.0267 0.0152  
 Venus -116235-12-30 13:12 J -40733047.10 -40733046.95 -40733046.79 0.0270 0.0190  
 Earth -116234-01-19 22:05 J -40733026.76 -40733026.58 -40733026.39 0.0270 0.0180  
 Moon -116234-01-20 01:27 J -40733026.63 -40733026.44 -40733026.24 0.0270 0.0166 \*  
 Venus -116234-08-17 00:00 J -40732817.61 -40732817.50 -40732817.38 0.0272 0.0226  
 Venus -116233-04-02 12:15 J -40732588.05 -40732587.99 -40732587.92 0.0275 0.0261

Mars -116233-10-24 11:46 J -40732383.29 -40732383.01 -40732382.73 0.0277 0.0058  
 Mercury -116231-12-12 18:58 J -40731603.74 -40731603.71 -40731603.68 0.0287 0.0277  
 Mercury -116230-03-11 08:39 J -40731515.24 -40731515.14 -40731515.03 0.0288 0.0182  
 Mercury -116230-06-07 22:19 J -40731426.70 -40731426.57 -40731426.43 0.0289 0.0085  
 Mercury -116230-09-04 11:46 J -40731338.14 -40731338.01 -40731337.87 0.0291 0.0015  
 Mercury -116230-12-02 01:12 J -40731249.57 -40731249.45 -40731249.32 0.0292 0.0108  
 Mercury -116229-02-28 14:39 J -40731160.99 -40731160.89 -40731160.79 0.0293 0.0203  
 Venus -116227-07-18 12:58 J -40730290.01 -40730289.96 -40730289.90 0.0301 0.0288  
 Venus -116226-03-05 12:29 J -40730060.09 -40730059.98 -40730059.86 0.0302 0.0248  
 Venus -116226-10-21 12:00 J -40729830.15 -40729830.00 -40729829.85 0.0303 0.0201  
 Venus -116225-06-07 11:03 J -40729600.22 -40729600.04 -40729599.86 0.0303 0.0150  
 Venus -116224-01-23 09:22 J -40729370.30 -40729370.11 -40729369.92 0.0303 0.0094  
 Venus -116224-09-10 06:58 J -40729140.41 -40729140.21 -40729140.01 0.0302 0.0037  
 Venus -116223-04-28 03:36 J -40728910.56 -40728910.35 -40728910.15 0.0300 0.0021  
 Venus -116223-12-13 22:48 J -40728680.75 -40728680.55 -40728680.35 0.0298 0.0076  
 Venus -116222-07-31 16:34 J -40728450.99 -40728450.81 -40728450.62 0.0296 0.0128  
 Venus -116221-03-17 09:07 J -40728221.29 -40728221.12 -40728220.96 0.0294 0.0176  
 Earth -116221-07-12 08:24 J -40728104.32 -40728104.15 -40728103.96 0.0292 0.0190  
 Moon -116221-07-12 08:39 J -40728104.31 -40728104.14 -40728103.95 0.0292 0.0205 \*  
 Venus -116221-11-01 23:46 J -40727991.64 -40727991.51 -40727991.37 0.0291 0.0219  
 Venus -116220-06-19 13:12 J -40727762.04 -40727761.95 -40727761.85 0.0288 0.0255  
 Mercury -116217-07-13 12:29 J -40726642.08 -40726641.98 -40726641.86 0.0274 0.0211  
 Mercury -116217-10-10 07:27 J -40726553.35 -40726553.19 -40726553.03 0.0273 0.0111  
 Mercury -116216-01-07 02:24 J -40726464.58 -40726464.40 -40726464.23 0.0272 0.0012  
 Mercury -116216-04-05 21:22 J -40726375.77 -40726375.61 -40726375.44 0.0271 0.0090  
 Mercury -116216-07-03 16:48 J -40726286.93 -40726286.80 -40726286.68 0.0270 0.0190  
 Venus -116213-12-30 11:46 J -40725011.07 -40725011.01 -40725010.94 0.0261 0.0247  
 Venus -116212-08-16 14:10 J -40724782.03 -40724781.91 -40724781.80 0.0260 0.0219  
 Venus -116211-04-02 16:05 J -40724552.98 -40724552.83 -40724552.68 0.0260 0.0188  
 Venus -116211-11-17 18:15 J -40724323.91 -40724323.74 -40724323.56 0.0260 0.0154



Venus	-116210-07-04 20:53 J	-40724094.83	-40724094.63	-40724094.44	0.0260	0.0119
Venus	-116209-02-18 23:46 J	-40723865.71	-40723865.51	-40723865.30	0.0260	0.0082
Venus	-116209-10-05 03:36 J	-40723636.56	-40723636.35	-40723636.13	0.0261	0.0044
Venus	-116208-05-22 08:10 J	-40723407.38	-40723407.16	-40723406.94	0.0262	0.0004
Venus	-116207-01-06 13:27 J	-40723178.16	-40723177.94	-40723177.72	0.0263	0.0037
Venus	-116207-08-23 19:41 J	-40722948.89	-40722948.68	-40722948.46	0.0264	0.0078
Venus	-116206-04-10 03:22 J	-40722719.56	-40722719.36	-40722719.17	0.0266	0.0118
Venus	-116206-11-25 11:46 J	-40722490.18	-40722490.01	-40722489.83	0.0268	0.0159
Moon	-116205-01-14 19:41 J	-40722439.91	-40722439.68	-40722439.45	0.0268	0.0122
Earth	-116205-01-14 23:03 J	-40722439.77	-40722439.54	-40722439.31	0.0268	0.0108 *
Venus	-116205-07-11 21:51 J	-40722260.74	-40722260.59	-40722260.44	0.0270	0.0197
Venus	-116204-02-26 08:53 J	-40722031.23	-40722031.13	-40722031.01	0.0272	0.0234
Venus	-116204-10-13 21:51 J	-40721801.63	-40721801.59	-40721801.55	0.0275	0.0268
Mars	-116203-12-13 22:48 J	-40721375.61	-40721375.55	-40721375.44	0.0280	0.0267
Mercury	-116201-07-28 11:46 J	-40720783.11	-40720783.01	-40720782.91	0.0288	0.0201
Mercury	-116201-10-25 01:27 J	-40720694.57	-40720694.44	-40720694.31	0.0289	0.0105
Mercury	-116200-01-21 15:07 J	-40720606.01	-40720605.87	-40720605.74	0.0290	0.0013
Mercury	-116200-04-20 04:19 J	-40720517.45	-40720517.32	-40720517.18	0.0291	0.0088
Mercury	-116200-07-17 17:46 J	-40720428.87	-40720428.76	-40720428.65	0.0292	0.0183
Mercury	-116200-10-14 06:58 J	-40720340.25	-40720340.21	-40720340.17	0.0293	0.0278
Venus	-116197-01-29 00:00 J	-40719503.56	-40719503.50	-40719503.43	0.0301	0.0285
Venus	-116197-09-14 23:17 J	-40719273.64	-40719273.53	-40719273.40	0.0302	0.0244
Venus	-116196-05-02 22:34 J	-40719043.71	-40719043.56	-40719043.40	0.0303	0.0196
Venus	-116196-12-18 21:22 J	-40718813.78	-40718813.61	-40718813.42	0.0303	0.0143
Venus	-116195-08-05 19:41 J	-40718583.87	-40718583.68	-40718583.48	0.0303	0.0087
Venus	-116194-03-23 17:03 J	-40718353.99	-40718353.79	-40718353.59	0.0302	0.0029
Venus	-116194-11-08 13:12 J	-40718124.15	-40718123.95	-40718123.75	0.0300	0.0028
Venus	-116193-06-25 08:10 J	-40717894.36	-40717894.16	-40717893.97	0.0298	0.0083
Venus	-116192-02-10 01:41 J	-40717664.61	-40717664.43	-40717664.25	0.0296	0.0135
Earth	-116192-07-06 22:05 J	-40717517.77	-40717517.58	-40717517.38	0.0295	0.0170

Moon -116192-07-06 22:48 J -40717517.75 -40717517.55 -40717517.36 0.0295 0.0154 \*  
 Venus -116192-09-27 17:31 J -40717434.92 -40717434.77 -40717434.60 0.0294 0.0183  
 Venus -116191-05-15 08:10 J -40717205.28 -40717205.16 -40717205.02 0.0291 0.0225  
 Venus -116191-12-30 21:36 J -40716975.69 -40716975.60 -40716975.52 0.0288 0.0260  
 Mars -116190-03-07 00:58 J -40716909.75 -40716909.46 -40716909.16 0.0287 0.0054  
 Mercury -116188-11-30 13:41 J -40715910.01 -40715909.93 -40715909.84 0.0274 0.0233  
 Mercury -116187-02-27 08:24 J -40715821.30 -40715821.15 -40715821.00 0.0273 0.0134  
 Mercury -116187-05-27 03:22 J -40715732.53 -40715732.36 -40715732.19 0.0272 0.0034  
 Mercury -116187-08-23 22:19 J -40715643.74 -40715643.57 -40715643.40 0.0271 0.0066  
 Mercury -116187-11-20 17:31 J -40715554.91 -40715554.77 -40715554.63 0.0270 0.0167  
 Mercury -116186-02-17 12:58 J -40715465.98 -40715465.96 -40715465.94 0.0270 0.0267  
 Venus -116183-07-12 17:17 J -40714224.84 -40714224.78 -40714224.70 0.0261 0.0245  
 Venus -116182-02-26 19:12 J -40713995.81 -40713995.70 -40713995.57 0.0260 0.0216  
 Venus -116182-10-13 21:22 J -40713766.75 -40713766.61 -40713766.45 0.0259 0.0184  
 Venus -116181-05-29 23:46 J -40713537.68 -40713537.51 -40713537.33 0.0259 0.0150  
 Venus -116180-01-14 02:24 J -40713308.59 -40713308.40 -40713308.20 0.0259 0.0114  
 Venus -116180-08-31 05:46 J -40713079.47 -40713079.26 -40713079.05 0.0260 0.0076  
 Venus -116179-04-17 09:36 J -40712850.32 -40712850.10 -40712849.88 0.0260 0.0037  
 Venus -116179-12-02 14:10 J -40712621.13 -40712620.91 -40712620.69 0.0261 0.0004  
 Venus -116178-07-19 19:41 J -40712391.90 -40712391.68 -40712391.46 0.0263 0.0044  
 Venus -116177-03-05 01:55 J -40712162.62 -40712162.42 -40712162.20 0.0264 0.0086  
 Venus -116177-10-20 09:51 J -40711933.28 -40711933.09 -40711932.89 0.0266 0.0126  
 Venus -116176-06-06 18:43 J -40711703.88 -40711703.72 -40711703.54 0.0268 0.0166  
 Moon -116175-01-21 15:36 J -40711474.89 -40711474.85 -40711474.79 0.0270 0.0265  
 Venus -116175-01-22 04:48 J -40711474.43 -40711474.30 -40711474.15 0.0270 0.0204  
 Venus -116175-09-08 16:05 J -40711244.92 -40711244.83 -40711244.72 0.0273 0.0241  
 Mars -116174-01-31 17:46 J -40711100.02 -40711099.76 -40711099.49 0.0275 0.0109  
 Venus -116174-04-26 05:03 J -40711015.30 -40711015.29 -40711015.26 0.0276 0.0275  
 Mercury -116172-12-15 14:10 J -40710050.99 -40710050.91 -40710050.82 0.0288 0.0223  
 Mercury -116171-03-14 03:51 J -40709962.46 -40709962.34 -40709962.21 0.0289 0.0127

Mercury -116171-06-10 17:31 J -40709873.91 -40709873.77 -40709873.63 0.0290 0.0031

Mercury -116171-09-07 06:58 J -40709785.34 -40709785.21 -40709785.07 0.0291 0.0066

Mercury -116171-12-04 20:24 J -40709696.76 -40709696.65 -40709696.54 0.0292 0.0162

Mercury -116170-03-03 09:36 J -40709608.16 -40709608.10 -40709608.03 0.0293 0.0257

Venus -116168-08-10 09:36 J -40708717.17 -40708717.10 -40708717.02 0.0301 0.0280

Venus -116167-03-28 08:53 J -40708487.24 -40708487.13 -40708486.99 0.0303 0.0238

Venus -116167-11-13 08:24 J -40708257.31 -40708257.15 -40708256.99 0.0303 0.0188

Venus -116166-07-01 06:58 J -40708027.38 -40708027.21 -40708027.02 0.0303 0.0135

Venus -116165-02-16 05:17 J -40707797.48 -40707797.28 -40707797.08 0.0302 0.0078

Venus -116165-10-03 02:24 J -40707567.60 -40707567.40 -40707567.19 0.0301 0.0020

Venus -116164-05-20 22:34 J -40707337.76 -40707337.56 -40707337.36 0.0300 0.0038

Venus -116163-01-05 17:17 J -40707107.97 -40707107.78 -40707107.58 0.0298 0.0094

Venus -116163-08-23 10:34 J -40706878.23 -40706878.06 -40706877.87 0.0295 0.0146

Venus -116162-04-10 02:39 J -40706648.54 -40706648.39 -40706648.23 0.0293 0.0193

Venus -116162-11-25 17:03 J -40706418.91 -40706418.79 -40706418.67 0.0290 0.0234

Venus -116161-07-12 05:46 J -40706189.32 -40706189.26 -40706189.18 0.0287 0.0269

Mars -116160-04-27 06:15 J -40705900.46 -40705900.24 -40705900.00 0.0283 0.0173

Mercury -116158-04-19 15:22 J -40705177.92 -40705177.86 -40705177.80 0.0274 0.0255

Mercury -116158-07-17 09:51 J -40705089.22 -40705089.09 -40705088.94 0.0273 0.0156

Mercury -116158-10-14 04:48 J -40705000.47 -40705000.30 -40705000.13 0.0272 0.0056

Mercury -116157-01-10 23:46 J -40704911.68 -40704911.51 -40704911.33 0.0271 0.0044

Mercury -116157-04-08 18:58 J -40704822.86 -40704822.71 -40704822.56 0.0270 0.0144

Mercury -116157-07-06 14:10 J -40704733.97 -40704733.91 -40704733.83 0.0270 0.0245

Venus -116153-01-23 00:29 J -40703438.55 -40703438.48 -40703438.40 0.0261 0.0242

Venus -116153-09-08 02:39 J -40703209.51 -40703209.39 -40703209.26 0.0260 0.0212

Venus -116152-04-25 04:34 J -40702980.46 -40702980.31 -40702980.14 0.0260 0.0181

Venus -116152-12-10 07:12 J -40702751.38 -40702751.20 -40702751.02 0.0260 0.0146

Venus -116151-07-27 09:36 J -40702522.29 -40702522.10 -40702521.89 0.0260 0.0110

Venus -116150-03-13 12:58 J -40702293.17 -40702292.96 -40702292.74 0.0260 0.0072

Venus -116150-10-28 17:03 J -40702064.01 -40702063.79 -40702063.57 0.0261 0.0032

Venus -116149-06-13 21:36 J -40701834.82 -40701834.60 -40701834.38 0.0262 0.0010  
 Venus -116148-01-29 03:22 J -40701605.58 -40701605.36 -40701605.15 0.0263 0.0050  
 Venus -116148-09-15 10:05 J -40701376.29 -40701376.08 -40701375.87 0.0265 0.0091  
 Venus -116147-05-02 17:46 J -40701146.94 -40701146.76 -40701146.56 0.0266 0.0132  
 Venus -116147-12-18 02:53 J -40700917.54 -40700917.38 -40700917.21 0.0269 0.0173  
 Moon -116146-01-16 11:03 J -40700888.28 -40700888.04 -40700887.79 0.0269 0.0024  
 Earth -116146-01-16 13:27 J -40700888.19 -40700887.94 -40700887.68 0.0269 0.0012 \*  
 Venus -116146-08-04 12:58 J -40700688.08 -40700687.96 -40700687.81 0.0271 0.0212  
 Venus -116145-03-21 00:43 J -40700458.54 -40700458.47 -40700458.37 0.0273 0.0249  
 Mars -116144-03-21 14:24 J -40700093.17 -40700092.90 -40700092.62 0.0277 0.0090  
 Mercury -116142-05-04 17:03 J -40699318.86 -40699318.79 -40699318.71 0.0287 0.0243  
 Mercury -116142-08-01 06:58 J -40699230.33 -40699230.21 -40699230.09 0.0288 0.0147  
 Mercury -116142-10-28 20:39 J -40699141.78 -40699141.64 -40699141.51 0.0289 0.0051  
 Mercury -116141-01-25 10:05 J -40699053.22 -40699053.08 -40699052.94 0.0291 0.0045  
 Mercury -116141-04-22 23:31 J -40698964.64 -40698964.52 -40698964.40 0.0292 0.0141  
 Mercury -116141-07-20 12:43 J -40698876.05 -40698875.97 -40698875.89 0.0293 0.0236  
 Venus -116138-02-20 20:10 J -40697930.73 -40697930.66 -40697930.57 0.0301 0.0276  
 Venus -116138-10-08 19:41 J -40697700.81 -40697700.68 -40697700.55 0.0302 0.0232  
 Venus -116137-05-25 18:58 J -40697470.88 -40697470.71 -40697470.55 0.0303 0.0182  
 Venus -116136-01-10 17:31 J -40697240.95 -40697240.77 -40697240.58 0.0303 0.0128  
 Venus -116136-08-28 15:36 J -40697011.05 -40697010.85 -40697010.65 0.0302 0.0070  
 Venus -116135-04-15 12:43 J -40696781.18 -40696780.97 -40696780.77 0.0301 0.0012  
 Venus -116135-12-01 08:24 J -40696551.35 -40696551.15 -40696550.94 0.0300 0.0046  
 Venus -116134-07-19 02:53 J -40696321.57 -40696321.38 -40696321.18 0.0298 0.0101  
 Venus -116133-03-04 19:55 J -40696091.84 -40696091.67 -40696091.49 0.0295 0.0153  
 Earth -116133-07-08 17:31 J -40695966.00 -40695965.77 -40695965.53 0.0294 0.0046  
 Moon -116133-07-08 21:22 J -40695965.85 -40695965.61 -40695965.37 0.0294 0.0030 \*  
 Venus -116133-10-20 11:31 J -40695862.16 -40695862.02 -40695861.86 0.0293 0.0199  
 Venus -116132-06-07 01:55 J -40695632.53 -40695632.42 -40695632.30 0.0290 0.0239  
 Mars -116132-06-10 11:03 J -40695629.15 -40695629.04 -40695628.89 0.0290 0.0260

Venus -116131-01-22 14:10 J -40695402.95 -40695402.91 -40695402.83 0.0287 0.0274  
 Mercury -116129-12-03 11:17 J -40694357.16 -40694357.03 -40694356.90 0.0274 0.0177  
 Mercury -116128-03-02 06:00 J -40694268.41 -40694268.25 -40694268.08 0.0273 0.0078  
 Mercury -116128-05-30 00:58 J -40694179.63 -40694179.46 -40694179.28 0.0272 0.0022  
 Mercury -116128-08-26 20:10 J -40694090.82 -40694090.66 -40694090.51 0.0271 0.0122  
 Mercury -116128-11-23 15:22 J -40694001.96 -40694001.86 -40694001.76 0.0270 0.0222  
 Venus -116124-08-04 06:00 J -40692652.32 -40692652.25 -40692652.15 0.0260 0.0239  
 Venus -116123-03-21 08:10 J -40692423.29 -40692423.16 -40692423.03 0.0260 0.0209  
 Venus -116123-11-05 10:05 J -40692194.23 -40692194.08 -40692193.91 0.0259 0.0176  
 Venus -116122-06-22 12:15 J -40691965.16 -40691964.99 -40691964.80 0.0259 0.0142  
 Venus -116121-02-06 15:07 J -40691736.07 -40691735.87 -40691735.67 0.0259 0.0104  
 Venus -116121-09-22 18:29 J -40691506.94 -40691506.73 -40691506.51 0.0260 0.0066  
 Venus -116120-05-09 22:34 J -40691277.78 -40691277.56 -40691277.34 0.0261 0.0026  
 Venus -116120-12-25 03:22 J -40691048.58 -40691048.36 -40691048.14 0.0262 0.0015  
 Venus -116119-08-11 08:53 J -40690819.34 -40690819.13 -40690818.91 0.0263 0.0057  
 Venus -116118-03-28 15:51 J -40690590.04 -40690589.84 -40690589.63 0.0265 0.0098  
 Venus -116118-11-12 23:46 J -40690360.69 -40690360.51 -40690360.31 0.0267 0.0140  
 Venus -116117-06-29 09:07 J -40690131.28 -40690131.12 -40690130.95 0.0269 0.0179  
 Venus -116116-02-13 19:27 J -40689901.80 -40689901.69 -40689901.55 0.0271 0.0219  
 Mars -116116-05-10 06:43 J -40689816.28 -40689816.22 -40689816.15 0.0272 0.0264  
 Venus -116116-10-01 07:27 J -40689672.26 -40689672.19 -40689672.10 0.0274 0.0255  
 Mercury -116113-09-20 19:12 J -40688586.74 -40688586.70 -40688586.64 0.0287 0.0267  
 Mercury -116113-12-18 09:07 J -40688498.23 -40688498.12 -40688498.01 0.0289 0.0171  
 Mercury -116112-03-16 22:48 J -40688409.69 -40688409.55 -40688409.42 0.0290 0.0075  
 Mercury -116112-06-13 12:15 J -40688321.12 -40688320.99 -40688320.85 0.0291 0.0023  
 Mercury -116112-09-10 01:41 J -40688232.55 -40688232.43 -40688232.30 0.0292 0.0118  
 Mercury -116112-12-07 15:07 J -40688143.96 -40688143.87 -40688143.78 0.0293 0.0213  
 Venus -116109-09-02 05:17 J -40687144.36 -40687144.28 -40687144.19 0.0302 0.0271  
 Venus -116108-04-20 04:34 J -40686914.43 -40686914.31 -40686914.16 0.0303 0.0226  
 Venus -116108-12-06 04:05 J -40686684.50 -40686684.33 -40686684.16 0.0303 0.0174

Venus	-116107-07-24 02:39 J	-40686454.57	-40686454.39	-40686454.20	0.0303	0.0119
Venus	-116106-03-11 00:43 J	-40686224.67	-40686224.47	-40686224.27	0.0302	0.0061
Venus	-116106-10-26 21:36 J	-40685994.80	-40685994.60	-40685994.40	0.0301	0.0002
Venus	-116105-06-12 17:17 J	-40685764.98	-40685764.78	-40685764.58	0.0299	0.0056
Venus	-116104-01-28 11:46 J	-40685535.20	-40685535.01	-40685534.82	0.0297	0.0111
Venus	-116104-09-15 04:48 J	-40685305.47	-40685305.30	-40685305.13	0.0295	0.0162
Venus	-116103-05-02 20:10 J	-40685075.79	-40685075.66	-40685075.51	0.0292	0.0208
Venus	-116103-12-18 10:05 J	-40684846.17	-40684846.08	-40684845.97	0.0289	0.0248
Mars	-116102-08-02 08:24 J	-40684619.45	-40684619.15	-40684618.85	0.0286	0.0018
Venus	-116102-08-04 22:34 J	-40684616.59	-40684616.56	-40684616.52	0.0286	0.0281
Mercury	-116099-04-22 12:29 J	-40683625.09	-40683624.98	-40683624.85	0.0274	0.0200
Mercury	-116099-07-20 07:27 J	-40683536.35	-40683536.19	-40683536.03	0.0273	0.0100
Mercury	-116099-10-17 02:24 J	-40683447.58	-40683447.40	-40683447.23	0.0272	0.0006
Mercury	-116098-01-13 21:22 J	-40683358.77	-40683358.61	-40683358.45	0.0271	0.0099
Mercury	-116098-04-12 16:34 J	-40683269.93	-40683269.81	-40683269.69	0.0270	0.0199
Venus	-116094-02-14 12:43 J	-40681866.05	-40681865.97	-40681865.87	0.0260	0.0236
Venus	-116094-10-01 14:53 J	-40681637.01	-40681636.88	-40681636.75	0.0260	0.0205
Venus	-116093-05-17 16:34 J	-40681407.96	-40681407.81	-40681407.63	0.0259	0.0173
Venus	-116092-01-01 19:12 J	-40681178.88	-40681178.70	-40681178.51	0.0259	0.0137
Venus	-116092-08-18 21:51 J	-40680949.78	-40680949.59	-40680949.37	0.0260	0.0100
Venus	-116091-04-05 01:27 J	-40680720.65	-40680720.44	-40680720.22	0.0260	0.0060
Venus	-116091-11-20 05:31 J	-40680491.49	-40680491.27	-40680491.05	0.0261	0.0020
Venus	-116090-07-07 10:19 J	-40680262.29	-40680262.07	-40680261.85	0.0262	0.0021
Venus	-116089-02-21 16:05 J	-40680033.04	-40680032.83	-40680032.61	0.0264	0.0062
Venus	-116089-10-07 23:17 J	-40679803.73	-40679803.53	-40679803.33	0.0265	0.0104
Venus	-116088-05-25 07:27 J	-40679574.37	-40679574.19	-40679574.01	0.0267	0.0146
Venus	-116087-01-09 16:34 J	-40679344.96	-40679344.81	-40679344.64	0.0269	0.0186
Earth	-116087-01-18 01:41 J	-40679336.67	-40679336.43	-40679336.19	0.0269	0.0083
Moon	-116087-01-18 03:51 J	-40679336.57	-40679336.34	-40679336.10	0.0269	0.0069 *
Venus	-116087-08-27 03:22 J	-40679115.47	-40679115.36	-40679115.23	0.0272	0.0225

Venus -116086-04-13 15:36 J -40678885.91 -40678885.85 -40678885.78 0.0274 0.0261  
 Mars -116086-06-28 13:12 J -40678810.22 -40678809.95 -40678809.67 0.0275 0.0078  
 Mercury -116083-05-07 11:46 J -40677766.11 -40677766.01 -40677765.90 0.0288 0.0192  
 Mercury -116083-08-04 01:27 J -40677677.57 -40677677.44 -40677677.30 0.0289 0.0096  
 Mercury -116083-10-31 15:07 J -40677589.01 -40677588.87 -40677588.73 0.0290 0.0002  
 Mercury -116082-01-28 04:34 J -40677500.44 -40677500.31 -40677500.18 0.0291 0.0096  
 Mercury -116082-04-26 18:00 J -40677411.85 -40677411.75 -40677411.65 0.0292 0.0192  
 Mercury -116082-07-24 07:12 J -40677323.22 -40677323.20 -40677323.17 0.0293 0.0287  
 Venus -116079-03-15 15:07 J -40676357.95 -40676357.87 -40676357.77 0.0302 0.0267  
 Venus -116079-10-31 14:39 J -40676128.02 -40676127.89 -40676127.75 0.0303 0.0220  
 Venus -116078-06-18 13:55 J -40675898.09 -40675897.92 -40675897.75 0.0303 0.0168  
 Venus -116077-02-03 12:29 J -40675668.17 -40675667.98 -40675667.79 0.0303 0.0112  
 Venus -116077-09-20 10:19 J -40675438.27 -40675438.07 -40675437.87 0.0302 0.0053  
 Venus -116076-05-08 07:12 J -40675208.41 -40675208.20 -40675208.00 0.0301 0.0007  
 Venus -116076-12-24 02:39 J -40674978.59 -40674978.39 -40674978.19 0.0299 0.0064  
 Venus -116075-08-10 20:53 J -40674748.82 -40674748.63 -40674748.44 0.0297 0.0118  
 Venus -116074-03-28 13:41 J -40674519.10 -40674518.93 -40674518.76 0.0295 0.0169  
 Earth -116074-07-11 11:31 J -40674414.25 -40674414.02 -40674413.78 0.0293 0.0074  
 Moon -116074-07-11 12:29 J -40674414.21 -40674413.98 -40674413.74 0.0293 0.0087 \*  
 Venus -116074-11-13 04:48 J -40674289.44 -40674289.30 -40674289.16 0.0292 0.0214  
 Venus -116073-06-29 18:29 J -40674059.82 -40674059.73 -40674059.63 0.0289 0.0253  
 Venus -116072-02-14 06:43 J -40673830.22 -40673830.22 -40673830.22 0.0286 0.0286  
 Mars -116072-09-22 09:22 J -40673610.29 -40673610.11 -40673609.91 0.0283 0.0216  
 Mercury -116070-09-09 13:55 J -40672893.02 -40672892.92 -40672892.82 0.0274 0.0221  
 Mercury -116070-12-07 08:39 J -40672804.29 -40672804.14 -40672803.99 0.0273 0.0122  
 Mercury -116069-03-05 03:22 J -40672715.53 -40672715.36 -40672715.18 0.0272 0.0023  
 Mercury -116069-06-01 22:19 J -40672626.73 -40672626.57 -40672626.40 0.0271 0.0077  
 Mercury -116069-08-29 17:31 J -40672537.90 -40672537.77 -40672537.63 0.0270 0.0177  
 Venus -116065-08-26 18:00 J -40671079.83 -40671079.75 -40671079.64 0.0260 0.0233  
 Venus -116064-04-12 19:55 J -40670850.80 -40670850.67 -40670850.52 0.0259 0.0202

Venus	-116064-11-27 21:51 J	-40670621.74	-40670621.59	-40670621.41	0.0259	0.0168
Venus	-116063-07-15 00:15 J	-40670392.67	-40670392.49	-40670392.30	0.0259	0.0132
Venus	-116062-03-01 02:53 J	-40670163.58	-40670163.38	-40670163.16	0.0259	0.0095
Venus	-116062-10-16 06:29 J	-40669934.44	-40669934.23	-40669934.01	0.0260	0.0055
Venus	-116061-06-01 10:34 J	-40669705.28	-40669705.06	-40669704.84	0.0261	0.0014
Venus	-116060-01-16 15:22 J	-40669476.07	-40669475.86	-40669475.63	0.0262	0.0028
Venus	-116060-09-02 21:22 J	-40669246.82	-40669246.61	-40669246.39	0.0263	0.0069
Venus	-116059-04-20 04:19 J	-40669017.51	-40669017.32	-40669017.11	0.0265	0.0111
Venus	-116059-12-05 12:29 J	-40668788.15	-40668787.98	-40668787.79	0.0267	0.0153
Moon	-116058-01-12 18:58 J	-40668749.83	-40668749.71	-40668749.56	0.0267	0.0228
Earth	-116058-01-12 21:22 J	-40668749.75	-40668749.61	-40668749.45	0.0267	0.0215 *
Venus	-116058-07-22 22:05 J	-40668558.73	-40668558.58	-40668558.42	0.0269	0.0193
Venus	-116057-03-08 08:53 J	-40668329.23	-40668329.13	-40668329.01	0.0272	0.0231
Venus	-116057-10-23 21:22 J	-40668099.65	-40668099.61	-40668099.56	0.0274	0.0267
Mars	-116056-08-16 00:29 J	-40667803.73	-40667803.48	-40667803.21	0.0278	0.0119
Mercury	-116054-09-24 13:27 J	-40667034.02	-40667033.94	-40667033.84	0.0288	0.0219
Mercury	-116054-12-22 03:07 J	-40666945.49	-40666945.37	-40666945.24	0.0289	0.0124
Mercury	-116053-03-19 16:48 J	-40666856.93	-40666856.80	-40666856.66	0.0290	0.0028
Mercury	-116053-06-16 06:29 J	-40666768.37	-40666768.23	-40666768.10	0.0291	0.0070
Mercury	-116053-09-12 19:55 J	-40666679.79	-40666679.67	-40666679.56	0.0293	0.0166
Mercury	-116053-12-10 09:07 J	-40666591.18	-40666591.12	-40666591.06	0.0294	0.0261
Venus	-116050-09-25 22:34 J	-40665571.66	-40665571.56	-40665571.45	0.0302	0.0261
Venus	-116049-05-12 21:51 J	-40665341.72	-40665341.59	-40665341.43	0.0303	0.0215
Venus	-116049-12-28 21:22 J	-40665111.78	-40665111.61	-40665111.44	0.0303	0.0160
Venus	-116048-08-15 19:55 J	-40664881.86	-40664881.67	-40664881.48	0.0303	0.0103
Venus	-116047-04-02 17:46 J	-40664651.96	-40664651.76	-40664651.56	0.0302	0.0044
Venus	-116047-11-18 14:24 J	-40664422.10	-40664421.90	-40664421.69	0.0301	0.0016
Venus	-116046-07-06 09:51 J	-40664192.29	-40664192.09	-40664191.89	0.0299	0.0073
Venus	-116045-02-21 03:51 J	-40663962.52	-40663962.34	-40663962.15	0.0297	0.0128
Moon	-116045-07-04 21:22 J	-40663827.65	-40663827.61	-40663827.55	0.0295	0.0288



Venus -116045-10-07 20:39 J -40663732.80 -40663732.64 -40663732.48 0.0294 0.0178  
 Venus -116044-05-25 11:46 J -40663503.13 -40663503.01 -40663502.87 0.0291 0.0223  
 Mars -116044-11-05 13:27 J -40663339.12 -40663338.94 -40663338.74 0.0289 0.0226  
 Venus -116043-01-10 01:27 J -40663273.52 -40663273.44 -40663273.35 0.0288 0.0261  
 Mercury -116040-01-26 14:53 J -40662160.95 -40662160.88 -40662160.80 0.0274 0.0245  
 Mercury -116040-04-25 09:22 J -40662072.25 -40662072.11 -40662071.96 0.0273 0.0147  
 Mercury -116040-07-23 04:19 J -40661983.49 -40661983.32 -40661983.15 0.0272 0.0048  
 Mercury -116040-10-19 23:17 J -40661894.70 -40661894.53 -40661894.36 0.0271 0.0052  
 Mercury -116039-01-16 18:29 J -40661805.88 -40661805.73 -40661805.59 0.0270 0.0151  
 Mercury -116039-04-15 13:27 J -40661716.99 -40661716.94 -40661716.87 0.0269 0.0251  
 Venus -116036-07-22 22:05 J -40660522.59 -40660522.58 -40660522.54 0.0261 0.0259  
 Venus -116035-03-09 00:15 J -40660293.59 -40660293.49 -40660293.39 0.0260 0.0229  
 Venus -116035-10-24 01:41 J -40660064.56 -40660064.43 -40660064.28 0.0259 0.0198  
 Venus -116034-06-10 03:51 J -40659835.51 -40659835.34 -40659835.17 0.0259 0.0163  
 Venus -116033-01-25 06:00 J -40659606.44 -40659606.25 -40659606.05 0.0259 0.0127  
 Venus -116033-09-10 09:07 J -40659377.33 -40659377.12 -40659376.92 0.0260 0.0089  
 Venus -116032-04-27 12:29 J -40659148.20 -40659147.98 -40659147.77 0.0260 0.0050  
 Venus -116032-12-12 16:34 J -40658919.03 -40658918.81 -40658918.59 0.0261 0.0010  
 Venus -116031-07-29 21:22 J -40658689.83 -40658689.61 -40658689.39 0.0262 0.0033  
 Venus -116030-03-16 03:22 J -40658460.57 -40658460.36 -40658460.15 0.0264 0.0075  
 Venus -116030-10-31 10:34 J -40658231.25 -40658231.06 -40658230.86 0.0266 0.0117  
 Venus -116029-06-16 18:43 J -40658001.88 -40658001.72 -40658001.53 0.0268 0.0159  
 Earth -116028-01-19 10:19 J -40657785.25 -40657785.07 -40657784.86 0.0270 0.0169  
 Moon -116028-01-19 13:55 J -40657785.12 -40657784.92 -40657784.70 0.0270 0.0154 \*  
 Venus -116028-02-01 04:19 J -40657772.45 -40657772.32 -40657772.16 0.0270 0.0199  
 Venus -116028-09-18 15:22 J -40657542.95 -40657542.86 -40657542.74 0.0272 0.0238  
 Mars -116028-10-04 17:31 J -40657526.89 -40657526.77 -40657526.62 0.0272 0.0237  
 Venus -116027-05-06 04:05 J -40657313.35 -40657313.33 -40657313.30 0.0275 0.0273  
 Mercury -116024-02-10 15:51 J -40656301.91 -40656301.84 -40656301.77 0.0287 0.0242  
 Mercury -116024-05-10 05:31 J -40656213.39 -40656213.27 -40656213.14 0.0289 0.0147

Mercury -116024-08-06 19:12 J -40656124.83 -40656124.70 -40656124.56 0.0290 0.0051

Mercury -116024-11-03 08:53 J -40656036.27 -40656036.13 -40656035.99 0.0291 0.0045

Mercury -116023-01-30 22:19 J -40655947.69 -40655947.57 -40655947.45 0.0292 0.0141

Mercury -116023-04-29 11:31 J -40655859.09 -40655859.02 -40655858.94 0.0293 0.0237

Venus -116021-08-20 07:41 J -40655015.19 -40655015.18 -40655015.16 0.0301 0.0299

Venus -116020-04-07 07:12 J -40654785.29 -40654785.20 -40654785.08 0.0302 0.0257

Venus -116020-11-23 06:58 J -40654555.36 -40654555.21 -40654555.06 0.0303 0.0208

Venus -116019-07-11 06:00 J -40654325.42 -40654325.25 -40654325.07 0.0303 0.0154

Venus -116018-02-26 04:48 J -40654095.49 -40654095.30 -40654095.11 0.0303 0.0096

Venus -116018-10-14 02:24 J -40653865.60 -40653865.40 -40653865.20 0.0302 0.0036

Venus -116017-05-30 23:03 J -40653635.74 -40653635.54 -40653635.34 0.0301 0.0024

Venus -116016-01-15 18:15 J -40653405.93 -40653405.74 -40653405.54 0.0299 0.0082

Venus -116016-09-02 12:15 J -40653176.16 -40653175.99 -40653175.80 0.0296 0.0136

Venus -116015-04-20 04:48 J -40652946.45 -40652946.30 -40652946.13 0.0294 0.0185

Moon -116015-07-12 22:34 J -40652862.73 -40652862.56 -40652862.37 0.0293 0.0192

Earth -116015-07-13 01:55 J -40652862.59 -40652862.42 -40652862.22 0.0293 0.0184 \*

Venus -116015-12-05 19:41 J -40652716.80 -40652716.68 -40652716.54 0.0291 0.0229

Venus -116014-07-23 09:07 J -40652487.19 -40652487.12 -40652487.04 0.0288 0.0266

Mars -116014-12-28 06:58 J -40652329.51 -40652329.21 -40652328.91 0.0286 0.0023

Mercury -116011-06-15 16:05 J -40651428.86 -40651428.83 -40651428.79 0.0275 0.0267

Mercury -116011-09-12 10:34 J -40651340.19 -40651340.06 -40651339.92 0.0274 0.0169

Mercury -116011-12-10 05:17 J -40651251.44 -40651251.28 -40651251.11 0.0273 0.0070

Mercury -116010-03-09 00:15 J -40651162.66 -40651162.49 -40651162.32 0.0272 0.0029

Mercury -116010-06-05 19:12 J -40651073.85 -40651073.70 -40651073.54 0.0271 0.0129

Mercury -116010-09-02 14:24 J -40650984.99 -40650984.90 -40650984.80 0.0270 0.0228

Venus -116006-02-02 03:07 J -40649736.40 -40649736.37 -40649736.32 0.0260 0.0255

Venus -116006-09-19 04:48 J -40649507.40 -40649507.30 -40649507.19 0.0260 0.0226

Venus -116005-05-05 06:15 J -40649278.37 -40649278.24 -40649278.08 0.0259 0.0194

Venus -116005-12-20 08:24 J -40649049.32 -40649049.15 -40649048.97 0.0259 0.0159

Venus -116004-08-06 10:34 J -40648820.25 -40648820.06 -40648819.86 0.0259 0.0122

Venus	-116003-03-23 13:27 J	-40648591.15	-40648590.94	-40648590.73	0.0259	0.0083
Venus	-116003-11-07 16:48 J	-40648362.02	-40648361.80	-40648361.58	0.0260	0.0043
Venus	-116002-06-24 20:53 J	-40648132.85	-40648132.63	-40648132.41	0.0261	0.0005
Venus	-116001-02-09 01:41 J	-40647903.65	-40647903.43	-40647903.21	0.0262	0.0040
Venus	-116001-09-25 07:55 J	-40647674.38	-40647674.17	-40647673.96	0.0263	0.0082

# 116TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 116th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-116000-05-12 14:53 J	-40647445.07	-40647444.88	-40647444.68	0.0265	0.0124		
Venus	-116000-12-27 23:17 J	-40647215.70	-40647215.53	-40647215.36	0.0267	0.0165		
Moon	-115999-01-14 01:12 J	-40647198.64	-40647198.45	-40647198.23	0.0267	0.0150		
Earth	-115999-01-14 04:48 J	-40647198.51	-40647198.30	-40647198.08	0.0267	0.0134	*	
Venus	-115999-08-14 08:53 J	-40646986.26	-40646986.13	-40646985.98	0.0270	0.0206		
Venus	-115998-03-31 20:10 J	-40646756.76	-40646756.66	-40646756.57	0.0272	0.0244		
Mars	-115998-11-22 13:12 J	-40646521.23	-40646520.95	-40646520.67	0.0275	0.0057		
Mercury	-115995-06-30 17:03 J	-40645569.83	-40645569.79	-40645569.74	0.0287	0.0272		
Mercury	-115995-09-27 06:58 J	-40645481.32	-40645481.21	-40645481.10	0.0289	0.0176		
Mercury	-115995-12-24 20:39 J	-40645392.77	-40645392.64	-40645392.51	0.0290	0.0080		
Mercury	-115994-03-23 10:19 J	-40645304.21	-40645304.07	-40645303.93	0.0291	0.0017		

Mercury -115994-06-19 23:46 J -40645215.64 -40645215.51 -40645215.38 0.0292 0.0112

Mercury -115994-09-16 12:58 J -40645127.05 -40645126.96 -40645126.86 0.0293 0.0208

Venus -115991-03-02 13:27 J -40644228.98 -40644228.94 -40644228.90 0.0302 0.0295

Venus -115991-10-18 12:58 J -40643999.06 -40643998.96 -40643998.84 0.0303 0.0252

Venus -115990-06-05 12:29 J -40643769.12 -40643768.98 -40643768.82 0.0303 0.0203

Venus -115989-01-21 12:00 J -40643539.18 -40643539.00 -40643538.82 0.0304 0.0147

Venus -115989-09-07 10:34 J -40643309.26 -40643309.06 -40643308.87 0.0303 0.0088

Venus -115988-04-25 08:10 J -40643079.36 -40643079.16 -40643078.95 0.0302 0.0029

Venus -115988-12-11 04:48 J -40642849.50 -40642849.30 -40642849.10 0.0301 0.0032

Venus -115987-07-29 00:00 J -40642619.69 -40642619.50 -40642619.30 0.0299 0.0089

Venus -115986-03-15 17:46 J -40642389.93 -40642389.76 -40642389.57 0.0296 0.0144

Earth -115986-07-07 09:36 J -40642276.27 -40642276.10 -40642275.91 0.0295 0.0196

Moon -115986-07-07 12:58 J -40642276.13 -40642275.96 -40642275.77 0.0295 0.0184 \*

Venus -115986-10-31 10:19 J -40642160.22 -40642160.07 -40642159.92 0.0294 0.0193

Venus -115985-06-17 01:12 J -40641930.57 -40641930.45 -40641930.33 0.0291 0.0237

Venus -115984-02-01 14:24 J -40641700.96 -40641700.90 -40641700.84 0.0288 0.0274

Mars -115983-02-16 22:19 J -40641320.72 -40641320.57 -40641320.41 0.0283 0.0239

Mercury -115981-01-30 11:03 J -40640608.16 -40640608.04 -40640607.92 0.0274 0.0197

Mercury -115981-04-28 05:31 J -40640519.43 -40640519.27 -40640519.10 0.0273 0.0099

Mercury -115981-07-26 00:29 J -40640430.66 -40640430.48 -40640430.31 0.0272 0.0002

Mercury -115981-10-22 19:27 J -40640341.85 -40640341.69 -40640341.53 0.0271 0.0100

Mercury -115980-01-19 14:24 J -40640253.01 -40640252.90 -40640252.77 0.0270 0.0200

Venus -115977-08-14 07:55 J -40638950.21 -40638950.17 -40638950.11 0.0260 0.0253

Venus -115976-03-31 09:36 J -40638721.20 -40638721.10 -40638720.98 0.0260 0.0222

Venus -115976-11-15 11:17 J -40638492.17 -40638492.03 -40638491.88 0.0259 0.0190

Venus -115975-07-02 13:12 J -40638263.13 -40638262.95 -40638262.77 0.0259 0.0154

Venus -115974-02-16 15:22 J -40638034.05 -40638033.86 -40638033.66 0.0259 0.0117

Venus -115974-10-03 18:15 J -40637804.95 -40637804.74 -40637804.53 0.0260 0.0079

Venus -115973-05-19 21:36 J -40637575.82 -40637575.60 -40637575.38 0.0260 0.0038

Venus -115972-01-04 01:41 J -40637346.65 -40637346.43 -40637346.21 0.0261 0.0003

Venus -115972-08-21 06:43 J -40637117.44 -40637117.22 -40637117.00 0.0262 0.0045  
 Venus -115971-04-07 12:43 J -40636888.18 -40636887.97 -40636887.76 0.0264 0.0087  
 Venus -115971-11-22 20:10 J -40636658.86 -40636658.66 -40636658.47 0.0266 0.0129  
 Venus -115970-07-10 04:19 J -40636429.48 -40636429.32 -40636429.14 0.0268 0.0171  
 Moon -115969-01-21 14:53 J -40636234.00 -40636233.88 -40636233.74 0.0270 0.0232  
 Earth -115969-01-21 16:05 J -40636233.92 -40636233.83 -40636233.72 0.0270 0.0246 \*  
 Venus -115969-02-24 14:10 J -40636200.04 -40636199.91 -40636199.77 0.0270 0.0211  
 Venus -115969-10-11 01:41 J -40635970.52 -40635970.43 -40635970.34 0.0273 0.0249  
 Mars -115967-01-10 01:41 J -40635514.67 -40635514.43 -40635514.17 0.0278 0.0142  
 Mercury -115965-02-14 08:39 J -40634749.23 -40634749.14 -40634749.03 0.0288 0.0203  
 Mercury -115965-05-12 22:34 J -40634660.69 -40634660.56 -40634660.43 0.0289 0.0107  
 Mercury -115965-08-09 12:15 J -40634572.13 -40634571.99 -40634571.85 0.0290 0.0013  
 Mercury -115965-11-06 01:41 J -40634483.56 -40634483.43 -40634483.30 0.0291 0.0085  
 Mercury -115964-02-02 15:07 J -40634394.98 -40634394.87 -40634394.76 0.0292 0.0180  
 Mercury -115964-05-02 04:19 J -40634306.36 -40634306.32 -40634306.27 0.0293 0.0276  
 Venus -115962-09-12 20:24 J -40633442.69 -40633442.65 -40633442.59 0.0301 0.0291  
 Venus -115961-04-29 20:10 J -40633212.77 -40633212.66 -40633212.54 0.0302 0.0247  
 Venus -115961-12-15 19:41 J -40632982.83 -40632982.68 -40632982.52 0.0303 0.0196  
 Venus -115960-08-02 18:58 J -40632752.89 -40632752.71 -40632752.53 0.0303 0.0140  
 Venus -115959-03-20 17:31 J -40632522.96 -40632522.77 -40632522.57 0.0303 0.0081  
 Venus -115959-11-05 15:07 J -40632293.07 -40632292.87 -40632292.66 0.0302 0.0020  
 Venus -115958-06-23 11:31 J -40632063.22 -40632063.02 -40632062.81 0.0300 0.0040  
 Venus -115957-02-08 06:43 J -40631833.41 -40631833.22 -40631833.02 0.0298 0.0098  
 Venus -115957-09-25 00:29 J -40631603.65 -40631603.48 -40631603.30 0.0296 0.0151  
 Venus -115956-05-12 17:03 J -40631373.94 -40631373.79 -40631373.64 0.0293 0.0200  
 Moon -115956-07-14 09:22 J -40631311.15 -40631311.11 -40631311.05 0.0293 0.0286  
 Earth -115956-07-14 11:17 J -40631311.09 -40631311.03 -40631310.95 0.0293 0.0279 \*  
 Venus -115956-12-28 07:41 J -40631144.29 -40631144.18 -40631144.06 0.0291 0.0243  
 Mars -115955-04-02 00:29 J -40631049.69 -40631049.48 -40631049.24 0.0289 0.0192  
 Venus -115955-08-14 20:39 J -40630914.68 -40630914.64 -40630914.58 0.0288 0.0279

Mercury -115952-06-18 11:31 J -40629876.11 -40629876.02 -40629875.91 0.0274 0.0221

Mercury -115952-09-15 06:15 J -40629787.39 -40629787.24 -40629787.08 0.0273 0.0123

Mercury -115952-12-13 00:58 J -40629698.63 -40629698.46 -40629698.28 0.0272 0.0024

Mercury -115951-03-11 19:55 J -40629609.84 -40629609.67 -40629609.50 0.0271 0.0076

Mercury -115951-06-08 14:53 J -40629521.00 -40629520.88 -40629520.74 0.0270 0.0176

Venus -115947-02-24 12:15 J -40628164.04 -40628163.99 -40628163.93 0.0260 0.0249

Venus -115947-10-11 13:41 J -40627935.04 -40627934.93 -40627934.81 0.0259 0.0219

Venus -115946-05-28 14:53 J -40627706.02 -40627705.88 -40627705.72 0.0259 0.0186

Venus -115945-01-12 16:48 J -40627476.97 -40627476.80 -40627476.62 0.0259 0.0150

Venus -115945-08-28 18:58 J -40627247.90 -40627247.71 -40627247.50 0.0259 0.0113

Venus -115944-04-14 21:51 J -40627018.80 -40627018.59 -40627018.38 0.0259 0.0073

Venus -115944-11-30 00:58 J -40626789.67 -40626789.46 -40626789.24 0.0260 0.0033

Venus -115943-07-17 05:03 J -40626560.51 -40626560.29 -40626560.07 0.0261 0.0009

Venus -115942-03-03 09:51 J -40626331.30 -40626331.09 -40626330.87 0.0262 0.0052

Venus -115942-10-18 16:05 J -40626102.03 -40626101.83 -40626101.62 0.0264 0.0094

Venus -115941-06-03 23:03 J -40625872.72 -40625872.54 -40625872.34 0.0265 0.0137

Earth -115940-01-15 08:24 J -40625647.39 -40625647.15 -40625646.90 0.0267 0.0061

Moon -115940-01-15 09:51 J -40625647.32 -40625647.09 -40625646.85 0.0267 0.0077 \*

Venus -115940-01-19 07:27 J -40625643.34 -40625643.19 -40625643.01 0.0267 0.0178

Venus -115940-09-05 17:31 J -40625413.90 -40625413.77 -40625413.64 0.0270 0.0217

Mars -115939-02-28 06:58 J -40625238.36 -40625238.21 -40625238.03 0.0272 0.0223

Venus -115939-04-23 04:19 J -40625184.38 -40625184.32 -40625184.23 0.0272 0.0256

Mercury -115936-07-03 09:36 J -40624017.18 -40624017.10 -40624017.02 0.0288 0.0236

Mercury -115936-09-29 23:17 J -40623928.65 -40623928.53 -40623928.41 0.0289 0.0140

Mercury -115936-12-27 12:58 J -40623840.10 -40623839.96 -40623839.82 0.0290 0.0045

Mercury -115935-03-26 02:24 J -40623751.53 -40623751.40 -40623751.26 0.0291 0.0052

Mercury -115935-06-22 15:51 J -40623662.95 -40623662.84 -40623662.72 0.0292 0.0147

Mercury -115935-09-19 05:17 J -40623574.35 -40623574.28 -40623574.20 0.0293 0.0242

Venus -115932-03-25 00:00 J -40622656.55 -40622656.50 -40622656.43 0.0302 0.0288

Venus -115932-11-10 00:00 J -40622426.62 -40622426.50 -40622426.38 0.0303 0.0242

Venus	-115931-06-27 23:31 J	-40622196.67	-40622196.52	-40622196.35	0.0304	0.0191
Venus	-115930-02-12 23:03 J	-40621966.72	-40621966.54	-40621966.36	0.0304	0.0134
Venus	-115930-09-30 21:36 J	-40621736.80	-40621736.60	-40621736.40	0.0303	0.0074
Venus	-115929-05-17 19:12 J	-40621506.90	-40621506.70	-40621506.50	0.0302	0.0013
Venus	-115928-01-02 15:36 J	-40621277.05	-40621276.85	-40621276.65	0.0300	0.0047
Venus	-115928-08-20 10:48 J	-40621047.24	-40621047.05	-40621046.86	0.0298	0.0105
Venus	-115927-04-07 04:34 J	-40620817.48	-40620817.31	-40620817.14	0.0296	0.0159
Earth	-115927-07-08 16:34 J	-40620725.03	-40620724.81	-40620724.58	0.0295	0.0106
Moon	-115927-07-08 18:29 J	-40620724.96	-40620724.73	-40620724.50	0.0295	0.0096 *
Venus	-115927-11-22 20:39 J	-40620587.78	-40620587.64	-40620587.49	0.0293	0.0208
Venus	-115926-07-10 11:31 J	-40620358.12	-40620358.02	-40620357.92	0.0290	0.0250
Venus	-115925-02-25 00:29 J	-40620128.50	-40620128.48	-40620128.46	0.0287	0.0286
Mars	-115925-05-23 04:48 J	-40620040.59	-40620040.30	-40620040.00	0.0286	0.0041
Mercury	-115923-11-05 11:31 J	-40619144.09	-40619144.02	-40619143.96	0.0274	0.0252
Mercury	-115922-02-02 06:00 J	-40619055.39	-40619055.25	-40619055.11	0.0273	0.0154
Mercury	-115922-05-02 00:43 J	-40618966.64	-40618966.47	-40618966.30	0.0272	0.0055
Mercury	-115922-07-29 19:41 J	-40618877.86	-40618877.68	-40618877.51	0.0271	0.0044
Mercury	-115922-10-26 14:39 J	-40618789.04	-40618788.89	-40618788.74	0.0270	0.0144
Mercury	-115921-01-23 10:05 J	-40618700.16	-40618700.08	-40618700.01	0.0269	0.0243
Venus	-115918-09-06 15:51 J	-40617377.90	-40617377.84	-40617377.77	0.0260	0.0246
Venus	-115917-04-22 17:17 J	-40617148.89	-40617148.78	-40617148.65	0.0259	0.0215
Venus	-115917-12-07 18:43 J	-40616919.87	-40616919.72	-40616919.56	0.0259	0.0182
Venus	-115916-07-24 20:24 J	-40616690.82	-40616690.65	-40616690.46	0.0259	0.0146
Venus	-115915-03-10 22:34 J	-40616461.75	-40616461.56	-40616461.35	0.0259	0.0108
Venus	-115915-10-26 01:27 J	-40616232.65	-40616232.44	-40616232.23	0.0259	0.0068
Venus	-115914-06-12 04:34 J	-40616003.52	-40616003.31	-40616003.08	0.0260	0.0029
Venus	-115913-01-27 08:53 J	-40615774.35	-40615774.13	-40615773.91	0.0261	0.0015
Venus	-115913-09-12 13:55 J	-40615545.14	-40615544.92	-40615544.71	0.0263	0.0057
Venus	-115912-04-29 19:55 J	-40615315.87	-40615315.67	-40615315.46	0.0264	0.0099
Venus	-115912-12-15 03:07 J	-40615086.55	-40615086.37	-40615086.18	0.0266	0.0141

Venus -115911-08-01 11:31 J -40614857.17 -40614857.02 -40614856.86 0.0268 0.0183  
 Venus -115910-03-18 21:22 J -40614627.73 -40614627.61 -40614627.48 0.0270 0.0222  
 Venus -115910-11-03 08:53 J -40614398.19 -40614398.13 -40614398.06 0.0273 0.0260  
 Mars -115909-04-17 01:41 J -40614232.71 -40614232.43 -40614232.14 0.0275 0.0039  
 Mercury -115907-11-20 10:48 J -40613285.10 -40613285.05 -40613284.99 0.0287 0.0265  
 Mercury -115906-02-17 00:43 J -40613196.58 -40613196.47 -40613196.36 0.0288 0.0170  
 Mercury -115906-05-16 14:24 J -40613108.03 -40613107.90 -40613107.76 0.0289 0.0074  
 Mercury -115906-08-13 04:05 J -40613019.47 -40613019.33 -40613019.19 0.0291 0.0022  
 Mercury -115906-11-09 17:31 J -40612930.90 -40612930.77 -40612930.64 0.0292 0.0117  
 Mercury -115905-02-06 06:58 J -40612842.30 -40612842.21 -40612842.12 0.0293 0.0213  
 Venus -115903-10-05 06:00 J -40611870.31 -40611870.25 -40611870.18 0.0302 0.0284  
 Venus -115902-05-23 05:46 J -40611640.38 -40611640.26 -40611640.13 0.0303 0.0237  
 Venus -115901-01-08 05:17 J -40611410.43 -40611410.28 -40611410.11 0.0303 0.0185  
 Venus -115901-08-25 04:34 J -40611180.49 -40611180.31 -40611180.12 0.0303 0.0127  
 Venus -115900-04-12 03:07 J -40610950.56 -40610950.37 -40610950.17 0.0303 0.0067  
 Venus -115900-11-28 00:43 J -40610720.67 -40610720.47 -40610720.26 0.0302 0.0007  
 Venus -115899-07-15 21:07 J -40610490.82 -40610490.62 -40610490.42 0.0300 0.0055  
 Venus -115898-03-02 16:19 J -40610261.01 -40610260.82 -40610260.63 0.0298 0.0113  
 Venus -115898-10-18 10:05 J -40610031.25 -40610031.08 -40610030.91 0.0296 0.0166  
 Venus -115897-06-04 02:10 J -40609801.54 -40609801.41 -40609801.26 0.0293 0.0214  
 Venus -115896-01-19 16:48 J -40609571.89 -40609571.80 -40609571.70 0.0290 0.0256  
 Mars -115895-07-13 19:55 J -40609031.77 -40609031.67 -40609031.57 0.0283 0.0265  
 Mercury -115893-06-21 06:15 J -40608323.37 -40608323.24 -40608323.11 0.0274 0.0180  
 Mercury -115893-09-18 00:58 J -40608234.63 -40608234.46 -40608234.30 0.0273 0.0082  
 Mercury -115893-12-15 19:41 J -40608145.85 -40608145.68 -40608145.50 0.0272 0.0018  
 Mercury -115892-03-14 14:39 J -40608057.04 -40608056.89 -40608056.72 0.0271 0.0117  
 Mercury -115892-06-11 09:51 J -40607968.19 -40607968.09 -40607967.98 0.0270 0.0216  
 Venus -115888-03-18 19:27 J -40606591.76 -40606591.69 -40606591.61 0.0260 0.0243  
 Venus -115888-11-02 20:39 J -40606362.76 -40606362.64 -40606362.51 0.0259 0.0211  
 Venus -115887-06-19 21:51 J -40606133.74 -40606133.59 -40606133.42 0.0259 0.0178



Venus	-115886-02-03 23:46 J	-40605904.69	-40605904.51	-40605904.33	0.0258	0.0141
Venus	-115886-09-21 01:55 J	-40605675.62	-40605675.42	-40605675.21	0.0259	0.0103
Venus	-115885-05-07 04:34 J	-40605446.52	-40605446.31	-40605446.09	0.0259	0.0063
Venus	-115885-12-22 07:41 J	-40605217.40	-40605217.18	-40605216.96	0.0260	0.0022
Venus	-115884-08-08 11:46 J	-40604988.23	-40604988.01	-40604987.79	0.0261	0.0021
Venus	-115883-03-25 16:48 J	-40604759.02	-40604758.80	-40604758.59	0.0262	0.0063
Venus	-115883-11-09 22:48 J	-40604529.75	-40604529.55	-40604529.35	0.0264	0.0106
Venus	-115882-06-27 06:00 J	-40604300.43	-40604300.25	-40604300.07	0.0265	0.0148
Earth	-115881-01-17 09:22 J	-40604096.36	-40604096.11	-40604095.86	0.0267	0.0004
Moon	-115881-01-17 13:12 J	-40604096.21	-40604095.95	-40604095.70	0.0267	0.0011 *
Venus	-115881-02-11 14:10 J	-40604071.05	-40604070.91	-40604070.75	0.0268	0.0189
Venus	-115881-09-28 00:00 J	-40603841.60	-40603841.50	-40603841.38	0.0270	0.0229
Venus	-115880-05-15 11:17 J	-40603612.06	-40603612.03	-40603611.98	0.0273	0.0266
Mars	-115879-06-05 02:24 J	-40603226.64	-40603226.40	-40603226.15	0.0277	0.0149
Mercury	-115877-07-06 01:12 J	-40602464.55	-40602464.45	-40602464.35	0.0288	0.0204
Mercury	-115877-10-02 14:53 J	-40602376.01	-40602375.88	-40602375.75	0.0289	0.0109
Mercury	-115877-12-30 04:34 J	-40602287.45	-40602287.31	-40602287.17	0.0290	0.0014
Mercury	-115876-03-28 18:00 J	-40602198.88	-40602198.75	-40602198.61	0.0291	0.0082
Mercury	-115876-06-25 07:27 J	-40602110.30	-40602110.19	-40602110.08	0.0292	0.0177
Mercury	-115876-09-21 20:39 J	-40602021.68	-40602021.64	-40602021.59	0.0293	0.0273
Venus	-115873-04-16 07:55 J	-40601084.24	-40601084.17	-40601084.09	0.0302	0.0280
Venus	-115873-12-02 07:41 J	-40600854.30	-40600854.18	-40600854.04	0.0303	0.0233
Venus	-115872-07-20 07:27 J	-40600624.35	-40600624.19	-40600624.02	0.0304	0.0180
Venus	-115871-03-07 06:58 J	-40600394.40	-40600394.21	-40600394.02	0.0304	0.0121
Venus	-115871-10-23 05:31 J	-40600164.47	-40600164.27	-40600164.07	0.0303	0.0061
Venus	-115870-06-10 02:53 J	-40599934.58	-40599934.38	-40599934.17	0.0302	0.0003
Venus	-115869-01-25 23:17 J	-40599704.73	-40599704.53	-40599704.33	0.0300	0.0062
Venus	-115869-09-11 18:15 J	-40599474.92	-40599474.74	-40599474.55	0.0298	0.0120
Venus	-115868-04-29 12:00 J	-40599245.16	-40599245.00	-40599244.83	0.0296	0.0173
Moon	-115868-07-09 15:22 J	-40599174.10	-40599173.86	-40599173.62	0.0295	0.0027

Earth -115868-07-09 18:15 J -40599173.98 -40599173.74 -40599173.50 0.0295 0.0031 \*  
 Venus -115868-12-15 04:19 J -40599015.46 -40599015.32 -40599015.19 0.0293 0.0220  
 Venus -115867-08-01 18:29 J -40598785.81 -40598785.73 -40598785.63 0.0290 0.0262  
 Mars -115867-08-26 05:03 J -40598761.51 -40598761.29 -40598761.05 0.0290 0.0183  
 Mercury -115864-11-08 05:03 J -40597591.39 -40597591.29 -40597591.18 0.0274 0.0215  
 Mercury -115863-02-04 23:46 J -40597502.66 -40597502.51 -40597502.35 0.0273 0.0117  
 Mercury -115863-05-04 18:43 J -40597413.90 -40597413.72 -40597413.55 0.0272 0.0018  
 Mercury -115863-08-01 13:41 J -40597325.10 -40597324.93 -40597324.76 0.0271 0.0082  
 Mercury -115863-10-29 08:39 J -40597236.26 -40597236.14 -40597236.00 0.0270 0.0181  
 Venus -115859-09-28 21:36 J -40595805.67 -40595805.60 -40595805.51 0.0260 0.0241  
 Venus -115858-05-15 23:03 J -40595576.66 -40595576.54 -40595576.41 0.0259 0.0208  
 Venus -115858-12-31 00:29 J -40595347.64 -40595347.48 -40595347.31 0.0259 0.0174  
 Venus -115857-08-16 02:24 J -40595118.58 -40595118.40 -40595118.21 0.0259 0.0137  
 Venus -115856-04-02 04:34 J -40594889.52 -40594889.31 -40594889.11 0.0259 0.0098  
 Venus -115856-11-17 06:58 J -40594660.42 -40594660.21 -40594659.99 0.0259 0.0058  
 Venus -115855-07-04 10:19 J -40594431.29 -40594431.07 -40594430.85 0.0260 0.0017  
 Venus -115854-02-18 14:10 J -40594202.13 -40594201.91 -40594201.69 0.0261 0.0026  
 Venus -115854-10-05 19:27 J -40593972.90 -40593972.69 -40593972.48 0.0263 0.0068  
 Venus -115853-05-22 01:27 J -40593743.64 -40593743.44 -40593743.24 0.0264 0.0111  
 Venus -115852-01-06 08:24 J -40593514.32 -40593514.15 -40593513.96 0.0266 0.0153  
 Venus -115852-08-23 16:48 J -40593284.94 -40593284.80 -40593284.64 0.0268 0.0194  
 Venus -115851-04-10 02:39 J -40593055.49 -40593055.39 -40593055.27 0.0271 0.0234  
 Mars -115851-07-24 11:46 J -40592950.18 -40592950.01 -40592949.82 0.0272 0.0210  
 Venus -115851-11-25 14:24 J -40592825.93 -40592825.90 -40592825.87 0.0273 0.0270  
 Mercury -115848-11-23 02:10 J -40591732.49 -40591732.41 -40591732.33 0.0287 0.0237  
 Mercury -115847-02-19 15:51 J -40591643.96 -40591643.84 -40591643.71 0.0288 0.0142  
 Mercury -115847-05-19 05:31 J -40591555.41 -40591555.27 -40591555.13 0.0290 0.0046  
 Mercury -115847-08-15 19:12 J -40591466.84 -40591466.70 -40591466.57 0.0291 0.0050  
 Mercury -115847-11-12 08:24 J -40591378.26 -40591378.15 -40591378.02 0.0292 0.0145  
 Mercury -115846-02-08 21:51 J -40591289.66 -40591289.59 -40591289.51 0.0293 0.0240

Venus	-115844-10-27 12:00 J	-40590298.07	-40590298.00	-40590297.91	0.0302	0.0277
Venus	-115843-06-14 12:00 J	-40590068.13	-40590068.00	-40590067.86	0.0303	0.0228
Venus	-115842-01-30 11:46 J	-40589838.17	-40589838.01	-40589837.84	0.0303	0.0173
Venus	-115842-09-17 11:03 J	-40589608.23	-40589608.04	-40589607.85	0.0303	0.0115
Venus	-115841-05-04 09:22 J	-40589378.30	-40589378.11	-40589377.90	0.0303	0.0054
Venus	-115841-12-20 06:58 J	-40589148.41	-40589148.21	-40589148.00	0.0302	0.0010
Venus	-115840-08-07 03:22 J	-40588918.56	-40588918.36	-40588918.16	0.0300	0.0070
Venus	-115839-03-24 22:34 J	-40588688.74	-40588688.56	-40588688.37	0.0298	0.0127
Venus	-115839-11-09 16:19 J	-40588458.98	-40588458.82	-40588458.66	0.0296	0.0180
Venus	-115838-06-27 08:24 J	-40588229.28	-40588229.15	-40588229.02	0.0293	0.0227
Venus	-115837-02-11 22:48 J	-40587999.62	-40587999.55	-40587999.47	0.0290	0.0268
Mars	-115837-10-16 11:31 J	-40587752.31	-40587752.02	-40587751.72	0.0287	0.0056
Mercury	-115834-03-28 05:03 J	-40586859.36	-40586859.29	-40586859.21	0.0275	0.0244
Mercury	-115834-06-24 23:46 J	-40586770.66	-40586770.51	-40586770.37	0.0274	0.0145
Mercury	-115834-09-21 18:29 J	-40586681.90	-40586681.73	-40586681.56	0.0273	0.0046
Mercury	-115834-12-19 13:27 J	-40586593.11	-40586592.94	-40586592.77	0.0272	0.0053
Mercury	-115833-03-17 08:24 J	-40586504.29	-40586504.15	-40586504.00	0.0271	0.0153
Mercury	-115833-06-14 03:51 J	-40586415.40	-40586415.34	-40586415.28	0.0270	0.0252
Venus	-115829-04-10 00:58 J	-40585019.54	-40585019.46	-40585019.37	0.0260	0.0237
Venus	-115829-11-25 02:10 J	-40584790.54	-40584790.41	-40584790.27	0.0259	0.0204
Venus	-115828-07-12 03:22 J	-40584561.52	-40584561.36	-40584561.19	0.0258	0.0169
Venus	-115827-02-26 04:48 J	-40584332.48	-40584332.30	-40584332.10	0.0258	0.0133
Venus	-115827-10-13 07:12 J	-40584103.41	-40584103.20	-40584103.00	0.0258	0.0093
Venus	-115826-05-30 09:36 J	-40583874.31	-40583874.10	-40583873.88	0.0259	0.0052
Venus	-115825-01-14 12:43 J	-40583645.19	-40583644.97	-40583644.74	0.0260	0.0012
Venus	-115825-08-30 16:48 J	-40583416.02	-40583415.80	-40583415.58	0.0261	0.0032
Venus	-115824-04-16 21:36 J	-40583186.80	-40583186.60	-40583186.38	0.0262	0.0075
Venus	-115824-12-02 03:36 J	-40582957.54	-40582957.35	-40582957.15	0.0264	0.0118
Venus	-115823-07-19 10:48 J	-40582728.22	-40582728.05	-40582727.87	0.0266	0.0160
Moon	-115822-01-18 06:00 J	-40582545.50	-40582545.25	-40582544.99	0.0267	0.0054

Earth -115822-01-18 07:12 J -40582545.44 -40582545.20 -40582544.95 0.0267 0.0063 \*  
 Venus -115822-03-05 18:58 J -40582498.84 -40582498.71 -40582498.56 0.0268 0.0201  
 Venus -115822-10-21 05:03 J -40582269.38 -40582269.29 -40582269.19 0.0270 0.0240  
 Mars -115821-09-09 21:51 J -40581944.87 -40581944.59 -40581944.30 0.0274 0.0037  
 Mercury -115818-04-12 02:24 J -40581000.44 -40581000.40 -40581000.36 0.0287 0.0273  
 Mercury -115818-07-09 16:05 J -40580911.94 -40580911.83 -40580911.72 0.0288 0.0178  
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Venus	-115712-10-08 06:43 J	-40542104.24	-40542104.22	-40542104.18	0.0260	0.0257
Venus	-115711-05-25 07:55 J	-40541875.27	-40541875.17	-40541875.05	0.0259	0.0225
Venus	-115710-01-09 09:07 J	-40541646.25	-40541646.12	-40541645.96	0.0259	0.0191
Venus	-115710-08-26 10:48 J	-40541417.22	-40541417.05	-40541416.86	0.0258	0.0154
Venus	-115709-04-11 12:29 J	-40541188.17	-40541187.98	-40541187.77	0.0258	0.0115
Venus	-115709-11-26 14:39 J	-40540959.10	-40540958.89	-40540958.68	0.0259	0.0073
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Venus	-115707-02-27 20:24 J	-40540500.87	-40540500.65	-40540500.43	0.0260	0.0012
Venus	-115707-10-15 00:43 J	-40540271.69	-40540271.47	-40540271.25	0.0261	0.0055
Venus	-115706-06-01 05:46 J	-40540042.47	-40540042.26	-40540042.06	0.0262	0.0099
Venus	-115705-01-16 11:31 J	-40539813.20	-40539813.02	-40539812.83	0.0264	0.0142
Venus	-115705-09-01 18:43 J	-40539583.87	-40539583.72	-40539583.56	0.0266	0.0184
Earth	-115704-01-20 00:15 J	-40539443.67	-40539443.49	-40539443.28	0.0267	0.0171
Moon	-115704-01-20 01:27 J	-40539443.61	-40539443.44	-40539443.24	0.0267	0.0174 *
Venus	-115704-04-19 02:53 J	-40539354.48	-40539354.38	-40539354.25	0.0268	0.0225
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Mars	-115702-03-23 11:17 J	-40538651.27	-40538651.03	-40538650.79	0.0276	0.0149
Mercury	-115700-04-17 07:41 J	-40537895.26	-40537895.18	-40537895.09	0.0286	0.0224
Mercury	-115700-07-14 21:22 J	-40537806.73	-40537806.61	-40537806.48	0.0287	0.0131
Mercury	-115700-10-11 11:03 J	-40537718.18	-40537718.04	-40537717.90	0.0289	0.0036
Mercury	-115699-01-08 00:29 J	-40537629.61	-40537629.48	-40537629.34	0.0290	0.0058
Mercury	-115699-04-06 13:55 J	-40537541.04	-40537540.92	-40537540.81	0.0291	0.0153
Mercury	-115699-07-04 03:07 J	-40537452.44	-40537452.37	-40537452.30	0.0292	0.0246
Venus	-115696-06-22 19:41 J	-40536367.78	-40536367.68	-40536367.58	0.0303	0.0260
Venus	-115695-02-07 19:27 J	-40536137.83	-40536137.69	-40536137.54	0.0304	0.0207
Venus	-115695-09-25 18:58 J	-40535907.88	-40535907.71	-40535907.53	0.0304	0.0149
Venus	-115694-05-13 18:15 J	-40535677.94	-40535677.74	-40535677.55	0.0304	0.0086
Venus	-115694-12-29 16:34 J	-40535448.02	-40535447.81	-40535447.61	0.0303	0.0023
Venus	-115693-08-15 13:41 J	-40535218.13	-40535217.93	-40535217.72	0.0302	0.0041
Venus	-115692-04-02 10:05 J	-40534988.27	-40534988.08	-40534987.89	0.0300	0.0102

Venus -115692-11-18 04:48 J -40534758.47 -40534758.30 -40534758.12 0.0298 0.0160  
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 Moon -115691-07-13 05:03 J -40534521.50 -40534521.29 -40534521.06 0.0295 0.0128 \*  
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 Mercury -115686-05-13 19:55 J -40532755.84 -40532755.67 -40532755.50 0.0272 0.0070  
 Mercury -115686-08-10 15:07 J -40532667.00 -40532666.87 -40532666.73 0.0271 0.0170  
 Venus -115682-04-20 06:58 J -40531318.24 -40531318.21 -40531318.17 0.0260 0.0256  
 Venus -115682-12-05 08:39 J -40531089.25 -40531089.14 -40531089.03 0.0259 0.0223  
 Venus -115681-07-21 10:05 J -40530860.23 -40530860.08 -40530859.93 0.0259 0.0187  
 Venus -115680-03-07 11:31 J -40530631.19 -40530631.02 -40530630.83 0.0258 0.0150  
 Venus -115680-10-22 13:27 J -40530402.14 -40530401.94 -40530401.74 0.0258 0.0110  
 Venus -115679-06-08 15:36 J -40530173.06 -40530172.85 -40530172.63 0.0259 0.0069  
 Venus -115678-01-23 18:29 J -40529943.95 -40529943.73 -40529943.51 0.0259 0.0027  
 Venus -115678-09-09 21:51 J -40529714.81 -40529714.59 -40529714.37 0.0260 0.0017  
 Venus -115677-04-26 02:10 J -40529485.63 -40529485.41 -40529485.20 0.0261 0.0060  
 Venus -115677-12-11 07:12 J -40529256.40 -40529256.20 -40529256.00 0.0263 0.0104  
 Venus -115676-07-28 13:12 J -40529027.13 -40529026.95 -40529026.77 0.0264 0.0147  
 Moon -115675-01-14 14:39 J -40528857.11 -40528856.89 -40528856.65 0.0266 0.0129  
 Earth -115675-01-14 16:05 J -40528857.03 -40528856.83 -40528856.59 0.0266 0.0131 \*  
 Venus -115675-03-14 20:10 J -40528797.80 -40528797.66 -40528797.50 0.0266 0.0189  
 Venus -115675-10-30 04:48 J -40528568.40 -40528568.30 -40528568.18 0.0269 0.0230  
 Mars -115674-05-12 01:27 J -40528374.61 -40528374.44 -40528374.25 0.0271 0.0206  
 Venus -115674-06-16 14:39 J -40528338.90 -40528338.89 -40528338.85 0.0271 0.0268  
 Mercury -115671-09-04 08:10 J -40527163.21 -40527163.16 -40527163.09 0.0286 0.0258  
 Mercury -115671-12-01 22:05 J -40527074.69 -40527074.58 -40527074.46 0.0287 0.0164

Mercury -115670-02-28 11:46 J -40526986.15 -40526986.01 -40526985.88 0.0288 0.0070

Mercury -115670-05-28 01:12 J -40526897.59 -40526897.45 -40526897.31 0.0290 0.0024

Mercury -115670-08-24 14:39 J -40526809.02 -40526808.89 -40526808.76 0.0291 0.0118

Mercury -115670-11-21 03:51 J -40526720.43 -40526720.34 -40526720.24 0.0292 0.0212

Venus -115666-01-02 22:19 J -40525581.67 -40525581.57 -40525581.45 0.0302 0.0256

Venus -115666-08-20 22:19 J -40525351.72 -40525351.57 -40525351.42 0.0303 0.0201

Venus -115665-04-06 22:05 J -40525121.76 -40525121.58 -40525121.40 0.0303 0.0142

Venus -115665-11-22 20:53 J -40524891.83 -40524891.63 -40524891.43 0.0303 0.0079

Venus -115664-07-10 18:58 J -40524661.91 -40524661.71 -40524661.51 0.0302 0.0015

Venus -115663-02-25 16:05 J -40524432.03 -40524431.83 -40524431.63 0.0301 0.0049

Venus -115663-10-13 12:15 J -40524202.18 -40524201.99 -40524201.80 0.0299 0.0110

Venus -115662-05-31 07:12 J -40523972.37 -40523972.20 -40523972.04 0.0297 0.0168

Moon -115662-07-07 00:43 J -40523935.54 -40523935.47 -40523935.37 0.0297 0.0275

Earth -115662-07-07 02:53 J -40523935.49 -40523935.38 -40523935.27 0.0297 0.0261 \*

Venus -115661-01-16 00:15 J -40523742.61 -40523742.49 -40523742.34 0.0295 0.0220

Venus -115661-09-01 16:05 J -40523512.90 -40523512.83 -40523512.73 0.0292 0.0265

Mars -115660-08-02 20:24 J -40523177.94 -40523177.65 -40523177.35 0.0288 0.0044

Mercury -115657-01-07 10:19 J -40522290.11 -40522290.07 -40522290.01 0.0276 0.0262

Mercury -115657-04-05 05:03 J -40522201.42 -40522201.29 -40522201.15 0.0275 0.0163

Mercury -115657-07-03 00:00 J -40522112.67 -40522112.50 -40522112.33 0.0274 0.0063

Mercury -115657-09-29 18:58 J -40522023.88 -40522023.71 -40522023.54 0.0273 0.0037

Mercury -115657-12-27 14:10 J -40521935.06 -40521934.91 -40521934.76 0.0272 0.0138

Mercury -115656-03-26 09:22 J -40521846.18 -40521846.11 -40521846.02 0.0271 0.0238

Venus -115653-10-30 09:36 J -40520532.14 -40520532.10 -40520532.05 0.0260 0.0253

Venus -115652-06-16 11:03 J -40520303.15 -40520303.04 -40520302.92 0.0260 0.0219

Venus -115651-01-31 12:15 J -40520074.13 -40520073.99 -40520073.82 0.0259 0.0184

Venus -115651-09-17 14:10 J -40519845.08 -40519844.91 -40519844.72 0.0259 0.0145

Venus -115650-05-04 16:05 J -40519616.03 -40519615.83 -40519615.63 0.0258 0.0105

Venus -115650-12-19 18:15 J -40519386.95 -40519386.74 -40519386.52 0.0259 0.0064

Venus -115649-08-04 20:53 J -40519157.84 -40519157.63 -40519157.40 0.0259 0.0022

Venus -115648-03-22 00:29 J -40518928.70 -40518928.48 -40518928.26 0.0260 0.0023  
 Venus -115648-11-06 04:34 J -40518699.52 -40518699.31 -40518699.09 0.0261 0.0067  
 Venus -115647-06-23 09:51 J -40518470.29 -40518470.09 -40518469.89 0.0262 0.0111  
 Venus -115646-02-07 15:51 J -40518241.01 -40518240.84 -40518240.66 0.0264 0.0154  
 Venus -115646-09-24 23:03 J -40518011.68 -40518011.54 -40518011.39 0.0266 0.0197  
 Earth -115645-01-21 21:36 J -40517892.73 -40517892.60 -40517892.46 0.0267 0.0225  
 Moon -115645-01-22 01:27 J -40517892.56 -40517892.44 -40517892.31 0.0267 0.0233 \*  
 Venus -115645-05-11 07:27 J -40517782.28 -40517782.19 -40517782.08 0.0268 0.0238  
 Mars -115644-06-28 09:51 J -40517369.37 -40517369.09 -40517368.80 0.0273 0.0036  
 Mercury -115641-04-19 22:34 J -40516342.66 -40516342.56 -40516342.46 0.0286 0.0200  
 Mercury -115641-07-17 12:15 J -40516254.12 -40516253.99 -40516253.86 0.0287 0.0106  
 Mercury -115641-10-14 01:41 J -40516165.57 -40516165.43 -40516165.29 0.0289 0.0013  
 Mercury -115640-01-10 15:07 J -40516077.00 -40516076.87 -40516076.74 0.0290 0.0082  
 Mercury -115640-04-09 04:19 J -40515988.42 -40515988.32 -40515988.20 0.0291 0.0176  
 Mercury -115640-07-06 17:31 J -40515899.81 -40515899.77 -40515899.71 0.0292 0.0269  
 Venus -115638-11-27 23:31 J -40515025.53 -40515025.52 -40515025.51 0.0301 0.0300  
 Venus -115637-07-14 23:03 J -40514795.65 -40514795.54 -40514795.43 0.0303 0.0253  
 Venus -115636-03-01 22:48 J -40514565.70 -40514565.55 -40514565.39 0.0303 0.0198  
 Venus -115636-10-17 22:05 J -40514335.76 -40514335.58 -40514335.39 0.0304 0.0138  
 Venus -115635-06-04 20:53 J -40514105.82 -40514105.63 -40514105.43 0.0304 0.0075  
 Venus -115634-01-20 19:12 J -40513875.91 -40513875.70 -40513875.50 0.0303 0.0011  
 Venus -115634-09-07 16:19 J -40513646.02 -40513645.82 -40513645.62 0.0301 0.0054  
 Venus -115633-04-24 12:29 J -40513416.17 -40513415.98 -40513415.79 0.0300 0.0116  
 Venus -115633-12-10 07:12 J -40513186.37 -40513186.20 -40513186.04 0.0298 0.0173  
 Moon -115632-07-13 16:34 J -40512971.00 -40512970.81 -40512970.61 0.0295 0.0172  
 Earth -115632-07-13 19:12 J -40512970.88 -40512970.70 -40512970.52 0.0295 0.0189 \*  
 Venus -115632-07-28 00:29 J -40512956.61 -40512956.48 -40512956.35 0.0295 0.0224  
 Venus -115631-03-14 16:05 J -40512726.90 -40512726.83 -40512726.75 0.0292 0.0270  
 Mars -115630-09-23 00:58 J -40512169.58 -40512169.46 -40512169.33 0.0285 0.0258  
 Mercury -115628-08-23 02:53 J -40511469.49 -40511469.38 -40511469.27 0.0276 0.0203

Mercury -115628-11-19 21:36 J -40511380.76 -40511380.60 -40511380.44 0.0274 0.0104

Mercury -115627-02-16 16:34 J -40511291.98 -40511291.81 -40511291.63 0.0273 0.0006

Mercury -115627-05-16 11:46 J -40511203.17 -40511203.01 -40511202.84 0.0272 0.0096

Mercury -115627-08-13 06:58 J -40511114.32 -40511114.21 -40511114.08 0.0271 0.0197

Venus -115623-05-12 09:36 J -40509746.14 -40509746.10 -40509746.03 0.0260 0.0251

Venus -115623-12-27 11:17 J -40509517.14 -40509517.03 -40509516.90 0.0259 0.0217

Venus -115622-08-13 13:12 J -40509288.10 -40509287.95 -40509287.79 0.0259 0.0180

Venus -115621-03-29 14:53 J -40509059.06 -40509058.88 -40509058.69 0.0258 0.0141

Venus -115621-11-13 16:48 J -40508830.00 -40508829.80 -40508829.59 0.0258 0.0101

Venus -115620-06-30 19:12 J -40508600.91 -40508600.70 -40508600.48 0.0259 0.0059

Venus -115619-02-14 22:05 J -40508371.80 -40508371.58 -40508371.36 0.0259 0.0016

Venus -115619-10-02 01:55 J -40508142.64 -40508142.42 -40508142.20 0.0260 0.0028

Venus -115618-05-19 06:15 J -40507913.45 -40507913.24 -40507913.03 0.0262 0.0072

Venus -115617-01-03 11:31 J -40507684.22 -40507684.02 -40507683.83 0.0263 0.0116

Venus -115617-08-19 17:31 J -40507454.94 -40507454.77 -40507454.59 0.0265 0.0160

Moon -115616-01-15 10:34 J -40507306.30 -40507306.06 -40507305.82 0.0266 0.0069

Earth -115616-01-15 13:55 J -40507306.16 -40507305.92 -40507305.67 0.0266 0.0075 \*

Venus -115616-04-06 00:58 J -40507225.60 -40507225.46 -40507225.32 0.0267 0.0202

Venus -115616-11-21 09:51 J -40506996.18 -40506996.09 -40506996.00 0.0269 0.0242

Mars -115614-08-16 05:46 J -40506363.50 -40506363.26 -40506363.02 0.0276 0.0153

Mercury -115612-09-06 23:17 J -40505610.61 -40505610.53 -40505610.44 0.0286 0.0232

Mercury -115612-12-04 12:58 J -40505522.08 -40505521.96 -40505521.83 0.0287 0.0139

Mercury -115611-03-03 02:39 J -40505433.53 -40505433.39 -40505433.25 0.0288 0.0045

Mercury -115611-05-30 16:05 J -40505344.97 -40505344.83 -40505344.69 0.0290 0.0049

Mercury -115611-08-27 05:17 J -40505256.39 -40505256.28 -40505256.15 0.0291 0.0144

Mercury -115611-11-23 18:43 J -40505167.80 -40505167.72 -40505167.64 0.0292 0.0237

Venus -115608-06-09 03:22 J -40504239.39 -40504239.36 -40504239.33 0.0301 0.0297

Venus -115607-01-25 02:53 J -40504009.49 -40504009.38 -40504009.26 0.0302 0.0247

Venus -115607-09-12 02:39 J -40503779.55 -40503779.39 -40503779.23 0.0303 0.0191

Venus -115606-04-30 01:55 J -40503549.60 -40503549.42 -40503549.23 0.0303 0.0130

Venus	-115606-12-16 00:43 J	-40503319.67	-40503319.47	-40503319.27	0.0303	0.0066
Venus	-115605-08-01 22:48 J	-40503089.76	-40503089.55	-40503089.35	0.0302	0.0003
Venus	-115604-03-19 19:41 J	-40502859.87	-40502859.68	-40502859.48	0.0301	0.0063
Venus	-115604-11-04 15:36 J	-40502630.03	-40502629.85	-40502629.66	0.0299	0.0124
Venus	-115603-06-22 10:05 J	-40502400.24	-40502400.08	-40502399.92	0.0297	0.0181
Earth	-115603-07-07 20:53 J	-40502384.80	-40502384.63	-40502384.46	0.0297	0.0207
Moon	-115603-07-07 23:46 J	-40502384.65	-40502384.51	-40502384.35	0.0297	0.0224 *
Venus	-115602-02-07 03:22 J	-40502170.48	-40502170.36	-40502170.24	0.0294	0.0233
Venus	-115602-09-24 19:12 J	-40501940.76	-40501940.70	-40501940.64	0.0292	0.0277
Mars	-115602-11-04 20:10 J	-40501899.86	-40501899.66	-40501899.42	0.0291	0.0199
Mercury	-115598-01-10 02:10 J	-40500737.49	-40500737.41	-40500737.32	0.0276	0.0236
Mercury	-115598-04-08 20:53 J	-40500648.78	-40500648.63	-40500648.48	0.0275	0.0137
Mercury	-115598-07-06 15:51 J	-40500560.01	-40500559.84	-40500559.67	0.0274	0.0037
Mercury	-115598-10-03 11:03 J	-40500471.21	-40500471.04	-40500470.87	0.0273	0.0064
Mercury	-115598-12-31 06:15 J	-40500382.38	-40500382.24	-40500382.10	0.0272	0.0164
Mercury	-115597-03-29 01:41 J	-40500293.46	-40500293.43	-40500293.39	0.0271	0.0264
Venus	-115594-11-22 12:43 J	-40498960.02	-40498959.97	-40498959.90	0.0261	0.0249
Venus	-115593-07-08 14:24 J	-40498731.01	-40498730.90	-40498730.77	0.0260	0.0214
Venus	-115592-02-22 16:19 J	-40498501.98	-40498501.82	-40498501.66	0.0259	0.0177
Venus	-115592-10-09 18:00 J	-40498272.93	-40498272.75	-40498272.56	0.0259	0.0137
Venus	-115591-05-26 20:10 J	-40498043.87	-40498043.66	-40498043.46	0.0259	0.0096
Venus	-115590-01-10 22:19 J	-40497814.78	-40497814.57	-40497814.35	0.0259	0.0054
Venus	-115590-08-28 01:27 J	-40497585.66	-40497585.44	-40497585.22	0.0259	0.0010
Venus	-115589-04-13 05:03 J	-40497356.51	-40497356.29	-40497356.07	0.0260	0.0035
Venus	-115589-11-28 09:22 J	-40497127.31	-40497127.11	-40497126.89	0.0261	0.0080
Venus	-115588-07-15 14:39 J	-40496898.08	-40496897.89	-40496897.69	0.0263	0.0124
Venus	-115587-03-01 20:53 J	-40496668.79	-40496668.63	-40496668.45	0.0264	0.0168
Venus	-115587-10-17 04:34 J	-40496439.43	-40496439.31	-40496439.17	0.0266	0.0210
Venus	-115586-06-03 13:12 J	-40496210.01	-40496209.95	-40496209.86	0.0269	0.0251
Mars	-115586-10-05 03:36 J	-40496086.52	-40496086.35	-40496086.15	0.0270	0.0206

Mercury -115582-01-25 00:15 J -40494878.54 -40494878.49 -40494878.44 0.0285 0.0264

Mercury -115582-04-23 13:55 J -40494790.03 -40494789.92 -40494789.80 0.0286 0.0171

Mercury -115582-07-21 03:36 J -40494701.49 -40494701.35 -40494701.22 0.0287 0.0078

Mercury -115582-10-17 17:03 J -40494612.93 -40494612.79 -40494612.65 0.0288 0.0015

Mercury -115581-01-14 06:29 J -40494524.36 -40494524.23 -40494524.11 0.0290 0.0109

Mercury -115581-04-11 19:41 J -40494435.78 -40494435.68 -40494435.58 0.0291 0.0202

Venus -115579-12-20 05:17 J -40493453.32 -40493453.28 -40493453.24 0.0301 0.0294

Venus -115578-08-07 04:34 J -40493223.43 -40493223.31 -40493223.19 0.0302 0.0244

Venus -115577-03-24 04:05 J -40492993.49 -40492993.33 -40492993.17 0.0303 0.0188

Venus -115577-11-09 03:07 J -40492763.55 -40492763.37 -40492763.18 0.0304 0.0126

Venus -115576-06-27 01:41 J -40492533.63 -40492533.43 -40492533.23 0.0303 0.0062

Venus -115575-02-11 23:31 J -40492303.72 -40492303.52 -40492303.31 0.0302 0.0005

Venus -115575-09-29 20:24 J -40492073.84 -40492073.65 -40492073.45 0.0301 0.0068

Venus -115574-05-17 16:19 J -40491844.00 -40491843.82 -40491843.63 0.0299 0.0130

Venus -115573-01-02 10:48 J -40491614.21 -40491614.05 -40491613.89 0.0297 0.0187

Moon -115573-07-14 11:03 J -40491420.18 -40491420.04 -40491419.89 0.0295 0.0228

Earth -115573-07-14 13:41 J -40491420.05 -40491419.93 -40491419.79 0.0295 0.0245 \*

Venus -115573-08-19 03:51 J -40491384.46 -40491384.34 -40491384.22 0.0295 0.0238

Venus -115572-04-05 19:27 J -40491154.73 -40491154.69 -40491154.64 0.0292 0.0282

Mars -115572-12-25 20:53 J -40490890.92 -40490890.63 -40490890.33 0.0288 0.0037

Mercury -115569-05-29 00:15 J -40490005.50 -40490005.49 -40490005.49 0.0277 0.0276

Mercury -115569-08-25 18:43 J -40489916.85 -40489916.72 -40489916.59 0.0276 0.0177

Mercury -115569-11-22 13:41 J -40489828.10 -40489827.93 -40489827.76 0.0274 0.0077

Mercury -115568-02-19 08:39 J -40489739.31 -40489739.14 -40489738.96 0.0273 0.0024

Mercury -115568-05-19 03:51 J -40489650.49 -40489650.34 -40489650.18 0.0272 0.0124

Mercury -115568-08-15 23:17 J -40489561.62 -40489561.53 -40489561.43 0.0271 0.0224

Venus -115564-06-03 13:12 J -40488174.01 -40488173.95 -40488173.87 0.0260 0.0247

Venus -115563-01-18 15:22 J -40487944.99 -40487944.86 -40487944.74 0.0259 0.0211

Venus -115563-09-04 17:17 J -40487715.94 -40487715.78 -40487715.62 0.0259 0.0173

Venus -115562-04-21 19:12 J -40487486.88 -40487486.70 -40487486.51 0.0259 0.0133

Venus	-115562-12-06 21:22 J	-40487257.81	-40487257.61	-40487257.40	0.0259	0.0091
Venus	-115561-07-23 00:00 J	-40487028.71	-40487028.50	-40487028.28	0.0259	0.0048
Venus	-115560-03-09 03:07 J	-40486799.59	-40486799.37	-40486799.15	0.0260	0.0005
Venus	-115560-10-24 07:12 J	-40486570.42	-40486570.20	-40486569.99	0.0261	0.0041
Venus	-115559-06-10 11:46 J	-40486341.22	-40486341.01	-40486340.80	0.0262	0.0085
Venus	-115558-01-25 17:03 J	-40486111.98	-40486111.79	-40486111.59	0.0263	0.0130
Venus	-115558-09-11 23:31 J	-40485882.68	-40485882.52	-40485882.35	0.0265	0.0173
Earth	-115557-01-17 14:10 J	-40485755.17	-40485754.91	-40485754.66	0.0266	0.0014
Moon	-115557-01-17 14:53 J	-40485755.13	-40485754.88	-40485754.64	0.0266	0.0006 *
Venus	-115557-04-28 07:12 J	-40485653.32	-40485653.20	-40485653.07	0.0267	0.0215
Venus	-115557-12-13 16:05 J	-40485423.89	-40485423.83	-40485423.76	0.0269	0.0256
Mars	-115556-11-21 12:43 J	-40485081.25	-40485080.97	-40485080.68	0.0273	0.0028
Mercury	-115553-09-09 14:53 J	-40484057.97	-40484057.88	-40484057.77	0.0286	0.0202
Mercury	-115553-12-07 04:34 J	-40483969.43	-40483969.31	-40483969.17	0.0287	0.0109
Mercury	-115552-03-05 18:15 J	-40483880.88	-40483880.74	-40483880.60	0.0288	0.0015
Mercury	-115552-06-02 07:41 J	-40483792.32	-40483792.18	-40483792.05	0.0290	0.0078
Mercury	-115552-08-29 20:53 J	-40483703.74	-40483703.63	-40483703.52	0.0291	0.0172
Mercury	-115552-11-26 10:05 J	-40483615.13	-40483615.08	-40483615.02	0.0292	0.0264
Venus	-115549-07-01 09:36 J	-40482667.15	-40482667.10	-40482667.04	0.0301	0.0290
Venus	-115548-02-16 09:07 J	-40482437.24	-40482437.12	-40482436.99	0.0302	0.0239
Venus	-115548-10-04 08:24 J	-40482207.30	-40482207.15	-40482206.97	0.0303	0.0181
Venus	-115547-05-22 07:41 J	-40481977.36	-40481977.18	-40481976.99	0.0303	0.0118
Venus	-115546-01-07 06:15 J	-40481747.44	-40481747.24	-40481747.04	0.0303	0.0053
Venus	-115546-08-25 04:05 J	-40481517.54	-40481517.33	-40481517.13	0.0302	0.0013
Venus	-115545-04-11 00:58 J	-40481287.66	-40481287.46	-40481287.27	0.0300	0.0078
Venus	-115545-11-26 20:24 J	-40481057.83	-40481057.65	-40481057.47	0.0299	0.0139
Earth	-115544-07-08 17:17 J	-40480833.99	-40480833.78	-40480833.58	0.0296	0.0147
Moon	-115544-07-08 19:12 J	-40480833.90	-40480833.70	-40480833.49	0.0296	0.0164 *
Venus	-115544-07-14 14:39 J	-40480828.04	-40480827.89	-40480827.74	0.0296	0.0196
Venus	-115543-03-01 07:27 J	-40480598.29	-40480598.19	-40480598.07	0.0294	0.0246



Venus -115543-10-16 22:48 J -40480368.55 -40480368.55 -40480368.52 0.0291 0.0290  
 Mars -115541-02-15 15:36 J -40479881.97 -40479881.85 -40479881.71 0.0285 0.0255  
 Mercury -115539-01-12 18:15 J -40479184.84 -40479184.74 -40479184.62 0.0276 0.0209  
 Mercury -115539-04-11 13:12 J -40479096.11 -40479095.95 -40479095.79 0.0275 0.0109  
 Mercury -115539-07-09 08:10 J -40479007.33 -40479007.16 -40479006.98 0.0274 0.0010  
 Mercury -115539-10-06 03:22 J -40478918.52 -40478918.36 -40478918.19 0.0273 0.0092  
 Mercury -115538-01-02 22:34 J -40478829.67 -40478829.56 -40478829.43 0.0272 0.0193  
 Venus -115535-12-14 17:03 J -40477387.86 -40477387.79 -40477387.71 0.0261 0.0244  
 Venus -115534-07-31 18:58 J -40477158.83 -40477158.71 -40477158.57 0.0260 0.0208  
 Venus -115533-03-16 20:53 J -40476929.79 -40476929.63 -40476929.46 0.0259 0.0169  
 Venus -115533-10-31 22:48 J -40476700.73 -40476700.55 -40476700.35 0.0259 0.0129  
 Venus -115532-06-18 01:12 J -40476471.66 -40476471.45 -40476471.24 0.0259 0.0086  
 Venus -115531-02-02 03:51 J -40476242.56 -40476242.34 -40476242.12 0.0259 0.0043  
 Venus -115531-09-19 07:12 J -40476013.42 -40476013.20 -40476012.98 0.0260 0.0002  
 Venus -115530-05-06 11:03 J -40475784.25 -40475784.04 -40475783.82 0.0261 0.0047  
 Venus -115530-12-21 15:51 J -40475555.05 -40475554.84 -40475554.64 0.0262 0.0092  
 Venus -115529-08-06 21:07 J -40475325.80 -40475325.62 -40475325.42 0.0263 0.0137  
 Venus -115528-03-24 03:51 J -40475096.49 -40475096.34 -40475096.18 0.0265 0.0181  
 Venus -115528-11-08 11:31 J -40474867.12 -40474867.02 -40474866.89 0.0267 0.0224  
 Venus -115527-06-25 20:39 J -40474637.67 -40474637.64 -40474637.59 0.0269 0.0264  
 Mars -115525-01-09 13:55 J -40474075.15 -40474074.92 -40474074.67 0.0275 0.0155  
 Mercury -115523-01-27 16:34 J -40473325.89 -40473325.81 -40473325.73 0.0285 0.0231  
 Mercury -115523-04-26 06:00 J -40473237.37 -40473237.25 -40473237.12 0.0286 0.0139  
 Mercury -115523-07-23 19:41 J -40473148.82 -40473148.68 -40473148.54 0.0287 0.0046  
 Mercury -115523-10-20 09:07 J -40473060.26 -40473060.12 -40473059.99 0.0289 0.0048  
 Mercury -115522-01-16 22:19 J -40472971.69 -40472971.57 -40472971.45 0.0290 0.0140  
 Mercury -115522-04-15 11:31 J -40472883.10 -40472883.02 -40472882.94 0.0291 0.0233  
 Venus -115519-01-11 13:27 J -40471880.99 -40471880.94 -40471880.88 0.0301 0.0287  
 Venus -115519-08-29 12:43 J -40471651.10 -40471650.97 -40471650.84 0.0302 0.0235  
 Venus -115518-04-16 12:00 J -40471421.17 -40471421.00 -40471420.83 0.0303 0.0176

Venus -115518-12-02 10:48 J -40471191.24 -40471191.05 -40471190.86 0.0303 0.0113

Venus -115517-07-19 09:07 J -40470961.32 -40470961.12 -40470960.92 0.0303 0.0047

Venus -115516-03-06 06:43 J -40470731.42 -40470731.22 -40470731.02 0.0302 0.0019

Venus -115516-10-22 03:22 J -40470501.56 -40470501.36 -40470501.17 0.0301 0.0084

Venus -115515-06-08 22:48 J -40470271.73 -40470271.55 -40470271.37 0.0299 0.0145

Venus -115514-01-24 16:48 J -40470041.94 -40470041.80 -40470041.64 0.0297 0.0202

Venus -115514-09-11 09:36 J -40469812.20 -40469812.10 -40469811.99 0.0294 0.0252

Mars -115513-03-29 04:48 J -40469612.52 -40469612.30 -40469612.08 0.0292 0.0199

Mercury -115510-06-01 16:48 J -40468452.87 -40468452.80 -40468452.72 0.0277 0.0246

Mercury -115510-08-29 11:31 J -40468364.16 -40468364.02 -40468363.87 0.0276 0.0146

Mercury -115510-11-26 06:29 J -40468275.40 -40468275.23 -40468275.06 0.0274 0.0046

Mercury -115509-02-23 01:41 J -40468186.60 -40468186.43 -40468186.26 0.0273 0.0054

Mercury -115509-05-21 20:53 J -40468097.77 -40468097.63 -40468097.48 0.0272 0.0155

Mercury -115509-08-18 16:19 J -40468008.87 -40468008.82 -40468008.76 0.0271 0.0256

Venus -115505-06-25 18:15 J -40466601.81 -40466601.74 -40466601.65 0.0260 0.0242

Venus -115504-02-09 20:24 J -40466372.77 -40466372.65 -40466372.51 0.0260 0.0204

Venus -115504-09-26 22:34 J -40466143.72 -40466143.56 -40466143.38 0.0259 0.0165

Venus -115503-05-14 00:58 J -40465914.65 -40465914.46 -40465914.27 0.0259 0.0124

Venus -115503-12-29 03:22 J -40465685.57 -40465685.36 -40465685.15 0.0259 0.0081

Venus -115502-08-15 06:15 J -40465456.46 -40465456.24 -40465456.02 0.0259 0.0037

Venus -115501-03-31 09:51 J -40465227.31 -40465227.09 -40465226.87 0.0260 0.0009

Venus -115501-11-15 13:55 J -40464998.14 -40464997.92 -40464997.71 0.0261 0.0053

Venus -115500-07-02 18:43 J -40464768.92 -40464768.72 -40464768.51 0.0262 0.0099

Venus -115499-02-17 00:29 J -40464539.66 -40464539.48 -40464539.29 0.0264 0.0144

Venus -115499-10-04 07:27 J -40464310.34 -40464310.19 -40464310.03 0.0266 0.0188

Earth -115498-01-18 17:17 J -40464204.03 -40464203.78 -40464203.54 0.0266 0.0055

Moon -115498-01-18 20:53 J -40464203.88 -40464203.63 -40464203.39 0.0266 0.0067 \*

Venus -115498-05-21 15:22 J -40464080.97 -40464080.86 -40464080.75 0.0268 0.0230

Mars -115497-02-28 14:24 J -40463798.09 -40463797.90 -40463797.69 0.0270 0.0195

Mercury -115494-06-16 17:46 J -40462593.81 -40462593.76 -40462593.70 0.0285 0.0259

Mercury -115494-09-13 07:41 J -40462505.30 -40462505.18 -40462505.07 0.0286 0.0167

Mercury -115494-12-10 21:07 J -40462416.75 -40462416.62 -40462416.48 0.0287 0.0074

Mercury -115493-03-08 10:34 J -40462328.20 -40462328.06 -40462327.92 0.0289 0.0020

Mercury -115493-06-05 00:00 J -40462239.63 -40462239.50 -40462239.38 0.0290 0.0113

Mercury -115493-09-01 12:58 J -40462151.05 -40462150.96 -40462150.85 0.0291 0.0206

Venus -115490-07-24 19:27 J -40461094.76 -40461094.69 -40461094.62 0.0301 0.0281

Venus -115489-03-10 18:29 J -40460864.85 -40460864.73 -40460864.59 0.0302 0.0229

Venus -115489-10-26 18:00 J -40460634.92 -40460634.75 -40460634.58 0.0303 0.0168

Venus -115488-06-13 16:48 J -40460404.99 -40460404.80 -40460404.61 0.0303 0.0104

Venus -115487-01-29 14:53 J -40460175.08 -40460174.88 -40460174.67 0.0302 0.0038

Venus -115487-09-16 12:29 J -40459945.18 -40459944.98 -40459944.78 0.0301 0.0029

Venus -115486-05-04 08:53 J -40459715.32 -40459715.13 -40459714.93 0.0300 0.0094

Venus -115486-12-20 04:05 J -40459485.50 -40459485.33 -40459485.15 0.0298 0.0155

Moon -115485-07-09 15:22 J -40459283.09 -40459282.86 -40459282.62 0.0296 0.0089

Earth -115485-07-09 18:29 J -40459282.96 -40459282.73 -40459282.50 0.0296 0.0073 \*

Venus -115485-08-05 21:51 J -40459255.72 -40459255.59 -40459255.44 0.0296 0.0211

Venus -115484-03-23 14:39 J -40459025.98 -40459025.89 -40459025.80 0.0293 0.0260

Mars -115483-05-20 21:07 J -40458602.91 -40458602.62 -40458602.32 0.0288 0.0038

Mercury -115481-10-18 16:48 J -40457720.81 -40457720.80 -40457720.78 0.0277 0.0275

Mercury -115480-01-15 11:31 J -40457632.15 -40457632.02 -40457631.89 0.0276 0.0176

Mercury -115480-04-14 06:29 J -40457543.40 -40457543.23 -40457543.06 0.0275 0.0076

Mercury -115480-07-12 01:27 J -40457454.61 -40457454.44 -40457454.26 0.0274 0.0025

Mercury -115480-10-08 20:53 J -40457365.79 -40457365.63 -40457365.48 0.0273 0.0125

Mercury -115479-01-05 16:05 J -40457276.92 -40457276.83 -40457276.73 0.0272 0.0226

Venus -115475-01-05 23:03 J -40455815.63 -40455815.54 -40455815.45 0.0261 0.0238

Venus -115475-08-23 00:58 J -40455586.58 -40455586.46 -40455586.31 0.0260 0.0201

Venus -115474-04-09 03:07 J -40455357.53 -40455357.37 -40455357.19 0.0259 0.0162

Venus -115474-11-24 05:31 J -40455128.46 -40455128.27 -40455128.07 0.0259 0.0119

Venus -115473-07-10 07:55 J -40454899.37 -40454899.17 -40454898.95 0.0259 0.0077

Venus -115472-02-24 11:03 J -40454670.26 -40454670.04 -40454669.82 0.0260 0.0032

Venus -115472-10-11 14:39 J -40454441.10 -40454440.89 -40454440.66 0.0260 0.0015  
 Venus -115471-05-28 18:58 J -40454211.92 -40454211.71 -40454211.49 0.0261 0.0060  
 Venus -115470-01-13 00:00 J -40453982.70 -40453982.50 -40453982.30 0.0262 0.0106  
 Venus -115470-08-30 06:00 J -40453753.43 -40453753.25 -40453753.07 0.0264 0.0151  
 Moon -115469-01-13 12:00 J -40453617.12 -40453617.00 -40453616.85 0.0265 0.0222  
 Earth -115469-01-13 15:51 J -40453616.95 -40453616.84 -40453616.71 0.0265 0.0230 \*  
 Venus -115469-04-15 12:43 J -40453524.11 -40453523.97 -40453523.81 0.0266 0.0196  
 Venus -115469-11-30 20:53 J -40453294.71 -40453294.63 -40453294.52 0.0267 0.0239  
 Mars -115467-04-17 07:55 J -40452792.46 -40452792.17 -40452791.89 0.0273 0.0020  
 Mercury -115464-01-30 09:22 J -40451773.21 -40451773.11 -40451773.00 0.0285 0.0193  
 Mercury -115464-04-28 23:03 J -40451684.67 -40451684.54 -40451684.41 0.0286 0.0101  
 Mercury -115464-07-26 12:29 J -40451596.12 -40451595.98 -40451595.84 0.0288 0.0008  
 Mercury -115464-10-23 01:55 J -40451507.56 -40451507.42 -40451507.29 0.0289 0.0085  
 Mercury -115463-01-19 15:07 J -40451418.98 -40451418.87 -40451418.76 0.0290 0.0177  
 Mercury -115463-04-18 04:19 J -40451330.37 -40451330.32 -40451330.27 0.0291 0.0269  
 Venus -115460-02-03 00:43 J -40450308.54 -40450308.47 -40450308.38 0.0301 0.0278  
 Venus -115460-09-20 23:46 J -40450078.64 -40450078.51 -40450078.36 0.0302 0.0224  
 Venus -115459-05-08 22:48 J -40449848.72 -40449848.55 -40449848.38 0.0303 0.0163  
 Venus -115459-12-24 21:22 J -40449618.80 -40449618.61 -40449618.41 0.0303 0.0098  
 Venus -115458-08-11 19:27 J -40449388.89 -40449388.69 -40449388.49 0.0303 0.0031  
 Venus -115457-03-28 16:48 J -40449159.01 -40449158.80 -40449158.60 0.0302 0.0036  
 Venus -115457-11-13 12:58 J -40448929.15 -40448928.96 -40448928.77 0.0300 0.0100  
 Venus -115456-07-01 07:55 J -40448699.34 -40448699.17 -40448699.00 0.0298 0.0161  
 Venus -115455-02-16 01:41 J -40448469.57 -40448469.43 -40448469.29 0.0296 0.0217  
 Venus -115455-10-03 18:00 J -40448239.83 -40448239.75 -40448239.66 0.0293 0.0266  
 Mars -115453-07-10 14:53 J -40447593.98 -40447593.88 -40447593.75 0.0285 0.0262  
 Mercury -115451-06-04 10:34 J -40446900.17 -40446900.06 -40446899.95 0.0276 0.0210  
 Mercury -115451-09-01 05:17 J -40446811.43 -40446811.28 -40446811.12 0.0275 0.0111  
 Mercury -115451-11-29 00:29 J -40446722.66 -40446722.48 -40446722.31 0.0274 0.0010  
 Mercury -115450-02-25 19:41 J -40446633.85 -40446633.68 -40446633.52 0.0273 0.0090

Mercury -115450-05-25 14:53 J -40446545.00 -40446544.88 -40446544.75 0.0272 0.0191  
 Venus -115446-07-19 01:12 J -40445029.53 -40445029.45 -40445029.34 0.0260 0.0236  
 Venus -115445-03-04 03:51 J -40444800.48 -40444800.34 -40444800.20 0.0260 0.0197  
 Venus -115445-10-19 06:00 J -40444571.42 -40444571.25 -40444571.08 0.0259 0.0157  
 Venus -115444-06-05 08:24 J -40444342.35 -40444342.15 -40444341.95 0.0259 0.0114  
 Venus -115443-01-20 11:03 J -40444113.25 -40444113.04 -40444112.82 0.0259 0.0071  
 Venus -115443-09-06 14:24 J -40443884.12 -40443883.90 -40443883.68 0.0260 0.0025  
 Venus -115442-04-23 18:15 J -40443654.96 -40443654.74 -40443654.52 0.0260 0.0021  
 Venus -115442-12-08 22:34 J -40443425.77 -40443425.56 -40443425.34 0.0261 0.0067  
 Venus -115441-07-25 03:51 J -40443196.54 -40443196.34 -40443196.14 0.0263 0.0113  
 Venus -115440-03-11 09:51 J -40442967.26 -40442967.09 -40442966.91 0.0264 0.0158  
 Venus -115440-10-26 17:17 J -40442737.92 -40442737.78 -40442737.64 0.0266 0.0202  
 Earth -115439-01-19 23:31 J -40442652.73 -40442652.52 -40442652.29 0.0267 0.0131  
 Moon -115439-01-20 00:00 J -40442652.71 -40442652.50 -40442652.26 0.0267 0.0143 \*  
 Venus -115439-06-13 01:41 J -40442508.52 -40442508.43 -40442508.34 0.0268 0.0245  
 Mars -115437-06-04 10:34 J -40441786.28 -40441786.06 -40441785.83 0.0276 0.0173  
 Mercury -115435-06-19 11:17 J -40441041.12 -40441041.03 -40441040.94 0.0286 0.0219  
 Mercury -115435-09-16 00:43 J -40440952.59 -40440952.47 -40440952.34 0.0287 0.0127  
 Mercury -115435-12-13 14:24 J -40440864.04 -40440863.90 -40440863.76 0.0288 0.0033  
 Mercury -115434-03-12 03:51 J -40440775.48 -40440775.34 -40440775.21 0.0289 0.0060  
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 Mercury -115434-09-05 06:15 J -40440598.31 -40440598.24 -40440598.17 0.0291 0.0244  
 Venus -115431-08-16 08:10 J -40439522.24 -40439522.16 -40439522.07 0.0301 0.0272  
 Venus -115430-04-03 07:27 J -40439292.33 -40439292.19 -40439292.05 0.0302 0.0216  
 Venus -115430-11-19 06:15 J -40439062.41 -40439062.24 -40439062.06 0.0303 0.0154  
 Venus -115429-07-06 04:48 J -40438832.49 -40438832.30 -40438832.10 0.0303 0.0089  
 Venus -115428-02-21 02:53 J -40438602.58 -40438602.38 -40438602.17 0.0302 0.0021  
 Venus -115428-10-09 00:00 J -40438372.70 -40438372.50 -40438372.29 0.0301 0.0047  
 Venus -115427-05-26 20:10 J -40438142.84 -40438142.66 -40438142.47 0.0299 0.0112  
 Venus -115426-01-11 14:53 J -40437913.03 -40437912.88 -40437912.70 0.0297 0.0173

Moon -115426-07-11 22:34 J -40437731.79 -40437731.56 -40437731.32 0.0296 0.0004  
 Earth -115426-07-12 01:12 J -40437731.69 -40437731.45 -40437731.21 0.0296 0.0015 \*  
 Venus -115426-08-29 08:39 J -40437683.27 -40437683.14 -40437683.01 0.0295 0.0227  
 Venus -115425-04-15 00:43 J -40437453.53 -40437453.47 -40437453.40 0.0293 0.0276  
 Mars -115425-08-22 19:41 J -40437323.90 -40437323.68 -40437323.43 0.0291 0.0188  
 Mercury -115422-10-22 11:03 J -40436168.12 -40436168.04 -40436167.95 0.0277 0.0237  
 Mercury -115421-01-19 05:46 J -40436079.40 -40436079.26 -40436079.10 0.0276 0.0138  
 Mercury -115421-04-17 00:58 J -40435990.63 -40435990.46 -40435990.29 0.0275 0.0037  
 Mercury -115421-07-14 20:10 J -40435901.83 -40435901.66 -40435901.49 0.0274 0.0064  
 Mercury -115421-10-11 15:22 J -40435813.00 -40435812.86 -40435812.72 0.0273 0.0164  
 Mercury -115420-01-08 11:03 J -40435724.08 -40435724.04 -40435724.01 0.0272 0.0265  
 Venus -115416-01-28 06:43 J -40434243.30 -40434243.22 -40434243.11 0.0261 0.0232  
 Venus -115416-09-14 09:22 J -40434014.25 -40434014.11 -40434013.96 0.0260 0.0193  
 Venus -115415-05-01 11:46 J -40433785.19 -40433785.01 -40433784.83 0.0260 0.0152  
 Venus -115415-12-16 14:10 J -40433556.11 -40433555.91 -40433555.71 0.0260 0.0109  
 Venus -115414-08-02 17:03 J -40433327.00 -40433326.79 -40433326.58 0.0260 0.0065  
 Venus -115413-03-18 20:24 J -40433097.87 -40433097.65 -40433097.43 0.0260 0.0020  
 Venus -115413-11-03 00:15 J -40432868.71 -40432868.49 -40432868.27 0.0261 0.0027  
 Venus -115412-06-20 04:48 J -40432639.51 -40432639.30 -40432639.09 0.0262 0.0074  
 Venus -115411-02-04 10:05 J -40432410.27 -40432410.08 -40432409.88 0.0263 0.0120  
 Venus -115411-09-21 16:34 J -40432180.97 -40432180.81 -40432180.63 0.0264 0.0166  
 Moon -115410-01-14 23:03 J -40432065.74 -40432065.54 -40432065.32 0.0265 0.0140  
 Earth -115410-01-14 23:46 J -40432065.71 -40432065.51 -40432065.29 0.0265 0.0151 \*  
 Venus -115410-05-09 00:00 J -40431951.63 -40431951.50 -40431951.36 0.0266 0.0211  
 Venus -115410-12-24 08:24 J -40431722.21 -40431722.15 -40431722.07 0.0268 0.0254  
 Mars -115409-07-24 19:41 J -40431508.89 -40431508.68 -40431508.46 0.0270 0.0178  
 Mercury -115406-11-06 13:41 J -40430309.00 -40430308.93 -40430308.86 0.0285 0.0241  
 Mercury -115405-02-03 03:22 J -40430220.48 -40430220.36 -40430220.24 0.0286 0.0149  
 Mercury -115405-05-01 16:48 J -40430131.94 -40430131.80 -40430131.66 0.0287 0.0057  
 Mercury -115405-07-29 06:15 J -40430043.38 -40430043.24 -40430043.10 0.0288 0.0035

Mercury -115405-10-25 19:27 J -40429954.81 -40429954.69 -40429954.56 0.0289 0.0128

Mercury -115404-01-22 08:39 J -40429866.22 -40429866.14 -40429866.05 0.0290 0.0220

Venus -115401-02-26 15:36 J -40428735.93 -40428735.85 -40428735.74 0.0301 0.0268

Venus -115401-10-13 14:39 J -40428506.03 -40428505.89 -40428505.74 0.0302 0.0210

Venus -115400-05-31 13:12 J -40428276.12 -40428275.95 -40428275.76 0.0303 0.0148

Venus -115399-01-16 11:31 J -40428046.21 -40428046.02 -40428045.82 0.0303 0.0082

Venus -115399-09-03 09:22 J -40427816.31 -40427816.11 -40427815.90 0.0302 0.0014

Venus -115398-04-21 06:15 J -40427586.43 -40427586.24 -40427586.03 0.0301 0.0054

Venus -115398-12-07 02:10 J -40427356.60 -40427356.41 -40427356.22 0.0300 0.0118

Venus -115397-07-23 20:39 J -40427126.80 -40427126.64 -40427126.47 0.0298 0.0179

Venus -115396-03-10 14:10 J -40426897.04 -40426896.91 -40426896.79 0.0295 0.0234

Venus -115396-10-26 05:46 J -40426667.30 -40426667.26 -40426667.19 0.0293 0.0282

Mars -115395-10-14 13:27 J -40426314.23 -40426313.94 -40426313.64 0.0288 0.0057

Mercury -115392-03-10 11:03 J -40425436.08 -40425436.04 -40425436.00 0.0277 0.0267

Mercury -115392-06-07 05:31 J -40425347.40 -40425347.27 -40425347.13 0.0276 0.0168

Mercury -115392-09-04 00:29 J -40425258.65 -40425258.48 -40425258.31 0.0275 0.0068

Mercury -115392-12-01 19:41 J -40425169.86 -40425169.68 -40425169.51 0.0274 0.0033

Mercury -115391-02-28 14:53 J -40425081.03 -40425080.88 -40425080.73 0.0273 0.0133

Mercury -115391-05-28 10:19 J -40424992.16 -40424992.07 -40424991.98 0.0272 0.0233

Venus -115387-08-10 10:34 J -40423457.16 -40423457.06 -40423456.95 0.0260 0.0228

Venus -115386-03-27 12:58 J -40423228.10 -40423227.96 -40423227.80 0.0260 0.0189

Venus -115386-11-11 15:07 J -40422999.04 -40422998.87 -40422998.67 0.0259 0.0148

Venus -115385-06-27 18:00 J -40422769.95 -40422769.75 -40422769.55 0.0259 0.0103

Venus -115384-02-11 21:07 J -40422540.84 -40422540.62 -40422540.41 0.0259 0.0059

Venus -115384-09-29 00:43 J -40422311.69 -40422311.47 -40422311.25 0.0260 0.0012

Venus -115383-05-16 04:48 J -40422082.52 -40422082.30 -40422082.08 0.0261 0.0034

Venus -115383-12-31 09:36 J -40421853.31 -40421853.10 -40421852.89 0.0262 0.0081

Venus -115382-08-17 15:07 J -40421624.06 -40421623.87 -40421623.67 0.0263 0.0128

Venus -115381-04-02 21:36 J -40421394.75 -40421394.60 -40421394.42 0.0265 0.0174

Venus -115381-11-18 05:31 J -40421165.39 -40421165.27 -40421165.14 0.0267 0.0218

Moon -115380-01-21 06:29 J -40421101.35 -40421101.23 -40421101.09 0.0267 0.0229  
 Earth -115380-01-21 09:51 J -40421101.23 -40421101.09 -40421100.93 0.0267 0.0215 \*  
 Venus -115380-07-05 14:24 J -40420935.95 -40420935.90 -40420935.85 0.0269 0.0260  
 Mars -115379-09-11 13:41 J -40420503.21 -40420502.93 -40420502.64 0.0273 0.0005  
 Mercury -115376-03-25 15:51 J -40419576.89 -40419576.84 -40419576.79 0.0285 0.0265  
 Mercury -115376-06-22 05:31 J -40419488.38 -40419488.27 -40419488.16 0.0286 0.0173  
 Mercury -115376-09-18 18:58 J -40419399.84 -40419399.71 -40419399.57 0.0287 0.0081  
 Mercury -115376-12-16 08:24 J -40419311.28 -40419311.15 -40419311.01 0.0288 0.0016  
 Mercury -115375-03-14 21:51 J -40419222.72 -40419222.59 -40419222.46 0.0289 0.0105  
 Mercury -115375-06-11 11:03 J -40419134.14 -40419134.04 -40419133.94 0.0291 0.0197  
 Mercury -115375-09-08 00:00 J -40419045.50 -40419045.50 -40419045.48 0.0292 0.0290  
 Venus -115372-09-08 00:15 J -40417949.59 -40417949.49 -40417949.39 0.0302 0.0260  
 Venus -115371-04-25 23:03 J -40417719.68 -40417719.54 -40417719.38 0.0302 0.0202  
 Venus -115371-12-11 21:51 J -40417489.77 -40417489.59 -40417489.40 0.0303 0.0138  
 Venus -115370-07-29 20:10 J -40417259.85 -40417259.66 -40417259.46 0.0303 0.0071  
 Venus -115369-03-15 18:00 J -40417029.95 -40417029.75 -40417029.55 0.0302 0.0002  
 Venus -115369-10-31 14:39 J -40416800.08 -40416799.89 -40416799.69 0.0301 0.0066  
 Venus -115368-06-18 10:34 J -40416570.25 -40416570.06 -40416569.88 0.0299 0.0130  
 Venus -115367-02-03 05:03 J -40416340.45 -40416340.29 -40416340.14 0.0297 0.0190  
 Earth -115367-07-13 12:29 J -40416180.19 -40416179.98 -40416179.75 0.0295 0.0116  
 Moon -115367-07-13 14:39 J -40416180.10 -40416179.89 -40416179.67 0.0295 0.0107 \*  
 Venus -115367-09-20 21:51 J -40416110.69 -40416110.59 -40416110.47 0.0294 0.0245  
 Venus -115366-05-08 13:55 J -40415880.93 -40415880.92 -40415880.91 0.0292 0.0291  
 Mars -115365-12-04 21:22 J -40415304.66 -40415304.61 -40415304.54 0.0285 0.0279  
 Mercury -115363-10-25 06:29 J -40414615.34 -40414615.23 -40414615.10 0.0276 0.0192  
 Mercury -115362-01-22 01:27 J -40414526.60 -40414526.44 -40414526.27 0.0275 0.0093  
 Mercury -115362-04-20 20:39 J -40414437.82 -40414437.64 -40414437.47 0.0274 0.0009  
 Mercury -115362-07-18 15:51 J -40414349.00 -40414348.84 -40414348.68 0.0273 0.0108  
 Mercury -115362-10-15 11:03 J -40414260.14 -40414260.04 -40414259.92 0.0272 0.0209  
 Venus -115358-07-06 14:24 J -40412899.90 -40412899.90 -40412899.88 0.0262 0.0261



Venus	-115357-02-20 17:03 J	-40412670.90	-40412670.79	-40412670.68	0.0261	0.0224
Venus	-115357-10-06 19:27 J	-40412441.84	-40412441.69	-40412441.53	0.0260	0.0184
Venus	-115356-05-23 22:05 J	-40412212.77	-40412212.58	-40412212.40	0.0260	0.0142
Venus	-115355-01-08 00:43 J	-40411983.67	-40411983.47	-40411983.27	0.0260	0.0098
Venus	-115355-08-25 03:51 J	-40411754.55	-40411754.34	-40411754.12	0.0260	0.0053
Venus	-115354-04-11 07:27 J	-40411525.41	-40411525.19	-40411524.97	0.0260	0.0006
Venus	-115354-11-26 11:31 J	-40411296.23	-40411296.02	-40411295.80	0.0261	0.0041
Venus	-115353-07-12 16:19 J	-40411067.02	-40411066.82	-40411066.60	0.0262	0.0089
Venus	-115352-02-26 22:05 J	-40410837.76	-40410837.58	-40410837.38	0.0264	0.0136
Venus	-115352-10-14 05:17 J	-40410608.44	-40410608.28	-40410608.12	0.0265	0.0181
Earth	-115351-01-16 10:48 J	-40410514.29	-40410514.05	-40410513.80	0.0266	0.0064
Moon	-115351-01-16 14:24 J	-40410514.14	-40410513.90	-40410513.65	0.0266	0.0050 *
Venus	-115351-05-31 12:58 J	-40410379.06	-40410378.96	-40410378.84	0.0267	0.0226
Venus	-115350-01-15 22:05 J	-40410149.59	-40410149.58	-40410149.56	0.0269	0.0268
Mars	-115349-10-30 03:22 J	-40409496.56	-40409496.36	-40409496.15	0.0276	0.0195
Mercury	-115347-11-09 08:10 J	-40408756.26	-40408756.16	-40408756.05	0.0285	0.0194
Mercury	-115346-02-05 21:51 J	-40408667.72	-40408667.59	-40408667.46	0.0286	0.0102
Mercury	-115346-05-05 11:17 J	-40408579.17	-40408579.03	-40408578.89	0.0287	0.0009
Mercury	-115346-08-02 00:29 J	-40408490.61	-40408490.48	-40408490.34	0.0289	0.0084
Mercury	-115346-10-29 13:41 J	-40408402.03	-40408401.93	-40408401.81	0.0290	0.0176
Mercury	-115345-01-26 02:53 J	-40408313.43	-40408313.38	-40408313.32	0.0291	0.0267
Venus	-115342-03-21 09:22 J	-40407163.21	-40407163.11	-40407163.00	0.0301	0.0254
Venus	-115342-11-06 08:10 J	-40406933.31	-40406933.16	-40406933.00	0.0302	0.0195
Venus	-115341-06-23 06:43 J	-40406703.40	-40406703.22	-40406703.03	0.0303	0.0130
Venus	-115340-02-08 04:48 J	-40406473.50	-40406473.30	-40406473.10	0.0302	0.0063
Venus	-115340-09-26 02:24 J	-40406243.61	-40406243.40	-40406243.20	0.0302	0.0008
Venus	-115339-05-13 22:48 J	-40406013.74	-40406013.55	-40406013.35	0.0301	0.0074
Venus	-115339-12-29 18:15 J	-40405783.92	-40405783.74	-40405783.56	0.0299	0.0138
Moon	-115338-07-07 19:12 J	-40405593.80	-40405593.70	-40405593.57	0.0297	0.0264
Earth	-115338-07-07 21:36 J	-40405593.70	-40405593.60	-40405593.46	0.0297	0.0255 *

Venus -115338-08-16 12:15 J -40405554.13 -40405553.99 -40405553.83 0.0297 0.0198  
 Venus -115337-04-02 05:17 J -40405324.38 -40405324.28 -40405324.17 0.0294 0.0251  
 Mars -115336-01-17 06:58 J -40405034.46 -40405034.21 -40405033.95 0.0291 0.0155  
 Mercury -115333-03-13 07:12 J -40403883.30 -40403883.20 -40403883.10 0.0277 0.0218  
 Mercury -115333-06-10 01:55 J -40403794.57 -40403794.42 -40403794.26 0.0276 0.0119  
 Mercury -115333-09-06 20:53 J -40403705.80 -40403705.63 -40403705.45 0.0274 0.0019  
 Mercury -115333-12-04 16:05 J -40403617.00 -40403616.83 -40403616.66 0.0273 0.0081  
 Mercury -115332-03-03 11:31 J -40403528.15 -40403528.02 -40403527.89 0.0272 0.0182  
 Venus -115328-01-15 18:58 J -40402113.74 -40402113.71 -40402113.67 0.0261 0.0258  
 Venus -115328-09-01 21:36 J -40401884.71 -40401884.60 -40401884.48 0.0260 0.0220  
 Venus -115327-04-19 00:15 J -40401655.65 -40401655.49 -40401655.33 0.0260 0.0179  
 Venus -115327-12-04 02:39 J -40401426.57 -40401426.39 -40401426.20 0.0259 0.0136  
 Venus -115326-07-21 05:31 J -40401197.47 -40401197.27 -40401197.06 0.0259 0.0092  
 Venus -115325-03-06 08:39 J -40400968.35 -40400968.14 -40400967.92 0.0260 0.0046  
 Venus -115325-10-21 12:29 J -40400739.20 -40400738.98 -40400738.75 0.0260 0.0006  
 Venus -115324-06-07 17:03 J -40400510.01 -40400509.79 -40400509.57 0.0261 0.0049  
 Venus -115323-01-22 22:05 J -40400280.78 -40400280.58 -40400280.37 0.0262 0.0096  
 Venus -115323-09-09 04:05 J -40400051.51 -40400051.33 -40400051.14 0.0264 0.0143  
 Venus -115322-04-26 11:03 J -40399822.18 -40399822.04 -40399821.88 0.0265 0.0189  
 Venus -115322-12-11 19:27 J -40399592.80 -40399592.69 -40399592.59 0.0267 0.0234  
 Mars -115321-12-19 07:12 J -40399219.43 -40399219.20 -40399218.96 0.0271 0.0152  
 Mercury -115317-03-28 10:34 J -40398024.15 -40398024.06 -40398023.96 0.0286 0.0215  
 Mercury -115317-06-25 00:15 J -40397935.62 -40397935.49 -40397935.36 0.0287 0.0123  
 Mercury -115317-09-21 13:41 J -40397847.07 -40397846.93 -40397846.79 0.0288 0.0032  
 Mercury -115317-12-19 03:07 J -40397758.50 -40397758.37 -40397758.23 0.0289 0.0062  
 Mercury -115316-03-17 16:19 J -40397669.93 -40397669.82 -40397669.70 0.0290 0.0155  
 Mercury -115316-06-14 05:46 J -40397581.33 -40397581.26 -40397581.19 0.0291 0.0246  
 Venus -115313-02-13 20:10 J -40396606.67 -40396606.66 -40396606.65 0.0301 0.0300  
 Venus -115313-09-30 18:58 J -40396376.82 -40396376.71 -40396376.59 0.0302 0.0246  
 Venus -115312-05-18 17:46 J -40396146.92 -40396146.76 -40396146.60 0.0303 0.0185

Venus	-115311-01-03 16:19 J	-40395917.01	-40395916.82	-40395916.63	0.0303	0.0119
Venus	-115311-08-21 14:24 J	-40395687.10	-40395686.90	-40395686.70	0.0302	0.0051
Venus	-115310-04-08 12:00 J	-40395457.21	-40395457.00	-40395456.80	0.0301	0.0018
Venus	-115310-11-24 08:24 J	-40395227.35	-40395227.15	-40395226.96	0.0300	0.0086
Venus	-115309-07-11 03:36 J	-40394997.52	-40394997.35	-40394997.17	0.0298	0.0150
Venus	-115308-02-25 21:36 J	-40394767.74	-40394767.60	-40394767.45	0.0296	0.0209
Earth	-115308-07-15 04:48 J	-40394628.44	-40394628.30	-40394628.14	0.0295	0.0229
Moon	-115308-07-15 08:24 J	-40394628.30	-40394628.15	-40394627.99	0.0295	0.0222 *
Venus	-115308-10-13 14:24 J	-40394537.99	-40394537.90	-40394537.81	0.0294	0.0262
Mars	-115306-03-11 12:15 J	-40394024.27	-40394023.99	-40394023.70	0.0287	0.0085
Mercury	-115304-07-31 08:39 J	-40393151.22	-40393151.14	-40393151.05	0.0277	0.0240
Mercury	-115304-10-28 03:22 J	-40393062.50	-40393062.36	-40393062.21	0.0275	0.0141
Mercury	-115303-01-24 22:19 J	-40392973.74	-40392973.57	-40392973.40	0.0274	0.0041
Mercury	-115303-04-23 17:17 J	-40392884.94	-40392884.78	-40392884.60	0.0273	0.0059
Mercury	-115303-07-21 12:29 J	-40392796.11	-40392795.98	-40392795.83	0.0273	0.0160
Mercury	-115303-10-18 07:55 J	-40392707.21	-40392707.17	-40392707.11	0.0272	0.0260
Venus	-115299-07-29 02:10 J	-40391327.45	-40391327.41	-40391327.35	0.0261	0.0254
Venus	-115298-03-15 04:48 J	-40391098.42	-40391098.30	-40391098.17	0.0261	0.0215
Venus	-115298-10-30 07:12 J	-40390869.35	-40390869.20	-40390869.03	0.0260	0.0174
Venus	-115297-06-15 09:51 J	-40390640.27	-40390640.09	-40390639.89	0.0260	0.0131
Venus	-115296-01-30 12:43 J	-40390411.17	-40390410.97	-40390410.76	0.0260	0.0086
Venus	-115296-09-16 16:19 J	-40390182.04	-40390181.82	-40390181.60	0.0260	0.0039
Venus	-115295-05-03 20:10 J	-40389952.88	-40389952.66	-40389952.44	0.0261	0.0008
Venus	-115295-12-19 00:43 J	-40389723.69	-40389723.47	-40389723.26	0.0262	0.0056
Venus	-115294-08-05 05:46 J	-40389494.46	-40389494.26	-40389494.05	0.0263	0.0104
Venus	-115293-03-21 11:46 J	-40389265.18	-40389265.01	-40389264.82	0.0264	0.0152
Venus	-115293-11-05 19:27 J	-40389035.83	-40389035.69	-40389035.54	0.0266	0.0197
Earth	-115292-01-18 00:29 J	-40388962.73	-40388962.48	-40388962.22	0.0266	0.0030
Moon	-115292-01-18 02:39 J	-40388962.64	-40388962.39	-40388962.12	0.0266	0.0045 *
Venus	-115292-06-23 03:36 J	-40388806.43	-40388806.35	-40388806.25	0.0268	0.0242

Mars -115290-02-06 12:15 J -40388213.28 -40388212.99 -40388212.71 0.0274 0.0033  
 Mercury -115288-08-15 13:41 J -40387292.01 -40387291.93 -40387291.85 0.0285 0.0234  
 Mercury -115288-11-12 03:22 J -40387203.48 -40387203.36 -40387203.24 0.0286 0.0142  
 Mercury -115287-02-08 16:48 J -40387114.93 -40387114.80 -40387114.66 0.0287 0.0050  
 Mercury -115287-05-08 06:15 J -40387026.37 -40387026.24 -40387026.10 0.0288 0.0043  
 Mercury -115287-08-04 19:27 J -40386937.80 -40386937.69 -40386937.56 0.0289 0.0136  
 Mercury -115287-11-01 08:53 J -40386849.22 -40386849.13 -40386849.05 0.0290 0.0227  
 Venus -115284-08-26 06:29 J -40385820.26 -40385820.23 -40385820.19 0.0300 0.0295  
 Venus -115283-04-13 05:17 J -40385590.40 -40385590.28 -40385590.15 0.0302 0.0239  
 Venus -115283-11-29 04:05 J -40385360.49 -40385360.33 -40385360.16 0.0302 0.0177  
 Venus -115282-07-17 02:24 J -40385130.59 -40385130.40 -40385130.21 0.0303 0.0111  
 Venus -115281-03-03 00:29 J -40384900.68 -40384900.48 -40384900.28 0.0302 0.0042  
 Venus -115281-10-18 21:36 J -40384670.81 -40384670.60 -40384670.40 0.0301 0.0028  
 Venus -115280-06-05 17:31 J -40384440.96 -40384440.77 -40384440.57 0.0300 0.0095  
 Venus -115279-01-21 12:43 J -40384211.14 -40384210.97 -40384210.80 0.0298 0.0159  
 Moon -115279-07-09 13:27 J -40384042.13 -40384041.94 -40384041.73 0.0297 0.0143  
 Earth -115279-07-09 16:34 J -40384042.01 -40384041.81 -40384041.59 0.0297 0.0133 \*  
 Venus -115279-09-08 06:15 J -40383981.37 -40383981.24 -40383981.10 0.0296 0.0217  
 Venus -115278-04-25 22:48 J -40383751.63 -40383751.55 -40383751.47 0.0294 0.0269  
 Mercury -115275-12-18 09:36 J -40382419.14 -40382419.10 -40382419.04 0.0277 0.0263  
 Mercury -115274-03-17 04:19 J -40382330.45 -40382330.32 -40382330.18 0.0276 0.0164  
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Mercury -115244-04-26 14:53 J -40371332.03 -40371331.88 -40371331.71 0.0273 0.0114

Mercury -115244-07-24 10:19 J -40371243.17 -40371243.07 -40371242.96 0.0272 0.0214

Venus -115240-08-20 15:22 J -40369754.93 -40369754.86 -40369754.78 0.0261 0.0244

Venus -115239-04-06 17:46 J -40369525.89 -40369525.76 -40369525.62 0.0260 0.0205

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Moon -115233-01-20 11:46 J -40367411.23 -40367411.01 -40367410.79 0.0267 0.0139

Earth -115233-01-20 14:39 J -40367411.11 -40367410.89 -40367410.66 0.0267 0.0124 \*

Venus -115233-07-15 18:29 J -40367233.78 -40367233.73 -40367233.66 0.0269 0.0258

Mars -115232-05-16 06:00 J -40366929.50 -40366929.25 -40366928.99 0.0271 0.0120

Mercury -115229-05-21 18:58 J -40365827.74 -40365827.71 -40365827.67 0.0284 0.0274

Mercury -115229-08-18 08:39 J -40365739.24 -40365739.14 -40365739.02 0.0286 0.0183

Mercury -115229-11-14 22:19 J -40365650.70 -40365650.57 -40365650.43 0.0287 0.0090

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Mercury -115228-05-11 01:12 J -40365473.58 -40365473.45 -40365473.32 0.0289 0.0095

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Mercury -115228-11-04 03:36 J -40365296.38 -40365296.35 -40365296.31 0.0291 0.0278

Venus -115225-09-18 02:39 J -40364247.45 -40364247.39 -40364247.31 0.0301 0.0281

Venus -115224-05-06 01:41 J -40364017.56 -40364017.43 -40364017.29 0.0302 0.0222

Venus -115224-12-22 00:15 J -40363787.66 -40363787.49 -40363787.31 0.0302 0.0158

Venus -115223-08-08 22:34 J -40363557.75 -40363557.56 -40363557.36 0.0302 0.0091

Venus -115222-03-26 20:39 J -40363327.85 -40363327.64 -40363327.44 0.0302 0.0020

Venus -115222-11-11 17:31 J -40363097.97 -40363097.77 -40363097.57 0.0301 0.0050

Venus -115221-06-28 13:12 J -40362868.13 -40362867.95 -40362867.76 0.0299 0.0117  
 Venus -115220-02-13 07:41 J -40362638.33 -40362638.18 -40362638.01 0.0298 0.0180  
 Earth -115220-07-11 13:27 J -40362490.18 -40362489.94 -40362489.70 0.0296 0.0007  
 Moon -115220-07-11 13:41 J -40362490.16 -40362489.93 -40362489.70 0.0296 0.0015 \*  
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 Venus -115219-05-18 17:17 J -40362178.81 -40362178.78 -40362178.73 0.0293 0.0287  
 Mars -115218-08-06 19:27 J -40361733.96 -40361733.69 -40361733.42 0.0287 0.0130  
 Mercury -115216-12-21 07:27 J -40360866.30 -40360866.19 -40360866.08 0.0276 0.0206  
 Mercury -115215-03-20 02:10 J -40360777.57 -40360777.41 -40360777.25 0.0275 0.0107  
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 Venus -115207-04-21 11:03 J -40357823.26 -40357823.04 -40357822.82 0.0260 0.0018  
 Venus -115207-12-06 15:07 J -40357594.09 -40357593.87 -40357593.65 0.0261 0.0031  
 Venus -115206-07-23 19:55 J -40357364.88 -40357364.67 -40357364.46 0.0262 0.0079  
 Venus -115205-03-09 01:41 J -40357135.62 -40357135.43 -40357135.24 0.0263 0.0128  
 Venus -115205-10-24 08:24 J -40356906.31 -40356906.15 -40356905.98 0.0265 0.0175  
 Earth -115204-01-14 12:58 J -40356824.15 -40356823.96 -40356823.74 0.0265 0.0159  
 Moon -115204-01-14 16:05 J -40356824.03 -40356823.83 -40356823.61 0.0265 0.0144 \*  
 Venus -115204-06-10 16:05 J -40356676.94 -40356676.83 -40356676.70 0.0267 0.0221  
 Venus -115203-01-26 00:58 J -40356447.48 -40356447.46 -40356447.42 0.0269 0.0266  
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 Mercury -115199-01-05 11:03 J -40355007.14 -40355007.04 -40355006.94 0.0286 0.0205  
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 Mercury -115199-07-01 14:10 J -40354830.05 -40354829.91 -40354829.77 0.0288 0.0021

Mercury -115199-09-28 03:36 J -40354741.48 -40354741.35 -40354741.21 0.0289 0.0073

Mercury -115199-12-25 16:48 J -40354652.91 -40354652.80 -40354652.68 0.0290 0.0165

Mercury -115198-03-24 06:15 J -40354564.30 -40354564.24 -40354564.18 0.0291 0.0257

Venus -115195-03-31 12:00 J -40353461.08 -40353461.00 -40353460.91 0.0301 0.0273

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Venus -115194-07-04 09:36 J -40353001.27 -40353001.10 -40353000.92 0.0303 0.0148

Venus -115193-02-19 07:55 J -40352771.36 -40352771.17 -40352770.97 0.0303 0.0080

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Venus -115191-08-26 16:48 J -40351851.95 -40351851.80 -40351851.64 0.0297 0.0191

Venus -115190-04-13 10:05 J -40351622.18 -40351622.08 -40351621.96 0.0295 0.0248

Mercury -115186-05-10 08:53 J -40350134.22 -40350134.13 -40350134.03 0.0276 0.0227

Mercury -115186-08-07 03:36 J -40350045.50 -40350045.35 -40350045.19 0.0275 0.0129

Mercury -115186-11-03 22:34 J -40349956.73 -40349956.56 -40349956.39 0.0274 0.0030

Mercury -115185-01-31 17:31 J -40349867.93 -40349867.77 -40349867.60 0.0273 0.0070

Mercury -115185-04-29 12:43 J -40349779.10 -40349778.97 -40349778.83 0.0272 0.0170

Mercury -115185-07-27 08:24 J -40349690.17 -40349690.15 -40349690.13 0.0271 0.0269

Venus -115181-09-12 04:05 J -40348182.41 -40348182.33 -40348182.22 0.0261 0.0235

Venus -115180-04-29 06:43 J -40347953.36 -40347953.22 -40347953.07 0.0260 0.0193

Venus -115180-12-14 09:22 J -40347724.29 -40347724.11 -40347723.93 0.0260 0.0150

Venus -115179-07-31 12:00 J -40347495.20 -40347495.00 -40347494.80 0.0260 0.0105

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Venus -115178-11-01 18:29 J -40347036.95 -40347036.73 -40347036.51 0.0261 0.0012

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Venus -115176-02-02 03:36 J -40346578.56 -40346578.35 -40346578.14 0.0262 0.0086

Venus -115176-09-19 09:22 J -40346349.29 -40346349.11 -40346348.92 0.0264 0.0135

Venus -115175-05-06 16:19 J -40346119.98 -40346119.82 -40346119.66 0.0265 0.0182

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Moon -115174-01-22 00:43 J -40345859.58 -40345859.47 -40345859.34 0.0267 0.0233



Earth -115174-01-22 04:05 J -40345859.47 -40345859.33 -40345859.18 0.0267 0.0217 \*  
 Mars -115174-08-24 09:22 J -40345645.16 -40345645.11 -40345645.05 0.0269 0.0264  
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 Mercury -115156-03-23 00:00 J -40339224.67 -40339224.50 -40339224.33 0.0275 0.0051  
 Mercury -115156-06-19 18:58 J -40339135.88 -40339135.71 -40339135.54 0.0274 0.0049  
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Venus -115149-02-10 17:03 J -40336708.98 -40336708.79 -40336708.58 0.0259 0.0099  
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 Earth -115145-01-17 01:26 J -40335272.68 -40335272.44 -40335272.19 0.0266 0.0069  
 Moon -115145-01-17 04:19 J -40335272.57 -40335272.32 -40335272.06 0.0266 0.0053 \*  
 Venus -115145-07-03 05:31 J -40335104.36 -40335104.27 -40335104.16 0.0267 0.0237  
 Mars -115144-10-10 18:43 J -40334639.98 -40334639.72 -40334639.44 0.0272 0.0094  
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 Mercury -115140-04-06 19:12 J -40333365.84 -40333365.70 -40333365.57 0.0288 0.0065  
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 Venus -115136-04-23 06:00 J -40331888.34 -40331888.25 -40331888.14 0.0302 0.0258  
 Venus -115136-12-09 05:02 J -40331658.44 -40331658.29 -40331658.13 0.0303 0.0196  
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 Moon -115132-07-07 14:53 J -40330351.97 -40330351.88 -40330351.77 0.0297 0.0267  
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 Venus -115131-05-06 03:07 J -40330049.44 -40330049.37 -40330049.27 0.0294 0.0266  
 Mars -115129-01-02 01:26 J -40329443.67 -40329443.44 -40329443.18 0.0287 0.0164  
 Mercury -115127-02-13 11:46 J -40328670.04 -40328670.01 -40328669.98 0.0277 0.0271

Mercury -115127-05-13 06:14 J -40328581.37 -40328581.24 -40328581.10 0.0276 0.0173

Mercury -115127-08-10 00:58 J -40328492.62 -40328492.46 -40328492.29 0.0275 0.0075

Mercury -115127-11-06 19:55 J -40328403.84 -40328403.67 -40328403.49 0.0274 0.0026

Mercury -115126-02-03 15:07 J -40328315.02 -40328314.87 -40328314.71 0.0273 0.0124

Mercury -115126-05-03 10:19 J -40328226.16 -40328226.07 -40328225.96 0.0272 0.0224

Venus -115122-10-05 16:34 J -40326609.92 -40326609.81 -40326609.70 0.0260 0.0224

Venus -115121-05-21 18:43 J -40326380.87 -40326380.72 -40326380.56 0.0260 0.0182

Venus -115120-01-05 21:07 J -40326151.80 -40326151.62 -40326151.43 0.0260 0.0138

Venus -115120-08-23 00:00 J -40325922.70 -40325922.50 -40325922.29 0.0260 0.0091

Venus -115119-04-09 03:07 J -40325693.59 -40325693.37 -40325693.15 0.0260 0.0044

Venus -115119-11-24 06:43 J -40325464.45 -40325464.22 -40325464.00 0.0261 0.0007

Venus -115118-07-11 10:48 J -40325235.27 -40325235.05 -40325234.83 0.0261 0.0053

Venus -115117-02-25 15:50 J -40325006.04 -40325005.84 -40325005.64 0.0263 0.0102

Venus -115117-10-11 21:50 J -40324776.77 -40324776.59 -40324776.41 0.0264 0.0150

Venus -115116-05-29 04:48 J -40324547.44 -40324547.30 -40324547.15 0.0266 0.0198

Venus -115115-01-13 12:58 J -40324318.04 -40324317.96 -40324317.87 0.0268 0.0244

Mars -115114-11-28 22:19 J -40323633.84 -40323633.57 -40323633.30 0.0275 0.0094

Mercury -115111-02-28 18:14 J -40322810.78 -40322810.74 -40322810.69 0.0285 0.0270

Mercury -115111-05-28 08:10 J -40322722.27 -40322722.16 -40322722.05 0.0286 0.0178

Mercury -115111-08-24 21:50 J -40322633.73 -40322633.59 -40322633.46 0.0287 0.0086

Mercury -115111-11-21 11:17 J -40322545.17 -40322545.03 -40322544.89 0.0288 0.0009

Mercury -115110-02-18 00:43 J -40322456.60 -40322456.47 -40322456.34 0.0289 0.0099

Mercury -115110-05-17 13:55 J -40322368.02 -40322367.92 -40322367.81 0.0290 0.0191

Mercury -115110-08-14 03:07 J -40322279.39 -40322279.37 -40322279.33 0.0291 0.0283

Venus -115107-11-03 15:36 J -40321101.95 -40321101.85 -40321101.73 0.0302 0.0251

Venus -115106-06-21 14:38 J -40320872.04 -40320871.89 -40320871.72 0.0302 0.0187

Venus -115105-02-06 13:26 J -40320642.12 -40320641.94 -40320641.75 0.0303 0.0119

Venus -115105-09-23 11:46 J -40320412.21 -40320412.01 -40320411.81 0.0302 0.0048

Venus -115104-05-11 09:22 J -40320182.31 -40320182.11 -40320181.91 0.0302 0.0024

Venus -115104-12-27 05:46 J -40319952.45 -40319952.26 -40319952.06 0.0300 0.0094

Venus -115103-08-14 01:12 J -40319722.62 -40319722.45 -40319722.27 0.0298 0.0159  
 Venus -115102-03-31 19:12 J -40319492.82 -40319492.70 -40319492.55 0.0296 0.0220  
 Earth -115102-07-16 01:26 J -40319386.59 -40319386.44 -40319386.29 0.0295 0.0229  
 Moon -115102-07-16 02:53 J -40319386.53 -40319386.38 -40319386.21 0.0295 0.0224 \*  
 Venus -115102-11-16 12:00 J -40319263.06 -40319263.00 -40319262.92 0.0294 0.0274  
 Mars -115101-02-13 15:07 J -40319173.93 -40319173.87 -40319173.80 0.0293 0.0285  
 Mercury -115098-09-30 07:26 J -40317849.30 -40317849.19 -40317849.06 0.0276 0.0195  
 Mercury -115098-12-28 02:10 J -40317760.56 -40317760.41 -40317760.24 0.0275 0.0096  
 Mercury -115097-03-25 21:07 J -40317671.79 -40317671.62 -40317671.44 0.0274 0.0008  
 Mercury -115097-06-22 16:19 J -40317582.98 -40317582.82 -40317582.66 0.0273 0.0102  
 Mercury -115097-09-19 11:17 J -40317494.13 -40317494.03 -40317493.90 0.0272 0.0202  
 Venus -115093-08-30 19:41 J -40316052.70 -40316052.68 -40316052.65 0.0261 0.0258  
 Venus -115092-04-16 21:50 J -40315823.70 -40315823.59 -40315823.47 0.0260 0.0218  
 Venus -115092-12-02 00:00 J -40315594.66 -40315594.50 -40315594.34 0.0259 0.0175  
 Venus -115091-07-19 02:10 J -40315365.59 -40315365.41 -40315365.21 0.0259 0.0131  
 Venus -115090-03-05 04:48 J -40315136.50 -40315136.30 -40315136.09 0.0259 0.0085  
 Venus -115090-10-20 07:55 J -40314907.39 -40314907.17 -40314906.95 0.0259 0.0037  
 Venus -115089-06-05 11:31 J -40314678.24 -40314678.02 -40314677.80 0.0260 0.0012  
 Venus -115088-01-20 15:36 J -40314449.06 -40314448.85 -40314448.63 0.0261 0.0061  
 Venus -115088-09-06 20:38 J -40314219.84 -40314219.64 -40314219.44 0.0262 0.0110  
 Venus -115087-04-24 02:38 J -40313990.56 -40313990.39 -40313990.21 0.0264 0.0159  
 Venus -115087-12-09 09:36 J -40313761.23 -40313761.10 -40313760.96 0.0265 0.0206  
 Moon -115086-01-18 09:07 J -40313721.38 -40313721.12 -40313720.86 0.0266 0.0028  
 Earth -115086-01-18 11:17 J -40313721.29 -40313721.03 -40313720.78 0.0266 0.0015 \*  
 Venus -115086-07-26 17:31 J -40313531.83 -40313531.77 -40313531.69 0.0267 0.0252  
 Mars -115085-01-18 14:10 J -40313356.01 -40313355.91 -40313355.77 0.0269 0.0243  
 Mercury -115082-10-15 09:36 J -40311990.20 -40311990.10 -40311990.00 0.0286 0.0206  
 Mercury -115081-01-11 23:17 J -40311901.66 -40311901.53 -40311901.40 0.0287 0.0114  
 Mercury -115081-04-09 12:43 J -40311813.11 -40311812.97 -40311812.83 0.0288 0.0023  
 Mercury -115081-07-07 02:10 J -40311724.54 -40311724.41 -40311724.27 0.0289 0.0072

Mercury -115081-10-03 15:36 J -40311635.96 -40311635.85 -40311635.74 0.0290 0.0163  
 Mercury -115081-12-31 04:48 J -40311547.36 -40311547.30 -40311547.23 0.0291 0.0255  
 Venus -115078-09-28 22:34 J -40310545.56 -40310545.56 -40310545.55 0.0301 0.0301  
 Venus -115077-05-15 21:36 J -40310315.71 -40310315.60 -40310315.47 0.0302 0.0243  
 Venus -115077-12-31 20:38 J -40310085.80 -40310085.64 -40310085.47 0.0303 0.0179  
 Venus -115076-08-18 19:26 J -40309855.88 -40309855.69 -40309855.50 0.0303 0.0110  
 Venus -115075-04-05 17:46 J -40309625.96 -40309625.76 -40309625.55 0.0303 0.0039  
 Venus -115075-11-21 15:22 J -40309396.07 -40309395.86 -40309395.66 0.0302 0.0034  
 Venus -115074-07-09 11:31 J -40309166.20 -40309166.02 -40309165.82 0.0300 0.0104  
 Venus -115073-02-24 06:58 J -40308936.37 -40308936.21 -40308936.04 0.0298 0.0169  
 Moon -115073-07-09 07:12 J -40308800.39 -40308800.20 -40308800.01 0.0297 0.0156  
 Earth -115073-07-09 07:55 J -40308800.36 -40308800.17 -40308799.95 0.0297 0.0151 \*  
 Venus -115073-10-11 01:12 J -40308706.58 -40308706.45 -40308706.32 0.0296 0.0229  
 Venus -115072-05-28 18:00 J -40308476.80 -40308476.75 -40308476.70 0.0294 0.0283  
 Mars -115071-04-06 23:17 J -40308163.83 -40308163.53 -40308163.23 0.0290 0.0041  
 Mercury -115068-02-16 07:55 J -40307117.26 -40307117.17 -40307117.06 0.0276 0.0222  
 Mercury -115068-05-16 02:38 J -40307028.54 -40307028.39 -40307028.23 0.0275 0.0123  
 Mercury -115068-08-12 21:36 J -40306939.77 -40306939.60 -40306939.43 0.0274 0.0024  
 Mercury -115068-11-09 16:34 J -40306850.97 -40306850.81 -40306850.64 0.0273 0.0075  
 Mercury -115067-02-06 11:46 J -40306762.14 -40306762.01 -40306761.87 0.0272 0.0174  
 Venus -115063-03-13 01:12 J -40305266.50 -40305266.45 -40305266.40 0.0261 0.0253  
 Venus -115063-10-28 03:07 J -40305037.48 -40305037.37 -40305037.24 0.0260 0.0213  
 Venus -115062-06-14 05:17 J -40304808.44 -40304808.28 -40304808.11 0.0260 0.0170  
 Venus -115061-01-29 07:41 J -40304579.37 -40304579.18 -40304578.98 0.0259 0.0125  
 Venus -115061-09-14 10:34 J -40304350.27 -40304350.06 -40304349.85 0.0259 0.0078  
 Venus -115060-05-01 13:26 J -40304121.15 -40304120.94 -40304120.72 0.0260 0.0031  
 Venus -115060-12-16 17:02 J -40303892.01 -40303891.79 -40303891.57 0.0261 0.0019  
 Venus -115059-08-02 21:07 J -40303662.83 -40303662.62 -40303662.40 0.0262 0.0068  
 Venus -115058-03-20 02:10 J -40303433.60 -40303433.41 -40303433.21 0.0263 0.0117  
 Venus -115058-11-04 08:24 J -40303204.32 -40303204.15 -40303203.98 0.0264 0.0166

Earth -115057-01-13 09:36 J -40303134.12 -40303134.10 -40303134.05 0.0265 0.0262  
 Moon -115057-01-13 11:17 J -40303134.09 -40303134.03 -40303133.93 0.0265 0.0249 \*  
 Venus -115057-06-20 15:22 J -40302974.98 -40302974.86 -40302974.72 0.0266 0.0213  
 Venus -115056-02-04 23:46 J -40302745.56 -40302745.51 -40302745.45 0.0268 0.0258  
 Mars -115055-03-07 01:41 J -40302350.70 -40302350.43 -40302350.15 0.0272 0.0068  
 Mercury -115052-03-03 11:46 J -40301258.09 -40301258.01 -40301257.93 0.0285 0.0229  
 Mercury -115052-05-31 01:26 J -40301169.56 -40301169.44 -40301169.32 0.0286 0.0137  
 Mercury -115052-08-27 15:07 J -40301081.01 -40301080.87 -40301080.73 0.0287 0.0046  
 Mercury -115052-11-24 04:34 J -40300992.45 -40300992.31 -40300992.17 0.0289 0.0047  
 Mercury -115051-02-20 17:46 J -40300903.88 -40300903.76 -40300903.63 0.0290 0.0139  
 Mercury -115051-05-20 07:12 J -40300815.28 -40300815.20 -40300815.12 0.0291 0.0231  
 Venus -115048-04-10 06:43 J -40299759.25 -40299759.22 -40299759.17 0.0301 0.0294  
 Venus -115048-11-26 05:46 J -40299529.38 -40299529.26 -40299529.13 0.0302 0.0235  
 Venus -115047-07-14 04:48 J -40299299.46 -40299299.30 -40299299.13 0.0303 0.0170  
 Venus -115046-03-01 03:36 J -40299069.54 -40299069.35 -40299069.15 0.0303 0.0100  
 Venus -115046-10-17 01:55 J -40298839.63 -40298839.42 -40298839.22 0.0302 0.0028  
 Venus -115045-06-02 23:17 J -40298609.73 -40298609.53 -40298609.33 0.0301 0.0044  
 Venus -115044-01-18 19:41 J -40298379.87 -40298379.68 -40298379.49 0.0300 0.0114  
 Venus -115044-09-05 14:53 J -40298150.04 -40298149.88 -40298149.71 0.0298 0.0179  
 Venus -115043-04-23 08:53 J -40297920.24 -40297920.13 -40297920.00 0.0296 0.0239  
 Venus -115043-12-09 01:41 J -40297690.45 -40297690.43 -40297690.41 0.0293 0.0291  
 Mars -115041-05-28 18:29 J -40297153.94 -40297153.73 -40297153.51 0.0287 0.0199  
 Mercury -115039-07-06 09:07 J -40296385.20 -40296385.12 -40296385.04 0.0277 0.0244  
 Mercury -115039-10-03 03:36 J -40296296.49 -40296296.35 -40296296.20 0.0276 0.0146  
 Mercury -115039-12-30 22:34 J -40296207.73 -40296207.56 -40296207.39 0.0275 0.0047  
 Mercury -115038-03-29 17:31 J -40296118.94 -40296118.77 -40296118.60 0.0274 0.0052  
 Mercury -115038-06-26 12:43 J -40296030.12 -40296029.97 -40296029.83 0.0273 0.0151  
 Mercury -115038-09-23 07:55 J -40295941.23 -40295941.17 -40295941.10 0.0272 0.0250  
 Venus -115034-09-23 05:31 J -40294480.32 -40294480.27 -40294480.19 0.0260 0.0249  
 Venus -115033-05-09 07:55 J -40294251.30 -40294251.17 -40294251.04 0.0260 0.0207

Venus	-115033-12-24 09:50 J	-40294022.26	-40294022.09	-40294021.92	0.0259	0.0164
Venus	-115032-08-10 12:00 J	-40293793.19	-40293793.00	-40293792.80	0.0259	0.0118
Venus	-115031-03-27 14:24 J	-40293564.11	-40293563.90	-40293563.68	0.0259	0.0071
Venus	-115031-11-11 17:31 J	-40293334.99	-40293334.77	-40293334.55	0.0259	0.0023
Venus	-115030-06-28 20:53 J	-40293105.85	-40293105.63	-40293105.41	0.0260	0.0027
Venus	-115029-02-13 00:58 J	-40292876.66	-40292876.46	-40292876.24	0.0261	0.0076
Venus	-115029-09-29 06:14 J	-40292647.43	-40292647.24	-40292647.05	0.0262	0.0125
Venus	-115028-05-16 12:00 J	-40292418.15	-40292418.00	-40292417.83	0.0264	0.0174
Venus	-115028-12-31 18:58 J	-40292188.82	-40292188.71	-40292188.58	0.0266	0.0221
Moon	-115027-01-19 13:26 J	-40292170.16	-40292169.94	-40292169.70	0.0266	0.0102
Earth	-115027-01-19 17:02 J	-40292170.03	-40292169.79	-40292169.55	0.0266	0.0089 *
Venus	-115027-08-18 03:07 J	-40291959.38	-40291959.37	-40291959.34	0.0268	0.0267
Mars	-115025-04-23 15:36 J	-40291345.10	-40291344.85	-40291344.58	0.0274	0.0110
Mercury	-115023-07-21 12:29 J	-40290526.03	-40290525.98	-40290525.91	0.0285	0.0260
Mercury	-115023-10-18 02:24 J	-40290437.51	-40290437.40	-40290437.28	0.0286	0.0168
Mercury	-115022-01-14 16:05 J	-40290348.96	-40290348.83	-40290348.69	0.0287	0.0076
Mercury	-115022-04-13 05:31 J	-40290260.41	-40290260.27	-40290260.13	0.0288	0.0018
Mercury	-115022-07-10 18:58 J	-40290171.84	-40290171.71	-40290171.58	0.0289	0.0108
Mercury	-115022-10-07 08:10 J	-40290083.25	-40290083.16	-40290083.05	0.0291	0.0201
Mercury	-115021-01-03 21:22 J	-40289994.61	-40289994.61	-40289994.60	0.0292	0.0292
Venus	-115019-10-21 11:02 J	-40288973.10	-40288973.04	-40288972.98	0.0302	0.0289
Venus	-115018-06-08 10:05 J	-40288743.21	-40288743.08	-40288742.94	0.0303	0.0229
Venus	-115017-01-24 09:22 J	-40288513.28	-40288513.11	-40288512.94	0.0303	0.0162
Venus	-115017-09-10 07:55 J	-40288283.36	-40288283.17	-40288282.97	0.0303	0.0093
Venus	-115016-04-28 06:29 J	-40288053.44	-40288053.23	-40288053.03	0.0303	0.0019
Venus	-115016-12-14 03:50 J	-40287823.54	-40287823.34	-40287823.14	0.0302	0.0053
Venus	-115015-08-01 00:00 J	-40287593.68	-40287593.50	-40287593.31	0.0300	0.0123
Venus	-115014-03-18 19:12 J	-40287363.85	-40287363.70	-40287363.54	0.0298	0.0188
Earth	-115014-07-11 17:02 J	-40287249.02	-40287248.79	-40287248.55	0.0297	0.0056
Moon	-115014-07-11 20:24 J	-40287248.87	-40287248.65	-40287248.41	0.0297	0.0057 *

Venus	-115014-11-03 13:12 J	-40287134.06	-40287133.95	-40287133.84	0.0296	0.0247
Mars	-115013-07-09 16:48 J	-40286884.91	-40286884.80	-40286884.65	0.0293	0.0265
Mercury	-115010-11-23 08:53 J	-40285653.14	-40285653.13	-40285653.10	0.0277	0.0274
Mercury	-115009-02-20 03:36 J	-40285564.48	-40285564.35	-40285564.22	0.0276	0.0176
Mercury	-115009-05-18 22:19 J	-40285475.74	-40285475.57	-40285475.41	0.0275	0.0078
Mercury	-115009-08-15 17:17 J	-40285386.96	-40285386.78	-40285386.61	0.0274	0.0021
Mercury	-115009-11-12 12:14 J	-40285298.14	-40285297.99	-40285297.83	0.0273	0.0120
Mercury	-115008-02-09 07:41 J	-40285209.28	-40285209.18	-40285209.08	0.0272	0.0219
Venus	-115004-04-04 09:50 J	-40283694.16	-40283694.09	-40283694.01	0.0260	0.0243
Venus	-115004-11-19 11:46 J	-40283465.14	-40283465.01	-40283464.86	0.0260	0.0202
Venus	-115003-07-06 13:41 J	-40283236.09	-40283235.93	-40283235.74	0.0259	0.0158
Venus	-115002-02-20 16:05 J	-40283007.02	-40283006.83	-40283006.63	0.0259	0.0112
Venus	-115002-10-07 18:43 J	-40282777.93	-40282777.72	-40282777.50	0.0259	0.0065
Venus	-115001-05-23 21:50 J	-40282548.81	-40282548.59	-40282548.37	0.0260	0.0016

# 115TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 115th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-115000-01-08 01:12 J	-40282319.66	-40282319.45	-40282319.23	0.0261	0.0033		
Venus	-115000-08-25 05:31 J	-40282090.48	-40282090.27	-40282090.06	0.0262	0.0082		



Venus -114999-04-11 10:19 J -40281861.25 -40281861.07 -40281860.87 0.0263 0.0132

Venus -114999-11-26 16:34 J -40281631.96 -40281631.81 -40281631.64 0.0264 0.0180

Earth -114998-01-14 13:41 J -40281583.09 -40281582.93 -40281582.74 0.0265 0.0192

Moon -114998-01-14 17:17 J -40281582.96 -40281582.78 -40281582.58 0.0265 0.0177 \*

Venus -114998-07-13 23:46 J -40281402.62 -40281402.51 -40281402.39 0.0266 0.0227

Mars -114997-06-13 10:05 J -40281067.22 -40281067.08 -40281066.91 0.0269 0.0223

Mercury -114993-03-06 04:05 J -40279705.43 -40279705.33 -40279705.22 0.0286 0.0194

Mercury -114993-06-02 17:46 J -40279616.89 -40279616.76 -40279616.62 0.0287 0.0103

Mercury -114993-08-30 07:26 J -40279528.33 -40279528.19 -40279528.05 0.0288 0.0011

Mercury -114993-11-26 20:53 J -40279439.76 -40279439.63 -40279439.50 0.0289 0.0081

Mercury -114992-02-23 10:05 J -40279351.19 -40279351.08 -40279350.97 0.0290 0.0173

Mercury -114992-05-22 23:17 J -40279262.58 -40279262.53 -40279262.47 0.0291 0.0265

Venus -114989-05-02 17:17 J -40278186.84 -40278186.78 -40278186.70 0.0301 0.0283

Venus -114989-12-18 16:34 J -40277956.94 -40277956.81 -40277956.67 0.0302 0.0221

Venus -114988-08-05 15:36 J -40277727.02 -40277726.85 -40277726.67 0.0303 0.0153

Venus -114987-03-23 14:24 J -40277497.09 -40277496.90 -40277496.70 0.0303 0.0082

Venus -114987-11-08 12:43 J -40277267.18 -40277266.97 -40277266.77 0.0302 0.0011

Venus -114986-06-26 09:50 J -40277037.29 -40277037.09 -40277036.89 0.0301 0.0063

Venus -114985-02-11 06:00 J -40276807.42 -40276807.25 -40276807.06 0.0300 0.0133

Venus -114985-09-28 01:26 J -40276577.59 -40276577.44 -40276577.29 0.0298 0.0197

Venus -114984-05-15 19:12 J -40276347.79 -40276347.70 -40276347.59 0.0296 0.0256

Mars -114983-09-01 01:26 J -40275874.75 -40275874.44 -40275874.14 0.0290 0.0015

Mercury -114980-07-09 03:50 J -40274832.45 -40274832.34 -40274832.22 0.0277 0.0203

Mercury -114980-10-05 22:34 J -40274743.71 -40274743.56 -40274743.40 0.0275 0.0104

Mercury -114979-01-02 17:31 J -40274654.94 -40274654.77 -40274654.60 0.0274 0.0005

Mercury -114979-04-01 12:29 J -40274566.14 -40274565.98 -40274565.81 0.0273 0.0094

Mercury -114979-06-29 07:41 J -40274477.30 -40274477.18 -40274477.05 0.0272 0.0193

Venus -114975-10-15 13:41 J -40272908.01 -40272907.93 -40272907.84 0.0260 0.0238

Venus -114974-06-01 15:22 J -40272678.99 -40272678.86 -40272678.71 0.0259 0.0197

Venus -114973-01-16 17:17 J -40272449.95 -40272449.78 -40272449.59 0.0259 0.0152

Venus -114973-09-01 19:41 J -40272220.88 -40272220.68 -40272220.48 0.0259 0.0105  
 Venus -114972-04-18 22:05 J -40271991.79 -40271991.58 -40271991.36 0.0259 0.0058  
 Venus -114972-12-04 00:58 J -40271762.68 -40271762.46 -40271762.24 0.0259 0.0009  
 Venus -114971-07-21 04:19 J -40271533.54 -40271533.32 -40271533.10 0.0260 0.0041  
 Venus -114970-03-07 08:24 J -40271304.35 -40271304.15 -40271303.94 0.0261 0.0091  
 Venus -114970-10-22 13:41 J -40271075.11 -40271074.93 -40271074.74 0.0262 0.0140  
 Venus -114969-06-07 19:41 J -40270845.83 -40270845.68 -40270845.53 0.0264 0.0188  
 Earth -114968-01-20 19:26 J -40270618.90 -40270618.69 -40270618.49 0.0266 0.0155  
 Moon -114968-01-20 19:55 J -40270618.85 -40270618.67 -40270618.47 0.0266 0.0165 \*  
 Venus -114968-01-23 02:38 J -40270616.49 -40270616.39 -40270616.29 0.0266 0.0235  
 Mars -114967-07-31 10:48 J -40270062.33 -40270062.05 -40270061.77 0.0271 0.0060  
 Mercury -114964-07-24 04:34 J -40268973.39 -40268973.31 -40268973.22 0.0285 0.0228  
 Mercury -114964-10-20 18:29 J -40268884.86 -40268884.73 -40268884.61 0.0286 0.0136  
 Mercury -114963-01-17 07:55 J -40268796.30 -40268796.17 -40268796.03 0.0287 0.0045  
 Mercury -114963-04-15 21:22 J -40268707.74 -40268707.61 -40268707.47 0.0288 0.0049  
 Mercury -114963-07-13 10:48 J -40268619.17 -40268619.05 -40268618.93 0.0290 0.0139  
 Mercury -114963-10-10 00:00 J -40268530.58 -40268530.50 -40268530.41 0.0291 0.0231  
 Venus -114960-11-12 19:26 J -40267400.76 -40267400.69 -40267400.60 0.0302 0.0278  
 Venus -114959-06-30 18:58 J -40267170.85 -40267170.71 -40267170.57 0.0303 0.0215  
 Venus -114958-02-15 18:00 J -40266940.92 -40266940.75 -40266940.57 0.0303 0.0147  
 Venus -114958-10-03 16:48 J -40266710.99 -40266710.80 -40266710.60 0.0303 0.0075  
 Venus -114957-05-20 15:07 J -40266481.07 -40266480.87 -40266480.67 0.0303 0.0002  
 Venus -114956-01-05 12:29 J -40266251.18 -40266250.98 -40266250.78 0.0302 0.0071  
 Venus -114956-08-23 08:38 J -40266021.32 -40266021.14 -40266020.96 0.0300 0.0141  
 Venus -114955-04-10 03:50 J -40265791.48 -40265791.34 -40265791.19 0.0298 0.0205  
 Earth -114955-07-12 20:10 J -40265697.90 -40265697.66 -40265697.43 0.0297 0.0023  
 Moon -114955-07-12 21:50 J -40265697.83 -40265697.59 -40265697.34 0.0297 0.0027 \*  
 Venus -114955-11-25 21:36 J -40265561.69 -40265561.60 -40265561.51 0.0296 0.0263  
 Mars -114953-10-22 04:19 J -40264865.51 -40264865.32 -40264865.10 0.0287 0.0209  
 Mercury -114951-11-26 02:53 J -40264100.46 -40264100.38 -40264100.29 0.0277 0.0237

Mercury -114950-02-22 21:36 J -40264011.74 -40264011.60 -40264011.45 0.0276 0.0139

Mercury -114950-05-22 16:34 J -40263922.98 -40263922.81 -40263922.64 0.0275 0.0040

Mercury -114950-08-19 11:31 J -40263834.19 -40263834.02 -40263833.85 0.0273 0.0059

Mercury -114950-11-16 06:29 J -40263745.36 -40263745.23 -40263745.08 0.0272 0.0159

Mercury -114949-02-13 01:55 J -40263656.47 -40263656.42 -40263656.36 0.0271 0.0257

Venus -114945-04-26 16:19 J -40262121.90 -40262121.82 -40262121.72 0.0260 0.0234

Venus -114945-12-11 18:14 J -40261892.88 -40261892.74 -40261892.59 0.0259 0.0192

Venus -114944-07-28 20:10 J -40261663.83 -40261663.66 -40261663.47 0.0259 0.0147

Venus -114943-03-14 22:19 J -40261434.77 -40261434.57 -40261434.36 0.0259 0.0100

Venus -114943-10-30 00:58 J -40261205.68 -40261205.46 -40261205.24 0.0259 0.0052

Venus -114942-06-16 03:50 J -40260976.56 -40260976.34 -40260976.12 0.0260 0.0003

Venus -114941-01-31 07:12 J -40260747.41 -40260747.20 -40260746.98 0.0260 0.0047

Venus -114941-09-16 11:31 J -40260518.22 -40260518.02 -40260517.81 0.0262 0.0097

Venus -114940-05-03 16:34 J -40260288.99 -40260288.81 -40260288.62 0.0263 0.0146

Venus -114940-12-18 22:34 J -40260059.70 -40260059.56 -40260059.41 0.0264 0.0194

Moon -114939-01-15 13:26 J -40260032.18 -40260031.94 -40260031.70 0.0265 0.0118

Earth -114939-01-15 14:10 J -40260032.13 -40260031.91 -40260031.69 0.0265 0.0130 \*

Venus -114939-08-05 05:31 J -40259830.35 -40259830.27 -40259830.17 0.0266 0.0241

Mars -114937-09-17 00:43 J -40259056.72 -40259056.47 -40259056.21 0.0274 0.0123

Mercury -114935-12-11 05:46 J -40258241.31 -40258241.26 -40258241.19 0.0285 0.0257

Mercury -114934-03-09 19:41 J -40258152.79 -40258152.68 -40258152.56 0.0286 0.0165

Mercury -114934-06-06 09:22 J -40258064.25 -40258064.11 -40258063.98 0.0287 0.0074

Mercury -114934-09-02 22:48 J -40257975.69 -40257975.55 -40257975.41 0.0288 0.0018

Mercury -114934-11-30 12:14 J -40257887.12 -40257886.99 -40257886.86 0.0289 0.0110

Mercury -114933-02-27 01:26 J -40257798.53 -40257798.44 -40257798.34 0.0290 0.0201

Venus -114930-05-26 00:58 J -40256614.55 -40256614.46 -40256614.37 0.0301 0.0271

Venus -114929-01-11 00:00 J -40256384.64 -40256384.50 -40256384.34 0.0302 0.0207

Venus -114929-08-27 23:17 J -40256154.71 -40256154.53 -40256154.35 0.0303 0.0138

Venus -114928-04-14 22:05 J -40255924.78 -40255924.58 -40255924.38 0.0303 0.0065

Venus -114928-11-30 20:10 J -40255694.86 -40255694.66 -40255694.45 0.0302 0.0009

Venus -114927-07-18 17:17 J -40255464.97 -40255464.78 -40255464.58 0.0301 0.0081

Venus -114926-03-05 13:41 J -40255235.10 -40255234.93 -40255234.75 0.0300 0.0150

Venus -114926-10-21 08:38 J -40255005.27 -40255005.14 -40255004.99 0.0298 0.0215

Venus -114925-06-07 02:24 J -40254775.46 -40254775.40 -40254775.31 0.0295 0.0273

Mars -114925-12-03 02:10 J -40254596.56 -40254596.41 -40254596.25 0.0293 0.0251

Mercury -114921-04-14 03:07 J -40253368.42 -40253368.37 -40253368.32 0.0277 0.0265

Mercury -114921-07-11 21:36 J -40253279.73 -40253279.60 -40253279.46 0.0276 0.0167

Mercury -114921-10-08 16:19 J -40253190.98 -40253190.82 -40253190.65 0.0275 0.0069

Mercury -114920-01-05 11:17 J -40253102.20 -40253102.03 -40253101.85 0.0274 0.0032

Mercury -114920-04-04 06:29 J -40253013.38 -40253013.23 -40253013.07 0.0273 0.0130

Mercury -114920-07-02 01:41 J -40252924.52 -40252924.43 -40252924.33 0.0272 0.0230

Venus -114916-11-06 19:26 J -40251335.78 -40251335.69 -40251335.58 0.0260 0.0229

Venus -114915-06-23 21:07 J -40251106.76 -40251106.62 -40251106.46 0.0259 0.0186

Venus -114914-02-07 23:02 J -40250877.72 -40250877.54 -40250877.35 0.0259 0.0141

Venus -114914-09-25 01:12 J -40250648.65 -40250648.45 -40250648.24 0.0259 0.0094

Venus -114913-05-11 03:50 J -40250419.56 -40250419.34 -40250419.13 0.0259 0.0045

Venus -114913-12-26 06:29 J -40250190.45 -40250190.23 -40250190.01 0.0259 0.0005

Venus -114912-08-12 09:50 J -40249961.30 -40249961.09 -40249960.87 0.0260 0.0054

Venus -114911-03-29 13:55 J -40249732.12 -40249731.92 -40249731.71 0.0261 0.0104

Venus -114911-11-13 19:12 J -40249502.88 -40249502.70 -40249502.53 0.0262 0.0154

Venus -114910-07-01 00:58 J -40249273.59 -40249273.46 -40249273.32 0.0264 0.0202

Earth -114909-01-22 18:00 J -40249067.88 -40249067.75 -40249067.58 0.0266 0.0214

Moon -114909-01-22 22:05 J -40249067.72 -40249067.58 -40249067.44 0.0266 0.0220 \*

Venus -114909-02-15 07:55 J -40249044.24 -40249044.17 -40249044.09 0.0266 0.0249

Mars -114909-11-06 13:12 J -40248779.11 -40248778.95 -40248778.78 0.0268 0.0220

Mercury -114905-07-26 19:55 J -40247420.76 -40247420.67 -40247420.56 0.0285 0.0201

Mercury -114905-10-23 09:36 J -40247332.23 -40247332.10 -40247331.97 0.0286 0.0109

Mercury -114904-01-19 23:17 J -40247243.67 -40247243.53 -40247243.39 0.0287 0.0018

Mercury -114904-04-18 12:43 J -40247155.11 -40247154.97 -40247154.84 0.0289 0.0074

Mercury -114904-07-16 01:55 J -40247066.53 -40247066.42 -40247066.31 0.0290 0.0165

Mercury -114904-10-12 15:07 J -40246977.93 -40246977.87 -40246977.81 0.0291 0.0256  
 Venus -114901-12-05 01:26 J -40245828.52 -40245828.44 -40245828.33 0.0302 0.0267  
 Venus -114900-07-23 00:58 J -40245598.61 -40245598.46 -40245598.31 0.0303 0.0202  
 Venus -114899-03-10 00:14 J -40245368.67 -40245368.49 -40245368.31 0.0303 0.0132  
 Venus -114899-10-25 23:02 J -40245138.74 -40245138.54 -40245138.34 0.0303 0.0059  
 Venus -114898-06-12 21:07 J -40244908.83 -40244908.62 -40244908.42 0.0303 0.0015  
 Venus -114897-01-28 18:14 J -40244678.93 -40244678.74 -40244678.54 0.0302 0.0088  
 Venus -114897-09-14 14:38 J -40244449.07 -40244448.89 -40244448.72 0.0300 0.0157  
 Venus -114896-05-02 09:50 J -40244219.23 -40244219.09 -40244218.96 0.0298 0.0221  
 Moon -114896-07-13 15:07 J -40244147.10 -40244146.87 -40244146.64 0.0297 0.0099  
 Earth -114896-07-13 18:14 J -40244146.96 -40244146.74 -40244146.50 0.0297 0.0088 \*  
 Venus -114896-12-18 03:22 J -40243989.42 -40243989.36 -40243989.29 0.0295 0.0278  
 Mars -114894-01-24 17:46 J -40243587.06 -40243586.76 -40243586.46 0.0290 0.0014  
 Mercury -114892-11-28 19:55 J -40242547.78 -40242547.67 -40242547.55 0.0277 0.0205  
 Mercury -114891-02-25 14:38 J -40242459.05 -40242458.89 -40242458.73 0.0276 0.0106  
 Mercury -114891-05-25 09:36 J -40242370.27 -40242370.10 -40242369.93 0.0274 0.0007  
 Mercury -114891-08-22 04:34 J -40242281.47 -40242281.31 -40242281.14 0.0273 0.0092  
 Mercury -114891-11-18 23:46 J -40242192.63 -40242192.51 -40242192.38 0.0272 0.0191  
 Venus -114886-05-19 21:07 J -40240549.73 -40240549.62 -40240549.51 0.0260 0.0225  
 Venus -114885-01-03 22:48 J -40240320.70 -40240320.55 -40240320.39 0.0259 0.0182  
 Venus -114885-08-20 00:43 J -40240091.64 -40240091.47 -40240091.27 0.0259 0.0136  
 Venus -114884-04-06 03:07 J -40239862.58 -40239862.37 -40239862.16 0.0259 0.0088  
 Venus -114884-11-21 05:31 J -40239633.49 -40239633.27 -40239633.05 0.0259 0.0039  
 Venus -114883-07-08 08:24 J -40239404.37 -40239404.15 -40239403.93 0.0260 0.0011  
 Venus -114882-02-22 11:46 J -40239175.22 -40239175.01 -40239174.79 0.0260 0.0060  
 Venus -114882-10-09 16:05 J -40238946.02 -40238945.83 -40238945.63 0.0262 0.0110  
 Venus -114881-05-25 21:07 J -40238716.79 -40238716.62 -40238716.44 0.0263 0.0160  
 Venus -114880-01-10 03:07 J -40238487.50 -40238487.37 -40238487.23 0.0265 0.0208  
 Moon -114880-01-16 08:10 J -40238481.40 -40238481.16 -40238480.91 0.0265 0.0065  
 Earth -114880-01-16 12:00 J -40238481.24 -40238481.00 -40238480.76 0.0265 0.0075 \*

Venus -114880-08-27 10:05 J -40238258.13 -40238258.08 -40238258.01 0.0266 0.0254

Mars -114879-12-24 12:29 J -40237774.25 -40237773.98 -40237773.69 0.0271 0.0051

Mercury -114876-12-13 20:53 J -40236688.71 -40236688.63 -40236688.55 0.0285 0.0232

Mercury -114875-03-12 10:34 J -40236600.18 -40236600.06 -40236599.94 0.0286 0.0141

Mercury -114875-06-09 00:14 J -40236511.63 -40236511.49 -40236511.35 0.0287 0.0050

Mercury -114875-09-05 13:41 J -40236423.07 -40236422.93 -40236422.79 0.0288 0.0043

Mercury -114875-12-03 02:53 J -40236334.50 -40236334.38 -40236334.25 0.0289 0.0134

Mercury -114874-03-01 16:19 J -40236245.91 -40236245.82 -40236245.74 0.0290 0.0225

Venus -114871-06-17 05:46 J -40235042.36 -40235042.26 -40235042.16 0.0302 0.0260

Venus -114870-02-02 04:48 J -40234812.45 -40234812.30 -40234812.13 0.0303 0.0195

Venus -114870-09-20 04:05 J -40234582.52 -40234582.33 -40234582.14 0.0303 0.0124

Venus -114869-05-07 02:53 J -40234352.58 -40234352.38 -40234352.18 0.0303 0.0050

Venus -114869-12-23 00:43 J -40234122.67 -40234122.47 -40234122.26 0.0302 0.0025

Venus -114868-08-09 22:05 J -40233892.78 -40233892.58 -40233892.39 0.0301 0.0097

Venus -114867-03-27 18:14 J -40233662.91 -40233662.74 -40233662.57 0.0299 0.0167

Moon -114867-07-07 23:17 J -40233560.55 -40233560.53 -40233560.49 0.0299 0.0295

Venus -114867-11-12 13:12 J -40233433.07 -40233432.95 -40233432.82 0.0297 0.0230

Venus -114866-06-30 06:43 J -40233203.25 -40233203.22 -40233203.17 0.0295 0.0287

Mars -114864-03-17 02:24 J -40232577.59 -40232577.40 -40232577.20 0.0287 0.0215

Mercury -114862-04-17 19:26 J -40231815.77 -40231815.69 -40231815.60 0.0277 0.0236

Mercury -114862-07-15 14:10 J -40231727.05 -40231726.91 -40231726.76 0.0276 0.0137

Mercury -114862-10-12 09:07 J -40231638.29 -40231638.12 -40231637.95 0.0275 0.0038

Mercury -114861-01-09 04:05 J -40231549.50 -40231549.33 -40231549.16 0.0274 0.0061

Mercury -114861-04-06 23:17 J -40231460.67 -40231460.53 -40231460.39 0.0273 0.0161

Mercury -114861-07-04 18:29 J -40231371.77 -40231371.73 -40231371.67 0.0272 0.0260

Venus -114857-11-28 23:31 J -40229763.62 -40229763.52 -40229763.39 0.0260 0.0221

Venus -114856-07-16 01:26 J -40229534.60 -40229534.44 -40229534.28 0.0259 0.0176

Venus -114855-03-02 03:22 J -40229305.55 -40229305.36 -40229305.17 0.0259 0.0130

Venus -114855-10-17 05:17 J -40229076.48 -40229076.28 -40229076.07 0.0259 0.0082

Venus -114854-06-03 07:41 J -40228847.40 -40228847.18 -40228846.96 0.0259 0.0033

Venus -114853-01-18 10:34 J -40228618.28 -40228618.06 -40228617.84 0.0259 0.0017  
 Venus -114853-09-03 13:55 J -40228389.13 -40228388.92 -40228388.71 0.0260 0.0068  
 Venus -114852-04-20 18:00 J -40228159.94 -40228159.75 -40228159.55 0.0261 0.0118  
 Venus -114852-12-05 22:48 J -40227930.71 -40227930.55 -40227930.37 0.0262 0.0168  
 Venus -114851-07-23 04:48 J -40227701.42 -40227701.30 -40227701.17 0.0264 0.0216  
 Venus -114850-03-09 11:46 J -40227472.03 -40227472.01 -40227471.97 0.0266 0.0262  
 Mars -114848-02-09 18:00 J -40226769.01 -40226768.75 -40226768.49 0.0273 0.0119  
 Mercury -114846-05-02 20:53 J -40225956.67 -40225956.63 -40225956.58 0.0284 0.0268  
 Mercury -114846-07-30 10:48 J -40225868.16 -40225868.05 -40225867.94 0.0285 0.0177  
 Mercury -114846-10-27 00:14 J -40225779.62 -40225779.49 -40225779.35 0.0286 0.0086  
 Mercury -114845-01-23 13:55 J -40225691.06 -40225690.92 -40225690.78 0.0287 0.0008  
 Mercury -114845-04-21 03:07 J -40225602.50 -40225602.37 -40225602.23 0.0288 0.0097  
 Mercury -114845-07-18 16:19 J -40225513.92 -40225513.82 -40225513.71 0.0290 0.0188  
 Mercury -114845-10-15 05:31 J -40225425.30 -40225425.27 -40225425.23 0.0291 0.0278  
 Venus -114842-12-28 05:31 J -40224256.38 -40224256.27 -40224256.16 0.0302 0.0256  
 Venus -114841-08-14 04:48 J -40224026.46 -40224026.30 -40224026.14 0.0303 0.0190  
 Venus -114840-04-01 04:05 J -40223796.52 -40223796.33 -40223796.14 0.0304 0.0119  
 Venus -114840-11-17 02:38 J -40223566.59 -40223566.39 -40223566.18 0.0303 0.0045  
 Venus -114839-07-05 00:43 J -40223336.67 -40223336.47 -40223336.26 0.0303 0.0031  
 Venus -114838-02-19 22:05 J -40223106.77 -40223106.58 -40223106.39 0.0301 0.0104  
 Venus -114838-10-07 18:14 J -40222876.90 -40222876.74 -40222876.57 0.0300 0.0173  
 Venus -114837-05-24 13:12 J -40222647.06 -40222646.95 -40222646.82 0.0298 0.0237  
 Moon -114837-07-14 11:17 J -40222596.22 -40222596.03 -40222595.83 0.0297 0.0158  
 Earth -114837-07-14 13:12 J -40222596.15 -40222595.95 -40222595.74 0.0297 0.0143 \*  
 Venus -114836-01-09 06:43 J -40222417.23 -40222417.22 -40222417.19 0.0295 0.0293  
 Mars -114836-04-27 01:55 J -40222309.56 -40222309.42 -40222309.27 0.0294 0.0258  
 Mercury -114833-09-03 17:31 J -40221083.79 -40221083.77 -40221083.75 0.0278 0.0275  
 Mercury -114833-12-01 12:00 J -40220995.12 -40220995.00 -40220994.86 0.0277 0.0178  
 Mercury -114832-02-28 06:58 J -40220906.37 -40220906.21 -40220906.05 0.0276 0.0078  
 Mercury -114832-05-28 01:55 J -40220817.59 -40220817.42 -40220817.25 0.0274 0.0021

Mercury -114832-08-24 21:07 J -40220728.78 -40220728.62 -40220728.46 0.0273 0.0120

Mercury -114832-11-21 16:19 J -40220639.92 -40220639.82 -40220639.71 0.0272 0.0220

Venus -114828-10-24 22:19 J -40219206.58 -40219206.57 -40219206.54 0.0261 0.0259

Venus -114827-06-11 00:14 J -40218977.60 -40218977.49 -40218977.36 0.0260 0.0216

Venus -114826-01-26 01:55 J -40218748.57 -40218748.42 -40218748.24 0.0259 0.0172

Venus -114826-09-12 04:19 J -40218519.51 -40218519.32 -40218519.13 0.0259 0.0125

Venus -114825-04-28 06:29 J -40218290.44 -40218290.23 -40218290.02 0.0259 0.0076

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Venus -114823-03-16 15:07 J -40217603.08 -40217602.87 -40217602.66 0.0260 0.0073

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Venus -114822-06-18 00:29 J -40217144.64 -40217144.48 -40217144.31 0.0263 0.0173

Earth -114821-01-18 07:41 J -40216930.43 -40216930.18 -40216929.92 0.0264 0.0025

Moon -114821-01-18 07:55 J -40216930.41 -40216930.17 -40216929.92 0.0264 0.0020 \*

Venus -114821-02-02 06:14 J -40216915.34 -40216915.24 -40216915.11 0.0265 0.0222

Mars -114820-04-01 09:07 J -40216491.28 -40216491.12 -40216490.94 0.0268 0.0215

Mercury -114817-12-16 11:31 J -40215136.12 -40215136.02 -40215135.93 0.0285 0.0209

Mercury -114816-03-15 00:58 J -40215047.58 -40215047.46 -40215047.32 0.0286 0.0119

Mercury -114816-06-11 14:38 J -40214959.03 -40214958.89 -40214958.75 0.0287 0.0027

Mercury -114816-09-08 04:05 J -40214870.47 -40214870.33 -40214870.19 0.0288 0.0064

Mercury -114816-12-05 17:17 J -40214781.89 -40214781.78 -40214781.66 0.0289 0.0155

Mercury -114815-03-04 06:43 J -40214693.29 -40214693.22 -40214693.15 0.0290 0.0246

Venus -114812-07-09 08:53 J -40213470.24 -40213470.13 -40213470.01 0.0302 0.0250

Venus -114811-02-24 08:24 J -40213240.31 -40213240.15 -40213239.99 0.0303 0.0182

Venus -114811-10-12 07:26 J -40213010.38 -40213010.19 -40213010.00 0.0303 0.0110

Venus -114810-05-30 06:00 J -40212780.45 -40212780.25 -40212780.05 0.0303 0.0035

Venus -114809-01-15 03:50 J -40212550.54 -40212550.34 -40212550.13 0.0302 0.0041

Venus -114809-09-01 00:58 J -40212320.64 -40212320.46 -40212320.27 0.0301 0.0113

Venus -114808-04-18 21:07 J -40212090.77 -40212090.62 -40212090.45 0.0299 0.0183

Earth -114808-07-08 13:41 J -40212010.05 -40212009.93 -40212009.81 0.0298 0.0253



Moon -114808-07-08 14:38 J -40212010.02 -40212009.89 -40212009.73 0.0298 0.0239 \*  
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 Mars -114806-06-19 02:38 J -40211299.69 -40211299.39 -40211299.08 0.0291 0.0017  
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 Mercury -114803-07-18 06:00 J -40210174.40 -40210174.25 -40210174.09 0.0276 0.0112  
 Mercury -114803-10-15 01:12 J -40210085.63 -40210085.45 -40210085.28 0.0275 0.0013  
 Mercury -114802-01-11 20:10 J -40209996.82 -40209996.66 -40209996.49 0.0274 0.0088  
 Mercury -114802-04-10 15:36 J -40209907.98 -40209907.85 -40209907.73 0.0273 0.0188  
 Venus -114798-05-07 00:58 J -40208420.50 -40208420.46 -40208420.41 0.0261 0.0255  
 Venus -114798-12-22 02:53 J -40208191.50 -40208191.38 -40208191.25 0.0260 0.0212  
 Venus -114797-08-07 04:34 J -40207962.47 -40207962.31 -40207962.13 0.0259 0.0167  
 Venus -114796-03-24 06:29 J -40207733.42 -40207733.23 -40207733.03 0.0259 0.0120  
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 Venus -114794-09-26 17:17 J -40206816.98 -40206816.78 -40206816.57 0.0260 0.0081  
 Venus -114793-05-12 21:36 J -40206587.79 -40206587.60 -40206587.41 0.0261 0.0131  
 Venus -114793-12-28 02:38 J -40206358.55 -40206358.39 -40206358.23 0.0263 0.0181  
 Venus -114792-08-14 08:24 J -40206129.25 -40206129.15 -40206129.04 0.0264 0.0229  
 Mars -114790-05-19 04:19 J -40205486.59 -40205486.32 -40205486.04 0.0270 0.0055  
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 Mercury -114787-10-29 14:53 J -40204227.02 -40204226.88 -40204226.74 0.0286 0.0064  
 Mercury -114786-01-26 04:19 J -40204138.46 -40204138.32 -40204138.18 0.0287 0.0027  
 Mercury -114786-04-24 17:31 J -40204049.89 -40204049.77 -40204049.64 0.0288 0.0118  
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 Venus -114782-01-19 08:24 J -40202684.26 -40202684.15 -40202684.03 0.0302 0.0246  
 Venus -114782-09-06 07:41 J -40202454.34 -40202454.18 -40202454.02 0.0303 0.0178  
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Venus -114780-07-27 03:22 J -40201764.56 -40201764.36 -40201764.16 0.0303 0.0045  
 Venus -114779-03-14 00:29 J -40201534.67 -40201534.48 -40201534.29 0.0301 0.0119  
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 Mercury -114774-09-07 09:07 J -40199531.19 -40199531.12 -40199531.05 0.0278 0.0251  
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 Mercury -114773-03-02 22:34 J -40199353.73 -40199353.56 -40199353.39 0.0276 0.0054  
 Mercury -114773-05-30 17:31 J -40199264.93 -40199264.77 -40199264.59 0.0275 0.0047  
 Mercury -114773-08-27 12:58 J -40199176.11 -40199175.96 -40199175.81 0.0274 0.0146  
 Mercury -114773-11-24 08:10 J -40199087.23 -40199087.16 -40199087.08 0.0272 0.0245  
 Venus -114769-11-16 00:58 J -40197634.51 -40197634.46 -40197634.40 0.0260 0.0252  
 Venus -114768-07-03 02:38 J -40197405.50 -40197405.39 -40197405.24 0.0260 0.0209  
 Venus -114767-02-17 04:48 J -40197176.46 -40197176.30 -40197176.12 0.0259 0.0162  
 Venus -114767-10-04 06:58 J -40196947.40 -40196947.21 -40196947.01 0.0259 0.0115  
 Venus -114766-05-21 09:07 J -40196718.33 -40196718.12 -40196717.90 0.0259 0.0066  
 Venus -114765-01-05 11:46 J -40196489.23 -40196489.01 -40196488.79 0.0259 0.0015  
 Venus -114765-08-21 14:38 J -40196260.11 -40196259.89 -40196259.67 0.0260 0.0036  
 Venus -114764-04-07 18:00 J -40196030.95 -40196030.75 -40196030.53 0.0260 0.0087  
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 Venus -114763-07-10 03:22 J -40195572.51 -40195572.36 -40195572.20 0.0263 0.0187  
 Earth -114762-01-19 03:22 J -40195379.61 -40195379.36 -40195379.11 0.0264 0.0026  
 Moon -114762-01-19 07:12 J -40195379.45 -40195379.20 -40195378.95 0.0264 0.0027 \*  
 Venus -114762-02-24 09:22 J -40195343.20 -40195343.11 -40195343.00 0.0265 0.0235  
 Mars -114760-07-05 08:53 J -40194481.38 -40194481.13 -40194480.87 0.0273 0.0122  
 Mercury -114758-09-22 12:00 J -40193672.02 -40193672.00 -40193671.96 0.0283 0.0278  
 Mercury -114758-12-20 01:55 J -40193583.53 -40193583.42 -40193583.31 0.0285 0.0187  
 Mercury -114757-03-17 15:36 J -40193494.99 -40193494.85 -40193494.72 0.0286 0.0097

Mercury -114757-06-14 05:02 J -40193406.43 -40193406.29 -40193406.15 0.0287 0.0007

Mercury -114757-09-10 18:14 J -40193317.87 -40193317.74 -40193317.60 0.0288 0.0085

Mercury -114757-12-08 07:41 J -40193229.29 -40193229.18 -40193229.07 0.0289 0.0175

Mercury -114756-03-06 20:38 J -40193140.68 -40193140.64 -40193140.58 0.0290 0.0266

Venus -114753-07-31 11:31 J -40191898.14 -40191898.02 -40191897.89 0.0302 0.0239

Venus -114752-03-18 10:48 J -40191668.21 -40191668.05 -40191667.88 0.0303 0.0170

Venus -114752-11-03 09:50 J -40191438.28 -40191438.09 -40191437.89 0.0303 0.0097

Venus -114751-06-21 08:24 J -40191208.35 -40191208.15 -40191207.95 0.0303 0.0021

Venus -114750-02-06 06:14 J -40190978.44 -40190978.24 -40190978.04 0.0302 0.0055

Venus -114750-09-24 03:22 J -40190748.54 -40190748.36 -40190748.18 0.0301 0.0128

Venus -114749-05-10 23:31 J -40190518.67 -40190518.52 -40190518.37 0.0299 0.0197

Moon -114749-07-09 02:24 J -40190459.57 -40190459.40 -40190459.20 0.0298 0.0188

Earth -114749-07-09 05:46 J -40190459.42 -40190459.26 -40190459.08 0.0298 0.0205 \*

Venus -114749-12-26 18:14 J -40190288.83 -40190288.74 -40190288.64 0.0297 0.0260

Mars -114748-09-19 03:07 J -40190022.48 -40190022.37 -40190022.24 0.0294 0.0268

Mercury -114744-04-23 02:53 J -40188710.50 -40188710.38 -40188710.25 0.0277 0.0186

Mercury -114744-07-20 21:50 J -40188621.75 -40188621.59 -40188621.43 0.0276 0.0086

Mercury -114744-10-17 16:48 J -40188532.97 -40188532.80 -40188532.62 0.0275 0.0014

Mercury -114743-01-14 12:00 J -40188444.16 -40188444.00 -40188443.84 0.0274 0.0113

Mercury -114743-04-13 07:12 J -40188355.30 -40188355.20 -40188355.08 0.0273 0.0214

Venus -114739-05-29 03:36 J -40186848.41 -40186848.35 -40186848.28 0.0261 0.0248

Venus -114738-01-13 05:31 J -40186619.40 -40186619.27 -40186619.13 0.0260 0.0204

Venus -114738-08-30 07:41 J -40186390.35 -40186390.18 -40186390.00 0.0259 0.0157

Venus -114737-04-15 09:36 J -40186161.30 -40186161.10 -40186160.90 0.0259 0.0109

Venus -114737-11-30 11:46 J -40185932.23 -40185932.01 -40185931.80 0.0259 0.0059

Venus -114736-07-17 14:10 J -40185703.13 -40185702.91 -40185702.69 0.0259 0.0009

Venus -114735-03-03 17:02 J -40185474.01 -40185473.79 -40185473.57 0.0259 0.0043

Venus -114735-10-18 20:38 J -40185244.84 -40185244.64 -40185244.43 0.0260 0.0094

Venus -114734-06-05 00:58 J -40185015.64 -40185015.46 -40185015.28 0.0261 0.0145

Moon -114733-01-13 18:29 J -40184792.78 -40184792.73 -40184792.68 0.0263 0.0257

Earth -114733-01-13 22:19 J -40184792.60 -40184792.57 -40184792.52 0.0263 0.0259  
 Venus -114733-01-20 05:46 J -40184786.39 -40184786.26 -40184786.10 0.0263 0.0195  
 Venus -114733-09-05 12:00 J -40184557.08 -40184557.00 -40184556.91 0.0264 0.0243  
 Mars -114732-08-25 05:17 J -40184203.44 -40184203.28 -40184203.11 0.0267 0.0217  
 Mercury -114728-05-08 02:24 J -40182851.49 -40182851.40 -40182851.31 0.0283 0.0221  
 Mercury -114728-08-04 16:05 J -40182762.96 -40182762.83 -40182762.71 0.0285 0.0132  
 Mercury -114728-11-01 05:31 J -40182674.41 -40182674.27 -40182674.13 0.0286 0.0041  
 Mercury -114727-01-28 18:58 J -40182585.85 -40182585.71 -40182585.57 0.0287 0.0049  
 Mercury -114727-04-27 08:10 J -40182497.28 -40182497.16 -40182497.04 0.0288 0.0139  
 Mercury -114727-07-24 21:22 J -40182408.69 -40182408.61 -40182408.53 0.0289 0.0229  
 Venus -114724-06-25 12:43 J -40181341.99 -40181341.97 -40181341.95 0.0301 0.0299  
 Venus -114723-02-10 11:31 J -40181112.14 -40181112.02 -40181111.88 0.0302 0.0236  
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 Earth -114719-07-16 22:48 J -40179494.69 -40179494.55 -40179494.42 0.0297 0.0242  
 Moon -114719-07-17 00:43 J -40179494.58 -40179494.47 -40179494.35 0.0297 0.0258 \*  
 Mars -114718-11-10 18:58 J -40179013.01 -40179012.71 -40179012.40 0.0292 0.0027  
 Mercury -114715-09-10 00:29 J -40177978.57 -40177978.48 -40177978.38 0.0278 0.0227  
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 Mercury -114714-06-03 09:22 J -40177712.27 -40177712.11 -40177711.94 0.0275 0.0071  
 Mercury -114714-08-31 04:48 J -40177623.44 -40177623.30 -40177623.16 0.0274 0.0171  
 Mercury -114714-11-28 00:00 J -40177534.51 -40177534.50 -40177534.47 0.0273 0.0271  
 Venus -114710-12-09 03:36 J -40176062.41 -40176062.35 -40176062.27 0.0260 0.0245  
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 Venus -114704-08-01 07:12 J -40174000.33 -40174000.20 -40174000.05 0.0263 0.0201  
 Earth -114703-01-20 00:14 J -40173828.73 -40173828.49 -40173828.24 0.0264 0.0079  
 Moon -114703-01-20 00:29 J -40173828.73 -40173828.48 -40173828.22 0.0264 0.0073 \*  
 Venus -114703-03-18 13:12 J -40173771.01 -40173770.95 -40173770.86 0.0265 0.0249  
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 Mercury -114699-09-25 03:07 J -40172119.43 -40172119.37 -40172119.30 0.0283 0.0253  
 Mercury -114699-12-22 16:48 J -40172030.91 -40172030.80 -40172030.68 0.0285 0.0163  
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 Venus -114691-10-16 06:14 J -40169176.41 -40169176.24 -40169176.06 0.0300 0.0145  
 Venus -114690-06-03 01:55 J -40168946.55 -40168946.42 -40168946.26 0.0299 0.0214  
 Moon -114690-07-10 21:50 J -40168908.79 -40168908.59 -40168908.39 0.0298 0.0138  
 Earth -114690-07-10 23:17 J -40168908.73 -40168908.53 -40168908.33 0.0298 0.0152 \*  
 Venus -114689-01-18 20:38 J -40168716.70 -40168716.64 -40168716.56 0.0297 0.0276

Mars -114687-01-01 06:00 J -40168003.45 -40168003.25 -40168003.02 0.0288 0.0200  
 Mercury -114685-01-27 23:46 J -40167246.56 -40167246.51 -40167246.45 0.0279 0.0260  
 Mercury -114685-04-25 18:29 J -40167157.86 -40167157.73 -40167157.59 0.0278 0.0162  
 Mercury -114685-07-23 13:26 J -40167069.11 -40167068.94 -40167068.77 0.0276 0.0062  
 Mercury -114685-10-20 08:38 J -40166980.31 -40166980.14 -40166979.97 0.0275 0.0038  
 Mercury -114684-01-17 03:50 J -40166891.49 -40166891.34 -40166891.19 0.0274 0.0138  
 Mercury -114684-04-15 23:17 J -40166802.61 -40166802.53 -40166802.44 0.0273 0.0238  
 Venus -114680-06-20 06:29 J -40165276.30 -40165276.23 -40165276.13 0.0261 0.0241  
 Venus -114679-02-04 08:53 J -40165047.27 -40165047.13 -40165046.99 0.0260 0.0195  
 Venus -114679-09-21 11:02 J -40164818.22 -40164818.04 -40164817.86 0.0259 0.0148  
 Venus -114678-05-08 13:12 J -40164589.15 -40164588.95 -40164588.75 0.0259 0.0098  
 Venus -114678-12-23 15:22 J -40164360.07 -40164359.86 -40164359.64 0.0259 0.0048  
 Venus -114677-08-08 18:00 J -40164130.97 -40164130.75 -40164130.53 0.0259 0.0004  
 Venus -114676-03-25 21:07 J -40163901.84 -40163901.62 -40163901.41 0.0260 0.0056  
 Venus -114676-11-10 00:43 J -40163672.67 -40163672.47 -40163672.26 0.0261 0.0108  
 Venus -114675-06-27 05:02 J -40163443.46 -40163443.29 -40163443.11 0.0262 0.0159  
 Earth -114674-01-14 20:10 J -40163241.81 -40163241.66 -40163241.50 0.0263 0.0204  
 Moon -114674-01-14 20:24 J -40163241.79 -40163241.65 -40163241.49 0.0263 0.0208 \*  
 Venus -114674-02-11 10:19 J -40163214.19 -40163214.07 -40163213.93 0.0263 0.0209  
 Venus -114674-09-28 16:34 J -40162984.85 -40162984.81 -40162984.75 0.0265 0.0257  
 Mars -114672-11-28 06:43 J -40162193.47 -40162193.22 -40162192.95 0.0272 0.0118  
 Mercury -114669-05-10 17:31 J -40161298.87 -40161298.77 -40161298.67 0.0283 0.0196  
 Mercury -114669-08-07 07:12 J -40161210.33 -40161210.20 -40161210.07 0.0285 0.0107  
 Mercury -114669-11-03 20:38 J -40161121.78 -40161121.64 -40161121.50 0.0286 0.0018  
 Mercury -114668-01-31 09:50 J -40161033.22 -40161033.09 -40161032.95 0.0287 0.0073  
 Mercury -114668-04-29 23:02 J -40160944.65 -40160944.54 -40160944.42 0.0288 0.0163  
 Mercury -114668-07-27 12:14 J -40160856.05 -40160855.99 -40160855.93 0.0289 0.0252  
 Venus -114665-07-17 17:02 J -40159769.84 -40159769.79 -40159769.73 0.0301 0.0290  
 Venus -114664-03-04 16:05 J -40159539.96 -40159539.83 -40159539.69 0.0302 0.0224  
 Venus -114664-10-20 14:53 J -40159310.05 -40159309.88 -40159309.70 0.0303 0.0153

Venus -114663-06-07 13:41 J -40159080.13 -40159079.93 -40159079.73 0.0303 0.0077  
 Venus -114662-01-23 12:00 J -40158850.20 -40158850.00 -40158849.80 0.0303 0.0000  
 Venus -114662-09-10 09:36 J -40158620.29 -40158620.10 -40158619.90 0.0302 0.0077  
 Venus -114661-04-27 06:43 J -40158390.40 -40158390.22 -40158390.04 0.0301 0.0150  
 Venus -114661-12-13 02:24 J -40158160.53 -40158160.40 -40158160.26 0.0299 0.0219  
 Earth -114660-07-17 16:48 J -40157943.82 -40157943.80 -40157943.78 0.0297 0.0295  
 Venus -114660-07-30 20:53 J -40157930.69 -40157930.63 -40157930.56 0.0297 0.0281  
 Mars -114659-02-10 19:55 J -40157735.77 -40157735.67 -40157735.57 0.0295 0.0277  
 Mercury -114656-09-12 16:19 J -40156425.93 -40156425.82 -40156425.70 0.0278 0.0202  
 Mercury -114656-12-10 11:17 J -40156337.19 -40156337.03 -40156336.87 0.0277 0.0103  
 Mercury -114655-03-09 06:14 J -40156248.41 -40156248.24 -40156248.07 0.0276 0.0003  
 Mercury -114655-06-06 01:26 J -40156159.60 -40156159.44 -40156159.27 0.0275 0.0097  
 Mercury -114655-09-02 20:38 J -40156070.75 -40156070.64 -40156070.51 0.0274 0.0198  
 Venus -114651-12-31 07:12 J -40154490.28 -40154490.20 -40154490.11 0.0260 0.0237  
 Venus -114650-08-17 09:36 J -40154261.24 -40154261.10 -40154260.95 0.0260 0.0191  
 Venus -114649-04-02 11:46 J -40154032.19 -40154032.01 -40154031.82 0.0259 0.0142  
 Venus -114649-11-17 13:55 J -40153803.12 -40153802.92 -40153802.71 0.0259 0.0093  
 Venus -114648-07-04 16:19 J -40153574.03 -40153573.82 -40153573.59 0.0259 0.0042  
 Venus -114647-02-18 19:12 J -40153344.92 -40153344.70 -40153344.48 0.0259 0.0011  
 Venus -114647-10-05 22:34 J -40153115.77 -40153115.56 -40153115.34 0.0260 0.0063  
 Venus -114646-05-23 02:24 J -40152886.59 -40152886.40 -40152886.19 0.0261 0.0115  
 Venus -114645-01-07 06:58 J -40152657.37 -40152657.21 -40152657.03 0.0262 0.0166  
 Venus -114645-08-23 12:14 J -40152428.11 -40152427.99 -40152427.86 0.0263 0.0216  
 Moon -114644-01-20 19:12 J -40152277.92 -40152277.70 -40152277.47 0.0265 0.0124  
 Earth -114644-01-20 23:02 J -40152277.75 -40152277.54 -40152277.31 0.0265 0.0136 \*  
 Venus -114644-04-09 18:29 J -40152198.74 -40152198.73 -40152198.70 0.0265 0.0264  
 Mars -114643-01-18 06:14 J -40151915.40 -40151915.24 -40151915.06 0.0268 0.0211  
 Mercury -114640-09-27 18:29 J -40150566.81 -40150566.73 -40150566.64 0.0283 0.0226  
 Mercury -114640-12-25 08:10 J -40150478.28 -40150478.16 -40150478.03 0.0285 0.0136  
 Mercury -114639-03-23 21:36 J -40150389.74 -40150389.60 -40150389.46 0.0286 0.0047

Mercury -114639-06-20 11:02 J -40150301.18 -40150301.04 -40150300.90 0.0287 0.0044

Mercury -114639-09-17 00:14 J -40150212.61 -40150212.49 -40150212.36 0.0288 0.0134

Mercury -114639-12-14 13:26 J -40150124.02 -40150123.94 -40150123.85 0.0289 0.0223

Venus -114635-01-27 21:36 J -40148983.66 -40148983.60 -40148983.53 0.0301 0.0283

Venus -114635-09-14 20:38 J -40148753.78 -40148753.64 -40148753.50 0.0302 0.0216

Venus -114634-05-02 19:26 J -40148523.86 -40148523.69 -40148523.50 0.0303 0.0144

Venus -114634-12-18 18:14 J -40148293.93 -40148293.74 -40148293.54 0.0303 0.0068

Venus -114633-08-04 16:34 J -40148064.01 -40148063.81 -40148063.60 0.0302 0.0013

Venus -114632-03-22 14:24 J -40147834.10 -40147833.90 -40147833.71 0.0302 0.0088

Venus -114632-11-07 10:48 J -40147604.21 -40147604.05 -40147603.87 0.0300 0.0162

Venus -114631-06-25 06:29 J -40147374.35 -40147374.23 -40147374.10 0.0298 0.0229

Earth -114631-07-11 18:58 J -40147357.93 -40147357.71 -40147357.48 0.0298 0.0094

Moon -114631-07-11 22:05 J -40147357.80 -40147357.58 -40147357.35 0.0298 0.0081 \*

Venus -114630-02-10 00:58 J -40147144.49 -40147144.46 -40147144.42 0.0296 0.0291

Mars -114629-04-04 05:02 J -40146725.60 -40146725.29 -40146724.99 0.0292 0.0034

Mercury -114626-01-30 15:50 J -40145693.92 -40145693.84 -40145693.74 0.0279 0.0234

Mercury -114626-04-29 10:48 J -40145605.20 -40145605.05 -40145604.90 0.0277 0.0135

Mercury -114626-07-27 05:46 J -40145516.43 -40145516.26 -40145516.09 0.0276 0.0035

Mercury -114626-10-24 00:58 J -40145427.63 -40145427.46 -40145427.29 0.0275 0.0066

Mercury -114625-01-20 20:10 J -40145338.79 -40145338.66 -40145338.51 0.0274 0.0166

Mercury -114625-04-18 15:36 J -40145249.88 -40145249.85 -40145249.80 0.0273 0.0266

Venus -114621-07-12 10:48 J -40143704.13 -40143704.05 -40143703.94 0.0261 0.0233

Venus -114620-02-26 13:12 J -40143475.10 -40143474.95 -40143474.79 0.0260 0.0186

Venus -114620-10-13 15:22 J -40143246.03 -40143245.86 -40143245.66 0.0259 0.0138

Venus -114619-05-30 17:46 J -40143016.96 -40143016.76 -40143016.55 0.0259 0.0087

Venus -114618-01-14 20:24 J -40142787.87 -40142787.65 -40142787.43 0.0259 0.0035

Venus -114618-08-31 23:17 J -40142558.75 -40142558.53 -40142558.31 0.0259 0.0017

Venus -114617-04-17 02:24 J -40142329.60 -40142329.40 -40142329.18 0.0260 0.0070

Venus -114617-12-02 06:29 J -40142100.42 -40142100.23 -40142100.04 0.0261 0.0122

Venus -114616-07-19 10:48 J -40141871.20 -40141871.05 -40141870.87 0.0262 0.0174



Earth -114615-01-15 20:53 J -40141690.84 -40141690.63 -40141690.41 0.0263 0.0143  
 Moon -114615-01-16 00:43 J -40141690.67 -40141690.47 -40141690.25 0.0263 0.0152 \*  
 Venus -114615-03-05 16:34 J -40141641.92 -40141641.81 -40141641.70 0.0263 0.0224  
 Mars -114613-03-06 06:58 J -40140910.49 -40140910.21 -40140909.93 0.0270 0.0049  
 Mercury -114610-02-14 19:55 J -40139834.73 -40139834.67 -40139834.61 0.0282 0.0254  
 Mercury -114610-05-14 09:36 J -40139746.22 -40139746.10 -40139745.99 0.0284 0.0166  
 Mercury -114610-08-10 23:02 J -40139657.68 -40139657.54 -40139657.41 0.0285 0.0076  
 Mercury -114610-11-07 12:29 J -40139569.12 -40139568.98 -40139568.84 0.0286 0.0016  
 Mercury -114609-02-04 01:41 J -40139480.56 -40139480.43 -40139480.30 0.0287 0.0103  
 Mercury -114609-05-02 14:38 J -40139391.98 -40139391.89 -40139391.78 0.0288 0.0193  
 Mercury -114609-07-30 03:50 J -40139303.37 -40139303.34 -40139303.31 0.0289 0.0281  
 Venus -114606-08-10 00:29 J -40138197.55 -40138197.48 -40138197.40 0.0301 0.0279  
 Venus -114605-03-26 23:02 J -40137967.67 -40137967.54 -40137967.38 0.0302 0.0212  
 Venus -114605-11-11 22:05 J -40137737.76 -40137737.58 -40137737.40 0.0303 0.0138  
 Venus -114604-06-29 20:24 J -40137507.84 -40137507.65 -40137507.45 0.0303 0.0062  
 Venus -114603-02-14 18:43 J -40137277.93 -40137277.72 -40137277.52 0.0303 0.0018  
 Venus -114603-10-02 16:05 J -40137048.02 -40137047.83 -40137047.64 0.0302 0.0094  
 Venus -114602-05-20 12:43 J -40136818.14 -40136817.97 -40136817.80 0.0300 0.0168  
 Venus -114601-01-05 08:10 J -40136588.28 -40136588.16 -40136588.03 0.0299 0.0236  
 Venus -114601-08-22 02:38 J -40136358.39 -40136358.39 -40136358.39 0.0296 0.0296  
 Mars -114599-05-26 11:46 J -40135716.22 -40135716.01 -40135715.78 0.0289 0.0198  
 Mercury -114597-06-18 14:10 J -40134961.94 -40134961.91 -40134961.87 0.0279 0.0272  
 Mercury -114597-09-15 08:53 J -40134873.26 -40134873.13 -40134873.00 0.0278 0.0173  
 Mercury -114597-12-13 03:50 J -40134784.51 -40134784.34 -40134784.18 0.0277 0.0073  
 Mercury -114596-03-11 22:48 J -40134695.72 -40134695.55 -40134695.37 0.0276 0.0028  
 Mercury -114596-06-08 18:14 J -40134606.89 -40134606.74 -40134606.59 0.0275 0.0127  
 Mercury -114596-09-05 13:41 J -40134518.02 -40134517.93 -40134517.83 0.0274 0.0227  
 Venus -114591-01-22 12:00 J -40132918.10 -40132918.00 -40132917.89 0.0261 0.0229  
 Venus -114591-09-08 14:38 J -40132689.04 -40132688.89 -40132688.73 0.0260 0.0181  
 Venus -114590-04-25 17:17 J -40132459.97 -40132459.78 -40132459.60 0.0259 0.0132

Venus -114590-12-10 19:26 J -40132230.89 -40132230.69 -40132230.47 0.0259 0.0081  
 Venus -114589-07-26 22:05 J -40132001.79 -40132001.58 -40132001.35 0.0259 0.0029  
 Venus -114588-03-13 01:12 J -40131772.67 -40131772.45 -40131772.23 0.0260 0.0024  
 Venus -114588-10-28 04:48 J -40131543.51 -40131543.30 -40131543.08 0.0260 0.0077  
 Venus -114587-06-14 09:07 J -40131314.31 -40131314.12 -40131313.93 0.0261 0.0129  
 Venus -114586-01-29 13:41 J -40131085.08 -40131084.93 -40131084.76 0.0262 0.0181  
 Venus -114586-09-15 19:12 J -40130855.79 -40130855.70 -40130855.58 0.0264 0.0231  
 Moon -114585-01-23 00:29 J -40130726.65 -40130726.48 -40130726.31 0.0265 0.0186  
 Earth -114585-01-23 01:12 J -40130726.61 -40130726.45 -40130726.28 0.0265 0.0199 \*  
 Mars -114583-04-23 14:24 J -40129905.15 -40129904.90 -40129904.64 0.0273 0.0128  
 Mercury -114581-09-30 10:48 J -40129014.15 -40129014.05 -40129013.95 0.0284 0.0194  
 Mercury -114581-12-28 00:14 J -40128925.62 -40128925.49 -40128925.36 0.0285 0.0105  
 Mercury -114580-03-26 13:41 J -40128837.07 -40128836.93 -40128836.79 0.0286 0.0016  
 Mercury -114580-06-23 03:07 J -40128748.51 -40128748.37 -40128748.24 0.0287 0.0075  
 Mercury -114580-09-19 16:05 J -40128659.94 -40128659.83 -40128659.71 0.0288 0.0165  
 Mercury -114580-12-17 05:17 J -40128571.34 -40128571.28 -40128571.21 0.0289 0.0253  
 Venus -114576-02-19 05:31 J -40127411.35 -40127411.27 -40127411.18 0.0301 0.0272  
 Venus -114576-10-07 04:19 J -40127181.47 -40127181.32 -40127181.16 0.0302 0.0203  
 Venus -114575-05-25 03:07 J -40126951.55 -40126951.37 -40126951.18 0.0303 0.0128  
 Venus -114574-01-10 01:41 J -40126721.63 -40126721.43 -40126721.23 0.0303 0.0050  
 Venus -114574-08-27 23:46 J -40126491.71 -40126491.51 -40126491.31 0.0302 0.0028  
 Venus -114573-04-13 21:22 J -40126261.80 -40126261.61 -40126261.42 0.0301 0.0106  
 Venus -114573-11-29 17:31 J -40126031.92 -40126031.77 -40126031.60 0.0300 0.0179  
 Earth -114572-07-12 18:29 J -40125806.96 -40125806.73 -40125806.49 0.0298 0.0027  
 Moon -114572-07-12 20:38 J -40125806.88 -40125806.64 -40125806.39 0.0298 0.0016 \*  
 Venus -114572-07-17 12:58 J -40125802.07 -40125801.96 -40125801.84 0.0298 0.0246  
 Mars -114571-07-06 14:24 J -40125447.99 -40125447.90 -40125447.79 0.0294 0.0278  
 Mercury -114567-02-02 08:38 J -40124141.25 -40124141.14 -40124141.02 0.0278 0.0204  
 Mercury -114567-05-02 03:36 J -40124052.51 -40124052.35 -40124052.19 0.0277 0.0104  
 Mercury -114567-07-29 22:48 J -40123963.73 -40123963.55 -40123963.38 0.0276 0.0005

Mercury -114567-10-26 18:00 J -40123874.91 -40123874.75 -40123874.59 0.0275 0.0097

Mercury -114566-01-23 13:12 J -40123786.06 -40123785.95 -40123785.82 0.0274 0.0198

Venus -114562-08-04 16:48 J -40122131.91 -40122131.80 -40122131.69 0.0261 0.0224

Venus -114561-03-20 19:12 J -40121902.85 -40121902.70 -40121902.53 0.0260 0.0176

Venus -114561-11-04 21:50 J -40121673.78 -40121673.59 -40121673.40 0.0260 0.0126

Venus -114560-06-22 00:14 J -40121444.70 -40121444.49 -40121444.28 0.0259 0.0075

Venus -114559-02-06 02:53 J -40121215.59 -40121215.38 -40121215.16 0.0259 0.0023

Venus -114559-09-23 06:14 J -40120986.46 -40120986.24 -40120986.02 0.0260 0.0031

Venus -114558-05-10 09:50 J -40120757.30 -40120757.09 -40120756.88 0.0260 0.0084

Venus -114558-12-25 13:55 J -40120528.10 -40120527.92 -40120527.73 0.0261 0.0137

Venus -114557-08-10 18:43 J -40120298.86 -40120298.72 -40120298.56 0.0262 0.0189

Earth -114556-01-17 00:29 J -40120139.72 -40120139.48 -40120139.23 0.0263 0.0076

Moon -114556-01-17 00:58 J -40120139.70 -40120139.46 -40120139.20 0.0263 0.0087 \*

Venus -114556-03-28 00:14 J -40120069.56 -40120069.49 -40120069.38 0.0264 0.0240

Mars -114555-06-13 23:02 J -40119626.72 -40119626.54 -40119626.35 0.0267 0.0202

Mercury -114551-02-17 12:29 J -40118282.06 -40118281.98 -40118281.89 0.0283 0.0220

Mercury -114551-05-17 02:10 J -40118193.54 -40118193.41 -40118193.28 0.0284 0.0131

Mercury -114551-08-13 15:36 J -40118104.99 -40118104.85 -40118104.71 0.0285 0.0042

Mercury -114551-11-10 04:48 J -40118016.43 -40118016.30 -40118016.16 0.0286 0.0048

Mercury -114550-02-06 18:00 J -40117927.87 -40117927.75 -40117927.62 0.0287 0.0137

Mercury -114550-05-06 07:12 J -40117839.28 -40117839.20 -40117839.11 0.0288 0.0225

Venus -114547-09-01 10:19 J -40116625.15 -40116625.07 -40116624.97 0.0301 0.0267

Venus -114546-04-19 08:53 J -40116395.28 -40116395.13 -40116394.97 0.0302 0.0197

Venus -114546-12-05 07:26 J -40116165.37 -40116165.19 -40116165.00 0.0303 0.0122

Venus -114545-07-22 05:46 J -40115935.46 -40115935.26 -40115935.06 0.0303 0.0044

Venus -114544-03-09 03:36 J -40115705.55 -40115705.35 -40115705.14 0.0302 0.0036

Venus -114544-10-25 00:43 J -40115475.65 -40115475.47 -40115475.28 0.0301 0.0113

Venus -114543-06-11 21:07 J -40115245.78 -40115245.62 -40115245.46 0.0300 0.0186

Venus -114542-01-27 16:19 J -40115015.93 -40115015.82 -40115015.71 0.0298 0.0253

Mars -114541-08-27 21:07 J -40114437.92 -40114437.62 -40114437.31 0.0292 0.0028

Mercury -114538-06-22 07:41 J -40113409.27 -40113409.18 -40113409.10 0.0279 0.0238

Mercury -114538-09-19 02:24 J -40113320.55 -40113320.40 -40113320.25 0.0278 0.0139

Mercury -114538-12-16 21:22 J -40113231.78 -40113231.61 -40113231.44 0.0277 0.0040

Mercury -114537-03-14 16:34 J -40113142.98 -40113142.81 -40113142.64 0.0276 0.0061

Mercury -114537-06-11 12:00 J -40113054.14 -40113054.00 -40113053.86 0.0275 0.0161

Mercury -114537-09-08 07:26 J -40112965.24 -40112965.19 -40112965.14 0.0274 0.0261

Venus -114532-02-13 18:29 J -40111345.83 -40111345.73 -40111345.60 0.0261 0.0220

Venus -114532-09-30 21:22 J -40111116.77 -40111116.61 -40111116.44 0.0260 0.0171

Venus -114531-05-18 00:00 J -40110887.69 -40110887.50 -40110887.30 0.0259 0.0120

Venus -114530-01-02 02:38 J -40110658.60 -40110658.39 -40110658.17 0.0259 0.0068

Venus -114530-08-19 05:46 J -40110429.48 -40110429.26 -40110429.04 0.0259 0.0015

Venus -114529-04-04 08:53 J -40110200.34 -40110200.13 -40110199.91 0.0260 0.0039

Venus -114529-11-19 12:43 J -40109971.17 -40109970.97 -40109970.76 0.0261 0.0093

Venus -114528-07-06 17:02 J -40109741.96 -40109741.79 -40109741.60 0.0262 0.0146

Venus -114527-02-20 22:19 J -40109512.71 -40109512.57 -40109512.42 0.0263 0.0197

Venus -114527-10-08 04:19 J -40109283.39 -40109283.32 -40109283.24 0.0264 0.0247

Moon -114526-01-24 10:05 J -40109175.14 -40109175.08 -40109175.01 0.0265 0.0255

Mars -114525-07-30 23:17 J -40108621.82 -40108621.53 -40108621.25 0.0270 0.0034

Mercury -114522-07-07 14:24 J -40107549.97 -40107549.90 -40107549.83 0.0283 0.0245

Mercury -114522-10-04 03:50 J -40107461.46 -40107461.34 -40107461.22 0.0284 0.0156

Mercury -114522-12-31 17:17 J -40107372.91 -40107372.78 -40107372.64 0.0285 0.0068

Mercury -114521-03-29 06:43 J -40107284.36 -40107284.22 -40107284.08 0.0286 0.0022

Mercury -114521-06-25 19:55 J -40107195.79 -40107195.67 -40107195.54 0.0287 0.0111

Mercury -114521-09-22 09:07 J -40107107.22 -40107107.12 -40107107.02 0.0288 0.0200

Mercury -114521-12-19 22:05 J -40107018.58 -40107018.58 -40107018.57 0.0290 0.0289

Venus -114517-03-13 17:02 J -40105838.88 -40105838.79 -40105838.67 0.0301 0.0258

Venus -114517-10-29 15:50 J -40105609.00 -40105608.84 -40105608.68 0.0302 0.0187

Venus -114516-06-16 14:24 J -40105379.09 -40105378.90 -40105378.71 0.0302 0.0110

Venus -114515-02-01 12:43 J -40105149.17 -40105148.97 -40105148.77 0.0302 0.0031

Venus -114515-09-19 10:34 J -40104919.26 -40104919.06 -40104918.86 0.0302 0.0048

Venus -114514-05-07 07:41 J -40104689.36 -40104689.18 -40104688.99 0.0301 0.0125  
 Venus -114514-12-23 03:50 J -40104459.49 -40104459.34 -40104459.19 0.0299 0.0198  
 Moon -114513-07-13 21:07 J -40104255.85 -40104255.62 -40104255.38 0.0298 0.0062  
 Earth -114513-07-13 23:31 J -40104255.75 -40104255.52 -40104255.28 0.0298 0.0056 \*  
 Venus -114513-08-08 22:48 J -40104229.64 -40104229.55 -40104229.45 0.0297 0.0265  
 Mars -114511-10-19 21:50 J -40103427.79 -40103427.59 -40103427.37 0.0289 0.0204  
 Mercury -114509-11-08 07:55 J -40102677.21 -40102677.17 -40102677.12 0.0279 0.0266  
 Mercury -114508-02-05 02:38 J -40102588.52 -40102588.39 -40102588.25 0.0278 0.0167  
 Mercury -114508-05-04 21:36 J -40102499.76 -40102499.60 -40102499.43 0.0277 0.0068  
 Mercury -114508-08-01 16:48 J -40102410.97 -40102410.80 -40102410.63 0.0276 0.0033  
 Mercury -114508-10-29 12:00 J -40102322.15 -40102322.00 -40102321.84 0.0275 0.0133  
 Mercury -114507-01-26 07:41 J -40102233.27 -40102233.18 -40102233.09 0.0274 0.0233  
 Venus -114503-01-09 21:22 J -40100788.62 -40100788.61 -40100788.60 0.0262 0.0261  
 Venus -114503-08-27 00:29 J -40100559.60 -40100559.48 -40100559.36 0.0261 0.0214  
 Venus -114502-04-13 02:53 J -40100330.54 -40100330.38 -40100330.20 0.0260 0.0166  
 Venus -114502-11-28 05:46 J -40100101.46 -40100101.26 -40100101.06 0.0260 0.0114  
 Venus -114501-07-14 08:24 J -40099872.36 -40099872.15 -40099871.93 0.0260 0.0061  
 Venus -114500-02-28 11:31 J -40099643.24 -40099643.02 -40099642.80 0.0260 0.0009  
 Venus -114500-10-15 14:53 J -40099414.09 -40099413.88 -40099413.66 0.0260 0.0046  
 Venus -114499-06-01 18:58 J -40099184.91 -40099184.71 -40099184.51 0.0261 0.0100  
 Venus -114498-01-16 23:31 J -40098955.70 -40098955.52 -40098955.34 0.0262 0.0153  
 Venus -114498-09-03 04:48 J -40098726.44 -40098726.30 -40098726.17 0.0263 0.0206  
 Moon -114497-01-19 03:50 J -40098588.60 -40098588.34 -40098588.08 0.0264 0.0015  
 Earth -114497-01-19 07:41 J -40098588.44 -40098588.18 -40098587.93 0.0264 0.0003 \*  
 Venus -114497-04-19 10:48 J -40098497.10 -40098497.05 -40098496.99 0.0265 0.0256  
 Mars -114495-09-17 18:00 J -40097615.99 -40097615.75 -40097615.50 0.0272 0.0141  
 Mercury -114493-11-23 16:34 J -40096817.85 -40096817.81 -40096817.77 0.0282 0.0268  
 Mercury -114492-02-20 06:14 J -40096729.35 -40096729.24 -40096729.13 0.0283 0.0179  
 Mercury -114492-05-19 19:41 J -40096640.81 -40096640.68 -40096640.55 0.0284 0.0091  
 Mercury -114492-08-16 09:07 J -40096552.26 -40096552.12 -40096551.98 0.0285 0.0005

Mercury -114492-11-12 22:19 J -40096463.70 -40096463.57 -40096463.44 0.0286 0.0087

Mercury -114491-02-09 11:31 J -40096375.13 -40096375.02 -40096374.91 0.0287 0.0176

Mercury -114491-05-09 00:29 J -40096286.53 -40096286.48 -40096286.42 0.0289 0.0264

Venus -114488-09-23 23:31 J -40095052.62 -40095052.52 -40095052.39 0.0301 0.0252

Venus -114487-05-11 22:05 J -40094822.74 -40094822.58 -40094822.41 0.0302 0.0179

Venus -114487-12-27 20:24 J -40094592.84 -40094592.65 -40094592.46 0.0302 0.0103

Venus -114486-08-14 18:29 J -40094362.94 -40094362.73 -40094362.53 0.0302 0.0024

Venus -114485-03-31 15:50 J -40094133.03 -40094132.84 -40094132.63 0.0302 0.0057

Venus -114485-11-16 12:43 J -40093903.15 -40093902.97 -40093902.79 0.0301 0.0133

Venus -114484-07-04 08:38 J -40093673.29 -40093673.14 -40093672.99 0.0299 0.0206

Venus -114483-02-19 03:22 J -40093443.44 -40093443.36 -40093443.28 0.0297 0.0272

Mars -114483-11-30 00:43 J -40093159.61 -40093159.47 -40093159.32 0.0295 0.0260

Mercury -114479-06-25 01:55 J -40091856.53 -40091856.42 -40091856.30 0.0279 0.0200

Mercury -114479-09-21 20:53 J -40091767.79 -40091767.63 -40091767.47 0.0278 0.0100

Mercury -114479-12-19 16:05 J -40091679.01 -40091678.83 -40091678.66 0.0277 0.0007

Mercury -114478-03-18 11:02 J -40091590.19 -40091590.04 -40091589.87 0.0275 0.0101

Mercury -114478-06-15 06:29 J -40091501.34 -40091501.23 -40091501.10 0.0274 0.0201

Venus -114474-07-23 00:14 J -40090002.52 -40090002.49 -40090002.45 0.0262 0.0257

Venus -114473-03-08 03:07 J -40089773.49 -40089773.37 -40089773.23 0.0261 0.0209

Venus -114473-10-23 06:00 J -40089544.42 -40089544.25 -40089544.07 0.0260 0.0159

Venus -114472-06-09 08:53 J -40089315.33 -40089315.13 -40089314.93 0.0260 0.0107

Venus -114471-01-24 11:46 J -40089086.22 -40089086.01 -40089085.79 0.0260 0.0054

Venus -114471-09-10 15:07 J -40088857.09 -40088856.87 -40088856.65 0.0260 0.0001

Venus -114470-04-27 18:43 J -40088627.93 -40088627.72 -40088627.50 0.0260 0.0054

Venus -114470-12-12 22:34 J -40088398.75 -40088398.56 -40088398.35 0.0261 0.0109

Venus -114469-07-29 03:22 J -40088169.52 -40088169.36 -40088169.18 0.0262 0.0162

Venus -114468-03-15 08:53 J -40087940.25 -40087940.13 -40087940.00 0.0263 0.0214

Venus -114468-10-30 15:36 J -40087710.86 -40087710.85 -40087710.84 0.0265 0.0264

Mars -114467-11-07 23:17 J -40087337.72 -40087337.53 -40087337.31 0.0268 0.0184

Mercury -114463-07-10 08:10 J -40085997.26 -40085997.16 -40085997.06 0.0283 0.0203

Mercury -114463-10-06 21:36 J -40085908.72 -40085908.60 -40085908.47 0.0284 0.0115

Mercury -114462-01-03 11:02 J -40085820.18 -40085820.04 -40085819.90 0.0285 0.0027

Mercury -114462-04-02 00:29 J -40085731.62 -40085731.48 -40085731.35 0.0287 0.0064

Mercury -114462-06-29 13:41 J -40085643.05 -40085642.93 -40085642.81 0.0288 0.0153

Mercury -114462-09-26 02:38 J -40085554.46 -40085554.39 -40085554.31 0.0289 0.0241

Venus -114458-04-06 07:26 J -40084266.30 -40084266.19 -40084266.06 0.0301 0.0243

Venus -114458-11-22 06:00 J -40084036.41 -40084036.25 -40084036.08 0.0302 0.0169

Venus -114457-07-09 04:19 J -40083806.51 -40083806.32 -40083806.12 0.0302 0.0091

Venus -114456-02-24 02:24 J -40083576.60 -40083576.40 -40083576.19 0.0302 0.0013

Venus -114456-10-12 00:00 J -40083346.70 -40083346.50 -40083346.30 0.0302 0.0069

Venus -114455-05-29 20:53 J -40083116.81 -40083116.63 -40083116.45 0.0300 0.0147

Venus -114454-01-14 16:34 J -40082886.94 -40082886.81 -40082886.67 0.0299 0.0219

Moon -114454-07-16 06:00 J -40082704.44 -40082704.25 -40082704.04 0.0297 0.0154

Earth -114454-07-16 08:53 J -40082704.33 -40082704.13 -40082703.92 0.0297 0.0151 \*

Venus -114454-09-01 11:17 J -40082657.08 -40082657.03 -40082656.97 0.0297 0.0284

Mars -114452-01-22 00:00 J -40082148.80 -40082148.50 -40082148.20 0.0291 0.0011

Mercury -114450-11-12 02:53 J -40081124.47 -40081124.38 -40081124.28 0.0279 0.0224

Mercury -114449-02-08 21:36 J -40081035.74 -40081035.60 -40081035.44 0.0278 0.0126

Mercury -114449-05-07 16:48 J -40080946.97 -40080946.80 -40080946.63 0.0277 0.0026

Mercury -114449-08-04 12:00 J -40080858.17 -40080858.00 -40080857.83 0.0276 0.0074

Mercury -114449-11-01 07:26 J -40080769.32 -40080769.19 -40080769.06 0.0275 0.0175

Venus -114444-02-01 06:14 J -40079216.28 -40079216.24 -40079216.17 0.0262 0.0252

Venus -114444-09-18 09:22 J -40078987.23 -40078987.11 -40078986.96 0.0261 0.0205

Venus -114443-05-05 12:29 J -40078758.15 -40078757.98 -40078757.80 0.0260 0.0153

Venus -114443-12-20 15:22 J -40078529.06 -40078528.86 -40078528.65 0.0260 0.0101

Venus -114442-08-06 18:14 J -40078299.95 -40078299.74 -40078299.52 0.0260 0.0048

Venus -114441-03-22 21:36 J -40078070.82 -40078070.60 -40078070.38 0.0260 0.0008

Venus -114441-11-07 01:26 J -40077841.65 -40077841.44 -40077841.23 0.0261 0.0062

Venus -114440-06-24 05:31 J -40077612.46 -40077612.27 -40077612.07 0.0261 0.0117

Venus -114439-02-08 10:19 J -40077383.23 -40077383.07 -40077382.89 0.0262 0.0170

Venus -114439-09-25 16:05 J -40077153.94 -40077153.83 -40077153.71 0.0264 0.0223  
 Moon -114438-01-20 16:05 J -40077037.07 -40077036.83 -40077036.59 0.0264 0.0067  
 Earth -114438-01-20 17:02 J -40077037.02 -40077036.79 -40077036.54 0.0264 0.0082 \*  
 Mars -114437-12-25 11:17 J -40076332.32 -40076332.03 -40076331.75 0.0270 0.0013  
 Mercury -114434-11-27 10:48 J -40075265.13 -40075265.05 -40075264.96 0.0282 0.0223  
 Mercury -114433-02-24 00:29 J -40075176.60 -40075176.48 -40075176.35 0.0283 0.0134  
 Mercury -114433-05-22 13:55 J -40075088.06 -40075087.92 -40075087.78 0.0285 0.0046  
 Mercury -114433-08-19 03:07 J -40074999.50 -40074999.37 -40074999.23 0.0286 0.0044  
 Mercury -114433-11-15 16:19 J -40074910.94 -40074910.82 -40074910.69 0.0287 0.0132  
 Mercury -114432-02-12 05:31 J -40074822.36 -40074822.27 -40074822.18 0.0288 0.0220  
 Venus -114429-10-16 16:19 J -40073479.94 -40073479.82 -40073479.69 0.0301 0.0234  
 Venus -114428-06-03 14:24 J -40073250.06 -40073249.90 -40073249.72 0.0302 0.0160  
 Venus -114427-01-19 12:43 J -40073020.17 -40073019.97 -40073019.78 0.0302 0.0081  
 Venus -114427-09-06 10:19 J -40072790.27 -40072790.07 -40072789.86 0.0302 0.0007  
 Venus -114426-04-24 07:41 J -40072560.37 -40072560.18 -40072559.98 0.0301 0.0079  
 Venus -114426-12-10 04:05 J -40072330.50 -40072330.33 -40072330.15 0.0300 0.0156  
 Earth -114425-07-09 15:50 J -40072117.98 -40072117.84 -40072117.67 0.0299 0.0220  
 Moon -114425-07-09 18:43 J -40072117.88 -40072117.72 -40072117.55 0.0299 0.0214 \*  
 Venus -114425-07-26 23:31 J -40072100.65 -40072100.52 -40072100.38 0.0299 0.0227  
 Venus -114424-03-13 17:46 J -40071870.78 -40071870.76 -40071870.71 0.0297 0.0292  
 Mars -114422-03-15 23:31 J -40071138.69 -40071138.52 -40071138.32 0.0289 0.0230  
 Mercury -114420-03-31 02:53 J -40070392.44 -40070392.38 -40070392.30 0.0279 0.0253  
 Mercury -114420-06-27 21:50 J -40070303.73 -40070303.59 -40070303.45 0.0278 0.0153  
 Mercury -114420-09-24 16:48 J -40070214.97 -40070214.80 -40070214.63 0.0277 0.0054  
 Mercury -114420-12-22 12:00 J -40070126.17 -40070126.00 -40070125.83 0.0276 0.0046  
 Mercury -114419-03-21 07:12 J -40070037.35 -40070037.20 -40070037.05 0.0275 0.0146  
 Mercury -114419-06-18 02:38 J -40069948.46 -40069948.39 -40069948.31 0.0274 0.0246  
 Venus -114415-08-14 10:19 J -40068430.13 -40068430.07 -40068429.99 0.0262 0.0247  
 Venus -114414-03-31 13:26 J -40068201.07 -40068200.94 -40068200.79 0.0261 0.0198  
 Venus -114414-11-15 16:34 J -40067971.99 -40067971.81 -40067971.63 0.0260 0.0146



Venus -114413-07-01 19:12 J -40067742.89 -40067742.70 -40067742.48 0.0260 0.0094  
 Venus -114412-02-15 22:34 J -40067513.78 -40067513.56 -40067513.34 0.0260 0.0039  
 Venus -114412-10-03 02:10 J -40067284.63 -40067284.41 -40067284.19 0.0260 0.0016  
 Venus -114411-05-20 06:00 J -40067055.46 -40067055.25 -40067055.03 0.0261 0.0071  
 Venus -114410-01-04 10:19 J -40066826.25 -40066826.07 -40066825.87 0.0261 0.0126  
 Venus -114410-08-21 15:22 J -40066597.01 -40066596.86 -40066596.69 0.0262 0.0179  
 Earth -114409-01-15 15:50 J -40066450.00 -40066449.84 -40066449.65 0.0263 0.0192  
 Moon -114409-01-15 17:31 J -40066449.94 -40066449.77 -40066449.61 0.0263 0.0203 \*  
 Venus -114409-04-06 21:07 J -40066367.71 -40066367.62 -40066367.50 0.0264 0.0232  
 Mars -114406-02-12 03:50 J -40065326.56 -40065326.34 -40065326.11 0.0273 0.0167  
 Mercury -114404-04-15 13:12 J -40064533.02 -40064532.95 -40064532.88 0.0283 0.0245  
 Mercury -114404-07-13 02:38 J -40064444.50 -40064444.39 -40064444.27 0.0284 0.0157  
 Mercury -114404-10-09 16:19 J -40064355.96 -40064355.82 -40064355.69 0.0285 0.0068  
 Mercury -114403-01-06 05:31 J -40064267.41 -40064267.27 -40064267.13 0.0286 0.0023  
 Mercury -114403-04-04 18:43 J -40064178.84 -40064178.72 -40064178.59 0.0287 0.0111  
 Mercury -114403-07-02 07:55 J -40064090.26 -40064090.17 -40064090.07 0.0288 0.0199  
 Mercury -114403-09-28 21:07 J -40064001.64 -40064001.62 -40064001.61 0.0289 0.0287  
 Venus -114400-09-11 02:38 J -40062923.42 -40062923.39 -40062923.33 0.0300 0.0293  
 Venus -114399-04-29 00:58 J -40062693.59 -40062693.46 -40062693.32 0.0301 0.0224  
 Venus -114399-12-14 23:17 J -40062463.70 -40062463.53 -40062463.35 0.0302 0.0148  
 Venus -114398-08-01 21:22 J -40062233.80 -40062233.61 -40062233.41 0.0302 0.0069  
 Venus -114397-03-18 19:12 J -40062003.90 -40062003.70 -40062003.49 0.0302 0.0014  
 Venus -114397-11-03 16:34 J -40061774.01 -40061773.81 -40061773.62 0.0301 0.0093  
 Venus -114396-06-21 12:43 J -40061544.13 -40061543.97 -40061543.80 0.0300 0.0169  
 Venus -114395-02-06 08:10 J -40061314.27 -40061314.16 -40061314.04 0.0298 0.0240  
 Earth -114395-07-17 23:17 J -40061152.65 -40061152.53 -40061152.41 0.0297 0.0256  
 Moon -114395-07-18 00:43 J -40061152.58 -40061152.47 -40061152.35 0.0297 0.0255 \*  
 Mars -114394-04-26 19:26 J -40060869.86 -40060869.69 -40060869.49 0.0294 0.0232  
 Mercury -114391-08-18 04:19 J -40059660.34 -40059660.32 -40059660.29 0.0279 0.0275  
 Mercury -114391-11-14 23:02 J -40059571.67 -40059571.54 -40059571.41 0.0278 0.0177

Mercury -114390-02-11 18:00 J -40059482.92 -40059482.75 -40059482.59 0.0277 0.0078

Mercury -114390-05-11 12:58 J -40059394.13 -40059393.96 -40059393.79 0.0276 0.0022

Mercury -114390-08-08 08:10 J -40059305.31 -40059305.16 -40059305.00 0.0275 0.0122

Mercury -114390-11-05 03:50 J -40059216.44 -40059216.34 -40059216.24 0.0274 0.0222

Venus -114385-02-24 17:31 J -40057643.85 -40057643.77 -40057643.68 0.0262 0.0241

Venus -114385-10-10 20:38 J -40057414.78 -40057414.64 -40057414.49 0.0261 0.0191

Venus -114384-05-27 23:31 J -40057185.70 -40057185.52 -40057185.33 0.0260 0.0140

Venus -114383-01-12 02:38 J -40056956.59 -40056956.39 -40056956.18 0.0260 0.0087

Venus -114383-08-29 06:00 J -40056727.47 -40056727.25 -40056727.03 0.0260 0.0032

Venus -114382-04-15 09:36 J -40056498.32 -40056498.10 -40056497.88 0.0260 0.0024

Venus -114382-11-30 13:26 J -40056269.15 -40056268.94 -40056268.73 0.0261 0.0079

Venus -114381-07-16 17:46 J -40056039.94 -40056039.76 -40056039.56 0.0262 0.0134

Venus -114380-03-02 23:02 J -40055810.69 -40055810.54 -40055810.38 0.0263 0.0188

Venus -114380-10-18 05:17 J -40055581.36 -40055581.28 -40055581.18 0.0264 0.0240

Earth -114379-01-22 05:02 J -40055485.48 -40055485.29 -40055485.09 0.0265 0.0169

Moon -114379-01-22 08:24 J -40055485.34 -40055485.15 -40055484.94 0.0265 0.0156 \*

Mars -114378-04-04 16:19 J -40055048.04 -40055047.82 -40055047.59 0.0268 0.0157

Mercury -114375-09-02 16:05 J -40053800.88 -40053800.83 -40053800.78 0.0282 0.0263

Mercury -114375-11-30 05:46 J -40053712.37 -40053712.26 -40053712.15 0.0283 0.0175

Mercury -114374-02-26 19:12 J -40053623.83 -40053623.70 -40053623.56 0.0284 0.0087

Mercury -114374-05-26 08:38 J -40053535.28 -40053535.14 -40053535.00 0.0285 0.0003

Mercury -114374-08-22 21:50 J -40053446.72 -40053446.59 -40053446.45 0.0286 0.0091

Mercury -114374-11-19 11:02 J -40053358.14 -40053358.04 -40053357.93 0.0287 0.0179

Mercury -114373-02-16 00:00 J -40053269.54 -40053269.50 -40053269.44 0.0289 0.0267

Venus -114370-03-24 12:58 J -40052137.02 -40052136.96 -40052136.90 0.0300 0.0284

Venus -114370-11-09 10:48 J -40051907.18 -40051907.05 -40051906.90 0.0301 0.0214

Venus -114369-06-26 08:53 J -40051677.30 -40051677.13 -40051676.94 0.0302 0.0138

Venus -114368-02-11 06:58 J -40051447.41 -40051447.21 -40051447.01 0.0302 0.0058

Venus -114368-09-29 04:34 J -40051217.51 -40051217.31 -40051217.11 0.0302 0.0023

Venus -114367-05-17 01:41 J -40050987.62 -40050987.43 -40050987.24 0.0301 0.0103

Venus -114366-01-01 21:36 J -40050757.76 -40050757.60 -40050757.43 0.0300 0.0179  
 Moon -114366-07-12 06:43 J -40050566.45 -40050566.22 -40050565.99 0.0298 0.0106  
 Earth -114366-07-12 09:07 J -40050566.34 -40050566.12 -40050565.90 0.0298 0.0105 \*  
 Venus -114366-08-19 16:34 J -40050527.91 -40050527.81 -40050527.69 0.0298 0.0249  
 Mars -114364-06-18 17:02 J -40049859.09 -40049858.79 -40049858.49 0.0291 0.0027  
 Mercury -114361-04-02 23:31 J -40048839.62 -40048839.52 -40048839.39 0.0279 0.0202  
 Mercury -114361-06-30 18:29 J -40048750.89 -40048750.73 -40048750.57 0.0278 0.0103  
 Mercury -114361-09-27 13:26 J -40048662.11 -40048661.94 -40048661.76 0.0277 0.0008  
 Mercury -114361-12-25 08:38 J -40048573.30 -40048573.14 -40048572.97 0.0276 0.0097  
 Mercury -114360-03-24 04:05 J -40048484.45 -40048484.33 -40048484.20 0.0274 0.0196  
 Venus -114356-09-05 22:19 J -40046857.66 -40046857.57 -40046857.47 0.0261 0.0235  
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 Moon -114350-01-17 00:58 J -40044898.69 -40044898.46 -40044898.23 0.0264 0.0119  
 Earth -114350-01-17 04:19 J -40044898.55 -40044898.32 -40044898.08 0.0264 0.0104 \*  
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 Mercury -114344-07-05 02:38 J -40042537.46 -40042537.39 -40042537.32 0.0289 0.0246  
 Venus -114341-10-03 22:05 J -40041350.66 -40041350.58 -40041350.50 0.0300 0.0275

Venus -114340-05-21 20:10 J -40041120.81 -40041120.66 -40041120.50 0.0302 0.0203  
 Venus -114339-01-06 18:29 J -40040890.92 -40040890.73 -40040890.55 0.0302 0.0125  
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 Venus -114338-04-11 14:10 J -40040431.11 -40040430.91 -40040430.71 0.0302 0.0037  
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 Venus -114336-03-01 01:55 J -40039741.51 -40039741.42 -40039741.32 0.0298 0.0263  
 Mars -114334-08-11 01:26 J -40038848.56 -40038848.44 -40038848.30 0.0288 0.0258  
 Mercury -114332-08-21 01:12 J -40038107.54 -40038107.45 -40038107.35 0.0279 0.0223  
 Mercury -114332-11-17 19:55 J -40038018.82 -40038018.67 -40038018.51 0.0277 0.0125  
 Mercury -114331-02-14 15:07 J -40037930.05 -40037929.87 -40037929.70 0.0276 0.0027  
 Mercury -114331-05-14 10:05 J -40037841.24 -40037841.08 -40037840.91 0.0275 0.0074  
 Mercury -114331-08-11 05:31 J -40037752.40 -40037752.27 -40037752.13 0.0274 0.0173  
 Mercury -114331-11-08 00:58 J -40037663.46 -40037663.46 -40037663.45 0.0273 0.0273  
 Venus -114326-03-19 05:31 J -40036071.36 -40036071.27 -40036071.15 0.0262 0.0229  
 Venus -114326-11-03 08:38 J -40035842.29 -40035842.14 -40035841.97 0.0261 0.0178  
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 Venus -114321-03-25 12:14 J -40034238.11 -40034237.99 -40034237.84 0.0263 0.0206  
 Venus -114321-11-09 18:58 J -40034008.75 -40034008.71 -40034008.65 0.0265 0.0258  
 Earth -114320-01-23 18:00 J -40033933.79 -40033933.75 -40033933.68 0.0265 0.0258  
 Moon -114320-01-23 20:10 J -40033933.75 -40033933.66 -40033933.56 0.0265 0.0246 \*  
 Mars -114318-07-10 02:53 J -40033036.57 -40033036.38 -40033036.17 0.0274 0.0198  
 Mercury -114316-09-05 11:02 J -40032248.12 -40032248.04 -40032247.94 0.0283 0.0214  
 Mercury -114316-12-03 00:43 J -40032159.59 -40032159.47 -40032159.34 0.0284 0.0125  
 Mercury -114315-03-01 14:10 J -40032071.05 -40032070.91 -40032070.77 0.0285 0.0037

Mercury -114315-05-29 03:36 J -40031982.49 -40031982.35 -40031982.21 0.0286 0.0052  
 Mercury -114315-08-25 16:48 J -40031893.92 -40031893.80 -40031893.68 0.0287 0.0140  
 Mercury -114315-11-22 06:00 J -40031805.33 -40031805.25 -40031805.17 0.0288 0.0229  
 Venus -114311-04-16 08:38 J -40030564.22 -40030564.14 -40030564.03 0.0300 0.0266  
 Venus -114311-12-02 06:58 J -40030334.36 -40030334.21 -40030334.05 0.0301 0.0192  
 Venus -114310-07-20 05:02 J -40030104.48 -40030104.29 -40030104.10 0.0302 0.0114  
 Venus -114309-03-06 02:53 J -40029874.58 -40029874.38 -40029874.17 0.0302 0.0033  
 Venus -114309-10-22 00:14 J -40029644.69 -40029644.49 -40029644.29 0.0301 0.0049  
 Venus -114308-06-08 20:53 J -40029414.81 -40029414.63 -40029414.44 0.0301 0.0129  
 Venus -114307-01-24 16:48 J -40029184.95 -40029184.80 -40029184.66 0.0299 0.0204  
 Moon -114307-07-14 01:41 J -40029014.66 -40029014.43 -40029014.19 0.0298 0.0012  
 Earth -114307-07-14 04:48 J -40029014.53 -40029014.30 -40029014.06 0.0298 0.0018 \*  
 Venus -114307-09-11 11:17 J -40028955.10 -40028955.03 -40028954.94 0.0297 0.0272  
 Mars -114306-09-22 02:38 J -40028579.62 -40028579.39 -40028579.15 0.0294 0.0185  
 Mercury -114302-01-08 02:24 J -40027375.47 -40027375.40 -40027375.32 0.0279 0.0245  
 Mercury -114302-04-06 21:07 J -40027286.76 -40027286.62 -40027286.47 0.0278 0.0147  
 Mercury -114302-07-04 16:05 J -40027198.00 -40027197.83 -40027197.66 0.0277 0.0049  
 Mercury -114302-10-01 11:02 J -40027109.21 -40027109.04 -40027108.87 0.0276 0.0051  
 Mercury -114302-12-29 06:14 J -40027020.38 -40027020.24 -40027020.09 0.0275 0.0151  
 Mercury -114301-03-27 01:41 J -40026931.49 -40026931.43 -40026931.35 0.0274 0.0250  
 Venus -114297-09-28 10:48 J -40025285.16 -40025285.05 -40025284.93 0.0261 0.0222  
 Venus -114296-05-15 13:41 J -40025056.08 -40025055.93 -40025055.75 0.0260 0.0171  
 Venus -114296-12-30 16:48 J -40024826.99 -40024826.80 -40024826.60 0.0260 0.0117  
 Venus -114295-08-16 20:10 J -40024597.88 -40024597.66 -40024597.45 0.0260 0.0062  
 Venus -114294-04-02 23:31 J -40024368.74 -40024368.52 -40024368.30 0.0260 0.0007  
 Venus -114294-11-18 03:22 J -40024139.58 -40024139.36 -40024139.15 0.0260 0.0050  
 Venus -114293-07-04 07:26 J -40023910.39 -40023910.19 -40023909.99 0.0261 0.0105  
 Venus -114292-02-18 12:14 J -40023681.16 -40023680.99 -40023680.81 0.0262 0.0161  
 Venus -114292-10-05 18:00 J -40023451.87 -40023451.75 -40023451.62 0.0263 0.0215  
 Moon -114291-01-18 15:07 J -40023347.11 -40023346.87 -40023346.62 0.0264 0.0029

Earth -114291-01-18 17:17 J -40023347.04 -40023346.78 -40023346.53 0.0264 0.0015 \*  
 Mars -114290-08-30 05:31 J -40022758.51 -40022758.27 -40022758.02 0.0269 0.0131  
 Mercury -114286-01-23 13:12 J -40021516.02 -40021515.95 -40021515.87 0.0283 0.0237  
 Mercury -114286-04-22 02:53 J -40021427.50 -40021427.38 -40021427.26 0.0284 0.0148  
 Mercury -114286-07-19 16:34 J -40021338.95 -40021338.81 -40021338.68 0.0285 0.0059  
 Mercury -114286-10-16 05:46 J -40021250.40 -40021250.26 -40021250.12 0.0286 0.0031  
 Mercury -114285-01-12 19:12 J -40021161.83 -40021161.70 -40021161.58 0.0287 0.0119  
 Mercury -114285-04-10 08:10 J -40021073.25 -40021073.16 -40021073.06 0.0288 0.0207  
 Venus -114282-10-27 17:17 J -40019777.87 -40019777.78 -40019777.66 0.0301 0.0256  
 Venus -114281-06-13 15:36 J -40019548.01 -40019547.85 -40019547.68 0.0302 0.0181  
 Venus -114280-01-29 13:55 J -40019318.11 -40019317.92 -40019317.73 0.0302 0.0101  
 Venus -114280-09-16 11:46 J -40019088.21 -40019088.01 -40019087.80 0.0302 0.0020  
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 Venus -114277-03-23 20:10 J -40018168.71 -40018168.66 -40018168.60 0.0297 0.0285  
 Mars -114276-11-14 02:53 J -40017568.67 -40017568.38 -40017568.08 0.0290 0.0062  
 Mercury -114273-05-27 03:50 J -40016643.38 -40016643.34 -40016643.28 0.0279 0.0267  
 Mercury -114273-08-23 22:34 J -40016554.69 -40016554.56 -40016554.42 0.0278 0.0169  
 Mercury -114273-11-20 17:31 J -40016465.94 -40016465.77 -40016465.61 0.0277 0.0071  
 Mercury -114272-02-17 12:29 J -40016377.15 -40016376.98 -40016376.81 0.0276 0.0029  
 Mercury -114272-05-17 07:41 J -40016288.33 -40016288.18 -40016288.02 0.0275 0.0128  
 Mercury -114272-08-14 03:07 J -40016199.46 -40016199.37 -40016199.27 0.0274 0.0227  
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Venus -114263-08-31 20:10 J -40012894.83 -40012894.66 -40012894.50 0.0263 0.0169  
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 Mars -114260-10-16 21:22 J -40011752.89 -40011752.61 -40011752.33 0.0271 0.0046  
 Mercury -114257-06-11 16:19 J -40010783.88 -40010783.82 -40010783.76 0.0282 0.0254  
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 Mercury -114256-03-04 08:53 J -40010518.27 -40010518.13 -40010517.99 0.0286 0.0013  
 Mercury -114256-05-31 22:19 J -40010429.70 -40010429.57 -40010429.44 0.0287 0.0100  
 Mercury -114256-08-28 11:17 J -40010341.12 -40010341.03 -40010340.92 0.0288 0.0189  
 Mercury -114256-11-25 00:29 J -40010252.51 -40010252.48 -40010252.44 0.0289 0.0276  
 Venus -114252-05-09 04:19 J -40008991.43 -40008991.32 -40008991.20 0.0301 0.0245  
 Venus -114252-12-25 02:24 J -40008761.56 -40008761.40 -40008761.22 0.0301 0.0169  
 Venus -114251-08-12 00:43 J -40008531.67 -40008531.47 -40008531.28 0.0302 0.0089  
 Venus -114250-03-29 22:34 J -40008301.76 -40008301.56 -40008301.36 0.0302 0.0007  
 Venus -114250-11-14 19:55 J -40008071.87 -40008071.67 -40008071.48 0.0301 0.0076  
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 Venus -114248-02-16 11:46 J -40007612.14 -40007612.01 -40007611.88 0.0299 0.0228  
 Earth -114248-07-16 00:58 J -40007462.67 -40007462.46 -40007462.25 0.0297 0.0139  
 Moon -114248-07-16 02:24 J -40007462.61 -40007462.40 -40007462.19 0.0297 0.0129 \*  
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 Mercury -114243-01-11 00:00 J -40005822.62 -40005822.50 -40005822.37 0.0278 0.0189  
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 Mercury -114243-10-04 08:53 J -40005556.28 -40005556.13 -40005555.96 0.0275 0.0107  
 Mercury -114242-01-01 04:19 J -40005467.43 -40005467.32 -40005467.20 0.0274 0.0206  
 Venus -114238-03-06 20:53 J -40003941.67 -40003941.63 -40003941.59 0.0262 0.0257  
 Venus -114238-10-21 23:46 J -40003712.64 -40003712.51 -40003712.37 0.0261 0.0207  
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 Venus -114236-01-22 05:31 J -40003254.47 -40003254.27 -40003254.06 0.0260 0.0101  
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Venus -114235-04-25 12:14 J -40002796.21 -40002795.99 -40002795.77 0.0260 0.0011  
 Venus -114235-12-10 15:50 J -40002567.05 -40002566.84 -40002566.62 0.0260 0.0068  
 Venus -114234-07-27 20:10 J -40002337.85 -40002337.66 -40002337.46 0.0261 0.0124  
 Venus -114233-03-13 01:12 J -40002108.61 -40002108.45 -40002108.29 0.0262 0.0179  
 Venus -114233-10-28 07:12 J -40001879.30 -40001879.20 -40001879.09 0.0264 0.0233  
 Earth -114232-01-20 05:02 J -40001795.53 -40001795.29 -40001795.04 0.0264 0.0071  
 Moon -114232-01-20 07:41 J -40001795.41 -40001795.18 -40001794.93 0.0264 0.0059 \*  
 Mars -114230-12-04 15:22 J -40000747.01 -40000746.86 -40000746.68 0.0274 0.0225  
 Mercury -114228-10-29 18:00 J -40000051.76 -40000051.75 -40000051.72 0.0282 0.0279  
 Mercury -114227-01-26 07:55 J -39999963.27 -39999963.17 -39999963.06 0.0284 0.0190  
 Mercury -114227-04-24 21:36 J -39999874.73 -39999874.60 -39999874.47 0.0285 0.0101  
 Mercury -114227-07-22 11:02 J -39999786.18 -39999786.04 -39999785.90 0.0286 0.0012  
 Mercury -114227-10-19 00:14 J -39999697.62 -39999697.49 -39999697.35 0.0287 0.0077  
 Mercury -114226-01-15 13:41 J -39999609.05 -39999608.93 -39999608.82 0.0288 0.0165  
 Mercury -114226-04-14 02:38 J -39999520.45 -39999520.39 -39999520.32 0.0289 0.0254  
 Venus -114223-11-19 12:14 J -39998205.11 -39998204.99 -39998204.86 0.0301 0.0235  
 Venus -114222-07-07 10:34 J -39997975.23 -39997975.06 -39997974.88 0.0302 0.0158  
 Venus -114221-02-22 08:53 J -39997745.33 -39997745.13 -39997744.93 0.0302 0.0077  
 Venus -114221-10-09 06:43 J -39997515.42 -39997515.22 -39997515.02 0.0302 0.0006  
 Venus -114220-05-27 03:50 J -39997285.53 -39997285.34 -39997285.14 0.0301 0.0089  
 Venus -114219-01-12 00:14 J -39997055.65 -39997055.49 -39997055.31 0.0300 0.0167  
 Moon -114219-07-10 07:41 J -39996876.31 -39996876.18 -39996876.02 0.0299 0.0239  
 Earth -114219-07-10 10:05 J -39996876.22 -39996876.08 -39996875.92 0.0299 0.0229 \*  
 Venus -114219-08-29 19:41 J -39996825.79 -39996825.68 -39996825.55 0.0298 0.0241  
 Mars -114217-02-17 12:58 J -39996289.22 -39996288.96 -39996288.69 0.0293 0.0147  
 Mercury -114214-05-31 01:12 J -39995090.55 -39995090.45 -39995090.33 0.0278 0.0213  
 Mercury -114214-08-27 20:10 J -39995001.82 -39995001.66 -39995001.51 0.0277 0.0114  
 Mercury -114214-11-24 15:07 J -39994913.05 -39994912.87 -39994912.70 0.0276 0.0017  
 Mercury -114213-02-21 10:05 J -39994824.24 -39994824.08 -39994823.91 0.0275 0.0083  
 Mercury -114213-05-20 05:17 J -39994735.40 -39994735.28 -39994735.14 0.0274 0.0182



Venus	-114209-09-16 04:05 J	-39993155.40	-39993155.33	-39993155.27	0.0262	0.0250
Venus	-114208-05-03 06:43 J	-39992926.35	-39992926.22	-39992926.07	0.0261	0.0200
Venus	-114208-12-18 09:36 J	-39992697.27	-39992697.10	-39992696.91	0.0260	0.0147
Venus	-114207-08-04 12:29 J	-39992468.18	-39992467.98	-39992467.77	0.0260	0.0093
Venus	-114206-03-21 15:36 J	-39992239.06	-39992238.85	-39992238.63	0.0260	0.0038
Venus	-114206-11-05 19:12 J	-39992009.92	-39992009.70	-39992009.48	0.0260	0.0019
Venus	-114205-06-21 23:02 J	-39991780.75	-39991780.54	-39991780.33	0.0261	0.0076
Venus	-114204-02-06 03:22 J	-39991551.54	-39991551.36	-39991551.16	0.0262	0.0132
Venus	-114204-09-23 08:38 J	-39991322.29	-39991322.14	-39991321.98	0.0263	0.0187
Moon	-114203-01-15 04:34 J	-39991208.47	-39991208.31	-39991208.14	0.0264	0.0205
Earth	-114203-01-15 07:26 J	-39991208.36	-39991208.19	-39991208.01	0.0264	0.0190 *
Venus	-114203-05-10 14:24 J	-39991092.98	-39991092.90	-39991092.80	0.0264	0.0241
Mars	-114201-01-24 22:19 J	-39990468.82	-39990468.57	-39990468.30	0.0269	0.0101
Mercury	-114198-06-15 10:48 J	-39989231.15	-39989231.05	-39989230.96	0.0283	0.0209
Mercury	-114198-09-12 00:14 J	-39989142.61	-39989142.49	-39989142.36	0.0284	0.0121
Mercury	-114198-12-09 13:55 J	-39989054.06	-39989053.92	-39989053.78	0.0285	0.0031
Mercury	-114197-03-07 03:07 J	-39988965.50	-39988965.37	-39988965.23	0.0286	0.0059
Mercury	-114197-06-03 16:34 J	-39988876.93	-39988876.81	-39988876.69	0.0287	0.0146
Mercury	-114197-08-31 05:31 J	-39988788.34	-39988788.27	-39988788.18	0.0289	0.0235
Venus	-114194-10-15 00:00 J	-39987648.52	-39987648.50	-39987648.45	0.0300	0.0296
Venus	-114193-05-31 22:19 J	-39987418.70	-39987418.57	-39987418.43	0.0301	0.0224
Venus	-114192-01-16 20:38 J	-39987188.81	-39987188.64	-39987188.46	0.0302	0.0146
Venus	-114192-09-03 18:58 J	-39986958.91	-39986958.71	-39986958.51	0.0302	0.0064
Venus	-114191-04-21 16:48 J	-39986729.00	-39986728.80	-39986728.60	0.0302	0.0019
Venus	-114191-12-07 13:55 J	-39986499.11	-39986498.92	-39986498.73	0.0301	0.0101
Venus	-114190-07-25 10:05 J	-39986269.24	-39986269.08	-39986268.91	0.0300	0.0179
Venus	-114189-03-11 05:17 J	-39986039.38	-39986039.28	-39986039.16	0.0298	0.0252
Earth	-114189-07-17 18:43 J	-39985910.84	-39985910.72	-39985910.59	0.0297	0.0253
Moon	-114189-07-17 22:19 J	-39985910.70	-39985910.57	-39985910.43	0.0297	0.0242 *
Mars	-114187-04-11 11:46 J	-39985278.29	-39985278.01	-39985277.73	0.0290	0.0108

Mercury -114185-10-17 02:38 J -39984358.47 -39984358.39 -39984358.29 0.0279 0.0233

Mercury -114184-01-13 21:22 J -39984269.75 -39984269.61 -39984269.46 0.0278 0.0135

Mercury -114184-04-12 16:19 J -39984180.99 -39984180.82 -39984180.65 0.0277 0.0037

Mercury -114184-07-10 11:17 J -39984092.19 -39984092.03 -39984091.86 0.0276 0.0062

Mercury -114184-10-07 06:43 J -39984003.36 -39984003.22 -39984003.08 0.0275 0.0161

Mercury -114183-01-04 01:55 J -39983914.46 -39983914.42 -39983914.36 0.0274 0.0260

Venus -114179-03-29 09:07 J -39982369.18 -39982369.12 -39982369.03 0.0261 0.0244

Venus -114179-11-13 12:00 J -39982140.14 -39982140.00 -39982139.85 0.0260 0.0192

Venus -114178-06-30 14:38 J -39981911.07 -39981910.89 -39981910.70 0.0260 0.0139

Venus -114177-02-14 17:31 J -39981681.98 -39981681.77 -39981681.56 0.0260 0.0084

Venus -114177-09-30 20:38 J -39981452.85 -39981452.64 -39981452.42 0.0260 0.0029

Venus -114176-05-18 00:00 J -39981223.71 -39981223.50 -39981223.28 0.0260 0.0029

Venus -114175-01-02 03:50 J -39980994.55 -39980994.34 -39980994.13 0.0260 0.0085

Venus -114175-08-19 07:55 J -39980765.34 -39980765.17 -39980764.97 0.0261 0.0142

Venus -114174-04-05 12:58 J -39980536.09 -39980535.96 -39980535.80 0.0262 0.0197

Venus -114174-11-20 19:12 J -39980306.76 -39980306.70 -39980306.63 0.0264 0.0250

Earth -114173-01-22 15:22 J -39980244.06 -39980243.86 -39980243.65 0.0264 0.0153

Moon -114173-01-22 18:43 J -39980243.92 -39980243.72 -39980243.49 0.0264 0.0140 \*

Mars -114171-03-13 02:53 J -39979463.65 -39979463.38 -39979463.10 0.0271 0.0067

Mercury -114169-11-01 12:14 J -39978499.07 -39978498.99 -39978498.91 0.0283 0.0235

Mercury -114168-01-29 01:55 J -39978410.54 -39978410.42 -39978410.30 0.0284 0.0147

Mercury -114168-04-27 15:22 J -39978322.00 -39978321.86 -39978321.72 0.0285 0.0058

Mercury -114168-07-25 04:48 J -39978233.44 -39978233.30 -39978233.16 0.0286 0.0031

Mercury -114168-10-21 18:00 J -39978144.87 -39978144.75 -39978144.62 0.0287 0.0120

Mercury -114167-01-18 07:26 J -39978056.29 -39978056.19 -39978056.10 0.0289 0.0208

Venus -114164-04-26 06:14 J -39976862.28 -39976862.24 -39976862.17 0.0301 0.0288

Venus -114164-12-12 04:48 J -39976632.44 -39976632.30 -39976632.15 0.0302 0.0214

Venus -114163-07-30 03:22 J -39976402.54 -39976402.36 -39976402.18 0.0302 0.0135

Venus -114162-03-17 01:41 J -39976172.63 -39976172.43 -39976172.23 0.0303 0.0053

Venus -114162-11-01 23:31 J -39975942.73 -39975942.52 -39975942.32 0.0302 0.0031

Venus -114161-06-18 20:24 J -39975712.83 -39975712.65 -39975712.45 0.0301 0.0114

Venus -114160-02-03 16:48 J -39975482.95 -39975482.80 -39975482.64 0.0300 0.0191

Moon -114160-07-11 22:19 J -39975324.78 -39975324.57 -39975324.35 0.0299 0.0126

Earth -114160-07-12 02:10 J -39975324.63 -39975324.41 -39975324.20 0.0299 0.0118 \*

Venus -114160-09-21 12:00 J -39975253.08 -39975253.00 -39975252.90 0.0298 0.0264

Mercury -114155-03-06 03:36 J -39973626.40 -39973626.35 -39973626.28 0.0279 0.0258

Mercury -114155-06-02 22:19 J -39973537.71 -39973537.57 -39973537.43 0.0278 0.0160

Mercury -114155-08-30 17:02 J -39973448.95 -39973448.79 -39973448.62 0.0277 0.0063

Mercury -114155-11-27 12:14 J -39973360.17 -39973359.99 -39973359.82 0.0276 0.0037

Mercury -114154-02-24 07:12 J -39973271.35 -39973271.20 -39973271.04 0.0275 0.0136

Mercury -114154-05-24 02:38 J -39973182.47 -39973182.39 -39973182.30 0.0274 0.0234

Venus -114150-10-09 15:22 J -39971582.94 -39971582.86 -39971582.76 0.0261 0.0236

Venus -114149-05-25 18:14 J -39971353.89 -39971353.74 -39971353.58 0.0260 0.0185

Venus -114148-01-09 20:53 J -39971124.81 -39971124.63 -39971124.43 0.0260 0.0131

Venus -114148-08-26 23:46 J -39970895.71 -39970895.51 -39970895.29 0.0260 0.0076

Venus -114147-04-13 02:53 J -39970666.60 -39970666.38 -39970666.16 0.0260 0.0020

Venus -114147-11-28 06:14 J -39970437.46 -39970437.24 -39970437.02 0.0260 0.0037

Venus -114146-07-15 10:05 J -39970208.29 -39970208.08 -39970207.88 0.0261 0.0093

Venus -114145-02-29 14:10 J -39969979.08 -39969978.91 -39969978.72 0.0262 0.0150

Venus -114145-10-15 19:26 J -39969749.81 -39969749.69 -39969749.54 0.0263 0.0205

Moon -114144-01-16 12:00 J -39969657.21 -39969657.00 -39969656.76 0.0264 0.0128

Earth -114144-01-16 16:19 J -39969657.05 -39969656.82 -39969656.59 0.0264 0.0111 \*

Venus -114144-06-02 01:55 J -39969520.47 -39969520.42 -39969520.38 0.0265 0.0258

Mars -114143-05-04 01:55 J -39969184.53 -39969184.42 -39969184.29 0.0267 0.0241

Mars -114141-04-30 01:41 J -39968457.53 -39968457.43 -39968457.31 0.0274 0.0253

Mercury -114139-03-21 14:38 J -39967766.95 -39967766.89 -39967766.83 0.0283 0.0256

Mercury -114139-06-18 04:19 J -39967678.43 -39967678.32 -39967678.20 0.0284 0.0168

Mercury -114139-09-14 18:00 J -39967589.89 -39967589.75 -39967589.62 0.0285 0.0079

Mercury -114139-12-12 07:26 J -39967501.33 -39967501.19 -39967501.05 0.0286 0.0010

Mercury -114138-03-10 20:38 J -39967412.77 -39967412.64 -39967412.50 0.0287 0.0099

Mercury -114138-06-07 09:50 J -39967324.19 -39967324.09 -39967323.98 0.0288 0.0187

Mercury -114138-09-03 23:02 J -39967235.58 -39967235.54 -39967235.50 0.0289 0.0275

Venus -114135-11-06 15:36 J -39966075.92 -39966075.85 -39966075.77 0.0300 0.0277

Venus -114134-06-24 13:55 J -39965846.06 -39965845.92 -39965845.76 0.0301 0.0203

Venus -114133-02-09 12:29 J -39965616.16 -39965615.98 -39965615.79 0.0302 0.0123

Venus -114133-09-26 10:48 J -39965386.25 -39965386.05 -39965385.85 0.0302 0.0040

Venus -114132-05-14 08:38 J -39965156.34 -39965156.14 -39965155.94 0.0302 0.0044

Venus -114132-12-30 05:46 J -39964926.45 -39964926.26 -39964926.08 0.0301 0.0126

Venus -114131-08-17 01:55 J -39964696.57 -39964696.42 -39964696.27 0.0300 0.0204

Venus -114130-04-03 21:07 J -39964466.69 -39964466.62 -39964466.54 0.0298 0.0275

Mars -114129-07-14 14:38 J -39963999.17 -39963998.89 -39963998.61 0.0293 0.0106

Mercury -114126-07-24 05:02 J -39962894.29 -39962894.29 -39962894.28 0.0279 0.0279

Mercury -114126-10-20 23:31 J -39962805.64 -39962805.52 -39962805.39 0.0278 0.0182

Mercury -114125-01-17 18:14 J -39962716.90 -39962716.74 -39962716.57 0.0277 0.0084

Mercury -114125-04-15 13:12 J -39962628.12 -39962627.95 -39962627.78 0.0276 0.0015

Mercury -114125-07-13 08:24 J -39962539.31 -39962539.15 -39962538.99 0.0275 0.0113

Mercury -114125-10-10 03:36 J -39962450.45 -39962450.35 -39962450.24 0.0274 0.0212

Venus -114120-04-20 20:38 J -39960796.73 -39960796.64 -39960796.53 0.0261 0.0229

Venus -114120-12-05 23:02 J -39960567.69 -39960567.54 -39960567.37 0.0260 0.0177

Venus -114119-07-23 01:41 J -39960338.62 -39960338.43 -39960338.23 0.0260 0.0123

Venus -114118-03-09 04:19 J -39960109.53 -39960109.32 -39960109.10 0.0259 0.0068

Venus -114118-10-24 07:26 J -39959880.41 -39959880.19 -39959879.97 0.0259 0.0011

Venus -114117-06-09 10:48 J -39959651.27 -39959651.05 -39959650.84 0.0260 0.0046

Venus -114116-01-24 14:24 J -39959422.10 -39959421.90 -39959421.70 0.0260 0.0103

Venus -114116-09-10 18:43 J -39959192.89 -39959192.72 -39959192.54 0.0261 0.0159

Venus -114115-04-28 00:00 J -39958963.63 -39958963.50 -39958963.38 0.0263 0.0214

Earth -114114-01-23 23:02 J -39958692.65 -39958692.54 -39958692.40 0.0264 0.0229

Moon -114114-01-24 00:29 J -39958692.63 -39958692.48 -39958692.32 0.0264 0.0214 \*

Mars -114113-06-19 20:10 J -39958179.92 -39958179.66 -39958179.38 0.0269 0.0085

Mercury -114110-11-05 05:31 J -39956946.37 -39956946.27 -39956946.17 0.0283 0.0196

Mercury -114109-02-01 19:12 J -39956857.83 -39956857.70 -39956857.57 0.0284 0.0108

Mercury -114109-04-30 08:38 J -39956769.28 -39956769.14 -39956769.00 0.0286 0.0019

Mercury -114109-07-27 22:05 J -39956680.72 -39956680.58 -39956680.45 0.0287 0.0069

Mercury -114109-10-24 11:17 J -39956592.14 -39956592.03 -39956591.91 0.0288 0.0158

Mercury -114108-01-21 00:29 J -39956503.55 -39956503.48 -39956503.41 0.0289 0.0246

Venus -114105-05-18 20:10 J -39955289.74 -39955289.66 -39955289.56 0.0301 0.0270

Venus -114104-01-03 18:43 J -39955059.87 -39955059.72 -39955059.56 0.0302 0.0194

Venus -114104-08-21 17:17 J -39954829.96 -39954829.78 -39954829.59 0.0303 0.0114

Venus -114103-04-08 15:50 J -39954600.05 -39954599.84 -39954599.64 0.0303 0.0030

Venus -114103-11-24 13:26 J -39954370.14 -39954369.94 -39954369.73 0.0302 0.0055

Venus -114102-07-12 10:34 J -39954140.24 -39954140.06 -39954139.88 0.0301 0.0137

Venus -114101-02-27 06:43 J -39953910.36 -39953910.22 -39953910.07 0.0300 0.0214

Moon -114101-07-13 11:02 J -39953773.27 -39953773.04 -39953772.81 0.0299 0.0018

Earth -114101-07-13 13:26 J -39953773.17 -39953772.94 -39953772.70 0.0299 0.0020 \*

Venus -114101-10-14 01:55 J -39953680.47 -39953680.42 -39953680.36 0.0298 0.0285

Mars -114099-09-05 22:19 J -39952988.83 -39952988.57 -39952988.29 0.0290 0.0132

Mercury -114096-03-08 23:31 J -39952073.62 -39952073.52 -39952073.40 0.0278 0.0211

Mercury -114096-06-05 18:14 J -39951984.89 -39951984.74 -39951984.58 0.0277 0.0113

Mercury -114096-09-02 13:12 J -39951896.12 -39951895.95 -39951895.78 0.0276 0.0015

Mercury -114096-11-30 08:10 J -39951807.32 -39951807.16 -39951806.99 0.0275 0.0085

Mercury -114095-02-27 03:36 J -39951718.48 -39951718.35 -39951718.22 0.0274 0.0183

Venus -114091-11-01 01:26 J -39950010.54 -39950010.44 -39950010.32 0.0261 0.0222

Venus -114090-06-18 04:05 J -39949781.49 -39949781.33 -39949781.16 0.0260 0.0170

Venus -114089-02-02 06:43 J -39949552.42 -39949552.22 -39949552.02 0.0260 0.0115

Venus -114089-09-18 09:36 J -39949323.31 -39949323.10 -39949322.89 0.0260 0.0059

Venus -114088-05-05 12:29 J -39949094.20 -39949093.98 -39949093.76 0.0260 0.0003

Venus -114088-12-20 15:36 J -39948865.06 -39948864.85 -39948864.63 0.0260 0.0055

Venus -114087-08-06 19:26 J -39948635.89 -39948635.69 -39948635.49 0.0261 0.0111

Venus -114086-03-23 23:46 J -39948406.68 -39948406.51 -39948406.34 0.0262 0.0167

Venus -114086-11-08 04:48 J -39948177.40 -39948177.30 -39948177.17 0.0263 0.0222

Moon -114085-01-18 20:24 J -39948105.89 -39948105.65 -39948105.41 0.0264 0.0054  
 Earth -114085-01-18 22:05 J -39948105.83 -39948105.58 -39948105.32 0.0264 0.0039 \*  
 Mars -114083-08-07 04:19 J -39947174.59 -39947174.32 -39947174.05 0.0272 0.0090  
 Mercury -114080-03-24 07:26 J -39946214.28 -39946214.19 -39946214.10 0.0283 0.0220  
 Mercury -114080-06-20 21:07 J -39946125.75 -39946125.62 -39946125.49 0.0284 0.0132  
 Mercury -114080-09-17 10:34 J -39946037.20 -39946037.06 -39946036.92 0.0285 0.0044  
 Mercury -114080-12-15 00:00 J -39945948.64 -39945948.50 -39945948.36 0.0286 0.0045  
 Mercury -114079-03-13 13:26 J -39945860.07 -39945859.94 -39945859.82 0.0287 0.0133  
 Mercury -114079-06-10 02:24 J -39945771.48 -39945771.40 -39945771.31 0.0288 0.0222  
 Venus -114076-11-29 03:36 J -39944503.45 -39944503.35 -39944503.24 0.0301 0.0260  
 Venus -114075-07-17 02:10 J -39944273.57 -39944273.41 -39944273.25 0.0302 0.0183  
 Venus -114074-03-04 00:43 J -39944043.66 -39944043.47 -39944043.28 0.0302 0.0101  
 Venus -114074-10-19 23:02 J -39943813.74 -39943813.54 -39943813.34 0.0302 0.0017  
 Venus -114073-06-05 20:53 J -39943583.83 -39943583.63 -39943583.43 0.0302 0.0068  
 Venus -114072-01-21 17:46 J -39943353.93 -39943353.76 -39943353.58 0.0301 0.0150  
 Venus -114072-09-08 13:55 J -39943124.04 -39943123.92 -39943123.78 0.0299 0.0227  
 Venus -114071-04-26 09:22 J -39942894.12 -39942894.11 -39942894.09 0.0298 0.0296  
 Mercury -114067-07-27 00:29 J -39941341.56 -39941341.48 -39941341.39 0.0279 0.0235  
 Mercury -114067-10-23 19:12 J -39941252.85 -39941252.70 -39941252.55 0.0278 0.0137  
 Mercury -114066-01-20 14:10 J -39941164.08 -39941163.91 -39941163.75 0.0277 0.0039  
 Mercury -114066-04-19 09:07 J -39941075.29 -39941075.12 -39941074.95 0.0276 0.0060  
 Mercury -114066-07-17 04:19 J -39940986.46 -39940986.32 -39940986.18 0.0275 0.0159  
 Mercury -114066-10-13 23:31 J -39940897.57 -39940897.52 -39940897.45 0.0274 0.0258  
 Venus -114061-05-13 06:29 J -39939224.36 -39939224.23 -39939224.11 0.0261 0.0215  
 Venus -114061-12-28 08:38 J -39938995.31 -39938995.14 -39938994.97 0.0260 0.0162  
 Venus -114060-08-14 11:02 J -39938766.24 -39938766.04 -39938765.84 0.0259 0.0107  
 Venus -114059-03-31 13:41 J -39938537.15 -39938536.93 -39938536.72 0.0259 0.0051  
 Venus -114059-11-15 16:19 J -39938308.04 -39938307.82 -39938307.60 0.0259 0.0007  
 Venus -114058-07-02 19:26 J -39938078.90 -39938078.69 -39938078.47 0.0260 0.0063  
 Venus -114057-02-16 23:02 J -39937849.73 -39937849.54 -39937849.34 0.0260 0.0120

Venus -114057-10-03 03:36 J -39937620.51 -39937620.35 -39937620.19 0.0261 0.0176  
 Venus -114056-05-20 08:38 J -39937391.24 -39937391.14 -39937391.03 0.0263 0.0231  
 Mars -114055-09-27 18:43 J -39936895.85 -39936895.72 -39936895.58 0.0266 0.0231  
 Mars -114053-09-23 14:38 J -39936168.96 -39936168.89 -39936168.79 0.0274 0.0262  
 Mercury -114051-08-11 08:10 J -39935482.22 -39935482.16 -39935482.09 0.0282 0.0251  
 Mercury -114051-11-07 21:50 J -39935393.70 -39935393.59 -39935393.47 0.0283 0.0163  
 Mercury -114050-02-04 11:31 J -39935305.16 -39935305.02 -39935304.88 0.0285 0.0075  
 Mercury -114050-05-04 00:58 J -39935216.60 -39935216.46 -39935216.32 0.0286 0.0014  
 Mercury -114050-07-31 14:24 J -39935128.03 -39935127.90 -39935127.77 0.0287 0.0102  
 Mercury -114050-10-28 03:36 J -39935039.46 -39935039.35 -39935039.25 0.0288 0.0190  
 Mercury -114049-01-24 16:34 J -39934950.84 -39934950.81 -39934950.77 0.0289 0.0278  
 Venus -114046-06-11 06:29 J -39933717.33 -39933717.23 -39933717.11 0.0301 0.0253  
 Venus -114045-01-27 05:17 J -39933487.44 -39933487.28 -39933487.11 0.0302 0.0175  
 Venus -114045-09-13 03:50 J -39933257.53 -39933257.34 -39933257.14 0.0303 0.0093  
 Venus -114044-05-01 02:24 J -39933027.60 -39933027.40 -39933027.20 0.0303 0.0008  
 Venus -114044-12-17 00:14 J -39932797.69 -39932797.49 -39932797.29 0.0302 0.0077  
 Venus -114043-08-03 21:22 J -39932567.79 -39932567.61 -39932567.44 0.0301 0.0159  
 Venus -114042-03-21 17:17 J -39932337.90 -39932337.78 -39932337.65 0.0300 0.0236  
 Moon -114042-07-15 19:12 J -39932221.91 -39932221.70 -39932221.47 0.0299 0.0073  
 Earth -114042-07-15 19:26 J -39932221.91 -39932221.69 -39932221.45 0.0299 0.0066 \*  
 Mars -114041-12-08 07:26 J -39931710.48 -39931710.19 -39931709.90 0.0293 0.0092  
 Mercury -114038-12-13 23:46 J -39930609.55 -39930609.51 -39930609.46 0.0279 0.0267  
 Mercury -114037-03-11 18:29 J -39930520.86 -39930520.73 -39930520.59 0.0278 0.0170  
 Mercury -114037-06-08 13:12 J -39930432.11 -39930431.95 -39930431.78 0.0277 0.0072  
 Mercury -114037-09-05 08:24 J -39930343.33 -39930343.15 -39930342.98 0.0276 0.0027  
 Mercury -114037-12-03 03:22 J -39930254.51 -39930254.36 -39930254.20 0.0275 0.0126  
 Mercury -114036-03-01 22:48 J -39930165.64 -39930165.55 -39930165.45 0.0274 0.0225  
 Venus -114032-04-08 07:12 J -39928667.22 -39928667.20 -39928667.17 0.0261 0.0260  
 Venus -114032-11-23 09:36 J -39928438.22 -39928438.10 -39928437.96 0.0260 0.0209  
 Venus -114031-07-10 12:14 J -39928209.16 -39928208.99 -39928208.81 0.0260 0.0155

Venus -114030-02-24 14:38 J -39927980.09 -39927979.89 -39927979.69 0.0259 0.0100  
 Venus -114030-10-11 17:17 J -39927750.99 -39927750.78 -39927750.56 0.0259 0.0044  
 Venus -114029-05-27 20:10 J -39927521.88 -39927521.66 -39927521.44 0.0260 0.0014  
 Venus -114028-01-11 23:17 J -39927292.74 -39927292.53 -39927292.31 0.0260 0.0071  
 Venus -114028-08-29 02:53 J -39927063.56 -39927063.38 -39927063.18 0.0261 0.0128  
 Venus -114027-04-15 07:12 J -39926834.34 -39926834.20 -39926834.03 0.0262 0.0184  
 Venus -114027-11-30 12:29 J -39926605.06 -39926604.98 -39926604.88 0.0263 0.0239  
 Earth -114026-01-20 01:12 J -39926554.70 -39926554.45 -39926554.20 0.0264 0.0026  
 Moon -114026-01-20 02:38 J -39926554.64 -39926554.39 -39926554.15 0.0264 0.0014 \*  
 Mars -114025-11-13 13:41 J -39925891.20 -39925890.93 -39925890.66 0.0269 0.0068  
 Mercury -114022-12-29 09:36 J -39924750.11 -39924750.10 -39924750.07 0.0282 0.0277  
 Mercury -114021-03-26 23:31 J -39924661.62 -39924661.52 -39924661.41 0.0283 0.0189  
 Mercury -114021-06-23 13:12 J -39924573.08 -39924572.95 -39924572.82 0.0284 0.0101  
 Mercury -114021-09-20 02:38 J -39924484.53 -39924484.39 -39924484.25 0.0285 0.0013  
 Mercury -114021-12-17 16:05 J -39924395.97 -39924395.83 -39924395.70 0.0287 0.0076  
 Mercury -114020-03-16 05:17 J -39924307.39 -39924307.28 -39924307.17 0.0288 0.0164  
 Mercury -114020-06-12 18:29 J -39924218.80 -39924218.73 -39924218.67 0.0289 0.0252  
 Venus -114017-12-21 12:58 J -39922931.07 -39922930.96 -39922930.84 0.0301 0.0243  
 Venus -114016-08-08 11:31 J -39922701.18 -39922701.02 -39922700.84 0.0302 0.0164  
 Venus -114015-03-26 10:19 J -39922471.27 -39922471.07 -39922470.87 0.0302 0.0081  
 Venus -114015-11-11 08:38 J -39922241.35 -39922241.14 -39922240.94 0.0302 0.0008  
 Venus -114014-06-29 06:14 J -39922011.43 -39922011.24 -39922011.05 0.0302 0.0089  
 Venus -114013-02-14 03:22 J -39921781.53 -39921781.36 -39921781.20 0.0301 0.0171  
 Venus -114013-09-30 23:17 J -39921551.63 -39921551.53 -39921551.41 0.0299 0.0247  
 Mars -114010-01-30 18:58 J -39920699.95 -39920699.71 -39920699.44 0.0290 0.0152  
 Mercury -114008-07-29 18:58 J -39919788.83 -39919788.71 -39919788.59 0.0279 0.0196  
 Mercury -114008-10-26 13:41 J -39919700.09 -39919699.93 -39919699.77 0.0278 0.0098  
 Mercury -114007-01-23 08:38 J -39919611.31 -39919611.14 -39919610.97 0.0277 0.0002  
 Mercury -114007-04-22 03:36 J -39919522.51 -39919522.35 -39919522.18 0.0276 0.0100  
 Mercury -114007-07-19 23:02 J -39919433.66 -39919433.54 -39919433.42 0.0275 0.0198



Venus	-114003-10-19 11:17 J	-39917881.07	-39917881.03	-39917880.97	0.0261	0.0253
Venus	-114002-06-05 13:41 J	-39917652.06	-39917651.93	-39917651.79	0.0260	0.0202
Venus	-114001-01-20 15:50 J	-39917423.01	-39917422.84	-39917422.65	0.0260	0.0148
Venus	-114001-09-05 18:29 J	-39917193.93	-39917193.73	-39917193.52	0.0259	0.0092

# 114TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 114th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-114000-04-22 20:53 J	-39916964.85	-39916964.63	-39916964.41	0.0259	0.0035		
Venus	-114000-12-07 23:31 J	-39916735.74	-39916735.52	-39916735.30	0.0259	0.0023		
Venus	-113999-07-25 02:38 J	-39916506.60	-39916506.39	-39916506.18	0.0260	0.0080		
Venus	-113998-03-11 06:00 J	-39916277.43	-39916277.25	-39916277.05	0.0260	0.0137		
Venus	-113998-10-26 10:34 J	-39916048.20	-39916048.06	-39916047.91	0.0261	0.0193		
Earth	-113997-01-14 21:22 J	-39915967.68	-39915967.61	-39915967.53	0.0262	0.0250		
Moon	-113997-01-14 21:07 J	-39915967.67	-39915967.62	-39915967.55	0.0262	0.0255 *		
Venus	-113997-06-11 15:36 J	-39915818.91	-39915818.85	-39915818.77	0.0263	0.0248		
Mars	-113995-12-31 11:02 J	-39914886.29	-39914886.04	-39914885.76	0.0271	0.0094		
Mercury	-113992-08-14 00:00 J	-39913929.58	-39913929.50	-39913929.41	0.0282	0.0222		
Mercury	-113992-11-10 13:41 J	-39913841.05	-39913840.93	-39913840.80	0.0283	0.0134		
Mercury	-113991-02-07 03:07 J	-39913752.51	-39913752.37	-39913752.23	0.0285	0.0047		

Mercury -113991-05-06 16:34 J -39913663.95 -39913663.81 -39913663.67 0.0286 0.0042

Mercury -113991-08-03 05:46 J -39913575.38 -39913575.26 -39913575.13 0.0287 0.0130

Mercury -113991-10-30 18:58 J -39913486.80 -39913486.71 -39913486.62 0.0288 0.0218

Venus -113987-07-03 13:55 J -39912145.05 -39912144.92 -39912144.80 0.0302 0.0238

Venus -113986-02-18 12:43 J -39911915.15 -39911914.97 -39911914.80 0.0303 0.0158

Venus -113986-10-06 11:17 J -39911685.23 -39911685.03 -39911684.83 0.0303 0.0074

Venus -113985-05-23 09:36 J -39911455.30 -39911455.10 -39911454.89 0.0303 0.0013

Venus -113984-01-08 07:26 J -39911225.38 -39911225.19 -39911225.00 0.0302 0.0097

Venus -113984-08-26 04:19 J -39910995.47 -39910995.32 -39910995.15 0.0301 0.0180

Venus -113983-04-13 00:29 J -39910765.57 -39910765.48 -39910765.36 0.0300 0.0256

Earth -113983-07-16 20:10 J -39910670.87 -39910670.66 -39910670.45 0.0299 0.0135

Moon -113983-07-16 22:34 J -39910670.75 -39910670.56 -39910670.35 0.0299 0.0147 \*

Mercury -113979-12-16 17:17 J -39909056.86 -39909056.78 -39909056.68 0.0279 0.0233

Mercury -113978-03-15 12:14 J -39908968.14 -39908967.99 -39908967.84 0.0278 0.0135

Mercury -113978-06-12 06:58 J -39908879.38 -39908879.21 -39908879.04 0.0277 0.0037

Mercury -113978-09-09 02:10 J -39908790.58 -39908790.41 -39908790.24 0.0276 0.0062

Mercury -113978-12-06 21:22 J -39908701.75 -39908701.61 -39908701.46 0.0275 0.0161

Mercury -113977-03-04 17:02 J -39908612.85 -39908612.79 -39908612.74 0.0274 0.0260

Venus -113973-04-30 13:26 J -39907094.99 -39907094.94 -39907094.86 0.0261 0.0248

Venus -113973-12-15 16:05 J -39906865.97 -39906865.83 -39906865.68 0.0260 0.0195

Venus -113972-08-01 18:29 J -39906636.91 -39906636.73 -39906636.54 0.0260 0.0141

Venus -113971-03-18 20:53 J -39906407.84 -39906407.63 -39906407.42 0.0259 0.0085

Venus -113971-11-02 23:31 J -39906178.74 -39906178.52 -39906178.30 0.0259 0.0028

Venus -113970-06-20 02:10 J -39905949.63 -39905949.41 -39905949.19 0.0259 0.0030

Venus -113969-02-04 05:17 J -39905720.49 -39905720.28 -39905720.07 0.0260 0.0087

Venus -113969-09-20 08:53 J -39905491.30 -39905491.13 -39905490.94 0.0261 0.0145

Venus -113968-05-07 13:12 J -39905262.08 -39905261.95 -39905261.80 0.0262 0.0201

Venus -113968-12-22 18:29 J -39905032.78 -39905032.73 -39905032.68 0.0263 0.0255

Earth -113967-01-21 01:12 J -39905003.69 -39905003.45 -39905003.20 0.0263 0.0084

Moon -113967-01-21 04:34 J -39905003.54 -39905003.31 -39905003.06 0.0263 0.0075 \*

Mars -113966-02-21 04:05 J -39904607.47 -39904607.33 -39904607.16 0.0266 0.0220  
 Mars -113964-02-16 21:50 J -39903880.61 -39903880.59 -39903880.55 0.0274 0.0272  
 Mercury -113962-01-01 01:12 J -39903197.51 -39903197.45 -39903197.39 0.0282 0.0250  
 Mercury -113962-03-30 14:53 J -39903109.00 -39903108.88 -39903108.76 0.0283 0.0163  
 Mercury -113962-06-27 04:19 J -39903020.45 -39903020.32 -39903020.18 0.0284 0.0075  
 Mercury -113962-09-23 17:46 J -39902931.90 -39902931.76 -39902931.61 0.0286 0.0016  
 Mercury -113962-12-21 07:12 J -39902843.33 -39902843.20 -39902843.07 0.0287 0.0101  
 Mercury -113961-03-18 20:24 J -39902754.75 -39902754.65 -39902754.55 0.0288 0.0189  
 Mercury -113961-06-15 09:36 J -39902666.14 -39902666.10 -39902666.07 0.0289 0.0276  
 Venus -113957-01-13 18:43 J -39901358.84 -39901358.72 -39901358.57 0.0301 0.0228  
 Venus -113957-08-30 17:31 J -39901128.94 -39901128.77 -39901128.58 0.0302 0.0147  
 Venus -113956-04-17 16:19 J -39900899.02 -39900898.82 -39900898.62 0.0302 0.0062  
 Venus -113956-12-03 14:38 J -39900669.09 -39900668.89 -39900668.69 0.0302 0.0024  
 Venus -113955-07-21 12:14 J -39900439.18 -39900438.99 -39900438.80 0.0302 0.0109  
 Venus -113954-03-08 09:22 J -39900209.27 -39900209.11 -39900208.95 0.0301 0.0191  
 Moon -113954-07-10 20:10 J -39900084.80 -39900084.66 -39900084.50 0.0300 0.0236  
 Earth -113954-07-10 23:02 J -39900084.67 -39900084.54 -39900084.41 0.0300 0.0250 \*  
 Venus -113954-10-24 05:31 J -39899979.36 -39899979.27 -39899979.18 0.0299 0.0266  
 Mars -113952-05-03 10:19 J -39899422.36 -39899422.07 -39899421.78 0.0294 0.0085  
 Mercury -113949-05-04 17:17 J -39898324.83 -39898324.78 -39898324.71 0.0280 0.0262  
 Mercury -113949-08-01 12:00 J -39898236.13 -39898236.00 -39898235.86 0.0279 0.0164  
 Mercury -113949-10-29 06:58 J -39898147.38 -39898147.21 -39898147.04 0.0278 0.0066  
 Mercury -113948-01-26 01:55 J -39898058.59 -39898058.42 -39898058.25 0.0277 0.0034  
 Mercury -113948-04-24 21:07 J -39897969.77 -39897969.62 -39897969.46 0.0276 0.0133  
 Mercury -113948-07-22 16:34 J -39897880.90 -39897880.81 -39897880.71 0.0275 0.0232  
 Venus -113944-11-10 16:48 J -39896308.86 -39896308.80 -39896308.70 0.0261 0.0243  
 Venus -113943-06-27 19:12 J -39896079.84 -39896079.70 -39896079.54 0.0260 0.0189  
 Venus -113942-02-11 21:36 J -39895850.78 -39895850.60 -39895850.41 0.0259 0.0134  
 Venus -113942-09-29 00:00 J -39895621.71 -39895621.50 -39895621.29 0.0259 0.0077  
 Venus -113941-05-15 02:24 J -39895392.62 -39895392.40 -39895392.18 0.0259 0.0020

Venus -113941-12-30 05:02 J -39895163.51 -39895163.29 -39895163.07 0.0259 0.0038  
 Venus -113940-08-16 07:55 J -39894934.37 -39894934.17 -39894933.96 0.0260 0.0096  
 Venus -113939-04-02 11:31 J -39894705.19 -39894705.02 -39894704.84 0.0260 0.0153  
 Venus -113939-11-17 15:50 J -39894475.96 -39894475.84 -39894475.70 0.0261 0.0209  
 Moon -113938-01-15 17:46 J -39894416.92 -39894416.76 -39894416.58 0.0262 0.0196  
 Earth -113938-01-15 20:38 J -39894416.79 -39894416.64 -39894416.45 0.0262 0.0194 \*  
 Mars -113936-04-08 14:53 J -39893603.15 -39893602.88 -39893602.60 0.0268 0.0068  
 Mercury -113933-08-16 15:22 J -39892376.96 -39892376.86 -39892376.76 0.0282 0.0196  
 Mercury -113933-11-13 04:48 J -39892288.43 -39892288.30 -39892288.17 0.0283 0.0109  
 Mercury -113932-02-09 18:14 J -39892199.88 -39892199.74 -39892199.60 0.0285 0.0022  
 Mercury -113932-05-09 07:41 J -39892111.32 -39892111.18 -39892111.04 0.0286 0.0066  
 Mercury -113932-08-05 20:53 J -39892022.75 -39892022.63 -39892022.51 0.0287 0.0154  
 Mercury -113932-11-02 09:50 J -39891934.16 -39891934.09 -39891934.01 0.0288 0.0242  
 Venus -113929-12-07 20:24 J -39890802.66 -39890802.65 -39890802.62 0.0300 0.0299  
 Venus -113928-07-25 19:12 J -39890572.84 -39890572.70 -39890572.56 0.0302 0.0223  
 Venus -113927-03-12 17:46 J -39890342.93 -39890342.76 -39890342.57 0.0303 0.0142  
 Venus -113927-10-28 16:34 J -39890113.01 -39890112.81 -39890112.61 0.0303 0.0056  
 Venus -113926-06-15 14:53 J -39889883.08 -39889882.88 -39889882.68 0.0303 0.0031  
 Venus -113925-01-31 12:29 J -39889653.16 -39889652.98 -39889652.79 0.0302 0.0117  
 Venus -113925-09-17 09:36 J -39889423.25 -39889423.10 -39889422.94 0.0301 0.0198  
 Venus -113924-05-05 05:46 J -39889193.33 -39889193.26 -39889193.17 0.0299 0.0274  
 Earth -113924-07-17 17:02 J -39889119.96 -39889119.79 -39889119.60 0.0299 0.0195  
 Moon -113924-07-17 20:38 J -39889119.80 -39889119.64 -39889119.46 0.0299 0.0210 \*  
 Mars -113922-06-25 03:36 J -39888412.61 -39888412.35 -39888412.09 0.0291 0.0148  
 Mercury -113920-12-19 10:05 J -39887504.19 -39887504.08 -39887503.96 0.0279 0.0204  
 Mercury -113919-03-18 04:48 J -39887415.45 -39887415.30 -39887415.14 0.0278 0.0106  
 Mercury -113919-06-14 23:46 J -39887326.68 -39887326.51 -39887326.33 0.0277 0.0009  
 Mercury -113919-09-11 18:58 J -39887237.87 -39887237.71 -39887237.54 0.0276 0.0093  
 Mercury -113919-12-09 14:24 J -39887149.02 -39887148.90 -39887148.77 0.0275 0.0192  
 Venus -113914-05-23 18:00 J -39885522.83 -39885522.75 -39885522.65 0.0261 0.0237

Venus -113913-01-07 20:38 J -39885293.79 -39885293.64 -39885293.48 0.0260 0.0183  
 Venus -113913-08-23 23:02 J -39885064.73 -39885064.54 -39885064.35 0.0259 0.0128  
 Venus -113912-04-10 01:26 J -39884835.65 -39884835.44 -39884835.23 0.0259 0.0071  
 Venus -113912-11-25 03:50 J -39884606.56 -39884606.34 -39884606.11 0.0259 0.0014  
 Venus -113911-07-12 06:43 J -39884377.44 -39884377.22 -39884377.01 0.0259 0.0045  
 Venus -113910-02-26 09:50 J -39884148.29 -39884148.09 -39884147.89 0.0260 0.0103  
 Venus -113910-10-13 13:26 J -39883919.10 -39883918.94 -39883918.76 0.0261 0.0161  
 Venus -113909-05-29 18:00 J -39883689.87 -39883689.75 -39883689.63 0.0262 0.0216  
 Earth -113908-01-21 23:17 J -39883452.75 -39883452.53 -39883452.31 0.0263 0.0137  
 Moon -113908-01-22 02:38 J -39883452.61 -39883452.39 -39883452.17 0.0263 0.0132 \*  
 Mars -113906-05-26 11:17 J -39882598.28 -39882598.03 -39882597.76 0.0271 0.0101  
 Mercury -113903-01-03 16:05 J -39881644.91 -39881644.83 -39881644.74 0.0282 0.0226  
 Mercury -113903-04-02 05:46 J -39881556.38 -39881556.26 -39881556.13 0.0283 0.0139  
 Mercury -113903-06-29 19:12 J -39881467.83 -39881467.70 -39881467.56 0.0284 0.0052  
 Mercury -113903-09-26 08:38 J -39881379.28 -39881379.14 -39881379.00 0.0285 0.0036  
 Mercury -113903-12-23 21:50 J -39881290.71 -39881290.59 -39881290.46 0.0287 0.0124  
 Mercury -113902-03-22 11:02 J -39881202.13 -39881202.04 -39881201.94 0.0288 0.0211  
 Venus -113899-06-20 00:29 J -39880016.53 -39880016.48 -39880016.43 0.0300 0.0290  
 Venus -113898-02-04 23:02 J -39879786.68 -39879786.54 -39879786.39 0.0301 0.0214  
 Venus -113898-09-22 21:36 J -39879556.77 -39879556.60 -39879556.41 0.0302 0.0132  
 Venus -113897-05-09 20:24 J -39879326.85 -39879326.65 -39879326.45 0.0302 0.0045  
 Venus -113897-12-25 18:29 J -39879096.93 -39879096.73 -39879096.52 0.0302 0.0043  
 Venus -113896-08-12 16:05 J -39878867.01 -39878866.83 -39878866.64 0.0302 0.0128  
 Venus -113895-03-30 12:58 J -39878637.09 -39878636.96 -39878636.80 0.0300 0.0210  
 Moon -113895-07-11 13:55 J -39878534.10 -39878533.92 -39878533.73 0.0300 0.0182  
 Earth -113895-07-11 17:17 J -39878533.94 -39878533.78 -39878533.59 0.0300 0.0197 \*  
 Venus -113895-11-15 09:07 J -39878407.17 -39878407.12 -39878407.05 0.0299 0.0284  
 Mercury -113890-05-08 09:36 J -39876772.19 -39876772.10 -39876772.01 0.0280 0.0235  
 Mercury -113890-08-05 04:19 J -39876683.47 -39876683.32 -39876683.17 0.0279 0.0137  
 Mercury -113890-11-01 23:17 J -39876594.70 -39876594.53 -39876594.36 0.0278 0.0039

Mercury -113889-01-29 18:14 J -39876505.90 -39876505.74 -39876505.57 0.0277 0.0061

Mercury -113889-04-27 13:41 J -39876417.07 -39876416.93 -39876416.79 0.0276 0.0160

Mercury -113889-07-25 09:07 J -39876328.17 -39876328.12 -39876328.06 0.0275 0.0260

Venus -113885-12-02 21:07 J -39874736.71 -39874736.62 -39874736.51 0.0261 0.0232

Venus -113884-07-19 23:31 J -39874507.67 -39874507.52 -39874507.36 0.0260 0.0177

Venus -113883-03-06 01:41 J -39874278.62 -39874278.43 -39874278.23 0.0259 0.0122

Venus -113883-10-21 04:05 J -39874049.54 -39874049.33 -39874049.11 0.0259 0.0064

Venus -113882-06-07 06:43 J -39873820.44 -39873820.22 -39873820.00 0.0259 0.0007

Venus -113881-01-22 09:07 J -39873591.33 -39873591.12 -39873590.90 0.0259 0.0054

Venus -113881-09-07 12:14 J -39873362.18 -39873361.99 -39873361.79 0.0260 0.0112

Venus -113880-04-24 16:05 J -39873133.00 -39873132.83 -39873132.67 0.0260 0.0169

Venus -113880-12-09 19:55 J -39872903.77 -39872903.67 -39872903.55 0.0261 0.0226

Moon -113879-01-16 14:53 J -39872866.09 -39872865.88 -39872865.66 0.0262 0.0140

Earth -113879-01-16 18:29 J -39872865.93 -39872865.73 -39872865.50 0.0262 0.0141 \*

Mars -113878-07-17 03:50 J -39872319.48 -39872319.34 -39872319.17 0.0265 0.0220

Mars -113876-07-12 14:53 J -39871592.92 -39871592.88 -39871592.80 0.0273 0.0266

Mercury -113874-05-23 16:34 J -39870912.86 -39870912.81 -39870912.76 0.0281 0.0260

Mercury -113874-08-20 06:14 J -39870824.36 -39870824.24 -39870824.13 0.0282 0.0173

Mercury -113874-11-16 19:41 J -39870735.82 -39870735.68 -39870735.55 0.0283 0.0086

Mercury -113873-02-13 09:07 J -39870647.26 -39870647.12 -39870646.98 0.0284 0.0005

Mercury -113873-05-11 22:19 J -39870558.70 -39870558.57 -39870558.44 0.0286 0.0088

Mercury -113873-08-08 11:31 J -39870470.13 -39870470.02 -39870469.91 0.0287 0.0175

Mercury -113873-11-05 00:29 J -39870381.53 -39870381.48 -39870381.42 0.0288 0.0262

Venus -113870-12-31 00:00 J -39869230.55 -39869230.50 -39869230.43 0.0300 0.0286

Venus -113869-08-16 22:34 J -39869000.71 -39869000.56 -39869000.41 0.0302 0.0209

Venus -113868-04-03 21:22 J -39868770.80 -39868770.61 -39868770.43 0.0303 0.0126

Venus -113868-11-19 19:41 J -39868540.88 -39868540.68 -39868540.47 0.0303 0.0040

Venus -113867-07-07 18:00 J -39868310.95 -39868310.75 -39868310.55 0.0303 0.0049

Venus -113866-02-22 15:36 J -39868081.03 -39868080.85 -39868080.66 0.0302 0.0135

Venus -113866-10-10 12:29 J -39867851.11 -39867850.98 -39867850.83 0.0301 0.0216

Venus -113865-05-27 08:53 J -39867621.18 -39867621.13 -39867621.09 0.0299 0.0291  
 Earth -113865-07-18 10:19 J -39867569.19 -39867569.07 -39867568.92 0.0299 0.0246  
 Moon -113865-07-18 11:31 J -39867569.13 -39867569.02 -39867568.89 0.0299 0.0259 \*  
 Mars -113864-09-25 04:19 J -39867135.61 -39867135.32 -39867135.03 0.0294 0.0095  
 Mercury -113861-09-24 07:12 J -39866040.22 -39866040.20 -39866040.17 0.0280 0.0277  
 Mercury -113861-12-22 01:41 J -39865951.55 -39865951.43 -39865951.29 0.0279 0.0179  
 Mercury -113860-03-20 20:38 J -39865862.80 -39865862.64 -39865862.47 0.0278 0.0081  
 Mercury -113860-06-17 15:50 J -39865774.01 -39865773.84 -39865773.67 0.0277 0.0019  
 Mercury -113860-09-14 11:02 J -39865685.20 -39865685.04 -39865684.88 0.0276 0.0118  
 Mercury -113860-12-12 06:29 J -39865596.33 -39865596.23 -39865596.12 0.0275 0.0218  
 Venus -113855-06-14 21:22 J -39863950.72 -39863950.61 -39863950.50 0.0261 0.0226  
 Venus -113854-01-29 23:31 J -39863721.67 -39863721.52 -39863721.34 0.0260 0.0172  
 Venus -113854-09-16 02:10 J -39863492.59 -39863492.41 -39863492.20 0.0259 0.0116  
 Venus -113853-05-02 04:48 J -39863263.51 -39863263.30 -39863263.08 0.0259 0.0057  
 Venus -113853-12-17 07:26 J -39863034.41 -39863034.19 -39863033.97 0.0259 0.0003  
 Venus -113852-08-03 10:05 J -39862805.29 -39862805.08 -39862804.86 0.0259 0.0060  
 Venus -113851-03-20 13:12 J -39862576.14 -39862575.95 -39862575.75 0.0260 0.0119  
 Venus -113851-11-04 17:02 J -39862346.95 -39862346.79 -39862346.62 0.0261 0.0176  
 Venus -113850-06-21 21:22 J -39862117.70 -39862117.61 -39862117.50 0.0262 0.0232  
 Earth -113849-01-23 19:26 J -39861901.86 -39861901.69 -39861901.50 0.0263 0.0187  
 Moon -113849-01-23 20:24 J -39861901.84 -39861901.65 -39861901.46 0.0263 0.0183 \*  
 Mars -113848-09-01 12:43 J -39861315.25 -39861314.97 -39861314.70 0.0268 0.0063  
 Mercury -113844-01-06 06:58 J -39860092.31 -39860092.21 -39860092.11 0.0282 0.0204  
 Mercury -113844-04-04 20:24 J -39860003.78 -39860003.65 -39860003.52 0.0283 0.0117  
 Mercury -113844-07-02 09:50 J -39859915.23 -39859915.09 -39859914.95 0.0284 0.0031  
 Mercury -113844-09-28 23:17 J -39859826.67 -39859826.53 -39859826.39 0.0285 0.0058  
 Mercury -113844-12-26 12:29 J -39859738.10 -39859737.98 -39859737.86 0.0287 0.0145  
 Mercury -113843-03-25 01:26 J -39859649.51 -39859649.44 -39859649.35 0.0288 0.0232  
 Venus -113840-07-12 03:36 J -39858444.42 -39858444.35 -39858444.27 0.0300 0.0278  
 Venus -113839-02-27 02:10 J -39858214.55 -39858214.41 -39858214.25 0.0301 0.0200

Venus -113839-10-15 00:58 J -39857984.65 -39857984.46 -39857984.27 0.0302 0.0115  
 Venus -113838-06-01 23:31 J -39857754.72 -39857754.52 -39857754.32 0.0302 0.0027  
 Venus -113837-01-17 21:36 J -39857524.80 -39857524.60 -39857524.40 0.0302 0.0060  
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 Venus -113836-04-21 16:05 J -39857064.96 -39857064.83 -39857064.70 0.0300 0.0227  
 Moon -113836-07-12 09:36 J -39856983.30 -39856983.10 -39856982.89 0.0300 0.0131  
 Earth -113836-07-12 10:48 J -39856983.25 -39856983.05 -39856982.84 0.0300 0.0146 \*  
 Mars -113834-11-17 10:34 J -39856125.32 -39856125.06 -39856124.79 0.0291 0.0141  
 Mercury -113831-05-11 00:58 J -39855219.56 -39855219.46 -39855219.34 0.0280 0.0212  
 Mercury -113831-08-07 19:55 J -39855130.82 -39855130.67 -39855130.51 0.0279 0.0113  
 Mercury -113831-11-04 15:07 J -39855042.05 -39855041.87 -39855041.70 0.0278 0.0015  
 Mercury -113830-02-01 10:19 J -39854953.24 -39854953.07 -39854952.91 0.0277 0.0086  
 Mercury -113830-05-01 05:31 J -39854864.39 -39854864.27 -39854864.14 0.0276 0.0186  
 Venus -113826-12-26 00:14 J -39853164.60 -39853164.49 -39853164.37 0.0261 0.0221  
 Venus -113825-08-11 02:38 J -39852935.55 -39852935.39 -39852935.21 0.0260 0.0166  
 Venus -113824-03-28 05:02 J -39852706.49 -39852706.29 -39852706.09 0.0260 0.0109  
 Venus -113824-11-12 07:26 J -39852477.41 -39852477.19 -39852476.97 0.0259 0.0050  
 Venus -113823-06-29 09:50 J -39852248.31 -39852248.09 -39852247.87 0.0259 0.0009  
 Venus -113822-02-13 12:29 J -39852019.19 -39852018.98 -39852018.76 0.0259 0.0068  
 Venus -113822-09-30 15:50 J -39851790.03 -39851789.84 -39851789.64 0.0260 0.0127  
 Venus -113821-05-16 19:26 J -39851560.84 -39851560.69 -39851560.53 0.0261 0.0185  
 Venus -113821-12-31 23:46 J -39851331.59 -39851331.51 -39851331.42 0.0262 0.0241  
 Moon -113820-01-17 14:24 J -39851315.13 -39851314.90 -39851314.67 0.0262 0.0087  
 Earth -113820-01-17 15:36 J -39851315.09 -39851314.85 -39851314.61 0.0262 0.0089 \*  
 Mars -113818-10-19 06:58 J -39850310.47 -39850310.21 -39850309.93 0.0270 0.0095  
 Mercury -113815-05-26 07:26 J -39849360.26 -39849360.19 -39849360.11 0.0281 0.0237  
 Mercury -113815-08-22 20:53 J -39849271.74 -39849271.63 -39849271.50 0.0282 0.0151  
 Mercury -113815-11-19 10:34 J -39849183.20 -39849183.06 -39849182.93 0.0283 0.0064  
 Mercury -113814-02-15 23:46 J -39849094.65 -39849094.51 -39849094.37 0.0284 0.0023  
 Mercury -113814-05-15 12:58 J -39849006.09 -39849005.96 -39849005.83 0.0286 0.0110



Mercury -113814-08-12 02:10 J -39848917.51 -39848917.41 -39848917.31 0.0287 0.0196

Mercury -113814-11-08 15:07 J -39848828.89 -39848828.87 -39848828.84 0.0288 0.0283

Venus -113810-01-22 03:22 J -39847658.43 -39847658.36 -39847658.27 0.0300 0.0275

Venus -113810-09-09 01:55 J -39847428.58 -39847428.42 -39847428.27 0.0302 0.0195

Venus -113809-04-26 00:14 J -39847198.67 -39847198.49 -39847198.29 0.0302 0.0111

Venus -113809-12-11 22:48 J -39846968.76 -39846968.55 -39846968.35 0.0303 0.0022

Venus -113808-07-29 20:53 J -39846738.83 -39846738.63 -39846738.43 0.0303 0.0066

Venus -113807-03-16 18:14 J -39846508.91 -39846508.74 -39846508.56 0.0302 0.0152

Venus -113807-11-01 14:53 J -39846278.99 -39846278.88 -39846278.74 0.0301 0.0234

Earth -113806-07-20 02:53 J -39846018.40 -39846018.38 -39846018.32 0.0299 0.0294

Mercury -113802-09-27 22:19 J -39844487.63 -39844487.57 -39844487.49 0.0281 0.0255

Mercury -113802-12-25 17:02 J -39844398.92 -39844398.79 -39844398.64 0.0279 0.0157

Mercury -113801-03-23 12:14 J -39844310.16 -39844309.99 -39844309.82 0.0278 0.0057

Mercury -113801-06-20 07:26 J -39844221.36 -39844221.19 -39844221.02 0.0277 0.0043

Mercury -113801-09-17 02:38 J -39844132.54 -39844132.39 -39844132.24 0.0276 0.0142

Mercury -113801-12-14 22:05 J -39844043.65 -39844043.58 -39844043.49 0.0275 0.0242

Venus -113796-07-07 00:00 J -39842378.62 -39842378.50 -39842378.38 0.0261 0.0216

Venus -113795-02-21 02:38 J -39842149.56 -39842149.39 -39842149.22 0.0260 0.0160

Venus -113795-10-08 05:17 J -39841920.48 -39841920.28 -39841920.08 0.0259 0.0103

Venus -113794-05-25 07:41 J -39841691.39 -39841691.18 -39841690.96 0.0259 0.0044

Venus -113793-01-09 10:34 J -39841462.28 -39841462.06 -39841461.84 0.0259 0.0016

Venus -113793-08-25 13:26 J -39841233.15 -39841232.94 -39841232.73 0.0259 0.0075

Venus -113792-04-11 16:34 J -39841003.99 -39841003.81 -39841003.62 0.0260 0.0134

Venus -113792-11-26 20:10 J -39840774.79 -39840774.66 -39840774.50 0.0261 0.0192

Venus -113791-07-14 00:58 J -39840545.53 -39840545.46 -39840545.39 0.0262 0.0247

Moon -113790-01-24 13:26 J -39840351.06 -39840350.94 -39840350.82 0.0263 0.0234

Earth -113790-01-24 16:19 J -39840350.93 -39840350.82 -39840350.71 0.0263 0.0236 \*

Mars -113790-12-10 01:26 J -39840031.60 -39840031.44 -39840031.27 0.0266 0.0217

Mars -113788-12-05 10:19 J -39839305.12 -39839305.07 -39839305.02 0.0273 0.0268

Mercury -113786-10-13 07:55 J -39838628.20 -39838628.17 -39838628.12 0.0281 0.0268

Mercury -113785-01-09 21:50 J -39838539.70 -39838539.59 -39838539.48 0.0282 0.0181  
 Mercury -113785-04-07 11:17 J -39838451.16 -39838451.03 -39838450.90 0.0283 0.0095  
 Mercury -113785-07-05 00:43 J -39838362.61 -39838362.47 -39838362.33 0.0284 0.0010  
 Mercury -113785-10-01 13:55 J -39838274.05 -39838273.92 -39838273.79 0.0285 0.0079  
 Mercury -113785-12-29 03:07 J -39838185.48 -39838185.37 -39838185.26 0.0287 0.0166  
 Mercury -113784-03-27 16:05 J -39838096.89 -39838096.83 -39838096.76 0.0288 0.0252  
 Venus -113781-08-03 06:43 J -39836872.31 -39836872.22 -39836872.12 0.0300 0.0266  
 Venus -113780-03-21 05:17 J -39836642.44 -39836642.28 -39836642.11 0.0301 0.0186  
 Venus -113780-11-06 03:50 J -39836412.53 -39836412.34 -39836412.14 0.0302 0.0100  
 Venus -113779-06-24 02:10 J -39836182.61 -39836182.41 -39836182.20 0.0302 0.0013  
 Venus -113778-02-09 00:14 J -39835952.68 -39835952.49 -39835952.29 0.0302 0.0078  
 Venus -113778-09-26 21:50 J -39835722.76 -39835722.59 -39835722.42 0.0301 0.0164  
 Venus -113777-05-13 18:29 J -39835492.84 -39835492.73 -39835492.61 0.0300 0.0244  
 Earth -113777-07-13 03:07 J -39835432.59 -39835432.37 -39835432.14 0.0300 0.0098  
 Moon -113777-07-13 05:02 J -39835432.51 -39835432.29 -39835432.07 0.0300 0.0082 \*  
 Mars -113775-02-17 05:46 J -39834848.54 -39834848.26 -39834847.97 0.0294 0.0106  
 Mercury -113772-05-13 16:34 J -39833666.93 -39833666.81 -39833666.69 0.0280 0.0189  
 Mercury -113772-08-10 11:17 J -39833578.18 -39833578.03 -39833577.86 0.0279 0.0091  
 Mercury -113772-11-07 06:29 J -39833489.40 -39833489.23 -39833489.06 0.0278 0.0009  
 Mercury -113771-02-04 01:55 J -39833400.58 -39833400.42 -39833400.27 0.0277 0.0109  
 Mercury -113771-05-03 21:07 J -39833311.72 -39833311.62 -39833311.50 0.0276 0.0209  
 Venus -113766-01-17 02:53 J -39831592.50 -39831592.38 -39831592.25 0.0261 0.0211  
 Venus -113766-09-03 05:46 J -39831363.44 -39831363.26 -39831363.08 0.0260 0.0155  
 Venus -113765-04-19 08:10 J -39831134.36 -39831134.16 -39831133.95 0.0260 0.0096  
 Venus -113765-12-04 10:34 J -39830905.27 -39830905.06 -39830904.84 0.0259 0.0037  
 Venus -113764-07-21 13:12 J -39830676.17 -39830675.95 -39830675.73 0.0259 0.0023  
 Venus -113763-03-07 16:05 J -39830447.04 -39830446.83 -39830446.62 0.0260 0.0082  
 Venus -113763-10-22 19:12 J -39830217.87 -39830217.70 -39830217.50 0.0260 0.0142  
 Venus -113762-06-08 23:02 J -39829988.67 -39829988.54 -39829988.39 0.0261 0.0200  
 Earth -113761-01-19 12:29 J -39829764.23 -39829763.98 -39829763.72 0.0262 0.0038

Moon -113761-01-19 15:07 J -39829764.12 -39829763.87 -39829763.63 0.0262 0.0033 \*  
 Venus -113761-01-24 03:36 J -39829759.39 -39829759.35 -39829759.30 0.0262 0.0256  
 Mars -113759-01-25 12:29 J -39829027.25 -39829026.98 -39829026.70 0.0267 0.0066  
 Mercury -113756-05-28 22:34 J -39827807.65 -39827807.56 -39827807.47 0.0281 0.0213  
 Mercury -113756-08-25 12:00 J -39827719.13 -39827719.00 -39827718.87 0.0282 0.0127  
 Mercury -113756-11-22 01:26 J -39827630.58 -39827630.44 -39827630.30 0.0283 0.0040  
 Mercury -113755-02-18 14:38 J -39827542.03 -39827541.89 -39827541.75 0.0284 0.0046  
 Mercury -113755-05-18 03:50 J -39827453.46 -39827453.34 -39827453.22 0.0285 0.0132  
 Mercury -113755-08-14 16:48 J -39827364.88 -39827364.80 -39827364.71 0.0287 0.0219  
 Venus -113751-02-13 07:41 J -39826086.28 -39826086.18 -39826086.08 0.0300 0.0262  
 Venus -113751-10-01 05:46 J -39825856.42 -39825856.26 -39825856.09 0.0302 0.0181  
 Venus -113750-05-19 04:05 J -39825626.52 -39825626.33 -39825626.13 0.0302 0.0094  
 Venus -113749-01-04 02:24 J -39825396.61 -39825396.40 -39825396.20 0.0303 0.0005  
 Venus -113749-08-21 00:14 J -39825166.68 -39825166.49 -39825166.29 0.0302 0.0084  
 Venus -113748-04-07 21:50 J -39824936.76 -39824936.59 -39824936.42 0.0302 0.0170  
 Venus -113748-11-23 18:29 J -39824706.84 -39824706.73 -39824706.62 0.0300 0.0251  
 Mars -113745-04-10 01:41 J -39823838.70 -39823838.43 -39823838.16 0.0292 0.0131  
 Mercury -113743-09-30 14:10 J -39822935.01 -39822934.91 -39822934.82 0.0281 0.0231  
 Mercury -113743-12-28 08:53 J -39822846.28 -39822846.13 -39822845.98 0.0279 0.0132  
 Mercury -113742-03-27 03:50 J -39822757.51 -39822757.34 -39822757.17 0.0278 0.0033  
 Mercury -113742-06-23 23:02 J -39822668.71 -39822668.54 -39822668.37 0.0277 0.0067  
 Mercury -113742-09-20 18:29 J -39822579.87 -39822579.73 -39822579.59 0.0276 0.0166  
 Mercury -113742-12-18 13:55 J -39822490.95 -39822490.92 -39822490.87 0.0275 0.0266  
 Venus -113738-12-12 23:46 J -39821035.51 -39821035.51 -39821035.49 0.0262 0.0261  
 Venus -113737-07-29 02:53 J -39820806.51 -39820806.38 -39820806.24 0.0261 0.0206  
 Venus -113736-03-15 05:31 J -39820577.44 -39820577.27 -39820577.08 0.0260 0.0149  
 Venus -113736-10-30 08:10 J -39820348.36 -39820348.16 -39820347.94 0.0260 0.0091  
 Venus -113735-06-16 11:02 J -39820119.26 -39820119.04 -39820118.82 0.0259 0.0030  
 Venus -113734-01-31 13:55 J -39819890.14 -39819889.92 -39819889.70 0.0259 0.0030  
 Venus -113734-09-17 17:02 J -39819661.00 -39819660.79 -39819660.58 0.0260 0.0090

Venus -113733-05-03 20:24 J -39819431.82 -39819431.65 -39819431.46 0.0260 0.0149  
 Venus -113733-12-19 00:14 J -39819202.61 -39819202.49 -39819202.35 0.0261 0.0208  
 Mars -113729-03-13 05:02 J -39818022.55 -39818022.29 -39818022.02 0.0270 0.0099  
 Mercury -113727-10-15 23:17 J -39817075.59 -39817075.53 -39817075.45 0.0281 0.0243  
 Mercury -113726-01-12 12:58 J -39816987.08 -39816986.96 -39816986.84 0.0282 0.0156  
 Mercury -113726-04-11 02:24 J -39816898.54 -39816898.40 -39816898.26 0.0283 0.0070  
 Mercury -113726-07-08 15:50 J -39816809.98 -39816809.84 -39816809.70 0.0284 0.0018  
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 Venus -113721-04-12 09:50 J -39815070.25 -39815070.09 -39815069.92 0.0301 0.0171  
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 Moon -113718-07-15 01:26 J -39813881.68 -39813881.44 -39813881.21 0.0299 0.0027 \*  
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Venus -113677-04-06 09:36 J -39799005.28 -39799005.10 -39799004.90 0.0260 0.0137  
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 Venus -113674-05-27 01:41 J -39797859.60 -39797859.43 -39797859.26 0.0261 0.0165  
 Venus -113673-01-11 05:31 J -39797630.37 -39797630.27 -39797630.15 0.0261 0.0223  
 Moon -113673-01-15 02:24 J -39797626.48 -39797626.40 -39797626.29 0.0261 0.0242  
 Earth -113673-01-15 05:46 J -39797626.30 -39797626.26 -39797626.18 0.0261 0.0255 \*  
 Mars -113671-06-20 14:53 J -39796739.15 -39796738.88 -39796738.60 0.0268 0.0058  
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 Moon -113659-07-15 22:48 J -39792330.79 -39792330.55 -39792330.31 0.0299 0.0035 \*  
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 Mercury -113654-05-20 00:29 J -39790561.62 -39790561.48 -39790561.33 0.0280 0.0138  
 Mercury -113654-08-16 19:41 J -39790472.85 -39790472.68 -39790472.51 0.0279 0.0038  
 Mercury -113654-11-13 14:53 J -39790384.05 -39790383.88 -39790383.71 0.0278 0.0062

Mercury -113653-02-10 10:19 J -39790295.21 -39790295.07 -39790294.93 0.0277 0.0162

Mercury -113653-05-09 06:00 J -39790206.30 -39790206.25 -39790206.20 0.0276 0.0262

Venus -113649-07-16 07:55 J -39788677.24 -39788677.17 -39788677.10 0.0262 0.0247

Venus -113648-03-02 11:02 J -39788448.18 -39788448.04 -39788447.89 0.0261 0.0190

Venus -113648-10-17 14:10 J -39788219.10 -39788218.91 -39788218.72 0.0261 0.0131

Venus -113647-06-03 17:02 J -39787990.00 -39787989.79 -39787989.58 0.0260 0.0070

Venus -113646-01-18 19:55 J -39787760.89 -39787760.67 -39787760.45 0.0260 0.0009

Venus -113646-09-04 23:02 J -39787531.76 -39787531.54 -39787531.33 0.0260 0.0052

Venus -113645-04-21 02:10 J -39787302.60 -39787302.41 -39787302.21 0.0260 0.0113

Venus -113645-12-06 05:46 J -39787073.41 -39787073.26 -39787073.09 0.0261 0.0174

Venus -113644-07-23 10:05 J -39786844.17 -39786844.08 -39786843.97 0.0262 0.0232

Earth -113643-01-21 12:43 J -39786662.21 -39786661.97 -39786661.72 0.0262 0.0080

Moon -113643-01-21 15:07 J -39786662.11 -39786661.87 -39786661.61 0.0262 0.0092 \*

Mars -113641-08-06 16:19 J -39785734.08 -39785733.82 -39785733.55 0.0269 0.0104

Mercury -113638-03-07 16:48 J -39784790.87 -39784790.80 -39784790.72 0.0280 0.0240

Mercury -113638-06-04 06:29 J -39784702.35 -39784702.23 -39784702.11 0.0281 0.0154

Mercury -113638-08-31 19:55 J -39784613.81 -39784613.67 -39784613.54 0.0282 0.0069

Mercury -113638-11-28 09:07 J -39784525.26 -39784525.12 -39784524.98 0.0283 0.0017

Mercury -113637-02-24 22:19 J -39784436.70 -39784436.57 -39784436.44 0.0284 0.0103

Mercury -113637-05-23 11:17 J -39784348.13 -39784348.03 -39784347.92 0.0286 0.0188

Mercury -113637-08-20 00:14 J -39784259.52 -39784259.49 -39784259.45 0.0287 0.0273

Venus -113633-03-29 22:19 J -39782941.70 -39782941.57 -39782941.44 0.0300 0.0231

Venus -113633-11-14 20:10 J -39782711.84 -39782711.66 -39782711.48 0.0301 0.0146

Venus -113632-07-02 18:00 J -39782481.95 -39782481.75 -39782481.55 0.0302 0.0057

Venus -113631-02-17 15:50 J -39782252.04 -39782251.84 -39782251.64 0.0302 0.0034

Venus -113631-10-05 13:26 J -39782022.13 -39782021.94 -39782021.76 0.0302 0.0123

Venus -113630-05-23 10:19 J -39781792.21 -39781792.07 -39781791.92 0.0301 0.0209

Venus -113629-01-08 06:29 J -39781562.28 -39781562.23 -39781562.18 0.0300 0.0288

Mercury -113625-07-09 04:05 J -39779918.36 -39779918.33 -39779918.28 0.0281 0.0273

Mercury -113625-10-05 23:02 J -39779829.67 -39779829.54 -39779829.41 0.0280 0.0175

Mercury -113624-01-02 17:46 J -39779740.92 -39779740.76 -39779740.59 0.0279 0.0076

Mercury -113624-04-01 12:58 J -39779652.13 -39779651.96 -39779651.79 0.0278 0.0024

Mercury -113624-06-29 08:24 J -39779563.31 -39779563.15 -39779563.00 0.0277 0.0124

Mercury -113624-09-26 03:50 J -39779474.44 -39779474.34 -39779474.23 0.0276 0.0224

Venus -113619-01-26 08:53 J -39777891.21 -39777891.13 -39777891.04 0.0262 0.0241

Venus -113619-09-12 12:29 J -39777662.13 -39777661.98 -39777661.82 0.0261 0.0183

Venus -113618-04-29 15:22 J -39777433.04 -39777432.86 -39777432.65 0.0260 0.0125

Venus -113618-12-14 18:29 J -39777203.94 -39777203.73 -39777203.51 0.0260 0.0063

Venus -113617-07-30 21:36 J -39776974.82 -39776974.60 -39776974.38 0.0260 0.0001

Venus -113616-03-17 00:43 J -39776745.68 -39776745.47 -39776745.25 0.0260 0.0060

Venus -113616-11-01 04:34 J -39776516.51 -39776516.31 -39776516.12 0.0260 0.0122

Venus -113615-06-18 08:10 J -39776287.30 -39776287.16 -39776286.99 0.0261 0.0182

Moon -113614-01-16 05:17 J -39776075.46 -39776075.28 -39776075.09 0.0262 0.0177

Earth -113614-01-16 08:24 J -39776075.31 -39776075.15 -39776074.96 0.0262 0.0191 \*

Venus -113614-02-02 12:58 J -39776058.05 -39776057.96 -39776057.88 0.0262 0.0240

Mars -113613-09-27 16:19 J -39775454.98 -39775454.82 -39775454.62 0.0266 0.0204

Mercury -113609-07-24 18:14 J -39774058.78 -39774058.74 -39774058.69 0.0280 0.0266

Mercury -113609-10-21 07:55 J -39773970.28 -39773970.17 -39773970.06 0.0281 0.0181

Mercury -113608-01-17 21:22 J -39773881.74 -39773881.61 -39773881.48 0.0282 0.0095

Mercury -113608-04-16 10:34 J -39773793.20 -39773793.06 -39773792.91 0.0284 0.0013

Mercury -113608-07-13 23:46 J -39773704.64 -39773704.51 -39773704.37 0.0285 0.0078

Mercury -113608-10-10 12:58 J -39773616.07 -39773615.96 -39773615.84 0.0286 0.0163

Mercury -113607-01-07 01:55 J -39773527.48 -39773527.42 -39773527.35 0.0287 0.0248

Venus -113604-10-10 04:05 J -39772155.46 -39772155.33 -39772155.19 0.0300 0.0221

Venus -113603-05-28 02:10 J -39771925.59 -39771925.41 -39771925.23 0.0301 0.0135

Venus -113602-01-13 00:00 J -39771695.70 -39771695.50 -39771695.29 0.0302 0.0045

Venus -113602-08-30 22:05 J -39771465.78 -39771465.58 -39771465.38 0.0302 0.0047

Venus -113601-04-16 19:41 J -39771235.86 -39771235.68 -39771235.50 0.0301 0.0137

Venus -113601-12-02 16:19 J -39771005.95 -39771005.82 -39771005.68 0.0300 0.0222

Moon -113600-07-16 22:19 J -39770779.79 -39770779.57 -39770779.34 0.0299 0.0109



Earth -113600-07-16 22:34 J -39770779.78 -39770779.56 -39770779.33 0.0299 0.0096 \*  
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 Moon -113584-01-22 16:48 J -39765111.00 -39765110.80 -39765110.58 0.0263 0.0161  
 Earth -113584-01-22 17:17 J -39765110.99 -39765110.78 -39765110.57 0.0263 0.0148 \*  
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 Mercury -113579-03-10 09:50 J -39763238.18 -39763238.09 -39763237.99 0.0280 0.0204  
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 Mercury -113579-09-03 12:43 J -39763061.11 -39763060.97 -39763060.83 0.0283 0.0034  
 Mercury -113579-12-01 01:55 J -39762972.55 -39762972.42 -39762972.28 0.0284 0.0053  
 Mercury -113578-02-27 15:07 J -39762883.99 -39762883.87 -39762883.75 0.0285 0.0138  
 Mercury -113578-05-27 04:05 J -39762795.41 -39762795.33 -39762795.24 0.0286 0.0223  
 Venus -113575-09-04 12:00 J -39761599.02 -39761599.00 -39761598.95 0.0299 0.0294  
 Venus -113574-04-22 09:50 J -39761369.23 -39761369.09 -39761368.95 0.0300 0.0213  
 Venus -113574-12-08 07:26 J -39761139.37 -39761139.19 -39761139.00 0.0301 0.0126  
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Venus -113572-10-28 00:14 J -39760449.67 -39760449.49 -39760449.31 0.0301 0.0146  
 Venus -113571-06-14 20:53 J -39760219.76 -39760219.63 -39760219.50 0.0300 0.0231  
 Earth -113571-07-11 00:00 J -39760193.56 -39760193.50 -39760193.40 0.0300 0.0283  
 Moon -113571-07-11 01:12 J -39760193.55 -39760193.45 -39760193.36 0.0300 0.0271 \*  
 Mars -113568-01-26 18:43 J -39759262.98 -39759262.72 -39759262.45 0.0292 0.0142  
 Mercury -113566-07-12 22:05 J -39758365.66 -39758365.58 -39758365.48 0.0281 0.0237  
 Mercury -113566-10-09 17:02 J -39758276.93 -39758276.79 -39758276.64 0.0280 0.0138  
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 Mercury -113565-04-04 07:12 J -39758099.36 -39758099.20 -39758099.03 0.0278 0.0062  
 Mercury -113565-07-02 02:38 J -39758010.53 -39758010.39 -39758010.24 0.0277 0.0161  
 Mercury -113565-09-28 22:19 J -39757921.62 -39757921.57 -39757921.51 0.0276 0.0261  
 Venus -113560-02-17 16:19 J -39756318.91 -39756318.82 -39756318.70 0.0262 0.0229  
 Venus -113560-10-04 19:55 J -39756089.82 -39756089.67 -39756089.49 0.0261 0.0170  
 Venus -113559-05-21 23:17 J -39755860.72 -39755860.53 -39755860.32 0.0260 0.0110  
 Venus -113558-01-06 02:24 J -39755631.61 -39755631.40 -39755631.18 0.0260 0.0048  
 Venus -113558-08-23 05:46 J -39755402.48 -39755402.26 -39755402.04 0.0260 0.0015  
 Venus -113557-04-08 09:07 J -39755173.33 -39755173.12 -39755172.90 0.0260 0.0077  
 Venus -113557-11-23 12:58 J -39754944.14 -39754943.96 -39754943.77 0.0260 0.0139  
 Venus -113556-07-10 17:17 J -39754714.92 -39754714.78 -39754714.64 0.0261 0.0199  
 Earth -113555-01-17 14:24 J -39754524.12 -39754523.90 -39754523.67 0.0262 0.0120  
 Moon -113555-01-17 14:53 J -39754524.10 -39754523.88 -39754523.65 0.0262 0.0106 \*  
 Venus -113555-02-24 21:50 J -39754485.62 -39754485.59 -39754485.55 0.0262 0.0258  
 Mars -113553-12-31 12:00 J -39753445.26 -39753445.00 -39753444.75 0.0270 0.0121  
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 Mercury -113550-10-25 01:12 J -39752417.57 -39752417.45 -39752417.32 0.0282 0.0143  
 Mercury -113549-01-21 14:38 J -39752329.03 -39752328.89 -39752328.75 0.0283 0.0057  
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 Mercury -113549-07-16 17:02 J -39752151.91 -39752151.79 -39752151.66 0.0285 0.0115  
 Mercury -113549-10-13 06:14 J -39752063.34 -39752063.24 -39752063.14 0.0286 0.0200  
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Venus -113545-03-16 19:26 J -39750812.75 -39750812.69 -39750812.62 0.0299 0.0283  
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 Moon -113541-07-18 02:38 J -39749228.55 -39749228.39 -39749228.20 0.0299 0.0202  
 Earth -113541-07-18 06:43 J -39749228.41 -39749228.22 -39749228.04 0.0299 0.0185 \*  
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 Mercury -113536-11-19 03:22 J -39747278.51 -39747278.36 -39747278.21 0.0277 0.0134  
 Mercury -113535-02-15 22:48 J -39747189.64 -39747189.55 -39747189.46 0.0276 0.0234  
 Venus -113531-08-30 22:48 J -39745532.66 -39745532.55 -39745532.43 0.0262 0.0222  
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 Venus -113526-01-20 23:46 J -39743928.63 -39743928.51 -39743928.37 0.0262 0.0209  
 Moon -113525-01-24 21:22 J -39743559.71 -39743559.61 -39743559.48 0.0263 0.0236  
 Earth -113525-01-25 01:12 J -39743559.57 -39743559.45 -39743559.31 0.0263 0.0225 \*  
 Mars -113524-02-21 22:34 J -39743165.75 -39743165.56 -39743165.35 0.0266 0.0183  
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 Mercury -113520-06-09 17:17 J -39741596.91 -39741596.78 -39741596.64 0.0282 0.0078  
 Mercury -113520-09-06 06:43 J -39741508.36 -39741508.22 -39741508.08 0.0283 0.0008

Mercury -113520-12-03 19:55 J -39741419.80 -39741419.67 -39741419.54 0.0284 0.0094

Mercury -113519-03-02 08:53 J -39741331.23 -39741331.13 -39741331.02 0.0285 0.0179

Mercury -113519-05-29 21:50 J -39741242.64 -39741242.59 -39741242.53 0.0286 0.0263

Venus -113516-09-27 03:22 J -39740026.43 -39740026.36 -39740026.27 0.0299 0.0274

Venus -113515-05-15 00:58 J -39739796.61 -39739796.46 -39739796.30 0.0300 0.0190

Venus -113515-12-30 22:34 J -39739566.75 -39739566.56 -39739566.36 0.0301 0.0102

Venus -113514-08-17 20:10 J -39739336.86 -39739336.66 -39739336.45 0.0302 0.0011

Venus -113513-04-03 17:46 J -39739106.96 -39739106.76 -39739106.56 0.0302 0.0082

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Venus -113512-07-07 10:48 J -39738647.15 -39738647.05 -39738646.94 0.0300 0.0255

Earth -113512-07-12 11:46 J -39738642.18 -39738642.01 -39738641.81 0.0300 0.0183

Moon -113512-07-12 15:36 J -39738642.04 -39738641.85 -39738641.65 0.0300 0.0166 \*

Mars -113510-05-01 03:36 J -39737984.64 -39737984.35 -39737984.05 0.0295 0.0078

Mercury -113507-07-15 17:31 J -39736812.89 -39736812.77 -39736812.64 0.0281 0.0193

Mercury -113507-10-12 12:29 J -39736724.14 -39736723.98 -39736723.82 0.0280 0.0094

Mercury -113506-01-09 07:26 J -39736635.36 -39736635.19 -39736635.01 0.0279 0.0008

Mercury -113506-04-08 02:53 J -39736546.54 -39736546.38 -39736546.22 0.0278 0.0104

Mercury -113506-07-05 22:05 J -39736457.68 -39736457.58 -39736457.45 0.0276 0.0205

Venus -113501-03-12 02:10 J -39734746.53 -39734746.41 -39734746.28 0.0262 0.0215

Venus -113501-10-27 05:46 J -39734517.43 -39734517.26 -39734517.08 0.0261 0.0155

Venus -113500-06-13 09:07 J -39734288.32 -39734288.12 -39734287.91 0.0260 0.0093

Venus -113499-01-28 12:29 J -39734059.20 -39734058.98 -39734058.76 0.0260 0.0030

Venus -113499-09-14 16:05 J -39733830.05 -39733829.83 -39733829.61 0.0260 0.0033

Venus -113498-05-01 19:41 J -39733600.88 -39733600.68 -39733600.47 0.0260 0.0096

Venus -113498-12-16 23:31 J -39733371.69 -39733371.52 -39733371.34 0.0261 0.0158

Venus -113497-08-02 03:50 J -39733142.45 -39733142.34 -39733142.21 0.0262 0.0219

Earth -113496-01-18 23:46 J -39732972.76 -39732972.51 -39732972.26 0.0262 0.0042

Moon -113496-01-19 03:36 J -39732972.60 -39732972.35 -39732972.09 0.0262 0.0028 \*

Mars -113494-04-10 14:53 J -39732161.16 -39732160.88 -39732160.59 0.0268 0.0025

Mercury -113491-05-03 16:19 J -39731041.85 -39731041.82 -39731041.78 0.0280 0.0271

Mercury -113491-07-31 05:46 J -39730953.36 -39730953.26 -39730953.14 0.0281 0.0186

Mercury -113491-10-27 19:26 J -39730864.82 -39730864.69 -39730864.56 0.0282 0.0100

Mercury -113490-01-24 08:38 J -39730776.28 -39730776.14 -39730775.99 0.0283 0.0018

Mercury -113490-04-22 22:05 J -39730687.72 -39730687.58 -39730687.45 0.0284 0.0071

Mercury -113490-07-20 11:02 J -39730599.15 -39730599.04 -39730598.92 0.0286 0.0156

Mercury -113490-10-17 00:00 J -39730510.57 -39730510.50 -39730510.42 0.0287 0.0241

Venus -113486-04-09 11:02 J -39729240.12 -39729240.04 -39729239.93 0.0300 0.0264

Venus -113486-11-25 08:38 J -39729010.29 -39729010.14 -39729009.97 0.0301 0.0179

Venus -113485-07-12 06:29 J -39728780.42 -39728780.23 -39728780.03 0.0302 0.0089

Venus -113484-02-27 04:19 J -39728550.52 -39728550.32 -39728550.11 0.0302 0.0004

Venus -113484-10-15 01:41 J -39728320.62 -39728320.43 -39728320.23 0.0302 0.0097

Venus -113483-06-01 22:48 J -39728090.70 -39728090.55 -39728090.38 0.0301 0.0186

Venus -113482-01-17 18:58 J -39727860.78 -39727860.71 -39727860.61 0.0300 0.0270

Earth -113482-07-20 18:43 J -39727676.77 -39727676.72 -39727676.64 0.0298 0.0286

Mars -113480-06-23 06:43 J -39726973.47 -39726973.22 -39726972.97 0.0291 0.0164

Mercury -113478-12-02 18:43 J -39726080.82 -39726080.72 -39726080.61 0.0281 0.0217

Mercury -113477-02-29 13:26 J -39725992.09 -39725991.94 -39725991.78 0.0280 0.0119

Mercury -113477-05-28 08:38 J -39725903.31 -39725903.14 -39725902.97 0.0279 0.0020

Mercury -113477-08-25 03:50 J -39725814.50 -39725814.34 -39725814.17 0.0278 0.0080

Mercury -113477-11-21 23:17 J -39725725.66 -39725725.53 -39725725.40 0.0277 0.0180

Venus -113472-09-22 09:22 J -39723960.23 -39723960.11 -39723959.97 0.0262 0.0208

Venus -113471-05-09 13:12 J -39723731.13 -39723730.95 -39723730.77 0.0261 0.0147

Venus -113471-12-24 16:19 J -39723502.02 -39723501.82 -39723501.60 0.0261 0.0085

Venus -113470-08-10 19:55 J -39723272.89 -39723272.67 -39723272.45 0.0261 0.0022

Venus -113469-03-26 23:17 J -39723043.75 -39723043.53 -39723043.31 0.0261 0.0042

Venus -113469-11-11 03:07 J -39722814.57 -39722814.37 -39722814.17 0.0261 0.0105

Venus -113468-06-28 06:58 J -39722585.37 -39722585.21 -39722585.03 0.0261 0.0167

Venus -113467-02-12 11:31 J -39722356.11 -39722356.02 -39722355.90 0.0262 0.0228

Mars -113464-05-28 03:22 J -39721155.60 -39721155.36 -39721155.12 0.0270 0.0147

Mercury -113462-12-18 08:53 J -39720221.22 -39720221.13 -39720221.03 0.0280 0.0203

Mercury -113461-03-15 22:34 J -39720132.69 -39720132.56 -39720132.43 0.0282 0.0118

Mercury -113461-06-12 11:46 J -39720044.15 -39720044.01 -39720043.87 0.0283 0.0033

Mercury -113461-09-09 00:58 J -39719955.59 -39719955.46 -39719955.32 0.0284 0.0054

Mercury -113461-12-06 14:10 J -39719867.03 -39719866.91 -39719866.79 0.0285 0.0138

Mercury -113460-03-05 03:07 J -39719778.45 -39719778.37 -39719778.28 0.0286 0.0223

Venus -113457-10-19 21:07 J -39718453.73 -39718453.62 -39718453.51 0.0299 0.0252

Venus -113456-06-06 18:29 J -39718223.90 -39718223.73 -39718223.56 0.0301 0.0166

Venus -113455-01-22 16:05 J -39717994.03 -39717993.83 -39717993.63 0.0301 0.0075

Venus -113455-09-09 13:41 J -39717764.14 -39717763.93 -39717763.73 0.0302 0.0017

Venus -113454-04-27 10:48 J -39717534.23 -39717534.05 -39717533.85 0.0301 0.0110

Venus -113454-12-13 07:26 J -39717304.33 -39717304.19 -39717304.03 0.0301 0.0198

Moon -113453-07-14 03:22 J -39717090.60 -39717090.36 -39717090.12 0.0300 0.0055

Earth -113453-07-14 04:05 J -39717090.56 -39717090.33 -39717090.10 0.0300 0.0072 \*

Venus -113453-07-30 03:22 J -39717074.42 -39717074.36 -39717074.28 0.0299 0.0281

Mercury -113448-04-20 19:26 J -39715348.77 -39715348.69 -39715348.61 0.0281 0.0241

Mercury -113448-07-18 13:55 J -39715260.06 -39715259.92 -39715259.77 0.0280 0.0144

Mercury -113448-10-15 09:07 J -39715171.29 -39715171.12 -39715170.95 0.0279 0.0045

Mercury -113447-01-12 04:19 J -39715082.49 -39715082.32 -39715082.16 0.0278 0.0055

Mercury -113447-04-10 23:31 J -39714993.66 -39714993.52 -39714993.37 0.0277 0.0154

Mercury -113447-07-08 19:12 J -39714904.77 -39714904.70 -39714904.63 0.0276 0.0253

Venus -113443-08-18 10:05 J -39713403.11 -39713403.08 -39713403.04 0.0263 0.0258

Venus -113442-04-04 13:55 J -39713174.06 -39713173.92 -39713173.78 0.0262 0.0199

Venus -113442-11-19 17:17 J -39712944.96 -39712944.78 -39712944.59 0.0261 0.0138

Venus -113441-07-05 20:38 J -39712715.84 -39712715.64 -39712715.42 0.0260 0.0076

Venus -113440-02-20 00:14 J -39712486.71 -39712486.49 -39712486.27 0.0260 0.0012

Venus -113440-10-07 03:50 J -39712257.55 -39712257.34 -39712257.12 0.0260 0.0052

Venus -113439-05-24 07:41 J -39712028.37 -39712028.18 -39712027.98 0.0260 0.0115

Venus -113438-01-08 12:00 J -39711799.16 -39711799.00 -39711798.84 0.0261 0.0177

Venus -113438-08-25 16:34 J -39711569.89 -39711569.81 -39711569.71 0.0262 0.0238

Moon -113437-01-21 10:34 J -39711421.31 -39711421.06 -39711420.80 0.0263 0.0050

Earth -113437-01-21 11:17 J -39711421.28 -39711421.03 -39711420.78 0.0263 0.0042 \*  
 Mars -113436-07-19 06:43 J -39710876.44 -39710876.22 -39710875.99 0.0266 0.0161  
 Mercury -113432-05-06 11:02 J -39709489.12 -39709489.04 -39709488.95 0.0281 0.0225  
 Mercury -113432-08-03 00:43 J -39709400.59 -39709400.47 -39709400.35 0.0282 0.0140  
 Mercury -113432-10-30 14:10 J -39709312.05 -39709311.91 -39709311.77 0.0283 0.0054  
 Mercury -113431-01-27 03:22 J -39709223.50 -39709223.36 -39709223.22 0.0284 0.0032  
 Mercury -113431-04-25 16:34 J -39709134.94 -39709134.81 -39709134.68 0.0285 0.0117  
 Mercury -113431-07-23 05:31 J -39709046.36 -39709046.27 -39709046.17 0.0286 0.0202  
 Mercury -113431-10-19 18:43 J -39708957.73 -39708957.72 -39708957.72 0.0287 0.0287  
 Venus -113427-05-02 05:46 J -39707667.38 -39707667.26 -39707667.13 0.0300 0.0240  
 Venus -113427-12-18 03:22 J -39707437.53 -39707437.36 -39707437.18 0.0301 0.0153  
 Venus -113426-08-05 00:58 J -39707207.66 -39707207.46 -39707207.26 0.0302 0.0062  
 Venus -113425-03-21 22:48 J -39706977.76 -39706977.55 -39706977.35 0.0302 0.0032  
 Venus -113425-11-06 19:55 J -39706747.85 -39706747.67 -39706747.48 0.0301 0.0125  
 Venus -113424-06-24 16:48 J -39706517.95 -39706517.80 -39706517.66 0.0300 0.0213  
 Venus -113423-02-09 12:29 J -39706288.00 -39706287.98 -39706287.94 0.0299 0.0295  
 Mars -113422-09-26 06:29 J -39705694.54 -39705694.23 -39705693.93 0.0294 0.0046  
 Mercury -113419-09-07 20:53 J -39704616.68 -39704616.63 -39704616.57 0.0281 0.0263  
 Mercury -113419-12-05 15:22 J -39704527.99 -39704527.86 -39704527.72 0.0280 0.0166  
 Mercury -113418-03-04 10:19 J -39704439.23 -39704439.07 -39704438.90 0.0279 0.0068  
 Mercury -113418-06-01 05:31 J -39704350.44 -39704350.27 -39704350.10 0.0278 0.0032  
 Mercury -113418-08-29 00:43 J -39704261.61 -39704261.47 -39704261.31 0.0277 0.0131  
 Mercury -113418-11-25 20:24 J -39704172.74 -39704172.65 -39704172.55 0.0276 0.0230  
 Venus -113413-02-28 17:46 J -39702616.82 -39702616.76 -39702616.70 0.0263 0.0250  
 Venus -113413-10-14 21:22 J -39702387.75 -39702387.61 -39702387.45 0.0262 0.0191  
 Venus -113412-06-01 00:58 J -39702158.64 -39702158.46 -39702158.26 0.0261 0.0130  
 Venus -113411-01-16 04:34 J -39701929.52 -39701929.31 -39701929.09 0.0261 0.0066  
 Venus -113411-09-02 08:10 J -39701700.38 -39701700.16 -39701699.94 0.0261 0.0003  
 Venus -113410-04-19 11:46 J -39701471.22 -39701471.01 -39701470.79 0.0261 0.0062  
 Venus -113410-12-04 15:36 J -39701242.04 -39701241.85 -39701241.65 0.0261 0.0125

Venus -113409-07-20 19:41 J -39701012.82 -39701012.68 -39701012.51 0.0262 0.0188  
 Earth -113408-01-15 15:50 J -39700834.00 -39700833.84 -39700833.69 0.0262 0.0207  
 Moon -113408-01-15 16:48 J -39700833.95 -39700833.80 -39700833.63 0.0262 0.0197 \*  
 Venus -113408-03-07 00:43 J -39700783.53 -39700783.47 -39700783.39 0.0263 0.0248  
 Mars -113406-09-05 12:14 J -39699871.27 -39699870.99 -39699870.71 0.0268 0.0005  
 Mercury -113403-09-23 14:10 J -39698756.97 -39698756.91 -39698756.83 0.0280 0.0241  
 Mercury -113403-12-21 03:50 J -39698668.46 -39698668.34 -39698668.22 0.0281 0.0156  
 Mercury -113402-03-19 17:17 J -39698579.92 -39698579.78 -39698579.64 0.0282 0.0071  
 Mercury -113402-06-16 06:43 J -39698491.36 -39698491.22 -39698491.08 0.0283 0.0016  
 Mercury -113402-09-12 19:55 J -39698402.80 -39698402.67 -39698402.54 0.0284 0.0100  
 Mercury -113402-12-10 08:53 J -39698314.23 -39698314.13 -39698314.02 0.0285 0.0185  
 Mercury -113401-03-07 21:50 J -39698225.63 -39698225.59 -39698225.54 0.0286 0.0269  
 Venus -113398-11-12 16:05 J -39696880.96 -39696880.83 -39696880.69 0.0300 0.0227  
 Venus -113397-06-29 13:26 J -39696651.11 -39696650.94 -39696650.75 0.0301 0.0140  
 Venus -113396-02-14 11:02 J -39696421.24 -39696421.04 -39696420.83 0.0301 0.0048  
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 Venus -113395-05-20 05:46 J -39695961.44 -39695961.26 -39695961.08 0.0301 0.0138  
 Venus -113394-01-05 02:10 J -39695731.54 -39695731.41 -39695731.27 0.0300 0.0226  
 Moon -113394-07-16 19:12 J -39695538.93 -39695538.70 -39695538.47 0.0299 0.0060  
 Earth -113394-07-16 22:48 J -39695538.79 -39695538.55 -39695538.32 0.0299 0.0044 \*  
 Mars -113392-11-18 08:10 J -39694683.37 -39694683.16 -39694682.94 0.0291 0.0204  
 Mercury -113389-04-23 16:34 J -39693795.93 -39693795.81 -39693795.69 0.0281 0.0189  
 Mercury -113389-07-21 11:17 J -39693707.19 -39693707.03 -39693706.86 0.0280 0.0091  
 Mercury -113389-10-18 06:29 J -39693618.40 -39693618.23 -39693618.06 0.0279 0.0009  
 Mercury -113388-01-15 01:41 J -39693529.59 -39693529.43 -39693529.27 0.0277 0.0107  
 Mercury -113388-04-13 21:07 J -39693440.73 -39693440.62 -39693440.50 0.0276 0.0206  
 Venus -113384-09-09 22:48 J -39691830.62 -39691830.55 -39691830.46 0.0263 0.0243  
 Venus -113383-04-27 02:38 J -39691601.54 -39691601.39 -39691601.23 0.0262 0.0182  
 Venus -113383-12-12 06:00 J -39691372.43 -39691372.25 -39691372.04 0.0261 0.0120  
 Venus -113382-07-29 09:36 J -39691143.31 -39691143.10 -39691142.88 0.0260 0.0056



Venus -113381-03-14 13:12 J -39690914.17 -39690913.95 -39690913.73 0.0260 0.0009  
 Venus -113381-10-29 16:48 J -39690685.01 -39690684.80 -39690684.58 0.0260 0.0072  
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 Venus -113379-01-31 01:12 J -39690226.59 -39690226.45 -39690226.30 0.0261 0.0198  
 Venus -113379-09-17 06:00 J -39689997.28 -39689997.25 -39689997.21 0.0262 0.0258  
 Moon -113378-01-22 19:55 J -39689869.87 -39689869.67 -39689869.44 0.0263 0.0130  
 Earth -113378-01-23 00:14 J -39689869.71 -39689869.49 -39689869.27 0.0263 0.0127 \*  
 Mars -113376-10-22 17:17 J -39688865.98 -39688865.78 -39688865.55 0.0271 0.0173  
 Mercury -113373-02-10 16:19 J -39688024.86 -39688024.82 -39688024.77 0.0280 0.0263  
 Mercury -113373-05-09 06:00 J -39687936.36 -39687936.25 -39687936.14 0.0281 0.0178  
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 Venus -113365-07-17 11:17 J -39684945.15 -39684945.03 -39684944.91 0.0300 0.0241  
 Mars -113364-12-28 20:10 J -39684415.79 -39684415.66 -39684415.52 0.0296 0.0264  
 Mercury -113360-09-10 18:00 J -39683063.85 -39683063.75 -39683063.63 0.0280 0.0210  
 Mercury -113360-12-08 12:58 J -39682975.12 -39682974.96 -39682974.81 0.0279 0.0113  
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 Mercury -113359-06-04 03:07 J -39682797.54 -39682797.37 -39682797.21 0.0277 0.0085  
 Mercury -113359-08-31 22:19 J -39682708.69 -39682708.57 -39682708.43 0.0276 0.0184  
 Venus -113354-03-23 06:29 J -39681044.32 -39681044.23 -39681044.12 0.0263 0.0234

Venus -113354-11-07 10:19 J -39680815.23 -39680815.07 -39680814.90 0.0262 0.0173  
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 Venus -113350-08-13 08:53 J -39679440.25 -39679440.13 -39679439.99 0.0262 0.0208  
 Earth -113349-01-18 04:19 J -39679282.54 -39679282.32 -39679282.09 0.0263 0.0122  
 Moon -113349-01-18 08:10 J -39679282.39 -39679282.16 -39679281.92 0.0263 0.0116 \*  
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 Mercury -113344-09-26 09:22 J -39677204.22 -39677204.11 -39677204.01 0.0281 0.0194  
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 Mercury -113343-09-15 14:38 J -39676850.01 -39676849.89 -39676849.77 0.0285 0.0147  
 Mercury -113343-12-13 03:36 J -39676761.42 -39676761.35 -39676761.27 0.0286 0.0232  
 Venus -113339-04-19 14:38 J -39675537.95 -39675537.89 -39675537.83 0.0299 0.0285  
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 Venus -113338-07-23 09:22 J -39675078.30 -39675078.11 -39675077.92 0.0301 0.0111  
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 Venus -113337-10-25 04:19 J -39674618.51 -39674618.32 -39674618.12 0.0301 0.0077  
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 Venus -113335-01-27 21:36 J -39674158.70 -39674158.60 -39674158.49 0.0300 0.0255  
 Earth -113335-07-18 19:12 J -39673986.90 -39673986.70 -39673986.51 0.0299 0.0164  
 Moon -113335-07-18 19:12 J -39673986.88 -39673986.70 -39673986.51 0.0299 0.0177 \*  
 Mars -113333-02-21 18:00 J -39673404.05 -39673403.75 -39673403.44 0.0294 0.0003  
 Mercury -113330-01-28 19:26 J -39672331.78 -39672331.69 -39672331.59 0.0281 0.0231  
 Mercury -113330-04-27 14:10 J -39672243.05 -39672242.91 -39672242.76 0.0280 0.0134  
 Mercury -113330-07-25 09:07 J -39672154.29 -39672154.12 -39672153.95 0.0279 0.0035

Mercury -113330-10-22 04:19 J -39672065.49 -39672065.32 -39672065.15 0.0278 0.0064

Mercury -113329-01-18 23:31 J -39671976.65 -39671976.52 -39671976.37 0.0277 0.0163

Mercury -113329-04-16 18:58 J -39671887.75 -39671887.71 -39671887.65 0.0276 0.0262

Venus -113325-10-02 12:14 J -39670258.10 -39670257.99 -39670257.88 0.0262 0.0225

Venus -113324-05-19 15:50 J -39670029.01 -39670028.84 -39670028.67 0.0261 0.0163

Venus -113323-01-03 19:12 J -39669799.90 -39669799.70 -39669799.49 0.0261 0.0100

Venus -113323-08-20 22:34 J -39669570.77 -39669570.56 -39669570.34 0.0260 0.0036

Venus -113322-04-07 02:10 J -39669341.63 -39669341.41 -39669341.19 0.0260 0.0029

Venus -113322-11-22 05:46 J -39669112.46 -39669112.26 -39669112.05 0.0260 0.0093

Venus -113321-07-08 09:50 J -39668883.26 -39668883.09 -39668882.91 0.0261 0.0157

Venus -113320-02-22 14:10 J -39668654.02 -39668653.91 -39668653.78 0.0262 0.0219

Earth -113319-01-24 12:43 J -39668318.11 -39668317.97 -39668317.81 0.0263 0.0213

Moon -113319-01-24 13:26 J -39668318.09 -39668317.94 -39668317.79 0.0263 0.0210 \*

Mars -113317-01-31 00:29 J -39667581.76 -39667581.48 -39667581.20 0.0269 0.0029

Mercury -113314-02-13 11:17 J -39666472.12 -39666472.03 -39666471.94 0.0281 0.0217

Mercury -113314-05-13 00:43 J -39666383.59 -39666383.47 -39666383.34 0.0282 0.0132

Mercury -113314-08-09 14:10 J -39666295.05 -39666294.91 -39666294.77 0.0283 0.0047

Mercury -113314-11-06 03:36 J -39666206.49 -39666206.35 -39666206.21 0.0284 0.0039

Mercury -113313-02-02 16:48 J -39666117.93 -39666117.80 -39666117.68 0.0285 0.0124

Mercury -113313-05-01 05:46 J -39666029.35 -39666029.26 -39666029.16 0.0286 0.0209

Venus -113310-10-30 22:19 J -39664751.65 -39664751.57 -39664751.49 0.0299 0.0275

Venus -113309-06-16 19:41 J -39664521.84 -39664521.68 -39664521.52 0.0301 0.0189

Venus -113308-02-01 17:17 J -39664291.97 -39664291.78 -39664291.58 0.0301 0.0098

Venus -113308-09-19 14:53 J -39664062.08 -39664061.88 -39664061.67 0.0302 0.0007

Venus -113307-05-07 12:29 J -39663832.17 -39663831.98 -39663831.79 0.0302 0.0091

Venus -113307-12-23 09:22 J -39663602.27 -39663602.11 -39663601.95 0.0301 0.0182

Moon -113306-07-13 02:53 J -39663400.56 -39663400.38 -39663400.18 0.0300 0.0186

Earth -113306-07-13 03:36 J -39663400.52 -39663400.35 -39663400.17 0.0300 0.0199 \*

Venus -113306-08-10 05:31 J -39663372.35 -39663372.27 -39663372.17 0.0300 0.0268

Mars -113303-04-15 17:17 J -39662392.94 -39662392.78 -39662392.59 0.0291 0.0238

Mercury -113301-06-16 20:38 J -39661599.70 -39661599.64 -39661599.56 0.0281 0.0254

Mercury -113301-09-13 15:22 J -39661510.99 -39661510.86 -39661510.72 0.0280 0.0157

Mercury -113301-12-11 10:19 J -39661422.23 -39661422.07 -39661421.90 0.0279 0.0059

Mercury -113300-03-10 05:31 J -39661333.44 -39661333.27 -39661333.10 0.0278 0.0040

Mercury -113300-06-07 00:43 J -39661244.62 -39661244.47 -39661244.32 0.0277 0.0138

Mercury -113300-09-03 19:55 J -39661155.74 -39661155.67 -39661155.57 0.0276 0.0238

Venus -113295-04-14 19:41 J -39659471.80 -39659471.68 -39659471.56 0.0262 0.0216

Venus -113295-11-29 23:02 J -39659242.71 -39659242.54 -39659242.36 0.0261 0.0154

Venus -113294-07-17 02:24 J -39659013.60 -39659013.40 -39659013.19 0.0261 0.0091

Venus -113293-03-02 06:00 J -39658784.47 -39658784.25 -39658784.03 0.0261 0.0026

Venus -113293-10-17 09:36 J -39658555.32 -39658555.10 -39658554.88 0.0261 0.0039

Venus -113292-06-03 13:12 J -39658326.14 -39658325.95 -39658325.74 0.0261 0.0103

Venus -113291-01-18 17:17 J -39658096.94 -39658096.78 -39658096.60 0.0261 0.0167

Venus -113291-09-04 21:50 J -39657867.69 -39657867.59 -39657867.48 0.0262 0.0229

Moon -113290-01-19 15:22 J -39657731.12 -39657730.86 -39657730.60 0.0263 0.0040

Earth -113290-01-19 16:19 J -39657731.07 -39657730.82 -39657730.56 0.0263 0.0039 \*

Mars -113289-03-23 23:17 J -39657301.57 -39657301.53 -39657301.47 0.0265 0.0260

Mars -113287-03-19 13:55 J -39656576.09 -39656575.92 -39656575.72 0.0271 0.0205

Mercury -113285-07-02 14:10 J -39655739.99 -39655739.91 -39655739.83 0.0281 0.0235

Mercury -113285-09-29 03:36 J -39655651.46 -39655651.35 -39655651.22 0.0282 0.0150

Mercury -113285-12-26 17:17 J -39655562.92 -39655562.78 -39655562.64 0.0283 0.0064

Mercury -113284-03-25 06:29 J -39655474.37 -39655474.23 -39655474.08 0.0284 0.0023

Mercury -113284-06-21 19:55 J -39655385.80 -39655385.67 -39655385.54 0.0285 0.0107

Mercury -113284-09-18 08:53 J -39655297.23 -39655297.13 -39655297.02 0.0286 0.0192

Mercury -113284-12-15 21:50 J -39655208.62 -39655208.59 -39655208.55 0.0287 0.0276

Venus -113280-05-12 08:38 J -39653965.23 -39653965.14 -39653965.03 0.0299 0.0261

Venus -113280-12-28 06:00 J -39653735.40 -39653735.25 -39653735.07 0.0300 0.0175

Venus -113279-08-15 03:50 J -39653505.53 -39653505.34 -39653505.14 0.0301 0.0082

Venus -113278-04-02 01:41 J -39653275.64 -39653275.43 -39653275.23 0.0301 0.0014

Venus -113278-11-17 22:48 J -39653045.74 -39653045.55 -39653045.35 0.0301 0.0107

Venus -113277-07-04 19:41 J -39652815.83 -39652815.68 -39652815.53 0.0301 0.0198

Venus -113276-02-19 15:50 J -39652585.90 -39652585.84 -39652585.77 0.0299 0.0282

Earth -113276-07-20 13:26 J -39652435.02 -39652434.94 -39652434.85 0.0298 0.0278

Moon -113276-07-20 17:02 J -39652434.85 -39652434.79 -39652434.73 0.0298 0.0288 \*

Mars -113275-05-26 09:07 J -39652125.31 -39652125.12 -39652124.90 0.0296 0.0218

Mercury -113272-11-03 22:19 J -39650867.60 -39650867.57 -39650867.53 0.0281 0.0274

Mercury -113271-01-31 16:48 J -39650778.92 -39650778.80 -39650778.66 0.0280 0.0178

Mercury -113271-04-30 11:46 J -39650690.17 -39650690.01 -39650689.85 0.0279 0.0079

Mercury -113271-07-28 06:43 J -39650601.39 -39650601.22 -39650601.05 0.0278 0.0020

Mercury -113271-10-25 01:55 J -39650512.57 -39650512.42 -39650512.26 0.0277 0.0118

Mercury -113270-01-21 21:22 J -39650423.71 -39650423.61 -39650423.50 0.0276 0.0217

Venus -113266-10-26 00:58 J -39648685.59 -39648685.46 -39648685.32 0.0262 0.0207

Venus -113265-06-11 04:19 J -39648456.50 -39648456.32 -39648456.13 0.0261 0.0144

Venus -113264-01-26 07:41 J -39648227.39 -39648227.18 -39648226.97 0.0260 0.0080

Venus -113264-09-12 11:02 J -39647998.26 -39647998.04 -39647997.82 0.0260 0.0016

Venus -113263-04-29 14:38 J -39647769.11 -39647768.89 -39647768.68 0.0260 0.0049

Venus -113263-12-14 18:00 J -39647539.94 -39647539.75 -39647539.54 0.0260 0.0114

Venus -113262-07-31 21:50 J -39647310.74 -39647310.59 -39647310.41 0.0261 0.0178

Venus -113261-03-17 02:24 J -39647081.47 -39647081.40 -39647081.30 0.0262 0.0240

Mars -113259-05-10 10:34 J -39646297.31 -39646297.06 -39646296.80 0.0267 0.0111

Mercury -113256-11-19 15:50 J -39645007.89 -39645007.84 -39645007.79 0.0280 0.0259

Mercury -113255-02-16 05:17 J -39644919.39 -39644919.28 -39644919.16 0.0281 0.0175

Mercury -113255-05-15 18:58 J -39644830.84 -39644830.71 -39644830.57 0.0282 0.0089

Mercury -113255-08-12 08:24 J -39644742.29 -39644742.15 -39644742.01 0.0284 0.0005

Mercury -113255-11-08 21:36 J -39644653.73 -39644653.60 -39644653.46 0.0285 0.0082

Mercury -113254-02-05 10:48 J -39644565.16 -39644565.05 -39644564.94 0.0286 0.0167

Mercury -113254-05-04 23:46 J -39644476.57 -39644476.51 -39644476.44 0.0287 0.0252

Venus -113251-11-22 15:22 J -39643178.97 -39643178.86 -39643178.74 0.0300 0.0251

Venus -113250-07-10 12:58 J -39642949.13 -39642948.96 -39642948.78 0.0301 0.0163

Venus -113249-02-25 10:48 J -39642719.25 -39642719.05 -39642718.85 0.0302 0.0069

Venus -113249-10-12 08:24 J -39642489.35 -39642489.15 -39642488.94 0.0302 0.0027  
 Venus -113248-05-30 05:46 J -39642259.44 -39642259.26 -39642259.06 0.0302 0.0121  
 Venus -113247-01-15 02:38 J -39642029.53 -39642029.39 -39642029.24 0.0301 0.0211  
 Moon -113247-07-14 17:02 J -39641849.01 -39641848.79 -39641848.56 0.0300 0.0076  
 Earth -113247-07-14 20:24 J -39641848.87 -39641848.65 -39641848.42 0.0300 0.0088 \*  
 Venus -113247-09-01 22:48 J -39641799.57 -39641799.55 -39641799.51 0.0300 0.0295  
 Mars -113245-07-18 20:24 J -39641113.95 -39641113.65 -39641113.34 0.0293 0.0033  
 Mercury -113242-06-20 17:46 J -39640046.87 -39640046.76 -39640046.64 0.0280 0.0202  
 Mercury -113242-09-17 12:29 J -39639958.13 -39639957.98 -39639957.82 0.0279 0.0105  
 Mercury -113242-12-15 07:26 J -39639869.36 -39639869.19 -39639869.01 0.0278 0.0010  
 Mercury -113241-03-13 02:38 J -39639780.55 -39639780.39 -39639780.22 0.0277 0.0092  
 Mercury -113241-06-09 21:50 J -39639691.70 -39639691.59 -39639691.45 0.0276 0.0192  
 Venus -113237-09-20 04:05 J -39638128.37 -39638128.33 -39638128.29 0.0263 0.0258  
 Venus -113236-05-07 07:26 J -39637899.32 -39637899.19 -39637899.04 0.0262 0.0198  
 Venus -113236-12-22 10:48 J -39637670.23 -39637670.05 -39637669.85 0.0261 0.0135  
 Venus -113235-08-08 14:10 J -39637441.12 -39637440.91 -39637440.69 0.0261 0.0071  
 Venus -113234-03-25 17:31 J -39637211.99 -39637211.77 -39637211.55 0.0260 0.0007  
 Venus -113234-11-09 21:07 J -39636982.83 -39636982.62 -39636982.41 0.0260 0.0059  
 Venus -113233-06-26 00:43 J -39636753.66 -39636753.47 -39636753.27 0.0261 0.0124  
 Venus -113232-02-10 04:34 J -39636524.45 -39636524.31 -39636524.14 0.0261 0.0188  
 Venus -113232-09-27 09:22 J -39636295.17 -39636295.11 -39636295.03 0.0262 0.0249  
 Moon -113231-01-20 22:19 J -39636179.82 -39636179.57 -39636179.32 0.0263 0.0033  
 Earth -113231-01-21 02:10 J -39636179.66 -39636179.41 -39636179.16 0.0263 0.0040 \*  
 Mars -113229-06-26 13:12 J -39635292.22 -39635291.95 -39635291.67 0.0269 0.0057  
 Mercury -113226-04-08 18:29 J -39634275.74 -39634275.73 -39634275.72 0.0280 0.0278  
 Mercury -113226-07-06 08:10 J -39634187.27 -39634187.16 -39634187.06 0.0281 0.0193  
 Mercury -113226-10-02 21:36 J -39634098.73 -39634098.60 -39634098.47 0.0282 0.0108  
 Mercury -113226-12-30 11:02 J -39634010.18 -39634010.04 -39634009.90 0.0283 0.0023  
 Mercury -113225-03-28 00:29 J -39633921.62 -39633921.48 -39633921.35 0.0284 0.0063  
 Mercury -113225-06-24 13:41 J -39633833.05 -39633832.93 -39633832.81 0.0285 0.0148

Mercury -113225-09-21 02:38 J -39633744.47 -39633744.39 -39633744.31 0.0286 0.0233  
 Venus -113221-06-04 00:58 J -39632392.58 -39632392.46 -39632392.33 0.0299 0.0237  
 Venus -113220-01-19 22:34 J -39632162.73 -39632162.56 -39632162.38 0.0301 0.0148  
 Venus -113220-09-06 20:24 J -39631932.85 -39631932.65 -39631932.45 0.0301 0.0054  
 Venus -113219-04-24 18:00 J -39631702.95 -39631702.75 -39631702.54 0.0301 0.0043  
 Venus -113219-12-10 15:22 J -39631473.04 -39631472.86 -39631472.68 0.0301 0.0136  
 Venus -113218-07-28 12:00 J -39631243.13 -39631243.00 -39631242.86 0.0300 0.0226  
 Mars -113215-09-10 20:38 J -39630102.73 -39630102.64 -39630102.55 0.0291 0.0276  
 Mercury -113213-11-06 18:58 J -39629314.80 -39629314.71 -39629314.60 0.0281 0.0224  
 Mercury -113212-02-03 13:41 J -39629226.07 -39629225.93 -39629225.77 0.0280 0.0127  
 Mercury -113212-05-03 08:38 J -39629137.31 -39629137.14 -39629136.97 0.0279 0.0029  
 Mercury -113212-07-31 03:50 J -39629048.51 -39629048.34 -39629048.17 0.0278 0.0070  
 Mercury -113212-10-27 23:02 J -39628959.67 -39628959.54 -39628959.40 0.0277 0.0169  
 Mercury -113211-01-24 18:43 J -39628870.76 -39628870.72 -39628870.68 0.0276 0.0267  
 Venus -113207-04-02 09:22 J -39627342.17 -39627342.11 -39627342.04 0.0263 0.0250  
 Venus -113207-11-17 12:29 J -39627113.12 -39627112.98 -39627112.82 0.0261 0.0189  
 Venus -113206-07-04 15:50 J -39626884.03 -39626883.84 -39626883.64 0.0261 0.0125  
 Venus -113205-02-18 18:58 J -39626654.92 -39626654.71 -39626654.49 0.0260 0.0061  
 Venus -113205-10-04 22:19 J -39626425.79 -39626425.57 -39626425.35 0.0260 0.0006  
 Venus -113204-05-22 01:41 J -39626196.64 -39626196.43 -39626196.21 0.0260 0.0070  
 Venus -113203-01-06 05:17 J -39625967.47 -39625967.28 -39625967.09 0.0260 0.0134  
 Venus -113203-08-23 09:07 J -39625738.25 -39625738.12 -39625737.97 0.0261 0.0198  
 Earth -113202-01-16 00:14 J -39625592.61 -39625592.49 -39625592.35 0.0261 0.0225  
 Moon -113202-01-16 03:50 J -39625592.45 -39625592.34 -39625592.19 0.0261 0.0225 \*  
 Venus -113202-04-09 13:55 J -39625508.95 -39625508.92 -39625508.90 0.0262 0.0259  
 Mars -113201-08-18 01:26 J -39625012.54 -39625012.44 -39625012.33 0.0265 0.0245  
 Mars -113199-08-13 14:53 J -39624287.03 -39624286.88 -39624286.70 0.0271 0.0220  
 Mercury -113197-11-22 09:22 J -39623455.20 -39623455.11 -39623455.02 0.0281 0.0221  
 Mercury -113196-02-18 23:02 J -39623366.67 -39623366.54 -39623366.42 0.0282 0.0136  
 Mercury -113196-05-18 12:29 J -39623278.12 -39623277.98 -39623277.84 0.0283 0.0050

Mercury -113196-08-15 01:41 J -39623189.57 -39623189.43 -39623189.29 0.0284 0.0036

Mercury -113196-11-11 15:07 J -39623101.00 -39623100.87 -39623100.75 0.0285 0.0120

Mercury -113195-02-08 04:05 J -39623012.42 -39623012.33 -39623012.23 0.0286 0.0205

Venus -113192-12-15 06:00 J -39621606.39 -39621606.25 -39621606.12 0.0300 0.0228

Venus -113191-08-02 03:36 J -39621376.53 -39621376.35 -39621376.17 0.0301 0.0137

Venus -113190-03-20 01:26 J -39621146.64 -39621146.44 -39621146.23 0.0302 0.0043

Venus -113190-11-04 23:17 J -39620916.73 -39620916.53 -39620916.33 0.0302 0.0054

Venus -113189-06-21 20:38 J -39620686.82 -39620686.64 -39620686.46 0.0302 0.0148

Venus -113188-02-06 17:17 J -39620456.90 -39620456.78 -39620456.65 0.0301 0.0238

Moon -113188-07-16 08:10 J -39620297.39 -39620297.16 -39620296.94 0.0300 0.0021

Earth -113188-07-16 08:53 J -39620297.36 -39620297.13 -39620296.89 0.0300 0.0012 \*

Mars -113187-10-20 23:02 J -39619835.77 -39619835.54 -39619835.31 0.0296 0.0191

Mercury -113183-03-26 19:12 J -39618582.76 -39618582.70 -39618582.62 0.0281 0.0252

Mercury -113183-06-23 13:55 J -39618494.06 -39618493.92 -39618493.78 0.0280 0.0155

Mercury -113183-09-20 08:53 J -39618405.30 -39618405.13 -39618404.97 0.0279 0.0057

Mercury -113183-12-18 03:50 J -39618316.51 -39618316.34 -39618316.17 0.0278 0.0041

Mercury -113182-03-16 23:02 J -39618227.68 -39618227.54 -39618227.39 0.0277 0.0140

Mercury -113182-06-13 18:43 J -39618138.81 -39618138.72 -39618138.64 0.0276 0.0238

Venus -113178-10-13 14:24 J -39616555.97 -39616555.90 -39616555.81 0.0262 0.0242

Venus -113177-05-29 18:00 J -39616326.91 -39616326.75 -39616326.59 0.0261 0.0179

Venus -113176-01-13 21:07 J -39616097.81 -39616097.62 -39616097.42 0.0261 0.0116

Venus -113176-08-31 00:29 J -39615868.70 -39615868.48 -39615868.26 0.0260 0.0051

Venus -113175-04-17 03:36 J -39615639.57 -39615639.35 -39615639.13 0.0260 0.0015

Venus -113175-12-02 06:58 J -39615410.42 -39615410.21 -39615410.00 0.0260 0.0080

Venus -113174-07-19 10:34 J -39615181.24 -39615181.06 -39615180.87 0.0261 0.0144

Venus -113173-03-04 14:24 J -39614952.02 -39614951.90 -39614951.76 0.0261 0.0207

Earth -113172-01-22 08:38 J -39614628.36 -39614628.14 -39614627.90 0.0263 0.0111

Moon -113172-01-22 08:24 J -39614628.36 -39614628.15 -39614627.91 0.0263 0.0104 \*

Mars -113171-10-04 16:05 J -39614008.09 -39614007.83 -39614007.55 0.0267 0.0088

Mercury -113167-04-11 11:31 J -39612723.09 -39612723.02 -39612722.95 0.0280 0.0242



Mercury -113167-07-09 01:12 J -39612634.57 -39612634.45 -39612634.33 0.0282 0.0157

Mercury -113167-10-05 14:38 J -39612546.03 -39612545.89 -39612545.75 0.0283 0.0072

Mercury -113166-01-02 04:05 J -39612457.47 -39612457.33 -39612457.19 0.0284 0.0013

Mercury -113166-03-31 17:17 J -39612368.91 -39612368.78 -39612368.65 0.0285 0.0099

Mercury -113166-06-28 06:29 J -39612280.33 -39612280.23 -39612280.12 0.0286 0.0183

Mercury -113166-09-24 19:26 J -39612191.73 -39612191.69 -39612191.64 0.0287 0.0268

Venus -113162-06-27 14:24 J -39610820.04 -39610819.90 -39610819.76 0.0300 0.0214

Venus -113161-02-12 12:14 J -39610590.18 -39610589.99 -39610589.81 0.0301 0.0122

Venus -113161-09-29 10:05 J -39610360.29 -39610360.08 -39610359.88 0.0301 0.0027

Venus -113160-05-17 07:41 J -39610130.38 -39610130.18 -39610129.98 0.0302 0.0070

Venus -113159-01-02 05:02 J -39609900.46 -39609900.29 -39609900.12 0.0301 0.0164

Venus -113159-08-20 01:41 J -39609670.53 -39609670.43 -39609670.32 0.0300 0.0253

Mars -113157-12-13 13:26 J -39608824.24 -39608823.94 -39608823.64 0.0293 0.0063

Mercury -113154-08-13 20:24 J -39607850.68 -39607850.65 -39607850.61 0.0282 0.0275

Mercury -113154-11-10 15:07 J -39607762.00 -39607761.87 -39607761.74 0.0281 0.0178

Mercury -113153-02-07 09:50 J -39607673.25 -39607673.09 -39607672.93 0.0279 0.0080

Mercury -113153-05-06 04:48 J -39607584.47 -39607584.30 -39607584.13 0.0278 0.0018

Mercury -113153-08-03 00:00 J -39607495.66 -39607495.50 -39607495.34 0.0277 0.0116

Mercury -113153-10-30 19:12 J -39607406.80 -39607406.70 -39607406.58 0.0276 0.0216

Venus -113148-04-24 19:26 J -39605769.77 -39605769.69 -39605769.58 0.0262 0.0233

Venus -113148-12-09 22:48 J -39605540.71 -39605540.55 -39605540.38 0.0261 0.0170

Venus -113147-07-27 01:41 J -39605311.62 -39605311.43 -39605311.22 0.0260 0.0107

Venus -113146-03-13 04:34 J -39605082.52 -39605082.31 -39605082.09 0.0260 0.0042

Venus -113146-10-28 07:55 J -39604853.39 -39604853.17 -39604852.95 0.0260 0.0024

Venus -113145-06-13 11:02 J -39604624.24 -39604624.04 -39604623.83 0.0260 0.0090

Venus -113144-01-28 14:24 J -39604395.07 -39604394.90 -39604394.71 0.0260 0.0155

Venus -113144-09-14 18:14 J -39604165.85 -39604165.74 -39604165.61 0.0261 0.0218

Earth -113143-01-17 06:14 J -39604041.44 -39604041.24 -39604041.03 0.0261 0.0155

Moon -113143-01-17 06:29 J -39604041.43 -39604041.23 -39604041.01 0.0261 0.0158 \*

Mars -113141-11-20 06:58 J -39603003.48 -39603003.21 -39603002.93 0.0268 0.0066

Mercury -113138-08-29 12:14 J -39601991.01 -39601990.99 -39601990.95 0.0280 0.0272

Mercury -113138-11-26 02:10 J -39601902.52 -39601902.41 -39601902.30 0.0281 0.0187

Mercury -113137-02-22 15:36 J -39601813.98 -39601813.85 -39601813.71 0.0282 0.0102

Mercury -113137-05-21 05:02 J -39601725.43 -39601725.29 -39601725.15 0.0283 0.0018

Mercury -113137-08-17 18:14 J -39601636.87 -39601636.74 -39601636.60 0.0284 0.0070

Mercury -113137-11-14 07:26 J -39601548.30 -39601548.19 -39601548.07 0.0285 0.0154

Mercury -113136-02-10 20:38 J -39601459.71 -39601459.64 -39601459.56 0.0286 0.0238

Venus -113133-05-21 19:55 J -39600263.71 -39600263.67 -39600263.63 0.0299 0.0292

Venus -113132-01-06 17:31 J -39600033.92 -39600033.77 -39600033.62 0.0301 0.0206

Venus -113132-08-24 15:22 J -39599804.05 -39599803.86 -39599803.67 0.0302 0.0113

Venus -113131-04-11 13:26 J -39599574.14 -39599573.94 -39599573.74 0.0302 0.0017

Venus -113131-11-27 11:02 J -39599344.23 -39599344.04 -39599343.84 0.0302 0.0080

Venus -113130-07-15 08:24 J -39599114.31 -39599114.15 -39599113.98 0.0302 0.0174

Venus -113129-03-01 05:17 J -39598884.38 -39598884.28 -39598884.19 0.0301 0.0263

Earth -113129-07-17 16:48 J -39598746.02 -39598745.80 -39598745.57 0.0300 0.0099

Moon -113129-07-17 19:55 J -39598745.88 -39598745.67 -39598745.45 0.0300 0.0107 \*

Mercury -113124-03-29 14:10 J -39597030.01 -39597029.91 -39597029.79 0.0281 0.0211

Mercury -113124-06-26 09:07 J -39596941.27 -39596941.12 -39596940.96 0.0280 0.0113

Mercury -113124-09-23 04:05 J -39596852.50 -39596852.33 -39596852.16 0.0279 0.0015

Mercury -113124-12-20 23:17 J -39596763.70 -39596763.53 -39596763.37 0.0277 0.0084

Mercury -113123-03-19 18:29 J -39596674.85 -39596674.73 -39596674.59 0.0276 0.0182

Venus -113119-11-04 23:17 J -39594983.63 -39594983.53 -39594983.41 0.0262 0.0225

Venus -113118-06-22 02:24 J -39594754.56 -39594754.40 -39594754.22 0.0261 0.0162

Venus -113117-02-06 05:46 J -39594525.47 -39594525.26 -39594525.06 0.0260 0.0097

Venus -113117-09-22 08:53 J -39594296.35 -39594296.13 -39594295.91 0.0260 0.0032

Venus -113116-05-09 12:00 J -39594067.22 -39594067.00 -39594066.78 0.0260 0.0034

Venus -113116-12-24 15:07 J -39593838.07 -39593837.87 -39593837.66 0.0260 0.0099

Venus -113115-08-10 18:29 J -39593608.89 -39593608.73 -39593608.55 0.0261 0.0164

Venus -113114-03-27 22:34 J -39593379.66 -39593379.56 -39593379.44 0.0261 0.0226

Earth -113113-01-24 12:29 J -39593077.16 -39593076.98 -39593076.78 0.0263 0.0176

Moon -113113-01-24 16:05 J -39593077.02 -39593076.83 -39593076.63 0.0263 0.0165 \*  
 Mars -113112-01-11 22:19 J -39592723.69 -39592723.57 -39592723.41 0.0265 0.0228  
 Mars -113110-01-07 11:17 J -39591998.16 -39591998.03 -39591997.89 0.0271 0.0238  
 Mercury -113108-04-14 03:50 J -39591170.43 -39591170.34 -39591170.24 0.0281 0.0211  
 Mercury -113108-07-11 17:31 J -39591081.90 -39591081.77 -39591081.64 0.0282 0.0126  
 Mercury -113108-10-08 06:58 J -39590993.35 -39590993.21 -39590993.07 0.0283 0.0041  
 Mercury -113107-01-04 20:10 J -39590904.79 -39590904.66 -39590904.52 0.0284 0.0045  
 Mercury -113107-04-03 09:36 J -39590816.23 -39590816.10 -39590815.98 0.0285 0.0129  
 Mercury -113107-06-30 22:34 J -39590727.65 -39590727.56 -39590727.47 0.0286 0.0214  
 Venus -113104-12-02 02:38 J -39589477.45 -39589477.39 -39589477.32 0.0299 0.0281  
 Venus -113103-07-20 00:29 J -39589247.64 -39589247.48 -39589247.33 0.0300 0.0192  
 Venus -113102-03-06 22:19 J -39589017.76 -39589017.57 -39589017.38 0.0301 0.0099  
 Venus -113102-10-22 20:10 J -39588787.86 -39588787.66 -39588787.45 0.0302 0.0005  
 Venus -113101-06-08 18:00 J -39588557.95 -39588557.75 -39588557.56 0.0302 0.0095  
 Venus -113100-01-24 15:07 J -39588328.02 -39588327.87 -39588327.71 0.0301 0.0189  
 Moon -113100-07-11 19:12 J -39588159.81 -39588159.70 -39588159.59 0.0300 0.0263  
 Earth -113100-07-11 22:34 J -39588159.65 -39588159.56 -39588159.46 0.0300 0.0271 \*  
 Venus -113100-09-11 11:46 J -39588098.08 -39588098.01 -39588097.93 0.0300 0.0277  
 Mars -113098-03-17 00:14 J -39587546.73 -39587546.49 -39587546.24 0.0296 0.0172  
 Mercury -113095-08-16 15:07 J -39586297.96 -39586297.87 -39586297.78 0.0281 0.0236  
 Mercury -113095-11-13 09:50 J -39586209.24 -39586209.09 -39586208.95 0.0280 0.0139  
 Mercury -113094-02-10 04:34 J -39586120.48 -39586120.31 -39586120.14 0.0279 0.0041  
 Mercury -113094-05-09 23:46 J -39586031.68 -39586031.51 -39586031.34 0.0278 0.0058  
 Mercury -113094-08-06 18:58 J -39585942.85 -39585942.71 -39585942.56 0.0277 0.0157  
 Mercury -113094-11-03 14:24 J -39585853.96 -39585853.90 -39585853.83 0.0276 0.0255  
 Venus -113089-05-17 03:50 J -39584197.46 -39584197.34 -39584197.22 0.0262 0.0217  
 Venus -113088-01-01 06:43 J -39583968.39 -39583968.22 -39583968.04 0.0261 0.0154  
 Venus -113088-08-18 09:36 J -39583739.30 -39583739.10 -39583738.89 0.0260 0.0089  
 Venus -113087-04-04 12:29 J -39583510.20 -39583509.98 -39583509.76 0.0260 0.0023  
 Venus -113087-11-19 15:22 J -39583281.07 -39583280.86 -39583280.64 0.0260 0.0044

Venus -113086-07-06 18:29 J -39583051.93 -39583051.73 -39583051.53 0.0260 0.0109  
 Venus -113085-02-20 21:50 J -39582822.75 -39582822.59 -39582822.42 0.0260 0.0173  
 Venus -113085-10-07 01:55 J -39582593.51 -39582593.42 -39582593.33 0.0261 0.0236  
 Moon -113084-01-18 05:31 J -39582490.49 -39582490.27 -39582490.02 0.0261 0.0101  
 Earth -113084-01-18 09:22 J -39582490.35 -39582490.11 -39582489.87 0.0261 0.0092 \*  
 Mars -113082-02-28 03:07 J -39581719.63 -39581719.37 -39581719.10 0.0266 0.0083  
 Mercury -113079-09-01 04:34 J -39580438.38 -39580438.31 -39580438.24 0.0280 0.0242  
 Mercury -113079-11-28 18:00 J -39580349.86 -39580349.75 -39580349.63 0.0281 0.0158  
 Mercury -113078-02-25 07:41 J -39580261.32 -39580261.18 -39580261.05 0.0282 0.0073  
 Mercury -113078-05-24 20:53 J -39580172.77 -39580172.63 -39580172.49 0.0283 0.0013  
 Mercury -113078-08-21 10:05 J -39580084.21 -39580084.08 -39580083.94 0.0284 0.0097  
 Mercury -113078-11-17 23:17 J -39579995.63 -39579995.53 -39579995.42 0.0285 0.0181  
 Mercury -113077-02-14 12:14 J -39579907.03 -39579906.99 -39579906.93 0.0287 0.0266  
 Venus -113074-06-14 03:50 J -39578691.41 -39578691.34 -39578691.25 0.0300 0.0275  
 Venus -113073-01-30 01:41 J -39578461.58 -39578461.43 -39578461.26 0.0301 0.0186  
 Venus -113073-09-15 23:46 J -39578231.70 -39578231.51 -39578231.31 0.0302 0.0091  
 Venus -113072-05-03 21:50 J -39578001.79 -39578001.59 -39578001.38 0.0302 0.0010  
 Venus -113072-12-19 19:41 J -39577771.87 -39577771.68 -39577771.49 0.0302 0.0104  
 Venus -113071-08-06 17:02 J -39577541.94 -39577541.79 -39577541.63 0.0302 0.0198  
 Venus -113070-03-24 13:41 J -39577311.98 -39577311.93 -39577311.86 0.0301 0.0286  
 Earth -113070-07-19 19:41 J -39577194.87 -39577194.68 -39577194.49 0.0300 0.0173  
 Moon -113070-07-19 21:50 J -39577194.79 -39577194.59 -39577194.39 0.0300 0.0176 \*  
 Mars -113068-05-08 17:02 J -39576536.08 -39576535.79 -39576535.48 0.0294 0.0072  
 Mercury -113065-01-03 13:55 J -39575565.96 -39575565.92 -39575565.88 0.0282 0.0271  
 Mercury -113065-04-01 08:24 J -39575477.28 -39575477.15 -39575477.02 0.0281 0.0174  
 Mercury -113065-06-29 03:22 J -39575388.53 -39575388.36 -39575388.20 0.0280 0.0077  
 Mercury -113065-09-25 22:19 J -39575299.74 -39575299.57 -39575299.40 0.0278 0.0022  
 Mercury -113065-12-23 17:31 J -39575210.92 -39575210.77 -39575210.61 0.0277 0.0121  
 Mercury -113064-03-22 12:58 J -39575122.06 -39575121.96 -39575121.85 0.0276 0.0219  
 Venus -113060-11-27 06:29 J -39573411.36 -39573411.23 -39573411.10 0.0262 0.0209

Venus -113059-07-14 09:22 J -39573182.29 -39573182.11 -39573181.92 0.0261 0.0145  
 Venus -113058-02-28 12:14 J -39572953.19 -39572952.99 -39572952.77 0.0260 0.0081  
 Venus -113058-10-15 15:36 J -39572724.07 -39572723.85 -39572723.63 0.0260 0.0015  
 Venus -113057-05-31 18:29 J -39572494.95 -39572494.73 -39572494.51 0.0260 0.0052  
 Venus -113056-01-15 21:22 J -39572265.80 -39572265.61 -39572265.40 0.0260 0.0118  
 Venus -113056-09-02 00:43 J -39572036.61 -39572036.47 -39572036.30 0.0260 0.0183  
 Venus -113055-04-19 05:02 J -39571807.36 -39571807.29 -39571807.22 0.0261 0.0245  
 Earth -113054-01-25 13:41 J -39571526.04 -39571525.93 -39571525.82 0.0263 0.0233  
 Moon -113054-01-25 14:53 J -39571526.01 -39571525.88 -39571525.73 0.0263 0.0221 \*  
 Mars -113052-04-15 17:46 J -39570715.03 -39570714.76 -39570714.49 0.0269 0.0079  
 Mercury -113049-01-19 05:46 J -39569706.29 -39569706.26 -39569706.22 0.0280 0.0268  
 Mercury -113049-04-16 19:26 J -39569617.79 -39569617.69 -39569617.58 0.0281 0.0184  
 Mercury -113049-07-14 09:07 J -39569529.26 -39569529.12 -39569528.99 0.0282 0.0099  
 Mercury -113049-10-10 22:34 J -39569440.71 -39569440.56 -39569440.42 0.0283 0.0017  
 Mercury -113048-01-07 11:46 J -39569352.15 -39569352.01 -39569351.87 0.0284 0.0070  
 Mercury -113048-04-06 00:58 J -39569263.58 -39569263.46 -39569263.35 0.0285 0.0155  
 Mercury -113048-07-03 13:55 J -39569174.99 -39569174.92 -39569174.84 0.0286 0.0239  
 Venus -113045-12-24 09:50 J -39567905.18 -39567905.09 -39567904.99 0.0299 0.0263  
 Venus -113044-08-11 07:41 J -39567675.35 -39567675.18 -39567675.01 0.0301 0.0172  
 Venus -113043-03-29 05:46 J -39567445.46 -39567445.26 -39567445.06 0.0301 0.0077  
 Venus -113043-11-14 03:50 J -39567215.55 -39567215.34 -39567215.14 0.0302 0.0022  
 Venus -113042-07-02 01:12 J -39566985.63 -39566985.45 -39566985.25 0.0302 0.0119  
 Venus -113041-02-16 22:34 J -39566755.70 -39566755.56 -39566755.41 0.0301 0.0212  
 Moon -113041-07-12 22:05 J -39566608.75 -39566608.58 -39566608.41 0.0300 0.0200  
 Earth -113041-07-12 23:31 J -39566608.69 -39566608.52 -39566608.34 0.0300 0.0203 \*  
 Venus -113041-10-03 19:26 J -39566525.69 -39566525.69 -39566525.68 0.0300 0.0300  
 Mercury -113036-08-19 08:38 J -39564745.25 -39564745.14 -39564745.02 0.0281 0.0202  
 Mercury -113036-11-16 03:22 J -39564656.51 -39564656.36 -39564656.20 0.0280 0.0105  
 Mercury -113035-02-12 22:19 J -39564567.74 -39564567.57 -39564567.40 0.0279 0.0008  
 Mercury -113035-05-12 17:31 J -39564478.93 -39564478.77 -39564478.60 0.0278 0.0093

Mercury -113035-08-09 12:58 J -39564390.08 -39564389.96 -39564389.83 0.0277 0.0191

Venus -113030-06-09 10:05 J -39562625.21 -39562625.08 -39562624.93 0.0262 0.0202

Venus -113029-01-24 12:58 J -39562396.13 -39562395.96 -39562395.76 0.0261 0.0138

Venus -113029-09-09 16:05 J -39562167.04 -39562166.83 -39562166.62 0.0260 0.0071

Venus -113028-04-26 18:58 J -39561937.93 -39561937.71 -39561937.49 0.0260 0.0007

Venus -113028-12-11 21:36 J -39561708.81 -39561708.60 -39561708.39 0.0259 0.0061

Venus -113027-07-29 00:29 J -39561479.67 -39561479.48 -39561479.28 0.0260 0.0127

Venus -113026-03-15 03:36 J -39561250.48 -39561250.35 -39561250.19 0.0260 0.0193

Venus -113026-10-30 07:41 J -39561021.21 -39561021.18 -39561021.12 0.0261 0.0255

Moon -113025-01-20 08:38 J -39560939.39 -39560939.14 -39560938.90 0.0261 0.0045

Earth -113025-01-20 10:05 J -39560939.33 -39560939.08 -39560938.83 0.0261 0.0035 \*

Mars -113024-06-07 04:34 J -39560435.44 -39560435.31 -39560435.16 0.0264 0.0225

Mars -113022-06-02 12:14 J -39559710.12 -39559709.99 -39559709.84 0.0270 0.0236

Mercury -113020-09-03 19:55 J -39558885.76 -39558885.67 -39558885.58 0.0280 0.0216

Mercury -113020-12-01 09:36 J -39558797.23 -39558797.10 -39558796.97 0.0281 0.0132

Mercury -113019-02-27 23:02 J -39558708.68 -39558708.54 -39558708.40 0.0282 0.0047

Mercury -113019-05-27 12:14 J -39558620.13 -39558619.99 -39558619.85 0.0283 0.0038

Mercury -113019-08-24 01:26 J -39558531.56 -39558531.44 -39558531.31 0.0284 0.0122

Mercury -113019-11-20 14:38 J -39558442.99 -39558442.89 -39558442.80 0.0285 0.0206

Venus -113015-07-06 09:50 J -39557119.18 -39557119.09 -39557118.97 0.0300 0.0258

Venus -113014-02-21 07:55 J -39556889.34 -39556889.17 -39556889.00 0.0301 0.0166

Venus -113014-10-09 06:00 J -39556659.45 -39556659.25 -39556659.05 0.0302 0.0070

Venus -113013-05-26 04:05 J -39556429.53 -39556429.33 -39556429.13 0.0302 0.0029

Venus -113012-01-11 01:41 J -39556199.61 -39556199.43 -39556199.24 0.0302 0.0127

Venus -113012-08-28 23:02 J -39555969.67 -39555969.54 -39555969.40 0.0302 0.0220

Moon -113011-07-20 15:07 J -39555644.01 -39555643.87 -39555643.71 0.0300 0.0231

Earth -113011-07-20 18:14 J -39555643.89 -39555643.74 -39555643.60 0.0300 0.0235 \*

Mars -113010-08-09 10:19 J -39555259.32 -39555259.07 -39555258.82 0.0297 0.0172

Mercury -113006-01-06 06:43 J -39554013.30 -39554013.22 -39554013.13 0.0282 0.0241

Mercury -113006-04-05 01:26 J -39553924.58 -39553924.44 -39553924.30 0.0281 0.0144

Mercury -113006-07-02 20:24 J -39553835.82 -39553835.65 -39553835.48 0.0279 0.0046

Mercury -113006-09-29 15:36 J -39553747.02 -39553746.85 -39553746.69 0.0278 0.0054

Mercury -113006-12-27 10:48 J -39553658.19 -39553658.05 -39553657.90 0.0277 0.0152

Mercury -113005-03-25 06:14 J -39553569.30 -39553569.24 -39553569.16 0.0276 0.0251

Venus -113001-05-04 08:10 J -39552068.19 -39552068.16 -39552068.11 0.0262 0.0258

Venus -113001-12-19 11:31 J -39551839.16 -39551839.02 -39551838.87 0.0261 0.0195

# 113TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 113th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-113000-08-05 14:38 J	-39551610.07	-39551609.89	-39551609.70	0.0260	0.0130		
Venus	-112999-03-22 17:31 J	-39551380.98	-39551380.77	-39551380.55	0.0260	0.0064		
Venus	-112999-11-06 20:38 J	-39551151.86	-39551151.64	-39551151.42	0.0260	0.0005		
Venus	-112998-06-23 23:31 J	-39550922.73	-39550922.52	-39550922.31	0.0260	0.0070		
Venus	-112997-02-08 02:24 J	-39550693.58	-39550693.40	-39550693.20	0.0260	0.0136		
Venus	-112997-09-24 05:46 J	-39550464.38	-39550464.26	-39550464.11	0.0260	0.0201		
Mars	-112994-07-24 07:55 J	-39549431.44	-39549431.17	-39549430.90	0.0266	0.0074		
Mercury	-112990-01-21 20:53 J	-39548153.69	-39548153.63	-39548153.56	0.0280	0.0244		
Mercury	-112990-04-20 10:34 J	-39548065.18	-39548065.06	-39548064.94	0.0281	0.0160		
Mercury	-112990-07-18 00:00 J	-39547976.64	-39547976.50	-39547976.36	0.0282	0.0076		

Mercury -112990-10-14 13:26 J -39547888.08 -39547887.94 -39547887.80 0.0283 0.0009

Mercury -112989-01-11 02:38 J -39547799.52 -39547799.39 -39547799.26 0.0284 0.0093

Mercury -112989-04-08 15:50 J -39547710.95 -39547710.84 -39547710.74 0.0285 0.0177

Mercury -112989-07-06 04:34 J -39547622.35 -39547622.31 -39547622.25 0.0286 0.0262

Venus -112985-01-16 14:24 J -39546333.01 -39546332.90 -39546332.78 0.0300 0.0247

Venus -112985-09-02 12:29 J -39546103.16 -39546102.98 -39546102.80 0.0301 0.0154

Venus -112984-04-20 10:34 J -39545873.26 -39545873.06 -39545872.86 0.0302 0.0057

Venus -112984-12-06 08:38 J -39545643.34 -39545643.14 -39545642.94 0.0302 0.0042

Venus -112983-07-24 06:14 J -39545413.42 -39545413.24 -39545413.05 0.0302 0.0140

Venus -112982-03-11 03:22 J -39545183.47 -39545183.36 -39545183.22 0.0301 0.0234

Earth -112982-07-14 19:41 J -39545057.87 -39545057.68 -39545057.46 0.0300 0.0146

Moon -112982-07-14 23:17 J -39545057.73 -39545057.53 -39545057.33 0.0300 0.0148 \*

Mars -112980-10-01 14:10 J -39544248.21 -39544247.91 -39544247.61 0.0294 0.0072

Mercury -112977-05-25 06:43 J -39543281.27 -39543281.22 -39543281.18 0.0282 0.0271

Mercury -112977-08-22 01:12 J -39543192.58 -39543192.45 -39543192.31 0.0281 0.0174

Mercury -112977-11-18 20:10 J -39543103.82 -39543103.66 -39543103.50 0.0280 0.0075

Mercury -112976-02-15 15:22 J -39543015.03 -39543014.86 -39543014.69 0.0279 0.0024

Mercury -112976-05-15 10:34 J -39542926.21 -39542926.06 -39542925.91 0.0278 0.0122

Mercury -112976-08-12 05:46 J -39542837.35 -39542837.26 -39542837.14 0.0277 0.0222

Venus -112972-11-14 12:00 J -39541282.05 -39541282.00 -39541281.93 0.0263 0.0251

Venus -112971-07-01 15:07 J -39541053.01 -39541052.87 -39541052.71 0.0261 0.0187

Venus -112970-02-15 18:14 J -39540823.93 -39540823.74 -39540823.55 0.0261 0.0122

Venus -112970-10-02 21:07 J -39540594.83 -39540594.62 -39540594.40 0.0260 0.0055

Venus -112969-05-18 23:46 J -39540365.73 -39540365.51 -39540365.29 0.0260 0.0013

Venus -112968-01-03 02:38 J -39540136.60 -39540136.39 -39540136.18 0.0259 0.0079

Venus -112968-08-20 05:17 J -39539907.45 -39539907.28 -39539907.09 0.0260 0.0145

Venus -112967-04-06 08:38 J -39539678.26 -39539678.14 -39539678.00 0.0260 0.0209

Earth -112966-01-21 08:38 J -39539388.40 -39539388.14 -39539387.89 0.0261 0.0019

Moon -112966-01-21 11:46 J -39539388.26 -39539388.01 -39539387.76 0.0261 0.0006 \*

Mars -112964-09-08 17:46 J -39538427.03 -39538426.76 -39538426.49 0.0268 0.0076



Mercury -112961-06-09 21:22 J -39537421.62 -39537421.61 -39537421.59 0.0279 0.0276

Mercury -112961-09-06 11:02 J -39537333.14 -39537333.04 -39537332.93 0.0280 0.0193

Mercury -112961-12-04 00:29 J -39537244.61 -39537244.48 -39537244.34 0.0281 0.0109

Mercury -112960-03-02 13:55 J -39537156.06 -39537155.92 -39537155.78 0.0282 0.0025

Mercury -112960-05-30 03:07 J -39537067.51 -39537067.37 -39537067.23 0.0283 0.0060

Mercury -112960-08-26 16:19 J -39536978.94 -39536978.82 -39536978.70 0.0284 0.0144

Mercury -112960-11-23 05:17 J -39536890.36 -39536890.28 -39536890.19 0.0285 0.0227

Venus -112956-07-28 14:24 J -39535547.02 -39535546.90 -39535546.78 0.0300 0.0241

Venus -112955-03-15 12:14 J -39535317.16 -39535316.99 -39535316.81 0.0301 0.0148

Venus -112955-10-31 10:19 J -39535087.27 -39535087.07 -39535086.87 0.0302 0.0050

Venus -112954-06-18 08:24 J -39534857.35 -39534857.15 -39534856.95 0.0302 0.0049

Venus -112953-02-03 06:00 J -39534627.42 -39534627.25 -39534627.07 0.0302 0.0148

Venus -112953-09-20 03:36 J -39534397.47 -39534397.35 -39534397.23 0.0302 0.0241

Moon -112952-07-21 10:48 J -39534093.11 -39534093.05 -39534092.96 0.0300 0.0282

Earth -112952-07-21 13:41 J -39534092.99 -39534092.93 -39534092.87 0.0300 0.0290 \*

Mercury -112947-01-08 22:48 J -39532460.65 -39532460.55 -39532460.43 0.0282 0.0215

Mercury -112947-04-07 17:46 J -39532371.91 -39532371.76 -39532371.61 0.0281 0.0116

Mercury -112947-07-05 12:43 J -39532283.14 -39532282.97 -39532282.80 0.0280 0.0018

Mercury -112947-10-02 07:55 J -39532194.33 -39532194.17 -39532194.00 0.0278 0.0081

Mercury -112947-12-30 03:22 J -39532105.49 -39532105.36 -39532105.23 0.0277 0.0180

Jupiter -112943-08-01 22:05 J -39530794.96 -39530794.58 -39530794.16 0.0264 0.0145

Venus -112942-05-27 12:29 J -39530496.05 -39530495.98 -39530495.90 0.0262 0.0245

Venus -112941-01-11 15:50 J -39530266.99 -39530266.84 -39530266.68 0.0261 0.0180

Venus -112941-08-27 18:58 J -39530037.90 -39530037.71 -39530037.51 0.0260 0.0114

Venus -112940-04-13 21:50 J -39529808.80 -39529808.59 -39529808.37 0.0260 0.0048

Venus -112940-11-29 00:43 J -39529579.69 -39529579.47 -39529579.25 0.0260 0.0020

Venus -112939-07-16 03:36 J -39529350.56 -39529350.35 -39529350.14 0.0260 0.0087

Venus -112938-03-02 06:43 J -39529121.39 -39529121.22 -39529121.04 0.0260 0.0153

Venus -112938-10-17 10:19 J -39528892.18 -39528892.07 -39528891.95 0.0260 0.0218

Moon -112937-01-15 23:31 J -39528801.53 -39528801.52 -39528801.48 0.0261 0.0259

Earth -112937-01-16 03:07 J -39528801.44 -39528801.37 -39528801.28 0.0261 0.0247  
 Mars -112936-10-31 06:14 J -39528147.38 -39528147.24 -39528147.07 0.0264 0.0220  
 Mars -112934-10-26 11:46 J -39527422.13 -39527422.01 -39527421.88 0.0270 0.0241  
 Mercury -112931-01-24 11:46 J -39526601.09 -39526601.01 -39526600.91 0.0280 0.0222  
 Mercury -112931-04-23 01:26 J -39526512.56 -39526512.44 -39526512.31 0.0281 0.0138  
 Mercury -112931-07-20 14:53 J -39526424.02 -39526423.88 -39526423.74 0.0282 0.0054  
 Mercury -112931-10-17 04:19 J -39526335.46 -39526335.32 -39526335.18 0.0283 0.0031  
 Mercury -112930-01-13 17:17 J -39526246.90 -39526246.78 -39526246.65 0.0284 0.0116  
 Mercury -112930-04-12 06:29 J -39526158.33 -39526158.23 -39526158.13 0.0285 0.0199  
 Mercury -112930-07-09 19:26 J -39526069.71 -39526069.69 -39526069.67 0.0286 0.0282  
 Venus -112926-02-07 18:14 J -39524760.86 -39524760.74 -39524760.60 0.0300 0.0231  
 Venus -112926-09-25 16:19 J -39524531.00 -39524530.82 -39524530.63 0.0301 0.0136  
 Venus -112925-05-12 14:38 J -39524301.10 -39524300.89 -39524300.69 0.0302 0.0037  
 Venus -112925-12-28 12:29 J -39524071.18 -39524070.98 -39524070.78 0.0302 0.0063  
 Venus -112924-08-15 10:05 J -39523841.24 -39523841.08 -39523840.90 0.0302 0.0161  
 Venus -112923-04-02 07:26 J -39523611.29 -39523611.19 -39523611.08 0.0301 0.0254  
 Earth -112923-07-15 14:24 J -39523507.12 -39523506.90 -39523506.67 0.0300 0.0092  
 Moon -112923-07-15 16:05 J -39523507.05 -39523506.83 -39523506.59 0.0300 0.0101 \*  
 Mars -112921-01-01 20:10 J -39522971.90 -39522971.66 -39522971.41 0.0297 0.0179  
 Mercury -112918-05-28 22:19 J -39521728.64 -39521728.57 -39521728.48 0.0282 0.0247  
 Mercury -112918-08-25 17:17 J -39521639.92 -39521639.78 -39521639.64 0.0281 0.0148  
 Mercury -112918-11-22 12:14 J -39521551.16 -39521550.99 -39521550.82 0.0280 0.0050  
 Mercury -112917-02-19 07:26 J -39521462.36 -39521462.19 -39521462.02 0.0279 0.0049  
 Mercury -112917-05-18 02:38 J -39521373.53 -39521373.39 -39521373.24 0.0278 0.0149  
 Mercury -112917-08-14 22:19 J -39521284.64 -39521284.57 -39521284.49 0.0277 0.0248  
 Venus -112913-12-06 15:50 J -39519709.91 -39519709.84 -39519709.74 0.0263 0.0239  
 Venus -112912-07-23 19:12 J -39519480.85 -39519480.70 -39519480.53 0.0261 0.0173  
 Venus -112911-03-09 22:19 J -39519251.77 -39519251.57 -39519251.37 0.0261 0.0107  
 Venus -112911-10-25 01:12 J -39519022.67 -39519022.45 -39519022.23 0.0260 0.0039  
 Venus -112910-06-11 03:50 J -39518793.55 -39518793.34 -39518793.12 0.0260 0.0029

Venus -112909-01-26 06:43 J -39518564.42 -39518564.22 -39518564.01 0.0259 0.0096  
 Venus -112909-09-11 09:50 J -39518335.26 -39518335.09 -39518334.92 0.0260 0.0162  
 Venus -112908-04-28 13:12 J -39518106.06 -39518105.95 -39518105.84 0.0260 0.0227  
 Earth -112907-01-22 06:43 J -39517837.47 -39517837.22 -39517836.98 0.0261 0.0071  
 Moon -112907-01-22 08:53 J -39517837.38 -39517837.13 -39517836.87 0.0261 0.0056 \*  
 Mars -112906-12-17 09:36 J -39517143.36 -39517143.10 -39517142.82 0.0265 0.0076  
 Mercury -112902-06-13 12:29 J -39515869.04 -39515868.98 -39515868.92 0.0278 0.0253  
 Mercury -112902-09-10 02:10 J -39515780.53 -39515780.41 -39515780.30 0.0280 0.0170  
 Mercury -112902-12-07 15:22 J -39515691.99 -39515691.86 -39515691.72 0.0281 0.0087  
 Mercury -112901-03-05 04:48 J -39515603.44 -39515603.30 -39515603.16 0.0282 0.0003  
 Mercury -112901-06-01 18:00 J -39515514.89 -39515514.75 -39515514.62 0.0283 0.0081  
 Mercury -112901-08-29 06:58 J -39515426.32 -39515426.21 -39515426.09 0.0284 0.0165  
 Mercury -112901-11-25 20:10 J -39515337.73 -39515337.66 -39515337.60 0.0285 0.0248  
 Venus -112897-08-19 17:46 J -39513974.89 -39513974.76 -39513974.62 0.0300 0.0225  
 Venus -112896-04-06 15:36 J -39513745.03 -39513744.85 -39513744.66 0.0301 0.0131  
 Venus -112896-11-22 13:41 J -39513515.14 -39513514.93 -39513514.73 0.0302 0.0032  
 Venus -112895-07-10 11:17 J -39513285.22 -39513285.03 -39513284.82 0.0302 0.0070  
 Venus -112894-02-25 09:07 J -39513055.29 -39513055.12 -39513054.95 0.0302 0.0167  
 Venus -112894-10-13 06:29 J -39512825.33 -39512825.23 -39512825.13 0.0301 0.0261  
 Mars -112891-02-23 05:46 J -39511961.56 -39511961.26 -39511960.96 0.0295 0.0064  
 Mercury -112888-01-11 14:38 J -39510908.01 -39510907.89 -39510907.77 0.0282 0.0191  
 Mercury -112888-04-10 09:22 J -39510819.26 -39510819.11 -39510818.94 0.0281 0.0093  
 Mercury -112888-07-08 04:34 J -39510730.48 -39510730.31 -39510730.14 0.0280 0.0008  
 Mercury -112888-10-05 00:00 J -39510641.66 -39510641.50 -39510641.34 0.0279 0.0106  
 Mercury -112887-01-01 19:26 J -39510552.80 -39510552.69 -39510552.57 0.0277 0.0205  
 Venus -112883-06-18 15:50 J -39508923.93 -39508923.84 -39508923.73 0.0262 0.0232  
 Venus -112882-02-02 19:26 J -39508694.86 -39508694.69 -39508694.52 0.0261 0.0166  
 Venus -112882-09-19 22:34 J -39508465.75 -39508465.56 -39508465.35 0.0260 0.0100  
 Venus -112881-05-06 01:41 J -39508236.65 -39508236.43 -39508236.21 0.0260 0.0032  
 Venus -112881-12-21 04:34 J -39508007.53 -39508007.31 -39508007.09 0.0260 0.0037

Venus -112880-08-07 07:26 J -39507778.39 -39507778.19 -39507777.99 0.0260 0.0104

Venus -112879-03-24 10:19 J -39507549.22 -39507549.07 -39507548.89 0.0260 0.0171

Venus -112879-11-08 13:55 J -39507319.99 -39507319.92 -39507319.81 0.0260 0.0236

Moon -112878-01-16 22:48 J -39507250.68 -39507250.55 -39507250.39 0.0261 0.0211

Earth -112878-01-17 00:43 J -39507250.63 -39507250.47 -39507250.29 0.0261 0.0196 \*

Mars -112875-02-01 16:48 J -39506139.06 -39506138.80 -39506138.52 0.0268 0.0080

Mercury -112872-01-27 02:53 J -39505048.48 -39505048.38 -39505048.28 0.0280 0.0199

Mercury -112872-04-25 16:19 J -39504959.95 -39504959.82 -39504959.69 0.0281 0.0116

Mercury -112872-07-23 05:46 J -39504871.40 -39504871.26 -39504871.12 0.0282 0.0032

Mercury -112872-10-19 18:58 J -39504782.85 -39504782.71 -39504782.57 0.0283 0.0052

Mercury -112871-01-16 07:55 J -39504694.28 -39504694.17 -39504694.04 0.0284 0.0137

Mercury -112871-04-14 21:07 J -39504605.71 -39504605.62 -39504605.53 0.0285 0.0219

Venus -112867-03-01 21:36 J -39503188.73 -39503188.60 -39503188.45 0.0300 0.0215

Venus -112867-10-17 19:41 J -39502958.87 -39502958.68 -39502958.49 0.0301 0.0118

Venus -112866-06-04 17:46 J -39502728.97 -39502728.76 -39502728.56 0.0302 0.0018

Venus -112865-01-20 15:36 J -39502499.04 -39502498.85 -39502498.65 0.0302 0.0083

Venus -112865-09-06 13:12 J -39502269.11 -39502268.95 -39502268.78 0.0302 0.0181

Venus -112864-04-24 10:34 J -39502039.14 -39502039.06 -39502038.97 0.0301 0.0274

Moon -112864-07-16 04:34 J -39501956.54 -39501956.31 -39501956.07 0.0300 0.0058

Earth -112864-07-16 07:55 J -39501956.40 -39501956.17 -39501955.94 0.0300 0.0042 \*

Mars -112861-04-16 17:46 J -39500950.79 -39500950.76 -39500950.73 0.0292 0.0290

Mercury -112859-05-31 14:10 J -39500176.01 -39500175.91 -39500175.81 0.0282 0.0223

Mercury -112859-08-28 08:53 J -39500087.28 -39500087.13 -39500086.98 0.0281 0.0125

Mercury -112859-11-25 04:05 J -39499998.50 -39499998.33 -39499998.16 0.0280 0.0026

Mercury -112858-02-21 23:17 J -39499909.70 -39499909.53 -39499909.36 0.0279 0.0074

Mercury -112858-05-21 18:43 J -39499820.85 -39499820.72 -39499820.58 0.0278 0.0173

Mercury -112858-08-18 14:24 J -39499731.92 -39499731.90 -39499731.87 0.0277 0.0272

Venus -112854-12-29 19:26 J -39498137.79 -39498137.69 -39498137.57 0.0263 0.0226

Venus -112853-08-14 23:02 J -39497908.71 -39497908.54 -39497908.37 0.0261 0.0160

Venus -112852-04-01 01:55 J -39497679.62 -39497679.42 -39497679.21 0.0261 0.0092

Venus -112852-11-16 05:02 J -39497450.51 -39497450.29 -39497450.07 0.0260 0.0024  
 Venus -112851-07-03 07:41 J -39497221.39 -39497221.18 -39497220.96 0.0260 0.0045  
 Venus -112850-02-17 10:34 J -39496992.25 -39496992.06 -39496991.86 0.0260 0.0113  
 Venus -112850-10-04 13:55 J -39496763.08 -39496762.92 -39496762.76 0.0260 0.0179  
 Venus -112849-05-20 17:02 J -39496533.85 -39496533.79 -39496533.70 0.0260 0.0245  
 Moon -112848-01-23 01:26 J -39496286.66 -39496286.44 -39496286.19 0.0261 0.0108  
 Earth -112848-01-23 04:48 J -39496286.53 -39496286.30 -39496286.08 0.0261 0.0123 \*  
 Mars -112847-03-26 09:50 J -39495859.23 -39495859.09 -39495858.92 0.0264 0.0219  
 Mars -112845-03-20 11:31 J -39495134.15 -39495134.02 -39495133.88 0.0269 0.0236  
 Mercury -112843-06-16 03:50 J -39494316.42 -39494316.34 -39494316.26 0.0278 0.0229  
 Mercury -112843-09-12 17:17 J -39494227.90 -39494227.78 -39494227.66 0.0280 0.0146  
 Mercury -112843-12-10 06:43 J -39494139.36 -39494139.22 -39494139.08 0.0281 0.0063  
 Mercury -112842-03-08 19:55 J -39494050.81 -39494050.67 -39494050.53 0.0282 0.0021  
 Mercury -112842-06-05 09:07 J -39493962.25 -39493962.12 -39493961.99 0.0283 0.0104  
 Mercury -112842-09-01 22:05 J -39493873.68 -39493873.58 -39493873.48 0.0284 0.0187  
 Mercury -112842-11-29 11:02 J -39493785.08 -39493785.04 -39493785.00 0.0285 0.0269  
 Venus -112838-09-11 22:05 J -39492402.72 -39492402.58 -39492402.43 0.0300 0.0209  
 Venus -112837-04-28 19:55 J -39492172.86 -39492172.67 -39492172.48 0.0301 0.0112  
 Venus -112837-12-14 17:46 J -39491942.97 -39491942.76 -39491942.56 0.0302 0.0013  
 Venus -112836-08-01 15:22 J -39491713.05 -39491712.86 -39491712.66 0.0302 0.0089  
 Venus -112835-03-19 12:58 J -39491483.11 -39491482.96 -39491482.80 0.0302 0.0188  
 Venus -112835-11-04 10:19 J -39491253.14 -39491253.07 -39491253.00 0.0301 0.0281  
 Mars -112833-05-25 07:41 J -39490685.41 -39490685.18 -39490684.93 0.0297 0.0188  
 Mercury -112830-10-18 11:31 J -39489444.07 -39489444.02 -39489443.96 0.0283 0.0264  
 Mercury -112829-01-15 06:14 J -39489355.37 -39489355.24 -39489355.10 0.0282 0.0167  
 Mercury -112829-04-13 01:12 J -39489266.61 -39489266.45 -39489266.28 0.0281 0.0069  
 Mercury -112829-07-10 20:24 J -39489177.82 -39489177.65 -39489177.48 0.0280 0.0031  
 Mercury -112829-10-07 15:50 J -39489088.99 -39489088.84 -39489088.69 0.0279 0.0130  
 Mercury -112828-01-04 11:31 J -39489000.12 -39489000.02 -39488999.93 0.0277 0.0230  
 Venus -112824-07-10 19:12 J -39487351.81 -39487351.70 -39487351.58 0.0262 0.0220

Venus -112823-02-24 22:34 J -39487122.72 -39487122.56 -39487122.37 0.0261 0.0154  
 Venus -112823-10-12 02:10 J -39486893.61 -39486893.41 -39486893.20 0.0260 0.0085  
 Venus -112822-05-29 05:17 J -39486664.50 -39486664.28 -39486664.06 0.0260 0.0017  
 Venus -112821-01-13 08:24 J -39486435.37 -39486435.15 -39486434.93 0.0260 0.0053  
 Venus -112821-08-29 11:31 J -39486206.22 -39486206.02 -39486205.83 0.0260 0.0121  
 Venus -112820-04-15 14:38 J -39485977.03 -39485976.89 -39485976.73 0.0260 0.0188  
 Venus -112820-11-30 18:14 J -39485747.78 -39485747.74 -39485747.68 0.0261 0.0253  
 Earth -112819-01-17 22:48 J -39485699.75 -39485699.55 -39485699.33 0.0261 0.0144  
 Moon -112819-01-18 02:10 J -39485699.60 -39485699.41 -39485699.20 0.0261 0.0159 \*  
 Mars -112817-05-11 09:07 J -39484855.38 -39484855.12 -39484854.84 0.0266 0.0072  
 Mercury -112814-11-03 04:34 J -39483584.36 -39483584.31 -39483584.25 0.0279 0.0258  
 Mercury -112813-01-30 18:14 J -39483495.85 -39483495.74 -39483495.63 0.0280 0.0175  
 Mercury -112813-04-28 07:41 J -39483407.32 -39483407.18 -39483407.05 0.0281 0.0092  
 Mercury -112813-07-25 20:53 J -39483318.77 -39483318.63 -39483318.49 0.0282 0.0009  
 Mercury -112813-10-22 10:05 J -39483230.22 -39483230.08 -39483229.94 0.0283 0.0075  
 Mercury -112812-01-18 23:02 J -39483141.65 -39483141.54 -39483141.42 0.0284 0.0159  
 Mercury -112812-04-17 12:00 J -39483053.07 -39483053.00 -39483052.92 0.0285 0.0241  
 Venus -112809-08-06 04:34 J -39481846.35 -39481846.31 -39481846.26 0.0298 0.0290  
 Venus -112808-03-24 01:55 J -39481616.57 -39481616.42 -39481616.26 0.0300 0.0198  
 Venus -112808-11-08 23:31 J -39481386.71 -39481386.52 -39481386.32 0.0301 0.0100  
 Venus -112807-06-26 21:36 J -39481156.81 -39481156.60 -39481156.40 0.0302 0.0005  
 Venus -112806-02-11 19:12 J -39480926.89 -39480926.70 -39480926.50 0.0302 0.0103  
 Venus -112806-09-29 16:48 J -39480696.95 -39480696.80 -39480696.64 0.0301 0.0201  
 Venus -112805-05-16 13:55 J -39480466.95 -39480466.92 -39480466.87 0.0301 0.0294  
 Moon -112805-07-17 00:14 J -39480405.72 -39480405.49 -39480405.26 0.0300 0.0008  
 Earth -112805-07-17 02:10 J -39480405.65 -39480405.41 -39480405.18 0.0300 0.0011 \*  
 Mars -112803-07-18 11:31 J -39479674.32 -39479674.02 -39479673.71 0.0295 0.0054  
 Mercury -112800-06-03 05:46 J -39478623.38 -39478623.26 -39478623.14 0.0282 0.0200  
 Mercury -112800-08-31 00:43 J -39478534.63 -39478534.47 -39478534.32 0.0281 0.0101  
 Mercury -112800-11-27 19:41 J -39478445.85 -39478445.68 -39478445.51 0.0280 0.0006

Mercury -112799-02-24 15:07 J -39478357.03 -39478356.87 -39478356.71 0.0279 0.0098

Mercury -112799-05-24 10:34 J -39478268.18 -39478268.06 -39478267.93 0.0278 0.0197

Venus -112794-01-20 23:02 J -39476565.66 -39476565.54 -39476565.41 0.0263 0.0214

Venus -112794-09-07 02:53 J -39476336.56 -39476336.38 -39476336.20 0.0262 0.0146

Venus -112793-04-23 06:00 J -39476107.45 -39476107.25 -39476107.03 0.0261 0.0078

Venus -112793-12-08 09:07 J -39475878.34 -39475878.12 -39475877.90 0.0260 0.0008

Venus -112792-07-25 12:00 J -39475649.21 -39475649.00 -39475648.78 0.0260 0.0061

Venus -112791-03-11 14:53 J -39475420.06 -39475419.88 -39475419.68 0.0260 0.0130

Venus -112791-10-26 18:43 J -39475190.87 -39475190.72 -39475190.58 0.0260 0.0197

Moon -112789-01-25 00:58 J -39474735.64 -39474735.46 -39474735.26 0.0261 0.0166

Earth -112789-01-25 03:36 J -39474735.53 -39474735.35 -39474735.16 0.0261 0.0177 \*

Mars -112787-06-27 21:36 J -39473850.86 -39473850.60 -39473850.32 0.0267 0.0081

Mercury -112784-06-18 19:26 J -39472763.79 -39472763.69 -39472763.59 0.0278 0.0203

Mercury -112784-09-15 08:38 J -39472675.26 -39472675.14 -39472675.00 0.0280 0.0121

Mercury -112784-12-12 22:05 J -39472586.72 -39472586.58 -39472586.44 0.0281 0.0037

Mercury -112783-03-11 11:17 J -39472498.17 -39472498.03 -39472497.89 0.0282 0.0046

Mercury -112783-06-08 00:14 J -39472409.61 -39472409.49 -39472409.36 0.0283 0.0129

Mercury -112783-09-04 13:12 J -39472321.04 -39472320.95 -39472320.85 0.0284 0.0211

Venus -112779-02-16 06:29 J -39471060.29 -39471060.23 -39471060.17 0.0298 0.0283

Venus -112779-10-04 03:36 J -39470830.51 -39470830.35 -39470830.19 0.0300 0.0191

Venus -112778-05-22 00:58 J -39470600.65 -39470600.46 -39470600.26 0.0301 0.0093

Venus -112777-01-06 22:34 J -39470370.76 -39470370.56 -39470370.35 0.0302 0.0009

Venus -112777-08-23 20:10 J -39470140.85 -39470140.66 -39470140.47 0.0302 0.0110

Venus -112776-04-10 17:31 J -39469910.91 -39469910.77 -39469910.62 0.0302 0.0209

Venus -112776-11-26 14:38 J -39469680.89 -39469680.89 -39469680.89 0.0301 0.0301

Mars -112773-09-08 12:29 J -39468664.03 -39468663.98 -39468663.91 0.0292 0.0286

Mercury -112771-10-21 03:22 J -39467891.44 -39467891.36 -39467891.27 0.0283 0.0240

Mercury -112770-01-17 22:19 J -39467802.72 -39467802.57 -39467802.43 0.0282 0.0142

Mercury -112770-04-16 17:17 J -39467713.95 -39467713.78 -39467713.61 0.0281 0.0043

Mercury -112770-07-14 12:29 J -39467625.14 -39467624.98 -39467624.81 0.0280 0.0057

Mercury -112770-10-11 07:55 J -39467536.31 -39467536.17 -39467536.02 0.0279 0.0156  
 Mercury -112769-01-08 03:36 J -39467447.41 -39467447.35 -39467447.28 0.0278 0.0256  
 Venus -112765-08-01 23:02 J -39465779.66 -39465779.54 -39465779.39 0.0262 0.0207  
 Venus -112764-03-19 02:53 J -39465550.56 -39465550.38 -39465550.19 0.0261 0.0139  
 Venus -112764-11-03 06:29 J -39465321.44 -39465321.23 -39465321.02 0.0260 0.0070  
 Venus -112763-06-20 09:36 J -39465092.32 -39465092.10 -39465091.88 0.0260 0.0003  
 Venus -112762-02-04 12:43 J -39464863.18 -39464862.97 -39464862.75 0.0260 0.0070  
 Venus -112762-09-21 16:19 J -39464634.01 -39464633.82 -39464633.64 0.0260 0.0138  
 Venus -112761-05-07 19:41 J -39464404.81 -39464404.68 -39464404.54 0.0260 0.0205  
 Earth -112760-01-18 22:19 J -39464148.81 -39464148.57 -39464148.33 0.0261 0.0088  
 Moon -112760-01-19 00:29 J -39464148.72 -39464148.48 -39464148.24 0.0261 0.0101 \*  
 Mars -112759-08-19 12:58 J -39463571.10 -39463570.96 -39463570.77 0.0264 0.0213  
 Mars -112757-08-13 13:55 J -39462846.04 -39462845.92 -39462845.80 0.0270 0.0243  
 Mercury -112755-11-05 20:24 J -39462031.73 -39462031.65 -39462031.57 0.0279 0.0231  
 Mercury -112754-02-02 09:50 J -39461943.21 -39461943.09 -39461942.96 0.0280 0.0148  
 Mercury -112754-05-01 23:17 J -39461854.67 -39461854.53 -39461854.39 0.0281 0.0065  
 Mercury -112754-07-29 12:29 J -39461766.12 -39461765.98 -39461765.84 0.0282 0.0019  
 Mercury -112754-10-26 01:41 J -39461677.56 -39461677.43 -39461677.30 0.0283 0.0101  
 Mercury -112753-01-22 14:38 J -39461588.99 -39461588.89 -39461588.78 0.0284 0.0184  
 Mercury -112753-04-20 03:36 J -39461500.40 -39461500.35 -39461500.30 0.0285 0.0266  
 Venus -112750-08-29 10:48 J -39460274.12 -39460274.05 -39460273.96 0.0298 0.0273  
 Venus -112749-04-15 08:10 J -39460044.32 -39460044.16 -39460043.99 0.0300 0.0179  
 Venus -112749-12-01 05:46 J -39459814.46 -39459814.26 -39459814.06 0.0301 0.0080  
 Venus -112748-07-19 03:22 J -39459584.56 -39459584.36 -39459584.15 0.0302 0.0023  
 Venus -112747-03-06 01:12 J -39459354.64 -39459354.45 -39459354.27 0.0302 0.0124  
 Venus -112747-10-21 22:34 J -39459124.69 -39459124.56 -39459124.42 0.0301 0.0222  
 Earth -112746-07-18 23:17 J -39458854.76 -39458854.53 -39458854.30 0.0300 0.0070  
 Moon -112746-07-19 02:24 J -39458854.63 -39458854.40 -39458854.17 0.0300 0.0054 \*  
 Mars -112745-10-17 19:55 J -39458397.89 -39458397.67 -39458397.43 0.0297 0.0192  
 Mercury -112741-03-09 03:07 J -39457159.41 -39457159.37 -39457159.32 0.0283 0.0271



Mercury -112741-06-05 21:50 J -39457070.72 -39457070.59 -39457070.46 0.0282 0.0174

Mercury -112741-09-02 16:48 J -39456981.96 -39456981.80 -39456981.63 0.0281 0.0075

Mercury -112741-11-30 12:00 J -39456893.17 -39456893.00 -39456892.83 0.0280 0.0025

Mercury -112740-02-27 07:26 J -39456804.34 -39456804.19 -39456804.03 0.0279 0.0124

Mercury -112740-05-27 03:07 J -39456715.47 -39456715.37 -39456715.27 0.0278 0.0224

Venus -112735-02-12 03:36 J -39454993.49 -39454993.35 -39454993.21 0.0263 0.0200

Venus -112735-09-29 07:26 J -39454764.37 -39454764.19 -39454764.00 0.0262 0.0132

Venus -112734-05-16 10:48 J -39454535.26 -39454535.05 -39454534.83 0.0261 0.0062

Venus -112734-12-31 14:10 J -39454306.13 -39454305.91 -39454305.69 0.0260 0.0008

Venus -112733-08-16 17:17 J -39454076.99 -39454076.78 -39454076.57 0.0260 0.0078

Venus -112732-04-02 20:24 J -39453847.82 -39453847.65 -39453847.46 0.0260 0.0147

Venus -112732-11-18 00:00 J -39453618.61 -39453618.50 -39453618.36 0.0260 0.0215

Earth -112730-01-26 04:19 J -39453184.42 -39453184.32 -39453184.20 0.0262 0.0236

Moon -112730-01-26 07:12 J -39453184.32 -39453184.20 -39453184.08 0.0262 0.0228 \*

Mars -112729-10-04 21:50 J -39452566.86 -39452566.59 -39452566.31 0.0265 0.0064

Mercury -112725-03-24 22:05 J -39451299.63 -39451299.58 -39451299.52 0.0278 0.0255

Mercury -112725-06-21 11:31 J -39451211.13 -39451211.02 -39451210.90 0.0279 0.0173

Mercury -112725-09-18 00:58 J -39451122.60 -39451122.46 -39451122.32 0.0280 0.0091

Mercury -112725-12-15 14:10 J -39451034.05 -39451033.91 -39451033.77 0.0281 0.0009

Mercury -112724-03-14 03:22 J -39450945.50 -39450945.36 -39450945.23 0.0282 0.0074

Mercury -112724-06-10 16:19 J -39450856.93 -39450856.82 -39450856.70 0.0283 0.0157

Mercury -112724-09-07 05:17 J -39450768.35 -39450768.28 -39450768.21 0.0284 0.0239

Venus -112720-03-10 14:24 J -39449487.99 -39449487.90 -39449487.80 0.0298 0.0265

Venus -112720-10-26 11:02 J -39449258.20 -39449258.04 -39449257.86 0.0300 0.0172

Venus -112719-06-13 08:24 J -39449028.34 -39449028.15 -39449027.95 0.0301 0.0072

Venus -112718-01-29 05:46 J -39448798.46 -39448798.26 -39448798.05 0.0301 0.0031

Venus -112718-09-16 03:07 J -39448568.55 -39448568.37 -39448568.18 0.0302 0.0132

Venus -112717-05-03 00:29 J -39448338.61 -39448338.48 -39448338.35 0.0301 0.0230

Mars -112715-12-10 15:50 J -39447387.14 -39447386.84 -39447386.54 0.0295 0.0056

Mercury -112712-10-23 19:55 J -39446338.78 -39446338.67 -39446338.56 0.0283 0.0212

Mercury -112711-01-20 14:38 J -39446250.04 -39446249.89 -39446249.73 0.0282 0.0114

Mercury -112711-04-19 09:50 J -39446161.26 -39446161.09 -39446160.92 0.0281 0.0015

Mercury -112711-07-17 05:17 J -39446072.45 -39446072.28 -39446072.12 0.0280 0.0085

Mercury -112711-10-14 00:43 J -39445983.60 -39445983.47 -39445983.34 0.0279 0.0185

Venus -112706-01-08 00:00 J -39444436.53 -39444436.50 -39444436.47 0.0264 0.0261

Venus -112706-08-25 04:05 J -39444207.46 -39444207.33 -39444207.17 0.0262 0.0194

Venus -112705-04-10 08:10 J -39443978.35 -39443978.16 -39443977.96 0.0261 0.0124

Venus -112705-11-25 11:46 J -39443749.22 -39443749.01 -39443748.79 0.0261 0.0054

Venus -112704-07-12 15:07 J -39443520.09 -39443519.87 -39443519.65 0.0260 0.0017

Venus -112703-02-26 18:29 J -39443290.93 -39443290.73 -39443290.52 0.0260 0.0087

Venus -112703-10-13 22:05 J -39443061.75 -39443061.58 -39443061.40 0.0260 0.0157

Venus -112702-05-31 01:55 J -39442832.52 -39442832.42 -39442832.30 0.0261 0.0224

Moon -112701-01-20 20:24 J -39442597.90 -39442597.65 -39442597.39 0.0261 0.0038

Earth -112701-01-20 23:46 J -39442597.76 -39442597.51 -39442597.25 0.0261 0.0028 \*

Mars -112699-11-21 06:29 J -39441562.49 -39441562.23 -39441561.96 0.0268 0.0091

Mercury -112696-11-08 12:43 J -39440479.06 -39440478.97 -39440478.86 0.0279 0.0200

Mercury -112695-02-05 02:24 J -39440390.53 -39440390.40 -39440390.27 0.0280 0.0117

Mercury -112695-05-04 15:36 J -39440301.99 -39440301.85 -39440301.71 0.0281 0.0034

Mercury -112695-08-01 04:48 J -39440213.44 -39440213.30 -39440213.16 0.0282 0.0048

Mercury -112695-10-28 17:46 J -39440124.88 -39440124.76 -39440124.63 0.0283 0.0131

Mercury -112694-01-25 06:43 J -39440036.31 -39440036.22 -39440036.12 0.0284 0.0213

Venus -112691-09-20 19:41 J -39438701.78 -39438701.68 -39438701.57 0.0298 0.0255

Venus -112690-05-08 16:34 J -39438471.98 -39438471.81 -39438471.63 0.0300 0.0159

Venus -112690-12-24 14:10 J -39438242.11 -39438241.91 -39438241.71 0.0301 0.0058

Venus -112689-08-10 11:31 J -39438012.22 -39438012.02 -39438011.82 0.0301 0.0045

Venus -112688-03-28 09:07 J -39437782.30 -39437782.12 -39437781.94 0.0301 0.0147

Venus -112688-11-13 06:14 J -39437552.35 -39437552.24 -39437552.12 0.0301 0.0245

Earth -112687-07-19 23:46 J -39437303.71 -39437303.51 -39437303.29 0.0300 0.0140

Moon -112687-07-20 01:55 J -39437303.63 -39437303.42 -39437303.19 0.0300 0.0125 \*

Mars -112684-02-01 12:43 J -39436376.01 -39436375.97 -39436375.90 0.0292 0.0286

Mercury -112682-03-12 19:55 J -39435606.75 -39435606.67 -39435606.58 0.0283 0.0241

Mercury -112682-06-09 14:38 J -39435518.03 -39435517.89 -39435517.74 0.0282 0.0144

Mercury -112682-09-06 09:50 J -39435429.26 -39435429.09 -39435428.92 0.0281 0.0045

Mercury -112682-12-04 05:02 J -39435340.45 -39435340.29 -39435340.12 0.0280 0.0055

Mercury -112681-03-02 00:29 J -39435251.62 -39435251.48 -39435251.33 0.0279 0.0155

Mercury -112681-05-29 20:24 J -39435162.72 -39435162.65 -39435162.58 0.0278 0.0254

Venus -112677-07-20 04:48 J -39433650.34 -39433650.30 -39433650.23 0.0264 0.0254

Venus -112676-03-06 09:22 J -39433421.26 -39433421.11 -39433420.95 0.0263 0.0186

Venus -112676-10-21 13:26 J -39433192.14 -39433191.94 -39433191.75 0.0262 0.0116

Venus -112675-06-07 17:02 J -39432963.01 -39432962.79 -39432962.57 0.0261 0.0045

Venus -112674-01-22 20:24 J -39432733.87 -39432733.65 -39432733.43 0.0261 0.0026

Venus -112674-09-08 23:46 J -39432504.71 -39432504.51 -39432504.30 0.0260 0.0096

Venus -112673-04-25 03:22 J -39432275.52 -39432275.36 -39432275.19 0.0260 0.0165

Venus -112673-12-10 06:58 J -39432046.29 -39432046.21 -39432046.10 0.0261 0.0233

Mars -112670-01-13 08:24 J -39431282.32 -39431282.15 -39431281.95 0.0264 0.0199

Mars -112668-01-07 09:07 J -39430557.20 -39430557.12 -39430557.01 0.0269 0.0253

Mercury -112666-03-28 14:53 J -39429746.96 -39429746.88 -39429746.79 0.0278 0.0222

Mercury -112666-06-25 04:19 J -39429658.44 -39429658.32 -39429658.19 0.0279 0.0140

Mercury -112666-09-21 17:46 J -39429569.90 -39429569.76 -39429569.62 0.0280 0.0058

Mercury -112666-12-19 06:58 J -39429481.35 -39429481.21 -39429481.07 0.0281 0.0025

Mercury -112665-03-16 19:55 J -39429392.80 -39429392.67 -39429392.54 0.0282 0.0107

Mercury -112665-06-13 08:53 J -39429304.23 -39429304.13 -39429304.02 0.0283 0.0189

Mercury -112665-09-09 21:50 J -39429215.63 -39429215.59 -39429215.55 0.0284 0.0270

Venus -112661-04-02 00:58 J -39427915.57 -39427915.46 -39427915.34 0.0298 0.0245

Venus -112661-11-17 21:50 J -39427685.77 -39427685.59 -39427685.41 0.0300 0.0149

Venus -112660-07-05 18:58 J -39427455.91 -39427455.71 -39427455.51 0.0301 0.0048

Venus -112659-02-20 16:05 J -39427226.03 -39427225.83 -39427225.63 0.0301 0.0056

Venus -112659-10-08 13:12 J -39426996.12 -39426995.95 -39426995.77 0.0301 0.0157

Venus -112658-05-26 10:05 J -39426766.17 -39426766.08 -39426765.96 0.0301 0.0255

Moon -112658-07-13 23:17 J -39426717.65 -39426717.53 -39426717.39 0.0301 0.0248

Earth -112658-07-14 00:43 J -39426717.61 -39426717.47 -39426717.31 0.0301 0.0233 \*  
 Mars -112656-03-12 14:10 J -39426110.14 -39426109.91 -39426109.65 0.0297 0.0180  
 Mercury -112653-07-29 18:43 J -39424874.75 -39424874.72 -39424874.68 0.0284 0.0276  
 Mercury -112653-10-26 13:26 J -39424786.06 -39424785.94 -39424785.81 0.0283 0.0178  
 Mercury -112652-01-23 08:24 J -39424697.31 -39424697.15 -39424696.98 0.0282 0.0080  
 Mercury -112652-04-22 03:36 J -39424608.52 -39424608.35 -39424608.18 0.0280 0.0020  
 Mercury -112652-07-19 23:02 J -39424519.70 -39424519.54 -39424519.38 0.0279 0.0119  
 Mercury -112652-10-16 18:29 J -39424430.83 -39424430.73 -39424430.62 0.0278 0.0219  
 Venus -112647-01-30 06:29 J -39422864.30 -39422864.23 -39422864.15 0.0264 0.0247  
 Venus -112647-09-16 11:02 J -39422635.20 -39422635.04 -39422634.88 0.0262 0.0178  
 Venus -112646-05-03 15:07 J -39422406.07 -39422405.87 -39422405.67 0.0261 0.0107  
 Venus -112646-12-18 18:43 J -39422176.93 -39422176.72 -39422176.50 0.0261 0.0036  
 Venus -112645-08-03 22:19 J -39421947.79 -39421947.57 -39421947.35 0.0260 0.0035  
 Venus -112644-03-21 01:55 J -39421718.62 -39421718.42 -39421718.22 0.0260 0.0106  
 Venus -112644-11-05 05:31 J -39421489.42 -39421489.27 -39421489.10 0.0260 0.0176  
 Venus -112643-06-22 09:36 J -39421260.17 -39421260.10 -39421260.01 0.0261 0.0243  
 Moon -112642-01-22 01:26 J -39421046.69 -39421046.44 -39421046.20 0.0261 0.0032  
 Earth -112642-01-22 03:50 J -39421046.59 -39421046.34 -39421046.08 0.0261 0.0038 \*  
 Mars -112640-02-28 12:14 J -39420278.26 -39420277.99 -39420277.71 0.0266 0.0051  
 Mercury -112637-08-14 16:19 J -39419014.87 -39419014.82 -39419014.75 0.0278 0.0248  
 Mercury -112637-11-11 06:00 J -39418926.36 -39418926.25 -39418926.13 0.0279 0.0165  
 Mercury -112636-02-07 19:26 J -39418837.83 -39418837.69 -39418837.55 0.0280 0.0082  
 Mercury -112636-05-07 08:38 J -39418749.28 -39418749.14 -39418749.00 0.0281 0.0003  
 Mercury -112636-08-03 21:50 J -39418660.73 -39418660.59 -39418660.46 0.0282 0.0083  
 Mercury -112636-10-31 10:48 J -39418572.16 -39418572.05 -39418571.94 0.0284 0.0165  
 Mercury -112635-01-27 23:46 J -39418483.58 -39418483.51 -39418483.44 0.0285 0.0247  
 Venus -112632-10-13 07:26 J -39417129.31 -39417129.19 -39417129.06 0.0299 0.0233  
 Venus -112631-05-31 04:19 J -39416899.50 -39416899.32 -39416899.14 0.0300 0.0135  
 Venus -112630-01-16 01:26 J -39416669.64 -39416669.44 -39416669.23 0.0301 0.0033  
 Venus -112630-09-02 22:48 J -39416439.75 -39416439.55 -39416439.35 0.0301 0.0071

Venus -112629-04-19 20:10 J -39416209.82 -39416209.66 -39416209.49 0.0301 0.0173

Venus -112629-12-05 17:02 J -39415979.87 -39415979.79 -39415979.70 0.0301 0.0270

Moon -112628-07-21 02:53 J -39415752.54 -39415752.38 -39415752.20 0.0300 0.0212

Earth -112628-07-21 05:46 J -39415752.41 -39415752.26 -39415752.10 0.0300 0.0221 \*

Mars -112626-05-06 06:29 J -39415098.53 -39415098.23 -39415097.93 0.0294 0.0067

Mercury -112623-03-15 13:55 J -39414054.03 -39414053.92 -39414053.81 0.0283 0.0206

Mercury -112623-06-12 08:53 J -39413965.29 -39413965.13 -39413964.98 0.0282 0.0108

Mercury -112623-09-09 03:50 J -39413876.51 -39413876.34 -39413876.17 0.0281 0.0010

Mercury -112623-12-06 23:17 J -39413787.69 -39413787.53 -39413787.37 0.0279 0.0091

Mercury -112622-03-05 18:43 J -39413698.84 -39413698.72 -39413698.59 0.0278 0.0190

Venus -112618-08-12 12:14 J -39412078.07 -39412077.99 -39412077.89 0.0264 0.0239

Venus -112617-03-28 16:48 J -39411848.96 -39411848.80 -39411848.63 0.0263 0.0170

Venus -112617-11-12 20:53 J -39411619.83 -39411619.63 -39411619.42 0.0262 0.0099

Venus -112616-06-30 00:43 J -39411390.69 -39411390.47 -39411390.25 0.0261 0.0027

Venus -112615-02-14 04:19 J -39411161.53 -39411161.32 -39411161.10 0.0261 0.0044

Venus -112615-10-01 07:55 J -39410932.36 -39410932.17 -39410931.96 0.0261 0.0116

Venus -112614-05-18 11:46 J -39410703.15 -39410703.01 -39410702.84 0.0261 0.0185

Venus -112613-01-02 15:50 J -39410473.89 -39410473.84 -39410473.78 0.0261 0.0253

Earth -112613-01-17 05:46 J -39410459.40 -39410459.26 -39410459.09 0.0261 0.0209

Moon -112613-01-17 08:24 J -39410459.28 -39410459.15 -39410458.99 0.0261 0.0218 \*

Mars -112610-04-17 09:22 J -39409273.36 -39409273.11 -39409272.84 0.0268 0.0109

Mercury -112607-01-01 18:58 J -39408282.74 -39408282.71 -39408282.67 0.0277 0.0267

Mercury -112607-03-31 08:38 J -39408194.25 -39408194.14 -39408194.04 0.0278 0.0184

Mercury -112607-06-27 21:50 J -39408105.72 -39408105.59 -39408105.45 0.0279 0.0103

Mercury -112607-09-24 11:17 J -39408017.17 -39408017.03 -39408016.89 0.0280 0.0020

Mercury -112607-12-22 00:29 J -39407928.62 -39407928.48 -39407928.35 0.0282 0.0063

Mercury -112606-03-20 13:26 J -39407840.06 -39407839.94 -39407839.82 0.0283 0.0144

Mercury -112606-06-17 02:10 J -39407751.48 -39407751.41 -39407751.32 0.0284 0.0226

Venus -112602-04-25 14:24 J -39406343.03 -39406342.90 -39406342.76 0.0298 0.0222

Venus -112602-12-11 11:17 J -39406113.22 -39406113.03 -39406112.85 0.0300 0.0123

Venus -112601-07-28 08:10 J -39405883.36 -39405883.16 -39405882.96 0.0301 0.0021  
 Venus -112600-03-15 05:17 J -39405653.48 -39405653.28 -39405653.08 0.0301 0.0083  
 Venus -112600-10-31 02:10 J -39405423.57 -39405423.41 -39405423.25 0.0301 0.0184  
 Venus -112599-06-17 22:48 J -39405193.61 -39405193.55 -39405193.47 0.0300 0.0281  
 Earth -112599-07-15 09:36 J -39405166.29 -39405166.10 -39405165.88 0.0300 0.0143  
 Moon -112599-07-15 12:29 J -39405166.17 -39405165.98 -39405165.77 0.0300 0.0153 \*  
 Mercury -112594-08-02 13:26 J -39403322.03 -39403321.94 -39403321.85 0.0283 0.0236  
 Mercury -112594-10-30 08:10 J -39403233.30 -39403233.16 -39403233.01 0.0282 0.0139  
 Mercury -112593-01-27 03:07 J -39403144.53 -39403144.37 -39403144.20 0.0281 0.0041  
 Mercury -112593-04-24 22:34 J -39403055.73 -39403055.56 -39403055.40 0.0280 0.0059  
 Mercury -112593-07-22 18:00 J -39402966.89 -39402966.75 -39402966.61 0.0279 0.0158  
 Mercury -112593-10-19 13:26 J -39402877.99 -39402877.94 -39402877.87 0.0278 0.0258  
 Venus -112588-02-21 14:38 J -39401291.98 -39401291.89 -39401291.77 0.0264 0.0232  
 Venus -112588-10-08 19:26 J -39401062.86 -39401062.69 -39401062.51 0.0262 0.0161  
 Venus -112587-05-25 23:31 J -39400833.72 -39400833.52 -39400833.31 0.0261 0.0090  
 Venus -112586-01-10 03:36 J -39400604.57 -39400604.35 -39400604.13 0.0261 0.0018  
 Venus -112586-08-27 07:12 J -39400375.41 -39400375.20 -39400374.98 0.0260 0.0054  
 Venus -112585-04-12 10:48 J -39400146.23 -39400146.05 -39400145.85 0.0260 0.0126  
 Venus -112585-11-27 15:07 J -39399917.02 -39399916.87 -39399916.73 0.0261 0.0195  
 Earth -112583-01-23 10:48 J -39399495.28 -39399495.05 -39399494.82 0.0262 0.0109  
 Moon -112583-01-23 13:12 J -39399495.17 -39399494.95 -39399494.72 0.0262 0.0109 \*  
 Mars -112582-06-09 04:19 J -39398993.51 -39398993.32 -39398993.11 0.0264 0.0184  
 Mercury -112578-08-18 10:19 J -39397462.16 -39397462.07 -39397461.97 0.0279 0.0208  
 Mercury -112578-11-14 23:46 J -39397373.64 -39397373.51 -39397373.38 0.0280 0.0126  
 Mercury -112577-02-11 13:12 J -39397285.09 -39397284.95 -39397284.81 0.0281 0.0044  
 Mercury -112577-05-10 02:24 J -39397196.54 -39397196.40 -39397196.26 0.0282 0.0040  
 Mercury -112577-08-06 15:22 J -39397107.98 -39397107.86 -39397107.73 0.0283 0.0122  
 Mercury -112577-11-03 04:19 J -39397019.41 -39397019.32 -39397019.22 0.0284 0.0204  
 Mercury -112576-01-30 17:17 J -39396930.78 -39396930.78 -39396930.78 0.0285 0.0285  
 Venus -112573-11-04 21:50 J -39395556.73 -39395556.59 -39395556.44 0.0299 0.0209

Venus -112572-06-22 18:43 J -39395326.91 -39395326.72 -39395326.53 0.0300 0.0109

Venus -112571-02-07 15:50 J -39395097.05 -39395096.84 -39395096.64 0.0301 0.0005

Venus -112571-09-25 12:58 J -39394867.15 -39394866.96 -39394866.76 0.0301 0.0099

Venus -112570-05-13 10:19 J -39394637.23 -39394637.07 -39394636.92 0.0301 0.0200

Venus -112570-12-29 06:43 J -39394407.24 -39394407.22 -39394407.18 0.0300 0.0296

Mars -112568-08-06 20:24 J -39393820.89 -39393820.65 -39393820.37 0.0297 0.0159

Mercury -112565-12-19 14:10 J -39392589.96 -39392589.91 -39392589.84 0.0283 0.0261

Mercury -112564-03-18 09:07 J -39392501.25 -39392501.12 -39392500.98 0.0282 0.0164

Mercury -112564-06-15 04:05 J -39392412.49 -39392412.33 -39392412.16 0.0281 0.0065

Mercury -112564-09-11 23:17 J -39392323.70 -39392323.53 -39392323.36 0.0280 0.0034

Mercury -112564-12-09 18:43 J -39392234.87 -39392234.72 -39392234.57 0.0279 0.0133

Mercury -112563-03-08 14:24 J -39392145.99 -39392145.90 -39392145.81 0.0278 0.0232

Venus -112559-09-03 21:50 J -39390505.70 -39390505.59 -39390505.47 0.0264 0.0222

Venus -112558-04-21 02:10 J -39390276.58 -39390276.41 -39390276.22 0.0263 0.0152

Venus -112558-12-06 06:29 J -39390047.44 -39390047.23 -39390047.02 0.0262 0.0080

Venus -112557-07-22 10:19 J -39389818.29 -39389818.07 -39389817.85 0.0261 0.0008

Venus -112556-03-08 13:55 J -39389589.12 -39389588.92 -39389588.70 0.0261 0.0065

Venus -112556-10-23 18:00 J -39389359.93 -39389359.75 -39389359.56 0.0261 0.0136

Venus -112555-06-09 22:05 J -39389130.71 -39389130.58 -39389130.44 0.0261 0.0205

Moon -112554-01-18 12:00 J -39388908.23 -39388908.00 -39388907.78 0.0262 0.0139

Earth -112554-01-18 14:10 J -39388908.13 -39388907.91 -39388907.69 0.0262 0.0134 \*

Mars -112552-07-25 22:05 J -39387988.86 -39387988.58 -39387988.30 0.0266 0.0027

Mercury -112548-01-04 13:12 J -39386730.03 -39386729.95 -39386729.86 0.0278 0.0225

Mercury -112548-04-03 02:38 J -39386641.51 -39386641.39 -39386641.26 0.0279 0.0143

Mercury -112548-06-30 16:05 J -39386552.97 -39386552.83 -39386552.69 0.0280 0.0061

Mercury -112548-09-27 05:17 J -39386464.42 -39386464.28 -39386464.14 0.0281 0.0022

Mercury -112548-12-24 18:29 J -39386375.86 -39386375.73 -39386375.60 0.0282 0.0103

Mercury -112547-03-23 07:26 J -39386287.29 -39386287.19 -39386287.09 0.0283 0.0185

Mercury -112547-06-19 20:24 J -39386198.70 -39386198.65 -39386198.61 0.0284 0.0266

Venus -112544-09-30 10:34 J -39385000.10 -39385000.06 -39385000.01 0.0297 0.0289

Venus -112543-05-18 06:43 J -39384770.36 -39384770.22 -39384770.06 0.0299 0.0195  
 Venus -112542-01-03 03:36 J -39384540.54 -39384540.35 -39384540.15 0.0300 0.0094  
 Venus -112542-08-21 00:29 J -39384310.68 -39384310.48 -39384310.27 0.0301 0.0010  
 Venus -112541-04-06 21:36 J -39384080.79 -39384080.60 -39384080.41 0.0301 0.0113  
 Venus -112541-11-22 18:14 J -39383850.88 -39383850.74 -39383850.59 0.0301 0.0214  
 Earth -112540-07-17 00:14 J -39383614.72 -39383614.49 -39383614.25 0.0300 0.0038  
 Moon -112540-07-17 03:07 J -39383614.61 -39383614.37 -39383614.13 0.0300 0.0049 \*  
 Mars -112538-09-30 12:00 J -39382809.28 -39382809.00 -39382808.70 0.0294 0.0099  
 Mercury -112535-08-05 09:22 J -39381769.23 -39381769.11 -39381768.99 0.0283 0.0190  
 Mercury -112535-11-02 04:19 J -39381680.48 -39381680.32 -39381680.17 0.0282 0.0093  
 Mercury -112534-01-29 23:17 J -39381591.70 -39381591.53 -39381591.36 0.0281 0.0006  
 Mercury -112534-04-28 18:29 J -39381502.88 -39381502.73 -39381502.57 0.0280 0.0105  
 Mercury -112534-07-26 13:55 J -39381414.03 -39381413.92 -39381413.79 0.0278 0.0205  
 Venus -112529-03-16 01:12 J -39379719.56 -39379719.45 -39379719.31 0.0263 0.0214  
 Venus -112529-10-31 05:46 J -39379490.43 -39379490.26 -39379490.07 0.0262 0.0142  
 Venus -112528-06-17 10:05 J -39379261.29 -39379261.08 -39379260.87 0.0261 0.0070  
 Venus -112527-02-01 14:10 J -39379032.13 -39379031.91 -39379031.69 0.0261 0.0005  
 Venus -112527-09-18 18:00 J -39378802.96 -39378802.75 -39378802.54 0.0261 0.0076  
 Venus -112526-05-05 21:50 J -39378573.76 -39378573.59 -39378573.40 0.0261 0.0147  
 Venus -112526-12-21 01:55 J -39378344.53 -39378344.42 -39378344.29 0.0261 0.0217  
 Earth -112524-01-24 20:38 J -39377943.82 -39377943.64 -39377943.46 0.0262 0.0186  
 Moon -112524-01-24 23:46 J -39377943.68 -39377943.51 -39377943.32 0.0262 0.0188 \*  
 Mars -112522-09-11 13:55 J -39376984.15 -39376983.92 -39376983.66 0.0268 0.0130  
 Mercury -112519-05-24 15:07 J -39375997.93 -39375997.87 -39375997.80 0.0278 0.0248  
 Mercury -112519-08-21 04:48 J -39375909.42 -39375909.30 -39375909.19 0.0279 0.0166  
 Mercury -112519-11-17 18:14 J -39375820.88 -39375820.74 -39375820.61 0.0280 0.0083  
 Mercury -112518-02-14 07:26 J -39375732.33 -39375732.19 -39375732.05 0.0281 0.0001  
 Mercury -112518-05-13 20:38 J -39375643.78 -39375643.64 -39375643.51 0.0282 0.0082  
 Mercury -112518-08-10 09:36 J -39375555.21 -39375555.10 -39375554.98 0.0284 0.0164  
 Mercury -112518-11-06 22:34 J -39375466.63 -39375466.56 -39375466.49 0.0285 0.0245



Venus -112514-04-12 18:29 J -39374213.80 -39374213.73 -39374213.66 0.0298 0.0277  
 Venus -112514-11-28 14:38 J -39373984.04 -39373983.89 -39373983.72 0.0299 0.0181  
 Venus -112513-07-15 11:46 J -39373754.21 -39373754.01 -39373753.82 0.0300 0.0080  
 Venus -112512-03-02 08:38 J -39373524.34 -39373524.14 -39373523.93 0.0301 0.0026  
 Venus -112512-10-18 05:46 J -39373294.44 -39373294.26 -39373294.07 0.0301 0.0129  
 Venus -112511-06-05 02:24 J -39373064.52 -39373064.40 -39373064.26 0.0301 0.0231  
 Mercury -112506-12-23 10:34 J -39371037.16 -39371037.06 -39371036.95 0.0283 0.0213  
 Mercury -112505-03-21 05:17 J -39370948.43 -39370948.28 -39370948.12 0.0281 0.0116  
 Mercury -112505-06-18 00:29 J -39370859.65 -39370859.48 -39370859.31 0.0280 0.0018  
 Mercury -112505-09-14 19:41 J -39370770.84 -39370770.68 -39370770.51 0.0279 0.0081  
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 Venus -112500-09-26 09:07 J -39368933.26 -39368933.12 -39368932.98 0.0264 0.0203  
 Venus -112499-05-13 13:26 J -39368704.12 -39368703.94 -39368703.74 0.0263 0.0132  
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 Venus -112497-11-15 05:31 J -39367787.44 -39367787.27 -39367787.09 0.0261 0.0158  
 Venus -112496-07-02 09:36 J -39367558.20 -39367558.10 -39367557.98 0.0261 0.0227  
 Moon -112495-01-19 21:07 J -39367356.86 -39367356.62 -39367356.37 0.0262 0.0060  
 Earth -112495-01-20 00:29 J -39367356.73 -39367356.48 -39367356.23 0.0262 0.0055 \*  
 Mars -112494-11-03 19:12 J -39366703.92 -39366703.70 -39366703.47 0.0265 0.0156  
 Mercury -112490-10-11 18:14 J -39365265.78 -39365265.74 -39365265.70 0.0278 0.0264  
 Mercury -112489-01-08 07:55 J -39365177.28 -39365177.17 -39365177.06 0.0279 0.0182  
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 Mercury -112489-07-03 10:34 J -39365000.20 -39365000.06 -39364999.92 0.0281 0.0018  
 Mercury -112489-09-29 23:46 J -39364911.65 -39364911.51 -39364911.37 0.0282 0.0065  
 Mercury -112489-12-27 12:58 J -39364823.08 -39364822.96 -39364822.85 0.0283 0.0147  
 Mercury -112488-03-26 01:41 J -39364734.50 -39364734.43 -39364734.34 0.0284 0.0229  
 Venus -112485-10-23 04:34 J -39363427.40 -39363427.31 -39363427.21 0.0297 0.0262  
 Venus -112484-06-10 00:58 J -39363197.63 -39363197.46 -39363197.28 0.0299 0.0165

Venus -112483-01-25 21:50 J -39362967.79 -39362967.59 -39362967.39 0.0300 0.0063  
 Venus -112483-09-12 18:43 J -39362737.92 -39362737.72 -39362737.52 0.0301 0.0042  
 Venus -112482-04-30 15:36 J -39362508.02 -39362507.85 -39362507.66 0.0301 0.0146  
 Venus -112482-12-16 12:14 J -39362278.10 -39362277.99 -39362277.87 0.0300 0.0245  
 Moon -112481-07-18 16:48 J -39362063.04 -39362062.80 -39362062.57 0.0300 0.0066  
 Earth -112481-07-18 18:00 J -39362062.97 -39362062.75 -39362062.52 0.0300 0.0074 \*  
 Mars -112479-01-01 21:07 J -39361530.90 -39361530.62 -39361530.33 0.0296 0.0116  
 Mercury -112476-05-11 11:31 J -39360305.10 -39360305.02 -39360304.92 0.0283 0.0236  
 Mercury -112476-08-08 06:14 J -39360216.38 -39360216.24 -39360216.09 0.0282 0.0139  
 Mercury -112476-11-05 01:12 J -39360127.61 -39360127.45 -39360127.28 0.0281 0.0042  
 Mercury -112475-02-01 20:24 J -39360038.81 -39360038.65 -39360038.48 0.0280 0.0057  
 Mercury -112475-05-01 15:50 J -39359949.98 -39359949.84 -39359949.70 0.0279 0.0156  
 Mercury -112475-07-29 11:31 J -39359861.09 -39359861.02 -39359860.95 0.0278 0.0255  
 Venus -112471-08-22 08:53 J -39358376.13 -39358376.13 -39358376.10 0.0264 0.0263  
 Venus -112470-04-08 13:41 J -39358147.07 -39358146.93 -39358146.77 0.0263 0.0193  
 Venus -112470-11-23 18:00 J -39357917.94 -39357917.75 -39357917.55 0.0262 0.0121  
 Venus -112469-07-09 22:05 J -39357688.79 -39357688.58 -39357688.36 0.0261 0.0048  
 Venus -112468-02-24 02:10 J -39357459.63 -39357459.41 -39357459.19 0.0261 0.0025  
 Venus -112468-10-11 06:14 J -39357230.44 -39357230.24 -39357230.03 0.0261 0.0098  
 Venus -112467-05-28 10:19 J -39357001.24 -39357001.07 -39357000.90 0.0261 0.0169  
 Venus -112466-01-12 14:10 J -39356771.98 -39356771.91 -39356771.81 0.0261 0.0239  
 Mars -112464-12-20 06:00 J -39355699.53 -39355699.25 -39355698.97 0.0266 0.0006  
 Mercury -112460-05-27 09:50 J -39354445.18 -39354445.09 -39354444.99 0.0279 0.0204  
 Mercury -112460-08-23 23:17 J -39354356.65 -39354356.53 -39354356.40 0.0280 0.0122  
 Mercury -112460-11-20 12:43 J -39354268.11 -39354267.97 -39354267.83 0.0281 0.0039  
 Mercury -112459-02-17 01:55 J -39354179.56 -39354179.42 -39354179.28 0.0282 0.0044  
 Mercury -112459-05-16 15:07 J -39354091.00 -39354090.87 -39354090.75 0.0283 0.0126  
 Mercury -112459-08-13 04:05 J -39354002.42 -39354002.33 -39354002.24 0.0284 0.0207  
 Venus -112455-05-05 12:43 J -39352641.07 -39352640.97 -39352640.85 0.0298 0.0250  
 Venus -112455-12-21 09:22 J -39352411.28 -39352411.11 -39352410.93 0.0300 0.0151

Venus -112454-08-08 06:29 J -39352181.44 -39352181.23 -39352181.03 0.0301 0.0048  
 Venus -112453-03-25 03:36 J -39351951.55 -39351951.35 -39351951.15 0.0301 0.0058  
 Venus -112453-11-10 00:29 J -39351721.65 -39351721.48 -39351721.31 0.0301 0.0162  
 Venus -112452-06-27 21:07 J -39351491.71 -39351491.62 -39351491.52 0.0301 0.0262  
 Earth -112452-07-13 03:36 J -39351476.42 -39351476.35 -39351476.26 0.0301 0.0280  
 Moon -112452-07-13 05:17 J -39351476.33 -39351476.28 -39351476.22 0.0301 0.0291 \*  
 Mars -112449-02-25 19:26 J -39350518.96 -39350518.69 -39350518.41 0.0294 0.0133  
 Mercury -112447-09-28 12:58 J -39349573.02 -39349572.96 -39349572.89 0.0283 0.0258  
 Mercury -112447-12-26 07:41 J -39349484.31 -39349484.18 -39349484.04 0.0282 0.0161  
 Mercury -112446-03-25 02:38 J -39349395.55 -39349395.39 -39349395.22 0.0281 0.0064  
 Mercury -112446-06-21 21:50 J -39349306.76 -39349306.59 -39349306.42 0.0280 0.0035  
 Mercury -112446-09-18 17:02 J -39349217.94 -39349217.79 -39349217.63 0.0279 0.0133  
 Mercury -112446-12-16 12:43 J -39349129.06 -39349128.97 -39349128.88 0.0278 0.0232  
 Venus -112441-03-03 16:48 J -39347589.85 -39347589.80 -39347589.73 0.0264 0.0253  
 Venus -112441-10-18 21:36 J -39347360.75 -39347360.60 -39347360.44 0.0263 0.0182  
 Venus -112440-06-05 01:55 J -39347131.61 -39347131.42 -39347131.22 0.0262 0.0110  
 Venus -112439-01-20 06:00 J -39346902.46 -39346902.25 -39346902.03 0.0262 0.0037  
 Venus -112439-09-06 10:05 J -39346673.30 -39346673.08 -39346672.86 0.0261 0.0037  
 Venus -112438-04-23 14:10 J -39346444.11 -39346443.91 -39346443.71 0.0261 0.0109  
 Venus -112438-12-08 18:14 J -39346214.90 -39346214.74 -39346214.58 0.0261 0.0181  
 Venus -112437-07-24 22:19 J -39345985.62 -39345985.57 -39345985.50 0.0262 0.0250  
 Earth -112436-01-21 12:43 J -39345805.23 -39345804.97 -39345804.72 0.0262 0.0026  
 Moon -112436-01-21 13:12 J -39345805.19 -39345804.95 -39345804.70 0.0262 0.0025 \*  
 Mars -112433-02-06 10:19 J -39344694.28 -39344694.07 -39344693.83 0.0269 0.0161  
 Mercury -112431-10-14 12:58 J -39343713.04 -39343712.96 -39343712.86 0.0278 0.0220  
 Mercury -112430-01-11 02:38 J -39343624.51 -39343624.39 -39343624.26 0.0279 0.0137  
 Mercury -112430-04-09 16:05 J -39343535.97 -39343535.83 -39343535.69 0.0281 0.0054  
 Mercury -112430-07-07 05:17 J -39343447.42 -39343447.28 -39343447.14 0.0282 0.0028  
 Mercury -112430-10-03 18:29 J -39343358.86 -39343358.73 -39343358.60 0.0283 0.0110  
 Mercury -112430-12-31 07:26 J -39343270.29 -39343270.19 -39343270.09 0.0284 0.0192

Mercury -112429-03-28 20:24 J -39343181.68 -39343181.65 -39343181.61 0.0285 0.0273

Venus -112426-11-15 23:46 J -39341854.63 -39341854.51 -39341854.38 0.0298 0.0233

Venus -112425-07-02 20:24 J -39341624.84 -39341624.65 -39341624.47 0.0299 0.0133

Venus -112424-02-17 17:17 J -39341394.99 -39341394.78 -39341394.58 0.0300 0.0030

Venus -112424-10-05 14:10 J -39341165.11 -39341164.91 -39341164.71 0.0301 0.0076

Venus -112423-05-23 11:02 J -39340935.20 -39340935.04 -39340934.87 0.0301 0.0179

Venus -112422-01-08 07:26 J -39340705.25 -39340705.19 -39340705.11 0.0300 0.0278

Moon -112422-07-21 10:19 J -39340511.25 -39340511.07 -39340510.88 0.0299 0.0182

Earth -112422-07-21 13:55 J -39340511.10 -39340510.92 -39340510.74 0.0299 0.0189 \*

Mercury -112417-02-15 14:24 J -39338840.92 -39338840.90 -39338840.87 0.0284 0.0279

Mercury -112417-05-14 09:07 J -39338752.25 -39338752.12 -39338751.99 0.0282 0.0182

Mercury -112417-08-11 03:50 J -39338663.50 -39338663.34 -39338663.17 0.0281 0.0085

Mercury -112417-11-07 23:02 J -39338574.71 -39338574.54 -39338574.37 0.0280 0.0014

Mercury -112416-02-04 18:14 J -39338485.90 -39338485.74 -39338485.58 0.0279 0.0112

Mercury -112416-05-04 13:41 J -39338397.04 -39338396.93 -39338396.81 0.0278 0.0210

Venus -112412-09-13 22:34 J -39336803.64 -39336803.56 -39336803.47 0.0264 0.0242

Venus -112411-05-01 03:07 J -39336574.53 -39336574.37 -39336574.20 0.0263 0.0171

Venus -112411-12-16 07:12 J -39336345.40 -39336345.20 -39336344.99 0.0262 0.0098

Venus -112410-08-02 11:17 J -39336116.25 -39336116.03 -39336115.81 0.0261 0.0025

Venus -112409-03-18 15:07 J -39335887.09 -39335886.87 -39335886.65 0.0261 0.0049

Venus -112409-11-02 18:58 J -39335657.90 -39335657.71 -39335657.51 0.0261 0.0122

Venus -112408-06-19 23:02 J -39335428.68 -39335428.54 -39335428.39 0.0261 0.0193

Moon -112407-01-16 11:17 J -39335218.15 -39335218.03 -39335217.91 0.0261 0.0234

Earth -112407-01-16 11:31 J -39335218.13 -39335218.02 -39335217.88 0.0261 0.0229 \*

Mars -112405-03-30 03:22 J -39334414.59 -39334414.36 -39334414.11 0.0265 0.0136

Mercury -112401-03-02 14:53 J -39332980.94 -39332980.88 -39332980.81 0.0278 0.0242

Mercury -112401-05-30 04:34 J -39332892.43 -39332892.31 -39332892.19 0.0279 0.0160

Mercury -112401-08-26 18:00 J -39332803.89 -39332803.75 -39332803.61 0.0281 0.0077

Mercury -112401-11-23 07:12 J -39332715.34 -39332715.20 -39332715.05 0.0282 0.0009

Mercury -112400-02-19 20:24 J -39332626.78 -39332626.65 -39332626.51 0.0283 0.0088

Mercury -112400-05-19 09:22 J -39332538.21 -39332538.11 -39332537.99 0.0284 0.0170

Mercury -112400-08-15 22:34 J -39332449.63 -39332449.56 -39332449.50 0.0285 0.0251

Venus -112396-05-28 06:58 J -39331068.33 -39331068.21 -39331068.06 0.0299 0.0221

Venus -112395-01-13 04:05 J -39330838.52 -39330838.33 -39330838.15 0.0300 0.0119

Venus -112395-08-31 00:58 J -39330608.66 -39330608.46 -39330608.25 0.0301 0.0015

Venus -112394-04-17 22:05 J -39330378.77 -39330378.58 -39330378.38 0.0301 0.0092

Venus -112394-12-03 18:58 J -39330148.86 -39330148.71 -39330148.55 0.0301 0.0195

Earth -112393-07-14 22:34 J -39329924.75 -39329924.56 -39329924.36 0.0300 0.0166

Moon -112393-07-15 02:10 J -39329924.60 -39329924.41 -39329924.21 0.0300 0.0175 \*

Venus -112393-07-20 15:36 J -39329918.89 -39329918.85 -39329918.80 0.0300 0.0293

Mars -112391-05-30 07:41 J -39329240.47 -39329240.18 -39329239.87 0.0296 0.0079

Mercury -112388-10-01 10:34 J -39328020.17 -39328020.06 -39328019.95 0.0282 0.0204

Mercury -112388-12-29 05:17 J -39327931.43 -39327931.28 -39327931.12 0.0281 0.0108

Mercury -112387-03-28 00:14 J -39327842.66 -39327842.49 -39327842.32 0.0280 0.0011

Mercury -112387-06-24 19:26 J -39327753.85 -39327753.69 -39327753.52 0.0279 0.0089

Mercury -112387-09-21 14:53 J -39327665.00 -39327664.88 -39327664.75 0.0278 0.0187

Venus -112382-03-27 06:29 J -39326017.33 -39326017.23 -39326017.13 0.0264 0.0231

Venus -112382-11-11 10:48 J -39325788.22 -39325788.05 -39325787.87 0.0263 0.0159

Venus -112381-06-27 14:53 J -39325559.08 -39325558.88 -39325558.67 0.0262 0.0087

Venus -112380-02-11 18:58 J -39325329.93 -39325329.71 -39325329.49 0.0261 0.0013

Venus -112380-09-28 23:02 J -39325100.75 -39325100.54 -39325100.33 0.0261 0.0061

Venus -112379-05-16 02:53 J -39324871.56 -39324871.38 -39324871.19 0.0261 0.0133

Venus -112379-12-31 06:58 J -39324642.34 -39324642.21 -39324642.07 0.0261 0.0204

Earth -112377-01-24 00:43 J -39324253.70 -39324253.47 -39324253.23 0.0262 0.0107

Moon -112377-01-24 04:34 J -39324253.54 -39324253.31 -39324253.08 0.0262 0.0108 \*

Mars -112375-05-17 00:14 J -39323409.77 -39323409.49 -39323409.21 0.0267 0.0025

Mercury -112372-07-20 18:00 J -39322248.80 -39322248.75 -39322248.69 0.0278 0.0258

Mercury -112372-10-17 07:41 J -39322160.29 -39322160.18 -39322160.07 0.0279 0.0176

Mercury -112371-01-13 21:07 J -39322071.75 -39322071.62 -39322071.48 0.0280 0.0093

Mercury -112371-04-12 10:34 J -39321983.20 -39321983.06 -39321982.92 0.0281 0.0011

Mercury -112371-07-09 23:46 J -39321894.65 -39321894.51 -39321894.37 0.0282 0.0072

Mercury -112371-10-06 12:58 J -39321806.08 -39321805.96 -39321805.85 0.0283 0.0154

Mercury -112370-01-03 01:41 J -39321717.50 -39321717.43 -39321717.35 0.0284 0.0236

Venus -112367-12-08 18:29 J -39320281.88 -39320281.73 -39320281.58 0.0298 0.0203

Venus -112366-07-26 15:07 J -39320052.06 -39320051.87 -39320051.68 0.0300 0.0101

Venus -112365-03-12 12:14 J -39319822.20 -39319821.99 -39319821.79 0.0300 0.0005

Venus -112365-10-28 09:07 J -39319592.30 -39319592.12 -39319591.92 0.0301 0.0111

Venus -112364-06-15 06:00 J -39319362.38 -39319362.25 -39319362.10 0.0301 0.0214

Mars -112361-07-23 08:38 J -39318228.38 -39318228.14 -39318227.89 0.0294 0.0178

Mercury -112358-02-18 12:14 J -39317288.09 -39317287.99 -39317287.89 0.0283 0.0224

Mercury -112358-05-18 06:43 J -39317199.36 -39317199.22 -39317199.06 0.0282 0.0128

Mercury -112358-08-15 01:55 J -39317110.59 -39317110.42 -39317110.25 0.0281 0.0030

Mercury -112358-11-11 20:53 J -39317021.79 -39317021.63 -39317021.46 0.0280 0.0069

Mercury -112357-02-08 16:19 J -39316932.96 -39316932.82 -39316932.68 0.0279 0.0167

Mercury -112357-05-07 11:46 J -39316844.05 -39316844.01 -39316843.95 0.0278 0.0266

Venus -112353-10-06 12:14 J -39315231.10 -39315230.99 -39315230.87 0.0263 0.0220

Venus -112352-05-23 16:34 J -39315001.99 -39315001.81 -39315001.63 0.0262 0.0148

Venus -112351-01-07 20:38 J -39314772.85 -39314772.64 -39314772.43 0.0261 0.0075

Venus -112351-08-25 00:29 J -39314543.70 -39314543.48 -39314543.26 0.0261 0.0003

Venus -112350-04-11 04:05 J -39314314.54 -39314314.33 -39314314.11 0.0261 0.0073

Venus -112350-11-26 07:55 J -39314085.35 -39314085.17 -39314084.98 0.0261 0.0146

Venus -112349-07-12 11:46 J -39313856.12 -39313856.01 -39313855.88 0.0261 0.0217

Moon -112348-01-17 20:24 J -39313666.86 -39313666.65 -39313666.44 0.0261 0.0150

Earth -112348-01-18 00:14 J -39313666.69 -39313666.49 -39313666.27 0.0261 0.0148 \*

Mars -112347-07-09 06:29 J -39313129.25 -39313129.23 -39313129.18 0.0263 0.0261

Mars -112345-07-02 18:14 J -39312404.93 -39312404.74 -39312404.52 0.0269 0.0181

Mercury -112342-03-06 09:36 J -39311428.20 -39311428.10 -39311428.00 0.0279 0.0199

Mercury -112342-06-02 23:02 J -39311339.67 -39311339.54 -39311339.41 0.0280 0.0117

Mercury -112342-08-30 12:29 J -39311251.12 -39311250.98 -39311250.84 0.0281 0.0035

Mercury -112342-11-27 01:41 J -39311162.57 -39311162.43 -39311162.29 0.0282 0.0048

Mercury -112341-02-23 14:53 J -39311074.01 -39311073.88 -39311073.76 0.0283 0.0130

Mercury -112341-05-22 03:36 J -39310985.43 -39310985.35 -39310985.25 0.0284 0.0213

Venus -112338-11-03 04:34 J -39309725.35 -39309725.31 -39309725.25 0.0298 0.0288

Venus -112337-06-20 01:12 J -39309495.61 -39309495.45 -39309495.29 0.0299 0.0190

Venus -112336-02-04 22:05 J -39309265.78 -39309265.58 -39309265.38 0.0300 0.0087

Venus -112336-09-22 19:12 J -39309035.90 -39309035.70 -39309035.49 0.0301 0.0019

Venus -112335-05-10 16:19 J -39308806.00 -39308805.82 -39308805.63 0.0301 0.0126

Venus -112335-12-26 13:12 J -39308576.07 -39308575.95 -39308575.81 0.0301 0.0228

Moon -112334-07-17 16:34 J -39308373.05 -39308372.81 -39308372.57 0.0300 0.0059

Earth -112334-07-17 16:48 J -39308373.03 -39308372.80 -39308372.57 0.0300 0.0054 \*

Mercury -112329-07-07 13:12 J -39306556.02 -39306555.95 -39306555.87 0.0283 0.0248

Mercury -112329-10-04 07:55 J -39306467.31 -39306467.17 -39306467.03 0.0282 0.0152

Mercury -112328-01-01 02:38 J -39306378.55 -39306378.39 -39306378.22 0.0281 0.0055

Mercury -112328-03-30 21:50 J -39306289.76 -39306289.59 -39306289.42 0.0280 0.0044

Mercury -112328-06-27 17:17 J -39306200.93 -39306200.78 -39306200.64 0.0279 0.0142

Mercury -112328-09-24 12:29 J -39306112.05 -39306111.98 -39306111.88 0.0278 0.0241

Venus -112323-04-18 19:12 J -39304444.82 -39304444.70 -39304444.55 0.0263 0.0210

Venus -112323-12-03 23:31 J -39304215.70 -39304215.52 -39304215.32 0.0262 0.0137

Venus -112322-07-21 03:36 J -39303986.56 -39303986.35 -39303986.13 0.0262 0.0063

Venus -112321-03-06 07:26 J -39303757.41 -39303757.19 -39303756.97 0.0261 0.0012

Venus -112321-10-21 11:31 J -39303528.23 -39303528.02 -39303527.81 0.0261 0.0085

Venus -112320-06-07 15:22 J -39303299.03 -39303298.86 -39303298.69 0.0261 0.0157

Venus -112319-01-22 19:12 J -39303069.80 -39303069.70 -39303069.59 0.0261 0.0228

Earth -112318-01-25 11:46 J -39302702.18 -39302702.01 -39302701.82 0.0262 0.0185

Moon -112318-01-25 12:43 J -39302702.13 -39302701.97 -39302701.77 0.0262 0.0190 \*

Mars -112317-08-24 19:26 J -39302124.94 -39302124.69 -39302124.43 0.0265 0.0108

Mercury -112313-07-23 12:14 J -39300696.08 -39300695.99 -39300695.90 0.0279 0.0217

Mercury -112313-10-20 01:55 J -39300607.55 -39300607.42 -39300607.30 0.0280 0.0135

Mercury -112312-01-16 15:22 J -39300519.00 -39300518.86 -39300518.72 0.0281 0.0053

Mercury -112312-04-15 04:34 J -39300430.45 -39300430.31 -39300430.17 0.0282 0.0030

Mercury -112312-07-12 17:46 J -39300341.89 -39300341.76 -39300341.63 0.0283 0.0112  
 Mercury -112312-10-09 06:43 J -39300253.32 -39300253.22 -39300253.12 0.0284 0.0194  
 Mercury -112311-01-05 19:41 J -39300164.71 -39300164.68 -39300164.64 0.0285 0.0275  
 Venus -112308-05-15 14:38 J -39298938.96 -39298938.89 -39298938.80 0.0297 0.0271  
 Venus -112308-12-31 11:02 J -39298709.20 -39298709.04 -39298708.86 0.0299 0.0173  
 Venus -112307-08-18 08:10 J -39298479.36 -39298479.16 -39298478.96 0.0300 0.0069  
 Venus -112306-04-05 05:17 J -39298249.48 -39298249.28 -39298249.07 0.0301 0.0038  
 Venus -112306-11-21 02:24 J -39298019.58 -39298019.40 -39298019.22 0.0301 0.0144  
 Venus -112305-07-07 23:02 J -39297789.64 -39297789.54 -39297789.41 0.0301 0.0247  
 Mars -112303-10-25 18:58 J -39296950.01 -39296949.71 -39296949.40 0.0296 0.0039  
 Mercury -112300-11-24 14:53 J -39295823.93 -39295823.88 -39295823.83 0.0283 0.0268  
 Mercury -112299-02-21 09:22 J -39295735.24 -39295735.11 -39295734.97 0.0282 0.0172  
 Mercury -112299-05-21 04:19 J -39295646.49 -39295646.32 -39295646.16 0.0281 0.0075  
 Mercury -112299-08-17 23:17 J -39295557.70 -39295557.53 -39295557.36 0.0280 0.0023  
 Mercury -112299-11-14 18:29 J -39295468.88 -39295468.73 -39295468.57 0.0279 0.0121  
 Mercury -112298-02-11 13:55 J -39295380.02 -39295379.92 -39295379.81 0.0278 0.0220  
 Venus -112294-10-30 01:12 J -39293658.58 -39293658.45 -39293658.30 0.0263 0.0198  
 Venus -112293-06-15 05:17 J -39293429.46 -39293429.28 -39293429.08 0.0262 0.0125  
 Venus -112292-01-30 09:07 J -39293200.33 -39293200.12 -39293199.90 0.0261 0.0051  
 Venus -112292-09-16 12:58 J -39292971.18 -39292970.96 -39292970.74 0.0261 0.0023  
 Venus -112291-05-03 16:34 J -39292742.01 -39292741.81 -39292741.60 0.0260 0.0097  
 Venus -112291-12-18 20:10 J -39292512.82 -39292512.66 -39292512.49 0.0260 0.0170  
 Venus -112290-08-05 00:14 J -39292283.58 -39292283.49 -39292283.41 0.0261 0.0240  
 Moon -112289-01-20 10:34 J -39292115.30 -39292115.06 -39292114.82 0.0261 0.0069  
 Earth -112289-01-20 11:02 J -39292115.28 -39292115.04 -39292114.78 0.0261 0.0071 \*  
 Mars -112287-10-11 05:17 J -39291120.56 -39291120.28 -39291120.00 0.0266 0.0040  
 Mercury -112284-12-10 13:41 J -39289964.00 -39289963.93 -39289963.86 0.0278 0.0242  
 Mercury -112283-03-09 03:22 J -39289875.48 -39289875.36 -39289875.24 0.0279 0.0160  
 Mercury -112283-06-05 16:48 J -39289786.94 -39289786.80 -39289786.66 0.0280 0.0078  
 Mercury -112283-09-02 06:00 J -39289698.39 -39289698.25 -39289698.10 0.0281 0.0010



Mercury -112283-11-29 19:12 J -39289609.83 -39289609.70 -39289609.56 0.0282 0.0087

Mercury -112282-02-26 08:24 J -39289521.26 -39289521.15 -39289521.04 0.0284 0.0168

Mercury -112282-05-25 21:22 J -39289432.67 -39289432.61 -39289432.55 0.0285 0.0250

Venus -112279-11-25 19:41 J -39288152.77 -39288152.68 -39288152.57 0.0298 0.0261

Venus -112278-07-13 16:19 J -39287922.98 -39287922.82 -39287922.64 0.0300 0.0162

Venus -112277-02-28 13:41 J -39287693.13 -39287692.93 -39287692.73 0.0301 0.0056

Venus -112277-10-15 11:02 J -39287463.24 -39287463.04 -39287462.84 0.0301 0.0051

Venus -112276-06-02 08:10 J -39287233.33 -39287233.16 -39287232.98 0.0301 0.0158

Venus -112275-01-18 05:02 J -39287003.38 -39287003.29 -39287003.18 0.0301 0.0260

Moon -112275-07-19 03:22 J -39286821.59 -39286821.36 -39286821.12 0.0300 0.0047

Earth -112275-07-19 07:12 J -39286821.43 -39286821.20 -39286820.97 0.0300 0.0048 \*

Mars -112273-12-18 04:05 J -39285938.53 -39285938.33 -39285938.09 0.0294 0.0205

Mercury -112270-07-11 09:50 J -39285003.21 -39285003.09 -39285002.97 0.0282 0.0199

Mercury -112270-10-08 04:34 J -39284914.46 -39284914.31 -39284914.15 0.0281 0.0103

Mercury -112269-01-04 23:31 J -39284825.69 -39284825.52 -39284825.35 0.0280 0.0009

Mercury -112269-04-02 18:43 J -39284736.88 -39284736.72 -39284736.55 0.0279 0.0094

Mercury -112269-06-30 14:10 J -39284648.03 -39284647.91 -39284647.78 0.0278 0.0192

Venus -112265-09-24 02:53 J -39283101.41 -39283101.38 -39283101.33 0.0264 0.0259

Venus -112264-05-11 07:26 J -39282872.34 -39282872.19 -39282872.04 0.0263 0.0187

Venus -112264-12-26 11:17 J -39282643.22 -39282643.03 -39282642.82 0.0262 0.0114

Venus -112263-08-12 15:22 J -39282414.08 -39282413.86 -39282413.65 0.0261 0.0040

Venus -112262-03-29 18:58 J -39282184.93 -39282184.71 -39282184.49 0.0261 0.0035

Venus -112262-11-13 22:34 J -39281955.75 -39281955.56 -39281955.35 0.0261 0.0109

Venus -112261-06-30 02:24 J -39281726.55 -39281726.40 -39281726.24 0.0261 0.0181

Venus -112260-02-14 06:14 J -39281497.29 -39281497.24 -39281497.17 0.0261 0.0251

Earth -112259-01-26 20:53 J -39281150.67 -39281150.63 -39281150.58 0.0262 0.0258

Mars -112259-12-03 16:48 J -39280839.91 -39280839.80 -39280839.67 0.0264 0.0238

Mars -112257-11-27 05:02 J -39280115.46 -39280115.29 -39280115.10 0.0269 0.0205

Mercury -112254-04-29 16:05 J -39279231.87 -39279231.83 -39279231.78 0.0278 0.0262

Mercury -112254-07-27 05:46 J -39279143.37 -39279143.26 -39279143.15 0.0279 0.0180

Mercury -112254-10-23 19:26 J -39279054.83 -39279054.69 -39279054.56 0.0280 0.0098

Mercury -112253-01-20 08:38 J -39278966.28 -39278966.14 -39278965.99 0.0281 0.0016

Mercury -112253-04-17 21:50 J -39278877.72 -39278877.59 -39278877.45 0.0282 0.0068

Mercury -112253-07-15 11:02 J -39278789.16 -39278789.04 -39278788.92 0.0283 0.0149

Mercury -112253-10-12 00:00 J -39278700.57 -39278700.50 -39278700.42 0.0284 0.0231

Venus -112249-06-07 05:02 J -39277366.39 -39277366.29 -39277366.16 0.0298 0.0245

Venus -112248-01-23 01:55 J -39277136.60 -39277136.42 -39277136.24 0.0299 0.0144

Venus -112248-09-09 23:02 J -39276906.74 -39276906.54 -39276906.34 0.0300 0.0038

Venus -112247-04-27 20:24 J -39276676.85 -39276676.65 -39276676.45 0.0301 0.0070

Venus -112247-12-13 17:31 J -39276446.93 -39276446.77 -39276446.60 0.0301 0.0176

Venus -112246-07-31 14:10 J -39276216.97 -39276216.91 -39276216.82 0.0301 0.0278

Mars -112244-01-26 07:26 J -39275672.32 -39275672.19 -39275672.06 0.0298 0.0269

Mercury -112241-11-27 11:02 J -39274271.13 -39274271.04 -39274270.93 0.0283 0.0221

Mercury -112240-02-24 06:00 J -39274182.40 -39274182.25 -39274182.10 0.0282 0.0124

Mercury -112240-05-24 00:43 J -39274093.63 -39274093.47 -39274093.30 0.0281 0.0028

Mercury -112240-08-20 19:55 J -39274004.83 -39274004.67 -39274004.50 0.0280 0.0072

Mercury -112240-11-17 15:22 J -39273916.00 -39273915.86 -39273915.72 0.0279 0.0170

Mercury -112239-02-14 11:02 J -39273827.08 -39273827.04 -39273827.00 0.0278 0.0268

Venus -112235-04-06 08:38 J -39272315.20 -39272315.14 -39272315.05 0.0264 0.0249

Venus -112235-11-21 12:43 J -39272086.12 -39272085.97 -39272085.79 0.0263 0.0177

Venus -112234-07-08 16:48 J -39271857.00 -39271856.80 -39271856.60 0.0262 0.0102

Venus -112233-02-22 20:24 J -39271627.87 -39271627.65 -39271627.43 0.0261 0.0028

Venus -112233-10-09 00:00 J -39271398.71 -39271398.50 -39271398.28 0.0260 0.0047

Venus -112232-05-26 03:36 J -39271169.55 -39271169.35 -39271169.16 0.0260 0.0121

Venus -112231-01-10 06:43 J -39270940.35 -39270940.22 -39270940.06 0.0260 0.0194

Earth -112230-01-21 19:41 J -39270563.94 -39270563.68 -39270563.43 0.0261 0.0002

Moon -112230-01-21 23:17 J -39270563.78 -39270563.53 -39270563.27 0.0261 0.0008 \*

Mars -112228-01-18 19:12 J -39269835.95 -39269835.70 -39269835.43 0.0265 0.0098

Mercury -112225-12-13 06:58 J -39268411.30 -39268411.21 -39268411.11 0.0278 0.0207

Mercury -112224-03-11 20:24 J -39268322.77 -39268322.65 -39268322.52 0.0279 0.0125

Mercury -112224-06-08 09:50 J -39268234.23 -39268234.09 -39268233.95 0.0281 0.0043

Mercury -112224-09-04 23:17 J -39268145.67 -39268145.53 -39268145.39 0.0282 0.0040

Mercury -112224-12-02 12:14 J -39268057.11 -39268056.99 -39268056.86 0.0283 0.0121

Mercury -112223-03-01 01:12 J -39267968.54 -39267968.45 -39267968.35 0.0284 0.0203

Mercury -112223-05-28 14:10 J -39267879.91 -39267879.91 -39267879.90 0.0285 0.0284

Venus -112220-12-18 08:24 J -39266580.27 -39266580.15 -39266580.02 0.0299 0.0236

Venus -112219-08-05 05:17 J -39266350.46 -39266350.28 -39266350.10 0.0300 0.0133

Venus -112218-03-23 02:38 J -39266120.60 -39266120.39 -39266120.19 0.0301 0.0027

Venus -112218-11-08 00:00 J -39265890.70 -39265890.50 -39265890.31 0.0301 0.0082

Venus -112217-06-24 20:53 J -39265660.78 -39265660.63 -39265660.46 0.0301 0.0189

Venus -112216-02-09 18:00 J -39265430.80 -39265430.75 -39265430.69 0.0301 0.0289

Moon -112216-07-20 15:36 J -39265270.05 -39265269.85 -39265269.64 0.0300 0.0140

Earth -112216-07-20 16:34 J -39265270.01 -39265269.81 -39265269.60 0.0300 0.0137 \*

Mars -112214-03-21 22:05 J -39264660.89 -39264660.58 -39264660.27 0.0296 0.0018

Mercury -112211-04-16 10:48 J -39263539.12 -39263539.05 -39263538.98 0.0283 0.0253

Mercury -112211-07-14 05:17 J -39263450.41 -39263450.28 -39263450.14 0.0282 0.0156

Mercury -112211-10-11 00:14 J -39263361.65 -39263361.49 -39263361.32 0.0281 0.0059

Mercury -112210-01-07 19:26 J -39263272.86 -39263272.69 -39263272.52 0.0280 0.0039

Mercury -112210-04-06 14:38 J -39263184.03 -39263183.89 -39263183.74 0.0279 0.0138

Mercury -112210-07-04 10:19 J -39263095.16 -39263095.07 -39263094.98 0.0278 0.0236

Venus -112206-10-17 13:12 J -39261529.03 -39261528.95 -39261528.85 0.0264 0.0239

Venus -112205-06-02 17:17 J -39261299.94 -39261299.78 -39261299.60 0.0262 0.0167

Venus -112204-01-17 21:22 J -39261070.81 -39261070.61 -39261070.40 0.0262 0.0092

Venus -112204-09-04 01:12 J -39260841.67 -39260841.45 -39260841.23 0.0261 0.0017

Venus -112203-04-21 04:48 J -39260612.52 -39260612.30 -39260612.09 0.0261 0.0058

Venus -112203-12-06 08:10 J -39260383.34 -39260383.16 -39260382.97 0.0260 0.0132

Venus -112202-07-23 11:46 J -39260154.14 -39260154.01 -39260153.87 0.0261 0.0204

Moon -112201-01-16 15:22 J -39259976.93 -39259976.86 -39259976.76 0.0261 0.0245

Earth -112201-01-16 19:12 J -39259976.76 -39259976.70 -39259976.61 0.0261 0.0248 \*

Mars -112198-03-07 07:12 J -39258831.47 -39258831.20 -39258830.93 0.0267 0.0059

Mercury -112195-05-02 08:53 J -39257679.21 -39257679.13 -39257679.04 0.0278 0.0229

Mercury -112195-07-29 22:34 J -39257590.68 -39257590.56 -39257590.44 0.0279 0.0147

Mercury -112195-10-26 12:00 J -39257502.14 -39257502.00 -39257501.86 0.0280 0.0065

Mercury -112194-01-23 01:12 J -39257413.59 -39257413.45 -39257413.30 0.0281 0.0019

Mercury -112194-04-21 14:24 J -39257325.03 -39257324.90 -39257324.76 0.0283 0.0100

Mercury -112194-07-19 03:36 J -39257236.46 -39257236.35 -39257236.24 0.0284 0.0181

Mercury -112194-10-15 16:34 J -39257147.86 -39257147.81 -39257147.76 0.0285 0.0262

Venus -112190-06-30 16:05 J -39255793.96 -39255793.83 -39255793.68 0.0298 0.0221

Venus -112189-02-15 13:12 J -39255564.14 -39255563.95 -39255563.76 0.0300 0.0117

Venus -112189-10-02 10:34 J -39255334.27 -39255334.06 -39255333.86 0.0301 0.0011

Venus -112188-05-20 07:41 J -39255104.37 -39255104.18 -39255103.98 0.0301 0.0100

Venus -112187-01-05 04:48 J -39254874.44 -39254874.30 -39254874.14 0.0301 0.0206

Earth -112187-07-15 00:14 J -39254683.64 -39254683.49 -39254683.33 0.0301 0.0222

Moon -112187-07-15 00:29 J -39254683.63 -39254683.48 -39254683.30 0.0301 0.0221 \*

Mars -112184-05-14 13:41 J -39253649.12 -39253648.93 -39253648.73 0.0294 0.0226

Mercury -112182-09-03 11:46 J -39252807.04 -39252807.01 -39252806.97 0.0284 0.0276

Mercury -112182-12-01 06:29 J -39252718.36 -39252718.23 -39252718.11 0.0283 0.0180

Mercury -112181-02-28 01:12 J -39252629.61 -39252629.45 -39252629.29 0.0282 0.0083

Mercury -112181-05-26 20:10 J -39252540.83 -39252540.66 -39252540.49 0.0281 0.0016

Mercury -112181-08-23 15:22 J -39252452.01 -39252451.86 -39252451.70 0.0280 0.0114

Mercury -112181-11-20 10:48 J -39252363.15 -39252363.05 -39252362.93 0.0278 0.0212

Venus -112176-04-28 18:29 J -39250742.82 -39250742.73 -39250742.61 0.0263 0.0229

Venus -112176-12-13 22:19 J -39250513.73 -39250513.57 -39250513.38 0.0262 0.0157

Venus -112175-07-31 02:10 J -39250284.62 -39250284.41 -39250284.20 0.0261 0.0081

Venus -112174-03-17 05:31 J -39250055.49 -39250055.27 -39250055.05 0.0261 0.0007

Venus -112174-11-01 08:53 J -39249826.34 -39249826.13 -39249825.91 0.0260 0.0069

Venus -112173-06-17 12:14 J -39249597.17 -39249596.99 -39249596.80 0.0260 0.0143

Venus -112172-02-01 15:36 J -39249367.96 -39249367.85 -39249367.72 0.0260 0.0215

Earth -112171-01-23 00:43 J -39249012.72 -39249012.47 -39249012.22 0.0261 0.0065

Moon -112171-01-23 02:38 J -39249012.64 -39249012.39 -39249012.14 0.0261 0.0074 \*

Mars -112170-04-29 09:36 J -39248551.21 -39248551.10 -39248550.95 0.0263 0.0231  
 Mars -112168-04-22 18:43 J -39247826.88 -39247826.72 -39247826.53 0.0268 0.0209  
 Mercury -112166-09-19 09:50 J -39246947.14 -39246947.09 -39246947.04 0.0277 0.0258  
 Mercury -112166-12-16 23:17 J -39246858.63 -39246858.53 -39246858.41 0.0279 0.0177  
 Mercury -112165-03-14 12:58 J -39246770.10 -39246769.96 -39246769.83 0.0280 0.0095  
 Mercury -112165-06-11 02:10 J -39246681.55 -39246681.41 -39246681.26 0.0281 0.0015  
 Mercury -112165-09-07 15:22 J -39246592.99 -39246592.86 -39246592.72 0.0282 0.0070  
 Mercury -112165-12-05 04:34 J -39246504.43 -39246504.31 -39246504.19 0.0283 0.0151  
 Mercury -112164-03-03 17:31 J -39246415.85 -39246415.77 -39246415.69 0.0284 0.0232  
 Venus -112160-01-09 18:00 J -39245007.89 -39245007.75 -39245007.60 0.0299 0.0212  
 Venus -112160-08-27 15:07 J -39244778.06 -39244777.87 -39244777.68 0.0300 0.0107  
 Venus -112159-04-14 12:29 J -39244548.18 -39244547.98 -39244547.77 0.0301 0.0006  
 Venus -112159-11-30 10:05 J -39244318.27 -39244318.08 -39244317.89 0.0302 0.0110  
 Venus -112158-07-18 06:58 J -39244088.34 -39244088.21 -39244088.06 0.0302 0.0217  
 Earth -112157-07-21 21:36 J -39243718.76 -39243718.60 -39243718.43 0.0300 0.0214  
 Moon -112157-07-22 01:12 J -39243718.61 -39243718.45 -39243718.30 0.0300 0.0223 \*  
 Mars -112156-06-21 14:24 J -39243384.05 -39243383.90 -39243383.74 0.0298 0.0258  
 Mercury -112152-04-19 05:02 J -39241986.39 -39241986.29 -39241986.18 0.0283 0.0215  
 Mercury -112152-07-17 00:00 J -39241897.65 -39241897.50 -39241897.35 0.0282 0.0118  
 Mercury -112152-10-13 18:58 J -39241808.88 -39241808.71 -39241808.54 0.0281 0.0020  
 Mercury -112151-01-10 14:10 J -39241720.07 -39241719.91 -39241719.75 0.0280 0.0078  
 Mercury -112151-04-09 09:22 J -39241631.23 -39241631.11 -39241630.97 0.0279 0.0177  
 Mercury -112151-07-07 05:17 J -39241542.30 -39241542.28 -39241542.26 0.0278 0.0275  
 Venus -112147-11-08 21:07 J -39239956.72 -39239956.62 -39239956.49 0.0263 0.0221  
 Venus -112146-06-26 01:26 J -39239727.62 -39239727.44 -39239727.26 0.0262 0.0146  
 Venus -112145-02-10 05:17 J -39239498.49 -39239498.28 -39239498.07 0.0261 0.0071  
 Venus -112145-09-26 08:53 J -39239269.35 -39239269.13 -39239268.91 0.0261 0.0007  
 Venus -112144-05-13 12:29 J -39239040.19 -39239039.98 -39239039.77 0.0260 0.0080  
 Venus -112144-12-28 15:36 J -39238811.02 -39238810.85 -39238810.66 0.0260 0.0154  
 Venus -112143-08-14 18:58 J -39238581.80 -39238581.71 -39238581.59 0.0261 0.0226

Moon -112142-01-17 21:07 J -39238425.79 -39238425.62 -39238425.44 0.0261 0.0182  
 Earth -112142-01-17 22:48 J -39238425.73 -39238425.55 -39238425.37 0.0261 0.0187 \*  
 Mars -112140-06-14 11:46 J -39237547.28 -39237547.01 -39237546.75 0.0265 0.0083  
 Mercury -112136-05-05 00:58 J -39236126.55 -39236126.46 -39236126.36 0.0278 0.0201  
 Mercury -112136-08-01 14:38 J -39236038.02 -39236037.89 -39236037.76 0.0280 0.0119  
 Mercury -112136-10-29 03:50 J -39235949.48 -39235949.34 -39235949.19 0.0281 0.0038  
 Mercury -112135-01-25 17:17 J -39235860.92 -39235860.78 -39235860.64 0.0282 0.0045  
 Mercury -112135-04-24 06:14 J -39235772.36 -39235772.24 -39235772.11 0.0283 0.0127  
 Mercury -112135-07-21 19:26 J -39235683.79 -39235683.69 -39235683.60 0.0284 0.0208  
 Venus -112132-12-05 03:50 J -39234451.34 -39234451.34 -39234451.33 0.0297 0.0297  
 Venus -112131-07-23 00:29 J -39234221.63 -39234221.48 -39234221.32 0.0299 0.0197  
 Venus -112130-03-09 21:36 J -39233991.79 -39233991.60 -39233991.40 0.0300 0.0092  
 Venus -112130-10-25 18:58 J -39233761.91 -39233761.71 -39233761.51 0.0301 0.0017  
 Venus -112129-06-11 16:05 J -39233532.00 -39233531.83 -39233531.63 0.0301 0.0127  
 Venus -112128-01-27 13:12 J -39233302.06 -39233301.95 -39233301.81 0.0301 0.0233  
 Moon -112128-07-15 23:17 J -39233132.74 -39233132.53 -39233132.32 0.0301 0.0144  
 Earth -112128-07-16 02:38 J -39233132.59 -39233132.39 -39233132.18 0.0301 0.0151 \*  
 Mars -112126-08-15 14:38 J -39232372.20 -39232371.89 -39232371.58 0.0296 0.0008  
 Mercury -112123-09-06 05:31 J -39231254.35 -39231254.27 -39231254.18 0.0284 0.0242  
 Mercury -112123-12-04 00:14 J -39231165.63 -39231165.49 -39231165.34 0.0283 0.0145  
 Mercury -112122-03-02 19:12 J -39231076.87 -39231076.70 -39231076.53 0.0281 0.0048  
 Mercury -112122-05-30 14:24 J -39230988.07 -39230987.90 -39230987.73 0.0280 0.0051  
 Mercury -112122-08-27 09:36 J -39230899.24 -39230899.10 -39230898.95 0.0279 0.0150  
 Mercury -112122-11-24 05:02 J -39230810.35 -39230810.29 -39230810.20 0.0278 0.0249  
 Venus -112117-05-21 01:55 J -39229170.54 -39229170.42 -39229170.28 0.0263 0.0211  
 Venus -112116-01-05 05:46 J -39228941.44 -39228941.26 -39228941.07 0.0262 0.0137  
 Venus -112116-08-22 09:22 J -39228712.32 -39228712.11 -39228711.89 0.0261 0.0061  
 Venus -112115-04-08 12:43 J -39228483.19 -39228482.97 -39228482.75 0.0260 0.0015  
 Venus -112115-11-23 15:50 J -39228254.04 -39228253.84 -39228253.62 0.0260 0.0091  
 Venus -112114-07-10 19:12 J -39228024.87 -39228024.70 -39228024.53 0.0260 0.0164

Venus -112113-02-24 22:19 J -39227795.64 -39227795.57 -39227795.46 0.0260 0.0237

Moon -112112-01-23 23:31 J -39227461.74 -39227461.52 -39227461.30 0.0261 0.0137

Earth -112112-01-24 02:53 J -39227461.60 -39227461.38 -39227461.15 0.0261 0.0124 \*

Mars -112110-07-31 15:22 J -39226543.12 -39226542.86 -39226542.58 0.0266 0.0061

Mercury -112107-09-22 01:41 J -39225394.51 -39225394.43 -39225394.35 0.0277 0.0231

Mercury -112107-12-19 15:07 J -39225305.99 -39225305.87 -39225305.74 0.0279 0.0150

Mercury -112106-03-18 04:34 J -39225217.45 -39225217.31 -39225217.17 0.0280 0.0068

Mercury -112106-06-14 18:00 J -39225128.90 -39225128.75 -39225128.61 0.0281 0.0016

Mercury -112106-09-11 06:58 J -39225040.34 -39225040.21 -39225040.07 0.0282 0.0095

Mercury -112106-12-08 19:55 J -39224951.77 -39224951.67 -39224951.56 0.0283 0.0176

Mercury -112105-03-06 08:53 J -39224863.18 -39224863.13 -39224863.07 0.0284 0.0257

Venus -112102-06-17 04:19 J -39223665.36 -39223665.32 -39223665.28 0.0297 0.0291

Venus -112101-02-02 00:43 J -39223435.62 -39223435.47 -39223435.30 0.0299 0.0191

Venus -112101-09-18 21:50 J -39223205.78 -39223205.59 -39223205.39 0.0300 0.0084

Venus -112100-05-06 19:26 J -39222975.90 -39222975.69 -39222975.49 0.0301 0.0026

Venus -112100-12-22 16:34 J -39222745.98 -39222745.81 -39222745.62 0.0302 0.0136

Venus -112099-08-09 13:55 J -39222516.03 -39222515.92 -39222515.79 0.0302 0.0241

Earth -112098-07-23 21:22 J -39222167.69 -39222167.61 -39222167.52 0.0300 0.0277

Moon -112098-07-23 23:17 J -39222167.59 -39222167.53 -39222167.47 0.0300 0.0289 \*

Mars -112096-10-07 05:31 J -39221361.46 -39221361.27 -39221361.07 0.0294 0.0228

Mercury -112093-01-24 03:50 J -39220522.36 -39220522.34 -39220522.32 0.0284 0.0280

Mercury -112093-04-21 22:19 J -39220433.69 -39220433.57 -39220433.44 0.0283 0.0184

Mercury -112093-07-19 17:17 J -39220344.94 -39220344.78 -39220344.62 0.0282 0.0086

Mercury -112093-10-16 12:14 J -39220256.15 -39220255.99 -39220255.82 0.0281 0.0014

Mercury -112092-01-13 07:41 J -39220167.34 -39220167.18 -39220167.02 0.0280 0.0110

Mercury -112092-04-12 03:07 J -39220078.48 -39220078.37 -39220078.25 0.0279 0.0209

Venus -112088-12-01 03:22 J -39218384.49 -39218384.36 -39218384.21 0.0263 0.0203

Venus -112087-07-18 07:26 J -39218155.38 -39218155.19 -39218155.00 0.0262 0.0128

Venus -112086-03-04 11:02 J -39217926.25 -39217926.04 -39217925.82 0.0261 0.0052

Venus -112086-10-19 14:53 J -39217697.10 -39217696.88 -39217696.67 0.0260 0.0025

Venus -112085-06-04 18:14 J -39217467.95 -39217467.74 -39217467.54 0.0260 0.0100  
 Venus -112084-01-19 21:22 J -39217238.77 -39217238.61 -39217238.44 0.0260 0.0174  
 Venus -112084-09-06 00:43 J -39217009.53 -39217009.47 -39217009.39 0.0260 0.0246  
 Earth -112083-01-18 22:34 J -39216874.77 -39216874.56 -39216874.33 0.0261 0.0133  
 Moon -112083-01-19 01:55 J -39216874.63 -39216874.42 -39216874.19 0.0261 0.0122 \*  
 Mars -112082-09-22 19:41 J -39216262.83 -39216262.68 -39216262.53 0.0263 0.0222  
 Mars -112080-09-16 02:53 J -39215538.53 -39215538.38 -39215538.21 0.0268 0.0218  
 Mercury -112077-02-09 02:53 J -39214662.43 -39214662.38 -39214662.33 0.0277 0.0257  
 Mercury -112077-05-07 16:19 J -39214573.93 -39214573.82 -39214573.70 0.0279 0.0176  
 Mercury -112077-08-04 06:00 J -39214485.39 -39214485.25 -39214485.12 0.0280 0.0095  
 Mercury -112077-10-31 19:12 J -39214396.84 -39214396.70 -39214396.56 0.0281 0.0013  
 Mercury -112076-01-28 08:24 J -39214308.29 -39214308.15 -39214308.01 0.0282 0.0069  
 Mercury -112076-04-26 21:36 J -39214219.72 -39214219.60 -39214219.48 0.0283 0.0150  
 Mercury -112076-07-24 10:19 J -39214131.14 -39214131.07 -39214130.98 0.0284 0.0231  
 Venus -112073-12-27 09:22 J -39212879.17 -39212879.11 -39212879.03 0.0297 0.0278  
 Venus -112072-08-14 06:14 J -39212649.40 -39212649.24 -39212649.07 0.0299 0.0176  
 Venus -112071-04-01 03:22 J -39212419.55 -39212419.36 -39212419.15 0.0300 0.0069  
 Venus -112071-11-17 00:58 J -39212189.67 -39212189.46 -39212189.26 0.0301 0.0042  
 Venus -112070-07-04 22:05 J -39211959.75 -39211959.58 -39211959.40 0.0301 0.0152  
 Venus -112069-02-19 19:12 J -39211729.79 -39211729.70 -39211729.59 0.0301 0.0257  
 Moon -112069-07-16 23:46 J -39211581.73 -39211581.51 -39211581.29 0.0301 0.0081  
 Earth -112069-07-17 00:58 J -39211581.69 -39211581.46 -39211581.24 0.0301 0.0091 \*  
 Mars -112068-11-14 14:10 J -39211096.06 -39211095.91 -39211095.75 0.0298 0.0258  
 Mercury -112064-09-08 22:19 J -39209701.67 -39209701.57 -39209701.46 0.0284 0.0213  
 Mercury -112064-12-06 17:17 J -39209612.93 -39209612.78 -39209612.63 0.0282 0.0116  
 Mercury -112063-03-05 12:14 J -39209524.16 -39209523.99 -39209523.82 0.0281 0.0018  
 Mercury -112063-06-02 07:26 J -39209435.35 -39209435.19 -39209435.02 0.0280 0.0081  
 Mercury -112063-08-30 02:53 J -39209346.51 -39209346.38 -39209346.24 0.0279 0.0180  
 Venus -112058-06-13 07:26 J -39207598.33 -39207598.19 -39207598.04 0.0263 0.0194  
 Venus -112057-01-28 11:17 J -39207369.22 -39207369.03 -39207368.83 0.0262 0.0119



Venus -112057-09-13 14:53 J -39207140.09 -39207139.88 -39207139.66 0.0261 0.0043  
 Venus -112056-04-30 18:14 J -39206910.96 -39206910.74 -39206910.52 0.0260 0.0034  
 Venus -112056-12-15 21:07 J -39206681.81 -39206681.62 -39206681.41 0.0260 0.0111  
 Venus -112055-08-02 00:14 J -39206452.63 -39206452.49 -39206452.32 0.0260 0.0184  
 Venus -112054-03-19 03:50 J -39206223.37 -39206223.34 -39206223.30 0.0260 0.0256  
 Moon -112053-01-26 00:14 J -39205910.65 -39205910.49 -39205910.32 0.0261 0.0192  
 Earth -112053-01-26 02:10 J -39205910.58 -39205910.41 -39205910.21 0.0261 0.0178 \*  
 Mars -112052-11-07 17:31 J -39205259.04 -39205258.77 -39205258.51 0.0264 0.0083  
 Mercury -112048-09-24 17:02 J -39203841.88 -39203841.79 -39203841.69 0.0277 0.0207  
 Mercury -112048-12-22 06:29 J -39203753.36 -39203753.23 -39203753.10 0.0278 0.0126  
 Mercury -112047-03-20 19:55 J -39203664.81 -39203664.67 -39203664.53 0.0280 0.0045  
 Mercury -112047-06-17 09:07 J -39203576.26 -39203576.12 -39203575.98 0.0281 0.0037  
 Mercury -112047-09-13 22:05 J -39203487.70 -39203487.58 -39203487.45 0.0282 0.0118  
 Mercury -112047-12-11 11:17 J -39203399.13 -39203399.03 -39203398.94 0.0283 0.0198  
 Mercury -112046-03-10 00:00 J -39203310.52 -39203310.50 -39203310.47 0.0284 0.0278  
 Venus -112043-07-09 09:07 J -39202093.19 -39202093.12 -39202093.03 0.0297 0.0273  
 Venus -112042-02-24 06:00 J -39201863.42 -39201863.25 -39201863.08 0.0299 0.0170  
 Venus -112042-10-12 03:07 J -39201633.57 -39201633.37 -39201633.17 0.0300 0.0062  
 Venus -112041-05-29 00:29 J -39201403.69 -39201403.48 -39201403.28 0.0301 0.0049  
 Venus -112040-01-13 21:50 J -39201173.77 -39201173.59 -39201173.42 0.0302 0.0159  
 Venus -112040-08-31 18:58 J -39200943.80 -39200943.71 -39200943.61 0.0301 0.0265  
 Mars -112037-01-07 14:38 J -39200085.20 -39200084.89 -39200084.58 0.0297 0.0012  
 Mercury -112034-01-26 19:55 J -39198969.74 -39198969.67 -39198969.59 0.0284 0.0254  
 Mercury -112034-04-25 14:38 J -39198881.02 -39198880.89 -39198880.75 0.0283 0.0157  
 Mercury -112034-07-23 09:36 J -39198792.26 -39198792.10 -39198791.93 0.0282 0.0060  
 Mercury -112034-10-20 04:48 J -39198703.47 -39198703.30 -39198703.13 0.0281 0.0039  
 Mercury -112033-01-17 00:14 J -39198614.64 -39198614.49 -39198614.34 0.0280 0.0138  
 Mercury -112033-04-14 19:41 J -39198525.76 -39198525.68 -39198525.58 0.0279 0.0237  
 Venus -112029-05-08 03:22 J -39197041.38 -39197041.36 -39197041.32 0.0264 0.0261  
 Venus -112029-12-23 07:41 J -39196812.32 -39196812.18 -39196812.02 0.0263 0.0187

Venus -112028-08-09 11:46 J -39196583.20 -39196583.01 -39196582.81 0.0262 0.0111  
 Venus -112027-03-26 15:36 J -39196354.07 -39196353.85 -39196353.63 0.0261 0.0034  
 Venus -112027-11-10 18:58 J -39196124.92 -39196124.71 -39196124.49 0.0260 0.0044  
 Venus -112026-06-27 22:19 J -39195895.76 -39195895.57 -39195895.37 0.0260 0.0119  
 Venus -112025-02-12 01:41 J -39195666.57 -39195666.43 -39195666.28 0.0260 0.0193  
 Earth -112024-01-19 20:53 J -39195323.87 -39195323.63 -39195323.38 0.0261 0.0081  
 Moon -112024-01-19 22:48 J -39195323.80 -39195323.55 -39195323.29 0.0261 0.0069 \*  
 Mars -112022-12-24 18:14 J -39194255.00 -39194254.74 -39194254.46 0.0266 0.0067  
 Mercury -112018-02-11 18:00 J -39193109.83 -39193109.75 -39193109.67 0.0277 0.0235  
 Mercury -112018-05-11 07:26 J -39193021.31 -39193021.19 -39193021.07 0.0279 0.0154  
 Mercury -112018-08-07 20:53 J -39192932.77 -39192932.63 -39192932.49 0.0280 0.0073  
 Mercury -112018-11-04 10:05 J -39192844.22 -39192844.08 -39192843.93 0.0281 0.0011  
 Mercury -112017-01-31 23:17 J -39192755.66 -39192755.53 -39192755.39 0.0282 0.0090  
 Mercury -112017-04-29 12:14 J -39192667.10 -39192666.99 -39192666.87 0.0283 0.0171  
 Mercury -112017-07-27 01:12 J -39192578.51 -39192578.45 -39192578.38 0.0284 0.0251  
 Venus -112013-01-19 13:12 J -39191307.04 -39191306.95 -39191306.84 0.0298 0.0261  
 Venus -112013-09-05 10:05 J -39191077.25 -39191077.08 -39191076.90 0.0299 0.0156  
 Venus -112012-04-23 07:26 J -39190847.39 -39190847.19 -39190846.99 0.0300 0.0047  
 Venus -112012-12-09 04:48 J -39190617.50 -39190617.30 -39190617.10 0.0301 0.0064  
 Venus -112011-07-27 01:55 J -39190387.58 -39190387.42 -39190387.25 0.0301 0.0174  
 Venus -112010-03-13 23:02 J -39190157.60 -39190157.54 -39190157.45 0.0301 0.0280  
 Earth -112010-07-18 19:26 J -39190030.92 -39190030.69 -39190030.45 0.0301 0.0039  
 Moon -112010-07-18 22:34 J -39190030.79 -39190030.56 -39190030.32 0.0301 0.0025 \*  
 Mars -112007-03-01 19:26 J -39189073.88 -39189073.69 -39189073.48 0.0294 0.0223  
 Mercury -112005-09-11 14:24 J -39188149.02 -39188148.90 -39188148.78 0.0284 0.0189  
 Mercury -112005-12-09 09:07 J -39188060.27 -39188060.12 -39188059.96 0.0282 0.0091  
 Mercury -112004-03-08 04:19 J -39187971.49 -39187971.32 -39187971.15 0.0281 0.0009  
 Mercury -112004-06-04 23:46 J -39187882.67 -39187882.51 -39187882.35 0.0280 0.0107  
 Mercury -112004-09-01 19:12 J -39187793.81 -39187793.70 -39187793.58 0.0279 0.0206

# 112TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 112th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-112000-11-18 07:12 J	-39186255.25	-39186255.20	-39186255.14	0.0264	0.0254		
Venus	-111999-07-05 11:31 J	-39186026.18	-39186026.02	-39186025.86	0.0263	0.0178		
Venus	-111998-02-19 15:22 J	-39185797.06	-39185796.86	-39185796.66	0.0262	0.0102		
Venus	-111998-10-06 19:12 J	-39185567.92	-39185567.70	-39185567.48	0.0261	0.0025		
Venus	-111997-05-22 22:19 J	-39185338.78	-39185338.57	-39185338.35	0.0260	0.0052		
Venus	-111996-01-07 01:26 J	-39185109.63	-39185109.44	-39185109.24	0.0260	0.0128		
Venus	-111996-08-24 04:34 J	-39184880.44	-39184880.31	-39184880.17	0.0260	0.0202		
Earth	-111994-01-26 23:46 J	-39184359.62	-39184359.51	-39184359.37	0.0261	0.0228		
Moon	-111994-01-27 02:53 J	-39184359.46	-39184359.38	-39184359.28	0.0261	0.0242	*	
Mars	-111993-02-15 23:31 J	-39183974.66	-39183974.52	-39183974.36	0.0262	0.0220		
Mars	-111991-02-09 02:38 J	-39183250.55	-39183250.39	-39183250.22	0.0267	0.0214		
Mercury	-111989-06-30 18:29 J	-39182377.76	-39182377.73	-39182377.69	0.0276	0.0265		
Mercury	-111989-09-27 08:10 J	-39182289.27	-39182289.16	-39182289.06	0.0277	0.0185		
Mercury	-111989-12-24 21:22 J	-39182200.74	-39182200.61	-39182200.47	0.0278	0.0105		
Mercury	-111988-03-23 10:48 J	-39182112.19	-39182112.05	-39182111.91	0.0279	0.0023		
Mercury	-111988-06-20 00:00 J	-39182023.64	-39182023.50	-39182023.36	0.0281	0.0058		
Mercury	-111988-09-16 12:58 J	-39181935.08	-39181934.96	-39181934.84	0.0282	0.0138		

Mercury -111988-12-14 01:55 J -39181846.51 -39181846.42 -39181846.33 0.0283 0.0218  
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 Mercury -111811-01-02 19:41 J -39117542.83 -39117542.68 -39117542.54 0.0278 0.0033  
 Mercury -111811-04-01 08:38 J -39117454.28 -39117454.14 -39117454.00 0.0279 0.0048  
 Mercury -111811-06-28 21:36 J -39117365.72 -39117365.60 -39117365.47 0.0281 0.0128

Mercury -111811-09-25 10:34 J -39117277.15 -39117277.06 -39117276.97 0.0282 0.0206

Venus -111807-10-07 04:19 J -39115804.47 -39115804.32 -39115804.16 0.0298 0.0196

Venus -111806-05-25 00:29 J -39115574.67 -39115574.48 -39115574.28 0.0299 0.0086

Venus -111805-01-09 21:07 J -39115344.82 -39115344.62 -39115344.41 0.0300 0.0027

Venus -111805-08-26 18:00 J -39115114.93 -39115114.75 -39115114.57 0.0301 0.0140

Venus -111804-04-13 14:53 J -39114884.98 -39114884.88 -39114884.76 0.0301 0.0250

Earth -111804-07-15 00:00 J -39114792.62 -39114792.50 -39114792.38 0.0301 0.0256

Moon -111804-07-15 00:58 J -39114792.60 -39114792.46 -39114792.31 0.0301 0.0242 \*

Mars -111802-01-23 03:36 J -39114235.47 -39114235.35 -39114235.22 0.0299 0.0272

Mercury -111799-11-10 16:34 J -39112847.88 -39112847.81 -39112847.74 0.0285 0.0255

Mercury -111798-02-07 11:17 J -39112759.17 -39112759.03 -39112758.89 0.0284 0.0157

Mercury -111798-05-07 06:14 J -39112670.40 -39112670.24 -39112670.07 0.0283 0.0060

Mercury -111798-08-04 01:26 J -39112581.60 -39112581.44 -39112581.27 0.0282 0.0040

Mercury -111798-10-31 20:53 J -39112492.77 -39112492.63 -39112492.48 0.0281 0.0139

Mercury -111797-01-28 16:34 J -39112403.89 -39112403.81 -39112403.71 0.0280 0.0238

Venus -111793-08-05 17:46 J -39110752.89 -39110752.76 -39110752.61 0.0264 0.0202

Venus -111792-03-22 22:34 J -39110523.74 -39110523.56 -39110523.36 0.0263 0.0123

Venus -111792-11-07 03:07 J -39110294.58 -39110294.37 -39110294.15 0.0262 0.0042

Venus -111791-06-24 07:12 J -39110065.42 -39110065.20 -39110064.98 0.0261 0.0038

Venus -111790-02-08 10:48 J -39109836.24 -39109836.05 -39109835.85 0.0261 0.0117

Venus -111790-09-25 14:38 J -39109607.03 -39109606.89 -39109606.74 0.0260 0.0194

Earth -111788-01-24 13:12 J -39109120.17 -39109119.95 -39109119.72 0.0261 0.0125

Moon -111788-01-24 16:05 J -39109120.04 -39109119.83 -39109119.60 0.0261 0.0134 \*

Mars -111786-01-20 01:41 J -39108394.70 -39108394.43 -39108394.16 0.0264 0.0068

Mercury -111783-11-26 18:14 J -39106987.83 -39106987.74 -39106987.65 0.0277 0.0218

Mercury -111782-02-23 07:26 J -39106899.31 -39106899.19 -39106899.06 0.0278 0.0139

Mercury -111782-05-22 20:53 J -39106810.77 -39106810.63 -39106810.49 0.0279 0.0058

Mercury -111782-08-19 10:05 J -39106722.22 -39106722.08 -39106721.94 0.0280 0.0022

Mercury -111782-11-15 23:02 J -39106633.67 -39106633.54 -39106633.41 0.0281 0.0102

Mercury -111781-02-12 12:00 J -39106545.10 -39106545.00 -39106544.89 0.0282 0.0181

Mercury -111781-05-11 00:43 J -39106456.52 -39106456.47 -39106456.41 0.0283 0.0260  
 Venus -111778-09-01 13:12 J -39105247.98 -39105247.95 -39105247.89 0.0296 0.0288  
 Venus -111777-04-18 09:07 J -39105018.27 -39105018.12 -39105017.95 0.0298 0.0183  
 Venus -111777-12-04 05:31 J -39104788.46 -39104788.27 -39104788.06 0.0299 0.0073  
 Venus -111776-07-22 02:24 J -39104558.60 -39104558.40 -39104558.20 0.0300 0.0042  
 Venus -111775-03-08 23:31 J -39104328.69 -39104328.52 -39104328.35 0.0301 0.0156  
 Venus -111775-10-24 20:24 J -39104098.73 -39104098.65 -39104098.55 0.0301 0.0266  
 Earth -111774-07-23 02:24 J -39103827.58 -39103827.40 -39103827.21 0.0300 0.0182  
 Moon -111774-07-23 05:17 J -39103827.46 -39103827.28 -39103827.10 0.0300 0.0191 \*  
 Mars -111772-03-18 06:29 J -39103223.54 -39103223.23 -39103222.92 0.0297 0.0024  
 Mercury -111769-03-29 16:19 J -39102115.82 -39102115.82 -39102115.80 0.0285 0.0285  
 Mercury -111769-06-26 11:17 J -39102027.15 -39102027.03 -39102026.91 0.0284 0.0187  
 Mercury -111769-09-23 06:00 J -39101938.40 -39101938.25 -39101938.08 0.0283 0.0091  
 Mercury -111769-12-21 01:26 J -39101849.61 -39101849.44 -39101849.27 0.0282 0.0011  
 Mercury -111768-03-19 20:38 J -39101760.79 -39101760.64 -39101760.48 0.0281 0.0109  
 Mercury -111768-06-16 16:19 J -39101671.93 -39101671.82 -39101671.70 0.0280 0.0208  
 Venus -111763-02-15 22:48 J -39099966.69 -39099966.55 -39099966.40 0.0264 0.0193  
 Venus -111763-10-03 03:50 J -39099737.53 -39099737.34 -39099737.14 0.0263 0.0113  
 Venus -111762-05-20 08:24 J -39099508.37 -39099508.15 -39099507.93 0.0262 0.0033  
 Venus -111761-01-04 12:14 J -39099279.20 -39099278.99 -39099278.77 0.0261 0.0048  
 Venus -111761-08-20 15:50 J -39099050.02 -39099049.84 -39099049.63 0.0261 0.0127  
 Venus -111760-04-06 19:41 J -39098820.81 -39098820.68 -39098820.53 0.0261 0.0204  
 Moon -111759-01-19 10:48 J -39098533.28 -39098533.05 -39098532.82 0.0261 0.0106  
 Earth -111759-01-19 13:41 J -39098533.15 -39098532.93 -39098532.70 0.0261 0.0118 \*  
 Mars -111756-03-07 11:31 J -39097390.28 -39097390.02 -39097389.75 0.0266 0.0082  
 Mercury -111753-04-14 20:10 J -39096255.73 -39096255.66 -39096255.59 0.0276 0.0240  
 Mercury -111753-07-12 09:36 J -39096167.21 -39096167.10 -39096166.98 0.0277 0.0160  
 Mercury -111753-10-08 23:02 J -39096078.68 -39096078.54 -39096078.41 0.0278 0.0081  
 Mercury -111752-01-05 12:14 J -39095990.14 -39095989.99 -39095989.85 0.0279 0.0007  
 Mercury -111752-04-04 01:12 J -39095901.58 -39095901.45 -39095901.31 0.0280 0.0078

Mercury -111752-07-01 14:10 J -39095813.03 -39095812.91 -39095812.79 0.0281 0.0158

Mercury -111752-09-28 02:53 J -39095724.45 -39095724.38 -39095724.30 0.0282 0.0236

Venus -111748-03-13 18:14 J -39094461.80 -39094461.74 -39094461.66 0.0296 0.0277

Venus -111748-10-29 13:55 J -39094232.08 -39094231.92 -39094231.75 0.0298 0.0171

Venus -111747-06-16 10:05 J -39094002.28 -39094002.08 -39094001.88 0.0299 0.0060

Venus -111746-02-01 06:29 J -39093772.43 -39093772.23 -39093772.03 0.0300 0.0054

Venus -111746-09-19 03:07 J -39093542.53 -39093542.37 -39093542.19 0.0301 0.0167

Venus -111745-05-06 00:14 J -39093312.57 -39093312.49 -39093312.41 0.0301 0.0276

Moon -111745-07-15 23:31 J -39093241.71 -39093241.52 -39093241.32 0.0301 0.0173

Earth -111745-07-16 02:38 J -39093241.56 -39093241.39 -39093241.19 0.0301 0.0183 \*

Mars -111742-05-11 07:55 J -39092212.36 -39092212.17 -39092211.96 0.0295 0.0220

Mercury -111740-11-13 09:36 J -39091295.19 -39091295.10 -39091294.99 0.0285 0.0223

Mercury -111739-02-10 04:34 J -39091206.46 -39091206.31 -39091206.16 0.0284 0.0126

Mercury -111739-05-09 23:31 J -39091117.68 -39091117.52 -39091117.35 0.0283 0.0029

Mercury -111739-08-06 18:58 J -39091028.88 -39091028.71 -39091028.55 0.0282 0.0072

Mercury -111739-11-03 14:24 J -39090940.03 -39090939.90 -39090939.76 0.0281 0.0171

Mercury -111738-01-31 10:19 J -39090851.11 -39090851.07 -39090851.03 0.0280 0.0270

Venus -111734-01-11 18:29 J -39089409.74 -39089409.73 -39089409.70 0.0266 0.0264

Venus -111734-08-29 00:14 J -39089180.65 -39089180.49 -39089180.34 0.0264 0.0184

Venus -111733-04-14 05:02 J -39088951.49 -39088951.29 -39088951.08 0.0263 0.0104

Venus -111733-11-29 09:36 J -39088722.32 -39088722.10 -39088721.88 0.0262 0.0023

Venus -111732-07-16 13:41 J -39088493.14 -39088492.93 -39088492.71 0.0261 0.0058

Venus -111731-03-02 17:46 J -39088263.95 -39088263.76 -39088263.57 0.0261 0.0137

Venus -111731-10-17 21:36 J -39088034.71 -39088034.60 -39088034.47 0.0261 0.0215

Moon -111729-01-26 14:24 J -39087569.08 -39087568.90 -39087568.72 0.0261 0.0190

Earth -111729-01-26 16:05 J -39087568.99 -39087568.83 -39087568.64 0.0261 0.0187 \*

Mars -111728-04-29 18:00 J -39087109.92 -39087109.75 -39087109.56 0.0263 0.0199

Mars -111726-04-23 19:26 J -39086385.81 -39086385.69 -39086385.54 0.0268 0.0234

Mercury -111724-09-01 21:36 J -39085523.64 -39085523.60 -39085523.57 0.0276 0.0265

Mercury -111724-11-29 11:02 J -39085435.15 -39085435.04 -39085434.93 0.0277 0.0186

Mercury -111723-02-26 00:29 J -39085346.62 -39085346.48 -39085346.35 0.0278 0.0106

Mercury -111723-05-25 13:41 J -39085258.07 -39085257.93 -39085257.79 0.0279 0.0026

Mercury -111723-08-22 02:38 J -39085169.52 -39085169.39 -39085169.25 0.0280 0.0054

Mercury -111723-11-18 15:36 J -39085080.97 -39085080.85 -39085080.72 0.0281 0.0133

Mercury -111722-02-15 04:33 J -39084992.40 -39084992.31 -39084992.22 0.0282 0.0212

Venus -111719-09-23 23:45 J -39083675.60 -39083675.51 -39083675.42 0.0296 0.0265

Venus -111718-05-11 19:12 J -39083445.86 -39083445.70 -39083445.52 0.0298 0.0159

Venus -111718-12-27 15:36 J -39083216.05 -39083215.85 -39083215.64 0.0299 0.0046

Venus -111717-08-13 12:14 J -39082986.19 -39082985.99 -39082985.79 0.0300 0.0069

Venus -111716-03-31 09:21 J -39082756.27 -39082756.11 -39082755.95 0.0301 0.0183

Venus -111716-11-16 06:00 J -39082526.29 -39082526.25 -39082526.20 0.0301 0.0293

Earth -111715-07-24 06:00 J -39082276.36 -39082276.25 -39082276.13 0.0300 0.0257

Moon -111715-07-24 08:24 J -39082276.25 -39082276.15 -39082276.02 0.0300 0.0262 \*

Mars -111714-06-18 12:14 J -39081947.12 -39081946.99 -39081946.83 0.0298 0.0263

Mercury -111710-04-02 10:05 J -39080563.15 -39080563.08 -39080563.00 0.0285 0.0251

Mercury -111710-06-30 04:48 J -39080474.44 -39080474.30 -39080474.16 0.0284 0.0154

Mercury -111710-09-26 23:45 J -39080385.67 -39080385.51 -39080385.34 0.0283 0.0056

Mercury -111710-12-24 19:12 J -39080296.87 -39080296.70 -39080296.54 0.0282 0.0043

Mercury -111709-03-22 14:38 J -39080208.04 -39080207.89 -39080207.74 0.0281 0.0142

Mercury -111709-06-19 10:19 J -39080119.15 -39080119.07 -39080118.98 0.0280 0.0241

Venus -111705-07-24 00:14 J -39078623.53 -39078623.49 -39078623.42 0.0266 0.0255

Venus -111704-03-10 06:00 J -39078394.41 -39078394.25 -39078394.08 0.0264 0.0175

Venus -111704-10-25 11:02 J -39078165.24 -39078165.04 -39078164.83 0.0263 0.0094

Venus -111703-06-11 15:36 J -39077936.07 -39077935.85 -39077935.63 0.0262 0.0013

Venus -111702-01-26 19:41 J -39077706.88 -39077706.68 -39077706.46 0.0262 0.0069

Venus -111702-09-12 23:45 J -39077477.68 -39077477.51 -39077477.32 0.0261 0.0148

Venus -111701-04-29 03:50 J -39077248.45 -39077248.34 -39077248.23 0.0261 0.0225

Earth -111700-01-20 18:14 J -39076981.99 -39076981.74 -39076981.49 0.0261 0.0052

Moon -111700-01-20 20:09 J -39076981.90 -39076981.66 -39076981.41 0.0261 0.0044 \*

Mars -111698-06-16 01:41 J -39076105.70 -39076105.43 -39076105.15 0.0264 0.0050

Mercury -111694-04-18 13:26 J -39074703.03 -39074702.94 -39074702.84 0.0276 0.0205

Mercury -111694-07-16 02:53 J -39074614.51 -39074614.38 -39074614.25 0.0277 0.0126

Mercury -111694-10-12 16:05 J -39074525.97 -39074525.83 -39074525.69 0.0278 0.0046

Mercury -111693-01-09 05:17 J -39074437.42 -39074437.28 -39074437.14 0.0279 0.0033

Mercury -111693-04-06 18:14 J -39074348.87 -39074348.74 -39074348.61 0.0280 0.0113

Mercury -111693-07-04 07:12 J -39074260.30 -39074260.20 -39074260.10 0.0281 0.0191

Mercury -111693-09-30 19:55 J -39074171.71 -39074171.67 -39074171.63 0.0282 0.0270

Venus -111689-04-05 06:14 J -39072889.33 -39072889.24 -39072889.12 0.0296 0.0252

Venus -111689-11-21 01:55 J -39072659.59 -39072659.42 -39072659.24 0.0298 0.0144

Venus -111688-07-08 22:05 J -39072429.79 -39072429.58 -39072429.38 0.0299 0.0032

Venus -111687-02-23 18:29 J -39072199.93 -39072199.73 -39072199.53 0.0300 0.0083

Venus -111687-10-11 14:53 J -39071970.02 -39071969.88 -39071969.72 0.0301 0.0197

Moon -111686-07-18 08:09 J -39071690.37 -39071690.16 -39071689.94 0.0300 0.0094

Earth -111686-07-18 10:05 J -39071690.30 -39071690.08 -39071689.85 0.0300 0.0098 \*

Mars -111684-08-11 11:17 J -39070935.34 -39070935.03 -39070934.72 0.0297 0.0006

Mercury -111681-08-19 09:21 J -39069831.13 -39069831.11 -39069831.08 0.0286 0.0282

Mercury -111681-11-16 04:05 J -39069742.45 -39069742.33 -39069742.20 0.0285 0.0186

Mercury -111680-02-12 23:02 J -39069653.70 -39069653.54 -39069653.38 0.0284 0.0088

Mercury -111680-05-12 18:14 J -39069564.91 -39069564.74 -39069564.58 0.0282 0.0013

Mercury -111680-08-09 13:26 J -39069476.09 -39069475.94 -39069475.78 0.0281 0.0109

Mercury -111680-11-06 09:07 J -39069387.23 -39069387.12 -39069387.01 0.0280 0.0208

Venus -111675-02-03 02:24 J -39067837.47 -39067837.40 -39067837.31 0.0265 0.0246

Venus -111675-09-20 08:09 J -39067608.32 -39067608.16 -39067607.98 0.0264 0.0165

Venus -111674-05-07 13:12 J -39067379.15 -39067378.95 -39067378.74 0.0263 0.0084

Venus -111674-12-22 17:45 J -39067149.98 -39067149.76 -39067149.54 0.0262 0.0006

Venus -111673-08-07 22:05 J -39066920.79 -39066920.58 -39066920.37 0.0261 0.0079

Venus -111672-03-25 02:09 J -39066691.58 -39066691.41 -39066691.23 0.0261 0.0159

Venus -111672-11-09 06:29 J -39066462.32 -39066462.23 -39066462.14 0.0261 0.0236

Moon -111670-01-27 18:43 J -39066017.77 -39066017.72 -39066017.66 0.0261 0.0255

Earth -111670-01-27 22:05 J -39066017.63 -39066017.58 -39066017.51 0.0261 0.0254

Mars -111668-08-01 06:00 J -39065101.51 -39065101.25 -39065100.99 0.0266 0.0096  
 Mercury -111665-09-04 15:07 J -39063970.95 -39063970.87 -39063970.79 0.0276 0.0229  
 Mercury -111665-12-02 04:33 J -39063882.43 -39063882.31 -39063882.19 0.0277 0.0149  
 Mercury -111664-02-28 18:00 J -39063793.89 -39063793.75 -39063793.61 0.0278 0.0070  
 Mercury -111664-05-28 07:12 J -39063705.35 -39063705.20 -39063705.06 0.0279 0.0012  
 Mercury -111664-08-24 20:09 J -39063616.79 -39063616.66 -39063616.53 0.0280 0.0090  
 Mercury -111664-11-21 09:07 J -39063528.23 -39063528.12 -39063528.01 0.0281 0.0169  
 Mercury -111663-02-17 21:50 J -39063439.65 -39063439.59 -39063439.52 0.0283 0.0248  
 Venus -111660-10-16 13:12 J -39062103.07 -39062102.95 -39062102.83 0.0297 0.0238  
 Venus -111659-06-03 08:38 J -39061873.32 -39061873.14 -39061872.95 0.0298 0.0130  
 Venus -111658-01-19 05:02 J -39061643.50 -39061643.29 -39061643.09 0.0300 0.0015  
 Venus -111658-09-06 01:26 J -39061413.63 -39061413.44 -39061413.24 0.0300 0.0100  
 Venus -111657-04-22 22:19 J -39061183.71 -39061183.57 -39061183.42 0.0301 0.0213  
 Mars -111654-10-05 07:55 J -39059923.34 -39059923.17 -39059922.97 0.0294 0.0235  
 Mercury -111651-04-05 04:48 J -39059010.41 -39059010.30 -39059010.19 0.0284 0.0212  
 Mercury -111651-07-02 23:31 J -39058921.67 -39058921.52 -39058921.36 0.0283 0.0115  
 Mercury -111651-09-29 18:43 J -39058832.89 -39058832.72 -39058832.55 0.0282 0.0016  
 Mercury -111651-12-27 14:09 J -39058744.08 -39058743.91 -39058743.75 0.0281 0.0083  
 Mercury -111650-03-26 09:36 J -39058655.23 -39058655.10 -39058654.97 0.0280 0.0182  
 Venus -111646-08-16 09:21 J -39057051.20 -39057051.11 -39057051.01 0.0266 0.0235  
 Venus -111645-04-01 14:53 J -39056822.05 -39056821.88 -39056821.70 0.0264 0.0154  
 Venus -111645-11-16 19:55 J -39056592.88 -39056592.67 -39056592.45 0.0263 0.0072  
 Venus -111644-07-04 00:43 J -39056363.69 -39056363.47 -39056363.25 0.0262 0.0010  
 Venus -111643-02-18 05:02 J -39056134.50 -39056134.29 -39056134.09 0.0262 0.0091  
 Venus -111643-10-05 09:21 J -39055905.28 -39055905.11 -39055904.94 0.0261 0.0171  
 Venus -111642-05-22 13:12 J -39055676.00 -39055675.95 -39055675.87 0.0261 0.0248  
 Earth -111641-01-23 01:26 J -39055430.69 -39055430.44 -39055430.18 0.0262 0.0018  
 Moon -111641-01-23 05:17 J -39055430.54 -39055430.28 -39055430.02 0.0262 0.0024 \*  
 Mars -111640-09-24 01:26 J -39054820.64 -39054820.44 -39054820.23 0.0263 0.0176  
 Mars -111638-09-18 05:17 J -39054096.35 -39054096.28 -39054096.18 0.0268 0.0255

Mercury -111635-01-22 18:00 J -39053238.81 -39053238.75 -39053238.69 0.0276 0.0246

Mercury -111635-04-21 07:26 J -39053150.30 -39053150.19 -39053150.07 0.0277 0.0167

Mercury -111635-07-18 20:53 J -39053061.77 -39053061.63 -39053061.50 0.0278 0.0087

Mercury -111635-10-15 10:05 J -39052973.22 -39052973.08 -39052972.94 0.0279 0.0008

Mercury -111634-01-11 23:02 J -39052884.67 -39052884.54 -39052884.40 0.0280 0.0072

Mercury -111634-04-10 12:00 J -39052796.11 -39052796.00 -39052795.88 0.0281 0.0151

Mercury -111634-07-08 00:43 J -39052707.54 -39052707.47 -39052707.38 0.0282 0.0230

Venus -111630-04-28 21:07 J -39051316.74 -39051316.62 -39051316.47 0.0296 0.0224

Venus -111630-12-14 17:02 J -39051086.98 -39051086.79 -39051086.60 0.0298 0.0113

Venus -111629-07-31 12:57 J -39050857.17 -39050856.96 -39050856.76 0.0299 0.0003

Venus -111628-03-18 09:07 J -39050627.30 -39050627.12 -39050626.92 0.0300 0.0116

Venus -111628-11-03 05:45 J -39050397.39 -39050397.26 -39050397.13 0.0300 0.0228

Earth -111627-07-19 22:05 J -39050138.81 -39050138.58 -39050138.34 0.0300 0.0005

Moon -111627-07-20 00:57 J -39050138.69 -39050138.46 -39050138.23 0.0300 0.0003 \*

Mars -111626-11-12 14:24 J -39049658.08 -39049657.90 -39049657.69 0.0298 0.0233

Mercury -111622-08-23 04:33 J -39048278.39 -39048278.31 -39048278.21 0.0285 0.0240

Mercury -111622-11-19 23:31 J -39048189.66 -39048189.52 -39048189.38 0.0284 0.0143

Mercury -111621-02-16 18:29 J -39048100.90 -39048100.73 -39048100.56 0.0283 0.0045

Mercury -111621-05-15 13:41 J -39048012.10 -39048011.93 -39048011.76 0.0282 0.0053

Mercury -111621-08-12 09:07 J -39047923.26 -39047923.12 -39047922.97 0.0281 0.0152

Mercury -111621-11-09 04:48 J -39047834.37 -39047834.30 -39047834.22 0.0280 0.0251

Venus -111616-02-25 12:14 J -39046265.09 -39046264.99 -39046264.86 0.0265 0.0226

Venus -111616-10-12 18:14 J -39046035.92 -39046035.74 -39046035.56 0.0264 0.0143

Venus -111615-05-29 23:17 J -39045806.74 -39045806.53 -39045806.32 0.0263 0.0061

Venus -111614-01-14 03:50 J -39045577.55 -39045577.34 -39045577.12 0.0262 0.0022

Venus -111614-08-31 08:24 J -39045348.35 -39045348.15 -39045347.95 0.0261 0.0103

Venus -111613-04-16 12:29 J -39045119.13 -39045118.98 -39045118.82 0.0261 0.0182

Venus -111613-12-01 16:33 J -39044889.81 -39044889.81 -39044889.78 0.0261 0.0260

Moon -111612-01-16 18:43 J -39044843.83 -39044843.72 -39044843.59 0.0261 0.0229

Earth -111612-01-16 22:19 J -39044843.68 -39044843.57 -39044843.46 0.0261 0.0234 \*



Mars -111610-11-10 02:09 J -39043816.68 -39043816.41 -39043816.13 0.0265 0.0035  
 Mercury -111606-06-11 19:41 J -39042506.71 -39042506.68 -39042506.65 0.0276 0.0269  
 Mercury -111606-09-08 09:21 J -39042418.22 -39042418.11 -39042418.01 0.0277 0.0189  
 Mercury -111606-12-05 22:33 J -39042329.69 -39042329.56 -39042329.42 0.0278 0.0110  
 Mercury -111605-03-03 12:00 J -39042241.14 -39042241.00 -39042240.86 0.0279 0.0030  
 Mercury -111605-05-31 01:12 J -39042152.59 -39042152.45 -39042152.31 0.0280 0.0050  
 Mercury -111605-08-27 14:09 J -39042064.04 -39042063.91 -39042063.79 0.0281 0.0129  
 Mercury -111605-11-24 02:53 J -39041975.47 -39041975.38 -39041975.28 0.0282 0.0208  
 Venus -111601-11-08 04:33 J -39040530.45 -39040530.31 -39040530.16 0.0297 0.0209  
 Venus -111600-06-26 00:14 J -39040300.68 -39040300.49 -39040300.29 0.0299 0.0098  
 Venus -111599-02-10 20:24 J -39040070.85 -39040070.65 -39040070.44 0.0300 0.0018  
 Venus -111599-09-28 16:48 J -39039840.98 -39039840.80 -39039840.61 0.0300 0.0133  
 Venus -111598-05-16 13:41 J -39039611.05 -39039610.93 -39039610.81 0.0300 0.0246  
 Mars -111595-01-06 02:38 J -39038645.70 -39038645.39 -39038645.08 0.0296 0.0020  
 Mercury -111592-01-09 06:00 J -39037546.31 -39037546.25 -39037546.19 0.0285 0.0263  
 Mercury -111592-04-08 00:29 J -39037457.61 -39037457.48 -39037457.34 0.0284 0.0167  
 Mercury -111592-07-05 19:26 J -39037368.85 -39037368.69 -39037368.52 0.0283 0.0070  
 Mercury -111592-10-02 14:38 J -39037280.06 -39037279.89 -39037279.72 0.0282 0.0029  
 Mercury -111592-12-30 10:05 J -39037191.23 -39037191.08 -39037190.93 0.0281 0.0127  
 Mercury -111591-03-29 05:45 J -39037102.36 -39037102.26 -39037102.16 0.0280 0.0226  
 Venus -111587-09-07 19:55 J -39035478.79 -39035478.67 -39035478.53 0.0265 0.0214  
 Venus -111586-04-25 01:41 J -39035249.62 -39035249.43 -39035249.24 0.0264 0.0131  
 Venus -111586-12-10 06:29 J -39035020.44 -39035020.23 -39035020.01 0.0263 0.0049  
 Venus -111585-07-26 11:17 J -39034791.25 -39034791.03 -39034790.81 0.0262 0.0034  
 Venus -111584-03-12 15:36 J -39034562.04 -39034561.85 -39034561.65 0.0262 0.0115  
 Venus -111584-10-27 20:09 J -39034332.80 -39034332.66 -39034332.51 0.0262 0.0195  
 Moon -111582-01-24 09:36 J -39033879.34 -39033879.10 -39033878.84 0.0262 0.0092  
 Earth -111582-01-24 10:48 J -39033879.28 -39033879.05 -39033878.81 0.0262 0.0093 \*  
 Mars -111580-12-26 20:53 J -39032811.88 -39032811.63 -39032811.38 0.0266 0.0123  
 Mercury -111576-01-25 12:29 J -39031686.08 -39031685.98 -39031685.88 0.0276 0.0205

Mercury -111576-04-24 01:55 J -39031597.55 -39031597.42 -39031597.29 0.0277 0.0125

Mercury -111576-07-21 15:07 J -39031509.01 -39031508.87 -39031508.73 0.0278 0.0046

Mercury -111576-10-18 04:19 J -39031420.46 -39031420.32 -39031420.18 0.0279 0.0034

Mercury -111575-01-14 17:17 J -39031331.90 -39031331.78 -39031331.65 0.0280 0.0113

Mercury -111575-04-13 06:14 J -39031243.34 -39031243.24 -39031243.14 0.0281 0.0192

Mercury -111575-07-10 18:57 J -39031154.74 -39031154.71 -39031154.67 0.0282 0.0270

Venus -111571-05-21 14:38 J -39029744.04 -39029743.89 -39029743.73 0.0297 0.0191

Venus -111570-01-06 10:19 J -39029514.27 -39029514.07 -39029513.87 0.0298 0.0079

Venus -111570-08-24 06:14 J -39029284.44 -39029284.24 -39029284.03 0.0299 0.0037

Venus -111569-04-10 02:38 J -39029054.56 -39029054.39 -39029054.21 0.0300 0.0152

Venus -111569-11-25 23:02 J -39028824.63 -39028824.54 -39028824.44 0.0300 0.0263

Earth -111568-07-21 14:38 J -39028587.11 -39028586.89 -39028586.67 0.0300 0.0103

Moon -111568-07-21 17:31 J -39028586.99 -39028586.77 -39028586.54 0.0300 0.0100 \*

Mars -111565-03-01 00:00 J -39027633.62 -39027633.50 -39027633.37 0.0294 0.0269

Mercury -111563-08-26 01:12 J -39026725.57 -39026725.45 -39026725.33 0.0284 0.0192

Mercury -111563-11-22 20:09 J -39026636.82 -39026636.66 -39026636.50 0.0283 0.0095

Mercury -111562-02-19 15:07 J -39026548.04 -39026547.87 -39026547.70 0.0282 0.0005

Mercury -111562-05-19 10:19 J -39026459.22 -39026459.07 -39026458.90 0.0281 0.0103

Mercury -111562-08-16 06:00 J -39026370.37 -39026370.25 -39026370.13 0.0280 0.0201

Venus -111557-03-20 00:14 J -39024692.62 -39024692.49 -39024692.34 0.0265 0.0202

Venus -111557-11-04 05:45 J -39024463.45 -39024463.26 -39024463.06 0.0264 0.0119

Venus -111556-06-21 10:48 J -39024234.27 -39024234.05 -39024233.83 0.0263 0.0036

Venus -111555-02-05 15:21 J -39024005.07 -39024004.86 -39024004.64 0.0262 0.0046

Venus -111555-09-22 19:41 J -39023775.86 -39023775.68 -39023775.48 0.0261 0.0129

Venus -111554-05-10 00:14 J -39023546.62 -39023546.49 -39023546.35 0.0261 0.0207

Earth -111553-01-19 08:38 J -39023292.34 -39023292.14 -39023291.93 0.0261 0.0159

Moon -111553-01-19 10:05 J -39023292.27 -39023292.08 -39023291.87 0.0261 0.0156 \*

Mars -111551-02-18 05:02 J -39022531.50 -39022531.29 -39022531.06 0.0263 0.0159

Mercury -111547-06-14 14:24 J -39020953.98 -39020953.90 -39020953.82 0.0277 0.0227

Mercury -111547-09-11 03:50 J -39020865.46 -39020865.34 -39020865.22 0.0277 0.0147

Mercury -111547-12-08 17:17 J -39020776.92 -39020776.78 -39020776.64 0.0278 0.0068

Mercury -111546-03-07 06:29 J -39020688.38 -39020688.23 -39020688.09 0.0279 0.0013

Mercury -111546-06-03 19:26 J -39020599.82 -39020599.69 -39020599.55 0.0281 0.0092

Mercury -111546-08-31 08:24 J -39020511.26 -39020511.15 -39020511.04 0.0282 0.0171

Mercury -111546-11-27 21:07 J -39020422.67 -39020422.62 -39020422.55 0.0283 0.0250

Venus -111542-04-16 03:07 J -39019187.43 -39019187.37 -39019187.31 0.0296 0.0283

Venus -111542-12-01 22:05 J -39018957.74 -39018957.58 -39018957.41 0.0297 0.0176

Venus -111541-07-18 18:00 J -39018727.95 -39018727.75 -39018727.55 0.0299 0.0063

Venus -111540-03-05 14:09 J -39018498.11 -39018497.91 -39018497.71 0.0300 0.0053

Venus -111540-10-21 10:33 J -39018268.22 -39018268.06 -39018267.89 0.0300 0.0169

Venus -111539-06-08 06:57 J -39018038.27 -39018038.21 -39018038.13 0.0300 0.0281

Moon -111539-07-15 21:21 J -39018000.74 -39018000.61 -39018000.48 0.0300 0.0245

Earth -111539-07-15 23:45 J -39018000.65 -39018000.51 -39018000.38 0.0300 0.0243 \*

Mars -111537-04-08 18:00 J -39017367.98 -39017367.75 -39017367.52 0.0298 0.0199

Mercury -111533-01-13 02:24 J -39015993.50 -39015993.40 -39015993.29 0.0284 0.0215

Mercury -111533-04-10 21:07 J -39015904.76 -39015904.62 -39015904.46 0.0283 0.0118

Mercury -111533-07-08 16:19 J -39015815.99 -39015815.82 -39015815.65 0.0282 0.0020

Mercury -111533-10-05 11:31 J -39015727.18 -39015727.02 -39015726.85 0.0281 0.0078

Mercury -111532-01-02 06:57 J -39015638.34 -39015638.21 -39015638.07 0.0280 0.0177

Mercury -111532-04-01 02:38 J -39015549.41 -39015549.39 -39015549.36 0.0279 0.0275

Venus -111528-09-30 08:24 J -39013906.31 -39013906.15 -39013906.00 0.0265 0.0189

Venus -111527-05-17 13:41 J -39013677.13 -39013676.93 -39013676.73 0.0264 0.0107

Venus -111526-01-01 18:43 J -39013447.94 -39013447.72 -39013447.50 0.0263 0.0024

Venus -111526-08-18 23:17 J -39013218.74 -39013218.53 -39013218.32 0.0262 0.0059

Venus -111525-04-04 03:36 J -39012989.53 -39012989.35 -39012989.16 0.0262 0.0141

Venus -111525-11-19 07:55 J -39012760.27 -39012760.17 -39012760.04 0.0262 0.0221

Moon -111523-01-25 18:00 J -39012327.94 -39012327.75 -39012327.55 0.0262 0.0165

Earth -111523-01-25 21:50 J -39012327.77 -39012327.59 -39012327.38 0.0262 0.0170 \*

Mars -111521-04-05 18:43 J -39011527.00 -39011526.72 -39011526.44 0.0265 0.0006

Mercury -111518-11-01 17:31 J -39010221.84 -39010221.77 -39010221.70 0.0276 0.0242

Mercury -111517-01-29 06:57 J -39010133.32 -39010133.21 -39010133.09 0.0277 0.0163

Mercury -111517-04-26 20:24 J -39010044.78 -39010044.65 -39010044.51 0.0278 0.0083

Mercury -111517-07-24 09:50 J -39009956.24 -39009956.09 -39009955.95 0.0279 0.0008

Mercury -111517-10-20 22:48 J -39009867.68 -39009867.55 -39009867.41 0.0280 0.0077

Mercury -111516-01-17 11:45 J -39009779.12 -39009779.01 -39009778.89 0.0281 0.0156

Mercury -111516-04-16 00:43 J -39009690.54 -39009690.47 -39009690.39 0.0282 0.0234

Venus -111513-10-26 13:55 J -39008401.01 -39008400.92 -39008400.83 0.0295 0.0265

Venus -111512-06-13 08:53 J -39008171.30 -39008171.13 -39008170.95 0.0297 0.0157

Venus -111511-01-29 04:33 J -39007941.51 -39007941.31 -39007941.10 0.0298 0.0043

Venus -111511-09-16 00:43 J -39007711.66 -39007711.47 -39007711.27 0.0299 0.0074

Venus -111510-05-03 21:21 J -39007481.77 -39007481.61 -39007481.46 0.0300 0.0188

Venus -111510-12-19 17:31 J -39007251.78 -39007251.77 -39007251.75 0.0300 0.0299

Moon -111509-07-23 07:12 J -39007035.37 -39007035.20 -39007035.01 0.0300 0.0204

Earth -111509-07-23 08:53 J -39007035.29 -39007035.13 -39007034.96 0.0300 0.0211 \*

Mars -111507-06-03 08:38 J -39006355.44 -39006355.14 -39006354.83 0.0296 0.0062

Mercury -111504-06-01 03:50 J -39005261.43 -39005261.34 -39005261.25 0.0285 0.0236

Mercury -111504-08-28 22:33 J -39005172.71 -39005172.56 -39005172.42 0.0284 0.0140

Mercury -111504-11-25 17:17 J -39005083.94 -39005083.78 -39005083.61 0.0283 0.0043

Mercury -111503-02-22 12:29 J -39004995.14 -39004994.98 -39004994.81 0.0282 0.0056

Mercury -111503-05-22 07:55 J -39004906.31 -39004906.17 -39004906.02 0.0281 0.0154

Mercury -111503-08-19 03:36 J -39004817.42 -39004817.35 -39004817.28 0.0280 0.0252

Venus -111499-08-26 07:26 J -39003349.22 -39003349.19 -39003349.13 0.0266 0.0259

Venus -111498-04-12 13:12 J -39003120.10 -39003119.95 -39003119.78 0.0265 0.0178

Venus -111498-11-27 18:29 J -39002890.93 -39002890.73 -39002890.52 0.0263 0.0094

Venus -111497-07-13 23:17 J -39002661.75 -39002661.53 -39002661.31 0.0262 0.0011

Venus -111496-02-28 03:50 J -39002432.55 -39002432.34 -39002432.13 0.0262 0.0072

Venus -111496-10-15 08:24 J -39002203.32 -39002203.15 -39002202.97 0.0261 0.0154

Venus -111495-06-01 12:43 J -39001974.06 -39001973.97 -39001973.87 0.0261 0.0233

Earth -111494-01-20 20:24 J -39001740.90 -39001740.65 -39001740.41 0.0261 0.0081

Moon -111494-01-21 00:00 J -39001740.74 -39001740.50 -39001740.25 0.0261 0.0081 \*

Mars -111491-05-23 03:50 J -39000522.58 -39000522.34 -39000522.10 0.0267 0.0142  
 Mercury -111488-03-20 19:26 J -38999489.73 -38999489.69 -38999489.65 0.0276 0.0264  
 Mercury -111488-06-17 08:53 J -38999401.23 -38999401.13 -38999401.02 0.0277 0.0185  
 Mercury -111488-09-13 22:19 J -38999312.70 -38999312.57 -38999312.43 0.0278 0.0105  
 Mercury -111488-12-11 11:45 J -38999224.15 -38999224.01 -38999223.87 0.0279 0.0026  
 Mercury -111487-03-10 00:57 J -38999135.60 -38999135.46 -38999135.32 0.0280 0.0055  
 Mercury -111487-06-06 13:55 J -38999047.04 -38999046.92 -38999046.80 0.0281 0.0134  
 Mercury -111487-09-03 02:53 J -38998958.47 -38998958.38 -38998958.29 0.0282 0.0212  
 Venus -111483-05-08 21:07 J -38997614.72 -38997614.62 -38997614.51 0.0296 0.0251  
 Venus -111483-12-24 16:33 J -38997384.99 -38997384.81 -38997384.63 0.0298 0.0141  
 Venus -111482-08-11 12:29 J -38997155.19 -38997154.98 -38997154.78 0.0299 0.0027  
 Venus -111481-03-28 08:53 J -38996925.33 -38996925.13 -38996924.94 0.0300 0.0090  
 Venus -111481-11-13 05:02 J -38996695.43 -38996695.29 -38996695.13 0.0300 0.0206  
 Earth -111480-07-17 18:00 J -38996448.95 -38996448.75 -38996448.53 0.0300 0.0133  
 Moon -111480-07-17 20:09 J -38996448.86 -38996448.66 -38996448.46 0.0300 0.0137 \*  
 Mercury -111475-10-19 05:02 J -38994529.35 -38994529.29 -38994529.22 0.0285 0.0259  
 Mercury -111474-01-15 23:45 J -38994440.65 -38994440.51 -38994440.37 0.0284 0.0163  
 Mercury -111474-04-14 18:43 J -38994351.89 -38994351.72 -38994351.56 0.0283 0.0066  
 Mercury -111474-07-12 13:41 J -38994263.10 -38994262.93 -38994262.76 0.0282 0.0032  
 Mercury -111474-10-09 09:07 J -38994174.27 -38994174.12 -38994173.97 0.0281 0.0130  
 Mercury -111473-01-06 04:33 J -38994085.40 -38994085.31 -38994085.21 0.0280 0.0229  
 Venus -111469-03-07 15:07 J -38992562.94 -38992562.87 -38992562.78 0.0266 0.0247  
 Venus -111469-10-22 21:07 J -38992333.79 -38992333.62 -38992333.45 0.0264 0.0164  
 Venus -111468-06-09 02:24 J -38992104.61 -38992104.40 -38992104.19 0.0263 0.0081  
 Venus -111467-01-24 07:12 J -38991875.42 -38991875.20 -38991874.98 0.0263 0.0003  
 Venus -111467-09-10 11:45 J -38991646.22 -38991646.01 -38991645.80 0.0262 0.0086  
 Venus -111466-04-27 16:05 J -38991416.99 -38991416.83 -38991416.66 0.0262 0.0167  
 Venus -111466-12-12 20:24 J -38991187.71 -38991187.65 -38991187.57 0.0262 0.0247  
 Moon -111464-01-27 09:21 J -38990776.20 -38990776.11 -38990776.01 0.0262 0.0240  
 Earth -111464-01-27 09:21 J -38990776.18 -38990776.11 -38990776.01 0.0262 0.0247 \*

Mars -111463-07-15 22:05 J -38990241.82 -38990241.58 -38990241.34 0.0264 0.0131  
 Mercury -111459-11-04 12:00 J -38988669.09 -38988669.00 -38988668.89 0.0277 0.0200  
 Mercury -111458-02-01 01:41 J -38988580.56 -38988580.43 -38988580.30 0.0278 0.0120  
 Mercury -111458-04-30 15:07 J -38988492.02 -38988491.87 -38988491.73 0.0279 0.0041  
 Mercury -111458-07-28 04:19 J -38988403.47 -38988403.32 -38988403.18 0.0280 0.0040  
 Mercury -111458-10-24 17:17 J -38988314.91 -38988314.78 -38988314.65 0.0281 0.0119  
 Mercury -111457-01-21 06:14 J -38988226.34 -38988226.24 -38988226.14 0.0282 0.0197  
 Mercury -111457-04-18 18:57 J -38988137.73 -38988137.71 -38988137.68 0.0283 0.0276  
 Venus -111454-11-19 08:09 J -38986828.28 -38986828.16 -38986828.03 0.0296 0.0232  
 Venus -111453-07-06 03:36 J -38986598.54 -38986598.35 -38986598.16 0.0298 0.0121  
 Venus -111452-02-20 23:31 J -38986368.73 -38986368.52 -38986368.32 0.0299 0.0007  
 Venus -111452-10-08 19:41 J -38986138.87 -38986138.68 -38986138.49 0.0300 0.0111  
 Venus -111451-05-26 16:05 J -38985908.96 -38985908.83 -38985908.69 0.0300 0.0226  
 Mars -111449-09-04 08:53 J -38985077.39 -38985077.13 -38985076.86 0.0298 0.0156  
 Mercury -111445-03-07 06:43 J -38983797.25 -38983797.22 -38983797.19 0.0285 0.0279  
 Mercury -111445-06-04 01:12 J -38983708.57 -38983708.45 -38983708.32 0.0284 0.0183  
 Mercury -111445-08-31 19:55 J -38983619.82 -38983619.67 -38983619.51 0.0283 0.0087  
 Mercury -111445-11-28 15:07 J -38983531.04 -38983530.87 -38983530.70 0.0282 0.0012  
 Mercury -111444-02-25 10:19 J -38983442.23 -38983442.07 -38983441.91 0.0281 0.0109  
 Mercury -111444-05-25 05:45 J -38983353.37 -38983353.26 -38983353.14 0.0280 0.0207  
 Venus -111440-09-17 21:07 J -38981776.71 -38981776.62 -38981776.51 0.0265 0.0234  
 Venus -111439-05-05 02:38 J -38981547.56 -38981547.39 -38981547.20 0.0264 0.0152  
 Venus -111439-12-20 07:41 J -38981318.39 -38981318.18 -38981317.97 0.0263 0.0068  
 Venus -111438-08-06 12:14 J -38981089.21 -38981088.99 -38981088.77 0.0262 0.0017  
 Venus -111437-03-22 16:33 J -38980860.00 -38980859.81 -38980859.60 0.0262 0.0100  
 Venus -111437-11-06 21:07 J -38980630.77 -38980630.62 -38980630.46 0.0261 0.0181  
 Venus -111436-06-24 01:26 J -38980401.46 -38980401.44 -38980401.41 0.0261 0.0259  
 Moon -111435-01-22 08:24 J -38980189.42 -38980189.15 -38980188.88 0.0261 0.0007  
 Earth -111435-01-22 08:24 J -38980189.41 -38980189.15 -38980188.89 0.0261 0.0003 \*  
 Mars -111433-08-31 02:09 J -38979237.69 -38979237.41 -38979237.13 0.0265 0.0012

Mercury -111429-03-23 13:55 J -38977937.00 -38977936.92 -38977936.84 0.0277 0.0223

Mercury -111429-06-20 03:21 J -38977848.48 -38977848.36 -38977848.23 0.0278 0.0144

Mercury -111429-09-16 16:48 J -38977759.94 -38977759.80 -38977759.66 0.0279 0.0064

Mercury -111429-12-14 06:00 J -38977671.39 -38977671.25 -38977671.11 0.0280 0.0016

Mercury -111428-03-12 19:12 J -38977582.83 -38977582.70 -38977582.57 0.0281 0.0095

Mercury -111428-06-09 08:09 J -38977494.27 -38977494.16 -38977494.05 0.0282 0.0174

Mercury -111428-09-05 21:07 J -38977405.68 -38977405.62 -38977405.56 0.0283 0.0253

Venus -111424-05-31 14:24 J -38976042.03 -38976041.90 -38976041.76 0.0297 0.0219

Venus -111423-01-16 10:05 J -38975812.27 -38975812.08 -38975811.89 0.0298 0.0106

Venus -111423-09-03 06:14 J -38975582.45 -38975582.24 -38975582.04 0.0300 0.0012

Venus -111422-04-21 02:38 J -38975352.58 -38975352.39 -38975352.21 0.0300 0.0128

Venus -111422-12-06 22:48 J -38975122.66 -38975122.55 -38975122.42 0.0300 0.0243

Earth -111421-07-19 11:45 J -38974897.25 -38974897.01 -38974896.78 0.0300 0.0025

Moon -111421-07-19 15:07 J -38974897.11 -38974896.87 -38974896.64 0.0300 0.0031 \*

Mars -111419-10-29 14:38 J -38974065.18 -38974064.89 -38974064.59 0.0296 0.0095

Mercury -111416-10-22 02:09 J -38972976.52 -38972976.41 -38972976.30 0.0284 0.0208

Mercury -111415-01-18 20:53 J -38972887.78 -38972887.63 -38972887.47 0.0283 0.0111

Mercury -111415-04-17 15:50 J -38972799.00 -38972798.84 -38972798.67 0.0282 0.0016

Mercury -111415-07-15 11:17 J -38972710.20 -38972710.03 -38972709.87 0.0281 0.0084

Mercury -111415-10-12 06:43 J -38972621.35 -38972621.22 -38972621.09 0.0280 0.0182

Venus -111410-03-31 04:19 J -38970990.43 -38970990.32 -38970990.19 0.0265 0.0221

Venus -111410-11-15 09:50 J -38970761.27 -38970761.09 -38970760.90 0.0264 0.0138

Venus -111409-07-01 14:53 J -38970532.09 -38970531.88 -38970531.67 0.0263 0.0054

Venus -111408-02-15 19:26 J -38970302.90 -38970302.69 -38970302.47 0.0262 0.0031

Venus -111408-10-03 00:00 J -38970073.69 -38970073.50 -38970073.30 0.0262 0.0113

Venus -111407-05-20 04:33 J -38969844.46 -38969844.31 -38969844.17 0.0262 0.0194

Moon -111406-01-17 10:33 J -38969602.15 -38969602.06 -38969601.95 0.0262 0.0238

Earth -111406-01-17 10:48 J -38969602.13 -38969602.05 -38969601.93 0.0262 0.0240 \*

Mars -111405-10-24 03:36 J -38968956.41 -38968956.35 -38968956.26 0.0263 0.0253

Mars -111403-10-17 20:38 J -38968232.84 -38968232.64 -38968232.41 0.0267 0.0171

Mercury -111400-08-10 16:48 J -38967204.87 -38967204.80 -38967204.73 0.0277 0.0240

Mercury -111400-11-07 06:14 J -38967116.35 -38967116.24 -38967116.12 0.0277 0.0160

Mercury -111399-02-03 19:41 J -38967027.81 -38967027.68 -38967027.54 0.0278 0.0081

Mercury -111399-05-03 09:07 J -38966939.26 -38966939.12 -38966938.98 0.0279 0.0002

Mercury -111399-07-30 22:19 J -38966850.71 -38966850.57 -38966850.44 0.0280 0.0079

Mercury -111399-10-27 11:17 J -38966762.15 -38966762.03 -38966761.91 0.0281 0.0158

Mercury -111398-01-24 00:00 J -38966673.56 -38966673.50 -38966673.42 0.0282 0.0238

Venus -111395-12-12 01:12 J -38965255.60 -38965255.45 -38965255.30 0.0297 0.0199

Venus -111394-07-29 20:53 J -38965025.83 -38965025.63 -38965025.44 0.0298 0.0085

Venus -111393-03-15 17:02 J -38964796.00 -38964795.79 -38964795.59 0.0299 0.0032

Venus -111393-10-31 13:26 J -38964566.12 -38964565.94 -38964565.77 0.0300 0.0149

Venus -111392-06-18 09:50 J -38964336.18 -38964336.09 -38964335.99 0.0300 0.0263

Mercury -111386-03-11 04:05 J -38962244.43 -38962244.33 -38962244.24 0.0285 0.0227

Mercury -111386-06-07 22:33 J -38962155.70 -38962155.56 -38962155.41 0.0284 0.0131

Mercury -111386-09-04 17:31 J -38962066.94 -38962066.77 -38962066.60 0.0283 0.0034

Mercury -111386-12-02 12:43 J -38961978.14 -38961977.97 -38961977.81 0.0282 0.0064

Mercury -111385-02-29 08:09 J -38961889.30 -38961889.16 -38961889.02 0.0281 0.0162

Mercury -111385-05-28 03:36 J -38961800.41 -38961800.35 -38961800.28 0.0280 0.0260

Venus -111381-10-10 10:33 J -38960204.18 -38960204.06 -38960203.92 0.0265 0.0209

Venus -111380-05-27 15:50 J -38959975.03 -38959974.84 -38959974.64 0.0264 0.0125

Venus -111379-01-11 20:38 J -38959745.86 -38959745.64 -38959745.42 0.0263 0.0041

Venus -111379-08-29 00:57 J -38959516.67 -38959516.46 -38959516.24 0.0262 0.0044

Venus -111378-04-15 05:02 J -38959287.47 -38959287.29 -38959287.09 0.0261 0.0127

Venus -111378-11-30 09:21 J -38959058.24 -38959058.11 -38959057.97 0.0261 0.0207

Moon -111376-01-23 15:50 J -38958638.09 -38958637.84 -38958637.59 0.0261 0.0065

Earth -111376-01-23 19:26 J -38958637.93 -38958637.69 -38958637.44 0.0261 0.0072 \*

Mars -111375-12-10 03:21 J -38957952.61 -38957952.36 -38957952.11 0.0264 0.0117

Mercury -111371-12-28 18:14 J -38956472.78 -38956472.74 -38956472.70 0.0276 0.0264

Mercury -111370-03-27 07:55 J -38956384.28 -38956384.17 -38956384.06 0.0277 0.0184

Mercury -111370-06-23 21:21 J -38956295.74 -38956295.61 -38956295.48 0.0278 0.0105



Mercury -111370-09-20 10:48 J -38956207.20 -38956207.05 -38956206.91 0.0279 0.0026

Mercury -111370-12-18 00:00 J -38956118.64 -38956118.50 -38956118.36 0.0280 0.0055

Mercury -111369-03-15 12:57 J -38956030.08 -38956029.96 -38956029.84 0.0281 0.0134

Mercury -111369-06-12 01:55 J -38955941.51 -38955941.42 -38955941.33 0.0282 0.0212

Venus -111366-11-06 11:02 J -38954699.05 -38954699.04 -38954699.02 0.0296 0.0295

Venus -111365-06-23 06:14 J -38954469.39 -38954469.24 -38954469.07 0.0297 0.0186

Venus -111364-02-08 02:09 J -38954239.60 -38954239.41 -38954239.21 0.0299 0.0072

Venus -111364-09-25 22:33 J -38954009.76 -38954009.56 -38954009.36 0.0300 0.0046

Venus -111363-05-13 18:57 J -38953779.87 -38953779.71 -38953779.53 0.0300 0.0165

Venus -111363-12-29 15:21 J -38953549.92 -38953549.86 -38953549.77 0.0301 0.0279

Moon -111362-07-22 03:21 J -38953345.60 -38953345.36 -38953345.13 0.0300 0.0068

Earth -111362-07-22 03:21 J -38953345.58 -38953345.36 -38953345.13 0.0300 0.0077 \*

Mars -111360-01-30 07:12 J -38952787.47 -38952787.20 -38952786.91 0.0298 0.0125

Mercury -111357-07-28 04:19 J -38951512.39 -38951512.32 -38951512.24 0.0285 0.0254

Mercury -111357-10-24 23:02 J -38951423.68 -38951423.54 -38951423.40 0.0284 0.0158

Mercury -111356-01-21 17:45 J -38951334.92 -38951334.76 -38951334.59 0.0283 0.0062

Mercury -111356-04-20 12:57 J -38951246.13 -38951245.96 -38951245.79 0.0282 0.0037

Mercury -111356-07-18 08:09 J -38951157.30 -38951157.16 -38951157.00 0.0281 0.0135

Mercury -111356-10-15 03:50 J -38951068.43 -38951068.34 -38951068.24 0.0280 0.0233

Venus -111351-04-22 16:48 J -38949417.94 -38949417.80 -38949417.65 0.0265 0.0196

Venus -111351-12-07 22:05 J -38949188.78 -38949188.58 -38949188.38 0.0263 0.0112

Venus -111350-07-25 02:53 J -38948959.60 -38948959.38 -38948959.16 0.0263 0.0027

Venus -111349-03-10 07:12 J -38948730.41 -38948730.20 -38948729.98 0.0262 0.0057

Venus -111349-10-25 11:45 J -38948501.19 -38948501.01 -38948500.82 0.0261 0.0140

Venus -111348-06-11 15:50 J -38948271.95 -38948271.84 -38948271.72 0.0261 0.0221

Earth -111347-01-18 20:53 J -38948050.82 -38948050.63 -38948050.42 0.0261 0.0167

Moon -111347-01-19 00:29 J -38948050.67 -38948050.48 -38948050.28 0.0261 0.0167 \*

Mars -111344-01-25 13:55 J -38946948.19 -38946947.92 -38946947.64 0.0266 0.0036

Mercury -111341-08-13 10:33 J -38945652.16 -38945652.06 -38945651.96 0.0277 0.0202

Mercury -111341-11-10 00:00 J -38945563.63 -38945563.50 -38945563.37 0.0278 0.0123

Mercury -111340-02-06 13:26 J -38945475.08 -38945474.94 -38945474.80 0.0279 0.0043  
 Mercury -111340-05-06 02:38 J -38945386.53 -38945386.39 -38945386.25 0.0280 0.0037  
 Mercury -111340-08-02 15:50 J -38945297.97 -38945297.84 -38945297.71 0.0281 0.0116  
 Mercury -111340-10-30 04:48 J -38945209.40 -38945209.30 -38945209.20 0.0282 0.0195  
 Mercury -111339-01-26 17:45 J -38945120.80 -38945120.76 -38945120.73 0.0283 0.0273  
 Venus -111336-05-18 20:38 J -38943912.70 -38943912.64 -38943912.56 0.0295 0.0277  
 Venus -111335-01-03 16:05 J -38943682.99 -38943682.83 -38943682.65 0.0297 0.0167  
 Venus -111335-08-21 12:14 J -38943453.20 -38943452.99 -38943452.79 0.0298 0.0051  
 Venus -111334-04-08 08:24 J -38943223.34 -38943223.15 -38943222.95 0.0299 0.0068  
 Venus -111334-11-24 05:02 J -38942993.45 -38942993.29 -38942993.13 0.0300 0.0185  
 Venus -111333-07-11 01:12 J -38942763.45 -38942763.45 -38942763.42 0.0300 0.0299  
 Earth -111333-07-15 14:53 J -38942758.98 -38942758.88 -38942758.76 0.0300 0.0263  
 Moon -111333-07-15 15:07 J -38942758.96 -38942758.87 -38942758.76 0.0300 0.0268 \*  
 Mars -111330-03-26 20:53 J -38941774.90 -38941774.63 -38941774.34 0.0296 0.0129  
 Mercury -111328-12-15 06:00 J -38940780.29 -38940780.25 -38940780.21 0.0285 0.0275  
 Mercury -111327-03-14 00:29 J -38940691.60 -38940691.48 -38940691.35 0.0284 0.0179  
 Mercury -111327-06-10 19:26 J -38940602.85 -38940602.69 -38940602.53 0.0283 0.0083  
 Mercury -111327-09-07 14:24 J -38940514.07 -38940513.90 -38940513.73 0.0282 0.0015  
 Mercury -111327-12-05 09:36 J -38940425.25 -38940425.10 -38940424.94 0.0281 0.0113  
 Mercury -111326-03-04 05:02 J -38940336.40 -38940336.29 -38940336.17 0.0280 0.0211  
 Venus -111322-11-02 23:02 J -38938631.69 -38938631.54 -38938631.38 0.0264 0.0183  
 Venus -111321-06-19 03:50 J -38938402.54 -38938402.34 -38938402.13 0.0263 0.0099  
 Venus -111320-02-03 08:24 J -38938173.37 -38938173.15 -38938172.93 0.0262 0.0015  
 Venus -111320-09-20 12:43 J -38937944.18 -38937943.97 -38937943.76 0.0261 0.0070  
 Venus -111319-05-07 16:33 J -38937714.98 -38937714.81 -38937714.62 0.0261 0.0153  
 Venus -111319-12-22 20:24 J -38937485.73 -38937485.65 -38937485.54 0.0261 0.0234  
 Moon -111317-01-26 03:07 J -38937086.58 -38937086.37 -38937086.16 0.0261 0.0136  
 Earth -111317-01-26 04:33 J -38937086.51 -38937086.31 -38937086.09 0.0261 0.0143 \*  
 Mars -111316-03-20 04:48 J -38936667.39 -38936667.30 -38936667.18 0.0262 0.0242  
 Mars -111314-03-13 20:53 J -38935943.84 -38935943.63 -38935943.43 0.0266 0.0180

Mercury -111312-12-31 11:31 J -38934920.09 -38934920.02 -38934919.93 0.0276 0.0229

Mercury -111311-03-30 01:12 J -38934831.57 -38934831.45 -38934831.32 0.0277 0.0150

Mercury -111311-06-26 14:38 J -38934743.03 -38934742.89 -38934742.75 0.0278 0.0070

Mercury -111311-09-23 03:50 J -38934654.48 -38934654.34 -38934654.19 0.0279 0.0013

Mercury -111311-12-20 17:02 J -38934565.92 -38934565.79 -38934565.65 0.0280 0.0089

Mercury -111310-03-19 06:00 J -38934477.36 -38934477.25 -38934477.13 0.0281 0.0168

Mercury -111310-06-15 18:57 J -38934388.77 -38934388.71 -38934388.64 0.0282 0.0246

Venus -111307-11-29 00:14 J -38933126.57 -38933126.49 -38933126.40 0.0296 0.0266

Venus -111306-07-16 19:41 J -38932896.85 -38932896.68 -38932896.50 0.0298 0.0155

Venus -111305-03-02 15:50 J -38932667.04 -38932666.84 -38932666.63 0.0299 0.0039

Venus -111305-10-18 12:14 J -38932437.18 -38932436.99 -38932436.78 0.0300 0.0082

Venus -111304-06-05 09:07 J -38932207.27 -38932207.12 -38932206.96 0.0301 0.0199

Moon -111303-07-23 11:17 J -38931794.22 -38931794.03 -38931793.82 0.0300 0.0157

Earth -111303-07-23 14:38 J -38931794.07 -38931793.89 -38931793.68 0.0300 0.0169 \*

Mercury -111298-08-01 00:29 J -38929959.59 -38929959.48 -38929959.37 0.0285 0.0209

Mercury -111298-10-28 19:12 J -38929870.85 -38929870.70 -38929870.55 0.0283 0.0113

Mercury -111297-01-25 14:09 J -38929782.08 -38929781.91 -38929781.74 0.0282 0.0015

Mercury -111297-04-23 09:21 J -38929693.27 -38929693.11 -38929692.95 0.0281 0.0083

Mercury -111297-07-21 04:48 J -38929604.43 -38929604.30 -38929604.17 0.0280 0.0181

Mercury -111297-10-18 00:29 J -38929515.48 -38929515.48 -38929515.47 0.0279 0.0279

Venus -111293-09-27 22:33 J -38928074.61 -38928074.56 -38928074.49 0.0266 0.0255

Venus -111292-05-15 04:05 J -38927845.49 -38927845.33 -38927845.15 0.0264 0.0171

Venus -111292-12-30 09:07 J -38927616.32 -38927616.12 -38927615.91 0.0263 0.0086

Venus -111291-08-16 13:41 J -38927387.15 -38927386.93 -38927386.71 0.0262 0.0002

Venus -111290-04-02 18:00 J -38927157.96 -38927157.75 -38927157.54 0.0262 0.0083

Venus -111290-11-17 21:50 J -38926928.74 -38926928.59 -38926928.41 0.0261 0.0167

Venus -111289-07-04 01:55 J -38926699.48 -38926699.42 -38926699.33 0.0261 0.0246

Earth -111288-01-20 04:48 J -38926499.54 -38926499.30 -38926499.06 0.0261 0.0099

Moon -111288-01-20 06:43 J -38926499.46 -38926499.22 -38926498.97 0.0261 0.0101 \*

Mars -111286-05-06 07:12 J -38925663.46 -38925663.20 -38925662.94 0.0264 0.0097

Mercury -111282-05-20 13:55 J -38924187.98 -38924187.92 -38924187.86 0.0276 0.0249

Mercury -111282-08-17 03:36 J -38924099.47 -38924099.35 -38924099.24 0.0277 0.0169

Mercury -111282-11-13 17:02 J -38924010.93 -38924010.79 -38924010.65 0.0278 0.0090

Mercury -111281-02-10 06:14 J -38923922.38 -38923922.24 -38923922.09 0.0279 0.0013

Mercury -111281-05-08 19:26 J -38923833.82 -38923833.69 -38923833.55 0.0280 0.0069

Mercury -111281-08-05 08:38 J -38923745.26 -38923745.14 -38923745.02 0.0281 0.0148

Mercury -111281-11-01 21:36 J -38923656.68 -38923656.60 -38923656.52 0.0282 0.0227

Venus -111277-06-10 09:07 J -38922340.23 -38922340.12 -38922340.01 0.0296 0.0248

Venus -111276-01-26 04:33 J -38922110.49 -38922110.31 -38922110.12 0.0298 0.0136

Venus -111276-09-13 00:43 J -38921880.67 -38921880.47 -38921880.26 0.0299 0.0019

Venus -111275-04-30 21:21 J -38921650.80 -38921650.61 -38921650.42 0.0300 0.0101

Venus -111275-12-16 17:45 J -38921420.89 -38921420.76 -38921420.61 0.0300 0.0220

Earth -111274-07-18 00:43 J -38921207.66 -38921207.47 -38921207.28 0.0300 0.0176

Moon -111274-07-18 04:19 J -38921207.50 -38921207.32 -38921207.14 0.0300 0.0184 \*

Mars -111272-06-27 01:12 J -38920497.73 -38920497.45 -38920497.15 0.0298 0.0101

Mercury -111269-12-18 01:41 J -38919227.52 -38919227.43 -38919227.33 0.0285 0.0231

Mercury -111268-03-16 20:24 J -38919138.80 -38919138.65 -38919138.50 0.0284 0.0135

Mercury -111268-06-13 15:21 J -38919050.03 -38919049.86 -38919049.70 0.0283 0.0038

Mercury -111268-09-10 10:33 J -38918961.23 -38918961.06 -38918960.90 0.0282 0.0060

Mercury -111268-12-08 05:45 J -38918872.40 -38918872.26 -38918872.11 0.0281 0.0158

Mercury -111267-03-07 01:26 J -38918783.50 -38918783.44 -38918783.37 0.0280 0.0256

Venus -111263-04-10 04:48 J -38917288.38 -38917288.30 -38917288.21 0.0265 0.0243

Venus -111263-11-25 09:50 J -38917059.25 -38917059.09 -38917058.91 0.0264 0.0159

Venus -111262-07-12 14:38 J -38916830.10 -38916829.89 -38916829.68 0.0263 0.0074

Venus -111261-02-26 18:57 J -38916600.93 -38916600.71 -38916600.49 0.0262 0.0011

Venus -111261-10-12 23:02 J -38916371.74 -38916371.54 -38916371.33 0.0261 0.0096

Venus -111260-05-30 02:38 J -38916142.53 -38916142.39 -38916142.22 0.0261 0.0179

Venus -111259-01-14 06:29 J -38915913.24 -38915913.23 -38915913.19 0.0261 0.0259

Earth -111258-01-27 11:31 J -38915535.16 -38915535.02 -38915534.86 0.0261 0.0209

Moon -111258-01-27 14:24 J -38915535.05 -38915534.90 -38915534.73 0.0261 0.0199 \*

Mars -111256-06-21 08:24 J -38914659.42 -38914659.15 -38914658.87 0.0265 0.0043  
 Mercury -111252-01-03 04:33 J -38913367.41 -38913367.31 -38913367.21 0.0276 0.0197  
 Mercury -111252-04-01 18:00 J -38913278.88 -38913278.75 -38913278.61 0.0277 0.0118  
 Mercury -111252-06-29 07:26 J -38913190.33 -38913190.19 -38913190.05 0.0278 0.0038  
 Mercury -111252-09-25 20:38 J -38913101.78 -38913101.64 -38913101.50 0.0279 0.0041  
 Mercury -111252-12-23 09:36 J -38913013.22 -38913013.10 -38913012.97 0.0281 0.0120  
 Mercury -111251-03-21 22:33 J -38912924.65 -38912924.56 -38912924.46 0.0282 0.0199  
 Mercury -111251-06-18 11:31 J -38912836.04 -38912836.02 -38912835.99 0.0283 0.0276  
 Venus -111248-12-21 11:02 J -38911554.15 -38911554.04 -38911553.91 0.0297 0.0239  
 Venus -111247-08-08 06:57 J -38911324.40 -38911324.21 -38911324.03 0.0298 0.0125  
 Venus -111246-03-26 03:07 J -38911094.57 -38911094.37 -38911094.16 0.0300 0.0009  
 Venus -111246-11-10 23:45 J -38910864.70 -38910864.51 -38910864.32 0.0300 0.0113  
 Venus -111245-06-27 20:24 J -38910634.77 -38910634.65 -38910634.51 0.0301 0.0231  
 Moon -111244-07-24 20:24 J -38910242.77 -38910242.65 -38910242.50 0.0300 0.0237  
 Earth -111244-07-24 21:50 J -38910242.71 -38910242.59 -38910242.45 0.0300 0.0248 \*  
 Mars -111242-08-20 13:26 J -38909486.20 -38909485.94 -38909485.66 0.0296 0.0144  
 Mercury -111239-05-07 00:43 J -38908495.52 -38908495.47 -38908495.41 0.0285 0.0265  
 Mercury -111239-08-03 19:26 J -38908406.82 -38908406.69 -38908406.56 0.0284 0.0169  
 Mercury -111239-10-31 14:09 J -38908318.07 -38908317.91 -38908317.74 0.0283 0.0073  
 Mercury -111238-01-28 09:21 J -38908229.28 -38908229.11 -38908228.94 0.0282 0.0025  
 Mercury -111238-04-27 04:33 J -38908140.46 -38908140.31 -38908140.15 0.0281 0.0124  
 Mercury -111238-07-25 00:00 J -38908051.59 -38908051.50 -38908051.39 0.0280 0.0222  
 Venus -111234-10-21 08:09 J -38906502.25 -38906502.16 -38906502.05 0.0265 0.0232  
 Venus -111233-06-06 13:41 J -38906273.11 -38906272.93 -38906272.75 0.0264 0.0147  
 Venus -111232-01-21 18:29 J -38906043.94 -38906043.73 -38906043.52 0.0263 0.0062  
 Venus -111232-09-07 22:48 J -38905814.77 -38905814.55 -38905814.33 0.0262 0.0024  
 Venus -111231-04-25 02:53 J -38905585.57 -38905585.38 -38905585.18 0.0261 0.0108  
 Venus -111231-12-10 06:43 J -38905356.36 -38905356.22 -38905356.06 0.0261 0.0191  
 Moon -111229-01-22 06:57 J -38904948.46 -38904948.21 -38904947.95 0.0261 0.0044  
 Earth -111229-01-22 10:05 J -38904948.33 -38904948.08 -38904947.83 0.0261 0.0036 \*

Mars -111228-08-14 03:07 J -38904378.50 -38904378.37 -38904378.23 0.0263 0.0228  
 Mars -111226-08-07 17:45 J -38903654.95 -38903654.76 -38903654.57 0.0267 0.0195  
 Mercury -111223-05-23 06:14 J -38902635.32 -38902635.24 -38902635.15 0.0276 0.0220  
 Mercury -111223-08-19 19:55 J -38902546.79 -38902546.67 -38902546.55 0.0277 0.0140  
 Mercury -111223-11-16 09:21 J -38902458.25 -38902458.11 -38902457.97 0.0278 0.0061  
 Mercury -111222-02-12 22:33 J -38902369.70 -38902369.56 -38902369.42 0.0279 0.0018  
 Mercury -111222-05-12 11:31 J -38902281.15 -38902281.02 -38902280.88 0.0280 0.0098  
 Mercury -111222-08-09 00:29 J -38902192.58 -38902192.48 -38902192.36 0.0281 0.0177  
 Mercury -111222-11-05 13:26 J -38902103.99 -38902103.94 -38902103.88 0.0283 0.0254  
 Venus -111218-07-03 18:00 J -38900767.88 -38900767.75 -38900767.61 0.0296 0.0223  
 Venus -111217-02-18 13:55 J -38900538.11 -38900537.92 -38900537.73 0.0298 0.0107  
 Venus -111217-10-05 10:19 J -38900308.27 -38900308.07 -38900307.86 0.0299 0.0012  
 Venus -111216-05-23 06:57 J -38900078.39 -38900078.21 -38900078.02 0.0300 0.0132  
 Venus -111215-01-08 03:36 J -38899848.45 -38899848.35 -38899848.23 0.0300 0.0250  
 Earth -111215-07-19 05:17 J -38899656.50 -38899656.28 -38899656.06 0.0300 0.0103  
 Moon -111215-07-19 06:14 J -38899656.47 -38899656.24 -38899656.02 0.0300 0.0114 \*  
 Mercury -111210-12-21 20:24 J -38897674.77 -38897674.65 -38897674.53 0.0285 0.0194  
 Mercury -111209-03-19 15:07 J -38897586.03 -38897585.87 -38897585.72 0.0284 0.0097  
 Mercury -111209-06-16 10:05 J -38897497.25 -38897497.08 -38897496.91 0.0283 0.0002  
 Mercury -111209-09-13 05:17 J -38897408.43 -38897408.28 -38897408.12 0.0282 0.0099  
 Mercury -111209-12-11 00:43 J -38897319.58 -38897319.47 -38897319.34 0.0281 0.0197  
 Venus -111204-05-02 13:55 J -38895716.03 -38895715.92 -38895715.79 0.0265 0.0221  
 Venus -111204-12-17 18:57 J -38895486.89 -38895486.71 -38895486.51 0.0264 0.0136  
 Venus -111203-08-03 23:31 J -38895257.73 -38895257.52 -38895257.30 0.0263 0.0050  
 Venus -111202-03-21 03:36 J -38895028.56 -38895028.35 -38895028.13 0.0262 0.0036  
 Venus -111202-11-05 07:41 J -38894799.37 -38894799.18 -38894798.98 0.0261 0.0120  
 Venus -111201-06-21 11:17 J -38894570.16 -38894570.03 -38894569.89 0.0261 0.0203  
 Moon -111199-01-28 18:29 J -38893983.75 -38893983.73 -38893983.67 0.0261 0.0258  
 Mars -111198-09-29 23:31 J -38893374.78 -38893374.52 -38893374.25 0.0263 0.0093  
 Mercury -111194-10-10 07:12 J -38891903.26 -38891903.20 -38891903.14 0.0275 0.0248

Mercury -111193-01-06 20:38 J -38891814.75 -38891814.64 -38891814.52 0.0276 0.0169

Mercury -111193-04-04 10:05 J -38891726.21 -38891726.08 -38891725.94 0.0277 0.0090

Mercury -111193-07-01 23:31 J -38891637.67 -38891637.52 -38891637.38 0.0278 0.0012

Mercury -111193-09-28 12:29 J -38891549.11 -38891548.98 -38891548.84 0.0279 0.0069

Mercury -111193-12-26 01:41 J -38891460.55 -38891460.43 -38891460.31 0.0281 0.0146

Mercury -111192-03-24 14:24 J -38891371.98 -38891371.90 -38891371.81 0.0282 0.0225

Venus -111188-01-12 19:12 J -38889981.84 -38889981.70 -38889981.56 0.0297 0.0214

Venus -111188-08-30 14:53 J -38889752.07 -38889751.88 -38889751.68 0.0299 0.0098

Venus -111187-04-17 11:31 J -38889522.23 -38889522.02 -38889521.82 0.0300 0.0022

Venus -111187-12-03 07:55 J -38889292.34 -38889292.17 -38889291.98 0.0301 0.0143

Venus -111186-07-21 05:02 J -38889062.39 -38889062.29 -38889062.19 0.0301 0.0260

Mars -111184-11-19 23:17 J -38888209.82 -38888209.53 -38888209.23 0.0298 0.0094

Mercury -111180-05-09 18:29 J -38886942.82 -38886942.73 -38886942.63 0.0285 0.0231

Mercury -111180-08-06 13:26 J -38886854.09 -38886853.94 -38886853.80 0.0284 0.0135

Mercury -111180-11-03 08:24 J -38886765.32 -38886765.15 -38886764.98 0.0283 0.0037

Mercury -111179-01-31 03:36 J -38886676.52 -38886676.35 -38886676.19 0.0282 0.0061

Mercury -111179-04-29 23:02 J -38886587.68 -38886587.54 -38886587.40 0.0281 0.0159

Mercury -111179-07-27 18:43 J -38886498.79 -38886498.72 -38886498.66 0.0280 0.0257

Venus -111175-11-12 15:50 J -38884929.96 -38884929.84 -38884929.70 0.0265 0.0211

Venus -111174-06-29 20:53 J -38884700.81 -38884700.63 -38884700.42 0.0263 0.0126

Venus -111173-02-14 01:41 J -38884471.64 -38884471.43 -38884471.21 0.0262 0.0039

Venus -111173-09-30 06:14 J -38884242.46 -38884242.24 -38884242.02 0.0262 0.0047

Venus -111172-05-17 10:05 J -38884013.26 -38884013.08 -38884012.88 0.0261 0.0132

Venus -111171-01-01 13:55 J -38883784.04 -38883783.92 -38883783.79 0.0261 0.0214

Moon -111170-01-23 09:50 J -38883397.34 -38883397.09 -38883396.84 0.0261 0.0011

Earth -111170-01-23 12:43 J -38883397.23 -38883396.97 -38883396.72 0.0261 0.0022 \*

Mars -111168-11-14 23:02 J -38882370.81 -38882370.54 -38882370.26 0.0265 0.0054

Mercury -111164-02-26 08:38 J -38881171.16 -38881171.14 -38881171.12 0.0276 0.0272

Mercury -111164-05-25 22:19 J -38881082.67 -38881082.57 -38881082.47 0.0276 0.0193

Mercury -111164-08-22 11:45 J -38880994.14 -38880994.01 -38880993.88 0.0277 0.0114

Mercury -111164-11-19 00:57 J -38880905.60 -38880905.46 -38880905.31 0.0278 0.0036

Mercury -111163-02-15 14:09 J -38880817.05 -38880816.91 -38880816.76 0.0280 0.0045

Mercury -111163-05-15 03:21 J -38880728.49 -38880728.36 -38880728.23 0.0281 0.0123

Mercury -111163-08-11 16:19 J -38880639.92 -38880639.82 -38880639.72 0.0282 0.0201

Mercury -111163-11-08 05:02 J -38880551.31 -38880551.29 -38880551.27 0.0283 0.0279

Venus -111159-07-26 01:12 J -38879195.60 -38879195.45 -38879195.30 0.0297 0.0198

Venus -111158-03-12 21:07 J -38878965.81 -38878965.62 -38878965.42 0.0298 0.0081

Venus -111158-10-28 17:45 J -38878735.96 -38878735.76 -38878735.56 0.0299 0.0040

Venus -111157-06-14 14:24 J -38878506.07 -38878505.90 -38878505.73 0.0300 0.0161

Venus -111156-01-30 11:02 J -38878276.10 -38878276.04 -38878275.96 0.0300 0.0279

Moon -111156-07-20 02:24 J -38878105.63 -38878105.40 -38878105.16 0.0300 0.0055

Earth -111156-07-20 06:00 J -38878105.48 -38878105.25 -38878105.02 0.0300 0.0037 \*

Mars -111153-01-14 00:57 J -38877197.72 -38877197.46 -38877197.18 0.0296 0.0149

Mercury -111151-09-26 18:57 J -38876210.77 -38876210.71 -38876210.64 0.0286 0.0259

Mercury -111151-12-24 13:41 J -38876122.06 -38876121.93 -38876121.79 0.0285 0.0162

Mercury -111150-03-23 08:38 J -38876033.30 -38876033.14 -38876032.98 0.0284 0.0065

Mercury -111150-06-20 03:50 J -38875944.51 -38875944.34 -38875944.17 0.0283 0.0033

Mercury -111150-09-16 23:02 J -38875855.68 -38875855.54 -38875855.38 0.0282 0.0132

Mercury -111150-12-14 18:43 J -38875766.81 -38875766.72 -38875766.62 0.0281 0.0230

Venus -111145-05-24 21:21 J -38874143.76 -38874143.61 -38874143.47 0.0265 0.0200

Venus -111144-01-09 01:55 J -38873914.61 -38873914.42 -38873914.21 0.0264 0.0115

Venus -111144-08-26 06:29 J -38873685.44 -38873685.23 -38873685.01 0.0262 0.0028

Venus -111143-04-12 10:33 J -38873456.27 -38873456.06 -38873455.84 0.0262 0.0059

Venus -111143-11-27 14:24 J -38873227.08 -38873226.90 -38873226.71 0.0261 0.0143

Venus -111142-07-14 18:00 J -38872997.85 -38872997.75 -38872997.64 0.0261 0.0226

Earth -111141-01-18 10:05 J -38872810.19 -38872810.08 -38872809.93 0.0260 0.0224

Moon -111141-01-18 12:57 J -38872810.07 -38872809.96 -38872809.84 0.0260 0.0232 \*

Mars -111139-01-07 17:02 J -38872089.93 -38872089.79 -38872089.64 0.0262 0.0223

Mars -111137-01-01 02:38 J -38871366.56 -38871366.39 -38871366.18 0.0266 0.0195

Mercury -111135-10-12 23:02 J -38870350.62 -38870350.54 -38870350.46 0.0275 0.0222



Mercury -111134-01-09 12:29 J -38870262.10 -38870261.98 -38870261.86 0.0276 0.0144

Mercury -111134-04-08 01:55 J -38870173.56 -38870173.42 -38870173.28 0.0277 0.0065

Mercury -111134-07-05 15:07 J -38870085.02 -38870084.87 -38870084.73 0.0278 0.0015

Mercury -111134-10-02 04:05 J -38869996.46 -38869996.33 -38869996.20 0.0279 0.0092

Mercury -111134-12-29 17:02 J -38869907.90 -38869907.79 -38869907.68 0.0280 0.0170

Mercury -111133-03-27 05:45 J -38869819.32 -38869819.26 -38869819.19 0.0282 0.0248

Venus -111129-02-05 00:57 J -38868409.61 -38868409.46 -38868409.30 0.0297 0.0191

Venus -111129-09-21 20:53 J -38868179.83 -38868179.63 -38868179.43 0.0299 0.0073

Venus -111128-05-09 17:17 J -38867949.98 -38867949.78 -38867949.58 0.0300 0.0048

Venus -111128-12-25 13:55 J -38867720.09 -38867719.92 -38867719.75 0.0301 0.0169

Venus -111127-08-12 10:48 J -38867490.11 -38867490.05 -38867489.99 0.0301 0.0287

Mercury -111121-05-12 11:31 J -38865390.14 -38865390.02 -38865389.91 0.0285 0.0202

Mercury -111121-08-09 06:14 J -38865301.39 -38865301.24 -38865301.08 0.0284 0.0106

Mercury -111121-11-06 01:26 J -38865212.61 -38865212.44 -38865212.27 0.0283 0.0009

Mercury -111120-02-02 20:38 J -38865123.80 -38865123.64 -38865123.48 0.0282 0.0091

Mercury -111120-05-02 16:05 J -38865034.95 -38865034.83 -38865034.70 0.0281 0.0189

Venus -111116-12-04 22:05 J -38863357.73 -38863357.58 -38863357.43 0.0265 0.0191

Venus -111115-07-22 02:53 J -38863128.57 -38863128.38 -38863128.17 0.0263 0.0105

Venus -111114-03-08 07:41 J -38862899.40 -38862899.18 -38862898.96 0.0262 0.0017

Venus -111114-10-23 12:00 J -38862670.21 -38862670.00 -38862669.78 0.0261 0.0069

Venus -111113-06-08 15:50 J -38862441.01 -38862440.84 -38862440.65 0.0261 0.0154

Venus -111112-01-23 19:26 J -38862211.76 -38862211.69 -38862211.58 0.0261 0.0237

Earth -111111-01-24 12:57 J -38861846.20 -38861845.96 -38861845.71 0.0261 0.0076

Moon -111111-01-24 15:21 J -38861846.10 -38861845.86 -38861845.61 0.0261 0.0062 \*

Mars -111109-02-23 07:55 J -38861086.43 -38861086.17 -38861085.90 0.0263 0.0085

Mercury -111105-03-01 00:00 J -38859618.55 -38859618.50 -38859618.43 0.0275 0.0249

Mercury -111105-05-28 13:41 J -38859530.04 -38859529.93 -38859529.81 0.0276 0.0170

Mercury -111105-08-25 03:07 J -38859441.51 -38859441.37 -38859441.23 0.0277 0.0091

Mercury -111105-11-21 16:19 J -38859352.96 -38859352.82 -38859352.68 0.0278 0.0012

Mercury -111104-02-18 05:31 J -38859264.41 -38859264.27 -38859264.13 0.0279 0.0066

Mercury -111104-05-17 18:29 J -38859175.85 -38859175.73 -38859175.61 0.0281 0.0144

Mercury -111104-08-14 07:12 J -38859087.28 -38859087.20 -38859087.11 0.0282 0.0223

Venus -111101-12-30 10:33 J -38857853.10 -38857853.06 -38857853.02 0.0295 0.0289

Venus -111100-08-17 05:45 J -38857623.42 -38857623.26 -38857623.09 0.0297 0.0176

Venus -111099-04-04 01:55 J -38857393.62 -38857393.42 -38857393.21 0.0299 0.0057

Venus -111099-11-19 22:33 J -38857163.76 -38857163.56 -38857163.36 0.0300 0.0066

Venus -111098-07-07 19:12 J -38856933.86 -38856933.70 -38856933.54 0.0300 0.0187

Moon -111097-07-21 01:12 J -38856554.68 -38856554.45 -38856554.22 0.0300 0.0003

Earth -111097-07-21 02:24 J -38856554.63 -38856554.40 -38856554.16 0.0300 0.0019 \*

Mars -111095-04-14 18:57 J -38855922.00 -38855921.71 -38855921.42 0.0298 0.0096

Mercury -111092-09-29 11:31 J -38854658.11 -38854658.02 -38854657.92 0.0286 0.0232

Mercury -111092-12-27 06:14 J -38854569.38 -38854569.24 -38854569.09 0.0285 0.0135

Mercury -111091-03-26 01:12 J -38854480.61 -38854480.45 -38854480.28 0.0284 0.0038

Mercury -111091-06-22 20:38 J -38854391.81 -38854391.64 -38854391.48 0.0283 0.0061

Mercury -111091-09-19 15:50 J -38854302.97 -38854302.84 -38854302.69 0.0282 0.0160

Mercury -111091-12-17 11:31 J -38854214.07 -38854214.02 -38854213.95 0.0281 0.0258

Venus -111086-06-17 02:38 J -38852571.55 -38852571.39 -38852571.23 0.0265 0.0181

Venus -111085-02-01 07:26 J -38852342.39 -38852342.19 -38852341.98 0.0263 0.0094

Venus -111085-09-17 12:00 J -38852113.21 -38852113.00 -38852112.78 0.0262 0.0008

Venus -111084-05-04 16:05 J -38851884.04 -38851883.83 -38851883.62 0.0261 0.0080

Venus -111084-12-19 19:41 J -38851654.84 -38851654.68 -38851654.50 0.0261 0.0165

Venus -111083-08-05 23:02 J -38851425.59 -38851425.54 -38851425.46 0.0261 0.0248

Moon -111082-01-19 07:26 J -38851259.37 -38851259.19 -38851259.00 0.0261 0.0183

Earth -111082-01-19 10:19 J -38851259.25 -38851259.07 -38851258.86 0.0261 0.0169 \*

Mars -111079-04-10 05:31 J -38850082.53 -38850082.27 -38850081.99 0.0264 0.0055

Mercury -111076-10-15 14:24 J -38848798.00 -38848797.90 -38848797.80 0.0275 0.0199

Mercury -111075-01-12 03:50 J -38848709.47 -38848709.34 -38848709.21 0.0276 0.0120

Mercury -111075-04-10 17:02 J -38848620.93 -38848620.79 -38848620.64 0.0277 0.0043

Mercury -111075-07-08 06:14 J -38848532.38 -38848532.24 -38848532.10 0.0278 0.0037

Mercury -111075-10-04 19:12 J -38848443.82 -38848443.70 -38848443.57 0.0279 0.0114

Mercury -111074-01-01 08:09 J -38848355.26 -38848355.16 -38848355.06 0.0280 0.0192

Mercury -111074-03-30 21:07 J -38848266.66 -38848266.62 -38848266.59 0.0281 0.0269

Venus -111071-07-12 10:48 J -38847067.11 -38847067.05 -38847066.99 0.0295 0.0281

Venus -111070-02-27 05:45 J -38846837.42 -38846837.26 -38846837.08 0.0297 0.0169

Venus -111070-10-15 01:41 J -38846607.63 -38846607.43 -38846607.22 0.0299 0.0049

Venus -111069-05-31 22:05 J -38846377.78 -38846377.58 -38846377.38 0.0300 0.0074

Venus -111068-01-16 18:29 J -38846147.87 -38846147.73 -38846147.56 0.0301 0.0196

Mars -111065-06-06 19:55 J -38844910.93 -38844910.67 -38844910.39 0.0297 0.0145

Mercury -111062-02-16 08:53 J -38843926.17 -38843926.13 -38843926.08 0.0286 0.0273

Mercury -111062-05-16 03:36 J -38843837.48 -38843837.35 -38843837.22 0.0285 0.0177

Mercury -111062-08-12 22:33 J -38843748.72 -38843748.56 -38843748.40 0.0284 0.0080

Mercury -111062-11-09 17:45 J -38843659.93 -38843659.76 -38843659.59 0.0283 0.0019

Mercury -111061-02-06 12:57 J -38843571.11 -38843570.96 -38843570.80 0.0282 0.0117

Mercury -111061-05-05 08:38 J -38843482.25 -38843482.14 -38843482.03 0.0281 0.0216

Venus -111057-05-11 20:53 J -38842014.67 -38842014.63 -38842014.58 0.0266 0.0259

Venus -111057-12-27 02:24 J -38841785.56 -38841785.40 -38841785.23 0.0265 0.0173

Venus -111056-08-13 07:41 J -38841556.39 -38841556.18 -38841555.97 0.0263 0.0085

Venus -111055-03-30 12:14 J -38841327.21 -38841326.99 -38841326.77 0.0262 0.0003

Venus -111055-11-14 16:33 J -38841098.01 -38841097.81 -38841097.60 0.0261 0.0090

Venus -111054-07-01 20:24 J -38840868.80 -38840868.65 -38840868.48 0.0261 0.0175

Venus -111053-02-16 00:00 J -38840639.51 -38840639.50 -38840639.45 0.0261 0.0258

Earth -111052-01-25 11:31 J -38840295.25 -38840295.02 -38840294.80 0.0261 0.0126

Moon -111052-01-25 14:38 J -38840295.13 -38840294.89 -38840294.65 0.0261 0.0111 \*

Mars -111051-06-02 19:41 J -38839801.82 -38839801.68 -38839801.51 0.0262 0.0218

Mars -111049-05-26 04:48 J -38839078.47 -38839078.30 -38839078.11 0.0266 0.0200

Mercury -111046-03-04 15:21 J -38838065.94 -38838065.86 -38838065.77 0.0275 0.0226

Mercury -111046-06-01 04:48 J -38837977.42 -38837977.30 -38837977.17 0.0276 0.0148

Mercury -111046-08-28 18:14 J -38837888.88 -38837888.74 -38837888.60 0.0277 0.0069

Mercury -111046-11-25 07:26 J -38837800.33 -38837800.19 -38837800.05 0.0278 0.0009

Mercury -111045-02-21 20:24 J -38837711.78 -38837711.65 -38837711.51 0.0279 0.0088

Mercury -111045-05-20 09:21 J -38837623.22 -38837623.11 -38837622.99 0.0280 0.0165

Mercury -111045-08-16 22:19 J -38837534.64 -38837534.57 -38837534.50 0.0281 0.0242

Venus -111041-01-22 14:24 J -38836280.97 -38836280.90 -38836280.81 0.0295 0.0269

Venus -111041-09-08 09:50 J -38836051.26 -38836051.09 -38836050.91 0.0297 0.0154

Venus -111040-04-26 06:00 J -38835821.46 -38835821.25 -38835821.05 0.0299 0.0034

Venus -111040-12-12 02:24 J -38835591.60 -38835591.40 -38835591.21 0.0300 0.0090

Venus -111039-07-29 23:02 J -38835361.68 -38835361.54 -38835361.40 0.0300 0.0211

Earth -111038-07-22 20:38 J -38835003.86 -38835003.64 -38835003.40 0.0300 0.0069

Moon -111038-07-23 00:14 J -38835003.72 -38835003.49 -38835003.26 0.0300 0.0052 \*

Mercury -111033-10-02 03:21 J -38833105.48 -38833105.36 -38833105.25 0.0286 0.0209

Mercury -111033-12-29 22:05 J -38833016.73 -38833016.58 -38833016.43 0.0285 0.0112

Mercury -111032-03-28 17:17 J -38832927.95 -38832927.78 -38832927.62 0.0284 0.0016

Mercury -111032-06-25 12:29 J -38832839.14 -38832838.98 -38832838.82 0.0283 0.0085

Mercury -111032-09-22 07:55 J -38832750.29 -38832750.17 -38832750.03 0.0282 0.0184

Venus -111028-11-22 00:57 J -38831228.52 -38831228.46 -38831228.38 0.0266 0.0251

Venus -111027-07-09 06:43 J -38830999.39 -38830999.22 -38830999.05 0.0265 0.0163

Venus -111026-02-23 11:45 J -38830770.22 -38830770.01 -38830769.80 0.0263 0.0075

Venus -111026-10-10 16:33 J -38830541.03 -38830540.81 -38830540.59 0.0262 0.0014

Venus -111025-05-26 20:24 J -38830311.84 -38830311.65 -38830311.44 0.0262 0.0101

Venus -111024-01-11 00:29 J -38830082.64 -38830082.48 -38830082.33 0.0261 0.0185

Moon -111023-01-20 06:14 J -38829708.45 -38829708.24 -38829708.02 0.0261 0.0133

Earth -111023-01-20 08:53 J -38829708.35 -38829708.13 -38829707.89 0.0261 0.0118 \*

Mars -111021-07-18 14:24 J -38828798.16 -38828797.90 -38828797.63 0.0263 0.0082

Mercury -111017-07-21 16:19 J -38827333.87 -38827333.82 -38827333.76 0.0274 0.0253

Mercury -111017-10-18 05:45 J -38827245.37 -38827245.26 -38827245.14 0.0275 0.0176

Mercury -111016-01-14 19:12 J -38827156.84 -38827156.70 -38827156.56 0.0276 0.0098

Mercury -111016-04-13 08:24 J -38827068.29 -38827068.15 -38827068.01 0.0277 0.0020

Mercury -111016-07-10 21:21 J -38826979.75 -38826979.61 -38826979.47 0.0278 0.0058

Mercury -111016-10-07 10:19 J -38826891.19 -38826891.07 -38826890.94 0.0279 0.0135

Mercury -111015-01-03 23:17 J -38826802.62 -38826802.53 -38826802.44 0.0280 0.0212

Venus	-111012-08-03 14:53 J	-38825494.97	-38825494.88	-38825494.78	0.0295	0.0261
Venus	-111011-03-21 09:50 J	-38825265.26	-38825265.09	-38825264.90	0.0297	0.0146
Venus	-111011-11-06 05:45 J	-38825035.47	-38825035.26	-38825035.06	0.0299	0.0025
Venus	-111010-06-24 01:55 J	-38824805.61	-38824805.42	-38824805.23	0.0300	0.0098
Venus	-111009-02-08 22:19 J	-38824575.70	-38824575.57	-38824575.43	0.0301	0.0220
Mars	-111007-09-06 05:45 J	-38823635.54	-38823635.26	-38823634.96	0.0299	0.0103
Mercury	-111003-02-19 00:29 J	-38822373.55	-38822373.48	-38822373.40	0.0286	0.0251
Mercury	-111003-05-18 19:12 J	-38822284.83	-38822284.70	-38822284.56	0.0285	0.0155
Mercury	-111003-08-15 14:09 J	-38822196.07	-38822195.91	-38822195.74	0.0284	0.0057
Mercury	-111003-11-12 09:21 J	-38822107.27	-38822107.11	-38822106.94	0.0283	0.0042
Mercury	-111002-02-09 04:48 J	-38822018.44	-38822018.30	-38822018.15	0.0282	0.0141
Mercury	-111002-05-09 00:29 J	-38821929.56	-38821929.48	-38821929.38	0.0281	0.0240

# 111TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 111th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-110998-06-04 00:14 J	-38820442.57	-38820442.49	-38820442.40	0.0266	0.0243		
Venus	-110997-01-19 06:00 J	-38820213.42	-38820213.25	-38820213.07	0.0264	0.0155		
Venus	-110997-09-04 11:17 J	-38819984.24	-38819984.03	-38819983.81	0.0263	0.0066		
Venus	-110996-04-21 16:05 J	-38819755.05	-38819754.83	-38819754.61	0.0262	0.0023		

Venus -110996-12-06 20:09 J -38819525.85 -38819525.66 -38819525.45 0.0261 0.0111  
 Venus -110995-07-24 00:00 J -38819296.63 -38819296.50 -38819296.34 0.0261 0.0196  
 Moon -110993-01-27 06:14 J -38818744.43 -38818744.24 -38818744.02 0.0261 0.0162  
 Earth -110993-01-27 08:53 J -38818744.32 -38818744.13 -38818743.94 0.0261 0.0175 \*  
 Mars -110991-09-03 05:45 J -38817794.53 -38817794.26 -38817793.98 0.0264 0.0059  
 Mercury -110987-03-07 06:43 J -38816513.32 -38816513.22 -38816513.12 0.0275 0.0203  
 Mercury -110987-06-03 20:09 J -38816424.79 -38816424.66 -38816424.53 0.0276 0.0125  
 Mercury -110987-08-31 09:21 J -38816336.25 -38816336.11 -38816335.97 0.0277 0.0047  
 Mercury -110987-11-27 22:33 J -38816247.70 -38816247.56 -38816247.42 0.0278 0.0031  
 Mercury -110986-02-24 11:31 J -38816159.15 -38816159.02 -38816158.89 0.0279 0.0108  
 Mercury -110986-05-24 00:29 J -38816070.59 -38816070.48 -38816070.38 0.0280 0.0186  
 Mercury -110986-08-20 13:12 J -38815982.00 -38815981.95 -38815981.90 0.0281 0.0263  
 Venus -110982-02-13 18:43 J -38814708.83 -38814708.72 -38814708.62 0.0295 0.0249  
 Venus -110982-10-01 13:41 J -38814479.11 -38814478.93 -38814478.74 0.0297 0.0132  
 Venus -110981-05-18 09:50 J -38814249.30 -38814249.09 -38814248.89 0.0299 0.0010  
 Venus -110980-01-03 06:14 J -38814019.43 -38814019.24 -38814019.05 0.0300 0.0114  
 Venus -110980-08-21 02:38 J -38813789.51 -38813789.39 -38813789.26 0.0300 0.0236  
 Earth -110979-07-23 15:07 J -38813453.08 -38813452.87 -38813452.65 0.0300 0.0119  
 Moon -110979-07-23 16:33 J -38813453.03 -38813452.81 -38813452.58 0.0300 0.0107 \*  
 Mars -110977-10-30 03:50 J -38812623.61 -38812623.34 -38812623.06 0.0296 0.0137  
 Mercury -110974-07-09 00:00 J -38811641.52 -38811641.50 -38811641.47 0.0287 0.0283  
 Mercury -110974-10-05 18:43 J -38811552.84 -38811552.72 -38811552.59 0.0286 0.0187  
 Mercury -110973-01-02 13:41 J -38811464.09 -38811463.93 -38811463.77 0.0285 0.0089  
 Mercury -110973-03-31 08:53 J -38811375.30 -38811375.13 -38811374.96 0.0284 0.0009  
 Mercury -110973-06-28 04:19 J -38811286.48 -38811286.32 -38811286.16 0.0283 0.0108  
 Mercury -110973-09-25 00:00 J -38811197.62 -38811197.50 -38811197.39 0.0282 0.0207  
 Venus -110969-12-14 04:19 J -38809656.41 -38809656.32 -38809656.21 0.0266 0.0234  
 Venus -110968-07-31 10:19 J -38809427.25 -38809427.07 -38809426.89 0.0265 0.0145  
 Venus -110967-03-17 15:21 J -38809198.07 -38809197.86 -38809197.64 0.0263 0.0056  
 Venus -110967-11-01 20:09 J -38808968.88 -38808968.66 -38808968.44 0.0262 0.0033

Venus -110966-06-19 00:14 J -38808739.68 -38808739.49 -38808739.29 0.0262 0.0121  
 Venus -110965-02-03 04:05 J -38808510.45 -38808510.33 -38808510.18 0.0261 0.0206  
 Earth -110964-01-21 06:43 J -38808157.46 -38808157.22 -38808156.96 0.0261 0.0067  
 Moon -110964-01-21 09:21 J -38808157.34 -38808157.11 -38808156.87 0.0261 0.0081 \*  
 Mars -110963-10-27 03:50 J -38807513.50 -38807513.34 -38807513.17 0.0262 0.0211  
 Mars -110961-10-19 10:05 J -38806790.25 -38806790.08 -38806789.88 0.0265 0.0202  
 Mercury -110958-07-25 07:55 J -38805781.25 -38805781.17 -38805781.09 0.0274 0.0229  
 Mercury -110958-10-21 21:07 J -38805692.73 -38805692.62 -38805692.49 0.0275 0.0153  
 Mercury -110957-01-18 10:33 J -38805604.20 -38805604.06 -38805603.92 0.0276 0.0074  
 Mercury -110957-04-15 23:45 J -38805515.65 -38805515.51 -38805515.37 0.0277 0.0004  
 Mercury -110957-07-13 12:43 J -38805427.11 -38805426.97 -38805426.83 0.0278 0.0081  
 Mercury -110957-10-10 01:41 J -38805338.55 -38805338.43 -38805338.32 0.0279 0.0158  
 Mercury -110956-01-06 14:24 J -38805249.97 -38805249.90 -38805249.82 0.0280 0.0234  
 Venus -110953-08-25 19:26 J -38803922.80 -38803922.69 -38803922.56 0.0295 0.0241  
 Venus -110952-04-12 14:38 J -38803693.07 -38803692.89 -38803692.70 0.0297 0.0123  
 Venus -110952-11-28 10:19 J -38803463.28 -38803463.07 -38803462.87 0.0299 0.0006  
 Venus -110951-07-16 06:14 J -38803233.43 -38803233.24 -38803233.05 0.0300 0.0122  
 Venus -110950-03-03 02:24 J -38803003.51 -38803003.40 -38803003.27 0.0300 0.0245  
 Moon -110950-07-17 09:50 J -38802867.19 -38802867.09 -38802866.97 0.0301 0.0262  
 Earth -110950-07-17 10:05 J -38802867.19 -38802867.08 -38802866.94 0.0301 0.0251 \*  
 Mercury -110944-02-21 16:05 J -38800820.93 -38800820.83 -38800820.73 0.0286 0.0228  
 Mercury -110944-05-21 10:48 J -38800732.19 -38800732.05 -38800731.90 0.0285 0.0132  
 Mercury -110944-08-18 06:00 J -38800643.42 -38800643.25 -38800643.09 0.0284 0.0034  
 Mercury -110944-11-15 01:12 J -38800554.61 -38800554.45 -38800554.28 0.0283 0.0065  
 Mercury -110943-02-11 20:38 J -38800465.77 -38800465.64 -38800465.50 0.0282 0.0164  
 Mercury -110943-05-11 16:33 J -38800376.87 -38800376.81 -38800376.75 0.0281 0.0263  
 Venus -110939-06-26 03:21 J -38798870.46 -38798870.36 -38798870.24 0.0266 0.0226  
 Venus -110938-02-10 09:21 J -38798641.29 -38798641.11 -38798640.92 0.0265 0.0137  
 Venus -110938-09-27 14:53 J -38798412.09 -38798411.88 -38798411.66 0.0263 0.0047  
 Venus -110937-05-13 19:41 J -38798182.89 -38798182.68 -38798182.46 0.0262 0.0043

Venus -110937-12-29 00:00 J -38797953.68 -38797953.50 -38797953.30 0.0261 0.0130  
 Venus -110936-08-15 04:05 J -38797724.45 -38797724.33 -38797724.20 0.0261 0.0216  
 Moon -110934-01-28 03:21 J -38797193.48 -38797193.36 -38797193.21 0.0261 0.0216  
 Earth -110934-01-28 06:43 J -38797193.34 -38797193.22 -38797193.08 0.0261 0.0225 \*  
 Mars -110933-12-11 14:53 J -38796510.14 -38796509.88 -38796509.61 0.0263 0.0077  
 Mercury -110929-12-11 08:38 J -38795049.18 -38795049.14 -38795049.09 0.0275 0.0257  
 Mercury -110928-03-09 22:05 J -38794960.68 -38794960.58 -38794960.46 0.0275 0.0180  
 Mercury -110928-06-06 11:31 J -38794872.15 -38794872.02 -38794871.88 0.0276 0.0102  
 Mercury -110928-09-03 00:43 J -38794783.61 -38794783.47 -38794783.33 0.0277 0.0024  
 Mercury -110928-11-30 13:41 J -38794695.06 -38794694.93 -38794694.78 0.0278 0.0055  
 Mercury -110927-02-27 02:38 J -38794606.51 -38794606.39 -38794606.26 0.0279 0.0131  
 Mercury -110927-05-26 15:36 J -38794517.94 -38794517.85 -38794517.76 0.0280 0.0208  
 Venus -110923-03-07 23:17 J -38793136.66 -38793136.53 -38793136.40 0.0295 0.0228  
 Venus -110923-10-23 18:14 J -38792906.92 -38792906.74 -38792906.54 0.0297 0.0110  
 Venus -110922-06-10 14:09 J -38792677.11 -38792676.91 -38792676.70 0.0299 0.0014  
 Venus -110921-01-26 10:19 J -38792447.25 -38792447.07 -38792446.89 0.0300 0.0139  
 Venus -110921-09-12 06:57 J -38792217.31 -38792217.21 -38792217.11 0.0300 0.0261  
 Moon -110920-07-24 06:43 J -38791902.41 -38791902.22 -38791902.02 0.0300 0.0166  
 Earth -110920-07-24 10:05 J -38791902.26 -38791902.08 -38791901.88 0.0300 0.0171 \*  
 Mars -110918-01-29 14:24 J -38791348.18 -38791347.90 -38791347.60 0.0298 0.0108  
 Mercury -110915-07-11 15:36 J -38790088.91 -38790088.85 -38790088.78 0.0287 0.0260  
 Mercury -110915-10-08 10:19 J -38790000.20 -38790000.07 -38789999.93 0.0286 0.0164  
 Mercury -110914-01-05 05:17 J -38789911.44 -38789911.28 -38789911.11 0.0285 0.0067  
 Mercury -110914-04-04 00:43 J -38789822.64 -38789822.47 -38789822.30 0.0284 0.0033  
 Mercury -110914-07-01 20:09 J -38789733.81 -38789733.66 -38789733.51 0.0283 0.0131  
 Mercury -110914-09-28 15:50 J -38789644.93 -38789644.84 -38789644.74 0.0281 0.0231  
 Venus -110909-01-06 07:41 J -38788084.29 -38788084.18 -38788084.04 0.0266 0.0218  
 Venus -110909-08-22 13:55 J -38787855.11 -38787854.92 -38787854.73 0.0265 0.0127  
 Venus -110908-04-08 19:12 J -38787625.92 -38787625.70 -38787625.48 0.0264 0.0037  
 Venus -110908-11-24 00:00 J -38787396.71 -38787396.50 -38787396.28 0.0263 0.0053



Venus -110907-07-11 04:19 J -38787167.50 -38787167.32 -38787167.13 0.0262 0.0141

Venus -110906-02-25 08:24 J -38786938.25 -38786938.15 -38786938.04 0.0261 0.0226

Earth -110905-01-23 05:17 J -38786606.53 -38786606.28 -38786606.02 0.0261 0.0014

Moon -110905-01-23 08:24 J -38786606.41 -38786606.15 -38786605.89 0.0261 0.0026 \*

Mars -110902-01-27 15:36 J -38785506.12 -38785505.85 -38785505.58 0.0264 0.0065

Mercury -110899-07-27 23:45 J -38784228.61 -38784228.51 -38784228.42 0.0274 0.0204

Mercury -110899-10-24 12:57 J -38784140.08 -38784139.96 -38784139.83 0.0275 0.0127

Mercury -110898-01-21 02:09 J -38784051.55 -38784051.41 -38784051.26 0.0276 0.0050

Mercury -110898-04-19 15:21 J -38783963.00 -38783962.86 -38783962.72 0.0277 0.0028

Mercury -110898-07-17 04:19 J -38783874.45 -38783874.32 -38783874.19 0.0278 0.0105

Mercury -110898-10-13 17:17 J -38783785.89 -38783785.78 -38783785.68 0.0279 0.0182

Mercury -110897-01-10 06:00 J -38783697.31 -38783697.25 -38783697.20 0.0280 0.0258

Venus -110894-09-18 01:41 J -38782350.56 -38782350.43 -38782350.29 0.0295 0.0217

Venus -110893-05-04 20:38 J -38782120.83 -38782120.64 -38782120.44 0.0297 0.0098

Venus -110893-12-20 16:05 J -38781891.03 -38781890.83 -38781890.62 0.0298 0.0025

Venus -110892-08-07 12:00 J -38781661.17 -38781661.00 -38781660.82 0.0300 0.0149

Venus -110891-03-25 08:09 J -38781431.23 -38781431.16 -38781431.06 0.0300 0.0271

Earth -110891-07-18 07:55 J -38781316.35 -38781316.17 -38781315.99 0.0300 0.0191

Moon -110891-07-18 11:17 J -38781316.20 -38781316.03 -38781315.84 0.0300 0.0195 \*

Mars -110888-03-23 21:50 J -38780336.85 -38780336.59 -38780336.30 0.0297 0.0137

Mercury -110885-02-25 08:09 J -38779268.27 -38779268.16 -38779268.04 0.0286 0.0203

Mercury -110885-05-24 02:53 J -38779179.53 -38779179.38 -38779179.22 0.0285 0.0107

Mercury -110885-08-20 22:05 J -38779090.75 -38779090.58 -38779090.41 0.0284 0.0008

Mercury -110885-11-17 17:31 J -38779001.93 -38779001.77 -38779001.61 0.0283 0.0091

Mercury -110884-02-14 13:12 J -38778913.08 -38778912.95 -38778912.83 0.0282 0.0190

Venus -110880-07-18 07:26 J -38777298.32 -38777298.19 -38777298.05 0.0266 0.0208

Venus -110879-03-04 13:26 J -38777069.13 -38777068.94 -38777068.74 0.0265 0.0118

Venus -110879-10-19 19:12 J -38776839.92 -38776839.70 -38776839.49 0.0263 0.0027

Venus -110878-06-06 00:00 J -38776610.71 -38776610.50 -38776610.29 0.0262 0.0063

Venus -110877-01-21 04:33 J -38776381.49 -38776381.31 -38776381.13 0.0262 0.0151

Venus -110877-09-06 08:38 J -38776152.22 -38776152.14 -38776152.04 0.0261 0.0237  
 Mars -110874-03-22 05:02 J -38775225.45 -38775225.29 -38775225.11 0.0262 0.0206  
 Mars -110872-03-14 12:43 J -38774502.12 -38774501.97 -38774501.78 0.0266 0.0209  
 Mercury -110870-12-15 00:43 J -38773496.55 -38773496.47 -38773496.39 0.0275 0.0231  
 Mercury -110869-03-12 13:55 J -38773408.03 -38773407.92 -38773407.79 0.0276 0.0154  
 Mercury -110869-06-09 03:21 J -38773319.50 -38773319.36 -38773319.22 0.0277 0.0076  
 Mercury -110869-09-05 16:33 J -38773230.95 -38773230.81 -38773230.67 0.0278 0.0002  
 Mercury -110869-12-03 05:31 J -38773142.40 -38773142.27 -38773142.13 0.0279 0.0079  
 Mercury -110868-03-01 18:29 J -38773053.85 -38773053.73 -38773053.61 0.0280 0.0156  
 Mercury -110868-05-29 07:12 J -38772965.27 -38772965.20 -38772965.12 0.0281 0.0233  
 Venus -110864-03-30 06:00 J -38771564.39 -38771564.25 -38771564.10 0.0296 0.0204  
 Venus -110864-11-15 00:57 J -38771334.65 -38771334.46 -38771334.26 0.0297 0.0084  
 Venus -110863-07-02 20:38 J -38771104.84 -38771104.64 -38771104.43 0.0299 0.0040  
 Venus -110862-02-17 16:48 J -38770874.97 -38770874.80 -38770874.63 0.0300 0.0165  
 Venus -110862-10-05 13:12 J -38770645.00 -38770644.95 -38770644.89 0.0300 0.0287  
 Moon -110861-07-25 06:57 J -38770351.34 -38770351.21 -38770351.06 0.0300 0.0233  
 Earth -110861-07-25 08:24 J -38770351.29 -38770351.15 -38770350.99 0.0300 0.0231 \*  
 Mercury -110856-07-14 07:41 J -38768536.26 -38768536.18 -38768536.08 0.0286 0.0235  
 Mercury -110856-10-11 02:38 J -38768447.53 -38768447.39 -38768447.24 0.0285 0.0137  
 Mercury -110855-01-07 21:36 J -38768358.76 -38768358.60 -38768358.43 0.0284 0.0041  
 Mercury -110855-04-06 17:02 J -38768269.96 -38768269.79 -38768269.62 0.0283 0.0059  
 Mercury -110855-07-04 12:29 J -38768181.12 -38768180.98 -38768180.83 0.0282 0.0158  
 Mercury -110855-10-01 08:09 J -38768092.22 -38768092.16 -38768092.08 0.0281 0.0257  
 Venus -110850-01-28 12:14 J -38766512.13 -38766511.99 -38766511.84 0.0266 0.0199  
 Venus -110850-09-14 18:29 J -38766282.93 -38766282.73 -38766282.53 0.0265 0.0107  
 Venus -110849-05-01 00:00 J -38766053.72 -38766053.50 -38766053.28 0.0264 0.0016  
 Venus -110849-12-16 04:48 J -38765824.51 -38765824.30 -38765824.08 0.0263 0.0074  
 Venus -110848-08-02 09:21 J -38765595.28 -38765595.11 -38765594.94 0.0262 0.0162  
 Venus -110847-03-19 13:41 J -38765365.99 -38765365.93 -38765365.86 0.0262 0.0248  
 Moon -110846-01-24 03:07 J -38765055.63 -38765055.37 -38765055.11 0.0261 0.0034

Earth -110846-01-24 05:31 J -38765055.53 -38765055.27 -38765055.02 0.0261 0.0041 \*  
 Mars -110844-05-07 04:05 J -38764221.59 -38764221.33 -38764221.05 0.0263 0.0065  
 Mercury -110840-05-03 02:24 J -38762764.45 -38762764.40 -38762764.34 0.0274 0.0253  
 Mercury -110840-07-30 15:50 J -38762675.94 -38762675.84 -38762675.72 0.0275 0.0176  
 Mercury -110840-10-27 05:17 J -38762587.41 -38762587.28 -38762587.14 0.0276 0.0098  
 Mercury -110839-01-23 18:29 J -38762498.87 -38762498.73 -38762498.58 0.0277 0.0021  
 Mercury -110839-04-22 07:26 J -38762410.32 -38762410.19 -38762410.05 0.0278 0.0057  
 Mercury -110839-07-19 20:24 J -38762321.77 -38762321.65 -38762321.52 0.0278 0.0133  
 Mercury -110839-10-16 09:21 J -38762233.21 -38762233.11 -38762233.02 0.0279 0.0209  
 Venus -110835-10-10 10:05 J -38760778.23 -38760778.08 -38760777.92 0.0295 0.0191  
 Venus -110834-05-28 04:48 J -38760548.50 -38760548.30 -38760548.10 0.0297 0.0071  
 Venus -110833-01-13 00:14 J -38760318.69 -38760318.49 -38760318.29 0.0298 0.0053  
 Venus -110833-08-29 19:55 J -38760088.83 -38760088.67 -38760088.50 0.0299 0.0177  
 Venus -110832-04-16 16:05 J -38759858.84 -38759858.83 -38759858.80 0.0300 0.0298  
 Earth -110832-07-19 08:38 J -38759765.35 -38759765.14 -38759764.92 0.0300 0.0124  
 Moon -110832-07-19 09:21 J -38759765.33 -38759765.11 -38759764.88 0.0300 0.0122 \*  
 Mars -110830-06-23 19:41 J -38759060.96 -38759060.68 -38759060.37 0.0298 0.0101  
 Mercury -110827-12-01 06:14 J -38757804.29 -38757804.24 -38757804.19 0.0287 0.0270  
 Mercury -110826-02-28 00:57 J -38757715.59 -38757715.46 -38757715.33 0.0286 0.0174  
 Mercury -110826-05-27 19:41 J -38757626.84 -38757626.68 -38757626.51 0.0285 0.0078  
 Mercury -110826-08-24 14:53 J -38757538.04 -38757537.88 -38757537.71 0.0284 0.0022  
 Mercury -110826-11-21 10:19 J -38757449.22 -38757449.07 -38757448.91 0.0283 0.0120  
 Mercury -110825-02-18 06:00 J -38757360.35 -38757360.25 -38757360.14 0.0282 0.0219  
 Venus -110821-08-09 12:43 J -38755726.12 -38755725.97 -38755725.82 0.0266 0.0189  
 Venus -110820-03-26 18:43 J -38755496.92 -38755496.72 -38755496.51 0.0265 0.0098  
 Venus -110820-11-11 00:29 J -38755267.70 -38755267.48 -38755267.26 0.0263 0.0006  
 Venus -110819-06-28 05:31 J -38755038.48 -38755038.27 -38755038.06 0.0262 0.0084  
 Venus -110818-02-12 10:05 J -38754809.24 -38754809.08 -38754808.91 0.0262 0.0173  
 Venus -110818-09-29 14:24 J -38754579.92 -38754579.90 -38754579.86 0.0261 0.0259  
 Earth -110817-01-18 21:21 J -38754468.74 -38754468.61 -38754468.45 0.0261 0.0214

Moon -110817-01-18 23:31 J -38754468.63 -38754468.52 -38754468.38 0.0261 0.0224 \*  
 Mars -110814-06-22 21:36 J -38753217.86 -38753217.60 -38753217.32 0.0264 0.0074  
 Mercury -110811-12-17 17:02 J -38751943.88 -38751943.79 -38751943.69 0.0275 0.0202  
 Mercury -110810-03-16 06:29 J -38751855.36 -38751855.23 -38751855.10 0.0276 0.0124  
 Mercury -110810-06-12 19:41 J -38751766.82 -38751766.68 -38751766.53 0.0277 0.0047  
 Mercury -110810-09-09 08:53 J -38751678.27 -38751678.13 -38751677.99 0.0278 0.0031  
 Mercury -110810-12-06 21:50 J -38751589.72 -38751589.59 -38751589.46 0.0279 0.0108  
 Mercury -110809-03-04 10:48 J -38751501.16 -38751501.05 -38751500.95 0.0280 0.0184  
 Mercury -110809-05-31 23:31 J -38751412.57 -38751412.52 -38751412.47 0.0281 0.0260  
 Venus -110806-09-04 20:38 J -38750221.65 -38750221.64 -38750221.62 0.0294 0.0293  
 Venus -110805-04-21 14:53 J -38749992.04 -38749991.88 -38749991.71 0.0296 0.0178  
 Venus -110805-12-07 09:50 J -38749762.29 -38749762.09 -38749761.88 0.0297 0.0057  
 Venus -110804-07-25 05:31 J -38749532.47 -38749532.27 -38749532.07 0.0299 0.0069  
 Venus -110803-03-12 01:26 J -38749302.59 -38749302.44 -38749302.28 0.0300 0.0194  
 Mars -110800-08-17 01:41 J -38748048.70 -38748048.43 -38748048.16 0.0296 0.0143  
 Mercury -110797-07-17 00:57 J -38746983.57 -38746983.46 -38746983.34 0.0286 0.0203  
 Mercury -110797-10-13 19:55 J -38746894.82 -38746894.67 -38746894.52 0.0285 0.0106  
 Mercury -110796-01-10 15:07 J -38746806.04 -38746805.87 -38746805.70 0.0284 0.0009  
 Mercury -110796-04-09 10:19 J -38746717.23 -38746717.07 -38746716.90 0.0283 0.0091  
 Mercury -110796-07-07 06:00 J -38746628.37 -38746628.25 -38746628.12 0.0282 0.0189  
 Venus -110791-02-19 18:14 J -38744939.89 -38744939.74 -38744939.57 0.0266 0.0178  
 Venus -110791-10-07 00:43 J -38744710.67 -38744710.47 -38744710.26 0.0265 0.0086  
 Venus -110790-05-24 06:14 J -38744481.45 -38744481.24 -38744481.02 0.0264 0.0008  
 Venus -110789-01-08 11:17 J -38744252.23 -38744252.03 -38744251.82 0.0263 0.0096  
 Venus -110789-08-24 15:50 J -38744022.99 -38744022.84 -38744022.68 0.0262 0.0185  
 Moon -110787-01-25 04:33 J -38743504.54 -38743504.31 -38743504.07 0.0262 0.0098  
 Earth -110787-01-25 07:55 J -38743504.41 -38743504.17 -38743503.94 0.0262 0.0101 \*  
 Mars -110786-08-16 00:43 J -38742936.65 -38742936.47 -38742936.27 0.0263 0.0189  
 Mars -110784-08-08 09:36 J -38742213.25 -38742213.10 -38742212.95 0.0266 0.0223  
 Mercury -110781-05-05 19:26 J -38741211.77 -38741211.69 -38741211.60 0.0274 0.0221

Mercury -110781-08-02 08:53 J -38741123.25 -38741123.13 -38741123.00 0.0275 0.0144  
 Mercury -110781-10-29 22:05 J -38741034.72 -38741034.58 -38741034.43 0.0276 0.0067  
 Mercury -110780-01-26 11:17 J -38740946.17 -38740946.03 -38740945.88 0.0277 0.0011  
 Mercury -110780-04-25 00:14 J -38740857.62 -38740857.49 -38740857.35 0.0278 0.0088  
 Mercury -110780-07-22 13:12 J -38740769.06 -38740768.95 -38740768.84 0.0279 0.0164  
 Mercury -110780-10-19 01:55 J -38740680.49 -38740680.42 -38740680.35 0.0280 0.0240  
 Venus -110776-03-17 02:53 J -38739435.43 -38739435.38 -38739435.31 0.0293 0.0278  
 Venus -110776-11-01 20:53 J -38739205.79 -38739205.63 -38739205.45 0.0295 0.0163  
 Venus -110775-06-19 15:50 J -38738976.04 -38738975.84 -38738975.64 0.0297 0.0040  
 Venus -110774-02-04 11:02 J -38738746.23 -38738746.04 -38738745.84 0.0298 0.0085  
 Venus -110774-09-22 06:57 J -38738516.36 -38738516.21 -38738516.07 0.0299 0.0209  
 Moon -110773-07-20 11:17 J -38738214.27 -38738214.03 -38738213.80 0.0300 0.0038  
 Earth -110773-07-20 14:38 J -38738214.12 -38738213.89 -38738213.66 0.0300 0.0045 \*  
 Mercury -110768-12-04 00:00 J -38736251.59 -38736251.50 -38736251.41 0.0287 0.0236  
 Mercury -110767-03-02 18:43 J -38736162.86 -38736162.72 -38736162.57 0.0286 0.0140  
 Mercury -110767-05-30 13:41 J -38736074.09 -38736073.93 -38736073.76 0.0285 0.0043  
 Mercury -110767-08-27 08:53 J -38735985.29 -38735985.13 -38735984.96 0.0284 0.0057  
 Mercury -110767-11-24 04:33 J -38735896.45 -38735896.31 -38735896.17 0.0283 0.0155  
 Mercury -110766-02-21 00:14 J -38735807.56 -38735807.49 -38735807.42 0.0282 0.0254  
 Venus -110762-01-15 12:43 J -38734383.00 -38734382.97 -38734382.90 0.0268 0.0260  
 Venus -110762-09-01 19:55 J -38734153.84 -38734153.67 -38734153.50 0.0266 0.0167  
 Venus -110761-04-18 02:09 J -38733924.62 -38733924.41 -38733924.20 0.0264 0.0075  
 Venus -110761-12-03 07:41 J -38733695.40 -38733695.18 -38733694.96 0.0263 0.0017  
 Venus -110760-07-20 12:43 J -38733466.16 -38733465.97 -38733465.77 0.0262 0.0108  
 Venus -110759-03-06 17:17 J -38733236.91 -38733236.78 -38733236.62 0.0262 0.0197  
 Earth -110758-01-20 00:57 J -38732917.66 -38732917.46 -38732917.24 0.0261 0.0152  
 Moon -110758-01-20 04:33 J -38732917.51 -38732917.31 -38732917.10 0.0261 0.0159 \*  
 Mars -110756-09-30 16:48 J -38731933.07 -38731932.80 -38731932.52 0.0263 0.0054  
 Mercury -110752-09-22 20:53 J -38730479.69 -38730479.63 -38730479.56 0.0274 0.0245  
 Mercury -110752-12-20 10:19 J -38730391.18 -38730391.07 -38730390.95 0.0275 0.0168

Mercury -110751-03-18 23:45 J -38730302.65 -38730302.51 -38730302.37 0.0276 0.0091

Mercury -110751-06-15 12:57 J -38730214.11 -38730213.96 -38730213.82 0.0277 0.0014

Mercury -110751-09-12 01:55 J -38730125.56 -38730125.42 -38730125.28 0.0278 0.0064

Mercury -110751-12-09 14:53 J -38730037.00 -38730036.88 -38730036.76 0.0279 0.0140

Mercury -110750-03-08 03:36 J -38729948.43 -38729948.35 -38729948.26 0.0280 0.0217

Venus -110747-09-27 08:24 J -38728649.23 -38728649.15 -38728649.05 0.0294 0.0265

Venus -110746-05-15 02:53 J -38728419.56 -38728419.38 -38728419.20 0.0296 0.0147

Venus -110746-12-30 21:50 J -38728189.80 -38728189.59 -38728189.39 0.0298 0.0024

Venus -110745-08-16 17:17 J -38727959.97 -38727959.78 -38727959.59 0.0299 0.0102

Venus -110744-04-03 12:57 J -38727730.08 -38727729.96 -38727729.82 0.0300 0.0227

Mars -110742-11-17 15:21 J -38726772.16 -38726771.86 -38726771.56 0.0298 0.0085

Mercury -110738-04-23 00:29 J -38725519.54 -38725519.48 -38725519.41 0.0287 0.0262

Mercury -110738-07-20 19:12 J -38725430.83 -38725430.70 -38725430.56 0.0286 0.0167

Mercury -110738-10-17 14:09 J -38725342.07 -38725341.91 -38725341.75 0.0285 0.0070

Mercury -110737-01-14 09:21 J -38725253.28 -38725253.11 -38725252.94 0.0284 0.0029

Mercury -110737-04-12 04:48 J -38725164.45 -38725164.30 -38725164.15 0.0283 0.0127

Mercury -110737-07-10 00:29 J -38725075.58 -38725075.48 -38725075.38 0.0282 0.0226

Venus -110733-07-27 19:41 J -38723596.76 -38723596.68 -38723596.60 0.0268 0.0247

Venus -110732-03-14 02:09 J -38723367.58 -38723367.41 -38723367.22 0.0266 0.0155

Venus -110732-10-29 08:38 J -38723138.35 -38723138.14 -38723137.92 0.0265 0.0062

Venus -110731-06-15 14:24 J -38722909.12 -38722908.90 -38722908.68 0.0264 0.0030

Venus -110730-01-30 19:26 J -38722679.88 -38722679.69 -38722679.49 0.0263 0.0121

Venus -110730-09-17 00:14 J -38722450.62 -38722450.49 -38722450.35 0.0262 0.0209

Earth -110728-01-26 12:57 J -38721953.15 -38721952.96 -38721952.75 0.0262 0.0166

Moon -110728-01-26 14:09 J -38721953.09 -38721952.91 -38721952.71 0.0262 0.0167 \*

Mars -110726-11-17 01:26 J -38720928.69 -38720928.44 -38720928.17 0.0265 0.0095

Mercury -110722-02-09 23:31 J -38719747.56 -38719747.52 -38719747.48 0.0274 0.0263

Mercury -110722-05-09 12:57 J -38719659.06 -38719658.96 -38719658.85 0.0275 0.0186

Mercury -110722-08-06 02:24 J -38719570.53 -38719570.40 -38719570.27 0.0276 0.0108

Mercury -110722-11-02 15:36 J -38719481.99 -38719481.85 -38719481.70 0.0277 0.0032

Mercury -110721-01-30 04:48 J -38719393.44 -38719393.30 -38719393.16 0.0277 0.0046

Mercury -110721-04-27 17:45 J -38719304.89 -38719304.76 -38719304.64 0.0278 0.0122

Mercury -110721-07-25 06:29 J -38719216.33 -38719216.23 -38719216.13 0.0279 0.0198

Mercury -110721-10-21 19:12 J -38719127.72 -38719127.70 -38719127.67 0.0280 0.0274

Venus -110717-04-08 16:19 J -38717862.92 -38717862.82 -38717862.71 0.0294 0.0248

Venus -110717-11-24 10:19 J -38717633.25 -38717633.07 -38717632.88 0.0296 0.0130

Venus -110716-07-12 05:17 J -38717403.49 -38717403.28 -38717403.08 0.0297 0.0006

Venus -110715-02-27 00:29 J -38717173.66 -38717173.48 -38717173.29 0.0298 0.0120

Venus -110715-10-14 20:09 J -38716943.77 -38716943.66 -38716943.54 0.0299 0.0243

Moon -110714-07-22 23:02 J -38716662.76 -38716662.54 -38716662.31 0.0300 0.0051

Earth -110714-07-23 00:57 J -38716662.70 -38716662.46 -38716662.23 0.0300 0.0043 \*

Mars -110711-01-10 18:43 J -38715759.96 -38715759.72 -38715759.45 0.0296 0.0168

Mercury -110709-12-06 18:57 J -38714698.82 -38714698.71 -38714698.59 0.0286 0.0196

Mercury -110708-03-05 13:55 J -38714610.08 -38714609.92 -38714609.77 0.0285 0.0099

Mercury -110708-06-02 08:53 J -38714521.29 -38714521.13 -38714520.96 0.0284 0.0007

Mercury -110708-08-30 04:19 J -38714432.48 -38714432.32 -38714432.16 0.0283 0.0097

Mercury -110708-11-26 23:45 J -38714343.63 -38714343.51 -38714343.38 0.0282 0.0196

Venus -110703-02-06 22:19 J -38712810.66 -38712810.57 -38712810.46 0.0267 0.0236

Venus -110703-09-24 05:17 J -38712581.46 -38712581.28 -38712581.09 0.0266 0.0143

Venus -110702-05-11 11:17 J -38712352.24 -38712352.03 -38712351.81 0.0264 0.0051

Venus -110702-12-26 17:02 J -38712123.01 -38712122.79 -38712122.58 0.0263 0.0043

Venus -110701-08-11 22:05 J -38711893.77 -38711893.58 -38711893.39 0.0262 0.0133

Venus -110700-03-29 02:53 J -38711664.49 -38711664.38 -38711664.26 0.0262 0.0222

Moon -110699-01-21 06:57 J -38711366.46 -38711366.21 -38711365.95 0.0262 0.0088

Earth -110699-01-21 07:55 J -38711366.40 -38711366.17 -38711365.92 0.0262 0.0085 \*

Mars -110697-01-09 18:29 J -38710647.92 -38710647.73 -38710647.51 0.0263 0.0177

Mars -110695-01-02 05:45 J -38709924.37 -38709924.26 -38709924.12 0.0266 0.0239

Mercury -110693-09-25 14:38 J -38708926.98 -38708926.89 -38708926.79 0.0275 0.0209

Mercury -110693-12-23 04:05 J -38708838.45 -38708838.33 -38708838.20 0.0276 0.0132

Mercury -110692-03-21 17:31 J -38708749.92 -38708749.77 -38708749.63 0.0277 0.0055

Mercury -110692-06-18 06:29 J -38708661.37 -38708661.23 -38708661.08 0.0278 0.0024

Mercury -110692-09-14 19:26 J -38708572.82 -38708572.69 -38708572.55 0.0279 0.0100

Mercury -110692-12-12 08:24 J -38708484.26 -38708484.15 -38708484.04 0.0280 0.0176

Mercury -110691-03-10 21:07 J -38708395.67 -38708395.62 -38708395.56 0.0281 0.0252

Venus -110688-10-19 23:02 J -38707076.67 -38707076.54 -38707076.42 0.0295 0.0233

Venus -110687-06-06 17:02 J -38706846.97 -38706846.79 -38706846.59 0.0296 0.0114

Venus -110686-01-22 12:14 J -38706617.20 -38706616.99 -38706616.79 0.0298 0.0012

Venus -110686-09-09 07:26 J -38706387.36 -38706387.19 -38706387.00 0.0299 0.0138

Venus -110685-04-26 03:36 J -38706157.44 -38706157.35 -38706157.25 0.0300 0.0262

Earth -110685-07-16 09:21 J -38706076.14 -38706076.11 -38706076.05 0.0300 0.0294

Moon -110685-07-16 11:02 J -38706076.09 -38706076.04 -38706075.96 0.0300 0.0289 \*

Mercury -110679-04-25 19:55 J -38703966.77 -38703966.67 -38703966.56 0.0286 0.0220

Mercury -110679-07-23 14:53 J -38703878.03 -38703877.88 -38703877.73 0.0285 0.0124

Mercury -110679-10-20 09:50 J -38703789.26 -38703789.09 -38703788.92 0.0284 0.0026

Mercury -110678-01-17 05:02 J -38703700.45 -38703700.29 -38703700.12 0.0283 0.0072

Mercury -110678-04-16 00:29 J -38703611.61 -38703611.48 -38703611.34 0.0282 0.0171

Mercury -110678-07-13 20:09 J -38703522.70 -38703522.66 -38703522.60 0.0281 0.0269

Venus -110674-08-20 05:31 J -38702024.38 -38702024.27 -38702024.14 0.0267 0.0223

Venus -110673-04-05 12:29 J -38701795.17 -38701794.98 -38701794.79 0.0266 0.0129

Venus -110673-11-20 18:43 J -38701565.94 -38701565.72 -38701565.51 0.0265 0.0036

Venus -110672-07-08 00:14 J -38701336.70 -38701336.49 -38701336.27 0.0264 0.0057

Venus -110671-02-22 05:17 J -38701107.45 -38701107.28 -38701107.09 0.0263 0.0148

Venus -110671-10-09 10:33 J -38700878.15 -38700878.06 -38700877.97 0.0262 0.0236

Earth -110669-01-28 21:21 J -38700401.71 -38700401.61 -38700401.49 0.0262 0.0235

Moon -110669-01-29 00:57 J -38700401.55 -38700401.46 -38700401.35 0.0262 0.0238 \*

Mars -110667-02-25 02:09 J -38699643.69 -38699643.41 -38699643.13 0.0264 0.0030

Mercury -110663-02-12 17:45 J -38698194.84 -38698194.76 -38698194.68 0.0275 0.0224

Mercury -110663-05-12 07:12 J -38698106.32 -38698106.20 -38698106.07 0.0275 0.0147

Mercury -110663-08-08 20:24 J -38698017.78 -38698017.65 -38698017.50 0.0276 0.0071

Mercury -110663-11-05 09:50 J -38697929.24 -38697929.09 -38697928.95 0.0277 0.0011



Mercury -110662-02-01 22:48 J -38697840.69 -38697840.55 -38697840.42 0.0278 0.0084  
 Mercury -110662-05-01 11:31 J -38697752.13 -38697752.02 -38697751.90 0.0279 0.0161  
 Mercury -110662-07-29 00:14 J -38697663.55 -38697663.49 -38697663.41 0.0280 0.0237  
 Venus -110658-05-02 08:24 J -38696290.28 -38696290.15 -38696290.00 0.0294 0.0214  
 Venus -110658-12-18 02:38 J -38696060.58 -38696060.39 -38696060.19 0.0296 0.0093  
 Venus -110657-08-03 21:36 J -38695830.81 -38695830.60 -38695830.40 0.0297 0.0032  
 Venus -110656-03-21 17:02 J -38695600.97 -38695600.79 -38695600.62 0.0299 0.0158  
 Venus -110656-11-06 12:29 J -38695371.04 -38695370.98 -38695370.90 0.0299 0.0281  
 Earth -110655-07-24 15:50 J -38695111.05 -38695110.84 -38695110.64 0.0299 0.0141  
 Moon -110655-07-24 18:00 J -38695110.94 -38695110.75 -38695110.55 0.0299 0.0153 \*  
 Mars -110653-04-13 05:17 J -38694482.58 -38694482.28 -38694481.97 0.0298 0.0051  
 Mercury -110650-09-12 20:38 J -38693234.72 -38693234.64 -38693234.56 0.0287 0.0245  
 Mercury -110650-12-10 15:07 J -38693146.00 -38693145.87 -38693145.72 0.0286 0.0149  
 Mercury -110649-03-08 10:05 J -38693057.24 -38693057.08 -38693056.91 0.0285 0.0053  
 Mercury -110649-06-05 05:17 J -38692968.44 -38692968.28 -38692968.11 0.0284 0.0046  
 Mercury -110649-09-02 00:43 J -38692879.61 -38692879.47 -38692879.32 0.0283 0.0144  
 Mercury -110649-11-29 20:24 J -38692790.73 -38692790.65 -38692790.56 0.0282 0.0242  
 Venus -110644-03-01 09:36 J -38691238.22 -38691238.10 -38691237.96 0.0267 0.0210  
 Venus -110644-10-16 16:19 J -38691009.01 -38691008.82 -38691008.61 0.0265 0.0117  
 Venus -110643-06-02 22:33 J -38690779.78 -38690779.56 -38690779.34 0.0264 0.0023  
 Venus -110642-01-18 04:05 J -38690550.54 -38690550.33 -38690550.12 0.0263 0.0070  
 Venus -110642-09-04 09:07 J -38690321.29 -38690321.12 -38690320.94 0.0262 0.0161  
 Venus -110641-04-20 13:55 J -38690091.97 -38690091.92 -38690091.84 0.0262 0.0249  
 Moon -110640-01-22 14:09 J -38689815.16 -38689814.91 -38689814.65 0.0262 0.0014  
 Earth -110640-01-22 18:00 J -38689815.01 -38689814.75 -38689814.49 0.0262 0.0012 \*  
 Mars -110637-04-12 02:38 J -38688639.64 -38688639.39 -38688639.14 0.0265 0.0110  
 Mercury -110634-07-02 19:12 J -38687462.75 -38687462.70 -38687462.63 0.0274 0.0248  
 Mercury -110634-09-29 08:53 J -38687374.24 -38687374.13 -38687374.01 0.0275 0.0170  
 Mercury -110634-12-26 22:19 J -38687285.70 -38687285.57 -38687285.43 0.0276 0.0092  
 Mercury -110633-03-24 11:31 J -38687197.16 -38687197.02 -38687196.87 0.0277 0.0016

Mercury -110633-06-21 00:43 J -38687108.61 -38687108.47 -38687108.33 0.0278 0.0062

Mercury -110633-09-17 13:26 J -38687020.06 -38687019.94 -38687019.81 0.0279 0.0139

Mercury -110633-12-15 02:24 J -38686931.49 -38686931.40 -38686931.31 0.0280 0.0215

Venus -110629-11-11 15:07 J -38685504.02 -38685503.87 -38685503.72 0.0295 0.0198

Venus -110628-06-29 09:21 J -38685274.30 -38685274.11 -38685273.91 0.0297 0.0077

Venus -110627-02-14 04:33 J -38685044.51 -38685044.31 -38685044.11 0.0298 0.0050

Venus -110627-10-02 00:00 J -38684814.66 -38684814.50 -38684814.33 0.0299 0.0176

Venus -110626-05-19 19:55 J -38684584.67 -38684584.67 -38684584.65 0.0300 0.0299

Moon -110626-07-18 22:05 J -38684524.76 -38684524.58 -38684524.39 0.0300 0.0186

Earth -110626-07-19 00:43 J -38684524.64 -38684524.47 -38684524.29 0.0300 0.0195 \*

Mars -110623-06-07 15:50 J -38683470.05 -38683469.84 -38683469.59 0.0296 0.0195

Mercury -110620-01-29 21:50 J -38682502.64 -38682502.59 -38682502.53 0.0287 0.0268

Mercury -110620-04-28 16:19 J -38682413.94 -38682413.82 -38682413.68 0.0286 0.0173

Mercury -110620-07-26 11:17 J -38682325.19 -38682325.03 -38682324.87 0.0285 0.0076

Mercury -110620-10-23 06:29 J -38682236.40 -38682236.23 -38682236.06 0.0284 0.0022

Mercury -110619-01-20 01:55 J -38682147.58 -38682147.42 -38682147.27 0.0283 0.0120

Mercury -110619-04-18 21:21 J -38682058.71 -38682058.61 -38682058.50 0.0282 0.0218

Venus -110615-09-11 17:45 J -38680451.90 -38680451.76 -38680451.61 0.0267 0.0195

Venus -110614-04-29 00:29 J -38680222.68 -38680222.48 -38680222.28 0.0265 0.0101

Venus -110614-12-14 06:29 J -38679993.45 -38679993.23 -38679993.01 0.0264 0.0007

Venus -110613-07-30 12:00 J -38679764.21 -38679764.00 -38679763.79 0.0263 0.0085

Venus -110612-03-16 17:02 J -38679534.94 -38679534.79 -38679534.62 0.0263 0.0176

Earth -110611-01-17 20:38 J -38679227.73 -38679227.64 -38679227.53 0.0262 0.0242

Moon -110611-01-18 00:29 J -38679227.54 -38679227.48 -38679227.38 0.0262 0.0249 \*

Mars -110609-06-05 07:55 J -38678358.39 -38678358.17 -38678357.93 0.0263 0.0151

Mars -110607-05-29 21:36 J -38677634.61 -38677634.60 -38677634.56 0.0267 0.0266

Mercury -110605-11-18 22:33 J -38676730.60 -38676730.56 -38676730.51 0.0274 0.0262

Mercury -110604-02-15 12:14 J -38676642.10 -38676641.99 -38676641.88 0.0275 0.0184

Mercury -110604-05-15 01:41 J -38676553.56 -38676553.43 -38676553.30 0.0276 0.0107

Mercury -110604-08-11 14:53 J -38676465.02 -38676464.88 -38676464.73 0.0277 0.0030

Mercury -110604-11-08 04:05 J -38676376.47 -38676376.33 -38676376.19 0.0278 0.0048

Mercury -110603-02-04 17:02 J -38676287.92 -38676287.79 -38676287.66 0.0279 0.0124

Mercury -110603-05-04 05:45 J -38676199.35 -38676199.26 -38676199.16 0.0280 0.0201

Mercury -110603-07-31 18:29 J -38676110.74 -38676110.73 -38676110.70 0.0281 0.0277

Venus -110599-05-25 01:41 J -38674717.58 -38674717.43 -38674717.26 0.0295 0.0177

Venus -110598-01-09 20:24 J -38674487.86 -38674487.65 -38674487.45 0.0296 0.0054

Venus -110598-08-27 15:21 J -38674258.06 -38674257.86 -38674257.66 0.0298 0.0073

Venus -110597-04-13 10:33 J -38674028.20 -38674028.06 -38674027.90 0.0299 0.0199

Earth -110596-07-26 09:07 J -38673559.24 -38673559.12 -38673558.98 0.0299 0.0244

Moon -110596-07-26 12:14 J -38673559.10 -38673558.99 -38673558.86 0.0299 0.0256 \*

Mars -110595-07-15 14:24 J -38673205.01 -38673204.90 -38673204.75 0.0299 0.0271

Mercury -110591-09-15 17:31 J -38671681.88 -38671681.77 -38671681.65 0.0286 0.0195

Mercury -110591-12-13 12:14 J -38671593.14 -38671592.99 -38671592.83 0.0285 0.0099

Mercury -110590-03-12 07:26 J -38671504.36 -38671504.19 -38671504.02 0.0284 0.0002

Mercury -110590-06-09 02:38 J -38671415.55 -38671415.39 -38671415.23 0.0283 0.0097

Mercury -110590-09-05 22:05 J -38671326.70 -38671326.58 -38671326.45 0.0282 0.0195

Venus -110585-03-23 22:48 J -38669665.70 -38669665.55 -38669665.38 0.0266 0.0182

Venus -110585-11-08 05:17 J -38669436.48 -38669436.28 -38669436.07 0.0265 0.0087

Venus -110584-06-25 11:17 J -38669207.25 -38669207.03 -38669206.81 0.0264 0.0007

Venus -110583-02-09 16:33 J -38668978.01 -38668977.81 -38668977.60 0.0263 0.0100

Venus -110583-09-26 21:50 J -38668748.74 -38668748.59 -38668748.44 0.0262 0.0190

Moon -110581-01-25 05:02 J -38668263.53 -38668263.29 -38668263.05 0.0262 0.0065

Earth -110581-01-25 05:31 J -38668263.52 -38668263.27 -38668263.02 0.0262 0.0063 \*

Mars -110579-07-22 06:43 J -38667354.49 -38667354.22 -38667353.94 0.0264 0.0015

Mercury -110575-07-05 14:09 J -38665910.01 -38665909.91 -38665909.82 0.0275 0.0206

Mercury -110575-10-02 03:36 J -38665821.48 -38665821.35 -38665821.22 0.0276 0.0129

Mercury -110575-12-29 16:48 J -38665732.94 -38665732.80 -38665732.65 0.0277 0.0052

Mercury -110574-03-28 06:00 J -38665644.39 -38665644.25 -38665644.11 0.0278 0.0026

Mercury -110574-06-24 18:57 J -38665555.84 -38665555.71 -38665555.57 0.0279 0.0103

Mercury -110574-09-21 07:55 J -38665467.27 -38665467.17 -38665467.06 0.0280 0.0179

Mercury -110574-12-18 20:53 J -38665378.69 -38665378.63 -38665378.58 0.0281 0.0255  
 Venus -110570-04-19 15:07 J -38664160.93 -38664160.87 -38664160.81 0.0294 0.0279  
 Venus -110570-12-05 08:53 J -38663931.30 -38663931.13 -38663930.96 0.0296 0.0161  
 Venus -110569-07-22 03:36 J -38663701.56 -38663701.35 -38663701.15 0.0297 0.0037  
 Venus -110568-03-08 22:33 J -38663471.75 -38663471.56 -38663471.36 0.0298 0.0091  
 Venus -110568-10-24 18:14 J -38663241.87 -38663241.74 -38663241.59 0.0299 0.0217  
 Moon -110567-07-20 15:36 J -38662973.07 -38662972.85 -38662972.62 0.0300 0.0080  
 Earth -110567-07-20 18:43 J -38662972.94 -38662972.72 -38662972.49 0.0300 0.0089 \*  
 Mars -110565-09-08 10:19 J -38662192.38 -38662192.07 -38662191.75 0.0297 0.0018  
 Mercury -110561-02-02 18:43 J -38660949.82 -38660949.72 -38660949.61 0.0286 0.0218  
 Mercury -110561-05-01 13:26 J -38660861.08 -38660860.94 -38660860.78 0.0285 0.0122  
 Mercury -110561-07-29 08:38 J -38660772.31 -38660772.14 -38660771.98 0.0284 0.0026  
 Mercury -110561-10-26 03:50 J -38660683.51 -38660683.34 -38660683.18 0.0283 0.0073  
 Mercury -110560-01-22 23:17 J -38660594.67 -38660594.53 -38660594.40 0.0282 0.0171  
 Mercury -110560-04-21 18:57 J -38660505.75 -38660505.71 -38660505.66 0.0281 0.0269  
 Venus -110556-02-16 23:31 J -38659108.55 -38659108.52 -38659108.45 0.0268 0.0260  
 Venus -110556-10-04 06:57 J -38658879.37 -38658879.21 -38658879.03 0.0266 0.0166  
 Venus -110555-05-21 13:26 J -38658650.15 -38658649.94 -38658649.73 0.0265 0.0072  
 Venus -110554-01-05 19:26 J -38658420.91 -38658420.69 -38658420.47 0.0264 0.0023  
 Venus -110554-08-23 00:43 J -38658191.66 -38658191.47 -38658191.27 0.0263 0.0115  
 Venus -110553-04-08 05:45 J -38657962.39 -38657962.26 -38657962.12 0.0263 0.0206  
 Earth -110552-01-19 08:38 J -38657676.33 -38657676.14 -38657675.93 0.0262 0.0166  
 Moon -110552-01-19 08:53 J -38657676.32 -38657676.13 -38657675.92 0.0262 0.0168 \*  
 Mars -110549-09-06 21:21 J -38656349.84 -38656349.61 -38656349.36 0.0266 0.0139  
 Mercury -110546-11-22 17:17 J -38655177.86 -38655177.78 -38655177.69 0.0275 0.0221  
 Mercury -110545-02-19 06:43 J -38655089.34 -38655089.22 -38655089.09 0.0276 0.0143  
 Mercury -110545-05-17 20:09 J -38655000.80 -38655000.66 -38655000.52 0.0277 0.0066  
 Mercury -110545-08-14 09:21 J -38654912.25 -38654912.11 -38654911.96 0.0278 0.0012  
 Mercury -110545-11-10 22:33 J -38654823.70 -38654823.56 -38654823.43 0.0278 0.0089  
 Mercury -110544-02-07 11:17 J -38654735.14 -38654735.03 -38654734.91 0.0279 0.0165

Mercury -110544-05-07 00:14 J -38654646.56 -38654646.49 -38654646.42 0.0280 0.0241

Venus -110541-10-30 01:55 J -38653374.51 -38653374.42 -38653374.32 0.0293 0.0258

Venus -110540-06-16 19:41 J -38653144.85 -38653144.68 -38653144.49 0.0295 0.0138

Venus -110539-02-01 14:24 J -38652915.10 -38652914.90 -38652914.69 0.0297 0.0013

Venus -110539-09-19 09:36 J -38652685.29 -38652685.10 -38652684.91 0.0298 0.0114

Venus -110538-05-07 05:02 J -38652455.40 -38652455.29 -38652455.16 0.0299 0.0240

Mars -110535-11-03 03:36 J -38651179.52 -38651179.35 -38651179.15 0.0296 0.0234

Mercury -110532-06-21 20:09 J -38650217.74 -38650217.66 -38650217.56 0.0286 0.0239

Mercury -110532-09-18 15:07 J -38650129.02 -38650128.87 -38650128.73 0.0285 0.0143

Mercury -110532-12-16 09:50 J -38650040.25 -38650040.09 -38650039.92 0.0284 0.0047

Mercury -110531-03-15 05:02 J -38649951.45 -38649951.29 -38649951.12 0.0283 0.0052

Mercury -110531-06-12 00:29 J -38649862.62 -38649862.48 -38649862.34 0.0283 0.0149

Mercury -110531-09-08 19:55 J -38649773.74 -38649773.67 -38649773.58 0.0282 0.0248

Venus -110527-08-30 06:14 J -38648322.32 -38648322.24 -38648322.15 0.0268 0.0246

Venus -110526-04-16 12:57 J -38648093.13 -38648092.96 -38648092.77 0.0266 0.0152

Venus -110526-12-01 19:12 J -38647863.91 -38647863.70 -38647863.49 0.0265 0.0057

Venus -110525-07-18 00:43 J -38647634.68 -38647634.47 -38647634.25 0.0264 0.0038

Venus -110524-03-04 06:00 J -38647405.44 -38647405.25 -38647405.06 0.0263 0.0130

Venus -110524-10-19 11:02 J -38647176.15 -38647176.04 -38647175.92 0.0262 0.0220

Earth -110522-01-26 17:45 J -38646711.96 -38646711.76 -38646711.53 0.0262 0.0140

Moon -110522-01-26 21:36 J -38646711.80 -38646711.60 -38646711.38 0.0262 0.0145 \*

Mars -110521-10-30 15:21 J -38646069.09 -38646068.86 -38646068.62 0.0263 0.0136

Mercury -110516-04-10 18:57 J -38644445.77 -38644445.71 -38644445.64 0.0275 0.0243

Mercury -110516-07-08 08:38 J -38644357.26 -38644357.14 -38644357.02 0.0275 0.0166

Mercury -110516-10-04 22:05 J -38644268.72 -38644268.58 -38644268.45 0.0276 0.0089

Mercury -110515-01-01 11:17 J -38644180.17 -38644180.03 -38644179.89 0.0277 0.0011

Mercury -110515-03-31 00:14 J -38644091.62 -38644091.49 -38644091.35 0.0278 0.0067

Mercury -110515-06-27 13:26 J -38644003.06 -38644002.94 -38644002.82 0.0279 0.0143

Mercury -110515-09-24 02:09 J -38643914.49 -38643914.41 -38643914.32 0.0280 0.0219

Venus -110511-05-12 07:55 J -38642588.28 -38642588.17 -38642588.05 0.0294 0.0244

Venus -110511-12-28 02:09 J -38642358.59 -38642358.41 -38642358.22 0.0296 0.0123  
 Venus -110510-08-14 21:07 J -38642128.83 -38642128.62 -38642128.42 0.0298 0.0005  
 Venus -110509-03-31 16:19 J -38641899.00 -38641898.82 -38641898.63 0.0299 0.0132  
 Venus -110509-11-16 12:00 J -38641669.09 -38641669.00 -38641668.89 0.0300 0.0258  
 Earth -110508-07-22 12:14 J -38641421.22 -38641420.99 -38641420.75 0.0300 0.0015  
 Moon -110508-07-22 13:26 J -38641421.17 -38641420.94 -38641420.71 0.0300 0.0028 \*  
 Mars -110507-12-10 20:24 J -38640914.82 -38640914.65 -38640914.45 0.0299 0.0237  
 Mercury -110503-11-08 21:21 J -38639485.67 -38639485.61 -38639485.54 0.0286 0.0262  
 Mercury -110502-02-05 16:05 J -38639396.96 -38639396.83 -38639396.70 0.0285 0.0167  
 Mercury -110502-05-05 10:48 J -38639308.21 -38639308.05 -38639307.88 0.0284 0.0071  
 Mercury -110502-08-02 06:00 J -38639219.42 -38639219.25 -38639219.08 0.0283 0.0027  
 Mercury -110502-10-30 01:26 J -38639130.59 -38639130.44 -38639130.29 0.0282 0.0125  
 Mercury -110501-01-26 20:53 J -38639041.73 -38639041.63 -38639041.52 0.0281 0.0223  
 Venus -110497-03-11 13:41 J -38637536.03 -38637535.93 -38637535.82 0.0267 0.0231  
 Venus -110497-10-26 20:38 J -38637306.83 -38637306.64 -38637306.45 0.0266 0.0136  
 Venus -110496-06-13 02:38 J -38637077.60 -38637077.39 -38637077.17 0.0265 0.0041  
 Venus -110495-01-28 08:24 J -38636848.36 -38636848.15 -38636847.93 0.0264 0.0053  
 Venus -110495-09-14 13:41 J -38636619.11 -38636618.93 -38636618.75 0.0263 0.0146  
 Venus -110494-05-01 18:43 J -38636389.81 -38636389.72 -38636389.62 0.0262 0.0236  
 Moon -110493-01-21 17:02 J -38636125.03 -38636124.79 -38636124.55 0.0262 0.0089  
 Earth -110493-01-21 20:53 J -38636124.87 -38636124.63 -38636124.39 0.0262 0.0091 \*  
 Mars -110491-12-17 00:29 J -38635064.76 -38635064.48 -38635064.20 0.0264 0.0012  
 Mercury -110487-08-28 22:05 J -38633713.62 -38633713.58 -38633713.53 0.0275 0.0258  
 Mercury -110487-11-25 11:45 J -38633625.12 -38633625.01 -38633624.90 0.0275 0.0181  
 Mercury -110486-02-22 01:12 J -38633536.59 -38633536.45 -38633536.32 0.0276 0.0103  
 Mercury -110486-05-21 14:24 J -38633448.04 -38633447.90 -38633447.75 0.0277 0.0027  
 Mercury -110486-08-18 03:36 J -38633359.49 -38633359.35 -38633359.21 0.0278 0.0051  
 Mercury -110486-11-14 16:33 J -38633270.93 -38633270.81 -38633270.68 0.0279 0.0128  
 Mercury -110485-02-11 05:31 J -38633182.36 -38633182.27 -38633182.17 0.0280 0.0204  
 Mercury -110485-05-09 18:14 J -38633093.74 -38633093.74 -38633093.73 0.0281 0.0280

Venus -110482-11-22 19:12 J -38631801.83 -38631801.70 -38631801.56 0.0294 0.0221  
 Venus -110481-07-09 13:26 J -38631572.14 -38631571.94 -38631571.75 0.0296 0.0099  
 Venus -110480-02-24 08:09 J -38631342.36 -38631342.16 -38631341.95 0.0297 0.0028  
 Venus -110480-10-12 03:36 J -38631112.52 -38631112.35 -38631112.18 0.0298 0.0156  
 Venus -110479-05-29 23:17 J -38630882.59 -38630882.53 -38630882.46 0.0299 0.0281  
 Moon -110479-07-17 01:26 J -38630834.47 -38630834.44 -38630834.38 0.0299 0.0294  
 Mars -110476-02-04 02:24 J -38629901.71 -38629901.40 -38629901.09 0.0297 0.0021  
 Mercury -110473-03-27 23:17 J -38628753.55 -38628753.53 -38628753.50 0.0287 0.0281  
 Mercury -110473-06-24 17:45 J -38628664.88 -38628664.76 -38628664.63 0.0286 0.0186  
 Mercury -110473-09-21 12:43 J -38628576.13 -38628575.97 -38628575.82 0.0285 0.0090  
 Mercury -110473-12-19 07:41 J -38628487.35 -38628487.18 -38628487.01 0.0284 0.0008  
 Mercury -110472-03-18 02:53 J -38628398.54 -38628398.38 -38628398.22 0.0283 0.0105  
 Mercury -110472-06-14 22:19 J -38628309.68 -38628309.57 -38628309.45 0.0282 0.0203  
 Venus -110468-09-21 20:24 J -38626749.76 -38626749.65 -38626749.51 0.0267 0.0216  
 Venus -110467-05-09 02:53 J -38626520.57 -38626520.38 -38626520.18 0.0265 0.0121  
 Venus -110467-12-24 08:53 J -38626291.35 -38626291.13 -38626290.91 0.0264 0.0026  
 Venus -110466-08-10 14:09 J -38626062.12 -38626061.91 -38626061.70 0.0263 0.0068  
 Venus -110465-03-26 18:57 J -38625832.87 -38625832.71 -38625832.53 0.0262 0.0161  
 Venus -110465-11-11 00:00 J -38625603.55 -38625603.50 -38625603.43 0.0262 0.0250  
 Earth -110463-01-28 06:00 J -38625160.38 -38625160.25 -38625160.09 0.0262 0.0214  
 Moon -110463-01-28 07:55 J -38625160.29 -38625160.17 -38625160.02 0.0262 0.0222 \*  
 Mars -110462-02-09 01:26 J -38624783.49 -38624783.44 -38624783.38 0.0262 0.0256  
 Mars -110460-02-01 03:50 J -38624060.56 -38624060.34 -38624060.10 0.0265 0.0152  
 Mercury -110457-04-13 13:12 J -38622893.04 -38622892.95 -38622892.85 0.0275 0.0205  
 Mercury -110457-07-11 02:53 J -38622804.51 -38622804.38 -38622804.25 0.0276 0.0127  
 Mercury -110457-10-07 16:05 J -38622715.97 -38622715.83 -38622715.68 0.0277 0.0050  
 Mercury -110456-01-04 05:17 J -38622627.42 -38622627.28 -38622627.13 0.0278 0.0028  
 Mercury -110456-04-02 18:14 J -38622538.86 -38622538.74 -38622538.60 0.0279 0.0105  
 Mercury -110456-06-30 07:12 J -38622450.30 -38622450.20 -38622450.09 0.0280 0.0181  
 Mercury -110456-09-26 19:55 J -38622361.71 -38622361.67 -38622361.61 0.0281 0.0257

Venus -110452-06-04 00:00 J -38621015.64 -38621015.50 -38621015.35 0.0295 0.0208  
 Venus -110451-01-19 18:29 J -38620785.93 -38620785.73 -38620785.53 0.0297 0.0084  
 Venus -110451-09-06 13:26 J -38620556.14 -38620555.94 -38620555.73 0.0298 0.0044  
 Venus -110450-04-24 08:53 J -38620326.29 -38620326.13 -38620325.95 0.0299 0.0172  
 Venus -110450-12-10 04:48 J -38620096.32 -38620096.30 -38620096.27 0.0300 0.0297  
 Earth -110449-07-24 04:05 J -38619869.54 -38619869.33 -38619869.11 0.0300 0.0114  
 Moon -110449-07-24 07:55 J -38619869.38 -38619869.17 -38619868.96 0.0300 0.0129 \*  
 Mars -110446-03-31 03:21 J -38618889.48 -38618889.36 -38618889.20 0.0296 0.0263  
 Mercury -110444-11-11 18:14 J -38617932.84 -38617932.74 -38617932.63 0.0286 0.0213  
 Mercury -110443-02-08 12:57 J -38617844.11 -38617843.96 -38617843.81 0.0285 0.0117  
 Mercury -110443-05-08 07:55 J -38617755.34 -38617755.17 -38617755.00 0.0284 0.0021  
 Mercury -110443-08-05 03:07 J -38617666.53 -38617666.37 -38617666.20 0.0283 0.0077  
 Mercury -110443-11-01 22:33 J -38617577.69 -38617577.56 -38617577.42 0.0282 0.0175  
 Mercury -110442-01-29 18:14 J -38617488.77 -38617488.74 -38617488.70 0.0281 0.0273  
 Jupiter -110441-10-15 01:55 J -38616864.77 -38616864.42 -38616864.03 0.0274 0.0176  
 Venus -110438-04-04 02:53 J -38615963.51 -38615963.38 -38615963.23 0.0267 0.0202  
 Venus -110438-11-19 09:21 J -38615734.30 -38615734.11 -38615733.90 0.0265 0.0106  
 Venus -110437-07-05 15:21 J -38615505.08 -38615504.86 -38615504.64 0.0264 0.0011  
 Venus -110436-02-19 20:53 J -38615275.84 -38615275.63 -38615275.42 0.0263 0.0084  
 Venus -110436-10-07 02:09 J -38615046.57 -38615046.41 -38615046.25 0.0263 0.0176  
 Moon -110434-01-23 06:43 J -38614573.47 -38614573.22 -38614572.97 0.0262 0.0013  
 Earth -110434-01-23 08:09 J -38614573.42 -38614573.16 -38614572.90 0.0262 0.0018 \*  
 Mars -110432-03-27 03:50 J -38613779.58 -38613779.34 -38613779.08 0.0263 0.0114  
 Mercury -110428-08-31 16:05 J -38612160.91 -38612160.83 -38612160.74 0.0275 0.0221  
 Mercury -110428-11-28 05:45 J -38612072.39 -38612072.26 -38612072.14 0.0276 0.0144  
 Mercury -110427-02-24 18:57 J -38611983.85 -38611983.71 -38611983.57 0.0277 0.0067  
 Mercury -110427-05-24 08:24 J -38611895.30 -38611895.15 -38611895.01 0.0278 0.0013  
 Mercury -110427-08-20 21:21 J -38611806.74 -38611806.61 -38611806.47 0.0279 0.0088  
 Mercury -110427-11-17 10:19 J -38611718.18 -38611718.07 -38611717.95 0.0280 0.0164  
 Mercury -110426-02-13 23:02 J -38611629.60 -38611629.54 -38611629.46 0.0281 0.0241



Venus -110423-12-15 10:19 J -38610229.23 -38610229.07 -38610228.91 0.0295 0.0186

Venus -110422-08-02 04:48 J -38609999.50 -38609999.30 -38609999.10 0.0296 0.0061

Venus -110421-03-19 00:00 J -38609769.70 -38609769.50 -38609769.30 0.0298 0.0067

Venus -110421-11-03 19:26 J -38609539.84 -38609539.69 -38609539.53 0.0299 0.0196

Moon -110420-07-18 14:38 J -38609283.07 -38609282.89 -38609282.72 0.0299 0.0197

Earth -110420-07-18 18:00 J -38609282.91 -38609282.75 -38609282.58 0.0299 0.0211 \*

Mars -110418-05-08 07:12 J -38608624.42 -38608624.20 -38608623.97 0.0298 0.0205

Mercury -110414-03-31 19:55 J -38607200.76 -38607200.67 -38607200.57 0.0286 0.0233

Mercury -110414-06-28 14:38 J -38607112.03 -38607111.89 -38607111.74 0.0285 0.0138

Mercury -110414-09-25 09:36 J -38607023.27 -38607023.10 -38607022.93 0.0284 0.0041

Mercury -110414-12-23 04:48 J -38606934.47 -38606934.30 -38606934.14 0.0283 0.0056

Mercury -110413-03-21 00:00 J -38606845.64 -38606845.50 -38606845.35 0.0282 0.0154

Mercury -110413-06-17 19:41 J -38606756.75 -38606756.68 -38606756.60 0.0281 0.0252

Venus -110409-10-14 09:36 J -38605177.24 -38605177.10 -38605176.93 0.0266 0.0188

Venus -110408-05-31 15:50 J -38604948.04 -38604947.84 -38604947.63 0.0265 0.0092

Venus -110407-01-15 21:36 J -38604718.82 -38604718.60 -38604718.38 0.0264 0.0005

Venus -110407-09-02 02:38 J -38604489.59 -38604489.39 -38604489.19 0.0263 0.0098

Venus -110406-04-19 07:26 J -38604260.34 -38604260.19 -38604260.04 0.0262 0.0190

Earth -110405-01-18 06:00 J -38603986.26 -38603986.25 -38603986.20 0.0262 0.0260

Moon -110405-01-18 07:26 J -38603986.23 -38603986.19 -38603986.13 0.0262 0.0257 \*

Mars -110402-05-13 02:38 J -38602775.67 -38602775.39 -38602775.12 0.0264 0.0023

Mercury -110398-01-18 17:17 J -38601428.83 -38601428.78 -38601428.71 0.0274 0.0247

Mercury -110398-04-17 06:57 J -38601340.32 -38601340.21 -38601340.09 0.0275 0.0169

Mercury -110398-07-14 20:24 J -38601251.78 -38601251.65 -38601251.51 0.0276 0.0092

Mercury -110398-10-11 09:50 J -38601163.24 -38601163.09 -38601162.95 0.0277 0.0017

Mercury -110397-01-07 22:48 J -38601074.69 -38601074.55 -38601074.41 0.0278 0.0063

Mercury -110397-04-05 11:45 J -38600986.13 -38600986.01 -38600985.88 0.0279 0.0139

Mercury -110397-07-03 00:43 J -38600897.56 -38600897.47 -38600897.38 0.0280 0.0215

Venus -110394-11-09 20:09 J -38599672.66 -38599672.66 -38599672.65 0.0293 0.0293

Venus -110393-06-26 14:09 J -38599443.07 -38599442.91 -38599442.74 0.0295 0.0174

Venus -110392-02-11 08:53 J -38599213.33 -38599213.13 -38599212.93 0.0297 0.0047

Venus -110392-09-29 04:05 J -38598983.52 -38598983.33 -38598983.13 0.0298 0.0082

Venus -110391-05-16 23:45 J -38598753.65 -38598753.51 -38598753.36 0.0299 0.0211

Earth -110390-07-26 17:02 J -38598317.95 -38598317.79 -38598317.61 0.0300 0.0205

Moon -110390-07-26 17:17 J -38598317.94 -38598317.78 -38598317.61 0.0300 0.0221 \*

Mars -110388-07-01 13:12 J -38597612.25 -38597611.95 -38597611.64 0.0297 0.0046

Mercury -110385-08-17 19:55 J -38596468.73 -38596468.67 -38596468.60 0.0287 0.0263

Mercury -110385-11-14 14:24 J -38596380.03 -38596379.90 -38596379.76 0.0286 0.0168

Mercury -110384-02-11 09:21 J -38596291.27 -38596291.11 -38596290.95 0.0285 0.0071

Mercury -110384-05-11 04:33 J -38596202.48 -38596202.31 -38596202.15 0.0284 0.0027

Mercury -110384-08-07 23:45 J -38596113.66 -38596113.51 -38596113.35 0.0283 0.0124

Mercury -110384-11-04 19:26 J -38596024.79 -38596024.69 -38596024.59 0.0282 0.0222

Venus -110379-04-26 14:53 J -38594391.03 -38594390.88 -38594390.71 0.0266 0.0173

Venus -110379-12-11 21:07 J -38594161.82 -38594161.62 -38594161.41 0.0265 0.0077

Venus -110378-07-29 02:53 J -38593932.60 -38593932.38 -38593932.16 0.0264 0.0019

Venus -110377-03-14 08:09 J -38593703.36 -38593703.16 -38593702.96 0.0263 0.0113

Venus -110377-10-29 12:57 J -38593474.08 -38593473.96 -38593473.81 0.0262 0.0206

Earth -110375-01-24 16:33 J -38593022.05 -38593021.81 -38593021.55 0.0262 0.0050

Moon -110375-01-24 20:09 J -38593021.91 -38593021.66 -38593021.42 0.0262 0.0059 \*

Mars -110374-07-06 07:55 J -38592494.28 -38592494.17 -38592494.04 0.0263 0.0238

Mars -110372-06-28 10:48 J -38591771.26 -38591771.05 -38591770.84 0.0266 0.0172

Mercury -110369-06-06 19:55 J -38590696.70 -38590696.67 -38590696.63 0.0274 0.0265

Mercury -110369-09-03 09:36 J -38590608.21 -38590608.10 -38590608.00 0.0275 0.0188

Mercury -110369-11-30 23:02 J -38590519.68 -38590519.54 -38590519.41 0.0276 0.0110

Mercury -110368-02-27 12:14 J -38590431.13 -38590430.99 -38590430.84 0.0277 0.0033

Mercury -110368-05-27 01:26 J -38590342.58 -38590342.44 -38590342.30 0.0278 0.0044

Mercury -110368-08-23 14:24 J -38590254.02 -38590253.90 -38590253.77 0.0279 0.0121

Mercury -110368-11-20 03:21 J -38590165.46 -38590165.36 -38590165.26 0.0280 0.0197

Mercury -110367-02-16 16:05 J -38590076.85 -38590076.83 -38590076.79 0.0281 0.0273

Venus -110364-05-22 05:17 J -38588886.35 -38588886.28 -38588886.20 0.0293 0.0274

Venus -110363-01-06 23:17 J -38588656.70 -38588656.53 -38588656.35 0.0295 0.0152  
 Venus -110363-08-24 18:14 J -38588426.95 -38588426.74 -38588426.54 0.0297 0.0025  
 Venus -110362-04-11 13:26 J -38588197.13 -38588196.94 -38588196.74 0.0298 0.0105  
 Venus -110362-11-27 09:07 J -38587967.24 -38587967.12 -38587966.99 0.0299 0.0233  
 Earth -110361-07-20 04:48 J -38587731.51 -38587731.30 -38587731.08 0.0299 0.0125  
 Moon -110361-07-20 05:17 J -38587731.49 -38587731.28 -38587731.06 0.0299 0.0109 \*  
 Mars -110358-08-26 01:41 J -38586599.49 -38586599.43 -38586599.34 0.0295 0.0287  
 Mercury -110355-01-04 21:21 J -38585736.62 -38585736.61 -38585736.59 0.0287 0.0284  
 Mercury -110355-04-03 15:50 J -38585647.96 -38585647.84 -38585647.71 0.0286 0.0190  
 Mercury -110355-07-01 10:33 J -38585559.21 -38585559.06 -38585558.90 0.0285 0.0094  
 Mercury -110355-09-28 05:45 J -38585470.43 -38585470.26 -38585470.09 0.0284 0.0004  
 Mercury -110355-12-26 00:57 J -38585381.62 -38585381.46 -38585381.30 0.0283 0.0101  
 Mercury -110354-03-24 20:24 J -38585292.76 -38585292.65 -38585292.53 0.0282 0.0199  
 Venus -110350-03-22 14:53 J -38583833.94 -38583833.88 -38583833.81 0.0268 0.0255  
 Venus -110350-11-06 21:21 J -38583604.78 -38583604.61 -38583604.43 0.0266 0.0159  
 Venus -110349-06-23 03:21 J -38583375.57 -38583375.36 -38583375.15 0.0265 0.0063  
 Venus -110348-02-07 08:38 J -38583146.35 -38583146.14 -38583145.92 0.0263 0.0033  
 Venus -110348-09-24 13:41 J -38582917.12 -38582916.93 -38582916.74 0.0263 0.0127  
 Venus -110347-05-11 18:14 J -38582687.85 -38582687.74 -38582687.61 0.0262 0.0219  
 Moon -110346-01-19 11:31 J -38582435.20 -38582435.02 -38582434.83 0.0261 0.0184  
 Earth -110346-01-19 14:53 J -38582435.05 -38582434.88 -38582434.70 0.0261 0.0191 \*  
 Mars -110344-08-21 03:36 J -38581490.60 -38581490.35 -38581490.09 0.0263 0.0105  
 Mercury -110339-01-21 10:33 J -38579876.15 -38579876.06 -38579875.97 0.0274 0.0214  
 Mercury -110339-04-20 00:00 J -38579787.62 -38579787.50 -38579787.37 0.0275 0.0137  
 Mercury -110339-07-17 13:26 J -38579699.08 -38579698.94 -38579698.80 0.0276 0.0060  
 Mercury -110339-10-14 02:38 J -38579610.53 -38579610.39 -38579610.25 0.0277 0.0017  
 Mercury -110338-01-10 15:36 J -38579521.98 -38579521.85 -38579521.71 0.0278 0.0094  
 Mercury -110338-04-09 04:33 J -38579433.42 -38579433.31 -38579433.19 0.0279 0.0170  
 Mercury -110338-07-06 17:31 J -38579344.84 -38579344.77 -38579344.71 0.0280 0.0245  
 Venus -110335-12-02 07:26 J -38578100.27 -38578100.19 -38578100.09 0.0294 0.0264

Venus -110334-07-20 01:41 J -38577870.61 -38577870.43 -38577870.25 0.0296 0.0141  
 Venus -110333-03-05 20:38 J -38577640.85 -38577640.64 -38577640.44 0.0297 0.0013  
 Venus -110333-10-21 16:05 J -38577411.02 -38577410.83 -38577410.64 0.0299 0.0117  
 Venus -110332-06-08 11:45 J -38577181.12 -38577181.01 -38577180.89 0.0300 0.0246  
 Earth -110331-07-28 00:57 J -38576766.52 -38576766.46 -38576766.38 0.0300 0.0285  
 Mars -110330-10-02 01:26 J -38576335.67 -38576335.44 -38576335.18 0.0299 0.0187  
 Mercury -110326-08-21 15:07 J -38574915.97 -38574915.87 -38574915.77 0.0287 0.0223  
 Mercury -110326-11-18 09:50 J -38574827.24 -38574827.09 -38574826.94 0.0286 0.0127  
 Mercury -110325-02-15 04:48 J -38574738.47 -38574738.30 -38574738.14 0.0284 0.0030  
 Mercury -110325-05-14 00:00 J -38574649.67 -38574649.50 -38574649.34 0.0283 0.0068  
 Mercury -110325-08-10 19:26 J -38574560.83 -38574560.69 -38574560.55 0.0282 0.0165  
 Mercury -110325-11-07 15:07 J -38574471.93 -38574471.87 -38574471.81 0.0281 0.0263  
 Venus -110321-10-01 18:29 J -38573047.81 -38573047.73 -38573047.63 0.0267 0.0243  
 Venus -110320-05-19 01:26 J -38572818.63 -38572818.44 -38572818.26 0.0266 0.0146  
 Venus -110319-01-03 07:12 J -38572589.41 -38572589.20 -38572588.98 0.0264 0.0050  
 Venus -110319-08-20 12:43 J -38572360.19 -38572359.97 -38572359.76 0.0263 0.0047  
 Venus -110318-04-06 17:45 J -38572130.94 -38572130.76 -38572130.58 0.0262 0.0141  
 Venus -110318-11-21 22:19 J -38571901.66 -38571901.57 -38571901.46 0.0262 0.0233  
 Earth -110316-01-25 22:33 J -38571470.78 -38571470.56 -38571470.32 0.0262 0.0112  
 Moon -110316-01-26 00:57 J -38571470.68 -38571470.46 -38571470.22 0.0262 0.0124 \*  
 Mars -110314-10-07 02:38 J -38570486.66 -38570486.39 -38570486.11 0.0264 0.0039  
 Mercury -110310-06-10 12:29 J -38569144.05 -38569143.98 -38569143.90 0.0275 0.0235  
 Mercury -110310-09-07 01:55 J -38569055.53 -38569055.42 -38569055.29 0.0275 0.0159  
 Mercury -110310-12-04 15:36 J -38568966.99 -38568966.85 -38568966.71 0.0276 0.0081  
 Mercury -110309-03-02 04:48 J -38568878.44 -38568878.30 -38568878.16 0.0277 0.0004  
 Mercury -110309-05-29 17:45 J -38568789.89 -38568789.76 -38568789.62 0.0278 0.0074  
 Mercury -110309-08-26 06:43 J -38568701.33 -38568701.22 -38568701.09 0.0279 0.0150  
 Mercury -110309-11-22 19:41 J -38568612.76 -38568612.68 -38568612.60 0.0280 0.0225  
 Venus -110305-06-13 15:07 J -38567313.97 -38567313.87 -38567313.75 0.0294 0.0245  
 Venus -110304-01-29 09:36 J -38567084.29 -38567084.10 -38567083.91 0.0296 0.0121

Venus -110304-09-16 04:33 J -38566854.51 -38566854.31 -38566854.10 0.0297 0.0010  
 Venus -110303-05-04 00:00 J -38566624.67 -38566624.50 -38566624.31 0.0298 0.0140  
 Venus -110303-12-19 20:09 J -38566394.75 -38566394.66 -38566394.57 0.0299 0.0268  
 Earth -110302-07-22 11:02 J -38566180.27 -38566180.04 -38566179.81 0.0300 0.0049  
 Moon -110302-07-22 14:38 J -38566180.12 -38566179.89 -38566179.66 0.0300 0.0031 \*  
 Mars -110300-11-25 21:07 J -38565322.92 -38565322.62 -38565322.31 0.0297 0.0062  
 Mercury -110296-01-07 16:19 J -38564183.90 -38564183.82 -38564183.74 0.0287 0.0246  
 Mercury -110296-04-06 10:48 J -38564095.19 -38564095.05 -38564094.91 0.0286 0.0151  
 Mercury -110296-07-04 05:45 J -38564006.42 -38564006.26 -38564006.10 0.0285 0.0054  
 Mercury -110296-10-01 00:57 J -38563917.63 -38563917.46 -38563917.30 0.0284 0.0043  
 Mercury -110296-12-28 20:09 J -38563828.80 -38563828.66 -38563828.51 0.0283 0.0141  
 Mercury -110295-03-27 15:50 J -38563739.92 -38563739.84 -38563739.75 0.0282 0.0239  
 Venus -110291-04-14 00:43 J -38562261.57 -38562261.47 -38562261.35 0.0267 0.0230  
 Venus -110291-11-29 07:12 J -38562032.39 -38562032.20 -38562032.01 0.0266 0.0133  
 Venus -110290-07-16 12:57 J -38561803.18 -38561802.96 -38561802.75 0.0264 0.0036  
 Venus -110289-03-01 18:00 J -38561573.96 -38561573.75 -38561573.53 0.0263 0.0060  
 Venus -110289-10-16 22:48 J -38561344.72 -38561344.55 -38561344.36 0.0262 0.0155  
 Venus -110288-06-03 03:21 J -38561115.43 -38561115.36 -38561115.28 0.0262 0.0246  
 Moon -110287-01-20 18:14 J -38560883.96 -38560883.74 -38560883.51 0.0261 0.0120  
 Earth -110287-01-20 20:38 J -38560883.86 -38560883.64 -38560883.42 0.0261 0.0128 \*  
 Mars -110286-11-30 04:19 J -38560205.44 -38560205.32 -38560205.17 0.0262 0.0230  
 Mars -110284-11-22 02:53 J -38559482.58 -38559482.38 -38559482.16 0.0265 0.0176  
 Mercury -110281-10-27 13:26 J -38558411.97 -38558411.94 -38558411.89 0.0274 0.0262  
 Mercury -110280-01-24 03:07 J -38558323.48 -38558323.37 -38558323.26 0.0274 0.0185  
 Mercury -110280-04-22 16:33 J -38558234.94 -38558234.81 -38558234.68 0.0275 0.0108  
 Mercury -110280-07-20 05:45 J -38558146.40 -38558146.26 -38558146.11 0.0276 0.0032  
 Mercury -110280-10-16 18:57 J -38558057.85 -38558057.71 -38558057.57 0.0277 0.0045  
 Mercury -110279-01-13 07:55 J -38557969.30 -38557969.17 -38557969.04 0.0278 0.0121  
 Mercury -110279-04-11 20:53 J -38557880.73 -38557880.63 -38557880.53 0.0279 0.0197  
 Mercury -110279-07-09 09:21 J -38557792.13 -38557792.11 -38557792.07 0.0280 0.0273

Venus -110276-12-24 16:33 J -38556527.93 -38556527.81 -38556527.69 0.0294 0.0235  
 Venus -110275-08-11 10:33 J -38556298.24 -38556298.06 -38556297.86 0.0296 0.0111  
 Venus -110274-03-29 05:45 J -38556068.46 -38556068.26 -38556068.05 0.0298 0.0019  
 Venus -110274-11-14 01:12 J -38555838.62 -38555838.45 -38555838.27 0.0299 0.0150  
 Venus -110273-06-30 21:07 J -38555608.69 -38555608.62 -38555608.54 0.0300 0.0279  
 Mercury -110267-05-27 14:38 J -38553451.91 -38553451.89 -38553451.86 0.0287 0.0283  
 Mercury -110267-08-24 09:07 J -38553363.24 -38553363.12 -38553362.99 0.0286 0.0188  
 Mercury -110267-11-21 04:05 J -38553274.49 -38553274.33 -38553274.18 0.0285 0.0092  
 Mercury -110266-02-17 23:02 J -38553185.71 -38553185.54 -38553185.37 0.0284 0.0006  
 Mercury -110266-05-17 18:29 J -38553096.89 -38553096.73 -38553096.58 0.0283 0.0104  
 Mercury -110266-08-14 13:55 J -38553008.04 -38553007.92 -38553007.80 0.0282 0.0202  
 Venus -110262-10-25 02:53 J -38551475.50 -38551475.38 -38551475.25 0.0267 0.0218  
 Venus -110261-06-10 09:21 J -38551246.30 -38551246.11 -38551245.91 0.0265 0.0121  
 Venus -110260-01-25 15:21 J -38551017.08 -38551016.86 -38551016.64 0.0264 0.0024  
 Venus -110260-09-11 20:38 J -38550787.85 -38550787.64 -38550787.43 0.0263 0.0073  
 Venus -110259-04-29 01:26 J -38550558.60 -38550558.44 -38550558.26 0.0262 0.0167  
 Venus -110259-12-14 06:00 J -38550329.27 -38550329.25 -38550329.21 0.0262 0.0259  
 Moon -110257-01-27 23:31 J -38549919.71 -38549919.52 -38549919.34 0.0261 0.0183  
 Earth -110257-01-28 02:09 J -38549919.60 -38549919.41 -38549919.21 0.0261 0.0169 \*  
 Mars -110255-01-14 20:24 J -38549201.91 -38549201.65 -38549201.39 0.0263 0.0093  
 Mercury -110251-06-13 04:33 J -38547591.40 -38547591.31 -38547591.21 0.0275 0.0209  
 Mercury -110251-09-09 18:14 J -38547502.87 -38547502.74 -38547502.61 0.0276 0.0132  
 Mercury -110251-12-07 07:26 J -38547414.33 -38547414.19 -38547414.04 0.0276 0.0055  
 Mercury -110250-03-05 20:38 J -38547325.78 -38547325.64 -38547325.49 0.0277 0.0022  
 Mercury -110250-06-02 09:36 J -38547237.23 -38547237.10 -38547236.96 0.0278 0.0099  
 Mercury -110250-08-29 22:33 J -38547148.66 -38547148.56 -38547148.45 0.0279 0.0174  
 Mercury -110250-11-26 11:31 J -38547060.08 -38547060.02 -38547059.96 0.0280 0.0250  
 Venus -110246-07-06 22:33 J -38545741.69 -38545741.56 -38545741.42 0.0294 0.0218  
 Venus -110245-02-21 17:02 J -38545511.98 -38545511.79 -38545511.59 0.0296 0.0092  
 Venus -110245-10-08 12:14 J -38545282.19 -38545281.99 -38545281.78 0.0298 0.0039

Venus -110244-05-26 07:55 J -38545052.33 -38545052.17 -38545052.00 0.0299 0.0171

Venus -110243-01-11 03:50 J -38544822.34 -38544822.34 -38544822.33 0.0299 0.0299

Earth -110243-07-23 12:29 J -38544629.21 -38544628.98 -38544628.74 0.0300 0.0016

Moon -110243-07-23 12:43 J -38544629.21 -38544628.97 -38544628.72 0.0300 0.0032 \*

Mars -110241-02-25 17:02 J -38544047.04 -38544046.79 -38544046.54 0.0299 0.0179

Mercury -110237-01-11 09:36 J -38542631.20 -38542631.10 -38542630.98 0.0287 0.0215

Mercury -110237-04-09 04:33 J -38542542.46 -38542542.31 -38542542.16 0.0286 0.0118

Mercury -110237-07-06 23:31 J -38542453.68 -38542453.52 -38542453.35 0.0285 0.0021

Mercury -110237-10-03 18:43 J -38542364.88 -38542364.72 -38542364.55 0.0284 0.0077

Mercury -110237-12-31 14:09 J -38542276.04 -38542275.91 -38542275.77 0.0283 0.0175

Mercury -110236-03-30 10:05 J -38542187.12 -38542187.08 -38542187.04 0.0282 0.0273

Venus -110232-05-06 08:24 J -38540689.28 -38540689.15 -38540689.00 0.0267 0.0206

Venus -110232-12-21 14:38 J -38540460.08 -38540459.89 -38540459.68 0.0265 0.0109

Venus -110231-08-07 20:24 J -38540230.87 -38540230.65 -38540230.43 0.0264 0.0011

Venus -110230-03-25 01:26 J -38540001.65 -38540001.44 -38540001.23 0.0263 0.0085

Venus -110230-11-09 06:14 J -38539772.40 -38539772.24 -38539772.08 0.0262 0.0180

Earth -110228-01-21 23:17 J -38539332.77 -38539332.53 -38539332.27 0.0261 0.0070

Moon -110228-01-22 01:55 J -38539332.66 -38539332.42 -38539332.17 0.0261 0.0059 \*

Mars -110225-03-01 15:21 J -38538198.13 -38538197.86 -38538197.58 0.0263 0.0042

Mercury -110222-10-31 05:17 J -38536859.34 -38536859.28 -38536859.20 0.0273 0.0237

Mercury -110221-01-27 18:57 J -38536770.83 -38536770.71 -38536770.59 0.0274 0.0160

Mercury -110221-04-25 08:24 J -38536682.29 -38536682.15 -38536682.01 0.0275 0.0084

Mercury -110221-07-22 21:36 J -38536593.75 -38536593.60 -38536593.46 0.0276 0.0009

Mercury -110221-10-19 10:33 J -38536505.20 -38536505.06 -38536504.92 0.0277 0.0069

Mercury -110220-01-15 23:31 J -38536416.64 -38536416.52 -38536416.40 0.0278 0.0145

Mercury -110220-04-14 12:14 J -38536328.07 -38536327.99 -38536327.90 0.0279 0.0220

Venus -110216-01-15 22:48 J -38534955.69 -38534955.55 -38534955.40 0.0294 0.0210

Venus -110216-09-02 17:17 J -38534725.98 -38534725.78 -38534725.58 0.0296 0.0083

Venus -110215-04-20 12:29 J -38534496.19 -38534495.98 -38534495.78 0.0298 0.0049

Venus -110215-12-06 07:55 J -38534266.33 -38534266.17 -38534266.00 0.0299 0.0180

Mars -110211-04-20 06:43 J -38533035.52 -38533035.22 -38533034.91 0.0298 0.0065  
 Mercury -110208-05-30 07:41 J -38531899.25 -38531899.18 -38531899.10 0.0287 0.0253  
 Mercury -110208-08-27 02:24 J -38531810.54 -38531810.40 -38531810.26 0.0286 0.0158  
 Mercury -110208-11-23 21:21 J -38531721.77 -38531721.61 -38531721.45 0.0285 0.0061  
 Mercury -110207-02-20 16:33 J -38531632.98 -38531632.81 -38531632.65 0.0284 0.0037  
 Mercury -110207-05-20 11:45 J -38531544.15 -38531544.01 -38531543.85 0.0283 0.0135  
 Mercury -110207-08-17 07:26 J -38531455.28 -38531455.19 -38531455.09 0.0282 0.0233  
 Venus -110203-11-16 09:21 J -38529903.25 -38529903.11 -38529902.96 0.0267 0.0195  
 Venus -110202-07-03 15:50 J -38529674.04 -38529673.84 -38529673.64 0.0265 0.0097  
 Venus -110201-02-17 21:36 J -38529444.82 -38529444.60 -38529444.38 0.0264 0.0001  
 Venus -110201-10-04 02:53 J -38529215.58 -38529215.38 -38529215.17 0.0263 0.0098  
 Venus -110200-05-21 07:26 J -38528986.32 -38528986.19 -38528986.03 0.0262 0.0192  
 Moon -110198-01-29 00:14 J -38528368.59 -38528368.49 -38528368.38 0.0261 0.0237  
 Earth -110198-01-29 02:53 J -38528368.50 -38528368.38 -38528368.24 0.0261 0.0222 \*  
 Mars -110197-04-24 12:57 J -38527917.09 -38527916.96 -38527916.80 0.0262 0.0222  
 Mars -110195-04-17 11:02 J -38527194.23 -38527194.04 -38527193.83 0.0265 0.0184  
 Mercury -110192-03-19 06:29 J -38526127.26 -38526127.23 -38526127.18 0.0274 0.0262  
 Mercury -110192-06-15 20:24 J -38526038.76 -38526038.65 -38526038.55 0.0275 0.0185  
 Mercury -110192-09-12 09:36 J -38525950.23 -38525950.10 -38525949.96 0.0276 0.0109  
 Mercury -110192-12-09 23:02 J -38525861.69 -38525861.54 -38525861.40 0.0277 0.0032  
 Mercury -110191-03-08 12:00 J -38525773.14 -38525773.00 -38525772.86 0.0277 0.0045  
 Mercury -110191-06-05 00:57 J -38525684.58 -38525684.46 -38525684.33 0.0278 0.0121  
 Mercury -110191-09-01 13:55 J -38525596.02 -38525595.92 -38525595.82 0.0279 0.0196  
 Mercury -110191-11-29 02:38 J -38525507.42 -38525507.39 -38525507.35 0.0280 0.0271  
 Venus -110187-07-29 03:50 J -38524169.49 -38524169.34 -38524169.18 0.0295 0.0194  
 Venus -110186-03-15 22:33 J -38523939.75 -38523939.56 -38523939.35 0.0296 0.0065  
 Venus -110186-10-31 18:00 J -38523709.95 -38523709.75 -38523709.55 0.0298 0.0067  
 Venus -110185-06-17 13:41 J -38523480.08 -38523479.93 -38523479.78 0.0299 0.0200  
 Moon -110184-07-24 07:12 J -38523078.42 -38523078.20 -38523077.97 0.0300 0.0086  
 Earth -110184-07-24 10:48 J -38523078.28 -38523078.05 -38523077.82 0.0300 0.0074 \*



Mercury -110179-10-17 07:55 J -38521167.19 -38521167.17 -38521167.13 0.0288 0.0282

Mercury -110178-01-14 02:24 J -38521078.51 -38521078.40 -38521078.27 0.0287 0.0187

Mercury -110178-04-12 21:21 J -38520989.76 -38520989.61 -38520989.45 0.0286 0.0090

Mercury -110178-07-10 16:33 J -38520900.98 -38520900.81 -38520900.64 0.0285 0.0008

Mercury -110178-10-07 11:45 J -38520812.16 -38520812.01 -38520811.85 0.0284 0.0106

Mercury -110177-01-04 07:26 J -38520723.30 -38520723.19 -38520723.07 0.0283 0.0204

Venus -110173-05-28 14:24 J -38519117.05 -38519116.90 -38519116.74 0.0267 0.0184

Venus -110172-01-12 20:38 J -38518887.84 -38518887.64 -38518887.43 0.0265 0.0086

Venus -110172-08-30 02:24 J -38518658.62 -38518658.40 -38518658.18 0.0264 0.0013

Venus -110171-04-16 07:12 J -38518429.39 -38518429.20 -38518428.99 0.0263 0.0110

Venus -110171-12-01 11:45 J -38518200.13 -38518200.01 -38518199.86 0.0262 0.0204

Earth -110169-01-24 00:14 J -38517781.75 -38517781.49 -38517781.24 0.0261 0.0016

Moon -110169-01-24 03:21 J -38517781.63 -38517781.36 -38517781.10 0.0261 0.0004 \*

Mars -110167-06-10 05:45 J -38516913.52 -38516913.26 -38516913.00 0.0262 0.0089

Mercury -110163-11-02 21:07 J -38515306.71 -38515306.62 -38515306.53 0.0273 0.0212

Mercury -110162-01-30 10:33 J -38515218.19 -38515218.06 -38515217.93 0.0274 0.0136

Mercury -110162-04-28 23:45 J -38515129.65 -38515129.51 -38515129.36 0.0275 0.0061

Mercury -110162-07-26 12:57 J -38515041.10 -38515040.96 -38515040.81 0.0276 0.0016

Mercury -110162-10-23 01:55 J -38514952.55 -38514952.42 -38514952.28 0.0277 0.0092

Mercury -110161-01-19 14:53 J -38514863.99 -38514863.88 -38514863.77 0.0278 0.0167

Mercury -110161-04-17 03:36 J -38514775.42 -38514775.35 -38514775.28 0.0279 0.0242

Venus -110157-02-08 03:50 J -38513383.49 -38513383.34 -38513383.17 0.0295 0.0185

Venus -110157-09-24 22:19 J -38513153.77 -38513153.57 -38513153.36 0.0296 0.0056

Venus -110156-05-12 17:31 J -38512923.97 -38512923.77 -38512923.57 0.0298 0.0076

Venus -110156-12-28 12:57 J -38512694.10 -38512693.96 -38512693.81 0.0299 0.0208

Earth -110155-07-18 06:14 J -38512492.31 -38512492.24 -38512492.16 0.0300 0.0284

Moon -110155-07-18 09:36 J -38512492.19 -38512492.10 -38512491.99 0.0300 0.0270 \*

Mars -110153-07-19 12:57 J -38511760.20 -38511759.96 -38511759.70 0.0299 0.0180

Mercury -110149-06-02 00:00 J -38510346.59 -38510346.50 -38510346.40 0.0287 0.0228

Mercury -110149-08-29 18:43 J -38510257.86 -38510257.72 -38510257.57 0.0286 0.0132

Mercury -110149-11-26 13:41 J -38510169.09 -38510168.93 -38510168.76 0.0285 0.0035

Mercury -110148-02-23 08:53 J -38510080.29 -38510080.13 -38510079.96 0.0284 0.0064

Mercury -110148-05-23 04:19 J -38509991.45 -38509991.32 -38509991.17 0.0283 0.0162

Mercury -110148-08-20 00:14 J -38509902.55 -38509902.49 -38509902.42 0.0282 0.0260

Venus -110144-12-08 14:24 J -38508331.06 -38508330.90 -38508330.73 0.0267 0.0174

Venus -110143-07-25 20:38 J -38508101.84 -38508101.64 -38508101.42 0.0265 0.0075

Venus -110142-03-12 02:24 J -38507872.61 -38507872.40 -38507872.18 0.0264 0.0024

Venus -110142-10-27 07:55 J -38507643.37 -38507643.17 -38507642.98 0.0263 0.0121

Venus -110141-06-12 12:29 J -38507414.09 -38507413.98 -38507413.85 0.0262 0.0215

Moon -110140-01-17 12:29 J -38507195.03 -38507194.98 -38507194.92 0.0261 0.0255

Mars -110137-07-25 18:29 J -38505910.00 -38505909.73 -38505909.46 0.0264 0.0048

Mercury -110133-03-21 22:05 J -38504574.65 -38504574.58 -38504574.51 0.0274 0.0239

Mercury -110133-06-18 11:31 J -38504486.14 -38504486.02 -38504485.90 0.0275 0.0163

Mercury -110133-09-15 00:57 J -38504397.60 -38504397.46 -38504397.32 0.0276 0.0087

Mercury -110133-12-12 14:09 J -38504309.06 -38504308.91 -38504308.77 0.0276 0.0012

Mercury -110132-03-11 03:07 J -38504220.51 -38504220.37 -38504220.23 0.0277 0.0065

Mercury -110132-06-07 16:05 J -38504131.95 -38504131.83 -38504131.71 0.0278 0.0141

Mercury -110132-09-04 04:48 J -38504043.38 -38504043.30 -38504043.21 0.0279 0.0216

Venus -110128-08-20 07:55 J -38502597.33 -38502597.17 -38502597.00 0.0295 0.0169

Venus -110127-04-07 02:38 J -38502367.59 -38502367.39 -38502367.18 0.0297 0.0039

Venus -110127-11-22 21:50 J -38502137.78 -38502137.59 -38502137.39 0.0298 0.0094

Venus -110126-07-10 17:31 J -38501907.89 -38501907.77 -38501907.63 0.0299 0.0227

Moon -110125-07-25 05:02 J -38501527.48 -38501527.29 -38501527.08 0.0300 0.0134

Earth -110125-07-25 05:45 J -38501527.46 -38501527.26 -38501527.04 0.0300 0.0125 \*

Mars -110123-09-12 22:19 J -38500747.88 -38500747.57 -38500747.27 0.0298 0.0061

Mercury -110120-10-20 00:00 J -38499614.57 -38499614.50 -38499614.43 0.0288 0.0257

Mercury -110119-01-16 18:43 J -38499525.86 -38499525.72 -38499525.59 0.0287 0.0162

Mercury -110119-04-15 13:41 J -38499437.09 -38499436.93 -38499436.77 0.0286 0.0065

Mercury -110119-07-13 08:53 J -38499348.30 -38499348.13 -38499347.97 0.0285 0.0033

Mercury -110119-10-10 04:05 J -38499259.47 -38499259.33 -38499259.17 0.0284 0.0132

Mercury -110118-01-07 00:00 J -38499170.60 -38499170.50 -38499170.40 0.0283 0.0230

Venus -110115-11-03 12:14 J -38497774.03 -38497773.99 -38497773.94 0.0268 0.0262

Venus -110114-06-20 19:12 J -38497544.87 -38497544.70 -38497544.52 0.0267 0.0163

Venus -110113-02-05 01:41 J -38497315.64 -38497315.43 -38497315.22 0.0265 0.0063

Venus -110113-09-21 07:12 J -38497086.41 -38497086.20 -38497085.98 0.0264 0.0036

Venus -110112-05-08 12:14 J -38496857.17 -38496856.99 -38496856.79 0.0263 0.0133

Venus -110112-12-23 16:48 J -38496627.90 -38496627.80 -38496627.68 0.0262 0.0227

Moon -110110-01-24 21:21 J -38496230.87 -38496230.61 -38496230.35 0.0261 0.0049

Earth -110110-01-24 23:17 J -38496230.78 -38496230.53 -38496230.27 0.0261 0.0036 \*

Mars -110109-09-17 22:33 J -38495628.71 -38495628.56 -38495628.40 0.0262 0.0215

Mars -110107-09-10 17:02 J -38494905.98 -38494905.79 -38494905.58 0.0264 0.0185

Mercury -110104-08-08 23:02 J -38493842.57 -38493842.54 -38493842.51 0.0273 0.0265

Mercury -110104-11-05 12:29 J -38493754.08 -38493753.98 -38493753.87 0.0273 0.0190

Mercury -110103-02-02 01:55 J -38493665.55 -38493665.42 -38493665.29 0.0274 0.0114

Mercury -110103-05-01 15:07 J -38493577.01 -38493576.87 -38493576.73 0.0275 0.0038

Mercury -110103-07-29 04:19 J -38493488.47 -38493488.32 -38493488.18 0.0276 0.0038

Mercury -110103-10-25 17:02 J -38493399.92 -38493399.79 -38493399.66 0.0277 0.0113

Mercury -110102-01-22 06:00 J -38493311.35 -38493311.25 -38493311.15 0.0278 0.0188

Mercury -110102-04-20 18:29 J -38493222.77 -38493222.73 -38493222.68 0.0279 0.0262

Venus -110099-07-15 14:53 J -38492040.92 -38492040.88 -38492040.83 0.0292 0.0284

Venus -110098-03-02 08:24 J -38491811.32 -38491811.15 -38491810.97 0.0295 0.0160

Venus -110098-10-18 02:53 J -38491581.59 -38491581.38 -38491581.18 0.0296 0.0030

Venus -110097-06-03 21:50 J -38491351.78 -38491351.59 -38491351.40 0.0298 0.0103

Venus -110096-01-19 17:02 J -38491121.90 -38491121.79 -38491121.65 0.0299 0.0237

Moon -110096-07-19 01:41 J -38490941.59 -38490941.43 -38490941.26 0.0300 0.0222

Earth -110096-07-19 01:26 J -38490941.58 -38490941.44 -38490941.29 0.0300 0.0232 \*

Mars -110093-11-04 23:31 J -38489736.54 -38489736.52 -38489736.46 0.0296 0.0294

Mercury -110090-06-05 15:50 J -38488793.95 -38488793.84 -38488793.72 0.0287 0.0204

Mercury -110090-09-02 10:48 J -38488705.20 -38488705.05 -38488704.90 0.0286 0.0107

Mercury -110090-11-30 05:45 J -38488616.42 -38488616.26 -38488616.09 0.0285 0.0011

Mercury -110089-02-27 01:12 J -38488527.61 -38488527.45 -38488527.29 0.0284 0.0088

Mercury -110089-05-25 20:38 J -38488438.76 -38488438.64 -38488438.51 0.0283 0.0187

Venus -110085-05-15 11:17 J -38486988.09 -38486988.03 -38486987.95 0.0268 0.0253

Venus -110085-12-30 18:29 J -38486758.90 -38486758.73 -38486758.54 0.0266 0.0153

Venus -110084-08-17 00:57 J -38486529.67 -38486529.46 -38486529.24 0.0265 0.0053

Venus -110083-04-03 06:43 J -38486300.43 -38486300.22 -38486300.00 0.0264 0.0046

Venus -110083-11-18 12:00 J -38486071.18 -38486071.00 -38486070.81 0.0263 0.0144

Venus -110082-07-05 16:48 J -38485841.88 -38485841.80 -38485841.70 0.0262 0.0238

Earth -110081-01-19 13:12 J -38485644.07 -38485643.95 -38485643.79 0.0261 0.0217

Moon -110081-01-19 15:21 J -38485644.00 -38485643.86 -38485643.69 0.0261 0.0203 \*

Mars -110079-11-03 06:57 J -38484625.47 -38484625.21 -38484624.94 0.0262 0.0085

Mercury -110074-03-25 13:26 J -38483022.03 -38483021.94 -38483021.85 0.0274 0.0217

Mercury -110074-06-22 02:53 J -38482933.50 -38482933.38 -38482933.25 0.0275 0.0141

Mercury -110074-09-18 16:05 J -38482844.97 -38482844.83 -38482844.69 0.0276 0.0065

Mercury -110074-12-16 05:17 J -38482756.42 -38482756.28 -38482756.14 0.0276 0.0011

Mercury -110073-03-13 18:14 J -38482667.87 -38482667.74 -38482667.60 0.0277 0.0087

Mercury -110073-06-10 07:12 J -38482579.32 -38482579.20 -38482579.09 0.0278 0.0162

Mercury -110073-09-06 19:55 J -38482490.74 -38482490.67 -38482490.60 0.0279 0.0236

Venus -110069-01-25 18:14 J -38481254.80 -38481254.74 -38481254.65 0.0293 0.0271

Venus -110069-09-11 12:14 J -38481025.17 -38481024.99 -38481024.81 0.0295 0.0145

Venus -110068-04-29 06:43 J -38480795.42 -38480795.22 -38480795.01 0.0297 0.0015

Venus -110068-12-15 01:55 J -38480565.60 -38480565.42 -38480565.23 0.0298 0.0120

Venus -110067-08-01 21:36 J -38480335.70 -38480335.60 -38480335.49 0.0299 0.0253

Earth -110066-07-27 00:29 J -38479976.66 -38479976.48 -38479976.28 0.0300 0.0175

Moon -110066-07-27 03:50 J -38479976.52 -38479976.34 -38479976.15 0.0300 0.0178 \*

Mars -110065-12-11 23:31 J -38479472.75 -38479472.52 -38479472.26 0.0299 0.0185

Mercury -110061-10-22 15:36 J -38478061.94 -38478061.85 -38478061.75 0.0288 0.0235

Mercury -110060-01-19 10:19 J -38477973.21 -38477973.07 -38477972.92 0.0287 0.0139

Mercury -110060-04-18 05:17 J -38477884.44 -38477884.28 -38477884.11 0.0286 0.0042

Mercury -110060-07-16 00:43 J -38477795.64 -38477795.47 -38477795.31 0.0285 0.0056

Mercury -110060-10-12 20:09 J -38477706.80 -38477706.66 -38477706.52 0.0284 0.0155

Mercury -110059-01-09 15:50 J -38477617.91 -38477617.84 -38477617.76 0.0283 0.0254

Venus -110056-11-25 15:50 J -38476201.92 -38476201.84 -38476201.73 0.0268 0.0243

Venus -110055-07-12 23:02 J -38475972.71 -38475972.54 -38475972.35 0.0267 0.0142

Venus -110054-02-27 05:31 J -38475743.48 -38475743.27 -38475743.05 0.0265 0.0042

Venus -110054-10-14 11:31 J -38475514.23 -38475514.02 -38475513.80 0.0264 0.0058

Venus -110053-05-30 16:48 J -38475284.98 -38475284.80 -38475284.63 0.0263 0.0155

Venus -110052-01-14 21:21 J -38475055.67 -38475055.61 -38475055.54 0.0262 0.0250

Moon -110051-01-25 18:14 J -38474679.97 -38474679.74 -38474679.50 0.0261 0.0100

Earth -110051-01-25 21:36 J -38474679.83 -38474679.60 -38474679.35 0.0261 0.0086 \*

Mars -110049-12-19 02:53 J -38473621.65 -38473621.38 -38473621.10 0.0263 0.0053

Mercury -110045-08-11 14:38 J -38472289.96 -38472289.89 -38472289.83 0.0273 0.0242

Mercury -110045-11-08 04:05 J -38472201.45 -38472201.33 -38472201.22 0.0273 0.0167

Mercury -110044-02-04 17:17 J -38472112.91 -38472112.78 -38472112.64 0.0274 0.0091

Mercury -110044-05-04 06:29 J -38472024.37 -38472024.23 -38472024.09 0.0275 0.0016

Mercury -110044-07-31 19:26 J -38471935.83 -38471935.69 -38471935.55 0.0276 0.0060

Mercury -110044-10-28 08:24 J -38471847.28 -38471847.15 -38471847.03 0.0277 0.0134

Mercury -110043-01-24 20:53 J -38471758.71 -38471758.63 -38471758.53 0.0278 0.0210

Venus -110040-08-06 19:12 J -38470468.78 -38470468.70 -38470468.60 0.0293 0.0261

Venus -110039-03-24 12:57 J -38470239.14 -38470238.96 -38470238.78 0.0295 0.0135

Venus -110039-11-09 07:12 J -38470009.41 -38470009.20 -38470009.00 0.0296 0.0004

Venus -110038-06-27 01:55 J -38469779.60 -38469779.42 -38469779.23 0.0298 0.0130

Venus -110037-02-11 21:21 J -38469549.70 -38469549.61 -38469549.51 0.0299 0.0262

Moon -110037-07-19 17:02 J -38469390.97 -38469390.79 -38469390.59 0.0300 0.0177

Earth -110037-07-19 20:38 J -38469390.82 -38469390.64 -38469390.45 0.0300 0.0180 \*

Mars -110034-02-04 10:05 J -38468461.39 -38468461.08 -38468460.77 0.0298 0.0057

Mercury -110031-03-11 12:57 J -38467330.00 -38467329.96 -38467329.91 0.0288 0.0276

Mercury -110031-06-08 07:41 J -38467241.31 -38467241.18 -38467241.05 0.0287 0.0181

Mercury -110031-09-05 02:24 J -38467152.55 -38467152.40 -38467152.24 0.0286 0.0085

Mercury -110031-12-02 21:36 J -38467063.76 -38467063.60 -38467063.43 0.0285 0.0015

Mercury -110030-03-01 17:02 J -38466974.94 -38466974.79 -38466974.63 0.0284 0.0112

Mercury -110030-05-29 12:43 J -38466886.08 -38466885.97 -38466885.85 0.0283 0.0211

Venus -110026-06-07 15:07 J -38465415.97 -38465415.87 -38465415.76 0.0268 0.0233

Venus -110025-01-22 22:19 J -38465186.75 -38465186.57 -38465186.37 0.0266 0.0133

Venus -110025-09-08 05:02 J -38464957.50 -38464957.29 -38464957.07 0.0265 0.0031

Venus -110024-04-25 11:02 J -38464728.25 -38464728.04 -38464727.83 0.0264 0.0069

Venus -110024-12-10 16:19 J -38464498.99 -38464498.82 -38464498.65 0.0263 0.0166

Venus -110023-07-27 21:07 J -38464269.64 -38464269.62 -38464269.60 0.0262 0.0260

Earth -110022-01-20 11:45 J -38464093.20 -38464093.01 -38464092.81 0.0262 0.0166

Moon -110022-01-20 15:07 J -38464093.07 -38464092.87 -38464092.65 0.0262 0.0151 \*

Mars -110020-02-10 22:33 J -38463340.71 -38463340.56 -38463340.38 0.0262 0.0212

Mars -110018-02-03 18:00 J -38462617.94 -38462617.75 -38462617.55 0.0265 0.0190

Mercury -110016-12-29 15:21 J -38461557.88 -38461557.86 -38461557.84 0.0273 0.0269

Mercury -110015-03-28 04:48 J -38461469.40 -38461469.30 -38461469.19 0.0274 0.0194

Mercury -110015-06-24 18:14 J -38461380.87 -38461380.74 -38461380.61 0.0275 0.0118

Mercury -110015-09-21 07:26 J -38461292.33 -38461292.19 -38461292.05 0.0276 0.0042

Mercury -110015-12-18 20:38 J -38461203.79 -38461203.64 -38461203.50 0.0276 0.0034

Mercury -110014-03-17 09:21 J -38461115.23 -38461115.11 -38461114.97 0.0277 0.0109

Mercury -110014-06-13 22:19 J -38461026.67 -38461026.57 -38461026.46 0.0278 0.0183

Mercury -110014-09-10 10:48 J -38460938.09 -38460938.05 -38460937.99 0.0279 0.0258

Venus -110010-02-16 23:02 J -38459682.65 -38459682.54 -38459682.43 0.0293 0.0247

Venus -110010-10-04 16:33 J -38459453.00 -38459452.81 -38459452.62 0.0295 0.0120

Venus -110009-05-21 11:02 J -38459223.24 -38459223.04 -38459222.83 0.0297 0.0014

Venus -110008-01-06 06:14 J -38458993.42 -38458993.24 -38458993.06 0.0298 0.0147

Venus -110008-08-24 01:40 J -38458763.49 -38458763.43 -38458763.35 0.0299 0.0280

Earth -110007-07-27 19:40 J -38458425.83 -38458425.68 -38458425.52 0.0300 0.0226

Moon -110007-07-27 20:38 J -38458425.79 -38458425.64 -38458425.47 0.0300 0.0224 \*

Mars -110004-03-30 10:19 J -38457449.13 -38457449.07 -38457448.99 0.0296 0.0288

Mercury -110002-10-26 07:26 J -38456509.30 -38456509.19 -38456509.08 0.0287 0.0212

Mercury -110001-01-23 02:09 J -38456420.56 -38456420.41 -38456420.26 0.0286 0.0116

Mercury -110001-04-20 21:21 J -38456331.78 -38456331.61 -38456331.45 0.0286 0.0019

Mercury -110001-07-18 16:33 J -38456242.97 -38456242.81 -38456242.65 0.0285 0.0080

Mercury -110001-10-15 12:14 J -38456154.12 -38456153.99 -38456153.86 0.0284 0.0179

# 110TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 110th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-110000-01-12 07:55 J	-38456065.19	-38456065.17	-38456065.13	0.0283	0.0278		
Venus	-109997-12-17 19:55 J	-38454629.78	-38454629.67	-38454629.54	0.0268	0.0222		
Venus	-109996-08-04 03:07 J	-38454400.56	-38454400.37	-38454400.17	0.0267	0.0121		
Venus	-109995-03-21 09:36 J	-38454171.31	-38454171.10	-38454170.88	0.0265	0.0020		
Venus	-109995-11-05 15:36 J	-38453942.05	-38453941.85	-38453941.64	0.0264	0.0081		
Venus	-109994-06-22 20:52 J	-38453712.78	-38453712.63	-38453712.46	0.0263	0.0178		
Earth	-109992-01-26 20:24 J	-38453128.86	-38453128.65	-38453128.43	0.0262	0.0137		
Moon	-109992-01-26 21:36 J	-38453128.79	-38453128.60	-38453128.39	0.0262	0.0149	*	
Mars	-109990-03-29 17:16 J	-38452337.05	-38452336.78	-38452336.52	0.0262	0.0075		
Mercury	-109986-08-15 06:28 J	-38450737.32	-38450737.23	-38450737.14	0.0273	0.0217		
Mercury	-109986-11-11 19:55 J	-38450648.80	-38450648.67	-38450648.55	0.0274	0.0142		
Mercury	-109985-02-08 09:07 J	-38450560.26	-38450560.12	-38450559.98	0.0274	0.0066		
Mercury	-109985-05-06 22:04 J	-38450471.72	-38450471.58	-38450471.43	0.0275	0.0012		

Mercury -109985-08-03 11:02 J -38450383.17 -38450383.04 -38450382.90 0.0276 0.0084

Mercury -109985-10-31 00:00 J -38450294.62 -38450294.50 -38450294.39 0.0277 0.0158

Mercury -109984-01-27 12:28 J -38450206.05 -38450205.98 -38450205.90 0.0278 0.0232

Venus -109981-08-29 01:26 J -38448896.56 -38448896.44 -38448896.32 0.0293 0.0235

Venus -109980-04-15 18:43 J -38448666.90 -38448666.72 -38448666.52 0.0295 0.0108

Venus -109980-12-01 12:57 J -38448437.16 -38448436.96 -38448436.75 0.0296 0.0025

Venus -109979-07-19 07:40 J -38448207.35 -38448207.18 -38448207.00 0.0298 0.0159

Venus -109978-03-06 02:52 J -38447977.41 -38447977.38 -38447977.33 0.0299 0.0291

Moon -109978-07-21 17:45 J -38447839.96 -38447839.76 -38447839.55 0.0299 0.0124

Earth -109978-07-21 18:14 J -38447839.95 -38447839.74 -38447839.52 0.0299 0.0123 \*

Mars -109976-05-05 14:52 J -38447186.11 -38447185.88 -38447185.62 0.0299 0.0185

Mercury -109972-03-14 05:02 J -38445777.37 -38445777.29 -38445777.21 0.0288 0.0251

Mercury -109972-06-10 23:31 J -38445688.65 -38445688.52 -38445688.37 0.0287 0.0156

Mercury -109972-09-07 18:43 J -38445599.89 -38445599.72 -38445599.56 0.0286 0.0059

Mercury -109972-12-05 13:55 J -38445511.09 -38445510.92 -38445510.76 0.0285 0.0039

Mercury -109971-03-04 09:21 J -38445422.26 -38445422.11 -38445421.96 0.0284 0.0138

Mercury -109971-06-01 05:02 J -38445333.38 -38445333.29 -38445333.19 0.0283 0.0236

Venus -109967-06-29 18:57 J -38443843.83 -38443843.71 -38443843.57 0.0268 0.0213

Venus -109966-02-14 02:38 J -38443614.59 -38443614.39 -38443614.19 0.0266 0.0111

Venus -109966-10-01 09:21 J -38443385.33 -38443385.11 -38443384.89 0.0265 0.0009

Venus -109965-05-17 15:21 J -38443156.06 -38443155.86 -38443155.65 0.0264 0.0092

Venus -109964-01-01 20:38 J -38442926.78 -38442926.64 -38442926.48 0.0263 0.0189

Moon -109963-01-21 08:52 J -38442542.37 -38442542.13 -38442541.88 0.0262 0.0102

Earth -109963-01-21 10:33 J -38442542.28 -38442542.06 -38442541.82 0.0262 0.0115 \*

Mars -109960-05-14 04:33 J -38441333.58 -38441333.31 -38441333.04 0.0263 0.0058

Mercury -109956-01-01 07:12 J -38440005.26 -38440005.20 -38440005.13 0.0273 0.0244

Mercury -109956-03-30 20:38 J -38439916.75 -38439916.64 -38439916.52 0.0274 0.0169

Mercury -109956-06-27 10:04 J -38439828.22 -38439828.08 -38439827.94 0.0275 0.0093

Mercury -109956-09-23 23:16 J -38439739.68 -38439739.53 -38439739.39 0.0276 0.0018

Mercury -109956-12-21 12:14 J -38439651.13 -38439650.99 -38439650.85 0.0277 0.0057



Mercury -109955-03-20 01:12 J -38439562.58 -38439562.45 -38439562.33 0.0277 0.0132

Mercury -109955-06-16 13:55 J -38439474.01 -38439473.92 -38439473.83 0.0278 0.0206

Venus -109951-03-11 04:48 J -38438110.43 -38438110.30 -38438110.16 0.0293 0.0222

Venus -109951-10-26 22:33 J -38437880.76 -38437880.56 -38437880.37 0.0295 0.0093

Venus -109950-06-13 16:48 J -38437651.00 -38437650.80 -38437650.60 0.0297 0.0041

Venus -109949-01-29 11:45 J -38437421.17 -38437421.01 -38437420.85 0.0298 0.0175

Moon -109948-07-28 13:26 J -38436875.03 -38436874.94 -38436874.83 0.0299 0.0272

Earth -109948-07-28 16:48 J -38436874.87 -38436874.80 -38436874.72 0.0299 0.0282 \*

Mars -109946-06-30 00:14 J -38436173.80 -38436173.49 -38436173.18 0.0298 0.0056

Mercury -109943-08-01 04:33 J -38435045.33 -38435045.31 -38435045.27 0.0288 0.0283

Mercury -109943-10-28 23:16 J -38434956.65 -38434956.53 -38434956.40 0.0287 0.0187

Mercury -109942-01-25 18:14 J -38434867.90 -38434867.74 -38434867.58 0.0286 0.0090

Mercury -109942-04-24 13:26 J -38434779.11 -38434778.94 -38434778.77 0.0285 0.0007

Mercury -109942-07-22 08:52 J -38434690.29 -38434690.13 -38434689.97 0.0284 0.0106

Mercury -109942-10-19 04:33 J -38434601.43 -38434601.31 -38434601.19 0.0283 0.0205

Venus -109937-01-10 00:14 J -38433057.62 -38433057.49 -38433057.34 0.0268 0.0202

Venus -109937-08-26 07:40 J -38432828.37 -38432828.18 -38432827.97 0.0267 0.0099

Venus -109936-04-12 14:38 J -38432599.11 -38432598.89 -38432598.68 0.0265 0.0007

Venus -109936-11-27 20:24 J -38432369.84 -38432369.65 -38432369.44 0.0264 0.0104

Venus -109935-07-15 01:40 J -38432140.56 -38432140.43 -38432140.28 0.0263 0.0202

Earth -109933-01-28 20:24 J -38431577.82 -38431577.65 -38431577.47 0.0262 0.0191

Moon -109933-01-29 00:00 J -38431577.65 -38431577.50 -38431577.32 0.0262 0.0200 \*

Mars -109932-07-07 12:43 J -38431052.15 -38431051.97 -38431051.79 0.0262 0.0197

Mars -109930-06-30 07:40 J -38430329.35 -38430329.18 -38430328.99 0.0264 0.0200

Mercury -109927-05-21 09:07 J -38429273.15 -38429273.12 -38429273.09 0.0272 0.0265

Mercury -109927-08-17 22:33 J -38429184.66 -38429184.56 -38429184.45 0.0273 0.0190

Mercury -109927-11-14 12:00 J -38429096.13 -38429096.00 -38429095.87 0.0274 0.0115

Mercury -109926-02-11 01:12 J -38429007.59 -38429007.45 -38429007.31 0.0275 0.0040

Mercury -109926-05-10 14:09 J -38428919.05 -38428918.91 -38428918.76 0.0276 0.0036

Mercury -109926-08-07 03:07 J -38428830.50 -38428830.37 -38428830.24 0.0276 0.0110

Mercury -109926-11-03 15:50 J -38428741.94 -38428741.84 -38428741.73 0.0277 0.0184

Mercury -109925-01-31 04:33 J -38428653.36 -38428653.31 -38428653.26 0.0278 0.0257

Venus -109922-09-21 08:38 J -38427324.27 -38427324.14 -38427323.99 0.0293 0.0208

Venus -109921-05-08 02:09 J -38427094.61 -38427094.41 -38427094.21 0.0295 0.0079

Venus -109921-12-23 20:09 J -38426864.86 -38426864.66 -38426864.46 0.0296 0.0055

Venus -109920-08-10 14:52 J -38426635.04 -38426634.88 -38426634.72 0.0298 0.0189

Earth -109919-07-22 18:00 J -38426288.97 -38426288.75 -38426288.51 0.0299 0.0061

Moon -109919-07-22 21:21 J -38426288.83 -38426288.61 -38426288.38 0.0299 0.0067 \*

Mars -109916-08-22 12:00 J -38425162.04 -38425162.00 -38425161.95 0.0296 0.0293

Mercury -109913-03-16 21:36 J -38424224.70 -38424224.60 -38424224.50 0.0288 0.0224

Mercury -109913-06-13 16:19 J -38424135.97 -38424135.82 -38424135.67 0.0287 0.0128

Mercury -109913-09-10 11:16 J -38424047.20 -38424047.03 -38424046.86 0.0286 0.0031

Mercury -109913-12-08 06:28 J -38423958.39 -38423958.23 -38423958.06 0.0285 0.0067

Mercury -109912-03-07 02:09 J -38423869.55 -38423869.41 -38423869.27 0.0284 0.0166

Mercury -109912-06-03 21:50 J -38423780.64 -38423780.59 -38423780.53 0.0283 0.0264

Venus -109908-07-22 00:14 J -38422271.64 -38422271.49 -38422271.33 0.0268 0.0191

Venus -109907-03-08 07:40 J -38422042.38 -38422042.18 -38422041.97 0.0266 0.0088

Venus -109907-10-23 14:38 J -38421813.11 -38421812.89 -38421812.67 0.0265 0.0015

Venus -109906-06-09 20:38 J -38421583.83 -38421583.64 -38421583.44 0.0264 0.0116

Venus -109905-01-25 02:09 J -38421354.53 -38421354.41 -38421354.28 0.0263 0.0213

Moon -109904-01-22 07:40 J -38420991.43 -38420991.18 -38420990.94 0.0262 0.0051

Earth -109904-01-22 11:02 J -38420991.28 -38420991.04 -38420990.78 0.0262 0.0060 \*

Mars -109902-08-22 22:19 J -38420048.84 -38420048.57 -38420048.30 0.0263 0.0069

Mercury -109897-01-04 23:31 J -38418452.60 -38418452.52 -38418452.42 0.0273 0.0217

Mercury -109897-04-02 13:12 J -38418364.08 -38418363.95 -38418363.83 0.0274 0.0140

Mercury -109897-06-30 02:24 J -38418275.54 -38418275.40 -38418275.26 0.0275 0.0065

Mercury -109897-09-26 15:36 J -38418187.00 -38418186.85 -38418186.71 0.0276 0.0012

Mercury -109897-12-24 04:33 J -38418098.45 -38418098.31 -38418098.18 0.0277 0.0085

Mercury -109896-03-22 17:16 J -38418009.89 -38418009.78 -38418009.66 0.0278 0.0159

Mercury -109896-06-19 06:00 J -38417921.32 -38417921.25 -38417921.17 0.0279 0.0233

Venus -109892-04-02 13:12 J -38416538.10 -38416537.95 -38416537.79 0.0293 0.0194  
 Venus -109892-11-18 06:43 J -38416308.42 -38416308.22 -38416308.02 0.0295 0.0063  
 Venus -109891-07-06 00:57 J -38416078.66 -38416078.46 -38416078.26 0.0297 0.0072  
 Venus -109890-02-20 19:40 J -38415848.82 -38415848.68 -38415848.53 0.0298 0.0207  
 Mars -109888-09-28 15:36 J -38414898.10 -38414897.85 -38414897.60 0.0299 0.0179  
 Mercury -109884-08-03 21:36 J -38413492.67 -38413492.60 -38413492.52 0.0288 0.0253  
 Mercury -109884-10-31 16:04 J -38413403.96 -38413403.83 -38413403.68 0.0287 0.0158  
 Mercury -109883-01-28 11:16 J -38413315.19 -38413315.03 -38413314.87 0.0286 0.0061  
 Mercury -109883-04-27 06:28 J -38413226.40 -38413226.23 -38413226.06 0.0285 0.0037  
 Mercury -109883-07-25 01:55 J -38413137.57 -38413137.42 -38413137.27 0.0284 0.0135  
 Mercury -109883-10-21 21:36 J -38413048.69 -38413048.60 -38413048.50 0.0283 0.0234  
 Venus -109878-02-01 06:00 J -38411485.41 -38411485.25 -38411485.08 0.0268 0.0178  
 Venus -109878-09-18 13:40 J -38411256.14 -38411255.93 -38411255.72 0.0267 0.0074  
 Venus -109877-05-04 20:24 J -38411026.87 -38411026.65 -38411026.43 0.0265 0.0028  
 Venus -109877-12-20 02:24 J -38410797.59 -38410797.40 -38410797.20 0.0264 0.0129  
 Venus -109876-08-06 07:55 J -38410568.27 -38410568.17 -38410568.05 0.0263 0.0227  
 Moon -109874-01-29 20:52 J -38410026.69 -38410026.63 -38410026.53 0.0262 0.0249  
 Earth -109874-01-29 22:04 J -38410026.66 -38410026.58 -38410026.50 0.0262 0.0248 \*  
 Mars -109872-10-08 00:28 J -38409044.75 -38409044.48 -38409044.21 0.0264 0.0074  
 Mercury -109868-05-24 02:09 J -38407720.49 -38407720.41 -38407720.34 0.0272 0.0235  
 Mercury -109868-08-20 15:36 J -38407631.97 -38407631.85 -38407631.74 0.0273 0.0160  
 Mercury -109868-11-17 04:48 J -38407543.44 -38407543.30 -38407543.16 0.0274 0.0085  
 Mercury -109867-02-13 18:00 J -38407454.90 -38407454.75 -38407454.61 0.0275 0.0012  
 Mercury -109867-05-13 06:57 J -38407366.35 -38407366.21 -38407366.07 0.0276 0.0065  
 Mercury -109867-08-09 19:40 J -38407277.80 -38407277.68 -38407277.55 0.0277 0.0139  
 Mercury -109867-11-06 08:24 J -38407189.23 -38407189.15 -38407189.06 0.0278 0.0213  
 Venus -109863-10-13 18:43 J -38405751.88 -38405751.72 -38405751.55 0.0293 0.0177  
 Venus -109862-05-31 12:00 J -38405522.20 -38405522.00 -38405521.79 0.0295 0.0046  
 Venus -109861-01-16 06:00 J -38405292.44 -38405292.25 -38405292.05 0.0296 0.0088  
 Venus -109861-09-02 00:28 J -38405062.61 -38405062.48 -38405062.34 0.0298 0.0223

Earth -109860-07-23 22:04 J -38404737.81 -38404737.58 -38404737.35 0.0299 0.0011  
 Moon -109860-07-23 23:31 J -38404737.76 -38404737.52 -38404737.28 0.0299 0.0001 \*  
 Mars -109858-11-22 17:45 J -38403886.06 -38403885.76 -38403885.45 0.0298 0.0069  
 Mercury -109855-12-21 20:09 J -38402760.66 -38402760.66 -38402760.64 0.0289 0.0288  
 Mercury -109854-03-20 14:52 J -38402672.00 -38402671.88 -38402671.76 0.0288 0.0192  
 Mercury -109854-06-17 09:36 J -38402583.25 -38402583.10 -38402582.94 0.0287 0.0097  
 Mercury -109854-09-14 04:48 J -38402494.47 -38402494.30 -38402494.13 0.0286 0.0001  
 Mercury -109854-12-12 00:00 J -38402405.65 -38402405.50 -38402405.33 0.0285 0.0100  
 Mercury -109853-03-09 19:40 J -38402316.79 -38402316.68 -38402316.55 0.0284 0.0198  
 Venus -109849-08-13 06:57 J -38400699.38 -38400699.21 -38400699.04 0.0268 0.0167  
 Venus -109848-03-30 14:24 J -38400470.11 -38400469.90 -38400469.68 0.0266 0.0063  
 Venus -109848-11-14 21:21 J -38400240.83 -38400240.61 -38400240.39 0.0265 0.0040  
 Venus -109847-07-02 03:36 J -38400011.54 -38400011.35 -38400011.17 0.0264 0.0141  
 Venus -109846-02-16 08:52 J -38399782.20 -38399782.13 -38399782.02 0.0263 0.0239  
 Earth -109845-01-24 13:40 J -38399440.18 -38399439.93 -38399439.67 0.0262 0.0003  
 Moon -109845-01-24 15:07 J -38399440.12 -38399439.87 -38399439.62 0.0262 0.0003 \*  
 Mars -109844-11-30 21:07 J -38398763.80 -38398763.62 -38398763.42 0.0262 0.0191  
 Mars -109842-11-23 18:57 J -38398040.87 -38398040.71 -38398040.54 0.0265 0.0210  
 Mercury -109839-10-11 03:07 J -38396988.41 -38396988.37 -38396988.32 0.0273 0.0260  
 Mercury -109838-01-07 16:48 J -38396899.91 -38396899.80 -38396899.69 0.0273 0.0185  
 Mercury -109838-04-06 06:00 J -38396811.38 -38396811.25 -38396811.11 0.0274 0.0110  
 Mercury -109838-07-03 19:12 J -38396722.84 -38396722.70 -38396722.55 0.0275 0.0035  
 Mercury -109838-09-30 08:24 J -38396634.29 -38396634.15 -38396634.01 0.0276 0.0041  
 Mercury -109838-12-27 21:07 J -38396545.74 -38396545.62 -38396545.49 0.0277 0.0116  
 Mercury -109837-03-25 10:04 J -38396457.18 -38396457.08 -38396456.98 0.0278 0.0189  
 Mercury -109837-06-21 22:33 J -38396368.60 -38396368.56 -38396368.51 0.0279 0.0263  
 Venus -109834-09-08 06:57 J -38395195.23 -38395195.21 -38395195.17 0.0291 0.0288  
 Venus -109833-04-24 23:45 J -38394965.68 -38394965.51 -38394965.33 0.0294 0.0162  
 Venus -109833-12-10 17:16 J -38394735.98 -38394735.78 -38394735.58 0.0295 0.0030  
 Venus -109832-07-28 11:16 J -38394506.22 -38394506.03 -38394505.83 0.0297 0.0106

Venus -109831-03-15 06:14 J -38394276.36 -38394276.24 -38394276.12 0.0298 0.0240  
 Mercury -109825-08-06 15:07 J -38391939.96 -38391939.87 -38391939.76 0.0288 0.0220  
 Mercury -109825-11-03 10:04 J -38391851.23 -38391851.08 -38391850.93 0.0287 0.0124  
 Mercury -109824-01-31 05:02 J -38391762.45 -38391762.29 -38391762.12 0.0286 0.0027  
 Mercury -109824-04-30 00:14 J -38391673.65 -38391673.49 -38391673.32 0.0285 0.0072  
 Mercury -109824-07-27 19:55 J -38391584.80 -38391584.67 -38391584.53 0.0284 0.0170  
 Mercury -109824-10-24 15:50 J -38391495.89 -38391495.84 -38391495.79 0.0283 0.0268  
 Venus -109820-07-09 05:02 J -38390142.35 -38390142.29 -38390142.22 0.0270 0.0257  
 Venus -109819-02-23 13:12 J -38389913.12 -38389912.95 -38389912.76 0.0268 0.0153  
 Venus -109819-10-10 21:07 J -38389683.84 -38389683.62 -38389683.41 0.0267 0.0049  
 Venus -109818-05-28 03:50 J -38389454.55 -38389454.34 -38389454.12 0.0265 0.0054  
 Venus -109817-01-12 09:50 J -38389225.26 -38389225.09 -38389224.91 0.0264 0.0156  
 Venus -109817-08-28 15:36 J -38388995.90 -38388995.85 -38388995.79 0.0263 0.0253  
 Moon -109816-01-18 11:45 J -38388853.15 -38388853.01 -38388852.87 0.0263 0.0224  
 Earth -109816-01-18 13:12 J -38388853.05 -38388852.95 -38388852.81 0.0263 0.0231 \*  
 Mars -109813-01-16 23:16 J -38387759.81 -38387759.53 -38387759.26 0.0263 0.0049  
 Mercury -109809-05-26 19:26 J -38386167.79 -38386167.69 -38386167.59 0.0273 0.0202  
 Mercury -109809-08-23 08:38 J -38386079.26 -38386079.14 -38386079.00 0.0274 0.0127  
 Mercury -109809-11-19 22:04 J -38385990.72 -38385990.58 -38385990.44 0.0275 0.0052  
 Mercury -109808-02-16 11:02 J -38385902.18 -38385902.04 -38385901.89 0.0275 0.0024  
 Mercury -109808-05-16 00:00 J -38385813.63 -38385813.50 -38385813.36 0.0276 0.0098  
 Mercury -109808-08-12 12:43 J -38385725.07 -38385724.97 -38385724.85 0.0277 0.0172  
 Mercury -109808-11-09 01:26 J -38385636.50 -38385636.44 -38385636.37 0.0278 0.0245  
 Venus -109804-03-20 14:52 J -38384408.95 -38384408.88 -38384408.80 0.0291 0.0268  
 Venus -109804-11-05 07:12 J -38384179.37 -38384179.20 -38384179.01 0.0293 0.0142  
 Venus -109803-06-23 00:43 J -38383949.68 -38383949.47 -38383949.27 0.0295 0.0011  
 Venus -109802-02-07 18:28 J -38383719.91 -38383719.73 -38383719.54 0.0297 0.0125  
 Venus -109802-09-25 13:12 J -38383490.05 -38383489.95 -38383489.85 0.0298 0.0259  
 Moon -109801-07-25 03:36 J -38383186.57 -38383186.35 -38383186.11 0.0299 0.0078  
 Earth -109801-07-25 06:57 J -38383186.43 -38383186.21 -38383185.99 0.0299 0.0093 \*

Mars -109799-02-22 04:19 J -38382609.57 -38382609.32 -38382609.04 0.0298 0.0158  
 Mercury -109796-12-24 14:52 J -38381207.96 -38381207.88 -38381207.80 0.0288 0.0250  
 Mercury -109795-03-23 09:36 J -38381119.24 -38381119.10 -38381118.97 0.0287 0.0154  
 Mercury -109795-06-20 04:19 J -38381030.48 -38381030.32 -38381030.15 0.0286 0.0058  
 Mercury -109795-09-16 23:31 J -38380941.68 -38380941.52 -38380941.35 0.0285 0.0040  
 Mercury -109795-12-14 18:57 J -38380852.85 -38380852.71 -38380852.56 0.0284 0.0138  
 Mercury -109794-03-13 14:38 J -38380763.98 -38380763.89 -38380763.79 0.0283 0.0236  
 Venus -109790-01-19 07:26 J -38379356.28 -38379356.19 -38379356.10 0.0269 0.0245  
 Venus -109790-09-05 15:21 J -38379127.04 -38379126.86 -38379126.67 0.0268 0.0141  
 Venus -109789-04-21 23:02 J -38378897.76 -38378897.54 -38378897.32 0.0266 0.0036  
 Venus -109789-12-07 05:45 J -38378668.47 -38378668.26 -38378668.05 0.0265 0.0068  
 Venus -109788-07-24 11:45 J -38378439.17 -38378439.01 -38378438.83 0.0264 0.0169  
 Earth -109786-01-25 18:57 J -38377888.96 -38377888.71 -38377888.46 0.0262 0.0062  
 Moon -109786-01-25 22:48 J -38377888.80 -38377888.55 -38377888.29 0.0262 0.0062 \*  
 Mars -109783-03-03 16:04 J -38376756.09 -38376755.83 -38376755.57 0.0264 0.0085  
 Mercury -109780-10-13 20:38 J -38375435.71 -38375435.64 -38375435.55 0.0273 0.0226  
 Mercury -109779-01-10 10:19 J -38375347.19 -38375347.07 -38375346.95 0.0274 0.0150  
 Mercury -109779-04-08 23:31 J -38375258.66 -38375258.52 -38375258.38 0.0275 0.0075  
 Mercury -109779-07-06 12:43 J -38375170.11 -38375169.97 -38375169.83 0.0276 0.0001  
 Mercury -109779-10-03 01:40 J -38375081.57 -38375081.43 -38375081.29 0.0277 0.0075  
 Mercury -109779-12-30 14:24 J -38374993.01 -38374992.90 -38374992.77 0.0277 0.0150  
 Mercury -109778-03-29 03:07 J -38374904.44 -38374904.37 -38374904.28 0.0278 0.0224  
 Venus -109775-09-30 20:24 J -38373622.75 -38373622.65 -38373622.55 0.0292 0.0254  
 Venus -109774-05-18 12:57 J -38373393.14 -38373392.96 -38373392.77 0.0294 0.0126  
 Venus -109773-01-03 06:28 J -38373163.43 -38373163.23 -38373163.02 0.0296 0.0008  
 Venus -109773-08-20 00:43 J -38372933.65 -38372933.47 -38372933.29 0.0297 0.0143  
 Venus -109772-04-06 19:26 J -38372703.76 -38372703.69 -38372703.62 0.0298 0.0278  
 Earth -109772-07-19 15:21 J -38372600.00 -38372599.86 -38372599.71 0.0298 0.0232  
 Moon -109772-07-19 18:57 J -38372599.83 -38372599.71 -38372599.58 0.0298 0.0247 \*  
 Mars -109769-04-17 20:52 J -38371596.93 -38371596.63 -38371596.33 0.0297 0.0088

Mercury -109766-05-13 15:36 J -38370475.89 -38370475.85 -38370475.80 0.0288 0.0275  
 Mercury -109766-08-10 10:04 J -38370387.20 -38370387.08 -38370386.95 0.0287 0.0180  
 Mercury -109766-11-07 05:02 J -38370298.45 -38370298.29 -38370298.13 0.0286 0.0084  
 Mercury -109765-02-04 00:00 J -38370209.66 -38370209.50 -38370209.33 0.0285 0.0014  
 Mercury -109765-05-02 19:26 J -38370120.84 -38370120.69 -38370120.53 0.0284 0.0111  
 Mercury -109765-07-30 14:52 J -38370031.98 -38370031.88 -38370031.76 0.0283 0.0210  
 Venus -109761-07-31 14:24 J -38368570.02 -38368569.90 -38368569.79 0.0269 0.0230  
 Venus -109760-03-17 22:19 J -38368340.76 -38368340.57 -38368340.37 0.0268 0.0125  
 Venus -109760-11-02 06:00 J -38368111.47 -38368111.25 -38368111.03 0.0266 0.0020  
 Venus -109759-06-19 12:43 J -38367882.17 -38367881.97 -38367881.76 0.0265 0.0084  
 Venus -109758-02-03 18:57 J -38367652.86 -38367652.71 -38367652.55 0.0264 0.0184  
 Moon -109757-01-20 16:19 J -38367302.02 -38367301.82 -38367301.62 0.0263 0.0165  
 Earth -109757-01-20 19:55 J -38367301.87 -38367301.67 -38367301.47 0.0263 0.0166 \*  
 Mars -109755-04-27 02:09 J -38366474.62 -38366474.41 -38366474.20 0.0263 0.0168  
 Mars -109753-04-19 02:38 J -38365751.52 -38365751.39 -38365751.25 0.0265 0.0233  
 Mercury -109750-03-02 23:45 J -38364703.58 -38364703.51 -38364703.44 0.0273 0.0241  
 Mercury -109750-05-30 13:12 J -38364615.06 -38364614.95 -38364614.83 0.0274 0.0166  
 Mercury -109750-08-27 02:38 J -38364526.53 -38364526.39 -38364526.25 0.0274 0.0091  
 Mercury -109750-11-23 15:50 J -38364437.99 -38364437.84 -38364437.70 0.0275 0.0016  
 Mercury -109749-02-20 04:48 J -38364349.44 -38364349.30 -38364349.16 0.0276 0.0059  
 Mercury -109749-05-18 17:45 J -38364260.88 -38364260.76 -38364260.64 0.0277 0.0134  
 Mercury -109749-08-15 06:28 J -38364172.32 -38364172.23 -38364172.14 0.0278 0.0207  
 Venus -109745-04-12 05:16 J -38362836.40 -38362836.28 -38362836.15 0.0291 0.0233  
 Venus -109745-11-27 21:50 J -38362606.78 -38362606.59 -38362606.39 0.0293 0.0104  
 Venus -109744-07-15 15:21 J -38362377.07 -38362376.86 -38362376.66 0.0295 0.0030  
 Venus -109743-03-02 09:07 J -38362147.28 -38362147.12 -38362146.94 0.0297 0.0166  
 Moon -109742-07-27 17:02 J -38361634.97 -38361634.79 -38361634.59 0.0298 0.0166  
 Earth -109742-07-27 19:12 J -38361634.87 -38361634.70 -38361634.50 0.0298 0.0183 \*  
 Mercury -109737-12-27 10:19 J -38359655.18 -38359655.07 -38359654.95 0.0288 0.0207  
 Mercury -109736-03-26 05:02 J -38359566.44 -38359566.29 -38359566.13 0.0287 0.0112

Mercury -109736-06-23 00:14 J -38359477.66 -38359477.49 -38359477.33 0.0286 0.0016

Mercury -109736-09-19 19:26 J -38359388.85 -38359388.69 -38359388.53 0.0285 0.0083

Mercury -109736-12-17 14:52 J -38359300.01 -38359299.88 -38359299.75 0.0284 0.0181

Mercury -109735-03-16 10:48 J -38359211.08 -38359211.05 -38359211.03 0.0283 0.0279

Venus -109731-02-10 17:45 J -38357783.88 -38357783.76 -38357783.63 0.0269 0.0217

Venus -109731-09-28 01:55 J -38357554.61 -38357554.42 -38357554.22 0.0267 0.0111

Venus -109730-05-15 09:21 J -38357325.33 -38357325.11 -38357324.89 0.0266 0.0007

Venus -109730-12-30 15:50 J -38357096.04 -38357095.84 -38357095.63 0.0265 0.0097

Venus -109729-08-15 22:04 J -38356866.72 -38356866.58 -38356866.44 0.0264 0.0198

Moon -109727-01-27 02:24 J -38356337.63 -38356337.40 -38356337.16 0.0262 0.0123

Earth -109727-01-27 02:52 J -38356337.59 -38356337.38 -38356337.15 0.0262 0.0129 \*

Mars -109725-06-11 18:28 J -38355471.00 -38355470.73 -38355470.45 0.0263 0.0037

Mercury -109721-07-20 01:12 J -38353971.48 -38353971.45 -38353971.41 0.0273 0.0265

Mercury -109721-10-16 14:52 J -38353882.99 -38353882.88 -38353882.78 0.0274 0.0189

Mercury -109720-01-13 04:19 J -38353794.46 -38353794.32 -38353794.19 0.0274 0.0114

Mercury -109720-04-11 17:31 J -38353705.91 -38353705.77 -38353705.63 0.0275 0.0038

Mercury -109720-07-09 06:28 J -38353617.37 -38353617.23 -38353617.08 0.0276 0.0038

Mercury -109720-10-05 19:26 J -38353528.82 -38353528.69 -38353528.56 0.0277 0.0112

Mercury -109719-01-02 08:24 J -38353440.26 -38353440.15 -38353440.05 0.0278 0.0185

Mercury -109719-03-31 20:52 J -38353351.67 -38353351.63 -38353351.57 0.0279 0.0259

Venus -109716-10-23 11:16 J -38352050.16 -38352050.03 -38352049.88 0.0292 0.0218

Venus -109715-06-10 04:19 J -38351820.52 -38351820.32 -38351820.12 0.0294 0.0087

Venus -109714-01-25 21:50 J -38351590.79 -38351590.59 -38351590.39 0.0296 0.0048

Venus -109714-09-12 16:04 J -38351360.99 -38351360.83 -38351360.67 0.0297 0.0184

Earth -109713-07-21 05:16 J -38351048.48 -38351048.28 -38351048.07 0.0299 0.0139

Moon -109713-07-21 06:57 J -38351048.41 -38351048.21 -38351048.00 0.0299 0.0155 \*

Mars -109711-07-19 19:40 J -38350319.96 -38350319.68 -38350319.40 0.0298 0.0131

Mercury -109707-05-16 11:31 J -38348923.11 -38348923.02 -38348922.92 0.0288 0.0230

Mercury -109707-08-13 06:00 J -38348834.39 -38348834.25 -38348834.10 0.0287 0.0136

Mercury -109707-11-10 00:57 J -38348745.62 -38348745.46 -38348745.29 0.0286 0.0040



Mercury -109706-02-06 20:09 J -38348656.82 -38348656.66 -38348656.49 0.0285 0.0059

Mercury -109706-05-06 15:36 J -38348567.98 -38348567.85 -38348567.70 0.0284 0.0157

Mercury -109706-08-03 11:16 J -38348479.09 -38348479.03 -38348478.95 0.0283 0.0255

Venus -109702-08-24 01:26 J -38346997.58 -38346997.44 -38346997.29 0.0269 0.0200

Venus -109701-04-09 09:21 J -38346768.31 -38346768.11 -38346767.90 0.0267 0.0095

Venus -109701-11-24 16:48 J -38346539.02 -38346538.80 -38346538.58 0.0266 0.0011

Venus -109700-07-11 23:31 J -38346309.71 -38346309.52 -38346309.32 0.0265 0.0114

Venus -109699-02-26 05:45 J -38346080.38 -38346080.26 -38346080.13 0.0264 0.0214

Earth -109698-01-22 04:19 J -38345750.55 -38345750.32 -38345750.07 0.0263 0.0099

Moon -109698-01-22 05:02 J -38345750.51 -38345750.29 -38345750.06 0.0263 0.0099 \*

Mars -109695-07-29 03:36 J -38344466.59 -38344466.35 -38344466.08 0.0265 0.0111

Mercury -109691-03-05 18:00 J -38343150.84 -38343150.75 -38343150.65 0.0273 0.0203

Mercury -109691-06-02 07:26 J -38343062.32 -38343062.19 -38343062.06 0.0274 0.0128

Mercury -109691-08-29 20:52 J -38342973.78 -38342973.63 -38342973.49 0.0275 0.0053

Mercury -109691-11-26 09:50 J -38342885.23 -38342885.09 -38342884.94 0.0276 0.0023

Mercury -109690-02-22 22:48 J -38342796.68 -38342796.55 -38342796.41 0.0277 0.0098

Mercury -109690-05-22 11:45 J -38342708.12 -38342708.01 -38342707.90 0.0278 0.0171

Mercury -109690-08-19 00:28 J -38342619.54 -38342619.48 -38342619.41 0.0278 0.0245

Venus -109686-05-05 21:36 J -38341263.74 -38341263.60 -38341263.44 0.0292 0.0194

Venus -109686-12-21 14:38 J -38341034.09 -38341033.89 -38341033.69 0.0294 0.0063

Venus -109685-08-07 08:09 J -38340804.36 -38340804.16 -38340803.96 0.0296 0.0073

Venus -109684-03-25 02:09 J -38340574.55 -38340574.41 -38340574.26 0.0297 0.0209

Earth -109683-07-29 11:31 J -38340083.09 -38340083.02 -38340082.93 0.0298 0.0279

Moon -109683-07-29 13:55 J -38340083.02 -38340082.92 -38340082.81 0.0298 0.0263 \*

Mars -109681-09-12 19:12 J -38339306.97 -38339306.70 -38339306.40 0.0297 0.0122

Mercury -109678-10-03 12:14 J -38338191.05 -38338190.99 -38338190.91 0.0288 0.0254

Mercury -109678-12-31 06:57 J -38338102.34 -38338102.21 -38338102.07 0.0287 0.0159

Mercury -109677-03-29 01:55 J -38338013.59 -38338013.42 -38338013.26 0.0286 0.0064

Mercury -109677-06-25 20:52 J -38337924.79 -38337924.63 -38337924.46 0.0285 0.0034

Mercury -109677-09-22 16:19 J -38337835.97 -38337835.82 -38337835.67 0.0284 0.0131

Mercury -109677-12-20 11:45 J -38337747.10 -38337747.01 -38337746.90 0.0283 0.0230

Venus -109672-03-05 06:00 J -38336211.39 -38336211.25 -38336211.08 0.0269 0.0186

Venus -109672-10-20 14:09 J -38335982.12 -38335981.91 -38335981.70 0.0267 0.0080

Venus -109671-06-06 21:21 J -38335752.83 -38335752.61 -38335752.39 0.0266 0.0026

Venus -109670-01-22 03:36 J -38335523.53 -38335523.35 -38335523.15 0.0265 0.0130

Venus -109670-09-08 09:36 J -38335294.19 -38335294.10 -38335293.98 0.0264 0.0230

Moon -109668-01-28 09:36 J -38334786.28 -38334786.10 -38334785.92 0.0262 0.0189

Earth -109668-01-28 13:26 J -38334786.10 -38334785.94 -38334785.77 0.0262 0.0199 \*

Mars -109667-09-21 02:52 J -38334185.59 -38334185.38 -38334185.15 0.0263 0.0157

Mars -109665-09-13 04:48 J -38333462.38 -38333462.30 -38333462.18 0.0265 0.0248

Mercury -109662-07-23 19:40 J -38332418.76 -38332418.68 -38332418.60 0.0273 0.0226

Mercury -109662-10-20 09:07 J -38332330.24 -38332330.12 -38332329.99 0.0274 0.0151

Mercury -109661-01-16 22:33 J -38332241.70 -38332241.56 -38332241.42 0.0275 0.0075

Mercury -109661-04-14 11:45 J -38332153.16 -38332153.01 -38332152.87 0.0276 0.0001

Mercury -109661-07-12 00:43 J -38332064.61 -38332064.47 -38332064.33 0.0277 0.0075

Mercury -109661-10-08 13:40 J -38331976.05 -38331975.93 -38331975.81 0.0278 0.0149

Mercury -109660-01-05 02:24 J -38331887.48 -38331887.40 -38331887.32 0.0279 0.0223

Venus -109657-11-15 03:50 J -38330477.50 -38330477.34 -38330477.17 0.0293 0.0178

Venus -109656-07-02 20:52 J -38330247.83 -38330247.63 -38330247.42 0.0295 0.0045

Venus -109655-02-17 14:38 J -38330018.08 -38330017.89 -38330017.69 0.0296 0.0091

Venus -109655-10-05 08:52 J -38329788.25 -38329788.13 -38329787.99 0.0298 0.0227

Moon -109654-07-23 18:28 J -38329496.96 -38329496.73 -38329496.49 0.0299 0.0059

Earth -109654-07-23 21:36 J -38329496.84 -38329496.60 -38329496.37 0.0299 0.0042 \*

Mercury -109648-02-19 13:26 J -38327458.97 -38327458.94 -38327458.89 0.0288 0.0277

Mercury -109648-05-19 07:55 J -38327370.29 -38327370.17 -38327370.04 0.0287 0.0183

Mercury -109648-08-16 02:52 J -38327281.54 -38327281.38 -38327281.22 0.0286 0.0087

Mercury -109648-11-12 21:50 J -38327192.75 -38327192.59 -38327192.42 0.0285 0.0011

Mercury -109647-02-09 17:16 J -38327103.94 -38327103.78 -38327103.63 0.0284 0.0107

Mercury -109647-05-09 12:43 J -38327015.08 -38327014.97 -38327014.85 0.0283 0.0205

Venus -109643-09-15 14:09 J -38325425.07 -38325424.91 -38325424.74 0.0268 0.0168

Venus -109642-05-02 22:04 J -38325195.79 -38325195.58 -38325195.37 0.0267 0.0062  
 Venus -109642-12-18 05:02 J -38324966.50 -38324966.29 -38324966.07 0.0266 0.0044  
 Venus -109641-08-03 11:31 J -38324737.19 -38324737.02 -38324736.83 0.0265 0.0147  
 Venus -109640-03-20 17:31 J -38324507.83 -38324507.77 -38324507.68 0.0264 0.0247  
 Earth -109639-01-23 15:07 J -38324199.12 -38324198.87 -38324198.61 0.0263 0.0027  
 Moon -109639-01-23 18:43 J -38324198.97 -38324198.72 -38324198.46 0.0263 0.0031 \*  
 Mars -109637-11-06 09:50 J -38323181.36 -38323181.09 -38323180.81 0.0264 0.0012  
 Mercury -109633-12-09 22:48 J -38321686.61 -38321686.55 -38321686.48 0.0273 0.0240  
 Mercury -109632-03-08 12:14 J -38321598.10 -38321597.99 -38321597.87 0.0274 0.0165  
 Mercury -109632-06-05 01:40 J -38321509.56 -38321509.43 -38321509.29 0.0275 0.0090  
 Mercury -109632-09-01 15:07 J -38321421.02 -38321420.87 -38321420.73 0.0276 0.0016  
 Mercury -109632-11-29 04:04 J -38321332.47 -38321332.33 -38321332.19 0.0277 0.0061  
 Mercury -109631-02-25 17:02 J -38321243.91 -38321243.79 -38321243.66 0.0277 0.0135  
 Mercury -109631-05-25 05:45 J -38321155.35 -38321155.26 -38321155.16 0.0278 0.0210  
 Venus -109628-10-10 22:33 J -38319920.61 -38319920.56 -38319920.51 0.0291 0.0281  
 Venus -109627-05-28 14:52 J -38319691.05 -38319690.88 -38319690.70 0.0293 0.0153  
 Venus -109626-01-13 07:55 J -38319461.37 -38319461.17 -38319460.96 0.0295 0.0020  
 Venus -109626-08-31 01:40 J -38319231.61 -38319231.43 -38319231.24 0.0296 0.0117  
 Venus -109625-04-16 19:55 J -38319001.76 -38319001.67 -38319001.55 0.0297 0.0254  
 Mars -109623-12-15 08:09 J -38318029.45 -38318029.16 -38318028.85 0.0298 0.0094  
 Mercury -109619-10-06 09:36 J -38316638.21 -38316638.10 -38316637.98 0.0287 0.0203  
 Mercury -109618-01-03 04:19 J -38316549.47 -38316549.32 -38316549.17 0.0286 0.0108  
 Mercury -109618-04-01 23:16 J -38316460.69 -38316460.53 -38316460.36 0.0286 0.0012  
 Mercury -109618-06-29 18:28 J -38316371.89 -38316371.73 -38316371.57 0.0285 0.0086  
 Mercury -109618-09-26 13:55 J -38316283.04 -38316282.92 -38316282.79 0.0284 0.0184  
 Mercury -109618-12-24 09:36 J -38316194.11 -38316194.10 -38316194.08 0.0283 0.0282  
 Venus -109614-08-11 12:14 J -38314868.05 -38314867.99 -38314867.93 0.0270 0.0258  
 Venus -109613-03-27 20:09 J -38314638.83 -38314638.66 -38314638.47 0.0268 0.0153  
 Venus -109613-11-12 03:50 J -38314409.55 -38314409.34 -38314409.12 0.0267 0.0046  
 Venus -109612-06-29 10:33 J -38314180.27 -38314180.06 -38314179.84 0.0265 0.0060

Venus -109611-02-13 16:48 J -38313950.96 -38313950.80 -38313950.62 0.0264 0.0163  
 Venus -109611-09-30 22:48 J -38313721.56 -38313721.55 -38313721.52 0.0263 0.0262  
 Moon -109609-01-31 00:14 J -38313234.49 -38313234.49 -38313234.46 0.0262 0.0262  
 Mars -109607-12-23 08:52 J -38312177.37 -38312177.13 -38312176.88 0.0264 0.0123  
 Mercury -109603-04-29 00:28 J -38310954.51 -38310954.48 -38310954.44 0.0273 0.0263  
 Mercury -109603-07-26 13:55 J -38310866.02 -38310865.92 -38310865.80 0.0274 0.0188  
 Mercury -109603-10-23 03:36 J -38310777.48 -38310777.35 -38310777.22 0.0275 0.0112  
 Mercury -109602-01-19 16:48 J -38310688.94 -38310688.80 -38310688.65 0.0275 0.0037  
 Mercury -109602-04-18 06:00 J -38310600.39 -38310600.25 -38310600.11 0.0276 0.0039  
 Mercury -109602-07-15 18:57 J -38310511.84 -38310511.71 -38310511.58 0.0277 0.0113  
 Mercury -109602-10-12 07:40 J -38310423.28 -38310423.18 -38310423.07 0.0278 0.0188  
 Mercury -109601-01-08 20:24 J -38310334.69 -38310334.65 -38310334.60 0.0279 0.0262  
 Venus -109598-04-23 04:19 J -38309134.40 -38309134.32 -38309134.23 0.0292 0.0266  
 Venus -109598-12-08 20:52 J -38308904.81 -38308904.63 -38308904.45 0.0294 0.0137  
 Venus -109597-07-25 14:09 J -38308675.11 -38308674.91 -38308674.70 0.0295 0.0004  
 Venus -109596-03-12 08:09 J -38308445.34 -38308445.16 -38308444.97 0.0297 0.0135  
 Venus -109596-10-28 02:52 J -38308215.46 -38308215.38 -38308215.30 0.0298 0.0271  
 Moon -109595-07-25 12:14 J -38307945.22 -38307944.99 -38307944.76 0.0299 0.0041  
 Earth -109595-07-25 14:52 J -38307945.11 -38307944.88 -38307944.65 0.0299 0.0058 \*  
 Mars -109592-02-08 00:00 J -38307016.75 -38307016.50 -38307016.22 0.0297 0.0154  
 Mercury -109589-02-23 10:33 J -38305906.15 -38305906.06 -38305905.96 0.0287 0.0228  
 Mercury -109589-05-22 05:16 J -38305817.42 -38305817.28 -38305817.13 0.0287 0.0132  
 Mercury -109589-08-19 00:14 J -38305728.66 -38305728.49 -38305728.33 0.0286 0.0037  
 Mercury -109589-11-15 19:12 J -38305639.86 -38305639.70 -38305639.53 0.0285 0.0062  
 Mercury -109588-02-12 14:38 J -38305551.02 -38305550.89 -38305550.74 0.0284 0.0159  
 Mercury -109588-05-12 10:19 J -38305462.13 -38305462.07 -38305461.99 0.0283 0.0257  
 Jupiter -109587-08-19 22:04 J -38304998.06 -38304997.58 -38304997.09 0.0278 0.0011  
 Venus -109584-02-20 19:40 J -38304081.77 -38304081.68 -38304081.59 0.0269 0.0241  
 Venus -109584-10-08 03:50 J -38303852.52 -38303852.34 -38303852.14 0.0268 0.0135  
 Venus -109583-05-25 11:31 J -38303623.24 -38303623.02 -38303622.80 0.0266 0.0028

Venus -109582-01-09 18:14 J -38303393.94 -38303393.74 -38303393.53 0.0265 0.0077

Venus -109582-08-27 00:28 J -38303164.63 -38303164.48 -38303164.31 0.0264 0.0180

Earth -109580-01-25 03:07 J -38302647.62 -38302647.37 -38302647.12 0.0263 0.0045

Moon -109580-01-25 04:19 J -38302647.58 -38302647.32 -38302647.06 0.0263 0.0040 \*

Mars -109578-02-15 18:28 J -38301895.97 -38301895.73 -38301895.49 0.0263 0.0133

Mercury -109574-12-13 17:16 J -38300133.88 -38300133.78 -38300133.68 0.0274 0.0202

Mercury -109573-03-11 06:43 J -38300045.35 -38300045.22 -38300045.09 0.0275 0.0126

Mercury -109573-06-07 20:09 J -38299956.80 -38299956.66 -38299956.52 0.0275 0.0051

Mercury -109573-09-04 09:21 J -38299868.26 -38299868.11 -38299867.97 0.0276 0.0025

Mercury -109573-12-01 22:19 J -38299779.70 -38299779.57 -38299779.43 0.0277 0.0099

Mercury -109572-02-28 11:16 J -38299691.14 -38299691.03 -38299690.92 0.0278 0.0174

Mercury -109572-05-28 00:00 J -38299602.56 -38299602.50 -38299602.44 0.0279 0.0247

Venus -109569-11-02 15:21 J -38298347.96 -38298347.86 -38298347.74 0.0291 0.0242

Venus -109568-06-20 07:55 J -38298118.35 -38298118.17 -38298117.97 0.0293 0.0112

Venus -109567-02-05 01:26 J -38297888.64 -38297888.44 -38297888.23 0.0295 0.0025

Venus -109567-09-22 19:26 J -38297658.86 -38297658.69 -38297658.52 0.0296 0.0162

Earth -109566-07-20 07:40 J -38297358.30 -38297358.18 -38297358.05 0.0298 0.0249

Moon -109566-07-20 10:19 J -38297358.17 -38297358.07 -38297357.95 0.0298 0.0264 \*

Mercury -109560-07-12 12:28 J -38295174.06 -38295173.98 -38295173.89 0.0288 0.0247

Mercury -109560-10-09 06:57 J -38295085.34 -38295085.21 -38295085.07 0.0287 0.0152

Mercury -109559-01-06 01:55 J -38294996.58 -38294996.42 -38294996.26 0.0286 0.0056

Mercury -109559-04-04 20:52 J -38294907.79 -38294907.63 -38294907.46 0.0285 0.0041

Mercury -109559-07-02 16:19 J -38294818.97 -38294818.82 -38294818.67 0.0284 0.0138

Mercury -109559-09-29 11:45 J -38294730.09 -38294730.01 -38294729.91 0.0283 0.0236

Venus -109555-09-03 02:52 J -38293295.49 -38293295.38 -38293295.26 0.0269 0.0225

Venus -109554-04-20 10:48 J -38293066.25 -38293066.05 -38293065.86 0.0268 0.0118

Venus -109554-12-05 17:45 J -38292836.97 -38292836.76 -38292836.54 0.0266 0.0012

Venus -109553-07-22 00:14 J -38292607.69 -38292607.49 -38292607.28 0.0265 0.0094

Venus -109552-03-08 06:28 J -38292378.38 -38292378.23 -38292378.08 0.0264 0.0196

Moon -109551-01-19 23:02 J -38292060.70 -38292060.54 -38292060.37 0.0263 0.0194

Earth -109551-01-20 00:14 J -38292060.66 -38292060.49 -38292060.31 0.0263 0.0192 \*  
 Mars -109548-04-02 15:07 J -38290892.15 -38290891.87 -38290891.59 0.0263 0.0002  
 Mercury -109544-05-01 18:43 J -38289401.80 -38289401.72 -38289401.63 0.0273 0.0225  
 Mercury -109544-07-29 08:24 J -38289313.27 -38289313.15 -38289313.03 0.0274 0.0150  
 Mercury -109544-10-25 21:36 J -38289224.73 -38289224.60 -38289224.45 0.0275 0.0075  
 Mercury -109543-01-22 11:02 J -38289136.19 -38289136.04 -38289135.90 0.0276 0.0005  
 Mercury -109543-04-21 00:00 J -38289047.64 -38289047.50 -38289047.36 0.0277 0.0076  
 Mercury -109543-07-18 12:57 J -38288959.08 -38288958.96 -38288958.84 0.0278 0.0150  
 Mercury -109543-10-15 01:40 J -38288870.51 -38288870.43 -38288870.34 0.0279 0.0224  
 Venus -109539-05-15 20:09 J -38287561.79 -38287561.66 -38287561.53 0.0292 0.0227  
 Venus -109539-12-31 12:57 J -38287332.15 -38287331.96 -38287331.76 0.0294 0.0096  
 Venus -109538-08-18 06:28 J -38287102.43 -38287102.23 -38287102.02 0.0296 0.0041  
 Venus -109537-04-04 00:43 J -38286872.63 -38286872.47 -38286872.30 0.0297 0.0180  
 Earth -109536-07-27 06:57 J -38286393.41 -38286393.21 -38286393.00 0.0299 0.0155  
 Moon -109536-07-27 08:24 J -38286393.34 -38286393.15 -38286392.94 0.0299 0.0140 \*  
 Mars -109534-05-12 09:07 J -38285739.42 -38285739.12 -38285738.81 0.0298 0.0062  
 Mercury -109531-11-29 13:12 J -38284442.00 -38284441.95 -38284441.90 0.0288 0.0272  
 Mercury -109530-02-26 07:40 J -38284353.31 -38284353.18 -38284353.05 0.0287 0.0178  
 Mercury -109530-05-26 02:24 J -38284264.56 -38284264.40 -38284264.24 0.0286 0.0083  
 Mercury -109530-08-22 21:36 J -38284175.77 -38284175.60 -38284175.44 0.0285 0.0016  
 Mercury -109530-11-19 16:48 J -38284086.95 -38284086.80 -38284086.64 0.0284 0.0112  
 Mercury -109529-02-16 12:28 J -38283998.10 -38283997.98 -38283997.87 0.0283 0.0210  
 Venus -109525-03-15 09:36 J -38282509.23 -38282509.10 -38282508.95 0.0269 0.0208  
 Venus -109525-10-30 17:45 J -38282279.96 -38282279.76 -38282279.56 0.0267 0.0100  
 Venus -109524-06-17 00:57 J -38282050.68 -38282050.46 -38282050.24 0.0266 0.0006  
 Venus -109523-02-01 07:26 J -38281821.38 -38281821.19 -38281820.99 0.0265 0.0112  
 Venus -109523-09-18 13:26 J -38281592.05 -38281591.94 -38281591.80 0.0264 0.0214  
 Moon -109521-01-27 11:31 J -38281096.24 -38281096.02 -38281095.77 0.0263 0.0108  
 Earth -109521-01-27 15:07 J -38281096.10 -38281095.87 -38281095.64 0.0263 0.0117 \*  
 Mars -109520-05-27 03:07 J -38280610.43 -38280610.37 -38280610.28 0.0263 0.0253

Mars -109518-05-19 22:48 J -38279887.77 -38279887.55 -38279887.31 0.0265 0.0147  
 Mercury -109515-09-18 21:50 J -38278669.66 -38278669.59 -38278669.52 0.0273 0.0241  
 Mercury -109515-12-16 11:16 J -38278581.14 -38278581.03 -38278580.91 0.0274 0.0165  
 Mercury -109514-03-15 00:43 J -38278492.60 -38278492.47 -38278492.33 0.0275 0.0090  
 Mercury -109514-06-11 14:09 J -38278404.06 -38278403.91 -38278403.77 0.0276 0.0016  
 Mercury -109514-09-08 03:07 J -38278315.51 -38278315.37 -38278315.23 0.0277 0.0061  
 Mercury -109514-12-05 16:04 J -38278226.95 -38278226.83 -38278226.70 0.0278 0.0136  
 Mercury -109513-03-03 05:02 J -38278138.38 -38278138.29 -38278138.20 0.0279 0.0209  
 Venus -109510-11-26 06:57 J -38276775.36 -38276775.21 -38276775.06 0.0292 0.0203  
 Venus -109509-07-12 23:45 J -38276545.70 -38276545.51 -38276545.30 0.0294 0.0070  
 Venus -109508-02-27 17:31 J -38276315.97 -38276315.77 -38276315.57 0.0296 0.0068  
 Venus -109508-10-15 11:45 J -38276086.15 -38276086.01 -38276085.86 0.0297 0.0206  
 Moon -109507-07-21 21:50 J -38275806.78 -38275806.59 -38275806.38 0.0298 0.0170  
 Earth -109507-07-21 23:16 J -38275806.72 -38275806.53 -38275806.32 0.0298 0.0155 \*  
 Mars -109504-07-06 15:07 J -38274726.11 -38274725.87 -38274725.62 0.0297 0.0186  
 Mercury -109501-07-15 09:36 J -38273621.21 -38273621.10 -38273620.98 0.0287 0.0197  
 Mercury -109501-10-12 04:19 J -38273532.47 -38273532.32 -38273532.16 0.0286 0.0102  
 Mercury -109500-01-08 23:16 J -38273443.70 -38273443.53 -38273443.36 0.0285 0.0006  
 Mercury -109500-04-07 18:28 J -38273354.89 -38273354.73 -38273354.57 0.0285 0.0092  
 Mercury -109500-07-05 13:55 J -38273266.04 -38273265.92 -38273265.79 0.0284 0.0189  
 Venus -109496-09-25 17:16 J -38271722.93 -38271722.78 -38271722.62 0.0269 0.0191  
 Venus -109495-05-13 00:43 J -38271493.67 -38271493.47 -38271493.26 0.0267 0.0084  
 Venus -109495-12-28 07:40 J -38271264.40 -38271264.18 -38271263.96 0.0266 0.0023  
 Venus -109494-08-14 13:55 J -38271035.11 -38271034.92 -38271034.73 0.0264 0.0128  
 Venus -109493-03-30 19:26 J -38270805.79 -38270805.69 -38270805.58 0.0264 0.0230  
 Earth -109492-01-21 12:43 J -38270509.19 -38270508.97 -38270508.73 0.0263 0.0119  
 Moon -109492-01-21 15:50 J -38270509.05 -38270508.84 -38270508.60 0.0263 0.0124 \*  
 Mars -109490-07-13 00:14 J -38269606.73 -38269606.49 -38269606.24 0.0263 0.0121  
 Mercury -109485-02-05 23:02 J -38267937.56 -38267937.54 -38267937.50 0.0273 0.0265  
 Mercury -109485-05-04 12:43 J -38267849.07 -38267848.97 -38267848.86 0.0273 0.0189

Mercury -109485-08-01 02:24 J -38267760.54 -38267760.40 -38267760.27 0.0274 0.0114

Mercury -109485-10-28 15:36 J -38267671.99 -38267671.85 -38267671.71 0.0275 0.0038

Mercury -109484-01-25 04:48 J -38267583.44 -38267583.30 -38267583.16 0.0276 0.0037

Mercury -109484-04-23 17:45 J -38267494.89 -38267494.76 -38267494.63 0.0277 0.0111

Mercury -109484-07-21 06:43 J -38267406.33 -38267406.22 -38267406.12 0.0278 0.0185

Mercury -109484-10-17 19:26 J -38267317.74 -38267317.69 -38267317.64 0.0279 0.0259

Venus -109480-06-07 10:33 J -38265989.20 -38265989.06 -38265988.89 0.0293 0.0190

Venus -109479-01-23 03:50 J -38265759.54 -38265759.34 -38265759.13 0.0295 0.0055

Venus -109479-09-09 21:50 J -38265529.79 -38265529.59 -38265529.40 0.0296 0.0084

Venus -109478-04-27 16:04 J -38265299.95 -38265299.83 -38265299.68 0.0298 0.0223

Earth -109477-07-28 21:07 J -38264841.74 -38264841.62 -38264841.48 0.0299 0.0246

Moon -109477-07-29 00:43 J -38264841.62 -38264841.47 -38264841.32 0.0299 0.0230 \*

Mars -109476-08-12 07:26 J -38264462.26 -38264462.19 -38264462.07 0.0299 0.0284

Mercury -109472-12-02 09:36 J -38262889.19 -38262889.10 -38262889.00 0.0288 0.0226

Mercury -109471-03-01 04:19 J -38262800.46 -38262800.32 -38262800.17 0.0287 0.0131

Mercury -109471-05-28 23:16 J -38262711.70 -38262711.53 -38262711.37 0.0286 0.0035

Mercury -109471-08-25 18:14 J -38262622.90 -38262622.74 -38262622.57 0.0285 0.0063

Mercury -109471-11-22 13:55 J -38262534.06 -38262533.92 -38262533.78 0.0284 0.0160

Mercury -109470-02-19 09:21 J -38262445.17 -38262445.11 -38262445.03 0.0283 0.0258

Venus -109466-04-07 23:02 J -38260936.70 -38260936.54 -38260936.37 0.0268 0.0175

Venus -109466-11-23 06:43 J -38260707.43 -38260707.22 -38260707.01 0.0267 0.0067

Venus -109465-07-09 13:26 J -38260478.15 -38260477.94 -38260477.72 0.0265 0.0040

Venus -109464-02-23 19:55 J -38260248.85 -38260248.67 -38260248.49 0.0264 0.0145

Venus -109464-10-11 01:55 J -38260019.49 -38260019.42 -38260019.34 0.0263 0.0247

Moon -109462-01-28 23:02 J -38259544.72 -38259544.54 -38259544.35 0.0263 0.0176

Earth -109462-01-29 01:26 J -38259544.61 -38259544.44 -38259544.25 0.0263 0.0186 \*

Mars -109460-08-28 02:09 J -38258602.69 -38258602.41 -38258602.13 0.0264 0.0020

Mercury -109456-09-21 15:21 J -38257116.95 -38257116.86 -38257116.76 0.0274 0.0207

Mercury -109456-12-19 04:48 J -38257028.42 -38257028.30 -38257028.16 0.0274 0.0132

Mercury -109455-03-17 18:14 J -38256939.88 -38256939.74 -38256939.60 0.0275 0.0056



Mercury -109455-06-14 07:26 J -38256851.33 -38256851.19 -38256851.04 0.0276 0.0020

Mercury -109455-09-10 20:38 J -38256762.78 -38256762.64 -38256762.51 0.0277 0.0094

Mercury -109455-12-08 09:21 J -38256674.22 -38256674.11 -38256673.99 0.0278 0.0169

Mercury -109454-03-06 22:19 J -38256585.64 -38256585.57 -38256585.50 0.0279 0.0242

Venus -109451-12-18 20:09 J -38255202.83 -38255202.66 -38255202.49 0.0293 0.0166

Venus -109450-08-05 13:26 J -38254973.14 -38254972.94 -38254972.73 0.0295 0.0031

Venus -109449-03-22 07:26 J -38254743.38 -38254743.19 -38254742.99 0.0296 0.0109

Venus -109449-11-07 01:55 J -38254513.52 -38254513.42 -38254513.30 0.0297 0.0248

Moon -109448-07-23 08:09 J -38254255.39 -38254255.16 -38254254.94 0.0298 0.0086

Earth -109448-07-23 11:16 J -38254255.25 -38254255.03 -38254254.80 0.0298 0.0069 \*

Mars -109446-10-07 15:21 J -38253449.17 -38253448.86 -38253448.55 0.0298 0.0037

Mercury -109442-04-21 11:31 J -38252157.10 -38252157.02 -38252156.94 0.0288 0.0246

Mercury -109442-07-19 06:00 J -38252068.38 -38252068.25 -38252068.11 0.0287 0.0152

Mercury -109442-10-16 00:57 J -38251979.62 -38251979.46 -38251979.30 0.0286 0.0056

Mercury -109441-01-12 19:55 J -38251890.83 -38251890.67 -38251890.50 0.0285 0.0042

Mercury -109441-04-10 15:21 J -38251802.01 -38251801.86 -38251801.71 0.0284 0.0139

Mercury -109441-07-08 11:02 J -38251713.13 -38251713.04 -38251712.95 0.0283 0.0237

Venus -109437-03-02 22:33 J -38250379.59 -38250379.56 -38250379.53 0.0270 0.0266

Venus -109437-10-18 06:28 J -38250150.40 -38250150.23 -38250150.05 0.0268 0.0159

Venus -109436-06-04 13:55 J -38249921.14 -38249920.92 -38249920.71 0.0267 0.0051

Venus -109435-01-19 20:24 J -38249691.86 -38249691.65 -38249691.44 0.0265 0.0056

Venus -109435-09-06 02:09 J -38249462.57 -38249462.41 -38249462.23 0.0264 0.0161

Venus -109434-04-23 07:40 J -38249233.18 -38249233.18 -38249233.15 0.0263 0.0262

Earth -109433-01-23 23:45 J -38248957.76 -38248957.51 -38248957.25 0.0262 0.0048

Moon -109433-01-24 02:24 J -38248957.65 -38248957.40 -38248957.14 0.0262 0.0055 \*

Mars -109432-10-21 09:36 J -38248321.20 -38248321.10 -38248320.99 0.0262 0.0241

Mars -109430-10-14 01:12 J -38247598.66 -38247598.45 -38247598.21 0.0264 0.0155

Mercury -109426-02-08 16:33 J -38246384.88 -38246384.81 -38246384.72 0.0273 0.0232

Mercury -109426-05-08 06:14 J -38246296.36 -38246296.24 -38246296.12 0.0274 0.0156

Mercury -109426-08-04 19:40 J -38246207.82 -38246207.68 -38246207.54 0.0274 0.0081

Mercury -109426-11-01 08:52 J -38246119.27 -38246119.13 -38246118.99 0.0275 0.0006

Mercury -109425-01-28 21:50 J -38246030.72 -38246030.59 -38246030.45 0.0276 0.0069

Mercury -109425-04-26 10:48 J -38245942.17 -38245942.05 -38245941.92 0.0277 0.0143

Mercury -109425-07-23 23:45 J -38245853.60 -38245853.51 -38245853.42 0.0278 0.0217

Venus -109422-11-13 06:28 J -38244646.27 -38244646.23 -38244646.18 0.0291 0.0284

Venus -109421-06-29 23:02 J -38244416.71 -38244416.54 -38244416.36 0.0293 0.0154

Venus -109420-02-14 16:19 J -38244187.02 -38244186.82 -38244186.61 0.0295 0.0017

Venus -109420-10-02 10:19 J -38243957.25 -38243957.07 -38243956.88 0.0297 0.0123

Venus -109419-05-20 05:02 J -38243727.38 -38243727.29 -38243727.19 0.0298 0.0262

Mars -109416-11-30 16:48 J -38242437.01 -38242436.80 -38242436.56 0.0297 0.0206

Mercury -109413-09-07 11:02 J -38241425.08 -38241425.04 -38241425.00 0.0288 0.0278

Mercury -109413-12-05 05:16 J -38241336.40 -38241336.28 -38241336.15 0.0287 0.0184

Mercury -109412-03-04 00:00 J -38241247.65 -38241247.50 -38241247.34 0.0287 0.0089

Mercury -109412-05-31 19:12 J -38241158.87 -38241158.70 -38241158.53 0.0286 0.0009

Mercury -109412-08-28 14:24 J -38241070.05 -38241069.90 -38241069.74 0.0285 0.0106

Mercury -109412-11-25 10:04 J -38240981.20 -38240981.08 -38240980.96 0.0284 0.0204

Venus -109408-09-13 02:38 J -38239593.45 -38239593.39 -38239593.30 0.0270 0.0252

Venus -109407-04-30 10:48 J -38239364.23 -38239364.05 -38239363.86 0.0268 0.0143

Venus -109407-12-15 18:14 J -38239134.96 -38239134.74 -38239134.53 0.0266 0.0035

Venus -109406-08-02 00:43 J -38238905.68 -38238905.47 -38238905.26 0.0265 0.0072

Venus -109405-03-18 06:43 J -38238676.37 -38238676.22 -38238676.05 0.0264 0.0177

Earth -109403-01-30 09:21 J -38237993.17 -38237993.11 -38237993.02 0.0262 0.0250

Moon -109403-01-30 11:45 J -38237993.10 -38237993.01 -38237992.90 0.0262 0.0238 \*

Mars -109402-12-07 05:31 J -38237317.52 -38237317.27 -38237317.01 0.0263 0.0106

Mercury -109397-06-27 18:57 J -38235652.76 -38235652.71 -38235652.65 0.0273 0.0251

Mercury -109397-09-24 08:24 J -38235564.25 -38235564.15 -38235564.03 0.0274 0.0176

Mercury -109397-12-21 21:50 J -38235475.72 -38235475.59 -38235475.45 0.0275 0.0101

Mercury -109396-03-20 11:16 J -38235387.17 -38235387.03 -38235386.89 0.0276 0.0025

Mercury -109396-06-17 00:28 J -38235298.62 -38235298.48 -38235298.34 0.0276 0.0050

Mercury -109396-09-13 13:26 J -38235210.07 -38235209.94 -38235209.82 0.0277 0.0124

Mercury -109396-12-11 02:09 J -38235121.50 -38235121.41 -38235121.31 0.0278 0.0198

Mercury -109395-03-09 14:52 J -38235032.90 -38235032.88 -38235032.85 0.0279 0.0272

Venus -109392-05-25 14:52 J -38233859.97 -38233859.88 -38233859.79 0.0291 0.0264

Venus -109391-01-10 07:26 J -38233630.37 -38233630.19 -38233630.00 0.0293 0.0131

Venus -109391-08-28 01:12 J -38233400.66 -38233400.45 -38233400.25 0.0295 0.0008

Venus -109390-04-14 19:26 J -38233170.87 -38233170.69 -38233170.51 0.0297 0.0147

Venus -109390-11-30 13:55 J -38232940.96 -38232940.92 -38232940.85 0.0298 0.0287

Earth -109389-07-24 19:40 J -38232703.91 -38232703.68 -38232703.44 0.0298 0.0010

Moon -109389-07-24 19:40 J -38232703.90 -38232703.68 -38232703.45 0.0298 0.0007 \*

Mars -109387-01-06 23:45 J -38232172.64 -38232172.51 -38232172.36 0.0299 0.0266

Mercury -109383-04-24 06:57 J -38230604.33 -38230604.21 -38230604.10 0.0288 0.0206

Mercury -109383-07-22 01:26 J -38230515.59 -38230515.44 -38230515.28 0.0287 0.0111

Mercury -109383-10-18 20:24 J -38230426.81 -38230426.65 -38230426.48 0.0286 0.0016

Mercury -109382-01-15 15:36 J -38230338.01 -38230337.85 -38230337.68 0.0285 0.0083

Mercury -109382-04-14 11:02 J -38230249.16 -38230249.04 -38230248.90 0.0284 0.0181

Mercury -109382-07-12 06:43 J -38230160.23 -38230160.22 -38230160.18 0.0283 0.0279

Venus -109378-03-26 09:50 J -38228807.18 -38228807.09 -38228806.98 0.0270 0.0237

Venus -109378-11-10 17:45 J -38228577.95 -38228577.76 -38228577.57 0.0268 0.0128

Venus -109377-06-27 00:57 J -38228348.68 -38228348.46 -38228348.24 0.0266 0.0020

Venus -109376-02-11 07:12 J -38228119.40 -38228119.20 -38228118.99 0.0265 0.0088

Venus -109376-09-28 13:12 J -38227890.10 -38227889.95 -38227889.80 0.0264 0.0192

Moon -109374-01-25 05:16 J -38227406.54 -38227406.28 -38227406.02 0.0262 0.0006

Earth -109374-01-25 07:55 J -38227406.42 -38227406.17 -38227405.91 0.0262 0.0018 \*

Mars -109371-01-22 01:55 J -38226313.69 -38226313.42 -38226313.14 0.0263 0.0028

Mercury -109367-02-11 09:50 J -38224832.19 -38224832.09 -38224832.00 0.0273 0.0201

Mercury -109367-05-10 23:02 J -38224743.66 -38224743.54 -38224743.40 0.0274 0.0127

Mercury -109367-08-07 12:28 J -38224655.12 -38224654.98 -38224654.84 0.0274 0.0051

Mercury -109367-11-04 01:40 J -38224566.58 -38224566.43 -38224566.29 0.0275 0.0024

Mercury -109366-01-31 14:38 J -38224478.03 -38224477.89 -38224477.76 0.0276 0.0098

Mercury -109366-04-30 03:21 J -38224389.47 -38224389.36 -38224389.24 0.0277 0.0172

Mercury -109366-07-27 16:19 J -38224300.89 -38224300.82 -38224300.76 0.0278 0.0245

Venus -109363-12-05 16:04 J -38223073.92 -38223073.83 -38223073.72 0.0291 0.0254

Venus -109362-07-23 08:52 J -38222844.32 -38222844.13 -38222843.94 0.0294 0.0120

Venus -109361-03-09 02:24 J -38222614.60 -38222614.40 -38222614.19 0.0295 0.0019

Venus -109361-10-24 20:38 J -38222384.81 -38222384.64 -38222384.47 0.0297 0.0159

Mars -109357-03-01 23:02 J -38221160.85 -38221160.54 -38221160.22 0.0298 0.0023

Mercury -109354-09-11 05:16 J -38219872.36 -38219872.28 -38219872.19 0.0288 0.0242

Mercury -109354-12-09 00:00 J -38219783.64 -38219783.50 -38219783.36 0.0287 0.0147

Mercury -109353-03-06 18:57 J -38219694.88 -38219694.71 -38219694.55 0.0286 0.0051

Mercury -109353-06-03 13:55 J -38219606.08 -38219605.92 -38219605.75 0.0285 0.0047

Mercury -109353-08-31 09:21 J -38219517.25 -38219517.11 -38219516.96 0.0284 0.0144

Mercury -109353-11-28 05:02 J -38219428.37 -38219428.29 -38219428.20 0.0283 0.0242

Venus -109349-10-05 12:43 J -38218021.08 -38218020.97 -38218020.84 0.0269 0.0223

Venus -109348-05-22 20:38 J -38217791.83 -38217791.64 -38217791.44 0.0267 0.0114

Venus -109347-01-07 03:50 J -38217562.56 -38217562.34 -38217562.12 0.0266 0.0005

Venus -109347-08-24 10:19 J -38217333.27 -38217333.07 -38217332.87 0.0265 0.0102

Venus -109346-04-10 16:04 J -38217103.95 -38217103.83 -38217103.68 0.0264 0.0207

Earth -109345-01-20 01:55 J -38216819.54 -38216819.42 -38216819.27 0.0263 0.0222

Moon -109345-01-20 05:16 J -38216819.39 -38216819.28 -38216819.16 0.0263 0.0232 \*

Mars -109343-03-17 06:43 J -38216032.34 -38216032.22 -38216032.08 0.0262 0.0230

Mars -109341-03-08 22:48 J -38215309.76 -38215309.55 -38215309.33 0.0264 0.0168

Mercury -109338-07-01 11:31 J -38214100.10 -38214100.02 -38214099.94 0.0273 0.0223

Mercury -109338-09-28 00:57 J -38214011.58 -38214011.46 -38214011.33 0.0274 0.0148

Mercury -109338-12-25 14:24 J -38213923.04 -38213922.90 -38213922.76 0.0275 0.0073

Mercury -109337-03-23 03:36 J -38213834.50 -38213834.35 -38213834.21 0.0276 0.0004

Mercury -109337-06-19 16:33 J -38213745.95 -38213745.81 -38213745.67 0.0277 0.0076

Mercury -109337-09-16 05:31 J -38213657.39 -38213657.27 -38213657.15 0.0277 0.0150

Mercury -109337-12-13 18:14 J -38213568.82 -38213568.74 -38213568.65 0.0278 0.0224

Venus -109333-06-16 23:02 J -38212287.66 -38212287.54 -38212287.42 0.0292 0.0234

Venus -109332-02-01 15:50 J -38212058.03 -38212057.84 -38212057.64 0.0294 0.0099

Venus -109332-09-19 09:36 J -38211828.30 -38211828.10 -38211827.89 0.0295 0.0041

Venus -109331-05-07 04:04 J -38211598.49 -38211598.33 -38211598.17 0.0297 0.0182

Earth -109330-07-26 22:48 J -38211152.77 -38211152.55 -38211152.32 0.0299 0.0076

Moon -109330-07-27 02:24 J -38211152.63 -38211152.40 -38211152.17 0.0299 0.0062 \*

Mars -109327-04-26 17:16 J -38210147.98 -38210147.78 -38210147.56 0.0297 0.0216

Mercury -109324-01-28 06:14 J -38209140.29 -38209140.24 -38209140.17 0.0289 0.0267

Mercury -109324-04-27 00:57 J -38209051.59 -38209051.46 -38209051.33 0.0288 0.0172

Mercury -109324-07-24 19:55 J -38208962.83 -38208962.67 -38208962.51 0.0287 0.0076

Mercury -109324-10-21 14:52 J -38208874.05 -38208873.88 -38208873.71 0.0286 0.0021

Mercury -109323-01-18 10:19 J -38208785.23 -38208785.07 -38208784.92 0.0285 0.0119

Mercury -109323-04-17 05:45 J -38208696.36 -38208696.26 -38208696.15 0.0284 0.0217

Venus -109319-04-17 19:12 J -38207234.83 -38207234.70 -38207234.56 0.0269 0.0209

Venus -109319-12-03 02:52 J -38207005.58 -38207005.38 -38207005.17 0.0267 0.0099

Venus -109318-07-20 09:50 J -38206776.31 -38206776.09 -38206775.87 0.0266 0.0010

Venus -109317-03-05 16:04 J -38206547.02 -38206546.83 -38206546.63 0.0265 0.0117

Venus -109317-10-20 22:04 J -38206317.70 -38206317.58 -38206317.46 0.0264 0.0221

Moon -109315-01-26 09:36 J -38205855.33 -38205855.10 -38205854.85 0.0262 0.0065

Earth -109315-01-26 12:57 J -38205855.20 -38205854.96 -38205854.71 0.0262 0.0078 \*

Mars -109313-05-02 00:28 J -38205028.73 -38205028.48 -38205028.22 0.0262 0.0097

Mercury -109309-11-17 12:28 J -38203368.03 -38203367.98 -38203367.92 0.0272 0.0249

Mercury -109308-02-14 02:09 J -38203279.53 -38203279.41 -38203279.30 0.0273 0.0174

Mercury -109308-05-13 15:21 J -38203190.99 -38203190.86 -38203190.72 0.0274 0.0100

Mercury -109308-08-10 04:33 J -38203102.45 -38203102.31 -38203102.16 0.0274 0.0026

Mercury -109308-11-06 17:45 J -38203013.90 -38203013.76 -38203013.62 0.0275 0.0049

Mercury -109307-02-03 06:28 J -38202925.35 -38202925.23 -38202925.10 0.0276 0.0124

Mercury -109307-05-02 19:26 J -38202836.79 -38202836.69 -38202836.59 0.0277 0.0196

Mercury -109307-07-30 07:55 J -38202748.19 -38202748.17 -38202748.13 0.0278 0.0270

Venus -109304-12-27 23:45 J -38201501.63 -38201501.51 -38201501.37 0.0292 0.0224

Venus -109303-08-14 16:33 J -38201272.00 -38201271.81 -38201271.61 0.0294 0.0089

Venus -109302-04-01 10:19 J -38201042.27 -38201042.07 -38201041.87 0.0296 0.0052

Venus -109302-11-17 04:33 J -38200812.46 -38200812.31 -38200812.15 0.0297 0.0193  
 Moon -109301-07-19 18:14 J -38200566.82 -38200566.74 -38200566.65 0.0298 0.0277  
 Earth -109301-07-19 21:50 J -38200566.69 -38200566.59 -38200566.47 0.0298 0.0262 \*  
 Mars -109299-06-01 14:09 J -38199885.07 -38199884.91 -38199884.76 0.0299 0.0259  
 Mercury -109295-09-13 23:02 J -38198319.65 -38198319.54 -38198319.43 0.0288 0.0210  
 Mercury -109295-12-11 17:45 J -38198230.91 -38198230.76 -38198230.61 0.0287 0.0115  
 Mercury -109294-03-10 12:43 J -38198142.14 -38198141.97 -38198141.81 0.0286 0.0018  
 Mercury -109294-06-07 07:55 J -38198053.33 -38198053.17 -38198053.01 0.0285 0.0079  
 Mercury -109294-09-04 03:21 J -38197964.49 -38197964.36 -38197964.22 0.0284 0.0178  
 Mercury -109294-12-01 23:16 J -38197875.57 -38197875.53 -38197875.49 0.0283 0.0276  
 Venus -109290-10-28 20:24 J -38196448.79 -38196448.65 -38196448.50 0.0269 0.0197  
 Venus -109289-06-14 04:19 J -38196219.53 -38196219.32 -38196219.11 0.0267 0.0087  
 Venus -109288-01-29 11:16 J -38195990.24 -38195990.03 -38195989.81 0.0266 0.0023  
 Venus -109288-09-15 17:45 J -38195760.95 -38195760.76 -38195760.57 0.0264 0.0130  
 Venus -109287-05-02 23:31 J -38195531.61 -38195531.52 -38195531.41 0.0263 0.0234  
 Earth -109286-01-21 05:02 J -38195268.48 -38195268.29 -38195268.08 0.0263 0.0165  
 Moon -109286-01-21 07:40 J -38195268.36 -38195268.18 -38195267.97 0.0263 0.0178 \*  
 Mars -109283-06-17 14:38 J -38194025.16 -38194024.89 -38194024.61 0.0263 0.0037  
 Mercury -109279-07-04 03:21 J -38192547.45 -38192547.36 -38192547.25 0.0273 0.0198  
 Mercury -109279-09-30 17:02 J -38192458.92 -38192458.79 -38192458.66 0.0274 0.0123  
 Mercury -109279-12-28 06:14 J -38192370.38 -38192370.24 -38192370.10 0.0275 0.0048  
 Mercury -109278-03-26 19:26 J -38192281.84 -38192281.69 -38192281.55 0.0276 0.0027  
 Mercury -109278-06-23 08:09 J -38192193.29 -38192193.16 -38192193.02 0.0277 0.0101  
 Mercury -109278-09-19 21:07 J -38192104.73 -38192104.62 -38192104.51 0.0277 0.0174  
 Mercury -109278-12-17 09:50 J -38192016.15 -38192016.09 -38192016.02 0.0278 0.0247  
 Venus -109274-07-10 05:16 J -38190715.43 -38190715.28 -38190715.14 0.0292 0.0206  
 Venus -109273-02-24 22:04 J -38190485.78 -38190485.58 -38190485.37 0.0294 0.0070  
 Venus -109273-10-11 16:04 J -38190256.03 -38190255.83 -38190255.64 0.0296 0.0072  
 Venus -109272-05-29 10:19 J -38190026.20 -38190026.07 -38190025.92 0.0297 0.0214  
 Earth -109271-07-27 22:04 J -38189601.78 -38189601.58 -38189601.37 0.0299 0.0134

Moon -109271-07-27 22:48 J -38189601.77 -38189601.55 -38189601.33 0.0299 0.0125 \*  
 Mars -109269-07-26 07:55 J -38188872.48 -38188872.17 -38188871.85 0.0298 0.0019  
 Mercury -109265-01-31 23:16 J -38187587.61 -38187587.53 -38187587.43 0.0288 0.0238  
 Mercury -109265-04-29 18:00 J -38187498.89 -38187498.75 -38187498.61 0.0288 0.0143  
 Mercury -109265-07-27 12:57 J -38187410.12 -38187409.96 -38187409.80 0.0287 0.0046  
 Mercury -109265-10-24 08:09 J -38187321.33 -38187321.16 -38187321.00 0.0286 0.0051  
 Mercury -109264-01-21 03:36 J -38187232.49 -38187232.35 -38187232.21 0.0285 0.0149  
 Mercury -109264-04-19 23:02 J -38187143.61 -38187143.54 -38187143.45 0.0284 0.0248  
 Venus -109260-05-10 02:09 J -38185662.56 -38185662.41 -38185662.25 0.0269 0.0184  
 Venus -109260-12-25 09:50 J -38185433.30 -38185433.09 -38185432.88 0.0267 0.0073  
 Venus -109259-08-11 16:48 J -38185204.02 -38185203.80 -38185203.59 0.0266 0.0037  
 Venus -109258-03-28 22:48 J -38184974.73 -38184974.55 -38184974.36 0.0265 0.0144  
 Venus -109258-11-13 04:33 J -38184745.37 -38184745.31 -38184745.23 0.0263 0.0248  
 Earth -109256-01-27 14:52 J -38184304.09 -38184303.88 -38184303.65 0.0262 0.0134  
 Moon -109256-01-27 17:02 J -38184304.00 -38184303.79 -38184303.56 0.0262 0.0119 \*  
 Mars -109255-08-10 22:33 J -38183743.70 -38183743.56 -38183743.40 0.0262 0.0220  
 Mars -109253-08-02 10:33 J -38183021.25 -38183021.06 -38183020.83 0.0264 0.0172  
 Mercury -109250-11-21 04:19 J -38181815.39 -38181815.32 -38181815.23 0.0272 0.0224  
 Mercury -109249-02-17 18:00 J -38181726.87 -38181726.75 -38181726.63 0.0273 0.0149  
 Mercury -109249-05-16 07:12 J -38181638.34 -38181638.20 -38181638.06 0.0274 0.0075  
 Mercury -109249-08-12 20:24 J -38181549.80 -38181549.65 -38181549.51 0.0274 0.0002  
 Mercury -109249-11-09 09:21 J -38181461.25 -38181461.11 -38181460.97 0.0275 0.0073  
 Mercury -109248-02-05 22:04 J -38181372.69 -38181372.58 -38181372.45 0.0276 0.0147  
 Mercury -109248-05-05 10:48 J -38181284.13 -38181284.05 -38181283.96 0.0277 0.0219  
 Venus -109244-01-19 05:31 J -38179929.42 -38179929.27 -38179929.11 0.0292 0.0196  
 Venus -109244-09-05 22:19 J -38179699.77 -38179699.57 -38179699.37 0.0294 0.0059  
 Venus -109243-04-23 15:50 J -38179470.03 -38179469.84 -38179469.64 0.0296 0.0083  
 Venus -109243-12-09 10:04 J -38179240.21 -38179240.08 -38179239.94 0.0297 0.0224  
 Earth -109242-07-21 19:40 J -38179015.84 -38179015.68 -38179015.51 0.0298 0.0207  
 Moon -109242-07-21 20:09 J -38179015.81 -38179015.66 -38179015.50 0.0298 0.0215 \*

Mars -109239-09-18 18:43 J -38177860.92 -38177860.72 -38177860.49 0.0297 0.0217  
 Mercury -109236-06-19 20:52 J -38176855.66 -38176855.63 -38176855.58 0.0289 0.0278  
 Mercury -109236-09-16 15:36 J -38176766.98 -38176766.85 -38176766.73 0.0288 0.0184  
 Mercury -109236-12-14 10:19 J -38176678.23 -38176678.07 -38176677.91 0.0287 0.0088  
 Mercury -109235-03-13 05:31 J -38176589.44 -38176589.27 -38176589.11 0.0286 0.0012  
 Mercury -109235-06-10 00:43 J -38176500.62 -38176500.47 -38176500.31 0.0285 0.0107  
 Mercury -109235-09-06 20:24 J -38176411.77 -38176411.65 -38176411.53 0.0284 0.0205  
 Venus -109231-11-20 01:55 J -38174876.58 -38174876.42 -38174876.24 0.0269 0.0173  
 Venus -109230-07-07 09:50 J -38174647.30 -38174647.09 -38174646.87 0.0267 0.0061  
 Venus -109229-02-21 17:02 J -38174418.01 -38174417.79 -38174417.58 0.0266 0.0049  
 Venus -109229-10-07 23:31 J -38174188.70 -38174188.52 -38174188.34 0.0264 0.0156  
 Venus -109228-05-25 05:02 J -38173959.31 -38173959.29 -38173959.25 0.0263 0.0261  
 Moon -109227-01-22 02:38 J -38173717.62 -38173717.39 -38173717.16 0.0263 0.0127  
 Earth -109227-01-22 05:16 J -38173717.50 -38173717.28 -38173717.04 0.0263 0.0112 \*  
 Mars -109225-09-25 07:26 J -38172740.44 -38172740.19 -38172739.92 0.0262 0.0092  
 Mercury -109220-04-09 05:31 J -38171083.33 -38171083.27 -38171083.21 0.0272 0.0250  
 Mercury -109220-07-06 18:57 J -38170994.82 -38170994.71 -38170994.59 0.0273 0.0175  
 Mercury -109220-10-03 08:24 J -38170906.29 -38170906.15 -38170906.01 0.0274 0.0101  
 Mercury -109220-12-30 21:36 J -38170817.74 -38170817.60 -38170817.45 0.0275 0.0026  
 Mercury -109219-03-29 10:33 J -38170729.20 -38170729.06 -38170728.91 0.0276 0.0049  
 Mercury -109219-06-25 23:31 J -38170640.64 -38170640.52 -38170640.39 0.0277 0.0122  
 Mercury -109219-09-22 12:28 J -38170552.08 -38170551.98 -38170551.88 0.0277 0.0195  
 Mercury -109219-12-20 00:57 J -38170463.49 -38170463.46 -38170463.42 0.0278 0.0267  
 Venus -109215-08-01 09:50 J -38169143.25 -38169143.09 -38169142.92 0.0292 0.0180  
 Venus -109214-03-19 02:52 J -38168913.58 -38168913.38 -38168913.17 0.0294 0.0042  
 Venus -109214-11-03 20:38 J -38168683.83 -38168683.64 -38168683.44 0.0296 0.0102  
 Venus -109213-06-20 15:07 J -38168453.98 -38168453.87 -38168453.75 0.0297 0.0244  
 Moon -109212-07-28 15:07 J -38168051.05 -38168050.87 -38168050.68 0.0299 0.0184  
 Earth -109212-07-28 18:43 J -38168050.90 -38168050.72 -38168050.53 0.0299 0.0187 \*  
 Mars -109211-10-25 10:19 J -38167597.21 -38167597.07 -38167596.90 0.0299 0.0259



Mercury -109206-02-03 15:36 J -38166034.96 -38166034.85 -38166034.74 0.0288 0.0213

Mercury -109206-05-03 10:19 J -38165946.22 -38165946.07 -38165945.92 0.0287 0.0117

Mercury -109206-07-31 05:16 J -38165857.44 -38165857.28 -38165857.11 0.0287 0.0021

Mercury -109206-10-28 00:43 J -38165768.63 -38165768.47 -38165768.31 0.0286 0.0077

Mercury -109205-01-24 20:09 J -38165679.79 -38165679.66 -38165679.52 0.0285 0.0176

Mercury -109205-04-22 16:04 J -38165590.87 -38165590.83 -38165590.79 0.0284 0.0274

Venus -109201-06-01 07:26 J -38164090.36 -38164090.19 -38164090.02 0.0269 0.0159

Venus -109200-01-16 15:07 J -38163861.09 -38163860.87 -38163860.66 0.0267 0.0048

Venus -109200-09-02 21:50 J -38163631.79 -38163631.59 -38163631.37 0.0266 0.0063

Venus -109199-04-20 04:19 J -38163402.49 -38163402.32 -38163402.15 0.0264 0.0170

Earth -109197-01-29 14:38 J -38162753.06 -38162752.89 -38162752.70 0.0262 0.0185

Moon -109197-01-29 18:14 J -38162752.93 -38162752.74 -38162752.54 0.0262 0.0171 \*

Mars -109195-11-11 01:26 J -38161736.71 -38161736.44 -38161736.16 0.0263 0.0043

Mercury -109191-11-23 19:55 J -38160262.76 -38160262.67 -38160262.56 0.0272 0.0201

Mercury -109190-02-20 09:21 J -38160174.23 -38160174.11 -38160173.97 0.0273 0.0127

Mercury -109190-05-19 22:48 J -38160085.69 -38160085.55 -38160085.41 0.0274 0.0053

Mercury -109190-08-16 11:45 J -38159997.15 -38159997.01 -38159996.86 0.0274 0.0022

Mercury -109190-11-13 00:43 J -38159908.60 -38159908.47 -38159908.33 0.0275 0.0095

Mercury -109189-02-09 13:40 J -38159820.05 -38159819.93 -38159819.82 0.0276 0.0168

Mercury -109189-05-08 02:09 J -38159731.47 -38159731.41 -38159731.34 0.0277 0.0240

Venus -109185-02-11 10:19 J -38158357.23 -38158357.07 -38158356.90 0.0292 0.0169

Venus -109185-09-28 03:07 J -38158127.57 -38158127.37 -38158127.16 0.0294 0.0030

Venus -109184-05-15 20:38 J -38157897.83 -38157897.64 -38157897.45 0.0296 0.0112

Venus -109184-12-31 14:52 J -38157667.98 -38157667.88 -38157667.77 0.0297 0.0254

Earth -109183-07-22 15:50 J -38157465.04 -38157464.84 -38157464.64 0.0298 0.0154

Moon -109183-07-22 19:40 J -38157464.88 -38157464.68 -38157464.48 0.0298 0.0156 \*

Mars -109181-12-17 23:45 J -38156585.82 -38156585.51 -38156585.19 0.0299 0.0021

Mercury -109177-06-22 12:57 J -38155303.04 -38155302.96 -38155302.89 0.0289 0.0255

Mercury -109177-09-19 07:26 J -38155214.32 -38155214.19 -38155214.05 0.0288 0.0160

Mercury -109177-12-17 02:24 J -38155125.56 -38155125.40 -38155125.24 0.0287 0.0063

Mercury -109176-03-15 21:36 J -38155036.77 -38155036.60 -38155036.44 0.0286 0.0034

Mercury -109176-06-12 16:48 J -38154947.94 -38154947.80 -38154947.64 0.0285 0.0132

Mercury -109176-09-09 12:28 J -38154859.07 -38154858.98 -38154858.87 0.0284 0.0231

Venus -109172-04-26 21:36 J -38153533.64 -38153533.60 -38153533.54 0.0271 0.0261

Venus -109172-12-12 06:28 J -38153304.41 -38153304.23 -38153304.05 0.0269 0.0149

Venus -109171-07-29 14:09 J -38153075.12 -38153074.91 -38153074.69 0.0267 0.0037

Venus -109170-03-15 21:21 J -38152845.82 -38152845.61 -38152845.40 0.0265 0.0074

Venus -109170-10-31 03:50 J -38152616.49 -38152616.34 -38152616.18 0.0264 0.0181

Moon -109168-01-23 00:43 J -38152166.71 -38152166.47 -38152166.23 0.0263 0.0077

Earth -109168-01-23 03:36 J -38152166.60 -38152166.35 -38152166.10 0.0263 0.0063 \*

Mars -109166-01-04 00:28 J -38151455.62 -38151455.48 -38151455.31 0.0262 0.0216

Mars -109165-12-26 12:57 J -38150733.16 -38150732.96 -38150732.74 0.0264 0.0176

Mercury -109161-04-11 20:52 J -38149530.71 -38149530.63 -38149530.55 0.0272 0.0227

Mercury -109161-07-09 10:19 J -38149442.19 -38149442.07 -38149441.94 0.0273 0.0153

Mercury -109161-10-05 23:45 J -38149353.65 -38149353.51 -38149353.37 0.0274 0.0079

Mercury -109160-01-02 12:57 J -38149265.11 -38149264.96 -38149264.82 0.0275 0.0009

Mercury -109160-04-01 01:55 J -38149176.56 -38149176.42 -38149176.28 0.0276 0.0069

Mercury -109160-06-28 14:38 J -38149088.01 -38149087.89 -38149087.76 0.0276 0.0142

Mercury -109160-09-25 03:21 J -38148999.44 -38148999.36 -38148999.27 0.0277 0.0215

Venus -109156-01-05 21:50 J -38147800.61 -38147800.59 -38147800.56 0.0290 0.0287

Venus -109156-08-23 13:55 J -38147571.09 -38147570.92 -38147570.74 0.0292 0.0154

Venus -109155-04-10 06:57 J -38147341.42 -38147341.21 -38147341.00 0.0294 0.0013

Venus -109155-11-26 00:28 J -38147111.65 -38147111.48 -38147111.29 0.0296 0.0130

Venus -109154-07-13 18:57 J -38146881.78 -38146881.71 -38146881.62 0.0297 0.0273

Moon -109153-07-29 12:28 J -38146500.11 -38146499.98 -38146499.84 0.0299 0.0240

Earth -109153-07-29 13:26 J -38146500.08 -38146499.94 -38146499.80 0.0299 0.0235 \*

Mars -109150-02-11 07:40 J -38145573.38 -38145573.18 -38145572.95 0.0297 0.0213

Mercury -109148-11-09 12:43 J -38144570.99 -38144570.97 -38144570.94 0.0289 0.0285

Mercury -109147-02-06 07:12 J -38144482.32 -38144482.20 -38144482.07 0.0288 0.0191

Mercury -109147-05-06 02:09 J -38144393.57 -38144393.41 -38144393.26 0.0287 0.0095

Mercury -109147-08-02 21:07 J -38144304.78 -38144304.62 -38144304.45 0.0286 0.0004

Mercury -109147-10-30 16:33 J -38144215.97 -38144215.81 -38144215.65 0.0286 0.0101

Mercury -109146-01-27 12:14 J -38144127.11 -38144126.99 -38144126.87 0.0285 0.0199

Venus -109143-11-07 02:38 J -38142747.47 -38142747.39 -38142747.30 0.0271 0.0249

Venus -109142-06-24 11:16 J -38142518.21 -38142518.03 -38142517.84 0.0269 0.0136

Venus -109141-02-08 19:12 J -38142288.92 -38142288.70 -38142288.48 0.0267 0.0024

Venus -109141-09-25 02:24 J -38142059.61 -38142059.40 -38142059.20 0.0266 0.0087

Venus -109140-05-12 08:24 J -38141830.29 -38141830.15 -38141829.99 0.0264 0.0195

Moon -109138-01-30 11:02 J -38141202.17 -38141202.04 -38141201.89 0.0262 0.0224

Earth -109138-01-30 12:43 J -38141202.06 -38141201.97 -38141201.84 0.0262 0.0235 \*

Mars -109136-02-18 17:02 J -38140452.05 -38140451.79 -38140451.52 0.0262 0.0082

Mercury -109132-08-29 22:04 J -38138798.63 -38138798.58 -38138798.52 0.0271 0.0252

Mercury -109132-11-26 11:31 J -38138710.13 -38138710.02 -38138709.90 0.0272 0.0178

Mercury -109131-02-23 00:57 J -38138621.60 -38138621.46 -38138621.32 0.0273 0.0104

Mercury -109131-05-22 14:09 J -38138533.06 -38138532.91 -38138532.77 0.0274 0.0031

Mercury -109131-08-19 03:07 J -38138444.51 -38138444.37 -38138444.23 0.0274 0.0043

Mercury -109131-11-15 15:50 J -38138355.96 -38138355.84 -38138355.70 0.0275 0.0117

Mercury -109130-02-12 04:48 J -38138267.40 -38138267.30 -38138267.20 0.0276 0.0188

Mercury -109130-05-11 17:16 J -38138178.82 -38138178.78 -38138178.73 0.0277 0.0260

Venus -109127-07-18 23:02 J -38137014.59 -38137014.54 -38137014.47 0.0290 0.0276

Venus -109126-03-05 14:52 J -38136785.06 -38136784.88 -38136784.69 0.0292 0.0142

Venus -109126-10-21 07:40 J -38136555.39 -38136555.18 -38136554.98 0.0294 0.0003

Venus -109125-06-07 01:12 J -38136325.63 -38136325.45 -38136325.27 0.0296 0.0141

Venus -109124-01-22 18:57 J -38136095.76 -38136095.71 -38136095.64 0.0297 0.0284

Moon -109124-07-23 11:02 J -38135914.26 -38135914.04 -38135913.81 0.0298 0.0098

Earth -109124-07-23 11:16 J -38135914.24 -38135914.03 -38135913.80 0.0298 0.0104 \*

Mars -109122-03-18 21:21 J -38135310.76 -38135310.61 -38135310.46 0.0299 0.0260

Mercury -109118-06-26 04:33 J -38133750.40 -38133750.31 -38133750.21 0.0289 0.0232

Mercury -109118-09-22 23:16 J -38133661.67 -38133661.53 -38133661.39 0.0288 0.0136

Mercury -109118-12-20 18:14 J -38133572.90 -38133572.74 -38133572.58 0.0287 0.0040

Mercury -109117-03-18 13:26 J -38133484.10 -38133483.94 -38133483.78 0.0286 0.0058  
 Mercury -109117-06-15 08:52 J -38133395.27 -38133395.13 -38133394.99 0.0285 0.0156  
 Mercury -109117-09-12 04:33 J -38133306.38 -38133306.31 -38133306.23 0.0284 0.0255  
 Venus -109113-05-19 01:12 J -38131961.53 -38131961.45 -38131961.34 0.0270 0.0240  
 Venus -109112-01-03 10:19 J -38131732.26 -38131732.07 -38131731.88 0.0269 0.0126  
 Venus -109112-08-20 18:14 J -38131502.96 -38131502.74 -38131502.53 0.0267 0.0014  
 Venus -109111-04-07 01:12 J -38131273.65 -38131273.45 -38131273.24 0.0265 0.0098  
 Venus -109111-11-22 07:40 J -38131044.31 -38131044.18 -38131044.04 0.0264 0.0206  
 Earth -109109-01-25 00:57 J -38130615.71 -38130615.46 -38130615.20 0.0263 0.0016  
 Moon -109109-01-25 03:07 J -38130615.61 -38130615.37 -38130615.12 0.0263 0.0027 \*  
 Mars -109106-04-06 00:28 J -38129448.75 -38129448.48 -38129448.21 0.0263 0.0047  
 Mercury -109102-04-15 12:14 J -38127978.08 -38127977.99 -38127977.89 0.0272 0.0205  
 Mercury -109102-07-13 01:40 J -38127889.55 -38127889.43 -38127889.30 0.0273 0.0131  
 Mercury -109102-10-09 15:07 J -38127801.02 -38127800.87 -38127800.73 0.0274 0.0057  
 Mercury -109101-01-06 04:04 J -38127712.47 -38127712.33 -38127712.18 0.0275 0.0017  
 Mercury -109101-04-03 17:02 J -38127623.92 -38127623.79 -38127623.65 0.0276 0.0090  
 Mercury -109101-07-01 05:45 J -38127535.37 -38127535.26 -38127535.14 0.0276 0.0163  
 Mercury -109101-09-27 18:28 J -38127446.80 -38127446.73 -38127446.65 0.0277 0.0235  
 Venus -109097-01-29 02:09 J -38126228.49 -38126228.41 -38126228.31 0.0290 0.0262  
 Venus -109097-09-14 18:14 J -38125998.92 -38125998.74 -38125998.55 0.0292 0.0127  
 Venus -109096-05-02 11:16 J -38125769.24 -38125769.03 -38125768.83 0.0294 0.0015  
 Venus -109096-12-18 04:48 J -38125539.47 -38125539.30 -38125539.12 0.0296 0.0158  
 Earth -109094-07-31 08:09 J -38124949.22 -38124949.16 -38124949.08 0.0299 0.0285  
 Moon -109094-07-31 11:45 J -38124949.03 -38124949.01 -38124948.98 0.0299 0.0296  
 Mars -109092-05-12 09:21 J -38124298.42 -38124298.11 -38124297.80 0.0298 0.0023  
 Mercury -109089-11-12 04:04 J -38123018.39 -38123018.33 -38123018.26 0.0289 0.0263  
 Mercury -109088-02-08 22:48 J -38122929.68 -38122929.55 -38122929.42 0.0288 0.0168  
 Mercury -109088-05-08 17:45 J -38122840.92 -38122840.76 -38122840.60 0.0287 0.0072  
 Mercury -109088-08-05 12:57 J -38122752.13 -38122751.96 -38122751.80 0.0286 0.0026  
 Mercury -109088-11-02 08:24 J -38122663.30 -38122663.15 -38122663.00 0.0285 0.0124

Mercury -109087-01-30 03:50 J -38122574.44 -38122574.34 -38122574.23 0.0285 0.0223

Venus -109084-11-29 06:00 J -38121175.36 -38121175.25 -38121175.12 0.0271 0.0227

Venus -109083-07-16 14:52 J -38120946.07 -38120945.88 -38120945.68 0.0269 0.0113

Venus -109082-03-02 22:48 J -38120716.77 -38120716.55 -38120716.33 0.0267 0.0003

Venus -109082-10-18 06:00 J -38120487.44 -38120487.25 -38120487.04 0.0266 0.0112

Venus -109081-06-03 12:28 J -38120258.09 -38120257.98 -38120257.85 0.0265 0.0219

Moon -109080-01-18 18:43 J -38120028.77 -38120028.72 -38120028.66 0.0264 0.0258

Earth -109080-01-18 20:52 J -38120028.71 -38120028.63 -38120028.53 0.0264 0.0246 \*

Mars -109078-05-30 09:21 J -38119167.28 -38119167.11 -38119166.93 0.0262 0.0204

Mars -109076-05-21 21:21 J -38118444.80 -38118444.61 -38118444.40 0.0264 0.0184

Mercury -109073-09-01 13:40 J -38117246.00 -38117245.93 -38117245.84 0.0271 0.0229

Mercury -109073-11-29 03:21 J -38117157.48 -38117157.36 -38117157.24 0.0272 0.0154

Mercury -109072-02-25 16:33 J -38117068.95 -38117068.81 -38117068.67 0.0273 0.0081

Mercury -109072-05-25 05:45 J -38116980.41 -38116980.26 -38116980.12 0.0274 0.0009

Mercury -109072-08-21 18:43 J -38116891.86 -38116891.72 -38116891.58 0.0274 0.0066

Mercury -109072-11-18 07:26 J -38116803.31 -38116803.19 -38116803.07 0.0275 0.0138

Mercury -109071-02-14 20:09 J -38116714.75 -38116714.66 -38116714.57 0.0276 0.0210

Venus -109068-08-10 04:33 J -38115442.42 -38115442.31 -38115442.21 0.0290 0.0248

Venus -109067-03-27 20:09 J -38115212.85 -38115212.66 -38115212.47 0.0292 0.0113

Venus -109067-11-12 12:43 J -38114983.17 -38114982.97 -38114982.76 0.0294 0.0028

Venus -109066-06-30 06:00 J -38114753.41 -38114753.25 -38114753.08 0.0296 0.0171

Moon -109065-07-24 04:19 J -38114363.55 -38114363.32 -38114363.09 0.0298 0.0038

Earth -109065-07-24 07:55 J -38114363.40 -38114363.17 -38114362.93 0.0298 0.0051 \*

Mars -109062-07-05 21:07 J -38113286.83 -38113286.62 -38113286.39 0.0297 0.0212

Mercury -109059-06-28 20:09 J -38112197.76 -38112197.66 -38112197.54 0.0289 0.0209

Mercury -109059-09-25 15:07 J -38112109.02 -38112108.87 -38112108.72 0.0288 0.0113

Mercury -109059-12-23 10:04 J -38112020.25 -38112020.08 -38112019.91 0.0287 0.0016

Mercury -109058-03-22 05:16 J -38111931.44 -38111931.28 -38111931.12 0.0286 0.0082

Mercury -109058-06-19 00:43 J -38111842.59 -38111842.47 -38111842.33 0.0285 0.0181

Mercury -109058-09-15 20:38 J -38111753.66 -38111753.64 -38111753.60 0.0284 0.0279

Venus -109054-06-11 05:02 J -38110389.42 -38110389.29 -38110389.16 0.0270 0.0217  
 Venus -109053-01-26 13:40 J -38110160.12 -38110159.93 -38110159.72 0.0269 0.0103  
 Venus -109053-09-11 21:50 J -38109930.80 -38109930.59 -38109930.37 0.0267 0.0013  
 Venus -109052-04-29 05:16 J -38109701.48 -38109701.28 -38109701.09 0.0265 0.0123  
 Venus -109052-12-14 11:45 J -38109472.11 -38109472.01 -38109471.90 0.0264 0.0231  
 Earth -109050-01-25 22:48 J -38109064.80 -38109064.55 -38109064.29 0.0263 0.0033  
 Moon -109050-01-26 02:09 J -38109064.67 -38109064.41 -38109064.15 0.0263 0.0025 \*  
 Mars -109048-07-14 15:07 J -38108164.12 -38108163.87 -38108163.59 0.0262 0.0080  
 Mercury -109043-01-19 14:24 J -38106513.94 -38106513.90 -38106513.85 0.0271 0.0256  
 Mercury -109043-04-18 04:04 J -38106425.44 -38106425.33 -38106425.22 0.0272 0.0182  
 Mercury -109043-07-15 17:16 J -38106336.91 -38106336.78 -38106336.64 0.0273 0.0108  
 Mercury -109043-10-12 06:28 J -38106248.37 -38106248.23 -38106248.08 0.0274 0.0035  
 Mercury -109042-01-08 19:40 J -38106159.83 -38106159.68 -38106159.54 0.0275 0.0040  
 Mercury -109042-04-07 08:24 J -38106071.28 -38106071.15 -38106071.02 0.0276 0.0112  
 Mercury -109042-07-04 21:07 J -38105982.72 -38105982.62 -38105982.51 0.0277 0.0185  
 Mercury -109042-10-01 09:50 J -38105894.14 -38105894.09 -38105894.04 0.0277 0.0256  
 Venus -109038-02-20 07:12 J -38104656.31 -38104656.20 -38104656.07 0.0291 0.0236  
 Venus -109038-10-07 23:16 J -38104426.72 -38104426.53 -38104426.33 0.0293 0.0098  
 Venus -109037-05-24 16:19 J -38104197.03 -38104196.82 -38104196.62 0.0295 0.0045  
 Venus -109036-01-09 09:50 J -38103967.25 -38103967.09 -38103966.93 0.0296 0.0189  
 Mars -109034-08-11 09:07 J -38103023.25 -38103023.12 -38103022.95 0.0299 0.0261  
 Mercury -109030-11-15 19:55 J -38101465.75 -38101465.67 -38101465.57 0.0289 0.0239  
 Mercury -109029-02-12 14:38 J -38101377.02 -38101376.89 -38101376.74 0.0288 0.0144  
 Mercury -109029-05-11 09:50 J -38101288.26 -38101288.09 -38101287.93 0.0287 0.0048  
 Mercury -109029-08-08 05:02 J -38101199.46 -38101199.29 -38101199.13 0.0286 0.0050  
 Mercury -109029-11-05 00:28 J -38101110.62 -38101110.48 -38101110.34 0.0285 0.0149  
 Mercury -109028-02-01 20:09 J -38101021.74 -38101021.66 -38101021.57 0.0284 0.0247  
 Venus -109025-12-21 10:19 J -38099603.21 -38099603.07 -38099602.93 0.0271 0.0203  
 Venus -109024-08-07 18:57 J -38099373.91 -38099373.71 -38099373.50 0.0269 0.0088  
 Venus -109023-03-25 03:07 J -38099144.59 -38099144.37 -38099144.16 0.0267 0.0026

Venus	-109023-11-09 10:19 J	-38098915.25	-38098915.07	-38098914.88	0.0266	0.0137
Venus	-109022-06-26 16:48 J	-38098685.87	-38098685.80	-38098685.71	0.0265	0.0245
Moon	-109021-01-20 16:04 J	-38098477.98	-38098477.83	-38098477.67	0.0264	0.0208
Earth	-109021-01-20 19:12 J	-38098477.86	-38098477.70	-38098477.52	0.0264	0.0196 *
Mars	-109018-08-30 12:14 J	-38097160.25	-38097159.99	-38097159.71	0.0263	0.0059
Mercury	-109014-09-05 06:00 J	-38095693.35	-38095693.25	-38095693.16	0.0271	0.0203
Mercury	-109014-12-02 19:12 J	-38095604.83	-38095604.70	-38095604.57	0.0272	0.0129
Mercury	-109013-02-29 08:24 J	-38095516.29	-38095516.15	-38095516.00	0.0273	0.0056
Mercury	-109013-05-27 21:36 J	-38095427.75	-38095427.60	-38095427.46	0.0274	0.0018
Mercury	-109013-08-24 10:19 J	-38095339.20	-38095339.07	-38095338.93	0.0275	0.0091
Mercury	-109013-11-20 23:16 J	-38095250.65	-38095250.53	-38095250.42	0.0276	0.0163
Mercury	-109012-02-17 11:45 J	-38095162.08	-38095162.01	-38095161.93	0.0276	0.0234
Venus	-109009-09-01 11:02 J	-38093870.17	-38093870.04	-38093869.90	0.0290	0.0219
Venus	-109008-04-19 02:52 J	-38093640.58	-38093640.38	-38093640.18	0.0292	0.0082
Venus	-109008-12-04 19:26 J	-38093410.89	-38093410.69	-38093410.49	0.0294	0.0060
Venus	-109007-07-22 12:28 J	-38093181.12	-38093180.98	-38093180.82	0.0296	0.0204
Earth	-109006-07-26 07:26 J	-38092812.43	-38092812.19	-38092811.96	0.0298	0.0009
Moon	-109006-07-26 07:26 J	-38092812.42	-38092812.19	-38092811.97	0.0298	0.0024 *
Mars	-109004-10-04 08:38 J	-38092011.45	-38092011.14	-38092010.83	0.0298	0.0019

# 109TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 109th millennium BCE.

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
TRANSIT								
TIME								
Mercury	-109000-04-03	18:00	J	-38090733.79	-38090733.75	-38090733.70	0.0290	0.0277
Mercury	-109000-07-01	12:43	J	-38090645.10	-38090644.97	-38090644.85	0.0289	0.0182
Mercury	-109000-09-28	07:26	J	-38090556.34	-38090556.19	-38090556.03	0.0288	0.0086
Mercury	-109000-12-26	02:38	J	-38090467.56	-38090467.39	-38090467.23	0.0287	0.0012
Mercury	-108999-03-24	21:50	J	-38090378.74	-38090378.59	-38090378.43	0.0286	0.0109
Mercury	-108999-06-21	17:31	J	-38090289.88	-38090289.77	-38090289.65	0.0285	0.0207
Venus	-108995-07-03	09:21	J	-38088817.25	-38088817.11	-38088816.95	0.0270	0.0193
Venus	-108994-02-17	18:28	J	-38088587.94	-38088587.73	-38088587.52	0.0268	0.0077
Venus	-108994-10-05	02:38	J	-38088358.60	-38088358.39	-38088358.17	0.0267	0.0038
Venus	-108993-05-21	10:04	J	-38088129.26	-38088129.08	-38088128.90	0.0265	0.0149
Venus	-108992-01-05	16:33	J	-38087899.85	-38087899.81	-38087899.76	0.0264	0.0257
Moon	-108991-01-26	20:38	J	-38087513.89	-38087513.64	-38087513.39	0.0263	0.0081
Earth	-108991-01-26	22:19	J	-38087513.81	-38087513.57	-38087513.33	0.0263	0.0084 *
Mars	-108990-10-23	09:21	J	-38086879.27	-38086879.11	-38086878.92	0.0262	0.0202
Mars	-108988-10-14	23:45	J	-38086156.69	-38086156.51	-38086156.31	0.0264	0.0189
Mercury	-108984-01-22	06:43	J	-38084961.30	-38084961.22	-38084961.14	0.0272	0.0229
Mercury	-108984-04-20	20:09	J	-38084872.78	-38084872.66	-38084872.54	0.0272	0.0155
Mercury	-108984-07-18	09:21	J	-38084784.24	-38084784.11	-38084783.97	0.0273	0.0082
Mercury	-108984-10-14	22:33	J	-38084695.70	-38084695.56	-38084695.41	0.0274	0.0009
Mercury	-108983-01-11	11:31	J	-38084607.16	-38084607.02	-38084606.88	0.0275	0.0065
Mercury	-108983-04-10	00:14	J	-38084518.61	-38084518.49	-38084518.36	0.0276	0.0138
Mercury	-108983-07-07	12:57	J	-38084430.04	-38084429.96	-38084429.86	0.0277	0.0210
Venus	-108979-03-14	14:38	J	-38083084.03	-38083083.89	-38083083.74	0.0291	0.0205
Venus	-108979-10-30	06:28	J	-38082854.42	-38082854.23	-38082854.02	0.0293	0.0067
Venus	-108978-06-16	23:16	J	-38082624.73	-38082624.53	-38082624.33	0.0295	0.0077
Venus	-108977-02-01	16:48	J	-38082394.93	-38082394.80	-38082394.66	0.0296	0.0221
Moon	-108977-07-19	13:26	J	-38082225.95	-38082225.94	-38082225.91	0.0297	0.0296



Mars -108974-11-28 18:57 J -38080998.92 -38080998.71 -38080998.49 0.0297 0.0215  
 Mercury -108971-11-18 12:28 J -38079913.08 -38079912.98 -38079912.86 0.0289 0.0212  
 Mercury -108970-02-15 07:12 J -38079824.34 -38079824.20 -38079824.04 0.0288 0.0117  
 Mercury -108970-05-15 02:24 J -38079735.57 -38079735.40 -38079735.24 0.0287 0.0020  
 Mercury -108970-08-11 21:36 J -38079646.76 -38079646.60 -38079646.44 0.0286 0.0078  
 Mercury -108970-11-08 17:16 J -38079557.91 -38079557.78 -38079557.65 0.0285 0.0176  
 Mercury -108969-02-05 12:57 J -38079468.99 -38079468.96 -38079468.91 0.0284 0.0275  
 Venus -108965-01-13 15:21 J -38078031.02 -38078030.86 -38078030.70 0.0270 0.0177  
 Venus -108965-08-30 00:14 J -38077801.70 -38077801.49 -38077801.28 0.0269 0.0062  
 Venus -108964-04-16 08:24 J -38077572.37 -38077572.15 -38077571.94 0.0267 0.0052  
 Venus -108964-12-01 15:36 J -38077343.01 -38077342.85 -38077342.67 0.0266 0.0164  
 Earth -108962-01-21 19:12 J -38076926.90 -38076926.70 -38076926.47 0.0264 0.0144  
 Moon -108962-01-21 20:38 J -38076926.83 -38076926.64 -38076926.43 0.0264 0.0152 \*  
 Mars -108960-12-08 07:55 J -38075875.44 -38075875.17 -38075874.90 0.0263 0.0064  
 Mercury -108955-06-11 08:38 J -38074229.19 -38074229.14 -38074229.07 0.0271 0.0249  
 Mercury -108955-09-07 22:19 J -38074140.68 -38074140.57 -38074140.46 0.0272 0.0175  
 Mercury -108955-12-05 11:45 J -38074052.15 -38074052.01 -38074051.88 0.0273 0.0102  
 Mercury -108954-03-04 00:43 J -38073963.61 -38073963.47 -38073963.32 0.0273 0.0030  
 Mercury -108954-05-31 13:55 J -38073875.07 -38073874.92 -38073874.78 0.0274 0.0045  
 Mercury -108954-08-28 02:38 J -38073786.52 -38073786.39 -38073786.26 0.0275 0.0117  
 Mercury -108954-11-24 15:21 J -38073697.96 -38073697.86 -38073697.76 0.0276 0.0189  
 Mercury -108953-02-21 03:50 J -38073609.38 -38073609.34 -38073609.29 0.0277 0.0261  
 Venus -108950-09-24 19:26 J -38072297.84 -38072297.69 -38072297.52 0.0290 0.0187  
 Venus -108949-05-11 11:16 J -38072068.23 -38072068.03 -38072067.82 0.0292 0.0048  
 Venus -108949-12-27 03:50 J -38071838.53 -38071838.34 -38071838.14 0.0294 0.0095  
 Venus -108948-08-13 20:52 J -38071608.74 -38071608.63 -38071608.50 0.0296 0.0239  
 Earth -108947-07-27 09:21 J -38071261.33 -38071261.11 -38071260.87 0.0297 0.0074  
 Moon -108947-07-27 13:12 J -38071261.17 -38071260.95 -38071260.73 0.0297 0.0091 \*  
 Mars -108945-01-04 00:00 J -38070735.66 -38070735.50 -38070735.32 0.0298 0.0250  
 Mercury -108941-04-06 11:16 J -38069181.11 -38069181.03 -38069180.95 0.0289 0.0246

Mercury -108941-07-04 05:45 J -38069092.39 -38069092.26 -38069092.12 0.0288 0.0152

Mercury -108941-10-01 00:43 J -38069003.63 -38069003.47 -38069003.31 0.0288 0.0055

Mercury -108941-12-28 19:55 J -38068914.84 -38068914.67 -38068914.51 0.0287 0.0042

Mercury -108940-03-27 15:21 J -38068826.01 -38068825.86 -38068825.71 0.0286 0.0140

Mercury -108940-06-24 11:02 J -38068737.13 -38068737.04 -38068736.95 0.0285 0.0238

Venus -108936-07-25 15:50 J -38067245.01 -38067244.84 -38067244.67 0.0270 0.0165

Venus -108935-03-12 00:43 J -38067015.68 -38067015.47 -38067015.25 0.0268 0.0049

Venus -108935-10-27 09:07 J -38066786.33 -38066786.12 -38066785.91 0.0267 0.0065

Venus -108934-06-13 16:19 J -38066556.98 -38066556.82 -38066556.65 0.0265 0.0177

Moon -108932-01-27 20:24 J -38065962.86 -38065962.65 -38065962.43 0.0263 0.0139

Earth -108932-01-28 00:00 J -38065962.71 -38065962.50 -38065962.28 0.0263 0.0139 \*

Mars -108929-01-23 18:43 J -38064871.98 -38064871.72 -38064871.45 0.0263 0.0065

Mercury -108925-01-25 23:31 J -38063408.62 -38063408.52 -38063408.42 0.0272 0.0200

Mercury -108925-04-23 12:43 J -38063320.10 -38063319.97 -38063319.84 0.0273 0.0127

Mercury -108925-07-21 01:55 J -38063231.56 -38063231.42 -38063231.27 0.0274 0.0054

Mercury -108925-10-17 15:07 J -38063143.01 -38063142.87 -38063142.73 0.0274 0.0020

Mercury -108924-01-14 04:04 J -38063054.47 -38063054.33 -38063054.20 0.0275 0.0093

Mercury -108924-04-12 16:48 J -38062965.91 -38062965.80 -38062965.69 0.0276 0.0165

Mercury -108924-07-10 05:31 J -38062877.34 -38062877.27 -38062877.20 0.0277 0.0237

Venus -108920-04-06 00:14 J -38061511.66 -38061511.49 -38061511.32 0.0291 0.0171

Venus -108920-11-21 16:04 J -38061282.04 -38061281.83 -38061281.63 0.0293 0.0031

Venus -108919-07-09 08:38 J -38061052.33 -38061052.14 -38061051.95 0.0295 0.0113

Venus -108918-02-24 01:55 J -38060822.51 -38060822.42 -38060822.31 0.0296 0.0257

Moon -108918-07-21 14:24 J -38060675.04 -38060674.90 -38060674.74 0.0297 0.0226

Earth -108918-07-21 17:45 J -38060674.88 -38060674.76 -38060674.61 0.0297 0.0242 \*

Mars -108915-02-27 16:33 J -38059723.12 -38059722.81 -38059722.49 0.0298 0.0010

Mercury -108912-08-24 11:31 J -38058449.06 -38058449.02 -38058448.97 0.0289 0.0274

Mercury -108912-11-21 06:00 J -38058360.37 -38058360.25 -38058360.12 0.0288 0.0180

Mercury -108911-02-18 00:57 J -38058271.62 -38058271.46 -38058271.30 0.0287 0.0084

Mercury -108911-05-17 19:55 J -38058182.83 -38058182.67 -38058182.50 0.0287 0.0015

Mercury -108911-08-14 15:21 J -38058094.01 -38058093.86 -38058093.70 0.0286 0.0111

Mercury -108911-11-11 11:02 J -38058005.15 -38058005.04 -38058004.93 0.0285 0.0209

Venus -108907-06-20 12:14 J -38056688.02 -38056687.99 -38056687.94 0.0272 0.0266

Venus -108906-02-04 22:04 J -38056458.75 -38056458.58 -38056458.39 0.0270 0.0150

Venus -108906-09-22 07:12 J -38056229.41 -38056229.20 -38056228.98 0.0268 0.0033

Venus -108905-05-08 15:21 J -38056000.07 -38055999.86 -38055999.65 0.0267 0.0082

Venus -108905-12-23 22:33 J -38055770.70 -38055770.56 -38055770.40 0.0266 0.0193

Earth -108903-01-22 22:04 J -38055375.82 -38055375.58 -38055375.33 0.0264 0.0087

Moon -108903-01-23 01:40 J -38055375.66 -38055375.43 -38055375.18 0.0264 0.0093 \*

Mars -108901-03-18 06:00 J -38054590.43 -38054590.25 -38054590.04 0.0263 0.0184

Mars -108899-03-10 23:02 J -38053867.71 -38053867.54 -38053867.37 0.0264 0.0207

Mercury -108896-06-14 01:55 J -38052676.50 -38052676.42 -38052676.33 0.0271 0.0218

Mercury -108896-09-10 15:21 J -38052587.98 -38052587.86 -38052587.73 0.0272 0.0144

Mercury -108896-12-08 04:48 J -38052499.44 -38052499.30 -38052499.16 0.0273 0.0070

Mercury -108895-03-06 17:45 J -38052410.90 -38052410.76 -38052410.61 0.0274 0.0007

Mercury -108895-06-03 06:43 J -38052322.35 -38052322.22 -38052322.08 0.0275 0.0076

Mercury -108895-08-30 19:26 J -38052233.80 -38052233.69 -38052233.56 0.0275 0.0149

Mercury -108895-11-27 08:09 J -38052145.24 -38052145.16 -38052145.07 0.0276 0.0220

Venus -108891-03-01 16:19 J -38050954.84 -38050954.82 -38050954.78 0.0288 0.0284

Venus -108891-10-17 07:12 J -38050725.37 -38050725.20 -38050725.02 0.0291 0.0150

Venus -108890-06-03 23:02 J -38050495.75 -38050495.54 -38050495.34 0.0293 0.0010

Venus -108889-01-19 15:21 J -38050266.04 -38050265.86 -38050265.67 0.0294 0.0134

Venus -108889-09-05 08:24 J -38050036.20 -38050036.15 -38050036.07 0.0296 0.0278

Earth -108888-07-28 16:33 J -38049710.00 -38049709.81 -38049709.60 0.0297 0.0149

Moon -108888-07-28 17:31 J -38049709.97 -38049709.77 -38049709.56 0.0297 0.0164 \*

Mars -108885-04-23 00:14 J -38048710.67 -38048710.49 -38048710.28 0.0297 0.0232

Mercury -108882-04-10 05:16 J -38047628.38 -38047628.28 -38047628.16 0.0289 0.0211

Mercury -108882-07-08 00:00 J -38047539.65 -38047539.50 -38047539.35 0.0288 0.0116

Mercury -108882-10-04 18:57 J -38047450.87 -38047450.71 -38047450.54 0.0287 0.0020

Mercury -108881-01-01 14:09 J -38047362.07 -38047361.91 -38047361.74 0.0286 0.0079

Mercury -108881-03-30 09:36 J -38047273.22 -38047273.10 -38047272.96 0.0285 0.0177  
 Mercury -108881-06-27 05:31 J -38047184.31 -38047184.27 -38047184.22 0.0284 0.0274  
 Venus -108878-12-31 14:24 J -38045901.97 -38045901.90 -38045901.82 0.0272 0.0253  
 Venus -108877-08-17 00:00 J -38045672.68 -38045672.50 -38045672.31 0.0270 0.0136  
 Venus -108876-04-03 08:52 J -38045443.35 -38045443.13 -38045442.91 0.0268 0.0019  
 Venus -108876-11-18 17:02 J -38045213.99 -38045213.79 -38045213.59 0.0267 0.0095  
 Venus -108875-07-06 00:28 J -38044984.62 -38044984.48 -38044984.34 0.0265 0.0207  
 Earth -108873-01-30 04:04 J -38044411.49 -38044411.33 -38044411.15 0.0263 0.0198  
 Moon -108873-01-30 04:48 J -38044411.45 -38044411.30 -38044411.14 0.0263 0.0202 \*  
 Mars -108871-05-03 18:00 J -38043587.01 -38043586.75 -38043586.47 0.0263 0.0057  
 Mercury -108867-11-01 03:07 J -38041944.43 -38041944.37 -38041944.30 0.0272 0.0242  
 Mercury -108866-01-28 16:33 J -38041855.92 -38041855.81 -38041855.69 0.0272 0.0169  
 Mercury -108866-04-27 06:00 J -38041767.39 -38041767.25 -38041767.11 0.0273 0.0095  
 Mercury -108866-07-24 19:12 J -38041678.84 -38041678.70 -38041678.55 0.0274 0.0021  
 Mercury -108866-10-21 08:09 J -38041590.30 -38041590.16 -38041590.01 0.0275 0.0052  
 Mercury -108865-01-17 21:07 J -38041501.75 -38041501.62 -38041501.49 0.0276 0.0124  
 Mercury -108865-04-15 09:50 J -38041413.19 -38041413.09 -38041412.99 0.0276 0.0197  
 Mercury -108865-07-12 22:19 J -38041324.60 -38041324.57 -38041324.53 0.0277 0.0268  
 Venus -108862-09-11 20:38 J -38040168.70 -38040168.64 -38040168.56 0.0289 0.0270  
 Venus -108861-04-28 11:45 J -38039939.19 -38039939.01 -38039938.82 0.0291 0.0135  
 Venus -108861-12-14 03:50 J -38039709.55 -38039709.34 -38039709.14 0.0293 0.0008  
 Venus -108860-07-31 20:24 J -38039479.82 -38039479.65 -38039479.47 0.0295 0.0152  
 Venus -108859-03-18 13:55 J -38039249.92 -38039249.92 -38039249.91 0.0296 0.0296  
 Moon -108859-07-23 00:57 J -38039123.65 -38039123.46 -38039123.26 0.0297 0.0151  
 Earth -108859-07-23 01:40 J -38039123.62 -38039123.43 -38039123.24 0.0297 0.0165 \*  
 Mars -108857-05-29 20:09 J -38038446.85 -38038446.66 -38038446.47 0.0298 0.0233  
 Mercury -108853-08-27 06:00 J -38036896.34 -38036896.25 -38036896.16 0.0289 0.0237  
 Mercury -108853-11-24 00:43 J -38036807.62 -38036807.47 -38036807.33 0.0288 0.0142  
 Mercury -108852-02-20 19:26 J -38036718.85 -38036718.69 -38036718.52 0.0287 0.0047  
 Mercury -108852-05-20 14:38 J -38036630.05 -38036629.89 -38036629.72 0.0286 0.0051

Mercury -108852-08-17 10:04 J -38036541.22 -38036541.08 -38036540.93 0.0285 0.0149  
 Mercury -108852-11-14 05:45 J -38036452.34 -38036452.26 -38036452.17 0.0284 0.0247  
 Venus -108848-07-12 21:21 J -38035115.71 -38035115.61 -38035115.50 0.0272 0.0236  
 Venus -108847-02-27 06:57 J -38034886.40 -38034886.21 -38034886.01 0.0270 0.0119  
 Venus -108847-10-14 16:04 J -38034657.05 -38034656.83 -38034656.61 0.0268 0.0004  
 Venus -108846-06-01 00:14 J -38034427.69 -38034427.49 -38034427.29 0.0267 0.0113  
 Venus -108845-01-16 07:40 J -38034198.30 -38034198.18 -38034198.07 0.0266 0.0224  
 Moon -108844-01-24 03:21 J -38033824.63 -38033824.36 -38033824.09 0.0264 0.0026  
 Earth -108844-01-24 03:50 J -38033824.60 -38033824.34 -38033824.09 0.0264 0.0027 \*  
 Mars -108841-06-18 22:48 J -38032582.80 -38032582.55 -38032582.28 0.0264 0.0086  
 Mercury -108837-03-20 06:00 J -38031212.29 -38031212.25 -38031212.20 0.0271 0.0258  
 Mercury -108837-06-16 19:26 J -38031123.79 -38031123.69 -38031123.57 0.0272 0.0184  
 Mercury -108837-09-13 08:52 J -38031035.26 -38031035.13 -38031034.99 0.0273 0.0111  
 Mercury -108837-12-10 22:19 J -38030946.72 -38030946.57 -38030946.43 0.0274 0.0037  
 Mercury -108836-03-09 11:16 J -38030858.17 -38030858.03 -38030857.89 0.0274 0.0037  
 Mercury -108836-06-06 00:14 J -38030769.62 -38030769.49 -38030769.36 0.0275 0.0109  
 Mercury -108836-09-02 12:57 J -38030681.06 -38030680.96 -38030680.85 0.0276 0.0181  
 Mercury -108836-11-30 01:26 J -38030592.49 -38030592.44 -38030592.38 0.0277 0.0253  
 Venus -108832-03-24 05:45 J -38029382.37 -38029382.26 -38029382.16 0.0289 0.0247  
 Venus -108832-11-08 20:38 J -38029152.83 -38029152.64 -38029152.45 0.0291 0.0110  
 Venus -108831-06-26 12:28 J -38028923.19 -38028922.98 -38028922.78 0.0293 0.0032  
 Venus -108830-02-11 04:48 J -38028693.45 -38028693.30 -38028693.13 0.0295 0.0177  
 Moon -108829-07-30 00:14 J -38028158.61 -38028158.49 -38028158.34 0.0297 0.0244  
 Earth -108829-07-30 03:36 J -38028158.49 -38028158.35 -38028158.20 0.0297 0.0230 \*  
 Mars -108827-07-24 17:31 J -38027434.08 -38027433.77 -38027433.45 0.0298 0.0014  
 Mercury -108823-01-14 06:00 J -38026164.30 -38026164.25 -38026164.18 0.0289 0.0265  
 Mercury -108823-04-13 00:43 J -38026075.60 -38026075.47 -38026075.34 0.0289 0.0170  
 Mercury -108823-07-10 19:26 J -38025986.85 -38025986.69 -38025986.53 0.0288 0.0074  
 Mercury -108823-10-07 14:24 J -38025898.06 -38025897.90 -38025897.73 0.0287 0.0024  
 Mercury -108822-01-04 09:50 J -38025809.24 -38025809.09 -38025808.94 0.0286 0.0120

Mercury -108822-04-03 05:16 J -38025720.38 -38025720.28 -38025720.16 0.0285 0.0218  
 Venus -108818-01-23 00:43 J -38024329.58 -38024329.47 -38024329.34 0.0271 0.0222  
 Venus -108818-09-09 10:19 J -38024100.27 -38024100.07 -38024099.87 0.0270 0.0104  
 Venus -108817-04-25 18:57 J -38023870.92 -38023870.71 -38023870.49 0.0268 0.0014  
 Venus -108817-12-11 02:52 J -38023641.57 -38023641.38 -38023641.18 0.0267 0.0128  
 Venus -108816-07-28 10:04 J -38023412.16 -38023412.08 -38023411.98 0.0265 0.0239  
 Earth -108814-01-31 11:16 J -38022860.05 -38022860.03 -38022859.98 0.0263 0.0261  
 Mars -108813-08-11 22:48 J -38022301.74 -38022301.55 -38022301.33 0.0263 0.0176  
 Mars -108811-08-04 17:02 J -38021578.93 -38021578.79 -38021578.62 0.0264 0.0217  
 Mercury -108808-11-03 21:07 J -38020391.71 -38020391.62 -38020391.53 0.0272 0.0207  
 Mercury -108807-01-31 10:33 J -38020303.19 -38020303.06 -38020302.93 0.0273 0.0133  
 Mercury -108807-04-29 23:45 J -38020214.65 -38020214.51 -38020214.36 0.0274 0.0060  
 Mercury -108807-07-27 12:57 J -38020126.11 -38020125.96 -38020125.82 0.0274 0.0014  
 Mercury -108807-10-24 01:55 J -38020037.56 -38020037.42 -38020037.28 0.0275 0.0087  
 Mercury -108806-01-20 14:38 J -38019949.00 -38019948.89 -38019948.77 0.0276 0.0159  
 Mercury -108806-04-19 03:21 J -38019860.43 -38019860.36 -38019860.28 0.0277 0.0231  
 Venus -108803-10-04 10:48 J -38018596.17 -38018596.05 -38018595.92 0.0290 0.0232  
 Venus -108802-05-22 02:09 J -38018366.60 -38018366.41 -38018366.21 0.0292 0.0093  
 Venus -108801-01-06 18:14 J -38018136.95 -38018136.74 -38018136.54 0.0294 0.0051  
 Venus -108801-08-23 10:48 J -38017907.19 -38017907.05 -38017906.89 0.0295 0.0196  
 Earth -108800-07-24 13:55 J -38017572.14 -38017571.92 -38017571.69 0.0297 0.0079  
 Moon -108800-07-24 17:02 J -38017572.01 -38017571.79 -38017571.56 0.0297 0.0063 \*  
 Mars -108797-09-17 09:21 J -38016421.26 -38016421.11 -38016420.93 0.0297 0.0253  
 Mercury -108794-06-03 06:57 J -38015432.21 -38015432.21 -38015432.19 0.0289 0.0289  
 Mercury -108794-08-31 01:26 J -38015343.55 -38015343.44 -38015343.32 0.0288 0.0195  
 Mercury -108794-11-27 20:09 J -38015254.81 -38015254.66 -38015254.50 0.0288 0.0100  
 Mercury -108793-02-24 15:21 J -38015166.03 -38015165.86 -38015165.70 0.0287 0.0009  
 Mercury -108793-05-23 10:33 J -38015077.22 -38015077.06 -38015076.90 0.0286 0.0094  
 Mercury -108793-08-20 06:00 J -38014988.37 -38014988.25 -38014988.12 0.0285 0.0192  
 Venus -108789-08-04 08:09 J -38013543.30 -38013543.16 -38013543.01 0.0271 0.0203

Venus -108788-03-21 17:45 J -38013313.97 -38013313.76 -38013313.55 0.0269 0.0085  
 Venus -108788-11-06 02:38 J -38013084.61 -38013084.39 -38013084.17 0.0268 0.0032  
 Venus -108787-06-23 10:33 J -38012855.24 -38012855.06 -38012854.87 0.0267 0.0147  
 Venus -108786-02-07 17:45 J -38012625.80 -38012625.76 -38012625.70 0.0266 0.0258  
 Moon -108785-01-26 07:55 J -38012273.42 -38012273.17 -38012272.91 0.0264 0.0043  
 Earth -108785-01-26 12:00 J -38012273.25 -38012273.00 -38012272.75 0.0264 0.0038 \*  
 Mars -108783-09-28 04:19 J -38011297.59 -38011297.32 -38011297.05 0.0264 0.0034  
 Mercury -108778-03-24 00:00 J -38009659.57 -38009659.50 -38009659.40 0.0272 0.0222  
 Mercury -108778-06-20 13:40 J -38009571.05 -38009570.93 -38009570.80 0.0273 0.0148  
 Mercury -108778-09-17 03:07 J -38009482.51 -38009482.37 -38009482.23 0.0273 0.0074  
 Mercury -108778-12-14 16:19 J -38009393.97 -38009393.82 -38009393.68 0.0274 0.0006  
 Mercury -108777-03-12 05:16 J -38009305.42 -38009305.28 -38009305.14 0.0275 0.0073  
 Mercury -108777-06-08 18:00 J -38009216.87 -38009216.75 -38009216.62 0.0276 0.0145  
 Mercury -108777-09-05 06:57 J -38009128.30 -38009128.21 -38009128.13 0.0277 0.0217  
 Venus -108773-04-15 20:52 J -38007809.77 -38007809.63 -38007809.49 0.0289 0.0206  
 Venus -108773-12-01 12:00 J -38007580.20 -38007580.00 -38007579.80 0.0291 0.0067  
 Venus -108772-07-19 03:50 J -38007350.54 -38007350.34 -38007350.14 0.0293 0.0077  
 Venus -108771-03-05 20:24 J -38007120.77 -38007120.65 -38007120.51 0.0295 0.0222  
 Mars -108769-10-24 16:48 J -38006157.02 -38006156.80 -38006156.56 0.0298 0.0204  
 Mercury -108764-01-17 02:09 J -38004611.51 -38004611.41 -38004611.30 0.0289 0.0220  
 Mercury -108764-04-15 20:52 J -38004522.78 -38004522.63 -38004522.48 0.0288 0.0125  
 Mercury -108764-07-13 15:50 J -38004434.01 -38004433.84 -38004433.68 0.0287 0.0029  
 Mercury -108764-10-10 11:02 J -38004345.21 -38004345.04 -38004344.88 0.0286 0.0069  
 Mercury -108763-01-07 06:14 J -38004256.37 -38004256.24 -38004256.10 0.0285 0.0166  
 Mercury -108763-04-06 02:09 J -38004167.47 -38004167.41 -38004167.35 0.0284 0.0264  
 Venus -108759-02-14 12:57 J -38002757.11 -38002756.96 -38002756.80 0.0271 0.0187  
 Venus -108759-10-01 22:19 J -38002527.77 -38002527.57 -38002527.35 0.0269 0.0069  
 Venus -108758-05-19 06:57 J -38002298.43 -38002298.21 -38002298.00 0.0268 0.0048  
 Venus -108757-01-03 14:24 J -38002069.06 -38002068.90 -38002068.72 0.0266 0.0163  
 Earth -108756-01-20 04:33 J -38001686.46 -38001686.31 -38001686.13 0.0264 0.0203

Moon -108756-01-20 08:38 J -38001686.30 -38001686.14 -38001685.96 0.0264 0.0200 \*  
 Mars -108753-11-12 22:19 J -38000293.82 -38000293.57 -38000293.30 0.0264 0.0097  
 Mercury -108749-08-10 01:40 J -37998927.49 -37998927.43 -37998927.36 0.0272 0.0244  
 Mercury -108749-11-06 15:21 J -37998838.98 -37998838.86 -37998838.75 0.0272 0.0170  
 Mercury -108748-02-03 04:33 J -37998750.44 -37998750.31 -37998750.17 0.0273 0.0097  
 Mercury -108748-05-02 18:00 J -37998661.90 -37998661.75 -37998661.61 0.0274 0.0024  
 Mercury -108748-07-30 06:57 J -37998573.35 -37998573.21 -37998573.07 0.0275 0.0050  
 Mercury -108748-10-26 19:55 J -37998484.80 -37998484.67 -37998484.54 0.0276 0.0123  
 Mercury -108747-01-23 08:38 J -37998396.24 -37998396.14 -37998396.04 0.0276 0.0195  
 Mercury -108747-04-21 21:21 J -37998307.65 -37998307.61 -37998307.57 0.0277 0.0266  
 Venus -108744-10-27 02:09 J -37997023.56 -37997023.41 -37997023.25 0.0290 0.0190  
 Venus -108743-06-13 17:45 J -37996793.97 -37996793.76 -37996793.56 0.0292 0.0049  
 Venus -108742-01-29 09:50 J -37996564.28 -37996564.09 -37996563.89 0.0294 0.0096  
 Venus -108742-09-16 02:52 J -37996334.50 -37996334.38 -37996334.26 0.0296 0.0241  
 Earth -108741-07-26 04:33 J -37996020.54 -37996020.31 -37996020.07 0.0297 0.0013  
 Moon -108741-07-26 06:43 J -37996020.46 -37996020.22 -37996019.97 0.0297 0.0028 \*  
 Mars -108739-12-19 12:43 J -37995144.27 -37995143.97 -37995143.65 0.0298 0.0041  
 Mercury -108735-06-06 03:21 J -37993879.44 -37993879.36 -37993879.27 0.0289 0.0243  
 Mercury -108735-09-02 21:50 J -37993790.73 -37993790.59 -37993790.45 0.0288 0.0149  
 Mercury -108735-11-30 16:33 J -37993701.97 -37993701.81 -37993701.64 0.0287 0.0054  
 Mercury -108734-02-27 11:45 J -37993613.17 -37993613.01 -37993612.84 0.0286 0.0044  
 Mercury -108734-05-27 07:12 J -37993524.35 -37993524.20 -37993524.05 0.0285 0.0141  
 Mercury -108734-08-24 02:52 J -37993435.47 -37993435.38 -37993435.29 0.0284 0.0239  
 Jupiter -108733-06-18 17:16 J -37993136.24 -37993135.78 -37993135.29 0.0281 0.0054  
 Venus -108730-08-27 20:38 J -37991970.80 -37991970.64 -37991970.46 0.0271 0.0168  
 Venus -108729-04-13 06:00 J -37991741.46 -37991741.25 -37991741.03 0.0269 0.0050  
 Venus -108729-11-28 14:38 J -37991512.10 -37991511.89 -37991511.68 0.0268 0.0068  
 Venus -108728-07-15 22:19 J -37991282.72 -37991282.57 -37991282.40 0.0266 0.0182  
 Moon -108726-01-27 21:21 J -37990721.83 -37990721.61 -37990721.38 0.0264 0.0114  
 Earth -108726-01-27 22:04 J -37990721.81 -37990721.58 -37990721.34 0.0264 0.0106 \*



Mars -108724-01-06 11:45 J -37990012.23 -37990012.01 -37990011.78 0.0264 0.0154  
 Mars -108723-12-30 08:24 J -37989289.25 -37989289.15 -37989289.03 0.0265 0.0241  
 Mercury -108720-12-28 04:48 J -37988195.34 -37988195.30 -37988195.25 0.0272 0.0259  
 Mercury -108719-03-26 18:28 J -37988106.83 -37988106.73 -37988106.62 0.0272 0.0184  
 Mercury -108719-06-23 07:55 J -37988018.30 -37988018.17 -37988018.03 0.0273 0.0111  
 Mercury -108719-09-19 21:21 J -37987929.76 -37987929.61 -37987929.47 0.0274 0.0037  
 Mercury -108719-12-17 10:19 J -37987841.21 -37987841.07 -37987840.92 0.0275 0.0037  
 Mercury -108718-03-15 23:16 J -37987752.66 -37987752.53 -37987752.39 0.0276 0.0110  
 Mercury -108718-06-12 12:00 J -37987664.10 -37987664.00 -37987663.89 0.0276 0.0183  
 Mercury -108718-09-09 00:57 J -37987575.52 -37987575.46 -37987575.41 0.0277 0.0254  
 Venus -108714-05-09 13:12 J -37986237.11 -37986236.95 -37986236.77 0.0290 0.0163  
 Venus -108714-12-25 04:48 J -37986007.51 -37986007.30 -37986007.10 0.0292 0.0022  
 Venus -108713-08-10 20:52 J -37985777.81 -37985777.63 -37985777.44 0.0294 0.0124  
 Venus -108712-03-28 13:40 J -37985548.00 -37985547.93 -37985547.84 0.0295 0.0269  
 Moon -108712-07-20 21:07 J -37985433.72 -37985433.62 -37985433.52 0.0296 0.0265  
 Earth -108712-07-20 23:02 J -37985433.60 -37985433.54 -37985433.46 0.0296 0.0281 \*  
 Mars -108708-02-12 16:04 J -37984130.90 -37984130.83 -37984130.73 0.0296 0.0285  
 Mercury -108706-10-24 04:48 J -37983147.36 -37983147.30 -37983147.23 0.0289 0.0264  
 Mercury -108705-01-20 23:16 J -37983058.66 -37983058.53 -37983058.40 0.0288 0.0170  
 Mercury -108705-04-18 18:00 J -37982969.91 -37982969.75 -37982969.59 0.0287 0.0075  
 Mercury -108705-07-16 12:57 J -37982881.12 -37982880.96 -37982880.79 0.0287 0.0021  
 Mercury -108705-10-13 08:09 J -37982792.31 -37982792.16 -37982792.00 0.0286 0.0119  
 Mercury -108704-01-10 03:50 J -37982703.45 -37982703.34 -37982703.23 0.0285 0.0216  
 Venus -108701-07-22 17:02 J -37981413.81 -37981413.79 -37981413.75 0.0272 0.0269  
 Venus -108700-03-09 02:52 J -37981184.56 -37981184.38 -37981184.20 0.0270 0.0150  
 Venus -108700-10-24 12:00 J -37980955.22 -37980955.00 -37980954.79 0.0269 0.0032  
 Venus -108699-06-10 20:09 J -37980725.87 -37980725.66 -37980725.45 0.0267 0.0085  
 Venus -108698-01-26 03:36 J -37980496.49 -37980496.35 -37980496.20 0.0266 0.0199  
 Moon -108697-01-22 16:48 J -37980135.03 -37980134.80 -37980134.57 0.0264 0.0125  
 Earth -108697-01-22 16:33 J -37980135.02 -37980134.81 -37980134.58 0.0264 0.0131 \*

Mars -108694-02-22 06:57 J -37979008.49 -37979008.21 -37979007.93 0.0263 0.0023  
 Mercury -108690-08-13 20:09 J -37977374.75 -37977374.66 -37977374.56 0.0272 0.0207  
 Mercury -108690-11-10 09:36 J -37977286.22 -37977286.10 -37977285.97 0.0273 0.0133  
 Mercury -108689-02-06 23:02 J -37977197.68 -37977197.54 -37977197.40 0.0274 0.0059  
 Mercury -108689-05-05 12:14 J -37977109.14 -37977108.99 -37977108.85 0.0274 0.0015  
 Mercury -108689-08-02 01:12 J -37977020.59 -37977020.45 -37977020.31 0.0275 0.0088  
 Mercury -108689-10-29 13:55 J -37976932.03 -37976931.92 -37976931.80 0.0276 0.0160  
 Mercury -108688-01-26 02:38 J -37976843.46 -37976843.39 -37976843.31 0.0277 0.0232  
 Venus -108685-04-03 03:36 J -37975680.37 -37975680.35 -37975680.30 0.0289 0.0284  
 Venus -108685-11-18 18:28 J -37975450.90 -37975450.73 -37975450.54 0.0291 0.0147  
 Venus -108684-07-06 10:19 J -37975221.28 -37975221.07 -37975220.87 0.0293 0.0005  
 Venus -108683-02-21 02:38 J -37974991.57 -37974991.39 -37974991.21 0.0295 0.0142  
 Venus -108683-10-08 19:40 J -37974761.72 -37974761.68 -37974761.63 0.0296 0.0288  
 Moon -108682-07-28 18:43 J -37974468.94 -37974468.72 -37974468.50 0.0297 0.0119  
 Earth -108682-07-28 21:07 J -37974468.84 -37974468.62 -37974468.40 0.0297 0.0105 \*  
 Mars -108680-03-21 17:31 J -37973867.02 -37973866.77 -37973866.51 0.0298 0.0172  
 Mercury -108676-03-12 05:31 J -37972415.27 -37972415.27 -37972415.26 0.0289 0.0289  
 Mercury -108676-06-09 00:00 J -37972326.62 -37972326.50 -37972326.38 0.0288 0.0196  
 Mercury -108676-09-05 18:43 J -37972237.87 -37972237.72 -37972237.57 0.0288 0.0101  
 Mercury -108676-12-03 13:40 J -37972149.10 -37972148.93 -37972148.76 0.0287 0.0005  
 Mercury -108675-03-02 08:52 J -37972060.29 -37972060.13 -37972059.97 0.0286 0.0093  
 Mercury -108675-05-30 04:19 J -37971971.44 -37971971.32 -37971971.19 0.0285 0.0190  
 Venus -108671-02-02 00:43 J -37970627.55 -37970627.47 -37970627.39 0.0272 0.0250  
 Venus -108671-09-19 10:19 J -37970398.25 -37970398.07 -37970397.87 0.0270 0.0131  
 Venus -108670-05-06 19:26 J -37970168.91 -37970168.69 -37970168.47 0.0269 0.0012  
 Venus -108670-12-22 03:36 J -37969939.55 -37969939.35 -37969939.14 0.0267 0.0105  
 Venus -108669-08-07 11:16 J -37969710.15 -37969710.03 -37969709.90 0.0266 0.0218  
 Earth -108667-01-29 09:36 J -37969170.29 -37969170.10 -37969169.91 0.0264 0.0175  
 Moon -108667-01-29 13:26 J -37969170.12 -37969169.94 -37969169.76 0.0264 0.0187 \*  
 Mars -108664-04-09 13:12 J -37968004.19 -37968003.95 -37968003.70 0.0264 0.0120

Mercury -108661-12-30 23:16 J -37966642.61 -37966642.53 -37966642.44 0.0272 0.0221  
 Mercury -108660-03-29 12:57 J -37966554.08 -37966553.96 -37966553.84 0.0273 0.0147  
 Mercury -108660-06-26 02:24 J -37966465.54 -37966465.40 -37966465.26 0.0274 0.0073  
 Mercury -108660-09-22 15:36 J -37966377.00 -37966376.85 -37966376.71 0.0274 0.0005  
 Mercury -108660-12-20 04:33 J -37966288.45 -37966288.31 -37966288.17 0.0275 0.0074  
 Mercury -108659-03-18 17:31 J -37966199.89 -37966199.77 -37966199.65 0.0276 0.0147  
 Mercury -108659-06-15 06:14 J -37966111.32 -37966111.24 -37966111.15 0.0277 0.0219  
 Venus -108656-10-14 14:38 J -37964893.97 -37964893.89 -37964893.79 0.0289 0.0258  
 Venus -108655-06-01 05:45 J -37964664.45 -37964664.26 -37964664.07 0.0291 0.0119  
 Venus -108654-01-16 21:36 J -37964434.81 -37964434.60 -37964434.40 0.0293 0.0026  
 Venus -108654-09-03 13:55 J -37964205.08 -37964204.92 -37964204.75 0.0294 0.0171  
 Earth -108653-07-22 15:36 J -37963882.02 -37963881.85 -37963881.66 0.0296 0.0187  
 Moon -108653-07-22 18:00 J -37963881.93 -37963881.75 -37963881.55 0.0296 0.0171 \*  
 Mars -108650-05-17 04:19 J -37962853.62 -37962853.32 -37962853.02 0.0297 0.0074  
 Mercury -108647-10-27 01:55 J -37961594.52 -37961594.42 -37961594.31 0.0289 0.0215  
 Mercury -108646-01-23 20:24 J -37961505.79 -37961505.65 -37961505.50 0.0288 0.0121  
 Mercury -108646-04-22 15:21 J -37961417.02 -37961416.86 -37961416.69 0.0287 0.0025  
 Mercury -108646-07-20 10:33 J -37961328.22 -37961328.06 -37961327.90 0.0286 0.0072  
 Mercury -108646-10-17 06:00 J -37961239.39 -37961239.25 -37961239.12 0.0285 0.0169  
 Mercury -108645-01-14 01:26 J -37961150.49 -37961150.44 -37961150.38 0.0284 0.0267  
 Venus -108642-08-15 07:55 J -37959841.27 -37959841.17 -37959841.05 0.0272 0.0233  
 Venus -108641-03-31 17:16 J -37959611.97 -37959611.78 -37959611.58 0.0270 0.0113  
 Venus -108641-11-16 02:09 J -37959382.63 -37959382.41 -37959382.20 0.0268 0.0007  
 Venus -108640-07-03 09:50 J -37959153.28 -37959153.09 -37959152.89 0.0267 0.0123  
 Venus -108639-02-17 17:02 J -37958923.88 -37958923.79 -37958923.68 0.0266 0.0236  
 Moon -108638-01-24 01:26 J -37958583.69 -37958583.44 -37958583.18 0.0264 0.0048  
 Earth -108638-01-24 05:31 J -37958583.52 -37958583.27 -37958583.02 0.0264 0.0058 \*  
 Mars -108636-06-02 16:33 J -37957723.04 -37957722.81 -37957722.57 0.0263 0.0142  
 Mars -108634-05-26 12:00 J -37957000.08 -37957000.00 -37956999.91 0.0265 0.0252  
 Mercury -108631-05-20 00:57 J -37955910.52 -37955910.46 -37955910.40 0.0272 0.0244

Mercury -108631-08-16 14:38 J -37955822.01 -37955821.89 -37955821.78 0.0272 0.0170

Mercury -108631-11-13 03:50 J -37955733.47 -37955733.34 -37955733.20 0.0273 0.0096

Mercury -108630-02-09 17:16 J -37955644.93 -37955644.78 -37955644.64 0.0274 0.0023

Mercury -108630-05-09 06:14 J -37955556.38 -37955556.24 -37955556.10 0.0275 0.0051

Mercury -108630-08-05 19:12 J -37955467.83 -37955467.70 -37955467.57 0.0276 0.0124

Mercury -108630-11-02 07:55 J -37955379.26 -37955379.17 -37955379.07 0.0277 0.0196

Mercury -108629-01-29 20:38 J -37955290.67 -37955290.64 -37955290.60 0.0277 0.0268

Venus -108626-04-26 19:26 J -37954107.80 -37954107.69 -37954107.58 0.0289 0.0243

Venus -108626-12-12 10:33 J -37953878.25 -37953878.06 -37953877.86 0.0292 0.0103

Venus -108625-07-29 02:24 J -37953648.60 -37953648.40 -37953648.19 0.0293 0.0043

Venus -108624-03-15 19:12 J -37953418.85 -37953418.70 -37953418.54 0.0295 0.0189

Moon -108623-07-30 10:04 J -37952917.24 -37952917.08 -37952916.92 0.0297 0.0212

Earth -108623-07-30 13:12 J -37952917.12 -37952916.95 -37952916.77 0.0297 0.0198 \*

Mercury -108617-03-15 02:24 J -37950862.48 -37950862.40 -37950862.31 0.0289 0.0241

Mercury -108617-06-11 20:52 J -37950773.76 -37950773.63 -37950773.48 0.0288 0.0147

Mercury -108617-09-08 15:50 J -37950685.00 -37950684.84 -37950684.68 0.0287 0.0051

Mercury -108617-12-06 10:48 J -37950596.21 -37950596.05 -37950595.88 0.0286 0.0046

Mercury -108616-03-05 06:14 J -37950507.38 -37950507.24 -37950507.09 0.0285 0.0143

Mercury -108616-06-02 01:55 J -37950418.51 -37950418.42 -37950418.33 0.0284 0.0240

Venus -108612-02-24 14:52 J -37949055.01 -37949054.88 -37949054.75 0.0271 0.0213

Venus -108612-10-12 00:28 J -37948825.68 -37948825.48 -37948825.28 0.0269 0.0094

Venus -108611-05-29 09:07 J -37948596.34 -37948596.12 -37948595.90 0.0268 0.0025

Venus -108610-01-13 17:02 J -37948366.97 -37948366.79 -37948366.60 0.0267 0.0142

Venus -108610-08-31 00:14 J -37948137.54 -37948137.49 -37948137.42 0.0266 0.0255

Earth -108608-01-30 21:21 J -37947618.70 -37947618.61 -37947618.52 0.0264 0.0244

Moon -108608-01-30 23:02 J -37947618.59 -37947618.54 -37947618.48 0.0264 0.0257 \*

Mars -108606-07-19 20:09 J -37946718.93 -37946718.66 -37946718.38 0.0264 0.0004

Mercury -108602-10-07 03:50 J -37945178.38 -37945178.34 -37945178.29 0.0272 0.0259

Mercury -108601-01-03 17:31 J -37945089.87 -37945089.77 -37945089.66 0.0273 0.0185

Mercury -108601-04-01 06:57 J -37945001.34 -37945001.21 -37945001.07 0.0273 0.0111

Mercury -108601-06-28 20:24 J -37944912.80 -37944912.65 -37944912.51 0.0274 0.0037

Mercury -108601-09-25 09:36 J -37944824.25 -37944824.10 -37944823.96 0.0275 0.0037

Mercury -108601-12-22 22:33 J -37944735.69 -37944735.56 -37944735.43 0.0276 0.0110

Mercury -108600-03-21 11:16 J -37944647.13 -37944647.03 -37944646.92 0.0277 0.0182

Mercury -108600-06-18 00:00 J -37944558.55 -37944558.50 -37944558.44 0.0277 0.0254

Venus -108597-11-06 06:14 J -37943321.37 -37943321.24 -37943321.10 0.0289 0.0217

Venus -108596-06-23 21:36 J -37943091.80 -37943091.60 -37943091.40 0.0291 0.0075

Venus -108595-02-08 13:40 J -37942862.13 -37942861.93 -37942861.73 0.0293 0.0071

Venus -108595-09-26 06:28 J -37942632.37 -37942632.23 -37942632.10 0.0295 0.0218

Earth -108594-07-25 07:26 J -37942330.41 -37942330.19 -37942329.96 0.0296 0.0096

Moon -108594-07-25 10:33 J -37942330.28 -37942330.06 -37942329.82 0.0296 0.0080 \*

Mars -108592-08-17 09:36 J -37941576.37 -37941576.10 -37941575.82 0.0297 0.0142

Mercury -108588-08-02 04:33 J -37940130.38 -37940130.31 -37940130.24 0.0289 0.0260

Mercury -108588-10-29 23:02 J -37940041.67 -37940041.54 -37940041.41 0.0288 0.0166

Mercury -108587-01-26 17:45 J -37939952.92 -37939952.76 -37939952.60 0.0287 0.0071

Mercury -108587-04-25 12:43 J -37939864.14 -37939863.97 -37939863.81 0.0286 0.0025

Mercury -108587-07-23 07:55 J -37939775.32 -37939775.17 -37939775.02 0.0286 0.0122

Mercury -108587-10-20 03:21 J -37939686.46 -37939686.36 -37939686.25 0.0285 0.0220

Venus -108583-09-06 22:33 J -37938268.70 -37938268.56 -37938268.40 0.0271 0.0195

Venus -108582-04-24 07:40 J -37938039.39 -37938039.18 -37938038.97 0.0269 0.0075

Venus -108582-12-09 16:04 J -37937810.05 -37937809.83 -37937809.62 0.0268 0.0044

Venus -108581-07-25 23:16 J -37937580.69 -37937580.53 -37937580.34 0.0266 0.0161

Moon -108579-01-25 16:48 J -37937032.05 -37937031.80 -37937031.55 0.0264 0.0026

Earth -108579-01-25 18:00 J -37937032.01 -37937031.75 -37937031.49 0.0264 0.0014 \*

Mars -108578-09-12 03:21 J -37936437.39 -37936437.36 -37936437.31 0.0263 0.0260

Mars -108576-09-03 18:14 J -37935714.98 -37935714.74 -37935714.50 0.0264 0.0130

Mercury -108572-05-22 18:57 J -37934357.80 -37934357.71 -37934357.61 0.0272 0.0208

Mercury -108572-08-19 08:24 J -37934269.27 -37934269.15 -37934269.01 0.0273 0.0135

Mercury -108572-11-15 21:50 J -37934180.73 -37934180.59 -37934180.44 0.0273 0.0061

Mercury -108571-02-12 11:02 J -37934092.18 -37934092.04 -37934091.89 0.0274 0.0014

Mercury -108571-05-12 00:00 J -37934003.63 -37934003.50 -37934003.36 0.0275 0.0087

Mercury -108571-08-08 12:57 J -37933915.07 -37933914.96 -37933914.84 0.0276 0.0158

Mercury -108571-11-05 01:40 J -37933826.50 -37933826.43 -37933826.35 0.0277 0.0230

Venus -108567-05-19 09:50 J -37932535.23 -37932535.09 -37932534.94 0.0290 0.0202

Venus -108566-01-04 01:12 J -37932305.65 -37932305.45 -37932305.24 0.0292 0.0060

Venus -108566-08-21 17:16 J -37932075.97 -37932075.78 -37932075.57 0.0294 0.0088

Venus -108565-04-07 10:19 J -37931846.18 -37931846.07 -37931845.94 0.0295 0.0235

Earth -108564-08-01 03:21 J -37931365.42 -37931365.36 -37931365.30 0.0298 0.0286

Moon -108564-08-01 04:04 J -37931365.33 -37931365.33 -37931365.30 0.0298 0.0297 \*

Mars -108562-10-11 20:09 J -37930563.95 -37930563.66 -37930563.36 0.0297 0.0102

Mercury -108559-12-20 04:33 J -37929398.31 -37929398.31 -37929398.29 0.0289 0.0288

Mercury -108558-03-18 23:02 J -37929309.66 -37929309.54 -37929309.42 0.0289 0.0195

Mercury -108558-06-15 17:31 J -37929220.92 -37929220.77 -37929220.61 0.0288 0.0101

Mercury -108558-09-12 12:28 J -37929132.14 -37929131.98 -37929131.81 0.0287 0.0009

Mercury -108558-12-10 07:55 J -37929043.33 -37929043.17 -37929043.02 0.0286 0.0093

Mercury -108557-03-08 03:07 J -37928954.49 -37928954.37 -37928954.24 0.0285 0.0191

Venus -108553-03-19 04:19 J -37927482.48 -37927482.32 -37927482.15 0.0271 0.0177

Venus -108553-11-03 13:40 J -37927253.14 -37927252.93 -37927252.72 0.0269 0.0057

Venus -108552-06-20 21:50 J -37927023.80 -37927023.59 -37927023.37 0.0267 0.0063

Venus -108551-02-05 05:31 J -37926794.42 -37926794.27 -37926794.10 0.0266 0.0179

Earth -108550-01-20 14:38 J -37926445.02 -37926444.89 -37926444.73 0.0265 0.0217

Moon -108550-01-20 16:04 J -37926444.98 -37926444.83 -37926444.66 0.0265 0.0208 \*

Mars -108548-10-28 03:21 J -37925433.59 -37925433.36 -37925433.11 0.0263 0.0124

Mercury -108543-10-09 21:36 J -37923625.68 -37923625.60 -37923625.51 0.0272 0.0225

Mercury -108542-01-06 11:16 J -37923537.15 -37923537.03 -37923536.91 0.0273 0.0151

Mercury -108542-04-05 00:43 J -37923448.61 -37923448.47 -37923448.33 0.0274 0.0077

Mercury -108542-07-02 13:55 J -37923360.07 -37923359.92 -37923359.77 0.0275 0.0004

Mercury -108542-09-29 02:52 J -37923271.51 -37923271.38 -37923271.24 0.0275 0.0070

Mercury -108542-12-26 16:04 J -37923182.96 -37923182.83 -37923182.71 0.0276 0.0143

Mercury -108541-03-24 04:48 J -37923094.39 -37923094.30 -37923094.21 0.0277 0.0214

Venus -108538-11-29 19:40 J -37921748.84 -37921748.68 -37921748.51 0.0290 0.0177  
 Venus -108537-07-16 11:16 J -37921519.23 -37921519.03 -37921518.82 0.0292 0.0033  
 Venus -108536-03-03 03:50 J -37921289.53 -37921289.34 -37921289.15 0.0294 0.0115  
 Venus -108536-10-18 20:38 J -37921059.72 -37921059.64 -37921059.54 0.0295 0.0263  
 Moon -108535-07-26 18:57 J -37920778.95 -37920778.71 -37920778.47 0.0297 0.0002  
 Earth -108535-07-26 20:38 J -37920778.88 -37920778.64 -37920778.41 0.0297 0.0011 \*  
 Mercury -108529-08-05 00:57 J -37918577.56 -37918577.46 -37918577.35 0.0289 0.0214  
 Mercury -108529-11-01 19:40 J -37918488.83 -37918488.68 -37918488.53 0.0288 0.0120  
 Mercury -108528-01-29 14:24 J -37918400.06 -37918399.90 -37918399.73 0.0287 0.0025  
 Mercury -108528-04-28 09:36 J -37918311.26 -37918311.10 -37918310.94 0.0286 0.0073  
 Mercury -108528-07-26 05:02 J -37918222.42 -37918222.29 -37918222.16 0.0285 0.0170  
 Mercury -108528-10-23 00:43 J -37918133.52 -37918133.47 -37918133.41 0.0284 0.0268  
 Venus -108524-09-29 12:28 J -37916696.15 -37916695.98 -37916695.80 0.0270 0.0159  
 Venus -108523-05-16 21:07 J -37916466.83 -37916466.62 -37916466.40 0.0269 0.0039  
 Venus -108522-01-01 05:16 J -37916237.49 -37916237.28 -37916237.08 0.0267 0.0081  
 Venus -108522-08-18 12:14 J -37916008.13 -37916007.99 -37916007.83 0.0266 0.0196  
 Earth -108520-01-27 05:16 J -37915480.52 -37915480.28 -37915480.03 0.0264 0.0083  
 Moon -108520-01-27 08:38 J -37915480.38 -37915480.14 -37915479.91 0.0264 0.0097 \*  
 Mars -108518-12-14 00:43 J -37914429.74 -37914429.47 -37914429.19 0.0263 0.0009  
 Mercury -108513-02-26 23:02 J -37912893.59 -37912893.54 -37912893.48 0.0271 0.0249  
 Mercury -108513-05-25 12:43 J -37912805.08 -37912804.97 -37912804.86 0.0272 0.0175  
 Mercury -108513-08-22 02:09 J -37912716.55 -37912716.41 -37912716.28 0.0273 0.0101  
 Mercury -108513-11-18 15:21 J -37912628.00 -37912627.86 -37912627.71 0.0274 0.0028  
 Mercury -108512-02-15 04:33 J -37912539.46 -37912539.31 -37912539.17 0.0275 0.0046  
 Mercury -108512-05-14 17:16 J -37912450.90 -37912450.78 -37912450.64 0.0275 0.0119  
 Mercury -108512-08-11 06:14 J -37912362.34 -37912362.24 -37912362.14 0.0276 0.0190  
 Mercury -108512-11-07 18:57 J -37912273.75 -37912273.71 -37912273.67 0.0277 0.0261  
 Venus -108508-06-10 22:33 J -37910962.72 -37910962.56 -37910962.38 0.0291 0.0163  
 Venus -108507-01-26 14:24 J -37910733.11 -37910732.90 -37910732.70 0.0293 0.0019  
 Venus -108507-09-13 06:43 J -37910503.40 -37910503.22 -37910503.04 0.0294 0.0131

Venus -108506-04-30 23:45 J -37910273.56 -37910273.51 -37910273.43 0.0296 0.0279  
 Mars -108503-01-11 13:40 J -37909287.22 -37909286.93 -37909286.64 0.0298 0.0118  
 Mercury -108500-12-23 00:14 J -37907845.56 -37907845.49 -37907845.40 0.0289 0.0246  
 Mercury -108499-03-21 18:57 J -37907756.85 -37907756.71 -37907756.57 0.0288 0.0152  
 Mercury -108499-06-18 13:40 J -37907668.09 -37907667.93 -37907667.77 0.0287 0.0056  
 Mercury -108499-09-15 08:52 J -37907579.30 -37907579.13 -37907578.97 0.0286 0.0041  
 Mercury -108499-12-13 04:04 J -37907490.47 -37907490.33 -37907490.18 0.0286 0.0138  
 Mercury -108498-03-11 23:31 J -37907401.60 -37907401.52 -37907401.42 0.0285 0.0236  
 Venus -108495-08-25 07:12 J -37906139.25 -37906139.20 -37906139.14 0.0272 0.0263  
 Venus -108494-04-11 16:48 J -37905909.98 -37905909.80 -37905909.61 0.0270 0.0142  
 Venus -108494-11-27 01:40 J -37905680.65 -37905680.43 -37905680.21 0.0268 0.0021  
 Venus -108493-07-13 09:50 J -37905451.29 -37905451.09 -37905450.89 0.0267 0.0098  
 Venus -108492-02-27 17:02 J -37905221.91 -37905221.79 -37905221.65 0.0266 0.0214  
 Moon -108491-01-21 21:21 J -37904893.82 -37904893.61 -37904893.38 0.0264 0.0139  
 Earth -108491-01-22 00:28 J -37904893.68 -37904893.48 -37904893.26 0.0264 0.0150 \*  
 Mars -108489-02-06 08:52 J -37904148.21 -37904148.13 -37904148.01 0.0263 0.0245  
 Mars -108487-01-28 23:45 J -37903425.73 -37903425.51 -37903425.27 0.0264 0.0147  
 Mercury -108484-07-16 01:12 J -37902161.46 -37902161.45 -37902161.42 0.0272 0.0268  
 Mercury -108484-10-12 15:07 J -37902072.98 -37902072.87 -37902072.77 0.0272 0.0194  
 Mercury -108483-01-09 04:33 J -37901984.44 -37901984.31 -37901984.18 0.0273 0.0120  
 Mercury -108483-04-07 17:45 J -37901895.90 -37901895.76 -37901895.61 0.0274 0.0047  
 Mercury -108483-07-05 06:57 J -37901807.35 -37901807.21 -37901807.06 0.0275 0.0027  
 Mercury -108483-10-01 19:55 J -37901718.80 -37901718.67 -37901718.53 0.0276 0.0100  
 Mercury -108483-12-29 08:52 J -37901630.24 -37901630.13 -37901630.02 0.0276 0.0172  
 Mercury -108482-03-27 21:36 J -37901541.66 -37901541.60 -37901541.53 0.0277 0.0244  
 Venus -108479-05-06 16:04 J -37900405.87 -37900405.83 -37900405.78 0.0289 0.0280  
 Venus -108479-12-22 07:12 J -37900176.38 -37900176.20 -37900176.02 0.0291 0.0139  
 Venus -108478-08-08 23:02 J -37899946.74 -37899946.54 -37899946.33 0.0293 0.0009  
 Venus -108477-03-25 15:50 J -37899717.01 -37899716.84 -37899716.67 0.0294 0.0157  
 Moon -108476-07-28 02:09 J -37899227.64 -37899227.41 -37899227.19 0.0297 0.0075



Earth -108476-07-28 05:31 J -37899227.49 -37899227.27 -37899227.04 0.0297 0.0067 \*  
 Mars -108473-03-07 18:14 J -37898274.02 -37898273.74 -37898273.45 0.0297 0.0122  
 Mercury -108470-05-12 02:09 J -37897113.47 -37897113.41 -37897113.35 0.0289 0.0267  
 Mercury -108470-08-08 20:24 J -37897024.77 -37897024.65 -37897024.51 0.0288 0.0174  
 Mercury -108470-11-05 15:21 J -37896936.02 -37896935.86 -37896935.70 0.0288 0.0078  
 Mercury -108469-02-02 10:19 J -37896847.24 -37896847.07 -37896846.90 0.0287 0.0018  
 Mercury -108469-05-01 05:31 J -37896758.42 -37896758.27 -37896758.11 0.0286 0.0116  
 Mercury -108469-07-29 01:12 J -37896669.56 -37896669.45 -37896669.34 0.0285 0.0213  
 Venus -108465-03-06 14:52 J -37895352.96 -37895352.88 -37895352.78 0.0272 0.0246  
 Venus -108465-10-22 00:28 J -37895123.66 -37895123.48 -37895123.28 0.0270 0.0124  
 Venus -108464-06-08 09:07 J -37894894.33 -37894894.12 -37894893.90 0.0268 0.0005  
 Venus -108463-01-23 16:48 J -37894664.99 -37894664.80 -37894664.60 0.0267 0.0116  
 Venus -108463-09-09 23:45 J -37894435.61 -37894435.51 -37894435.39 0.0266 0.0231  
 Earth -108461-01-29 14:38 J -37893929.10 -37893928.89 -37893928.68 0.0264 0.0149  
 Moon -108461-01-29 17:02 J -37893928.98 -37893928.79 -37893928.57 0.0264 0.0163 \*  
 Mars -108459-03-24 05:16 J -37893144.52 -37893144.28 -37893144.02 0.0263 0.0113  
 Mercury -108454-03-01 16:04 J -37891340.91 -37891340.83 -37891340.74 0.0271 0.0219  
 Mercury -108454-05-29 05:45 J -37891252.39 -37891252.26 -37891252.14 0.0272 0.0145  
 Mercury -108454-08-25 18:57 J -37891163.85 -37891163.71 -37891163.56 0.0273 0.0072  
 Mercury -108454-11-22 08:09 J -37891075.30 -37891075.16 -37891075.01 0.0274 0.0008  
 Mercury -108453-02-18 21:21 J -37890986.75 -37890986.61 -37890986.47 0.0275 0.0075  
 Mercury -108453-05-17 10:04 J -37890898.20 -37890898.08 -37890897.96 0.0275 0.0147  
 Mercury -108453-08-13 22:48 J -37890809.63 -37890809.55 -37890809.46 0.0276 0.0219  
 Venus -108450-11-16 18:00 J -37889619.82 -37889619.75 -37889619.67 0.0289 0.0267  
 Venus -108449-07-03 08:52 J -37889390.31 -37889390.13 -37889389.94 0.0291 0.0126  
 Venus -108448-02-18 00:43 J -37889160.67 -37889160.47 -37889160.26 0.0293 0.0021  
 Venus -108448-10-05 17:16 J -37888930.94 -37888930.78 -37888930.61 0.0295 0.0171  
 Earth -108447-07-22 08:38 J -37888641.26 -37888641.14 -37888641.01 0.0297 0.0251  
 Moon -108447-07-22 11:45 J -37888641.14 -37888641.01 -37888640.86 0.0297 0.0241 \*  
 Mercury -108441-12-25 19:26 J -37886292.80 -37886292.69 -37886292.58 0.0289 0.0207

Mercury -108440-03-24 13:55 J -37886204.06 -37886203.92 -37886203.76 0.0288 0.0113

Mercury -108440-06-21 08:52 J -37886115.29 -37886115.13 -37886114.96 0.0287 0.0018

Mercury -108440-09-18 04:04 J -37886026.49 -37886026.33 -37886026.17 0.0286 0.0081

Mercury -108440-12-15 23:31 J -37885937.64 -37885937.52 -37885937.38 0.0285 0.0178

Mercury -108439-03-14 19:26 J -37885848.73 -37885848.69 -37885848.65 0.0284 0.0276

Venus -108436-09-16 18:28 J -37884566.84 -37884566.73 -37884566.62 0.0272 0.0230

Venus -108435-05-04 03:50 J -37884337.54 -37884337.34 -37884337.14 0.0270 0.0108

Venus -108435-12-19 12:28 J -37884108.20 -37884107.98 -37884107.76 0.0268 0.0013

Venus -108434-08-05 20:09 J -37883878.84 -37883878.66 -37883878.47 0.0267 0.0132

Venus -108433-03-22 03:07 J -37883649.43 -37883649.37 -37883649.28 0.0265 0.0248

Moon -108432-01-23 05:02 J -37883342.53 -37883342.29 -37883342.05 0.0264 0.0075

Earth -108432-01-23 07:55 J -37883342.41 -37883342.17 -37883341.93 0.0264 0.0086 \*

Mars -108429-05-08 22:48 J -37882140.83 -37882140.55 -37882140.28 0.0263 0.0021

Mercury -108425-07-18 18:00 J -37880608.81 -37880608.75 -37880608.67 0.0272 0.0240

Mercury -108425-10-15 07:40 J -37880520.29 -37880520.18 -37880520.06 0.0272 0.0166

Mercury -108424-01-11 21:07 J -37880431.76 -37880431.62 -37880431.48 0.0273 0.0092

Mercury -108424-04-10 10:19 J -37880343.21 -37880343.07 -37880342.92 0.0274 0.0019

Mercury -108424-07-07 23:31 J -37880254.66 -37880254.52 -37880254.38 0.0275 0.0055

Mercury -108424-10-04 12:28 J -37880166.11 -37880165.98 -37880165.86 0.0276 0.0127

Mercury -108423-01-01 01:12 J -37880077.55 -37880077.45 -37880077.35 0.0277 0.0199

Mercury -108423-03-30 13:40 J -37879988.95 -37879988.93 -37879988.89 0.0277 0.0271

Venus -108420-05-29 01:12 J -37878833.55 -37878833.45 -37878833.34 0.0289 0.0247

Venus -108419-01-13 16:19 J -37878604.01 -37878603.82 -37878603.62 0.0291 0.0104

Venus -108419-08-31 08:38 J -37878374.35 -37878374.14 -37878373.94 0.0293 0.0045

Venus -108418-04-18 01:26 J -37878144.59 -37878144.44 -37878144.28 0.0295 0.0195

Earth -108417-07-29 10:33 J -37877676.27 -37877676.06 -37877675.85 0.0297 0.0135

Moon -108417-07-29 10:48 J -37877676.25 -37877676.05 -37877675.85 0.0297 0.0140 \*

Mars -108415-06-07 20:52 J -37876997.91 -37876997.63 -37876997.33 0.0298 0.0104

Mercury -108411-05-14 20:38 J -37875560.73 -37875560.64 -37875560.54 0.0289 0.0231

Mercury -108411-08-11 15:21 J -37875472.00 -37875471.86 -37875471.72 0.0288 0.0136

Mercury -108411-11-08 10:04 J -37875383.24 -37875383.08 -37875382.91 0.0287 0.0041

Mercury -108410-02-05 05:16 J -37875294.44 -37875294.28 -37875294.12 0.0287 0.0056

Mercury -108410-05-05 00:43 J -37875205.61 -37875205.47 -37875205.33 0.0286 0.0154

Mercury -108410-08-01 20:09 J -37875116.73 -37875116.66 -37875116.57 0.0285 0.0252

Venus -108406-03-30 01:26 J -37873780.56 -37873780.44 -37873780.30 0.0272 0.0214

Venus -108406-11-14 10:48 J -37873551.25 -37873551.05 -37873550.84 0.0270 0.0091

Venus -108405-06-30 19:12 J -37873321.91 -37873321.70 -37873321.48 0.0268 0.0031

Venus -108404-02-15 02:52 J -37873092.56 -37873092.38 -37873092.20 0.0267 0.0149

Venus -108404-10-02 09:50 J -37872863.11 -37872863.09 -37872863.06 0.0265 0.0263

Moon -108402-01-30 18:57 J -37872377.83 -37872377.71 -37872377.56 0.0263 0.0224

Earth -108402-01-30 20:52 J -37872377.77 -37872377.63 -37872377.46 0.0263 0.0211 \*

Mars -108401-07-02 07:55 J -37871859.28 -37871859.17 -37871859.02 0.0263 0.0233

Mars -108399-06-24 18:57 J -37871136.93 -37871136.71 -37871136.48 0.0263 0.0154

Mercury -108396-12-05 19:12 J -37869876.72 -37869876.70 -37869876.66 0.0271 0.0264

Mercury -108395-03-04 08:52 J -37869788.23 -37869788.13 -37869788.02 0.0271 0.0190

Mercury -108395-05-31 22:19 J -37869699.70 -37869699.57 -37869699.44 0.0272 0.0117

Mercury -108395-08-28 11:31 J -37869611.16 -37869611.02 -37869610.87 0.0273 0.0045

Mercury -108395-11-25 00:43 J -37869522.61 -37869522.47 -37869522.33 0.0274 0.0029

Mercury -108394-02-21 13:40 J -37869434.06 -37869433.93 -37869433.80 0.0275 0.0101

Mercury -108394-05-21 02:24 J -37869345.51 -37869345.40 -37869345.29 0.0275 0.0173

Mercury -108394-08-17 15:07 J -37869256.93 -37869256.87 -37869256.80 0.0276 0.0244

Venus -108391-12-09 02:24 J -37868047.51 -37868047.40 -37868047.27 0.0289 0.0234

Venus -108390-07-26 17:31 J -37867817.97 -37867817.77 -37867817.57 0.0291 0.0091

Venus -108389-03-12 09:36 J -37867588.31 -37867588.10 -37867587.90 0.0293 0.0058

Venus -108389-10-28 02:09 J -37867358.55 -37867358.41 -37867358.26 0.0295 0.0208

Moon -108388-07-23 10:48 J -37867090.23 -37867090.05 -37867089.85 0.0297 0.0181

Earth -108388-07-23 11:45 J -37867090.19 -37867090.01 -37867089.82 0.0297 0.0186 \*

Mars -108385-07-31 15:50 J -37865986.11 -37865985.84 -37865985.55 0.0298 0.0133

Mercury -108382-10-01 18:57 J -37864828.76 -37864828.71 -37864828.65 0.0290 0.0268

Mercury -108382-12-29 13:26 J -37864740.07 -37864739.94 -37864739.81 0.0289 0.0174

Mercury -108381-03-27 08:09 J -37864651.32 -37864651.16 -37864651.00 0.0288 0.0079  
 Mercury -108381-06-24 03:07 J -37864562.53 -37864562.37 -37864562.20 0.0287 0.0018  
 Mercury -108381-09-20 22:33 J -37864473.72 -37864473.56 -37864473.41 0.0286 0.0115  
 Mercury -108381-12-18 18:00 J -37864384.86 -37864384.75 -37864384.63 0.0285 0.0213  
 Venus -108377-10-09 03:21 J -37862994.50 -37862994.36 -37862994.21 0.0271 0.0200  
 Venus -108376-05-26 12:43 J -37862765.18 -37862764.97 -37862764.76 0.0269 0.0077  
 Venus -108375-01-10 21:07 J -37862535.83 -37862535.62 -37862535.40 0.0268 0.0045  
 Venus -108375-08-28 04:48 J -37862306.47 -37862306.30 -37862306.12 0.0266 0.0164  
 Earth -108373-01-25 12:14 J -37861791.24 -37861790.99 -37861790.73 0.0264 0.0029  
 Moon -108373-01-25 13:55 J -37861791.16 -37861790.92 -37861790.67 0.0264 0.0016 \*  
 Mars -108371-08-17 21:50 J -37860855.84 -37860855.59 -37860855.34 0.0263 0.0103  
 Mercury -108366-07-22 10:19 J -37859056.16 -37859056.07 -37859055.97 0.0272 0.0214  
 Mercury -108366-10-18 23:45 J -37858967.63 -37858967.51 -37858967.38 0.0272 0.0140  
 Mercury -108365-01-15 13:12 J -37858879.09 -37858878.95 -37858878.81 0.0273 0.0067  
 Mercury -108365-04-13 02:24 J -37858790.55 -37858790.40 -37858790.25 0.0274 0.0006  
 Mercury -108365-07-10 15:21 J -37858702.00 -37858701.86 -37858701.72 0.0275 0.0079  
 Mercury -108365-10-07 04:19 J -37858613.44 -37858613.32 -37858613.20 0.0276 0.0151  
 Mercury -108364-01-03 16:48 J -37858524.87 -37858524.80 -37858524.71 0.0277 0.0223  
 Venus -108361-06-20 07:55 J -37857261.30 -37857261.17 -37857261.03 0.0289 0.0216  
 Venus -108360-02-04 23:16 J -37857031.73 -37857031.53 -37857031.33 0.0292 0.0071  
 Venus -108360-09-22 15:21 J -37856802.05 -37856801.86 -37856801.66 0.0293 0.0079  
 Venus -108359-05-10 08:24 J -37856572.27 -37856572.15 -37856572.01 0.0295 0.0230  
 Earth -108358-07-31 11:02 J -37856125.21 -37856125.04 -37856124.86 0.0297 0.0194  
 Moon -108358-07-31 14:38 J -37856125.06 -37856124.89 -37856124.71 0.0297 0.0194 \*  
 Mercury -108352-05-17 14:09 J -37854008.02 -37854007.91 -37854007.79 0.0289 0.0200  
 Mercury -108352-08-14 08:52 J -37853919.28 -37853919.13 -37853918.97 0.0288 0.0105  
 Mercury -108352-11-11 03:50 J -37853830.50 -37853830.34 -37853830.17 0.0287 0.0009  
 Mercury -108351-02-07 23:02 J -37853741.69 -37853741.54 -37853741.38 0.0286 0.0089  
 Mercury -108351-05-07 18:43 J -37853652.85 -37853652.72 -37853652.59 0.0286 0.0187  
 Venus -108347-04-21 10:04 J -37852208.24 -37852208.08 -37852207.92 0.0271 0.0183

Venus -108347-12-06 19:12 J -37851978.91 -37851978.70 -37851978.48 0.0269 0.0060  
 Venus -108346-07-24 03:36 J -37851749.56 -37851749.35 -37851749.14 0.0268 0.0061  
 Venus -108345-03-09 10:48 J -37851520.20 -37851520.05 -37851519.88 0.0266 0.0181  
 Moon -108344-01-19 06:43 J -37851204.32 -37851204.22 -37851204.11 0.0265 0.0241  
 Earth -108344-01-19 08:24 J -37851204.20 -37851204.15 -37851204.06 0.0265 0.0254 \*  
 Mars -108341-10-02 16:48 J -37849852.07 -37849851.80 -37849851.52 0.0263 0.0030  
 Mercury -108337-12-08 11:31 J -37848324.09 -37848324.02 -37848323.95 0.0271 0.0238  
 Mercury -108336-03-07 01:12 J -37848235.57 -37848235.45 -37848235.34 0.0271 0.0165  
 Mercury -108336-06-03 14:24 J -37848147.04 -37848146.90 -37848146.76 0.0272 0.0092  
 Mercury -108336-08-31 03:36 J -37848058.49 -37848058.35 -37848058.20 0.0273 0.0019  
 Mercury -108336-11-27 16:33 J -37847969.95 -37847969.81 -37847969.66 0.0274 0.0054  
 Mercury -108335-02-24 05:31 J -37847881.40 -37847881.27 -37847881.14 0.0275 0.0125  
 Mercury -108335-05-23 18:14 J -37847792.84 -37847792.74 -37847792.64 0.0275 0.0196  
 Mercury -108335-08-20 06:43 J -37847704.24 -37847704.22 -37847704.18 0.0276 0.0267  
 Venus -108332-12-31 08:52 J -37846475.27 -37846475.13 -37846474.98 0.0289 0.0203  
 Venus -108331-08-18 00:00 J -37846245.70 -37846245.50 -37846245.30 0.0291 0.0058  
 Venus -108330-04-04 16:04 J -37846016.03 -37846015.83 -37846015.63 0.0293 0.0092  
 Venus -108330-11-20 08:52 J -37845786.24 -37845786.13 -37845786.01 0.0295 0.0242  
 Moon -108329-07-24 07:55 J -37845539.37 -37845539.17 -37845538.95 0.0297 0.0128  
 Earth -108329-07-24 11:16 J -37845539.23 -37845539.03 -37845538.81 0.0297 0.0129 \*  
 Mars -108327-10-31 03:36 J -37844710.64 -37844710.35 -37844710.05 0.0298 0.0100  
 Mercury -108323-10-04 12:00 J -37843276.08 -37843276.00 -37843275.91 0.0290 0.0239  
 Mercury -108322-01-01 06:28 J -37843187.36 -37843187.23 -37843187.08 0.0289 0.0145  
 Mercury -108322-03-31 01:26 J -37843098.60 -37843098.44 -37843098.28 0.0288 0.0049  
 Mercury -108322-06-27 20:38 J -37843009.81 -37843009.64 -37843009.48 0.0287 0.0049  
 Mercury -108322-09-24 15:50 J -37842920.98 -37842920.84 -37842920.69 0.0286 0.0146  
 Mercury -108322-12-22 11:31 J -37842832.10 -37842832.02 -37842831.93 0.0285 0.0244  
 Venus -108318-11-01 10:19 J -37841422.23 -37841422.07 -37841421.90 0.0271 0.0171  
 Venus -108317-06-17 19:40 J -37841192.89 -37841192.68 -37841192.46 0.0269 0.0047  
 Venus -108316-02-02 04:04 J -37840963.53 -37840963.33 -37840963.12 0.0267 0.0075

Venus -108316-09-19 11:31 J -37840734.15 -37840734.02 -37840733.86 0.0266 0.0195

Earth -108314-01-26 14:24 J -37840240.15 -37840239.90 -37840239.64 0.0264 0.0027

Moon -108314-01-26 18:14 J -37840240.00 -37840239.74 -37840239.48 0.0264 0.0041 \*

Mars -108313-11-25 18:28 J -37839570.86 -37839570.73 -37839570.58 0.0263 0.0226

Mars -108311-11-18 05:16 J -37838848.49 -37838848.28 -37838848.06 0.0264 0.0161

Mercury -108307-04-27 12:43 J -37837592.00 -37837591.97 -37837591.93 0.0271 0.0262

Mercury -108307-07-25 02:09 J -37837503.51 -37837503.41 -37837503.30 0.0272 0.0190

Mercury -108307-10-21 15:36 J -37837414.98 -37837414.85 -37837414.71 0.0272 0.0117

Mercury -108306-01-18 05:02 J -37837326.44 -37837326.29 -37837326.15 0.0273 0.0043

Mercury -108306-04-16 18:00 J -37837237.89 -37837237.75 -37837237.60 0.0274 0.0030

Mercury -108306-07-14 06:57 J -37837149.34 -37837149.21 -37837149.07 0.0275 0.0102

Mercury -108306-10-10 19:40 J -37837060.78 -37837060.68 -37837060.56 0.0276 0.0174

Mercury -108305-01-07 08:24 J -37836972.21 -37836972.15 -37836972.08 0.0277 0.0244

Venus -108302-07-13 13:26 J -37835689.09 -37835688.94 -37835688.78 0.0290 0.0186

Venus -108301-02-28 04:48 J -37835459.50 -37835459.30 -37835459.09 0.0292 0.0039

Venus -108301-10-14 21:07 J -37835229.81 -37835229.62 -37835229.43 0.0294 0.0112

Venus -108300-06-01 14:09 J -37835000.00 -37834999.91 -37834999.82 0.0295 0.0263

Earth -108299-08-01 09:21 J -37834574.23 -37834574.11 -37834573.98 0.0297 0.0248

Moon -108299-08-01 10:04 J -37834574.21 -37834574.08 -37834573.94 0.0297 0.0244 \*

Mars -108297-12-24 20:09 J -37833697.93 -37833697.66 -37833697.37 0.0297 0.0136

Mercury -108293-02-21 12:14 J -37832544.04 -37832543.99 -37832543.92 0.0290 0.0267

Mercury -108293-05-20 06:57 J -37832455.34 -37832455.21 -37832455.08 0.0289 0.0173

Mercury -108293-08-17 01:40 J -37832366.59 -37832366.43 -37832366.27 0.0288 0.0077

Mercury -108293-11-13 20:38 J -37832277.80 -37832277.64 -37832277.47 0.0287 0.0022

Mercury -108292-02-10 16:04 J -37832188.98 -37832188.83 -37832188.68 0.0286 0.0117

Mercury -108292-05-10 11:45 J -37832100.12 -37832100.01 -37832099.90 0.0286 0.0215

Venus -108288-05-13 16:19 J -37830635.99 -37830635.82 -37830635.63 0.0271 0.0155

Venus -108288-12-29 01:40 J -37830406.65 -37830406.43 -37830406.21 0.0269 0.0031

Venus -108287-08-15 09:50 J -37830177.29 -37830177.09 -37830176.88 0.0268 0.0091

Venus -108286-04-01 17:16 J -37829947.90 -37829947.78 -37829947.64 0.0266 0.0210

Moon -108285-01-21 06:43 J -37829653.40 -37829653.22 -37829653.04 0.0265 0.0185  
 Earth -108285-01-21 10:19 J -37829653.23 -37829653.07 -37829652.89 0.0265 0.0200 \*  
 Mars -108282-01-11 13:40 J -37828567.18 -37828566.93 -37828566.66 0.0263 0.0093  
 Mercury -108278-12-12 03:21 J -37826771.44 -37826771.36 -37826771.26 0.0271 0.0214  
 Mercury -108277-03-09 17:02 J -37826682.92 -37826682.79 -37826682.67 0.0271 0.0141  
 Mercury -108277-06-06 06:14 J -37826594.38 -37826594.24 -37826594.10 0.0272 0.0068  
 Mercury -108277-09-02 19:26 J -37826505.84 -37826505.69 -37826505.55 0.0273 0.0008  
 Mercury -108277-11-30 08:09 J -37826417.29 -37826417.16 -37826417.02 0.0274 0.0077  
 Mercury -108276-02-26 21:07 J -37826328.74 -37826328.62 -37826328.50 0.0274 0.0147  
 Mercury -108276-05-26 09:50 J -37826240.17 -37826240.09 -37826240.01 0.0275 0.0218  
 Venus -108272-01-22 14:09 J -37824903.07 -37824902.91 -37824902.74 0.0289 0.0173  
 Venus -108272-09-09 05:16 J -37824673.49 -37824673.28 -37824673.08 0.0291 0.0027  
 Venus -108271-04-26 21:07 J -37824443.80 -37824443.62 -37824443.43 0.0293 0.0124  
 Venus -108271-12-12 13:55 J -37824213.99 -37824213.92 -37824213.84 0.0295 0.0275  
 Moon -108270-07-26 08:09 J -37823988.37 -37823988.16 -37823987.94 0.0296 0.0079  
 Earth -108270-07-26 08:24 J -37823988.37 -37823988.15 -37823987.91 0.0296 0.0077 \*  
 Mercury -108264-10-07 04:19 J -37821723.43 -37821723.32 -37821723.21 0.0290 0.0214  
 Mercury -108263-01-03 23:02 J -37821634.69 -37821634.54 -37821634.40 0.0289 0.0119  
 Mercury -108263-04-02 17:45 J -37821545.92 -37821545.76 -37821545.59 0.0288 0.0024  
 Mercury -108263-06-30 12:57 J -37821457.12 -37821456.96 -37821456.79 0.0287 0.0075  
 Mercury -108263-09-27 08:38 J -37821368.27 -37821368.14 -37821368.01 0.0286 0.0173  
 Mercury -108263-12-25 04:04 J -37821279.37 -37821279.33 -37821279.27 0.0285 0.0272  
 Venus -108259-04-08 05:16 J -37820079.30 -37820079.28 -37820079.23 0.0273 0.0269  
 Venus -108259-11-23 15:50 J -37819850.02 -37819849.84 -37819849.65 0.0271 0.0143  
 Venus -108258-07-11 01:11 J -37819620.67 -37819620.45 -37819620.23 0.0269 0.0019  
 Venus -108257-02-25 09:35 J -37819391.30 -37819391.10 -37819390.89 0.0267 0.0104  
 Venus -108257-10-11 17:31 J -37819161.88 -37819161.77 -37819161.65 0.0266 0.0222  
 Moon -108255-01-27 13:55 J -37818689.16 -37818688.92 -37818688.66 0.0264 0.0092  
 Earth -108255-01-27 14:38 J -37818689.13 -37818688.89 -37818688.64 0.0264 0.0078 \*  
 Mars -108252-02-25 22:04 J -37817563.85 -37817563.58 -37817563.30 0.0263 0.0036

Mercury -108248-04-30 04:19 J -37816039.38 -37816039.32 -37816039.25 0.0271 0.0240  
 Mercury -108248-07-27 17:45 J -37815950.87 -37815950.76 -37815950.64 0.0272 0.0167  
 Mercury -108248-10-24 07:11 J -37815862.33 -37815862.20 -37815862.06 0.0272 0.0094  
 Mercury -108247-01-20 20:24 J -37815773.79 -37815773.65 -37815773.50 0.0273 0.0022  
 Mercury -108247-04-19 09:35 J -37815685.25 -37815685.10 -37815684.96 0.0274 0.0052  
 Mercury -108247-07-16 22:19 J -37815596.69 -37815596.57 -37815596.44 0.0275 0.0123  
 Mercury -108247-10-13 11:02 J -37815508.14 -37815508.04 -37815507.94 0.0276 0.0194  
 Mercury -108246-01-09 23:45 J -37815419.55 -37815419.51 -37815419.47 0.0277 0.0264  
 Venus -108243-08-04 17:45 J -37814116.93 -37814116.76 -37814116.58 0.0290 0.0157  
 Venus -108242-03-22 09:21 J -37813887.32 -37813887.11 -37813886.91 0.0292 0.0011  
 Venus -108242-11-07 01:26 J -37813657.62 -37813657.44 -37813657.26 0.0294 0.0143  
 Venus -108241-06-23 18:28 J -37813427.74 -37813427.73 -37813427.72 0.0295 0.0295  
 Moon -108240-08-02 01:40 J -37813023.48 -37813023.43 -37813023.36 0.0297 0.0286  
 Mars -108238-03-25 20:38 J -37812422.92 -37812422.64 -37812422.33 0.0298 0.0100  
 Mercury -108234-02-24 04:19 J -37810991.40 -37810991.32 -37810991.23 0.0290 0.0243  
 Mercury -108234-05-23 22:48 J -37810902.68 -37810902.55 -37810902.40 0.0289 0.0149  
 Mercury -108234-08-20 17:45 J -37810813.92 -37810813.76 -37810813.60 0.0288 0.0053  
 Mercury -108234-11-17 12:57 J -37810725.12 -37810724.96 -37810724.80 0.0287 0.0045  
 Mercury -108233-02-14 08:24 J -37810636.29 -37810636.15 -37810636.00 0.0286 0.0142  
 Mercury -108233-05-13 04:04 J -37810547.42 -37810547.33 -37810547.24 0.0285 0.0241  
 Venus -108230-10-19 11:02 J -37809293.10 -37809293.04 -37809292.95 0.0273 0.0254  
 Venus -108229-06-04 21:35 J -37809063.79 -37809063.60 -37809063.41 0.0271 0.0128  
 Venus -108228-01-20 06:43 J -37808834.43 -37808834.22 -37808834.00 0.0269 0.0006  
 Venus -108228-09-06 15:07 J -37808605.06 -37808604.87 -37808604.67 0.0268 0.0119  
 Venus -108227-04-23 22:48 J -37808375.64 -37808375.55 -37808375.45 0.0266 0.0237  
 Earth -108226-01-22 09:50 J -37808102.29 -37808102.09 -37808101.87 0.0265 0.0149  
 Moon -108226-01-22 10:48 J -37808102.25 -37808102.05 -37808101.83 0.0265 0.0134 \*  
 Mars -108224-04-21 07:11 J -37807282.35 -37807282.20 -37807282.03 0.0263 0.0213  
 Mars -108222-04-13 17:02 J -37806559.99 -37806559.79 -37806559.57 0.0263 0.0169  
 Mercury -108219-09-17 05:45 J -37805307.29 -37805307.26 -37805307.23 0.0270 0.0262



Mercury -108219-12-14 19:11 J -37805218.80 -37805218.70 -37805218.59 0.0271 0.0190

Mercury -108218-03-13 08:38 J -37805130.27 -37805130.14 -37805130.00 0.0271 0.0117

Mercury -108218-06-09 21:50 J -37805041.73 -37805041.59 -37805041.44 0.0272 0.0045

Mercury -108218-09-06 11:02 J -37804953.19 -37804953.04 -37804952.90 0.0273 0.0028

Mercury -108218-12-03 23:45 J -37804864.64 -37804864.51 -37804864.37 0.0274 0.0099

Mercury -108217-03-01 12:28 J -37804776.08 -37804775.98 -37804775.86 0.0274 0.0170

Mercury -108217-05-29 01:11 J -37804687.51 -37804687.45 -37804687.38 0.0275 0.0240

Venus -108214-06-30 05:02 J -37803560.30 -37803560.29 -37803560.25 0.0287 0.0285

Venus -108213-02-14 19:11 J -37803330.87 -37803330.70 -37803330.51 0.0289 0.0143

Venus -108213-10-01 10:19 J -37803101.28 -37803101.07 -37803100.86 0.0292 0.0005

Venus -108212-05-19 02:09 J -37802871.58 -37802871.41 -37802871.23 0.0293 0.0156

Earth -108211-07-27 05:16 J -37802437.51 -37802437.28 -37802437.04 0.0296 0.0025

Moon -108211-07-27 08:38 J -37802437.37 -37802437.14 -37802436.91 0.0296 0.0031 \*

Mars -108208-05-18 10:04 J -37801411.35 -37801411.08 -37801410.79 0.0298 0.0134

Mercury -108205-07-13 01:40 J -37800259.45 -37800259.43 -37800259.39 0.0291 0.0284

Mercury -108205-10-09 20:09 J -37800170.78 -37800170.66 -37800170.53 0.0290 0.0190

Mercury -108204-01-06 14:52 J -37800082.03 -37800081.88 -37800081.72 0.0289 0.0095

Mercury -108204-04-05 10:04 J -37799993.25 -37799993.08 -37799992.92 0.0288 0.0007

Mercury -108204-07-03 05:16 J -37799904.44 -37799904.28 -37799904.12 0.0287 0.0099

Mercury -108204-09-30 00:57 J -37799815.58 -37799815.46 -37799815.34 0.0286 0.0198

Venus -108200-04-30 10:04 J -37798507.17 -37798507.08 -37798506.98 0.0273 0.0243

Venus -108200-12-15 20:09 J -37798277.85 -37798277.66 -37798277.46 0.0271 0.0117

Venus -108199-08-02 05:45 J -37798048.48 -37798048.26 -37798048.04 0.0269 0.0009

Venus -108198-03-19 14:09 J -37797819.09 -37797818.91 -37797818.71 0.0267 0.0131

Venus -108198-11-03 22:04 J -37797589.64 -37797589.58 -37797589.50 0.0266 0.0250

Moon -108196-01-28 09:21 J -37797138.33 -37797138.11 -37797137.89 0.0264 0.0139

Earth -108196-01-28 13:11 J -37797138.17 -37797137.95 -37797137.72 0.0264 0.0126 \*

Mars -108194-06-06 13:55 J -37796279.17 -37796278.92 -37796278.65 0.0263 0.0089

Mercury -108189-05-02 20:09 J -37794486.75 -37794486.66 -37794486.57 0.0271 0.0216

Mercury -108189-07-30 09:35 J -37794398.23 -37794398.10 -37794397.98 0.0272 0.0144

Mercury -108189-10-26 22:48 J -37794309.69 -37794309.55 -37794309.41 0.0272 0.0071  
 Mercury -108188-01-23 12:00 J -37794221.15 -37794221.00 -37794220.86 0.0273 0.0003  
 Mercury -108188-04-22 00:57 J -37794132.60 -37794132.46 -37794132.32 0.0274 0.0073  
 Mercury -108188-07-19 13:40 J -37794044.05 -37794043.93 -37794043.81 0.0275 0.0144  
 Mercury -108188-10-16 02:24 J -37793955.49 -37793955.40 -37793955.31 0.0276 0.0215  
 Venus -108184-01-09 08:09 J -37792774.22 -37792774.16 -37792774.09 0.0288 0.0271  
 Venus -108184-08-26 22:19 J -37792544.75 -37792544.57 -37792544.38 0.0290 0.0128  
 Venus -108183-04-13 13:40 J -37792315.13 -37792314.93 -37792314.72 0.0292 0.0022  
 Venus -108183-11-29 05:45 J -37792085.42 -37792085.26 -37792085.09 0.0294 0.0174  
 Mercury -108175-02-26 19:55 J -37789438.77 -37789438.67 -37789438.56 0.0290 0.0221  
 Mercury -108175-05-26 14:38 J -37789350.04 -37789349.89 -37789349.74 0.0289 0.0126  
 Mercury -108175-08-23 09:35 J -37789261.27 -37789261.10 -37789260.94 0.0288 0.0030  
 Mercury -108175-11-20 04:48 J -37789172.46 -37789172.30 -37789172.14 0.0287 0.0068  
 Mercury -108174-02-17 00:14 J -37789083.62 -37789083.49 -37789083.35 0.0286 0.0166  
 Mercury -108174-05-16 19:55 J -37788994.72 -37788994.67 -37788994.60 0.0285 0.0265  
 Venus -108171-11-10 15:21 J -37787720.97 -37787720.86 -37787720.74 0.0273 0.0228  
 Venus -108170-06-28 01:40 J -37787491.63 -37787491.43 -37787491.23 0.0271 0.0101  
 Venus -108169-02-12 11:02 J -37787262.25 -37787262.04 -37787261.82 0.0269 0.0024  
 Venus -108169-09-28 19:40 J -37787032.86 -37787032.68 -37787032.49 0.0268 0.0147  
 Venus -108168-05-16 03:21 J -37786803.37 -37786803.36 -37786803.34 0.0266 0.0265  
 Earth -108167-01-23 08:09 J -37786551.39 -37786551.16 -37786550.91 0.0265 0.0100  
 Moon -108167-01-23 12:14 J -37786551.23 -37786550.99 -37786550.74 0.0265 0.0084 \*  
 Mars -108164-07-22 09:35 J -37785275.37 -37785275.10 -37785274.82 0.0263 0.0047  
 Mercury -108160-09-19 21:35 J -37783754.66 -37783754.60 -37783754.53 0.0270 0.0238  
 Mercury -108160-12-17 11:02 J -37783666.15 -37783666.04 -37783665.92 0.0271 0.0166  
 Mercury -108159-03-16 00:28 J -37783577.62 -37783577.48 -37783577.34 0.0271 0.0094  
 Mercury -108159-06-12 13:40 J -37783489.08 -37783488.93 -37783488.79 0.0272 0.0023  
 Mercury -108159-09-09 02:38 J -37783400.53 -37783400.39 -37783400.25 0.0273 0.0050  
 Mercury -108159-12-06 15:21 J -37783311.99 -37783311.86 -37783311.73 0.0274 0.0121  
 Mercury -108158-03-05 04:04 J -37783223.43 -37783223.33 -37783223.23 0.0275 0.0191

Mercury -108158-06-01 16:33 J -37783134.85 -37783134.81 -37783134.76 0.0275 0.0261

Venus -108155-07-22 10:33 J -37781988.15 -37781988.06 -37781987.97 0.0287 0.0256

Venus -108154-03-09 00:28 J -37781758.67 -37781758.48 -37781758.29 0.0289 0.0112

Venus -108154-10-24 15:21 J -37781529.06 -37781528.86 -37781528.65 0.0292 0.0037

Venus -108153-06-10 07:11 J -37781299.35 -37781299.20 -37781299.04 0.0293 0.0189

Earth -108152-07-28 01:55 J -37780886.65 -37780886.42 -37780886.18 0.0296 0.0027

Moon -108152-07-28 03:21 J -37780886.60 -37780886.36 -37780886.12 0.0296 0.0018 \*

Mars -108150-08-17 11:31 J -37780136.31 -37780136.02 -37780135.72 0.0298 0.0100

Mercury -108146-07-16 17:31 J -37778706.83 -37778706.77 -37778706.70 0.0290 0.0261

Mercury -108146-10-13 12:00 J -37778618.13 -37778618.00 -37778617.86 0.0290 0.0167

Mercury -108145-01-10 06:57 J -37778529.37 -37778529.21 -37778529.05 0.0289 0.0071

Mercury -108145-04-08 01:55 J -37778440.58 -37778440.42 -37778440.25 0.0288 0.0026

Mercury -108145-07-05 21:07 J -37778351.76 -37778351.62 -37778351.46 0.0287 0.0124

Mercury -108145-10-02 16:48 J -37778262.90 -37778262.80 -37778262.69 0.0286 0.0222

Venus -108141-05-22 13:55 J -37776935.04 -37776934.92 -37776934.78 0.0273 0.0218

Venus -108140-01-07 00:28 J -37776705.68 -37776705.48 -37776705.27 0.0271 0.0090

Venus -108140-08-24 09:50 J -37776476.30 -37776476.09 -37776475.87 0.0269 0.0036

Venus -108139-04-10 18:28 J -37776246.90 -37776246.73 -37776246.55 0.0267 0.0159

Earth -108137-01-30 11:16 J -37775587.22 -37775587.03 -37775586.83 0.0264 0.0173

Moon -108137-01-30 11:02 J -37775587.21 -37775587.04 -37775586.86 0.0264 0.0184 \*

Mars -108136-09-14 05:16 J -37774994.44 -37774994.28 -37774994.11 0.0263 0.0211

Mars -108134-09-06 17:16 J -37774271.98 -37774271.78 -37774271.56 0.0263 0.0173

Mercury -108130-02-06 22:19 J -37773022.59 -37773022.57 -37773022.55 0.0270 0.0266

Mercury -108130-05-06 11:45 J -37772934.11 -37772934.01 -37772933.90 0.0271 0.0193

Mercury -108130-08-03 01:11 J -37772845.58 -37772845.45 -37772845.32 0.0272 0.0120

Mercury -108130-10-30 14:24 J -37772757.04 -37772756.90 -37772756.75 0.0272 0.0048

Mercury -108129-01-27 03:35 J -37772668.50 -37772668.35 -37772668.21 0.0273 0.0024

Mercury -108129-04-24 16:19 J -37772579.95 -37772579.82 -37772579.68 0.0274 0.0096

Mercury -108129-07-22 05:16 J -37772491.40 -37772491.28 -37772491.17 0.0275 0.0166

Mercury -108129-10-18 17:45 J -37772402.83 -37772402.76 -37772402.69 0.0276 0.0237

Venus -108125-02-01 13:11 J -37771202.05 -37771201.95 -37771201.83 0.0288 0.0242  
 Venus -108125-09-18 03:35 J -37770972.54 -37770972.35 -37770972.15 0.0290 0.0097  
 Venus -108124-05-05 18:43 J -37770742.92 -37770742.72 -37770742.51 0.0292 0.0054  
 Venus -108124-12-21 10:48 J -37770513.19 -37770513.05 -37770512.90 0.0294 0.0206  
 Moon -108123-07-22 08:38 J -37770300.18 -37770300.14 -37770300.08 0.0295 0.0288  
 Earth -108123-07-22 09:50 J -37770300.16 -37770300.09 -37770300.01 0.0295 0.0278 \*  
 Mars -108120-10-10 23:16 J -37769123.80 -37769123.53 -37769123.24 0.0297 0.0133  
 Mercury -108117-12-02 17:31 J -37767974.77 -37767974.77 -37767974.77 0.0290 0.0290  
 Mercury -108116-03-01 11:45 J -37767886.12 -37767886.01 -37767885.89 0.0290 0.0197  
 Mercury -108116-05-29 06:28 J -37767797.38 -37767797.23 -37767797.07 0.0289 0.0102  
 Mercury -108116-08-26 01:26 J -37767708.60 -37767708.44 -37767708.27 0.0288 0.0009  
 Mercury -108116-11-22 20:52 J -37767619.79 -37767619.63 -37767619.47 0.0287 0.0092  
 Mercury -108115-02-19 16:19 J -37767530.94 -37767530.82 -37767530.69 0.0286 0.0190  
 Venus -108112-12-02 19:11 J -37766148.84 -37766148.70 -37766148.55 0.0273 0.0202  
 Venus -108111-07-20 05:45 J -37765919.47 -37765919.26 -37765919.05 0.0271 0.0074  
 Venus -108110-03-06 15:07 J -37765690.08 -37765689.87 -37765689.65 0.0269 0.0053  
 Venus -108110-10-22 00:00 J -37765460.66 -37765460.50 -37765460.33 0.0268 0.0175  
 Moon -108108-01-24 06:14 J -37765000.50 -37765000.24 -37764999.97 0.0265 0.0040  
 Earth -108108-01-24 06:28 J -37765000.48 -37765000.23 -37764999.97 0.0265 0.0052 \*  
 Mars -108106-10-31 02:52 J -37763990.64 -37763990.38 -37763990.11 0.0263 0.0075  
 Mercury -108101-09-22 13:40 J -37762202.02 -37762201.93 -37762201.84 0.0270 0.0213  
 Mercury -108101-12-20 03:07 J -37762113.49 -37762113.37 -37762113.24 0.0271 0.0141  
 Mercury -108100-03-18 16:19 J -37762024.96 -37762024.82 -37762024.67 0.0272 0.0069  
 Mercury -108100-06-15 05:31 J -37761936.42 -37761936.27 -37761936.13 0.0272 0.0003  
 Mercury -108100-09-11 18:28 J -37761847.87 -37761847.73 -37761847.59 0.0273 0.0074  
 Mercury -108100-12-09 07:11 J -37761759.32 -37761759.20 -37761759.08 0.0274 0.0145  
 Mercury -108099-03-07 19:55 J -37761670.76 -37761670.67 -37761670.59 0.0275 0.0215  
 Venus -108096-08-13 16:48 J -37760415.92 -37760415.80 -37760415.66 0.0287 0.0224  
 Venus -108095-03-31 06:57 J -37760186.41 -37760186.21 -37760186.01 0.0290 0.0079  
 Venus -108095-11-15 21:50 J -37759956.79 -37759956.59 -37759956.39 0.0292 0.0071

Venus -108094-07-03 13:26 J -37759727.07 -37759726.94 -37759726.80 0.0293 0.0223  
 Moon -108093-07-28 21:35 J -37759335.82 -37759335.60 -37759335.36 0.0296 0.0068  
 Earth -108093-07-29 00:43 J -37759335.69 -37759335.47 -37759335.24 0.0296 0.0082 \*  
 Mercury -108087-07-19 09:35 J -37757154.19 -37757154.10 -37757154.01 0.0290 0.0236  
 Mercury -108087-10-16 04:04 J -37757065.47 -37757065.33 -37757065.18 0.0289 0.0142  
 Mercury -108086-01-12 23:02 J -37756976.70 -37756976.54 -37756976.38 0.0289 0.0046  
 Mercury -108086-04-11 18:14 J -37756887.91 -37756887.74 -37756887.58 0.0288 0.0051  
 Mercury -108086-07-09 13:40 J -37756799.08 -37756798.93 -37756798.79 0.0287 0.0149  
 Mercury -108086-10-06 09:21 J -37756710.19 -37756710.11 -37756710.03 0.0286 0.0247  
 Venus -108082-06-14 18:14 J -37755362.88 -37755362.74 -37755362.58 0.0273 0.0191  
 Venus -108081-01-30 04:48 J -37755133.51 -37755133.30 -37755133.09 0.0271 0.0063  
 Venus -108081-09-15 14:24 J -37754904.11 -37754903.90 -37754903.69 0.0269 0.0064  
 Venus -108080-05-02 23:02 J -37754674.69 -37754674.54 -37754674.38 0.0267 0.0187  
 Earth -108078-01-31 10:19 J -37754036.21 -37754036.07 -37754035.93 0.0264 0.0222  
 Moon -108078-01-31 13:55 J -37754036.03 -37754035.92 -37754035.78 0.0264 0.0229 \*  
 Mars -108076-12-15 10:04 J -37752987.35 -37752987.08 -37752986.80 0.0263 0.0050  
 Mercury -108071-02-09 14:24 J -37751469.96 -37751469.90 -37751469.83 0.0270 0.0240  
 Mercury -108071-05-09 03:50 J -37751381.45 -37751381.34 -37751381.22 0.0271 0.0168  
 Mercury -108071-08-05 17:16 J -37751292.92 -37751292.78 -37751292.64 0.0272 0.0095  
 Mercury -108071-11-02 06:28 J -37751204.38 -37751204.23 -37751204.09 0.0273 0.0024  
 Mercury -108070-01-29 19:26 J -37751115.83 -37751115.69 -37751115.55 0.0273 0.0048  
 Mercury -108070-04-28 08:09 J -37751027.28 -37751027.16 -37751027.03 0.0274 0.0120  
 Mercury -108070-07-25 20:52 J -37750938.73 -37750938.63 -37750938.52 0.0275 0.0190  
 Mercury -108070-10-22 09:35 J -37750850.14 -37750850.10 -37750850.06 0.0276 0.0260  
 Venus -108066-02-23 19:40 J -37749629.81 -37749629.68 -37749629.53 0.0288 0.0210  
 Venus -108066-10-11 10:04 J -37749400.28 -37749400.08 -37749399.88 0.0290 0.0063  
 Venus -108065-05-28 01:11 J -37749170.65 -37749170.45 -37749170.25 0.0292 0.0088  
 Venus -108064-01-12 16:48 J -37748940.90 -37748940.80 -37748940.67 0.0294 0.0241  
 Earth -108064-07-23 08:38 J -37748749.28 -37748749.14 -37748748.98 0.0295 0.0222  
 Moon -108064-07-23 12:00 J -37748749.13 -37748749.00 -37748748.86 0.0295 0.0235 \*

Mars -108061-01-10 05:45 J -37747848.55 -37747848.26 -37747847.96 0.0298 0.0096  
 Mercury -108058-12-06 09:35 J -37746422.16 -37746422.10 -37746422.03 0.0290 0.0265  
 Mercury -108057-03-04 04:04 J -37746333.46 -37746333.33 -37746333.20 0.0289 0.0171  
 Mercury -108057-05-31 22:48 J -37746244.71 -37746244.55 -37746244.39 0.0289 0.0076  
 Mercury -108057-08-28 18:00 J -37746155.92 -37746155.75 -37746155.59 0.0288 0.0022  
 Mercury -108057-11-25 13:11 J -37746067.10 -37746066.95 -37746066.79 0.0287 0.0119  
 Mercury -108056-02-22 08:52 J -37745978.24 -37745978.13 -37745978.02 0.0286 0.0217  
 Venus -108053-12-25 00:00 J -37744576.66 -37744576.50 -37744576.33 0.0273 0.0174  
 Venus -108052-08-11 10:19 J -37744347.28 -37744347.07 -37744346.85 0.0271 0.0046  
 Venus -108051-03-28 19:55 J -37744117.87 -37744117.67 -37744117.46 0.0269 0.0081  
 Venus -108051-11-13 04:48 J -37743888.44 -37743888.30 -37743888.15 0.0268 0.0204  
 Moon -108049-01-26 01:55 J -37743449.68 -37743449.42 -37743449.16 0.0265 0.0005  
 Earth -108049-01-26 05:45 J -37743449.51 -37743449.26 -37743449.00 0.0265 0.0005 \*  
 Mars -108047-02-07 19:40 J -37742705.85 -37742705.68 -37742705.49 0.0263 0.0196  
 Mars -108045-01-31 09:35 J -37741983.29 -37741983.10 -37741982.90 0.0264 0.0187  
 Mercury -108042-06-29 16:33 J -37740737.85 -37740737.81 -37740737.77 0.0270 0.0259  
 Mercury -108042-09-26 06:00 J -37740649.35 -37740649.25 -37740649.14 0.0271 0.0187  
 Mercury -108042-12-23 19:26 J -37740560.82 -37740560.69 -37740560.56 0.0271 0.0115  
 Mercury -108041-03-21 08:38 J -37740472.28 -37740472.14 -37740471.99 0.0272 0.0043  
 Mercury -108041-06-17 21:35 J -37740383.74 -37740383.60 -37740383.45 0.0273 0.0030  
 Mercury -108041-09-14 10:33 J -37740295.19 -37740295.06 -37740294.93 0.0273 0.0100  
 Mercury -108041-12-11 23:16 J -37740206.64 -37740206.53 -37740206.42 0.0274 0.0171  
 Mercury -108040-03-10 11:45 J -37740118.07 -37740118.01 -37740117.94 0.0275 0.0241  
 Venus -108037-09-05 00:57 J -37738843.61 -37738843.46 -37738843.30 0.0288 0.0190  
 Venus -108036-04-22 14:52 J -37738614.08 -37738613.88 -37738613.67 0.0290 0.0044  
 Venus -108036-12-08 05:45 J -37738384.45 -37738384.26 -37738384.07 0.0292 0.0108  
 Venus -108035-07-25 21:35 J -37738154.70 -37738154.60 -37738154.51 0.0293 0.0260  
 Moon -108034-07-31 00:14 J -37737784.69 -37737784.49 -37737784.28 0.0296 0.0128  
 Earth -108034-07-31 02:38 J -37737784.59 -37737784.39 -37737784.18 0.0296 0.0143 \*  
 Mars -108031-03-05 08:09 J -37736836.42 -37736836.16 -37736835.87 0.0297 0.0141

Mercury -108028-07-22 02:24 J -37735601.51 -37735601.40 -37735601.28 0.0290 0.0207

Mercury -108028-10-18 21:07 J -37735512.77 -37735512.62 -37735512.47 0.0289 0.0112

Mercury -108027-01-15 16:04 J -37735424.00 -37735423.83 -37735423.67 0.0288 0.0016

Mercury -108027-04-14 11:16 J -37735335.19 -37735335.03 -37735334.87 0.0287 0.0081

Mercury -108027-07-12 06:43 J -37735246.35 -37735246.22 -37735246.09 0.0287 0.0179

Mercury -108027-10-09 02:38 J -37735157.43 -37735157.39 -37735157.35 0.0286 0.0277

Venus -108023-07-07 00:00 J -37733790.67 -37733790.50 -37733790.32 0.0272 0.0162

Venus -108022-02-21 10:19 J -37733561.28 -37733561.07 -37733560.85 0.0271 0.0033

Venus -108022-10-08 20:09 J -37733331.87 -37733331.66 -37733331.46 0.0269 0.0094

Venus -108021-05-25 04:33 J -37733102.42 -37733102.31 -37733102.17 0.0267 0.0218

Earth -108020-01-19 14:38 J -37732862.96 -37732862.89 -37732862.80 0.0266 0.0252

Moon -108020-01-19 18:14 J -37732862.83 -37732862.74 -37732862.62 0.0266 0.0241 \*

Mars -108017-03-25 04:04 J -37731702.59 -37731702.33 -37731702.06 0.0263 0.0072

Mercury -108012-02-12 06:57 J -37729917.30 -37729917.21 -37729917.12 0.0271 0.0213

Mercury -108012-05-11 20:24 J -37729828.78 -37729828.65 -37729828.52 0.0271 0.0140

Mercury -108012-08-08 09:35 J -37729740.24 -37729740.10 -37729739.95 0.0272 0.0068

Mercury -108012-11-04 22:48 J -37729651.70 -37729651.55 -37729651.41 0.0273 0.0004

Mercury -108011-02-01 11:45 J -37729563.15 -37729563.01 -37729562.87 0.0274 0.0075

Mercury -108011-05-01 00:28 J -37729474.60 -37729474.48 -37729474.36 0.0274 0.0146

Mercury -108011-07-28 13:11 J -37729386.03 -37729385.95 -37729385.86 0.0275 0.0216

Venus -108007-03-18 04:33 J -37728057.47 -37728057.31 -37728057.14 0.0288 0.0174

Venus -108007-11-02 18:43 J -37727827.92 -37727827.72 -37727827.51 0.0290 0.0026

Venus -108006-06-20 09:35 J -37727598.28 -37727598.10 -37727597.91 0.0292 0.0126

Venus -108005-02-05 01:40 J -37727368.49 -37727368.43 -37727368.37 0.0294 0.0278

Earth -108005-07-24 11:31 J -37727198.22 -37727198.02 -37727197.82 0.0295 0.0158

Moon -108005-07-24 13:26 J -37727198.13 -37727197.94 -37727197.74 0.0295 0.0173 \*

# 108TH MILLENNIUM

# BCE

**This is a list of transits visible from Saturn in the 108th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-107999-12-09 02:38 J	-37724869.48	-37724869.39	-37724869.30	0.0290	0.0235		
Mercury	-107998-03-07 21:07 J	-37724780.76	-37724780.62	-37724780.48	0.0289	0.0141		
Mercury	-107998-06-04 16:04 J	-37724692.00	-37724691.83	-37724691.67	0.0288	0.0046		
Mercury	-107998-09-01 11:02 J	-37724603.20	-37724603.04	-37724602.87	0.0287	0.0052		
Mercury	-107998-11-29 06:28 J	-37724514.37	-37724514.23	-37724514.08	0.0287	0.0149		
Mercury	-107997-02-26 02:09 J	-37724425.49	-37724425.41	-37724425.32	0.0286	0.0247		
Venus	-107994-06-01 18:43 J	-37723233.73	-37723233.72	-37723233.70	0.0274	0.0273		
Venus	-107993-01-17 05:45 J	-37723004.43	-37723004.26	-37723004.06	0.0272	0.0145		
Venus	-107993-09-02 16:33 J	-37722775.03	-37722774.81	-37722774.59	0.0271	0.0015		
Venus	-107992-04-20 01:55 J	-37722545.61	-37722545.42	-37722545.21	0.0269	0.0112		
Venus	-107992-12-05 10:48 J	-37722316.14	-37722316.05	-37722315.94	0.0268	0.0235		
Moon	-107990-01-27 06:14 J	-37721898.48	-37721898.24	-37721898.00	0.0266	0.0054		
Earth	-107990-01-27 06:57 J	-37721898.46	-37721898.21	-37721897.96	0.0266	0.0049	*	
Mars	-107987-05-11 05:02 J	-37720698.55	-37720698.29	-37720698.01	0.0264	0.0067		
Mercury	-107983-07-02 09:21 J	-37719185.18	-37719185.11	-37719185.03	0.0270	0.0230		
Mercury	-107983-09-28 22:48 J	-37719096.66	-37719096.55	-37719096.43	0.0271	0.0158		
Mercury	-107983-12-26 12:14 J	-37719008.13	-37719007.99	-37719007.85	0.0272	0.0085		
Mercury	-107982-03-25 01:26 J	-37718919.59	-37718919.44	-37718919.30	0.0272	0.0014		
Mercury	-107982-06-21 14:24 J	-37718831.04	-37718830.90	-37718830.76	0.0273	0.0058		



Mercury -107982-09-18 03:07 J -37718742.49 -37718742.37 -37718742.24 0.0274 0.0129

Mercury -107982-12-15 15:50 J -37718653.93 -37718653.84 -37718653.74 0.0275 0.0199

Mercury -107981-03-13 04:33 J -37718565.34 -37718565.31 -37718565.28 0.0275 0.0269

Venus -107978-09-28 11:02 J -37717271.21 -37717271.04 -37717270.86 0.0288 0.0152

Venus -107977-05-15 01:11 J -37717041.66 -37717041.45 -37717041.25 0.0290 0.0005

Venus -107977-12-30 15:50 J -37716812.01 -37716811.84 -37716811.66 0.0292 0.0148

Earth -107975-08-01 07:26 J -37716233.34 -37716233.19 -37716233.01 0.0296 0.0211

Moon -107975-08-01 09:50 J -37716233.26 -37716233.09 -37716232.91 0.0296 0.0194 \*

Mars -107973-06-04 08:09 J -37715560.45 -37715560.16 -37715559.85 0.0297 0.0084

Mercury -107969-04-27 01:40 J -37714137.48 -37714137.43 -37714137.36 0.0290 0.0268

Mercury -107969-07-24 20:09 J -37714048.79 -37714048.66 -37714048.53 0.0290 0.0174

Mercury -107969-10-21 14:52 J -37713960.04 -37713959.88 -37713959.72 0.0289 0.0079

Mercury -107968-01-18 09:50 J -37713871.25 -37713871.09 -37713870.92 0.0288 0.0018

Mercury -107968-04-17 05:02 J -37713782.44 -37713782.29 -37713782.13 0.0287 0.0115

Mercury -107968-07-15 00:43 J -37713693.58 -37713693.47 -37713693.35 0.0286 0.0213

Venus -107965-12-11 20:09 J -37712447.72 -37712447.66 -37712447.59 0.0274 0.0260

Venus -107964-07-29 07:11 J -37712218.38 -37712218.20 -37712218.00 0.0272 0.0130

Venus -107963-03-15 17:45 J -37711988.98 -37711988.76 -37711988.55 0.0270 0.0003

Venus -107963-10-31 03:07 J -37711759.55 -37711759.37 -37711759.17 0.0269 0.0127

Venus -107962-06-17 12:14 J -37711530.07 -37711529.99 -37711529.92 0.0267 0.0249

Earth -107961-01-21 17:02 J -37711311.95 -37711311.79 -37711311.61 0.0266 0.0198

Moon -107961-01-21 17:45 J -37711311.94 -37711311.76 -37711311.57 0.0266 0.0189 \*

Mars -107959-07-04 01:11 J -37710417.63 -37710417.45 -37710417.26 0.0263 0.0193

Mars -107957-06-25 17:16 J -37709694.97 -37709694.78 -37709694.59 0.0264 0.0193

Mercury -107954-11-19 10:19 J -37708453.11 -37708453.07 -37708453.02 0.0270 0.0256

Mercury -107953-02-15 23:45 J -37708364.61 -37708364.51 -37708364.39 0.0271 0.0183

Mercury -107953-05-14 13:11 J -37708276.08 -37708275.95 -37708275.81 0.0272 0.0111

Mercury -107953-08-11 02:38 J -37708187.54 -37708187.39 -37708187.25 0.0272 0.0039

Mercury -107953-11-07 15:35 J -37708098.99 -37708098.85 -37708098.71 0.0273 0.0033

Mercury -107952-02-04 04:33 J -37708010.44 -37708010.31 -37708010.18 0.0274 0.0105

Mercury -107952-05-03 17:16 J -37707921.89 -37707921.78 -37707921.67 0.0275 0.0175

Mercury -107952-07-31 05:45 J -37707833.31 -37707833.26 -37707833.19 0.0276 0.0246

Venus -107949-08-23 01:55 J -37706714.47 -37706714.42 -37706714.38 0.0287 0.0279

Venus -107948-04-09 15:07 J -37706485.05 -37706484.87 -37706484.68 0.0289 0.0136

Venus -107948-11-25 05:31 J -37706255.48 -37706255.27 -37706255.07 0.0291 0.0015

Venus -107947-07-12 20:24 J -37706025.81 -37706025.65 -37706025.48 0.0293 0.0167

Moon -107946-07-26 14:52 J -37705647.10 -37705646.88 -37705646.65 0.0295 0.0105

Earth -107946-07-26 17:45 J -37705646.98 -37705646.76 -37705646.53 0.0295 0.0088 \*

Mars -107943-07-29 23:02 J -37704547.81 -37704547.54 -37704547.27 0.0297 0.0153

Mercury -107940-12-11 20:38 J -37703316.75 -37703316.64 -37703316.52 0.0289 0.0201

Mercury -107939-03-10 15:21 J -37703228.01 -37703227.86 -37703227.71 0.0289 0.0106

Mercury -107939-06-07 10:19 J -37703139.24 -37703139.07 -37703138.91 0.0288 0.0012

Mercury -107939-09-04 05:31 J -37703050.43 -37703050.27 -37703050.11 0.0287 0.0087

Mercury -107939-12-02 00:43 J -37702961.59 -37702961.47 -37702961.33 0.0286 0.0186

Mercury -107938-02-28 20:38 J -37702872.65 -37702872.64 -37702872.62 0.0285 0.0283

Venus -107935-06-24 02:52 J -37701661.48 -37701661.38 -37701661.27 0.0274 0.0241

Venus -107934-02-08 14:09 J -37701432.11 -37701431.91 -37701431.71 0.0272 0.0111

Venus -107934-09-26 00:43 J -37701202.69 -37701202.47 -37701202.26 0.0270 0.0019

Venus -107933-05-12 10:04 J -37700973.26 -37700973.08 -37700972.89 0.0269 0.0146

Earth -107931-01-28 10:33 J -37700347.29 -37700347.06 -37700346.82 0.0266 0.0106

Moon -107931-01-28 14:24 J -37700347.13 -37700346.90 -37700346.67 0.0266 0.0106 \*

Mars -107929-08-19 04:48 J -37699413.57 -37699413.30 -37699413.03 0.0264 0.0054

Mercury -107924-07-05 02:38 J -37697632.48 -37697632.39 -37697632.28 0.0271 0.0199

Mercury -107924-10-01 16:04 J -37697543.96 -37697543.83 -37697543.69 0.0271 0.0127

Mercury -107924-12-29 05:31 J -37697455.42 -37697455.27 -37697455.13 0.0272 0.0054

Mercury -107923-03-27 18:28 J -37697366.87 -37697366.73 -37697366.58 0.0273 0.0020

Mercury -107923-06-24 07:26 J -37697278.32 -37697278.19 -37697278.05 0.0274 0.0090

Mercury -107923-09-20 20:09 J -37697189.77 -37697189.66 -37697189.54 0.0274 0.0161

Mercury -107923-12-18 08:52 J -37697101.20 -37697101.13 -37697101.05 0.0275 0.0230

Venus -107919-03-05 10:19 J -37695928.16 -37695928.07 -37695927.98 0.0286 0.0255

Venus -107919-10-20 23:31 J -37695698.71 -37695698.52 -37695698.33 0.0288 0.0110  
 Venus -107918-06-07 13:40 J -37695469.13 -37695468.93 -37695468.73 0.0290 0.0040  
 Venus -107917-01-23 04:33 J -37695239.46 -37695239.31 -37695239.15 0.0292 0.0193  
 Earth -107916-08-02 17:16 J -37694681.84 -37694681.78 -37694681.73 0.0296 0.0286  
 Moon -107916-08-02 20:09 J -37694681.74 -37694681.66 -37694681.55 0.0296 0.0269 \*  
 Mercury -107910-04-30 20:38 J -37692584.74 -37692584.64 -37692584.54 0.0290 0.0229  
 Mercury -107910-07-28 15:07 J -37692496.01 -37692495.87 -37692495.73 0.0289 0.0135  
 Mercury -107910-10-25 09:50 J -37692407.25 -37692407.09 -37692406.93 0.0288 0.0040  
 Mercury -107909-01-22 04:48 J -37692318.46 -37692318.30 -37692318.13 0.0288 0.0058  
 Mercury -107909-04-20 00:14 J -37692229.63 -37692229.49 -37692229.34 0.0287 0.0154  
 Mercury -107909-07-17 19:55 J -37692140.74 -37692140.67 -37692140.59 0.0286 0.0252  
 Venus -107905-01-04 06:00 J -37690875.37 -37690875.25 -37690875.13 0.0274 0.0226  
 Venus -107905-08-20 16:48 J -37690646.00 -37690645.80 -37690645.59 0.0272 0.0095  
 Venus -107904-04-07 03:07 J -37690416.59 -37690416.37 -37690416.16 0.0270 0.0035  
 Venus -107904-11-22 12:28 J -37690187.15 -37690186.98 -37690186.80 0.0269 0.0161  
 Moon -107902-01-22 19:11 J -37689760.91 -37689760.70 -37689760.47 0.0266 0.0135  
 Earth -107902-01-22 22:48 J -37689760.76 -37689760.55 -37689760.32 0.0266 0.0138 \*  
 Mars -107899-10-04 18:43 J -37688409.98 -37688409.72 -37688409.45 0.0264 0.0073  
 Mercury -107895-11-22 03:50 J -37686900.42 -37686900.34 -37686900.25 0.0271 0.0223  
 Mercury -107894-02-18 17:31 J -37686811.89 -37686811.77 -37686811.65 0.0271 0.0150  
 Mercury -107894-05-18 06:43 J -37686723.36 -37686723.22 -37686723.07 0.0272 0.0078  
 Mercury -107894-08-14 19:55 J -37686634.81 -37686634.67 -37686634.52 0.0273 0.0009  
 Mercury -107894-11-11 08:52 J -37686546.26 -37686546.13 -37686545.98 0.0274 0.0067  
 Mercury -107893-02-07 21:50 J -37686457.71 -37686457.59 -37686457.46 0.0274 0.0137  
 Mercury -107893-05-06 10:33 J -37686369.15 -37686369.06 -37686368.97 0.0275 0.0207  
 Venus -107890-09-15 14:24 J -37685142.01 -37685141.90 -37685141.78 0.0287 0.0239  
 Venus -107889-05-02 04:04 J -37684912.52 -37684912.33 -37684912.13 0.0289 0.0093  
 Venus -107889-12-17 18:28 J -37684682.93 -37684682.73 -37684682.53 0.0291 0.0058  
 Venus -107888-08-04 09:35 J -37684453.24 -37684453.10 -37684452.96 0.0293 0.0211  
 Moon -107887-07-28 01:26 J -37684095.66 -37684095.44 -37684095.21 0.0295 0.0027

Earth -107887-07-28 04:04 J -37684095.56 -37684095.33 -37684095.09 0.0295 0.0010 \*  
 Mars -107885-10-29 12:43 J -37683271.28 -37683270.97 -37683270.67 0.0297 0.0062  
 Mercury -107881-09-16 21:07 J -37681852.68 -37681852.62 -37681852.54 0.0290 0.0255  
 Mercury -107881-12-14 15:35 J -37681763.98 -37681763.85 -37681763.71 0.0289 0.0161  
 Mercury -107880-03-13 10:19 J -37681675.22 -37681675.07 -37681674.90 0.0288 0.0067  
 Mercury -107880-06-10 05:31 J -37681586.44 -37681586.27 -37681586.11 0.0287 0.0031  
 Mercury -107880-09-07 00:43 J -37681497.62 -37681497.47 -37681497.32 0.0287 0.0128  
 Mercury -107880-12-04 20:09 J -37681408.75 -37681408.66 -37681408.55 0.0286 0.0226  
 Jupiter -107879-04-18 10:48 J -37681274.51 -37681274.05 -37681273.57 0.0284 0.0077  
 Venus -107876-07-16 12:57 J -37680089.09 -37680088.96 -37680088.81 0.0273 0.0206  
 Venus -107875-03-03 00:00 J -37679859.70 -37679859.50 -37679859.28 0.0272 0.0075  
 Venus -107875-10-18 10:33 J -37679630.27 -37679630.06 -37679629.85 0.0270 0.0055  
 Venus -107874-06-04 19:55 J -37679400.82 -37679400.67 -37679400.51 0.0269 0.0182  
 Earth -107872-01-29 17:16 J -37678795.97 -37678795.78 -37678795.57 0.0266 0.0165  
 Moon -107872-01-29 18:57 J -37678795.90 -37678795.71 -37678795.49 0.0266 0.0163 \*  
 Mars -107871-11-28 06:28 J -37678128.43 -37678128.23 -37678128.01 0.0264 0.0175  
 Mars -107869-11-20 00:57 J -37677405.61 -37677405.46 -37677405.29 0.0265 0.0214  
 Mercury -107865-04-10 06:57 J -37676168.28 -37676168.21 -37676168.14 0.0271 0.0238  
 Mercury -107865-07-07 20:24 J -37676079.76 -37676079.65 -37676079.53 0.0271 0.0165  
 Mercury -107865-10-04 09:50 J -37675991.23 -37675991.09 -37675990.95 0.0272 0.0093  
 Mercury -107865-12-31 23:02 J -37675902.68 -37675902.54 -37675902.39 0.0273 0.0022  
 Mercury -107864-03-30 12:14 J -37675814.13 -37675813.99 -37675813.85 0.0273 0.0052  
 Mercury -107864-06-27 00:57 J -37675725.58 -37675725.46 -37675725.33 0.0274 0.0123  
 Mercury -107864-09-23 13:55 J -37675637.02 -37675636.92 -37675636.82 0.0275 0.0193  
 Mercury -107864-12-21 02:24 J -37675548.44 -37675548.40 -37675548.36 0.0276 0.0263  
 Venus -107860-03-28 00:00 J -37674355.63 -37674355.50 -37674355.36 0.0287 0.0212  
 Venus -107860-11-12 13:26 J -37674126.14 -37674125.94 -37674125.73 0.0289 0.0066  
 Venus -107859-06-30 03:50 J -37673896.53 -37673896.34 -37673896.14 0.0291 0.0086  
 Venus -107858-02-14 18:57 J -37673666.82 -37673666.71 -37673666.59 0.0293 0.0239  
 Earth -107858-07-22 21:50 J -37673508.61 -37673508.59 -37673508.55 0.0294 0.0291

Mars -107855-12-24 13:11 J -37672258.19 -37672257.95 -37672257.69 0.0297 0.0178  
 Mercury -107851-02-03 22:04 J -37671120.62 -37671120.58 -37671120.53 0.0290 0.0279  
 Mercury -107851-05-03 16:33 J -37671031.94 -37671031.81 -37671031.69 0.0289 0.0186  
 Mercury -107851-07-31 11:02 J -37670943.19 -37670943.04 -37670942.88 0.0289 0.0091  
 Mercury -107851-10-28 06:00 J -37670854.42 -37670854.25 -37670854.09 0.0288 0.0005  
 Mercury -107850-01-25 01:11 J -37670765.61 -37670765.45 -37670765.29 0.0287 0.0101  
 Mercury -107850-04-23 20:38 J -37670676.76 -37670676.64 -37670676.52 0.0286 0.0199  
 Venus -107846-01-26 18:00 J -37669302.90 -37669302.75 -37669302.59 0.0273 0.0188  
 Venus -107846-09-13 04:48 J -37669073.51 -37669073.30 -37669073.09 0.0271 0.0057  
 Venus -107845-04-29 14:38 J -37668844.10 -37668843.89 -37668843.68 0.0270 0.0073  
 Venus -107845-12-14 23:31 J -37668614.65 -37668614.52 -37668614.36 0.0268 0.0200  
 Moon -107843-01-24 06:28 J -37668209.46 -37668209.23 -37668208.99 0.0266 0.0072  
 Earth -107843-01-24 08:09 J -37668209.40 -37668209.16 -37668208.91 0.0266 0.0073 \*  
 Mars -107840-01-13 00:14 J -37667124.76 -37667124.49 -37667124.22 0.0264 0.0046  
 Mercury -107836-08-28 08:09 J -37665436.19 -37665436.16 -37665436.12 0.0270 0.0261  
 Mercury -107836-11-24 21:50 J -37665347.69 -37665347.59 -37665347.48 0.0271 0.0188  
 Mercury -107835-02-21 11:16 J -37665259.16 -37665259.03 -37665258.89 0.0272 0.0116  
 Mercury -107835-05-21 00:43 J -37665170.62 -37665170.47 -37665170.33 0.0273 0.0043  
 Mercury -107835-08-17 13:40 J -37665082.07 -37665081.93 -37665081.78 0.0273 0.0030  
 Mercury -107835-11-14 02:38 J -37664993.52 -37664993.39 -37664993.25 0.0274 0.0101  
 Mercury -107834-02-10 15:35 J -37664904.96 -37664904.85 -37664904.74 0.0275 0.0171  
 Mercury -107834-05-10 04:04 J -37664816.39 -37664816.33 -37664816.26 0.0276 0.0242  
 Venus -107831-10-08 04:33 J -37663569.45 -37663569.31 -37663569.15 0.0288 0.0196  
 Venus -107830-05-25 18:28 J -37663339.93 -37663339.73 -37663339.52 0.0290 0.0048  
 Venus -107829-01-10 09:07 J -37663110.31 -37663110.12 -37663109.93 0.0292 0.0106  
 Venus -107829-08-27 00:28 J -37662880.57 -37662880.48 -37662880.38 0.0293 0.0259  
 Earth -107828-07-29 17:31 J -37662543.99 -37662543.77 -37662543.54 0.0295 0.0075  
 Moon -107828-07-29 19:40 J -37662543.90 -37662543.68 -37662543.46 0.0295 0.0060 \*  
 Mars -107826-01-30 12:57 J -37661994.07 -37661993.96 -37661993.83 0.0297 0.0272  
 Mercury -107822-09-20 17:16 J -37660299.89 -37660299.78 -37660299.67 0.0289 0.0210

Mercury -107822-12-18 11:45 J -37660211.15 -37660211.01 -37660210.86 0.0289 0.0117

Mercury -107821-03-16 06:43 J -37660122.38 -37660122.22 -37660122.06 0.0288 0.0021

Mercury -107821-06-13 01:55 J -37660033.58 -37660033.42 -37660033.26 0.0287 0.0076

Mercury -107821-09-09 21:21 J -37659944.75 -37659944.61 -37659944.48 0.0286 0.0173

Mercury -107821-12-07 16:48 J -37659855.84 -37659855.80 -37659855.74 0.0285 0.0272

Venus -107817-08-08 01:26 J -37658516.61 -37658516.44 -37658516.27 0.0273 0.0167

Venus -107816-03-25 12:14 J -37658287.21 -37658286.99 -37658286.77 0.0271 0.0035

Venus -107816-11-09 22:19 J -37658057.77 -37658057.57 -37658057.36 0.0270 0.0094

Venus -107815-06-27 07:26 J -37657828.30 -37657828.19 -37657828.06 0.0268 0.0220

Moon -107813-01-31 23:45 J -37657244.64 -37657244.51 -37657244.35 0.0266 0.0222

Earth -107813-02-01 02:52 J -37657244.49 -37657244.38 -37657244.24 0.0266 0.0230 \*

Mars -107810-03-01 06:14 J -37656120.49 -37656120.24 -37656119.98 0.0264 0.0094

Mercury -107806-04-14 01:11 J -37654615.55 -37654615.45 -37654615.35 0.0271 0.0202

Mercury -107806-07-11 14:38 J -37654527.02 -37654526.89 -37654526.76 0.0272 0.0129

Mercury -107806-10-08 04:04 J -37654438.47 -37654438.33 -37654438.19 0.0273 0.0057

Mercury -107805-01-04 17:16 J -37654349.93 -37654349.78 -37654349.64 0.0273 0.0016

Mercury -107805-04-02 06:14 J -37654261.38 -37654261.24 -37654261.10 0.0274 0.0087

Mercury -107805-06-29 18:57 J -37654172.82 -37654172.71 -37654172.59 0.0275 0.0158

Mercury -107805-09-26 07:40 J -37654084.25 -37654084.18 -37654084.10 0.0275 0.0229

Venus -107801-04-19 15:21 J -37652783.02 -37652782.86 -37652782.68 0.0287 0.0168

Venus -107801-12-05 05:16 J -37652553.48 -37652553.28 -37652553.07 0.0289 0.0018

Venus -107800-07-22 19:55 J -37652323.85 -37652323.67 -37652323.49 0.0291 0.0135

Venus -107799-03-09 11:02 J -37652094.06 -37652094.04 -37652094.00 0.0293 0.0289

Moon -107799-07-24 11:16 J -37651957.18 -37651957.03 -37651956.86 0.0294 0.0219

Earth -107799-07-24 13:40 J -37651957.10 -37651956.93 -37651956.76 0.0294 0.0204 \*

Mars -107796-03-26 19:40 J -37650980.99 -37650980.68 -37650980.37 0.0297 0.0034

Mercury -107792-02-06 18:43 J -37649567.81 -37649567.72 -37649567.62 0.0290 0.0232

Mercury -107792-05-06 13:11 J -37649479.09 -37649478.95 -37649478.81 0.0289 0.0139

Mercury -107792-08-03 07:55 J -37649390.33 -37649390.17 -37649390.01 0.0288 0.0043

Mercury -107792-10-31 02:52 J -37649301.54 -37649301.38 -37649301.21 0.0287 0.0053

Mercury -107791-01-27 22:19 J -37649212.71 -37649212.57 -37649212.43 0.0287 0.0150

Mercury -107791-04-26 17:45 J -37649123.84 -37649123.76 -37649123.67 0.0286 0.0248

Venus -107787-02-18 07:40 J -37647730.36 -37647730.18 -37647729.99 0.0273 0.0148

Venus -107787-10-05 18:14 J -37647500.95 -37647500.74 -37647500.52 0.0271 0.0017

Venus -107786-05-23 03:50 J -37647271.53 -37647271.34 -37647271.14 0.0269 0.0113

Venus -107785-01-07 12:43 J -37647042.06 -37647041.97 -37647041.87 0.0268 0.0238

Earth -107784-01-25 19:55 J -37646657.92 -37646657.67 -37646657.41 0.0266 0.0005

Moon -107784-01-25 22:48 J -37646657.80 -37646657.55 -37646657.30 0.0266 0.0006 \*

Mars -107782-04-24 07:11 J -37645839.40 -37645839.20 -37645838.97 0.0264 0.0166

Mars -107780-04-16 01:26 J -37645116.58 -37645116.44 -37645116.28 0.0264 0.0223

Mercury -107777-08-31 02:38 J -37643883.47 -37643883.39 -37643883.31 0.0271 0.0225

Mercury -107777-11-27 16:04 J -37643794.95 -37643794.83 -37643794.70 0.0271 0.0152

Mercury -107776-02-24 05:31 J -37643706.41 -37643706.27 -37643706.13 0.0272 0.0080

Mercury -107776-05-23 18:43 J -37643617.86 -37643617.72 -37643617.57 0.0273 0.0010

Mercury -107776-08-20 07:55 J -37643529.31 -37643529.17 -37643529.03 0.0274 0.0065

Mercury -107776-11-16 20:52 J -37643440.76 -37643440.63 -37643440.51 0.0274 0.0136

Mercury -107775-02-13 09:21 J -37643352.20 -37643352.11 -37643352.01 0.0275 0.0207

Mercury -107775-05-12 22:04 J -37643263.58 -37643263.58 -37643263.58 0.0276 0.0276

Venus -107772-10-30 19:55 J -37641996.84 -37641996.67 -37641996.49 0.0288 0.0151

Venus -107771-06-17 10:04 J -37641767.29 -37641767.08 -37641766.87 0.0290 0.0001

Venus -107770-02-02 00:43 J -37641537.64 -37641537.47 -37641537.29 0.0292 0.0155

Earth -107769-07-31 08:38 J -37640992.33 -37640992.14 -37640991.94 0.0296 0.0162

Moon -107769-07-31 11:45 J -37640992.20 -37640992.01 -37640991.79 0.0296 0.0149 \*

Mars -107766-05-21 10:33 J -37639968.28 -37639968.06 -37639967.83 0.0297 0.0205

Mercury -107763-06-26 19:26 J -37638835.75 -37638835.69 -37638835.61 0.0290 0.0257

Mercury -107763-09-23 13:55 J -37638747.05 -37638746.92 -37638746.79 0.0289 0.0164

Mercury -107763-12-21 08:38 J -37638658.30 -37638658.14 -37638657.98 0.0288 0.0069

Mercury -107762-03-20 03:35 J -37638569.51 -37638569.35 -37638569.18 0.0287 0.0027

Mercury -107762-06-16 22:48 J -37638480.70 -37638480.55 -37638480.40 0.0287 0.0125

Mercury -107762-09-13 18:28 J -37638391.83 -37638391.73 -37638391.63 0.0286 0.0222

Venus -107758-01-14 04:04 J -37637173.39 -37637173.33 -37637173.25 0.0274 0.0259  
 Venus -107758-08-31 15:21 J -37636944.05 -37636943.86 -37636943.66 0.0272 0.0126  
 Venus -107757-04-17 01:55 J -37636714.64 -37636714.42 -37636714.20 0.0271 0.0006  
 Venus -107757-12-02 11:31 J -37636485.20 -37636485.02 -37636484.82 0.0269 0.0135  
 Venus -107756-07-19 20:24 J -37636255.69 -37636255.65 -37636255.59 0.0268 0.0260  
 Moon -107755-01-20 14:09 J -37636071.04 -37636070.91 -37636070.77 0.0267 0.0227  
 Earth -107755-01-20 17:02 J -37636070.91 -37636070.79 -37636070.65 0.0267 0.0229 \*  
 Mars -107752-06-09 13:26 J -37634835.21 -37634834.94 -37634834.66 0.0264 0.0026  
 Mercury -107747-01-18 05:45 J -37633151.32 -37633151.26 -37633151.19 0.0271 0.0239  
 Mercury -107747-04-16 19:26 J -37633062.80 -37633062.69 -37633062.57 0.0272 0.0166  
 Mercury -107747-07-14 08:52 J -37632974.27 -37632974.13 -37632973.99 0.0272 0.0093  
 Mercury -107747-10-10 22:19 J -37632885.72 -37632885.57 -37632885.43 0.0273 0.0022  
 Mercury -107746-01-07 11:16 J -37632797.17 -37632797.03 -37632796.89 0.0274 0.0051  
 Mercury -107746-04-06 00:14 J -37632708.62 -37632708.49 -37632708.36 0.0275 0.0123  
 Mercury -107746-07-03 12:57 J -37632620.06 -37632619.96 -37632619.86 0.0275 0.0194  
 Mercury -107746-09-30 01:40 J -37632531.47 -37632531.43 -37632531.39 0.0276 0.0263  
 Venus -107743-09-25 17:45 J -37631439.82 -37631439.76 -37631439.68 0.0286 0.0268  
 Venus -107742-05-13 07:11 J -37631210.38 -37631210.20 -37631210.01 0.0288 0.0121  
 Venus -107742-12-28 21:21 J -37630980.81 -37630980.61 -37630980.40 0.0290 0.0032  
 Venus -107741-08-14 12:14 J -37630751.14 -37630750.99 -37630750.83 0.0292 0.0186  
 Moon -107740-07-26 02:38 J -37630405.59 -37630405.39 -37630405.18 0.0294 0.0131  
 Earth -107740-07-26 05:45 J -37630405.47 -37630405.26 -37630405.04 0.0294 0.0116 \*  
 Mars -107738-06-28 05:02 J -37629703.46 -37629703.29 -37629703.11 0.0297 0.0243  
 Mercury -107734-11-13 21:35 J -37628103.64 -37628103.60 -37628103.55 0.0290 0.0276  
 Mercury -107733-02-10 15:50 J -37628014.96 -37628014.84 -37628014.71 0.0289 0.0183  
 Mercury -107733-05-09 10:33 J -37627926.22 -37627926.06 -37627925.91 0.0288 0.0089  
 Mercury -107733-08-06 05:16 J -37627837.44 -37627837.28 -37627837.11 0.0288 0.0009  
 Mercury -107733-11-03 00:28 J -37627748.63 -37627748.48 -37627748.32 0.0287 0.0104  
 Mercury -107732-01-30 19:55 J -37627659.78 -37627659.67 -37627659.55 0.0286 0.0201  
 Venus -107729-07-26 11:45 J -37626387.11 -37626387.01 -37626386.90 0.0274 0.0239



Venus -107728-03-12 22:48 J -37626157.75 -37626157.55 -37626157.35 0.0272 0.0106  
 Venus -107728-10-28 09:07 J -37625928.34 -37625928.12 -37625927.91 0.0270 0.0026  
 Venus -107727-06-14 18:14 J -37625698.91 -37625698.74 -37625698.56 0.0269 0.0154  
 Earth -107725-01-28 09:07 J -37625106.36 -37625106.12 -37625105.87 0.0266 0.0067  
 Moon -107725-01-28 12:28 J -37625106.24 -37625105.98 -37625105.73 0.0266 0.0064 \*  
 Mars -107722-07-26 10:33 J -37623831.30 -37623831.06 -37623830.79 0.0264 0.0105  
 Mercury -107718-06-07 07:11 J -37622419.23 -37622419.20 -37622419.16 0.0270 0.0262  
 Mercury -107718-09-03 21:07 J -37622330.73 -37622330.62 -37622330.52 0.0271 0.0188  
 Mercury -107718-12-01 10:33 J -37622242.19 -37622242.06 -37622241.93 0.0272 0.0115  
 Mercury -107717-02-27 23:45 J -37622153.65 -37622153.51 -37622153.36 0.0273 0.0044  
 Mercury -107717-05-26 12:57 J -37622065.10 -37622064.96 -37622064.81 0.0273 0.0030  
 Mercury -107717-08-23 01:55 J -37621976.55 -37621976.42 -37621976.28 0.0274 0.0101  
 Mercury -107717-11-19 14:52 J -37621887.99 -37621887.88 -37621887.77 0.0275 0.0171  
 Mercury -107716-02-16 03:35 J -37621799.42 -37621799.35 -37621799.29 0.0276 0.0242  
 Venus -107713-04-06 22:19 J -37620653.66 -37620653.57 -37620653.46 0.0287 0.0251  
 Venus -107713-11-22 12:00 J -37620424.20 -37620424.00 -37620423.81 0.0289 0.0103  
 Venus -107712-07-10 02:09 J -37620194.61 -37620194.41 -37620194.20 0.0291 0.0050  
 Venus -107711-02-24 17:16 J -37619964.92 -37619964.78 -37619964.63 0.0293 0.0205  
 Moon -107710-08-03 00:14 J -37619440.62 -37619440.49 -37619440.34 0.0296 0.0240  
 Earth -107710-08-03 00:43 J -37619440.58 -37619440.47 -37619440.34 0.0296 0.0251 \*  
 Mars -107708-08-21 18:00 J -37618691.06 -37618690.75 -37618690.43 0.0297 0.0005  
 Mercury -107704-06-29 16:19 J -37617282.92 -37617282.82 -37617282.70 0.0290 0.0209  
 Mercury -107704-09-26 10:48 J -37617194.19 -37617194.05 -37617193.89 0.0289 0.0116  
 Mercury -107704-12-24 05:45 J -37617105.42 -37617105.26 -37617105.09 0.0288 0.0020  
 Mercury -107703-03-23 00:57 J -37617016.62 -37617016.46 -37617016.30 0.0287 0.0077  
 Mercury -107703-06-19 20:09 J -37616927.79 -37616927.66 -37616927.52 0.0286 0.0175  
 Mercury -107703-09-16 15:50 J -37616838.88 -37616838.84 -37616838.78 0.0285 0.0272  
 Venus -107699-02-05 18:57 J -37615600.83 -37615600.71 -37615600.58 0.0274 0.0218  
 Venus -107699-09-23 06:00 J -37615371.45 -37615371.25 -37615371.04 0.0272 0.0084  
 Venus -107698-05-10 16:04 J -37615142.04 -37615141.83 -37615141.61 0.0270 0.0048

Venus -107698-12-26 01:40 J -37614912.60 -37614912.43 -37614912.27 0.0269 0.0176  
 Moon -107696-01-22 03:21 J -37614519.56 -37614519.36 -37614519.16 0.0266 0.0160  
 Earth -107696-01-22 06:00 J -37614519.44 -37614519.25 -37614519.03 0.0266 0.0158 \*  
 Mars -107694-09-18 22:48 J -37613549.78 -37613549.55 -37613549.32 0.0264 0.0146  
 Mars -107692-09-10 17:31 J -37612826.86 -37612826.77 -37612826.65 0.0265 0.0244  
 Mercury -107688-01-21 00:00 J -37611598.59 -37611598.50 -37611598.39 0.0271 0.0204  
 Mercury -107688-04-19 13:40 J -37611510.06 -37611509.93 -37611509.80 0.0272 0.0130  
 Mercury -107688-07-17 03:07 J -37611421.51 -37611421.37 -37611421.23 0.0273 0.0057  
 Mercury -107688-10-13 16:19 J -37611332.97 -37611332.82 -37611332.68 0.0273 0.0015  
 Mercury -107687-01-10 05:16 J -37611244.41 -37611244.28 -37611244.14 0.0274 0.0087  
 Mercury -107687-04-08 18:14 J -37611155.86 -37611155.74 -37611155.62 0.0275 0.0158  
 Mercury -107687-07-06 06:57 J -37611067.29 -37611067.21 -37611067.13 0.0276 0.0228  
 Venus -107684-10-18 08:52 J -37609867.25 -37609867.13 -37609866.99 0.0287 0.0224  
 Venus -107683-06-04 22:48 J -37609637.75 -37609637.55 -37609637.35 0.0289 0.0074  
 Venus -107682-01-20 13:11 J -37609408.15 -37609407.95 -37609407.75 0.0291 0.0080  
 Venus -107682-09-07 04:19 J -37609178.44 -37609178.32 -37609178.19 0.0292 0.0235  
 Earth -107681-07-27 21:07 J -37608853.85 -37608853.62 -37608853.38 0.0294 0.0028  
 Moon -107681-07-27 21:21 J -37608853.83 -37608853.61 -37608853.38 0.0294 0.0042 \*  
 Mars -107678-10-17 03:50 J -37607677.52 -37607677.34 -37607677.14 0.0296 0.0234  
 Mercury -107675-11-16 18:43 J -37606550.82 -37606550.72 -37606550.63 0.0290 0.0228  
 Mercury -107674-02-13 12:57 J -37606462.10 -37606461.96 -37606461.81 0.0289 0.0134  
 Mercury -107674-05-13 07:40 J -37606373.34 -37606373.18 -37606373.01 0.0288 0.0040  
 Mercury -107674-08-10 02:52 J -37606284.55 -37606284.38 -37606284.22 0.0287 0.0057  
 Mercury -107674-11-06 22:04 J -37606195.72 -37606195.58 -37606195.44 0.0286 0.0154  
 Mercury -107673-02-03 17:45 J -37606106.84 -37606106.76 -37606106.68 0.0286 0.0252  
 Venus -107670-08-19 03:21 J -37604814.50 -37604814.36 -37604814.20 0.0273 0.0197  
 Venus -107669-04-04 13:55 J -37604585.12 -37604584.92 -37604584.70 0.0272 0.0065  
 Venus -107669-11-19 23:45 J -37604355.71 -37604355.51 -37604355.29 0.0270 0.0068  
 Venus -107668-07-07 08:52 J -37604126.27 -37604126.13 -37604125.98 0.0268 0.0196  
 Moon -107666-01-29 21:07 J -37603554.84 -37603554.62 -37603554.38 0.0265 0.0131

Earth -107666-01-29 23:02 J -37603554.76 -37603554.54 -37603554.32 0.0265 0.0140 \*  
 Mars -107664-11-03 22:04 J -37602545.86 -37602545.58 -37602545.30 0.0264 0.0015  
 Mercury -107659-06-10 01:40 J -37600866.51 -37600866.43 -37600866.35 0.0271 0.0225  
 Mercury -107659-09-06 15:21 J -37600777.98 -37600777.86 -37600777.74 0.0271 0.0153  
 Mercury -107659-12-04 04:48 J -37600689.44 -37600689.30 -37600689.16 0.0272 0.0081  
 Mercury -107658-03-02 18:00 J -37600600.90 -37600600.75 -37600600.61 0.0273 0.0009  
 Mercury -107658-05-30 06:57 J -37600512.35 -37600512.21 -37600512.07 0.0274 0.0064  
 Mercury -107658-08-26 19:55 J -37600423.79 -37600423.67 -37600423.54 0.0274 0.0135  
 Mercury -107658-11-23 08:38 J -37600335.23 -37600335.14 -37600335.04 0.0275 0.0206  
 Mercury -107657-02-19 21:21 J -37600246.62 -37600246.61 -37600246.60 0.0276 0.0275  
 Venus -107654-04-30 12:28 J -37599081.11 -37599080.98 -37599080.82 0.0287 0.0209  
 Venus -107654-12-16 02:38 J -37598851.60 -37598851.39 -37598851.19 0.0290 0.0058  
 Venus -107653-08-01 17:02 J -37598621.98 -37598621.79 -37598621.59 0.0291 0.0097  
 Venus -107652-03-19 08:24 J -37598392.25 -37598392.15 -37598392.04 0.0293 0.0253  
 Mars -107650-11-22 21:35 J -37597413.81 -37597413.60 -37597413.38 0.0297 0.0216  
 Mercury -107645-04-04 18:43 J -37595818.79 -37595818.72 -37595818.64 0.0290 0.0256  
 Mercury -107645-07-02 13:11 J -37595730.08 -37595729.95 -37595729.82 0.0289 0.0163  
 Mercury -107645-09-29 07:40 J -37595641.33 -37595641.18 -37595641.02 0.0288 0.0068  
 Mercury -107645-12-27 02:38 J -37595552.55 -37595552.39 -37595552.22 0.0288 0.0030  
 Mercury -107644-03-25 21:50 J -37595463.73 -37595463.59 -37595463.43 0.0287 0.0126  
 Mercury -107644-06-22 17:31 J -37595374.87 -37595374.77 -37595374.66 0.0286 0.0223  
 Venus -107640-02-28 09:21 J -37594028.26 -37594028.11 -37594027.93 0.0273 0.0177  
 Venus -107640-10-15 20:24 J -37593798.86 -37593798.65 -37593798.43 0.0271 0.0043  
 Venus -107639-06-02 06:14 J -37593569.45 -37593569.24 -37593569.03 0.0269 0.0088  
 Venus -107638-01-17 15:07 J -37593339.99 -37593339.87 -37593339.74 0.0268 0.0216  
 Earth -107637-01-24 18:43 J -37592967.96 -37592967.72 -37592967.47 0.0266 0.0087  
 Moon -107637-01-24 20:52 J -37592967.86 -37592967.63 -37592967.39 0.0266 0.0093 \*  
 Mars -107634-12-21 00:28 J -37591541.71 -37591541.48 -37591541.23 0.0264 0.0124  
 Mercury -107630-10-28 04:19 J -37590134.38 -37590134.32 -37590134.24 0.0271 0.0242  
 Mercury -107629-01-24 18:14 J -37590045.86 -37590045.74 -37590045.63 0.0272 0.0169

Mercury -107629-04-22 07:40 J -37589957.32 -37589957.18 -37589957.04 0.0272 0.0096

Mercury -107629-07-19 20:52 J -37589868.77 -37589868.63 -37589868.48 0.0273 0.0024

Mercury -107629-10-16 10:04 J -37589780.22 -37589780.08 -37589779.94 0.0274 0.0049

Mercury -107628-01-12 23:02 J -37589691.67 -37589691.54 -37589691.41 0.0275 0.0120

Mercury -107628-04-11 11:45 J -37589603.11 -37589603.01 -37589602.90 0.0275 0.0191

Mercury -107628-07-09 00:28 J -37589514.52 -37589514.48 -37589514.43 0.0276 0.0261

Venus -107625-11-09 23:02 J -37588294.70 -37588294.54 -37588294.38 0.0288 0.0181

Venus -107624-06-27 12:57 J -37588065.16 -37588064.96 -37588064.75 0.0290 0.0029

Venus -107623-02-12 03:35 J -37587835.53 -37587835.35 -37587835.16 0.0291 0.0128

Venus -107623-09-29 19:26 J -37587605.74 -37587605.69 -37587605.64 0.0293 0.0284

Earth -107622-07-30 10:48 J -37587302.27 -37587302.05 -37587301.81 0.0295 0.0056

Moon -107622-07-30 14:24 J -37587302.13 -37587301.90 -37587301.67 0.0295 0.0043 \*

Mars -107619-01-17 07:40 J -37586400.49 -37586400.18 -37586399.87 0.0297 0.0022

Mercury -107616-08-22 20:52 J -37585086.67 -37585086.63 -37585086.57 0.0290 0.0274

Mercury -107616-11-19 15:21 J -37584997.99 -37584997.86 -37584997.74 0.0289 0.0181

Mercury -107615-02-16 09:50 J -37584909.24 -37584909.09 -37584908.93 0.0289 0.0087

Mercury -107615-05-16 04:48 J -37584820.47 -37584820.30 -37584820.14 0.0288 0.0009

Mercury -107615-08-12 23:45 J -37584731.66 -37584731.51 -37584731.35 0.0287 0.0106

Mercury -107615-11-09 19:11 J -37584642.81 -37584642.70 -37584642.57 0.0286 0.0203

Venus -107611-09-10 18:14 J -37583241.91 -37583241.74 -37583241.56 0.0273 0.0156

Venus -107610-04-28 04:33 J -37583012.53 -37583012.31 -37583012.09 0.0271 0.0023

Venus -107610-12-13 13:55 J -37582783.11 -37582782.92 -37582782.72 0.0269 0.0109

Venus -107609-07-29 22:33 J -37582553.65 -37582553.56 -37582553.45 0.0268 0.0236

Moon -107607-01-31 07:40 J -37582003.33 -37582003.18 -37582003.00 0.0265 0.0199

Earth -107607-01-31 11:45 J -37582003.16 -37582003.01 -37582002.85 0.0265 0.0209 \*

Mars -107605-02-13 07:26 J -37581260.41 -37581260.19 -37581259.94 0.0264 0.0134

Mars -107603-02-04 23:31 J -37580537.58 -37580537.52 -37580537.42 0.0264 0.0253

Mercury -107600-03-16 06:00 J -37579402.28 -37579402.25 -37579402.22 0.0270 0.0264

Mercury -107600-06-12 19:40 J -37579313.78 -37579313.68 -37579313.58 0.0271 0.0191

Mercury -107600-09-09 09:07 J -37579225.25 -37579225.12 -37579224.99 0.0271 0.0119

Mercury -107600-12-06 22:33 J -37579136.71 -37579136.56 -37579136.42 0.0272 0.0047  
 Mercury -107599-03-05 11:31 J -37579048.16 -37579048.02 -37579047.87 0.0273 0.0027  
 Mercury -107599-06-02 00:43 J -37578959.61 -37578959.47 -37578959.34 0.0274 0.0097  
 Mercury -107599-08-29 13:26 J -37578871.05 -37578870.94 -37578870.83 0.0275 0.0167  
 Mercury -107599-11-26 02:09 J -37578782.48 -37578782.41 -37578782.34 0.0275 0.0237  
 Venus -107595-05-23 01:40 J -37577508.59 -37577508.43 -37577508.25 0.0288 0.0166  
 Venus -107594-01-07 15:50 J -37577279.05 -37577278.84 -37577278.64 0.0290 0.0013  
 Venus -107594-08-25 06:28 J -37577049.41 -37577049.23 -37577049.05 0.0292 0.0143  
 Moon -107593-07-23 14:52 J -37576715.99 -37576715.88 -37576715.76 0.0294 0.0256  
 Earth -107593-07-23 18:14 J -37576715.86 -37576715.74 -37576715.60 0.0294 0.0241 \*  
 Mars -107589-03-12 11:16 J -37575388.17 -37575388.03 -37575387.86 0.0297 0.0258  
 Mercury -107586-04-08 14:38 J -37574265.99 -37574265.89 -37574265.78 0.0290 0.0213  
 Mercury -107586-07-06 09:07 J -37574177.26 -37574177.12 -37574176.97 0.0289 0.0119  
 Mercury -107586-10-03 04:04 J -37574088.50 -37574088.33 -37574088.17 0.0288 0.0024  
 Mercury -107586-12-30 23:02 J -37573999.70 -37573999.54 -37573999.38 0.0287 0.0074  
 Mercury -107585-03-28 18:28 J -37573910.86 -37573910.73 -37573910.59 0.0286 0.0171  
 Mercury -107585-06-25 14:09 J -37573821.96 -37573821.91 -37573821.85 0.0286 0.0268  
 Venus -107582-08-06 11:45 J -37572685.04 -37572685.01 -37572684.98 0.0274 0.0272  
 Venus -107581-03-22 22:48 J -37572455.73 -37572455.55 -37572455.36 0.0272 0.0138  
 Venus -107581-11-07 09:21 J -37572226.32 -37572226.11 -37572225.89 0.0271 0.0006  
 Venus -107580-06-24 18:57 J -37571996.90 -37571996.71 -37571996.51 0.0269 0.0128  
 Venus -107579-02-09 03:50 J -37571767.40 -37571767.34 -37571767.27 0.0268 0.0255  
 Earth -107578-01-26 06:00 J -37571416.51 -37571416.25 -37571416.00 0.0266 0.0019  
 Moon -107578-01-26 09:50 J -37571416.35 -37571416.09 -37571415.84 0.0266 0.0028 \*  
 Mars -107575-03-31 06:00 J -37570256.52 -37570256.25 -37570255.97 0.0264 0.0004  
 Mercury -107571-10-30 22:04 J -37568581.67 -37568581.58 -37568581.48 0.0271 0.0210  
 Mercury -107570-01-27 11:45 J -37568493.14 -37568493.01 -37568492.88 0.0272 0.0137  
 Mercury -107570-04-26 00:57 J -37568404.60 -37568404.46 -37568404.31 0.0273 0.0065  
 Mercury -107570-07-23 14:24 J -37568316.05 -37568315.90 -37568315.76 0.0273 0.0012  
 Mercury -107570-10-20 03:21 J -37568227.50 -37568227.36 -37568227.22 0.0274 0.0080

Mercury -107569-01-16 16:04 J -37568138.94 -37568138.83 -37568138.70 0.0275 0.0151  
 Mercury -107569-04-14 05:02 J -37568050.37 -37568050.29 -37568050.21 0.0276 0.0221  
 Venus -107566-12-03 10:33 J -37566722.23 -37566722.06 -37566721.87 0.0288 0.0141  
 Venus -107565-07-20 00:57 J -37566492.67 -37566492.46 -37566492.26 0.0290 0.0014  
 Venus -107564-03-06 15:50 J -37566263.00 -37566262.84 -37566262.67 0.0292 0.0172  
 Earth -107563-07-31 20:52 J -37565750.84 -37565750.63 -37565750.42 0.0295 0.0131  
 Moon -107563-07-31 22:04 J -37565750.80 -37565750.58 -37565750.36 0.0295 0.0120 \*  
 Mars -107561-04-19 00:28 J -37565123.71 -37565123.48 -37565123.24 0.0297 0.0193  
 Mercury -107557-08-25 16:33 J -37563533.89 -37563533.81 -37563533.71 0.0290 0.0233  
 Mercury -107557-11-22 11:02 J -37563445.18 -37563445.04 -37563444.89 0.0289 0.0139  
 Mercury -107556-02-19 06:00 J -37563356.42 -37563356.25 -37563356.09 0.0288 0.0044  
 Mercury -107556-05-19 00:57 J -37563267.62 -37563267.46 -37563267.30 0.0287 0.0052  
 Mercury -107556-08-15 20:09 J -37563178.80 -37563178.66 -37563178.51 0.0287 0.0150  
 Mercury -107556-11-12 15:50 J -37563089.92 -37563089.84 -37563089.75 0.0286 0.0247  
 Venus -107552-02-15 20:09 J -37561898.73 -37561898.66 -37561898.57 0.0274 0.0252  
 Venus -107552-10-03 07:11 J -37561669.38 -37561669.20 -37561668.99 0.0272 0.0118  
 Venus -107551-05-20 17:31 J -37561439.99 -37561439.77 -37561439.55 0.0271 0.0017  
 Venus -107550-01-05 02:38 J -37561210.57 -37561210.39 -37561210.20 0.0269 0.0148  
 Moon -107549-01-20 22:48 J -37560829.63 -37560829.55 -37560829.45 0.0267 0.0249  
 Earth -107549-01-21 01:55 J -37560829.51 -37560829.42 -37560829.30 0.0267 0.0242 \*  
 Moon -107548-02-01 22:33 J -37560451.57 -37560451.56 -37560451.53 0.0265 0.0263  
 Mars -107547-05-24 13:11 J -37559975.03 -37559974.95 -37559974.86 0.0264 0.0250  
 Mars -107545-05-16 03:21 J -37559252.59 -37559252.36 -37559252.11 0.0264 0.0134  
 Mercury -107541-03-18 23:31 J -37557849.59 -37557849.52 -37557849.45 0.0270 0.0233  
 Mercury -107541-06-15 12:57 J -37557761.07 -37557760.96 -37557760.84 0.0271 0.0160  
 Mercury -107541-09-12 02:24 J -37557672.54 -37557672.40 -37557672.26 0.0272 0.0088  
 Mercury -107541-12-09 15:35 J -37557583.99 -37557583.85 -37557583.70 0.0272 0.0019  
 Mercury -107540-03-08 04:48 J -37557495.44 -37557495.30 -37557495.16 0.0273 0.0056  
 Mercury -107540-06-04 17:45 J -37557406.89 -37557406.76 -37557406.63 0.0274 0.0127  
 Mercury -107540-09-01 06:28 J -37557318.33 -37557318.23 -37557318.13 0.0275 0.0197

Mercury -107540-11-28 18:57 J -37557229.73 -37557229.71 -37557229.67 0.0275 0.0267  
 Venus -107537-10-27 23:31 J -37556165.57 -37556165.52 -37556165.45 0.0286 0.0274  
 Venus -107536-06-14 12:57 J -37555936.14 -37555935.96 -37555935.77 0.0288 0.0125  
 Venus -107535-01-30 03:07 J -37555706.58 -37555706.37 -37555706.17 0.0290 0.0030  
 Venus -107535-09-16 18:00 J -37555476.90 -37555476.75 -37555476.59 0.0292 0.0187  
 Moon -107534-07-26 01:40 J -37555164.61 -37555164.43 -37555164.25 0.0294 0.0180  
 Earth -107534-07-26 02:09 J -37555164.59 -37555164.41 -37555164.20 0.0294 0.0169 \*  
 Mars -107531-06-13 00:28 J -37554111.79 -37554111.48 -37554111.17 0.0297 0.0042  
 Mercury -107527-01-12 15:35 J -37552801.90 -37552801.85 -37552801.78 0.0290 0.0267  
 Mercury -107527-04-11 09:50 J -37552713.21 -37552713.09 -37552712.95 0.0290 0.0174  
 Mercury -107527-07-09 04:33 J -37552624.46 -37552624.31 -37552624.15 0.0289 0.0079  
 Mercury -107527-10-05 23:31 J -37552535.68 -37552535.52 -37552535.35 0.0288 0.0018  
 Mercury -107526-01-02 18:43 J -37552446.87 -37552446.72 -37552446.56 0.0287 0.0115  
 Mercury -107526-04-01 14:09 J -37552358.01 -37552357.91 -37552357.79 0.0286 0.0213  
 Venus -107523-08-28 23:31 J -37551112.62 -37551112.52 -37551112.40 0.0274 0.0235  
 Venus -107522-04-15 10:33 J -37550883.26 -37550883.06 -37550882.85 0.0272 0.0100  
 Venus -107522-11-30 20:52 J -37550653.85 -37550653.63 -37550653.41 0.0270 0.0035  
 Venus -107521-07-17 06:14 J -37550424.41 -37550424.24 -37550424.07 0.0269 0.0166  
 Moon -107519-01-27 13:11 J -37549865.21 -37549864.95 -37549864.68 0.0266 0.0033  
 Earth -107519-01-27 14:24 J -37549865.15 -37549864.90 -37549864.65 0.0266 0.0045 \*  
 Mars -107517-07-09 08:52 J -37548971.37 -37548971.13 -37548970.87 0.0264 0.0120  
 Mercury -107512-08-06 01:26 J -37547117.49 -37547117.44 -37547117.39 0.0271 0.0253  
 Mercury -107512-11-02 15:07 J -37547028.98 -37547028.87 -37547028.76 0.0271 0.0180  
 Mercury -107511-01-30 04:33 J -37546940.44 -37546940.31 -37546940.17 0.0272 0.0108  
 Mercury -107511-04-28 18:00 J -37546851.90 -37546851.75 -37546851.61 0.0273 0.0036  
 Mercury -107511-07-26 06:57 J -37546763.35 -37546763.21 -37546763.06 0.0273 0.0037  
 Mercury -107511-10-22 19:55 J -37546674.80 -37546674.67 -37546674.53 0.0274 0.0108  
 Mercury -107510-01-19 08:52 J -37546586.24 -37546586.13 -37546586.02 0.0275 0.0178  
 Mercury -107510-04-17 21:35 J -37546497.66 -37546497.60 -37546497.54 0.0276 0.0248  
 Venus -107507-05-10 06:57 J -37545379.30 -37545379.21 -37545379.11 0.0287 0.0253

Venus -107507-12-25 20:24 J -37545149.84 -37545149.65 -37545149.45 0.0289 0.0102  
 Venus -107506-08-12 10:48 J -37544920.25 -37544920.05 -37544919.84 0.0291 0.0055  
 Venus -107505-03-29 01:55 J -37544690.55 -37544690.42 -37544690.27 0.0292 0.0214  
 Moon -107504-08-01 23:31 J -37544199.69 -37544199.52 -37544199.33 0.0295 0.0193  
 Earth -107504-08-02 02:52 J -37544199.55 -37544199.38 -37544199.21 0.0295 0.0200 \*  
 Mars -107501-08-07 00:57 J -37543098.56 -37543098.46 -37543098.32 0.0296 0.0274  
 Mercury -107498-06-01 17:02 J -37542069.79 -37542069.79 -37542069.77 0.0290 0.0289  
 Mercury -107498-08-29 11:31 J -37541981.14 -37541981.02 -37541980.90 0.0290 0.0196  
 Mercury -107498-11-26 06:00 J -37541892.40 -37541892.25 -37541892.10 0.0289 0.0102  
 Mercury -107497-02-23 00:57 J -37541803.63 -37541803.46 -37541803.30 0.0288 0.0007  
 Mercury -107497-05-21 19:55 J -37541714.82 -37541714.67 -37541714.51 0.0287 0.0092  
 Mercury -107497-08-18 15:21 J -37541625.98 -37541625.86 -37541625.73 0.0286 0.0189  
 Venus -107493-03-10 07:26 J -37540326.32 -37540326.19 -37540326.06 0.0274 0.0216  
 Venus -107493-10-25 18:28 J -37540096.94 -37540096.73 -37540096.52 0.0272 0.0080  
 Venus -107492-06-12 04:19 J -37539867.53 -37539867.32 -37539867.10 0.0270 0.0055  
 Venus -107491-01-27 13:26 J -37539638.09 -37539637.94 -37539637.78 0.0269 0.0185  
 Earth -107490-01-22 10:19 J -37539278.26 -37539278.07 -37539277.88 0.0266 0.0177  
 Moon -107490-01-22 11:16 J -37539278.20 -37539278.03 -37539277.85 0.0266 0.0187 \*  
 Mars -107487-08-25 06:57 J -37537967.48 -37537967.21 -37537966.93 0.0263 0.0014  
 Mercury -107482-03-22 16:19 J -37536296.91 -37536296.82 -37536296.72 0.0270 0.0204  
 Mercury -107482-06-19 06:00 J -37536208.38 -37536208.25 -37536208.12 0.0271 0.0131  
 Mercury -107482-09-15 19:11 J -37536119.84 -37536119.70 -37536119.55 0.0272 0.0060  
 Mercury -107482-12-13 08:24 J -37536031.29 -37536031.15 -37536031.00 0.0272 0.0012  
 Mercury -107481-03-10 21:21 J -37535942.74 -37535942.61 -37535942.47 0.0273 0.0083  
 Mercury -107481-06-07 10:04 J -37535854.19 -37535854.08 -37535853.95 0.0274 0.0154  
 Mercury -107481-09-03 22:48 J -37535765.62 -37535765.55 -37535765.46 0.0275 0.0224  
 Venus -107478-11-20 08:24 J -37534593.25 -37534593.15 -37534593.03 0.0286 0.0239  
 Venus -107477-07-06 21:50 J -37534363.79 -37534363.59 -37534363.39 0.0289 0.0088  
 Venus -107476-02-21 12:00 J -37534134.20 -37534134.00 -37534133.80 0.0291 0.0069  
 Venus -107476-10-09 03:07 J -37533904.50 -37533904.37 -37533904.24 0.0293 0.0227



Earth -107475-07-27 06:14 J -37533613.46 -37533613.24 -37533613.02 0.0295 0.0104  
 Moon -107475-07-27 09:35 J -37533613.31 -37533613.10 -37533612.88 0.0295 0.0113 \*  
 Mars -107473-09-12 00:57 J -37532835.70 -37532835.46 -37532835.20 0.0297 0.0180  
 Mercury -107468-01-15 09:50 J -37531249.18 -37531249.09 -37531249.00 0.0290 0.0233  
 Mercury -107468-04-14 04:19 J -37531160.46 -37531160.32 -37531160.18 0.0290 0.0139  
 Mercury -107468-07-11 23:02 J -37531071.70 -37531071.54 -37531071.38 0.0289 0.0044  
 Mercury -107468-10-08 18:00 J -37530982.91 -37530982.75 -37530982.59 0.0288 0.0053  
 Mercury -107467-01-05 13:26 J -37530894.08 -37530893.94 -37530893.80 0.0287 0.0150  
 Mercury -107467-04-04 08:52 J -37530805.20 -37530805.13 -37530805.04 0.0286 0.0249  
 Venus -107464-09-20 09:07 J -37529540.25 -37529540.12 -37529539.96 0.0274 0.0201  
 Venus -107463-05-07 20:09 J -37529310.86 -37529310.66 -37529310.44 0.0272 0.0065  
 Venus -107463-12-23 06:14 J -37529081.44 -37529081.24 -37529081.02 0.0270 0.0071  
 Venus -107462-08-09 15:21 J -37528851.99 -37528851.86 -37528851.71 0.0268 0.0201  
 Moon -107460-01-28 15:50 J -37528314.08 -37528313.84 -37528313.60 0.0265 0.0088  
 Earth -107460-01-28 19:40 J -37528313.91 -37528313.68 -37528313.44 0.0265 0.0103 \*  
 Mars -107459-10-18 07:26 J -37527686.29 -37527686.19 -37527686.07 0.0264 0.0241  
 Mars -107457-10-09 22:04 J -37526963.80 -37526963.58 -37526963.34 0.0264 0.0144  
 Mercury -107453-08-08 18:00 J -37525564.83 -37525564.75 -37525564.67 0.0271 0.0226  
 Mercury -107453-11-05 07:26 J -37525476.30 -37525476.19 -37525476.06 0.0271 0.0154  
 Mercury -107452-02-01 20:52 J -37525387.77 -37525387.63 -37525387.48 0.0272 0.0082  
 Mercury -107452-05-01 10:19 J -37525299.22 -37525299.07 -37525298.93 0.0273 0.0013  
 Mercury -107452-07-28 23:16 J -37525210.67 -37525210.53 -37525210.39 0.0273 0.0062  
 Mercury -107452-10-25 12:14 J -37525122.12 -37525121.99 -37525121.87 0.0274 0.0133  
 Mercury -107451-01-22 00:43 J -37525033.56 -37525033.47 -37525033.37 0.0275 0.0203  
 Mercury -107451-04-20 13:26 J -37524944.95 -37524944.94 -37524944.92 0.0276 0.0272  
 Venus -107448-06-01 14:09 J -37523807.03 -37523806.91 -37523806.76 0.0287 0.0219  
 Venus -107447-01-17 04:04 J -37523577.53 -37523577.33 -37523577.13 0.0289 0.0066  
 Venus -107447-09-03 18:28 J -37523347.92 -37523347.73 -37523347.53 0.0291 0.0092  
 Venus -107446-04-21 10:04 J -37523118.18 -37523118.08 -37523117.98 0.0293 0.0251  
 Moon -107445-08-03 02:38 J -37522648.50 -37522648.39 -37522648.28 0.0295 0.0258

Earth -107445-08-03 04:33 J -37522648.41 -37522648.31 -37522648.19 0.0295 0.0260 \*  
 Mars -107443-11-06 22:48 J -37521822.85 -37521822.55 -37521822.23 0.0297 0.0053  
 Mercury -107439-06-04 11:02 J -37520517.12 -37520517.04 -37520516.97 0.0290 0.0257  
 Mercury -107439-09-01 05:16 J -37520428.41 -37520428.28 -37520428.15 0.0290 0.0163  
 Mercury -107439-11-29 00:00 J -37520339.66 -37520339.50 -37520339.34 0.0289 0.0068  
 Mercury -107438-02-25 18:57 J -37520250.87 -37520250.71 -37520250.54 0.0288 0.0028  
 Mercury -107438-05-25 14:09 J -37520162.06 -37520161.91 -37520161.76 0.0287 0.0125  
 Mercury -107438-08-22 09:35 J -37520073.19 -37520073.10 -37520072.99 0.0286 0.0224  
 Venus -107434-04-02 16:19 J -37518753.97 -37518753.82 -37518753.65 0.0274 0.0183  
 Venus -107434-11-18 03:21 J -37518524.57 -37518524.36 -37518524.14 0.0272 0.0046  
 Venus -107433-07-04 13:11 J -37518295.15 -37518294.95 -37518294.74 0.0270 0.0089  
 Venus -107432-02-18 22:04 J -37518065.69 -37518065.58 -37518065.44 0.0268 0.0220  
 Earth -107431-01-23 15:07 J -37517727.10 -37517726.87 -37517726.64 0.0266 0.0118  
 Moon -107431-01-23 18:43 J -37517726.94 -37517726.72 -37517726.49 0.0266 0.0130 \*  
 Mars -107429-12-03 06:57 J -37516682.46 -37516682.21 -37516681.96 0.0263 0.0106  
 Mercury -107424-12-26 19:11 J -37514832.75 -37514832.70 -37514832.64 0.0270 0.0250  
 Mercury -107423-03-25 08:52 J -37514744.24 -37514744.13 -37514744.02 0.0270 0.0177  
 Mercury -107423-06-21 22:19 J -37514655.71 -37514655.57 -37514655.43 0.0271 0.0105  
 Mercury -107423-09-18 11:31 J -37514567.16 -37514567.02 -37514566.87 0.0272 0.0034  
 Mercury -107423-12-16 00:28 J -37514478.62 -37514478.48 -37514478.33 0.0272 0.0039  
 Mercury -107422-03-14 13:26 J -37514390.07 -37514389.94 -37514389.80 0.0273 0.0108  
 Mercury -107422-06-11 02:09 J -37514301.51 -37514301.41 -37514301.30 0.0274 0.0178  
 Mercury -107422-09-07 14:52 J -37514212.94 -37514212.88 -37514212.82 0.0275 0.0247  
 Venus -107419-12-12 15:35 J -37513020.99 -37513020.85 -37513020.70 0.0287 0.0205  
 Venus -107418-07-30 05:02 J -37512791.49 -37512791.29 -37512791.09 0.0289 0.0052  
 Venus -107417-03-15 19:11 J -37512561.88 -37512561.70 -37512561.50 0.0291 0.0106  
 Venus -107417-10-31 10:19 J -37512332.14 -37512332.07 -37512331.97 0.0293 0.0265  
 Earth -107416-07-28 07:11 J -37512062.43 -37512062.20 -37512061.97 0.0295 0.0046  
 Moon -107416-07-28 08:38 J -37512062.38 -37512062.14 -37512061.90 0.0295 0.0048 \*  
 Mars -107413-12-30 12:43 J -37510811.06 -37510810.97 -37510810.86 0.0297 0.0280

Mercury -107409-01-19 02:52 J -37509696.49 -37509696.38 -37509696.26 0.0290 0.0203  
 Mercury -107409-04-16 21:35 J -37509607.75 -37509607.60 -37509607.45 0.0289 0.0108  
 Mercury -107409-07-14 16:19 J -37509518.98 -37509518.82 -37509518.65 0.0289 0.0015  
 Mercury -107409-10-11 11:31 J -37509430.18 -37509430.02 -37509429.86 0.0288 0.0084  
 Mercury -107408-01-08 06:57 J -37509341.33 -37509341.21 -37509341.08 0.0287 0.0182  
 Mercury -107408-04-07 02:38 J -37509252.41 -37509252.39 -37509252.35 0.0286 0.0280  
 Venus -107405-10-12 16:48 J -37507967.96 -37507967.80 -37507967.62 0.0273 0.0169  
 Venus -107404-05-30 03:50 J -37507738.55 -37507738.34 -37507738.12 0.0271 0.0031  
 Venus -107403-01-14 13:40 J -37507509.12 -37507508.93 -37507508.72 0.0270 0.0104  
 Venus -107403-08-31 22:48 J -37507279.65 -37507279.55 -37507279.44 0.0268 0.0234  
 Earth -107401-01-30 22:04 J -37506762.77 -37506762.58 -37506762.36 0.0265 0.0157  
 Moon -107401-01-30 22:04 J -37506762.77 -37506762.58 -37506762.36 0.0265 0.0144 \*  
 Mars -107398-01-18 18:43 J -37505678.99 -37505678.72 -37505678.44 0.0263 0.0021  
 Mercury -107394-08-12 10:04 J -37504012.18 -37504012.08 -37504011.98 0.0271 0.0202  
 Mercury -107394-11-08 23:31 J -37503923.65 -37503923.52 -37503923.39 0.0271 0.0130  
 Mercury -107393-02-05 12:57 J -37503835.11 -37503834.96 -37503834.82 0.0272 0.0058  
 Mercury -107393-05-04 02:09 J -37503746.56 -37503746.41 -37503746.27 0.0273 0.0016  
 Mercury -107393-07-31 14:52 J -37503658.01 -37503657.88 -37503657.74 0.0273 0.0086  
 Mercury -107393-10-28 03:50 J -37503569.46 -37503569.34 -37503569.22 0.0274 0.0155  
 Mercury -107392-01-24 16:33 J -37503480.89 -37503480.81 -37503480.73 0.0275 0.0225  
 Venus -107389-06-23 20:09 J -37502234.81 -37502234.66 -37502234.50 0.0287 0.0186  
 Venus -107388-02-08 09:50 J -37502005.30 -37502005.09 -37502004.89 0.0289 0.0032  
 Venus -107388-09-26 00:14 J -37501775.67 -37501775.49 -37501775.30 0.0291 0.0127  
 Venus -107387-05-13 15:35 J -37501545.88 -37501545.85 -37501545.80 0.0293 0.0287  
 Mars -107384-02-05 08:52 J -37500547.37 -37500547.13 -37500546.87 0.0297 0.0174  
 Mercury -107380-06-07 03:35 J -37498964.44 -37498964.35 -37498964.25 0.0290 0.0229  
 Mercury -107380-09-03 22:04 J -37498875.72 -37498875.58 -37498875.44 0.0290 0.0136  
 Mercury -107380-12-01 16:48 J -37498786.96 -37498786.80 -37498786.63 0.0289 0.0041  
 Mercury -107379-02-28 12:00 J -37498698.16 -37498698.00 -37498697.84 0.0288 0.0057  
 Mercury -107379-05-28 07:11 J -37498609.33 -37498609.20 -37498609.05 0.0287 0.0155

Mercury -107379-08-25 02:52 J -37498520.45 -37498520.38 -37498520.29 0.0286 0.0252

Venus -107375-04-24 23:16 J -37497181.70 -37497181.53 -37497181.34 0.0273 0.0151

Venus -107375-12-10 10:19 J -37496952.29 -37496952.07 -37496951.86 0.0272 0.0014

Venus -107374-07-27 19:55 J -37496722.86 -37496722.67 -37496722.47 0.0270 0.0122

Venus -107373-03-13 05:02 J -37496493.36 -37496493.29 -37496493.21 0.0268 0.0251

Moon -107372-01-24 17:16 J -37496176.04 -37496175.78 -37496175.53 0.0266 0.0077

Earth -107372-01-24 17:02 J -37496176.03 -37496175.79 -37496175.54 0.0266 0.0064 \*

Mars -107370-03-14 00:57 J -37495397.60 -37495397.46 -37495397.32 0.0264 0.0226

Mars -107368-03-05 14:09 J -37494675.13 -37494674.91 -37494674.68 0.0263 0.0154

Mercury -107365-12-29 11:16 J -37493280.11 -37493280.03 -37493279.95 0.0270 0.0225

Mercury -107364-03-28 00:43 J -37493191.59 -37493191.47 -37493191.34 0.0270 0.0154

Mercury -107364-06-24 14:09 J -37493103.05 -37493102.91 -37493102.77 0.0271 0.0082

Mercury -107364-09-21 03:21 J -37493014.51 -37493014.36 -37493014.21 0.0272 0.0011

Mercury -107364-12-18 16:19 J -37492925.96 -37492925.82 -37492925.68 0.0272 0.0060

Mercury -107363-03-17 05:02 J -37492837.41 -37492837.29 -37492837.16 0.0273 0.0131

Mercury -107363-06-13 18:00 J -37492748.85 -37492748.75 -37492748.66 0.0274 0.0200

Mercury -107363-09-10 06:28 J -37492660.25 -37492660.23 -37492660.20 0.0275 0.0269

Venus -107359-01-03 21:07 J -37491448.78 -37491448.62 -37491448.45 0.0287 0.0172

Venus -107359-08-21 10:33 J -37491219.27 -37491219.06 -37491218.85 0.0289 0.0017

Venus -107358-04-08 00:57 J -37490989.64 -37490989.46 -37490989.28 0.0291 0.0141

Moon -107357-07-29 01:55 J -37490511.66 -37490511.42 -37490511.18 0.0294 0.0012

Earth -107357-07-29 05:16 J -37490511.51 -37490511.28 -37490511.04 0.0294 0.0008 \*

Mars -107354-03-31 21:35 J -37489535.91 -37489535.60 -37489535.29 0.0297 0.0055

Mercury -107351-10-25 01:11 J -37488232.50 -37488232.45 -37488232.39 0.0291 0.0269

Mercury -107350-01-21 19:26 J -37488143.81 -37488143.69 -37488143.56 0.0290 0.0177

Mercury -107350-04-20 14:09 J -37488055.06 -37488054.91 -37488054.75 0.0289 0.0082

Mercury -107350-07-18 09:07 J -37487966.28 -37487966.12 -37487965.95 0.0289 0.0016

Mercury -107350-10-15 04:19 J -37487877.47 -37487877.32 -37487877.16 0.0288 0.0112

Mercury -107349-01-12 00:00 J -37487788.61 -37487788.50 -37487788.39 0.0287 0.0210

Venus -107346-11-04 22:48 J -37486395.73 -37486395.55 -37486395.36 0.0273 0.0137

Venus -107345-06-21 09:50 J -37486166.31 -37486166.09 -37486165.87 0.0271 0.0003  
 Venus -107344-02-05 19:40 J -37485936.86 -37485936.68 -37485936.49 0.0270 0.0135  
 Venus -107344-09-23 04:48 J -37485707.32 -37485707.30 -37485707.27 0.0268 0.0265  
 Earth -107342-01-31 22:48 J -37485211.71 -37485211.55 -37485211.39 0.0265 0.0207  
 Moon -107342-02-01 02:24 J -37485211.56 -37485211.40 -37485211.22 0.0265 0.0193 \*  
 Mars -107340-04-28 10:33 J -37484394.31 -37484394.06 -37484393.80 0.0263 0.0102  
 Mercury -107335-05-18 12:14 J -37482548.04 -37482547.99 -37482547.94 0.0270 0.0251  
 Mercury -107335-08-15 01:40 J -37482459.53 -37482459.43 -37482459.31 0.0271 0.0179  
 Mercury -107335-11-11 15:07 J -37482371.00 -37482370.87 -37482370.73 0.0271 0.0107  
 Mercury -107334-02-08 04:33 J -37482282.46 -37482282.31 -37482282.17 0.0272 0.0036  
 Mercury -107334-05-07 17:31 J -37482193.91 -37482193.77 -37482193.62 0.0273 0.0036  
 Mercury -107334-08-04 06:28 J -37482105.36 -37482105.23 -37482105.10 0.0273 0.0106  
 Mercury -107334-10-31 19:11 J -37482016.81 -37482016.70 -37482016.59 0.0274 0.0176  
 Mercury -107333-01-28 07:55 J -37481928.23 -37481928.17 -37481928.11 0.0275 0.0245  
 Venus -107330-07-17 00:43 J -37480662.64 -37480662.47 -37480662.29 0.0287 0.0155  
 Venus -107329-03-02 14:24 J -37480433.11 -37480432.90 -37480432.69 0.0289 0.0002  
 Venus -107329-10-18 05:02 J -37480203.46 -37480203.29 -37480203.12 0.0291 0.0161  
 Earth -107328-07-23 15:50 J -37479924.89 -37479924.84 -37479924.77 0.0293 0.0282  
 Moon -107328-07-23 19:11 J -37479924.75 -37479924.70 -37479924.62 0.0293 0.0280  
 Mars -107324-05-25 10:48 J -37478523.14 -37478523.05 -37478522.95 0.0297 0.0282  
 Mercury -107321-06-09 19:40 J -37477411.79 -37477411.68 -37477411.56 0.0290 0.0205  
 Mercury -107321-09-06 14:24 J -37477323.05 -37477322.90 -37477322.75 0.0289 0.0110  
 Mercury -107321-12-04 09:07 J -37477234.28 -37477234.12 -37477233.95 0.0289 0.0016  
 Mercury -107320-03-03 04:19 J -37477145.48 -37477145.32 -37477145.16 0.0288 0.0083  
 Mercury -107320-05-30 23:45 J -37477056.63 -37477056.51 -37477056.38 0.0287 0.0180  
 Mercury -107320-08-27 19:40 J -37476967.72 -37476967.68 -37476967.64 0.0286 0.0278  
 Venus -107317-09-29 17:02 J -37475838.86 -37475838.79 -37475838.72 0.0275 0.0259  
 Venus -107316-05-17 04:48 J -37475609.49 -37475609.30 -37475609.10 0.0273 0.0120  
 Venus -107315-01-01 15:35 J -37475380.07 -37475379.85 -37475379.63 0.0271 0.0018  
 Venus -107315-08-19 01:26 J -37475150.62 -37475150.44 -37475150.26 0.0270 0.0153

Moon -107313-01-26 13:11 J -37474625.20 -37474624.95 -37474624.69 0.0266 0.0030  
 Earth -107313-01-26 17:02 J -37474625.05 -37474624.79 -37474624.54 0.0266 0.0015 \*  
 Mars -107310-06-14 07:26 J -37473390.47 -37473390.19 -37473389.92 0.0263 0.0033  
 Mercury -107305-01-02 03:07 J -37471727.46 -37471727.37 -37471727.27 0.0270 0.0202  
 Mercury -107305-03-30 16:33 J -37471638.93 -37471638.81 -37471638.67 0.0270 0.0130  
 Mercury -107305-06-27 06:00 J -37471550.40 -37471550.25 -37471550.11 0.0271 0.0059  
 Mercury -107305-09-23 18:57 J -37471461.85 -37471461.71 -37471461.56 0.0272 0.0014  
 Mercury -107305-12-21 07:55 J -37471373.31 -37471373.17 -37471373.03 0.0272 0.0083  
 Mercury -107304-03-19 20:38 J -37471284.75 -37471284.64 -37471284.52 0.0273 0.0153  
 Mercury -107304-06-16 09:21 J -37471196.19 -37471196.11 -37471196.03 0.0274 0.0222  
 Venus -107300-01-26 02:09 J -37469876.59 -37469876.41 -37469876.23 0.0287 0.0139  
 Venus -107300-09-12 15:35 J -37469647.06 -37469646.85 -37469646.65 0.0289 0.0017  
 Venus -107299-04-30 05:45 J -37469417.42 -37469417.26 -37469417.09 0.0291 0.0176  
 Moon -107298-07-31 00:28 J -37468960.70 -37468960.48 -37468960.25 0.0294 0.0067  
 Earth -107298-07-31 02:09 J -37468960.63 -37468960.41 -37468960.17 0.0294 0.0056 \*  
 Mars -107296-06-30 02:09 J -37468260.66 -37468260.41 -37468260.15 0.0297 0.0173  
 Mercury -107292-10-27 17:02 J -37466679.87 -37466679.79 -37466679.70 0.0291 0.0246  
 Mercury -107291-01-24 11:31 J -37466591.15 -37466591.02 -37466590.88 0.0290 0.0152  
 Mercury -107291-04-23 06:14 J -37466502.40 -37466502.24 -37466502.08 0.0289 0.0057  
 Mercury -107291-07-21 01:11 J -37466413.61 -37466413.45 -37466413.28 0.0289 0.0041  
 Mercury -107291-10-17 20:38 J -37466324.78 -37466324.64 -37466324.49 0.0288 0.0137  
 Mercury -107290-01-14 16:19 J -37466235.91 -37466235.82 -37466235.72 0.0287 0.0235  
 Venus -107287-04-11 15:35 J -37465052.94 -37465052.85 -37465052.76 0.0275 0.0247  
 Venus -107287-11-27 03:35 J -37464823.55 -37464823.35 -37464823.15 0.0273 0.0108  
 Venus -107286-07-14 14:24 J -37464594.11 -37464593.90 -37464593.68 0.0271 0.0031  
 Venus -107285-02-29 00:28 J -37464364.65 -37464364.48 -37464364.31 0.0269 0.0166  
 Earth -107284-01-19 23:02 J -37464038.57 -37464038.54 -37464038.49 0.0267 0.0263  
 Earth -107283-02-01 21:35 J -37463660.67 -37463660.60 -37463660.52 0.0265 0.0254  
 Moon -107283-02-01 22:33 J -37463660.67 -37463660.56 -37463660.45 0.0265 0.0242 \*  
 Mars -107282-08-07 00:00 J -37463109.65 -37463109.50 -37463109.36 0.0264 0.0224

Mars -107280-07-29 14:38 J -37462387.10 -37462386.89 -37462386.66 0.0264 0.0157  
 Mercury -107276-05-21 03:35 J -37460995.42 -37460995.35 -37460995.26 0.0270 0.0229  
 Mercury -107276-08-17 17:16 J -37460906.90 -37460906.78 -37460906.66 0.0271 0.0157  
 Mercury -107276-11-14 06:43 J -37460818.36 -37460818.22 -37460818.08 0.0271 0.0085  
 Mercury -107275-02-10 19:55 J -37460729.82 -37460729.67 -37460729.52 0.0272 0.0014  
 Mercury -107275-05-10 08:52 J -37460641.27 -37460641.13 -37460640.99 0.0273 0.0057  
 Mercury -107275-08-06 21:35 J -37460552.72 -37460552.60 -37460552.47 0.0273 0.0128  
 Mercury -107275-11-03 10:19 J -37460464.16 -37460464.07 -37460463.97 0.0274 0.0197  
 Mercury -107274-01-30 23:02 J -37460375.57 -37460375.54 -37460375.51 0.0275 0.0265  
 Venus -107272-12-21 16:04 J -37459319.87 -37459319.83 -37459319.76 0.0285 0.0275  
 Venus -107271-08-08 04:48 J -37459090.48 -37459090.30 -37459090.11 0.0287 0.0124  
 Venus -107270-03-25 18:28 J -37458860.93 -37458860.73 -37458860.52 0.0290 0.0035  
 Venus -107270-11-10 08:52 J -37458631.27 -37458631.13 -37458630.97 0.0291 0.0195  
 Earth -107269-07-24 11:31 J -37458374.16 -37458374.02 -37458373.88 0.0293 0.0235  
 Moon -107269-07-24 12:28 J -37458374.12 -37458373.98 -37458373.82 0.0293 0.0226 \*  
 Mars -107266-08-24 12:14 J -37457248.29 -37457247.99 -37457247.67 0.0297 0.0055  
 Mercury -107262-03-16 17:02 J -37455947.83 -37455947.79 -37455947.73 0.0291 0.0275  
 Mercury -107262-06-13 11:31 J -37455859.14 -37455859.02 -37455858.89 0.0290 0.0182  
 Mercury -107262-09-10 06:14 J -37455770.40 -37455770.24 -37455770.09 0.0289 0.0087  
 Mercury -107262-12-08 01:11 J -37455681.62 -37455681.45 -37455681.29 0.0289 0.0010  
 Mercury -107261-03-05 20:24 J -37455592.80 -37455592.65 -37455592.49 0.0288 0.0107  
 Mercury -107261-06-02 15:50 J -37455503.95 -37455503.84 -37455503.72 0.0287 0.0205  
 Venus -107258-10-22 21:21 J -37454266.72 -37454266.61 -37454266.48 0.0275 0.0230  
 Venus -107257-06-08 09:21 J -37454037.31 -37454037.11 -37454036.90 0.0273 0.0090  
 Venus -107256-01-23 20:09 J -37453807.87 -37453807.66 -37453807.44 0.0271 0.0049  
 Venus -107256-09-10 06:14 J -37453578.40 -37453578.24 -37453578.08 0.0270 0.0184  
 Moon -107254-01-27 14:38 J -37453074.14 -37453073.89 -37453073.64 0.0267 0.0020  
 Earth -107254-01-27 15:35 J -37453074.11 -37453073.85 -37453073.60 0.0267 0.0033 \*  
 Mars -107252-09-21 23:16 J -37452105.79 -37452105.53 -37452105.27 0.0264 0.0089  
 Mercury -107247-10-08 05:16 J -37450263.33 -37450263.28 -37450263.22 0.0269 0.0250

Mercury -107246-01-04 18:57 J -37450174.82 -37450174.71 -37450174.60 0.0270 0.0178

Mercury -107246-04-03 08:24 J -37450086.29 -37450086.15 -37450086.01 0.0270 0.0107

Mercury -107246-06-30 21:35 J -37449997.75 -37449997.60 -37449997.45 0.0271 0.0036

Mercury -107246-09-27 10:33 J -37449909.20 -37449909.06 -37449908.91 0.0272 0.0035

Mercury -107246-12-24 23:31 J -37449820.65 -37449820.52 -37449820.39 0.0272 0.0105

Mercury -107245-03-22 12:14 J -37449732.10 -37449731.99 -37449731.88 0.0273 0.0174

Mercury -107245-06-19 00:43 J -37449643.53 -37449643.47 -37449643.40 0.0274 0.0243

Venus -107242-07-03 18:43 J -37448533.79 -37448533.72 -37448533.62 0.0285 0.0257

Venus -107241-02-18 07:11 J -37448304.39 -37448304.20 -37448304.00 0.0287 0.0106

Venus -107241-10-04 20:38 J -37448074.85 -37448074.64 -37448074.44 0.0289 0.0051

Venus -107240-05-22 10:33 J -37447845.19 -37447845.06 -37447844.90 0.0291 0.0211

Earth -107239-07-31 23:02 J -37447409.75 -37447409.54 -37447409.32 0.0294 0.0105

Moon -107239-08-01 02:09 J -37447409.61 -37447409.41 -37447409.19 0.0294 0.0120 \*

Mars -107236-10-17 02:24 J -37446236.49 -37446236.40 -37446236.30 0.0297 0.0281

Mercury -107233-10-30 09:07 J -37445127.22 -37445127.12 -37445127.02 0.0291 0.0222

Mercury -107232-01-27 03:35 J -37445038.50 -37445038.35 -37445038.21 0.0290 0.0128

Mercury -107232-04-25 22:19 J -37444949.73 -37444949.57 -37444949.40 0.0289 0.0033

Mercury -107232-07-23 17:31 J -37444860.93 -37444860.77 -37444860.61 0.0288 0.0064

Mercury -107232-10-20 12:57 J -37444772.10 -37444771.96 -37444771.82 0.0288 0.0162

Mercury -107231-01-17 08:38 J -37444683.21 -37444683.14 -37444683.07 0.0287 0.0260

Venus -107228-05-03 19:55 J -37443480.79 -37443480.67 -37443480.53 0.0275 0.0219

Venus -107228-12-19 07:55 J -37443251.38 -37443251.17 -37443250.96 0.0273 0.0077

Venus -107227-08-05 18:57 J -37443021.93 -37443021.71 -37443021.50 0.0271 0.0061

Venus -107226-03-23 04:48 J -37442792.44 -37442792.30 -37442792.14 0.0269 0.0197

Earth -107225-01-21 20:52 J -37442487.77 -37442487.63 -37442487.47 0.0267 0.0217

Moon -107225-01-21 21:21 J -37442487.73 -37442487.61 -37442487.46 0.0267 0.0230 \*

Mars -107222-11-07 06:00 J -37441102.53 -37441102.25 -37441101.98 0.0263 0.0035

Mercury -107217-05-23 19:40 J -37439442.78 -37439442.68 -37439442.59 0.0270 0.0205

Mercury -107217-08-20 09:07 J -37439354.25 -37439354.12 -37439353.99 0.0271 0.0134

Mercury -107217-11-16 22:19 J -37439265.71 -37439265.57 -37439265.42 0.0271 0.0062



Mercury -107216-02-13 11:31 J -37439177.17 -37439177.02 -37439176.87 0.0272 0.0009

Mercury -107216-05-13 00:28 J -37439088.62 -37439088.48 -37439088.34 0.0273 0.0079

Mercury -107216-08-09 13:11 J -37439000.07 -37438999.95 -37438999.83 0.0273 0.0149

Mercury -107216-11-06 01:55 J -37438911.50 -37438911.42 -37438911.34 0.0274 0.0218

Venus -107212-01-12 21:21 J -37437747.71 -37437747.61 -37437747.49 0.0285 0.0242

Venus -107212-08-30 10:04 J -37437518.28 -37437518.08 -37437517.88 0.0288 0.0090

Venus -107211-04-16 23:31 J -37437288.71 -37437288.52 -37437288.31 0.0290 0.0069

Venus -107211-12-02 13:55 J -37437059.04 -37437058.92 -37437058.79 0.0292 0.0229

Moon -107210-07-26 04:48 J -37436823.48 -37436823.30 -37436823.09 0.0293 0.0172

Earth -107210-07-26 08:24 J -37436823.33 -37436823.15 -37436822.97 0.0293 0.0185 \*

Mars -107208-11-22 16:19 J -37435973.06 -37435972.82 -37435972.55 0.0297 0.0172

Mercury -107203-03-19 08:52 J -37434395.20 -37434395.13 -37434395.05 0.0291 0.0252

Mercury -107203-06-16 03:21 J -37434306.49 -37434306.36 -37434306.22 0.0290 0.0158

Mercury -107203-09-12 22:04 J -37434217.74 -37434217.58 -37434217.42 0.0289 0.0063

Mercury -107203-12-10 17:02 J -37434128.95 -37434128.79 -37434128.62 0.0288 0.0034

Mercury -107202-03-09 12:28 J -37434040.13 -37434039.98 -37434039.83 0.0288 0.0131

Mercury -107202-06-06 07:55 J -37433951.26 -37433951.17 -37433951.06 0.0287 0.0229

Venus -107199-11-14 01:40 J -37432694.58 -37432694.43 -37432694.28 0.0275 0.0200

Venus -107198-07-01 13:40 J -37432465.14 -37432464.93 -37432464.72 0.0273 0.0059

Venus -107197-02-16 00:43 J -37432235.68 -37432235.47 -37432235.27 0.0271 0.0080

Venus -107197-10-02 10:33 J -37432006.18 -37432006.06 -37432005.92 0.0270 0.0215

Earth -107195-01-28 13:40 J -37431523.17 -37431522.93 -37431522.68 0.0267 0.0079

Moon -107195-01-28 17:02 J -37431523.03 -37431522.79 -37431522.54 0.0267 0.0067 \*

Mars -107194-12-31 12:28 J -37430821.14 -37430820.98 -37430820.81 0.0264 0.0211

Mars -107192-12-23 04:04 J -37430098.54 -37430098.33 -37430098.11 0.0264 0.0169

Mercury -107188-10-10 21:21 J -37428710.69 -37428710.61 -37428710.53 0.0269 0.0226

Mercury -107187-01-07 10:48 J -37428622.17 -37428622.05 -37428621.92 0.0270 0.0155

Mercury -107187-04-06 00:14 J -37428533.63 -37428533.49 -37428533.35 0.0270 0.0083

Mercury -107187-07-03 13:26 J -37428445.09 -37428444.94 -37428444.80 0.0271 0.0013

Mercury -107187-09-30 02:24 J -37428356.54 -37428356.40 -37428356.26 0.0272 0.0058

Mercury -107187-12-27 15:07 J -37428267.99 -37428267.87 -37428267.74 0.0273 0.0128

Mercury -107186-03-26 03:50 J -37428179.44 -37428179.34 -37428179.24 0.0273 0.0197

Mercury -107186-06-22 16:19 J -37428090.85 -37428090.82 -37428090.78 0.0274 0.0265

Venus -107183-07-26 00:28 J -37426961.59 -37426961.48 -37426961.34 0.0285 0.0224

Venus -107182-03-12 12:57 J -37426732.15 -37426731.96 -37426731.75 0.0287 0.0071

Venus -107182-10-28 02:24 J -37426502.60 -37426502.40 -37426502.21 0.0289 0.0087

Venus -107181-06-13 16:19 J -37426272.92 -37426272.82 -37426272.70 0.0291 0.0247

Earth -107180-08-01 20:52 J -37425858.82 -37425858.63 -37425858.42 0.0294 0.0156

Moon -107180-08-01 23:02 J -37425858.73 -37425858.54 -37425858.34 0.0294 0.0172 \*

Mars -107177-01-16 09:21 J -37424961.41 -37424961.11 -37424960.80 0.0297 0.0056

Mercury -107174-08-06 06:43 J -37423663.22 -37423663.22 -37423663.20 0.0291 0.0291

Mercury -107174-11-03 00:57 J -37423574.57 -37423574.46 -37423574.33 0.0291 0.0198

Mercury -107173-01-30 19:40 J -37423485.83 -37423485.68 -37423485.53 0.0290 0.0103

Mercury -107173-04-28 14:38 J -37423397.06 -37423396.89 -37423396.73 0.0289 0.0008

Mercury -107173-07-26 09:50 J -37423308.25 -37423308.09 -37423307.93 0.0288 0.0090

Mercury -107173-10-23 05:16 J -37423219.41 -37423219.28 -37423219.15 0.0288 0.0188

Mercury -107172-01-20 00:57 J -37423130.46 -37423130.46 -37423130.45 0.0287 0.0286

Venus -107169-05-26 00:43 J -37421908.62 -37421908.47 -37421908.31 0.0275 0.0188

Venus -107168-01-10 12:43 J -37421679.18 -37421678.97 -37421678.76 0.0273 0.0047

Venus -107168-08-27 23:31 J -37421449.72 -37421449.52 -37421449.31 0.0271 0.0093

Venus -107167-04-14 09:35 J -37421220.20 -37421220.10 -37421219.97 0.0269 0.0228

Moon -107166-01-22 15:35 J -37420937.02 -37420936.85 -37420936.65 0.0268 0.0184

Earth -107166-01-22 19:40 J -37420936.87 -37420936.68 -37420936.47 0.0268 0.0169 \*

Mars -107163-02-14 21:07 J -37419817.88 -37419817.62 -37419817.36 0.0264 0.0088

Mercury -107158-02-27 21:50 J -37417978.63 -37417978.59 -37417978.53 0.0269 0.0253

Mercury -107158-05-27 11:31 J -37417890.13 -37417890.02 -37417889.91 0.0270 0.0181

Mercury -107158-08-24 00:57 J -37417801.59 -37417801.46 -37417801.32 0.0271 0.0110

Mercury -107158-11-20 14:09 J -37417713.05 -37417712.91 -37417712.76 0.0271 0.0039

Mercury -107157-02-17 03:21 J -37417624.51 -37417624.36 -37417624.22 0.0272 0.0033

Mercury -107157-05-15 16:04 J -37417535.96 -37417535.83 -37417535.69 0.0273 0.0103

Mercury -107157-08-12 04:48 J -37417447.41 -37417447.30 -37417447.18 0.0274 0.0172  
 Mercury -107157-11-08 17:31 J -37417358.84 -37417358.77 -37417358.70 0.0274 0.0241  
 Venus -107153-02-05 03:07 J -37416175.50 -37416175.37 -37416175.22 0.0286 0.0209  
 Venus -107153-09-21 15:50 J -37415946.04 -37415945.84 -37415945.64 0.0288 0.0054  
 Venus -107152-05-09 05:16 J -37415716.47 -37415716.28 -37415716.08 0.0290 0.0105  
 Venus -107152-12-24 19:40 J -37415486.76 -37415486.68 -37415486.59 0.0292 0.0265  
 Moon -107151-07-27 05:02 J -37415272.49 -37415272.29 -37415272.08 0.0293 0.0119  
 Earth -107151-07-27 06:43 J -37415272.43 -37415272.22 -37415272.01 0.0293 0.0133 \*  
 Mars -107147-03-11 18:57 J -37413948.79 -37413948.71 -37413948.60 0.0297 0.0283  
 Mercury -107144-03-22 00:57 J -37412842.55 -37412842.46 -37412842.35 0.0291 0.0227  
 Mercury -107144-06-18 19:26 J -37412753.83 -37412753.69 -37412753.54 0.0290 0.0133  
 Mercury -107144-09-15 14:24 J -37412665.06 -37412664.90 -37412664.74 0.0289 0.0037  
 Mercury -107144-12-13 09:21 J -37412576.27 -37412576.11 -37412575.94 0.0288 0.0060  
 Mercury -107143-03-12 04:48 J -37412487.44 -37412487.30 -37412487.16 0.0287 0.0157  
 Mercury -107143-06-09 00:28 J -37412398.55 -37412398.48 -37412398.40 0.0287 0.0255  
 Venus -107140-12-06 06:28 J -37411122.40 -37411122.23 -37411122.06 0.0275 0.0169  
 Venus -107139-07-23 18:14 J -37410892.95 -37410892.74 -37410892.52 0.0273 0.0028  
 Venus -107138-03-10 05:16 J -37410663.47 -37410663.28 -37410663.07 0.0271 0.0112  
 Venus -107138-10-25 15:35 J -37410433.93 -37410433.85 -37410433.75 0.0270 0.0247  
 Earth -107136-01-29 12:43 J -37409972.19 -37409971.97 -37409971.74 0.0267 0.0126  
 Moon -107136-01-29 14:38 J -37409972.12 -37409971.89 -37409971.65 0.0267 0.0117 \*  
 Mars -107133-04-01 20:38 J -37408813.90 -37408813.64 -37408813.36 0.0264 0.0049  
 Mercury -107129-10-13 13:40 J -37407158.03 -37407157.93 -37407157.83 0.0270 0.0200  
 Mercury -107128-01-10 03:07 J -37407069.50 -37407069.37 -37407069.24 0.0270 0.0129  
 Mercury -107128-04-08 16:19 J -37406980.96 -37406980.82 -37406980.67 0.0271 0.0058  
 Mercury -107128-07-06 05:31 J -37406892.41 -37406892.27 -37406892.12 0.0271 0.0014  
 Mercury -107128-10-02 18:28 J -37406803.87 -37406803.73 -37406803.59 0.0272 0.0084  
 Mercury -107128-12-30 07:11 J -37406715.31 -37406715.20 -37406715.08 0.0273 0.0153  
 Mercury -107127-03-28 19:55 J -37406626.75 -37406626.67 -37406626.59 0.0273 0.0222  
 Venus -107124-08-17 08:09 J -37405389.31 -37405389.16 -37405389.00 0.0285 0.0187

Venus -107123-04-03 20:38 J -37405159.84 -37405159.64 -37405159.43 0.0287 0.0033  
 Venus -107123-11-19 09:50 J -37404930.27 -37404930.09 -37404929.90 0.0289 0.0126  
 Venus -107122-07-06 23:45 J -37404700.53 -37404700.51 -37404700.46 0.0291 0.0286  
 Moon -107121-08-02 19:26 J -37404307.83 -37404307.69 -37404307.53 0.0294 0.0228  
 Earth -107121-08-02 22:04 J -37404307.73 -37404307.58 -37404307.40 0.0294 0.0213 \*  
 Mars -107119-04-17 01:40 J -37403685.67 -37403685.43 -37403685.16 0.0296 0.0168  
 Mercury -107115-08-08 23:16 J -37402110.58 -37402110.53 -37402110.45 0.0291 0.0263  
 Mercury -107115-11-05 17:45 J -37402021.89 -37402021.76 -37402021.63 0.0290 0.0170  
 Mercury -107114-02-02 12:28 J -37401933.14 -37401932.98 -37401932.82 0.0290 0.0075  
 Mercury -107114-05-02 07:26 J -37401844.36 -37401844.19 -37401844.03 0.0289 0.0021  
 Mercury -107114-07-30 02:38 J -37401755.54 -37401755.39 -37401755.24 0.0288 0.0119  
 Mercury -107114-10-26 22:04 J -37401666.68 -37401666.58 -37401666.46 0.0287 0.0217  
 Venus -107110-06-18 06:14 J -37400336.41 -37400336.24 -37400336.06 0.0275 0.0156  
 Venus -107109-02-02 18:14 J -37400106.96 -37400106.74 -37400106.53 0.0273 0.0014  
 Venus -107109-09-19 05:02 J -37399877.47 -37399877.29 -37399877.09 0.0271 0.0126  
 Venus -107108-05-06 15:07 J -37399647.91 -37399647.87 -37399647.80 0.0269 0.0261  
 Moon -107107-01-23 18:28 J -37399385.94 -37399385.73 -37399385.51 0.0268 0.0131  
 Earth -107107-01-23 19:40 J -37399385.91 -37399385.68 -37399385.45 0.0268 0.0121 \*  
 Mars -107105-05-25 11:16 J -37398533.20 -37398533.03 -37398532.87 0.0264 0.0211  
 Mars -107103-05-18 05:16 J -37397810.48 -37397810.28 -37397810.06 0.0264 0.0172  
 Mercury -107099-03-02 14:24 J -37396425.98 -37396425.90 -37396425.82 0.0270 0.0226  
 Mercury -107099-05-30 03:50 J -37396337.46 -37396337.34 -37396337.21 0.0270 0.0155  
 Mercury -107099-08-26 17:16 J -37396248.92 -37396248.78 -37396248.64 0.0271 0.0083  
 Mercury -107099-11-23 06:28 J -37396160.38 -37396160.23 -37396160.08 0.0272 0.0012  
 Mercury -107098-02-19 19:26 J -37396071.83 -37396071.69 -37396071.55 0.0272 0.0058  
 Mercury -107098-05-19 08:24 J -37395983.28 -37395983.15 -37395983.03 0.0273 0.0128  
 Mercury -107098-08-15 21:07 J -37395894.72 -37395894.62 -37395894.53 0.0274 0.0197  
 Mercury -107098-11-12 09:35 J -37395806.13 -37395806.10 -37395806.07 0.0274 0.0265  
 Venus -107094-02-27 10:48 J -37394603.21 -37394603.05 -37394602.88 0.0286 0.0172  
 Venus -107094-10-14 23:31 J -37394373.73 -37394373.52 -37394373.31 0.0288 0.0016

Venus -107093-05-31 12:57 J -37394144.14 -37394143.96 -37394143.78 0.0290 0.0144  
 Earth -107092-07-28 07:55 J -37393721.39 -37393721.17 -37393720.94 0.0293 0.0075  
 Moon -107092-07-28 10:48 J -37393721.28 -37393721.05 -37393720.83 0.0293 0.0059 \*  
 Mars -107089-06-10 08:24 J -37392673.46 -37392673.15 -37392672.84 0.0297 0.0062  
 Mercury -107086-12-26 23:45 J -37391378.51 -37391378.51 -37391378.51 0.0291 0.0291  
 Mercury -107085-03-24 17:45 J -37391289.87 -37391289.76 -37391289.64 0.0290 0.0199  
 Mercury -107085-06-21 12:14 J -37391201.13 -37391200.99 -37391200.83 0.0290 0.0105  
 Mercury -107085-09-18 07:11 J -37391112.36 -37391112.20 -37391112.03 0.0289 0.0009  
 Mercury -107085-12-16 02:24 J -37391023.56 -37391023.40 -37391023.24 0.0288 0.0088  
 Mercury -107084-03-14 21:50 J -37390934.71 -37390934.59 -37390934.46 0.0287 0.0186  
 Mercury -107084-06-11 17:31 J -37390845.78 -37390845.77 -37390845.74 0.0286 0.0285  
 Venus -107081-12-28 12:14 J -37389550.17 -37389549.99 -37389549.80 0.0275 0.0136  
 Venus -107080-08-15 00:14 J -37389320.71 -37389320.49 -37389320.27 0.0273 0.0006  
 Venus -107079-04-01 11:16 J -37389091.21 -37389091.03 -37389090.84 0.0271 0.0146  
 Moon -107077-01-31 10:19 J -37388421.26 -37388421.07 -37388420.86 0.0267 0.0171  
 Earth -107077-01-31 13:26 J -37388421.12 -37388420.94 -37388420.74 0.0267 0.0176 \*  
 Mars -107075-07-11 14:52 J -37387529.14 -37387528.88 -37387528.61 0.0264 0.0073  
 Mercury -107070-07-20 16:48 J -37385693.86 -37385693.80 -37385693.74 0.0269 0.0244  
 Mercury -107070-10-17 06:28 J -37385605.34 -37385605.23 -37385605.12 0.0270 0.0172  
 Mercury -107069-01-13 19:55 J -37385516.81 -37385516.67 -37385516.54 0.0270 0.0101  
 Mercury -107069-04-11 09:07 J -37385428.27 -37385428.12 -37385427.98 0.0271 0.0030  
 Mercury -107069-07-08 22:04 J -37385339.72 -37385339.58 -37385339.43 0.0272 0.0041  
 Mercury -107069-10-05 11:02 J -37385251.17 -37385251.04 -37385250.91 0.0272 0.0111  
 Mercury -107068-01-01 23:45 J -37385162.62 -37385162.51 -37385162.40 0.0273 0.0180  
 Mercury -107068-03-31 12:14 J -37385074.04 -37385073.99 -37385073.93 0.0274 0.0249  
 Venus -107065-09-08 17:16 J -37383816.95 -37383816.78 -37383816.60 0.0285 0.0147  
 Venus -107064-04-26 05:45 J -37383587.46 -37383587.26 -37383587.05 0.0287 0.0010  
 Venus -107064-12-11 18:57 J -37383357.87 -37383357.71 -37383357.54 0.0289 0.0168  
 Moon -107062-08-04 23:45 J -37382756.54 -37382756.51 -37382756.47 0.0294 0.0289  
 Earth -107062-08-05 02:09 J -37382756.48 -37382756.41 -37382756.32 0.0294 0.0274 \*

Mars -107059-08-04 14:52 J -37381660.93 -37381660.88 -37381660.81 0.0296 0.0291  
 Mercury -107056-08-11 16:48 J -37380557.89 -37380557.80 -37380557.70 0.0291 0.0232  
 Mercury -107056-11-08 11:16 J -37380469.17 -37380469.03 -37380468.89 0.0290 0.0138  
 Mercury -107055-02-05 06:00 J -37380380.41 -37380380.25 -37380380.09 0.0289 0.0043  
 Mercury -107055-05-05 00:57 J -37380291.62 -37380291.46 -37380291.29 0.0289 0.0054  
 Mercury -107055-08-01 20:24 J -37380202.79 -37380202.65 -37380202.51 0.0288 0.0151  
 Mercury -107055-10-29 15:50 J -37380113.91 -37380113.84 -37380113.75 0.0287 0.0249  
 Venus -107052-11-23 00:28 J -37378993.52 -37378993.48 -37378993.41 0.0277 0.0266  
 Venus -107051-07-10 13:26 J -37378764.13 -37378763.94 -37378763.75 0.0274 0.0122  
 Venus -107050-02-25 01:11 J -37378534.66 -37378534.45 -37378534.23 0.0273 0.0021  
 Venus -107050-10-12 12:14 J -37378305.16 -37378304.99 -37378304.81 0.0271 0.0161  
 Earth -107048-01-24 21:35 J -37377834.84 -37377834.60 -37377834.35 0.0268 0.0069  
 Moon -107048-01-25 01:26 J -37377834.69 -37377834.44 -37377834.20 0.0268 0.0075 \*  
 Mars -107045-08-26 01:55 J -37376525.69 -37376525.42 -37376525.15 0.0264 0.0052  
 Mercury -107040-03-05 07:11 J -37374873.30 -37374873.20 -37374873.09 0.0270 0.0198  
 Mercury -107040-06-01 20:52 J -37374784.76 -37374784.63 -37374784.50 0.0271 0.0126  
 Mercury -107040-08-29 10:04 J -37374696.22 -37374696.08 -37374695.93 0.0271 0.0055  
 Mercury -107040-11-25 23:16 J -37374607.68 -37374607.53 -37374607.39 0.0272 0.0016  
 Mercury -107039-02-22 12:14 J -37374519.13 -37374518.99 -37374518.85 0.0273 0.0087  
 Mercury -107039-05-22 00:57 J -37374430.58 -37374430.46 -37374430.34 0.0273 0.0156  
 Mercury -107039-08-18 13:26 J -37374342.01 -37374341.94 -37374341.85 0.0274 0.0225  
 Venus -107036-08-04 08:52 J -37373260.14 -37373260.13 -37373260.10 0.0284 0.0282  
 Venus -107035-03-21 20:52 J -37373030.81 -37373030.63 -37373030.44 0.0286 0.0131  
 Venus -107035-11-06 09:35 J -37372801.31 -37372801.10 -37372800.90 0.0288 0.0027  
 Venus -107034-06-23 22:48 J -37372571.70 -37372571.55 -37372571.38 0.0290 0.0187  
 Earth -107033-07-29 13:11 J -37372170.18 -37372169.95 -37372169.71 0.0293 0.0011  
 Moon -107033-07-29 15:50 J -37372170.08 -37372169.84 -37372169.60 0.0293 0.0008 \*  
 Mars -107031-09-10 11:31 J -37371397.27 -37371397.02 -37371396.74 0.0296 0.0156  
 Mercury -107027-12-29 17:02 J -37369825.85 -37369825.79 -37369825.71 0.0291 0.0259  
 Mercury -107026-03-28 11:31 J -37369737.15 -37369737.02 -37369736.89 0.0290 0.0166

Mercury -107026-06-25 06:14 J -37369648.40 -37369648.24 -37369648.08 0.0289 0.0071  
 Mercury -107026-09-22 01:11 J -37369559.62 -37369559.45 -37369559.29 0.0288 0.0025  
 Mercury -107026-12-19 20:24 J -37369470.80 -37369470.65 -37369470.50 0.0288 0.0122  
 Jupiter -107025-02-20 16:33 J -37369408.18 -37369407.81 -37369407.40 0.0287 0.0171  
 Mercury -107025-03-17 15:50 J -37369381.94 -37369381.84 -37369381.73 0.0287 0.0220  
 Venus -107022-06-05 07:11 J -37368207.29 -37368207.20 -37368207.10 0.0276 0.0245  
 Venus -107021-01-20 19:55 J -37367977.87 -37367977.67 -37367977.47 0.0274 0.0101  
 Venus -107021-09-06 07:55 J -37367748.39 -37367748.17 -37367747.96 0.0273 0.0042  
 Venus -107020-04-23 18:43 J -37367518.87 -37367518.72 -37367518.55 0.0271 0.0182  
 Moon -107018-02-01 13:55 J -37366870.04 -37366869.92 -37366869.79 0.0267 0.0227  
 Earth -107018-02-01 16:19 J -37366869.94 -37366869.82 -37366869.68 0.0267 0.0227 \*  
 Mars -107017-10-19 08:38 J -37366244.31 -37366244.14 -37366243.94 0.0265 0.0196  
 Mars -107015-10-12 06:00 J -37365521.44 -37365521.25 -37365521.05 0.0265 0.0189  
 Mercury -107011-07-23 10:04 J -37364141.17 -37364141.08 -37364140.99 0.0270 0.0214  
 Mercury -107011-10-19 23:31 J -37364052.64 -37364052.52 -37364052.39 0.0270 0.0142  
 Mercury -107010-01-16 12:57 J -37363964.10 -37363963.96 -37363963.82 0.0271 0.0070  
 Mercury -107010-04-15 02:09 J -37363875.56 -37363875.41 -37363875.26 0.0272 0.0002  
 Mercury -107010-07-12 15:07 J -37363787.01 -37363786.87 -37363786.73 0.0272 0.0071  
 Mercury -107010-10-09 03:50 J -37363698.46 -37363698.34 -37363698.21 0.0273 0.0141  
 Mercury -107009-01-05 16:33 J -37363609.90 -37363609.81 -37363609.72 0.0274 0.0210  
 Venus -107006-02-14 17:02 J -37362473.87 -37362473.79 -37362473.70 0.0284 0.0256  
 Venus -107006-10-02 04:33 J -37362244.49 -37362244.31 -37362244.11 0.0286 0.0105  
 Venus -107005-05-18 17:16 J -37362014.98 -37362014.78 -37362014.58 0.0288 0.0053  
 Venus -107004-01-03 06:14 J -37361785.36 -37361785.24 -37361785.09 0.0290 0.0214  
 Moon -107004-07-24 03:35 J -37361583.43 -37361583.35 -37361583.26 0.0291 0.0267  
 Earth -107004-07-24 06:14 J -37361583.29 -37361583.24 -37361583.18 0.0291 0.0282 \*  
 Mars -107001-11-04 00:57 J -37360384.76 -37360384.46 -37360384.16 0.0296 0.0076

# 107TH MILLENNIUM

# BCE

**This is a list of transits visible from Saturn in the 107th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-106997-05-17 17:02 J	-37359093.81	-37359093.79	-37359093.77	0.0291	0.0288		
Mercury	-106997-08-14 11:16 J	-37359005.15	-37359005.03	-37359004.91	0.0290	0.0196		
Mercury	-106997-11-11 05:45 J	-37358916.41	-37358916.26	-37358916.11	0.0290	0.0102		
Mercury	-106996-02-08 00:28 J	-37358827.64	-37358827.48	-37358827.31	0.0289	0.0007		
Mercury	-106996-05-07 19:40 J	-37358738.84	-37358738.68	-37358738.52	0.0288	0.0090		
Mercury	-106996-08-04 15:07 J	-37358650.00	-37358649.87	-37358649.74	0.0287	0.0188		
Mercury	-106996-11-01 10:48 J	-37358561.06	-37358561.05	-37358561.04	0.0287	0.0286		
Venus	-106993-12-15 10:04 J	-37357421.20	-37357421.08	-37357420.96	0.0276	0.0228		
Venus	-106992-08-01 22:19 J	-37357191.77	-37357191.57	-37357191.36	0.0274	0.0085		
Venus	-106991-03-19 10:04 J	-37356962.29	-37356962.08	-37356961.86	0.0272	0.0059		
Venus	-106991-11-03 21:07 J	-37356732.76	-37356732.62	-37356732.47	0.0271	0.0198		
Earth	-106989-01-27 02:24 J	-37356283.65	-37356283.40	-37356283.14	0.0268	0.0013		
Moon	-106989-01-27 04:19 J	-37356283.58	-37356283.32	-37356283.05	0.0268	0.0014	*	
Mars	-106987-12-05 00:57 J	-37355240.72	-37355240.46	-37355240.19	0.0264	0.0070		
Mercury	-106982-12-10 11:02 J	-37353409.11	-37353409.04	-37353408.97	0.0270	0.0238		
Mercury	-106981-03-08 00:43 J	-37353320.59	-37353320.47	-37353320.35	0.0270	0.0166		
Mercury	-106981-06-04 14:09 J	-37353232.05	-37353231.91	-37353231.77	0.0271	0.0095		
Mercury	-106981-09-01 03:21 J	-37353143.51	-37353143.36	-37353143.21	0.0272	0.0024		
Mercury	-106981-11-28 16:19 J	-37353054.96	-37353054.82	-37353054.67	0.0272	0.0048		



Mercury -106980-02-25 05:16 J -37352966.41 -37352966.28 -37352966.15 0.0273 0.0117

Mercury -106980-05-24 18:00 J -37352877.85 -37352877.75 -37352877.64 0.0274 0.0187

Mercury -106980-08-21 06:28 J -37352789.27 -37352789.23 -37352789.17 0.0274 0.0256

Venus -106977-08-26 20:24 J -37351687.75 -37351687.65 -37351687.53 0.0284 0.0241

Venus -106976-04-13 08:38 J -37351458.34 -37351458.14 -37351457.94 0.0287 0.0087

Venus -106976-11-28 21:21 J -37351228.81 -37351228.61 -37351228.41 0.0289 0.0072

Venus -106975-07-16 10:48 J -37350999.17 -37350999.05 -37350998.93 0.0291 0.0233

Moon -106974-07-31 19:55 J -37350618.90 -37350618.67 -37350618.43 0.0293 0.0075

Earth -106974-07-31 21:50 J -37350618.82 -37350618.59 -37350618.36 0.0293 0.0062 \*

Mercury -106967-01-01 11:45 J -37348273.11 -37348273.01 -37348272.91 0.0290 0.0222

Mercury -106967-03-31 06:14 J -37348184.39 -37348184.24 -37348184.10 0.0290 0.0128

Mercury -106967-06-28 00:57 J -37348095.62 -37348095.46 -37348095.30 0.0289 0.0033

Mercury -106967-09-24 19:55 J -37348006.83 -37348006.67 -37348006.50 0.0288 0.0064

Mercury -106967-12-22 15:21 J -37347918.00 -37347917.86 -37347917.72 0.0287 0.0161

Mercury -106966-03-21 10:48 J -37347829.11 -37347829.05 -37347828.97 0.0287 0.0259

Venus -106963-06-27 16:48 J -37346634.93 -37346634.80 -37346634.65 0.0276 0.0207

Venus -106962-02-12 05:31 J -37346405.48 -37346405.27 -37346405.06 0.0274 0.0062

Venus -106962-09-29 17:16 J -37346175.98 -37346175.78 -37346175.57 0.0272 0.0081

Venus -106961-05-16 04:19 J -37345946.44 -37345946.32 -37345946.19 0.0271 0.0220

Moon -106960-01-20 18:57 J -37345696.81 -37345696.71 -37345696.60 0.0269 0.0242

Earth -106960-01-20 20:09 J -37345696.76 -37345696.66 -37345696.53 0.0269 0.0238 \*

Mars -106956-01-20 06:14 J -37344236.50 -37344236.24 -37344235.96 0.0265 0.0070

Mercury -106952-04-28 13:55 J -37342676.96 -37342676.92 -37342676.87 0.0270 0.0254

Mercury -106952-07-26 03:35 J -37342588.45 -37342588.35 -37342588.24 0.0270 0.0181

Mercury -106952-10-22 17:02 J -37342499.92 -37342499.79 -37342499.65 0.0271 0.0110

Mercury -106951-01-19 06:28 J -37342411.38 -37342411.23 -37342411.08 0.0271 0.0038

Mercury -106951-04-17 19:40 J -37342322.83 -37342322.68 -37342322.54 0.0272 0.0033

Mercury -106951-07-15 08:38 J -37342234.28 -37342234.14 -37342234.01 0.0273 0.0103

Mercury -106951-10-11 21:21 J -37342145.72 -37342145.61 -37342145.50 0.0273 0.0172

Mercury -106950-01-08 09:50 J -37342057.15 -37342057.09 -37342057.02 0.0274 0.0242

Venus -106947-03-09 06:00 J -37340901.38 -37340901.25 -37340901.10 0.0284 0.0213  
 Venus -106947-10-24 18:00 J -37340671.95 -37340671.75 -37340671.55 0.0286 0.0058  
 Venus -106946-06-11 06:43 J -37340442.41 -37340442.22 -37340442.03 0.0288 0.0102  
 Venus -106945-01-26 20:09 J -37340212.74 -37340212.66 -37340212.57 0.0290 0.0262  
 Earth -106945-07-25 17:31 J -37340031.93 -37340031.77 -37340031.60 0.0291 0.0206  
 Moon -106945-07-25 19:11 J -37340031.87 -37340031.70 -37340031.52 0.0291 0.0190 \*  
 Mars -106942-02-04 23:31 J -37339107.80 -37339107.52 -37339107.24 0.0296 0.0135  
 Mercury -106938-05-21 12:14 J -37337541.06 -37337540.99 -37337540.90 0.0291 0.0248  
 Mercury -106938-08-18 06:43 J -37337452.36 -37337452.22 -37337452.08 0.0290 0.0155  
 Mercury -106938-11-15 01:11 J -37337363.60 -37337363.45 -37337363.29 0.0289 0.0061  
 Mercury -106937-02-11 20:09 J -37337274.82 -37337274.66 -37337274.49 0.0289 0.0036  
 Mercury -106937-05-10 15:21 J -37337186.00 -37337185.86 -37337185.71 0.0288 0.0133  
 Mercury -106937-08-07 11:02 J -37337097.14 -37337097.04 -37337096.94 0.0287 0.0230  
 Venus -106933-01-07 21:21 J -37335848.76 -37335848.61 -37335848.45 0.0276 0.0189  
 Venus -106933-08-24 09:35 J -37335619.31 -37335619.10 -37335618.88 0.0274 0.0044  
 Venus -106932-04-10 21:07 J -37335389.82 -37335389.62 -37335389.42 0.0272 0.0099  
 Venus -106932-11-26 07:55 J -37335160.27 -37335160.17 -37335160.07 0.0270 0.0238  
 Moon -106930-01-28 06:57 J -37334732.46 -37334732.21 -37334731.95 0.0268 0.0052  
 Earth -106930-01-28 10:19 J -37334732.32 -37334732.07 -37334731.82 0.0268 0.0048 \*  
 Mars -106928-03-15 00:00 J -37333955.68 -37333955.50 -37333955.30 0.0265 0.0191  
 Mars -106926-03-07 22:19 J -37333232.75 -37333232.57 -37333232.38 0.0264 0.0195  
 Mercury -106923-12-13 04:48 J -37331856.39 -37331856.30 -37331856.20 0.0270 0.0205  
 Mercury -106922-03-11 18:28 J -37331767.86 -37331767.73 -37331767.60 0.0271 0.0133  
 Mercury -106922-06-08 07:55 J -37331679.32 -37331679.17 -37331679.03 0.0271 0.0062  
 Mercury -106922-09-04 21:07 J -37331590.77 -37331590.62 -37331590.48 0.0272 0.0011  
 Mercury -106922-12-02 10:04 J -37331502.22 -37331502.08 -37331501.94 0.0273 0.0080  
 Mercury -106921-02-28 22:48 J -37331413.66 -37331413.55 -37331413.42 0.0273 0.0150  
 Mercury -106921-05-27 11:31 J -37331325.10 -37331325.02 -37331324.93 0.0274 0.0219  
 Venus -106918-09-19 10:04 J -37330115.23 -37330115.08 -37330114.93 0.0285 0.0195  
 Venus -106917-05-05 22:04 J -37329885.78 -37329885.58 -37329885.37 0.0287 0.0041

Venus -106917-12-21 11:02 J -37329656.22 -37329656.04 -37329655.85 0.0289 0.0121

Venus -106916-08-08 00:28 J -37329426.51 -37329426.48 -37329426.42 0.0291 0.0282

Moon -106915-08-02 06:28 J -37329067.43 -37329067.23 -37329067.03 0.0293 0.0153

Earth -106915-08-02 09:50 J -37329067.29 -37329067.09 -37329066.88 0.0293 0.0139 \*

Mars -106912-03-31 09:21 J -37328095.40 -37328095.11 -37328094.80 0.0296 0.0099

Mercury -106909-10-07 12:57 J -37326809.01 -37326808.96 -37326808.90 0.0291 0.0273

Mercury -106908-01-04 07:11 J -37326720.32 -37326720.20 -37326720.07 0.0290 0.0181

Mercury -106908-04-03 01:40 J -37326631.58 -37326631.43 -37326631.27 0.0289 0.0087

Mercury -106908-06-30 20:38 J -37326542.80 -37326542.64 -37326542.47 0.0289 0.0009

Mercury -106908-09-27 15:50 J -37326453.99 -37326453.84 -37326453.69 0.0288 0.0106

Mercury -106908-12-25 11:16 J -37326365.15 -37326365.03 -37326364.91 0.0287 0.0203

Venus -106904-07-20 04:19 J -37325062.48 -37325062.32 -37325062.14 0.0275 0.0166

Venus -106903-03-06 16:48 J -37324833.01 -37324832.80 -37324832.58 0.0273 0.0020

Venus -106903-10-22 04:19 J -37324603.50 -37324603.32 -37324603.12 0.0272 0.0123

Venus -106902-06-08 15:07 J -37324373.92 -37324373.87 -37324373.81 0.0270 0.0261

Earth -106901-01-23 04:48 J -37324145.49 -37324145.30 -37324145.10 0.0269 0.0176

Moon -106901-01-23 07:55 J -37324145.35 -37324145.17 -37324144.97 0.0269 0.0176 \*

Mars -106898-05-01 07:26 J -37322951.46 -37322951.19 -37322950.91 0.0265 0.0052

Mercury -106893-05-01 08:09 J -37321124.25 -37321124.16 -37321124.08 0.0270 0.0219

Mercury -106893-07-28 21:35 J -37321035.72 -37321035.60 -37321035.47 0.0271 0.0147

Mercury -106893-10-25 11:02 J -37320947.18 -37320947.04 -37320946.89 0.0271 0.0076

Mercury -106892-01-22 00:14 J -37320858.63 -37320858.49 -37320858.34 0.0272 0.0010

Mercury -106892-04-20 13:26 J -37320770.08 -37320769.94 -37320769.80 0.0273 0.0067

Mercury -106892-07-18 02:09 J -37320681.53 -37320681.41 -37320681.28 0.0273 0.0137

Mercury -106892-10-14 15:07 J -37320592.96 -37320592.87 -37320592.78 0.0274 0.0206

Mercury -106891-01-11 03:35 J -37320504.35 -37320504.35 -37320504.34 0.0275 0.0274

Venus -106888-03-31 20:24 J -37319328.82 -37319328.65 -37319328.48 0.0285 0.0166

Venus -106888-11-16 08:38 J -37319099.35 -37319099.14 -37319098.93 0.0287 0.0009

Venus -106887-07-03 21:35 J -37318869.78 -37318869.60 -37318869.43 0.0289 0.0152

Earth -106886-07-28 07:11 J -37318480.40 -37318480.20 -37318479.98 0.0292 0.0126

Moon -106886-07-28 10:48 J -37318480.26 -37318480.05 -37318479.82 0.0292 0.0109 \*  
 Mercury -106879-05-24 08:38 J -37315988.25 -37315988.14 -37315988.03 0.0290 0.0203  
 Mercury -106879-08-21 02:52 J -37315899.52 -37315899.38 -37315899.22 0.0289 0.0110  
 Mercury -106879-11-17 21:35 J -37315810.76 -37315810.60 -37315810.43 0.0289 0.0017  
 Mercury -106878-02-14 16:48 J -37315721.96 -37315721.80 -37315721.64 0.0288 0.0082  
 Mercury -106878-05-14 12:00 J -37315633.12 -37315633.00 -37315632.86 0.0287 0.0179  
 Mercury -106878-08-11 07:40 J -37315544.21 -37315544.18 -37315544.13 0.0287 0.0277  
 Venus -106874-01-30 10:48 J -37314276.24 -37314276.05 -37314275.87 0.0275 0.0146  
 Venus -106874-09-16 22:48 J -37314046.77 -37314046.55 -37314046.34 0.0273 0.0006  
 Venus -106873-05-03 09:50 J -37313817.27 -37313817.09 -37313816.90 0.0271 0.0142  
 Moon -106871-01-29 18:00 J -37313180.97 -37313180.75 -37313180.52 0.0268 0.0120  
 Earth -106871-01-29 20:52 J -37313180.86 -37313180.63 -37313180.39 0.0268 0.0113 \*  
 Mars -106868-06-16 03:07 J -37311947.63 -37311947.37 -37311947.10 0.0264 0.0077  
 Mercury -106864-09-18 09:07 J -37310392.17 -37310392.12 -37310392.05 0.0270 0.0243  
 Mercury -106864-12-15 23:02 J -37310303.65 -37310303.54 -37310303.42 0.0270 0.0170  
 Mercury -106863-03-14 12:28 J -37310215.12 -37310214.98 -37310214.84 0.0271 0.0099  
 Mercury -106863-06-11 01:55 J -37310126.57 -37310126.42 -37310126.28 0.0272 0.0028  
 Mercury -106863-09-07 14:52 J -37310038.02 -37310037.88 -37310037.73 0.0272 0.0044  
 Mercury -106863-12-05 03:50 J -37309949.47 -37309949.34 -37309949.21 0.0273 0.0114  
 Mercury -106862-03-03 16:33 J -37309860.91 -37309860.81 -37309860.70 0.0274 0.0184  
 Mercury -106862-05-31 05:16 J -37309772.33 -37309772.28 -37309772.22 0.0274 0.0253  
 Venus -106859-10-12 00:28 J -37308542.66 -37308542.48 -37308542.30 0.0286 0.0148  
 Venus -106858-05-29 12:57 J -37308313.17 -37308312.96 -37308312.76 0.0288 0.0011  
 Venus -106857-01-14 01:55 J -37308083.58 -37308083.42 -37308083.25 0.0290 0.0172  
 Earth -106856-08-04 00:00 J -37307515.65 -37307515.50 -37307515.34 0.0294 0.0221  
 Moon -106856-08-04 00:00 J -37307515.63 -37307515.50 -37307515.36 0.0294 0.0233 \*  
 Mars -106854-07-02 14:52 J -37306818.17 -37306817.88 -37306817.59 0.0296 0.0108  
 Mercury -106850-10-11 09:07 J -37305256.21 -37305256.12 -37305256.01 0.0290 0.0229  
 Mercury -106849-01-08 03:35 J -37305167.49 -37305167.35 -37305167.21 0.0290 0.0135  
 Mercury -106849-04-05 22:19 J -37305078.73 -37305078.57 -37305078.41 0.0289 0.0040

Mercury -106849-07-03 17:16 J -37304989.94 -37304989.78 -37304989.62 0.0288 0.0056

Mercury -106849-09-30 12:28 J -37304901.12 -37304900.98 -37304900.83 0.0287 0.0153

Mercury -106849-12-28 08:09 J -37304812.24 -37304812.16 -37304812.08 0.0287 0.0250

Venus -106846-12-26 05:16 J -37303719.33 -37303719.28 -37303719.23 0.0277 0.0268

Venus -106845-08-11 17:45 J -37303489.95 -37303489.76 -37303489.56 0.0275 0.0122

Venus -106844-03-29 06:00 J -37303260.47 -37303260.25 -37303260.04 0.0273 0.0024

Venus -106844-11-13 17:16 J -37303030.95 -37303030.78 -37303030.61 0.0271 0.0166

Earth -106842-01-24 15:35 J -37302594.07 -37302593.85 -37302593.61 0.0269 0.0111

Moon -106842-01-24 18:28 J -37302593.97 -37302593.73 -37302593.49 0.0269 0.0108 \*

Mars -106840-08-09 10:48 J -37301666.25 -37301666.05 -37301665.84 0.0265 0.0174

Mars -106838-08-02 09:50 J -37300943.24 -37300943.09 -37300942.92 0.0265 0.0215

Mercury -106834-02-05 12:28 J -37299660.02 -37299659.98 -37299659.93 0.0270 0.0257

Mercury -106834-05-05 02:09 J -37299571.51 -37299571.41 -37299571.30 0.0271 0.0185

Mercury -106834-08-01 15:50 J -37299482.98 -37299482.84 -37299482.71 0.0271 0.0112

Mercury -106834-10-29 05:16 J -37299394.43 -37299394.28 -37299394.14 0.0272 0.0041

Mercury -106833-01-25 18:14 J -37299305.88 -37299305.74 -37299305.59 0.0273 0.0032

Mercury -106833-04-23 07:26 J -37299217.33 -37299217.19 -37299217.06 0.0273 0.0101

Mercury -106833-07-20 20:09 J -37299128.77 -37299128.66 -37299128.55 0.0274 0.0171

Mercury -106833-10-17 08:52 J -37299040.20 -37299040.13 -37299040.06 0.0275 0.0240

Venus -106830-09-06 23:31 J -37297985.57 -37297985.52 -37297985.46 0.0284 0.0272

Venus -106829-04-23 11:16 J -37297756.21 -37297756.03 -37297755.83 0.0286 0.0118

Venus -106829-12-09 00:00 J -37297526.71 -37297526.50 -37297526.30 0.0288 0.0042

Venus -106828-07-26 12:57 J -37297297.10 -37297296.96 -37297296.81 0.0289 0.0204

Moon -106827-07-29 22:33 J -37296928.80 -37296928.56 -37296928.32 0.0292 0.0027

Earth -106827-07-29 22:48 J -37296928.78 -37296928.55 -37296928.31 0.0292 0.0042 \*

Mars -106824-08-26 21:21 J -37295804.88 -37295804.61 -37295804.31 0.0296 0.0126

Mercury -106820-02-27 11:02 J -37294524.11 -37294524.04 -37294523.95 0.0290 0.0249

Mercury -106820-05-27 05:16 J -37294435.41 -37294435.28 -37294435.14 0.0290 0.0156

Mercury -106820-08-24 00:00 J -37294346.66 -37294346.50 -37294346.34 0.0289 0.0061

Mercury -106820-11-20 18:43 J -37294257.88 -37294257.72 -37294257.55 0.0288 0.0036

Mercury -106819-02-17 13:55 J -37294169.06 -37294168.92 -37294168.77 0.0288 0.0131

Mercury -106819-05-17 09:21 J -37294080.20 -37294080.11 -37294080.00 0.0287 0.0229

Venus -106816-07-07 12:43 J -37292933.06 -37292932.97 -37292932.87 0.0276 0.0247

Venus -106815-02-22 01:11 J -37292703.65 -37292703.45 -37292703.24 0.0274 0.0100

Venus -106815-10-09 12:57 J -37292474.17 -37292473.96 -37292473.74 0.0273 0.0045

Venus -106814-05-27 00:00 J -37292244.66 -37292244.50 -37292244.35 0.0271 0.0186

Earth -106812-01-31 09:35 J -37291629.29 -37291629.10 -37291628.91 0.0267 0.0181

Moon -106812-01-31 11:31 J -37291629.19 -37291629.02 -37291628.85 0.0267 0.0190 \*

Mars -106810-09-25 11:02 J -37290662.31 -37290662.04 -37290661.76 0.0265 0.0043

Mercury -106805-09-21 03:35 J -37288839.44 -37288839.35 -37288839.25 0.0270 0.0207

Mercury -106805-12-18 17:16 J -37288750.91 -37288750.78 -37288750.65 0.0271 0.0135

Mercury -106804-03-17 06:43 J -37288662.36 -37288662.22 -37288662.08 0.0271 0.0063

Mercury -106804-06-13 19:55 J -37288573.81 -37288573.67 -37288573.52 0.0272 0.0009

Mercury -106804-09-10 09:07 J -37288485.26 -37288485.12 -37288484.99 0.0273 0.0079

Mercury -106804-12-07 21:50 J -37288396.71 -37288396.59 -37288396.47 0.0273 0.0149

Mercury -106803-03-06 10:33 J -37288308.14 -37288308.06 -37288307.97 0.0274 0.0218

Venus -106800-03-19 03:35 J -37287199.44 -37287199.35 -37287199.26 0.0284 0.0254

Venus -106800-11-03 15:21 J -37286970.05 -37286969.86 -37286969.66 0.0286 0.0100

Venus -106799-06-21 04:04 J -37286740.53 -37286740.33 -37286740.13 0.0288 0.0061

Venus -106798-02-05 17:16 J -37286510.90 -37286510.78 -37286510.64 0.0290 0.0224

Mercury -106791-07-17 11:31 J -37283792.06 -37283792.02 -37283791.96 0.0291 0.0275

Mercury -106791-10-14 05:45 J -37283703.38 -37283703.26 -37283703.13 0.0290 0.0182

Mercury -106790-01-11 00:14 J -37283614.64 -37283614.49 -37283614.33 0.0289 0.0089

Mercury -106790-04-09 19:11 J -37283525.87 -37283525.70 -37283525.54 0.0289 0.0007

Mercury -106790-07-07 14:09 J -37283437.06 -37283436.91 -37283436.75 0.0288 0.0104

Mercury -106790-10-04 09:35 J -37283348.21 -37283348.10 -37283347.98 0.0287 0.0201

Venus -106786-01-17 19:40 J -37282146.79 -37282146.68 -37282146.55 0.0276 0.0224

Venus -106786-09-04 08:24 J -37281917.36 -37281917.15 -37281916.94 0.0274 0.0077

Venus -106785-04-20 19:55 J -37281687.87 -37281687.67 -37281687.45 0.0272 0.0069

Venus -106785-12-06 06:57 J -37281458.34 -37281458.21 -37281458.07 0.0271 0.0210

Moon -106783-01-26 02:09 J -37281042.67 -37281042.41 -37281042.14 0.0268 0.0037  
 Earth -106783-01-26 04:19 J -37281042.57 -37281042.32 -37281042.07 0.0268 0.0042 \*  
 Mars -106780-11-10 16:33 J -37279658.06 -37279657.81 -37279657.55 0.0265 0.0096  
 Mercury -106775-02-08 06:43 J -37278107.30 -37278107.22 -37278107.13 0.0270 0.0222  
 Mercury -106775-05-07 20:24 J -37278018.77 -37278018.65 -37278018.52 0.0271 0.0150  
 Mercury -106775-08-04 09:50 J -37277930.23 -37277930.09 -37277929.95 0.0272 0.0078  
 Mercury -106775-10-31 23:16 J -37277841.68 -37277841.53 -37277841.39 0.0272 0.0009  
 Mercury -106774-01-28 12:14 J -37277753.13 -37277752.99 -37277752.85 0.0273 0.0065  
 Mercury -106774-04-27 01:11 J -37277664.57 -37277664.45 -37277664.32 0.0274 0.0135  
 Mercury -106774-07-24 13:55 J -37277576.01 -37277575.92 -37277575.82 0.0274 0.0205  
 Mercury -106774-10-21 02:38 J -37277487.40 -37277487.39 -37277487.38 0.0275 0.0273  
 Venus -106771-09-29 13:55 J -37276413.04 -37276412.92 -37276412.79 0.0284 0.0226  
 Venus -106770-05-17 02:09 J -37276183.61 -37276183.41 -37276183.21 0.0286 0.0069  
 Venus -106769-01-01 14:52 J -37275954.07 -37275953.88 -37275953.68 0.0288 0.0093  
 Venus -106769-08-18 04:33 J -37275724.40 -37275724.31 -37275724.21 0.0290 0.0256  
 Moon -106768-07-31 10:19 J -37275377.31 -37275377.07 -37275376.84 0.0292 0.0054  
 Earth -106768-07-31 13:55 J -37275377.15 -37275376.92 -37275376.69 0.0292 0.0041 \*  
 Mars -106766-11-28 08:09 J -37274527.45 -37274527.16 -37274526.85 0.0296 0.0081  
 Mercury -106761-03-02 08:09 J -37272971.27 -37272971.16 -37272971.04 0.0290 0.0200  
 Mercury -106761-05-30 02:38 J -37272882.54 -37272882.39 -37272882.24 0.0289 0.0107  
 Mercury -106761-08-26 21:21 J -37272793.78 -37272793.61 -37272793.45 0.0289 0.0012  
 Mercury -106761-11-23 16:19 J -37272704.98 -37272704.82 -37272704.66 0.0288 0.0085  
 Mercury -106760-02-20 11:31 J -37272616.14 -37272616.02 -37272615.89 0.0287 0.0182  
 Mercury -106760-05-20 07:11 J -37272527.23 -37272527.20 -37272527.16 0.0286 0.0279  
 Venus -106757-07-30 04:33 J -37271360.45 -37271360.31 -37271360.16 0.0276 0.0201  
 Venus -106756-03-16 16:48 J -37271131.01 -37271130.80 -37271130.59 0.0274 0.0054  
 Venus -106756-11-01 04:04 J -37270901.53 -37270901.33 -37270901.12 0.0272 0.0091  
 Venus -106755-06-18 14:38 J -37270671.99 -37270671.89 -37270671.77 0.0270 0.0231  
 Earth -106754-01-20 21:35 J -37270455.62 -37270455.60 -37270455.54 0.0269 0.0265  
 Moon -106754-01-20 23:16 J -37270455.55 -37270455.53 -37270455.47 0.0269 0.0266 \*

Earth -106753-02-02 23:02 J -37270077.61 -37270077.54 -37270077.44 0.0267 0.0250  
 Moon -106753-02-03 02:38 J -37270077.42 -37270077.39 -37270077.32 0.0267 0.0261  
 Mars -106751-01-03 18:57 J -37269376.92 -37269376.71 -37269376.48 0.0265 0.0161  
 Mars -106750-12-27 15:21 J -37268653.99 -37268653.86 -37268653.70 0.0265 0.0225  
 Mercury -106746-06-28 08:09 J -37267375.22 -37267375.16 -37267375.09 0.0270 0.0244  
 Mercury -106746-09-24 21:50 J -37267286.70 -37267286.59 -37267286.47 0.0270 0.0172  
 Mercury -106746-12-22 11:31 J -37267198.16 -37267198.02 -37267197.88 0.0271 0.0100  
 Mercury -106745-03-20 00:43 J -37267109.61 -37267109.47 -37267109.32 0.0272 0.0029  
 Mercury -106745-06-16 13:55 J -37267021.06 -37267020.92 -37267020.77 0.0272 0.0043  
 Mercury -106745-09-13 02:52 J -37266932.51 -37266932.38 -37266932.25 0.0273 0.0113  
 Mercury -106745-12-10 15:35 J -37266843.95 -37266843.85 -37266843.74 0.0274 0.0183  
 Mercury -106744-03-09 04:19 J -37266755.37 -37266755.32 -37266755.26 0.0274 0.0251  
 Venus -106741-04-10 17:45 J -37265626.89 -37265626.76 -37265626.61 0.0285 0.0209  
 Venus -106741-11-26 06:00 J -37265397.45 -37265397.25 -37265397.04 0.0287 0.0051  
 Venus -106740-07-13 18:43 J -37265167.90 -37265167.72 -37265167.52 0.0289 0.0112  
 Venus -106739-02-28 08:38 J -37264938.20 -37264938.14 -37264938.08 0.0291 0.0275  
 Earth -106739-07-26 01:11 J -37264790.57 -37264790.45 -37264790.30 0.0292 0.0235  
 Moon -106739-07-26 05:02 J -37264790.44 -37264790.29 -37264790.13 0.0292 0.0220 \*  
 Mars -106735-01-21 14:52 J -37263515.14 -37263514.88 -37263514.60 0.0296 0.0153  
 Mercury -106732-07-20 08:09 J -37262239.25 -37262239.16 -37262239.06 0.0290 0.0229  
 Mercury -106732-10-17 02:38 J -37262150.53 -37262150.39 -37262150.25 0.0290 0.0135  
 Mercury -106731-01-13 21:21 J -37262061.78 -37262061.61 -37262061.45 0.0289 0.0041  
 Mercury -106731-04-12 16:04 J -37261972.99 -37261972.83 -37261972.66 0.0288 0.0056  
 Mercury -106731-07-10 11:31 J -37261884.16 -37261884.02 -37261883.88 0.0287 0.0152  
 Mercury -106731-10-07 06:57 J -37261795.29 -37261795.21 -37261795.13 0.0287 0.0250  
 Venus -106727-02-09 10:48 J -37260574.21 -37260574.05 -37260573.88 0.0275 0.0179  
 Venus -106727-09-26 23:02 J -37260344.75 -37260344.54 -37260344.32 0.0273 0.0032  
 Venus -106726-05-14 10:19 J -37260115.26 -37260115.07 -37260114.86 0.0272 0.0114  
 Venus -106726-12-29 20:52 J -37259885.69 -37259885.63 -37259885.55 0.0270 0.0254  
 Moon -106724-01-27 13:40 J -37259491.18 -37259490.93 -37259490.68 0.0268 0.0034



Earth -106724-01-27 17:16 J -37259491.03 -37259490.78 -37259490.52 0.0268 0.0027 \*  
 Mars -106721-02-19 23:31 J -37258372.79 -37258372.52 -37258372.24 0.0265 0.0025  
 Mercury -106717-11-14 11:02 J -37256643.07 -37256643.04 -37256643.00 0.0270 0.0260  
 Mercury -106716-02-11 00:43 J -37256554.57 -37256554.47 -37256554.35 0.0271 0.0188  
 Mercury -106716-05-10 14:24 J -37256466.03 -37256465.90 -37256465.76 0.0271 0.0116  
 Mercury -106716-08-07 03:50 J -37256377.48 -37256377.34 -37256377.19 0.0272 0.0044  
 Mercury -106716-11-03 17:02 J -37256288.93 -37256288.79 -37256288.64 0.0273 0.0028  
 Mercury -106715-01-31 06:00 J -37256200.38 -37256200.25 -37256200.11 0.0273 0.0099  
 Mercury -106715-04-29 18:57 J -37256111.82 -37256111.71 -37256111.60 0.0274 0.0168  
 Mercury -106715-07-27 07:40 J -37256023.25 -37256023.18 -37256023.11 0.0275 0.0237  
 Venus -106712-10-22 03:50 J -37254840.50 -37254840.34 -37254840.18 0.0285 0.0181  
 Venus -106711-06-08 16:19 J -37254611.03 -37254610.82 -37254610.61 0.0287 0.0021  
 Venus -106710-01-24 05:31 J -37254381.45 -37254381.27 -37254381.09 0.0289 0.0143  
 Moon -106709-08-02 02:24 J -37253825.60 -37253825.40 -37253825.19 0.0293 0.0131  
 Earth -106709-08-02 03:21 J -37253825.57 -37253825.36 -37253825.14 0.0293 0.0122 \*  
 Mars -106707-02-28 18:43 J -37253249.81 -37253249.72 -37253249.63 0.0295 0.0283  
 Mercury -106703-12-07 10:33 J -37251507.13 -37251507.06 -37251506.97 0.0290 0.0246  
 Mercury -106702-03-06 04:48 J -37251418.43 -37251418.30 -37251418.16 0.0290 0.0154  
 Mercury -106702-06-02 23:31 J -37251329.68 -37251329.52 -37251329.36 0.0289 0.0059  
 Mercury -106702-08-30 18:14 J -37251240.90 -37251240.74 -37251240.57 0.0288 0.0038  
 Mercury -106702-11-27 13:26 J -37251152.08 -37251151.94 -37251151.79 0.0288 0.0133  
 Mercury -106701-02-24 08:52 J -37251063.22 -37251063.13 -37251063.02 0.0287 0.0231  
 Venus -106698-08-22 20:09 J -37249787.84 -37249787.66 -37249787.49 0.0275 0.0156  
 Venus -106697-04-08 07:55 J -37249558.39 -37249558.17 -37249557.95 0.0273 0.0008  
 Venus -106697-11-23 18:57 J -37249328.89 -37249328.71 -37249328.52 0.0272 0.0136  
 Earth -106695-01-22 12:00 J -37248904.17 -37248904.00 -37248903.82 0.0269 0.0193  
 Moon -106695-01-22 15:50 J -37248904.02 -37248903.84 -37248903.65 0.0269 0.0191 \*  
 Mars -106691-04-06 23:02 J -37247368.78 -37247368.54 -37247368.28 0.0264 0.0108  
 Mercury -106687-07-01 02:24 J -37245822.49 -37245822.40 -37245822.31 0.0270 0.0210  
 Mercury -106687-09-27 15:50 J -37245733.96 -37245733.84 -37245733.71 0.0270 0.0138

Mercury -106687-12-25 05:16 J -37245645.42 -37245645.28 -37245645.13 0.0271 0.0067

Mercury -106686-03-23 18:28 J -37245556.87 -37245556.73 -37245556.58 0.0272 0.0009

Mercury -106686-06-20 07:40 J -37245468.32 -37245468.18 -37245468.04 0.0272 0.0075

Mercury -106686-09-16 20:38 J -37245379.76 -37245379.64 -37245379.52 0.0273 0.0145

Mercury -106686-12-14 09:21 J -37245291.20 -37245291.11 -37245291.02 0.0274 0.0214

Venus -106682-05-04 06:43 J -37244054.38 -37244054.22 -37244054.05 0.0285 0.0164

Venus -106682-12-19 19:11 J -37243824.91 -37243824.70 -37243824.50 0.0287 0.0005

Venus -106681-08-05 08:09 J -37243595.33 -37243595.16 -37243594.98 0.0289 0.0161

Earth -106680-07-27 13:11 J -37243239.15 -37243238.95 -37243238.75 0.0292 0.0158

Moon -106680-07-27 13:40 J -37243239.13 -37243238.93 -37243238.71 0.0292 0.0147 \*

Mars -106677-04-23 16:33 J -37242238.12 -37242237.81 -37242237.50 0.0296 0.0055

Mercury -106673-04-25 10:19 J -37240775.11 -37240775.07 -37240775.02 0.0291 0.0276

Mercury -106673-07-23 04:33 J -37240686.43 -37240686.31 -37240686.18 0.0290 0.0184

Mercury -106673-10-19 23:02 J -37240597.69 -37240597.54 -37240597.38 0.0289 0.0090

Mercury -106672-01-16 17:45 J -37240508.92 -37240508.76 -37240508.59 0.0289 0.0010

Mercury -106672-04-15 12:57 J -37240420.11 -37240419.96 -37240419.80 0.0288 0.0102

Mercury -106672-07-13 08:24 J -37240331.27 -37240331.15 -37240331.03 0.0287 0.0199

Venus -106668-03-04 01:11 J -37239001.63 -37239001.45 -37239001.26 0.0275 0.0134

Venus -106668-10-19 13:26 J -37238772.16 -37238771.94 -37238771.73 0.0273 0.0014

Venus -106667-06-06 00:28 J -37238542.66 -37238542.48 -37238542.30 0.0271 0.0158

Earth -106665-01-30 05:45 J -37237939.50 -37237939.26 -37237939.02 0.0268 0.0095

Moon -106665-01-30 05:31 J -37237939.49 -37237939.27 -37237939.04 0.0268 0.0103 \*

Mars -106663-05-31 03:35 J -37237087.57 -37237087.35 -37237087.11 0.0265 0.0145

Mars -106661-05-23 00:00 J -37236364.61 -37236364.50 -37236364.39 0.0265 0.0240

Mercury -106658-11-18 04:48 J -37235090.37 -37235090.30 -37235090.22 0.0270 0.0228

Mercury -106657-02-14 18:28 J -37235001.85 -37235001.73 -37235001.60 0.0271 0.0156

Mercury -106657-05-13 08:09 J -37234913.30 -37234913.16 -37234913.02 0.0272 0.0084

Mercury -106657-08-09 21:21 J -37234824.76 -37234824.61 -37234824.46 0.0272 0.0012

Mercury -106657-11-06 10:33 J -37234736.21 -37234736.06 -37234735.92 0.0273 0.0059

Mercury -106656-02-02 23:16 J -37234647.65 -37234647.53 -37234647.40 0.0274 0.0130

Mercury -106656-05-02 12:14 J -37234559.09 -37234558.99 -37234558.89 0.0274 0.0199  
 Mercury -106656-07-30 00:57 J -37234470.49 -37234470.46 -37234470.43 0.0275 0.0267  
 Venus -106653-11-13 15:50 J -37233268.02 -37233267.84 -37233267.65 0.0286 0.0137  
 Venus -106652-07-01 04:33 J -37233038.51 -37233038.31 -37233038.10 0.0288 0.0026  
 Venus -106651-02-15 18:00 J -37232808.90 -37232808.75 -37232808.59 0.0290 0.0191  
 Earth -106650-08-04 13:55 J -37232274.08 -37232273.92 -37232273.73 0.0293 0.0197  
 Moon -106650-08-04 17:16 J -37232273.94 -37232273.78 -37232273.61 0.0293 0.0202 \*  
 Mars -106647-06-18 22:48 J -37231224.79 -37231224.55 -37231224.28 0.0296 0.0177  
 Mercury -106644-12-10 06:43 J -37229954.33 -37229954.22 -37229954.10 0.0290 0.0203  
 Mercury -106643-03-09 01:11 J -37229865.60 -37229865.45 -37229865.30 0.0289 0.0109  
 Mercury -106643-06-05 19:55 J -37229776.83 -37229776.67 -37229776.51 0.0289 0.0014  
 Mercury -106643-09-02 14:52 J -37229688.03 -37229687.88 -37229687.72 0.0288 0.0082  
 Mercury -106643-11-30 10:19 J -37229599.20 -37229599.07 -37229598.94 0.0287 0.0179  
 Mercury -106642-02-27 06:00 J -37229510.29 -37229510.25 -37229510.21 0.0286 0.0277  
 Venus -106639-01-27 21:50 J -37228444.66 -37228444.59 -37228444.52 0.0277 0.0260  
 Venus -106639-09-14 10:19 J -37228215.26 -37228215.07 -37228214.87 0.0275 0.0111  
 Venus -106638-05-01 22:04 J -37227985.80 -37227985.58 -37227985.37 0.0273 0.0036  
 Venus -106638-12-17 08:38 J -37227756.29 -37227756.14 -37227755.97 0.0271 0.0180  
 Moon -106636-01-24 00:57 J -37227352.69 -37227352.46 -37227352.21 0.0268 0.0117  
 Earth -106636-01-24 00:57 J -37227352.68 -37227352.46 -37227352.22 0.0268 0.0122 \*  
 Mars -106633-07-16 06:28 J -37226083.51 -37226083.23 -37226082.95 0.0264 0.0011  
 Mercury -106628-04-06 06:28 J -37224358.29 -37224358.23 -37224358.18 0.0269 0.0250  
 Mercury -106628-07-03 19:55 J -37224269.77 -37224269.67 -37224269.55 0.0270 0.0178  
 Mercury -106628-09-30 09:35 J -37224181.24 -37224181.10 -37224180.96 0.0271 0.0106  
 Mercury -106628-12-27 23:02 J -37224092.69 -37224092.54 -37224092.40 0.0271 0.0036  
 Mercury -106627-03-26 12:00 J -37224004.14 -37224004.00 -37224003.85 0.0272 0.0037  
 Mercury -106627-06-23 00:57 J -37223915.59 -37223915.46 -37223915.32 0.0273 0.0107  
 Mercury -106627-09-19 13:55 J -37223827.03 -37223826.92 -37223826.81 0.0273 0.0176  
 Mercury -106627-12-17 02:38 J -37223738.45 -37223738.39 -37223738.33 0.0274 0.0244  
 Venus -106624-10-09 06:28 J -37222711.26 -37222711.23 -37222711.17 0.0284 0.0277

Venus -106623-05-26 18:28 J -37222481.92 -37222481.73 -37222481.54 0.0286 0.0120  
 Venus -106622-01-11 06:57 J -37222252.41 -37222252.21 -37222252.00 0.0288 0.0043  
 Venus -106622-08-28 20:09 J -37222022.79 -37222022.66 -37222022.51 0.0290 0.0208  
 Moon -106621-07-28 19:11 J -37221687.93 -37221687.70 -37221687.47 0.0292 0.0080  
 Earth -106621-07-28 22:19 J -37221687.79 -37221687.57 -37221687.34 0.0292 0.0087 \*  
 Mars -106619-07-25 14:09 J -37220961.04 -37220960.91 -37220960.76 0.0296 0.0263  
 Mercury -106614-04-29 05:45 J -37219222.34 -37219222.26 -37219222.16 0.0291 0.0236  
 Mercury -106614-07-27 00:14 J -37219133.63 -37219133.49 -37219133.35 0.0290 0.0143  
 Mercury -106614-10-23 18:43 J -37219044.88 -37219044.72 -37219044.56 0.0289 0.0049  
 Mercury -106613-01-20 13:40 J -37218956.09 -37218955.93 -37218955.77 0.0289 0.0048  
 Mercury -106613-04-18 08:52 J -37218867.27 -37218867.13 -37218866.98 0.0288 0.0145  
 Mercury -106613-07-16 04:19 J -37218778.40 -37218778.32 -37218778.22 0.0287 0.0243  
 Venus -106610-08-10 01:11 J -37217658.54 -37217658.45 -37217658.34 0.0276 0.0241  
 Venus -106609-03-26 14:09 J -37217429.12 -37217428.91 -37217428.71 0.0274 0.0092  
 Venus -106609-11-11 01:55 J -37217199.63 -37217199.42 -37217199.21 0.0272 0.0056  
 Venus -106608-06-28 12:43 J -37216970.11 -37216969.97 -37216969.82 0.0271 0.0200  
 Earth -106606-01-31 15:35 J -37216388.04 -37216387.85 -37216387.63 0.0267 0.0160  
 Moon -106606-01-31 19:26 J -37216387.88 -37216387.69 -37216387.49 0.0267 0.0171 \*  
 Mars -106605-09-08 04:19 J -37215802.33 -37215802.32 -37215802.30 0.0265 0.0265  
 Mars -106603-09-01 03:50 J -37215079.59 -37215079.34 -37215079.10 0.0264 0.0121  
 Mercury -106599-08-24 08:24 J -37213626.15 -37213626.15 -37213626.14 0.0270 0.0270  
 Mercury -106599-11-20 22:04 J -37213537.67 -37213537.58 -37213537.47 0.0270 0.0198  
 Mercury -106598-02-17 11:45 J -37213449.14 -37213449.01 -37213448.87 0.0271 0.0126  
 Mercury -106598-05-17 01:11 J -37213360.59 -37213360.45 -37213360.30 0.0272 0.0054  
 Mercury -106598-08-13 14:24 J -37213272.04 -37213271.90 -37213271.75 0.0272 0.0017  
 Mercury -106598-11-10 03:21 J -37213183.49 -37213183.36 -37213183.22 0.0273 0.0088  
 Mercury -106597-02-06 16:19 J -37213094.94 -37213094.82 -37213094.70 0.0274 0.0158  
 Mercury -106597-05-05 05:02 J -37213006.37 -37213006.29 -37213006.21 0.0274 0.0227  
 Venus -106594-04-21 13:55 J -37211925.00 -37211924.92 -37211924.82 0.0284 0.0254  
 Venus -106594-12-07 01:55 J -37211695.61 -37211695.42 -37211695.22 0.0286 0.0096

Venus -106593-07-23 14:38 J -37211466.08 -37211465.89 -37211465.68 0.0288 0.0069

Venus -106592-03-10 04:19 J -37211236.43 -37211236.32 -37211236.19 0.0290 0.0235

Earth -106591-08-05 21:07 J -37210722.72 -37210722.62 -37210722.52 0.0293 0.0263

Moon -106591-08-05 23:16 J -37210722.62 -37210722.53 -37210722.42 0.0293 0.0265 \*

Mars -106589-09-18 11:59 J -37209948.31 -37209948.00 -37209947.69 0.0296 0.0036

Mercury -106585-09-15 07:40 J -37208490.25 -37208490.18 -37208490.10 0.0291 0.0257

Mercury -106585-12-13 01:55 J -37208401.55 -37208401.42 -37208401.28 0.0290 0.0164

Mercury -106584-03-11 20:38 J -37208312.80 -37208312.64 -37208312.49 0.0289 0.0070

Mercury -106584-06-08 15:21 J -37208224.02 -37208223.86 -37208223.69 0.0289 0.0027

Mercury -106584-09-05 10:33 J -37208135.21 -37208135.06 -37208134.91 0.0288 0.0123

Mercury -106584-12-03 05:59 J -37208046.35 -37208046.25 -37208046.14 0.0287 0.0221

Venus -106580-02-19 10:33 J -37206872.19 -37206872.06 -37206871.93 0.0276 0.0219

Venus -106580-10-06 23:02 J -37206642.75 -37206642.54 -37206642.33 0.0274 0.0069

Venus -106579-05-24 10:33 J -37206413.27 -37206413.06 -37206412.85 0.0272 0.0078

Venus -106578-01-08 20:52 J -37206183.74 -37206183.63 -37206183.50 0.0271 0.0222

Moon -106577-01-26 07:40 J -37205801.43 -37205801.18 -37205800.92 0.0268 0.0047

Earth -106577-01-26 11:45 J -37205801.26 -37205801.01 -37205800.76 0.0268 0.0056 \*

Mars -106575-10-25 10:19 J -37204798.30 -37204798.07 -37204797.82 0.0264 0.0129

Mars -106573-10-17 03:07 J -37204075.45 -37204075.37 -37204075.28 0.0264 0.0251

Mercury -106569-04-08 23:45 J -37202805.60 -37202805.51 -37202805.42 0.0269 0.0219

Mercury -106569-07-06 13:11 J -37202717.07 -37202716.95 -37202716.82 0.0270 0.0148

Mercury -106569-10-03 02:38 J -37202628.53 -37202628.39 -37202628.24 0.0271 0.0077

Mercury -106569-12-30 15:50 J -37202539.98 -37202539.84 -37202539.69 0.0271 0.0010

Mercury -106568-03-29 05:02 J -37202451.43 -37202451.29 -37202451.15 0.0272 0.0065

Mercury -106568-06-25 17:45 J -37202362.88 -37202362.76 -37202362.63 0.0273 0.0135

Mercury -106568-09-22 06:28 J -37202274.32 -37202274.23 -37202274.13 0.0273 0.0204

Mercury -106568-12-19 19:11 J -37202185.71 -37202185.70 -37202185.68 0.0274 0.0271

Venus -106565-10-31 16:19 J -37201138.93 -37201138.82 -37201138.71 0.0284 0.0237

Venus -106564-06-18 04:04 J -37200909.53 -37200909.33 -37200909.13 0.0286 0.0078

Venus -106563-02-02 16:33 J -37200680.00 -37200679.81 -37200679.61 0.0288 0.0086

Venus -106563-09-20 05:59 J -37200450.34 -37200450.25 -37200450.14 0.0290 0.0251  
 Moon -106562-07-31 01:55 J -37200136.65 -37200136.42 -37200136.19 0.0292 0.0017  
 Earth -106562-07-31 03:50 J -37200136.58 -37200136.34 -37200136.11 0.0292 0.0022 \*  
 Mars -106559-11-12 05:59 J -37198936.48 -37198936.25 -37198936.00 0.0296 0.0192  
 Mercury -106555-05-02 00:28 J -37197669.59 -37197669.48 -37197669.36 0.0291 0.0200  
 Mercury -106555-07-29 18:57 J -37197580.86 -37197580.71 -37197580.56 0.0290 0.0106  
 Mercury -106555-10-26 13:40 J -37197492.09 -37197491.93 -37197491.76 0.0289 0.0011  
 Mercury -106554-01-23 08:38 J -37197403.29 -37197403.14 -37197402.98 0.0288 0.0087  
 Mercury -106554-04-22 04:04 J -37197314.45 -37197314.33 -37197314.20 0.0288 0.0184  
 Mercury -106554-07-19 23:45 J -37197225.53 -37197225.51 -37197225.48 0.0287 0.0281  
 Venus -106551-09-01 12:28 J -37196086.12 -37196085.98 -37196085.83 0.0276 0.0202  
 Venus -106550-04-19 01:11 J -37195856.66 -37195856.45 -37195856.24 0.0274 0.0051  
 Venus -106550-12-04 12:43 J -37195627.17 -37195626.97 -37195626.76 0.0272 0.0097  
 Venus -106549-07-20 23:31 J -37195397.62 -37195397.52 -37195397.42 0.0270 0.0240  
 Earth -106547-02-01 23:02 J -37194836.67 -37194836.54 -37194836.38 0.0267 0.0220  
 Moon -106547-02-02 00:57 J -37194836.58 -37194836.46 -37194836.32 0.0267 0.0232 \*  
 Mars -106545-12-10 05:02 J -37193794.57 -37193794.29 -37193794.02 0.0264 0.0005  
 Mercury -106540-08-27 01:26 J -37192073.50 -37192073.44 -37192073.37 0.0270 0.0241  
 Mercury -106540-11-23 15:07 J -37191984.99 -37191984.87 -37191984.75 0.0270 0.0169  
 Mercury -106539-02-20 04:33 J -37191896.45 -37191896.31 -37191896.17 0.0271 0.0098  
 Mercury -106539-05-19 17:59 J -37191807.90 -37191807.75 -37191807.61 0.0272 0.0027  
 Mercury -106539-08-16 06:57 J -37191719.35 -37191719.21 -37191719.06 0.0272 0.0045  
 Mercury -106539-11-12 19:55 J -37191630.80 -37191630.67 -37191630.54 0.0273 0.0114  
 Mercury -106538-02-09 08:38 J -37191542.24 -37191542.14 -37191542.03 0.0274 0.0184  
 Mercury -106538-05-08 21:21 J -37191453.66 -37191453.61 -37191453.55 0.0274 0.0252  
 Venus -106535-05-13 22:33 J -37190352.69 -37190352.56 -37190352.43 0.0284 0.0216  
 Venus -106535-12-29 10:33 J -37190123.26 -37190123.06 -37190122.86 0.0287 0.0055  
 Venus -106534-08-15 23:31 J -37189893.71 -37189893.52 -37189893.33 0.0289 0.0110  
 Venus -106533-04-01 13:11 J -37189664.00 -37189663.95 -37189663.88 0.0290 0.0277  
 Earth -106533-07-24 20:38 J -37189549.66 -37189549.64 -37189549.59 0.0291 0.0288

Moon -106533-07-24 23:02 J -37189549.61 -37189549.54 -37189549.46 0.0291 0.0276 \*  
 Mars -106531-12-19 18:43 J -37188671.87 -37188671.72 -37188671.54 0.0296 0.0249  
 Mercury -106526-09-19 01:55 J -37186937.52 -37186937.42 -37186937.32 0.0291 0.0222  
 Mercury -106526-12-16 20:09 J -37186848.80 -37186848.66 -37186848.51 0.0290 0.0129  
 Mercury -106525-03-14 14:52 J -37186760.04 -37186759.88 -37186759.71 0.0289 0.0035  
 Mercury -106525-06-11 10:04 J -37186671.25 -37186671.08 -37186670.92 0.0288 0.0063  
 Mercury -106525-09-08 05:16 J -37186582.42 -37186582.28 -37186582.14 0.0288 0.0160  
 Mercury -106525-12-06 00:57 J -37186493.53 -37186493.46 -37186493.39 0.0287 0.0257  
 Venus -106521-03-13 20:38 J -37185299.79 -37185299.64 -37185299.47 0.0276 0.0180  
 Venus -106521-10-29 09:21 J -37185070.33 -37185070.11 -37185069.89 0.0274 0.0030  
 Venus -106520-06-15 20:38 J -37184840.83 -37184840.64 -37184840.44 0.0272 0.0118  
 Venus -106519-01-31 07:11 J -37184611.25 -37184611.20 -37184611.14 0.0270 0.0261  
 Moon -106518-01-27 17:16 J -37184250.03 -37184249.78 -37184249.54 0.0268 0.0017  
 Earth -106518-01-27 18:43 J -37184249.98 -37184249.72 -37184249.46 0.0268 0.0005 \*  
 Mars -106516-02-02 07:40 J -37183513.26 -37183513.18 -37183513.07 0.0265 0.0247  
 Mars -106514-01-26 04:33 J -37182790.54 -37182790.31 -37182790.06 0.0264 0.0134  
 Mercury -106510-01-14 02:52 J -37181341.41 -37181341.38 -37181341.35 0.0269 0.0263  
 Mercury -106510-04-12 16:33 J -37181252.91 -37181252.81 -37181252.70 0.0269 0.0191  
 Mercury -106510-07-10 05:59 J -37181164.38 -37181164.25 -37181164.11 0.0270 0.0120  
 Mercury -106510-10-06 19:26 J -37181075.84 -37181075.69 -37181075.55 0.0270 0.0049  
 Mercury -106509-01-03 08:38 J -37180987.29 -37180987.14 -37180987.00 0.0271 0.0022  
 Mercury -106509-03-31 21:35 J -37180898.74 -37180898.60 -37180898.47 0.0272 0.0091  
 Mercury -106509-06-28 10:19 J -37180810.18 -37180810.07 -37180809.95 0.0273 0.0160  
 Mercury -106509-09-24 23:02 J -37180721.62 -37180721.54 -37180721.47 0.0273 0.0229  
 Venus -106506-11-23 23:59 J -37179566.64 -37179566.50 -37179566.34 0.0284 0.0200  
 Venus -106505-07-10 11:59 J -37179337.21 -37179337.00 -37179336.80 0.0286 0.0039  
 Venus -106504-02-25 00:28 J -37179107.66 -37179107.48 -37179107.29 0.0288 0.0126  
 Earth -106503-08-01 05:45 J -37178585.49 -37178585.26 -37178585.03 0.0292 0.0036  
 Moon -106503-08-01 07:55 J -37178585.39 -37178585.17 -37178584.94 0.0292 0.0038 \*  
 Mars -106500-02-11 03:21 J -37177660.67 -37177660.36 -37177660.04 0.0296 0.0027

Mercury -106496-02-04 23:59 J -37176205.57 -37176205.50 -37176205.43 0.0291 0.0261

Mercury -106496-05-04 18:14 J -37176116.87 -37176116.74 -37176116.61 0.0291 0.0168

Mercury -106496-08-01 12:43 J -37176028.13 -37176027.97 -37176027.81 0.0290 0.0074

Mercury -106496-10-29 07:40 J -37175939.35 -37175939.18 -37175939.02 0.0289 0.0023

Mercury -106495-01-26 02:38 J -37175850.54 -37175850.39 -37175850.23 0.0288 0.0120

Mercury -106495-04-24 22:19 J -37175761.68 -37175761.57 -37175761.46 0.0288 0.0217

Venus -106492-09-23 21:35 J -37174513.77 -37174513.60 -37174513.42 0.0276 0.0164

Venus -106491-05-11 10:04 J -37174284.29 -37174284.08 -37174283.86 0.0274 0.0014

Venus -106491-12-26 21:35 J -37174054.78 -37174054.60 -37174054.41 0.0272 0.0135

Earth -106489-01-22 02:23 J -37173663.51 -37173663.40 -37173663.26 0.0269 0.0235

Moon -106489-01-22 03:21 J -37173663.49 -37173663.36 -37173663.20 0.0269 0.0224 \*

Mars -106486-03-20 23:59 J -37172509.73 -37172509.50 -37172509.24 0.0264 0.0121

Mars -106484-03-12 18:28 J -37171786.78 -37171786.73 -37171786.68 0.0264 0.0260

Mercury -106481-08-29 17:45 J -37170520.84 -37170520.76 -37170520.67 0.0270 0.0215

Mercury -106481-11-26 07:26 J -37170432.31 -37170432.19 -37170432.06 0.0270 0.0144

Mercury -106480-02-22 20:52 J -37170343.77 -37170343.63 -37170343.49 0.0271 0.0072

Mercury -106480-05-22 10:04 J -37170255.23 -37170255.08 -37170254.93 0.0272 0.0002

Mercury -106480-08-18 23:02 J -37170166.68 -37170166.54 -37170166.40 0.0272 0.0069

Mercury -106480-11-15 11:59 J -37170078.12 -37170078.00 -37170077.88 0.0273 0.0138

Mercury -106479-02-12 00:43 J -37169989.56 -37169989.47 -37169989.38 0.0274 0.0207

Venus -106476-06-05 05:02 J -37168780.45 -37168780.29 -37168780.13 0.0285 0.0180

Venus -106475-01-20 17:02 J -37168551.00 -37168550.79 -37168550.58 0.0287 0.0018

Venus -106475-09-07 05:59 J -37168321.43 -37168321.25 -37168321.08 0.0289 0.0148

Moon -106474-07-26 17:59 J -37167998.89 -37167998.75 -37167998.58 0.0291 0.0227

Earth -106474-07-26 20:23 J -37167998.78 -37167998.65 -37167998.50 0.0291 0.0233 \*

Mars -106470-04-07 20:38 J -37166647.86 -37166647.64 -37166647.40 0.0296 0.0201

Mercury -106467-06-25 00:57 J -37165473.49 -37165473.46 -37165473.43 0.0291 0.0285

Mercury -106467-09-21 18:57 J -37165384.82 -37165384.71 -37165384.59 0.0291 0.0193

Mercury -106467-12-19 13:26 J -37165296.09 -37165295.94 -37165295.78 0.0290 0.0099

Mercury -106466-03-18 08:23 J -37165207.32 -37165207.15 -37165206.99 0.0289 0.0005



Mercury -106466-06-15 03:21 J -37165118.51 -37165118.36 -37165118.20 0.0288 0.0093

Mercury -106466-09-11 22:47 J -37165029.67 -37165029.55 -37165029.42 0.0288 0.0191

Venus -106462-04-06 04:47 J -37163727.47 -37163727.30 -37163727.11 0.0276 0.0144

Venus -106462-11-21 17:31 J -37163497.99 -37163497.77 -37163497.56 0.0274 0.0008

Venus -106461-07-08 04:47 J -37163268.47 -37163268.30 -37163268.12 0.0272 0.0155

Earth -106459-01-28 22:19 J -37162698.81 -37162698.57 -37162698.31 0.0268 0.0061

Moon -106459-01-29 01:40 J -37162698.67 -37162698.43 -37162698.19 0.0268 0.0075 \*

Mars -106456-05-06 01:11 J -37161505.73 -37161505.45 -37161505.17 0.0264 0.0015

Mercury -106451-01-16 19:11 J -37159788.76 -37159788.70 -37159788.62 0.0269 0.0237

Mercury -106451-04-15 08:52 J -37159700.24 -37159700.13 -37159700.01 0.0269 0.0166

Mercury -106451-07-12 22:19 J -37159611.71 -37159611.57 -37159611.43 0.0270 0.0095

Mercury -106451-10-09 11:31 J -37159523.16 -37159523.02 -37159522.87 0.0271 0.0025

Mercury -106450-01-06 00:43 J -37159434.61 -37159434.47 -37159434.33 0.0271 0.0046

Mercury -106450-04-04 13:26 J -37159346.06 -37159345.94 -37159345.80 0.0272 0.0116

Mercury -106450-07-02 02:09 J -37159257.51 -37159257.41 -37159257.30 0.0273 0.0185

Mercury -106450-09-28 14:52 J -37159168.93 -37159168.88 -37159168.83 0.0273 0.0252

Venus -106447-12-16 06:43 J -37157994.39 -37157994.22 -37157994.05 0.0284 0.0163

Venus -106446-08-02 18:28 J -37157764.94 -37157764.73 -37157764.52 0.0286 0.0003

Venus -106445-03-19 06:57 J -37157535.37 -37157535.21 -37157535.03 0.0288 0.0165

Earth -106444-08-02 05:31 J -37157034.49 -37157034.27 -37157034.04 0.0292 0.0090

Moon -106444-08-02 08:52 J -37157034.36 -37157034.13 -37157033.91 0.0292 0.0091 \*

Mars -106442-05-13 23:31 J -37156384.69 -37156384.52 -37156384.34 0.0296 0.0243

Mercury -106437-02-08 16:33 J -37154652.89 -37154652.81 -37154652.71 0.0291 0.0234

Mercury -106437-05-07 11:02 J -37154564.18 -37154564.04 -37154563.90 0.0291 0.0140

Mercury -106437-08-04 05:45 J -37154475.42 -37154475.26 -37154475.10 0.0290 0.0045

Mercury -106437-11-01 00:43 J -37154386.63 -37154386.47 -37154386.31 0.0289 0.0052

Mercury -106436-01-28 19:55 J -37154297.81 -37154297.67 -37154297.53 0.0288 0.0149

Mercury -106436-04-27 15:35 J -37154208.93 -37154208.85 -37154208.77 0.0288 0.0247

Venus -106433-10-16 04:33 J -37152941.50 -37152941.31 -37152941.12 0.0276 0.0129

Venus -106432-06-02 17:02 J -37152712.00 -37152711.79 -37152711.57 0.0274 0.0022

Venus -106431-01-18 04:33 J -37152482.48 -37152482.31 -37152482.14 0.0272 0.0170  
 Moon -106430-01-23 00:43 J -37152112.66 -37152112.47 -37152112.26 0.0269 0.0169  
 Earth -106430-01-23 04:19 J -37152112.50 -37152112.32 -37152112.12 0.0269 0.0183 \*  
 Mars -106428-06-28 12:57 J -37151225.06 -37151224.96 -37151224.83 0.0265 0.0242  
 Mars -106426-06-21 11:45 J -37150502.23 -37150502.01 -37150501.77 0.0264 0.0140  
 Mercury -106422-06-05 20:09 J -37149056.69 -37149056.66 -37149056.63 0.0269 0.0262  
 Mercury -106422-09-02 09:50 J -37148968.19 -37148968.09 -37148967.98 0.0270 0.0191  
 Mercury -106422-11-29 23:31 J -37148879.66 -37148879.52 -37148879.39 0.0270 0.0120  
 Mercury -106421-02-26 12:43 J -37148791.11 -37148790.97 -37148790.82 0.0271 0.0049  
 Mercury -106421-05-25 01:55 J -37148702.57 -37148702.42 -37148702.27 0.0272 0.0022  
 Mercury -106421-08-21 14:52 J -37148614.02 -37148613.88 -37148613.74 0.0272 0.0092  
 Mercury -106421-11-18 03:35 J -37148525.46 -37148525.35 -37148525.23 0.0273 0.0161  
 Mercury -106420-02-14 16:19 J -37148436.89 -37148436.82 -37148436.74 0.0274 0.0229  
 Venus -106417-06-27 10:04 J -37147208.25 -37147208.08 -37147207.89 0.0285 0.0146  
 Venus -106416-02-11 22:19 J -37146978.78 -37146978.57 -37146978.36 0.0287 0.0018  
 Venus -106416-09-29 11:02 J -37146749.19 -37146749.04 -37146748.88 0.0289 0.0185  
 Moon -106415-07-27 15:07 J -37146448.04 -37146447.87 -37146447.68 0.0291 0.0179  
 Earth -106415-07-27 18:28 J -37146447.91 -37146447.73 -37146447.55 0.0291 0.0183 \*  
 Mars -106412-07-07 06:14 J -37145372.55 -37145372.24 -37145371.93 0.0296 0.0021  
 Mercury -106408-06-27 17:02 J -37143920.85 -37143920.79 -37143920.71 0.0291 0.0260  
 Mercury -106408-09-24 11:16 J -37143832.15 -37143832.03 -37143831.89 0.0290 0.0168  
 Mercury -106408-12-22 05:59 J -37143743.41 -37143743.25 -37143743.09 0.0290 0.0073  
 Mercury -106407-03-21 00:57 J -37143654.63 -37143654.46 -37143654.30 0.0289 0.0024  
 Mercury -106407-06-17 19:55 J -37143565.81 -37143565.67 -37143565.51 0.0288 0.0121  
 Mercury -106407-09-14 15:35 J -37143476.96 -37143476.85 -37143476.74 0.0288 0.0218  
 Venus -106404-09-10 21:21 J -37142384.66 -37142384.61 -37142384.53 0.0278 0.0263  
 Venus -106403-04-28 11:02 J -37142155.23 -37142155.04 -37142154.84 0.0276 0.0109  
 Venus -106403-12-13 23:31 J -37141925.73 -37141925.52 -37141925.30 0.0274 0.0043  
 Venus -106402-07-31 11:02 J -37141696.19 -37141696.04 -37141695.89 0.0272 0.0190  
 Earth -106400-01-29 23:16 J -37141147.76 -37141147.53 -37141147.29 0.0268 0.0111

Moon -106400-01-30 02:09 J -37141147.64 -37141147.41 -37141147.18 0.0268 0.0125 \*  
 Mars -106398-08-14 17:16 J -37140221.02 -37140220.78 -37140220.51 0.0265 0.0106  
 Mercury -106392-01-19 11:16 J -37138236.11 -37138236.03 -37138235.93 0.0269 0.0213  
 Mercury -106392-04-18 00:57 J -37138147.58 -37138147.46 -37138147.33 0.0269 0.0141  
 Mercury -106392-07-15 14:23 J -37138059.04 -37138058.90 -37138058.76 0.0270 0.0071  
 Mercury -106392-10-12 03:35 J -37137970.50 -37137970.35 -37137970.21 0.0271 0.0005  
 Mercury -106391-01-08 16:33 J -37137881.95 -37137881.81 -37137881.67 0.0271 0.0069  
 Mercury -106391-04-07 05:16 J -37137793.40 -37137793.28 -37137793.15 0.0272 0.0139  
 Mercury -106391-07-04 17:59 J -37137704.84 -37137704.75 -37137704.66 0.0272 0.0207  
 Venus -106387-01-07 11:59 J -37136422.18 -37136422.00 -37136421.81 0.0284 0.0128  
 Venus -106387-08-24 23:45 J -37136192.72 -37136192.51 -37136192.30 0.0286 0.0036  
 Venus -106386-04-11 12:28 J -37135963.13 -37135962.98 -37135962.83 0.0288 0.0202  
 Moon -106385-08-03 02:09 J -37135483.62 -37135483.41 -37135483.18 0.0292 0.0134  
 Earth -106385-08-03 03:21 J -37135483.56 -37135483.36 -37135483.15 0.0292 0.0139 \*  
 Mars -106382-08-30 16:19 J -37134361.04 -37134360.82 -37134360.58 0.0296 0.0202  
 Mercury -106378-02-11 08:52 J -37133100.24 -37133100.13 -37133100.02 0.0291 0.0208  
 Mercury -106378-05-11 03:21 J -37133011.51 -37133011.36 -37133011.21 0.0290 0.0114  
 Mercury -106378-08-07 22:04 J -37132922.74 -37132922.58 -37132922.42 0.0290 0.0019  
 Mercury -106378-11-04 17:02 J -37132833.95 -37132833.79 -37132833.63 0.0289 0.0078  
 Mercury -106377-02-01 12:28 J -37132745.11 -37132744.98 -37132744.85 0.0288 0.0175  
 Mercury -106377-04-30 07:55 J -37132656.21 -37132656.17 -37132656.11 0.0287 0.0274  
 Venus -106374-03-23 20:23 J -37131598.74 -37131598.65 -37131598.56 0.0278 0.0250  
 Venus -106374-11-08 09:50 J -37131369.29 -37131369.09 -37131368.88 0.0275 0.0096  
 Venus -106373-06-24 22:19 J -37131139.78 -37131139.57 -37131139.35 0.0273 0.0056  
 Venus -106372-02-09 09:50 J -37130910.22 -37130910.09 -37130909.94 0.0272 0.0204  
 Moon -106371-01-24 01:40 J -37130561.65 -37130561.43 -37130561.20 0.0269 0.0121  
 Earth -106371-01-24 03:35 J -37130561.56 -37130561.35 -37130561.12 0.0269 0.0135 \*  
 Mars -106368-09-29 02:52 J -37129217.66 -37129217.38 -37129217.10 0.0264 0.0019  
 Mercury -106363-06-08 11:59 J -37127504.06 -37127504.00 -37127503.93 0.0269 0.0239  
 Mercury -106363-09-05 01:40 J -37127415.54 -37127415.43 -37127415.31 0.0270 0.0168

Mercury -106363-12-02 15:07 J -37127327.01 -37127326.87 -37127326.73 0.0270 0.0097  
 Mercury -106362-03-01 04:19 J -37127238.46 -37127238.32 -37127238.17 0.0271 0.0027  
 Mercury -106362-05-28 17:31 J -37127149.92 -37127149.77 -37127149.63 0.0272 0.0044  
 Mercury -106362-08-25 06:28 J -37127061.36 -37127061.23 -37127061.10 0.0272 0.0113  
 Mercury -106362-11-21 19:11 J -37126972.81 -37126972.70 -37126972.60 0.0273 0.0182  
 Mercury -106361-02-18 07:40 J -37126884.23 -37126884.18 -37126884.12 0.0274 0.0250  
 Venus -106359-12-03 04:04 J -37125865.39 -37125865.33 -37125865.27 0.0283 0.0269  
 Venus -106358-07-20 14:52 J -37125636.07 -37125635.88 -37125635.68 0.0285 0.0111  
 Venus -106357-03-06 02:52 J -37125406.58 -37125406.38 -37125406.18 0.0287 0.0054  
 Venus -106357-10-21 15:35 J -37125176.97 -37125176.85 -37125176.71 0.0289 0.0221  
 Earth -106356-07-28 15:07 J -37124897.08 -37124896.87 -37124896.66 0.0291 0.0135  
 Moon -106356-07-28 16:19 J -37124897.02 -37124896.82 -37124896.62 0.0291 0.0136 \*  
 Mars -106354-10-06 17:59 J -37124096.92 -37124096.75 -37124096.56 0.0295 0.0240  
 Mercury -106349-06-30 09:07 J -37122368.21 -37122368.12 -37122368.03 0.0291 0.0236  
 Mercury -106349-09-27 03:21 J -37122279.50 -37122279.36 -37122279.22 0.0290 0.0143  
 Mercury -106349-12-24 22:04 J -37122190.74 -37122190.58 -37122190.42 0.0290 0.0048  
 Mercury -106348-03-23 17:02 J -37122101.95 -37122101.79 -37122101.63 0.0289 0.0048  
 Mercury -106348-06-20 12:14 J -37122013.13 -37122012.99 -37122012.84 0.0288 0.0145  
 Mercury -106348-09-17 07:40 J -37121924.26 -37121924.18 -37121924.08 0.0288 0.0244  
 Venus -106345-10-03 02:23 J -37120812.51 -37120812.40 -37120812.27 0.0277 0.0230  
 Venus -106344-05-20 16:04 J -37120583.04 -37120582.83 -37120582.62 0.0275 0.0075  
 Venus -106343-01-05 04:19 J -37120353.52 -37120353.32 -37120353.11 0.0274 0.0077  
 Venus -106343-08-22 15:50 J -37120123.95 -37120123.84 -37120123.71 0.0272 0.0224  
 Moon -106341-01-31 19:40 J -37119596.87 -37119596.68 -37119596.47 0.0268 0.0171  
 Earth -106341-01-31 22:19 J -37119596.77 -37119596.57 -37119596.36 0.0268 0.0156 \*  
 Mars -106340-11-22 03:21 J -37118936.50 -37118936.36 -37118936.21 0.0265 0.0228  
 Mars -106338-11-15 01:55 J -37118213.64 -37118213.42 -37118213.19 0.0264 0.0152  
 Mercury -106334-10-26 13:26 J -37116771.96 -37116771.94 -37116771.89 0.0268 0.0261  
 Mercury -106333-01-23 03:21 J -37116683.46 -37116683.36 -37116683.25 0.0269 0.0189  
 Mercury -106333-04-20 16:47 J -37116594.93 -37116594.80 -37116594.66 0.0269 0.0118

Mercury -106333-07-18 06:14 J -37116506.39 -37116506.24 -37116506.10 0.0270 0.0047

Mercury -106333-10-14 19:11 J -37116417.84 -37116417.70 -37116417.55 0.0271 0.0024

Mercury -106332-01-11 08:09 J -37116329.29 -37116329.16 -37116329.02 0.0271 0.0092

Mercury -106332-04-09 20:52 J -37116240.74 -37116240.63 -37116240.51 0.0272 0.0161

Mercury -106332-07-07 09:35 J -37116152.17 -37116152.10 -37116152.02 0.0273 0.0229

Venus -106329-06-14 06:43 J -37115079.31 -37115079.22 -37115079.12 0.0282 0.0250

Venus -106328-01-29 17:16 J -37114849.97 -37114849.78 -37114849.58 0.0284 0.0092

Venus -106328-09-16 05:02 J -37114620.49 -37114620.29 -37114620.09 0.0286 0.0073

Venus -106327-05-03 17:31 J -37114390.88 -37114390.77 -37114390.65 0.0288 0.0239

Moon -106326-08-04 21:07 J -37113932.79 -37113932.62 -37113932.42 0.0292 0.0178

Earth -106326-08-05 00:57 J -37113932.64 -37113932.46 -37113932.28 0.0292 0.0186 \*

Mars -106324-11-29 01:40 J -37113085.74 -37113085.43 -37113085.11 0.0296 0.0021

Mercury -106320-11-17 06:43 J -37111636.27 -37111636.22 -37111636.17 0.0292 0.0277

Mercury -106319-02-14 00:43 J -37111547.59 -37111547.47 -37111547.34 0.0291 0.0185

Mercury -106319-05-13 19:11 J -37111458.85 -37111458.70 -37111458.54 0.0290 0.0091

Mercury -106319-08-10 14:09 J -37111370.08 -37111369.91 -37111369.75 0.0290 0.0008

Mercury -106319-11-07 09:07 J -37111281.27 -37111281.12 -37111280.96 0.0289 0.0103

Mercury -106318-02-04 04:33 J -37111192.42 -37111192.31 -37111192.19 0.0288 0.0200

Venus -106315-04-15 00:57 J -37110026.59 -37110026.46 -37110026.33 0.0277 0.0218

Venus -106315-11-30 14:09 J -37109797.11 -37109796.91 -37109796.69 0.0275 0.0064

Venus -106314-07-18 02:52 J -37109567.58 -37109567.38 -37109567.17 0.0273 0.0090

Venus -106313-03-03 14:23 J -37109337.99 -37109337.90 -37109337.79 0.0272 0.0237

Earth -106312-01-25 01:40 J -37109010.67 -37109010.43 -37109010.19 0.0269 0.0090

Moon -106312-01-25 04:19 J -37109010.56 -37109010.32 -37109010.08 0.0269 0.0075 \*

Mars -106309-01-07 14:23 J -37107933.15 -37107932.90 -37107932.64 0.0265 0.0105

Mercury -106304-06-11 03:50 J -37105951.42 -37105951.34 -37105951.25 0.0269 0.0216

Mercury -106304-09-07 17:31 J -37105862.90 -37105862.77 -37105862.65 0.0270 0.0145

Mercury -106304-12-05 06:43 J -37105774.36 -37105774.22 -37105774.07 0.0270 0.0075

Mercury -106303-03-03 20:09 J -37105685.81 -37105685.66 -37105685.52 0.0271 0.0009

Mercury -106303-05-31 09:07 J -37105597.26 -37105597.12 -37105596.98 0.0272 0.0066

Mercury -106303-08-27 21:50 J -37105508.71 -37105508.59 -37105508.46 0.0272 0.0135

Mercury -106303-11-24 10:33 J -37105420.15 -37105420.06 -37105419.96 0.0273 0.0204

Mercury -106302-02-20 23:16 J -37105331.55 -37105331.53 -37105331.52 0.0274 0.0271

Venus -106300-12-25 08:38 J -37104293.24 -37104293.14 -37104293.02 0.0283 0.0235

Venus -106299-08-11 19:40 J -37104063.88 -37104063.68 -37104063.48 0.0285 0.0075

Venus -106298-03-29 07:40 J -37103834.38 -37103834.18 -37103833.98 0.0287 0.0090

Venus -106298-11-13 20:23 J -37103604.74 -37103604.65 -37103604.56 0.0289 0.0258

Earth -106297-07-29 11:31 J -37103346.24 -37103346.02 -37103345.79 0.0291 0.0088

Moon -106297-07-29 15:07 J -37103346.09 -37103345.87 -37103345.64 0.0291 0.0093 \*

Mars -106293-01-23 07:11 J -37102073.42 -37102073.20 -37102072.97 0.0296 0.0202

Mercury -106290-07-04 00:43 J -37100815.57 -37100815.47 -37100815.36 0.0291 0.0214

Mercury -106290-09-30 19:11 J -37100726.85 -37100726.70 -37100726.56 0.0290 0.0120

Mercury -106290-12-28 13:55 J -37100638.09 -37100637.92 -37100637.76 0.0290 0.0025

Mercury -106289-03-26 08:52 J -37100549.29 -37100549.13 -37100548.97 0.0289 0.0072

Mercury -106289-06-23 04:04 J -37100460.46 -37100460.33 -37100460.19 0.0288 0.0170

Mercury -106289-09-19 23:45 J -37100371.56 -37100371.51 -37100371.44 0.0287 0.0268

Venus -106286-10-26 06:43 J -37099240.37 -37099240.22 -37099240.07 0.0277 0.0197

Venus -106285-06-11 20:09 J -37099010.87 -37099010.66 -37099010.44 0.0275 0.0043

Venus -106284-01-27 08:38 J -37098781.33 -37098781.14 -37098780.93 0.0273 0.0110

Venus -106284-09-13 20:09 J -37098551.71 -37098551.66 -37098551.58 0.0272 0.0258

Moon -106282-02-01 17:02 J -37098045.94 -37098045.79 -37098045.64 0.0268 0.0215

Earth -106282-02-01 20:09 J -37098045.82 -37098045.66 -37098045.48 0.0268 0.0201 \*

Mars -106279-02-22 16:04 J -37096929.11 -37096928.83 -37096928.56 0.0265 0.0031

Mercury -106275-10-29 05:31 J -37095219.33 -37095219.27 -37095219.19 0.0269 0.0237

Mercury -106274-01-25 19:11 J -37095130.81 -37095130.70 -37095130.58 0.0269 0.0165

Mercury -106274-04-24 08:38 J -37095042.27 -37095042.14 -37095042.00 0.0270 0.0094

Mercury -106274-07-21 22:04 J -37094953.73 -37094953.58 -37094953.44 0.0270 0.0025

Mercury -106274-10-18 11:02 J -37094865.19 -37094865.04 -37094864.90 0.0271 0.0046

Mercury -106273-01-14 23:45 J -37094776.64 -37094776.51 -37094776.37 0.0271 0.0115

Mercury -106273-04-12 12:28 J -37094688.08 -37094687.98 -37094687.87 0.0272 0.0183

Mercury -106273-07-10 01:11 J -37094599.50 -37094599.45 -37094599.40 0.0273 0.0251

Venus -106270-07-07 12:14 J -37093507.11 -37093506.99 -37093506.85 0.0282 0.0214

Venus -106269-02-21 23:02 J -37093277.74 -37093277.54 -37093277.33 0.0284 0.0054

Venus -106269-10-08 10:47 J -37093048.24 -37093048.05 -37093047.86 0.0287 0.0111

Venus -106268-05-25 23:02 J -37092818.58 -37092818.54 -37092818.47 0.0289 0.0278

Moon -106267-08-05 22:33 J -37092381.69 -37092381.56 -37092381.40 0.0292 0.0224

Earth -106267-08-05 22:47 J -37092381.68 -37092381.55 -37092381.40 0.0292 0.0235 \*

Mars -106265-02-28 18:43 J -37091809.90 -37091809.72 -37091809.53 0.0295 0.0238

Mercury -106261-11-19 22:33 J -37090083.63 -37090083.56 -37090083.48 0.0292 0.0253

Mercury -106260-02-16 16:47 J -37089994.93 -37089994.80 -37089994.66 0.0291 0.0160

Mercury -106260-05-16 11:31 J -37089906.18 -37089906.02 -37089905.86 0.0290 0.0065

Mercury -106260-08-13 06:14 J -37089817.40 -37089817.24 -37089817.07 0.0290 0.0031

Mercury -106260-11-10 01:26 J -37089728.58 -37089728.44 -37089728.29 0.0289 0.0128

Mercury -106259-02-06 20:52 J -37089639.72 -37089639.63 -37089639.52 0.0288 0.0226

Venus -106256-05-07 05:31 J -37088454.43 -37088454.27 -37088454.11 0.0277 0.0185

Venus -106256-12-22 18:57 J -37088224.92 -37088224.71 -37088224.49 0.0275 0.0029

Venus -106255-08-09 07:26 J -37087995.38 -37087995.19 -37087994.99 0.0273 0.0124

Venus -106254-03-26 19:11 J -37087765.71 -37087765.70 -37087765.69 0.0272 0.0271

Earth -106253-01-26 23:31 J -37087459.77 -37087459.52 -37087459.27 0.0269 0.0045

Moon -106253-01-27 02:38 J -37087459.65 -37087459.39 -37087459.13 0.0269 0.0031 \*

Mars -106251-04-16 20:52 J -37086648.76 -37086648.63 -37086648.48 0.0265 0.0229

Mars -106249-04-08 23:02 J -37085925.76 -37085925.54 -37085925.32 0.0264 0.0154

Mercury -106245-03-17 05:59 J -37084487.27 -37084487.25 -37084487.22 0.0269 0.0264

Mercury -106245-06-13 19:40 J -37084398.78 -37084398.68 -37084398.57 0.0269 0.0193

Mercury -106245-09-10 09:21 J -37084310.24 -37084310.11 -37084309.98 0.0270 0.0121

Mercury -106245-12-07 22:33 J -37084221.70 -37084221.56 -37084221.41 0.0270 0.0051

Mercury -106244-03-06 11:45 J -37084133.16 -37084133.01 -37084132.86 0.0271 0.0020

Mercury -106244-06-03 00:43 J -37084044.61 -37084044.47 -37084044.33 0.0272 0.0089

Mercury -106244-08-30 13:26 J -37083956.05 -37083955.94 -37083955.82 0.0272 0.0158

Mercury -106244-11-27 02:09 J -37083867.49 -37083867.41 -37083867.33 0.0273 0.0226

Venus -106240-01-16 14:23 J -37082721.04 -37082720.90 -37082720.75 0.0283 0.0199  
 Venus -106240-09-03 01:26 J -37082491.65 -37082491.44 -37082491.23 0.0285 0.0037  
 Venus -106239-04-20 13:26 J -37082262.13 -37082261.94 -37082261.76 0.0287 0.0129  
 Moon -106238-07-31 09:35 J -37081795.34 -37081795.10 -37081794.86 0.0291 0.0048  
 Earth -106238-07-31 09:50 J -37081795.32 -37081795.09 -37081794.86 0.0291 0.0038 \*  
 Mars -106235-04-23 16:47 J -37080798.11 -37080797.80 -37080797.48 0.0296 0.0019  
 Mercury -106231-04-08 22:33 J -37079351.59 -37079351.56 -37079351.52 0.0291 0.0281  
 Mercury -106231-07-06 16:33 J -37079262.92 -37079262.81 -37079262.68 0.0291 0.0190  
 Mercury -106231-10-03 11:02 J -37079174.19 -37079174.04 -37079173.88 0.0290 0.0096  
 Mercury -106231-12-31 05:59 J -37079085.41 -37079085.25 -37079085.09 0.0289 0.0002  
 Mercury -106230-03-30 00:57 J -37078996.61 -37078996.46 -37078996.30 0.0289 0.0097  
 Mercury -106230-06-26 20:23 J -37078907.77 -37078907.65 -37078907.52 0.0288 0.0195  
 Venus -106227-11-17 11:02 J -37077668.21 -37077668.04 -37077667.86 0.0277 0.0164  
 Venus -106226-07-05 00:43 J -37077438.69 -37077438.47 -37077438.26 0.0275 0.0009  
 Venus -106225-02-19 13:11 J -37077209.13 -37077208.95 -37077208.76 0.0273 0.0145  
 Moon -106224-01-20 09:50 J -37076873.14 -37076873.09 -37076873.00 0.0271 0.0258  
 Earth -106223-02-02 18:28 J -37076494.83 -37076494.73 -37076494.62 0.0269 0.0244  
 Moon -106223-02-02 19:11 J -37076494.76 -37076494.70 -37076494.61 0.0269 0.0257 \*  
 Mars -106221-06-02 02:38 J -37075644.64 -37075644.39 -37075644.12 0.0265 0.0092  
 Mercury -106216-10-31 21:50 J -37073666.68 -37073666.59 -37073666.50 0.0269 0.0211  
 Mercury -106215-01-28 11:16 J -37073578.15 -37073578.03 -37073577.89 0.0269 0.0141  
 Mercury -106215-04-27 00:43 J -37073489.61 -37073489.47 -37073489.32 0.0270 0.0070  
 Mercury -106215-07-24 13:55 J -37073401.06 -37073400.92 -37073400.77 0.0270 0.0007  
 Mercury -106215-10-21 02:52 J -37073312.52 -37073312.38 -37073312.23 0.0271 0.0071  
 Mercury -106214-01-17 15:50 J -37073223.96 -37073223.84 -37073223.72 0.0272 0.0139  
 Mercury -106214-04-16 04:19 J -37073135.40 -37073135.32 -37073135.22 0.0272 0.0208  
 Venus -106211-07-29 19:11 J -37071934.86 -37071934.70 -37071934.54 0.0283 0.0176  
 Venus -106210-03-16 05:59 J -37071705.46 -37071705.25 -37071705.04 0.0285 0.0014  
 Venus -106210-10-31 17:31 J -37071475.94 -37071475.77 -37071475.59 0.0287 0.0152  
 Earth -106208-08-06 23:02 J -37070830.58 -37070830.54 -37070830.50 0.0292 0.0286



Moon -106208-08-07 02:23 J -37070830.47 -37070830.40 -37070830.31 0.0292 0.0272  
 Mars -106205-06-16 12:14 J -37069786.22 -37069785.99 -37069785.76 0.0296 0.0204  
 Mercury -106202-11-23 14:52 J -37068530.97 -37068530.88 -37068530.77 0.0291 0.0227  
 Mercury -106201-02-20 09:07 J -37068442.25 -37068442.12 -37068441.97 0.0291 0.0134  
 Mercury -106201-05-19 03:50 J -37068353.50 -37068353.34 -37068353.17 0.0290 0.0039  
 Mercury -106201-08-15 22:47 J -37068264.71 -37068264.55 -37068264.39 0.0289 0.0058  
 Mercury -106201-11-12 17:59 J -37068175.88 -37068175.75 -37068175.60 0.0289 0.0156  
 Mercury -106200-02-09 13:40 J -37068087.00 -37068086.93 -37068086.85 0.0288 0.0253  
 Venus -106197-05-29 10:47 J -37066882.23 -37066882.05 -37066881.87 0.0277 0.0150  
 Venus -106196-01-14 00:14 J -37066652.71 -37066652.49 -37066652.28 0.0275 0.0007  
 Venus -106196-08-31 12:43 J -37066423.15 -37066422.97 -37066422.80 0.0273 0.0159  
 Moon -106194-01-27 21:07 J -37065908.88 -37065908.62 -37065908.35 0.0270 0.0013  
 Earth -106194-01-27 22:33 J -37065908.82 -37065908.56 -37065908.31 0.0270 0.0003 \*  
 Mars -106191-07-18 13:11 J -37064641.22 -37064640.95 -37064640.68 0.0265 0.0031  
 Mercury -106186-03-20 22:04 J -37062934.64 -37062934.58 -37062934.50 0.0269 0.0239  
 Mercury -106186-06-17 11:59 J -37062846.12 -37062846.00 -37062845.88 0.0269 0.0167  
 Mercury -106186-09-14 01:26 J -37062757.58 -37062757.44 -37062757.30 0.0270 0.0096  
 Mercury -106186-12-11 14:38 J -37062669.03 -37062668.89 -37062668.74 0.0271 0.0026  
 Mercury -106185-03-09 03:50 J -37062580.49 -37062580.34 -37062580.20 0.0271 0.0044  
 Mercury -106185-06-05 16:33 J -37062491.94 -37062491.81 -37062491.67 0.0272 0.0114  
 Mercury -106185-09-02 05:31 J -37062403.38 -37062403.27 -37062403.17 0.0272 0.0182  
 Mercury -106185-11-29 17:59 J -37062314.80 -37062314.75 -37062314.69 0.0273 0.0249  
 Venus -106181-02-08 21:07 J -37061148.78 -37061148.62 -37061148.44 0.0283 0.0161  
 Venus -106181-09-25 08:09 J -37060919.37 -37060919.16 -37060918.95 0.0286 0.0003  
 Venus -106180-05-12 19:55 J -37060689.83 -37060689.67 -37060689.50 0.0288 0.0170  
 Moon -106179-08-01 06:28 J -37060244.46 -37060244.23 -37060243.99 0.0291 0.0002  
 Earth -106179-08-01 10:19 J -37060244.31 -37060244.07 -37060243.84 0.0291 0.0015 \*  
 Mars -106177-07-23 15:07 J -37059522.05 -37059521.87 -37059521.67 0.0295 0.0232  
 Mercury -106172-04-11 15:07 J -37057798.94 -37057798.87 -37057798.79 0.0291 0.0254  
 Mercury -106172-07-09 09:21 J -37057710.24 -37057710.11 -37057709.98 0.0291 0.0162

Mercury -106172-10-06 03:50 J -37057621.50 -37057621.34 -37057621.18 0.0290 0.0068  
 Mercury -106171-01-02 22:47 J -37057532.72 -37057532.55 -37057532.39 0.0289 0.0029  
 Mercury -106171-04-01 17:45 J -37057443.90 -37057443.76 -37057443.60 0.0288 0.0126  
 Mercury -106171-06-29 13:26 J -37057355.04 -37057354.94 -37057354.84 0.0288 0.0223  
 Venus -106168-12-09 16:33 J -37056095.99 -37056095.81 -37056095.61 0.0277 0.0128  
 Venus -106167-07-27 06:14 J -37055866.46 -37055866.24 -37055866.03 0.0275 0.0029  
 Venus -106166-03-13 18:28 J -37055636.88 -37055636.73 -37055636.55 0.0273 0.0182  
 Earth -106165-01-22 12:43 J -37055322.10 -37055321.97 -37055321.82 0.0271 0.0225  
 Moon -106165-01-22 13:55 J -37055322.07 -37055321.92 -37055321.76 0.0271 0.0211 \*  
 Mars -106163-09-10 11:31 J -37054360.16 -37054360.02 -37054359.84 0.0266 0.0218  
 Mars -106161-09-02 16:04 J -37053637.03 -37053636.83 -37053636.61 0.0265 0.0167  
 Mercury -106157-08-07 00:28 J -37052202.51 -37052202.48 -37052202.43 0.0269 0.0257  
 Mercury -106157-11-03 14:09 J -37052114.01 -37052113.91 -37052113.79 0.0269 0.0186  
 Mercury -106156-01-31 03:50 J -37052025.47 -37052025.34 -37052025.20 0.0270 0.0114  
 Mercury -106156-04-29 17:16 J -37051936.93 -37051936.78 -37051936.64 0.0270 0.0044  
 Mercury -106156-07-27 06:14 J -37051848.38 -37051848.24 -37051848.09 0.0271 0.0028  
 Mercury -106156-10-23 19:11 J -37051759.83 -37051759.70 -37051759.56 0.0271 0.0096  
 Mercury -106155-01-20 07:55 J -37051671.28 -37051671.17 -37051671.05 0.0272 0.0165  
 Mercury -106155-04-18 20:38 J -37051582.71 -37051582.64 -37051582.56 0.0273 0.0232  
 Venus -106152-08-21 03:21 J -37050362.54 -37050362.36 -37050362.17 0.0283 0.0135  
 Venus -106151-04-07 14:23 J -37050133.11 -37050132.90 -37050132.70 0.0285 0.0029  
 Venus -106151-11-23 01:55 J -37049903.57 -37049903.42 -37049903.27 0.0287 0.0195  
 Earth -106150-07-27 01:55 J -37049657.52 -37049657.42 -37049657.28 0.0289 0.0248  
 Moon -106150-07-27 05:31 J -37049657.36 -37049657.27 -37049657.15 0.0289 0.0259 \*  
 Mars -106147-09-16 14:23 J -37048510.21 -37048509.90 -37048509.59 0.0295 0.0013  
 Mercury -106143-08-29 14:09 J -37047066.93 -37047066.91 -37047066.89 0.0292 0.0288  
 Mercury -106143-11-26 08:09 J -37046978.27 -37046978.16 -37046978.04 0.0291 0.0196  
 Mercury -106142-02-23 02:23 J -37046889.54 -37046889.40 -37046889.24 0.0290 0.0104  
 Mercury -106142-05-22 21:21 J -37046800.78 -37046800.61 -37046800.45 0.0290 0.0009  
 Mercury -106142-08-19 16:19 J -37046711.98 -37046711.82 -37046711.66 0.0289 0.0089

Mercury -106142-11-16 11:31 J -37046623.14 -37046623.02 -37046622.89 0.0288 0.0187  
 Mercury -106141-02-13 07:11 J -37046534.21 -37046534.20 -37046534.17 0.0288 0.0285  
 Venus -106139-11-04 03:07 J -37045539.40 -37045539.37 -37045539.31 0.0279 0.0271  
 Venus -106138-06-21 17:31 J -37045309.96 -37045309.77 -37045309.57 0.0277 0.0113  
 Venus -106137-02-06 06:43 J -37045080.43 -37045080.22 -37045080.00 0.0275 0.0044  
 Venus -106137-09-22 19:11 J -37044850.85 -37044850.70 -37044850.55 0.0273 0.0196  
 Moon -106135-01-28 19:55 J -37044357.92 -37044357.67 -37044357.42 0.0270 0.0061  
 Earth -106135-01-28 23:31 J -37044357.77 -37044357.52 -37044357.26 0.0270 0.0049 \*  
 Mars -106133-10-26 03:50 J -37043356.59 -37043356.34 -37043356.07 0.0265 0.0093  
 Mercury -106127-03-23 14:52 J -37041381.96 -37041381.88 -37041381.78 0.0269 0.0211  
 Mercury -106127-06-20 04:33 J -37041293.43 -37041293.31 -37041293.18 0.0270 0.0140  
 Mercury -106127-09-16 17:59 J -37041204.89 -37041204.75 -37041204.61 0.0270 0.0069  
 Mercury -106127-12-14 07:11 J -37041116.35 -37041116.20 -37041116.05 0.0271 0.0004  
 Mercury -106126-03-12 20:09 J -37041027.80 -37041027.66 -37041027.51 0.0271 0.0072  
 Mercury -106126-06-09 09:07 J -37040939.24 -37040939.12 -37040939.00 0.0272 0.0140  
 Mercury -106126-09-05 21:50 J -37040850.68 -37040850.59 -37040850.50 0.0273 0.0208  
 Venus -106123-07-16 19:40 J -37039805.71 -37039805.68 -37039805.64 0.0282 0.0277  
 Venus -106122-03-03 05:59 J -37039576.44 -37039576.25 -37039576.06 0.0284 0.0118  
 Venus -106122-10-18 17:02 J -37039346.99 -37039346.79 -37039346.58 0.0286 0.0046  
 Venus -106121-06-04 04:47 J -37039117.43 -37039117.30 -37039117.16 0.0288 0.0214  
 Moon -106120-08-02 13:11 J -37038693.17 -37038692.95 -37038692.73 0.0291 0.0059  
 Earth -106120-08-02 14:09 J -37038693.14 -37038692.91 -37038692.69 0.0291 0.0074 \*  
 Mars -106117-11-09 18:43 J -37037497.93 -37037497.72 -37037497.50 0.0296 0.0213  
 Mercury -106113-04-14 08:23 J -37036246.25 -37036246.15 -37036246.05 0.0291 0.0224  
 Mercury -106113-07-12 02:38 J -37036157.53 -37036157.39 -37036157.24 0.0290 0.0131  
 Mercury -106113-10-08 21:21 J -37036068.77 -37036068.61 -37036068.45 0.0290 0.0036  
 Mercury -106112-01-05 16:19 J -37035979.98 -37035979.82 -37035979.66 0.0289 0.0060  
 Mercury -106112-04-04 11:31 J -37035891.16 -37035891.02 -37035890.88 0.0288 0.0157  
 Mercury -106112-07-02 06:57 J -37035802.28 -37035802.21 -37035802.13 0.0287 0.0255  
 Venus -106109-05-16 09:35 J -37034753.19 -37034753.10 -37034753.00 0.0278 0.0248

Venus -106109-12-31 23:45 J -37034523.71 -37034523.51 -37034523.30 0.0277 0.0089  
 Venus -106108-08-18 13:11 J -37034294.16 -37034293.95 -37034293.74 0.0275 0.0067  
 Venus -106107-04-05 01:40 J -37034064.55 -37034064.43 -37034064.30 0.0273 0.0219  
 Earth -106106-01-23 14:23 J -37033771.09 -37033770.90 -37033770.70 0.0271 0.0176  
 Moon -106106-01-23 18:28 J -37033770.94 -37033770.73 -37033770.53 0.0271 0.0160 \*  
 Mars -106103-12-12 10:04 J -37032352.35 -37032352.08 -37032351.80 0.0265 0.0045  
 Mercury -106098-08-10 17:31 J -37030649.84 -37030649.77 -37030649.69 0.0269 0.0228  
 Mercury -106098-11-07 07:11 J -37030561.32 -37030561.20 -37030561.07 0.0270 0.0157  
 Mercury -106097-02-03 20:38 J -37030472.78 -37030472.64 -37030472.49 0.0270 0.0086  
 Mercury -106097-05-02 10:04 J -37030384.23 -37030384.08 -37030383.94 0.0271 0.0016  
 Mercury -106097-07-29 23:02 J -37030295.68 -37030295.54 -37030295.40 0.0271 0.0055  
 Mercury -106097-10-26 11:59 J -37030207.13 -37030207.00 -37030206.87 0.0272 0.0124  
 Mercury -106096-01-23 00:43 J -37030118.57 -37030118.47 -37030118.37 0.0272 0.0192  
 Mercury -106096-04-21 13:11 J -37030029.98 -37030029.95 -37030029.90 0.0273 0.0260  
 Venus -106093-01-27 03:07 J -37029019.45 -37029019.37 -37029019.27 0.0281 0.0250  
 Venus -106093-09-12 13:26 J -37028790.14 -37028789.94 -37028789.74 0.0283 0.0090  
 Venus -106092-04-30 00:28 J -37028560.68 -37028560.48 -37028560.28 0.0285 0.0074  
 Venus -106092-12-15 11:59 J -37028331.10 -37028331.00 -37028330.88 0.0287 0.0242  
 Earth -106091-07-28 08:23 J -37028106.32 -37028106.15 -37028105.96 0.0289 0.0185  
 Moon -106091-07-28 09:21 J -37028106.28 -37028106.11 -37028105.92 0.0289 0.0196 \*  
 Mars -106089-12-17 07:11 J -37027233.39 -37027233.20 -37027232.98 0.0294 0.0222  
 Mercury -106084-09-01 08:09 J -37025514.23 -37025514.16 -37025514.08 0.0291 0.0254  
 Mercury -106084-11-29 02:23 J -37025425.53 -37025425.40 -37025425.27 0.0291 0.0162  
 Mercury -106083-02-25 20:52 J -37025336.79 -37025336.63 -37025336.48 0.0290 0.0068  
 Mercury -106083-05-25 15:35 J -37025248.01 -37025247.85 -37025247.69 0.0289 0.0028  
 Mercury -106083-08-22 10:47 J -37025159.20 -37025159.05 -37025158.90 0.0289 0.0125  
 Mercury -106083-11-19 05:59 J -37025070.35 -37025070.25 -37025070.14 0.0288 0.0223  
 Venus -106080-11-26 12:28 J -37023967.10 -37023966.98 -37023966.86 0.0278 0.0230  
 Venus -106079-07-14 02:23 J -37023737.61 -37023737.40 -37023737.19 0.0276 0.0072  
 Venus -106078-02-28 15:35 J -37023508.06 -37023507.85 -37023507.65 0.0275 0.0084

Venus -106078-10-16 03:50 J -37023278.44 -37023278.34 -37023278.23 0.0273 0.0237  
 Moon -106076-01-30 03:07 J -37022806.59 -37022806.37 -37022806.14 0.0270 0.0113  
 Earth -106076-01-30 03:35 J -37022806.58 -37022806.35 -37022806.10 0.0270 0.0102 \*  
 Mars -106074-02-03 18:14 J -37022071.89 -37022071.74 -37022071.57 0.0266 0.0217  
 Mars -106072-01-26 23:59 J -37021348.70 -37021348.50 -37021348.28 0.0265 0.0170  
 Mercury -106069-12-27 18:28 J -37019917.78 -37019917.73 -37019917.68 0.0269 0.0253  
 Mercury -106068-03-26 08:09 J -37019829.27 -37019829.16 -37019829.05 0.0269 0.0182  
 Mercury -106068-06-22 21:35 J -37019740.73 -37019740.60 -37019740.46 0.0270 0.0111  
 Mercury -106068-09-19 11:02 J -37019652.19 -37019652.04 -37019651.89 0.0271 0.0040  
 Mercury -106068-12-17 00:14 J -37019563.64 -37019563.49 -37019563.35 0.0271 0.0031  
 Mercury -106067-03-15 13:11 J -37019475.09 -37019474.95 -37019474.82 0.0272 0.0100  
 Mercury -106067-06-12 01:55 J -37019386.53 -37019386.42 -37019386.30 0.0272 0.0169  
 Mercury -106067-09-08 14:23 J -37019297.96 -37019297.90 -37019297.82 0.0273 0.0237  
 Venus -106064-08-08 05:59 J -37018233.35 -37018233.25 -37018233.12 0.0282 0.0234  
 Venus -106063-03-25 16:33 J -37018004.01 -37018003.81 -37018003.60 0.0284 0.0073  
 Venus -106063-11-10 03:50 J -37017774.54 -37017774.34 -37017774.14 0.0286 0.0093  
 Venus -106062-06-27 15:50 J -37017544.92 -37017544.84 -37017544.76 0.0288 0.0261  
 Earth -106061-08-03 20:52 J -37017141.83 -37017141.63 -37017141.41 0.0291 0.0139  
 Moon -106061-08-03 23:59 J -37017141.70 -37017141.50 -37017141.28 0.0291 0.0124 \*  
 Mars -106058-02-10 07:11 J -37016221.51 -37016221.20 -37016220.89 0.0295 0.0002  
 Mercury -106054-01-19 08:38 J -37014782.18 -37014782.14 -37014782.10 0.0291 0.0280  
 Mercury -106054-04-18 02:38 J -37014693.51 -37014693.39 -37014693.27 0.0291 0.0189  
 Mercury -106054-07-15 21:07 J -37014604.77 -37014604.62 -37014604.47 0.0290 0.0095  
 Mercury -106054-10-12 15:50 J -37014516.00 -37014515.84 -37014515.68 0.0289 0.0002  
 Mercury -106053-01-09 10:47 J -37014427.20 -37014427.05 -37014426.89 0.0289 0.0097  
 Mercury -106053-04-07 06:14 J -37014338.36 -37014338.24 -37014338.12 0.0288 0.0194  
 Venus -106050-06-08 18:57 J -37013180.84 -37013180.71 -37013180.56 0.0278 0.0207  
 Venus -106049-01-24 09:07 J -37012951.33 -37012951.12 -37012950.91 0.0276 0.0048  
 Venus -106049-09-09 22:19 J -37012721.77 -37012721.57 -37012721.37 0.0274 0.0109  
 Venus -106048-04-27 10:33 J -37012492.11 -37012492.06 -37012491.99 0.0273 0.0261

Earth -106047-01-24 19:26 J -37012219.92 -37012219.69 -37012219.46 0.0271 0.0122  
 Moon -106047-01-24 19:40 J -37012219.92 -37012219.68 -37012219.43 0.0271 0.0108 \*  
 Mars -106044-03-22 03:50 J -37011067.60 -37011067.34 -37011067.07 0.0266 0.0079  
 Mercury -106039-05-16 21:21 J -37009185.61 -37009185.61 -37009185.61 0.0269 0.0269  
 Mercury -106039-08-13 11:02 J -37009097.14 -37009097.04 -37009096.93 0.0270 0.0197  
 Mercury -106039-11-10 00:43 J -37009008.60 -37009008.47 -37009008.34 0.0270 0.0125  
 Mercury -106038-02-06 14:09 J -37008920.06 -37008919.91 -37008919.77 0.0271 0.0055  
 Mercury -106038-05-06 03:21 J -37008831.51 -37008831.36 -37008831.22 0.0271 0.0016  
 Mercury -106038-08-02 16:19 J -37008742.96 -37008742.82 -37008742.68 0.0272 0.0086  
 Mercury -106038-10-30 05:16 J -37008654.40 -37008654.28 -37008654.16 0.0272 0.0155  
 Mercury -106037-01-26 17:45 J -37008565.83 -37008565.76 -37008565.67 0.0273 0.0223  
 Venus -106034-02-18 15:07 J -37007447.00 -37007446.87 -37007446.72 0.0282 0.0205  
 Venus -106034-10-06 01:40 J -37007217.63 -37007217.43 -37007217.22 0.0284 0.0043  
 Venus -106033-05-22 12:57 J -37006988.15 -37006987.96 -37006987.77 0.0286 0.0124  
 Moon -106032-07-29 15:35 J -37006555.06 -37006554.85 -37006554.63 0.0289 0.0129  
 Earth -106032-07-29 18:28 J -37006554.94 -37006554.73 -37006554.51 0.0289 0.0115 \*  
 Mars -106028-04-06 00:14 J -37005208.67 -37005208.49 -37005208.28 0.0295 0.0228  
 Mercury -106025-09-04 03:07 J -37003961.47 -37003961.37 -37003961.26 0.0291 0.0215  
 Mercury -106025-12-01 21:21 J -37003872.75 -37003872.61 -37003872.46 0.0290 0.0122  
 Mercury -106024-02-28 16:04 J -37003783.99 -37003783.83 -37003783.67 0.0290 0.0028  
 Mercury -106024-05-28 10:47 J -37003695.20 -37003695.05 -37003694.88 0.0289 0.0069  
 Mercury -106024-08-25 06:14 J -37003606.38 -37003606.24 -37003606.11 0.0288 0.0166  
 Mercury -106024-11-22 01:26 J -37003517.49 -37003517.44 -37003517.36 0.0288 0.0264  
 Venus -106021-12-18 23:31 J -37002394.67 -37002394.52 -37002394.36 0.0278 0.0187  
 Venus -106020-08-05 13:11 J -37002165.16 -37002164.95 -37002164.73 0.0276 0.0029  
 Venus -106019-03-23 02:09 J -37001935.60 -37001935.41 -37001935.22 0.0274 0.0128  
 Earth -106017-02-01 10:47 J -37001255.26 -37001255.05 -37001254.84 0.0269 0.0159  
 Moon -106017-02-01 14:09 J -37001255.10 -37001254.91 -37001254.71 0.0269 0.0170 \*  
 Mars -106014-05-07 23:16 J -37000063.80 -37000063.53 -37000063.25 0.0265 0.0049  
 Mercury -106010-12-31 11:59 J -36998365.08 -36998365.00 -36998364.91 0.0269 0.0222

Mercury -106009-03-29 01:40 J -36998276.55 -36998276.43 -36998276.30 0.0270 0.0150  
 Mercury -106009-06-25 15:07 J -36998188.01 -36998187.87 -36998187.72 0.0270 0.0079  
 Mercury -106009-09-22 04:33 J -36998099.46 -36998099.31 -36998099.16 0.0271 0.0008  
 Mercury -106009-12-19 17:31 J -36998010.91 -36998010.77 -36998010.62 0.0271 0.0063  
 Mercury -106008-03-18 06:28 J -36997922.35 -36997922.23 -36997922.10 0.0272 0.0131  
 Mercury -106008-06-14 19:11 J -36997833.79 -36997833.70 -36997833.60 0.0273 0.0200  
 Mercury -106008-09-11 07:55 J -36997745.20 -36997745.17 -36997745.14 0.0273 0.0267  
 Venus -106005-08-30 18:14 J -36996660.89 -36996660.74 -36996660.58 0.0283 0.0188  
 Venus -106004-04-17 05:02 J -36996431.50 -36996431.29 -36996431.08 0.0285 0.0024  
 Venus -106004-12-02 16:19 J -36996202.00 -36996201.82 -36996201.64 0.0287 0.0143  
 Earth -106002-08-06 07:11 J -36995590.36 -36995590.20 -36995590.04 0.0291 0.0209  
 Moon -106002-08-06 09:50 J -36995590.27 -36995590.09 -36995589.91 0.0291 0.0193 \*

# 106TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 106th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-106000-05-13 09:35 J	-36994944.32	-36994944.10	-36994943.87	0.0295	0.0203		
Mercury	-105995-01-22 03:35 J	-36993229.43	-36993229.35	-36993229.26	0.0291	0.0242		
Mercury	-105995-04-20 21:50 J	-36993140.72	-36993140.59	-36993140.45	0.0290	0.0149		
Mercury	-105995-07-18 16:19 J	-36993051.98	-36993051.82	-36993051.66	0.0290	0.0055		

Mercury -105995-10-15 11:16 J -36992963.19 -36992963.03 -36992962.87 0.0289 0.0041  
 Mercury -105994-01-12 06:28 J -36992874.38 -36992874.23 -36992874.09 0.0288 0.0138  
 Mercury -105994-04-11 01:55 J -36992785.51 -36992785.42 -36992785.33 0.0288 0.0236  
 Venus -105991-07-01 06:28 J -36991608.39 -36991608.23 -36991608.04 0.0277 0.0163  
 Venus -105990-02-15 20:38 J -36991378.86 -36991378.64 -36991378.43 0.0276 0.0006  
 Venus -105990-10-03 09:35 J -36991149.28 -36991149.10 -36991148.92 0.0274 0.0153  
 Moon -105988-01-25 23:45 J -36990668.76 -36990668.51 -36990668.25 0.0271 0.0050  
 Earth -105988-01-26 03:35 J -36990668.60 -36990668.35 -36990668.10 0.0271 0.0063 \*  
 Mars -105986-06-30 23:16 J -36989782.70 -36989782.53 -36989782.34 0.0267 0.0204  
 Mars -105984-06-23 06:57 J -36989059.40 -36989059.21 -36989059.01 0.0266 0.0186  
 Mercury -105980-05-19 15:07 J -36987632.94 -36987632.87 -36987632.79 0.0269 0.0236  
 Mercury -105980-08-16 05:02 J -36987544.41 -36987544.29 -36987544.17 0.0270 0.0164  
 Mercury -105980-11-12 18:28 J -36987455.87 -36987455.73 -36987455.59 0.0270 0.0093  
 Mercury -105979-02-09 07:40 J -36987367.32 -36987367.18 -36987367.03 0.0271 0.0024  
 Mercury -105979-05-08 20:52 J -36987278.77 -36987278.63 -36987278.48 0.0272 0.0049  
 Mercury -105979-08-05 09:50 J -36987190.22 -36987190.09 -36987189.96 0.0272 0.0118  
 Mercury -105979-11-01 22:33 J -36987101.66 -36987101.56 -36987101.45 0.0273 0.0187  
 Mercury -105978-01-29 11:16 J -36987013.07 -36987013.03 -36987012.98 0.0273 0.0255  
 Venus -105975-03-13 04:33 J -36985874.48 -36985874.31 -36985874.14 0.0283 0.0157  
 Venus -105975-10-28 15:07 J -36985645.07 -36985644.87 -36985644.66 0.0284 0.0009  
 Venus -105974-06-15 02:23 J -36985415.55 -36985415.40 -36985415.23 0.0286 0.0177  
 Moon -105973-07-31 03:50 J -36985003.56 -36985003.34 -36985003.11 0.0289 0.0055  
 Earth -105973-07-31 06:43 J -36985003.45 -36985003.22 -36985002.98 0.0289 0.0041 \*  
 Mars -105970-07-08 05:16 J -36983931.59 -36983931.28 -36983930.97 0.0295 0.0022  
 Mercury -105966-06-11 05:02 J -36982497.35 -36982497.29 -36982497.22 0.0291 0.0264  
 Mercury -105966-09-07 23:02 J -36982408.66 -36982408.54 -36982408.41 0.0290 0.0172  
 Mercury -105966-12-05 17:31 J -36982319.92 -36982319.77 -36982319.61 0.0290 0.0078  
 Mercury -105965-03-03 12:14 J -36982231.15 -36982230.99 -36982230.83 0.0289 0.0017  
 Mercury -105965-05-31 07:11 J -36982142.35 -36982142.20 -36982142.04 0.0289 0.0113  
 Mercury -105965-08-28 02:38 J -36982053.50 -36982053.39 -36982053.28 0.0288 0.0211



Venus -105961-01-11 12:57 J -36980822.15 -36980821.96 -36980821.78 0.0277 0.0141

Venus -105961-08-28 02:23 J -36980592.62 -36980592.40 -36980592.19 0.0275 0.0019

Venus -105960-04-14 14:52 J -36980363.04 -36980362.88 -36980362.71 0.0274 0.0174

Earth -105958-02-02 20:52 J -36979703.76 -36979703.63 -36979703.48 0.0269 0.0221

Moon -105958-02-02 23:45 J -36979703.64 -36979703.51 -36979703.37 0.0269 0.0230 \*

Mars -105956-08-16 01:11 J -36978778.71 -36978778.45 -36978778.18 0.0266 0.0072

Mercury -105951-10-06 16:19 J -36976900.85 -36976900.82 -36976900.78 0.0269 0.0259

Mercury -105950-01-03 06:14 J -36976812.35 -36976812.24 -36976812.13 0.0270 0.0188

Mercury -105950-04-01 19:40 J -36976723.81 -36976723.68 -36976723.54 0.0270 0.0116

Mercury -105950-06-29 09:07 J -36976635.26 -36976635.12 -36976634.97 0.0271 0.0045

Mercury -105950-09-25 22:19 J -36976546.71 -36976546.57 -36976546.42 0.0271 0.0026

Mercury -105950-12-23 11:16 J -36976458.16 -36976458.03 -36976457.89 0.0272 0.0096

Mercury -105949-03-21 00:14 J -36976369.60 -36976369.49 -36976369.37 0.0272 0.0164

Mercury -105949-06-17 12:57 J -36976281.03 -36976280.96 -36976280.88 0.0273 0.0232

Venus -105946-09-23 08:09 J -36975088.34 -36975088.16 -36975087.98 0.0283 0.0138

Venus -105945-05-09 18:57 J -36974858.91 -36974858.71 -36974858.50 0.0285 0.0028

Venus -105945-12-25 06:28 J -36974629.37 -36974629.23 -36974629.07 0.0287 0.0196

Moon -105943-08-07 19:11 J -36974038.79 -36974038.70 -36974038.61 0.0292 0.0269

Earth -105943-08-07 20:23 J -36974038.69 -36974038.65 -36974038.59 0.0292 0.0285 \*

Mars -105940-08-31 11:45 J -36972919.16 -36972919.01 -36972918.83 0.0295 0.0251

Mercury -105937-10-28 05:45 J -36971765.27 -36971765.26 -36971765.25 0.0291 0.0290

Mercury -105936-01-24 23:31 J -36971676.63 -36971676.52 -36971676.40 0.0291 0.0199

Mercury -105936-04-23 17:59 J -36971587.90 -36971587.75 -36971587.60 0.0290 0.0105

Mercury -105936-07-21 12:43 J -36971499.14 -36971498.97 -36971498.81 0.0289 0.0012

Mercury -105936-10-18 07:26 J -36971410.34 -36971410.19 -36971410.03 0.0289 0.0087

Mercury -105935-01-15 02:38 J -36971321.51 -36971321.39 -36971321.25 0.0288 0.0184

Mercury -105935-04-13 22:19 J -36971232.59 -36971232.57 -36971232.53 0.0287 0.0282

Venus -105933-12-06 05:31 J -36970265.29 -36970265.27 -36970265.23 0.0279 0.0276

Venus -105932-07-23 19:55 J -36970035.87 -36970035.67 -36970035.47 0.0277 0.0115

Venus -105931-03-10 09:21 J -36969806.32 -36969806.11 -36969805.89 0.0275 0.0044

Venus -105931-10-25 22:19 J -36969576.72 -36969576.57 -36969576.42 0.0273 0.0199  
 Moon -105929-01-28 11:59 J -36969117.25 -36969117.00 -36969116.76 0.0270 0.0012  
 Earth -105929-01-28 14:09 J -36969117.17 -36969116.91 -36969116.66 0.0270 0.0002 \*  
 Mars -105926-10-02 10:33 J -36967774.33 -36967774.06 -36967773.79 0.0266 0.0066  
 Mercury -105921-05-22 09:21 J -36966080.21 -36966080.11 -36966080.01 0.0270 0.0202  
 Mercury -105921-08-18 23:02 J -36965991.67 -36965991.54 -36965991.41 0.0270 0.0130  
 Mercury -105921-11-15 12:28 J -36965903.12 -36965902.98 -36965902.83 0.0271 0.0059  
 Mercury -105920-02-12 01:40 J -36965814.57 -36965814.43 -36965814.28 0.0271 0.0014  
 Mercury -105920-05-11 14:52 J -36965726.02 -36965725.88 -36965725.74 0.0272 0.0082  
 Mercury -105920-08-08 03:35 J -36965637.46 -36965637.35 -36965637.22 0.0273 0.0152  
 Mercury -105920-11-04 16:19 J -36965548.89 -36965548.82 -36965548.73 0.0273 0.0220  
 Venus -105917-08-18 08:23 J -36964531.21 -36964531.15 -36964531.09 0.0281 0.0269  
 Venus -105916-04-04 18:43 J -36964301.91 -36964301.72 -36964301.53 0.0283 0.0107  
 Venus -105916-11-20 05:45 J -36964072.47 -36964072.26 -36964072.06 0.0285 0.0060  
 Venus -105915-07-07 17:02 J -36963842.90 -36963842.79 -36963842.65 0.0287 0.0230  
 Earth -105914-08-02 20:52 J -36963451.86 -36963451.63 -36963451.40 0.0290 0.0036  
 Moon -105914-08-02 21:35 J -36963451.83 -36963451.60 -36963451.37 0.0290 0.0023 \*  
 Mars -105912-10-08 20:23 J -36962653.88 -36962653.65 -36962653.39 0.0294 0.0179  
 Mercury -105907-06-14 01:26 J -36960944.54 -36960944.44 -36960944.33 0.0291 0.0219  
 Mercury -105907-09-10 19:40 J -36960855.82 -36960855.68 -36960855.53 0.0290 0.0126  
 Mercury -105907-12-08 14:09 J -36960767.07 -36960766.91 -36960766.74 0.0289 0.0032  
 Mercury -105906-03-07 09:07 J -36960678.28 -36960678.12 -36960677.96 0.0289 0.0064  
 Mercury -105906-06-04 04:19 J -36960589.46 -36960589.32 -36960589.18 0.0288 0.0161  
 Mercury -105906-08-31 23:45 J -36960500.58 -36960500.51 -36960500.44 0.0287 0.0259  
 Venus -105903-06-18 13:40 J -36959479.02 -36959478.93 -36959478.84 0.0279 0.0253  
 Venus -105902-02-03 03:35 J -36959249.55 -36959249.35 -36959249.15 0.0277 0.0092  
 Venus -105902-09-20 16:47 J -36959020.01 -36959019.80 -36959019.59 0.0275 0.0067  
 Venus -105901-05-07 04:47 J -36958790.41 -36958790.30 -36958790.16 0.0273 0.0223  
 Earth -105900-01-22 04:04 J -36958530.47 -36958530.33 -36958530.18 0.0271 0.0223  
 Moon -105900-01-22 05:45 J -36958530.41 -36958530.26 -36958530.08 0.0271 0.0211 \*

Mars -105898-11-25 03:50 J -36957493.53 -36957493.34 -36957493.15 0.0266 0.0193  
 Mars -105896-11-17 09:21 J -36956770.29 -36956770.11 -36956769.91 0.0265 0.0194  
 Mercury -105892-10-09 10:47 J -36955348.13 -36955348.05 -36955347.97 0.0269 0.0224  
 Mercury -105891-01-06 00:28 J -36955259.60 -36955259.48 -36955259.36 0.0270 0.0153  
 Mercury -105891-04-04 13:55 J -36955171.06 -36955170.92 -36955170.77 0.0270 0.0082  
 Mercury -105891-07-02 03:21 J -36955082.51 -36955082.36 -36955082.21 0.0271 0.0011  
 Mercury -105891-09-28 16:19 J -36954993.96 -36954993.82 -36954993.67 0.0272 0.0060  
 Mercury -105891-12-26 05:16 J -36954905.40 -36954905.28 -36954905.15 0.0272 0.0130  
 Mercury -105890-03-24 18:14 J -36954816.84 -36954816.74 -36954816.64 0.0273 0.0198  
 Mercury -105890-06-21 06:43 J -36954728.24 -36954728.22 -36954728.18 0.0273 0.0266  
 Venus -105887-02-28 11:45 J -36953745.09 -36953745.01 -36953744.90 0.0282 0.0251  
 Venus -105887-10-15 22:19 J -36953515.77 -36953515.57 -36953515.37 0.0284 0.0088  
 Venus -105886-06-02 09:21 J -36953286.31 -36953286.11 -36953285.91 0.0286 0.0080  
 Venus -105885-01-17 21:07 J -36953056.72 -36953056.62 -36953056.52 0.0288 0.0250  
 Moon -105885-07-27 10:04 J -36952865.21 -36952865.08 -36952864.93 0.0289 0.0234  
 Earth -105885-07-27 11:02 J -36952865.18 -36952865.04 -36952864.89 0.0289 0.0222 \*  
 Mars -105882-12-02 21:07 J -36951641.92 -36951641.62 -36951641.30 0.0295 0.0049  
 Mercury -105878-11-01 01:55 J -36950212.50 -36950212.42 -36950212.33 0.0291 0.0245  
 Mercury -105877-01-28 19:55 J -36950123.80 -36950123.67 -36950123.53 0.0290 0.0154  
 Mercury -105877-04-26 14:23 J -36950035.05 -36950034.90 -36950034.74 0.0290 0.0060  
 Mercury -105877-07-24 09:21 J -36949946.27 -36949946.11 -36949945.95 0.0289 0.0037  
 Mercury -105877-10-21 04:33 J -36949857.46 -36949857.31 -36949857.17 0.0288 0.0134  
 Mercury -105876-01-17 23:59 J -36949768.60 -36949768.50 -36949768.41 0.0288 0.0231  
 Venus -105874-12-29 20:23 J -36948692.76 -36948692.65 -36948692.52 0.0278 0.0228  
 Venus -105873-08-15 10:19 J -36948463.27 -36948463.07 -36948462.85 0.0276 0.0067  
 Venus -105872-04-01 23:31 J -36948233.72 -36948233.52 -36948233.31 0.0274 0.0092  
 Venus -105872-11-17 11:59 J -36948004.08 -36948004.00 -36948003.90 0.0273 0.0247  
 Earth -105870-01-30 02:23 J -36947565.64 -36947565.40 -36947565.15 0.0270 0.0067  
 Moon -105870-01-30 04:47 J -36947565.53 -36947565.30 -36947565.05 0.0270 0.0076 \*  
 Mars -105867-01-10 14:38 J -36946489.16 -36946488.89 -36946488.62 0.0266 0.0056

Mercury -105862-02-26 13:40 J -36944615.99 -36944615.93 -36944615.85 0.0270 0.0240

Mercury -105862-05-26 03:35 J -36944527.47 -36944527.35 -36944527.23 0.0270 0.0167

Mercury -105862-08-22 17:16 J -36944438.92 -36944438.78 -36944438.64 0.0271 0.0096

Mercury -105862-11-19 06:28 J -36944350.37 -36944350.23 -36944350.08 0.0271 0.0026

Mercury -105861-02-15 19:40 J -36944261.82 -36944261.68 -36944261.53 0.0272 0.0047

Mercury -105861-05-14 08:52 J -36944173.26 -36944173.13 -36944173.00 0.0272 0.0116

Mercury -105861-08-10 21:35 J -36944084.70 -36944084.60 -36944084.49 0.0273 0.0185

Mercury -105861-11-07 10:19 J -36943996.12 -36943996.07 -36943996.02 0.0274 0.0253

Venus -105858-09-10 22:19 J -36942958.69 -36942958.57 -36942958.43 0.0282 0.0221

Venus -105857-04-27 09:07 J -36942729.32 -36942729.12 -36942728.92 0.0284 0.0056

Venus -105857-12-12 20:23 J -36942499.84 -36942499.65 -36942499.46 0.0286 0.0113

Venus -105856-07-30 08:09 J -36942270.18 -36942270.16 -36942270.12 0.0288 0.0284

Earth -105855-08-04 11:31 J -36941900.23 -36941900.02 -36941899.80 0.0290 0.0115

Moon -105855-08-04 15:07 J -36941900.09 -36941899.87 -36941899.65 0.0290 0.0100 \*

Mars -105851-01-27 04:19 J -36940628.42 -36940628.32 -36940628.20 0.0295 0.0276

Mercury -105848-03-20 04:19 J -36939480.38 -36939480.32 -36939480.25 0.0291 0.0263

Mercury -105848-06-16 22:19 J -36939391.69 -36939391.57 -36939391.44 0.0290 0.0172

Mercury -105848-09-13 16:47 J -36939302.96 -36939302.80 -36939302.65 0.0290 0.0078

Mercury -105848-12-11 11:31 J -36939214.19 -36939214.02 -36939213.86 0.0289 0.0018

Mercury -105847-03-10 06:28 J -36939125.38 -36939125.23 -36939125.08 0.0288 0.0114

Mercury -105847-06-07 01:40 J -36939036.54 -36939036.43 -36939036.31 0.0288 0.0211

Venus -105844-07-11 05:31 J -36937906.41 -36937906.27 -36937906.12 0.0278 0.0203

Venus -105843-02-25 19:11 J -36937676.92 -36937676.70 -36937676.49 0.0276 0.0042

Venus -105843-10-13 08:09 J -36937447.36 -36937447.16 -36937446.97 0.0274 0.0117

Venus -105842-05-30 19:55 J -36937217.68 -36937217.67 -36937217.63 0.0273 0.0271

Moon -105841-01-24 16:04 J -36936979.05 -36936978.83 -36936978.60 0.0271 0.0142

Earth -105841-01-24 18:43 J -36936978.93 -36936978.72 -36936978.50 0.0271 0.0152 \*

Mars -105837-02-26 17:02 J -36935485.04 -36935484.79 -36935484.51 0.0265 0.0078

Mercury -105833-07-15 15:21 J -36933883.89 -36933883.86 -36933883.83 0.0269 0.0261

Mercury -105833-10-12 05:02 J -36933795.39 -36933795.29 -36933795.18 0.0269 0.0189

Mercury -105832-01-08 18:43 J -36933706.85 -36933706.72 -36933706.58 0.0270 0.0118  
 Mercury -105832-04-07 08:09 J -36933618.30 -36933618.16 -36933618.01 0.0271 0.0047  
 Mercury -105832-07-04 21:21 J -36933529.75 -36933529.61 -36933529.46 0.0271 0.0024  
 Mercury -105832-10-01 10:33 J -36933441.20 -36933441.06 -36933440.93 0.0272 0.0094  
 Mercury -105832-12-28 23:16 J -36933352.64 -36933352.53 -36933352.41 0.0272 0.0163  
 Mercury -105831-03-27 11:59 J -36933264.07 -36933264.00 -36933263.92 0.0273 0.0231  
 Venus -105828-03-23 01:55 J -36932172.56 -36932172.42 -36932172.27 0.0282 0.0202  
 Venus -105828-11-07 12:28 J -36931943.18 -36931942.98 -36931942.77 0.0284 0.0037  
 Venus -105827-06-24 23:45 J -36931713.69 -36931713.51 -36931713.32 0.0286 0.0133  
 Moon -105826-07-29 20:52 J -36931313.82 -36931313.63 -36931313.43 0.0290 0.0160  
 Earth -105826-07-30 00:28 J -36931313.67 -36931313.48 -36931313.27 0.0290 0.0146 \*  
 Mars -105823-03-05 11:02 J -36930364.30 -36930364.04 -36930363.76 0.0295 0.0152  
 Mercury -105819-11-03 22:19 J -36928659.68 -36928659.57 -36928659.45 0.0291 0.0200  
 Mercury -105818-01-31 16:33 J -36928570.95 -36928570.81 -36928570.66 0.0290 0.0107  
 Mercury -105818-04-30 11:16 J -36928482.19 -36928482.03 -36928481.87 0.0289 0.0012  
 Mercury -105818-07-28 06:14 J -36928393.40 -36928393.24 -36928393.08 0.0289 0.0084  
 Mercury -105818-10-25 01:26 J -36928304.57 -36928304.44 -36928304.31 0.0288 0.0181  
 Mercury -105817-01-21 20:52 J -36928215.66 -36928215.63 -36928215.59 0.0287 0.0279  
 Venus -105814-01-21 11:31 J -36927120.18 -36927120.02 -36927119.85 0.0278 0.0180  
 Venus -105814-09-08 01:26 J -36926890.66 -36926890.44 -36926890.23 0.0276 0.0018  
 Venus -105813-04-24 14:09 J -36926661.09 -36926660.91 -36926660.72 0.0274 0.0141  
 Earth -105811-01-31 15:35 J -36926014.07 -36926013.85 -36926013.62 0.0270 0.0135  
 Moon -105811-01-31 19:11 J -36926013.92 -36926013.70 -36926013.48 0.0270 0.0142 \*  
 Mars -105809-04-20 15:21 J -36925204.06 -36925203.86 -36925203.64 0.0266 0.0177  
 Mars -105807-04-13 21:50 J -36924480.75 -36924480.59 -36924480.42 0.0266 0.0211  
 Mercury -105803-03-01 07:55 J -36923063.26 -36923063.17 -36923063.07 0.0270 0.0205  
 Mercury -105803-05-28 21:35 J -36922974.72 -36922974.60 -36922974.46 0.0271 0.0134  
 Mercury -105803-08-25 11:16 J -36922886.18 -36922886.03 -36922885.89 0.0271 0.0062  
 Mercury -105803-11-22 00:28 J -36922797.62 -36922797.48 -36922797.33 0.0272 0.0010  
 Mercury -105802-02-18 13:40 J -36922709.07 -36922708.93 -36922708.79 0.0272 0.0079

Mercury -105802-05-18 02:38 J -36922620.51 -36922620.39 -36922620.27 0.0273 0.0149  
 Mercury -105802-08-14 15:21 J -36922531.94 -36922531.86 -36922531.77 0.0273 0.0217  
 Venus -105799-10-03 11:59 J -36921386.17 -36921386.00 -36921385.84 0.0283 0.0173  
 Venus -105798-05-20 22:47 J -36921156.76 -36921156.55 -36921156.34 0.0285 0.0006  
 Venus -105797-01-05 10:19 J -36920927.24 -36920927.07 -36920926.90 0.0287 0.0165  
 Earth -105796-08-06 00:43 J -36920348.64 -36920348.47 -36920348.29 0.0291 0.0191  
 Moon -105796-08-06 02:23 J -36920348.60 -36920348.40 -36920348.21 0.0291 0.0175 \*  
 Mars -105793-04-29 13:40 J -36919351.23 -36919350.93 -36919350.62 0.0295 0.0075  
 Mercury -105789-03-23 00:57 J -36917927.56 -36917927.46 -36917927.36 0.0291 0.0218  
 Mercury -105789-06-19 18:57 J -36917838.85 -36917838.71 -36917838.56 0.0290 0.0125  
 Mercury -105789-09-16 13:40 J -36917750.09 -36917749.93 -36917749.77 0.0289 0.0031  
 Mercury -105789-12-14 08:23 J -36917661.31 -36917661.15 -36917660.99 0.0289 0.0066  
 Mercury -105788-03-13 03:35 J -36917572.48 -36917572.35 -36917572.21 0.0288 0.0162  
 Mercury -105788-06-09 23:02 J -36917483.60 -36917483.54 -36917483.47 0.0287 0.0260  
 Venus -105785-08-02 21:07 J -36916333.79 -36916333.62 -36916333.44 0.0278 0.0154  
 Venus -105784-03-20 10:33 J -36916104.27 -36916104.06 -36916103.84 0.0276 0.0008  
 Venus -105784-11-04 23:16 J -36915874.70 -36915874.53 -36915874.35 0.0274 0.0166  
 Moon -105782-01-26 05:45 J -36915427.50 -36915427.26 -36915427.01 0.0271 0.0070  
 Earth -105782-01-26 09:07 J -36915427.36 -36915427.12 -36915426.87 0.0271 0.0081 \*  
 Mars -105779-06-06 23:02 J -36914199.82 -36914199.54 -36914199.27 0.0266 0.0041  
 Mercury -105774-07-19 09:21 J -36912331.18 -36912331.11 -36912331.02 0.0269 0.0227  
 Mercury -105774-10-15 23:16 J -36912242.65 -36912242.53 -36912242.41 0.0270 0.0155  
 Mercury -105773-01-12 12:43 J -36912154.11 -36912153.97 -36912153.83 0.0270 0.0084  
 Mercury -105773-04-10 02:09 J -36912065.56 -36912065.41 -36912065.26 0.0271 0.0013  
 Mercury -105773-07-07 15:21 J -36911977.01 -36911976.86 -36911976.72 0.0271 0.0057  
 Mercury -105773-10-04 04:04 J -36911888.45 -36911888.33 -36911888.19 0.0272 0.0127  
 Mercury -105773-12-31 17:02 J -36911799.89 -36911799.79 -36911799.69 0.0273 0.0195  
 Mercury -105772-03-30 05:31 J -36911711.30 -36911711.27 -36911711.22 0.0273 0.0263  
 Venus -105769-04-14 15:07 J -36910600.04 -36910599.87 -36910599.69 0.0283 0.0154  
 Venus -105769-11-30 01:55 J -36910370.62 -36910370.42 -36910370.21 0.0285 0.0015

Venus -105768-07-17 13:26 J -36910141.09 -36910140.94 -36910140.78 0.0287 0.0185  
 Moon -105767-07-31 11:45 J -36909762.23 -36909762.01 -36909761.79 0.0290 0.0087  
 Earth -105767-07-31 12:43 J -36909762.20 -36909761.97 -36909761.74 0.0290 0.0071 \*  
 Mercury -105760-08-10 00:28 J -36907195.55 -36907195.48 -36907195.39 0.0291 0.0248  
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 Mercury -105759-02-03 13:11 J -36907018.11 -36907017.95 -36907017.79 0.0290 0.0061  
 Mercury -105759-05-03 07:55 J -36906929.33 -36906929.17 -36906929.01 0.0289 0.0034  
 Mercury -105759-07-31 02:52 J -36906840.52 -36906840.38 -36906840.23 0.0288 0.0131  
 Mercury -105759-10-27 22:19 J -36906751.67 -36906751.57 -36906751.47 0.0288 0.0228  
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 Venus -105755-09-30 15:50 J -36905318.05 -36905317.84 -36905317.62 0.0275 0.0032  
 Venus -105754-05-18 04:19 J -36905088.46 -36905088.32 -36905088.15 0.0273 0.0189  
 Moon -105752-02-02 03:50 J -36904462.50 -36904462.34 -36904462.16 0.0269 0.0206  
 Earth -105752-02-02 04:19 J -36904462.49 -36904462.32 -36904462.15 0.0269 0.0201 \*  
 Mars -105749-07-23 02:38 J -36903195.65 -36903195.39 -36903195.13 0.0266 0.0093  
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 Mercury -105744-11-24 18:14 J -36901244.89 -36901244.74 -36901244.60 0.0272 0.0041  
 Mercury -105743-02-21 07:11 J -36901156.33 -36901156.20 -36901156.07 0.0272 0.0111  
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 Mercury -105743-08-17 08:38 J -36900979.19 -36900979.14 -36900979.08 0.0274 0.0248  
 Venus -105740-10-26 00:14 J -36899813.67 -36899813.49 -36899813.30 0.0283 0.0126  
 Venus -105739-06-12 11:16 J -36899584.23 -36899584.03 -36899583.82 0.0285 0.0044  
 Venus -105738-01-27 23:02 J -36899354.67 -36899354.54 -36899354.40 0.0287 0.0216  
 Moon -105737-08-07 08:38 J -36898797.25 -36898797.14 -36898797.00 0.0291 0.0246  
 Earth -105737-08-07 11:45 J -36898797.10 -36898797.01 -36898796.91 0.0291 0.0263 \*  
 Mars -105735-07-31 21:21 J -36898073.88 -36898073.61 -36898073.32 0.0294 0.0127  
 Mercury -105731-12-28 02:52 J -36896463.43 -36896463.38 -36896463.31 0.0291 0.0266

Mercury -105730-03-26 20:52 J -36896374.75 -36896374.63 -36896374.50 0.0290 0.0174

Mercury -105730-06-23 15:21 J -36896286.01 -36896285.86 -36896285.70 0.0290 0.0080

Mercury -105730-09-20 10:04 J -36896197.24 -36896197.08 -36896196.92 0.0289 0.0015

Mercury -105730-12-18 05:02 J -36896108.44 -36896108.29 -36896108.14 0.0288 0.0111

Mercury -105729-03-16 00:14 J -36896019.60 -36896019.49 -36896019.37 0.0288 0.0209

Venus -105726-01-08 21:35 J -36894990.64 -36894990.60 -36894990.53 0.0279 0.0269

Venus -105726-08-26 11:45 J -36894761.20 -36894761.01 -36894760.81 0.0277 0.0106

Venus -105725-04-12 00:57 J -36894531.67 -36894531.46 -36894531.24 0.0275 0.0056

Venus -105725-11-27 13:26 J -36894302.07 -36894301.94 -36894301.80 0.0273 0.0214

Earth -105723-01-27 22:19 J -36893875.82 -36893875.57 -36893875.31 0.0270 0.0013

Moon -105723-01-27 22:19 J -36893875.82 -36893875.57 -36893875.32 0.0270 0.0002 \*

Mars -105721-09-15 02:09 J -36892914.63 -36892914.41 -36892914.18 0.0266 0.0158

Mars -105719-09-08 04:33 J -36892191.45 -36892191.31 -36892191.15 0.0265 0.0223

Mercury -105715-04-24 13:26 J -36890866.95 -36890866.94 -36890866.91 0.0269 0.0266

Mercury -105715-07-22 03:21 J -36890778.46 -36890778.36 -36890778.25 0.0269 0.0194

Mercury -105715-10-18 17:02 J -36890689.92 -36890689.79 -36890689.65 0.0270 0.0123

Mercury -105714-01-15 06:28 J -36890601.37 -36890601.23 -36890601.08 0.0270 0.0052

Mercury -105714-04-13 19:40 J -36890512.82 -36890512.68 -36890512.53 0.0271 0.0020

Mercury -105714-07-11 08:52 J -36890424.27 -36890424.13 -36890423.99 0.0271 0.0089

Mercury -105714-10-07 21:35 J -36890335.71 -36890335.60 -36890335.48 0.0272 0.0158

Mercury -105713-01-04 10:19 J -36890247.14 -36890247.07 -36890246.99 0.0273 0.0226

Venus -105711-09-20 16:33 J -36889256.86 -36889256.81 -36889256.75 0.0281 0.0272

Venus -105710-05-08 02:52 J -36889027.57 -36889027.38 -36889027.19 0.0283 0.0108

Venus -105710-12-23 13:40 J -36888798.13 -36888797.93 -36888797.72 0.0285 0.0062

Venus -105709-08-09 01:26 J -36888568.55 -36888568.44 -36888568.32 0.0287 0.0234

Earth -105708-08-01 22:04 J -36888210.82 -36888210.58 -36888210.34 0.0290 0.0002

Moon -105708-08-02 01:11 J -36888210.68 -36888210.45 -36888210.22 0.0290 0.0018 \*

Mars -105705-09-23 12:43 J -36887062.26 -36887061.97 -36887061.67 0.0295 0.0097

Mercury -105701-08-12 20:09 J -36885642.77 -36885642.66 -36885642.55 0.0291 0.0207

Mercury -105701-11-09 14:23 J -36885554.05 -36885553.90 -36885553.75 0.0290 0.0114



Mercury -105700-02-06 09:07 J -36885465.29 -36885465.12 -36885464.96 0.0290 0.0021

Mercury -105700-05-06 03:50 J -36885376.50 -36885376.34 -36885376.18 0.0289 0.0077

Mercury -105700-08-02 23:02 J -36885287.67 -36885287.54 -36885287.40 0.0288 0.0174

Mercury -105700-10-30 18:43 J -36885198.77 -36885198.72 -36885198.67 0.0287 0.0272

Venus -105697-07-21 01:26 J -36884204.53 -36884204.44 -36884204.34 0.0279 0.0248

Venus -105696-03-07 15:35 J -36883975.05 -36883974.85 -36883974.64 0.0277 0.0084

Venus -105696-10-23 05:02 J -36883745.49 -36883745.29 -36883745.08 0.0275 0.0078

Venus -105695-06-09 17:31 J -36883515.87 -36883515.77 -36883515.66 0.0273 0.0235

Moon -105694-01-22 09:07 J -36883289.26 -36883289.12 -36883288.98 0.0271 0.0229

Earth -105694-01-22 08:38 J -36883289.23 -36883289.14 -36883289.01 0.0271 0.0243 \*

Moon -105693-02-04 11:31 J -36882911.04 -36882911.02 -36882910.99 0.0269 0.0267

Earth -105693-02-04 15:07 J -36882910.91 -36882910.87 -36882910.82 0.0269 0.0264

Mars -105691-11-01 04:33 J -36881910.58 -36881910.31 -36881910.03 0.0266 0.0027

Mercury -105686-12-09 05:31 J -36880046.36 -36880046.27 -36880046.18 0.0270 0.0214

Mercury -105685-03-06 19:11 J -36879957.82 -36879957.70 -36879957.57 0.0270 0.0142

Mercury -105685-06-03 08:52 J -36879869.28 -36879869.13 -36879868.99 0.0271 0.0071

Mercury -105685-08-30 22:04 J -36879780.73 -36879780.58 -36879780.43 0.0271 0.0004

Mercury -105685-11-27 11:16 J -36879692.17 -36879692.03 -36879691.89 0.0272 0.0070

Mercury -105684-02-24 00:14 J -36879603.61 -36879603.49 -36879603.37 0.0273 0.0140

Mercury -105684-05-23 12:57 J -36879515.05 -36879514.96 -36879514.87 0.0273 0.0208

Venus -105681-04-01 23:59 J -36878470.59 -36878470.50 -36878470.39 0.0282 0.0248

Venus -105681-11-17 10:33 J -36878241.25 -36878241.06 -36878240.86 0.0284 0.0082

Venus -105680-07-04 21:50 J -36878011.78 -36878011.59 -36878011.39 0.0286 0.0090

Venus -105679-02-19 09:50 J -36877782.17 -36877782.09 -36877782.00 0.0288 0.0263

Moon -105679-07-27 16:33 J -36877623.90 -36877623.81 -36877623.70 0.0289 0.0262

Earth -105679-07-27 19:55 J -36877623.79 -36877623.67 -36877623.55 0.0289 0.0247 \*

Mercury -105672-12-30 22:19 J -36874910.67 -36874910.57 -36874910.47 0.0291 0.0226

Mercury -105671-03-29 16:33 J -36874821.95 -36874821.81 -36874821.67 0.0290 0.0133

Mercury -105671-06-26 11:02 J -36874733.20 -36874733.04 -36874732.88 0.0290 0.0039

Mercury -105671-09-23 05:45 J -36874644.42 -36874644.26 -36874644.10 0.0289 0.0057

Mercury -105671-12-21 00:57 J -36874555.60 -36874555.46 -36874555.32 0.0288 0.0154

Mercury -105670-03-19 20:23 J -36874466.72 -36874466.65 -36874466.57 0.0288 0.0251

Venus -105667-01-31 11:02 J -36873418.16 -36873418.04 -36873417.91 0.0279 0.0223

Venus -105667-09-18 00:57 J -36873188.67 -36873188.46 -36873188.24 0.0277 0.0059

Venus -105666-05-05 14:09 J -36872959.11 -36872958.91 -36872958.71 0.0275 0.0103

Venus -105666-12-21 02:23 J -36872729.47 -36872729.40 -36872729.34 0.0273 0.0259

Earth -105664-01-29 09:35 J -36872324.35 -36872324.10 -36872323.85 0.0270 0.0054

Moon -105664-01-29 12:57 J -36872324.20 -36872323.96 -36872323.71 0.0270 0.0065 \*

Mars -105661-12-17 08:52 J -36870906.37 -36870906.13 -36870905.87 0.0265 0.0108

Mercury -105656-04-27 07:11 J -36869314.27 -36869314.20 -36869314.13 0.0269 0.0235

Mercury -105656-07-24 20:52 J -36869225.75 -36869225.63 -36869225.51 0.0269 0.0163

Mercury -105656-10-21 10:19 J -36869137.21 -36869137.07 -36869136.93 0.0270 0.0093

Mercury -105655-01-17 23:45 J -36869048.66 -36869048.51 -36869048.36 0.0270 0.0022

Mercury -105655-04-16 12:57 J -36868960.11 -36868959.96 -36868959.82 0.0271 0.0049

Mercury -105655-07-14 01:55 J -36868871.55 -36868871.42 -36868871.29 0.0272 0.0118

Mercury -105655-10-10 14:38 J -36868782.99 -36868782.89 -36868782.78 0.0272 0.0186

Mercury -105654-01-07 03:07 J -36868694.41 -36868694.37 -36868694.31 0.0273 0.0254

Venus -105652-10-13 02:38 J -36867684.51 -36867684.39 -36867684.27 0.0281 0.0229

Venus -105651-05-30 12:57 J -36867455.16 -36867454.96 -36867454.76 0.0284 0.0063

Venus -105650-01-14 23:45 J -36867225.69 -36867225.51 -36867225.31 0.0286 0.0109

Venus -105650-09-01 11:31 J -36866996.05 -36866996.02 -36866995.97 0.0288 0.0281

Earth -105649-08-03 04:33 J -36866659.54 -36866659.31 -36866659.08 0.0290 0.0062

Moon -105649-08-03 07:11 J -36866659.44 -36866659.20 -36866658.96 0.0290 0.0045 \*

Mars -105647-12-25 07:11 J -36865785.49 -36865785.20 -36865784.91 0.0295 0.0110

Mercury -105642-05-19 20:52 J -36864178.69 -36864178.63 -36864178.56 0.0291 0.0261

Mercury -105642-08-16 14:52 J -36864090.00 -36864089.88 -36864089.74 0.0291 0.0170

Mercury -105642-11-13 09:21 J -36864001.26 -36864001.11 -36864000.95 0.0290 0.0076

Mercury -105641-02-10 04:04 J -36863912.49 -36863912.33 -36863912.17 0.0289 0.0020

Mercury -105641-05-08 23:02 J -36863823.69 -36863823.54 -36863823.38 0.0289 0.0117

Mercury -105641-08-05 18:28 J -36863734.84 -36863734.73 -36863734.62 0.0288 0.0214

Venus -105638-08-13 12:57 J -36862632.10 -36862631.96 -36862631.81 0.0278 0.0204  
 Venus -105637-03-30 03:07 J -36862402.58 -36862402.37 -36862402.15 0.0276 0.0040  
 Venus -105637-11-14 16:33 J -36862173.00 -36862172.81 -36862172.62 0.0274 0.0122  
 Moon -105635-01-23 14:09 J -36861738.11 -36861737.91 -36861737.71 0.0271 0.0167  
 Earth -105635-01-23 17:45 J -36861737.94 -36861737.76 -36861737.56 0.0271 0.0180 \*  
 Mars -105632-02-09 00:43 J -36860625.69 -36860625.47 -36860625.23 0.0266 0.0147  
 Mars -105630-02-02 04:04 J -36859902.44 -36859902.33 -36859902.19 0.0265 0.0235  
 Mercury -105627-09-14 08:52 J -36858582.17 -36858582.13 -36858582.09 0.0269 0.0257  
 Mercury -105627-12-11 22:33 J -36858493.66 -36858493.56 -36858493.45 0.0270 0.0185  
 Mercury -105626-03-10 12:14 J -36858405.12 -36858404.99 -36858404.85 0.0270 0.0113  
 Mercury -105626-06-07 01:40 J -36858316.58 -36858316.43 -36858316.28 0.0271 0.0042  
 Mercury -105626-09-03 14:52 J -36858228.02 -36858227.88 -36858227.73 0.0271 0.0028  
 Mercury -105626-12-01 03:50 J -36858139.47 -36858139.34 -36858139.20 0.0272 0.0098  
 Mercury -105625-02-27 16:47 J -36858050.91 -36858050.80 -36858050.68 0.0273 0.0167  
 Mercury -105625-05-26 05:31 J -36857962.34 -36857962.27 -36857962.20 0.0273 0.0235  
 Venus -105622-04-25 08:38 J -36856898.27 -36856898.14 -36856897.99 0.0282 0.0207  
 Venus -105622-12-10 19:26 J -36856668.90 -36856668.69 -36856668.49 0.0284 0.0039  
 Venus -105621-07-27 06:28 J -36856439.40 -36856439.23 -36856439.04 0.0286 0.0134  
 Moon -105620-07-28 21:21 J -36856072.77 -36856072.61 -36856072.44 0.0289 0.0202  
 Earth -105620-07-28 23:45 J -36856072.68 -36856072.51 -36856072.32 0.0289 0.0188 \*  
 Mars -105616-02-17 23:16 J -36854772.81 -36854772.53 -36854772.23 0.0295 0.0114  
 Mercury -105613-10-05 22:33 J -36853446.59 -36853446.56 -36853446.52 0.0291 0.0283  
 Mercury -105612-01-02 16:33 J -36853357.92 -36853357.81 -36853357.69 0.0291 0.0191  
 Mercury -105612-04-01 10:47 J -36853269.19 -36853269.05 -36853268.89 0.0290 0.0098  
 Mercury -105612-06-29 05:31 J -36853180.43 -36853180.27 -36853180.10 0.0289 0.0006  
 Mercury -105612-09-26 00:28 J -36853091.63 -36853091.48 -36853091.32 0.0289 0.0094  
 Mercury -105612-12-23 19:55 J -36853002.80 -36853002.67 -36853002.55 0.0288 0.0191  
 Venus -105608-02-22 22:04 J -36851845.74 -36851845.58 -36851845.41 0.0278 0.0179  
 Venus -105608-10-10 12:14 J -36851616.21 -36851615.99 -36851615.78 0.0276 0.0015  
 Venus -105607-05-28 00:57 J -36851386.64 -36851386.46 -36851386.27 0.0274 0.0147

Earth -105605-01-31 17:45 J -36850772.99 -36850772.76 -36850772.53 0.0270 0.0114  
 Moon -105605-01-31 20:23 J -36850772.89 -36850772.65 -36850772.42 0.0270 0.0123 \*  
 Mars -105602-03-28 07:55 J -36849621.44 -36849621.17 -36849620.89 0.0265 0.0010  
 Mercury -105597-04-29 23:59 J -36847761.59 -36847761.50 -36847761.40 0.0269 0.0207  
 Mercury -105597-07-27 13:40 J -36847673.05 -36847672.93 -36847672.80 0.0269 0.0135  
 Mercury -105597-10-24 03:07 J -36847584.51 -36847584.37 -36847584.22 0.0270 0.0065  
 Mercury -105596-01-20 16:33 J -36847495.96 -36847495.81 -36847495.67 0.0270 0.0008  
 Mercury -105596-04-19 05:31 J -36847407.41 -36847407.27 -36847407.13 0.0271 0.0075  
 Mercury -105596-07-16 18:14 J -36847318.85 -36847318.74 -36847318.61 0.0272 0.0145  
 Mercury -105596-10-13 07:11 J -36847230.29 -36847230.20 -36847230.11 0.0272 0.0212  
 Venus -105593-11-04 10:33 J -36846112.20 -36846112.06 -36846111.90 0.0282 0.0189  
 Venus -105592-06-21 21:07 J -36845882.83 -36845882.62 -36845882.41 0.0284 0.0020  
 Venus -105591-02-06 07:55 J -36845653.33 -36845653.17 -36845652.99 0.0286 0.0152  
 Moon -105590-08-05 05:45 J -36845108.49 -36845108.26 -36845108.03 0.0290 0.0103  
 Earth -105590-08-05 07:40 J -36845108.40 -36845108.18 -36845107.97 0.0290 0.0119 \*  
 Mercury -105583-05-22 14:52 J -36842625.97 -36842625.88 -36842625.78 0.0291 0.0228  
 Mercury -105583-08-19 09:07 J -36842537.26 -36842537.12 -36842536.98 0.0291 0.0135  
 Mercury -105583-11-16 03:35 J -36842448.51 -36842448.35 -36842448.19 0.0290 0.0041  
 Mercury -105582-02-12 22:19 J -36842359.73 -36842359.57 -36842359.40 0.0289 0.0056  
 Mercury -105582-05-12 17:31 J -36842270.91 -36842270.77 -36842270.63 0.0289 0.0152  
 Mercury -105582-08-09 12:57 J -36842182.04 -36842181.96 -36842181.87 0.0288 0.0250  
 Venus -105579-09-04 23:02 J -36841059.71 -36841059.54 -36841059.36 0.0278 0.0162  
 Venus -105578-04-22 13:11 J -36840830.17 -36840829.95 -36840829.74 0.0276 0.0004  
 Venus -105578-12-08 02:09 J -36840600.58 -36840600.41 -36840600.23 0.0274 0.0165  
 Moon -105576-01-24 21:50 J -36840186.81 -36840186.59 -36840186.36 0.0271 0.0112  
 Earth -105576-01-24 23:45 J -36840186.73 -36840186.51 -36840186.27 0.0271 0.0122 \*  
 Mars -105572-05-13 00:14 J -36838617.73 -36838617.49 -36838617.24 0.0265 0.0117  
 Mercury -105568-09-17 01:26 J -36837029.51 -36837029.44 -36837029.36 0.0269 0.0230  
 Mercury -105568-12-14 15:07 J -36836940.99 -36836940.87 -36836940.75 0.0270 0.0158  
 Mercury -105567-03-13 04:47 J -36836852.44 -36836852.30 -36836852.16 0.0270 0.0087

Mercury -105567-06-09 17:59 J -36836763.90 -36836763.75 -36836763.60 0.0271 0.0017

Mercury -105567-09-06 07:11 J -36836675.34 -36836675.20 -36836675.06 0.0271 0.0053

Mercury -105567-12-03 20:09 J -36836586.79 -36836586.66 -36836586.53 0.0272 0.0123

Mercury -105566-03-02 08:52 J -36836498.23 -36836498.13 -36836498.02 0.0273 0.0191

Mercury -105566-05-29 21:35 J -36836409.64 -36836409.60 -36836409.56 0.0273 0.0259

Venus -105563-05-17 15:50 J -36835326.01 -36835325.84 -36835325.67 0.0282 0.0168

Venus -105562-01-02 02:23 J -36835096.61 -36835096.40 -36835096.20 0.0284 0.0005

Venus -105562-08-19 13:26 J -36834867.09 -36834866.94 -36834866.77 0.0286 0.0176

Earth -105561-07-30 00:43 J -36834521.67 -36834521.47 -36834521.26 0.0289 0.0134

Moon -105561-07-30 02:23 J -36834521.60 -36834521.40 -36834521.21 0.0289 0.0148 \*

Mars -105558-05-21 03:07 J -36833496.66 -36833496.37 -36833496.07 0.0295 0.0097

Mercury -105554-10-09 15:50 J -36831893.90 -36831893.84 -36831893.75 0.0291 0.0253

Mercury -105553-01-06 10:04 J -36831805.21 -36831805.08 -36831804.94 0.0291 0.0160

Mercury -105553-04-04 04:33 J -36831716.47 -36831716.31 -36831716.15 0.0290 0.0066

Mercury -105553-07-01 23:16 J -36831627.69 -36831627.53 -36831627.36 0.0289 0.0031

Mercury -105553-09-28 18:28 J -36831538.88 -36831538.73 -36831538.58 0.0289 0.0127

Mercury -105553-12-26 13:40 J -36831450.02 -36831449.93 -36831449.82 0.0288 0.0225

Venus -105549-03-17 06:57 J -36830273.39 -36830273.21 -36830273.01 0.0278 0.0138

Venus -105549-11-01 21:07 J -36830043.83 -36830043.62 -36830043.40 0.0276 0.0028

Venus -105548-06-19 10:04 J -36829814.23 -36829814.08 -36829813.92 0.0274 0.0188

Moon -105546-02-01 20:09 J -36829221.85 -36829221.66 -36829221.45 0.0270 0.0174

Earth -105546-02-01 22:33 J -36829221.75 -36829221.56 -36829221.36 0.0270 0.0169 \*

Mars -105544-07-06 00:28 J -36828336.71 -36828336.48 -36828336.23 0.0266 0.0130

Mars -105542-06-29 01:11 J -36827613.53 -36827613.45 -36827613.34 0.0265 0.0248

Mercury -105538-02-04 02:52 J -36826297.42 -36826297.38 -36826297.32 0.0268 0.0251

Mercury -105538-05-03 16:47 J -36826208.91 -36826208.80 -36826208.69 0.0269 0.0179

Mercury -105538-07-31 06:14 J -36826120.37 -36826120.24 -36826120.10 0.0269 0.0109

Mercury -105538-10-27 19:40 J -36826031.83 -36826031.68 -36826031.53 0.0270 0.0038

Mercury -105537-01-24 08:52 J -36825943.28 -36825943.13 -36825942.98 0.0270 0.0032

Mercury -105537-04-21 21:50 J -36825854.72 -36825854.59 -36825854.45 0.0271 0.0101

Mercury -105537-07-19 10:33 J -36825766.17 -36825766.06 -36825765.94 0.0272 0.0169  
 Mercury -105537-10-15 23:16 J -36825677.60 -36825677.53 -36825677.46 0.0272 0.0236  
 Venus -105534-11-27 17:45 J -36824539.93 -36824539.76 -36824539.58 0.0282 0.0149  
 Venus -105533-07-14 04:04 J -36824310.53 -36824310.33 -36824310.12 0.0284 0.0021  
 Venus -105532-02-28 14:52 J -36824081.02 -36824080.88 -36824080.72 0.0286 0.0194  
 Moon -105531-08-06 05:02 J -36823557.48 -36823557.29 -36823557.09 0.0290 0.0156  
 Earth -105531-08-06 08:23 J -36823557.34 -36823557.15 -36823556.96 0.0290 0.0171 \*  
 Mars -105528-07-13 08:38 J -36822485.42 -36822485.14 -36822484.85 0.0295 0.0120  
 Mercury -105524-02-25 14:09 J -36821161.92 -36821161.91 -36821161.90 0.0292 0.0290  
 Mercury -105524-05-25 07:55 J -36821073.28 -36821073.17 -36821073.05 0.0291 0.0199  
 Mercury -105524-08-22 02:09 J -36820984.55 -36820984.41 -36820984.25 0.0291 0.0106  
 Mercury -105524-11-18 20:52 J -36820895.79 -36820895.63 -36820895.47 0.0290 0.0011  
 Mercury -105523-02-15 15:50 J -36820807.00 -36820806.84 -36820806.68 0.0289 0.0086  
 Mercury -105523-05-15 11:02 J -36820718.16 -36820718.04 -36820717.91 0.0289 0.0183  
 Mercury -105523-08-12 06:43 J -36820629.25 -36820629.22 -36820629.19 0.0288 0.0281  
 Venus -105520-09-27 06:57 J -36819487.40 -36819487.21 -36819487.01 0.0278 0.0123  
 Venus -105519-05-14 20:52 J -36819257.84 -36819257.63 -36819257.41 0.0276 0.0044  
 Venus -105519-12-30 09:50 J -36819028.22 -36819028.09 -36819027.94 0.0274 0.0205  
 Earth -105517-01-27 02:52 J -36818635.63 -36818635.38 -36818635.13 0.0271 0.0070  
 Moon -105517-01-27 05:45 J -36818635.50 -36818635.26 -36818635.01 0.0271 0.0062 \*  
 Mars -105514-08-21 16:33 J -36817333.09 -36817332.81 -36817332.53 0.0265 0.0004  
 Mercury -105509-09-19 17:31 J -36815476.86 -36815476.77 -36815476.67 0.0269 0.0205  
 Mercury -105509-12-17 07:11 J -36815388.32 -36815388.20 -36815388.06 0.0270 0.0134  
 Mercury -105508-03-15 20:52 J -36815299.78 -36815299.63 -36815299.49 0.0270 0.0063  
 Mercury -105508-06-12 10:04 J -36815211.23 -36815211.08 -36815210.93 0.0271 0.0008  
 Mercury -105508-09-08 23:02 J -36815122.68 -36815122.54 -36815122.40 0.0271 0.0077  
 Mercury -105508-12-06 11:59 J -36815034.12 -36815034.00 -36815033.88 0.0272 0.0146  
 Mercury -105507-03-05 00:43 J -36814945.56 -36814945.47 -36814945.38 0.0273 0.0214  
 Venus -105504-06-08 21:21 J -36813753.79 -36813753.61 -36813753.43 0.0283 0.0130  
 Venus -105503-01-24 07:40 J -36813524.38 -36813524.18 -36813523.97 0.0285 0.0041

Venus -105503-09-10 18:57 J -36813294.84 -36813294.71 -36813294.57 0.0287 0.0215  
 Earth -105502-07-31 22:47 J -36812970.77 -36812970.55 -36812970.32 0.0289 0.0086  
 Moon -105502-08-01 02:23 J -36812970.62 -36812970.40 -36812970.18 0.0289 0.0101 \*  
 Mercury -105495-10-12 08:38 J -36810341.23 -36810341.14 -36810341.04 0.0291 0.0225  
 Mercury -105494-01-09 02:52 J -36810252.52 -36810252.38 -36810252.24 0.0291 0.0132  
 Mercury -105494-04-07 21:21 J -36810163.77 -36810163.61 -36810163.44 0.0290 0.0038  
 Mercury -105494-07-05 16:19 J -36810074.98 -36810074.82 -36810074.66 0.0289 0.0059  
 Mercury -105494-10-02 11:31 J -36809986.16 -36809986.02 -36809985.88 0.0289 0.0156  
 Mercury -105494-12-30 06:57 J -36809897.28 -36809897.21 -36809897.13 0.0288 0.0254  
 Venus -105491-08-22 23:16 J -36808930.58 -36808930.53 -36808930.45 0.0280 0.0267  
 Venus -105490-04-09 14:23 J -36808701.10 -36808700.90 -36808700.70 0.0278 0.0099  
 Venus -105490-11-25 04:33 J -36808471.52 -36808471.31 -36808471.10 0.0276 0.0067  
 Venus -105489-07-11 17:16 J -36808241.89 -36808241.78 -36808241.65 0.0274 0.0228  
 Moon -105487-02-02 21:21 J -36807670.75 -36807670.61 -36807670.46 0.0270 0.0222  
 Earth -105487-02-03 00:57 J -36807670.60 -36807670.46 -36807670.31 0.0270 0.0220 \*  
 Mars -105486-10-14 09:21 J -36807052.18 -36807052.11 -36807052.00 0.0267 0.0252  
 Mars -105484-10-06 19:55 J -36806328.90 -36806328.67 -36806328.42 0.0265 0.0131  
 Mercury -105479-02-06 19:26 J -36804744.77 -36804744.69 -36804744.61 0.0268 0.0226  
 Mercury -105479-05-06 08:52 J -36804656.25 -36804656.13 -36804656.00 0.0269 0.0155  
 Mercury -105479-08-02 22:33 J -36804567.70 -36804567.56 -36804567.42 0.0269 0.0084  
 Mercury -105479-10-30 11:45 J -36804479.16 -36804479.01 -36804478.86 0.0270 0.0014  
 Mercury -105478-01-27 00:57 J -36804390.61 -36804390.46 -36804390.32 0.0270 0.0056  
 Mercury -105478-04-25 13:40 J -36804302.05 -36804301.93 -36804301.80 0.0271 0.0125  
 Mercury -105478-07-23 02:23 J -36804213.49 -36804213.40 -36804213.29 0.0272 0.0192  
 Mercury -105478-10-19 15:07 J -36804124.91 -36804124.87 -36804124.83 0.0272 0.0259  
 Venus -105475-05-04 14:09 J -36803196.94 -36803196.91 -36803196.87 0.0280 0.0274  
 Venus -105475-12-19 23:31 J -36802967.71 -36802967.52 -36802967.32 0.0282 0.0110  
 Venus -105474-08-06 09:50 J -36802738.29 -36802738.09 -36802737.89 0.0284 0.0061  
 Venus -105473-03-22 20:38 J -36802508.74 -36802508.64 -36802508.51 0.0286 0.0234  
 Earth -105472-08-07 06:57 J -36802006.35 -36802006.21 -36802006.05 0.0290 0.0219

Moon -105472-08-07 07:11 J -36802006.35 -36802006.20 -36802006.04 0.0290 0.0207 \*  
 Mars -105470-10-13 05:59 J -36801209.54 -36801209.25 -36801208.95 0.0294 0.0095  
 Mercury -105465-02-29 06:28 J -36799609.29 -36799609.23 -36799609.16 0.0292 0.0264  
 Mercury -105465-05-28 00:28 J -36799520.60 -36799520.48 -36799520.35 0.0291 0.0172  
 Mercury -105465-08-24 18:57 J -36799431.87 -36799431.71 -36799431.56 0.0291 0.0078  
 Mercury -105465-11-21 13:40 J -36799343.10 -36799342.93 -36799342.77 0.0290 0.0018  
 Mercury -105464-02-18 08:38 J -36799254.29 -36799254.14 -36799253.99 0.0289 0.0114  
 Mercury -105464-05-18 03:50 J -36799165.44 -36799165.34 -36799165.22 0.0289 0.0212  
 Venus -105461-03-03 22:19 J -36798144.65 -36798144.57 -36798144.47 0.0280 0.0253  
 Venus -105461-10-19 13:26 J -36797915.14 -36797914.94 -36797914.73 0.0278 0.0084  
 Venus -105460-06-06 03:21 J -36797685.56 -36797685.36 -36797685.15 0.0276 0.0082  
 Venus -105459-01-21 16:19 J -36797455.91 -36797455.82 -36797455.72 0.0274 0.0243  
 Earth -105458-01-28 03:35 J -36797084.60 -36797084.35 -36797084.09 0.0271 0.0022  
 Moon -105458-01-28 06:57 J -36797084.47 -36797084.21 -36797083.95 0.0271 0.0017 \*  
 Mars -105456-11-29 02:52 J -36796048.62 -36796048.38 -36796048.13 0.0266 0.0127  
 Mars -105454-11-22 05:45 J -36795325.33 -36795325.26 -36795325.16 0.0265 0.0252  
 Mercury -105450-06-26 19:55 J -36794012.72 -36794012.67 -36794012.62 0.0269 0.0252  
 Mercury -105450-09-23 09:35 J -36793924.20 -36793924.10 -36793923.98 0.0269 0.0181  
 Mercury -105450-12-20 23:16 J -36793835.66 -36793835.53 -36793835.39 0.0270 0.0110  
 Mercury -105449-03-18 12:43 J -36793747.12 -36793746.97 -36793746.82 0.0270 0.0039  
 Mercury -105449-06-15 01:55 J -36793658.57 -36793658.42 -36793658.28 0.0271 0.0031  
 Mercury -105449-09-11 14:52 J -36793570.02 -36793569.88 -36793569.75 0.0271 0.0100  
 Mercury -105449-12-09 03:35 J -36793481.46 -36793481.35 -36793481.23 0.0272 0.0168  
 Mercury -105448-03-07 16:19 J -36793392.89 -36793392.82 -36793392.75 0.0273 0.0235  
 Venus -105446-11-14 16:47 J -36792410.87 -36792410.80 -36792410.71 0.0281 0.0258  
 Venus -105445-07-01 02:23 J -36792181.59 -36792181.40 -36792181.20 0.0283 0.0092  
 Venus -105444-02-15 12:57 J -36791952.16 -36791951.96 -36791951.76 0.0285 0.0080  
 Venus -105444-10-03 00:14 J -36791722.58 -36791722.49 -36791722.40 0.0287 0.0254  
 Earth -105443-08-01 20:52 J -36791419.87 -36791419.63 -36791419.40 0.0289 0.0038  
 Moon -105443-08-01 20:52 J -36791419.87 -36791419.63 -36791419.39 0.0289 0.0052 \*



Mars -105440-12-06 07:55 J -36790197.45 -36790197.17 -36790196.88 0.0295 0.0124  
 Mercury -105436-07-18 06:57 J -36788877.21 -36788877.21 -36788877.21 0.0292 0.0291  
 Mercury -105436-10-15 00:43 J -36788788.58 -36788788.47 -36788788.35 0.0291 0.0200  
 Mercury -105435-01-11 19:11 J -36788699.85 -36788699.70 -36788699.55 0.0291 0.0107  
 Mercury -105435-04-10 13:40 J -36788611.09 -36788610.93 -36788610.77 0.0290 0.0012  
 Mercury -105435-07-08 08:38 J -36788522.29 -36788522.14 -36788521.98 0.0289 0.0085  
 Mercury -105435-10-05 03:50 J -36788433.46 -36788433.34 -36788433.21 0.0289 0.0183  
 Mercury -105434-01-01 23:31 J -36788344.55 -36788344.52 -36788344.48 0.0288 0.0281  
 Venus -105432-09-14 05:02 J -36787358.41 -36787358.29 -36787358.16 0.0280 0.0230  
 Venus -105431-05-01 19:55 J -36787128.88 -36787128.67 -36787128.46 0.0278 0.0061  
 Venus -105431-12-17 09:50 J -36786899.28 -36786899.09 -36786898.88 0.0276 0.0105  
 Venus -105430-08-03 22:47 J -36786669.59 -36786669.55 -36786669.49 0.0274 0.0266  
 Moon -105429-01-22 14:38 J -36786498.01 -36786497.89 -36786497.77 0.0273 0.0236  
 Earth -105429-01-22 17:02 J -36786497.89 -36786497.79 -36786497.66 0.0273 0.0242 \*  
 Earth -105428-02-04 00:43 J -36786119.50 -36786119.47 -36786119.41 0.0270 0.0266  
 Moon -105428-02-04 01:40 J -36786119.46 -36786119.43 -36786119.37 0.0270 0.0265 \*  
 Mars -105425-01-15 10:04 J -36785044.35 -36785044.08 -36785043.80 0.0266 0.0011  
 Mercury -105420-02-09 11:16 J -36783192.12 -36783192.03 -36783191.92 0.0268 0.0202  
 Mercury -105420-05-09 00:57 J -36783103.58 -36783103.46 -36783103.32 0.0269 0.0131  
 Mercury -105420-08-05 14:23 J -36783015.04 -36783014.90 -36783014.75 0.0269 0.0060  
 Mercury -105420-11-02 03:35 J -36782926.49 -36782926.35 -36782926.20 0.0270 0.0013  
 Mercury -105419-01-29 16:47 J -36782837.94 -36782837.80 -36782837.66 0.0270 0.0079  
 Mercury -105419-04-28 05:31 J -36782749.39 -36782749.27 -36782749.15 0.0271 0.0147  
 Mercury -105419-07-25 18:14 J -36782660.82 -36782660.74 -36782660.65 0.0272 0.0215  
 Venus -105416-05-26 19:40 J -36781624.78 -36781624.68 -36781624.56 0.0280 0.0237  
 Venus -105415-01-11 05:02 J -36781395.49 -36781395.29 -36781395.09 0.0282 0.0071  
 Venus -105415-08-28 15:07 J -36781166.06 -36781165.87 -36781165.68 0.0284 0.0100  
 Venus -105414-04-15 01:55 J -36780936.46 -36780936.42 -36780936.35 0.0286 0.0274  
 Earth -105413-08-08 04:33 J -36780455.39 -36780455.31 -36780455.20 0.0290 0.0265  
 Moon -105413-08-08 07:55 J -36780455.27 -36780455.17 -36780455.04 0.0290 0.0253 \*

Mercury -105406-03-03 22:33 J -36778056.65 -36778056.56 -36778056.47 0.0292 0.0240

Mercury -105406-05-31 16:33 J -36777967.94 -36777967.81 -36777967.67 0.0291 0.0148

Mercury -105406-08-28 11:02 J -36777879.20 -36777879.04 -36777878.88 0.0291 0.0053

Mercury -105406-11-25 05:59 J -36777790.42 -36777790.25 -36777790.09 0.0290 0.0043

Mercury -105405-02-22 00:57 J -36777701.60 -36777701.46 -36777701.31 0.0289 0.0140

Mercury -105405-05-20 20:23 J -36777612.74 -36777612.65 -36777612.55 0.0289 0.0238

Venus -105402-03-27 03:35 J -36776572.48 -36776572.35 -36776572.21 0.0280 0.0217

Venus -105402-11-11 18:43 J -36776342.93 -36776342.72 -36776342.51 0.0278 0.0047

Venus -105401-06-28 08:38 J -36776113.33 -36776113.14 -36776112.94 0.0276 0.0119

Moon -105399-01-29 01:11 J -36775533.72 -36775533.45 -36775533.19 0.0271 0.0023

Earth -105399-01-29 02:52 J -36775533.63 -36775533.38 -36775533.12 0.0271 0.0025 \*

Mars -105397-03-08 05:59 J -36774764.32 -36774764.25 -36774764.15 0.0267 0.0253

Mars -105395-03-01 19:40 J -36774040.90 -36774040.68 -36774040.43 0.0265 0.0134

Mercury -105391-06-29 11:45 J -36772460.08 -36772460.01 -36772459.92 0.0269 0.0229

Mercury -105391-09-26 01:40 J -36772371.55 -36772371.43 -36772371.31 0.0269 0.0157

Mercury -105391-12-23 15:07 J -36772283.01 -36772282.87 -36772282.73 0.0270 0.0087

Mercury -105390-03-22 04:19 J -36772194.46 -36772194.32 -36772194.17 0.0270 0.0018

Mercury -105390-06-18 17:31 J -36772105.91 -36772105.77 -36772105.63 0.0271 0.0053

Mercury -105390-09-15 06:28 J -36772017.36 -36772017.23 -36772017.10 0.0271 0.0122

Mercury -105390-12-12 19:11 J -36771928.80 -36771928.70 -36771928.60 0.0272 0.0190

Mercury -105389-03-10 07:55 J -36771840.22 -36771840.17 -36771840.13 0.0273 0.0257

Venus -105387-12-06 21:50 J -36770838.72 -36770838.59 -36770838.46 0.0281 0.0221

Venus -105386-07-24 07:11 J -36770609.40 -36770609.20 -36770608.99 0.0283 0.0054

Venus -105385-03-09 17:31 J -36770379.95 -36770379.77 -36770379.58 0.0285 0.0119

Moon -105384-08-02 14:23 J -36769869.14 -36769868.90 -36769868.66 0.0289 0.0008

Earth -105384-08-02 17:45 J -36769868.99 -36769868.76 -36769868.52 0.0289 0.0010 \*

Mars -105381-03-06 22:04 J -36768921.86 -36768921.58 -36768921.27 0.0294 0.0093

Mercury -105377-07-20 22:47 J -36767324.61 -36767324.55 -36767324.49 0.0292 0.0268

Mercury -105377-10-17 16:47 J -36767235.93 -36767235.80 -36767235.68 0.0291 0.0176

Mercury -105376-01-14 11:02 J -36767147.19 -36767147.04 -36767146.88 0.0290 0.0083

Mercury -105376-04-13 05:45 J -36767058.42 -36767058.26 -36767058.10 0.0290 0.0013

Mercury -105376-07-11 00:43 J -36766969.62 -36766969.47 -36766969.31 0.0289 0.0110

Mercury -105376-10-07 20:09 J -36766880.77 -36766880.66 -36766880.54 0.0289 0.0208

Venus -105373-10-06 09:50 J -36765786.24 -36765786.09 -36765785.93 0.0279 0.0194

Venus -105372-05-24 00:57 J -36765556.68 -36765556.46 -36765556.25 0.0278 0.0024

Venus -105371-01-08 14:52 J -36765327.06 -36765326.88 -36765326.69 0.0276 0.0143

Earth -105370-01-23 15:35 J -36764947.02 -36764946.85 -36764946.67 0.0273 0.0198

Moon -105370-01-23 17:16 J -36764946.93 -36764946.78 -36764946.59 0.0273 0.0196 \*

Mars -105367-04-24 16:47 J -36763760.04 -36763759.80 -36763759.54 0.0266 0.0115

Mars -105365-04-16 21:21 J -36763036.63 -36763036.61 -36763036.58 0.0265 0.0264

Mercury -105362-11-16 13:40 J -36761727.98 -36761727.93 -36761727.87 0.0268 0.0248

Mercury -105361-02-13 03:35 J -36761639.46 -36761639.35 -36761639.24 0.0269 0.0177

Mercury -105361-05-11 17:02 J -36761550.92 -36761550.79 -36761550.65 0.0269 0.0106

Mercury -105361-08-08 06:28 J -36761462.38 -36761462.23 -36761462.08 0.0269 0.0036

Mercury -105361-11-04 19:40 J -36761373.83 -36761373.68 -36761373.54 0.0270 0.0034

Mercury -105360-02-01 08:38 J -36761285.28 -36761285.14 -36761285.01 0.0271 0.0102

Mercury -105360-04-30 21:21 J -36761196.72 -36761196.61 -36761196.50 0.0271 0.0170

Mercury -105360-07-28 09:50 J -36761108.15 -36761108.09 -36761108.02 0.0272 0.0238

Venus -105357-06-18 01:40 J -36760052.57 -36760052.43 -36760052.28 0.0280 0.0198

Venus -105356-02-02 11:02 J -36759823.25 -36759823.04 -36759822.83 0.0282 0.0030

Venus -105356-09-19 21:07 J -36759593.80 -36759593.62 -36759593.44 0.0284 0.0142

Earth -105355-07-28 07:11 J -36759282.32 -36759282.20 -36759282.08 0.0287 0.0248

Moon -105355-07-28 10:47 J -36759282.13 -36759282.05 -36759281.96 0.0287 0.0265 \*

Mars -105351-04-30 07:11 J -36757910.48 -36757910.20 -36757909.91 0.0295 0.0123

Mercury -105347-03-06 14:38 J -36756503.99 -36756503.89 -36756503.78 0.0292 0.0215

Mercury -105347-06-03 08:38 J -36756415.28 -36756415.14 -36756414.99 0.0291 0.0123

Mercury -105347-08-31 03:21 J -36756326.52 -36756326.36 -36756326.20 0.0290 0.0028

Mercury -105347-11-27 22:04 J -36756237.73 -36756237.58 -36756237.42 0.0290 0.0069

Mercury -105346-02-24 17:16 J -36756148.91 -36756148.78 -36756148.64 0.0289 0.0166

Mercury -105346-05-24 12:43 J -36756060.02 -36756059.97 -36756059.90 0.0288 0.0265

Venus -105343-04-18 08:38 J -36755000.29 -36755000.14 -36754999.97 0.0279 0.0180  
 Venus -105343-12-03 23:45 J -36754770.73 -36754770.51 -36754770.30 0.0277 0.0010  
 Venus -105342-07-21 13:40 J -36754541.11 -36754540.93 -36754540.75 0.0275 0.0157  
 Moon -105340-01-29 21:35 J -36753982.85 -36753982.60 -36753982.35 0.0271 0.0062  
 Earth -105340-01-30 01:11 J -36753982.69 -36753982.45 -36753982.20 0.0271 0.0068 \*  
 Mars -105337-06-09 05:59 J -36752756.52 -36752756.25 -36752755.97 0.0266 0.0010  
 Mercury -105332-07-02 03:50 J -36750907.43 -36750907.34 -36750907.24 0.0269 0.0205  
 Mercury -105332-09-28 17:31 J -36750818.89 -36750818.77 -36750818.63 0.0269 0.0134  
 Mercury -105332-12-26 06:57 J -36750730.35 -36750730.21 -36750730.06 0.0270 0.0063  
 Mercury -105331-03-24 20:23 J -36750641.80 -36750641.65 -36750641.51 0.0270 0.0010  
 Mercury -105331-06-21 09:21 J -36750553.25 -36750553.11 -36750552.97 0.0271 0.0076  
 Mercury -105331-09-17 22:19 J -36750464.70 -36750464.57 -36750464.45 0.0271 0.0145  
 Mercury -105331-12-15 11:02 J -36750376.13 -36750376.04 -36750375.96 0.0272 0.0212  
 Venus -105328-12-29 03:07 J -36749266.52 -36749266.37 -36749266.20 0.0281 0.0183  
 Venus -105327-08-15 12:43 J -36749037.17 -36749036.97 -36749036.76 0.0283 0.0015  
 Venus -105326-04-01 23:02 J -36748807.71 -36748807.54 -36748807.36 0.0285 0.0159  
 Moon -105325-08-03 14:23 J -36748318.13 -36748317.90 -36748317.67 0.0289 0.0042  
 Earth -105325-08-03 15:35 J -36748318.07 -36748317.85 -36748317.61 0.0289 0.0055 \*  
 Mercury -105318-07-24 14:38 J -36745771.98 -36745771.89 -36745771.81 0.0291 0.0245  
 Mercury -105318-10-21 08:38 J -36745683.27 -36745683.14 -36745683.00 0.0291 0.0152  
 Mercury -105317-01-18 03:07 J -36745594.53 -36745594.37 -36745594.21 0.0290 0.0058  
 Mercury -105317-04-15 21:50 J -36745505.75 -36745505.59 -36745505.43 0.0290 0.0038  
 Mercury -105317-07-13 16:47 J -36745416.94 -36745416.80 -36745416.65 0.0289 0.0135  
 Mercury -105317-10-10 12:28 J -36745328.08 -36745327.98 -36745327.89 0.0288 0.0233  
 Venus -105314-10-29 14:38 J -36744214.06 -36744213.89 -36744213.71 0.0279 0.0157  
 Venus -105313-06-15 05:45 J -36743984.48 -36743984.26 -36743984.05 0.0277 0.0014  
 Venus -105312-01-30 19:40 J -36743754.84 -36743754.68 -36743754.51 0.0276 0.0180  
 Earth -105311-01-24 13:26 J -36743396.14 -36743395.94 -36743395.72 0.0273 0.0155  
 Moon -105311-01-24 17:16 J -36743395.99 -36743395.78 -36743395.57 0.0273 0.0154 \*  
 Mars -105309-08-01 18:57 J -36742475.82 -36742475.71 -36742475.58 0.0268 0.0242

Mars -105307-07-26 11:02 J -36741752.27 -36741752.04 -36741751.81 0.0266 0.0145  
 Mercury -105303-11-19 05:59 J -36740175.33 -36740175.25 -36740175.16 0.0268 0.0223  
 Mercury -105302-02-15 19:40 J -36740086.80 -36740086.68 -36740086.55 0.0269 0.0152  
 Mercury -105302-05-15 09:21 J -36739998.26 -36739998.11 -36739997.97 0.0269 0.0082  
 Mercury -105302-08-11 22:33 J -36739909.71 -36739909.56 -36739909.41 0.0270 0.0011  
 Mercury -105302-11-08 11:45 J -36739821.16 -36739821.01 -36739820.87 0.0270 0.0058  
 Mercury -105301-02-05 00:28 J -36739732.60 -36739732.48 -36739732.35 0.0271 0.0127  
 Mercury -105301-05-03 13:11 J -36739644.05 -36739643.95 -36739643.85 0.0271 0.0194  
 Mercury -105301-07-31 01:40 J -36739555.46 -36739555.43 -36739555.38 0.0272 0.0261  
 Venus -105298-07-11 08:23 J -36738480.32 -36738480.15 -36738479.98 0.0280 0.0158  
 Venus -105297-02-25 17:31 J -36738250.98 -36738250.77 -36738250.56 0.0282 0.0011  
 Venus -105297-10-12 03:21 J -36738021.51 -36738021.36 -36738021.19 0.0284 0.0184  
 Earth -105296-07-29 06:57 J -36737731.37 -36737731.21 -36737731.03 0.0287 0.0199  
 Moon -105296-07-29 08:09 J -36737731.31 -36737731.16 -36737730.99 0.0287 0.0213 \*  
 Mars -105293-07-30 07:40 J -36736634.47 -36736634.18 -36736633.88 0.0294 0.0091  
 Mercury -105289-12-10 12:57 J -36735039.99 -36735039.96 -36735039.92 0.0292 0.0281  
 Mercury -105288-03-09 06:57 J -36734951.33 -36734951.21 -36734951.09 0.0291 0.0190  
 Mercury -105288-06-06 01:11 J -36734862.60 -36734862.45 -36734862.30 0.0291 0.0096  
 Mercury -105288-09-02 19:40 J -36734773.84 -36734773.68 -36734773.51 0.0290 0.0008  
 Mercury -105288-11-30 14:38 J -36734685.04 -36734684.89 -36734684.73 0.0290 0.0096  
 Mercury -105287-02-27 10:04 J -36734596.20 -36734596.08 -36734595.96 0.0289 0.0193  
 Venus -105284-05-10 14:09 J -36733428.09 -36733427.91 -36733427.72 0.0279 0.0143  
 Venus -105284-12-26 05:02 J -36733198.50 -36733198.29 -36733198.07 0.0277 0.0029  
 Venus -105283-08-12 18:43 J -36732968.86 -36732968.72 -36732968.55 0.0275 0.0196  
 Earth -105281-01-31 23:59 J -36732431.73 -36732431.50 -36732431.27 0.0271 0.0112  
 Moon -105281-02-01 00:14 J -36732431.71 -36732431.49 -36732431.26 0.0271 0.0105 \*  
 Mars -105279-09-17 13:11 J -36731472.19 -36731471.95 -36731471.69 0.0266 0.0117  
 Mars -105277-09-09 19:55 J -36730748.68 -36730748.67 -36730748.65 0.0265 0.0265  
 Mercury -105273-04-07 06:28 J -36729443.28 -36729443.23 -36729443.18 0.0268 0.0251  
 Mercury -105273-07-04 20:09 J -36729354.77 -36729354.66 -36729354.55 0.0269 0.0179

Mercury -105273-10-01 09:50 J -36729266.23 -36729266.09 -36729265.95 0.0269 0.0108  
 Mercury -105273-12-28 23:02 J -36729177.68 -36729177.54 -36729177.39 0.0270 0.0039  
 Mercury -105272-03-27 12:14 J -36729089.13 -36729088.99 -36729088.84 0.0270 0.0032  
 Mercury -105272-06-24 01:11 J -36729000.58 -36729000.45 -36729000.31 0.0271 0.0101  
 Mercury -105272-09-20 14:09 J -36728912.02 -36728911.91 -36728911.80 0.0271 0.0169  
 Mercury -105272-12-18 02:38 J -36728823.45 -36728823.39 -36728823.31 0.0272 0.0236  
 Venus -105268-01-20 10:04 J -36727694.26 -36727694.08 -36727693.90 0.0281 0.0142  
 Venus -105268-09-06 19:26 J -36727464.89 -36727464.69 -36727464.48 0.0283 0.0029  
 Venus -105267-04-24 05:45 J -36727235.40 -36727235.26 -36727235.11 0.0285 0.0202  
 Earth -105266-08-05 15:50 J -36726767.05 -36726766.84 -36726766.61 0.0289 0.0105  
 Moon -105266-08-05 18:57 J -36726766.93 -36726766.71 -36726766.49 0.0289 0.0094 \*  
 Mars -105263-09-23 02:09 J -36725622.68 -36725622.41 -36725622.11 0.0295 0.0128  
 Mercury -105259-07-27 06:57 J -36724219.31 -36724219.21 -36724219.11 0.0291 0.0218  
 Mercury -105259-10-24 01:11 J -36724130.60 -36724130.45 -36724130.31 0.0291 0.0126  
 Mercury -105258-01-20 19:40 J -36724041.84 -36724041.68 -36724041.52 0.0290 0.0031  
 Mercury -105258-04-19 14:23 J -36723953.06 -36723952.90 -36723952.74 0.0289 0.0066  
 Mercury -105258-07-17 09:35 J -36723864.23 -36723864.10 -36723863.96 0.0289 0.0163  
 Mercury -105258-10-14 05:16 J -36723775.35 -36723775.28 -36723775.21 0.0288 0.0261  
 Venus -105255-11-20 19:55 J -36722641.86 -36722641.67 -36722641.47 0.0279 0.0118  
 Venus -105254-07-08 11:02 J -36722412.25 -36722412.04 -36722411.83 0.0277 0.0053  
 Venus -105253-02-23 00:57 J -36722182.58 -36722182.46 -36722182.32 0.0275 0.0219  
 Moon -105252-01-25 11:59 J -36721845.23 -36721845.00 -36721844.75 0.0273 0.0114  
 Earth -105252-01-25 12:28 J -36721845.21 -36721844.98 -36721844.75 0.0273 0.0111 \*  
 Mars -105249-11-02 22:04 J -36720467.86 -36720467.58 -36720467.31 0.0266 0.0021  
 Mercury -105244-11-21 22:33 J -36718622.66 -36718622.56 -36718622.46 0.0269 0.0197  
 Mercury -105243-02-18 12:14 J -36718534.12 -36718533.99 -36718533.86 0.0269 0.0126  
 Mercury -105243-05-18 01:40 J -36718445.58 -36718445.43 -36718445.29 0.0270 0.0055  
 Mercury -105243-08-14 14:52 J -36718357.03 -36718356.88 -36718356.73 0.0270 0.0014  
 Mercury -105243-11-11 03:50 J -36718268.48 -36718268.34 -36718268.20 0.0271 0.0084  
 Mercury -105242-02-07 16:47 J -36718179.92 -36718179.80 -36718179.68 0.0271 0.0152

Mercury -105242-05-07 05:16 J -36718091.35 -36718091.28 -36718091.19 0.0272 0.0220  
 Venus -105239-08-02 16:04 J -36716908.02 -36716907.83 -36716907.64 0.0281 0.0115  
 Venus -105238-03-20 01:26 J -36716678.64 -36716678.44 -36716678.23 0.0283 0.0056  
 Venus -105238-11-04 11:31 J -36716449.14 -36716449.02 -36716448.90 0.0284 0.0229  
 Moon -105237-07-30 06:28 J -36716180.42 -36716180.23 -36716180.02 0.0287 0.0157  
 Earth -105237-07-30 09:50 J -36716180.29 -36716180.09 -36716179.88 0.0287 0.0145 \*  
 Mercury -105230-12-14 05:45 J -36713487.33 -36713487.26 -36713487.18 0.0292 0.0253  
 Mercury -105229-03-11 23:45 J -36713398.64 -36713398.51 -36713398.37 0.0291 0.0161  
 Mercury -105229-06-08 18:14 J -36713309.90 -36713309.74 -36713309.59 0.0291 0.0067  
 Mercury -105229-09-05 12:57 J -36713221.13 -36713220.96 -36713220.80 0.0290 0.0029  
 Mercury -105229-12-03 07:55 J -36713132.32 -36713132.17 -36713132.02 0.0289 0.0125  
 Mercury -105228-03-02 03:07 J -36713043.47 -36713043.37 -36713043.26 0.0289 0.0223  
 Venus -105226-10-16 05:02 J -36712085.32 -36712085.29 -36712085.23 0.0281 0.0275  
 Venus -105225-06-01 20:52 J -36711855.83 -36711855.63 -36711855.43 0.0279 0.0102  
 Venus -105224-01-17 11:31 J -36711626.23 -36711626.02 -36711625.81 0.0277 0.0068  
 Venus -105224-09-04 01:26 J -36711396.55 -36711396.44 -36711396.33 0.0275 0.0235  
 Earth -105222-02-02 00:14 J -36710880.69 -36710880.49 -36710880.27 0.0271 0.0158  
 Moon -105222-02-02 04:04 J -36710880.54 -36710880.33 -36710880.12 0.0271 0.0148 \*  
 Mars -105221-12-25 17:02 J -36710187.89 -36710187.79 -36710187.67 0.0268 0.0245  
 Mars -105219-12-19 11:16 J -36709464.26 -36709464.03 -36709463.80 0.0266 0.0145  
 Mercury -105214-04-10 23:02 J -36707890.62 -36707890.54 -36707890.46 0.0269 0.0224  
 Mercury -105214-07-08 12:43 J -36707802.09 -36707801.97 -36707801.84 0.0269 0.0153  
 Mercury -105214-10-05 02:09 J -36707713.55 -36707713.41 -36707713.26 0.0270 0.0082  
 Mercury -105213-01-01 15:35 J -36707625.00 -36707624.85 -36707624.70 0.0270 0.0012  
 Mercury -105213-03-30 04:47 J -36707536.45 -36707536.30 -36707536.16 0.0271 0.0058  
 Mercury -105213-06-26 17:45 J -36707447.89 -36707447.76 -36707447.63 0.0271 0.0127  
 Mercury -105213-09-23 06:14 J -36707359.33 -36707359.24 -36707359.13 0.0272 0.0195  
 Mercury -105213-12-20 18:57 J -36707270.74 -36707270.71 -36707270.67 0.0272 0.0261  
 Venus -105210-06-28 09:07 J -36706351.17 -36706351.12 -36706351.04 0.0280 0.0264  
 Venus -105209-02-12 17:59 J -36706121.94 -36706121.75 -36706121.55 0.0281 0.0098

Venus -105209-09-29 03:35 J -36705892.55 -36705892.35 -36705892.15 0.0283 0.0074

Venus -105208-05-16 13:55 J -36705663.02 -36705662.92 -36705662.82 0.0285 0.0248

Earth -105207-08-06 18:43 J -36705215.91 -36705215.72 -36705215.52 0.0289 0.0158

Moon -105207-08-06 21:21 J -36705215.81 -36705215.61 -36705215.40 0.0289 0.0150 \*

Mars -105205-12-23 10:33 J -36704346.35 -36704346.06 -36704345.75 0.0294 0.0083

Mercury -105200-05-02 05:59 J -36702755.29 -36702755.25 -36702755.21 0.0292 0.0281

Mercury -105200-07-29 23:59 J -36702666.62 -36702666.50 -36702666.38 0.0291 0.0189

Mercury -105200-10-26 18:14 J -36702577.89 -36702577.74 -36702577.59 0.0290 0.0096

Mercury -105199-01-23 12:43 J -36702489.13 -36702488.97 -36702488.80 0.0290 0.0005

Mercury -105199-04-22 07:40 J -36702400.33 -36702400.18 -36702400.02 0.0289 0.0096

Mercury -105199-07-20 02:52 J -36702311.50 -36702311.38 -36702311.25 0.0289 0.0193

Venus -105196-04-27 11:16 J -36701299.13 -36701299.03 -36701298.94 0.0281 0.0250

Venus -105196-12-13 02:38 J -36701069.59 -36701069.39 -36701069.18 0.0279 0.0077

Venus -105195-07-30 17:31 J -36700839.97 -36700839.77 -36700839.56 0.0277 0.0094

Venus -105194-03-17 07:40 J -36700610.25 -36700610.18 -36700610.11 0.0275 0.0260

Moon -105193-01-27 09:35 J -36700294.35 -36700294.10 -36700293.85 0.0273 0.0071

Earth -105193-01-27 13:11 J -36700294.19 -36700293.95 -36700293.70 0.0273 0.0065 \*

Mars -105190-02-11 06:28 J -36699183.48 -36699183.23 -36699182.97 0.0267 0.0106

Mercury -105185-08-28 01:40 J -36697158.50 -36697158.43 -36697158.37 0.0269 0.0241

Mercury -105185-11-24 15:21 J -36697069.98 -36697069.86 -36697069.74 0.0269 0.0169

Mercury -105184-02-21 05:02 J -36696981.43 -36696981.29 -36696981.15 0.0269 0.0099

Mercury -105184-05-20 18:14 J -36696892.88 -36696892.74 -36696892.59 0.0270 0.0029

Mercury -105184-08-17 07:26 J -36696804.33 -36696804.19 -36696804.04 0.0270 0.0042

Mercury -105184-11-13 20:23 J -36696715.78 -36696715.65 -36696715.51 0.0271 0.0111

Mercury -105183-02-10 09:21 J -36696627.22 -36696627.11 -36696627.00 0.0271 0.0179

Mercury -105183-05-09 21:50 J -36696538.64 -36696538.59 -36696538.52 0.0272 0.0246

Venus -105180-01-07 16:33 J -36695564.91 -36695564.81 -36695564.69 0.0279 0.0236

Venus -105180-08-25 01:26 J -36695335.64 -36695335.44 -36695335.24 0.0281 0.0069

Venus -105179-04-11 10:47 J -36695106.23 -36695106.05 -36695105.85 0.0283 0.0104

Venus -105179-11-26 21:07 J -36694876.66 -36694876.62 -36694876.57 0.0285 0.0277



Moon -105178-08-01 12:57 J -36694629.17 -36694628.96 -36694628.74 0.0287 0.0097  
 Earth -105178-08-01 15:21 J -36694629.08 -36694628.86 -36694628.63 0.0287 0.0086 \*  
 Mars -105174-02-16 12:28 J -36693334.26 -36693333.98 -36693333.70 0.0294 0.0134  
 Mercury -105171-12-16 23:31 J -36691934.62 -36691934.52 -36691934.41 0.0291 0.0220  
 Mercury -105170-03-15 17:45 J -36691845.91 -36691845.76 -36691845.62 0.0291 0.0128  
 Mercury -105170-06-12 11:59 J -36691757.16 -36691757.00 -36691756.83 0.0290 0.0034  
 Mercury -105170-09-09 06:57 J -36691668.37 -36691668.21 -36691668.05 0.0290 0.0063  
 Mercury -105170-12-07 01:55 J -36691579.55 -36691579.42 -36691579.28 0.0289 0.0160  
 Mercury -105169-03-04 21:21 J -36691490.68 -36691490.61 -36691490.53 0.0288 0.0258  
 Venus -105167-11-07 13:40 J -36690513.04 -36690512.93 -36690512.80 0.0280 0.0232  
 Venus -105166-06-25 05:02 J -36690283.50 -36690283.29 -36690283.07 0.0279 0.0059  
 Venus -105165-02-09 19:26 J -36690053.88 -36690053.69 -36690053.48 0.0277 0.0112  
 Earth -105163-02-03 03:21 J -36689329.51 -36689329.36 -36689329.18 0.0271 0.0207  
 Moon -105163-02-03 05:02 J -36689329.46 -36689329.29 -36689329.10 0.0271 0.0197 \*  
 Mars -105160-03-29 01:26 J -36688179.71 -36688179.44 -36688179.16 0.0266 0.0022  
 Mercury -105155-01-15 01:55 J -36686426.42 -36686426.42 -36686426.40 0.0268 0.0268  
 Mercury -105155-04-13 15:50 J -36686337.93 -36686337.84 -36686337.73 0.0269 0.0196  
 Mercury -105155-07-11 05:45 J -36686249.39 -36686249.26 -36686249.13 0.0269 0.0124  
 Mercury -105155-10-07 19:11 J -36686160.85 -36686160.70 -36686160.56 0.0270 0.0054  
 Mercury -105154-01-04 08:23 J -36686072.30 -36686072.15 -36686072.00 0.0270 0.0017  
 Mercury -105154-04-02 21:35 J -36685983.74 -36685983.60 -36685983.46 0.0271 0.0086  
 Mercury -105154-06-30 10:19 J -36685895.18 -36685895.07 -36685894.95 0.0271 0.0155  
 Mercury -105154-09-26 23:02 J -36685806.62 -36685806.54 -36685806.45 0.0272 0.0222  
 Venus -105151-07-20 18:57 J -36684778.84 -36684778.71 -36684778.58 0.0280 0.0219  
 Venus -105150-03-07 03:50 J -36684549.54 -36684549.34 -36684549.13 0.0282 0.0051  
 Venus -105150-10-22 13:26 J -36684320.12 -36684319.94 -36684319.75 0.0284 0.0122  
 Moon -105148-08-07 22:33 J -36683664.71 -36683664.56 -36683664.39 0.0289 0.0214  
 Earth -105148-08-08 00:57 J -36683664.62 -36683664.46 -36683664.31 0.0289 0.0217 \*  
 Mars -105146-03-26 14:09 J -36683068.98 -36683068.91 -36683068.81 0.0293 0.0280  
 Mercury -105141-05-04 23:45 J -36681202.59 -36681202.51 -36681202.43 0.0291 0.0248

Mercury -105141-08-01 17:45 J -36681113.89 -36681113.76 -36681113.62 0.0291 0.0156

Mercury -105141-10-29 12:14 J -36681025.15 -36681024.99 -36681024.84 0.0290 0.0062

Mercury -105140-01-26 06:43 J -36680936.38 -36680936.22 -36680936.05 0.0290 0.0035

Mercury -105140-04-25 01:55 J -36680847.57 -36680847.42 -36680847.28 0.0289 0.0130

Mercury -105140-07-22 21:07 J -36680758.71 -36680758.62 -36680758.51 0.0288 0.0228

Venus -105137-05-19 19:40 J -36679726.81 -36679726.68 -36679726.52 0.0280 0.0207

Venus -105136-01-04 11:16 J -36679497.24 -36679497.03 -36679496.82 0.0278 0.0033

Venus -105136-08-22 01:55 J -36679267.61 -36679267.42 -36679267.23 0.0276 0.0137

Moon -105134-01-28 14:52 J -36678743.12 -36678742.88 -36678742.63 0.0273 0.0022

Earth -105134-01-28 16:33 J -36678743.06 -36678742.81 -36678742.55 0.0273 0.0016 \*

Mars -105132-05-21 12:57 J -36677899.09 -36677898.96 -36677898.83 0.0268 0.0235

Mars -105130-05-15 09:35 J -36677175.31 -36677175.10 -36677174.87 0.0266 0.0158

Mercury -105126-08-31 18:57 J -36675605.80 -36675605.71 -36675605.62 0.0269 0.0211

Mercury -105126-11-28 08:38 J -36675517.27 -36675517.14 -36675517.01 0.0269 0.0140

Mercury -105125-02-24 22:04 J -36675428.72 -36675428.58 -36675428.43 0.0270 0.0069

Mercury -105125-05-23 11:31 J -36675340.17 -36675340.02 -36675339.87 0.0270 0.0005

Mercury -105125-08-20 00:28 J -36675251.62 -36675251.48 -36675251.33 0.0271 0.0071

Mercury -105125-11-16 13:26 J -36675163.06 -36675162.94 -36675162.81 0.0271 0.0140

Mercury -105124-02-13 02:09 J -36675074.50 -36675074.41 -36675074.31 0.0272 0.0208

Venus -105121-01-31 03:35 J -36673992.50 -36673992.35 -36673992.20 0.0280 0.0189

Venus -105121-09-16 12:28 J -36673763.19 -36673762.98 -36673762.77 0.0282 0.0020

Venus -105120-05-03 22:04 J -36673533.75 -36673533.58 -36673533.40 0.0283 0.0154

Earth -105119-08-02 23:45 J -36673077.75 -36673077.51 -36673077.28 0.0287 0.0023

Moon -105119-08-03 01:40 J -36673077.66 -36673077.43 -36673077.21 0.0287 0.0030 \*

Mars -105116-05-19 14:09 J -36672057.20 -36672056.91 -36672056.60 0.0293 0.0071

Mercury -105112-09-22 00:14 J -36670470.53 -36670470.49 -36670470.44 0.0291 0.0275

Mercury -105112-12-19 17:59 J -36670381.86 -36670381.75 -36670381.62 0.0291 0.0184

Mercury -105111-03-18 12:28 J -36670293.14 -36670292.98 -36670292.83 0.0290 0.0091

Mercury -105111-06-15 06:57 J -36670204.37 -36670204.21 -36670204.05 0.0290 0.0005

Mercury -105111-09-12 01:40 J -36670115.58 -36670115.43 -36670115.27 0.0289 0.0101

Mercury -105111-12-09 20:52 J -36670026.74 -36670026.63 -36670026.50 0.0289 0.0198  
 Venus -105108-11-30 00:14 J -36668940.65 -36668940.49 -36668940.33 0.0280 0.0186  
 Venus -105107-07-17 15:21 J -36668711.08 -36668710.86 -36668710.64 0.0278 0.0013  
 Venus -105106-03-04 05:45 J -36668481.44 -36668481.26 -36668481.08 0.0276 0.0157  
 Earth -105105-01-22 22:33 J -36668156.65 -36668156.56 -36668156.44 0.0274 0.0248  
 Moon -105105-01-22 23:59 J -36668156.58 -36668156.50 -36668156.38 0.0274 0.0252 \*  
 Moon -105104-02-04 06:43 J -36667778.32 -36667778.22 -36667778.11 0.0271 0.0247  
 Earth -105104-02-04 09:07 J -36667778.17 -36667778.12 -36667778.03 0.0271 0.0261 \*  
 Mars -105102-07-07 16:19 J -36666895.08 -36666894.82 -36666894.57 0.0267 0.0103  
 Mercury -105096-01-17 19:26 J -36664873.75 -36664873.69 -36664873.61 0.0269 0.0237  
 Mercury -105096-04-16 09:21 J -36664785.23 -36664785.11 -36664784.99 0.0269 0.0165  
 Mercury -105096-07-13 23:02 J -36664696.68 -36664696.54 -36664696.40 0.0270 0.0094  
 Mercury -105096-10-10 12:28 J -36664608.13 -36664607.98 -36664607.83 0.0270 0.0024  
 Mercury -105095-01-07 01:40 J -36664519.58 -36664519.43 -36664519.29 0.0271 0.0047  
 Mercury -105095-04-05 14:38 J -36664431.02 -36664430.89 -36664430.76 0.0271 0.0116  
 Mercury -105095-07-03 03:21 J -36664342.46 -36664342.36 -36664342.25 0.0272 0.0184  
 Mercury -105095-09-29 16:04 J -36664253.88 -36664253.83 -36664253.77 0.0272 0.0251  
 Venus -105092-08-12 05:59 J -36663206.41 -36663206.25 -36663206.08 0.0280 0.0172  
 Venus -105091-03-29 15:21 J -36662977.07 -36662976.86 -36662976.66 0.0282 0.0004  
 Venus -105091-11-14 00:57 J -36662747.62 -36662747.46 -36662747.29 0.0284 0.0174  
 Moon -105090-07-28 12:57 J -36662491.01 -36662490.96 -36662490.89 0.0286 0.0276  
 Earth -105090-07-28 14:38 J -36662490.96 -36662490.89 -36662490.79 0.0286 0.0267 \*  
 Moon -105089-08-09 05:59 J -36662113.28 -36662113.25 -36662113.18 0.0289 0.0283  
 Earth -105089-08-09 09:50 J -36662113.14 -36662113.09 -36662113.04 0.0289 0.0282  
 Mars -105086-07-13 09:21 J -36661045.36 -36661045.11 -36661044.82 0.0294 0.0152  
 Mercury -105082-05-08 18:28 J -36659649.83 -36659649.73 -36659649.62 0.0291 0.0210  
 Mercury -105082-08-05 12:43 J -36659561.12 -36659560.97 -36659560.82 0.0290 0.0117  
 Mercury -105082-11-02 07:11 J -36659472.36 -36659472.20 -36659472.04 0.0290 0.0023  
 Mercury -105081-01-30 01:55 J -36659383.58 -36659383.42 -36659383.26 0.0289 0.0073  
 Mercury -105081-04-27 21:07 J -36659294.75 -36659294.62 -36659294.49 0.0289 0.0170

Mercury -105081-07-25 16:33 J -36659205.86 -36659205.81 -36659205.75 0.0288 0.0268  
 Venus -105078-06-12 06:57 J -36658154.38 -36658154.21 -36658154.03 0.0280 0.0160  
 Venus -105077-01-27 22:04 J -36657924.79 -36657924.58 -36657924.36 0.0278 0.0015  
 Venus -105077-09-13 12:28 J -36657695.14 -36657694.98 -36657694.81 0.0276 0.0184  
 Earth -105075-01-29 23:16 J -36657191.78 -36657191.53 -36657191.27 0.0273 0.0041  
 Moon -105075-01-30 01:55 J -36657191.66 -36657191.42 -36657191.17 0.0273 0.0032 \*  
 Mars -105072-08-23 04:19 J -36655890.59 -36655890.32 -36655890.04 0.0267 0.0035  
 Mercury -105067-06-06 22:33 J -36654141.61 -36654141.56 -36654141.51 0.0269 0.0252  
 Mercury -105067-09-03 12:14 J -36654053.09 -36654052.99 -36654052.87 0.0269 0.0181  
 Mercury -105067-12-01 02:09 J -36653964.55 -36653964.41 -36653964.27 0.0270 0.0109  
 Mercury -105066-02-27 15:35 J -36653876.00 -36653875.85 -36653875.70 0.0270 0.0038  
 Mercury -105066-05-27 04:47 J -36653787.44 -36653787.30 -36653787.15 0.0271 0.0033  
 Mercury -105066-08-23 17:59 J -36653698.89 -36653698.75 -36653698.62 0.0271 0.0102  
 Mercury -105066-11-20 06:43 J -36653610.33 -36653610.22 -36653610.10 0.0272 0.0171  
 Mercury -105065-02-16 19:26 J -36653521.75 -36653521.69 -36653521.62 0.0272 0.0238  
 Venus -105062-02-22 15:35 J -36652420.02 -36652419.85 -36652419.66 0.0280 0.0141  
 Venus -105062-10-10 00:57 J -36652190.66 -36652190.46 -36652190.25 0.0282 0.0033  
 Venus -105061-05-26 11:02 J -36651961.18 -36651961.04 -36651960.90 0.0284 0.0207  
 Earth -105060-08-04 10:47 J -36651526.28 -36651526.05 -36651525.82 0.0287 0.0046  
 Moon -105060-08-04 14:09 J -36651526.14 -36651525.91 -36651525.67 0.0287 0.0039 \*  
 Mars -105058-08-21 10:04 J -36650779.19 -36650779.08 -36650778.93 0.0292 0.0264  
 Mercury -105053-09-24 19:40 J -36648917.77 -36648917.68 -36648917.58 0.0291 0.0234  
 Mercury -105053-12-22 13:55 J -36648829.06 -36648828.92 -36648828.79 0.0290 0.0142  
 Mercury -105052-03-21 08:09 J -36648740.32 -36648740.16 -36648740.00 0.0290 0.0048  
 Mercury -105052-06-18 02:38 J -36648651.54 -36648651.39 -36648651.22 0.0289 0.0049  
 Mercury -105052-09-14 21:50 J -36648562.73 -36648562.59 -36648562.45 0.0289 0.0144  
 Mercury -105052-12-12 17:02 J -36648473.87 -36648473.79 -36648473.70 0.0288 0.0242  
 Venus -105049-12-22 12:57 J -36647368.14 -36647367.96 -36647367.77 0.0279 0.0137  
 Venus -105048-08-09 03:50 J -36647138.56 -36647138.34 -36647138.13 0.0278 0.0037  
 Venus -105047-03-26 17:59 J -36646908.90 -36646908.75 -36646908.61 0.0276 0.0206

Moon -105046-01-24 05:02 J -36646605.47 -36646605.29 -36646605.10 0.0274 0.0195  
 Earth -105046-01-24 08:09 J -36646605.33 -36646605.16 -36646604.96 0.0274 0.0187 \*  
 Mars -105044-10-15 06:28 J -36645610.35 -36645610.23 -36645610.07 0.0268 0.0229  
 Mars -105042-10-09 03:07 J -36644886.59 -36644886.37 -36644886.15 0.0266 0.0163  
 Mercury -105037-01-21 13:26 J -36643321.03 -36643320.94 -36643320.84 0.0269 0.0204  
 Mercury -105037-04-19 03:07 J -36643232.49 -36643232.37 -36643232.23 0.0269 0.0133  
 Mercury -105037-07-16 16:47 J -36643143.94 -36643143.80 -36643143.65 0.0270 0.0061  
 Mercury -105037-10-13 06:14 J -36643055.39 -36643055.24 -36643055.10 0.0270 0.0011  
 Mercury -105036-01-09 19:11 J -36642966.84 -36642966.70 -36642966.56 0.0271 0.0079  
 Mercury -105036-04-08 08:09 J -36642878.28 -36642878.16 -36642878.03 0.0272 0.0148  
 Mercury -105036-07-05 21:07 J -36642789.71 -36642789.62 -36642789.54 0.0272 0.0215  
 Venus -105033-09-03 18:43 J -36641633.90 -36641633.72 -36641633.53 0.0281 0.0121  
 Venus -105032-04-21 04:19 J -36641404.53 -36641404.32 -36641404.12 0.0283 0.0052  
 Venus -105032-12-06 14:09 J -36641175.03 -36641174.91 -36641174.78 0.0285 0.0228  
 Moon -105031-07-29 22:47 J -36640939.70 -36640939.55 -36640939.39 0.0287 0.0210  
 Earth -105031-07-30 02:09 J -36640939.57 -36640939.41 -36640939.24 0.0287 0.0198 \*  
 Mars -105028-10-13 20:52 J -36639767.94 -36639767.63 -36639767.32 0.0293 0.0049  
 Mercury -105023-02-11 20:09 J -36638185.72 -36638185.66 -36638185.59 0.0291 0.0260  
 Mercury -105023-05-11 14:09 J -36638097.04 -36638096.91 -36638096.78 0.0291 0.0169  
 Mercury -105023-08-08 08:23 J -36638008.31 -36638008.15 -36638007.99 0.0290 0.0075  
 Mercury -105023-11-05 02:52 J -36637919.54 -36637919.38 -36637919.21 0.0290 0.0021  
 Mercury -105022-02-01 21:50 J -36637830.74 -36637830.59 -36637830.44 0.0289 0.0116  
 Mercury -105022-05-01 17:02 J -36637741.89 -36637741.79 -36637741.67 0.0288 0.0214  
 Venus -105019-07-04 19:55 J -36636581.87 -36636581.67 -36636581.47 0.0279 0.0110  
 Venus -105018-02-19 10:47 J -36636352.26 -36636352.05 -36636351.84 0.0277 0.0064  
 Venus -105018-10-07 00:43 J -36636122.57 -36636122.47 -36636122.34 0.0276 0.0234  
 Earth -105016-01-31 08:52 J -36635640.36 -36635640.13 -36635639.88 0.0272 0.0101  
 Moon -105016-01-31 12:28 J -36635640.22 -36635639.98 -36635639.73 0.0272 0.0089 \*  
 Mars -105014-12-01 23:31 J -36634605.77 -36634605.52 -36634605.25 0.0268 0.0091  
 Mercury -105008-06-09 16:33 J -36632588.90 -36632588.81 -36632588.72 0.0269 0.0219

Mercury	-105008-09-06 06:14 J	-36632500.36	-36632500.24	-36632500.11	0.0270	0.0148
Mercury	-105008-12-03 19:55 J	-36632411.81	-36632411.67	-36632411.52	0.0270	0.0076
Mercury	-105007-03-02 09:21 J	-36632323.26	-36632323.11	-36632322.96	0.0271	0.0005
Mercury	-105007-05-29 22:33 J	-36632234.70	-36632234.56	-36632234.42	0.0271	0.0065
Mercury	-105007-08-26 11:31 J	-36632146.14	-36632146.02	-36632145.89	0.0272	0.0134
Mercury	-105007-11-23 00:14 J	-36632057.58	-36632057.49	-36632057.39	0.0272	0.0203
Mercury	-105006-02-19 12:57 J	-36631968.97	-36631968.96	-36631968.94	0.0273	0.0270
Venus	-105004-07-30 19:40 J	-36631076.75	-36631076.68	-36631076.59	0.0279	0.0259
Venus	-105003-03-17 04:47 J	-36630847.50	-36630847.30	-36630847.10	0.0281	0.0089
Venus	-105003-11-01 14:23 J	-36630618.10	-36630617.90	-36630617.70	0.0283	0.0086
Venus	-105002-06-19 00:43 J	-36630388.55	-36630388.47	-36630388.39	0.0285	0.0262
Earth	-105001-08-05 23:31 J	-36629974.74	-36629974.52	-36629974.31	0.0288	0.0117
Moon	-105001-08-05 23:45 J	-36629974.73	-36629974.51	-36629974.28	0.0288	0.0112 *

# 105TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 105th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-104998-12-08 16:33 J	-36628755.06	-36628754.81	-36628754.55	0.0293	0.0172		
Mercury	-104994-07-01 22:04 J	-36627453.61	-36627453.58	-36627453.53	0.0291	0.0280		
Mercury	-104994-09-28 16:04 J	-36627364.95	-36627364.83	-36627364.71	0.0291	0.0189		

Mercury -104994-12-26 10:19 J -36627276.22 -36627276.07 -36627275.92 0.0290 0.0096

Mercury -104993-03-24 04:47 J -36627187.47 -36627187.30 -36627187.14 0.0290 0.0007

Mercury -104993-06-20 23:31 J -36627098.68 -36627098.52 -36627098.37 0.0289 0.0094

Mercury -104993-09-17 18:28 J -36627009.85 -36627009.73 -36627009.60 0.0288 0.0192

Venus -104990-05-30 12:28 J -36626025.05 -36626024.98 -36626024.90 0.0281 0.0260

Venus -104989-01-15 03:35 J -36625795.55 -36625795.35 -36625795.14 0.0279 0.0085

Venus -104989-08-31 18:14 J -36625565.94 -36625565.74 -36625565.53 0.0277 0.0089

Venus -104988-04-18 07:55 J -36625336.24 -36625336.17 -36625336.09 0.0275 0.0258

Moon -104987-01-25 18:28 J -36625053.95 -36625053.73 -36625053.51 0.0273 0.0131

Earth -104987-01-25 21:35 J -36625053.83 -36625053.60 -36625053.37 0.0273 0.0120 \*

Mars -104983-01-17 05:02 J -36623601.56 -36623601.29 -36623601.01 0.0267 0.0043

Mercury -104979-10-27 17:45 J -36621856.82 -36621856.76 -36621856.69 0.0269 0.0242

Mercury -104978-01-24 07:40 J -36621768.30 -36621768.18 -36621768.06 0.0269 0.0170

Mercury -104978-04-22 21:21 J -36621679.75 -36621679.61 -36621679.47 0.0270 0.0099

Mercury -104978-07-20 10:47 J -36621591.20 -36621591.05 -36621590.90 0.0270 0.0028

Mercury -104978-10-16 23:59 J -36621502.64 -36621502.50 -36621502.35 0.0271 0.0042

Mercury -104977-01-13 12:57 J -36621414.09 -36621413.96 -36621413.82 0.0271 0.0112

Mercury -104977-04-11 01:55 J -36621325.52 -36621325.42 -36621325.31 0.0272 0.0180

Mercury -104977-07-08 14:38 J -36621236.94 -36621236.89 -36621236.83 0.0272 0.0248

Venus -104974-02-09 23:02 J -36620290.64 -36620290.54 -36620290.43 0.0280 0.0239

Venus -104974-09-27 08:09 J -36620061.36 -36620061.16 -36620060.96 0.0282 0.0069

Venus -104973-05-13 17:45 J -36619831.95 -36619831.76 -36619831.56 0.0283 0.0106

Venus -104973-12-29 03:50 J -36619602.35 -36619602.34 -36619602.30 0.0285 0.0283

Moon -104972-07-31 14:23 J -36619388.10 -36619387.90 -36619387.70 0.0287 0.0137

Earth -104972-07-31 15:07 J -36619388.08 -36619387.87 -36619387.66 0.0287 0.0127 \*

Mars -104969-01-15 21:07 J -36618489.79 -36618489.62 -36618489.44 0.0293 0.0240

Mercury -104964-02-14 16:19 J -36616632.92 -36616632.82 -36616632.71 0.0291 0.0217

Mercury -104964-05-14 10:19 J -36616544.21 -36616544.07 -36616543.92 0.0290 0.0124

Mercury -104964-08-11 04:47 J -36616455.46 -36616455.30 -36616455.14 0.0290 0.0030

Mercury -104964-11-07 23:31 J -36616366.68 -36616366.52 -36616366.36 0.0289 0.0066

Mercury -104963-02-04 18:43 J -36616277.86 -36616277.72 -36616277.59 0.0289 0.0163  
 Mercury -104963-05-04 13:55 J -36616188.98 -36616188.92 -36616188.84 0.0288 0.0261  
 Venus -104961-12-09 18:57 J -36615238.82 -36615238.71 -36615238.59 0.0280 0.0233  
 Venus -104960-07-27 10:19 J -36615009.28 -36615009.07 -36615008.86 0.0278 0.0057  
 Venus -104959-03-14 00:57 J -36614779.66 -36614779.46 -36614779.26 0.0277 0.0116  
 Moon -104957-02-02 20:23 J -36614088.87 -36614088.65 -36614088.43 0.0272 0.0150  
 Earth -104957-02-02 21:07 J -36614088.81 -36614088.62 -36614088.40 0.0272 0.0164 \*  
 Mars -104955-03-11 16:47 J -36613320.96 -36613320.80 -36613320.63 0.0268 0.0214  
 Mars -104953-03-04 14:09 J -36612597.11 -36612596.91 -36612596.71 0.0267 0.0178  
 Mercury -104949-03-15 20:52 J -36611124.67 -36611124.63 -36611124.59 0.0269 0.0257  
 Mercury -104949-06-12 10:47 J -36611036.16 -36611036.05 -36611035.94 0.0270 0.0185  
 Mercury -104949-09-09 00:28 J -36610947.61 -36610947.48 -36610947.34 0.0270 0.0113  
 Mercury -104949-12-06 13:55 J -36610859.06 -36610858.92 -36610858.77 0.0271 0.0043  
 Mercury -104948-03-05 03:21 J -36610770.51 -36610770.36 -36610770.21 0.0271 0.0028  
 Mercury -104948-06-01 16:19 J -36610681.95 -36610681.82 -36610681.68 0.0272 0.0099  
 Mercury -104948-08-29 05:16 J -36610593.39 -36610593.28 -36610593.16 0.0272 0.0167  
 Mercury -104948-11-25 18:14 J -36610504.81 -36610504.74 -36610504.67 0.0273 0.0235  
 Venus -104945-08-22 09:21 J -36609504.25 -36609504.11 -36609503.97 0.0280 0.0208  
 Venus -104944-04-08 18:43 J -36609274.93 -36609274.72 -36609274.52 0.0282 0.0036  
 Venus -104944-11-24 04:33 J -36609045.49 -36609045.31 -36609045.13 0.0284 0.0141  
 Moon -104942-08-08 10:19 J -36608423.25 -36608423.07 -36608422.88 0.0288 0.0186  
 Earth -104942-08-08 13:26 J -36608423.11 -36608422.94 -36608422.76 0.0288 0.0190 \*  
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 Mercury -104935-12-29 06:57 J -36605723.36 -36605723.21 -36605723.05 0.0290 0.0049  
 Mercury -104934-03-28 01:40 J -36605634.59 -36605634.43 -36605634.27 0.0289 0.0047  
 Mercury -104934-06-24 20:38 J -36605545.78 -36605545.64 -36605545.50 0.0289 0.0143  
 Mercury -104934-09-21 15:50 J -36605456.92 -36605456.84 -36605456.74 0.0288 0.0241  
 Venus -104931-06-22 04:19 J -36604452.46 -36604452.32 -36604452.17 0.0280 0.0206



Venus -104930-02-06 19:26 J -36604222.91 -36604222.69 -36604222.48 0.0278 0.0031  
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 Earth -104928-01-27 12:14 J -36603502.24 -36603501.99 -36603501.74 0.0273 0.0050  
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 Mars -104925-04-27 05:16 J -36602316.54 -36602316.28 -36602316.01 0.0267 0.0077  
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 Venus -104915-03-04 12:28 J -36598718.13 -36598717.98 -36598717.83 0.0280 0.0188  
 Venus -104915-10-19 21:35 J -36598488.80 -36598488.60 -36598488.39 0.0282 0.0016  
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 Moon -104913-08-02 06:43 J -36597836.44 -36597836.22 -36597835.99 0.0287 0.0066 \*  
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 Mercury -104904-02-07 15:35 J -36594724.96 -36594724.85 -36594724.73 0.0288 0.0211  
 Venus -104901-01-02 10:33 J -36593666.22 -36593666.06 -36593665.89 0.0280 0.0180  
 Venus -104901-08-19 01:40 J -36593436.64 -36593436.43 -36593436.21 0.0278 0.0005  
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 Moon -104898-02-04 06:57 J -36592537.36 -36592537.21 -36592537.05 0.0272 0.0215  
 Earth -104898-02-04 11:16 J -36592537.17 -36592537.03 -36592536.90 0.0272 0.0230 \*

Mars -104895-06-13 16:19 J -36591312.09 -36591311.82 -36591311.55 0.0267 0.0059  
 Mercury -104890-03-19 14:52 J -36589571.95 -36589571.88 -36589571.79 0.0270 0.0224  
 Mercury -104890-06-16 05:02 J -36589483.42 -36589483.29 -36589483.17 0.0270 0.0151  
 Mercury -104890-09-12 18:28 J -36589394.87 -36589394.73 -36589394.58 0.0270 0.0080  
 Mercury -104890-12-10 07:55 J -36589306.31 -36589306.17 -36589306.02 0.0271 0.0011  
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 Mercury -104889-06-04 10:19 J -36589129.20 -36589129.07 -36589128.94 0.0272 0.0131  
 Mercury -104889-08-31 23:02 J -36589040.63 -36589040.54 -36589040.44 0.0273 0.0200  
 Mercury -104889-11-28 11:45 J -36588952.03 -36588952.01 -36588951.98 0.0273 0.0267  
 Venus -104886-09-14 22:04 J -36587931.74 -36587931.58 -36587931.40 0.0281 0.0159  
 Venus -104885-05-01 07:55 J -36587702.38 -36587702.17 -36587701.96 0.0282 0.0017  
 Venus -104885-12-16 17:59 J -36587472.89 -36587472.75 -36587472.59 0.0284 0.0195  
 Earth -104884-07-28 06:57 J -36587249.24 -36587249.21 -36587249.15 0.0286 0.0280  
 Moon -104883-08-09 23:45 J -36586871.61 -36586871.51 -36586871.41 0.0289 0.0258  
 Earth -104883-08-10 02:09 J -36586871.49 -36586871.41 -36586871.30 0.0289 0.0263 \*  
 Mars -104881-06-12 12:28 J -36586199.18 -36586198.98 -36586198.76 0.0292 0.0214  
 Mercury -104876-04-09 21:35 J -36584436.64 -36584436.60 -36584436.55 0.0291 0.0279  
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 Mercury -104875-01-01 04:04 J -36584170.49 -36584170.33 -36584170.17 0.0290 0.0001  
 Mercury -104875-03-30 22:47 J -36584081.70 -36584081.55 -36584081.39 0.0289 0.0095  
 Mercury -104875-06-27 17:59 J -36583992.87 -36583992.75 -36583992.63 0.0288 0.0192  
 Venus -104872-07-14 20:38 J -36582879.82 -36582879.64 -36582879.46 0.0280 0.0152  
 Venus -104871-03-01 11:30 J -36582650.24 -36582650.02 -36582649.81 0.0278 0.0024  
 Venus -104871-10-17 01:26 J -36582420.58 -36582420.44 -36582420.28 0.0276 0.0197  
 Earth -104869-01-30 03:35 J -36581950.60 -36581950.35 -36581950.09 0.0273 0.0020  
 Moon -104869-01-30 07:26 J -36581950.44 -36581950.19 -36581949.93 0.0273 0.0008 \*  
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 Mercury -104861-08-05 16:33 J -36578839.87 -36578839.81 -36578839.75 0.0269 0.0245

Mercury -104861-11-02 06:28 J -36578751.34 -36578751.23 -36578751.11 0.0269 0.0173  
 Mercury -104860-01-29 20:09 J -36578662.80 -36578662.66 -36578662.52 0.0270 0.0101  
 Mercury -104860-04-28 09:35 J -36578574.24 -36578574.10 -36578573.95 0.0270 0.0031  
 Mercury -104860-07-25 22:47 J -36578485.69 -36578485.55 -36578485.40 0.0271 0.0041  
 Mercury -104860-10-22 11:59 J -36578397.13 -36578397.00 -36578396.87 0.0271 0.0109  
 Mercury -104859-01-19 00:57 J -36578308.57 -36578308.46 -36578308.35 0.0272 0.0178  
 Mercury -104859-04-17 13:40 J -36578219.99 -36578219.93 -36578219.87 0.0272 0.0245  
 Venus -104856-03-27 01:40 J -36577145.61 -36577145.43 -36577145.24 0.0281 0.0138  
 Venus -104856-11-11 11:16 J -36576916.24 -36576916.03 -36576915.83 0.0283 0.0038  
 Venus -104855-06-28 21:06 J -36576686.75 -36576686.62 -36576686.48 0.0284 0.0216  
 Earth -104854-08-04 16:04 J -36576285.06 -36576284.83 -36576284.59 0.0288 0.0016  
 Moon -104854-08-04 18:57 J -36576284.95 -36576284.71 -36576284.47 0.0288 0.0007 \*  
 Mars -104851-08-05 20:38 J -36575187.95 -36575187.64 -36575187.33 0.0294 0.0001  
 Mercury -104847-11-24 15:06 J -36573615.97 -36573615.87 -36573615.76 0.0291 0.0218  
 Mercury -104846-02-21 09:06 J -36573527.26 -36573527.12 -36573526.97 0.0291 0.0126  
 Mercury -104846-05-21 03:35 J -36573438.51 -36573438.35 -36573438.19 0.0290 0.0032  
 Mercury -104846-08-17 22:18 J -36573349.73 -36573349.57 -36573349.41 0.0289 0.0064  
 Mercury -104846-11-14 17:16 J -36573260.91 -36573260.78 -36573260.64 0.0289 0.0161  
 Mercury -104845-02-11 12:28 J -36573172.04 -36573171.98 -36573171.90 0.0288 0.0259  
 Venus -104842-01-25 01:54 J -36572093.61 -36572093.42 -36572093.22 0.0279 0.0127  
 Venus -104842-09-11 16:47 J -36571864.01 -36571863.80 -36571863.58 0.0277 0.0050  
 Venus -104841-04-28 06:42 J -36571634.33 -36571634.22 -36571634.08 0.0276 0.0222  
 Moon -104840-01-23 10:33 J -36571364.20 -36571364.06 -36571363.89 0.0274 0.0215  
 Earth -104840-01-23 14:09 J -36571364.06 -36571363.91 -36571363.73 0.0274 0.0205 \*  
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 Mercury -104832-12-23 19:11 J -36568107.73 -36568107.70 -36568107.67 0.0269 0.0262  
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 Mercury -104831-09-15 12:28 J -36567842.13 -36567841.98 -36567841.83 0.0271 0.0047  
 Mercury -104831-12-13 01:40 J -36567753.57 -36567753.43 -36567753.28 0.0271 0.0025

Mercury -104830-03-11 14:52 J -36567665.01 -36567664.88 -36567664.74 0.0272 0.0094

Mercury -104830-06-08 03:50 J -36567576.45 -36567576.34 -36567576.22 0.0272 0.0163

Mercury -104830-09-04 16:33 J -36567487.88 -36567487.81 -36567487.73 0.0273 0.0231

Venus -104827-10-07 10:33 J -36566359.25 -36566359.06 -36566358.86 0.0281 0.0109

Venus -104826-05-24 20:23 J -36566129.85 -36566129.65 -36566129.45 0.0283 0.0068

Venus -104825-01-09 06:42 J -36565900.32 -36565900.22 -36565900.12 0.0285 0.0247

Moon -104825-07-29 15:06 J -36565698.01 -36565697.87 -36565697.73 0.0286 0.0223

Earth -104825-07-29 17:30 J -36565697.92 -36565697.77 -36565697.60 0.0286 0.0212 \*

Mars -104821-09-29 18:14 J -36564174.92 -36564174.74 -36564174.51 0.0294 0.0223

Mercury -104817-04-12 17:45 J -36562883.85 -36562883.76 -36562883.67 0.0291 0.0236

Mercury -104817-07-10 11:45 J -36562795.15 -36562795.01 -36562794.87 0.0290 0.0144

Mercury -104817-10-07 05:59 J -36562706.41 -36562706.25 -36562706.09 0.0290 0.0050

Mercury -104816-01-04 00:42 J -36562617.63 -36562617.47 -36562617.31 0.0289 0.0046

Mercury -104816-04-02 19:26 J -36562528.82 -36562528.69 -36562528.54 0.0289 0.0143

Mercury -104816-06-30 14:52 J -36562439.97 -36562439.88 -36562439.79 0.0288 0.0240

Venus -104814-12-20 20:38 J -36561536.66 -36561536.64 -36561536.59 0.0281 0.0276

Venus -104813-08-06 12:14 J -36561307.19 -36561306.99 -36561306.79 0.0279 0.0098

Venus -104812-03-24 02:52 J -36561077.58 -36561077.38 -36561077.17 0.0277 0.0078

Venus -104812-11-08 16:47 J -36560847.88 -36560847.80 -36560847.70 0.0276 0.0249

Earth -104810-01-31 18:14 J -36560398.98 -36560398.74 -36560398.50 0.0272 0.0090

Moon -104810-01-31 19:26 J -36560398.94 -36560398.69 -36560398.43 0.0272 0.0078 \*

Mars -104807-11-08 03:35 J -36559022.62 -36559022.35 -36559022.09 0.0266 0.0076

Mercury -104802-08-09 10:47 J -36557287.14 -36557287.05 -36557286.96 0.0269 0.0211

Mercury -104802-11-06 00:28 J -36557198.60 -36557198.48 -36557198.35 0.0269 0.0139

Mercury -104801-02-02 14:09 J -36557110.05 -36557109.91 -36557109.77 0.0270 0.0068

Mercury -104801-05-01 03:35 J -36557021.50 -36557021.35 -36557021.21 0.0270 0.0007

Mercury -104801-07-28 16:33 J -36556932.95 -36556932.81 -36556932.66 0.0271 0.0073

Mercury -104801-10-25 05:30 J -36556844.39 -36556844.27 -36556844.14 0.0271 0.0141

Mercury -104800-01-21 18:28 J -36556755.82 -36556755.73 -36556755.64 0.0272 0.0209

Venus -104798-09-02 04:47 J -36555802.38 -36555802.30 -36555802.23 0.0279 0.0260

Venus -104797-04-18 13:40 J -36555573.13 -36555572.93 -36555572.73 0.0281 0.0088  
 Venus -104797-12-03 23:16 J -36555343.73 -36555343.53 -36555343.33 0.0283 0.0089  
 Venus -104796-07-21 09:06 J -36555114.17 -36555114.12 -36555114.04 0.0285 0.0268  
 Moon -104795-08-06 00:14 J -36554733.72 -36554733.49 -36554733.25 0.0288 0.0078  
 Earth -104795-08-06 01:54 J -36554733.64 -36554733.42 -36554733.19 0.0288 0.0083 \*  
 Mars -104793-11-06 11:59 J -36553910.23 -36553910.00 -36553909.76 0.0293 0.0193  
 Mercury -104788-08-30 17:02 J -36552151.84 -36552151.79 -36552151.72 0.0291 0.0268  
 Mercury -104788-11-27 11:02 J -36552063.17 -36552063.04 -36552062.91 0.0291 0.0176  
 Mercury -104787-02-24 05:02 J -36551974.44 -36551974.29 -36551974.13 0.0290 0.0084  
 Mercury -104787-05-23 23:45 J -36551885.67 -36551885.51 -36551885.35 0.0290 0.0012  
 Mercury -104787-08-20 18:28 J -36551796.88 -36551796.73 -36551796.57 0.0289 0.0109  
 Mercury -104787-11-17 13:40 J -36551708.04 -36551707.93 -36551707.81 0.0289 0.0206  
 Venus -104784-07-02 00:42 J -36550750.55 -36550750.47 -36550750.38 0.0281 0.0254  
 Venus -104783-02-16 16:18 J -36550521.03 -36550520.82 -36550520.61 0.0279 0.0075  
 Venus -104783-10-04 07:11 J -36550291.40 -36550291.20 -36550291.00 0.0277 0.0101  
 Venus -104782-05-21 20:52 J -36550061.65 -36550061.63 -36550061.59 0.0275 0.0273  
 Moon -104781-01-26 02:09 J -36549812.61 -36549812.41 -36549812.20 0.0273 0.0146  
 Earth -104781-01-26 03:06 J -36549812.58 -36549812.37 -36549812.14 0.0273 0.0138 \*  
 Mars -104779-12-31 11:59 J -36548742.19 -36548742.00 -36548741.79 0.0268 0.0182  
 Mars -104777-12-24 05:16 J -36548018.44 -36548018.28 -36548018.09 0.0266 0.0206  
 Mercury -104773-12-26 12:57 J -36546555.03 -36546554.96 -36546554.88 0.0269 0.0230  
 Mercury -104772-03-25 02:52 J -36546466.50 -36546466.38 -36546466.26 0.0270 0.0158  
 Mercury -104772-06-21 16:33 J -36546377.95 -36546377.81 -36546377.67 0.0270 0.0086  
 Mercury -104772-09-18 05:59 J -36546289.40 -36546289.25 -36546289.10 0.0271 0.0016  
 Mercury -104772-12-15 19:11 J -36546200.84 -36546200.70 -36546200.55 0.0271 0.0055  
 Mercury -104771-03-14 08:23 J -36546112.28 -36546112.15 -36546112.02 0.0272 0.0124  
 Mercury -104771-06-10 21:06 J -36546023.72 -36546023.62 -36546023.52 0.0272 0.0192  
 Mercury -104771-09-07 09:50 J -36545935.13 -36545935.09 -36545935.05 0.0273 0.0260  
 Venus -104768-03-14 12:14 J -36545016.09 -36545015.99 -36545015.86 0.0280 0.0235  
 Venus -104768-10-29 21:35 J -36544786.80 -36544786.60 -36544786.39 0.0282 0.0061

Venus -104767-06-16 07:26 J -36544557.37 -36544557.19 -36544557.00 0.0284 0.0118  
 Earth -104766-08-01 01:54 J -36544146.62 -36544146.42 -36544146.21 0.0287 0.0147  
 Moon -104766-08-01 03:35 J -36544146.53 -36544146.35 -36544146.15 0.0287 0.0156 \*  
 Mars -104763-12-31 23:45 J -36542897.82 -36542897.51 -36542897.19 0.0293 0.0024  
 Mercury -104758-01-17 19:26 J -36541419.71 -36541419.69 -36541419.66 0.0291 0.0285  
 Mercury -104758-04-16 13:11 J -36541331.06 -36541330.95 -36541330.83 0.0291 0.0195  
 Mercury -104758-07-14 07:26 J -36541242.34 -36541242.19 -36541242.04 0.0290 0.0102  
 Mercury -104758-10-11 01:54 J -36541153.58 -36541153.42 -36541153.26 0.0290 0.0007  
 Mercury -104757-01-07 20:38 J -36541064.79 -36541064.64 -36541064.48 0.0289 0.0089  
 Mercury -104757-04-05 15:35 J -36540975.97 -36540975.85 -36540975.72 0.0289 0.0187  
 Mercury -104757-07-03 11:16 J -36540887.05 -36540887.03 -36540887.01 0.0288 0.0284  
 Venus -104754-01-12 11:02 J -36539964.16 -36539964.04 -36539963.91 0.0281 0.0225  
 Venus -104754-08-30 02:23 J -36539734.62 -36539734.40 -36539734.19 0.0279 0.0047  
 Venus -104753-04-15 16:47 J -36539504.99 -36539504.80 -36539504.61 0.0277 0.0129  
 Moon -104751-02-02 03:35 J -36538847.56 -36538847.35 -36538847.11 0.0272 0.0142  
 Earth -104751-02-02 06:42 J -36538847.42 -36538847.22 -36538847.00 0.0272 0.0155 \*  
 Mars -104748-02-16 03:50 J -36537737.61 -36537737.34 -36537737.06 0.0267 0.0042  
 Mercury -104743-05-15 14:38 J -36535822.94 -36535822.89 -36535822.83 0.0268 0.0250  
 Mercury -104743-08-12 04:33 J -36535734.42 -36535734.31 -36535734.20 0.0269 0.0178  
 Mercury -104743-11-08 18:14 J -36535645.88 -36535645.74 -36535645.60 0.0269 0.0107  
 Mercury -104742-02-05 07:40 J -36535557.32 -36535557.18 -36535557.03 0.0270 0.0037  
 Mercury -104742-05-04 21:06 J -36535468.77 -36535468.62 -36535468.48 0.0270 0.0035  
 Mercury -104742-08-01 10:04 J -36535380.21 -36535380.08 -36535379.94 0.0271 0.0103  
 Mercury -104742-10-28 22:47 J -36535291.65 -36535291.55 -36535291.43 0.0271 0.0172  
 Mercury -104741-01-25 11:30 J -36535203.08 -36535203.02 -36535202.94 0.0272 0.0239  
 Venus -104739-09-24 15:06 J -36534230.00 -36534229.87 -36534229.73 0.0279 0.0214  
 Venus -104738-05-12 00:14 J -36534000.70 -36534000.49 -36534000.28 0.0281 0.0040  
 Venus -104738-12-27 09:35 J -36533771.27 -36533771.10 -36533770.91 0.0283 0.0139  
 Moon -104736-08-07 05:59 J -36533182.45 -36533182.25 -36533182.05 0.0288 0.0143  
 Earth -104736-08-07 09:21 J -36533182.31 -36533182.11 -36533181.90 0.0288 0.0145 \*

Mars -104732-02-23 07:54 J -36531886.34 -36531886.17 -36531885.98 0.0294 0.0240  
 Mercury -104729-09-02 11:59 J -36530599.09 -36530599.00 -36530598.90 0.0291 0.0230  
 Mercury -104729-11-30 05:59 J -36530510.39 -36530510.25 -36530510.11 0.0291 0.0138  
 Mercury -104728-02-27 00:28 J -36530421.64 -36530421.48 -36530421.32 0.0290 0.0044  
 Mercury -104728-05-26 18:57 J -36530332.87 -36530332.71 -36530332.55 0.0290 0.0053  
 Mercury -104728-08-23 13:54 J -36530244.05 -36530243.92 -36530243.77 0.0289 0.0150  
 Mercury -104728-11-20 09:06 J -36530155.19 -36530155.12 -36530155.02 0.0288 0.0248  
 Venus -104725-07-24 13:11 J -36529178.09 -36529177.95 -36529177.80 0.0280 0.0205  
 Venus -104724-03-11 04:47 J -36528948.52 -36528948.30 -36528948.09 0.0279 0.0026  
 Venus -104724-10-26 19:26 J -36528718.86 -36528718.69 -36528718.50 0.0277 0.0151  
 Earth -104722-01-27 13:40 J -36528261.17 -36528260.93 -36528260.68 0.0273 0.0074  
 Moon -104722-01-27 16:33 J -36528261.04 -36528260.81 -36528260.57 0.0273 0.0084 \*  
 Mars -104718-04-04 04:04 J -36526733.59 -36526733.33 -36526733.06 0.0266 0.0088  
 Mercury -104714-12-30 06:28 J -36525002.33 -36525002.23 -36525002.13 0.0269 0.0200  
 Mercury -104713-03-27 20:09 J -36524913.79 -36524913.66 -36524913.53 0.0270 0.0128  
 Mercury -104713-06-24 09:35 J -36524825.24 -36524825.10 -36524824.95 0.0270 0.0058  
 Mercury -104713-09-20 23:02 J -36524736.69 -36524736.54 -36524736.39 0.0271 0.0014  
 Mercury -104713-12-18 12:14 J -36524648.13 -36524647.99 -36524647.85 0.0271 0.0083  
 Mercury -104712-03-17 01:11 J -36524559.57 -36524559.45 -36524559.33 0.0272 0.0152  
 Mercury -104712-06-13 13:54 J -36524471.00 -36524470.92 -36524470.83 0.0272 0.0220  
 Venus -104709-04-05 21:35 J -36523443.75 -36523443.60 -36523443.44 0.0280 0.0190  
 Venus -104709-11-21 06:42 J -36523214.42 -36523214.22 -36523214.01 0.0282 0.0016  
 Venus -104708-07-08 16:33 J -36522984.97 -36522984.81 -36522984.64 0.0284 0.0165  
 Earth -104707-08-02 06:57 J -36522595.43 -36522595.21 -36522594.98 0.0287 0.0088  
 Moon -104707-08-02 10:18 J -36522595.29 -36522595.07 -36522594.84 0.0287 0.0094 \*  
 Mars -104704-04-03 00:42 J -36521620.70 -36521620.47 -36521620.20 0.0293 0.0174  
 Mercury -104699-01-20 14:09 J -36519866.99 -36519866.91 -36519866.83 0.0291 0.0249  
 Mercury -104699-04-19 07:54 J -36519778.30 -36519778.17 -36519778.03 0.0291 0.0158  
 Mercury -104699-07-17 02:09 J -36519689.56 -36519689.41 -36519689.25 0.0290 0.0064  
 Mercury -104699-10-13 20:52 J -36519600.79 -36519600.63 -36519600.47 0.0290 0.0032

Mercury -104698-01-10 15:35 J -36519511.99 -36519511.85 -36519511.70 0.0289 0.0128  
 Mercury -104698-04-09 11:02 J -36519423.14 -36519423.04 -36519422.94 0.0288 0.0226  
 Venus -104695-02-03 23:02 J -36518391.70 -36518391.54 -36518391.37 0.0280 0.0177  
 Venus -104695-09-21 14:23 J -36518162.12 -36518161.90 -36518161.69 0.0278 0.0003  
 Venus -104694-05-09 04:33 J -36517932.46 -36517932.31 -36517932.13 0.0277 0.0179  
 Moon -104692-02-03 13:11 J -36517296.11 -36517295.95 -36517295.78 0.0272 0.0203  
 Earth -104692-02-03 16:18 J -36517295.96 -36517295.82 -36517295.66 0.0272 0.0216 \*  
 Mars -104690-05-27 19:40 J -36516452.90 -36516452.68 -36516452.45 0.0268 0.0161  
 Mars -104688-05-20 09:50 J -36515729.23 -36515729.09 -36515728.93 0.0266 0.0221  
 Mercury -104684-05-18 07:54 J -36514270.25 -36514270.17 -36514270.08 0.0268 0.0220  
 Mercury -104684-08-14 21:50 J -36514181.71 -36514181.59 -36514181.46 0.0269 0.0149  
 Mercury -104684-11-11 11:16 J -36514093.17 -36514093.03 -36514092.88 0.0269 0.0079  
 Mercury -104683-02-08 00:42 J -36514004.61 -36514004.47 -36514004.32 0.0270 0.0010  
 Mercury -104683-05-07 13:54 J -36513916.06 -36513915.92 -36513915.77 0.0270 0.0062  
 Mercury -104683-08-04 02:52 J -36513827.50 -36513827.38 -36513827.25 0.0271 0.0131  
 Mercury -104683-10-31 15:50 J -36513738.94 -36513738.84 -36513738.74 0.0271 0.0199  
 Mercury -104682-01-28 04:18 J -36513650.34 -36513650.32 -36513650.29 0.0272 0.0266  
 Venus -104680-10-17 00:14 J -36512657.66 -36512657.49 -36512657.33 0.0280 0.0169  
 Venus -104679-06-03 09:06 J -36512428.33 -36512428.12 -36512427.91 0.0282 0.0007  
 Venus -104678-01-18 18:28 J -36512198.87 -36512198.73 -36512198.56 0.0283 0.0186  
 Earth -104677-08-08 13:40 J -36511631.08 -36511630.93 -36511630.75 0.0288 0.0202  
 Moon -104677-08-08 14:09 J -36511631.07 -36511630.91 -36511630.75 0.0288 0.0204 \*  
 Mars -104674-05-27 00:14 J -36510609.80 -36510609.49 -36510609.18 0.0294 0.0037  
 Mercury -104670-06-09 12:28 J -36509135.00 -36509134.98 -36509134.95 0.0292 0.0286  
 Mercury -104670-09-06 06:14 J -36509046.35 -36509046.24 -36509046.12 0.0291 0.0195  
 Mercury -104670-12-04 00:28 J -36508957.63 -36508957.48 -36508957.33 0.0291 0.0102  
 Mercury -104669-03-01 18:57 J -36508868.88 -36508868.71 -36508868.55 0.0290 0.0009  
 Mercury -104669-05-29 13:40 J -36508780.09 -36508779.93 -36508779.78 0.0290 0.0089  
 Mercury -104669-08-26 08:38 J -36508691.26 -36508691.14 -36508691.01 0.0289 0.0187  
 Mercury -104669-11-23 04:18 J -36508602.34 -36508602.32 -36508602.30 0.0288 0.0285



Venus -104666-08-16 23:59 J -36507605.68 -36507605.50 -36507605.32 0.0280 0.0158  
 Venus -104665-04-02 15:21 J -36507376.07 -36507375.86 -36507375.64 0.0278 0.0022  
 Venus -104665-11-18 05:59 J -36507146.39 -36507146.25 -36507146.09 0.0276 0.0198  
 Earth -104663-01-28 20:52 J -36506709.89 -36506709.63 -36506709.38 0.0273 0.0016  
 Moon -104663-01-28 23:59 J -36506709.75 -36506709.50 -36506709.24 0.0273 0.0028 \*  
 Mars -104660-07-12 20:09 J -36505448.93 -36505448.66 -36505448.38 0.0267 0.0032  
 Mercury -104655-10-05 09:21 J -36503538.17 -36503538.11 -36503538.04 0.0269 0.0243  
 Mercury -104654-01-01 23:16 J -36503449.64 -36503449.53 -36503449.41 0.0269 0.0172  
 Mercury -104654-03-31 12:57 J -36503361.10 -36503360.96 -36503360.82 0.0270 0.0100  
 Mercury -104654-06-28 02:23 J -36503272.55 -36503272.40 -36503272.25 0.0270 0.0030  
 Mercury -104654-09-24 15:35 J -36503183.99 -36503183.85 -36503183.70 0.0271 0.0041  
 Mercury -104654-12-22 04:33 J -36503095.44 -36503095.31 -36503095.17 0.0271 0.0111  
 Mercury -104653-03-19 17:30 J -36503006.87 -36503006.77 -36503006.66 0.0272 0.0178  
 Mercury -104653-06-16 06:14 J -36502918.29 -36502918.24 -36502918.18 0.0272 0.0245  
 Venus -104650-04-29 05:16 J -36501871.45 -36501871.28 -36501871.10 0.0280 0.0147  
 Venus -104650-12-14 14:23 J -36501642.10 -36501641.90 -36501641.69 0.0282 0.0030  
 Venus -104649-07-30 23:59 J -36501412.63 -36501412.50 -36501412.35 0.0284 0.0210  
 Moon -104648-08-03 09:06 J -36501044.37 -36501044.12 -36501043.88 0.0287 0.0037  
 Earth -104648-08-03 09:06 J -36501044.35 -36501044.12 -36501043.88 0.0287 0.0035 \*  
 Mars -104644-07-20 09:35 J -36499597.24 -36499597.10 -36499596.93 0.0294 0.0255  
 Mercury -104640-01-23 07:26 J -36498314.28 -36498314.19 -36498314.08 0.0291 0.0218  
 Mercury -104640-04-22 01:40 J -36498225.57 -36498225.43 -36498225.29 0.0291 0.0125  
 Mercury -104640-07-19 19:54 J -36498136.83 -36498136.67 -36498136.50 0.0290 0.0032  
 Mercury -104640-10-16 14:38 J -36498048.04 -36498047.89 -36498047.73 0.0290 0.0066  
 Mercury -104639-01-13 09:50 J -36497959.23 -36497959.09 -36497958.95 0.0289 0.0162  
 Mercury -104639-04-12 05:02 J -36497870.35 -36497870.29 -36497870.21 0.0288 0.0261  
 Venus -104636-02-26 08:38 J -36496819.33 -36496819.14 -36496818.95 0.0280 0.0131  
 Venus -104636-10-13 23:59 J -36496589.71 -36496589.50 -36496589.28 0.0278 0.0049  
 Venus -104635-05-31 14:23 J -36496360.02 -36496359.90 -36496359.77 0.0276 0.0224  
 Moon -104634-01-23 08:23 J -36496123.26 -36496123.15 -36496123.02 0.0275 0.0239

Earth -104634-01-23 11:16 J -36496123.15 -36496123.03 -36496122.88 0.0275 0.0229 \*  
 Moon -104633-02-05 23:16 J -36495744.60 -36495744.53 -36495744.45 0.0272 0.0258  
 Earth -104633-02-05 22:18 J -36495744.58 -36495744.57 -36495744.54 0.0272 0.0271 \*  
 Mars -104630-08-29 05:45 J -36494444.50 -36494444.26 -36494443.99 0.0266 0.0106  
 Mercury -104625-02-22 10:47 J -36492806.06 -36492806.05 -36492806.01 0.0268 0.0264  
 Mercury -104625-05-21 00:57 J -36492717.56 -36492717.46 -36492717.35 0.0268 0.0192  
 Mercury -104625-08-17 14:38 J -36492629.02 -36492628.89 -36492628.75 0.0269 0.0121  
 Mercury -104625-11-14 04:04 J -36492540.47 -36492540.33 -36492540.18 0.0269 0.0051  
 Mercury -104624-02-10 17:30 J -36492451.92 -36492451.77 -36492451.63 0.0270 0.0020  
 Mercury -104624-05-10 06:28 J -36492363.37 -36492363.23 -36492363.09 0.0270 0.0089  
 Mercury -104624-08-06 19:26 J -36492274.81 -36492274.69 -36492274.57 0.0271 0.0157  
 Mercury -104624-11-03 08:09 J -36492186.24 -36492186.16 -36492186.08 0.0271 0.0224  
 Venus -104621-11-08 07:40 J -36491085.36 -36491085.18 -36491084.99 0.0280 0.0126  
 Venus -104620-06-25 16:33 J -36490856.01 -36490855.81 -36490855.60 0.0282 0.0051  
 Venus -104619-02-10 01:54 J -36490626.53 -36490626.42 -36490626.29 0.0284 0.0231  
 Earth -104619-07-28 21:35 J -36490457.63 -36490457.60 -36490457.54 0.0285 0.0279  
 Earth -104618-08-10 15:06 J -36490079.97 -36490079.87 -36490079.74 0.0288 0.0253  
 Moon -104618-08-10 18:42 J -36490079.81 -36490079.72 -36490079.61 0.0288 0.0259 \*  
 Mars -104616-08-26 16:04 J -36489333.08 -36489332.83 -36489332.57 0.0293 0.0166  
 Mercury -104611-06-12 05:45 J -36487582.33 -36487582.26 -36487582.19 0.0292 0.0256  
 Mercury -104611-09-08 23:30 J -36487493.65 -36487493.52 -36487493.38 0.0291 0.0165  
 Mercury -104611-12-06 17:45 J -36487404.91 -36487404.76 -36487404.60 0.0291 0.0071  
 Mercury -104610-03-05 12:28 J -36487316.15 -36487315.98 -36487315.82 0.0290 0.0025  
 Mercury -104610-06-02 07:11 J -36487227.34 -36487227.20 -36487227.05 0.0290 0.0122  
 Mercury -104610-08-30 02:23 J -36487138.50 -36487138.40 -36487138.29 0.0289 0.0219  
 Venus -104607-09-08 08:23 J -36486033.34 -36486033.15 -36486032.94 0.0280 0.0115  
 Venus -104606-04-25 23:59 J -36485803.71 -36485803.50 -36485803.29 0.0278 0.0066  
 Venus -104606-12-11 14:38 J -36485573.99 -36485573.89 -36485573.79 0.0276 0.0241  
 Moon -104604-01-29 23:16 J -36485158.79 -36485158.53 -36485158.27 0.0273 0.0022  
 Earth -104604-01-30 00:42 J -36485158.72 -36485158.47 -36485158.22 0.0273 0.0036 \*

Mars -104602-10-21 04:33 J -36484164.54 -36484164.31 -36484164.08 0.0267 0.0155  
 Mars -104600-10-13 20:38 J -36483440.77 -36483440.64 -36483440.49 0.0266 0.0228  
 Mercury -104596-10-08 01:54 J -36481985.51 -36481985.42 -36481985.33 0.0269 0.0217  
 Mercury -104595-01-04 15:35 J -36481896.97 -36481896.85 -36481896.72 0.0269 0.0146  
 Mercury -104595-04-03 05:16 J -36481808.42 -36481808.28 -36481808.14 0.0270 0.0075  
 Mercury -104595-06-30 18:42 J -36481719.87 -36481719.72 -36481719.57 0.0270 0.0007  
 Mercury -104595-09-27 07:40 J -36481631.32 -36481631.18 -36481631.03 0.0271 0.0066  
 Mercury -104595-12-24 20:38 J -36481542.76 -36481542.64 -36481542.51 0.0271 0.0134  
 Mercury -104594-03-23 09:35 J -36481454.19 -36481454.10 -36481454.00 0.0272 0.0202  
 Mercury -104594-06-19 22:18 J -36481365.59 -36481365.57 -36481365.55 0.0272 0.0269  
 Venus -104592-10-04 02:52 J -36480528.38 -36480528.38 -36480528.37 0.0279 0.0279  
 Venus -104591-05-21 11:30 J -36480299.21 -36480299.02 -36480298.83 0.0281 0.0106  
 Venus -104590-01-05 20:23 J -36480069.84 -36480069.65 -36480069.44 0.0282 0.0073  
 Venus -104590-08-23 06:14 J -36479840.33 -36479840.24 -36479840.14 0.0284 0.0253  
 Moon -104589-08-04 05:16 J -36479493.51 -36479493.28 -36479493.04 0.0287 0.0016  
 Earth -104589-08-04 08:52 J -36479493.37 -36479493.13 -36479492.90 0.0287 0.0015 \*  
 Mars -104586-10-20 12:28 J -36478321.29 -36478320.98 -36478320.67 0.0293 0.0047  
 Mercury -104582-10-30 06:28 J -36476850.26 -36476850.23 -36476850.18 0.0292 0.0281  
 Mercury -104581-01-27 00:28 J -36476761.60 -36476761.48 -36476761.36 0.0291 0.0189  
 Mercury -104581-04-24 18:42 J -36476672.87 -36476672.72 -36476672.57 0.0291 0.0096  
 Mercury -104581-07-22 13:11 J -36476584.11 -36476583.95 -36476583.79 0.0290 0.0005  
 Mercury -104581-10-19 07:54 J -36476495.32 -36476495.17 -36476495.01 0.0289 0.0096  
 Mercury -104580-01-16 03:06 J -36476406.49 -36476406.37 -36476406.25 0.0289 0.0193  
 Venus -104578-08-04 00:14 J -36475476.54 -36475476.49 -36475476.43 0.0282 0.0270  
 Venus -104577-03-20 16:18 J -36475247.02 -36475246.82 -36475246.61 0.0280 0.0088  
 Venus -104577-11-05 07:54 J -36475017.37 -36475017.17 -36475016.97 0.0278 0.0093  
 Venus -104576-06-22 22:18 J -36474787.61 -36474787.57 -36474787.51 0.0276 0.0268  
 Earth -104575-01-24 13:54 J -36474572.10 -36474571.92 -36474571.72 0.0275 0.0179  
 Moon -104575-01-24 15:50 J -36474572.01 -36474571.84 -36474571.66 0.0275 0.0192 \*  
 Mars -104572-12-06 18:28 J -36473160.00 -36473159.73 -36473159.45 0.0267 0.0016

Mercury -104566-02-25 03:35 J -36471253.42 -36471253.35 -36471253.28 0.0268 0.0237  
 Mercury -104566-05-24 17:16 J -36471164.89 -36471164.78 -36471164.65 0.0268 0.0166  
 Mercury -104566-08-21 06:57 J -36471076.35 -36471076.21 -36471076.07 0.0269 0.0095  
 Mercury -104566-11-17 20:23 J -36470987.80 -36470987.65 -36470987.50 0.0269 0.0025  
 Mercury -104565-02-14 09:35 J -36470899.24 -36470899.10 -36470898.95 0.0270 0.0045  
 Mercury -104565-05-12 22:47 J -36470810.69 -36470810.55 -36470810.42 0.0270 0.0114  
 Mercury -104565-08-09 11:30 J -36470722.13 -36470722.02 -36470721.91 0.0271 0.0181  
 Mercury -104565-11-05 23:59 J -36470633.55 -36470633.50 -36470633.44 0.0271 0.0248  
 Venus -104562-04-16 05:59 J -36469742.32 -36469742.25 -36469742.16 0.0278 0.0256  
 Venus -104562-12-01 14:09 J -36469513.11 -36469512.91 -36469512.71 0.0280 0.0083  
 Venus -104561-07-17 23:02 J -36469283.74 -36469283.54 -36469283.35 0.0282 0.0094  
 Venus -104560-03-04 08:23 J -36469054.20 -36469054.15 -36469054.09 0.0284 0.0274  
 Earth -104560-07-29 21:35 J -36468906.72 -36468906.60 -36468906.45 0.0285 0.0231  
 Moon -104560-07-30 00:57 J -36468906.58 -36468906.46 -36468906.32 0.0285 0.0236 \*  
 Mars -104556-12-12 14:38 J -36467310.02 -36467309.89 -36467309.73 0.0294 0.0258  
 Mercury -104552-06-14 22:18 J -36466029.66 -36466029.57 -36466029.47 0.0292 0.0229  
 Mercury -104552-09-11 16:18 J -36465940.96 -36465940.82 -36465940.68 0.0291 0.0137  
 Mercury -104552-12-09 10:33 J -36465852.22 -36465852.06 -36465851.90 0.0291 0.0043  
 Mercury -104551-03-08 05:16 J -36465763.44 -36465763.28 -36465763.12 0.0290 0.0053  
 Mercury -104551-06-05 00:14 J -36465674.63 -36465674.49 -36465674.35 0.0289 0.0150  
 Mercury -104551-09-01 19:26 J -36465585.77 -36465585.69 -36465585.60 0.0289 0.0249  
 Venus -104548-02-12 23:02 J -36464690.62 -36464690.54 -36464690.44 0.0282 0.0256  
 Venus -104548-09-30 15:21 J -36464461.06 -36464460.86 -36464460.65 0.0280 0.0073  
 Venus -104547-05-18 06:42 J -36464231.42 -36464231.22 -36464231.02 0.0278 0.0108  
 Moon -104545-01-31 22:04 J -36463607.83 -36463607.58 -36463607.34 0.0273 0.0067  
 Earth -104545-02-01 01:54 J -36463607.66 -36463607.42 -36463607.17 0.0273 0.0083 \*  
 Mars -104541-01-22 09:35 J -36462156.34 -36462156.10 -36462155.84 0.0266 0.0109  
 Mercury -104537-07-14 04:04 J -36460521.35 -36460521.33 -36460521.30 0.0268 0.0264  
 Mercury -104537-10-10 17:59 J -36460432.85 -36460432.75 -36460432.64 0.0269 0.0193  
 Mercury -104536-01-07 07:40 J -36460344.31 -36460344.18 -36460344.04 0.0269 0.0121

Mercury -104536-04-05 21:21 J -36460255.76 -36460255.61 -36460255.47 0.0270 0.0051  
 Mercury -104536-07-03 10:33 J -36460167.21 -36460167.06 -36460166.91 0.0270 0.0019  
 Mercury -104536-09-29 23:45 J -36460078.65 -36460078.51 -36460078.37 0.0271 0.0089  
 Mercury -104536-12-27 12:28 J -36459990.09 -36459989.98 -36459989.86 0.0271 0.0157  
 Mercury -104535-03-26 01:11 J -36459901.52 -36459901.45 -36459901.36 0.0272 0.0224  
 Venus -104533-10-26 08:23 J -36458956.25 -36458956.15 -36458956.04 0.0279 0.0239  
 Venus -104532-06-12 16:47 J -36458727.00 -36458726.80 -36458726.60 0.0281 0.0065  
 Venus -104531-01-28 01:40 J -36458497.62 -36458497.43 -36458497.24 0.0283 0.0114  
 Moon -104530-08-06 05:16 J -36457942.50 -36457942.28 -36457942.06 0.0287 0.0062  
 Earth -104530-08-06 06:42 J -36457942.45 -36457942.22 -36457941.99 0.0287 0.0059 \*  
 Mars -104527-01-19 16:47 J -36457045.05 -36457044.80 -36457044.53 0.0293 0.0159  
 Mercury -104523-11-01 22:47 J -36455297.62 -36455297.55 -36455297.47 0.0291 0.0255  
 Mercury -104522-01-29 16:33 J -36455208.93 -36455208.81 -36455208.67 0.0291 0.0164  
 Mercury -104522-04-28 11:02 J -36455120.20 -36455120.04 -36455119.89 0.0290 0.0070  
 Mercury -104522-07-26 05:30 J -36455031.43 -36455031.27 -36455031.11 0.0290 0.0025  
 Mercury -104522-10-23 00:28 J -36454942.63 -36454942.48 -36454942.33 0.0289 0.0122  
 Mercury -104521-01-19 19:40 J -36454853.78 -36454853.68 -36454853.57 0.0289 0.0220  
 Venus -104519-08-26 05:59 J -36453904.36 -36453904.25 -36453904.12 0.0282 0.0230  
 Venus -104518-04-12 22:18 J -36453674.78 -36453674.57 -36453674.35 0.0280 0.0046  
 Venus -104518-11-28 13:54 J -36453445.11 -36453444.92 -36453444.73 0.0278 0.0134  
 Earth -104516-01-25 13:54 J -36453021.13 -36453020.92 -36453020.69 0.0275 0.0134  
 Moon -104516-01-25 17:59 J -36453020.97 -36453020.75 -36453020.53 0.0275 0.0148 \*  
 Mars -104513-03-15 21:35 J -36451875.83 -36451875.60 -36451875.36 0.0268 0.0141  
 Mars -104511-03-09 14:52 J -36451151.99 -36451151.88 -36451151.76 0.0266 0.0240  
 Mercury -104507-02-27 19:40 J -36449700.76 -36449700.68 -36449700.58 0.0268 0.0213  
 Mercury -104507-05-27 09:35 J -36449612.23 -36449612.10 -36449611.97 0.0269 0.0141  
 Mercury -104507-08-23 23:02 J -36449523.68 -36449523.54 -36449523.39 0.0269 0.0071  
 Mercury -104507-11-20 12:28 J -36449435.13 -36449434.98 -36449434.83 0.0269 0.0004  
 Mercury -104506-02-17 01:26 J -36449346.58 -36449346.44 -36449346.29 0.0270 0.0069  
 Mercury -104506-05-16 14:23 J -36449258.02 -36449257.90 -36449257.77 0.0270 0.0137

Mercury -104506-08-13 03:21 J -36449169.46 -36449169.36 -36449169.27 0.0271 0.0204

Mercury -104506-11-09 15:50 J -36449080.85 -36449080.84 -36449080.83 0.0271 0.0270

Venus -104503-05-08 11:30 J -36448170.14 -36448170.02 -36448169.88 0.0278 0.0216

Venus -104503-12-23 19:40 J -36447940.89 -36447940.68 -36447940.47 0.0280 0.0042

Venus -104502-08-10 04:18 J -36447711.50 -36447711.32 -36447711.14 0.0282 0.0136

Earth -104501-07-30 20:23 J -36447355.82 -36447355.65 -36447355.46 0.0285 0.0185

Moon -104501-07-30 22:18 J -36447355.75 -36447355.57 -36447355.39 0.0285 0.0187 \*

Mars -104497-03-13 13:54 J -36446034.23 -36446033.92 -36446033.61 0.0293 0.0047

Mercury -104493-06-17 14:23 J -36444477.00 -36444476.90 -36444476.78 0.0292 0.0204

Mercury -104493-09-14 08:38 J -36444388.29 -36444388.14 -36444387.99 0.0291 0.0111

Mercury -104493-12-12 03:06 J -36444299.54 -36444299.37 -36444299.21 0.0291 0.0017

Mercury -104492-03-10 21:50 J -36444210.75 -36444210.59 -36444210.44 0.0290 0.0080

Mercury -104492-06-07 16:47 J -36444121.93 -36444121.80 -36444121.67 0.0289 0.0178

Mercury -104492-09-04 12:14 J -36444033.03 -36444032.99 -36444032.94 0.0289 0.0276

Venus -104489-03-07 04:47 J -36443118.43 -36443118.30 -36443118.15 0.0282 0.0216

Venus -104489-10-22 21:21 J -36442888.83 -36442888.61 -36442888.40 0.0280 0.0032

Venus -104488-06-09 12:28 J -36442659.16 -36442658.98 -36442658.79 0.0278 0.0149

Earth -104486-02-02 01:11 J -36442056.66 -36442056.45 -36442056.21 0.0273 0.0127

Moon -104486-02-02 01:11 J -36442056.66 -36442056.45 -36442056.21 0.0273 0.0112 \*

Mars -104483-05-01 15:35 J -36440872.13 -36440871.85 -36440871.57 0.0267 0.0015

Mercury -104478-07-17 20:09 J -36438968.73 -36438968.66 -36438968.60 0.0268 0.0240

Mercury -104478-10-14 09:50 J -36438880.20 -36438880.09 -36438879.97 0.0269 0.0169

Mercury -104477-01-10 23:30 J -36438791.65 -36438791.52 -36438791.38 0.0269 0.0098

Mercury -104477-04-08 12:57 J -36438703.10 -36438702.96 -36438702.81 0.0270 0.0029

Mercury -104477-07-06 02:09 J -36438614.55 -36438614.41 -36438614.26 0.0270 0.0043

Mercury -104477-10-02 15:21 J -36438525.99 -36438525.86 -36438525.73 0.0271 0.0111

Mercury -104477-12-30 04:04 J -36438437.43 -36438437.33 -36438437.22 0.0271 0.0179

Mercury -104476-03-28 16:47 J -36438348.85 -36438348.80 -36438348.74 0.0272 0.0246

Venus -104474-11-18 13:26 J -36437384.08 -36437383.94 -36437383.79 0.0279 0.0199

Venus -104473-07-04 21:35 J -36437154.80 -36437154.60 -36437154.39 0.0281 0.0025

Venus -104472-02-19 06:28 J -36436925.40 -36436925.23 -36436925.05 0.0283 0.0156  
 Earth -104471-08-07 04:04 J -36436391.55 -36436391.33 -36436391.11 0.0287 0.0103  
 Moon -104471-08-07 06:42 J -36436391.43 -36436391.22 -36436391.00 0.0287 0.0110 \*  
 Mars -104467-05-07 09:21 J -36435022.25 -36435022.11 -36435021.96 0.0294 0.0261  
 Mercury -104464-11-04 14:38 J -36433744.98 -36433744.89 -36433744.79 0.0291 0.0232  
 Mercury -104463-02-01 08:38 J -36433656.28 -36433656.14 -36433656.00 0.0291 0.0139  
 Mercury -104463-05-01 03:06 J -36433567.53 -36433567.37 -36433567.21 0.0290 0.0046  
 Mercury -104463-07-28 21:35 J -36433478.76 -36433478.60 -36433478.44 0.0290 0.0051  
 Mercury -104463-10-25 16:33 J -36433389.95 -36433389.81 -36433389.66 0.0289 0.0148  
 Mercury -104462-01-22 11:59 J -36433301.08 -36433301.00 -36433300.91 0.0289 0.0246  
 Venus -104460-09-17 11:02 J -36432332.19 -36432332.04 -36432331.88 0.0281 0.0190  
 Venus -104459-05-05 03:21 J -36432102.57 -36432102.36 -36432102.14 0.0280 0.0006  
 Venus -104459-12-20 18:42 J -36431872.88 -36431872.72 -36431872.55 0.0278 0.0175  
 Moon -104457-01-27 11:45 J -36431470.25 -36431470.01 -36431469.76 0.0275 0.0107  
 Earth -104457-01-27 12:28 J -36431470.21 -36431469.98 -36431469.74 0.0275 0.0091 \*  
 Mars -104453-06-17 00:14 J -36429867.73 -36429867.49 -36429867.23 0.0267 0.0121  
 Mercury -104449-12-03 21:50 J -36428236.61 -36428236.59 -36428236.55 0.0268 0.0260  
 Mercury -104448-03-02 11:45 J -36428148.11 -36428148.01 -36428147.89 0.0268 0.0189  
 Mercury -104448-05-30 01:40 J -36428059.57 -36428059.43 -36428059.30 0.0269 0.0117  
 Mercury -104448-08-26 15:06 J -36427971.02 -36427970.87 -36427970.72 0.0269 0.0047  
 Mercury -104448-11-23 04:18 J -36427882.46 -36427882.32 -36427882.17 0.0270 0.0023  
 Mercury -104447-02-19 17:30 J -36427793.91 -36427793.77 -36427793.63 0.0270 0.0092  
 Mercury -104447-05-19 06:14 J -36427705.35 -36427705.24 -36427705.12 0.0270 0.0160  
 Mercury -104447-08-15 18:57 J -36427616.78 -36427616.71 -36427616.63 0.0271 0.0227  
 Venus -104444-05-30 17:16 J -36426597.93 -36426597.78 -36426597.61 0.0278 0.0174  
 Venus -104443-01-15 01:26 J -36426368.65 -36426368.44 -36426368.23 0.0280 0.0003  
 Venus -104443-09-01 09:50 J -36426139.24 -36426139.09 -36426138.92 0.0282 0.0180  
 Moon -104442-08-01 16:33 J -36425805.01 -36425804.81 -36425804.59 0.0285 0.0137  
 Earth -104442-08-01 19:26 J -36425804.89 -36425804.69 -36425804.48 0.0285 0.0140 \*  
 Mars -104439-06-13 22:47 J -36424757.80 -36424757.55 -36424757.28 0.0292 0.0160

Mercury -104434-03-24 12:42 J -36423013.02 -36423012.97 -36423012.91 0.0292 0.0270

Mercury -104434-06-21 06:28 J -36422924.35 -36422924.23 -36422924.10 0.0291 0.0179

Mercury -104434-09-18 00:42 J -36422835.62 -36422835.47 -36422835.32 0.0291 0.0086

Mercury -104434-12-15 19:11 J -36422746.86 -36422746.70 -36422746.54 0.0290 0.0010

Mercury -104433-03-13 13:54 J -36422658.07 -36422657.92 -36422657.76 0.0290 0.0106

Mercury -104433-06-10 09:06 J -36422569.23 -36422569.12 -36422569.00 0.0289 0.0204

Venus -104430-03-30 10:04 J -36421546.25 -36421546.08 -36421545.91 0.0281 0.0176

Venus -104430-11-15 02:23 J -36421316.62 -36421316.40 -36421316.19 0.0279 0.0010

Venus -104429-07-01 17:30 J -36421086.92 -36421086.77 -36421086.61 0.0278 0.0190

Earth -104427-02-02 23:30 J -36420505.71 -36420505.52 -36420505.31 0.0273 0.0169

Moon -104427-02-03 03:35 J -36420505.56 -36420505.35 -36420505.14 0.0273 0.0153 \*

Mars -104425-08-08 15:50 J -36419588.07 -36419587.84 -36419587.60 0.0268 0.0144

Mars -104423-08-02 11:02 J -36418864.15 -36418864.04 -36418863.92 0.0266 0.0240

Mercury -104419-07-20 12:14 J -36417416.08 -36417415.99 -36417415.91 0.0268 0.0217

Mercury -104419-10-17 01:54 J -36417327.55 -36417327.42 -36417327.29 0.0269 0.0145

Mercury -104418-01-13 15:21 J -36417239.00 -36417238.86 -36417238.71 0.0269 0.0075

Mercury -104418-04-12 04:47 J -36417150.45 -36417150.30 -36417150.15 0.0270 0.0006

Mercury -104418-07-09 17:59 J -36417061.89 -36417061.75 -36417061.61 0.0270 0.0065

Mercury -104418-10-06 06:57 J -36416973.33 -36416973.21 -36416973.08 0.0271 0.0133

Mercury -104417-01-02 19:40 J -36416884.77 -36416884.68 -36416884.58 0.0271 0.0201

Mercury -104417-03-31 08:23 J -36416796.17 -36416796.15 -36416796.13 0.0272 0.0267

Venus -104415-12-10 18:28 J -36415811.90 -36415811.73 -36415811.55 0.0279 0.0159

Venus -104414-07-28 02:38 J -36415582.59 -36415582.39 -36415582.18 0.0281 0.0018

Venus -104413-03-13 11:30 J -36415353.16 -36415353.02 -36415352.87 0.0283 0.0198

Earth -104412-08-08 01:40 J -36414840.63 -36414840.43 -36414840.22 0.0287 0.0146

Moon -104412-08-08 04:18 J -36414840.51 -36414840.32 -36414840.10 0.0287 0.0154 \*

Mars -104409-08-06 05:30 J -36413746.57 -36413746.27 -36413745.96 0.0293 0.0050

Mercury -104405-11-07 06:42 J -36412192.33 -36412192.22 -36412192.11 0.0291 0.0207

Mercury -104404-02-04 00:42 J -36412103.62 -36412103.47 -36412103.32 0.0291 0.0115

Mercury -104404-05-03 19:11 J -36412014.86 -36412014.70 -36412014.54 0.0290 0.0021



Mercury -104404-07-31 13:40 J -36411926.08 -36411925.93 -36411925.77 0.0290 0.0077  
 Mercury -104404-10-28 08:52 J -36411837.26 -36411837.13 -36411837.00 0.0289 0.0174  
 Mercury -104403-01-25 04:18 J -36411748.37 -36411748.32 -36411748.26 0.0289 0.0272  
 Venus -104401-10-09 16:04 J -36410760.00 -36410759.83 -36410759.64 0.0281 0.0150  
 Venus -104400-05-27 08:23 J -36410530.36 -36410530.15 -36410529.93 0.0279 0.0036  
 Venus -104399-01-11 23:45 J -36410300.64 -36410300.51 -36410300.37 0.0278 0.0216  
 Moon -104398-01-28 06:57 J -36409919.46 -36409919.21 -36409918.96 0.0275 0.0066  
 Earth -104398-01-28 10:47 J -36409919.30 -36409919.05 -36409918.80 0.0275 0.0050 \*  
 Mars -104395-09-25 05:45 J -36408583.54 -36408583.26 -36408582.99 0.0268 0.0006  
 Mercury -104390-12-07 14:09 J -36406683.98 -36406683.91 -36406683.84 0.0268 0.0236  
 Mercury -104389-03-05 04:04 J -36406595.45 -36406595.33 -36406595.21 0.0268 0.0164  
 Mercury -104389-06-01 17:45 J -36406506.90 -36406506.76 -36406506.62 0.0269 0.0093  
 Mercury -104389-08-29 07:11 J -36406418.35 -36406418.20 -36406418.06 0.0269 0.0024  
 Mercury -104389-11-25 20:23 J -36406329.80 -36406329.65 -36406329.51 0.0270 0.0047  
 Mercury -104388-02-22 09:21 J -36406241.24 -36406241.11 -36406240.98 0.0270 0.0115  
 Mercury -104388-05-21 22:04 J -36406152.68 -36406152.58 -36406152.47 0.0271 0.0183  
 Mercury -104388-08-18 10:33 J -36406064.10 -36406064.06 -36406063.99 0.0271 0.0251  
 Venus -104385-06-21 23:30 J -36405025.70 -36405025.52 -36405025.33 0.0278 0.0132  
 Venus -104384-02-06 07:26 J -36404796.39 -36404796.19 -36404795.98 0.0280 0.0045  
 Venus -104384-09-23 16:04 J -36404566.95 -36404566.83 -36404566.70 0.0282 0.0224  
 Moon -104383-08-02 16:33 J -36404254.03 -36404253.81 -36404253.59 0.0285 0.0088  
 Earth -104383-08-02 19:26 J -36404253.92 -36404253.69 -36404253.47 0.0285 0.0093 \*  
 Mars -104379-09-29 15:50 J -36402734.96 -36402734.84 -36402734.67 0.0293 0.0260  
 Mercury -104375-03-27 05:02 J -36401460.37 -36401460.29 -36401460.20 0.0292 0.0245  
 Mercury -104375-06-23 22:47 J -36401371.68 -36401371.55 -36401371.41 0.0291 0.0153  
 Mercury -104375-09-20 17:02 J -36401282.94 -36401282.79 -36401282.63 0.0291 0.0060  
 Mercury -104375-12-18 11:45 J -36401194.17 -36401194.01 -36401193.85 0.0290 0.0037  
 Mercury -104374-03-17 06:28 J -36401105.37 -36401105.23 -36401105.08 0.0290 0.0134  
 Mercury -104374-06-14 01:54 J -36401016.52 -36401016.42 -36401016.32 0.0289 0.0231  
 Venus -104371-04-21 15:50 J -36399974.03 -36399973.84 -36399973.65 0.0281 0.0134

Venus -104371-12-07 07:40 J -36399744.38 -36399744.18 -36399743.96 0.0279 0.0052  
 Venus -104370-07-24 23:02 J -36399514.65 -36399514.54 -36399514.42 0.0277 0.0231  
 Earth -104368-02-03 22:04 J -36398954.73 -36398954.58 -36398954.40 0.0273 0.0211  
 Moon -104368-02-03 23:30 J -36398954.70 -36398954.52 -36398954.33 0.0273 0.0197 \*  
 Mars -104365-11-09 20:23 J -36397579.89 -36397579.65 -36397579.39 0.0267 0.0119  
 Mercury -104360-04-25 14:09 J -36395951.92 -36395951.91 -36395951.88 0.0268 0.0264  
 Mercury -104360-07-23 04:18 J -36395863.43 -36395863.32 -36395863.22 0.0269 0.0192  
 Mercury -104360-10-19 17:59 J -36395774.88 -36395774.75 -36395774.61 0.0269 0.0121  
 Mercury -104359-01-16 07:40 J -36395686.33 -36395686.18 -36395686.04 0.0269 0.0051  
 Mercury -104359-04-14 20:52 J -36395597.78 -36395597.63 -36395597.48 0.0270 0.0020  
 Mercury -104359-07-12 09:50 J -36395509.22 -36395509.09 -36395508.95 0.0270 0.0089  
 Mercury -104359-10-08 22:47 J -36395420.66 -36395420.55 -36395420.43 0.0271 0.0157  
 Mercury -104358-01-05 11:30 J -36395332.09 -36395332.02 -36395331.93 0.0271 0.0225  
 Venus -104355-01-02 00:42 J -36394239.66 -36394239.47 -36394239.28 0.0279 0.0116  
 Venus -104355-08-19 08:52 J -36394010.33 -36394010.13 -36394009.92 0.0281 0.0062  
 Venus -104354-04-05 17:45 J -36393780.86 -36393780.76 -36393780.65 0.0283 0.0243  
 Moon -104353-08-08 23:30 J -36393289.67 -36393289.52 -36393289.33 0.0287 0.0204  
 Earth -104353-08-09 01:26 J -36393289.61 -36393289.44 -36393289.26 0.0287 0.0192 \*  
 Mars -104351-11-06 18:14 J -36392469.99 -36392469.74 -36392469.47 0.0292 0.0155  
 Mercury -104346-08-14 05:16 J -36390728.34 -36390728.28 -36390728.23 0.0292 0.0273  
 Mercury -104346-11-10 22:47 J -36390639.67 -36390639.55 -36390639.42 0.0291 0.0182  
 Mercury -104345-02-07 17:02 J -36390550.94 -36390550.79 -36390550.64 0.0291 0.0089  
 Mercury -104345-05-06 11:30 J -36390462.18 -36390462.02 -36390461.86 0.0290 0.0006  
 Mercury -104345-08-03 06:14 J -36390373.39 -36390373.24 -36390373.08 0.0290 0.0103  
 Mercury -104345-10-31 01:26 J -36390284.56 -36390284.44 -36390284.32 0.0289 0.0201  
 Venus -104342-11-01 21:35 J -36389187.80 -36389187.60 -36389187.40 0.0281 0.0108  
 Venus -104341-06-18 13:54 J -36388958.13 -36388957.92 -36388957.71 0.0279 0.0077  
 Venus -104340-02-03 05:16 J -36388728.36 -36388728.28 -36388728.20 0.0277 0.0258  
 Moon -104339-01-29 08:23 J -36388368.39 -36388368.15 -36388367.90 0.0275 0.0023  
 Earth -104339-01-29 09:06 J -36388368.37 -36388368.12 -36388367.86 0.0275 0.0011 \*

Mars -104336-01-02 05:45 J -36387299.49 -36387299.26 -36387299.01 0.0269 0.0136  
 Mars -104335-12-27 03:50 J -36386575.42 -36386575.34 -36386575.23 0.0267 0.0251  
 Mercury -104331-12-10 06:28 J -36385131.32 -36385131.23 -36385131.13 0.0268 0.0210  
 Mercury -104330-03-08 20:23 J -36385042.78 -36385042.65 -36385042.52 0.0269 0.0139  
 Mercury -104330-06-05 09:50 J -36384954.23 -36384954.09 -36384953.94 0.0269 0.0068  
 Mercury -104330-09-01 23:16 J -36384865.68 -36384865.53 -36384865.38 0.0270 0.0004  
 Mercury -104330-11-29 12:28 J -36384777.12 -36384776.98 -36384776.84 0.0270 0.0072  
 Mercury -104329-02-26 01:26 J -36384688.56 -36384688.44 -36384688.31 0.0270 0.0140  
 Mercury -104329-05-24 14:09 J -36384600.00 -36384599.91 -36384599.81 0.0271 0.0207  
 Venus -104327-11-27 23:02 J -36383682.60 -36383682.54 -36383682.46 0.0277 0.0261  
 Venus -104326-07-15 06:42 J -36383453.42 -36383453.22 -36383453.02 0.0279 0.0087  
 Venus -104325-02-29 14:38 J -36383224.08 -36383223.89 -36383223.69 0.0280 0.0090  
 Venus -104325-10-15 23:02 J -36382994.58 -36382994.54 -36382994.47 0.0282 0.0271  
 Earth -104324-08-03 20:52 J -36382702.87 -36382702.63 -36382702.40 0.0285 0.0044  
 Moon -104324-08-03 22:33 J -36382702.79 -36382702.56 -36382702.33 0.0285 0.0035 \*  
 Mars -104321-12-30 01:40 J -36381458.74 -36381458.43 -36381458.13 0.0292 0.0050  
 Mercury -104316-03-29 21:50 J -36379907.69 -36379907.59 -36379907.49 0.0291 0.0217  
 Mercury -104316-06-26 15:35 J -36379818.99 -36379818.85 -36379818.70 0.0291 0.0125  
 Mercury -104316-09-23 10:04 J -36379730.24 -36379730.08 -36379729.92 0.0291 0.0030  
 Mercury -104316-12-21 04:33 J -36379641.46 -36379641.31 -36379641.15 0.0290 0.0066  
 Mercury -104315-03-19 23:45 J -36379552.65 -36379552.51 -36379552.38 0.0290 0.0163  
 Mercury -104315-06-16 18:57 J -36379463.77 -36379463.71 -36379463.64 0.0289 0.0261  
 Venus -104313-09-26 05:45 J -36378631.29 -36378631.26 -36378631.22 0.0283 0.0278  
 Venus -104312-05-13 22:33 J -36378401.76 -36378401.56 -36378401.36 0.0281 0.0091  
 Venus -104312-12-29 14:23 J -36378172.10 -36378171.90 -36378171.70 0.0279 0.0094  
 Venus -104311-08-16 05:30 J -36377942.29 -36377942.27 -36377942.24 0.0277 0.0275  
 Earth -104310-01-23 08:38 J -36377782.24 -36377782.14 -36377782.02 0.0276 0.0247  
 Moon -104310-01-23 09:06 J -36377782.20 -36377782.12 -36377782.03 0.0276 0.0260 \*  
 Moon -104309-02-05 19:26 J -36377403.80 -36377403.69 -36377403.57 0.0273 0.0244  
 Earth -104309-02-05 22:47 J -36377403.64 -36377403.55 -36377403.45 0.0273 0.0254 \*

Mars -104306-02-18 03:50 J -36376295.62 -36376295.34 -36376295.07 0.0268 0.0008  
 Mercury -104301-04-28 06:42 J -36374399.28 -36374399.22 -36374399.15 0.0268 0.0238  
 Mercury -104301-07-25 20:38 J -36374310.75 -36374310.64 -36374310.52 0.0269 0.0166  
 Mercury -104301-10-22 10:18 J -36374222.21 -36374222.07 -36374221.92 0.0269 0.0095  
 Mercury -104300-01-18 23:59 J -36374133.65 -36374133.50 -36374133.36 0.0270 0.0026  
 Mercury -104300-04-17 13:11 J -36374045.10 -36374044.95 -36374044.81 0.0270 0.0045  
 Mercury -104300-07-15 02:09 J -36373956.54 -36373956.41 -36373956.28 0.0270 0.0114  
 Mercury -104300-10-11 15:06 J -36373867.98 -36373867.87 -36373867.76 0.0271 0.0182  
 Mercury -104299-01-08 03:50 J -36373779.40 -36373779.34 -36373779.29 0.0271 0.0249  
 Venus -104297-06-09 00:14 J -36372896.57 -36372896.49 -36372896.38 0.0278 0.0245  
 Venus -104296-01-24 07:54 J -36372667.37 -36372667.17 -36372666.96 0.0279 0.0071  
 Venus -104296-09-10 16:18 J -36372438.01 -36372437.82 -36372437.63 0.0281 0.0109  
 Moon -104295-07-29 09:35 J -36372116.16 -36372116.10 -36372116.01 0.0284 0.0269  
 Earth -104295-07-29 11:45 J -36372116.04 -36372116.01 -36372115.95 0.0284 0.0277 \*  
 Moon -104294-08-10 23:45 J -36371738.61 -36371738.51 -36371738.40 0.0287 0.0255  
 Earth -104294-08-11 03:06 J -36371738.49 -36371738.37 -36371738.24 0.0287 0.0241 \*  
 Mars -104290-02-22 15:21 J -36370446.97 -36370446.86 -36370446.70 0.0293 0.0265  
 Mercury -104287-08-16 21:50 J -36369175.67 -36369175.59 -36369175.50 0.0291 0.0245  
 Mercury -104287-11-13 15:35 J -36369086.98 -36369086.85 -36369086.71 0.0291 0.0154  
 Mercury -104286-02-10 10:04 J -36368998.24 -36368998.08 -36368997.93 0.0290 0.0060  
 Mercury -104286-05-10 04:33 J -36368909.47 -36368909.31 -36368909.15 0.0290 0.0036  
 Mercury -104286-08-06 23:16 J -36368820.67 -36368820.53 -36368820.38 0.0289 0.0133  
 Mercury -104286-11-03 18:28 J -36368731.82 -36368731.73 -36368731.62 0.0289 0.0231  
 Venus -104283-04-08 11:30 J -36367845.12 -36367845.02 -36367844.93 0.0282 0.0252  
 Venus -104283-11-24 04:04 J -36367615.53 -36367615.33 -36367615.11 0.0281 0.0065  
 Venus -104282-07-11 20:23 J -36367385.84 -36367385.65 -36367385.46 0.0279 0.0121  
 Earth -104280-01-30 09:35 J -36366817.35 -36366817.10 -36366816.85 0.0275 0.0035  
 Moon -104280-01-30 12:57 J -36366817.21 -36366816.96 -36366816.71 0.0275 0.0023 \*  
 Mars -104278-04-12 00:14 J -36366015.50 -36366015.49 -36366015.45 0.0270 0.0269  
 Mars -104276-04-05 14:23 J -36365291.14 -36365290.90 -36365290.66 0.0267 0.0129

Mercury -104272-09-15 09:21 J -36363667.15 -36363667.11 -36363667.06 0.0268 0.0255  
 Mercury -104272-12-12 23:16 J -36363578.64 -36363578.53 -36363578.42 0.0269 0.0183  
 Mercury -104271-03-11 12:57 J -36363490.09 -36363489.96 -36363489.82 0.0269 0.0112  
 Mercury -104271-06-08 02:38 J -36363401.54 -36363401.39 -36363401.24 0.0270 0.0041  
 Mercury -104271-09-04 15:50 J -36363312.98 -36363312.84 -36363312.69 0.0270 0.0030  
 Mercury -104271-12-02 05:02 J -36363224.43 -36363224.29 -36363224.15 0.0270 0.0098  
 Mercury -104270-02-28 17:45 J -36363135.87 -36363135.76 -36363135.64 0.0271 0.0167  
 Mercury -104270-05-28 06:42 J -36363047.29 -36363047.22 -36363047.15 0.0271 0.0233  
 Venus -104268-12-20 07:40 J -36362110.30 -36362110.18 -36362110.04 0.0277 0.0215  
 Venus -104267-08-06 15:21 J -36361881.06 -36361880.86 -36361880.65 0.0279 0.0040  
 Venus -104266-03-23 23:30 J -36361651.70 -36361651.52 -36361651.34 0.0281 0.0140  
 Earth -104265-08-05 01:26 J -36361151.67 -36361151.44 -36361151.20 0.0285 0.0011  
 Moon -104265-08-05 05:02 J -36361151.53 -36361151.29 -36361151.05 0.0285 0.0023 \*  
 Mars -104262-04-02 05:30 J -36360181.52 -36360181.27 -36360180.99 0.0291 0.0151  
 Mercury -104257-01-03 21:21 J -36358443.64 -36358443.61 -36358443.55 0.0292 0.0277  
 Mercury -104257-04-01 15:21 J -36358354.98 -36358354.86 -36358354.74 0.0291 0.0185  
 Mercury -104257-06-29 09:21 J -36358266.26 -36358266.11 -36358265.96 0.0291 0.0092  
 Mercury -104257-09-26 03:50 J -36358177.51 -36358177.34 -36358177.18 0.0290 0.0008  
 Mercury -104257-12-23 22:33 J -36358088.72 -36358088.56 -36358088.41 0.0290 0.0099  
 Mercury -104256-03-22 17:30 J -36357999.89 -36357999.77 -36357999.65 0.0289 0.0196  
 Venus -104254-10-19 14:09 J -36357059.03 -36357058.91 -36357058.79 0.0282 0.0233  
 Venus -104253-06-05 06:28 J -36356829.44 -36356829.23 -36356829.01 0.0281 0.0045  
 Venus -104252-01-20 22:18 J -36356599.75 -36356599.57 -36356599.38 0.0279 0.0140  
 Moon -104251-01-24 07:40 J -36356231.33 -36356231.18 -36356231.01 0.0276 0.0213  
 Earth -104251-01-24 11:16 J -36356231.20 -36356231.03 -36356230.85 0.0276 0.0199 \*  
 Mars -104248-05-28 07:11 J -36355011.44 -36355011.20 -36355010.96 0.0269 0.0137  
 Mars -104246-05-22 06:42 J -36354287.30 -36354287.22 -36354287.12 0.0267 0.0251  
 Mercury -104242-05-01 23:30 J -36352846.60 -36352846.52 -36352846.41 0.0269 0.0211  
 Mercury -104242-07-29 13:40 J -36352758.06 -36352757.93 -36352757.80 0.0269 0.0138  
 Mercury -104242-10-26 03:06 J -36352669.51 -36352669.37 -36352669.22 0.0269 0.0068

Mercury -104241-01-22 16:33 J -36352580.96 -36352580.81 -36352580.66 0.0270 0.0006

Mercury -104241-04-20 05:45 J -36352492.40 -36352492.26 -36352492.12 0.0270 0.0073

Mercury -104241-07-17 18:42 J -36352403.84 -36352403.72 -36352403.59 0.0271 0.0141

Mercury -104241-10-14 07:26 J -36352315.27 -36352315.19 -36352315.09 0.0271 0.0209

Venus -104238-07-02 09:21 J -36351324.25 -36351324.11 -36351323.96 0.0278 0.0198

Venus -104237-02-16 17:02 J -36351095.00 -36351094.79 -36351094.58 0.0280 0.0022

Venus -104237-10-03 01:11 J -36350865.62 -36350865.45 -36350865.28 0.0282 0.0158

Moon -104236-07-30 13:26 J -36350565.09 -36350564.94 -36350564.78 0.0284 0.0213

Earth -104236-07-30 16:47 J -36350564.94 -36350564.80 -36350564.65 0.0284 0.0222 \*

Mars -104232-05-25 08:52 J -36349170.44 -36349170.13 -36349169.82 0.0293 0.0060

Mercury -104228-08-19 15:21 J -36347622.96 -36347622.86 -36347622.75 0.0291 0.0214

Mercury -104228-11-16 09:21 J -36347534.25 -36347534.11 -36347533.97 0.0291 0.0121

Mercury -104227-02-13 03:35 J -36347445.51 -36347445.35 -36347445.19 0.0290 0.0027

Mercury -104227-05-12 22:18 J -36347356.73 -36347356.57 -36347356.41 0.0290 0.0069

Mercury -104227-08-09 17:16 J -36347267.91 -36347267.78 -36347267.64 0.0289 0.0166

Mercury -104227-11-06 12:28 J -36347179.04 -36347178.98 -36347178.91 0.0289 0.0265

Venus -104224-04-30 19:54 J -36346272.81 -36346272.67 -36346272.52 0.0282 0.0206

Venus -104224-12-16 12:28 J -36346043.19 -36346042.98 -36346042.76 0.0280 0.0018

Venus -104223-08-03 04:33 J -36345813.48 -36345813.31 -36345813.14 0.0279 0.0168

Earth -104221-02-01 12:28 J -36345266.22 -36345265.98 -36345265.73 0.0275 0.0083

Moon -104221-02-01 15:06 J -36345266.12 -36345265.87 -36345265.61 0.0275 0.0071 \*

Mars -104218-07-15 00:14 J -36344006.77 -36344006.49 -36344006.21 0.0268 0.0002

Mercury -104213-09-18 02:23 J -36342114.47 -36342114.40 -36342114.31 0.0269 0.0227

Mercury -104213-12-15 16:33 J -36342025.94 -36342025.81 -36342025.69 0.0269 0.0155

Mercury -104212-03-14 05:59 J -36341937.39 -36341937.25 -36341937.10 0.0269 0.0083

Mercury -104212-06-10 19:40 J -36341848.83 -36341848.68 -36341848.54 0.0270 0.0015

Mercury -104212-09-07 08:52 J -36341760.28 -36341760.13 -36341759.99 0.0270 0.0058

Mercury -104212-12-04 21:50 J -36341671.72 -36341671.59 -36341671.46 0.0271 0.0126

Mercury -104211-03-03 10:47 J -36341583.15 -36341583.05 -36341582.95 0.0271 0.0194

Mercury -104211-05-30 23:30 J -36341494.56 -36341494.52 -36341494.49 0.0272 0.0261

Venus -104208-01-11 17:30 J -36340537.93 -36340537.77 -36340537.60 0.0278 0.0167  
 Venus -104208-08-29 01:26 J -36340308.65 -36340308.44 -36340308.23 0.0280 0.0011  
 Venus -104207-04-15 09:35 J -36340079.24 -36340079.10 -36340078.94 0.0281 0.0191  
 Moon -104206-08-07 08:09 J -36339600.39 -36339600.16 -36339599.92 0.0285 0.0082  
 Earth -104206-08-07 08:23 J -36339600.38 -36339600.15 -36339599.92 0.0285 0.0068 \*  
 Mars -104202-07-19 13:26 J -36338158.04 -36338157.94 -36338157.82 0.0293 0.0272  
 Mercury -104198-01-06 15:50 J -36336890.92 -36336890.84 -36336890.75 0.0291 0.0241  
 Mercury -104198-04-05 09:35 J -36336802.23 -36336802.10 -36336801.96 0.0291 0.0150  
 Mercury -104198-07-03 03:50 J -36336713.50 -36336713.34 -36336713.18 0.0290 0.0056  
 Mercury -104198-09-29 22:18 J -36336624.73 -36336624.57 -36336624.41 0.0290 0.0039  
 Mercury -104198-12-27 17:02 J -36336535.93 -36336535.79 -36336535.64 0.0289 0.0136  
 Mercury -104197-03-25 12:14 J -36336447.08 -36336446.99 -36336446.89 0.0289 0.0234  
 Venus -104195-11-11 00:14 J -36335486.65 -36335486.49 -36335486.32 0.0282 0.0184  
 Venus -104194-06-28 16:33 J -36335257.02 -36335256.81 -36335256.59 0.0280 0.0006  
 Venus -104193-02-13 08:09 J -36335027.31 -36335027.16 -36335027.00 0.0278 0.0189  
 Moon -104192-01-25 14:38 J -36334680.09 -36334679.89 -36334679.69 0.0276 0.0159  
 Earth -104192-01-25 16:47 J -36334680.01 -36334679.80 -36334679.58 0.0276 0.0146 \*  
 Mars -104190-09-05 08:52 J -36333727.16 -36333727.13 -36333727.08 0.0270 0.0267  
 Mars -104188-08-29 23:16 J -36333002.76 -36333002.53 -36333002.28 0.0267 0.0131  
 Mercury -104183-02-05 03:06 J -36331382.42 -36331382.37 -36331382.32 0.0268 0.0252  
 Mercury -104183-05-04 17:02 J -36331293.90 -36331293.79 -36331293.67 0.0269 0.0180  
 Mercury -104183-08-01 06:42 J -36331205.35 -36331205.22 -36331205.08 0.0269 0.0109  
 Mercury -104183-10-28 20:23 J -36331116.80 -36331116.65 -36331116.50 0.0270 0.0038  
 Mercury -104182-01-25 09:50 J -36331028.24 -36331028.09 -36331027.95 0.0270 0.0033  
 Mercury -104182-04-23 22:47 J -36330939.68 -36330939.55 -36330939.41 0.0270 0.0102  
 Mercury -104182-07-21 11:45 J -36330851.12 -36330851.01 -36330850.89 0.0271 0.0170  
 Mercury -104182-10-18 00:28 J -36330762.54 -36330762.48 -36330762.41 0.0271 0.0238  
 Venus -104179-07-24 19:40 J -36329751.85 -36329751.68 -36329751.50 0.0278 0.0149  
 Venus -104178-03-11 03:35 J -36329522.56 -36329522.35 -36329522.14 0.0280 0.0030  
 Venus -104178-10-26 11:59 J -36329293.13 -36329293.00 -36329292.86 0.0282 0.0211

Earth -104177-08-01 00:28 J -36329013.67 -36329013.48 -36329013.28 0.0284 0.0163  
 Moon -104177-08-01 00:57 J -36329013.65 -36329013.46 -36329013.26 0.0284 0.0153 \*  
 Mars -104174-08-26 22:33 J -36327892.83 -36327892.56 -36327892.28 0.0291 0.0136  
 Mercury -104169-05-25 16:04 J -36326158.88 -36326158.83 -36326158.77 0.0291 0.0269  
 Mercury -104169-08-22 09:50 J -36326070.21 -36326070.09 -36326069.97 0.0291 0.0178  
 Mercury -104169-11-19 03:50 J -36325981.49 -36325981.34 -36325981.18 0.0290 0.0085  
 Mercury -104168-02-15 22:18 J -36325892.73 -36325892.57 -36325892.41 0.0290 0.0010  
 Mercury -104168-05-15 17:02 J -36325803.94 -36325803.79 -36325803.64 0.0289 0.0107  
 Mercury -104168-08-12 12:14 J -36325715.11 -36325714.99 -36325714.88 0.0289 0.0204  
 Venus -104165-05-23 06:28 J -36324700.40 -36324700.23 -36324700.05 0.0282 0.0156  
 Venus -104164-01-07 22:47 J -36324470.76 -36324470.55 -36324470.33 0.0280 0.0033  
 Venus -104164-08-25 14:23 J -36324241.02 -36324240.90 -36324240.76 0.0278 0.0217  
 Moon -104162-02-02 16:18 J -36323715.05 -36323714.82 -36323714.58 0.0274 0.0126  
 Earth -104162-02-02 18:14 J -36323714.96 -36323714.74 -36323714.51 0.0274 0.0135 \*  
 Mars -104160-10-22 08:09 J -36322722.39 -36322722.16 -36322721.90 0.0269 0.0127  
 Mars -104158-10-16 10:04 J -36321998.12 -36321998.08 -36321998.03 0.0267 0.0263  
 Mercury -104154-06-25 05:59 J -36320650.25 -36320650.25 -36320650.24 0.0269 0.0268  
 Mercury -104154-09-21 19:54 J -36320561.76 -36320561.67 -36320561.56 0.0269 0.0196  
 Mercury -104154-12-19 09:50 J -36320473.22 -36320473.09 -36320472.95 0.0270 0.0124  
 Mercury -104153-03-16 23:30 J -36320384.67 -36320384.52 -36320384.37 0.0270 0.0053  
 Mercury -104153-06-13 12:57 J -36320296.11 -36320295.96 -36320295.81 0.0270 0.0018  
 Mercury -104153-09-10 02:09 J -36320207.55 -36320207.41 -36320207.27 0.0271 0.0088  
 Mercury -104153-12-07 15:06 J -36320118.99 -36320118.87 -36320118.75 0.0271 0.0156  
 Mercury -104152-03-06 03:50 J -36320030.41 -36320030.34 -36320030.26 0.0272 0.0224  
 Venus -104149-02-04 05:02 J -36318965.48 -36318965.29 -36318965.10 0.0278 0.0116  
 Venus -104149-09-20 12:57 J -36318736.16 -36318735.96 -36318735.76 0.0280 0.0063  
 Venus -104148-05-07 21:35 J -36318506.70 -36318506.60 -36318506.50 0.0282 0.0245  
 Moon -104147-08-08 14:23 J -36318049.09 -36318048.90 -36318048.69 0.0285 0.0147  
 Earth -104147-08-08 17:59 J -36318048.95 -36318048.75 -36318048.53 0.0285 0.0131 \*  
 Mars -104144-10-20 00:14 J -36316880.79 -36316880.49 -36316880.18 0.0292 0.0074



Mercury -104139-01-09 10:47 J -36315338.16 -36315338.05 -36315337.93 0.0291 0.0203  
 Mercury -104139-04-08 04:47 J -36315249.45 -36315249.30 -36315249.15 0.0290 0.0110  
 Mercury -104139-07-05 23:02 J -36315160.70 -36315160.54 -36315160.38 0.0290 0.0017  
 Mercury -104139-10-02 17:45 J -36315071.92 -36315071.76 -36315071.60 0.0290 0.0080  
 Mercury -104139-12-30 12:42 J -36314983.10 -36314982.97 -36314982.84 0.0289 0.0177  
 Mercury -104138-03-29 07:54 J -36314894.21 -36314894.17 -36314894.12 0.0288 0.0275  
 Venus -104136-12-03 12:28 J -36313914.17 -36313913.98 -36313913.79 0.0281 0.0132  
 Venus -104135-07-21 04:33 J -36313684.52 -36313684.31 -36313684.10 0.0280 0.0056  
 Venus -104134-03-07 19:54 J -36313454.77 -36313454.67 -36313454.56 0.0278 0.0240  
 Earth -104133-01-28 01:26 J -36313128.67 -36313128.44 -36313128.19 0.0276 0.0088  
 Moon -104133-01-28 03:35 J -36313128.58 -36313128.35 -36313128.12 0.0276 0.0100 \*  
 Mars -104130-12-08 16:18 J -36311718.10 -36311717.82 -36311717.54 0.0268 0.0007  
 Mercury -104124-02-07 20:52 J -36309829.71 -36309829.63 -36309829.54 0.0269 0.0220  
 Mercury -104124-05-07 10:47 J -36309741.17 -36309741.05 -36309740.92 0.0269 0.0148  
 Mercury -104124-08-04 00:28 J -36309652.62 -36309652.48 -36309652.33 0.0269 0.0077  
 Mercury -104124-10-31 13:54 J -36309564.06 -36309563.92 -36309563.77 0.0270 0.0010  
 Mercury -104123-01-28 03:21 J -36309475.51 -36309475.36 -36309475.22 0.0270 0.0064  
 Mercury -104123-04-26 16:18 J -36309386.94 -36309386.82 -36309386.69 0.0271 0.0133  
 Mercury -104123-07-24 05:02 J -36309298.38 -36309298.29 -36309298.18 0.0271 0.0201  
 Mercury -104123-10-20 17:45 J -36309209.77 -36309209.76 -36309209.73 0.0272 0.0268  
 Venus -104121-12-29 23:45 J -36308408.53 -36308408.51 -36308408.46 0.0277 0.0273  
 Venus -104120-08-16 07:26 J -36308179.38 -36308179.19 -36308178.99 0.0279 0.0097  
 Venus -104119-04-02 15:35 J -36307950.05 -36307949.85 -36307949.65 0.0281 0.0084  
 Venus -104119-11-18 00:14 J -36307720.55 -36307720.49 -36307720.42 0.0282 0.0266  
 Earth -104118-08-03 10:33 J -36307462.28 -36307462.06 -36307461.84 0.0284 0.0100  
 Moon -104118-08-03 13:54 J -36307462.14 -36307461.92 -36307461.70 0.0284 0.0087 \*  
 Mars -104114-12-13 15:21 J -36305868.89 -36305868.86 -36305868.80 0.0293 0.0290  
 Mercury -104110-05-29 11:02 J -36304606.13 -36304606.04 -36304605.94 0.0291 0.0230  
 Mercury -104110-08-26 05:02 J -36304517.43 -36304517.29 -36304517.15 0.0291 0.0138  
 Mercury -104110-11-22 23:16 J -36304428.69 -36304428.53 -36304428.37 0.0290 0.0044

Mercury -104109-02-19 17:45 J -36304339.92 -36304339.76 -36304339.60 0.0290 0.0051  
 Mercury -104109-05-18 12:42 J -36304251.11 -36304250.97 -36304250.83 0.0289 0.0148  
 Mercury -104109-08-15 07:40 J -36304162.25 -36304162.18 -36304162.09 0.0289 0.0247  
 Venus -104106-06-15 18:57 J -36303127.90 -36303127.71 -36303127.50 0.0281 0.0104  
 Venus -104105-01-31 11:16 J -36302898.24 -36302898.03 -36302897.83 0.0279 0.0085  
 Venus -104105-09-17 02:23 J -36302668.44 -36302668.40 -36302668.33 0.0278 0.0269  
 Moon -104103-02-03 23:16 J -36302163.71 -36302163.53 -36302163.33 0.0274 0.0183  
 Earth -104103-02-04 03:06 J -36302163.55 -36302163.37 -36302163.18 0.0274 0.0191 \*  
 Mars -104101-01-30 13:26 J -36301438.01 -36301437.94 -36301437.84 0.0270 0.0256  
 Mars -104099-01-24 05:45 J -36300713.48 -36300713.26 -36300713.02 0.0268 0.0143  
 Mercury -104095-06-27 23:45 J -36299097.57 -36299097.51 -36299097.43 0.0269 0.0237  
 Mercury -104095-09-24 13:54 J -36299009.04 -36299008.92 -36299008.80 0.0270 0.0164  
 Mercury -104095-12-22 03:35 J -36298920.49 -36298920.35 -36298920.20 0.0270 0.0092  
 Mercury -104094-03-20 17:16 J -36298831.93 -36298831.78 -36298831.63 0.0270 0.0021  
 Mercury -104094-06-17 06:28 J -36298743.37 -36298743.23 -36298743.08 0.0271 0.0050  
 Mercury -104094-09-13 19:40 J -36298654.81 -36298654.68 -36298654.55 0.0271 0.0119  
 Mercury -104094-12-11 08:38 J -36298566.24 -36298566.14 -36298566.04 0.0272 0.0188  
 Mercury -104093-03-08 21:21 J -36298477.66 -36298477.61 -36298477.56 0.0272 0.0255  
 Venus -104091-07-12 09:35 J -36297622.19 -36297622.10 -36297621.99 0.0277 0.0241  
 Venus -104090-02-26 17:30 J -36297392.98 -36297392.77 -36297392.57 0.0279 0.0064  
 Venus -104090-10-14 01:40 J -36297163.62 -36297163.43 -36297163.24 0.0281 0.0118  
 Moon -104088-08-10 04:18 J -36296497.47 -36296497.32 -36296497.17 0.0286 0.0213  
 Earth -104088-08-10 05:45 J -36296497.42 -36296497.26 -36296497.08 0.0286 0.0198 \*  
 Mars -104085-01-22 02:52 J -36295602.66 -36295602.38 -36295602.09 0.0291 0.0116  
 Mercury -104081-10-15 13:11 J -36293874.03 -36293873.95 -36293873.87 0.0291 0.0250  
 Mercury -104080-01-12 06:42 J -36293785.34 -36293785.22 -36293785.08 0.0291 0.0160  
 Mercury -104080-04-11 00:57 J -36293696.62 -36293696.46 -36293696.30 0.0290 0.0066  
 Mercury -104080-07-08 19:26 J -36293607.85 -36293607.69 -36293607.53 0.0290 0.0030  
 Mercury -104080-10-05 14:09 J -36293519.06 -36293518.91 -36293518.76 0.0289 0.0125  
 Mercury -104079-01-02 09:06 J -36293430.22 -36293430.12 -36293430.01 0.0289 0.0223

Venus -104077-05-10 10:18 J -36292571.13 -36292571.07 -36292571.00 0.0283 0.0267  
 Venus -104077-12-26 02:38 J -36292341.59 -36292341.39 -36292341.18 0.0281 0.0077  
 Venus -104076-08-12 18:28 J -36292111.93 -36292111.73 -36292111.53 0.0279 0.0111  
 Earth -104074-01-29 13:26 J -36291577.20 -36291576.94 -36291576.69 0.0275 0.0025  
 Moon -104074-01-29 17:16 J -36291577.04 -36291576.78 -36291576.53 0.0275 0.0037 \*  
 Mars -104071-03-18 06:28 J -36290433.47 -36290433.23 -36290432.97 0.0269 0.0117  
 Mercury -104066-11-15 00:57 J -36288365.49 -36288365.46 -36288365.42 0.0269 0.0260  
 Mercury -104065-02-11 15:06 J -36288276.98 -36288276.87 -36288276.76 0.0269 0.0187  
 Mercury -104065-05-10 04:47 J -36288188.43 -36288188.30 -36288188.16 0.0269 0.0115  
 Mercury -104065-08-06 18:28 J -36288099.88 -36288099.73 -36288099.58 0.0270 0.0044  
 Mercury -104065-11-03 07:54 J -36288011.32 -36288011.17 -36288011.02 0.0270 0.0027  
 Mercury -104064-01-30 21:06 J -36287922.76 -36287922.62 -36287922.48 0.0271 0.0096  
 Mercury -104064-04-29 10:04 J -36287834.19 -36287834.08 -36287833.97 0.0271 0.0165  
 Mercury -104064-07-26 22:47 J -36287745.62 -36287745.55 -36287745.47 0.0272 0.0233  
 Venus -104061-01-22 12:28 J -36286836.10 -36286835.98 -36286835.85 0.0278 0.0221  
 Venus -104061-09-07 20:23 J -36286606.86 -36286606.65 -36286606.45 0.0279 0.0043  
 Venus -104060-04-25 04:47 J -36286377.48 -36286377.30 -36286377.12 0.0281 0.0140  
 Earth -104059-08-04 22:18 J -36285910.81 -36285910.57 -36285910.34 0.0285 0.0033  
 Moon -104059-08-05 00:14 J -36285910.73 -36285910.49 -36285910.25 0.0285 0.0021 \*  
 Mars -104055-03-16 08:38 J -36284591.43 -36284591.14 -36284590.84 0.0292 0.0097  
 Mercury -104051-03-04 13:11 J -36283141.98 -36283141.95 -36283141.90 0.0291 0.0279  
 Mercury -104051-06-01 06:57 J -36283053.33 -36283053.21 -36283053.09 0.0291 0.0188  
 Mercury -104051-08-29 00:57 J -36282964.61 -36282964.46 -36282964.31 0.0290 0.0095  
 Mercury -104051-11-25 19:11 J -36282875.86 -36282875.70 -36282875.54 0.0290 0.0005  
 Mercury -104050-02-22 13:54 J -36282787.07 -36282786.92 -36282786.77 0.0289 0.0096  
 Mercury -104050-05-22 08:52 J -36282698.25 -36282698.13 -36282698.00 0.0289 0.0193  
 Venus -104048-11-20 16:18 J -36281784.92 -36281784.82 -36281784.70 0.0282 0.0239  
 Venus -104047-07-08 09:06 J -36281555.34 -36281555.12 -36281554.91 0.0280 0.0049  
 Venus -104046-02-23 00:42 J -36281325.65 -36281325.47 -36281325.27 0.0279 0.0140  
 Moon -104045-01-23 19:40 J -36280990.75 -36280990.68 -36280990.59 0.0276 0.0259

Earth -104045-01-23 23:30 J -36280990.63 -36280990.52 -36280990.41 0.0276 0.0246 \*  
 Moon -104044-02-05 13:54 J -36280612.02 -36280611.92 -36280611.80 0.0274 0.0245  
 Earth -104044-02-05 14:09 J -36280611.99 -36280611.91 -36280611.79 0.0274 0.0252 \*  
 Mars -104041-05-03 23:59 J -36279428.77 -36279428.50 -36279428.22 0.0268 0.0022  
 Mercury -104036-06-30 17:59 J -36277544.85 -36277544.75 -36277544.65 0.0270 0.0203  
 Mercury -104036-09-27 07:54 J -36277456.30 -36277456.17 -36277456.04 0.0270 0.0130  
 Mercury -104036-12-24 21:35 J -36277367.74 -36277367.60 -36277367.45 0.0270 0.0059  
 Mercury -104035-03-23 11:02 J -36277279.19 -36277279.04 -36277278.89 0.0271 0.0013  
 Mercury -104035-06-20 00:14 J -36277190.63 -36277190.49 -36277190.35 0.0271 0.0083  
 Mercury -104035-09-16 13:26 J -36277102.06 -36277101.94 -36277101.82 0.0272 0.0151  
 Mercury -104035-12-14 02:09 J -36277013.49 -36277013.41 -36277013.32 0.0272 0.0220  
 Venus -104032-08-03 22:18 J -36276049.72 -36276049.57 -36276049.42 0.0278 0.0189  
 Venus -104031-03-21 06:28 J -36275820.44 -36275820.23 -36275820.03 0.0280 0.0011  
 Venus -104031-11-05 14:38 J -36275591.04 -36275590.89 -36275590.72 0.0281 0.0175  
 Moon -104030-07-31 00:57 J -36275323.57 -36275323.46 -36275323.33 0.0283 0.0238  
 Earth -104030-07-31 03:21 J -36275323.47 -36275323.36 -36275323.23 0.0283 0.0244 \*  
 Earth -104029-08-11 18:14 J -36274945.82 -36274945.74 -36274945.65 0.0286 0.0265  
 Moon -104029-08-11 20:23 J -36274945.67 -36274945.65 -36274945.59 0.0286 0.0281 \*  
 Mercury -104022-10-19 09:21 J -36272321.22 -36272321.11 -36272321.00 0.0291 0.0206  
 Mercury -104021-01-16 03:21 J -36272232.51 -36272232.36 -36272232.22 0.0290 0.0114  
 Mercury -104021-04-13 21:35 J -36272143.76 -36272143.60 -36272143.44 0.0290 0.0021  
 Mercury -104021-07-11 16:04 J -36272054.99 -36272054.83 -36272054.67 0.0289 0.0076  
 Mercury -104021-10-08 11:02 J -36271966.17 -36271966.04 -36271965.91 0.0289 0.0173  
 Mercury -104020-01-05 05:59 J -36271877.29 -36271877.25 -36271877.19 0.0288 0.0271  
 Venus -104018-06-03 01:40 J -36270998.56 -36270998.43 -36270998.28 0.0282 0.0211  
 Venus -104017-01-18 17:59 J -36270768.96 -36270768.75 -36270768.53 0.0280 0.0020  
 Venus -104017-09-04 09:35 J -36270539.27 -36270539.10 -36270538.93 0.0279 0.0168  
 Moon -104015-01-31 03:35 J -36270025.62 -36270025.35 -36270025.09 0.0275 0.0032  
 Earth -104015-01-31 03:21 J -36270025.61 -36270025.36 -36270025.10 0.0275 0.0042 \*  
 Mars -104013-06-25 19:11 J -36269148.81 -36269148.70 -36269148.56 0.0270 0.0241

**Mars -104011-06-20 08:38 J -36268424.36 -36268424.14 -36268423.91 0.0267 0.0154**  
**Mercury -104007-11-17 19:26 J -36266812.78 -36266812.69 -36266812.61 0.0269 0.0225**  
**Mercury -104006-02-14 09:06 J -36266724.24 -36266724.12 -36266723.99 0.0269 0.0153**  
**Mercury -104006-05-13 23:02 J -36266635.68 -36266635.54 -36266635.40 0.0269 0.0081**  
**Mercury -104006-08-10 12:28 J -36266547.13 -36266546.98 -36266546.83 0.0270 0.0011**  
**Mercury -104006-11-07 01:54 J -36266458.57 -36266458.42 -36266458.28 0.0270 0.0060**  
**Mercury -104005-02-03 14:52 J -36266370.00 -36266369.88 -36266369.75 0.0271 0.0129**  
**Mercury -104005-05-02 03:50 J -36266281.44 -36266281.34 -36266281.24 0.0271 0.0197**  
**Mercury -104005-07-29 16:33 J -36266192.84 -36266192.81 -36266192.78 0.0272 0.0265**  
**Venus -104002-02-14 01:11 J -36265263.61 -36265263.45 -36265263.28 0.0278 0.0168**  
**Venus -104002-10-01 09:21 J -36265034.32 -36265034.11 -36265033.90 0.0280 0.0012**  
**Venus -104001-05-17 17:59 J -36264804.90 -36264804.75 -36264804.60 0.0282 0.0196**

# 104TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 104th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
<b>Moon</b>	<b>-104000-08-06 08:23 J</b>	<b>-36264359.39</b>	<b>-36264359.15</b>	<b>-36264358.91</b>	<b>0.0285</b>	<b>0.0048</b>		
<b>Earth</b>	<b>-104000-08-06 10:33 J</b>	<b>-36264359.29</b>	<b>-36264359.06</b>	<b>-36264358.82</b>	<b>0.0285</b>	<b>0.0035</b>	<b>*</b>	
<b>Mars</b>	<b>-103997-06-17 11:59 J</b>	<b>-36263313.29</b>	<b>-36263313.00</b>	<b>-36263312.70</b>	<b>0.0291</b>	<b>0.0092</b>		
<b>Mercury</b>	<b>-103992-03-07 09:35 J</b>	<b>-36261589.19</b>	<b>-36261589.10</b>	<b>-36261589.01</b>	<b>0.0291</b>	<b>0.0234</b>		

Mercury -103992-06-04 03:21 J -36261500.50 -36261500.36 -36261500.23 0.0291 0.0143  
 Mercury -103992-08-31 21:21 J -36261411.77 -36261411.61 -36261411.45 0.0290 0.0049  
 Mercury -103992-11-28 15:50 J -36261323.00 -36261322.84 -36261322.68 0.0290 0.0046  
 Mercury -103991-02-25 10:33 J -36261234.20 -36261234.06 -36261233.91 0.0289 0.0143  
 Mercury -103991-05-25 05:45 J -36261145.34 -36261145.26 -36261145.17 0.0289 0.0241  
 Venus -103989-12-13 07:26 J -36260212.34 -36260212.19 -36260212.02 0.0282 0.0183  
 Venus -103988-07-30 23:59 J -36259982.71 -36259982.50 -36259982.28 0.0280 0.0009  
 Venus -103987-03-17 15:35 J -36259753.00 -36259752.85 -36259752.69 0.0278 0.0196  
 Earth -103986-01-25 12:57 J -36259439.14 -36259438.96 -36259438.76 0.0276 0.0179  
 Moon -103986-01-25 13:40 J -36259439.10 -36259438.93 -36259438.75 0.0276 0.0190 \*  
 Mars -103983-08-12 17:02 J -36258144.05 -36258143.79 -36258143.53 0.0269 0.0102  
 Mercury -103977-04-05 22:04 J -36256080.64 -36256080.58 -36256080.51 0.0269 0.0242  
 Mercury -103977-07-03 12:14 J -36255992.11 -36255991.99 -36255991.87 0.0270 0.0169  
 Mercury -103977-09-30 01:54 J -36255903.56 -36255903.42 -36255903.28 0.0270 0.0097  
 Mercury -103977-12-27 15:35 J -36255815.00 -36255814.85 -36255814.70 0.0271 0.0025  
 Mercury -103976-03-26 05:02 J -36255726.44 -36255726.29 -36255726.15 0.0271 0.0045  
 Mercury -103976-06-22 17:59 J -36255637.88 -36255637.75 -36255637.61 0.0271 0.0115  
 Mercury -103976-09-19 06:57 J -36255549.31 -36255549.21 -36255549.10 0.0272 0.0184  
 Mercury -103976-12-16 19:54 J -36255460.72 -36255460.67 -36255460.62 0.0272 0.0251  
 Venus -103973-08-26 10:47 J -36254477.22 -36254477.05 -36254476.86 0.0279 0.0137  
 Venus -103972-04-12 19:11 J -36254247.90 -36254247.70 -36254247.49 0.0280 0.0046  
 Venus -103972-11-28 04:04 J -36254018.44 -36254018.33 -36254018.21 0.0282 0.0231  
 Earth -103971-08-01 15:21 J -36253772.04 -36253771.86 -36253771.67 0.0284 0.0176  
 Moon -103971-08-01 17:02 J -36253771.97 -36253771.79 -36253771.60 0.0284 0.0168 \*  
 Mars -103967-08-12 00:28 J -36252300.76 -36252300.48 -36252300.19 0.0292 0.0123  
 Mercury -103963-07-25 11:59 J -36250857.07 -36250857.00 -36250856.91 0.0291 0.0251  
 Mercury -103963-10-22 05:45 J -36250768.39 -36250768.26 -36250768.12 0.0290 0.0160  
 Mercury -103962-01-18 23:59 J -36250679.66 -36250679.50 -36250679.35 0.0290 0.0067  
 Mercury -103962-04-17 18:14 J -36250590.90 -36250590.74 -36250590.58 0.0290 0.0028  
 Mercury -103962-07-15 12:57 J -36250502.11 -36250501.96 -36250501.81 0.0289 0.0124

Mercury -103962-10-12 08:09 J -36250413.27 -36250413.16 -36250413.06 0.0289 0.0222  
 Venus -103959-06-25 17:59 J -36249425.93 -36249425.75 -36249425.57 0.0282 0.0152  
 Venus -103958-02-10 09:50 J -36249196.30 -36249196.09 -36249195.87 0.0280 0.0039  
 Venus -103958-09-28 00:57 J -36248966.57 -36248966.46 -36248966.32 0.0278 0.0226  
 Moon -103956-02-01 14:38 J -36248474.13 -36248473.89 -36248473.65 0.0275 0.0102  
 Earth -103956-02-01 18:28 J -36248473.96 -36248473.73 -36248473.49 0.0275 0.0110 \*  
 Mars -103953-09-28 09:21 J -36247139.38 -36247139.11 -36247138.83 0.0268 0.0037  
 Mercury -103948-08-23 23:30 J -36245348.54 -36245348.52 -36245348.49 0.0269 0.0263  
 Mercury -103948-11-20 13:40 J -36245260.03 -36245259.93 -36245259.82 0.0269 0.0190  
 Mercury -103947-02-17 03:35 J -36245171.49 -36245171.35 -36245171.22 0.0269 0.0118  
 Mercury -103947-05-16 17:02 J -36245082.93 -36245082.79 -36245082.64 0.0270 0.0048  
 Mercury -103947-08-13 06:28 J -36244994.37 -36244994.23 -36244994.08 0.0270 0.0025  
 Mercury -103947-11-09 19:40 J -36244905.81 -36244905.68 -36244905.54 0.0271 0.0094  
 Mercury -103946-02-06 08:52 J -36244817.25 -36244817.13 -36244817.02 0.0271 0.0162  
 Mercury -103946-05-05 21:35 J -36244728.67 -36244728.60 -36244728.52 0.0271 0.0230  
 Venus -103943-03-08 14:09 J -36243691.10 -36243690.91 -36243690.72 0.0279 0.0115  
 Venus -103943-10-23 22:18 J -36243461.77 -36243461.57 -36243461.37 0.0280 0.0068  
 Venus -103942-06-10 06:57 J -36243232.30 -36243232.21 -36243232.11 0.0282 0.0252  
 Moon -103941-08-07 18:57 J -36242807.92 -36242807.71 -36242807.49 0.0285 0.0115  
 Earth -103941-08-07 22:18 J -36242807.79 -36242807.57 -36242807.34 0.0285 0.0101 \*  
 Mars -103939-09-19 23:30 J -36242034.60 -36242034.52 -36242034.39 0.0290 0.0273  
 Mercury -103934-12-12 11:59 J -36240125.04 -36240125.00 -36240124.96 0.0291 0.0281  
 Mercury -103933-03-10 05:30 J -36240036.38 -36240036.27 -36240036.15 0.0291 0.0190  
 Mercury -103933-06-06 23:30 J -36239947.67 -36239947.52 -36239947.37 0.0290 0.0098  
 Mercury -103933-09-03 17:45 J -36239858.92 -36239858.76 -36239858.60 0.0290 0.0004  
 Mercury -103933-12-01 12:28 J -36239770.14 -36239769.98 -36239769.83 0.0289 0.0093  
 Mercury -103932-02-28 07:26 J -36239681.31 -36239681.19 -36239681.07 0.0289 0.0190  
 Mercury -103932-05-28 02:38 J -36239592.39 -36239592.39 -36239592.38 0.0288 0.0288  
 Venus -103929-01-05 23:02 J -36238639.73 -36238639.54 -36238639.35 0.0281 0.0125  
 Venus -103929-08-22 15:06 J -36238410.08 -36238409.87 -36238409.66 0.0279 0.0066

Venus -103928-04-09 06:28 J -36238180.31 -36238180.23 -36238180.13 0.0278 0.0252  
 Earth -103927-01-27 03:06 J -36237887.60 -36237887.37 -36237887.14 0.0276 0.0112  
 Moon -103927-01-27 06:42 J -36237887.43 -36237887.22 -36237886.98 0.0276 0.0122 \*  
 Mars -103925-11-20 05:30 J -36236859.41 -36236859.27 -36236859.11 0.0270 0.0226  
 Mars -103923-11-14 19:11 J -36236134.91 -36236134.70 -36236134.48 0.0268 0.0169  
 Mercury -103918-04-09 16:04 J -36234527.92 -36234527.83 -36234527.73 0.0270 0.0209  
 Mercury -103918-07-07 06:14 J -36234439.37 -36234439.24 -36234439.11 0.0270 0.0136  
 Mercury -103918-10-03 19:54 J -36234350.82 -36234350.67 -36234350.53 0.0270 0.0064  
 Mercury -103918-12-31 09:21 J -36234262.26 -36234262.11 -36234261.96 0.0271 0.0007  
 Mercury -103917-03-28 22:33 J -36234173.70 -36234173.56 -36234173.41 0.0271 0.0078  
 Mercury -103917-06-25 11:45 J -36234085.13 -36234085.01 -36234084.89 0.0272 0.0147  
 Mercury -103917-09-22 00:28 J -36233996.56 -36233996.48 -36233996.38 0.0272 0.0215  
 Venus -103914-02-01 14:52 J -36233133.93 -36233133.88 -36233133.81 0.0278 0.0264  
 Venus -103914-09-18 22:47 J -36232904.74 -36232904.55 -36232904.35 0.0279 0.0085  
 Venus -103913-05-05 07:26 J -36232675.38 -36232675.19 -36232674.99 0.0281 0.0100  
 Earth -103912-08-03 01:40 J -36232220.64 -36232220.43 -36232220.21 0.0284 0.0112  
 Moon -103912-08-03 05:16 J -36232220.50 -36232220.28 -36232220.05 0.0284 0.0101 \*  
 Mars -103909-11-13 00:57 J -36231022.76 -36231022.46 -36231022.16 0.0291 0.0066  
 Mercury -103904-07-28 08:23 J -36229304.26 -36229304.15 -36229304.04 0.0291 0.0206  
 Mercury -103904-10-25 02:09 J -36229215.55 -36229215.41 -36229215.26 0.0290 0.0115  
 Mercury -103903-01-21 20:23 J -36229126.81 -36229126.65 -36229126.49 0.0290 0.0021  
 Mercury -103903-04-20 14:52 J -36229038.03 -36229037.88 -36229037.72 0.0289 0.0076  
 Mercury -103903-07-18 09:50 J -36228949.22 -36228949.09 -36228948.96 0.0289 0.0172  
 Mercury -103903-10-15 05:02 J -36228860.34 -36228860.29 -36228860.23 0.0288 0.0270  
 Venus -103900-07-18 09:50 J -36227853.29 -36227853.09 -36227852.89 0.0281 0.0093  
 Venus -103899-03-05 01:40 J -36227623.63 -36227623.43 -36227623.22 0.0279 0.0097  
 Moon -103897-02-04 07:26 J -36226922.38 -36226922.19 -36226921.99 0.0274 0.0171  
 Earth -103897-02-04 09:21 J -36226922.29 -36226922.11 -36226921.91 0.0274 0.0177 \*  
 Mars -103894-01-07 06:28 J -36225854.49 -36225854.23 -36225853.96 0.0269 0.0083  
 Mercury -103889-08-26 17:45 J -36223795.83 -36223795.76 -36223795.68 0.0269 0.0229



Mercury -103889-11-23 07:54 J -36223707.30 -36223707.17 -36223707.05 0.0269 0.0156

Mercury -103888-02-19 21:35 J -36223618.74 -36223618.60 -36223618.46 0.0269 0.0085

Mercury -103888-05-19 11:02 J -36223530.19 -36223530.04 -36223529.89 0.0270 0.0015

Mercury -103888-08-16 00:28 J -36223441.63 -36223441.48 -36223441.34 0.0270 0.0057

Mercury -103888-11-12 13:26 J -36223353.06 -36223352.94 -36223352.81 0.0271 0.0126

Mercury -103887-02-09 02:23 J -36223264.50 -36223264.40 -36223264.30 0.0271 0.0194

Mercury -103887-05-08 15:06 J -36223175.90 -36223175.87 -36223175.83 0.0272 0.0261

Venus -103885-08-13 18:14 J -36222347.84 -36222347.74 -36222347.64 0.0277 0.0242

Venus -103884-03-31 02:09 J -36222118.61 -36222118.41 -36222118.21 0.0279 0.0062

Venus -103884-11-15 10:18 J -36221889.25 -36221889.07 -36221888.88 0.0281 0.0122

Earth -103882-08-10 08:23 J -36221256.33 -36221256.15 -36221255.94 0.0286 0.0166

Moon -103882-08-10 08:38 J -36221256.31 -36221256.14 -36221255.96 0.0286 0.0181 \*

Mars -103878-01-06 02:52 J -36220011.65 -36220011.38 -36220011.10 0.0293 0.0145

Mercury -103875-12-15 07:54 J -36218572.26 -36218572.17 -36218572.09 0.0291 0.0239

Mercury -103874-03-14 01:26 J -36218483.57 -36218483.44 -36218483.30 0.0291 0.0147

Mercury -103874-06-10 19:40 J -36218394.84 -36218394.68 -36218394.53 0.0290 0.0054

Mercury -103874-09-07 13:54 J -36218306.08 -36218305.92 -36218305.75 0.0290 0.0043

Mercury -103874-12-05 08:52 J -36218217.28 -36218217.13 -36218216.99 0.0289 0.0138

Mercury -103873-03-03 03:50 J -36218128.43 -36218128.34 -36218128.24 0.0289 0.0236

Venus -103871-06-12 20:52 J -36217296.69 -36217296.63 -36217296.54 0.0283 0.0263

Venus -103870-01-28 13:54 J -36217067.13 -36217066.92 -36217066.72 0.0281 0.0069

Venus -103870-09-15 05:45 J -36216837.45 -36216837.26 -36216837.06 0.0279 0.0122

Earth -103868-01-28 16:33 J -36216336.06 -36216335.81 -36216335.56 0.0275 0.0046

Moon -103868-01-28 18:14 J -36216335.99 -36216335.74 -36216335.48 0.0275 0.0055 \*

Mars -103864-02-22 16:47 J -36214850.07 -36214849.80 -36214849.53 0.0268 0.0051

Mercury -103859-01-13 19:54 J -36213063.72 -36213063.67 -36213063.61 0.0269 0.0248

Mercury -103859-04-12 10:04 J -36212975.19 -36212975.08 -36212974.96 0.0270 0.0175

Mercury -103859-07-09 23:59 J -36212886.64 -36212886.50 -36212886.36 0.0270 0.0103

Mercury -103859-10-06 13:40 J -36212798.08 -36212797.93 -36212797.79 0.0270 0.0033

Mercury -103858-01-03 02:52 J -36212709.52 -36212709.38 -36212709.23 0.0271 0.0039

Mercury -103858-04-01 16:04 J -36212620.96 -36212620.83 -36212620.69 0.0271 0.0109

Mercury -103858-06-29 05:02 J -36212532.39 -36212532.29 -36212532.17 0.0272 0.0178

Mercury -103858-09-25 17:59 J -36212443.81 -36212443.75 -36212443.69 0.0272 0.0245

Venus -103855-02-24 01:54 J -36211561.55 -36211561.42 -36211561.28 0.0278 0.0215

Venus -103855-10-11 10:04 J -36211332.29 -36211332.08 -36211331.87 0.0280 0.0034

Venus -103854-05-28 18:28 J -36211102.90 -36211102.73 -36211102.55 0.0281 0.0152

Moon -103853-08-04 10:18 J -36210669.31 -36210669.07 -36210668.83 0.0285 0.0036

Earth -103853-08-04 10:18 J -36210669.30 -36210669.07 -36210668.84 0.0285 0.0050 \*

Mars -103850-02-15 02:52 J -36209744.52 -36209744.38 -36209744.20 0.0290 0.0249

Mercury -103845-05-03 10:18 J -36207840.14 -36207840.07 -36207840.00 0.0291 0.0256

Mercury -103845-07-31 04:04 J -36207751.46 -36207751.33 -36207751.20 0.0291 0.0165

Mercury -103845-10-27 22:04 J -36207662.74 -36207662.58 -36207662.43 0.0290 0.0072

Mercury -103844-01-24 16:18 J -36207573.98 -36207573.82 -36207573.66 0.0290 0.0024

Mercury -103844-04-23 11:02 J -36207485.19 -36207485.04 -36207484.89 0.0289 0.0120

Mercury -103844-07-21 05:59 J -36207396.35 -36207396.25 -36207396.14 0.0289 0.0218

Venus -103842-12-24 07:54 J -36206510.28 -36206510.17 -36206510.04 0.0282 0.0230

Venus -103841-08-10 00:28 J -36206280.69 -36206280.48 -36206280.27 0.0281 0.0037

Venus -103840-03-27 16:04 J -36206051.00 -36206050.83 -36206050.64 0.0279 0.0154

Moon -103839-01-23 06:14 J -36205749.30 -36205749.24 -36205749.15 0.0277 0.0264

Earth -103839-01-23 08:23 J -36205749.25 -36205749.15 -36205749.04 0.0277 0.0251 \*

Earth -103838-02-05 22:33 J -36205370.67 -36205370.56 -36205370.43 0.0274 0.0241

Moon -103838-02-06 00:57 J -36205370.57 -36205370.46 -36205370.33 0.0274 0.0238 \*

Mars -103836-04-16 19:26 J -36204569.86 -36204569.69 -36204569.50 0.0270 0.0203

Mars -103834-04-11 05:02 J -36203845.47 -36203845.29 -36203845.08 0.0267 0.0186

Mercury -103830-06-02 21:50 J -36202331.59 -36202331.59 -36202331.59 0.0268 0.0268

Mercury -103830-08-30 11:45 J -36202243.11 -36202243.01 -36202242.90 0.0269 0.0196

Mercury -103830-11-27 01:40 J -36202154.56 -36202154.43 -36202154.30 0.0269 0.0124

Mercury -103829-02-23 15:21 J -36202066.01 -36202065.86 -36202065.71 0.0269 0.0053

Mercury -103829-05-22 04:47 J -36201977.45 -36201977.30 -36201977.15 0.0270 0.0018

Mercury -103829-08-18 17:59 J -36201888.89 -36201888.75 -36201888.61 0.0270 0.0088

Mercury -103829-11-15 06:57 J -36201800.33 -36201800.21 -36201800.09 0.0271 0.0156  
 Mercury -103828-02-11 19:40 J -36201711.75 -36201711.68 -36201711.59 0.0271 0.0224  
 Venus -103826-09-06 04:47 J -36200775.45 -36200775.30 -36200775.15 0.0277 0.0192  
 Venus -103825-04-22 12:42 J -36200546.18 -36200545.97 -36200545.76 0.0279 0.0012  
 Venus -103825-12-07 21:06 J -36200316.78 -36200316.62 -36200316.46 0.0281 0.0174  
 Moon -103824-07-30 01:54 J -36200082.48 -36200082.42 -36200082.34 0.0283 0.0268  
 Earth -103824-07-30 01:26 J -36200082.47 -36200082.44 -36200082.38 0.0283 0.0278 \*  
 Earth -103823-08-11 16:04 J -36199704.96 -36199704.83 -36199704.67 0.0286 0.0225  
 Moon -103823-08-11 19:40 J -36199704.79 -36199704.68 -36199704.55 0.0286 0.0242 \*  
 Mars -103820-04-08 16:18 J -36198734.12 -36198733.82 -36198733.51 0.0292 0.0048  
 Mercury -103816-09-20 09:21 J -36197108.12 -36197108.11 -36197108.09 0.0292 0.0289  
 Mercury -103816-12-18 02:52 J -36197019.49 -36197019.38 -36197019.26 0.0291 0.0199  
 Mercury -103815-03-16 20:52 J -36196930.78 -36196930.63 -36196930.48 0.0291 0.0106  
 Mercury -103815-06-13 15:06 J -36196842.03 -36196841.87 -36196841.71 0.0290 0.0012  
 Mercury -103815-09-10 09:35 J -36196753.25 -36196753.10 -36196752.94 0.0290 0.0085  
 Mercury -103815-12-08 04:33 J -36196664.43 -36196664.31 -36196664.18 0.0289 0.0181  
 Mercury -103814-03-06 23:45 J -36196575.54 -36196575.51 -36196575.46 0.0289 0.0280  
 Venus -103812-07-05 10:33 J -36195724.19 -36195724.06 -36195723.91 0.0282 0.0209  
 Venus -103811-02-20 03:21 J -36195494.57 -36195494.36 -36195494.14 0.0281 0.0014  
 Venus -103811-10-07 19:26 J -36195264.86 -36195264.69 -36195264.53 0.0279 0.0177  
 Moon -103809-01-31 01:40 J -36194784.69 -36194784.43 -36194784.16 0.0275 0.0012  
 Earth -103809-01-31 04:18 J -36194784.57 -36194784.32 -36194784.06 0.0275 0.0018 \*  
 Mars -103806-06-03 07:26 J -36193565.45 -36193565.19 -36193564.92 0.0268 0.0070  
 Mercury -103800-01-16 13:26 J -36191511.02 -36191510.94 -36191510.84 0.0269 0.0217  
 Mercury -103800-04-15 03:35 J -36191422.48 -36191422.35 -36191422.22 0.0270 0.0144  
 Mercury -103800-07-12 17:16 J -36191333.92 -36191333.78 -36191333.63 0.0270 0.0073  
 Mercury -103800-10-09 06:42 J -36191245.36 -36191245.22 -36191245.07 0.0270 0.0008  
 Mercury -103799-01-05 20:09 J -36191156.80 -36191156.66 -36191156.52 0.0271 0.0068  
 Mercury -103799-04-04 09:06 J -36191068.24 -36191068.12 -36191067.99 0.0271 0.0138  
 Mercury -103799-07-01 22:04 J -36190979.67 -36190979.58 -36190979.48 0.0272 0.0206

Venus -103796-03-18 11:16 J -36189989.19 -36189989.03 -36189988.86 0.0278 0.0168  
 Venus -103796-11-02 19:26 J -36189759.90 -36189759.69 -36189759.48 0.0280 0.0016  
 Venus -103795-06-20 03:50 J -36189530.47 -36189530.34 -36189530.18 0.0282 0.0203  
 Moon -103794-08-06 12:28 J -36189118.22 -36189117.98 -36189117.74 0.0285 0.0023  
 Earth -103794-08-06 16:04 J -36189118.06 -36189117.83 -36189117.59 0.0285 0.0008 \*  
 Mars -103790-06-02 22:18 J -36187721.82 -36187721.57 -36187721.30 0.0292 0.0166  
 Mercury -103786-05-07 05:02 J -36186287.39 -36186287.29 -36186287.18 0.0291 0.0218  
 Mercury -103786-08-03 23:02 J -36186198.68 -36186198.54 -36186198.40 0.0290 0.0126  
 Mercury -103786-10-31 17:16 J -36186109.94 -36186109.78 -36186109.62 0.0290 0.0032  
 Mercury -103785-01-28 11:45 J -36186021.17 -36186021.01 -36186020.85 0.0290 0.0064  
 Mercury -103785-04-26 06:28 J -36185932.36 -36185932.23 -36185932.09 0.0289 0.0161  
 Mercury -103785-07-24 01:40 J -36185843.49 -36185843.43 -36185843.35 0.0289 0.0259  
 Venus -103782-01-15 21:06 J -36184937.79 -36184937.62 -36184937.45 0.0282 0.0176  
 Venus -103782-09-02 13:26 J -36184708.15 -36184707.94 -36184707.72 0.0280 0.0018  
 Venus -103781-04-19 05:16 J -36184478.42 -36184478.28 -36184478.14 0.0279 0.0208  
 Earth -103780-01-24 19:26 J -36184197.87 -36184197.69 -36184197.50 0.0277 0.0189  
 Moon -103780-01-24 21:50 J -36184197.76 -36184197.59 -36184197.42 0.0277 0.0200 \*  
 Mars -103776-07-20 01:40 J -36182560.69 -36182560.43 -36182560.15 0.0268 0.0071  
 Mercury -103771-06-05 15:21 J -36180778.93 -36180778.86 -36180778.79 0.0268 0.0237  
 Mercury -103771-09-02 05:16 J -36180690.39 -36180690.28 -36180690.15 0.0269 0.0165  
 Mercury -103771-11-29 19:11 J -36180601.84 -36180601.70 -36180601.56 0.0269 0.0093  
 Mercury -103770-02-26 08:38 J -36180513.29 -36180513.14 -36180512.99 0.0269 0.0022  
 Mercury -103770-05-25 22:04 J -36180424.73 -36180424.58 -36180424.44 0.0270 0.0048  
 Mercury -103770-08-22 11:02 J -36180336.17 -36180336.04 -36180335.90 0.0270 0.0118  
 Mercury -103770-11-18 23:59 J -36180247.60 -36180247.50 -36180247.39 0.0271 0.0186  
 Mercury -103769-02-15 12:57 J -36180159.01 -36180158.96 -36180158.91 0.0271 0.0253  
 Venus -103767-09-28 14:23 J -36179203.07 -36179202.90 -36179202.72 0.0278 0.0144  
 Venus -103766-05-15 22:18 J -36178973.78 -36178973.57 -36178973.36 0.0279 0.0039  
 Venus -103766-12-31 06:42 J -36178744.34 -36178744.22 -36178744.10 0.0281 0.0225  
 Earth -103765-07-31 07:11 J -36178531.33 -36178531.20 -36178531.04 0.0283 0.0222

Moon -103765-07-31 10:47 J -36178531.20 -36178531.05 -36178530.88 0.0283 0.0208 \*  
 Earth -103764-08-12 22:04 J -36178153.62 -36178153.58 -36178153.53 0.0286 0.0280  
 Mars -103762-07-11 10:04 J -36177456.26 -36177456.08 -36177455.90 0.0290 0.0235  
 Mercury -103757-09-23 03:50 J -36175555.41 -36175555.34 -36175555.26 0.0291 0.0254  
 Mercury -103757-12-20 21:35 J -36175466.73 -36175466.60 -36175466.47 0.0291 0.0162  
 Mercury -103756-03-19 15:35 J -36175378.01 -36175377.85 -36175377.70 0.0291 0.0069  
 Mercury -103756-06-16 09:50 J -36175289.25 -36175289.09 -36175288.93 0.0290 0.0027  
 Mercury -103756-09-13 04:33 J -36175200.45 -36175200.31 -36175200.16 0.0290 0.0123  
 Mercury -103756-12-10 23:45 J -36175111.62 -36175111.51 -36175111.41 0.0289 0.0220  
 Venus -103753-07-27 22:18 J -36174151.75 -36174151.57 -36174151.39 0.0282 0.0156  
 Venus -103752-03-14 14:52 J -36173922.09 -36173921.88 -36173921.67 0.0280 0.0038  
 Venus -103752-10-30 06:57 J -36173692.33 -36173692.21 -36173692.09 0.0278 0.0229  
 Moon -103750-02-01 09:35 J -36173233.34 -36173233.10 -36173232.85 0.0275 0.0069  
 Earth -103750-02-01 12:57 J -36173233.20 -36173232.96 -36173232.71 0.0275 0.0075 \*  
 Mars -103748-09-10 14:38 J -36172281.07 -36172280.89 -36172280.68 0.0269 0.0193  
 Mars -103746-09-05 01:11 J -36171556.62 -36171556.45 -36171556.25 0.0267 0.0197  
 Mercury -103742-10-23 16:47 J -36170046.84 -36170046.80 -36170046.77 0.0269 0.0260  
 Mercury -103741-01-20 06:42 J -36169958.32 -36169958.22 -36169958.11 0.0269 0.0188  
 Mercury -103741-04-17 20:38 J -36169869.77 -36169869.64 -36169869.50 0.0269 0.0115  
 Mercury -103741-07-15 10:18 J -36169781.22 -36169781.07 -36169780.92 0.0270 0.0044  
 Mercury -103741-10-11 23:45 J -36169692.66 -36169692.51 -36169692.37 0.0270 0.0027  
 Mercury -103740-01-08 12:57 J -36169604.10 -36169603.96 -36169603.82 0.0271 0.0096  
 Mercury -103740-04-07 01:54 J -36169515.53 -36169515.42 -36169515.30 0.0271 0.0165  
 Mercury -103740-07-04 14:38 J -36169426.96 -36169426.89 -36169426.81 0.0272 0.0232  
 Venus -103737-04-09 19:26 J -36168416.87 -36168416.69 -36168416.50 0.0279 0.0121  
 Venus -103737-11-25 03:35 J -36168187.56 -36168187.35 -36168187.15 0.0280 0.0064  
 Venus -103736-07-12 11:59 J -36167958.09 -36167958.00 -36167957.90 0.0282 0.0250  
 Moon -103735-08-07 17:30 J -36167566.99 -36167566.77 -36167566.54 0.0285 0.0076  
 Earth -103735-08-07 18:57 J -36167566.94 -36167566.71 -36167566.48 0.0285 0.0060 \*  
 Mars -103732-09-02 21:50 J -36166444.90 -36166444.59 -36166444.28 0.0292 0.0031

Mercury -103727-02-10 05:30 J -36164823.32 -36164823.27 -36164823.22 0.0291 0.0274

Mercury -103727-05-09 23:02 J -36164734.66 -36164734.54 -36164734.41 0.0291 0.0184

Mercury -103727-08-06 17:02 J -36164645.94 -36164645.79 -36164645.64 0.0290 0.0091

Mercury -103727-11-03 11:30 J -36164557.19 -36164557.02 -36164556.86 0.0290 0.0009

Mercury -103726-01-31 05:59 J -36164468.40 -36164468.25 -36164468.09 0.0290 0.0100

Mercury -103726-04-30 00:57 J -36164379.57 -36164379.46 -36164379.34 0.0289 0.0198

Venus -103723-02-07 07:54 J -36163365.36 -36163365.17 -36163364.97 0.0282 0.0125

Venus -103723-09-25 00:28 J -36163135.69 -36163135.48 -36163135.27 0.0280 0.0070

Venus -103722-05-12 16:04 J -36162905.90 -36162905.83 -36162905.74 0.0278 0.0260

Earth -103721-01-27 03:21 J -36162646.58 -36162646.36 -36162646.13 0.0276 0.0132

Moon -103721-01-27 06:57 J -36162646.42 -36162646.21 -36162645.98 0.0276 0.0143 \*

Mars -103718-10-28 15:21 J -36161276.14 -36161275.86 -36161275.59 0.0269 0.0050

Mercury -103712-06-08 08:23 J -36159226.23 -36159226.15 -36159226.04 0.0268 0.0208

Mercury -103712-09-04 22:33 J -36159137.69 -36159137.56 -36159137.43 0.0269 0.0135

Mercury -103712-12-02 12:14 J -36159049.14 -36159048.99 -36159048.85 0.0269 0.0064

Mercury -103711-03-01 01:40 J -36158960.58 -36158960.43 -36158960.28 0.0269 0.0007

Mercury -103711-05-28 14:52 J -36158872.02 -36158871.88 -36158871.74 0.0270 0.0076

Mercury -103711-08-25 03:50 J -36158783.46 -36158783.34 -36158783.22 0.0270 0.0145

Mercury -103711-11-21 16:33 J -36158694.89 -36158694.81 -36158694.71 0.0271 0.0213

Venus -103708-03-05 15:21 J -36157859.86 -36157859.86 -36157859.86 0.0276 0.0276

Venus -103708-10-20 22:33 J -36157630.76 -36157630.56 -36157630.37 0.0278 0.0097

Venus -103707-06-07 06:14 J -36157401.44 -36157401.24 -36157401.04 0.0280 0.0087

Venus -103706-01-22 14:38 J -36157171.94 -36157171.89 -36157171.85 0.0281 0.0273

Earth -103706-08-02 10:18 J -36156980.26 -36156980.07 -36156979.88 0.0283 0.0170

Moon -103706-08-02 11:45 J -36156980.21 -36156980.01 -36156979.81 0.0283 0.0156 \*

Mars -103702-10-26 17:30 J -36155434.01 -36155433.77 -36155433.51 0.0292 0.0175

Mercury -103698-09-26 21:21 J -36154002.70 -36154002.61 -36154002.50 0.0291 0.0222

Mercury -103698-12-24 15:06 J -36153914.00 -36153913.87 -36153913.72 0.0291 0.0130

Mercury -103697-03-22 09:21 J -36153825.27 -36153825.11 -36153824.95 0.0291 0.0036

Mercury -103697-06-19 03:50 J -36153736.50 -36153736.34 -36153736.18 0.0290 0.0061

Mercury -103697-09-15 22:47 J -36153647.69 -36153647.55 -36153647.41 0.0290 0.0158  
 Mercury -103697-12-13 17:45 J -36153558.83 -36153558.76 -36153558.68 0.0289 0.0256  
 Venus -103694-08-20 08:09 J -36152579.36 -36152579.16 -36152578.96 0.0282 0.0107  
 Venus -103693-04-06 00:42 J -36152349.68 -36152349.47 -36152349.27 0.0280 0.0088  
 Venus -103693-11-21 16:33 J -36152119.81 -36152119.81 -36152119.80 0.0278 0.0278  
 Earth -103691-02-02 18:28 J -36151681.94 -36151681.73 -36151681.49 0.0275 0.0128  
 Moon -103691-02-02 19:11 J -36151681.92 -36151681.70 -36151681.48 0.0275 0.0124 \*  
 Mars -103688-12-13 15:06 J -36150272.13 -36150271.87 -36150271.60 0.0268 0.0078  
 Mercury -103683-10-26 09:35 J -36148494.17 -36148494.10 -36148494.02 0.0269 0.0232  
 Mercury -103682-01-22 23:30 J -36148405.64 -36148405.52 -36148405.39 0.0269 0.0160  
 Mercury -103682-04-21 13:11 J -36148317.09 -36148316.95 -36148316.80 0.0269 0.0089  
 Mercury -103682-07-19 02:52 J -36148228.53 -36148228.38 -36148228.23 0.0270 0.0017  
 Mercury -103682-10-15 16:04 J -36148139.97 -36148139.83 -36148139.68 0.0270 0.0054  
 Mercury -103681-01-12 05:16 J -36148051.41 -36148051.28 -36148051.15 0.0271 0.0122  
 Mercury -103681-04-09 18:14 J -36147962.84 -36147962.74 -36147962.64 0.0271 0.0190  
 Mercury -103681-07-07 06:57 J -36147874.25 -36147874.21 -36147874.16 0.0272 0.0257  
 Venus -103679-09-15 18:57 J -36147073.78 -36147073.71 -36147073.63 0.0277 0.0256  
 Venus -103678-05-03 02:23 J -36146844.59 -36146844.40 -36146844.19 0.0279 0.0076  
 Venus -103678-12-18 10:33 J -36146615.25 -36146615.06 -36146614.87 0.0280 0.0110  
 Earth -103676-08-08 19:54 J -36146015.88 -36146015.67 -36146015.44 0.0285 0.0108  
 Moon -103676-08-08 23:02 J -36146015.75 -36146015.54 -36146015.33 0.0285 0.0124 \*  
 Mars -103674-12-05 01:40 J -36145167.61 -36145167.43 -36145167.22 0.0291 0.0223  
 Mercury -103668-02-12 22:33 J -36143270.64 -36143270.56 -36143270.47 0.0291 0.0245  
 Mercury -103668-05-12 16:18 J -36143181.95 -36143181.82 -36143181.68 0.0291 0.0153  
 Mercury -103668-08-09 10:18 J -36143093.22 -36143093.07 -36143092.91 0.0290 0.0060  
 Mercury -103668-11-06 04:47 J -36143004.46 -36143004.30 -36143004.14 0.0290 0.0036  
 Mercury -103667-02-02 23:30 J -36142915.66 -36142915.52 -36142915.37 0.0289 0.0133  
 Mercury -103667-05-02 18:42 J -36142826.81 -36142826.72 -36142826.62 0.0289 0.0231  
 Venus -103665-07-14 23:16 J -36142022.57 -36142022.53 -36142022.47 0.0283 0.0274  
 Venus -103664-03-01 16:33 J -36141793.01 -36141792.81 -36141792.60 0.0282 0.0077

Venus -103664-10-17 09:06 J -36141563.31 -36141563.12 -36141562.92 0.0280 0.0119  
 Moon -103662-01-28 07:11 J -36141095.44 -36141095.20 -36141094.94 0.0276 0.0089  
 Earth -103662-01-28 07:40 J -36141095.41 -36141095.18 -36141094.93 0.0276 0.0081 \*  
 Mars -103659-02-04 17:45 J -36139991.96 -36139991.76 -36139991.54 0.0270 0.0175  
 Mars -103657-01-30 03:35 J -36139267.51 -36139267.35 -36139267.17 0.0267 0.0212  
 Mercury -103653-03-14 11:30 J -36137762.07 -36137762.02 -36137761.97 0.0268 0.0251  
 Mercury -103653-06-11 01:26 J -36137673.55 -36137673.44 -36137673.32 0.0268 0.0179  
 Mercury -103653-09-07 15:06 J -36137585.00 -36137584.87 -36137584.72 0.0269 0.0108  
 Mercury -103653-12-05 04:47 J -36137496.45 -36137496.30 -36137496.15 0.0269 0.0037  
 Mercury -103652-03-03 18:14 J -36137407.89 -36137407.74 -36137407.59 0.0269 0.0034  
 Mercury -103652-05-31 07:11 J -36137319.33 -36137319.20 -36137319.06 0.0270 0.0103  
 Mercury -103652-08-27 20:09 J -36137230.77 -36137230.66 -36137230.54 0.0270 0.0171  
 Mercury -103652-11-24 08:52 J -36137142.19 -36137142.13 -36137142.06 0.0271 0.0238  
 Venus -103649-03-27 22:33 J -36136287.67 -36136287.56 -36136287.44 0.0276 0.0231  
 Venus -103649-11-12 05:45 J -36136058.47 -36136058.26 -36136058.06 0.0278 0.0051  
 Venus -103648-06-29 13:11 J -36135829.13 -36135828.95 -36135828.77 0.0280 0.0134  
 Moon -103647-08-03 08:38 J -36135429.37 -36135429.14 -36135428.92 0.0283 0.0107  
 Earth -103647-08-03 11:30 J -36135429.24 -36135429.02 -36135428.81 0.0283 0.0122 \*  
 Mars -103643-01-26 09:50 J -36134157.39 -36134157.09 -36134156.77 0.0291 0.0028  
 Mercury -103639-07-02 20:38 J -36132538.67 -36132538.64 -36132538.60 0.0292 0.0284  
 Mercury -103639-09-29 14:09 J -36132450.02 -36132449.91 -36132449.79 0.0291 0.0194  
 Mercury -103639-12-27 08:09 J -36132361.31 -36132361.16 -36132361.01 0.0291 0.0100  
 Mercury -103638-03-26 02:23 J -36132272.56 -36132272.40 -36132272.24 0.0291 0.0009  
 Mercury -103638-06-22 21:06 J -36132183.78 -36132183.62 -36132183.47 0.0290 0.0091  
 Mercury -103638-09-19 16:04 J -36132094.95 -36132094.83 -36132094.71 0.0290 0.0188  
 Mercury -103638-12-17 11:16 J -36132006.04 -36132006.03 -36132006.01 0.0289 0.0287  
 Venus -103635-01-24 22:47 J -36131236.63 -36131236.55 -36131236.46 0.0284 0.0258  
 Venus -103635-09-11 16:04 J -36131007.04 -36131006.83 -36131006.62 0.0282 0.0060  
 Venus -103634-04-29 08:38 J -36130777.33 -36130777.14 -36130776.95 0.0280 0.0135  
 Earth -103632-02-03 21:35 J -36130130.79 -36130130.60 -36130130.40 0.0275 0.0175



Moon -103632-02-04 01:11 J -36130130.64 -36130130.45 -36130130.25 0.0275 0.0173 \*  
 Mars -103629-03-22 20:23 J -36128987.92 -36128987.65 -36128987.37 0.0268 0.0046  
 Mercury -103624-10-29 01:54 J -36126941.51 -36126941.42 -36126941.31 0.0269 0.0206  
 Mercury -103623-01-25 15:50 J -36126852.96 -36126852.84 -36126852.70 0.0269 0.0134  
 Mercury -103623-04-24 05:45 J -36126764.41 -36126764.26 -36126764.12 0.0269 0.0063  
 Mercury -103623-07-21 19:11 J -36126675.85 -36126675.70 -36126675.55 0.0270 0.0011  
 Mercury -103623-10-18 08:23 J -36126587.29 -36126587.15 -36126587.01 0.0270 0.0078  
 Mercury -103622-01-14 21:21 J -36126498.73 -36126498.61 -36126498.49 0.0271 0.0146  
 Mercury -103622-04-13 10:04 J -36126410.16 -36126410.08 -36126409.99 0.0271 0.0214  
 Venus -103620-10-08 00:57 J -36125501.59 -36125501.46 -36125501.32 0.0277 0.0213  
 Venus -103619-05-25 08:23 J -36125272.36 -36125272.15 -36125271.94 0.0279 0.0031  
 Venus -103618-01-09 16:04 J -36125043.00 -36125042.83 -36125042.65 0.0281 0.0155  
 Earth -103617-08-09 18:42 J -36124464.91 -36124464.72 -36124464.51 0.0285 0.0152  
 Moon -103617-08-09 21:21 J -36124464.80 -36124464.61 -36124464.41 0.0285 0.0167 \*  
 Mars -103613-03-20 23:30 J -36123145.77 -36123145.52 -36123145.28 0.0292 0.0183  
 Mercury -103609-02-16 15:06 J -36121717.97 -36121717.87 -36121717.77 0.0291 0.0218  
 Mercury -103609-05-15 08:52 J -36121629.27 -36121629.13 -36121628.98 0.0291 0.0126  
 Mercury -103609-08-12 03:06 J -36121540.53 -36121540.37 -36121540.21 0.0290 0.0032  
 Mercury -103609-11-08 21:35 J -36121451.76 -36121451.60 -36121451.44 0.0290 0.0064  
 Mercury -103608-02-05 16:18 J -36121362.95 -36121362.82 -36121362.68 0.0289 0.0162  
 Mercury -103608-05-05 11:30 J -36121274.08 -36121274.02 -36121273.94 0.0289 0.0260  
 Venus -103606-08-07 06:14 J -36120450.36 -36120450.24 -36120450.11 0.0283 0.0229  
 Venus -103605-03-23 23:30 J -36120220.73 -36120220.52 -36120220.30 0.0282 0.0031  
 Venus -103605-11-08 16:18 J -36119990.99 -36119990.82 -36119990.64 0.0280 0.0165  
 Moon -103603-01-29 05:16 J -36119544.53 -36119544.28 -36119544.03 0.0276 0.0040  
 Earth -103603-01-29 09:06 J -36119544.37 -36119544.12 -36119543.86 0.0276 0.0036 \*  
 Mars -103599-05-09 11:59 J -36117983.25 -36117983.00 -36117982.73 0.0268 0.0093  
 Mercury -103594-03-18 03:50 J -36116209.41 -36116209.34 -36116209.25 0.0268 0.0225  
 Mercury -103594-06-14 17:59 J -36116120.88 -36116120.75 -36116120.63 0.0268 0.0153  
 Mercury -103594-09-11 07:40 J -36116032.32 -36116032.18 -36116032.04 0.0269 0.0082

Mercury -103594-12-08 21:06 J -36115943.77 -36115943.62 -36115943.47 0.0269 0.0011

Mercury -103593-03-06 10:18 J -36115855.21 -36115855.07 -36115854.92 0.0269 0.0059

Mercury -103593-06-02 23:30 J -36115766.65 -36115766.52 -36115766.39 0.0270 0.0127

Mercury -103593-08-30 12:14 J -36115678.08 -36115677.99 -36115677.88 0.0270 0.0195

Mercury -103593-11-27 00:57 J -36115589.49 -36115589.46 -36115589.42 0.0271 0.0262

Venus -103590-04-20 05:02 J -36114715.44 -36114715.29 -36114715.13 0.0276 0.0187

Venus -103590-12-05 11:59 J -36114486.21 -36114486.00 -36114485.79 0.0278 0.0007

Venus -103589-07-21 19:26 J -36114256.84 -36114256.69 -36114256.53 0.0280 0.0180

Moon -103588-08-04 08:52 J -36113878.36 -36113878.13 -36113877.90 0.0283 0.0062

Earth -103588-08-04 11:30 J -36113878.25 -36113878.02 -36113877.79 0.0283 0.0077 \*

Mars -103585-04-28 12:42 J -36112880.16 -36112879.97 -36112879.76 0.0290 0.0221

Mercury -103580-07-05 13:11 J -36110986.02 -36110985.95 -36110985.88 0.0292 0.0257

Mercury -103580-10-02 06:42 J -36110897.34 -36110897.22 -36110897.09 0.0291 0.0166

Mercury -103580-12-30 00:42 J -36110808.62 -36110808.47 -36110808.31 0.0291 0.0073

Mercury -103579-03-28 19:11 J -36110719.86 -36110719.70 -36110719.54 0.0290 0.0023

Mercury -103579-06-25 13:54 J -36110631.07 -36110630.92 -36110630.77 0.0290 0.0119

Mercury -103579-09-22 08:52 J -36110542.24 -36110542.13 -36110542.02 0.0289 0.0217

Venus -103576-02-16 05:16 J -36109664.41 -36109664.28 -36109664.14 0.0283 0.0214

Venus -103576-10-03 22:33 J -36109434.77 -36109434.56 -36109434.34 0.0282 0.0015

Venus -103575-05-21 15:06 J -36109205.03 -36109204.87 -36109204.70 0.0280 0.0181

Earth -103574-01-23 05:02 J -36108958.32 -36108958.29 -36108958.25 0.0278 0.0274

Earth -103573-02-05 21:50 J -36108579.73 -36108579.59 -36108579.42 0.0275 0.0219

Moon -103573-02-05 23:45 J -36108579.67 -36108579.51 -36108579.35 0.0275 0.0219 \*

Mars -103571-06-30 15:50 J -36107704.04 -36107703.84 -36107703.62 0.0270 0.0176

Mars -103569-06-24 03:50 J -36106979.49 -36106979.34 -36106979.17 0.0267 0.0215

Mercury -103565-08-04 04:18 J -36105477.37 -36105477.32 -36105477.27 0.0268 0.0253

Mercury -103565-10-31 18:14 J -36105388.85 -36105388.74 -36105388.62 0.0269 0.0181

Mercury -103564-01-28 08:09 J -36105300.30 -36105300.16 -36105300.02 0.0269 0.0109

Mercury -103564-04-26 21:50 J -36105211.74 -36105211.59 -36105211.45 0.0269 0.0038

Mercury -103564-07-24 11:02 J -36105123.18 -36105123.04 -36105122.89 0.0270 0.0033

Mercury -103564-10-21 00:14 J -36105034.62 -36105034.49 -36105034.35 0.0270 0.0102  
 Mercury -103563-01-17 13:11 J -36104946.06 -36104945.95 -36104945.83 0.0271 0.0170  
 Mercury -103563-04-16 01:54 J -36104857.48 -36104857.42 -36104857.35 0.0271 0.0237  
 Venus -103561-10-30 06:28 J -36103929.38 -36103929.23 -36103929.05 0.0277 0.0171  
 Venus -103560-06-16 13:54 J -36103700.13 -36103699.92 -36103699.71 0.0279 0.0013  
 Venus -103559-01-31 21:21 J -36103470.75 -36103470.61 -36103470.46 0.0281 0.0200  
 Moon -103559-07-30 07:26 J -36103291.19 -36103291.19 -36103291.19 0.0282 0.0282  
 Moon -103558-08-11 15:06 J -36102914.03 -36102913.87 -36102913.69 0.0285 0.0207  
 Earth -103558-08-11 17:02 J -36102913.95 -36102913.79 -36102913.61 0.0285 0.0195 \*  
 Mars -103555-06-21 08:09 J -36101869.47 -36101869.16 -36101868.85 0.0291 0.0021  
 Mercury -103551-11-22 13:26 J -36100253.96 -36100253.94 -36100253.90 0.0291 0.0284  
 Mercury -103550-02-19 06:57 J -36100165.32 -36100165.21 -36100165.09 0.0291 0.0194  
 Mercury -103550-05-19 00:57 J -36100076.61 -36100076.46 -36100076.31 0.0291 0.0101  
 Mercury -103550-08-15 19:11 J -36099987.86 -36099987.70 -36099987.54 0.0290 0.0007  
 Mercury -103550-11-12 13:54 J -36099899.08 -36099898.92 -36099898.77 0.0290 0.0090  
 Mercury -103549-02-09 08:52 J -36099810.26 -36099810.13 -36099810.01 0.0289 0.0188  
 Mercury -103549-05-08 03:50 J -36099721.34 -36099721.34 -36099721.31 0.0289 0.0287  
 Venus -103547-08-29 11:45 J -36098878.17 -36098878.01 -36098877.85 0.0283 0.0185  
 Venus -103546-04-16 05:02 J -36098648.50 -36098648.29 -36098648.07 0.0281 0.0015  
 Venus -103546-12-01 21:50 J -36098418.73 -36098418.59 -36098418.44 0.0280 0.0209  
 Moon -103544-01-30 07:26 J -36097993.44 -36097993.19 -36097992.95 0.0277 0.0007  
 Earth -103544-01-30 08:23 J -36097993.41 -36097993.15 -36097992.90 0.0277 0.0007 \*  
 Mars -103541-08-16 13:26 J -36096699.21 -36096698.94 -36096698.66 0.0269 0.0034  
 Mercury -103535-03-20 20:23 J -36094656.75 -36094656.65 -36094656.55 0.0268 0.0199  
 Mercury -103535-06-17 10:18 J -36094568.21 -36094568.07 -36094567.94 0.0269 0.0128  
 Mercury -103535-09-13 23:45 J -36094479.65 -36094479.51 -36094479.36 0.0269 0.0057  
 Mercury -103535-12-11 13:11 J -36094391.10 -36094390.95 -36094390.80 0.0269 0.0015  
 Mercury -103534-03-10 02:23 J -36094302.54 -36094302.40 -36094302.26 0.0270 0.0083  
 Mercury -103534-06-06 15:21 J -36094213.97 -36094213.86 -36094213.73 0.0270 0.0152  
 Mercury -103534-09-03 04:18 J -36094125.40 -36094125.32 -36094125.24 0.0270 0.0219

Venus -103531-05-12 10:47 J -36093143.22 -36093143.05 -36093142.86 0.0276 0.0144  
 Venus -103531-12-27 17:45 J -36092913.96 -36092913.76 -36092913.55 0.0278 0.0040  
 Venus -103530-08-14 01:11 J -36092684.57 -36092684.45 -36092684.32 0.0280 0.0225  
 Earth -103529-08-05 10:47 J -36092327.28 -36092327.05 -36092326.81 0.0283 0.0034  
 Moon -103529-08-05 12:14 J -36092327.22 -36092326.99 -36092326.76 0.0283 0.0019 \*  
 Mars -103525-08-13 04:33 J -36090858.54 -36090858.31 -36090858.05 0.0292 0.0181  
 Mercury -103521-07-08 05:16 J -36089433.37 -36089433.28 -36089433.19 0.0292 0.0232  
 Mercury -103521-10-04 23:02 J -36089344.68 -36089344.54 -36089344.40 0.0291 0.0140  
 Mercury -103520-01-01 17:02 J -36089255.95 -36089255.79 -36089255.63 0.0291 0.0047  
 Mercury -103520-03-31 11:30 J -36089167.18 -36089167.02 -36089166.86 0.0290 0.0049  
 Mercury -103520-06-28 06:14 J -36089078.38 -36089078.24 -36089078.10 0.0290 0.0146  
 Mercury -103520-09-25 01:26 J -36088989.53 -36088989.44 -36088989.35 0.0289 0.0244  
 Venus -103517-03-10 10:47 J -36088092.21 -36088092.05 -36088091.87 0.0283 0.0170  
 Venus -103517-10-26 04:18 J -36087862.53 -36087862.32 -36087862.11 0.0281 0.0030  
 Venus -103516-06-12 20:52 J -36087632.75 -36087632.63 -36087632.50 0.0280 0.0225  
 Moon -103515-01-24 03:50 J -36087407.48 -36087407.34 -36087407.20 0.0278 0.0232  
 Earth -103515-01-24 03:50 J -36087407.47 -36087407.34 -36087407.20 0.0278 0.0232 \*  
 Moon -103514-02-06 17:45 J -36087028.82 -36087028.76 -36087028.68 0.0275 0.0265  
 Earth -103514-02-06 20:52 J -36087028.69 -36087028.63 -36087028.53 0.0275 0.0261 \*  
 Mars -103511-10-02 08:38 J -36085695.39 -36085695.14 -36085694.87 0.0268 0.0092  
 Mercury -103506-08-07 20:23 J -36083924.72 -36083924.65 -36083924.57 0.0268 0.0228  
 Mercury -103506-11-04 10:18 J -36083836.19 -36083836.07 -36083835.94 0.0269 0.0156  
 Mercury -103505-02-01 00:14 J -36083747.64 -36083747.49 -36083747.35 0.0269 0.0085  
 Mercury -103505-04-29 13:40 J -36083659.08 -36083658.93 -36083658.78 0.0269 0.0014  
 Mercury -103505-07-27 02:52 J -36083570.52 -36083570.38 -36083570.23 0.0270 0.0057  
 Mercury -103505-10-23 16:04 J -36083481.96 -36083481.83 -36083481.70 0.0270 0.0125  
 Mercury -103504-01-20 05:02 J -36083393.39 -36083393.29 -36083393.19 0.0271 0.0193  
 Mercury -103504-04-18 17:45 J -36083304.80 -36083304.76 -36083304.72 0.0271 0.0260  
 Venus -103502-11-22 11:59 J -36082357.18 -36082357.00 -36082356.81 0.0277 0.0127  
 Venus -103501-07-08 19:11 J -36082127.90 -36082127.70 -36082127.49 0.0279 0.0058

Venus -103500-02-23 02:38 J -36081898.48 -36081898.39 -36081898.28 0.0281 0.0245  
 Moon -103500-07-31 01:54 J -36081740.55 -36081740.42 -36081740.29 0.0282 0.0237  
 Earth -103500-07-31 03:06 J -36081740.46 -36081740.37 -36081740.26 0.0282 0.0253 \*  
 Moon -103499-08-12 11:59 J -36081363.10 -36081363.00 -36081362.87 0.0285 0.0249  
 Earth -103499-08-12 15:35 J -36081362.98 -36081362.85 -36081362.72 0.0285 0.0236 \*  
 Mars -103497-09-21 07:54 J -36080592.37 -36080592.17 -36080591.96 0.0290 0.0216  
 Mercury -103492-11-25 05:16 J -36078701.34 -36078701.28 -36078701.20 0.0291 0.0261  
 Mercury -103491-02-21 23:02 J -36078612.66 -36078612.54 -36078612.41 0.0291 0.0169  
 Mercury -103491-05-21 17:02 J -36078523.94 -36078523.79 -36078523.63 0.0291 0.0076  
 Mercury -103491-08-18 11:30 J -36078435.18 -36078435.02 -36078434.86 0.0290 0.0020  
 Mercury -103491-11-15 05:59 J -36078346.39 -36078346.25 -36078346.10 0.0290 0.0117  
 Mercury -103490-02-12 00:57 J -36078257.56 -36078257.46 -36078257.34 0.0289 0.0215  
 Venus -103488-09-20 16:47 J -36077305.98 -36077305.80 -36077305.61 0.0283 0.0142  
 Venus -103487-05-08 10:18 J -36077076.28 -36077076.07 -36077075.86 0.0281 0.0058  
 Venus -103487-12-24 02:52 J -36076846.46 -36076846.38 -36076846.28 0.0280 0.0254  
 Earth -103485-02-01 06:28 J -36076442.48 -36076442.23 -36076441.98 0.0277 0.0045  
 Moon -103485-02-01 10:04 J -36076442.33 -36076442.08 -36076441.84 0.0277 0.0049 \*  
 Mars -103483-11-24 05:16 J -36075415.49 -36075415.28 -36075415.05 0.0270 0.0168  
 Mars -103481-11-17 20:09 J -36074690.80 -36074690.66 -36074690.50 0.0268 0.0225  
 Mercury -103477-12-24 22:33 J -36073192.62 -36073192.56 -36073192.50 0.0268 0.0247  
 Mercury -103476-03-23 12:28 J -36073104.09 -36073103.98 -36073103.86 0.0268 0.0175  
 Mercury -103476-06-20 02:23 J -36073015.54 -36073015.40 -36073015.26 0.0269 0.0103  
 Mercury -103476-09-16 16:04 J -36072926.98 -36072926.83 -36072926.69 0.0269 0.0033  
 Mercury -103476-12-14 05:16 J -36072838.42 -36072838.28 -36072838.13 0.0269 0.0038  
 Mercury -103475-03-12 18:28 J -36072749.86 -36072749.73 -36072749.59 0.0270 0.0107  
 Mercury -103475-06-09 07:26 J -36072661.30 -36072661.19 -36072661.08 0.0270 0.0175  
 Mercury -103475-09-05 20:09 J -36072572.72 -36072572.66 -36072572.60 0.0271 0.0242  
 Venus -103472-06-03 17:16 J -36071570.97 -36071570.78 -36071570.58 0.0277 0.0098  
 Venus -103471-01-18 23:59 J -36071341.69 -36071341.50 -36071341.30 0.0278 0.0087  
 Venus -103471-09-05 07:26 J -36071112.23 -36071112.19 -36071112.14 0.0280 0.0272

Earth -103470-08-07 11:02 J -36070776.27 -36070776.04 -36070775.80 0.0283 0.0012  
 Moon -103470-08-07 14:38 J -36070776.13 -36070775.89 -36070775.65 0.0283 0.0028 \*  
 Mars -103467-11-13 22:18 J -36069581.88 -36069581.57 -36069581.26 0.0290 0.0023  
 Mercury -103462-07-11 21:21 J -36067880.71 -36067880.61 -36067880.49 0.0291 0.0207  
 Mercury -103462-10-08 15:06 J -36067792.01 -36067791.87 -36067791.72 0.0291 0.0115  
 Mercury -103461-01-05 09:21 J -36067703.27 -36067703.11 -36067702.95 0.0291 0.0021  
 Mercury -103461-04-03 03:50 J -36067614.49 -36067614.34 -36067614.18 0.0290 0.0076  
 Mercury -103461-06-30 22:33 J -36067525.68 -36067525.56 -36067525.42 0.0290 0.0174  
 Mercury -103461-09-27 17:59 J -36067436.80 -36067436.75 -36067436.69 0.0289 0.0272  
 Venus -103458-04-02 16:18 J -36066520.00 -36066519.82 -36066519.62 0.0283 0.0126  
 Venus -103458-11-18 09:50 J -36066290.30 -36066290.09 -36066289.88 0.0281 0.0074  
 Venus -103457-07-05 02:09 J -36066060.46 -36066060.41 -36066060.35 0.0279 0.0269  
 Moon -103456-01-24 22:04 J -36065856.75 -36065856.58 -36065856.38 0.0278 0.0188  
 Earth -103456-01-25 02:09 J -36065856.58 -36065856.41 -36065856.22 0.0278 0.0192 \*  
 Mars -103452-01-09 07:40 J -36064411.45 -36064411.18 -36064410.90 0.0269 0.0038  
 Mercury -103447-08-10 12:42 J -36062372.07 -36062371.97 -36062371.87 0.0268 0.0203  
 Mercury -103447-11-07 02:23 J -36062283.52 -36062283.40 -36062283.26 0.0269 0.0132  
 Mercury -103446-02-03 16:18 J -36062194.97 -36062194.82 -36062194.67 0.0269 0.0060  
 Mercury -103446-05-03 05:45 J -36062106.41 -36062106.26 -36062106.11 0.0269 0.0011  
 Mercury -103446-07-30 18:57 J -36062017.85 -36062017.71 -36062017.57 0.0270 0.0080  
 Mercury -103446-10-27 07:54 J -36061929.29 -36061929.17 -36061929.04 0.0270 0.0149  
 Mercury -103445-01-23 20:52 J -36061840.71 -36061840.63 -36061840.54 0.0271 0.0216  
 Venus -103443-04-29 11:16 J -36061014.08 -36061014.03 -36061013.95 0.0276 0.0262  
 Venus -103443-12-14 17:59 J -36060784.94 -36060784.75 -36060784.54 0.0277 0.0082  
 Venus -103442-08-01 00:57 J -36060555.64 -36060555.46 -36060555.26 0.0279 0.0105  
 Moon -103441-07-31 23:16 J -36060189.70 -36060189.53 -36060189.35 0.0282 0.0193  
 Earth -103441-08-01 03:06 J -36060189.53 -36060189.37 -36060189.22 0.0282 0.0209 \*  
 Earth -103440-08-13 14:52 J -36059811.92 -36059811.88 -36059811.83 0.0285 0.0279  
 Mars -103436-01-05 22:47 J -36058570.78 -36058570.55 -36058570.29 0.0292 0.0184  
 Mercury -103433-11-27 21:35 J -36057148.69 -36057148.60 -36057148.51 0.0291 0.0235

Mercury -103432-02-24 15:06 J -36057060.00 -36057059.87 -36057059.73 0.0291 0.0144  
 Mercury -103432-05-24 09:21 J -36056971.27 -36056971.11 -36056970.95 0.0290 0.0050  
 Mercury -103432-08-21 03:35 J -36056882.50 -36056882.35 -36056882.19 0.0290 0.0046  
 Mercury -103432-11-17 22:33 J -36056793.70 -36056793.56 -36056793.42 0.0290 0.0143  
 Mercury -103431-02-14 17:30 J -36056704.86 -36056704.77 -36056704.68 0.0289 0.0241  
 Venus -103429-10-12 22:18 J -36055733.77 -36055733.57 -36055733.37 0.0283 0.0097  
 Venus -103428-05-30 15:35 J -36055504.05 -36055503.85 -36055503.65 0.0281 0.0103  
 Earth -103426-02-02 04:33 J -36054891.55 -36054891.31 -36054891.06 0.0277 0.0085  
 Moon -103426-02-02 06:42 J -36054891.46 -36054891.22 -36054890.96 0.0277 0.0092 \*  
 Mars -103422-02-25 23:30 J -36053406.78 -36053406.52 -36053406.26 0.0269 0.0100  
 Mercury -103418-12-28 14:52 J -36051639.96 -36051639.88 -36051639.79 0.0268 0.0222  
 Mercury -103417-03-26 04:47 J -36051551.42 -36051551.30 -36051551.17 0.0269 0.0150  
 Mercury -103417-06-22 18:42 J -36051462.87 -36051462.72 -36051462.58 0.0269 0.0078  
 Mercury -103417-09-19 08:09 J -36051374.31 -36051374.16 -36051374.01 0.0269 0.0007  
 Mercury -103417-12-16 21:21 J -36051285.75 -36051285.61 -36051285.46 0.0270 0.0063  
 Mercury -103416-03-15 10:33 J -36051197.19 -36051197.06 -36051196.93 0.0270 0.0131  
 Mercury -103416-06-11 23:16 J -36051108.62 -36051108.53 -36051108.42 0.0270 0.0200  
 Mercury -103416-09-08 11:59 J -36051020.02 -36051020.00 -36051019.97 0.0271 0.0266  
 Venus -103414-11-09 17:45 J -36050227.87 -36050227.76 -36050227.65 0.0275 0.0233  
 Venus -103413-06-26 00:14 J -36049998.70 -36049998.49 -36049998.29 0.0277 0.0051  
 Venus -103412-02-10 06:57 J -36049769.39 -36049769.21 -36049769.02 0.0279 0.0134  
 Earth -103411-08-08 12:28 J -36049225.21 -36049224.98 -36049224.75 0.0283 0.0058  
 Moon -103411-08-08 12:42 J -36049225.20 -36049224.97 -36049224.73 0.0283 0.0072 \*  
 Mars -103408-02-14 08:09 J -36048304.35 -36048304.16 -36048303.95 0.0289 0.0216  
 Mercury -103403-04-16 20:38 J -36046416.69 -36046416.64 -36046416.58 0.0291 0.0270  
 Mercury -103403-07-14 14:09 J -36046328.03 -36046327.91 -36046327.79 0.0291 0.0179  
 Mercury -103403-10-11 07:54 J -36046239.32 -36046239.17 -36046239.01 0.0291 0.0087  
 Mercury -103402-01-08 02:09 J -36046150.57 -36046150.41 -36046150.24 0.0290 0.0011  
 Mercury -103402-04-06 20:52 J -36046061.78 -36046061.63 -36046061.48 0.0290 0.0105  
 Mercury -103402-07-04 15:50 J -36045972.96 -36045972.84 -36045972.72 0.0289 0.0203

Venus -103400-09-07 05:16 J -36045177.29 -36045177.28 -36045177.24 0.0284 0.0282  
 Venus -103399-04-24 23:02 J -36044947.74 -36044947.54 -36044947.33 0.0283 0.0080  
 Venus -103399-12-10 16:04 J -36044718.02 -36044717.83 -36044717.63 0.0281 0.0121  
 Moon -103397-01-27 00:28 J -36044305.68 -36044305.48 -36044305.26 0.0278 0.0144  
 Earth -103397-01-27 01:54 J -36044305.62 -36044305.42 -36044305.20 0.0278 0.0149 \*  
 Mars -103394-04-18 23:02 J -36043127.75 -36043127.54 -36043127.32 0.0270 0.0172  
 Mars -103392-04-12 16:33 J -36042402.95 -36042402.81 -36042402.65 0.0268 0.0223  
 Mercury -103388-05-16 14:52 J -36040907.93 -36040907.88 -36040907.82 0.0268 0.0251  
 Mercury -103388-08-13 05:02 J -36040819.40 -36040819.29 -36040819.18 0.0269 0.0178  
 Mercury -103388-11-09 18:57 J -36040730.85 -36040730.71 -36040730.57 0.0269 0.0106  
 Mercury -103387-02-06 08:38 J -36040642.29 -36040642.14 -36040642.00 0.0269 0.0036  
 Mercury -103387-05-05 21:50 J -36040553.73 -36040553.59 -36040553.44 0.0270 0.0036  
 Mercury -103387-08-02 11:02 J -36040465.17 -36040465.04 -36040464.90 0.0270 0.0105  
 Mercury -103387-10-29 23:59 J -36040376.61 -36040376.50 -36040376.38 0.0270 0.0173  
 Mercury -103386-01-26 12:57 J -36040288.02 -36040287.96 -36040287.90 0.0271 0.0240  
 Venus -103384-05-21 18:28 J -36039441.86 -36039441.73 -36039441.60 0.0276 0.0216  
 Venus -103383-01-06 00:57 J -36039212.66 -36039212.46 -36039212.25 0.0278 0.0034  
 Venus -103383-08-23 07:54 J -36038983.34 -36038983.17 -36038982.99 0.0279 0.0153  
 Earth -103382-08-03 04:18 J -36038638.51 -36038638.32 -36038638.12 0.0282 0.0163  
 Moon -103382-08-03 04:18 J -36038638.51 -36038638.32 -36038638.12 0.0282 0.0148 \*  
 Mars -103378-04-08 19:54 J -36037293.97 -36037293.67 -36037293.35 0.0291 0.0018  
 Mercury -103374-12-01 14:09 J -36035596.02 -36035595.91 -36035595.80 0.0291 0.0208  
 Mercury -103373-02-28 07:54 J -36035507.32 -36035507.17 -36035507.03 0.0291 0.0116  
 Mercury -103373-05-27 01:54 J -36035418.58 -36035418.42 -36035418.26 0.0290 0.0023  
 Mercury -103373-08-23 20:23 J -36035329.80 -36035329.65 -36035329.49 0.0290 0.0075  
 Mercury -103373-11-20 15:21 J -36035240.99 -36035240.86 -36035240.73 0.0289 0.0172  
 Mercury -103372-02-17 10:33 J -36035152.11 -36035152.06 -36035152.00 0.0289 0.0270  
 Venus -103370-03-20 10:33 J -36034391.14 -36034391.06 -36034390.95 0.0284 0.0254  
 Venus -103370-11-05 04:33 J -36034161.52 -36034161.31 -36034161.09 0.0282 0.0051  
 Venus -103369-06-21 21:50 J -36033931.77 -36033931.59 -36033931.41 0.0281 0.0149



Moon -103367-02-03 01:11 J -36033340.67 -36033340.45 -36033340.22 0.0277 0.0136  
 Earth -103367-02-03 04:04 J -36033340.55 -36033340.33 -36033340.10 0.0277 0.0125 \*  
 Mars -103364-06-04 21:35 J -36032122.87 -36032122.60 -36032122.32 0.0270 0.0031  
 Mercury -103359-10-03 17:30 J -36030175.77 -36030175.77 -36030175.77 0.0269 0.0268  
 Mercury -103359-12-31 07:26 J -36030087.29 -36030087.19 -36030087.08 0.0269 0.0196  
 Mercury -103358-03-29 21:35 J -36029998.74 -36029998.60 -36029998.47 0.0269 0.0123  
 Mercury -103358-06-26 11:02 J -36029910.18 -36029910.04 -36029909.89 0.0269 0.0053  
 Mercury -103358-09-23 00:42 J -36029821.62 -36029821.47 -36029821.33 0.0270 0.0020  
 Mercury -103358-12-20 13:54 J -36029733.06 -36029732.92 -36029732.78 0.0270 0.0089  
 Mercury -103357-03-18 02:52 J -36029644.50 -36029644.38 -36029644.26 0.0270 0.0157  
 Mercury -103357-06-14 15:35 J -36029555.92 -36029555.85 -36029555.76 0.0271 0.0225  
 Venus -103355-12-02 01:26 J -36028655.59 -36028655.44 -36028655.28 0.0276 0.0186  
 Venus -103354-07-19 08:09 J -36028426.37 -36028426.16 -36028425.95 0.0277 0.0002  
 Venus -103353-03-04 15:06 J -36028197.02 -36028196.87 -36028196.71 0.0279 0.0184  
 Moon -103352-08-09 12:28 J -36027674.19 -36027673.98 -36027673.76 0.0283 0.0120  
 Earth -103352-08-09 16:04 J -36027674.05 -36027673.83 -36027673.61 0.0283 0.0107 \*  
 Mars -103348-06-01 05:30 J -36026282.51 -36026282.27 -36026282.03 0.0291 0.0185  
 Mercury -103344-04-19 13:40 J -36024864.01 -36024863.93 -36024863.84 0.0291 0.0240  
 Mercury -103344-07-17 07:26 J -36024775.33 -36024775.19 -36024775.06 0.0291 0.0149  
 Mercury -103344-10-14 01:26 J -36024686.60 -36024686.44 -36024686.29 0.0290 0.0056  
 Mercury -103343-01-10 19:40 J -36024597.84 -36024597.68 -36024597.52 0.0290 0.0040  
 Mercury -103343-04-09 14:23 J -36024509.05 -36024508.90 -36024508.76 0.0290 0.0137  
 Mercury -103343-07-07 09:06 J -36024420.20 -36024420.12 -36024420.01 0.0289 0.0236  
 Venus -103341-09-29 13:26 J -36023605.06 -36023604.94 -36023604.82 0.0284 0.0233  
 Venus -103340-05-17 06:57 J -36023375.43 -36023375.21 -36023375.00 0.0282 0.0031  
 Venus -103339-01-01 23:45 J -36023145.68 -36023145.51 -36023145.34 0.0281 0.0169  
 Earth -103338-01-28 03:50 J -36022754.57 -36022754.34 -36022754.10 0.0278 0.0104  
 Moon -103338-01-28 06:42 J -36022754.45 -36022754.22 -36022753.98 0.0278 0.0095 \*  
 Mars -103334-07-21 23:02 J -36021118.80 -36021118.54 -36021118.28 0.0269 0.0098  
 Mercury -103329-05-19 07:40 J -36019355.26 -36019355.18 -36019355.10 0.0268 0.0224

Mercury -103329-08-15 21:35 J -36019266.72 -36019266.60 -36019266.47 0.0269 0.0151  
 Mercury -103329-11-12 11:30 J -36019178.16 -36019178.02 -36019177.88 0.0269 0.0079  
 Mercury -103328-02-09 00:57 J -36019089.60 -36019089.46 -36019089.31 0.0269 0.0012  
 Mercury -103328-05-08 14:23 J -36019001.04 -36019000.90 -36019000.76 0.0270 0.0062  
 Mercury -103328-08-05 03:21 J -36018912.48 -36018912.36 -36018912.22 0.0270 0.0132  
 Mercury -103328-11-01 16:33 J -36018823.91 -36018823.81 -36018823.72 0.0271 0.0199  
 Mercury -103327-01-29 05:02 J -36018735.30 -36018735.29 -36018735.26 0.0271 0.0266  
 Venus -103325-06-13 02:23 J -36017869.56 -36017869.40 -36017869.23 0.0276 0.0168  
 Venus -103324-01-28 09:06 J -36017640.33 -36017640.12 -36017639.91 0.0278 0.0016  
 Venus -103324-09-14 16:18 J -36017410.96 -36017410.82 -36017410.68 0.0280 0.0203  
 Earth -103323-08-04 07:54 J -36017087.39 -36017087.17 -36017086.95 0.0282 0.0113  
 Moon -103323-08-04 11:30 J -36017087.24 -36017087.02 -36017086.80 0.0282 0.0098 \*  
 Mars -103320-07-10 12:42 J -36016016.18 -36016015.97 -36016015.75 0.0289 0.0207  
 Mercury -103315-09-06 13:54 J -36014131.98 -36014131.92 -36014131.86 0.0291 0.0268  
 Mercury -103315-12-04 07:26 J -36014043.31 -36014043.19 -36014043.07 0.0291 0.0178  
 Mercury -103314-03-03 01:11 J -36013954.60 -36013954.45 -36013954.29 0.0290 0.0085  
 Mercury -103314-05-30 19:26 J -36013865.85 -36013865.69 -36013865.53 0.0290 0.0012  
 Mercury -103314-08-27 14:09 J -36013777.06 -36013776.91 -36013776.76 0.0290 0.0107  
 Mercury -103314-11-24 09:06 J -36013688.24 -36013688.12 -36013688.01 0.0289 0.0205  
 Venus -103311-04-11 18:57 J -36012818.85 -36012818.71 -36012818.56 0.0284 0.0205  
 Venus -103311-11-27 12:42 J -36012589.19 -36012588.97 -36012588.76 0.0282 0.0002  
 Venus -103310-07-15 05:30 J -36012359.41 -36012359.27 -36012359.11 0.0280 0.0199  
 Moon -103308-02-04 02:52 J -36011789.56 -36011789.38 -36011789.18 0.0276 0.0183  
 Earth -103308-02-04 06:14 J -36011789.44 -36011789.24 -36011789.04 0.0276 0.0170 \*  
 Mars -103306-09-12 16:47 J -36010839.02 -36010838.80 -36010838.58 0.0271 0.0165  
 Mars -103304-09-06 12:14 J -36010114.11 -36010113.99 -36010113.83 0.0269 0.0232  
 Mercury -103300-10-06 10:18 J -36008623.13 -36008623.07 -36008623.00 0.0269 0.0241  
 Mercury -103299-01-03 00:14 J -36008534.60 -36008534.49 -36008534.36 0.0269 0.0169  
 Mercury -103299-04-01 14:23 J -36008446.04 -36008445.90 -36008445.76 0.0269 0.0096  
 Mercury -103299-06-29 03:50 J -36008357.49 -36008357.34 -36008357.19 0.0270 0.0025

Mercury -103299-09-25 17:16 J -36008268.92 -36008268.78 -36008268.63 0.0270 0.0047  
 Mercury -103299-12-23 06:28 J -36008180.36 -36008180.23 -36008180.09 0.0270 0.0116  
 Mercury -103298-03-21 19:26 J -36008091.79 -36008091.69 -36008091.58 0.0271 0.0184  
 Mercury -103298-06-18 08:23 J -36008003.20 -36008003.15 -36008003.10 0.0271 0.0251  
 Venus -103296-12-24 10:33 J -36007083.24 -36007083.06 -36007082.88 0.0276 0.0137  
 Venus -103295-08-10 17:16 J -36006853.99 -36006853.78 -36006853.58 0.0278 0.0049  
 Venus -103294-03-28 00:28 J -36006624.59 -36006624.48 -36006624.37 0.0279 0.0237  
 Moon -103293-08-10 20:09 J -36006122.84 -36006122.66 -36006122.48 0.0283 0.0171  
 Earth -103293-08-10 21:50 J -36006122.78 -36006122.59 -36006122.39 0.0283 0.0161 \*  
 Mars -103290-09-02 18:42 J -36005005.03 -36005004.72 -36005004.41 0.0290 0.0010  
 Mercury -103285-04-22 07:40 J -36003311.28 -36003311.18 -36003311.06 0.0291 0.0206  
 Mercury -103285-07-20 01:26 J -36003222.58 -36003222.44 -36003222.29 0.0290 0.0114  
 Mercury -103285-10-16 19:26 J -36003133.84 -36003133.69 -36003133.52 0.0290 0.0022  
 Mercury -103284-01-13 13:54 J -36003045.07 -36003044.92 -36003044.76 0.0290 0.0076  
 Mercury -103284-04-12 08:38 J -36002956.26 -36002956.14 -36002956.00 0.0289 0.0173  
 Mercury -103284-07-10 03:50 J -36002867.39 -36002867.34 -36002867.28 0.0289 0.0271  
 Venus -103282-10-22 23:16 J -36002032.69 -36002032.53 -36002032.37 0.0284 0.0182  
 Venus -103281-06-08 16:33 J -36001803.02 -36001802.81 -36001802.60 0.0282 0.0021  
 Venus -103280-01-24 09:06 J -36001573.24 -36001573.12 -36001572.98 0.0280 0.0220  
 Earth -103279-01-29 08:38 J -36001203.39 -36001203.14 -36001202.89 0.0278 0.0054  
 Moon -103279-01-29 11:45 J -36001203.26 -36001203.01 -36001202.75 0.0278 0.0045 \*  
 Mars -103276-10-29 03:21 J -35999834.64 -35999834.36 -35999834.08 0.0270 0.0031  
 Mercury -103270-02-23 10:33 J -35997891.06 -35997891.06 -35997891.05 0.0268 0.0268  
 Mercury -103270-05-23 00:42 J -35997802.57 -35997802.47 -35997802.36 0.0269 0.0195  
 Mercury -103270-08-19 14:52 J -35997714.01 -35997713.88 -35997713.75 0.0269 0.0122  
 Mercury -103270-11-16 04:33 J -35997625.46 -35997625.31 -35997625.16 0.0269 0.0050  
 Mercury -103269-02-12 17:59 J -35997536.90 -35997536.75 -35997536.60 0.0270 0.0021  
 Mercury -103269-05-11 07:26 J -35997448.33 -35997448.19 -35997448.05 0.0270 0.0091  
 Mercury -103269-08-07 20:23 J -35997359.77 -35997359.65 -35997359.53 0.0270 0.0159  
 Mercury -103269-11-04 09:21 J -35997271.19 -35997271.11 -35997271.03 0.0271 0.0227

Venus -103266-07-06 11:59 J -35996297.19 -35996297.00 -35996296.81 0.0277 0.0117

Venus -103265-02-20 18:42 J -35996067.92 -35996067.72 -35996067.51 0.0278 0.0069

Venus -103265-10-07 01:54 J -35995838.49 -35995838.42 -35995838.33 0.0280 0.0257

Earth -103264-08-05 14:38 J -35995536.12 -35995535.89 -35995535.66 0.0282 0.0058

Moon -103264-08-05 16:18 J -35995536.06 -35995535.82 -35995535.58 0.0282 0.0045 \*

Mars -103260-10-25 18:14 J -35993993.96 -35993993.74 -35993993.50 0.0291 0.0197

Mercury -103256-09-09 07:40 J -35992579.26 -35992579.18 -35992579.08 0.0291 0.0235

Mercury -103256-12-07 01:26 J -35992490.57 -35992490.44 -35992490.30 0.0291 0.0143

Mercury -103255-03-05 19:26 J -35992401.85 -35992401.69 -35992401.53 0.0290 0.0050

Mercury -103255-06-02 13:40 J -35992313.08 -35992312.93 -35992312.76 0.0290 0.0047

Mercury -103255-08-30 08:23 J -35992224.29 -35992224.15 -35992224.00 0.0289 0.0143

Mercury -103255-11-27 03:35 J -35992135.44 -35992135.35 -35992135.26 0.0289 0.0241

Venus -103252-05-04 05:02 J -35991246.46 -35991246.29 -35991246.10 0.0283 0.0153

Venus -103252-12-19 22:33 J -35991016.77 -35991016.56 -35991016.35 0.0282 0.0051

Venus -103251-08-06 15:06 J -35990786.95 -35990786.87 -35990786.76 0.0280 0.0250

Moon -103250-01-23 13:11 J -35990617.01 -35990616.95 -35990616.89 0.0279 0.0268

Earth -103250-01-23 16:18 J -35990616.87 -35990616.82 -35990616.78 0.0279 0.0273

Earth -103249-02-06 11:02 J -35990238.19 -35990238.04 -35990237.88 0.0276 0.0218

Moon -103249-02-06 11:45 J -35990238.13 -35990238.01 -35990237.87 0.0276 0.0232 \*

Mars -103246-12-15 22:18 J -35988829.82 -35988829.57 -35988829.31 0.0269 0.0107

Mercury -103241-10-09 03:35 J -35987070.44 -35987070.35 -35987070.25 0.0269 0.0211

Mercury -103240-01-05 17:45 J -35986981.89 -35986981.76 -35986981.63 0.0269 0.0138

Mercury -103240-04-04 07:26 J -35986893.33 -35986893.19 -35986893.04 0.0270 0.0066

Mercury -103240-07-01 21:06 J -35986804.77 -35986804.62 -35986804.47 0.0270 0.0006

Mercury -103240-09-28 10:18 J -35986716.21 -35986716.07 -35986715.92 0.0270 0.0076

Mercury -103240-12-25 23:30 J -35986627.64 -35986627.52 -35986627.39 0.0271 0.0145

Mercury -103239-03-24 12:28 J -35986539.07 -35986538.98 -35986538.89 0.0271 0.0213

Venus -103237-05-31 13:54 J -35985739.95 -35985739.92 -35985739.86 0.0275 0.0268

Venus -103236-01-15 20:38 J -35985510.84 -35985510.64 -35985510.44 0.0277 0.0085

Venus -103236-09-02 03:35 J -35985281.54 -35985281.35 -35985281.16 0.0278 0.0103

Moon -103235-07-31 17:16 J -35984948.88 -35984948.78 -35984948.67 0.0281 0.0247  
 Earth -103235-07-31 18:57 J -35984948.78 -35984948.71 -35984948.61 0.0281 0.0261 \*  
 Earth -103234-08-13 05:59 J -35984571.40 -35984571.25 -35984571.10 0.0283 0.0217  
 Moon -103234-08-13 08:23 J -35984571.28 -35984571.15 -35984571.00 0.0283 0.0226 \*  
 Mars -103232-12-05 01:54 J -35983726.64 -35983726.42 -35983726.18 0.0288 0.0195  
 Mercury -103226-01-27 09:06 J -35981847.19 -35981847.12 -35981847.05 0.0291 0.0258  
 Mercury -103226-04-26 02:38 J -35981758.52 -35981758.39 -35981758.26 0.0291 0.0168  
 Mercury -103226-07-23 20:23 J -35981669.80 -35981669.65 -35981669.49 0.0290 0.0075  
 Mercury -103226-10-20 14:38 J -35981581.05 -35981580.89 -35981580.73 0.0290 0.0020  
 Mercury -103225-01-17 09:06 J -35981492.26 -35981492.12 -35981491.97 0.0289 0.0116  
 Mercury -103225-04-15 04:04 J -35981403.44 -35981403.33 -35981403.22 0.0289 0.0214  
 Venus -103223-11-14 11:16 J -35980460.22 -35980460.03 -35980459.83 0.0283 0.0127  
 Venus -103222-07-02 04:18 J -35980230.52 -35980230.32 -35980230.11 0.0282 0.0077  
 Venus -103221-02-16 20:52 J -35980000.66 -35980000.63 -35980000.59 0.0280 0.0275  
 Moon -103220-01-30 16:18 J -35979652.09 -35979651.82 -35979651.56 0.0277 0.0013  
 Earth -103220-01-30 17:16 J -35979652.04 -35979651.78 -35979651.53 0.0277 0.0004 \*  
 Mars -103217-02-06 05:45 J -35978550.49 -35978550.26 -35978550.04 0.0271 0.0160  
 Mars -103215-01-31 01:26 J -35977825.55 -35977825.44 -35977825.29 0.0268 0.0235  
 Jupiter -103212-03-05 01:54 J -35976696.56 -35976696.42 -35976696.26 0.0268 0.0252  
 Mercury -103211-02-26 04:18 J -35976338.39 -35976338.32 -35976338.25 0.0269 0.0237  
 Mercury -103211-05-25 18:28 J -35976249.85 -35976249.73 -35976249.61 0.0269 0.0164  
 Mercury -103211-08-22 08:23 J -35976161.29 -35976161.15 -35976161.01 0.0269 0.0091  
 Mercury -103211-11-18 22:04 J -35976072.73 -35976072.58 -35976072.43 0.0270 0.0021  
 Mercury -103210-02-15 11:30 J -35975984.17 -35975984.02 -35975983.88 0.0270 0.0051  
 Mercury -103210-05-15 00:28 J -35975895.61 -35975895.48 -35975895.34 0.0270 0.0121  
 Mercury -103210-08-11 13:40 J -35975807.03 -35975806.93 -35975806.83 0.0271 0.0189  
 Mercury -103210-11-08 02:23 J -35975718.44 -35975718.40 -35975718.35 0.0271 0.0256  
 Venus -103208-12-11 15:50 J -35974953.91 -35974953.84 -35974953.73 0.0276 0.0249  
 Venus -103207-07-28 22:47 J -35974724.75 -35974724.55 -35974724.35 0.0277 0.0064  
 Venus -103206-03-15 05:45 J -35974495.44 -35974495.26 -35974495.07 0.0279 0.0124

Moon -103205-08-06 20:38 J -35973984.89 -35973984.64 -35973984.40 0.0283 0.0009  
 Earth -103205-08-06 23:16 J -35973984.77 -35973984.53 -35973984.29 0.0283 0.0002 \*  
 Mars -103201-01-27 15:21 J -35972716.17 -35972715.86 -35972715.55 0.0290 0.0006  
 Mercury -103197-06-15 09:21 J -35971115.13 -35971115.11 -35971115.08 0.0291 0.0286  
 Mercury -103197-09-12 02:38 J -35971026.50 -35971026.39 -35971026.27 0.0291 0.0197  
 Mercury -103197-12-09 20:23 J -35970937.79 -35970937.65 -35970937.50 0.0290 0.0104  
 Mercury -103196-03-08 14:38 J -35970849.05 -35970848.89 -35970848.73 0.0290 0.0010  
 Mercury -103196-06-05 09:06 J -35970760.28 -35970760.12 -35970759.97 0.0290 0.0087  
 Mercury -103196-09-02 03:50 J -35970671.46 -35970671.34 -35970671.21 0.0289 0.0184  
 Mercury -103196-11-29 23:02 J -35970582.57 -35970582.54 -35970582.51 0.0289 0.0282  
 Venus -103193-05-26 17:30 J -35969673.97 -35969673.77 -35969673.57 0.0283 0.0097  
 Venus -103192-01-11 10:33 J -35969444.26 -35969444.06 -35969443.86 0.0281 0.0106  
 Earth -103191-01-25 00:42 J -35969065.61 -35969065.47 -35969065.30 0.0278 0.0217  
 Moon -103191-01-25 01:40 J -35969065.57 -35969065.43 -35969065.25 0.0278 0.0210 \*  
 Earth -103190-02-07 18:57 J -35968686.73 -35968686.71 -35968686.65 0.0276 0.0272  
 Mars -103187-03-25 05:45 J -35967545.54 -35967545.26 -35967544.98 0.0270 0.0021  
 Mercury -103182-07-16 07:11 J -35965606.25 -35965606.20 -35965606.15 0.0269 0.0253  
 Mercury -103182-10-12 21:21 J -35965517.72 -35965517.61 -35965517.49 0.0270 0.0180  
 Mercury -103181-01-09 11:16 J -35965429.16 -35965429.03 -35965428.89 0.0270 0.0107  
 Mercury -103181-04-07 01:11 J -35965340.60 -35965340.45 -35965340.30 0.0270 0.0035  
 Mercury -103181-07-04 14:38 J -35965252.04 -35965251.89 -35965251.74 0.0270 0.0036  
 Mercury -103181-10-01 03:50 J -35965163.47 -35965163.34 -35965163.20 0.0271 0.0106  
 Mercury -103181-12-28 17:02 J -35965074.90 -35965074.79 -35965074.68 0.0271 0.0175  
 Mercury -103180-03-27 05:45 J -35964986.32 -35964986.26 -35964986.19 0.0272 0.0243  
 Venus -103178-06-24 01:26 J -35964167.56 -35964167.44 -35964167.30 0.0276 0.0216  
 Venus -103177-02-08 08:23 J -35963938.36 -35963938.15 -35963937.94 0.0277 0.0030  
 Venus -103177-09-24 15:21 J -35963709.02 -35963708.86 -35963708.68 0.0279 0.0159  
 Earth -103176-08-02 05:02 J -35963397.45 -35963397.29 -35963397.11 0.0281 0.0200  
 Moon -103176-08-02 06:57 J -35963397.37 -35963397.21 -35963397.02 0.0281 0.0188 \*  
 Earth -103175-08-14 16:33 J -35963019.85 -35963019.81 -35963019.76 0.0284 0.0278

Mars -103171-03-22 18:28 J -35961703.93 -35961703.73 -35961703.51 0.0291 0.0214  
 Mercury -103167-01-30 04:33 J -35960294.41 -35960294.31 -35960294.20 0.0291 0.0217  
 Mercury -103167-04-28 22:18 J -35960205.71 -35960205.57 -35960205.43 0.0290 0.0126  
 Mercury -103167-07-26 16:18 J -35960116.98 -35960116.82 -35960116.66 0.0290 0.0032  
 Mercury -103167-10-23 10:33 J -35960028.22 -35960028.06 -35960027.90 0.0290 0.0064  
 Mercury -103166-01-20 05:16 J -35959939.42 -35959939.28 -35959939.14 0.0289 0.0160  
 Mercury -103166-04-19 00:13 J -35959850.56 -35959850.49 -35959850.41 0.0289 0.0258  
 Venus -103164-04-21 07:25 J -35959117.23 -35959117.19 -35959117.12 0.0284 0.0274  
 Venus -103164-12-07 01:11 J -35958887.66 -35958887.45 -35958887.24 0.0283 0.0068  
 Venus -103163-07-24 17:59 J -35958657.94 -35958657.75 -35958657.56 0.0281 0.0135  
 Moon -103161-02-02 00:28 J -35958100.72 -35958100.48 -35958100.23 0.0277 0.0074  
 Earth -103161-02-02 04:18 J -35958100.56 -35958100.32 -35958100.07 0.0277 0.0063 \*  
 Mars -103157-05-10 17:45 J -35956541.01 -35956540.76 -35956540.51 0.0269 0.0114  
 Mercury -103152-02-28 22:18 J -35954785.66 -35954785.57 -35954785.47 0.0269 0.0204  
 Mercury -103152-05-28 12:13 J -35954697.11 -35954696.99 -35954696.85 0.0269 0.0132  
 Mercury -103152-08-25 02:09 J -35954608.55 -35954608.41 -35954608.26 0.0269 0.0059  
 Mercury -103152-11-21 15:49 J -35954519.99 -35954519.84 -35954519.69 0.0270 0.0014  
 Mercury -103151-02-18 05:01 J -35954431.43 -35954431.29 -35954431.15 0.0270 0.0083  
 Mercury -103151-05-17 18:13 J -35954342.86 -35954342.74 -35954342.62 0.0271 0.0152  
 Mercury -103151-08-14 07:11 J -35954254.28 -35954254.20 -35954254.12 0.0271 0.0220  
 Venus -103148-01-03 03:49 J -35953381.48 -35953381.34 -35953381.19 0.0276 0.0195  
 Venus -103148-08-20 10:47 J -35953152.26 -35953152.05 -35953151.84 0.0278 0.0010  
 Venus -103147-04-06 17:59 J -35952922.91 -35952922.75 -35952922.59 0.0279 0.0181  
 Moon -103146-08-09 06:28 J -35952433.45 -35952433.23 -35952433.00 0.0283 0.0070  
 Earth -103146-08-09 09:35 J -35952433.33 -35952433.10 -35952432.86 0.0283 0.0061 \*  
 Mars -103143-05-01 03:35 J -35951437.58 -35951437.35 -35951437.09 0.0289 0.0176  
 Mercury -103138-06-19 04:47 J -35949562.38 -35949562.30 -35949562.22 0.0291 0.0246  
 Mercury -103138-09-15 22:18 J -35949473.70 -35949473.57 -35949473.44 0.0291 0.0155  
 Mercury -103138-12-13 16:04 J -35949384.98 -35949384.83 -35949384.67 0.0290 0.0062  
 Mercury -103137-03-11 10:18 J -35949296.23 -35949296.07 -35949295.91 0.0290 0.0034

Mercury -103137-06-08 05:01 J -35949207.44 -35949207.29 -35949207.15 0.0289 0.0130  
 Mercury -103137-09-04 23:59 J -35949118.60 -35949118.50 -35949118.40 0.0289 0.0228  
 Venus -103135-11-01 13:40 J -35948331.03 -35948330.93 -35948330.81 0.0284 0.0244  
 Venus -103134-06-19 07:25 J -35948101.40 -35948101.19 -35948100.98 0.0282 0.0038  
 Venus -103133-02-04 00:13 J -35947871.66 -35947871.49 -35947871.31 0.0281 0.0165  
 Earth -103132-01-26 12:28 J -35947514.18 -35947513.98 -35947513.76 0.0278 0.0155  
 Moon -103132-01-26 16:33 J -35947514.02 -35947513.81 -35947513.59 0.0278 0.0145 \*  
 Mars -103129-07-02 11:30 J -35946261.25 -35946261.02 -35946260.78 0.0271 0.0148  
 Mars -103127-06-27 08:23 J -35945536.25 -35945536.15 -35945536.03 0.0269 0.0247  
 Mercury -103123-07-19 01:25 J -35944053.53 -35944053.44 -35944053.36 0.0270 0.0220  
 Mercury -103123-10-15 15:21 J -35943964.98 -35943964.86 -35943964.73 0.0270 0.0147  
 Mercury -103122-01-12 05:16 J -35943876.42 -35943876.28 -35943876.13 0.0270 0.0074  
 Mercury -103122-04-10 18:57 J -35943787.86 -35943787.71 -35943787.56 0.0270 0.0003  
 Mercury -103122-07-08 08:23 J -35943699.30 -35943699.15 -35943699.01 0.0271 0.0069  
 Mercury -103122-10-04 21:35 J -35943610.73 -35943610.60 -35943610.48 0.0271 0.0138  
 Mercury -103121-01-01 10:33 J -35943522.15 -35943522.06 -35943521.97 0.0271 0.0207  
 Venus -103119-07-16 13:25 J -35942595.10 -35942594.94 -35942594.76 0.0277 0.0163  
 Venus -103118-03-02 20:37 J -35942365.85 -35942365.64 -35942365.43 0.0278 0.0026  
 Venus -103118-10-18 03:49 J -35942136.46 -35942136.34 -35942136.20 0.0280 0.0216  
 Earth -103117-08-03 16:04 J -35941846.04 -35941845.83 -35941845.62 0.0282 0.0138  
 Moon -103117-08-03 19:25 J -35941845.90 -35941845.69 -35941845.47 0.0282 0.0123 \*  
 Mars -103113-06-24 00:13 J -35940425.79 -35940425.49 -35940425.17 0.0290 0.0029  
 Mercury -103109-11-05 07:11 J -35938830.26 -35938830.20 -35938830.13 0.0291 0.0264  
 Mercury -103108-02-02 00:42 J -35938741.59 -35938741.47 -35938741.34 0.0290 0.0173  
 Mercury -103108-05-01 18:28 J -35938652.88 -35938652.73 -35938652.58 0.0290 0.0080  
 Mercury -103108-07-29 12:42 J -35938564.13 -35938563.97 -35938563.81 0.0290 0.0015  
 Mercury -103108-10-26 07:11 J -35938475.35 -35938475.20 -35938475.05 0.0289 0.0110  
 Mercury -103107-01-23 01:54 J -35938386.53 -35938386.42 -35938386.30 0.0289 0.0208  
 Venus -103105-05-13 23:01 J -35937544.66 -35937544.54 -35937544.38 0.0284 0.0213  
 Venus -103105-12-29 16:33 J -35937315.03 -35937314.81 -35937314.60 0.0282 0.0007



Venus -103104-08-16 09:06 J -35937085.27 -35937085.12 -35937084.96 0.0281 0.0196  
 Moon -103102-02-03 16:18 J -35936549.02 -35936548.82 -35936548.60 0.0277 0.0139  
 Earth -103102-02-03 18:13 J -35936548.96 -35936548.74 -35936548.51 0.0277 0.0126 \*  
 Mars -103099-08-19 09:49 J -35935256.37 -35935256.09 -35935255.81 0.0270 0.0007  
 Mercury -103094-12-06 02:23 J -35933321.46 -35933321.40 -35933321.33 0.0269 0.0243  
 Mercury -103093-03-03 16:33 J -35933232.92 -35933232.81 -35933232.69 0.0269 0.0170  
 Mercury -103093-05-31 06:42 J -35933144.36 -35933144.22 -35933144.08 0.0269 0.0097  
 Mercury -103093-08-27 20:23 J -35933055.80 -35933055.65 -35933055.50 0.0270 0.0026  
 Mercury -103093-11-24 09:49 J -35932967.24 -35932967.09 -35932966.95 0.0270 0.0046  
 Mercury -103092-02-20 23:01 J -35932878.67 -35932878.54 -35932878.41 0.0270 0.0116  
 Mercury -103092-05-20 11:59 J -35932790.10 -35932790.00 -35932789.89 0.0271 0.0185  
 Mercury -103092-08-17 00:57 J -35932701.51 -35932701.46 -35932701.41 0.0271 0.0252  
 Venus -103089-01-26 16:18 J -35931808.99 -35931808.82 -35931808.63 0.0277 0.0140  
 Venus -103089-09-11 23:16 J -35931579.73 -35931579.53 -35931579.32 0.0278 0.0050  
 Venus -103088-04-29 06:57 J -35931350.31 -35931350.21 -35931350.10 0.0280 0.0239  
 Earth -103087-08-10 21:21 J -35930881.82 -35930881.61 -35930881.39 0.0283 0.0124  
 Moon -103087-08-10 21:49 J -35930881.79 -35930881.59 -35930881.38 0.0283 0.0132 \*  
 Mars -103083-08-17 01:25 J -35929414.61 -35929414.44 -35929414.24 0.0291 0.0236  
 Mercury -103079-06-22 00:42 J -35928009.58 -35928009.47 -35928009.36 0.0291 0.0203  
 Mercury -103079-09-18 18:28 J -35927920.88 -35927920.73 -35927920.59 0.0290 0.0111  
 Mercury -103079-12-16 12:28 J -35927832.14 -35927831.98 -35927831.82 0.0290 0.0017  
 Mercury -103078-03-15 06:42 J -35927743.37 -35927743.22 -35927743.06 0.0290 0.0080  
 Mercury -103078-06-12 01:25 J -35927654.56 -35927654.44 -35927654.31 0.0289 0.0177  
 Mercury -103078-09-08 20:37 J -35927565.68 -35927565.64 -35927565.59 0.0289 0.0275  
 Venus -103076-11-24 04:47 J -35926758.46 -35926758.30 -35926758.13 0.0283 0.0184  
 Venus -103075-07-11 22:18 J -35926528.79 -35926528.57 -35926528.36 0.0282 0.0022  
 Venus -103074-02-26 14:52 J -35926299.00 -35926298.88 -35926298.74 0.0280 0.0225  
 Earth -103073-01-29 01:54 J -35925962.65 -35925962.42 -35925962.17 0.0278 0.0091  
 Moon -103073-01-29 03:21 J -35925962.61 -35925962.36 -35925962.11 0.0278 0.0079 \*  
 Mars -103069-10-05 03:35 J -35924251.58 -35924251.35 -35924251.10 0.0269 0.0129

Mercury -103064-04-24 05:16 J -35922589.32 -35922589.28 -35922589.24 0.0269 0.0260

Mercury -103064-07-21 19:25 J -35922500.79 -35922500.69 -35922500.57 0.0270 0.0186

Mercury -103064-10-18 09:35 J -35922412.24 -35922412.10 -35922411.96 0.0270 0.0113

Mercury -103063-01-14 23:16 J -35922323.68 -35922323.53 -35922323.38 0.0270 0.0041

Mercury -103063-04-13 12:57 J -35922235.11 -35922234.96 -35922234.82 0.0271 0.0032

Mercury -103063-07-11 02:09 J -35922146.55 -35922146.41 -35922146.27 0.0271 0.0101

Mercury -103063-10-07 15:21 J -35922057.97 -35922057.86 -35922057.75 0.0271 0.0171

Mercury -103062-01-04 04:04 J -35921969.39 -35921969.33 -35921969.26 0.0272 0.0239

Venus -103060-08-08 01:40 J -35921022.62 -35921022.43 -35921022.23 0.0277 0.0108

Venus -103059-03-25 08:52 J -35920793.32 -35920793.13 -35920792.92 0.0279 0.0083

Venus -103059-11-09 16:33 J -35920563.84 -35920563.81 -35920563.76 0.0280 0.0274

Earth -103058-08-06 03:21 J -35920294.59 -35920294.36 -35920294.13 0.0282 0.0074

Moon -103058-08-06 03:35 J -35920294.59 -35920294.35 -35920294.10 0.0282 0.0061 \*

Mars -103055-09-26 16:18 J -35919147.07 -35919146.82 -35919146.54 0.0289 0.0150

Mercury -103050-11-09 03:21 J -35917277.46 -35917277.36 -35917277.25 0.0290 0.0219

Mercury -103049-02-05 20:52 J -35917188.76 -35917188.63 -35917188.48 0.0290 0.0128

Mercury -103049-05-04 14:52 J -35917100.03 -35917099.88 -35917099.72 0.0290 0.0035

Mercury -103049-08-01 09:21 J -35917011.27 -35917011.11 -35917010.95 0.0289 0.0062

Mercury -103049-10-29 03:49 J -35916922.47 -35916922.34 -35916922.20 0.0289 0.0158

Mercury -103048-01-25 22:47 J -35916833.62 -35916833.55 -35916833.47 0.0289 0.0256

Venus -103046-06-06 15:21 J -35915972.03 -35915971.86 -35915971.67 0.0283 0.0151

Venus -103045-01-22 08:23 J -35915742.35 -35915742.15 -35915741.93 0.0282 0.0056

Venus -103045-09-08 00:57 J -35915512.54 -35915512.46 -35915512.37 0.0280 0.0257

Earth -103043-02-05 09:35 J -35914997.28 -35914997.10 -35914996.92 0.0276 0.0192

Moon -103043-02-05 11:59 J -35914997.15 -35914997.00 -35914996.82 0.0276 0.0207 \*

Mars -103041-11-26 23:01 J -35913971.78 -35913971.54 -35913971.29 0.0271 0.0129

Mars -103039-11-21 16:04 J -35913246.88 -35913246.83 -35913246.75 0.0268 0.0261

Mercury -103035-12-08 20:52 J -35911768.72 -35911768.63 -35911768.53 0.0269 0.0207

Mercury -103034-03-07 11:01 J -35911680.17 -35911680.04 -35911679.91 0.0269 0.0134

Mercury -103034-06-04 00:42 J -35911591.61 -35911591.47 -35911591.32 0.0269 0.0063

Mercury -103034-08-31 14:23 J -35911503.05 -35911502.90 -35911502.75 0.0270 0.0010  
 Mercury -103034-11-28 03:49 J -35911414.48 -35911414.34 -35911414.20 0.0270 0.0080  
 Mercury -103033-02-24 16:47 J -35911325.91 -35911325.80 -35911325.67 0.0271 0.0150  
 Mercury -103033-05-23 05:45 J -35911237.34 -35911237.26 -35911237.17 0.0271 0.0218  
 Venus -103031-07-03 22:04 J -35910465.61 -35910465.58 -35910465.53 0.0275 0.0270  
 Venus -103030-02-18 04:47 J -35910236.49 -35910236.30 -35910236.10 0.0277 0.0084  
 Venus -103030-10-05 11:59 J -35910007.19 -35910007.00 -35910006.81 0.0279 0.0106  
 Moon -103029-07-30 21:06 J -35909707.66 -35909707.62 -35909707.55 0.0281 0.0272  
 Earth -103028-08-12 08:52 J -35909330.31 -35909330.13 -35909329.95 0.0283 0.0187  
 Moon -103028-08-12 11:59 J -35909330.16 -35909330.00 -35909329.82 0.0283 0.0195 \*  
 Mars -103025-11-18 05:59 J -35908136.55 -35908136.25 -35908135.94 0.0290 0.0051  
 Mercury -103020-03-28 03:21 J -35906545.44 -35906545.36 -35906545.28 0.0291 0.0249  
 Mercury -103020-06-24 20:37 J -35906456.76 -35906456.64 -35906456.50 0.0291 0.0159  
 Mercury -103020-09-21 14:37 J -35906368.05 -35906367.89 -35906367.74 0.0290 0.0065  
 Mercury -103020-12-19 08:52 J -35906279.29 -35906279.13 -35906278.97 0.0290 0.0030  
 Mercury -103019-03-18 03:21 J -35906190.51 -35906190.36 -35906190.21 0.0289 0.0126  
 Mercury -103019-06-14 22:04 J -35906101.67 -35906101.58 -35906101.47 0.0289 0.0224  
 Venus -103017-12-16 20:23 J -35905185.84 -35905185.65 -35905185.46 0.0283 0.0122  
 Venus -103016-08-03 13:25 J -35904956.14 -35904955.94 -35904955.73 0.0281 0.0084  
 Moon -103014-01-30 13:11 J -35904411.20 -35904410.95 -35904410.69 0.0277 0.0012  
 Earth -103014-01-30 16:33 J -35904411.06 -35904410.81 -35904410.55 0.0277 0.0025 \*  
 Mars -103010-01-13 19:54 J -35902966.95 -35902966.67 -35902966.39 0.0270 0.0008  
 Mercury -103005-04-26 23:30 J -35901036.60 -35901036.52 -35901036.44 0.0270 0.0225  
 Mercury -103005-07-24 13:40 J -35900948.05 -35900947.93 -35900947.80 0.0270 0.0152  
 Mercury -103005-10-21 03:35 J -35900859.49 -35900859.35 -35900859.21 0.0270 0.0079  
 Mercury -103004-01-17 17:16 J -35900770.93 -35900770.78 -35900770.63 0.0270 0.0007  
 Mercury -103004-04-16 06:42 J -35900682.36 -35900682.22 -35900682.08 0.0271 0.0064  
 Mercury -103004-07-13 19:54 J -35900593.80 -35900593.67 -35900593.54 0.0271 0.0134  
 Mercury -103004-10-10 08:52 J -35900505.22 -35900505.13 -35900505.03 0.0272 0.0203  
 Mercury -103003-01-06 21:49 J -35900416.60 -35900416.59 -35900416.58 0.0272 0.0270

Venus -103001-01-14 06:42 J -35899679.32 -35899679.22 -35899679.12 0.0276 0.0241

Venus -103001-08-30 13:40 J -35899450.13 -35899449.93 -35899449.72 0.0278 0.0053

# 103RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 103rd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-103000-04-16 21:06 J		-35899220.80	-35899220.62	-35899220.44	0.0279	0.0139	
Moon	-102999-08-07 10:47 J		-35898743.29	-35898743.05	-35898742.81	0.0282	0.0004	
Earth	-102999-08-07 14:09 J		-35898743.15	-35898742.91	-35898742.68	0.0282	0.0012	*
Mars	-102994-01-12 15:35 J		-35897123.98	-35897123.85	-35897123.71	0.0291	0.0262	
Mercury	-102991-08-15 06:13 J		-35895813.30	-35895813.24	-35895813.18	0.0291	0.0265	
Mercury	-102991-11-11 23:30 J		-35895724.64	-35895724.52	-35895724.39	0.0290	0.0174	
Mercury	-102990-02-08 17:16 J		-35895635.93	-35895635.78	-35895635.62	0.0290	0.0082	
Mercury	-102990-05-08 11:30 J		-35895547.18	-35895547.02	-35895546.86	0.0290	0.0013	
Mercury	-102990-08-05 05:59 J		-35895458.40	-35895458.25	-35895458.10	0.0289	0.0109	
Mercury	-102990-11-02 00:42 J		-35895369.58	-35895369.47	-35895369.35	0.0289	0.0206	
Venus	-102987-06-29 07:25 J		-35894399.39	-35894399.19	-35894398.98	0.0283	0.0088	
Venus	-102986-02-14 00:28 J		-35894169.67	-35894169.48	-35894169.28	0.0281	0.0118	
Earth	-102985-01-25 06:57 J		-35893824.35	-35893824.21	-35893824.05	0.0279	0.0226	
Moon	-102985-01-25 10:18 J		-35893824.22	-35893824.07	-35893823.90	0.0279	0.0215	*

Earth -102984-02-07 00:42 J -35893445.55 -35893445.47 -35893445.37 0.0276 0.0257  
 Moon -102984-02-07 04:33 J -35893445.35 -35893445.31 -35893445.27 0.0276 0.0272  
 Mars -102982-03-07 04:47 J -35892687.39 -35892687.30 -35892687.18 0.0272 0.0252  
 Mars -102980-03-01 15:21 J -35891962.08 -35891961.86 -35891961.62 0.0269 0.0147  
 Mercury -102976-09-14 00:57 J -35890304.51 -35890304.46 -35890304.39 0.0269 0.0246  
 Mercury -102976-12-11 15:21 J -35890215.97 -35890215.86 -35890215.74 0.0269 0.0172  
 Mercury -102975-03-10 05:16 J -35890127.42 -35890127.28 -35890127.14 0.0269 0.0099  
 Mercury -102975-06-06 18:57 J -35890038.86 -35890038.71 -35890038.56 0.0270 0.0028  
 Mercury -102975-09-03 08:23 J -35889950.29 -35889950.15 -35889950.00 0.0270 0.0044  
 Mercury -102975-11-30 21:49 J -35889861.73 -35889861.59 -35889861.46 0.0270 0.0113  
 Mercury -102974-02-27 10:47 J -35889773.15 -35889773.05 -35889772.94 0.0271 0.0182  
 Mercury -102974-05-26 23:30 J -35889684.56 -35889684.52 -35889684.46 0.0271 0.0250  
 Venus -102972-07-26 10:18 J -35888893.20 -35888893.07 -35888892.94 0.0276 0.0216  
 Venus -102971-03-12 17:01 J -35888664.00 -35888663.79 -35888663.58 0.0277 0.0028  
 Venus -102971-10-27 23:59 J -35888434.66 -35888434.50 -35888434.32 0.0279 0.0163  
 Earth -102970-08-02 07:40 J -35888156.31 -35888156.18 -35888156.02 0.0281 0.0225  
 Moon -102970-08-02 11:16 J -35888156.18 -35888156.03 -35888155.87 0.0281 0.0209 \*  
 Earth -102969-08-13 19:25 J -35887778.80 -35887778.69 -35887778.58 0.0284 0.0248  
 Moon -102969-08-13 21:21 J -35887778.71 -35887778.61 -35887778.50 0.0284 0.0255 \*  
 Mars -102966-02-20 17:01 J -35886858.07 -35886857.79 -35886857.51 0.0289 0.0129  
 Mercury -102961-03-30 23:01 J -35884992.65 -35884992.54 -35884992.43 0.0291 0.0207  
 Mercury -102961-06-27 16:33 J -35884903.95 -35884903.81 -35884903.66 0.0290 0.0115  
 Mercury -102961-09-24 10:33 J -35884815.22 -35884815.06 -35884814.90 0.0290 0.0021  
 Mercury -102961-12-22 05:01 J -35884726.45 -35884726.29 -35884726.14 0.0290 0.0075  
 Mercury -102960-03-20 23:30 J -35884637.64 -35884637.52 -35884637.38 0.0289 0.0172  
 Mercury -102960-06-17 18:42 J -35884548.77 -35884548.72 -35884548.66 0.0289 0.0270  
 Venus -102958-05-24 17:30 J -35883842.82 -35883842.77 -35883842.69 0.0284 0.0270  
 Venus -102957-01-09 11:16 J -35883613.24 -35883613.03 -35883612.82 0.0283 0.0062  
 Venus -102957-08-26 04:18 J -35883383.50 -35883383.32 -35883383.13 0.0281 0.0144  
 Moon -102955-02-01 03:21 J -35882859.60 -35882859.36 -35882859.12 0.0277 0.0053

Earth -102955-02-01 06:13 J -35882859.49 -35882859.24 -35882858.98 0.0277 0.0039 \*  
 Mars -102952-04-23 04:33 J -35881682.55 -35881682.31 -35881682.05 0.0271 0.0114  
 Mercury -102946-02-01 03:06 J -35879572.38 -35879572.37 -35879572.34 0.0269 0.0266  
 Mercury -102946-04-30 17:30 J -35879483.87 -35879483.77 -35879483.66 0.0270 0.0192  
 Mercury -102946-07-28 07:40 J -35879395.32 -35879395.18 -35879395.04 0.0270 0.0118  
 Mercury -102946-10-24 21:21 J -35879306.75 -35879306.61 -35879306.46 0.0270 0.0046  
 Mercury -102945-01-21 11:01 J -35879218.19 -35879218.04 -35879217.89 0.0271 0.0026  
 Mercury -102945-04-19 00:13 J -35879129.62 -35879129.49 -35879129.35 0.0271 0.0096  
 Mercury -102945-07-16 13:25 J -35879041.05 -35879040.94 -35879040.82 0.0271 0.0165  
 Mercury -102945-10-13 02:23 J -35878952.47 -35878952.40 -35878952.33 0.0272 0.0234  
 Venus -102942-02-05 17:30 J -35878106.91 -35878106.77 -35878106.60 0.0276 0.0189  
 Venus -102942-09-23 00:57 J -35877877.67 -35877877.46 -35877877.26 0.0278 0.0006  
 Venus -102941-05-09 08:09 J -35877648.30 -35877648.16 -35877648.00 0.0280 0.0195  
 Moon -102940-08-08 20:23 J -35877191.88 -35877191.65 -35877191.43 0.0283 0.0060  
 Earth -102940-08-08 22:33 J -35877191.79 -35877191.56 -35877191.32 0.0283 0.0048 \*  
 Mars -102936-04-15 12:42 J -35875846.27 -35875845.97 -35875845.67 0.0290 0.0077  
 Mercury -102932-08-18 01:40 J -35874260.52 -35874260.43 -35874260.33 0.0291 0.0223  
 Mercury -102932-11-14 19:11 J -35874171.84 -35874171.70 -35874171.55 0.0290 0.0132  
 Mercury -102931-02-11 13:11 J -35874083.11 -35874082.95 -35874082.79 0.0290 0.0038  
 Mercury -102931-05-11 07:25 J -35873994.35 -35873994.19 -35873994.03 0.0290 0.0058  
 Mercury -102931-08-08 02:09 J -35873905.55 -35873905.41 -35873905.27 0.0289 0.0154  
 Mercury -102931-11-04 20:52 J -35873816.70 -35873816.63 -35873816.54 0.0289 0.0253  
 Venus -102929-12-04 05:01 J -35873056.40 -35873056.29 -35873056.16 0.0284 0.0234  
 Venus -102928-07-21 22:33 J -35872826.77 -35872826.56 -35872826.34 0.0282 0.0026  
 Venus -102927-03-08 15:35 J -35872597.02 -35872596.85 -35872596.69 0.0281 0.0179  
 Earth -102926-01-26 21:06 J -35872272.82 -35872272.62 -35872272.41 0.0279 0.0160  
 Moon -102926-01-26 23:59 J -35872272.71 -35872272.50 -35872272.27 0.0279 0.0149 \*  
 Mars -102922-06-10 08:09 J -35870677.43 -35870677.16 -35870676.88 0.0270 0.0030  
 Mercury -102917-09-16 19:11 J -35868751.79 -35868751.70 -35868751.60 0.0269 0.0212  
 Mercury -102917-12-14 09:21 J -35868663.24 -35868663.11 -35868662.98 0.0269 0.0138

Mercury -102916-03-12 23:16 J -35868574.68 -35868574.53 -35868574.39 0.0269 0.0066

Mercury -102916-06-09 12:42 J -35868486.11 -35868485.97 -35868485.82 0.0270 0.0010

Mercury -102916-09-06 02:09 J -35868397.55 -35868397.41 -35868397.27 0.0270 0.0076

Mercury -102916-12-03 15:21 J -35868308.98 -35868308.86 -35868308.74 0.0270 0.0145

Mercury -102915-03-02 04:18 J -35868220.41 -35868220.32 -35868220.23 0.0271 0.0213

Venus -102913-08-17 21:06 J -35867320.78 -35867320.62 -35867320.45 0.0276 0.0163

Venus -102912-04-04 04:04 J -35867091.54 -35867091.33 -35867091.12 0.0278 0.0027

Venus -102912-11-19 11:16 J -35866862.15 -35866862.03 -35866861.90 0.0279 0.0218

Earth -102911-08-03 16:18 J -35866605.01 -35866604.82 -35866604.63 0.0281 0.0167

Moon -102911-08-03 18:13 J -35866604.93 -35866604.74 -35866604.52 0.0281 0.0152 \*

Mars -102906-06-08 09:21 J -35864835.17 -35864835.11 -35864835.01 0.0291 0.0282

Mercury -102902-01-05 00:57 J -35863528.53 -35863528.46 -35863528.39 0.0291 0.0257

Mercury -102902-04-03 18:28 J -35863439.86 -35863439.73 -35863439.60 0.0291 0.0166

Mercury -102902-07-01 12:13 J -35863351.15 -35863350.99 -35863350.84 0.0290 0.0073

Mercury -102902-09-28 06:13 J -35863262.40 -35863262.24 -35863262.08 0.0290 0.0023

Mercury -102902-12-26 00:42 J -35863173.61 -35863173.47 -35863173.32 0.0290 0.0119

Mercury -102901-03-23 19:40 J -35863084.79 -35863084.68 -35863084.57 0.0289 0.0216

Venus -102899-06-16 07:54 J -35862270.31 -35862270.17 -35862270.03 0.0284 0.0211

Venus -102898-02-01 01:25 J -35862040.66 -35862040.44 -35862040.23 0.0282 0.0006

Venus -102898-09-18 18:13 J -35861810.88 -35861810.74 -35861810.59 0.0281 0.0203

Earth -102896-02-02 18:13 J -35861307.97 -35861307.74 -35861307.50 0.0277 0.0101

Moon -102896-02-02 19:40 J -35861307.90 -35861307.68 -35861307.45 0.0277 0.0115 \*

Mars -102894-08-01 06:28 J -35860398.36 -35860398.23 -35860398.09 0.0271 0.0239

Mars -102892-07-26 16:47 J -35859673.01 -35859672.80 -35859672.57 0.0269 0.0160

Mercury -102887-02-03 21:06 J -35858019.69 -35858019.62 -35858019.54 0.0269 0.0233

Mercury -102887-05-03 11:16 J -35857931.15 -35857931.03 -35857930.91 0.0270 0.0159

Mercury -102887-07-31 01:11 J -35857842.59 -35857842.45 -35857842.31 0.0270 0.0087

Mercury -102887-10-27 14:52 J -35857754.03 -35857753.88 -35857753.73 0.0270 0.0015

Mercury -102886-01-24 04:18 J -35857665.46 -35857665.32 -35857665.17 0.0271 0.0056

Mercury -102886-04-22 17:30 J -35857576.90 -35857576.77 -35857576.64 0.0271 0.0126

Mercury -102886-07-20 06:28 J -35857488.32 -35857488.23 -35857488.12 0.0271 0.0196

Mercury -102886-10-16 19:25 J -35857399.72 -35857399.69 -35857399.65 0.0272 0.0263

Venus -102883-02-28 03:35 J -35856534.53 -35856534.35 -35856534.16 0.0277 0.0137

Venus -102883-10-15 10:47 J -35856305.26 -35856305.05 -35856304.85 0.0278 0.0054

Venus -102882-06-01 18:13 J -35856075.83 -35856075.74 -35856075.64 0.0280 0.0248

Earth -102881-08-10 05:01 J -35855640.51 -35855640.29 -35855640.06 0.0283 0.0103

Moon -102881-08-10 07:11 J -35855640.41 -35855640.20 -35855639.98 0.0283 0.0113 \*

Mars -102878-07-18 12:42 J -35854568.26 -35854567.97 -35854567.68 0.0289 0.0106

Mercury -102873-05-24 03:21 J -35852796.41 -35852796.36 -35852796.31 0.0291 0.0274

Mercury -102873-08-20 20:37 J -35852707.76 -35852707.64 -35852707.52 0.0290 0.0184

Mercury -102873-11-17 14:23 J -35852619.05 -35852618.90 -35852618.75 0.0290 0.0092

Mercury -102872-02-14 08:23 J -35852530.31 -35852530.15 -35852529.99 0.0290 0.0005

Mercury -102872-05-14 02:52 J -35852441.53 -35852441.38 -35852441.23 0.0289 0.0099

Mercury -102872-08-10 21:35 J -35852352.72 -35852352.60 -35852352.48 0.0289 0.0197

Venus -102870-12-27 18:28 J -35851483.90 -35851483.73 -35851483.56 0.0284 0.0176

Venus -102869-08-13 11:45 J -35851254.22 -35851254.01 -35851253.79 0.0282 0.0034

Venus -102868-03-31 04:47 J -35851024.41 -35851024.30 -35851024.19 0.0281 0.0238

Moon -102867-01-28 07:11 J -35850721.44 -35850721.20 -35850720.94 0.0278 0.0089

Earth -102867-01-28 08:37 J -35850721.37 -35850721.14 -35850720.90 0.0278 0.0100 \*

Mars -102864-09-17 17:45 J -35849393.02 -35849392.76 -35849392.49 0.0270 0.0091

Mercury -102858-06-23 23:01 J -35847287.59 -35847287.54 -35847287.49 0.0268 0.0252

Mercury -102858-09-20 13:11 J -35847199.06 -35847198.95 -35847198.84 0.0269 0.0179

Mercury -102858-12-18 03:06 J -35847110.51 -35847110.37 -35847110.23 0.0269 0.0106

Mercury -102857-03-15 16:47 J -35847021.95 -35847021.80 -35847021.65 0.0269 0.0034

Mercury -102857-06-12 06:13 J -35846933.38 -35846933.24 -35846933.09 0.0270 0.0037

Mercury -102857-09-08 19:25 J -35846844.82 -35846844.69 -35846844.55 0.0270 0.0107

Mercury -102857-12-06 08:37 J -35846756.25 -35846756.14 -35846756.03 0.0270 0.0175

Mercury -102856-03-04 21:35 J -35846667.66 -35846667.60 -35846667.54 0.0271 0.0243

Venus -102854-09-10 06:57 J -35845748.40 -35845748.21 -35845748.01 0.0276 0.0111

Venus -102853-04-26 13:54 J -35845519.12 -35845518.92 -35845518.72 0.0278 0.0080



Venus -102853-12-11 20:52 J -35845289.66 -35845289.63 -35845289.57 0.0279 0.0272  
 Moon -102852-08-04 19:54 J -35845053.90 -35845053.67 -35845053.44 0.0281 0.0101  
 Earth -102852-08-04 22:33 J -35845053.78 -35845053.56 -35845053.34 0.0281 0.0113 \*  
 Mars -102848-09-08 21:21 J -35843557.90 -35843557.61 -35843557.31 0.0290 0.0092  
 Mercury -102843-01-07 19:25 J -35841975.79 -35841975.69 -35841975.59 0.0291 0.0220  
 Mercury -102843-04-06 12:57 J -35841887.10 -35841886.96 -35841886.82 0.0291 0.0128  
 Mercury -102843-07-04 06:57 J -35841798.37 -35841798.21 -35841798.05 0.0290 0.0034  
 Mercury -102843-10-01 01:11 J -35841709.61 -35841709.45 -35841709.29 0.0290 0.0061  
 Mercury -102843-12-28 19:40 J -35841620.81 -35841620.68 -35841620.54 0.0290 0.0159  
 Mercury -102842-03-27 14:52 J -35841531.95 -35841531.88 -35841531.81 0.0289 0.0257  
 Venus -102840-07-08 19:54 J -35840697.85 -35840697.67 -35840697.49 0.0284 0.0155  
 Venus -102839-02-23 13:25 J -35840468.15 -35840467.94 -35840467.73 0.0282 0.0055  
 Venus -102839-10-11 06:13 J -35840238.30 -35840238.24 -35840238.15 0.0280 0.0260  
 Earth -102837-02-05 03:49 J -35839756.55 -35839756.34 -35839756.13 0.0277 0.0157  
 Moon -102837-02-05 07:40 J -35839756.38 -35839756.18 -35839755.99 0.0277 0.0172 \*  
 Mars -102834-11-04 04:04 J -35838388.60 -35838388.33 -35838388.05 0.0269 0.0041  
 Mercury -102828-02-06 14:23 J -35836467.00 -35836466.90 -35836466.80 0.0269 0.0202  
 Mercury -102828-05-06 04:33 J -35836378.44 -35836378.31 -35836378.18 0.0269 0.0129  
 Mercury -102828-08-02 18:28 J -35836289.88 -35836289.73 -35836289.59 0.0270 0.0057  
 Mercury -102828-10-30 07:54 J -35836201.32 -35836201.17 -35836201.02 0.0270 0.0015  
 Mercury -102827-01-26 21:21 J -35836112.75 -35836112.61 -35836112.47 0.0270 0.0085  
 Mercury -102827-04-25 10:18 J -35836024.18 -35836024.07 -35836023.94 0.0271 0.0155  
 Mercury -102827-07-22 23:30 J -35835935.60 -35835935.52 -35835935.44 0.0271 0.0223  
 Venus -102825-08-05 05:16 J -35835191.28 -35835191.28 -35835191.26 0.0275 0.0275  
 Venus -102824-03-22 11:59 J -35834962.19 -35834962.00 -35834961.79 0.0277 0.0087  
 Venus -102824-11-06 18:57 J -35834732.89 -35834732.71 -35834732.51 0.0279 0.0106  
 Earth -102822-08-12 08:52 J -35834089.32 -35834089.13 -35834088.93 0.0283 0.0154  
 Moon -102822-08-12 12:13 J -35834089.18 -35834088.99 -35834088.79 0.0283 0.0161 \*  
 Mars -102820-10-19 17:01 J -35833289.83 -35833289.79 -35833289.71 0.0288 0.0282  
 Mercury -102814-05-27 21:21 J -35831243.69 -35831243.61 -35831243.52 0.0291 0.0239

Mercury -102814-08-24 14:52 J -35831155.01 -35831154.88 -35831154.74 0.0290 0.0148

Mercury -102814-11-21 08:37 J -35831066.29 -35831066.14 -35831065.98 0.0290 0.0056

Mercury -102813-02-18 02:52 J -35830977.54 -35830977.38 -35830977.22 0.0290 0.0041

Mercury -102813-05-16 21:21 J -35830888.75 -35830888.61 -35830888.46 0.0289 0.0138

Mercury -102813-08-13 16:33 J -35830799.91 -35830799.81 -35830799.72 0.0289 0.0235

Venus -102810-01-19 05:59 J -35829911.44 -35829911.25 -35829911.06 0.0283 0.0120

Venus -102810-09-05 23:16 J -35829681.73 -35829681.53 -35829681.32 0.0282 0.0090

Moon -102808-01-29 13:40 J -35829170.17 -35829169.93 -35829169.67 0.0278 0.0032

Earth -102808-01-29 17:30 J -35829170.02 -35829169.77 -35829169.52 0.0278 0.0044 \*

Mars -102806-12-26 16:18 J -35828108.97 -35828108.82 -35828108.63 0.0272 0.0218

Mars -102804-12-21 00:42 J -35827383.67 -35827383.47 -35827383.26 0.0269 0.0178

Mercury -102799-06-26 16:18 J -35825734.90 -35825734.82 -35825734.73 0.0268 0.0221

Mercury -102799-09-23 06:28 J -35825646.36 -35825646.23 -35825646.10 0.0269 0.0148

Mercury -102799-12-20 20:23 J -35825557.80 -35825557.65 -35825557.51 0.0269 0.0076

Mercury -102798-03-19 09:49 J -35825469.23 -35825469.09 -35825468.94 0.0269 0.0010

Mercury -102798-06-15 23:16 J -35825380.67 -35825380.53 -35825380.38 0.0270 0.0066

Mercury -102798-09-12 12:28 J -35825292.10 -35825291.98 -35825291.85 0.0270 0.0135

Mercury -102798-12-10 01:25 J -35825203.53 -35825203.44 -35825203.34 0.0270 0.0204

Mercury -102797-03-07 14:23 J -35825114.90 -35825114.90 -35825114.90 0.0271 0.0270

Venus -102795-02-15 09:06 J -35824405.20 -35824405.12 -35824405.02 0.0275 0.0248

Venus -102795-10-02 15:35 J -35824176.05 -35824175.85 -35824175.65 0.0276 0.0060

Venus -102794-05-19 22:18 J -35823946.75 -35823946.57 -35823946.38 0.0278 0.0131

Moon -102793-08-05 23:30 J -35823502.75 -35823502.52 -35823502.29 0.0281 0.0054

Earth -102793-08-06 02:37 J -35823502.62 -35823502.39 -35823502.16 0.0281 0.0063 \*

Mars -102790-12-11 13:40 J -35822280.22 -35822279.93 -35822279.64 0.0289 0.0097

Mercury -102785-10-13 19:54 J -35820511.71 -35820511.67 -35820511.62 0.0291 0.0276

Mercury -102784-01-10 13:11 J -35820423.06 -35820422.95 -35820422.83 0.0291 0.0186

Mercury -102784-04-09 06:57 J -35820334.36 -35820334.21 -35820334.06 0.0291 0.0094

Mercury -102784-07-07 00:57 J -35820245.62 -35820245.46 -35820245.30 0.0290 0.0004

Mercury -102784-10-03 19:25 J -35820156.84 -35820156.69 -35820156.54 0.0290 0.0097

Mercury -102784-12-31 14:09 J -35820068.03 -35820067.91 -35820067.79 0.0289 0.0195  
 Venus -102781-07-31 06:13 J -35819125.44 -35819125.24 -35819125.04 0.0284 0.0101  
 Venus -102780-03-17 23:45 J -35818895.71 -35818895.51 -35818895.32 0.0282 0.0109  
 Earth -102779-01-23 14:52 J -35818583.93 -35818583.88 -35818583.84 0.0280 0.0274  
 Moon -102779-01-23 18:13 J -35818583.81 -35818583.74 -35818583.64 0.0280 0.0264  
 Earth -102778-02-06 10:04 J -35818205.23 -35818205.08 -35818204.90 0.0277 0.0209  
 Moon -102778-02-06 11:16 J -35818205.18 -35818205.03 -35818204.87 0.0277 0.0222 \*  
 Mars -102775-02-11 06:28 J -35817104.50 -35817104.23 -35817103.96 0.0270 0.0084  
 Mercury -102770-11-13 17:01 J -35815002.84 -35815002.79 -35815002.72 0.0269 0.0247  
 Mercury -102769-02-10 07:25 J -35814914.30 -35814914.19 -35814914.07 0.0269 0.0173  
 Mercury -102769-05-08 21:21 J -35814825.75 -35814825.61 -35814825.47 0.0269 0.0101  
 Mercury -102769-08-05 11:01 J -35814737.18 -35814737.04 -35814736.89 0.0270 0.0030  
 Mercury -102769-11-02 00:42 J -35814648.62 -35814648.47 -35814648.33 0.0270 0.0043  
 Mercury -102768-01-29 13:54 J -35814560.05 -35814559.92 -35814559.79 0.0270 0.0112  
 Mercury -102768-04-28 02:52 J -35814471.48 -35814471.38 -35814471.27 0.0271 0.0181  
 Mercury -102768-07-25 15:49 J -35814382.89 -35814382.84 -35814382.78 0.0271 0.0249  
 Venus -102766-08-28 12:42 J -35813619.08 -35813618.97 -35813618.84 0.0276 0.0227  
 Venus -102765-04-13 19:25 J -35813389.89 -35813389.69 -35813389.48 0.0277 0.0038  
 Venus -102765-11-29 02:23 J -35813160.57 -35813160.40 -35813160.22 0.0279 0.0155  
 Earth -102764-07-31 23:45 J -35812915.58 -35812915.51 -35812915.43 0.0280 0.0265  
 Moon -102764-08-01 02:37 J -35812915.48 -35812915.39 -35812915.27 0.0280 0.0252 \*  
 Moon -102763-08-13 09:21 J -35812538.27 -35812538.11 -35812537.92 0.0283 0.0202  
 Earth -102763-08-13 10:33 J -35812538.22 -35812538.06 -35812537.89 0.0283 0.0200 \*  
 Mars -102759-02-02 17:30 J -35811269.05 -35811268.77 -35811268.47 0.0290 0.0106  
 Mercury -102755-05-30 14:37 J -35809690.99 -35809690.89 -35809690.78 0.0291 0.0209  
 Mercury -102755-08-27 08:23 J -35809602.30 -35809602.15 -35809602.01 0.0290 0.0117  
 Mercury -102755-11-24 02:09 J -35809513.57 -35809513.41 -35809513.25 0.0290 0.0024  
 Mercury -102754-02-20 20:37 J -35809424.80 -35809424.64 -35809424.49 0.0290 0.0074  
 Mercury -102754-05-20 15:06 J -35809335.99 -35809335.87 -35809335.73 0.0289 0.0171  
 Mercury -102754-08-17 10:04 J -35809247.12 -35809247.08 -35809247.01 0.0289 0.0270

Venus -102752-06-25 21:21 J -35808568.65 -35808568.61 -35808568.57 0.0285 0.0278  
 Venus -102751-02-10 15:06 J -35808339.07 -35808338.87 -35808338.66 0.0283 0.0067  
 Venus -102751-09-28 08:52 J -35808109.32 -35808109.13 -35808108.95 0.0282 0.0143  
 Moon -102749-01-31 21:35 J -35807618.84 -35807618.60 -35807618.36 0.0278 0.0018  
 Earth -102749-01-31 22:47 J -35807618.81 -35807618.55 -35807618.30 0.0278 0.0006 \*  
 Mars -102745-03-30 07:40 J -35806099.44 -35806099.18 -35806098.90 0.0270 0.0058  
 Mercury -102740-04-01 18:57 J -35804270.72 -35804270.71 -35804270.68 0.0268 0.0266  
 Mercury -102740-06-29 09:21 J -35804182.21 -35804182.11 -35804182.00 0.0268 0.0192  
 Mercury -102740-09-25 23:16 J -35804093.66 -35804093.53 -35804093.39 0.0269 0.0120  
 Mercury -102740-12-23 13:11 J -35804005.10 -35804004.95 -35804004.81 0.0269 0.0048  
 Mercury -102739-03-22 02:37 J -35803916.54 -35803916.39 -35803916.24 0.0269 0.0023  
 Mercury -102739-06-18 15:49 J -35803827.97 -35803827.84 -35803827.70 0.0270 0.0093  
 Mercury -102739-09-15 05:01 J -35803739.41 -35803739.29 -35803739.17 0.0270 0.0162  
 Mercury -102739-12-12 17:59 J -35803650.83 -35803650.75 -35803650.68 0.0270 0.0229  
 Venus -102736-03-09 16:33 J -35802832.95 -35802832.81 -35802832.66 0.0275 0.0200  
 Venus -102736-10-24 22:47 J -35802603.76 -35802603.55 -35802603.34 0.0276 0.0012  
 Venus -102735-06-11 05:16 J -35802374.43 -35802374.28 -35802374.11 0.0278 0.0181  
 Earth -102734-08-08 04:18 J -35801951.56 -35801951.32 -35801951.09 0.0281 0.0017  
 Moon -102734-08-08 05:16 J -35801951.51 -35801951.28 -35801951.05 0.0281 0.0011 \*  
 Mars -102731-03-14 12:57 J -35801002.04 -35801001.96 -35801001.88 0.0288 0.0277  
 Mercury -102726-10-17 12:57 J -35798959.03 -35798958.96 -35798958.87 0.0291 0.0247  
 Mercury -102725-01-14 06:28 J -35798870.36 -35798870.23 -35798870.10 0.0291 0.0155  
 Mercury -102725-04-12 00:13 J -35798781.64 -35798781.49 -35798781.33 0.0291 0.0062  
 Mercury -102725-07-09 18:28 J -35798692.89 -35798692.73 -35798692.57 0.0290 0.0033  
 Mercury -102725-10-06 12:57 J -35798604.10 -35798603.96 -35798603.81 0.0290 0.0130  
 Mercury -102724-01-03 07:40 J -35798515.27 -35798515.18 -35798515.07 0.0289 0.0229  
 Venus -102722-01-05 20:52 J -35797782.70 -35797782.63 -35797782.54 0.0285 0.0261  
 Venus -102722-08-23 14:52 J -35797553.09 -35797552.88 -35797552.67 0.0283 0.0049  
 Venus -102721-04-09 08:23 J -35797323.32 -35797323.15 -35797322.97 0.0282 0.0161  
 Earth -102720-01-24 18:28 J -35797032.87 -35797032.73 -35797032.57 0.0280 0.0226

Moon -102720-01-24 18:57 J -35797032.87 -35797032.71 -35797032.53 0.0280 0.0212 \*  
 Moon -102719-02-07 11:01 J -35796654.09 -35796654.04 -35796653.98 0.0277 0.0270  
 Earth -102719-02-07 13:54 J -35796654.00 -35796653.92 -35796653.81 0.0277 0.0256 \*  
 Mars -102717-05-20 20:37 J -35795820.79 -35795820.64 -35795820.45 0.0272 0.0216  
 Mars -102715-05-16 06:42 J -35795095.41 -35795095.22 -35795095.01 0.0269 0.0183  
 Mercury -102711-11-16 09:49 J -35793450.17 -35793450.09 -35793450.00 0.0269 0.0219  
 Mercury -102710-02-12 23:59 J -35793361.63 -35793361.50 -35793361.37 0.0269 0.0146  
 Mercury -102710-05-12 13:54 J -35793273.07 -35793272.92 -35793272.78 0.0269 0.0074  
 Mercury -102710-08-09 03:35 J -35793184.50 -35793184.35 -35793184.20 0.0270 0.0008  
 Mercury -102710-11-05 16:47 J -35793095.94 -35793095.80 -35793095.65 0.0270 0.0069  
 Mercury -102709-02-02 05:59 J -35793007.37 -35793007.25 -35793007.12 0.0270 0.0138  
 Mercury -102709-04-30 18:57 J -35792918.80 -35792918.71 -35792918.61 0.0271 0.0206  
 Venus -102707-09-19 18:57 J -35792046.86 -35792046.71 -35792046.54 0.0276 0.0181  
 Venus -102706-05-07 01:40 J -35791817.64 -35791817.43 -35791817.22 0.0277 0.0010  
 Venus -102706-12-22 08:23 J -35791588.29 -35791588.15 -35791588.00 0.0279 0.0203  
 Moon -102705-08-01 22:47 J -35791364.70 -35791364.55 -35791364.37 0.0280 0.0212  
 Earth -102705-08-01 23:45 J -35791364.65 -35791364.51 -35791364.36 0.0280 0.0222 \*  
 Moon -102704-08-14 06:28 J -35790987.34 -35790987.23 -35790987.09 0.0283 0.0240  
 Earth -102704-08-14 10:18 J -35790987.18 -35790987.07 -35790986.94 0.0283 0.0243 \*  
 Mars -102701-05-05 21:49 J -35789991.88 -35789991.59 -35789991.29 0.0289 0.0087  
 Mercury -102696-03-05 13:54 J -35788226.97 -35788226.92 -35788226.86 0.0291 0.0271  
 Mercury -102696-06-02 07:25 J -35788138.31 -35788138.19 -35788138.07 0.0291 0.0180  
 Mercury -102696-08-30 01:11 J -35788049.60 -35788049.45 -35788049.30 0.0290 0.0088  
 Mercury -102696-11-26 19:11 J -35787960.86 -35787960.70 -35787960.54 0.0290 0.0007  
 Mercury -102695-02-23 13:40 J -35787872.08 -35787871.93 -35787871.78 0.0290 0.0104  
 Mercury -102695-05-23 08:23 J -35787783.26 -35787783.15 -35787783.03 0.0289 0.0202  
 Venus -102693-07-18 04:33 J -35786996.42 -35786996.31 -35786996.17 0.0285 0.0229  
 Venus -102692-03-04 22:47 J -35786766.76 -35786766.55 -35786766.33 0.0283 0.0016  
 Venus -102692-10-20 16:33 J -35786536.96 -35786536.81 -35786536.65 0.0282 0.0194  
 Earth -102690-02-02 00:57 J -35786067.71 -35786067.46 -35786067.21 0.0278 0.0050

Moon -102690-02-02 04:04 J -35786067.57 -35786067.33 -35786067.09 0.0278 0.0066 \*  
 Mars -102687-07-08 04:47 J -35784815.57 -35784815.30 -35784815.03 0.0271 0.0070  
 Mercury -102681-04-04 11:45 J -35782718.07 -35782718.01 -35782717.93 0.0268 0.0239  
 Mercury -102681-07-02 01:54 J -35782629.53 -35782629.42 -35782629.29 0.0269 0.0165  
 Mercury -102681-09-28 15:49 J -35782540.98 -35782540.84 -35782540.69 0.0269 0.0093  
 Mercury -102681-12-26 05:30 J -35782452.41 -35782452.27 -35782452.12 0.0269 0.0023  
 Mercury -102680-03-24 18:57 J -35782363.85 -35782363.71 -35782363.56 0.0269 0.0050  
 Mercury -102680-06-21 08:23 J -35782275.29 -35782275.15 -35782275.02 0.0270 0.0119  
 Mercury -102680-09-17 21:21 J -35782186.71 -35782186.61 -35782186.51 0.0270 0.0187  
 Mercury -102680-12-15 10:04 J -35782098.12 -35782098.08 -35782098.03 0.0270 0.0255  
 Venus -102677-03-31 23:30 J -35781260.69 -35781260.52 -35781260.34 0.0275 0.0152  
 Venus -102677-11-16 05:30 J -35781031.47 -35781031.27 -35781031.06 0.0276 0.0038  
 Venus -102676-07-03 11:59 J -35780802.11 -35780802.00 -35780801.88 0.0278 0.0230  
 Earth -102675-08-09 04:47 J -35780400.53 -35780400.30 -35780400.06 0.0281 0.0028  
 Moon -102675-08-09 08:23 J -35780400.39 -35780400.15 -35780399.91 0.0281 0.0031 \*  
 Mars -102671-06-28 05:16 J -35778981.57 -35778981.28 -35778980.99 0.0290 0.0106  
 Mercury -102667-10-20 05:30 J -35777406.37 -35777406.27 -35777406.17 0.0291 0.0219  
 Mercury -102666-01-16 23:01 J -35777317.68 -35777317.54 -35777317.39 0.0291 0.0128  
 Mercury -102666-04-15 17:01 J -35777228.95 -35777228.79 -35777228.63 0.0291 0.0033  
 Mercury -102666-07-13 11:16 J -35777140.19 -35777140.03 -35777139.87 0.0290 0.0062  
 Mercury -102666-10-10 05:45 J -35777051.39 -35777051.26 -35777051.12 0.0290 0.0160  
 Mercury -102665-01-07 00:42 J -35776962.53 -35776962.47 -35776962.39 0.0289 0.0258  
 Venus -102663-01-28 04:04 J -35776210.47 -35776210.33 -35776210.18 0.0285 0.0213  
 Venus -102663-09-14 22:04 J -35775980.79 -35775980.58 -35775980.36 0.0283 0.0002  
 Venus -102662-05-02 15:35 J -35775750.99 -35775750.85 -35775750.71 0.0282 0.0211  
 Moon -102661-01-26 16:04 J -35775482.04 -35775481.83 -35775481.63 0.0280 0.0166  
 Earth -102661-01-26 19:40 J -35775481.86 -35775481.68 -35775481.48 0.0280 0.0182 \*  
 Mars -102657-08-23 08:23 J -35773811.42 -35773811.15 -35773810.87 0.0270 0.0058  
 Mercury -102652-08-22 11:45 J -35771986.01 -35771986.01 -35771985.99 0.0268 0.0268  
 Mercury -102652-11-19 02:09 J -35771897.51 -35771897.41 -35771897.30 0.0269 0.0194

Mercury -102651-02-15 16:18 J -35771808.96 -35771808.82 -35771808.68 0.0269 0.0121  
 Mercury -102651-05-15 05:59 J -35771720.39 -35771720.25 -35771720.10 0.0269 0.0049  
 Mercury -102651-08-11 19:40 J -35771631.83 -35771631.68 -35771631.53 0.0270 0.0023  
 Mercury -102651-11-08 08:52 J -35771543.27 -35771543.13 -35771542.99 0.0270 0.0093  
 Mercury -102650-02-04 22:04 J -35771454.70 -35771454.58 -35771454.46 0.0270 0.0162  
 Mercury -102650-05-04 10:47 J -35771366.12 -35771366.05 -35771365.97 0.0271 0.0230  
 Venus -102648-10-12 00:42 J -35770474.65 -35770474.47 -35770474.28 0.0276 0.0134  
 Venus -102647-05-29 06:57 J -35770245.41 -35770245.21 -35770245.00 0.0277 0.0058  
 Venus -102646-01-13 13:40 J -35770016.01 -35770015.93 -35770015.83 0.0279 0.0250  
 Moon -102646-08-03 19:11 J -35769813.88 -35769813.70 -35769813.51 0.0280 0.0172  
 Earth -102646-08-03 22:33 J -35769813.73 -35769813.56 -35769813.37 0.0280 0.0181 \*  
 Moon -102645-08-15 08:09 J -35769436.19 -35769436.16 -35769436.11 0.0283 0.0279  
 Earth -102645-08-15 08:37 J -35769436.14 -35769436.14 -35769436.11 0.0283 0.0282 \*  
 Mars -102643-08-07 13:40 J -35768714.02 -35768713.93 -35768713.82 0.0288 0.0270  
 Mercury -102637-03-08 06:13 J -35766674.32 -35766674.24 -35766674.16 0.0291 0.0245  
 Mercury -102637-06-04 23:30 J -35766585.65 -35766585.52 -35766585.38 0.0291 0.0155  
 Mercury -102637-09-01 17:30 J -35766496.93 -35766496.77 -35766496.62 0.0290 0.0061  
 Mercury -102637-11-29 11:30 J -35766408.17 -35766408.02 -35766407.86 0.0290 0.0036  
 Mercury -102636-02-26 06:13 J -35766319.39 -35766319.24 -35766319.10 0.0290 0.0132  
 Mercury -102636-05-26 00:57 J -35766230.55 -35766230.46 -35766230.36 0.0289 0.0230  
 Venus -102634-08-10 11:01 J -35765424.20 -35765424.04 -35765423.87 0.0285 0.0181  
 Venus -102633-03-27 05:16 J -35765194.50 -35765194.28 -35765194.07 0.0283 0.0033  
 Venus -102633-11-11 23:01 J -35764964.64 -35764964.54 -35764964.43 0.0281 0.0243  
 Earth -102631-02-03 00:57 J -35764516.70 -35764516.46 -35764516.22 0.0278 0.0091  
 Moon -102631-02-03 03:35 J -35764516.58 -35764516.35 -35764516.10 0.0278 0.0108 \*  
 Mars -102629-10-14 15:06 J -35763532.04 -35763531.87 -35763531.68 0.0272 0.0205  
 Mars -102627-10-10 02:37 J -35762806.57 -35762806.39 -35762806.19 0.0269 0.0194  
 Mercury -102622-04-08 04:18 J -35761165.41 -35761165.32 -35761165.22 0.0268 0.0212  
 Mercury -102622-07-05 18:13 J -35761076.86 -35761076.74 -35761076.60 0.0269 0.0140  
 Mercury -102622-10-02 08:09 J -35760988.30 -35760988.16 -35760988.01 0.0269 0.0068

Mercury -102622-12-29 21:49 J -35760899.74 -35760899.59 -35760899.44 0.0269 0.0004  
 Mercury -102621-03-27 11:16 J -35760811.17 -35760811.03 -35760810.89 0.0269 0.0074  
 Mercury -102621-06-24 00:13 J -35760722.61 -35760722.49 -35760722.36 0.0270 0.0144  
 Mercury -102621-09-20 13:25 J -35760634.03 -35760633.94 -35760633.85 0.0270 0.0212  
 Venus -102618-04-24 05:45 J -35759688.46 -35759688.26 -35759688.07 0.0275 0.0105  
 Venus -102618-12-09 11:45 J -35759459.21 -35759459.01 -35759458.81 0.0277 0.0086  
 Venus -102617-07-25 17:59 J -35759229.75 -35759229.75 -35759229.74 0.0278 0.0278  
 Earth -102616-08-10 04:47 J -35758849.53 -35758849.30 -35758849.07 0.0281 0.0069  
 Moon -102616-08-10 05:30 J -35758849.51 -35758849.27 -35758849.03 0.0281 0.0070 \*  
 Mars -102613-09-28 12:13 J -35757704.28 -35757703.99 -35757703.69 0.0289 0.0089  
 Mercury -102608-07-26 04:33 J -35755942.34 -35755942.31 -35755942.27 0.0291 0.0283  
 Mercury -102608-10-22 21:49 J -35755853.70 -35755853.59 -35755853.47 0.0291 0.0193  
 Mercury -102607-01-19 15:35 J -35755765.00 -35755764.85 -35755764.70 0.0291 0.0100  
 Mercury -102607-04-18 09:35 J -35755676.26 -35755676.10 -35755675.94 0.0290 0.0007  
 Mercury -102607-07-16 03:49 J -35755587.49 -35755587.34 -35755587.18 0.0290 0.0091  
 Mercury -102607-10-12 22:33 J -35755498.68 -35755498.56 -35755498.43 0.0290 0.0188  
 Mercury -102606-01-09 17:30 J -35755409.78 -35755409.77 -35755409.74 0.0289 0.0287  
 Venus -102604-02-19 10:18 J -35754638.24 -35754638.07 -35754637.89 0.0285 0.0165  
 Venus -102604-10-07 04:33 J -35754408.52 -35754408.31 -35754408.10 0.0283 0.0050  
 Venus -102603-05-24 21:49 J -35754178.66 -35754178.59 -35754178.50 0.0281 0.0260  
 Moon -102602-01-27 17:45 J -35753930.98 -35753930.76 -35753930.54 0.0280 0.0125  
 Earth -102602-01-27 19:25 J -35753930.90 -35753930.69 -35753930.47 0.0280 0.0140 \*  
 Mars -102599-12-01 00:57 J -35752527.72 -35752527.46 -35752527.18 0.0271 0.0073  
 Mercury -102593-08-25 04:18 J -35750433.38 -35750433.32 -35750433.25 0.0268 0.0242  
 Mercury -102593-11-21 18:28 J -35750344.85 -35750344.73 -35750344.61 0.0269 0.0168  
 Mercury -102592-02-18 08:23 J -35750256.29 -35750256.15 -35750256.00 0.0269 0.0096  
 Mercury -102592-05-17 22:04 J -35750167.73 -35750167.58 -35750167.43 0.0269 0.0025  
 Mercury -102592-08-14 11:45 J -35750079.16 -35750079.01 -35750078.87 0.0270 0.0047  
 Mercury -102592-11-11 00:57 J -35749990.59 -35749990.46 -35749990.33 0.0270 0.0117  
 Mercury -102591-02-07 13:54 J -35749902.02 -35749901.92 -35749901.81 0.0270 0.0185



Mercury -102591-05-07 02:52 J -35749813.43 -35749813.38 -35749813.33 0.0271 0.0253  
 Venus -102589-11-03 06:28 J -35748902.42 -35748902.23 -35748902.03 0.0276 0.0088  
 Venus -102588-06-20 12:42 J -35748673.16 -35748672.97 -35748672.77 0.0277 0.0105  
 Moon -102587-08-04 20:52 J -35748262.82 -35748262.63 -35748262.42 0.0280 0.0134  
 Earth -102587-08-04 22:04 J -35748262.78 -35748262.58 -35748262.37 0.0280 0.0139 \*  
 Mars -102583-11-21 01:25 J -35746693.72 -35746693.44 -35746693.14 0.0290 0.0110  
 Mercury -102578-03-11 22:04 J -35745121.67 -35745121.58 -35745121.47 0.0291 0.0221  
 Mercury -102578-06-08 15:49 J -35745032.98 -35745032.84 -35745032.70 0.0291 0.0129  
 Mercury -102578-09-05 09:35 J -35744944.26 -35744944.10 -35744943.94 0.0290 0.0035  
 Mercury -102578-12-03 03:49 J -35744855.50 -35744855.34 -35744855.18 0.0290 0.0061  
 Mercury -102577-02-29 22:18 J -35744766.70 -35744766.57 -35744766.43 0.0289 0.0159  
 Mercury -102577-05-28 17:16 J -35744677.84 -35744677.78 -35744677.70 0.0289 0.0257  
 Venus -102575-09-01 16:33 J -35743852.00 -35743851.81 -35743851.62 0.0284 0.0134  
 Venus -102574-04-19 10:33 J -35743622.26 -35743622.06 -35743621.85 0.0283 0.0081  
 Moon -102572-02-03 21:06 J -35742965.83 -35742965.62 -35742965.39 0.0278 0.0145  
 Earth -102572-02-03 23:45 J -35742965.73 -35742965.51 -35742965.29 0.0278 0.0130 \*  
 Mars -102568-01-17 01:11 J -35741522.72 -35741522.45 -35741522.18 0.0270 0.0067  
 Mercury -102563-01-12 06:28 J -35739701.26 -35739701.23 -35739701.19 0.0268 0.0260  
 Mercury -102563-04-10 20:37 J -35739612.74 -35739612.64 -35739612.53 0.0269 0.0187  
 Mercury -102563-07-08 10:47 J -35739524.19 -35739524.05 -35739523.91 0.0269 0.0114  
 Mercury -102563-10-05 00:28 J -35739435.63 -35739435.48 -35739435.33 0.0269 0.0042  
 Mercury -102562-01-01 13:54 J -35739347.06 -35739346.92 -35739346.77 0.0269 0.0030  
 Mercury -102562-03-31 03:21 J -35739258.50 -35739258.36 -35739258.22 0.0270 0.0099  
 Mercury -102562-06-27 16:18 J -35739169.93 -35739169.82 -35739169.70 0.0270 0.0168  
 Mercury -102562-09-24 05:16 J -35739081.35 -35739081.28 -35739081.21 0.0270 0.0235  
 Venus -102560-09-29 05:59 J -35738345.34 -35738345.25 -35738345.16 0.0274 0.0246  
 Venus -102559-05-16 11:45 J -35738116.21 -35738116.01 -35738115.80 0.0275 0.0058  
 Venus -102559-12-31 17:45 J -35737886.94 -35737886.76 -35737886.58 0.0277 0.0134  
 Moon -102557-08-11 01:40 J -35737298.65 -35737298.43 -35737298.20 0.0281 0.0108  
 Earth -102557-08-11 04:47 J -35737298.51 -35737298.30 -35737298.07 0.0281 0.0111 \*

Mars -102555-12-31 09:35 J -35736426.18 -35736426.10 -35736425.99 0.0287 0.0272  
 Mercury -102549-07-28 20:37 J -35734389.70 -35734389.64 -35734389.56 0.0291 0.0258  
 Mercury -102549-10-25 14:09 J -35734301.04 -35734300.91 -35734300.78 0.0291 0.0167  
 Mercury -102548-01-22 07:54 J -35734212.32 -35734212.17 -35734212.02 0.0291 0.0074  
 Mercury -102548-04-21 01:54 J -35734123.58 -35734123.42 -35734123.26 0.0290 0.0022  
 Mercury -102548-07-18 20:23 J -35734034.80 -35734034.65 -35734034.50 0.0290 0.0118  
 Mercury -102548-10-15 15:06 J -35733945.97 -35733945.87 -35733945.76 0.0290 0.0216  
 Venus -102545-03-13 16:33 J -35733066.01 -35733065.81 -35733065.62 0.0284 0.0117  
 Venus -102545-10-29 10:33 J -35732836.26 -35732836.06 -35732835.86 0.0283 0.0098  
 Earth -102543-01-28 18:42 J -35732379.95 -35732379.72 -35732379.48 0.0280 0.0100  
 Moon -102543-01-28 21:49 J -35732379.82 -35732379.59 -35732379.35 0.0280 0.0084 \*  
 Mars -102540-03-09 07:54 J -35731244.34 -35731244.17 -35731243.99 0.0272 0.0210  
 Mars -102538-03-04 23:01 J -35730518.72 -35730518.54 -35730518.33 0.0269 0.0193  
 Mercury -102534-08-28 20:37 J -35728880.73 -35728880.64 -35728880.55 0.0269 0.0216  
 Mercury -102534-11-25 10:47 J -35728792.18 -35728792.05 -35728791.92 0.0269 0.0143  
 Mercury -102533-02-22 00:42 J -35728703.62 -35728703.47 -35728703.33 0.0269 0.0071  
 Mercury -102533-05-20 14:23 J -35728615.05 -35728614.90 -35728614.75 0.0269 0.0007  
 Mercury -102533-08-17 03:35 J -35728526.49 -35728526.35 -35728526.20 0.0270 0.0072  
 Mercury -102533-11-13 16:47 J -35728437.92 -35728437.80 -35728437.67 0.0270 0.0141  
 Mercury -102532-02-10 05:45 J -35728349.34 -35728349.26 -35728349.16 0.0270 0.0209  
 Venus -102530-04-11 06:28 J -35727559.34 -35727559.23 -35727559.11 0.0275 0.0229  
 Venus -102530-11-26 12:28 J -35727330.19 -35727329.98 -35727329.77 0.0276 0.0040  
 Venus -102529-07-12 18:28 J -35727100.90 -35727100.73 -35727100.55 0.0278 0.0153  
 Earth -102528-08-05 21:35 J -35726711.82 -35726711.60 -35726711.38 0.0280 0.0097  
 Moon -102528-08-06 00:28 J -35726711.69 -35726711.48 -35726711.25 0.0280 0.0095 \*  
 Mars -102524-02-21 06:28 J -35725416.51 -35725416.23 -35725415.92 0.0289 0.0085  
 Mercury -102520-12-15 20:52 J -35723657.65 -35723657.63 -35723657.60 0.0291 0.0286  
 Mercury -102519-03-14 14:09 J -35723569.02 -35723568.91 -35723568.79 0.0291 0.0196  
 Mercury -102519-06-11 07:54 J -35723480.32 -35723480.17 -35723480.02 0.0290 0.0103  
 Mercury -102519-09-08 01:54 J -35723391.58 -35723391.42 -35723391.26 0.0290 0.0009

Mercury -102519-12-05 20:09 J -35723302.81 -35723302.66 -35723302.50 0.0290 0.0088

Mercury -102518-03-04 14:52 J -35723214.00 -35723213.88 -35723213.75 0.0289 0.0185

Mercury -102518-06-01 10:04 J -35723125.11 -35723125.08 -35723125.06 0.0289 0.0284

Venus -102516-09-23 22:04 J -35722279.78 -35722279.58 -35722279.37 0.0284 0.0086

Venus -102515-05-11 16:18 J -35722050.01 -35722049.82 -35722049.63 0.0283 0.0129

Moon -102513-02-05 18:57 J -35721414.90 -35721414.71 -35721414.52 0.0278 0.0182

Earth -102513-02-05 22:33 J -35721414.76 -35721414.56 -35721414.36 0.0278 0.0168 \*

Mars -102510-04-26 14:37 J -35720239.16 -35720238.89 -35720238.62 0.0272 0.0067

Mercury -102504-01-14 23:01 J -35718148.61 -35718148.54 -35718148.47 0.0269 0.0235

Mercury -102504-04-13 13:11 J -35718060.07 -35718059.95 -35718059.83 0.0269 0.0161

Mercury -102504-07-11 03:06 J -35717971.51 -35717971.37 -35717971.23 0.0269 0.0089

Mercury -102504-10-07 16:47 J -35717882.95 -35717882.80 -35717882.65 0.0269 0.0017

Mercury -102503-01-04 06:13 J -35717794.39 -35717794.24 -35717794.09 0.0270 0.0054

Mercury -102503-04-02 19:25 J -35717705.82 -35717705.69 -35717705.56 0.0270 0.0124

Mercury -102503-06-30 08:23 J -35717617.24 -35717617.15 -35717617.04 0.0270 0.0193

Mercury -102503-09-26 21:21 J -35717528.64 -35717528.61 -35717528.57 0.0271 0.0260

Venus -102501-10-21 12:42 J -35716773.11 -35716772.97 -35716772.82 0.0274 0.0199

Venus -102500-06-07 18:42 J -35716543.93 -35716543.72 -35716543.51 0.0276 0.0010

Venus -102499-01-23 00:28 J -35716314.63 -35716314.48 -35716314.32 0.0277 0.0184

Moon -102498-08-13 04:04 J -35715747.52 -35715747.33 -35715747.13 0.0281 0.0151

Earth -102498-08-13 06:13 J -35715747.43 -35715747.24 -35715747.03 0.0281 0.0155 \*

Mars -102494-04-15 22:18 J -35714405.85 -35714405.57 -35714405.27 0.0289 0.0108

Mercury -102490-08-01 13:11 J -35712837.04 -35712836.95 -35712836.85 0.0291 0.0231

Mercury -102490-10-29 06:42 J -35712748.35 -35712748.22 -35712748.08 0.0291 0.0139

Mercury -102489-01-26 00:28 J -35712659.63 -35712659.48 -35712659.32 0.0290 0.0046

Mercury -102489-04-23 18:42 J -35712570.88 -35712570.72 -35712570.56 0.0290 0.0050

Mercury -102489-07-21 13:11 J -35712482.09 -35712481.95 -35712481.81 0.0290 0.0147

Mercury -102489-10-18 08:09 J -35712393.24 -35712393.16 -35712393.07 0.0289 0.0245

Venus -102487-08-19 04:33 J -35711723.32 -35711723.31 -35711723.28 0.0286 0.0284

Venus -102486-04-05 23:01 J -35711493.75 -35711493.54 -35711493.33 0.0284 0.0067

Venus -102486-11-21 16:47 J -35711263.97 -35711263.80 -35711263.61 0.0283 0.0148  
 Earth -102484-01-29 18:28 J -35710828.97 -35710828.73 -35710828.48 0.0280 0.0059  
 Moon -102484-01-29 21:21 J -35710828.86 -35710828.61 -35710828.35 0.0280 0.0044 \*  
 Mars -102480-06-11 20:23 J -35709234.92 -35709234.65 -35709234.38 0.0270 0.0064  
 Mercury -102475-06-03 22:47 J -35707416.57 -35707416.55 -35707416.52 0.0268 0.0264  
 Mercury -102475-08-31 12:57 J -35707328.06 -35707327.96 -35707327.84 0.0269 0.0191  
 Mercury -102475-11-28 03:06 J -35707239.50 -35707239.37 -35707239.23 0.0269 0.0117  
 Mercury -102474-02-24 17:01 J -35707150.94 -35707150.79 -35707150.64 0.0269 0.0045  
 Mercury -102474-05-24 06:28 J -35707062.37 -35707062.23 -35707062.08 0.0269 0.0027  
 Mercury -102474-08-20 19:54 J -35706973.81 -35706973.67 -35706973.53 0.0270 0.0096  
 Mercury -102474-11-17 09:06 J -35706885.24 -35706885.12 -35706885.01 0.0270 0.0166  
 Mercury -102473-02-13 21:49 J -35706796.65 -35706796.59 -35706796.51 0.0270 0.0234  
 Venus -102471-05-03 13:11 J -35705987.10 -35705986.95 -35705986.79 0.0275 0.0182  
 Venus -102471-12-18 19:11 J -35705757.91 -35705757.70 -35705757.49 0.0276 0.0009  
 Venus -102470-08-05 01:11 J -35705528.59 -35705528.45 -35705528.31 0.0278 0.0203  
 Earth -102469-08-06 22:47 J -35705160.78 -35705160.55 -35705160.31 0.0280 0.0054  
 Moon -102469-08-07 01:11 J -35705160.68 -35705160.45 -35705160.20 0.0280 0.0053 \*  
 Mars -102466-05-26 07:54 J -35704138.28 -35704138.17 -35704138.05 0.0287 0.0265  
 Mercury -102461-12-18 13:11 J -35702105.01 -35702104.95 -35702104.88 0.0291 0.0260  
 Mercury -102460-03-17 06:28 J -35702016.35 -35702016.23 -35702016.10 0.0291 0.0170  
 Mercury -102460-06-14 00:13 J -35701927.64 -35701927.49 -35701927.33 0.0290 0.0077  
 Mercury -102460-09-10 18:28 J -35701838.89 -35701838.73 -35701838.57 0.0290 0.0019  
 Mercury -102460-12-08 12:57 J -35701750.11 -35701749.96 -35701749.82 0.0290 0.0116  
 Mercury -102459-03-07 07:25 J -35701661.29 -35701661.19 -35701661.07 0.0289 0.0214  
 Venus -102457-02-29 09:49 J -35700937.18 -35700937.09 -35700936.99 0.0285 0.0254  
 Venus -102457-10-16 04:33 J -35700707.52 -35700707.31 -35700707.10 0.0284 0.0037  
 Venus -102456-06-02 22:33 J -35700477.72 -35700477.56 -35700477.39 0.0282 0.0178  
 Moon -102455-01-23 21:21 J -35700242.69 -35700242.61 -35700242.52 0.0281 0.0262  
 Earth -102455-01-23 23:30 J -35700242.55 -35700242.52 -35700242.46 0.0281 0.0276 \*  
 Earth -102454-02-06 21:49 J -35699863.76 -35699863.59 -35699863.42 0.0278 0.0207

Moon -102454-02-06 22:47 J -35699863.69 -35699863.55 -35699863.39 0.0278 0.0219 \*  
 Mars -102452-08-02 21:06 J -35698955.78 -35698955.62 -35698955.42 0.0273 0.0206  
 Mars -102450-07-29 15:21 J -35698230.04 -35698229.86 -35698229.67 0.0270 0.0199  
 Mercury -102445-01-18 15:35 J -35696595.94 -35696595.85 -35696595.75 0.0269 0.0208  
 Mercury -102445-04-16 05:45 J -35696507.39 -35696507.26 -35696507.13 0.0269 0.0135  
 Mercury -102445-07-13 19:40 J -35696418.83 -35696418.68 -35696418.54 0.0269 0.0062  
 Mercury -102445-10-10 09:06 J -35696330.26 -35696330.12 -35696329.97 0.0270 0.0013  
 Mercury -102444-01-06 22:33 J -35696241.70 -35696241.56 -35696241.41 0.0270 0.0080  
 Mercury -102444-04-05 11:45 J -35696153.13 -35696153.01 -35696152.88 0.0270 0.0150  
 Mercury -102444-07-03 00:42 J -35696064.55 -35696064.47 -35696064.38 0.0270 0.0218  
 Venus -102442-11-13 20:09 J -35695200.82 -35695200.66 -35695200.47 0.0275 0.0151  
 Venus -102441-06-30 02:09 J -35694971.62 -35694971.41 -35694971.20 0.0276 0.0042  
 Venus -102440-02-14 08:09 J -35694742.27 -35694742.16 -35694742.05 0.0277 0.0236  
 Moon -102440-08-01 22:47 J -35694573.64 -35694573.55 -35694573.43 0.0278 0.0247  
 Earth -102440-08-02 01:11 J -35694573.54 -35694573.45 -35694573.33 0.0278 0.0249 \*  
 Earth -102439-08-14 09:06 J -35694196.28 -35694196.12 -35694195.95 0.0281 0.0200  
 Moon -102439-08-14 10:47 J -35694196.20 -35694196.05 -35694195.87 0.0281 0.0194 \*  
 Mars -102436-07-17 16:33 J -35693128.10 -35693127.81 -35693127.51 0.0288 0.0083  
 Mercury -102431-05-07 13:11 J -35691372.95 -35691372.95 -35691372.95 0.0291 0.0291  
 Mercury -102431-08-04 06:13 J -35691284.34 -35691284.24 -35691284.12 0.0291 0.0202  
 Mercury -102431-10-31 23:45 J -35691195.65 -35691195.51 -35691195.36 0.0290 0.0110  
 Mercury -102430-01-28 17:45 J -35691106.92 -35691106.76 -35691106.60 0.0290 0.0015  
 Mercury -102430-04-27 11:59 J -35691018.15 -35691018.00 -35691017.84 0.0290 0.0081  
 Mercury -102430-07-25 06:28 J -35690929.35 -35690929.23 -35690929.10 0.0289 0.0179  
 Mercury -102430-10-22 01:25 J -35690840.47 -35690840.44 -35690840.39 0.0289 0.0277  
 Venus -102428-09-10 12:28 J -35690151.09 -35690150.98 -35690150.85 0.0285 0.0233  
 Venus -102427-04-28 06:42 J -35689921.43 -35689921.22 -35689921.00 0.0284 0.0016  
 Venus -102427-12-14 00:28 J -35689691.62 -35689691.48 -35689691.32 0.0282 0.0199  
 Moon -102425-01-31 17:59 J -35689278.01 -35689277.75 -35689277.49 0.0280 0.0004  
 Earth -102425-01-31 20:09 J -35689277.92 -35689277.66 -35689277.41 0.0280 0.0015 \*

Mars -102422-09-19 12:57 J -35687951.23 -35687950.96 -35687950.69 0.0272 0.0069  
 Mercury -102416-06-06 15:21 J -35685863.92 -35685863.86 -35685863.78 0.0269 0.0238  
 Mercury -102416-09-03 05:45 J -35685775.38 -35685775.26 -35685775.14 0.0269 0.0164  
 Mercury -102416-11-30 19:40 J -35685686.82 -35685686.68 -35685686.53 0.0269 0.0091  
 Mercury -102415-02-27 09:35 J -35685598.25 -35685598.10 -35685597.95 0.0269 0.0019  
 Mercury -102415-05-26 23:01 J -35685509.68 -35685509.54 -35685509.39 0.0270 0.0053  
 Mercury -102415-08-23 12:13 J -35685421.12 -35685420.99 -35685420.85 0.0270 0.0123  
 Mercury -102415-11-20 01:25 J -35685332.54 -35685332.44 -35685332.34 0.0270 0.0191  
 Mercury -102414-02-16 14:23 J -35685243.94 -35685243.90 -35685243.86 0.0271 0.0259  
 Venus -102412-05-25 20:52 J -35684414.81 -35684414.63 -35684414.44 0.0275 0.0132  
 Venus -102411-01-10 02:52 J -35684185.58 -35684185.38 -35684185.17 0.0276 0.0061  
 Venus -102411-08-27 08:52 J -35683956.20 -35683956.13 -35683956.04 0.0278 0.0255  
 Moon -102410-08-08 23:45 J -35683609.75 -35683609.51 -35683609.26 0.0280 0.0012  
 Earth -102410-08-09 02:09 J -35683609.65 -35683609.41 -35683609.17 0.0280 0.0007 \*  
 Mars -102406-09-09 00:42 J -35682117.76 -35682117.47 -35682117.19 0.0289 0.0115  
 Mercury -102402-12-22 06:13 J -35680552.33 -35680552.24 -35680552.14 0.0291 0.0231  
 Mercury -102401-03-19 23:45 J -35680463.65 -35680463.51 -35680463.37 0.0290 0.0139  
 Mercury -102401-06-16 17:30 J -35680374.93 -35680374.77 -35680374.61 0.0290 0.0046  
 Mercury -102401-09-13 11:45 J -35680286.17 -35680286.01 -35680285.85 0.0290 0.0050  
 Mercury -102401-12-11 06:13 J -35680197.38 -35680197.24 -35680197.10 0.0289 0.0147  
 Mercury -102400-03-10 00:57 J -35680108.54 -35680108.46 -35680108.37 0.0289 0.0246  
 Venus -102398-03-23 17:45 J -35679364.90 -35679364.76 -35679364.61 0.0285 0.0203  
 Venus -102398-11-08 12:13 J -35679135.20 -35679134.99 -35679134.77 0.0283 0.0014  
 Venus -102397-06-25 05:59 J -35678905.36 -35678905.25 -35678905.12 0.0282 0.0229  
 Earth -102396-01-25 00:57 J -35678691.59 -35678691.46 -35678691.31 0.0281 0.0232  
 Moon -102396-01-25 03:06 J -35678691.51 -35678691.37 -35678691.21 0.0281 0.0220 \*  
 Earth -102395-02-07 22:47 J -35678312.65 -35678312.55 -35678312.43 0.0278 0.0249  
 Moon -102395-02-08 02:52 J -35678312.47 -35678312.38 -35678312.28 0.0278 0.0258 \*  
 Mars -102392-11-05 14:09 J -35676946.17 -35676945.91 -35676945.64 0.0271 0.0070  
 Mercury -102387-10-24 17:59 J -35675131.79 -35675131.75 -35675131.70 0.0269 0.0255

Mercury -102386-01-21 08:23 J -35675043.26 -35675043.15 -35675043.03 0.0269 0.0181  
 Mercury -102386-04-19 22:33 J -35674954.70 -35674954.56 -35674954.42 0.0269 0.0107  
 Mercury -102386-07-17 12:13 J -35674866.13 -35674865.99 -35674865.84 0.0270 0.0036  
 Mercury -102386-10-14 01:54 J -35674777.57 -35674777.42 -35674777.27 0.0270 0.0037  
 Mercury -102385-01-10 15:21 J -35674689.00 -35674688.86 -35674688.73 0.0270 0.0107  
 Mercury -102385-04-08 04:18 J -35674600.42 -35674600.32 -35674600.20 0.0271 0.0177  
 Mercury -102385-07-05 17:16 J -35674511.84 -35674511.78 -35674511.72 0.0271 0.0244  
 Venus -102383-12-06 05:01 J -35673628.49 -35673628.29 -35673628.10 0.0275 0.0099  
 Venus -102382-07-23 10:47 J -35673399.24 -35673399.05 -35673398.85 0.0276 0.0095  
 Earth -102381-08-03 06:13 J -35673022.40 -35673022.24 -35673022.07 0.0279 0.0200  
 Moon -102381-08-03 08:37 J -35673022.30 -35673022.14 -35673021.98 0.0279 0.0200 \*  
 Earth -102380-08-15 14:09 J -35672645.01 -35672644.91 -35672644.80 0.0281 0.0249  
 Moon -102380-08-15 17:30 J -35672644.88 -35672644.77 -35672644.64 0.0281 0.0240 \*  
 Mars -102378-10-20 08:37 J -35671849.27 -35671849.14 -35671849.01 0.0286 0.0258  
 Mercury -102372-05-10 06:42 J -35669820.28 -35669820.22 -35669820.15 0.0291 0.0259  
 Mercury -102372-08-06 23:59 J -35669731.62 -35669731.50 -35669731.37 0.0290 0.0168  
 Mercury -102372-11-03 17:30 J -35669642.92 -35669642.77 -35669642.61 0.0290 0.0076  
 Mercury -102371-01-31 11:30 J -35669554.18 -35669554.02 -35669553.86 0.0290 0.0020  
 Mercury -102371-04-30 05:59 J -35669465.40 -35669465.25 -35669465.10 0.0290 0.0115  
 Mercury -102371-07-28 00:42 J -35669376.58 -35669376.47 -35669376.36 0.0289 0.0213  
 Venus -102369-10-02 21:49 J -35668578.75 -35668578.59 -35668578.42 0.0285 0.0179  
 Venus -102368-05-20 15:49 J -35668349.05 -35668348.84 -35668348.62 0.0284 0.0039  
 Venus -102367-01-05 09:35 J -35668119.19 -35668119.10 -35668119.00 0.0282 0.0252  
 Moon -102366-02-01 20:37 J -35667726.89 -35667726.64 -35667726.40 0.0279 0.0042  
 Earth -102366-02-01 23:59 J -35667726.75 -35667726.50 -35667726.24 0.0279 0.0033 \*  
 Mars -102364-12-27 00:13 J -35666667.66 -35666667.49 -35666667.29 0.0273 0.0205  
 Mars -102362-12-22 19:54 J -35665941.85 -35665941.67 -35665941.48 0.0270 0.0199  
 Mercury -102357-06-09 08:37 J -35664311.23 -35664311.14 -35664311.04 0.0269 0.0209  
 Mercury -102357-09-05 22:47 J -35664222.68 -35664222.55 -35664222.42 0.0269 0.0135  
 Mercury -102357-12-03 12:42 J -35664134.11 -35664133.97 -35664133.82 0.0269 0.0062

Mercury -102356-03-02 02:23 J -35664045.55 -35664045.40 -35664045.25 0.0270 0.0011

Mercury -102356-05-29 15:49 J -35663956.98 -35663956.84 -35663956.69 0.0270 0.0081

Mercury -102356-08-26 05:01 J -35663868.41 -35663868.29 -35663868.16 0.0270 0.0151

Mercury -102356-11-22 18:13 J -35663779.83 -35663779.74 -35663779.66 0.0271 0.0219

Venus -102354-10-31 23:59 J -35663071.53 -35663071.50 -35663071.46 0.0274 0.0270

Venus -102353-06-17 05:45 J -35662842.45 -35662842.26 -35662842.05 0.0275 0.0080

Venus -102352-02-01 11:45 J -35662613.20 -35662613.01 -35662612.82 0.0277 0.0115

Moon -102351-08-10 04:04 J -35662058.56 -35662058.33 -35662058.09 0.0280 0.0035

Earth -102351-08-10 07:25 J -35662058.42 -35662058.19 -35662057.95 0.0280 0.0043 \*

Mars -102348-12-11 02:37 J -35660839.69 -35660839.39 -35660839.09 0.0288 0.0072

Mercury -102343-09-27 06:42 J -35659088.23 -35659088.22 -35659088.20 0.0291 0.0288

Mercury -102343-12-24 23:45 J -35658999.61 -35658999.51 -35658999.39 0.0291 0.0199

Mercury -102342-03-23 17:30 J -35658910.92 -35658910.77 -35658910.62 0.0290 0.0106

Mercury -102342-06-20 11:30 J -35658822.18 -35658822.02 -35658821.86 0.0290 0.0014

Mercury -102342-09-17 05:45 J -35658733.42 -35658733.26 -35658733.11 0.0290 0.0085

Mercury -102342-12-15 00:13 J -35658644.61 -35658644.49 -35658644.36 0.0289 0.0182

Mercury -102341-03-12 19:11 J -35658555.73 -35658555.70 -35658555.66 0.0289 0.0281

Venus -102339-04-15 03:06 J -35657792.54 -35657792.37 -35657792.18 0.0285 0.0150

Venus -102339-11-30 21:35 J -35657562.81 -35657562.60 -35657562.39 0.0283 0.0069

Earth -102337-01-27 05:16 J -35657140.46 -35657140.28 -35657140.08 0.0280 0.0183

Moon -102337-01-27 08:37 J -35657140.33 -35657140.14 -35657139.92 0.0280 0.0171 \*

Mars -102333-02-13 08:52 J -35655662.40 -35655662.13 -35655661.85 0.0272 0.0063

Mercury -102328-10-27 11:16 J -35653579.11 -35653579.03 -35653578.94 0.0269 0.0226

Mercury -102327-01-24 01:40 J -35653490.56 -35653490.43 -35653490.31 0.0270 0.0152

Mercury -102327-04-22 15:35 J -35653401.99 -35653401.85 -35653401.70 0.0270 0.0078

Mercury -102327-07-20 05:16 J -35653313.43 -35653313.28 -35653313.13 0.0270 0.0009

Mercury -102327-10-16 18:57 J -35653224.86 -35653224.71 -35653224.57 0.0270 0.0065

Mercury -102326-01-13 08:09 J -35653136.29 -35653136.16 -35653136.03 0.0271 0.0135

Mercury -102326-04-11 21:06 J -35653047.71 -35653047.62 -35653047.52 0.0271 0.0205

Venus -102324-05-13 08:23 J -35652285.24 -35652285.15 -35652285.04 0.0274 0.0238



Venus -102324-12-28 14:23 J -35652056.10 -35652055.90 -35652055.69 0.0276 0.0046  
 Venus -102323-08-14 20:23 J -35651826.82 -35651826.65 -35651826.47 0.0277 0.0150  
 Earth -102322-08-05 13:11 J -35651471.15 -35651470.95 -35651470.74 0.0279 0.0147  
 Moon -102322-08-05 16:33 J -35651471.01 -35651470.81 -35651470.60 0.0279 0.0149 \*  
 Mars -102317-02-03 09:49 J -35649828.36 -35649828.09 -35649827.80 0.0289 0.0126  
 Mercury -102313-05-13 01:11 J -35648267.55 -35648267.45 -35648267.35 0.0290 0.0222  
 Mercury -102313-08-09 18:28 J -35648178.86 -35648178.73 -35648178.58 0.0290 0.0132  
 Mercury -102313-11-06 12:13 J -35648090.14 -35648089.99 -35648089.83 0.0290 0.0039  
 Mercury -102312-02-03 06:28 J -35648001.39 -35648001.23 -35648001.07 0.0290 0.0058  
 Mercury -102312-05-03 00:57 J -35647912.60 -35647912.46 -35647912.32 0.0289 0.0155  
 Mercury -102312-07-30 19:40 J -35647823.75 -35647823.68 -35647823.60 0.0289 0.0253  
 Venus -102310-10-26 09:21 J -35647006.30 -35647006.11 -35647005.92 0.0285 0.0122  
 Venus -102309-06-12 03:06 J -35646776.57 -35646776.37 -35646776.16 0.0283 0.0096  
 Earth -102307-02-03 07:11 J -35646175.44 -35646175.20 -35646174.95 0.0279 0.0084  
 Moon -102307-02-03 07:11 J -35646175.43 -35646175.20 -35646174.97 0.0279 0.0092 \*  
 Mars -102303-03-31 23:59 J -35644657.76 -35644657.50 -35644657.23 0.0271 0.0074  
 Mercury -102298-03-16 11:30 J -35642847.06 -35642847.02 -35642846.96 0.0269 0.0253  
 Mercury -102298-06-13 02:09 J -35642758.52 -35642758.41 -35642758.30 0.0269 0.0178  
 Mercury -102298-09-09 16:18 J -35642669.96 -35642669.82 -35642669.68 0.0269 0.0105  
 Mercury -102298-12-07 05:59 J -35642581.40 -35642581.25 -35642581.10 0.0270 0.0032  
 Mercury -102297-03-04 19:40 J -35642492.83 -35642492.68 -35642492.53 0.0270 0.0040  
 Mercury -102297-06-01 09:06 J -35642404.26 -35642404.12 -35642403.99 0.0270 0.0110  
 Mercury -102297-08-28 22:18 J -35642315.68 -35642315.57 -35642315.46 0.0270 0.0180  
 Mercury -102297-11-25 11:16 J -35642227.09 -35642227.03 -35642226.98 0.0271 0.0248  
 Venus -102295-11-23 10:18 J -35641499.20 -35641499.07 -35641498.94 0.0274 0.0217  
 Venus -102294-07-10 16:04 J -35641270.04 -35641269.83 -35641269.62 0.0276 0.0025  
 Venus -102293-02-24 22:04 J -35641040.74 -35641040.58 -35641040.41 0.0277 0.0171  
 Earth -102292-08-11 15:21 J -35640507.09 -35640506.86 -35640506.64 0.0281 0.0097  
 Moon -102292-08-11 15:49 J -35640507.05 -35640506.84 -35640506.62 0.0281 0.0088 \*  
 Mars -102289-03-15 00:57 J -35639560.62 -35639560.46 -35639560.30 0.0287 0.0244

Mercury -102284-09-30 01:11 J -35637535.52 -35637535.45 -35637535.37 0.0291 0.0252

Mercury -102284-12-27 18:28 J -35637446.86 -35637446.73 -35637446.60 0.0290 0.0161

Mercury -102283-03-26 11:59 J -35637358.15 -35637358.00 -35637357.84 0.0290 0.0069

Mercury -102283-06-23 06:13 J -35637269.40 -35637269.24 -35637269.09 0.0290 0.0028

Mercury -102283-09-20 00:28 J -35637180.63 -35637180.48 -35637180.33 0.0289 0.0123

Mercury -102283-12-17 19:11 J -35637091.80 -35637091.70 -35637091.59 0.0289 0.0221

Venus -102280-05-07 14:37 J -35636220.09 -35636219.89 -35636219.68 0.0284 0.0091

Venus -102280-12-23 08:37 J -35635990.33 -35635990.14 -35635989.94 0.0283 0.0127

Moon -102278-01-28 12:42 J -35635589.20 -35635588.97 -35635588.73 0.0280 0.0120

Earth -102278-01-28 12:42 J -35635589.19 -35635588.97 -35635588.74 0.0280 0.0130 \*

Mars -102275-05-22 22:04 J -35634378.76 -35634378.58 -35634378.37 0.0273 0.0197

Mars -102273-05-17 19:54 J -35633652.83 -35633652.67 -35633652.48 0.0270 0.0209

Mercury -102269-10-30 05:01 J -35632026.40 -35632026.29 -35632026.19 0.0270 0.0195

Mercury -102268-01-26 19:11 J -35631937.84 -35631937.70 -35631937.57 0.0270 0.0121

Mercury -102268-04-25 09:06 J -35631849.27 -35631849.12 -35631848.97 0.0270 0.0048

Mercury -102268-07-22 22:47 J -35631760.70 -35631760.55 -35631760.40 0.0270 0.0025

Mercury -102268-10-19 12:13 J -35631672.13 -35631671.99 -35631671.85 0.0271 0.0096

Mercury -102267-01-16 01:25 J -35631583.55 -35631583.44 -35631583.32 0.0271 0.0166

Mercury -102267-04-14 14:23 J -35631494.97 -35631494.90 -35631494.83 0.0271 0.0234

Venus -102265-06-04 19:11 J -35630712.85 -35630712.70 -35630712.54 0.0275 0.0184

Venus -102264-01-20 01:11 J -35630483.66 -35630483.45 -35630483.24 0.0276 0.0010

Venus -102264-09-06 07:25 J -35630254.33 -35630254.19 -35630254.05 0.0277 0.0207

Moon -102263-08-06 21:21 J -35629919.83 -35629919.61 -35629919.37 0.0279 0.0096

Earth -102263-08-06 21:49 J -35629919.81 -35629919.59 -35629919.36 0.0279 0.0091 \*

Mars -102259-05-08 00:13 J -35628549.79 -35628549.49 -35628549.19 0.0287 0.0055

Mercury -102254-02-17 03:06 J -35626803.41 -35626803.37 -35626803.31 0.0290 0.0272

Mercury -102254-05-16 20:23 J -35626714.77 -35626714.65 -35626714.53 0.0290 0.0182

Mercury -102254-08-13 13:54 J -35626626.07 -35626625.92 -35626625.77 0.0290 0.0090

Mercury -102254-11-10 07:40 J -35626537.34 -35626537.18 -35626537.02 0.0290 0.0005

Mercury -102253-02-07 01:54 J -35626448.57 -35626448.42 -35626448.27 0.0289 0.0100

Mercury -102253-05-05 20:23 J -35626359.76 -35626359.65 -35626359.52 0.0289 0.0198

Venus -102251-04-02 04:18 J -35625663.35 -35625663.32 -35625663.28 0.0285 0.0280

Venus -102251-11-17 22:33 J -35625433.77 -35625433.56 -35625433.35 0.0284 0.0061

Venus -102250-07-05 16:18 J -35625204.00 -35625203.82 -35625203.64 0.0283 0.0157

Earth -102248-02-04 17:30 J -35624623.99 -35624623.77 -35624623.56 0.0279 0.0140

Moon -102248-02-04 20:37 J -35624623.84 -35624623.64 -35624623.42 0.0279 0.0148 \*

Mars -102245-07-09 02:23 J -35623373.67 -35623373.40 -35623373.12 0.0272 0.0054

Mercury -102239-03-19 05:30 J -35621294.35 -35621294.27 -35621294.17 0.0269 0.0220

Mercury -102239-06-15 19:54 J -35621205.80 -35621205.67 -35621205.54 0.0269 0.0146

Mercury -102239-09-12 09:49 J -35621117.23 -35621117.09 -35621116.94 0.0270 0.0073

Mercury -102239-12-09 23:45 J -35621028.66 -35621028.51 -35621028.36 0.0270 0.0003

Mercury -102238-03-08 13:11 J -35620940.09 -35620939.95 -35620939.81 0.0270 0.0071

Mercury -102238-06-05 02:23 J -35620851.52 -35620851.40 -35620851.27 0.0270 0.0142

Mercury -102238-09-01 15:35 J -35620762.94 -35620762.85 -35620762.76 0.0271 0.0210

Venus -102236-12-15 21:06 J -35619926.78 -35619926.62 -35619926.45 0.0275 0.0162

Venus -102235-08-02 03:06 J -35619697.57 -35619697.37 -35619697.16 0.0276 0.0033

Venus -102234-03-19 09:21 J -35619468.22 -35619468.11 -35619467.99 0.0278 0.0229

Earth -102233-08-13 00:28 J -35618955.67 -35618955.48 -35618955.28 0.0281 0.0153

Moon -102233-08-13 04:04 J -35618955.53 -35618955.33 -35618955.12 0.0281 0.0141 \*

Mars -102229-06-29 09:06 J -35617539.38 -35617539.12 -35617538.84 0.0289 0.0143

Mercury -102225-10-02 20:09 J -35615982.75 -35615982.66 -35615982.54 0.0290 0.0213

Mercury -102225-12-30 13:54 J -35615894.07 -35615893.92 -35615893.78 0.0290 0.0121

Mercury -102224-03-29 07:40 J -35615805.34 -35615805.18 -35615805.03 0.0290 0.0028

Mercury -102224-06-26 01:40 J -35615716.58 -35615716.43 -35615716.27 0.0289 0.0069

Mercury -102224-09-22 20:09 J -35615627.79 -35615627.66 -35615627.53 0.0289 0.0167

Mercury -102224-12-20 15:06 J -35615538.93 -35615538.87 -35615538.81 0.0289 0.0265

Venus -102222-10-13 10:04 J -35614877.18 -35614877.08 -35614876.98 0.0285 0.0249

Venus -102221-05-30 04:18 J -35614647.54 -35614647.32 -35614647.11 0.0284 0.0030

Venus -102220-01-14 21:49 J -35614417.74 -35614417.59 -35614417.42 0.0282 0.0189

Moon -102219-01-29 20:09 J -35614037.91 -35614037.66 -35614037.41 0.0280 0.0062

Earth -102219-01-29 23:30 J -35614037.76 -35614037.52 -35614037.27 0.0280 0.0073 \*  
 Mars -102215-08-26 04:18 J -35612368.57 -35612368.32 -35612368.05 0.0271 0.0085  
 Mercury -102210-08-06 08:23 J -35610562.22 -35610562.15 -35610562.07 0.0270 0.0237  
 Mercury -102210-11-02 22:47 J -35610473.67 -35610473.55 -35610473.43 0.0270 0.0163  
 Mercury -102209-01-30 12:42 J -35610385.11 -35610384.97 -35610384.82 0.0270 0.0090  
 Mercury -102209-04-28 02:37 J -35610296.54 -35610296.39 -35610296.24 0.0270 0.0017  
 Mercury -102209-07-25 16:18 J -35610207.97 -35610207.82 -35610207.67 0.0271 0.0056  
 Mercury -102209-10-22 05:45 J -35610119.39 -35610119.26 -35610119.13 0.0271 0.0127  
 Mercury -102208-01-18 18:57 J -35610030.81 -35610030.71 -35610030.61 0.0271 0.0197  
 Mercury -102208-04-17 07:40 J -35609942.20 -35609942.18 -35609942.14 0.0272 0.0265  
 Venus -102206-06-28 06:28 J -35609140.41 -35609140.23 -35609140.04 0.0275 0.0129  
 Venus -102205-02-12 12:42 J -35608911.17 -35608910.97 -35608910.77 0.0277 0.0068  
 Venus -102205-09-28 18:57 J -35608681.76 -35608681.71 -35608681.64 0.0278 0.0266  
 Moon -102204-08-08 04:18 J -35608368.55 -35608368.32 -35608368.08 0.0280 0.0040  
 Earth -102204-08-08 07:54 J -35608368.41 -35608368.17 -35608367.94 0.0280 0.0033 \*  
 Mars -102201-08-10 06:13 J -35607270.42 -35607270.24 -35607270.04 0.0286 0.0224  
 Mercury -102195-02-19 22:47 J -35605250.64 -35605250.55 -35605250.45 0.0290 0.0230  
 Mercury -102195-05-19 16:04 J -35605161.96 -35605161.83 -35605161.69 0.0290 0.0139  
 Mercury -102195-08-16 09:49 J -35605073.25 -35605073.09 -35605072.93 0.0290 0.0046  
 Mercury -102195-11-13 03:49 J -35604984.50 -35604984.34 -35604984.18 0.0289 0.0049  
 Mercury -102194-02-09 22:04 J -35604895.71 -35604895.58 -35604895.43 0.0289 0.0146  
 Mercury -102194-05-09 17:01 J -35604806.88 -35604806.79 -35604806.71 0.0289 0.0244  
 Venus -102192-04-24 19:11 J -35604090.83 -35604090.70 -35604090.55 0.0285 0.0216  
 Venus -102192-12-10 13:25 J -35603861.16 -35603860.94 -35603860.73 0.0284 0.0006  
 Venus -102191-07-28 06:42 J -35603631.34 -35603631.22 -35603631.08 0.0282 0.0221  
 Earth -102190-01-24 09:06 J -35603451.16 -35603451.12 -35603451.06 0.0281 0.0274  
 Moon -102190-01-24 12:57 J -35603451.04 -35603450.96 -35603450.86 0.0281 0.0260  
 Earth -102189-02-07 05:59 J -35603072.41 -35603072.25 -35603072.07 0.0279 0.0201  
 Moon -102189-02-07 08:37 J -35603072.30 -35603072.14 -35603071.96 0.0279 0.0208 \*  
 Mars -102187-10-17 02:37 J -35602089.60 -35602089.39 -35602089.18 0.0273 0.0181

Mars -102185-10-11 20:52 J -35601363.77 -35601363.63 -35601363.45 0.0270 0.0219  
 Mercury -102181-12-23 09:35 J -35599830.14 -35599830.10 -35599830.07 0.0269 0.0260  
 Mercury -102180-03-21 23:59 J -35599741.61 -35599741.50 -35599741.39 0.0269 0.0186  
 Mercury -102180-06-18 14:09 J -35599653.05 -35599652.91 -35599652.77 0.0269 0.0112  
 Mercury -102180-09-15 04:04 J -35599564.48 -35599564.33 -35599564.18 0.0270 0.0039  
 Mercury -102180-12-12 17:45 J -35599475.91 -35599475.76 -35599475.62 0.0270 0.0034  
 Mercury -102179-03-11 06:57 J -35599387.34 -35599387.21 -35599387.07 0.0270 0.0105  
 Mercury -102179-06-07 20:09 J -35599298.77 -35599298.66 -35599298.54 0.0271 0.0174  
 Mercury -102179-09-04 09:06 J -35599210.17 -35599210.12 -35599210.05 0.0271 0.0243  
 Venus -102176-01-07 08:52 J -35598354.32 -35598354.13 -35598353.93 0.0275 0.0105  
 Venus -102176-08-24 15:06 J -35598125.06 -35598124.87 -35598124.67 0.0277 0.0092  
 Earth -102175-08-03 02:52 J -35597781.51 -35597781.38 -35597781.25 0.0279 0.0233  
 Moon -102175-08-03 05:59 J -35597781.37 -35597781.25 -35597781.11 0.0279 0.0233 \*  
 Earth -102174-08-15 11:16 J -35597404.18 -35597404.03 -35597403.87 0.0281 0.0212  
 Moon -102174-08-15 12:28 J -35597404.14 -35597403.98 -35597403.80 0.0281 0.0199 \*  
 Mars -102171-10-02 03:06 J -35596260.67 -35596260.37 -35596260.06 0.0288 0.0035  
 Mercury -102166-07-09 22:47 J -35594518.61 -35594518.55 -35594518.48 0.0290 0.0260  
 Mercury -102166-10-06 16:04 J -35594429.96 -35594429.83 -35594429.71 0.0290 0.0170  
 Mercury -102165-01-03 09:35 J -35594341.25 -35594341.10 -35594340.95 0.0290 0.0077  
 Mercury -102165-04-01 03:35 J -35594252.51 -35594252.35 -35594252.19 0.0290 0.0019  
 Mercury -102165-06-28 21:49 J -35594163.74 -35594163.59 -35594163.44 0.0289 0.0114  
 Mercury -102165-09-25 16:18 J -35594074.92 -35594074.82 -35594074.71 0.0289 0.0212  
 Venus -102163-11-05 00:28 J -35593304.63 -35593304.48 -35593304.31 0.0285 0.0187  
 Venus -102162-06-22 18:42 J -35593074.93 -35593074.72 -35593074.50 0.0283 0.0034  
 Venus -102161-02-07 12:28 J -35592845.07 -35592844.98 -35592844.88 0.0282 0.0251  
 Moon -102160-01-31 10:04 J -35592486.33 -35592486.08 -35592485.84 0.0279 0.0002  
 Earth -102160-01-31 12:28 J -35592486.23 -35592485.98 -35592485.73 0.0279 0.0012 \*  
 Mars -102157-12-03 10:04 J -35591084.35 -35591084.08 -35591083.80 0.0272 0.0041  
 Mercury -102151-08-09 02:37 J -35589009.49 -35589009.39 -35589009.29 0.0270 0.0203  
 Mercury -102151-11-05 16:47 J -35588920.93 -35588920.80 -35588920.67 0.0270 0.0129

Mercury -102150-02-02 06:42 J -35588832.36 -35588832.22 -35588832.07 0.0270 0.0056

Mercury -102150-05-01 20:37 J -35588743.79 -35588743.64 -35588743.49 0.0271 0.0019

Mercury -102150-07-29 10:04 J -35588655.22 -35588655.08 -35588654.94 0.0271 0.0089

Mercury -102150-10-25 23:16 J -35588566.65 -35588566.53 -35588566.41 0.0271 0.0159

Mercury -102149-01-22 12:13 J -35588478.06 -35588477.99 -35588477.90 0.0272 0.0229

Venus -102148-12-03 11:45 J -35587797.05 -35587797.01 -35587796.96 0.0275 0.0267

Venus -102147-07-20 17:59 J -35587567.95 -35587567.75 -35587567.55 0.0276 0.0072

Venus -102146-03-07 00:13 J -35587338.67 -35587338.49 -35587338.30 0.0277 0.0126

Moon -102145-08-09 16:04 J -35586817.06 -35586816.83 -35586816.60 0.0280 0.0020

Earth -102145-08-09 17:59 J -35586816.99 -35586816.75 -35586816.51 0.0280 0.0026 \*

Mars -102141-11-24 21:35 J -35585248.84 -35585248.60 -35585248.34 0.0289 0.0168

Mercury -102137-11-26 01:40 J -35583786.47 -35583786.43 -35583786.38 0.0290 0.0275

Mercury -102136-02-22 18:57 J -35583697.83 -35583697.71 -35583697.59 0.0290 0.0185

Mercury -102136-05-22 12:13 J -35583609.13 -35583608.99 -35583608.83 0.0290 0.0094

Mercury -102136-08-19 06:13 J -35583520.40 -35583520.24 -35583520.08 0.0289 0.0002

Mercury -102136-11-16 00:13 J -35583431.64 -35583431.49 -35583431.33 0.0289 0.0097

Mercury -102135-02-12 18:57 J -35583342.83 -35583342.71 -35583342.59 0.0289 0.0194

Venus -102133-05-17 11:30 J -35582518.20 -35582518.02 -35582517.83 0.0285 0.0150

Venus -102132-01-02 05:16 J -35582288.48 -35582288.28 -35582288.07 0.0283 0.0071

Earth -102131-01-26 00:42 J -35581899.62 -35581899.47 -35581899.29 0.0281 0.0209

Moon -102131-01-26 02:52 J -35581899.55 -35581899.38 -35581899.18 0.0281 0.0196 \*

Moon -102130-02-08 19:25 J -35581520.75 -35581520.69 -35581520.61 0.0278 0.0268

Earth -102130-02-08 21:06 J -35581520.69 -35581520.62 -35581520.53 0.0278 0.0263 \*

Mars -102126-01-20 13:11 J -35580079.20 -35580078.95 -35580078.69 0.0271 0.0101

Mercury -102122-12-27 03:49 J -35578277.42 -35578277.34 -35578277.25 0.0269 0.0225

Mercury -102121-03-24 18:13 J -35578188.87 -35578188.74 -35578188.61 0.0269 0.0151

Mercury -102121-06-21 08:09 J -35578100.30 -35578100.16 -35578100.01 0.0270 0.0078

Mercury -102121-09-17 22:04 J -35578011.73 -35578011.58 -35578011.43 0.0270 0.0004

Mercury -102121-12-15 11:30 J -35577923.16 -35577923.02 -35577922.87 0.0270 0.0068

Mercury -102120-03-14 00:57 J -35577834.59 -35577834.46 -35577834.33 0.0270 0.0138

Mercury -102120-06-10 14:09 J -35577746.00 -35577745.91 -35577745.82 0.0271 0.0207

Venus -102118-06-15 14:52 J -35577010.97 -35577010.88 -35577010.78 0.0274 0.0241

Venus -102117-01-30 21:06 J -35576781.83 -35576781.62 -35576781.42 0.0276 0.0047

Venus -102117-09-16 03:21 J -35576552.53 -35576552.36 -35576552.19 0.0277 0.0151

Earth -102116-08-04 13:11 J -35576230.13 -35576229.95 -35576229.75 0.0279 0.0175

Moon -102116-08-04 15:35 J -35576230.03 -35576229.85 -35576229.65 0.0279 0.0175 \*

Moon -102115-08-16 19:25 J -35575852.78 -35575852.69 -35575852.58 0.0282 0.0256

Earth -102115-08-16 22:18 J -35575852.63 -35575852.57 -35575852.51 0.0282 0.0270 \*

Mars -102112-01-04 09:06 J -35574981.34 -35574981.12 -35574980.91 0.0287 0.0203

Mercury -102107-07-12 18:42 J -35572965.82 -35572965.72 -35572965.62 0.0290 0.0216

Mercury -102107-10-09 11:59 J -35572877.14 -35572877.00 -35572876.86 0.0290 0.0125

Mercury -102106-01-06 05:45 J -35572788.42 -35572788.26 -35572788.10 0.0290 0.0031

Mercury -102106-04-04 23:45 J -35572699.66 -35572699.51 -35572699.35 0.0289 0.0064

Mercury -102106-07-02 18:13 J -35572610.87 -35572610.74 -35572610.61 0.0289 0.0161

Mercury -102106-09-29 12:57 J -35572522.02 -35572521.96 -35572521.89 0.0289 0.0260

Venus -102104-11-27 16:04 J -35571732.02 -35571731.83 -35571731.63 0.0284 0.0121

Venus -102103-07-15 10:04 J -35571502.28 -35571502.08 -35571501.88 0.0283 0.0100

Earth -102101-02-03 02:37 J -35570934.64 -35570934.39 -35570934.14 0.0279 0.0051

Moon -102101-02-03 04:33 J -35570934.54 -35570934.31 -35570934.06 0.0279 0.0060 \*

Mars -102098-03-13 10:04 J -35569800.30 -35569800.08 -35569799.85 0.0273 0.0167

Mars -102096-03-08 06:13 J -35569074.37 -35569074.24 -35569074.10 0.0270 0.0232

Mercury -102092-05-15 06:13 J -35567545.30 -35567545.24 -35567545.17 0.0270 0.0244

Mercury -102092-08-11 20:37 J -35567456.75 -35567456.64 -35567456.51 0.0270 0.0169

Mercury -102092-11-08 10:47 J -35567368.19 -35567368.05 -35567367.90 0.0270 0.0095

Mercury -102091-02-05 00:42 J -35567279.62 -35567279.47 -35567279.32 0.0271 0.0022

Mercury -102091-05-04 14:23 J -35567191.04 -35567190.90 -35567190.75 0.0271 0.0051

Mercury -102091-08-01 03:49 J -35567102.47 -35567102.34 -35567102.21 0.0271 0.0122

Mercury -102091-10-28 17:01 J -35567013.89 -35567013.79 -35567013.69 0.0271 0.0192

Mercury -102090-01-25 05:59 J -35566925.28 -35566925.25 -35566925.21 0.0272 0.0260

Venus -102089-12-25 23:16 J -35566224.65 -35566224.53 -35566224.39 0.0275 0.0211

Venus -102088-08-12 05:45 J -35565995.47 -35565995.26 -35565995.05 0.0276 0.0014  
 Venus -102087-03-29 11:59 J -35565766.14 -35565766.00 -35565765.83 0.0278 0.0186  
 Earth -102086-08-12 04:18 J -35565265.55 -35565265.32 -35565265.09 0.0281 0.0084  
 Moon -102086-08-12 06:13 J -35565265.46 -35565265.24 -35565265.01 0.0281 0.0077 \*  
 Mars -102082-02-27 14:52 J -35563970.19 -35563969.88 -35563969.57 0.0288 0.0008  
 Mercury -102078-11-29 21:35 J -35562233.69 -35562233.60 -35562233.50 0.0290 0.0231  
 Mercury -102077-02-26 14:52 J -35562145.01 -35562144.88 -35562144.74 0.0290 0.0140  
 Mercury -102077-05-25 08:37 J -35562056.30 -35562056.14 -35562055.99 0.0290 0.0047  
 Mercury -102077-08-22 02:37 J -35561967.55 -35561967.39 -35561967.23 0.0289 0.0048  
 Mercury -102077-11-18 20:52 J -35561878.77 -35561878.63 -35561878.49 0.0289 0.0145  
 Mercury -102076-02-15 15:35 J -35561789.93 -35561789.85 -35561789.76 0.0289 0.0243  
 Venus -102074-06-10 03:35 J -35560945.55 -35560945.35 -35560945.14 0.0284 0.0083  
 Venus -102073-01-25 21:06 J -35560715.79 -35560715.62 -35560715.42 0.0283 0.0138  
 Moon -102072-01-27 13:54 J -35560348.14 -35560347.92 -35560347.68 0.0280 0.0133  
 Earth -102072-01-27 16:33 J -35560348.02 -35560347.81 -35560347.59 0.0280 0.0143 \*  
 Mars -102068-04-29 23:45 J -35558794.79 -35558794.51 -35558794.23 0.0272 0.0020  
 Mercury -102063-10-02 07:54 J -35556813.19 -35556813.17 -35556813.14 0.0269 0.0264  
 Mercury -102063-12-29 22:18 J -35556724.67 -35556724.57 -35556724.46 0.0269 0.0189  
 Mercury -102062-03-28 12:28 J -35556636.11 -35556635.98 -35556635.84 0.0269 0.0116  
 Mercury -102062-06-25 02:23 J -35556547.54 -35556547.40 -35556547.25 0.0270 0.0043  
 Mercury -102062-09-21 16:04 J -35556458.97 -35556458.83 -35556458.68 0.0270 0.0031  
 Mercury -102062-12-19 05:30 J -35556370.40 -35556370.27 -35556370.13 0.0270 0.0101  
 Mercury -102061-03-16 18:57 J -35556281.83 -35556281.71 -35556281.60 0.0270 0.0171  
 Mercury -102061-06-13 07:40 J -35556193.24 -35556193.18 -35556193.10 0.0271 0.0240  
 Venus -102059-07-08 02:37 J -35555438.54 -35555438.39 -35555438.23 0.0274 0.0185  
 Venus -102058-02-22 08:52 J -35555209.34 -35555209.13 -35555208.92 0.0276 0.0012  
 Venus -102058-10-09 15:06 J -35554980.00 -35554979.87 -35554979.73 0.0277 0.0210  
 Moon -102057-08-05 21:06 J -35554678.83 -35554678.62 -35554678.39 0.0279 0.0121  
 Earth -102057-08-05 23:16 J -35554678.74 -35554678.53 -35554678.31 0.0279 0.0117 \*  
 Mars -102052-04-20 23:01 J -35552959.76 -35552959.54 -35552959.29 0.0289 0.0189



Mercury -102048-04-17 21:06 J -35551501.67 -35551501.62 -35551501.55 0.0291 0.0264  
 Mercury -102048-07-15 14:23 J -35551413.02 -35551412.90 -35551412.77 0.0290 0.0173  
 Mercury -102048-10-12 07:54 J -35551324.32 -35551324.17 -35551324.01 0.0290 0.0081  
 Mercury -102047-01-09 01:54 J -35551235.58 -35551235.42 -35551235.26 0.0290 0.0015  
 Mercury -102047-04-07 20:09 J -35551146.81 -35551146.66 -35551146.51 0.0289 0.0111  
 Mercury -102047-07-05 14:37 J -35551058.00 -35551057.89 -35551057.77 0.0289 0.0208  
 Venus -102045-05-04 13:25 J -35550388.98 -35550388.94 -35550388.89 0.0286 0.0278  
 Venus -102045-12-20 07:25 J -35550159.39 -35550159.19 -35550158.97 0.0284 0.0056  
 Venus -102044-08-07 01:25 J -35549929.61 -35549929.44 -35549929.26 0.0283 0.0165  
 Earth -102042-02-04 17:01 J -35549383.02 -35549382.79 -35549382.56 0.0279 0.0114  
 Moon -102042-02-04 20:52 J -35549382.86 -35549382.63 -35549382.40 0.0279 0.0122 \*  
 Mars -102038-06-16 19:25 J -35547789.93 -35547789.69 -35547789.43 0.0271 0.0116  
 Mercury -102033-05-18 00:28 J -35545992.57 -35545992.48 -35545992.38 0.0270 0.0209  
 Mercury -102033-08-14 14:52 J -35545904.01 -35545903.88 -35545903.75 0.0270 0.0135  
 Mercury -102033-11-11 04:47 J -35545815.44 -35545815.30 -35545815.15 0.0270 0.0061  
 Mercury -102032-02-07 18:42 J -35545726.87 -35545726.72 -35545726.57 0.0271 0.0013  
 Mercury -102032-05-07 08:09 J -35545638.30 -35545638.16 -35545638.02 0.0271 0.0083  
 Mercury -102032-08-03 21:21 J -35545549.72 -35545549.61 -35545549.48 0.0271 0.0154  
 Mercury -102032-10-31 10:33 J -35545461.14 -35545461.06 -35545460.98 0.0271 0.0223  
 Venus -102029-01-18 10:18 J -35544652.24 -35544652.07 -35544651.89 0.0275 0.0155  
 Venus -102029-09-03 16:33 J -35544423.01 -35544422.81 -35544422.60 0.0277 0.0043  
 Venus -102028-04-20 23:16 J -35544193.62 -35544193.53 -35544193.43 0.0278 0.0243  
 Earth -102027-08-13 12:57 J -35543714.17 -35543713.96 -35543713.76 0.0281 0.0141  
 Moon -102027-08-13 16:18 J -35543714.03 -35543713.82 -35543713.60 0.0281 0.0132 \*  
 Mars -102024-06-01 13:40 J -35542691.16 -35542690.93 -35542690.68 0.0287 0.0178  
 Mercury -102019-09-05 00:13 J -35540769.53 -35540769.49 -35540769.45 0.0290 0.0278  
 Mercury -102019-12-02 17:16 J -35540680.89 -35540680.78 -35540680.66 0.0290 0.0188  
 Mercury -102018-03-01 10:47 J -35540592.20 -35540592.05 -35540591.90 0.0290 0.0096  
 Mercury -102018-05-29 04:33 J -35540503.47 -35540503.31 -35540503.15 0.0289 0.0005  
 Mercury -102018-08-25 22:47 J -35540414.70 -35540414.55 -35540414.40 0.0289 0.0094

Mercury -102018-11-22 17:16 J -35540325.90 -35540325.78 -35540325.66 0.0289 0.0191  
 Venus -102016-11-15 01:25 J -35539602.56 -35539602.44 -35539602.33 0.0285 0.0239  
 Venus -102015-07-02 19:25 J -35539372.91 -35539372.69 -35539372.48 0.0284 0.0017  
 Venus -102014-02-17 12:57 J -35539143.10 -35539142.96 -35539142.81 0.0282 0.0204  
 Moon -102013-01-30 04:04 J -35538796.57 -35538796.33 -35538796.08 0.0280 0.0071  
 Earth -102013-01-30 07:40 J -35538796.42 -35538796.18 -35538795.94 0.0280 0.0079 \*  
 Mars -102010-08-08 03:49 J -35537510.57 -35537510.34 -35537510.09 0.0273 0.0143  
 Mars -102008-08-02 18:57 J -35536784.81 -35536784.71 -35536784.61 0.0270 0.0251  
 Mercury -102004-10-05 02:23 J -35535260.48 -35535260.40 -35535260.32 0.0269 0.0228  
 Mercury -102003-01-01 16:33 J -35535171.93 -35535171.81 -35535171.68 0.0269 0.0154  
 Mercury -102003-03-31 06:42 J -35535083.36 -35535083.22 -35535083.07 0.0269 0.0080  
 Mercury -102003-06-27 20:37 J -35534994.79 -35534994.64 -35534994.49 0.0270 0.0009  
 Mercury -102003-09-24 10:04 J -35534906.22 -35534906.08 -35534905.93 0.0270 0.0064  
 Mercury -102003-12-21 23:30 J -35534817.65 -35534817.52 -35534817.39 0.0270 0.0134  
 Mercury -102002-03-20 12:28 J -35534729.07 -35534728.98 -35534728.88 0.0271 0.0204

# 102ND MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 102nd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
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Venus -102000-07-30 14:09 J -35533866.09 -35533865.91 -35533865.72 0.0275 0.0128

Venus -101999-03-16 20:09 J -35533636.86 -35533636.66 -35533636.45 0.0276 0.0070

Venus -101999-11-01 02:37 J -35533407.44 -35533407.39 -35533407.34 0.0278 0.0269

Moon -101998-08-08 05:01 J -35533127.52 -35533127.29 -35533127.06 0.0279 0.0067

Earth -101998-08-08 08:23 J -35533127.38 -35533127.15 -35533126.91 0.0279 0.0061 \*

Mars -101994-07-24 10:47 J -35531681.36 -35531681.05 -35531680.74 0.0288 0.0010

Mercury -101989-04-20 16:33 J -35529948.90 -35529948.81 -35529948.71 0.0290 0.0222

Mercury -101989-07-18 09:49 J -35529860.22 -35529860.09 -35529859.94 0.0290 0.0131

Mercury -101989-10-15 03:35 J -35529771.51 -35529771.35 -35529771.19 0.0290 0.0037

Mercury -101988-01-11 21:35 J -35529682.76 -35529682.60 -35529682.44 0.0290 0.0058

Mercury -101988-04-10 16:04 J -35529593.97 -35529593.83 -35529593.69 0.0289 0.0155

Mercury -101988-07-08 10:47 J -35529505.12 -35529505.05 -35529504.97 0.0289 0.0254

Venus -101986-05-28 03:49 J -35528816.47 -35528816.34 -35528816.20 0.0285 0.0215

Venus -101985-01-12 22:04 J -35528586.80 -35528586.58 -35528586.37 0.0284 0.0009

Venus -101985-08-29 15:49 J -35528356.96 -35528356.84 -35528356.71 0.0282 0.0229

Earth -101983-02-06 05:59 J -35527831.45 -35527831.25 -35527831.05 0.0279 0.0174

Moon -101983-02-06 05:45 J -35527831.45 -35527831.26 -35527831.05 0.0279 0.0178 \*

Mars -101980-09-24 03:35 J -35526505.63 -35526505.35 -35526505.07 0.0271 0.0006

Mercury -101974-02-22 04:04 J -35524528.38 -35524528.33 -35524528.27 0.0270 0.0250

Mercury -101974-05-21 18:28 J -35524439.84 -35524439.73 -35524439.61 0.0270 0.0175

Mercury -101974-08-18 08:37 J -35524351.28 -35524351.14 -35524351.00 0.0270 0.0101

Mercury -101974-11-14 22:33 J -35524262.71 -35524262.56 -35524262.41 0.0270 0.0028

Mercury -101973-02-11 12:13 J -35524174.14 -35524173.99 -35524173.84 0.0271 0.0044

Mercury -101973-05-10 01:40 J -35524085.56 -35524085.43 -35524085.29 0.0271 0.0115

Mercury -101973-08-06 14:52 J -35523996.98 -35523996.88 -35523996.77 0.0271 0.0185

Mercury -101973-11-03 03:49 J -35523908.38 -35523908.34 -35523908.29 0.0271 0.0254

Venus -101970-02-09 20:37 J -35523079.84 -35523079.64 -35523079.45 0.0276 0.0100

Venus -101970-09-27 02:52 J -35522850.57 -35522850.38 -35522850.18 0.0277 0.0099

Earth -101969-08-02 10:33 J -35522540.16 -35522540.06 -35522539.94 0.0279 0.0246

Moon -101969-08-02 14:09 J -35522540.01 -35522539.91 -35522539.79 0.0279 0.0247 \*

Moon -101968-08-14 19:40 J -35522162.87 -35522162.68 -35522162.49 0.0281 0.0182

Earth -101968-08-14 19:40 J -35522162.84 -35522162.68 -35522162.50 0.0281 0.0194 \*  
 Mars -101964-09-15 23:30 J -35520669.71 -35520669.52 -35520669.29 0.0289 0.0214  
 Mercury -101960-09-07 19:11 J -35519216.78 -35519216.70 -35519216.61 0.0290 0.0239  
 Mercury -101960-12-05 12:28 J -35519128.11 -35519127.98 -35519127.85 0.0290 0.0148  
 Mercury -101959-03-04 05:59 J -35519039.40 -35519039.25 -35519039.09 0.0290 0.0055  
 Mercury -101959-05-31 23:59 J -35518950.66 -35518950.50 -35518950.34 0.0289 0.0040  
 Mercury -101959-08-28 18:13 J -35518861.88 -35518861.74 -35518861.59 0.0289 0.0137  
 Mercury -101959-11-25 12:57 J -35518773.05 -35518772.96 -35518772.86 0.0289 0.0235  
 Venus -101957-12-07 15:06 J -35518030.03 -35518029.87 -35518029.69 0.0285 0.0175  
 Venus -101956-07-25 09:21 J -35517800.32 -35517800.11 -35517799.89 0.0284 0.0049  
 Venus -101955-03-12 02:52 J -35517570.43 -35517570.38 -35517570.30 0.0282 0.0269  
 Earth -101954-01-31 20:23 J -35517244.90 -35517244.65 -35517244.40 0.0280 0.0019  
 Moon -101954-01-31 20:52 J -35517244.88 -35517244.63 -35517244.39 0.0280 0.0013 \*  
 Mars -101952-11-14 22:47 J -35516226.59 -35516226.55 -35516226.49 0.0274 0.0269  
 Mars -101950-11-11 10:33 J -35515500.30 -35515500.06 -35515499.82 0.0270 0.0137  
 Mercury -101945-10-07 20:23 J -35513707.75 -35513707.65 -35513707.54 0.0269 0.0194  
 Mercury -101944-01-04 10:33 J -35513619.19 -35513619.06 -35513618.92 0.0269 0.0121  
 Mercury -101944-04-03 00:42 J -35513530.62 -35513530.47 -35513530.32 0.0269 0.0047  
 Mercury -101944-06-30 14:23 J -35513442.05 -35513441.90 -35513441.75 0.0270 0.0026  
 Mercury -101944-09-27 03:49 J -35513353.48 -35513353.34 -35513353.20 0.0270 0.0096  
 Mercury -101944-12-24 17:01 J -35513264.90 -35513264.79 -35513264.67 0.0270 0.0166  
 Mercury -101943-03-23 05:59 J -35513176.32 -35513176.25 -35513176.18 0.0271 0.0235  
 Venus -101941-01-05 18:42 J -35512522.76 -35512522.72 -35512522.68 0.0273 0.0267  
 Venus -101941-08-22 00:28 J -35512293.68 -35512293.48 -35512293.28 0.0275 0.0072  
 Venus -101940-04-08 06:28 J -35512064.41 -35512064.23 -35512064.04 0.0276 0.0127  
 Earth -101939-08-09 15:21 J -35511576.10 -35511575.86 -35511575.62 0.0279 0.0009  
 Moon -101939-08-09 15:35 J -35511576.08 -35511575.85 -35511575.62 0.0279 0.0018 \*  
 Mars -101936-10-26 03:21 J -35510402.61 -35510402.36 -35510402.10 0.0287 0.0164  
 Mercury -101930-01-25 18:13 J -35508484.78 -35508484.74 -35508484.68 0.0291 0.0274  
 Mercury -101930-04-24 11:16 J -35508396.14 -35508396.03 -35508395.90 0.0290 0.0184

Mercury -101930-07-22 04:47 J -35508307.45 -35508307.30 -35508307.15 0.0290 0.0091  
 Mercury -101930-10-18 22:47 J -35508218.71 -35508218.55 -35508218.39 0.0290 0.0009  
 Mercury -101929-01-15 16:47 J -35508129.95 -35508129.80 -35508129.65 0.0290 0.0100  
 Mercury -101929-04-13 11:30 J -35508041.14 -35508041.02 -35508040.91 0.0289 0.0198  
 Venus -101927-06-19 17:01 J -35507243.97 -35507243.79 -35507243.61 0.0285 0.0153  
 Venus -101926-02-04 11:01 J -35507014.24 -35507014.04 -35507013.83 0.0284 0.0072  
 Moon -101925-01-25 18:28 J -35506658.87 -35506658.73 -35506658.57 0.0281 0.0231  
 Earth -101925-01-25 19:11 J -35506658.82 -35506658.70 -35506658.56 0.0281 0.0239 \*  
 Moon -101924-02-07 12:57 J -35506280.09 -35506279.96 -35506279.81 0.0279 0.0231  
 Earth -101924-02-07 16:47 J -35506279.93 -35506279.80 -35506279.65 0.0279 0.0231 \*  
 Mars -101921-01-02 02:37 J -35505221.62 -35505221.39 -35505221.13 0.0272 0.0131  
 Mars -101920-12-27 18:13 J -35504495.79 -35504495.74 -35504495.68 0.0270 0.0263  
 Mercury -101915-02-24 21:49 J -35502975.68 -35502975.59 -35502975.50 0.0269 0.0217  
 Mercury -101915-05-24 12:13 J -35502887.12 -35502886.99 -35502886.86 0.0270 0.0143  
 Mercury -101915-08-21 02:09 J -35502798.55 -35502798.41 -35502798.26 0.0270 0.0069  
 Mercury -101915-11-17 16:04 J -35502709.98 -35502709.83 -35502709.68 0.0270 0.0007  
 Mercury -101914-02-14 05:30 J -35502621.41 -35502621.27 -35502621.13 0.0270 0.0075  
 Mercury -101914-05-13 18:42 J -35502532.84 -35502532.72 -35502532.59 0.0271 0.0146  
 Mercury -101914-08-10 07:54 J -35502444.25 -35502444.17 -35502444.08 0.0271 0.0215  
 Venus -101912-07-17 23:45 J -35501736.60 -35501736.51 -35501736.41 0.0274 0.0243  
 Venus -101911-03-04 05:45 J -35501507.47 -35501507.26 -35501507.05 0.0276 0.0046  
 Venus -101911-10-19 11:59 J -35501278.17 -35501278.00 -35501277.83 0.0277 0.0154  
 Moon -101910-08-04 15:35 J -35500989.01 -35500988.85 -35500988.67 0.0279 0.0200  
 Earth -101910-08-04 15:49 J -35500989.00 -35500988.84 -35500988.66 0.0279 0.0196 \*  
 Moon -101909-08-15 21:06 J -35500611.75 -35500611.62 -35500611.47 0.0281 0.0228  
 Earth -101909-08-16 00:57 J -35500611.57 -35500611.46 -35500611.34 0.0281 0.0243 \*  
 Mars -101906-12-18 22:33 J -35499391.87 -35499391.56 -35499391.25 0.0288 0.0031  
 Mercury -101901-09-10 13:25 J -35497664.04 -35497663.94 -35497663.82 0.0290 0.0202  
 Mercury -101901-12-08 06:57 J -35497575.36 -35497575.21 -35497575.07 0.0290 0.0110  
 Mercury -101900-03-07 00:42 J -35497486.63 -35497486.47 -35497486.31 0.0290 0.0016

Mercury -101900-06-03 18:42 J -35497397.87 -35497397.72 -35497397.56 0.0289 0.0080

Mercury -101900-08-31 13:11 J -35497309.07 -35497308.95 -35497308.82 0.0289 0.0177

Mercury -101900-11-28 08:09 J -35497220.21 -35497220.16 -35497220.12 0.0289 0.0276

Venus -101898-12-31 03:21 J -35496457.55 -35496457.36 -35496457.16 0.0285 0.0114

Venus -101897-08-16 21:35 J -35496227.79 -35496227.60 -35496227.40 0.0283 0.0110

Earth -101895-02-02 06:13 J -35495693.49 -35495693.24 -35495692.99 0.0280 0.0036

Moon -101895-02-02 09:35 J -35495693.34 -35495693.10 -35495692.85 0.0280 0.0042 \*

Mars -101891-02-18 16:47 J -35494216.08 -35494215.80 -35494215.52 0.0271 0.0016

Mercury -101886-07-14 23:45 J -35492243.57 -35492243.51 -35492243.43 0.0269 0.0236

Mercury -101886-10-11 14:09 J -35492155.03 -35492154.91 -35492154.78 0.0269 0.0162

Mercury -101885-01-08 04:18 J -35492066.46 -35492066.32 -35492066.18 0.0269 0.0088

Mercury -101885-04-05 17:59 J -35491977.90 -35491977.75 -35491977.59 0.0269 0.0018

Mercury -101885-07-03 07:40 J -35491889.32 -35491889.18 -35491889.03 0.0270 0.0056

Mercury -101885-09-29 21:06 J -35491800.75 -35491800.62 -35491800.49 0.0270 0.0127

Mercury -101885-12-27 10:04 J -35491712.17 -35491712.08 -35491711.97 0.0270 0.0196

Mercury -101884-03-25 23:01 J -35491623.56 -35491623.54 -35491623.51 0.0271 0.0264

Venus -101882-01-28 03:49 J -35490950.46 -35490950.34 -35490950.20 0.0274 0.0214

Venus -101882-09-14 09:35 J -35490721.30 -35490721.10 -35490720.89 0.0275 0.0018

Venus -101881-04-30 15:49 J -35490492.00 -35490491.84 -35490491.69 0.0276 0.0182

Earth -101880-08-10 20:23 J -35490024.89 -35490024.65 -35490024.42 0.0279 0.0041

Moon -101880-08-10 23:59 J -35490024.74 -35490024.50 -35490024.26 0.0279 0.0029 \*

Mars -101875-02-09 03:21 J -35488381.55 -35488381.36 -35488381.16 0.0289 0.0223

Mercury -101871-01-28 12:13 J -35486932.07 -35486931.99 -35486931.90 0.0291 0.0239

Mercury -101871-04-27 05:16 J -35486843.40 -35486843.28 -35486843.14 0.0290 0.0149

Mercury -101871-07-24 23:01 J -35486754.69 -35486754.54 -35486754.38 0.0290 0.0055

Mercury -101871-10-21 17:01 J -35486665.95 -35486665.79 -35486665.63 0.0290 0.0041

Mercury -101870-01-18 11:16 J -35486577.17 -35486577.03 -35486576.89 0.0290 0.0138

Mercury -101870-04-17 05:45 J -35486488.34 -35486488.26 -35486488.16 0.0289 0.0237

Venus -101868-07-12 04:04 J -35485671.53 -35485671.33 -35485671.12 0.0285 0.0094

Venus -101867-02-26 22:18 J -35485441.76 -35485441.57 -35485441.38 0.0283 0.0131

Moon -101866-01-26 23:16 J -35485107.71 -35485107.53 -35485107.32 0.0281 0.0179  
 Earth -101866-01-27 03:06 J -35485107.55 -35485107.37 -35485107.18 0.0281 0.0186 \*  
 Mars -101863-04-10 12:57 J -35483938.03 -35483937.96 -35483937.87 0.0274 0.0262  
 Mars -101861-04-06 02:23 J -35483211.64 -35483211.40 -35483211.17 0.0270 0.0146  
 Mercury -101857-12-01 00:42 J -35481511.50 -35481511.47 -35481511.43 0.0269 0.0261  
 Mercury -101856-02-27 15:06 J -35481422.98 -35481422.87 -35481422.76 0.0269 0.0187  
 Mercury -101856-05-27 05:16 J -35481334.41 -35481334.28 -35481334.14 0.0270 0.0113  
 Mercury -101856-08-23 19:11 J -35481245.85 -35481245.70 -35481245.55 0.0270 0.0040  
 Mercury -101856-11-20 08:52 J -35481157.27 -35481157.13 -35481156.98 0.0270 0.0034  
 Mercury -101855-02-16 22:18 J -35481068.70 -35481068.57 -35481068.43 0.0270 0.0104  
 Mercury -101855-05-16 11:45 J -35480980.12 -35480980.01 -35480979.90 0.0271 0.0174  
 Mercury -101855-08-13 00:42 J -35480891.53 -35480891.47 -35480891.41 0.0271 0.0242  
 Venus -101853-08-09 07:25 J -35480164.33 -35480164.19 -35480164.03 0.0274 0.0192  
 Venus -101852-03-26 13:40 J -35479935.14 -35479934.93 -35479934.72 0.0276 0.0007  
 Venus -101852-11-10 19:40 J -35479705.81 -35479705.68 -35479705.54 0.0277 0.0207  
 Moon -101851-08-05 15:06 J -35479438.05 -35479437.87 -35479437.66 0.0279 0.0159  
 Earth -101851-08-05 18:42 J -35479437.91 -35479437.72 -35479437.50 0.0279 0.0150 \*  
 Moon -101850-08-18 01:54 J -35479060.46 -35479060.42 -35479060.35 0.0281 0.0274  
 Mars -101847-03-22 01:40 J -35478113.68 -35478113.43 -35478113.16 0.0287 0.0148  
 Mercury -101842-06-17 13:54 J -35476199.98 -35476199.92 -35476199.85 0.0290 0.0260  
 Mercury -101842-09-14 07:11 J -35476111.33 -35476111.20 -35476111.08 0.0290 0.0169  
 Mercury -101842-12-12 00:42 J -35476022.63 -35476022.47 -35476022.32 0.0290 0.0077  
 Mercury -101841-03-09 18:28 J -35475933.89 -35475933.73 -35475933.57 0.0290 0.0018  
 Mercury -101841-06-06 12:42 J -35475845.12 -35475844.97 -35475844.82 0.0289 0.0115  
 Mercury -101841-09-03 07:11 J -35475756.30 -35475756.20 -35475756.08 0.0289 0.0213  
 Venus -101839-06-06 18:57 J -35475114.73 -35475114.71 -35475114.67 0.0286 0.0282  
 Venus -101838-01-22 13:40 J -35474885.14 -35474884.93 -35474884.72 0.0285 0.0056  
 Venus -101838-09-09 07:40 J -35474655.34 -35474655.18 -35474655.00 0.0283 0.0169  
 Earth -101836-02-03 12:42 J -35474142.21 -35474141.97 -35474141.73 0.0280 0.0085  
 Moon -101836-02-03 14:52 J -35474142.13 -35474141.88 -35474141.63 0.0280 0.0090 \*

Mars -101833-05-28 10:04 J -35472932.34 -35472932.08 -35472931.82 0.0273 0.0112  
 Mercury -101827-07-17 17:16 J -35470690.88 -35470690.78 -35470690.68 0.0269 0.0205  
 Mercury -101827-10-14 07:25 J -35470602.32 -35470602.19 -35470602.06 0.0269 0.0131  
 Mercury -101826-01-10 21:21 J -35470513.76 -35470513.61 -35470513.46 0.0269 0.0058  
 Mercury -101826-04-09 11:01 J -35470425.19 -35470425.04 -35470424.88 0.0269 0.0017  
 Mercury -101826-07-07 00:42 J -35470336.61 -35470336.47 -35470336.33 0.0270 0.0086  
 Mercury -101826-10-03 13:54 J -35470248.04 -35470247.92 -35470247.80 0.0270 0.0155  
 Mercury -101826-12-31 02:52 J -35470159.45 -35470159.38 -35470159.30 0.0270 0.0224  
 Venus -101823-02-19 11:59 J -35469378.16 -35469378.00 -35469377.82 0.0274 0.0162  
 Venus -101823-10-06 17:45 J -35469148.97 -35469148.76 -35469148.55 0.0275 0.0036  
 Venus -101822-05-23 23:30 J -35468919.62 -35468919.52 -35468919.40 0.0276 0.0235  
 Earth -101821-08-11 23:30 J -35468473.74 -35468473.52 -35468473.29 0.0279 0.0086  
 Moon -101821-08-12 00:42 J -35468473.70 -35468473.47 -35468473.23 0.0279 0.0073 \*  
 Mars -101817-05-12 20:37 J -35467103.94 -35467103.64 -35467103.33 0.0288 0.0036  
 Mercury -101812-01-31 05:30 J -35465379.37 -35465379.27 -35465379.16 0.0291 0.0207  
 Mercury -101812-04-29 23:01 J -35465290.69 -35465290.54 -35465290.40 0.0290 0.0115  
 Mercury -101812-07-27 16:33 J -35465201.96 -35465201.81 -35465201.65 0.0290 0.0023  
 Mercury -101812-10-24 10:47 J -35465113.21 -35465113.05 -35465112.90 0.0290 0.0075  
 Mercury -101811-01-21 05:01 J -35465024.41 -35465024.29 -35465024.15 0.0290 0.0173  
 Mercury -101811-04-19 23:45 J -35464935.55 -35464935.51 -35464935.45 0.0289 0.0271  
 Venus -101810-12-17 19:11 J -35464328.78 -35464328.70 -35464328.62 0.0286 0.0263  
 Venus -101809-08-03 13:25 J -35464099.15 -35464098.94 -35464098.72 0.0285 0.0037  
 Venus -101808-03-21 07:40 J -35463869.34 -35463869.18 -35463869.02 0.0283 0.0188  
 Moon -101807-01-28 06:13 J -35463556.45 -35463556.24 -35463556.02 0.0281 0.0132  
 Earth -101807-01-28 07:40 J -35463556.39 -35463556.18 -35463555.95 0.0281 0.0139 \*  
 Mars -101803-07-15 00:13 J -35461927.77 -35461927.49 -35461927.21 0.0271 0.0021  
 Mercury -101798-12-04 17:45 J -35459958.84 -35459958.76 -35459958.68 0.0269 0.0232  
 Mercury -101797-03-02 07:54 J -35459870.29 -35459870.17 -35459870.04 0.0269 0.0158  
 Mercury -101797-05-29 22:04 J -35459781.72 -35459781.58 -35459781.43 0.0269 0.0084  
 Mercury -101797-08-26 11:59 J -35459693.15 -35459693.00 -35459692.85 0.0270 0.0011



Mercury -101797-11-23 01:40 J -35459604.58 -35459604.43 -35459604.29 0.0270 0.0061

Mercury -101796-02-19 14:52 J -35459516.01 -35459515.88 -35459515.75 0.0270 0.0131

Mercury -101796-05-19 04:04 J -35459427.42 -35459427.33 -35459427.23 0.0271 0.0200

Mercury -101796-08-15 17:01 J -35459338.80 -35459338.79 -35459338.77 0.0271 0.0268

Venus -101794-09-01 14:37 J -35458592.06 -35458591.89 -35458591.70 0.0275 0.0140

Venus -101793-04-17 20:37 J -35458362.85 -35458362.64 -35458362.44 0.0276 0.0058

Venus -101793-12-03 02:37 J -35458133.46 -35458133.39 -35458133.32 0.0277 0.0259

Moon -101792-08-06 18:57 J -35457886.92 -35457886.71 -35457886.50 0.0279 0.0116

Earth -101792-08-06 20:09 J -35457886.87 -35457886.66 -35457886.43 0.0279 0.0107 \*

Mars -101787-07-05 17:01 J -35456092.96 -35456092.79 -35456092.60 0.0289 0.0235

Mercury -101783-06-20 06:28 J -35454647.31 -35454647.23 -35454647.13 0.0290 0.0232

Mercury -101783-09-16 23:59 J -35454558.64 -35454558.50 -35454558.36 0.0290 0.0140

Mercury -101783-12-14 17:30 J -35454469.92 -35454469.77 -35454469.61 0.0290 0.0047

Mercury -101782-03-13 11:30 J -35454381.18 -35454381.02 -35454380.86 0.0290 0.0050

Mercury -101782-06-10 05:59 J -35454292.39 -35454292.25 -35454292.11 0.0289 0.0147

Mercury -101782-09-07 00:28 J -35454203.56 -35454203.48 -35454203.39 0.0289 0.0245

Venus -101780-06-29 03:06 J -35453542.49 -35453542.37 -35453542.24 0.0286 0.0228

Venus -101779-02-13 21:49 J -35453312.81 -35453312.59 -35453312.38 0.0284 0.0004

Venus -101779-10-01 16:04 J -35453082.96 -35453082.83 -35453082.70 0.0283 0.0223

Moon -101777-02-05 13:11 J -35452591.17 -35452590.95 -35452590.71 0.0280 0.0130

Earth -101777-02-05 15:35 J -35452591.06 -35452590.85 -35452590.61 0.0280 0.0130 \*

Mars -101775-09-04 14:23 J -35451649.00 -35451648.90 -35451648.77 0.0274 0.0248

Mars -101773-08-31 04:18 J -35450922.55 -35450922.32 -35450922.10 0.0271 0.0160

Mercury -101768-04-22 19:54 J -35449226.72 -35449226.67 -35449226.62 0.0269 0.0251

Mercury -101768-07-20 10:04 J -35449138.19 -35449138.08 -35449137.96 0.0269 0.0177

Mercury -101768-10-17 00:13 J -35449049.63 -35449049.49 -35449049.35 0.0269 0.0103

Mercury -101767-01-13 14:09 J -35448961.06 -35448960.91 -35448960.76 0.0269 0.0030

Mercury -101767-04-12 03:49 J -35448872.49 -35448872.34 -35448872.19 0.0269 0.0042

Mercury -101767-07-09 17:16 J -35448783.92 -35448783.78 -35448783.65 0.0270 0.0113

Mercury -101767-10-06 06:28 J -35448695.34 -35448695.23 -35448695.12 0.0270 0.0182

Mercury -101766-01-02 19:25 J -35448606.74 -35448606.69 -35448606.64 0.0270 0.0250  
 Venus -101764-03-13 19:25 J -35447805.88 -35447805.69 -35447805.49 0.0274 0.0110  
 Venus -101764-10-29 00:57 J -35447576.66 -35447576.46 -35447576.26 0.0275 0.0088  
 Moon -101762-08-13 21:49 J -35446922.81 -35446922.59 -35446922.36 0.0279 0.0113  
 Earth -101762-08-14 00:57 J -35446922.66 -35446922.46 -35446922.24 0.0279 0.0128 \*  
 Mars -101759-08-14 22:47 J -35445825.80 -35445825.55 -35445825.28 0.0286 0.0146  
 Mercury -101754-11-07 05:16 J -35443915.33 -35443915.28 -35443915.22 0.0291 0.0269  
 Mercury -101753-02-03 22:18 J -35443826.69 -35443826.57 -35443826.45 0.0291 0.0178  
 Mercury -101753-05-02 15:49 J -35443737.99 -35443737.84 -35443737.69 0.0290 0.0086  
 Mercury -101753-07-30 09:35 J -35443649.26 -35443649.10 -35443648.94 0.0290 0.0009  
 Mercury -101753-10-27 03:49 J -35443560.49 -35443560.34 -35443560.19 0.0290 0.0106  
 Mercury -101752-01-23 22:18 J -35443471.68 -35443471.57 -35443471.45 0.0289 0.0204  
 Venus -101750-01-09 02:37 J -35442756.52 -35442756.39 -35442756.24 0.0286 0.0211  
 Venus -101750-08-26 21:21 J -35442526.83 -35442526.61 -35442526.40 0.0285 0.0017  
 Venus -101749-04-12 15:35 J -35442296.96 -35442296.85 -35442296.74 0.0283 0.0241  
 Earth -101748-01-29 09:35 J -35442005.33 -35442005.10 -35442004.85 0.0281 0.0095  
 Moon -101748-01-29 12:28 J -35442005.20 -35442004.98 -35442004.74 0.0281 0.0091 \*  
 Mars -101745-10-21 10:47 J -35440644.30 -35440644.05 -35440643.78 0.0273 0.0113  
 Mercury -101739-12-07 10:18 J -35438406.17 -35438406.07 -35438405.97 0.0269 0.0205  
 Mercury -101738-03-06 00:28 J -35438317.61 -35438317.48 -35438317.34 0.0269 0.0131  
 Mercury -101738-06-02 14:37 J -35438229.04 -35438228.89 -35438228.74 0.0269 0.0058  
 Mercury -101738-08-30 04:18 J -35438140.47 -35438140.32 -35438140.17 0.0270 0.0015  
 Mercury -101738-11-26 17:45 J -35438051.90 -35438051.76 -35438051.62 0.0270 0.0086  
 Mercury -101737-02-23 07:11 J -35437963.32 -35437963.20 -35437963.08 0.0270 0.0156  
 Mercury -101737-05-21 20:09 J -35437874.74 -35437874.66 -35437874.58 0.0271 0.0225  
 Venus -101735-09-23 20:52 J -35437019.83 -35437019.63 -35437019.43 0.0275 0.0091  
 Venus -101734-05-11 02:37 J -35436790.58 -35436790.39 -35436790.20 0.0276 0.0109  
 Earth -101733-08-07 20:09 J -35436335.89 -35436335.66 -35436335.43 0.0279 0.0066  
 Moon -101733-08-07 22:47 J -35436335.77 -35436335.55 -35436335.32 0.0279 0.0078 \*  
 Mars -101729-10-06 01:11 J -35434815.76 -35434815.45 -35434815.15 0.0288 0.0044

Mercury -101724-06-22 23:01 J -35433094.64 -35433094.54 -35433094.43 0.0290 0.0204

Mercury -101724-09-19 16:33 J -35433005.96 -35433005.81 -35433005.67 0.0290 0.0112

Mercury -101724-12-17 10:04 J -35432917.23 -35432917.08 -35432916.92 0.0290 0.0020

Mercury -101723-03-16 04:18 J -35432828.48 -35432828.32 -35432828.17 0.0290 0.0079

Mercury -101723-06-12 22:33 J -35432739.68 -35432739.56 -35432739.42 0.0289 0.0177

Mercury -101723-09-09 17:30 J -35432650.81 -35432650.77 -35432650.72 0.0289 0.0275

Venus -101721-07-21 09:49 J -35431970.25 -35431970.09 -35431969.92 0.0286 0.0176

Venus -101720-03-08 04:33 J -35431740.52 -35431740.31 -35431740.10 0.0284 0.0052

Venus -101720-10-23 23:01 J -35431510.58 -35431510.54 -35431510.49 0.0283 0.0276

Moon -101718-02-06 13:11 J -35431040.14 -35431039.95 -35431039.75 0.0280 0.0169

Earth -101718-02-06 16:33 J -35431040.01 -35431039.81 -35431039.60 0.0280 0.0169 \*

Mars -101715-12-08 21:06 J -35429638.90 -35429638.62 -35429638.34 0.0272 0.0032

Mercury -101709-04-25 12:28 J -35427674.06 -35427673.98 -35427673.90 0.0269 0.0224

Mercury -101709-07-23 02:37 J -35427585.51 -35427585.39 -35427585.26 0.0269 0.0150

Mercury -101709-10-19 16:47 J -35427496.95 -35427496.80 -35427496.65 0.0269 0.0076

Mercury -101708-01-16 06:42 J -35427408.38 -35427408.22 -35427408.07 0.0269 0.0008

Mercury -101708-04-14 20:09 J -35427319.80 -35427319.66 -35427319.51 0.0270 0.0068

Mercury -101708-07-12 09:21 J -35427231.23 -35427231.11 -35427230.98 0.0270 0.0139

Mercury -101708-10-08 22:33 J -35427142.65 -35427142.56 -35427142.46 0.0270 0.0208

Venus -101706-08-19 20:37 J -35426462.70 -35426462.64 -35426462.56 0.0273 0.0256

Venus -101705-04-05 02:09 J -35426233.62 -35426233.41 -35426233.20 0.0274 0.0060

Venus -101705-11-20 07:25 J -35426004.37 -35426004.19 -35426004.01 0.0275 0.0139

Moon -101704-08-02 17:01 J -35425748.86 -35425748.79 -35425748.72 0.0277 0.0264

Earth -101704-08-02 19:25 J -35425748.77 -35425748.69 -35425748.60 0.0277 0.0258 \*

Moon -101703-08-14 23:16 J -35425371.72 -35425371.53 -35425371.33 0.0279 0.0154

Earth -101703-08-15 01:54 J -35425371.61 -35425371.42 -35425371.23 0.0279 0.0169 \*

Mars -101699-11-28 07:40 J -35423805.36 -35423805.18 -35423804.99 0.0289 0.0232

Mercury -101695-11-09 21:35 J -35422362.68 -35422362.60 -35422362.51 0.0291 0.0242

Mercury -101694-02-06 14:37 J -35422274.02 -35422273.89 -35422273.75 0.0290 0.0152

Mercury -101694-05-06 08:23 J -35422185.31 -35422185.15 -35422185.00 0.0290 0.0058

Mercury -101694-08-03 02:09 J -35422096.57 -35422096.41 -35422096.25 0.0290 0.0038

Mercury -101694-10-30 20:23 J -35422007.79 -35422007.65 -35422007.50 0.0290 0.0135

Mercury -101693-01-27 15:06 J -35421918.96 -35421918.87 -35421918.77 0.0289 0.0233

Venus -101691-01-31 09:21 J -35421184.28 -35421184.11 -35421183.93 0.0286 0.0159

Venus -101691-09-18 03:49 J -35420954.54 -35420954.34 -35420954.13 0.0284 0.0070

Earth -101689-01-31 09:49 J -35420454.33 -35420454.09 -35420453.84 0.0281 0.0055

Moon -101689-01-31 13:11 J -35420454.20 -35420453.95 -35420453.70 0.0281 0.0053 \*

Mars -101686-01-28 09:06 J -35419361.23 -35419361.12 -35419361.01 0.0274 0.0252

Mars -101684-01-24 01:54 J -35418634.63 -35418634.42 -35418634.18 0.0271 0.0160

Mercury -101680-09-12 12:13 J -35416942.03 -35416941.99 -35416941.94 0.0269 0.0254

Mercury -101680-12-10 02:37 J -35416853.50 -35416853.39 -35416853.27 0.0269 0.0179

Mercury -101679-03-08 16:47 J -35416764.94 -35416764.80 -35416764.65 0.0269 0.0105

Mercury -101679-06-05 06:42 J -35416676.37 -35416676.22 -35416676.07 0.0269 0.0033

Mercury -101679-09-01 20:23 J -35416587.79 -35416587.65 -35416587.50 0.0270 0.0041

Mercury -101679-11-29 09:49 J -35416499.22 -35416499.09 -35416498.95 0.0270 0.0111

Mercury -101678-02-25 23:01 J -35416410.64 -35416410.54 -35416410.43 0.0270 0.0181

Mercury -101678-05-25 11:59 J -35416322.05 -35416322.00 -35416321.94 0.0271 0.0250

Venus -101676-02-28 21:06 J -35415676.71 -35415676.62 -35415676.50 0.0273 0.0239

Venus -101676-10-16 02:37 J -35415447.59 -35415447.39 -35415447.18 0.0275 0.0042

Venus -101675-06-02 08:09 J -35415218.32 -35415218.16 -35415217.98 0.0276 0.0159

Earth -101674-08-09 19:40 J -35414784.91 -35414784.68 -35414784.44 0.0279 0.0027

Moon -101674-08-09 22:33 J -35414784.80 -35414784.56 -35414784.32 0.0279 0.0039 \*

Mars -101670-01-07 21:06 J -35413537.88 -35413537.62 -35413537.35 0.0287 0.0141

Mercury -101665-03-28 21:49 J -35411630.63 -35411630.59 -35411630.52 0.0290 0.0270

Mercury -101665-06-25 15:06 J -35411541.99 -35411541.87 -35411541.75 0.0290 0.0179

Mercury -101665-09-22 08:37 J -35411453.29 -35411453.14 -35411452.99 0.0290 0.0086

Mercury -101665-12-20 02:23 J -35411364.56 -35411364.40 -35411364.24 0.0290 0.0009

Mercury -101664-03-18 20:23 J -35411275.79 -35411275.65 -35411275.49 0.0289 0.0106

Mercury -101664-06-15 15:06 J -35411186.99 -35411186.87 -35411186.76 0.0289 0.0203

Venus -101662-08-13 15:35 J -35410398.04 -35410397.85 -35410397.66 0.0285 0.0126

Venus -101661-03-30 10:04 J -35410168.27 -35410168.08 -35410167.87 0.0284 0.0103  
 Moon -101660-01-24 12:57 J -35409868.03 -35409867.96 -35409867.86 0.0282 0.0264  
 Earth -101660-01-24 15:35 J -35409867.93 -35409867.85 -35409867.75 0.0282 0.0264 \*  
 Earth -101659-02-07 15:21 J -35409489.02 -35409488.86 -35409488.68 0.0280 0.0206  
 Moon -101659-02-07 16:18 J -35409488.99 -35409488.82 -35409488.65 0.0280 0.0202 \*  
 Mars -101656-03-17 02:23 J -35408355.65 -35408355.40 -35408355.13 0.0273 0.0105  
 Mercury -101650-04-29 04:47 J -35406121.40 -35406121.30 -35406121.19 0.0269 0.0198  
 Mercury -101650-07-26 18:57 J -35406032.84 -35406032.71 -35406032.57 0.0269 0.0124  
 Mercury -101650-10-23 09:06 J -35405944.27 -35405944.12 -35405943.97 0.0269 0.0050  
 Mercury -101649-01-19 22:47 J -35405855.70 -35405855.55 -35405855.40 0.0270 0.0022  
 Mercury -101649-04-17 12:13 J -35405767.13 -35405766.99 -35405766.85 0.0270 0.0093  
 Mercury -101649-07-15 01:40 J -35405678.55 -35405678.43 -35405678.32 0.0270 0.0163  
 Mercury -101649-10-11 14:23 J -35405589.96 -35405589.90 -35405589.82 0.0270 0.0233  
 Venus -101647-09-11 02:52 J -35404890.51 -35404890.38 -35404890.24 0.0273 0.0207  
 Venus -101646-04-28 08:23 J -35404661.36 -35404661.15 -35404660.94 0.0274 0.0010  
 Venus -101646-12-13 13:25 J -35404432.08 -35404431.94 -35404431.78 0.0275 0.0191  
 Moon -101645-08-03 16:47 J -35404197.92 -35404197.80 -35404197.65 0.0277 0.0227  
 Earth -101645-08-03 20:09 J -35404197.81 -35404197.66 -35404197.51 0.0277 0.0217 \*  
 Earth -101644-08-16 01:54 J -35403820.57 -35403820.42 -35403820.25 0.0279 0.0208  
 Moon -101644-08-16 03:35 J -35403820.50 -35403820.35 -35403820.17 0.0279 0.0195 \*  
 Mars -101640-02-28 19:11 J -35402528.00 -35402527.70 -35402527.39 0.0287 0.0041  
 Mercury -101636-11-12 13:54 J -35400810.02 -35400809.92 -35400809.82 0.0290 0.0216  
 Mercury -101635-02-09 07:11 J -35400721.34 -35400721.20 -35400721.06 0.0290 0.0124  
 Mercury -101635-05-09 00:42 J -35400632.62 -35400632.47 -35400632.31 0.0290 0.0031  
 Mercury -101635-08-05 18:42 J -35400543.87 -35400543.72 -35400543.56 0.0290 0.0066  
 Mercury -101635-11-02 12:57 J -35400455.08 -35400454.96 -35400454.82 0.0289 0.0164  
 Mercury -101634-01-30 07:40 J -35400366.24 -35400366.18 -35400366.10 0.0289 0.0262  
 Venus -101632-02-22 15:49 J -35399612.04 -35399611.84 -35399611.64 0.0286 0.0107  
 Venus -101632-10-10 10:18 J -35399382.26 -35399382.07 -35399381.87 0.0284 0.0122  
 Moon -101630-02-01 07:54 J -35398903.43 -35398903.17 -35398902.91 0.0281 0.0020

Earth -101630-02-01 09:49 J -35398903.34 -35398903.09 -35398902.84 0.0281 0.0016 \*  
 Mars -101626-05-03 14:37 J -35397351.17 -35397350.89 -35397350.61 0.0272 0.0028  
 Mercury -101621-09-15 04:33 J -35395389.39 -35395389.31 -35395389.23 0.0269 0.0229  
 Mercury -101621-12-12 18:57 J -35395300.83 -35395300.71 -35395300.58 0.0269 0.0154  
 Mercury -101620-03-11 09:06 J -35395212.27 -35395212.12 -35395211.98 0.0269 0.0080  
 Mercury -101620-06-07 23:01 J -35395123.70 -35395123.54 -35395123.39 0.0269 0.0010  
 Mercury -101620-09-04 12:28 J -35395035.12 -35395034.98 -35395034.83 0.0270 0.0065  
 Mercury -101620-12-02 01:54 J -35394946.55 -35394946.42 -35394946.29 0.0270 0.0136  
 Mercury -101619-02-28 14:52 J -35394857.96 -35394857.88 -35394857.78 0.0270 0.0206  
 Venus -101617-03-23 03:06 J -35394104.51 -35394104.37 -35394104.21 0.0274 0.0189  
 Venus -101617-11-07 08:37 J -35393875.35 -35393875.14 -35393874.93 0.0275 0.0009  
 Venus -101616-06-24 13:54 J -35393646.05 -35393645.92 -35393645.78 0.0276 0.0210  
 Moon -101615-08-10 17:59 J -35393233.99 -35393233.75 -35393233.50 0.0279 0.0004  
 Earth -101615-08-10 19:40 J -35393233.92 -35393233.68 -35393233.44 0.0279 0.0013 \*  
 Mars -101610-04-23 02:09 J -35391517.59 -35391517.41 -35391517.23 0.0289 0.0235  
 Mercury -101606-04-01 13:54 J -35390077.99 -35390077.92 -35390077.83 0.0290 0.0245  
 Mercury -101606-06-29 07:11 J -35389989.33 -35389989.20 -35389989.07 0.0290 0.0153  
 Mercury -101606-09-26 00:42 J -35389900.62 -35389900.47 -35389900.31 0.0290 0.0060  
 Mercury -101606-12-23 18:42 J -35389811.88 -35389811.72 -35389811.57 0.0290 0.0036  
 Mercury -101605-03-21 12:57 J -35389723.11 -35389722.96 -35389722.82 0.0289 0.0133  
 Mercury -101605-06-18 07:25 J -35389634.28 -35389634.19 -35389634.09 0.0289 0.0231  
 Venus -101603-09-04 21:06 J -35388825.82 -35388825.62 -35388825.41 0.0285 0.0076  
 Venus -101602-04-22 15:49 J -35388596.02 -35388595.84 -35388595.66 0.0284 0.0154  
 Earth -101601-01-26 13:54 J -35388317.06 -35388316.92 -35388316.77 0.0282 0.0226  
 Moon -101601-01-26 16:18 J -35388316.95 -35388316.82 -35388316.67 0.0282 0.0230 \*  
 Earth -101600-02-08 13:40 J -35387938.05 -35387937.93 -35387937.80 0.0280 0.0242  
 Moon -101600-02-08 17:30 J -35387937.89 -35387937.77 -35387937.62 0.0280 0.0235 \*  
 Mars -101598-06-23 20:37 J -35387072.75 -35387072.64 -35387072.51 0.0275 0.0249  
 Mars -101596-06-19 16:18 J -35386346.03 -35386345.82 -35386345.59 0.0271 0.0166  
 Mercury -101591-02-02 06:57 J -35384657.27 -35384657.21 -35384657.15 0.0269 0.0247

Mercury -101591-05-01 21:21 J -35384568.73 -35384568.61 -35384568.49 0.0269 0.0172

Mercury -101591-07-29 11:30 J -35384480.16 -35384480.02 -35384479.88 0.0269 0.0098

Mercury -101591-10-26 01:25 J -35384391.59 -35384391.44 -35384391.29 0.0270 0.0025

Mercury -101590-01-22 15:06 J -35384303.02 -35384302.87 -35384302.72 0.0270 0.0047

Mercury -101590-04-21 04:33 J -35384214.45 -35384214.31 -35384214.18 0.0270 0.0118

Mercury -101590-07-18 17:30 J -35384125.87 -35384125.77 -35384125.66 0.0270 0.0189

Mercury -101590-10-15 06:42 J -35384037.26 -35384037.22 -35384037.18 0.0270 0.0256

Venus -101588-10-03 09:35 J -35383318.27 -35383318.10 -35383317.93 0.0273 0.0158

Venus -101587-05-20 14:52 J -35383089.09 -35383088.88 -35383088.67 0.0274 0.0041

Venus -101586-01-04 20:09 J -35382859.76 -35382859.66 -35382859.56 0.0276 0.0242

Earth -101586-08-05 21:06 J -35382646.79 -35382646.62 -35382646.42 0.0277 0.0176

Moon -101586-08-05 22:33 J -35382646.72 -35382646.56 -35382646.38 0.0277 0.0188 \*

Earth -101585-08-17 03:06 J -35382269.47 -35382269.37 -35382269.25 0.0279 0.0248

Moon -101585-08-17 06:28 J -35382269.35 -35382269.23 -35382269.09 0.0279 0.0233 \*

Mars -101582-06-02 23:59 J -35381249.75 -35381249.50 -35381249.22 0.0286 0.0142

Mercury -101577-08-18 13:25 J -35379345.98 -35379345.94 -35379345.90 0.0290 0.0278

Mercury -101577-11-15 06:28 J -35379257.35 -35379257.23 -35379257.12 0.0290 0.0189

Mercury -101576-02-11 23:45 J -35379168.66 -35379168.51 -35379168.36 0.0290 0.0096

Mercury -101576-05-11 17:30 J -35379079.93 -35379079.77 -35379079.62 0.0290 0.0009

Mercury -101576-08-08 11:30 J -35378991.17 -35378991.02 -35378990.87 0.0290 0.0094

Mercury -101576-11-05 05:45 J -35378902.37 -35378902.26 -35378902.13 0.0289 0.0192

Venus -101574-07-31 03:21 J -35378269.36 -35378269.36 -35378269.33 0.0287 0.0286

Venus -101573-03-16 22:18 J -35378039.78 -35378039.57 -35378039.36 0.0285 0.0055

Venus -101573-11-01 16:47 J -35377809.96 -35377809.80 -35377809.63 0.0284 0.0174

Moon -101571-02-02 05:30 J -35377352.51 -35377352.27 -35377352.02 0.0281 0.0016

Earth -101571-02-02 09:21 J -35377352.36 -35377352.11 -35377351.86 0.0281 0.0024 \*

Mars -101568-08-09 19:11 J -35376067.95 -35376067.70 -35376067.43 0.0273 0.0111

Mercury -101562-09-18 20:52 J -35373836.72 -35373836.63 -35373836.52 0.0269 0.0203

Mercury -101562-12-16 11:16 J -35373748.16 -35373748.03 -35373747.89 0.0269 0.0128

Mercury -101561-03-14 01:11 J -35373659.59 -35373659.45 -35373659.30 0.0269 0.0055

Mercury -101561-06-10 15:06 J -35373571.02 -35373570.87 -35373570.72 0.0270 0.0018

Mercury -101561-09-07 04:33 J -35373482.45 -35373482.31 -35373482.16 0.0270 0.0090

Mercury -101561-12-04 17:59 J -35373393.87 -35373393.75 -35373393.63 0.0270 0.0160

Mercury -101560-03-03 06:57 J -35373305.28 -35373305.21 -35373305.13 0.0270 0.0229

Venus -101558-04-15 09:21 J -35372532.28 -35372532.11 -35372531.92 0.0274 0.0140

Venus -101558-11-30 14:52 J -35372303.09 -35372302.88 -35372302.68 0.0275 0.0060

Venus -101557-07-16 19:54 J -35372073.72 -35372073.67 -35372073.59 0.0276 0.0261

Moon -101556-08-11 16:33 J -35371683.04 -35371682.81 -35371682.57 0.0279 0.0036

Earth -101556-08-11 20:09 J -35371682.90 -35371682.66 -35371682.43 0.0279 0.0052 \*

Mars -101552-07-24 14:52 J -35370240.19 -35370239.88 -35370239.57 0.0287 0.0045

Mercury -101547-04-04 06:13 J -35368525.33 -35368525.24 -35368525.13 0.0290 0.0219

Mercury -101547-07-01 23:30 J -35368436.66 -35368436.52 -35368436.38 0.0290 0.0127

Mercury -101547-09-28 17:16 J -35368347.94 -35368347.78 -35368347.63 0.0290 0.0033

Mercury -101547-12-26 11:16 J -35368259.19 -35368259.03 -35368258.88 0.0290 0.0064

Mercury -101546-03-25 05:30 J -35368170.40 -35368170.27 -35368170.13 0.0289 0.0161

Mercury -101546-06-22 00:13 J -35368081.56 -35368081.49 -35368081.42 0.0289 0.0260

Venus -101544-02-09 08:37 J -35367483.22 -35367483.14 -35367483.03 0.0286 0.0255

Venus -101544-09-27 03:35 J -35367253.56 -35367253.35 -35367253.13 0.0285 0.0024

Venus -101543-05-14 22:18 J -35367023.71 -35367023.57 -35367023.42 0.0284 0.0206

Earth -101542-01-27 13:11 J -35366766.12 -35366765.95 -35366765.75 0.0282 0.0188

Moon -101542-01-27 16:47 J -35366765.98 -35366765.80 -35366765.61 0.0282 0.0194 \*

Moon -101541-02-10 13:54 J -35366386.99 -35366386.92 -35366386.84 0.0280 0.0267

Earth -101541-02-10 13:11 J -35366386.96 -35366386.95 -35366386.93 0.0280 0.0279 \*

Mars -101538-09-27 05:01 J -35365062.57 -35365062.29 -35365062.01 0.0273 0.0032

Mercury -101532-02-04 23:16 J -35363104.61 -35363104.53 -35363104.44 0.0269 0.0222

Mercury -101532-05-04 13:40 J -35363016.05 -35363015.93 -35363015.80 0.0270 0.0147

Mercury -101532-08-01 03:49 J -35362927.48 -35362927.34 -35362927.19 0.0270 0.0072

Mercury -101532-10-28 17:45 J -35362838.91 -35362838.76 -35362838.61 0.0270 0.0001

Mercury -101531-01-25 07:25 J -35362750.34 -35362750.19 -35362750.05 0.0270 0.0073

Mercury -101531-04-23 20:37 J -35362661.76 -35362661.64 -35362661.51 0.0270 0.0144



Mercury -101531-07-21 09:49 J -35362573.18 -35362573.09 -35362573.00 0.0270 0.0213  
 Venus -101529-10-25 16:18 J -35361746.01 -35361745.82 -35361745.62 0.0274 0.0108  
 Venus -101528-06-11 21:35 J -35361516.79 -35361516.60 -35361516.39 0.0275 0.0094  
 Earth -101527-08-06 23:16 J -35361095.73 -35361095.53 -35361095.31 0.0277 0.0134  
 Moon -101527-08-07 03:06 J -35361095.56 -35361095.37 -35361095.16 0.0277 0.0147 \*  
 Moon -101526-08-19 05:30 J -35360718.30 -35360718.27 -35360718.23 0.0279 0.0276  
 Mars -101522-09-16 08:09 J -35359229.33 -35359229.16 -35359228.97 0.0288 0.0234  
 Mercury -101518-08-22 05:59 J -35357793.32 -35357793.25 -35357793.16 0.0290 0.0250  
 Mercury -101518-11-18 23:16 J -35357704.66 -35357704.53 -35357704.40 0.0290 0.0159  
 Mercury -101517-02-15 16:47 J -35357615.96 -35357615.80 -35357615.65 0.0290 0.0067  
 Mercury -101517-05-14 10:33 J -35357527.22 -35357527.06 -35357526.90 0.0290 0.0029  
 Mercury -101517-08-11 04:33 J -35357438.45 -35357438.31 -35357438.16 0.0289 0.0126  
 Mercury -101517-11-07 23:01 J -35357349.64 -35357349.54 -35357349.43 0.0289 0.0224  
 Venus -101515-08-22 11:01 J -35356697.15 -35356697.04 -35356696.91 0.0286 0.0232  
 Venus -101514-04-09 05:45 J -35356467.47 -35356467.26 -35356467.04 0.0285 0.0004  
 Venus -101514-11-25 00:28 J -35356237.61 -35356237.48 -35356237.36 0.0284 0.0228  
 Earth -101512-02-03 10:18 J -35355801.31 -35355801.07 -35355800.82 0.0281 0.0065  
 Moon -101512-02-03 11:01 J -35355801.28 -35355801.04 -35355800.80 0.0281 0.0054 \*  
 Mars -101510-11-16 15:49 J -35354784.95 -35354784.84 -35354784.72 0.0275 0.0251  
 Mars -101508-11-12 14:09 J -35354058.13 -35354057.91 -35354057.68 0.0271 0.0163  
 Mercury -101503-06-24 23:16 J -35352372.59 -35352372.53 -35352372.48 0.0269 0.0251  
 Mercury -101503-09-21 13:40 J -35352284.04 -35352283.93 -35352283.81 0.0269 0.0176  
 Mercury -101503-12-19 03:49 J -35352195.48 -35352195.34 -35352195.20 0.0269 0.0101  
 Mercury -101502-03-17 17:45 J -35352106.91 -35352106.76 -35352106.60 0.0270 0.0029  
 Mercury -101502-06-14 07:40 J -35352018.33 -35352018.18 -35352018.04 0.0270 0.0045  
 Mercury -101502-09-10 21:06 J -35351929.76 -35351929.62 -35351929.49 0.0270 0.0116  
 Mercury -101502-12-08 10:18 J -35351841.17 -35351841.07 -35351840.96 0.0270 0.0186  
 Mercury -101501-03-05 23:16 J -35351752.57 -35351752.53 -35351752.48 0.0271 0.0255  
 Venus -101499-05-07 16:47 J -35350960.00 -35350959.80 -35350959.60 0.0274 0.0088  
 Venus -101499-12-22 22:04 J -35350730.77 -35350730.58 -35350730.38 0.0275 0.0113

Earth -101497-08-12 22:47 J -35350131.78 -35350131.55 -35350131.33 0.0279 0.0095  
 Moon -101497-08-12 22:33 J -35350131.78 -35350131.56 -35350131.34 0.0279 0.0080 \*  
 Mars -101494-10-27 01:11 J -35348961.72 -35348961.45 -35348961.18 0.0286 0.0135  
 Mercury -101488-01-08 06:13 J -35347061.28 -35347061.24 -35347061.20 0.0290 0.0280  
 Mercury -101488-04-06 23:01 J -35346972.65 -35346972.54 -35346972.42 0.0290 0.0190  
 Mercury -101488-07-04 16:18 J -35346883.96 -35346883.82 -35346883.67 0.0290 0.0098  
 Mercury -101488-10-01 10:04 J -35346795.24 -35346795.08 -35346794.92 0.0290 0.0005  
 Mercury -101488-12-29 04:04 J -35346706.48 -35346706.33 -35346706.17 0.0289 0.0094  
 Mercury -101487-03-27 22:33 J -35346617.68 -35346617.56 -35346617.44 0.0289 0.0192  
 Venus -101485-03-03 16:04 J -35345910.97 -35345910.83 -35345910.67 0.0286 0.0201  
 Venus -101485-10-19 11:01 J -35345681.25 -35345681.04 -35345680.82 0.0285 0.0031  
 Venus -101484-06-06 05:45 J -35345451.35 -35345451.26 -35345451.18 0.0283 0.0260  
 Moon -101483-01-28 13:11 J -35345215.17 -35345214.95 -35345214.73 0.0282 0.0155  
 Earth -101483-01-28 14:23 J -35345215.11 -35345214.90 -35345214.68 0.0282 0.0145 \*  
 Mars -101479-01-03 10:04 J -35343779.33 -35343779.08 -35343778.82 0.0274 0.0107  
 Mercury -101473-02-08 16:04 J -35341551.93 -35341551.83 -35341551.72 0.0270 0.0194  
 Mercury -101473-05-07 06:28 J -35341463.37 -35341463.23 -35341463.09 0.0270 0.0119  
 Mercury -101473-08-03 20:37 J -35341374.79 -35341374.64 -35341374.49 0.0270 0.0045  
 Mercury -101473-10-31 10:18 J -35341286.22 -35341286.07 -35341285.92 0.0270 0.0028  
 Mercury -101472-01-27 23:45 J -35341197.64 -35341197.51 -35341197.37 0.0270 0.0100  
 Mercury -101472-04-26 13:11 J -35341109.06 -35341108.95 -35341108.84 0.0271 0.0170  
 Mercury -101472-07-24 02:23 J -35341020.47 -35341020.40 -35341020.34 0.0271 0.0239  
 Venus -101470-04-02 18:57 J -35340402.78 -35340402.71 -35340402.63 0.0273 0.0254  
 Venus -101470-11-18 00:13 J -35340173.69 -35340173.49 -35340173.28 0.0274 0.0055  
 Venus -101469-07-04 05:45 J -35339944.44 -35339944.26 -35339944.09 0.0275 0.0147  
 Earth -101468-08-08 03:21 J -35339544.58 -35339544.36 -35339544.13 0.0277 0.0087  
 Moon -101468-08-08 03:21 J -35339544.58 -35339544.36 -35339544.12 0.0277 0.0102 \*  
 Mars -101464-12-18 10:33 J -35337951.36 -35337951.06 -35337950.75 0.0287 0.0049  
 Mercury -101459-08-24 23:30 J -35336240.61 -35336240.52 -35336240.41 0.0290 0.0218  
 Mercury -101459-11-21 16:47 J -35336151.94 -35336151.80 -35336151.66 0.0290 0.0127

Mercury -101458-02-18 10:18 J -35336063.23 -35336063.07 -35336062.91 0.0290 0.0033

Mercury -101458-05-18 04:04 J -35335974.48 -35335974.33 -35335974.17 0.0289 0.0063

Mercury -101458-08-14 22:18 J -35335885.70 -35335885.57 -35335885.43 0.0289 0.0160

Mercury -101458-11-11 17:01 J -35335796.86 -35335796.79 -35335796.72 0.0289 0.0258

Venus -101456-09-13 20:23 J -35335124.81 -35335124.65 -35335124.48 0.0286 0.0176

Venus -101455-05-01 14:52 J -35334895.08 -35334894.88 -35334894.67 0.0285 0.0057

Earth -101453-02-05 13:54 J -35334250.14 -35334249.92 -35334249.67 0.0281 0.0111

Moon -101453-02-05 17:59 J -35334249.98 -35334249.75 -35334249.51 0.0281 0.0097 \*

Mars -101449-02-20 06:42 J -35332774.50 -35332774.22 -35332773.94 0.0273 0.0032

Mercury -101444-06-27 16:04 J -35330819.91 -35330819.83 -35330819.74 0.0269 0.0223

Mercury -101444-09-24 06:42 J -35330731.35 -35330731.22 -35330731.10 0.0269 0.0148

Mercury -101444-12-21 20:37 J -35330642.78 -35330642.64 -35330642.49 0.0270 0.0074

Mercury -101443-03-20 10:33 J -35330554.21 -35330554.06 -35330553.91 0.0270 0.0007

Mercury -101443-06-17 00:13 J -35330465.63 -35330465.49 -35330465.34 0.0270 0.0072

Mercury -101443-09-13 13:40 J -35330377.05 -35330376.93 -35330376.80 0.0270 0.0143

Mercury -101443-12-11 02:52 J -35330288.47 -35330288.38 -35330288.29 0.0270 0.0213

Venus -101441-10-12 19:25 J -35329616.79 -35329616.69 -35329616.57 0.0273 0.0234

Venus -101440-05-30 00:57 J -35329387.67 -35329387.46 -35329387.25 0.0274 0.0035

Venus -101439-01-14 06:28 J -35329158.40 -35329158.23 -35329158.07 0.0275 0.0168

Earth -101438-08-15 02:52 J -35328580.58 -35328580.38 -35328580.17 0.0279 0.0141

Moon -101438-08-15 06:28 J -35328580.44 -35328580.23 -35328580.02 0.0279 0.0125 \*

Mars -101433-02-09 13:40 J -35326941.09 -35326940.93 -35326940.75 0.0288 0.0242

Mercury -101429-01-11 23:30 J -35325508.59 -35325508.52 -35325508.44 0.0290 0.0248

Mercury -101429-04-09 16:33 J -35325419.94 -35325419.81 -35325419.68 0.0290 0.0158

Mercury -101429-07-07 10:04 J -35325331.24 -35325331.08 -35325330.93 0.0290 0.0065

Mercury -101429-10-04 03:49 J -35325242.50 -35325242.34 -35325242.18 0.0289 0.0031

Mercury -101429-12-31 22:04 J -35325153.73 -35325153.58 -35325153.44 0.0289 0.0128

Mercury -101428-03-30 16:33 J -35325064.91 -35325064.81 -35325064.71 0.0289 0.0226

Venus -101426-03-27 01:11 J -35324338.62 -35324338.45 -35324338.26 0.0286 0.0145

Venus -101426-11-11 20:09 J -35324108.86 -35324108.66 -35324108.45 0.0284 0.0088

Moon -101424-01-29 14:23 J -35323664.13 -35323663.90 -35323663.67 0.0282 0.0113  
 Earth -101424-01-29 17:59 J -35323663.98 -35323663.75 -35323663.51 0.0282 0.0100 \*  
 Mars -101421-04-11 06:42 J -35322496.33 -35322496.22 -35322496.08 0.0275 0.0247  
 Mars -101419-04-08 08:52 J -35321769.34 -35321769.13 -35321768.90 0.0272 0.0169  
 Mercury -101415-11-14 18:42 J -35320087.78 -35320087.72 -35320087.65 0.0270 0.0241  
 Mercury -101414-02-11 09:21 J -35319999.23 -35319999.11 -35319998.99 0.0270 0.0165  
 Mercury -101414-05-10 23:30 J -35319910.66 -35319910.52 -35319910.38 0.0270 0.0090  
 Mercury -101414-08-07 13:25 J -35319822.09 -35319821.94 -35319821.79 0.0270 0.0017  
 Mercury -101414-11-04 03:06 J -35319733.51 -35319733.37 -35319733.22 0.0270 0.0057  
 Mercury -101413-01-31 16:47 J -35319644.93 -35319644.80 -35319644.67 0.0271 0.0128  
 Mercury -101413-04-29 05:59 J -35319556.35 -35319556.25 -35319556.15 0.0271 0.0198  
 Mercury -101413-07-26 18:57 J -35319467.73 -35319467.71 -35319467.68 0.0271 0.0267  
 Venus -101411-04-25 03:49 J -35318830.47 -35318830.34 -35318830.19 0.0273 0.0201  
 Venus -101411-12-10 09:21 J -35318601.32 -35318601.11 -35318600.89 0.0275 0.0006  
 Venus -101410-07-27 14:52 J -35318372.02 -35318371.88 -35318371.74 0.0276 0.0204  
 Moon -101409-08-09 05:45 J -35317993.49 -35317993.26 -35317993.02 0.0278 0.0055  
 Earth -101409-08-09 09:21 J -35317993.34 -35317993.11 -35317992.87 0.0278 0.0038 \*  
 Mars -101405-03-22 08:37 J -35316672.40 -35316672.14 -35316671.85 0.0285 0.0125  
 Mercury -101400-05-31 00:57 J -35314776.51 -35314776.46 -35314776.41 0.0290 0.0272  
 Mercury -101400-08-27 17:45 J -35314687.88 -35314687.76 -35314687.64 0.0290 0.0183  
 Mercury -101400-11-24 11:01 J -35314599.19 -35314599.04 -35314598.89 0.0289 0.0090  
 Mercury -101399-02-21 04:47 J -35314510.46 -35314510.30 -35314510.15 0.0289 0.0009  
 Mercury -101399-05-20 22:33 J -35314421.71 -35314421.56 -35314421.40 0.0289 0.0100  
 Mercury -101399-08-17 17:01 J -35314332.91 -35314332.79 -35314332.67 0.0289 0.0198  
 Venus -101397-10-06 07:11 J -35313552.39 -35313552.20 -35313552.00 0.0286 0.0116  
 Venus -101396-05-24 01:40 J -35313322.62 -35313322.43 -35313322.23 0.0284 0.0117  
 Earth -101394-02-06 20:37 J -35312698.84 -35312698.64 -35312698.43 0.0281 0.0159  
 Moon -101394-02-06 21:49 J -35312698.81 -35312698.59 -35312698.36 0.0281 0.0145 \*  
 Mars -101391-05-29 17:16 J -35311491.03 -35311490.78 -35311490.51 0.0274 0.0102  
 Mercury -101385-04-02 18:57 J -35309355.71 -35309355.71 -35309355.70 0.0269 0.0269

Mercury -101385-06-30 09:35 J -35309267.20 -35309267.10 -35309266.99 0.0269 0.0193  
 Mercury -101385-09-26 23:59 J -35309178.64 -35309178.50 -35309178.36 0.0270 0.0117  
 Mercury -101385-12-24 13:54 J -35309090.07 -35309089.92 -35309089.77 0.0270 0.0044  
 Mercury -101384-03-23 03:49 J -35309001.49 -35309001.34 -35309001.19 0.0270 0.0030  
 Mercury -101384-06-19 17:16 J -35308912.91 -35308912.78 -35308912.64 0.0270 0.0102  
 Mercury -101384-09-16 06:42 J -35308824.33 -35308824.22 -35308824.11 0.0270 0.0172  
 Mercury -101384-12-13 19:40 J -35308735.73 -35308735.68 -35308735.61 0.0271 0.0242  
 Venus -101382-11-05 05:01 J -35308044.45 -35308044.29 -35308044.13 0.0273 0.0180  
 Venus -101381-06-21 10:33 J -35307815.27 -35307815.06 -35307814.85 0.0275 0.0022  
 Venus -101380-02-05 15:49 J -35307585.95 -35307585.84 -35307585.72 0.0276 0.0225  
 Earth -101380-08-04 03:21 J -35307406.48 -35307406.36 -35307406.22 0.0277 0.0229  
 Moon -101380-08-04 06:42 J -35307406.32 -35307406.22 -35307406.10 0.0277 0.0244 \*  
 Earth -101379-08-16 09:06 J -35307029.28 -35307029.12 -35307028.93 0.0279 0.0190  
 Moon -101379-08-16 11:01 J -35307029.23 -35307029.04 -35307028.84 0.0279 0.0175 \*  
 Mars -101375-05-13 22:04 J -35305662.87 -35305662.58 -35305662.27 0.0287 0.0061  
 Mercury -101370-01-14 17:30 J -35303955.87 -35303955.77 -35303955.66 0.0290 0.0214  
 Mercury -101370-04-13 10:47 J -35303867.19 -35303867.05 -35303866.91 0.0290 0.0122  
 Mercury -101370-07-11 04:18 J -35303778.48 -35303778.32 -35303778.16 0.0290 0.0028  
 Mercury -101370-10-07 22:04 J -35303689.73 -35303689.58 -35303689.42 0.0289 0.0069  
 Mercury -101369-01-04 16:33 J -35303600.94 -35303600.81 -35303600.68 0.0289 0.0165  
 Mercury -101369-04-02 11:16 J -35303512.10 -35303512.03 -35303511.97 0.0289 0.0264  
 Venus -101367-04-18 12:13 J -35302766.19 -35302765.99 -35302765.78 0.0285 0.0085  
 Venus -101367-12-04 07:11 J -35302536.39 -35302536.20 -35302536.02 0.0284 0.0149  
 Moon -101365-01-31 23:59 J -35302112.73 -35302112.50 -35302112.26 0.0282 0.0061  
 Earth -101365-02-01 00:57 J -35302112.71 -35302112.46 -35302112.21 0.0282 0.0049 \*  
 Mars -101361-07-16 04:04 J -35300485.61 -35300485.33 -35300485.05 0.0273 0.0040  
 Mercury -101356-11-17 12:13 J -35298535.08 -35298534.99 -35298534.89 0.0270 0.0210  
 Mercury -101355-02-14 02:37 J -35298446.52 -35298446.39 -35298446.25 0.0270 0.0135  
 Mercury -101355-05-13 16:47 J -35298357.94 -35298357.80 -35298357.65 0.0270 0.0060  
 Mercury -101355-08-10 06:42 J -35298269.37 -35298269.22 -35298269.07 0.0271 0.0014

Mercury -101355-11-06 20:23 J -35298180.79 -35298180.65 -35298180.51 0.0271 0.0086

Mercury -101354-02-03 09:49 J -35298092.21 -35298092.09 -35298091.97 0.0271 0.0157

Mercury -101354-05-02 23:01 J -35298003.62 -35298003.54 -35298003.46 0.0271 0.0227

Venus -101352-05-17 13:40 J -35297258.10 -35297257.93 -35297257.75 0.0274 0.0146

Venus -101351-01-01 19:25 J -35297028.90 -35297028.69 -35297028.49 0.0275 0.0057

Venus -101351-08-19 00:57 J -35296799.52 -35296799.46 -35296799.40 0.0276 0.0261

Moon -101350-08-11 15:06 J -35296442.10 -35296441.87 -35296441.64 0.0278 0.0003

Earth -101350-08-11 16:47 J -35296442.04 -35296441.80 -35296441.56 0.0278 0.0014 \*

Mars -101345-07-06 06:28 J -35294651.36 -35294651.23 -35294651.08 0.0287 0.0256

Mercury -101341-06-02 19:40 J -35293223.77 -35293223.68 -35293223.59 0.0290 0.0234

Mercury -101341-08-30 12:42 J -35293135.11 -35293134.97 -35293134.84 0.0289 0.0143

Mercury -101341-11-27 05:59 J -35293046.40 -35293046.25 -35293046.09 0.0289 0.0051

Mercury -101340-02-23 23:45 J -35292957.67 -35292957.51 -35292957.35 0.0289 0.0045

Mercury -101340-05-23 17:45 J -35292868.89 -35292868.76 -35292868.61 0.0289 0.0142

Mercury -101340-08-20 12:28 J -35292780.07 -35292779.98 -35292779.89 0.0289 0.0240

Venus -101338-03-14 01:40 J -35292209.45 -35292209.43 -35292209.41 0.0286 0.0285

Venus -101338-10-29 20:09 J -35291979.87 -35291979.66 -35291979.45 0.0285 0.0052

Venus -101337-06-15 14:23 J -35291750.06 -35291749.90 -35291749.73 0.0284 0.0180

Earth -101336-01-25 06:57 J -35291526.31 -35291526.21 -35291526.08 0.0283 0.0249

Moon -101336-01-25 08:09 J -35291526.26 -35291526.16 -35291526.05 0.0283 0.0257 \*

Moon -101335-02-08 03:06 J -35291147.55 -35291147.37 -35291147.18 0.0280 0.0196

Earth -101335-02-08 05:59 J -35291147.40 -35291147.25 -35291147.07 0.0280 0.0213 \*

Mars -101333-09-05 00:57 J -35290207.60 -35290207.46 -35290207.31 0.0275 0.0235

Mars -101331-09-02 00:42 J -35289480.67 -35289480.47 -35289480.25 0.0272 0.0176

Mercury -101326-04-06 12:42 J -35287803.03 -35287802.97 -35287802.89 0.0269 0.0236

Mercury -101326-07-04 03:21 J -35287714.48 -35287714.36 -35287714.23 0.0270 0.0160

Mercury -101326-09-30 17:30 J -35287625.91 -35287625.77 -35287625.62 0.0270 0.0086

Mercury -101326-12-28 07:40 J -35287537.33 -35287537.18 -35287537.03 0.0270 0.0012

Mercury -101325-03-25 21:21 J -35287448.76 -35287448.61 -35287448.46 0.0270 0.0061

Mercury -101325-06-22 10:47 J -35287360.18 -35287360.05 -35287359.92 0.0270 0.0133

Mercury -101325-09-18 23:59 J -35287271.59 -35287271.50 -35287271.40 0.0271 0.0203

Venus -101323-11-27 15:35 J -35286472.03 -35286471.85 -35286471.66 0.0274 0.0122

Venus -101322-07-14 21:06 J -35286242.82 -35286242.62 -35286242.42 0.0275 0.0081

Earth -101321-08-05 11:45 J -35285855.18 -35285855.01 -35285854.81 0.0277 0.0177

Moon -101321-08-05 13:40 J -35285855.10 -35285854.93 -35285854.74 0.0277 0.0190 \*

Moon -101320-08-17 15:06 J -35285478.00 -35285477.87 -35285477.72 0.0279 0.0229

Earth -101320-08-17 17:59 J -35285477.86 -35285477.75 -35285477.62 0.0279 0.0242 \*

Mars -101317-08-16 02:23 J -35284383.67 -35284383.40 -35284383.11 0.0286 0.0110

Mercury -101312-10-20 19:25 J -35282491.74 -35282491.69 -35282491.62 0.0290 0.0265

Mercury -101311-01-17 12:28 J -35282403.10 -35282402.98 -35282402.86 0.0290 0.0174

Mercury -101311-04-16 05:45 J -35282314.41 -35282314.26 -35282314.11 0.0290 0.0082

Mercury -101311-07-13 23:30 J -35282225.68 -35282225.52 -35282225.36 0.0289 0.0014

Mercury -101311-10-10 17:30 J -35282136.92 -35282136.77 -35282136.62 0.0289 0.0109

Mercury -101310-01-07 11:45 J -35282048.12 -35282048.01 -35282047.89 0.0289 0.0207

Venus -101309-09-23 06:28 J -35281423.32 -35281423.23 -35281423.13 0.0286 0.0254

Venus -101308-05-11 01:11 J -35281193.67 -35281193.45 -35281193.24 0.0285 0.0021

Venus -101308-12-26 19:40 J -35280963.82 -35280963.68 -35280963.54 0.0284 0.0212

Earth -101306-02-02 10:33 J -35280561.31 -35280561.06 -35280560.81 0.0281 0.0006

Moon -101306-02-02 13:25 J -35280561.18 -35280560.94 -35280560.69 0.0281 0.0009 \*

Mars -101303-10-23 18:42 J -35279201.98 -35279201.72 -35279201.45 0.0274 0.0092

Mercury -101297-08-23 15:21 J -35277070.90 -35277070.86 -35277070.80 0.0270 0.0255

Mercury -101297-11-20 05:59 J -35276982.36 -35276982.25 -35276982.13 0.0270 0.0178

Mercury -101296-02-16 20:23 J -35276893.79 -35276893.65 -35276893.51 0.0270 0.0102

Mercury -101296-05-16 10:33 J -35276805.21 -35276805.06 -35276804.91 0.0271 0.0028

Mercury -101296-08-13 00:13 J -35276716.63 -35276716.49 -35276716.34 0.0271 0.0046

Mercury -101296-11-09 13:54 J -35276628.05 -35276627.92 -35276627.79 0.0271 0.0118

Mercury -101295-02-06 03:21 J -35276539.47 -35276539.36 -35276539.26 0.0271 0.0189

Mercury -101295-05-05 16:18 J -35276450.86 -35276450.82 -35276450.77 0.0271 0.0258

Venus -101293-06-09 00:28 J -35275685.67 -35275685.48 -35275685.28 0.0274 0.0089

Venus -101292-01-24 06:13 J -35275456.43 -35275456.24 -35275456.05 0.0275 0.0117

Earth -101291-08-13 01:40 J -35274890.66 -35274890.43 -35274890.19 0.0278 0.0068  
 Moon -101291-08-13 04:18 J -35274890.55 -35274890.32 -35274890.09 0.0278 0.0054 \*  
 Mars -101287-10-09 01:40 J -35273372.73 -35273372.43 -35273372.13 0.0286 0.0082  
 Mercury -101282-03-09 22:04 J -35271759.61 -35271759.58 -35271759.55 0.0290 0.0282  
 Mercury -101282-06-06 14:52 J -35271670.99 -35271670.88 -35271670.76 0.0289 0.0193  
 Mercury -101282-09-03 08:09 J -35271582.31 -35271582.16 -35271582.02 0.0289 0.0101  
 Mercury -101282-12-01 01:40 J -35271493.59 -35271493.43 -35271493.27 0.0289 0.0008  
 Mercury -101281-02-27 19:25 J -35271404.84 -35271404.69 -35271404.53 0.0289 0.0089  
 Mercury -101281-05-26 13:40 J -35271316.05 -35271315.93 -35271315.80 0.0289 0.0187  
 Mercury -101281-08-23 08:23 J -35271227.17 -35271227.15 -35271227.12 0.0288 0.0285  
 Venus -101279-04-05 15:49 J -35270636.97 -35270636.84 -35270636.70 0.0286 0.0219  
 Venus -101279-11-21 10:33 J -35270407.28 -35270407.06 -35270406.85 0.0285 0.0016  
 Venus -101278-07-09 04:33 J -35270177.41 -35270177.31 -35270177.20 0.0284 0.0247  
 Moon -101277-01-27 16:18 J -35269974.99 -35269974.82 -35269974.63 0.0282 0.0202  
 Earth -101277-01-27 19:40 J -35269974.86 -35269974.68 -35269974.49 0.0282 0.0190 \*  
 Moon -101276-02-09 15:06 J -35269595.96 -35269595.87 -35269595.75 0.0280 0.0254  
 Earth -101276-02-09 18:28 J -35269595.80 -35269595.73 -35269595.66 0.0280 0.0268 \*  
 Mars -101273-12-10 04:33 J -35268196.58 -35268196.31 -35268196.03 0.0273 0.0053  
 Mercury -101267-04-09 06:57 J -35266250.30 -35266250.21 -35266250.10 0.0270 0.0202  
 Mercury -101267-07-06 21:21 J -35266161.74 -35266161.61 -35266161.47 0.0270 0.0126  
 Mercury -101267-10-03 11:30 J -35266073.16 -35266073.02 -35266072.87 0.0270 0.0052  
 Mercury -101267-12-31 01:25 J -35265984.59 -35265984.44 -35265984.29 0.0270 0.0023  
 Mercury -101266-03-29 15:06 J -35265896.01 -35265895.87 -35265895.73 0.0270 0.0095  
 Mercury -101266-06-26 04:33 J -35265807.43 -35265807.31 -35265807.19 0.0271 0.0166  
 Mercury -101266-09-22 17:45 J -35265718.83 -35265718.76 -35265718.69 0.0271 0.0235  
 Venus -101264-05-04 21:21 J -35265128.65 -35265128.61 -35265128.56 0.0273 0.0265  
 Venus -101264-12-20 03:06 J -35264899.58 -35264899.37 -35264899.17 0.0274 0.0063  
 Venus -101263-08-06 08:37 J -35264670.32 -35264670.14 -35264669.96 0.0275 0.0141  
 Moon -101262-08-07 19:11 J -35264303.91 -35264303.70 -35264303.48 0.0277 0.0136  
 Earth -101262-08-07 21:21 J -35264303.82 -35264303.61 -35264303.39 0.0277 0.0122 \*



Mars -101259-11-19 22:04 J -35263103.67 -35263103.58 -35263103.47 0.0285 0.0268  
 Mars -101257-11-30 06:28 J -35262362.31 -35262362.23 -35262362.12 0.0288 0.0274  
 Mercury -101253-10-23 14:37 J -35260938.98 -35260938.89 -35260938.78 0.0290 0.0224  
 Mercury -101252-01-20 07:54 J -35260850.31 -35260850.17 -35260850.03 0.0290 0.0132  
 Mercury -101252-04-19 01:25 J -35260761.60 -35260761.44 -35260761.29 0.0289 0.0040  
 Mercury -101252-07-16 19:11 J -35260672.86 -35260672.70 -35260672.55 0.0289 0.0057  
 Mercury -101252-10-13 13:11 J -35260584.08 -35260583.95 -35260583.81 0.0289 0.0154  
 Mercury -101251-01-10 07:40 J -35260495.25 -35260495.18 -35260495.10 0.0289 0.0252  
 Venus -101250-10-16 20:52 J -35259850.79 -35259850.63 -35259850.47 0.0286 0.0188  
 Venus -101249-06-02 15:21 J -35259621.07 -35259620.86 -35259620.65 0.0285 0.0047  
 Venus -101248-01-18 09:35 J -35259391.13 -35259391.10 -35259391.06 0.0283 0.0278  
 Earth -101247-02-03 22:33 J -35259009.80 -35259009.56 -35259009.31 0.0281 0.0063  
 Moon -101247-02-04 01:54 J -35259009.67 -35259009.42 -35259009.17 0.0281 0.0050 \*  
 Mars -101244-01-30 04:33 J -35257918.46 -35257918.31 -35257918.13 0.0275 0.0223  
 Mars -101242-01-27 06:28 J -35257191.43 -35257191.23 -35257191.03 0.0272 0.0188  
 Mercury -101238-08-27 09:35 J -35255518.19 -35255518.10 -35255518.01 0.0270 0.0220  
 Mercury -101238-11-23 23:59 J -35255429.62 -35255429.50 -35255429.37 0.0271 0.0144  
 Mercury -101237-02-20 14:23 J -35255341.05 -35255340.90 -35255340.76 0.0271 0.0069  
 Mercury -101237-05-19 04:18 J -35255252.47 -35255252.32 -35255252.17 0.0271 0.0006  
 Mercury -101237-08-15 17:59 J -35255163.89 -35255163.75 -35255163.61 0.0271 0.0078  
 Mercury -101237-11-12 07:25 J -35255075.31 -35255075.19 -35255075.06 0.0271 0.0150  
 Mercury -101236-02-08 20:37 J -35254986.72 -35254986.64 -35254986.55 0.0271 0.0221  
 Venus -101235-11-15 05:59 J -35254342.35 -35254342.25 -35254342.14 0.0274 0.0233  
 Venus -101234-07-02 11:45 J -35254113.21 -35254113.01 -35254112.80 0.0275 0.0030  
 Venus -101233-02-16 17:30 J -35253883.93 -35253883.77 -35253883.61 0.0276 0.0177  
 Earth -101232-08-14 11:16 J -35253339.23 -35253339.03 -35253338.81 0.0279 0.0123  
 Moon -101232-08-14 14:37 J -35253339.11 -35253338.89 -35253338.66 0.0279 0.0108 \*  
 Mars -101228-01-11 09:49 J -35252093.38 -35252093.09 -35252092.79 0.0286 0.0085  
 Mercury -101223-03-12 17:45 J -35250206.84 -35250206.76 -35250206.67 0.0289 0.0239  
 Mercury -101223-06-09 10:47 J -35250118.19 -35250118.05 -35250117.92 0.0289 0.0148

Mercury -101223-09-06 04:04 J -35250029.48 -35250029.33 -35250029.18 0.0289 0.0056

Mercury -101223-12-03 21:49 J -35249940.75 -35249940.59 -35249940.43 0.0289 0.0040

Mercury -101222-03-02 15:49 J -35249851.98 -35249851.84 -35249851.70 0.0289 0.0136

Mercury -101222-05-30 10:04 J -35249763.16 -35249763.08 -35249762.98 0.0288 0.0235

Venus -101220-04-28 07:25 J -35249064.36 -35249064.19 -35249064.00 0.0286 0.0150

Venus -101220-12-14 01:54 J -35248834.62 -35248834.42 -35248834.21 0.0284 0.0085

Moon -101218-01-29 07:11 J -35248423.41 -35248423.20 -35248422.99 0.0282 0.0140

Earth -101218-01-29 10:04 J -35248423.29 -35248423.08 -35248422.85 0.0282 0.0128 \*

Mars -101214-03-20 02:52 J -35246912.65 -35246912.38 -35246912.11 0.0274 0.0072

Mercury -101208-01-13 10:47 J -35244786.11 -35244786.05 -35244785.98 0.0270 0.0242

Mercury -101208-04-12 01:25 J -35244697.56 -35244697.44 -35244697.32 0.0270 0.0166

Mercury -101208-07-09 15:35 J -35244608.99 -35244608.85 -35244608.70 0.0270 0.0091

Mercury -101208-10-06 05:45 J -35244520.41 -35244520.26 -35244520.11 0.0270 0.0017

Mercury -101207-01-02 19:25 J -35244431.83 -35244431.69 -35244431.54 0.0270 0.0057

Mercury -101207-04-01 09:06 J -35244343.25 -35244343.12 -35244342.99 0.0270 0.0128

Mercury -101207-06-28 22:18 J -35244254.66 -35244254.57 -35244254.47 0.0271 0.0199

Mercury -101207-09-25 11:30 J -35244166.04 -35244166.02 -35244166.00 0.0271 0.0268

Venus -101205-05-27 09:06 J -35243556.25 -35243556.12 -35243555.98 0.0273 0.0206

Venus -101204-01-11 14:52 J -35243327.09 -35243326.88 -35243326.67 0.0274 0.0004

Venus -101204-08-28 20:23 J -35243097.79 -35243097.65 -35243097.51 0.0276 0.0203

Moon -101203-08-09 04:33 J -35242752.54 -35242752.31 -35242752.09 0.0278 0.0082

Earth -101203-08-09 07:40 J -35242752.41 -35242752.18 -35242751.94 0.0278 0.0067 \*

Mars -101198-03-05 02:37 J -35241083.67 -35241083.39 -35241083.09 0.0287 0.0102

Mercury -101194-07-30 17:30 J -35239474.82 -35239474.77 -35239474.72 0.0290 0.0270

Mercury -101194-10-27 10:18 J -35239386.19 -35239386.07 -35239385.95 0.0290 0.0181

Mercury -101193-01-24 03:35 J -35239297.50 -35239297.35 -35239297.20 0.0289 0.0088

Mercury -101193-04-21 21:06 J -35239208.78 -35239208.62 -35239208.46 0.0289 0.0008

Mercury -101193-07-19 15:06 J -35239120.02 -35239119.87 -35239119.72 0.0289 0.0102

Mercury -101193-10-16 09:21 J -35239031.22 -35239031.11 -35239030.99 0.0289 0.0200

Venus -101191-11-08 11:45 J -35238278.20 -35238278.01 -35238277.81 0.0286 0.0120

Venus -101190-06-26 06:13 J -35238048.43 -35238048.24 -35238048.04 0.0284 0.0115

Moon -101188-02-05 11:01 J -35237458.27 -35237458.04 -35237457.79 0.0281 0.0108

Earth -101188-02-05 12:13 J -35237458.21 -35237457.99 -35237457.76 0.0281 0.0122 \*

Mars -101184-05-06 09:21 J -35235907.38 -35235907.11 -35235906.83 0.0273 0.0067

Mercury -101179-06-02 13:11 J -35234053.98 -35234053.95 -35234053.91 0.0270 0.0262

Mercury -101179-08-30 03:49 J -35233965.45 -35233965.34 -35233965.23 0.0270 0.0185

Mercury -101179-11-26 18:13 J -35233876.88 -35233876.74 -35233876.60 0.0271 0.0109

Mercury -101178-02-23 08:23 J -35233788.30 -35233788.15 -35233788.00 0.0271 0.0034

Mercury -101178-05-22 22:18 J -35233699.72 -35233699.57 -35233699.42 0.0271 0.0040

Mercury -101178-08-19 11:45 J -35233611.14 -35233611.01 -35233610.87 0.0271 0.0112

Mercury -101178-11-16 01:11 J -35233522.55 -35233522.45 -35233522.34 0.0271 0.0183

Mercury -101177-02-12 14:23 J -35233433.95 -35233433.90 -35233433.85 0.0272 0.0253

Venus -101176-12-07 17:30 J -35232769.93 -35232769.77 -35232769.61 0.0274 0.0174

Venus -101175-07-24 23:16 J -35232540.74 -35232540.53 -35232540.32 0.0275 0.0031

Venus -101174-03-11 04:47 J -35232311.39 -35232311.30 -35232311.18 0.0276 0.0239

Earth -101174-08-04 14:09 J -35232165.03 -35232164.91 -35232164.79 0.0277 0.0237

Moon -101174-08-04 17:45 J -35232164.86 -35232164.76 -35232164.65 0.0277 0.0251 \*

Moon -101173-08-15 20:37 J -35231787.83 -35231787.64 -35231787.43 0.0279 0.0165

Earth -101173-08-15 21:06 J -35231787.80 -35231787.62 -35231787.43 0.0279 0.0177 \*

Mars -101170-04-17 04:04 J -35230813.47 -35230813.33 -35230813.15 0.0285 0.0243

Mercury -101165-12-16 20:37 J -35228742.66 -35228742.64 -35228742.61 0.0289 0.0284

Mercury -101164-03-15 13:25 J -35228654.05 -35228653.94 -35228653.82 0.0289 0.0195

Mercury -101164-06-12 06:42 J -35228565.37 -35228565.22 -35228565.08 0.0289 0.0104

Mercury -101164-09-08 23:59 J -35228476.65 -35228476.50 -35228476.34 0.0289 0.0013

Mercury -101164-12-06 17:59 J -35228387.90 -35228387.75 -35228387.60 0.0289 0.0086

Mercury -101163-03-05 12:13 J -35228299.11 -35228298.99 -35228298.87 0.0289 0.0184

Mercury -101163-06-02 06:42 J -35228210.24 -35228210.22 -35228210.18 0.0288 0.0283

Venus -101161-05-20 23:30 J -35227491.72 -35227491.52 -35227491.31 0.0285 0.0078

Venus -101160-01-05 17:45 J -35227261.94 -35227261.76 -35227261.58 0.0284 0.0156

Earth -101159-01-31 01:25 J -35226871.68 -35226871.44 -35226871.19 0.0282 0.0066

Moon -101159-01-31 02:37 J -35226871.62 -35226871.39 -35226871.15 0.0282 0.0080 \*  
 Mars -101156-06-26 19:25 J -35225628.88 -35225628.69 -35225628.49 0.0275 0.0199  
 Mars -101154-06-23 16:04 J -35224902.00 -35224901.83 -35224901.64 0.0272 0.0207  
 Mercury -101149-01-17 05:16 J -35223233.37 -35223233.28 -35223233.18 0.0270 0.0206  
 Mercury -101149-04-14 19:54 J -35223144.81 -35223144.67 -35223144.54 0.0270 0.0130  
 Mercury -101149-07-12 10:04 J -35223056.23 -35223056.08 -35223055.93 0.0270 0.0055  
 Mercury -101149-10-08 23:59 J -35222967.65 -35222967.50 -35222967.35 0.0270 0.0019  
 Mercury -101148-01-05 13:40 J -35222879.07 -35222878.93 -35222878.79 0.0270 0.0091  
 Mercury -101148-04-04 02:52 J -35222790.49 -35222790.38 -35222790.26 0.0271 0.0163  
 Mercury -101148-07-01 16:04 J -35222701.90 -35222701.83 -35222701.75 0.0271 0.0233  
 Venus -101146-06-19 20:37 J -35221983.81 -35221983.64 -35221983.45 0.0274 0.0147  
 Venus -101145-02-04 02:23 J -35221754.60 -35221754.40 -35221754.19 0.0275 0.0059  
 Venus -101145-09-20 07:54 J -35221525.21 -35221525.17 -35221525.10 0.0276 0.0265  
 Earth -101144-08-10 17:30 J -35221201.01 -35221200.77 -35221200.53 0.0278 0.0013  
 Moon -101144-08-10 17:30 J -35221201.00 -35221200.77 -35221200.54 0.0278 0.0027 \*  
 Mars -101140-06-07 09:35 J -35219804.39 -35219804.10 -35219803.80 0.0286 0.0066  
 Mercury -101135-08-02 13:11 J -35217922.04 -35217921.95 -35217921.86 0.0290 0.0227  
 Mercury -101135-10-30 05:59 J -35217833.38 -35217833.25 -35217833.10 0.0290 0.0137  
 Mercury -101134-01-26 23:30 J -35217744.67 -35217744.52 -35217744.36 0.0289 0.0043  
 Mercury -101134-04-25 17:16 J -35217655.94 -35217655.78 -35217655.62 0.0289 0.0052  
 Mercury -101134-07-23 11:16 J -35217567.16 -35217567.03 -35217566.89 0.0289 0.0150  
 Mercury -101134-10-20 05:45 J -35217478.33 -35217478.26 -35217478.17 0.0289 0.0248  
 Venus -101132-12-01 03:06 J -35216705.58 -35216705.37 -35216705.16 0.0285 0.0051  
 Venus -101131-07-18 21:21 J -35216475.76 -35216475.61 -35216475.44 0.0284 0.0185  
 Earth -101130-01-25 03:06 J -35216285.42 -35216285.37 -35216285.32 0.0283 0.0275  
 Moon -101129-02-07 22:18 J -35215906.77 -35215906.57 -35215906.36 0.0280 0.0165  
 Earth -101129-02-08 02:09 J -35215906.59 -35215906.41 -35215906.21 0.0280 0.0182 \*  
 Mars -101126-08-14 07:40 J -35214623.45 -35214623.18 -35214622.90 0.0273 0.0058  
 Mercury -101120-06-05 07:25 J -35212501.27 -35212501.19 -35212501.11 0.0270 0.0226  
 Mercury -101120-09-01 21:49 J -35212412.71 -35212412.59 -35212412.46 0.0270 0.0150

Mercury -101120-11-29 12:13 J -35212324.14 -35212323.99 -35212323.84 0.0271 0.0074  
 Mercury -101119-02-26 02:09 J -35212235.56 -35212235.41 -35212235.25 0.0271 0.0007  
 Mercury -101119-05-25 16:04 J -35212146.98 -35212146.83 -35212146.69 0.0271 0.0073  
 Mercury -101119-08-22 05:30 J -35212058.39 -35212058.27 -35212058.14 0.0271 0.0145  
 Mercury -101119-11-18 18:42 J -35211969.80 -35211969.72 -35211969.63 0.0271 0.0216  
 Venus -101117-12-30 04:18 J -35211197.51 -35211197.32 -35211197.12 0.0274 0.0116  
 Venus -101116-08-16 10:04 J -35210968.27 -35210968.08 -35210967.88 0.0276 0.0092  
 Earth -101115-08-05 22:47 J -35210613.72 -35210613.55 -35210613.37 0.0277 0.0184  
 Moon -101115-08-05 23:01 J -35210613.70 -35210613.54 -35210613.36 0.0277 0.0198 \*  
 Moon -101114-08-18 02:52 J -35210236.53 -35210236.38 -35210236.23 0.0280 0.0217  
 Earth -101114-08-18 06:13 J -35210236.37 -35210236.24 -35210236.11 0.0280 0.0230 \*  
 Mars -101110-07-31 10:18 J -35208793.34 -35208793.07 -35208792.79 0.0287 0.0129  
 Mercury -101106-12-20 16:04 J -35207189.91 -35207189.83 -35207189.74 0.0289 0.0242  
 Mercury -101105-03-18 09:06 J -35207101.25 -35207101.12 -35207100.99 0.0289 0.0151  
 Mercury -101105-06-15 02:23 J -35207012.55 -35207012.40 -35207012.25 0.0289 0.0059  
 Mercury -101105-09-11 20:09 J -35206923.82 -35206923.66 -35206923.51 0.0289 0.0037  
 Mercury -101105-12-09 14:09 J -35206835.05 -35206834.91 -35206834.77 0.0289 0.0133  
 Mercury -101104-03-08 08:23 J -35206746.24 -35206746.15 -35206746.05 0.0288 0.0231  
 Venus -101103-10-26 20:23 J -35206148.75 -35206148.65 -35206148.53 0.0286 0.0245  
 Venus -101102-06-13 15:06 J -35205919.09 -35205918.87 -35205918.66 0.0285 0.0009  
 Venus -101101-01-29 08:52 J -35205689.24 -35205689.13 -35205688.99 0.0284 0.0227  
 Earth -101100-02-01 16:18 J -35205320.07 -35205319.82 -35205319.57 0.0282 0.0006  
 Moon -101100-02-01 20:09 J -35205319.91 -35205319.66 -35205319.40 0.0282 0.0021 \*  
 Mars -101096-10-01 00:42 J -35203617.73 -35203617.47 -35203617.20 0.0272 0.0089  
 Mercury -101091-10-23 09:06 J -35201769.18 -35201769.12 -35201769.05 0.0270 0.0246  
 Mercury -101090-01-19 23:45 J -35201680.63 -35201680.51 -35201680.39 0.0270 0.0169  
 Mercury -101090-04-18 14:09 J -35201592.05 -35201591.91 -35201591.77 0.0270 0.0094  
 Mercury -101090-07-16 04:04 J -35201503.48 -35201503.33 -35201503.17 0.0270 0.0021  
 Mercury -101090-10-12 17:59 J -35201414.90 -35201414.75 -35201414.60 0.0270 0.0054  
 Mercury -101089-01-09 07:25 J -35201326.32 -35201326.19 -35201326.05 0.0270 0.0126

Mercury -101089-04-06 20:52 J -35201237.73 -35201237.63 -35201237.53 0.0271 0.0196  
 Mercury -101089-07-04 10:04 J -35201149.11 -35201149.08 -35201149.06 0.0271 0.0265  
 Venus -101087-07-12 08:23 J -35200411.35 -35200411.15 -35200410.95 0.0274 0.0086  
 Venus -101086-02-26 13:54 J -35200182.11 -35200181.92 -35200181.73 0.0275 0.0120  
 Earth -101085-08-12 02:37 J -35199649.62 -35199649.39 -35199649.15 0.0278 0.0041  
 Moon -101085-08-12 06:13 J -35199649.48 -35199649.24 -35199649.01 0.0278 0.0025 \*  
 Mars -101082-09-11 01:11 J -35198524.62 -35198524.45 -35198524.26 0.0285 0.0226  
 Mercury -101076-05-08 15:35 J -35196457.89 -35196457.85 -35196457.80 0.0290 0.0275  
 Mercury -101076-08-05 08:23 J -35196369.26 -35196369.15 -35196369.03 0.0290 0.0185  
 Mercury -101076-11-02 01:40 J -35196280.58 -35196280.43 -35196280.28 0.0290 0.0093  
 Mercury -101075-01-29 19:11 J -35196191.86 -35196191.70 -35196191.54 0.0289 0.0002  
 Mercury -101075-04-28 12:57 J -35196103.11 -35196102.96 -35196102.80 0.0289 0.0098  
 Mercury -101075-07-26 07:11 J -35196014.31 -35196014.20 -35196014.08 0.0289 0.0195  
 Venus -101073-05-07 23:01 J -35195362.66 -35195362.54 -35195362.39 0.0286 0.0219  
 Venus -101073-12-23 17:45 J -35195132.97 -35195132.76 -35195132.55 0.0285 0.0019  
 Venus -101072-08-10 11:45 J -35194903.09 -35194903.01 -35194902.90 0.0284 0.0254  
 Moon -101071-01-26 12:28 J -35194734.11 -35194733.98 -35194733.83 0.0283 0.0232  
 Earth -101071-01-26 16:18 J -35194733.97 -35194733.82 -35194733.65 0.0283 0.0216 \*  
 Moon -101070-02-09 14:09 J -35194355.05 -35194354.91 -35194354.76 0.0280 0.0224  
 Earth -101070-02-09 15:06 J -35194354.98 -35194354.87 -35194354.72 0.0280 0.0240 \*  
 Mars -101068-11-20 22:47 J -35193339.75 -35193339.55 -35193339.33 0.0274 0.0186  
 Mars -101066-11-17 18:57 J -35192612.85 -35192612.71 -35192612.53 0.0271 0.0221  
 Mercury -101061-03-11 10:47 J -35191037.06 -35191037.05 -35191037.04 0.0270 0.0268  
 Mercury -101061-06-08 01:25 J -35190948.54 -35190948.44 -35190948.33 0.0270 0.0192  
 Mercury -101061-09-04 15:49 J -35190859.97 -35190859.84 -35190859.70 0.0270 0.0116  
 Mercury -101061-12-02 05:59 J -35190771.40 -35190771.25 -35190771.10 0.0271 0.0041  
 Mercury -101060-02-28 19:54 J -35190682.82 -35190682.67 -35190682.52 0.0271 0.0033  
 Mercury -101060-05-28 09:35 J -35190594.24 -35190594.10 -35190593.96 0.0271 0.0106  
 Mercury -101060-08-24 23:01 J -35190505.65 -35190505.54 -35190505.43 0.0271 0.0177  
 Mercury -101060-11-21 12:13 J -35190417.05 -35190416.99 -35190416.93 0.0271 0.0247

Venus -101058-06-07 08:37 J -35189854.19 -35189854.14 -35189854.07 0.0274 0.0262  
 Venus -101057-01-22 14:37 J -35189625.10 -35189624.89 -35189624.69 0.0275 0.0057  
 Venus -101057-09-07 20:09 J -35189395.83 -35189395.66 -35189395.48 0.0276 0.0151  
 Moon -101056-08-07 02:09 J -35189062.60 -35189062.41 -35189062.20 0.0278 0.0150  
 Earth -101056-08-07 05:59 J -35189062.46 -35189062.25 -35189062.04 0.0278 0.0133 \*  
 Moon -101055-08-19 11:16 J -35188685.08 -35188685.03 -35188684.96 0.0280 0.0269  
 Earth -101055-08-19 13:11 J -35188684.95 -35188684.95 -35188684.94 0.0280 0.0280  
 Mars -101052-11-02 07:54 J -35187514.47 -35187514.17 -35187513.86 0.0286 0.0041  
 Mercury -101047-12-23 11:16 J -35185637.14 -35185637.03 -35185636.92 0.0289 0.0201  
 Mercury -101046-03-22 04:18 J -35185548.46 -35185548.32 -35185548.17 0.0289 0.0109  
 Mercury -101046-06-18 21:49 J -35185459.75 -35185459.59 -35185459.43 0.0289 0.0015  
 Mercury -101046-09-15 15:35 J -35185371.00 -35185370.85 -35185370.69 0.0289 0.0081  
 Mercury -101046-12-13 09:49 J -35185282.21 -35185282.09 -35185281.96 0.0289 0.0178  
 Mercury -101045-03-11 04:33 J -35185193.35 -35185193.31 -35185193.27 0.0288 0.0277  
 Venus -101044-11-18 11:01 J -35184576.20 -35184576.04 -35184575.86 0.0286 0.0176  
 Venus -101043-07-06 05:45 J -35184346.47 -35184346.26 -35184346.05 0.0285 0.0062  
 Earth -101041-02-04 05:45 J -35183768.50 -35183768.26 -35183768.01 0.0281 0.0053  
 Moon -101041-02-04 06:42 J -35183768.48 -35183768.22 -35183767.96 0.0281 0.0037 \*  
 Mars -101037-01-09 01:40 J -35182333.71 -35182333.43 -35182333.15 0.0273 0.0034  
 Mercury -101032-10-26 03:21 J -35180216.45 -35180216.36 -35180216.26 0.0270 0.0211  
 Mercury -101031-01-22 17:45 J -35180127.88 -35180127.76 -35180127.62 0.0270 0.0135  
 Mercury -101031-04-21 08:09 J -35180039.31 -35180039.16 -35180039.01 0.0270 0.0059  
 Mercury -101031-07-18 22:04 J -35179950.73 -35179950.58 -35179950.43 0.0270 0.0014  
 Mercury -101031-10-15 11:45 J -35179862.15 -35179862.01 -35179861.87 0.0270 0.0087  
 Mercury -101030-01-12 01:11 J -35179773.57 -35179773.45 -35179773.33 0.0270 0.0158  
 Mercury -101030-04-10 14:23 J -35179684.97 -35179684.90 -35179684.82 0.0271 0.0228  
 Venus -101029-12-17 13:25 J -35179068.05 -35179067.94 -35179067.83 0.0273 0.0231  
 Venus -101028-08-03 18:57 J -35178838.92 -35178838.71 -35178838.50 0.0274 0.0027  
 Venus -101027-03-21 00:13 J -35178609.64 -35178609.49 -35178609.33 0.0275 0.0180  
 Earth -101026-08-14 10:04 J -35178098.30 -35178098.08 -35178097.84 0.0278 0.0091

Moon -101026-08-14 12:13 J -35178098.22 -35178097.99 -35178097.75 0.0278 0.0076 \*  
 Mars -101022-12-25 01:11 J -35176504.72 -35176504.45 -35176504.18 0.0287 0.0143  
 Mercury -101017-05-11 10:18 J -35174905.15 -35174905.07 -35174904.98 0.0290 0.0236  
 Mercury -101017-08-08 03:21 J -35174816.49 -35174816.36 -35174816.22 0.0290 0.0145  
 Mercury -101017-11-04 20:37 J -35174727.79 -35174727.64 -35174727.48 0.0290 0.0052  
 Mercury -101016-02-01 14:23 J -35174639.06 -35174638.90 -35174638.74 0.0289 0.0043  
 Mercury -101016-05-01 08:23 J -35174550.29 -35174550.15 -35174550.01 0.0289 0.0140  
 Mercury -101016-07-29 02:52 J -35174461.47 -35174461.38 -35174461.29 0.0289 0.0239  
 Venus -101014-05-31 12:57 J -35173790.14 -35173789.96 -35173789.78 0.0286 0.0152  
 Venus -101013-01-16 07:11 J -35173560.40 -35173560.20 -35173559.99 0.0285 0.0086  
 Earth -101012-01-28 03:49 J -35173182.54 -35173182.34 -35173182.13 0.0283 0.0160  
 Moon -101012-01-28 03:35 J -35173182.53 -35173182.35 -35173182.15 0.0283 0.0175 \*  
 Moon -101011-02-11 05:45 J -35172803.28 -35172803.26 -35172803.21 0.0280 0.0278  
 Mars -101007-02-24 23:30 J -35171328.77 -35171328.52 -35171328.25 0.0272 0.0101  
 Mercury -101002-03-15 04:47 J -35169484.38 -35169484.30 -35169484.23 0.0270 0.0234  
 Mercury -101002-06-11 19:11 J -35169395.82 -35169395.70 -35169395.57 0.0270 0.0158  
 Mercury -101002-09-08 09:35 J -35169307.24 -35169307.10 -35169306.95 0.0270 0.0082  
 Mercury -101002-12-05 23:45 J -35169218.67 -35169218.51 -35169218.36 0.0270 0.0010  
 Mercury -101001-03-03 13:25 J -35169130.08 -35169129.94 -35169129.79 0.0271 0.0065  
 Mercury -101001-05-31 02:52 J -35169041.50 -35169041.38 -35169041.25 0.0271 0.0138  
 Mercury -101001-08-27 16:18 J -35168952.91 -35168952.82 -35168952.73 0.0271 0.0208

# 101ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 101st millennium



## BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-100999-06-29 18:13 J	-35168281.87	-35168281.74	-35168281.59	0.0274	0.0205		
Venus	-100998-02-13 23:59 J	-35168052.71	-35168052.50	-35168052.29	0.0275	0.0005		
Venus	-100998-10-01 05:45 J	-35167823.39	-35167823.26	-35167823.12	0.0276	0.0209		
Moon	-100997-08-08 10:04 J	-35167511.30	-35167511.08	-35167510.87	0.0278	0.0101		
Earth	-100997-08-08 11:45 J	-35167511.24	-35167511.01	-35167510.78	0.0278	0.0085	*	
Mars	-100993-02-05 12:13 J	-35166235.20	-35166234.99	-35166234.78	0.0285	0.0205		
Mercury	-100988-09-28 12:42 J	-35164173.04	-35164172.97	-35164172.89	0.0290	0.0253		
Mercury	-100988-12-26 05:45 J	-35164084.39	-35164084.26	-35164084.13	0.0289	0.0163		
Mercury	-100987-03-24 23:01 J	-35163995.69	-35163995.54	-35163995.39	0.0289	0.0070		
Mercury	-100987-06-21 16:33 J	-35163906.97	-35163906.81	-35163906.65	0.0289	0.0025		
Mercury	-100987-09-18 10:33 J	-35163818.20	-35163818.06	-35163817.91	0.0289	0.0121		
Mercury	-100987-12-16 04:47 J	-35163729.40	-35163729.30	-35163729.19	0.0289	0.0220		
Venus	-100985-12-10 23:45 J	-35163003.70	-35163003.51	-35163003.31	0.0286	0.0110		
Venus	-100984-07-28 18:13 J	-35162773.92	-35162773.74	-35162773.54	0.0284	0.0129		
Moon	-100982-02-05 12:57 J	-35162217.20	-35162216.96	-35162216.72	0.0281	0.0090		
Earth	-100982-02-05 16:18 J	-35162217.05	-35162216.82	-35162216.58	0.0281	0.0106	*	
Mars	-100979-04-17 13:40 J	-35161050.15	-35161049.93	-35161049.70	0.0275	0.0164		
Mars	-100977-04-13 07:54 J	-35160323.28	-35160323.17	-35160323.02	0.0271	0.0240		
Mercury	-100973-08-01 06:42 J	-35158752.27	-35158752.22	-35158752.16	0.0269	0.0253		
Mercury	-100973-10-28 21:21 J	-35158663.72	-35158663.61	-35158663.49	0.0270	0.0176		
Mercury	-100972-01-25 11:45 J	-35158575.15	-35158575.01	-35158574.87	0.0270	0.0101		
Mercury	-100972-04-24 01:40 J	-35158486.58	-35158486.43	-35158486.27	0.0270	0.0028		
Mercury	-100972-07-21 15:35 J	-35158398.00	-35158397.85	-35158397.70	0.0270	0.0047		
Mercury	-100972-10-18 05:01 J	-35158309.42	-35158309.29	-35158309.15	0.0270	0.0119		
Mercury	-100971-01-14 18:28 J	-35158220.83	-35158220.73	-35158220.62	0.0270	0.0190		

Mercury -100971-04-13 07:40 J -35158132.22 -35158132.18 -35158132.14 0.0271 0.0259

Venus -100969-01-09 23:01 J -35157495.70 -35157495.54 -35157495.38 0.0273 0.0174

Venus -100969-08-26 04:18 J -35157266.53 -35157266.32 -35157266.11 0.0274 0.0031

Venus -100968-04-12 09:35 J -35157037.19 -35157037.10 -35157036.99 0.0275 0.0239

Earth -100968-08-03 09:35 J -35156924.14 -35156924.10 -35156924.04 0.0276 0.0269

Moon -100967-08-15 12:57 J -35156547.17 -35156546.96 -35156546.74 0.0278 0.0124

Earth -100967-08-15 15:49 J -35156547.05 -35156546.84 -35156546.63 0.0278 0.0137 \*

Mars -100963-03-28 16:33 J -35155226.11 -35155225.81 -35155225.50 0.0286 0.0032

Mercury -100958-02-15 11:59 J -35153441.01 -35153441.00 -35153440.99 0.0290 0.0288

Mercury -100958-05-15 04:47 J -35153352.41 -35153352.30 -35153352.19 0.0290 0.0199

Mercury -100958-08-11 21:49 J -35153263.74 -35153263.59 -35153263.45 0.0290 0.0107

Mercury -100958-11-08 15:21 J -35153175.02 -35153174.86 -35153174.71 0.0290 0.0015

Mercury -100957-02-05 09:06 J -35153086.27 -35153086.12 -35153085.97 0.0289 0.0083

Mercury -100957-05-04 03:06 J -35152997.49 -35152997.37 -35152997.24 0.0289 0.0181

Mercury -100957-07-31 21:49 J -35152908.63 -35152908.59 -35152908.55 0.0289 0.0280

Venus -100955-06-23 00:57 J -35152217.66 -35152217.46 -35152217.25 0.0286 0.0088

Venus -100954-02-07 19:25 J -35151987.87 -35151987.69 -35151987.50 0.0285 0.0151

Earth -100953-01-30 12:57 J -35151631.19 -35151630.96 -35151630.72 0.0282 0.0108

Moon -100953-01-30 16:33 J -35151631.03 -35151630.81 -35151630.59 0.0282 0.0123 \*

Mars -100949-06-03 17:16 J -35150045.06 -35150044.78 -35150044.50 0.0273 0.0026

Mercury -100943-03-17 22:18 J -35147931.67 -35147931.57 -35147931.47 0.0270 0.0202

Mercury -100943-06-14 12:42 J -35147843.10 -35147842.97 -35147842.83 0.0270 0.0126

Mercury -100943-09-11 02:52 J -35147754.53 -35147754.38 -35147754.23 0.0270 0.0051

Mercury -100943-12-08 16:47 J -35147665.95 -35147665.80 -35147665.65 0.0270 0.0023

Mercury -100942-03-07 06:28 J -35147577.37 -35147577.23 -35147577.09 0.0271 0.0096

Mercury -100942-06-03 19:54 J -35147488.78 -35147488.67 -35147488.55 0.0271 0.0167

Mercury -100942-08-31 09:06 J -35147400.18 -35147400.12 -35147400.05 0.0271 0.0237

Venus -100940-07-22 02:37 J -35146709.56 -35146709.39 -35146709.20 0.0274 0.0150

Venus -100939-03-08 08:09 J -35146480.36 -35146480.16 -35146479.95 0.0275 0.0058

Venus -100939-10-23 13:40 J -35146250.97 -35146250.93 -35146250.86 0.0276 0.0265

Earth -100938-08-10 15:21 J -35145960.10 -35145959.86 -35145959.62 0.0278 0.0041  
 Moon -100938-08-10 17:59 J -35145959.97 -35145959.75 -35145959.52 0.0278 0.0056 \*  
 Mars -100933-05-20 04:04 J -35144215.57 -35144215.33 -35144215.06 0.0287 0.0161  
 Mercury -100929-10-01 06:42 J -35142620.32 -35142620.22 -35142620.13 0.0290 0.0219  
 Mercury -100929-12-28 23:30 J -35142531.66 -35142531.52 -35142531.38 0.0289 0.0128  
 Mercury -100928-03-27 17:01 J -35142442.95 -35142442.79 -35142442.64 0.0289 0.0034  
 Mercury -100928-06-24 10:47 J -35142354.21 -35142354.05 -35142353.90 0.0289 0.0062  
 Mercury -100928-09-21 04:47 J -35142265.43 -35142265.30 -35142265.16 0.0289 0.0159  
 Mercury -100928-12-18 23:16 J -35142176.60 -35142176.53 -35142176.46 0.0289 0.0258  
 Venus -100926-05-18 16:04 J -35141660.84 -35141660.83 -35141660.81 0.0287 0.0286  
 Venus -100925-01-03 10:47 J -35141431.26 -35141431.05 -35141430.84 0.0286 0.0047  
 Venus -100925-08-20 05:16 J -35141201.43 -35141201.28 -35141201.12 0.0284 0.0192  
 Moon -100923-02-06 21:21 J -35140665.82 -35140665.61 -35140665.39 0.0281 0.0139  
 Earth -100923-02-06 23:59 J -35140665.71 -35140665.50 -35140665.29 0.0281 0.0155 \*  
 Mars -100919-07-22 08:52 J -35139039.38 -35139039.13 -35139038.88 0.0272 0.0119  
 Mercury -100914-08-05 00:13 J -35137199.57 -35137199.49 -35137199.39 0.0269 0.0221  
 Mercury -100914-11-01 14:52 J -35137111.01 -35137110.88 -35137110.75 0.0270 0.0144  
 Mercury -100913-01-29 05:01 J -35137022.43 -35137022.29 -35137022.14 0.0270 0.0070  
 Mercury -100913-04-26 19:11 J -35136933.85 -35136933.70 -35136933.55 0.0270 0.0006  
 Mercury -100913-07-24 08:52 J -35136845.27 -35136845.13 -35136844.99 0.0270 0.0078  
 Mercury -100913-10-20 22:18 J -35136756.69 -35136756.57 -35136756.45 0.0270 0.0149  
 Mercury -100912-01-17 11:30 J -35136668.10 -35136668.02 -35136667.93 0.0270 0.0219  
 Venus -100910-02-01 07:40 J -35135923.36 -35135923.18 -35135922.98 0.0273 0.0118  
 Venus -100910-09-18 12:57 J -35135694.16 -35135693.96 -35135693.76 0.0274 0.0089  
 Moon -100909-08-04 11:45 J -35135373.13 -35135373.01 -35135372.88 0.0276 0.0238  
 Earth -100909-08-04 14:09 J -35135373.04 -35135372.91 -35135372.76 0.0276 0.0224 \*  
 Moon -100908-08-16 17:01 J -35134995.97 -35134995.79 -35134995.60 0.0278 0.0171  
 Earth -100908-08-16 19:54 J -35134995.84 -35134995.67 -35134995.48 0.0278 0.0181 \*  
 Mars -100905-06-30 18:28 J -35133946.95 -35133946.73 -35133946.52 0.0284 0.0200  
 Mercury -100899-02-18 05:16 J -35131888.34 -35131888.28 -35131888.20 0.0290 0.0256

Mercury -100899-05-17 22:04 J -35131799.70 -35131799.58 -35131799.44 0.0290 0.0166  
 Mercury -100899-08-14 15:35 J -35131711.01 -35131710.85 -35131710.70 0.0290 0.0073  
 Mercury -100899-11-11 09:06 J -35131622.28 -35131622.12 -35131621.96 0.0289 0.0022  
 Mercury -100898-02-08 02:52 J -35131533.52 -35131533.38 -35131533.23 0.0289 0.0119  
 Mercury -100898-05-07 21:21 J -35131444.71 -35131444.61 -35131444.50 0.0289 0.0217  
 Venus -100897-11-27 16:18 J -35130874.88 -35130874.82 -35130874.73 0.0287 0.0266  
 Venus -100896-07-15 11:01 J -35130645.25 -35130645.04 -35130644.82 0.0286 0.0027  
 Venus -100895-03-02 05:30 J -35130415.40 -35130415.27 -35130415.12 0.0284 0.0213  
 Earth -100894-01-31 18:57 J -35130079.95 -35130079.71 -35130079.46 0.0282 0.0060  
 Moon -100894-01-31 21:21 J -35130079.86 -35130079.61 -35130079.36 0.0282 0.0074 \*  
 Mars -100891-09-10 23:01 J -35128761.76 -35128761.54 -35128761.30 0.0275 0.0160  
 Mars -100889-09-06 18:42 J -35128034.83 -35128034.72 -35128034.59 0.0271 0.0245  
 Mercury -100885-12-22 00:57 J -35126467.52 -35126467.46 -35126467.41 0.0270 0.0248  
 Mercury -100884-03-20 15:21 J -35126378.97 -35126378.86 -35126378.74 0.0270 0.0172  
 Mercury -100884-06-17 05:45 J -35126290.40 -35126290.26 -35126290.11 0.0270 0.0096  
 Mercury -100884-09-13 19:54 J -35126201.82 -35126201.67 -35126201.52 0.0270 0.0021  
 Mercury -100884-12-11 09:35 J -35126113.24 -35126113.10 -35126112.95 0.0270 0.0053  
 Mercury -100883-03-09 23:16 J -35126024.66 -35126024.53 -35126024.40 0.0270 0.0124  
 Mercury -100883-06-06 12:42 J -35125936.07 -35125935.97 -35125935.87 0.0271 0.0195  
 Mercury -100883-09-03 01:40 J -35125847.45 -35125847.43 -35125847.40 0.0271 0.0264  
 Venus -100881-08-13 10:04 J -35125137.27 -35125137.08 -35125136.88 0.0274 0.0096  
 Venus -100880-03-30 15:35 J -35124908.04 -35124907.85 -35124907.66 0.0275 0.0112  
 Earth -100879-08-11 17:16 J -35124409.02 -35124408.78 -35124408.54 0.0278 0.0004  
 Moon -100879-08-11 20:23 J -35124408.90 -35124408.65 -35124408.41 0.0278 0.0013 \*  
 Mars -100875-08-22 08:37 J -35122937.45 -35122937.14 -35122936.84 0.0286 0.0019  
 Mercury -100870-07-08 06:57 J -35121156.25 -35121156.21 -35121156.17 0.0290 0.0278  
 Mercury -100870-10-04 23:30 J -35121067.63 -35121067.52 -35121067.40 0.0290 0.0189  
 Mercury -100869-01-01 16:47 J -35120978.95 -35120978.80 -35120978.65 0.0289 0.0096  
 Mercury -100869-03-30 10:18 J -35120890.23 -35120890.07 -35120889.91 0.0289 0.0002  
 Mercury -100869-06-27 04:04 J -35120801.48 -35120801.33 -35120801.18 0.0289 0.0095

Mercury -100869-09-23 22:18 J -35120712.69 -35120712.57 -35120712.45 0.0289 0.0193

Venus -100867-06-10 00:57 J -35120088.58 -35120088.46 -35120088.32 0.0287 0.0227

Venus -100866-01-25 19:54 J -35119858.89 -35119858.67 -35119858.46 0.0285 0.0014

Venus -100866-09-12 14:23 J -35119628.99 -35119628.90 -35119628.79 0.0284 0.0252

Moon -100865-01-26 02:23 J -35119493.46 -35119493.40 -35119493.32 0.0283 0.0270

Earth -100865-01-26 04:47 J -35119493.40 -35119493.30 -35119493.20 0.0283 0.0256 \*

Earth -100864-02-08 04:47 J -35119114.48 -35119114.30 -35119114.12 0.0281 0.0198

Moon -100864-02-08 06:28 J -35119114.41 -35119114.23 -35119114.04 0.0281 0.0185 \*

Mars -100861-10-28 22:47 J -35117755.83 -35117755.55 -35117755.27 0.0274 0.0011

Mercury -100855-05-11 02:52 J -35115735.39 -35115735.38 -35115735.35 0.0269 0.0267

Mercury -100855-08-07 17:45 J -35115646.87 -35115646.76 -35115646.65 0.0269 0.0190

Mercury -100855-11-04 08:09 J -35115558.30 -35115558.16 -35115558.02 0.0270 0.0114

Mercury -100854-01-31 22:18 J -35115469.72 -35115469.57 -35115469.42 0.0270 0.0040

Mercury -100854-04-30 11:59 J -35115381.15 -35115381.00 -35115380.85 0.0270 0.0035

Mercury -100854-07-28 01:40 J -35115292.57 -35115292.43 -35115292.29 0.0270 0.0106

Mercury -100854-10-24 15:06 J -35115203.98 -35115203.87 -35115203.76 0.0270 0.0177

Mercury -100853-01-21 04:04 J -35115115.38 -35115115.33 -35115115.27 0.0270 0.0247

Venus -100852-07-09 10:18 J -35114580.10 -35114580.07 -35114580.03 0.0272 0.0267

Venus -100851-02-23 15:35 J -35114351.06 -35114350.85 -35114350.65 0.0273 0.0063

Venus -100851-10-10 20:23 J -35114121.82 -35114121.65 -35114121.46 0.0274 0.0144

Moon -100850-08-06 13:54 J -35113822.07 -35113821.92 -35113821.74 0.0276 0.0197

Earth -100850-08-06 17:01 J -35113821.96 -35113821.79 -35113821.60 0.0276 0.0182 \*

Earth -100849-08-17 22:18 J -35113444.71 -35113444.57 -35113444.42 0.0278 0.0221

Moon -100849-08-17 23:59 J -35113444.65 -35113444.50 -35113444.36 0.0278 0.0215 \*

Mars -100845-10-13 02:09 J -35111927.66 -35111927.41 -35111927.15 0.0287 0.0162

Mercury -100840-02-20 22:18 J -35110335.66 -35110335.57 -35110335.47 0.0290 0.0226

Mercury -100840-05-20 15:21 J -35110247.00 -35110246.86 -35110246.72 0.0290 0.0135

Mercury -100840-08-17 08:37 J -35110158.29 -35110158.14 -35110157.98 0.0290 0.0041

Mercury -100840-11-14 02:23 J -35110069.56 -35110069.40 -35110069.24 0.0289 0.0055

Mercury -100839-02-10 20:23 J -35109980.78 -35109980.65 -35109980.51 0.0289 0.0152

Mercury -100839-05-10 14:52 J -35109891.96 -35109891.88 -35109891.80 0.0289 0.0251  
 Venus -100838-12-21 01:11 J -35109302.60 -35109302.45 -35109302.31 0.0287 0.0208  
 Venus -100837-08-06 19:40 J -35109072.89 -35109072.68 -35109072.46 0.0286 0.0033  
 Venus -100836-03-24 14:23 J -35108842.96 -35108842.90 -35108842.84 0.0284 0.0271  
 Moon -100835-02-01 20:23 J -35108528.91 -35108528.65 -35108528.39 0.0282 0.0031  
 Earth -100835-02-01 22:33 J -35108528.81 -35108528.56 -35108528.30 0.0282 0.0017 \*  
 Mars -100831-12-15 13:25 J -35106751.18 -35106750.94 -35106750.68 0.0272 0.0121  
 Mercury -100826-12-25 17:45 J -35104914.85 -35104914.76 -35104914.67 0.0270 0.0219  
 Mercury -100825-03-23 08:09 J -35104826.28 -35104826.16 -35104826.02 0.0270 0.0143  
 Mercury -100825-06-19 22:33 J -35104737.71 -35104737.56 -35104737.41 0.0270 0.0067  
 Mercury -100825-09-16 12:28 J -35104649.13 -35104648.98 -35104648.83 0.0270 0.0008  
 Mercury -100825-12-14 02:09 J -35104560.55 -35104560.41 -35104560.26 0.0270 0.0080  
 Mercury -100824-03-12 15:35 J -35104471.97 -35104471.85 -35104471.72 0.0270 0.0152  
 Mercury -100824-06-09 05:01 J -35104383.37 -35104383.29 -35104383.21 0.0271 0.0222  
 Venus -100822-01-19 11:45 J -35103794.09 -35103794.01 -35103793.92 0.0273 0.0247  
 Venus -100822-09-05 17:01 J -35103565.00 -35103564.79 -35103564.58 0.0274 0.0042  
 Venus -100821-04-21 22:04 J -35103335.73 -35103335.58 -35103335.40 0.0275 0.0167  
 Moon -100820-08-12 17:01 J -35102858.03 -35102857.79 -35102857.54 0.0278 0.0031  
 Earth -100820-08-12 18:28 J -35102857.96 -35102857.73 -35102857.49 0.0278 0.0040 \*  
 Mars -100817-11-24 01:40 J -35101658.65 -35101658.43 -35101658.20 0.0285 0.0191  
 Mercury -100811-07-10 23:16 J -35099603.60 -35099603.53 -35099603.45 0.0290 0.0251  
 Mercury -100811-10-07 16:18 J -35099514.95 -35099514.82 -35099514.69 0.0290 0.0160  
 Mercury -100810-01-04 09:21 J -35099426.26 -35099426.11 -35099425.95 0.0289 0.0067  
 Mercury -100810-04-03 03:06 J -35099337.53 -35099337.37 -35099337.21 0.0289 0.0029  
 Mercury -100810-06-30 21:06 J -35099248.77 -35099248.62 -35099248.48 0.0289 0.0125  
 Mercury -100810-09-27 15:21 J -35099159.96 -35099159.86 -35099159.76 0.0289 0.0224  
 Venus -100808-07-02 08:23 J -35098516.32 -35098516.15 -35098515.98 0.0286 0.0171  
 Venus -100807-02-17 03:21 J -35098286.57 -35098286.36 -35098286.16 0.0285 0.0070  
 Earth -100806-01-27 05:59 J -35097942.41 -35097942.25 -35097942.09 0.0283 0.0216  
 Moon -100806-01-27 08:09 J -35097942.29 -35097942.16 -35097942.01 0.0283 0.0232 \*

Earth -100805-02-10 06:28 J -35097563.36 -35097563.23 -35097563.09 0.0281 0.0238  
 Moon -100805-02-10 09:49 J -35097563.23 -35097563.09 -35097562.92 0.0281 0.0224 \*  
 Mars -100802-02-04 22:47 J -35096472.79 -35096472.55 -35096472.31 0.0275 0.0149  
 Mars -100800-01-31 19:54 J -35095745.76 -35095745.67 -35095745.58 0.0272 0.0256  
 Mercury -100796-05-13 19:54 J -35094182.74 -35094182.67 -35094182.59 0.0269 0.0238  
 Mercury -100796-08-10 10:33 J -35094094.18 -35094094.06 -35094093.93 0.0270 0.0161  
 Mercury -100796-11-07 00:57 J -35094005.61 -35094005.46 -35094005.32 0.0270 0.0086  
 Mercury -100795-02-03 14:52 J -35093917.03 -35093916.88 -35093916.73 0.0270 0.0012  
 Mercury -100795-05-03 04:47 J -35093828.45 -35093828.30 -35093828.16 0.0270 0.0062  
 Mercury -100795-07-30 18:13 J -35093739.87 -35093739.74 -35093739.61 0.0270 0.0134  
 Mercury -100795-10-27 07:25 J -35093651.28 -35093651.19 -35093651.09 0.0270 0.0204  
 Venus -100793-07-31 17:30 J -35093007.89 -35093007.77 -35093007.63 0.0272 0.0215  
 Venus -100792-03-17 22:33 J -35092778.77 -35092778.56 -35092778.35 0.0273 0.0011  
 Venus -100792-11-02 03:21 J -35092549.49 -35092549.36 -35092549.21 0.0274 0.0199  
 Earth -100791-08-07 18:57 J -35092270.91 -35092270.71 -35092270.50 0.0276 0.0141  
 Moon -100791-08-07 19:54 J -35092270.86 -35092270.67 -35092270.48 0.0276 0.0154 \*  
 Earth -100790-08-19 23:45 J -35091893.59 -35091893.51 -35091893.42 0.0278 0.0260  
 Moon -100790-08-20 03:21 J -35091893.45 -35091893.36 -35091893.27 0.0278 0.0256 \*  
 Mars -100786-01-15 06:42 J -35090649.52 -35090649.22 -35090648.91 0.0285 0.0021  
 Mercury -100782-11-27 22:18 J -35088871.59 -35088871.57 -35088871.56 0.0290 0.0287  
 Mercury -100781-02-24 14:52 J -35088782.99 -35088782.88 -35088782.77 0.0290 0.0198  
 Mercury -100781-05-23 07:54 J -35088694.31 -35088694.17 -35088694.02 0.0290 0.0106  
 Mercury -100781-08-20 01:25 J -35088605.60 -35088605.44 -35088605.29 0.0290 0.0013  
 Mercury -100781-11-16 19:11 J -35088516.85 -35088516.70 -35088516.55 0.0289 0.0085  
 Mercury -100780-02-13 13:25 J -35088428.07 -35088427.94 -35088427.82 0.0289 0.0183  
 Mercury -100780-05-13 07:40 J -35088339.20 -35088339.18 -35088339.14 0.0289 0.0282  
 Venus -100778-01-12 08:09 J -35087730.33 -35087730.16 -35087729.97 0.0287 0.0153  
 Venus -100778-08-30 03:06 J -35087500.57 -35087500.37 -35087500.17 0.0285 0.0090  
 Moon -100776-02-02 20:37 J -35086977.89 -35086977.64 -35086977.39 0.0282 0.0009  
 Earth -100776-02-02 23:59 J -35086977.75 -35086977.50 -35086977.24 0.0282 0.0025 \*

Mars -100772-03-23 20:52 J -35085467.91 -35085467.63 -35085467.35 0.0274 0.0012  
 Mercury -100767-09-30 19:40 J -35083450.69 -35083450.68 -35083450.67 0.0269 0.0268  
 Mercury -100767-12-28 10:18 J -35083362.17 -35083362.07 -35083361.96 0.0269 0.0191  
 Mercury -100766-03-27 00:42 J -35083273.60 -35083273.47 -35083273.32 0.0270 0.0116  
 Mercury -100766-06-23 15:06 J -35083185.02 -35083184.87 -35083184.72 0.0270 0.0040  
 Mercury -100766-09-20 05:01 J -35083096.44 -35083096.29 -35083096.14 0.0270 0.0034  
 Mercury -100766-12-17 18:28 J -35083007.86 -35083007.73 -35083007.59 0.0270 0.0106  
 Mercury -100765-03-15 07:54 J -35082919.28 -35082919.17 -35082919.05 0.0270 0.0177  
 Mercury -100765-06-11 21:06 J -35082830.67 -35082830.62 -35082830.56 0.0271 0.0247  
 Venus -100763-02-10 18:13 J -35082221.89 -35082221.74 -35082221.59 0.0273 0.0195  
 Venus -100763-09-27 23:16 J -35081992.74 -35081992.53 -35081992.32 0.0274 0.0011  
 Venus -100762-05-15 04:33 J -35081763.44 -35081763.31 -35081763.19 0.0275 0.0219  
 Moon -100761-08-13 15:06 J -35081307.09 -35081306.87 -35081306.63 0.0277 0.0070  
 Earth -100761-08-13 18:28 J -35081306.95 -35081306.73 -35081306.49 0.0277 0.0078 \*  
 Mars -100756-03-08 01:40 J -35079639.67 -35079639.43 -35079639.17 0.0287 0.0168  
 Mercury -100752-07-13 15:21 J -35078050.95 -35078050.86 -35078050.76 0.0290 0.0225  
 Mercury -100752-10-10 08:23 J -35077962.29 -35077962.15 -35077962.01 0.0290 0.0133  
 Mercury -100751-01-07 01:40 J -35077873.58 -35077873.43 -35077873.27 0.0289 0.0040  
 Mercury -100751-04-05 19:25 J -35077784.85 -35077784.69 -35077784.53 0.0289 0.0056  
 Mercury -100751-07-03 13:25 J -35077696.07 -35077695.94 -35077695.80 0.0289 0.0154  
 Mercury -100751-09-30 07:54 J -35077607.24 -35077607.17 -35077607.09 0.0289 0.0253  
 Venus -100749-07-24 14:37 J -35076944.08 -35076943.89 -35076943.69 0.0286 0.0117  
 Venus -100748-03-11 09:35 J -35076714.29 -35076714.10 -35076713.90 0.0285 0.0126  
 Earth -100747-01-28 05:30 J -35076391.46 -35076391.27 -35076391.07 0.0283 0.0177  
 Moon -100747-01-28 08:52 J -35076391.31 -35076391.13 -35076390.94 0.0283 0.0194 \*  
 Moon -100746-02-11 06:28 J -35076012.31 -35076012.23 -35076012.12 0.0281 0.0261  
 Earth -100746-02-11 06:13 J -35076012.28 -35076012.24 -35076012.17 0.0281 0.0275 \*  
 Mars -100742-05-11 08:37 J -35074462.39 -35074462.14 -35074461.89 0.0273 0.0129  
 Mercury -100737-05-16 12:42 J -35072630.06 -35072629.97 -35072629.87 0.0270 0.0210  
 Mercury -100737-08-13 03:06 J -35072541.50 -35072541.37 -35072541.23 0.0270 0.0134



Mercury -100737-11-09 17:30 J -35072452.92 -35072452.77 -35072452.62 0.0270 0.0059

Mercury -100736-02-06 07:25 J -35072364.34 -35072364.19 -35072364.04 0.0270 0.0016

Mercury -100736-05-05 21:06 J -35072275.76 -35072275.62 -35072275.48 0.0270 0.0088

Mercury -100736-08-02 10:33 J -35072187.18 -35072187.06 -35072186.94 0.0270 0.0160

Mercury -100736-10-29 23:45 J -35072098.58 -35072098.51 -35072098.43 0.0270 0.0230

Venus -100734-08-24 00:13 J -35071435.65 -35071435.49 -35071435.32 0.0272 0.0163

Venus -100733-04-09 05:16 J -35071206.48 -35071206.28 -35071206.07 0.0273 0.0045

Venus -100733-11-24 10:04 J -35070977.15 -35070977.08 -35070976.99 0.0274 0.0252

Earth -100732-08-08 20:23 J -35070719.87 -35070719.65 -35070719.42 0.0276 0.0101

Moon -100732-08-08 23:45 J -35070719.72 -35070719.51 -35070719.28 0.0276 0.0115 \*

Mars -100728-04-19 03:35 J -35069370.56 -35069370.35 -35069370.11 0.0284 0.0192

Mercury -100723-11-30 14:23 J -35067318.96 -35067318.90 -35067318.83 0.0290 0.0261

Mercury -100722-02-27 07:11 J -35067230.32 -35067230.20 -35067230.07 0.0290 0.0171

Mercury -100722-05-27 00:28 J -35067141.63 -35067141.48 -35067141.33 0.0290 0.0078

Mercury -100722-08-23 17:59 J -35067052.91 -35067052.75 -35067052.59 0.0289 0.0017

Mercury -100722-11-20 11:45 J -35066964.15 -35066964.01 -35066963.86 0.0289 0.0114

Mercury -100721-02-17 05:59 J -35066875.35 -35066875.25 -35066875.14 0.0289 0.0213

Venus -100719-02-03 15:06 J -35066158.07 -35066157.87 -35066157.67 0.0286 0.0097

Venus -100719-09-21 09:49 J -35065928.27 -35065928.09 -35065927.90 0.0285 0.0145

Earth -100717-02-05 00:13 J -35065426.74 -35065426.49 -35065426.25 0.0282 0.0063

Moon -100717-02-05 00:42 J -35065426.71 -35065426.47 -35065426.23 0.0282 0.0049 \*

Mars -100714-06-30 15:35 J -35064185.08 -35064184.85 -35064184.61 0.0275 0.0153

Mars -100712-06-26 15:49 J -35063457.92 -35063457.84 -35063457.74 0.0272 0.0255

Mercury -100708-10-03 12:13 J -35061898.05 -35061897.99 -35061897.92 0.0269 0.0241

Mercury -100708-12-31 02:52 J -35061809.50 -35061809.38 -35061809.26 0.0270 0.0164

Mercury -100707-03-29 17:16 J -35061720.92 -35061720.78 -35061720.63 0.0270 0.0089

Mercury -100707-06-26 07:25 J -35061632.34 -35061632.19 -35061632.04 0.0270 0.0014

Mercury -100707-09-22 21:06 J -35061543.76 -35061543.62 -35061543.47 0.0270 0.0060

Mercury -100707-12-20 10:47 J -35061455.18 -35061455.05 -35061454.92 0.0270 0.0132

Mercury -100706-03-18 23:59 J -35061366.59 -35061366.50 -35061366.40 0.0270 0.0203

Venus -100704-03-05 00:13 J -35060649.66 -35060649.49 -35060649.30 0.0273 0.0144  
 Venus -100704-10-20 05:30 J -35060420.48 -35060420.27 -35060420.07 0.0274 0.0064  
 Venus -100703-06-06 10:33 J -35060191.08 -35060191.06 -35060191.04 0.0275 0.0272  
 Moon -100702-08-15 18:28 J -35059755.94 -35059755.73 -35059755.51 0.0277 0.0110  
 Earth -100702-08-15 18:57 J -35059755.93 -35059755.71 -35059755.49 0.0277 0.0115 \*  
 Mars -100698-06-10 04:04 J -35058361.64 -35058361.33 -35058361.03 0.0286 0.0015  
 Mercury -100693-04-18 14:37 J -35056586.89 -35056586.89 -35056586.88 0.0290 0.0289  
 Mercury -100693-07-16 07:25 J -35056498.30 -35056498.19 -35056498.08 0.0290 0.0200  
 Mercury -100693-10-13 00:28 J -35056409.62 -35056409.48 -35056409.33 0.0290 0.0108  
 Mercury -100692-01-09 17:59 J -35056320.91 -35056320.75 -35056320.60 0.0289 0.0015  
 Mercury -100692-04-08 11:45 J -35056232.17 -35056232.01 -35056231.86 0.0289 0.0083  
 Mercury -100692-07-06 05:45 J -35056143.38 -35056143.26 -35056143.13 0.0289 0.0181  
 Mercury -100692-10-03 00:13 J -35056054.52 -35056054.49 -35056054.45 0.0289 0.0281  
 Venus -100690-08-16 20:23 J -35055371.85 -35055371.65 -35055371.44 0.0286 0.0064  
 Venus -100689-04-02 15:21 J -35055142.02 -35055141.86 -35055141.69 0.0285 0.0180  
 Moon -100688-01-29 02:37 J -35054840.60 -35054840.39 -35054840.17 0.0283 0.0156  
 Earth -100688-01-29 03:49 J -35054840.54 -35054840.34 -35054840.11 0.0283 0.0142 \*  
 Mars -100684-08-17 12:13 J -35053179.28 -35053178.99 -35053178.71 0.0274 0.0008  
 Mercury -100678-02-20 14:37 J -35051165.93 -35051165.89 -35051165.85 0.0270 0.0260  
 Mercury -100678-05-20 05:16 J -35051077.39 -35051077.28 -35051077.17 0.0270 0.0183  
 Mercury -100678-08-16 19:40 J -35050988.82 -35050988.68 -35050988.54 0.0270 0.0107  
 Mercury -100678-11-13 09:49 J -35050900.24 -35050900.09 -35050899.94 0.0270 0.0032  
 Mercury -100677-02-09 23:45 J -35050811.66 -35050811.51 -35050811.36 0.0270 0.0042  
 Mercury -100677-05-08 13:25 J -35050723.08 -35050722.94 -35050722.81 0.0270 0.0114  
 Mercury -100677-08-05 02:52 J -35050634.49 -35050634.38 -35050634.28 0.0270 0.0186  
 Mercury -100677-11-01 15:49 J -35050545.88 -35050545.84 -35050545.79 0.0271 0.0255  
 Venus -100675-09-15 06:42 J -35049863.40 -35049863.22 -35049863.02 0.0273 0.0111  
 Venus -100674-05-02 11:59 J -35049634.20 -35049634.00 -35049633.80 0.0274 0.0098  
 Earth -100673-08-09 21:49 J -35049168.82 -35049168.59 -35049168.35 0.0276 0.0061  
 Moon -100673-08-09 22:47 J -35049168.79 -35049168.55 -35049168.31 0.0276 0.0072 \*

Mars -100668-08-01 02:52 J -35047351.62 -35047351.38 -35047351.12 0.0286 0.0165  
 Mercury -100664-12-03 06:57 J -35045766.30 -35045766.21 -35045766.12 0.0290 0.0234  
 Mercury -100663-03-01 23:45 J -35045677.64 -35045677.51 -35045677.37 0.0289 0.0143  
 Mercury -100663-05-29 17:01 J -35045588.95 -35045588.79 -35045588.64 0.0289 0.0050  
 Mercury -100663-08-26 10:33 J -35045500.22 -35045500.06 -35045499.90 0.0289 0.0046  
 Mercury -100663-11-23 04:33 J -35045411.45 -35045411.31 -35045411.17 0.0289 0.0143  
 Mercury -100662-02-19 22:47 J -35045322.63 -35045322.55 -35045322.46 0.0289 0.0242  
 Venus -100661-07-11 02:52 J -35044815.39 -35044815.38 -35044815.35 0.0287 0.0286  
 Venus -100660-02-25 21:49 J -35044585.80 -35044585.59 -35044585.38 0.0286 0.0042  
 Venus -100660-10-13 16:33 J -35044355.96 -35044355.81 -35044355.66 0.0285 0.0201  
 Earth -100658-02-05 23:59 J -35043875.73 -35043875.50 -35043875.26 0.0282 0.0101  
 Moon -100658-02-06 03:49 J -35043875.57 -35043875.34 -35043875.09 0.0282 0.0088 \*  
 Mars -100654-10-04 03:35 J -35042174.60 -35042174.35 -35042174.10 0.0273 0.0126  
 Mercury -100649-10-06 04:47 J -35040345.39 -35040345.30 -35040345.21 0.0270 0.0215  
 Mercury -100648-01-02 19:25 J -35040256.82 -35040256.69 -35040256.56 0.0270 0.0138  
 Mercury -100648-04-01 09:35 J -35040168.25 -35040168.10 -35040167.95 0.0270 0.0063  
 Mercury -100648-06-28 23:45 J -35040079.66 -35040079.51 -35040079.36 0.0270 0.0013  
 Mercury -100648-09-25 13:25 J -35039991.08 -35039990.94 -35039990.80 0.0270 0.0085  
 Mercury -100648-12-23 02:52 J -35039902.50 -35039902.38 -35039902.26 0.0270 0.0157  
 Mercury -100647-03-21 16:04 J -35039813.90 -35039813.83 -35039813.74 0.0270 0.0228  
 Venus -100645-03-27 06:42 J -35039077.41 -35039077.22 -35039077.01 0.0273 0.0091  
 Venus -100645-11-11 11:45 J -35038848.20 -35038848.01 -35038847.82 0.0274 0.0118  
 Moon -100644-08-04 14:23 J -35038581.97 -35038581.90 -35038581.81 0.0275 0.0257  
 Earth -100644-08-04 14:52 J -35038581.97 -35038581.88 -35038581.75 0.0275 0.0244 \*  
 Earth -100643-08-16 19:40 J -35038204.87 -35038204.68 -35038204.47 0.0277 0.0153  
 Moon -100643-08-16 23:01 J -35038204.74 -35038204.54 -35038204.34 0.0277 0.0150 \*  
 Mars -100640-09-12 01:54 J -35037082.64 -35037082.42 -35037082.19 0.0284 0.0186  
 Mercury -100634-04-22 06:42 J -35035034.27 -35035034.22 -35035034.15 0.0290 0.0264  
 Mercury -100634-07-19 23:30 J -35034945.63 -35034945.52 -35034945.39 0.0290 0.0174  
 Mercury -100634-10-16 16:47 J -35034856.95 -35034856.80 -35034856.65 0.0289 0.0080

Mercury -100633-01-13 10:18 J -35034768.23 -35034768.07 -35034767.91 0.0289 0.0015  
 Mercury -100633-04-11 04:04 J -35034679.47 -35034679.33 -35034679.18 0.0289 0.0112  
 Mercury -100633-07-08 22:33 J -35034590.67 -35034590.56 -35034590.45 0.0289 0.0210  
 Venus -100631-01-21 07:54 J -35034029.26 -35034029.17 -35034029.07 0.0287 0.0253  
 Venus -100631-09-08 02:52 J -35033799.60 -35033799.38 -35033799.17 0.0286 0.0010  
 Venus -100630-04-25 21:49 J -35033569.71 -35033569.59 -35033569.47 0.0285 0.0234  
 Moon -100629-01-30 23:16 J -35033289.75 -35033289.53 -35033289.30 0.0283 0.0118  
 Earth -100629-01-31 03:21 J -35033289.60 -35033289.36 -35033289.13 0.0283 0.0104 \*  
 Mars -100626-11-24 03:35 J -35031896.57 -35031896.35 -35031896.10 0.0276 0.0151  
 Mars -100624-11-20 07:25 J -35031169.26 -35031169.19 -35031169.09 0.0273 0.0260  
 Mercury -100619-02-23 06:57 J -35029613.27 -35029613.21 -35029613.12 0.0270 0.0234  
 Mercury -100619-05-22 21:49 J -35029524.71 -35029524.59 -35029524.46 0.0270 0.0157  
 Mercury -100619-08-19 12:13 J -35029436.14 -35029435.99 -35029435.85 0.0270 0.0081  
 Mercury -100619-11-16 02:09 J -35029347.56 -35029347.41 -35029347.25 0.0270 0.0010  
 Mercury -100618-02-12 16:04 J -35029258.97 -35029258.83 -35029258.68 0.0270 0.0068  
 Mercury -100618-05-12 05:30 J -35029170.39 -35029170.27 -35029170.14 0.0271 0.0141  
 Mercury -100618-08-08 18:57 J -35029081.80 -35029081.71 -35029081.62 0.0271 0.0211  
 Venus -100616-02-20 08:52 J -35028520.17 -35028520.13 -35028520.08 0.0272 0.0264  
 Venus -100616-10-07 13:54 J -35028291.13 -35028290.92 -35028290.71 0.0273 0.0057  
 Venus -100615-05-24 18:57 J -35028061.88 -35028061.71 -35028061.54 0.0274 0.0152  
 Moon -100614-08-11 20:52 J -35027617.87 -35027617.63 -35027617.38 0.0276 0.0030  
 Earth -100614-08-12 00:13 J -35027617.73 -35027617.49 -35027617.25 0.0276 0.0020 \*  
 Mars -100610-11-03 16:04 J -35026073.13 -35026072.83 -35026072.52 0.0284 0.0014  
 Mercury -100605-12-05 23:30 J -35024213.63 -35024213.52 -35024213.41 0.0289 0.0205  
 Mercury -100604-03-04 16:33 J -35024124.96 -35024124.81 -35024124.67 0.0289 0.0114  
 Mercury -100604-06-01 09:49 J -35024036.25 -35024036.09 -35024035.93 0.0289 0.0020  
 Mercury -100604-08-29 03:21 J -35023947.51 -35023947.36 -35023947.20 0.0289 0.0077  
 Mercury -100604-11-25 21:35 J -35023858.73 -35023858.60 -35023858.47 0.0289 0.0174  
 Mercury -100603-02-22 16:04 J -35023769.88 -35023769.83 -35023769.78 0.0289 0.0273  
 Venus -100602-08-03 10:04 J -35023243.20 -35023243.08 -35023242.94 0.0287 0.0230

Venus -100601-03-20 05:01 J -35023013.51 -35023013.29 -35023013.08 0.0286 0.0015

Venus -100601-11-04 23:45 J -35022783.59 -35022783.51 -35022783.42 0.0285 0.0258

Earth -100599-02-07 00:42 J -35022324.68 -35022324.47 -35022324.24 0.0282 0.0140

Moon -100599-02-07 01:40 J -35022324.65 -35022324.43 -35022324.19 0.0282 0.0129 \*

Mars -100595-01-10 07:11 J -35020891.48 -35020891.20 -35020890.92 0.0274 0.0010

Mercury -100590-07-13 06:42 J -35018881.24 -35018881.22 -35018881.19 0.0270 0.0265

Mercury -100590-10-09 21:21 J -35018792.71 -35018792.61 -35018792.49 0.0270 0.0188

Mercury -100589-01-06 11:59 J -35018704.14 -35018704.00 -35018703.86 0.0270 0.0111

Mercury -100589-04-04 02:09 J -35018615.56 -35018615.41 -35018615.26 0.0270 0.0035

Mercury -100589-07-01 16:04 J -35018526.98 -35018526.83 -35018526.68 0.0270 0.0039

Mercury -100589-09-28 05:45 J -35018438.39 -35018438.26 -35018438.12 0.0270 0.0112

Mercury -100589-12-25 19:11 J -35018349.80 -35018349.70 -35018349.59 0.0270 0.0183

Mercury -100588-03-24 08:23 J -35018261.19 -35018261.15 -35018261.10 0.0271 0.0253

Venus -100587-09-02 08:23 J -35017734.23 -35017734.15 -35017734.05 0.0272 0.0245

Venus -100586-04-19 13:54 J -35017505.13 -35017504.92 -35017504.71 0.0273 0.0037

Venus -100586-12-04 18:42 J -35017275.87 -35017275.72 -35017275.55 0.0274 0.0173

Earth -100585-08-05 17:01 J -35017030.94 -35017030.79 -35017030.61 0.0275 0.0203

Moon -100585-08-05 20:37 J -35017030.78 -35017030.64 -35017030.48 0.0275 0.0214 \*

Earth -100584-08-17 21:49 J -35016653.76 -35016653.59 -35016653.41 0.0277 0.0193

Moon -100584-08-17 23:59 J -35016653.67 -35016653.50 -35016653.32 0.0277 0.0191 \*

Mars -100580-12-25 01:54 J -35015063.65 -35015063.42 -35015063.16 0.0286 0.0170

Mercury -100575-04-24 23:30 J -35013481.61 -35013481.52 -35013481.44 0.0289 0.0236

Mercury -100575-07-22 16:04 J -35013392.95 -35013392.83 -35013392.69 0.0289 0.0146

Mercury -100575-10-19 09:21 J -35013304.26 -35013304.11 -35013303.95 0.0289 0.0053

Mercury -100574-01-16 03:06 J -35013215.53 -35013215.37 -35013215.21 0.0289 0.0044

Mercury -100574-04-14 20:52 J -35013126.76 -35013126.63 -35013126.48 0.0289 0.0142

Mercury -100574-07-12 15:21 J -35013037.94 -35013037.86 -35013037.77 0.0289 0.0240

Venus -100572-02-12 14:52 J -35012457.03 -35012456.88 -35012456.72 0.0287 0.0198

Venus -100572-09-30 09:49 J -35012227.30 -35012227.09 -35012226.88 0.0286 0.0048

Earth -100570-02-01 03:35 J -35011738.59 -35011738.35 -35011738.10 0.0283 0.0064

Moon -100570-02-01 03:35 J -35011738.58 -35011738.35 -35011738.11 0.0283 0.0075 \*  
 Mars -100565-02-27 18:28 J -35009885.97 -35009885.73 -35009885.48 0.0274 0.0130  
 Mercury -100560-02-25 23:59 J -35008060.60 -35008060.50 -35008060.40 0.0270 0.0207  
 Mercury -100560-05-25 14:23 J -35007972.03 -35007971.90 -35007971.76 0.0270 0.0130  
 Mercury -100560-08-22 04:47 J -35007883.45 -35007883.30 -35007883.15 0.0270 0.0054  
 Mercury -100560-11-18 18:42 J -35007794.87 -35007794.72 -35007794.57 0.0271 0.0022  
 Mercury -100559-02-15 08:37 J -35007706.28 -35007706.14 -35007706.00 0.0271 0.0095  
 Mercury -100559-05-14 22:04 J -35007617.70 -35007617.58 -35007617.46 0.0271 0.0167  
 Mercury -100559-08-11 11:16 J -35007529.10 -35007529.03 -35007528.96 0.0271 0.0237  
 Venus -100557-03-14 16:04 J -35006947.95 -35006947.83 -35006947.69 0.0273 0.0212  
 Venus -100557-10-29 21:21 J -35006718.82 -35006718.61 -35006718.40 0.0273 0.0003  
 Venus -100556-06-16 02:23 J -35006489.54 -35006489.40 -35006489.27 0.0274 0.0208  
 Moon -100555-08-13 01:11 J -35006066.69 -35006066.45 -35006066.22 0.0276 0.0016  
 Earth -100555-08-13 03:21 J -35006066.60 -35006066.36 -35006066.12 0.0276 0.0022 \*  
 Mars -100551-02-05 23:16 J -35004793.76 -35004793.53 -35004793.29 0.0283 0.0180  
 Mercury -100546-09-11 23:59 J -35002749.55 -35002749.50 -35002749.43 0.0289 0.0264  
 Mercury -100546-12-09 16:47 J -35002660.92 -35002660.80 -35002660.67 0.0289 0.0173  
 Mercury -100545-03-07 09:49 J -35002572.24 -35002572.09 -35002571.94 0.0289 0.0081  
 Mercury -100545-06-04 03:21 J -35002483.52 -35002483.36 -35002483.20 0.0289 0.0014  
 Mercury -100545-08-31 21:06 J -35002394.77 -35002394.62 -35002394.47 0.0289 0.0110  
 Mercury -100545-11-28 15:21 J -35002305.97 -35002305.86 -35002305.75 0.0289 0.0208  
 Venus -100543-08-25 18:57 J -35001670.87 -35001670.71 -35001670.53 0.0287 0.0171  
 Venus -100542-04-12 13:40 J -35001441.13 -35001440.93 -35001440.72 0.0286 0.0074  
 Moon -100541-01-26 02:37 J -35001152.45 -35001152.39 -35001152.33 0.0284 0.0276  
 Earth -100541-01-26 03:21 J -35001152.43 -35001152.36 -35001152.26 0.0284 0.0266 \*  
 Moon -100540-02-07 23:59 J -35000773.69 -35000773.50 -35000773.29 0.0282 0.0175  
 Earth -100540-02-08 03:49 J -35000773.53 -35000773.34 -35000773.14 0.0282 0.0181 \*  
 Mars -100537-04-18 01:40 J -34999608.65 -34999608.43 -34999608.18 0.0276 0.0150  
 Mars -100535-04-15 07:40 J -34998881.25 -34998881.18 -34998881.09 0.0272 0.0260  
 Mercury -100531-07-15 23:30 J -34997328.59 -34997328.52 -34997328.44 0.0270 0.0237

Mercury -100531-10-12 14:23 J -34997240.03 -34997239.90 -34997239.78 0.0270 0.0159

Mercury -100530-01-09 04:47 J -34997151.45 -34997151.30 -34997151.16 0.0270 0.0083

Mercury -100530-04-07 18:57 J -34997062.86 -34997062.71 -34997062.56 0.0270 0.0009

Mercury -100530-07-05 08:37 J -34996974.28 -34996974.14 -34996973.99 0.0270 0.0067

Mercury -100530-10-01 22:18 J -34996885.69 -34996885.57 -34996885.44 0.0270 0.0139

Mercury -100530-12-29 11:45 J -34996797.10 -34996797.01 -34996796.92 0.0271 0.0210

Venus -100528-09-24 16:33 J -34996161.96 -34996161.81 -34996161.66 0.0273 0.0191

Venus -100527-05-11 21:49 J -34995932.80 -34995932.59 -34995932.38 0.0273 0.0019

Venus -100527-12-27 02:52 J -34995703.50 -34995703.38 -34995703.27 0.0274 0.0229

Earth -100526-08-07 20:52 J -34995479.82 -34995479.63 -34995479.43 0.0276 0.0160

Moon -100526-08-07 23:01 J -34995479.73 -34995479.54 -34995479.34 0.0276 0.0168 \*

Moon -100525-08-18 23:16 J -34995102.65 -34995102.53 -34995102.40 0.0278 0.0237

Earth -100525-08-19 01:25 J -34995102.55 -34995102.44 -34995102.30 0.0278 0.0235 \*

Mars -100521-03-28 19:25 J -34993784.99 -34993784.69 -34993784.38 0.0285 0.0006

Mercury -100516-04-27 16:33 J -34991928.92 -34991928.81 -34991928.70 0.0289 0.0205

Mercury -100516-07-25 09:35 J -34991840.25 -34991840.10 -34991839.96 0.0289 0.0114

Mercury -100516-10-22 02:52 J -34991751.54 -34991751.38 -34991751.23 0.0289 0.0020

Mercury -100515-01-18 20:23 J -34991662.80 -34991662.65 -34991662.49 0.0289 0.0077

Mercury -100515-04-17 14:23 J -34991574.02 -34991573.90 -34991573.77 0.0289 0.0175

Mercury -100515-07-15 08:52 J -34991485.17 -34991485.13 -34991485.08 0.0288 0.0274

Venus -100513-03-06 23:16 J -34990884.71 -34990884.53 -34990884.34 0.0286 0.0140

Venus -100513-10-22 18:28 J -34990654.93 -34990654.73 -34990654.53 0.0285 0.0107

Earth -100511-02-02 06:13 J -34990187.49 -34990187.24 -34990186.99 0.0283 0.0022

Moon -100511-02-02 10:04 J -34990187.33 -34990187.08 -34990186.83 0.0283 0.0029 \*

Mars -100507-06-05 21:49 J -34988602.88 -34988602.59 -34988602.31 0.0275 0.0006

Mercury -100502-12-03 02:09 J -34986596.46 -34986596.41 -34986596.36 0.0271 0.0256

Mercury -100501-02-29 16:47 J -34986507.91 -34986507.80 -34986507.68 0.0271 0.0178

Mercury -100501-05-28 07:25 J -34986419.33 -34986419.19 -34986419.05 0.0271 0.0101

Mercury -100501-08-24 21:35 J -34986330.75 -34986330.60 -34986330.45 0.0271 0.0025

Mercury -100501-11-21 11:30 J -34986242.17 -34986242.02 -34986241.87 0.0271 0.0050

Mercury -100500-02-18 01:11 J -34986153.58 -34986153.45 -34986153.31 0.0271 0.0123

Mercury -100500-05-17 14:37 J -34986064.99 -34986064.89 -34986064.78 0.0271 0.0195

Mercury -100500-08-14 04:04 J -34985976.36 -34985976.33 -34985976.31 0.0271 0.0265

Venus -100498-04-07 00:28 J -34985375.64 -34985375.48 -34985375.30 0.0273 0.0157

Venus -100498-11-22 05:45 J -34985146.46 -34985146.26 -34985146.05 0.0274 0.0054

Venus -100497-07-08 10:33 J -34984917.09 -34984917.06 -34984916.99 0.0275 0.0266

Earth -100496-08-14 08:09 J -34984515.39 -34984515.16 -34984514.92 0.0277 0.0068

Moon -100496-08-14 10:33 J -34984515.28 -34984515.06 -34984514.83 0.0277 0.0065 \*

Mars -100491-05-21 06:28 J -34982774.46 -34982774.23 -34982773.98 0.0285 0.0179

Mercury -100487-09-14 17:59 J -34981196.84 -34981196.75 -34981196.66 0.0289 0.0229

Mercury -100487-12-12 10:33 J -34981108.19 -34981108.06 -34981107.92 0.0289 0.0139

Mercury -100486-03-11 03:49 J -34981019.49 -34981019.34 -34981019.18 0.0289 0.0046

Mercury -100486-06-07 21:21 J -34980930.77 -34980930.61 -34980930.45 0.0289 0.0049

Mercury -100486-09-04 15:06 J -34980842.00 -34980841.87 -34980841.73 0.0288 0.0147

Mercury -100486-12-02 09:21 J -34980753.19 -34980753.11 -34980753.02 0.0288 0.0245

Venus -100484-09-17 05:16 J -34980098.47 -34980098.28 -34980098.08 0.0286 0.0109

Venus -100483-05-04 23:45 J -34979868.69 -34979868.51 -34979868.32 0.0285 0.0137

Moon -100482-01-27 05:01 J -34979601.42 -34979601.29 -34979601.12 0.0284 0.0227

Earth -100482-01-27 08:52 J -34979601.27 -34979601.13 -34979600.96 0.0284 0.0219 \*

Moon -100481-02-10 06:57 J -34979222.35 -34979222.21 -34979222.06 0.0282 0.0224

Earth -100481-02-10 09:06 J -34979222.26 -34979222.12 -34979221.96 0.0282 0.0226 \*

Mars -100477-07-22 23:45 J -34977597.75 -34977597.51 -34977597.26 0.0274 0.0133

Mercury -100472-07-18 17:01 J -34975775.89 -34975775.79 -34975775.69 0.0270 0.0206

Mercury -100472-10-15 07:25 J -34975687.32 -34975687.19 -34975687.05 0.0270 0.0129

Mercury -100471-01-11 21:49 J -34975598.74 -34975598.59 -34975598.44 0.0270 0.0053

Mercury -100471-04-10 11:59 J -34975510.15 -34975510.00 -34975509.85 0.0270 0.0023

Mercury -100471-07-08 01:40 J -34975421.57 -34975421.43 -34975421.29 0.0270 0.0095

Mercury -100471-10-04 15:06 J -34975332.98 -34975332.87 -34975332.75 0.0271 0.0168

Mercury -100470-01-01 04:33 J -34975244.38 -34975244.31 -34975244.24 0.0271 0.0238

Venus -100469-10-17 01:11 J -34974589.63 -34974589.45 -34974589.27 0.0273 0.0135



Venus -100468-06-03 06:28 J -34974360.43 -34974360.23 -34974360.03 0.0274 0.0076  
 Moon -100467-08-08 23:45 J -34973928.73 -34973928.51 -34973928.29 0.0276 0.0118  
 Earth -100467-08-09 02:23 J -34973928.62 -34973928.40 -34973928.18 0.0276 0.0114 \*  
 Mars -100463-07-02 07:54 J -34972505.41 -34972505.17 -34972504.93 0.0284 0.0170  
 Mercury -100457-02-01 17:45 J -34970464.82 -34970464.76 -34970464.69 0.0289 0.0260  
 Mercury -100457-04-30 10:33 J -34970376.19 -34970376.06 -34970375.94 0.0289 0.0170  
 Mercury -100457-07-28 03:35 J -34970287.50 -34970287.35 -34970287.20 0.0289 0.0078  
 Mercury -100457-10-24 20:52 J -34970198.79 -34970198.63 -34970198.47 0.0289 0.0017  
 Mercury -100456-01-21 14:37 J -34970110.03 -34970109.89 -34970109.74 0.0289 0.0114  
 Mercury -100456-04-20 08:52 J -34970021.24 -34970021.13 -34970021.02 0.0289 0.0212  
 Venus -100454-03-30 09:49 J -34969312.29 -34969312.09 -34969311.88 0.0286 0.0077  
 Venus -100454-11-15 04:47 J -34969082.47 -34969082.30 -34969082.12 0.0285 0.0170  
 Earth -100452-02-03 12:13 J -34968636.24 -34968635.99 -34968635.74 0.0283 0.0025  
 Moon -100452-02-03 13:54 J -34968636.18 -34968635.92 -34968635.66 0.0283 0.0021 \*  
 Mars -100449-09-11 19:54 J -34967319.90 -34967319.67 -34967319.42 0.0276 0.0144  
 Mars -100447-09-09 04:33 J -34966592.36 -34966592.31 -34966592.24 0.0273 0.0266  
 Mercury -100443-12-05 19:11 J -34965043.77 -34965043.70 -34965043.61 0.0271 0.0226  
 Mercury -100442-03-04 10:04 J -34964955.21 -34964955.08 -34964954.95 0.0271 0.0148  
 Mercury -100442-06-01 00:28 J -34964866.63 -34964866.48 -34964866.33 0.0271 0.0071  
 Mercury -100442-08-28 14:37 J -34964778.04 -34964777.89 -34964777.74 0.0271 0.0006  
 Mercury -100442-11-25 04:33 J -34964689.45 -34964689.31 -34964689.17 0.0271 0.0079  
 Mercury -100441-02-21 17:59 J -34964600.86 -34964600.75 -34964600.62 0.0271 0.0153  
 Mercury -100441-05-20 07:25 J -34964512.26 -34964512.19 -34964512.10 0.0271 0.0224  
 Venus -100439-04-29 09:35 J -34963803.29 -34963803.10 -34963802.90 0.0273 0.0101  
 Venus -100439-12-14 14:52 J -34963574.06 -34963573.88 -34963573.68 0.0274 0.0113  
 Earth -100438-08-04 09:21 J -34963341.11 -34963341.11 -34963341.10 0.0275 0.0275  
 Earth -100437-08-15 14:37 J -34962964.11 -34962963.89 -34962963.67 0.0277 0.0114  
 Moon -100437-08-15 17:59 J -34962963.97 -34962963.75 -34962963.53 0.0277 0.0115 \*  
 Mars -100433-08-23 11:16 J -34961495.34 -34961495.03 -34961494.73 0.0284 0.0010  
 Mercury -100428-06-20 19:40 J -34959732.70 -34959732.68 -34959732.64 0.0289 0.0281

Mercury -100428-09-17 12:13 J -34959644.10 -34959643.99 -34959643.87 0.0289 0.0192

Mercury -100428-12-15 05:16 J -34959555.42 -34959555.28 -34959555.13 0.0289 0.0100

Mercury -100427-03-13 22:33 J -34959466.72 -34959466.56 -34959466.40 0.0289 0.0006

Mercury -100427-06-10 16:04 J -34959377.98 -34959377.83 -34959377.67 0.0288 0.0090

Mercury -100427-09-07 10:04 J -34959289.19 -34959289.08 -34959288.95 0.0288 0.0188

Mercury -100427-12-05 04:33 J -34959200.32 -34959200.31 -34959200.29 0.0288 0.0286

Venus -100425-10-09 17:30 J -34958525.98 -34958525.77 -34958525.56 0.0286 0.0042

Venus -100424-05-27 11:59 J -34958296.15 -34958296.00 -34958295.85 0.0285 0.0203

Moon -100423-01-28 16:18 J -34958050.00 -34958049.82 -34958049.62 0.0284 0.0175

Earth -100423-01-28 17:45 J -34958049.95 -34958049.76 -34958049.55 0.0284 0.0167 \*

Earth -100422-02-11 17:45 J -34957670.81 -34957670.76 -34957670.71 0.0282 0.0275

Moon -100422-02-11 19:54 J -34957670.70 -34957670.67 -34957670.61 0.0282 0.0277

Mars -100419-10-30 12:28 J -34956314.26 -34956313.98 -34956313.70 0.0275 0.0003

Mercury -100413-04-23 19:40 J -34954311.73 -34954311.68 -34954311.62 0.0270 0.0252

Mercury -100413-07-21 10:33 J -34954223.17 -34954223.06 -34954222.94 0.0270 0.0174

Mercury -100413-10-18 00:57 J -34954134.60 -34954134.46 -34954134.31 0.0270 0.0098

Mercury -100412-01-14 15:21 J -34954046.01 -34954045.86 -34954045.71 0.0270 0.0021

Mercury -100412-04-13 05:16 J -34953957.43 -34953957.28 -34953957.13 0.0270 0.0053

Mercury -100412-07-10 18:57 J -34953868.84 -34953868.71 -34953868.57 0.0271 0.0127

Mercury -100412-10-07 08:23 J -34953780.24 -34953780.15 -34953780.04 0.0271 0.0199

Mercury -100411-01-03 21:35 J -34953691.61 -34953691.60 -34953691.58 0.0271 0.0269

Venus -100410-11-09 11:01 J -34953017.24 -34953017.04 -34953016.83 0.0273 0.0076

Venus -100409-06-25 16:18 J -34952788.00 -34952787.82 -34952787.63 0.0274 0.0137

Moon -100408-08-10 06:42 J -34952377.45 -34952377.22 -34952376.99 0.0276 0.0068

Earth -100408-08-10 09:49 J -34952377.32 -34952377.09 -34952376.86 0.0276 0.0066 \*

Mars -100403-10-14 22:04 J -34950485.80 -34950485.58 -34950485.34 0.0286 0.0192

Mercury -100398-02-04 12:13 J -34948912.09 -34948911.99 -34948911.89 0.0289 0.0223

Mercury -100398-05-04 05:01 J -34948823.43 -34948823.29 -34948823.15 0.0289 0.0132

Mercury -100398-07-31 22:04 J -34948734.73 -34948734.58 -34948734.42 0.0289 0.0039

Mercury -100398-10-28 15:35 J -34948646.00 -34948645.85 -34948645.69 0.0289 0.0057

Mercury -100397-01-25 09:35 J -34948557.23 -34948557.10 -34948556.96 0.0289 0.0154  
 Mercury -100397-04-23 03:49 J -34948468.41 -34948468.34 -34948468.26 0.0288 0.0253  
 Venus -100396-09-04 03:06 J -34947969.45 -34947969.37 -34947969.27 0.0287 0.0258  
 Venus -100395-04-21 22:04 J -34947739.80 -34947739.58 -34947739.37 0.0286 0.0012  
 Venus -100395-12-07 16:47 J -34947509.91 -34947509.80 -34947509.68 0.0285 0.0236  
 Moon -100393-02-05 17:59 J -34947085.00 -34947084.75 -34947084.50 0.0283 0.0075  
 Earth -100393-02-05 20:52 J -34947084.87 -34947084.63 -34947084.39 0.0283 0.0076 \*  
 Mars -100389-12-16 23:59 J -34945308.73 -34945308.50 -34945308.26 0.0274 0.0142  
 Mercury -100384-12-08 12:57 J -34943491.06 -34943490.96 -34943490.85 0.0271 0.0193  
 Mercury -100383-03-07 03:35 J -34943402.48 -34943402.35 -34943402.21 0.0271 0.0116  
 Mercury -100383-06-03 17:59 J -34943313.90 -34943313.75 -34943313.60 0.0271 0.0039  
 Mercury -100383-08-31 08:09 J -34943225.31 -34943225.16 -34943225.01 0.0271 0.0037  
 Mercury -100383-11-27 21:49 J -34943136.72 -34943136.59 -34943136.45 0.0271 0.0110  
 Mercury -100382-02-24 11:30 J -34943048.13 -34943048.02 -34943047.91 0.0272 0.0183  
 Mercury -100382-05-24 00:42 J -34942959.52 -34942959.47 -34942959.42 0.0272 0.0254  
 Venus -100381-10-04 13:54 J -34942459.99 -34942459.92 -34942459.84 0.0273 0.0253  
 Venus -100380-05-21 19:40 J -34942230.89 -34942230.68 -34942230.47 0.0274 0.0041  
 Venus -100379-01-06 00:57 J -34942001.62 -34942001.46 -34942001.29 0.0275 0.0172  
 Earth -100379-08-05 16:33 J -34941789.94 -34941789.81 -34941789.67 0.0276 0.0226  
 Moon -100379-08-05 19:54 J -34941789.78 -34941789.67 -34941789.54 0.0276 0.0236 \*  
 Moon -100378-08-17 21:21 J -34941412.80 -34941412.61 -34941412.41 0.0277 0.0167  
 Earth -100378-08-17 22:04 J -34941412.76 -34941412.58 -34941412.38 0.0277 0.0164 \*  
 Mars -100375-11-27 06:57 J -34940215.46 -34940215.21 -34940214.95 0.0283 0.0150  
 Mercury -100369-06-23 14:37 J -34938179.96 -34938179.89 -34938179.80 0.0289 0.0241  
 Mercury -100369-09-20 07:25 J -34938091.32 -34938091.19 -34938091.05 0.0289 0.0150  
 Mercury -100369-12-18 00:28 J -34938002.63 -34938002.48 -34938002.32 0.0289 0.0058  
 Mercury -100368-03-16 17:59 J -34937913.91 -34937913.75 -34937913.59 0.0288 0.0037  
 Mercury -100368-06-13 11:45 J -34937825.15 -34937825.01 -34937824.87 0.0288 0.0134  
 Mercury -100368-09-10 05:45 J -34937736.35 -34937736.26 -34937736.16 0.0288 0.0232  
 Venus -100366-03-17 13:11 J -34937183.09 -34937182.95 -34937182.82 0.0286 0.0219

Venus -100366-11-02 07:40 J -34936953.40 -34936953.18 -34936952.97 0.0286 0.0028  
 Venus -100365-06-19 01:40 J -34936723.47 -34936723.43 -34936723.36 0.0285 0.0274  
 Earth -100364-01-30 05:45 J -34936498.48 -34936498.26 -34936498.02 0.0283 0.0111  
 Moon -100364-01-30 08:23 J -34936498.37 -34936498.15 -34936497.92 0.0283 0.0117 \*  
 Mars -100360-02-05 21:06 J -34935030.87 -34935030.62 -34935030.37 0.0276 0.0128  
 Mercury -100354-04-27 13:54 J -34932759.01 -34932758.92 -34932758.83 0.0270 0.0218  
 Mercury -100354-07-25 04:33 J -34932670.44 -34932670.31 -34932670.18 0.0270 0.0140  
 Mercury -100354-10-21 18:57 J -34932581.86 -34932581.71 -34932581.56 0.0270 0.0063  
 Mercury -100353-01-18 09:06 J -34932493.27 -34932493.12 -34932492.97 0.0270 0.0012  
 Mercury -100353-04-15 23:01 J -34932404.68 -34932404.54 -34932404.40 0.0271 0.0086  
 Mercury -100353-07-13 12:42 J -34932316.09 -34932315.97 -34932315.85 0.0271 0.0159  
 Mercury -100353-10-10 01:54 J -34932227.49 -34932227.42 -34932227.34 0.0271 0.0230  
 Venus -100351-04-16 16:18 J -34931673.93 -34931673.82 -34931673.70 0.0273 0.0227  
 Venus -100351-12-01 21:49 J -34931444.80 -34931444.59 -34931444.38 0.0273 0.0015  
 Venus -100350-07-19 03:06 J -34931215.51 -34931215.37 -34931215.22 0.0274 0.0198  
 Earth -100349-08-11 18:13 J -34930825.98 -34930825.74 -34930825.50 0.0276 0.0016  
 Moon -100349-08-11 18:57 J -34930825.94 -34930825.71 -34930825.48 0.0276 0.0017 \*  
 Mars -100344-01-17 06:42 J -34929206.52 -34929206.22 -34929205.91 0.0285 0.0025  
 Mercury -100340-11-10 14:37 J -34927447.93 -34927447.89 -34927447.84 0.0289 0.0272  
 Mercury -100339-02-07 07:11 J -34927359.31 -34927359.20 -34927359.08 0.0289 0.0182  
 Mercury -100339-05-07 00:13 J -34927270.64 -34927270.49 -34927270.34 0.0289 0.0090  
 Mercury -100339-08-03 17:30 J -34927181.93 -34927181.77 -34927181.61 0.0289 0.0004  
 Mercury -100339-10-31 11:01 J -34927093.18 -34927093.04 -34927092.88 0.0289 0.0101  
 Mercury -100338-01-28 05:01 J -34927004.40 -34927004.29 -34927004.17 0.0288 0.0199  
 Venus -100337-09-26 17:16 J -34926396.94 -34926396.78 -34926396.62 0.0286 0.0189  
 Venus -100336-05-14 11:45 J -34926167.22 -34926167.01 -34926166.80 0.0285 0.0059  
 Moon -100334-02-07 05:01 J -34925533.50 -34925533.29 -34925533.06 0.0282 0.0129  
 Earth -100334-02-07 08:09 J -34925533.37 -34925533.16 -34925532.93 0.0282 0.0130 \*  
 Mars -100330-03-26 14:23 J -34924025.18 -34924024.90 -34924024.62 0.0275 0.0015  
 Mercury -100325-09-13 16:18 J -34922026.89 -34922026.82 -34922026.75 0.0271 0.0237

Mercury -100325-12-11 06:57 J -34921938.33 -34921938.21 -34921938.08 0.0271 0.0159

Mercury -100324-03-09 21:35 J -34921849.75 -34921849.60 -34921849.45 0.0271 0.0082

Mercury -100324-06-06 11:45 J -34921761.16 -34921761.01 -34921760.86 0.0271 0.0007

Mercury -100324-09-03 01:40 J -34921672.57 -34921672.43 -34921672.28 0.0271 0.0070

Mercury -100324-11-30 15:35 J -34921583.98 -34921583.85 -34921583.73 0.0272 0.0143

Mercury -100323-02-27 05:01 J -34921495.38 -34921495.29 -34921495.20 0.0272 0.0215

Venus -100322-10-28 00:42 J -34920887.61 -34920887.47 -34920887.32 0.0273 0.0193

Venus -100321-06-13 06:28 J -34920658.44 -34920658.23 -34920658.02 0.0274 0.0021

Venus -100320-01-28 11:45 J -34920429.11 -34920429.01 -34920428.89 0.0275 0.0235

Earth -100320-08-07 01:25 J -34920238.62 -34920238.44 -34920238.25 0.0276 0.0175

Moon -100320-08-07 01:25 J -34920238.61 -34920238.44 -34920238.24 0.0276 0.0183 \*

Moon -100319-08-19 03:35 J -34919861.48 -34919861.35 -34919861.20 0.0278 0.0222

Earth -100319-08-19 07:25 J -34919861.34 -34919861.19 -34919861.04 0.0278 0.0214 \*

Mars -100314-03-12 05:16 J -34918195.47 -34918195.28 -34918195.07 0.0286 0.0216

Mercury -100310-03-30 17:45 J -34916715.77 -34916715.76 -34916715.75 0.0289 0.0287

Mercury -100310-06-27 10:18 J -34916627.18 -34916627.07 -34916626.96 0.0289 0.0198

Mercury -100310-09-24 03:06 J -34916538.52 -34916538.37 -34916538.23 0.0288 0.0106

Mercury -100310-12-21 20:09 J -34916449.81 -34916449.66 -34916449.50 0.0288 0.0015

Mercury -100309-03-19 13:40 J -34916361.08 -34916360.93 -34916360.77 0.0288 0.0084

Mercury -100309-06-16 07:40 J -34916272.30 -34916272.18 -34916272.05 0.0288 0.0181

Mercury -100309-09-13 02:09 J -34916183.45 -34916183.41 -34916183.37 0.0288 0.0279

Venus -100307-04-09 04:04 J -34915610.51 -34915610.33 -34915610.14 0.0286 0.0147

Venus -100307-11-24 22:33 J -34915380.75 -34915380.56 -34915380.36 0.0285 0.0101

Earth -100305-02-01 19:25 J -34914946.93 -34914946.69 -34914946.44 0.0283 0.0054

Moon -100305-02-01 23:01 J -34914946.79 -34914946.54 -34914946.29 0.0283 0.0060 \*

Mars -100302-05-15 22:18 J -34913747.66 -34913747.57 -34913747.47 0.0277 0.0260

Mars -100300-05-13 05:01 J -34913019.50 -34913019.29 -34913019.05 0.0274 0.0159

Mercury -100295-01-31 17:16 J -34911294.81 -34911294.78 -34911294.73 0.0270 0.0260

Mercury -100295-04-30 08:09 J -34911206.27 -34911206.16 -34911206.04 0.0270 0.0182

Mercury -100295-07-27 22:47 J -34911117.69 -34911117.55 -34911117.40 0.0270 0.0104

Mercury -100295-10-24 13:11 J -34911029.10 -34911028.95 -34911028.80 0.0270 0.0028

Mercury -100294-01-21 03:06 J -34910940.52 -34910940.37 -34910940.22 0.0271 0.0047

Mercury -100294-04-19 17:01 J -34910851.93 -34910851.79 -34910851.66 0.0271 0.0121

Mercury -100294-07-17 06:28 J -34910763.33 -34910763.23 -34910763.13 0.0271 0.0193

Mercury -100294-10-13 19:40 J -34910674.71 -34910674.68 -34910674.64 0.0271 0.0263

Venus -100292-05-09 03:49 J -34910101.50 -34910101.34 -34910101.17 0.0273 0.0165

Venus -100292-12-24 09:21 J -34909872.32 -34909872.11 -34909871.90 0.0274 0.0048

Venus -100291-08-10 14:23 J -34909642.95 -34909642.90 -34909642.83 0.0275 0.0262

Earth -100290-08-14 03:35 J -34909274.58 -34909274.35 -34909274.11 0.0276 0.0036

Moon -100290-08-14 06:57 J -34909274.44 -34909274.21 -34909273.97 0.0276 0.0037 \*

Mars -100286-04-23 05:01 J -34907926.56 -34907926.29 -34907926.02 0.0284 0.0133

Mercury -100281-11-13 09:49 J -34905895.17 -34905895.09 -34905894.99 0.0289 0.0230

Mercury -100280-02-10 02:37 J -34905806.52 -34905806.39 -34905806.25 0.0289 0.0139

Mercury -100280-05-09 19:54 J -34905717.83 -34905717.67 -34905717.52 0.0289 0.0047

Mercury -100280-08-06 13:11 J -34905629.10 -34905628.95 -34905628.79 0.0289 0.0050

Mercury -100280-11-03 06:57 J -34905540.34 -34905540.21 -34905540.07 0.0288 0.0147

Mercury -100279-01-31 01:11 J -34905451.53 -34905451.45 -34905451.36 0.0288 0.0245

Venus -100278-10-20 07:54 J -34904824.35 -34904824.17 -34904823.97 0.0286 0.0118

Venus -100277-06-06 02:37 J -34904594.57 -34904594.39 -34904594.20 0.0285 0.0132

Moon -100276-01-25 18:13 J -34904360.82 -34904360.74 -34904360.64 0.0284 0.0263

Earth -100276-01-25 21:21 J -34904360.70 -34904360.61 -34904360.48 0.0284 0.0254 \*

Earth -100275-02-08 21:49 J -34903981.78 -34903981.59 -34903981.40 0.0282 0.0186

Moon -100275-02-08 21:49 J -34903981.76 -34903981.59 -34903981.40 0.0282 0.0187 \*

Mars -100272-07-03 00:42 J -34902741.72 -34902741.47 -34902741.20 0.0276 0.0115

Mercury -100266-09-17 10:33 J -34900474.16 -34900474.06 -34900473.96 0.0271 0.0201

Mercury -100266-12-15 01:11 J -34900385.59 -34900385.45 -34900385.31 0.0271 0.0123

Mercury -100265-03-12 15:35 J -34900297.00 -34900296.85 -34900296.70 0.0271 0.0047

Mercury -100265-06-09 05:45 J -34900208.41 -34900208.26 -34900208.11 0.0271 0.0029

Mercury -100265-09-05 19:25 J -34900119.82 -34900119.69 -34900119.55 0.0271 0.0104

Mercury -100265-12-03 09:06 J -34900031.23 -34900031.12 -34900031.00 0.0272 0.0176

Mercury -100264-03-01 22:33 J -34899942.62 -34899942.56 -34899942.50 0.0272 0.0248

Venus -100263-11-19 11:59 J -34899315.19 -34899315.00 -34899314.82 0.0274 0.0132

Venus -100262-07-06 17:30 J -34899085.97 -34899085.77 -34899085.57 0.0275 0.0083

Moon -100261-08-08 06:57 J -34898687.42 -34898687.21 -34898686.99 0.0276 0.0131

Earth -100261-08-08 10:18 J -34898687.28 -34898687.07 -34898686.85 0.0276 0.0124 \*

Moon -100260-08-20 14:37 J -34898309.92 -34898309.89 -34898309.83 0.0278 0.0273

Earth -100260-08-20 16:18 J -34898309.89 -34898309.82 -34898309.75 0.0278 0.0264 \*

Mars -100256-06-14 14:23 J -34896916.20 -34896915.90 -34896915.60 0.0285 0.0052

Jupiter -100254-08-01 22:47 J -34896137.89 -34896137.55 -34896137.18 0.0287 0.0181

Mercury -100251-04-02 13:11 J -34895163.03 -34895162.95 -34895162.87 0.0289 0.0244

Mercury -100251-06-30 05:45 J -34895074.38 -34895074.26 -34895074.12 0.0288 0.0154

Mercury -100251-09-26 22:47 J -34894985.70 -34894985.55 -34894985.39 0.0288 0.0061

Mercury -100251-12-24 16:18 J -34894896.98 -34894896.82 -34894896.67 0.0288 0.0034

Mercury -100250-03-23 10:04 J -34894808.23 -34894808.08 -34894807.94 0.0288 0.0130

Mercury -100250-06-20 04:04 J -34894719.42 -34894719.33 -34894719.23 0.0288 0.0229

Venus -100248-05-01 19:54 J -34894037.87 -34894037.67 -34894037.46 0.0286 0.0073

Venus -100248-12-17 14:23 J -34893808.06 -34893807.90 -34893807.73 0.0285 0.0176

Moon -100246-02-03 10:33 J -34893395.32 -34893395.06 -34893394.80 0.0283 0.0003

Earth -100246-02-03 10:47 J -34893395.30 -34893395.05 -34893394.80 0.0283 0.0006 \*

Mars -100242-08-21 04:18 J -34891735.59 -34891735.32 -34891735.04 0.0274 0.0037

Mercury -100236-02-03 11:59 J -34889742.08 -34889742.00 -34889741.91 0.0270 0.0222

Mercury -100236-05-03 02:37 J -34889653.51 -34889653.39 -34889653.25 0.0270 0.0145

Mercury -100236-07-30 17:16 J -34889564.93 -34889564.78 -34889564.63 0.0270 0.0067

Mercury -100236-10-27 07:25 J -34889476.34 -34889476.19 -34889476.04 0.0271 0.0008

Mercury -100235-01-23 21:21 J -34889387.75 -34889387.61 -34889387.47 0.0271 0.0083

Mercury -100235-04-22 11:01 J -34889299.16 -34889299.04 -34889298.92 0.0271 0.0156

Mercury -100235-07-20 00:28 J -34889210.56 -34889210.48 -34889210.40 0.0271 0.0227

Venus -100233-05-31 15:35 J -34888529.04 -34888528.85 -34888528.65 0.0273 0.0102

Venus -100232-01-15 20:52 J -34888299.81 -34888299.63 -34888299.43 0.0274 0.0113

Earth -100231-08-15 13:25 J -34887723.16 -34887722.94 -34887722.70 0.0277 0.0088

Moon -100231-08-15 15:21 J -34887723.09 -34887722.86 -34887722.62 0.0277 0.0087 \*  
 Mars -100228-07-27 16:47 J -34886645.82 -34886645.80 -34886645.77 0.0283 0.0281  
 Mars -100226-08-06 05:01 J -34885906.46 -34885906.29 -34885906.11 0.0286 0.0234  
 Mercury -100222-08-20 12:57 J -34884431.00 -34884430.96 -34884430.91 0.0289 0.0276  
 Mercury -100222-11-17 05:30 J -34884342.39 -34884342.27 -34884342.15 0.0289 0.0186  
 Mercury -100221-02-13 22:18 J -34884253.71 -34884253.57 -34884253.42 0.0289 0.0095  
 Mercury -100221-05-12 15:35 J -34884165.01 -34884164.85 -34884164.69 0.0289 0.0004  
 Mercury -100221-08-09 09:21 J -34884076.26 -34884076.11 -34884075.96 0.0289 0.0096  
 Mercury -100221-11-06 03:06 J -34883987.48 -34883987.37 -34883987.25 0.0288 0.0194  
 Venus -100219-11-11 23:16 J -34883251.74 -34883251.53 -34883251.31 0.0286 0.0044  
 Venus -100218-06-29 17:45 J -34883021.90 -34883021.76 -34883021.60 0.0285 0.0205  
 Earth -100217-01-28 11:16 J -34882809.19 -34882809.03 -34882808.84 0.0284 0.0196  
 Moon -100217-01-28 12:28 J -34882809.14 -34882808.98 -34882808.81 0.0284 0.0202 \*  
 Earth -100216-02-10 11:30 J -34882430.13 -34882430.02 -34882429.88 0.0282 0.0243  
 Moon -100216-02-10 15:06 J -34882429.98 -34882429.87 -34882429.74 0.0282 0.0243 \*  
 Mars -100214-10-10 04:18 J -34881458.43 -34881458.32 -34881458.17 0.0277 0.0246  
 Mars -100212-10-07 11:01 J -34880730.25 -34880730.04 -34880729.82 0.0273 0.0173  
 Mercury -100207-06-23 13:54 J -34879009.98 -34879009.92 -34879009.85 0.0271 0.0244  
 Mercury -100207-09-20 04:47 J -34878921.42 -34878921.30 -34878921.18 0.0271 0.0165  
 Mercury -100207-12-17 19:25 J -34878832.84 -34878832.69 -34878832.55 0.0271 0.0087  
 Mercury -100206-03-16 09:35 J -34878744.25 -34878744.10 -34878743.94 0.0271 0.0013  
 Mercury -100206-06-12 23:45 J -34878655.66 -34878655.51 -34878655.37 0.0271 0.0064  
 Mercury -100206-09-09 13:25 J -34878567.07 -34878566.94 -34878566.81 0.0272 0.0138  
 Mercury -100206-12-07 02:52 J -34878478.47 -34878478.38 -34878478.28 0.0272 0.0210  
 Venus -100204-12-11 23:01 J -34877742.74 -34877742.54 -34877742.33 0.0274 0.0070  
 Venus -100203-07-29 04:33 J -34877513.48 -34877513.31 -34877513.13 0.0275 0.0146  
 Moon -100202-08-10 16:47 J -34877136.02 -34877135.80 -34877135.57 0.0276 0.0080  
 Earth -100202-08-10 19:11 J -34877135.93 -34877135.70 -34877135.47 0.0276 0.0074 \*  
 Mars -100198-09-18 08:37 J -34875636.41 -34875636.14 -34875635.85 0.0284 0.0107  
 Mercury -100192-04-05 08:37 J -34873610.25 -34873610.14 -34873610.03 0.0289 0.0201



Mercury -100192-07-03 01:25 J -34873521.58 -34873521.44 -34873521.30 0.0288 0.0109  
 Mercury -100192-09-29 18:28 J -34873432.88 -34873432.73 -34873432.57 0.0288 0.0017  
 Mercury -100192-12-27 11:59 J -34873344.15 -34873344.00 -34873343.84 0.0288 0.0081  
 Mercury -100191-03-26 05:59 J -34873255.37 -34873255.25 -34873255.12 0.0288 0.0178  
 Mercury -100191-06-23 00:13 J -34873166.53 -34873166.49 -34873166.44 0.0288 0.0277  
 Venus -100190-10-07 17:01 J -34872694.89 -34872694.79 -34872694.68 0.0287 0.0247  
 Venus -100189-05-24 11:30 J -34872465.23 -34872465.02 -34872464.81 0.0286 0.0002  
 Venus -100188-01-09 05:45 J -34872235.35 -34872235.26 -34872235.15 0.0285 0.0251  
 Moon -100187-02-04 22:04 J -34871843.83 -34871843.58 -34871843.33 0.0283 0.0061  
 Earth -100187-02-05 01:54 J -34871843.66 -34871843.42 -34871843.18 0.0283 0.0064 \*  
 Mars -100184-11-27 20:37 J -34870451.90 -34870451.64 -34870451.36 0.0276 0.0090  
 Mercury -100178-11-10 15:35 J -34868277.87 -34868277.85 -34868277.81 0.0270 0.0264  
 Mercury -100177-02-07 06:42 J -34868189.33 -34868189.22 -34868189.11 0.0270 0.0184  
 Mercury -100177-05-05 21:06 J -34868100.75 -34868100.62 -34868100.47 0.0270 0.0108  
 Mercury -100177-08-02 11:30 J -34868012.17 -34868012.02 -34868011.86 0.0270 0.0032  
 Mercury -100177-10-30 01:40 J -34867923.58 -34867923.43 -34867923.28 0.0271 0.0045  
 Mercury -100176-01-26 15:21 J -34867834.99 -34867834.86 -34867834.72 0.0271 0.0119  
 Mercury -100176-04-25 05:01 J -34867746.39 -34867746.29 -34867746.19 0.0271 0.0191  
 Mercury -100176-07-22 18:13 J -34867657.77 -34867657.74 -34867657.70 0.0271 0.0262  
 Venus -100175-11-06 21:35 J -34867185.67 -34867185.60 -34867185.51 0.0272 0.0251  
 Venus -100174-06-24 03:21 J -34866956.57 -34866956.36 -34866956.15 0.0273 0.0038  
 Venus -100173-02-08 08:23 J -34866727.30 -34866727.15 -34866726.98 0.0274 0.0177  
 Earth -100173-08-04 17:16 J -34866548.88 -34866548.78 -34866548.67 0.0275 0.0247  
 Moon -100173-08-04 19:11 J -34866548.77 -34866548.70 -34866548.59 0.0275 0.0256 \*  
 Moon -100172-08-16 20:23 J -34866171.86 -34866171.65 -34866171.43 0.0277 0.0140  
 Earth -100172-08-16 22:47 J -34866171.75 -34866171.55 -34866171.34 0.0277 0.0137 \*  
 Mars -100168-11-08 11:45 J -34864627.30 -34864627.01 -34864626.70 0.0285 0.0069  
 Mercury -100163-08-23 08:09 J -34862878.24 -34862878.16 -34862878.07 0.0289 0.0234  
 Mercury -100163-11-20 00:57 J -34862789.60 -34862789.46 -34862789.33 0.0289 0.0143  
 Mercury -100162-02-16 17:59 J -34862700.91 -34862700.75 -34862700.60 0.0289 0.0050

Mercury -100162-05-16 11:16 J -34862612.18 -34862612.03 -34862611.87 0.0289 0.0045  
 Mercury -100162-08-13 05:01 J -34862523.43 -34862523.29 -34862523.15 0.0289 0.0142  
 Mercury -100162-11-09 23:16 J -34862434.62 -34862434.53 -34862434.44 0.0288 0.0240  
 Venus -100160-04-18 19:40 J -34861908.81 -34861908.68 -34861908.54 0.0287 0.0221  
 Venus -100160-12-04 14:23 J -34861679.12 -34861678.90 -34861678.69 0.0286 0.0030  
 Venus -100159-07-22 08:37 J -34861449.17 -34861449.14 -34861449.09 0.0285 0.0278  
 Earth -100158-01-30 01:11 J -34861257.66 -34861257.45 -34861257.23 0.0284 0.0138  
 Moon -100158-01-30 05:01 J -34861257.50 -34861257.29 -34861257.07 0.0284 0.0143 \*  
 Mars -100153-01-15 08:37 J -34859446.41 -34859446.14 -34859445.86 0.0274 0.0052  
 Mercury -100148-06-26 08:23 J -34857457.25 -34857457.15 -34857457.05 0.0271 0.0207  
 Mercury -100148-09-22 23:01 J -34857368.68 -34857368.54 -34857368.40 0.0271 0.0129  
 Mercury -100148-12-20 13:25 J -34857280.09 -34857279.94 -34857279.79 0.0271 0.0052  
 Mercury -100147-03-19 03:35 J -34857191.50 -34857191.35 -34857191.20 0.0271 0.0024  
 Mercury -100147-06-15 17:30 J -34857102.91 -34857102.77 -34857102.63 0.0271 0.0098  
 Mercury -100147-09-12 07:11 J -34857014.32 -34857014.20 -34857014.09 0.0272 0.0171  
 Mercury -100147-12-09 20:37 J -34856925.71 -34856925.64 -34856925.58 0.0272 0.0243  
 Venus -100145-05-19 03:49 J -34856399.45 -34856399.34 -34856399.21 0.0273 0.0222  
 Venus -100144-01-03 09:35 J -34856170.31 -34856170.10 -34856169.89 0.0274 0.0008  
 Venus -100144-08-20 14:52 J -34855941.00 -34855940.88 -34855940.73 0.0275 0.0209  
 Earth -100143-08-12 02:52 J -34855584.62 -34855584.38 -34855584.14 0.0277 0.0026  
 Moon -100143-08-12 05:16 J -34855584.52 -34855584.28 -34855584.05 0.0277 0.0028 \*  
 Mars -100140-12-22 12:42 J -34854356.08 -34854355.97 -34854355.84 0.0283 0.0257  
 Mars -100137-01-01 07:11 J -34853616.31 -34853616.20 -34853616.06 0.0286 0.0261  
 Mercury -100133-01-10 11:01 J -34852146.11 -34852146.04 -34852145.96 0.0289 0.0249  
 Mercury -100133-04-08 03:49 J -34852057.47 -34852057.34 -34852057.21 0.0289 0.0158  
 Mercury -100133-07-05 20:37 J -34851968.79 -34851968.64 -34851968.48 0.0288 0.0066  
 Mercury -100133-10-02 14:09 J -34851880.07 -34851879.91 -34851879.76 0.0288 0.0029  
 Mercury -100133-12-30 07:40 J -34851791.32 -34851791.18 -34851791.03 0.0288 0.0126  
 Mercury -100132-03-29 01:40 J -34851702.52 -34851702.43 -34851702.32 0.0288 0.0224  
 Venus -100131-10-30 07:40 J -34851122.34 -34851122.18 -34851122.01 0.0286 0.0174

Venus -100130-06-17 02:09 J -34850892.61 -34850892.41 -34850892.20 0.0285 0.0076  
 Moon -100128-02-06 13:25 J -34850292.15 -34850291.94 -34850291.71 0.0283 0.0119  
 Earth -100128-02-06 15:21 J -34850292.08 -34850291.86 -34850291.62 0.0283 0.0120 \*  
 Mars -100125-03-06 01:11 J -34849168.60 -34849168.45 -34849168.26 0.0277 0.0221  
 Mars -100123-03-04 05:01 J -34848440.48 -34848440.29 -34848440.09 0.0273 0.0194  
 Mercury -100119-11-13 10:18 J -34846725.15 -34846725.07 -34846724.98 0.0270 0.0226  
 Mercury -100118-02-10 01:11 J -34846636.58 -34846636.45 -34846636.32 0.0270 0.0148  
 Mercury -100118-05-09 15:35 J -34846548.00 -34846547.85 -34846547.70 0.0270 0.0070  
 Mercury -100118-08-06 05:45 J -34846459.41 -34846459.26 -34846459.11 0.0270 0.0006  
 Mercury -100118-11-02 19:40 J -34846370.82 -34846370.68 -34846370.53 0.0271 0.0080  
 Mercury -100117-01-30 09:21 J -34846282.23 -34846282.11 -34846281.99 0.0271 0.0153  
 Mercury -100117-04-27 22:47 J -34846193.63 -34846193.55 -34846193.47 0.0271 0.0225  
 Venus -100116-11-29 09:06 J -34845613.27 -34845613.12 -34845612.97 0.0272 0.0189  
 Venus -100115-07-16 14:23 J -34845384.11 -34845383.90 -34845383.69 0.0273 0.0026  
 Venus -100114-03-02 19:25 J -34845154.79 -34845154.69 -34845154.59 0.0274 0.0240  
 Moon -100114-08-06 23:16 J -34844997.69 -34844997.53 -34844997.36 0.0275 0.0203  
 Earth -100114-08-07 01:54 J -34844997.58 -34844997.42 -34844997.25 0.0275 0.0198 \*  
 Moon -100113-08-18 03:49 J -34844620.50 -34844620.34 -34844620.16 0.0277 0.0190  
 Earth -100113-08-18 06:57 J -34844620.37 -34844620.21 -34844620.02 0.0277 0.0185 \*  
 Mars -100109-02-12 02:52 J -34843347.66 -34843347.38 -34843347.08 0.0284 0.0093  
 Mercury -100104-05-29 10:33 J -34841414.08 -34841414.06 -34841414.03 0.0289 0.0283  
 Mercury -100104-08-26 03:06 J -34841325.48 -34841325.37 -34841325.26 0.0289 0.0193  
 Mercury -100104-11-22 19:54 J -34841236.82 -34841236.67 -34841236.53 0.0289 0.0102  
 Mercury -100103-02-19 12:57 J -34841148.11 -34841147.96 -34841147.80 0.0289 0.0011  
 Mercury -100103-05-19 06:28 J -34841059.38 -34841059.23 -34841059.07 0.0289 0.0089  
 Mercury -100103-08-16 00:28 J -34840970.60 -34840970.48 -34840970.36 0.0288 0.0186  
 Mercury -100103-11-12 18:42 J -34840881.73 -34840881.72 -34840881.69 0.0288 0.0286  
 Venus -100101-05-11 09:35 J -34840336.28 -34840336.10 -34840335.92 0.0287 0.0150  
 Venus -100101-12-27 04:04 J -34840106.53 -34840106.33 -34840106.13 0.0286 0.0101  
 Earth -100099-01-31 13:11 J -34839706.18 -34839705.95 -34839705.71 0.0284 0.0084

Moon -100099-01-31 14:23 J -34839706.15 -34839705.90 -34839705.65 0.0284 0.0085 \*  
 Mars -100095-04-23 19:40 J -34838162.94 -34838162.68 -34838162.40 0.0275 0.0078  
 Mercury -100089-04-01 11:30 J -34835993.08 -34835993.02 -34835992.96 0.0271 0.0250  
 Mercury -100089-06-29 02:23 J -34835904.52 -34835904.40 -34835904.28 0.0271 0.0171  
 Mercury -100089-09-25 17:01 J -34835815.94 -34835815.79 -34835815.65 0.0271 0.0094  
 Mercury -100089-12-23 07:11 J -34835727.35 -34835727.20 -34835727.04 0.0271 0.0018  
 Mercury -100088-03-21 21:21 J -34835638.76 -34835638.61 -34835638.46 0.0271 0.0058  
 Mercury -100088-06-18 11:01 J -34835550.17 -34835550.04 -34835549.91 0.0271 0.0132  
 Mercury -100088-09-15 00:28 J -34835461.57 -34835461.48 -34835461.38 0.0271 0.0204  
 Venus -100086-06-11 13:40 J -34834827.09 -34834826.93 -34834826.75 0.0273 0.0162  
 Venus -100085-01-26 19:25 J -34834597.90 -34834597.69 -34834597.48 0.0274 0.0055  
 Venus -100085-09-12 00:28 J -34834368.50 -34834368.48 -34834368.43 0.0275 0.0271  
 Earth -100084-08-13 09:06 J -34834033.36 -34834033.12 -34834032.88 0.0277 0.0021  
 Moon -100084-08-13 12:42 J -34834033.22 -34834032.97 -34834032.73 0.0277 0.0021 \*  
 Mars -100079-04-05 03:21 J -34832337.65 -34832337.36 -34832337.07 0.0285 0.0092  
 Mercury -100074-01-13 05:45 J -34830593.37 -34830593.26 -34830593.16 0.0289 0.0210  
 Mercury -100074-04-11 22:18 J -34830504.71 -34830504.57 -34830504.43 0.0289 0.0119  
 Mercury -100074-07-09 15:35 J -34830416.01 -34830415.85 -34830415.70 0.0288 0.0026  
 Mercury -100074-10-06 08:52 J -34830327.28 -34830327.13 -34830326.97 0.0288 0.0071  
 Mercury -100073-01-03 02:52 J -34830238.51 -34830238.38 -34830238.25 0.0288 0.0168  
 Mercury -100073-03-31 21:06 J -34830149.68 -34830149.62 -34830149.56 0.0288 0.0267  
 Venus -100072-11-21 20:52 J -34829549.82 -34829549.63 -34829549.43 0.0286 0.0104  
 Venus -100071-07-09 15:21 J -34829320.03 -34829319.86 -34829319.67 0.0285 0.0148  
 Moon -100070-01-26 01:54 J -34829119.48 -34829119.42 -34829119.34 0.0284 0.0271  
 Earth -100070-01-26 02:37 J -34829119.46 -34829119.39 -34829119.29 0.0284 0.0266 \*  
 Earth -100069-02-09 02:52 J -34828740.58 -34828740.38 -34828740.18 0.0283 0.0171  
 Moon -100069-02-09 05:30 J -34828740.46 -34828740.27 -34828740.07 0.0283 0.0173 \*  
 Mars -100065-06-11 00:28 J -34827156.74 -34827156.48 -34827156.20 0.0274 0.0073  
 Mercury -100060-08-19 13:40 J -34825260.94 -34825260.93 -34825260.92 0.0270 0.0268  
 Mercury -100060-11-16 04:18 J -34825172.42 -34825172.32 -34825172.20 0.0270 0.0191

Mercury -100059-02-12 19:11 J -34825083.84 -34825083.70 -34825083.56 0.0270 0.0112

Mercury -100059-05-12 09:35 J -34824995.25 -34824995.10 -34824994.95 0.0270 0.0036

Mercury -100059-08-08 23:30 J -34824906.67 -34824906.52 -34824906.37 0.0270 0.0040

Mercury -100059-11-05 13:25 J -34824818.08 -34824817.94 -34824817.80 0.0271 0.0114

Mercury -100058-02-02 02:52 J -34824729.48 -34824729.38 -34824729.27 0.0271 0.0186

Mercury -100058-05-01 16:18 J -34824640.86 -34824640.82 -34824640.78 0.0271 0.0257

Venus -100057-12-21 19:11 J -34824040.88 -34824040.70 -34824040.51 0.0272 0.0127

Venus -100056-08-08 00:28 J -34823811.68 -34823811.48 -34823811.28 0.0273 0.0088

Moon -100055-08-08 05:30 J -34823446.46 -34823446.27 -34823446.07 0.0275 0.0155

Earth -100055-08-08 08:52 J -34823446.33 -34823446.13 -34823445.93 0.0275 0.0152 \*

Earth -100054-08-20 13:25 J -34823069.06 -34823068.94 -34823068.79 0.0277 0.0230

Moon -100054-08-20 14:37 J -34823069.01 -34823068.89 -34823068.78 0.0277 0.0238 \*

Mars -100051-05-18 04:04 J -34822067.46 -34822067.33 -34822067.18 0.0282 0.0247

Mars -100049-05-26 18:28 J -34821327.81 -34821327.73 -34821327.62 0.0286 0.0272

Mercury -100045-06-01 04:47 J -34819861.37 -34819861.30 -34819861.22 0.0289 0.0245

Mercury -100045-08-28 21:21 J -34819772.73 -34819772.61 -34819772.47 0.0289 0.0155

Mercury -100045-11-25 14:23 J -34819684.05 -34819683.90 -34819683.74 0.0289 0.0062

Mercury -100044-02-22 07:40 J -34819595.33 -34819595.18 -34819595.02 0.0289 0.0034

Mercury -100044-05-22 01:25 J -34819506.58 -34819506.44 -34819506.30 0.0289 0.0130

Mercury -100044-08-18 19:25 J -34819417.78 -34819417.69 -34819417.59 0.0288 0.0228

Venus -100042-06-03 22:04 J -34818763.78 -34818763.58 -34818763.37 0.0286 0.0081

Venus -100041-01-19 16:33 J -34818533.97 -34818533.81 -34818533.63 0.0285 0.0171

Moon -100040-02-01 19:54 J -34818154.92 -34818154.67 -34818154.42 0.0284 0.0030

Earth -100040-02-01 23:16 J -34818154.78 -34818154.53 -34818154.28 0.0284 0.0033 \*

Mars -100037-07-30 18:28 J -34816879.89 -34816879.73 -34816879.53 0.0277 0.0213

Mars -100035-07-28 22:18 J -34816151.74 -34816151.57 -34816151.38 0.0273 0.0205

Mercury -100030-04-05 05:16 J -34814440.37 -34814440.28 -34814440.18 0.0271 0.0216

Mercury -100030-07-02 20:09 J -34814351.79 -34814351.66 -34814351.53 0.0271 0.0138

Mercury -100030-09-29 10:33 J -34814263.21 -34814263.06 -34814262.91 0.0271 0.0061

Mercury -100030-12-27 00:42 J -34814174.62 -34814174.47 -34814174.32 0.0271 0.0016

Mercury -100029-03-24 14:37 J -34814086.03 -34814085.89 -34814085.75 0.0271 0.0090

Mercury -100029-06-21 04:18 J -34813997.44 -34813997.32 -34813997.20 0.0271 0.0163

Mercury -100029-09-17 17:45 J -34813908.83 -34813908.76 -34813908.69 0.0271 0.0235

Venus -100027-07-03 23:01 J -34813254.73 -34813254.54 -34813254.34 0.0273 0.0101

Venus -100026-02-18 04:18 J -34813025.51 -34813025.32 -34813025.13 0.0274 0.0115

Moon -100025-08-14 12:57 J -34812482.20 -34812481.96 -34812481.72 0.0277 0.0068

Earth -100025-08-14 13:54 J -34812482.15 -34812481.92 -34812481.69 0.0277 0.0063 \*

Mars -100021-07-08 07:54 J -34811058.45 -34811058.17 -34811057.87 0.0284 0.0076

Mercury -100016-10-19 06:42 J -34809129.27 -34809129.22 -34809129.15 0.0289 0.0265

Mercury -100015-01-15 23:30 J -34809040.64 -34809040.52 -34809040.40 0.0289 0.0174

Mercury -100015-04-14 16:18 J -34808951.97 -34808951.82 -34808951.67 0.0289 0.0082

Mercury -100015-07-12 09:35 J -34808863.26 -34808863.10 -34808862.94 0.0288 0.0012

Mercury -100015-10-09 03:06 J -34808774.51 -34808774.37 -34808774.22 0.0288 0.0109

Mercury -100014-01-05 21:06 J -34808685.72 -34808685.62 -34808685.50 0.0288 0.0207

Venus -100013-12-14 08:09 J -34807977.37 -34807977.16 -34807976.95 0.0286 0.0036

Venus -100012-08-01 02:37 J -34807747.52 -34807747.39 -34807747.24 0.0285 0.0215

Earth -100011-01-27 10:33 J -34807568.21 -34807568.06 -34807567.90 0.0284 0.0219

Moon -100011-01-27 13:40 J -34807568.08 -34807567.93 -34807567.77 0.0284 0.0221 \*

Earth -100010-02-10 10:47 J -34807189.20 -34807189.05 -34807188.88 0.0282 0.0218

Moon -100010-02-10 14:23 J -34807189.05 -34807188.90 -34807188.74 0.0282 0.0222 \*

Mars -100007-09-18 08:52 J -34805873.41 -34805873.13 -34805872.85 0.0276 0.0059

Mercury -100001-08-22 07:25 J -34803708.26 -34803708.19 -34803708.11 0.0270 0.0234

Mercury -100001-11-18 22:18 J -34803619.69 -34803619.57 -34803619.44 0.0270 0.0156

# 100TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 100th millennium BCE.**

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
	TRANSIT							
	TIME							
Mercury	-100000-02-15 12:57 J	-34803531.11	-34803530.96	-34803530.81	0.0270	0.0078		
Mercury	-100000-05-15 03:06 J	-34803442.52	-34803442.37	-34803442.22	0.0270	0.0003		
Mercury	-100000-08-11 17:01 J	-34803353.93	-34803353.79	-34803353.64	0.0270	0.0072		
Mercury	-100000-11-08 06:42 J	-34803265.34	-34803265.22	-34803265.09	0.0271	0.0146		
Mercury	-99999-02-04 20:09 J	-34803176.74	-34803176.66	-34803176.57	0.0271	0.0218		
Venus	-99997-01-14 04:33 J	-34802468.51	-34802468.31	-34802468.10	0.0273	0.0067		
Venus	-99997-08-30 09:21 J	-34802239.28	-34802239.11	-34802238.92	0.0273	0.0149		
Earth	-99996-08-09 13:54 J	-34801895.13	-34801894.92	-34801894.69	0.0275	0.0109		
Moon	-99996-08-09 14:52 J	-34801895.09	-34801894.88	-34801894.66	0.0275	0.0109	*	
Earth	-99995-08-21 18:42 J	-34801517.76	-34801517.72	-34801517.67	0.0277	0.0271		
Mars	-99991-08-29 11:16 J	-34800049.31	-34800049.03	-34800048.74	0.0285	0.0098		
Mercury	-99986-06-04 22:33 J	-34798308.66	-34798308.56	-34798308.46	0.0289	0.0211		
Mercury	-99986-09-01 15:06 J	-34798220.00	-34798219.87	-34798219.72	0.0289	0.0120		
Mercury	-99986-11-29 08:23 J	-34798131.31	-34798131.15	-34798131.00	0.0289	0.0026		
Mercury	-99985-02-26 01:40 J	-34798042.58	-34798042.43	-34798042.27	0.0289	0.0070		
Mercury	-99985-05-24 19:40 J	-34797953.81	-34797953.68	-34797953.55	0.0289	0.0168		
Mercury	-99985-08-21 13:54 J	-34797864.98	-34797864.92	-34797864.86	0.0288	0.0267		
Venus	-99984-11-08 14:09 J	-34797420.97	-34797420.91	-34797420.82	0.0287	0.0267		
Venus	-99983-06-26 08:52 J	-34797191.34	-34797191.13	-34797190.92	0.0286	0.0015		
Venus	-99982-02-11 03:21 J	-34796961.47	-34796961.36	-34796961.23	0.0285	0.0237		
Moon	-99981-02-04 03:35 J	-34796603.60	-34796603.35	-34796603.11	0.0284	0.0017		

Earth -99981-02-04 06:13 J -34796603.49 -34796603.24 -34796602.99 0.0284 0.0013 \*  
 Mars -99977-11-04 12:13 J -34794868.26 -34794867.99 -34794867.72 0.0274 0.0079  
 Mercury -99971-01-09 07:40 J -34792976.21 -34792976.18 -34792976.14 0.0270 0.0263  
 Mercury -99971-04-07 22:47 J -34792887.67 -34792887.55 -34792887.44 0.0270 0.0184  
 Mercury -99971-07-05 13:11 J -34792799.08 -34792798.95 -34792798.80 0.0270 0.0107  
 Mercury -99971-10-02 03:35 J -34792710.50 -34792710.35 -34792710.19 0.0271 0.0030  
 Mercury -99971-12-29 17:45 J -34792621.91 -34792621.76 -34792621.61 0.0271 0.0046  
 Mercury -99970-03-28 07:40 J -34792533.32 -34792533.18 -34792533.05 0.0271 0.0120  
 Mercury -99970-06-24 21:06 J -34792444.72 -34792444.62 -34792444.51 0.0271 0.0193  
 Mercury -99970-09-21 10:33 J -34792356.09 -34792356.06 -34792356.03 0.0271 0.0263  
 Venus -99969-12-09 01:25 J -34791911.50 -34791911.44 -34791911.37 0.0272 0.0258  
 Venus -99968-07-26 06:57 J -34791682.42 -34791682.21 -34791682.00 0.0273 0.0043  
 Venus -99967-03-12 11:59 J -34791453.16 -34791453.00 -34791452.83 0.0274 0.0174  
 Moon -99966-08-16 13:11 J -34790931.17 -34790930.95 -34790930.73 0.0277 0.0112  
 Earth -99966-08-16 16:47 J -34790931.02 -34790930.80 -34790930.57 0.0277 0.0103 \*  
 Mars -99963-10-11 23:01 J -34789778.70 -34789778.54 -34789778.37 0.0283 0.0234  
 Mars -99961-10-20 14:52 J -34789038.88 -34789038.88 -34789038.84 0.0286 0.0286  
 Mercury -99957-10-21 23:59 J -34787576.58 -34787576.50 -34787576.40 0.0289 0.0233  
 Mercury -99956-01-18 16:47 J -34787487.93 -34787487.80 -34787487.66 0.0289 0.0142  
 Mercury -99956-04-17 09:49 J -34787399.24 -34787399.09 -34787398.94 0.0289 0.0048  
 Mercury -99956-07-15 03:06 J -34787310.52 -34787310.37 -34787310.21 0.0289 0.0048  
 Mercury -99956-10-11 20:52 J -34787221.76 -34787221.63 -34787221.49 0.0288 0.0145  
 Mercury -99955-01-08 15:06 J -34787132.95 -34787132.87 -34787132.79 0.0288 0.0243  
 Venus -99954-05-21 23:01 J -34786634.66 -34786634.54 -34786634.40 0.0287 0.0225  
 Venus -99953-01-06 17:45 J -34786404.97 -34786404.76 -34786404.55 0.0286 0.0028  
 Venus -99953-08-23 12:28 J -34786175.01 -34786174.98 -34786174.94 0.0285 0.0280  
 Earth -99952-01-28 15:35 J -34786017.03 -34786016.85 -34786016.64 0.0284 0.0176  
 Moon -99952-01-28 18:28 J -34786016.92 -34786016.73 -34786016.52 0.0284 0.0176 \*  
 Moon -99951-02-11 15:21 J -34785637.94 -34785637.86 -34785637.77 0.0282 0.0267  
 Earth -99951-02-11 16:33 J -34785637.90 -34785637.81 -34785637.71 0.0282 0.0260 \*



Mars -99949-12-25 02:52 J -34784590.58 -34784590.38 -34784590.18 0.0277 0.0198  
 Mars -99947-12-23 05:45 J -34783862.42 -34783862.26 -34783862.09 0.0274 0.0219  
 Mercury -99942-08-26 00:57 J -34782155.56 -34782155.46 -34782155.35 0.0270 0.0202  
 Mercury -99942-11-22 15:35 J -34782066.98 -34782066.85 -34782066.71 0.0270 0.0124  
 Mercury -99941-02-19 05:59 J -34781978.40 -34781978.25 -34781978.09 0.0270 0.0048  
 Mercury -99941-05-17 20:09 J -34781889.81 -34781889.66 -34781889.51 0.0270 0.0029  
 Mercury -99941-08-14 10:04 J -34781801.22 -34781801.08 -34781800.94 0.0270 0.0103  
 Mercury -99941-11-10 23:30 J -34781712.62 -34781712.52 -34781712.40 0.0271 0.0176  
 Mercury -99940-02-07 12:57 J -34781624.01 -34781623.96 -34781623.90 0.0271 0.0247  
 Venus -99939-06-21 07:40 J -34781125.30 -34781125.18 -34781125.06 0.0272 0.0223  
 Venus -99938-02-05 12:42 J -34780896.18 -34780895.97 -34780895.76 0.0273 0.0009  
 Venus -99938-09-22 17:16 J -34780666.90 -34780666.78 -34780666.63 0.0273 0.0208  
 Earth -99937-08-10 17:45 J -34780343.99 -34780343.76 -34780343.52 0.0275 0.0068  
 Moon -99937-08-10 21:21 J -34780343.84 -34780343.61 -34780343.38 0.0275 0.0065 \*  
 Mars -99933-12-01 14:09 J -34778770.20 -34778769.91 -34778769.61 0.0283 0.0072  
 Mercury -99927-03-10 23:01 J -34776844.58 -34776844.54 -34776844.48 0.0289 0.0269  
 Mercury -99927-06-07 15:35 J -34776755.97 -34776755.85 -34776755.73 0.0289 0.0179  
 Mercury -99927-09-04 08:23 J -34776667.29 -34776667.15 -34776667.00 0.0289 0.0087  
 Mercury -99927-12-02 01:40 J -34776578.59 -34776578.43 -34776578.27 0.0289 0.0008  
 Mercury -99926-02-28 19:11 J -34776489.85 -34776489.70 -34776489.55 0.0289 0.0104  
 Mercury -99926-05-28 13:11 J -34776401.06 -34776400.95 -34776400.83 0.0289 0.0202  
 Venus -99925-11-30 23:16 J -34775848.67 -34775848.53 -34775848.38 0.0287 0.0205  
 Venus -99924-07-18 17:59 J -34775618.96 -34775618.75 -34775618.54 0.0286 0.0049  
 Earth -99922-02-05 10:18 J -34775052.31 -34775052.07 -34775051.82 0.0284 0.0056  
 Moon -99922-02-05 11:59 J -34775052.23 -34775052.00 -34775051.76 0.0284 0.0062 \*  
 Mars -99918-02-11 13:11 J -34773585.22 -34773584.95 -34773584.67 0.0276 0.0057  
 Mercury -99912-01-12 00:57 J -34771423.54 -34771423.46 -34771423.38 0.0270 0.0232  
 Mercury -99912-04-10 15:49 J -34771334.97 -34771334.84 -34771334.71 0.0270 0.0153  
 Mercury -99912-07-08 06:13 J -34771246.38 -34771246.24 -34771246.09 0.0270 0.0076  
 Mercury -99912-10-04 20:37 J -34771157.80 -34771157.64 -34771157.49 0.0271 0.0004

Mercury -99911-01-01 10:33 J -34771069.20 -34771069.06 -34771068.91 0.0271 0.0075

Mercury -99911-03-31 00:13 J -34770980.61 -34770980.49 -34770980.36 0.0271 0.0149

Mercury -99911-06-27 13:40 J -34770892.01 -34770891.93 -34770891.84 0.0271 0.0221

Venus -99909-01-01 08:52 J -34770339.27 -34770339.13 -34770338.98 0.0272 0.0202

Venus -99909-08-17 14:09 J -34770110.12 -34770109.91 -34770109.70 0.0273 0.0014

Venus -99908-04-03 19:11 J -34769880.81 -34769880.70 -34769880.59 0.0274 0.0231

Moon -99908-08-05 10:04 J -34769757.19 -34769757.08 -34769756.96 0.0275 0.0241

Earth -99908-08-05 13:25 J -34769757.05 -34769756.94 -34769756.81 0.0275 0.0238 \*

Moon -99907-08-17 17:59 J -34769379.94 -34769379.75 -34769379.55 0.0277 0.0151

Earth -99907-08-17 18:28 J -34769379.93 -34769379.73 -34769379.52 0.0277 0.0140 \*

Mars -99902-01-22 21:06 J -34767760.90 -34767760.62 -34767760.34 0.0285 0.0107

Mercury -99898-10-25 16:33 J -34766023.91 -34766023.81 -34766023.69 0.0289 0.0204

Mercury -99897-01-22 09:35 J -34765935.25 -34765935.10 -34765934.96 0.0289 0.0112

Mercury -99897-04-20 02:37 J -34765846.55 -34765846.39 -34765846.23 0.0289 0.0018

Mercury -99897-07-17 20:09 J -34765757.81 -34765757.66 -34765757.51 0.0289 0.0078

Mercury -99897-10-14 13:54 J -34765669.04 -34765668.92 -34765668.79 0.0288 0.0176

Mercury -99896-01-11 07:54 J -34765580.20 -34765580.17 -34765580.11 0.0288 0.0277

Venus -99895-06-13 06:42 J -34765062.38 -34765062.22 -34765062.04 0.0287 0.0166

Venus -99894-01-29 01:40 J -34764832.63 -34764832.43 -34764832.23 0.0286 0.0089

Moon -99893-01-30 16:18 J -34764466.05 -34764465.82 -34764465.59 0.0284 0.0133

Earth -99893-01-30 17:59 J -34764465.96 -34764465.75 -34764465.52 0.0284 0.0136 \*

Mars -99888-03-31 13:54 J -34762579.19 -34762578.92 -34762578.66 0.0275 0.0089

Mercury -99883-06-01 03:06 J -34760691.42 -34760691.37 -34760691.31 0.0270 0.0251

Mercury -99883-08-28 17:59 J -34760602.86 -34760602.75 -34760602.63 0.0270 0.0172

Mercury -99883-11-25 08:37 J -34760514.28 -34760514.14 -34760513.99 0.0270 0.0095

Mercury -99882-02-21 23:01 J -34760425.69 -34760425.54 -34760425.39 0.0270 0.0018

Mercury -99882-05-21 12:57 J -34760337.11 -34760336.96 -34760336.81 0.0270 0.0057

Mercury -99882-08-18 02:37 J -34760248.51 -34760248.39 -34760248.25 0.0271 0.0131

Mercury -99882-11-14 16:18 J -34760159.92 -34760159.82 -34760159.72 0.0271 0.0203

Venus -99880-07-13 14:52 J -34759553.04 -34759552.88 -34759552.71 0.0272 0.0168

Venus -99879-02-27 19:54 J -34759323.88 -34759323.67 -34759323.46 0.0273 0.0048  
 Venus -99879-10-15 00:28 J -34759094.52 -34759094.48 -34759094.42 0.0274 0.0264  
 Earth -99878-08-12 19:54 J -34758792.91 -34758792.67 -34758792.43 0.0275 0.0030  
 Moon -99878-08-12 21:06 J -34758792.87 -34758792.62 -34758792.37 0.0275 0.0026 \*  
 Mars -99874-03-07 04:04 J -34757490.48 -34757490.33 -34757490.15 0.0282 0.0234  
 Mars -99872-03-15 12:57 J -34756750.98 -34756750.96 -34756750.91 0.0286 0.0284  
 Mercury -99868-03-13 15:49 J -34755291.92 -34755291.84 -34755291.76 0.0289 0.0240  
 Mercury -99868-06-10 08:23 J -34755203.28 -34755203.15 -34755203.02 0.0289 0.0149  
 Mercury -99868-09-07 01:25 J -34755114.60 -34755114.44 -34755114.29 0.0289 0.0056  
 Mercury -99868-12-04 18:42 J -34755025.88 -34755025.72 -34755025.57 0.0289 0.0039  
 Mercury -99867-03-03 12:13 J -34754937.13 -34754936.99 -34754936.84 0.0289 0.0136  
 Mercury -99867-05-31 06:28 J -34754848.32 -34754848.23 -34754848.14 0.0288 0.0235  
 Venus -99866-12-24 07:25 J -34754276.38 -34754276.19 -34754276.01 0.0287 0.0144  
 Venus -99865-08-10 01:54 J -34754046.61 -34754046.42 -34754046.22 0.0286 0.0110  
 Earth -99863-02-06 12:42 J -34753501.20 -34753500.97 -34753500.73 0.0284 0.0095  
 Moon -99863-02-06 16:18 J -34753501.05 -34753500.82 -34753500.58 0.0284 0.0103 \*  
 Mars -99860-05-19 23:01 J -34752302.73 -34752302.54 -34752302.33 0.0277 0.0200  
 Mars -99858-05-18 05:30 J -34751574.41 -34751574.27 -34751574.08 0.0273 0.0220  
 Mercury -99853-01-15 17:45 J -34749870.86 -34749870.76 -34749870.66 0.0270 0.0203  
 Mercury -99853-04-13 08:23 J -34749782.28 -34749782.15 -34749782.01 0.0270 0.0125  
 Mercury -99853-07-10 22:47 J -34749693.70 -34749693.55 -34749693.39 0.0270 0.0049  
 Mercury -99853-10-07 13:11 J -34749605.11 -34749604.95 -34749604.80 0.0270 0.0029  
 Mercury -99852-01-04 02:52 J -34749516.51 -34749516.38 -34749516.24 0.0271 0.0103  
 Mercury -99852-04-02 16:33 J -34749427.92 -34749427.81 -34749427.69 0.0271 0.0175  
 Mercury -99852-06-30 05:59 J -34749339.31 -34749339.25 -34749339.19 0.0271 0.0247  
 Venus -99850-01-23 15:21 J -34748767.03 -34748766.86 -34748766.68 0.0272 0.0147  
 Venus -99850-09-09 20:23 J -34748537.85 -34748537.65 -34748537.44 0.0273 0.0070  
 Moon -99849-08-06 12:42 J -34748206.11 -34748205.97 -34748205.80 0.0275 0.0203  
 Earth -99849-08-06 14:09 J -34748206.06 -34748205.91 -34748205.73 0.0275 0.0201 \*  
 Earth -99848-08-18 18:57 J -34747828.89 -34747828.71 -34747828.52 0.0276 0.0176

Moon -99848-08-18 22:18 J -34747828.74 -34747828.57 -34747828.40 0.0276 0.0189 \*  
 Mars -99844-04-26 16:33 J -34746482.10 -34746481.81 -34746481.51 0.0284 0.0066  
 Mercury -99839-07-31 16:18 J -34744559.87 -34744559.82 -34744559.75 0.0289 0.0267  
 Mercury -99839-10-28 08:52 J -34744471.24 -34744471.13 -34744471.00 0.0289 0.0177  
 Mercury -99838-01-25 01:54 J -34744382.57 -34744382.42 -34744382.27 0.0289 0.0084  
 Mercury -99838-04-23 19:11 J -34744293.86 -34744293.70 -34744293.55 0.0289 0.0013  
 Mercury -99838-07-21 12:42 J -34744205.12 -34744204.97 -34744204.82 0.0289 0.0108  
 Mercury -99838-10-18 06:28 J -34744116.33 -34744116.23 -34744116.11 0.0288 0.0207  
 Venus -99836-07-05 13:40 J -34743490.13 -34743489.93 -34743489.73 0.0287 0.0108  
 Venus -99835-02-20 08:23 J -34743260.33 -34743260.15 -34743259.97 0.0286 0.0148  
 Moon -99834-01-31 14:23 J -34742915.12 -34742914.90 -34742914.66 0.0284 0.0095  
 Earth -99834-01-31 18:13 J -34742914.97 -34742914.74 -34742914.51 0.0284 0.0099 \*  
 Mars -99830-07-08 08:37 J -34741296.42 -34741296.14 -34741295.86 0.0276 0.0050  
 Mercury -99824-06-03 19:54 J -34739138.75 -34739138.67 -34739138.58 0.0270 0.0223  
 Mercury -99824-08-31 10:47 J -34739050.18 -34739050.05 -34739049.92 0.0270 0.0144  
 Mercury -99824-11-28 01:25 J -34738961.59 -34738961.44 -34738961.29 0.0270 0.0066  
 Mercury -99823-02-24 15:35 J -34738873.00 -34738872.85 -34738872.70 0.0271 0.0010  
 Mercury -99823-05-24 05:30 J -34738784.41 -34738784.27 -34738784.13 0.0271 0.0085  
 Mercury -99823-08-20 19:11 J -34738695.82 -34738695.70 -34738695.58 0.0271 0.0158  
 Mercury -99823-11-17 08:37 J -34738607.21 -34738607.14 -34738607.06 0.0271 0.0230  
 Venus -99821-08-04 21:49 J -34737980.78 -34737980.59 -34737980.39 0.0272 0.0113  
 Venus -99820-03-22 02:37 J -34737751.58 -34737751.39 -34737751.19 0.0273 0.0105  
 Moon -99819-08-13 18:57 J -34737241.96 -34737241.71 -34737241.47 0.0275 0.0017  
 Earth -99819-08-13 21:49 J -34737241.83 -34737241.59 -34737241.35 0.0275 0.0009 \*  
 Mars -99814-06-17 22:33 J -34735472.85 -34735472.56 -34735472.28 0.0284 0.0105  
 Mercury -99809-03-16 08:09 J -34733739.26 -34733739.16 -34733739.05 0.0289 0.0212  
 Mercury -99809-06-13 00:57 J -34733650.60 -34733650.46 -34733650.32 0.0289 0.0121  
 Mercury -99809-09-09 17:59 J -34733561.91 -34733561.75 -34733561.60 0.0289 0.0028  
 Mercury -99809-12-07 11:16 J -34733473.18 -34733473.03 -34733472.87 0.0289 0.0069  
 Mercury -99808-03-06 05:01 J -34733384.42 -34733384.29 -34733384.16 0.0289 0.0166

Mercury -99808-06-02 23:16 J -34733295.59 -34733295.53 -34733295.47 0.0288 0.0266  
 Venus -99806-01-15 14:23 J -34732704.11 -34732703.90 -34732703.70 0.0287 0.0086  
 Venus -99806-09-02 08:52 J -34732474.30 -34732474.13 -34732473.95 0.0286 0.0169  
 Earth -99804-02-07 13:11 J -34731950.16 -34731949.95 -34731949.72 0.0284 0.0132  
 Moon -99804-02-07 13:25 J -34731950.16 -34731949.94 -34731949.70 0.0284 0.0142 \*  
 Mars -99800-08-24 09:21 J -34730291.37 -34730291.11 -34730290.83 0.0275 0.0087  
 Mercury -99795-10-21 19:11 J -34728406.74 -34728406.70 -34728406.64 0.0270 0.0255  
 Mercury -99794-01-18 10:18 J -34728318.18 -34728318.07 -34728317.95 0.0270 0.0176  
 Mercury -99794-04-17 00:57 J -34728229.60 -34728229.46 -34728229.31 0.0270 0.0098  
 Mercury -99794-07-14 15:21 J -34728141.01 -34728140.86 -34728140.71 0.0270 0.0021  
 Mercury -99794-10-11 05:30 J -34728052.42 -34728052.27 -34728052.12 0.0270 0.0055  
 Mercury -99793-01-07 19:11 J -34727963.83 -34727963.70 -34727963.57 0.0271 0.0129  
 Mercury -99793-04-05 08:52 J -34727875.23 -34727875.13 -34727875.03 0.0271 0.0201  
 Venus -99791-02-14 21:35 J -34727194.79 -34727194.60 -34727194.40 0.0272 0.0092  
 Venus -99791-10-02 02:23 J -34726965.58 -34726965.40 -34726965.20 0.0273 0.0126  
 Earth -99790-08-08 14:52 J -34726655.07 -34726654.88 -34726654.68 0.0275 0.0164  
 Moon -99790-08-08 17:45 J -34726654.95 -34726654.76 -34726654.57 0.0275 0.0162 \*  
 Earth -99789-08-19 18:57 J -34726277.85 -34726277.71 -34726277.54 0.0276 0.0211  
 Moon -99789-08-19 21:21 J -34726277.75 -34726277.61 -34726277.46 0.0276 0.0223 \*  
 Mars -99786-07-31 03:21 J -34725202.53 -34725202.36 -34725202.18 0.0282 0.0228  
 Mercury -99780-08-03 08:37 J -34723007.23 -34723007.14 -34723007.06 0.0289 0.0241  
 Mercury -99780-10-31 00:57 J -34722918.58 -34722918.46 -34722918.32 0.0289 0.0151  
 Mercury -99779-01-27 17:59 J -34722829.90 -34722829.75 -34722829.59 0.0289 0.0057  
 Mercury -99779-04-26 11:16 J -34722741.18 -34722741.03 -34722740.87 0.0289 0.0039  
 Mercury -99779-07-24 05:01 J -34722652.43 -34722652.29 -34722652.15 0.0288 0.0136  
 Mercury -99779-10-20 23:01 J -34722563.63 -34722563.54 -34722563.44 0.0288 0.0235  
 Venus -99777-07-27 19:54 J -34721917.88 -34721917.67 -34721917.46 0.0286 0.0050  
 Venus -99776-03-14 14:37 J -34721688.03 -34721687.89 -34721687.74 0.0286 0.0206  
 Earth -99775-02-01 17:30 J -34721364.01 -34721363.77 -34721363.53 0.0284 0.0062  
 Moon -99775-02-01 17:30 J -34721364.00 -34721363.77 -34721363.53 0.0284 0.0055 \*

Mars -99772-10-13 13:40 J -34720014.12 -34720013.93 -34720013.72 0.0277 0.0197  
 Mars -99770-10-11 23:30 J -34719285.67 -34719285.52 -34719285.35 0.0274 0.0224  
 Mercury -99765-06-06 12:42 J -34717586.08 -34717585.97 -34717585.86 0.0271 0.0195  
 Mercury -99765-09-03 03:21 J -34717497.50 -34717497.36 -34717497.22 0.0271 0.0117  
 Mercury -99765-11-30 17:45 J -34717408.91 -34717408.76 -34717408.60 0.0271 0.0040  
 Mercury -99764-02-27 07:54 J -34717320.32 -34717320.17 -34717320.02 0.0271 0.0037  
 Mercury -99764-05-26 21:49 J -34717231.73 -34717231.59 -34717231.45 0.0271 0.0111  
 Mercury -99764-08-23 11:30 J -34717143.13 -34717143.02 -34717142.91 0.0271 0.0184  
 Mercury -99764-11-20 00:42 J -34717054.51 -34717054.47 -34717054.42 0.0271 0.0256  
 Venus -99762-08-28 04:33 J -34716408.52 -34716408.31 -34716408.11 0.0272 0.0058  
 Venus -99761-04-13 09:21 J -34716179.28 -34716179.11 -34716178.94 0.0273 0.0160  
 Moon -99760-08-14 20:23 J -34715690.87 -34715690.65 -34715690.41 0.0275 0.0055  
 Earth -99760-08-14 23:01 J -34715690.77 -34715690.54 -34715690.30 0.0275 0.0046 \*  
 Mars -99756-09-20 00:13 J -34714193.79 -34714193.49 -34714193.20 0.0283 0.0066  
 Mercury -99751-12-21 08:23 J -34712275.20 -34712275.15 -34712275.11 0.0289 0.0274  
 Mercury -99750-03-20 00:42 J -34712186.59 -34712186.47 -34712186.35 0.0289 0.0184  
 Mercury -99750-06-16 17:30 J -34712097.92 -34712097.77 -34712097.63 0.0289 0.0093  
 Mercury -99750-09-13 10:32 J -34712009.22 -34712009.06 -34712008.90 0.0289 0.0003  
 Mercury -99750-12-11 04:04 J -34711920.48 -34711920.33 -34711920.18 0.0288 0.0098  
 Mercury -99749-03-08 21:49 J -34711831.70 -34711831.59 -34711831.47 0.0288 0.0197  
 Venus -99748-06-22 02:37 J -34711361.41 -34711361.39 -34711361.35 0.0287 0.0284  
 Venus -99747-02-06 21:20 J -34711131.83 -34711131.61 -34711131.40 0.0287 0.0028  
 Venus -99747-09-24 16:04 J -34710901.96 -34710901.83 -34710901.71 0.0286 0.0228  
 Moon -99746-01-26 12:28 J -34710778.10 -34710777.98 -34710777.86 0.0285 0.0253  
 Earth -99746-01-26 13:25 J -34710778.03 -34710777.94 -34710777.84 0.0285 0.0262 \*  
 Moon -99745-02-09 10:18 J -34710399.26 -34710399.07 -34710398.88 0.0283 0.0182  
 Earth -99745-02-09 13:54 J -34710399.12 -34710398.92 -34710398.72 0.0283 0.0169 \*  
 Mars -99742-12-01 01:40 J -34709008.70 -34709008.43 -34709008.15 0.0276 0.0053  
 Mercury -99736-10-24 11:59 J -34706854.08 -34706854.00 -34706853.91 0.0270 0.0227  
 Mercury -99735-01-21 02:52 J -34706765.51 -34706765.38 -34706765.25 0.0270 0.0148

Mercury -99735-04-19 17:30 J -34706676.92 -34706676.77 -34706676.62 0.0270 0.0070

Mercury -99735-07-17 07:40 J -34706588.33 -34706588.18 -34706588.02 0.0270 0.0010

Mercury -99735-10-13 21:49 J -34706499.74 -34706499.59 -34706499.45 0.0271 0.0081

Mercury -99734-01-10 11:30 J -34706411.14 -34706411.02 -34706410.90 0.0271 0.0155

Mercury -99734-04-09 00:56 J -34706322.53 -34706322.46 -34706322.38 0.0271 0.0227

Venus -99733-07-22 22:47 J -34705851.61 -34705851.55 -34705851.47 0.0272 0.0254

Venus -99732-03-09 04:04 J -34705622.53 -34705622.33 -34705622.12 0.0273 0.0037

Venus -99732-10-24 09:06 J -34705393.28 -34705393.12 -34705392.97 0.0273 0.0181

Earth -99731-08-09 16:04 J -34705104.04 -34705103.83 -34705103.61 0.0275 0.0127

Moon -99731-08-09 18:56 J -34705103.93 -34705103.71 -34705103.48 0.0275 0.0121 \*

Moon -99730-08-21 17:59 J -34704726.83 -34704726.75 -34704726.67 0.0276 0.0260

Earth -99730-08-21 20:23 J -34704726.76 -34704726.65 -34704726.55 0.0276 0.0246 \*

Mars -99726-11-10 19:11 J -34703184.98 -34703184.70 -34703184.41 0.0284 0.0109

Mercury -99721-08-06 00:42 J -34701454.57 -34701454.47 -34701454.37 0.0289 0.0215

Mercury -99721-11-02 17:16 J -34701365.92 -34701365.78 -34701365.64 0.0289 0.0124

Mercury -99720-01-30 10:18 J -34701277.23 -34701277.07 -34701276.91 0.0289 0.0030

Mercury -99720-04-29 03:35 J -34701188.50 -34701188.35 -34701188.19 0.0289 0.0067

Mercury -99720-07-26 21:20 J -34701099.74 -34701099.61 -34701099.47 0.0288 0.0165

Mercury -99720-10-23 15:20 J -34701010.91 -34701010.86 -34701010.78 0.0288 0.0265

Venus -99718-01-02 07:11 J -34700575.29 -34700575.20 -34700575.09 0.0287 0.0250

Venus -99718-08-20 01:54 J -34700345.63 -34700345.42 -34700345.20 0.0286 0.0009

Venus -99717-04-05 20:52 J -34700115.70 -34700115.63 -34700115.54 0.0285 0.0263

Earth -99716-02-02 16:32 J -34699813.06 -34699812.81 -34699812.56 0.0284 0.0027

Moon -99716-02-02 20:23 J -34699812.90 -34699812.65 -34699812.40 0.0284 0.0015 \*

Mars -99711-01-17 23:59 J -34698002.76 -34698002.50 -34698002.23 0.0275 0.0090

Mercury -99706-03-13 14:23 J -34696121.96 -34696121.90 -34696121.84 0.0271 0.0247

Mercury -99706-06-10 05:16 J -34696033.40 -34696033.28 -34696033.16 0.0271 0.0168

Mercury -99706-09-06 19:54 J -34695944.81 -34695944.67 -34695944.52 0.0271 0.0089

Mercury -99706-12-04 10:18 J -34695856.22 -34695856.07 -34695855.92 0.0271 0.0012

Mercury -99705-03-02 00:28 J -34695767.63 -34695767.48 -34695767.34 0.0271 0.0064

Mercury -99705-05-29 14:08 J -34695679.04 -34695678.91 -34695678.78 0.0271 0.0138

Mercury -99705-08-26 03:49 J -34695590.43 -34695590.34 -34695590.25 0.0271 0.0210

Venus -99703-02-02 05:59 J -34695065.37 -34695065.25 -34695065.12 0.0272 0.0220

Venus -99703-09-19 11:16 J -34694836.24 -34694836.03 -34694835.82 0.0273 0.0005

Venus -99702-05-06 15:49 J -34694606.95 -34694606.84 -34694606.70 0.0273 0.0217

Earth -99701-08-16 00:42 J -34694139.69 -34694139.47 -34694139.23 0.0275 0.0084

Moon -99701-08-16 02:23 J -34694139.61 -34694139.40 -34694139.17 0.0275 0.0096 \*

Mars -99698-12-24 17:44 J -34692913.92 -34692913.76 -34692913.57 0.0281 0.0225

Mercury -99692-12-24 00:42 J -34690722.54 -34690722.47 -34690722.39 0.0288 0.0246

Mercury -99691-03-22 17:16 J -34690633.91 -34690633.78 -34690633.65 0.0288 0.0156

Mercury -99691-06-19 10:04 J -34690545.23 -34690545.08 -34690544.93 0.0288 0.0063

Mercury -99691-09-16 03:20 J -34690456.52 -34690456.36 -34690456.21 0.0288 0.0032

Mercury -99691-12-13 20:52 J -34690367.77 -34690367.63 -34690367.49 0.0288 0.0129

Mercury -99690-03-12 14:52 J -34690278.98 -34690278.88 -34690278.78 0.0288 0.0228

Venus -99689-07-14 09:49 J -34689789.21 -34689789.09 -34689788.95 0.0287 0.0225

Venus -99688-03-01 04:32 J -34689559.52 -34689559.31 -34689559.10 0.0286 0.0032

Moon -99687-01-27 10:18 J -34689227.23 -34689227.07 -34689226.89 0.0285 0.0210

Earth -99687-01-27 14:23 J -34689227.05 -34689226.90 -34689226.74 0.0285 0.0222 \*

Moon -99686-02-10 13:11 J -34688848.10 -34688847.95 -34688847.80 0.0283 0.0221

Earth -99686-02-10 14:52 J -34688848.04 -34688847.88 -34688847.70 0.0283 0.0207 \*

Mars -99683-03-08 06:42 J -34687726.41 -34687726.22 -34687726.01 0.0278 0.0198

Mars -99681-03-05 20:08 J -34686997.82 -34686997.66 -34686997.50 0.0274 0.0223

Mercury -99677-10-27 04:47 J -34685301.40 -34685301.30 -34685301.19 0.0270 0.0199

Mercury -99676-01-23 19:40 J -34685212.82 -34685212.68 -34685212.55 0.0270 0.0121

Mercury -99676-04-22 10:04 J -34685124.23 -34685124.08 -34685123.93 0.0270 0.0043

Mercury -99676-07-20 00:13 J -34685035.64 -34685035.49 -34685035.34 0.0271 0.0033

Mercury -99676-10-16 14:08 J -34684947.05 -34684946.91 -34684946.77 0.0271 0.0108

Mercury -99675-01-13 03:49 J -34684858.45 -34684858.34 -34684858.23 0.0271 0.0181

Mercury -99675-04-11 17:16 J -34684769.83 -34684769.78 -34684769.73 0.0271 0.0253

Venus -99674-08-15 05:44 J -34684279.40 -34684279.26 -34684279.12 0.0272 0.0199



Venus -99673-03-31 11:01 J -34684050.25 -34684050.04 -34684049.83 0.0273 0.0019  
 Venus -99673-11-15 15:49 J -34683820.94 -34683820.84 -34683820.74 0.0274 0.0237  
 Moon -99672-08-10 16:04 J -34683553.07 -34683552.83 -34683552.59 0.0275 0.0078  
 Earth -99672-08-10 17:59 J -34683552.97 -34683552.75 -34683552.52 0.0275 0.0088 \*  
 Mars -99667-02-12 21:20 J -34681905.90 -34681905.61 -34681905.31 0.0283 0.0061  
 Mercury -99662-05-13 00:28 J -34679990.51 -34679990.48 -34679990.43 0.0289 0.0278  
 Mercury -99662-08-09 17:01 J -34679901.90 -34679901.79 -34679901.67 0.0289 0.0188  
 Mercury -99662-11-06 09:49 J -34679813.24 -34679813.09 -34679812.94 0.0289 0.0095  
 Mercury -99661-02-03 02:52 J -34679724.54 -34679724.38 -34679724.22 0.0288 0.0003  
 Mercury -99661-05-01 20:23 J -34679635.80 -34679635.65 -34679635.50 0.0288 0.0096  
 Mercury -99661-07-29 14:08 J -34679547.02 -34679546.91 -34679546.79 0.0288 0.0194  
 Venus -99659-01-24 13:54 J -34679003.06 -34679002.92 -34679002.75 0.0287 0.0193  
 Venus -99659-09-11 08:52 J -34678773.34 -34678773.13 -34678772.92 0.0286 0.0065  
 Earth -99657-02-04 16:47 J -34678262.05 -34678261.80 -34678261.55 0.0284 0.0012  
 Moon -99657-02-04 18:13 J -34678262.00 -34678261.74 -34678261.48 0.0284 0.0025 \*  
 Mars -99653-04-25 13:11 J -34676720.23 -34676719.95 -34676719.67 0.0277 0.0051  
 Mercury -99647-03-16 07:11 J -34674569.29 -34674569.20 -34674569.11 0.0271 0.0219  
 Mercury -99647-06-12 21:49 J -34674480.72 -34674480.59 -34674480.45 0.0271 0.0140  
 Mercury -99647-09-09 12:28 J -34674392.13 -34674391.98 -34674391.83 0.0271 0.0062  
 Mercury -99647-12-07 02:52 J -34674303.53 -34674303.38 -34674303.23 0.0271 0.0015  
 Mercury -99646-03-05 16:47 J -34674214.94 -34674214.80 -34674214.65 0.0271 0.0091  
 Mercury -99646-06-02 06:42 J -34674126.34 -34674126.22 -34674126.11 0.0271 0.0165  
 Mercury -99646-08-29 19:54 J -34674037.73 -34674037.67 -34674037.59 0.0271 0.0238  
 Venus -99644-02-24 13:11 J -34673493.11 -34673492.95 -34673492.77 0.0272 0.0165  
 Venus -99644-10-11 18:28 J -34673263.94 -34673263.73 -34673263.52 0.0273 0.0054  
 Venus -99643-05-28 23:16 J -34673034.53 -34673034.53 -34673034.52 0.0274 0.0274  
 Earth -99643-08-05 23:16 J -34672965.63 -34672965.53 -34672965.41 0.0274 0.0244  
 Moon -99643-08-06 01:11 J -34672965.55 -34672965.45 -34672965.33 0.0274 0.0239 \*  
 Earth -99642-08-18 03:35 J -34672588.55 -34672588.35 -34672588.12 0.0275 0.0125  
 Moon -99642-08-18 07:25 J -34672588.40 -34672588.19 -34672587.98 0.0275 0.0138 \*

Mars -99637-04-05 12:56 J -34670896.23 -34670895.96 -34670895.67 0.0283 0.0113  
 Mercury -99633-12-26 17:44 J -34669169.86 -34669169.76 -34669169.66 0.0288 0.0215  
 Mercury -99632-03-25 10:18 J -34669081.21 -34669081.07 -34669080.93 0.0288 0.0124  
 Mercury -99632-06-22 03:20 J -34668992.52 -34668992.36 -34668992.21 0.0288 0.0031  
 Mercury -99632-09-18 20:37 J -34668903.80 -34668903.64 -34668903.49 0.0288 0.0065  
 Mercury -99632-12-16 14:08 J -34668815.04 -34668814.91 -34668814.77 0.0288 0.0162  
 Mercury -99631-03-15 08:08 J -34668726.22 -34668726.16 -34668726.09 0.0288 0.0261  
 Venus -99630-08-06 18:13 J -34668216.91 -34668216.74 -34668216.56 0.0287 0.0164  
 Venus -99629-03-23 12:42 J -34667987.17 -34667986.97 -34667986.77 0.0286 0.0094  
 Moon -99628-01-28 16:18 J -34667676.01 -34667675.82 -34667675.62 0.0285 0.0168  
 Earth -99628-01-28 16:47 J -34667675.99 -34667675.80 -34667675.61 0.0285 0.0181 \*  
 Earth -99627-02-11 17:16 J -34667296.90 -34667296.78 -34667296.65 0.0283 0.0245  
 Moon -99627-02-11 19:54 J -34667296.75 -34667296.67 -34667296.57 0.0283 0.0262 \*  
 Mars -99623-06-12 21:35 J -34665714.86 -34665714.60 -34665714.33 0.0275 0.0091  
 Mercury -99618-08-03 06:28 J -34663837.28 -34663837.23 -34663837.16 0.0271 0.0251  
 Mercury -99618-10-30 21:35 J -34663748.71 -34663748.60 -34663748.47 0.0271 0.0171  
 Mercury -99617-01-27 12:28 J -34663660.13 -34663659.98 -34663659.84 0.0271 0.0092  
 Mercury -99617-04-25 02:52 J -34663571.54 -34663571.38 -34663571.23 0.0271 0.0015  
 Mercury -99617-07-22 17:01 J -34663482.94 -34663482.79 -34663482.65 0.0271 0.0062  
 Mercury -99617-10-19 06:42 J -34663394.35 -34663394.22 -34663394.09 0.0271 0.0136  
 Mercury -99616-01-15 20:23 J -34663305.74 -34663305.65 -34663305.56 0.0271 0.0209  
 Venus -99615-09-06 13:11 J -34662707.12 -34662706.95 -34662706.76 0.0272 0.0143  
 Venus -99614-04-23 18:28 J -34662477.93 -34662477.73 -34662477.52 0.0273 0.0077  
 Moon -99613-08-11 17:44 J -34662001.99 -34662001.76 -34662001.52 0.0275 0.0035  
 Earth -99613-08-11 21:20 J -34662001.85 -34662001.61 -34662001.37 0.0275 0.0048 \*  
 Mars -99609-05-18 19:11 J -34660625.88 -34660625.70 -34660625.51 0.0282 0.0218  
 Mercury -99603-05-15 17:30 J -34658437.84 -34658437.77 -34658437.69 0.0288 0.0248  
 Mercury -99603-08-12 09:49 J -34658349.21 -34658349.09 -34658348.96 0.0288 0.0158  
 Mercury -99603-11-09 02:52 J -34658260.54 -34658260.38 -34658260.23 0.0288 0.0065  
 Mercury -99602-02-05 19:54 J -34658171.82 -34658171.67 -34658171.51 0.0288 0.0031

Mercury -99602-05-05 13:25 J -34658083.08 -34658082.94 -34658082.79 0.0288 0.0128

Mercury -99602-08-02 07:25 J -34657994.28 -34657994.19 -34657994.09 0.0288 0.0227

Venus -99600-02-15 22:04 J -34657430.76 -34657430.58 -34657430.39 0.0287 0.0133

Venus -99600-10-03 16:47 J -34657200.98 -34657200.80 -34657200.60 0.0286 0.0127

Moon -99598-02-05 15:35 J -34656711.10 -34656710.85 -34656710.60 0.0284 0.0068

Earth -99598-02-05 18:56 J -34656710.95 -34656710.71 -34656710.46 0.0284 0.0052 \*

Mars -99595-08-01 17:59 J -34655437.95 -34655437.75 -34655437.54 0.0278 0.0195

Mars -99593-07-30 10:47 J -34654709.19 -34654709.05 -34654708.88 0.0275 0.0227

Mercury -99589-12-20 09:06 J -34653105.13 -34653105.12 -34653105.12 0.0271 0.0271

Mercury -99588-03-18 23:59 J -34653016.60 -34653016.50 -34653016.38 0.0271 0.0190

Mercury -99588-06-15 14:52 J -34652928.02 -34652927.88 -34652927.74 0.0271 0.0111

Mercury -99588-09-12 05:16 J -34652839.43 -34652839.28 -34652839.12 0.0271 0.0034

Mercury -99588-12-09 19:40 J -34652750.83 -34652750.68 -34652750.53 0.0271 0.0044

Mercury -99587-03-08 09:35 J -34652662.24 -34652662.10 -34652661.97 0.0271 0.0119

Mercury -99587-06-04 23:16 J -34652573.63 -34652573.53 -34652573.43 0.0272 0.0192

Mercury -99587-09-01 12:28 J -34652485.00 -34652484.98 -34652484.94 0.0272 0.0265

Venus -99585-03-18 21:20 J -34651920.81 -34651920.61 -34651920.42 0.0273 0.0108

Venus -99585-11-03 02:23 J -34651691.59 -34651691.40 -34651691.20 0.0273 0.0113

Earth -99584-08-07 03:20 J -34651414.52 -34651414.36 -34651414.19 0.0274 0.0201

Moon -99584-08-07 06:42 J -34651414.38 -34651414.22 -34651414.04 0.0274 0.0193 \*

Earth -99583-08-19 07:40 J -34651037.36 -34651037.18 -34651036.98 0.0276 0.0166

Moon -99583-08-19 07:40 J -34651037.36 -34651037.18 -34651036.99 0.0276 0.0180 \*

Mars -99579-07-10 01:25 J -34649616.73 -34649616.44 -34649616.14 0.0282 0.0051

Mercury -99574-10-02 18:56 J -34647705.75 -34647705.71 -34647705.66 0.0288 0.0271

Mercury -99574-12-30 11:16 J -34647617.15 -34647617.03 -34647616.91 0.0288 0.0182

Mercury -99573-03-28 04:04 J -34647528.48 -34647528.33 -34647528.19 0.0288 0.0090

Mercury -99573-06-24 21:06 J -34647439.78 -34647439.62 -34647439.47 0.0288 0.0008

Mercury -99573-09-21 14:23 J -34647351.05 -34647350.90 -34647350.75 0.0288 0.0100

Mercury -99573-12-19 08:08 J -34647262.27 -34647262.16 -34647262.04 0.0288 0.0198

Venus -99571-08-29 04:04 J -34646644.53 -34646644.33 -34646644.13 0.0287 0.0100

Venus -99570-04-15 22:32 J -34646414.74 -34646414.56 -34646414.39 0.0286 0.0158

Earth -99569-01-30 21:20 J -34646124.82 -34646124.61 -34646124.38 0.0285 0.0137

Moon -99569-01-31 01:11 J -34646124.67 -34646124.45 -34646124.23 0.0285 0.0121 \*

Mars -99565-09-18 17:30 J -34644432.04 -34644431.77 -34644431.48 0.0277 0.0046

Mercury -99559-08-05 23:59 J -34642284.59 -34642284.50 -34642284.41 0.0271 0.0220

Mercury -99559-11-02 14:52 J -34642196.01 -34642195.88 -34642195.75 0.0271 0.0140

Mercury -99558-01-30 05:30 J -34642107.42 -34642107.27 -34642107.12 0.0271 0.0062

Mercury -99558-04-28 19:54 J -34642018.83 -34642018.67 -34642018.52 0.0271 0.0017

Mercury -99558-07-26 09:49 J -34641930.23 -34641930.09 -34641929.95 0.0271 0.0091

Mercury -99558-10-22 23:30 J -34641841.63 -34641841.52 -34641841.40 0.0271 0.0165

Mercury -99557-01-19 13:11 J -34641753.02 -34641752.95 -34641752.88 0.0271 0.0237

Venus -99556-09-28 21:49 J -34641134.79 -34641134.59 -34641134.39 0.0272 0.0085

Venus -99555-05-16 02:52 J -34640905.55 -34640905.38 -34640905.19 0.0273 0.0136

Earth -99554-08-14 02:08 J -34640450.65 -34640450.41 -34640450.17 0.0275 0.0006

Moon -99554-08-14 02:37 J -34640450.62 -34640450.39 -34640450.16 0.0275 0.0009 \*

Mars -99549-08-29 18:42 J -34638608.00 -34638607.72 -34638607.45 0.0284 0.0122

Mercury -99544-05-18 11:01 J -34636885.14 -34636885.04 -34636884.94 0.0288 0.0214

Mercury -99544-08-15 03:35 J -34636796.49 -34636796.35 -34636796.21 0.0288 0.0123

Mercury -99544-11-11 20:23 J -34636707.80 -34636707.65 -34636707.49 0.0288 0.0031

Mercury -99543-02-08 13:40 J -34636619.08 -34636618.93 -34636618.77 0.0288 0.0067

Mercury -99543-05-08 07:25 J -34636530.32 -34636530.19 -34636530.06 0.0288 0.0164

Mercury -99543-08-05 01:25 J -34636441.50 -34636441.44 -34636441.37 0.0288 0.0263

Venus -99541-03-10 07:40 J -34635858.38 -34635858.18 -34635857.97 0.0286 0.0069

Venus -99541-10-26 02:37 J -34635628.54 -34635628.39 -34635628.23 0.0286 0.0191

Moon -99539-02-06 21:06 J -34635159.84 -34635159.62 -34635159.39 0.0284 0.0111

Earth -99539-02-06 23:44 J -34635159.74 -34635159.51 -34635159.27 0.0284 0.0095 \*

Mars -99535-11-06 14:23 J -34633426.16 -34633425.90 -34633425.63 0.0276 0.0097

Mercury -99530-12-24 02:08 J -34631552.47 -34631552.41 -34631552.33 0.0272 0.0240

Mercury -99529-03-21 17:16 J -34631463.90 -34631463.78 -34631463.65 0.0272 0.0160

Mercury -99529-06-18 07:54 J -34631375.31 -34631375.17 -34631375.02 0.0272 0.0081

Mercury -99529-09-14 22:18 J -34631286.72 -34631286.57 -34631286.41 0.0272 0.0008

Mercury -99529-12-12 12:28 J -34631198.12 -34631197.98 -34631197.83 0.0272 0.0074

Mercury -99528-03-11 02:23 J -34631109.52 -34631109.40 -34631109.27 0.0272 0.0148

Mercury -99528-06-07 16:04 J -34631020.91 -34631020.83 -34631020.75 0.0272 0.0222

Venus -99527-08-25 00:13 J -34630577.51 -34630577.49 -34630577.46 0.0273 0.0270

Venus -99526-04-11 05:59 J -34630348.45 -34630348.25 -34630348.04 0.0273 0.0049

Venus -99526-11-26 11:16 J -34630119.19 -34630119.03 -34630118.86 0.0274 0.0173

Moon -99525-08-08 08:37 J -34629863.35 -34629863.14 -34629862.92 0.0275 0.0147

Earth -99525-08-08 08:52 J -34629863.32 -34629863.13 -34629862.93 0.0275 0.0157 \*

Moon -99524-08-20 09:49 J -34629486.22 -34629486.09 -34629485.94 0.0276 0.0226

Earth -99524-08-20 13:40 J -34629486.08 -34629485.93 -34629485.77 0.0276 0.0209 \*

Mars -99521-10-13 08:08 J -34628336.36 -34628336.16 -34628335.94 0.0281 0.0202

Mercury -99515-10-05 12:56 J -34626153.04 -34626152.96 -34626152.87 0.0288 0.0235

Mercury -99514-01-02 05:30 J -34626064.41 -34626064.27 -34626064.14 0.0288 0.0145

Mercury -99514-03-31 22:18 J -34625975.73 -34625975.57 -34625975.42 0.0288 0.0053

Mercury -99514-06-28 15:20 J -34625887.02 -34625886.86 -34625886.70 0.0288 0.0043

Mercury -99514-09-25 08:52 J -34625798.27 -34625798.13 -34625797.99 0.0288 0.0139

Mercury -99514-12-23 02:52 J -34625709.47 -34625709.38 -34625709.29 0.0288 0.0238

Venus -99512-09-20 15:20 J -34625072.07 -34625071.86 -34625071.65 0.0286 0.0032

Venus -99511-05-08 09:35 J -34624842.22 -34624842.10 -34624841.96 0.0286 0.0227

Earth -99510-02-01 05:01 J -34624573.53 -34624573.29 -34624573.05 0.0285 0.0089

Moon -99510-02-01 06:56 J -34624573.45 -34624573.21 -34624572.95 0.0285 0.0074 \*

Mars -99507-12-26 07:11 J -34623149.41 -34623149.20 -34623148.99 0.0278 0.0184

Mars -99505-12-23 22:32 J -34622420.70 -34622420.56 -34622420.41 0.0275 0.0234

Mercury -99500-05-12 02:23 J -34620820.42 -34620820.40 -34620820.38 0.0271 0.0268

Mercury -99500-08-08 17:30 J -34620731.88 -34620731.77 -34620731.65 0.0271 0.0187

Mercury -99500-11-05 08:23 J -34620643.29 -34620643.15 -34620643.01 0.0271 0.0108

Mercury -99499-02-01 22:47 J -34620554.70 -34620554.55 -34620554.39 0.0271 0.0031

Mercury -99499-05-01 13:11 J -34620466.10 -34620465.95 -34620465.80 0.0271 0.0047

Mercury -99499-07-29 03:06 J -34620377.50 -34620377.37 -34620377.24 0.0271 0.0122

Mercury -99499-10-25 16:47 J -34620288.90 -34620288.80 -34620288.70 0.0271 0.0196

Mercury -99498-01-22 06:13 J -34620200.26 -34620200.24 -34620200.22 0.0271 0.0268

Venus -99497-03-06 01:40 J -34619791.52 -34619791.43 -34619791.34 0.0272 0.0244

Venus -99497-10-21 07:11 J -34619562.41 -34619562.20 -34619561.99 0.0273 0.0024

Venus -99496-06-07 12:28 J -34619333.12 -34619332.98 -34619332.83 0.0273 0.0198

Earth -99495-08-15 08:37 J -34618899.38 -34618899.14 -34618898.90 0.0275 0.0039

Moon -99495-08-15 12:13 J -34618899.22 -34618898.99 -34618898.75 0.0275 0.0055 \*

Mars -99491-12-03 12:42 J -34617328.26 -34617327.97 -34617327.66 0.0283 0.0039

Mercury -99485-02-22 12:42 J -34615421.02 -34615420.97 -34615420.91 0.0288 0.0268

Mercury -99485-05-21 05:01 J -34615332.40 -34615332.29 -34615332.16 0.0288 0.0178

Mercury -99485-08-17 21:49 J -34615243.74 -34615243.59 -34615243.44 0.0288 0.0086

Mercury -99485-11-14 14:52 J -34615155.04 -34615154.88 -34615154.72 0.0288 0.0009

Mercury -99484-02-11 08:08 J -34615066.30 -34615066.16 -34615066.01 0.0288 0.0106

Mercury -99484-05-11 01:54 J -34614977.53 -34614977.42 -34614977.30 0.0288 0.0204

Venus -99483-08-16 00:28 J -34614515.55 -34614515.48 -34614515.38 0.0287 0.0260

Venus -99482-04-02 19:11 J -34614285.91 -34614285.70 -34614285.49 0.0286 0.0000

Venus -99482-11-18 14:08 J -34614056.00 -34614055.91 -34614055.82 0.0285 0.0259

Moon -99481-01-26 05:01 J -34613987.35 -34613987.29 -34613987.20 0.0285 0.0269

Earth -99481-01-26 06:42 J -34613987.24 -34613987.22 -34613987.17 0.0285 0.0283 \*

Earth -99480-02-08 06:56 J -34613608.42 -34613608.21 -34613607.98 0.0284 0.0142

Moon -99480-02-08 09:06 J -34613608.31 -34613608.12 -34613607.91 0.0284 0.0158 \*

Mars -99476-02-12 12:13 J -34612143.26 -34612142.99 -34612142.70 0.0277 0.0038

Mercury -99471-12-26 19:40 J -34609999.77 -34609999.68 -34609999.57 0.0272 0.0208

Mercury -99470-03-25 10:47 J -34609911.19 -34609911.05 -34609910.92 0.0272 0.0128

Mercury -99470-06-22 01:25 J -34609822.59 -34609822.44 -34609822.29 0.0272 0.0049

Mercury -99470-09-18 15:49 J -34609734.00 -34609733.84 -34609733.69 0.0272 0.0030

Mercury -99470-12-16 05:44 J -34609645.40 -34609645.26 -34609645.12 0.0272 0.0105

Mercury -99469-03-13 19:40 J -34609556.79 -34609556.68 -34609556.57 0.0272 0.0179

Mercury -99469-06-10 09:06 J -34609468.17 -34609468.12 -34609468.06 0.0272 0.0252

Venus -99468-09-16 09:35 J -34609005.23 -34609005.10 -34609004.96 0.0273 0.0210

Venus -99467-05-03 15:35 J -34608776.06 -34608775.85 -34608775.64 0.0273 0.0012  
 Venus -99467-12-18 20:37 J -34608546.73 -34608546.64 -34608546.52 0.0274 0.0235  
 Moon -99466-08-10 12:13 J -34608312.22 -34608311.99 -34608311.77 0.0275 0.0099  
 Earth -99466-08-10 15:35 J -34608312.07 -34608311.85 -34608311.63 0.0275 0.0112 \*  
 Moon -99465-08-21 19:11 J -34607934.73 -34607934.70 -34607934.65 0.0276 0.0271  
 Earth -99465-08-21 20:23 J -34607934.73 -34607934.65 -34607934.54 0.0276 0.0255 \*  
 Mars -99460-01-24 15:20 J -34606318.11 -34606317.86 -34606317.58 0.0283 0.0143  
 Mercury -99456-07-11 15:35 J -34604688.87 -34604688.85 -34604688.83 0.0288 0.0284  
 Mercury -99456-10-08 07:40 J -34604600.29 -34604600.18 -34604600.07 0.0288 0.0195  
 Mercury -99455-01-05 00:13 J -34604511.63 -34604511.49 -34604511.34 0.0288 0.0104  
 Mercury -99455-04-03 17:16 J -34604422.94 -34604422.78 -34604422.63 0.0288 0.0011  
 Mercury -99455-07-01 10:32 J -34604334.21 -34604334.06 -34604333.91 0.0288 0.0085  
 Mercury -99455-09-28 04:04 J -34604245.45 -34604245.33 -34604245.20 0.0288 0.0183  
 Mercury -99455-12-25 22:04 J -34604156.60 -34604156.58 -34604156.55 0.0287 0.0282  
 Venus -99453-02-26 10:18 J -34603729.20 -34603729.07 -34603728.93 0.0287 0.0219  
 Venus -99453-10-13 04:32 J -34603499.52 -34603499.31 -34603499.10 0.0286 0.0041  
 Moon -99451-02-02 13:25 J -34603022.20 -34603021.94 -34603021.68 0.0284 0.0023  
 Earth -99451-02-02 15:49 J -34603022.09 -34603021.84 -34603021.59 0.0284 0.0038 \*  
 Mars -99446-04-02 09:49 J -34601137.34 -34601137.09 -34601136.82 0.0276 0.0110  
 Mercury -99441-05-14 20:23 J -34599267.72 -34599267.65 -34599267.57 0.0271 0.0233  
 Mercury -99441-08-11 11:30 J -34599179.15 -34599179.02 -34599178.89 0.0271 0.0153  
 Mercury -99441-11-08 02:08 J -34599090.56 -34599090.41 -34599090.26 0.0271 0.0074  
 Mercury -99440-02-04 16:32 J -34599001.96 -34599001.81 -34599001.65 0.0271 0.0006  
 Mercury -99440-05-04 06:42 J -34598913.36 -34598913.22 -34598913.07 0.0271 0.0080  
 Mercury -99440-07-31 20:37 J -34598824.76 -34598824.64 -34598824.52 0.0271 0.0155  
 Mercury -99440-10-28 10:04 J -34598736.15 -34598736.08 -34598735.99 0.0271 0.0229  
 Venus -99438-03-29 11:59 J -34598219.15 -34598219.00 -34598218.84 0.0272 0.0182  
 Venus -99438-11-13 17:30 J -34597989.98 -34597989.77 -34597989.56 0.0273 0.0040  
 Venus -99437-06-29 22:32 J -34597760.61 -34597760.56 -34597760.49 0.0274 0.0262  
 Moon -99437-08-04 14:08 J -34597724.93 -34597724.91 -34597724.88 0.0274 0.0272

Earth -99436-08-16 16:32 J -34597348.04 -34597347.81 -34597347.58 0.0275 0.0086  
 Moon -99436-08-16 17:44 J -34597347.99 -34597347.76 -34597347.52 0.0275 0.0101 \*  
 Mars -99432-03-09 00:13 J -34596047.71 -34596047.49 -34596047.27 0.0282 0.0188  
 Mercury -99426-02-25 07:25 J -34593868.28 -34593868.19 -34593868.09 0.0288 0.0228  
 Mercury -99426-05-24 23:59 J -34593779.64 -34593779.50 -34593779.37 0.0288 0.0137  
 Mercury -99426-08-21 16:47 J -34593690.96 -34593690.80 -34593690.65 0.0288 0.0045  
 Mercury -99426-11-18 09:49 J -34593602.24 -34593602.09 -34593601.93 0.0288 0.0051  
 Mercury -99425-02-15 03:20 J -34593513.49 -34593513.36 -34593513.22 0.0288 0.0148  
 Mercury -99425-05-13 21:20 J -34593424.69 -34593424.61 -34593424.53 0.0288 0.0247  
 Venus -99424-09-07 13:40 J -34592943.08 -34592942.93 -34592942.77 0.0287 0.0189  
 Venus -99423-04-25 07:54 J -34592713.37 -34592713.17 -34592712.96 0.0286 0.0072  
 Earth -99422-01-27 16:47 J -34592435.93 -34592435.80 -34592435.64 0.0285 0.0231  
 Moon -99422-01-27 19:11 J -34592435.84 -34592435.70 -34592435.53 0.0285 0.0217 \*  
 Earth -99421-02-10 17:16 J -34592056.97 -34592056.78 -34592056.60 0.0283 0.0191  
 Moon -99421-02-10 20:37 J -34592056.80 -34592056.64 -34592056.46 0.0283 0.0206 \*  
 Mars -99418-05-22 03:49 J -34590860.56 -34590860.34 -34590860.11 0.0278 0.0173  
 Mars -99416-05-19 20:37 J -34590131.74 -34590131.64 -34590131.49 0.0275 0.0245  
 Mercury -99412-10-01 22:32 J -34588535.61 -34588535.56 -34588535.50 0.0272 0.0254  
 Mercury -99412-12-29 13:40 J -34588447.05 -34588446.93 -34588446.81 0.0272 0.0173  
 Mercury -99411-03-28 04:32 J -34588358.45 -34588358.31 -34588358.16 0.0272 0.0093  
 Mercury -99411-06-24 19:11 J -34588269.86 -34588269.70 -34588269.55 0.0272 0.0017  
 Mercury -99411-09-21 09:20 J -34588181.26 -34588181.11 -34588180.96 0.0272 0.0062  
 Mercury -99411-12-18 23:16 J -34588092.66 -34588092.53 -34588092.40 0.0272 0.0138  
 Mercury -99410-03-17 12:56 J -34588004.05 -34588003.96 -34588003.86 0.0272 0.0212  
 Venus -99409-10-08 19:54 J -34587432.84 -34587432.67 -34587432.48 0.0273 0.0148  
 Venus -99408-05-26 01:54 J -34587203.62 -34587203.42 -34587203.22 0.0274 0.0076  
 Moon -99407-08-11 21:35 J -34586760.83 -34586760.60 -34586760.37 0.0275 0.0054  
 Earth -99407-08-11 23:16 J -34586760.76 -34586760.53 -34586760.29 0.0275 0.0065 \*  
 Mars -99402-04-30 14:23 J -34585038.21 -34585037.90 -34585037.60 0.0283 0.0015  
 Jupiter -99400-06-28 19:54 J -34584247.90 -34584247.67 -34584247.40 0.0285 0.0238



Mercury -99397-07-14 10:32 J -34583136.14 -34583136.06 -34583135.98 0.0288 0.0243

Mercury -99397-10-11 02:52 J -34583047.51 -34583047.38 -34583047.25 0.0288 0.0153

Mercury -99396-01-07 19:40 J -34582958.84 -34582958.68 -34582958.53 0.0288 0.0061

Mercury -99396-04-06 12:42 J -34582870.13 -34582869.97 -34582869.82 0.0288 0.0035

Mercury -99396-07-04 05:59 J -34582781.39 -34582781.25 -34582781.11 0.0287 0.0131

Mercury -99396-09-30 23:44 J -34582692.60 -34582692.51 -34582692.41 0.0287 0.0229

Venus -99394-03-21 00:42 J -34582156.65 -34582156.47 -34582156.28 0.0286 0.0144

Venus -99394-11-05 19:11 J -34581926.90 -34581926.70 -34581926.51 0.0286 0.0116

Moon -99392-02-04 01:11 J -34581470.70 -34581470.45 -34581470.21 0.0284 0.0031

Earth -99392-02-04 04:32 J -34581470.56 -34581470.31 -34581470.06 0.0284 0.0016 \*

Mars -99388-07-09 17:16 J -34579854.07 -34579853.78 -34579853.50 0.0277 0.0019

Mercury -99382-05-18 14:37 J -34577714.99 -34577714.89 -34577714.78 0.0271 0.0197

Mercury -99382-08-15 05:30 J -34577626.40 -34577626.27 -34577626.12 0.0271 0.0117

Mercury -99382-11-11 20:08 J -34577537.81 -34577537.66 -34577537.50 0.0271 0.0039

Mercury -99381-02-08 10:32 J -34577449.21 -34577449.06 -34577448.91 0.0271 0.0039

Mercury -99381-05-07 00:28 J -34577360.61 -34577360.48 -34577360.34 0.0271 0.0115

Mercury -99381-08-03 14:23 J -34577272.01 -34577271.90 -34577271.79 0.0271 0.0189

Mercury -99381-10-31 03:49 J -34577183.37 -34577183.34 -34577183.30 0.0271 0.0261

Venus -99379-04-20 23:01 J -34576646.73 -34576646.54 -34576646.35 0.0273 0.0118

Venus -99379-12-06 04:32 J -34576417.50 -34576417.31 -34576417.11 0.0273 0.0105

Earth -99378-08-06 19:25 J -34576173.81 -34576173.69 -34576173.55 0.0274 0.0231

Moon -99378-08-06 21:49 J -34576173.73 -34576173.59 -34576173.44 0.0274 0.0223 \*

Moon -99377-08-17 22:18 J -34575796.77 -34575796.57 -34575796.35 0.0276 0.0148

Earth -99377-08-18 01:25 J -34575796.65 -34575796.44 -34575796.23 0.0276 0.0133 \*

Mars -99372-06-20 11:16 J -34574029.27 -34574029.03 -34574028.76 0.0284 0.0159

Mercury -99368-12-01 10:18 J -34572404.10 -34572404.07 -34572404.02 0.0288 0.0275

Mercury -99367-02-28 02:37 J -34572315.50 -34572315.39 -34572315.27 0.0288 0.0186

Mercury -99367-05-27 19:11 J -34572226.84 -34572226.70 -34572226.55 0.0288 0.0094

Mercury -99367-08-24 12:13 J -34572138.15 -34572137.99 -34572137.84 0.0288 0.0003

Mercury -99367-11-21 05:30 J -34572049.42 -34572049.27 -34572049.12 0.0288 0.0096

Mercury -99366-02-17 23:01 J -34571960.65 -34571960.54 -34571960.42 0.0288 0.0195

Venus -99365-09-30 04:18 J -34571370.52 -34571370.32 -34571370.13 0.0286 0.0114

Venus -99364-05-17 22:32 J -34571140.74 -34571140.56 -34571140.37 0.0286 0.0147

Earth -99363-01-29 05:30 J -34570884.45 -34570884.27 -34570884.06 0.0285 0.0177

Moon -99363-01-29 09:06 J -34570884.32 -34570884.12 -34570883.90 0.0285 0.0161 \*

Earth -99362-02-12 05:44 J -34570505.38 -34570505.26 -34570505.13 0.0283 0.0243

Moon -99362-02-12 05:44 J -34570505.35 -34570505.26 -34570505.14 0.0283 0.0257 \*

Mars -99358-08-27 11:16 J -34568848.28 -34568848.03 -34568847.77 0.0275 0.0122

Mercury -99353-10-04 16:47 J -34566982.89 -34566982.80 -34566982.71 0.0272 0.0218

Mercury -99352-01-01 07:40 J -34566894.31 -34566894.18 -34566894.04 0.0272 0.0138

Mercury -99352-03-30 22:32 J -34566805.71 -34566805.56 -34566805.41 0.0272 0.0058

Mercury -99352-06-27 12:56 J -34566717.11 -34566716.96 -34566716.81 0.0272 0.0020

Mercury -99352-09-24 03:06 J -34566628.51 -34566628.37 -34566628.23 0.0272 0.0096

Mercury -99352-12-21 17:01 J -34566539.91 -34566539.79 -34566539.68 0.0272 0.0171

Mercury -99351-03-20 06:28 J -34566451.29 -34566451.23 -34566451.16 0.0272 0.0245

Venus -99350-11-01 06:42 J -34565860.42 -34565860.22 -34565860.02 0.0273 0.0084

Venus -99349-06-17 12:28 J -34565631.16 -34565630.98 -34565630.80 0.0274 0.0141

Earth -99348-08-13 07:40 J -34565209.42 -34565209.18 -34565208.93 0.0276 0.0018

Moon -99348-08-13 09:49 J -34565209.32 -34565209.09 -34565208.85 0.0276 0.0007 \*

Mars -99344-08-04 01:40 J -34563757.66 -34563757.43 -34563757.17 0.0282 0.0164

Mercury -99338-07-18 05:44 J -34561583.36 -34561583.26 -34561583.15 0.0288 0.0200

Mercury -99338-10-14 22:18 J -34561494.71 -34561494.57 -34561494.43 0.0288 0.0108

Mercury -99337-01-11 15:06 J -34561406.02 -34561405.87 -34561405.71 0.0287 0.0016

Mercury -99337-04-09 08:23 J -34561317.30 -34561317.15 -34561317.00 0.0287 0.0081

Mercury -99337-07-07 01:54 J -34561228.54 -34561228.42 -34561228.29 0.0287 0.0178

Mercury -99337-10-03 19:54 J -34561139.70 -34561139.67 -34561139.63 0.0287 0.0277

Venus -99335-04-12 16:04 J -34560584.04 -34560583.83 -34560583.63 0.0286 0.0067

Venus -99335-11-28 10:18 J -34560354.22 -34560354.07 -34560353.91 0.0285 0.0194

Moon -99333-02-06 18:13 J -34559918.96 -34559918.74 -34559918.51 0.0284 0.0085

Earth -99333-02-06 18:42 J -34559918.96 -34559918.72 -34559918.48 0.0284 0.0070 \*

Mars -99330-10-16 18:13 J -34558570.97 -34558570.74 -34558570.49 0.0278 0.0151  
 Mars -99328-10-14 06:42 J -34557842.28 -34557842.22 -34557842.12 0.0275 0.0263  
 Mercury -99323-02-21 18:13 J -34556250.81 -34556250.74 -34556250.67 0.0271 0.0240  
 Mercury -99323-05-21 09:06 J -34556162.24 -34556162.12 -34556161.99 0.0271 0.0160  
 Mercury -99323-08-17 23:59 J -34556073.64 -34556073.50 -34556073.35 0.0271 0.0080  
 Mercury -99323-11-14 14:37 J -34555985.05 -34555984.89 -34555984.74 0.0271 0.0006  
 Mercury -99322-02-11 04:47 J -34555896.45 -34555896.30 -34555896.16 0.0271 0.0075  
 Mercury -99322-05-10 18:42 J -34555807.84 -34555807.72 -34555807.60 0.0271 0.0151  
 Mercury -99322-08-07 08:08 J -34555719.23 -34555719.16 -34555719.07 0.0271 0.0225  
 Venus -99320-05-13 10:47 J -34555074.26 -34555074.05 -34555073.84 0.0273 0.0052  
 Venus -99320-12-28 15:49 J -34554844.99 -34554844.84 -34554844.66 0.0273 0.0173  
 Moon -99319-08-08 03:06 J -34554622.56 -34554622.37 -34554622.17 0.0274 0.0172  
 Earth -99319-08-08 05:30 J -34554622.45 -34554622.27 -34554622.09 0.0274 0.0183 \*  
 Moon -99318-08-20 07:54 J -34554245.33 -34554245.17 -34554245.00 0.0276 0.0195  
 Earth -99318-08-20 10:47 J -34554245.22 -34554245.05 -34554244.86 0.0276 0.0181 \*  
 Mars -99314-09-24 11:59 J -34552749.30 -34552749.00 -34552748.69 0.0283 0.0005  
 Mercury -99309-12-04 05:44 J -34550851.35 -34550851.26 -34550851.17 0.0288 0.0232  
 Mercury -99308-03-02 22:04 J -34550762.72 -34550762.58 -34550762.45 0.0288 0.0142  
 Mercury -99308-05-30 14:37 J -34550674.04 -34550673.89 -34550673.73 0.0288 0.0050  
 Mercury -99308-08-27 07:54 J -34550585.33 -34550585.17 -34550585.02 0.0288 0.0046  
 Mercury -99308-11-24 01:11 J -34550496.58 -34550496.45 -34550496.31 0.0288 0.0143  
 Mercury -99307-02-20 18:56 J -34550407.79 -34550407.71 -34550407.62 0.0288 0.0242  
 Venus -99306-10-23 19:11 J -34549797.91 -34549797.70 -34549797.49 0.0286 0.0037  
 Venus -99305-06-09 13:40 J -34549568.06 -34549567.93 -34549567.80 0.0285 0.0224  
 Moon -99304-01-30 19:25 J -34549332.93 -34549332.69 -34549332.45 0.0285 0.0106  
 Earth -99304-01-30 19:25 J -34549332.91 -34549332.69 -34549332.46 0.0285 0.0122 \*  
 Mars -99300-12-03 20:52 J -34547564.91 -34547564.63 -34547564.34 0.0276 0.0005  
 Mercury -99294-07-11 19:54 J -34545518.71 -34545518.67 -34545518.63 0.0272 0.0262  
 Mercury -99294-10-08 11:01 J -34545430.15 -34545430.04 -34545429.92 0.0272 0.0181  
 Mercury -99293-01-05 01:54 J -34545341.56 -34545341.42 -34545341.27 0.0272 0.0101

Mercury -99293-04-02 16:32 J -34545252.96 -34545252.81 -34545252.66 0.0272 0.0022

Mercury -99293-06-30 06:56 J -34545164.36 -34545164.21 -34545164.06 0.0272 0.0056

Mercury -99293-09-26 20:52 J -34545075.76 -34545075.63 -34545075.50 0.0272 0.0131

Mercury -99293-12-24 10:47 J -34544987.15 -34544987.05 -34544986.96 0.0272 0.0206

Venus -99291-04-08 11:16 J -34544517.11 -34544517.03 -34544516.92 0.0273 0.0243

Venus -99291-11-23 17:30 J -34544287.98 -34544287.77 -34544287.55 0.0274 0.0020

Venus -99290-07-10 23:16 J -34544058.67 -34544058.53 -34544058.39 0.0274 0.0207

Earth -99289-08-14 16:04 J -34543658.07 -34543657.83 -34543657.59 0.0276 0.0029

Moon -99289-08-14 19:25 J -34543657.93 -34543657.69 -34543657.45 0.0276 0.0043 \*

Mars -99284-11-15 16:18 J -34541739.04 -34541738.82 -34541738.57 0.0284 0.0186

Mercury -99279-04-23 08:52 J -34540119.20 -34540119.13 -34540119.05 0.0288 0.0245

Mercury -99279-07-21 01:11 J -34540030.58 -34540030.45 -34540030.32 0.0288 0.0155

Mercury -99279-10-17 17:59 J -34539941.90 -34539941.75 -34539941.60 0.0288 0.0063

Mercury -99278-01-14 11:01 J -34539853.20 -34539853.04 -34539852.89 0.0287 0.0033

Mercury -99278-04-13 04:18 J -34539764.46 -34539764.32 -34539764.18 0.0287 0.0128

Mercury -99278-07-10 22:04 J -34539675.67 -34539675.58 -34539675.48 0.0287 0.0227

Venus -99277-09-17 13:25 J -34539241.03 -34539240.94 -34539240.83 0.0287 0.0249

Venus -99276-05-05 07:40 J -34539011.39 -34539011.18 -34539010.97 0.0286 0.0012

Venus -99276-12-21 02:08 J -34538781.47 -34538781.41 -34538781.35 0.0285 0.0273

Moon -99275-01-25 11:16 J -34538746.07 -34538746.03 -34538745.97 0.0285 0.0277

Earth -99274-02-08 09:49 J -34538367.31 -34538367.09 -34538366.86 0.0284 0.0126

Moon -99274-02-08 13:11 J -34538367.16 -34538366.95 -34538366.74 0.0284 0.0142 \*

Mars -99269-01-22 04:47 J -34536558.54 -34536558.30 -34536558.06 0.0275 0.0144

Mercury -99264-02-24 12:42 J -34534698.06 -34534697.97 -34534697.86 0.0271 0.0202

Mercury -99264-05-24 03:49 J -34534609.48 -34534609.34 -34534609.20 0.0271 0.0121

Mercury -99264-08-20 18:28 J -34534520.88 -34534520.73 -34534520.58 0.0271 0.0042

Mercury -99264-11-17 08:52 J -34534432.28 -34534432.13 -34534431.98 0.0271 0.0036

Mercury -99263-02-13 22:47 J -34534343.68 -34534343.55 -34534343.41 0.0271 0.0112

Mercury -99263-05-13 12:42 J -34534255.08 -34534254.97 -34534254.86 0.0271 0.0186

Mercury -99263-08-10 02:23 J -34534166.45 -34534166.40 -34534166.36 0.0272 0.0259

Venus -99262-10-19 16:04 J -34533730.95 -34533730.83 -34533730.68 0.0272 0.0210  
 Venus -99261-06-04 22:04 J -34533501.79 -34533501.58 -34533501.36 0.0273 0.0016  
 Venus -99260-01-20 03:20 J -34533272.45 -34533272.36 -34533272.25 0.0274 0.0239  
 Moon -99260-08-09 11:01 J -34533071.24 -34533071.04 -34533070.82 0.0274 0.0123  
 Earth -99260-08-09 14:37 J -34533071.09 -34533070.89 -34533070.67 0.0274 0.0135 \*  
 Earth -99259-08-21 19:54 J -34532693.80 -34532693.67 -34532693.53 0.0276 0.0227  
 Moon -99259-08-21 20:37 J -34532693.74 -34532693.64 -34532693.52 0.0276 0.0241 \*  
 Mars -99256-12-28 23:01 J -34531468.79 -34531468.54 -34531468.28 0.0282 0.0149  
 Mercury -99250-09-10 08:37 J -34529387.17 -34529387.14 -34529387.10 0.0288 0.0278  
 Mercury -99250-12-08 00:56 J -34529298.57 -34529298.46 -34529298.35 0.0288 0.0189  
 Mercury -99249-03-05 17:30 J -34529209.92 -34529209.77 -34529209.63 0.0288 0.0097  
 Mercury -99249-06-02 10:18 J -34529121.23 -34529121.07 -34529120.91 0.0288 0.0004  
 Mercury -99249-08-30 03:35 J -34529032.50 -34529032.35 -34529032.20 0.0288 0.0093  
 Mercury -99249-11-26 21:06 J -34528943.73 -34528943.62 -34528943.50 0.0288 0.0191  
 Venus -99247-03-30 16:04 J -34528454.96 -34528454.83 -34528454.69 0.0287 0.0222  
 Venus -99247-11-15 10:18 J -34528225.28 -34528225.07 -34528224.86 0.0286 0.0040  
 Moon -99245-02-02 05:30 J -34527781.51 -34527781.27 -34527781.02 0.0284 0.0050  
 Earth -99245-02-02 09:20 J -34527781.35 -34527781.11 -34527780.87 0.0284 0.0067 \*  
 Mars -99241-03-11 21:35 J -34526281.84 -34526281.60 -34526281.34 0.0277 0.0136  
 Mercury -99235-07-14 14:08 J -34523965.99 -34523965.91 -34523965.81 0.0272 0.0225  
 Mercury -99235-10-11 05:16 J -34523877.40 -34523877.28 -34523877.14 0.0272 0.0144  
 Mercury -99234-01-07 20:08 J -34523788.81 -34523788.66 -34523788.51 0.0272 0.0064  
 Mercury -99234-04-06 10:32 J -34523700.21 -34523700.06 -34523699.90 0.0272 0.0016  
 Mercury -99234-07-04 00:42 J -34523611.61 -34523611.47 -34523611.32 0.0272 0.0092  
 Mercury -99234-09-30 14:37 J -34523523.00 -34523522.89 -34523522.77 0.0272 0.0167  
 Mercury -99234-12-28 04:18 J -34523434.38 -34523434.32 -34523434.25 0.0272 0.0240  
 Venus -99232-04-30 22:32 J -34522944.72 -34522944.56 -34522944.40 0.0273 0.0178  
 Venus -99232-12-16 04:32 J -34522715.52 -34522715.31 -34522715.10 0.0274 0.0048  
 Venus -99231-08-02 09:49 J -34522486.10 -34522486.09 -34522486.06 0.0274 0.0273  
 Moon -99230-08-16 23:44 J -34522106.74 -34522106.51 -34522106.27 0.0276 0.0090

Earth -99230-08-17 00:13 J -34522106.72 -34522106.49 -34522106.26 0.0276 0.0075 \*  
 Mars -99225-02-19 10:32 J -34520459.37 -34520459.06 -34520458.76 0.0283 0.0027  
 Mercury -99220-04-26 03:49 J -34518566.44 -34518566.34 -34518566.23 0.0288 0.0204  
 Mercury -99220-07-23 20:23 J -34518477.79 -34518477.65 -34518477.51 0.0288 0.0112  
 Mercury -99220-10-20 13:11 J -34518389.10 -34518388.95 -34518388.79 0.0288 0.0019  
 Mercury -99219-01-17 06:28 J -34518300.38 -34518300.23 -34518300.08 0.0287 0.0077  
 Mercury -99219-04-15 23:59 J -34518211.63 -34518211.50 -34518211.37 0.0287 0.0175  
 Mercury -99219-07-13 17:59 J -34518122.80 -34518122.75 -34518122.71 0.0287 0.0274  
 Venus -99218-10-11 04:18 J -34517668.49 -34517668.32 -34517668.15 0.0286 0.0172  
 Venus -99217-05-27 22:32 J -34517438.76 -34517438.56 -34517438.36 0.0286 0.0090  
 Earth -99216-01-27 00:28 J -34517194.60 -34517194.48 -34517194.33 0.0285 0.0239  
 Moon -99216-01-27 04:18 J -34517194.46 -34517194.32 -34517194.15 0.0285 0.0222 \*  
 Earth -99215-02-09 23:44 J -34516815.69 -34516815.51 -34516815.31 0.0283 0.0179  
 Moon -99215-02-10 02:37 J -34516815.56 -34516815.39 -34516815.19 0.0283 0.0195 \*  
 Mars -99211-04-30 16:32 J -34515275.09 -34515274.81 -34515274.53 0.0276 0.0019  
 Mercury -99206-12-01 16:18 J -34513233.88 -34513233.82 -34513233.75 0.0271 0.0243  
 Mercury -99205-02-28 07:25 J -34513145.31 -34513145.19 -34513145.06 0.0271 0.0162  
 Mercury -99205-05-26 22:18 J -34513056.72 -34513056.57 -34513056.42 0.0271 0.0083  
 Mercury -99205-08-23 12:42 J -34512968.12 -34512967.97 -34512967.81 0.0271 0.0009  
 Mercury -99205-11-20 03:06 J -34512879.52 -34512879.37 -34512879.23 0.0271 0.0073  
 Mercury -99204-02-16 17:01 J -34512790.92 -34512790.79 -34512790.67 0.0271 0.0148  
 Mercury -99204-05-16 06:42 J -34512702.30 -34512702.22 -34512702.14 0.0271 0.0221  
 Venus -99203-11-11 03:49 J -34512158.52 -34512158.34 -34512158.16 0.0272 0.0143  
 Venus -99202-06-28 09:20 J -34511929.31 -34511929.11 -34511928.91 0.0273 0.0082  
 Earth -99201-08-10 23:16 J -34511519.75 -34511519.53 -34511519.29 0.0274 0.0090  
 Moon -99201-08-10 23:59 J -34511519.73 -34511519.50 -34511519.28 0.0274 0.0075 \*  
 Earth -99200-08-23 04:18 J -34511142.35 -34511142.32 -34511142.27 0.0276 0.0271  
 Mars -99195-04-11 10:47 J -34509450.26 -34509450.05 -34509449.82 0.0284 0.0199  
 Mercury -99191-09-13 03:35 J -34507834.43 -34507834.35 -34507834.26 0.0288 0.0237  
 Mercury -99191-12-10 19:54 J -34507745.80 -34507745.67 -34507745.54 0.0288 0.0147

Mercury -99190-03-09 12:28 J -34507657.13 -34507656.98 -34507656.82 0.0288 0.0055  
 Mercury -99190-06-06 05:30 J -34507568.42 -34507568.27 -34507568.11 0.0288 0.0042  
 Mercury -99190-09-02 23:01 J -34507479.68 -34507479.54 -34507479.40 0.0288 0.0138  
 Mercury -99190-11-30 16:47 J -34507390.89 -34507390.80 -34507390.71 0.0288 0.0237  
 Venus -99188-04-22 06:28 J -34506882.41 -34506882.23 -34506882.05 0.0287 0.0146  
 Venus -99188-12-08 00:42 J -34506652.66 -34506652.47 -34506652.28 0.0286 0.0117  
 Moon -99186-02-03 20:08 J -34506229.90 -34506229.66 -34506229.41 0.0284 0.0005  
 Earth -99186-02-03 22:18 J -34506229.82 -34506229.57 -34506229.32 0.0284 0.0014 \*  
 Mars -99183-06-18 11:44 J -34504999.05 -34504999.01 -34504998.94 0.0278 0.0273  
 Mars -99181-06-17 04:04 J -34504269.55 -34504269.33 -34504269.09 0.0275 0.0157  
 Mercury -99176-04-19 17:16 J -34502501.79 -34502501.78 -34502501.75 0.0272 0.0269  
 Mercury -99176-07-17 08:37 J -34502413.25 -34502413.14 -34502413.03 0.0272 0.0187  
 Mercury -99176-10-13 23:30 J -34502324.66 -34502324.52 -34502324.37 0.0272 0.0107  
 Mercury -99175-01-10 14:08 J -34502236.06 -34502235.91 -34502235.75 0.0272 0.0028  
 Mercury -99175-04-09 04:32 J -34502147.46 -34502147.31 -34502147.16 0.0272 0.0050  
 Mercury -99175-07-06 18:28 J -34502058.86 -34502058.73 -34502058.59 0.0272 0.0126  
 Mercury -99175-10-03 08:23 J -34501970.25 -34501970.15 -34501970.05 0.0272 0.0200  
 Venus -99173-05-23 08:37 J -34501372.32 -34501372.14 -34501371.94 0.0273 0.0114  
 Venus -99172-01-07 14:23 J -34501143.09 -34501142.90 -34501142.70 0.0274 0.0113  
 Moon -99172-08-05 23:30 J -34500932.63 -34500932.52 -34500932.37 0.0274 0.0232  
 Earth -99172-08-06 00:28 J -34500932.59 -34500932.48 -34500932.37 0.0274 0.0243 \*  
 Moon -99171-08-18 03:06 J -34500555.58 -34500555.37 -34500555.15 0.0276 0.0134  
 Earth -99171-08-18 06:56 J -34500555.43 -34500555.21 -34500554.99 0.0276 0.0118 \*  
 Mars -99167-05-25 13:11 J -34499179.21 -34499178.95 -34499178.68 0.0282 0.0127  
 Mercury -99161-01-31 06:13 J -34497102.30 -34497102.24 -34497102.16 0.0288 0.0253  
 Mercury -99161-04-28 22:32 J -34497013.68 -34497013.56 -34497013.43 0.0288 0.0163  
 Mercury -99161-07-26 15:06 J -34496925.02 -34496924.87 -34496924.71 0.0288 0.0071  
 Mercury -99161-10-23 08:08 J -34496836.31 -34496836.16 -34496836.00 0.0288 0.0024  
 Mercury -99160-01-20 01:25 J -34496747.58 -34496747.44 -34496747.29 0.0288 0.0121  
 Mercury -99160-04-18 19:11 J -34496658.80 -34496658.70 -34496658.59 0.0287 0.0219

Venus -99159-11-02 17:59 J -34496095.95 -34496095.75 -34496095.55 0.0286 0.0097

Venus -99158-06-20 12:13 J -34495866.16 -34495865.99 -34495865.81 0.0286 0.0166

Earth -99157-01-29 12:28 J -34495643.16 -34495642.98 -34495642.79 0.0285 0.0188

Moon -99157-01-29 14:08 J -34495643.11 -34495642.91 -34495642.70 0.0285 0.0171 \*

Moon -99156-02-11 10:18 J -34495264.19 -34495264.07 -34495263.93 0.0283 0.0243

Earth -99156-02-11 11:59 J -34495264.13 -34495264.00 -34495263.84 0.0283 0.0229 \*

Mars -99153-08-06 17:59 J -34493992.01 -34493991.75 -34493991.49 0.0277 0.0114

Mercury -99147-12-04 10:47 J -34491681.14 -34491681.05 -34491680.94 0.0271 0.0205

Mercury -99146-03-03 01:54 J -34491592.56 -34491592.42 -34491592.28 0.0271 0.0125

Mercury -99146-05-30 16:32 J -34491503.96 -34491503.81 -34491503.66 0.0271 0.0046

Mercury -99146-08-27 06:56 J -34491415.36 -34491415.21 -34491415.06 0.0271 0.0032

Mercury -99146-11-23 21:06 J -34491326.76 -34491326.62 -34491326.48 0.0271 0.0108

Mercury -99145-02-20 10:47 J -34491238.16 -34491238.05 -34491237.94 0.0271 0.0183

Mercury -99145-05-19 00:28 J -34491149.53 -34491149.48 -34491149.43 0.0271 0.0256

Venus -99144-12-03 14:52 J -34490586.08 -34490585.88 -34490585.68 0.0272 0.0077

Venus -99143-07-20 20:08 J -34490356.84 -34490356.66 -34490356.48 0.0273 0.0148

Earth -99142-08-13 07:25 J -34489968.43 -34489968.19 -34489967.95 0.0274 0.0044

Moon -99142-08-13 11:16 J -34489968.27 -34489968.03 -34489967.79 0.0274 0.0029 \*

Mars -99137-07-15 02:37 J -34488170.68 -34488170.39 -34488170.08 0.0283 0.0038

Mercury -99132-06-19 05:44 J -34486370.26 -34486370.26 -34486370.24 0.0288 0.0287

Mercury -99132-09-15 22:04 J -34486281.69 -34486281.58 -34486281.47 0.0288 0.0198

Mercury -99132-12-13 14:23 J -34486193.04 -34486192.90 -34486192.75 0.0288 0.0107

Mercury -99131-03-12 07:11 J -34486104.35 -34486104.20 -34486104.04 0.0288 0.0015

Mercury -99131-06-09 00:28 J -34486015.63 -34486015.48 -34486015.33 0.0288 0.0083

Mercury -99131-09-05 17:59 J -34485926.87 -34485926.75 -34485926.62 0.0288 0.0181

Mercury -99131-12-03 11:44 J -34485838.03 -34485838.01 -34485837.97 0.0288 0.0281

Venus -99129-05-14 19:25 J -34485309.89 -34485309.69 -34485309.48 0.0287 0.0072

Venus -99129-12-30 13:25 J -34485080.08 -34485079.94 -34485079.77 0.0286 0.0192

Earth -99127-02-05 08:52 J -34484678.37 -34484678.13 -34484677.88 0.0284 0.0036

Moon -99127-02-05 11:30 J -34484678.25 -34484678.02 -34484677.78 0.0284 0.0051 \*



Mars -99123-09-24 12:13 J -34482986.27 -34482985.99 -34482985.70 0.0276 0.0030  
 Mercury -99117-04-22 11:30 J -34480949.09 -34480949.02 -34480948.93 0.0271 0.0232  
 Mercury -99117-07-20 02:37 J -34480860.51 -34480860.39 -34480860.26 0.0271 0.0151  
 Mercury -99117-10-16 17:30 J -34480771.92 -34480771.77 -34480771.62 0.0271 0.0071  
 Mercury -99116-01-13 07:54 J -34480683.32 -34480683.17 -34480683.01 0.0271 0.0010  
 Mercury -99116-04-11 22:04 J -34480594.72 -34480594.58 -34480594.43 0.0272 0.0085  
 Mercury -99116-07-09 11:59 J -34480506.11 -34480506.00 -34480505.87 0.0272 0.0160  
 Mercury -99116-10-06 01:54 J -34480417.50 -34480417.42 -34480417.35 0.0272 0.0233  
 Venus -99114-06-15 18:28 J -34479799.94 -34479799.73 -34479799.52 0.0273 0.0049  
 Venus -99113-01-30 23:44 J -34479570.66 -34479570.51 -34479570.34 0.0274 0.0177  
 Moon -99113-08-07 02:52 J -34479381.55 -34479381.38 -34479381.20 0.0274 0.0187  
 Earth -99113-08-07 06:28 J -34479381.39 -34479381.23 -34479381.06 0.0274 0.0201 \*  
 Moon -99112-08-19 11:01 J -34479004.22 -34479004.04 -34479003.86 0.0276 0.0175  
 Earth -99112-08-19 12:13 J -34479004.18 -34479003.99 -34479003.79 0.0276 0.0159 \*  
 Mars -99109-08-29 01:25 J -34477898.48 -34477898.44 -34477898.35 0.0281 0.0274  
 Mars -99107-09-05 19:11 J -34477160.88 -34477160.70 -34477160.49 0.0284 0.0219  
 Mercury -99102-02-03 00:13 J -34475549.59 -34475549.49 -34475549.39 0.0288 0.0217  
 Mercury -99102-05-02 16:32 J -34475460.94 -34475460.81 -34475460.67 0.0288 0.0126  
 Mercury -99102-07-30 09:20 J -34475372.26 -34475372.11 -34475371.95 0.0288 0.0033  
 Mercury -99102-10-27 02:37 J -34475283.55 -34475283.39 -34475283.24 0.0288 0.0064  
 Mercury -99101-01-23 19:54 J -34475194.79 -34475194.67 -34475194.53 0.0288 0.0161  
 Mercury -99101-04-21 13:54 J -34475105.98 -34475105.92 -34475105.85 0.0287 0.0260  
 Venus -99100-11-25 05:59 J -34474523.46 -34474523.25 -34474523.04 0.0286 0.0026  
 Venus -99099-07-13 00:13 J -34474293.60 -34474293.49 -34474293.37 0.0286 0.0239  
 Moon -99098-01-30 18:28 J -34474091.95 -34474091.73 -34474091.49 0.0285 0.0126  
 Earth -99098-01-30 21:35 J -34474091.81 -34474091.60 -34474091.38 0.0285 0.0141 \*  
 Earth -99097-02-13 21:49 J -34473712.65 -34473712.59 -34473712.52 0.0283 0.0274  
 Mars -99095-11-13 05:44 J -34472709.37 -34472709.26 -34472709.13 0.0279 0.0254  
 Mars -99093-11-11 19:40 J -34471979.89 -34471979.68 -34471979.45 0.0275 0.0175  
 Mercury -99088-09-09 13:54 J -34470216.97 -34470216.92 -34470216.86 0.0271 0.0250

Mercury -99088-12-07 05:01 J -34470128.41 -34470128.29 -34470128.16 0.0271 0.0169

Mercury -99087-03-05 19:54 J -34470039.81 -34470039.67 -34470039.52 0.0271 0.0089

Mercury -99087-06-02 10:32 J -34469951.22 -34469951.06 -34469950.91 0.0271 0.0011

Mercury -99087-08-30 00:42 J -34469862.62 -34469862.47 -34469862.32 0.0271 0.0067

Mercury -99087-11-26 14:37 J -34469774.01 -34469773.89 -34469773.76 0.0271 0.0142

Mercury -99086-02-23 04:18 J -34469685.40 -34469685.32 -34469685.23 0.0271 0.0216

Venus -99085-05-10 18:56 J -34469242.80 -34469242.71 -34469242.60 0.0272 0.0237

Venus -99085-12-26 00:42 J -34469013.68 -34469013.47 -34469013.26 0.0272 0.0012

Venus -99084-08-12 05:44 J -34468784.39 -34468784.26 -34468784.13 0.0273 0.0212

Earth -99083-08-14 13:40 J -34468417.17 -34468416.93 -34468416.69 0.0274 0.0003

Moon -99083-08-14 14:52 J -34468417.12 -34468416.88 -34468416.63 0.0274 0.0014 \*

Mars -99079-10-19 03:20 J -34466890.63 -34466890.36 -34466890.08 0.0281 0.0120

Mercury -99073-06-21 23:30 J -34464817.58 -34464817.52 -34464817.44 0.0288 0.0252

Mercury -99073-09-18 15:49 J -34464728.96 -34464728.84 -34464728.71 0.0288 0.0162

Mercury -99073-12-16 08:37 J -34464640.29 -34464640.14 -34464639.99 0.0288 0.0069

Mercury -99072-03-15 01:25 J -34464551.59 -34464551.44 -34464551.28 0.0288 0.0026

Mercury -99072-06-11 18:42 J -34464462.86 -34464462.72 -34464462.57 0.0288 0.0123

Mercury -99072-09-08 12:28 J -34464374.08 -34464373.98 -34464373.88 0.0288 0.0221

Venus -99071-10-20 12:56 J -34463967.03 -34463966.96 -34463966.88 0.0287 0.0265

Venus -99070-06-07 06:56 J -34463737.42 -34463737.21 -34463737.00 0.0287 0.0003

Venus -99069-01-23 01:11 J -34463507.52 -34463507.45 -34463507.36 0.0286 0.0263

Earth -99068-02-06 17:16 J -34463127.01 -34463126.78 -34463126.53 0.0284 0.0082

Moon -99068-02-06 20:37 J -34463126.87 -34463126.64 -34463126.39 0.0284 0.0096 \*

Mars -99065-12-31 07:25 J -34461703.45 -34461703.19 -34461702.92 0.0277 0.0107

Mercury -99058-04-26 05:16 J -34459396.38 -34459396.28 -34459396.17 0.0271 0.0198

Mercury -99058-07-23 20:23 J -34459307.79 -34459307.65 -34459307.51 0.0271 0.0117

Mercury -99058-10-20 11:01 J -34459219.19 -34459219.04 -34459218.89 0.0271 0.0038

Mercury -99057-01-17 01:25 J -34459130.59 -34459130.44 -34459130.29 0.0271 0.0040

Mercury -99057-04-14 15:35 J -34459041.99 -34459041.85 -34459041.72 0.0271 0.0117

Mercury -99057-07-12 05:16 J -34458953.38 -34458953.28 -34458953.17 0.0272 0.0191

Mercury -99057-10-08 18:56 J -34458864.74 -34458864.71 -34458864.68 0.0272 0.0264

Venus -99056-11-20 21:35 J -34458456.73 -34458456.60 -34458456.46 0.0272 0.0212

Venus -99055-07-08 03:20 J -34458227.57 -34458227.36 -34458227.15 0.0273 0.0014

Venus -99054-02-22 08:23 J -34457998.24 -34457998.15 -34457998.04 0.0274 0.0240

Moon -99054-08-09 09:35 J -34457830.28 -34457830.10 -34457829.89 0.0274 0.0149

Earth -99054-08-09 11:01 J -34457830.23 -34457830.04 -34457829.83 0.0274 0.0161 \*

Earth -99053-08-20 16:32 J -34457452.98 -34457452.81 -34457452.64 0.0276 0.0197

Moon -99053-08-20 19:40 J -34457452.83 -34457452.68 -34457452.53 0.0276 0.0212 \*

Mars -99049-12-09 00:28 J -34455881.77 -34455881.48 -34455881.18 0.0283 0.0052

Mercury -99044-11-09 01:25 J -34454085.48 -34454085.44 -34454085.39 0.0288 0.0272

Mercury -99043-02-05 17:30 J -34453996.88 -34453996.77 -34453996.65 0.0288 0.0183

Mercury -99043-05-05 10:04 J -34453908.22 -34453908.08 -34453907.93 0.0288 0.0091

Mercury -99043-08-02 03:06 J -34453819.53 -34453819.37 -34453819.22 0.0288 0.0005

Mercury -99043-10-29 20:08 J -34453730.80 -34453730.66 -34453730.50 0.0288 0.0101

Mercury -99042-01-26 13:54 J -34453642.03 -34453641.92 -34453641.80 0.0288 0.0199

Venus -99041-05-01 21:35 J -34453180.72 -34453180.60 -34453180.46 0.0287 0.0222

Venus -99041-12-17 16:04 J -34452951.04 -34452950.83 -34452950.62 0.0286 0.0044

Moon -99039-02-01 00:42 J -34452540.70 -34452540.47 -34452540.24 0.0285 0.0083

Earth -99039-02-01 03:49 J -34452540.57 -34452540.34 -34452540.11 0.0285 0.0098 \*

Mars -99034-02-18 23:30 J -34450696.79 -34450696.52 -34450696.23 0.0277 0.0045

Mercury -99029-09-12 07:54 J -34448664.26 -34448664.17 -34448664.08 0.0271 0.0215

Mercury -99029-12-09 22:47 J -34448575.68 -34448575.55 -34448575.41 0.0271 0.0135

Mercury -99028-03-08 13:40 J -34448487.08 -34448486.93 -34448486.78 0.0271 0.0055

Mercury -99028-06-05 04:04 J -34448398.49 -34448398.33 -34448398.18 0.0271 0.0023

Mercury -99028-09-01 18:13 J -34448309.88 -34448309.74 -34448309.60 0.0271 0.0100

Mercury -99028-11-29 07:54 J -34448221.28 -34448221.17 -34448221.05 0.0271 0.0174

Mercury -99027-02-25 21:35 J -34448132.66 -34448132.60 -34448132.54 0.0271 0.0247

Venus -99026-06-03 04:18 J -34447670.48 -34447670.32 -34447670.16 0.0272 0.0175

Venus -99025-01-18 09:35 J -34447441.30 -34447441.10 -34447440.89 0.0272 0.0051

Moon -99024-08-15 15:35 J -34446866.09 -34446865.85 -34446865.61 0.0274 0.0053

Earth	-99024-08-15 18:28 J	-34446865.96	-34446865.73	-34446865.48	0.0274	0.0039	*
Mars	-99020-01-22 14:08 J	-34445609.97	-34445609.91	-34445609.81	0.0280	0.0269	
Mars	-99018-01-30 01:54 J	-34444872.60	-34444872.42	-34444872.22	0.0284	0.0222	
Mercury	-99014-06-25 16:47 J	-34443264.89	-34443264.80	-34443264.70	0.0288	0.0219	
Mercury	-99014-09-22 09:06 J	-34443176.25	-34443176.12	-34443175.98	0.0288	0.0128	
Mercury	-99014-12-20 01:54 J	-34443087.57	-34443087.42	-34443087.26	0.0288	0.0035	
Mercury	-99013-03-17 18:56 J	-34442998.86	-34442998.71	-34442998.55	0.0288	0.0061	
Mercury	-99013-06-14 12:13 J	-34442910.11	-34442909.99	-34442909.85	0.0288	0.0159	
Mercury	-99013-09-11 06:13 J	-34442821.31	-34442821.24	-34442821.17	0.0288	0.0258	
Venus	-99012-11-11 22:32 J	-34442394.71	-34442394.56	-34442394.41	0.0287	0.0199	
Venus	-99011-06-29 16:32 J	-34442165.01	-34442164.81	-34442164.60	0.0286	0.0067	
Moon	-99010-01-26 02:23 J	-34441954.46	-34441954.40	-34441954.33	0.0286	0.0274	
Moon	-99009-02-08 21:49 J	-34441575.81	-34441575.59	-34441575.36	0.0284	0.0134	
Earth	-99009-02-08 23:01 J	-34441575.77	-34441575.54	-34441575.32	0.0284	0.0123	*
Mars	-99006-04-08 09:49 J	-34440421.21	-34440421.09	-34440420.97	0.0279	0.0251	
Mars	-99004-04-07 03:35 J	-34439691.56	-34439691.35	-34439691.14	0.0275	0.0180	

# 99TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 99th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-98999-01-30 07:25 J	-34437932.24	-34437932.19	-34437932.11	0.0271	0.0247		
Mercury	-98999-04-28 22:47 J	-34437843.67	-34437843.55	-34437843.42	0.0271	0.0165		
Mercury	-98999-07-26 13:40 J	-34437755.08	-34437754.93	-34437754.78	0.0271	0.0085		

Mercury -98999-10-23 04:18 J -34437666.48 -34437666.32 -34437666.17 0.0271 0.0008

Mercury -98998-01-19 18:28 J -34437577.88 -34437577.73 -34437577.58 0.0271 0.0071

Mercury -98998-04-18 08:23 J -34437489.27 -34437489.15 -34437489.02 0.0271 0.0147

Mercury -98998-07-15 22:04 J -34437400.66 -34437400.58 -34437400.49 0.0271 0.0221

Venus -98997-12-13 05:44 J -34436884.43 -34436884.26 -34436884.08 0.0272 0.0151

Venus -98996-07-30 11:01 J -34436655.24 -34436655.04 -34436654.83 0.0273 0.0075

Earth -98995-08-10 14:23 J -34436279.12 -34436278.90 -34436278.68 0.0274 0.0123

Moon -98995-08-10 17:01 J -34436279.01 -34436278.79 -34436278.57 0.0274 0.0108 \*

Earth -98994-08-22 19:11 J -34435901.83 -34435901.70 -34435901.57 0.0276 0.0233

Moon -98994-08-22 21:20 J -34435901.70 -34435901.61 -34435901.48 0.0276 0.0246 \*

Mars -98990-03-14 15:35 J -34434602.13 -34434601.85 -34434601.57 0.0282 0.0109

Mercury -98985-11-11 17:59 J -34432532.82 -34432532.75 -34432532.66 0.0288 0.0243

Mercury -98984-02-08 10:32 J -34432444.19 -34432444.06 -34432443.93 0.0288 0.0152

Mercury -98984-05-08 03:06 J -34432355.52 -34432355.37 -34432355.22 0.0288 0.0059

Mercury -98984-08-04 20:08 J -34432266.82 -34432266.66 -34432266.51 0.0288 0.0036

Mercury -98984-11-01 13:25 J -34432178.08 -34432177.94 -34432177.80 0.0288 0.0134

Mercury -98983-01-29 07:11 J -34432089.29 -34432089.20 -34432089.10 0.0288 0.0232

Venus -98982-05-25 05:59 J -34431608.42 -34431608.25 -34431608.07 0.0287 0.0158

Venus -98981-01-10 00:28 J -34431378.67 -34431378.48 -34431378.28 0.0286 0.0109

Earth -98980-02-02 06:56 J -34430989.45 -34430989.21 -34430988.96 0.0285 0.0059

Moon -98980-02-02 08:08 J -34430989.40 -34430989.16 -34430988.93 0.0285 0.0046 \*

Mars -98976-05-27 11:01 J -34429414.30 -34429414.04 -34429413.76 0.0278 0.0097

Mercury -98970-06-19 10:04 J -34427200.11 -34427200.08 -34427200.05 0.0271 0.0265

Mercury -98970-09-16 01:11 J -34427111.56 -34427111.45 -34427111.33 0.0271 0.0183

Mercury -98970-12-13 16:04 J -34427022.97 -34427022.83 -34427022.68 0.0271 0.0103

Mercury -98969-03-11 06:42 J -34426934.37 -34426934.22 -34426934.06 0.0271 0.0024

Mercury -98969-06-07 21:06 J -34426845.77 -34426845.62 -34426845.47 0.0271 0.0054

Mercury -98969-09-04 11:01 J -34426757.17 -34426757.04 -34426756.90 0.0271 0.0130

Mercury -98969-12-02 00:42 J -34426668.56 -34426668.47 -34426668.37 0.0271 0.0204

Venus -98967-06-25 12:13 J -34426098.17 -34426097.99 -34426097.79 0.0272 0.0115

Venus -98966-02-09 17:30 J -34425868.96 -34425868.77 -34425868.57 0.0273 0.0111  
 Moon -98966-08-05 14:23 J -34425691.95 -34425691.90 -34425691.83 0.0273 0.0264  
 Moon -98965-08-16 19:11 J -34425314.91 -34425314.70 -34425314.47 0.0274 0.0090  
 Earth -98965-08-16 22:04 J -34425314.81 -34425314.58 -34425314.35 0.0274 0.0076 \*  
 Mars -98960-05-04 06:56 J -34423593.50 -34423593.21 -34423592.91 0.0282 0.0054  
 Mercury -98955-03-31 17:30 J -34421800.80 -34421800.77 -34421800.73 0.0288 0.0278  
 Mercury -98955-06-28 09:49 J -34421712.21 -34421712.09 -34421711.98 0.0288 0.0188  
 Mercury -98955-09-25 02:08 J -34421623.55 -34421623.41 -34421623.26 0.0288 0.0096  
 Mercury -98955-12-22 18:56 J -34421534.86 -34421534.71 -34421534.55 0.0288 0.0005  
 Mercury -98954-03-21 12:13 J -34421446.14 -34421445.99 -34421445.84 0.0288 0.0094  
 Mercury -98954-06-18 05:44 J -34421357.38 -34421357.26 -34421357.14 0.0288 0.0192  
 Venus -98953-12-04 06:56 J -34420822.40 -34420822.21 -34420822.02 0.0287 0.0135  
 Venus -98952-07-22 01:11 J -34420592.64 -34420592.45 -34420592.26 0.0286 0.0131  
 Moon -98951-01-27 00:56 J -34420403.59 -34420403.46 -34420403.31 0.0286 0.0236  
 Earth -98951-01-27 02:23 J -34420403.50 -34420403.40 -34420403.27 0.0286 0.0251 \*  
 Moon -98950-02-09 22:18 J -34420024.76 -34420024.57 -34420024.37 0.0284 0.0170  
 Earth -98950-02-10 01:54 J -34420024.62 -34420024.42 -34420024.21 0.0284 0.0162 \*  
 Mars -98946-07-14 23:30 J -34418408.80 -34418408.52 -34418408.24 0.0277 0.0045  
 Mercury -98940-02-02 00:42 J -34416379.56 -34416379.47 -34416379.37 0.0271 0.0215  
 Mercury -98940-05-01 15:49 J -34416290.97 -34416290.84 -34416290.70 0.0271 0.0134  
 Mercury -98940-07-29 06:28 J -34416202.38 -34416202.23 -34416202.07 0.0271 0.0055  
 Mercury -98940-10-25 21:06 J -34416113.78 -34416113.62 -34416113.47 0.0271 0.0024  
 Mercury -98939-01-22 11:16 J -34416025.17 -34416025.03 -34416024.89 0.0271 0.0101  
 Mercury -98939-04-21 01:11 J -34415936.57 -34415936.45 -34415936.34 0.0271 0.0176  
 Mercury -98939-07-18 14:37 J -34415847.94 -34415847.89 -34415847.83 0.0271 0.0249  
 Venus -98937-01-05 12:56 J -34415312.16 -34415311.96 -34415311.76 0.0272 0.0092  
 Venus -98937-08-21 18:13 J -34415082.92 -34415082.74 -34415082.56 0.0273 0.0134  
 Earth -98936-08-11 16:18 J -34414728.04 -34414727.82 -34414727.58 0.0274 0.0086  
 Moon -98936-08-11 19:25 J -34414727.93 -34414727.69 -34414727.45 0.0274 0.0071 \*  
 Moon -98935-08-23 18:42 J -34414350.72 -34414350.72 -34414350.71 0.0276 0.0275

Earth -98935-08-23 20:37 J -34414350.68 -34414350.64 -34414350.57 0.0276 0.0268  
 Mars -98932-06-17 20:23 J -34413321.73 -34413321.65 -34413321.52 0.0280 0.0262  
 Mars -98930-06-25 07:11 J -34412584.38 -34412584.20 -34412584.02 0.0284 0.0228  
 Mercury -98926-11-15 10:32 J -34410980.16 -34410980.06 -34410979.96 0.0288 0.0215  
 Mercury -98925-02-12 02:52 J -34410891.52 -34410891.38 -34410891.24 0.0288 0.0124  
 Mercury -98925-05-10 19:40 J -34410802.84 -34410802.68 -34410802.53 0.0288 0.0031  
 Mercury -98925-08-07 12:42 J -34410714.12 -34410713.97 -34410713.82 0.0288 0.0066  
 Mercury -98925-11-04 06:13 J -34410625.37 -34410625.24 -34410625.11 0.0288 0.0164  
 Mercury -98924-01-31 23:44 J -34410536.56 -34410536.51 -34410536.44 0.0288 0.0264  
 Venus -98923-06-16 13:11 J -34410036.15 -34410035.95 -34410035.75 0.0287 0.0096  
 Venus -98922-02-01 07:25 J -34409806.35 -34409806.19 -34409806.01 0.0286 0.0171  
 Earth -98921-02-04 07:40 J -34409438.42 -34409438.18 -34409437.93 0.0285 0.0024  
 Moon -98921-02-04 11:30 J -34409438.27 -34409438.02 -34409437.78 0.0285 0.0011 \*  
 Mars -98918-09-02 06:13 J -34408132.37 -34408132.24 -34408132.10 0.0279 0.0246  
 Mars -98916-09-01 02:08 J -34407402.61 -34407402.41 -34407402.20 0.0276 0.0187  
 Mercury -98911-06-22 03:06 J -34405647.44 -34405647.37 -34405647.29 0.0271 0.0234  
 Mercury -98911-09-18 18:13 J -34405558.87 -34405558.74 -34405558.61 0.0271 0.0153  
 Mercury -98911-12-16 09:06 J -34405470.27 -34405470.12 -34405469.97 0.0271 0.0073  
 Mercury -98910-03-14 23:30 J -34405381.67 -34405381.52 -34405381.36 0.0271 0.0009  
 Mercury -98910-06-11 13:54 J -34405293.07 -34405292.92 -34405292.78 0.0271 0.0083  
 Mercury -98910-09-08 03:49 J -34405204.46 -34405204.34 -34405204.22 0.0271 0.0159  
 Mercury -98910-12-05 17:30 J -34405115.85 -34405115.77 -34405115.70 0.0271 0.0232  
 Venus -98908-07-17 19:54 J -34404525.88 -34404525.67 -34404525.46 0.0272 0.0056  
 Venus -98907-03-04 00:42 J -34404296.63 -34404296.47 -34404296.30 0.0273 0.0171  
 Moon -98907-08-06 16:18 J -34404140.95 -34404140.82 -34404140.68 0.0273 0.0226  
 Earth -98907-08-06 19:40 J -34404140.79 -34404140.68 -34404140.56 0.0273 0.0238 \*  
 Earth -98906-08-18 23:59 J -34403763.71 -34403763.50 -34403763.27 0.0274 0.0113  
 Moon -98906-08-19 01:40 J -34403763.63 -34403763.43 -34403763.22 0.0274 0.0125 \*  
 Mars -98902-08-08 01:11 J -34402313.73 -34402313.45 -34402313.17 0.0281 0.0108  
 Mercury -98896-04-03 09:49 J -34400248.15 -34400248.09 -34400248.01 0.0288 0.0250

Mercury -98896-07-01 02:08 J -34400159.53 -34400159.41 -34400159.28 0.0288 0.0160  
 Mercury -98896-09-27 18:42 J -34400070.87 -34400070.72 -34400070.57 0.0288 0.0067  
 Mercury -98896-12-25 11:44 J -34399982.17 -34399982.01 -34399981.86 0.0288 0.0029  
 Mercury -98895-03-24 04:47 J -34399893.43 -34399893.30 -34399893.15 0.0288 0.0126  
 Mercury -98895-06-20 22:32 J -34399804.65 -34399804.56 -34399804.46 0.0288 0.0224  
 Venus -98894-12-27 14:08 J -34399250.11 -34399249.91 -34399249.70 0.0287 0.0073  
 Venus -98893-08-13 08:23 J -34399020.30 -34399020.15 -34399019.99 0.0286 0.0195  
 Moon -98892-01-28 00:13 J -34398852.66 -34398852.49 -34398852.31 0.0286 0.0199  
 Earth -98892-01-28 03:49 J -34398852.50 -34398852.34 -34398852.17 0.0286 0.0213 \*  
 Moon -98891-02-11 02:08 J -34398473.56 -34398473.41 -34398473.23 0.0284 0.0205  
 Earth -98891-02-11 03:20 J -34398473.54 -34398473.36 -34398473.18 0.0284 0.0197 \*  
 Mars -98888-10-20 05:44 J -34397126.52 -34397126.26 -34397125.99 0.0278 0.0098  
 Mercury -98882-11-09 02:08 J -34394915.42 -34394915.41 -34394915.38 0.0271 0.0268  
 Mercury -98881-02-05 17:30 J -34394826.88 -34394826.77 -34394826.65 0.0271 0.0186  
 Mercury -98881-05-04 08:37 J -34394738.29 -34394738.14 -34394738.00 0.0271 0.0105  
 Mercury -98881-07-31 23:16 J -34394649.69 -34394649.53 -34394649.38 0.0271 0.0026  
 Mercury -98881-10-28 13:40 J -34394561.08 -34394560.93 -34394560.78 0.0271 0.0052  
 Mercury -98880-01-25 03:35 J -34394472.48 -34394472.35 -34394472.21 0.0271 0.0128  
 Mercury -98880-04-23 17:16 J -34394383.87 -34394383.78 -34394383.67 0.0271 0.0204  
 Venus -98879-06-12 13:54 J -34393968.97 -34393968.92 -34393968.86 0.0272 0.0261  
 Venus -98878-01-27 19:40 J -34393739.89 -34393739.68 -34393739.47 0.0272 0.0034  
 Venus -98878-09-14 00:28 J -34393510.62 -34393510.48 -34393510.32 0.0273 0.0193  
 Moon -98877-08-12 16:18 J -34393177.07 -34393176.82 -34393176.57 0.0274 0.0036  
 Earth -98877-08-12 17:30 J -34393177.00 -34393176.77 -34393176.53 0.0274 0.0051 \*  
 Mars -98872-09-27 07:25 J -34391305.48 -34391305.19 -34391304.89 0.0283 0.0059  
 Mercury -98867-08-21 10:32 J -34389516.10 -34389516.06 -34389516.03 0.0288 0.0278  
 Mercury -98867-11-18 02:23 J -34389427.51 -34389427.40 -34389427.28 0.0288 0.0189  
 Mercury -98866-02-14 18:56 J -34389338.85 -34389338.71 -34389338.56 0.0288 0.0096  
 Mercury -98866-05-14 11:44 J -34389250.16 -34389250.01 -34389249.85 0.0288 0.0009  
 Mercury -98866-08-11 05:01 J -34389161.44 -34389161.29 -34389161.14 0.0288 0.0095



Mercury -98866-11-07 22:32 J -34389072.67 -34389072.56 -34389072.44 0.0288 0.0194  
 Venus -98864-07-08 19:40 J -34388463.89 -34388463.68 -34388463.47 0.0287 0.0036  
 Venus -98863-02-23 13:54 J -34388234.03 -34388233.92 -34388233.78 0.0286 0.0232  
 Earth -98862-02-05 07:25 J -34387887.44 -34387887.19 -34387886.94 0.0285 0.0012  
 Moon -98862-02-05 08:08 J -34387887.41 -34387887.16 -34387886.90 0.0285 0.0023 \*  
 Mars -98858-12-08 16:47 J -34386120.08 -34386119.80 -34386119.52 0.0277 0.0050  
 Mercury -98852-06-24 19:54 J -34384094.77 -34384094.67 -34384094.57 0.0272 0.0206  
 Mercury -98852-09-21 11:01 J -34384006.18 -34384006.04 -34384005.90 0.0271 0.0124  
 Mercury -98852-12-19 01:40 J -34383917.58 -34383917.43 -34383917.28 0.0271 0.0045  
 Mercury -98851-03-17 16:04 J -34383828.98 -34383828.83 -34383828.67 0.0271 0.0034  
 Mercury -98851-06-14 06:13 J -34383740.38 -34383740.24 -34383740.10 0.0271 0.0111  
 Mercury -98851-09-10 20:08 J -34383651.77 -34383651.66 -34383651.55 0.0271 0.0186  
 Mercury -98851-12-08 09:35 J -34383563.13 -34383563.10 -34383563.05 0.0272 0.0260  
 Venus -98850-12-23 21:20 J -34383182.73 -34383182.61 -34383182.49 0.0272 0.0225  
 Venus -98849-08-09 02:52 J -34382953.60 -34382953.38 -34382953.17 0.0272 0.0006  
 Venus -98848-03-26 07:40 J -34382724.29 -34382724.18 -34382724.07 0.0273 0.0229  
 Earth -98848-08-07 21:35 J -34382589.76 -34382589.60 -34382589.43 0.0273 0.0201  
 Moon -98848-08-07 22:18 J -34382589.73 -34382589.57 -34382589.39 0.0273 0.0188 \*  
 Earth -98847-08-20 02:08 J -34382212.61 -34382212.41 -34382212.21 0.0274 0.0148  
 Moon -98847-08-20 05:30 J -34382212.46 -34382212.27 -34382212.07 0.0274 0.0161 \*  
 Mars -98844-11-11 10:32 J -34381033.16 -34381033.06 -34381032.93 0.0279 0.0258  
 Mars -98842-11-18 13:54 J -34380296.08 -34380295.92 -34380295.72 0.0283 0.0228  
 Mercury -98837-04-06 02:23 J -34378695.49 -34378695.40 -34378695.30 0.0288 0.0221  
 Mercury -98837-07-03 18:42 J -34378606.86 -34378606.72 -34378606.58 0.0288 0.0131  
 Mercury -98837-09-30 11:16 J -34378518.18 -34378518.03 -34378517.87 0.0288 0.0037  
 Mercury -98837-12-28 04:18 J -34378429.47 -34378429.32 -34378429.17 0.0288 0.0058  
 Mercury -98836-03-26 21:35 J -34378340.73 -34378340.60 -34378340.46 0.0288 0.0156  
 Mercury -98836-06-23 15:20 J -34378251.93 -34378251.86 -34378251.78 0.0288 0.0255  
 Venus -98835-06-03 03:06 J -34377907.41 -34377907.37 -34377907.32 0.0287 0.0279  
 Venus -98834-01-18 21:06 J -34377677.84 -34377677.62 -34377677.41 0.0287 0.0012

Venus -98834-09-05 15:06 J -34377447.95 -34377447.87 -34377447.76 0.0286 0.0256  
 Moon -98833-01-30 03:49 J -34377301.53 -34377301.34 -34377301.14 0.0286 0.0166  
 Earth -98833-01-30 04:04 J -34377301.52 -34377301.33 -34377301.14 0.0286 0.0177 \*  
 Earth -98832-02-12 03:20 J -34376922.49 -34376922.36 -34376922.20 0.0284 0.0232  
 Moon -98832-02-12 06:28 J -34376922.35 -34376922.23 -34376922.08 0.0284 0.0237 \*  
 Mars -98829-01-25 21:20 J -34375844.73 -34375844.61 -34375844.46 0.0279 0.0247  
 Mars -98827-01-24 20:37 J -34375114.83 -34375114.64 -34375114.42 0.0276 0.0186  
 Mercury -98823-11-11 18:56 J -34373362.77 -34373362.71 -34373362.63 0.0271 0.0239  
 Mercury -98822-02-08 10:18 J -34373274.20 -34373274.07 -34373273.94 0.0271 0.0157  
 Mercury -98822-05-08 01:11 J -34373185.60 -34373185.45 -34373185.30 0.0271 0.0077  
 Mercury -98822-08-04 15:49 J -34373097.00 -34373096.84 -34373096.69 0.0271 0.0007  
 Mercury -98822-11-01 05:59 J -34373008.39 -34373008.25 -34373008.10 0.0271 0.0080  
 Mercury -98821-01-28 20:08 J -34372919.79 -34372919.66 -34372919.54 0.0271 0.0156  
 Mercury -98821-04-26 09:49 J -34372831.17 -34372831.09 -34372831.01 0.0271 0.0230  
 Venus -98820-07-04 20:37 J -34372396.77 -34372396.64 -34372396.49 0.0272 0.0204  
 Venus -98819-02-19 02:08 J -34372167.62 -34372167.41 -34372167.20 0.0272 0.0024  
 Venus -98819-10-06 06:56 J -34371938.28 -34371938.21 -34371938.12 0.0273 0.0251  
 Moon -98818-08-14 15:20 J -34371626.10 -34371625.86 -34371625.62 0.0274 0.0001  
 Earth -98818-08-14 18:56 J -34371625.95 -34371625.71 -34371625.47 0.0274 0.0015 \*  
 Mars -98814-12-31 23:16 J -34370025.81 -34370025.53 -34370025.25 0.0281 0.0104  
 Mercury -98808-08-24 02:23 J -34367963.47 -34367963.40 -34367963.32 0.0288 0.0252  
 Mercury -98808-11-20 18:42 J -34367874.85 -34367874.72 -34367874.60 0.0288 0.0162  
 Mercury -98807-02-17 11:01 J -34367786.18 -34367786.04 -34367785.88 0.0288 0.0070  
 Mercury -98807-05-17 04:04 J -34367697.48 -34367697.33 -34367697.17 0.0288 0.0026  
 Mercury -98807-08-13 21:20 J -34367608.75 -34367608.61 -34367608.47 0.0288 0.0123  
 Mercury -98807-11-10 14:52 J -34367519.97 -34367519.88 -34367519.77 0.0288 0.0223  
 Venus -98806-12-14 07:25 J -34367121.29 -34367121.19 -34367121.08 0.0287 0.0244  
 Venus -98805-07-31 01:40 J -34366891.64 -34366891.43 -34366891.22 0.0286 0.0024  
 Moon -98803-02-06 03:06 J -34366336.61 -34366336.37 -34366336.12 0.0285 0.0054  
 Earth -98803-02-06 06:28 J -34366336.47 -34366336.23 -34366335.98 0.0285 0.0047 \*

Mars -98799-03-15 17:01 J -34364838.05 -34364837.79 -34364837.51 0.0278 0.0097  
 Mercury -98793-03-30 21:20 J -34362630.65 -34362630.61 -34362630.57 0.0272 0.0260  
 Mercury -98793-06-27 12:28 J -34362542.09 -34362541.98 -34362541.86 0.0272 0.0178  
 Mercury -98793-09-24 03:35 J -34362453.50 -34362453.35 -34362453.21 0.0272 0.0097  
 Mercury -98793-12-21 18:13 J -34362364.90 -34362364.74 -34362364.59 0.0272 0.0018  
 Mercury -98792-03-20 08:23 J -34362276.29 -34362276.15 -34362276.00 0.0272 0.0062  
 Mercury -98792-06-16 22:32 J -34362187.69 -34362187.56 -34362187.43 0.0272 0.0138  
 Mercury -98792-09-13 12:13 J -34362099.07 -34362098.99 -34362098.89 0.0272 0.0213  
 Venus -98790-01-15 03:49 J -34361610.50 -34361610.34 -34361610.17 0.0272 0.0169  
 Venus -98790-09-01 09:20 J -34361381.32 -34361381.11 -34361380.91 0.0273 0.0060  
 Earth -98789-08-08 23:01 J -34361038.73 -34361038.54 -34361038.34 0.0273 0.0164  
 Moon -98789-08-09 02:52 J -34361038.58 -34361038.38 -34361038.17 0.0273 0.0148 \*  
 Earth -98788-08-21 03:35 J -34360661.52 -34360661.35 -34360661.17 0.0275 0.0183  
 Moon -98788-08-21 03:49 J -34360661.51 -34360661.34 -34360661.15 0.0275 0.0193 \*  
 Mars -98783-02-20 20:23 J -34359016.95 -34359016.65 -34359016.36 0.0282 0.0061  
 Mercury -98778-01-11 02:52 J -34357231.40 -34357231.38 -34357231.35 0.0287 0.0282  
 Mercury -98778-04-09 18:56 J -34357142.82 -34357142.71 -34357142.60 0.0287 0.0192  
 Mercury -98778-07-07 11:16 J -34357054.17 -34357054.03 -34357053.88 0.0287 0.0101  
 Mercury -98778-10-04 04:04 J -34356965.49 -34356965.33 -34356965.18 0.0287 0.0007  
 Mercury -98778-12-31 21:06 J -34356876.77 -34356876.62 -34356876.47 0.0287 0.0089  
 Mercury -98777-03-29 14:23 J -34356788.01 -34356787.90 -34356787.77 0.0287 0.0188  
 Mercury -98777-06-26 08:23 J -34356699.15 -34356699.15 -34356699.14 0.0287 0.0287  
 Venus -98776-06-25 10:32 J -34356335.20 -34356335.06 -34356334.93 0.0287 0.0217  
 Venus -98775-02-10 04:18 J -34356105.53 -34356105.32 -34356105.11 0.0286 0.0051  
 Earth -98774-01-31 04:47 J -34355750.51 -34355750.30 -34355750.08 0.0286 0.0140  
 Moon -98774-01-31 08:37 J -34355750.36 -34355750.14 -34355749.92 0.0286 0.0129 \*  
 Earth -98773-02-14 04:32 J -34355371.38 -34355371.31 -34355371.22 0.0284 0.0268  
 Moon -98773-02-14 07:25 J -34355371.26 -34355371.19 -34355371.11 0.0284 0.0271 \*  
 Mars -98769-05-02 09:49 J -34353832.37 -34353832.09 -34353831.81 0.0277 0.0049  
 Mercury -98764-11-14 11:44 J -34351810.10 -34351810.01 -34351809.91 0.0271 0.0211

Mercury -98763-02-11 02:52 J -34351721.51 -34351721.38 -34351721.24 0.0271 0.0129

Mercury -98763-05-10 17:44 J -34351632.91 -34351632.76 -34351632.61 0.0271 0.0049

Mercury -98763-08-07 08:08 J -34351544.31 -34351544.16 -34351544.01 0.0271 0.0030

Mercury -98763-11-03 22:18 J -34351455.70 -34351455.57 -34351455.43 0.0271 0.0107

Mercury -98762-01-31 12:13 J -34351367.09 -34351366.99 -34351366.87 0.0271 0.0183

Mercury -98762-04-30 01:54 J -34351278.46 -34351278.42 -34351278.37 0.0271 0.0256

Venus -98761-07-27 03:20 J -34350824.54 -34350824.36 -34350824.18 0.0272 0.0147

Venus -98760-03-13 08:37 J -34350595.34 -34350595.14 -34350594.93 0.0273 0.0082

Moon -98759-08-15 20:08 J -34350074.89 -34350074.66 -34350074.43 0.0274 0.0034

Earth -98759-08-15 20:23 J -34350074.89 -34350074.65 -34350074.41 0.0274 0.0021 \*

Mars -98755-04-06 08:23 J -34348745.27 -34348745.15 -34348745.03 0.0280 0.0253

Mars -98753-04-12 10:32 J -34348008.23 -34348008.06 -34348007.88 0.0283 0.0231

Mercury -98749-08-26 18:42 J -34346410.81 -34346410.72 -34346410.62 0.0288 0.0225

Mercury -98749-11-23 11:01 J -34346322.18 -34346322.04 -34346321.90 0.0288 0.0134

Mercury -98748-02-20 03:35 J -34346233.50 -34346233.35 -34346233.19 0.0288 0.0041

Mercury -98748-05-19 20:37 J -34346144.80 -34346144.64 -34346144.49 0.0288 0.0055

Mercury -98748-08-16 13:54 J -34346056.05 -34346055.92 -34346055.78 0.0288 0.0153

Mercury -98748-11-13 07:40 J -34345967.25 -34345967.18 -34345967.10 0.0287 0.0252

Venus -98746-01-05 13:54 J -34345549.08 -34345548.92 -34345548.75 0.0287 0.0185

Venus -98746-08-23 08:08 J -34345319.36 -34345319.16 -34345318.95 0.0286 0.0085

Moon -98744-02-07 03:49 J -34344785.56 -34344785.34 -34344785.10 0.0285 0.0087

Earth -98744-02-07 06:13 J -34344785.47 -34344785.24 -34344785.00 0.0285 0.0082 \*

Mars -98741-06-20 04:47 J -34343556.41 -34343556.30 -34343556.14 0.0280 0.0247

Mars -98739-06-20 08:52 J -34342826.32 -34342826.13 -34342825.91 0.0276 0.0189

Mercury -98734-04-03 13:54 J -34341078.00 -34341077.92 -34341077.83 0.0272 0.0232

Mercury -98734-07-01 05:16 J -34340989.41 -34340989.28 -34340989.15 0.0272 0.0149

Mercury -98734-09-27 20:08 J -34340900.81 -34340900.66 -34340900.51 0.0272 0.0069

Mercury -98734-12-25 10:47 J -34340812.21 -34340812.05 -34340811.90 0.0272 0.0013

Mercury -98733-03-23 00:56 J -34340723.60 -34340723.46 -34340723.31 0.0272 0.0089

Mercury -98733-06-19 14:52 J -34340634.99 -34340634.88 -34340634.75 0.0272 0.0165

Mercury -98733-09-16 04:47 J -34340546.37 -34340546.30 -34340546.23 0.0272 0.0239

Venus -98731-02-06 10:47 J -34340038.24 -34340038.05 -34340037.85 0.0272 0.0111

Venus -98731-09-23 16:04 J -34339809.01 -34339808.83 -34339808.63 0.0273 0.0119

Earth -98730-08-11 01:25 J -34339487.65 -34339487.44 -34339487.22 0.0274 0.0126

Moon -98730-08-11 01:40 J -34339487.65 -34339487.43 -34339487.19 0.0274 0.0111 \*

Moon -98729-08-22 02:37 J -34339110.52 -34339110.39 -34339110.25 0.0275 0.0228

Earth -98729-08-22 06:13 J -34339110.38 -34339110.24 -34339110.10 0.0275 0.0220 \*

Mars -98725-05-26 19:40 J -34337736.96 -34337736.68 -34337736.40 0.0280 0.0097

Mercury -98719-01-13 19:40 J -34335678.75 -34335678.68 -34335678.61 0.0287 0.0252

Mercury -98719-04-12 11:44 J -34335590.13 -34335590.01 -34335589.88 0.0287 0.0162

Mercury -98719-07-10 04:04 J -34335501.47 -34335501.33 -34335501.17 0.0287 0.0070

Mercury -98719-10-06 21:06 J -34335412.78 -34335412.62 -34335412.47 0.0287 0.0026

Mercury -98718-01-03 14:08 J -34335324.05 -34335323.91 -34335323.77 0.0287 0.0122

Mercury -98718-04-02 07:40 J -34335235.28 -34335235.18 -34335235.08 0.0287 0.0220

Venus -98717-07-17 18:13 J -34334762.91 -34334762.74 -34334762.56 0.0287 0.0155

Venus -98716-03-04 12:13 J -34334533.18 -34334532.99 -34334532.80 0.0286 0.0114

Earth -98715-02-01 06:42 J -34334199.45 -34334199.22 -34334198.99 0.0285 0.0101

Moon -98715-02-01 08:23 J -34334199.39 -34334199.15 -34334198.90 0.0285 0.0094 \*

Mars -98711-08-08 13:54 J -34332550.19 -34332549.92 -34332549.65 0.0278 0.0095

Mercury -98705-08-20 13:11 J -34330345.98 -34330345.95 -34330345.91 0.0272 0.0265

Mercury -98705-11-17 04:32 J -34330257.42 -34330257.31 -34330257.19 0.0271 0.0182

Mercury -98704-02-13 19:40 J -34330168.82 -34330168.68 -34330168.54 0.0271 0.0100

Mercury -98704-05-13 10:18 J -34330080.22 -34330080.07 -34330079.91 0.0271 0.0021

Mercury -98704-08-10 00:42 J -34329991.61 -34329991.47 -34329991.32 0.0271 0.0058

Mercury -98704-11-06 14:52 J -34329903.01 -34329902.88 -34329902.75 0.0271 0.0135

Mercury -98703-02-03 04:47 J -34329814.39 -34329814.30 -34329814.21 0.0271 0.0210

Venus -98702-08-19 10:18 J -34329252.27 -34329252.07 -34329251.86 0.0272 0.0089

Venus -98701-04-04 15:35 J -34329023.02 -34329022.85 -34329022.66 0.0273 0.0141

Earth -98700-08-16 22:47 J -34328523.79 -34328523.55 -34328523.31 0.0274 0.0058

Moon -98700-08-17 02:23 J -34328523.63 -34328523.40 -34328523.17 0.0274 0.0070 \*

Mars -98695-07-16 18:56 J -34326729.00 -34326728.71 -34326728.41 0.0282 0.0066  
 Mercury -98690-06-02 19:25 J -34324946.70 -34324946.69 -34324946.67 0.0287 0.0284  
 Mercury -98690-08-30 11:16 J -34324858.13 -34324858.03 -34324857.91 0.0287 0.0196  
 Mercury -98690-11-27 03:49 J -34324769.48 -34324769.34 -34324769.20 0.0287 0.0104  
 Mercury -98689-02-23 20:23 J -34324680.80 -34324680.65 -34324680.49 0.0287 0.0012  
 Mercury -98689-05-22 13:25 J -34324592.08 -34324591.94 -34324591.78 0.0287 0.0087  
 Mercury -98689-08-19 06:56 J -34324503.33 -34324503.21 -34324503.09 0.0287 0.0185  
 Mercury -98689-11-16 00:42 J -34324414.48 -34324414.47 -34324414.45 0.0287 0.0285  
 Venus -98687-01-27 21:35 J -34323976.79 -34323976.60 -34323976.40 0.0287 0.0123  
 Venus -98687-09-14 15:49 J -34323747.01 -34323746.84 -34323746.65 0.0286 0.0148  
 Moon -98686-01-26 08:08 J -34323613.20 -34323613.16 -34323613.11 0.0286 0.0280  
 Earth -98686-01-26 08:52 J -34323613.13 -34323613.13 -34323613.12 0.0286 0.0286 \*  
 Earth -98685-02-09 07:40 J -34323234.39 -34323234.18 -34323233.94 0.0285 0.0120  
 Moon -98685-02-09 10:18 J -34323234.28 -34323234.07 -34323233.84 0.0285 0.0121 \*  
 Mars -98681-09-25 22:04 J -34321543.86 -34321543.58 -34321543.30 0.0278 0.0052  
 Mercury -98675-04-06 06:42 J -34319525.32 -34319525.22 -34319525.11 0.0272 0.0203  
 Mercury -98675-07-03 21:49 J -34319436.72 -34319436.59 -34319436.44 0.0272 0.0121  
 Mercury -98675-09-30 12:42 J -34319348.12 -34319347.97 -34319347.81 0.0272 0.0040  
 Mercury -98675-12-28 03:20 J -34319259.51 -34319259.36 -34319259.21 0.0272 0.0039  
 Mercury -98674-03-26 17:30 J -34319170.91 -34319170.77 -34319170.63 0.0272 0.0117  
 Mercury -98674-06-23 07:25 J -34319082.29 -34319082.19 -34319082.08 0.0272 0.0193  
 Mercury -98674-09-19 21:06 J -34318993.64 -34318993.62 -34318993.59 0.0272 0.0267  
 Venus -98672-02-28 18:13 J -34318465.95 -34318465.74 -34318465.53 0.0273 0.0053  
 Venus -98672-10-15 23:30 J -34318236.67 -34318236.52 -34318236.36 0.0273 0.0178  
 Moon -98671-08-12 00:42 J -34317936.70 -34317936.47 -34317936.22 0.0274 0.0074  
 Earth -98671-08-12 04:32 J -34317936.54 -34317936.31 -34317936.08 0.0274 0.0087 \*  
 Moon -98670-08-24 07:11 J -34317559.25 -34317559.20 -34317559.13 0.0275 0.0264  
 Earth -98670-08-24 09:06 J -34317559.19 -34317559.12 -34317559.03 0.0275 0.0258 \*  
 Mars -98667-08-31 11:44 J -34316456.15 -34316456.01 -34316455.85 0.0279 0.0242  
 Mars -98665-09-06 11:44 J -34315719.16 -34315719.01 -34315718.84 0.0282 0.0239

Mercury -98660-01-16 12:56 J -34314126.05 -34314125.96 -34314125.86 0.0287 0.0219

Mercury -98660-04-15 05:01 J -34314037.42 -34314037.29 -34314037.15 0.0287 0.0129

Mercury -98660-07-12 21:35 J -34313948.75 -34313948.60 -34313948.44 0.0287 0.0036

Mercury -98660-10-09 14:37 J -34313860.05 -34313859.89 -34313859.74 0.0287 0.0060

Mercury -98659-01-06 07:54 J -34313771.30 -34313771.17 -34313771.04 0.0287 0.0157

Mercury -98659-04-05 01:25 J -34313682.51 -34313682.44 -34313682.37 0.0287 0.0256

Venus -98658-08-10 03:20 J -34313190.55 -34313190.36 -34313190.15 0.0286 0.0089

Venus -98657-03-26 21:20 J -34312960.77 -34312960.61 -34312960.44 0.0286 0.0181

Moon -98656-02-02 07:40 J -34312648.43 -34312648.18 -34312647.93 0.0285 0.0058

Earth -98656-02-02 10:47 J -34312648.29 -34312648.05 -34312647.81 0.0285 0.0059 \*

Mars -98653-11-13 08:23 J -34311268.28 -34311268.15 -34311267.99 0.0280 0.0240

Mars -98651-11-13 12:13 J -34310538.19 -34310537.99 -34310537.79 0.0276 0.0192

Mercury -98646-08-24 06:28 J -34308793.31 -34308793.23 -34308793.15 0.0272 0.0234

Mercury -98646-11-20 21:49 J -34308704.72 -34308704.59 -34308704.46 0.0272 0.0151

Mercury -98645-02-17 12:42 J -34308616.12 -34308615.97 -34308615.82 0.0272 0.0070

Mercury -98645-05-16 03:20 J -34308527.51 -34308527.36 -34308527.21 0.0272 0.0010

Mercury -98645-08-12 17:44 J -34308438.91 -34308438.76 -34308438.62 0.0272 0.0088

Mercury -98645-11-09 07:40 J -34308350.30 -34308350.18 -34308350.06 0.0272 0.0164

Mercury -98644-02-05 21:20 J -34308261.67 -34308261.61 -34308261.53 0.0272 0.0239

Venus -98643-01-24 12:13 J -34307909.04 -34307908.99 -34307908.91 0.0272 0.0259

Venus -98643-09-10 18:28 J -34307679.94 -34307679.73 -34307679.52 0.0272 0.0029

Venus -98642-04-27 23:44 J -34307450.64 -34307450.51 -34307450.36 0.0273 0.0202

Earth -98642-08-06 20:52 J -34307349.72 -34307349.63 -34307349.52 0.0273 0.0248

Moon -98642-08-07 00:28 J -34307349.60 -34307349.48 -34307349.35 0.0273 0.0233 \*

Earth -98641-08-18 02:52 J -34306972.60 -34306972.38 -34306972.15 0.0274 0.0097

Moon -98641-08-18 04:32 J -34306972.53 -34306972.31 -34306972.07 0.0274 0.0106 \*

Mars -98637-10-19 23:16 J -34305448.81 -34305448.53 -34305448.24 0.0281 0.0089

Mercury -98631-06-05 12:42 J -34303394.04 -34303393.97 -34303393.90 0.0287 0.0252

Mercury -98631-09-02 04:47 J -34303305.43 -34303305.30 -34303305.18 0.0287 0.0162

Mercury -98631-11-29 21:06 J -34303216.77 -34303216.62 -34303216.47 0.0287 0.0070

Mercury -98630-02-26 13:54 J -34303128.08 -34303127.92 -34303127.76 0.0287 0.0025  
 Mercury -98630-05-26 06:56 J -34303039.35 -34303039.21 -34303039.06 0.0287 0.0122  
 Mercury -98630-08-23 00:42 J -34302950.57 -34302950.47 -34302950.37 0.0287 0.0220  
 Venus -98628-02-19 06:42 J -34302404.43 -34302404.22 -34302404.01 0.0287 0.0057  
 Venus -98628-10-07 00:56 J -34302174.59 -34302174.46 -34302174.32 0.0286 0.0214  
 Earth -98627-01-27 12:28 J -34302062.10 -34302061.98 -34302061.85 0.0286 0.0244  
 Moon -98627-01-27 15:49 J -34302061.96 -34302061.84 -34302061.71 0.0286 0.0242 \*  
 Earth -98626-02-10 11:30 J -34301683.22 -34301683.02 -34301682.81 0.0284 0.0159  
 Moon -98626-02-10 15:06 J -34301683.08 -34301682.87 -34301682.65 0.0284 0.0157 \*  
 Mars -98622-01-02 02:37 J -34300261.66 -34300261.39 -34300261.11 0.0279 0.0090  
 Mercury -98616-01-10 08:23 J -34298061.19 -34298061.15 -34298061.09 0.0273 0.0256  
 Mercury -98616-04-08 23:44 J -34297972.62 -34297972.51 -34297972.38 0.0272 0.0173  
 Mercury -98616-07-06 14:52 J -34297884.02 -34297883.88 -34297883.73 0.0272 0.0091  
 Mercury -98616-10-03 05:44 J -34297795.41 -34297795.26 -34297795.11 0.0272 0.0010  
 Mercury -98616-12-30 20:08 J -34297706.81 -34297706.66 -34297706.51 0.0272 0.0069  
 Mercury -98615-03-29 10:18 J -34297618.20 -34297618.07 -34297617.94 0.0272 0.0146  
 Mercury -98615-06-26 00:13 J -34297529.57 -34297529.49 -34297529.40 0.0272 0.0222  
 Venus -98614-08-06 20:23 J -34297122.77 -34297122.65 -34297122.53 0.0273 0.0224  
 Venus -98613-03-23 02:23 J -34296893.61 -34296893.40 -34296893.19 0.0273 0.0008  
 Venus -98613-11-07 07:25 J -34296664.27 -34296664.19 -34296664.07 0.0274 0.0240  
 Moon -98612-08-13 07:11 J -34296385.43 -34296385.20 -34296384.96 0.0274 0.0035  
 Earth -98612-08-13 08:52 J -34296385.36 -34296385.13 -34296384.89 0.0274 0.0047 \*  
 Mars -98607-12-11 05:44 J -34294439.55 -34294439.26 -34294438.97 0.0281 0.0081  
 Mercury -98602-10-23 14:37 J -34292661.92 -34292661.89 -34292661.84 0.0287 0.0273  
 Mercury -98601-01-20 06:42 J -34292573.33 -34292573.22 -34292573.10 0.0287 0.0183  
 Mercury -98601-04-17 23:01 J -34292484.69 -34292484.54 -34292484.39 0.0287 0.0092  
 Mercury -98601-07-15 15:35 J -34292396.00 -34292395.85 -34292395.69 0.0287 0.0008  
 Mercury -98601-10-12 08:37 J -34292307.28 -34292307.14 -34292306.99 0.0287 0.0098  
 Mercury -98600-01-09 02:08 J -34292218.53 -34292218.41 -34292218.30 0.0287 0.0196  
 Venus -98599-09-01 14:23 J -34291618.11 -34291617.90 -34291617.69 0.0286 0.0018



Venus -98598-04-19 08:08 J -34291388.25 -34291388.16 -34291388.05 0.0286 0.0252  
 Moon -98597-02-04 14:52 J -34291097.12 -34291096.88 -34291096.64 0.0285 0.0017  
 Earth -98597-02-04 17:44 J -34291097.01 -34291096.76 -34291096.51 0.0285 0.0015 \*  
 Mars -98592-02-19 09:06 J -34289255.40 -34289255.12 -34289254.84 0.0277 0.0060  
 Mercury -98587-08-26 23:59 J -34287240.60 -34287240.50 -34287240.39 0.0272 0.0201  
 Mercury -98587-11-23 15:06 J -34287152.01 -34287151.87 -34287151.73 0.0272 0.0119  
 Mercury -98586-02-20 05:59 J -34287063.40 -34287063.25 -34287063.09 0.0272 0.0038  
 Mercury -98586-05-19 20:37 J -34286974.79 -34286974.64 -34286974.49 0.0272 0.0042  
 Mercury -98586-08-16 10:47 J -34286886.18 -34286886.05 -34286885.91 0.0272 0.0119  
 Mercury -98586-11-13 00:42 J -34286797.57 -34286797.47 -34286797.36 0.0272 0.0195  
 Mercury -98585-02-09 14:23 J -34286708.91 -34286708.90 -34286708.88 0.0272 0.0269  
 Venus -98584-02-15 21:20 J -34286336.75 -34286336.61 -34286336.46 0.0272 0.0197  
 Venus -98584-10-03 03:20 J -34286107.57 -34286107.36 -34286107.15 0.0273 0.0034  
 Venus -98583-05-20 08:37 J -34285878.18 -34285878.14 -34285878.08 0.0273 0.0265  
 Earth -98583-08-08 02:23 J -34285798.56 -34285798.40 -34285798.24 0.0273 0.0207  
 Moon -98583-08-08 04:04 J -34285798.50 -34285798.33 -34285798.14 0.0273 0.0193 \*  
 Moon -98582-08-20 05:16 J -34285421.49 -34285421.28 -34285421.06 0.0274 0.0142  
 Earth -98582-08-20 08:23 J -34285421.36 -34285421.15 -34285420.94 0.0274 0.0138 \*  
 Mars -98578-01-24 19:54 J -34284167.83 -34284167.67 -34284167.50 0.0280 0.0232  
 Mars -98576-01-30 20:08 J -34283430.80 -34283430.66 -34283430.51 0.0283 0.0249  
 Mercury -98572-06-08 06:28 J -34281841.33 -34281841.23 -34281841.13 0.0287 0.0217  
 Mercury -98572-09-04 22:32 J -34281752.69 -34281752.56 -34281752.42 0.0287 0.0126  
 Mercury -98572-12-02 15:06 J -34281664.02 -34281663.87 -34281663.71 0.0287 0.0033  
 Mercury -98571-03-01 08:08 J -34281575.32 -34281575.16 -34281575.01 0.0287 0.0063  
 Mercury -98571-05-29 01:25 J -34281486.57 -34281486.44 -34281486.31 0.0287 0.0161  
 Mercury -98571-08-25 18:42 J -34281397.77 -34281397.72 -34281397.64 0.0287 0.0261  
 Venus -98570-07-27 23:44 J -34281061.60 -34281061.51 -34281061.42 0.0287 0.0257  
 Venus -98569-03-13 17:30 J -34280831.98 -34280831.77 -34280831.56 0.0286 0.0013  
 Venus -98569-10-29 11:44 J -34280602.02 -34280602.01 -34280601.98 0.0286 0.0284  
 Earth -98568-01-28 18:56 J -34280510.88 -34280510.71 -34280510.53 0.0285 0.0199

Moon -98568-01-28 21:20 J -34280510.78 -34280510.61 -34280510.42 0.0285 0.0198 \*  
 Moon -98567-02-11 17:01 J -34280131.97 -34280131.79 -34280131.59 0.0284 0.0195  
 Earth -98567-02-11 18:28 J -34280131.90 -34280131.73 -34280131.56 0.0284 0.0202 \*  
 Mars -98564-04-08 23:01 J -34278979.69 -34278979.54 -34278979.37 0.0279 0.0232  
 Mars -98562-04-09 05:44 J -34278249.44 -34278249.26 -34278249.06 0.0277 0.0200  
 Mercury -98557-01-14 01:54 J -34276508.50 -34276508.42 -34276508.32 0.0273 0.0223  
 Mercury -98557-04-11 17:16 J -34276419.91 -34276419.78 -34276419.64 0.0273 0.0140  
 Mercury -98557-07-09 08:23 J -34276331.30 -34276331.15 -34276331.00 0.0273 0.0058  
 Mercury -98557-10-05 23:01 J -34276242.70 -34276242.54 -34276242.39 0.0273 0.0023  
 Mercury -98556-01-02 13:25 J -34276154.08 -34276153.94 -34276153.80 0.0273 0.0101  
 Mercury -98556-04-01 03:20 J -34276065.47 -34276065.36 -34276065.24 0.0273 0.0178  
 Mercury -98556-06-28 17:01 J -34275976.83 -34275976.79 -34275976.73 0.0273 0.0253  
 Venus -98555-08-29 05:16 J -34275550.44 -34275550.28 -34275550.10 0.0273 0.0162  
 Venus -98554-04-15 11:30 J -34275321.22 -34275321.02 -34275320.81 0.0273 0.0072  
 Earth -98553-08-14 14:52 J -34274834.12 -34274833.88 -34274833.64 0.0275 0.0004  
 Moon -98553-08-14 17:30 J -34274834.01 -34274833.77 -34274833.54 0.0275 0.0006 \*  
 Mars -98548-03-16 15:49 J -34273159.12 -34273158.84 -34273158.54 0.0281 0.0070  
 Mercury -98543-10-26 09:06 J -34271109.21 -34271109.12 -34271109.03 0.0287 0.0234  
 Mercury -98542-01-23 01:11 J -34271020.58 -34271020.45 -34271020.32 0.0287 0.0144  
 Mercury -98542-04-21 17:30 J -34270931.92 -34270931.77 -34270931.62 0.0287 0.0052  
 Mercury -98542-07-19 10:18 J -34270843.22 -34270843.07 -34270842.91 0.0287 0.0043  
 Mercury -98542-10-16 03:35 J -34270754.49 -34270754.35 -34270754.22 0.0287 0.0140  
 Mercury -98541-01-12 20:52 J -34270665.71 -34270665.63 -34270665.54 0.0287 0.0239  
 Venus -98540-02-06 09:06 J -34270275.25 -34270275.12 -34270274.98 0.0286 0.0214  
 Venus -98540-09-24 02:37 J -34270045.59 -34270045.39 -34270045.18 0.0286 0.0056  
 Earth -98538-02-06 02:52 J -34269545.62 -34269545.38 -34269545.13 0.0285 0.0033  
 Moon -98538-02-06 04:32 J -34269545.55 -34269545.31 -34269545.07 0.0285 0.0028 \*  
 Mars -98534-05-28 22:18 J -34267972.85 -34267972.57 -34267972.30 0.0278 0.0075  
 Mercury -98528-06-02 02:23 J -34265776.45 -34265776.40 -34265776.33 0.0272 0.0250  
 Mercury -98528-08-29 17:59 J -34265687.87 -34265687.75 -34265687.63 0.0272 0.0166

Mercury -98528-11-26 09:06 J -34265599.27 -34265599.12 -34265598.98 0.0272 0.0084

Mercury -98527-02-22 23:44 J -34265510.66 -34265510.51 -34265510.36 0.0272 0.0004

Mercury -98527-05-22 14:08 J -34265422.06 -34265421.91 -34265421.76 0.0272 0.0075

Mercury -98527-08-19 04:18 J -34265333.44 -34265333.32 -34265333.19 0.0272 0.0152

Mercury -98527-11-15 17:59 J -34265244.82 -34265244.75 -34265244.66 0.0272 0.0228

Venus -98525-03-10 07:25 J -34264764.37 -34264764.19 -34264764.00 0.0272 0.0133

Venus -98525-10-25 13:11 J -34264535.14 -34264534.95 -34264534.75 0.0273 0.0100

Moon -98524-08-09 07:11 J -34264247.41 -34264247.20 -34264246.99 0.0273 0.0151

Earth -98524-08-09 09:20 J -34264247.29 -34264247.11 -34264246.90 0.0273 0.0163 \*

Moon -98523-08-21 12:28 J -34263870.15 -34263869.98 -34263869.80 0.0275 0.0183

Earth -98523-08-21 15:20 J -34263870.03 -34263869.86 -34263869.67 0.0275 0.0181 \*

Mars -98518-05-06 18:42 J -34262151.00 -34262150.72 -34262150.43 0.0282 0.0094

Mercury -98513-03-14 08:52 J -34260377.18 -34260377.13 -34260377.08 0.0287 0.0267

Mercury -98513-06-11 00:42 J -34260288.58 -34260288.47 -34260288.35 0.0287 0.0178

Mercury -98513-09-07 17:01 J -34260199.93 -34260199.79 -34260199.64 0.0287 0.0086

Mercury -98513-12-05 09:49 J -34260111.25 -34260111.09 -34260110.94 0.0287 0.0009

Mercury -98512-03-04 02:52 J -34260022.53 -34260022.38 -34260022.24 0.0287 0.0105

Mercury -98512-05-31 20:08 J -34259933.77 -34259933.66 -34259933.55 0.0287 0.0203

Venus -98511-08-19 11:44 J -34259489.16 -34259489.01 -34259488.84 0.0287 0.0185

Venus -98510-04-06 05:44 J -34259259.46 -34259259.26 -34259259.06 0.0286 0.0087

Moon -98509-01-31 02:08 J -34258959.62 -34258959.41 -34258959.19 0.0285 0.0154

Earth -98509-01-31 04:04 J -34258959.53 -34258959.33 -34258959.11 0.0285 0.0151 \*

Moon -98508-02-12 23:30 J -34258580.64 -34258580.52 -34258580.37 0.0284 0.0239

Earth -98508-02-13 03:35 J -34258580.46 -34258580.35 -34258580.23 0.0284 0.0248 \*

Mars -98504-07-16 04:47 J -34256966.57 -34256966.30 -34256966.02 0.0277 0.0071

Mercury -98499-10-20 04:18 J -34255044.32 -34255044.32 -34255044.30 0.0273 0.0272

Mercury -98498-01-16 19:54 J -34254955.78 -34254955.67 -34254955.55 0.0273 0.0187

Mercury -98498-04-15 11:01 J -34254867.18 -34254867.04 -34254866.89 0.0273 0.0105

Mercury -98498-07-13 01:54 J -34254778.57 -34254778.42 -34254778.26 0.0273 0.0024

Mercury -98498-10-09 16:32 J -34254689.96 -34254689.81 -34254689.66 0.0273 0.0056

Mercury -98497-01-06 06:42 J -34254601.35 -34254601.22 -34254601.08 0.0273 0.0134

Mercury -98497-04-03 20:52 J -34254512.73 -34254512.63 -34254512.54 0.0273 0.0210

Venus -98496-09-20 15:06 J -34253978.06 -34253977.87 -34253977.67 0.0273 0.0097

Venus -98495-05-07 21:20 J -34253748.79 -34253748.61 -34253748.43 0.0274 0.0137

Earth -98494-08-16 21:49 J -34253282.83 -34253282.59 -34253282.35 0.0275 0.0039

Moon -98494-08-17 00:56 J -34253282.70 -34253282.46 -34253282.22 0.0275 0.0049 \*

Mars -98490-06-21 16:18 J -34251878.01 -34251877.82 -34251877.62 0.0280 0.0210

Mars -98488-06-27 20:23 J -34251140.71 -34251140.65 -34251140.56 0.0283 0.0273

Mercury -98484-08-01 11:59 J -34249645.02 -34249645.00 -34249644.97 0.0286 0.0281

Mercury -98484-10-29 03:49 J -34249556.45 -34249556.34 -34249556.23 0.0287 0.0193

Mercury -98483-01-25 20:08 J -34249467.81 -34249467.66 -34249467.52 0.0287 0.0102

Mercury -98483-04-24 12:42 J -34249379.13 -34249378.97 -34249378.82 0.0287 0.0010

Mercury -98483-07-22 05:30 J -34249290.42 -34249290.27 -34249290.12 0.0287 0.0087

Mercury -98483-10-18 22:47 J -34249201.67 -34249201.55 -34249201.43 0.0287 0.0185

Mercury -98482-01-15 16:18 J -34249112.83 -34249112.82 -34249112.79 0.0287 0.0285

Venus -98481-02-29 22:47 J -34248702.73 -34248702.55 -34248702.36 0.0286 0.0138

Venus -98481-10-16 16:32 J -34248472.99 -34248472.81 -34248472.62 0.0286 0.0134

Earth -98479-02-07 14:52 J -34247994.11 -34247993.88 -34247993.64 0.0285 0.0083

Moon -98479-02-07 18:42 J -34247993.96 -34247993.72 -34247993.48 0.0285 0.0077 \*

Mars -98476-09-03 06:13 J -34246690.42 -34246690.24 -34246690.04 0.0279 0.0211

Mars -98474-09-03 08:37 J -34245960.30 -34245960.14 -34245959.95 0.0276 0.0216

Mercury -98469-06-04 20:52 J -34244223.73 -34244223.63 -34244223.53 0.0272 0.0212

Mercury -98469-09-01 11:59 J -34244135.13 -34244135.00 -34244134.86 0.0272 0.0130

Mercury -98469-11-29 03:06 J -34244046.52 -34244046.37 -34244046.22 0.0272 0.0048

Mercury -98468-02-25 17:44 J -34243957.91 -34243957.76 -34243957.61 0.0272 0.0032

Mercury -98468-05-25 07:54 J -34243869.30 -34243869.17 -34243869.03 0.0272 0.0111

Mercury -98468-08-21 22:04 J -34243780.69 -34243780.58 -34243780.47 0.0272 0.0187

Mercury -98468-11-18 11:44 J -34243692.04 -34243692.01 -34243691.97 0.0272 0.0262

Venus -98466-04-02 18:28 J -34243191.94 -34243191.73 -34243191.53 0.0273 0.0066

Venus -98466-11-18 00:13 J -34242962.66 -34242962.49 -34242962.33 0.0273 0.0167

Moon -98465-08-10 14:37 J -34242696.10 -34242695.89 -34242695.66 0.0274 0.0106  
 Earth -98465-08-10 17:59 J -34242695.96 -34242695.75 -34242695.52 0.0274 0.0118 \*  
 Earth -98464-08-22 23:59 J -34242318.64 -34242318.50 -34242318.36 0.0275 0.0224  
 Moon -98464-08-23 00:56 J -34242318.58 -34242318.46 -34242318.31 0.0275 0.0225 \*  
 Mars -98460-08-10 09:35 J -34240870.39 -34240870.10 -34240869.80 0.0281 0.0055  
 Mercury -98454-03-18 03:35 J -34238824.44 -34238824.35 -34238824.25 0.0287 0.0226  
 Mercury -98454-06-14 19:40 J -34238735.81 -34238735.68 -34238735.54 0.0287 0.0136  
 Mercury -98454-09-11 12:13 J -34238647.14 -34238646.99 -34238646.84 0.0287 0.0043  
 Mercury -98454-12-09 05:01 J -34238558.45 -34238558.29 -34238558.14 0.0287 0.0053  
 Mercury -98453-03-06 22:04 J -34238469.71 -34238469.58 -34238469.44 0.0287 0.0150  
 Mercury -98453-06-03 15:35 J -34238380.92 -34238380.85 -34238380.77 0.0287 0.0248  
 Venus -98452-09-11 01:40 J -34237916.62 -34237916.43 -34237916.23 0.0286 0.0108  
 Venus -98451-04-28 19:40 J -34237686.86 -34237686.68 -34237686.51 0.0286 0.0164  
 Moon -98450-02-01 12:13 J -34237408.21 -34237407.99 -34237407.76 0.0285 0.0104  
 Earth -98450-02-01 15:35 J -34237408.07 -34237407.85 -34237407.61 0.0285 0.0101 \*  
 Mars -98446-10-22 22:32 J -34235683.84 -34235683.56 -34235683.28 0.0278 0.0061  
 Mercury -98440-10-22 22:47 J -34233491.63 -34233491.55 -34233491.47 0.0273 0.0234  
 Mercury -98439-01-19 13:54 J -34233403.04 -34233402.92 -34233402.78 0.0273 0.0151  
 Mercury -98439-04-18 05:01 J -34233314.44 -34233314.29 -34233314.14 0.0273 0.0069  
 Mercury -98439-07-15 19:54 J -34233225.83 -34233225.67 -34233225.52 0.0273 0.0012  
 Mercury -98439-10-12 10:18 J -34233137.21 -34233137.07 -34233136.93 0.0273 0.0091  
 Mercury -98438-01-09 00:28 J -34233048.60 -34233048.48 -34233048.36 0.0273 0.0169  
 Mercury -98438-04-07 14:23 J -34232959.96 -34232959.90 -34232959.84 0.0273 0.0244  
 Venus -98437-02-26 19:11 J -34232634.74 -34232634.70 -34232634.64 0.0273 0.0264  
 Venus -98437-10-13 01:54 J -34232405.63 -34232405.42 -34232405.21 0.0273 0.0030  
 Venus -98436-05-30 07:40 J -34232176.31 -34232176.18 -34232176.03 0.0274 0.0205  
 Earth -98436-08-05 21:49 J -34232108.65 -34232108.59 -34232108.50 0.0274 0.0260  
 Moon -98436-08-06 01:54 J -34232108.53 -34232108.42 -34232108.31 0.0274 0.0243 \*  
 Moon -98435-08-18 05:16 J -34231731.51 -34231731.28 -34231731.04 0.0275 0.0089  
 Earth -98435-08-18 05:59 J -34231731.48 -34231731.25 -34231731.02 0.0275 0.0083 \*

Mars -98430-10-01 21:20 J -34229860.87 -34229860.61 -34229860.32 0.0282 0.0120  
 Mercury -98425-08-04 06:56 J -34228092.29 -34228092.21 -34228092.13 0.0286 0.0239  
 Mercury -98425-10-31 23:01 J -34228003.67 -34228003.54 -34228003.41 0.0286 0.0150  
 Mercury -98424-01-28 15:20 J -34227915.01 -34227914.86 -34227914.71 0.0287 0.0058  
 Mercury -98424-04-27 07:54 J -34227826.32 -34227826.17 -34227826.01 0.0287 0.0038  
 Mercury -98424-07-25 00:56 J -34227737.59 -34227737.46 -34227737.32 0.0287 0.0134  
 Mercury -98424-10-21 18:28 J -34227648.82 -34227648.73 -34227648.64 0.0287 0.0232  
 Venus -98422-03-24 13:25 J -34227130.14 -34227129.94 -34227129.73 0.0286 0.0058  
 Venus -98422-11-09 07:25 J -34226900.33 -34226900.19 -34226900.05 0.0286 0.0214  
 Earth -98421-01-27 06:42 J -34226821.30 -34226821.22 -34226821.11 0.0285 0.0264  
 Moon -98421-01-27 10:32 J -34226821.15 -34226821.06 -34226820.95 0.0285 0.0259 \*  
 Earth -98420-02-09 04:18 J -34226442.53 -34226442.32 -34226442.09 0.0284 0.0133  
 Moon -98420-02-09 05:30 J -34226442.50 -34226442.27 -34226442.04 0.0284 0.0127 \*  
 Mars -98416-12-10 17:30 J -34224677.04 -34224676.77 -34224676.50 0.0277 0.0092  
 Mercury -98410-03-11 23:59 J -34222759.54 -34222759.50 -34222759.44 0.0272 0.0257  
 Mercury -98410-06-08 15:20 J -34222670.97 -34222670.86 -34222670.73 0.0272 0.0173  
 Mercury -98410-09-05 06:42 J -34222582.37 -34222582.22 -34222582.08 0.0272 0.0091  
 Mercury -98410-12-02 21:20 J -34222493.76 -34222493.61 -34222493.45 0.0272 0.0012  
 Mercury -98409-02-29 11:59 J -34222405.15 -34222405.00 -34222404.85 0.0272 0.0070  
 Mercury -98409-05-28 02:08 J -34222316.54 -34222316.41 -34222316.28 0.0272 0.0147  
 Mercury -98409-08-24 16:04 J -34222227.91 -34222227.83 -34222227.74 0.0272 0.0223  
 Venus -98408-09-07 23:30 J -34221848.63 -34221848.52 -34221848.40 0.0272 0.0230  
 Venus -98407-04-25 05:59 J -34221619.46 -34221619.25 -34221619.04 0.0273 0.0004  
 Venus -98407-12-10 11:16 J -34221390.12 -34221390.03 -34221389.91 0.0273 0.0238  
 Earth -98406-08-13 03:20 J -34221144.59 -34221144.36 -34221144.12 0.0274 0.0073  
 Moon -98406-08-13 03:35 J -34221144.58 -34221144.35 -34221144.12 0.0274 0.0062 \*  
 Earth -98405-08-24 08:52 J -34220767.17 -34220767.13 -34220767.06 0.0275 0.0268  
 Moon -98405-08-24 12:42 J -34220767.03 -34220766.97 -34220766.91 0.0275 0.0266  
 Mars -98402-11-15 12:56 J -34219589.15 -34219588.96 -34219588.73 0.0280 0.0196  
 Mercury -98396-12-22 06:56 J -34217360.25 -34217360.21 -34217360.17 0.0287 0.0272

Mercury -98395-03-20 22:47 J -34217271.67 -34217271.55 -34217271.43 0.0287 0.0183

Mercury -98395-06-17 14:52 J -34217183.02 -34217182.88 -34217182.73 0.0287 0.0092

Mercury -98395-09-14 07:40 J -34217094.34 -34217094.18 -34217094.03 0.0287 0.0009

Mercury -98395-12-12 00:28 J -34217005.63 -34217005.48 -34217005.33 0.0287 0.0099

Mercury -98394-03-10 17:44 J -34216916.87 -34216916.76 -34216916.64 0.0287 0.0197

Venus -98393-10-03 16:18 J -34216344.03 -34216343.82 -34216343.61 0.0286 0.0028

Venus -98392-05-21 10:18 J -34216114.18 -34216114.07 -34216113.96 0.0286 0.0244

Moon -98391-02-03 04:18 J -34215856.56 -34215856.32 -34215856.09 0.0285 0.0052

Earth -98391-02-03 05:01 J -34215856.53 -34215856.29 -34215856.05 0.0285 0.0049 \*

Mars -98387-01-28 09:20 J -34214401.31 -34214401.11 -34214400.90 0.0279 0.0197

Mars -98385-01-28 11:30 J -34213671.16 -34213671.02 -34213670.85 0.0276 0.0230

Mercury -98381-10-25 17:01 J -34211938.89 -34211938.79 -34211938.68 0.0273 0.0196

Mercury -98380-01-22 08:23 J -34211850.29 -34211850.15 -34211850.01 0.0273 0.0113

Mercury -98380-04-20 23:16 J -34211761.68 -34211761.53 -34211761.38 0.0273 0.0031

Mercury -98380-07-18 13:54 J -34211673.07 -34211672.92 -34211672.77 0.0273 0.0049

Mercury -98380-10-15 04:04 J -34211584.46 -34211584.33 -34211584.19 0.0273 0.0128

Mercury -98379-01-11 18:13 J -34211495.84 -34211495.74 -34211495.64 0.0273 0.0204

Venus -98378-03-21 06:13 J -34211062.38 -34211062.24 -34211062.09 0.0273 0.0197

Venus -98378-11-05 12:42 J -34210833.18 -34210832.97 -34210832.76 0.0274 0.0039

Venus -98377-06-21 18:28 J -34210603.74 -34210603.73 -34210603.71 0.0274 0.0273

Moon -98377-08-07 06:28 J -34210557.39 -34210557.23 -34210557.05 0.0274 0.0201

Earth -98377-08-07 06:42 J -34210557.37 -34210557.22 -34210557.07 0.0274 0.0216 \*

Moon -98376-08-19 10:47 J -34210180.26 -34210180.05 -34210179.84 0.0275 0.0132

Earth -98376-08-19 14:08 J -34210180.12 -34210179.91 -34210179.69 0.0275 0.0127 \*

Mars -98371-01-05 10:18 J -34208580.37 -34208580.07 -34208579.77 0.0281 0.0029

Mercury -98366-05-11 10:18 J -34206628.08 -34206628.07 -34206628.06 0.0286 0.0284

Mercury -98366-08-08 02:08 J -34206539.52 -34206539.41 -34206539.30 0.0286 0.0196

Mercury -98366-11-04 18:13 J -34206450.88 -34206450.74 -34206450.60 0.0286 0.0105

Mercury -98365-02-01 10:47 J -34206362.21 -34206362.05 -34206361.90 0.0287 0.0012

Mercury -98365-04-30 03:35 J -34206273.50 -34206273.35 -34206273.20 0.0287 0.0084

Mercury -98365-07-27 20:52 J -34206184.75 -34206184.63 -34206184.51 0.0287 0.0182

Mercury -98365-10-24 14:23 J -34206095.92 -34206095.90 -34206095.87 0.0287 0.0281

Venus -98364-08-29 11:16 J -34205787.13 -34205787.03 -34205786.92 0.0286 0.0247

Venus -98363-04-16 04:32 J -34205557.52 -34205557.31 -34205557.09 0.0286 0.0025

Earth -98362-01-28 21:06 J -34205269.78 -34205269.62 -34205269.45 0.0285 0.0212

Moon -98362-01-28 21:49 J -34205269.76 -34205269.59 -34205269.41 0.0285 0.0210 \*

Moon -98361-02-11 15:35 J -34204891.03 -34204890.85 -34204890.63 0.0284 0.0177

Earth -98361-02-11 18:42 J -34204890.90 -34204890.72 -34204890.52 0.0284 0.0184 \*

Mars -98357-03-18 17:16 J -34203394.06 -34203393.78 -34203393.50 0.0278 0.0038

Mercury -98351-03-14 18:42 J -34201206.81 -34201206.72 -34201206.62 0.0272 0.0217

Mercury -98351-06-11 10:04 J -34201118.21 -34201118.08 -34201117.94 0.0272 0.0133

Mercury -98351-09-08 01:11 J -34201029.60 -34201029.45 -34201029.30 0.0272 0.0051

Mercury -98351-12-05 15:49 J -34200940.99 -34200940.84 -34200940.69 0.0272 0.0029

Mercury -98350-03-04 06:13 J -34200852.38 -34200852.24 -34200852.10 0.0272 0.0108

Mercury -98350-05-31 20:23 J -34200763.76 -34200763.65 -34200763.54 0.0272 0.0184

Mercury -98350-08-28 10:04 J -34200675.12 -34200675.08 -34200675.03 0.0272 0.0260

Venus -98349-09-30 11:16 J -34200276.19 -34200276.03 -34200275.85 0.0272 0.0161

Venus -98348-05-17 17:44 J -34200046.97 -34200046.76 -34200046.56 0.0273 0.0074

Earth -98347-08-14 12:56 J -34199593.20 -34199592.96 -34199592.72 0.0274 0.0028

Moon -98347-08-14 16:32 J -34199593.05 -34199592.81 -34199592.57 0.0274 0.0017 \*

Mars -98341-02-25 19:25 J -34197571.95 -34197571.69 -34197571.42 0.0282 0.0135

Mercury -98337-12-25 01:54 J -34195807.51 -34195807.42 -34195807.33 0.0287 0.0229

Mercury -98336-03-23 17:59 J -34195718.89 -34195718.75 -34195718.62 0.0287 0.0139

Mercury -98336-06-20 10:18 J -34195630.22 -34195630.07 -34195629.92 0.0287 0.0046

Mercury -98336-09-17 03:06 J -34195541.53 -34195541.37 -34195541.22 0.0287 0.0049

Mercury -98336-12-14 19:54 J -34195452.80 -34195452.67 -34195452.53 0.0287 0.0146

Mercury -98335-03-13 13:25 J -34195364.01 -34195363.94 -34195363.85 0.0287 0.0245

Venus -98334-03-11 13:40 J -34195001.06 -34195000.93 -34195000.79 0.0287 0.0220

Venus -98334-10-27 06:56 J -34194771.41 -34194771.21 -34194770.99 0.0286 0.0054

Earth -98332-02-04 18:13 J -34194304.98 -34194304.74 -34194304.49 0.0285 0.0006



Moon -98332-02-04 21:20 J -34194304.85 -34194304.61 -34194304.36 0.0285 0.0006 \*  
 Mars -98327-05-06 18:42 J -34192387.97 -34192387.72 -34192387.45 0.0277 0.0106  
 Mercury -98322-08-01 20:08 J -34190474.73 -34190474.66 -34190474.59 0.0273 0.0241  
 Mercury -98322-10-29 11:30 J -34190386.14 -34190386.02 -34190385.89 0.0273 0.0157  
 Mercury -98321-01-26 02:37 J -34190297.54 -34190297.39 -34190297.24 0.0273 0.0074  
 Mercury -98321-04-23 17:30 J -34190208.92 -34190208.77 -34190208.62 0.0273 0.0007  
 Mercury -98321-07-21 07:54 J -34190120.31 -34190120.17 -34190120.02 0.0273 0.0086  
 Mercury -98321-10-17 22:04 J -34190031.69 -34190031.58 -34190031.45 0.0273 0.0164  
 Mercury -98320-01-14 11:59 J -34189943.06 -34189943.00 -34189942.92 0.0273 0.0240  
 Venus -98319-04-12 17:30 J -34189489.96 -34189489.77 -34189489.59 0.0273 0.0128  
 Venus -98319-11-27 23:30 J -34189260.71 -34189260.52 -34189260.32 0.0274 0.0109  
 Moon -98318-08-09 11:16 J -34189006.23 -34189006.03 -34189005.83 0.0274 0.0159  
 Earth -98318-08-09 14:52 J -34189006.06 -34189005.88 -34189005.68 0.0274 0.0173 \*  
 Moon -98317-08-20 20:37 J -34188628.81 -34188628.64 -34188628.45 0.0275 0.0174  
 Earth -98317-08-20 22:18 J -34188628.75 -34188628.57 -34188628.37 0.0275 0.0170 \*  
 Mars -98313-04-11 09:06 J -34187299.34 -34187299.12 -34187298.88 0.0280 0.0172  
 Mercury -98307-05-14 05:01 J -34185075.36 -34185075.29 -34185075.21 0.0286 0.0243  
 Mercury -98307-08-10 21:06 J -34184986.75 -34184986.62 -34184986.49 0.0287 0.0153  
 Mercury -98307-11-07 13:25 J -34184898.09 -34184897.94 -34184897.79 0.0287 0.0061  
 Mercury -98306-02-04 05:59 J -34184809.40 -34184809.25 -34184809.09 0.0287 0.0034  
 Mercury -98306-05-03 23:01 J -34184720.68 -34184720.54 -34184720.40 0.0287 0.0131  
 Mercury -98306-07-31 16:18 J -34184631.91 -34184631.82 -34184631.72 0.0287 0.0230  
 Venus -98305-09-21 01:54 J -34184214.59 -34184214.42 -34184214.25 0.0286 0.0167  
 Venus -98304-05-08 19:11 J -34183984.89 -34183984.70 -34183984.49 0.0286 0.0106  
 Moon -98303-01-30 06:56 J -34183718.40 -34183718.21 -34183717.99 0.0285 0.0164  
 Earth -98303-01-30 10:32 J -34183718.25 -34183718.06 -34183717.85 0.0285 0.0161 \*  
 Moon -98302-02-13 05:30 J -34183339.41 -34183339.27 -34183339.12 0.0284 0.0227  
 Earth -98302-02-13 08:52 J -34183339.27 -34183339.13 -34183338.99 0.0284 0.0233 \*  
 Mars -98299-06-25 07:40 J -34182111.40 -34182111.18 -34182110.94 0.0279 0.0173  
 Mars -98297-06-24 05:30 J -34181381.37 -34181381.27 -34181381.13 0.0276 0.0251

Mercury -98293-12-18 22:04 J -34179742.62 -34179742.58 -34179742.53 0.0272 0.0260

Mercury -98292-03-17 13:40 J -34179654.05 -34179653.93 -34179653.81 0.0272 0.0176

Mercury -98292-06-14 04:47 J -34179565.44 -34179565.30 -34179565.15 0.0272 0.0093

Mercury -98292-09-10 19:40 J -34179476.84 -34179476.68 -34179476.53 0.0272 0.0012

Mercury -98292-12-08 10:04 J -34179388.22 -34179388.08 -34179387.93 0.0272 0.0068

Mercury -98291-03-07 00:28 J -34179299.61 -34179299.48 -34179299.35 0.0272 0.0145

Mercury -98291-06-03 14:23 J -34179210.98 -34179210.90 -34179210.81 0.0272 0.0221

Venus -98290-10-23 23:01 J -34178703.74 -34178703.54 -34178703.34 0.0273 0.0091

Venus -98289-06-09 04:47 J -34178474.47 -34178474.30 -34178474.11 0.0273 0.0145

Earth -98288-08-15 22:04 J -34178041.82 -34178041.58 -34178041.33 0.0274 0.0016

Moon -98288-08-15 23:59 J -34178041.75 -34178041.50 -34178041.25 0.0274 0.0024 \*

Mars -98283-06-01 08:08 J -34176291.46 -34176291.16 -34176290.86 0.0281 0.0016

Mercury -98278-10-01 05:01 J -34174343.33 -34174343.29 -34174343.25 0.0287 0.0276

Mercury -98278-12-28 20:52 J -34174254.74 -34174254.63 -34174254.52 0.0287 0.0187

Mercury -98277-03-26 12:56 J -34174166.10 -34174165.96 -34174165.81 0.0287 0.0095

Mercury -98277-06-23 05:30 J -34174077.43 -34174077.27 -34174077.11 0.0287 0.0002

Mercury -98277-09-19 22:18 J -34173988.71 -34173988.57 -34173988.42 0.0287 0.0095

Mercury -98277-12-17 15:35 J -34173899.96 -34173899.85 -34173899.73 0.0287 0.0193

Venus -98275-04-03 04:04 J -34173428.51 -34173428.33 -34173428.15 0.0286 0.0140

Venus -98275-11-18 21:49 J -34173198.78 -34173198.59 -34173198.41 0.0286 0.0133

Earth -98273-02-07 07:25 J -34172753.43 -34172753.19 -34172752.94 0.0285 0.0052

Moon -98273-02-07 10:32 J -34172753.31 -34172753.06 -34172752.81 0.0285 0.0046 \*

Mars -98269-08-12 17:30 J -34171105.05 -34171104.77 -34171104.48 0.0278 0.0025

Jupiter -98267-05-15 12:56 J -34170464.39 -34170463.96 -34170463.52 0.0275 0.0113

Mercury -98263-08-04 14:37 J -34168921.99 -34168921.89 -34168921.78 0.0273 0.0202

Mercury -98263-11-01 05:59 J -34168833.39 -34168833.25 -34168833.11 0.0273 0.0119

Mercury -98262-01-28 20:52 J -34168744.78 -34168744.63 -34168744.48 0.0273 0.0037

Mercury -98262-04-27 11:30 J -34168656.17 -34168656.02 -34168655.87 0.0273 0.0044

Mercury -98262-07-25 01:54 J -34168567.55 -34168567.42 -34168567.28 0.0273 0.0122

Mercury -98262-10-21 15:49 J -34168478.93 -34168478.84 -34168478.73 0.0273 0.0200

Venus -98260-05-05 04:04 J -34167917.54 -34167917.33 -34167917.12 0.0273 0.0059  
 Venus -98260-12-20 10:04 J -34167688.24 -34167688.08 -34167687.92 0.0274 0.0177  
 Moon -98259-08-10 21:06 J -34167454.83 -34167454.62 -34167454.41 0.0274 0.0119  
 Earth -98259-08-10 22:32 J -34167454.77 -34167454.56 -34167454.34 0.0274 0.0131 \*  
 Earth -98258-08-23 05:44 J -34167077.42 -34167077.26 -34167077.11 0.0275 0.0210  
 Moon -98258-08-23 08:08 J -34167077.30 -34167077.16 -34167077.00 0.0275 0.0212 \*  
 Mars -98253-07-22 13:40 J -34165282.17 -34165281.93 -34165281.67 0.0282 0.0158  
 Mercury -98248-05-16 23:30 J -34163522.62 -34163522.52 -34163522.41 0.0287 0.0203  
 Mercury -98248-08-13 15:49 J -34163433.98 -34163433.84 -34163433.70 0.0287 0.0111  
 Mercury -98248-11-10 08:08 J -34163345.31 -34163345.16 -34163345.00 0.0287 0.0019  
 Mercury -98247-02-07 00:56 J -34163256.61 -34163256.46 -34163256.30 0.0287 0.0079  
 Mercury -98247-05-06 18:13 J -34163167.86 -34163167.74 -34163167.61 0.0287 0.0176  
 Mercury -98247-08-03 11:44 J -34163079.05 -34163079.01 -34163078.96 0.0287 0.0275  
 Venus -98246-10-14 15:20 J -34162642.05 -34162641.86 -34162641.65 0.0286 0.0089  
 Venus -98245-05-31 09:20 J -34162412.27 -34162412.11 -34162411.95 0.0286 0.0185  
 Moon -98244-01-31 20:08 J -34162166.88 -34162166.66 -34162166.44 0.0285 0.0117  
 Earth -98244-01-31 22:32 J -34162166.78 -34162166.56 -34162166.33 0.0285 0.0113 \*  
 Earth -98243-02-14 21:06 J -34161787.65 -34161787.62 -34161787.58 0.0284 0.0280  
 Moon -98243-02-14 21:35 J -34161787.65 -34161787.60 -34161787.52 0.0284 0.0272 \*  
 Mars -98239-10-01 15:06 J -34160098.11 -34160097.87 -34160097.61 0.0277 0.0127  
 Mercury -98234-12-22 16:47 J -34158189.88 -34158189.80 -34158189.70 0.0272 0.0220  
 Mercury -98233-03-20 08:23 J -34158101.29 -34158101.15 -34158101.02 0.0272 0.0137  
 Mercury -98233-06-16 23:16 J -34158012.68 -34158012.53 -34158012.38 0.0272 0.0055  
 Mercury -98233-09-13 13:54 J -34157924.07 -34157923.92 -34157923.76 0.0272 0.0027  
 Mercury -98233-12-11 04:18 J -34157835.46 -34157835.32 -34157835.18 0.0272 0.0105  
 Mercury -98232-03-09 18:28 J -34157746.84 -34157746.73 -34157746.62 0.0272 0.0182  
 Mercury -98232-06-06 08:23 J -34157658.20 -34157658.15 -34157658.10 0.0272 0.0257  
 Venus -98231-03-31 03:49 J -34157360.40 -34157360.34 -34157360.26 0.0272 0.0256  
 Venus -98231-11-15 10:18 J -34157131.28 -34157131.07 -34157130.85 0.0273 0.0021  
 Venus -98230-07-02 15:49 J -34156901.96 -34156901.84 -34156901.70 0.0273 0.0215

Moon -98230-08-06 00:56 J -34156867.51 -34156867.46 -34156867.39 0.0273 0.0265  
 Moon -98229-08-17 03:49 J -34156490.58 -34156490.34 -34156490.10 0.0274 0.0063  
 Earth -98229-08-17 06:42 J -34156490.45 -34156490.22 -34156489.98 0.0274 0.0058 \*  
 Mars -98225-09-05 06:13 J -34155010.47 -34155010.24 -34155009.99 0.0280 0.0162  
 Mercury -98219-10-03 23:30 J -34152790.61 -34152790.52 -34152790.44 0.0287 0.0236  
 Mercury -98219-12-31 15:20 J -34152701.99 -34152701.86 -34152701.73 0.0287 0.0146  
 Mercury -98218-03-30 07:40 J -34152613.33 -34152613.18 -34152613.03 0.0287 0.0053  
 Mercury -98218-06-27 00:13 J -34152524.64 -34152524.49 -34152524.33 0.0287 0.0042  
 Mercury -98218-09-23 17:16 J -34152435.91 -34152435.78 -34152435.64 0.0287 0.0139  
 Mercury -98218-12-21 10:47 J -34152347.14 -34152347.05 -34152346.96 0.0287 0.0237  
 Venus -98216-04-25 17:16 J -34151855.99 -34151855.78 -34151855.57 0.0286 0.0063  
 Venus -98216-12-11 11:01 J -34151626.18 -34151626.04 -34151625.90 0.0286 0.0212  
 Moon -98214-02-08 17:01 J -34151202.03 -34151201.79 -34151201.54 0.0285 0.0089  
 Earth -98214-02-08 18:42 J -34151201.95 -34151201.72 -34151201.48 0.0285 0.0099 \*  
 Mars -98211-11-19 04:04 J -34149822.56 -34149822.33 -34149822.09 0.0279 0.0163  
 Mars -98209-11-18 02:37 J -34149092.46 -34149092.39 -34149092.29 0.0276 0.0261  
 Mercury -98204-05-10 17:16 J -34147457.84 -34147457.78 -34147457.71 0.0272 0.0248  
 Mercury -98204-08-07 08:37 J -34147369.25 -34147369.14 -34147369.01 0.0272 0.0165  
 Mercury -98204-11-03 23:59 J -34147280.65 -34147280.50 -34147280.35 0.0272 0.0081  
 Mercury -98203-01-31 14:52 J -34147192.04 -34147191.88 -34147191.73 0.0272 0.0003  
 Mercury -98203-04-30 05:16 J -34147103.42 -34147103.28 -34147103.13 0.0272 0.0080  
 Mercury -98203-07-27 19:25 J -34147014.81 -34147014.69 -34147014.56 0.0272 0.0158  
 Mercury -98203-10-24 09:35 J -34146926.18 -34146926.10 -34146926.03 0.0272 0.0233  
 Venus -98202-10-11 07:11 J -34146574.30 -34146574.20 -34146574.07 0.0273 0.0228  
 Venus -98201-05-27 14:08 J -34146345.13 -34146344.91 -34146344.70 0.0273 0.0011  
 Venus -98200-01-11 19:40 J -34146115.76 -34146115.68 -34146115.58 0.0274 0.0245  
 Earth -98200-08-12 05:01 J -34145903.52 -34145903.29 -34145903.06 0.0274 0.0090  
 Moon -98200-08-12 07:54 J -34145903.40 -34145903.17 -34145902.94 0.0274 0.0082 \*  
 Earth -98199-08-24 11:16 J -34145526.11 -34145526.03 -34145525.91 0.0275 0.0249  
 Moon -98199-08-24 14:37 J -34145525.98 -34145525.89 -34145525.77 0.0275 0.0247 \*

Mars -98195-10-26 16:47 J -34144002.10 -34144001.80 -34144001.50 0.0281 0.0004  
 Mercury -98189-02-21 01:54 J -34142058.49 -34142058.42 -34142058.35 0.0287 0.0253  
 Mercury -98189-05-19 17:44 J -34141969.88 -34141969.76 -34141969.63 0.0287 0.0164  
 Mercury -98189-08-16 10:04 J -34141881.23 -34141881.08 -34141880.93 0.0287 0.0071  
 Mercury -98189-11-13 02:37 J -34141792.54 -34141792.39 -34141792.23 0.0287 0.0024  
 Mercury -98188-02-09 19:40 J -34141703.82 -34141703.68 -34141703.54 0.0287 0.0120  
 Mercury -98188-05-09 12:56 J -34141615.06 -34141614.96 -34141614.86 0.0287 0.0219  
 Venus -98187-03-21 10:32 J -34141299.07 -34141299.06 -34141299.04 0.0286 0.0286  
 Venus -98187-11-06 04:04 J -34141069.55 -34141069.33 -34141069.12 0.0286 0.0013  
 Venus -98186-06-23 21:35 J -34140839.67 -34140839.60 -34140839.50 0.0286 0.0263  
 Earth -98185-02-03 08:23 J -34140615.38 -34140615.15 -34140614.90 0.0285 0.0068  
 Moon -98185-02-03 10:32 J -34140615.29 -34140615.06 -34140614.83 0.0285 0.0075 \*  
 Mars -98180-01-07 12:56 J -34138815.24 -34138814.96 -34138814.67 0.0278 0.0008  
 Mercury -98175-09-27 19:40 J -34136725.70 -34136725.68 -34136725.64 0.0272 0.0266  
 Mercury -98175-12-25 11:16 J -34136637.14 -34136637.03 -34136636.91 0.0272 0.0182  
 Mercury -98174-03-24 02:23 J -34136548.54 -34136548.40 -34136548.25 0.0272 0.0099  
 Mercury -98174-06-20 17:16 J -34136459.93 -34136459.78 -34136459.62 0.0272 0.0019  
 Mercury -98174-09-17 07:54 J -34136371.32 -34136371.17 -34136371.02 0.0272 0.0062  
 Mercury -98174-12-14 22:18 J -34136282.70 -34136282.57 -34136282.44 0.0272 0.0140  
 Mercury -98173-03-12 11:59 J -34136194.08 -34136194.00 -34136193.90 0.0272 0.0217  
 Venus -98172-04-22 14:37 J -34135788.04 -34135787.89 -34135787.73 0.0272 0.0188  
 Venus -98172-12-07 20:52 J -34135558.84 -34135558.63 -34135558.43 0.0273 0.0048  
 Moon -98171-08-07 04:04 J -34135316.46 -34135316.33 -34135316.19 0.0273 0.0226  
 Earth -98171-08-07 06:28 J -34135316.34 -34135316.23 -34135316.10 0.0273 0.0238 \*  
 Moon -98170-08-19 10:32 J -34134939.27 -34134939.06 -34134938.83 0.0274 0.0100  
 Earth -98170-08-19 13:40 J -34134939.15 -34134938.93 -34134938.70 0.0274 0.0098 \*  
 Mars -98165-12-16 05:01 J -34132993.52 -34132993.29 -34132993.03 0.0282 0.0166  
 Mercury -98160-10-06 17:16 J -34131237.88 -34131237.78 -34131237.67 0.0287 0.0199  
 Mercury -98159-01-03 09:20 J -34131149.25 -34131149.11 -34131148.96 0.0287 0.0108  
 Mercury -98159-04-02 01:54 J -34131060.58 -34131060.42 -34131060.27 0.0287 0.0014

Mercury -98159-06-29 18:42 J -34130971.87 -34130971.72 -34130971.57 0.0287 0.0082  
 Mercury -98159-09-26 11:44 J -34130883.13 -34130883.01 -34130882.88 0.0287 0.0180  
 Mercury -98159-12-24 05:16 J -34130794.30 -34130794.28 -34130794.24 0.0287 0.0280  
 Venus -98158-10-01 11:59 J -34130513.08 -34130513.00 -34130512.91 0.0287 0.0261  
 Venus -98157-05-18 05:16 J -34130283.49 -34130283.28 -34130283.07 0.0286 0.0013  
 Moon -98156-01-27 03:49 J -34130029.44 -34130029.34 -34130029.21 0.0286 0.0254  
 Earth -98156-01-27 06:56 J -34130029.33 -34130029.21 -34130029.09 0.0286 0.0247 \*  
 Moon -98155-02-09 23:59 J -34129650.71 -34129650.50 -34129650.27 0.0285 0.0131  
 Earth -98155-02-10 04:04 J -34129650.55 -34129650.33 -34129650.12 0.0285 0.0143 \*  
 Mars -98150-02-25 06:56 J -34127809.45 -34127809.21 -34127808.96 0.0277 0.0135  
 Mercury -98145-05-13 11:30 J -34125905.12 -34125905.02 -34125904.92 0.0272 0.0211  
 Mercury -98145-08-10 02:37 J -34125816.52 -34125816.39 -34125816.24 0.0272 0.0128  
 Mercury -98145-11-06 17:44 J -34125727.91 -34125727.76 -34125727.60 0.0272 0.0046  
 Mercury -98144-02-03 08:37 J -34125639.30 -34125639.14 -34125638.99 0.0272 0.0036  
 Mercury -98144-05-02 22:47 J -34125550.68 -34125550.55 -34125550.41 0.0272 0.0114  
 Mercury -98144-07-30 12:56 J -34125462.06 -34125461.96 -34125461.85 0.0272 0.0191  
 Mercury -98144-10-27 02:52 J -34125373.40 -34125373.38 -34125373.35 0.0272 0.0266  
 Venus -98143-11-02 17:01 J -34125001.95 -34125001.79 -34125001.61 0.0273 0.0162  
 Venus -98142-06-19 23:16 J -34124772.73 -34124772.53 -34124772.32 0.0273 0.0076  
 Earth -98141-08-13 10:32 J -34124352.30 -34124352.06 -34124351.82 0.0274 0.0052  
 Moon -98141-08-13 13:40 J -34124352.18 -34124351.93 -34124351.69 0.0274 0.0044 \*  
 Mars -98136-01-30 04:47 J -34122721.54 -34122721.30 -34122721.04 0.0280 0.0148  
 Mercury -98130-02-23 19:11 J -34120505.79 -34120505.70 -34120505.60 0.0287 0.0219  
 Mercury -98130-05-23 11:16 J -34120417.16 -34120417.03 -34120416.89 0.0287 0.0128  
 Mercury -98130-08-20 03:49 J -34120328.50 -34120328.34 -34120328.19 0.0287 0.0036  
 Mercury -98130-11-16 20:23 J -34120239.80 -34120239.65 -34120239.49 0.0287 0.0061  
 Mercury -98129-02-13 13:25 J -34120151.06 -34120150.94 -34120150.80 0.0287 0.0159  
 Mercury -98129-05-12 06:56 J -34120062.27 -34120062.21 -34120062.14 0.0287 0.0258  
 Venus -98128-04-12 20:52 J -34119726.76 -34119726.63 -34119726.49 0.0286 0.0215  
 Venus -98128-11-28 14:37 J -34119497.10 -34119496.89 -34119496.69 0.0286 0.0060

Earth -98126-02-04 15:20 J -34119064.10 -34119063.86 -34119063.61 0.0285 0.0026  
 Moon -98126-02-04 18:56 J -34119063.95 -34119063.71 -34119063.46 0.0285 0.0036 \*  
 Mars -98122-04-15 17:44 J -34117533.00 -34117532.76 -34117532.51 0.0279 0.0149  
 Mars -98120-04-14 15:35 J -34116802.86 -34116802.85 -34116802.81 0.0276 0.0276  
 Mercury -98116-09-30 13:54 J -34115173.00 -34115172.92 -34115172.83 0.0272 0.0230  
 Mercury -98116-12-28 05:16 J -34115084.41 -34115084.28 -34115084.14 0.0272 0.0146  
 Mercury -98115-03-26 20:23 J -34114995.80 -34114995.65 -34114995.50 0.0272 0.0063  
 Mercury -98115-06-23 11:01 J -34114907.19 -34114907.04 -34114906.88 0.0272 0.0019  
 Mercury -98115-09-20 01:25 J -34114818.58 -34114818.44 -34114818.29 0.0272 0.0097  
 Mercury -98115-12-17 15:35 J -34114729.96 -34114729.85 -34114729.73 0.0272 0.0174  
 Mercury -98114-03-16 05:30 J -34114641.32 -34114641.27 -34114641.21 0.0272 0.0250  
 Venus -98113-05-15 00:13 J -34114215.68 -34114215.49 -34114215.30 0.0272 0.0123  
 Venus -98113-12-30 05:59 J -34113986.44 -34113986.25 -34113986.05 0.0273 0.0114  
 Moon -98112-08-08 09:20 J -34113765.28 -34113765.11 -34113764.93 0.0273 0.0187  
 Earth -98112-08-08 12:13 J -34113765.14 -34113764.99 -34113764.81 0.0273 0.0199 \*  
 Earth -98111-08-20 18:56 J -34113387.92 -34113387.71 -34113387.50 0.0274 0.0135  
 Moon -98111-08-20 20:08 J -34113387.86 -34113387.66 -34113387.45 0.0274 0.0135 \*  
 Mars -98106-03-22 05:44 J -34111713.56 -34111713.26 -34111712.96 0.0281 0.0008  
 Mercury -98101-07-12 18:56 J -34109773.78 -34109773.71 -34109773.64 0.0287 0.0254  
 Mercury -98101-10-09 10:47 J -34109685.17 -34109685.05 -34109684.92 0.0287 0.0164  
 Mercury -98100-01-06 03:06 J -34109596.52 -34109596.37 -34109596.22 0.0287 0.0072  
 Mercury -98100-04-04 19:40 J -34109507.84 -34109507.68 -34109507.53 0.0287 0.0023  
 Mercury -98100-07-02 12:28 J -34109419.12 -34109418.98 -34109418.83 0.0287 0.0120  
 Mercury -98100-09-29 05:44 J -34109330.36 -34109330.26 -34109330.15 0.0287 0.0219  
 Venus -98099-10-23 22:18 J -34108940.72 -34108940.57 -34108940.41 0.0287 0.0190  
 Venus -98098-06-10 15:49 J -34108711.04 -34108710.84 -34108710.64 0.0286 0.0085  
 Moon -98097-01-29 10:04 J -34108478.23 -34108478.08 -34108477.91 0.0286 0.0214  
 Earth -98097-01-29 13:11 J -34108478.11 -34108477.95 -34108477.77 0.0286 0.0206 \*  
 Moon -98096-02-11 10:47 J -34108099.24 -34108099.05 -34108098.86 0.0285 0.0171  
 Earth -98096-02-11 10:47 J -34108099.23 -34108099.05 -34108098.85 0.0285 0.0184 \*

Mars -98092-06-02 20:37 J -34106526.93 -34106526.64 -34106526.35 0.0278 0.0002  
 Mercury -98086-02-17 13:25 J -34104440.97 -34104440.94 -34104440.89 0.0272 0.0262  
 Mercury -98086-05-17 05:01 J -34104352.40 -34104352.29 -34104352.17 0.0272 0.0177  
 Mercury -98086-08-13 20:23 J -34104263.80 -34104263.65 -34104263.51 0.0272 0.0094  
 Mercury -98086-11-10 11:16 J -34104175.19 -34104175.03 -34104174.88 0.0272 0.0013  
 Mercury -98085-02-07 01:40 J -34104086.57 -34104086.43 -34104086.28 0.0272 0.0068  
 Mercury -98085-05-05 16:04 J -34103997.96 -34103997.83 -34103997.70 0.0272 0.0146  
 Mercury -98085-08-02 05:59 J -34103909.33 -34103909.25 -34103909.16 0.0272 0.0223  
 Venus -98084-11-25 01:40 J -34103429.63 -34103429.43 -34103429.23 0.0273 0.0097  
 Venus -98083-07-12 07:25 J -34103200.36 -34103200.19 -34103200.00 0.0273 0.0140  
 Moon -98082-08-15 13:11 J -34102801.20 -34102800.95 -34102800.70 0.0274 0.0012  
 Earth -98082-08-15 14:23 J -34102801.14 -34102800.90 -34102800.66 0.0274 0.0015 \*  
 Mars -98076-05-11 19:54 J -34100704.90 -34100704.67 -34100704.42 0.0282 0.0176  
 Mercury -98072-11-29 20:23 J -34099041.68 -34099041.65 -34099041.61 0.0287 0.0277  
 Mercury -98071-02-26 12:13 J -34098953.10 -34098952.99 -34098952.88 0.0287 0.0188  
 Mercury -98071-05-26 04:18 J -34098864.46 -34098864.32 -34098864.17 0.0287 0.0096  
 Mercury -98071-08-22 20:52 J -34098775.78 -34098775.63 -34098775.47 0.0287 0.0001  
 Mercury -98071-11-19 13:40 J -34098687.07 -34098686.93 -34098686.78 0.0287 0.0095  
 Mercury -98070-02-16 06:56 J -34098598.32 -34098598.21 -34098598.09 0.0287 0.0194  
 Venus -98069-05-05 05:44 J -34098154.43 -34098154.26 -34098154.07 0.0286 0.0148  
 Venus -98069-12-20 23:30 J -34097924.70 -34097924.52 -34097924.32 0.0286 0.0130  
 Moon -98067-02-05 19:25 J -34097512.94 -34097512.69 -34097512.43 0.0285 0.0003  
 Earth -98067-02-05 19:40 J -34097512.92 -34097512.68 -34097512.43 0.0285 0.0013 \*  
 Mars -98062-07-22 13:40 J -34095520.15 -34095519.93 -34095519.67 0.0277 0.0147  
 Mercury -98057-10-03 07:40 J -34093620.29 -34093620.18 -34093620.07 0.0272 0.0195  
 Mercury -98057-12-30 22:47 J -34093531.69 -34093531.55 -34093531.40 0.0272 0.0112  
 Mercury -98056-03-29 13:54 J -34093443.08 -34093442.92 -34093442.77 0.0272 0.0030  
 Mercury -98056-06-26 04:32 J -34093354.46 -34093354.31 -34093354.16 0.0272 0.0051  
 Mercury -98056-09-22 18:42 J -34093265.85 -34093265.72 -34093265.58 0.0272 0.0129  
 Mercury -98056-12-20 08:52 J -34093177.23 -34093177.13 -34093177.03 0.0272 0.0206



Venus -98054-06-07 09:06 J -34092643.33 -34092643.12 -34092642.92 0.0272 0.0058

Venus -98053-01-22 14:23 J -34092414.05 -34092413.90 -34092413.73 0.0273 0.0179

Earth -98053-08-09 17:16 J -34092213.98 -34092213.78 -34092213.58 0.0273 0.0160

Moon -98053-08-09 17:44 J -34092213.95 -34092213.76 -34092213.56 0.0273 0.0151 \*

Earth -98052-08-21 23:01 J -34091836.72 -34091836.54 -34091836.34 0.0274 0.0172

Moon -98052-08-22 02:52 J -34091836.57 -34091836.38 -34091836.19 0.0274 0.0168 \*

Mars -98048-06-25 18:56 J -34090432.96 -34090432.71 -34090432.45 0.0279 0.0144

Mercury -98042-07-16 11:44 J -34088221.10 -34088221.01 -34088220.91 0.0287 0.0222

Mercury -98042-10-13 03:49 J -34088132.47 -34088132.34 -34088132.20 0.0287 0.0132

Mercury -98041-01-09 20:08 J -34088043.81 -34088043.66 -34088043.51 0.0287 0.0038

Mercury -98041-04-07 12:42 J -34087955.12 -34087954.97 -34087954.81 0.0287 0.0058

Mercury -98041-07-05 05:44 J -34087866.39 -34087866.26 -34087866.12 0.0287 0.0155

Mercury -98041-10-01 23:15 J -34087777.60 -34087777.53 -34087777.46 0.0287 0.0254

Venus -98040-11-15 07:11 J -34087368.39 -34087368.20 -34087368.01 0.0287 0.0123

Venus -98039-07-03 00:27 J -34087138.65 -34087138.48 -34087138.29 0.0286 0.0154

Earth -98038-01-30 17:01 J -34086926.99 -34086926.79 -34086926.59 0.0286 0.0167

Moon -98038-01-30 17:30 J -34086926.95 -34086926.77 -34086926.58 0.0286 0.0177 \*

Earth -98037-02-13 14:51 J -34086548.03 -34086547.88 -34086547.72 0.0285 0.0221

Moon -98037-02-13 18:27 J -34086547.89 -34086547.73 -34086547.56 0.0285 0.0206 \*

Mars -98034-09-08 18:42 J -34085244.96 -34085244.72 -34085244.47 0.0279 0.0147

Mercury -98027-02-20 06:56 J -34082888.29 -34082888.21 -34082888.12 0.0272 0.0228

Mercury -98027-05-19 22:32 J -34082799.70 -34082799.56 -34082799.43 0.0272 0.0144

Mercury -98027-08-16 13:25 J -34082711.09 -34082710.94 -34082710.78 0.0272 0.0062

Mercury -98027-11-13 04:18 J -34082622.47 -34082622.32 -34082622.17 0.0272 0.0019

Mercury -98026-02-09 18:42 J -34082533.86 -34082533.72 -34082533.57 0.0272 0.0099

Mercury -98026-05-09 08:51 J -34082445.24 -34082445.13 -34082445.01 0.0272 0.0177

Mercury -98026-08-05 22:47 J -34082356.60 -34082356.55 -34082356.49 0.0272 0.0252

Venus -98025-05-02 03:06 J -34082086.38 -34082086.37 -34082086.35 0.0272 0.0272

Venus -98025-12-17 09:35 J -34081857.31 -34081857.10 -34081856.89 0.0273 0.0034

Venus -98024-08-03 14:51 J -34081628.01 -34081627.88 -34081627.73 0.0273 0.0203

Moon	-98023-08-16 13:39 J	-34081250.17	-34081249.93	-34081249.69	0.0274	0.0021
Earth	-98023-08-16 17:15 J	-34081250.03	-34081249.78	-34081249.54	0.0274	0.0020 *
Mars	-98018-08-15 13:25 J	-34079425.24	-34079424.94	-34079424.64	0.0281	0.0015
Mercury	-98013-12-02 12:42 J	-34077489.04	-34077488.97	-34077488.89	0.0287	0.0249
Mercury	-98012-03-01 04:32 J	-34077400.43	-34077400.31	-34077400.18	0.0287	0.0159
Mercury	-98012-05-28 20:51 J	-34077311.78	-34077311.63	-34077311.48	0.0287	0.0066
Mercury	-98012-08-25 13:25 J	-34077223.09	-34077222.94	-34077222.78	0.0287	0.0030
Mercury	-98012-11-22 06:27 J	-34077134.37	-34077134.23	-34077134.09	0.0287	0.0127
Mercury	-98011-02-18 23:44 J	-34077045.60	-34077045.51	-34077045.41	0.0287	0.0226
Venus	-98010-05-28 13:25 J	-34076582.14	-34076581.94	-34076581.73	0.0286	0.0082
Venus	-98009-01-13 07:11 J	-34076352.35	-34076352.20	-34076352.04	0.0286	0.0196
Moon	-98008-02-06 18:13 J	-34075961.99	-34075961.74	-34075961.49	0.0285	0.0034
Earth	-98008-02-06 21:49 J	-34075961.83	-34075961.59	-34075961.35	0.0285	0.0048 *
Mars	-98004-10-27 21:20 J	-34074237.89	-34074237.61	-34074237.32	0.0279	0.0008

# 98TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 98th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-97998-07-10 09:20 J	-34072156.17	-34072156.11	-34072156.04	0.0272	0.0248		
Mercury	-97998-10-07 00:56 J	-34072067.59	-34072067.46	-34072067.34	0.0272	0.0163		
Mercury	-97997-01-03 16:03 J	-34071978.98	-34071978.83	-34071978.68	0.0272	0.0080		
Mercury	-97997-04-01 06:56 J	-34071890.37	-34071890.21	-34071890.06	0.0272	0.0003		
Mercury	-97997-06-28 21:20 J	-34071801.75	-34071801.61	-34071801.46	0.0272	0.0082		

Mercury -97997-09-25 11:44 J -34071713.13 -34071713.01 -34071712.89 0.0272 0.0159

Mercury -97997-12-23 01:39 J -34071624.50 -34071624.43 -34071624.36 0.0272 0.0235

Venus -97996-11-12 10:47 J -34071300.16 -34071300.05 -34071299.94 0.0272 0.0234

Venus -97995-06-29 16:47 J -34071071.01 -34071070.80 -34071070.59 0.0272 0.0005

Venus -97994-02-13 22:03 J -34070841.67 -34070841.58 -34070841.48 0.0273 0.0241

Earth -97994-08-11 20:37 J -34070662.86 -34070662.64 -34070662.43 0.0273 0.0124

Moon -97994-08-11 23:59 J -34070662.71 -34070662.50 -34070662.27 0.0273 0.0114 \*

Earth -97993-08-23 01:39 J -34070285.57 -34070285.43 -34070285.26 0.0274 0.0207

Moon -97993-08-23 02:08 J -34070285.56 -34070285.41 -34070285.23 0.0274 0.0201 \*

Mars -97988-10-05 05:01 J -34068416.51 -34068416.29 -34068416.04 0.0281 0.0178

Mercury -97983-04-21 12:42 J -34066756.99 -34066756.97 -34066756.94 0.0286 0.0281

Mercury -97983-07-19 04:18 J -34066668.42 -34066668.32 -34066668.20 0.0287 0.0193

Mercury -97983-10-15 20:37 J -34066579.79 -34066579.64 -34066579.50 0.0287 0.0101

Mercury -97982-01-12 12:56 J -34066491.12 -34066490.96 -34066490.81 0.0287 0.0007

Mercury -97982-04-11 05:44 J -34066402.41 -34066402.26 -34066402.11 0.0287 0.0089

Mercury -97982-07-08 22:47 J -34066313.67 -34066313.55 -34066313.43 0.0287 0.0188

Venus -97981-12-07 14:51 J -34065796.09 -34065795.88 -34065795.67 0.0287 0.0057

Venus -97980-07-25 08:23 J -34065566.28 -34065566.15 -34065566.01 0.0286 0.0221

Earth -97979-01-31 18:42 J -34065375.93 -34065375.72 -34065375.49 0.0286 0.0131

Moon -97979-01-31 22:32 J -34065375.77 -34065375.56 -34065375.35 0.0286 0.0141 \*

Earth -97978-02-14 17:01 J -34064996.89 -34064996.79 -34064996.68 0.0285 0.0257

Moon -97978-02-14 18:56 J -34064996.84 -34064996.71 -34064996.57 0.0285 0.0241 \*

Mars -97974-12-15 12:13 J -34063232.23 -34063231.99 -34063231.74 0.0278 0.0147

Mercury -97968-02-22 23:59 J -34061335.60 -34061335.50 -34061335.39 0.0272 0.0197

Mercury -97968-05-22 15:20 J -34061247.00 -34061246.86 -34061246.71 0.0272 0.0114

Mercury -97968-08-19 06:27 J -34061158.39 -34061158.23 -34061158.08 0.0272 0.0031

Mercury -97968-11-15 21:06 J -34061069.77 -34061069.62 -34061069.47 0.0272 0.0049

Mercury -97967-02-12 11:30 J -34060981.15 -34060981.02 -34060980.89 0.0272 0.0128

Mercury -97967-05-12 01:39 J -34060892.53 -34060892.43 -34060892.34 0.0272 0.0205

Venus -97966-05-25 10:18 J -34060514.19 -34060514.07 -34060513.93 0.0272 0.0211

Venus -97965-01-09 16:47 J -34060285.01 -34060284.80 -34060284.59 0.0273 0.0027  
 Moon -97965-08-05 07:39 J -34060076.22 -34060076.18 -34060076.11 0.0273 0.0266  
 Venus -97965-08-25 22:03 J -34060055.62 -34060055.58 -34060055.52 0.0273 0.0264  
 Moon -97964-08-17 18:27 J -34059698.96 -34059698.73 -34059698.50 0.0274 0.0054  
 Earth -97964-08-17 19:11 J -34059698.94 -34059698.70 -34059698.46 0.0274 0.0054 \*  
 Mars -97960-11-18 21:35 J -34058144.85 -34058144.60 -34058144.34 0.0280 0.0139  
 Mercury -97954-12-06 04:47 J -34055936.39 -34055936.30 -34055936.20 0.0287 0.0222  
 Mercury -97953-03-03 20:51 J -34055847.77 -34055847.63 -34055847.49 0.0287 0.0131  
 Mercury -97953-05-31 13:11 J -34055759.10 -34055758.95 -34055758.80 0.0287 0.0037  
 Mercury -97953-08-28 05:44 J -34055670.41 -34055670.26 -34055670.10 0.0287 0.0060  
 Mercury -97953-11-24 22:47 J -34055581.67 -34055581.55 -34055581.41 0.0287 0.0157  
 Mercury -97952-02-21 16:18 J -34055492.88 -34055492.82 -34055492.75 0.0287 0.0257  
 Venus -97951-06-19 20:08 J -34055009.87 -34055009.66 -34055009.45 0.0286 0.0019  
 Venus -97950-02-04 13:54 J -34054780.00 -34054779.92 -34054779.83 0.0286 0.0259  
 Moon -97949-02-08 20:08 J -34054410.88 -34054410.66 -34054410.42 0.0285 0.0069  
 Earth -97949-02-08 21:49 J -34054410.82 -34054410.59 -34054410.35 0.0285 0.0082 \*  
 Mars -97945-02-02 11:44 J -34052956.25 -34052956.01 -34052955.75 0.0280 0.0143  
 Mercury -97939-07-13 02:23 J -34050603.49 -34050603.40 -34050603.30 0.0273 0.0217  
 Mercury -97939-10-09 17:59 J -34050514.89 -34050514.75 -34050514.62 0.0273 0.0133  
 Mercury -97938-01-06 08:51 J -34050426.28 -34050426.13 -34050425.97 0.0272 0.0050  
 Mercury -97938-04-04 23:44 J -34050337.67 -34050337.51 -34050337.36 0.0272 0.0031  
 Mercury -97938-07-02 14:08 J -34050249.05 -34050248.91 -34050248.77 0.0272 0.0111  
 Mercury -97938-09-29 04:18 J -34050160.43 -34050160.32 -34050160.21 0.0272 0.0188  
 Mercury -97938-12-26 17:59 J -34050071.77 -34050071.75 -34050071.71 0.0272 0.0264  
 Venus -97937-12-04 17:59 J -34049727.90 -34049727.75 -34049727.58 0.0272 0.0174  
 Venus -97936-07-21 23:59 J -34049498.70 -34049498.50 -34049498.29 0.0273 0.0066  
 Earth -97935-08-12 23:01 J -34049111.77 -34049111.54 -34049111.31 0.0273 0.0087  
 Moon -97935-08-13 00:13 J -34049111.73 -34049111.49 -34049111.24 0.0273 0.0081 \*  
 Moon -97934-08-25 00:56 J -34048734.59 -34048734.46 -34048734.33 0.0274 0.0231  
 Earth -97934-08-25 04:03 J -34048734.43 -34048734.33 -34048734.21 0.0274 0.0241 \*

Mars -97929-01-09 01:54 J -34047136.72 -34047136.42 -34047136.12 0.0280 0.0018  
 Mercury -97924-04-24 05:01 J -34045204.36 -34045204.29 -34045204.22 0.0286 0.0253  
 Mercury -97924-07-21 20:51 J -34045115.75 -34045115.63 -34045115.51 0.0286 0.0163  
 Mercury -97924-10-18 12:56 J -34045027.11 -34045026.96 -34045026.81 0.0287 0.0071  
 Mercury -97923-01-15 05:30 J -34044938.43 -34044938.27 -34044938.12 0.0287 0.0024  
 Mercury -97923-04-13 22:18 J -34044849.71 -34044849.57 -34044849.43 0.0287 0.0120  
 Mercury -97923-07-11 15:35 J -34044760.95 -34044760.85 -34044760.75 0.0287 0.0219  
 Venus -97922-05-15 04:47 J -34044453.37 -34044453.30 -34044453.23 0.0287 0.0270  
 Venus -97922-12-30 21:49 J -34044223.80 -34044223.59 -34044223.38 0.0286 0.0008  
 Venus -97921-08-16 15:35 J -34043993.85 -34043993.85 -34043993.84 0.0286 0.0286  
 Earth -97920-02-01 19:54 J -34043824.90 -34043824.67 -34043824.44 0.0286 0.0095  
 Moon -97920-02-01 21:06 J -34043824.85 -34043824.62 -34043824.38 0.0286 0.0107 \*  
 Moon -97919-02-15 15:06 J -34043445.92 -34043445.87 -34043445.79 0.0285 0.0275  
 Mars -97915-03-22 15:06 J -34041950.15 -34041949.87 -34041949.58 0.0279 0.0007  
 Mercury -97910-11-30 01:25 J -34039871.49 -34039871.44 -34039871.38 0.0272 0.0252  
 Mercury -97909-02-26 17:01 J -34039782.91 -34039782.79 -34039782.67 0.0272 0.0167  
 Mercury -97909-05-25 08:08 J -34039694.30 -34039694.16 -34039694.01 0.0272 0.0084  
 Mercury -97909-08-21 23:01 J -34039605.69 -34039605.54 -34039605.38 0.0272 0.0008  
 Mercury -97909-11-18 13:39 J -34039517.07 -34039516.93 -34039516.78 0.0272 0.0079  
 Mercury -97908-02-15 04:03 J -34039428.45 -34039428.33 -34039428.21 0.0272 0.0157  
 Mercury -97908-05-14 17:59 J -34039339.82 -34039339.75 -34039339.67 0.0272 0.0233  
 Venus -97907-06-16 17:30 J -34038941.95 -34038941.77 -34038941.59 0.0272 0.0151  
 Venus -97906-01-31 23:30 J -34038712.72 -34038712.52 -34038712.32 0.0273 0.0088  
 Moon -97906-08-07 12:42 J -34038525.08 -34038524.97 -34038524.84 0.0273 0.0234  
 Earth -97906-08-07 13:25 J -34038525.04 -34038524.94 -34038524.82 0.0273 0.0242 \*  
 Earth -97905-08-18 20:37 J -34038147.87 -34038147.64 -34038147.41 0.0274 0.0088  
 Moon -97905-08-18 23:44 J -34038147.74 -34038147.51 -34038147.28 0.0274 0.0085 \*  
 Mars -97899-02-28 02:23 J -34036128.63 -34036128.40 -34036128.16 0.0282 0.0181  
 Mercury -97895-09-11 05:15 J -34034472.30 -34034472.28 -34034472.26 0.0287 0.0284  
 Mercury -97895-12-08 20:51 J -34034383.74 -34034383.63 -34034383.52 0.0287 0.0195

Mercury -97894-03-07 12:56 J -34034295.10 -34034294.96 -34034294.82 0.0287 0.0103

Mercury -97894-06-04 05:15 J -34034206.43 -34034206.28 -34034206.12 0.0287 0.0013

Mercury -97894-08-31 22:03 J -34034117.72 -34034117.58 -34034117.43 0.0287 0.0088

Mercury -97894-11-28 15:20 J -34034028.98 -34034028.86 -34034028.74 0.0287 0.0186

Mercury -97893-02-25 08:51 J -34033940.14 -34033940.13 -34033940.12 0.0287 0.0286

Venus -97893-11-24 08:37 J -34033667.25 -34033667.14 -34033667.01 0.0287 0.0236

Venus -97892-07-12 02:23 J -34033437.61 -34033437.40 -34033437.19 0.0286 0.0044

Earth -97891-01-26 23:59 J -34033238.58 -34033238.50 -34033238.41 0.0286 0.0269

Moon -97891-01-26 23:01 J -34033238.57 -34033238.54 -34033238.49 0.0286 0.0282 \*

Earth -97890-02-09 21:06 J -34032859.84 -34032859.62 -34032859.39 0.0285 0.0115

Moon -97890-02-09 23:59 J -34032859.73 -34032859.50 -34032859.27 0.0285 0.0100 \*

Mars -97885-05-10 02:37 J -34030943.63 -34030943.39 -34030943.15 0.0278 0.0150

Mercury -97880-07-15 19:11 J -34029050.81 -34029050.70 -34029050.58 0.0273 0.0188

Mercury -97880-10-12 10:32 J -34028962.20 -34028962.06 -34028961.91 0.0273 0.0104

Mercury -97879-01-09 01:39 J -34028873.59 -34028873.43 -34028873.28 0.0273 0.0022

Mercury -97879-04-07 16:18 J -34028784.97 -34028784.82 -34028784.67 0.0273 0.0060

Mercury -97879-07-05 06:42 J -34028696.35 -34028696.22 -34028696.09 0.0273 0.0139

Mercury -97879-10-01 20:37 J -34028607.73 -34028607.64 -34028607.55 0.0272 0.0216

Venus -97878-12-28 01:11 J -34028155.64 -34028155.45 -34028155.26 0.0273 0.0114

Venus -97877-08-13 06:56 J -34027926.39 -34027926.21 -34027926.02 0.0273 0.0126

Moon -97876-08-13 21:49 J -34027560.83 -34027560.59 -34027560.34 0.0273 0.0050

Earth -97876-08-14 01:11 J -34027560.69 -34027560.45 -34027560.21 0.0273 0.0052 \*

Moon -97875-08-26 03:49 J -34027183.38 -34027183.34 -34027183.27 0.0274 0.0266

Mars -97871-04-14 13:54 J -34025856.17 -34025855.92 -34025855.65 0.0279 0.0133

Mercury -97865-04-26 21:20 J -34023651.69 -34023651.61 -34023651.51 0.0286 0.0225

Mercury -97865-07-24 13:11 J -34023563.08 -34023562.95 -34023562.81 0.0286 0.0135

Mercury -97865-10-21 05:30 J -34023474.42 -34023474.27 -34023474.11 0.0286 0.0041

Mercury -97864-01-17 22:03 J -34023385.73 -34023385.58 -34023385.42 0.0286 0.0055

Mercury -97864-04-16 15:06 J -34023297.00 -34023296.87 -34023296.74 0.0287 0.0152

Mercury -97864-07-14 08:23 J -34023208.22 -34023208.15 -34023208.07 0.0287 0.0251

Venus -97863-06-06 11:44 J -34022881.15 -34022881.01 -34022880.86 0.0286 0.0207  
 Venus -97862-01-22 04:47 J -34022651.50 -34022651.30 -34022651.09 0.0286 0.0073  
 Moon -97861-02-03 17:30 J -34022274.01 -34022273.77 -34022273.53 0.0286 0.0075  
 Earth -97861-02-03 20:37 J -34022273.88 -34022273.64 -34022273.40 0.0286 0.0060 \*  
 Mars -97857-06-27 03:49 J -34020668.58 -34020668.34 -34020668.08 0.0280 0.0142  
 Mercury -97851-12-02 18:13 J -34018318.82 -34018318.74 -34018318.64 0.0272 0.0222  
 Mercury -97850-03-01 09:49 J -34018230.22 -34018230.09 -34018229.95 0.0272 0.0137  
 Mercury -97850-05-29 00:56 J -34018141.61 -34018141.46 -34018141.31 0.0272 0.0054  
 Mercury -97850-08-25 15:49 J -34018053.00 -34018052.84 -34018052.69 0.0272 0.0028  
 Mercury -97850-11-22 06:13 J -34017964.38 -34017964.24 -34017964.10 0.0272 0.0107  
 Mercury -97849-02-18 20:23 J -34017875.75 -34017875.65 -34017875.53 0.0272 0.0185  
 Mercury -97849-05-17 10:18 J -34017787.10 -34017787.07 -34017787.02 0.0272 0.0261  
 Venus -97848-07-09 00:27 J -34017369.68 -34017369.48 -34017369.28 0.0272 0.0090  
 Venus -97847-02-23 06:13 J -34017140.41 -34017140.24 -34017140.06 0.0273 0.0149  
 Earth -97847-08-08 15:35 J -34016974.00 -34016973.85 -34016973.69 0.0273 0.0206  
 Moon -97847-08-08 19:11 J -34016973.86 -34016973.70 -34016973.54 0.0273 0.0201 \*  
 Earth -97846-08-20 22:32 J -34016596.78 -34016596.56 -34016596.35 0.0274 0.0122  
 Moon -97846-08-21 00:42 J -34016596.68 -34016596.47 -34016596.23 0.0274 0.0117 \*  
 Mars -97841-06-02 22:47 J -34014848.85 -34014848.55 -34014848.25 0.0280 0.0022  
 Mercury -97836-09-13 21:06 J -34012919.67 -34012919.62 -34012919.55 0.0286 0.0258  
 Mercury -97836-12-11 12:56 J -34012831.08 -34012830.96 -34012830.83 0.0287 0.0168  
 Mercury -97835-03-10 05:01 J -34012742.43 -34012742.29 -34012742.13 0.0287 0.0076  
 Mercury -97835-06-06 21:35 J -34012653.75 -34012653.60 -34012653.44 0.0287 0.0021  
 Mercury -97835-09-03 14:37 J -34012565.04 -34012564.89 -34012564.75 0.0287 0.0117  
 Mercury -97835-12-01 07:39 J -34012476.28 -34012476.18 -34012476.07 0.0287 0.0216  
 Venus -97834-12-17 14:51 J -34012095.04 -34012094.88 -34012094.71 0.0287 0.0174  
 Venus -97833-08-03 08:23 J -34011865.34 -34011865.15 -34011864.95 0.0286 0.0106  
 Earth -97832-01-27 23:01 J -34011687.67 -34011687.54 -34011687.39 0.0286 0.0235  
 Moon -97832-01-28 02:37 J -34011687.50 -34011687.39 -34011687.27 0.0286 0.0250 \*  
 Earth -97831-02-10 20:37 J -34011308.85 -34011308.64 -34011308.42 0.0285 0.0148

Moon -97831-02-10 23:44 J -34011308.73 -34011308.51 -34011308.28 0.0285 0.0132 \*  
 Mars -97827-08-16 00:56 J -34009661.75 -34009661.46 -34009661.17 0.0279 0.0009  
 Mercury -97821-04-20 20:23 J -34007586.72 -34007586.65 -34007586.58 0.0273 0.0244  
 Mercury -97821-07-18 11:59 J -34007498.13 -34007498.00 -34007497.87 0.0273 0.0158  
 Mercury -97821-10-15 03:06 J -34007409.51 -34007409.37 -34007409.21 0.0273 0.0075  
 Mercury -97820-01-11 18:13 J -34007320.90 -34007320.74 -34007320.59 0.0273 0.0009  
 Mercury -97820-04-10 08:37 J -34007232.28 -34007232.14 -34007231.99 0.0273 0.0089  
 Mercury -97820-07-07 23:01 J -34007143.66 -34007143.54 -34007143.42 0.0273 0.0167  
 Mercury -97820-10-04 13:11 J -34007055.02 -34007054.95 -34007054.89 0.0273 0.0244  
 Venus -97818-01-19 08:08 J -34006583.37 -34006583.16 -34006582.95 0.0273 0.0053  
 Venus -97818-09-05 13:54 J -34006354.07 -34006353.92 -34006353.77 0.0273 0.0187  
 Moon -97817-08-15 00:56 J -34006009.70 -34006009.46 -34006009.23 0.0274 0.0018  
 Earth -97817-08-15 03:20 J -34006009.60 -34006009.36 -34006009.12 0.0274 0.0016 \*  
 Mars -97813-07-19 16:47 J -34004574.85 -34004574.80 -34004574.73 0.0278 0.0271  
 Mars -97811-07-24 20:37 J -34003839.86 -34003839.64 -34003839.41 0.0281 0.0187  
 Mercury -97806-01-31 22:18 J -34002187.58 -34002187.57 -34002187.54 0.0286 0.0283  
 Mercury -97806-04-30 14:08 J -34002099.02 -34002098.91 -34002098.80 0.0286 0.0194  
 Mercury -97806-07-28 05:59 J -34002010.39 -34002010.25 -34002010.10 0.0286 0.0103  
 Mercury -97806-10-24 22:18 J -34001921.72 -34001921.57 -34001921.41 0.0286 0.0011  
 Mercury -97805-01-21 15:06 J -34001833.02 -34001832.87 -34001832.72 0.0286 0.0087  
 Mercury -97805-04-19 08:08 J -34001744.28 -34001744.16 -34001744.04 0.0286 0.0184  
 Mercury -97805-07-17 01:25 J -34001655.45 -34001655.44 -34001655.42 0.0286 0.0284  
 Venus -97804-06-28 19:25 J -34001308.87 -34001308.69 -34001308.50 0.0286 0.0142  
 Venus -97803-02-13 12:27 J -34001079.16 -34001078.98 -34001078.79 0.0286 0.0138  
 Moon -97802-02-04 19:25 J -34000722.93 -34000722.69 -34000722.45 0.0285 0.0040  
 Earth -97802-02-04 22:03 J -34000722.82 -34000722.58 -34000722.33 0.0285 0.0024 \*  
 Mars -97797-10-02 22:47 J -33998655.78 -33998655.55 -33998655.30 0.0278 0.0152  
 Mercury -97792-12-05 11:15 J -33996766.14 -33996766.03 -33996765.92 0.0273 0.0192  
 Mercury -97791-03-04 02:37 J -33996677.53 -33996677.39 -33996677.25 0.0272 0.0108  
 Mercury -97791-05-31 17:44 J -33996588.92 -33996588.76 -33996588.61 0.0272 0.0025



Mercury -97791-08-28 08:23 J -33996500.30 -33996500.15 -33996500.00 0.0272 0.0056

Mercury -97791-11-24 22:47 J -33996411.68 -33996411.55 -33996411.42 0.0272 0.0136

Mercury -97790-02-21 12:56 J -33996323.05 -33996322.96 -33996322.87 0.0272 0.0213

Venus -97790-12-15 00:56 J -33996026.48 -33996026.46 -33996026.43 0.0272 0.0270

Venus -97789-07-31 07:25 J -33995797.40 -33995797.19 -33995796.97 0.0272 0.0031

Venus -97788-03-17 13:25 J -33995568.07 -33995567.94 -33995567.81 0.0273 0.0210

Earth -97788-08-09 17:59 J -33995422.94 -33995422.75 -33995422.56 0.0273 0.0170

Moon -97788-08-09 20:08 J -33995422.85 -33995422.66 -33995422.46 0.0273 0.0168 \*

Moon -97787-08-21 22:18 J -33995045.77 -33995045.57 -33995045.35 0.0274 0.0147

Earth -97787-08-22 00:42 J -33995045.66 -33995045.47 -33995045.26 0.0274 0.0157 \*

Mars -97783-09-07 12:56 J -33993568.22 -33993567.96 -33993567.69 0.0279 0.0127

Mercury -97777-09-16 13:39 J -33991367.01 -33991366.93 -33991366.83 0.0286 0.0228

Mercury -97777-12-14 05:44 J -33991278.40 -33991278.26 -33991278.13 0.0286 0.0137

Mercury -97776-03-12 21:49 J -33991189.74 -33991189.59 -33991189.43 0.0286 0.0044

Mercury -97776-06-09 14:23 J -33991101.05 -33991100.90 -33991100.74 0.0286 0.0052

Mercury -97776-09-06 07:25 J -33991012.33 -33991012.19 -33991012.06 0.0287 0.0149

Mercury -97776-12-04 00:42 J -33990923.55 -33990923.47 -33990923.39 0.0287 0.0248

Venus -97774-01-08 22:18 J -33990522.77 -33990522.57 -33990522.38 0.0286 0.0110

Venus -97774-08-26 15:35 J -33990293.01 -33990292.85 -33990292.67 0.0286 0.0171

Earth -97773-01-29 23:59 J -33990136.66 -33990136.50 -33990136.31 0.0286 0.0199

Moon -97773-01-30 02:23 J -33990136.56 -33990136.40 -33990136.23 0.0286 0.0214 \*

Moon -97772-02-11 19:54 J -33989757.87 -33989757.67 -33989757.45 0.0285 0.0167

Earth -97772-02-11 21:20 J -33989757.79 -33989757.61 -33989757.41 0.0285 0.0183 \*

Mars -97769-11-20 11:01 J -33988380.28 -33988380.04 -33988379.77 0.0280 0.0139

Mercury -97762-04-24 13:11 J -33986034.04 -33986033.95 -33986033.85 0.0273 0.0214

Mercury -97762-07-22 04:32 J -33985945.44 -33985945.31 -33985945.16 0.0273 0.0130

Mercury -97762-10-18 19:54 J -33985856.82 -33985856.67 -33985856.52 0.0273 0.0045

Mercury -97761-01-15 10:47 J -33985768.20 -33985768.05 -33985767.90 0.0273 0.0037

Mercury -97761-04-13 01:11 J -33985679.58 -33985679.45 -33985679.31 0.0273 0.0117

Mercury -97761-07-10 15:35 J -33985590.96 -33985590.85 -33985590.75 0.0273 0.0195

Mercury -97761-10-07 05:30 J -33985502.28 -33985502.27 -33985502.26 0.0273 0.0272  
 Venus -97760-06-26 08:37 J -33985240.24 -33985240.14 -33985240.03 0.0273 0.0234  
 Venus -97759-02-10 15:20 J -33985011.08 -33985010.86 -33985010.65 0.0273 0.0010  
 Venus -97759-09-27 20:51 J -33984781.70 -33984781.63 -33984781.54 0.0273 0.0249  
 Earth -97758-08-17 05:59 J -33984458.49 -33984458.25 -33984458.00 0.0274 0.0022  
 Moon -97758-08-17 08:23 J -33984458.39 -33984458.15 -33984457.91 0.0274 0.0016 \*  
 Mars -97753-10-28 01:11 J -33982559.75 -33982559.45 -33982559.15 0.0280 0.0034  
 Mercury -97747-02-03 15:35 J -33980634.92 -33980634.85 -33980634.78 0.0286 0.0251  
 Mercury -97747-05-03 07:11 J -33980546.33 -33980546.20 -33980546.08 0.0286 0.0162  
 Mercury -97747-07-30 23:15 J -33980457.68 -33980457.53 -33980457.38 0.0286 0.0070  
 Mercury -97747-10-27 15:35 J -33980369.00 -33980368.85 -33980368.70 0.0286 0.0025  
 Mercury -97746-01-24 08:23 J -33980280.29 -33980280.15 -33980280.01 0.0286 0.0121  
 Mercury -97746-04-23 01:25 J -33980191.54 -33980191.44 -33980191.34 0.0286 0.0220  
 Venus -97745-07-21 03:49 J -33979736.54 -33979736.34 -33979736.13 0.0286 0.0074  
 Venus -97744-03-07 21:06 J -33979506.76 -33979506.62 -33979506.47 0.0286 0.0206  
 Earth -97743-02-06 01:11 J -33979171.70 -33979171.45 -33979171.20 0.0285 0.0015  
 Moon -97743-02-06 03:06 J -33979171.61 -33979171.37 -33979171.13 0.0285 0.0005 \*  
 Mars -97738-01-09 01:54 J -33977373.71 -33977373.42 -33977373.13 0.0279 0.0014  
 Mercury -97733-09-10 12:42 J -33975302.03 -33975301.97 -33975301.90 0.0273 0.0246  
 Mercury -97733-12-08 04:18 J -33975213.44 -33975213.32 -33975213.19 0.0273 0.0161  
 Mercury -97732-03-06 19:39 J -33975124.83 -33975124.68 -33975124.53 0.0273 0.0077  
 Mercury -97732-06-03 10:32 J -33975036.21 -33975036.06 -33975035.90 0.0273 0.0007  
 Mercury -97732-08-31 01:11 J -33974947.59 -33974947.45 -33974947.30 0.0272 0.0087  
 Mercury -97732-11-27 15:35 J -33974858.97 -33974858.85 -33974858.73 0.0272 0.0166  
 Mercury -97731-02-24 05:44 J -33974770.33 -33974770.26 -33974770.20 0.0272 0.0243  
 Venus -97730-01-06 08:51 J -33974454.26 -33974454.13 -33974453.99 0.0272 0.0209  
 Venus -97730-08-23 15:20 J -33974225.07 -33974224.86 -33974224.65 0.0273 0.0033  
 Moon -97729-08-10 18:56 J -33973871.92 -33973871.71 -33973871.48 0.0273 0.0136  
 Earth -97729-08-10 21:49 J -33973871.81 -33973871.59 -33973871.38 0.0273 0.0133 \*  
 Moon -97728-08-23 00:56 J -33973494.63 -33973494.46 -33973494.27 0.0274 0.0181

Earth -97728-08-23 04:32 J -33973494.48 -33973494.31 -33973494.14 0.0274 0.0193 \*  
 Mars -97725-12-12 18:42 J -33972286.80 -33972286.72 -33972286.62 0.0278 0.0264  
 Mars -97723-12-17 21:49 J -33971551.80 -33971551.59 -33971551.36 0.0281 0.0194  
 Mercury -97718-06-23 15:06 J -33969902.87 -33969902.87 -33969902.85 0.0286 0.0285  
 Mercury -97718-09-20 06:42 J -33969814.33 -33969814.22 -33969814.11 0.0286 0.0196  
 Mercury -97718-12-17 22:32 J -33969725.69 -33969725.56 -33969725.41 0.0286 0.0106  
 Mercury -97717-03-15 15:06 J -33969637.03 -33969636.87 -33969636.72 0.0286 0.0014  
 Mercury -97717-06-12 07:39 J -33969548.33 -33969548.18 -33969548.03 0.0286 0.0085  
 Mercury -97717-09-09 00:27 J -33969459.59 -33969459.48 -33969459.35 0.0286 0.0184  
 Mercury -97717-12-06 17:59 J -33969370.77 -33969370.75 -33969370.72 0.0286 0.0283  
 Venus -97715-01-31 06:27 J -33968950.43 -33968950.23 -33968950.02 0.0286 0.0043  
 Venus -97715-09-17 23:59 J -33968720.61 -33968720.50 -33968720.38 0.0286 0.0239  
 Moon -97714-01-31 00:13 J -33968585.69 -33968585.49 -33968585.29 0.0286 0.0177  
 Earth -97714-01-31 02:51 J -33968585.57 -33968585.38 -33968585.17 0.0286 0.0161 \*  
 Moon -97713-02-13 20:37 J -33968206.81 -33968206.64 -33968206.46 0.0285 0.0204  
 Earth -97713-02-14 00:27 J -33968206.63 -33968206.48 -33968206.32 0.0285 0.0219 \*  
 Mars -97708-02-26 10:03 J -33966367.30 -33966367.08 -33966366.83 0.0278 0.0158  
 Mercury -97703-01-28 14:23 J -33964569.92 -33964569.90 -33964569.87 0.0274 0.0270  
 Mercury -97703-04-27 06:13 J -33964481.35 -33964481.24 -33964481.12 0.0274 0.0183  
 Mercury -97703-07-24 21:35 J -33964392.74 -33964392.60 -33964392.45 0.0273 0.0099  
 Mercury -97703-10-21 12:42 J -33964304.12 -33964303.97 -33964303.81 0.0273 0.0015  
 Mercury -97702-01-18 03:35 J -33964215.50 -33964215.35 -33964215.20 0.0273 0.0067  
 Mercury -97702-04-16 17:59 J -33964126.88 -33964126.75 -33964126.62 0.0273 0.0147  
 Mercury -97702-07-14 07:54 J -33964038.24 -33964038.17 -33964038.07 0.0273 0.0226  
 Venus -97701-07-18 16:18 J -33963667.98 -33963667.82 -33963667.65 0.0273 0.0172  
 Venus -97700-03-04 22:47 J -33963438.75 -33963438.55 -33963438.34 0.0273 0.0072  
 Earth -97700-08-06 00:42 J -33963284.51 -33963284.47 -33963284.41 0.0274 0.0268  
 Moon -97700-08-06 02:37 J -33963284.43 -33963284.39 -33963284.32 0.0274 0.0265 \*  
 Earth -97699-08-18 09:35 J -33962907.33 -33962907.10 -33962906.86 0.0274 0.0059  
 Moon -97699-08-18 13:11 J -33962907.19 -33962906.95 -33962906.71 0.0274 0.0050 \*

Mars -97694-02-01 20:37 J -33961278.91 -33961278.64 -33961278.37 0.0279 0.0111  
 Mercury -97688-02-06 08:51 J -33959082.22 -33959082.13 -33959082.03 0.0286 0.0216  
 Mercury -97688-05-06 00:42 J -33958993.60 -33958993.47 -33958993.33 0.0286 0.0126  
 Mercury -97688-08-02 17:01 J -33958904.95 -33958904.79 -33958904.64 0.0286 0.0034  
 Mercury -97688-10-30 09:20 J -33958816.26 -33958816.11 -33958815.95 0.0286 0.0063  
 Mercury -97687-01-27 02:08 J -33958727.53 -33958727.41 -33958727.27 0.0286 0.0160  
 Mercury -97687-04-25 19:39 J -33958638.75 -33958638.68 -33958638.62 0.0286 0.0258  
 Venus -97687-12-26 21:20 J -33958393.63 -33958393.61 -33958393.55 0.0286 0.0280  
 Venus -97686-08-13 14:08 J -33958164.12 -33958163.91 -33958163.70 0.0286 0.0003  
 Venus -97685-03-30 07:11 J -33957934.23 -33957934.20 -33957934.14 0.0286 0.0279  
 Earth -97684-02-07 06:56 J -33957620.45 -33957620.21 -33957619.97 0.0285 0.0055  
 Moon -97684-02-07 10:32 J -33957620.30 -33957620.06 -33957619.81 0.0285 0.0039 \*  
 Mars -97680-04-15 19:11 J -33956091.96 -33956091.70 -33956091.44 0.0280 0.0129  
 Mercury -97674-09-14 05:59 J -33953749.34 -33953749.25 -33953749.15 0.0273 0.0214  
 Mercury -97674-12-11 21:35 J -33953660.73 -33953660.60 -33953660.46 0.0273 0.0128  
 Mercury -97673-03-09 12:56 J -33953572.12 -33953571.96 -33953571.81 0.0273 0.0045  
 Mercury -97673-06-06 03:49 J -33953483.50 -33953483.34 -33953483.19 0.0273 0.0038  
 Mercury -97673-09-02 18:13 J -33953394.87 -33953394.74 -33953394.60 0.0273 0.0119  
 Mercury -97673-11-30 08:37 J -33953306.24 -33953306.14 -33953306.04 0.0273 0.0197  
 Venus -97671-01-28 17:15 J -33952881.95 -33952881.78 -33952881.59 0.0273 0.0145  
 Venus -97671-09-14 23:44 J -33952652.70 -33952652.51 -33952652.31 0.0273 0.0098  
 Moon -97670-08-12 23:15 J -33952320.75 -33952320.53 -33952320.31 0.0273 0.0099  
 Earth -97670-08-13 02:23 J -33952320.63 -33952320.40 -33952320.17 0.0273 0.0094 \*  
 Earth -97669-08-24 09:06 J -33951943.24 -33951943.12 -33951942.98 0.0274 0.0231  
 Moon -97669-08-24 10:03 J -33951943.21 -33951943.08 -33951942.93 0.0274 0.0217 \*  
 Mars -97664-03-23 06:27 J -33950271.52 -33950271.23 -33950270.93 0.0280 0.0043  
 Mercury -97659-06-26 08:37 J -33948350.21 -33948350.14 -33948350.07 0.0286 0.0250  
 Mercury -97659-09-23 00:13 J -33948261.61 -33948261.49 -33948261.36 0.0286 0.0161  
 Mercury -97659-12-20 16:18 J -33948172.97 -33948172.82 -33948172.67 0.0286 0.0069  
 Mercury -97658-03-19 08:51 J -33948084.29 -33948084.13 -33948083.98 0.0286 0.0027

Mercury -97658-06-16 01:25 J -33947995.58 -33947995.44 -33947995.30 0.0286 0.0123

Mercury -97658-09-12 18:27 J -33947906.82 -33947906.73 -33947906.62 0.0286 0.0222

Venus -97657-07-07 23:44 J -33947607.61 -33947607.51 -33947607.41 0.0286 0.0251

Venus -97656-02-22 16:32 J -33947378.02 -33947377.81 -33947377.60 0.0286 0.0029

Moon -97655-02-01 05:15 J -33947034.49 -33947034.28 -33947034.07 0.0285 0.0136

Earth -97655-02-01 08:08 J -33947034.38 -33947034.16 -33947033.93 0.0285 0.0120 \*

Moon -97654-02-15 05:30 J -33946655.38 -33946655.27 -33946655.14 0.0285 0.0246

Earth -97654-02-15 05:30 J -33946655.36 -33946655.27 -33946655.16 0.0285 0.0259 \*

Mars -97650-06-04 13:11 J -33945085.23 -33945084.95 -33945084.66 0.0279 0.0021

Mercury -97644-01-31 07:54 J -33943017.25 -33943017.17 -33943017.09 0.0274 0.0237

Mercury -97644-04-29 23:30 J -33942928.65 -33942928.52 -33942928.39 0.0274 0.0151

Mercury -97644-07-27 14:51 J -33942840.03 -33942839.88 -33942839.73 0.0274 0.0066

Mercury -97644-10-24 05:59 J -33942751.41 -33942751.25 -33942751.10 0.0274 0.0018

Mercury -97643-01-20 20:37 J -33942662.78 -33942662.64 -33942662.50 0.0274 0.0099

Mercury -97643-04-19 10:47 J -33942574.15 -33942574.05 -33942573.93 0.0273 0.0179

Mercury -97643-07-17 01:11 J -33942485.50 -33942485.45 -33942485.40 0.0273 0.0256

Venus -97642-08-11 01:11 J -33942095.65 -33942095.45 -33942095.26 0.0273 0.0108

Venus -97641-03-27 07:25 J -33941866.36 -33941866.19 -33941866.00 0.0274 0.0137

Earth -97641-08-07 05:59 J -33941733.38 -33941733.25 -33941733.12 0.0274 0.0228

Moon -97641-08-07 09:35 J -33941733.24 -33941733.10 -33941732.96 0.0274 0.0224 \*

Moon -97640-08-19 14:08 J -33941356.15 -33941355.91 -33941355.67 0.0274 0.0086

Earth -97640-08-19 14:51 J -33941356.10 -33941355.88 -33941355.65 0.0274 0.0097 \*

Mars -97636-05-09 06:56 J -33939997.33 -33939997.21 -33939997.05 0.0278 0.0246

Mars -97634-05-14 12:56 J -33939262.16 -33939261.96 -33939261.76 0.0281 0.0213

Mercury -97630-11-13 11:15 J -33937618.07 -33937618.03 -33937617.97 0.0285 0.0267

Mercury -97629-02-10 02:51 J -33937529.49 -33937529.38 -33937529.26 0.0285 0.0178

Mercury -97629-05-08 18:56 J -33937440.86 -33937440.71 -33937440.57 0.0286 0.0087

Mercury -97629-08-05 11:15 J -33937352.19 -33937352.03 -33937351.88 0.0286 0.0011

Mercury -97629-11-02 03:49 J -33937263.49 -33937263.34 -33937263.20 0.0286 0.0103

Mercury -97628-01-29 20:37 J -33937174.74 -33937174.64 -33937174.52 0.0286 0.0201

Venus -97627-01-18 08:51 J -33936821.26 -33936821.13 -33936820.97 0.0286 0.0206  
 Venus -97627-09-05 01:39 J -33936591.63 -33936591.43 -33936591.22 0.0286 0.0074  
 Earth -97626-01-26 20:08 J -33936447.70 -33936447.66 -33936447.59 0.0286 0.0277  
 Moon -97625-02-09 14:37 J -33936069.13 -33936068.89 -33936068.64 0.0285 0.0084  
 Earth -97625-02-09 15:06 J -33936069.10 -33936068.87 -33936068.63 0.0285 0.0098 \*  
 Mars -97622-07-22 06:13 J -33934810.30 -33934810.24 -33934810.16 0.0281 0.0272  
 Mars -97620-07-23 01:54 J -33934078.65 -33934078.42 -33934078.20 0.0278 0.0169  
 Mercury -97615-06-20 07:54 J -33932285.19 -33932285.17 -33932285.12 0.0273 0.0266  
 Mercury -97615-09-16 23:59 J -33932196.62 -33932196.50 -33932196.38 0.0273 0.0179  
 Mercury -97615-12-14 15:20 J -33932108.01 -33932107.86 -33932107.71 0.0273 0.0093  
 Mercury -97614-03-13 06:27 J -33932019.39 -33932019.23 -33932019.08 0.0273 0.0011  
 Mercury -97614-06-09 21:06 J -33931930.76 -33931930.62 -33931930.47 0.0273 0.0072  
 Mercury -97614-09-06 11:30 J -33931842.14 -33931842.02 -33931841.89 0.0273 0.0152  
 Mercury -97614-12-04 01:39 J -33931753.50 -33931753.43 -33931753.34 0.0273 0.0230  
 Venus -97612-02-20 02:51 J -33931309.58 -33931309.38 -33931309.18 0.0273 0.0078  
 Venus -97612-10-07 09:06 J -33931080.28 -33931080.12 -33931079.95 0.0273 0.0165  
 Earth -97611-08-14 08:23 J -33930769.39 -33930769.15 -33930768.91 0.0273 0.0054  
 Moon -97611-08-14 08:51 J -33930769.36 -33930769.13 -33930768.90 0.0273 0.0061 \*  
 Earth -97610-08-26 15:06 J -33930391.90 -33930391.87 -33930391.81 0.0274 0.0269  
 Moon -97610-08-26 18:56 J -33930391.79 -33930391.71 -33930391.61 0.0274 0.0253  
 Mars -97606-06-28 06:42 J -33928990.49 -33928990.22 -33928989.94 0.0279 0.0100  
 Mercury -97600-06-29 02:51 J -33926797.48 -33926797.38 -33926797.28 0.0286 0.0212  
 Mercury -97600-09-25 18:27 J -33926708.86 -33926708.73 -33926708.59 0.0286 0.0122  
 Mercury -97600-12-23 10:47 J -33926620.21 -33926620.05 -33926619.90 0.0286 0.0029  
 Mercury -97599-03-22 03:06 J -33926531.52 -33926531.37 -33926531.21 0.0286 0.0068  
 Mercury -97599-06-18 20:08 J -33926442.79 -33926442.66 -33926442.53 0.0286 0.0165  
 Mercury -97599-09-15 13:11 J -33926354.00 -33926353.95 -33926353.88 0.0286 0.0264  
 Venus -97598-07-31 11:30 J -33926035.18 -33926035.02 -33926034.85 0.0286 0.0176  
 Venus -97597-03-17 04:18 J -33925805.51 -33925805.32 -33925805.12 0.0286 0.0105  
 Earth -97596-02-02 16:32 J -33925483.04 -33925482.81 -33925482.57 0.0285 0.0075

Moon -97596-02-02 17:44 J -33925482.98 -33925482.76 -33925482.53 0.0285 0.0089 \*  
 Mars -97592-09-09 11:30 J -33923803.27 -33923803.02 -33923802.74 0.0280 0.0119  
 Mercury -97585-02-04 01:25 J -33921464.54 -33921464.44 -33921464.33 0.0274 0.0202  
 Mercury -97585-05-02 17:01 J -33921375.93 -33921375.79 -33921375.64 0.0274 0.0116  
 Mercury -97585-07-30 08:23 J -33921287.30 -33921287.15 -33921286.99 0.0274 0.0031  
 Mercury -97585-10-26 23:15 J -33921198.68 -33921198.53 -33921198.38 0.0274 0.0051  
 Mercury -97584-01-23 13:54 J -33921110.05 -33921109.92 -33921109.79 0.0274 0.0132  
 Mercury -97584-04-22 04:18 J -33921021.42 -33921021.32 -33921021.23 0.0274 0.0211  
 Venus -97583-09-02 10:18 J -33920523.28 -33920523.07 -33920522.86 0.0274 0.0041  
 Venus -97582-04-19 16:47 J -33920293.93 -33920293.80 -33920293.65 0.0274 0.0204  
 Earth -97582-08-09 11:59 J -33920182.18 -33920182.00 -33920181.83 0.0274 0.0188  
 Moon -97582-08-09 11:59 J -33920182.18 -33920182.00 -33920181.81 0.0274 0.0187 \*  
 Moon -97581-08-20 17:15 J -33919804.99 -33919804.78 -33919804.55 0.0275 0.0124  
 Earth -97581-08-20 20:51 J -33919804.83 -33919804.63 -33919804.41 0.0275 0.0137 \*  
 Mars -97576-08-18 01:25 J -33917981.73 -33917981.44 -33917981.14 0.0280 0.0066  
 Mercury -97571-11-16 05:44 J -33916065.35 -33916065.26 -33916065.17 0.0285 0.0227  
 Mercury -97570-02-12 21:20 J -33915976.74 -33915976.61 -33915976.47 0.0285 0.0138  
 Mercury -97570-05-12 13:25 J -33915888.09 -33915887.94 -33915887.78 0.0285 0.0046  
 Mercury -97570-08-09 05:59 J -33915799.40 -33915799.25 -33915799.10 0.0286 0.0050  
 Mercury -97570-11-05 22:47 J -33915710.69 -33915710.55 -33915710.42 0.0286 0.0147  
 Mercury -97569-02-02 15:49 J -33915621.92 -33915621.84 -33915621.76 0.0286 0.0246  
 Venus -97568-02-09 22:03 J -33915248.76 -33915248.58 -33915248.39 0.0286 0.0127  
 Venus -97568-09-27 14:51 J -33915019.06 -33915018.88 -33915018.70 0.0285 0.0154  
 Moon -97567-01-28 05:59 J -33914896.37 -33914896.25 -33914896.11 0.0285 0.0244  
 Earth -97567-01-28 06:56 J -33914896.34 -33914896.21 -33914896.06 0.0285 0.0231 \*  
 Moon -97566-02-10 22:18 J -33914517.79 -33914517.57 -33914517.35 0.0285 0.0131  
 Earth -97566-02-11 01:54 J -33914517.63 -33914517.42 -33914517.20 0.0285 0.0144 \*  
 Mars -97562-10-29 16:03 J -33912796.11 -33912795.83 -33912795.54 0.0279 0.0039  
 Mercury -97556-06-23 02:23 J -33910732.48 -33910732.40 -33910732.31 0.0273 0.0227  
 Mercury -97556-09-19 17:59 J -33910643.88 -33910643.75 -33910643.61 0.0273 0.0141

Mercury -97556-12-17 09:20 J -33910555.26 -33910555.11 -33910554.96 0.0273 0.0056

Mercury -97555-03-16 00:27 J -33910466.64 -33910466.48 -33910466.33 0.0273 0.0027

Mercury -97555-06-12 15:06 J -33910378.01 -33910377.87 -33910377.73 0.0273 0.0108

Mercury -97555-09-09 05:30 J -33910289.38 -33910289.27 -33910289.16 0.0273 0.0187

Mercury -97555-12-06 19:25 J -33910200.72 -33910200.69 -33910200.65 0.0273 0.0264

Venus -97554-07-29 06:13 J -33909966.31 -33909966.24 -33909966.15 0.0273 0.0253

Venus -97553-03-14 13:25 J -33909737.15 -33909736.94 -33909736.73 0.0273 0.0008

Venus -97553-10-29 19:39 J -33909507.78 -33909507.68 -33909507.57 0.0273 0.0235

Earth -97552-08-15 16:32 J -33909218.05 -33909217.81 -33909217.57 0.0274 0.0013

Moon -97552-08-15 19:54 J -33909217.91 -33909217.67 -33909217.43 0.0274 0.0020 \*

Mars -97548-10-02 22:32 J -33907708.71 -33907708.56 -33907708.39 0.0278 0.0234

Mars -97546-10-08 04:03 J -33906973.51 -33906973.33 -33906973.15 0.0281 0.0226

Mercury -97541-04-04 05:44 J -33905333.32 -33905333.26 -33905333.20 0.0286 0.0260

Mercury -97541-07-01 21:20 J -33905244.73 -33905244.61 -33905244.49 0.0286 0.0171

Mercury -97541-09-28 13:11 J -33905156.09 -33905155.95 -33905155.80 0.0286 0.0079

Mercury -97541-12-26 05:30 J -33905067.42 -33905067.27 -33905067.12 0.0286 0.0015

Mercury -97540-03-24 22:03 J -33904978.72 -33904978.58 -33904978.43 0.0286 0.0111

Mercury -97540-06-21 15:06 J -33904889.97 -33904889.87 -33904889.76 0.0286 0.0209

Venus -97539-08-23 00:27 J -33904462.68 -33904462.48 -33904462.28 0.0286 0.0097

Venus -97538-04-09 17:15 J -33904232.93 -33904232.78 -33904232.61 0.0286 0.0185

Earth -97537-02-05 03:06 J -33903931.61 -33903931.37 -33903931.12 0.0285 0.0029

Moon -97537-02-05 06:42 J -33903931.46 -33903931.22 -33903930.97 0.0285 0.0043 \*

Mars -97534-12-16 03:49 J -33902521.44 -33902521.34 -33902521.22 0.0281 0.0260

Mars -97532-12-16 23:01 J -33901789.74 -33901789.54 -33901789.31 0.0278 0.0181

Mercury -97527-11-10 03:49 J -33900000.39 -33900000.34 -33900000.27 0.0274 0.0251

Mercury -97526-02-06 19:39 J -33899911.80 -33899911.68 -33899911.55 0.0274 0.0164

Mercury -97526-05-06 11:15 J -33899823.18 -33899823.03 -33899822.89 0.0274 0.0079

Mercury -97526-08-03 02:08 J -33899734.56 -33899734.41 -33899734.25 0.0274 0.0009

Mercury -97526-10-30 17:01 J -33899645.93 -33899645.79 -33899645.64 0.0274 0.0087

Mercury -97525-01-27 07:25 J -33899557.30 -33899557.19 -33899557.07 0.0274 0.0167



Mercury -97525-04-24 21:35 J -33899468.66 -33899468.60 -33899468.53 0.0274 0.0246

Venus -97524-02-07 12:56 J -33899180.08 -33899179.96 -33899179.82 0.0274 0.0218

Venus -97524-09-24 20:23 J -33898950.86 -33898950.65 -33898950.44 0.0274 0.0029

Venus -97523-05-12 02:51 J -33898721.39 -33898721.38 -33898721.36 0.0274 0.0273

Moon -97523-08-10 15:20 J -33898631.05 -33898630.86 -33898630.64 0.0274 0.0150

Earth -97523-08-10 19:11 J -33898630.91 -33898630.70 -33898630.50 0.0274 0.0148 \*

Moon -97522-08-23 02:37 J -33898253.57 -33898253.39 -33898253.19 0.0275 0.0165

Earth -97522-08-23 04:03 J -33898253.51 -33898253.33 -33898253.14 0.0275 0.0177 \*

Mars -97518-11-23 03:20 J -33896700.64 -33896700.36 -33896700.07 0.0279 0.0077

Mercury -97512-08-22 08:51 J -33894601.16 -33894601.13 -33894601.08 0.0285 0.0274

Mercury -97512-11-19 00:27 J -33894512.59 -33894512.48 -33894512.36 0.0285 0.0185

Mercury -97511-02-15 16:32 J -33894423.96 -33894423.81 -33894423.67 0.0285 0.0093

Mercury -97511-05-15 08:37 J -33894335.29 -33894335.14 -33894334.98 0.0285 0.0003

Mercury -97511-08-12 01:11 J -33894246.59 -33894246.45 -33894246.30 0.0286 0.0096

Mercury -97511-11-08 18:13 J -33894157.86 -33894157.74 -33894157.63 0.0286 0.0194

Venus -97509-03-04 12:27 J -33893676.19 -33893675.98 -33893675.78 0.0286 0.0045

Venus -97509-10-20 05:01 J -33893446.39 -33893446.29 -33893446.16 0.0285 0.0238

Moon -97508-01-29 16:03 J -33893344.99 -33893344.83 -33893344.64 0.0285 0.0198

Earth -97508-01-29 19:54 J -33893344.86 -33893344.67 -33893344.48 0.0285 0.0182 \*

Moon -97507-02-12 13:25 J -33892966.12 -33892965.94 -33892965.75 0.0285 0.0180

Earth -97507-02-12 15:06 J -33892966.05 -33892965.87 -33892965.68 0.0285 0.0191 \*

Mars -97503-02-04 00:56 J -33891513.73 -33891513.46 -33891513.19 0.0280 0.0097

Mercury -97497-06-25 20:51 J -33889179.74 -33889179.63 -33889179.51 0.0273 0.0188

Mercury -97497-09-22 12:27 J -33889091.12 -33889090.98 -33889090.83 0.0273 0.0102

Mercury -97497-12-20 03:35 J -33889002.50 -33889002.35 -33889002.19 0.0273 0.0019

Mercury -97496-03-18 18:27 J -33888913.88 -33888913.73 -33888913.58 0.0273 0.0065

Mercury -97496-06-15 09:06 J -33888825.25 -33888825.12 -33888824.99 0.0273 0.0145

Mercury -97496-09-11 23:15 J -33888736.61 -33888736.53 -33888736.44 0.0273 0.0224

Venus -97495-08-20 17:30 J -33888393.92 -33888393.77 -33888393.60 0.0273 0.0182

Venus -97494-04-07 00:27 J -33888164.68 -33888164.48 -33888164.27 0.0273 0.0064

Earth -97493-08-17 01:11 J -33887666.69 -33887666.45 -33887666.20 0.0274 0.0030  
 Moon -97493-08-17 03:06 J -33887666.62 -33887666.37 -33887666.11 0.0274 0.0022 \*  
 Mars -97487-01-11 20:08 J -33885692.94 -33885692.66 -33885692.37 0.0280 0.0080  
 Mercury -97482-04-08 00:27 J -33883780.57 -33883780.48 -33883780.38 0.0286 0.0218  
 Mercury -97482-07-05 16:18 J -33883691.96 -33883691.82 -33883691.68 0.0286 0.0127  
 Mercury -97482-10-02 08:23 J -33883603.30 -33883603.15 -33883603.00 0.0286 0.0034  
 Mercury -97482-12-30 00:42 J -33883514.62 -33883514.47 -33883514.32 0.0286 0.0061  
 Mercury -97481-03-27 17:30 J -33883425.90 -33883425.77 -33883425.64 0.0286 0.0158  
 Mercury -97481-06-24 10:32 J -33883337.12 -33883337.06 -33883336.98 0.0286 0.0257  
 Venus -97480-09-14 14:37 J -33882890.10 -33882889.89 -33882889.67 0.0286 0.0016  
 Venus -97479-05-02 07:39 J -33882660.25 -33882660.18 -33882660.10 0.0286 0.0267  
 Earth -97478-02-06 15:49 J -33882380.09 -33882379.84 -33882379.59 0.0285 0.0019  
 Moon -97478-02-06 17:15 J -33882380.03 -33882379.78 -33882379.52 0.0285 0.0007 \*  
 Mars -97473-03-24 16:03 J -33880507.11 -33880506.83 -33880506.54 0.0279 0.0052  
 Mercury -97468-11-12 22:18 J -33878447.66 -33878447.57 -33878447.47 0.0274 0.0212  
 Mercury -97467-02-09 13:54 J -33878359.05 -33878358.92 -33878358.77 0.0274 0.0126  
 Mercury -97467-05-09 05:15 J -33878270.43 -33878270.28 -33878270.12 0.0274 0.0041  
 Mercury -97467-08-05 20:23 J -33878181.81 -33878181.65 -33878181.50 0.0274 0.0043  
 Mercury -97467-11-02 11:01 J -33878093.18 -33878093.04 -33878092.91 0.0274 0.0124  
 Mercury -97466-01-30 01:11 J -33878004.54 -33878004.45 -33878004.34 0.0274 0.0204  
 Venus -97465-03-01 23:59 J -33877607.67 -33877607.50 -33877607.32 0.0274 0.0147  
 Venus -97465-10-17 07:11 J -33877378.40 -33877378.20 -33877378.00 0.0274 0.0100  
 Moon -97464-08-12 01:11 J -33877079.66 -33877079.45 -33877079.22 0.0274 0.0112  
 Earth -97464-08-12 03:20 J -33877079.58 -33877079.36 -33877079.13 0.0274 0.0107 \*  
 Earth -97463-08-24 12:13 J -33876702.13 -33876701.99 -33876701.84 0.0275 0.0216  
 Moon -97463-08-24 14:51 J -33876702.04 -33876701.88 -33876701.72 0.0275 0.0203 \*  
 Mars -97459-02-27 17:44 J -33875418.94 -33875418.76 -33875418.56 0.0279 0.0211  
 Mars -97457-03-04 05:01 J -33874683.42 -33874683.29 -33874683.16 0.0281 0.0253  
 Mercury -97453-08-25 03:49 J -33873048.42 -33873048.34 -33873048.25 0.0285 0.0230  
 Mercury -97453-11-21 19:39 J -33872959.81 -33872959.68 -33872959.55 0.0285 0.0140

Mercury -97452-02-18 11:30 J -33872871.17 -33872871.02 -33872870.86 0.0285 0.0049  
 Mercury -97452-05-18 03:49 J -33872782.49 -33872782.34 -33872782.18 0.0285 0.0048  
 Mercury -97452-08-14 20:37 J -33872693.77 -33872693.64 -33872693.50 0.0286 0.0143  
 Mercury -97452-11-11 13:39 J -33872605.01 -33872604.93 -33872604.84 0.0286 0.0242  
 Venus -97451-08-10 10:32 J -33872333.17 -33872333.06 -33872332.94 0.0286 0.0241  
 Venus -97450-03-28 02:51 J -33872103.59 -33872103.38 -33872103.17 0.0285 0.0040  
 Moon -97449-02-01 07:39 J -33871793.38 -33871793.18 -33871792.98 0.0285 0.0150  
 Earth -97449-02-01 09:06 J -33871793.33 -33871793.12 -33871792.89 0.0285 0.0135 \*  
 Earth -97448-02-14 04:47 J -33871414.42 -33871414.30 -33871414.15 0.0284 0.0238  
 Moon -97448-02-14 07:11 J -33871414.33 -33871414.20 -33871414.05 0.0284 0.0229 \*  
 Mars -97445-05-11 23:59 J -33870231.65 -33870231.50 -33870231.34 0.0281 0.0236  
 Mars -97443-05-13 15:06 J -33869500.06 -33869499.87 -33869499.68 0.0278 0.0202  
 Mercury -97438-04-01 23:59 J -33867715.57 -33867715.50 -33867715.41 0.0273 0.0233  
 Mercury -97438-06-29 15:49 J -33867626.97 -33867626.84 -33867626.71 0.0273 0.0146  
 Mercury -97438-09-26 07:11 J -33867538.35 -33867538.20 -33867538.05 0.0273 0.0061  
 Mercury -97438-12-23 22:18 J -33867449.73 -33867449.57 -33867449.42 0.0273 0.0023  
 Mercury -97437-03-21 12:56 J -33867361.10 -33867360.96 -33867360.82 0.0273 0.0104  
 Mercury -97437-06-18 03:20 J -33867272.47 -33867272.36 -33867272.25 0.0273 0.0183  
 Mercury -97437-09-14 17:30 J -33867183.81 -33867183.77 -33867183.73 0.0273 0.0261  
 Venus -97436-09-12 05:30 J -33866821.46 -33866821.27 -33866821.07 0.0273 0.0109  
 Venus -97435-04-29 12:13 J -33866592.17 -33866591.99 -33866591.80 0.0273 0.0137  
 Earth -97435-08-07 00:56 J -33866492.55 -33866492.46 -33866492.36 0.0273 0.0251  
 Moon -97435-08-07 02:51 J -33866492.47 -33866492.38 -33866492.28 0.0273 0.0251 \*  
 Moon -97434-08-19 08:08 J -33866115.40 -33866115.16 -33866114.91 0.0274 0.0060  
 Earth -97434-08-19 10:47 J -33866115.28 -33866115.05 -33866114.81 0.0274 0.0071 \*  
 Mars -97429-04-18 00:27 J -33864411.77 -33864411.48 -33864411.19 0.0279 0.0063  
 Mercury -97423-01-12 04:03 J -33862316.39 -33862316.33 -33862316.28 0.0286 0.0263  
 Mercury -97423-04-10 19:25 J -33862227.80 -33862227.69 -33862227.57 0.0286 0.0174  
 Mercury -97423-07-08 11:15 J -33862139.17 -33862139.03 -33862138.88 0.0286 0.0083  
 Mercury -97423-10-05 03:35 J -33862050.50 -33862050.35 -33862050.20 0.0286 0.0012

Mercury -97422-01-01 20:08 J -33861961.80 -33861961.66 -33861961.51 0.0286 0.0108

Mercury -97422-03-31 12:56 J -33861873.06 -33861872.96 -33861872.84 0.0286 0.0206

Venus -97421-02-20 12:56 J -33861547.09 -33861546.96 -33861546.82 0.0286 0.0213

Venus -97421-10-07 05:30 J -33861317.48 -33861317.27 -33861317.07 0.0286 0.0069

Moon -97419-02-08 02:51 J -33860828.63 -33860828.38 -33860828.13 0.0285 0.0055

Earth -97419-02-08 05:30 J -33860828.51 -33860828.27 -33860828.03 0.0285 0.0067 \*

Mars -97415-07-01 01:39 J -33859224.70 -33859224.43 -33859224.14 0.0280 0.0083

Mercury -97409-08-19 01:11 J -33856983.50 -33856983.45 -33856983.40 0.0274 0.0258

Mercury -97409-11-15 17:01 J -33856894.91 -33856894.79 -33856894.67 0.0274 0.0171

Mercury -97408-02-12 08:23 J -33856806.29 -33856806.15 -33856806.00 0.0274 0.0086

Mercury -97408-05-11 23:44 J -33856717.67 -33856717.51 -33856717.36 0.0274 0.0005

Mercury -97408-08-08 14:23 J -33856629.04 -33856628.90 -33856628.75 0.0274 0.0082

Mercury -97408-11-05 05:01 J -33856540.41 -33856540.29 -33856540.17 0.0274 0.0162

Mercury -97407-02-01 19:11 J -33856451.76 -33856451.70 -33856451.62 0.0274 0.0241

Venus -97406-03-25 11:15 J -33856035.23 -33856035.03 -33856034.82 0.0274 0.0074

Venus -97406-11-09 17:59 J -33855805.91 -33855805.75 -33855805.58 0.0274 0.0173

Earth -97405-08-13 11:44 J -33855528.24 -33855528.01 -33855527.77 0.0274 0.0066

Moon -97405-08-13 14:08 J -33855528.13 -33855527.91 -33855527.67 0.0274 0.0074 \*

Earth -97404-08-25 20:23 J -33855150.74 -33855150.65 -33855150.56 0.0275 0.0255

Moon -97404-08-25 23:30 J -33855150.63 -33855150.52 -33855150.40 0.0275 0.0241 \*

Mars -97399-06-08 17:30 J -33853403.05 -33853402.77 -33853402.49 0.0281 0.0104

Mercury -97394-06-01 07:11 J -33851584.23 -33851584.20 -33851584.16 0.0285 0.0276

Mercury -97394-08-28 22:47 J -33851495.66 -33851495.55 -33851495.44 0.0285 0.0187

Mercury -97394-11-25 14:37 J -33851407.03 -33851406.89 -33851406.75 0.0285 0.0096

Mercury -97393-02-22 06:42 J -33851318.37 -33851318.22 -33851318.06 0.0285 0.0005

Mercury -97393-05-20 23:15 J -33851229.68 -33851229.53 -33851229.38 0.0286 0.0093

Mercury -97393-08-17 16:03 J -33851140.94 -33851140.83 -33851140.71 0.0286 0.0191

Venus -97392-09-02 00:42 J -33850760.63 -33850760.47 -33850760.28 0.0286 0.0159

Venus -97391-04-19 17:30 J -33850530.96 -33850530.77 -33850530.58 0.0285 0.0124

Earth -97390-02-02 22:47 J -33850241.79 -33850241.55 -33850241.32 0.0285 0.0087

Moon -97390-02-03 01:11 J -33850241.67 -33850241.45 -33850241.22 0.0285 0.0102 \*  
 Earth -97389-02-16 18:56 J -33849862.72 -33849862.71 -33849862.69 0.0284 0.0284  
 Moon -97389-02-16 22:18 J -33849862.63 -33849862.57 -33849862.49 0.0284 0.0273  
 Mars -97385-08-19 13:39 J -33848217.20 -33848216.93 -33848216.65 0.0279 0.0075  
 Mercury -97379-04-04 19:11 J -33846162.81 -33846162.70 -33846162.59 0.0273 0.0190  
 Mercury -97379-07-02 10:47 J -33846074.20 -33846074.05 -33846073.91 0.0273 0.0104  
 Mercury -97379-09-29 01:54 J -33845985.57 -33845985.42 -33845985.26 0.0273 0.0020  
 Mercury -97379-12-26 16:47 J -33845896.95 -33845896.80 -33845896.65 0.0273 0.0062  
 Mercury -97378-03-25 07:25 J -33845808.32 -33845808.19 -33845808.06 0.0273 0.0143  
 Mercury -97378-06-21 21:35 J -33845719.68 -33845719.60 -33845719.51 0.0273 0.0222  
 Venus -97377-10-04 17:30 J -33845248.98 -33845248.77 -33845248.56 0.0273 0.0035  
 Venus -97376-05-21 23:59 J -33845019.62 -33845019.50 -33845019.36 0.0273 0.0212  
 Moon -97376-08-08 08:23 J -33844941.31 -33844941.15 -33844940.99 0.0273 0.0213  
 Earth -97376-08-08 11:01 J -33844941.19 -33844941.04 -33844940.88 0.0273 0.0208 \*  
 Moon -97375-08-20 17:01 J -33844564.00 -33844563.79 -33844563.56 0.0274 0.0100  
 Earth -97375-08-20 20:37 J -33844563.86 -33844563.64 -33844563.42 0.0274 0.0112 \*  
 Mars -97371-07-24 16:47 J -33843129.99 -33843129.80 -33843129.58 0.0278 0.0199  
 Mars -97369-07-29 02:37 J -33842394.49 -33842394.39 -33842394.30 0.0281 0.0266  
 Mercury -97364-01-14 22:47 J -33840763.64 -33840763.55 -33840763.46 0.0286 0.0221  
 Mercury -97364-04-13 14:23 J -33840675.03 -33840674.90 -33840674.76 0.0286 0.0130  
 Mercury -97364-07-11 06:27 J -33840586.38 -33840586.23 -33840586.08 0.0286 0.0037  
 Mercury -97364-10-07 22:47 J -33840497.70 -33840497.55 -33840497.40 0.0286 0.0058  
 Mercury -97363-01-04 15:35 J -33840408.98 -33840408.85 -33840408.72 0.0286 0.0155  
 Mercury -97363-04-03 08:37 J -33840320.21 -33840320.14 -33840320.07 0.0286 0.0254  
 Venus -97362-03-15 03:06 J -33839974.55 -33839974.37 -33839974.18 0.0286 0.0130  
 Venus -97362-10-30 19:54 J -33839744.85 -33839744.67 -33839744.49 0.0286 0.0153  
 Moon -97361-01-27 21:06 J -33839655.69 -33839655.62 -33839655.53 0.0286 0.0269  
 Earth -97361-01-28 00:13 J -33839655.59 -33839655.49 -33839655.37 0.0286 0.0254 \*  
 Moon -97360-02-09 15:06 J -33839277.09 -33839276.87 -33839276.64 0.0285 0.0102  
 Earth -97360-02-09 18:42 J -33839276.95 -33839276.72 -33839276.50 0.0285 0.0114 \*

Mars -97357-10-05 23:59 J -33837942.66 -33837942.50 -33837942.31 0.0281 0.0224  
 Mars -97355-10-07 15:20 J -33837211.02 -33837210.86 -33837210.66 0.0278 0.0216  
 Mercury -97350-08-22 19:54 J -33835430.76 -33835430.67 -33835430.57 0.0274 0.0217  
 Mercury -97350-11-19 11:30 J -33835342.15 -33835342.02 -33835341.88 0.0274 0.0131  
 Mercury -97349-02-16 02:51 J -33835253.53 -33835253.38 -33835253.22 0.0274 0.0046  
 Mercury -97349-05-14 17:59 J -33835164.90 -33835164.75 -33835164.60 0.0273 0.0038  
 Mercury -97349-08-11 08:37 J -33835076.27 -33835076.14 -33835076.00 0.0273 0.0120  
 Mercury -97349-11-07 23:01 J -33834987.64 -33834987.54 -33834987.43 0.0273 0.0200  
 Venus -97348-08-30 14:51 J -33834691.96 -33834691.88 -33834691.79 0.0274 0.0249  
 Venus -97347-04-16 22:32 J -33834462.77 -33834462.56 -33834462.35 0.0274 0.0001  
 Venus -97347-12-02 05:01 J -33834233.38 -33834233.29 -33834233.19 0.0274 0.0245  
 Earth -97346-08-15 20:08 J -33833976.90 -33833976.66 -33833976.41 0.0274 0.0026  
 Moon -97346-08-15 23:30 J -33833976.76 -33833976.52 -33833976.27 0.0274 0.0036 \*  
 Mars -97341-09-12 16:03 J -33832122.12 -33832121.83 -33832121.54 0.0280 0.0041  
 Mercury -97335-06-04 01:39 J -33830031.51 -33830031.43 -33830031.34 0.0285 0.0236  
 Mercury -97335-08-31 17:15 J -33829942.91 -33829942.78 -33829942.64 0.0285 0.0146  
 Mercury -97335-11-28 09:20 J -33829854.26 -33829854.11 -33829853.96 0.0286 0.0053  
 Mercury -97334-02-25 01:39 J -33829765.58 -33829765.43 -33829765.28 0.0286 0.0042  
 Mercury -97334-05-24 18:13 J -33829676.87 -33829676.74 -33829676.60 0.0286 0.0139  
 Mercury -97334-08-21 11:15 J -33829588.11 -33829588.03 -33829587.94 0.0286 0.0237  
 Venus -97333-09-24 14:37 J -33829188.09 -33829187.89 -33829187.69 0.0286 0.0076  
 Venus -97332-05-12 07:11 J -33828958.33 -33828958.20 -33828958.04 0.0285 0.0208  
 Earth -97331-02-04 11:01 J -33828690.28 -33828690.04 -33828689.80 0.0285 0.0041  
 Moon -97331-02-04 14:23 J -33828690.14 -33828689.90 -33828689.65 0.0285 0.0057 \*  
 Mars -97327-11-26 02:23 J -33826934.68 -33826934.40 -33826934.12 0.0280 0.0061  
 Mercury -97320-01-08 22:18 J -33824698.64 -33824698.57 -33824698.49 0.0273 0.0235  
 Mercury -97320-04-07 14:08 J -33824610.04 -33824609.91 -33824609.78 0.0273 0.0148  
 Mercury -97320-07-05 05:30 J -33824521.42 -33824521.27 -33824521.12 0.0273 0.0063  
 Mercury -97320-10-01 20:23 J -33824432.80 -33824432.65 -33824432.49 0.0273 0.0022  
 Mercury -97320-12-29 11:15 J -33824344.17 -33824344.03 -33824343.89 0.0273 0.0102

Mercury -97319-03-28 01:39 J -33824255.54 -33824255.43 -33824255.32 0.0273 0.0182

Mercury -97319-06-24 15:49 J -33824166.88 -33824166.84 -33824166.80 0.0273 0.0260

Venus -97318-03-12 22:18 J -33823905.70 -33823905.57 -33823905.43 0.0273 0.0208

Venus -97318-10-28 05:15 J -33823676.49 -33823676.28 -33823676.07 0.0273 0.0039

Moon -97317-08-09 17:30 J -33823389.95 -33823389.77 -33823389.58 0.0273 0.0174

Earth -97317-08-09 20:51 J -33823389.82 -33823389.63 -33823389.44 0.0273 0.0167 \*

Earth -97316-08-22 05:30 J -33823012.47 -33823012.27 -33823012.06 0.0274 0.0152

Moon -97316-08-22 06:13 J -33823012.43 -33823012.24 -33823012.03 0.0274 0.0139 \*

Mars -97311-11-02 14:23 J -33821114.17 -33821113.90 -33821113.62 0.0280 0.0116

Mercury -97306-10-22 01:39 J -33819299.47 -33819299.43 -33819299.38 0.0286 0.0269

Mercury -97305-01-18 17:15 J -33819210.90 -33819210.78 -33819210.66 0.0286 0.0179

Mercury -97305-04-16 09:06 J -33819122.27 -33819122.12 -33819121.98 0.0286 0.0088

Mercury -97305-07-14 01:11 J -33819033.60 -33819033.45 -33819033.29 0.0286 0.0007

Mercury -97305-10-10 17:44 J -33818944.90 -33818944.76 -33818944.61 0.0286 0.0102

Mercury -97304-01-07 10:32 J -33818856.17 -33818856.06 -33818855.94 0.0286 0.0201

Venus -97303-04-06 16:32 J -33818402.01 -33818401.81 -33818401.60 0.0286 0.0049

Venus -97303-11-22 09:20 J -33818172.22 -33818172.11 -33818171.98 0.0286 0.0236

Moon -97302-01-29 09:06 J -33818104.26 -33818104.12 -33818103.97 0.0286 0.0224

Earth -97302-01-29 11:59 J -33818104.16 -33818104.00 -33818103.83 0.0286 0.0208 \*

Earth -97301-02-12 06:27 J -33817725.43 -33817725.23 -33817725.02 0.0285 0.0159

Moon -97301-02-12 06:56 J -33817725.41 -33817725.21 -33817725.00 0.0285 0.0149 \*

Mars -97296-01-13 11:44 J -33815928.27 -33815928.01 -33815927.73 0.0279 0.0087

Mercury -97291-05-28 22:32 J -33813966.59 -33813966.56 -33813966.52 0.0274 0.0264

Mercury -97291-08-25 14:37 J -33813878.01 -33813877.89 -33813877.77 0.0273 0.0177

Mercury -97291-11-22 05:59 J -33813789.40 -33813789.25 -33813789.10 0.0273 0.0091

Mercury -97290-02-18 21:20 J -33813700.77 -33813700.61 -33813700.46 0.0273 0.0011

Mercury -97290-05-18 11:59 J -33813612.14 -33813612.00 -33813611.85 0.0273 0.0077

Mercury -97290-08-15 02:37 J -33813523.51 -33813523.39 -33813523.26 0.0273 0.0157

Mercury -97290-11-11 17:01 J -33813434.87 -33813434.79 -33813434.72 0.0273 0.0236

Venus -97289-09-22 01:39 J -33813119.58 -33813119.43 -33813119.26 0.0273 0.0178

Venus -97288-05-09 09:06 J -33812890.32 -33812890.12 -33812889.91 0.0274 0.0071  
 Moon -97287-08-17 02:37 J -33812425.64 -33812425.39 -33812425.14 0.0274 0.0002  
 Earth -97287-08-17 03:35 J -33812425.59 -33812425.35 -33812425.10 0.0274 0.0014 \*  
 Mars -97283-12-19 00:27 J -33810840.71 -33810840.48 -33810840.26 0.0279 0.0181  
 Mercury -97276-03-10 04:18 J -33808567.32 -33808567.32 -33808567.31 0.0285 0.0285  
 Mercury -97276-06-06 19:54 J -33808478.78 -33808478.67 -33808478.56 0.0285 0.0196  
 Mercury -97276-09-03 11:30 J -33808390.16 -33808390.02 -33808389.87 0.0286 0.0106  
 Mercury -97276-12-01 03:49 J -33808301.50 -33808301.34 -33808301.19 0.0286 0.0013  
 Mercury -97275-02-27 20:08 J -33808212.81 -33808212.66 -33808212.51 0.0286 0.0084  
 Mercury -97275-05-27 12:56 J -33808124.08 -33808123.96 -33808123.84 0.0286 0.0182  
 Mercury -97275-08-24 06:13 J -33808035.26 -33808035.24 -33808035.22 0.0286 0.0282  
 Venus -97274-03-02 10:47 J -33807845.08 -33807845.05 -33807845.00 0.0286 0.0279  
 Venus -97274-10-18 03:20 J -33807615.58 -33807615.36 -33807615.15 0.0286 0.0006  
 Moon -97272-02-05 20:37 J -33807138.90 -33807138.64 -33807138.39 0.0285 0.0010  
 Earth -97272-02-05 21:20 J -33807138.85 -33807138.61 -33807138.36 0.0285 0.0007 \*  
 Mars -97268-03-02 22:32 J -33805652.74 -33805652.56 -33805652.34 0.0281 0.0205  
 Mars -97266-03-04 11:44 J -33804921.15 -33804921.01 -33804920.84 0.0278 0.0234  
 Mercury -97261-01-12 17:01 J -33803145.90 -33803145.79 -33803145.68 0.0273 0.0194  
 Mercury -97261-04-10 08:37 J -33803057.28 -33803057.14 -33803056.99 0.0273 0.0108  
 Mercury -97261-07-07 23:59 J -33802968.66 -33802968.50 -33802968.35 0.0273 0.0024  
 Mercury -97261-10-04 14:51 J -33802880.03 -33802879.88 -33802879.73 0.0273 0.0059  
 Mercury -97260-01-01 05:30 J -33802791.40 -33802791.27 -33802791.14 0.0273 0.0140  
 Mercury -97260-03-30 19:39 J -33802702.76 -33802702.68 -33802702.59 0.0273 0.0219  
 Venus -97259-04-04 09:35 J -33802333.28 -33802333.10 -33802332.91 0.0273 0.0136  
 Venus -97259-11-19 16:18 J -33802104.01 -33802103.82 -33802103.62 0.0273 0.0112  
 Earth -97258-08-12 05:15 J -33801838.49 -33801838.28 -33801838.06 0.0273 0.0126  
 Moon -97258-08-12 05:44 J -33801838.45 -33801838.26 -33801838.04 0.0273 0.0135 \*  
 Earth -97257-08-23 13:39 J -33801461.10 -33801460.93 -33801460.76 0.0274 0.0190  
 Moon -97257-08-23 17:15 J -33801460.96 -33801460.78 -33801460.58 0.0274 0.0175 \*  
 Mars -97252-02-06 11:59 J -33799833.29 -33799833.00 -33799832.70 0.0279 0.0033



Mercury -97247-10-24 19:39 J -33797746.76 -33797746.68 -33797746.59 0.0286 0.0231  
 Mercury -97246-01-21 11:15 J -33797658.16 -33797658.03 -33797657.90 0.0286 0.0140  
 Mercury -97246-04-20 03:20 J -33797569.52 -33797569.36 -33797569.21 0.0286 0.0048  
 Mercury -97246-07-17 19:39 J -33797480.84 -33797480.68 -33797480.53 0.0286 0.0048  
 Mercury -97246-10-14 12:13 J -33797392.12 -33797391.99 -33797391.85 0.0286 0.0145  
 Mercury -97245-01-11 05:15 J -33797303.36 -33797303.28 -33797303.20 0.0286 0.0243  
 Venus -97245-09-11 12:27 J -33797059.07 -33797058.98 -33797058.88 0.0286 0.0253  
 Venus -97244-04-29 04:47 J -33796829.51 -33796829.30 -33796829.09 0.0286 0.0030  
 Earth -97243-01-30 21:06 J -33796552.81 -33796552.62 -33796552.41 0.0286 0.0166  
 Moon -97243-01-30 22:47 J -33796552.73 -33796552.55 -33796552.36 0.0286 0.0179 \*  
 Earth -97242-02-13 16:18 J -33796173.99 -33796173.82 -33796173.64 0.0285 0.0201  
 Moon -97242-02-13 19:54 J -33796173.84 -33796173.67 -33796173.48 0.0285 0.0192 \*  
 Mars -97238-04-21 17:15 J -33794646.06 -33794645.78 -33794645.49 0.0280 0.0052  
 Mercury -97232-05-31 17:01 J -33792413.87 -33792413.79 -33792413.70 0.0273 0.0225  
 Mercury -97232-08-28 08:37 J -33792325.27 -33792325.14 -33792325.00 0.0273 0.0139  
 Mercury -97232-11-25 00:13 J -33792236.64 -33792236.49 -33792236.34 0.0273 0.0053  
 Mercury -97231-02-21 15:20 J -33792148.02 -33792147.86 -33792147.71 0.0273 0.0032  
 Mercury -97231-05-21 05:59 J -33792059.39 -33792059.25 -33792059.11 0.0273 0.0113  
 Mercury -97231-08-17 20:23 J -33791970.75 -33791970.65 -33791970.54 0.0273 0.0193  
 Mercury -97231-11-14 10:32 J -33791882.07 -33791882.06 -33791882.04 0.0273 0.0271  
 Venus -97230-10-15 12:13 J -33791547.19 -33791546.99 -33791546.79 0.0273 0.0106  
 Venus -97229-05-31 19:11 J -33791317.88 -33791317.70 -33791317.52 0.0273 0.0142  
 Moon -97229-08-05 22:47 J -33791251.57 -33791251.55 -33791251.50 0.0274 0.0271  
 Earth -97229-08-05 23:15 J -33791251.56 -33791251.53 -33791251.48 0.0274 0.0269 \*  
 Moon -97228-08-18 06:27 J -33790874.47 -33790874.23 -33790873.99 0.0274 0.0035  
 Earth -97228-08-18 10:03 J -33790874.32 -33790874.08 -33790873.84 0.0274 0.0050 \*  
 Mars -97222-03-29 15:49 J -33788825.10 -33788824.84 -33788824.56 0.0281 0.0131  
 Mercury -97217-03-12 21:49 J -33787014.66 -33787014.59 -33787014.52 0.0286 0.0250  
 Mercury -97217-06-09 13:25 J -33786926.06 -33786925.94 -33786925.82 0.0286 0.0160  
 Mercury -97217-09-06 05:15 J -33786837.43 -33786837.28 -33786837.13 0.0286 0.0068

Mercury -97217-12-03 21:35 J -33786748.76 -33786748.60 -33786748.45 0.0286 0.0027

Mercury -97216-03-02 14:08 J -33786660.05 -33786659.91 -33786659.77 0.0286 0.0124

Mercury -97216-05-30 06:56 J -33786571.30 -33786571.21 -33786571.10 0.0286 0.0223

Venus -97215-03-24 21:35 J -33786272.74 -33786272.60 -33786272.45 0.0286 0.0204

Venus -97215-11-09 14:08 J -33786043.11 -33786042.91 -33786042.70 0.0286 0.0080

Moon -97213-02-08 01:11 J -33785587.69 -33785587.45 -33785587.20 0.0285 0.0032

Earth -97213-02-08 05:01 J -33785587.53 -33785587.29 -33785587.04 0.0285 0.0043 \*

Mars -97208-06-10 03:20 J -33783638.63 -33783638.36 -33783638.09 0.0279 0.0102

Mercury -97203-10-18 19:25 J -33781681.75 -33781681.69 -33781681.61 0.0273 0.0244

Mercury -97202-01-15 11:15 J -33781593.15 -33781593.03 -33781592.89 0.0273 0.0156

Mercury -97202-04-14 02:51 J -33781504.53 -33781504.38 -33781504.23 0.0273 0.0070

Mercury -97202-07-11 17:59 J -33781415.91 -33781415.75 -33781415.60 0.0273 0.0014

Mercury -97202-10-08 08:37 J -33781327.28 -33781327.14 -33781326.99 0.0273 0.0096

Mercury -97201-01-04 23:15 J -33781238.65 -33781238.53 -33781238.42 0.0273 0.0176

Mercury -97201-04-02 13:25 J -33781149.99 -33781149.94 -33781149.89 0.0273 0.0254

Venus -97200-04-26 20:08 J -33780760.87 -33780760.66 -33780760.46 0.0273 0.0065

Venus -97200-12-12 02:23 J -33780531.55 -33780531.40 -33780531.24 0.0273 0.0183

Earth -97199-08-13 12:13 J -33780287.22 -33780286.99 -33780286.76 0.0273 0.0088

Moon -97199-08-13 15:49 J -33780287.07 -33780286.84 -33780286.62 0.0273 0.0097 \*

Earth -97198-08-25 19:54 J -33779909.79 -33779909.67 -33779909.52 0.0274 0.0227

Moon -97198-08-25 20:51 J -33779909.78 -33779909.63 -33779909.46 0.0274 0.0211 \*

Mars -97194-05-14 20:23 J -33778551.87 -33778551.65 -33778551.42 0.0278 0.0174

Mercury -97188-07-30 21:49 J -33776282.60 -33776282.59 -33776282.57 0.0285 0.0283

Mercury -97188-10-27 13:11 J -33776194.05 -33776193.95 -33776193.84 0.0286 0.0195

Mercury -97187-01-24 05:01 J -33776105.43 -33776105.29 -33776105.15 0.0286 0.0103

Mercury -97187-04-22 21:06 J -33776016.77 -33776016.62 -33776016.47 0.0286 0.0010

Mercury -97187-07-20 13:25 J -33775928.08 -33775927.94 -33775927.79 0.0286 0.0087

Mercury -97187-10-17 06:13 J -33775839.35 -33775839.24 -33775839.12 0.0286 0.0185

Mercury -97186-01-13 23:30 J -33775750.53 -33775750.52 -33775750.51 0.0286 0.0284

Venus -97186-10-04 23:15 J -33775486.69 -33775486.53 -33775486.36 0.0286 0.0178

Venus -97185-05-21 15:35 J -33775257.04 -33775256.85 -33775256.65 0.0286 0.0107  
 Earth -97184-02-01 04:32 J -33775001.53 -33775001.31 -33775001.09 0.0286 0.0125  
 Moon -97184-02-01 08:08 J -33775001.37 -33775001.16 -33775000.94 0.0286 0.0136 \*  
 Earth -97183-02-14 23:59 J -33774622.63 -33774622.50 -33774622.37 0.0285 0.0240  
 Moon -97183-02-15 01:25 J -33774622.58 -33774622.44 -33774622.29 0.0285 0.0233 \*  
 Mars -97180-07-27 06:27 J -33773364.42 -33773364.23 -33773364.01 0.0281 0.0199  
 Mars -97178-07-28 22:03 J -33772632.72 -33772632.58 -33772632.44 0.0278 0.0240  
 Mercury -97173-06-03 11:01 J -33770861.15 -33770861.04 -33770860.92 0.0273 0.0188  
 Mercury -97173-08-31 02:37 J -33770772.53 -33770772.39 -33770772.24 0.0273 0.0102  
 Mercury -97173-11-27 17:59 J -33770683.91 -33770683.75 -33770683.60 0.0273 0.0018  
 Mercury -97172-02-24 08:51 J -33770595.28 -33770595.13 -33770594.98 0.0273 0.0066  
 Mercury -97172-05-23 23:30 J -33770506.65 -33770506.52 -33770506.39 0.0273 0.0147  
 Mercury -97172-08-20 13:54 J -33770418.01 -33770417.92 -33770417.84 0.0273 0.0227  
 Venus -97171-11-06 21:35 J -33769974.81 -33769974.60 -33769974.39 0.0273 0.0038  
 Venus -97170-06-24 04:03 J -33769745.46 -33769745.33 -33769745.19 0.0273 0.0210  
 Moon -97170-08-08 01:11 J -33769700.56 -33769700.45 -33769700.31 0.0273 0.0237  
 Earth -97170-08-08 05:01 J -33769700.42 -33769700.29 -33769700.16 0.0273 0.0232 \*  
 Moon -97169-08-19 14:08 J -33769323.13 -33769322.91 -33769322.68 0.0274 0.0072  
 Earth -97169-08-19 15:06 J -33769323.10 -33769322.87 -33769322.64 0.0274 0.0085 \*  
 Mars -97164-07-03 05:44 J -33767544.56 -33767544.26 -33767543.97 0.0280 0.0021  
 Mercury -97158-03-16 14:51 J -33765461.98 -33765461.88 -33765461.79 0.0286 0.0218  
 Mercury -97158-06-13 06:27 J -33765373.37 -33765373.23 -33765373.09 0.0286 0.0127  
 Mercury -97158-09-09 22:32 J -33765284.72 -33765284.56 -33765284.41 0.0286 0.0034  
 Mercury -97158-12-07 14:51 J -33765196.03 -33765195.88 -33765195.73 0.0286 0.0062  
 Mercury -97157-03-05 07:25 J -33765107.31 -33765107.19 -33765107.06 0.0286 0.0160  
 Mercury -97157-06-02 00:42 J -33765018.53 -33765018.47 -33765018.41 0.0286 0.0259  
 Venus -97156-04-16 06:56 J -33764700.40 -33764700.21 -33764700.03 0.0286 0.0133  
 Venus -97156-12-01 23:30 J -33764470.69 -33764470.52 -33764470.34 0.0286 0.0153  
 Earth -97155-01-26 16:03 J -33764414.85 -33764414.83 -33764414.80 0.0286 0.0283  
 Moon -97154-02-09 08:51 J -33764036.35 -33764036.13 -33764035.89 0.0285 0.0072

Earth -97154-02-09 09:49 J -33764036.32 -33764036.09 -33764035.85 0.0285 0.0079 \*  
 Mars -97150-09-16 02:37 J -33762356.68 -33762356.39 -33762356.10 0.0280 0.0040  
 Mercury -97144-10-21 13:39 J -33760129.03 -33760128.93 -33760128.83 0.0273 0.0206  
 Mercury -97143-01-18 05:15 J -33760040.42 -33760040.28 -33760040.14 0.0273 0.0120  
 Mercury -97143-04-16 20:37 J -33759951.80 -33759951.64 -33759951.49 0.0273 0.0035  
 Mercury -97143-07-14 11:30 J -33759863.17 -33759863.02 -33759862.86 0.0273 0.0049  
 Mercury -97143-10-11 02:08 J -33759774.54 -33759774.41 -33759774.27 0.0273 0.0131  
 Mercury -97142-01-07 16:32 J -33759685.90 -33759685.81 -33759685.71 0.0273 0.0210  
 Venus -97142-10-02 22:03 J -33759417.66 -33759417.58 -33759417.48 0.0273 0.0246  
 Venus -97141-05-19 05:30 J -33759188.48 -33759188.27 -33759188.06 0.0273 0.0004  
 Venus -97140-01-03 11:30 J -33758959.09 -33758959.02 -33758958.93 0.0273 0.0251  
 Earth -97140-08-14 17:44 J -33758736.00 -33758735.76 -33758735.52 0.0273 0.0051  
 Moon -97140-08-14 19:25 J -33758735.94 -33758735.69 -33758735.44 0.0273 0.0060 \*  
 Moon -97139-08-26 21:35 J -33758358.69 -33758358.60 -33758358.48 0.0274 0.0246  
 Earth -97139-08-27 01:11 J -33758358.51 -33758358.45 -33758358.37 0.0274 0.0261 \*  
 Mars -97134-08-23 07:11 J -33756536.46 -33756536.20 -33756535.94 0.0280 0.0135  
 Mercury -97129-08-02 14:51 J -33754729.95 -33754729.88 -33754729.81 0.0285 0.0251  
 Mercury -97129-10-30 06:13 J -33754641.36 -33754641.24 -33754641.11 0.0286 0.0161  
 Mercury -97128-01-26 22:03 J -33754552.72 -33754552.58 -33754552.43 0.0286 0.0069  
 Mercury -97128-04-25 14:23 J -33754464.06 -33754463.90 -33754463.75 0.0286 0.0026  
 Mercury -97128-07-23 06:42 J -33754375.35 -33754375.22 -33754375.07 0.0286 0.0123  
 Mercury -97128-10-19 23:44 J -33754286.61 -33754286.51 -33754286.41 0.0286 0.0221  
 Venus -97127-10-27 08:23 J -33753914.34 -33753914.15 -33753913.95 0.0286 0.0107  
 Venus -97126-06-14 00:56 J -33753684.62 -33753684.46 -33753684.29 0.0286 0.0180  
 Earth -97125-02-03 09:06 J -33753450.35 -33753450.12 -33753449.88 0.0286 0.0088  
 Moon -97125-02-03 09:20 J -33753450.35 -33753450.11 -33753449.86 0.0286 0.0096 \*  
 Moon -97124-02-16 01:39 J -33753071.49 -33753071.43 -33753071.36 0.0285 0.0274  
 Earth -97124-02-16 04:47 J -33753071.35 -33753071.30 -33753071.23 0.0285 0.0276  
 Mars -97120-11-03 06:42 J -33751350.47 -33751350.22 -33751349.94 0.0279 0.0106  
 Mercury -97114-03-10 12:42 J -33749397.04 -33749396.97 -33749396.89 0.0273 0.0241

Mercury -97114-06-07 04:32 J -33749308.44 -33749308.31 -33749308.18 0.0273 0.0154  
 Mercury -97114-09-03 20:08 J -33749219.81 -33749219.66 -33749219.51 0.0273 0.0068  
 Mercury -97114-12-01 11:15 J -33749131.19 -33749131.03 -33749130.88 0.0273 0.0017  
 Mercury -97113-02-28 02:08 J -33749042.56 -33749042.41 -33749042.27 0.0273 0.0099  
 Mercury -97113-05-26 16:32 J -33748953.92 -33748953.81 -33748953.70 0.0273 0.0179  
 Mercury -97113-08-23 06:42 J -33748865.26 -33748865.22 -33748865.17 0.0273 0.0258  
 Venus -97112-04-13 22:32 J -33748631.68 -33748631.56 -33748631.43 0.0273 0.0221  
 Venus -97112-11-29 05:44 J -33748402.47 -33748402.26 -33748402.04 0.0273 0.0029  
 Moon -97111-08-09 07:11 J -33748149.35 -33748149.20 -33748149.03 0.0273 0.0203  
 Earth -97111-08-09 08:51 J -33748149.29 -33748149.13 -33748148.95 0.0273 0.0196 \*  
 Earth -97110-08-21 18:13 J -33747771.95 -33747771.74 -33747771.51 0.0274 0.0119  
 Moon -97110-08-21 21:35 J -33747771.82 -33747771.60 -33747771.38 0.0274 0.0104 \*  
 Mars -97106-10-08 06:13 J -33746263.46 -33746263.24 -33746262.99 0.0278 0.0167  
 Mercury -97100-12-20 15:49 J -33743997.87 -33743997.84 -33743997.80 0.0285 0.0277  
 Mercury -97099-03-19 07:11 J -33743909.31 -33743909.20 -33743909.08 0.0286 0.0188  
 Mercury -97099-06-15 23:01 J -33743820.68 -33743820.54 -33743820.39 0.0286 0.0096  
 Mercury -97099-09-12 15:06 J -33743732.02 -33743731.87 -33743731.71 0.0286 0.0009  
 Mercury -97099-12-10 07:39 J -33743643.33 -33743643.18 -33743643.03 0.0286 0.0095  
 Mercury -97098-03-09 00:27 J -33743554.59 -33743554.48 -33743554.36 0.0286 0.0194  
 Venus -97097-05-08 14:37 J -33743128.09 -33743127.89 -33743127.68 0.0286 0.0065  
 Venus -97097-12-24 07:39 J -33742898.31 -33742898.18 -33742898.04 0.0286 0.0223  
 Earth -97096-01-27 18:27 J -33742863.84 -33742863.73 -33742863.60 0.0286 0.0248  
 Moon -97096-01-27 18:13 J -33742863.83 -33742863.74 -33742863.64 0.0286 0.0260 \*  
 Earth -97095-02-10 12:27 J -33742485.20 -33742484.98 -33742484.75 0.0285 0.0115  
 Moon -97095-02-10 15:49 J -33742485.06 -33742484.84 -33742484.61 0.0285 0.0111 \*  
 Mars -97092-12-21 07:54 J -33741075.38 -33741075.17 -33741074.95 0.0281 0.0191  
 Mars -97090-12-23 01:25 J -33740343.56 -33740343.44 -33740343.31 0.0278 0.0249  
 Mercury -97085-07-27 15:06 J -33738664.91 -33738664.87 -33738664.82 0.0274 0.0261  
 Mercury -97085-10-24 07:11 J -33738576.32 -33738576.20 -33738576.08 0.0274 0.0173  
 Mercury -97084-01-20 22:32 J -33738487.70 -33738487.56 -33738487.41 0.0273 0.0087

Mercury -97084-04-19 13:54 J -33738399.08 -33738398.92 -33738398.77 0.0273 0.0004

Mercury -97084-07-17 04:47 J -33738310.45 -33738310.30 -33738310.16 0.0273 0.0081

Mercury -97084-10-13 19:11 J -33738221.82 -33738221.70 -33738221.57 0.0273 0.0163

Mercury -97083-01-10 09:35 J -33738133.17 -33738133.10 -33738133.03 0.0273 0.0241

Venus -97083-10-25 06:42 J -33737845.38 -33737845.22 -33737845.06 0.0273 0.0180

Venus -97082-06-11 13:39 J -33737616.13 -33737615.93 -33737615.72 0.0273 0.0070

Moon -97081-08-15 18:56 J -33737184.95 -33737184.71 -33737184.46 0.0273 0.0028

Earth -97081-08-15 21:49 J -33737184.83 -33737184.59 -33737184.35 0.0273 0.0016 \*

Mars -97076-11-26 21:49 J -33735255.89 -33735255.59 -33735255.29 0.0278 0.0016

Mercury -97070-08-06 07:25 J -33733177.28 -33733177.19 -33733177.09 0.0285 0.0220

Mercury -97070-11-02 23:01 J -33733088.67 -33733088.54 -33733088.40 0.0285 0.0130

Mercury -97069-01-30 14:51 J -33733000.03 -33732999.88 -33732999.72 0.0286 0.0037

Mercury -97069-04-28 07:11 J -33732911.35 -33732911.20 -33732911.05 0.0286 0.0059

Mercury -97069-07-25 23:44 J -33732822.63 -33732822.51 -33732822.37 0.0286 0.0157

Mercury -97069-10-22 16:47 J -33732733.86 -33732733.80 -33732733.73 0.0286 0.0256

Venus -97068-11-18 16:18 J -33732342.03 -33732341.82 -33732341.61 0.0286 0.0038

Venus -97067-07-06 09:06 J -33732112.22 -33732112.12 -33732112.02 0.0286 0.0249

Moon -97066-02-04 08:08 J -33731899.40 -33731899.16 -33731898.91 0.0286 0.0059

Earth -97066-02-04 11:30 J -33731899.26 -33731899.02 -33731898.77 0.0286 0.0053 \*

Mars -97061-02-09 00:13 J -33730068.77 -33730068.49 -33730068.20 0.0280 0.0039

Mercury -97055-03-13 06:13 J -33727844.34 -33727844.24 -33727844.14 0.0273 0.0208

Mercury -97055-06-09 21:49 J -33727755.73 -33727755.59 -33727755.45 0.0273 0.0121

Mercury -97055-09-06 13:11 J -33727667.10 -33727666.95 -33727666.79 0.0273 0.0035

Mercury -97055-12-04 04:18 J -33727578.47 -33727578.32 -33727578.17 0.0273 0.0049

Mercury -97054-03-02 18:56 J -33727489.84 -33727489.71 -33727489.57 0.0273 0.0130

Mercury -97054-05-30 09:20 J -33727401.20 -33727401.11 -33727401.01 0.0273 0.0210

Venus -97053-05-06 06:27 J -33727059.40 -33727059.23 -33727059.05 0.0273 0.0156

Venus -97053-12-21 13:25 J -33726830.13 -33726829.94 -33726829.73 0.0273 0.0094

Earth -97052-08-10 11:44 J -33726598.20 -33726598.01 -33726597.80 0.0273 0.0162

Moon -97052-08-10 14:51 J -33726598.07 -33726597.88 -33726597.70 0.0273 0.0172 \*

Earth -97051-08-22 21:06 J -33726220.82 -33726220.62 -33726220.42 0.0274 0.0151  
 Moon -97051-08-22 23:44 J -33726220.72 -33726220.51 -33726220.29 0.0274 0.0137 \*  
 Mars -97045-01-16 10:18 J -33724248.33 -33724248.07 -33724247.81 0.0280 0.0140  
 Mercury -97041-12-23 07:54 J -33722445.23 -33722445.17 -33722445.09 0.0285 0.0249  
 Mercury -97040-03-21 23:30 J -33722356.64 -33722356.52 -33722356.39 0.0286 0.0159  
 Mercury -97040-06-18 15:20 J -33722268.01 -33722267.86 -33722267.71 0.0286 0.0067  
 Mercury -97040-09-15 07:25 J -33722179.34 -33722179.19 -33722179.03 0.0286 0.0030  
 Mercury -97040-12-12 23:59 J -33722090.63 -33722090.50 -33722090.35 0.0286 0.0126  
 Mercury -97039-03-11 17:01 J -33722001.88 -33722001.79 -33722001.69 0.0286 0.0225  
 Venus -97039-10-14 05:15 J -33721785.30 -33721785.28 -33721785.26 0.0286 0.0284  
 Venus -97038-05-31 21:20 J -33721555.82 -33721555.61 -33721555.39 0.0286 0.0006  
 Earth -97037-01-29 18:42 J -33721312.88 -33721312.72 -33721312.55 0.0286 0.0215  
 Moon -97037-01-29 22:03 J -33721312.72 -33721312.58 -33721312.43 0.0286 0.0226 \*  
 Earth -97036-02-11 13:11 J -33720934.16 -33720933.95 -33720933.73 0.0285 0.0146  
 Moon -97036-02-11 15:35 J -33720934.06 -33720933.85 -33720933.62 0.0285 0.0144 \*  
 Mars -97031-03-30 02:37 J -33719061.65 -33719061.39 -33719061.12 0.0280 0.0111  
 Mercury -97026-07-31 08:23 J -33717112.23 -33717112.15 -33717112.06 0.0274 0.0229  
 Mercury -97026-10-28 00:13 J -33717023.63 -33717023.49 -33717023.36 0.0274 0.0141  
 Mercury -97025-01-24 15:35 J -33716935.00 -33716934.85 -33716934.69 0.0274 0.0055  
 Mercury -97025-04-22 06:42 J -33716846.37 -33716846.22 -33716846.06 0.0273 0.0030  
 Mercury -97025-07-19 21:20 J -33716757.74 -33716757.61 -33716757.46 0.0273 0.0113  
 Mercury -97025-10-16 11:59 J -33716669.10 -33716669.00 -33716668.89 0.0273 0.0192  
 Mercury -97024-01-13 02:08 J -33716580.42 -33716580.41 -33716580.39 0.0273 0.0271  
 Venus -97024-11-16 14:08 J -33716273.09 -33716272.91 -33716272.71 0.0273 0.0117  
 Venus -97023-07-03 20:51 J -33716043.81 -33716043.63 -33716043.44 0.0273 0.0134  
 Moon -97022-08-17 21:20 J -33715633.84 -33715633.61 -33715633.37 0.0273 0.0007  
 Earth -97022-08-18 00:27 J -33715633.72 -33715633.48 -33715633.24 0.0273 0.0019 \*  
 Mars -97017-03-02 23:01 J -33713974.77 -33713974.54 -33713974.29 0.0277 0.0160  
 Mercury -97011-05-12 08:23 J -33711713.17 -33711713.15 -33711713.11 0.0285 0.0279  
 Mercury -97011-08-08 23:59 J -33711624.61 -33711624.50 -33711624.39 0.0285 0.0190

Mercury	-97011-11-05 15:35 J	-33711535.99	-33711535.85	-33711535.71	0.0285	0.0099
Mercury	-97010-02-02 07:39 J	-33711447.34	-33711447.18	-33711447.03	0.0285	0.0007
Mercury	-97010-05-01 23:59 J	-33711358.65	-33711358.50	-33711358.35	0.0286	0.0091
Mercury	-97010-07-29 16:47 J	-33711269.92	-33711269.80	-33711269.69	0.0286	0.0189
Venus	-97009-04-25 07:39 J	-33710999.27	-33710999.18	-33710999.09	0.0286	0.0256
Venus	-97009-12-10 23:44 J	-33710769.72	-33710769.51	-33710769.30	0.0286	0.0030
Moon	-97007-02-05 11:01 J	-33710348.28	-33710348.04	-33710347.80	0.0286	0.0024
Earth	-97007-02-05 13:11 J	-33710348.20	-33710347.95	-33710347.71	0.0286	0.0019 *
Mars	-97003-05-16 00:42 J	-33708787.67	-33708787.47	-33708787.24	0.0281	0.0190
Mars	-97001-05-16 20:51 J	-33708055.74	-33708055.63	-33708055.49	0.0279	0.0250

# 97TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 97th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-96997-12-17 07:11 J	-33706380.23	-33706380.20	-33706380.16	0.0273	0.0265		
Mercury	-96996-03-15 23:01 J	-33706291.65	-33706291.54	-33706291.41	0.0273	0.0177		
Mercury	-96996-06-12 14:37 J	-33706203.03	-33706202.89	-33706202.74	0.0273	0.0090		
Mercury	-96996-09-09 05:59 J	-33706114.40	-33706114.25	-33706114.09	0.0273	0.0005		
Mercury	-96996-12-06 20:51 J	-33706025.77	-33706025.63	-33706025.48	0.0273	0.0079		
Mercury	-96995-03-05 11:30 J	-33705937.14	-33705937.02	-33705936.89	0.0273	0.0160		
Mercury	-96995-06-02 01:54 J	-33705848.49	-33705848.42	-33705848.35	0.0273	0.0239		
Venus	-96994-05-29 13:39 J	-33705487.13	-33705486.93	-33705486.73	0.0273	0.0093		
Venus	-96993-01-13 20:23 J	-33705257.82	-33705257.65	-33705257.47	0.0273	0.0157		



Earth -96993-08-11 13:39 J -33705047.14 -33705046.93 -33705046.71 0.0273 0.0129  
 Moon -96993-08-11 16:47 J -33705047.01 -33705046.80 -33705046.58 0.0273 0.0140 \*  
 Moon -96992-08-23 20:51 J -33704669.82 -33704669.63 -33704669.42 0.0274 0.0168  
 Earth -96992-08-23 22:32 J -33704669.73 -33704669.56 -33704669.37 0.0274 0.0183 \*  
 Mars -96987-04-21 20:23 J -33702967.95 -33702967.65 -33702967.36 0.0279 0.0013  
 Mercury -96982-12-26 23:59 J -33700892.59 -33700892.50 -33700892.40 0.0285 0.0222  
 Mercury -96981-03-24 15:35 J -33700803.98 -33700803.85 -33700803.71 0.0285 0.0131  
 Mercury -96981-06-21 07:25 J -33700715.34 -33700715.19 -33700715.03 0.0286 0.0039  
 Mercury -96981-09-17 23:44 J -33700626.66 -33700626.51 -33700626.36 0.0286 0.0058  
 Mercury -96981-12-15 16:18 J -33700537.94 -33700537.82 -33700537.68 0.0286 0.0156  
 Mercury -96980-03-14 09:20 J -33700449.17 -33700449.11 -33700449.03 0.0286 0.0255  
 Venus -96980-11-05 11:15 J -33700213.16 -33700213.03 -33700212.90 0.0286 0.0221  
 Venus -96979-06-23 03:35 J -33699983.55 -33699983.35 -33699983.14 0.0286 0.0066  
 Earth -96978-01-30 17:59 J -33699761.93 -33699761.75 -33699761.56 0.0286 0.0182  
 Moon -96978-01-30 19:54 J -33699761.84 -33699761.67 -33699761.47 0.0286 0.0191 \*  
 Moon -96977-02-13 10:32 J -33699383.25 -33699383.06 -33699382.85 0.0285 0.0180  
 Earth -96977-02-13 12:56 J -33699383.15 -33699382.96 -33699382.77 0.0285 0.0177 \*  
 Mars -96973-07-04 12:13 J -33697780.28 -33697779.99 -33697779.70 0.0281 0.0036  
 Mercury -96967-08-03 01:11 J -33695559.55 -33695559.45 -33695559.33 0.0274 0.0198  
 Mercury -96967-10-30 17:01 J -33695470.93 -33695470.79 -33695470.65 0.0274 0.0110  
 Mercury -96966-01-27 08:23 J -33695382.31 -33695382.15 -33695382.00 0.0274 0.0025  
 Mercury -96966-04-25 23:30 J -33695293.67 -33695293.52 -33695293.37 0.0274 0.0060  
 Mercury -96966-07-23 14:08 J -33695205.04 -33695204.91 -33695204.78 0.0274 0.0141  
 Mercury -96966-10-20 04:32 J -33695116.40 -33695116.31 -33695116.22 0.0273 0.0221  
 Venus -96965-12-08 21:35 J -33694700.81 -33694700.60 -33694700.39 0.0273 0.0053  
 Venus -96964-07-26 04:03 J -33694471.47 -33694471.33 -33694471.18 0.0273 0.0198  
 Moon -96964-08-06 12:56 J -33694459.99 -33694459.96 -33694459.90 0.0273 0.0268  
 Earth -96964-08-06 15:49 J -33694459.91 -33694459.84 -33694459.75 0.0273 0.0258 \*  
 Earth -96963-08-19 02:37 J -33694082.63 -33694082.39 -33694082.15 0.0274 0.0053  
 Moon -96963-08-19 04:03 J -33694082.57 -33694082.33 -33694082.10 0.0274 0.0038 \*

Mars -96957-06-11 01:39 J -33691959.67 -33691959.43 -33691959.16 0.0279 0.0146  
 Mercury -96952-05-15 00:56 J -33690160.53 -33690160.46 -33690160.39 0.0285 0.0250  
 Mercury -96952-08-11 16:18 J -33690071.94 -33690071.82 -33690071.70 0.0285 0.0161  
 Mercury -96952-11-08 07:54 J -33689983.31 -33689983.17 -33689983.02 0.0285 0.0069  
 Mercury -96951-02-05 00:13 J -33689894.65 -33689894.49 -33689894.34 0.0285 0.0027  
 Mercury -96951-05-04 16:32 J -33689805.95 -33689805.81 -33689805.67 0.0285 0.0122  
 Mercury -96951-08-01 09:20 J -33689717.20 -33689717.11 -33689717.01 0.0285 0.0221  
 Venus -96950-05-18 14:23 J -33689427.05 -33689426.90 -33689426.73 0.0286 0.0191  
 Venus -96949-01-03 06:42 J -33689197.42 -33689197.22 -33689197.02 0.0286 0.0097  
 Earth -96948-02-06 13:39 J -33688797.18 -33688796.93 -33688796.68 0.0285 0.0015  
 Moon -96948-02-06 15:49 J -33688797.08 -33688796.84 -33688796.60 0.0285 0.0014 \*  
 Mars -96943-08-22 20:51 J -33686773.89 -33686773.63 -33686773.36 0.0280 0.0112  
 Mercury -96938-12-21 00:13 J -33684827.57 -33684827.49 -33684827.41 0.0274 0.0234  
 Mercury -96937-03-18 16:03 J -33684738.96 -33684738.83 -33684738.70 0.0273 0.0146  
 Mercury -96937-06-15 07:39 J -33684650.34 -33684650.18 -33684650.03 0.0273 0.0060  
 Mercury -96937-09-11 22:47 J -33684561.71 -33684561.55 -33684561.40 0.0273 0.0026  
 Mercury -96937-12-09 13:39 J -33684473.08 -33684472.93 -33684472.79 0.0273 0.0108  
 Mercury -96936-03-08 04:03 J -33684384.44 -33684384.33 -33684384.22 0.0273 0.0189  
 Mercury -96936-06-04 18:13 J -33684295.76 -33684295.74 -33684295.71 0.0273 0.0268  
 Venus -96935-06-20 20:37 J -33683914.85 -33683914.64 -33683914.43 0.0273 0.0030  
 Venus -96934-02-05 03:06 J -33683685.49 -33683685.37 -33683685.24 0.0273 0.0220  
 Moon -96934-08-13 13:39 J -33683496.16 -33683495.93 -33683495.69 0.0273 0.0109  
 Earth -96934-08-13 15:35 J -33683496.07 -33683495.85 -33683495.61 0.0273 0.0095 \*  
 Moon -96933-08-24 20:37 J -33683118.80 -33683118.64 -33683118.47 0.0274 0.0200  
 Earth -96933-08-24 23:59 J -33683118.64 -33683118.50 -33683118.34 0.0274 0.0215 \*  
 Mars -96929-07-26 20:23 J -33681686.88 -33681686.65 -33681686.39 0.0278 0.0156  
 Mercury -96923-10-02 00:42 J -33679428.48 -33679428.47 -33679428.45 0.0285 0.0284  
 Mercury -96923-12-29 16:03 J -33679339.94 -33679339.83 -33679339.72 0.0285 0.0195  
 Mercury -96922-03-28 07:39 J -33679251.32 -33679251.18 -33679251.03 0.0285 0.0103  
 Mercury -96922-06-24 23:44 J -33679162.66 -33679162.51 -33679162.36 0.0286 0.0009

Mercury -96922-09-21 16:03 J -33679073.98 -33679073.83 -33679073.68 0.0286 0.0087

Mercury -96922-12-19 08:51 J -33678985.25 -33678985.13 -33678985.01 0.0286 0.0185

Mercury -96921-03-17 01:54 J -33678896.42 -33678896.42 -33678896.41 0.0286 0.0285

Venus -96921-11-27 17:15 J -33678640.95 -33678640.78 -33678640.60 0.0286 0.0158

Venus -96920-07-15 09:49 J -33678411.27 -33678411.09 -33678410.90 0.0286 0.0131

Moon -96919-01-31 14:37 J -33678211.09 -33678210.89 -33678210.67 0.0286 0.0154

Earth -96919-01-31 17:30 J -33678210.98 -33678210.77 -33678210.56 0.0286 0.0150 \*

Moon -96918-02-14 09:06 J -33677832.27 -33677832.12 -33677831.95 0.0285 0.0213

Earth -96918-02-14 12:27 J -33677832.14 -33677831.98 -33677831.81 0.0285 0.0209 \*

Mars -96915-10-09 07:54 J -33676499.37 -33676499.17 -33676498.94 0.0281 0.0188

Mars -96913-10-10 09:06 J -33675767.22 -33675767.12 -33675766.98 0.0279 0.0253

Mercury -96908-05-09 02:08 J -33674095.46 -33674095.41 -33674095.36 0.0274 0.0257

Mercury -96908-08-05 17:59 J -33674006.87 -33674006.75 -33674006.62 0.0274 0.0168

Mercury -96908-11-02 09:35 J -33673918.25 -33673918.10 -33673917.95 0.0274 0.0081

Mercury -96907-01-30 00:56 J -33673829.62 -33673829.46 -33673829.30 0.0274 0.0005

Mercury -96907-04-28 15:49 J -33673740.98 -33673740.84 -33673740.69 0.0274 0.0089

Mercury -96907-07-26 06:27 J -33673652.34 -33673652.23 -33673652.11 0.0274 0.0170

Mercury -96907-10-22 20:51 J -33673563.69 -33673563.63 -33673563.57 0.0274 0.0250

Venus -96906-05-16 20:37 J -33673357.72 -33673357.64 -33673357.54 0.0274 0.0245

Venus -96905-01-01 04:18 J -33673128.53 -33673128.32 -33673128.11 0.0273 0.0009

Earth -96905-08-07 17:30 J -33672908.90 -33672908.77 -33672908.62 0.0273 0.0224

Moon -96905-08-07 19:25 J -33672908.80 -33672908.69 -33672908.56 0.0273 0.0236 \*

Venus -96905-08-17 10:32 J -33672899.11 -33672899.06 -33672898.98 0.0273 0.0261

Earth -96904-08-20 04:18 J -33672531.55 -33672531.32 -33672531.09 0.0274 0.0086

Moon -96904-08-20 08:08 J -33672531.40 -33672531.16 -33672530.92 0.0274 0.0070 \*

Mars -96899-09-15 17:01 J -33670679.09 -33670678.79 -33670678.49 0.0278 0.0003

Mercury -96893-05-17 17:15 J -33668607.87 -33668607.78 -33668607.68 0.0285 0.0220

Mercury -96893-08-14 08:51 J -33668519.26 -33668519.13 -33668519.00 0.0285 0.0130

Mercury -96893-11-11 00:42 J -33668430.62 -33668430.47 -33668430.32 0.0285 0.0037

Mercury -96892-02-07 16:47 J -33668341.95 -33668341.80 -33668341.65 0.0285 0.0058

Mercury -96892-05-07 09:20 J -33668253.24 -33668253.11 -33668252.98 0.0285 0.0155

Mercury -96892-08-04 02:08 J -33668164.47 -33668164.41 -33668164.33 0.0285 0.0254

Venus -96891-06-09 21:49 J -33667854.77 -33667854.59 -33667854.39 0.0286 0.0124

Venus -96890-01-25 13:54 J -33667625.08 -33667624.92 -33667624.74 0.0286 0.0165

Earth -96889-02-08 14:51 J -33667246.12 -33667245.88 -33667245.63 0.0285 0.0049

Moon -96889-02-08 18:13 J -33667245.98 -33667245.74 -33667245.48 0.0285 0.0050 \*

Mars -96885-11-27 08:08 J -33665492.45 -33665492.16 -33665491.87 0.0281 0.0033

Mercury -96879-12-23 17:01 J -33663274.89 -33663274.79 -33663274.68 0.0274 0.0203

Mercury -96878-03-22 08:51 J -33663186.27 -33663186.13 -33663185.99 0.0274 0.0115

Mercury -96878-06-19 00:13 J -33663097.64 -33663097.49 -33663097.33 0.0273 0.0030

Mercury -96878-09-15 15:20 J -33663009.01 -33663008.86 -33663008.71 0.0273 0.0056

Mercury -96878-12-13 05:59 J -33662920.37 -33662920.25 -33662920.11 0.0273 0.0139

Mercury -96877-03-10 20:37 J -33662831.73 -33662831.64 -33662831.55 0.0273 0.0218

Venus -96877-11-25 20:23 J -33662571.78 -33662571.65 -33662571.53 0.0273 0.0219

Venus -96876-07-13 03:49 J -33662342.56 -33662342.34 -33662342.13 0.0273 0.0034

Moon -96875-08-14 14:37 J -33661945.12 -33661944.89 -33661944.66 0.0273 0.0077

Earth -96875-08-14 18:13 J -33661944.98 -33661944.74 -33661944.50 0.0273 0.0060 \*

Moon -96874-08-27 02:23 J -33661567.51 -33661567.40 -33661567.27 0.0274 0.0235

Earth -96874-08-27 02:08 J -33661567.50 -33661567.41 -33661567.29 0.0274 0.0247 \*

Mars -96869-11-03 23:15 J -33659671.79 -33659671.53 -33659671.28 0.0279 0.0150

Mercury -96864-10-04 17:01 J -33657875.85 -33657875.79 -33657875.72 0.0285 0.0255

Mercury -96863-01-01 08:23 J -33657787.27 -33657787.15 -33657787.02 0.0285 0.0165

Mercury -96863-03-31 00:13 J -33657698.64 -33657698.49 -33657698.34 0.0285 0.0073

Mercury -96863-06-27 16:18 J -33657609.98 -33657609.82 -33657609.67 0.0285 0.0022

Mercury -96863-09-24 08:37 J -33657521.28 -33657521.14 -33657521.00 0.0285 0.0118

Mercury -96863-12-22 01:25 J -33657432.54 -33657432.44 -33657432.34 0.0286 0.0217

Venus -96862-12-20 23:59 J -33657068.69 -33657068.50 -33657068.30 0.0286 0.0092

Venus -96861-08-06 16:18 J -33656838.96 -33656838.82 -33656838.66 0.0286 0.0198

Moon -96860-02-01 14:23 J -33656660.11 -33656659.90 -33656659.68 0.0285 0.0117

Earth -96860-02-01 17:30 J -33656659.99 -33656659.77 -33656659.54 0.0285 0.0116 \*

Earth	-96859-02-15 12:27 J	-33656281.10	-33656280.98	-33656280.84	0.0285	0.0241
Moon	-96859-02-15 12:56 J	-33656281.07	-33656280.96	-33656280.84	0.0285	0.0248 *
Mars	-96854-01-16 05:30 J	-33654485.53	-33654485.27	-33654485.00	0.0280	0.0116
Mercury	-96849-05-11 18:42 J	-33652542.80	-33652542.72	-33652542.62	0.0275	0.0227
Mercury	-96849-08-08 10:47 J	-33652454.18	-33652454.05	-33652453.91	0.0274	0.0138
Mercury	-96849-11-05 02:23 J	-33652365.55	-33652365.40	-33652365.25	0.0274	0.0050
Mercury	-96848-02-01 17:30 J	-33652276.92	-33652276.77	-33652276.61	0.0274	0.0035
Mercury	-96848-05-01 08:23 J	-33652188.28	-33652188.15	-33652188.01	0.0274	0.0118
Mercury	-96848-07-28 23:01 J	-33652099.64	-33652099.54	-33652099.44	0.0274	0.0199
Venus	-96847-06-08 03:49 J	-33651785.49	-33651785.34	-33651785.18	0.0274	0.0182
Venus	-96846-01-23 11:15 J	-33651556.23	-33651556.03	-33651555.82	0.0274	0.0073
Earth	-96846-08-09 19:54 J	-33651357.84	-33651357.67	-33651357.48	0.0274	0.0189
Moon	-96846-08-09 23:30 J	-33651357.68	-33651357.52	-33651357.35	0.0274	0.0202 *
Moon	-96845-08-21 06:27 J	-33650980.45	-33650980.23	-33650979.99	0.0274	0.0105
Earth	-96845-08-21 06:42 J	-33650980.44	-33650980.22	-33650980.00	0.0274	0.0120 *
Mars	-96841-12-20 21:49 J	-33649397.82	-33649397.59	-33649397.32	0.0277	0.0144
Mercury	-96834-02-21 18:42 J	-33647143.74	-33647143.72	-33647143.68	0.0284	0.0277
Mercury	-96834-05-21 10:03 J	-33647055.19	-33647055.08	-33647054.97	0.0284	0.0189
Mercury	-96834-08-18 01:39 J	-33646966.57	-33646966.43	-33646966.29	0.0285	0.0098
Mercury	-96834-11-14 17:30 J	-33646877.92	-33646877.77	-33646877.61	0.0285	0.0009
Mercury	-96833-02-11 09:49 J	-33646789.23	-33646789.09	-33646788.94	0.0285	0.0092
Mercury	-96833-05-10 02:37 J	-33646700.51	-33646700.39	-33646700.28	0.0285	0.0189
Venus	-96832-07-02 05:59 J	-33646282.45	-33646282.25	-33646282.04	0.0285	0.0054
Earth	-96831-01-27 01:39 J	-33646073.51	-33646073.43	-33646073.35	0.0285	0.0269
Moon	-96831-01-27 04:18 J	-33646073.39	-33646073.32	-33646073.24	0.0285	0.0271 *
Venus	-96831-02-16 22:18 J	-33646052.69	-33646052.57	-33646052.45	0.0285	0.0235
Moon	-96830-02-09 16:47 J	-33645695.04	-33645694.80	-33645694.55	0.0285	0.0089
Earth	-96830-02-09 17:30 J	-33645695.00	-33645694.77	-33645694.53	0.0285	0.0084 *
Mars	-96826-03-04 07:54 J	-33644211.38	-33644211.17	-33644210.93	0.0282	0.0181
Mars	-96824-03-05 10:03 J	-33643479.18	-33643479.08	-33643478.96	0.0279	0.0257

Mercury -96820-09-28 17:59 J -33641810.79 -33641810.75 -33641810.69 0.0274 0.0260  
 Mercury -96820-12-26 10:03 J -33641722.20 -33641722.08 -33641721.95 0.0274 0.0171  
 Mercury -96819-03-25 01:54 J -33641633.57 -33641633.42 -33641633.27 0.0274 0.0083  
 Mercury -96819-06-21 17:15 J -33641544.94 -33641544.78 -33641544.63 0.0274 0.0003  
 Mercury -96819-09-18 08:08 J -33641456.30 -33641456.16 -33641456.01 0.0274 0.0087  
 Mercury -96819-12-15 22:47 J -33641367.66 -33641367.55 -33641367.42 0.0273 0.0169  
 Mercury -96818-03-14 13:11 J -33641279.00 -33641278.95 -33641278.88 0.0273 0.0249  
 Venus -96818-12-19 03:49 J -33640999.51 -33640999.34 -33640999.16 0.0273 0.0156  
 Venus -96817-08-04 11:15 J -33640770.23 -33640770.03 -33640769.83 0.0273 0.0099  
 Earth -96816-08-15 21:06 J -33640393.86 -33640393.62 -33640393.38 0.0273 0.0026  
 Moon -96816-08-15 21:35 J -33640393.84 -33640393.60 -33640393.37 0.0273 0.0041 \*  
 Moon -96815-08-28 08:51 J -33640016.17 -33640016.13 -33640016.07 0.0274 0.0268  
 Mars -96810-02-08 16:32 J -33638391.11 -33638390.81 -33638390.51 0.0278 0.0003  
 Mercury -96805-10-07 09:49 J -33636323.18 -33636323.09 -33636323.00 0.0285 0.0224  
 Mercury -96804-01-04 01:11 J -33636234.58 -33636234.45 -33636234.31 0.0285 0.0133  
 Mercury -96804-04-02 17:01 J -33636145.94 -33636145.79 -33636145.64 0.0285 0.0040  
 Mercury -96804-06-30 09:06 J -33636057.27 -33636057.12 -33636056.96 0.0285 0.0055  
 Mercury -96804-09-27 01:39 J -33635968.56 -33635968.43 -33635968.30 0.0285 0.0152  
 Mercury -96804-12-24 18:27 J -33635879.80 -33635879.73 -33635879.65 0.0285 0.0251  
 Venus -96802-01-12 07:54 J -33635496.38 -33635496.17 -33635495.96 0.0286 0.0024  
 Venus -96802-08-30 00:13 J -33635266.55 -33635266.49 -33635266.41 0.0285 0.0267  
 Earth -96801-02-03 19:39 J -33635108.92 -33635108.68 -33635108.45 0.0285 0.0081  
 Moon -96801-02-03 21:06 J -33635108.85 -33635108.62 -33635108.39 0.0285 0.0077 \*  
 Earth -96800-02-16 14:37 J -33634729.95 -33634729.89 -33634729.82 0.0285 0.0274  
 Moon -96800-02-16 18:13 J -33634729.75 -33634729.74 -33634729.72 0.0285 0.0284  
 Mars -96796-04-22 14:37 J -33633204.18 -33633203.89 -33633203.60 0.0281 0.0027  
 Mercury -96790-05-15 11:44 J -33630990.11 -33630990.01 -33630989.89 0.0275 0.0195  
 Mercury -96790-08-12 03:35 J -33630901.49 -33630901.35 -33630901.20 0.0275 0.0107  
 Mercury -96790-11-08 19:11 J -33630812.86 -33630812.70 -33630812.54 0.0274 0.0019  
 Mercury -96789-02-05 10:18 J -33630724.22 -33630724.07 -33630723.92 0.0274 0.0066

Mercury -96789-05-04 01:11 J -33630635.58 -33630635.45 -33630635.32 0.0274 0.0148

Mercury -96789-07-31 15:35 J -33630546.93 -33630546.85 -33630546.77 0.0274 0.0229

Venus -96788-06-30 11:15 J -33630213.22 -33630213.03 -33630212.83 0.0274 0.0117

Venus -96787-02-14 18:42 J -33629983.90 -33629983.72 -33629983.53 0.0274 0.0138

Earth -96787-08-10 23:15 J -33629806.73 -33629806.53 -33629806.33 0.0274 0.0153

Moon -96787-08-10 23:01 J -33629806.73 -33629806.54 -33629806.33 0.0274 0.0166 \*

Moon -96786-08-23 05:59 J -33629429.45 -33629429.25 -33629429.03 0.0274 0.0141

Earth -96786-08-23 10:03 J -33629429.28 -33629429.08 -33629428.88 0.0274 0.0155 \*

Mars -96782-03-28 18:27 J -33628115.78 -33628115.73 -33628115.68 0.0277 0.0272

Mars -96780-03-31 05:15 J -33627382.52 -33627382.28 -33627382.04 0.0279 0.0165

Mercury -96775-02-24 11:59 J -33625591.07 -33625591.00 -33625590.92 0.0284 0.0243

Mercury -96775-05-24 03:20 J -33625502.48 -33625502.36 -33625502.23 0.0284 0.0154

Mercury -96775-08-20 18:56 J -33625413.85 -33625413.71 -33625413.56 0.0284 0.0063

Mercury -96775-11-17 11:01 J -33625325.19 -33625325.04 -33625324.88 0.0285 0.0032

Mercury -96774-02-14 03:20 J -33625236.49 -33625236.36 -33625236.22 0.0285 0.0129

Mercury -96774-05-13 20:08 J -33625147.75 -33625147.66 -33625147.56 0.0285 0.0227

Venus -96774-12-07 23:59 J -33624939.57 -33624939.50 -33624939.43 0.0285 0.0267

Venus -96773-07-24 15:20 J -33624710.07 -33624709.86 -33624709.65 0.0285 0.0019

Moon -96772-01-28 03:49 J -33624522.48 -33624522.34 -33624522.18 0.0285 0.0228

Earth -96772-01-28 05:59 J -33624522.38 -33624522.25 -33624522.09 0.0285 0.0231 \*

Moon -96771-02-10 17:59 J -33624143.95 -33624143.75 -33624143.52 0.0285 0.0130

Earth -96771-02-10 22:03 J -33624143.80 -33624143.58 -33624143.35 0.0285 0.0121 \*

Mars -96766-06-11 11:44 J -33622197.27 -33622197.01 -33622196.75 0.0280 0.0124

Mercury -96761-10-01 11:30 J -33620258.10 -33620258.02 -33620257.93 0.0274 0.0226

Mercury -96761-12-29 03:35 J -33620169.49 -33620169.35 -33620169.21 0.0274 0.0137

Mercury -96760-03-27 19:11 J -33620080.86 -33620080.70 -33620080.55 0.0274 0.0050

Mercury -96760-06-24 10:18 J -33619992.22 -33619992.07 -33619991.91 0.0274 0.0036

Mercury -96760-09-21 01:11 J -33619903.58 -33619903.45 -33619903.31 0.0274 0.0119

Mercury -96760-12-18 15:49 J -33619814.94 -33619814.84 -33619814.73 0.0274 0.0200

Venus -96758-01-10 12:27 J -33619427.18 -33619426.98 -33619426.78 0.0273 0.0088

Venus -96758-08-27 19:39 J -33619197.85 -33619197.68 -33619197.51 0.0273 0.0166  
 Earth -96757-08-17 01:25 J -33618842.69 -33618842.44 -33618842.20 0.0273 0.0010  
 Moon -96757-08-17 05:01 J -33618842.53 -33618842.29 -33618842.05 0.0273 0.0004 \*  
 Mars -96752-05-16 02:08 J -33617109.66 -33617109.41 -33617109.14 0.0278 0.0135  
 Mercury -96746-07-14 11:44 J -33614859.03 -33614859.01 -33614858.98 0.0285 0.0278  
 Mercury -96746-10-11 02:51 J -33614770.48 -33614770.38 -33614770.26 0.0285 0.0190  
 Mercury -96745-01-07 18:27 J -33614681.87 -33614681.73 -33614681.58 0.0285 0.0098  
 Mercury -96745-04-05 10:32 J -33614593.22 -33614593.06 -33614592.91 0.0285 0.0010  
 Mercury -96745-07-03 02:37 J -33614504.53 -33614504.39 -33614504.24 0.0285 0.0091  
 Mercury -96745-09-29 19:11 J -33614415.81 -33614415.70 -33614415.58 0.0285 0.0189  
 Venus -96744-06-19 01:25 J -33614153.55 -33614153.44 -33614153.32 0.0285 0.0240  
 Venus -96743-02-03 17:01 J -33613924.00 -33613923.79 -33613923.58 0.0285 0.0049  
 Earth -96742-02-04 23:44 J -33613557.75 -33613557.51 -33613557.27 0.0285 0.0043  
 Moon -96742-02-05 03:35 J -33613557.60 -33613557.35 -33613557.10 0.0285 0.0036 \*  
 Mars -96738-07-28 16:47 J -33611923.02 -33611922.80 -33611922.55 0.0281 0.0174  
 Mars -96736-07-29 21:06 J -33611190.69 -33611190.62 -33611190.52 0.0279 0.0265  
 Mercury -96731-02-18 12:56 J -33609526.01 -33609525.96 -33609525.89 0.0275 0.0251  
 Mercury -96731-05-18 05:15 J -33609437.41 -33609437.28 -33609437.15 0.0275 0.0161  
 Mercury -96731-08-14 20:51 J -33609348.78 -33609348.63 -33609348.48 0.0275 0.0073  
 Mercury -96731-11-11 12:13 J -33609260.14 -33609259.99 -33609259.83 0.0275 0.0015  
 Mercury -96730-02-08 03:20 J -33609171.50 -33609171.36 -33609171.22 0.0275 0.0098  
 Mercury -96730-05-07 17:59 J -33609082.86 -33609082.75 -33609082.63 0.0274 0.0181  
 Mercury -96730-08-04 08:37 J -33608994.19 -33608994.14 -33608994.10 0.0274 0.0261  
 Venus -96729-07-22 19:39 J -33608640.89 -33608640.68 -33608640.47 0.0274 0.0050  
 Venus -96728-03-09 03:06 J -33608411.51 -33608411.37 -33608411.23 0.0274 0.0206  
 Moon -96728-08-11 23:59 J -33608255.71 -33608255.50 -33608255.28 0.0274 0.0132  
 Earth -96728-08-12 03:20 J -33608255.57 -33608255.36 -33608255.13 0.0274 0.0118 \*  
 Moon -96727-08-24 12:56 J -33607878.14 -33607877.96 -33607877.78 0.0274 0.0179  
 Earth -96727-08-24 14:08 J -33607878.08 -33607877.91 -33607877.73 0.0274 0.0190 \*  
 Mars -96722-07-06 03:49 J -33606101.63 -33606101.34 -33606101.04 0.0278 0.0023



Mercury -96716-02-27 05:44 J -33604038.36 -33604038.26 -33604038.16 0.0284 0.0206

Mercury -96716-05-26 21:06 J -33603949.76 -33603949.62 -33603949.48 0.0284 0.0116

Mercury -96716-08-23 12:56 J -33603861.11 -33603860.96 -33603860.81 0.0284 0.0023

Mercury -96716-11-20 05:01 J -33603772.44 -33603772.29 -33603772.14 0.0285 0.0072

Mercury -96715-02-16 21:35 J -33603683.73 -33603683.60 -33603683.48 0.0285 0.0169

Mercury -96715-05-16 14:23 J -33603594.95 -33603594.90 -33603594.85 0.0285 0.0268

Venus -96715-12-30 10:32 J -33603367.21 -33603367.06 -33603366.90 0.0285 0.0192

Venus -96714-08-17 02:08 J -33603137.61 -33603137.41 -33603137.21 0.0285 0.0096

Moon -96713-01-30 09:35 J -33602971.27 -33602971.10 -33602970.91 0.0285 0.0186

Earth -96713-01-30 12:56 J -33602971.13 -33602970.96 -33602970.76 0.0285 0.0192 \*

Moon -96712-02-12 04:18 J -33602592.51 -33602592.32 -33602592.13 0.0285 0.0171

Earth -96712-02-12 05:01 J -33602592.48 -33602592.29 -33602592.08 0.0285 0.0160 \*

Mars -96708-09-16 07:11 J -33600915.49 -33600915.20 -33600914.91 0.0281 0.0014

Mercury -96702-10-05 05:15 J -33598705.39 -33598705.28 -33598705.16 0.0274 0.0191

Mercury -96701-01-01 21:06 J -33598616.76 -33598616.62 -33598616.47 0.0274 0.0102

Mercury -96701-03-30 12:42 J -33598528.13 -33598527.97 -33598527.82 0.0274 0.0015

Mercury -96701-06-27 03:49 J -33598439.49 -33598439.34 -33598439.19 0.0274 0.0070

Mercury -96701-09-23 18:42 J -33598350.85 -33598350.72 -33598350.60 0.0274 0.0153

Mercury -96701-12-21 09:06 J -33598262.19 -33598262.12 -33598262.04 0.0274 0.0234

Venus -96699-02-01 21:35 J -33597854.81 -33597854.60 -33597854.38 0.0273 0.0020

Earth -96699-08-06 18:42 J -33597668.80 -33597668.72 -33597668.65 0.0273 0.0260

Moon -96699-08-06 22:03 J -33597668.58 -33597668.58 -33597668.58 0.0273 0.0273

Venus -96699-09-19 04:32 J -33597625.40 -33597625.31 -33597625.19 0.0273 0.0236

Earth -96698-08-19 06:56 J -33597291.44 -33597291.21 -33597290.96 0.0274 0.0048

Moon -96698-08-19 08:37 J -33597291.39 -33597291.14 -33597290.89 0.0274 0.0034 \*

Mars -96694-08-22 03:49 J -33595827.43 -33595827.34 -33595827.25 0.0277 0.0262

Mars -96692-08-24 13:11 J -33595094.17 -33595093.95 -33595093.70 0.0279 0.0176

Mercury -96687-07-17 05:30 J -33593306.34 -33593306.27 -33593306.19 0.0284 0.0241

Mercury -96687-10-13 20:51 J -33593217.76 -33593217.63 -33593217.50 0.0285 0.0151

Mercury -96686-01-10 12:27 J -33593129.13 -33593128.98 -33593128.83 0.0285 0.0059

Mercury -96686-04-09 04:32 J -33593040.46 -33593040.31 -33593040.16 0.0285 0.0035

Mercury -96686-07-06 20:51 J -33592951.77 -33592951.63 -33592951.49 0.0285 0.0132

Mercury -96686-10-03 13:25 J -33592863.02 -33592862.94 -33592862.84 0.0285 0.0231

Venus -96685-07-11 12:27 J -33592581.15 -33592580.98 -33592580.81 0.0285 0.0163

Venus -96684-02-26 03:49 J -33592351.52 -33592351.34 -33592351.14 0.0285 0.0127

Moon -96683-02-06 06:56 J -33592006.47 -33592006.21 -33592005.96 0.0285 0.0008

Earth -96683-02-06 06:42 J -33592006.46 -33592006.22 -33592005.97 0.0285 0.0005 \*

Mars -96678-11-05 02:08 J -33589908.65 -33589908.41 -33589908.15 0.0280 0.0135

Mercury -96672-02-21 06:42 J -33587973.31 -33587973.22 -33587973.12 0.0275 0.0215

Mercury -96672-05-20 22:47 J -33587884.69 -33587884.55 -33587884.41 0.0275 0.0126

Mercury -96672-08-17 14:23 J -33587796.05 -33587795.90 -33587795.74 0.0275 0.0038

Mercury -96672-11-14 05:44 J -33587707.41 -33587707.26 -33587707.11 0.0275 0.0048

Mercury -96671-02-10 20:37 J -33587618.77 -33587618.64 -33587618.50 0.0275 0.0132

Mercury -96671-05-10 11:15 J -33587530.12 -33587530.03 -33587529.94 0.0275 0.0214

Venus -96671-12-28 20:23 J -33587297.74 -33587297.65 -33587297.54 0.0274 0.0239

Venus -96670-08-15 04:47 J -33587068.51 -33587068.30 -33587068.08 0.0274 0.0020

Moon -96669-08-13 07:11 J -33586704.42 -33586704.20 -33586703.98 0.0274 0.0095

Earth -96669-08-13 09:06 J -33586704.35 -33586704.12 -33586703.88 0.0274 0.0080 \*

Earth -96668-08-25 19:54 J -33586326.80 -33586326.67 -33586326.53 0.0275 0.0226

Moon -96668-08-25 22:32 J -33586326.69 -33586326.56 -33586326.40 0.0275 0.0218 \*

Mars -96664-10-10 17:59 J -33584820.02 -33584819.75 -33584819.48 0.0278 0.0113

Mercury -96658-12-04 08:37 J -33582574.20 -33582574.14 -33582574.08 0.0284 0.0255

Mercury -96657-03-01 23:44 J -33582485.63 -33582485.51 -33582485.38 0.0284 0.0167

Mercury -96657-05-29 15:20 J -33582397.00 -33582396.86 -33582396.71 0.0284 0.0075

Mercury -96657-08-26 07:11 J -33582308.35 -33582308.20 -33582308.04 0.0284 0.0020

Mercury -96657-11-22 23:30 J -33582219.66 -33582219.52 -33582219.38 0.0284 0.0115

Mercury -96656-02-19 16:03 J -33582130.93 -33582130.83 -33582130.72 0.0285 0.0213

Venus -96655-01-21 22:47 J -33581794.75 -33581794.55 -33581794.36 0.0285 0.0112

Venus -96655-09-08 14:08 J -33581565.07 -33581564.91 -33581564.74 0.0285 0.0177

Earth -96654-01-31 22:32 J -33581419.77 -33581419.56 -33581419.35 0.0285 0.0149

Moon -96654-01-31 22:18 J -33581419.76 -33581419.57 -33581419.36 0.0285 0.0144 \*  
 Earth -96653-02-14 14:23 J -33581041.06 -33581040.90 -33581040.71 0.0285 0.0201  
 Moon -96653-02-14 17:44 J -33581040.90 -33581040.76 -33581040.59 0.0285 0.0215 \*  
 Mars -96650-12-22 19:54 J -33579633.91 -33579633.67 -33579633.42 0.0281 0.0156  
 Mars -96648-12-23 21:20 J -33578901.62 -33578901.61 -33578901.59 0.0279 0.0279  
 Mercury -96643-07-11 07:25 J -33577241.26 -33577241.19 -33577241.11 0.0275 0.0242  
 Mercury -96643-10-07 23:30 J -33577152.65 -33577152.52 -33577152.39 0.0274 0.0152  
 Mercury -96642-01-04 15:06 J -33577064.02 -33577063.87 -33577063.71 0.0274 0.0065  
 Mercury -96642-04-03 06:27 J -33576975.38 -33576975.23 -33576975.07 0.0274 0.0024  
 Mercury -96642-06-30 21:35 J -33576886.74 -33576886.60 -33576886.46 0.0274 0.0107  
 Mercury -96642-09-27 12:13 J -33576798.09 -33576797.99 -33576797.87 0.0274 0.0189  
 Mercury -96642-12-25 02:51 J -33576709.41 -33576709.38 -33576709.36 0.0274 0.0269  
 Venus -96641-07-09 23:59 J -33576511.64 -33576511.50 -33576511.36 0.0274 0.0204  
 Venus -96640-02-24 07:54 J -33576282.38 -33576282.17 -33576281.96 0.0274 0.0054  
 Earth -96640-08-08 01:54 J -33576117.55 -33576117.42 -33576117.26 0.0274 0.0222  
 Moon -96640-08-08 04:18 J -33576117.44 -33576117.32 -33576117.18 0.0274 0.0235 \*  
 Moon -96639-08-20 11:59 J -33575740.24 -33575740.00 -33575739.76 0.0274 0.0073  
 Earth -96639-08-20 14:37 J -33575740.12 -33575739.89 -33575739.66 0.0274 0.0085 \*  
 Mars -96634-11-29 17:59 J -33573813.04 -33573812.75 -33573812.45 0.0278 0.0035  
 Mercury -96628-07-19 23:44 J -33571753.61 -33571753.51 -33571753.40 0.0284 0.0201  
 Mercury -96628-10-16 15:06 J -33571665.01 -33571664.87 -33571664.73 0.0285 0.0110  
 Mercury -96627-01-13 06:56 J -33571576.36 -33571576.21 -33571576.06 0.0285 0.0017  
 Mercury -96627-04-11 23:01 J -33571487.69 -33571487.54 -33571487.39 0.0285 0.0079  
 Mercury -96627-07-09 15:35 J -33571398.97 -33571398.85 -33571398.73 0.0285 0.0176  
 Mercury -96627-10-06 08:23 J -33571310.19 -33571310.15 -33571310.11 0.0285 0.0275  
 Venus -96626-08-04 00:42 J -33571008.67 -33571008.47 -33571008.27 0.0285 0.0083  
 Venus -96625-03-20 16:18 J -33570778.95 -33570778.82 -33570778.67 0.0285 0.0208  
 Moon -96624-02-07 12:56 J -33570455.21 -33570454.96 -33570454.72 0.0285 0.0052  
 Earth -96624-02-07 16:18 J -33570455.06 -33570454.82 -33570454.57 0.0285 0.0040 \*  
 Mars -96619-02-10 01:54 J -33568626.71 -33568626.42 -33568626.13 0.0281 0.0002

Mercury -96614-11-28 08:23 J -33566509.17 -33566509.15 -33566509.11 0.0275 0.0268  
 Mercury -96613-02-25 00:42 J -33566420.58 -33566420.47 -33566420.34 0.0275 0.0177  
 Mercury -96613-05-23 16:47 J -33566331.95 -33566331.80 -33566331.66 0.0275 0.0088  
 Mercury -96613-08-20 08:08 J -33566243.31 -33566243.16 -33566243.00 0.0275 0.0003  
 Mercury -96613-11-16 23:15 J -33566154.67 -33566154.53 -33566154.38 0.0275 0.0085  
 Mercury -96612-02-13 14:08 J -33566066.03 -33566065.91 -33566065.79 0.0275 0.0168  
 Mercury -96612-05-13 04:47 J -33565977.36 -33565977.30 -33565977.24 0.0275 0.0249  
 Venus -96611-01-20 06:13 J -33565725.40 -33565725.24 -33565725.06 0.0275 0.0168  
 Venus -96611-09-06 14:37 J -33565496.09 -33565495.89 -33565495.69 0.0274 0.0092  
 Earth -96610-08-15 15:49 J -33565153.08 -33565152.84 -33565152.60 0.0275 0.0043  
 Moon -96610-08-15 17:59 J -33565152.98 -33565152.75 -33565152.52 0.0275 0.0058 \*  
 Earth -96609-08-27 02:23 J -33564775.46 -33564775.40 -33564775.32 0.0275 0.0262  
 Moon -96609-08-27 05:30 J -33564775.36 -33564775.27 -33564775.17 0.0275 0.0253 \*  
 Mars -96605-01-16 19:54 J -33563537.80 -33563537.67 -33563537.52 0.0277 0.0242  
 Mars -96603-01-19 10:32 J -33562804.26 -33562804.06 -33562803.84 0.0279 0.0201  
 Mercury -96599-12-07 03:06 J -33561021.46 -33561021.37 -33561021.27 0.0284 0.0213  
 Mercury -96598-03-05 18:27 J -33560932.86 -33560932.73 -33560932.59 0.0284 0.0123  
 Mercury -96598-06-02 10:03 J -33560844.23 -33560844.08 -33560843.92 0.0284 0.0032  
 Mercury -96598-08-30 02:08 J -33560755.56 -33560755.41 -33560755.26 0.0284 0.0064  
 Mercury -96598-11-26 18:42 J -33560666.85 -33560666.72 -33560666.59 0.0284 0.0161  
 Mercury -96597-02-23 11:15 J -33560578.08 -33560578.03 -33560577.96 0.0284 0.0260  
 Venus -96596-02-13 12:13 J -33560222.20 -33560221.99 -33560221.78 0.0285 0.0028  
 Venus -96596-10-01 03:49 J -33559992.41 -33559992.34 -33559992.25 0.0285 0.0262  
 Earth -96595-02-02 10:03 J -33559868.30 -33559868.08 -33559867.85 0.0285 0.0106  
 Moon -96595-02-02 13:11 J -33559868.17 -33559867.95 -33559867.71 0.0285 0.0099 \*  
 Earth -96594-02-16 02:37 J -33559489.51 -33559489.39 -33559489.26 0.0284 0.0243  
 Moon -96594-02-16 05:01 J -33559489.38 -33559489.29 -33559489.17 0.0284 0.0257 \*  
 Mars -96589-03-31 11:15 J -33557619.26 -33557619.03 -33557618.78 0.0280 0.0153  
 Mercury -96584-07-14 01:54 J -33555688.52 -33555688.42 -33555688.31 0.0275 0.0201  
 Mercury -96584-10-10 17:59 J -33555599.89 -33555599.75 -33555599.61 0.0274 0.0112

Mercury -96583-01-07 09:35 J -33555511.26 -33555511.10 -33555510.95 0.0274 0.0025  
 Mercury -96583-04-06 00:42 J -33555422.62 -33555422.47 -33555422.32 0.0274 0.0061  
 Mercury -96583-07-03 15:35 J -33555333.98 -33555333.85 -33555333.72 0.0274 0.0145  
 Mercury -96583-09-30 06:13 J -33555245.32 -33555245.24 -33555245.15 0.0274 0.0227  
 Venus -96582-08-02 11:01 J -33554939.22 -33554939.04 -33554938.84 0.0274 0.0130  
 Venus -96581-03-18 18:42 J -33554709.90 -33554709.72 -33554709.52 0.0274 0.0129  
 Moon -96581-08-09 08:08 J -33554566.32 -33554566.16 -33554565.97 0.0274 0.0198  
 Earth -96581-08-09 11:01 J -33554566.23 -33554566.04 -33554565.86 0.0274 0.0182 \*  
 Moon -96580-08-21 19:54 J -33554188.88 -33554188.67 -33554188.45 0.0274 0.0111  
 Earth -96580-08-21 23:01 J -33554188.75 -33554188.54 -33554188.32 0.0274 0.0124 \*  
 Mars -96575-03-06 12:13 J -33552531.26 -33552530.99 -33552530.71 0.0278 0.0101  
 Mercury -96569-04-25 03:06 J -33550289.44 -33550289.37 -33550289.29 0.0284 0.0247  
 Mercury -96569-07-22 18:27 J -33550200.86 -33550200.73 -33550200.61 0.0284 0.0158  
 Mercury -96569-10-19 09:49 J -33550112.23 -33550112.09 -33550111.94 0.0285 0.0067  
 Mercury -96568-01-16 01:54 J -33550023.58 -33550023.42 -33550023.27 0.0285 0.0028  
 Mercury -96568-04-14 17:59 J -33549934.88 -33549934.75 -33549934.61 0.0285 0.0125  
 Mercury -96568-07-12 10:32 J -33549846.15 -33549846.06 -33549845.96 0.0285 0.0223  
 Venus -96567-08-26 14:08 J -33549436.12 -33549435.91 -33549435.70 0.0285 0.0001  
 Moon -96566-01-27 10:18 J -33549282.17 -33549282.07 -33549281.96 0.0285 0.0257  
 Earth -96566-01-27 13:54 J -33549282.01 -33549281.92 -33549281.82 0.0285 0.0262 \*  
 Moon -96565-02-10 01:39 J -33548903.65 -33548903.43 -33548903.20 0.0285 0.0095  
 Earth -96565-02-10 03:49 J -33548903.57 -33548903.34 -33548903.10 0.0285 0.0083 \*  
 Mars -96561-05-17 16:47 J -33547345.04 -33547344.80 -33547344.54 0.0281 0.0142  
 Mercury -96555-12-01 03:06 J -33544956.46 -33544956.37 -33544956.28 0.0275 0.0227  
 Mercury -96554-02-27 19:11 J -33544867.84 -33544867.70 -33544867.56 0.0275 0.0137  
 Mercury -96554-05-27 11:01 J -33544779.20 -33544779.04 -33544778.89 0.0275 0.0049  
 Mercury -96554-08-24 02:23 J -33544690.56 -33544690.40 -33544690.25 0.0275 0.0038  
 Mercury -96554-11-20 17:15 J -33544601.91 -33544601.78 -33544601.64 0.0275 0.0123  
 Mercury -96553-02-17 07:54 J -33544513.26 -33544513.17 -33544513.06 0.0275 0.0206  
 Venus -96552-02-11 17:15 J -33544152.98 -33544152.78 -33544152.58 0.0275 0.0092

Venus -96552-09-29 01:11 J -33543923.61 -33543923.45 -33543923.28 0.0275 0.0166  
 Earth -96551-08-16 23:44 J -33543601.76 -33543601.51 -33543601.27 0.0275 0.0006  
 Moon -96551-08-17 03:06 J -33543601.61 -33543601.37 -33543601.12 0.0275 0.0021 \*  
 Mars -96545-04-25 14:51 J -33541523.16 -33541522.88 -33541522.58 0.0279 0.0059  
 Mercury -96540-09-12 06:42 J -33539557.28 -33539557.22 -33539557.16 0.0284 0.0259  
 Mercury -96540-12-09 21:49 J -33539468.71 -33539468.59 -33539468.47 0.0284 0.0170  
 Mercury -96539-03-08 13:25 J -33539380.09 -33539379.94 -33539379.80 0.0284 0.0079  
 Mercury -96539-06-05 05:01 J -33539291.44 -33539291.29 -33539291.13 0.0284 0.0017  
 Mercury -96539-09-01 21:20 J -33539202.75 -33539202.61 -33539202.47 0.0284 0.0110  
 Mercury -96539-11-29 13:54 J -33539114.02 -33539113.92 -33539113.81 0.0284 0.0208  
 Venus -96538-07-22 11:01 J -33538879.15 -33538879.04 -33538878.91 0.0285 0.0231  
 Venus -96537-03-08 02:23 J -33538649.61 -33538649.40 -33538649.20 0.0285 0.0058  
 Earth -96536-02-03 22:47 J -33538316.79 -33538316.55 -33538316.31 0.0285 0.0061  
 Moon -96536-02-04 01:25 J -33538316.69 -33538316.44 -33538316.20 0.0285 0.0055 \*  
 Mars -96531-07-07 18:56 J -33536337.00 -33536336.71 -33536336.42 0.0281 0.0020  
 Mercury -96525-04-19 04:47 J -33534224.36 -33534224.30 -33534224.23 0.0275 0.0249  
 Mercury -96525-07-16 20:51 J -33534135.76 -33534135.63 -33534135.50 0.0275 0.0159  
 Mercury -96525-10-13 12:42 J -33534047.12 -33534046.97 -33534046.82 0.0274 0.0070  
 Mercury -96524-01-10 04:03 J -33533958.49 -33533958.33 -33533958.17 0.0274 0.0017  
 Mercury -96524-04-08 19:11 J -33533869.84 -33533869.70 -33533869.56 0.0274 0.0101  
 Mercury -96524-07-06 09:49 J -33533781.20 -33533781.09 -33533780.97 0.0274 0.0185  
 Mercury -96524-10-03 00:13 J -33533692.52 -33533692.49 -33533692.45 0.0274 0.0265  
 Venus -96523-08-24 22:47 J -33533366.75 -33533366.55 -33533366.33 0.0274 0.0054  
 Venus -96522-04-11 06:27 J -33533137.36 -33533137.23 -33533137.09 0.0274 0.0205  
 Moon -96522-08-11 16:47 J -33533014.99 -33533014.80 -33533014.60 0.0274 0.0159  
 Earth -96522-08-11 20:08 J -33533014.86 -33533014.66 -33533014.44 0.0274 0.0143 \*  
 Earth -96521-08-23 08:08 J -33532637.35 -33532637.16 -33532636.95 0.0274 0.0162  
 Moon -96521-08-23 08:37 J -33532637.32 -33532637.14 -33532636.93 0.0274 0.0152 \*  
 Mars -96517-06-11 17:59 J -33531248.89 -33531248.75 -33531248.57 0.0277 0.0230  
 Mars -96515-06-15 08:08 J -33530515.35 -33530515.16 -33530514.97 0.0279 0.0214

Mercury -96510-04-28 21:49 J -33528736.69 -33528736.59 -33528736.48 0.0284 0.0204  
 Mercury -96510-07-26 13:25 J -33528648.08 -33528647.94 -33528647.80 0.0284 0.0113  
 Mercury -96510-10-23 05:01 J -33528559.44 -33528559.29 -33528559.14 0.0285 0.0020  
 Mercury -96509-01-19 21:06 J -33528470.77 -33528470.62 -33528470.47 0.0285 0.0075  
 Mercury -96509-04-17 13:25 J -33528382.06 -33528381.94 -33528381.81 0.0285 0.0173  
 Mercury -96509-07-15 06:13 J -33528293.28 -33528293.24 -33528293.19 0.0285 0.0272  
 Venus -96508-01-31 13:11 J -33528093.08 -33528092.95 -33528092.79 0.0285 0.0202  
 Venus -96508-09-18 04:32 J -33527863.51 -33527863.31 -33527863.11 0.0285 0.0088  
 Moon -96507-01-29 00:13 J -33527730.63 -33527730.49 -33527730.32 0.0285 0.0213  
 Earth -96507-01-29 02:37 J -33527730.54 -33527730.39 -33527730.22 0.0285 0.0217 \*  
 Earth -96506-02-11 17:01 J -33527352.00 -33527351.79 -33527351.56 0.0285 0.0128  
 Moon -96506-02-11 18:56 J -33527351.91 -33527351.71 -33527351.50 0.0285 0.0140 \*  
 Mars -96501-08-25 11:01 J -33525330.25 -33525330.04 -33525329.80 0.0280 0.0168  
 Mercury -96496-12-03 21:49 J -33523403.71 -33523403.59 -33523403.47 0.0275 0.0185  
 Mercury -96495-03-02 13:39 J -33523315.07 -33523314.93 -33523314.78 0.0275 0.0096  
 Mercury -96495-05-30 05:15 J -33523226.44 -33523226.28 -33523226.12 0.0275 0.0009  
 Mercury -96495-08-26 20:23 J -33523137.79 -33523137.65 -33523137.50 0.0275 0.0078  
 Mercury -96495-11-23 11:15 J -33523049.15 -33523049.03 -33523048.90 0.0275 0.0162  
 Mercury -96494-02-20 02:08 J -33522960.48 -33522960.41 -33522960.35 0.0275 0.0243  
 Venus -96493-03-06 04:32 J -33522580.53 -33522580.31 -33522580.10 0.0274 0.0018  
 Earth -96493-08-05 17:01 J -33522427.80 -33522427.79 -33522427.77 0.0275 0.0274  
 Venus -96493-10-21 11:59 J -33522351.09 -33522351.00 -33522350.89 0.0275 0.0242  
 Moon -96492-08-18 07:25 J -33522050.44 -33522050.19 -33522049.94 0.0275 0.0019  
 Earth -96492-08-18 07:54 J -33522050.41 -33522050.17 -33522049.92 0.0275 0.0033 \*  
 Mars -96487-08-01 06:27 J -33520241.51 -33520241.23 -33520240.94 0.0278 0.0079  
 Mercury -96481-09-15 01:25 J -33518004.54 -33518004.44 -33518004.35 0.0284 0.0216  
 Mercury -96481-12-12 16:32 J -33517915.94 -33517915.81 -33517915.67 0.0284 0.0126  
 Mercury -96480-03-11 08:23 J -33517827.31 -33517827.15 -33517827.00 0.0284 0.0035  
 Mercury -96480-06-08 00:13 J -33517738.64 -33517738.49 -33517738.34 0.0284 0.0061  
 Mercury -96480-09-04 16:32 J -33517649.93 -33517649.81 -33517649.68 0.0284 0.0158

Mercury -96480-12-02 09:20 J -33517561.17 -33517561.11 -33517561.04 0.0284 0.0257  
 Venus -96479-08-14 01:11 J -33517306.63 -33517306.45 -33517306.27 0.0285 0.0145  
 Venus -96478-03-31 16:32 J -33517076.99 -33517076.81 -33517076.63 0.0285 0.0145  
 Moon -96477-02-06 10:03 J -33516765.33 -33516765.08 -33516764.82 0.0285 0.0009  
 Earth -96477-02-06 11:44 J -33516765.25 -33516765.01 -33516764.76 0.0285 0.0017 \*  
 Mars -96473-10-12 17:44 J -33515055.02 -33515054.76 -33515054.48 0.0281 0.0120  
 Mercury -96466-04-22 23:59 J -33512671.61 -33512671.50 -33512671.40 0.0275 0.0205  
 Mercury -96466-07-20 15:49 J -33512582.98 -33512582.84 -33512582.69 0.0275 0.0116  
 Mercury -96466-10-17 07:25 J -33512494.34 -33512494.19 -33512494.03 0.0274 0.0028  
 Mercury -96465-01-13 22:47 J -33512405.70 -33512405.55 -33512405.40 0.0274 0.0058  
 Mercury -96465-04-11 13:39 J -33512317.06 -33512316.93 -33512316.80 0.0274 0.0143  
 Mercury -96465-07-09 04:18 J -33512228.40 -33512228.32 -33512228.23 0.0274 0.0224  
 Venus -96464-01-30 02:37 J -33512023.49 -33512023.39 -33512023.27 0.0274 0.0235  
 Venus -96464-09-16 11:01 J -33511794.25 -33511794.04 -33511793.82 0.0274 0.0026  
 Earth -96463-08-13 06:42 J -33511463.45 -33511463.22 -33511462.99 0.0274 0.0102  
 Moon -96463-08-13 07:11 J -33511463.41 -33511463.20 -33511462.98 0.0274 0.0118 \*  
 Earth -96462-08-25 17:59 J -33511085.91 -33511085.75 -33511085.58 0.0274 0.0200  
 Moon -96462-08-25 21:49 J -33511085.76 -33511085.59 -33511085.41 0.0274 0.0189 \*  
 Mars -96457-09-19 14:23 J -33509234.18 -33509233.90 -33509233.61 0.0279 0.0072  
 Mercury -96451-02-02 01:25 J -33507272.50 -33507272.44 -33507272.37 0.0284 0.0249  
 Mercury -96451-05-01 16:47 J -33507183.93 -33507183.80 -33507183.68 0.0284 0.0160  
 Mercury -96451-07-29 08:08 J -33507095.30 -33507095.16 -33507095.01 0.0284 0.0068  
 Mercury -96451-10-25 23:59 J -33507006.65 -33507006.50 -33507006.34 0.0285 0.0027  
 Mercury -96450-01-22 16:18 J -33506917.96 -33506917.82 -33506917.68 0.0285 0.0122  
 Mercury -96450-04-21 08:51 J -33506829.23 -33506829.13 -33506829.03 0.0285 0.0221  
 Venus -96449-02-24 03:20 J -33506520.54 -33506520.36 -33506520.16 0.0285 0.0116  
 Venus -96449-10-10 18:56 J -33506290.88 -33506290.71 -33506290.54 0.0285 0.0175  
 Earth -96448-01-30 15:20 J -33506179.05 -33506178.86 -33506178.66 0.0285 0.0172  
 Moon -96448-01-30 17:30 J -33506178.96 -33506178.77 -33506178.58 0.0285 0.0165 \*  
 Earth -96447-02-13 05:59 J -33505800.43 -33505800.25 -33505800.04 0.0285 0.0172



Moon -96447-02-13 09:49 J -33505800.27 -33505800.09 -33505799.90 0.0285 0.0184 \*  
 Mars -96443-12-01 19:54 J -33504047.95 -33504047.67 -33504047.38 0.0280 0.0034  
 Mercury -96437-09-09 00:13 J -33501939.56 -33501939.49 -33501939.40 0.0275 0.0234  
 Mercury -96437-12-06 16:32 J -33501850.94 -33501850.81 -33501850.68 0.0275 0.0143  
 Mercury -96436-03-05 08:23 J -33501762.31 -33501762.15 -33501762.00 0.0275 0.0055  
 Mercury -96436-06-01 23:44 J -33501673.67 -33501673.51 -33501673.36 0.0275 0.0032  
 Mercury -96436-08-29 14:37 J -33501585.02 -33501584.89 -33501584.74 0.0275 0.0118  
 Mercury -96436-11-26 05:30 J -33501496.37 -33501496.27 -33501496.16 0.0274 0.0200  
 Venus -96435-08-12 07:11 J -33501237.34 -33501237.20 -33501237.05 0.0274 0.0202  
 Venus -96434-03-29 15:35 J -33501008.05 -33501007.85 -33501007.64 0.0274 0.0060  
 Moon -96434-08-08 00:56 J -33500876.55 -33500876.46 -33500876.34 0.0274 0.0250  
 Earth -96434-08-08 01:54 J -33500876.54 -33500876.42 -33500876.29 0.0274 0.0236 \*  
 Moon -96433-08-19 12:27 J -33500499.22 -33500498.98 -33500498.74 0.0275 0.0057  
 Earth -96433-08-19 16:18 J -33500499.05 -33500498.82 -33500498.58 0.0275 0.0070 \*  
 Mars -96429-11-06 07:11 J -33498959.39 -33498959.20 -33498959.01 0.0278 0.0211  
 Mars -96427-11-10 01:25 J -33498225.58 -33498225.44 -33498225.26 0.0280 0.0236  
 Mercury -96422-06-22 04:32 J -33496540.36 -33496540.31 -33496540.25 0.0284 0.0263  
 Mercury -96422-09-18 19:39 J -33496451.79 -33496451.68 -33496451.55 0.0284 0.0175  
 Mercury -96422-12-16 11:15 J -33496363.17 -33496363.03 -33496362.88 0.0284 0.0083  
 Mercury -96421-03-14 03:06 J -33496274.52 -33496274.37 -33496274.22 0.0284 0.0011  
 Mercury -96421-06-10 19:11 J -33496185.84 -33496185.70 -33496185.55 0.0284 0.0108  
 Mercury -96421-09-07 11:44 J -33496097.11 -33496097.01 -33496096.90 0.0285 0.0205  
 Venus -96420-09-05 14:51 J -33495734.08 -33495733.88 -33495733.67 0.0285 0.0060  
 Venus -96419-04-23 06:27 J -33495504.34 -33495504.23 -33495504.10 0.0285 0.0232  
 Moon -96418-02-07 20:51 J -33495213.87 -33495213.63 -33495213.39 0.0285 0.0037  
 Earth -96418-02-08 00:27 J -33495213.72 -33495213.48 -33495213.23 0.0285 0.0027 \*  
 Mars -96414-01-18 05:15 J -33493773.37 -33493773.28 -33493773.17 0.0282 0.0265  
 Mars -96412-01-20 11:44 J -33493040.21 -33493040.01 -33493039.78 0.0280 0.0188  
 Mercury -96407-01-27 02:51 J -33491207.44 -33491207.38 -33491207.32 0.0275 0.0252  
 Mercury -96407-04-25 18:56 J -33491118.83 -33491118.71 -33491118.58 0.0275 0.0162

Mercury -96407-07-23 10:47 J -33491030.20 -33491030.05 -33491029.90 0.0274 0.0073  
 Mercury -96407-10-20 02:08 J -33490941.56 -33490941.41 -33490941.25 0.0274 0.0017  
 Mercury -96406-01-16 17:15 J -33490852.92 -33490852.78 -33490852.63 0.0274 0.0100  
 Mercury -96406-04-15 08:08 J -33490764.27 -33490764.16 -33490764.05 0.0274 0.0183  
 Mercury -96406-07-12 22:32 J -33490675.59 -33490675.56 -33490675.52 0.0274 0.0264  
 Venus -96405-02-22 14:51 J -33490451.04 -33490450.88 -33490450.70 0.0274 0.0158  
 Venus -96405-10-08 23:01 J -33490221.74 -33490221.54 -33490221.34 0.0274 0.0102  
 Earth -96404-08-14 16:18 J -33489912.06 -33489911.82 -33489911.58 0.0274 0.0063  
 Moon -96404-08-14 19:54 J -33489911.90 -33489911.67 -33489911.43 0.0274 0.0078 \*  
 Earth -96403-08-27 03:06 J -33489534.48 -33489534.37 -33489534.24 0.0274 0.0237  
 Moon -96403-08-27 04:47 J -33489534.43 -33489534.30 -33489534.15 0.0274 0.0228 \*  
 Mars -96399-12-26 06:27 J -33487952.52 -33487952.23 -33487951.95 0.0278 0.0068  
 Mercury -96392-02-04 19:54 J -33485719.77 -33485719.67 -33485719.56 0.0284 0.0207  
 Mercury -96392-05-04 11:15 J -33485631.17 -33485631.03 -33485630.89 0.0284 0.0117  
 Mercury -96392-08-01 02:51 J -33485542.53 -33485542.38 -33485542.22 0.0285 0.0025  
 Mercury -96392-10-28 18:56 J -33485453.86 -33485453.71 -33485453.56 0.0285 0.0072  
 Mercury -96391-01-25 11:15 J -33485365.15 -33485365.03 -33485364.90 0.0285 0.0169  
 Mercury -96391-04-24 04:03 J -33485276.38 -33485276.33 -33485276.28 0.0285 0.0268  
 Venus -96390-03-18 17:01 J -33484948.00 -33484947.79 -33484947.58 0.0285 0.0031  
 Venus -96390-11-03 08:37 J -33484718.21 -33484718.14 -33484718.05 0.0285 0.0261  
 Earth -96389-02-02 03:06 J -33484627.58 -33484627.37 -33484627.14 0.0285 0.0129  
 Moon -96389-02-02 06:56 J -33484627.43 -33484627.21 -33484626.98 0.0285 0.0119 \*  
 Earth -96388-02-14 18:42 J -33484248.88 -33484248.72 -33484248.55 0.0285 0.0214  
 Moon -96388-02-14 19:25 J -33484248.84 -33484248.69 -33484248.53 0.0285 0.0227 \*  
 Mars -96384-03-08 15:35 J -33482766.11 -33482765.85 -33482765.57 0.0281 0.0108  
 Mercury -96378-09-12 19:11 J -33480386.81 -33480386.70 -33480386.58 0.0275 0.0191  
 Mercury -96378-12-10 11:15 J -33480298.18 -33480298.03 -33480297.88 0.0275 0.0101  
 Mercury -96377-03-08 02:51 J -33480209.54 -33480209.38 -33480209.22 0.0275 0.0014  
 Mercury -96377-06-04 17:59 J -33480120.89 -33480120.75 -33480120.60 0.0274 0.0073  
 Mercury -96377-09-01 09:06 J -33480032.25 -33480032.12 -33480032.00 0.0274 0.0157

Mercury -96377-11-28 23:44 J -33479943.58 -33479943.51 -33479943.44 0.0274 0.0239

Venus -96376-09-03 18:42 J -33479664.91 -33479664.72 -33479664.53 0.0274 0.0125

Venus -96375-04-21 02:51 J -33479435.56 -33479435.38 -33479435.19 0.0274 0.0136

Moon -96375-08-09 06:56 J -33479325.35 -33479325.21 -33479325.04 0.0274 0.0213

Earth -96375-08-09 10:32 J -33479325.22 -33479325.06 -33479324.88 0.0274 0.0198 \*

Moon -96374-08-21 23:15 J -33478947.74 -33478947.53 -33478947.30 0.0275 0.0097

Earth -96374-08-22 00:27 J -33478947.70 -33478947.48 -33478947.25 0.0275 0.0107 \*

Mars -96368-02-14 00:27 J -33476944.76 -33476944.48 -33476944.20 0.0279 0.0090

Mercury -96363-06-24 22:32 J -33474987.64 -33474987.56 -33474987.46 0.0284 0.0224

Mercury -96363-09-21 13:54 J -33474899.05 -33474898.92 -33474898.78 0.0284 0.0134

Mercury -96363-12-19 05:30 J -33474810.42 -33474810.27 -33474810.11 0.0284 0.0041

Mercury -96362-03-17 21:35 J -33474721.75 -33474721.60 -33474721.45 0.0284 0.0054

Mercury -96362-06-14 13:54 J -33474633.05 -33474632.92 -33474632.79 0.0285 0.0151

Mercury -96362-09-11 06:27 J -33474544.30 -33474544.23 -33474544.15 0.0285 0.0250

Venus -96361-02-11 12:27 J -33474391.04 -33474390.98 -33474390.90 0.0285 0.0267

Venus -96361-09-28 03:35 J -33474161.56 -33474161.35 -33474161.14 0.0285 0.0023

Moon -96360-01-26 18:13 J -33474040.82 -33474040.74 -33474040.64 0.0285 0.0265

Earth -96360-01-26 21:35 J -33474040.66 -33474040.60 -33474040.52 0.0285 0.0272 \*

Moon -96359-02-09 10:47 J -33473662.28 -33473662.05 -33473661.83 0.0285 0.0080

Earth -96359-02-09 11:15 J -33473662.27 -33473662.03 -33473661.79 0.0285 0.0068 \*

Mars -96354-04-28 19:39 J -33471757.96 -33471757.68 -33471757.39 0.0281 0.0053

Mercury -96348-01-29 21:49 J -33469654.69 -33469654.59 -33469654.48 0.0275 0.0209

Mercury -96348-04-28 13:54 J -33469566.06 -33469565.92 -33469565.78 0.0275 0.0119

Mercury -96348-07-26 05:30 J -33469477.42 -33469477.27 -33469477.11 0.0274 0.0031

Mercury -96348-10-22 20:51 J -33469388.78 -33469388.63 -33469388.48 0.0274 0.0056

Mercury -96347-01-19 11:44 J -33469300.14 -33469300.01 -33469299.87 0.0274 0.0140

Mercury -96347-04-18 02:23 J -33469211.48 -33469211.40 -33469211.31 0.0274 0.0222

Venus -96346-03-17 02:51 J -33468878.58 -33468878.38 -33468878.17 0.0274 0.0081

Venus -96346-11-01 10:32 J -33468649.22 -33468649.06 -33468648.90 0.0274 0.0179

Earth -96345-08-16 01:25 J -33468360.68 -33468360.44 -33468360.19 0.0274 0.0025

Moon -96345-08-16 02:51 J -33468360.63 -33468360.38 -33468360.13 0.0274 0.0037 \*  
 Moon -96344-08-28 08:37 J -33467983.18 -33467983.14 -33467983.08 0.0274 0.0268  
 Earth -96344-08-28 11:44 J -33467983.02 -33467983.01 -33467982.98 0.0274 0.0273  
 Mars -96340-04-02 07:25 J -33466670.38 -33466670.19 -33466669.98 0.0277 0.0202  
 Mars -96338-04-05 22:32 J -33465936.70 -33465936.56 -33465936.41 0.0279 0.0245  
 Mercury -96334-11-11 22:47 J -33464255.60 -33464255.55 -33464255.48 0.0284 0.0257  
 Mercury -96333-02-08 13:54 J -33464167.03 -33464166.92 -33464166.79 0.0284 0.0168  
 Mercury -96333-05-07 05:30 J -33464078.41 -33464078.27 -33464078.12 0.0284 0.0075  
 Mercury -96333-08-03 21:20 J -33463989.76 -33463989.61 -33463989.46 0.0285 0.0019  
 Mercury -96333-10-31 13:25 J -33463901.08 -33463900.94 -33463900.79 0.0285 0.0115  
 Mercury -96332-01-28 05:59 J -33463812.35 -33463812.25 -33463812.14 0.0285 0.0213  
 Venus -96332-08-23 14:37 J -33463605.00 -33463604.89 -33463604.77 0.0285 0.0239  
 Venus -96331-04-10 05:44 J -33463375.47 -33463375.26 -33463375.06 0.0285 0.0053  
 Moon -96330-02-03 13:11 J -33463076.19 -33463075.95 -33463075.70 0.0285 0.0076  
 Earth -96330-02-03 13:39 J -33463076.16 -33463075.93 -33463075.70 0.0285 0.0087 \*  
 Moon -96329-02-17 01:54 J -33462697.48 -33462697.42 -33462697.32 0.0285 0.0270  
 Earth -96329-02-17 05:44 J -33462697.37 -33462697.26 -33462697.15 0.0285 0.0254 \*  
 Mars -96326-06-13 21:20 J -33461484.73 -33461484.61 -33461484.48 0.0282 0.0255  
 Mars -96324-06-16 05:44 J -33460751.45 -33460751.26 -33460751.05 0.0280 0.0198  
 Mercury -96319-06-18 21:35 J -33458922.67 -33458922.60 -33458922.52 0.0275 0.0241  
 Mercury -96319-09-15 13:54 J -33458834.05 -33458833.92 -33458833.79 0.0274 0.0150  
 Mercury -96319-12-13 05:30 J -33458745.42 -33458745.27 -33458745.11 0.0274 0.0062  
 Mercury -96318-03-11 21:06 J -33458656.78 -33458656.62 -33458656.47 0.0274 0.0026  
 Mercury -96318-06-08 12:13 J -33458568.13 -33458567.99 -33458567.85 0.0274 0.0111  
 Mercury -96318-09-05 03:06 J -33458479.48 -33458479.37 -33458479.27 0.0274 0.0195  
 Venus -96317-09-26 05:30 J -33458092.48 -33458092.27 -33458092.06 0.0274 0.0050  
 Venus -96316-05-13 13:25 J -33457863.07 -33457862.94 -33457862.80 0.0274 0.0210  
 Moon -96316-08-10 16:47 J -33457773.98 -33457773.80 -33457773.61 0.0274 0.0174  
 Earth -96316-08-10 18:13 J -33457773.93 -33457773.74 -33457773.53 0.0274 0.0160 \*  
 Earth -96315-08-23 07:25 J -33457396.40 -33457396.19 -33457395.98 0.0274 0.0142

Moon -96315-08-23 10:18 J -33457396.27 -33457396.07 -33457395.85 0.0274 0.0135 \*  
 Mars -96310-05-22 08:37 J -33455663.43 -33455663.14 -33455662.85 0.0278 0.0054  
 Mercury -96304-03-31 01:11 J -33453523.48 -33453523.45 -33453523.41 0.0284 0.0276  
 Mercury -96304-06-27 16:18 J -33453434.93 -33453434.82 -33453434.71 0.0284 0.0187  
 Mercury -96304-09-24 07:39 J -33453346.32 -33453346.18 -33453346.03 0.0284 0.0095  
 Mercury -96304-12-21 23:30 J -33453257.67 -33453257.52 -33453257.37 0.0285 0.0002  
 Mercury -96303-03-20 15:35 J -33453168.99 -33453168.85 -33453168.70 0.0285 0.0095  
 Mercury -96303-06-17 07:54 J -33453080.28 -33453080.17 -33453080.05 0.0285 0.0193  
 Venus -96302-03-05 23:44 J -33452818.66 -33452818.51 -33452818.35 0.0285 0.0189  
 Venus -96302-10-21 14:51 J -33452589.07 -33452588.88 -33452588.67 0.0285 0.0104  
 Earth -96301-01-29 05:30 J -33452489.40 -33452489.27 -33452489.12 0.0285 0.0232  
 Moon -96301-01-29 06:13 J -33452489.38 -33452489.24 -33452489.09 0.0285 0.0224 \*  
 Earth -96300-02-10 19:39 J -33452110.90 -33452110.68 -33452110.45 0.0285 0.0107  
 Moon -96300-02-10 23:15 J -33452110.75 -33452110.53 -33452110.31 0.0285 0.0122 \*  
 Mars -96296-08-03 11:44 J -33450476.29 -33450476.01 -33450475.73 0.0281 0.0092  
 Mercury -96290-11-06 00:13 J -33448190.53 -33448190.49 -33448190.43 0.0275 0.0259  
 Mercury -96289-02-02 16:32 J -33448101.93 -33448101.81 -33448101.68 0.0275 0.0168  
 Mercury -96289-05-01 08:23 J -33448013.30 -33448013.15 -33448013.00 0.0274 0.0078  
 Mercury -96289-07-28 23:59 J -33447924.66 -33447924.50 -33447924.35 0.0274 0.0010  
 Mercury -96289-10-25 15:06 J -33447836.02 -33447835.87 -33447835.73 0.0274 0.0095  
 Mercury -96288-01-22 05:59 J -33447747.37 -33447747.25 -33447747.14 0.0274 0.0178  
 Mercury -96288-04-20 20:23 J -33447658.69 -33447658.65 -33447658.60 0.0274 0.0260  
 Venus -96288-08-22 05:44 J -33447535.30 -33447535.26 -33447535.22 0.0274 0.0267  
 Venus -96287-04-08 14:08 J -33447306.12 -33447305.91 -33447305.70 0.0274 0.0006  
 Venus -96287-11-23 21:20 J -33447076.68 -33447076.61 -33447076.53 0.0274 0.0254  
 Moon -96286-08-18 06:42 J -33446809.47 -33446809.22 -33446808.97 0.0274 0.0004  
 Earth -96286-08-18 09:35 J -33446809.34 -33446809.10 -33446808.85 0.0274 0.0014 \*  
 Mars -96280-07-10 21:35 J -33444655.88 -33444655.60 -33444655.32 0.0278 0.0097  
 Mercury -96275-11-14 16:32 J -33442702.90 -33442702.81 -33442702.72 0.0284 0.0219  
 Mercury -96274-02-11 07:39 J -33442614.31 -33442614.18 -33442614.04 0.0284 0.0129

Mercury -96274-05-10 23:15 J -33442525.68 -33442525.53 -33442525.37 0.0284 0.0037

Mercury -96274-08-07 15:20 J -33442437.01 -33442436.86 -33442436.71 0.0285 0.0059

Mercury -96274-11-04 07:39 J -33442348.31 -33442348.18 -33442348.05 0.0285 0.0156

Mercury -96273-02-01 00:13 J -33442259.56 -33442259.49 -33442259.42 0.0285 0.0255

Venus -96273-09-15 01:25 J -33442032.60 -33442032.44 -33442032.26 0.0285 0.0161

Venus -96272-05-02 16:47 J -33441802.99 -33441802.80 -33441802.61 0.0285 0.0132

Moon -96271-02-04 17:30 J -33441525.01 -33441524.77 -33441524.52 0.0285 0.0035

Earth -96271-02-04 21:20 J -33441524.85 -33441524.61 -33441524.36 0.0285 0.0049 \*

Mars -96266-09-22 07:39 J -33439469.47 -33439469.18 -33439468.90 0.0280 0.0061

Mercury -96260-06-21 16:03 J -33437369.94 -33437369.83 -33437369.72 0.0274 0.0201

Mercury -96260-09-18 08:08 J -33437281.31 -33437281.16 -33437281.02 0.0274 0.0111

Mercury -96260-12-15 23:44 J -33437192.67 -33437192.51 -33437192.35 0.0274 0.0022

Mercury -96259-03-14 15:06 J -33437104.02 -33437103.87 -33437103.72 0.0274 0.0064

Mercury -96259-06-11 05:59 J -33437015.37 -33437015.25 -33437015.12 0.0274 0.0149

Mercury -96259-09-07 20:37 J -33436926.71 -33436926.64 -33436926.55 0.0274 0.0231

Venus -96258-03-04 06:56 J -33436749.30 -33436749.21 -33436749.09 0.0274 0.0239

Venus -96258-10-19 15:35 J -33436520.06 -33436519.85 -33436519.64 0.0274 0.0024

Earth -96257-08-12 00:56 J -33436222.67 -33436222.46 -33436222.24 0.0274 0.0124

Moon -96257-08-12 03:35 J -33436222.56 -33436222.35 -33436222.14 0.0274 0.0138 \*

Earth -96256-08-24 13:11 J -33435845.13 -33435844.95 -33435844.76 0.0274 0.0176

Moon -96256-08-24 15:49 J -33435845.02 -33435844.84 -33435844.63 0.0274 0.0170 \*

Mars -96252-08-27 02:08 J -33434381.61 -33434381.41 -33434381.18 0.0277 0.0191

Mars -96250-08-30 18:27 J -33433647.84 -33433647.73 -33433647.60 0.0280 0.0256

Mercury -96245-04-02 18:13 J -33431970.82 -33431970.74 -33431970.67 0.0284 0.0243

Mercury -96245-06-30 09:20 J -33431882.23 -33431882.11 -33431881.98 0.0284 0.0153

Mercury -96245-09-27 00:56 J -33431793.61 -33431793.46 -33431793.31 0.0285 0.0060

Mercury -96245-12-24 16:47 J -33431704.95 -33431704.80 -33431704.65 0.0285 0.0035

Mercury -96244-03-23 09:06 J -33431616.26 -33431616.12 -33431615.99 0.0285 0.0132

Mercury -96244-06-20 01:25 J -33431527.52 -33431527.44 -33431527.34 0.0285 0.0231

Venus -96243-03-28 09:06 J -33431246.31 -33431246.12 -33431245.92 0.0285 0.0114

Venus -96243-11-13 00:42 J -33431016.63 -33431016.47 -33431016.30 0.0285 0.0180  
 Earth -96242-01-30 10:47 J -33430938.22 -33430938.05 -33430937.87 0.0285 0.0196  
 Moon -96242-01-30 14:23 J -33430938.08 -33430937.90 -33430937.71 0.0285 0.0185 \*  
 Earth -96241-02-13 01:25 J -33430559.64 -33430559.44 -33430559.22 0.0285 0.0143  
 Moon -96241-02-13 03:35 J -33430559.55 -33430559.35 -33430559.13 0.0285 0.0158 \*  
 Mars -96238-11-08 09:35 J -33429195.24 -33429195.10 -33429194.94 0.0282 0.0243  
 Mars -96236-11-10 18:56 J -33428461.88 -33428461.71 -33428461.51 0.0280 0.0211  
 Mercury -96231-11-08 18:42 J -33426637.81 -33426637.72 -33426637.62 0.0275 0.0219  
 Mercury -96230-02-05 10:47 J -33426549.19 -33426549.05 -33426548.91 0.0275 0.0129  
 Mercury -96230-05-05 02:37 J -33426460.55 -33426460.39 -33426460.24 0.0274 0.0040  
 Mercury -96230-08-01 17:59 J -33426371.91 -33426371.75 -33426371.60 0.0274 0.0047  
 Mercury -96230-10-29 08:51 J -33426283.26 -33426283.13 -33426282.99 0.0274 0.0132  
 Mercury -96229-01-25 23:44 J -33426194.61 -33426194.51 -33426194.42 0.0274 0.0214  
 Venus -96229-09-13 15:49 J -33425962.98 -33425962.84 -33425962.68 0.0274 0.0195  
 Venus -96228-05-01 00:13 J -33425733.69 -33425733.49 -33425733.28 0.0274 0.0068  
 Moon -96228-08-06 23:30 J -33425635.57 -33425635.52 -33425635.44 0.0274 0.0264  
 Earth -96228-08-07 02:08 J -33425635.50 -33425635.41 -33425635.30 0.0274 0.0249 \*  
 Moon -96227-08-19 13:11 J -33425258.19 -33425257.95 -33425257.71 0.0274 0.0038  
 Earth -96227-08-19 16:03 J -33425258.07 -33425257.83 -33425257.58 0.0274 0.0050 \*  
 Mars -96222-10-16 05:59 J -33423374.54 -33423374.25 -33423373.96 0.0277 0.0046  
 Mercury -96216-08-20 18:27 J -33421238.76 -33421238.73 -33421238.69 0.0284 0.0274  
 Mercury -96216-11-17 09:35 J -33421150.21 -33421150.10 -33421149.98 0.0284 0.0185  
 Mercury -96215-02-14 00:56 J -33421061.60 -33421061.46 -33421061.31 0.0284 0.0094  
 Mercury -96215-05-13 16:47 J -33420972.96 -33420972.80 -33420972.65 0.0284 0.0007  
 Mercury -96215-08-10 08:37 J -33420884.28 -33420884.14 -33420883.99 0.0285 0.0096  
 Mercury -96215-11-07 01:11 J -33420795.56 -33420795.45 -33420795.34 0.0285 0.0194  
 Venus -96214-10-08 11:01 J -33420460.23 -33420460.04 -33420459.83 0.0285 0.0086  
 Venus -96213-05-25 02:23 J -33420230.53 -33420230.40 -33420230.25 0.0285 0.0209  
 Moon -96212-02-06 01:25 J -33419973.68 -33419973.44 -33419973.20 0.0285 0.0003  
 Earth -96212-02-06 02:51 J -33419973.62 -33419973.38 -33419973.13 0.0285 0.0012 \*

Mars -96208-12-27 16:47 J -33418188.07 -33418187.80 -33418187.51 0.0281 0.0087  
 Mercury -96201-03-27 17:44 J -33415905.81 -33415905.76 -33415905.70 0.0275 0.0254  
 Mercury -96201-06-24 10:03 J -33415817.21 -33415817.08 -33415816.95 0.0274 0.0163  
 Mercury -96201-09-21 01:54 J -33415728.57 -33415728.42 -33415728.27 0.0274 0.0074  
 Mercury -96201-12-18 17:30 J -33415639.93 -33415639.77 -33415639.62 0.0274 0.0015  
 Mercury -96200-03-17 08:37 J -33415551.28 -33415551.14 -33415551.00 0.0274 0.0100  
 Mercury -96200-06-13 23:30 J -33415462.63 -33415462.52 -33415462.41 0.0274 0.0183  
 Mercury -96200-09-10 13:54 J -33415373.95 -33415373.92 -33415373.88 0.0274 0.0265  
 Venus -96199-03-26 16:32 J -33415176.97 -33415176.81 -33415176.63 0.0274 0.0168  
 Venus -96199-11-11 00:42 J -33414947.66 -33414947.47 -33414947.26 0.0274 0.0095  
 Earth -96198-08-14 06:13 J -33414671.47 -33414671.24 -33414671.00 0.0274 0.0089  
 Moon -96198-08-14 09:35 J -33414671.33 -33414671.10 -33414670.87 0.0274 0.0103 \*  
 Moon -96197-08-25 16:18 J -33414293.97 -33414293.82 -33414293.64 0.0274 0.0206  
 Earth -96197-08-25 17:59 J -33414293.90 -33414293.75 -33414293.58 0.0274 0.0208 \*  
 Mars -96192-12-04 09:35 J -33412367.37 -33412367.10 -33412366.82 0.0279 0.0106  
 Mercury -96186-04-06 10:47 J -33410418.15 -33410418.05 -33410417.95 0.0284 0.0212  
 Mercury -96186-07-04 02:08 J -33410329.55 -33410329.41 -33410329.28 0.0284 0.0121  
 Mercury -96186-09-30 17:44 J -33410240.91 -33410240.76 -33410240.61 0.0285 0.0027  
 Mercury -96186-12-28 09:35 J -33410152.25 -33410152.10 -33410151.95 0.0285 0.0069  
 Mercury -96185-03-26 01:54 J -33410063.54 -33410063.42 -33410063.29 0.0285 0.0167  
 Mercury -96185-06-22 18:42 J -33409974.77 -33409974.72 -33409974.66 0.0285 0.0266  
 Venus -96184-04-19 17:15 J -33409673.99 -33409673.78 -33409673.57 0.0285 0.0043  
 Venus -96184-12-05 09:06 J -33409444.21 -33409444.12 -33409444.02 0.0285 0.0252  
 Earth -96183-01-31 13:39 J -33409387.12 -33409386.93 -33409386.72 0.0285 0.0162  
 Moon -96183-01-31 15:20 J -33409387.07 -33409386.86 -33409386.65 0.0285 0.0150 \*  
 Moon -96182-02-14 02:08 J -33409008.59 -33409008.41 -33409008.22 0.0285 0.0191  
 Earth -96182-02-14 04:47 J -33409008.49 -33409008.30 -33409008.10 0.0285 0.0176 \*  
 Mars -96177-02-16 12:56 J -33407180.24 -33407179.96 -33407179.67 0.0281 0.0070  
 Mercury -96172-08-14 20:08 J -33405173.66 -33405173.66 -33405173.64 0.0275 0.0274  
 Mercury -96172-11-11 12:27 J -33405085.09 -33405084.98 -33405084.86 0.0275 0.0183



Mercury -96171-02-08 04:32 J -33404996.46 -33404996.31 -33404996.16 0.0275 0.0092

Mercury -96171-05-07 20:08 J -33404907.82 -33404907.66 -33404907.50 0.0275 0.0004

Mercury -96171-08-04 11:15 J -33404819.17 -33404819.03 -33404818.88 0.0274 0.0083

Mercury -96171-11-01 02:08 J -33404730.52 -33404730.41 -33404730.28 0.0274 0.0167

Mercury -96170-01-28 16:47 J -33404641.85 -33404641.80 -33404641.73 0.0274 0.0249

Venus -96170-10-07 01:25 J -33404390.63 -33404390.44 -33404390.25 0.0274 0.0124

Venus -96169-05-23 09:20 J -33404161.29 -33404161.11 -33404160.93 0.0274 0.0138

Moon -96169-08-08 04:18 J -33404084.44 -33404084.32 -33404084.18 0.0274 0.0229

Earth -96169-08-08 07:25 J -33404084.33 -33404084.19 -33404084.02 0.0274 0.0213 \*

Earth -96168-08-20 21:06 J -33403706.85 -33403706.62 -33403706.38 0.0274 0.0084

Moon -96168-08-20 22:03 J -33403706.80 -33403706.58 -33403706.35 0.0274 0.0075 \*

Mars -96163-01-20 23:30 J -33402092.74 -33402092.52 -33402092.30 0.0276 0.0182

Mars -96161-01-24 10:18 J -33401359.15 -33401359.07 -33401358.95 0.0279 0.0262

Mercury -96157-08-23 11:01 J -33399686.10 -33399686.04 -33399685.95 0.0284 0.0243

Mercury -96157-11-20 02:23 J -33399597.53 -33399597.40 -33399597.27 0.0284 0.0153

Mercury -96156-02-16 17:44 J -33399508.91 -33399508.76 -33399508.61 0.0284 0.0061

Mercury -96156-05-16 09:35 J -33399420.25 -33399420.10 -33399419.95 0.0284 0.0034

Mercury -96156-08-13 01:39 J -33399331.56 -33399331.43 -33399331.29 0.0285 0.0131

Mercury -96156-11-09 18:13 J -33399242.83 -33399242.74 -33399242.65 0.0285 0.0229

Venus -96155-10-30 19:25 J -33398887.90 -33398887.69 -33398887.48 0.0285 0.0014

Venus -96154-06-17 10:47 J -33398658.07 -33398658.05 -33398658.01 0.0285 0.0281

Earth -96153-02-08 05:59 J -33398422.49 -33398422.25 -33398422.00 0.0285 0.0022

Moon -96153-02-08 08:51 J -33398422.37 -33398422.13 -33398421.89 0.0285 0.0037 \*

Mars -96149-04-02 07:25 J -33396907.33 -33396907.19 -33396907.02 0.0282 0.0240

Mars -96147-04-05 19:54 J -33396173.85 -33396173.67 -33396173.48 0.0280 0.0214

Mercury -96142-03-31 11:30 J -33394353.11 -33394353.02 -33394352.92 0.0275 0.0218

Mercury -96142-06-28 03:35 J -33394264.49 -33394264.35 -33394264.21 0.0274 0.0128

Mercury -96142-09-24 19:25 J -33394175.85 -33394175.69 -33394175.54 0.0274 0.0039

Mercury -96142-12-22 10:47 J -33394087.20 -33394087.05 -33394086.90 0.0274 0.0048

Mercury -96141-03-20 01:54 J -33393998.56 -33393998.42 -33393998.29 0.0274 0.0133

Mercury -96141-06-16 16:32 J -33393909.90 -33393909.81 -33393909.71 0.0274 0.0216  
 Venus -96140-04-18 01:11 J -33393604.64 -33393604.45 -33393604.25 0.0274 0.0098  
 Venus -96140-12-03 09:06 J -33393375.28 -33393375.12 -33393374.95 0.0274 0.0164  
 Moon -96139-08-15 09:20 J -33393120.36 -33393120.11 -33393119.87 0.0274 0.0067  
 Earth -96139-08-15 10:18 J -33393120.31 -33393120.07 -33393119.83 0.0274 0.0055 \*  
 Moon -96138-08-27 17:59 J -33392742.86 -33392742.75 -33392742.62 0.0274 0.0238  
 Earth -96138-08-27 21:20 J -33392742.71 -33392742.61 -33392742.48 0.0274 0.0239 \*  
 Mars -96133-03-10 10:32 J -33391086.34 -33391086.06 -33391085.76 0.0278 0.0040  
 Mercury -96127-01-10 11:59 J -33388954.04 -33388954.00 -33388953.96 0.0284 0.0271  
 Mercury -96127-04-09 02:51 J -33388865.49 -33388865.38 -33388865.26 0.0284 0.0183  
 Mercury -96127-07-06 18:27 J -33388776.88 -33388776.73 -33388776.59 0.0284 0.0091  
 Mercury -96127-10-03 10:03 J -33388688.23 -33388688.08 -33388687.93 0.0285 0.0004  
 Mercury -96127-12-31 02:08 J -33388599.55 -33388599.41 -33388599.26 0.0285 0.0100  
 Mercury -96126-03-29 18:27 J -33388510.83 -33388510.73 -33388510.61 0.0285 0.0199  
 Venus -96126-09-25 08:51 J -33388331.18 -33388331.13 -33388331.05 0.0285 0.0268  
 Venus -96125-05-12 00:13 J -33388101.70 -33388101.49 -33388101.28 0.0285 0.0026  
 Moon -96124-02-01 11:44 J -33387836.23 -33387836.01 -33387835.78 0.0285 0.0116  
 Earth -96124-02-01 14:23 J -33387836.10 -33387835.90 -33387835.67 0.0285 0.0131 \*  
 Moon -96123-02-15 02:51 J -33387457.52 -33387457.38 -33387457.22 0.0285 0.0223  
 Earth -96123-02-15 05:59 J -33387457.41 -33387457.25 -33387457.07 0.0285 0.0207 \*  
 Mars -96119-05-23 11:44 J -33385899.28 -33385899.01 -33385898.71 0.0282 0.0080  
 Mercury -96113-08-17 13:39 J -33383621.00 -33383620.93 -33383620.85 0.0275 0.0240  
 Mercury -96113-11-14 05:44 J -33383532.38 -33383532.26 -33383532.12 0.0275 0.0149  
 Mercury -96112-02-10 21:49 J -33383443.75 -33383443.59 -33383443.44 0.0275 0.0059  
 Mercury -96112-05-10 13:11 J -33383355.10 -33383354.95 -33383354.79 0.0275 0.0030  
 Mercury -96112-08-07 04:18 J -33383266.45 -33383266.32 -33383266.17 0.0275 0.0115  
 Mercury -96112-11-03 19:11 J -33383177.80 -33383177.70 -33383177.59 0.0274 0.0199  
 Venus -96111-10-29 09:35 J -33382818.31 -33382818.10 -33382817.89 0.0274 0.0056  
 Venus -96110-06-15 17:01 J -33382588.92 -33382588.79 -33382588.64 0.0274 0.0207  
 Earth -96110-08-10 11:30 J -33382533.20 -33382533.02 -33382532.83 0.0274 0.0178

Moon -96110-08-10 12:27 J -33382533.14 -33382532.98 -33382532.81 0.0274 0.0194 \*  
 Earth -96109-08-22 00:27 J -33382155.69 -33382155.48 -33382155.25 0.0274 0.0117  
 Moon -96109-08-22 04:18 J -33382155.54 -33382155.32 -33382155.09 0.0274 0.0108 \*  
 Mars -96103-04-30 02:37 J -33380078.66 -33380078.39 -33380078.11 0.0278 0.0113  
 Mercury -96098-08-27 03:35 J -33378133.44 -33378133.35 -33378133.25 0.0284 0.0212  
 Mercury -96098-11-23 18:56 J -33378044.85 -33378044.71 -33378044.58 0.0284 0.0121  
 Mercury -96097-02-20 10:32 J -33377956.22 -33377956.06 -33377955.91 0.0284 0.0029  
 Mercury -96097-05-19 02:23 J -33377867.55 -33377867.40 -33377867.25 0.0284 0.0067  
 Mercury -96097-08-15 18:27 J -33377778.85 -33377778.73 -33377778.60 0.0284 0.0164  
 Mercury -96097-11-12 11:01 J -33377690.09 -33377690.04 -33377689.98 0.0285 0.0264  
 Venus -96096-04-06 11:44 J -33377545.11 -33377545.01 -33377544.88 0.0285 0.0237  
 Venus -96096-11-22 02:51 J -33377315.59 -33377315.38 -33377315.17 0.0285 0.0057  
 Earth -96095-01-26 19:25 J -33377249.74 -33377249.69 -33377249.63 0.0285 0.0277  
 Moon -96095-01-26 22:03 J -33377249.65 -33377249.58 -33377249.48 0.0285 0.0266 \*  
 Earth -96094-02-09 07:39 J -33376871.42 -33376871.18 -33376870.94 0.0285 0.0054  
 Moon -96094-02-09 10:32 J -33376871.30 -33376871.06 -33376870.81 0.0285 0.0069 \*  
 Mars -96089-07-11 08:08 J -33374892.43 -33374892.16 -33374891.87 0.0281 0.0073  
 Mercury -96083-04-03 04:47 J -33372800.42 -33372800.30 -33372800.18 0.0275 0.0185  
 Mercury -96083-06-30 20:51 J -33372711.78 -33372711.63 -33372711.48 0.0274 0.0095  
 Mercury -96083-09-27 12:27 J -33372623.14 -33372622.98 -33372622.82 0.0274 0.0006  
 Mercury -96083-12-25 03:49 J -33372534.49 -33372534.34 -33372534.19 0.0274 0.0081  
 Mercury -96082-03-23 18:42 J -33372445.84 -33372445.72 -33372445.60 0.0274 0.0165  
 Mercury -96082-06-20 09:20 J -33372357.17 -33372357.11 -33372357.04 0.0274 0.0247  
 Venus -96081-05-10 09:06 J -33372032.33 -33372032.12 -33372031.91 0.0274 0.0031  
 Venus -96081-12-25 16:32 J -33371802.91 -33371802.81 -33371802.69 0.0274 0.0232  
 Moon -96080-08-16 09:20 J -33371569.35 -33371569.11 -33371568.86 0.0274 0.0033  
 Earth -96080-08-16 13:11 J -33371569.19 -33371568.95 -33371568.70 0.0274 0.0023 \*  
 Moon -96079-08-28 23:30 J -33371191.54 -33371191.52 -33371191.47 0.0274 0.0271  
 Earth -96079-08-28 23:59 J -33371191.53 -33371191.50 -33371191.45 0.0274 0.0269 \*  
 Mars -96075-06-16 00:27 J -33369804.69 -33369804.48 -33369804.24 0.0277 0.0177

Mars -96073-06-18 10:03 J -33369071.16 -33369071.08 -33369070.98 0.0279 0.0265  
 Mercury -96068-01-13 03:49 J -33367401.41 -33367401.34 -33367401.26 0.0284 0.0244  
 Mercury -96068-04-11 18:56 J -33367312.83 -33367312.71 -33367312.58 0.0284 0.0154  
 Mercury -96068-07-09 10:32 J -33367224.21 -33367224.06 -33367223.91 0.0284 0.0062  
 Mercury -96068-10-06 02:08 J -33367135.56 -33367135.41 -33367135.25 0.0284 0.0034  
 Mercury -96067-01-02 18:13 J -33367046.87 -33367046.74 -33367046.60 0.0285 0.0131  
 Mercury -96067-04-01 11:01 J -33366958.13 -33366958.04 -33366957.95 0.0285 0.0229  
 Venus -96067-10-17 15:06 J -33366759.01 -33366758.87 -33366758.72 0.0285 0.0202  
 Venus -96066-06-04 06:13 J -33366529.44 -33366529.24 -33366529.04 0.0285 0.0093  
 Moon -96065-02-03 11:01 J -33366285.26 -33366285.04 -33366284.81 0.0285 0.0085  
 Earth -96065-02-03 13:54 J -33366285.14 -33366284.92 -33366284.69 0.0285 0.0099 \*  
 Earth -96064-02-16 05:44 J -33365906.39 -33365906.26 -33365906.12 0.0285 0.0236  
 Moon -96064-02-16 06:56 J -33365906.32 -33365906.21 -33365906.10 0.0285 0.0250 \*  
 Mars -96061-08-26 18:13 J -33364618.90 -33364618.74 -33364618.57 0.0283 0.0235  
 Mars -96059-08-30 11:01 J -33363885.20 -33363885.04 -33363884.85 0.0280 0.0220  
 Mercury -96054-08-21 06:42 J -33362068.32 -33362068.22 -33362068.11 0.0275 0.0208  
 Mercury -96054-11-17 23:01 J -33361979.68 -33361979.54 -33361979.40 0.0275 0.0116  
 Mercury -96053-02-14 14:37 J -33361891.04 -33361890.89 -33361890.73 0.0275 0.0028  
 Mercury -96053-05-13 06:13 J -33361802.39 -33361802.24 -33361802.09 0.0275 0.0061  
 Mercury -96053-08-09 21:06 J -33361713.74 -33361713.62 -33361713.49 0.0275 0.0146  
 Mercury -96053-11-06 11:44 J -33361625.08 -33361625.01 -33361624.92 0.0275 0.0230  
 Venus -96052-04-05 08:23 J -33361475.22 -33361475.15 -33361475.07 0.0274 0.0255  
 Venus -96052-11-20 17:15 J -33361246.00 -33361245.78 -33361245.57 0.0274 0.0012  
 Venus -96051-07-08 00:42 J -33361016.48 -33361016.47 -33361016.46 0.0274 0.0273  
 Earth -96051-08-11 14:08 J -33360982.11 -33360981.91 -33360981.69 0.0274 0.0145  
 Moon -96051-08-11 18:13 J -33360981.94 -33360981.74 -33360981.54 0.0274 0.0158 \*  
 Earth -96050-08-24 03:06 J -33360604.56 -33360604.37 -33360604.15 0.0274 0.0149  
 Moon -96050-08-24 04:18 J -33360604.53 -33360604.32 -33360604.10 0.0274 0.0143 \*  
 Mars -96045-08-04 06:42 J -33358797.51 -33358797.22 -33358796.92 0.0277 0.0030  
 Mercury -96039-06-02 05:01 J -33356669.33 -33356669.29 -33356669.25 0.0283 0.0270

Mercury -96039-08-29 20:08 J -33356580.78 -33356580.66 -33356580.55 0.0284 0.0182  
 Mercury -96039-11-26 11:15 J -33356492.17 -33356492.03 -33356491.89 0.0284 0.0091  
 Mercury -96038-02-23 02:51 J -33356403.53 -33356403.38 -33356403.22 0.0284 0.0005  
 Mercury -96038-05-22 18:56 J -33356314.86 -33356314.71 -33356314.57 0.0284 0.0099  
 Mercury -96038-08-19 11:15 J -33356226.14 -33356226.03 -33356225.92 0.0284 0.0197  
 Venus -96037-04-28 18:42 J -33355972.88 -33355972.72 -33355972.54 0.0285 0.0169  
 Venus -96037-12-14 09:49 J -33355743.28 -33355743.09 -33355742.90 0.0285 0.0126  
 Earth -96036-01-27 20:08 J -33355698.78 -33355698.66 -33355698.54 0.0285 0.0245  
 Moon -96036-01-27 22:47 J -33355698.68 -33355698.55 -33355698.40 0.0285 0.0231 \*  
 Moon -96035-02-10 07:11 J -33355320.44 -33355320.20 -33355319.96 0.0285 0.0099  
 Earth -96035-02-10 08:23 J -33355320.38 -33355320.15 -33355319.91 0.0285 0.0085 \*  
 Mars -96031-10-16 05:30 J -33353611.55 -33353611.27 -33353610.98 0.0282 0.0077  
 Mercury -96024-01-07 05:15 J -33351336.34 -33351336.28 -33351336.20 0.0275 0.0245  
 Mercury -96024-04-05 21:49 J -33351247.72 -33351247.59 -33351247.46 0.0275 0.0153  
 Mercury -96024-07-03 13:39 J -33351159.08 -33351158.93 -33351158.78 0.0275 0.0063  
 Mercury -96024-09-30 05:15 J -33351070.44 -33351070.28 -33351070.12 0.0274 0.0025  
 Mercury -96024-12-27 20:23 J -33350981.79 -33350981.65 -33350981.51 0.0274 0.0112  
 Mercury -96023-03-26 11:15 J -33350893.13 -33350893.03 -33350892.92 0.0274 0.0196  
 Venus -96023-10-16 07:25 J -33350689.30 -33350689.19 -33350689.07 0.0274 0.0230  
 Venus -96022-06-02 16:18 J -33350460.03 -33350459.82 -33350459.61 0.0274 0.0035  
 Moon -96021-08-17 14:51 J -33350018.12 -33350017.88 -33350017.64 0.0274 0.0002  
 Earth -96021-08-17 15:20 J -33350018.11 -33350017.86 -33350017.62 0.0274 0.0009 \*  
 Mars -96015-09-23 00:13 J -33347790.75 -33347790.49 -33347790.21 0.0278 0.0117  
 Mercury -96009-01-16 19:54 J -33345848.76 -33345848.67 -33345848.57 0.0284 0.0216  
 Mercury -96009-04-14 11:15 J -33345760.17 -33345760.03 -33345759.90 0.0284 0.0125  
 Mercury -96009-07-12 02:37 J -33345671.54 -33345671.39 -33345671.24 0.0284 0.0032  
 Mercury -96009-10-08 18:27 J -33345582.88 -33345582.73 -33345582.58 0.0284 0.0064  
 Mercury -96008-01-05 10:47 J -33345494.18 -33345494.05 -33345493.92 0.0284 0.0161  
 Mercury -96008-04-04 03:06 J -33345405.42 -33345405.37 -33345405.30 0.0285 0.0261  
 Venus -96008-11-08 21:20 J -33345186.80 -33345186.61 -33345186.43 0.0285 0.0136

Venus	-96007-06-26 12:27 J	-33344957.15	-33344956.98	-33344956.80	0.0285	0.0160
Earth	-96006-02-04 13:11 J	-33344734.18	-33344733.95	-33344733.71	0.0285	0.0069
Moon	-96006-02-04 14:51 J	-33344734.12	-33344733.88	-33344733.65	0.0285	0.0053 *
Earth	-96005-02-18 05:15 J	-33344355.37	-33344355.28	-33344355.19	0.0285	0.0265
Moon	-96005-02-18 08:37 J	-33344355.18	-33344355.14	-33344355.08	0.0285	0.0279
Mars	-96001-12-04 16:47 J	-33342604.08	-33342603.80	-33342603.52	0.0281	0.0077

# 96TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 96th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-95995-05-27 07:11 J	-33340604.23	-33340604.20	-33340604.16	0.0276	0.0269		
Mercury	-95995-08-23 23:30 J	-33340515.64	-33340515.52	-33340515.39	0.0276	0.0176		
Mercury	-95995-11-20 15:35 J	-33340427.00	-33340426.85	-33340426.70	0.0275	0.0085		
Mercury	-95994-02-17 07:25 J	-33340338.35	-33340338.19	-33340338.04	0.0275	0.0006		
Mercury	-95994-05-16 22:47 J	-33340249.70	-33340249.55	-33340249.41	0.0275	0.0091		
Mercury	-95994-08-13 13:39 J	-33340161.05	-33340160.93	-33340160.81	0.0275	0.0176		
Mercury	-95994-11-10 04:18 J	-33340072.36	-33340072.32	-33340072.27	0.0275	0.0259		
Venus	-95993-04-27 15:20 J	-33339903.00	-33339902.86	-33339902.70	0.0275	0.0190		
Venus	-95993-12-12 23:59 J	-33339673.70	-33339673.50	-33339673.29	0.0274	0.0077		
Earth	-95992-08-12 16:18 J	-33339431.04	-33339430.82	-33339430.59	0.0274	0.0112		
Moon	-95992-08-12 16:32 J	-33339431.03	-33339430.81	-33339430.57	0.0274	0.0122 *		
Moon	-95991-08-25 01:54 J	-33339053.60	-33339053.42	-33339053.23	0.0274	0.0179		
Earth	-95991-08-25 05:30 J	-33339053.45	-33339053.27	-33339053.09	0.0274	0.0180 *		

Mars -95987-11-09 23:30 J -33337515.74 -33337515.52 -33337515.27 0.0276 0.0165  
 Mars -95985-11-12 06:27 J -33336782.27 -33336782.23 -33336782.18 0.0278 0.0274  
 Mercury -95980-06-04 21:20 J -33335116.68 -33335116.61 -33335116.53 0.0283 0.0241  
 Mercury -95980-09-01 12:27 J -33335028.11 -33335027.98 -33335027.85 0.0283 0.0151  
 Mercury -95980-11-29 03:49 J -33334939.49 -33334939.34 -33334939.19 0.0284 0.0059  
 Mercury -95979-02-25 19:25 J -33334850.84 -33334850.69 -33334850.53 0.0284 0.0035  
 Mercury -95979-05-25 11:30 J -33334762.16 -33334762.02 -33334761.88 0.0284 0.0131  
 Mercury -95979-08-22 03:49 J -33334673.42 -33334673.34 -33334673.24 0.0284 0.0230  
 Venus -95978-05-22 01:54 J -33334400.62 -33334400.42 -33334400.22 0.0284 0.0100  
 Venus -95977-01-06 16:47 J -33334170.95 -33334170.80 -33334170.65 0.0285 0.0196  
 Moon -95977-01-29 18:42 J -33334147.89 -33334147.72 -33334147.53 0.0285 0.0197  
 Earth -95977-01-29 20:51 J -33334147.78 -33334147.63 -33334147.46 0.0285 0.0213 \*  
 Moon -95976-02-11 05:30 J -33333769.47 -33333769.27 -33333769.04 0.0285 0.0132  
 Earth -95976-02-11 09:06 J -33333769.33 -33333769.12 -33333768.88 0.0285 0.0117 \*  
 Mars -95972-01-19 12:13 J -33332331.14 -33332330.99 -33332330.80 0.0283 0.0231  
 Mars -95970-01-23 06:13 J -33331597.40 -33331597.24 -33331597.05 0.0280 0.0223  
 Mercury -95965-01-10 22:32 J -33329783.66 -33329783.56 -33329783.46 0.0275 0.0212  
 Mercury -95965-04-08 14:37 J -33329695.03 -33329694.89 -33329694.74 0.0275 0.0121  
 Mercury -95965-07-06 06:27 J -33329606.38 -33329606.23 -33329606.07 0.0275 0.0032  
 Mercury -95965-10-02 22:03 J -33329517.73 -33329517.58 -33329517.43 0.0275 0.0057  
 Mercury -95965-12-30 13:11 J -33329429.08 -33329428.95 -33329428.82 0.0274 0.0142  
 Mercury -95964-03-29 03:49 J -33329340.42 -33329340.34 -33329340.25 0.0274 0.0226  
 Venus -95964-11-07 14:51 J -33329117.04 -33329116.88 -33329116.70 0.0274 0.0164  
 Venus -95963-06-24 23:30 J -33328887.72 -33328887.52 -33328887.32 0.0274 0.0102  
 Earth -95963-08-07 02:08 J -33328844.50 -33328844.41 -33328844.32 0.0274 0.0252  
 Moon -95963-08-07 01:39 J -33328844.47 -33328844.43 -33328844.36 0.0274 0.0265 \*  
 Earth -95962-08-19 17:30 J -33328467.01 -33328466.77 -33328466.52 0.0274 0.0042  
 Moon -95962-08-19 21:20 J -33328466.85 -33328466.61 -33328466.37 0.0274 0.0038 \*  
 Mars -95957-12-28 04:18 J -33326509.61 -33326509.32 -33326509.03 0.0277 0.0025  
 Mercury -95951-10-22 21:06 J -33324384.64 -33324384.62 -33324384.58 0.0284 0.0276

Mercury -95950-01-19 12:13 J -33324296.10 -33324295.99 -33324295.88 0.0284 0.0187  
 Mercury -95950-04-18 03:20 J -33324207.50 -33324207.36 -33324207.21 0.0284 0.0096  
 Mercury -95950-07-15 18:56 J -33324118.86 -33324118.71 -33324118.56 0.0284 0.0004  
 Mercury -95950-10-12 11:01 J -33324030.19 -33324030.04 -33324029.90 0.0284 0.0095  
 Mercury -95949-01-09 03:06 J -33323941.48 -33323941.37 -33323941.25 0.0284 0.0192  
 Venus -95949-12-01 03:35 J -33323614.55 -33323614.35 -33323614.14 0.0285 0.0069  
 Venus -95948-07-18 18:42 J -33323384.84 -33323384.72 -33323384.59 0.0285 0.0228  
 Earth -95947-02-05 12:56 J -33323183.20 -33323182.96 -33323182.72 0.0285 0.0038  
 Moon -95947-02-05 16:47 J -33323183.05 -33323182.80 -33323182.56 0.0285 0.0021 \*  
 Mars -95942-03-11 09:06 J -33321323.40 -33321323.12 -33321322.83 0.0282 0.0073  
 Mercury -95936-05-29 23:59 J -33319051.58 -33319051.50 -33319051.42 0.0276 0.0238  
 Mercury -95936-08-26 16:18 J -33318962.95 -33318962.82 -33318962.68 0.0276 0.0145  
 Mercury -95936-11-23 08:23 J -33318874.31 -33318874.15 -33318874.00 0.0276 0.0055  
 Mercury -95935-02-19 23:59 J -33318785.66 -33318785.50 -33318785.35 0.0275 0.0035  
 Mercury -95935-05-19 15:06 J -33318697.00 -33318696.87 -33318696.73 0.0275 0.0121  
 Mercury -95935-08-16 05:59 J -33318608.34 -33318608.25 -33318608.14 0.0275 0.0206  
 Venus -95934-05-20 22:18 J -33318330.76 -33318330.57 -33318330.38 0.0275 0.0124  
 Venus -95933-01-05 06:56 J -33318101.39 -33318101.21 -33318101.03 0.0275 0.0143  
 Moon -95933-08-13 14:37 J -33317880.13 -33317879.89 -33317879.66 0.0274 0.0087  
 Earth -95933-08-13 17:59 J -33317879.98 -33317879.75 -33317879.51 0.0274 0.0081 \*  
 Moon -95932-08-26 05:01 J -33317502.43 -33317502.29 -33317502.14 0.0274 0.0214  
 Earth -95932-08-26 07:11 J -33317502.35 -33317502.20 -33317502.04 0.0274 0.0210 \*  
 Mars -95926-02-16 23:59 J -33315501.76 -33315501.50 -33315501.24 0.0277 0.0130  
 Mercury -95921-06-07 13:54 J -33313564.01 -33313563.92 -33313563.81 0.0283 0.0209  
 Mercury -95921-09-04 05:01 J -33313475.42 -33313475.29 -33313475.15 0.0283 0.0119  
 Mercury -95921-12-01 20:37 J -33313386.79 -33313386.64 -33313386.49 0.0283 0.0026  
 Mercury -95920-02-28 12:13 J -33313298.13 -33313297.99 -33313297.83 0.0284 0.0070  
 Mercury -95920-05-28 04:32 J -33313209.44 -33313209.31 -33313209.19 0.0284 0.0166  
 Mercury -95920-08-24 20:51 J -33313120.68 -33313120.63 -33313120.57 0.0284 0.0265  
 Venus -95919-06-13 09:35 J -33312828.30 -33312828.10 -33312827.88 0.0284 0.0029



Venus -95918-01-29 00:27 J -33312598.54 -33312598.48 -33312598.40 0.0285 0.0268  
 Moon -95918-01-30 19:39 J -33312596.87 -33312596.68 -33312596.48 0.0285 0.0163  
 Earth -95918-01-30 23:15 J -33312596.71 -33312596.53 -33312596.34 0.0285 0.0180 \*  
 Moon -95917-02-13 11:01 J -33312218.23 -33312218.04 -33312217.84 0.0285 0.0163  
 Earth -95917-02-13 11:44 J -33312218.22 -33312218.01 -33312217.80 0.0285 0.0149 \*  
 Mars -95912-04-29 14:51 J -33310316.15 -33310315.88 -33310315.60 0.0281 0.0082  
 Mercury -95907-10-16 23:01 J -33308319.55 -33308319.54 -33308319.52 0.0275 0.0273  
 Mercury -95906-01-13 15:20 J -33308230.97 -33308230.86 -33308230.73 0.0275 0.0181  
 Mercury -95906-04-12 07:39 J -33308142.33 -33308142.18 -33308142.03 0.0275 0.0089  
 Mercury -95906-07-09 23:30 J -33308053.68 -33308053.52 -33308053.37 0.0275 0.0008  
 Mercury -95906-10-06 14:37 J -33307965.03 -33307964.89 -33307964.74 0.0275 0.0089  
 Mercury -95905-01-03 05:44 J -33307876.37 -33307876.26 -33307876.14 0.0275 0.0174  
 Mercury -95905-03-31 20:23 J -33307787.69 -33307787.65 -33307787.59 0.0274 0.0257  
 Venus -95905-11-29 22:18 J -33307544.76 -33307544.57 -33307544.36 0.0274 0.0097  
 Venus -95904-07-17 06:27 J -33307315.38 -33307315.23 -33307315.05 0.0274 0.0170  
 Earth -95904-08-08 04:18 J -33307293.45 -33307293.32 -33307293.16 0.0274 0.0220  
 Moon -95904-08-08 07:54 J -33307293.29 -33307293.17 -33307293.03 0.0274 0.0230 \*  
 Earth -95903-08-20 20:08 J -33306915.89 -33306915.66 -33306915.42 0.0274 0.0073  
 Moon -95903-08-20 22:03 J -33306915.82 -33306915.58 -33306915.34 0.0274 0.0073 \*  
 Mars -95898-04-04 22:32 J -33305227.80 -33305227.56 -33305227.32 0.0276 0.0159  
 Mercury -95892-10-25 13:39 J -33302832.00 -33302831.93 -33302831.85 0.0283 0.0245  
 Mercury -95891-01-22 04:47 J -33302743.43 -33302743.30 -33302743.18 0.0284 0.0155  
 Mercury -95891-04-20 20:08 J -33302654.81 -33302654.66 -33302654.52 0.0284 0.0063  
 Mercury -95891-07-18 11:44 J -33302566.16 -33302566.01 -33302565.86 0.0284 0.0031  
 Mercury -95891-10-15 03:35 J -33302477.48 -33302477.35 -33302477.21 0.0284 0.0128  
 Mercury -95890-01-11 19:54 J -33302388.75 -33302388.67 -33302388.57 0.0284 0.0227  
 Venus -95890-12-24 10:47 J -33302042.26 -33302042.05 -33302041.84 0.0285 0.0005  
 Moon -95888-02-06 14:08 J -33301632.17 -33301631.91 -33301631.66 0.0285 0.0010  
 Earth -95888-02-06 14:08 J -33301632.15 -33301631.91 -33301631.66 0.0285 0.0006 \*  
 Mars -95884-06-14 14:23 J -33300043.06 -33300042.90 -33300042.70 0.0283 0.0226

Mars -95882-06-18 11:44 J -33299309.16 -33299309.01 -33299308.83 0.0281 0.0228  
 Mercury -95877-06-01 17:01 J -33297498.90 -33297498.79 -33297498.68 0.0276 0.0205  
 Mercury -95877-08-29 09:20 J -33297410.26 -33297410.11 -33297409.97 0.0276 0.0113  
 Mercury -95877-11-26 01:11 J -33297321.61 -33297321.45 -33297321.30 0.0276 0.0023  
 Mercury -95876-02-22 16:32 J -33297232.96 -33297232.81 -33297232.65 0.0276 0.0066  
 Mercury -95876-05-22 07:39 J -33297144.30 -33297144.18 -33297144.04 0.0275 0.0153  
 Mercury -95876-08-18 22:32 J -33297055.63 -33297055.56 -33297055.48 0.0275 0.0237  
 Venus -95875-06-12 05:44 J -33296758.47 -33296758.26 -33296758.05 0.0275 0.0057  
 Venus -95874-01-27 13:54 J -33296529.04 -33296528.92 -33296528.77 0.0275 0.0211  
 Moon -95874-08-15 18:56 J -33296328.95 -33296328.71 -33296328.48 0.0275 0.0053  
 Earth -95874-08-15 20:51 J -33296328.87 -33296328.63 -33296328.39 0.0275 0.0048 \*  
 Earth -95873-08-27 09:49 J -33295951.20 -33295951.09 -33295950.97 0.0275 0.0242  
 Moon -95873-08-27 12:13 J -33295951.07 -33295950.99 -33295950.88 0.0275 0.0250 \*  
 Mars -95868-05-24 08:08 J -33294220.45 -33294220.16 -33294219.86 0.0277 0.0009  
 Mercury -95862-03-14 16:03 J -33292099.88 -33292099.83 -33292099.77 0.0283 0.0263  
 Mercury -95862-06-11 06:56 J -33292011.32 -33292011.21 -33292011.09 0.0283 0.0175  
 Mercury -95862-09-07 22:18 J -33291922.72 -33291922.57 -33291922.43 0.0283 0.0084  
 Mercury -95862-12-05 13:39 J -33291834.08 -33291833.93 -33291833.77 0.0283 0.0011  
 Mercury -95861-03-03 05:30 J -33291745.41 -33291745.27 -33291745.12 0.0283 0.0105  
 Mercury -95861-05-30 21:49 J -33291656.70 -33291656.59 -33291656.48 0.0284 0.0203  
 Venus -95861-11-18 04:03 J -33291485.42 -33291485.33 -33291485.22 0.0284 0.0248  
 Venus -95860-07-05 18:13 J -33291255.94 -33291255.74 -33291255.53 0.0284 0.0046  
 Earth -95859-02-01 02:51 J -33291045.59 -33291045.38 -33291045.17 0.0284 0.0145  
 Moon -95859-02-01 03:20 J -33291045.56 -33291045.36 -33291045.15 0.0284 0.0131 \*  
 Earth -95858-02-14 15:20 J -33290667.05 -33290666.86 -33290666.67 0.0284 0.0182  
 Moon -95858-02-14 18:42 J -33290666.89 -33290666.72 -33290666.54 0.0284 0.0195 \*  
 Mars -95854-08-04 14:23 J -33289035.18 -33289034.90 -33289034.60 0.0282 0.0064  
 Mercury -95848-10-19 16:18 J -33286766.89 -33286766.82 -33286766.74 0.0276 0.0239  
 Mercury -95847-01-16 08:37 J -33286678.27 -33286678.14 -33286678.00 0.0275 0.0147  
 Mercury -95847-04-15 00:42 J -33286589.62 -33286589.47 -33286589.31 0.0275 0.0055

Mercury -95847-07-12 16:18 J -33286500.97 -33286500.82 -33286500.66 0.0275 0.0035  
 Mercury -95847-10-09 07:39 J -33286412.32 -33286412.18 -33286412.04 0.0275 0.0121  
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 Venus -95846-12-23 06:27 J -33285972.44 -33285972.23 -33285972.01 0.0274 0.0028  
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 Moon -95845-08-09 10:18 J -33285742.24 -33285742.07 -33285741.89 0.0274 0.0195 \*  
 Moon -95844-08-21 20:51 J -33285364.86 -33285364.63 -33285364.40 0.0274 0.0110  
 Earth -95844-08-21 23:44 J -33285364.73 -33285364.51 -33285364.28 0.0274 0.0106 \*  
 Mars -95838-07-13 00:42 J -33283213.72 -33283213.47 -33283213.20 0.0278 0.0137  
 Mercury -95833-10-28 06:42 J -33281279.31 -33281279.22 -33281279.12 0.0283 0.0211  
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 Mars -95824-09-22 22:18 J -33278027.84 -33278027.57 -33278027.29 0.0281 0.0090  
 Mercury -95818-03-08 17:30 J -33276034.81 -33276034.77 -33276034.72 0.0276 0.0266  
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 Moon -95815-08-17 02:23 J -33274777.64 -33274777.40 -33274777.16 0.0275 0.0017 \*  
 Earth -95814-08-29 13:11 J -33274399.97 -33274399.95 -33274399.93 0.0275 0.0273  
 Mars -95810-08-30 05:44 J -33272938.50 -33272938.26 -33272938.00 0.0277 0.0142  
 Mercury -95803-03-17 09:20 J -33270547.19 -33270547.11 -33270547.02 0.0283 0.0228  
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 Mercury -95803-12-08 07:25 J -33270281.34 -33270281.19 -33270281.04 0.0283 0.0048  
 Mercury -95802-03-06 23:15 J -33270192.66 -33270192.53 -33270192.39 0.0283 0.0145  
 Mercury -95802-06-03 15:35 J -33270103.92 -33270103.85 -33270103.76 0.0283 0.0243  
 Venus -95802-12-11 14:08 J -33269913.07 -33269912.91 -33269912.73 0.0284 0.0171  
 Venus -95801-07-28 04:18 J -33269683.50 -33269683.32 -33269683.12 0.0284 0.0124  
 Earth -95800-02-02 08:37 J -33269494.36 -33269494.14 -33269493.91 0.0284 0.0109  
 Moon -95800-02-02 12:27 J -33269494.21 -33269493.98 -33269493.75 0.0284 0.0094 \*  
 Earth -95799-02-15 21:06 J -33269115.76 -33269115.62 -33269115.45 0.0284 0.0218  
 Moon -95799-02-15 23:30 J -33269115.66 -33269115.52 -33269115.36 0.0284 0.0227 \*  
 Mars -95796-11-08 05:59 J -33267754.44 -33267754.25 -33267754.04 0.0283 0.0212  
 Mars -95794-11-12 01:11 J -33267020.59 -33267020.45 -33267020.29 0.0281 0.0238  
 Mercury -95789-10-22 10:03 J -33265214.18 -33265214.08 -33265213.97 0.0276 0.0202  
 Mercury -95788-01-19 02:23 J -33265125.54 -33265125.40 -33265125.25 0.0276 0.0110  
 Mercury -95788-04-17 18:13 J -33265036.89 -33265036.74 -33265036.58 0.0275 0.0020  
 Mercury -95788-07-15 09:49 J -33264948.24 -33264948.09 -33264947.94 0.0275 0.0069  
 Mercury -95788-10-12 00:56 J -33264859.58 -33264859.46 -33264859.33 0.0275 0.0156  
 Mercury -95787-01-08 15:49 J -33264770.91 -33264770.84 -33264770.76 0.0275 0.0240  
 Venus -95787-05-30 06:13 J -33264629.36 -33264629.24 -33264629.12 0.0275 0.0226  
 Venus -95786-01-14 15:35 J -33264400.06 -33264399.85 -33264399.64 0.0274 0.0044  
 Moon -95786-08-11 11:01 J -33264191.23 -33264191.04 -33264190.82 0.0274 0.0159  
 Earth -95786-08-11 13:39 J -33264191.13 -33264190.93 -33264190.72 0.0274 0.0152 \*  
 Moon -95785-08-23 02:08 J -33263813.61 -33263813.41 -33263813.21 0.0274 0.0145

Earth -95785-08-23 05:01 J -33263813.50 -33263813.29 -33263813.08 0.0274 0.0139 \*  
 Mars -95780-10-17 14:23 J -33261932.19 -33261931.90 -33261931.60 0.0277 0.0004  
 Mercury -95774-08-04 09:20 J -33259815.16 -33259815.11 -33259815.05 0.0283 0.0262  
 Mercury -95774-11-01 00:13 J -33259726.61 -33259726.49 -33259726.37 0.0283 0.0174  
 Mercury -95773-01-28 15:20 J -33259638.00 -33259637.86 -33259637.71 0.0283 0.0083  
 Mercury -95773-04-26 06:56 J -33259549.36 -33259549.21 -33259549.06 0.0284 0.0012  
 Mercury -95773-07-23 22:47 J -33259460.69 -33259460.55 -33259460.41 0.0284 0.0107  
 Mercury -95773-10-20 14:51 J -33259371.98 -33259371.88 -33259371.77 0.0284 0.0205  
 Venus -95772-06-22 15:20 J -33259127.03 -33259126.86 -33259126.67 0.0284 0.0143  
 Moon -95771-01-27 09:49 J -33258908.20 -33258908.09 -33258907.95 0.0284 0.0242  
 Earth -95771-01-27 13:39 J -33258908.03 -33258907.93 -33258907.82 0.0284 0.0256 \*  
 Venus -95771-02-07 05:44 J -33258897.44 -33258897.26 -33258897.08 0.0284 0.0153  
 Moon -95770-02-09 22:32 J -33258529.79 -33258529.56 -33258529.33 0.0284 0.0076  
 Earth -95770-02-09 23:59 J -33258529.74 -33258529.50 -33258529.26 0.0284 0.0066 \*  
 Mars -95766-12-29 01:25 J -33256746.73 -33256746.44 -33256746.15 0.0282 0.0054  
 Mercury -95759-03-11 11:01 J -33254482.12 -33254482.04 -33254481.94 0.0276 0.0230  
 Mercury -95759-06-08 03:35 J -33254393.48 -33254393.35 -33254393.21 0.0276 0.0136  
 Mercury -95759-09-04 19:39 J -33254304.83 -33254304.68 -33254304.52 0.0276 0.0044  
 Mercury -95759-12-02 11:30 J -33254216.18 -33254216.02 -33254215.87 0.0276 0.0046  
 Mercury -95758-03-01 02:51 J -33254127.52 -33254127.38 -33254127.25 0.0276 0.0133  
 Mercury -95758-05-28 17:30 J -33254038.85 -33254038.77 -33254038.67 0.0276 0.0219  
 Venus -95758-12-10 12:42 J -33253843.12 -33253842.97 -33253842.81 0.0275 0.0188  
 Venus -95757-07-26 22:03 J -33253613.78 -33253613.58 -33253613.37 0.0275 0.0084  
 Earth -95757-08-05 10:18 J -33253604.09 -33253604.07 -33253604.06 0.0275 0.0275  
 Earth -95756-08-18 04:47 J -33253226.54 -33253226.30 -33253226.05 0.0275 0.0019  
 Moon -95756-08-18 08:08 J -33253226.41 -33253226.16 -33253225.91 0.0275 0.0017 \*  
 Mars -95752-12-05 15:35 J -33251655.92 -33251655.85 -33251655.76 0.0276 0.0265  
 Mars -95750-12-07 14:08 J -33250924.15 -33250923.91 -33250923.66 0.0278 0.0158  
 Mercury -95745-12-21 12:27 J -33249083.00 -33249082.98 -33249082.95 0.0282 0.0276  
 Mercury -95744-03-20 03:06 J -33248994.47 -33248994.37 -33248994.25 0.0283 0.0189

Mercury -95744-06-16 18:27 J -33248905.87 -33248905.73 -33248905.59 0.0283 0.0098

Mercury -95744-09-13 09:49 J -33248817.24 -33248817.09 -33248816.94 0.0283 0.0006

Mercury -95744-12-11 01:25 J -33248728.58 -33248728.44 -33248728.29 0.0283 0.0090

Mercury -95743-03-09 17:30 J -33248639.88 -33248639.77 -33248639.65 0.0283 0.0187

Venus -95742-01-03 01:39 J -33248340.63 -33248340.43 -33248340.23 0.0284 0.0090

Venus -95742-08-20 15:49 J -33248110.98 -33248110.84 -33248110.69 0.0284 0.0206

Earth -95741-02-04 17:01 J -33247943.02 -33247942.79 -33247942.55 0.0284 0.0071

Moon -95741-02-04 18:27 J -33247942.98 -33247942.73 -33247942.48 0.0284 0.0058 \*

Moon -95740-02-17 03:06 J -33247564.45 -33247564.37 -33247564.25 0.0284 0.0261

Earth -95740-02-17 05:59 J -33247564.35 -33247564.25 -33247564.13 0.0284 0.0254 \*

Mars -95735-02-16 21:49 J -33245738.86 -33245738.59 -33245738.32 0.0281 0.0105

Mercury -95730-07-29 11:44 J -33243750.06 -33243750.01 -33243749.95 0.0276 0.0257

Mercury -95730-10-26 04:03 J -33243661.45 -33243661.33 -33243661.19 0.0276 0.0164

Mercury -95729-01-22 20:23 J -33243572.80 -33243572.65 -33243572.50 0.0276 0.0071

Mercury -95729-04-20 12:13 J -33243484.15 -33243483.99 -33243483.84 0.0275 0.0019

Mercury -95729-07-18 03:35 J -33243395.49 -33243395.35 -33243395.21 0.0275 0.0106

Mercury -95729-10-14 18:42 J -33243306.83 -33243306.72 -33243306.61 0.0275 0.0192

Venus -95728-06-21 16:03 J -33243057.00 -33243056.83 -33243056.64 0.0275 0.0152

Venus -95727-02-06 01:25 J -33242827.63 -33242827.44 -33242827.25 0.0274 0.0119

Moon -95727-08-12 16:47 J -33242640.01 -33242639.80 -33242639.57 0.0274 0.0122

Earth -95727-08-12 20:23 J -33242639.87 -33242639.65 -33242639.42 0.0274 0.0116 \*

Earth -95726-08-25 11:30 J -33242262.21 -33242262.02 -33242261.83 0.0274 0.0174

Moon -95726-08-25 12:13 J -33242262.16 -33242261.99 -33242261.80 0.0274 0.0182 \*

Mars -95721-01-23 16:32 J -33240650.05 -33240649.81 -33240649.54 0.0276 0.0132

Mercury -95715-08-07 03:20 J -33238262.45 -33238262.36 -33238262.27 0.0283 0.0223

Mercury -95715-11-03 18:13 J -33238173.87 -33238173.74 -33238173.61 0.0283 0.0133

Mercury -95714-01-31 09:35 J -33238085.25 -33238085.10 -33238084.95 0.0283 0.0041

Mercury -95714-04-30 01:11 J -33237996.60 -33237996.45 -33237996.30 0.0283 0.0053

Mercury -95714-07-27 17:01 J -33237907.92 -33237907.79 -33237907.65 0.0284 0.0150

Mercury -95714-10-24 09:20 J -33237819.18 -33237819.11 -33237819.03 0.0284 0.0248

Venus -95713-07-15 03:06 J -33237554.57 -33237554.37 -33237554.16 0.0284 0.0062  
 Moon -95712-01-28 20:51 J -33237356.78 -33237356.63 -33237356.45 0.0284 0.0205  
 Earth -95712-01-28 22:18 J -33237356.73 -33237356.57 -33237356.42 0.0284 0.0217 \*  
 Venus -95712-03-01 17:30 J -33237324.88 -33237324.77 -33237324.65 0.0284 0.0236  
 Earth -95711-02-11 08:23 J -33236978.37 -33236978.15 -33236977.92 0.0284 0.0105  
 Moon -95711-02-11 11:15 J -33236978.24 -33236978.03 -33236977.80 0.0284 0.0113 \*  
 Mars -95707-04-03 19:54 J -33235465.87 -33235465.67 -33235465.45 0.0282 0.0201  
 Mars -95705-04-06 16:18 J -33234731.93 -33234731.82 -33234731.68 0.0280 0.0250  
 Mercury -95700-03-14 05:15 J -33232929.39 -33232929.28 -33232929.16 0.0276 0.0190  
 Mercury -95700-06-10 21:35 J -33232840.75 -33232840.60 -33232840.45 0.0276 0.0097  
 Mercury -95700-09-07 13:25 J -33232752.09 -33232751.94 -33232751.78 0.0276 0.0007  
 Mercury -95700-12-05 05:01 J -33232663.44 -33232663.29 -33232663.14 0.0276 0.0083  
 Mercury -95699-03-03 20:08 J -33232574.77 -33232574.66 -33232574.53 0.0276 0.0170  
 Mercury -95699-05-31 11:15 J -33232486.09 -33232486.03 -33232485.98 0.0276 0.0254  
 Venus -95698-01-01 22:32 J -33232270.75 -33232270.56 -33232270.36 0.0276 0.0113  
 Earth -95698-08-07 16:18 J -33232052.93 -33232052.82 -33232052.69 0.0275 0.0240  
 Moon -95698-08-07 19:54 J -33232052.76 -33232052.67 -33232052.56 0.0275 0.0250 \*  
 Venus -95698-08-19 07:54 J -33232041.34 -33232041.17 -33232041.00 0.0275 0.0158  
 Moon -95697-08-19 10:47 J -33231675.30 -33231675.05 -33231674.80 0.0275 0.0054  
 Earth -95697-08-19 11:15 J -33231675.27 -33231675.03 -33231674.79 0.0275 0.0053 \*  
 Mars -95691-03-14 05:30 J -33229642.56 -33229642.27 -33229641.97 0.0277 0.0022  
 Mercury -95686-12-25 06:42 J -33227530.30 -33227530.22 -33227530.14 0.0282 0.0236  
 Mercury -95685-03-22 21:35 J -33227441.73 -33227441.60 -33227441.47 0.0283 0.0147  
 Mercury -95685-06-19 12:42 J -33227353.12 -33227352.97 -33227352.82 0.0283 0.0055  
 Mercury -95685-09-16 04:18 J -33227264.47 -33227264.32 -33227264.17 0.0283 0.0039  
 Mercury -95685-12-13 20:08 J -33227175.79 -33227175.66 -33227175.52 0.0283 0.0135  
 Mercury -95684-03-12 12:27 J -33227087.07 -33227086.98 -33227086.89 0.0283 0.0233  
 Venus -95683-01-25 14:08 J -33226768.12 -33226767.91 -33226767.70 0.0284 0.0006  
 Moon -95682-02-06 00:42 J -33226391.72 -33226391.47 -33226391.22 0.0284 0.0021  
 Earth -95682-02-06 03:35 J -33226391.59 -33226391.35 -33226391.10 0.0284 0.0031 \*

Mars -95677-05-24 09:49 J -33224457.38 -33224457.09 -33224456.80 0.0282 0.0035  
 Mercury -95671-08-01 06:13 J -33222197.33 -33222197.24 -33222197.13 0.0276 0.0215  
 Mercury -95671-10-28 22:47 J -33222108.69 -33222108.55 -33222108.41 0.0276 0.0122  
 Mercury -95670-01-25 14:37 J -33222020.04 -33222019.89 -33222019.73 0.0276 0.0032  
 Mercury -95670-04-24 06:27 J -33221931.39 -33221931.23 -33221931.08 0.0275 0.0059  
 Mercury -95670-07-21 21:35 J -33221842.73 -33221842.60 -33221842.46 0.0275 0.0146  
 Mercury -95670-10-18 12:27 J -33221754.05 -33221753.98 -33221753.89 0.0275 0.0231  
 Venus -95669-07-14 03:20 J -33221484.56 -33221484.36 -33221484.15 0.0275 0.0074  
 Venus -95668-02-28 12:13 J -33221255.13 -33221254.99 -33221254.84 0.0275 0.0196  
 Earth -95668-08-14 04:47 J -33221088.53 -33221088.30 -33221088.06 0.0274 0.0080  
 Moon -95668-08-14 05:15 J -33221088.50 -33221088.28 -33221088.05 0.0274 0.0082 \*  
 Earth -95667-08-26 19:39 J -33220710.83 -33220710.68 -33220710.52 0.0274 0.0209  
 Moon -95667-08-26 23:01 J -33220710.68 -33220710.54 -33220710.38 0.0274 0.0218 \*  
 Mars -95663-05-01 08:23 J -33219367.24 -33219367.15 -33219367.03 0.0276 0.0255  
 Mars -95661-05-02 05:30 J -33218635.48 -33218635.27 -33218635.02 0.0278 0.0171  
 Mercury -95656-05-13 06:56 J -33216798.26 -33216798.21 -33216798.17 0.0283 0.0269  
 Mercury -95656-08-09 21:35 J -33216709.71 -33216709.60 -33216709.49 0.0283 0.0181  
 Mercury -95656-11-06 12:42 J -33216621.11 -33216620.97 -33216620.83 0.0283 0.0090  
 Mercury -95655-02-03 04:03 J -33216532.48 -33216532.33 -33216532.18 0.0283 0.0003  
 Mercury -95655-05-02 19:54 J -33216443.82 -33216443.67 -33216443.53 0.0283 0.0098  
 Mercury -95655-07-30 11:59 J -33216355.11 -33216355.00 -33216354.89 0.0284 0.0196  
 Venus -95655-12-21 02:23 J -33216211.46 -33216211.40 -33216211.33 0.0284 0.0270  
 Venus -95654-08-07 15:49 J -33215982.05 -33215981.84 -33215981.63 0.0284 0.0025  
 Earth -95653-01-31 08:37 J -33215805.32 -33215805.14 -33215804.94 0.0284 0.0176  
 Moon -95653-01-31 11:15 J -33215805.21 -33215805.03 -33215804.82 0.0284 0.0164 \*  
 Earth -95652-02-12 19:11 J -33215426.91 -33215426.70 -33215426.48 0.0284 0.0144  
 Moon -95652-02-12 22:18 J -33215426.78 -33215426.57 -33215426.36 0.0284 0.0151 \*  
 Mars -95647-07-13 16:03 J -33213450.08 -33213449.83 -33213449.55 0.0281 0.0119  
 Mercury -95642-12-19 07:11 J -33211465.27 -33211465.20 -33211465.13 0.0276 0.0243  
 Mercury -95641-03-16 23:30 J -33211376.65 -33211376.52 -33211376.38 0.0276 0.0149



Mercury -95641-06-13 15:49 J -33211287.99 -33211287.84 -33211287.68 0.0276 0.0057

Mercury -95641-09-10 07:39 J -33211199.34 -33211199.18 -33211199.03 0.0276 0.0034

Mercury -95641-12-07 23:01 J -33211110.68 -33211110.54 -33211110.40 0.0276 0.0122

Mercury -95640-03-06 14:08 J -33211022.01 -33211021.91 -33211021.81 0.0276 0.0208

Venus -95639-01-24 09:20 J -33210698.32 -33210698.11 -33210697.90 0.0275 0.0036

Moon -95639-08-08 23:30 J -33210501.68 -33210501.52 -33210501.35 0.0275 0.0210

Earth -95639-08-09 00:13 J -33210501.64 -33210501.49 -33210501.32 0.0275 0.0205 \*

Venus -95639-09-10 18:13 J -33210468.84 -33210468.74 -33210468.63 0.0275 0.0235

Moon -95638-08-21 15:06 J -33210124.11 -33210123.87 -33210123.64 0.0275 0.0092

Earth -95638-08-21 18:27 J -33210123.95 -33210123.73 -33210123.49 0.0275 0.0089 \*

Mars -95633-06-19 08:23 J -33208360.41 -33208360.15 -33208359.87 0.0277 0.0110

Mercury -95627-09-30 10:18 J -33206066.08 -33206066.07 -33206066.06 0.0282 0.0281

Mercury -95627-12-28 00:56 J -33205977.56 -33205977.46 -33205977.35 0.0283 0.0194

Mercury -95626-03-26 16:03 J -33205888.97 -33205888.83 -33205888.69 0.0283 0.0103

Mercury -95626-06-23 07:25 J -33205800.34 -33205800.19 -33205800.04 0.0283 0.0010

Mercury -95626-09-19 23:01 J -33205711.68 -33205711.54 -33205711.39 0.0283 0.0085

Mercury -95626-12-17 15:06 J -33205622.98 -33205622.87 -33205622.75 0.0283 0.0182

Mercury -95625-03-15 07:39 J -33205534.20 -33205534.18 -33205534.16 0.0283 0.0281

Venus -95625-07-02 13:54 J -33205425.05 -33205424.92 -33205424.78 0.0283 0.0213

Venus -95624-02-17 03:35 J -33205195.55 -33205195.35 -33205195.14 0.0284 0.0083

Moon -95623-02-07 12:27 J -33204840.22 -33204839.98 -33204839.74 0.0284 0.0021

Earth -95623-02-07 15:35 J -33204840.09 -33204839.85 -33204839.61 0.0284 0.0010 \*

Mars -95619-08-29 15:20 J -33203176.08 -33203175.86 -33203175.62 0.0282 0.0179

Mars -95617-09-01 06:56 J -33202442.28 -33202442.21 -33202442.12 0.0281 0.0269

Mercury -95612-05-07 08:51 J -33200733.17 -33200733.13 -33200733.09 0.0276 0.0265

Mercury -95612-08-04 01:25 J -33200644.57 -33200644.44 -33200644.32 0.0276 0.0171

Mercury -95612-10-31 17:30 J -33200555.92 -33200555.77 -33200555.62 0.0276 0.0079

Mercury -95611-01-28 09:20 J -33200467.27 -33200467.11 -33200466.95 0.0276 0.0012

Mercury -95611-04-27 00:56 J -33200378.61 -33200378.46 -33200378.32 0.0275 0.0100

Mercury -95611-07-24 16:03 J -33200289.94 -33200289.83 -33200289.72 0.0275 0.0187

Mercury -95611-10-21 06:56 J -33200201.23 -33200201.21 -33200201.19 0.0275 0.0271

Venus -95611-12-20 05:30 J -33200141.31 -33200141.27 -33200141.21 0.0275 0.0267

Venus -95610-08-06 15:20 J -33199912.07 -33199911.86 -33199911.64 0.0275 0.0006

Earth -95609-08-15 14:37 J -33199537.14 -33199536.89 -33199536.65 0.0275 0.0042

Moon -95609-08-15 18:13 J -33199536.98 -33199536.74 -33199536.49 0.0275 0.0043 \*

Earth -95608-08-28 04:47 J -33199159.39 -33199159.30 -33199159.18 0.0274 0.0245

Moon -95608-08-28 06:27 J -33199159.32 -33199159.23 -33199159.12 0.0274 0.0253 \*

Mars -95603-08-08 01:54 J -33197353.71 -33197353.42 -33197353.12 0.0277 0.0035

Mercury -95597-05-16 01:25 J -33195245.53 -33195245.44 -33195245.36 0.0283 0.0226

Mercury -95597-08-12 16:03 J -33195156.95 -33195156.83 -33195156.69 0.0283 0.0137

Mercury -95597-11-09 07:25 J -33195068.34 -33195068.19 -33195068.04 0.0283 0.0045

Mercury -95596-02-05 23:01 J -33194979.69 -33194979.54 -33194979.39 0.0283 0.0050

Mercury -95596-05-05 14:51 J -33194891.01 -33194890.88 -33194890.75 0.0283 0.0146

Mercury -95596-08-02 06:56 J -33194802.28 -33194802.21 -33194802.12 0.0284 0.0245

Venus -95595-01-12 16:03 J -33194638.99 -33194638.83 -33194638.67 0.0284 0.0183

Venus -95595-08-30 05:30 J -33194409.46 -33194409.27 -33194409.07 0.0284 0.0113

Earth -95594-02-01 20:37 J -33194253.84 -33194253.64 -33194253.41 0.0284 0.0135

Moon -95594-02-01 23:59 J -33194253.72 -33194253.50 -33194253.27 0.0284 0.0120 \*

Moon -95593-02-15 06:27 J -33193875.41 -33193875.23 -33193875.03 0.0284 0.0188

Earth -95593-02-15 07:25 J -33193875.36 -33193875.19 -33193874.99 0.0284 0.0185 \*

Mars -95589-10-18 08:08 J -33192168.45 -33192168.16 -33192167.86 0.0282 0.0021

Mercury -95583-12-22 01:54 J -33189912.53 -33189912.42 -33189912.31 0.0276 0.0199

Mercury -95582-03-20 18:13 J -33189823.88 -33189823.74 -33189823.59 0.0276 0.0106

Mercury -95582-06-17 10:18 J -33189735.23 -33189735.07 -33189734.91 0.0276 0.0015

Mercury -95582-09-14 01:54 J -33189646.57 -33189646.42 -33189646.27 0.0276 0.0076

Mercury -95582-12-11 17:15 J -33189557.90 -33189557.78 -33189557.65 0.0276 0.0162

Mercury -95581-03-09 08:08 J -33189469.22 -33189469.16 -33189469.09 0.0276 0.0248

Venus -95581-07-01 10:47 J -33189355.16 -33189355.05 -33189354.93 0.0276 0.0230

Venus -95580-02-15 20:37 J -33189125.85 -33189125.64 -33189125.43 0.0275 0.0044

Moon -95580-08-10 05:30 J -33188950.45 -33188950.27 -33188950.07 0.0275 0.0170

Earth -95580-08-10 09:35 J -33188950.29 -33188950.10 -33188949.90 0.0275 0.0168 \*  
 Moon -95579-08-23 01:25 J -33188572.64 -33188572.44 -33188572.22 0.0275 0.0130  
 Earth -95579-08-23 03:06 J -33188572.58 -33188572.37 -33188572.14 0.0275 0.0123 \*  
 Mars -95575-09-25 22:18 J -33187077.70 -33187077.57 -33187077.41 0.0277 0.0236  
 Mars -95573-09-27 00:27 J -33186345.68 -33186345.48 -33186345.25 0.0278 0.0194  
 Mercury -95568-10-03 04:32 J -33184513.38 -33184513.31 -33184513.22 0.0283 0.0240  
 Mercury -95568-12-30 19:39 J -33184424.81 -33184424.68 -33184424.56 0.0283 0.0150  
 Mercury -95567-03-29 10:47 J -33184336.20 -33184336.05 -33184335.90 0.0283 0.0058  
 Mercury -95567-06-26 02:08 J -33184247.56 -33184247.41 -33184247.25 0.0283 0.0036  
 Mercury -95567-09-22 17:59 J -33184158.88 -33184158.75 -33184158.61 0.0283 0.0132  
 Mercury -95567-12-20 10:18 J -33184070.16 -33184070.07 -33184069.98 0.0283 0.0230  
 Venus -95566-07-26 03:20 J -33183852.54 -33183852.36 -33183852.17 0.0284 0.0126  
 Moon -95565-01-27 16:03 J -33183666.93 -33183666.83 -33183666.71 0.0284 0.0250  
 Earth -95565-01-27 19:25 J -33183666.77 -33183666.69 -33183666.60 0.0284 0.0265 \*  
 Venus -95565-03-11 17:15 J -33183622.94 -33183622.78 -33183622.61 0.0284 0.0172  
 Earth -95564-02-09 03:49 J -33183288.58 -33183288.34 -33183288.10 0.0284 0.0050  
 Moon -95564-02-09 04:18 J -33183288.55 -33183288.32 -33183288.09 0.0284 0.0060 \*  
 Mars -95559-12-08 14:51 J -33181160.13 -33181159.88 -33181159.63 0.0281 0.0139  
 Mercury -95553-05-10 04:03 J -33179180.42 -33179180.33 -33179180.23 0.0276 0.0219  
 Mercury -95553-08-06 20:23 J -33179091.78 -33179091.65 -33179091.50 0.0276 0.0126  
 Mercury -95553-11-03 12:27 J -33179003.13 -33179002.98 -33179002.82 0.0276 0.0035  
 Mercury -95552-01-31 04:18 J -33178914.48 -33178914.32 -33178914.17 0.0276 0.0056  
 Mercury -95552-04-29 19:25 J -33178825.81 -33178825.69 -33178825.55 0.0275 0.0144  
 Mercury -95552-07-27 10:32 J -33178737.14 -33178737.06 -33178736.97 0.0275 0.0229  
 Venus -95551-01-11 18:27 J -33178568.89 -33178568.73 -33178568.57 0.0275 0.0185  
 Venus -95551-08-29 03:49 J -33178339.54 -33178339.34 -33178339.14 0.0275 0.0088  
 Earth -95550-08-18 01:11 J -33177985.70 -33177985.45 -33177985.21 0.0275 0.0006  
 Moon -95550-08-18 02:37 J -33177985.65 -33177985.39 -33177985.14 0.0275 0.0002 \*  
 Mars -95545-11-13 08:51 J -33176071.40 -33176071.13 -33176070.86 0.0277 0.0098  
 Mercury -95538-02-20 05:15 J -33173781.32 -33173781.28 -33173781.24 0.0283 0.0271

Mercury -95538-05-19 19:54 J -33173692.78 -33173692.67 -33173692.56 0.0283 0.0183  
 Mercury -95538-08-16 11:01 J -33173604.19 -33173604.04 -33173603.90 0.0283 0.0092  
 Mercury -95538-11-13 02:23 J -33173515.56 -33173515.40 -33173515.25 0.0283 0.0005  
 Mercury -95537-02-09 17:59 J -33173426.89 -33173426.75 -33173426.60 0.0283 0.0097  
 Mercury -95537-05-08 09:49 J -33173338.19 -33173338.09 -33173337.97 0.0284 0.0195  
 Venus -95536-02-04 05:44 J -33173066.46 -33173066.26 -33173066.06 0.0284 0.0095  
 Venus -95536-09-21 19:39 J -33172836.82 -33172836.68 -33172836.53 0.0284 0.0202  
 Moon -95535-02-03 08:23 J -33172702.38 -33172702.15 -33172701.90 0.0284 0.0082  
 Earth -95535-02-03 09:20 J -33172702.34 -33172702.11 -33172701.88 0.0284 0.0094 \*  
 Moon -95534-02-16 17:01 J -33172323.93 -33172323.79 -33172323.64 0.0284 0.0229  
 Earth -95534-02-16 20:37 J -33172323.78 -33172323.64 -33172323.49 0.0284 0.0225 \*  
 Mars -95530-01-23 14:23 J -33170887.12 -33170886.90 -33170886.64 0.0282 0.0167  
 Mercury -95524-09-27 04:18 J -33168448.38 -33168448.32 -33168448.25 0.0276 0.0250  
 Mercury -95524-12-24 20:51 J -33168359.76 -33168359.63 -33168359.50 0.0276 0.0155  
 Mercury -95523-03-23 13:11 J -33168271.11 -33168270.95 -33168270.80 0.0276 0.0063  
 Mercury -95523-06-20 05:01 J -33168182.45 -33168182.29 -33168182.14 0.0276 0.0028  
 Mercury -95523-09-16 20:23 J -33168093.79 -33168093.65 -33168093.51 0.0276 0.0117  
 Mercury -95523-12-14 11:30 J -33168005.12 -33168005.02 -33168004.91 0.0276 0.0203  
 Venus -95522-07-24 22:32 J -33167782.73 -33167782.56 -33167782.37 0.0275 0.0150  
 Venus -95521-03-10 08:08 J -33167553.34 -33167553.16 -33167552.96 0.0275 0.0125  
 Moon -95521-08-11 17:30 J -33167398.97 -33167398.77 -33167398.55 0.0275 0.0133  
 Earth -95521-08-11 18:42 J -33167398.93 -33167398.72 -33167398.50 0.0275 0.0131 \*  
 Earth -95520-08-24 11:44 J -33167021.20 -33167021.01 -33167020.80 0.0275 0.0158  
 Moon -95520-08-24 14:37 J -33167021.07 -33167020.89 -33167020.69 0.0275 0.0167 \*  
 Mars -95514-01-02 16:18 J -33165064.10 -33165063.82 -33165063.53 0.0278 0.0055  
 Mercury -95509-10-05 23:01 J -33162960.64 -33162960.54 -33162960.43 0.0283 0.0197  
 Mercury -95508-01-02 14:08 J -33162872.05 -33162871.91 -33162871.77 0.0283 0.0106  
 Mercury -95508-04-01 05:30 J -33162783.42 -33162783.27 -33162783.12 0.0283 0.0014  
 Mercury -95508-06-28 21:06 J -33162694.77 -33162694.62 -33162694.47 0.0283 0.0082  
 Mercury -95508-09-25 12:56 J -33162606.07 -33162605.96 -33162605.83 0.0283 0.0179

Mercury -95508-12-23 05:15 J -33162517.30 -33162517.28 -33162517.24 0.0283 0.0278  
 Venus -95507-08-17 17:01 J -33162280.00 -33162279.79 -33162279.58 0.0284 0.0038  
 Earth -95506-01-29 06:56 J -33162115.34 -33162115.21 -33162115.05 0.0284 0.0225  
 Moon -95506-01-29 07:54 J -33162115.31 -33162115.17 -33162115.00 0.0284 0.0211 \*  
 Venus -95506-04-04 06:56 J -33162050.28 -33162050.21 -33162050.12 0.0284 0.0261  
 Earth -95505-02-11 16:03 J -33161737.06 -33161736.83 -33161736.59 0.0284 0.0091  
 Moon -95505-02-11 19:39 J -33161736.90 -33161736.68 -33161736.45 0.0284 0.0101 \*  
 Mars -95500-03-15 10:47 J -33159878.35 -33159878.05 -33159877.76 0.0282 0.0002  
 Mercury -95494-02-14 06:42 J -33157716.25 -33157716.22 -33157716.18 0.0276 0.0268  
 Mercury -95494-05-13 23:15 J -33157627.65 -33157627.53 -33157627.40 0.0276 0.0174  
 Mercury -95494-08-10 15:35 J -33157539.00 -33157538.85 -33157538.69 0.0276 0.0081  
 Mercury -95494-11-07 07:25 J -33157450.34 -33157450.19 -33157450.03 0.0276 0.0013  
 Mercury -95493-02-03 23:01 J -33157361.68 -33157361.54 -33157361.39 0.0276 0.0099  
 Mercury -95493-05-02 14:23 J -33157273.02 -33157272.90 -33157272.79 0.0275 0.0186  
 Mercury -95493-07-30 05:01 J -33157184.31 -33157184.29 -33157184.26 0.0275 0.0270  
 Venus -95492-02-03 07:11 J -33156996.40 -33156996.20 -33156996.01 0.0275 0.0103  
 Earth -95492-08-06 16:18 J -33156811.90 -33156811.82 -33156811.71 0.0275 0.0255  
 Moon -95492-08-06 17:59 J -33156811.82 -33156811.75 -33156811.66 0.0275 0.0261 \*  
 Venus -95492-09-20 16:03 J -33156766.99 -33156766.83 -33156766.66 0.0275 0.0170  
 Moon -95491-08-19 08:23 J -33156434.40 -33156434.15 -33156433.90 0.0275 0.0040  
 Earth -95491-08-19 11:30 J -33156434.26 -33156434.02 -33156433.77 0.0275 0.0033 \*  
 Mars -95486-02-20 00:56 J -33154788.62 -33154788.46 -33154788.29 0.0276 0.0224  
 Mars -95484-02-21 00:42 J -33154056.66 -33154056.47 -33154056.26 0.0278 0.0205  
 Mercury -95479-02-22 23:30 J -33152228.60 -33152228.52 -33152228.43 0.0283 0.0229  
 Mercury -95479-05-22 14:23 J -33152140.03 -33152139.90 -33152139.77 0.0283 0.0139  
 Mercury -95479-08-19 05:30 J -33152051.42 -33152051.27 -33152051.12 0.0283 0.0048  
 Mercury -95479-11-15 21:06 J -33151962.77 -33151962.62 -33151962.47 0.0283 0.0047  
 Mercury -95478-02-12 12:56 J -33151874.09 -33151873.96 -33151873.83 0.0283 0.0143  
 Mercury -95478-05-12 05:01 J -33151785.36 -33151785.29 -33151785.21 0.0284 0.0242  
 Venus -95477-02-27 19:11 J -33151493.91 -33151493.70 -33151493.49 0.0284 0.0009

Moon -95476-02-04 17:15 J -33151151.02 -33151150.78 -33151150.53 0.0284 0.0042  
 Earth -95476-02-04 21:06 J -33151150.85 -33151150.62 -33151150.37 0.0284 0.0053 \*  
 Moon -95475-02-18 06:56 J -33150772.27 -33150772.21 -33150772.12 0.0284 0.0270  
 Earth -95475-02-18 08:51 J -33150772.21 -33150772.13 -33150772.03 0.0284 0.0265 \*  
 Mars -95470-05-04 12:13 J -33148871.23 -33148870.99 -33148870.75 0.0281 0.0152  
 Mercury -95465-09-29 23:30 J -33146895.63 -33146895.52 -33146895.41 0.0276 0.0204  
 Mercury -95465-12-27 15:49 J -33146806.98 -33146806.84 -33146806.69 0.0276 0.0111  
 Mercury -95464-03-26 07:54 J -33146718.33 -33146718.17 -33146718.01 0.0276 0.0019  
 Mercury -95464-06-22 23:30 J -33146629.67 -33146629.52 -33146629.36 0.0276 0.0071  
 Mercury -95464-09-19 14:51 J -33146541.00 -33146540.88 -33146540.75 0.0276 0.0158  
 Mercury -95464-12-17 05:59 J -33146452.32 -33146452.25 -33146452.18 0.0275 0.0244  
 Venus -95463-08-16 10:32 J -33146210.26 -33146210.06 -33146209.84 0.0275 0.0070  
 Venus -95462-04-02 19:54 J -33145980.81 -33145980.67 -33145980.53 0.0275 0.0205  
 Earth -95462-08-14 04:03 J -33145847.56 -33145847.33 -33145847.09 0.0275 0.0095  
 Moon -95462-08-14 06:56 J -33145847.43 -33145847.21 -33145846.98 0.0275 0.0093 \*  
 Earth -95461-08-25 20:37 J -33145469.81 -33145469.64 -33145469.46 0.0275 0.0192  
 Moon -95461-08-25 23:44 J -33145469.67 -33145469.51 -33145469.33 0.0275 0.0203 \*  
 Mars -95456-04-09 17:01 J -33143782.06 -33143781.79 -33143781.51 0.0277 0.0081  
 Mercury -95450-07-13 02:08 J -33141496.47 -33141496.41 -33141496.33 0.0283 0.0246  
 Mercury -95450-10-09 17:15 J -33141407.91 -33141407.78 -33141407.66 0.0283 0.0156  
 Mercury -95449-01-06 08:23 J -33141319.30 -33141319.15 -33141319.00 0.0283 0.0064  
 Mercury -95449-04-03 23:44 J -33141230.66 -33141230.51 -33141230.36 0.0283 0.0030  
 Mercury -95449-07-01 15:35 J -33141141.99 -33141141.85 -33141141.71 0.0283 0.0126  
 Mercury -95449-09-28 07:39 J -33141053.27 -33141053.18 -33141053.08 0.0283 0.0225  
 Venus -95448-01-22 15:49 J -33140936.93 -33140936.84 -33140936.73 0.0284 0.0249  
 Venus -95448-09-09 05:30 J -33140707.48 -33140707.27 -33140707.06 0.0284 0.0048  
 Earth -95447-01-30 17:30 J -33140563.94 -33140563.77 -33140563.58 0.0284 0.0186  
 Moon -95447-01-30 21:20 J -33140563.80 -33140563.61 -33140563.41 0.0284 0.0172 \*  
 Earth -95446-02-13 03:06 J -33140185.58 -33140185.37 -33140185.15 0.0284 0.0129  
 Moon -95446-02-13 05:01 J -33140185.51 -33140185.29 -33140185.06 0.0284 0.0137 \*

Mars -95442-06-20 16:32 J -33138597.06 -33138596.81 -33138596.55 0.0282 0.0146  
 Mercury -95435-02-17 01:54 J -33136163.50 -33136163.42 -33136163.32 0.0276 0.0223  
 Mercury -95435-05-16 18:27 J -33136074.87 -33136074.73 -33136074.59 0.0276 0.0129  
 Mercury -95435-08-13 10:32 J -33135986.21 -33135986.06 -33135985.90 0.0276 0.0037  
 Mercury -95435-11-10 02:23 J -33135897.56 -33135897.40 -33135897.25 0.0276 0.0053  
 Mercury -95434-02-06 17:44 J -33135808.89 -33135808.76 -33135808.63 0.0275 0.0141  
 Mercury -95434-05-06 08:37 J -33135720.22 -33135720.14 -33135720.05 0.0275 0.0227  
 Venus -95433-02-26 19:25 J -33135423.90 -33135423.69 -33135423.48 0.0275 0.0022  
 Moon -95433-08-08 00:27 J -33135260.63 -33135260.48 -33135260.33 0.0275 0.0220  
 Earth -95433-08-08 03:06 J -33135260.52 -33135260.37 -33135260.22 0.0275 0.0216 \*  
 Venus -95433-10-13 03:49 J -33135194.41 -33135194.34 -33135194.24 0.0275 0.0251  
 Moon -95432-08-20 18:13 J -33134882.97 -33134882.74 -33134882.50 0.0275 0.0078  
 Earth -95432-08-20 21:20 J -33134882.85 -33134882.61 -33134882.38 0.0275 0.0070 \*  
 Mars -95426-05-29 17:30 J -33132775.05 -33132774.77 -33132774.48 0.0277 0.0065  
 Mercury -95421-11-29 02:51 J -33130764.40 -33130764.38 -33130764.35 0.0283 0.0276  
 Mercury -95420-02-25 17:30 J -33130675.87 -33130675.77 -33130675.65 0.0283 0.0188  
 Mercury -95420-05-25 08:37 J -33130587.28 -33130587.14 -33130587.00 0.0283 0.0097  
 Mercury -95420-08-21 23:59 J -33130498.65 -33130498.50 -33130498.35 0.0283 0.0004  
 Mercury -95420-11-18 15:35 J -33130409.99 -33130409.85 -33130409.70 0.0283 0.0092  
 Mercury -95419-02-15 07:25 J -33130321.30 -33130321.19 -33130321.07 0.0284 0.0190  
 Venus -95419-08-04 18:27 J -33130150.86 -33130150.73 -33130150.60 0.0284 0.0218  
 Venus -95418-03-22 07:54 J -33129921.37 -33129921.17 -33129920.97 0.0284 0.0079  
 Moon -95417-02-07 06:56 J -33129599.45 -33129599.21 -33129598.98 0.0284 0.0007  
 Earth -95417-02-07 07:54 J -33129599.41 -33129599.17 -33129598.92 0.0284 0.0014 \*  
 Mars -95412-08-09 04:18 J -33127589.61 -33127589.32 -33127589.02 0.0282 0.0012  
 Mercury -95406-07-07 01:25 J -33125431.49 -33125431.44 -33125431.37 0.0276 0.0256  
 Mercury -95406-10-03 18:13 J -33125342.87 -33125342.74 -33125342.61 0.0276 0.0161  
 Mercury -95406-12-31 10:32 J -33125254.21 -33125254.06 -33125253.91 0.0276 0.0068  
 Mercury -95405-03-29 02:23 J -33125165.56 -33125165.40 -33125165.24 0.0276 0.0023  
 Mercury -95405-06-25 17:59 J -33125076.89 -33125076.75 -33125076.61 0.0275 0.0112

Mercury -95405-09-22 09:06 J -33124988.22 -33124988.12 -33124988.01 0.0275 0.0198

Venus -95404-01-21 11:44 J -33124867.05 -33124867.01 -33124866.94 0.0275 0.0265

Venus -95404-09-07 22:03 J -33124637.79 -33124637.58 -33124637.37 0.0275 0.0011

Earth -95403-08-15 12:42 J -33124296.21 -33124295.97 -33124295.73 0.0275 0.0059

Moon -95403-08-15 15:35 J -33124296.09 -33124295.85 -33124295.60 0.0275 0.0058 \*

Moon -95402-08-28 02:51 J -33123918.49 -33123918.38 -33123918.24 0.0275 0.0238

Earth -95402-08-28 04:32 J -33123918.44 -33123918.31 -33123918.16 0.0275 0.0225 \*

Mars -95398-07-17 02:51 J -33122499.55 -33122499.38 -33122499.18 0.0277 0.0212

Mars -95396-07-18 05:59 J -33121767.42 -33121767.25 -33121767.06 0.0278 0.0220

Mercury -95391-07-15 19:54 J -33119943.77 -33119943.67 -33119943.57 0.0283 0.0208

Mercury -95391-10-12 10:47 J -33119855.18 -33119855.05 -33119854.91 0.0283 0.0117

Mercury -95390-01-09 02:08 J -33119766.56 -33119766.41 -33119766.26 0.0283 0.0024

Mercury -95390-04-07 17:44 J -33119677.91 -33119677.76 -33119677.61 0.0283 0.0071

Mercury -95390-07-05 09:49 J -33119589.22 -33119589.09 -33119588.97 0.0283 0.0169

Mercury -95390-10-02 01:54 J -33119500.46 -33119500.42 -33119500.36 0.0284 0.0268

Venus -95389-02-15 03:06 J -33119364.53 -33119364.37 -33119364.20 0.0284 0.0168

Venus -95389-10-01 17:01 J -33119134.98 -33119134.79 -33119134.60 0.0284 0.0131

Earth -95388-02-01 01:39 J -33119012.62 -33119012.43 -33119012.21 0.0284 0.0149

Moon -95388-02-01 02:37 J -33119012.60 -33119012.39 -33119012.16 0.0284 0.0137 \*

Moon -95387-02-14 09:06 J -33118634.31 -33118634.12 -33118633.91 0.0284 0.0170

Earth -95387-02-14 11:59 J -33118634.19 -33118634.00 -33118633.80 0.0284 0.0166 \*

Mars -95382-09-29 09:06 J -33116581.35 -33116581.12 -33116580.89 0.0281 0.0169

Mercury -95377-11-23 04:32 J -33114699.33 -33114699.31 -33114699.29 0.0276 0.0274

Mercury -95376-02-19 21:06 J -33114610.74 -33114610.62 -33114610.50 0.0276 0.0179

Mercury -95376-05-19 13:25 J -33114522.09 -33114521.94 -33114521.79 0.0276 0.0085

Mercury -95376-08-16 05:15 J -33114433.44 -33114433.28 -33114433.12 0.0276 0.0007

Mercury -95376-11-12 20:51 J -33114344.77 -33114344.63 -33114344.48 0.0276 0.0095

Mercury -95375-02-09 11:59 J -33114256.11 -33114256.00 -33114255.88 0.0275 0.0183

Mercury -95375-05-09 02:51 J -33114167.41 -33114167.38 -33114167.34 0.0275 0.0267

Venus -95375-08-03 21:35 J -33114080.72 -33114080.60 -33114080.46 0.0275 0.0218



Venus -95374-03-21 07:11 J -33113851.41 -33113851.20 -33113850.99 0.0275 0.0058  
 Moon -95374-08-10 09:20 J -33113709.28 -33113709.11 -33113708.92 0.0275 0.0183  
 Earth -95374-08-10 12:42 J -33113709.15 -33113708.97 -33113708.78 0.0275 0.0178 \*  
 Earth -95373-08-22 06:13 J -33113331.46 -33113331.24 -33113331.01 0.0274 0.0106  
 Moon -95373-08-22 07:11 J -33113331.41 -33113331.20 -33113330.98 0.0274 0.0115 \*  
 Mars -95368-09-03 19:25 J -33111492.97 -33111492.69 -33111492.41 0.0276 0.0071  
 Mercury -95362-12-02 20:23 J -33109211.72 -33109211.65 -33109211.57 0.0283 0.0239  
 Mercury -95361-02-29 11:15 J -33109123.15 -33109123.03 -33109122.90 0.0283 0.0149  
 Mercury -95361-05-28 02:23 J -33109034.55 -33109034.40 -33109034.25 0.0283 0.0057  
 Mercury -95361-08-24 17:59 J -33108945.91 -33108945.75 -33108945.60 0.0283 0.0038  
 Mercury -95361-11-21 09:35 J -33108857.23 -33108857.10 -33108856.96 0.0283 0.0134  
 Mercury -95360-02-18 01:39 J -33108768.51 -33108768.43 -33108768.34 0.0284 0.0232  
 Venus -95360-08-27 05:30 J -33108578.46 -33108578.27 -33108578.09 0.0284 0.0137  
 Moon -95359-01-26 08:37 J -33108426.19 -33108426.14 -33108426.07 0.0284 0.0274  
 Venus -95359-04-13 18:56 J -33108348.87 -33108348.71 -33108348.53 0.0284 0.0162  
 Earth -95358-02-08 16:18 J -33108048.06 -33108047.82 -33108047.58 0.0284 0.0023  
 Moon -95358-02-08 19:25 J -33108047.92 -33108047.69 -33108047.45 0.0284 0.0030 \*  
 Mars -95354-11-14 05:01 J -33106308.54 -33106308.29 -33106308.02 0.0282 0.0138  
 Mercury -95347-07-09 20:08 J -33103878.75 -33103878.66 -33103878.55 0.0276 0.0214  
 Mercury -95347-10-06 12:42 J -33103790.11 -33103789.97 -33103789.82 0.0276 0.0120  
 Mercury -95346-01-03 04:47 J -33103701.45 -33103701.30 -33103701.14 0.0276 0.0029  
 Mercury -95346-04-01 20:37 J -33103612.79 -33103612.64 -33103612.49 0.0275 0.0063  
 Mercury -95346-06-29 11:59 J -33103524.13 -33103524.00 -33103523.87 0.0275 0.0151  
 Mercury -95346-09-26 03:06 J -33103435.45 -33103435.37 -33103435.29 0.0275 0.0236  
 Venus -95345-02-13 22:47 J -33103294.70 -33103294.55 -33103294.39 0.0275 0.0188  
 Venus -95345-09-30 08:37 J -33103065.34 -33103065.14 -33103064.94 0.0275 0.0088  
 Moon -95344-08-16 18:56 J -33102744.96 -33102744.71 -33102744.45 0.0275 0.0020  
 Earth -95344-08-16 19:54 J -33102744.91 -33102744.67 -33102744.42 0.0275 0.0024 \*  
 Moon -95343-08-29 07:25 J -33102367.21 -33102367.19 -33102367.15 0.0275 0.0272  
 Earth -95343-08-29 11:01 J -33102367.11 -33102367.04 -33102366.94 0.0275 0.0257

Mars -95338-10-23 14:23 J -33100486.18 -33100485.90 -33100485.62 0.0278 0.0077  
 Mercury -95332-04-20 22:18 J -33098479.62 -33098479.57 -33098479.51 0.0283 0.0262  
 Mercury -95332-07-18 13:11 J -33098391.07 -33098390.95 -33098390.83 0.0283 0.0172  
 Mercury -95332-10-15 04:03 J -33098302.47 -33098302.33 -33098302.18 0.0283 0.0081  
 Mercury -95331-01-11 19:39 J -33098213.84 -33098213.68 -33098213.53 0.0283 0.0015  
 Mercury -95331-04-10 11:15 J -33098125.17 -33098125.03 -33098124.89 0.0283 0.0110  
 Mercury -95331-07-08 03:20 J -33098036.46 -33098036.36 -33098036.25 0.0284 0.0208  
 Venus -95330-03-09 12:56 J -33097792.15 -33097791.96 -33097791.76 0.0284 0.0090  
 Venus -95330-10-25 03:06 J -33097562.50 -33097562.37 -33097562.22 0.0284 0.0211  
 Moon -95329-02-03 04:47 J -33097461.53 -33097461.30 -33097461.07 0.0284 0.0105  
 Earth -95329-02-03 08:08 J -33097461.38 -33097461.16 -33097460.94 0.0284 0.0113 \*  
 Moon -95328-02-15 15:49 J -33097083.00 -33097082.84 -33097082.67 0.0284 0.0202  
 Earth -95328-02-15 18:42 J -33097082.88 -33097082.72 -33097082.53 0.0284 0.0201 \*  
 Mars -95323-01-03 19:39 J -33095299.97 -33095299.68 -33095299.38 0.0282 0.0026  
 Mercury -95318-11-26 23:01 J -33093146.62 -33093146.54 -33093146.45 0.0276 0.0232  
 Mercury -95317-02-23 15:35 J -33093057.99 -33093057.85 -33093057.71 0.0276 0.0138  
 Mercury -95317-05-22 07:39 J -33092969.33 -33092969.18 -33092969.02 0.0276 0.0045  
 Mercury -95317-08-18 23:30 J -33092880.68 -33092880.52 -33092880.37 0.0276 0.0046  
 Mercury -95317-11-15 14:51 J -33092792.01 -33092791.88 -33092791.74 0.0276 0.0134  
 Mercury -95316-02-12 05:59 J -33092703.34 -33092703.25 -33092703.16 0.0275 0.0220  
 Venus -95316-08-26 08:23 J -33092508.33 -33092508.15 -33092507.96 0.0275 0.0141  
 Venus -95315-04-12 17:44 J -33092278.94 -33092278.76 -33092278.57 0.0275 0.0135  
 Earth -95315-08-11 20:23 J -33092157.86 -33092157.65 -33092157.44 0.0275 0.0142  
 Moon -95315-08-11 20:37 J -33092157.83 -33092157.64 -33092157.43 0.0275 0.0145 \*  
 Earth -95314-08-24 13:25 J -33091780.15 -33091779.94 -33091779.73 0.0274 0.0140  
 Moon -95314-08-24 16:47 J -33091780.00 -33091779.80 -33091779.59 0.0274 0.0150 \*  
 Mars -95310-12-11 04:18 J -33090210.51 -33090210.32 -33090210.12 0.0276 0.0201  
 Mars -95308-12-12 03:20 J -33089478.51 -33089478.36 -33089478.17 0.0277 0.0229  
 Mercury -95303-12-05 13:39 J -33087659.03 -33087658.93 -33087658.82 0.0283 0.0203  
 Mercury -95302-03-04 04:32 J -33087570.44 -33087570.31 -33087570.17 0.0283 0.0113

Mercury -95302-05-31 19:54 J -33087481.82 -33087481.67 -33087481.52 0.0283 0.0020

Mercury -95302-08-28 11:30 J -33087393.17 -33087393.02 -33087392.88 0.0283 0.0076

Mercury -95302-11-25 03:20 J -33087304.48 -33087304.36 -33087304.24 0.0283 0.0173

Mercury -95301-02-21 19:39 J -33087215.72 -33087215.68 -33087215.64 0.0284 0.0272

Venus -95301-09-18 15:20 J -33087006.07 -33087005.86 -33087005.66 0.0284 0.0059

Earth -95300-01-27 14:37 J -33086874.98 -33086874.89 -33086874.76 0.0284 0.0251

Moon -95300-01-27 18:13 J -33086874.87 -33086874.74 -33086874.62 0.0284 0.0239 \*

Venus -95300-05-06 05:15 J -33086776.39 -33086776.28 -33086776.17 0.0284 0.0241

Earth -95299-02-09 22:18 J -33086496.80 -33086496.57 -33086496.32 0.0284 0.0059

Moon -95299-02-10 01:11 J -33086496.70 -33086496.45 -33086496.21 0.0284 0.0062 \*

Mars -95293-02-22 17:15 J -33084293.00 -33084292.78 -33084292.55 0.0281 0.0175

Mercury -95288-04-14 21:49 J -33082414.62 -33082414.59 -33082414.55 0.0276 0.0269

Mercury -95288-07-12 14:37 J -33082326.01 -33082325.89 -33082325.76 0.0276 0.0173

Mercury -95288-10-09 06:56 J -33082237.36 -33082237.21 -33082237.06 0.0276 0.0080

Mercury -95287-01-05 23:01 J -33082148.70 -33082148.54 -33082148.39 0.0275 0.0014

Mercury -95287-04-04 14:23 J -33082060.04 -33082059.90 -33082059.75 0.0275 0.0101

Mercury -95287-07-02 05:44 J -33081971.37 -33081971.26 -33081971.15 0.0275 0.0188

Mercury -95287-09-28 20:37 J -33081882.65 -33081882.64 -33081882.62 0.0275 0.0273

Venus -95286-03-08 09:06 J -33081722.31 -33081722.12 -33081721.92 0.0275 0.0112

Earth -95286-08-06 06:13 J -33081571.24 -33081571.24 -33081571.24 0.0275 0.0275

Venus -95286-10-23 18:27 J -33081492.90 -33081492.73 -33081492.56 0.0275 0.0164

Moon -95285-08-17 22:32 J -33081193.81 -33081193.56 -33081193.31 0.0275 0.0015

Earth -95285-08-18 02:08 J -33081193.65 -33081193.41 -33081193.16 0.0275 0.0010 \*

Mars -95279-01-28 07:39 J -33079204.46 -33079204.18 -33079203.89 0.0277 0.0062

Mercury -95273-04-23 14:51 J -33076926.96 -33076926.88 -33076926.79 0.0283 0.0230

Mercury -95273-07-21 05:44 J -33076838.39 -33076838.26 -33076838.13 0.0283 0.0140

Mercury -95273-10-17 21:06 J -33076749.77 -33076749.62 -33076749.48 0.0283 0.0047

Mercury -95272-01-14 12:27 J -33076661.13 -33076660.98 -33076660.83 0.0283 0.0048

Mercury -95272-04-13 04:18 J -33076572.45 -33076572.32 -33076572.19 0.0283 0.0145

Mercury -95272-07-10 20:23 J -33076483.72 -33076483.65 -33076483.57 0.0284 0.0245

Venus	-95271-03-31 21:20 J	-33076219.82	-33076219.61	-33076219.40	0.0284	0.0016
Moon	-95270-02-04 08:51 J	-33075910.35	-33075910.13	-33075909.89	0.0284	0.0074
Earth	-95270-02-04 11:30 J	-33075910.26	-33075910.02	-33075909.79	0.0284	0.0080 *
Earth	-95269-02-17 22:47 J	-33075531.68	-33075531.55	-33075531.40	0.0284	0.0232
Moon	-95269-02-18 00:13 J	-33075531.62	-33075531.49	-33075531.35	0.0284	0.0231 *
Mars	-95265-04-09 10:32 J	-33074019.32	-33074019.06	-33074018.78	0.0283	0.0127
Mercury	-95259-11-29 17:01 J	-33071593.90	-33071593.79	-33071593.67	0.0276	0.0194
Mercury	-95258-02-26 09:35 J	-33071505.25	-33071505.10	-33071504.95	0.0276	0.0099
Mercury	-95258-05-26 01:39 J	-33071416.59	-33071416.43	-33071416.28	0.0276	0.0010
Mercury	-95258-08-22 17:15 J	-33071327.93	-33071327.78	-33071327.63	0.0276	0.0083
Mercury	-95258-11-19 08:37 J	-33071239.26	-33071239.14	-33071239.02	0.0276	0.0171
Mercury	-95257-02-15 23:30 J	-33071150.57	-33071150.52	-33071150.46	0.0275	0.0256
Venus	-95257-09-17 18:13 J	-33070935.95	-33070935.74	-33070935.53	0.0275	0.0066
Venus	-95256-05-05 03:06 J	-33070706.49	-33070706.37	-33070706.22	0.0275	0.0210
Earth	-95256-08-13 02:08 J	-33070606.63	-33070606.41	-33070606.17	0.0275	0.0108
Moon	-95256-08-13 05:59 J	-33070606.47	-33070606.25	-33070606.02	0.0275	0.0107 *
Earth	-95255-08-25 18:42 J	-33070228.90	-33070228.72	-33070228.52	0.0274	0.0173
Moon	-95255-08-25 19:54 J	-33070228.85	-33070228.67	-33070228.47	0.0274	0.0182 *
Mars	-95249-03-18 11:01 J	-33068197.32	-33068197.04	-33068196.76	0.0277	0.0085
Mercury	-95244-09-10 15:49 J	-33066194.89	-33066194.84	-33066194.78	0.0282	0.0259
Mercury	-95244-12-08 06:27 J	-33066106.34	-33066106.23	-33066106.11	0.0283	0.0170
Mercury	-95243-03-06 21:35 J	-33066017.75	-33066017.60	-33066017.46	0.0283	0.0078
Mercury	-95243-06-03 12:56 J	-33065929.12	-33065928.96	-33065928.81	0.0283	0.0017
Mercury	-95243-08-31 04:32 J	-33065840.45	-33065840.31	-33065840.17	0.0283	0.0111
Mercury	-95243-11-27 20:37 J	-33065751.75	-33065751.64	-33065751.54	0.0283	0.0209
Venus	-95242-02-24 10:32 J	-33065663.07	-33065663.06	-33065663.03	0.0283	0.0282
Venus	-95242-10-11 23:44 J	-33065433.71	-33065433.51	-33065433.29	0.0284	0.0018
Earth	-95241-01-29 18:42 J	-33065323.88	-33065323.72	-33065323.57	0.0284	0.0217
Moon	-95241-01-29 21:06 J	-33065323.78	-33065323.62	-33065323.44	0.0284	0.0206 *
Moon	-95240-02-11 00:42 J	-33064945.71	-33064945.47	-33064945.23	0.0284	0.0090

Earth -95240-02-11 02:37 J -33064945.62 -33064945.39 -33064945.16 0.0284 0.0091 \*  
 Mars -95235-05-29 21:06 J -33063011.91 -33063011.62 -33063011.32 0.0282 0.0031  
 Mercury -95229-04-17 15:49 J -33060861.92 -33060861.84 -33060861.75 0.0276 0.0231  
 Mercury -95229-07-15 08:23 J -33060773.28 -33060773.15 -33060773.01 0.0276 0.0136  
 Mercury -95229-10-12 00:42 J -33060684.63 -33060684.47 -33060684.32 0.0276 0.0043  
 Mercury -95228-01-08 16:32 J -33060595.97 -33060595.81 -33060595.66 0.0275 0.0048  
 Mercury -95228-04-07 07:54 J -33060507.30 -33060507.17 -33060507.03 0.0275 0.0136  
 Mercury -95228-07-04 23:01 J -33060418.62 -33060418.54 -33060418.45 0.0275 0.0223  
 Venus -95227-03-30 18:13 J -33060149.95 -33060149.74 -33060149.53 0.0275 0.0039  
 Moon -95227-08-07 07:11 J -33060020.31 -33060020.20 -33060020.08 0.0275 0.0241  
 Earth -95227-08-07 11:01 J -33060020.15 -33060020.04 -33060019.92 0.0275 0.0241 \*  
 Venus -95227-11-15 03:06 J -33059920.47 -33059920.37 -33059920.26 0.0275 0.0236  
 Moon -95226-08-20 05:30 J -33059642.50 -33059642.27 -33059642.04 0.0274 0.0050  
 Earth -95226-08-20 06:42 J -33059642.47 -33059642.22 -33059641.98 0.0274 0.0042 \*  
 Mars -95221-05-05 10:47 J -33057922.24 -33057922.05 -33057921.84 0.0276 0.0194  
 Mars -95219-05-07 09:06 J -33057190.26 -33057190.12 -33057189.95 0.0278 0.0234  
 Mercury -95214-04-27 07:11 J -33055374.30 -33055374.20 -33055374.09 0.0283 0.0200  
 Mercury -95214-07-24 22:03 J -33055285.71 -33055285.58 -33055285.44 0.0283 0.0109  
 Mercury -95214-10-21 13:25 J -33055197.09 -33055196.94 -33055196.79 0.0283 0.0015  
 Mercury -95213-01-18 05:01 J -33055108.44 -33055108.29 -33055108.14 0.0283 0.0081  
 Mercury -95213-04-15 20:51 J -33055019.74 -33055019.63 -33055019.51 0.0283 0.0179  
 Mercury -95213-07-13 13:11 J -33054930.97 -33054930.95 -33054930.92 0.0284 0.0278  
 Venus -95213-09-05 14:37 J -33054876.99 -33054876.89 -33054876.78 0.0284 0.0244  
 Venus -95212-04-23 04:18 J -33054647.53 -33054647.32 -33054647.11 0.0284 0.0056  
 Earth -95211-02-05 12:42 J -33054359.21 -33054358.97 -33054358.73 0.0284 0.0049  
 Moon -95211-02-05 14:23 J -33054359.13 -33054358.90 -33054358.66 0.0284 0.0047 \*  
 Earth -95210-02-19 00:42 J -33053980.56 -33053980.47 -33053980.38 0.0284 0.0262  
 Moon -95210-02-19 04:18 J -33053980.42 -33053980.32 -33053980.21 0.0284 0.0256 \*  
 Mars -95205-07-18 16:03 J -33052004.04 -33052003.83 -33052003.60 0.0282 0.0184  
 Mercury -95200-09-04 17:59 J -33050129.81 -33050129.75 -33050129.68 0.0277 0.0253

Mercury -95200-12-02 10:32 J -33050041.18 -33050041.06 -33050040.92 0.0276 0.0158

Mercury -95199-03-01 03:06 J -33049952.53 -33049952.37 -33049952.22 0.0276 0.0063

Mercury -95199-05-28 18:56 J -33049863.86 -33049863.71 -33049863.55 0.0276 0.0029

Mercury -95199-08-25 10:32 J -33049775.20 -33049775.06 -33049774.92 0.0276 0.0118

Mercury -95199-11-22 01:39 J -33049686.53 -33049686.43 -33049686.32 0.0276 0.0205

Venus -95198-02-23 16:47 J -33049592.82 -33049592.80 -33049592.76 0.0276 0.0272

Venus -95198-10-11 02:51 J -33049363.59 -33049363.38 -33049363.16 0.0275 0.0010

Earth -95197-08-14 06:56 J -33049055.45 -33049055.21 -33049054.97 0.0275 0.0074

Moon -95197-08-14 08:08 J -33049055.41 -33049055.16 -33049054.91 0.0275 0.0069 \*

Moon -95196-08-26 20:08 J -33048677.81 -33048677.66 -33048677.50 0.0274 0.0216

Earth -95196-08-26 23:01 J -33048677.69 -33048677.54 -33048677.37 0.0274 0.0204 \*

Mars -95191-06-24 05:30 J -33046915.55 -33046915.27 -33046914.98 0.0276 0.0052

Mercury -95185-09-13 08:23 J -33044642.24 -33044642.15 -33044642.07 0.0282 0.0227

Mercury -95185-12-10 23:01 J -33044553.67 -33044553.54 -33044553.41 0.0282 0.0138

Mercury -95184-03-09 14:08 J -33044465.06 -33044464.91 -33044464.76 0.0283 0.0046

Mercury -95184-06-06 05:30 J -33044376.42 -33044376.27 -33044376.12 0.0283 0.0049

Mercury -95184-09-02 21:20 J -33044287.74 -33044287.61 -33044287.48 0.0283 0.0146

Mercury -95184-11-30 13:11 J -33044199.02 -33044198.95 -33044198.86 0.0283 0.0245

Venus -95183-03-18 17:44 J -33044090.89 -33044090.76 -33044090.61 0.0283 0.0211

Venus -95183-11-03 07:11 J -33043861.39 -33043861.20 -33043860.99 0.0284 0.0090

Moon -95182-01-30 18:13 J -33043772.92 -33043772.74 -33043772.54 0.0284 0.0179

Earth -95182-01-30 20:08 J -33043772.83 -33043772.66 -33043772.47 0.0284 0.0186 \*

Moon -95181-02-13 01:11 J -33043394.67 -33043394.45 -33043394.23 0.0284 0.0118

Earth -95181-02-13 04:32 J -33043394.52 -33043394.31 -33043394.08 0.0284 0.0122 \*

Mars -95177-09-02 07:39 J -33041731.44 -33041731.18 -33041730.90 0.0283 0.0123

Mercury -95170-04-21 09:20 J -33039309.22 -33039309.11 -33039308.99 0.0276 0.0195

Mercury -95170-07-19 01:54 J -33039220.57 -33039220.42 -33039220.27 0.0276 0.0100

Mercury -95170-10-15 17:59 J -33039131.91 -33039131.75 -33039131.59 0.0276 0.0008

Mercury -95169-01-12 09:35 J -33039043.24 -33039043.10 -33039042.95 0.0275 0.0083

Mercury -95169-04-10 00:56 J -33038954.58 -33038954.46 -33038954.33 0.0275 0.0171

Mercury -95169-07-07 16:03 J -33038865.88 -33038865.83 -33038865.77 0.0275 0.0256  
 Venus -95169-09-04 16:18 J -33038806.90 -33038806.82 -33038806.72 0.0275 0.0246  
 Venus -95168-04-22 02:37 J -33038577.60 -33038577.39 -33038577.18 0.0275 0.0033  
 Moon -95168-08-08 14:08 J -33038469.05 -33038468.91 -33038468.74 0.0275 0.0206  
 Earth -95168-08-08 14:51 J -33038469.04 -33038468.88 -33038468.71 0.0275 0.0208 \*  
 Earth -95167-08-21 10:03 J -33038091.32 -33038091.08 -33038090.84 0.0274 0.0073  
 Moon -95167-08-21 13:11 J -33038091.17 -33038090.95 -33038090.71 0.0274 0.0085 \*  
 Mars -95161-08-11 12:27 J -33035909.26 -33035908.98 -33035908.70 0.0277 0.0091  
 Mercury -95155-01-31 08:37 J -33033910.19 -33033910.14 -33033910.08 0.0283 0.0260  
 Mercury -95155-04-29 23:15 J -33033821.65 -33033821.53 -33033821.41 0.0283 0.0171  
 Mercury -95155-07-27 14:23 J -33033733.05 -33033732.90 -33033732.76 0.0283 0.0079  
 Mercury -95155-10-24 05:30 J -33033644.42 -33033644.27 -33033644.11 0.0283 0.0018  
 Mercury -95154-01-20 21:20 J -33033555.75 -33033555.61 -33033555.47 0.0283 0.0112  
 Mercury -95154-04-19 13:11 J -33033467.05 -33033466.95 -33033466.84 0.0283 0.0210  
 Venus -95154-09-28 20:51 J -33033304.79 -33033304.63 -33033304.47 0.0284 0.0176  
 Venus -95153-05-15 10:18 J -33033075.25 -33033075.07 -33033074.87 0.0284 0.0126  
 Earth -95152-02-06 12:27 J -33032808.22 -33032807.98 -33032807.74 0.0284 0.0020  
 Moon -95152-02-06 15:49 J -33032808.08 -33032807.84 -33032807.59 0.0284 0.0018 \*  
 Moon -95151-02-20 00:56 J -33032429.49 -33032429.46 -33032429.42 0.0284 0.0281  
 Mars -95147-10-23 11:30 J -33030723.31 -33030723.02 -33030722.72 0.0282 0.0038  
 Mercury -95141-09-07 11:30 J -33028577.12 -33028577.02 -33028576.93 0.0277 0.0218  
 Mercury -95141-12-05 04:03 J -33028488.48 -33028488.33 -33028488.19 0.0277 0.0123  
 Mercury -95140-03-03 20:08 J -33028399.82 -33028399.66 -33028399.50 0.0276 0.0029  
 Mercury -95140-05-31 11:59 J -33028311.15 -33028311.00 -33028310.85 0.0276 0.0062  
 Mercury -95140-08-28 03:20 J -33028222.48 -33028222.36 -33028222.23 0.0276 0.0151  
 Mercury -95140-11-24 18:27 J -33028133.80 -33028133.73 -33028133.65 0.0276 0.0237  
 Venus -95139-03-18 00:56 J -33028020.60 -33028020.46 -33028020.32 0.0276 0.0202  
 Venus -95139-11-02 10:47 J -33027791.25 -33027791.05 -33027790.84 0.0275 0.0077  
 Moon -95138-08-16 06:42 J -33027504.47 -33027504.22 -33027503.97 0.0275 0.0033  
 Earth -95138-08-16 10:03 J -33027504.32 -33027504.08 -33027503.83 0.0275 0.0043 \*

Moon -95137-08-27 23:15 J -33027126.63 -33027126.53 -33027126.43 0.0275 0.0248  
 Earth -95137-08-28 01:54 J -33027126.54 -33027126.42 -33027126.28 0.0275 0.0234 \*  
 Mars -95133-09-29 10:03 J -33025633.29 -33025633.08 -33025632.86 0.0275 0.0182  
 Mars -95131-10-01 04:47 J -33024901.43 -33024901.30 -33024901.15 0.0277 0.0243  
 Mercury -95126-09-17 00:27 J -33023089.58 -33023089.48 -33023089.37 0.0282 0.0197  
 Mercury -95126-12-14 15:20 J -33023001.00 -33023000.86 -33023000.72 0.0282 0.0107  
 Mercury -95125-03-12 06:27 J -33022912.38 -33022912.23 -33022912.07 0.0283 0.0016  
 Mercury -95125-06-08 22:03 J -33022823.73 -33022823.58 -33022823.43 0.0283 0.0081  
 Mercury -95125-09-05 13:54 J -33022735.04 -33022734.92 -33022734.80 0.0283 0.0179  
 Mercury -95125-12-03 05:59 J -33022646.27 -33022646.25 -33022646.22 0.0283 0.0278  
 Venus -95124-04-10 00:42 J -33022518.65 -33022518.47 -33022518.28 0.0283 0.0140  
 Venus -95124-11-25 14:23 J -33022289.07 -33022288.90 -33022288.73 0.0284 0.0161  
 Moon -95123-01-31 17:44 J -33022221.96 -33022221.76 -33022221.56 0.0284 0.0150  
 Earth -95123-01-31 21:06 J -33022221.82 -33022221.62 -33022221.41 0.0284 0.0156 \*  
 Earth -95122-02-14 05:30 J -33021843.47 -33021843.27 -33021843.06 0.0284 0.0151  
 Moon -95122-02-14 05:30 J -33021843.46 -33021843.27 -33021843.06 0.0284 0.0147 \*  
 Mars -95119-12-07 01:54 J -33020451.46 -33020451.42 -33020451.36 0.0283 0.0279  
 Mars -95117-12-11 11:59 J -33019716.20 -33019716.00 -33019715.77 0.0282 0.0188  
 Mercury -95111-01-25 09:49 J -33017845.14 -33017845.09 -33017845.03 0.0276 0.0257  
 Mercury -95111-04-24 02:37 J -33017756.52 -33017756.39 -33017756.26 0.0276 0.0161  
 Mercury -95111-07-21 18:56 J -33017667.86 -33017667.71 -33017667.55 0.0276 0.0067  
 Mercury -95111-10-18 11:01 J -33017579.20 -33017579.04 -33017578.88 0.0276 0.0026  
 Mercury -95110-01-15 02:37 J -33017490.53 -33017490.39 -33017490.25 0.0276 0.0115  
 Mercury -95110-04-13 17:59 J -33017401.86 -33017401.75 -33017401.65 0.0275 0.0203  
 Venus -95110-09-28 00:13 J -33017234.65 -33017234.49 -33017234.32 0.0275 0.0175  
 Venus -95109-05-14 10:18 J -33017005.27 -33017005.07 -33017004.87 0.0275 0.0103  
 Earth -95109-08-09 17:44 J -33016917.94 -33016917.76 -33016917.57 0.0275 0.0176  
 Moon -95109-08-09 21:06 J -33016917.80 -33016917.62 -33016917.42 0.0275 0.0170 \*  
 Earth -95108-08-22 12:42 J -33016540.19 -33016539.97 -33016539.74 0.0274 0.0103  
 Moon -95108-08-22 15:20 J -33016540.08 -33016539.86 -33016539.63 0.0274 0.0117 \*



Mars -95103-11-17 05:01 J -33014627.58 -33014627.29 -33014627.00 0.0276 0.0047  
 Mercury -95096-02-03 00:27 J -33012357.56 -33012357.48 -33012357.39 0.0282 0.0232  
 Mercury -95096-05-02 15:20 J -33012268.99 -33012268.86 -33012268.73 0.0283 0.0142  
 Mercury -95096-07-30 06:27 J -33012180.38 -33012180.23 -33012180.08 0.0283 0.0050  
 Mercury -95096-10-26 21:49 J -33012091.74 -33012091.59 -33012091.44 0.0283 0.0046  
 Mercury -95095-01-23 13:25 J -33012003.07 -33012002.94 -33012002.80 0.0283 0.0142  
 Mercury -95095-04-22 05:30 J -33011914.35 -33011914.27 -33011914.19 0.0283 0.0241  
 Venus -95095-10-21 02:37 J -33011732.58 -33011732.39 -33011732.19 0.0284 0.0108  
 Moon -95094-01-26 08:37 J -33011635.14 -33011635.14 -33011635.12 0.0284 0.0284  
 Venus -95094-06-07 16:32 J -33011502.96 -33011502.81 -33011502.66 0.0284 0.0194  
 Moon -95093-02-08 11:30 J -33011257.27 -33011257.02 -33011256.77 0.0284 0.0007  
 Earth -95093-02-08 11:30 J -33011257.26 -33011257.02 -33011256.77 0.0284 0.0010 \*  
 Mars -95088-01-26 14:08 J -33009443.17 -33009442.91 -33009442.63 0.0283 0.0117  
 Mercury -95082-09-11 04:18 J -33007024.43 -33007024.32 -33007024.20 0.0277 0.0185  
 Mercury -95082-12-08 20:51 J -33006935.78 -33006935.63 -33006935.48 0.0277 0.0090  
 Mercury -95081-03-06 12:56 J -33006847.12 -33006846.96 -33006846.80 0.0277 0.0005  
 Mercury -95081-06-03 04:47 J -33006758.45 -33006758.30 -33006758.15 0.0276 0.0094  
 Mercury -95081-08-30 20:08 J -33006669.78 -33006669.66 -33006669.55 0.0276 0.0182  
 Mercury -95081-11-27 11:15 J -33006581.06 -33006581.03 -33006581.00 0.0276 0.0268  
 Venus -95080-04-09 08:23 J -33006448.34 -33006448.15 -33006447.96 0.0276 0.0133  
 Venus -95080-11-24 18:13 J -33006218.92 -33006218.74 -33006218.56 0.0275 0.0147  
 Moon -95079-08-17 10:18 J -33005953.31 -33005953.07 -33005952.83 0.0275 0.0003  
 Earth -95079-08-17 12:42 J -33005953.22 -33005952.97 -33005952.73 0.0275 0.0012 \*  
 Earth -95078-08-30 04:18 J -33005575.38 -33005575.32 -33005575.25 0.0275 0.0263  
 Mars -95072-01-05 10:18 J -33003620.33 -33003620.07 -33003619.79 0.0276 0.0103  
 Mercury -95067-06-23 02:23 J -33001625.46 -33001625.40 -33001625.34 0.0282 0.0255  
 Mercury -95067-09-19 16:47 J -33001536.92 -33001536.80 -33001536.68 0.0282 0.0166  
 Mercury -95067-12-17 07:39 J -33001448.32 -33001448.18 -33001448.03 0.0282 0.0075  
 Mercury -95066-03-15 23:01 J -33001359.69 -33001359.54 -33001359.39 0.0282 0.0019  
 Mercury -95066-06-12 14:37 J -33001271.03 -33001270.89 -33001270.75 0.0283 0.0114

Mercury -95066-09-09 06:27 J -33001182.33 -33001182.23 -33001182.13 0.0283 0.0212  
 Venus -95065-05-02 07:25 J -33000946.39 -33000946.19 -33000945.98 0.0283 0.0070  
 Venus -95065-12-17 20:51 J -33000716.74 -33000716.63 -33000716.50 0.0284 0.0233  
 Earth -95064-02-01 21:35 J -33000670.81 -33000670.60 -33000670.38 0.0284 0.0126  
 Moon -95064-02-01 22:03 J -33000670.79 -33000670.58 -33000670.37 0.0284 0.0125 \*  
 Earth -95063-02-15 05:59 J -33000292.43 -33000292.25 -33000292.05 0.0284 0.0180  
 Moon -95063-02-15 09:35 J -33000292.29 -33000292.10 -33000291.90 0.0284 0.0172 \*  
 Mars -95058-03-18 06:56 J -32998435.50 -32998435.21 -32998434.92 0.0282 0.0042  
 Mercury -95052-01-28 03:06 J -32996292.46 -32996292.37 -32996292.27 0.0276 0.0223  
 Mercury -95052-04-26 19:39 J -32996203.82 -32996203.68 -32996203.53 0.0276 0.0127  
 Mercury -95052-07-24 11:59 J -32996115.16 -32996115.00 -32996114.84 0.0276 0.0033  
 Mercury -95052-10-21 03:49 J -32996026.49 -32996026.34 -32996026.18 0.0276 0.0059  
 Mercury -95051-01-17 19:25 J -32995937.82 -32995937.69 -32995937.56 0.0276 0.0148  
 Mercury -95051-04-16 10:32 J -32995849.13 -32995849.06 -32995848.98 0.0275 0.0235  
 Venus -95051-10-20 07:54 J -32995662.36 -32995662.17 -32995661.97 0.0275 0.0106  
 Venus -95050-06-06 17:44 J -32995432.92 -32995432.76 -32995432.59 0.0275 0.0173  
 Earth -95050-08-11 20:23 J -32995366.85 -32995366.65 -32995366.43 0.0275 0.0145  
 Moon -95050-08-11 22:32 J -32995366.78 -32995366.56 -32995366.33 0.0275 0.0136 \*  
 Moon -95049-08-23 12:42 J -32994989.18 -32994988.97 -32994988.75 0.0274 0.0148  
 Earth -95049-08-23 15:06 J -32994989.08 -32994988.87 -32994988.65 0.0274 0.0133 \*  
 Mars -95044-02-22 08:08 J -32993345.37 -32993345.16 -32993344.94 0.0276 0.0177  
 Mars -95042-02-24 00:42 J -32992613.59 -32992613.47 -32992613.32 0.0277 0.0248  
 Mercury -95037-02-06 16:32 J -32990804.91 -32990804.81 -32990804.70 0.0282 0.0202  
 Mercury -95037-05-05 07:25 J -32990716.33 -32990716.19 -32990716.05 0.0282 0.0112  
 Mercury -95037-08-01 22:32 J -32990627.71 -32990627.56 -32990627.41 0.0283 0.0019  
 Mercury -95037-10-29 13:54 J -32990539.06 -32990538.92 -32990538.77 0.0283 0.0077  
 Mercury -95036-01-26 05:44 J -32990450.38 -32990450.26 -32990450.14 0.0283 0.0174  
 Mercury -95036-04-24 21:49 J -32990361.62 -32990361.59 -32990361.54 0.0283 0.0273  
 Venus -95036-11-12 08:51 J -32990160.34 -32990160.13 -32990159.92 0.0284 0.0040  
 Moon -95035-01-27 03:20 J -32990084.44 -32990084.36 -32990084.25 0.0284 0.0260

Earth	-95035-01-27 04:32 J	-32990084.39	-32990084.31	-32990084.21	0.0284	0.0263	*
Venus	-95035-06-29 22:32 J	-32989930.63	-32989930.56	-32989930.48	0.0284	0.0264	
Moon	-95034-02-09 07:25 J	-32989706.44	-32989706.19	-32989705.95	0.0284	0.0032	
Earth	-95034-02-09 11:01 J	-32989706.28	-32989706.04	-32989705.80	0.0284	0.0038	*
Mars	-95030-05-02 02:51 J	-32988163.45	-32988163.38	-32988163.30	0.0283	0.0274	
Mars	-95028-05-06 17:01 J	-32987427.99	-32987427.79	-32987427.57	0.0282	0.0193	
Mercury	-95023-06-17 04:18 J	-32985560.38	-32985560.32	-32985560.25	0.0277	0.0249	
Mercury	-95023-09-13 21:06 J	-32985471.75	-32985471.62	-32985471.48	0.0277	0.0153	
Mercury	-95023-12-11 13:39 J	-32985383.09	-32985382.93	-32985382.78	0.0277	0.0058	
Mercury	-95022-03-10 05:44 J	-32985294.42	-32985294.26	-32985294.11	0.0277	0.0036	
Mercury	-95022-06-06 21:20 J	-32985205.75	-32985205.61	-32985205.47	0.0277	0.0125	
Mercury	-95022-09-03 12:27 J	-32985117.07	-32985116.98	-32985116.88	0.0276	0.0214	
Venus	-95021-05-01 15:20 J	-32984876.06	-32984875.86	-32984875.65	0.0276	0.0064	
Moon	-95021-08-05 13:54 J	-32984779.99	-32984779.92	-32984779.83	0.0276	0.0259	
Earth	-95021-08-05 16:18 J	-32984779.89	-32984779.82	-32984779.74	0.0276	0.0261	*
Venus	-95021-12-17 01:11 J	-32984646.58	-32984646.45	-32984646.32	0.0276	0.0216	
Earth	-95020-08-18 14:23 J	-32984402.15	-32984401.90	-32984401.65	0.0275	0.0019	
Moon	-95020-08-18 16:32 J	-32984402.04	-32984401.81	-32984401.57	0.0275	0.0033	*
Mars	-95014-04-13 05:01 J	-32982338.57	-32982338.29	-32982338.00	0.0276	0.0032	
Mercury	-95008-06-25 18:42 J	-32980072.81	-32980072.72	-32980072.63	0.0282	0.0223	
Mercury	-95008-09-22 09:20 J	-32979984.24	-32979984.11	-32979983.98	0.0282	0.0134	
Mercury	-95008-12-20 00:13 J	-32979895.63	-32979895.49	-32979895.34	0.0282	0.0043	
Mercury	-95007-03-18 15:35 J	-32979807.00	-32979806.85	-32979806.70	0.0282	0.0052	
Mercury	-95007-06-15 07:11 J	-32979718.33	-32979718.20	-32979718.06	0.0282	0.0148	
Mercury	-95007-09-11 23:15 J	-32979629.60	-32979629.53	-32979629.45	0.0283	0.0246	
Venus	-95006-05-25 14:51 J	-32979374.09	-32979373.88	-32979373.67	0.0283	0.0004	
Earth	-95005-02-03 23:01 J	-32979119.76	-32979119.54	-32979119.31	0.0283	0.0095	
Moon	-95005-02-04 02:51 J	-32979119.60	-32979119.38	-32979119.15	0.0283	0.0097	*
Earth	-95004-02-16 07:39 J	-32978741.34	-32978741.18	-32978741.01	0.0284	0.0209	
Moon	-95004-02-16 09:20 J	-32978741.27	-32978741.11	-32978740.92	0.0284	0.0200	*

# 95TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 95th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-95000-06-21 11:59 J	-32977155.27	-32977155.00	-32977154.72	0.0283	0.0110		
Mercury	-94993-01-31 20:08 J	-32974739.77	-32974739.66	-32974739.54	0.0277	0.0189		
Mercury	-94993-04-29 12:42 J	-32974651.12	-32974650.97	-32974650.82	0.0276	0.0093		
Mercury	-94993-07-27 05:01 J	-32974562.45	-32974562.29	-32974562.14	0.0276	0.0007		
Mercury	-94993-10-23 20:37 J	-32974473.78	-32974473.64	-32974473.49	0.0276	0.0092		
Mercury	-94992-01-20 12:13 J	-32974385.11	-32974384.99	-32974384.87	0.0276	0.0180		
Mercury	-94992-04-19 03:06 J	-32974296.40	-32974296.37	-32974296.32	0.0276	0.0267		
Venus	-94992-11-11 15:35 J	-32974090.06	-32974089.85	-32974089.64	0.0275	0.0035		
Venus	-94991-06-29 00:56 J	-32973860.54	-32973860.46	-32973860.35	0.0275	0.0244		
Moon	-94991-08-12 20:51 J	-32973815.86	-32973815.63	-32973815.39	0.0275	0.0103		
Earth	-94991-08-12 23:15 J	-32973815.75	-32973815.53	-32973815.30	0.0275	0.0114	*	
Moon	-94990-08-25 14:23 J	-32973438.07	-32973437.90	-32973437.71	0.0275	0.0179		
Earth	-94990-08-25 17:59 J	-32973437.95	-32973437.75	-32973437.55	0.0275	0.0163	*	
Mars	-94984-05-31 08:23 J	-32971332.41	-32971332.15	-32971331.87	0.0277	0.0109		
Mercury	-94979-11-12 18:27 J	-32969340.78	-32969340.73	-32969340.67	0.0282	0.0260		
Mercury	-94978-02-09 08:51 J	-32969252.24	-32969252.13	-32969252.01	0.0282	0.0171		
Mercury	-94978-05-08 23:44 J	-32969163.65	-32969163.51	-32969163.36	0.0282	0.0081		
Mercury	-94978-08-05 15:06 J	-32969075.02	-32969074.87	-32969074.72	0.0283	0.0014		
Mercury	-94978-11-02 06:27 J	-32968986.37	-32968986.23	-32968986.08	0.0283	0.0110		

Mercury -94977-01-29 22:32 J -32968897.67 -32968897.56 -32968897.46 0.0283 0.0207

Venus -94977-04-19 02:37 J -32968817.45 -32968817.39 -32968817.32 0.0283 0.0268

Venus -94977-12-04 15:35 J -32968588.06 -32968587.85 -32968587.64 0.0283 0.0032

Moon -94976-01-28 01:11 J -32968533.57 -32968533.45 -32968533.30 0.0283 0.0236

Earth -94976-01-28 05:01 J -32968533.41 -32968533.29 -32968533.14 0.0283 0.0233 \*

Moon -94975-02-10 10:03 J -32968155.31 -32968155.08 -32968154.85 0.0284 0.0058

Earth -94975-02-10 11:15 J -32968155.26 -32968155.03 -32968154.79 0.0284 0.0067 \*

Mars -94970-08-11 09:20 J -32966147.40 -32966147.11 -32966146.82 0.0282 0.0048

Mercury -94964-06-19 21:20 J -32964007.71 -32964007.61 -32964007.51 0.0277 0.0216

Mercury -94964-09-16 14:08 J -32963919.06 -32963918.91 -32963918.77 0.0277 0.0119

Mercury -94964-12-14 06:27 J -32963830.39 -32963830.23 -32963830.07 0.0277 0.0025

Mercury -94963-03-12 22:18 J -32963741.72 -32963741.57 -32963741.41 0.0277 0.0068

Mercury -94963-06-09 13:54 J -32963653.04 -32963652.92 -32963652.79 0.0277 0.0158

Mercury -94963-09-06 05:15 J -32963564.35 -32963564.28 -32963564.21 0.0277 0.0245

Venus -94962-05-24 22:47 J -32963303.77 -32963303.55 -32963303.34 0.0276 0.0007

Earth -94962-08-07 18:13 J -32963228.86 -32963228.74 -32963228.59 0.0276 0.0231

Moon -94962-08-07 20:08 J -32963228.78 -32963228.66 -32963228.51 0.0276 0.0226 \*

Earth -94961-08-19 16:32 J -32962851.05 -32962850.81 -32962850.56 0.0275 0.0049

Moon -94961-08-19 19:54 J -32962850.91 -32962850.67 -32962850.42 0.0275 0.0063 \*

Mars -94956-07-19 11:30 J -32961056.24 -32961056.02 -32961055.78 0.0276 0.0161

Mars -94954-07-21 04:03 J -32960324.40 -32960324.33 -32960324.23 0.0277 0.0264

Mercury -94949-03-31 20:51 J -32958608.64 -32958608.63 -32958608.60 0.0281 0.0278

Mercury -94949-06-28 11:15 J -32958520.13 -32958520.03 -32958519.92 0.0281 0.0190

Mercury -94949-09-25 02:08 J -32958431.55 -32958431.41 -32958431.27 0.0282 0.0100

Mercury -94949-12-22 17:15 J -32958342.93 -32958342.78 -32958342.63 0.0282 0.0008

Mercury -94948-03-21 08:37 J -32958254.29 -32958254.14 -32958253.99 0.0282 0.0087

Mercury -94948-06-18 00:13 J -32958165.60 -32958165.49 -32958165.37 0.0282 0.0185

Venus -94948-10-30 10:18 J -32958031.19 -32958031.07 -32958030.93 0.0283 0.0221

Venus -94947-06-16 22:47 J -32957801.75 -32957801.55 -32957801.34 0.0283 0.0079

Earth -94946-02-05 02:08 J -32957568.65 -32957568.41 -32957568.18 0.0283 0.0064

Moon	-94946-02-05 03:06 J	-32957568.61	-32957568.37	-32957568.12	0.0283	0.0070	*
Moon	-94945-02-18 08:08 J	-32957190.31	-32957190.16	-32957190.01	0.0284	0.0225	
Earth	-94945-02-18 10:47 J	-32957190.18	-32957190.05	-32957189.92	0.0284	0.0239	*
Mars	-94942-09-25 07:54 J	-32955875.26	-32955875.17	-32955875.05	0.0283	0.0264	
Mars	-94940-09-29 21:35 J	-32955139.80	-32955139.60	-32955139.39	0.0282	0.0200	
Mercury	-94935-11-06 20:23 J	-32953275.71	-32953275.65	-32953275.57	0.0277	0.0252	
Mercury	-94934-02-03 13:25 J	-32953187.07	-32953186.94	-32953186.81	0.0277	0.0154	
Mercury	-94934-05-03 05:44 J	-32953098.41	-32953098.26	-32953098.10	0.0277	0.0060	
Mercury	-94934-07-30 22:03 J	-32953009.74	-32953009.58	-32953009.43	0.0276	0.0035	
Mercury	-94934-10-27 13:39 J	-32952921.07	-32952920.93	-32952920.79	0.0276	0.0125	
Mercury	-94933-01-24 05:01 J	-32952832.38	-32952832.29	-32952832.19	0.0276	0.0213	
Venus	-94933-04-18 12:56 J	-32952747.06	-32952746.96	-32952746.87	0.0276	0.0246	
Venus	-94933-12-03 23:30 J	-32952517.73	-32952517.52	-32952517.30	0.0275	0.0037	
Moon	-94932-08-13 23:30 J	-32952264.75	-32952264.52	-32952264.28	0.0275	0.0071	
Earth	-94932-08-14 02:37 J	-32952264.62	-32952264.39	-32952264.14	0.0275	0.0083	*
Earth	-94931-08-26 21:06 J	-32951886.78	-32951886.62	-32951886.43	0.0275	0.0193	
Moon	-94931-08-26 22:03 J	-32951886.73	-32951886.58	-32951886.42	0.0275	0.0208	*
Mars	-94926-09-06 06:42 J	-32950050.50	-32950050.22	-32950049.93	0.0276	0.0025	
Mercury	-94920-11-15 11:15 J	-32947788.12	-32947788.03	-32947787.94	0.0282	0.0226	
Mercury	-94919-02-12 01:54 J	-32947699.55	-32947699.42	-32947699.29	0.0282	0.0137	
Mercury	-94919-05-11 16:47 J	-32947610.95	-32947610.80	-32947610.65	0.0282	0.0045	
Mercury	-94919-08-08 07:54 J	-32947522.31	-32947522.17	-32947522.01	0.0282	0.0050	
Mercury	-94919-11-04 23:30 J	-32947433.65	-32947433.52	-32947433.38	0.0283	0.0146	
Mercury	-94918-02-01 15:35 J	-32947344.92	-32947344.85	-32947344.77	0.0283	0.0244	
Venus	-94918-05-12 10:47 J	-32947245.20	-32947245.05	-32947244.89	0.0283	0.0194	
Venus	-94918-12-27 23:30 J	-32947015.71	-32947015.52	-32947015.32	0.0283	0.0107	
Moon	-94917-01-30 07:25 J	-32946982.33	-32946982.19	-32946982.02	0.0283	0.0207	
Earth	-94917-01-30 07:54 J	-32946982.33	-32946982.17	-32946981.99	0.0283	0.0201	*
Earth	-94916-02-11 14:08 J	-32946604.14	-32946603.91	-32946603.68	0.0284	0.0098	
Moon	-94916-02-11 17:15 J	-32946604.01	-32946603.78	-32946603.55	0.0284	0.0086	*

Mars -94912-11-14 15:49 J -32944867.11 -32944866.84 -32944866.55 0.0283 0.0103  
 Mercury -94905-06-22 14:23 J -32942455.02 -32942454.90 -32942454.77 0.0278 0.0182  
 Mercury -94905-09-19 07:11 J -32942366.35 -32942366.20 -32942366.05 0.0277 0.0085  
 Mercury -94905-12-16 23:15 J -32942277.68 -32942277.53 -32942277.37 0.0277 0.0011  
 Mercury -94904-03-15 15:06 J -32942189.01 -32942188.87 -32942188.72 0.0277 0.0101  
 Mercury -94904-06-12 06:42 J -32942100.33 -32942100.22 -32942100.11 0.0277 0.0190  
 Venus -94904-10-29 19:11 J -32941960.83 -32941960.70 -32941960.55 0.0277 0.0207  
 Venus -94903-06-16 06:13 J -32941731.44 -32941731.24 -32941731.03 0.0276 0.0078  
 Earth -94903-08-08 21:06 J -32941677.77 -32941677.62 -32941677.44 0.0276 0.0201  
 Moon -94903-08-09 00:56 J -32941677.63 -32941677.46 -32941677.28 0.0276 0.0193 \*  
 Moon -94902-08-21 18:56 J -32941299.94 -32941299.71 -32941299.46 0.0276 0.0093  
 Earth -94902-08-21 19:39 J -32941299.91 -32941299.68 -32941299.44 0.0276 0.0079 \*  
 Mars -94896-10-25 16:18 J -32939043.07 -32939042.82 -32939042.55 0.0277 0.0127  
 Mercury -94890-04-04 13:54 J -32937055.99 -32937055.92 -32937055.84 0.0281 0.0243  
 Mercury -94890-07-02 04:32 J -32936967.43 -32936967.31 -32936967.19 0.0281 0.0154  
 Mercury -94890-09-28 19:25 J -32936878.84 -32936878.69 -32936878.55 0.0281 0.0063  
 Mercury -94890-12-26 10:32 J -32936790.21 -32936790.06 -32936789.91 0.0282 0.0030  
 Mercury -94889-03-24 01:54 J -32936701.55 -32936701.42 -32936701.28 0.0282 0.0126  
 Mercury -94889-06-20 17:59 J -32936612.85 -32936612.75 -32936612.66 0.0282 0.0223  
 Venus -94889-11-21 19:25 J -32936458.86 -32936458.69 -32936458.50 0.0282 0.0144  
 Venus -94888-07-09 08:08 J -32936229.33 -32936229.16 -32936228.98 0.0283 0.0157  
 Moon -94887-02-06 03:20 J -32936017.60 -32936017.36 -32936017.11 0.0283 0.0042  
 Earth -94887-02-06 06:42 J -32936017.46 -32936017.22 -32936016.97 0.0283 0.0032 \*  
 Moon -94886-02-19 12:13 J -32935639.08 -32935638.99 -32935638.87 0.0284 0.0256  
 Earth -94886-02-19 15:35 J -32935638.92 -32935638.85 -32935638.77 0.0284 0.0270 \*  
 Mars -94881-01-04 21:35 J -32933858.88 -32933858.60 -32933858.30 0.0282 0.0060  
 Mercury -94876-11-09 14:23 J -32931723.00 -32931722.90 -32931722.80 0.0277 0.0213  
 Mercury -94875-02-06 06:56 J -32931634.35 -32931634.21 -32931634.06 0.0277 0.0117  
 Mercury -94875-05-05 23:15 J -32931545.68 -32931545.53 -32931545.37 0.0277 0.0024  
 Mercury -94875-08-02 15:20 J -32931457.01 -32931456.86 -32931456.71 0.0277 0.0070

Mercury -94875-10-30 06:56 J -32931368.33 -32931368.21 -32931368.08 0.0276 0.0160

Mercury -94874-01-26 22:03 J -32931279.64 -32931279.58 -32931279.51 0.0276 0.0248

Venus -94874-05-11 21:49 J -32931174.75 -32931174.59 -32931174.42 0.0276 0.0172

Venus -94874-12-27 08:23 J -32930945.34 -32930945.15 -32930944.95 0.0276 0.0112

Earth -94873-08-15 07:39 J -32930713.42 -32930713.18 -32930712.94 0.0275 0.0051

Moon -94873-08-15 07:54 J -32930713.40 -32930713.17 -32930712.93 0.0275 0.0039 \*

Earth -94872-08-28 02:08 J -32930335.55 -32930335.41 -32930335.27 0.0275 0.0223

Moon -94872-08-28 05:30 J -32930335.38 -32930335.27 -32930335.14 0.0275 0.0238 \*

Mars -94868-12-12 17:44 J -32928767.99 -32928767.76 -32928767.52 0.0276 0.0153

Mars -94866-12-14 09:35 J -32928036.14 -32928036.10 -32928036.04 0.0277 0.0272

Mercury -94861-08-21 13:54 J -32926323.93 -32926323.92 -32926323.89 0.0281 0.0278

Mercury -94861-11-18 04:18 J -32926235.42 -32926235.32 -32926235.21 0.0282 0.0190

Mercury -94860-02-14 19:11 J -32926146.84 -32926146.70 -32926146.56 0.0282 0.0100

Mercury -94860-05-14 10:03 J -32926058.23 -32926058.08 -32926057.92 0.0282 0.0010

Mercury -94860-08-11 01:25 J -32925969.58 -32925969.44 -32925969.29 0.0282 0.0088

Mercury -94860-11-07 17:01 J -32925880.90 -32925880.79 -32925880.67 0.0282 0.0186

Venus -94859-06-03 20:23 J -32925672.84 -32925672.65 -32925672.46 0.0283 0.0116

Venus -94858-01-19 09:06 J -32925443.28 -32925443.12 -32925442.96 0.0283 0.0186

Earth -94858-01-31 12:56 J -32925431.15 -32925430.96 -32925430.76 0.0283 0.0167

Moon -94858-01-31 16:18 J -32925431.00 -32925430.82 -32925430.62 0.0283 0.0176 \*

Earth -94857-02-13 18:56 J -32925052.92 -32925052.71 -32925052.48 0.0284 0.0131

Moon -94857-02-13 21:49 J -32925052.81 -32925052.59 -32925052.36 0.0284 0.0116 \*

Mars -94853-02-18 13:54 J -32923587.04 -32923586.92 -32923586.78 0.0283 0.0256

Mars -94851-02-23 06:13 J -32922851.43 -32922851.24 -32922851.05 0.0282 0.0210

Mercury -94846-03-29 14:51 J -32920990.95 -32920990.88 -32920990.80 0.0278 0.0243

Mercury -94846-06-26 07:54 J -32920902.31 -32920902.17 -32920902.03 0.0278 0.0145

Mercury -94846-09-23 00:27 J -32920813.64 -32920813.48 -32920813.33 0.0277 0.0049

Mercury -94846-12-20 16:32 J -32920724.97 -32920724.81 -32920724.65 0.0277 0.0044

Mercury -94845-03-18 08:08 J -32920636.29 -32920636.16 -32920636.02 0.0277 0.0136

Mercury -94845-06-14 23:30 J -32920547.60 -32920547.52 -32920547.42 0.0277 0.0225



Venus -94845-11-21 03:49 J -32920388.53 -32920388.34 -32920388.15 0.0277 0.0133  
 Venus -94844-07-08 14:23 J -32920159.07 -32920158.90 -32920158.71 0.0276 0.0152  
 Moon -94844-08-10 00:56 J -32920126.66 -32920126.46 -32920126.24 0.0276 0.0159  
 Earth -94844-08-10 01:25 J -32920126.63 -32920126.44 -32920126.24 0.0276 0.0170 \*  
 Moon -94843-08-22 20:08 J -32919748.88 -32919748.66 -32919748.44 0.0276 0.0124  
 Earth -94843-08-22 23:44 J -32919748.74 -32919748.51 -32919748.28 0.0276 0.0109 \*  
 Mars -94837-01-31 16:47 J -32917761.09 -32917760.80 -32917760.51 0.0276 0.0006  
 Mercury -94831-04-07 07:39 J -32915503.28 -32915503.18 -32915503.08 0.0281 0.0204  
 Mercury -94831-07-04 22:18 J -32915414.71 -32915414.57 -32915414.44 0.0281 0.0115  
 Mercury -94831-10-01 13:11 J -32915326.10 -32915325.95 -32915325.80 0.0281 0.0023  
 Mercury -94831-12-29 04:32 J -32915237.46 -32915237.31 -32915237.17 0.0282 0.0072  
 Mercury -94830-03-27 20:08 J -32915148.79 -32915148.66 -32915148.54 0.0282 0.0168  
 Mercury -94830-06-24 11:59 J -32915060.05 -32915060.00 -32915059.95 0.0282 0.0266  
 Venus -94830-12-15 06:13 J -32914886.44 -32914886.24 -32914886.03 0.0282 0.0061  
 Venus -94829-07-31 18:56 J -32914656.81 -32914656.71 -32914656.59 0.0283 0.0241  
 Moon -94828-02-07 11:44 J -32914466.24 -32914466.01 -32914465.77 0.0283 0.0009  
 Earth -94828-02-07 14:08 J -32914466.15 -32914465.91 -32914465.66 0.0283 0.0005 \*  
 Mars -94823-04-10 13:39 J -32912578.20 -32912577.93 -32912577.64 0.0283 0.0088  
 Mercury -94817-08-15 15:06 J -32910258.89 -32910258.87 -32910258.83 0.0277 0.0273  
 Mercury -94817-11-12 08:08 J -32910170.28 -32910170.16 -32910170.03 0.0277 0.0174  
 Mercury -94816-02-09 00:56 J -32910081.62 -32910081.46 -32910081.31 0.0277 0.0078  
 Mercury -94816-05-08 17:01 J -32909992.94 -32909992.79 -32909992.63 0.0277 0.0018  
 Mercury -94816-08-05 08:51 J -32909904.27 -32909904.13 -32909903.98 0.0277 0.0108  
 Mercury -94816-11-02 00:27 J -32909815.59 -32909815.48 -32909815.37 0.0276 0.0197  
 Venus -94815-06-03 07:25 J -32909602.38 -32909602.19 -32909601.98 0.0276 0.0096  
 Venus -94814-01-18 17:59 J -32909372.90 -32909372.75 -32909372.59 0.0276 0.0188  
 Earth -94814-08-17 13:25 J -32909162.18 -32909161.94 -32909161.69 0.0275 0.0019  
 Moon -94814-08-17 17:15 J -32909162.03 -32909161.78 -32909161.54 0.0275 0.0007 \*  
 Earth -94813-08-29 07:54 J -32908784.25 -32908784.17 -32908784.07 0.0275 0.0254  
 Moon -94813-08-29 08:51 J -32908784.17 -32908784.13 -32908784.05 0.0275 0.0266 \*

Mars -94809-03-20 17:01 J -32907484.81 -32907484.79 -32907484.76 0.0275 0.0274  
 Mars -94807-03-21 02:08 J -32906754.65 -32906754.41 -32906754.14 0.0277 0.0138  
 Mercury -94802-08-25 07:39 J -32904771.25 -32904771.18 -32904771.10 0.0281 0.0239  
 Mercury -94802-11-21 22:03 J -32904682.70 -32904682.58 -32904682.45 0.0282 0.0150  
 Mercury -94801-02-18 12:56 J -32904594.11 -32904593.96 -32904593.81 0.0282 0.0059  
 Mercury -94801-05-17 04:03 J -32904505.48 -32904505.33 -32904505.18 0.0282 0.0035  
 Mercury -94801-08-13 19:39 J -32904416.82 -32904416.68 -32904416.55 0.0282 0.0131  
 Mercury -94801-11-10 11:15 J -32904328.11 -32904328.03 -32904327.93 0.0282 0.0228  
 Venus -94800-06-26 07:11 J -32904100.40 -32904100.20 -32904099.99 0.0283 0.0033  
 Earth -94799-02-01 20:23 J -32903879.85 -32903879.65 -32903879.43 0.0283 0.0132  
 Moon -94799-02-01 22:47 J -32903879.76 -32903879.55 -32903879.33 0.0283 0.0140 \*  
 Venus -94799-02-10 20:08 J -32903870.72 -32903870.66 -32903870.60 0.0283 0.0269  
 Moon -94798-02-15 00:42 J -32903501.68 -32903501.47 -32903501.25 0.0284 0.0149  
 Earth -94798-02-15 02:51 J -32903501.58 -32903501.38 -32903501.18 0.0284 0.0165 \*  
 Mars -94793-05-30 09:06 J -32901570.40 -32901570.12 -32901569.83 0.0282 0.0070  
 Mercury -94787-04-01 08:51 J -32899438.23 -32899438.13 -32899438.01 0.0278 0.0203  
 Mercury -94787-06-29 01:39 J -32899349.57 -32899349.43 -32899349.28 0.0278 0.0106  
 Mercury -94787-09-25 18:13 J -32899260.90 -32899260.74 -32899260.58 0.0277 0.0011  
 Mercury -94787-12-23 10:03 J -32899172.22 -32899172.08 -32899171.93 0.0277 0.0083  
 Mercury -94786-03-22 01:54 J -32899083.54 -32899083.42 -32899083.30 0.0277 0.0173  
 Mercury -94786-06-18 17:15 J -32898994.83 -32898994.78 -32898994.73 0.0277 0.0261  
 Venus -94786-12-14 13:25 J -32898816.14 -32898815.94 -32898815.72 0.0277 0.0056  
 Venus -94785-07-30 23:59 J -32898586.61 -32898586.50 -32898586.38 0.0276 0.0229  
 Moon -94785-08-11 03:35 J -32898575.58 -32898575.35 -32898575.13 0.0276 0.0124  
 Earth -94785-08-11 07:25 J -32898575.41 -32898575.19 -32898574.98 0.0276 0.0138 \*  
 Moon -94784-08-24 03:49 J -32898197.53 -32898197.34 -32898197.14 0.0276 0.0155  
 Earth -94784-08-24 05:30 J -32898197.48 -32898197.27 -32898197.06 0.0276 0.0140 \*  
 Mars -94779-05-09 05:30 J -32896478.52 -32896478.27 -32896478.01 0.0276 0.0134  
 Mercury -94772-01-11 11:01 J -32894039.10 -32894039.04 -32894038.97 0.0281 0.0252  
 Mercury -94772-04-10 01:25 J -32893950.56 -32893950.44 -32893950.32 0.0281 0.0163

Mercury -94772-07-07 16:18 J -32893861.97 -32893861.82 -32893861.68 0.0281 0.0073  
 Mercury -94772-10-04 07:25 J -32893773.35 -32893773.19 -32893773.04 0.0281 0.0022  
 Mercury -94772-12-31 22:47 J -32893684.69 -32893684.55 -32893684.41 0.0282 0.0116  
 Mercury -94771-03-30 14:23 J -32893596.00 -32893595.90 -32893595.80 0.0282 0.0213  
 Venus -94771-05-22 05:59 J -32893543.29 -32893543.25 -32893543.19 0.0282 0.0274  
 Venus -94770-01-06 17:59 J -32893313.96 -32893313.75 -32893313.54 0.0282 0.0025  
 Moon -94770-01-27 17:30 J -32893292.85 -32893292.77 -32893292.66 0.0282 0.0256  
 Earth -94770-01-27 20:23 J -32893292.75 -32893292.65 -32893292.54 0.0282 0.0253 \*  
 Earth -94769-02-09 23:30 J -32892914.76 -32892914.52 -32892914.28 0.0283 0.0039  
 Moon -94769-02-10 01:11 J -32892914.68 -32892914.45 -32892914.21 0.0283 0.0027 \*  
 Mars -94765-07-15 00:13 J -32891297.65 -32891297.49 -32891297.33 0.0283 0.0238  
 Mars -94763-07-20 11:15 J -32890562.19 -32890562.03 -32890561.84 0.0282 0.0226  
 Mercury -94758-08-19 09:49 J -32888706.17 -32888706.09 -32888706.00 0.0277 0.0230  
 Mercury -94758-11-16 02:37 J -32888617.53 -32888617.39 -32888617.24 0.0277 0.0132  
 Mercury -94757-02-12 19:11 J -32888528.86 -32888528.70 -32888528.54 0.0277 0.0037  
 Mercury -94757-05-11 11:15 J -32888440.18 -32888440.03 -32888439.87 0.0277 0.0057  
 Mercury -94757-08-08 03:06 J -32888351.50 -32888351.37 -32888351.24 0.0277 0.0148  
 Mercury -94757-11-04 18:13 J -32888262.81 -32888262.74 -32888262.65 0.0277 0.0237  
 Venus -94756-06-25 18:27 J -32888029.95 -32888029.73 -32888029.52 0.0276 0.0016  
 Earth -94756-08-05 20:37 J -32887988.70 -32887988.64 -32887988.55 0.0276 0.0263  
 Moon -94756-08-06 00:56 J -32887988.57 -32887988.46 -32887988.36 0.0276 0.0251 \*  
 Venus -94755-02-10 04:18 J -32887800.36 -32887800.32 -32887800.26 0.0276 0.0268  
 Earth -94755-08-18 21:20 J -32887610.86 -32887610.61 -32887610.37 0.0275 0.0015  
 Moon -94755-08-18 23:01 J -32887610.79 -32887610.54 -32887610.29 0.0275 0.0030 \*  
 Mars -94749-06-26 08:08 J -32885472.45 -32885472.16 -32885471.87 0.0276 0.0005  
 Mercury -94743-08-28 01:39 J -32883218.53 -32883218.43 -32883218.32 0.0281 0.0197  
 Mercury -94743-11-24 16:18 J -32883129.96 -32883129.82 -32883129.68 0.0282 0.0107  
 Mercury -94742-02-21 07:11 J -32883041.35 -32883041.20 -32883041.04 0.0282 0.0017  
 Mercury -94742-05-20 22:32 J -32882952.71 -32882952.56 -32882952.41 0.0282 0.0080  
 Mercury -94742-08-17 14:08 J -32882864.03 -32882863.91 -32882863.79 0.0282 0.0176

Mercury -94742-11-14 06:13 J -32882775.28 -32882775.24 -32882775.21 0.0282 0.0275  
 Venus -94742-12-02 07:25 J -32882757.28 -32882757.19 -32882757.07 0.0282 0.0246  
 Venus -94741-07-18 19:39 J -32882527.89 -32882527.68 -32882527.47 0.0283 0.0054  
 Moon -94740-02-03 04:32 J -32882328.53 -32882328.31 -32882328.07 0.0283 0.0106  
 Earth -94740-02-03 06:27 J -32882328.45 -32882328.23 -32882327.99 0.0283 0.0095 \*  
 Moon -94739-02-16 09:35 J -32881950.28 -32881950.10 -32881949.92 0.0283 0.0185  
 Earth -94739-02-16 12:56 J -32881950.12 -32881949.96 -32881949.78 0.0283 0.0201 \*  
 Mars -94735-09-04 06:42 J -32880289.50 -32880289.22 -32880288.93 0.0283 0.0076  
 Mercury -94728-01-05 10:18 J -32877974.12 -32877974.07 -32877974.01 0.0278 0.0259  
 Mercury -94728-04-04 03:20 J -32877885.49 -32877885.36 -32877885.23 0.0278 0.0161  
 Mercury -94728-07-01 19:54 J -32877796.82 -32877796.67 -32877796.51 0.0278 0.0065  
 Mercury -94728-09-28 12:13 J -32877708.15 -32877707.99 -32877707.83 0.0277 0.0030  
 Mercury -94728-12-26 04:03 J -32877619.47 -32877619.33 -32877619.19 0.0277 0.0122  
 Mercury -94727-03-24 19:39 J -32877530.78 -32877530.68 -32877530.58 0.0277 0.0212  
 Venus -94727-05-21 11:59 J -32877473.05 -32877473.00 -32877472.92 0.0277 0.0264  
 Venus -94726-01-05 23:59 J -32877243.72 -32877243.50 -32877243.29 0.0277 0.0025  
 Moon -94726-08-13 12:56 J -32877024.18 -32877023.96 -32877023.73 0.0276 0.0091  
 Earth -94726-08-13 14:08 J -32877024.13 -32877023.91 -32877023.67 0.0276 0.0106 \*  
 Earth -94725-08-25 12:13 J -32876646.18 -32876645.99 -32876645.80 0.0276 0.0172  
 Moon -94725-08-25 14:37 J -32876646.06 -32876645.89 -32876645.70 0.0276 0.0187 \*  
 Mars -94721-08-15 04:18 J -32875195.42 -32875195.32 -32875195.21 0.0276 0.0256  
 Mars -94719-08-15 18:42 J -32874464.96 -32874464.72 -32874464.48 0.0277 0.0158  
 Mercury -94713-01-15 05:01 J -32872486.38 -32872486.29 -32872486.18 0.0281 0.0210  
 Mercury -94713-04-12 19:39 J -32872397.81 -32872397.68 -32872397.54 0.0281 0.0121  
 Mercury -94713-07-10 10:47 J -32872309.20 -32872309.05 -32872308.90 0.0281 0.0029  
 Mercury -94713-10-07 01:54 J -32872220.57 -32872220.42 -32872220.27 0.0282 0.0066  
 Mercury -94712-01-03 17:30 J -32872131.90 -32872131.77 -32872131.65 0.0282 0.0162  
 Mercury -94712-04-02 09:20 J -32872043.17 -32872043.11 -32872043.05 0.0282 0.0260  
 Venus -94712-06-13 18:42 J -32871970.87 -32871970.72 -32871970.56 0.0282 0.0187  
 Venus -94711-01-29 06:42 J -32871741.41 -32871741.22 -32871741.02 0.0282 0.0114

Earth -94711-01-29 06:56 J -32871741.36 -32871741.21 -32871741.05 0.0282 0.0216 \*  
 Moon -94711-01-29 08:23 J -32871741.29 -32871741.15 -32871741.00 0.0282 0.0221 \*  
 Earth -94710-02-11 10:32 J -32871363.29 -32871363.06 -32871362.82 0.0283 0.0076  
 Moon -94710-02-11 14:08 J -32871363.15 -32871362.91 -32871362.67 0.0283 0.0063 \*  
 Mars -94705-10-25 01:39 J -32869280.70 -32869280.43 -32869280.14 0.0282 0.0089  
 Mercury -94699-08-22 04:47 J -32867153.41 -32867153.30 -32867153.17 0.0277 0.0184  
 Mercury -94699-11-18 21:35 J -32867064.75 -32867064.60 -32867064.45 0.0277 0.0087  
 Mercury -94698-02-15 13:54 J -32866976.08 -32866975.92 -32866975.76 0.0277 0.0008  
 Mercury -94698-05-15 05:44 J -32866887.40 -32866887.26 -32866887.11 0.0277 0.0100  
 Mercury -94698-08-11 21:20 J -32866798.72 -32866798.61 -32866798.49 0.0277 0.0190  
 Venus -94698-12-01 18:56 J -32866686.83 -32866686.71 -32866686.57 0.0276 0.0220  
 Venus -94697-07-18 06:13 J -32866457.44 -32866457.24 -32866457.03 0.0276 0.0068  
 Earth -94697-08-07 06:42 J -32866437.35 -32866437.22 -32866437.07 0.0276 0.0227  
 Moon -94697-08-07 08:08 J -32866437.33 -32866437.16 -32866437.00 0.0276 0.0214 \*  
 Moon -94696-08-20 04:03 J -32866059.58 -32866059.33 -32866059.09 0.0276 0.0066  
 Earth -94696-08-20 06:56 J -32866059.45 -32866059.21 -32866058.97 0.0276 0.0050 \*  
 Mars -94691-10-03 02:23 J -32864189.66 -32864189.40 -32864189.14 0.0276 0.0123  
 Mercury -94684-06-03 05:30 J -32861754.33 -32861754.27 -32861754.19 0.0281 0.0243  
 Mercury -94684-08-30 20:08 J -32861665.79 -32861665.66 -32861665.54 0.0281 0.0154  
 Mercury -94684-11-27 10:47 J -32861577.19 -32861577.05 -32861576.90 0.0282 0.0063  
 Mercury -94683-02-24 01:54 J -32861488.57 -32861488.42 -32861488.27 0.0282 0.0031  
 Mercury -94683-05-23 17:15 J -32861399.91 -32861399.78 -32861399.64 0.0282 0.0127  
 Mercury -94683-08-20 08:51 J -32861311.21 -32861311.13 -32861311.03 0.0282 0.0225  
 Venus -94683-12-24 20:37 J -32861184.81 -32861184.64 -32861184.46 0.0282 0.0157  
 Venus -94682-08-11 08:37 J -32860955.31 -32860955.14 -32860954.95 0.0283 0.0145  
 Moon -94681-02-05 14:23 J -32860777.13 -32860776.90 -32860776.66 0.0283 0.0068  
 Earth -94681-02-05 17:59 J -32860776.99 -32860776.75 -32860776.51 0.0283 0.0057 \*  
 Moon -94680-02-18 00:13 J -32860398.62 -32860398.49 -32860398.33 0.0283 0.0224  
 Earth -94680-02-18 00:27 J -32860398.60 -32860398.48 -32860398.34 0.0283 0.0238 \*  
 Mars -94677-12-08 20:23 J -32859008.81 -32859008.65 -32859008.45 0.0283 0.0226

Mars -94675-12-14 09:20 J -32858273.26 -32858273.11 -32858272.96 0.0282 0.0240  
 Mercury -94669-01-09 05:01 J -32856421.38 -32856421.29 -32856421.18 0.0278 0.0215  
 Mercury -94669-04-06 22:03 J -32856332.72 -32856332.58 -32856332.43 0.0278 0.0117  
 Mercury -94669-07-04 14:37 J -32856244.05 -32856243.89 -32856243.74 0.0277 0.0022  
 Mercury -94669-10-01 06:42 J -32856155.37 -32856155.22 -32856155.07 0.0277 0.0073  
 Mercury -94669-12-28 22:18 J -32856066.69 -32856066.57 -32856066.44 0.0277 0.0164  
 Mercury -94668-03-27 13:39 J -32855977.98 -32855977.93 -32855977.86 0.0277 0.0253  
 Venus -94668-06-12 23:59 J -32855900.66 -32855900.50 -32855900.34 0.0277 0.0181  
 Venus -94667-01-28 11:01 J -32855671.23 -32855671.04 -32855670.84 0.0277 0.0107  
 Earth -94667-08-14 23:01 J -32855472.78 -32855472.54 -32855472.30 0.0276 0.0071  
 Moon -94667-08-15 02:08 J -32855472.65 -32855472.41 -32855472.17 0.0276 0.0055 \*  
 Earth -94666-08-27 20:08 J -32855094.81 -32855094.66 -32855094.49 0.0276 0.0204  
 Moon -94666-08-27 23:44 J -32855094.66 -32855094.51 -32855094.36 0.0276 0.0218 \*  
 Mars -94661-11-20 22:47 J -32853182.83 -32853182.55 -32853182.25 0.0277 0.0025  
 Mercury -94655-10-21 09:06 J -32851022.18 -32851022.12 -32851022.06 0.0281 0.0255  
 Mercury -94654-01-17 23:30 J -32850933.64 -32850933.52 -32850933.40 0.0281 0.0167  
 Mercury -94654-04-16 14:08 J -32850845.05 -32850844.91 -32850844.76 0.0281 0.0076  
 Mercury -94654-07-14 05:15 J -32850756.43 -32850756.28 -32850756.13 0.0282 0.0017  
 Mercury -94654-10-10 20:37 J -32850667.78 -32850667.64 -32850667.50 0.0282 0.0113  
 Mercury -94653-01-07 12:13 J -32850579.09 -32850578.99 -32850578.88 0.0282 0.0210  
 Venus -94653-07-06 07:54 J -32850398.36 -32850398.17 -32850397.97 0.0282 0.0098  
 Earth -94652-01-30 18:42 J -32850189.91 -32850189.72 -32850189.54 0.0283 0.0178  
 Moon -94652-01-30 22:18 J -32850189.75 -32850189.57 -32850189.38 0.0283 0.0183 \*  
 Venus -94652-02-20 20:08 J -32850168.79 -32850168.66 -32850168.51 0.0283 0.0205  
 Earth -94651-02-12 22:47 J -32849811.77 -32849811.55 -32849811.32 0.0283 0.0114  
 Moon -94651-02-12 23:30 J -32849811.75 -32849811.52 -32849811.28 0.0283 0.0101 \*  
 Mars -94646-01-30 08:37 J -32847999.43 -32847999.14 -32847998.84 0.0283 0.0055  
 Mercury -94640-05-28 07:11 J -32845689.28 -32845689.20 -32845689.11 0.0278 0.0235  
 Mercury -94640-08-25 00:13 J -32845600.63 -32845600.49 -32845600.35 0.0277 0.0137  
 Mercury -94640-11-21 16:47 J -32845511.96 -32845511.80 -32845511.65 0.0277 0.0042

Mercury -94639-02-18 08:51 J -32845423.29 -32845423.13 -32845422.98 0.0277 0.0052

Mercury -94639-05-18 00:42 J -32845334.61 -32845334.47 -32845334.34 0.0277 0.0144

Mercury -94639-08-14 16:03 J -32845245.91 -32845245.83 -32845245.75 0.0277 0.0233

Venus -94639-12-24 07:54 J -32845114.35 -32845114.17 -32845113.98 0.0276 0.0134

Moon -94638-08-09 14:23 J -32844886.09 -32844885.90 -32844885.70 0.0276 0.0176

Earth -94638-08-09 17:44 J -32844885.94 -32844885.76 -32844885.58 0.0276 0.0190 \*

Venus -94638-08-10 18:42 J -32844884.90 -32844884.72 -32844884.54 0.0276 0.0152

Moon -94637-08-21 13:54 J -32844508.14 -32844507.92 -32844507.69 0.0276 0.0100

Earth -94637-08-21 17:01 J -32844508.02 -32844507.79 -32844507.55 0.0276 0.0085 \*

Mars -94632-01-09 04:32 J -32842906.43 -32842906.31 -32842906.17 0.0275 0.0246

Mars -94630-01-09 17:44 J -32842175.99 -32842175.76 -32842175.52 0.0277 0.0171

Mercury -94625-06-05 23:59 J -32840201.60 -32840201.50 -32840201.39 0.0281 0.0199

Mercury -94625-09-02 14:37 J -32840113.03 -32840112.89 -32840112.75 0.0282 0.0109

Mercury -94625-11-30 05:30 J -32840024.42 -32840024.27 -32840024.12 0.0282 0.0017

Mercury -94624-02-26 20:37 J -32839935.78 -32839935.64 -32839935.49 0.0282 0.0079

Mercury -94624-05-26 12:13 J -32839847.11 -32839846.99 -32839846.87 0.0282 0.0175

Mercury -94624-08-23 04:03 J -32839758.36 -32839758.33 -32839758.29 0.0282 0.0273

Venus -94623-01-16 10:03 J -32839612.28 -32839612.08 -32839611.87 0.0283 0.0067

Venus -94623-09-02 22:18 J -32839382.67 -32839382.57 -32839382.45 0.0283 0.0236

Moon -94622-02-07 05:44 J -32839225.50 -32839225.26 -32839225.03 0.0283 0.0030

Earth -94622-02-07 06:13 J -32839225.48 -32839225.24 -32839224.99 0.0283 0.0018 \*

Earth -94621-02-20 13:11 J -32838846.99 -32838846.95 -32838846.88 0.0283 0.0275

Moon -94621-02-20 16:18 J -32838846.90 -32838846.82 -32838846.71 0.0283 0.0261 \*

Mars -94616-03-21 00:56 J -32836991.73 -32836991.46 -32836991.18 0.0282 0.0104

Mercury -94611-10-15 07:11 J -32834957.24 -32834957.20 -32834957.15 0.0278 0.0267

Mercury -94610-01-12 00:13 J -32834868.61 -32834868.49 -32834868.36 0.0277 0.0168

Mercury -94610-04-10 17:01 J -32834779.94 -32834779.79 -32834779.64 0.0277 0.0071

Mercury -94610-07-08 09:20 J -32834691.27 -32834691.11 -32834690.95 0.0277 0.0024

Mercury -94610-10-05 01:11 J -32834602.59 -32834602.45 -32834602.30 0.0277 0.0116

Mercury -94609-01-01 16:47 J -32834513.90 -32834513.80 -32834513.69 0.0277 0.0207

Venus -94609-07-05 11:59 J -32834328.19 -32834328.00 -32834327.79 0.0277 0.0097  
 Venus -94608-02-19 23:01 J -32834098.69 -32834098.54 -32834098.38 0.0276 0.0191  
 Earth -94608-08-16 08:37 J -32833921.38 -32833921.14 -32833920.89 0.0276 0.0037  
 Moon -94608-08-16 11:44 J -32833921.27 -32833921.01 -32833920.76 0.0276 0.0021 \*  
 Moon -94607-08-29 04:03 J -32833543.43 -32833543.33 -32833543.21 0.0276 0.0248  
 Earth -94607-08-29 05:15 J -32833543.40 -32833543.28 -32833543.15 0.0276 0.0236 \*  
 Mars -94602-02-27 12:56 J -32831900.22 -32831899.96 -32831899.69 0.0277 0.0106  
 Mercury -94596-10-24 03:06 J -32829469.46 -32829469.37 -32829469.27 0.0281 0.0214  
 Mercury -94595-01-20 17:44 J -32829380.89 -32829380.76 -32829380.62 0.0281 0.0124  
 Mercury -94595-04-19 08:37 J -32829292.29 -32829292.14 -32829291.99 0.0282 0.0032  
 Mercury -94595-07-16 23:44 J -32829203.65 -32829203.51 -32829203.36 0.0282 0.0064  
 Mercury -94595-10-13 15:20 J -32829114.98 -32829114.86 -32829114.73 0.0282 0.0160  
 Mercury -94594-01-10 07:11 J -32829026.26 -32829026.20 -32829026.14 0.0282 0.0258  
 Venus -94594-07-29 21:06 J -32828825.83 -32828825.62 -32828825.41 0.0282 0.0009  
 Earth -94593-02-02 05:44 J -32828638.46 -32828638.26 -32828638.04 0.0283 0.0140  
 Moon -94593-02-02 06:27 J -32828638.44 -32828638.23 -32828638.01 0.0283 0.0148 \*  
 Moon -94592-02-14 07:25 J -32828260.40 -32828260.19 -32828259.96 0.0283 0.0136  
 Earth -94592-02-14 10:32 J -32828260.26 -32828260.06 -32828259.85 0.0283 0.0151 \*  
 Mars -94588-05-06 01:54 J -32826718.62 -32826718.42 -32826718.20 0.0283 0.0204  
 Mars -94586-05-11 10:32 J -32825983.16 -32825983.06 -32825982.94 0.0282 0.0260  
 Mercury -94581-05-31 02:51 J -32824136.50 -32824136.38 -32824136.26 0.0277 0.0187  
 Mercury -94581-08-27 19:39 J -32824047.83 -32824047.68 -32824047.53 0.0277 0.0090  
 Mercury -94581-11-24 11:59 J -32823959.16 -32823959.00 -32823958.84 0.0277 0.0006  
 Mercury -94580-02-21 03:49 J -32823870.48 -32823870.34 -32823870.19 0.0277 0.0098  
 Mercury -94580-05-20 19:25 J -32823781.80 -32823781.69 -32823781.57 0.0277 0.0189  
 Mercury -94580-08-17 10:47 J -32823693.05 -32823693.05 -32823693.05 0.0277 0.0277  
 Venus -94579-01-15 21:06 J -32823541.83 -32823541.62 -32823541.41 0.0276 0.0048  
 Moon -94579-08-11 02:23 J -32823334.61 -32823334.40 -32823334.19 0.0276 0.0139  
 Earth -94579-08-11 05:15 J -32823334.48 -32823334.28 -32823334.07 0.0276 0.0153 \*  
 Venus -94579-09-02 07:25 J -32823312.29 -32823312.19 -32823312.08 0.0276 0.0238



Earth -94578-08-24 03:49 J -32822956.56 -32822956.34 -32822956.12 0.0275 0.0120  
 Moon -94578-08-24 05:01 J -32822956.49 -32822956.29 -32822956.08 0.0275 0.0135 \*  
 Mars -94572-04-17 00:56 J -32820893.74 -32820893.46 -32820893.16 0.0276 0.0037  
 Mercury -94566-03-13 03:49 J -32818737.40 -32818737.34 -32818737.26 0.0281 0.0245  
 Mercury -94566-06-09 18:13 J -32818648.86 -32818648.74 -32818648.61 0.0281 0.0156  
 Mercury -94566-09-06 09:06 J -32818560.27 -32818560.12 -32818559.97 0.0282 0.0064  
 Mercury -94566-12-04 00:13 J -32818471.64 -32818471.49 -32818471.34 0.0282 0.0030  
 Mercury -94565-03-01 15:35 J -32818382.99 -32818382.85 -32818382.72 0.0282 0.0125  
 Mercury -94565-05-29 07:11 J -32818294.29 -32818294.20 -32818294.10 0.0282 0.0223  
 Venus -94565-06-23 11:30 J -32818269.04 -32818269.02 -32818268.97 0.0282 0.0278  
 Earth -94564-01-26 16:32 J -32818051.89 -32818051.81 -32818051.73 0.0283 0.0266  
 Moon -94564-01-26 16:18 J -32818051.87 -32818051.82 -32818051.76 0.0283 0.0274 \*  
 Venus -94564-02-07 23:15 J -32818039.74 -32818039.53 -32818039.32 0.0283 0.0023  
 Earth -94563-02-08 18:13 J -32817673.99 -32817673.74 -32817673.50 0.0283 0.0020  
 Moon -94563-02-08 21:20 J -32817673.85 -32817673.61 -32817673.37 0.0283 0.0007 \*  
 Mars -94558-06-26 05:59 J -32815710.54 -32815710.25 -32815709.95 0.0283 0.0041  
 Mercury -94552-10-18 02:37 J -32813404.48 -32813404.39 -32813404.29 0.0277 0.0219  
 Mercury -94551-01-14 19:39 J -32813315.83 -32813315.68 -32813315.54 0.0277 0.0122  
 Mercury -94551-04-13 11:59 J -32813227.16 -32813227.00 -32813226.84 0.0277 0.0026  
 Mercury -94551-07-11 04:03 J -32813138.48 -32813138.33 -32813138.17 0.0277 0.0069  
 Mercury -94551-10-07 19:54 J -32813049.79 -32813049.67 -32813049.54 0.0277 0.0160  
 Mercury -94550-01-04 11:15 J -32812961.09 -32812961.03 -32812960.96 0.0277 0.0249  
 Venus -94550-07-29 00:42 J -32812755.69 -32812755.47 -32812755.26 0.0276 0.0012  
 Moon -94550-08-05 19:25 J -32812747.75 -32812747.69 -32812747.62 0.0276 0.0266  
 Venus -94549-03-14 11:15 J -32812526.05 -32812526.03 -32812526.02 0.0276 0.0275  
 Moon -94549-08-17 17:15 J -32812370.04 -32812369.78 -32812369.53 0.0276 0.0013  
 Earth -94549-08-17 18:42 J -32812369.97 -32812369.72 -32812369.47 0.0276 0.0003 \*  
 Earth -94548-08-30 14:23 J -32811991.95 -32811991.90 -32811991.84 0.0276 0.0268  
 Mars -94544-06-05 11:15 J -32810617.17 -32810617.03 -32810616.86 0.0276 0.0231  
 Mars -94542-06-06 04:32 J -32809886.52 -32809886.31 -32809886.09 0.0277 0.0188

Mercury -94537-07-30 06:56 J -32808005.26 -32808005.21 -32808005.16 0.0281 0.0261  
 Mercury -94537-10-26 21:06 J -32807916.73 -32807916.62 -32807916.50 0.0281 0.0173  
 Mercury -94536-01-23 11:59 J -32807828.14 -32807828.00 -32807827.86 0.0282 0.0081  
 Mercury -94536-04-22 02:51 J -32807739.53 -32807739.38 -32807739.22 0.0282 0.0015  
 Mercury -94536-07-19 18:13 J -32807650.88 -32807650.74 -32807650.60 0.0282 0.0108  
 Mercury -94536-10-16 09:49 J -32807562.19 -32807562.09 -32807561.98 0.0282 0.0206  
 Venus -94535-01-03 21:35 J -32807482.73 -32807482.60 -32807482.47 0.0282 0.0222  
 Venus -94535-08-21 09:35 J -32807253.30 -32807253.10 -32807252.90 0.0283 0.0080  
 Moon -94534-02-03 12:42 J -32807087.19 -32807086.97 -32807086.74 0.0283 0.0116  
 Earth -94534-02-03 16:32 J -32807087.04 -32807086.81 -32807086.59 0.0283 0.0103 \*  
 Moon -94533-02-16 18:56 J -32806708.90 -32806708.71 -32806708.52 0.0283 0.0173  
 Earth -94533-02-16 21:49 J -32806708.77 -32806708.59 -32806708.41 0.0283 0.0187 \*  
 Mars -94528-08-16 04:03 J -32804701.59 -32804701.33 -32804701.06 0.0282 0.0123  
 Mercury -94522-03-07 05:15 J -32802672.36 -32802672.28 -32802672.19 0.0278 0.0238  
 Mercury -94522-06-03 22:18 J -32802583.71 -32802583.57 -32802583.43 0.0277 0.0139  
 Mercury -94522-08-31 14:51 J -32802495.04 -32802494.88 -32802494.72 0.0277 0.0043  
 Mercury -94522-11-28 06:56 J -32802406.36 -32802406.21 -32802406.05 0.0277 0.0052  
 Mercury -94521-02-24 22:47 J -32802317.68 -32802317.55 -32802317.41 0.0277 0.0143  
 Mercury -94521-05-23 14:08 J -32802228.98 -32802228.91 -32802228.82 0.0277 0.0233  
 Venus -94521-06-22 22:32 J -32802198.63 -32802198.56 -32802198.46 0.0277 0.0252  
 Venus -94520-02-07 10:03 J -32801969.29 -32801969.08 -32801968.87 0.0276 0.0038  
 Earth -94520-08-12 16:32 J -32801783.03 -32801782.81 -32801782.58 0.0276 0.0116  
 Moon -94520-08-12 17:30 J -32801782.99 -32801782.77 -32801782.54 0.0276 0.0103 \*  
 Earth -94519-08-25 14:08 J -32801405.10 -32801404.91 -32801404.69 0.0275 0.0156  
 Moon -94519-08-25 18:13 J -32801404.94 -32801404.74 -32801404.55 0.0275 0.0169 \*  
 Mars -94514-07-24 17:59 J -32799611.01 -32799610.75 -32799610.47 0.0276 0.0094  
 Mercury -94507-03-15 21:49 J -32797184.68 -32797184.59 -32797184.48 0.0281 0.0203  
 Mercury -94507-06-12 12:27 J -32797096.11 -32797095.98 -32797095.84 0.0282 0.0113  
 Mercury -94507-09-09 03:20 J -32797007.51 -32797007.36 -32797007.21 0.0282 0.0021  
 Mercury -94507-12-06 18:27 J -32796918.87 -32796918.73 -32796918.58 0.0282 0.0075

Mercury -94506-03-05 10:03 J -32796830.20 -32796830.08 -32796829.96 0.0282 0.0171

Mercury -94506-06-02 01:54 J -32796741.46 -32796741.42 -32796741.38 0.0282 0.0270

Venus -94506-07-16 23:44 J -32796696.65 -32796696.51 -32796696.34 0.0282 0.0192

Earth -94505-01-29 02:23 J -32796500.53 -32796500.40 -32796500.25 0.0283 0.0230

Moon -94505-01-29 05:44 J -32796500.37 -32796500.26 -32796500.12 0.0283 0.0240 \*

Venus -94505-03-02 11:44 J -32796467.20 -32796467.01 -32796466.81 0.0283 0.0112

Earth -94504-02-10 04:47 J -32796122.54 -32796122.30 -32796122.06 0.0283 0.0057

Moon -94504-02-10 07:25 J -32796122.43 -32796122.19 -32796121.94 0.0283 0.0042 \*

Mars -94500-09-29 21:06 J -32794429.83 -32794429.62 -32794429.39 0.0283 0.0192

Mars -94498-10-05 06:56 J -32793694.28 -32793694.21 -32793694.13 0.0282 0.0272

Mercury -94493-07-24 04:47 J -32791940.33 -32791940.30 -32791940.27 0.0277 0.0272

Mercury -94493-10-20 21:49 J -32791851.71 -32791851.59 -32791851.46 0.0277 0.0173

Mercury -94492-01-17 14:37 J -32791763.04 -32791762.89 -32791762.74 0.0277 0.0076

Mercury -94492-04-16 06:56 J -32791674.37 -32791674.21 -32791674.05 0.0277 0.0020

Mercury -94492-07-13 22:47 J -32791585.69 -32791585.55 -32791585.40 0.0277 0.0113

Mercury -94492-10-10 14:37 J -32791497.00 -32791496.89 -32791496.79 0.0277 0.0203

Venus -94491-01-03 01:25 J -32791412.57 -32791412.44 -32791412.31 0.0277 0.0217

Moon -94491-08-07 01:54 J -32791196.56 -32791196.42 -32791196.27 0.0276 0.0227

Earth -94491-08-07 02:51 J -32791196.50 -32791196.38 -32791196.26 0.0276 0.0241 \*

Venus -94491-08-20 12:42 J -32791183.17 -32791182.97 -32791182.76 0.0276 0.0073

Moon -94490-08-20 00:42 J -32790818.71 -32790818.47 -32790818.22 0.0276 0.0048

Earth -94490-08-20 04:18 J -32790818.56 -32790818.32 -32790818.07 0.0276 0.0033 \*

Mars -94484-09-11 05:30 J -32788604.55 -32788604.27 -32788603.98 0.0277 0.0051

Mercury -94478-08-03 00:27 J -32786452.57 -32786452.48 -32786452.39 0.0281 0.0223

Mercury -94478-10-30 14:51 J -32786364.01 -32786363.88 -32786363.75 0.0282 0.0133

Mercury -94477-01-27 05:44 J -32786275.41 -32786275.26 -32786275.11 0.0282 0.0040

Mercury -94477-04-24 20:51 J -32786186.78 -32786186.63 -32786186.48 0.0282 0.0054

Mercury -94477-07-22 12:13 J -32786098.11 -32786097.99 -32786097.86 0.0282 0.0151

Mercury -94477-10-19 04:03 J -32786009.40 -32786009.33 -32786009.26 0.0282 0.0249

Venus -94476-01-26 08:23 J -32785910.32 -32785910.15 -32785909.96 0.0282 0.0140

Venus -94476-09-12 20:51 J -32785680.80 -32785680.63 -32785680.46 0.0283 0.0165  
 Moon -94475-02-04 22:32 J -32785535.78 -32785535.56 -32785535.32 0.0283 0.0082  
 Earth -94475-02-05 00:56 J -32785535.69 -32785535.46 -32785535.22 0.0283 0.0068 \*  
 Earth -94474-02-18 06:42 J -32785157.35 -32785157.22 -32785157.05 0.0283 0.0223  
 Moon -94474-02-18 08:23 J -32785157.30 -32785157.15 -32785156.98 0.0283 0.0207 \*  
 Mars -94470-11-21 06:42 J -32783420.51 -32783420.22 -32783419.92 0.0283 0.0023  
 Mercury -94463-03-10 00:42 J -32781119.58 -32781119.47 -32781119.35 0.0277 0.0191  
 Mercury -94463-06-06 17:30 J -32781030.92 -32781030.77 -32781030.62 0.0277 0.0093  
 Mercury -94463-09-03 09:49 J -32780942.24 -32780942.09 -32780941.93 0.0277 0.0007  
 Mercury -94463-12-01 01:54 J -32780853.57 -32780853.42 -32780853.27 0.0277 0.0096  
 Mercury -94462-02-27 17:30 J -32780764.88 -32780764.77 -32780764.65 0.0277 0.0187  
 Mercury -94462-05-27 08:51 J -32780676.14 -32780676.13 -32780676.11 0.0277 0.0275  
 Venus -94462-07-16 11:30 J -32780626.18 -32780626.02 -32780625.84 0.0276 0.0166  
 Venus -94461-03-01 22:32 J -32780396.75 -32780396.56 -32780396.37 0.0276 0.0123  
 Earth -94461-08-14 03:20 J -32780231.60 -32780231.36 -32780231.12 0.0276 0.0079  
 Moon -94461-08-14 06:56 J -32780231.45 -32780231.21 -32780230.97 0.0276 0.0064 \*  
 Earth -94460-08-26 23:59 J -32779853.66 -32779853.50 -32779853.31 0.0275 0.0190  
 Moon -94460-08-27 01:11 J -32779853.62 -32779853.45 -32779853.27 0.0275 0.0200 \*  
 Mars -94456-10-30 17:30 J -32778327.93 -32778327.77 -32778327.59 0.0275 0.0219  
 Mars -94454-10-31 06:56 J -32777597.40 -32777597.21 -32777596.99 0.0276 0.0200  
 Mercury -94449-12-20 01:11 J -32775720.51 -32775720.45 -32775720.38 0.0281 0.0252  
 Mercury -94448-03-18 15:35 J -32775631.97 -32775631.85 -32775631.73 0.0281 0.0164  
 Mercury -94448-06-15 06:13 J -32775543.38 -32775543.24 -32775543.09 0.0282 0.0073  
 Mercury -94448-09-11 21:20 J -32775454.76 -32775454.61 -32775454.46 0.0282 0.0021  
 Mercury -94448-12-09 12:42 J -32775366.11 -32775365.97 -32775365.83 0.0282 0.0117  
 Mercury -94447-03-08 04:03 J -32775277.42 -32775277.33 -32775277.22 0.0282 0.0216  
 Venus -94447-08-08 11:15 J -32775124.23 -32775124.03 -32775123.84 0.0282 0.0107  
 Earth -94446-01-30 11:01 J -32774949.21 -32774949.04 -32774948.87 0.0283 0.0194  
 Moon -94446-01-30 12:56 J -32774949.13 -32774948.96 -32774948.78 0.0283 0.0204 \*  
 Venus -94446-03-25 23:15 J -32774894.67 -32774894.53 -32774894.37 0.0283 0.0198

Moon -94445-02-12 11:30 J -32774571.26 -32774571.02 -32774570.77 0.0283 0.0076  
 Earth -94445-02-12 13:54 J -32774571.15 -32774570.92 -32774570.69 0.0283 0.0092 \*  
 Mars -94439-01-09 19:54 J -32772412.92 -32772412.67 -32772412.40 0.0282 0.0134  
 Mercury -94434-07-27 23:44 J -32770387.59 -32770387.51 -32770387.41 0.0277 0.0227  
 Mercury -94434-10-24 16:47 J -32770298.94 -32770298.80 -32770298.66 0.0277 0.0128  
 Mercury -94433-01-21 09:20 J -32770210.27 -32770210.11 -32770209.95 0.0277 0.0032  
 Mercury -94433-04-19 01:25 J -32770121.59 -32770121.44 -32770121.28 0.0277 0.0063  
 Mercury -94433-07-16 17:15 J -32770032.90 -32770032.78 -32770032.65 0.0277 0.0154  
 Mercury -94433-10-13 08:51 J -32769944.20 -32769944.13 -32769944.06 0.0276 0.0244  
 Venus -94432-01-25 13:11 J -32769840.13 -32769839.95 -32769839.76 0.0276 0.0134  
 Moon -94432-08-08 08:23 J -32769645.33 -32769645.15 -32769644.97 0.0276 0.0191  
 Earth -94432-08-08 11:59 J -32769645.15 -32769645.00 -32769644.82 0.0276 0.0206 \*  
 Venus -94432-09-12 00:13 J -32769610.66 -32769610.49 -32769610.31 0.0276 0.0155  
 Moon -94431-08-21 11:44 J -32769267.24 -32769267.01 -32769266.78 0.0276 0.0080  
 Earth -94431-08-21 12:42 J -32769267.21 -32769266.97 -32769266.73 0.0276 0.0067 \*  
 Mars -94426-12-18 14:51 J -32767322.15 -32767321.88 -32767321.60 0.0276 0.0082  
 Mercury -94419-05-09 03:06 J -32764988.39 -32764988.37 -32764988.33 0.0281 0.0275  
 Mercury -94419-08-05 17:30 J -32764899.88 -32764899.77 -32764899.66 0.0282 0.0187  
 Mercury -94419-11-02 08:08 J -32764811.30 -32764811.16 -32764811.02 0.0282 0.0096  
 Mercury -94418-01-29 23:01 J -32764722.69 -32764722.54 -32764722.38 0.0282 0.0009  
 Mercury -94418-04-28 14:23 J -32764634.04 -32764633.90 -32764633.76 0.0282 0.0094  
 Mercury -94418-07-26 05:59 J -32764545.36 -32764545.25 -32764545.14 0.0282 0.0191  
 Venus -94417-02-18 18:27 J -32764337.94 -32764337.73 -32764337.53 0.0283 0.0059  
 Venus -94417-10-05 06:56 J -32764108.30 -32764108.21 -32764108.10 0.0283 0.0248  
 Earth -94416-02-06 07:11 J -32763984.43 -32763984.20 -32763983.95 0.0283 0.0035  
 Moon -94416-02-06 09:35 J -32763984.33 -32763984.10 -32763983.87 0.0283 0.0049 \*  
 Earth -94415-02-19 13:54 J -32763606.01 -32763605.92 -32763605.80 0.0283 0.0255  
 Moon -94415-02-19 17:44 J -32763605.88 -32763605.76 -32763605.62 0.0283 0.0238 \*  
 Mars -94411-02-24 14:23 J -32762140.13 -32762139.90 -32762139.66 0.0283 0.0176  
 Mercury -94405-12-14 02:37 J -32759655.46 -32759655.39 -32759655.32 0.0278 0.0245

Mercury -94404-03-12 19:39 J -32759566.82 -32759566.68 -32759566.54 0.0278 0.0146

Mercury -94404-06-09 12:13 J -32759478.15 -32759477.99 -32759477.83 0.0277 0.0049

Mercury -94404-09-06 04:32 J -32759389.47 -32759389.31 -32759389.16 0.0277 0.0046

Mercury -94404-12-03 20:23 J -32759300.79 -32759300.65 -32759300.52 0.0277 0.0138

Mercury -94403-03-02 11:44 J -32759212.09 -32759212.01 -32759211.92 0.0277 0.0228

Venus -94403-08-07 23:30 J -32759053.72 -32759053.52 -32759053.31 0.0276 0.0084

Venus -94402-03-25 10:03 J -32758824.22 -32758824.08 -32758823.94 0.0276 0.0205

Earth -94402-08-16 12:27 J -32758680.23 -32758679.98 -32758679.74 0.0276 0.0044

Moon -94402-08-16 13:54 J -32758680.17 -32758679.92 -32758679.66 0.0276 0.0029 \*

Moon -94401-08-28 05:30 J -32758302.39 -32758302.27 -32758302.12 0.0275 0.0232

Earth -94401-08-28 08:51 J -32758302.27 -32758302.13 -32758301.98 0.0275 0.0222 \*

Mars -94395-02-05 07:54 J -32756315.45 -32756315.17 -32756314.88 0.0276 0.0063

Mercury -94390-12-23 18:27 J -32754167.82 -32754167.73 -32754167.63 0.0281 0.0216

Mercury -94389-03-21 08:51 J -32754079.26 -32754079.13 -32754078.99 0.0281 0.0126

Mercury -94389-06-17 23:44 J -32753990.66 -32753990.51 -32753990.36 0.0282 0.0034

Mercury -94389-09-14 14:51 J -32753902.03 -32753901.88 -32753901.73 0.0282 0.0061

Mercury -94389-12-12 06:13 J -32753813.36 -32753813.24 -32753813.11 0.0282 0.0157

Mercury -94388-03-10 21:49 J -32753724.64 -32753724.59 -32753724.52 0.0282 0.0256

Venus -94388-08-30 21:06 J -32753551.83 -32753551.62 -32753551.41 0.0282 0.0026

Moon -94387-01-31 14:23 J -32753398.08 -32753397.90 -32753397.69 0.0283 0.0174

Earth -94387-01-31 17:01 J -32753397.99 -32753397.79 -32753397.59 0.0283 0.0161 \*

Venus -94387-04-17 09:20 J -32753322.13 -32753322.11 -32753322.08 0.0283 0.0280

Moon -94386-02-13 16:47 J -32753020.02 -32753019.80 -32753019.57 0.0283 0.0108

Earth -94386-02-13 20:08 J -32753019.87 -32753019.66 -32753019.43 0.0283 0.0125 \*

Mars -94381-04-15 15:35 J -32751132.15 -32751131.85 -32751131.55 0.0283 0.0014

Mercury -94375-07-30 18:27 J -32748834.84 -32748834.73 -32748834.60 0.0277 0.0183

Mercury -94375-10-27 11:15 J -32748746.18 -32748746.03 -32748745.87 0.0277 0.0086

Mercury -94374-01-24 03:49 J -32748657.50 -32748657.34 -32748657.18 0.0277 0.0011

Mercury -94374-04-22 19:39 J -32748568.82 -32748568.68 -32748568.53 0.0277 0.0104

Mercury -94374-07-20 11:30 J -32748480.13 -32748480.02 -32748479.91 0.0276 0.0194

Venus -94373-02-18 00:13 J -32748267.70 -32748267.49 -32748267.28 0.0276 0.0053  
 Moon -94373-08-09 19:11 J -32748093.89 -32748093.70 -32748093.50 0.0276 0.0156  
 Earth -94373-08-09 19:54 J -32748093.85 -32748093.67 -32748093.46 0.0276 0.0171 \*  
 Venus -94373-10-04 10:47 J -32748038.15 -32748038.05 -32748037.93 0.0276 0.0236  
 Earth -94372-08-22 19:54 J -32747715.90 -32747715.67 -32747715.44 0.0275 0.0099  
 Moon -94372-08-22 22:47 J -32747715.77 -32747715.55 -32747715.33 0.0275 0.0113 \*  
 Mars -94367-03-26 07:54 J -32746039.35 -32746039.17 -32746038.98 0.0276 0.0209  
 Mars -94365-03-25 22:03 J -32745308.77 -32745308.58 -32745308.39 0.0277 0.0208  
 Mercury -94360-05-11 19:54 J -32743435.74 -32743435.67 -32743435.59 0.0281 0.0242  
 Mercury -94360-08-08 10:18 J -32743347.19 -32743347.07 -32743346.94 0.0282 0.0153  
 Mercury -94360-11-05 00:56 J -32743258.60 -32743258.46 -32743258.31 0.0282 0.0061  
 Mercury -94359-02-01 16:03 J -32743169.98 -32743169.83 -32743169.68 0.0282 0.0034  
 Mercury -94359-05-01 07:25 J -32743081.32 -32743081.19 -32743081.05 0.0282 0.0130  
 Mercury -94359-07-28 23:15 J -32742992.62 -32742992.53 -32742992.44 0.0282 0.0229  
 Venus -94358-03-13 02:51 J -32742765.59 -32742765.38 -32742765.17 0.0283 0.0019  
 Earth -94357-02-08 11:15 J -32742433.28 -32742433.03 -32742432.79 0.0283 0.0006  
 Moon -94357-02-08 14:23 J -32742433.14 -32742432.90 -32742432.65 0.0283 0.0019 \*  
 Moon -94356-02-20 18:42 J -32742054.79 -32742054.72 -32742054.63 0.0283 0.0268  
 Mars -94351-06-06 04:47 J -32740123.55 -32740123.30 -32740123.04 0.0282 0.0147  
 Mercury -94346-12-17 20:51 J -32738102.73 -32738102.63 -32738102.51 0.0278 0.0204  
 Mercury -94345-03-15 13:54 J -32738014.07 -32738013.92 -32738013.77 0.0278 0.0105  
 Mercury -94345-06-12 06:27 J -32737925.39 -32737925.23 -32737925.07 0.0277 0.0010  
 Mercury -94345-09-08 22:32 J -32737836.71 -32737836.56 -32737836.41 0.0277 0.0085  
 Mercury -94345-12-06 14:08 J -32737748.02 -32737747.91 -32737747.79 0.0277 0.0177  
 Mercury -94344-03-05 05:30 J -32737659.30 -32737659.27 -32737659.22 0.0277 0.0266  
 Moon -94344-08-04 17:44 J -32737506.83 -32737506.76 -32737506.69 0.0276 0.0265  
 Venus -94344-08-30 10:03 J -32737481.30 -32737481.08 -32737480.87 0.0276 0.0006  
 Moon -94343-08-17 16:18 J -32737129.07 -32737128.82 -32737128.56 0.0276 0.0006  
 Earth -94343-08-17 19:25 J -32737128.94 -32737128.69 -32737128.44 0.0276 0.0010 \*  
 Moon -94342-08-30 12:13 J -32736751.04 -32736750.99 -32736750.90 0.0275 0.0264

Earth -94342-08-30 15:20 J -32736750.95 -32736750.86 -32736750.76 0.0275 0.0253 \*  
 Mars -94337-05-13 17:15 J -32735033.06 -32735032.78 -32735032.50 0.0275 0.0069  
 Mercury -94331-09-28 21:06 J -32732703.66 -32732703.62 -32732703.58 0.0281 0.0269  
 Mercury -94331-12-26 11:15 J -32732615.14 -32732615.03 -32732614.91 0.0281 0.0181  
 Mercury -94330-03-25 01:54 J -32732526.56 -32732526.42 -32732526.28 0.0281 0.0090  
 Mercury -94330-06-21 16:47 J -32732437.95 -32732437.80 -32732437.65 0.0281 0.0006  
 Mercury -94330-09-18 07:54 J -32732349.31 -32732349.17 -32732349.02 0.0282 0.0099  
 Mercury -94330-12-15 23:30 J -32732260.63 -32732260.52 -32732260.41 0.0282 0.0196  
 Venus -94329-02-05 18:13 J -32732208.82 -32732208.74 -32732208.64 0.0282 0.0250  
 Venus -94329-09-22 05:59 J -32731979.46 -32731979.25 -32731979.05 0.0282 0.0053  
 Moon -94328-02-01 17:59 J -32731846.95 -32731846.75 -32731846.54 0.0283 0.0143  
 Earth -94328-02-01 21:06 J -32731846.82 -32731846.62 -32731846.40 0.0283 0.0130 \*  
 Earth -94327-02-15 00:42 J -32731468.66 -32731468.47 -32731468.26 0.0283 0.0156  
 Moon -94327-02-15 01:25 J -32731468.64 -32731468.44 -32731468.24 0.0283 0.0141 \*  
 Mars -94323-07-20 17:15 J -32729852.01 -32729851.78 -32729851.53 0.0283 0.0170  
 Mercury -94316-05-05 19:25 J -32727370.76 -32727370.69 -32727370.60 0.0277 0.0243  
 Mercury -94316-08-02 12:42 J -32727282.11 -32727281.97 -32727281.83 0.0277 0.0143  
 Mercury -94316-10-30 05:15 J -32727193.43 -32727193.28 -32727193.12 0.0277 0.0046  
 Mercury -94315-01-26 21:35 J -32727104.75 -32727104.60 -32727104.44 0.0277 0.0049  
 Mercury -94315-04-25 13:25 J -32727016.07 -32727015.94 -32727015.80 0.0277 0.0142  
 Mercury -94315-07-23 05:01 J -32726927.37 -32726927.29 -32726927.20 0.0276 0.0232  
 Venus -94315-07-25 22:18 J -32726924.61 -32726924.57 -32726924.51 0.0276 0.0267  
 Venus -94314-03-12 10:03 J -32726695.29 -32726695.08 -32726694.87 0.0276 0.0025  
 Earth -94314-08-12 02:08 J -32726542.62 -32726542.41 -32726542.19 0.0276 0.0138  
 Moon -94314-08-12 05:44 J -32726542.48 -32726542.26 -32726542.04 0.0276 0.0121 \*  
 Earth -94313-08-24 01:11 J -32726164.65 -32726164.45 -32726164.22 0.0275 0.0131  
 Moon -94313-08-24 04:18 J -32726164.53 -32726164.32 -32726164.10 0.0275 0.0144 \*  
 Mars -94307-07-01 16:47 J -32724027.08 -32724026.80 -32724026.52 0.0276 0.0070  
 Mercury -94301-05-14 12:13 J -32721883.08 -32721882.99 -32721882.89 0.0281 0.0211  
 Mercury -94301-08-11 02:37 J -32721794.52 -32721794.39 -32721794.25 0.0282 0.0121



Mercury -94301-11-07 17:30 J -32721705.92 -32721705.77 -32721705.62 0.0282 0.0028  
 Mercury -94300-02-04 08:37 J -32721617.29 -32721617.14 -32721616.99 0.0282 0.0067  
 Mercury -94300-05-03 23:59 J -32721528.62 -32721528.50 -32721528.37 0.0282 0.0164  
 Mercury -94300-07-31 15:49 J -32721439.89 -32721439.84 -32721439.78 0.0282 0.0263  
 Venus -94300-08-17 22:03 J -32721422.71 -32721422.58 -32721422.44 0.0282 0.0213  
 Earth -94299-01-27 11:01 J -32721260.13 -32721260.04 -32721259.93 0.0283 0.0254  
 Moon -94299-01-27 14:37 J -32721259.97 -32721259.89 -32721259.80 0.0283 0.0263 \*  
 Venus -94299-04-04 09:49 J -32721193.28 -32721193.09 -32721192.88 0.0283 0.0093  
 Moon -94298-02-09 12:13 J -32720882.24 -32720881.99 -32720881.74 0.0283 0.0012  
 Earth -94298-02-09 12:42 J -32720882.21 -32720881.97 -32720881.72 0.0283 0.0026 \*  
 Mars -94293-09-09 14:23 J -32718843.20 -32718842.90 -32718842.60 0.0283 0.0004  
 Mercury -94287-09-22 21:49 J -32716638.64 -32716638.59 -32716638.54 0.0278 0.0264  
 Mercury -94287-12-20 14:51 J -32716550.00 -32716549.88 -32716549.75 0.0278 0.0165  
 Mercury -94286-03-19 07:39 J -32716461.33 -32716461.18 -32716461.02 0.0278 0.0067  
 Mercury -94286-06-15 23:59 J -32716372.65 -32716372.50 -32716372.34 0.0277 0.0030  
 Mercury -94286-09-12 16:03 J -32716283.97 -32716283.83 -32716283.69 0.0277 0.0123  
 Mercury -94286-12-10 07:39 J -32716195.27 -32716195.18 -32716195.08 0.0277 0.0214  
 Venus -94285-02-05 07:39 J -32716138.30 -32716138.18 -32716138.04 0.0277 0.0220  
 Moon -94285-08-05 19:25 J -32715955.82 -32715955.69 -32715955.55 0.0277 0.0231  
 Earth -94285-08-05 22:47 J -32715955.65 -32715955.55 -32715955.43 0.0277 0.0247 \*  
 Venus -94285-09-21 19:11 J -32715908.90 -32715908.70 -32715908.49 0.0276 0.0074  
 Moon -94284-08-18 21:49 J -32715577.82 -32715577.59 -32715577.34 0.0276 0.0038  
 Earth -94284-08-19 00:56 J -32715577.71 -32715577.46 -32715577.21 0.0276 0.0022 \*  
 Mars -94279-08-20 10:18 J -32713750.25 -32713750.07 -32713749.86 0.0275 0.0196  
 Mars -94277-08-19 20:37 J -32713019.80 -32713019.64 -32713019.45 0.0276 0.0220  
 Mercury -94272-10-01 13:39 J -32711151.01 -32711150.93 -32711150.86 0.0281 0.0237  
 Mercury -94272-12-29 03:49 J -32711062.46 -32711062.34 -32711062.21 0.0281 0.0148  
 Mercury -94271-03-27 18:27 J -32710973.87 -32710973.73 -32710973.58 0.0281 0.0057  
 Mercury -94271-06-24 09:35 J -32710885.25 -32710885.10 -32710884.95 0.0281 0.0037  
 Mercury -94271-09-21 00:42 J -32710796.60 -32710796.47 -32710796.33 0.0282 0.0133

Mercury -94271-12-18 16:32 J -32710707.90 -32710707.81 -32710707.73 0.0282 0.0231  
 Venus -94270-02-28 01:54 J -32710636.58 -32710636.42 -32710636.26 0.0282 0.0176  
 Venus -94270-10-15 13:25 J -32710407.12 -32710406.94 -32710406.75 0.0282 0.0129  
 Earth -94269-02-03 23:15 J -32710295.75 -32710295.53 -32710295.30 0.0283 0.0100  
 Moon -94269-02-03 23:44 J -32710295.72 -32710295.51 -32710295.29 0.0283 0.0114 \*  
 Earth -94268-02-16 03:06 J -32709917.54 -32709917.37 -32709917.17 0.0283 0.0185  
 Moon -94268-02-16 06:42 J -32709917.40 -32709917.22 -32709917.01 0.0283 0.0170 \*  
 Mars -94263-10-30 04:03 J -32707835.57 -32707835.33 -32707835.07 0.0283 0.0152  
 Mercury -94257-05-08 13:11 J -32705818.05 -32705817.95 -32705817.83 0.0277 0.0205  
 Mercury -94257-08-05 06:13 J -32705729.38 -32705729.24 -32705729.09 0.0277 0.0106  
 Mercury -94257-11-01 22:47 J -32705640.71 -32705640.55 -32705640.39 0.0277 0.0011  
 Mercury -94256-01-29 15:06 J -32705552.02 -32705551.87 -32705551.72 0.0277 0.0086  
 Mercury -94256-04-28 06:42 J -32705463.33 -32705463.22 -32705463.10 0.0277 0.0178  
 Mercury -94256-07-25 22:18 J -32705374.61 -32705374.57 -32705374.53 0.0276 0.0267  
 Venus -94256-08-17 07:25 J -32705352.34 -32705352.19 -32705352.03 0.0276 0.0192  
 Venus -94255-04-03 18:56 J -32705122.91 -32705122.71 -32705122.51 0.0276 0.0100  
 Earth -94255-08-13 06:56 J -32704991.44 -32704991.21 -32704990.98 0.0276 0.0106  
 Moon -94255-08-13 09:20 J -32704991.35 -32704991.11 -32704990.87 0.0276 0.0090 \*  
 Moon -94254-08-26 04:03 J -32704613.53 -32704613.33 -32704613.13 0.0275 0.0170  
 Earth -94254-08-26 05:30 J -32704613.46 -32704613.27 -32704613.06 0.0275 0.0160 \*  
 Mars -94249-10-06 21:06 J -32702744.89 -32702744.62 -32702744.33 0.0276 0.0064  
 Mercury -94242-02-18 14:08 J -32700418.95 -32700418.91 -32700418.87 0.0281 0.0269  
 Mercury -94242-05-18 04:18 J -32700330.43 -32700330.32 -32700330.20 0.0281 0.0181  
 Mercury -94242-08-14 18:56 J -32700241.85 -32700241.71 -32700241.57 0.0281 0.0090  
 Mercury -94242-11-11 09:49 J -32700153.24 -32700153.09 -32700152.94 0.0282 0.0005  
 Mercury -94241-02-08 00:56 J -32700064.60 -32700064.46 -32700064.32 0.0282 0.0099  
 Mercury -94241-05-06 16:32 J -32699975.92 -32699975.81 -32699975.70 0.0282 0.0197  
 Venus -94241-09-09 04:18 J -32699850.50 -32699850.32 -32699850.14 0.0282 0.0142  
 Moon -94240-01-28 10:47 J -32699709.17 -32699709.05 -32699708.91 0.0283 0.0238  
 Earth -94240-01-28 11:15 J -32699709.17 -32699709.03 -32699708.88 0.0283 0.0226 \*

Venus -94240-04-26 16:18 J -32699620.98 -32699620.82 -32699620.64 0.0283 0.0165  
 Moon -94239-02-10 09:35 J -32699331.34 -32699331.10 -32699330.86 0.0283 0.0038  
 Earth -94239-02-10 13:11 J -32699331.19 -32699330.95 -32699330.71 0.0283 0.0054 \*  
 Mars -94235-12-14 06:13 J -32697563.48 -32697563.24 -32697562.98 0.0283 0.0161  
 Mercury -94228-09-25 15:06 J -32695085.95 -32695085.87 -32695085.77 0.0278 0.0228  
 Mercury -94228-12-23 08:08 J -32694997.30 -32694997.16 -32694997.01 0.0278 0.0129  
 Mercury -94227-03-22 00:56 J -32694908.62 -32694908.46 -32694908.30 0.0278 0.0031  
 Mercury -94227-06-18 17:15 J -32694819.94 -32694819.78 -32694819.63 0.0278 0.0064  
 Mercury -94227-09-15 09:06 J -32694731.25 -32694731.12 -32694730.99 0.0277 0.0157  
 Mercury -94227-12-13 00:42 J -32694642.54 -32694642.47 -32694642.40 0.0277 0.0248  
 Venus -94226-02-27 15:49 J -32694566.01 -32694565.84 -32694565.65 0.0277 0.0146  
 Moon -94226-08-08 00:27 J -32694404.65 -32694404.48 -32694404.32 0.0277 0.0201  
 Earth -94226-08-08 02:23 J -32694404.54 -32694404.40 -32694404.24 0.0277 0.0216 \*  
 Venus -94226-10-15 03:20 J -32694336.54 -32694336.36 -32694336.18 0.0277 0.0147  
 Earth -94225-08-20 04:18 J -32694026.56 -32694026.32 -32694026.08 0.0276 0.0052  
 Moon -94225-08-20 05:59 J -32694026.48 -32694026.25 -32694026.01 0.0276 0.0066 \*  
 Mars -94219-11-25 16:18 J -32691738.10 -32691737.82 -32691737.55 0.0276 0.0083  
 Mercury -94213-10-04 05:59 J -32689598.35 -32689598.25 -32689598.16 0.0281 0.0206  
 Mercury -94213-12-31 20:08 J -32689509.79 -32689509.66 -32689509.52 0.0281 0.0117  
 Mercury -94212-03-30 11:01 J -32689421.19 -32689421.04 -32689420.89 0.0281 0.0024  
 Mercury -94212-06-27 01:54 J -32689332.56 -32689332.42 -32689332.27 0.0281 0.0071  
 Mercury -94212-09-23 17:15 J -32689243.90 -32689243.78 -32689243.65 0.0281 0.0167  
 Mercury -94212-12-21 08:51 J -32689155.17 -32689155.13 -32689155.07 0.0282 0.0266  
 Venus -94211-03-22 08:23 J -32689064.34 -32689064.15 -32689063.95 0.0282 0.0104  
 Venus -94211-11-06 20:23 J -32688834.79 -32688834.65 -32688834.50 0.0282 0.0202  
 Earth -94210-02-05 00:13 J -32688744.72 -32688744.49 -32688744.25 0.0283 0.0071  
 Moon -94210-02-05 03:49 J -32688744.56 -32688744.34 -32688744.11 0.0283 0.0087 \*  
 Earth -94209-02-18 04:32 J -32688366.46 -32688366.31 -32688366.14 0.0283 0.0211  
 Moon -94209-02-18 05:59 J -32688366.43 -32688366.25 -32688366.07 0.0283 0.0198 \*  
 Mars -94204-02-02 10:18 J -32686555.36 -32686555.07 -32686554.77 0.0283 0.0004

Mercury -94198-02-12 13:39 J -32684353.97 -32684353.93 -32684353.89 0.0278 0.0268  
 Mercury -94198-05-12 06:56 J -32684265.34 -32684265.21 -32684265.09 0.0278 0.0168  
 Mercury -94198-08-08 23:44 J -32684176.67 -32684176.51 -32684176.36 0.0277 0.0070  
 Mercury -94198-11-05 16:03 J -32684087.99 -32684087.83 -32684087.67 0.0277 0.0027  
 Mercury -94197-02-02 08:08 J -32683999.30 -32683999.16 -32683999.02 0.0277 0.0121  
 Mercury -94197-04-30 23:44 J -32683910.60 -32683910.51 -32683910.41 0.0277 0.0212  
 Venus -94197-09-08 15:49 J -32683780.03 -32683779.84 -32683779.65 0.0276 0.0118  
 Venus -94196-04-26 02:51 J -32683550.53 -32683550.38 -32683550.21 0.0276 0.0175  
 Moon -94196-08-14 07:54 J -32683440.41 -32683440.17 -32683439.92 0.0276 0.0062  
 Earth -94196-08-14 10:18 J -32683440.30 -32683440.07 -32683439.83 0.0276 0.0076 \*  
 Moon -94195-08-27 05:15 J -32683062.45 -32683062.28 -32683062.11 0.0275 0.0197  
 Earth -94195-08-27 08:51 J -32683062.30 -32683062.13 -32683061.94 0.0275 0.0188 \*  
 Mars -94190-01-13 10:32 J -32681462.26 -32681462.06 -32681461.85 0.0275 0.0190  
 Mars -94188-01-12 19:25 J -32680731.84 -32680731.69 -32680731.50 0.0276 0.0224  
 Mercury -94183-02-21 05:59 J -32678866.32 -32678866.25 -32678866.17 0.0281 0.0240  
 Mercury -94183-05-20 20:23 J -32678777.78 -32678777.65 -32678777.53 0.0281 0.0151  
 Mercury -94183-08-17 10:47 J -32678689.19 -32678689.05 -32678688.90 0.0281 0.0060  
 Mercury -94183-11-14 01:54 J -32678600.57 -32678600.42 -32678600.27 0.0282 0.0035  
 Mercury -94182-02-10 17:01 J -32678511.92 -32678511.79 -32678511.65 0.0282 0.0131  
 Mercury -94182-05-10 08:37 J -32678423.22 -32678423.14 -32678423.05 0.0282 0.0229  
 Venus -94182-10-02 10:03 J -32678278.28 -32678278.08 -32678277.88 0.0282 0.0072  
 Moon -94181-01-30 06:42 J -32678158.37 -32678158.22 -32678158.06 0.0282 0.0214  
 Earth -94181-01-30 10:32 J -32678158.23 -32678158.06 -32678157.89 0.0282 0.0198 \*  
 Venus -94181-05-18 22:18 J -32678048.69 -32678048.57 -32678048.46 0.0283 0.0235  
 Moon -94180-02-11 10:47 J -32677780.27 -32677780.05 -32677779.81 0.0283 0.0068  
 Earth -94180-02-11 12:13 J -32677780.22 -32677779.99 -32677779.75 0.0283 0.0081 \*  
 Mars -94174-03-25 12:13 J -32675547.22 -32675546.99 -32675546.74 0.0283 0.0159  
 Mercury -94169-09-28 08:23 J -32673533.27 -32673533.15 -32673533.04 0.0278 0.0194  
 Mercury -94169-12-26 01:11 J -32673444.60 -32673444.45 -32673444.29 0.0278 0.0095  
 Mercury -94168-03-24 17:44 J -32673355.91 -32673355.76 -32673355.60 0.0278 0.0008

Mercury -94168-06-21 10:03 J -32673267.23 -32673267.08 -32673266.93 0.0278 0.0098

Mercury -94168-09-18 01:39 J -32673178.53 -32673178.43 -32673178.31 0.0278 0.0191

Venus -94167-03-21 23:30 J -32672993.72 -32672993.52 -32672993.31 0.0277 0.0074

Earth -94167-08-09 04:47 J -32672853.48 -32672853.30 -32672853.12 0.0277 0.0186

Moon -94167-08-09 06:42 J -32672853.40 -32672853.22 -32672853.02 0.0277 0.0173 \*

Venus -94167-11-06 10:32 J -32672764.18 -32672764.06 -32672763.92 0.0277 0.0220

Earth -94166-08-22 06:27 J -32672475.46 -32672475.23 -32672474.99 0.0276 0.0081

Moon -94166-08-22 10:18 J -32672475.31 -32672475.07 -32672474.84 0.0276 0.0092 \*

Mars -94160-03-02 19:54 J -32670455.95 -32670455.67 -32670455.38 0.0275 0.0050

Mercury -94154-07-11 07:54 J -32668134.22 -32668134.17 -32668134.12 0.0280 0.0263

Mercury -94154-10-07 22:03 J -32668045.69 -32668045.58 -32668045.46 0.0280 0.0175

Mercury -94153-01-04 12:27 J -32667957.12 -32667956.98 -32667956.83 0.0281 0.0085

Mercury -94153-04-02 03:20 J -32667868.51 -32667868.36 -32667868.21 0.0281 0.0009

Mercury -94153-06-29 18:27 J -32667779.87 -32667779.73 -32667779.59 0.0281 0.0104

Mercury -94153-09-26 09:49 J -32667691.19 -32667691.09 -32667690.98 0.0281 0.0201

Venus -94152-04-13 15:20 J -32667492.07 -32667491.86 -32667491.65 0.0282 0.0031

Venus -94152-11-29 03:20 J -32667262.40 -32667262.36 -32667262.32 0.0282 0.0276

Earth -94151-02-06 01:11 J -32667193.69 -32667193.45 -32667193.21 0.0282 0.0043

Moon -94151-02-06 02:37 J -32667193.64 -32667193.39 -32667193.15 0.0282 0.0059 \*

Moon -94150-02-19 02:37 J -32666815.53 -32666815.39 -32666815.24 0.0283 0.0227

Earth -94150-02-19 05:30 J -32666815.39 -32666815.27 -32666815.13 0.0283 0.0238 \*

Mars -94146-05-09 00:56 J -32665275.70 -32665275.46 -32665275.20 0.0283 0.0156

Mercury -94139-02-15 06:42 J -32662801.30 -32662801.22 -32662801.13 0.0278 0.0233

Mercury -94139-05-14 23:59 J -32662712.64 -32662712.50 -32662712.36 0.0278 0.0133

Mercury -94139-08-11 16:47 J -32662623.96 -32662623.80 -32662623.65 0.0278 0.0036

Mercury -94139-11-08 08:51 J -32662535.28 -32662535.13 -32662534.97 0.0277 0.0062

Mercury -94138-02-05 00:56 J -32662446.59 -32662446.46 -32662446.33 0.0277 0.0154

Mercury -94138-05-04 16:32 J -32662357.88 -32662357.81 -32662357.74 0.0277 0.0245

Venus -94138-10-01 23:15 J -32662207.74 -32662207.53 -32662207.32 0.0277 0.0045

Venus -94137-05-18 10:18 J -32661978.15 -32661978.07 -32661977.97 0.0276 0.0248

Moon -94137-08-15 09:20 J -32661889.35 -32661889.11 -32661888.86 0.0276 0.0035  
 Earth -94137-08-15 12:42 J -32661889.21 -32661888.97 -32661888.72 0.0276 0.0046 \*  
 Earth -94136-08-28 11:01 J -32661511.19 -32661511.04 -32661510.88 0.0275 0.0216  
 Moon -94136-08-28 11:15 J -32661511.17 -32661511.03 -32661510.89 0.0275 0.0221 \*  
 Mars -94130-04-20 12:27 J -32659450.25 -32659449.98 -32659449.70 0.0276 0.0088  
 Mercury -94124-02-23 22:03 J -32657313.68 -32657313.58 -32657313.49 0.0281 0.0211  
 Mercury -94124-05-23 12:27 J -32657225.12 -32657224.98 -32657224.85 0.0281 0.0121  
 Mercury -94124-08-20 03:06 J -32657136.52 -32657136.37 -32657136.22 0.0281 0.0029  
 Mercury -94124-11-16 17:59 J -32657047.89 -32657047.75 -32657047.60 0.0281 0.0066  
 Mercury -94123-02-13 09:20 J -32656959.23 -32656959.11 -32656958.98 0.0282 0.0162  
 Mercury -94123-05-13 00:56 J -32656870.51 -32656870.46 -32656870.40 0.0282 0.0261  
 Venus -94123-10-24 16:03 J -32656706.04 -32656705.83 -32656705.62 0.0282 0.0004  
 Moon -94122-01-31 08:51 J -32656607.30 -32656607.13 -32656606.95 0.0282 0.0187  
 Earth -94122-01-31 09:35 J -32656607.29 -32656607.10 -32656606.90 0.0282 0.0170 \*  
 Earth -94121-02-13 11:30 J -32656229.25 -32656229.02 -32656228.80 0.0283 0.0107  
 Moon -94121-02-13 14:23 J -32656229.12 -32656228.90 -32656228.67 0.0283 0.0094 \*  
 Mars -94116-06-28 11:59 J -32654267.30 -32654267.00 -32654266.70 0.0283 0.0007  
 Mercury -94110-07-05 07:54 J -32652069.22 -32652069.17 -32652069.11 0.0279 0.0261  
 Mercury -94110-10-02 01:11 J -32651980.58 -32651980.45 -32651980.32 0.0279 0.0160  
 Mercury -94110-12-29 17:59 J -32651891.90 -32651891.75 -32651891.59 0.0278 0.0061  
 Mercury -94109-03-27 10:32 J -32651803.22 -32651803.06 -32651802.90 0.0278 0.0036  
 Mercury -94109-06-24 02:37 J -32651714.52 -32651714.39 -32651714.25 0.0278 0.0131  
 Mercury -94109-09-20 18:13 J -32651625.82 -32651625.74 -32651625.64 0.0278 0.0223  
 Venus -94108-04-13 06:42 J -32651421.43 -32651421.22 -32651421.00 0.0277 0.0004  
 Earth -94108-08-10 06:13 J -32651302.43 -32651302.24 -32651302.02 0.0277 0.0158  
 Moon -94108-08-10 09:49 J -32651302.30 -32651302.09 -32651301.87 0.0277 0.0143 \*  
 Moon -94107-08-23 07:54 J -32650924.39 -32650924.17 -32650923.93 0.0276 0.0117  
 Earth -94107-08-23 08:23 J -32650924.37 -32650924.15 -32650923.92 0.0276 0.0109 \*  
 Mars -94102-06-09 10:32 J -32649173.27 -32649173.06 -32649172.83 0.0275 0.0176  
 Mars -94100-06-08 17:59 J -32648442.88 -32648442.75 -32648442.58 0.0276 0.0239

Mercury -94095-07-14 00:13 J -32646581.57 -32646581.49 -32646581.41 0.0280 0.0231

Mercury -94095-10-10 14:23 J -32646493.02 -32646492.90 -32646492.77 0.0280 0.0143

Mercury -94094-01-07 05:01 J -32646404.44 -32646404.29 -32646404.15 0.0280 0.0052

Mercury -94094-04-05 19:54 J -32646315.82 -32646315.67 -32646315.52 0.0281 0.0042

Mercury -94094-07-03 11:01 J -32646227.17 -32646227.04 -32646226.91 0.0281 0.0138

Venus -94094-09-19 11:01 J -32646149.11 -32646149.04 -32646148.95 0.0281 0.0260

Mercury -94094-09-30 02:23 J -32646138.47 -32646138.40 -32646138.31 0.0281 0.0236

Venus -94093-05-05 22:03 J -32645919.79 -32645919.58 -32645919.37 0.0282 0.0043

Moon -94092-02-06 22:47 J -32645642.79 -32645642.55 -32645642.30 0.0282 0.0031

Earth -94092-02-07 02:08 J -32645642.66 -32645642.41 -32645642.17 0.0282 0.0016 \*

Moon -94091-02-20 03:35 J -32645264.44 -32645264.35 -32645264.24 0.0283 0.0255

Earth -94091-02-20 06:13 J -32645264.31 -32645264.24 -32645264.14 0.0283 0.0264 \*

Mars -94086-08-18 10:03 J -32643259.31 -32643259.08 -32643258.83 0.0283 0.0164

Mercury -94080-02-17 23:59 J -32641248.61 -32641248.50 -32641248.39 0.0278 0.0198

Mercury -94080-05-17 17:01 J -32641159.94 -32641159.79 -32641159.64 0.0278 0.0098

Mercury -94080-08-14 09:35 J -32641071.26 -32641071.10 -32641070.94 0.0278 0.0005

Mercury -94080-11-11 01:54 J -32640982.57 -32640982.42 -32640982.27 0.0277 0.0095

Mercury -94079-02-07 17:44 J -32640893.87 -32640893.76 -32640893.64 0.0277 0.0187

Venus -94079-03-08 18:27 J -32640864.77 -32640864.73 -32640864.67 0.0277 0.0269

Moon -94079-08-04 06:56 J -32640716.25 -32640716.21 -32640716.15 0.0277 0.0270

Venus -94079-10-24 06:56 J -32640635.42 -32640635.21 -32640635.00 0.0277 0.0028

Earth -94078-08-17 15:20 J -32640338.11 -32640337.86 -32640337.61 0.0276 0.0017

Moon -94078-08-17 15:49 J -32640338.08 -32640337.84 -32640337.60 0.0276 0.0009 \*

Earth -94077-08-29 13:25 J -32639960.05 -32639959.94 -32639959.82 0.0275 0.0243

Moon -94077-08-29 17:01 J -32639959.89 -32639959.79 -32639959.67 0.0275 0.0244 \*

Mars -94072-07-26 17:30 J -32638168.04 -32638167.77 -32638167.48 0.0275 0.0045

Mercury -94066-12-01 00:13 J -32635849.53 -32635849.49 -32635849.45 0.0280 0.0268

Mercury -94065-02-27 14:08 J -32635761.02 -32635760.91 -32635760.79 0.0281 0.0180

Mercury -94065-05-26 04:32 J -32635672.45 -32635672.31 -32635672.17 0.0281 0.0090

Mercury -94065-08-22 19:25 J -32635583.84 -32635583.69 -32635583.54 0.0281 0.0005

Mercury -94065-11-19 10:18 J -32635495.21 -32635495.07 -32635494.92 0.0281 0.0099

Mercury -94064-02-16 01:54 J -32635406.53 -32635406.42 -32635406.31 0.0281 0.0196

Venus -94064-03-31 11:15 J -32635363.14 -32635363.03 -32635362.91 0.0282 0.0234

Venus -94064-11-15 22:18 J -32635133.77 -32635133.57 -32635133.36 0.0282 0.0071

Earth -94063-02-01 09:49 J -32635056.30 -32635056.09 -32635055.88 0.0282 0.0142

Moon -94063-02-01 13:25 J -32635056.14 -32635055.94 -32635055.75 0.0282 0.0159 \*

Earth -94062-02-14 11:30 J -32634678.23 -32634678.02 -32634677.80 0.0283 0.0134

Moon -94062-02-14 14:23 J -32634678.12 -32634677.90 -32634677.67 0.0283 0.0122 \*

Mars -94058-10-02 00:42 J -32632987.72 -32632987.47 -32632987.21 0.0283 0.0149

Mercury -94051-07-08 00:42 J -32630516.56 -32630516.47 -32630516.37 0.0279 0.0227

Mercury -94051-10-04 17:59 J -32630427.89 -32630427.75 -32630427.60 0.0279 0.0126

Mercury -94050-01-01 10:47 J -32630339.21 -32630339.05 -32630338.89 0.0278 0.0028

Mercury -94050-03-31 03:20 J -32630250.52 -32630250.36 -32630250.21 0.0278 0.0069

Mercury -94050-06-27 19:11 J -32630161.82 -32630161.70 -32630161.57 0.0278 0.0163

Venus -94050-09-19 01:11 J -32630078.57 -32630078.45 -32630078.33 0.0278 0.0227

Mercury -94050-09-24 10:47 J -32630073.10 -32630073.05 -32630072.98 0.0278 0.0255

Venus -94049-05-05 13:39 J -32629849.13 -32629848.93 -32629848.72 0.0277 0.0072

Moon -94049-08-11 07:54 J -32629751.41 -32629751.17 -32629750.94 0.0277 0.0117

Earth -94049-08-11 08:08 J -32629751.38 -32629751.16 -32629750.94 0.0277 0.0130 \*

Moon -94048-08-24 06:27 J -32629373.44 -32629373.23 -32629373.01 0.0277 0.0140

Earth -94048-08-24 10:18 J -32629373.29 -32629373.07 -32629372.86 0.0277 0.0136 \*

Mars -94042-09-14 14:08 J -32627161.18 -32627160.91 -32627160.64 0.0276 0.0104

Mercury -94036-07-16 16:32 J -32625028.91 -32625028.81 -32625028.70 0.0280 0.0199

Mercury -94036-10-13 06:56 J -32624940.34 -32624940.21 -32624940.07 0.0280 0.0109

Mercury -94035-01-09 21:35 J -32624851.75 -32624851.60 -32624851.45 0.0280 0.0017

Mercury -94035-04-08 12:27 J -32624763.12 -32624762.98 -32624762.83 0.0281 0.0077

Mercury -94035-07-06 03:49 J -32624674.46 -32624674.34 -32624674.22 0.0281 0.0173

Mercury -94035-10-02 19:25 J -32624585.72 -32624585.69 -32624585.65 0.0281 0.0271

Venus -94035-10-11 18:27 J -32624576.88 -32624576.73 -32624576.56 0.0281 0.0185

Moon -94034-01-27 02:37 J -32624469.43 -32624469.39 -32624469.32 0.0281 0.0274



Earth -94034-01-27 06:13 J -32624469.33 -32624469.24 -32624469.14 0.0281 0.0257 \*  
 Venus -94034-05-29 05:30 J -32624347.46 -32624347.27 -32624347.07 0.0282 0.0119  
 Moon -94033-02-09 01:39 J -32624091.66 -32624091.43 -32624091.19 0.0282 0.0006  
 Earth -94033-02-09 04:18 J -32624091.56 -32624091.32 -32624091.08 0.0282 0.0013 \*  
 Mars -94028-11-21 15:06 J -32621979.17 -32621978.87 -32621978.57 0.0283 0.0015  
 Mercury -94022-11-24 23:44 J -32619784.55 -32619784.51 -32619784.45 0.0279 0.0264  
 Mercury -94021-02-21 17:15 J -32619695.91 -32619695.78 -32619695.65 0.0278 0.0162  
 Mercury -94021-05-20 10:03 J -32619607.23 -32619607.08 -32619606.92 0.0278 0.0063  
 Mercury -94021-08-17 02:37 J -32619518.54 -32619518.39 -32619518.23 0.0278 0.0035  
 Mercury -94021-11-13 18:42 J -32619429.85 -32619429.72 -32619429.57 0.0278 0.0130  
 Mercury -94020-02-10 10:32 J -32619341.15 -32619341.06 -32619340.96 0.0277 0.0222  
 Venus -94020-03-31 02:37 J -32619292.54 -32619292.39 -32619292.24 0.0277 0.0194  
 Earth -94020-08-05 13:25 J -32619165.02 -32619164.94 -32619164.84 0.0277 0.0255  
 Moon -94020-08-05 14:08 J -32619165.02 -32619164.91 -32619164.79 0.0277 0.0241 \*  
 Venus -94020-11-15 14:51 J -32619063.08 -32619062.88 -32619062.68 0.0277 0.0103  
 Earth -94019-08-18 18:27 J -32618786.97 -32618786.73 -32618786.48 0.0276 0.0012  
 Moon -94019-08-18 22:03 J -32618786.83 -32618786.58 -32618786.33 0.0276 0.0020 \*  
 Earth -94018-08-31 16:32 J -32618408.84 -32618408.81 -32618408.75 0.0276 0.0270  
 Moon -94018-08-31 17:59 J -32618408.80 -32618408.75 -32618408.68 0.0276 0.0267 \*  
 Mars -94014-11-02 11:15 J -32616885.24 -32616885.03 -32616884.79 0.0275 0.0170  
 Mars -94012-11-01 17:01 J -32616154.90 -32616154.79 -32616154.64 0.0276 0.0245  
 Mercury -94007-12-03 16:32 J -32614296.89 -32614296.81 -32614296.73 0.0280 0.0235  
 Mercury -94006-03-02 06:42 J -32614208.34 -32614208.22 -32614208.09 0.0280 0.0146  
 Mercury -94006-05-29 21:20 J -32614119.76 -32614119.61 -32614119.47 0.0281 0.0055  
 Mercury -94006-08-26 11:59 J -32614031.15 -32614031.00 -32614030.85 0.0281 0.0039  
 Mercury -94006-11-23 03:06 J -32613942.50 -32613942.37 -32613942.23 0.0281 0.0134  
 Mercury -94005-02-19 18:42 J -32613853.81 -32613853.72 -32613853.64 0.0281 0.0232  
 Venus -94005-04-22 18:27 J -32613790.89 -32613790.73 -32613790.55 0.0281 0.0159  
 Venus -94005-12-08 05:44 J -32613561.44 -32613561.26 -32613561.08 0.0282 0.0146  
 Earth -94004-02-02 11:30 J -32613505.23 -32613505.02 -32613504.79 0.0282 0.0114

Moon -94004-02-02 13:39 J -32613505.15 -32613504.93 -32613504.70 0.0282 0.0128 \*

Moon -94003-02-15 11:15 J -32613127.23 -32613127.03 -32613126.81 0.0283 0.0153

Earth -94003-02-15 13:11 J -32613127.14 -32613126.95 -32613126.74 0.0283 0.0162 \*

# 94TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 94th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-93997-01-11 12:13 J		-32610971.21	-32610970.99	-32610970.75	0.0283	0.0173	
Mercury	-93992-07-10 17:59 J		-32608963.87	-32608963.75	-32608963.63	0.0279	0.0191	
Mercury	-93992-10-07 11:01 J		-32608875.19	-32608875.04	-32608874.89	0.0279	0.0091	
Mercury	-93991-01-04 03:49 J		-32608786.50	-32608786.34	-32608786.18	0.0279	0.0008	
Mercury	-93991-04-02 20:08 J		-32608697.81	-32608697.66	-32608697.52	0.0278	0.0104	
Mercury	-93991-06-30 11:59 J		-32608609.11	-32608609.00	-32608608.89	0.0278	0.0197	
Venus	-93991-10-11 08:37 J		-32608506.31	-32608506.14	-32608505.95	0.0278	0.0153	
Venus	-93990-05-28 21:06 J		-32608276.79	-32608276.62	-32608276.43	0.0278	0.0146	
Moon	-93990-08-13 06:42 J		-32608200.45	-32608200.22	-32608199.97	0.0277	0.0090	
Earth	-93990-08-13 10:32 J		-32608200.29	-32608200.06	-32608199.83	0.0277	0.0102	*
Moon	-93989-08-25 11:15 J		-32607822.22	-32607822.03	-32607821.84	0.0277	0.0166	
Earth	-93989-08-25 12:42 J		-32607822.17	-32607821.97	-32607821.77	0.0277	0.0163	*
Mars	-93984-12-20 21:49 J		-32605878.87	-32605878.59	-32605878.30	0.0276	0.0027	
Mercury	-93977-04-21 19:11 J		-32603564.75	-32603564.70	-32603564.63	0.0280	0.0252	
Mercury	-93977-07-19 09:20 J		-32603476.22	-32603476.11	-32603475.98	0.0280	0.0164	
Mercury	-93977-10-15 23:59 J		-32603387.65	-32603387.50	-32603387.36	0.0280	0.0073	

Mercury -93976-01-12 14:37 J -32603299.04 -32603298.89 -32603298.74 0.0280 0.0020

Mercury -93976-04-11 05:44 J -32603210.40 -32603210.26 -32603210.12 0.0280 0.0115

Mercury -93976-07-08 20:51 J -32603121.72 -32603121.63 -32603121.52 0.0281 0.0212

Venus -93976-11-03 03:06 J -32603004.56 -32603004.37 -32603004.18 0.0281 0.0107

Moon -93975-01-28 07:54 J -32602918.28 -32602918.17 -32602918.05 0.0281 0.0243

Earth -93975-01-28 09:49 J -32602918.22 -32602918.09 -32602917.94 0.0281 0.0228 \*

Venus -93975-06-20 13:54 J -32602775.06 -32602774.92 -32602774.76 0.0281 0.0199

Earth -93974-02-10 08:08 J -32602540.40 -32602540.16 -32602539.92 0.0282 0.0042

Moon -93974-02-10 10:18 J -32602540.30 -32602540.07 -32602539.83 0.0282 0.0031 \*

Mars -93969-02-25 11:15 J -32600699.28 -32600699.03 -32600698.76 0.0283 0.0139

Mercury -93963-11-27 17:30 J -32598231.86 -32598231.77 -32598231.67 0.0279 0.0225

Mercury -93962-02-24 10:47 J -32598143.19 -32598143.05 -32598142.91 0.0278 0.0124

Mercury -93962-05-24 03:35 J -32598054.51 -32598054.35 -32598054.19 0.0278 0.0025

Mercury -93962-08-20 19:54 J -32597965.82 -32597965.67 -32597965.51 0.0278 0.0072

Mercury -93962-11-17 11:59 J -32597877.12 -32597877.00 -32597876.87 0.0278 0.0166

Mercury -93961-02-14 03:49 J -32597788.40 -32597788.34 -32597788.28 0.0278 0.0257

Venus -93961-04-22 11:15 J -32597720.22 -32597720.03 -32597719.83 0.0277 0.0118

Earth -93961-08-06 17:44 J -32597613.90 -32597613.76 -32597613.61 0.0277 0.0225

Moon -93961-08-06 21:35 J -32597613.75 -32597613.60 -32597613.43 0.0277 0.0210 \*

Venus -93961-12-07 23:15 J -32597490.68 -32597490.53 -32597490.36 0.0277 0.0180

Earth -93960-08-19 22:47 J -32597235.80 -32597235.55 -32597235.31 0.0276 0.0041

Moon -93960-08-20 00:27 J -32597235.74 -32597235.48 -32597235.23 0.0276 0.0048 \*

Mars -93953-02-07 16:47 J -32594873.06 -32594872.80 -32594872.52 0.0276 0.0112

Mercury -93948-12-06 09:35 J -32592744.21 -32592744.10 -32592744.00 0.0280 0.0200

Mercury -93947-03-04 23:44 J -32592655.64 -32592655.51 -32592655.37 0.0280 0.0110

Mercury -93947-06-01 14:23 J -32592567.05 -32592566.90 -32592566.75 0.0281 0.0018

Mercury -93947-08-29 05:15 J -32592478.43 -32592478.28 -32592478.14 0.0281 0.0076

Mercury -93947-11-25 20:23 J -32592389.77 -32592389.65 -32592389.53 0.0281 0.0173

Mercury -93946-02-22 11:59 J -32592301.04 -32592301.00 -32592300.96 0.0281 0.0271

Venus -93946-05-16 03:20 J -32592218.56 -32592218.36 -32592218.16 0.0281 0.0080

Venus -93946-12-31 14:37 J -32591989.01 -32591988.89 -32591988.77 0.0282 0.0226  
 Moon -93945-02-04 12:56 J -32591954.18 -32591953.96 -32591953.71 0.0282 0.0095  
 Earth -93945-02-04 15:49 J -32591954.07 -32591953.84 -32591953.61 0.0282 0.0083 \*  
 Moon -93944-02-16 13:54 J -32591576.10 -32591575.92 -32591575.74 0.0283 0.0186  
 Earth -93944-02-16 17:30 J -32591575.95 -32591575.77 -32591575.59 0.0283 0.0191 \*  
 Mars -93939-04-16 18:27 J -32589691.03 -32589690.73 -32589690.43 0.0283 0.0025  
 Mercury -93933-04-15 17:59 J -32587499.81 -32587499.75 -32587499.69 0.0279 0.0256  
 Mercury -93933-07-13 11:15 J -32587411.16 -32587411.03 -32587410.89 0.0279 0.0154  
 Mercury -93933-10-10 04:18 J -32587322.48 -32587322.32 -32587322.16 0.0279 0.0054  
 Mercury -93932-01-06 20:51 J -32587233.78 -32587233.63 -32587233.47 0.0279 0.0044  
 Mercury -93932-04-05 13:11 J -32587145.09 -32587144.95 -32587144.81 0.0278 0.0139  
 Mercury -93932-07-03 04:47 J -32587056.37 -32587056.30 -32587056.21 0.0278 0.0233  
 Venus -93932-11-02 17:01 J -32586933.99 -32586933.79 -32586933.58 0.0278 0.0077  
 Venus -93931-06-20 05:30 J -32586704.40 -32586704.27 -32586704.15 0.0278 0.0222  
 Moon -93931-08-14 12:27 J -32586649.21 -32586648.98 -32586648.74 0.0278 0.0063  
 Earth -93931-08-14 14:08 J -32586649.15 -32586648.91 -32586648.67 0.0278 0.0073 \*  
 Earth -93930-08-27 16:18 J -32586271.00 -32586270.82 -32586270.64 0.0277 0.0190  
 Moon -93930-08-27 18:56 J -32586270.88 -32586270.71 -32586270.54 0.0277 0.0190 \*  
 Mars -93925-03-28 16:47 J -32584596.03 -32584595.80 -32584595.56 0.0276 0.0153  
 Mars -93923-03-29 01:11 J -32583865.52 -32583865.45 -32583865.35 0.0276 0.0264  
 Mercury -93918-04-25 12:42 J -32582012.07 -32582011.97 -32582011.88 0.0280 0.0214  
 Mercury -93918-07-23 02:51 J -32581923.51 -32581923.38 -32581923.25 0.0280 0.0125  
 Mercury -93918-10-19 17:15 J -32581834.93 -32581834.78 -32581834.63 0.0280 0.0034  
 Mercury -93917-01-16 08:08 J -32581746.31 -32581746.16 -32581746.01 0.0280 0.0060  
 Mercury -93917-04-13 23:15 J -32581657.66 -32581657.53 -32581657.40 0.0280 0.0155  
 Mercury -93917-07-11 14:51 J -32581568.95 -32581568.88 -32581568.82 0.0281 0.0253  
 Venus -93917-11-25 12:56 J -32581432.17 -32581431.96 -32581431.76 0.0281 0.0025  
 Earth -93916-01-29 15:35 J -32581367.01 -32581366.85 -32581366.67 0.0281 0.0197  
 Moon -93916-01-29 17:44 J -32581366.91 -32581366.76 -32581366.60 0.0281 0.0211 \*  
 Venus -93916-07-12 23:59 J -32581202.50 -32581202.50 -32581202.49 0.0281 0.0281

Earth -93915-02-11 13:54 J -32580989.15 -32580988.92 -32580988.68 0.0282 0.0073  
 Moon -93915-02-11 17:30 J -32580989.01 -32580988.77 -32580988.53 0.0282 0.0064 \*  
 Mars -93909-06-06 05:59 J -32578682.47 -32578682.25 -32578682.02 0.0283 0.0185  
 Mercury -93904-11-30 11:30 J -32576679.14 -32576679.02 -32576678.89 0.0279 0.0185  
 Mercury -93903-02-27 04:32 J -32576590.46 -32576590.31 -32576590.15 0.0278 0.0085  
 Mercury -93903-05-26 21:20 J -32576501.77 -32576501.61 -32576501.45 0.0278 0.0015  
 Mercury -93903-08-23 13:39 J -32576413.07 -32576412.93 -32576412.78 0.0278 0.0110  
 Mercury -93903-11-20 05:30 J -32576324.37 -32576324.27 -32576324.16 0.0278 0.0204  
 Venus -93902-05-15 21:06 J -32576147.83 -32576147.62 -32576147.40 0.0277 0.0038  
 Earth -93902-08-08 23:44 J -32576062.69 -32576062.51 -32576062.33 0.0277 0.0195  
 Moon -93902-08-09 00:56 J -32576062.65 -32576062.46 -32576062.27 0.0277 0.0182 \*  
 Venus -93902-12-31 09:06 J -32575918.19 -32575918.12 -32575918.05 0.0277 0.0259  
 Moon -93901-08-21 01:39 J -32575684.67 -32575684.43 -32575684.18 0.0276 0.0074  
 Earth -93901-08-21 04:32 J -32575684.55 -32575684.31 -32575684.07 0.0276 0.0070 \*  
 Mars -93895-05-16 06:13 J -32573590.52 -32573590.24 -32573589.95 0.0275 0.0018  
 Mercury -93889-09-11 12:42 J -32571280.03 -32571279.97 -32571279.90 0.0280 0.0249  
 Mercury -93889-12-09 02:51 J -32571191.50 -32571191.38 -32571191.26 0.0280 0.0161  
 Mercury -93888-03-07 17:15 J -32571102.93 -32571102.78 -32571102.64 0.0280 0.0070  
 Mercury -93888-06-04 07:54 J -32571014.32 -32571014.17 -32571014.02 0.0281 0.0023  
 Mercury -93888-08-31 22:47 J -32570925.68 -32570925.55 -32570925.41 0.0281 0.0118  
 Mercury -93888-11-28 14:08 J -32570837.00 -32570836.91 -32570836.81 0.0281 0.0215  
 Venus -93887-06-07 13:25 J -32570646.15 -32570645.94 -32570645.73 0.0281 0.0003  
 Moon -93886-02-05 18:56 J -32570402.94 -32570402.71 -32570402.47 0.0282 0.0063  
 Earth -93886-02-05 22:03 J -32570402.81 -32570402.58 -32570402.34 0.0282 0.0052 \*  
 Earth -93885-02-18 23:59 J -32570024.65 -32570024.50 -32570024.35 0.0283 0.0221  
 Moon -93885-02-19 00:27 J -32570024.63 -32570024.48 -32570024.33 0.0283 0.0220 \*  
 Mars -93881-07-20 17:59 J -32568411.01 -32568410.75 -32568410.47 0.0283 0.0129  
 Mercury -93874-04-19 11:44 J -32565947.10 -32565947.01 -32565946.90 0.0279 0.0216  
 Mercury -93874-07-17 05:15 J -32565858.43 -32565858.28 -32565858.14 0.0279 0.0114  
 Mercury -93874-10-13 22:03 J -32565769.74 -32565769.58 -32565769.42 0.0279 0.0014

Mercury -93873-01-10 14:37 J -32565681.04 -32565680.89 -32565680.74 0.0279 0.0083

Mercury -93873-04-08 06:42 J -32565592.34 -32565592.22 -32565592.10 0.0278 0.0177

Mercury -93873-07-05 22:18 J -32565503.60 -32565503.57 -32565503.53 0.0278 0.0270

Venus -93873-11-25 02:37 J -32565361.60 -32565361.39 -32565361.18 0.0278 0.0004

Earth -93872-08-15 19:25 J -32565097.93 -32565097.69 -32565097.44 0.0278 0.0044

Moon -93872-08-15 22:18 J -32565097.81 -32565097.57 -32565097.32 0.0278 0.0036 \*

Earth -93871-08-28 21:20 J -32564719.76 -32564719.61 -32564719.46 0.0277 0.0218

Moon -93871-08-29 00:13 J -32564719.63 -32564719.49 -32564719.32 0.0277 0.0218 \*

Mars -93867-07-05 21:20 J -32563312.64 -32563312.61 -32563312.57 0.0276 0.0273

Mars -93865-07-04 03:35 J -32562583.60 -32562583.35 -32562583.09 0.0276 0.0131

Mercury -93859-01-29 16:18 J -32560547.87 -32560547.82 -32560547.77 0.0279 0.0262

Mercury -93859-04-28 06:13 J -32560459.35 -32560459.24 -32560459.13 0.0280 0.0174

Mercury -93859-07-25 20:37 J -32560370.79 -32560370.64 -32560370.50 0.0280 0.0084

Mercury -93859-10-22 11:15 J -32560282.18 -32560282.03 -32560281.88 0.0280 0.0012

Mercury -93858-01-19 02:08 J -32560193.55 -32560193.41 -32560193.27 0.0280 0.0103

Mercury -93858-04-17 17:15 J -32560104.88 -32560104.78 -32560104.67 0.0280 0.0199

Venus -93858-05-03 13:25 J -32560089.04 -32560088.94 -32560088.83 0.0280 0.0242

Venus -93858-12-18 23:44 J -32559859.71 -32559859.51 -32559859.30 0.0281 0.0062

Earth -93857-01-31 23:30 J -32559815.71 -32559815.52 -32559815.32 0.0281 0.0165

Moon -93857-02-01 02:51 J -32559815.56 -32559815.38 -32559815.19 0.0281 0.0179 \*

Moon -93856-02-12 21:35 J -32559437.83 -32559437.60 -32559437.36 0.0282 0.0099

Earth -93856-02-12 22:03 J -32559437.80 -32559437.58 -32559437.35 0.0282 0.0105 \*

Mars -93851-09-10 23:59 J -32557401.79 -32557401.50 -32557401.20 0.0283 0.0040

Mercury -93845-09-05 12:27 J -32555215.05 -32555214.98 -32555214.89 0.0279 0.0244

Mercury -93845-12-03 05:59 J -32555126.39 -32555126.25 -32555126.11 0.0279 0.0142

Mercury -93844-03-01 23:01 J -32555037.70 -32555037.54 -32555037.38 0.0279 0.0042

Mercury -93844-05-29 15:35 J -32554949.01 -32554948.85 -32554948.70 0.0278 0.0056

Mercury -93844-08-26 07:39 J -32554860.31 -32554860.18 -32554860.04 0.0278 0.0151

Venus -93844-10-20 18:27 J -32554804.80 -32554804.73 -32554804.64 0.0278 0.0257

Mercury -93844-11-22 23:30 J -32554771.59 -32554771.52 -32554771.44 0.0278 0.0244

Venus -93843-06-07 07:54 J -32554575.38 -32554575.17 -32554574.96 0.0277 0.0045  
 Moon -93843-08-10 03:49 J -32554511.54 -32554511.34 -32554511.12 0.0277 0.0153  
 Earth -93843-08-10 07:25 J -32554511.39 -32554511.19 -32554510.99 0.0277 0.0163 \*  
 Moon -93842-08-23 08:37 J -32554133.36 -32554133.14 -32554132.91 0.0277 0.0104  
 Earth -93842-08-23 11:44 J -32554133.24 -32554133.01 -32554132.77 0.0277 0.0101 \*  
 Mars -93837-08-22 07:11 J -32552307.43 -32552307.20 -32552306.95 0.0275 0.0144  
 Mars -93835-08-22 14:08 J -32551576.91 -32551576.91 -32551576.86 0.0276 0.0276  
 Mercury -93830-09-15 06:27 J -32549727.32 -32549727.23 -32549727.13 0.0280 0.0208  
 Mercury -93830-12-12 20:37 J -32549638.77 -32549638.64 -32549638.50 0.0280 0.0119  
 Mercury -93829-03-10 11:15 J -32549550.18 -32549550.03 -32549549.88 0.0280 0.0027  
 Mercury -93829-06-07 01:54 J -32549461.56 -32549461.42 -32549461.27 0.0281 0.0068  
 Mercury -93829-09-03 17:01 J -32549372.91 -32549372.79 -32549372.66 0.0281 0.0163  
 Venus -93829-11-12 14:37 J -32549303.02 -32549302.89 -32549302.75 0.0281 0.0213  
 Mercury -93829-12-01 08:37 J -32549284.19 -32549284.14 -32549284.08 0.0281 0.0260  
 Venus -93828-06-30 00:56 J -32549073.66 -32549073.46 -32549073.26 0.0281 0.0091  
 Earth -93827-02-07 07:11 J -32548851.45 -32548851.20 -32548850.96 0.0282 0.0019  
 Moon -93827-02-07 07:25 J -32548851.42 -32548851.19 -32548850.95 0.0282 0.0028 \*  
 Earth -93826-02-20 09:06 J -32548473.23 -32548473.12 -32548473.02 0.0282 0.0253  
 Moon -93826-02-20 12:42 J -32548473.07 -32548472.97 -32548472.86 0.0282 0.0254 \*  
 Mars -93821-10-30 19:39 J -32546393.88 -32546393.68 -32546393.46 0.0283 0.0198  
 Mercury -93815-01-23 12:42 J -32544482.99 -32544482.97 -32544482.95 0.0279 0.0276  
 Mercury -93815-04-22 06:13 J -32544394.36 -32544394.24 -32544394.11 0.0279 0.0173  
 Mercury -93815-07-19 23:15 J -32544305.68 -32544305.53 -32544305.37 0.0279 0.0072  
 Mercury -93815-10-16 16:03 J -32544216.99 -32544216.83 -32544216.67 0.0279 0.0028  
 Mercury -93814-01-13 08:23 J -32544128.29 -32544128.15 -32544128.00 0.0279 0.0124  
 Mercury -93814-04-12 00:27 J -32544039.57 -32544039.48 -32544039.38 0.0278 0.0217  
 Venus -93814-05-02 23:44 J -32544018.64 -32544018.51 -32544018.37 0.0278 0.0216  
 Moon -93814-08-04 21:06 J -32543924.67 -32543924.62 -32543924.55 0.0278 0.0269  
 Venus -93814-12-18 12:56 J -32543789.16 -32543788.96 -32543788.75 0.0278 0.0087  
 Earth -93813-08-17 02:23 J -32543546.64 -32543546.40 -32543546.15 0.0278 0.0014

Moon -93813-08-17 05:30 J -32543546.52 -32543546.27 -32543546.01 0.0278 0.0009 \*  
 Moon -93812-08-30 03:06 J -32543168.48 -32543168.37 -32543168.24 0.0277 0.0242  
 Earth -93812-08-30 04:03 J -32543168.43 -32543168.33 -32543168.21 0.0277 0.0247 \*  
 Mars -93807-10-10 17:44 J -32541301.05 -32541300.76 -32541300.47 0.0276 0.0002  
 Mercury -93800-02-01 10:03 J -32538995.17 -32538995.08 -32538994.99 0.0280 0.0221  
 Mercury -93800-05-01 00:13 J -32538906.62 -32538906.49 -32538906.36 0.0280 0.0132  
 Mercury -93800-07-28 14:37 J -32538818.04 -32538817.89 -32538817.74 0.0280 0.0041  
 Mercury -93800-10-25 05:15 J -32538729.42 -32538729.28 -32538729.13 0.0280 0.0053  
 Mercury -93799-01-21 20:23 J -32538640.78 -32538640.65 -32538640.52 0.0280 0.0148  
 Mercury -93799-04-20 11:44 J -32538552.08 -32538552.01 -32538551.93 0.0280 0.0246  
 Venus -93799-05-26 01:11 J -32538516.62 -32538516.45 -32538516.27 0.0281 0.0154  
 Venus -93798-01-10 11:44 J -32538287.18 -32538287.01 -32538286.83 0.0281 0.0151  
 Earth -93798-02-02 08:51 J -32538264.33 -32538264.13 -32538263.91 0.0281 0.0131  
 Moon -93798-02-02 09:06 J -32538264.33 -32538264.12 -32538263.90 0.0281 0.0144 \*  
 Moon -93797-02-15 04:32 J -32537886.52 -32537886.31 -32537886.09 0.0282 0.0135  
 Earth -93797-02-15 08:08 J -32537886.37 -32537886.16 -32537885.94 0.0282 0.0138 \*  
 Mars -93793-12-15 11:15 J -32536121.30 -32536121.03 -32536120.75 0.0283 0.0110  
 Mercury -93786-09-09 07:39 J -32533662.29 -32533662.18 -32533662.06 0.0279 0.0197  
 Mercury -93786-12-07 00:56 J -32533573.61 -32533573.46 -32533573.31 0.0279 0.0096  
 Mercury -93785-03-04 17:44 J -32533484.92 -32533484.76 -32533484.60 0.0279 0.0004  
 Mercury -93785-06-01 10:03 J -32533396.22 -32533396.08 -32533395.93 0.0278 0.0101  
 Mercury -93785-08-29 02:08 J -32533307.52 -32533307.41 -32533307.30 0.0278 0.0195  
 Venus -93785-11-12 06:56 J -32533232.38 -32533232.21 -32533232.04 0.0278 0.0170  
 Venus -93784-06-29 19:39 J -32533002.86 -32533002.68 -32533002.49 0.0277 0.0132  
 Moon -93784-08-11 14:23 J -32532960.11 -32532959.90 -32532959.67 0.0277 0.0123  
 Earth -93784-08-11 17:01 J -32532960.00 -32532959.79 -32532959.56 0.0277 0.0130 \*  
 Earth -93783-08-24 21:06 J -32532581.83 -32532581.62 -32532581.40 0.0277 0.0133  
 Moon -93783-08-24 22:03 J -32532581.78 -32532581.58 -32532581.36 0.0277 0.0133 \*  
 Mars -93779-11-29 17:01 J -32531023.86 -32531023.79 -32531023.70 0.0275 0.0263  
 Mars -93777-11-27 22:32 J -32530294.80 -32530294.56 -32530294.30 0.0276 0.0143



Mercury -93771-06-21 10:32 J -32528263.11 -32528263.06 -32528263.00 0.0280 0.0253

Mercury -93771-09-18 00:42 J -32528174.59 -32528174.47 -32528174.35 0.0280 0.0165

Mercury -93771-12-15 14:51 J -32528086.02 -32528085.88 -32528085.73 0.0280 0.0075

Mercury -93770-03-14 05:30 J -32527997.42 -32527997.27 -32527997.12 0.0280 0.0019

Mercury -93770-06-10 20:23 J -32527908.78 -32527908.65 -32527908.51 0.0281 0.0113

Mercury -93770-09-07 11:44 J -32527820.11 -32527820.01 -32527819.91 0.0281 0.0210

Venus -93770-12-06 02:51 J -32527730.56 -32527730.38 -32527730.18 0.0281 0.0124

Earth -93769-01-27 21:35 J -32527677.70 -32527677.60 -32527677.48 0.0281 0.0247

Moon -93769-01-27 21:49 J -32527677.66 -32527677.59 -32527677.51 0.0281 0.0263 \*

Venus -93769-07-22 13:25 J -32527501.09 -32527500.94 -32527500.77 0.0281 0.0182

Earth -93768-02-08 17:44 J -32527300.01 -32527299.76 -32527299.52 0.0282 0.0016

Moon -93768-02-08 21:06 J -32527299.86 -32527299.62 -32527299.38 0.0282 0.0007 \*

Mars -93762-02-04 17:59 J -32525113.04 -32525112.75 -32525112.45 0.0283 0.0054

Mercury -93756-01-26 07:39 J -32522930.27 -32522930.18 -32522930.09 0.0279 0.0230

Mercury -93756-04-25 00:56 J -32522841.60 -32522841.46 -32522841.31 0.0279 0.0127

Mercury -93756-07-22 17:59 J -32522752.91 -32522752.75 -32522752.59 0.0279 0.0027

Mercury -93756-10-19 10:32 J -32522664.21 -32522664.06 -32522663.90 0.0279 0.0071

Mercury -93755-01-16 02:37 J -32522575.51 -32522575.39 -32522575.26 0.0278 0.0167

Mercury -93755-04-14 18:27 J -32522486.77 -32522486.73 -32522486.67 0.0278 0.0260

Venus -93755-05-25 11:30 J -32522446.21 -32522446.02 -32522445.83 0.0278 0.0131

Earth -93755-08-06 02:23 J -32522373.49 -32522373.40 -32522373.27 0.0278 0.0249

Moon -93755-08-06 05:01 J -32522373.41 -32522373.29 -32522373.14 0.0278 0.0237 \*

Venus -93754-01-10 00:13 J -32522216.65 -32522216.49 -32522216.32 0.0278 0.0172

Moon -93754-08-19 09:06 J -32521995.37 -32521995.12 -32521994.86 0.0278 0.0019

Earth -93754-08-19 10:47 J -32521995.30 -32521995.05 -32521994.80 0.0278 0.0018 \*

Moon -93753-08-31 08:08 J -32521617.20 -32521617.16 -32521617.09 0.0277 0.0269

Earth -93753-08-31 12:13 J -32521617.01 -32521616.99 -32521616.97 0.0277 0.0275

Mars -93748-01-16 16:32 J -32520018.05 -32520017.81 -32520017.55 0.0276 0.0127

Mercury -93742-11-08 14:08 J -32517530.95 -32517530.91 -32517530.87 0.0280 0.0266

Mercury -93741-02-05 04:03 J -32517442.44 -32517442.33 -32517442.21 0.0280 0.0178

Mercury -93741-05-03 18:27 J -32517353.87 -32517353.73 -32517353.59 0.0280 0.0088

Mercury -93741-07-31 09:06 J -32517265.27 -32517265.12 -32517264.97 0.0280 0.0009

Mercury -93741-10-27 23:59 J -32517176.64 -32517176.50 -32517176.36 0.0280 0.0100

Mercury -93740-01-24 14:51 J -32517087.98 -32517087.88 -32517087.76 0.0280 0.0197

Venus -93740-06-17 13:54 J -32516944.12 -32516943.92 -32516943.71 0.0281 0.0064

Venus -93739-02-02 00:27 J -32516714.57 -32516714.48 -32516714.37 0.0281 0.0243

Moon -93739-02-03 16:32 J -32516713.03 -32516712.81 -32516712.58 0.0281 0.0110

Earth -93739-02-03 20:08 J -32516712.89 -32516712.66 -32516712.43 0.0281 0.0096 \*

Moon -93738-02-16 17:59 J -32516334.94 -32516334.75 -32516334.56 0.0282 0.0168

Earth -93738-02-16 19:39 J -32516334.86 -32516334.68 -32516334.48 0.0282 0.0172 \*

Mars -93734-03-21 12:42 J -32514841.07 -32514840.97 -32514840.85 0.0283 0.0264

Mars -93732-03-27 17:01 J -32514103.97 -32514103.79 -32514103.59 0.0283 0.0217

Mercury -93727-06-15 09:35 J -32512198.16 -32512198.10 -32512198.03 0.0279 0.0251

Mercury -93727-09-12 03:06 J -32512109.51 -32512109.37 -32512109.23 0.0279 0.0149

Mercury -93727-12-09 20:08 J -32512020.82 -32512020.66 -32512020.50 0.0279 0.0048

Mercury -93726-03-08 12:42 J -32511932.12 -32511931.97 -32511931.81 0.0278 0.0050

Mercury -93726-06-05 05:01 J -32511843.42 -32511843.29 -32511843.16 0.0278 0.0146

Mercury -93726-09-01 20:51 J -32511754.70 -32511754.63 -32511754.55 0.0278 0.0239

Venus -93726-12-05 19:54 J -32511659.87 -32511659.67 -32511659.46 0.0278 0.0081

Venus -93725-07-22 07:54 J -32511430.28 -32511430.17 -32511430.03 0.0277 0.0221

Earth -93725-08-13 04:03 J -32511408.57 -32511408.33 -32511408.10 0.0277 0.0095

Moon -93725-08-13 05:30 J -32511408.49 -32511408.27 -32511408.03 0.0277 0.0091 \*

Earth -93724-08-26 07:25 J -32511030.39 -32511030.19 -32511029.99 0.0277 0.0165

Moon -93724-08-26 11:15 J -32511030.23 -32511030.03 -32511029.83 0.0277 0.0162 \*

Mars -93718-03-06 17:15 J -32509012.06 -32509011.78 -32509011.49 0.0276 0.0013

Mercury -93712-06-24 04:47 J -32506710.39 -32506710.30 -32506710.20 0.0280 0.0210

Mercury -93712-09-20 18:56 J -32506621.84 -32506621.71 -32506621.57 0.0280 0.0120

Mercury -93712-12-18 09:20 J -32506533.26 -32506533.11 -32506532.96 0.0280 0.0029

Mercury -93711-03-17 00:13 J -32506444.64 -32506444.49 -32506444.35 0.0280 0.0065

Mercury -93711-06-13 15:06 J -32506355.99 -32506355.87 -32506355.74 0.0281 0.0161

Mercury -93711-09-10 06:27 J -32506267.28 -32506267.23 -32506267.16 0.0281 0.0259

Venus -93711-12-28 16:03 J -32506158.04 -32506157.83 -32506157.62 0.0281 0.0032

Earth -93710-01-29 08:37 J -32506126.29 -32506126.14 -32506125.97 0.0281 0.0212

Moon -93710-01-29 12:13 J -32506126.12 -32506125.99 -32506125.84 0.0281 0.0228 \*

Venus -93710-08-15 02:51 J -32505928.42 -32505928.38 -32505928.34 0.0282 0.0275

Earth -93709-02-11 05:15 J -32505748.52 -32505748.28 -32505748.04 0.0282 0.0051

Moon -93709-02-11 07:25 J -32505748.44 -32505748.19 -32505747.95 0.0282 0.0043 \*

Mars -93704-05-11 06:13 J -32503832.52 -32503832.24 -32503831.95 0.0283 0.0097

Mercury -93697-01-30 02:51 J -32501377.50 -32501377.38 -32501377.25 0.0279 0.0181

Mercury -93697-04-27 20:08 J -32501288.81 -32501288.66 -32501288.50 0.0279 0.0080

Mercury -93697-07-25 12:56 J -32501200.12 -32501199.96 -32501199.80 0.0279 0.0020

Mercury -93697-10-22 05:15 J -32501111.42 -32501111.28 -32501111.13 0.0278 0.0117

Mercury -93696-01-18 21:20 J -32501022.71 -32501022.61 -32501022.50 0.0278 0.0211

Venus -93696-06-16 23:59 J -32500873.71 -32500873.50 -32500873.29 0.0278 0.0042

Moon -93696-08-07 11:30 J -32500822.18 -32500822.02 -32500821.84 0.0278 0.0206

Earth -93696-08-07 13:11 J -32500822.10 -32500821.95 -32500821.78 0.0278 0.0214 \*

Venus -93695-02-01 12:13 J -32500644.05 -32500643.99 -32500643.90 0.0278 0.0260

Moon -93695-08-20 17:01 J -32500444.03 -32500443.79 -32500443.55 0.0277 0.0048

Earth -93695-08-20 20:37 J -32500443.88 -32500443.64 -32500443.39 0.0277 0.0051 \*

Mars -93690-04-26 00:42 J -32498734.57 -32498734.47 -32498734.34 0.0276 0.0250

Mars -93688-04-24 10:47 J -32498005.28 -32498005.05 -32498004.80 0.0277 0.0161

Mercury -93683-11-11 08:08 J -32495978.25 -32495978.16 -32495978.07 0.0280 0.0224

Mercury -93682-02-07 22:18 J -32495889.70 -32495889.57 -32495889.44 0.0280 0.0135

Mercury -93682-05-07 12:42 J -32495801.12 -32495800.97 -32495800.82 0.0280 0.0043

Mercury -93682-08-04 03:20 J -32495712.51 -32495712.36 -32495712.21 0.0280 0.0051

Mercury -93682-10-31 18:27 J -32495623.86 -32495623.73 -32495623.60 0.0280 0.0146

Venus -93682-11-23 16:47 J -32495600.83 -32495600.80 -32495600.77 0.0280 0.0277

Mercury -93681-01-28 09:49 J -32495535.16 -32495535.09 -32495535.02 0.0281 0.0244

Venus -93681-07-10 02:37 J -32495371.60 -32495371.39 -32495371.18 0.0281 0.0027

Moon -93680-02-05 05:01 J -32495161.52 -32495161.29 -32495161.07 0.0281 0.0074

Earth -93680-02-05 07:11 J -32495161.44 -32495161.20 -32495160.97 0.0281 0.0062 \*  
 Earth -93679-02-18 07:11 J -32494783.35 -32494783.20 -32494783.02 0.0282 0.0206  
 Moon -93679-02-18 09:20 J -32494783.26 -32494783.11 -32494782.94 0.0282 0.0204 \*  
 Mars -93674-07-02 20:51 J -32492822.91 -32492822.63 -32492822.34 0.0283 0.0074  
 Mercury -93668-06-18 05:15 J -32490645.39 -32490645.28 -32490645.16 0.0279 0.0201  
 Mercury -93668-09-14 22:32 J -32490556.71 -32490556.56 -32490556.41 0.0279 0.0100  
 Mercury -93668-12-12 15:20 J -32490468.01 -32490467.86 -32490467.69 0.0279 0.0009  
 Mercury -93667-03-11 07:54 J -32490379.32 -32490379.17 -32490379.02 0.0278 0.0098  
 Mercury -93667-06-07 23:59 J -32490290.61 -32490290.50 -32490290.39 0.0278 0.0192  
 Venus -93667-12-28 09:20 J -32490087.32 -32490087.11 -32490086.90 0.0278 0.0009  
 Earth -93666-08-15 15:20 J -32489857.10 -32489856.86 -32489856.61 0.0277 0.0060  
 Moon -93666-08-15 19:11 J -32489856.95 -32489856.70 -32489856.46 0.0277 0.0055 \*  
 Earth -93665-08-27 17:59 J -32489478.91 -32489478.75 -32489478.56 0.0277 0.0198  
 Moon -93665-08-27 18:42 J -32489478.89 -32489478.72 -32489478.52 0.0277 0.0192 \*  
 Mars -93660-06-12 20:51 J -32487728.88 -32487728.63 -32487728.37 0.0275 0.0114  
 Mercury -93653-03-30 09:06 J -32485246.18 -32485246.12 -32485246.06 0.0280 0.0254  
 Mercury -93653-06-26 23:01 J -32485157.65 -32485157.54 -32485157.42 0.0280 0.0166  
 Mercury -93653-09-23 13:25 J -32485069.08 -32485068.94 -32485068.80 0.0280 0.0075  
 Mercury -93653-12-21 04:03 J -32484980.48 -32484980.33 -32484980.18 0.0280 0.0019  
 Mercury -93652-03-19 18:56 J -32484891.85 -32484891.71 -32484891.57 0.0281 0.0113  
 Venus -93652-06-04 19:11 J -32484814.80 -32484814.70 -32484814.59 0.0281 0.0244  
 Mercury -93652-06-16 10:03 J -32484803.18 -32484803.08 -32484802.98 0.0281 0.0210  
 Venus -93651-01-20 05:15 J -32484585.49 -32484585.28 -32484585.08 0.0281 0.0061  
 Earth -93651-01-30 20:08 J -32484574.84 -32484574.66 -32484574.47 0.0281 0.0177  
 Moon -93651-01-30 22:03 J -32484574.76 -32484574.58 -32484574.39 0.0281 0.0190 \*  
 Moon -93650-02-12 15:06 J -32484197.11 -32484196.87 -32484196.63 0.0282 0.0081  
 Earth -93650-02-12 17:15 J -32484197.00 -32484196.78 -32484196.54 0.0282 0.0087 \*  
 Mars -93646-08-15 09:49 J -32482552.21 -32482552.09 -32482551.93 0.0283 0.0251  
 Mars -93644-08-21 14:23 J -32481815.06 -32481814.90 -32481814.72 0.0282 0.0231  
 Mercury -93639-11-05 04:47 J -32479913.38 -32479913.30 -32479913.21 0.0279 0.0236

Mercury -93638-02-01 22:18 J -32479824.71 -32479824.57 -32479824.43 0.0279 0.0133  
 Mercury -93638-05-01 15:20 J -32479736.02 -32479735.86 -32479735.70 0.0279 0.0032  
 Mercury -93638-07-29 07:54 J -32479647.32 -32479647.17 -32479647.01 0.0278 0.0066  
 Mercury -93638-10-25 23:59 J -32479558.62 -32479558.50 -32479558.36 0.0278 0.0163  
 Venus -93638-11-22 23:01 J -32479530.61 -32479530.54 -32479530.45 0.0278 0.0259  
 Mercury -93637-01-22 16:03 J -32479469.89 -32479469.83 -32479469.77 0.0278 0.0255  
 Venus -93637-07-09 12:42 J -32479301.18 -32479300.97 -32479300.76 0.0278 0.0047  
 Moon -93637-08-08 20:37 J -32479270.83 -32479270.64 -32479270.44 0.0278 0.0171  
 Earth -93637-08-09 00:13 J -32479270.67 -32479270.49 -32479270.29 0.0278 0.0179 \*  
 Moon -93636-08-22 06:13 J -32478892.46 -32478892.24 -32478892.01 0.0277 0.0081  
 Earth -93636-08-22 06:42 J -32478892.45 -32478892.22 -32478891.98 0.0277 0.0083 \*  
 Mars -93630-08-01 01:25 J -32476722.72 -32476722.44 -32476722.15 0.0276 0.0028  
 Mercury -93624-08-17 11:59 J -32474514.03 -32474514.00 -32474513.96 0.0280 0.0271  
 Mercury -93624-11-14 01:54 J -32474425.52 -32474425.42 -32474425.30 0.0280 0.0183  
 Mercury -93623-02-10 16:18 J -32474336.96 -32474336.82 -32474336.68 0.0280 0.0092  
 Mercury -93623-05-10 06:56 J -32474248.36 -32474248.21 -32474248.06 0.0280 0.0006  
 Mercury -93623-08-06 21:35 J -32474159.74 -32474159.60 -32474159.45 0.0280 0.0096  
 Mercury -93623-11-03 12:56 J -32474071.07 -32474070.96 -32474070.85 0.0281 0.0193  
 Venus -93623-12-16 04:47 J -32474028.46 -32474028.30 -32474028.15 0.0281 0.0189  
 Venus -93622-08-02 15:06 J -32473799.06 -32473798.87 -32473798.68 0.0281 0.0117  
 Earth -93621-02-07 17:30 J -32473610.01 -32473609.77 -32473609.53 0.0281 0.0027  
 Moon -93621-02-07 19:39 J -32473609.91 -32473609.68 -32473609.44 0.0281 0.0037 \*  
 Earth -93620-02-19 18:27 J -32473231.85 -32473231.73 -32473231.60 0.0282 0.0239  
 Moon -93620-02-19 21:49 J -32473231.71 -32473231.59 -32473231.45 0.0282 0.0237 \*  
 Mars -93616-10-06 12:13 J -32471542.28 -32471541.99 -32471541.70 0.0283 0.0076  
 Mercury -93609-03-24 07:25 J -32469181.24 -32469181.19 -32469181.11 0.0279 0.0254  
 Mercury -93609-06-21 00:56 J -32469092.59 -32469092.46 -32469092.32 0.0279 0.0151  
 Mercury -93609-09-17 18:13 J -32469003.90 -32469003.74 -32469003.58 0.0279 0.0050  
 Mercury -93609-12-15 10:47 J -32468915.20 -32468915.05 -32468914.89 0.0278 0.0049  
 Mercury -93608-03-14 03:06 J -32468826.50 -32468826.37 -32468826.23 0.0278 0.0145

Venus -93608-06-04 10:03 J -32468744.22 -32468744.08 -32468743.94 0.0278 0.0205  
 Mercury -93608-06-10 18:56 J -32468737.78 -32468737.71 -32468737.63 0.0278 0.0239  
 Moon -93608-08-03 22:47 J -32468683.59 -32468683.55 -32468683.49 0.0278 0.0271  
 Venus -93607-01-19 23:01 J -32468514.74 -32468514.54 -32468514.34 0.0278 0.0100  
 Earth -93607-08-17 03:35 J -32468305.59 -32468305.35 -32468305.10 0.0277 0.0025  
 Moon -93607-08-17 04:32 J -32468305.56 -32468305.31 -32468305.05 0.0277 0.0021 \*  
 Moon -93606-08-30 02:08 J -32467927.55 -32467927.41 -32467927.25 0.0277 0.0221  
 Earth -93606-08-30 05:30 J -32467927.39 -32467927.27 -32467927.12 0.0277 0.0231 \*  
 Mars -93602-09-20 08:08 J -32466445.30 -32466445.16 -32466445.02 0.0275 0.0236  
 Jupiter -93601-10-14 23:59 J -32466054.74 -32466054.50 -32466054.22 0.0275 0.0222  
 Mars -93600-09-18 15:35 J -32465716.06 -32465715.85 -32465715.62 0.0276 0.0174  
 Mercury -93594-04-03 03:06 J -32463693.46 -32463693.37 -32463693.28 0.0280 0.0212  
 Mercury -93594-06-30 17:15 J -32463604.91 -32463604.78 -32463604.65 0.0280 0.0122  
 Mercury -93594-09-27 07:39 J -32463516.33 -32463516.18 -32463516.03 0.0280 0.0031  
 Mercury -93594-12-24 22:18 J -32463427.72 -32463427.57 -32463427.42 0.0280 0.0063  
 Mercury -93593-03-22 13:11 J -32463339.07 -32463338.95 -32463338.82 0.0281 0.0160  
 Mercury -93593-06-19 04:47 J -32463250.36 -32463250.30 -32463250.24 0.0281 0.0257  
 Venus -93593-06-27 07:11 J -32463242.36 -32463242.20 -32463242.02 0.0281 0.0156  
 Moon -93592-02-01 03:35 J -32463023.55 -32463023.35 -32463023.13 0.0281 0.0154  
 Earth -93592-02-01 06:42 J -32463023.43 -32463023.22 -32463023.02 0.0281 0.0143 \*  
 Venus -93592-02-11 17:30 J -32463012.94 -32463012.77 -32463012.59 0.0281 0.0151  
 Moon -93591-02-14 00:42 J -32462645.68 -32462645.47 -32462645.24 0.0282 0.0117  
 Earth -93591-02-14 04:18 J -32462645.53 -32462645.32 -32462645.10 0.0282 0.0121 \*  
 Mars -93586-11-26 17:30 J -32460534.05 -32460533.77 -32460533.48 0.0283 0.0087  
 Mercury -93580-11-08 00:27 J -32458360.60 -32458360.48 -32458360.36 0.0279 0.0186  
 Mercury -93579-02-04 17:44 J -32458271.92 -32458271.76 -32458271.61 0.0279 0.0085  
 Mercury -93579-05-04 10:32 J -32458183.22 -32458183.06 -32458182.90 0.0278 0.0015  
 Mercury -93579-08-01 02:51 J -32458094.52 -32458094.38 -32458094.23 0.0278 0.0112  
 Mercury -93579-10-28 18:56 J -32458005.81 -32458005.71 -32458005.60 0.0278 0.0207  
 Venus -93579-12-15 12:27 J -32457958.15 -32457957.98 -32457957.81 0.0278 0.0169

Venus -93578-08-02 01:11 J -32457728.63 -32457728.45 -32457728.25 0.0278 0.0136  
 Moon -93578-08-11 10:18 J -32457719.27 -32457719.07 -32457718.85 0.0278 0.0138  
 Earth -93578-08-11 11:15 J -32457719.24 -32457719.03 -32457718.81 0.0278 0.0144 \*  
 Earth -93577-08-23 16:47 J -32457341.02 -32457340.80 -32457340.57 0.0277 0.0116  
 Moon -93577-08-23 20:08 J -32457340.88 -32457340.66 -32457340.44 0.0277 0.0111 \*  
 Mars -93572-11-06 23:15 J -32455439.79 -32455439.53 -32455439.26 0.0276 0.0102  
 Mercury -93565-08-20 05:30 J -32452961.34 -32452961.27 -32452961.18 0.0280 0.0232  
 Mercury -93565-11-16 19:39 J -32452872.80 -32452872.68 -32452872.55 0.0280 0.0142  
 Mercury -93564-02-13 10:03 J -32452784.23 -32452784.08 -32452783.93 0.0280 0.0050  
 Mercury -93564-05-13 00:42 J -32452695.62 -32452695.47 -32452695.32 0.0280 0.0044  
 Mercury -93564-08-09 15:49 J -32452606.97 -32452606.84 -32452606.71 0.0281 0.0140  
 Mercury -93564-11-06 06:56 J -32452518.28 -32452518.21 -32452518.12 0.0281 0.0238  
 Venus -93563-01-07 15:49 J -32452456.03 -32452455.84 -32452455.64 0.0281 0.0103  
 Earth -93563-01-27 06:27 J -32452436.32 -32452436.23 -32452436.11 0.0281 0.0252  
 Moon -93563-01-27 09:06 J -32452436.19 -32452436.12 -32452436.04 0.0281 0.0265 \*  
 Venus -93563-08-25 02:37 J -32452226.53 -32452226.39 -32452226.25 0.0281 0.0206  
 Earth -93562-02-09 02:37 J -32452058.63 -32452058.39 -32452058.15 0.0282 0.0007  
 Moon -93562-02-09 05:59 J -32452058.49 -32452058.25 -32452058.00 0.0282 0.0003 \*  
 Earth -93561-02-22 04:03 J -32451680.37 -32451680.33 -32451680.25 0.0282 0.0272  
 Moon -93561-02-22 04:18 J -32451680.37 -32451680.32 -32451680.25 0.0282 0.0272 \*  
 Mars -93557-01-10 13:25 J -32450262.10 -32450261.94 -32450261.76 0.0283 0.0231  
 Mars -93555-01-16 16:47 J -32449524.92 -32449524.80 -32449524.65 0.0283 0.0249  
 Mercury -93550-03-28 03:20 J -32447628.47 -32447628.36 -32447628.25 0.0279 0.0204  
 Mercury -93550-06-24 20:37 J -32447539.79 -32447539.64 -32447539.49 0.0279 0.0102  
 Mercury -93550-09-21 13:25 J -32447451.10 -32447450.94 -32447450.78 0.0279 0.0003  
 Mercury -93550-12-19 05:59 J -32447362.40 -32447362.25 -32447362.10 0.0278 0.0096  
 Mercury -93549-03-16 21:49 J -32447273.69 -32447273.59 -32447273.47 0.0278 0.0192  
 Venus -93549-06-26 23:15 J -32447171.72 -32447171.53 -32447171.33 0.0278 0.0115  
 Earth -93549-08-05 06:56 J -32447132.31 -32447132.21 -32447132.09 0.0278 0.0248  
 Moon -93549-08-05 07:39 J -32447132.30 -32447132.18 -32447132.03 0.0278 0.0237 \*

Venus -93548-02-11 11:44 J -32446942.16 -32446942.01 -32446941.85 0.0278 0.0189  
 Moon -93548-08-18 11:44 J -32446754.26 -32446754.01 -32446753.75 0.0277 0.0013  
 Earth -93548-08-18 14:51 J -32446754.13 -32446753.88 -32446753.63 0.0277 0.0011 \*  
 Moon -93547-08-31 13:11 J -32446376.03 -32446375.95 -32446375.85 0.0276 0.0254  
 Earth -93547-08-31 15:49 J -32446375.91 -32446375.84 -32446375.76 0.0276 0.0262 \*  
 Mars -93542-12-26 06:56 J -32444433.49 -32444433.21 -32444432.92 0.0275 0.0042  
 Mercury -93535-01-07 06:42 J -32442229.26 -32442229.22 -32442229.16 0.0280 0.0260  
 Mercury -93535-04-05 20:51 J -32442140.75 -32442140.63 -32442140.52 0.0280 0.0171  
 Mercury -93535-07-03 11:01 J -32442052.18 -32442052.04 -32442051.90 0.0280 0.0081  
 Mercury -93535-09-30 01:39 J -32441963.58 -32441963.43 -32441963.28 0.0280 0.0014  
 Mercury -93535-12-27 16:18 J -32441874.95 -32441874.82 -32441874.68 0.0280 0.0108  
 Mercury -93534-03-26 07:25 J -32441786.29 -32441786.19 -32441786.08 0.0281 0.0205  
 Venus -93534-07-20 18:42 J -32441669.92 -32441669.72 -32441669.51 0.0281 0.0069  
 Moon -93533-02-03 12:13 J -32441472.20 -32441471.99 -32441471.77 0.0281 0.0119  
 Earth -93533-02-03 15:20 J -32441472.08 -32441471.86 -32441471.63 0.0281 0.0109 \*  
 Venus -93533-03-06 05:15 J -32441440.39 -32441440.28 -32441440.17 0.0281 0.0240  
 Earth -93532-02-15 13:54 J -32441094.13 -32441093.92 -32441093.72 0.0282 0.0154  
 Moon -93532-02-15 14:23 J -32441094.10 -32441093.90 -32441093.70 0.0282 0.0153 \*  
 Mars -93527-03-02 05:15 J -32439253.58 -32439253.28 -32439252.99 0.0283 0.0064  
 Mercury -93521-08-14 02:08 J -32436896.48 -32436896.41 -32436896.32 0.0279 0.0242  
 Mercury -93521-11-10 19:39 J -32436807.82 -32436807.68 -32436807.54 0.0279 0.0138  
 Mercury -93520-02-07 12:42 J -32436719.13 -32436718.97 -32436718.81 0.0278 0.0038  
 Mercury -93520-05-07 05:30 J -32436630.43 -32436630.27 -32436630.12 0.0278 0.0061  
 Mercury -93520-08-03 21:49 J -32436541.72 -32436541.59 -32436541.46 0.0278 0.0157  
 Mercury -93520-10-31 13:25 J -32436452.99 -32436452.94 -32436452.86 0.0278 0.0251  
 Venus -93519-01-07 01:11 J -32436385.66 -32436385.45 -32436385.25 0.0278 0.0081  
 Earth -93519-08-12 21:35 J -32436167.82 -32436167.60 -32436167.37 0.0277 0.0109  
 Moon -93519-08-13 00:56 J -32436167.69 -32436167.46 -32436167.23 0.0277 0.0104 \*  
 Venus -93519-08-24 13:39 J -32436156.05 -32436155.93 -32436155.80 0.0277 0.0223  
 Earth -93518-08-26 02:23 J -32435789.60 -32435789.40 -32435789.18 0.0277 0.0148



Moon -93518-08-26 05:01 J -32435789.49 -32435789.29 -32435789.06 0.0277 0.0144 \*  
 Mars -93513-02-14 04:03 J -32434156.48 -32434156.33 -32434156.16 0.0276 0.0225  
 Mars -93511-02-12 13:39 J -32433427.13 -32433426.93 -32433426.71 0.0276 0.0186  
 Mercury -93506-08-23 22:47 J -32431408.65 -32431408.55 -32431408.44 0.0280 0.0194  
 Mercury -93506-11-20 12:56 J -32431320.09 -32431319.96 -32431319.82 0.0280 0.0104  
 Mercury -93505-02-17 03:35 J -32431231.50 -32431231.35 -32431231.20 0.0280 0.0013  
 Mercury -93505-05-15 18:13 J -32431142.88 -32431142.74 -32431142.59 0.0281 0.0084  
 Mercury -93505-08-12 09:20 J -32431054.22 -32431054.11 -32431053.99 0.0281 0.0181  
 Mercury -93505-11-09 00:56 J -32430965.47 -32430965.46 -32430965.45 0.0281 0.0279  
 Earth -93504-01-28 12:56 J -32430885.11 -32430884.96 -32430884.81 0.0281 0.0220  
 Moon -93504-01-28 15:49 J -32430884.96 -32430884.84 -32430884.69 0.0281 0.0235 \*  
 Venus -93504-01-30 01:39 J -32430883.64 -32430883.43 -32430883.22 0.0281 0.0020  
 Moon -93503-02-10 08:37 J -32430507.39 -32430507.14 -32430506.89 0.0282 0.0034  
 Earth -93503-02-10 09:20 J -32430507.35 -32430507.11 -32430506.87 0.0282 0.0038 \*  
 Mars -93497-04-22 13:25 J -32428244.22 -32428243.94 -32428243.66 0.0283 0.0104  
 Mercury -93491-01-01 05:01 J -32426164.35 -32426164.29 -32426164.23 0.0279 0.0260  
 Mercury -93491-03-30 22:32 J -32426075.69 -32426075.56 -32426075.43 0.0279 0.0157  
 Mercury -93491-06-27 15:35 J -32425987.01 -32425986.85 -32425986.69 0.0279 0.0055  
 Mercury -93491-09-24 08:23 J -32425898.31 -32425898.15 -32425897.99 0.0279 0.0044  
 Mercury -93491-12-22 00:42 J -32425809.61 -32425809.47 -32425809.33 0.0278 0.0141  
 Mercury -93490-03-20 16:47 J -32425720.89 -32425720.80 -32425720.72 0.0278 0.0235  
 Venus -93490-07-20 11:44 J -32425599.22 -32425599.01 -32425598.79 0.0278 0.0028  
 Moon -93490-08-07 14:08 J -32425581.07 -32425580.91 -32425580.73 0.0278 0.0204  
 Earth -93490-08-07 17:30 J -32425580.92 -32425580.77 -32425580.60 0.0278 0.0213 \*  
 Venus -93489-03-05 23:44 J -32425369.52 -32425369.51 -32425369.48 0.0277 0.0276  
 Moon -93489-08-19 21:49 J -32425202.83 -32425202.59 -32425202.35 0.0277 0.0046  
 Earth -93489-08-20 00:56 J -32425202.71 -32425202.46 -32425202.21 0.0277 0.0045 \*  
 Mars -93483-04-03 04:47 J -32423150.56 -32423150.30 -32423150.02 0.0275 0.0087  
 Mercury -93476-01-10 00:13 J -32420676.58 -32420676.49 -32420676.41 0.0280 0.0222  
 Mercury -93476-04-08 14:08 J -32420588.04 -32420587.91 -32420587.78 0.0280 0.0133

Mercury -93476-07-06 04:32 J -32420499.46 -32420499.31 -32420499.17 0.0280 0.0041

Mercury -93476-10-02 19:11 J -32420410.85 -32420410.70 -32420410.55 0.0280 0.0053

Mercury -93476-12-30 10:03 J -32420322.21 -32420322.08 -32420321.95 0.0280 0.0149

Mercury -93475-03-29 01:11 J -32420233.51 -32420233.45 -32420233.37 0.0281 0.0247

Venus -93475-08-12 04:47 J -32420097.50 -32420097.30 -32420097.08 0.0281 0.0017

Earth -93474-02-04 22:03 J -32419920.80 -32419920.58 -32419920.34 0.0281 0.0078

Moon -93474-02-04 23:01 J -32419920.76 -32419920.54 -32419920.32 0.0281 0.0084 \*

Earth -93473-02-17 20:51 J -32419542.80 -32419542.63 -32419542.43 0.0282 0.0185

Moon -93473-02-18 00:42 J -32419542.64 -32419542.47 -32419542.28 0.0282 0.0188 \*

Mars -93469-06-05 00:56 J -32417973.65 -32417973.46 -32417973.26 0.0283 0.0221

Mars -93467-06-12 04:47 J -32417236.40 -32417236.30 -32417236.16 0.0283 0.0259

Mercury -93462-08-17 21:20 J -32415343.73 -32415343.61 -32415343.49 0.0279 0.0195

Mercury -93462-11-14 14:37 J -32415255.04 -32415254.89 -32415254.74 0.0278 0.0093

Mercury -93461-02-11 07:25 J -32415166.35 -32415166.19 -32415166.03 0.0278 0.0009

Mercury -93461-05-09 23:59 J -32415077.64 -32415077.50 -32415077.35 0.0278 0.0105

Mercury -93461-08-06 16:03 J -32414988.93 -32414988.83 -32414988.72 0.0278 0.0200

Venus -93460-01-29 12:56 J -32414813.18 -32414812.96 -32414812.75 0.0278 0.0006

Earth -93460-08-14 06:27 J -32414616.46 -32414616.23 -32414615.98 0.0277 0.0076

Moon -93460-08-14 09:20 J -32414616.35 -32414616.11 -32414615.86 0.0277 0.0072 \*

Moon -93459-08-27 09:06 J -32414238.32 -32414238.12 -32414237.92 0.0277 0.0171

Earth -93459-08-27 10:32 J -32414238.24 -32414238.06 -32414237.87 0.0277 0.0179 \*

Mars -93453-05-20 22:32 J -32412144.84 -32412144.56 -32412144.28 0.0276 0.0051

Mercury -93447-05-30 01:25 J -32409944.50 -32409944.44 -32409944.37 0.0280 0.0249

Mercury -93447-08-26 15:35 J -32409855.97 -32409855.85 -32409855.73 0.0280 0.0160

Mercury -93447-11-23 05:59 J -32409767.40 -32409767.25 -32409767.11 0.0280 0.0069

Mercury -93446-02-19 20:23 J -32409678.80 -32409678.65 -32409678.50 0.0281 0.0026

Mercury -93446-05-19 11:15 J -32409590.16 -32409590.03 -32409589.89 0.0281 0.0122

Venus -93446-07-07 23:59 J -32409540.58 -32409540.50 -32409540.39 0.0281 0.0249

Mercury -93446-08-16 02:37 J -32409501.48 -32409501.39 -32409501.30 0.0281 0.0219

Moon -93445-01-30 16:18 J -32409333.98 -32409333.82 -32409333.64 0.0281 0.0201

Earth -93445-01-30 16:47 J -32409333.97 -32409333.80 -32409333.62 0.0281 0.0190 \*  
 Venus -93445-02-22 10:18 J -32409311.27 -32409311.07 -32409310.86 0.0281 0.0059  
 Moon -93444-02-11 10:18 J -32408956.31 -32408956.07 -32408955.84 0.0282 0.0068  
 Earth -93444-02-11 13:54 J -32408956.15 -32408955.92 -32408955.68 0.0282 0.0068 \*  
 Mars -93439-07-27 15:49 J -32406964.13 -32406963.84 -32406963.54 0.0283 0.0049  
 Mercury -93432-01-03 23:44 J -32404611.61 -32404611.51 -32404611.40 0.0279 0.0216  
 Mercury -93432-04-02 17:15 J -32404522.93 -32404522.78 -32404522.63 0.0279 0.0112  
 Mercury -93432-06-30 10:18 J -32404434.24 -32404434.07 -32404433.91 0.0279 0.0014  
 Mercury -93432-09-27 02:51 J -32404345.53 -32404345.38 -32404345.23 0.0279 0.0087  
 Mercury -93432-12-24 18:56 J -32404256.83 -32404256.71 -32404256.59 0.0278 0.0183  
 Venus -93432-12-25 09:49 J -32404256.17 -32404256.09 -32404255.99 0.0278 0.0250  
 Mercury -93431-03-23 10:32 J -32404168.06 -32404168.06 -32404168.03 0.0278 0.0277  
 Moon -93431-08-08 23:44 J -32404029.69 -32404029.51 -32404029.31 0.0278 0.0174  
 Earth -93431-08-09 02:08 J -32404029.59 -32404029.41 -32404029.21 0.0278 0.0179 \*  
 Venus -93431-08-11 23:15 J -32404026.74 -32404026.53 -32404026.32 0.0278 0.0058  
 Earth -93430-08-22 09:06 J -32403651.36 -32403651.12 -32403650.88 0.0277 0.0077  
 Moon -93430-08-22 10:18 J -32403651.30 -32403651.07 -32403650.84 0.0277 0.0075 \*  
 Mars -93425-07-10 10:32 J -32401867.23 -32401867.06 -32401866.87 0.0275 0.0210  
 Mars -93423-07-09 16:47 J -32401138.00 -32401137.80 -32401137.60 0.0275 0.0199  
 Mercury -93418-10-17 03:06 J -32399212.39 -32399212.37 -32399212.34 0.0279 0.0274  
 Mercury -93417-01-13 16:47 J -32399123.90 -32399123.80 -32399123.68 0.0280 0.0187  
 Mercury -93417-04-11 06:56 J -32399035.34 -32399035.21 -32399035.06 0.0280 0.0097  
 Mercury -93417-07-08 21:35 J -32398946.75 -32398946.60 -32398946.45 0.0280 0.0005  
 Mercury -93417-10-05 12:13 J -32398858.13 -32398857.99 -32398857.84 0.0280 0.0091  
 Mercury -93416-01-02 03:20 J -32398769.47 -32398769.36 -32398769.25 0.0280 0.0188  
 Venus -93416-01-17 03:35 J -32398754.47 -32398754.35 -32398754.20 0.0280 0.0212  
 Venus -93416-09-03 13:39 J -32398525.12 -32398524.93 -32398524.73 0.0281 0.0096  
 Earth -93415-02-06 02:37 J -32398369.62 -32398369.39 -32398369.15 0.0281 0.0048  
 Moon -93415-02-06 06:13 J -32398369.48 -32398369.24 -32398369.00 0.0281 0.0053 \*  
 Earth -93414-02-19 01:54 J -32397991.57 -32397991.42 -32397991.26 0.0282 0.0213

Moon -93414-02-19 03:06 J -32397991.52 -32397991.37 -32397991.21 0.0282 0.0218 \*  
 Mars -93409-09-15 19:54 J -32395955.94 -32395955.67 -32395955.39 0.0283 0.0113  
 Mercury -93403-05-23 22:18 J -32393879.63 -32393879.57 -32393879.50 0.0279 0.0255  
 Mercury -93403-08-20 15:49 J -32393790.97 -32393790.84 -32393790.70 0.0279 0.0151  
 Mercury -93403-11-17 09:06 J -32393702.28 -32393702.12 -32393701.96 0.0278 0.0050  
 Mercury -93402-02-14 01:39 J -32393613.58 -32393613.43 -32393613.27 0.0278 0.0050  
 Mercury -93402-05-13 18:13 J -32393524.88 -32393524.74 -32393524.61 0.0278 0.0146  
 Venus -93402-07-07 10:18 J -32393470.19 -32393470.07 -32393469.93 0.0278 0.0218  
 Mercury -93402-08-10 10:03 J -32393436.15 -32393436.08 -32393436.00 0.0278 0.0241  
 Venus -93401-02-21 23:44 J -32393240.72 -32393240.51 -32393240.31 0.0277 0.0089  
 Moon -93401-08-15 12:13 J -32393065.24 -32393064.99 -32393064.73 0.0277 0.0044  
 Earth -93401-08-15 14:23 J -32393065.15 -32393064.90 -32393064.66 0.0277 0.0043 \*  
 Moon -93400-08-28 13:39 J -32392687.09 -32392686.93 -32392686.75 0.0276 0.0200  
 Earth -93400-08-28 17:15 J -32392686.93 -32392686.78 -32392686.61 0.0276 0.0209 \*  
 Mars -93395-08-27 15:35 J -32390862.11 -32390861.85 -32390861.57 0.0276 0.0079  
 Mercury -93388-06-01 17:44 J -32388391.84 -32388391.76 -32388391.66 0.0280 0.0217  
 Mercury -93388-08-29 07:54 J -32388303.30 -32388303.17 -32388303.03 0.0280 0.0127  
 Mercury -93388-11-25 22:18 J -32388214.72 -32388214.57 -32388214.42 0.0280 0.0035  
 Mercury -93387-02-22 12:56 J -32388126.10 -32388125.96 -32388125.81 0.0281 0.0060  
 Mercury -93387-05-22 04:03 J -32388037.46 -32388037.33 -32388037.21 0.0281 0.0157  
 Venus -93387-07-30 07:11 J -32387968.36 -32387968.20 -32387968.03 0.0281 0.0174  
 Mercury -93387-08-18 19:11 J -32387948.75 -32387948.70 -32387948.63 0.0281 0.0255  
 Moon -93386-01-31 15:06 J -32387783.06 -32387782.87 -32387782.68 0.0281 0.0173  
 Earth -93386-01-31 18:27 J -32387782.92 -32387782.73 -32387782.52 0.0281 0.0162 \*  
 Venus -93386-03-16 17:30 J -32387738.95 -32387738.77 -32387738.58 0.0281 0.0136  
 Moon -93385-02-13 14:51 J -32387405.10 -32387404.88 -32387404.66 0.0282 0.0097  
 Earth -93385-02-13 15:49 J -32387405.06 -32387404.84 -32387404.61 0.0282 0.0096 \*  
 Mars -93381-10-30 00:42 J -32385684.67 -32385684.47 -32385684.26 0.0283 0.0208  
 Mars -93379-11-06 07:54 J -32384947.24 -32384947.17 -32384947.07 0.0283 0.0271  
 Mercury -93374-10-11 00:27 J -32383147.49 -32383147.48 -32383147.47 0.0280 0.0278

Mercury -93373-01-07 17:59 J -32383058.87 -32383058.75 -32383058.62 0.0279 0.0174  
 Mercury -93373-04-05 11:15 J -32382970.18 -32382970.03 -32382969.87 0.0279 0.0071  
 Mercury -93373-07-03 04:18 J -32382881.48 -32382881.32 -32382881.17 0.0279 0.0030  
 Mercury -93373-09-29 20:37 J -32382792.78 -32382792.64 -32382792.50 0.0279 0.0127  
 Mercury -93373-12-27 12:42 J -32382704.06 -32382703.97 -32382703.87 0.0278 0.0222  
 Venus -93372-01-16 20:23 J -32382683.82 -32382683.65 -32382683.48 0.0278 0.0168  
 Earth -93372-08-10 08:51 J -32382478.33 -32382478.13 -32382477.91 0.0278 0.0147  
 Moon -93372-08-10 11:15 J -32382478.23 -32382478.03 -32382477.82 0.0278 0.0145 \*  
 Venus -93372-09-03 09:06 J -32382454.29 -32382454.12 -32382453.92 0.0278 0.0140  
 Earth -93371-08-23 15:20 J -32382100.08 -32382099.86 -32382099.63 0.0277 0.0108  
 Moon -93371-08-23 19:11 J -32382099.92 -32382099.70 -32382099.46 0.0277 0.0103 \*  
 Mars -93365-10-15 01:39 J -32379855.71 -32379855.43 -32379855.15 0.0275 0.0066  
 Mercury -93359-10-19 19:25 J -32377659.75 -32377659.69 -32377659.61 0.0279 0.0241  
 Mercury -93358-01-16 09:35 J -32377571.22 -32377571.10 -32377570.98 0.0279 0.0153  
 Mercury -93358-04-14 23:44 J -32377482.66 -32377482.51 -32377482.37 0.0280 0.0062  
 Mercury -93358-07-12 14:08 J -32377394.05 -32377393.91 -32377393.76 0.0280 0.0033  
 Mercury -93358-10-09 05:01 J -32377305.42 -32377305.29 -32377305.15 0.0280 0.0127  
 Mercury -93357-01-05 20:08 J -32377216.74 -32377216.66 -32377216.57 0.0280 0.0225  
 Earth -93357-01-26 11:59 J -32377196.05 -32377196.00 -32377195.93 0.0280 0.0271  
 Venus -93357-02-09 11:30 J -32377182.20 -32377182.02 -32377181.84 0.0280 0.0135  
 Venus -93357-09-25 21:20 J -32376952.77 -32376952.61 -32376952.44 0.0281 0.0174  
 Earth -93356-02-07 05:30 J -32376818.51 -32376818.27 -32376818.03 0.0281 0.0020  
 Moon -93356-02-07 06:42 J -32376818.47 -32376818.22 -32376817.97 0.0281 0.0024 \*  
 Moon -93355-02-20 01:39 J -32376440.53 -32376440.43 -32376440.31 0.0282 0.0250  
 Earth -93355-02-20 05:01 J -32376440.41 -32376440.29 -32376440.16 0.0282 0.0240 \*  
 Mars -93351-12-20 17:30 J -32374676.07 -32374675.77 -32374675.47 0.0283 0.0042  
 Mercury -93344-05-26 16:18 J -32372326.92 -32372326.82 -32372326.71 0.0279 0.0214  
 Mercury -93344-08-23 09:49 J -32372238.24 -32372238.09 -32372237.94 0.0279 0.0111  
 Mercury -93344-11-20 02:51 J -32372149.54 -32372149.38 -32372149.22 0.0279 0.0010  
 Mercury -93343-02-16 19:25 J -32372060.84 -32372060.69 -32372060.53 0.0278 0.0089

Mercury -93343-05-16 11:44 J -32371972.12 -32371972.01 -32371971.89 0.0278 0.0185  
 Venus -93343-07-29 20:08 J -32371897.84 -32371897.66 -32371897.47 0.0278 0.0138  
 Moon -93343-08-04 07:39 J -32371892.25 -32371892.18 -32371892.10 0.0278 0.0265  
 Earth -93343-08-04 10:03 J -32371892.13 -32371892.08 -32371892.01 0.0278 0.0269 \*  
 Venus -93342-03-16 09:06 J -32371668.28 -32371668.12 -32371667.95 0.0277 0.0169  
 Moon -93342-08-17 16:18 J -32371514.06 -32371513.82 -32371513.57 0.0277 0.0018  
 Earth -93342-08-17 19:54 J -32371513.91 -32371513.67 -32371513.42 0.0277 0.0014 \*  
 Moon -93341-08-29 21:49 J -32371135.71 -32371135.59 -32371135.44 0.0276 0.0227  
 Earth -93341-08-29 22:32 J -32371135.68 -32371135.56 -32371135.43 0.0276 0.0237 \*  
 Mars -93337-12-03 16:32 J -32369579.00 -32369578.81 -32369578.62 0.0275 0.0203  
 Mars -93335-12-02 21:49 J -32368849.78 -32368849.59 -32368849.39 0.0276 0.0205  
 Mercury -93329-03-07 20:08 J -32366927.68 -32366927.66 -32366927.63 0.0280 0.0274  
 Mercury -93329-06-04 10:03 J -32366839.19 -32366839.08 -32366838.97 0.0280 0.0185  
 Mercury -93329-09-01 00:13 J -32366750.63 -32366750.49 -32366750.35 0.0280 0.0095  
 Mercury -93329-11-28 14:37 J -32366662.04 -32366661.89 -32366661.74 0.0280 0.0002  
 Mercury -93328-02-25 05:15 J -32366573.42 -32366573.28 -32366573.13 0.0280 0.0093  
 Mercury -93328-05-24 20:23 J -32366484.76 -32366484.65 -32366484.54 0.0281 0.0190  
 Venus -93328-08-21 13:25 J -32366396.13 -32366395.94 -32366395.74 0.0281 0.0101  
 Moon -93327-02-01 17:30 J -32366231.96 -32366231.77 -32366231.56 0.0281 0.0143  
 Earth -93327-02-01 18:56 J -32366231.92 -32366231.71 -32366231.49 0.0281 0.0135 \*  
 Venus -93327-04-07 23:44 J -32366166.64 -32366166.51 -32366166.36 0.0281 0.0211  
 Earth -93326-02-14 16:18 J -32365854.04 -32365853.82 -32365853.60 0.0282 0.0122  
 Moon -93326-02-14 19:11 J -32365853.91 -32365853.70 -32365853.48 0.0282 0.0127 \*  
 Mars -93320-02-09 12:42 J -32363667.24 -32363666.97 -32363666.70 0.0283 0.0124  
 Mercury -93315-10-13 18:13 J -32361594.82 -32361594.74 -32361594.66 0.0280 0.0239  
 Mercury -93314-01-10 11:44 J -32361506.15 -32361506.01 -32361505.87 0.0279 0.0134  
 Mercury -93314-04-09 04:47 J -32361417.45 -32361417.30 -32361417.13 0.0279 0.0034  
 Mercury -93314-07-06 21:35 J -32361328.75 -32361328.60 -32361328.44 0.0279 0.0068  
 Mercury -93314-10-03 13:54 J -32361240.04 -32361239.92 -32361239.79 0.0279 0.0165  
 Mercury -93314-12-31 05:59 J -32361151.30 -32361151.25 -32361151.19 0.0279 0.0259

Venus -93313-02-09 05:15 J -32361111.48 -32361111.28 -32361111.08 0.0279 0.0089  
 Earth -93313-08-11 13:39 J -32360927.15 -32360926.93 -32360926.69 0.0278 0.0117  
 Moon -93313-08-11 17:15 J -32360927.00 -32360926.78 -32360926.54 0.0278 0.0117 \*  
 Venus -93313-09-25 17:59 J -32360881.87 -32360881.75 -32360881.61 0.0278 0.0219  
 Earth -93312-08-24 19:39 J -32360548.88 -32360548.68 -32360548.45 0.0277 0.0138  
 Moon -93312-08-24 20:08 J -32360548.88 -32360548.66 -32360548.42 0.0277 0.0128 \*  
 Mars -93306-01-21 17:44 J -32358573.03 -32358572.76 -32358572.48 0.0275 0.0063  
 Mercury -93300-10-22 11:44 J -32356107.10 -32356107.01 -32356106.91 0.0279 0.0209  
 Mercury -93299-01-19 01:39 J -32356018.56 -32356018.43 -32356018.29 0.0279 0.0120  
 Mercury -93299-04-17 16:03 J -32355929.98 -32355929.83 -32355929.68 0.0280 0.0028  
 Mercury -93299-07-15 06:42 J -32355841.37 -32355841.22 -32355841.07 0.0280 0.0066  
 Mercury -93299-10-11 21:35 J -32355752.72 -32355752.60 -32355752.48 0.0280 0.0162  
 Mercury -93298-01-08 12:42 J -32355664.02 -32355663.97 -32355663.91 0.0280 0.0260  
 Earth -93298-01-27 12:56 J -32355645.07 -32355644.96 -32355644.83 0.0280 0.0244  
 Moon -93298-01-27 13:54 J -32355645.00 -32355644.92 -32355644.80 0.0280 0.0255 \*  
 Venus -93298-03-03 17:59 J -32355609.95 -32355609.75 -32355609.54 0.0280 0.0060  
 Venus -93298-10-19 04:18 J -32355380.41 -32355380.32 -32355380.22 0.0281 0.0250  
 Moon -93297-02-09 03:35 J -32355267.59 -32355267.35 -32355267.10 0.0281 0.0008  
 Earth -93297-02-09 06:42 J -32355267.47 -32355267.22 -32355266.98 0.0281 0.0008 \*  
 Moon -93296-02-21 04:03 J -32354889.37 -32354889.33 -32354889.29 0.0282 0.0276  
 Earth -93296-02-21 06:27 J -32354889.30 -32354889.23 -32354889.15 0.0282 0.0265 \*  
 Mars -93292-03-24 21:49 J -32353396.81 -32353396.59 -32353396.38 0.0284 0.0201  
 Mars -93290-04-01 06:27 J -32352659.28 -32352659.23 -32352659.16 0.0283 0.0276  
 Mercury -93285-05-29 10:03 J -32350774.20 -32350774.08 -32350773.95 0.0279 0.0175  
 Mercury -93285-08-26 03:20 J -32350685.51 -32350685.36 -32350685.20 0.0279 0.0073  
 Mercury -93285-11-22 20:23 J -32350596.81 -32350596.65 -32350596.49 0.0279 0.0028  
 Mercury -93284-02-19 12:56 J -32350508.10 -32350507.96 -32350507.82 0.0278 0.0126  
 Mercury -93284-05-19 05:01 J -32350419.38 -32350419.29 -32350419.19 0.0278 0.0222  
 Moon -93284-08-05 11:30 J -32350341.14 -32350341.02 -32350340.89 0.0278 0.0237  
 Earth -93284-08-05 14:37 J -32350341.00 -32350340.89 -32350340.75 0.0278 0.0239 \*

Venus -93284-08-21 05:15 J -32350325.49 -32350325.28 -32350325.07 0.0278 0.0059  
 Venus -93283-04-07 17:44 J -32350095.84 -32350095.76 -32350095.65 0.0277 0.0248  
 Earth -93283-08-19 00:13 J -32349962.73 -32349962.49 -32349962.24 0.0277 0.0017  
 Moon -93283-08-19 00:42 J -32349962.71 -32349962.47 -32349962.23 0.0277 0.0009 \*  
 Earth -93282-09-01 02:23 J -32349584.46 -32349584.40 -32349584.31 0.0276 0.0264  
 Moon -93282-09-01 06:13 J -32349584.34 -32349584.24 -32349584.13 0.0276 0.0250 \*  
 Mars -93276-03-10 02:08 J -32347567.68 -32347567.41 -32347567.13 0.0275 0.0072  
 Mercury -93270-03-11 12:13 J -32345375.06 -32345374.99 -32345374.92 0.0279 0.0244  
 Mercury -93270-06-08 01:54 J -32345286.54 -32345286.42 -32345286.29 0.0280 0.0155  
 Mercury -93270-09-04 16:03 J -32345197.97 -32345197.83 -32345197.68 0.0280 0.0065  
 Mercury -93270-12-02 06:42 J -32345109.37 -32345109.22 -32345109.07 0.0280 0.0030  
 Mercury -93269-02-28 21:20 J -32345020.74 -32345020.61 -32345020.47 0.0280 0.0126  
 Mercury -93269-05-27 12:42 J -32344932.06 -32344931.97 -32344931.88 0.0281 0.0223  
 Venus -93269-09-12 19:11 J -32344823.91 -32344823.70 -32344823.49 0.0281 0.0029  
 Earth -93268-02-02 18:13 J -32344680.95 -32344680.74 -32344680.51 0.0281 0.0110  
 Moon -93268-02-02 21:20 J -32344680.82 -32344680.61 -32344680.39 0.0281 0.0114 \*  
 Earth -93267-02-15 15:35 J -32344303.05 -32344302.85 -32344302.64 0.0282 0.0147  
 Moon -93267-02-15 18:27 J -32344302.94 -32344302.73 -32344302.52 0.0282 0.0152 \*  
 Mars -93262-05-15 23:59 J -32342387.80 -32342387.50 -32342387.20 0.0283 0.0033  
 Mercury -93256-10-16 11:30 J -32340042.13 -32340042.02 -32340041.91 0.0280 0.0202  
 Mercury -93255-01-13 04:47 J -32339953.45 -32339953.30 -32339953.14 0.0280 0.0099  
 Mercury -93255-04-11 22:03 J -32339864.74 -32339864.58 -32339864.42 0.0279 0.0006  
 Mercury -93255-07-09 14:37 J -32339776.04 -32339775.89 -32339775.74 0.0279 0.0103  
 Mercury -93255-10-06 06:56 J -32339687.32 -32339687.21 -32339687.10 0.0279 0.0199  
 Venus -93254-03-03 13:11 J -32339539.17 -32339538.95 -32339538.74 0.0279 0.0012  
 Moon -93254-08-13 16:18 J -32339376.06 -32339375.82 -32339375.57 0.0278 0.0092  
 Earth -93254-08-13 16:32 J -32339376.04 -32339375.81 -32339375.56 0.0278 0.0089 \*  
 Moon -93253-08-25 18:56 J -32338997.91 -32338997.71 -32338997.50 0.0277 0.0151  
 Earth -93253-08-25 22:47 J -32338997.75 -32338997.55 -32338997.35 0.0277 0.0164 \*  
 Mars -93248-04-29 18:13 J -32337289.94 -32337289.74 -32337289.53 0.0275 0.0187



Mars -93246-04-28 20:51 J -32336560.79 -32336560.63 -32336560.45 0.0275 0.0220  
 Mercury -93241-07-28 14:08 J -32334642.95 -32334642.91 -32334642.86 0.0279 0.0265  
 Mercury -93241-10-25 04:03 J -32334554.44 -32334554.33 -32334554.22 0.0279 0.0177  
 Mercury -93240-01-21 17:59 J -32334465.89 -32334465.75 -32334465.61 0.0279 0.0088  
 Mercury -93240-04-20 08:23 J -32334377.30 -32334377.15 -32334377.00 0.0279 0.0007  
 Mercury -93240-07-17 23:01 J -32334288.68 -32334288.54 -32334288.40 0.0280 0.0100  
 Mercury -93240-10-14 14:08 J -32334200.02 -32334199.91 -32334199.80 0.0280 0.0196  
 Moon -93239-01-28 10:03 J -32334094.21 -32334094.08 -32334093.92 0.0280 0.0225  
 Earth -93239-01-28 13:54 J -32334094.07 -32334093.92 -32334093.77 0.0280 0.0217 \*  
 Venus -93239-03-26 00:42 J -32334037.68 -32334037.47 -32334037.26 0.0280 0.0016  
 Moon -93238-02-10 04:32 J -32333716.55 -32333716.31 -32333716.08 0.0281 0.0035  
 Earth -93238-02-10 07:11 J -32333716.44 -32333716.20 -32333715.96 0.0281 0.0033 \*  
 Mars -93232-07-05 08:23 J -32331379.40 -32331379.15 -32331378.87 0.0283 0.0130  
 Mercury -93226-03-05 09:35 J -32329310.17 -32329310.10 -32329310.01 0.0280 0.0244  
 Mercury -93226-06-02 03:20 J -32329221.50 -32329221.36 -32329221.21 0.0279 0.0139  
 Mercury -93226-08-29 20:37 J -32329132.80 -32329132.64 -32329132.48 0.0279 0.0036  
 Mercury -93226-11-26 13:25 J -32329044.09 -32329043.94 -32329043.78 0.0279 0.0065  
 Mercury -93225-02-23 05:59 J -32328955.38 -32328955.25 -32328955.12 0.0279 0.0162  
 Mercury -93225-05-21 22:03 J -32328866.64 -32328866.58 -32328866.52 0.0278 0.0257  
 Earth -93225-08-06 17:44 J -32328789.91 -32328789.76 -32328789.59 0.0278 0.0211  
 Moon -93225-08-06 18:27 J -32328789.88 -32328789.73 -32328789.57 0.0278 0.0211 \*  
 Venus -93225-09-12 13:11 J -32328753.16 -32328752.95 -32328752.73 0.0278 0.0019  
 Earth -93224-08-20 03:20 J -32328411.61 -32328411.36 -32328411.12 0.0277 0.0044  
 Moon -93224-08-20 06:56 J -32328411.45 -32328411.21 -32328410.96 0.0277 0.0034 \*  
 Moon -93223-09-02 07:25 J -32328033.21 -32328033.19 -32328033.14 0.0276 0.0274  
 Mars -93218-06-16 17:30 J -32326285.05 -32326284.77 -32326284.49 0.0275 0.0057  
 Mercury -93211-03-14 04:03 J -32323822.42 -32323822.33 -32323822.24 0.0279 0.0214  
 Mercury -93211-06-10 17:59 J -32323733.88 -32323733.75 -32323733.62 0.0279 0.0124  
 Mercury -93211-09-07 08:08 J -32323645.30 -32323645.16 -32323645.01 0.0280 0.0033  
 Mercury -93211-12-04 22:47 J -32323556.70 -32323556.55 -32323556.40 0.0280 0.0061

Venus -93210-02-18 15:20 J -32323480.91 -32323480.86 -32323480.78 0.0280 0.0264

Mercury -93210-03-03 13:39 J -32323468.06 -32323467.93 -32323467.81 0.0280 0.0157

Mercury -93210-05-31 04:47 J -32323379.36 -32323379.30 -32323379.24 0.0280 0.0255

Venus -93210-10-06 00:56 J -32323251.67 -32323251.46 -32323251.25 0.0281 0.0043

Earth -93209-02-04 17:30 J -32323130.00 -32323129.77 -32323129.54 0.0281 0.0084

Moon -93209-02-04 19:54 J -32323129.90 -32323129.67 -32323129.43 0.0281 0.0084 \*

Moon -93208-02-16 12:42 J -32322752.15 -32322751.97 -32322751.77 0.0282 0.0181

Earth -93208-02-16 14:37 J -32322752.08 -32322751.89 -32322751.69 0.0282 0.0171 \*

Mars -93204-08-17 21:35 J -32321108.81 -32321108.60 -32321108.37 0.0283 0.0195

Mercury -93197-07-22 10:32 J -32318578.09 -32318578.06 -32318578.02 0.0280 0.0272

Mercury -93197-10-19 04:32 J -32318489.44 -32318489.31 -32318489.18 0.0280 0.0166

Mercury -93196-01-15 21:49 J -32318400.75 -32318400.59 -32318400.43 0.0280 0.0063

Mercury -93196-04-14 14:51 J -32318312.04 -32318311.88 -32318311.72 0.0280 0.0039

Mercury -93196-07-12 07:25 J -32318223.33 -32318223.19 -32318223.05 0.0279 0.0137

Venus -93196-08-08 06:13 J -32318196.32 -32318196.24 -32318196.13 0.0279 0.0249

Mercury -93196-10-08 23:44 J -32318134.60 -32318134.51 -32318134.43 0.0279 0.0233

Venus -93195-03-25 20:37 J -32317966.85 -32317966.64 -32317966.43 0.0279 0.0064

Moon -93195-08-14 15:20 J -32317825.10 -32317824.86 -32317824.62 0.0278 0.0068

Earth -93195-08-14 18:42 J -32317824.96 -32317824.72 -32317824.47 0.0278 0.0063 \*

Moon -93194-08-27 23:01 J -32317446.71 -32317446.54 -32317446.34 0.0278 0.0177

Earth -93194-08-28 00:42 J -32317446.64 -32317446.47 -32317446.28 0.0278 0.0190 \*

Mars -93188-08-04 03:06 J -32315278.63 -32315278.37 -32315278.09 0.0275 0.0088

Mercury -93182-08-01 06:13 J -32313090.31 -32313090.24 -32313090.16 0.0278 0.0234

Mercury -93182-10-28 20:08 J -32313001.78 -32313001.66 -32313001.53 0.0279 0.0145

Mercury -93181-01-25 10:18 J -32312913.21 -32312913.07 -32312912.92 0.0279 0.0055

Mercury -93181-04-23 00:42 J -32312824.62 -32312824.47 -32312824.32 0.0279 0.0039

Mercury -93181-07-20 15:35 J -32312735.99 -32312735.85 -32312735.72 0.0279 0.0134

Venus -93181-08-30 21:49 J -32312694.71 -32312694.59 -32312694.45 0.0280 0.0217

Mercury -93181-10-17 06:27 J -32312647.31 -32312647.23 -32312647.14 0.0280 0.0231

Moon -93180-01-29 12:13 J -32312543.15 -32312542.99 -32312542.82 0.0280 0.0195

Earth -93180-01-29 14:23 J -32312543.06 -32312542.90 -32312542.72 0.0280 0.0192 \*  
 Venus -93180-04-17 07:11 J -32312465.40 -32312465.20 -32312465.00 0.0280 0.0090  
 Earth -93179-02-11 07:54 J -32312165.41 -32312165.17 -32312164.94 0.0281 0.0058  
 Moon -93179-02-11 09:35 J -32312165.33 -32312165.10 -32312164.87 0.0281 0.0065 \*  
 Mars -93174-10-08 22:03 J -32310099.88 -32310099.58 -32310099.27 0.0284 0.0027  
 Mercury -93167-03-08 02:51 J -32307757.48 -32307757.38 -32307757.26 0.0280 0.0207  
 Mercury -93167-06-04 20:37 J -32307668.79 -32307668.64 -32307668.49 0.0279 0.0102  
 Mercury -93167-09-01 13:39 J -32307580.09 -32307579.93 -32307579.77 0.0279 0.0003  
 Mercury -93167-11-29 06:27 J -32307491.38 -32307491.23 -32307491.08 0.0279 0.0100  
 Venus -93166-02-18 06:56 J -32307410.34 -32307410.21 -32307410.08 0.0279 0.0217  
 Mercury -93166-02-25 22:47 J -32307402.66 -32307402.55 -32307402.44 0.0279 0.0196  
 Earth -93166-08-08 20:23 J -32307238.83 -32307238.65 -32307238.46 0.0278 0.0184  
 Moon -93166-08-08 23:59 J -32307238.68 -32307238.50 -32307238.31 0.0278 0.0185 \*  
 Venus -93166-10-05 20:51 J -32307180.83 -32307180.63 -32307180.43 0.0278 0.0095  
 Earth -93165-08-21 05:44 J -32306860.50 -32306860.26 -32306860.02 0.0277 0.0070  
 Moon -93165-08-21 07:11 J -32306860.45 -32306860.20 -32306859.95 0.0277 0.0060 \*  
 Mars -93160-09-22 17:59 J -32305001.95 -32305001.75 -32305001.53 0.0275 0.0182  
 Mars -93158-09-21 18:56 J -32304272.87 -32304272.71 -32304272.54 0.0275 0.0226  
 Mercury -93153-12-18 06:13 J -32302358.26 -32302358.24 -32302358.20 0.0279 0.0270  
 Mercury -93152-03-16 20:08 J -32302269.77 -32302269.66 -32302269.55 0.0279 0.0182  
 Mercury -93152-06-13 10:03 J -32302181.21 -32302181.08 -32302180.94 0.0279 0.0092  
 Mercury -93152-09-10 00:27 J -32302092.63 -32302092.48 -32302092.33 0.0280 0.0000  
 Mercury -93152-12-07 15:06 J -32302004.01 -32302003.87 -32302003.73 0.0280 0.0095  
 Mercury -93151-03-06 05:59 J -32301915.36 -32301915.25 -32301915.14 0.0280 0.0191  
 Venus -93151-03-12 21:49 J -32301908.74 -32301908.59 -32301908.43 0.0280 0.0190  
 Venus -93151-10-28 07:11 J -32301679.39 -32301679.20 -32301679.01 0.0281 0.0118  
 Moon -93150-02-05 15:06 J -32301579.11 -32301578.87 -32301578.62 0.0281 0.0053  
 Earth -93150-02-05 17:30 J -32301579.00 -32301578.77 -32301578.53 0.0281 0.0059 \*  
 Moon -93149-02-18 11:01 J -32301201.19 -32301201.04 -32301200.87 0.0282 0.0208  
 Earth -93149-02-18 14:37 J -32301201.06 -32301200.89 -32301200.71 0.0282 0.0195 \*

Mars -93144-11-28 08:23 J -32299091.40 -32299091.15 -32299090.88 0.0283 0.0137  
 Mercury -93138-07-26 03:35 J -32297025.43 -32297025.35 -32297025.26 0.0280 0.0237  
 Mercury -93138-10-22 21:20 J -32296936.75 -32296936.61 -32296936.47 0.0280 0.0132  
 Mercury -93137-01-19 14:37 J -32296848.05 -32296847.89 -32296847.73 0.0280 0.0028  
 Mercury -93137-04-17 07:25 J -32296759.34 -32296759.19 -32296759.03 0.0280 0.0073  
 Mercury -93137-07-14 23:59 J -32296670.62 -32296670.50 -32296670.37 0.0280 0.0171  
 Venus -93137-08-30 13:25 J -32296624.11 -32296623.94 -32296623.77 0.0279 0.0174  
 Mercury -93137-10-11 16:03 J -32296581.87 -32296581.83 -32296581.78 0.0279 0.0267  
 Venus -93136-04-17 03:20 J -32296394.53 -32296394.36 -32296394.16 0.0279 0.0140  
 Moon -93136-08-15 18:27 J -32296273.97 -32296273.73 -32296273.49 0.0279 0.0044  
 Earth -93136-08-15 20:08 J -32296273.91 -32296273.66 -32296273.41 0.0279 0.0037 \*  
 Earth -93135-08-29 02:23 J -32295895.55 -32295895.40 -32295895.24 0.0278 0.0214  
 Moon -93135-08-29 05:01 J -32295895.45 -32295895.29 -32295895.11 0.0278 0.0200 \*  
 Mars -93130-11-10 19:54 J -32293995.95 -32293995.67 -32293995.39 0.0275 0.0042  
 Mercury -93123-08-03 22:47 J -32291537.65 -32291537.55 -32291537.45 0.0278 0.0200  
 Mercury -93123-10-31 12:42 J -32291449.11 -32291448.97 -32291448.84 0.0279 0.0111  
 Mercury -93122-01-28 02:51 J -32291360.53 -32291360.38 -32291360.23 0.0279 0.0020  
 Mercury -93122-04-26 17:15 J -32291271.92 -32291271.78 -32291271.63 0.0279 0.0074  
 Mercury -93122-07-24 08:08 J -32291183.28 -32291183.16 -32291183.04 0.0279 0.0169  
 Venus -93122-09-23 04:47 J -32291122.47 -32291122.30 -32291122.11 0.0279 0.0141  
 Mercury -93122-10-20 23:15 J -32291094.57 -32291094.53 -32291094.49 0.0279 0.0267  
 Earth -93121-01-31 15:49 J -32290992.02 -32290991.84 -32290991.64 0.0280 0.0166  
 Moon -93121-01-31 18:13 J -32290991.92 -32290991.74 -32290991.55 0.0280 0.0165 \*  
 Venus -93121-05-09 14:08 J -32290893.07 -32290892.91 -32290892.74 0.0280 0.0167  
 Earth -93120-02-12 09:20 J -32290614.34 -32290614.11 -32290613.88 0.0281 0.0083  
 Moon -93120-02-12 12:56 J -32290614.19 -32290613.96 -32290613.73 0.0281 0.0093 \*  
 Mars -93115-01-11 00:42 J -32288820.69 -32288820.47 -32288820.23 0.0284 0.0187  
 Mercury -93109-12-12 02:23 J -32286293.42 -32286293.40 -32286293.37 0.0280 0.0276  
 Mercury -93108-03-10 20:08 J -32286204.78 -32286204.66 -32286204.52 0.0280 0.0170  
 Mercury -93108-06-07 13:39 J -32286116.08 -32286115.93 -32286115.77 0.0280 0.0066

Mercury -93108-09-04 06:42 J -32286027.37 -32286027.22 -32286027.06 0.0279 0.0038  
 Mercury -93108-12-01 23:30 J -32285938.66 -32285938.52 -32285938.38 0.0279 0.0136  
 Mercury -93107-02-28 15:35 J -32285849.93 -32285849.85 -32285849.76 0.0279 0.0232  
 Venus -93107-03-12 14:51 J -32285838.06 -32285837.88 -32285837.69 0.0279 0.0140  
 Earth -93107-08-09 23:15 J -32285687.73 -32285687.53 -32285687.31 0.0278 0.0157  
 Moon -93107-08-10 00:42 J -32285687.67 -32285687.47 -32285687.25 0.0278 0.0161 \*  
 Venus -93107-10-28 04:47 J -32285608.46 -32285608.30 -32285608.13 0.0278 0.0173  
 Moon -93106-08-23 05:44 J -32285309.49 -32285309.26 -32285309.01 0.0278 0.0084  
 Earth -93106-08-23 08:51 J -32285309.36 -32285309.13 -32285308.90 0.0278 0.0097 \*  
 Mars -93100-12-28 03:20 J -32282990.62 -32282990.36 -32282990.08 0.0275 0.0094  
 Mercury -93094-12-21 22:47 J -32280805.63 -32280805.55 -32280805.48 0.0279 0.0237  
 Mercury -93093-03-19 12:27 J -32280717.10 -32280716.98 -32280716.85 0.0279 0.0149  
 Mercury -93093-06-16 02:37 J -32280628.54 -32280628.39 -32280628.25 0.0279 0.0058  
 Mercury -93093-09-12 17:01 J -32280539.94 -32280539.79 -32280539.64 0.0279 0.0035  
 Mercury -93093-12-10 07:39 J -32280451.31 -32280451.18 -32280451.05 0.0280 0.0130  
 Moon -93092-01-25 01:54 J -32280405.44 -32280405.42 -32280405.38 0.0280 0.0277  
 Earth -93092-01-25 04:18 J -32280405.35 -32280405.32 -32280405.27 0.0280 0.0275  
 Mercury -93092-03-08 22:32 J -32280362.64 -32280362.56 -32280362.47 0.0280 0.0227  
 Venus -93092-04-04 04:32 J -32280336.49 -32280336.31 -32280336.11 0.0280 0.0115  
 Venus -93092-11-19 14:08 J -32280107.06 -32280106.91 -32280106.76 0.0280 0.0195  
 Moon -93091-02-06 15:35 J -32280028.08 -32280027.85 -32280027.61 0.0281 0.0023  
 Earth -93091-02-06 18:56 J -32280027.95 -32280027.71 -32280027.47 0.0281 0.0033 \*  
 Earth -93090-02-19 15:49 J -32279649.98 -32279649.84 -32279649.68 0.0281 0.0219  
 Moon -93090-02-19 16:03 J -32279649.95 -32279649.83 -32279649.69 0.0281 0.0234 \*  
 Mars -93085-03-02 20:23 J -32277811.95 -32277811.65 -32277811.34 0.0283 0.0020  
 Mercury -93079-07-28 20:37 J -32275472.75 -32275472.64 -32275472.53 0.0280 0.0201  
 Mercury -93079-10-25 14:08 J -32275384.06 -32275383.91 -32275383.75 0.0280 0.0096  
 Mercury -93078-01-22 07:25 J -32275295.35 -32275295.19 -32275295.03 0.0280 0.0008  
 Mercury -93078-04-21 00:13 J -32275206.63 -32275206.49 -32275206.34 0.0280 0.0108  
 Mercury -93078-07-18 16:32 J -32275117.91 -32275117.81 -32275117.70 0.0280 0.0206

Moon -93078-08-04 07:11 J -32275101.25 -32275101.20 -32275101.14 0.0280 0.0272  
 Earth -93078-08-04 07:54 J -32275101.22 -32275101.17 -32275101.08 0.0280 0.0268 \*  
 Venus -93078-09-22 20:37 J -32275051.84 -32275051.64 -32275051.43 0.0280 0.0097  
 Venus -93077-05-09 10:47 J -32274822.18 -32274822.05 -32274821.91 0.0279 0.0216  
 Earth -93077-08-16 21:49 J -32274722.84 -32274722.59 -32274722.34 0.0279 0.0012  
 Moon -93077-08-17 00:27 J -32274722.72 -32274722.48 -32274722.24 0.0279 0.0021 \*  
 Earth -93076-08-30 04:03 J -32274344.45 -32274344.33 -32274344.19 0.0278 0.0238  
 Moon -93076-08-30 06:56 J -32274344.34 -32274344.21 -32274344.04 0.0278 0.0223 \*  
 Mars -93071-02-16 19:54 J -32272712.88 -32272712.67 -32272712.44 0.0276 0.0167  
 Mars -93069-02-15 22:32 J -32271983.69 -32271983.56 -32271983.42 0.0275 0.0243  
 Mercury -93064-05-10 01:39 J -32270073.48 -32270073.43 -32270073.37 0.0278 0.0253  
 Mercury -93064-08-06 15:20 J -32269984.97 -32269984.86 -32269984.74 0.0278 0.0165  
 Mercury -93064-11-03 05:30 J -32269896.42 -32269896.27 -32269896.13 0.0278 0.0076  
 Mercury -93063-01-30 19:39 J -32269807.83 -32269807.68 -32269807.53 0.0279 0.0017  
 Mercury -93063-04-29 10:18 J -32269719.21 -32269719.07 -32269718.93 0.0279 0.0111  
 Mercury -93063-07-27 01:11 J -32269630.55 -32269630.45 -32269630.35 0.0279 0.0207  
 Venus -93063-10-15 12:56 J -32269550.16 -32269549.96 -32269549.75 0.0279 0.0061  
 Earth -93062-02-01 19:11 J -32269440.91 -32269440.70 -32269440.49 0.0280 0.0139  
 Moon -93062-02-01 22:18 J -32269440.78 -32269440.57 -32269440.35 0.0280 0.0136 \*  
 Venus -93062-06-01 22:03 J -32269320.66 -32269320.58 -32269320.47 0.0280 0.0248  
 Moon -93061-02-14 11:59 J -32269063.21 -32269063.00 -32269062.76 0.0281 0.0123  
 Earth -93061-02-14 12:42 J -32269063.19 -32269062.97 -32269062.74 0.0281 0.0110 \*  
 Mars -93055-04-23 16:47 J -32266803.05 -32266802.80 -32266802.54 0.0283 0.0146  
 Mercury -93050-12-15 19:54 J -32264740.75 -32264740.67 -32264740.58 0.0280 0.0237  
 Mercury -93049-03-13 13:39 J -32264652.07 -32264651.93 -32264651.78 0.0280 0.0131  
 Mercury -93049-06-10 07:11 J -32264563.36 -32264563.20 -32264563.04 0.0280 0.0028  
 Mercury -93049-09-06 23:59 J -32264474.65 -32264474.50 -32264474.34 0.0279 0.0074  
 Mercury -93049-12-04 16:32 J -32264385.93 -32264385.81 -32264385.68 0.0279 0.0172  
 Mercury -93048-03-03 08:37 J -32264297.17 -32264297.14 -32264297.09 0.0279 0.0268  
 Venus -93048-04-03 23:15 J -32264265.73 -32264265.53 -32264265.31 0.0279 0.0061

Moon -93048-08-10 23:30 J -32264136.73 -32264136.52 -32264136.29 0.0279 0.0138  
 Earth -93048-08-11 02:37 J -32264136.60 -32264136.39 -32264136.15 0.0279 0.0130 \*  
 Venus -93048-11-19 12:56 J -32264036.04 -32264035.96 -32264035.86 0.0278 0.0252  
 Moon -93047-08-24 09:06 J -32263758.33 -32263758.12 -32263757.89 0.0278 0.0110  
 Earth -93047-08-24 12:13 J -32263758.21 -32263757.99 -32263757.76 0.0278 0.0123 \*  
 Mars -93041-04-04 22:47 J -32261707.83 -32261707.55 -32261707.27 0.0275 0.0035  
 Mercury -93035-12-24 15:20 J -32259252.95 -32259252.86 -32259252.76 0.0279 0.0202  
 Mercury -93034-03-23 05:15 J -32259164.41 -32259164.28 -32259164.14 0.0279 0.0113  
 Mercury -93034-06-19 19:25 J -32259075.84 -32259075.69 -32259075.54 0.0279 0.0021  
 Mercury -93034-09-16 09:49 J -32258987.23 -32258987.09 -32258986.94 0.0279 0.0073  
 Mercury -93034-12-14 00:27 J -32258898.59 -32258898.48 -32258898.35 0.0279 0.0169  
 Moon -93033-01-27 04:32 J -32258854.41 -32258854.31 -32258854.20 0.0280 0.0250  
 Earth -93033-01-27 07:39 J -32258854.28 -32258854.18 -32258854.06 0.0280 0.0248 \*  
 Mercury -93033-03-11 15:35 J -32258809.89 -32258809.85 -32258809.80 0.0280 0.0266  
 Venus -93033-04-26 12:42 J -32258764.18 -32258763.97 -32258763.76 0.0280 0.0035  
 Venus -93033-12-11 22:03 J -32258534.61 -32258534.58 -32258534.53 0.0280 0.0275  
 Earth -93032-02-07 22:03 J -32258476.82 -32258476.58 -32258476.33 0.0281 0.0007  
 Moon -93032-02-07 23:01 J -32258476.77 -32258476.54 -32258476.30 0.0281 0.0007 \*  
 Earth -93031-02-20 19:11 J -32258098.82 -32258098.70 -32258098.58 0.0281 0.0245  
 Moon -93031-02-20 22:47 J -32258098.63 -32258098.55 -32258098.45 0.0281 0.0262 \*  
 Mars -93027-06-05 23:30 J -32256532.75 -32256532.52 -32256532.27 0.0283 0.0180  
 Mercury -93020-05-03 20:08 J -32254008.71 -32254008.66 -32254008.62 0.0281 0.0270  
 Mercury -93020-07-31 13:54 J -32253920.05 -32253919.92 -32253919.78 0.0281 0.0163  
 Mercury -93020-10-28 07:25 J -32253831.35 -32253831.19 -32253831.03 0.0280 0.0058  
 Mercury -93019-01-25 00:42 J -32253742.63 -32253742.47 -32253742.31 0.0280 0.0045  
 Mercury -93019-04-23 17:15 J -32253653.91 -32253653.78 -32253653.64 0.0280 0.0144  
 Mercury -93019-07-21 09:35 J -32253565.17 -32253565.10 -32253565.02 0.0280 0.0241  
 Earth -93019-08-05 11:15 J -32253550.15 -32253550.03 -32253549.90 0.0280 0.0241  
 Moon -93019-08-05 14:37 J -32253549.99 -32253549.89 -32253549.77 0.0280 0.0249 \*  
 Venus -93019-10-15 04:47 J -32253479.51 -32253479.30 -32253479.08 0.0280 0.0018

Earth	-93018-08-19 00:42 J	-32253171.72	-32253171.47	-32253171.22	0.0279	0.0015
Moon	-93018-08-19 04:03 J	-32253171.59	-32253171.33	-32253171.08	0.0279	0.0003 *
Moon	-93017-08-31 06:13 J	-32252793.35	-32252793.24	-32252793.12	0.0278	0.0247
Earth	-93017-08-31 07:11 J	-32252793.27	-32252793.20	-32252793.11	0.0278	0.0262 *
Mars	-93011-05-24 09:06 J	-32250701.39	-32250701.12	-32250700.86	0.0276	0.0111
Mercury	-93005-05-12 18:42 J	-32248520.81	-32248520.72	-32248520.63	0.0278	0.0216
Mercury	-93005-08-09 08:23 J	-32248432.28	-32248432.15	-32248432.02	0.0278	0.0128
Mercury	-93005-11-05 22:32 J	-32248343.71	-32248343.56	-32248343.41	0.0278	0.0037
Mercury	-93004-02-02 12:56 J	-32248255.11	-32248254.96	-32248254.82	0.0279	0.0056
Mercury	-93004-05-02 03:35 J	-32248166.48	-32248166.35	-32248166.22	0.0279	0.0151
Mercury	-93004-07-29 18:27 J	-32248077.79	-32248077.73	-32248077.66	0.0279	0.0248
Venus	-93004-11-06 22:03 J	-32247977.79	-32247977.58	-32247977.38	0.0279	0.0022
Moon	-93003-02-02 23:15 J	-32247889.75	-32247889.53	-32247889.29	0.0280	0.0106
Earth	-93003-02-02 23:59 J	-32247889.72	-32247889.50	-32247889.28	0.0280	0.0111 *
Moon	-93002-02-15 14:08 J	-32247512.12	-32247511.91	-32247511.71	0.0280	0.0152
Earth	-93002-02-15 17:44 J	-32247511.97	-32247511.76	-32247511.54	0.0280	0.0137 *

# 93RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 93rd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-92997-07-27 15:06 J	-32245523.17	-32245522.87	-32245522.57	0.0283	0.0007		
Mercury	-92991-12-18 14:08 J	-32243188.03	-32243187.91	-32243187.80	0.0280	0.0196		



Mercury -92990-03-17 07:39 J -32243099.33 -32243099.18 -32243099.03 0.0280 0.0090

Mercury -92990-06-14 00:56 J -32243010.62 -32243010.46 -32243010.30 0.0280 0.0014

Mercury -92990-09-10 17:30 J -32242921.91 -32242921.77 -32242921.62 0.0280 0.0114

Mercury -92990-12-08 10:03 J -32242833.18 -32242833.08 -32242832.98 0.0279 0.0211

Venus -92989-04-26 08:51 J -32242693.34 -32242693.13 -32242692.91 0.0279 0.0022

Moon -92989-08-12 05:01 J -32242585.50 -32242585.29 -32242585.06 0.0279 0.0113

Earth -92989-08-12 07:54 J -32242585.40 -32242585.17 -32242584.93 0.0279 0.0101 \*

Earth -92988-08-25 17:15 J -32242206.99 -32242206.78 -32242206.57 0.0278 0.0150

Moon -92988-08-25 18:13 J -32242206.94 -32242206.74 -32242206.53 0.0278 0.0136 \*

Mars -92983-07-13 03:49 J -32240424.56 -32240424.34 -32240424.10 0.0275 0.0161

Mars -92981-07-11 05:01 J -32239695.39 -32239695.29 -32239695.16 0.0275 0.0251

Mercury -92976-09-29 18:42 J -32237788.77 -32237788.72 -32237788.65 0.0278 0.0252

Mercury -92976-12-27 08:37 J -32237700.26 -32237700.14 -32237700.02 0.0279 0.0163

Mercury -92975-03-25 22:32 J -32237611.70 -32237611.56 -32237611.42 0.0279 0.0073

Mercury -92975-06-22 12:42 J -32237523.11 -32237522.97 -32237522.82 0.0279 0.0021

Mercury -92975-09-19 03:20 J -32237434.50 -32237434.36 -32237434.22 0.0279 0.0113

Venus -92975-10-02 13:54 J -32237421.00 -32237420.92 -32237420.84 0.0279 0.0256

Mercury -92975-12-16 18:13 J -32237345.84 -32237345.74 -32237345.64 0.0279 0.0210

Earth -92974-01-28 12:56 J -32237303.09 -32237302.96 -32237302.80 0.0280 0.0220

Moon -92974-01-28 13:11 J -32237303.08 -32237302.95 -32237302.79 0.0280 0.0220 \*

Venus -92974-05-19 22:18 J -32237191.78 -32237191.57 -32237191.36 0.0280 0.0049

Earth -92973-02-10 03:49 J -32236925.58 -32236925.34 -32236925.10 0.0280 0.0023

Moon -92973-02-10 07:25 J -32236925.43 -32236925.19 -32236924.95 0.0280 0.0036 \*

Earth -92972-02-22 00:42 J -32236547.51 -32236547.47 -32236547.40 0.0281 0.0272

Mars -92967-09-16 23:01 J -32234514.77 -32234514.54 -32234514.28 0.0283 0.0157

Mercury -92961-05-06 13:39 J -32232456.01 -32232455.93 -32232455.83 0.0281 0.0230

Mercury -92961-08-03 07:39 J -32232367.32 -32232367.18 -32232367.03 0.0280 0.0123

Mercury -92961-10-31 01:11 J -32232278.61 -32232278.45 -32232278.29 0.0280 0.0019

Mercury -92960-01-27 17:59 J -32232189.90 -32232189.75 -32232189.59 0.0280 0.0084

Venus -92960-03-21 22:32 J -32232136.64 -32232136.56 -32232136.46 0.0280 0.0254

Mercury -92960-04-26 10:32 J -32232101.17 -32232101.06 -32232100.93 0.0280 0.0183

Mercury -92960-07-24 02:51 J -32232012.39 -32232012.38 -32232012.37 0.0280 0.0279

Earth -92960-08-06 15:35 J -32231999.00 -32231998.85 -32231998.68 0.0280 0.0214

Moon -92960-08-06 18:13 J -32231998.89 -32231998.74 -32231998.59 0.0280 0.0223 \*

Venus -92960-11-06 13:54 J -32231907.13 -32231906.92 -32231906.71 0.0280 0.0064

Moon -92959-08-20 03:49 J -32231620.60 -32231620.34 -32231620.08 0.0279 0.0027

Earth -92959-08-20 05:15 J -32231620.53 -32231620.28 -32231620.04 0.0279 0.0041 \*

Moon -92958-09-02 07:39 J -32231242.22 -32231242.18 -32231242.11 0.0278 0.0272

Mars -92953-08-30 05:15 J -32229418.57 -32229418.28 -32229418.00 0.0276 0.0019

Mercury -92946-02-16 22:18 J -32227056.61 -32227056.57 -32227056.53 0.0278 0.0264

Mercury -92946-05-16 11:59 J -32226968.11 -32226968.00 -32226967.89 0.0278 0.0177

Mercury -92946-08-13 01:54 J -32226879.56 -32226879.42 -32226879.28 0.0278 0.0088

Mercury -92946-11-09 16:03 J -32226790.98 -32226790.83 -32226790.68 0.0279 0.0005

Mercury -92945-02-06 06:27 J -32226702.37 -32226702.23 -32226702.09 0.0279 0.0098

Venus -92945-04-13 23:30 J -32226634.66 -32226634.52 -32226634.37 0.0279 0.0199

Mercury -92945-05-04 21:20 J -32226613.72 -32226613.61 -32226613.50 0.0279 0.0194

Venus -92945-11-29 08:08 J -32226405.35 -32226405.16 -32226404.96 0.0279 0.0108

Moon -92944-02-04 03:20 J -32226338.59 -32226338.36 -32226338.12 0.0280 0.0074

Earth -92944-02-04 06:42 J -32226338.44 -32226338.22 -32226337.98 0.0280 0.0082 \*

Moon -92943-02-16 23:30 J -32225960.69 -32225960.52 -32225960.33 0.0280 0.0181

Earth -92943-02-17 00:56 J -32225960.66 -32225960.46 -32225960.26 0.0280 0.0165 \*

Mars -92939-10-31 06:27 J -32224243.47 -32224243.23 -32224242.97 0.0283 0.0165

Mercury -92932-09-23 14:23 J -32221723.95 -32221723.90 -32221723.83 0.0280 0.0259

Mercury -92932-12-21 08:23 J -32221635.28 -32221635.15 -32221635.01 0.0280 0.0152

Mercury -92931-03-20 01:54 J -32221546.58 -32221546.42 -32221546.26 0.0280 0.0047

Mercury -92931-06-16 18:56 J -32221457.86 -32221457.71 -32221457.55 0.0280 0.0056

Mercury -92931-09-13 11:30 J -32221369.14 -32221369.02 -32221368.88 0.0280 0.0156

Venus -92931-10-02 04:32 J -32221350.44 -32221350.31 -32221350.16 0.0280 0.0210

Mercury -92931-12-11 03:49 J -32221280.40 -32221280.34 -32221280.27 0.0279 0.0252

Venus -92930-05-19 19:25 J -32221120.88 -32221120.69 -32221120.49 0.0279 0.0108

Earth -92930-08-14 15:06 J -32221034.11 -32221033.87 -32221033.63 0.0279 0.0071  
 Moon -92930-08-14 17:01 J -32221034.02 -32221033.79 -32221033.56 0.0279 0.0085 \*  
 Earth -92929-08-26 23:59 J -32220655.68 -32220655.50 -32220655.30 0.0278 0.0178  
 Moon -92929-08-27 03:49 J -32220655.53 -32220655.34 -32220655.13 0.0278 0.0162 \*  
 Mars -92923-10-17 21:35 J -32218412.86 -32218412.60 -32218412.34 0.0275 0.0121  
 Mercury -92917-10-02 12:13 J -32216236.08 -32216235.99 -32216235.89 0.0278 0.0212  
 Mercury -92917-12-30 02:08 J -32216147.54 -32216147.41 -32216147.28 0.0279 0.0122  
 Mercury -92916-03-28 16:18 J -32216058.97 -32216058.82 -32216058.68 0.0279 0.0032  
 Mercury -92916-06-25 06:27 J -32215970.37 -32215970.23 -32215970.08 0.0279 0.0063  
 Mercury -92916-09-21 21:06 J -32215881.74 -32215881.62 -32215881.49 0.0279 0.0157  
 Venus -92916-10-25 00:13 J -32215848.64 -32215848.49 -32215848.31 0.0279 0.0171  
 Mercury -92916-12-19 11:59 J -32215793.05 -32215793.00 -32215792.93 0.0279 0.0255  
 Earth -92915-01-29 20:23 J -32215751.82 -32215751.65 -32215751.47 0.0280 0.0189  
 Moon -92915-01-29 23:44 J -32215751.67 -32215751.51 -32215751.32 0.0280 0.0188 \*  
 Venus -92915-06-11 08:51 J -32215619.30 -32215619.13 -32215618.94 0.0280 0.0138  
 Earth -92914-02-11 11:30 J -32215374.26 -32215374.02 -32215373.78 0.0280 0.0053  
 Moon -92914-02-11 12:42 J -32215374.21 -32215373.97 -32215373.72 0.0280 0.0065 \*  
 Mars -92909-12-21 01:54 J -32213234.73 -32213234.42 -32213234.12 0.0283 0.0005  
 Mercury -92902-05-10 08:23 J -32210903.28 -32210903.15 -32210903.03 0.0281 0.0185  
 Mercury -92902-08-07 01:54 J -32210814.57 -32210814.42 -32210814.26 0.0280 0.0079  
 Mercury -92902-11-03 19:11 J -32210725.86 -32210725.70 -32210725.54 0.0280 0.0025  
 Mercury -92901-01-31 11:59 J -32210637.14 -32210637.00 -32210636.85 0.0280 0.0126  
 Venus -92901-04-13 09:20 J -32210564.28 -32210564.11 -32210563.94 0.0280 0.0168  
 Mercury -92901-04-29 04:18 J -32210548.40 -32210548.32 -32210548.22 0.0280 0.0224  
 Moon -92901-08-07 19:54 J -32210447.84 -32210447.67 -32210447.48 0.0280 0.0197  
 Earth -92901-08-07 22:18 J -32210447.74 -32210447.57 -32210447.37 0.0280 0.0185 \*  
 Venus -92901-11-29 00:13 J -32210334.67 -32210334.49 -32210334.31 0.0279 0.0149  
 Moon -92900-08-21 07:54 J -32210069.41 -32210069.17 -32210068.93 0.0279 0.0053  
 Earth -92900-08-21 11:44 J -32210069.25 -32210069.01 -32210068.77 0.0279 0.0069 \*  
 Mars -92895-12-07 10:18 J -32208135.31 -32208135.07 -32208134.83 0.0276 0.0145

Mars -92893-12-05 16:18 J -32207405.87 -32207405.82 -32207405.74 0.0276 0.0269  
 Mercury -92887-02-19 15:49 J -32205503.92 -32205503.84 -32205503.75 0.0278 0.0224  
 Mercury -92887-05-19 05:30 J -32205415.39 -32205415.27 -32205415.14 0.0278 0.0136  
 Mercury -92887-08-15 19:39 J -32205326.83 -32205326.68 -32205326.54 0.0278 0.0045  
 Mercury -92887-11-12 09:49 J -32205238.23 -32205238.09 -32205237.94 0.0279 0.0048  
 Mercury -92886-02-09 00:27 J -32205149.61 -32205149.48 -32205149.35 0.0279 0.0143  
 Venus -92886-05-07 10:32 J -32205062.25 -32205062.06 -32205061.87 0.0279 0.0111  
 Mercury -92886-05-08 15:20 J -32205060.93 -32205060.86 -32205060.78 0.0279 0.0240  
 Venus -92886-12-22 19:25 J -32204832.83 -32204832.69 -32204832.54 0.0280 0.0198  
 Moon -92885-02-06 13:39 J -32204787.16 -32204786.93 -32204786.70 0.0280 0.0043  
 Earth -92885-02-06 15:20 J -32204787.10 -32204786.86 -32204786.62 0.0280 0.0051 \*  
 Earth -92884-02-18 09:49 J -32204409.26 -32204409.09 -32204408.91 0.0280 0.0195  
 Moon -92884-02-18 12:27 J -32204409.12 -32204408.98 -32204408.81 0.0280 0.0211 \*  
 Mars -92878-02-11 13:25 J -32202225.17 -32202224.94 -32202224.70 0.0283 0.0172  
 Mercury -92873-09-26 09:35 J -32200171.20 -32200171.10 -32200170.99 0.0280 0.0211  
 Mercury -92873-12-24 03:20 J -32200082.51 -32200082.36 -32200082.21 0.0280 0.0104  
 Mercury -92872-03-22 20:37 J -32199993.80 -32199993.64 -32199993.48 0.0280 0.0006  
 Mercury -92872-06-19 13:39 J -32199905.08 -32199904.93 -32199904.78 0.0280 0.0101  
 Mercury -92872-09-16 05:59 J -32199816.35 -32199816.25 -32199816.13 0.0280 0.0200  
 Venus -92872-10-24 16:47 J -32199777.99 -32199777.80 -32199777.61 0.0279 0.0120  
 Venus -92871-06-11 06:56 J -32199548.35 -32199548.21 -32199548.05 0.0279 0.0197  
 Earth -92871-08-16 00:13 J -32199482.74 -32199482.49 -32199482.24 0.0279 0.0040  
 Moon -92871-08-16 04:03 J -32199482.58 -32199482.33 -32199482.09 0.0279 0.0055 \*  
 Earth -92870-08-29 08:37 J -32199104.30 -32199104.14 -32199103.97 0.0278 0.0206  
 Moon -92870-08-29 09:35 J -32199104.28 -32199104.10 -32199103.91 0.0278 0.0190 \*  
 Mars -92864-01-23 23:15 J -32197129.81 -32197129.53 -32197129.25 0.0275 0.0008  
 Mercury -92858-07-09 16:32 J -32194771.86 -32194771.81 -32194771.75 0.0278 0.0256  
 Mercury -92858-10-06 06:13 J -32194683.36 -32194683.24 -32194683.13 0.0278 0.0169  
 Mercury -92857-01-02 20:08 J -32194594.80 -32194594.66 -32194594.52 0.0279 0.0079  
 Mercury -92857-03-31 10:18 J -32194506.22 -32194506.07 -32194505.92 0.0279 0.0013

Mercury -92857-06-28 00:42 J -32194417.61 -32194417.47 -32194417.33 0.0279 0.0108

Mercury -92857-09-24 15:35 J -32194328.95 -32194328.85 -32194328.75 0.0279 0.0204

Venus -92857-11-16 11:59 J -32194276.19 -32194276.00 -32194275.79 0.0279 0.0081

Earth -92856-01-31 05:30 J -32194200.45 -32194200.27 -32194200.06 0.0280 0.0159

Moon -92856-01-31 07:39 J -32194200.39 -32194200.18 -32194199.97 0.0280 0.0153 \*

Venus -92856-07-03 20:51 J -32194046.74 -32194046.63 -32194046.51 0.0280 0.0229

Moon -92855-02-12 18:13 J -32193822.96 -32193822.74 -32193822.50 0.0280 0.0099

Earth -92855-02-12 21:06 J -32193822.84 -32193822.62 -32193822.38 0.0280 0.0085 \*

Mars -92850-03-26 20:37 J -32191954.89 -32191954.64 -32191954.37 0.0283 0.0153

Mercury -92843-02-13 09:06 J -32189439.19 -32189439.12 -32189439.04 0.0281 0.0245

Mercury -92843-05-13 03:06 J -32189350.51 -32189350.37 -32189350.23 0.0280 0.0138

Mercury -92843-08-09 20:37 J -32189261.80 -32189261.64 -32189261.48 0.0280 0.0033

Mercury -92843-11-06 13:39 J -32189173.08 -32189172.93 -32189172.77 0.0280 0.0070

Mercury -92842-02-03 06:27 J -32189084.36 -32189084.23 -32189084.11 0.0280 0.0169

Mercury -92842-05-02 22:32 J -32188995.59 -32188995.56 -32188995.51 0.0280 0.0267

Venus -92842-05-06 21:06 J -32188991.83 -32188991.62 -32188991.42 0.0280 0.0079

Moon -92842-08-10 03:49 J -32188896.53 -32188896.34 -32188896.14 0.0280 0.0168

Earth -92842-08-10 07:11 J -32188896.40 -32188896.20 -32188895.99 0.0280 0.0154 \*

Venus -92842-12-22 11:15 J -32188762.13 -32188762.03 -32188761.91 0.0279 0.0238

Moon -92841-08-22 19:25 J -32188517.91 -32188517.69 -32188517.46 0.0279 0.0083

Earth -92841-08-22 19:54 J -32188517.90 -32188517.67 -32188517.44 0.0279 0.0098 \*

Mars -92836-03-16 00:13 J -32186851.55 -32186851.49 -32186851.42 0.0276 0.0267

Mars -92834-03-14 07:39 J -32186123.43 -32186123.18 -32186122.93 0.0276 0.0137

Mercury -92829-11-25 19:54 J -32184039.69 -32184039.67 -32184039.63 0.0278 0.0270

Mercury -92828-02-22 09:35 J -32183951.21 -32183951.10 -32183950.99 0.0278 0.0182

Mercury -92828-05-21 23:30 J -32183862.66 -32183862.52 -32183862.38 0.0278 0.0093

Mercury -92828-08-18 13:39 J -32183774.08 -32183773.93 -32183773.78 0.0279 0.0001

Mercury -92828-11-15 04:03 J -32183685.47 -32183685.33 -32183685.19 0.0279 0.0093

Moon -92827-01-26 10:18 J -32183613.15 -32183613.07 -32183612.97 0.0279 0.0256

Earth -92827-01-26 12:13 J -32183613.08 -32183612.99 -32183612.90 0.0279 0.0256 \*

Mercury -92827-02-11 18:56 J -32183596.82 -32183596.71 -32183596.60 0.0279 0.0189

Venus -92827-05-29 22:32 J -32183489.77 -32183489.56 -32183489.36 0.0279 0.0021

Earth -92826-02-08 01:11 J -32183235.69 -32183235.45 -32183235.21 0.0280 0.0019

Moon -92826-02-08 03:35 J -32183235.59 -32183235.35 -32183235.12 0.0280 0.0009 \*

Earth -92825-02-20 20:08 J -32182857.80 -32182857.66 -32182857.51 0.0281 0.0225

Moon -92825-02-20 23:15 J -32182857.65 -32182857.53 -32182857.40 0.0281 0.0240 \*

Mars -92820-05-18 00:13 J -32180944.79 -32180944.49 -32180944.19 0.0283 0.0023

Mercury -92814-07-03 11:01 J -32178707.08 -32178707.04 -32178706.98 0.0281 0.0268

Mercury -92814-09-30 05:01 J -32178618.42 -32178618.29 -32178618.15 0.0280 0.0161

Mercury -92814-12-27 22:47 J -32178529.71 -32178529.55 -32178529.39 0.0280 0.0055

Mercury -92813-03-25 15:49 J -32178441.00 -32178440.84 -32178440.68 0.0280 0.0048

Mercury -92813-06-22 08:37 J -32178352.27 -32178352.14 -32178352.01 0.0280 0.0148

Earth -92813-08-03 20:23 J -32178309.73 -32178309.65 -32178309.54 0.0280 0.0259

Moon -92813-08-03 23:59 J -32178309.56 -32178309.50 -32178309.41 0.0280 0.0267 \*

Mercury -92813-09-19 00:56 J -32178263.53 -32178263.46 -32178263.38 0.0280 0.0246

Venus -92813-11-16 05:59 J -32178205.46 -32178205.25 -32178205.04 0.0279 0.0027

Earth -92812-08-17 11:15 J -32177931.28 -32177931.03 -32177930.78 0.0279 0.0008

Moon -92812-08-17 11:15 J -32177931.28 -32177931.03 -32177930.77 0.0279 0.0023 \*

Moon -92811-08-30 15:20 J -32177553.00 -32177552.86 -32177552.70 0.0278 0.0220

Earth -92811-08-30 18:56 J -32177552.83 -32177552.71 -32177552.57 0.0278 0.0236 \*

Mars -92806-05-03 10:32 J -32175846.30 -32175846.06 -32175845.81 0.0275 0.0134

Mercury -92799-07-12 10:32 J -32173219.15 -32173219.06 -32173218.97 0.0278 0.0214

Mercury -92799-10-09 00:13 J -32173130.62 -32173130.49 -32173130.36 0.0279 0.0125

Mercury -92798-01-05 14:08 J -32173042.05 -32173041.91 -32173041.76 0.0279 0.0035

Mercury -92798-04-04 04:32 J -32172953.45 -32172953.31 -32172953.16 0.0279 0.0060

Mercury -92798-07-01 19:11 J -32172864.82 -32172864.70 -32172864.57 0.0279 0.0155

Mercury -92798-09-28 10:03 J -32172776.14 -32172776.08 -32172776.01 0.0279 0.0252

Venus -92798-12-10 00:27 J -32172703.69 -32172703.48 -32172703.27 0.0280 0.0013

Moon -92797-02-02 13:11 J -32172649.16 -32172648.95 -32172648.72 0.0280 0.0118

Earth -92797-02-02 16:03 J -32172649.04 -32172648.83 -32172648.61 0.0280 0.0126 \*

Moon -92796-02-14 04:47 J -32172271.50 -32172271.30 -32172271.08 0.0280 0.0131  
 Earth -92796-02-14 08:08 J -32172271.38 -32172271.16 -32172270.94 0.0280 0.0116 \*  
 Mars -92790-07-08 08:08 J -32169936.38 -32169936.16 -32169935.93 0.0283 0.0186  
 Mercury -92784-02-16 04:32 J -32167886.42 -32167886.31 -32167886.19 0.0280 0.0195  
 Mercury -92784-05-15 22:18 J -32167797.72 -32167797.57 -32167797.41 0.0280 0.0089  
 Mercury -92784-08-12 15:49 J -32167709.00 -32167708.84 -32167708.68 0.0280 0.0016  
 Mercury -92784-11-09 08:37 J -32167620.28 -32167620.14 -32167619.99 0.0280 0.0117  
 Mercury -92783-02-06 00:56 J -32167531.55 -32167531.46 -32167531.35 0.0280 0.0216  
 Venus -92783-05-29 09:49 J -32167419.31 -32167419.09 -32167418.88 0.0279 0.0013  
 Earth -92783-08-11 17:44 J -32167344.98 -32167344.76 -32167344.53 0.0279 0.0122  
 Moon -92783-08-11 17:44 J -32167344.96 -32167344.76 -32167344.54 0.0279 0.0135 \*  
 Earth -92782-08-25 05:30 J -32166966.49 -32166966.27 -32166966.05 0.0279 0.0128  
 Moon -92782-08-25 09:06 J -32166966.34 -32166966.12 -32166965.89 0.0279 0.0112 \*  
 Mars -92776-06-20 07:54 J -32164840.45 -32164840.17 -32164839.88 0.0276 0.0009  
 Mercury -92770-11-29 13:39 J -32162487.00 -32162486.93 -32162486.84 0.0278 0.0229  
 Mercury -92769-02-26 03:35 J -32162398.48 -32162398.35 -32162398.23 0.0279 0.0140  
 Mercury -92769-05-24 17:30 J -32162309.91 -32162309.77 -32162309.62 0.0279 0.0049  
 Mercury -92769-08-21 07:54 J -32162221.32 -32162221.17 -32162221.03 0.0279 0.0045  
 Venus -92769-11-04 01:54 J -32162146.52 -32162146.42 -32162146.30 0.0279 0.0237  
 Mercury -92769-11-17 22:18 J -32162132.69 -32162132.57 -32162132.44 0.0279 0.0140  
 Earth -92768-01-27 21:20 J -32162061.73 -32162061.61 -32162061.45 0.0279 0.0225  
 Moon -92768-01-28 00:13 J -32162061.63 -32162061.49 -32162061.34 0.0279 0.0221 \*  
 Mercury -92768-02-14 13:11 J -32162044.02 -32162043.95 -32162043.87 0.0279 0.0237  
 Venus -92768-06-21 10:32 J -32161917.26 -32161917.06 -32161916.86 0.0279 0.0071  
 Earth -92767-02-09 11:30 J -32161684.26 -32161684.02 -32161683.78 0.0280 0.0013  
 Moon -92767-02-09 14:51 J -32161684.12 -32161683.88 -32161683.63 0.0280 0.0025 \*  
 Moon -92766-02-22 06:27 J -32161306.29 -32161306.23 -32161306.15 0.0281 0.0270  
 Earth -92766-02-22 07:25 J -32161306.28 -32161306.19 -32161306.09 0.0281 0.0256 \*  
 Mars -92762-08-22 02:08 J -32159664.67 -32159664.41 -32159664.13 0.0283 0.0132  
 Mercury -92755-07-06 06:56 J -32157154.31 -32157154.21 -32157154.10 0.0280 0.0216

Mercury -92755-10-03 00:42 J -32157065.61 -32157065.47 -32157065.31 0.0280 0.0109  
 Mercury -92755-12-30 18:13 J -32156976.90 -32156976.74 -32156976.58 0.0280 0.0004  
 Mercury -92754-03-29 11:15 J -32156888.18 -32156888.03 -32156887.88 0.0280 0.0098  
 Venus -92754-04-24 04:32 J -32156862.39 -32156862.31 -32156862.21 0.0280 0.0253  
 Mercury -92754-06-26 03:49 J -32156799.45 -32156799.34 -32156799.23 0.0280 0.0197  
 Earth -92754-08-06 09:06 J -32156758.26 -32156758.12 -32156757.96 0.0280 0.0224  
 Moon -92754-08-06 09:20 J -32156758.24 -32156758.11 -32156757.96 0.0280 0.0233 \*  
 Venus -92754-12-09 19:39 J -32156632.88 -32156632.68 -32156632.47 0.0279 0.0067  
 Moon -92753-08-18 19:54 J -32156379.92 -32156379.67 -32156379.42 0.0279 0.0010  
 Earth -92753-08-18 23:15 J -32156379.77 -32156379.53 -32156379.28 0.0279 0.0026 \*  
 Moon -92752-09-01 03:35 J -32156001.43 -32156001.35 -32156001.24 0.0278 0.0253  
 Earth -92752-09-01 06:27 J -32156001.30 -32156001.23 -32156001.16 0.0278 0.0266 \*  
 Mars -92748-08-10 05:30 J -32154562.36 -32154562.27 -32154562.15 0.0276 0.0254  
 Mars -92746-08-08 11:15 J -32153834.26 -32153834.03 -32153833.78 0.0275 0.0151  
 Mercury -92740-04-17 14:51 J -32151754.93 -32151754.88 -32151754.82 0.0278 0.0258  
 Mercury -92740-07-15 04:32 J -32151666.42 -32151666.31 -32151666.19 0.0278 0.0170  
 Mercury -92740-10-11 18:27 J -32151577.87 -32151577.73 -32151577.59 0.0279 0.0080  
 Mercury -92739-01-08 08:37 J -32151489.29 -32151489.14 -32151488.99 0.0279 0.0013  
 Mercury -92739-04-06 23:01 J -32151400.68 -32151400.54 -32151400.40 0.0279 0.0107  
 Venus -92739-05-17 04:32 J -32151360.44 -32151360.31 -32151360.16 0.0279 0.0203  
 Mercury -92739-07-04 13:39 J -32151312.03 -32151311.93 -32151311.82 0.0279 0.0204  
 Venus -92738-01-01 12:56 J -32151131.15 -32151130.96 -32151130.76 0.0280 0.0106  
 Moon -92738-02-03 23:44 J -32151097.73 -32151097.51 -32151097.28 0.0280 0.0083  
 Earth -92738-02-04 02:51 J -32151097.60 -32151097.38 -32151097.15 0.0280 0.0094 \*  
 Earth -92737-02-16 19:25 J -32150719.89 -32150719.69 -32150719.48 0.0281 0.0148  
 Moon -92737-02-16 19:54 J -32150719.85 -32150719.67 -32150719.47 0.0281 0.0164 \*  
 Mars -92732-10-11 21:20 J -32148655.91 -32148655.61 -32148655.31 0.0283 0.0037  
 Mercury -92726-11-23 06:13 J -32146422.30 -32146422.24 -32146422.16 0.0280 0.0252  
 Mercury -92725-02-20 00:13 J -32146333.63 -32146333.49 -32146333.35 0.0280 0.0144  
 Mercury -92725-05-18 17:59 J -32146244.92 -32146244.75 -32146244.59 0.0280 0.0039



Mercury -92725-08-15 11:01 J -32146156.20 -32146156.04 -32146155.88 0.0280 0.0064

Venus -92725-11-03 07:54 J -32146076.30 -32146076.17 -32146076.03 0.0280 0.0214

Mercury -92725-11-12 03:35 J -32146067.47 -32146067.35 -32146067.21 0.0280 0.0165

Mercury -92724-02-08 19:54 J -32145978.71 -32145978.67 -32145978.61 0.0280 0.0263

Venus -92724-06-20 23:01 J -32145846.73 -32145846.54 -32145846.34 0.0279 0.0106

Earth -92724-08-13 05:30 J -32145793.51 -32145793.27 -32145793.03 0.0279 0.0088

Moon -92724-08-13 08:51 J -32145793.36 -32145793.13 -32145792.90 0.0279 0.0102 \*

Earth -92723-08-26 16:18 J -32145415.02 -32145414.82 -32145414.61 0.0278 0.0159

Moon -92723-08-26 18:42 J -32145414.93 -32145414.72 -32145414.50 0.0278 0.0143 \*

Mars -92718-09-27 16:47 J -32143557.05 -32143556.80 -32143556.55 0.0276 0.0120

Mercury -92711-09-04 17:59 J -32141022.77 -32141022.75 -32141022.73 0.0278 0.0275

Mercury -92711-12-02 07:25 J -32140934.29 -32140934.19 -32140934.08 0.0279 0.0187

Mercury -92710-02-28 21:20 J -32140845.75 -32140845.61 -32140845.47 0.0279 0.0097

Mercury -92710-05-28 11:30 J -32140757.17 -32140757.02 -32140756.87 0.0279 0.0005

Mercury -92710-08-25 01:54 J -32140668.56 -32140668.42 -32140668.28 0.0279 0.0090

Mercury -92710-11-21 16:32 J -32140579.92 -32140579.81 -32140579.69 0.0279 0.0186

Venus -92710-11-27 13:39 J -32140574.10 -32140573.93 -32140573.75 0.0279 0.0148

Earth -92709-01-30 06:42 J -32140510.39 -32140510.22 -32140510.04 0.0279 0.0193

Moon -92709-01-30 09:49 J -32140510.26 -32140510.09 -32140509.91 0.0279 0.0188 \*

Venus -92709-07-13 22:18 J -32140344.74 -32140344.57 -32140344.40 0.0280 0.0163

Moon -92708-02-10 20:37 J -32140132.88 -32140132.64 -32140132.39 0.0280 0.0058

Earth -92708-02-10 21:20 J -32140132.84 -32140132.61 -32140132.37 0.0280 0.0044 \*

Mars -92702-12-03 13:39 J -32137646.13 -32137645.93 -32137645.72 0.0283 0.0207

Mercury -92696-04-11 09:06 J -32135690.16 -32135690.12 -32135690.08 0.0281 0.0270

Mercury -92696-07-09 03:06 J -32135601.50 -32135601.37 -32135601.24 0.0280 0.0162

Mercury -92696-10-05 20:37 J -32135512.80 -32135512.64 -32135512.48 0.0280 0.0057

Mercury -92695-01-02 13:54 J -32135424.08 -32135423.92 -32135423.76 0.0280 0.0047

Mercury -92695-04-01 06:42 J -32135335.36 -32135335.22 -32135335.09 0.0280 0.0148

Venus -92695-05-16 19:11 J -32135289.87 -32135289.70 -32135289.51 0.0280 0.0157

Mercury -92695-06-28 23:01 J -32135246.61 -32135246.54 -32135246.46 0.0280 0.0246

Moon -92695-08-07 18:56 J -32135206.87 -32135206.71 -32135206.52 0.0279 0.0201  
 Earth -92695-08-07 22:32 J -32135206.73 -32135206.56 -32135206.36 0.0279 0.0189 \*  
 Venus -92694-01-01 09:49 J -32135060.26 -32135060.09 -32135059.91 0.0279 0.0163  
 Moon -92694-08-21 09:35 J -32134828.34 -32134828.10 -32134827.86 0.0279 0.0045  
 Earth -92694-08-21 11:44 J -32134828.24 -32134828.01 -32134827.76 0.0279 0.0060 \*  
 Mars -92688-11-14 15:20 J -32132551.15 -32132550.86 -32132550.58 0.0275 0.0022  
 Mercury -92681-04-20 08:51 J -32130202.22 -32130202.13 -32130202.04 0.0278 0.0215  
 Mercury -92681-07-17 22:32 J -32130113.69 -32130113.56 -32130113.43 0.0278 0.0126  
 Mercury -92681-10-14 12:27 J -32130025.12 -32130024.98 -32130024.83 0.0279 0.0036  
 Mercury -92680-01-11 02:51 J -32129936.53 -32129936.38 -32129936.23 0.0279 0.0059  
 Mercury -92680-04-09 17:15 J -32129847.90 -32129847.78 -32129847.65 0.0279 0.0155  
 Venus -92680-06-08 16:47 J -32129787.99 -32129787.80 -32129787.61 0.0279 0.0112  
 Mercury -92680-07-07 08:08 J -32129759.21 -32129759.16 -32129759.09 0.0279 0.0252  
 Venus -92679-01-24 01:11 J -32129558.59 -32129558.45 -32129558.30 0.0280 0.0199  
 Earth -92679-02-05 13:11 J -32129546.18 -32129545.95 -32129545.71 0.0280 0.0061  
 Moon -92679-02-05 14:08 J -32129546.13 -32129545.91 -32129545.68 0.0280 0.0050 \*  
 Earth -92678-02-18 06:13 J -32129168.42 -32129168.24 -32129168.05 0.0281 0.0180  
 Moon -92678-02-18 09:49 J -32129168.25 -32129168.09 -32129167.90 0.0281 0.0197 \*  
 Mars -92673-01-15 23:59 J -32127375.78 -32127375.50 -32127375.22 0.0283 0.0118  
 Mercury -92667-11-26 02:08 J -32124869.52 -32124869.41 -32124869.29 0.0280 0.0199  
 Mercury -92666-02-22 19:54 J -32124780.82 -32124780.67 -32124780.51 0.0280 0.0093  
 Mercury -92666-05-22 13:11 J -32124692.11 -32124691.95 -32124691.78 0.0280 0.0014  
 Mercury -92666-08-19 06:13 J -32124603.38 -32124603.24 -32124603.09 0.0280 0.0113  
 Mercury -92666-11-15 22:47 J -32124514.65 -32124514.55 -32124514.45 0.0279 0.0212  
 Venus -92666-11-26 21:49 J -32124503.79 -32124503.59 -32124503.40 0.0279 0.0120  
 Venus -92665-07-13 11:59 J -32124274.13 -32124274.00 -32124273.84 0.0279 0.0200  
 Earth -92665-08-14 17:01 J -32124242.03 -32124241.79 -32124241.54 0.0279 0.0055  
 Moon -92665-08-14 19:39 J -32124241.93 -32124241.68 -32124241.43 0.0279 0.0068 \*  
 Moon -92664-08-28 00:56 J -32123863.64 -32123863.46 -32123863.25 0.0278 0.0176  
 Earth -92664-08-28 03:06 J -32123863.54 -32123863.37 -32123863.18 0.0278 0.0190 \*

Mars -92659-01-04 06:27 J -32122273.34 -32122273.23 -32122273.08 0.0276 0.0243  
 Mars -92657-01-02 15:35 J -32121545.07 -32121544.85 -32121544.61 0.0276 0.0165  
 Mercury -92652-09-07 11:30 J -32119470.10 -32119470.02 -32119469.95 0.0279 0.0235  
 Mercury -92652-12-05 01:11 J -32119381.58 -32119381.45 -32119381.33 0.0279 0.0146  
 Mercury -92651-03-03 15:06 J -32119293.01 -32119292.87 -32119292.72 0.0279 0.0055  
 Mercury -92651-05-31 05:15 J -32119204.42 -32119204.28 -32119204.13 0.0279 0.0039  
 Mercury -92651-08-27 19:54 J -32119115.80 -32119115.67 -32119115.54 0.0279 0.0134  
 Mercury -92651-11-24 10:47 J -32119027.13 -32119027.05 -32119026.97 0.0279 0.0231  
 Venus -92651-12-20 00:42 J -32119001.67 -32119001.47 -32119001.26 0.0279 0.0060  
 Moon -92650-01-31 14:08 J -32118959.11 -32118958.91 -32118958.69 0.0279 0.0155  
 Earth -92650-01-31 14:51 J -32118959.06 -32118958.88 -32118958.67 0.0279 0.0163 \*  
 Venus -92650-08-06 09:35 J -32118772.18 -32118772.10 -32118772.00 0.0280 0.0253  
 Moon -92649-02-13 02:37 J -32118581.61 -32118581.39 -32118581.16 0.0280 0.0091  
 Earth -92649-02-13 06:27 J -32118581.46 -32118581.23 -32118580.99 0.0280 0.0075 \*  
 Mars -92643-03-09 01:11 J -32116365.74 -32116365.45 -32116365.15 0.0283 0.0058  
 Mercury -92637-04-14 05:01 J -32114137.39 -32114137.29 -32114137.19 0.0281 0.0218  
 Mercury -92637-07-11 22:47 J -32114048.70 -32114048.55 -32114048.40 0.0280 0.0111  
 Mercury -92637-10-08 16:18 J -32113959.98 -32113959.82 -32113959.66 0.0280 0.0007  
 Mercury -92636-01-05 09:06 J -32113871.26 -32113871.12 -32113870.96 0.0280 0.0097  
 Mercury -92636-04-04 01:54 J -32113782.53 -32113782.42 -32113782.31 0.0280 0.0196  
 Venus -92636-06-08 09:20 J -32113717.32 -32113717.11 -32113716.90 0.0280 0.0062  
 Moon -92636-08-09 08:51 J -32113655.32 -32113655.13 -32113654.93 0.0279 0.0167  
 Earth -92636-08-09 11:15 J -32113655.23 -32113655.03 -32113654.81 0.0279 0.0154 \*  
 Venus -92635-01-23 23:30 J -32113487.60 -32113487.52 -32113487.44 0.0279 0.0256  
 Earth -92635-08-22 23:44 J -32113276.74 -32113276.51 -32113276.27 0.0279 0.0093  
 Moon -92635-08-23 01:25 J -32113276.67 -32113276.44 -32113276.21 0.0279 0.0078 \*  
 Mars -92629-02-22 00:56 J -32111267.71 -32111267.46 -32111267.18 0.0275 0.0105  
 Mercury -92622-01-25 12:56 J -32108738.00 -32108737.96 -32108737.91 0.0278 0.0262  
 Mercury -92622-04-24 02:23 J -32108649.51 -32108649.40 -32108649.28 0.0278 0.0174  
 Mercury -92622-07-21 16:18 J -32108560.96 -32108560.82 -32108560.68 0.0279 0.0084

Mercury -92622-10-18 06:27 J -32108472.38 -32108472.23 -32108472.08 0.0279 0.0009

Mercury -92621-01-14 20:51 J -32108383.77 -32108383.63 -32108383.49 0.0279 0.0103

Earth -92621-01-26 10:03 J -32108372.15 -32108372.08 -32108371.99 0.0279 0.0262

Moon -92621-01-26 10:18 J -32108372.14 -32108372.07 -32108371.98 0.0279 0.0261 \*

Mercury -92621-04-12 11:30 J -32108295.12 -32108295.02 -32108294.91 0.0279 0.0200

Venus -92621-07-01 04:03 J -32108215.54 -32108215.33 -32108215.12 0.0279 0.0023

Earth -92620-02-06 22:03 J -32107994.82 -32107994.58 -32107994.34 0.0280 0.0030

Moon -92620-02-07 01:39 J -32107994.67 -32107994.43 -32107994.19 0.0280 0.0016 \*

Earth -92619-02-19 15:49 J -32107616.99 -32107616.84 -32107616.67 0.0281 0.0210

Moon -92619-02-19 17:01 J -32107616.93 -32107616.79 -32107616.63 0.0281 0.0225 \*

Mars -92615-04-20 11:44 J -32106096.06 -32106096.01 -32106095.93 0.0283 0.0276

Mars -92613-04-28 07:39 J -32105357.35 -32105357.18 -32105356.98 0.0283 0.0220

Mercury -92608-09-01 03:49 J -32103405.40 -32103405.34 -32103405.27 0.0280 0.0256

Mercury -92608-11-28 21:49 J -32103316.73 -32103316.59 -32103316.45 0.0280 0.0148

Mercury -92607-02-25 15:20 J -32103228.02 -32103227.86 -32103227.70 0.0280 0.0043

Mercury -92607-05-25 08:37 J -32103139.30 -32103139.14 -32103138.98 0.0280 0.0061

Earth -92607-08-03 12:42 J -32103069.03 -32103068.97 -32103068.90 0.0280 0.0268

Mercury -92607-08-22 01:25 J -32103050.57 -32103050.44 -32103050.31 0.0279 0.0161

Mercury -92607-11-18 17:44 J -32102961.81 -32102961.76 -32102961.70 0.0279 0.0259

Venus -92607-12-19 11:15 J -32102931.24 -32102931.03 -32102930.81 0.0279 0.0026

Moon -92606-08-17 02:51 J -32102690.64 -32102690.38 -32102690.13 0.0279 0.0037

Earth -92606-08-17 04:47 J -32102690.55 -32102690.30 -32102690.05 0.0279 0.0021 \*

Moon -92605-08-29 10:18 J -32102312.22 -32102312.07 -32102311.89 0.0278 0.0207

Earth -92605-08-29 13:54 J -32102312.06 -32102311.92 -32102311.76 0.0278 0.0220 \*

Mars -92599-04-10 13:39 J -32100262.21 -32100261.93 -32100261.64 0.0276 0.0034

Mercury -92593-09-10 04:32 J -32097917.41 -32097917.31 -32097917.20 0.0279 0.0197

Mercury -92593-12-07 18:27 J -32097828.87 -32097828.73 -32097828.60 0.0279 0.0107

Mercury -92592-03-06 08:23 J -32097740.29 -32097740.15 -32097740.00 0.0279 0.0017

Mercury -92592-06-02 22:47 J -32097651.69 -32097651.55 -32097651.40 0.0279 0.0080

Mercury -92592-08-30 13:25 J -32097563.05 -32097562.94 -32097562.82 0.0279 0.0176

Mercury -92592-11-27 04:18 J -32097474.34 -32097474.32 -32097474.28 0.0280 0.0275  
 Venus -92591-01-11 10:32 J -32097429.26 -32097429.06 -32097428.85 0.0280 0.0027  
 Moon -92591-02-01 17:59 J -32097407.96 -32097407.75 -32097407.53 0.0280 0.0123  
 Earth -92591-02-01 21:35 J -32097407.81 -32097407.60 -32097407.39 0.0280 0.0132 \*  
 Moon -92590-02-14 12:42 J -32097030.18 -32097029.97 -32097029.76 0.0280 0.0121  
 Earth -92590-02-14 13:25 J -32097030.16 -32097029.94 -32097029.71 0.0280 0.0105 \*  
 Mars -92585-06-11 21:06 J -32095085.91 -32095085.62 -32095085.33 0.0283 0.0098  
 Mercury -92578-01-19 06:27 J -32092673.26 -32092673.23 -32092673.20 0.0281 0.0276  
 Mercury -92578-04-18 00:27 J -32092584.61 -32092584.48 -32092584.35 0.0281 0.0168  
 Mercury -92578-07-15 18:13 J -32092495.90 -32092495.74 -32092495.58 0.0280 0.0061  
 Mercury -92578-10-12 11:30 J -32092407.18 -32092407.02 -32092406.86 0.0280 0.0043  
 Mercury -92577-01-09 04:18 J -32092318.45 -32092318.32 -32092318.18 0.0280 0.0144  
 Mercury -92577-04-06 20:37 J -32092229.71 -32092229.64 -32092229.56 0.0280 0.0243  
 Venus -92577-06-30 22:18 J -32092144.78 -32092144.57 -32092144.35 0.0280 0.0031  
 Earth -92577-08-10 22:47 J -32092103.77 -32092103.55 -32092103.32 0.0279 0.0119  
 Moon -92577-08-11 00:56 J -32092103.67 -32092103.46 -32092103.24 0.0279 0.0134 \*  
 Earth -92576-08-24 10:32 J -32091725.28 -32091725.06 -32091724.83 0.0279 0.0125  
 Moon -92576-08-24 14:23 J -32091725.13 -32091724.90 -32091724.67 0.0279 0.0109 \*  
 Mars -92571-05-31 17:15 J -32089983.93 -32089983.78 -32089983.61 0.0275 0.0225  
 Mars -92569-05-28 22:47 J -32089255.76 -32089255.55 -32089255.33 0.0275 0.0180  
 Mercury -92563-01-28 06:13 J -32087185.32 -32087185.24 -32087185.15 0.0278 0.0223  
 Mercury -92563-04-26 19:54 J -32087096.80 -32087096.67 -32087096.54 0.0278 0.0134  
 Mercury -92563-07-24 09:49 J -32087008.23 -32087008.09 -32087007.94 0.0279 0.0043  
 Mercury -92563-10-20 23:59 J -32086919.64 -32086919.50 -32086919.35 0.0279 0.0051  
 Venus -92563-12-07 06:13 J -32086872.33 -32086872.24 -32086872.13 0.0279 0.0245  
 Mercury -92562-01-17 14:37 J -32086831.02 -32086830.89 -32086830.76 0.0279 0.0146  
 Earth -92562-01-27 17:01 J -32086820.91 -32086820.79 -32086820.65 0.0279 0.0232  
 Moon -92562-01-27 20:37 J -32086820.77 -32086820.64 -32086820.50 0.0279 0.0229 \*  
 Mercury -92562-04-16 05:30 J -32086742.34 -32086742.27 -32086742.20 0.0279 0.0243  
 Venus -92562-07-24 14:23 J -32086643.10 -32086642.90 -32086642.70 0.0279 0.0064

Earth -92561-02-09 05:30 J -32086443.51 -32086443.27 -32086443.03 0.0280 0.0002  
 Moon -92561-02-09 06:42 J -32086443.47 -32086443.22 -32086442.97 0.0280 0.0014 \*  
 Moon -92560-02-20 20:23 J -32086065.74 -32086065.65 -32086065.53 0.0281 0.0254  
 Earth -92560-02-20 23:44 J -32086065.62 -32086065.51 -32086065.37 0.0281 0.0239 \*  
 Mars -92555-08-02 15:20 J -32084077.15 -32084076.86 -32084076.57 0.0283 0.0069  
 Mercury -92549-09-03 23:01 J -32081852.64 -32081852.54 -32081852.42 0.0280 0.0207  
 Mercury -92549-12-01 17:01 J -32081763.94 -32081763.79 -32081763.64 0.0280 0.0100  
 Mercury -92548-02-28 10:32 J -32081675.22 -32081675.06 -32081674.90 0.0280 0.0007  
 Venus -92548-05-26 08:37 J -32081588.22 -32081588.14 -32081588.06 0.0280 0.0257  
 Mercury -92548-05-28 03:20 J -32081586.50 -32081586.36 -32081586.21 0.0280 0.0108  
 Moon -92548-08-04 20:08 J -32081517.76 -32081517.66 -32081517.53 0.0279 0.0250  
 Earth -92548-08-04 23:15 J -32081517.65 -32081517.53 -32081517.38 0.0279 0.0235 \*  
 Mercury -92548-08-24 20:08 J -32081497.77 -32081497.66 -32081497.56 0.0279 0.0207  
 Venus -92547-01-10 23:44 J -32081358.72 -32081358.51 -32081358.30 0.0279 0.0065  
 Moon -92547-08-18 11:01 J -32081139.29 -32081139.04 -32081138.80 0.0279 0.0008  
 Earth -92547-08-18 14:37 J -32081139.14 -32081138.89 -32081138.64 0.0279 0.0011 \*  
 Moon -92546-08-31 22:32 J -32080760.68 -32080760.56 -32080760.43 0.0278 0.0237  
 Earth -92546-08-31 22:47 J -32080760.64 -32080760.55 -32080760.42 0.0278 0.0249 \*  
 Mars -92541-07-17 18:56 J -32078978.97 -32078978.71 -32078978.44 0.0276 0.0094  
 Mercury -92534-06-17 07:54 J -32076453.23 -32076453.17 -32076453.11 0.0278 0.0249  
 Mercury -92534-09-13 21:20 J -32076364.72 -32076364.61 -32076364.49 0.0279 0.0161  
 Mercury -92534-12-11 11:15 J -32076276.17 -32076276.03 -32076275.88 0.0279 0.0070  
 Mercury -92533-03-09 01:25 J -32076187.58 -32076187.44 -32076187.29 0.0279 0.0025  
 Mercury -92533-06-05 15:49 J -32076098.97 -32076098.84 -32076098.70 0.0279 0.0119  
 Venus -92533-06-18 10:47 J -32076086.18 -32076086.05 -32076085.90 0.0279 0.0204  
 Mercury -92533-09-02 06:42 J -32076010.31 -32076010.22 -32076010.12 0.0279 0.0216  
 Venus -92532-02-02 19:25 J -32075856.88 -32075856.69 -32075856.50 0.0280 0.0108  
 Moon -92532-02-03 00:27 J -32075856.69 -32075856.48 -32075856.25 0.0280 0.0095 \*  
 Earth -92532-02-03 01:54 J -32075856.63 -32075856.42 -32075856.19 0.0280 0.0104 \*  
 Earth -92531-02-15 18:13 J -32075478.94 -32075478.74 -32075478.51 0.0280 0.0134

Moon -92531-02-15 21:35 J -32075478.80 -32075478.60 -32075478.40 0.0280 0.0149 \*  
 Mars -92527-09-14 23:44 J -32073806.61 -32073806.51 -32073806.37 0.0283 0.0259  
 Mars -92525-09-22 21:20 J -32073067.76 -32073067.61 -32073067.43 0.0283 0.0237  
 Mercury -92519-01-22 01:39 J -32071120.52 -32071120.43 -32071120.33 0.0281 0.0228  
 Mercury -92519-04-20 19:39 J -32071031.83 -32071031.68 -32071031.53 0.0281 0.0120  
 Mercury -92519-07-18 13:11 J -32070943.11 -32070942.95 -32070942.79 0.0280 0.0015  
 Mercury -92519-10-15 06:13 J -32070854.39 -32070854.24 -32070854.09 0.0280 0.0089  
 Venus -92519-12-06 19:39 J -32070801.83 -32070801.68 -32070801.53 0.0280 0.0201  
 Mercury -92518-01-11 22:47 J -32070765.66 -32070765.55 -32070765.43 0.0280 0.0190  
 Venus -92518-07-24 10:32 J -32070572.25 -32070572.06 -32070571.86 0.0279 0.0121  
 Earth -92518-08-13 08:51 J -32070552.37 -32070552.13 -32070551.89 0.0279 0.0086  
 Moon -92518-08-13 12:27 J -32070552.21 -32070551.98 -32070551.74 0.0279 0.0102 \*  
 Earth -92517-08-25 20:08 J -32070173.86 -32070173.66 -32070173.45 0.0279 0.0155  
 Moon -92517-08-25 20:51 J -32070173.85 -32070173.63 -32070173.40 0.0279 0.0140 \*  
 Mars -92511-09-04 21:20 J -32067972.89 -32067972.61 -32067972.33 0.0275 0.0051  
 Mercury -92505-11-03 09:35 J -32065721.12 -32065721.10 -32065721.07 0.0278 0.0273  
 Mercury -92504-01-30 23:01 J -32065632.64 -32065632.54 -32065632.43 0.0278 0.0186  
 Mercury -92504-04-29 12:56 J -32065544.10 -32065543.96 -32065543.82 0.0278 0.0096  
 Mercury -92504-07-27 02:51 J -32065455.52 -32065455.38 -32065455.23 0.0278 0.0009  
 Mercury -92504-10-23 17:15 J -32065366.92 -32065366.78 -32065366.64 0.0279 0.0090  
 Venus -92504-12-29 15:20 J -32065300.03 -32065299.86 -32065299.69 0.0279 0.0163  
 Mercury -92503-01-20 07:54 J -32065278.28 -32065278.17 -32065278.06 0.0279 0.0186  
 Earth -92503-01-28 21:49 J -32065269.75 -32065269.59 -32065269.42 0.0279 0.0204  
 Moon -92503-01-28 23:30 J -32065269.68 -32065269.52 -32065269.34 0.0279 0.0198 \*  
 Venus -92503-08-15 23:15 J -32065070.70 -32065070.53 -32065070.35 0.0279 0.0148  
 Moon -92502-02-10 07:39 J -32064892.42 -32064892.18 -32064891.93 0.0280 0.0043  
 Earth -92502-02-10 10:47 J -32064892.29 -32064892.05 -32064891.81 0.0280 0.0028 \*  
 Moon -92501-02-23 02:51 J -32064514.39 -32064514.38 -32064514.36 0.0281 0.0280  
 Earth -92501-02-23 05:15 J -32064514.34 -32064514.28 -32064514.19 0.0281 0.0266  
 Mars -92497-11-05 06:13 J -32062797.52 -32062797.24 -32062796.94 0.0283 0.0089

Mercury -92490-06-10 23:44 J -32060388.54 -32060388.51 -32060388.46 0.0280 0.0270  
 Mercury -92490-09-07 17:59 J -32060299.88 -32060299.75 -32060299.61 0.0280 0.0161  
 Mercury -92490-12-05 11:44 J -32060211.17 -32060211.01 -32060210.85 0.0280 0.0054  
 Mercury -92489-03-03 05:01 J -32060122.45 -32060122.29 -32060122.13 0.0280 0.0050  
 Mercury -92489-05-30 21:49 J -32060033.72 -32060033.59 -32060033.45 0.0280 0.0151  
 Venus -92489-06-17 20:08 J -32060015.82 -32060015.66 -32060015.48 0.0279 0.0169  
 Moon -92489-08-06 05:01 J -32059966.43 -32059966.29 -32059966.12 0.0279 0.0219  
 Earth -92489-08-06 08:23 J -32059966.32 -32059966.15 -32059965.97 0.0279 0.0203 \*  
 Mercury -92489-08-27 14:23 J -32059944.97 -32059944.90 -32059944.83 0.0279 0.0250  
 Venus -92488-02-02 11:01 J -32059786.21 -32059786.04 -32059785.85 0.0279 0.0153  
 Earth -92488-08-19 23:01 J -32059587.79 -32059587.54 -32059587.30 0.0279 0.0042  
 Moon -92488-08-19 23:01 J -32059587.78 -32059587.54 -32059587.30 0.0279 0.0026 \*  
 Earth -92487-09-02 06:27 J -32059209.24 -32059209.23 -32059209.20 0.0278 0.0277  
 Moon -92487-09-02 10:03 J -32059209.15 -32059209.08 -32059209.01 0.0278 0.0264  
 Mars -92483-10-25 05:30 J -32057695.43 -32057695.27 -32057695.09 0.0276 0.0217  
 Mars -92481-10-22 10:47 J -32056967.25 -32056967.05 -32056966.83 0.0276 0.0189  
 Mercury -92475-06-20 00:13 J -32054900.57 -32054900.49 -32054900.39 0.0278 0.0216  
 Mercury -92475-09-16 13:54 J -32054812.04 -32054811.92 -32054811.78 0.0279 0.0127  
 Mercury -92475-12-14 04:03 J -32054723.48 -32054723.33 -32054723.19 0.0279 0.0035  
 Mercury -92474-03-12 18:13 J -32054634.88 -32054634.74 -32054634.59 0.0279 0.0060  
 Mercury -92474-06-09 08:51 J -32054546.26 -32054546.13 -32054546.01 0.0279 0.0156  
 Venus -92474-07-11 18:27 J -32054513.91 -32054513.73 -32054513.54 0.0279 0.0126  
 Mercury -92474-09-05 23:30 J -32054457.57 -32054457.52 -32054457.45 0.0279 0.0254  
 Earth -92473-02-05 04:47 J -32054305.53 -32054305.30 -32054305.07 0.0280 0.0077  
 Moon -92473-02-05 07:25 J -32054305.42 -32054305.19 -32054304.96 0.0280 0.0064 \*  
 Venus -92473-02-26 02:51 J -32054284.52 -32054284.38 -32054284.21 0.0280 0.0188  
 Earth -92472-02-16 21:20 J -32053927.80 -32053927.61 -32053927.40 0.0281 0.0160  
 Moon -92472-02-17 00:13 J -32053927.69 -32053927.49 -32053927.30 0.0281 0.0174 \*  
 Mars -92467-12-27 19:11 J -32051787.99 -32051787.70 -32051787.41 0.0283 0.0085  
 Mercury -92460-01-24 20:08 J -32049567.78 -32049567.66 -32049567.54 0.0281 0.0183



Mercury -92460-04-23 13:54 J -32049479.07 -32049478.92 -32049478.76 0.0281 0.0076

Mercury -92460-07-21 07:25 J -32049390.35 -32049390.19 -32049390.03 0.0280 0.0030

Mercury -92460-10-18 00:13 J -32049301.63 -32049301.49 -32049301.34 0.0280 0.0132

Venus -92460-12-29 06:27 J -32049229.42 -32049229.23 -32049229.03 0.0280 0.0115

Mercury -92459-01-14 16:47 J -32049212.88 -32049212.80 -32049212.71 0.0280 0.0231

Moon -92459-08-14 15:35 J -32049001.10 -32049000.85 -32049000.60 0.0279 0.0072

Earth -92459-08-14 16:03 J -32049001.07 -32049000.83 -32049000.58 0.0279 0.0056 \*

Venus -92459-08-15 21:06 J -32048999.76 -32048999.62 -32048999.47 0.0279 0.0207

Moon -92458-08-27 23:30 J -32048622.72 -32048622.52 -32048622.32 0.0279 0.0168

Earth -92458-08-28 03:06 J -32048622.55 -32048622.37 -32048622.18 0.0279 0.0184 \*

Mars -92453-12-12 00:56 J -32046689.72 -32046689.46 -32046689.18 0.0275 0.0078

Mercury -92446-11-07 02:23 J -32044168.48 -32044168.40 -32044168.33 0.0278 0.0239

Mercury -92445-02-03 15:49 J -32044079.96 -32044079.84 -32044079.72 0.0278 0.0151

Mercury -92445-05-02 05:30 J -32043991.41 -32043991.27 -32043991.12 0.0278 0.0061

Mercury -92445-07-29 19:39 J -32043902.83 -32043902.68 -32043902.53 0.0278 0.0033

Mercury -92445-10-26 10:03 J -32043814.21 -32043814.08 -32043813.94 0.0279 0.0128

Venus -92444-01-20 23:01 J -32043727.74 -32043727.54 -32043727.34 0.0279 0.0084

Mercury -92444-01-23 00:56 J -32043725.55 -32043725.46 -32043725.38 0.0279 0.0224

Moon -92444-01-29 21:49 J -32043718.77 -32043718.59 -32043718.38 0.0279 0.0167

Earth -92444-01-30 00:56 J -32043718.64 -32043718.46 -32043718.27 0.0279 0.0177 \*

Venus -92444-09-07 07:11 J -32043498.31 -32043498.20 -32043498.07 0.0279 0.0228

Moon -92443-02-11 11:15 J -32043341.26 -32043341.03 -32043340.80 0.0280 0.0069

Earth -92443-02-11 13:54 J -32043341.16 -32043340.92 -32043340.68 0.0280 0.0054 \*

Mars -92438-02-08 04:03 J -32041518.47 -32041518.33 -32041518.18 0.0283 0.0250

Mars -92436-02-16 02:08 J -32040779.55 -32040779.41 -32040779.25 0.0284 0.0244

Mercury -92431-06-13 18:13 J -32038835.83 -32038835.74 -32038835.63 0.0280 0.0226

Mercury -92431-09-10 12:13 J -32038747.13 -32038746.99 -32038746.83 0.0280 0.0118

Mercury -92431-12-08 05:59 J -32038658.41 -32038658.25 -32038658.09 0.0280 0.0011

Mercury -92430-03-06 23:01 J -32038569.69 -32038569.54 -32038569.38 0.0280 0.0093

Mercury -92430-06-03 15:49 J -32038480.95 -32038480.84 -32038480.72 0.0280 0.0193

Venus -92430-07-11 06:56 J -32038443.42 -32038443.21 -32038443.00 0.0280 0.0083  
 Earth -92430-08-08 15:20 J -32038415.05 -32038414.86 -32038414.66 0.0279 0.0172  
 Moon -92430-08-08 16:32 J -32038414.99 -32038414.81 -32038414.63 0.0279 0.0187 \*  
 Venus -92429-02-25 21:20 J -32038213.71 -32038213.61 -32038213.49 0.0279 0.0239  
 Earth -92429-08-21 05:44 J -32038036.50 -32038036.26 -32038036.02 0.0278 0.0071  
 Moon -92429-08-21 09:35 J -32038036.34 -32038036.10 -32038035.86 0.0278 0.0055 \*  
 Mars -92422-01-29 03:20 J -32035684.64 -32035684.36 -32035684.08 0.0275 0.0058  
 Mercury -92416-03-26 03:06 J -32033436.40 -32033436.37 -32033436.35 0.0278 0.0271  
 Mercury -92416-06-22 16:32 J -32033347.92 -32033347.81 -32033347.70 0.0278 0.0184  
 Mercury -92416-09-19 06:13 J -32033259.38 -32033259.24 -32033259.10 0.0279 0.0093  
 Mercury -92416-12-16 20:08 J -32033170.80 -32033170.66 -32033170.51 0.0279 0.0008  
 Earth -92415-01-24 18:27 J -32033131.75 -32033131.73 -32033131.69 0.0279 0.0277  
 Moon -92415-01-24 21:20 J -32033131.65 -32033131.61 -32033131.54 0.0279 0.0270  
 Mercury -92415-03-15 10:32 J -32033082.20 -32033082.06 -32033081.92 0.0279 0.0094  
 Mercury -92415-06-12 01:11 J -32032993.56 -32032993.45 -32032993.34 0.0279 0.0190  
 Venus -92415-08-03 00:56 J -32032941.67 -32032941.46 -32032941.25 0.0279 0.0050  
 Earth -92414-02-06 05:15 J -32032754.51 -32032754.28 -32032754.04 0.0280 0.0052  
 Moon -92414-02-06 08:23 J -32032754.39 -32032754.15 -32032753.90 0.0280 0.0037 \*  
 Venus -92414-03-20 09:20 J -32032712.16 -32032712.11 -32032712.03 0.0280 0.0264  
 Moon -92413-02-18 20:23 J -32032376.82 -32032376.65 -32032376.47 0.0281 0.0196  
 Earth -92413-02-18 22:18 J -32032376.75 -32032376.57 -32032376.39 0.0281 0.0184 \*  
 Mars -92408-03-31 22:18 J -32030508.86 -32030508.57 -32030508.27 0.0283 0.0076  
 Mercury -92402-10-31 19:54 J -32028103.74 -32028103.67 -32028103.59 0.0281 0.0251  
 Mercury -92401-01-28 13:54 J -32028015.05 -32028014.92 -32028014.77 0.0281 0.0142  
 Mercury -92401-04-26 07:54 J -32027926.33 -32027926.17 -32027926.01 0.0281 0.0035  
 Mercury -92401-07-24 01:11 J -32027837.61 -32027837.45 -32027837.30 0.0281 0.0070  
 Earth -92401-08-02 03:20 J -32027828.41 -32027828.36 -32027828.29 0.0281 0.0272  
 Mercury -92401-10-20 17:59 J -32027748.88 -32027748.75 -32027748.63 0.0280 0.0171  
 Mercury -92400-01-17 10:18 J -32027660.10 -32027660.07 -32027660.03 0.0280 0.0270  
 Venus -92400-01-20 16:03 J -32027657.04 -32027656.83 -32027656.62 0.0280 0.0031

Moon -92400-08-15 17:30 J -32027450.01 -32027449.77 -32027449.52 0.0280 0.0044  
 Earth -92400-08-15 21:20 J -32027449.86 -32027449.61 -32027449.36 0.0280 0.0028 \*  
 Moon -92399-08-29 05:59 J -32027071.42 -32027071.25 -32027071.08 0.0279 0.0198  
 Earth -92399-08-29 07:54 J -32027071.32 -32027071.17 -32027071.00 0.0279 0.0211 \*  
 Mars -92394-03-21 09:35 J -32025406.27 -32025406.10 -32025405.89 0.0275 0.0201  
 Mars -92392-03-18 12:13 J -32024678.17 -32024677.99 -32024677.79 0.0275 0.0205  
 Mercury -92387-11-09 18:27 J -32022615.82 -32022615.73 -32022615.63 0.0278 0.0206  
 Mercury -92386-02-06 08:08 J -32022527.29 -32022527.16 -32022527.03 0.0278 0.0117  
 Mercury -92386-05-05 22:03 J -32022438.73 -32022438.58 -32022438.43 0.0278 0.0026  
 Mercury -92386-08-02 12:13 J -32022350.14 -32022349.99 -32022349.85 0.0278 0.0068  
 Mercury -92386-10-30 02:37 J -32022261.51 -32022261.39 -32022261.27 0.0278 0.0163  
 Mercury -92385-01-26 17:15 J -32022172.82 -32022172.78 -32022172.72 0.0279 0.0261  
 Moon -92385-01-31 23:30 J -32022167.71 -32022167.52 -32022167.31 0.0279 0.0140  
 Earth -92385-02-01 02:23 J -32022167.59 -32022167.40 -32022167.19 0.0279 0.0152 \*  
 Venus -92385-02-13 05:44 J -32022155.46 -32022155.26 -32022155.05 0.0279 0.0009  
 Earth -92384-02-12 15:35 J -32021790.08 -32021789.85 -32021789.62 0.0280 0.0079  
 Moon -92384-02-12 17:01 J -32021790.01 -32021789.79 -32021789.57 0.0280 0.0094 \*  
 Mars -92378-05-22 18:42 J -32019500.00 -32019499.72 -32019499.43 0.0284 0.0092  
 Mercury -92372-06-16 12:13 J -32017283.11 -32017282.99 -32017282.86 0.0281 0.0184  
 Mercury -92372-09-13 06:13 J -32017194.40 -32017194.24 -32017194.08 0.0280 0.0076  
 Mercury -92372-12-10 23:30 J -32017105.68 -32017105.52 -32017105.35 0.0280 0.0030  
 Mercury -92371-03-09 16:32 J -32017016.95 -32017016.81 -32017016.66 0.0280 0.0132  
 Mercury -92371-06-06 09:06 J -32016928.20 -32016928.12 -32016928.02 0.0280 0.0232  
 Venus -92371-08-02 16:18 J -32016871.04 -32016870.82 -32016870.61 0.0280 0.0006  
 Earth -92371-08-09 20:23 J -32016863.87 -32016863.65 -32016863.44 0.0280 0.0144  
 Moon -92371-08-09 23:44 J -32016863.71 -32016863.51 -32016863.30 0.0280 0.0159 \*  
 Earth -92370-08-23 10:32 J -32016485.30 -32016485.06 -32016484.83 0.0279 0.0098  
 Moon -92370-08-23 11:59 J -32016485.24 -32016485.00 -32016484.75 0.0279 0.0085 \*  
 Mars -92364-05-07 03:06 J -32014401.64 -32014401.37 -32014401.09 0.0275 0.0070  
 Mercury -92357-03-28 18:56 J -32011883.78 -32011883.71 -32011883.64 0.0278 0.0241

Mercury -92357-06-25 08:23 J -32011795.27 -32011795.15 -32011795.03 0.0278 0.0152

Mercury -92357-09-21 22:18 J -32011706.72 -32011706.57 -32011706.43 0.0278 0.0062

Mercury -92357-12-19 12:13 J -32011618.13 -32011617.99 -32011617.84 0.0279 0.0032

Earth -92356-01-25 18:27 J -32011580.83 -32011580.73 -32011580.63 0.0279 0.0252

Moon -92356-01-25 21:06 J -32011580.74 -32011580.62 -32011580.50 0.0279 0.0241 \*

Mercury -92356-03-18 02:37 J -32011529.52 -32011529.39 -32011529.25 0.0279 0.0127

Mercury -92356-06-14 17:30 J -32011440.86 -32011440.77 -32011440.68 0.0279 0.0224

Venus -92356-08-25 06:42 J -32011369.43 -32011369.22 -32011369.01 0.0279 0.0024

Moon -92355-02-07 03:35 J -32011203.60 -32011203.35 -32011203.11 0.0280 0.0012

Earth -92355-02-07 05:15 J -32011203.52 -32011203.28 -32011203.04 0.0280 0.0027 \*

Moon -92354-02-19 18:27 J -32010825.87 -32010825.73 -32010825.57 0.0280 0.0220

Earth -92354-02-19 21:49 J -32010825.74 -32010825.59 -32010825.42 0.0280 0.0207 \*

Mars -92350-07-04 10:03 J -32009230.23 -32009230.08 -32009229.90 0.0283 0.0240

Jupiter -92350-12-07 04:03 J -32009074.75 -32009074.33 -32009073.89 0.0283 0.0146

Mars -92348-07-12 11:15 J -32008491.15 -32008491.03 -32008490.89 0.0284 0.0255

Mercury -92343-11-03 13:25 J -32006551.04 -32006550.94 -32006550.83 0.0281 0.0212

Mercury -92342-01-31 07:25 J -32006462.34 -32006462.19 -32006462.03 0.0281 0.0103

Mercury -92342-04-30 01:11 J -32006373.62 -32006373.45 -32006373.29 0.0281 0.0006

Venus -92342-06-28 08:08 J -32006314.18 -32006314.16 -32006314.12 0.0281 0.0278

Mercury -92342-07-27 18:13 J -32006284.89 -32006284.74 -32006284.59 0.0281 0.0108

Moon -92342-08-04 03:06 J -32006277.45 -32006277.37 -32006277.27 0.0281 0.0261

Earth -92342-08-04 06:42 J -32006277.33 -32006277.22 -32006277.09 0.0281 0.0246 \*

Mercury -92342-10-24 11:01 J -32006196.14 -32006196.04 -32006195.93 0.0280 0.0208

Venus -92341-02-13 00:13 J -32006084.70 -32006084.49 -32006084.27 0.0280 0.0050

Moon -92341-08-16 23:30 J -32005898.76 -32005898.52 -32005898.28 0.0280 0.0016

Earth -92341-08-17 00:56 J -32005898.71 -32005898.46 -32005898.21 0.0280 0.0003 \*

Earth -92340-08-30 11:15 J -32005520.15 -32005520.03 -32005519.89 0.0279 0.0236

Moon -92340-08-30 14:08 J -32005520.05 -32005519.91 -32005519.77 0.0279 0.0226 \*

Mars -92334-06-25 04:47 J -32003395.57 -32003395.30 -32003395.03 0.0275 0.0074

Mercury -92328-08-15 21:06 J -32001151.66 -32001151.62 -32001151.57 0.0277 0.0261

Mercury -92328-11-12 10:32 J -32001063.17 -32001063.06 -32001062.94 0.0277 0.0174

Mercury -92327-02-09 00:13 J -32000974.63 -32000974.49 -32000974.35 0.0278 0.0084

Mercury -92327-05-08 14:08 J -32000886.05 -32000885.91 -32000885.76 0.0278 0.0012

Venus -92327-07-21 04:32 J -32000812.40 -32000812.31 -32000812.20 0.0278 0.0240

Mercury -92327-08-05 04:32 J -32000797.45 -32000797.31 -32000797.17 0.0278 0.0102

Mercury -92327-11-01 18:56 J -32000708.81 -32000708.71 -32000708.60 0.0278 0.0198

Earth -92326-02-02 03:06 J -32000616.58 -32000616.37 -32000616.16 0.0279 0.0128

Moon -92326-02-02 04:47 J -32000616.51 -32000616.30 -32000616.08 0.0279 0.0113 \*

Venus -92326-03-07 11:59 J -32000583.20 -32000583.00 -32000582.79 0.0279 0.0070

Earth -92325-02-14 16:03 J -32000239.05 -32000238.83 -32000238.60 0.0280 0.0103

Moon -92325-02-14 19:39 J -32000238.89 -32000238.68 -32000238.45 0.0280 0.0119 \*

Mars -92320-08-24 20:23 J -31998220.95 -31998220.65 -31998220.35 0.0284 0.0069

Mercury -92313-03-22 11:44 J -31995819.08 -31995819.01 -31995818.94 0.0281 0.0254

Mercury -92313-06-19 05:44 J -31995730.39 -31995730.26 -31995730.11 0.0281 0.0145

Mercury -92313-09-15 23:30 J -31995641.68 -31995641.52 -31995641.35 0.0281 0.0039

Mercury -92313-12-13 17:01 J -31995552.95 -31995552.79 -31995552.64 0.0280 0.0067

Venus -92312-01-07 08:51 J -31995528.23 -31995528.13 -31995528.02 0.0280 0.0245

Mercury -92312-03-12 09:49 J -31995464.21 -31995464.09 -31995463.96 0.0280 0.0170

Mercury -92312-06-09 02:23 J -31995375.44 -31995375.40 -31995375.35 0.0280 0.0269

Earth -92312-08-10 23:59 J -31995312.72 -31995312.50 -31995312.27 0.0280 0.0117

Moon -92312-08-11 01:25 J -31995312.67 -31995312.44 -31995312.21 0.0280 0.0131 \*

Venus -92312-08-25 00:42 J -31995298.67 -31995298.47 -31995298.26 0.0280 0.0081

Moon -92311-08-24 11:01 J -31994934.27 -31994934.04 -31994933.80 0.0279 0.0114

Earth -92311-08-24 14:08 J -31994934.13 -31994933.91 -31994933.68 0.0279 0.0124 \*

Mars -92306-08-14 10:18 J -31993118.26 -31993118.07 -31993117.87 0.0275 0.0194

Mars -92304-08-11 10:47 J -31992390.23 -31992390.05 -31992389.86 0.0275 0.0210

Mercury -92298-04-01 10:32 J -31990331.14 -31990331.06 -31990330.96 0.0278 0.0211

Mercury -92298-06-29 00:13 J -31990242.62 -31990242.49 -31990242.35 0.0278 0.0122

Mercury -92298-09-25 14:08 J -31990154.06 -31990153.91 -31990153.76 0.0278 0.0030

Mercury -92298-12-23 04:18 J -31990065.46 -31990065.32 -31990065.17 0.0278 0.0064

Moon -92297-01-27 15:35 J -31990030.00 -31990029.85 -31990029.69 0.0279 0.0215  
 Earth -92297-01-27 17:44 J -31990029.89 -31990029.76 -31990029.62 0.0279 0.0229 \*  
 Venus -92297-01-31 04:32 J -31990026.44 -31990026.31 -31990026.18 0.0279 0.0213  
 Mercury -92297-03-20 18:42 J -31989976.84 -31989976.72 -31989976.60 0.0279 0.0159  
 Mercury -92297-06-17 09:20 J -31989888.16 -31989888.11 -31989888.05 0.0279 0.0257  
 Venus -92297-09-16 11:59 J -31989797.19 -31989797.00 -31989796.80 0.0279 0.0098  
 Moon -92296-02-08 00:56 J -31989652.70 -31989652.46 -31989652.23 0.0279 0.0013  
 Earth -92296-02-08 04:32 J -31989652.56 -31989652.31 -31989652.07 0.0279 0.0006 \*  
 Earth -92295-02-20 20:51 J -31989274.76 -31989274.63 -31989274.48 0.0280 0.0229  
 Moon -92295-02-20 20:51 J -31989274.74 -31989274.63 -31989274.50 0.0280 0.0239 \*  
 Mars -92290-10-15 20:51 J -31987211.92 -31987211.63 -31987211.35 0.0284 0.0101  
 Mercury -92284-11-06 06:42 J -31984998.35 -31984998.22 -31984998.09 0.0281 0.0174  
 Mercury -92283-02-03 00:27 J -31984909.63 -31984909.48 -31984909.32 0.0281 0.0066  
 Mercury -92283-05-02 17:59 J -31984820.91 -31984820.75 -31984820.59 0.0281 0.0041  
 Venus -92283-07-20 15:49 J -31984741.98 -31984741.84 -31984741.68 0.0281 0.0199  
 Mercury -92283-07-30 11:01 J -31984732.17 -31984732.04 -31984731.90 0.0281 0.0144  
 Moon -92283-08-05 07:54 J -31984726.30 -31984726.17 -31984726.04 0.0281 0.0236  
 Earth -92283-08-05 08:51 J -31984726.28 -31984726.13 -31984725.97 0.0281 0.0221 \*  
 Mercury -92283-10-27 03:49 J -31984643.41 -31984643.34 -31984643.26 0.0281 0.0244  
 Venus -92282-03-07 07:39 J -31984512.36 -31984512.18 -31984511.98 0.0280 0.0130  
 Earth -92282-08-19 03:06 J -31984347.62 -31984347.37 -31984347.12 0.0280 0.0024  
 Moon -92282-08-19 05:44 J -31984347.50 -31984347.26 -31984347.01 0.0280 0.0011 \*  
 Earth -92281-08-31 13:25 J -31983969.02 -31983968.94 -31983968.84 0.0279 0.0259  
 Moon -92281-08-31 16:47 J -31983968.90 -31983968.80 -31983968.68 0.0279 0.0251 \*  
 Mars -92276-10-01 04:32 J -31982112.58 -31982112.31 -31982112.03 0.0275 0.0054  
 Mercury -92269-08-18 13:11 J -31979599.03 -31979598.95 -31979598.87 0.0277 0.0230  
 Mercury -92269-11-15 02:37 J -31979510.51 -31979510.39 -31979510.26 0.0277 0.0142  
 Mercury -92268-02-11 16:32 J -31979421.96 -31979421.81 -31979421.67 0.0277 0.0052  
 Mercury -92268-05-11 06:27 J -31979333.38 -31979333.23 -31979333.08 0.0278 0.0041  
 Mercury -92268-08-07 20:51 J -31979244.76 -31979244.63 -31979244.50 0.0278 0.0136

Venus -92268-08-12 10:47 J -31979240.22 -31979240.05 -31979239.88 0.0278 0.0164  
 Mercury -92268-11-04 11:30 J -31979156.10 -31979156.02 -31979155.94 0.0278 0.0232  
 Earth -92267-02-03 03:35 J -31979065.58 -31979065.35 -31979065.13 0.0278 0.0104  
 Moon -92267-02-03 06:56 J -31979065.44 -31979065.21 -31979064.98 0.0278 0.0087 \*  
 Venus -92267-03-29 17:59 J -31979010.91 -31979010.75 -31979010.56 0.0279 0.0147  
 Earth -92266-02-15 16:32 J -31978688.03 -31978687.81 -31978687.59 0.0279 0.0125  
 Moon -92266-02-15 16:32 J -31978688.03 -31978687.81 -31978687.59 0.0279 0.0139 \*  
 Mars -92262-11-27 08:37 J -31976942.29 -31976942.14 -31976941.94 0.0283 0.0234  
 Mars -92260-12-05 09:35 J -31976203.20 -31976203.10 -31976202.97 0.0284 0.0261  
 Mercury -92254-03-26 05:01 J -31974266.39 -31974266.29 -31974266.18 0.0281 0.0216  
 Mercury -92254-06-22 23:01 J -31974177.69 -31974177.54 -31974177.38 0.0281 0.0107  
 Mercury -92254-09-19 16:47 J -31974088.96 -31974088.80 -31974088.64 0.0281 0.0002  
 Mercury -92254-12-17 10:03 J -31974000.23 -31974000.08 -31973999.93 0.0280 0.0104  
 Venus -92253-01-30 17:01 J -31973955.96 -31973955.79 -31973955.62 0.0280 0.0165  
 Mercury -92253-03-15 02:51 J -31973911.48 -31973911.38 -31973911.27 0.0280 0.0206  
 Moon -92253-08-11 23:44 J -31973761.74 -31973761.51 -31973761.27 0.0280 0.0106  
 Earth -92253-08-12 02:37 J -31973761.62 -31973761.39 -31973761.14 0.0280 0.0092 \*  
 Venus -92253-09-16 08:23 J -31973726.31 -31973726.15 -31973725.96 0.0280 0.0162  
 Moon -92252-08-25 13:54 J -31973383.12 -31973382.92 -31973382.70 0.0279 0.0140  
 Earth -92252-08-25 17:01 J -31973383.00 -31973382.79 -31973382.58 0.0279 0.0148 \*  
 Mars -92246-11-18 03:20 J -31971107.62 -31971107.36 -31971107.08 0.0275 0.0080  
 Mercury -92239-01-05 13:11 J -31968866.98 -31968866.95 -31968866.90 0.0277 0.0267  
 Mercury -92239-04-04 02:37 J -31968778.50 -31968778.39 -31968778.28 0.0278 0.0179  
 Mercury -92239-07-01 16:18 J -31968689.96 -31968689.82 -31968689.68 0.0278 0.0089  
 Mercury -92239-09-28 06:13 J -31968601.39 -31968601.24 -31968601.09 0.0278 0.0004  
 Mercury -92239-12-25 20:23 J -31968512.79 -31968512.65 -31968512.51 0.0278 0.0097  
 Moon -92238-01-28 14:23 J -31968479.07 -31968478.90 -31968478.73 0.0278 0.0191  
 Earth -92238-01-28 17:30 J -31968478.92 -31968478.77 -31968478.60 0.0278 0.0205 \*  
 Venus -92238-02-22 10:18 J -31968454.25 -31968454.07 -31968453.89 0.0278 0.0139  
 Mercury -92238-03-24 11:01 J -31968424.15 -31968424.04 -31968423.94 0.0279 0.0193

Venus -92238-10-09 17:44 J -31968224.92 -31968224.76 -31968224.59 0.0279 0.0173  
 Earth -92237-02-10 03:49 J -31968101.58 -31968101.34 -31968101.10 0.0279 0.0020  
 Moon -92237-02-10 04:18 J -31968101.55 -31968101.32 -31968101.08 0.0279 0.0034 \*  
 Earth -92236-02-21 20:08 J -31967723.75 -31967723.66 -31967723.54 0.0280 0.0250  
 Moon -92236-02-21 23:44 J -31967723.59 -31967723.51 -31967723.41 0.0280 0.0259 \*  
 Mars -92231-01-17 16:18 J -31965933.11 -31965932.82 -31965932.51 0.0283 0.0062  
 Mercury -92225-08-12 05:15 J -31963534.35 -31963534.28 -31963534.20 0.0282 0.0248  
 Mercury -92225-11-08 23:44 J -31963445.66 -31963445.51 -31963445.37 0.0282 0.0138  
 Mercury -92224-02-05 17:30 J -31963356.93 -31963356.77 -31963356.61 0.0281 0.0030  
 Mercury -92224-05-05 10:47 J -31963268.20 -31963268.05 -31963267.89 0.0281 0.0076  
 Mercury -92224-08-02 03:49 J -31963179.46 -31963179.34 -31963179.21 0.0281 0.0179  
 Earth -92224-08-06 10:03 J -31963175.25 -31963175.08 -31963174.89 0.0281 0.0197  
 Moon -92224-08-06 13:39 J -31963175.09 -31963174.93 -31963174.77 0.0281 0.0213 \*  
 Venus -92224-08-11 23:15 J -31963169.72 -31963169.53 -31963169.33 0.0281 0.0120  
 Mercury -92224-10-29 20:23 J -31963090.66 -31963090.65 -31963090.63 0.0281 0.0279  
 Venus -92223-03-29 14:51 J -31962940.01 -31962939.88 -31962939.73 0.0280 0.0209  
 Earth -92223-08-20 04:32 J -31962796.55 -31962796.31 -31962796.06 0.0280 0.0047  
 Moon -92223-08-20 07:39 J -31962796.43 -31962796.18 -31962795.92 0.0280 0.0034 \*  
 Moon -92222-09-02 14:08 J -31962417.93 -31962417.91 -31962417.87 0.0279 0.0277  
 Mars -92217-01-08 10:32 J -31960829.26 -31960829.06 -31960828.84 0.0276 0.0180  
 Mars -92215-01-05 11:44 J -31960101.16 -31960101.01 -31960100.84 0.0275 0.0227  
 Mercury -92210-08-22 05:15 J -31958046.38 -31958046.28 -31958046.17 0.0277 0.0197  
 Mercury -92210-11-18 18:56 J -31957957.85 -31957957.71 -31957957.58 0.0277 0.0108  
 Mercury -92209-02-15 08:37 J -31957869.28 -31957869.14 -31957868.99 0.0277 0.0019  
 Mercury -92209-05-13 22:47 J -31957780.69 -31957780.55 -31957780.41 0.0278 0.0076  
 Mercury -92209-08-10 13:11 J -31957692.07 -31957691.95 -31957691.83 0.0278 0.0171  
 Venus -92209-09-03 17:01 J -31957667.98 -31957667.79 -31957667.59 0.0278 0.0088  
 Mercury -92209-11-07 03:49 J -31957603.37 -31957603.34 -31957603.30 0.0278 0.0268  
 Moon -92208-02-04 03:49 J -31957514.58 -31957514.34 -31957514.09 0.0278 0.0065  
 Earth -92208-02-04 04:18 J -31957514.55 -31957514.32 -31957514.09 0.0278 0.0080 \*



Venus -92208-04-21 00:42 J -31957438.59 -31957438.47 -31957438.34 0.0278 0.0224  
 Moon -92207-02-16 13:25 J -31957137.13 -31957136.94 -31957136.73 0.0279 0.0159  
 Earth -92207-02-16 17:30 J -31957136.98 -31957136.77 -31957136.57 0.0279 0.0148 \*  
 Mars -92201-03-09 21:35 J -31954923.87 -31954923.60 -31954923.31 0.0284 0.0108  
 Mercury -92195-03-28 22:18 J -31952713.69 -31952713.57 -31952713.44 0.0281 0.0178  
 Mercury -92195-06-25 16:18 J -31952624.97 -31952624.82 -31952624.66 0.0281 0.0069  
 Mercury -92195-09-22 10:03 J -31952536.24 -31952536.08 -31952535.92 0.0281 0.0038  
 Mercury -92195-12-20 03:06 J -31952447.51 -31952447.37 -31952447.23 0.0281 0.0142  
 Venus -92194-02-22 01:11 J -31952383.66 -31952383.45 -31952383.25 0.0280 0.0084  
 Mercury -92194-03-18 19:54 J -31952358.75 -31952358.67 -31952358.59 0.0280 0.0242  
 Moon -92194-08-14 02:37 J -31952210.61 -31952210.39 -31952210.15 0.0280 0.0081  
 Earth -92194-08-14 05:44 J -31952210.50 -31952210.26 -31952210.02 0.0280 0.0066 \*  
 Venus -92194-10-09 16:18 J -31952153.91 -31952153.82 -31952153.70 0.0280 0.0243  
 Earth -92193-08-26 19:25 J -31951831.88 -31951831.69 -31951831.49 0.0279 0.0172  
 Moon -92193-08-26 20:37 J -31951831.82 -31951831.64 -31951831.44 0.0279 0.0167 \*  
 Mars -92187-02-24 03:49 J -31949824.61 -31949824.34 -31949824.05 0.0275 0.0049  
 Mercury -92180-01-08 05:30 J -31947314.34 -31947314.27 -31947314.19 0.0277 0.0234  
 Mercury -92180-04-06 18:56 J -31947225.83 -31947225.71 -31947225.59 0.0278 0.0146  
 Mercury -92180-07-04 08:37 J -31947137.28 -31947137.14 -31947137.00 0.0278 0.0055  
 Mercury -92180-09-30 22:32 J -31947048.71 -31947048.56 -31947048.41 0.0278 0.0037  
 Mercury -92180-12-28 12:42 J -31946960.10 -31946959.97 -31946959.83 0.0278 0.0132  
 Earth -92179-01-29 18:13 J -31946927.91 -31946927.74 -31946927.55 0.0278 0.0181  
 Moon -92179-01-29 18:27 J -31946927.90 -31946927.73 -31946927.54 0.0278 0.0169 \*  
 Venus -92179-03-16 16:32 J -31946882.01 -31946881.81 -31946881.60 0.0278 0.0062  
 Mercury -92179-03-27 03:20 J -31946871.44 -31946871.36 -31946871.27 0.0278 0.0228  
 Venus -92179-10-31 23:59 J -31946652.57 -31946652.50 -31946652.39 0.0279 0.0251  
 Earth -92178-02-11 04:32 J -31946550.55 -31946550.31 -31946550.07 0.0279 0.0043  
 Moon -92178-02-11 08:08 J -31946550.39 -31946550.16 -31946549.92 0.0279 0.0056 \*  
 Earth -92177-02-23 21:06 J -31946172.67 -31946172.62 -31946172.56 0.0280 0.0272  
 Moon -92177-02-23 22:18 J -31946172.59 -31946172.57 -31946172.51 0.0280 0.0276 \*

Mars -92173-04-21 01:25 J -31944654.62 -31944654.44 -31944654.25 0.0283 0.0228  
 Mars -92171-04-30 06:13 J -31943915.31 -31943915.24 -31943915.13 0.0284 0.0270  
 Mercury -92166-08-15 22:18 J -31941981.67 -31941981.57 -31941981.46 0.0282 0.0211  
 Mercury -92166-11-12 16:32 J -31941892.96 -31941892.81 -31941892.66 0.0282 0.0101  
 Mercury -92165-02-09 10:18 J -31941804.23 -31941804.07 -31941803.91 0.0282 0.0007  
 Mercury -92165-05-08 03:35 J -31941715.49 -31941715.35 -31941715.20 0.0281 0.0112  
 Mercury -92165-08-04 20:37 J -31941626.74 -31941626.64 -31941626.54 0.0281 0.0214  
 Earth -92165-08-07 11:30 J -31941624.22 -31941624.02 -31941623.82 0.0281 0.0173  
 Moon -92165-08-07 14:08 J -31941624.10 -31941623.91 -31941623.72 0.0281 0.0188 \*  
 Venus -92165-09-03 06:42 J -31941597.44 -31941597.22 -31941597.01 0.0281 0.0041  
 Moon -92164-08-21 04:32 J -31941245.55 -31941245.31 -31941245.05 0.0280 0.0061  
 Earth -92164-08-21 05:59 J -31941245.49 -31941245.25 -31941245.01 0.0280 0.0070 \*  
 Mars -92157-04-13 04:32 J -31938818.57 -31938818.31 -31938818.04 0.0275 0.0096  
 Mercury -92151-05-28 08:23 J -31936582.20 -31936582.15 -31936582.08 0.0277 0.0250  
 Mercury -92151-08-24 21:49 J -31936493.71 -31936493.59 -31936493.47 0.0277 0.0162  
 Mercury -92151-11-21 11:30 J -31936405.16 -31936405.02 -31936404.88 0.0277 0.0073  
 Moon -92150-01-24 23:44 J -31936340.58 -31936340.51 -31936340.42 0.0277 0.0262  
 Earth -92150-01-24 23:15 J -31936340.55 -31936340.53 -31936340.48 0.0277 0.0274 \*  
 Mercury -92150-02-18 01:25 J -31936316.59 -31936316.44 -31936316.30 0.0277 0.0021  
 Mercury -92150-05-17 15:20 J -31936227.99 -31936227.86 -31936227.72 0.0277 0.0114  
 Mercury -92150-08-14 05:59 J -31936139.35 -31936139.25 -31936139.15 0.0278 0.0209  
 Venus -92150-09-27 00:27 J -31936095.69 -31936095.48 -31936095.27 0.0278 0.0008  
 Moon -92149-02-06 03:06 J -31935963.60 -31935963.37 -31935963.13 0.0278 0.0042  
 Earth -92149-02-06 06:42 J -31935963.45 -31935963.22 -31935962.98 0.0278 0.0056 \*  
 Moon -92148-02-17 18:13 J -31935585.91 -31935585.74 -31935585.55 0.0279 0.0180  
 Earth -92148-02-17 19:25 J -31935585.87 -31935585.69 -31935585.48 0.0279 0.0172 \*  
 Mars -92143-06-12 23:30 J -31933644.82 -31933644.52 -31933644.21 0.0283 0.0053  
 Mercury -92136-01-01 21:35 J -31931249.67 -31931249.60 -31931249.52 0.0282 0.0249  
 Mercury -92136-03-31 16:03 J -31931160.98 -31931160.83 -31931160.69 0.0281 0.0138  
 Mercury -92136-06-28 09:49 J -31931072.25 -31931072.09 -31931071.93 0.0281 0.0029

Mercury -92136-09-25 03:20 J -31930983.52 -31930983.36 -31930983.21 0.0281 0.0077

Mercury -92136-12-22 20:23 J -31930894.77 -31930894.65 -31930894.53 0.0281 0.0180

Venus -92135-03-16 09:35 J -31930811.32 -31930811.10 -31930810.89 0.0281 0.0002

Mercury -92135-03-21 12:56 J -31930805.96 -31930805.96 -31930805.95 0.0281 0.0280

Earth -92135-08-15 09:06 J -31930659.37 -31930659.12 -31930658.87 0.0280 0.0041

Moon -92135-08-15 10:47 J -31930659.29 -31930659.05 -31930658.81 0.0280 0.0054 \*

Earth -92134-08-28 22:47 J -31930280.72 -31930280.55 -31930280.36 0.0279 0.0196

Moon -92134-08-29 02:23 J -31930280.57 -31930280.40 -31930280.21 0.0279 0.0190 \*

Mars -92129-06-02 13:54 J -31928541.14 -31928540.92 -31928540.71 0.0275 0.0174

Mars -92127-05-31 12:56 J -31927813.10 -31927812.96 -31927812.80 0.0275 0.0234

Mercury -92121-01-11 21:49 J -31925761.68 -31925761.59 -31925761.49 0.0277 0.0199

Mercury -92121-04-09 11:15 J -31925673.16 -31925673.03 -31925672.89 0.0277 0.0111

Mercury -92121-07-07 01:11 J -31925584.60 -31925584.45 -31925584.30 0.0278 0.0019

Mercury -92121-10-03 15:06 J -31925496.01 -31925495.87 -31925495.72 0.0278 0.0075

Mercury -92121-12-31 05:30 J -31925407.39 -31925407.27 -31925407.15 0.0278 0.0169

Earth -92120-01-30 20:37 J -31925376.83 -31925376.64 -31925376.44 0.0278 0.0157

Moon -92120-01-30 23:59 J -31925376.70 -31925376.50 -31925376.29 0.0278 0.0142 \*

Mercury -92120-03-29 20:08 J -31925318.70 -31925318.66 -31925318.62 0.0278 0.0266

Venus -92120-04-07 23:59 J -31925309.71 -31925309.50 -31925309.30 0.0278 0.0019

Earth -92119-02-12 06:42 J -31924999.45 -31924999.22 -31924998.98 0.0279 0.0067

Moon -92119-02-12 07:39 J -31924999.41 -31924999.18 -31924998.93 0.0279 0.0076 \*

Mars -92113-08-02 18:42 J -31922635.99 -31922635.72 -31922635.43 0.0283 0.0116

Mercury -92107-08-18 15:49 J -31920428.97 -31920428.84 -31920428.71 0.0282 0.0172

Mercury -92107-11-15 09:49 J -31920340.25 -31920340.09 -31920339.93 0.0282 0.0062

Mercury -92106-02-12 03:20 J -31920251.51 -31920251.36 -31920251.19 0.0282 0.0046

Mercury -92106-05-11 20:37 J -31920162.77 -31920162.64 -31920162.50 0.0281 0.0150

Mercury -92106-08-08 13:25 J -31920074.00 -31920073.94 -31920073.86 0.0281 0.0251

Moon -92106-08-09 11:30 J -31920073.21 -31920073.02 -31920072.79 0.0281 0.0163

Earth -92106-08-09 14:08 J -31920073.11 -31920072.91 -31920072.69 0.0281 0.0149 \*

Venus -92106-09-26 14:37 J -31920025.10 -31920024.89 -31920024.68 0.0281 0.0041

Moon -92105-08-22 04:47 J -31919694.53 -31919694.30 -31919694.06 0.0280 0.0085  
 Earth -92105-08-22 08:37 J -31919694.37 -31919694.14 -31919693.90 0.0280 0.0094 \*  
 Mars -92099-07-21 05:59 J -31917535.52 -31917535.25 -31917534.97 0.0276 0.0034  
 Mercury -92092-05-31 01:11 J -31915029.54 -31915029.45 -31915029.36 0.0277 0.0213  
 Mercury -92092-08-27 14:37 J -31914941.02 -31914940.89 -31914940.76 0.0277 0.0125  
 Mercury -92092-11-24 04:18 J -31914852.47 -31914852.32 -31914852.17 0.0277 0.0035  
 Moon -92091-01-25 23:59 J -31914789.63 -31914789.50 -31914789.37 0.0277 0.0235  
 Earth -92091-01-26 03:06 J -31914789.46 -31914789.37 -31914789.26 0.0277 0.0249 \*  
 Mercury -92091-02-20 18:13 J -31914763.88 -31914763.74 -31914763.59 0.0277 0.0058  
 Venus -92091-03-04 01:54 J -31914752.52 -31914752.42 -31914752.30 0.0277 0.0233  
 Mercury -92091-05-20 08:23 J -31914675.27 -31914675.15 -31914675.02 0.0277 0.0153  
 Mercury -92091-08-16 23:01 J -31914586.60 -31914586.54 -31914586.47 0.0278 0.0249  
 Venus -92091-10-19 08:37 J -31914523.34 -31914523.14 -31914522.93 0.0278 0.0075  
 Moon -92090-02-07 09:06 J -31914412.35 -31914412.12 -31914411.88 0.0278 0.0019  
 Earth -92090-02-07 10:32 J -31914412.30 -31914412.06 -31914411.82 0.0278 0.0031 \*  
 Earth -92089-02-19 23:30 J -31914034.68 -31914034.52 -31914034.33 0.0279 0.0195  
 Moon -92089-02-20 02:51 J -31914034.54 -31914034.38 -31914034.21 0.0279 0.0199 \*  
 Mars -92085-09-14 19:25 J -31912365.88 -31912365.69 -31912365.48 0.0283 0.0217  
 Mars -92083-09-23 21:06 J -31911626.66 -31911626.62 -31911626.55 0.0284 0.0279  
 Mercury -92077-01-05 15:35 J -31909696.96 -31909696.85 -31909696.74 0.0282 0.0206  
 Mercury -92077-04-03 09:35 J -31909608.25 -31909608.10 -31909607.94 0.0282 0.0097  
 Mercury -92077-07-01 03:35 J -31909519.52 -31909519.35 -31909519.19 0.0281 0.0013  
 Earth -92077-08-02 16:32 J -31909486.90 -31909486.81 -31909486.70 0.0281 0.0257  
 Moon -92077-08-02 19:39 J -31909486.74 -31909486.68 -31909486.61 0.0281 0.0271 \*  
 Venus -92077-08-21 01:54 J -31909468.50 -31909468.42 -31909468.31 0.0281 0.0250  
 Mercury -92077-09-27 20:51 J -31909430.78 -31909430.63 -31909430.48 0.0281 0.0117  
 Mercury -92077-12-25 13:39 J -31909342.02 -31909341.93 -31909341.83 0.0281 0.0219  
 Venus -92076-04-07 18:42 J -31909238.92 -31909238.72 -31909238.51 0.0281 0.0083  
 Earth -92076-08-16 13:39 J -31909108.18 -31909107.93 -31909107.68 0.0280 0.0016  
 Moon -92076-08-16 17:30 J -31909108.02 -31909107.77 -31909107.51 0.0280 0.0026 \*

Earth -92075-08-30 03:35 J -31908729.50 -31908729.35 -31908729.20 0.0279 0.0220  
 Moon -92075-08-30 04:18 J -31908729.47 -31908729.32 -31908729.15 0.0279 0.0217 \*  
 Mars -92069-09-06 11:01 J -31906530.31 -31906530.04 -31906529.78 0.0275 0.0104  
 Mercury -92063-10-18 01:39 J -31904297.49 -31904297.43 -31904297.37 0.0277 0.0248  
 Mercury -92062-01-14 14:51 J -31904209.00 -31904208.88 -31904208.76 0.0277 0.0161  
 Mercury -92062-04-13 04:32 J -31904120.46 -31904120.31 -31904120.17 0.0277 0.0071  
 Mercury -92062-07-10 18:13 J -31904031.88 -31904031.74 -31904031.59 0.0278 0.0022  
 Venus -92062-09-14 01:54 J -31903966.55 -31903966.42 -31903966.28 0.0278 0.0206  
 Mercury -92062-10-07 08:23 J -31903943.28 -31903943.15 -31903943.01 0.0278 0.0115  
 Mercury -92061-01-03 22:47 J -31903854.64 -31903854.55 -31903854.45 0.0278 0.0210  
 Earth -92061-02-02 01:39 J -31903825.64 -31903825.43 -31903825.22 0.0278 0.0131  
 Moon -92061-02-02 03:20 J -31903825.58 -31903825.36 -31903825.13 0.0278 0.0116 \*  
 Venus -92061-04-30 08:37 J -31903737.33 -31903737.14 -31903736.94 0.0278 0.0103  
 Moon -92060-02-13 08:23 J -31903448.37 -31903448.15 -31903447.91 0.0279 0.0098  
 Earth -92060-02-13 11:44 J -31903448.23 -31903448.01 -31903447.78 0.0279 0.0092 \*  
 Mars -92055-11-05 23:59 J -31901356.80 -31901356.50 -31901356.19 0.0283 0.0045  
 Mercury -92048-05-24 14:51 J -31898964.95 -31898964.88 -31898964.79 0.0282 0.0243  
 Mercury -92048-08-21 09:20 J -31898876.25 -31898876.11 -31898875.96 0.0282 0.0131  
 Mercury -92048-11-18 03:20 J -31898787.52 -31898787.36 -31898787.20 0.0282 0.0022  
 Mercury -92047-02-14 20:51 J -31898698.78 -31898698.63 -31898698.48 0.0282 0.0085  
 Venus -92047-03-03 06:27 J -31898682.37 -31898682.23 -31898682.09 0.0282 0.0208  
 Mercury -92047-05-14 13:54 J -31898610.03 -31898609.92 -31898609.80 0.0281 0.0189  
 Moon -92047-08-10 14:51 J -31898522.09 -31898521.88 -31898521.66 0.0281 0.0135  
 Earth -92047-08-10 18:13 J -31898521.95 -31898521.74 -31898521.50 0.0281 0.0124 \*  
 Venus -92047-10-18 23:15 J -31898452.72 -31898452.53 -31898452.33 0.0281 0.0126  
 Moon -92046-08-24 11:59 J -31898143.22 -31898143.00 -31898142.78 0.0280 0.0112  
 Earth -92046-08-24 12:27 J -31898143.20 -31898142.98 -31898142.75 0.0280 0.0117 \*  
 Mars -92041-10-27 15:49 J -31896252.06 -31896251.84 -31896251.61 0.0276 0.0161  
 Mars -92039-10-25 19:39 J -31895523.80 -31895523.68 -31895523.56 0.0276 0.0250  
 Mercury -92033-03-06 04:47 J -31893565.33 -31893565.30 -31893565.25 0.0277 0.0262

Mercury -92033-06-02 18:13 J -31893476.85 -31893476.74 -31893476.63 0.0277 0.0175

Mercury -92033-08-30 07:39 J -31893388.32 -31893388.18 -31893388.04 0.0277 0.0086

Mercury -92033-11-26 21:35 J -31893299.75 -31893299.60 -31893299.45 0.0277 0.0007

Moon -92032-01-27 06:42 J -31893238.37 -31893238.22 -31893238.06 0.0277 0.0208

Earth -92032-01-27 08:51 J -31893238.27 -31893238.13 -31893237.99 0.0277 0.0222 \*

Mercury -92032-02-23 11:30 J -31893211.16 -31893211.02 -31893210.88 0.0277 0.0099

Venus -92032-03-26 11:01 J -31893180.21 -31893180.04 -31893179.85 0.0277 0.0149

Mercury -92032-05-23 01:54 J -31893122.52 -31893122.42 -31893122.31 0.0277 0.0194

Venus -92032-11-10 17:59 J -31892950.91 -31892950.75 -31892950.57 0.0278 0.0162

Earth -92031-02-08 16:18 J -31892861.06 -31892860.82 -31892860.58 0.0278 0.0005

Moon -92031-02-08 18:56 J -31892860.95 -31892860.71 -31892860.48 0.0278 0.0008 \*

Earth -92030-02-21 05:44 J -31892483.40 -31892483.26 -31892483.10 0.0279 0.0220

Moon -92030-02-21 08:37 J -31892483.29 -31892483.14 -31892482.99 0.0279 0.0221 \*

Mars -92025-12-27 20:37 J -31890346.91 -31890346.64 -31890346.36 0.0283 0.0128

Mercury -92019-10-11 15:35 J -31888232.89 -31888232.85 -31888232.81 0.0282 0.0273

Mercury -92018-01-08 10:03 J -31888144.21 -31888144.08 -31888143.95 0.0282 0.0161

Mercury -92018-04-07 04:03 J -31888055.49 -31888055.33 -31888055.17 0.0282 0.0051

Mercury -92018-07-04 21:35 J -31887966.75 -31887966.60 -31887966.44 0.0281 0.0056

Earth -92018-08-04 23:59 J -31887935.64 -31887935.50 -31887935.35 0.0281 0.0229

Moon -92018-08-05 03:06 J -31887935.50 -31887935.37 -31887935.24 0.0281 0.0241 \*

Venus -92018-09-13 12:42 J -31887896.14 -31887895.97 -31887895.78 0.0281 0.0162

Mercury -92018-10-01 14:51 J -31887878.01 -31887877.88 -31887877.75 0.0281 0.0160

Mercury -92018-12-29 07:25 J -31887789.23 -31887789.19 -31887789.12 0.0281 0.0262

Venus -92017-04-30 05:15 J -31887666.44 -31887666.28 -31887666.11 0.0281 0.0171

Moon -92017-08-17 20:23 J -31887556.91 -31887556.65 -31887556.39 0.0280 0.0005

Earth -92017-08-17 20:37 J -31887556.89 -31887556.64 -31887556.39 0.0280 0.0013 \*

Moon -92016-08-31 06:56 J -31887178.33 -31887178.21 -31887178.09 0.0279 0.0245

Earth -92016-08-31 10:18 J -31887178.19 -31887178.07 -31887177.95 0.0279 0.0245 \*

Mars -92011-12-14 18:13 J -31885247.02 -31885246.74 -31885246.46 0.0275 0.0026

Mercury -92004-10-20 18:42 J -31882744.81 -31882744.72 -31882744.62 0.0277 0.0209

Mercury	-92003-01-17 08:08 J	-31882656.29	-31882656.16	-31882656.03	0.0277	0.0120
Mercury	-92003-04-15 21:49 J	-31882567.74	-31882567.59	-31882567.44	0.0277	0.0030
Mercury	-92003-07-13 11:44 J	-31882479.15	-31882479.01	-31882478.86	0.0277	0.0063
Venus	-92003-10-06 11:59 J	-31882394.19	-31882394.00	-31882393.81	0.0278	0.0119
Mercury	-92003-10-10 02:08 J	-31882390.54	-31882390.41	-31882390.29	0.0278	0.0158
Mercury	-92002-01-06 16:32 J	-31882301.87	-31882301.81	-31882301.75	0.0278	0.0254
Moon	-92002-02-03 05:30 J	-31882274.49	-31882274.27	-31882274.03	0.0278	0.0089
Earth	-92002-02-03 08:08 J	-31882274.37	-31882274.16	-31882273.93	0.0278	0.0104 *
Venus	-92002-05-23 18:42 J	-31882164.86	-31882164.72	-31882164.56	0.0278	0.0192
Moon	-92001-02-15 15:49 J	-31881897.04	-31881896.84	-31881896.62	0.0279	0.0125
Earth	-92001-02-15 18:42 J	-31881896.94	-31881896.72	-31881896.50	0.0279	0.0118 *

# 92ND MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 92nd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-91996-02-08 00:13 J	-31880077.69	-31880077.49	-31880077.27	0.0283	0.0209		
Mercury	-91989-05-27 09:20 J	-31877412.23	-31877412.11	-31877411.99	0.0282	0.0198		
Mercury	-91989-08-24 03:35 J	-31877323.51	-31877323.35	-31877323.19	0.0282	0.0087		
Mercury	-91989-11-20 21:20 J	-31877234.77	-31877234.61	-31877234.45	0.0282	0.0022		
Mercury	-91988-02-17 14:37 J	-31877146.03	-31877145.89	-31877145.74	0.0281	0.0128		
Venus	-91988-03-25 16:47 J	-31877110.00	-31877109.80	-31877109.61	0.0281	0.0120		
Mercury	-91988-05-17 07:39 J	-31877057.26	-31877057.18	-31877057.08	0.0281	0.0230		

Earth -91988-08-12 00:13 J -31876970.72 -31876970.49 -31876970.25 0.0281 0.0097  
 Moon -91988-08-12 01:11 J -31876970.68 -31876970.45 -31876970.23 0.0281 0.0105 \*  
 Venus -91988-11-10 09:20 J -31876880.25 -31876880.11 -31876879.97 0.0281 0.0213  
 Earth -91987-08-25 17:59 J -31876591.96 -31876591.75 -31876591.53 0.0280 0.0142  
 Moon -91987-08-25 21:35 J -31876591.80 -31876591.60 -31876591.38 0.0280 0.0140 \*  
 Mars -91980-01-31 16:32 J -31874241.06 -31874240.81 -31874240.55 0.0276 0.0119  
 Mercury -91974-03-09 22:18 J -31872012.65 -31872012.57 -31872012.49 0.0277 0.0222  
 Mercury -91974-06-06 11:44 J -31871924.14 -31871924.01 -31871923.89 0.0277 0.0134  
 Mercury -91974-09-03 01:11 J -31871835.59 -31871835.45 -31871835.30 0.0277 0.0044  
 Mercury -91974-11-30 15:06 J -31871747.01 -31871746.87 -31871746.72 0.0277 0.0050  
 Earth -91973-01-29 16:03 J -31871686.99 -31871686.83 -31871686.65 0.0277 0.0195  
 Moon -91973-01-29 18:27 J -31871686.90 -31871686.73 -31871686.54 0.0277 0.0180 \*  
 Mercury -91973-02-27 05:15 J -31871658.40 -31871658.28 -31871658.15 0.0277 0.0144  
 Venus -91973-04-17 21:49 J -31871607.80 -31871607.59 -31871607.39 0.0277 0.0060  
 Mercury -91973-05-25 19:54 J -31871569.74 -31871569.67 -31871569.60 0.0278 0.0240  
 Venus -91973-12-03 04:47 J -31871378.38 -31871378.30 -31871378.20 0.0278 0.0252  
 Earth -91972-02-10 00:13 J -31871309.73 -31871309.49 -31871309.25 0.0278 0.0023  
 Moon -91972-02-10 03:20 J -31871309.60 -31871309.36 -31871309.11 0.0278 0.0036 \*  
 Moon -91971-02-22 12:27 J -31870932.09 -31870931.98 -31870931.85 0.0279 0.0244  
 Earth -91971-02-22 14:08 J -31870932.01 -31870931.91 -31870931.79 0.0279 0.0246 \*  
 Mars -91966-04-02 12:42 J -31869067.27 -31869066.97 -31869066.66 0.0283 0.0030  
 Mercury -91960-10-14 10:32 J -31866680.16 -31866680.06 -31866679.96 0.0282 0.0225  
 Mercury -91959-01-11 04:47 J -31866591.44 -31866591.30 -31866591.14 0.0282 0.0114  
 Mercury -91959-04-09 22:47 J -31866502.71 -31866502.55 -31866502.39 0.0282 0.0005  
 Mercury -91959-07-07 16:03 J -31866413.97 -31866413.83 -31866413.67 0.0281 0.0102  
 Moon -91959-08-06 07:25 J -31866384.35 -31866384.19 -31866384.00 0.0281 0.0209  
 Earth -91959-08-06 08:37 J -31866384.30 -31866384.14 -31866383.95 0.0281 0.0199 \*  
 Mercury -91959-10-04 09:06 J -31866325.22 -31866325.12 -31866325.01 0.0281 0.0205  
 Venus -91959-10-06 00:42 J -31866323.68 -31866323.47 -31866323.26 0.0281 0.0069  
 Venus -91958-05-23 16:32 J -31866093.87 -31866093.81 -31866093.72 0.0281 0.0263



Moon -91958-08-20 00:56 J -31866005.71 -31866005.46 -31866005.21 0.0280 0.0037  
 Earth -91958-08-20 04:47 J -31866005.54 -31866005.30 -31866005.05 0.0280 0.0040 \*  
 Moon -91957-09-01 15:20 J -31865626.90 -31865626.86 -31865626.81 0.0279 0.0274  
 Earth -91957-09-01 17:44 J -31865626.80 -31865626.76 -31865626.68 0.0279 0.0271  
 Mars -91952-03-23 09:20 J -31863963.34 -31863963.11 -31863962.88 0.0276 0.0151  
 Jupiter -91952-03-30 21:06 J -31863956.05 -31863955.62 -31863955.18 0.0276 0.0024  
 Mars -91950-03-21 11:30 J -31863235.09 -31863235.02 -31863234.91 0.0275 0.0261  
 Mercury -91945-07-26 23:01 J -31861280.59 -31861280.54 -31861280.48 0.0277 0.0254  
 Mercury -91945-10-23 12:13 J -31861192.10 -31861191.99 -31861191.87 0.0277 0.0167  
 Mercury -91944-01-20 01:54 J -31861103.56 -31861103.42 -31861103.28 0.0277 0.0077  
 Moon -91944-01-23 08:37 J -31861100.18 -31861100.14 -31861100.09 0.0277 0.0272  
 Mercury -91944-04-18 15:35 J -31861014.99 -31861014.85 -31861014.70 0.0277 0.0017  
 Mercury -91944-07-16 05:44 J -31860926.40 -31860926.26 -31860926.12 0.0278 0.0108  
 Mercury -91944-10-12 20:08 J -31860837.76 -31860837.66 -31860837.56 0.0278 0.0204  
 Venus -91944-10-28 23:01 J -31860821.75 -31860821.54 -31860821.33 0.0278 0.0028  
 Moon -91943-02-04 13:25 J -31860723.16 -31860722.94 -31860722.70 0.0278 0.0061  
 Earth -91943-02-04 16:47 J -31860723.03 -31860722.80 -31860722.57 0.0278 0.0075 \*  
 Earth -91942-02-17 03:35 J -31860345.56 -31860345.35 -31860345.14 0.0279 0.0146  
 Moon -91942-02-17 04:32 J -31860345.49 -31860345.31 -31860345.10 0.0279 0.0151 \*  
 Mars -91936-05-23 07:25 J -31858058.44 -31858058.19 -31858057.91 0.0283 0.0141  
 Mercury -91930-03-03 09:35 J -31855948.15 -31855948.10 -31855948.03 0.0282 0.0262  
 Mercury -91930-05-31 04:03 J -31855859.46 -31855859.33 -31855859.18 0.0282 0.0150  
 Mercury -91930-08-27 22:18 J -31855770.73 -31855770.57 -31855770.41 0.0282 0.0040  
 Mercury -91930-11-24 15:49 J -31855681.99 -31855681.84 -31855681.68 0.0282 0.0069  
 Mercury -91929-02-21 09:20 J -31855593.24 -31855593.11 -31855592.99 0.0281 0.0173  
 Venus -91929-04-17 04:32 J -31855537.52 -31855537.31 -31855537.09 0.0281 0.0028  
 Mercury -91929-05-20 02:08 J -31855504.44 -31855504.41 -31855504.38 0.0281 0.0274  
 Earth -91929-08-13 08:51 J -31855419.37 -31855419.13 -31855418.89 0.0281 0.0068  
 Moon -91929-08-13 12:27 J -31855419.22 -31855418.98 -31855418.74 0.0281 0.0074 \*  
 Earth -91928-08-27 02:08 J -31855040.60 -31855040.41 -31855040.20 0.0280 0.0169

Moon -91928-08-27 04:18 J -31855040.51 -31855040.32 -31855040.11 0.0280 0.0170 \*  
 Mars -91922-05-10 23:44 J -31852957.79 -31852957.51 -31852957.23 0.0276 0.0012  
 Mercury -91916-12-14 02:37 J -31850548.42 -31850548.39 -31850548.36 0.0277 0.0268  
 Mercury -91915-03-12 15:49 J -31850459.95 -31850459.84 -31850459.73 0.0277 0.0181  
 Mercury -91915-06-09 05:15 J -31850371.41 -31850371.28 -31850371.14 0.0277 0.0091  
 Mercury -91915-09-05 19:11 J -31850282.85 -31850282.70 -31850282.56 0.0277 0.0007  
 Mercury -91915-12-03 09:06 J -31850194.26 -31850194.12 -31850193.98 0.0277 0.0094  
 Earth -91914-01-31 00:27 J -31850135.66 -31850135.48 -31850135.28 0.0277 0.0167  
 Moon -91914-01-31 04:03 J -31850135.54 -31850135.33 -31850135.13 0.0277 0.0150 \*  
 Mercury -91914-03-01 23:15 J -31850105.63 -31850105.53 -31850105.41 0.0277 0.0190  
 Venus -91914-05-11 08:51 J -31850035.34 -31850035.13 -31850034.92 0.0278 0.0031  
 Moon -91913-02-12 08:37 J -31849758.38 -31849758.14 -31849757.90 0.0278 0.0062  
 Earth -91913-02-12 09:20 J -31849758.35 -31849758.11 -31849757.87 0.0278 0.0052 \*  
 Moon -91912-02-23 20:23 J -31849380.70 -31849380.65 -31849380.59 0.0279 0.0271  
 Earth -91912-02-23 23:44 J -31849380.55 -31849380.51 -31849380.45 0.0279 0.0273  
 Mars -91908-07-05 23:15 J -31847787.75 -31847787.53 -31847787.29 0.0283 0.0190  
 Mercury -91901-10-17 06:13 J -31845127.37 -31845127.24 -31845127.11 0.0282 0.0173  
 Mercury -91900-01-14 00:13 J -31845038.65 -31845038.49 -31845038.33 0.0282 0.0063  
 Mercury -91900-04-12 17:59 J -31844949.91 -31844949.75 -31844949.59 0.0281 0.0045  
 Mercury -91900-07-10 11:15 J -31844861.17 -31844861.03 -31844860.90 0.0281 0.0150  
 Moon -91900-08-07 16:18 J -31844833.01 -31844832.82 -31844832.62 0.0281 0.0177  
 Earth -91900-08-07 20:08 J -31844832.86 -31844832.66 -31844832.46 0.0281 0.0167 \*  
 Mercury -91900-10-07 04:03 J -31844772.39 -31844772.33 -31844772.26 0.0281 0.0253  
 Venus -91900-10-28 13:39 J -31844751.14 -31844750.93 -31844750.72 0.0281 0.0026  
 Moon -91899-08-21 13:39 J -31844454.17 -31844453.93 -31844453.70 0.0280 0.0069  
 Earth -91899-08-21 15:20 J -31844454.10 -31844453.86 -31844453.62 0.0280 0.0070 \*  
 Mars -91894-07-01 06:56 J -31842679.23 -31842679.21 -31842679.15 0.0276 0.0273  
 Mars -91892-06-27 15:06 J -31841952.11 -31841951.87 -31841951.61 0.0275 0.0131  
 Mercury -91886-07-30 17:01 J -31839727.88 -31839727.79 -31839727.70 0.0277 0.0211  
 Mercury -91886-10-27 06:13 J -31839639.37 -31839639.24 -31839639.11 0.0277 0.0123

Mercury -91885-01-23 19:54 J -31839550.81 -31839550.67 -31839550.52 0.0277 0.0032

Moon -91885-01-25 17:44 J -31839548.86 -31839548.76 -31839548.64 0.0277 0.0243

Earth -91885-01-25 20:51 J -31839548.71 -31839548.63 -31839548.54 0.0277 0.0258 \*

Venus -91885-04-05 04:18 J -31839478.40 -31839478.32 -31839478.21 0.0277 0.0245

Mercury -91885-04-21 09:49 J -31839462.23 -31839462.09 -31839461.94 0.0277 0.0061

Mercury -91885-07-18 23:59 J -31839373.62 -31839373.50 -31839373.37 0.0278 0.0156

Mercury -91885-10-15 14:23 J -31839284.95 -31839284.90 -31839284.83 0.0278 0.0253

Venus -91885-11-20 11:01 J -31839249.24 -31839249.04 -31839248.84 0.0278 0.0065

Earth -91884-02-06 02:37 J -31839171.62 -31839171.39 -31839171.14 0.0278 0.0046

Moon -91884-02-06 03:49 J -31839171.57 -31839171.34 -31839171.11 0.0278 0.0033 \*

Earth -91883-02-18 14:08 J -31838794.09 -31838793.91 -31838793.72 0.0279 0.0175

Moon -91883-02-18 17:30 J -31838793.94 -31838793.77 -31838793.57 0.0279 0.0180 \*

Mars -91878-08-27 05:44 J -31836778.57 -31836778.26 -31836777.96 0.0283 0.0017

Mercury -91871-03-06 05:01 J -31834395.39 -31834395.29 -31834395.17 0.0282 0.0211

Mercury -91871-06-02 23:30 J -31834306.67 -31834306.52 -31834306.36 0.0282 0.0099

Earth -91871-08-01 19:54 J -31834246.71 -31834246.67 -31834246.62 0.0282 0.0277

Mercury -91871-08-30 17:30 J -31834217.94 -31834217.77 -31834217.61 0.0281 0.0011

Venus -91871-09-22 23:44 J -31834194.56 -31834194.51 -31834194.44 0.0281 0.0269

Mercury -91871-11-27 10:47 J -31834129.19 -31834129.05 -31834128.90 0.0281 0.0117

Mercury -91870-02-24 03:49 J -31834040.43 -31834040.34 -31834040.24 0.0281 0.0220

Venus -91870-05-10 17:15 J -31833964.99 -31833964.78 -31833964.57 0.0281 0.0067

Earth -91870-08-15 18:56 J -31833867.96 -31833867.71 -31833867.46 0.0281 0.0038

Moon -91870-08-15 20:37 J -31833867.90 -31833867.64 -31833867.38 0.0281 0.0043 \*

Moon -91869-08-28 08:51 J -31833489.29 -31833489.13 -31833488.94 0.0280 0.0201

Earth -91869-08-28 11:30 J -31833489.18 -31833489.02 -31833488.83 0.0280 0.0196 \*

Mars -91864-08-17 13:25 J -31831674.17 -31831673.94 -31831673.69 0.0277 0.0139

Mars -91862-08-15 20:37 J -31830945.64 -31830945.64 -31830945.62 0.0276 0.0276

Mercury -91857-12-16 20:08 J -31828995.74 -31828995.66 -31828995.58 0.0277 0.0227

Mercury -91856-03-15 09:35 J -31828907.23 -31828907.10 -31828906.97 0.0277 0.0138

Mercury -91856-06-11 23:15 J -31828818.68 -31828818.53 -31828818.39 0.0277 0.0048

Mercury -91856-09-08 12:56 J -31828730.10 -31828729.96 -31828729.81 0.0277 0.0046  
 Venus -91856-10-16 13:39 J -31828692.08 -31828691.93 -31828691.77 0.0277 0.0187  
 Mercury -91856-12-06 03:06 J -31828641.49 -31828641.37 -31828641.24 0.0278 0.0141  
 Moon -91855-02-01 08:51 J -31828584.35 -31828584.13 -31828583.91 0.0278 0.0122  
 Earth -91855-02-01 09:49 J -31828584.30 -31828584.09 -31828583.88 0.0278 0.0137 \*  
 Mercury -91855-03-04 17:30 J -31828552.84 -31828552.77 -31828552.68 0.0278 0.0237  
 Venus -91855-06-02 20:37 J -31828462.83 -31828462.64 -31828462.46 0.0278 0.0124  
 Moon -91854-02-13 15:20 J -31828207.08 -31828206.86 -31828206.62 0.0278 0.0091  
 Earth -91854-02-13 19:11 J -31828206.92 -31828206.70 -31828206.46 0.0278 0.0081 \*  
 Mars -91848-10-18 11:01 J -31825768.28 -31825768.04 -31825767.78 0.0283 0.0160  
 Mercury -91842-07-24 07:39 J -31823663.27 -31823663.18 -31823663.09 0.0282 0.0231  
 Mercury -91842-10-21 01:54 J -31823574.56 -31823574.42 -31823574.27 0.0282 0.0120  
 Mercury -91841-01-17 19:54 J -31823485.83 -31823485.67 -31823485.50 0.0282 0.0011  
 Venus -91841-04-04 11:01 J -31823408.18 -31823408.04 -31823407.90 0.0281 0.0211  
 Mercury -91841-04-15 13:25 J -31823397.09 -31823396.94 -31823396.79 0.0281 0.0097  
 Mercury -91841-07-13 06:27 J -31823308.34 -31823308.23 -31823308.11 0.0281 0.0201  
 Moon -91841-08-09 07:11 J -31823281.40 -31823281.20 -31823280.99 0.0281 0.0144  
 Earth -91841-08-09 09:06 J -31823281.34 -31823281.12 -31823280.90 0.0281 0.0134 \*  
 Venus -91841-11-20 03:35 J -31823178.54 -31823178.35 -31823178.15 0.0281 0.0125  
 Earth -91840-08-23 03:35 J -31822902.58 -31822902.35 -31822902.11 0.0280 0.0101  
 Moon -91840-08-23 05:59 J -31822902.47 -31822902.25 -31822902.02 0.0280 0.0102 \*  
 Mars -91834-10-05 03:20 J -31820668.64 -31820668.36 -31820668.08 0.0276 0.0003  
 Mercury -91827-05-05 21:35 J -31818263.65 -31818263.60 -31818263.54 0.0277 0.0255  
 Mercury -91827-08-02 10:47 J -31818175.16 -31818175.05 -31818174.93 0.0277 0.0167  
 Mercury -91827-10-30 00:13 J -31818086.63 -31818086.49 -31818086.35 0.0277 0.0078  
 Mercury -91826-01-26 14:08 J -31817998.06 -31817997.91 -31817997.76 0.0277 0.0015  
 Earth -91826-01-27 06:42 J -31817997.35 -31817997.22 -31817997.08 0.0277 0.0229  
 Moon -91826-01-27 07:11 J -31817997.33 -31817997.20 -31817997.05 0.0277 0.0216 \*  
 Mercury -91826-04-25 04:03 J -31817909.46 -31817909.33 -31817909.19 0.0277 0.0109  
 Venus -91826-04-28 16:32 J -31817905.99 -31817905.81 -31817905.64 0.0277 0.0152

Mercury -91826-07-22 18:27 J -31817820.83 -31817820.73 -31817820.63 0.0278 0.0204

Venus -91826-12-13 23:01 J -31817676.70 -31817676.54 -31817676.36 0.0278 0.0160

Earth -91825-02-08 13:11 J -31817620.19 -31817619.95 -31817619.71 0.0278 0.0016

Moon -91825-02-08 17:01 J -31817620.03 -31817619.79 -31817619.55 0.0278 0.0005 \*

Earth -91824-02-20 00:56 J -31817242.61 -31817242.46 -31817242.28 0.0279 0.0204

Moon -91824-02-20 02:23 J -31817242.57 -31817242.40 -31817242.23 0.0279 0.0205 \*

Mars -91820-11-29 20:23 J -31815498.88 -31815498.65 -31815498.40 0.0283 0.0176

Mercury -91813-12-10 06:27 J -31812931.27 -31812931.23 -31812931.18 0.0282 0.0270

Mercury -91812-03-09 01:11 J -31812842.59 -31812842.45 -31812842.31 0.0282 0.0157

Mercury -91812-06-05 19:11 J -31812753.86 -31812753.70 -31812753.54 0.0281 0.0047

Earth -91812-08-03 08:51 J -31812695.25 -31812695.13 -31812695.00 0.0281 0.0244

Moon -91812-08-03 09:49 J -31812695.18 -31812695.09 -31812694.96 0.0281 0.0255 \*

Mercury -91812-09-02 12:56 J -31812665.12 -31812664.96 -31812664.80 0.0281 0.0061

Venus -91812-10-15 13:54 J -31812622.09 -31812621.92 -31812621.75 0.0281 0.0171

Mercury -91812-11-30 06:13 J -31812576.37 -31812576.24 -31812576.11 0.0281 0.0166

Mercury -91811-02-26 23:01 J -31812487.58 -31812487.54 -31812487.49 0.0281 0.0269

Venus -91811-06-02 06:42 J -31812392.38 -31812392.22 -31812392.04 0.0281 0.0165

Moon -91811-08-17 04:18 J -31812316.57 -31812316.32 -31812316.06 0.0281 0.0010

Earth -91811-08-17 06:56 J -31812316.46 -31812316.21 -31812315.96 0.0281 0.0007 \*

Moon -91810-08-30 19:11 J -31811937.83 -31811937.70 -31811937.55 0.0280 0.0231

Earth -91810-08-30 22:32 J -31811937.70 -31811937.56 -31811937.40 0.0280 0.0224 \*

Mars -91806-11-25 09:20 J -31810390.20 -31810390.11 -31810390.02 0.0277 0.0261

Mars -91804-11-21 21:06 J -31809662.86 -31809662.62 -31809662.38 0.0276 0.0145

Mercury -91798-09-23 00:27 J -31807531.50 -31807531.48 -31807531.45 0.0277 0.0273

Mercury -91798-12-20 13:39 J -31807443.03 -31807442.93 -31807442.82 0.0277 0.0185

Mercury -91797-03-18 03:20 J -31807354.50 -31807354.36 -31807354.22 0.0277 0.0095

Mercury -91797-06-14 17:01 J -31807265.94 -31807265.79 -31807265.64 0.0277 0.0003

Mercury -91797-09-11 06:56 J -31807177.35 -31807177.21 -31807177.07 0.0278 0.0091

Venus -91797-11-08 00:56 J -31807119.65 -31807119.46 -31807119.26 0.0278 0.0097

Mercury -91797-12-08 21:20 J -31807088.72 -31807088.61 -31807088.50 0.0278 0.0187

Moon -91796-02-02 15:06 J -31807033.09 -31807032.87 -31807032.64 0.0278 0.0094  
 Earth -91796-02-02 18:42 J -31807032.94 -31807032.72 -31807032.49 0.0278 0.0107 \*  
 Venus -91796-06-25 07:54 J -31806890.29 -31806890.17 -31806890.03 0.0278 0.0217  
 Moon -91795-02-15 04:03 J -31806655.54 -31806655.33 -31806655.12 0.0279 0.0117  
 Earth -91795-02-15 05:01 J -31806655.50 -31806655.29 -31806655.06 0.0279 0.0111 \*  
 Mars -91789-01-22 13:25 J -31804488.25 -31804487.94 -31804487.63 0.0283 0.0006  
 Mercury -91783-07-27 03:49 J -31802110.47 -31802110.34 -31802110.21 0.0282 0.0176  
 Mercury -91783-10-23 22:03 J -31802021.74 -31802021.58 -31802021.42 0.0282 0.0065  
 Mercury -91782-01-20 15:49 J -31801933.00 -31801932.84 -31801932.68 0.0282 0.0044  
 Mercury -91782-04-19 08:51 J -31801844.26 -31801844.13 -31801843.99 0.0281 0.0150  
 Venus -91782-04-28 01:54 J -31801835.62 -31801835.42 -31801835.22 0.0281 0.0111  
 Mercury -91782-07-17 01:54 J -31801755.48 -31801755.42 -31801755.35 0.0281 0.0252  
 Earth -91782-08-11 22:18 J -31801729.80 -31801729.57 -31801729.33 0.0281 0.0101  
 Moon -91782-08-12 00:56 J -31801729.68 -31801729.46 -31801729.23 0.0281 0.0109 \*  
 Venus -91782-12-13 17:59 J -31801605.87 -31801605.75 -31801605.61 0.0281 0.0224  
 Earth -91781-08-24 16:32 J -31801351.03 -31801350.81 -31801350.59 0.0280 0.0132  
 Moon -91781-08-24 19:54 J -31801350.89 -31801350.67 -31801350.44 0.0280 0.0132 \*  
 Mars -91775-01-11 20:23 J -31799384.89 -31799384.65 -31799384.39 0.0276 0.0123  
 Mercury -91768-05-08 15:20 J -31796710.95 -31796710.86 -31796710.77 0.0277 0.0212  
 Mercury -91768-08-05 04:47 J -31796622.43 -31796622.30 -31796622.17 0.0277 0.0123  
 Mercury -91768-11-01 18:13 J -31796533.88 -31796533.74 -31796533.59 0.0277 0.0033  
 Earth -91767-01-28 15:49 J -31796445.99 -31796445.84 -31796445.66 0.0277 0.0200  
 Moon -91767-01-28 19:39 J -31796445.86 -31796445.68 -31796445.51 0.0277 0.0184 \*  
 Mercury -91767-01-29 08:08 J -31796445.30 -31796445.16 -31796445.01 0.0277 0.0061  
 Mercury -91767-04-27 22:18 J -31796356.69 -31796356.57 -31796356.44 0.0278 0.0156  
 Venus -91767-05-21 04:18 J -31796333.53 -31796333.32 -31796333.12 0.0278 0.0060  
 Mercury -91767-07-25 12:42 J -31796268.02 -31796267.97 -31796267.90 0.0278 0.0253  
 Venus -91766-01-05 11:01 J -31796104.11 -31796104.04 -31796103.95 0.0278 0.0254  
 Earth -91766-02-09 23:15 J -31796068.77 -31796068.53 -31796068.29 0.0278 0.0015  
 Moon -91766-02-10 00:13 J -31796068.74 -31796068.49 -31796068.24 0.0278 0.0023 \*

Moon -91765-02-22 08:37 J -31795691.26 -31795691.14 -31795690.99 0.0279 0.0231  
 Earth -91765-02-22 11:44 J -31795691.13 -31795691.01 -31795690.86 0.0279 0.0233 \*  
 Mars -91759-03-14 09:06 J -31793479.36 -31793479.12 -31793478.88 0.0283 0.0174  
 Mercury -91754-12-14 02:37 J -31791378.49 -31791378.39 -31791378.28 0.0282 0.0215  
 Mercury -91753-03-11 21:06 J -31791289.77 -31791289.62 -31791289.47 0.0281 0.0103  
 Mercury -91753-06-08 15:06 J -31791201.04 -31791200.87 -31791200.71 0.0281 0.0009  
 Moon -91753-08-04 18:42 J -31791143.86 -31791143.72 -31791143.55 0.0281 0.0220  
 Earth -91753-08-04 22:03 J -31791143.74 -31791143.58 -31791143.40 0.0281 0.0210 \*  
 Mercury -91753-09-05 08:23 J -31791112.29 -31791112.15 -31791112.00 0.0281 0.0113  
 Venus -91753-11-07 04:18 J -31791049.52 -31791049.32 -31791049.11 0.0281 0.0072  
 Mercury -91753-12-03 01:25 J -31791023.53 -31791023.44 -31791023.33 0.0281 0.0217  
 Venus -91752-06-24 20:37 J -31790819.70 -31790819.64 -31790819.56 0.0281 0.0263  
 Moon -91752-08-18 16:03 J -31790765.07 -31790764.83 -31790764.58 0.0280 0.0022  
 Earth -91752-08-18 19:39 J -31790764.93 -31790764.68 -31790764.43 0.0280 0.0026 \*  
 Earth -91751-09-01 10:03 J -31790386.17 -31790386.08 -31790385.96 0.0280 0.0253  
 Moon -91751-09-01 10:32 J -31790386.14 -31790386.06 -31790385.97 0.0280 0.0260 \*  
 Mars -91745-02-29 04:47 J -31788379.58 -31788379.30 -31788379.02 0.0276 0.0015  
 Mercury -91739-09-25 17:59 J -31785978.82 -31785978.75 -31785978.67 0.0277 0.0232  
 Mercury -91739-12-23 07:25 J -31785890.32 -31785890.19 -31785890.07 0.0277 0.0144  
 Moon -91738-01-23 17:30 J -31785858.80 -31785858.77 -31785858.71 0.0277 0.0272  
 Mercury -91738-03-21 20:51 J -31785801.77 -31785801.63 -31785801.48 0.0277 0.0053  
 Mercury -91738-06-18 10:47 J -31785713.20 -31785713.05 -31785712.90 0.0278 0.0040  
 Mercury -91738-09-15 00:42 J -31785624.59 -31785624.47 -31785624.33 0.0278 0.0136  
 Venus -91738-12-01 11:44 J -31785547.21 -31785547.01 -31785546.80 0.0278 0.0010  
 Mercury -91738-12-12 15:20 J -31785535.94 -31785535.86 -31785535.78 0.0278 0.0232  
 Moon -91737-02-05 01:39 J -31785481.66 -31785481.43 -31785481.21 0.0278 0.0066  
 Earth -91737-02-05 02:51 J -31785481.61 -31785481.38 -31785481.15 0.0278 0.0078 \*  
 Earth -91736-02-16 13:39 J -31785104.13 -31785103.93 -31785103.71 0.0279 0.0139  
 Moon -91736-02-16 16:47 J -31785103.99 -31785103.80 -31785103.59 0.0279 0.0143 \*  
 Mars -91731-04-27 01:25 J -31783208.70 -31783208.44 -31783208.18 0.0283 0.0153

Mercury -91724-05-02 05:30 J -31780646.36 -31780646.27 -31780646.17 0.0282 0.0233

Mercury -91724-07-29 23:59 J -31780557.65 -31780557.50 -31780557.35 0.0282 0.0121

Mercury -91724-10-26 17:59 J -31780468.91 -31780468.75 -31780468.59 0.0282 0.0011

Mercury -91723-01-23 11:30 J -31780380.17 -31780380.02 -31780379.87 0.0281 0.0096

Mercury -91723-04-22 04:32 J -31780291.41 -31780291.31 -31780291.19 0.0281 0.0201

Venus -91723-05-20 16:47 J -31780263.02 -31780262.80 -31780262.59 0.0281 0.0011

Earth -91723-08-13 11:59 J -31780178.24 -31780178.00 -31780177.75 0.0281 0.0067

Moon -91723-08-13 15:49 J -31780178.09 -31780177.84 -31780177.59 0.0281 0.0075 \*

Earth -91722-08-27 05:15 J -31779799.47 -31779799.28 -31779799.07 0.0280 0.0164

Moon -91722-08-27 05:44 J -31779799.47 -31779799.26 -31779799.05 0.0280 0.0164 \*

Mars -91717-04-20 20:23 J -31778100.77 -31778100.65 -31778100.51 0.0276 0.0244

Mars -91715-04-18 05:01 J -31777373.52 -31777373.29 -31777373.06 0.0275 0.0162

Mercury -91709-02-12 19:39 J -31775246.72 -31775246.68 -31775246.63 0.0277 0.0258

Mercury -91709-05-11 08:51 J -31775158.24 -31775158.13 -31775158.01 0.0277 0.0170

Mercury -91709-08-07 22:32 J -31775069.70 -31775069.56 -31775069.42 0.0277 0.0081

Mercury -91709-11-04 12:13 J -31774981.14 -31774980.99 -31774980.85 0.0277 0.0013

Earth -91708-01-30 00:27 J -31774894.66 -31774894.48 -31774894.29 0.0277 0.0170

Moon -91708-01-30 02:08 J -31774894.60 -31774894.41 -31774894.20 0.0277 0.0155 \*

Mercury -91708-02-01 02:08 J -31774892.55 -31774892.41 -31774892.27 0.0277 0.0106

Mercury -91708-04-30 16:18 J -31774803.92 -31774803.82 -31774803.71 0.0278 0.0202

Venus -91708-06-12 15:35 J -31774761.06 -31774760.85 -31774760.65 0.0278 0.0032

Moon -91707-02-11 05:01 J -31774517.52 -31774517.29 -31774517.04 0.0278 0.0049

Earth -91707-02-11 08:23 J -31774517.39 -31774517.15 -31774516.91 0.0278 0.0044 \*

Moon -91706-02-23 18:56 J -31774139.79 -31774139.71 -31774139.61 0.0279 0.0257

Earth -91706-02-23 21:35 J -31774139.67 -31774139.60 -31774139.50 0.0279 0.0261 \*

Mars -91701-06-17 09:06 J -31772199.43 -31772199.12 -31772198.81 0.0283 0.0020

Mercury -91695-09-19 04:18 J -31769914.36 -31769914.32 -31769914.28 0.0282 0.0273

Mercury -91695-12-16 22:47 J -31769825.68 -31769825.55 -31769825.41 0.0281 0.0160

Mercury -91694-03-15 17:01 J -31769736.95 -31769736.79 -31769736.63 0.0281 0.0050

Mercury -91694-06-12 10:47 J -31769648.21 -31769648.05 -31769647.90 0.0281 0.0059



Moon -91694-08-07 08:08 J -31769592.33 -31769592.16 -31769591.96 0.0281 0.0184  
 Earth -91694-08-07 11:30 J -31769592.22 -31769592.02 -31769591.83 0.0281 0.0176 \*  
 Mercury -91694-09-09 04:03 J -31769559.46 -31769559.33 -31769559.20 0.0281 0.0164  
 Venus -91694-11-30 18:42 J -31769476.93 -31769476.72 -31769476.50 0.0281 0.0027  
 Mercury -91694-12-06 20:51 J -31769470.67 -31769470.63 -31769470.58 0.0281 0.0267  
 Earth -91693-08-20 07:54 J -31769213.42 -31769213.17 -31769212.92 0.0280 0.0057  
 Moon -91693-08-20 08:08 J -31769213.40 -31769213.16 -31769212.93 0.0280 0.0056 \*  
 Mars -91687-06-07 18:56 J -31767095.96 -31767095.71 -31767095.45 0.0276 0.0111  
 Mercury -91680-09-28 11:15 J -31764426.14 -31764426.03 -31764425.93 0.0277 0.0194  
 Mercury -91680-12-26 00:27 J -31764337.61 -31764337.48 -31764337.34 0.0277 0.0104  
 Moon -91679-01-25 01:11 J -31764307.55 -31764307.45 -31764307.34 0.0277 0.0244  
 Earth -91679-01-25 03:20 J -31764307.44 -31764307.36 -31764307.27 0.0277 0.0258 \*  
 Mercury -91679-03-24 14:08 J -31764249.05 -31764248.91 -31764248.76 0.0278 0.0014  
 Venus -91679-05-08 14:51 J -31764203.98 -31764203.88 -31764203.76 0.0278 0.0234  
 Mercury -91679-06-21 04:03 J -31764160.47 -31764160.33 -31764160.18 0.0278 0.0083  
 Mercury -91679-09-17 18:27 J -31764071.84 -31764071.73 -31764071.62 0.0278 0.0178  
 Mercury -91679-12-15 08:51 J -31763983.14 -31763983.13 -31763983.11 0.0278 0.0276  
 Venus -91679-12-23 21:49 J -31763974.79 -31763974.59 -31763974.39 0.0278 0.0080  
 Earth -91678-02-06 09:20 J -31763930.34 -31763930.11 -31763929.87 0.0278 0.0050  
 Moon -91678-02-06 11:59 J -31763930.23 -31763930.00 -31763929.76 0.0278 0.0039 \*  
 Earth -91677-02-18 20:51 J -31763552.81 -31763552.63 -31763552.43 0.0279 0.0167  
 Moon -91677-02-18 23:44 J -31763552.70 -31763552.51 -31763552.31 0.0279 0.0167 \*  
 Mars -91671-08-09 08:23 J -31761189.36 -31761189.15 -31761188.92 0.0283 0.0196  
 Mercury -91665-05-05 01:25 J -31759093.56 -31759093.44 -31759093.31 0.0282 0.0179  
 Earth -91665-08-01 01:39 J -31759005.50 -31759005.43 -31759005.35 0.0282 0.0268  
 Moon -91665-08-01 04:18 J -31759005.35 -31759005.32 -31759005.27 0.0282 0.0278 \*  
 Mercury -91665-08-01 19:39 J -31759004.84 -31759004.68 -31759004.52 0.0282 0.0068  
 Venus -91665-10-25 13:11 J -31758920.03 -31758919.95 -31758919.84 0.0282 0.0251  
 Mercury -91665-10-29 13:25 J -31758916.10 -31758915.94 -31758915.77 0.0282 0.0042  
 Mercury -91664-01-26 06:56 J -31758827.35 -31758827.21 -31758827.07 0.0281 0.0147

Mercury -91664-04-24 23:44 J -31758738.57 -31758738.51 -31758738.43 0.0281 0.0251

Venus -91664-06-12 06:27 J -31758690.43 -31758690.23 -31758690.02 0.0281 0.0088

Moon -91664-08-15 00:13 J -31758626.75 -31758626.49 -31758626.23 0.0281 0.0039

Earth -91664-08-15 00:42 J -31758626.72 -31758626.47 -31758626.22 0.0281 0.0035 \*

Moon -91663-08-28 13:39 J -31758248.10 -31758247.93 -31758247.74 0.0280 0.0197

Earth -91663-08-28 17:15 J -31758247.95 -31758247.78 -31758247.60 0.0280 0.0194 \*

Mars -91657-07-25 15:06 J -31756090.15 -31756089.87 -31756089.59 0.0275 0.0034

Mercury -91650-02-15 12:56 J -31753694.04 -31753693.96 -31753693.87 0.0277 0.0218

Mercury -91650-05-15 02:23 J -31753605.53 -31753605.40 -31753605.27 0.0277 0.0129

Mercury -91650-08-11 15:49 J -31753516.98 -31753516.84 -31753516.69 0.0277 0.0039

Mercury -91650-11-08 05:44 J -31753428.41 -31753428.26 -31753428.12 0.0277 0.0055

Venus -91650-11-18 19:11 J -31753417.84 -31753417.70 -31753417.54 0.0277 0.0192

Moon -91649-02-01 05:15 J -31753343.50 -31753343.28 -31753343.06 0.0277 0.0127

Earth -91649-02-01 07:39 J -31753343.38 -31753343.18 -31753342.97 0.0277 0.0142 \*

Mercury -91649-02-04 19:54 J -31753339.80 -31753339.67 -31753339.55 0.0277 0.0150

Mercury -91649-05-03 10:18 J -31753251.14 -31753251.07 -31753251.00 0.0278 0.0246

Venus -91649-07-05 01:39 J -31753188.61 -31753188.43 -31753188.24 0.0278 0.0121

Moon -91648-02-12 13:11 J -31752966.17 -31752965.95 -31752965.72 0.0278 0.0077

Earth -91648-02-12 15:49 J -31752966.07 -31752965.84 -31752965.60 0.0278 0.0071 \*

Mars -91643-09-20 17:59 J -31750920.01 -31750919.75 -31750919.47 0.0283 0.0140

Mercury -91636-09-21 23:59 J -31748361.60 -31748361.50 -31748361.39 0.0282 0.0220

Mercury -91636-12-19 18:27 J -31748272.88 -31748272.73 -31748272.58 0.0281 0.0108

Mercury -91635-03-18 12:27 J -31748184.14 -31748183.98 -31748183.82 0.0281 0.0002

Venus -91635-05-07 15:20 J -31748133.99 -31748133.86 -31748133.71 0.0281 0.0213

Mercury -91635-06-15 05:59 J -31748095.40 -31748095.25 -31748095.10 0.0281 0.0109

Earth -91635-08-08 23:30 J -31748040.73 -31748040.52 -31748040.30 0.0281 0.0144

Moon -91635-08-09 00:56 J -31748040.66 -31748040.46 -31748040.25 0.0281 0.0149 \*

Mercury -91635-09-11 23:01 J -31748006.64 -31748006.54 -31748006.43 0.0281 0.0214

Venus -91635-12-23 08:08 J -31747904.34 -31747904.16 -31747903.96 0.0281 0.0125

Earth -91634-08-22 19:25 J -31747661.93 -31747661.69 -31747661.45 0.0280 0.0088

Moon -91634-08-22 23:15 J -31747661.77 -31747661.53 -31747661.30 0.0280 0.0089 \*  
 Mars -91629-09-14 15:06 J -31745812.00 -31745811.87 -31745811.71 0.0276 0.0233  
 Mars -91627-09-11 23:59 J -31745084.71 -31745084.50 -31745084.27 0.0276 0.0173  
 Mercury -91621-07-04 14:37 J -31742961.95 -31742961.89 -31742961.82 0.0277 0.0245  
 Mercury -91621-10-01 04:03 J -31742873.45 -31742873.33 -31742873.21 0.0277 0.0156  
 Mercury -91621-12-28 17:30 J -31742784.91 -31742784.77 -31742784.63 0.0277 0.0066  
 Earth -91620-01-26 07:25 J -31742756.31 -31742756.19 -31742756.05 0.0278 0.0231  
 Moon -91620-01-26 09:49 J -31742756.22 -31742756.09 -31742755.94 0.0278 0.0216 \*  
 Mercury -91620-03-27 07:11 J -31742696.34 -31742696.20 -31742696.05 0.0278 0.0028  
 Venus -91620-05-30 23:30 J -31742631.69 -31742631.52 -31742631.34 0.0278 0.0151  
 Mercury -91620-06-23 21:20 J -31742607.74 -31742607.61 -31742607.48 0.0278 0.0122  
 Mercury -91620-09-20 11:30 J -31742519.10 -31742519.02 -31742518.92 0.0278 0.0219  
 Venus -91619-01-15 06:27 J -31742402.40 -31742402.23 -31742402.06 0.0278 0.0164  
 Earth -91619-02-07 14:08 J -31742379.15 -31742378.91 -31742378.67 0.0278 0.0023  
 Moon -91619-02-07 17:15 J -31742379.03 -31742378.78 -31742378.54 0.0278 0.0011 \*  
 Moon -91618-02-20 00:27 J -31742001.66 -31742001.48 -31742001.30 0.0279 0.0189  
 Earth -91618-02-20 02:08 J -31742001.57 -31742001.41 -31742001.23 0.0279 0.0193 \*  
 Mars -91613-11-12 00:13 J -31739909.79 -31739909.49 -31739909.18 0.0283 0.0041  
 Mercury -91606-02-09 02:23 J -31737629.48 -31737629.40 -31737629.31 0.0282 0.0241  
 Mercury -91606-05-08 20:51 J -31737540.77 -31737540.63 -31737540.48 0.0282 0.0128  
 Moon -91606-08-03 11:15 J -31737454.15 -31737454.03 -31737453.89 0.0282 0.0243  
 Earth -91606-08-03 12:56 J -31737454.08 -31737453.96 -31737453.81 0.0282 0.0237 \*  
 Mercury -91606-08-05 15:06 J -31737452.04 -31737451.87 -31737451.71 0.0282 0.0018  
 Mercury -91606-11-02 08:37 J -31737363.29 -31737363.14 -31737362.98 0.0282 0.0091  
 Venus -91606-11-18 02:37 J -31737347.56 -31737347.39 -31737347.20 0.0282 0.0155  
 Mercury -91605-01-30 01:54 J -31737274.53 -31737274.42 -31737274.30 0.0281 0.0196  
 Venus -91605-07-04 19:25 J -31737117.84 -31737117.69 -31737117.52 0.0281 0.0184  
 Moon -91605-08-16 08:08 J -31737075.41 -31737075.16 -31737074.91 0.0281 0.0005  
 Earth -91605-08-16 11:59 J -31737075.25 -31737075.00 -31737074.75 0.0281 0.0004 \*  
 Moon -91604-08-30 01:25 J -31736696.57 -31736696.44 -31736696.30 0.0280 0.0228

Earth -91604-08-30 03:49 J -31736696.48 -31736696.34 -31736696.18 0.0280 0.0223 \*  
 Mars -91599-11-02 06:27 J -31734806.49 -31734806.23 -31734805.97 0.0276 0.0092  
 Mercury -91592-11-21 16:47 J -31732229.83 -31732229.80 -31732229.76 0.0276 0.0267  
 Mercury -91591-02-18 05:59 J -31732141.36 -31732141.25 -31732141.14 0.0277 0.0180  
 Mercury -91591-05-17 19:25 J -31732052.83 -31732052.69 -31732052.55 0.0277 0.0090  
 Mercury -91591-08-14 09:06 J -31731964.27 -31731964.12 -31731963.98 0.0277 0.0006  
 Mercury -91591-11-10 23:01 J -31731875.68 -31731875.54 -31731875.40 0.0277 0.0095  
 Venus -91591-12-11 04:18 J -31731845.51 -31731845.32 -31731845.13 0.0277 0.0107  
 Moon -91590-02-02 09:35 J -31731792.31 -31731792.10 -31731791.87 0.0277 0.0101  
 Earth -91590-02-02 12:42 J -31731792.18 -31731791.97 -31731791.74 0.0277 0.0116 \*  
 Mercury -91590-02-07 13:11 J -31731787.06 -31731786.95 -31731786.84 0.0277 0.0191  
 Venus -91590-07-28 10:32 J -31731616.18 -31731616.06 -31731615.91 0.0278 0.0207  
 Earth -91589-02-14 21:20 J -31731414.83 -31731414.61 -31731414.38 0.0278 0.0098  
 Moon -91589-02-14 22:47 J -31731414.77 -31731414.55 -31731414.33 0.0278 0.0100 \*  
 Mars -91582-01-02 20:37 J -31728900.83 -31728900.64 -31728900.42 0.0284 0.0207  
 Mercury -91577-09-24 19:25 J -31726808.82 -31726808.69 -31726808.56 0.0282 0.0170  
 Mercury -91577-12-22 13:39 J -31726720.09 -31726719.93 -31726719.77 0.0281 0.0059  
 Mercury -91576-03-21 07:25 J -31726631.35 -31726631.19 -31726631.03 0.0281 0.0050  
 Venus -91576-05-30 04:03 J -31726561.52 -31726561.33 -31726561.13 0.0281 0.0119  
 Mercury -91576-06-18 00:42 J -31726542.60 -31726542.47 -31726542.33 0.0281 0.0157  
 Earth -91576-08-10 09:35 J -31726489.33 -31726489.10 -31726488.87 0.0281 0.0113  
 Moon -91576-08-10 13:25 J -31726489.17 -31726488.94 -31726488.71 0.0281 0.0115 \*  
 Mercury -91576-09-14 17:44 J -31726453.81 -31726453.76 -31726453.70 0.0281 0.0260  
 Venus -91575-01-14 20:37 J -31726331.77 -31726331.64 -31726331.50 0.0281 0.0218  
 Earth -91575-08-24 05:01 J -31726110.51 -31726110.29 -31726110.06 0.0280 0.0117  
 Moon -91575-08-24 06:42 J -31726110.44 -31726110.22 -31726109.98 0.0280 0.0121 \*  
 Mars -91569-12-19 04:47 J -31723801.57 -31723801.30 -31723801.02 0.0276 0.0044  
 Mercury -91562-07-08 07:11 J -31721409.29 -31721409.20 -31721409.10 0.0277 0.0210  
 Mercury -91562-10-04 20:37 J -31721320.77 -31721320.64 -31721320.51 0.0277 0.0121  
 Mercury -91561-01-01 10:03 J -31721232.22 -31721232.08 -31721231.93 0.0277 0.0030

Earth -91561-01-28 10:32 J -31721205.21 -31721205.06 -31721204.90 0.0277 0.0206  
 Moon -91561-01-28 13:39 J -31721205.10 -31721204.93 -31721204.74 0.0277 0.0189 \*  
 Mercury -91561-03-29 23:59 J -31721143.64 -31721143.50 -31721143.36 0.0278 0.0065  
 Venus -91561-06-22 07:25 J -31721059.39 -31721059.19 -31721058.99 0.0278 0.0070  
 Mercury -91561-06-26 14:08 J -31721055.03 -31721054.91 -31721054.79 0.0278 0.0160  
 Mercury -91561-09-23 04:32 J -31720966.36 -31720966.31 -31720966.25 0.0278 0.0257  
 Venus -91560-02-06 14:08 J -31720830.00 -31720829.91 -31720829.81 0.0278 0.0246  
 Moon -91560-02-08 16:18 J -31720828.07 -31720827.82 -31720827.57 0.0278 0.0011  
 Earth -91560-02-08 17:30 J -31720828.01 -31720827.77 -31720827.53 0.0278 0.0006 \*  
 Moon -91559-02-21 02:08 J -31720450.55 -31720450.41 -31720450.24 0.0279 0.0211  
 Earth -91559-02-21 05:30 J -31720450.41 -31720450.27 -31720450.11 0.0279 0.0217 \*  
 Mars -91554-02-14 22:18 J -31718630.84 -31718630.57 -31718630.28 0.0283 0.0122  
 Mercury -91547-02-11 21:20 J -31716076.73 -31716076.61 -31716076.49 0.0282 0.0193  
 Mercury -91547-05-11 15:35 J -31715988.00 -31715987.85 -31715987.69 0.0282 0.0081  
 Moon -91547-08-04 17:59 J -31715902.90 -31715902.75 -31715902.58 0.0282 0.0213  
 Earth -91547-08-04 21:35 J -31715902.76 -31715902.60 -31715902.42 0.0282 0.0207 \*  
 Mercury -91547-08-08 09:35 J -31715899.26 -31715899.10 -31715898.93 0.0282 0.0030  
 Mercury -91547-11-05 03:06 J -31715810.51 -31715810.37 -31715810.22 0.0282 0.0137  
 Venus -91547-12-10 14:37 J -31715775.10 -31715774.89 -31715774.68 0.0282 0.0062  
 Mercury -91546-02-01 20:23 J -31715721.73 -31715721.65 -31715721.57 0.0282 0.0241  
 Venus -91546-07-28 06:56 J -31715545.24 -31715545.21 -31715545.16 0.0281 0.0276  
 Moon -91546-08-18 19:11 J -31715523.94 -31715523.70 -31715523.46 0.0281 0.0027  
 Earth -91546-08-18 20:37 J -31715523.89 -31715523.64 -31715523.39 0.0281 0.0026 \*  
 Earth -91545-08-31 11:59 J -31715145.09 -31715145.00 -31715144.87 0.0280 0.0250  
 Moon -91545-08-31 14:23 J -31715144.98 -31715144.90 -31715144.80 0.0280 0.0259 \*  
 Mars -91540-02-09 00:56 J -31713522.62 -31713522.46 -31713522.28 0.0276 0.0214  
 Mars -91538-02-06 06:56 J -31712795.41 -31712795.21 -31712795.00 0.0275 0.0191  
 Mercury -91533-11-24 09:20 J -31710677.18 -31710677.11 -31710677.03 0.0276 0.0232  
 Mercury -91532-02-20 22:32 J -31710588.68 -31710588.56 -31710588.43 0.0276 0.0144  
 Mercury -91532-05-20 11:59 J -31710500.14 -31710500.00 -31710499.85 0.0277 0.0054

Mercury -91532-08-17 01:39 J -31710411.57 -31710411.43 -31710411.28 0.0277 0.0040  
 Mercury -91532-11-13 15:49 J -31710322.97 -31710322.84 -31710322.71 0.0277 0.0133  
 Venus -91531-01-02 11:59 J -31710273.20 -31710273.00 -31710272.79 0.0277 0.0027  
 Earth -91531-02-03 16:03 J -31710241.05 -31710240.83 -31710240.60 0.0277 0.0090  
 Moon -91531-02-03 17:15 J -31710241.00 -31710240.78 -31710240.56 0.0277 0.0078 \*  
 Mercury -91531-02-10 05:59 J -31710234.33 -31710234.25 -31710234.16 0.0277 0.0230  
 Earth -91530-02-16 00:42 J -31709863.68 -31709863.47 -31709863.25 0.0278 0.0122  
 Moon -91530-02-16 04:18 J -31709863.53 -31709863.32 -31709863.10 0.0278 0.0124 \*  
 Mars -91524-04-07 06:42 J -31707621.52 -31707621.22 -31707620.92 0.0283 0.0050  
 Mercury -91518-07-01 19:25 J -31705344.77 -31705344.69 -31705344.59 0.0282 0.0236  
 Mercury -91518-09-28 14:08 J -31705256.06 -31705255.91 -31705255.76 0.0282 0.0123  
 Mercury -91518-12-26 08:08 J -31705167.32 -31705167.16 -31705166.99 0.0282 0.0013  
 Mercury -91517-03-24 01:54 J -31705078.57 -31705078.42 -31705078.27 0.0281 0.0096  
 Mercury -91517-06-20 19:11 J -31704989.81 -31704989.70 -31704989.59 0.0281 0.0201  
 Venus -91517-06-21 15:35 J -31704989.07 -31704988.85 -31704988.64 0.0281 0.0027  
 Earth -91517-08-11 17:59 J -31704937.99 -31704937.75 -31704937.51 0.0281 0.0084  
 Moon -91517-08-11 18:42 J -31704937.97 -31704937.72 -31704937.47 0.0281 0.0084 \*  
 Moon -91516-08-25 09:49 J -31704559.29 -31704559.09 -31704558.87 0.0280 0.0153  
 Earth -91516-08-25 12:56 J -31704559.17 -31704558.96 -31704558.74 0.0280 0.0145 \*  
 Mars -91510-03-28 14:51 J -31702518.15 -31702517.88 -31702517.62 0.0276 0.0083  
 Mercury -91503-04-13 10:18 J -31699945.11 -31699945.07 -31699945.03 0.0277 0.0264  
 Mercury -91503-07-10 23:30 J -31699856.63 -31699856.52 -31699856.41 0.0277 0.0176  
 Mercury -91503-10-07 12:42 J -31699768.10 -31699767.97 -31699767.83 0.0277 0.0087  
 Mercury -91502-01-04 02:23 J -31699679.54 -31699679.40 -31699679.25 0.0277 0.0009  
 Moon -91502-01-29 10:32 J -31699654.25 -31699654.06 -31699653.86 0.0277 0.0168  
 Earth -91502-01-29 11:44 J -31699654.18 -31699654.01 -31699653.82 0.0277 0.0182 \*  
 Mercury -91502-04-02 16:18 J -31699590.95 -31699590.82 -31699590.68 0.0278 0.0100  
 Mercury -91502-06-30 06:27 J -31699502.33 -31699502.23 -31699502.12 0.0278 0.0196  
 Venus -91502-07-15 13:54 J -31699487.13 -31699486.92 -31699486.71 0.0278 0.0009  
 Moon -91501-02-10 15:06 J -31699277.11 -31699276.87 -31699276.64 0.0278 0.0033

Earth -91501-02-10 18:42 J -31699276.96 -31699276.72 -31699276.48 0.0278 0.0026 \*  
 Moon -91500-02-22 06:42 J -31698899.33 -31698899.22 -31698899.08 0.0279 0.0233  
 Earth -91500-02-22 06:56 J -31698899.32 -31698899.21 -31698899.08 0.0279 0.0239 \*  
 Mars -91494-05-29 15:49 J -31696612.01 -31696611.84 -31696611.64 0.0284 0.0223  
 Mercury -91489-11-17 20:51 J -31694612.68 -31694612.63 -31694612.57 0.0283 0.0263  
 Mercury -91488-02-14 15:35 J -31694523.99 -31694523.85 -31694523.71 0.0282 0.0149  
 Mercury -91488-05-14 09:49 J -31694435.25 -31694435.09 -31694434.93 0.0282 0.0037  
 Moon -91488-08-06 02:37 J -31694351.56 -31694351.39 -31694351.19 0.0282 0.0186  
 Earth -91488-08-06 03:35 J -31694351.53 -31694351.35 -31694351.15 0.0282 0.0180 \*  
 Mercury -91488-08-11 03:35 J -31694346.50 -31694346.35 -31694346.19 0.0282 0.0073  
 Mercury -91488-11-07 21:06 J -31694257.74 -31694257.62 -31694257.50 0.0282 0.0179  
 Venus -91487-01-02 00:42 J -31694202.68 -31694202.47 -31694202.25 0.0282 0.0028  
 Earth -91487-08-20 02:23 J -31693972.64 -31693972.40 -31693972.15 0.0281 0.0052  
 Moon -91487-08-20 05:30 J -31693972.51 -31693972.27 -31693972.03 0.0281 0.0057 \*  
 Earth -91486-09-02 17:59 J -31693593.79 -31693593.75 -31693593.70 0.0280 0.0274  
 Mars -91480-05-15 10:32 J -31691512.33 -31691512.06 -31691511.78 0.0275 0.0062  
 Mercury -91474-11-28 01:39 J -31689124.53 -31689124.43 -31689124.33 0.0276 0.0198  
 Earth -91473-01-24 14:37 J -31689066.93 -31689066.89 -31689066.83 0.0276 0.0268  
 Moon -91473-01-24 15:49 J -31689066.92 -31689066.84 -31689066.75 0.0276 0.0255 \*  
 Mercury -91473-02-24 15:06 J -31689036.01 -31689035.87 -31689035.74 0.0276 0.0109  
 Mercury -91473-05-23 04:32 J -31688947.46 -31688947.31 -31688947.16 0.0277 0.0018  
 Venus -91473-06-09 13:11 J -31688930.01 -31688929.95 -31688929.86 0.0277 0.0257  
 Mercury -91473-08-19 18:13 J -31688858.88 -31688858.74 -31688858.59 0.0277 0.0076  
 Mercury -91473-11-16 08:23 J -31688770.27 -31688770.15 -31688770.03 0.0277 0.0171  
 Venus -91472-01-24 19:11 J -31688700.90 -31688700.70 -31688700.49 0.0277 0.0055  
 Earth -91472-02-04 18:13 J -31688689.97 -31688689.74 -31688689.50 0.0277 0.0066  
 Moon -91472-02-04 22:03 J -31688689.81 -31688689.58 -31688689.34 0.0277 0.0056 \*  
 Mercury -91472-02-12 22:47 J -31688681.59 -31688681.55 -31688681.51 0.0277 0.0267  
 Earth -91471-02-17 02:51 J -31688312.57 -31688312.38 -31688312.16 0.0278 0.0146  
 Moon -91471-02-17 03:35 J -31688312.56 -31688312.35 -31688312.13 0.0278 0.0143 \*

Mars -91466-07-11 00:42 J -31686342.75 -31686342.47 -31686342.18 0.0283 0.0113  
 Mercury -91459-07-04 13:39 J -31683792.05 -31683791.93 -31683791.81 0.0282 0.0192  
 Mercury -91459-10-01 08:08 J -31683703.32 -31683703.16 -31683703.00 0.0282 0.0080  
 Venus -91459-11-27 07:39 J -31683646.18 -31683646.18 -31683646.17 0.0282 0.0282  
 Mercury -91459-12-29 02:08 J -31683614.57 -31683614.41 -31683614.25 0.0282 0.0031  
 Mercury -91458-03-27 19:39 J -31683525.82 -31683525.68 -31683525.54 0.0281 0.0138  
 Mercury -91458-06-24 12:56 J -31683437.04 -31683436.96 -31683436.88 0.0281 0.0243  
 Venus -91458-07-15 01:25 J -31683416.65 -31683416.44 -31683416.23 0.0281 0.0060  
 Moon -91458-08-13 20:23 J -31683386.90 -31683386.65 -31683386.39 0.0281 0.0054  
 Earth -91458-08-13 23:44 J -31683386.75 -31683386.51 -31683386.26 0.0281 0.0057 \*  
 Moon -91457-08-26 15:20 J -31683008.03 -31683007.86 -31683007.66 0.0280 0.0182  
 Earth -91457-08-26 18:27 J -31683007.92 -31683007.73 -31683007.52 0.0280 0.0171 \*  
 Mars -91452-07-05 06:13 J -31681234.41 -31681234.24 -31681234.04 0.0276 0.0207  
 Mars -91450-07-02 11:15 J -31680507.23 -31680507.03 -31680506.83 0.0275 0.0198  
 Mercury -91444-04-16 02:08 J -31678392.48 -31678392.41 -31678392.33 0.0277 0.0233  
 Mercury -91444-07-13 15:20 J -31678303.98 -31678303.86 -31678303.73 0.0277 0.0144  
 Mercury -91444-10-10 04:47 J -31678215.44 -31678215.30 -31678215.15 0.0277 0.0054  
 Venus -91444-12-20 13:39 J -31678144.04 -31678143.93 -31678143.80 0.0277 0.0228  
 Mercury -91443-01-06 18:27 J -31678126.87 -31678126.73 -31678126.58 0.0277 0.0040  
 Moon -91443-01-30 08:23 J -31678103.34 -31678103.15 -31678102.94 0.0277 0.0148  
 Earth -91443-01-30 11:59 J -31678103.19 -31678103.00 -31678102.80 0.0277 0.0159 \*  
 Mercury -91443-04-05 08:23 J -31678038.27 -31678038.15 -31678038.01 0.0277 0.0135  
 Mercury -91443-07-02 22:47 J -31677949.63 -31677949.55 -31677949.47 0.0278 0.0230  
 Venus -91443-08-06 19:54 J -31677914.87 -31677914.67 -31677914.48 0.0278 0.0085  
 Moon -91442-02-11 18:13 J -31677725.97 -31677725.74 -31677725.51 0.0278 0.0050  
 Earth -91442-02-11 18:27 J -31677725.96 -31677725.73 -31677725.49 0.0278 0.0049 \*  
 Earth -91441-02-24 06:42 J -31677348.29 -31677348.22 -31677348.12 0.0279 0.0260  
 Moon -91441-02-24 10:03 J -31677348.17 -31677348.08 -31677347.97 0.0279 0.0251 \*  
 Mars -91436-08-31 15:20 J -31675333.15 -31675332.86 -31675332.55 0.0283 0.0064  
 Mercury -91430-11-21 14:37 J -31673059.99 -31673059.89 -31673059.78 0.0283 0.0221



Mercury -91429-02-18 09:20 J -31672971.26 -31672971.11 -31672970.96 0.0283 0.0107

Mercury -91429-05-17 03:20 J -31672882.52 -31672882.36 -31672882.19 0.0282 0.0010

Venus -91429-06-08 15:49 J -31672859.95 -31672859.84 -31672859.70 0.0282 0.0231

Earth -91429-08-07 08:08 J -31672800.37 -31672800.16 -31672799.95 0.0282 0.0155

Moon -91429-08-07 11:15 J -31672800.24 -31672800.03 -31672799.83 0.0282 0.0158 \*

Mercury -91429-08-13 21:06 J -31672793.76 -31672793.62 -31672793.47 0.0282 0.0113

Mercury -91429-11-10 14:23 J -31672704.99 -31672704.90 -31672704.80 0.0282 0.0219

Venus -91428-01-24 09:49 J -31672630.28 -31672630.09 -31672629.89 0.0282 0.0113

Earth -91428-08-21 06:42 J -31672421.46 -31672421.22 -31672420.97 0.0281 0.0077

Moon -91428-08-21 09:49 J -31672421.33 -31672421.09 -31672420.84 0.0281 0.0082 \*

Mars -91422-08-22 19:54 J -31670228.94 -31670228.67 -31670228.40 0.0276 0.0066

Mercury -91415-09-03 04:47 J -31667660.35 -31667660.30 -31667660.24 0.0276 0.0252

Mercury -91415-11-30 17:44 J -31667571.87 -31667571.76 -31667571.64 0.0276 0.0165

Earth -91414-01-25 15:35 J -31667515.95 -31667515.85 -31667515.73 0.0276 0.0246

Moon -91414-01-25 19:11 J -31667515.82 -31667515.70 -31667515.57 0.0276 0.0231 \*

Mercury -91414-02-27 07:11 J -31667483.34 -31667483.20 -31667483.06 0.0276 0.0075

Mercury -91414-05-26 20:37 J -31667394.78 -31667394.64 -31667394.49 0.0276 0.0019

Venus -91414-07-02 19:39 J -31667357.83 -31667357.68 -31667357.52 0.0276 0.0179

Mercury -91414-08-23 10:32 J -31667306.19 -31667306.06 -31667305.92 0.0277 0.0111

Mercury -91414-11-20 00:42 J -31667217.57 -31667217.47 -31667217.37 0.0277 0.0206

Earth -91413-02-06 19:11 J -31667138.93 -31667138.70 -31667138.46 0.0277 0.0044

Moon -91413-02-06 19:25 J -31667138.93 -31667138.69 -31667138.44 0.0277 0.0039 \*

Venus -91413-02-17 01:25 J -31667128.62 -31667128.44 -31667128.25 0.0277 0.0133

Moon -91412-02-18 00:27 J -31666761.67 -31666761.48 -31666761.27 0.0278 0.0160

Earth -91412-02-18 04:03 J -31666761.52 -31666761.33 -31666761.13 0.0278 0.0166 \*

Mars -91408-10-12 05:30 J -31665064.30 -31665064.27 -31665064.22 0.0283 0.0280

Mars -91406-10-22 15:35 J -31664324.02 -31664323.85 -31664323.66 0.0284 0.0229

Mercury -91400-04-09 12:42 J -31662328.02 -31662327.97 -31662327.92 0.0282 0.0266

Mercury -91400-07-07 07:25 J -31662239.33 -31662239.19 -31662239.05 0.0282 0.0151

Moon -91400-07-31 22:18 J -31662214.65 -31662214.57 -31662214.48 0.0282 0.0266

Earth -91400-08-01 01:54 J -31662214.50 -31662214.42 -31662214.32 0.0282 0.0263 \*  
 Mercury -91400-10-04 01:39 J -31662150.59 -31662150.43 -31662150.26 0.0282 0.0039  
 Venus -91400-12-19 16:32 J -31662073.95 -31662073.81 -31662073.65 0.0282 0.0197  
 Mercury -91400-12-31 19:39 J -31662061.84 -31662061.68 -31662061.52 0.0282 0.0071  
 Mercury -91399-03-30 13:11 J -31661973.08 -31661972.95 -31661972.83 0.0282 0.0178  
 Venus -91399-08-06 10:18 J -31661844.25 -31661844.07 -31661843.89 0.0281 0.0146  
 Moon -91399-08-15 01:11 J -31661835.70 -31661835.45 -31661835.21 0.0281 0.0029  
 Earth -91399-08-15 03:49 J -31661835.59 -31661835.34 -31661835.09 0.0281 0.0032 \*  
 Earth -91398-08-28 22:18 J -31661456.73 -31661456.57 -31661456.37 0.0280 0.0195  
 Moon -91398-08-28 23:44 J -31661456.66 -31661456.51 -31661456.34 0.0280 0.0206 \*  
 Mars -91392-10-08 12:13 J -31659224.26 -31659223.99 -31659223.72 0.0275 0.0068  
 Mercury -91385-04-18 18:13 J -31656839.84 -31656839.74 -31656839.64 0.0276 0.0200  
 Mercury -91385-07-16 07:25 J -31656751.32 -31656751.19 -31656751.06 0.0277 0.0111  
 Mercury -91385-10-12 20:51 J -31656662.77 -31656662.63 -31656662.48 0.0277 0.0021  
 Mercury -91384-01-09 10:32 J -31656574.20 -31656574.06 -31656573.91 0.0277 0.0073  
 Venus -91384-01-11 19:25 J -31656571.86 -31656571.69 -31656571.51 0.0277 0.0152  
 Earth -91384-01-31 11:59 J -31656552.21 -31656552.00 -31656551.79 0.0277 0.0136  
 Moon -91384-01-31 11:59 J -31656552.21 -31656552.00 -31656551.80 0.0277 0.0129 \*  
 Mercury -91384-04-08 00:27 J -31656485.59 -31656485.48 -31656485.35 0.0277 0.0169  
 Mercury -91384-07-05 15:06 J -31656396.91 -31656396.87 -31656396.83 0.0277 0.0265  
 Venus -91384-08-29 01:25 J -31656342.61 -31656342.44 -31656342.27 0.0278 0.0162  
 Earth -91383-02-12 18:13 J -31656174.97 -31656174.74 -31656174.50 0.0278 0.0071  
 Moon -91383-02-12 21:49 J -31656174.82 -31656174.59 -31656174.35 0.0278 0.0068 \*  
 Moon -91382-02-25 08:37 J -31655797.21 -31655797.14 -31655797.08 0.0279 0.0268  
 Mars -91378-12-04 01:11 J -31654054.74 -31654054.45 -31654054.16 0.0283 0.0104  
 Mercury -91371-11-24 07:54 J -31651507.29 -31651507.17 -31651507.04 0.0283 0.0182  
 Mercury -91370-02-21 02:23 J -31651418.56 -31651418.40 -31651418.24 0.0283 0.0069  
 Mercury -91370-05-20 20:23 J -31651329.81 -31651329.65 -31651329.48 0.0283 0.0043  
 Venus -91370-07-01 23:44 J -31651287.69 -31651287.51 -31651287.33 0.0282 0.0148  
 Earth -91370-08-09 09:49 J -31651249.31 -31651249.09 -31651248.86 0.0282 0.0132

Moon -91370-08-09 12:42 J -31651249.20 -31651248.97 -31651248.74 0.0282 0.0132 \*  
 Mercury -91370-08-17 14:08 J -31651241.05 -31651240.91 -31651240.77 0.0282 0.0151  
 Mercury -91370-11-14 07:11 J -31651152.26 -31651152.20 -31651152.13 0.0282 0.0256  
 Venus -91369-02-16 17:15 J -31651057.93 -31651057.78 -31651057.62 0.0282 0.0196  
 Moon -91369-08-22 07:39 J -31650870.42 -31650870.18 -31650869.94 0.0281 0.0108  
 Earth -91369-08-22 08:51 J -31650870.36 -31650870.13 -31650869.89 0.0281 0.0100 \*  
 Mars -91364-11-29 08:23 J -31648945.33 -31648945.15 -31648944.94 0.0276 0.0192  
 Mars -91362-11-26 13:25 J -31648218.11 -31648217.94 -31648217.76 0.0275 0.0215  
 Mercury -91356-09-05 20:37 J -31646107.72 -31646107.64 -31646107.55 0.0276 0.0220  
 Mercury -91356-12-03 09:49 J -31646019.21 -31646019.09 -31646018.96 0.0276 0.0131  
 Earth -91355-01-26 16:18 J -31645964.95 -31645964.82 -31645964.67 0.0276 0.0224  
 Moon -91355-01-26 17:01 J -31645964.93 -31645964.79 -31645964.62 0.0276 0.0211 \*  
 Mercury -91355-03-01 23:15 J -31645930.67 -31645930.53 -31645930.38 0.0276 0.0041  
 Mercury -91355-05-29 12:56 J -31645842.10 -31645841.96 -31645841.82 0.0276 0.0051  
 Venus -91355-07-25 01:39 J -31645785.62 -31645785.43 -31645785.23 0.0276 0.0102  
 Mercury -91355-08-26 02:51 J -31645753.51 -31645753.38 -31645753.25 0.0276 0.0145  
 Mercury -91355-11-22 17:01 J -31645664.86 -31645664.79 -31645664.72 0.0277 0.0241  
 Moon -91354-02-07 16:03 J -31645588.07 -31645587.83 -31645587.58 0.0277 0.0023  
 Earth -91354-02-07 19:54 J -31645587.91 -31645587.67 -31645587.43 0.0277 0.0022 \*  
 Venus -91354-03-11 07:25 J -31645556.32 -31645556.19 -31645556.05 0.0277 0.0211  
 Moon -91353-02-20 02:23 J -31645210.57 -31645210.40 -31645210.21 0.0278 0.0178  
 Earth -91353-02-20 04:18 J -31645210.49 -31645210.32 -31645210.13 0.0278 0.0187 \*  
 Mars -91347-01-24 14:51 J -31643045.17 -31643044.88 -31643044.57 0.0283 0.0069  
 Mercury -91341-04-12 06:13 J -31640775.34 -31640775.24 -31640775.14 0.0283 0.0225  
 Mercury -91341-07-10 00:56 J -31640686.61 -31640686.46 -31640686.31 0.0282 0.0111  
 Moon -91341-08-02 03:06 J -31640663.49 -31640663.37 -31640663.24 0.0282 0.0239  
 Earth -91341-08-02 04:47 J -31640663.42 -31640663.30 -31640663.15 0.0282 0.0239 \*  
 Mercury -91341-10-06 19:11 J -31640597.87 -31640597.70 -31640597.54 0.0282 0.0004  
 Mercury -91340-01-03 12:56 J -31640509.11 -31640508.96 -31640508.81 0.0282 0.0110  
 Venus -91340-01-11 01:11 J -31640501.64 -31640501.45 -31640501.25 0.0282 0.0113

Mercury -91340-04-02 06:13 J -31640420.34 -31640420.24 -31640420.14 0.0282 0.0217  
 Earth -91340-08-16 06:42 J -31640284.47 -31640284.22 -31640283.96 0.0281 0.0010  
 Moon -91340-08-16 08:23 J -31640284.39 -31640284.15 -31640283.91 0.0281 0.0002 \*  
 Venus -91340-08-28 18:27 J -31640271.84 -31640271.73 -31640271.60 0.0281 0.0230  
 Earth -91339-08-30 01:25 J -31639905.58 -31639905.44 -31639905.27 0.0280 0.0217  
 Moon -91339-08-30 05:15 J -31639905.41 -31639905.28 -31639905.13 0.0280 0.0230 \*  
 Mars -91333-01-15 19:39 J -31637940.95 -31637940.68 -31637940.40 0.0275 0.0061  
 Mercury -91326-01-23 20:51 J -31635375.67 -31635375.63 -31635375.57 0.0276 0.0256  
 Mercury -91326-04-22 10:03 J -31635287.19 -31635287.08 -31635286.97 0.0276 0.0168  
 Mercury -91326-07-19 23:15 J -31635198.67 -31635198.53 -31635198.39 0.0276 0.0079  
 Mercury -91326-10-16 12:56 J -31635110.11 -31635109.96 -31635109.82 0.0277 0.0013  
 Mercury -91325-01-13 02:37 J -31635021.52 -31635021.39 -31635021.25 0.0277 0.0107  
 Earth -91325-02-02 11:30 J -31635001.23 -31635001.02 -31635000.79 0.0277 0.0115  
 Moon -91325-02-02 14:51 J -31635001.09 -31635000.88 -31635000.65 0.0277 0.0110 \*  
 Venus -91325-02-04 00:56 J -31634999.66 -31634999.46 -31634999.26 0.0277 0.0076  
 Mercury -91325-04-10 16:47 J -31634932.90 -31634932.80 -31634932.70 0.0277 0.0202  
 Venus -91325-09-20 06:42 J -31634770.32 -31634770.22 -31634770.10 0.0277 0.0238  
 Earth -91324-02-13 17:44 J -31634623.98 -31634623.76 -31634623.53 0.0278 0.0091  
 Moon -91324-02-13 19:25 J -31634623.92 -31634623.69 -31634623.45 0.0278 0.0084 \*  
 Mars -91319-03-06 22:18 J -31632776.63 -31632776.57 -31632776.48 0.0282 0.0274  
 Mars -91317-03-16 13:25 J -31632036.09 -31632035.94 -31632035.77 0.0284 0.0238  
 Mercury -91312-08-30 05:59 J -31630043.31 -31630043.25 -31630043.18 0.0283 0.0260  
 Mercury -91312-11-27 00:56 J -31629954.60 -31629954.46 -31629954.32 0.0283 0.0144  
 Mercury -91311-02-23 19:25 J -31629865.86 -31629865.69 -31629865.53 0.0283 0.0031  
 Mercury -91311-05-23 13:25 J -31629777.10 -31629776.94 -31629776.79 0.0283 0.0080  
 Venus -91311-07-24 07:11 J -31629715.41 -31629715.20 -31629714.99 0.0283 0.0066  
 Moon -91311-08-10 08:51 J -31629698.36 -31629698.13 -31629697.88 0.0282 0.0104  
 Earth -91311-08-10 11:01 J -31629698.26 -31629698.04 -31629697.80 0.0282 0.0109 \*  
 Mercury -91311-08-20 06:42 J -31629688.33 -31629688.22 -31629688.09 0.0282 0.0188  
 Venus -91310-03-11 00:27 J -31629485.51 -31629485.48 -31629485.44 0.0282 0.0277

Moon -91310-08-24 06:27 J -31629319.44 -31629319.23 -31629319.00 0.0282 0.0132  
 Earth -91310-08-24 10:18 J -31629319.29 -31629319.07 -31629318.84 0.0282 0.0121 \*  
 Mars -91303-03-04 12:13 J -31626935.25 -31626934.99 -31626934.71 0.0275 0.0084  
 Mercury -91297-06-11 23:59 J -31624643.52 -31624643.50 -31624643.48 0.0275 0.0273  
 Mercury -91297-09-08 12:42 J -31624555.07 -31624554.97 -31624554.86 0.0276 0.0187  
 Mercury -91297-12-06 01:54 J -31624466.55 -31624466.42 -31624466.28 0.0276 0.0098  
 Moon -91296-01-27 13:54 J -31624414.08 -31624413.92 -31624413.73 0.0276 0.0191  
 Earth -91296-01-27 17:01 J -31624413.94 -31624413.79 -31624413.61 0.0276 0.0202 \*  
 Mercury -91296-03-04 15:35 J -31624378.00 -31624377.85 -31624377.71 0.0276 0.0009  
 Mercury -91296-06-01 05:15 J -31624289.42 -31624289.28 -31624289.14 0.0276 0.0086  
 Venus -91296-08-16 07:54 J -31624213.38 -31624213.17 -31624212.96 0.0276 0.0024  
 Mercury -91296-08-28 19:11 J -31624200.81 -31624200.70 -31624200.59 0.0276 0.0181  
 Moon -91295-02-08 18:56 J -31624036.94 -31624036.71 -31624036.47 0.0277 0.0004  
 Earth -91295-02-08 20:37 J -31624036.88 -31624036.64 -31624036.40 0.0277 0.0001 \*  
 Earth -91294-02-21 05:01 J -31623659.44 -31623659.29 -31623659.12 0.0278 0.0207  
 Moon -91294-02-21 07:54 J -31623659.33 -31623659.17 -31623659.00 0.0278 0.0195 \*  
 Mars -91289-04-28 03:06 J -31621766.65 -31621766.37 -31621766.07 0.0283 0.0098  
 Mercury -91282-04-15 23:30 J -31619222.64 -31619222.52 -31619222.39 0.0283 0.0186  
 Mercury -91282-07-13 18:13 J -31619133.90 -31619133.74 -31619133.58 0.0283 0.0072  
 Earth -91282-08-04 07:11 J -31619112.35 -31619112.20 -31619112.03 0.0283 0.0216  
 Moon -91282-08-04 10:03 J -31619112.23 -31619112.08 -31619111.91 0.0283 0.0212 \*  
 Mercury -91282-10-10 12:13 J -31619045.15 -31619044.99 -31619044.83 0.0282 0.0040  
 Mercury -91281-01-07 05:59 J -31618956.39 -31618956.25 -31618956.11 0.0282 0.0148  
 Venus -91281-02-03 09:06 J -31618929.33 -31618929.12 -31618928.90 0.0282 0.0030  
 Mercury -91281-04-04 23:01 J -31618867.60 -31618867.54 -31618867.46 0.0282 0.0254  
 Earth -91281-08-17 09:06 J -31618733.37 -31618733.12 -31618732.87 0.0282 0.0015  
 Moon -91281-08-17 12:42 J -31618733.22 -31618732.97 -31618732.71 0.0282 0.0024 \*  
 Earth -91280-08-31 03:49 J -31618354.46 -31618354.34 -31618354.20 0.0280 0.0238  
 Moon -91280-08-31 04:47 J -31618354.42 -31618354.30 -31618354.19 0.0280 0.0250 \*  
 Mars -91275-04-24 08:51 J -31616657.33 -31616657.13 -31616656.92 0.0276 0.0187

Mars -91273-04-20 11:44 J -31615930.17 -31615930.01 -31615929.83 0.0275 0.0221  
 Moon -91267-01-22 13:54 J -31613826.93 -31613826.92 -31613826.89 0.0276 0.0275  
 Mercury -91267-01-26 12:56 J -31613823.04 -31613822.96 -31613822.87 0.0276 0.0223  
 Mercury -91267-04-25 02:08 J -31613734.54 -31613734.41 -31613734.28 0.0276 0.0135  
 Mercury -91267-07-22 15:35 J -31613646.00 -31613645.85 -31613645.71 0.0276 0.0046  
 Mercury -91267-10-19 05:01 J -31613557.43 -31613557.29 -31613557.14 0.0276 0.0047  
 Mercury -91266-01-15 18:56 J -31613468.84 -31613468.71 -31613468.58 0.0277 0.0141  
 Earth -91266-02-03 11:59 J -31613450.22 -31613450.00 -31613449.77 0.0277 0.0094  
 Moon -91266-02-03 13:54 J -31613450.15 -31613449.92 -31613449.68 0.0277 0.0089 \*  
 Venus -91266-02-26 06:56 J -31613427.42 -31613427.21 -31613427.00 0.0277 0.0004  
 Mercury -91266-04-14 09:06 J -31613380.20 -31613380.12 -31613380.05 0.0277 0.0237  
 Moon -91265-02-15 15:06 J -31613073.10 -31613072.87 -31613072.64 0.0278 0.0100  
 Earth -91265-02-15 18:13 J -31613072.96 -31613072.74 -31613072.52 0.0278 0.0112 \*  
 Mars -91259-06-19 08:23 J -31610757.44 -31610757.15 -31610756.85 0.0283 0.0076  
 Mercury -91253-09-01 23:15 J -31608490.63 -31608490.53 -31608490.43 0.0283 0.0222  
 Mercury -91253-11-29 17:59 J -31608401.90 -31608401.75 -31608401.60 0.0283 0.0106  
 Mercury -91252-02-26 12:13 J -31608313.15 -31608312.99 -31608312.82 0.0283 0.0008  
 Mercury -91252-05-26 06:13 J -31608224.39 -31608224.24 -31608224.09 0.0283 0.0117  
 Moon -91252-08-11 08:23 J -31608147.38 -31608147.15 -31608146.90 0.0283 0.0080  
 Earth -91252-08-11 12:13 J -31608147.23 -31608146.99 -31608146.75 0.0283 0.0088 \*  
 Venus -91252-08-15 14:23 J -31608143.11 -31608142.90 -31608142.68 0.0283 0.0017  
 Mercury -91252-08-22 23:30 J -31608135.61 -31608135.52 -31608135.42 0.0283 0.0224  
 Moon -91251-08-25 10:47 J -31607768.25 -31607768.05 -31607767.85 0.0282 0.0154  
 Earth -91251-08-25 11:15 J -31607768.23 -31607768.03 -31607767.80 0.0282 0.0142 \*  
 Mars -91245-06-10 19:11 J -31605651.97 -31605651.70 -31605651.42 0.0276 0.0047  
 Mercury -91238-06-15 16:03 J -31603090.90 -31603090.83 -31603090.76 0.0275 0.0239  
 Mercury -91238-09-12 05:01 J -31603002.41 -31603002.29 -31603002.17 0.0275 0.0152  
 Mercury -91238-12-09 18:13 J -31602913.88 -31602913.74 -31602913.59 0.0276 0.0063  
 Venus -91237-01-22 09:20 J -31602870.17 -31602870.11 -31602870.01 0.0276 0.0254  
 Moon -91237-01-29 16:32 J -31602862.99 -31602862.81 -31602862.63 0.0276 0.0170

Earth -91237-01-29 18:42 J -31602862.89 -31602862.72 -31602862.53 0.0276 0.0180 \*  
 Mercury -91237-03-07 07:54 J -31602825.32 -31602825.17 -31602825.03 0.0276 0.0029  
 Mercury -91237-06-03 21:35 J -31602736.73 -31602736.60 -31602736.46 0.0276 0.0123  
 Mercury -91237-08-31 11:30 J -31602648.10 -31602648.02 -31602647.92 0.0276 0.0219  
 Venus -91237-09-07 14:37 J -31602641.10 -31602640.89 -31602640.69 0.0276 0.0056  
 Earth -91236-02-09 22:03 J -31602485.82 -31602485.58 -31602485.34 0.0277 0.0021  
 Moon -91236-02-10 00:42 J -31602485.70 -31602485.47 -31602485.24 0.0277 0.0016 \*  
 Earth -91235-02-22 06:27 J -31602108.36 -31602108.23 -31602108.08 0.0278 0.0227  
 Moon -91235-02-22 09:35 J -31602108.25 -31602108.10 -31602107.93 0.0278 0.0212 \*  
 Mars -91231-07-31 07:25 J -31600488.27 -31600488.19 -31600488.07 0.0282 0.0268  
 Mars -91229-08-09 19:39 J -31599747.82 -31599747.68 -31599747.52 0.0284 0.0245  
 Mercury -91223-01-19 22:03 J -31597758.63 -31597758.58 -31597758.51 0.0283 0.0261  
 Mercury -91223-04-18 17:01 J -31597669.92 -31597669.79 -31597669.64 0.0283 0.0145  
 Mercury -91223-07-16 11:30 J -31597581.18 -31597581.02 -31597580.85 0.0283 0.0032  
 Earth -91223-08-05 10:18 J -31597561.24 -31597561.07 -31597560.87 0.0283 0.0192  
 Moon -91223-08-05 13:39 J -31597561.12 -31597560.93 -31597560.73 0.0283 0.0183 \*  
 Mercury -91223-10-13 05:30 J -31597492.42 -31597492.27 -31597492.11 0.0282 0.0080  
 Mercury -91222-01-09 23:15 J -31597403.65 -31597403.53 -31597403.41 0.0282 0.0188  
 Venus -91222-02-25 17:30 J -31597356.98 -31597356.77 -31597356.55 0.0282 0.0056  
 Moon -91222-08-19 12:13 J -31597182.25 -31597181.99 -31597181.73 0.0282 0.0050  
 Earth -91222-08-19 12:13 J -31597182.24 -31597181.99 -31597181.74 0.0282 0.0038 \*  
 Moon -91221-09-01 03:20 J -31596803.40 -31596803.36 -31596803.29 0.0281 0.0274  
 Earth -91221-09-01 06:42 J -31596803.30 -31596803.22 -31596803.12 0.0281 0.0259 \*  
 Mars -91215-07-28 13:54 J -31594647.18 -31594646.92 -31594646.65 0.0275 0.0090  
 Mercury -91209-11-01 16:18 J -31592358.82 -31592358.82 -31592358.81 0.0276 0.0275  
 Earth -91208-01-23 12:42 J -31592276.02 -31592275.97 -31592275.90 0.0276 0.0267  
 Moon -91208-01-23 15:20 J -31592275.95 -31592275.86 -31592275.76 0.0276 0.0253 \*  
 Mercury -91208-01-29 05:15 J -31592270.38 -31592270.28 -31592270.17 0.0276 0.0189  
 Mercury -91208-04-27 18:27 J -31592181.86 -31592181.73 -31592181.59 0.0276 0.0100  
 Mercury -91208-07-25 07:54 J -31592093.32 -31592093.17 -31592093.03 0.0276 0.0009

Venus -91208-08-03 08:51 J -31592084.24 -31592084.13 -31592084.01 0.0276 0.0228  
 Mercury -91208-10-21 21:35 J -31592004.74 -31592004.60 -31592004.46 0.0276 0.0084  
 Mercury -91207-01-18 11:30 J -31591916.13 -31591916.02 -31591915.91 0.0277 0.0179  
 Moon -91207-02-04 11:30 J -31591899.26 -31591899.02 -31591898.78 0.0277 0.0072  
 Earth -91207-02-04 13:54 J -31591899.15 -31591898.92 -31591898.69 0.0277 0.0071 \*  
 Venus -91207-03-20 13:39 J -31591855.12 -31591854.93 -31591854.72 0.0277 0.0083  
 Mercury -91207-04-17 01:39 J -31591827.44 -31591827.43 -31591827.41 0.0277 0.0275  
 Moon -91206-02-16 17:15 J -31591521.99 -31591521.78 -31591521.57 0.0278 0.0120  
 Earth -91206-02-16 19:54 J -31591521.88 -31591521.67 -31591521.46 0.0278 0.0133 \*  
 Mars -91201-09-20 20:51 J -31589478.92 -31589478.63 -31589478.33 0.0283 0.0092  
 Mercury -91194-09-05 16:18 J -31586937.94 -31586937.82 -31586937.69 0.0283 0.0183  
 Mercury -91194-12-03 11:01 J -31586849.20 -31586849.04 -31586848.87 0.0283 0.0068  
 Venus -91193-01-21 03:06 J -31586800.46 -31586800.37 -31586800.26 0.0283 0.0249  
 Mercury -91193-03-01 05:15 J -31586760.44 -31586760.28 -31586760.12 0.0283 0.0045  
 Mercury -91193-05-28 23:01 J -31586671.67 -31586671.54 -31586671.40 0.0283 0.0155  
 Earth -91193-08-12 13:54 J -31586596.16 -31586595.92 -31586595.67 0.0283 0.0066  
 Moon -91193-08-12 14:37 J -31586596.12 -31586595.89 -31586595.64 0.0283 0.0055 \*  
 Mercury -91193-08-25 16:32 J -31586582.87 -31586582.81 -31586582.75 0.0283 0.0261  
 Venus -91193-09-06 22:03 J -31586570.78 -31586570.58 -31586570.38 0.0283 0.0100  
 Earth -91192-08-26 13:11 J -31586217.15 -31586216.95 -31586216.74 0.0282 0.0162  
 Moon -91192-08-26 16:18 J -31586217.00 -31586216.82 -31586216.62 0.0282 0.0178 \*  
 Mars -91187-09-18 07:11 J -31584368.41 -31584368.20 -31584367.98 0.0277 0.0176  
 Mars -91185-09-14 13:25 J -31583641.08 -31583640.94 -31583640.79 0.0275 0.0235  
 Mercury -91179-06-18 08:23 J -31581538.24 -31581538.15 -31581538.05 0.0275 0.0204  
 Mercury -91179-09-14 21:35 J -31581449.73 -31581449.60 -31581449.47 0.0275 0.0116  
 Mercury -91179-12-12 11:01 J -31581361.19 -31581361.04 -31581360.90 0.0276 0.0026  
 Earth -91178-01-30 21:35 J -31581311.79 -31581311.60 -31581311.40 0.0276 0.0157  
 Moon -91178-01-30 23:30 J -31581311.71 -31581311.52 -31581311.32 0.0276 0.0150 \*  
 Venus -91178-02-13 16:47 J -31581297.95 -31581297.80 -31581297.63 0.0276 0.0173  
 Mercury -91178-03-11 00:27 J -31581272.62 -31581272.48 -31581272.33 0.0276 0.0067



Mercury -91178-06-07 14:23 J -31581184.02 -31581183.90 -31581183.78 0.0276 0.0161

Mercury -91178-09-04 04:32 J -31581095.36 -31581095.31 -31581095.26 0.0276 0.0257

Venus -91178-09-30 22:03 J -31581068.76 -31581068.58 -31581068.40 0.0276 0.0139

Earth -91177-02-12 00:56 J -31580934.69 -31580934.46 -31580934.22 0.0277 0.0044

Moon -91177-02-12 04:03 J -31580934.57 -31580934.33 -31580934.09 0.0277 0.0038 \*

Moon -91176-02-23 07:54 J -31580557.29 -31580557.17 -31580557.02 0.0278 0.0232

Earth -91176-02-23 09:35 J -31580557.19 -31580557.10 -31580556.98 0.0278 0.0248 \*

Mars -91171-11-12 23:59 J -31578468.79 -31578468.50 -31578468.20 0.0283 0.0085

Mercury -91164-01-22 16:03 J -31576205.93 -31576205.83 -31576205.72 0.0283 0.0218

Mercury -91164-04-21 10:47 J -31576117.20 -31576117.05 -31576116.89 0.0283 0.0103

Mercury -91164-07-19 05:15 J -31576028.44 -31576028.28 -31576028.12 0.0283 0.0011

Venus -91164-08-02 08:08 J -31576014.30 -31576014.16 -31576014.01 0.0283 0.0205

Moon -91164-08-06 12:56 J -31576010.17 -31576009.96 -31576009.73 0.0283 0.0156

Earth -91164-08-06 14:37 J -31576010.08 -31576009.89 -31576009.68 0.0283 0.0167 \*

Mercury -91164-10-15 23:01 J -31575939.68 -31575939.54 -31575939.39 0.0283 0.0121

Mercury -91163-01-12 16:18 J -31575850.90 -31575850.82 -31575850.71 0.0282 0.0229

Venus -91163-03-20 02:23 J -31575784.58 -31575784.40 -31575784.21 0.0282 0.0144

Moon -91163-08-20 12:27 J -31575631.22 -31575630.98 -31575630.73 0.0282 0.0076

Earth -91163-08-20 16:18 J -31575631.06 -31575630.82 -31575630.57 0.0282 0.0062 \*

Earth -91162-09-03 10:47 J -31575252.06 -31575252.05 -31575252.02 0.0281 0.0280

Mars -91157-11-04 01:11 J -31573363.72 -31573363.45 -31573363.17 0.0276 0.0041

Mercury -91150-11-05 08:51 J -31570806.19 -31570806.13 -31570806.06 0.0276 0.0239

Moon -91149-01-25 13:54 J -31570725.03 -31570724.92 -31570724.78 0.0276 0.0234

Earth -91149-01-25 16:18 J -31570724.92 -31570724.82 -31570724.70 0.0276 0.0244 \*

Mercury -91149-02-01 21:49 J -31570717.70 -31570717.59 -31570717.46 0.0276 0.0152

Mercury -91149-04-30 11:15 J -31570629.18 -31570629.03 -31570628.89 0.0276 0.0062

Mercury -91149-07-28 00:42 J -31570540.62 -31570540.47 -31570540.33 0.0276 0.0030

Venus -91149-08-25 16:32 J -31570511.98 -31570511.81 -31570511.63 0.0276 0.0145

Mercury -91149-10-24 14:23 J -31570452.03 -31570451.90 -31570451.77 0.0276 0.0123

Mercury -91148-01-21 04:18 J -31570363.41 -31570363.32 -31570363.23 0.0276 0.0219

Moon -91148-02-05 14:23 J -31570348.13 -31570347.90 -31570347.67 0.0276 0.0049  
 Earth -91148-02-05 17:30 J -31570348.00 -31570347.77 -31570347.53 0.0276 0.0048 \*  
 Venus -91148-04-11 21:35 J -31570282.76 -31570282.60 -31570282.43 0.0277 0.0167  
 Earth -91147-02-17 23:15 J -31569970.72 -31569970.53 -31569970.32 0.0277 0.0155  
 Moon -91147-02-18 00:56 J -31569970.66 -31569970.46 -31569970.26 0.0277 0.0142 \*  
 Mars -91143-12-24 03:49 J -31568200.45 -31568200.34 -31568200.22 0.0282 0.0261  
 Mars -91140-01-02 19:11 J -31567459.82 -31567459.70 -31567459.56 0.0283 0.0254  
 Mercury -91135-06-11 15:06 J -31565473.93 -31565473.87 -31565473.80 0.0283 0.0257  
 Earth -91135-07-31 12:13 J -31565424.05 -31565423.99 -31565423.92 0.0283 0.0272  
 Moon -91135-07-31 14:23 J -31565423.99 -31565423.90 -31565423.81 0.0283 0.0263 \*  
 Mercury -91135-09-08 10:03 J -31565385.22 -31565385.08 -31565384.93 0.0283 0.0140  
 Mercury -91135-12-06 04:47 J -31565296.47 -31565296.30 -31565296.14 0.0283 0.0026  
 Venus -91134-02-12 11:59 J -31565228.17 -31565228.00 -31565227.82 0.0283 0.0162  
 Mercury -91134-03-04 22:47 J -31565207.71 -31565207.55 -31565207.40 0.0283 0.0086  
 Mercury -91134-06-01 16:18 J -31565118.93 -31565118.82 -31565118.70 0.0283 0.0195  
 Earth -91134-08-14 17:30 J -31565045.01 -31565044.77 -31565044.52 0.0283 0.0043  
 Moon -91134-08-14 21:35 J -31565044.85 -31565044.60 -31565044.35 0.0283 0.0028 \*  
 Venus -91134-09-30 06:42 J -31564998.38 -31564998.22 -31564998.06 0.0283 0.0187  
 Earth -91133-08-27 16:32 J -31564665.99 -31564665.81 -31564665.62 0.0282 0.0184  
 Moon -91133-08-27 18:56 J -31564665.89 -31564665.71 -31564665.52 0.0282 0.0199 \*  
 Mars -91127-12-22 15:49 J -31562358.10 -31562357.84 -31562357.58 0.0276 0.0103  
 Mercury -91120-03-24 12:13 J -31560074.04 -31560073.99 -31560073.93 0.0275 0.0254  
 Mercury -91120-06-21 01:11 J -31559985.56 -31559985.45 -31559985.33 0.0275 0.0167  
 Mercury -91120-09-17 14:23 J -31559897.04 -31559896.90 -31559896.76 0.0276 0.0077  
 Mercury -91120-12-15 03:49 J -31559808.49 -31559808.34 -31559808.19 0.0276 0.0014  
 Earth -91119-02-01 01:39 J -31559760.63 -31559760.43 -31559760.21 0.0276 0.0134  
 Moon -91119-02-01 05:15 J -31559760.49 -31559760.28 -31559760.06 0.0276 0.0128 \*  
 Venus -91119-03-08 01:11 J -31559725.64 -31559725.45 -31559725.25 0.0276 0.0088  
 Mercury -91119-03-13 17:30 J -31559719.91 -31559719.77 -31559719.63 0.0276 0.0107  
 Mercury -91119-06-10 07:25 J -31559631.29 -31559631.19 -31559631.09 0.0276 0.0202

Venus -91119-10-23 06:27 J -31559496.34 -31559496.23 -31559496.10 0.0276 0.0225  
 Moon -91118-02-13 04:47 J -31559383.55 -31559383.30 -31559383.06 0.0277 0.0058  
 Earth -91118-02-13 05:30 J -31559383.50 -31559383.27 -31559383.03 0.0277 0.0067 \*  
 Moon -91117-02-25 11:01 J -31559006.12 -31559006.04 -31559005.93 0.0277 0.0254  
 Earth -91117-02-25 14:51 J -31559005.94 -31559005.88 -31559005.83 0.0277 0.0269 \*  
 Mars -91112-02-14 22:18 J -31557189.86 -31557189.57 -31557189.26 0.0283 0.0081  
 Mercury -91105-01-26 10:32 J -31554653.19 -31554653.06 -31554652.92 0.0283 0.0172  
 Mercury -91105-04-24 05:15 J -31554564.44 -31554564.28 -31554564.12 0.0283 0.0057  
 Mercury -91105-07-21 23:15 J -31554475.68 -31554475.53 -31554475.36 0.0283 0.0056  
 Moon -91105-08-07 17:30 J -31554458.99 -31554458.77 -31554458.55 0.0283 0.0128  
 Earth -91105-08-07 21:06 J -31554458.83 -31554458.62 -31554458.40 0.0283 0.0141 \*  
 Venus -91105-08-24 18:42 J -31554441.91 -31554441.72 -31554441.52 0.0283 0.0114  
 Mercury -91105-10-18 17:01 J -31554386.92 -31554386.79 -31554386.65 0.0283 0.0165  
 Mercury -91104-01-15 10:32 J -31554298.11 -31554298.06 -31554298.02 0.0282 0.0271  
 Venus -91104-04-11 12:56 J -31554212.08 -31554211.96 -31554211.84 0.0282 0.0234  
 Moon -91104-08-21 20:37 J -31554079.86 -31554079.64 -31554079.41 0.0282 0.0102  
 Earth -91104-08-21 22:18 J -31554079.80 -31554079.57 -31554079.33 0.0282 0.0086 \*  
 Mars -91098-02-11 17:59 J -31552079.97 -31552079.75 -31552079.53 0.0276 0.0169  
 Mars -91096-02-07 23:01 J -31551352.66 -31551352.54 -31551352.41 0.0275 0.0243  
 Mercury -91091-11-08 01:54 J -31549253.52 -31549253.42 -31549253.32 0.0276 0.0200  
 Moon -91090-01-26 18:27 J -31549173.88 -31549173.73 -31549173.58 0.0276 0.0213  
 Earth -91090-01-26 21:35 J -31549173.73 -31549173.60 -31549173.45 0.0276 0.0220 \*  
 Mercury -91090-02-04 14:51 J -31549165.01 -31549164.88 -31549164.74 0.0276 0.0112  
 Mercury -91090-05-04 04:18 J -31549076.47 -31549076.32 -31549076.18 0.0276 0.0022  
 Mercury -91090-07-31 17:44 J -31548987.90 -31548987.76 -31548987.61 0.0276 0.0071  
 Venus -91090-09-18 01:25 J -31548939.64 -31548939.44 -31548939.23 0.0276 0.0059  
 Mercury -91090-10-28 07:39 J -31548899.30 -31548899.18 -31548899.06 0.0276 0.0165  
 Mercury -91089-01-24 21:35 J -31548810.64 -31548810.60 -31548810.54 0.0276 0.0262  
 Earth -91089-02-07 23:01 J -31548796.78 -31548796.54 -31548796.30 0.0276 0.0024  
 Moon -91089-02-07 23:44 J -31548796.74 -31548796.51 -31548796.28 0.0276 0.0028 \*

Venus -91089-05-04 06:42 J -31548710.29 -31548710.22 -31548710.13 0.0277 0.0255  
 Earth -91088-02-19 05:01 J -31548419.47 -31548419.29 -31548419.10 0.0277 0.0178  
 Moon -91088-02-19 08:37 J -31548419.33 -31548419.14 -31548418.94 0.0277 0.0164 \*  
 Mars -91082-04-08 02:08 J -31546180.70 -31546180.41 -31546180.12 0.0283 0.0094  
 Mercury -91076-06-14 09:20 J -31543921.21 -31543921.11 -31543920.99 0.0283 0.0212  
 Earth -91076-08-01 17:44 J -31543872.87 -31543872.76 -31543872.63 0.0283 0.0246  
 Moon -91076-08-01 21:35 J -31543872.74 -31543872.60 -31543872.46 0.0283 0.0236 \*  
 Mercury -91076-09-11 04:18 J -31543832.48 -31543832.32 -31543832.16 0.0283 0.0095  
 Mercury -91076-12-08 22:47 J -31543743.72 -31543743.55 -31543743.39 0.0283 0.0020  
 Venus -91075-03-06 22:03 J -31543655.78 -31543655.58 -31543655.37 0.0283 0.0072  
 Mercury -91075-03-07 16:32 J -31543654.95 -31543654.81 -31543654.66 0.0283 0.0129  
 Mercury -91075-06-04 10:03 J -31543566.16 -31543566.08 -31543565.99 0.0283 0.0237  
 Earth -91075-08-15 23:01 J -31543493.79 -31543493.54 -31543493.29 0.0283 0.0018  
 Moon -91075-08-15 23:59 J -31543493.76 -31543493.50 -31543493.24 0.0283 0.0003 \*  
 Venus -91075-10-22 16:18 J -31543425.85 -31543425.82 -31543425.77 0.0282 0.0277  
 Moon -91074-08-29 18:56 J -31543114.86 -31543114.71 -31543114.55 0.0282 0.0222  
 Earth -91074-08-29 21:49 J -31543114.76 -31543114.59 -31543114.42 0.0282 0.0206 \*  
 Mars -91068-03-31 02:08 J -31541074.68 -31541074.41 -31541074.13 0.0277 0.0030  
 Mercury -91061-03-27 05:15 J -31538521.37 -31538521.28 -31538521.19 0.0275 0.0215  
 Mercury -91061-06-23 18:13 J -31538432.86 -31538432.74 -31538432.61 0.0276 0.0127  
 Mercury -91061-09-20 07:39 J -31538344.33 -31538344.18 -31538344.04 0.0276 0.0036  
 Mercury -91061-12-17 21:06 J -31538255.76 -31538255.62 -31538255.47 0.0276 0.0056  
 Moon -91060-02-02 07:11 J -31538209.42 -31538209.20 -31538208.96 0.0276 0.0108  
 Earth -91060-02-02 07:54 J -31538209.39 -31538209.17 -31538208.95 0.0276 0.0108 \*  
 Mercury -91060-03-16 11:01 J -31538167.17 -31538167.04 -31538166.92 0.0276 0.0150  
 Venus -91060-03-30 10:47 J -31538153.26 -31538153.05 -31538152.84 0.0276 0.0002  
 Mercury -91060-06-13 00:56 J -31538078.52 -31538078.46 -31538078.39 0.0276 0.0246  
 Moon -91059-02-14 08:23 J -31537832.37 -31537832.15 -31537831.91 0.0277 0.0081  
 Earth -91059-02-14 11:59 J -31537832.22 -31537832.00 -31537831.77 0.0277 0.0091 \*  
 Mars -91054-05-20 15:20 J -31535910.99 -31535910.86 -31535910.69 0.0282 0.0247

Mars -91052-05-30 03:06 J -31535170.45 -31535170.37 -31535170.25 0.0283 0.0268  
 Mercury -91047-11-01 10:32 J -31533189.14 -31533189.06 -31533188.97 0.0283 0.0239  
 Mercury -91046-01-29 05:30 J -31533100.42 -31533100.27 -31533100.12 0.0283 0.0123  
 Mercury -91046-04-27 23:59 J -31533011.67 -31533011.50 -31533011.34 0.0283 0.0009  
 Mercury -91046-07-25 17:59 J -31532922.90 -31532922.75 -31532922.60 0.0283 0.0103  
 Moon -91046-08-10 05:01 J -31532907.51 -31532907.29 -31532907.06 0.0283 0.0101  
 Earth -91046-08-10 05:44 J -31532907.49 -31532907.26 -31532907.03 0.0283 0.0113 \*  
 Venus -91046-09-17 06:27 J -31532869.44 -31532869.23 -31532869.01 0.0283 0.0019  
 Mercury -91046-10-22 11:30 J -31532834.12 -31532834.02 -31532833.91 0.0283 0.0211  
 Earth -91045-08-23 06:13 J -31532528.46 -31532528.24 -31532528.00 0.0282 0.0112  
 Moon -91045-08-23 09:20 J -31532528.33 -31532528.11 -31532527.89 0.0282 0.0128 \*  
 Mars -91038-05-18 07:54 J -31530069.41 -31530069.17 -31530068.90 0.0275 0.0114  
 Mercury -91032-08-14 06:13 J -31527789.30 -31527789.24 -31527789.18 0.0275 0.0246  
 Mercury -91032-11-10 19:11 J -31527700.82 -31527700.70 -31527700.58 0.0276 0.0159  
 Earth -91031-01-28 04:18 J -31527622.47 -31527622.32 -31527622.14 0.0276 0.0195  
 Moon -91031-01-28 05:15 J -31527622.44 -31527622.28 -31527622.11 0.0276 0.0191 \*  
 Mercury -91031-02-07 08:23 J -31527612.29 -31527612.15 -31527612.01 0.0276 0.0070  
 Mercury -91031-05-06 21:49 J -31527523.74 -31527523.59 -31527523.45 0.0276 0.0022  
 Mercury -91031-08-03 11:30 J -31527435.16 -31527435.02 -31527434.89 0.0276 0.0115  
 Venus -91031-10-10 11:44 J -31527367.22 -31527367.01 -31527366.80 0.0276 0.0032  
 Mercury -91031-10-31 01:11 J -31527346.54 -31527346.45 -31527346.35 0.0276 0.0211  
 Earth -91030-02-09 06:13 J -31527245.48 -31527245.24 -31527245.00 0.0276 0.0002  
 Moon -91030-02-09 10:03 J -31527245.32 -31527245.08 -31527244.84 0.0276 0.0007 \*  
 Earth -91029-02-21 12:42 J -31526868.13 -31526867.97 -31526867.80 0.0277 0.0202  
 Moon -91029-02-21 13:11 J -31526868.12 -31526867.95 -31526867.75 0.0277 0.0189 \*  
 Mars -91024-07-11 05:59 J -31524901.55 -31524901.25 -31524900.95 0.0283 0.0071  
 Mercury -91017-03-20 09:20 J -31522457.13 -31522457.11 -31522457.08 0.0283 0.0279  
 Mercury -91017-06-17 04:18 J -31522368.45 -31522368.32 -31522368.18 0.0283 0.0162  
 Earth -91017-08-03 02:37 J -31522321.55 -31522321.39 -31522321.23 0.0283 0.0218  
 Moon -91017-08-03 02:37 J -31522321.55 -31522321.39 -31522321.20 0.0283 0.0207 \*

Mercury -91017-09-13 23:01 J -31522279.70 -31522279.54 -31522279.37 0.0283 0.0047

Mercury -91017-12-11 17:15 J -31522190.94 -31522190.78 -31522190.62 0.0283 0.0066

Mercury -91016-03-10 11:01 J -31522102.16 -31522102.04 -31522101.91 0.0283 0.0176

Venus -91016-03-29 09:49 J -31522083.30 -31522083.09 -31522082.87 0.0283 0.0023

Mercury -91016-06-07 04:18 J -31522013.32 -31522013.32 -31522013.31 0.0283 0.0283

Moon -91016-08-17 03:49 J -31521942.59 -31521942.34 -31521942.08 0.0282 0.0024

Earth -91016-08-17 07:11 J -31521942.45 -31521942.20 -31521941.95 0.0282 0.0009 \*

Moon -91015-08-31 01:54 J -31521563.53 -31521563.42 -31521563.30 0.0282 0.0246

Earth -91015-08-31 05:15 J -31521563.42 -31521563.28 -31521563.13 0.0282 0.0230 \*

Mars -91010-07-08 19:11 J -31519790.91 -31519790.70 -31519790.46 0.0277 0.0159

Mars -91008-07-05 05:01 J -31519063.38 -31519063.29 -31519063.18 0.0276 0.0257

Mercury -91002-01-01 09:35 J -31517057.14 -31517057.10 -31517057.05 0.0275 0.0261

Moon -91002-01-23 14:51 J -31517034.95 -31517034.88 -31517034.81 0.0276 0.0263

Earth -91002-01-23 14:23 J -31517034.91 -31517034.90 -31517034.85 0.0276 0.0274 \*

Mercury -91002-03-30 22:32 J -31516968.67 -31516968.56 -31516968.45 0.0276 0.0174

Mercury -91002-06-27 11:44 J -31516880.15 -31516880.01 -31516879.87 0.0276 0.0085

Venus -91002-09-05 15:49 J -31516809.95 -31516809.84 -31516809.70 0.0276 0.0222

Mercury -91002-09-24 01:11 J -31516791.60 -31516791.45 -31516791.31 0.0276 0.0009

Mercury -91002-12-21 14:51 J -31516703.02 -31516702.88 -31516702.75 0.0276 0.0100

Moon -91001-02-04 11:30 J -31516658.24 -31516658.02 -31516657.79 0.0276 0.0086

Earth -91001-02-04 15:20 J -31516658.09 -31516657.86 -31516657.63 0.0276 0.0082 \*

Mercury -91001-03-19 04:32 J -31516614.41 -31516614.31 -31516614.20 0.0276 0.0195

Venus -91001-04-21 20:51 J -31516580.82 -31516580.63 -31516580.43 0.0276 0.0091

# 91ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 91st millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-91000-02-15 18:42 J	-31516280.93	-31516280.72	-31516280.50	0.0277	0.0105		
Earth	-91000-02-15 19:54 J	-31516280.88	-31516280.67	-31516280.45	0.0277	0.0117	*	
Mars	-90994-09-02 21:49 J	-31513890.87	-31513890.59	-31513890.31	0.0283	0.0111		
Mercury	-90988-11-04 06:13 J	-31511636.37	-31511636.24	-31511636.12	0.0283	0.0187		
Mercury	-90987-02-01 00:56 J	-31511547.62	-31511547.46	-31511547.30	0.0283	0.0071		
Venus	-90987-02-22 00:27 J	-31511526.53	-31511526.48	-31511526.42	0.0283	0.0272		
Mercury	-90987-04-30 19:11 J	-31511458.86	-31511458.70	-31511458.54	0.0283	0.0042		
Mercury	-90987-07-28 12:56 J	-31511370.09	-31511369.96	-31511369.82	0.0283	0.0152		
Earth	-90987-08-11 16:18 J	-31511356.06	-31511355.82	-31511355.58	0.0283	0.0084		
Moon	-90987-08-11 19:25 J	-31511355.93	-31511355.69	-31511355.45	0.0283	0.0070	*	
Venus	-90987-10-09 19:25 J	-31511296.90	-31511296.69	-31511296.48	0.0283	0.0079		
Mercury	-90987-10-25 06:13 J	-31511281.29	-31511281.24	-31511281.17	0.0283	0.0260		
Earth	-90986-08-25 16:18 J	-31510977.03	-31510976.82	-31510976.60	0.0282	0.0139		
Moon	-90986-08-25 19:25 J	-31510976.90	-31510976.69	-31510976.47	0.0282	0.0155	*	
Mars	-90980-08-25 00:56 J	-31508785.74	-31508785.46	-31508785.18	0.0276	0.0016		
Mercury	-90973-08-16 23:44 J	-31506236.60	-31506236.51	-31506236.41	0.0275	0.0204		
Mercury	-90973-11-13 12:42 J	-31506148.09	-31506147.97	-31506147.83	0.0276	0.0116		
Earth	-90972-01-29 12:56 J	-31506071.14	-31506070.96	-31506070.76	0.0276	0.0168		
Moon	-90972-01-29 16:47 J	-31506070.99	-31506070.80	-31506070.61	0.0276	0.0166	*	
Mercury	-90972-02-10 02:08 J	-31506059.56	-31506059.41	-31506059.27	0.0276	0.0025		
Venus	-90972-03-17 18:13 J	-31506023.89	-31506023.74	-31506023.59	0.0276	0.0187		
Mercury	-90972-05-09 15:35 J	-31505970.99	-31505970.85	-31505970.71	0.0276	0.0068		
Mercury	-90972-08-06 05:15 J	-31505882.39	-31505882.28	-31505882.15	0.0276	0.0162		
Venus	-90972-11-01 23:01 J	-31505794.73	-31505794.54	-31505794.35	0.0276	0.0125		
Mercury	-90972-11-02 19:25 J	-31505793.74	-31505793.69	-31505793.64	0.0276	0.0258		
Earth	-90971-02-10 15:20 J	-31505694.10	-31505693.86	-31505693.62	0.0277	0.0029		

Moon -90971-02-10 16:18 J -31505694.06 -31505693.82 -31505693.57 0.0277 0.0019 \*  
 Moon -90970-02-22 18:56 J -31505316.85 -31505316.71 -31505316.54 0.0277 0.0213  
 Earth -90970-02-22 22:18 J -31505316.70 -31505316.57 -31505316.43 0.0277 0.0228 \*  
 Mars -90966-10-14 05:59 J -31503622.40 -31503622.25 -31503622.06 0.0282 0.0236  
 Mars -90964-10-23 18:27 J -31502881.77 -31502881.73 -31502881.68 0.0283 0.0280  
 Mercury -90958-03-24 05:01 J -31500904.39 -31500904.29 -31500904.19 0.0283 0.0226  
 Mercury -90958-06-20 23:44 J -31500815.66 -31500815.51 -31500815.35 0.0283 0.0110  
 Moon -90958-08-05 10:03 J -31500770.28 -31500770.08 -31500769.88 0.0283 0.0175  
 Earth -90958-08-05 13:25 J -31500770.12 -31500769.94 -31500769.75 0.0283 0.0189 \*  
 Venus -90958-09-04 03:35 J -31500740.46 -31500740.35 -31500740.22 0.0283 0.0231  
 Mercury -90958-09-17 18:13 J -31500726.90 -31500726.74 -31500726.57 0.0283 0.0007  
 Mercury -90958-12-15 12:13 J -31500638.13 -31500637.99 -31500637.84 0.0283 0.0116  
 Mercury -90957-03-13 05:44 J -31500549.35 -31500549.26 -31500549.15 0.0283 0.0225  
 Venus -90957-04-20 22:32 J -31500510.74 -31500510.56 -31500510.36 0.0283 0.0122  
 Moon -90957-08-18 14:23 J -31500391.13 -31500390.90 -31500390.65 0.0282 0.0053  
 Earth -90957-08-18 17:15 J -31500391.03 -31500390.78 -31500390.53 0.0282 0.0037 \*  
 Earth -90956-09-01 14:51 J -31500011.98 -31500011.88 -31500011.78 0.0282 0.0255  
 Moon -90956-09-01 15:35 J -31500011.91 -31500011.85 -31500011.78 0.0282 0.0270 \*  
 Mars -90950-10-12 13:11 J -31497780.19 -31497779.95 -31497779.69 0.0276 0.0126  
 Mercury -90943-01-04 02:51 J -31495504.46 -31495504.38 -31495504.29 0.0276 0.0221  
 Moon -90943-01-24 18:56 J -31495483.81 -31495483.71 -31495483.58 0.0276 0.0239  
 Earth -90943-01-24 22:18 J -31495483.66 -31495483.57 -31495483.45 0.0276 0.0247 \*  
 Mercury -90943-04-02 16:03 J -31495415.96 -31495415.83 -31495415.70 0.0276 0.0132  
 Mercury -90943-06-30 05:15 J -31495327.42 -31495327.28 -31495327.13 0.0276 0.0041  
 Mercury -90943-09-26 18:42 J -31495238.86 -31495238.72 -31495238.57 0.0276 0.0052  
 Venus -90943-09-28 02:37 J -31495237.57 -31495237.39 -31495237.20 0.0276 0.0131  
 Mercury -90943-12-24 08:37 J -31495150.27 -31495150.14 -31495150.02 0.0276 0.0146  
 Moon -90942-02-05 22:18 J -31495106.79 -31495106.57 -31495106.34 0.0276 0.0061  
 Earth -90942-02-05 23:30 J -31495106.75 -31495106.52 -31495106.29 0.0276 0.0055 \*  
 Mercury -90942-03-22 22:32 J -31495061.63 -31495061.56 -31495061.49 0.0276 0.0242



Venus -90942-05-15 07:39 J -31495008.32 -31495008.18 -31495008.01 0.0276 0.0184  
 Earth -90941-02-18 04:47 J -31494729.50 -31494729.30 -31494729.09 0.0277 0.0143  
 Moon -90941-02-18 07:39 J -31494729.38 -31494729.18 -31494728.97 0.0277 0.0129 \*  
 Mars -90936-12-06 09:49 J -31492611.39 -31492611.09 -31492610.78 0.0282 0.0050  
 Earth -90929-07-29 23:44 J -31490183.55 -31490183.51 -31490183.45 0.0283 0.0277  
 Moon -90929-07-30 03:35 J -31490183.43 -31490183.35 -31490183.26 0.0283 0.0266  
 Mercury -90929-08-10 07:11 J -31490172.27 -31490172.20 -31490172.12 0.0283 0.0248  
 Mercury -90929-11-07 02:08 J -31490083.55 -31490083.41 -31490083.26 0.0283 0.0131  
 Mercury -90928-02-03 20:37 J -31489994.80 -31489994.64 -31489994.47 0.0283 0.0018  
 Venus -90928-03-16 14:51 J -31489954.04 -31489953.88 -31489953.69 0.0283 0.0170  
 Mercury -90928-05-03 14:51 J -31489906.04 -31489905.88 -31489905.73 0.0283 0.0096  
 Mercury -90928-07-31 08:23 J -31489817.26 -31489817.15 -31489817.04 0.0283 0.0205  
 Earth -90928-08-13 05:15 J -31489804.52 -31489804.28 -31489804.03 0.0283 0.0053  
 Moon -90928-08-13 08:23 J -31489804.40 -31489804.15 -31489803.89 0.0283 0.0040 \*  
 Venus -90928-11-01 09:35 J -31489724.26 -31489724.10 -31489723.93 0.0283 0.0182  
 Moon -90927-08-27 03:35 J -31489425.53 -31489425.35 -31489425.14 0.0282 0.0182  
 Earth -90927-08-27 04:47 J -31489425.50 -31489425.30 -31489425.10 0.0282 0.0168 \*  
 Mars -90922-12-02 23:59 J -31487501.73 -31487501.50 -31487501.26 0.0277 0.0143  
 Mars -90920-11-29 08:23 J -31486774.18 -31486774.15 -31486774.10 0.0275 0.0272  
 Mercury -90914-05-24 04:32 J -31484772.36 -31484772.31 -31484772.24 0.0275 0.0248  
 Mercury -90914-08-20 17:30 J -31484683.88 -31484683.77 -31484683.65 0.0276 0.0160  
 Mercury -90914-11-17 06:42 J -31484595.36 -31484595.22 -31484595.08 0.0276 0.0070  
 Earth -90913-01-31 22:32 J -31484519.76 -31484519.56 -31484519.35 0.0276 0.0140  
 Moon -90913-01-31 23:59 J -31484519.71 -31484519.50 -31484519.28 0.0276 0.0139 \*  
 Mercury -90913-02-13 20:08 J -31484506.81 -31484506.66 -31484506.52 0.0276 0.0022  
 Venus -90913-04-09 05:30 J -31484451.46 -31484451.27 -31484451.07 0.0276 0.0094  
 Mercury -90913-05-12 09:35 J -31484418.23 -31484418.10 -31484417.96 0.0276 0.0115  
 Mercury -90913-08-08 23:30 J -31484329.61 -31484329.52 -31484329.42 0.0276 0.0210  
 Venus -90913-11-24 10:32 J -31484222.18 -31484222.06 -31484221.93 0.0276 0.0221  
 Moon -90912-02-11 21:49 J -31484142.83 -31484142.59 -31484142.35 0.0277 0.0043

Earth -90912-02-12 01:11 J -31484142.68 -31484142.45 -31484142.21 0.0277 0.0056 \*  
 Moon -90911-02-24 05:59 J -31483765.36 -31483765.25 -31483765.12 0.0277 0.0239  
 Earth -90911-02-24 08:51 J -31483765.22 -31483765.13 -31483765.03 0.0277 0.0254 \*  
 Mars -90905-01-27 17:30 J -31481602.04 -31481601.77 -31481601.49 0.0283 0.0125  
 Mercury -90899-03-27 00:56 J -31479351.59 -31479351.46 -31479351.33 0.0283 0.0171  
 Mercury -90899-06-23 19:39 J -31479262.84 -31479262.68 -31479262.52 0.0283 0.0055  
 Moon -90899-08-06 23:44 J -31479218.72 -31479218.51 -31479218.30 0.0283 0.0144  
 Earth -90899-08-07 02:08 J -31479218.61 -31479218.41 -31479218.19 0.0283 0.0158 \*  
 Mercury -90899-09-20 13:54 J -31479174.08 -31479173.92 -31479173.76 0.0283 0.0058  
 Venus -90899-09-26 17:59 J -31479167.94 -31479167.75 -31479167.56 0.0283 0.0129  
 Mercury -90899-12-18 07:39 J -31479085.31 -31479085.18 -31479085.05 0.0283 0.0168  
 Mercury -90898-03-17 01:11 J -31478996.48 -31478996.45 -31478996.42 0.0282 0.0275  
 Venus -90898-05-14 12:13 J -31478938.11 -31478937.99 -31478937.84 0.0282 0.0223  
 Earth -90898-08-21 05:01 J -31478839.53 -31478839.29 -31478839.05 0.0282 0.0066  
 Moon -90898-08-21 05:59 J -31478839.47 -31478839.25 -31478839.01 0.0282 0.0081 \*  
 Earth -90897-09-03 01:54 J -31478460.44 -31478460.42 -31478460.41 0.0281 0.0281  
 Mars -90891-01-19 03:35 J -31476496.62 -31476496.35 -31476496.07 0.0277 0.0006  
 Mercury -90885-10-10 07:39 J -31474040.21 -31474040.18 -31474040.14 0.0276 0.0266  
 Mercury -90884-01-06 20:37 J -31473951.75 -31473951.64 -31473951.53 0.0276 0.0178  
 Moon -90884-01-26 04:32 J -31473932.45 -31473932.31 -31473932.16 0.0276 0.0212  
 Earth -90884-01-26 06:56 J -31473932.36 -31473932.21 -31473932.07 0.0276 0.0219 \*  
 Mercury -90884-04-05 09:35 J -31473863.23 -31473863.10 -31473862.96 0.0276 0.0089  
 Mercury -90884-07-02 23:01 J -31473774.68 -31473774.54 -31473774.39 0.0276 0.0005  
 Mercury -90884-09-29 12:42 J -31473686.11 -31473685.97 -31473685.83 0.0276 0.0097  
 Venus -90884-10-20 13:39 J -31473665.13 -31473664.93 -31473664.72 0.0276 0.0039  
 Mercury -90884-12-27 02:23 J -31473597.50 -31473597.40 -31473597.29 0.0276 0.0193  
 Earth -90883-02-07 08:08 J -31473555.39 -31473555.16 -31473554.92 0.0276 0.0028  
 Moon -90883-02-07 11:01 J -31473555.27 -31473555.04 -31473554.80 0.0276 0.0036 \*  
 Earth -90882-02-19 14:08 J -31473178.09 -31473177.91 -31473177.71 0.0277 0.0170  
 Moon -90882-02-19 17:15 J -31473177.98 -31473177.78 -31473177.58 0.0277 0.0154 \*

Mars -90877-03-10 13:39 J -31471332.13 -31471331.93 -31471331.72 0.0282 0.0212  
 Earth -90870-08-01 13:54 J -31468632.04 -31468631.92 -31468631.79 0.0283 0.0245  
 Moon -90870-08-01 16:03 J -31468631.97 -31468631.83 -31468631.67 0.0283 0.0232 \*  
 Mercury -90870-08-14 03:35 J -31468619.47 -31468619.35 -31468619.23 0.0283 0.0191  
 Mercury -90870-11-10 22:18 J -31468530.73 -31468530.57 -31468530.41 0.0283 0.0074  
 Mercury -90869-02-07 16:32 J -31468441.97 -31468441.81 -31468441.64 0.0283 0.0040  
 Venus -90869-04-08 05:59 J -31468381.45 -31468381.25 -31468381.04 0.0283 0.0066  
 Mercury -90869-05-06 10:32 J -31468353.20 -31468353.06 -31468352.92 0.0283 0.0150  
 Mercury -90869-08-03 03:49 J -31468264.39 -31468264.34 -31468264.27 0.0283 0.0258  
 Moon -90869-08-14 17:44 J -31468253.02 -31468252.76 -31468252.50 0.0283 0.0008  
 Earth -90869-08-14 18:56 J -31468252.96 -31468252.71 -31468252.46 0.0283 0.0022 \*  
 Moon -90868-08-28 13:54 J -31467874.07 -31467873.92 -31467873.74 0.0282 0.0212  
 Earth -90868-08-28 17:44 J -31467873.93 -31467873.76 -31467873.58 0.0282 0.0197 \*  
 Mars -90863-03-12 04:32 J -31466217.37 -31466217.31 -31466217.22 0.0277 0.0267  
 Mars -90861-03-07 20:37 J -31465490.88 -31465490.64 -31465490.40 0.0276 0.0143  
 Mercury -90855-05-26 22:18 J -31463219.66 -31463219.57 -31463219.47 0.0275 0.0204  
 Mercury -90855-08-23 11:15 J -31463131.16 -31463131.03 -31463130.90 0.0276 0.0116  
 Mercury -90855-11-20 00:42 J -31463042.62 -31463042.47 -31463042.33 0.0276 0.0026  
 Moon -90854-02-02 05:30 J -31462968.49 -31462968.27 -31462968.04 0.0276 0.0114  
 Earth -90854-02-02 08:08 J -31462968.38 -31462968.16 -31462967.94 0.0276 0.0112 \*  
 Mercury -90854-02-16 14:08 J -31462954.05 -31462953.91 -31462953.77 0.0276 0.0068  
 Venus -90854-05-02 17:01 J -31462878.99 -31462878.79 -31462878.58 0.0276 0.0005  
 Mercury -90854-05-16 03:49 J -31462865.46 -31462865.34 -31462865.22 0.0276 0.0162  
 Mercury -90854-08-12 17:44 J -31462776.80 -31462776.76 -31462776.70 0.0276 0.0259  
 Moon -90853-02-14 08:37 J -31462591.37 -31462591.14 -31462590.91 0.0277 0.0070  
 Earth -90853-02-14 11:01 J -31462591.26 -31462591.04 -31462590.80 0.0277 0.0083 \*  
 Moon -90852-02-25 20:51 J -31462213.69 -31462213.63 -31462213.55 0.0278 0.0265  
 Mars -90847-05-02 07:11 J -31460322.50 -31460322.20 -31460321.88 0.0282 0.0036  
 Mercury -90841-12-31 02:08 J -31457887.50 -31457887.41 -31457887.31 0.0283 0.0231  
 Mercury -90840-03-29 21:06 J -31457798.77 -31457798.62 -31457798.46 0.0283 0.0114

Mercury -90840-06-26 15:49 J -31457710.01 -31457709.84 -31457709.68 0.0283 0.0008

Earth -90840-08-08 16:18 J -31457667.04 -31457666.82 -31457666.59 0.0283 0.0125

Moon -90840-08-08 18:13 J -31457666.96 -31457666.74 -31457666.51 0.0283 0.0110 \*

Mercury -90840-09-23 09:49 J -31457621.24 -31457621.09 -31457620.94 0.0283 0.0112

Venus -90840-10-19 08:51 J -31457595.34 -31457595.13 -31457594.91 0.0283 0.0025

Mercury -90840-12-21 03:20 J -31457532.45 -31457532.36 -31457532.26 0.0282 0.0221

Earth -90839-08-22 17:59 J -31457287.97 -31457287.75 -31457287.50 0.0282 0.0097

Moon -90839-08-22 21:49 J -31457287.81 -31457287.59 -31457287.35 0.0282 0.0113 \*

Mars -90833-04-28 01:11 J -31455212.69 -31455212.45 -31455212.21 0.0277 0.0131

Mercury -90826-10-14 00:56 J -31452487.54 -31452487.46 -31452487.37 0.0276 0.0225

Mercury -90825-01-10 13:54 J -31452399.04 -31452398.92 -31452398.79 0.0276 0.0137

Earth -90825-01-28 14:08 J -31452381.07 -31452380.91 -31452380.73 0.0276 0.0192

Moon -90825-01-28 16:03 J -31452380.99 -31452380.83 -31452380.65 0.0276 0.0187 \*

Venus -90825-03-27 19:25 J -31452321.75 -31452321.69 -31452321.62 0.0276 0.0262

Mercury -90825-04-08 03:06 J -31452310.51 -31452310.37 -31452310.22 0.0276 0.0047

Mercury -90825-07-05 16:47 J -31452221.95 -31452221.80 -31452221.66 0.0276 0.0048

Mercury -90825-10-02 06:13 J -31452133.36 -31452133.24 -31452133.10 0.0276 0.0143

Venus -90825-11-12 00:27 J -31452092.69 -31452092.48 -31452092.28 0.0276 0.0052

Mercury -90825-12-29 20:23 J -31452044.72 -31452044.65 -31452044.57 0.0277 0.0238

Earth -90824-02-08 16:18 J -31452004.06 -31452003.82 -31452003.58 0.0277 0.0000

Moon -90824-02-08 19:11 J -31452003.94 -31452003.70 -31452003.45 0.0277 0.0008 \*

Moon -90823-02-20 21:06 J -31451626.79 -31451626.62 -31451626.42 0.0277 0.0181

Earth -90823-02-20 23:01 J -31451626.70 -31451626.54 -31451626.36 0.0277 0.0196 \*

Mars -90817-06-23 23:01 J -31449311.79 -31449311.54 -31449311.27 0.0283 0.0149

Mercury -90811-05-20 04:47 J -31447155.37 -31447155.30 -31447155.22 0.0283 0.0251

Moon -90811-08-03 01:54 J -31447080.60 -31447080.42 -31447080.22 0.0283 0.0197

Earth -90811-08-03 04:32 J -31447080.47 -31447080.31 -31447080.14 0.0283 0.0212 \*

Mercury -90811-08-16 23:59 J -31447066.65 -31447066.50 -31447066.35 0.0283 0.0133

Mercury -90811-11-13 18:27 J -31446977.89 -31446977.73 -31446977.56 0.0283 0.0018

Mercury -90810-02-10 12:27 J -31446889.13 -31446888.98 -31446888.82 0.0283 0.0095

Venus -90810-05-01 21:20 J -31446808.82 -31446808.61 -31446808.40 0.0283 0.0039

Mercury -90810-05-10 06:13 J -31446800.35 -31446800.24 -31446800.12 0.0283 0.0204

Moon -90810-08-17 05:01 J -31446701.54 -31446701.29 -31446701.04 0.0283 0.0026

Earth -90810-08-17 08:51 J -31446701.38 -31446701.13 -31446700.88 0.0283 0.0011 \*

Moon -90809-08-30 05:01 J -31446322.40 -31446322.29 -31446322.16 0.0282 0.0241

Earth -90809-08-30 06:56 J -31446322.35 -31446322.21 -31446322.05 0.0282 0.0226 \*

Mars -90803-06-15 15:06 J -31444207.15 -31444206.87 -31444206.59 0.0276 0.0015

Moon -90796-01-22 15:35 J -31441793.93 -31441793.85 -31441793.78 0.0275 0.0261

Earth -90796-01-22 17:15 J -31441793.80 -31441793.78 -31441793.73 0.0275 0.0272 \*

Mercury -90796-03-02 03:06 J -31441755.43 -31441755.37 -31441755.31 0.0275 0.0249

Mercury -90796-05-29 15:49 J -31441666.95 -31441666.84 -31441666.72 0.0275 0.0161

Mercury -90796-08-26 05:01 J -31441578.43 -31441578.29 -31441578.15 0.0276 0.0071

Venus -90796-10-07 23:44 J -31441535.63 -31441535.51 -31441535.38 0.0276 0.0220

Mercury -90796-11-22 18:27 J -31441489.88 -31441489.73 -31441489.59 0.0276 0.0021

Moon -90795-02-03 13:54 J -31441417.14 -31441416.92 -31441416.70 0.0276 0.0086

Earth -90795-02-03 17:01 J -31441417.02 -31441416.79 -31441416.56 0.0276 0.0084 \*

Mercury -90795-02-19 08:08 J -31441401.30 -31441401.16 -31441401.03 0.0276 0.0114

Mercury -90795-05-18 21:49 J -31441312.68 -31441312.59 -31441312.49 0.0276 0.0210

Venus -90795-05-25 04:18 J -31441306.51 -31441306.32 -31441306.12 0.0276 0.0094

Earth -90794-02-15 20:23 J -31441039.86 -31441039.65 -31441039.42 0.0277 0.0111

Moon -90794-02-15 22:03 J -31441039.79 -31441039.58 -31441039.36 0.0277 0.0097 \*

Mars -90789-08-04 12:13 J -31439043.20 -31439042.99 -31439042.75 0.0282 0.0197

Mercury -90781-01-03 22:32 J -31436334.69 -31436334.56 -31436334.43 0.0283 0.0174

Venus -90781-03-26 04:32 J -31436252.35 -31436252.31 -31436252.26 0.0283 0.0275

Mercury -90781-04-01 17:15 J -31436245.94 -31436245.78 -31436245.62 0.0283 0.0058

Mercury -90781-06-29 11:30 J -31436157.18 -31436157.02 -31436156.85 0.0283 0.0056

Earth -90781-08-10 05:59 J -31436115.48 -31436115.25 -31436115.01 0.0283 0.0094

Moon -90781-08-10 09:49 J -31436115.33 -31436115.09 -31436114.84 0.0283 0.0077 \*

Mercury -90781-09-26 05:15 J -31436068.40 -31436068.28 -31436068.14 0.0282 0.0167

Venus -90781-11-10 23:44 J -31436022.72 -31436022.51 -31436022.31 0.0282 0.0078

Mercury -90781-12-23 22:47 J -31435979.58 -31435979.55 -31435979.51 0.0282 0.0274  
 Earth -90780-08-24 06:56 J -31435736.42 -31435736.21 -31435735.97 0.0282 0.0127  
 Moon -90780-08-24 08:37 J -31435736.36 -31435736.14 -31435735.91 0.0282 0.0142 \*  
 Mars -90775-08-06 03:20 J -31433928.46 -31433928.36 -31433928.25 0.0278 0.0255  
 Mars -90773-08-01 20:37 J -31433201.87 -31433201.64 -31433201.40 0.0276 0.0155  
 Mercury -90767-07-20 05:15 J -31431023.29 -31431023.28 -31431023.26 0.0276 0.0273  
 Mercury -90767-10-16 18:13 J -31430934.84 -31430934.74 -31430934.63 0.0276 0.0185  
 Mercury -90766-01-13 07:11 J -31430846.33 -31430846.20 -31430846.06 0.0276 0.0096  
 Earth -90766-01-29 20:51 J -31430829.81 -31430829.63 -31430829.43 0.0276 0.0165  
 Moon -90766-01-30 00:27 J -31430829.67 -31430829.48 -31430829.28 0.0276 0.0160 \*  
 Mercury -90766-04-11 20:37 J -31430757.79 -31430757.64 -31430757.49 0.0276 0.0003  
 Venus -90766-04-20 05:15 J -31430749.44 -31430749.28 -31430749.12 0.0276 0.0175  
 Mercury -90766-07-09 10:18 J -31430669.21 -31430669.07 -31430668.94 0.0276 0.0091  
 Mercury -90766-10-05 23:59 J -31430580.61 -31430580.50 -31430580.39 0.0276 0.0186  
 Venus -90766-12-05 10:32 J -31430520.24 -31430520.06 -31430519.88 0.0277 0.0142  
 Moon -90765-02-10 22:18 J -31430452.82 -31430452.57 -31430452.32 0.0277 0.0017  
 Earth -90765-02-10 23:15 J -31430452.76 -31430452.53 -31430452.29 0.0277 0.0027 \*  
 Moon -90764-02-22 03:06 J -31430075.52 -31430075.37 -31430075.20 0.0277 0.0206  
 Earth -90764-02-22 06:27 J -31430075.36 -31430075.23 -31430075.07 0.0277 0.0222 \*  
 Mars -90759-09-27 09:06 J -31428032.43 -31428032.12 -31428031.80 0.0282 0.0011  
 Mercury -90752-05-23 01:11 J -31425602.57 -31425602.45 -31425602.32 0.0283 0.0193  
 Moon -90752-08-04 15:20 J -31425529.06 -31425528.86 -31425528.66 0.0283 0.0165  
 Earth -90752-08-04 18:42 J -31425528.91 -31425528.72 -31425528.52 0.0283 0.0180 \*  
 Mercury -90752-08-19 20:08 J -31425513.82 -31425513.66 -31425513.50 0.0283 0.0076  
 Venus -90752-10-06 17:01 J -31425465.92 -31425465.79 -31425465.64 0.0283 0.0211  
 Mercury -90752-11-16 14:23 J -31425425.06 -31425424.90 -31425424.73 0.0283 0.0038  
 Mercury -90751-02-13 08:23 J -31425336.29 -31425336.15 -31425336.01 0.0283 0.0149  
 Mercury -90751-05-13 01:54 J -31425247.48 -31425247.42 -31425247.35 0.0283 0.0257  
 Venus -90751-05-24 12:13 J -31425236.17 -31425235.99 -31425235.80 0.0283 0.0143  
 Moon -90751-08-18 21:20 J -31425149.84 -31425149.61 -31425149.37 0.0283 0.0058

Earth -90751-08-18 22:32 J -31425149.81 -31425149.56 -31425149.31 0.0283 0.0041 \*  
 Earth -90750-09-01 20:08 J -31424770.76 -31424770.66 -31424770.55 0.0282 0.0254  
 Moon -90750-09-01 22:03 J -31424770.63 -31424770.58 -31424770.50 0.0282 0.0270 \*  
 Mars -90745-09-22 15:06 J -31422923.11 -31422922.87 -31422922.61 0.0277 0.0112  
 Moon -90737-01-24 20:51 J -31420242.73 -31420242.63 -31420242.50 0.0275 0.0239  
 Earth -90737-01-25 00:27 J -31420242.57 -31420242.48 -31420242.36 0.0275 0.0245 \*  
 Mercury -90737-03-04 20:23 J -31420202.74 -31420202.65 -31420202.56 0.0275 0.0208  
 Mercury -90737-06-01 09:20 J -31420114.24 -31420114.11 -31420113.98 0.0275 0.0119  
 Mercury -90737-08-28 22:32 J -31420025.70 -31420025.56 -31420025.41 0.0276 0.0028  
 Venus -90737-10-30 10:03 J -31419963.26 -31419963.08 -31419962.90 0.0276 0.0130  
 Mercury -90737-11-25 11:59 J -31419937.14 -31419937.00 -31419936.86 0.0276 0.0064  
 Earth -90736-02-05 00:13 J -31419865.72 -31419865.49 -31419865.25 0.0276 0.0058  
 Moon -90736-02-05 00:42 J -31419865.69 -31419865.47 -31419865.24 0.0276 0.0063 \*  
 Mercury -90736-02-22 01:39 J -31419848.55 -31419848.43 -31419848.31 0.0276 0.0159  
 Mercury -90736-05-21 15:35 J -31419759.90 -31419759.85 -31419759.79 0.0276 0.0255  
 Venus -90736-06-16 14:51 J -31419734.03 -31419733.88 -31419733.72 0.0276 0.0185  
 Earth -90735-02-17 04:32 J -31419488.52 -31419488.31 -31419488.10 0.0277 0.0136  
 Moon -90735-02-17 07:54 J -31419488.38 -31419488.17 -31419487.95 0.0277 0.0122 \*  
 Mars -90729-11-17 19:11 J -31417022.95 -31417022.70 -31417022.44 0.0283 0.0163  
 Earth -90723-07-29 12:27 J -31414942.99 -31414942.98 -31414942.95 0.0283 0.0282  
 Moon -90723-07-29 15:35 J -31414942.92 -31414942.85 -31414942.76 0.0283 0.0268  
 Mercury -90723-10-09 23:30 J -31414870.60 -31414870.52 -31414870.42 0.0283 0.0236  
 Mercury -90722-01-06 18:42 J -31414781.87 -31414781.72 -31414781.57 0.0283 0.0118  
 Mercury -90722-04-05 13:11 J -31414693.12 -31414692.95 -31414692.79 0.0283 0.0003  
 Venus -90722-04-18 19:11 J -31414679.86 -31414679.70 -31414679.52 0.0283 0.0173  
 Mercury -90722-07-03 07:11 J -31414604.35 -31414604.20 -31414604.05 0.0283 0.0109  
 Moon -90722-08-12 19:11 J -31414563.96 -31414563.70 -31414563.44 0.0282 0.0046  
 Earth -90722-08-12 18:56 J -31414563.95 -31414563.71 -31414563.46 0.0282 0.0063 \*  
 Mercury -90722-09-30 00:56 J -31414515.56 -31414515.46 -31414515.36 0.0282 0.0218  
 Venus -90722-12-04 14:08 J -31414450.08 -31414449.91 -31414449.75 0.0282 0.0181

Moon -90721-08-25 16:47 J -31414185.00 -31414184.80 -31414184.60 0.0282 0.0171  
 Earth -90721-08-25 19:39 J -31414184.88 -31414184.68 -31414184.47 0.0282 0.0156 \*  
 Mars -90715-11-09 10:47 J -31411918.33 -31411918.05 -31411917.77 0.0276 0.0027  
 Mercury -90708-07-22 22:03 J -31409470.64 -31409470.58 -31409470.50 0.0276 0.0235  
 Mercury -90708-10-19 11:01 J -31409382.16 -31409382.04 -31409381.91 0.0276 0.0146  
 Mercury -90707-01-16 00:13 J -31409293.63 -31409293.49 -31409293.34 0.0276 0.0056  
 Moon -90707-01-31 01:39 J -31409278.64 -31409278.43 -31409278.21 0.0276 0.0140  
 Earth -90707-01-31 01:54 J -31409278.61 -31409278.42 -31409278.20 0.0276 0.0141 \*  
 Mercury -90707-04-14 13:39 J -31409205.07 -31409204.93 -31409204.78 0.0276 0.0037  
 Venus -90707-05-12 14:08 J -31409177.10 -31409176.91 -31409176.71 0.0276 0.0089  
 Mercury -90707-07-12 03:20 J -31409116.49 -31409116.36 -31409116.23 0.0276 0.0132  
 Mercury -90707-10-08 17:15 J -31409027.86 -31409027.78 -31409027.69 0.0277 0.0228  
 Venus -90707-12-27 19:39 J -31408947.80 -31408947.68 -31408947.57 0.0277 0.0229  
 Moon -90706-02-12 01:25 J -31408901.68 -31408901.44 -31408901.20 0.0277 0.0040  
 Earth -90706-02-12 05:01 J -31408901.53 -31408901.29 -31408901.06 0.0277 0.0052 \*  
 Moon -90705-02-24 12:27 J -31408524.10 -31408523.98 -31408523.85 0.0278 0.0232  
 Earth -90705-02-24 12:27 J -31408524.08 -31408523.98 -31408523.86 0.0278 0.0246 \*  
 Mars -90701-12-30 06:27 J -31406753.47 -31406753.23 -31406752.97 0.0282 0.0174  
 Mercury -90693-02-27 01:39 J -31404138.48 -31404138.43 -31404138.35 0.0284 0.0258  
 Mercury -90693-05-25 21:06 J -31404049.77 -31404049.62 -31404049.48 0.0283 0.0139  
 Earth -90693-08-06 06:56 J -31403977.43 -31403977.21 -31403977.00 0.0283 0.0150  
 Moon -90693-08-06 06:56 J -31403977.42 -31403977.21 -31403976.99 0.0283 0.0136 \*  
 Mercury -90693-08-22 15:35 J -31403961.01 -31403960.85 -31403960.68 0.0283 0.0024  
 Venus -90693-10-29 06:56 J -31403893.40 -31403893.21 -31403893.01 0.0283 0.0110  
 Mercury -90693-11-19 09:49 J -31403872.24 -31403872.09 -31403871.93 0.0283 0.0090  
 Mercury -90692-02-16 03:35 J -31403783.46 -31403783.35 -31403783.23 0.0283 0.0201  
 Venus -90692-06-16 01:39 J -31403663.53 -31403663.43 -31403663.32 0.0283 0.0244  
 Earth -90692-08-20 10:03 J -31403598.32 -31403598.08 -31403597.83 0.0283 0.0071  
 Moon -90692-08-20 13:25 J -31403598.17 -31403597.94 -31403597.70 0.0283 0.0087 \*  
 Earth -90691-09-03 06:56 J -31403219.21 -31403219.21 -31403219.18 0.0282 0.0281



Mars -90687-12-31 16:47 J -31401638.93 -31401638.80 -31401638.64 0.0277 0.0234  
 Mars -90685-12-27 07:25 J -31400912.40 -31400912.19 -31400911.97 0.0275 0.0176  
 Mercury -90679-12-10 00:27 J -31398738.52 -31398738.48 -31398738.42 0.0275 0.0256  
 Earth -90678-01-26 05:59 J -31398691.38 -31398691.25 -31398691.09 0.0275 0.0220  
 Moon -90678-01-26 06:42 J -31398691.36 -31398691.22 -31398691.08 0.0275 0.0216 \*  
 Mercury -90678-03-08 13:25 J -31398650.05 -31398649.94 -31398649.83 0.0275 0.0168  
 Mercury -90678-06-05 02:23 J -31398561.54 -31398561.40 -31398561.26 0.0275 0.0079  
 Mercury -90678-09-01 15:49 J -31398472.99 -31398472.84 -31398472.70 0.0276 0.0015  
 Venus -90678-11-22 19:11 J -31398390.90 -31398390.70 -31398390.49 0.0276 0.0043  
 Mercury -90678-11-29 05:15 J -31398384.42 -31398384.28 -31398384.14 0.0276 0.0106  
 Earth -90677-02-07 06:13 J -31398314.48 -31398314.24 -31398314.00 0.0276 0.0033  
 Moon -90677-02-07 09:49 J -31398314.33 -31398314.09 -31398313.85 0.0276 0.0040 \*  
 Mercury -90677-02-25 18:56 J -31398295.80 -31398295.71 -31398295.60 0.0276 0.0202  
 Venus -90677-07-09 00:13 J -31398161.51 -31398161.49 -31398161.46 0.0276 0.0273  
 Earth -90676-02-18 10:32 J -31397937.25 -31397937.06 -31397936.86 0.0277 0.0161  
 Moon -90676-02-18 11:15 J -31397937.23 -31397937.03 -31397936.81 0.0277 0.0146 \*  
 Mars -90670-02-21 01:11 J -31395743.76 -31395743.45 -31395743.13 0.0283 0.0005  
 Moon -90664-07-30 23:30 J -31393391.65 -31393391.52 -31393391.37 0.0283 0.0238  
 Earth -90664-07-31 00:13 J -31393391.59 -31393391.49 -31393391.37 0.0283 0.0252 \*  
 Mercury -90664-10-12 19:11 J -31393317.82 -31393317.70 -31393317.57 0.0283 0.0182  
 Mercury -90663-01-09 14:08 J -31393229.07 -31393228.91 -31393228.75 0.0283 0.0065  
 Mercury -90663-04-08 08:37 J -31393140.30 -31393140.14 -31393139.98 0.0283 0.0049  
 Venus -90663-05-11 08:51 J -31393107.33 -31393107.13 -31393106.92 0.0283 0.0072  
 Mercury -90663-07-06 02:23 J -31393051.53 -31393051.40 -31393051.26 0.0283 0.0161  
 Moon -90663-08-14 02:51 J -31393012.63 -31393012.38 -31393012.13 0.0282 0.0017  
 Earth -90663-08-14 06:27 J -31393012.48 -31393012.23 -31393011.98 0.0282 0.0033 \*  
 Mercury -90663-10-02 19:54 J -31392962.71 -31392962.67 -31392962.62 0.0282 0.0269  
 Venus -90663-12-27 03:06 J -31392877.38 -31392877.37 -31392877.34 0.0282 0.0281  
 Moon -90662-08-28 03:35 J -31392633.52 -31392633.35 -31392633.17 0.0282 0.0198  
 Earth -90662-08-28 06:42 J -31392633.40 -31392633.22 -31392633.02 0.0282 0.0183 \*

Mars -90656-02-16 05:15 J -31390634.53 -31390634.28 -31390634.02 0.0277 0.0100  
 Mercury -90649-07-25 14:37 J -31387917.98 -31387917.89 -31387917.79 0.0276 0.0199  
 Mercury -90649-10-22 03:49 J -31387829.47 -31387829.34 -31387829.21 0.0276 0.0109  
 Mercury -90648-01-18 17:01 J -31387740.94 -31387740.79 -31387740.65 0.0276 0.0018  
 Moon -90648-02-01 01:54 J -31387727.63 -31387727.42 -31387727.20 0.0276 0.0120  
 Earth -90648-02-01 05:44 J -31387727.48 -31387727.26 -31387727.04 0.0276 0.0115 \*  
 Mercury -90648-04-17 06:27 J -31387652.37 -31387652.23 -31387652.09 0.0276 0.0076  
 Venus -90648-06-03 22:03 J -31387604.79 -31387604.58 -31387604.37 0.0276 0.0006  
 Mercury -90648-07-14 20:08 J -31387563.77 -31387563.66 -31387563.54 0.0276 0.0171  
 Mercury -90648-10-11 10:18 J -31387475.11 -31387475.07 -31387475.04 0.0277 0.0268  
 Moon -90647-02-13 07:25 J -31387350.41 -31387350.19 -31387349.96 0.0277 0.0063  
 Earth -90647-02-13 08:23 J -31387350.37 -31387350.15 -31387349.91 0.0277 0.0076 \*  
 Earth -90646-02-25 16:18 J -31386972.87 -31386972.82 -31386972.75 0.0278 0.0268  
 Moon -90646-02-25 19:39 J -31386972.76 -31386972.68 -31386972.58 0.0278 0.0255 \*  
 Mars -90640-04-14 03:20 J -31384733.58 -31384733.36 -31384733.11 0.0283 0.0184  
 Mercury -90634-03-01 21:06 J -31382585.72 -31382585.62 -31382585.49 0.0284 0.0206  
 Mercury -90634-05-29 16:18 J -31382496.98 -31382496.82 -31382496.66 0.0284 0.0088  
 Earth -90634-08-08 16:47 J -31382426.02 -31382425.80 -31382425.57 0.0283 0.0121  
 Moon -90634-08-08 20:08 J -31382425.88 -31382425.66 -31382425.42 0.0283 0.0106 \*  
 Mercury -90634-08-26 10:47 J -31382408.21 -31382408.05 -31382407.89 0.0283 0.0028  
 Venus -90634-11-21 19:39 J -31382320.89 -31382320.68 -31382320.46 0.0283 0.0013  
 Mercury -90634-11-23 04:47 J -31382319.44 -31382319.30 -31382319.16 0.0283 0.0140  
 Mercury -90633-02-19 22:18 J -31382230.64 -31382230.57 -31382230.49 0.0283 0.0249  
 Earth -90633-08-21 20:08 J -31382046.89 -31382046.66 -31382046.42 0.0283 0.0098  
 Moon -90633-08-21 23:01 J -31382046.77 -31382046.54 -31382046.30 0.0283 0.0114 \*  
 Mars -90626-04-05 20:37 J -31379628.92 -31379628.64 -31379628.37 0.0276 0.0047  
 Mercury -90620-12-12 17:15 J -31377185.87 -31377185.78 -31377185.70 0.0275 0.0219  
 Earth -90619-01-27 10:03 J -31377140.24 -31377140.08 -31377139.91 0.0275 0.0196  
 Moon -90619-01-27 13:39 J -31377140.09 -31377139.93 -31377139.76 0.0275 0.0196 \*  
 Mercury -90619-03-11 05:59 J -31377097.37 -31377097.25 -31377097.12 0.0275 0.0131

Venus -90619-04-29 22:47 J -31377047.57 -31377047.55 -31377047.51 0.0275 0.0272

Mercury -90619-06-07 19:11 J -31377008.85 -31377008.70 -31377008.56 0.0275 0.0041

Mercury -90619-09-04 08:23 J -31376920.29 -31376920.15 -31376920.00 0.0276 0.0053

Mercury -90619-12-01 22:03 J -31376831.70 -31376831.58 -31376831.45 0.0276 0.0146

Venus -90619-12-15 03:06 J -31376818.57 -31376818.37 -31376818.16 0.0276 0.0042

Earth -90618-02-08 10:03 J -31376763.32 -31376763.08 -31376762.84 0.0276 0.0009

Moon -90618-02-08 11:15 J -31376763.27 -31376763.03 -31376762.78 0.0276 0.0019 \*

Mercury -90618-02-28 11:59 J -31376743.07 -31376743.00 -31376742.93 0.0276 0.0242

Moon -90617-02-20 11:44 J -31376386.20 -31376386.01 -31376385.81 0.0277 0.0167

Earth -90617-02-20 14:37 J -31376386.06 -31376385.89 -31376385.70 0.0277 0.0183 \*

Mars -90612-05-25 17:01 J -31374465.04 -31374464.79 -31374464.53 0.0282 0.0161

Mercury -90605-07-18 19:11 J -31371853.77 -31371853.70 -31371853.61 0.0283 0.0250

Moon -90605-08-01 05:59 J -31371840.41 -31371840.25 -31371840.06 0.0283 0.0210

Earth -90605-08-01 09:49 J -31371840.24 -31371840.09 -31371839.93 0.0283 0.0224 \*

Mercury -90605-10-15 14:23 J -31371765.04 -31371764.90 -31371764.75 0.0283 0.0132

Mercury -90604-01-12 09:06 J -31371676.28 -31371676.12 -31371675.95 0.0283 0.0016

Mercury -90604-04-11 03:20 J -31371587.51 -31371587.36 -31371587.20 0.0283 0.0098

Venus -90604-06-02 21:06 J -31371534.83 -31371534.62 -31371534.40 0.0283 0.0025

Mercury -90604-07-08 21:06 J -31371498.72 -31371498.62 -31371498.51 0.0283 0.0208

Moon -90604-08-15 13:39 J -31371461.18 -31371460.93 -31371460.69 0.0283 0.0010

Earth -90604-08-15 15:49 J -31371461.09 -31371460.84 -31371460.59 0.0283 0.0005 \*

Earth -90603-08-29 15:35 J -31371082.01 -31371081.85 -31371081.68 0.0282 0.0209

Moon -90603-08-29 17:01 J -31371081.94 -31371081.79 -31371081.64 0.0282 0.0222 \*

Mars -90598-05-27 03:49 J -31369350.50 -31369350.34 -31369350.18 0.0277 0.0224

Mars -90596-05-22 17:01 J -31368624.00 -31368623.79 -31368623.58 0.0276 0.0185

Moon -90590-01-22 05:15 J -31366553.31 -31366553.28 -31366553.22 0.0275 0.0269

Earth -90590-01-22 08:51 J -31366553.14 -31366553.13 -31366553.11 0.0275 0.0275

Mercury -90590-05-01 18:13 J -31366453.79 -31366453.74 -31366453.68 0.0276 0.0252

Mercury -90590-07-29 06:56 J -31366365.32 -31366365.21 -31366365.09 0.0276 0.0164

Mercury -90590-10-25 20:08 J -31366276.80 -31366276.66 -31366276.52 0.0276 0.0074

Venus -90590-11-10 00:13 J -31366261.58 -31366261.49 -31366261.38 0.0276 0.0240  
 Mercury -90589-01-22 09:20 J -31366188.26 -31366188.11 -31366187.96 0.0276 0.0018  
 Moon -90589-02-03 06:27 J -31366176.44 -31366176.23 -31366176.01 0.0276 0.0101  
 Earth -90589-02-03 07:25 J -31366176.41 -31366176.19 -31366175.96 0.0276 0.0093 \*  
 Mercury -90589-04-19 23:01 J -31366099.68 -31366099.54 -31366099.41 0.0276 0.0113  
 Venus -90589-06-26 04:47 J -31366032.50 -31366032.30 -31366032.10 0.0276 0.0076  
 Mercury -90589-07-17 12:42 J -31366011.06 -31366010.97 -31366010.87 0.0276 0.0208  
 Earth -90588-02-14 10:03 J -31365799.29 -31365799.08 -31365798.85 0.0277 0.0098  
 Moon -90588-02-14 13:25 J -31365799.16 -31365798.94 -31365798.71 0.0277 0.0083 \*  
 Moon -90587-02-26 20:37 J -31365421.67 -31365421.64 -31365421.61 0.0278 0.0275  
 Mars -90582-07-17 21:49 J -31363454.90 -31363454.59 -31363454.28 0.0283 0.0021  
 Mercury -90576-12-05 20:37 J -31361121.67 -31361121.64 -31361121.60 0.0284 0.0277  
 Mercury -90575-03-04 15:49 J -31361032.97 -31361032.84 -31361032.70 0.0284 0.0158  
 Venus -90575-04-28 11:15 J -31360978.08 -31360978.03 -31360977.98 0.0284 0.0275  
 Mercury -90575-06-01 10:47 J -31360944.22 -31360944.05 -31360943.89 0.0284 0.0041  
 Earth -90575-08-09 23:44 J -31360874.74 -31360874.51 -31360874.26 0.0284 0.0096  
 Moon -90575-08-10 02:08 J -31360874.65 -31360874.41 -31360874.16 0.0284 0.0081 \*  
 Mercury -90575-08-29 05:01 J -31360855.44 -31360855.29 -31360855.13 0.0283 0.0074  
 Mercury -90575-11-25 23:01 J -31360766.66 -31360766.54 -31360766.42 0.0283 0.0186  
 Venus -90575-12-14 06:42 J -31360748.42 -31360748.22 -31360748.01 0.0283 0.0083  
 Moon -90574-08-24 01:25 J -31360495.66 -31360495.44 -31360495.20 0.0283 0.0136  
 Earth -90574-08-24 03:06 J -31360495.58 -31360495.37 -31360495.13 0.0283 0.0124 \*  
 Mars -90568-07-13 14:23 J -31358345.16 -31358344.90 -31358344.64 0.0276 0.0081  
 Mercury -90561-09-17 20:37 J -31355721.65 -31355721.64 -31355721.61 0.0275 0.0271  
 Mercury -90561-12-15 09:20 J -31355633.21 -31355633.11 -31355633.00 0.0275 0.0184  
 Earth -90560-01-28 12:13 J -31355589.16 -31355588.99 -31355588.80 0.0275 0.0174  
 Moon -90560-01-28 13:25 J -31355589.11 -31355588.94 -31355588.74 0.0275 0.0175 \*  
 Mercury -90560-03-13 22:18 J -31355544.70 -31355544.57 -31355544.43 0.0275 0.0095  
 Venus -90560-05-22 05:59 J -31355475.40 -31355475.25 -31355475.10 0.0275 0.0190  
 Mercury -90560-06-10 11:30 J -31355456.16 -31355456.02 -31355455.87 0.0275 0.0009

Mercury -90560-09-07 00:56 J -31355367.59 -31355367.46 -31355367.32 0.0275 0.0089

Mercury -90560-12-04 14:37 J -31355278.99 -31355278.89 -31355278.78 0.0276 0.0184

Venus -90559-01-06 10:18 J -31355246.25 -31355246.07 -31355245.88 0.0276 0.0124

Moon -90559-02-09 09:06 J -31355212.36 -31355212.12 -31355211.88 0.0276 0.0001

Earth -90559-02-09 12:27 J -31355212.22 -31355211.98 -31355211.74 0.0276 0.0013 \*

Moon -90558-02-21 14:51 J -31354835.05 -31354834.88 -31354834.71 0.0277 0.0189

Earth -90558-02-21 17:01 J -31354834.94 -31354834.79 -31354834.62 0.0277 0.0204 \*

Mars -90552-09-07 08:37 J -31352445.36 -31352445.14 -31352444.91 0.0283 0.0193

Mercury -90546-07-22 13:54 J -31350301.03 -31350300.92 -31350300.80 0.0283 0.0202

Moon -90546-08-03 15:06 J -31350289.05 -31350288.87 -31350288.68 0.0283 0.0184

Earth -90546-08-03 16:47 J -31350288.97 -31350288.80 -31350288.61 0.0283 0.0198 \*

Mercury -90546-10-19 08:51 J -31350212.28 -31350212.13 -31350211.97 0.0283 0.0085

Venus -90546-11-08 12:27 J -31350192.09 -31350191.98 -31350191.86 0.0283 0.0239

Mercury -90545-01-16 03:35 J -31350123.52 -31350123.35 -31350123.19 0.0283 0.0031

Mercury -90545-04-13 21:35 J -31350034.74 -31350034.60 -31350034.46 0.0283 0.0144

Venus -90545-06-25 07:54 J -31349962.36 -31349962.17 -31349961.97 0.0283 0.0119

Mercury -90545-07-11 15:20 J -31349945.93 -31349945.86 -31349945.79 0.0283 0.0253

Earth -90545-08-16 22:47 J -31349909.80 -31349909.55 -31349909.30 0.0283 0.0021

Moon -90545-08-17 00:56 J -31349909.70 -31349909.46 -31349909.22 0.0283 0.0035 \*

Earth -90544-08-30 22:18 J -31349530.70 -31349530.57 -31349530.42 0.0282 0.0233

Moon -90544-08-31 02:08 J -31349530.53 -31349530.41 -31349530.28 0.0282 0.0244 \*

Mars -90538-08-30 02:51 J -31347340.65 -31347340.38 -31347340.11 0.0276 0.0055

Moon -90531-01-23 07:39 J -31345002.26 -31345002.18 -31345002.07 0.0275 0.0250

Earth -90531-01-23 09:35 J -31345002.19 -31345002.10 -31345002.01 0.0275 0.0254 \*

Mercury -90531-05-04 10:03 J -31344901.16 -31344901.08 -31344900.99 0.0275 0.0219

Mercury -90531-07-31 23:01 J -31344812.67 -31344812.54 -31344812.41 0.0276 0.0130

Mercury -90531-10-28 11:59 J -31344724.14 -31344724.00 -31344723.85 0.0276 0.0041

Venus -90531-12-02 06:13 J -31344689.40 -31344689.24 -31344689.07 0.0276 0.0162

Mercury -90530-01-25 01:25 J -31344635.58 -31344635.44 -31344635.30 0.0276 0.0053

Earth -90530-02-04 07:39 J -31344625.40 -31344625.18 -31344624.94 0.0276 0.0072

Moon -90530-02-04 11:01 J -31344625.26 -31344625.04 -31344624.81 0.0276 0.0083 \*  
 Mercury -90530-04-23 15:06 J -31344547.00 -31344546.87 -31344546.75 0.0276 0.0147  
 Venus -90530-07-19 10:47 J -31344460.22 -31344460.05 -31344459.88 0.0276 0.0154  
 Mercury -90530-07-21 04:47 J -31344458.36 -31344458.30 -31344458.22 0.0276 0.0244  
 Earth -90529-02-16 10:32 J -31344248.27 -31344248.06 -31344247.84 0.0277 0.0118  
 Moon -90529-02-16 12:56 J -31344248.18 -31344247.96 -31344247.73 0.0277 0.0102 \*  
 Mars -90524-10-19 01:25 J -31342176.70 -31342176.44 -31342176.17 0.0282 0.0148  
 Moon -90517-07-27 20:51 J -31339702.68 -31339702.63 -31339702.55 0.0284 0.0275  
 Mercury -90517-12-08 14:37 J -31339568.98 -31339568.89 -31339568.79 0.0284 0.0232  
 Mercury -90516-03-07 09:49 J -31339480.24 -31339480.09 -31339479.93 0.0284 0.0113  
 Venus -90516-05-20 20:51 J -31339405.79 -31339405.63 -31339405.46 0.0284 0.0185  
 Mercury -90516-06-04 04:32 J -31339391.47 -31339391.31 -31339391.14 0.0284 0.0007  
 Moon -90516-08-11 02:37 J -31339323.64 -31339323.39 -31339323.13 0.0284 0.0056  
 Earth -90516-08-11 04:47 J -31339323.54 -31339323.30 -31339323.05 0.0284 0.0072 \*  
 Mercury -90516-08-31 22:47 J -31339302.69 -31339302.55 -31339302.40 0.0284 0.0118  
 Mercury -90516-11-28 16:32 J -31339213.89 -31339213.81 -31339213.71 0.0283 0.0229  
 Venus -90515-01-05 16:32 J -31339175.98 -31339175.81 -31339175.64 0.0283 0.0174  
 Moon -90515-08-25 04:32 J -31338944.50 -31338944.31 -31338944.09 0.0283 0.0159  
 Earth -90515-08-25 08:23 J -31338944.36 -31338944.15 -31338943.93 0.0283 0.0146 \*  
 Mars -90510-10-21 10:03 J -31337061.25 -31337061.08 -31337060.89 0.0277 0.0207  
 Mars -90508-10-16 21:49 J -31336334.76 -31336334.59 -31336334.38 0.0275 0.0204  
 Mercury -90502-09-21 12:42 J -31334169.03 -31334168.97 -31334168.90 0.0275 0.0238  
 Mercury -90502-12-19 01:39 J -31334080.55 -31334080.43 -31334080.31 0.0275 0.0150  
 Moon -90501-01-30 10:32 J -31334038.25 -31334038.06 -31334037.85 0.0275 0.0159  
 Earth -90501-01-30 13:25 J -31334038.13 -31334037.94 -31334037.73 0.0275 0.0153 \*  
 Mercury -90501-03-16 14:37 J -31333992.03 -31333991.89 -31333991.75 0.0275 0.0060  
 Mercury -90501-06-13 03:49 J -31333903.49 -31333903.34 -31333903.19 0.0275 0.0031  
 Venus -90501-06-13 12:13 J -31333903.18 -31333902.99 -31333902.80 0.0275 0.0111  
 Mercury -90501-09-09 17:15 J -31333814.91 -31333814.78 -31333814.65 0.0275 0.0125  
 Mercury -90501-12-07 06:56 J -31333726.29 -31333726.21 -31333726.12 0.0275 0.0220

Venus -90500-01-28 16:18 J -31333673.94 -31333673.82 -31333673.67 0.0276 0.0205  
 Moon -90500-02-10 11:15 J -31333661.26 -31333661.03 -31333660.80 0.0276 0.0018  
 Earth -90500-02-10 13:25 J -31333661.17 -31333660.94 -31333660.70 0.0276 0.0034 \*  
 Earth -90499-02-22 17:59 J -31333283.88 -31333283.75 -31333283.60 0.0277 0.0223  
 Moon -90499-02-22 20:08 J -31333283.80 -31333283.66 -31333283.50 0.0277 0.0209 \*  
 Mars -90494-12-10 23:30 J -31331166.83 -31331166.52 -31331166.21 0.0283 0.0029  
 Mercury -90487-04-27 12:42 J -31328837.00 -31328836.97 -31328836.94 0.0284 0.0278  
 Mercury -90487-07-25 07:54 J -31328748.30 -31328748.17 -31328748.03 0.0284 0.0158  
 Earth -90487-08-04 21:35 J -31328737.80 -31328737.60 -31328737.40 0.0284 0.0174  
 Moon -90487-08-05 00:13 J -31328737.69 -31328737.49 -31328737.28 0.0284 0.0158 \*  
 Mercury -90487-10-22 02:51 J -31328659.54 -31328659.38 -31328659.21 0.0283 0.0041  
 Venus -90487-11-30 22:03 J -31328619.76 -31328619.58 -31328619.39 0.0283 0.0150  
 Mercury -90486-01-18 21:20 J -31328570.77 -31328570.61 -31328570.45 0.0283 0.0074  
 Mercury -90486-04-17 15:20 J -31328481.98 -31328481.86 -31328481.74 0.0283 0.0186  
 Venus -90486-07-18 17:15 J -31328389.91 -31328389.78 -31328389.63 0.0283 0.0209  
 Earth -90486-08-19 03:35 J -31328358.59 -31328358.35 -31328358.10 0.0283 0.0045  
 Moon -90486-08-19 07:11 J -31328358.45 -31328358.20 -31328357.95 0.0283 0.0059 \*  
 Earth -90485-09-01 03:06 J -31327979.46 -31327979.37 -31327979.25 0.0282 0.0255  
 Moon -90485-09-01 03:35 J -31327979.43 -31327979.35 -31327979.24 0.0282 0.0262 \*  
 Mars -90480-12-06 17:30 J -31326057.03 -31326056.77 -31326056.50 0.0276 0.0074  
 Earth -90472-01-24 09:35 J -31323451.22 -31323451.10 -31323450.97 0.0275 0.0233  
 Moon -90472-01-24 12:13 J -31323451.11 -31323450.99 -31323450.87 0.0275 0.0232 \*  
 Mercury -90472-02-07 13:11 J -31323436.95 -31323436.95 -31323436.93 0.0275 0.0273  
 Mercury -90472-05-07 01:54 J -31323348.52 -31323348.42 -31323348.31 0.0275 0.0186  
 Mercury -90472-08-03 14:51 J -31323260.01 -31323259.88 -31323259.74 0.0275 0.0097  
 Mercury -90472-10-31 04:03 J -31323171.48 -31323171.33 -31323171.18 0.0275 0.0006  
 Venus -90472-12-24 11:44 J -31323117.20 -31323117.01 -31323116.81 0.0276 0.0084  
 Mercury -90471-01-27 17:30 J -31323082.91 -31323082.77 -31323082.63 0.0276 0.0087  
 Earth -90471-02-05 07:39 J -31323074.41 -31323074.18 -31323073.94 0.0276 0.0052  
 Moon -90471-02-05 10:03 J -31323074.32 -31323074.08 -31323073.84 0.0276 0.0063 \*

Mercury -90471-04-26 07:11 J -31322994.31 -31322994.20 -31322994.09 0.0276 0.0182

Venus -90471-08-10 16:18 J -31322887.93 -31322887.82 -31322887.71 0.0276 0.0232

Moon -90470-02-17 07:39 J -31322697.39 -31322697.18 -31322696.95 0.0276 0.0121

Earth -90470-02-17 10:18 J -31322697.28 -31322697.07 -31322696.86 0.0276 0.0137 \*

Mars -90463-01-31 10:47 J -31320157.25 -31320157.05 -31320156.82 0.0283 0.0205

Moon -90458-07-29 18:42 J -31318151.83 -31318151.72 -31318151.60 0.0284 0.0252

Earth -90458-07-29 22:03 J -31318151.65 -31318151.58 -31318151.49 0.0284 0.0269 \*

Mercury -90458-12-12 08:23 J -31318016.28 -31318016.15 -31318016.03 0.0284 0.0191

Mercury -90457-03-10 03:20 J -31317927.52 -31317927.36 -31317927.20 0.0284 0.0072

Mercury -90457-06-06 22:03 J -31317838.75 -31317838.58 -31317838.42 0.0284 0.0045

Venus -90457-06-12 05:15 J -31317833.48 -31317833.28 -31317833.07 0.0284 0.0098

Moon -90457-08-12 04:03 J -31317772.57 -31317772.33 -31317772.08 0.0284 0.0035

Earth -90457-08-12 07:39 J -31317772.43 -31317772.18 -31317771.93 0.0284 0.0050 \*

Mercury -90457-09-03 16:03 J -31317749.96 -31317749.83 -31317749.69 0.0284 0.0158

Mercury -90457-12-01 09:49 J -31317661.14 -31317661.09 -31317661.04 0.0284 0.0268

Venus -90456-01-28 00:56 J -31317603.54 -31317603.46 -31317603.38 0.0283 0.0261

Moon -90456-08-26 10:32 J -31317393.23 -31317393.06 -31317392.86 0.0283 0.0178

Earth -90456-08-26 11:01 J -31317393.23 -31317393.04 -31317392.82 0.0283 0.0167 \*

Mars -90449-01-24 05:30 J -31315051.54 -31315051.27 -31315051.00 0.0276 0.0072

Mercury -90443-09-24 04:47 J -31312616.39 -31312616.30 -31312616.21 0.0274 0.0204

Mercury -90443-12-21 17:30 J -31312527.90 -31312527.77 -31312527.64 0.0275 0.0116

Moon -90442-01-31 11:30 J -31312487.22 -31312487.02 -31312486.82 0.0275 0.0139

Earth -90442-01-31 13:54 J -31312487.12 -31312486.92 -31312486.70 0.0275 0.0133 \*

Mercury -90442-03-20 06:42 J -31312439.37 -31312439.22 -31312439.08 0.0275 0.0027

Mercury -90442-06-16 19:54 J -31312350.81 -31312350.67 -31312350.53 0.0275 0.0066

Venus -90442-07-06 17:59 J -31312330.95 -31312330.75 -31312330.54 0.0275 0.0033

Mercury -90442-09-13 09:20 J -31312262.22 -31312262.11 -31312261.99 0.0275 0.0160

Mercury -90442-12-10 23:15 J -31312173.58 -31312173.53 -31312173.48 0.0275 0.0256

Earth -90441-02-12 13:54 J -31312110.16 -31312109.92 -31312109.69 0.0275 0.0053

Moon -90441-02-12 16:03 J -31312110.06 -31312109.83 -31312109.60 0.0275 0.0038 \*



Earth -90440-02-23 18:13 J -31311732.84 -31311732.74 -31311732.61 0.0276 0.0241  
 Moon -90440-02-23 22:03 J -31311732.72 -31311732.58 -31311732.44 0.0276 0.0227 \*  
 Mars -90435-03-14 01:11 J -31309888.71 -31309888.45 -31309888.17 0.0282 0.0143  
 Mercury -90428-04-30 06:27 J -31307284.32 -31307284.23 -31307284.14 0.0284 0.0235  
 Mercury -90428-07-28 01:39 J -31307195.58 -31307195.43 -31307195.28 0.0284 0.0115  
 Earth -90428-08-06 00:56 J -31307186.66 -31307186.46 -31307186.24 0.0284 0.0151  
 Moon -90428-08-06 04:32 J -31307186.54 -31307186.31 -31307186.09 0.0284 0.0134 \*  
 Mercury -90428-10-24 20:23 J -31307106.81 -31307106.65 -31307106.48 0.0284 0.0007  
 Venus -90428-12-23 07:11 J -31307047.41 -31307047.20 -31307046.99 0.0284 0.0061  
 Mercury -90427-01-21 14:37 J -31307018.03 -31307017.89 -31307017.73 0.0283 0.0117  
 Mercury -90427-04-20 08:37 J -31306929.23 -31306929.14 -31306929.04 0.0283 0.0227  
 Moon -90427-08-20 07:11 J -31306807.44 -31306807.20 -31306806.94 0.0283 0.0079  
 Earth -90427-08-20 07:25 J -31306807.43 -31306807.19 -31306806.95 0.0283 0.0067 \*  
 Moon -90426-09-03 03:35 J -31306428.37 -31306428.35 -31306428.31 0.0282 0.0279  
 Earth -90426-09-03 06:56 J -31306428.25 -31306428.21 -31306428.15 0.0282 0.0275  
 Mars -90421-03-15 11:01 J -31304773.21 -31304773.04 -31304772.84 0.0277 0.0202  
 Mars -90419-03-11 21:49 J -31304046.77 -31304046.59 -31304046.40 0.0275 0.0210  
 Earth -90413-01-26 09:20 J -31301900.24 -31301900.11 -31301899.95 0.0275 0.0214  
 Moon -90413-01-26 12:27 J -31301900.12 -31301899.98 -31301899.82 0.0275 0.0214 \*  
 Mercury -90413-02-11 05:01 J -31301884.35 -31301884.29 -31301884.22 0.0275 0.0241  
 Mercury -90413-05-09 17:44 J -31301795.87 -31301795.76 -31301795.64 0.0275 0.0154  
 Mercury -90413-08-06 06:42 J -31301707.36 -31301707.22 -31301707.07 0.0275 0.0064  
 Mercury -90413-11-02 19:54 J -31301618.81 -31301618.67 -31301618.52 0.0275 0.0029  
 Venus -90412-01-15 17:15 J -31301544.99 -31301544.78 -31301544.57 0.0275 0.0006  
 Mercury -90412-01-30 09:20 J -31301530.24 -31301530.11 -31301529.97 0.0275 0.0122  
 Moon -90412-02-06 05:15 J -31301523.52 -31301523.28 -31301523.03 0.0275 0.0046  
 Earth -90412-02-06 07:39 J -31301523.42 -31301523.18 -31301522.94 0.0275 0.0032 \*  
 Mercury -90412-04-28 23:01 J -31301441.62 -31301441.54 -31301441.44 0.0276 0.0217  
 Moon -90411-02-18 06:42 J -31301146.42 -31301146.22 -31301146.01 0.0276 0.0142  
 Earth -90411-02-18 09:49 J -31301146.28 -31301146.09 -31301145.89 0.0276 0.0155 \*

Mars -90405-05-04 17:01 J -31298879.09 -31298878.79 -31298878.47 0.0283 0.0037  
 Moon -90399-07-30 20:51 J -31296600.77 -31296600.63 -31296600.49 0.0285 0.0233  
 Earth -90399-07-30 23:01 J -31296600.65 -31296600.54 -31296600.41 0.0285 0.0248 \*  
 Mercury -90399-09-17 05:44 J -31296552.30 -31296552.26 -31296552.20 0.0284 0.0273  
 Mercury -90399-12-15 01:25 J -31296463.58 -31296463.44 -31296463.30 0.0284 0.0151  
 Mercury -90398-03-13 20:23 J -31296374.82 -31296374.65 -31296374.49 0.0284 0.0033  
 Mercury -90398-06-10 14:51 J -31296286.03 -31296285.88 -31296285.72 0.0284 0.0083  
 Venus -90398-07-05 12:42 J -31296261.18 -31296260.97 -31296260.75 0.0284 0.0013  
 Earth -90398-08-14 08:51 J -31296221.38 -31296221.13 -31296220.88 0.0284 0.0029  
 Moon -90398-08-14 09:35 J -31296221.35 -31296221.10 -31296220.86 0.0284 0.0016 \*  
 Mercury -90398-09-07 08:51 J -31296197.24 -31296197.13 -31296197.01 0.0284 0.0196  
 Earth -90397-08-27 12:27 J -31295842.16 -31295841.98 -31295841.78 0.0283 0.0186  
 Moon -90397-08-27 15:49 J -31295842.01 -31295841.84 -31295841.65 0.0283 0.0196 \*  
 Mars -90391-05-02 17:30 J -31293768.04 -31293767.77 -31293767.51 0.0277 0.0060  
 Mercury -90384-06-30 08:08 J -31291152.20 -31291152.16 -31291152.11 0.0274 0.0257  
 Mercury -90384-09-26 20:51 J -31291063.74 -31291063.63 -31291063.52 0.0274 0.0171  
 Venus -90384-12-11 20:23 J -31290987.69 -31290987.65 -31290987.58 0.0274 0.0265  
 Mercury -90384-12-24 09:35 J -31290975.23 -31290975.10 -31290974.96 0.0274 0.0082  
 Earth -90383-02-01 14:51 J -31290936.09 -31290935.88 -31290935.66 0.0274 0.0113  
 Moon -90383-02-01 16:18 J -31290936.03 -31290935.82 -31290935.61 0.0274 0.0122 \*  
 Mercury -90383-03-22 22:47 J -31290886.70 -31290886.55 -31290886.41 0.0275 0.0009  
 Mercury -90383-06-19 11:59 J -31290798.13 -31290798.00 -31290797.86 0.0275 0.0102  
 Venus -90383-07-28 23:59 J -31290758.70 -31290758.50 -31290758.29 0.0275 0.0048  
 Mercury -90383-09-16 01:39 J -31290709.53 -31290709.43 -31290709.33 0.0275 0.0196  
 Earth -90382-02-13 14:23 J -31290559.13 -31290558.90 -31290558.66 0.0275 0.0072  
 Moon -90382-02-13 17:44 J -31290559.00 -31290558.76 -31290558.52 0.0275 0.0056 \*  
 Moon -90381-02-25 17:59 J -31290181.85 -31290181.75 -31290181.63 0.0276 0.0248  
 Earth -90381-02-25 19:11 J -31290181.78 -31290181.70 -31290181.62 0.0276 0.0258 \*  
 Mars -90375-06-26 11:30 J -31287869.22 -31287869.02 -31287868.81 0.0283 0.0211  
 Mercury -90369-05-02 23:44 J -31285731.62 -31285731.51 -31285731.38 0.0284 0.0195

Mercury -90369-07-30 18:56 J -31285642.86 -31285642.71 -31285642.54 0.0284 0.0075  
 Moon -90369-08-07 01:54 J -31285635.66 -31285635.42 -31285635.18 0.0284 0.0114  
 Earth -90369-08-07 03:20 J -31285635.57 -31285635.36 -31285635.12 0.0284 0.0129 \*  
 Mercury -90369-10-27 13:39 J -31285554.09 -31285553.93 -31285553.76 0.0284 0.0043  
 Venus -90368-01-14 15:20 J -31285475.07 -31285474.86 -31285474.64 0.0284 0.0027  
 Mercury -90368-01-24 07:54 J -31285465.30 -31285465.17 -31285465.03 0.0284 0.0156  
 Mercury -90368-04-23 01:39 J -31285376.48 -31285376.43 -31285376.37 0.0283 0.0266  
 Moon -90368-08-21 05:59 J -31285256.48 -31285256.25 -31285256.01 0.0283 0.0099  
 Earth -90368-08-21 09:49 J -31285256.33 -31285256.09 -31285255.85 0.0283 0.0088 \*  
 Mars -90361-06-18 05:59 J -31282763.51 -31282763.25 -31282762.98 0.0276 0.0078  
 Moon -90354-01-27 08:37 J -31280349.30 -31280349.14 -31280348.97 0.0275 0.0199  
 Earth -90354-01-27 10:03 J -31280349.24 -31280349.08 -31280348.91 0.0275 0.0193 \*  
 Mercury -90354-02-13 21:06 J -31280331.71 -31280331.62 -31280331.53 0.0275 0.0208  
 Mercury -90354-05-13 09:49 J -31280243.22 -31280243.09 -31280242.96 0.0275 0.0120  
 Venus -90354-06-23 19:11 J -31280201.79 -31280201.70 -31280201.59 0.0275 0.0240  
 Mercury -90354-08-09 22:47 J -31280154.69 -31280154.55 -31280154.40 0.0275 0.0030  
 Mercury -90354-11-06 11:59 J -31280066.14 -31280066.00 -31280065.85 0.0275 0.0063  
 Mercury -90353-02-03 01:39 J -31279977.55 -31279977.43 -31279977.31 0.0275 0.0157  
 Venus -90353-02-07 22:47 J -31279972.75 -31279972.55 -31279972.34 0.0275 0.0073  
 Moon -90353-02-08 04:47 J -31279972.54 -31279972.30 -31279972.07 0.0275 0.0027 \*  
 Earth -90353-02-08 07:54 J -31279972.41 -31279972.17 -31279971.93 0.0275 0.0012 \*  
 Mercury -90353-05-01 15:20 J -31279888.92 -31279888.86 -31279888.80 0.0275 0.0252  
 Earth -90352-02-19 09:49 J -31279595.27 -31279595.09 -31279594.90 0.0276 0.0173  
 Moon -90352-02-19 11:01 J -31279595.22 -31279595.04 -31279594.85 0.0276 0.0163 \*  
 Mars -90347-08-06 14:37 J -31277601.16 -31277600.89 -31277600.61 0.0282 0.0138  
 Earth -90340-07-31 23:59 J -31275049.64 -31275049.50 -31275049.34 0.0285 0.0228  
 Moon -90340-08-01 02:37 J -31275049.55 -31275049.39 -31275049.23 0.0285 0.0214 \*  
 Mercury -90340-09-19 23:01 J -31274999.63 -31274999.54 -31274999.44 0.0285 0.0232  
 Mercury -90340-12-17 18:27 J -31274910.88 -31274910.73 -31274910.57 0.0284 0.0112  
 Mercury -90339-03-16 13:25 J -31274822.11 -31274821.94 -31274821.78 0.0284 0.0007

Mercury -90339-06-13 07:39 J -31274733.32 -31274733.18 -31274733.02 0.0284 0.0123

Venus -90339-07-27 20:23 J -31274688.86 -31274688.65 -31274688.44 0.0284 0.0073

Earth -90339-08-15 10:03 J -31274670.33 -31274670.08 -31274669.82 0.0284 0.0010

Moon -90339-08-15 14:08 J -31274670.16 -31274669.91 -31274669.66 0.0284 0.0004 \*

Mercury -90339-09-10 01:39 J -31274644.51 -31274644.43 -31274644.33 0.0284 0.0234

Earth -90338-08-29 13:54 J -31274291.08 -31274290.92 -31274290.73 0.0283 0.0205

Moon -90338-08-29 16:18 J -31274290.98 -31274290.82 -31274290.64 0.0283 0.0213 \*

Mars -90333-08-09 08:37 J -31272484.33 -31272484.14 -31272483.94 0.0278 0.0191

Mars -90331-08-05 21:35 J -31271757.75 -31271757.60 -31271757.42 0.0276 0.0224

Earth -90325-01-22 19:54 J -31269761.70 -31269761.67 -31269761.61 0.0274 0.0269

Moon -90325-01-22 21:06 J -31269761.64 -31269761.62 -31269761.57 0.0274 0.0270 \*

Mercury -90325-07-02 23:59 J -31269599.57 -31269599.50 -31269599.41 0.0274 0.0224

Mercury -90325-09-29 12:56 J -31269511.09 -31269510.96 -31269510.84 0.0274 0.0136

Mercury -90325-12-27 01:54 J -31269422.57 -31269422.42 -31269422.28 0.0274 0.0047

Venus -90324-01-03 02:51 J -31269415.53 -31269415.38 -31269415.22 0.0274 0.0184

Earth -90324-02-02 15:49 J -31269385.06 -31269384.84 -31269384.61 0.0274 0.0093

Moon -90324-02-02 19:25 J -31269384.90 -31269384.69 -31269384.46 0.0274 0.0104 \*

Mercury -90324-03-25 14:51 J -31269334.02 -31269333.88 -31269333.73 0.0274 0.0045

Mercury -90324-06-22 04:18 J -31269245.44 -31269245.32 -31269245.19 0.0275 0.0138

Venus -90324-08-20 06:13 J -31269186.42 -31269186.24 -31269186.05 0.0275 0.0129

Mercury -90324-09-18 17:59 J -31269156.82 -31269156.75 -31269156.67 0.0275 0.0233

Moon -90323-02-14 14:51 J -31269008.12 -31269007.88 -31269007.64 0.0275 0.0078

Earth -90323-02-14 15:35 J -31269008.07 -31269007.85 -31269007.62 0.0275 0.0091 \*

Moon -90322-02-26 16:18 J -31268630.85 -31268630.82 -31268630.76 0.0276 0.0270

Earth -90322-02-26 19:54 J -31268630.67 -31268630.67 -31268630.64 0.0276 0.0275

Mars -90317-09-27 23:44 J -31266590.82 -31266590.51 -31266590.20 0.0283 0.0043

Mercury -90310-02-06 21:49 J -31264267.62 -31264267.59 -31264267.54 0.0284 0.0274

Mercury -90310-05-06 17:30 J -31264178.91 -31264178.77 -31264178.63 0.0284 0.0152

Venus -90310-06-22 03:20 J -31264132.46 -31264132.36 -31264132.25 0.0284 0.0249

Mercury -90310-08-03 12:27 J -31264090.14 -31264089.98 -31264089.81 0.0284 0.0033

Moon -90310-08-09 02:23 J -31264084.63 -31264084.40 -31264084.16 0.0284 0.0095  
 Earth -90310-08-09 06:13 J -31264084.47 -31264084.24 -31264084.00 0.0284 0.0107 \*  
 Mercury -90310-10-31 06:56 J -31264001.36 -31264001.21 -31264001.05 0.0284 0.0083  
 Mercury -90309-01-28 01:11 J -31263912.57 -31263912.45 -31263912.33 0.0284 0.0196  
 Venus -90309-02-06 23:44 J -31263902.71 -31263902.51 -31263902.31 0.0284 0.0114  
 Moon -90309-08-22 10:32 J -31263705.27 -31263705.06 -31263704.83 0.0283 0.0117  
 Earth -90309-08-22 12:27 J -31263705.21 -31263704.98 -31263704.75 0.0283 0.0109 \*  
 Jupiter -90304-09-24 06:42 J -31261846.63 -31261846.22 -31261845.78 0.0277 0.0072  
 Mars -90303-09-25 19:39 J -31261479.95 -31261479.68 -31261479.41 0.0276 0.0055  
 Mercury -90296-11-20 00:42 J -31258867.51 -31258867.47 -31258867.43 0.0274 0.0260  
 Moon -90295-01-28 08:08 J -31258798.33 -31258798.16 -31258797.98 0.0274 0.0183  
 Earth -90295-01-28 11:44 J -31258798.19 -31258798.01 -31258797.82 0.0274 0.0173 \*  
 Mercury -90295-02-16 13:11 J -31258779.06 -31258778.95 -31258778.84 0.0274 0.0173  
 Mercury -90295-05-16 02:08 J -31258690.55 -31258690.41 -31258690.28 0.0275 0.0084  
 Venus -90295-07-16 01:54 J -31258629.58 -31258629.42 -31258629.24 0.0275 0.0159  
 Mercury -90295-08-12 15:06 J -31258602.01 -31258601.87 -31258601.72 0.0275 0.0007  
 Mercury -90295-11-09 04:18 J -31258513.45 -31258513.32 -31258513.18 0.0275 0.0100  
 Mercury -90294-02-05 17:59 J -31258424.85 -31258424.75 -31258424.65 0.0275 0.0194  
 Earth -90294-02-09 09:20 J -31258421.34 -31258421.11 -31258420.87 0.0275 0.0009  
 Moon -90294-02-09 09:49 J -31258421.32 -31258421.09 -31258420.86 0.0275 0.0006 \*  
 Venus -90294-03-02 05:15 J -31258400.44 -31258400.28 -31258400.10 0.0275 0.0156  
 Earth -90293-02-21 11:15 J -31258044.20 -31258044.03 -31258043.85 0.0276 0.0192  
 Moon -90293-02-21 14:51 J -31258044.05 -31258043.88 -31258043.70 0.0276 0.0183 \*  
 Mars -90287-11-19 03:49 J -31255581.52 -31255581.34 -31255581.13 0.0283 0.0218  
 Earth -90281-08-02 01:11 J -31253498.62 -31253498.45 -31253498.27 0.0285 0.0207  
 Moon -90281-08-02 04:18 J -31253498.49 -31253498.32 -31253498.12 0.0285 0.0195 \*  
 Mercury -90281-09-22 16:18 J -31253446.94 -31253446.82 -31253446.69 0.0285 0.0192  
 Mercury -90281-12-20 11:30 J -31253358.18 -31253358.02 -31253357.85 0.0285 0.0072  
 Venus -90280-01-01 07:11 J -31253346.34 -31253346.20 -31253346.04 0.0285 0.0206  
 Mercury -90280-03-19 06:27 J -31253269.40 -31253269.23 -31253269.07 0.0284 0.0046

Mercury -90280-06-16 00:42 J -31253180.60 -31253180.47 -31253180.33 0.0284 0.0160

Earth -90280-08-16 11:15 J -31253119.28 -31253119.03 -31253118.78 0.0284 0.0011

Moon -90280-08-16 11:59 J -31253119.25 -31253119.00 -31253118.73 0.0284 0.0020 \*

Venus -90280-08-19 03:35 J -31253116.52 -31253116.35 -31253116.16 0.0284 0.0160

Mercury -90280-09-12 18:27 J -31253091.77 -31253091.73 -31253091.68 0.0284 0.0272

Moon -90279-08-30 12:56 J -31252740.11 -31252739.96 -31252739.80 0.0283 0.0226

Earth -90279-08-30 15:20 J -31252740.00 -31252739.86 -31252739.70 0.0283 0.0223 \*

Mars -90273-11-12 04:47 J -31250474.56 -31250474.30 -31250474.03 0.0276 0.0089

Earth -90266-01-23 22:03 J -31248210.67 -31248210.58 -31248210.47 0.0274 0.0248

Moon -90266-01-24 01:39 J -31248210.51 -31248210.43 -31248210.33 0.0274 0.0252 \*

Mercury -90266-07-06 16:32 J -31248046.92 -31248046.81 -31248046.71 0.0274 0.0189

Mercury -90266-10-03 05:15 J -31247958.42 -31247958.28 -31247958.15 0.0274 0.0100

Mercury -90266-12-30 18:13 J -31247869.89 -31247869.74 -31247869.60 0.0274 0.0010

Venus -90265-01-26 09:49 J -31247843.28 -31247843.09 -31247842.90 0.0274 0.0102

Earth -90265-02-04 18:27 J -31247833.96 -31247833.73 -31247833.50 0.0274 0.0072

Moon -90265-02-04 18:27 J -31247833.96 -31247833.73 -31247833.49 0.0274 0.0085 \*

Mercury -90265-03-28 07:25 J -31247781.33 -31247781.19 -31247781.05 0.0274 0.0082

Mercury -90265-06-24 20:51 J -31247692.74 -31247692.63 -31247692.51 0.0275 0.0176

Venus -90265-09-11 13:11 J -31247614.07 -31247613.95 -31247613.81 0.0275 0.0212

Mercury -90265-09-21 10:32 J -31247604.07 -31247604.06 -31247604.03 0.0275 0.0272

Moon -90264-02-15 14:37 J -31247457.11 -31247456.89 -31247456.66 0.0275 0.0098

Earth -90264-02-15 17:59 J -31247456.96 -31247456.75 -31247456.52 0.0275 0.0111 \*

Mars -90259-12-31 05:30 J -31245312.54 -31245312.27 -31245311.98 0.0282 0.0130

Mercury -90251-02-09 16:03 J -31242714.93 -31242714.83 -31242714.73 0.0285 0.0229

Mercury -90251-05-09 11:15 J -31242626.18 -31242626.03 -31242625.87 0.0284 0.0108

Venus -90251-07-14 12:42 J -31242560.15 -31242559.97 -31242559.79 0.0284 0.0159

Mercury -90251-08-06 06:13 J -31242537.41 -31242537.24 -31242537.08 0.0284 0.0010

Earth -90251-08-10 10:18 J -31242533.31 -31242533.07 -31242532.83 0.0284 0.0084

Moon -90251-08-10 10:32 J -31242533.30 -31242533.06 -31242532.83 0.0284 0.0076 \*

Mercury -90251-11-03 00:42 J -31242448.62 -31242448.47 -31242448.33 0.0284 0.0125

Mercury -90250-01-30 18:27 J -31242359.81 -31242359.73 -31242359.63 0.0284 0.0238  
 Venus -90250-03-01 08:37 J -31242330.28 -31242330.14 -31242329.99 0.0284 0.0204  
 Earth -90250-08-24 16:18 J -31242154.04 -31242153.82 -31242153.59 0.0283 0.0130  
 Moon -90250-08-24 19:25 J -31242153.90 -31242153.69 -31242153.47 0.0283 0.0135 \*  
 Mars -90244-01-02 13:39 J -31240196.13 -31240195.93 -31240195.73 0.0277 0.0185  
 Mars -90243-12-30 02:23 J -31239469.54 -31239469.40 -31239469.24 0.0275 0.0231  
 Mercury -90237-11-22 17:01 J -31237314.87 -31237314.79 -31237314.71 0.0274 0.0223  
 Earth -90236-01-29 14:51 J -31237247.08 -31237246.88 -31237246.68 0.0274 0.0152  
 Moon -90236-01-29 14:37 J -31237247.06 -31237246.89 -31237246.70 0.0274 0.0165 \*  
 Mercury -90236-02-19 05:30 J -31237226.39 -31237226.27 -31237226.14 0.0274 0.0137  
 Mercury -90236-05-18 18:27 J -31237137.87 -31237137.73 -31237137.58 0.0275 0.0047  
 Venus -90236-08-07 09:20 J -31237057.31 -31237057.11 -31237056.91 0.0275 0.0075  
 Mercury -90236-08-15 07:39 J -31237049.32 -31237049.18 -31237049.03 0.0275 0.0045  
 Mercury -90236-11-11 21:06 J -31236960.75 -31236960.62 -31236960.49 0.0275 0.0138  
 Mercury -90235-02-08 10:47 J -31236872.13 -31236872.05 -31236871.98 0.0275 0.0233  
 Earth -90235-02-10 12:27 J -31236870.22 -31236869.98 -31236869.75 0.0275 0.0028  
 Moon -90235-02-10 15:49 J -31236870.08 -31236869.84 -31236869.60 0.0275 0.0013 \*  
 Venus -90235-03-24 12:56 J -31236828.06 -31236827.96 -31236827.86 0.0275 0.0240  
 Earth -90234-02-22 14:08 J -31236493.05 -31236492.91 -31236492.75 0.0276 0.0211  
 Moon -90234-02-22 14:37 J -31236493.04 -31236492.89 -31236492.71 0.0276 0.0205 \*  
 Mars -90228-02-20 17:15 J -31234303.08 -31234302.78 -31234302.47 0.0282 0.0049  
 Mercury -90222-06-29 14:23 J -31231982.94 -31231982.90 -31231982.85 0.0285 0.0272  
 Moon -90222-08-04 03:06 J -31231947.56 -31231947.37 -31231947.15 0.0285 0.0176  
 Earth -90222-08-04 04:03 J -31231947.51 -31231947.33 -31231947.13 0.0285 0.0185 \*  
 Mercury -90222-09-26 09:49 J -31231894.23 -31231894.09 -31231893.94 0.0285 0.0150  
 Mercury -90222-12-24 05:01 J -31231805.45 -31231805.29 -31231805.12 0.0284 0.0030  
 Venus -90221-01-24 15:49 J -31231774.03 -31231773.84 -31231773.64 0.0284 0.0117  
 Mercury -90221-03-21 23:44 J -31231716.67 -31231716.51 -31231716.35 0.0284 0.0087  
 Mercury -90221-06-18 17:59 J -31231627.86 -31231627.75 -31231627.64 0.0284 0.0201  
 Moon -90221-08-17 10:18 J -31231568.32 -31231568.07 -31231567.82 0.0284 0.0035

Earth -90221-08-17 14:08 J -31231568.16 -31231567.91 -31231567.66 0.0284 0.0032 \*  
 Venus -90221-09-10 11:59 J -31231544.09 -31231544.00 -31231543.89 0.0284 0.0247  
 Moon -90220-08-31 14:23 J -31231189.02 -31231188.90 -31231188.76 0.0283 0.0242  
 Earth -90220-08-31 17:44 J -31231188.87 -31231188.76 -31231188.62 0.0283 0.0242 \*  
 Mars -90214-02-19 16:03 J -31229191.10 -31229190.83 -31229190.55 0.0277 0.0046  
 Earth -90207-01-25 01:39 J -31226659.55 -31226659.43 -31226659.29 0.0274 0.0226  
 Moon -90207-01-25 02:08 J -31226659.53 -31226659.41 -31226659.28 0.0274 0.0232 \*  
 Mercury -90207-04-11 20:23 J -31226582.72 -31226582.65 -31226582.58 0.0274 0.0239  
 Mercury -90207-07-09 08:51 J -31226494.24 -31226494.13 -31226494.00 0.0274 0.0152  
 Mercury -90207-10-05 21:49 J -31226405.73 -31226405.59 -31226405.45 0.0274 0.0062  
 Mercury -90206-01-02 11:01 J -31226317.19 -31226317.04 -31226316.90 0.0274 0.0030  
 Moon -90206-02-05 18:42 J -31226282.95 -31226282.72 -31226282.49 0.0274 0.0066  
 Earth -90206-02-05 22:18 J -31226282.80 -31226282.57 -31226282.33 0.0274 0.0050 \*  
 Venus -90206-02-17 17:44 J -31226270.97 -31226270.76 -31226270.56 0.0274 0.0018  
 Mercury -90206-04-01 00:13 J -31226228.62 -31226228.49 -31226228.36 0.0274 0.0122  
 Mercury -90206-06-28 13:54 J -31226140.01 -31226139.92 -31226139.83 0.0275 0.0217  
 Moon -90205-02-17 21:06 J -31225905.83 -31225905.62 -31225905.41 0.0275 0.0120  
 Earth -90205-02-17 22:18 J -31225905.78 -31225905.57 -31225905.36 0.0275 0.0131 \*  
 Mars -90198-04-15 00:42 J -31223292.64 -31223292.47 -31223292.27 0.0283 0.0227  
 Earth -90193-07-28 04:18 J -31221361.37 -31221361.32 -31221361.24 0.0285 0.0274  
 Moon -90193-07-28 05:30 J -31221361.35 -31221361.27 -31221361.17 0.0285 0.0264 \*  
 Mercury -90192-02-12 10:18 J -31221162.20 -31221162.07 -31221161.94 0.0285 0.0183  
 Mercury -90192-05-12 05:30 J -31221073.43 -31221073.27 -31221073.11 0.0284 0.0063  
 Venus -90192-08-05 22:32 J -31220987.76 -31220987.56 -31220987.34 0.0284 0.0067  
 Mercury -90192-08-09 00:13 J -31220984.65 -31220984.49 -31220984.33 0.0284 0.0055  
 Earth -90192-08-11 15:35 J -31220982.10 -31220981.85 -31220981.60 0.0284 0.0060  
 Moon -90192-08-11 19:11 J -31220981.94 -31220981.70 -31220981.45 0.0284 0.0054 \*  
 Mercury -90192-11-05 18:27 J -31220895.86 -31220895.73 -31220895.60 0.0284 0.0169  
 Mercury -90191-02-02 12:13 J -31220807.00 -31220806.99 -31220806.96 0.0284 0.0281  
 Earth -90191-08-25 21:20 J -31220602.81 -31220602.61 -31220602.39 0.0284 0.0152



Moon -90191-08-26 00:27 J -31220602.69 -31220602.48 -31220602.26 0.0284 0.0153 \*  
 Mars -90184-04-07 13:25 J -31218186.20 -31218185.94 -31218185.68 0.0276 0.0097  
 Mercury -90178-08-29 21:20 J -31215850.63 -31215850.61 -31215850.60 0.0274 0.0271  
 Mercury -90178-11-26 09:35 J -31215762.20 -31215762.10 -31215761.99 0.0274 0.0186  
 Earth -90177-01-31 19:25 J -31215695.89 -31215695.69 -31215695.47 0.0274 0.0129  
 Moon -90177-01-31 23:15 J -31215695.73 -31215695.53 -31215695.33 0.0274 0.0144 \*  
 Mercury -90177-02-22 22:32 J -31215673.70 -31215673.56 -31215673.43 0.0274 0.0096  
 Mercury -90177-05-21 11:30 J -31215585.17 -31215585.02 -31215584.88 0.0274 0.0006  
 Mercury -90177-08-18 00:42 J -31215496.61 -31215496.47 -31215496.33 0.0275 0.0086  
 Venus -90177-08-29 17:44 J -31215484.97 -31215484.76 -31215484.55 0.0275 0.0012  
 Mercury -90177-11-14 14:08 J -31215408.02 -31215407.91 -31215407.80 0.0275 0.0180  
 Earth -90176-02-11 17:15 J -31215319.01 -31215318.78 -31215318.54 0.0275 0.0050  
 Moon -90176-02-11 18:42 J -31215318.96 -31215318.72 -31215318.47 0.0275 0.0036 \*  
 Moon -90175-02-23 16:18 J -31214941.95 -31214941.82 -31214941.68 0.0276 0.0228  
 Earth -90175-02-23 19:25 J -31214941.81 -31214941.69 -31214941.56 0.0276 0.0231 \*  
 Mars -90170-05-26 03:06 J -31213024.65 -31213024.37 -31213024.08 0.0282 0.0124  
 Mercury -90163-07-02 08:51 J -31210430.24 -31210430.13 -31210430.03 0.0285 0.0225  
 Moon -90163-08-05 05:59 J -31210396.45 -31210396.25 -31210396.03 0.0285 0.0154  
 Earth -90163-08-05 09:35 J -31210396.30 -31210396.10 -31210395.88 0.0285 0.0161 \*  
 Mercury -90163-09-29 04:03 J -31210341.48 -31210341.33 -31210341.17 0.0285 0.0104  
 Mercury -90163-12-26 23:01 J -31210252.70 -31210252.54 -31210252.37 0.0284 0.0016  
 Venus -90162-02-16 01:39 J -31210201.64 -31210201.43 -31210201.21 0.0284 0.0025  
 Mercury -90162-03-25 17:30 J -31210163.91 -31210163.77 -31210163.62 0.0284 0.0131  
 Mercury -90162-06-22 11:30 J -31210075.09 -31210075.02 -31210074.93 0.0284 0.0245  
 Moon -90162-08-19 17:01 J -31210017.03 -31210016.79 -31210016.55 0.0284 0.0056  
 Earth -90162-08-19 19:11 J -31210016.95 -31210016.70 -31210016.45 0.0284 0.0055 \*  
 Earth -90161-09-01 22:32 J -31209637.64 -31209637.56 -31209637.46 0.0283 0.0262  
 Moon -90161-09-01 23:44 J -31209637.60 -31209637.51 -31209637.41 0.0283 0.0259 \*  
 Mars -90156-05-29 10:03 J -31207907.29 -31207907.08 -31207906.87 0.0278 0.0178  
 Mars -90154-05-26 02:51 J -31207180.50 -31207180.38 -31207180.23 0.0276 0.0242

Moon -90148-01-26 03:20 J -31205108.51 -31205108.36 -31205108.21 0.0274 0.0214  
 Earth -90148-01-26 06:27 J -31205108.38 -31205108.23 -31205108.06 0.0274 0.0204 \*  
 Mercury -90148-04-14 13:11 J -31205030.05 -31205029.95 -31205029.86 0.0274 0.0200  
 Mercury -90148-07-12 01:54 J -31204941.55 -31204941.42 -31204941.29 0.0274 0.0112  
 Venus -90148-07-25 23:01 J -31204927.63 -31204927.54 -31204927.44 0.0274 0.0243  
 Mercury -90148-10-08 14:51 J -31204853.03 -31204852.88 -31204852.74 0.0274 0.0022  
 Mercury -90147-01-05 04:03 J -31204764.47 -31204764.33 -31204764.19 0.0274 0.0071  
 Moon -90147-02-07 01:39 J -31204731.65 -31204731.43 -31204731.20 0.0275 0.0043  
 Earth -90147-02-07 03:20 J -31204731.60 -31204731.36 -31204731.12 0.0275 0.0027 \*  
 Venus -90147-03-12 02:08 J -31204698.61 -31204698.41 -31204698.20 0.0275 0.0071  
 Mercury -90147-04-03 17:15 J -31204675.89 -31204675.78 -31204675.66 0.0275 0.0165  
 Mercury -90147-07-01 06:56 J -31204587.25 -31204587.21 -31204587.16 0.0275 0.0260  
 Earth -90146-02-19 03:35 J -31204354.54 -31204354.35 -31204354.14 0.0275 0.0153  
 Moon -90146-02-19 06:13 J -31204354.43 -31204354.24 -31204354.03 0.0275 0.0143 \*  
 Mars -90140-07-18 01:25 J -31202013.74 -31202013.44 -31202013.13 0.0282 0.0062  
 Earth -90134-07-30 12:56 J -31199810.08 -31199809.96 -31199809.83 0.0285 0.0247  
 Moon -90134-07-30 16:32 J -31199809.94 -31199809.81 -31199809.66 0.0285 0.0236 \*  
 Mercury -90134-11-19 09:35 J -31199698.17 -31199698.10 -31199698.02 0.0285 0.0255  
 Mercury -90133-02-16 05:01 J -31199609.43 -31199609.29 -31199609.14 0.0285 0.0133  
 Mercury -90133-05-15 00:13 J -31199520.66 -31199520.49 -31199520.33 0.0284 0.0014  
 Mercury -90133-08-11 18:42 J -31199431.87 -31199431.72 -31199431.57 0.0284 0.0103  
 Earth -90133-08-12 23:30 J -31199430.77 -31199430.52 -31199430.27 0.0284 0.0035  
 Moon -90133-08-13 01:39 J -31199430.69 -31199430.43 -31199430.17 0.0284 0.0029 \*  
 Venus -90133-08-28 10:18 J -31199415.29 -31199415.07 -31199414.86 0.0284 0.0030  
 Mercury -90133-11-08 12:56 J -31199343.07 -31199342.96 -31199342.86 0.0284 0.0216  
 Moon -90132-08-27 03:20 J -31199051.57 -31199051.36 -31199051.16 0.0284 0.0172  
 Earth -90132-08-27 05:01 J -31199051.48 -31199051.29 -31199051.09 0.0284 0.0176 \*  
 Mars -90126-07-16 06:56 J -31196902.48 -31196902.21 -31196901.94 0.0277 0.0035  
 Mercury -90119-09-01 14:08 J -31194297.98 -31194297.91 -31194297.83 0.0274 0.0232  
 Mercury -90119-11-29 02:51 J -31194209.50 -31194209.38 -31194209.26 0.0274 0.0144

Earth -90118-02-02 01:39 J -31194144.64 -31194144.43 -31194144.20 0.0274 0.0106  
 Moon -90118-02-02 03:20 J -31194144.58 -31194144.36 -31194144.13 0.0274 0.0120 \*  
 Venus -90118-02-05 00:13 J -31194141.62 -31194141.49 -31194141.36 0.0274 0.0211  
 Mercury -90118-02-25 15:35 J -31194120.99 -31194120.85 -31194120.70 0.0274 0.0055  
 Mercury -90118-05-25 04:47 J -31194032.44 -31194032.30 -31194032.16 0.0275 0.0037  
 Mercury -90118-08-21 17:59 J -31193943.87 -31193943.75 -31193943.62 0.0275 0.0130  
 Venus -90118-09-22 03:06 J -31193912.56 -31193912.37 -31193912.17 0.0275 0.0103  
 Mercury -90118-11-18 07:25 J -31193855.26 -31193855.19 -31193855.10 0.0275 0.0225  
 Moon -90117-02-13 21:06 J -31193767.86 -31193767.62 -31193767.38 0.0275 0.0059  
 Earth -90117-02-13 23:59 J -31193767.73 -31193767.50 -31193767.27 0.0275 0.0073 \*  
 Moon -90116-02-24 23:59 J -31193390.59 -31193390.50 -31193390.40 0.0276 0.0250  
 Earth -90116-02-25 02:08 J -31193390.49 -31193390.41 -31193390.30 0.0276 0.0253 \*  
 Mars -90110-09-08 06:42 J -31191004.37 -31191004.22 -31191004.04 0.0283 0.0237  
 Mercury -90104-07-05 03:35 J -31188877.48 -31188877.35 -31188877.22 0.0284 0.0175  
 Moon -90104-08-06 16:03 J -31188845.04 -31188844.83 -31188844.60 0.0284 0.0129  
 Earth -90104-08-06 17:30 J -31188844.98 -31188844.77 -31188844.53 0.0284 0.0135 \*  
 Mercury -90104-10-01 22:47 J -31188788.71 -31188788.55 -31188788.38 0.0284 0.0055  
 Mercury -90104-12-29 17:44 J -31188699.93 -31188699.76 -31188699.60 0.0284 0.0064  
 Venus -90103-03-10 13:11 J -31188629.16 -31188628.95 -31188628.75 0.0284 0.0073  
 Mercury -90103-03-28 11:59 J -31188611.13 -31188611.00 -31188610.87 0.0284 0.0178  
 Earth -90103-08-21 02:23 J -31188465.64 -31188465.40 -31188465.15 0.0284 0.0079  
 Moon -90103-08-21 04:32 J -31188465.54 -31188465.31 -31188465.07 0.0284 0.0078 \*  
 Moon -90102-09-04 08:51 J -31188086.16 -31188086.13 -31188086.06 0.0283 0.0277  
 Mars -90096-09-01 13:25 J -31185897.19 -31185896.94 -31185896.68 0.0277 0.0108  
 Mercury -90089-01-19 17:30 J -31183565.82 -31183565.77 -31183565.71 0.0274 0.0248  
 Moon -90089-01-28 10:18 J -31183557.23 -31183557.07 -31183556.90 0.0274 0.0190  
 Earth -90089-01-28 12:27 J -31183557.15 -31183556.98 -31183556.79 0.0274 0.0179 \*  
 Mercury -90089-04-17 06:13 J -31183477.36 -31183477.24 -31183477.13 0.0274 0.0160  
 Mercury -90089-07-14 18:56 J -31183388.85 -31183388.71 -31183388.57 0.0274 0.0071  
 Venus -90089-08-17 08:23 J -31183355.32 -31183355.15 -31183354.97 0.0274 0.0155

Mercury -90089-10-11 07:54 J -31183300.31 -31183300.17 -31183300.02 0.0275 0.0023

Mercury -90088-01-07 21:20 J -31183211.74 -31183211.61 -31183211.48 0.0275 0.0114

Earth -90088-02-08 09:49 J -31183180.33 -31183180.09 -31183179.85 0.0275 0.0004

Moon -90088-02-08 12:27 J -31183180.21 -31183179.98 -31183179.74 0.0275 0.0019 \*

Venus -90088-04-03 11:44 J -31183126.17 -31183126.01 -31183125.84 0.0275 0.0161

Mercury -90088-04-06 10:47 J -31183123.14 -31183123.05 -31183122.95 0.0275 0.0209

Earth -90087-02-20 10:32 J -31182803.24 -31182803.06 -31182802.87 0.0275 0.0176

Moon -90087-02-20 13:39 J -31182803.12 -31182802.93 -31182802.73 0.0275 0.0166 \*

Mars -90082-10-20 22:32 J -31180734.85 -31180734.56 -31180734.27 0.0281 0.0106

Earth -90075-07-31 23:44 J -31178258.67 -31178258.51 -31178258.35 0.0285 0.0219

Moon -90075-08-01 01:11 J -31178258.62 -31178258.45 -31178258.27 0.0285 0.0209 \*

Mercury -90075-11-22 05:15 J -31178145.40 -31178145.28 -31178145.16 0.0285 0.0201

Venus -90074-02-03 02:23 J -31178072.51 -31178072.40 -31178072.27 0.0285 0.0236

Mercury -90074-02-19 00:27 J -31178056.64 -31178056.48 -31178056.32 0.0285 0.0080

Mercury -90074-05-18 19:25 J -31177967.86 -31177967.69 -31177967.53 0.0284 0.0039

Moon -90074-08-15 07:39 J -31177879.44 -31177879.18 -31177878.92 0.0284 0.0006

Earth -90074-08-15 09:49 J -31177879.34 -31177879.09 -31177878.83 0.0284 0.0009 \*

Mercury -90074-08-15 13:39 J -31177879.06 -31177878.93 -31177878.79 0.0284 0.0155 \*

Venus -90074-09-20 23:01 J -31177842.73 -31177842.54 -31177842.34 0.0284 0.0132

Mercury -90074-11-12 07:54 J -31177790.23 -31177790.17 -31177790.12 0.0284 0.0266

Moon -90073-08-28 11:01 J -31177500.21 -31177500.04 -31177499.85 0.0284 0.0195

Earth -90073-08-28 14:51 J -31177500.05 -31177499.88 -31177499.70 0.0284 0.0201 \*

Mars -90068-10-23 07:11 J -31175618.41 -31175618.20 -31175617.97 0.0278 0.0166

Mars -90066-10-19 22:47 J -31174891.64 -31174891.55 -31174891.43 0.0276 0.0255

Earth -90060-01-22 13:54 J -31172969.99 -31172969.92 -31172969.82 0.0274 0.0254

Moon -90060-01-22 16:47 J -31172969.87 -31172969.80 -31172969.71 0.0274 0.0257 \*

Mercury -90060-09-04 07:25 J -31172745.29 -31172745.19 -31172745.08 0.0274 0.0190

Mercury -90060-12-01 20:08 J -31172656.79 -31172656.66 -31172656.52 0.0274 0.0101

Moon -90059-02-03 06:42 J -31172593.44 -31172593.22 -31172592.98 0.0274 0.0097

Earth -90059-02-03 09:35 J -31172593.33 -31172593.10 -31172592.87 0.0274 0.0082 \*

Venus -90059-02-27 10:18 J -31172569.25 -31172569.07 -31172568.88 0.0274 0.0119  
 Mercury -90059-02-28 09:06 J -31172568.26 -31172568.12 -31172567.97 0.0274 0.0013  
 Mercury -90059-05-27 22:18 J -31172479.71 -31172479.57 -31172479.43 0.0275 0.0082  
 Mercury -90059-08-24 11:44 J -31172391.12 -31172391.01 -31172390.90 0.0275 0.0176  
 Venus -90059-10-14 13:39 J -31172340.07 -31172339.93 -31172339.78 0.0275 0.0196  
 Mercury -90059-11-21 01:25 J -31172302.46 -31172302.44 -31172302.42 0.0275 0.0271  
 Moon -90058-02-15 05:15 J -31172216.50 -31172216.28 -31172216.06 0.0275 0.0085  
 Earth -90058-02-15 07:54 J -31172216.39 -31172216.17 -31172215.94 0.0275 0.0097 \*  
 Earth -90057-02-27 10:47 J -31171839.06 -31171839.05 -31171839.02 0.0276 0.0275  
 Moon -90057-02-27 12:27 J -31171838.99 -31171838.98 -31171838.96 0.0276 0.0275  
 Mars -90052-12-11 13:54 J -31169725.22 -31169724.92 -31169724.61 0.0282 0.0074  
 Mercury -90045-04-10 03:35 J -31167413.43 -31167413.35 -31167413.26 0.0284 0.0243  
 Mercury -90045-07-07 23:01 J -31167324.68 -31167324.54 -31167324.38 0.0284 0.0122  
 Earth -90045-08-08 04:18 J -31167293.55 -31167293.32 -31167293.08 0.0284 0.0106  
 Moon -90045-08-08 06:56 J -31167293.44 -31167293.21 -31167292.98 0.0284 0.0101 \*  
 Venus -90045-08-15 05:30 J -31167286.42 -31167286.27 -31167286.11 0.0284 0.0194  
 Mercury -90045-10-04 18:13 J -31167235.91 -31167235.74 -31167235.57 0.0284 0.0002  
 Mercury -90044-01-01 12:42 J -31167147.12 -31167146.97 -31167146.82 0.0284 0.0115  
 Mercury -90044-03-31 06:42 J -31167058.30 -31167058.22 -31167058.11 0.0284 0.0229  
 Venus -90044-04-02 01:54 J -31167056.58 -31167056.42 -31167056.24 0.0284 0.0174  
 Earth -90044-08-22 12:27 J -31166914.21 -31166913.98 -31166913.74 0.0284 0.0105  
 Moon -90044-08-22 16:03 J -31166914.07 -31166913.83 -31166913.59 0.0284 0.0103 \*  
 Mars -90038-12-10 06:27 J -31164613.50 -31164613.23 -31164612.95 0.0278 0.0025  
 Mercury -90030-01-22 10:32 J -31162013.14 -31162013.06 -31162012.96 0.0275 0.0208  
 Earth -90030-01-29 19:11 J -31162005.89 -31162005.70 -31162005.50 0.0275 0.0155  
 Moon -90030-01-29 21:06 J -31162005.80 -31162005.62 -31162005.43 0.0275 0.0166 \*  
 Mercury -90030-04-20 23:15 J -31161924.65 -31161924.53 -31161924.39 0.0275 0.0119  
 Mercury -90030-07-18 12:13 J -31161836.13 -31161835.99 -31161835.84 0.0275 0.0029  
 Venus -90030-09-09 18:13 J -31161782.94 -31161782.74 -31161782.53 0.0275 0.0065  
 Mercury -90030-10-15 01:25 J -31161747.58 -31161747.44 -31161747.30 0.0275 0.0065

Mercury -90029-01-11 14:51 J -31161659.00 -31161658.88 -31161658.76 0.0275 0.0159  
 Earth -90029-02-10 17:01 J -31161629.02 -31161628.79 -31161628.55 0.0275 0.0022  
 Moon -90029-02-10 20:08 J -31161628.90 -31161628.66 -31161628.42 0.0275 0.0007 \*  
 Mercury -90029-04-09 04:32 J -31161570.36 -31161570.31 -31161570.25 0.0275 0.0254  
 Venus -90029-04-25 22:03 J -31161553.66 -31161553.58 -31161553.50 0.0275 0.0253  
 Moon -90028-02-21 17:01 J -31161251.95 -31161251.79 -31161251.60 0.0275 0.0194  
 Earth -90028-02-21 18:42 J -31161251.88 -31161251.72 -31161251.55 0.0275 0.0199 \*  
 Mars -90023-01-22 16:32 J -31159455.87 -31159455.81 -31159455.72 0.0281 0.0272  
 Mars -90021-02-03 07:54 J -31158714.29 -31158714.17 -31158714.03 0.0283 0.0257  
 Moon -90016-08-02 09:35 J -31156707.29 -31156707.10 -31156706.89 0.0285 0.0182  
 Earth -90016-08-02 12:42 J -31156707.15 -31156706.97 -31156706.77 0.0285 0.0190 \*  
 Mercury -90016-08-28 05:44 J -31156681.31 -31156681.26 -31156681.20 0.0285 0.0266  
 Mercury -90016-11-25 01:11 J -31156592.59 -31156592.45 -31156592.30 0.0285 0.0144  
 Mercury -90015-02-21 20:23 J -31156503.81 -31156503.65 -31156503.48 0.0284 0.0024  
 Venus -90015-02-25 17:01 J -31156499.98 -31156499.79 -31156499.60 0.0284 0.0130  
 Mercury -90015-05-21 15:06 J -31156415.03 -31156414.87 -31156414.71 0.0284 0.0094  
 Moon -90015-08-16 18:56 J -31156327.96 -31156327.71 -31156327.46 0.0284 0.0024  
 Earth -90015-08-16 22:32 J -31156327.81 -31156327.56 -31156327.31 0.0284 0.0021 \*  
 Mercury -90015-08-18 09:06 J -31156326.22 -31156326.12 -31156326.00 0.0284 0.0209  
 Venus -90015-10-13 13:11 J -31156270.06 -31156269.95 -31156269.83 0.0284 0.0236  
 Moon -90014-08-31 01:54 J -31155948.57 -31155948.42 -31155948.27 0.0283 0.0222  
 Earth -90014-08-31 02:23 J -31155948.54 -31155948.40 -31155948.24 0.0283 0.0227 \*  
 Mars -90007-01-26 14:51 J -31153608.13 -31153607.88 -31153607.63 0.0276 0.0123  
 Moon -90001-01-24 20:51 J -31151418.75 -31151418.63 -31151418.50 0.0274 0.0235  
 Earth -90001-01-24 22:18 J -31151418.69 -31151418.57 -31151418.44 0.0274 0.0228 \*  
 Mercury -90001-06-10 12:27 J -31151281.05 -31151280.98 -31151280.91 0.0274 0.0234  
 Mercury -90001-09-07 00:56 J -31151192.57 -31151192.46 -31151192.33 0.0274 0.0146  
 Mercury -90001-12-04 13:54 J -31151104.06 -31151103.92 -31151103.78 0.0274 0.0056

# 90TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 90th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-90000-02-04 15:06 J	-31151042.10	-31151041.87	-31151041.64	0.0274	0.0071		
Earth	-90000-02-04 17:59 J	-31151041.98	-31151041.75	-31151041.51	0.0274	0.0057	*	
Mercury	-90000-03-03 02:51 J	-31151015.52	-31151015.38	-31151015.23	0.0275	0.0035		
Venus	-90000-03-21 21:20 J	-31150996.82	-31150996.61	-31150996.41	0.0275	0.0026		
Mercury	-90000-05-30 16:03 J	-31150926.95	-31150926.83	-31150926.70	0.0275	0.0129		
Mercury	-90000-08-27 05:44 J	-31150838.34	-31150838.26	-31150838.18	0.0275	0.0223		
Earth	-89999-02-16 17:01 J	-31150665.00	-31150664.79	-31150664.57	0.0275	0.0121		
Moon	-89999-02-16 18:27 J	-31150664.93	-31150664.73	-31150664.51	0.0275	0.0113	*	
Mars	-89993-03-15 16:03 J	-31148446.12	-31148445.83	-31148445.53	0.0281	0.0093		
Moon	-89987-07-27 08:51 J	-31146121.17	-31146121.13	-31146121.07	0.0285	0.0279		
Mercury	-89986-04-13 23:44 J	-31145860.63	-31145860.51	-31145860.38	0.0284	0.0186		
Mercury	-89986-07-11 19:11 J	-31145771.87	-31145771.70	-31145771.54	0.0284	0.0065		
Earth	-89986-08-10 17:01 J	-31145742.03	-31145741.79	-31145741.54	0.0284	0.0077		
Moon	-89986-08-10 20:37 J	-31145741.88	-31145741.64	-31145741.39	0.0284	0.0072	*	
Venus	-89986-09-07 19:54 J	-31145713.87	-31145713.67	-31145713.46	0.0284	0.0088		
Mercury	-89986-10-08 13:54 J	-31145683.08	-31145682.92	-31145682.76	0.0284	0.0054		
Mercury	-89985-01-05 08:23 J	-31145594.28	-31145594.15	-31145594.02	0.0284	0.0169		
Mercury	-89985-04-03 02:23 J	-31145505.42	-31145505.40	-31145505.38	0.0284	0.0281		
Venus	-89985-04-24 16:03 J	-31145483.87	-31145483.83	-31145483.79	0.0284	0.0278		
Earth	-89985-08-24 00:13 J	-31145362.70	-31145362.49	-31145362.26	0.0284	0.0133		

Moon -89985-08-24 00:42 J -31145362.70 -31145362.47 -31145362.23 0.0284 0.0129 \*  
 Mars -89979-03-19 05:59 J -31143329.47 -31143329.25 -31143329.01 0.0278 0.0155  
 Mars -89977-03-15 00:56 J -31142602.52 -31142602.46 -31142602.38 0.0277 0.0267  
 Mercury -89972-10-28 15:20 J -31140548.91 -31140548.86 -31140548.80 0.0275 0.0253  
 Mercury -89971-01-25 03:49 J -31140460.44 -31140460.34 -31140460.22 0.0275 0.0166  
 Earth -89971-01-31 02:37 J -31140454.59 -31140454.39 -31140454.17 0.0275 0.0130  
 Moon -89971-01-31 06:13 J -31140454.44 -31140454.24 -31140454.03 0.0275 0.0142 \*  
 Mercury -89971-04-23 16:47 J -31140371.94 -31140371.80 -31140371.66 0.0275 0.0076  
 Mercury -89971-07-21 05:44 J -31140283.40 -31140283.26 -31140283.11 0.0275 0.0018  
 Venus -89971-10-02 04:32 J -31140210.51 -31140210.31 -31140210.10 0.0275 0.0029  
 Mercury -89971-10-17 18:56 J -31140194.84 -31140194.71 -31140194.57 0.0275 0.0110  
 Mercury -89970-01-14 08:23 J -31140106.24 -31140106.15 -31140106.04 0.0275 0.0205  
 Moon -89970-02-11 23:59 J -31140077.74 -31140077.50 -31140077.25 0.0275 0.0034  
 Earth -89970-02-12 01:11 J -31140077.68 -31140077.45 -31140077.21 0.0275 0.0046 \*  
 Moon -89969-02-23 23:30 J -31139700.65 -31139700.52 -31139700.37 0.0276 0.0221  
 Earth -89969-02-24 03:35 J -31139700.49 -31139700.35 -31139700.21 0.0276 0.0223 \*  
 Mars -89963-05-08 18:56 J -31137435.00 -31137434.71 -31137434.42 0.0282 0.0097  
 Moon -89957-08-04 00:13 J -31135155.69 -31135155.49 -31135155.28 0.0285 0.0154  
 Earth -89957-08-04 03:20 J -31135155.56 -31135155.36 -31135155.14 0.0285 0.0159 \*  
 Mercury -89957-08-31 02:23 J -31135128.51 -31135128.40 -31135128.28 0.0285 0.0206  
 Mercury -89957-11-27 21:35 J -31135039.75 -31135039.60 -31135039.43 0.0285 0.0085  
 Mercury -89956-02-24 16:32 J -31134950.97 -31134950.81 -31134950.64 0.0284 0.0035  
 Venus -89956-03-20 08:23 J -31134927.36 -31134927.15 -31134926.93 0.0284 0.0022  
 Mercury -89956-05-24 11:01 J -31134862.17 -31134862.04 -31134861.90 0.0284 0.0151  
 Moon -89956-08-18 12:13 J -31134776.22 -31134775.99 -31134775.75 0.0284 0.0052  
 Earth -89956-08-18 12:42 J -31134776.22 -31134775.97 -31134775.72 0.0284 0.0051 \*  
 Mercury -89956-08-21 05:01 J -31134773.34 -31134773.29 -31134773.23 0.0284 0.0264  
 Earth -89955-09-01 15:49 J -31134396.94 -31134396.84 -31134396.72 0.0283 0.0254  
 Moon -89955-09-01 18:42 J -31134396.82 -31134396.72 -31134396.59 0.0283 0.0248 \*  
 Mars -89949-05-05 14:37 J -31132324.16 -31132323.89 -31132323.61 0.0277 0.0007



Moon -89942-01-26 03:06 J -31129867.51 -31129867.37 -31129867.22 0.0274 0.0213  
 Earth -89942-01-26 06:42 J -31129867.37 -31129867.22 -31129867.05 0.0274 0.0203 \*  
 Mercury -89942-06-14 05:59 J -31129728.35 -31129728.25 -31129728.15 0.0274 0.0191  
 Venus -89942-08-28 05:01 J -31129653.37 -31129653.29 -31129653.19 0.0274 0.0246  
 Mercury -89942-09-10 18:42 J -31129639.85 -31129639.72 -31129639.59 0.0274 0.0102  
 Mercury -89942-12-08 07:39 J -31129551.33 -31129551.18 -31129551.04 0.0274 0.0014  
 Earth -89941-02-07 02:51 J -31129490.61 -31129490.38 -31129490.14 0.0275 0.0031  
 Moon -89941-02-07 03:20 J -31129490.58 -31129490.36 -31129490.13 0.0275 0.0045 \*  
 Mercury -89941-03-05 20:37 J -31129462.78 -31129462.64 -31129462.50 0.0275 0.0082  
 Venus -89941-04-13 08:08 J -31129424.36 -31129424.16 -31129423.96 0.0275 0.0069  
 Mercury -89941-06-02 10:03 J -31129374.19 -31129374.08 -31129373.97 0.0275 0.0176  
 Mercury -89941-08-29 23:44 J -31129285.53 -31129285.51 -31129285.49 0.0275 0.0271  
 Earth -89940-02-18 02:08 J -31129113.60 -31129113.41 -31129113.20 0.0275 0.0147  
 Moon -89940-02-18 05:44 J -31129113.46 -31129113.26 -31129113.04 0.0275 0.0140 \*  
 Mars -89935-06-18 13:54 J -31127167.03 -31127166.92 -31127166.78 0.0281 0.0257  
 Mars -89933-06-29 04:18 J -31126425.40 -31126425.32 -31126425.23 0.0283 0.0271  
 Earth -89928-07-28 20:37 J -31124569.75 -31124569.64 -31124569.53 0.0284 0.0255  
 Moon -89928-07-28 22:47 J -31124569.66 -31124569.55 -31124569.41 0.0284 0.0249 \*  
 Mercury -89927-01-18 00:42 J -31124396.54 -31124396.47 -31124396.38 0.0284 0.0248  
 Mercury -89927-04-16 20:23 J -31124307.80 -31124307.65 -31124307.50 0.0284 0.0126  
 Mercury -89927-07-14 15:20 J -31124219.02 -31124218.86 -31124218.69 0.0284 0.0009  
 Moon -89927-08-12 07:11 J -31124190.46 -31124190.20 -31124189.94 0.0284 0.0045  
 Earth -89927-08-12 07:39 J -31124190.42 -31124190.18 -31124189.93 0.0284 0.0047 \*  
 Venus -89927-09-30 11:15 J -31124141.24 -31124141.03 -31124140.81 0.0284 0.0021  
 Mercury -89927-10-11 10:03 J -31124130.23 -31124130.08 -31124129.93 0.0284 0.0111  
 Mercury -89926-01-08 04:18 J -31124041.42 -31124041.32 -31124041.22 0.0284 0.0225  
 Moon -89926-08-26 10:47 J -31123811.26 -31123811.05 -31123810.84 0.0283 0.0156  
 Earth -89926-08-26 14:08 J -31123811.11 -31123810.91 -31123810.70 0.0283 0.0161 \*  
 Mars -89919-06-22 16:03 J -31121319.06 -31121318.83 -31121318.58 0.0277 0.0136  
 Earth -89913-01-21 14:23 J -31119279.92 -31119279.90 -31119279.86 0.0275 0.0272

Mercury -89913-10-31 08:37 J -31118996.23 -31118996.14 -31118996.05 0.0275 0.0212

Mercury -89912-01-27 21:20 J -31118907.74 -31118907.61 -31118907.48 0.0275 0.0123

Earth -89912-02-01 10:18 J -31118903.29 -31118903.07 -31118902.85 0.0275 0.0104

Moon -89912-02-01 10:18 J -31118903.29 -31118903.07 -31118902.84 0.0275 0.0117 \*

Venus -89912-03-09 11:15 J -31118867.16 -31118867.03 -31118866.88 0.0275 0.0198

Mercury -89912-04-26 10:18 J -31118819.22 -31118819.07 -31118818.93 0.0275 0.0033

Mercury -89912-07-23 23:15 J -31118730.67 -31118730.53 -31118730.38 0.0275 0.0061

Mercury -89912-10-20 12:42 J -31118642.09 -31118641.97 -31118641.85 0.0275 0.0155

Venus -89912-10-24 14:51 J -31118638.06 -31118637.88 -31118637.69 0.0275 0.0120

Mercury -89911-01-17 02:23 J -31118553.46 -31118553.40 -31118553.34 0.0275 0.0251

Moon -89911-02-13 05:30 J -31118526.50 -31118526.27 -31118526.03 0.0275 0.0060

Earth -89911-02-13 08:51 J -31118526.36 -31118526.13 -31118525.89 0.0275 0.0072 \*

Moon -89910-02-25 11:15 J -31118149.12 -31118149.03 -31118148.92 0.0276 0.0248

Earth -89910-02-25 11:30 J -31118149.11 -31118149.02 -31118148.90 0.0276 0.0247 \*

Mars -89905-08-10 21:49 J -31116155.89 -31116155.59 -31116155.28 0.0281 0.0066

Mercury -89898-06-07 03:20 J -31113664.41 -31113664.36 -31113664.30 0.0285 0.0269

Earth -89898-08-06 18:13 J -31113603.96 -31113603.74 -31113603.51 0.0285 0.0129

Moon -89898-08-06 19:25 J -31113603.90 -31113603.69 -31113603.46 0.0285 0.0126 \*

Venus -89898-08-26 03:06 J -31113584.39 -31113584.37 -31113584.34 0.0285 0.0282

Mercury -89898-09-03 23:01 J -31113575.69 -31113575.54 -31113575.40 0.0285 0.0146

Mercury -89898-12-01 18:13 J -31113486.91 -31113486.74 -31113486.58 0.0285 0.0026

Mercury -89897-02-28 12:56 J -31113398.12 -31113397.96 -31113397.81 0.0284 0.0093

Venus -89897-04-11 23:59 J -31113354.71 -31113354.50 -31113354.30 0.0284 0.0088

Mercury -89897-05-27 07:11 J -31113309.31 -31113309.20 -31113309.09 0.0284 0.0207

Earth -89897-08-20 03:06 J -31113224.61 -31113224.37 -31113224.13 0.0284 0.0080

Moon -89897-08-20 06:42 J -31113224.46 -31113224.22 -31113223.98 0.0284 0.0080 \*

Earth -89896-09-03 05:59 J -31112845.28 -31112845.25 -31112845.21 0.0283 0.0280

Moon -89896-09-03 08:51 J -31112845.18 -31112845.13 -31112845.05 0.0283 0.0274

Mars -89891-08-13 19:39 J -31111039.91 -31111039.68 -31111039.44 0.0278 0.0135

Moon -89883-01-27 14:51 J -31108316.04 -31108315.88 -31108315.71 0.0274 0.0190

Earth -89883-01-27 15:06 J -31108316.04 -31108315.87 -31108315.68 0.0274 0.0178 \*  
 Mercury -89883-03-20 10:47 J -31108264.11 -31108264.05 -31108263.97 0.0274 0.0235  
 Mercury -89883-06-16 23:30 J -31108175.64 -31108175.52 -31108175.40 0.0274 0.0147  
 Mercury -89883-09-13 12:13 J -31108087.13 -31108086.99 -31108086.85 0.0274 0.0057  
 Venus -89883-09-19 15:49 J -31108081.01 -31108080.84 -31108080.66 0.0274 0.0153  
 Mercury -89883-12-11 01:11 J -31107998.59 -31107998.45 -31107998.30 0.0274 0.0035  
 Earth -89882-02-08 11:44 J -31107939.25 -31107939.01 -31107938.77 0.0275 0.0006  
 Moon -89882-02-08 15:06 J -31107939.11 -31107938.87 -31107938.63 0.0275 0.0021 \*  
 Mercury -89882-03-09 14:23 J -31107910.02 -31107909.90 -31107909.76 0.0275 0.0129  
 Venus -89882-05-06 19:11 J -31107851.87 -31107851.70 -31107851.53 0.0275 0.0164  
 Mercury -89882-06-06 04:03 J -31107821.41 -31107821.33 -31107821.25 0.0275 0.0223  
 Earth -89881-02-20 11:30 J -31107562.20 -31107562.02 -31107561.82 0.0275 0.0170  
 Moon -89881-02-20 11:59 J -31107562.19 -31107562.00 -31107561.79 0.0275 0.0165 \*  
 Mars -89875-10-02 17:15 J -31105146.06 -31105145.78 -31105145.49 0.0282 0.0113  
 Moon -89869-07-30 09:20 J -31103018.27 -31103018.11 -31103017.94 0.0284 0.0222  
 Earth -89869-07-30 11:15 J -31103018.17 -31103018.03 -31103017.86 0.0284 0.0225 \*  
 Mercury -89868-01-20 21:20 J -31102843.73 -31102843.61 -31102843.48 0.0284 0.0188  
 Venus -89868-03-07 05:44 J -31102798.36 -31102798.26 -31102798.13 0.0284 0.0240  
 Mercury -89868-04-19 16:47 J -31102754.96 -31102754.80 -31102754.64 0.0284 0.0067  
 Mercury -89868-07-17 11:44 J -31102666.18 -31102666.01 -31102665.85 0.0284 0.0052  
 Moon -89868-08-13 18:27 J -31102638.98 -31102638.73 -31102638.47 0.0284 0.0018  
 Earth -89868-08-13 22:32 J -31102638.81 -31102638.56 -31102638.31 0.0284 0.0016 \*  
 Mercury -89868-10-14 05:59 J -31102577.37 -31102577.25 -31102577.11 0.0284 0.0168  
 Venus -89868-10-23 02:37 J -31102568.58 -31102568.39 -31102568.19 0.0284 0.0129  
 Mercury -89867-01-10 23:59 J -31102488.51 -31102488.50 -31102488.47 0.0284 0.0281  
 Moon -89867-08-28 01:11 J -31102259.63 -31102259.45 -31102259.25 0.0283 0.0184  
 Earth -89867-08-28 04:03 J -31102259.51 -31102259.33 -31102259.14 0.0283 0.0189 \*  
 Mars -89861-09-29 13:54 J -31100035.19 -31100034.92 -31100034.64 0.0277 0.0007  
 Earth -89854-01-22 20:37 J -31097728.73 -31097728.64 -31097728.53 0.0275 0.0248  
 Moon -89854-01-22 21:06 J -31097728.70 -31097728.62 -31097728.52 0.0275 0.0255 \*

Mercury -89854-08-07 13:11 J -31097531.99 -31097531.95 -31097531.90 0.0275 0.0259

Mercury -89854-11-04 01:39 J -31097443.54 -31097443.43 -31097443.31 0.0275 0.0171

Mercury -89853-01-31 14:23 J -31097355.03 -31097354.90 -31097354.76 0.0275 0.0082

Moon -89853-02-03 13:11 J -31097352.17 -31097351.95 -31097351.72 0.0275 0.0095

Earth -89853-02-03 16:47 J -31097352.02 -31097351.80 -31097351.57 0.0275 0.0079 \*

Venus -89853-03-31 20:51 J -31097294.81 -31097294.63 -31097294.43 0.0275 0.0108

Mercury -89853-04-29 03:35 J -31097266.50 -31097266.35 -31097266.21 0.0275 0.0012

Mercury -89853-07-26 16:47 J -31097177.94 -31097177.80 -31097177.67 0.0275 0.0104

Mercury -89853-10-23 06:13 J -31097089.34 -31097089.24 -31097089.14 0.0275 0.0199

Venus -89853-11-16 00:42 J -31097065.60 -31097065.47 -31097065.33 0.0275 0.0211

Moon -89852-02-14 14:37 J -31096975.11 -31096974.89 -31096974.67 0.0275 0.0085

Earth -89852-02-14 15:49 J -31096975.06 -31096974.84 -31096974.61 0.0275 0.0096 \*

Earth -89851-02-26 19:11 J -31096597.74 -31096597.70 -31096597.65 0.0276 0.0270

Moon -89851-02-26 22:32 J -31096597.58 -31096597.56 -31096597.52 0.0276 0.0273

Mars -89847-11-13 16:03 J -31094877.00 -31094876.83 -31094876.64 0.0281 0.0231

Mercury -89839-06-09 23:59 J -31092111.61 -31092111.50 -31092111.38 0.0285 0.0208

Earth -89839-08-08 09:20 J -31092052.35 -31092052.11 -31092051.87 0.0285 0.0098

Moon -89839-08-08 13:11 J -31092052.18 -31092051.95 -31092051.71 0.0285 0.0097 \*

Mercury -89839-09-06 19:25 J -31092022.85 -31092022.69 -31092022.53 0.0285 0.0086

Venus -89839-09-17 18:56 J -31092011.88 -31092011.71 -31092011.53 0.0285 0.0172

Mercury -89839-12-04 14:23 J -31091934.06 -31091933.90 -31091933.73 0.0285 0.0035

Mercury -89838-03-03 08:51 J -31091845.26 -31091845.13 -31091844.99 0.0284 0.0151

Venus -89838-05-05 15:20 J -31091782.00 -31091781.86 -31091781.70 0.0284 0.0198

Mercury -89838-05-31 02:51 J -31091756.43 -31091756.38 -31091756.31 0.0284 0.0264

Earth -89838-08-22 17:30 J -31091673.00 -31091672.77 -31091672.53 0.0284 0.0110

Moon -89838-08-22 20:08 J -31091672.90 -31091672.66 -31091672.42 0.0284 0.0107 \*

Mars -89833-11-21 03:35 J -31089755.44 -31089755.35 -31089755.24 0.0278 0.0259

Mars -89831-11-17 05:59 J -31089029.48 -31089029.25 -31089029.02 0.0276 0.0158

Earth -89824-01-28 22:32 J -31086764.76 -31086764.56 -31086764.36 0.0274 0.0153

Moon -89824-01-29 02:08 J -31086764.60 -31086764.41 -31086764.23 0.0274 0.0168 \*

Mercury -89824-03-23 04:03 J -31086711.42 -31086711.33 -31086711.23 0.0274 0.0193

Mercury -89824-06-19 16:47 J -31086622.93 -31086622.80 -31086622.67 0.0274 0.0104

Mercury -89824-09-16 05:44 J -31086534.41 -31086534.26 -31086534.12 0.0274 0.0014

Venus -89824-10-12 02:08 J -31086508.61 -31086508.41 -31086508.21 0.0274 0.0061

Mercury -89824-12-13 18:42 J -31086445.86 -31086445.72 -31086445.58 0.0274 0.0079

Earth -89823-02-09 19:11 J -31086387.93 -31086387.70 -31086387.46 0.0275 0.0019

Moon -89823-02-09 21:06 J -31086387.87 -31086387.62 -31086387.38 0.0275 0.0005 \*

Mercury -89823-03-12 08:08 J -31086357.27 -31086357.16 -31086357.05 0.0275 0.0173

Venus -89823-05-29 05:30 J -31086279.34 -31086279.27 -31086279.20 0.0275 0.0257

Mercury -89823-06-08 21:49 J -31086268.62 -31086268.59 -31086268.56 0.0275 0.0269

Moon -89822-02-21 16:32 J -31086010.98 -31086010.81 -31086010.63 0.0275 0.0191

Earth -89822-02-21 19:39 J -31086010.85 -31086010.68 -31086010.51 0.0275 0.0194 \*

Mars -89816-01-04 20:23 J -31083866.96 -31083866.65 -31083866.34 0.0282 0.0050

Moon -89810-08-01 21:49 J -31081466.76 -31081466.59 -31081466.40 0.0284 0.0194

Earth -89810-08-02 01:25 J -31081466.61 -31081466.44 -31081466.25 0.0284 0.0195 \*

Mercury -89810-10-27 22:18 J -31081379.65 -31081379.57 -31081379.50 0.0284 0.0252

Mercury -89809-01-24 17:44 J -31081290.91 -31081290.76 -31081290.61 0.0284 0.0129

Venus -89809-03-29 21:06 J -31081225.80 -31081225.62 -31081225.42 0.0284 0.0133

Mercury -89809-04-22 12:56 J -31081202.13 -31081201.96 -31081201.79 0.0284 0.0009

Mercury -89809-07-20 07:39 J -31081113.33 -31081113.18 -31081113.03 0.0284 0.0109

Moon -89809-08-15 10:47 J -31081087.30 -31081087.05 -31081086.81 0.0284 0.0010

Earth -89809-08-15 12:13 J -31081087.24 -31081086.99 -31081086.74 0.0284 0.0013 \*

Mercury -89809-10-17 01:54 J -31081024.52 -31081024.42 -31081024.32 0.0284 0.0224

Venus -89809-11-14 17:44 J -31080995.88 -31080995.76 -31080995.64 0.0284 0.0236

Earth -89808-08-29 17:30 J -31080707.93 -31080707.77 -31080707.61 0.0283 0.0215

Moon -89808-08-29 18:56 J -31080707.87 -31080707.71 -31080707.54 0.0283 0.0208 \*

Mars -89802-01-07 15:06 J -31078751.11 -31078750.87 -31078750.62 0.0278 0.0122

Moon -89795-01-23 23:15 J -31076177.65 -31076177.53 -31076177.41 0.0275 0.0235

Earth -89795-01-24 02:23 J -31076177.52 -31076177.40 -31076177.25 0.0275 0.0224 \*

Mercury -89795-08-10 05:59 J -31075979.33 -31075979.25 -31075979.16 0.0275 0.0220

Mercury -89795-11-06 18:42 J -31075890.84 -31075890.72 -31075890.59 0.0275 0.0131

Mercury -89794-02-03 07:39 J -31075802.33 -31075802.18 -31075802.04 0.0275 0.0041

Moon -89794-02-04 20:51 J -31075800.85 -31075800.63 -31075800.40 0.0275 0.0071

Earth -89794-02-04 22:32 J -31075800.79 -31075800.56 -31075800.32 0.0275 0.0055 \*

Venus -89794-04-24 06:13 J -31075722.45 -31075722.24 -31075722.04 0.0275 0.0020

Mercury -89794-05-02 20:37 J -31075713.78 -31075713.64 -31075713.50 0.0275 0.0052

Mercury -89794-07-30 09:49 J -31075625.21 -31075625.09 -31075624.96 0.0275 0.0147

Mercury -89794-10-26 23:30 J -31075536.59 -31075536.52 -31075536.45 0.0275 0.0242

Earth -89793-02-16 21:49 J -31075423.81 -31075423.59 -31075423.38 0.0275 0.0119

Moon -89793-02-17 00:27 J -31075423.69 -31075423.48 -31075423.26 0.0275 0.0109 \*

Mars -89786-02-27 13:11 J -31072856.22 -31072855.95 -31072855.67 0.0282 0.0139

Earth -89781-07-26 09:35 J -31070880.16 -31070880.10 -31070880.03 0.0285 0.0276

Moon -89781-07-26 13:11 J -31070880.02 -31070879.95 -31070879.86 0.0285 0.0268

Mercury -89780-03-16 00:27 J -31070647.52 -31070647.48 -31070647.43 0.0285 0.0274

Mercury -89780-06-12 20:08 J -31070558.80 -31070558.66 -31070558.51 0.0285 0.0150

Earth -89780-08-09 22:18 J -31070500.81 -31070500.57 -31070500.32 0.0285 0.0069

Moon -89780-08-09 23:30 J -31070500.77 -31070500.52 -31070500.26 0.0285 0.0069 \*

Mercury -89780-09-09 15:35 J -31070470.02 -31070469.85 -31070469.69 0.0285 0.0029

Venus -89780-10-10 09:35 J -31070439.31 -31070439.10 -31070438.89 0.0285 0.0065

Mercury -89780-12-07 10:18 J -31070381.23 -31070381.07 -31070380.91 0.0285 0.0090

Mercury -89779-03-06 04:32 J -31070292.42 -31070292.31 -31070292.19 0.0284 0.0206

Moon -89779-08-24 03:49 J -31070121.56 -31070121.34 -31070121.10 0.0284 0.0130

Earth -89779-08-24 06:13 J -31070121.46 -31070121.24 -31070121.02 0.0284 0.0137 \*

Mars -89772-02-24 04:03 J -31067745.60 -31067745.33 -31067745.05 0.0277 0.0029

Mercury -89766-12-28 08:37 J -31065247.20 -31065247.14 -31065247.07 0.0274 0.0240

Earth -89765-01-31 04:32 J -31065213.51 -31065213.31 -31065213.10 0.0274 0.0130

Moon -89765-01-31 06:13 J -31065213.43 -31065213.24 -31065213.02 0.0274 0.0144 \*

Mercury -89765-03-25 21:06 J -31065158.73 -31065158.62 -31065158.50 0.0274 0.0153

Mercury -89765-06-22 09:49 J -31065070.23 -31065070.09 -31065069.95 0.0274 0.0063

Mercury -89765-09-18 22:47 J -31064981.69 -31064981.55 -31064981.40 0.0274 0.0030

Venus -89765-11-03 11:30 J -31064936.23 -31064936.02 -31064935.81 0.0274 0.0029  
 Mercury -89765-12-16 11:59 J -31064893.13 -31064893.00 -31064892.87 0.0274 0.0122  
 Moon -89764-02-10 22:32 J -31064836.80 -31064836.56 -31064836.31 0.0275 0.0029  
 Earth -89764-02-11 01:25 J -31064836.67 -31064836.44 -31064836.20 0.0275 0.0042 \*  
 Mercury -89764-03-15 01:25 J -31064804.52 -31064804.44 -31064804.35 0.0275 0.0217  
 Moon -89763-02-22 23:44 J -31064459.66 -31064459.51 -31064459.36 0.0275 0.0214  
 Earth -89763-02-23 02:08 J -31064459.55 -31064459.41 -31064459.26 0.0275 0.0216 \*  
 Mars -89758-04-09 11:01 J -31062588.24 -31062588.04 -31062587.84 0.0281 0.0215  
 Moon -89751-08-03 13:54 J -31059915.12 -31059914.92 -31059914.72 0.0285 0.0165  
 Earth -89751-08-03 14:23 J -31059915.10 -31059914.90 -31059914.69 0.0285 0.0166 \*  
 Mercury -89751-10-30 18:13 J -31059826.85 -31059826.74 -31059826.61 0.0284 0.0195  
 Mercury -89750-01-27 13:54 J -31059738.08 -31059737.92 -31059737.76 0.0284 0.0072  
 Venus -89750-04-22 11:44 J -31059653.22 -31059653.01 -31059652.79 0.0284 0.0026  
 Mercury -89750-04-26 08:51 J -31059649.29 -31059649.13 -31059648.97 0.0284 0.0048  
 Mercury -89750-07-24 03:20 J -31059560.49 -31059560.36 -31059560.23 0.0284 0.0164  
 Earth -89750-08-18 00:56 J -31059535.71 -31059535.46 -31059535.21 0.0284 0.0041  
 Moon -89750-08-18 03:35 J -31059535.59 -31059535.35 -31059535.10 0.0284 0.0036 \*  
 Mercury -89750-10-20 21:35 J -31059471.63 -31059471.60 -31059471.57 0.0284 0.0277  
 Earth -89749-08-31 05:44 J -31059156.38 -31059156.26 -31059156.12 0.0283 0.0242  
 Moon -89749-08-31 09:35 J -31059156.23 -31059156.10 -31059155.95 0.0283 0.0231 \*  
 Mars -89744-04-16 20:08 J -31057466.77 -31057466.66 -31057466.52 0.0278 0.0247  
 Mars -89742-04-12 22:03 J -31056740.80 -31056740.58 -31056740.36 0.0276 0.0170  
 Moon -89736-01-25 04:32 J -31054626.45 -31054626.31 -31054626.16 0.0274 0.0213  
 Earth -89736-01-25 06:27 J -31054626.38 -31054626.23 -31054626.06 0.0274 0.0202 \*  
 Mercury -89736-05-16 10:18 J -31054515.09 -31054515.07 -31054515.05 0.0275 0.0269  
 Mercury -89736-08-12 22:47 J -31054426.66 -31054426.55 -31054426.45 0.0275 0.0182  
 Venus -89736-09-29 10:47 J -31054379.12 -31054379.05 -31054378.95 0.0275 0.0251  
 Mercury -89736-11-09 11:15 J -31054338.16 -31054338.03 -31054337.89 0.0275 0.0093  
 Mercury -89735-02-06 00:13 J -31054249.63 -31054249.49 -31054249.34 0.0275 0.0007  
 Earth -89735-02-06 02:37 J -31054249.63 -31054249.39 -31054249.15 0.0275 0.0032 \*

Moon -89735-02-06 05:30 J -31054249.50 -31054249.27 -31054249.04 0.0275 0.0048 \*  
 Mercury -89735-05-05 13:25 J -31054161.08 -31054160.94 -31054160.80 0.0275 0.0092  
 Venus -89735-05-16 14:08 J -31054150.11 -31054149.91 -31054149.71 0.0275 0.0067  
 Mercury -89735-08-02 02:51 J -31054072.49 -31054072.38 -31054072.27 0.0275 0.0187  
 Earth -89734-02-18 01:54 J -31053872.62 -31053872.42 -31053872.21 0.0275 0.0140  
 Moon -89734-02-18 05:01 J -31053872.51 -31053872.29 -31053872.08 0.0275 0.0132 \*  
 Mars -89728-06-01 05:30 J -31051577.58 -31051577.27 -31051576.95 0.0282 0.0027  
 Earth -89722-07-28 20:08 J -31049328.77 -31049328.66 -31049328.53 0.0285 0.0249  
 Moon -89722-07-28 20:51 J -31049328.76 -31049328.63 -31049328.49 0.0285 0.0243 \*  
 Mercury -89721-03-18 20:08 J -31049094.76 -31049094.66 -31049094.55 0.0285 0.0219  
 Mercury -89721-06-15 15:35 J -31049006.00 -31049005.85 -31049005.68 0.0285 0.0096  
 Moon -89721-08-11 06:13 J -31048949.50 -31048949.24 -31048948.99 0.0285 0.0046  
 Earth -89721-08-11 09:06 J -31048949.37 -31048949.12 -31048948.87 0.0285 0.0043 \*  
 Mercury -89721-09-12 10:47 J -31048917.21 -31048917.05 -31048916.88 0.0285 0.0025  
 Venus -89721-11-01 22:47 J -31048866.77 -31048866.55 -31048866.34 0.0285 0.0038  
 Mercury -89721-12-10 05:30 J -31048828.41 -31048828.27 -31048828.13 0.0285 0.0142  
 Mercury -89720-03-08 23:44 J -31048739.58 -31048739.51 -31048739.44 0.0284 0.0257  
 Moon -89720-08-25 13:11 J -31048570.15 -31048569.95 -31048569.74 0.0284 0.0153  
 Earth -89720-08-25 16:47 J -31048570.00 -31048569.80 -31048569.59 0.0284 0.0162 \*  
 Mars -89714-06-04 05:30 J -31046461.53 -31046461.27 -31046461.02 0.0278 0.0100  
 Earth -89707-01-20 15:06 J -31044038.88 -31044038.87 -31044038.83 0.0274 0.0271  
 Mercury -89707-12-31 01:25 J -31043694.53 -31043694.44 -31043694.35 0.0274 0.0201  
 Moon -89706-02-01 06:42 J -31043662.43 -31043662.22 -31043661.99 0.0274 0.0122  
 Earth -89706-02-01 09:35 J -31043662.32 -31043662.10 -31043661.88 0.0274 0.0107 \*  
 Mercury -89706-03-29 13:54 J -31043606.05 -31043605.92 -31043605.79 0.0274 0.0113  
 Venus -89706-04-11 17:01 J -31043592.93 -31043592.79 -31043592.65 0.0274 0.0199  
 Mercury -89706-06-26 02:51 J -31043517.53 -31043517.38 -31043517.24 0.0274 0.0023  
 Mercury -89706-09-22 15:49 J -31043428.98 -31043428.84 -31043428.70 0.0274 0.0070  
 Venus -89706-11-26 19:39 J -31043363.86 -31043363.68 -31043363.48 0.0274 0.0118  
 Mercury -89706-12-20 05:01 J -31043340.40 -31043340.29 -31043340.17 0.0274 0.0164



Moon -89705-02-13 03:20 J -31043285.59 -31043285.36 -31043285.13 0.0274 0.0053  
 Earth -89705-02-13 06:13 J -31043285.47 -31043285.24 -31043285.00 0.0274 0.0064 \*  
 Mercury -89705-03-17 18:27 J -31043251.77 -31043251.73 -31043251.68 0.0274 0.0260  
 Earth -89704-02-24 06:56 J -31042908.32 -31042908.21 -31042908.07 0.0275 0.0236  
 Moon -89704-02-24 08:37 J -31042908.25 -31042908.14 -31042908.02 0.0275 0.0237 \*  
 Mars -89698-07-24 02:23 J -31040567.65 -31040567.40 -31040567.12 0.0282 0.0152  
 Earth -89692-08-05 00:42 J -31038363.69 -31038363.47 -31038363.24 0.0285 0.0139  
 Moon -89692-08-05 03:49 J -31038363.55 -31038363.34 -31038363.12 0.0285 0.0139 \*  
 Mercury -89692-08-05 17:59 J -31038362.80 -31038362.75 -31038362.68 0.0285 0.0265  
 Mercury -89692-11-02 13:54 J -31038274.07 -31038273.92 -31038273.77 0.0285 0.0141  
 Mercury -89691-01-30 09:06 J -31038185.29 -31038185.12 -31038184.95 0.0284 0.0019  
 Mercury -89691-04-29 04:03 J -31038096.49 -31038096.33 -31038096.18 0.0284 0.0100  
 Venus -89691-05-15 00:42 J -31038080.68 -31038080.47 -31038080.26 0.0284 0.0076  
 Mercury -89691-07-26 22:18 J -31038007.67 -31038007.57 -31038007.46 0.0284 0.0215  
 Earth -89691-08-19 11:01 J -31037984.29 -31037984.04 -31037983.80 0.0284 0.0067  
 Moon -89691-08-19 14:08 J -31037984.16 -31037983.91 -31037983.66 0.0284 0.0061 \*  
 Moon -89690-09-02 15:49 J -31037604.95 -31037604.84 -31037604.72 0.0283 0.0252  
 Earth -89690-09-02 15:35 J -31037604.93 -31037604.85 -31037604.76 0.0283 0.0265 \*  
 Mars -89684-07-20 16:47 J -31035457.07 -31035456.80 -31035456.53 0.0277 0.0040  
 Earth -89677-01-27 09:35 J -31033075.28 -31033075.10 -31033074.92 0.0274 0.0180  
 Moon -89677-01-27 11:30 J -31033075.18 -31033075.02 -31033074.85 0.0274 0.0193 \*  
 Mercury -89677-05-19 02:37 J -31032962.46 -31032962.39 -31032962.32 0.0274 0.0234  
 Mercury -89677-08-15 15:06 J -31032873.99 -31032873.87 -31032873.75 0.0274 0.0145  
 Venus -89677-10-21 18:13 J -31032806.90 -31032806.74 -31032806.57 0.0275 0.0167  
 Mercury -89677-11-12 03:49 J -31032785.48 -31032785.34 -31032785.20 0.0275 0.0055  
 Earth -89676-02-07 05:15 J -31032698.52 -31032698.28 -31032698.04 0.0275 0.0011  
 Moon -89676-02-07 08:08 J -31032698.40 -31032698.16 -31032697.92 0.0275 0.0025 \*  
 Mercury -89676-02-08 16:47 J -31032696.94 -31032696.80 -31032696.66 0.0275 0.0037  
 Mercury -89676-05-08 05:59 J -31032608.38 -31032608.25 -31032608.12 0.0275 0.0130  
 Venus -89676-06-07 21:20 J -31032577.78 -31032577.61 -31032577.44 0.0275 0.0151

Mercury -89676-08-04 19:25 J -31032519.77 -31032519.69 -31032519.61 0.0275 0.0226  
 Moon -89675-02-19 02:51 J -31032321.58 -31032321.38 -31032321.17 0.0275 0.0157  
 Earth -89675-02-19 04:32 J -31032321.50 -31032321.31 -31032321.11 0.0275 0.0161 \*  
 Mars -89670-09-03 08:08 J -31030299.38 -31030299.16 -31030298.93 0.0281 0.0197  
 Moon -89663-07-30 00:42 J -31027777.61 -31027777.47 -31027777.29 0.0285 0.0223  
 Earth -89663-07-30 04:18 J -31027777.46 -31027777.32 -31027777.15 0.0285 0.0225 \*  
 Mercury -89662-03-22 15:06 J -31027542.00 -31027541.87 -31027541.73 0.0285 0.0167  
 Venus -89662-04-09 13:11 J -31027524.06 -31027523.95 -31027523.82 0.0285 0.0236  
 Mercury -89662-06-19 10:32 J -31027453.22 -31027453.06 -31027452.89 0.0285 0.0045  
 Moon -89662-08-13 14:23 J -31027398.14 -31027397.90 -31027397.65 0.0285 0.0021  
 Earth -89662-08-13 17:30 J -31027398.02 -31027397.77 -31027397.51 0.0285 0.0019 \*  
 Mercury -89662-09-16 05:30 J -31027364.42 -31027364.27 -31027364.10 0.0285 0.0076  
 Venus -89662-11-25 10:32 J -31027294.24 -31027294.06 -31027293.87 0.0285 0.0138  
 Mercury -89662-12-14 00:13 J -31027275.61 -31027275.49 -31027275.37 0.0285 0.0192  
 Earth -89661-08-27 01:11 J -31027018.62 -31027018.45 -31027018.25 0.0284 0.0186  
 Moon -89661-08-27 01:25 J -31027018.62 -31027018.44 -31027018.25 0.0284 0.0177 \*  
 Mars -89656-09-11 08:23 J -31025177.30 -31025177.15 -31025176.99 0.0278 0.0227  
 Mars -89654-09-07 08:23 J -31024451.34 -31024451.15 -31024450.94 0.0276 0.0190  
 Moon -89648-01-21 17:01 J -31022487.86 -31022487.79 -31022487.70 0.0273 0.0258  
 Earth -89648-01-21 18:27 J -31022487.82 -31022487.73 -31022487.63 0.0273 0.0250 \*  
 Mercury -89648-10-06 05:15 J -31022230.33 -31022230.28 -31022230.22 0.0274 0.0252  
 Mercury -89647-01-02 17:44 J -31022141.87 -31022141.76 -31022141.65 0.0274 0.0165  
 Moon -89647-02-02 09:35 J -31022111.32 -31022111.10 -31022110.88 0.0274 0.0101  
 Earth -89647-02-02 12:27 J -31022111.20 -31022110.98 -31022110.75 0.0274 0.0086 \*  
 Mercury -89647-04-01 06:27 J -31022053.37 -31022053.23 -31022053.09 0.0274 0.0076  
 Venus -89647-05-03 23:59 J -31022020.68 -31022020.50 -31022020.30 0.0274 0.0116  
 Mercury -89647-06-28 19:11 J -31021964.84 -31021964.70 -31021964.55 0.0274 0.0017  
 Mercury -89647-09-25 08:23 J -31021876.28 -31021876.15 -31021876.02 0.0274 0.0108  
 Venus -89647-12-19 03:06 J -31021791.51 -31021791.37 -31021791.23 0.0274 0.0201  
 Mercury -89647-12-22 21:35 J -31021787.69 -31021787.60 -31021787.50 0.0274 0.0203

Earth -89646-02-14 09:06 J -31021734.35 -31021734.12 -31021733.89 0.0274 0.0084  
 Moon -89646-02-14 10:47 J -31021734.27 -31021734.05 -31021733.83 0.0274 0.0076 \*  
 Earth -89645-02-26 09:49 J -31021357.17 -31021357.09 -31021356.99 0.0275 0.0255  
 Moon -89645-02-26 13:39 J -31021357.01 -31021356.93 -31021356.84 0.0275 0.0257 \*  
 Mars -89640-10-25 14:51 J -31019289.20 -31019288.88 -31019288.57 0.0282 0.0016  
 Earth -89633-08-06 08:37 J -31016812.36 -31016812.14 -31016811.90 0.0285 0.0114  
 Moon -89633-08-06 11:44 J -31016812.24 -31016812.01 -31016811.77 0.0285 0.0114 \*  
 Mercury -89633-08-08 12:56 J -31016810.06 -31016809.96 -31016809.84 0.0285 0.0214  
 Venus -89633-10-19 15:06 J -31016738.03 -31016737.87 -31016737.72 0.0285 0.0198  
 Mercury -89633-11-05 08:37 J -31016721.30 -31016721.14 -31016720.98 0.0285 0.0091  
 Mercury -89632-02-02 03:49 J -31016632.50 -31016632.34 -31016632.17 0.0285 0.0030  
 Mercury -89632-05-01 22:32 J -31016543.70 -31016543.56 -31016543.42 0.0284 0.0148  
 Venus -89632-06-06 12:13 J -31016508.16 -31016507.99 -31016507.82 0.0284 0.0175  
 Mercury -89632-07-29 16:47 J -31016454.86 -31016454.80 -31016454.74 0.0284 0.0263  
 Moon -89632-08-20 17:59 J -31016432.99 -31016432.75 -31016432.49 0.0284 0.0083  
 Earth -89632-08-20 18:42 J -31016432.95 -31016432.72 -31016432.48 0.0284 0.0092 \*  
 Moon -89631-09-03 19:39 J -31016053.74 -31016053.68 -31016053.61 0.0283 0.0272  
 Mars -89626-10-28 14:23 J -31014173.15 -31014172.90 -31014172.64 0.0277 0.0091  
 Earth -89618-01-28 11:01 J -31011524.23 -31011524.04 -31011523.84 0.0274 0.0160  
 Moon -89618-01-28 14:08 J -31011524.08 -31011523.91 -31011523.71 0.0274 0.0173 \*  
 Mercury -89618-05-22 18:27 J -31011409.82 -31011409.73 -31011409.63 0.0274 0.0200  
 Mercury -89618-08-19 07:11 J -31011321.33 -31011321.20 -31011321.07 0.0274 0.0110  
 Venus -89618-11-14 00:42 J -31011234.67 -31011234.47 -31011234.27 0.0274 0.0085  
 Mercury -89618-11-15 19:54 J -31011232.81 -31011232.67 -31011232.52 0.0274 0.0021  
 Moon -89617-02-09 05:01 J -31011147.54 -31011147.29 -31011147.04 0.0275 0.0002  
 Earth -89617-02-09 06:42 J -31011147.46 -31011147.22 -31011146.99 0.0275 0.0010 \*  
 Mercury -89617-02-12 08:51 J -31011144.26 -31011144.13 -31011143.98 0.0275 0.0074  
 Mercury -89617-05-10 22:18 J -31011055.69 -31011055.57 -31011055.46 0.0275 0.0167  
 Venus -89617-06-30 03:35 J -31011005.45 -31011005.35 -31011005.24 0.0275 0.0233  
 Mercury -89617-08-07 11:44 J -31010967.05 -31010967.01 -31010966.97 0.0275 0.0263

Moon -89616-02-20 02:08 J -31010770.59 -31010770.41 -31010770.23 0.0275 0.0179  
 Earth -89616-02-20 05:44 J -31010770.44 -31010770.26 -31010770.07 0.0275 0.0179 \*  
 Mars -89610-12-17 15:35 J -31008279.09 -31008278.85 -31008278.59 0.0282 0.0168  
 Moon -89604-07-31 06:56 J -31006226.37 -31006226.21 -31006226.02 0.0285 0.0204  
 Earth -89604-07-31 09:35 J -31006226.27 -31006226.10 -31006225.92 0.0285 0.0203 \*  
 Mercury -89604-12-26 13:39 J -31006078.01 -31006077.93 -31006077.84 0.0285 0.0245  
 Mercury -89603-03-25 09:20 J -31005989.26 -31005989.11 -31005988.95 0.0285 0.0121  
 Venus -89603-05-01 23:30 J -31005951.71 -31005951.52 -31005951.33 0.0285 0.0141  
 Mercury -89603-06-22 04:47 J -31005900.47 -31005900.30 -31005900.13 0.0285 0.0002  
 Earth -89603-08-14 22:47 J -31005846.81 -31005846.55 -31005846.30 0.0285 0.0005  
 Moon -89603-08-14 23:30 J -31005846.76 -31005846.52 -31005846.28 0.0285 0.0001 \*  
 Mercury -89603-09-18 23:30 J -31005811.66 -31005811.52 -31005811.37 0.0285 0.0121  
 Mercury -89603-12-16 17:59 J -31005722.84 -31005722.75 -31005722.66 0.0285 0.0237  
 Venus -89603-12-17 20:37 J -31005721.76 -31005721.64 -31005721.51 0.0285 0.0233  
 Earth -89602-08-29 06:42 J -31005467.38 -31005467.22 -31005467.04 0.0284 0.0207  
 Moon -89602-08-29 10:03 J -31005467.25 -31005467.08 -31005466.89 0.0284 0.0196 \*  
 Mars -89596-12-15 00:13 J -31003167.76 -31003167.49 -31003167.22 0.0277 0.0058  
 Moon -89589-01-23 17:01 J -31000936.90 -31000936.79 -31000936.68 0.0273 0.0242  
 Earth -89589-01-23 20:23 J -31000936.77 -31000936.65 -31000936.52 0.0273 0.0231 \*  
 Mercury -89589-10-08 21:20 J -31000677.69 -31000677.61 -31000677.52 0.0273 0.0217  
 Mercury -89588-01-05 09:49 J -31000589.21 -31000589.09 -31000588.96 0.0273 0.0130  
 Earth -89588-02-03 14:08 J -31000560.14 -31000559.91 -31000559.68 0.0274 0.0066  
 Moon -89588-02-03 14:51 J -31000560.10 -31000559.88 -31000559.66 0.0274 0.0080 \*  
 Mercury -89588-04-03 22:32 J -31000500.70 -31000500.56 -31000500.41 0.0274 0.0040  
 Venus -89588-05-26 06:42 J -31000448.43 -31000448.22 -31000448.01 0.0274 0.0033  
 Mercury -89588-07-01 11:30 J -31000412.16 -31000412.02 -31000411.88 0.0274 0.0052  
 Mercury -89588-09-28 00:42 J -31000323.59 -31000323.47 -31000323.35 0.0274 0.0145  
 Mercury -89588-12-25 14:08 J -31000234.98 -31000234.91 -31000234.84 0.0274 0.0240  
 Earth -89587-02-15 10:32 J -31000183.28 -31000183.06 -31000182.83 0.0274 0.0103  
 Moon -89587-02-15 14:08 J -31000183.13 -31000182.91 -31000182.68 0.0274 0.0098 \*

Earth -89586-02-27 11:30 J -30999806.05 -30999806.02 -30999805.98 0.0275 0.0271  
 Mars -89581-01-27 13:11 J -30998011.17 -30998010.95 -30998010.70 0.0281 0.0189  
 Moon -89574-08-08 12:42 J -30995261.22 -30995260.97 -30995260.72 0.0285 0.0096  
 Earth -89574-08-08 14:23 J -30995261.14 -30995260.90 -30995260.66 0.0285 0.0091 \*  
 Mercury -89574-08-12 07:25 J -30995257.32 -30995257.19 -30995257.05 0.0285 0.0166  
 Mercury -89574-11-09 02:51 J -30995168.54 -30995168.38 -30995168.21 0.0285 0.0044  
 Venus -89574-11-12 01:25 J -30995165.64 -30995165.44 -30995165.24 0.0285 0.0103  
 Mercury -89573-02-05 22:03 J -30995079.74 -30995079.58 -30995079.42 0.0285 0.0077  
 Mercury -89573-05-04 16:32 J -30994990.93 -30994990.81 -30994990.69 0.0285 0.0194  
 Venus -89573-06-28 22:32 J -30994935.63 -30994935.56 -30994935.50 0.0284 0.0270  
 Moon -89573-08-21 20:51 J -30994881.86 -30994881.63 -30994881.39 0.0284 0.0103  
 Earth -89573-08-22 00:27 J -30994881.70 -30994881.48 -30994881.24 0.0284 0.0114 \*  
 Mars -89567-02-04 12:42 J -30992889.12 -30992888.97 -30992888.79 0.0278 0.0220  
 Mars -89565-01-31 11:59 J -30992163.18 -30992163.00 -30992162.80 0.0276 0.0198  
 Moon -89559-01-29 11:01 J -30989973.23 -30989973.04 -30989972.83 0.0274 0.0155  
 Earth -89559-01-29 11:30 J -30989973.22 -30989973.02 -30989972.81 0.0274 0.0141 \*  
 Mercury -89559-02-25 22:03 J -30989945.63 -30989945.58 -30989945.52 0.0274 0.0253  
 Mercury -89559-05-25 10:32 J -30989857.17 -30989857.06 -30989856.95 0.0274 0.0165  
 Mercury -89559-08-21 23:01 J -30989768.67 -30989768.54 -30989768.40 0.0274 0.0077  
 Mercury -89559-11-18 11:59 J -30989680.15 -30989680.00 -30989679.86 0.0274 0.0015  
 Venus -89559-12-06 06:13 J -30989662.45 -30989662.24 -30989662.03 0.0274 0.0007  
 Moon -89558-02-10 03:20 J -30989596.59 -30989596.36 -30989596.12 0.0274 0.0019  
 Earth -89558-02-10 06:42 J -30989596.45 -30989596.22 -30989595.98 0.0274 0.0027 \*  
 Mercury -89558-02-15 00:56 J -30989591.59 -30989591.46 -30989591.32 0.0274 0.0108  
 Mercury -89558-05-14 14:23 J -30989503.00 -30989502.90 -30989502.80 0.0274 0.0203  
 Earth -89557-02-22 05:30 J -30989219.43 -30989219.27 -30989219.09 0.0275 0.0196  
 Moon -89557-02-22 05:44 J -30989219.40 -30989219.26 -30989219.09 0.0275 0.0202 \*  
 Mars -89551-03-20 15:49 J -30987001.15 -30987000.84 -30987000.52 0.0282 0.0006  
 Earth -89545-08-01 12:27 J -30984675.17 -30984674.98 -30984674.78 0.0286 0.0182  
 Moon -89545-08-01 14:51 J -30984675.05 -30984674.88 -30984674.68 0.0286 0.0187 \*

Mercury -89545-12-29 07:25 J -30984525.31 -30984525.19 -30984525.07 0.0285 0.0201

Mercury -89544-03-28 03:06 J -30984436.53 -30984436.37 -30984436.21 0.0285 0.0076

Venus -89544-05-24 08:23 J -30984379.36 -30984379.15 -30984378.93 0.0285 0.0050

Mercury -89544-06-24 22:18 J -30984347.73 -30984347.57 -30984347.40 0.0285 0.0045

Earth -89544-08-16 01:54 J -30984295.67 -30984295.42 -30984295.17 0.0285 0.0025

Moon -89544-08-16 05:44 J -30984295.51 -30984295.26 -30984295.01 0.0285 0.0018 \*

Mercury -89544-09-21 17:01 J -30984258.92 -30984258.79 -30984258.65 0.0285 0.0164

Mercury -89544-12-19 11:15 J -30984170.05 -30984170.03 -30984169.99 0.0285 0.0279

Earth -89543-08-30 10:03 J -30983916.23 -30983916.08 -30983915.92 0.0284 0.0225

Moon -89543-08-30 12:13 J -30983916.15 -30983915.99 -30983915.82 0.0284 0.0214 \*

Mars -89537-03-23 16:47 J -30981884.06 -30981883.80 -30981883.53 0.0278 0.0076

Earth -89530-01-24 21:20 J -30979385.76 -30979385.61 -30979385.46 0.0273 0.0211

Moon -89530-01-24 21:20 J -30979385.74 -30979385.61 -30979385.48 0.0273 0.0225 \*

Mercury -89530-07-16 00:56 J -30979213.47 -30979213.46 -30979213.44 0.0273 0.0270

Mercury -89530-10-12 13:25 J -30979125.04 -30979124.94 -30979124.84 0.0273 0.0183

Venus -89530-11-01 10:32 J -30979105.10 -30979105.06 -30979105.02 0.0273 0.0267

Mercury -89529-01-09 01:54 J -30979036.55 -30979036.42 -30979036.29 0.0273 0.0095

Earth -89529-02-05 14:37 J -30979009.12 -30979008.89 -30979008.65 0.0273 0.0048

Moon -89529-02-05 18:13 J -30979008.97 -30979008.74 -30979008.51 0.0273 0.0062 \*

Mercury -89529-04-06 14:37 J -30978948.03 -30978947.89 -30978947.74 0.0273 0.0005

Venus -89529-06-17 12:42 J -30978876.18 -30978875.97 -30978875.77 0.0274 0.0048

Mercury -89529-07-04 03:35 J -30978859.48 -30978859.35 -30978859.21 0.0274 0.0088

Mercury -89529-09-30 16:47 J -30978770.91 -30978770.80 -30978770.69 0.0274 0.0182

Moon -89528-02-16 11:01 J -30978632.26 -30978632.04 -30978631.81 0.0274 0.0119

Earth -89528-02-16 11:15 J -30978632.24 -30978632.03 -30978631.81 0.0274 0.0120 \*

Mars -89521-05-11 17:30 J -30975991.00 -30975990.77 -30975990.51 0.0283 0.0174

Moon -89516-07-26 00:13 J -30974089.54 -30974089.49 -30974089.43 0.0285 0.0278

Earth -89516-07-26 03:35 J -30974089.42 -30974089.35 -30974089.27 0.0285 0.0272

Mercury -89515-05-18 05:30 J -30973793.35 -30973793.27 -30973793.18 0.0285 0.0247

Moon -89515-08-09 14:08 J -30973710.15 -30973709.91 -30973709.67 0.0285 0.0078

Earth -89515-08-09 17:59 J -30973709.99 -30973709.75 -30973709.50 0.0285 0.0069 \*  
 Mercury -89515-08-15 01:11 J -30973704.60 -30973704.45 -30973704.29 0.0285 0.0122  
 Mercury -89515-11-11 20:37 J -30973615.80 -30973615.64 -30973615.47 0.0285 0.0005  
 Venus -89515-12-04 10:32 J -30973593.27 -30973593.06 -30973592.84 0.0285 0.0012  
 Mercury -89514-02-08 15:35 J -30973527.00 -30973526.85 -30973526.70 0.0285 0.0120  
 Mercury -89514-05-08 09:49 J -30973438.17 -30973438.09 -30973437.99 0.0285 0.0237  
 Moon -89514-08-24 02:37 J -30973330.60 -30973330.39 -30973330.17 0.0284 0.0123  
 Earth -89514-08-24 04:18 J -30973330.54 -30973330.32 -30973330.10 0.0284 0.0134 \*  
 Mars -89507-05-10 01:25 J -30970879.71 -30970879.44 -30970879.17 0.0277 0.0064  
 Moon -89500-01-30 07:54 J -30968422.37 -30968422.17 -30968421.96 0.0274 0.0138  
 Earth -89500-01-30 11:30 J -30968422.22 -30968422.02 -30968421.80 0.0274 0.0123 \*  
 Mercury -89500-02-28 13:54 J -30968393.00 -30968392.92 -30968392.84 0.0274 0.0220  
 Venus -89500-05-13 09:06 J -30968319.21 -30968319.12 -30968319.02 0.0274 0.0242  
 Mercury -89500-05-28 02:23 J -30968304.53 -30968304.40 -30968304.28 0.0274 0.0132  
 Mercury -89500-08-24 14:51 J -30968216.02 -30968215.88 -30968215.73 0.0274 0.0043  
 Mercury -89500-11-21 03:49 J -30968127.48 -30968127.34 -30968127.20 0.0274 0.0049  
 Venus -89500-12-28 11:30 J -30968090.22 -30968090.02 -30968089.82 0.0274 0.0074  
 Moon -89499-02-11 06:13 J -30968045.46 -30968045.24 -30968045.01 0.0274 0.0039  
 Earth -89499-02-11 06:27 J -30968045.46 -30968045.23 -30968044.99 0.0274 0.0045 \*  
 Mercury -89499-02-17 16:47 J -30968038.92 -30968038.80 -30968038.67 0.0274 0.0143  
 Mercury -89499-05-17 06:13 J -30967950.31 -30967950.24 -30967950.16 0.0274 0.0238  
 Earth -89498-02-23 05:01 J -30967668.43 -30967668.29 -30967668.13 0.0275 0.0212  
 Moon -89498-02-23 08:37 J -30967668.27 -30967668.14 -30967667.99 0.0275 0.0221 \*  
 Mars -89493-06-21 05:30 J -30965723.50 -30965723.27 -30965723.01 0.0281 0.0183  
 Earth -89486-08-03 13:54 J -30963124.13 -30963123.92 -30963123.71 0.0286 0.0162  
 Moon -89486-08-03 17:30 J -30963123.98 -30963123.77 -30963123.57 0.0286 0.0170 \*  
 Mercury -89486-10-05 04:47 J -30963061.30 -30963061.30 -30963061.29 0.0286 0.0285  
 Mercury -89485-01-02 00:42 J -30962972.61 -30962972.47 -30962972.33 0.0286 0.0159  
 Mercury -89485-03-30 20:23 J -30962883.82 -30962883.65 -30962883.49 0.0285 0.0035  
 Venus -89485-06-15 16:18 J -30962807.04 -30962806.82 -30962806.61 0.0285 0.0039

Mercury -89485-06-27 15:20 J -30962795.01 -30962794.86 -30962794.70 0.0285 0.0086  
 Earth -89485-08-17 03:20 J -30962744.61 -30962744.36 -30962744.11 0.0285 0.0044  
 Moon -89485-08-17 04:18 J -30962744.57 -30962744.32 -30962744.05 0.0285 0.0033 \*  
 Mercury -89485-09-24 10:03 J -30962706.19 -30962706.08 -30962705.96 0.0285 0.0204  
 Moon -89484-08-31 09:20 J -30962365.26 -30962365.11 -30962364.95 0.0285 0.0228  
 Earth -89484-08-31 11:44 J -30962365.13 -30962365.01 -30962364.87 0.0285 0.0243 \*  
 Mars -89479-07-01 11:30 J -30960600.18 -30960600.02 -30960599.83 0.0279 0.0209  
 Mars -89477-06-26 12:27 J -30959874.14 -30959873.98 -30959873.79 0.0276 0.0212  
 Earth -89471-01-25 21:35 J -30957834.76 -30957834.60 -30957834.42 0.0273 0.0193  
 Moon -89471-01-26 01:11 J -30957834.59 -30957834.45 -30957834.29 0.0273 0.0209 \*  
 Mercury -89471-07-18 16:47 J -30957660.86 -30957660.80 -30957660.73 0.0273 0.0237  
 Mercury -89471-10-15 05:15 J -30957572.40 -30957572.28 -30957572.16 0.0273 0.0150  
 Venus -89471-11-23 16:03 J -30957532.98 -30957532.83 -30957532.68 0.0273 0.0187  
 Mercury -89470-01-11 17:44 J -30957483.90 -30957483.76 -30957483.62 0.0273 0.0061  
 Earth -89470-02-06 15:06 J -30957458.11 -30957457.87 -30957457.63 0.0273 0.0030  
 Moon -89470-02-06 16:03 J -30957458.07 -30957457.83 -30957457.58 0.0273 0.0042 \*  
 Mercury -89470-04-10 06:42 J -30957395.37 -30957395.22 -30957395.08 0.0273 0.0031  
 Mercury -89470-07-07 19:39 J -30957306.81 -30957306.68 -30957306.55 0.0273 0.0123  
 Venus -89470-07-10 18:13 J -30957303.92 -30957303.74 -30957303.56 0.0273 0.0128  
 Mercury -89470-10-04 08:51 J -30957218.21 -30957218.13 -30957218.04 0.0274 0.0217  
 Moon -89469-02-18 07:54 J -30957081.37 -30957081.17 -30957080.95 0.0274 0.0141  
 Earth -89469-02-18 11:30 J -30957081.22 -30957081.02 -30957080.81 0.0274 0.0137 \*  
 Mars -89463-08-13 19:11 J -30954713.02 -30954712.70 -30954712.39 0.0282 0.0002  
 Moon -89457-07-27 03:49 J -30952538.43 -30952538.34 -30952538.24 0.0286 0.0260  
 Earth -89457-07-27 06:27 J -30952538.35 -30952538.23 -30952538.11 0.0286 0.0251 \*  
 Mercury -89456-05-20 23:01 J -30952240.65 -30952240.54 -30952240.41 0.0285 0.0204  
 Earth -89456-08-10 20:51 J -30952158.88 -30952158.63 -30952158.38 0.0285 0.0048  
 Moon -89456-08-10 20:51 J -30952158.86 -30952158.63 -30952158.39 0.0285 0.0060 \*  
 Mercury -89456-08-17 18:56 J -30952151.87 -30952151.71 -30952151.55 0.0285 0.0078  
 Mercury -89456-11-14 14:08 J -30952063.07 -30952062.91 -30952062.74 0.0285 0.0044



Venus -89456-12-26 19:11 J -30952020.90 -30952020.70 -30952020.49 0.0285 0.0080  
 Mercury -89455-02-11 08:51 J -30951974.26 -30951974.13 -30951973.99 0.0285 0.0162  
 Mercury -89455-05-11 03:06 J -30951885.39 -30951885.37 -30951885.33 0.0285 0.0278  
 Earth -89455-08-25 06:56 J -30951779.41 -30951779.21 -30951778.99 0.0285 0.0154  
 Moon -89455-08-25 10:03 J -30951779.29 -30951779.08 -30951778.86 0.0285 0.0140 \*  
 Mars -89449-08-16 18:13 J -30949595.99 -30949595.74 -30949595.47 0.0277 0.0071  
 Earth -89442-01-20 19:11 J -30947247.75 -30947247.70 -30947247.63 0.0273 0.0264  
 Moon -89441-02-01 10:32 J -30946871.26 -30946871.06 -30946870.85 0.0273 0.0119  
 Earth -89441-02-01 11:30 J -30946871.24 -30946871.02 -30946870.80 0.0273 0.0104 \*  
 Mercury -89441-03-03 05:44 J -30946840.37 -30946840.26 -30946840.16 0.0274 0.0187  
 Mercury -89441-05-30 17:59 J -30946751.88 -30946751.75 -30946751.61 0.0274 0.0099  
 Venus -89441-06-04 14:37 J -30946747.05 -30946746.89 -30946746.72 0.0274 0.0162  
 Mercury -89441-08-27 06:42 J -30946663.36 -30946663.22 -30946663.07 0.0274 0.0012  
 Mercury -89441-11-23 19:39 J -30946574.81 -30946574.68 -30946574.54 0.0274 0.0084  
 Venus -89440-01-19 16:47 J -30946517.97 -30946517.80 -30946517.62 0.0274 0.0154  
 Earth -89440-02-12 06:13 J -30946494.47 -30946494.24 -30946494.00 0.0274 0.0062  
 Moon -89440-02-12 09:35 J -30946494.33 -30946494.10 -30946493.87 0.0274 0.0058 \*  
 Mercury -89440-02-20 08:51 J -30946486.24 -30946486.13 -30946486.02 0.0274 0.0178  
 Mercury -89440-05-19 22:18 J -30946397.58 -30946397.57 -30946397.56 0.0274 0.0273  
 Earth -89439-02-24 04:47 J -30946117.43 -30946117.30 -30946117.16 0.0275 0.0228  
 Moon -89439-02-24 05:44 J -30946117.37 -30946117.26 -30946117.13 0.0275 0.0238 \*  
 Mars -89433-10-04 08:37 J -30943703.38 -30943703.14 -30943702.90 0.0282 0.0181  
 Moon -89427-08-04 13:11 J -30941573.16 -30941572.95 -30941572.72 0.0286 0.0155  
 Earth -89427-08-04 14:37 J -30941573.10 -30941572.89 -30941572.67 0.0286 0.0143 \*  
 Mercury -89427-10-07 22:03 J -30941508.67 -30941508.58 -30941508.49 0.0286 0.0244  
 Venus -89427-11-21 01:11 J -30941464.54 -30941464.45 -30941464.34 0.0286 0.0252  
 Mercury -89426-01-04 17:44 J -30941419.91 -30941419.76 -30941419.60 0.0286 0.0119  
 Mercury -89426-04-03 13:25 J -30941331.11 -30941330.94 -30941330.77 0.0286 0.0006  
 Mercury -89426-07-01 08:23 J -30941242.30 -30941242.15 -30941242.00 0.0285 0.0125  
 Venus -89426-07-08 23:30 J -30941234.71 -30941234.52 -30941234.32 0.0285 0.0127

Moon -89426-08-19 00:42 J -30941193.72 -30941193.47 -30941193.21 0.0285 0.0047  
 Earth -89426-08-19 04:18 J -30941193.56 -30941193.32 -30941193.07 0.0285 0.0062 \*  
 Mercury -89426-09-28 02:51 J -30941153.46 -30941153.38 -30941153.29 0.0285 0.0243  
 Moon -89425-09-01 09:35 J -30940814.22 -30940814.10 -30940813.97 0.0285 0.0244  
 Earth -89425-09-01 12:56 J -30940814.06 -30940813.96 -30940813.85 0.0285 0.0259 \*  
 Mars -89419-10-03 23:15 J -30938590.78 -30938590.53 -30938590.26 0.0277 0.0076  
 Earth -89412-01-26 22:03 J -30936283.75 -30936283.58 -30936283.38 0.0273 0.0175  
 Moon -89412-01-26 23:30 J -30936283.69 -30936283.52 -30936283.34 0.0273 0.0189 \*  
 Mercury -89412-07-21 08:37 J -30936108.23 -30936108.14 -30936108.04 0.0273 0.0204  
 Mercury -89412-10-17 21:06 J -30936019.75 -30936019.62 -30936019.49 0.0273 0.0116  
 Venus -89412-12-15 21:49 J -30935960.78 -30935960.59 -30935960.40 0.0273 0.0107  
 Mercury -89411-01-14 09:49 J -30935931.23 -30935931.09 -30935930.95 0.0273 0.0026  
 Moon -89411-02-07 12:27 J -30935907.22 -30935906.98 -30935906.74 0.0273 0.0022  
 Earth -89411-02-07 15:49 J -30935907.08 -30935906.84 -30935906.60 0.0273 0.0012 \*  
 Mercury -89411-04-12 22:32 J -30935842.69 -30935842.56 -30935842.41 0.0273 0.0067  
 Mercury -89411-07-10 11:44 J -30935754.13 -30935754.01 -30935753.89 0.0273 0.0159  
 Venus -89411-08-01 23:44 J -30935731.63 -30935731.51 -30935731.37 0.0273 0.0209  
 Mercury -89411-10-07 01:11 J -30935665.50 -30935665.45 -30935665.40 0.0273 0.0254  
 Moon -89410-02-19 10:32 J -30935530.25 -30935530.06 -30935529.87 0.0274 0.0158  
 Earth -89410-02-19 11:59 J -30935530.19 -30935530.00 -30935529.80 0.0274 0.0154 \*  
 Mars -89405-11-14 13:25 J -30933435.18 -30933434.94 -30933434.69 0.0281 0.0177  
 Earth -89398-07-29 08:37 J -30930987.29 -30930987.14 -30930986.99 0.0286 0.0230  
 Moon -89398-07-29 10:18 J -30930987.19 -30930987.07 -30930986.93 0.0286 0.0242 \*  
 Mercury -89397-05-23 16:47 J -30930687.94 -30930687.80 -30930687.66 0.0286 0.0160  
 Venus -89397-06-02 05:30 J -30930678.41 -30930678.27 -30930678.11 0.0286 0.0209  
 Earth -89397-08-11 23:01 J -30930607.79 -30930607.54 -30930607.29 0.0285 0.0028  
 Moon -89397-08-12 02:51 J -30930607.63 -30930607.38 -30930607.13 0.0285 0.0043 \*  
 Mercury -89397-08-20 12:27 J -30930599.15 -30930598.98 -30930598.82 0.0285 0.0037  
 Mercury -89397-11-17 07:25 J -30930510.35 -30930510.19 -30930510.03 0.0285 0.0085  
 Venus -89396-01-18 03:20 J -30930448.52 -30930448.36 -30930448.18 0.0285 0.0170

Mercury -89396-02-14 02:08 J -30930421.52 -30930421.41 -30930421.29 0.0285 0.0203  
 Earth -89396-08-26 09:20 J -30930228.30 -30930228.11 -30930227.90 0.0285 0.0172  
 Moon -89396-08-26 12:27 J -30930228.19 -30930227.98 -30930227.76 0.0285 0.0156 \*  
 Mars -89391-11-24 13:39 J -30928312.10 -30928311.93 -30928311.73 0.0278 0.0205  
 Mars -89389-11-19 14:08 J -30927586.06 -30927585.91 -30927585.73 0.0276 0.0218  
 Moon -89383-01-21 19:11 J -30925696.77 -30925696.70 -30925696.63 0.0273 0.0260  
 Earth -89383-01-21 20:23 J -30925696.75 -30925696.65 -30925696.54 0.0273 0.0245 \*  
 Mercury -89383-12-08 09:20 J -30925376.18 -30925376.11 -30925376.05 0.0273 0.0239  
 Earth -89382-02-02 12:27 J -30925320.21 -30925319.98 -30925319.75 0.0273 0.0086  
 Moon -89382-02-02 15:35 J -30925320.06 -30925319.85 -30925319.62 0.0273 0.0099 \*  
 Mercury -89382-03-06 21:35 J -30925287.71 -30925287.60 -30925287.48 0.0273 0.0152  
 Mercury -89382-06-03 10:03 J -30925199.22 -30925199.08 -30925198.94 0.0273 0.0063  
 Venus -89382-06-27 20:37 J -30925174.84 -30925174.64 -30925174.44 0.0273 0.0081  
 Mercury -89382-08-30 22:47 J -30925110.69 -30925110.55 -30925110.40 0.0274 0.0029  
 Mercury -89382-11-27 11:44 J -30925022.13 -30925022.01 -30925021.87 0.0274 0.0121  
 Venus -89381-02-11 22:47 J -30924945.65 -30924945.55 -30924945.44 0.0274 0.0235  
 Earth -89381-02-14 07:11 J -30924943.43 -30924943.20 -30924942.97 0.0274 0.0079  
 Moon -89381-02-14 09:06 J -30924943.35 -30924943.12 -30924942.88 0.0274 0.0077 \*  
 Mercury -89381-02-24 00:56 J -30924933.54 -30924933.46 -30924933.36 0.0274 0.0215  
 Moon -89380-02-25 02:08 J -30924566.48 -30924566.41 -30924566.31 0.0275 0.0257  
 Earth -89380-02-25 05:15 J -30924566.37 -30924566.28 -30924566.16 0.0275 0.0244 \*  
 Mars -89374-01-06 06:56 J -30922425.52 -30922425.21 -30922424.89 0.0281 0.0005  
 Moon -89368-08-05 11:44 J -30920022.22 -30920022.01 -30920021.78 0.0286 0.0138  
 Earth -89368-08-05 15:35 J -30920022.07 -30920021.85 -30920021.62 0.0286 0.0123 \*  
 Mercury -89368-10-10 15:20 J -30919955.98 -30919955.86 -30919955.74 0.0286 0.0203  
 Venus -89368-12-13 09:06 J -30919892.30 -30919892.12 -30919891.94 0.0286 0.0164  
 Mercury -89367-01-07 11:01 J -30919867.20 -30919867.04 -30919866.88 0.0286 0.0078  
 Mercury -89367-04-06 06:27 J -30919778.40 -30919778.23 -30919778.07 0.0286 0.0045  
 Mercury -89367-07-04 01:11 J -30919689.58 -30919689.45 -30919689.31 0.0286 0.0166  
 Venus -89367-07-31 07:11 J -30919662.34 -30919662.20 -30919662.06 0.0286 0.0216

Moon -89367-08-20 03:20 J -30919642.60 -30919642.36 -30919642.12 0.0285 0.0065  
 Earth -89367-08-20 05:30 J -30919642.51 -30919642.27 -30919642.03 0.0285 0.0080 \*  
 Mercury -89367-09-30 19:54 J -30919600.69 -30919600.67 -30919600.65 0.0285 0.0282  
 Earth -89366-09-03 13:54 J -30919262.97 -30919262.92 -30919262.85 0.0285 0.0276  
 Moon -89366-09-03 14:37 J -30919262.97 -30919262.89 -30919262.78 0.0285 0.0261 \*  
 Mars -89360-01-10 13:25 J -30917307.20 -30917306.94 -30917306.67 0.0278 0.0062  
 Moon -89353-01-28 20:08 J -30914732.84 -30914732.66 -30914732.46 0.0273 0.0170  
 Earth -89353-01-28 23:15 J -30914732.72 -30914732.53 -30914732.33 0.0273 0.0156 \*  
 Mercury -89353-04-26 12:27 J -30914644.02 -30914643.98 -30914643.93 0.0273 0.0256  
 Mercury -89353-07-24 00:42 J -30914555.58 -30914555.47 -30914555.36 0.0273 0.0169  
 Mercury -89353-10-20 13:11 J -30914467.08 -30914466.95 -30914466.81 0.0273 0.0080  
 Venus -89352-01-07 03:49 J -30914388.54 -30914388.34 -30914388.13 0.0273 0.0026  
 Mercury -89352-01-17 01:54 J -30914378.56 -30914378.42 -30914378.27 0.0273 0.0011  
 Moon -89352-02-08 14:37 J -30914356.12 -30914355.89 -30914355.66 0.0273 0.0002  
 Earth -89352-02-08 17:01 J -30914356.03 -30914355.79 -30914355.55 0.0273 0.0008 \*  
 Mercury -89352-04-15 14:51 J -30914290.01 -30914289.88 -30914289.75 0.0273 0.0103  
 Mercury -89352-07-13 04:03 J -30914201.43 -30914201.33 -30914201.23 0.0273 0.0196  
 Earth -89351-02-20 13:11 J -30913979.13 -30913978.95 -30913978.76 0.0274 0.0171  
 Moon -89351-02-20 15:35 J -30913979.01 -30913978.85 -30913978.66 0.0274 0.0179 \*  
 Mars -89344-02-27 19:25 J -30911414.91 -30911414.69 -30911414.44 0.0282 0.0188  
 Earth -89339-07-30 11:44 J -30909436.17 -30909436.01 -30909435.83 0.0286 0.0209  
 Moon -89339-07-30 15:20 J -30909436.01 -30909435.86 -30909435.69 0.0286 0.0221 \*  
 Mercury -89338-02-27 14:37 J -30909223.97 -30909223.89 -30909223.80 0.0286 0.0242  
 Mercury -89338-05-27 10:32 J -30909135.21 -30909135.06 -30909134.90 0.0286 0.0116  
 Venus -89338-06-25 14:37 J -30909106.08 -30909105.89 -30909105.69 0.0286 0.0117  
 Earth -89338-08-14 02:23 J -30909056.65 -30909056.40 -30909056.14 0.0286 0.0009  
 Moon -89338-08-14 03:49 J -30909056.60 -30909056.34 -30909056.08 0.0286 0.0023 \*  
 Mercury -89338-08-24 05:59 J -30909046.41 -30909046.25 -30909046.08 0.0286 0.0010  
 Mercury -89338-11-21 00:56 J -30908957.60 -30908957.46 -30908957.31 0.0285 0.0129  
 Venus -89337-02-10 12:13 J -30908876.06 -30908875.99 -30908875.90 0.0285 0.0263

Mercury -89337-02-17 19:39 J -30908868.76 -30908868.68 -30908868.60 0.0285 0.0246

Moon -89337-08-27 10:47 J -30908677.25 -30908677.05 -30908676.84 0.0285 0.0174

Earth -89337-08-27 12:42 J -30908677.15 -30908676.97 -30908676.78 0.0285 0.0191 \*

Mars -89330-02-27 03:20 J -30906302.62 -30906302.36 -30906302.09 0.0277 0.0082

Earth -89324-01-22 22:18 J -30904145.70 -30904145.57 -30904145.43 0.0273 0.0226

Moon -89324-01-23 00:56 J -30904145.56 -30904145.46 -30904145.34 0.0273 0.0241 \*

Mercury -89324-12-11 01:25 J -30903823.53 -30903823.44 -30903823.35 0.0273 0.0204

Earth -89323-02-03 14:23 J -30903769.13 -30903768.90 -30903768.66 0.0273 0.0067

Moon -89323-02-03 16:32 J -30903769.04 -30903768.81 -30903768.57 0.0273 0.0078 \*

Mercury -89323-03-09 13:39 J -30903735.05 -30903734.93 -30903734.79 0.0273 0.0117

Mercury -89323-06-06 02:23 J -30903646.54 -30903646.40 -30903646.26 0.0273 0.0026

Venus -89323-07-20 03:20 J -30903602.57 -30903602.36 -30903602.15 0.0273 0.0004

Mercury -89323-09-02 15:06 J -30903558.01 -30903557.87 -30903557.72 0.0273 0.0066

Mercury -89323-11-30 04:18 J -30903469.44 -30903469.32 -30903469.20 0.0274 0.0158

Moon -89322-02-15 06:27 J -30903392.45 -30903392.23 -30903391.99 0.0274 0.0100

Earth -89322-02-15 09:06 J -30903392.34 -30903392.12 -30903391.89 0.0274 0.0097 \*

Mercury -89322-02-26 17:30 J -30903380.82 -30903380.77 -30903380.71 0.0274 0.0253

Moon -89321-02-27 04:47 J -30903015.30 -30903015.30 -30903015.27 0.0274 0.0274

Earth -89321-02-27 07:25 J -30903015.26 -30903015.19 -30903015.11 0.0274 0.0260

Mars -89316-04-09 01:54 J -30901147.66 -30901147.42 -30901147.17 0.0280 0.0175

Moon -89309-08-06 17:01 J -30898471.01 -30898470.79 -30898470.56 0.0286 0.0117

Earth -89309-08-06 17:30 J -30898471.00 -30898470.77 -30898470.53 0.0286 0.0103 \*

Mercury -89309-10-13 08:51 J -30898403.27 -30898403.13 -30898402.99 0.0286 0.0160

Venus -89308-01-04 17:30 J -30898319.98 -30898319.77 -30898319.56 0.0286 0.0074

Mercury -89308-01-10 04:32 J -30898314.48 -30898314.31 -30898314.15 0.0286 0.0035

Mercury -89308-04-08 23:44 J -30898225.67 -30898225.51 -30898225.35 0.0286 0.0087

Mercury -89308-07-06 18:27 J -30898136.84 -30898136.73 -30898136.61 0.0286 0.0206

Earth -89308-08-21 07:11 J -30898091.43 -30898091.20 -30898090.96 0.0286 0.0100

Moon -89308-08-21 09:49 J -30898091.32 -30898091.09 -30898090.85 0.0286 0.0084 \*

Moon -89307-09-04 19:54 J -30897711.73 -30897711.67 -30897711.60 0.0285 0.0275

Mars -89302-04-20 06:56 J -30896023.39 -30896023.21 -30896023.01 0.0279 0.0199  
 Mars -89300-04-15 11:01 J -30895297.18 -30895297.04 -30895296.87 0.0277 0.0228  
 Moon -89294-01-29 23:30 J -30893181.71 -30893181.52 -30893181.32 0.0273 0.0149  
 Earth -89294-01-30 01:39 J -30893181.62 -30893181.43 -30893181.21 0.0273 0.0136 \*  
 Mercury -89294-04-30 04:32 J -30893091.38 -30893091.31 -30893091.22 0.0273 0.0220  
 Venus -89294-06-15 09:06 J -30893045.18 -30893045.12 -30893045.04 0.0273 0.0256  
 Mercury -89294-07-27 17:01 J -30893002.91 -30893002.79 -30893002.66 0.0273 0.0132  
 Mercury -89294-10-24 05:44 J -30892914.41 -30892914.26 -30892914.12 0.0273 0.0044  
 Mercury -89293-01-20 18:27 J -30892825.87 -30892825.73 -30892825.59 0.0273 0.0049  
 Venus -89293-01-30 11:01 J -30892816.24 -30892816.04 -30892815.84 0.0273 0.0059  
 Earth -89293-02-10 19:39 J -30892804.92 -30892804.68 -30892804.44 0.0273 0.0026  
 Moon -89293-02-10 21:49 J -30892804.82 -30892804.59 -30892804.36 0.0273 0.0023 \*  
 Mercury -89293-04-18 07:25 J -30892737.31 -30892737.19 -30892737.07 0.0273 0.0141  
 Mercury -89293-07-15 20:37 J -30892648.71 -30892648.64 -30892648.57 0.0273 0.0236  
 Earth -89292-02-21 16:03 J -30892427.99 -30892427.83 -30892427.65 0.0274 0.0189  
 Moon -89292-02-21 19:11 J -30892427.86 -30892427.70 -30892427.52 0.0274 0.0197 \*  
 Mars -89286-06-02 02:51 J -30890136.70 -30890136.38 -30890136.07 0.0281 0.0013  
 Earth -89280-07-31 16:47 J -30887884.99 -30887884.80 -30887884.61 0.0286 0.0186  
 Moon -89280-07-31 16:47 J -30887884.98 -30887884.80 -30887884.60 0.0286 0.0198 \*  
 Mercury -89279-03-02 08:51 J -30887671.25 -30887671.13 -30887671.00 0.0286 0.0195  
 Mercury -89279-05-30 04:32 J -30887582.47 -30887582.31 -30887582.14 0.0286 0.0070  
 Venus -89279-07-18 00:27 J -30887533.69 -30887533.48 -30887533.26 0.0286 0.0022  
 Moon -89279-08-15 04:03 J -30887505.58 -30887505.33 -30887505.07 0.0286 0.0005  
 Earth -89279-08-15 07:11 J -30887505.45 -30887505.20 -30887504.94 0.0286 0.0016 \*  
 Mercury -89279-08-26 23:59 J -30887493.66 -30887493.50 -30887493.33 0.0286 0.0054  
 Mercury -89279-11-23 18:56 J -30887404.84 -30887404.71 -30887404.58 0.0286 0.0173  
 Moon -89278-08-29 13:39 J -30887126.10 -30887125.93 -30887125.74 0.0285 0.0195  
 Earth -89278-08-29 17:15 J -30887125.93 -30887125.78 -30887125.60 0.0285 0.0211 \*  
 Mars -89272-06-05 22:32 J -30885018.83 -30885018.56 -30885018.29 0.0278 0.0054  
 Earth -89265-01-25 01:54 J -30882594.57 -30882594.42 -30882594.26 0.0273 0.0206

Moon -89265-01-25 04:47 J -30882594.44 -30882594.30 -30882594.15 0.0273 0.0220 \*  
 Mercury -89265-09-16 05:44 J -30882359.31 -30882359.26 -30882359.21 0.0273 0.0253  
 Mercury -89265-12-13 17:59 J -30882270.86 -30882270.75 -30882270.64 0.0273 0.0166  
 Venus -89265-12-25 09:06 J -30882259.22 -30882259.12 -30882259.00 0.0273 0.0226  
 Moon -89264-02-04 15:49 J -30882218.08 -30882217.84 -30882217.60 0.0273 0.0053  
 Earth -89264-02-04 18:13 J -30882217.97 -30882217.74 -30882217.50 0.0273 0.0047 \*  
 Mercury -89264-03-12 06:27 J -30882182.37 -30882182.23 -30882182.10 0.0273 0.0078  
 Mercury -89264-06-08 18:56 J -30882093.85 -30882093.71 -30882093.56 0.0273 0.0015  
 Venus -89264-08-11 10:47 J -30882030.24 -30882030.05 -30882029.85 0.0273 0.0089  
 Mercury -89264-09-05 07:54 J -30882005.30 -30882005.17 -30882005.03 0.0273 0.0105  
 Mercury -89264-12-02 20:51 J -30881916.72 -30881916.63 -30881916.52 0.0273 0.0200  
 Moon -89263-02-16 09:35 J -30881841.30 -30881841.10 -30881840.88 0.0274 0.0122  
 Earth -89263-02-16 12:56 J -30881841.18 -30881840.96 -30881840.75 0.0274 0.0116 \*  
 Mars -89256-07-23 14:23 J -30879127.11 -30879126.90 -30879126.66 0.0282 0.0193  
 Earth -89251-07-25 06:27 J -30877299.29 -30877299.23 -30877299.18 0.0286 0.0278  
 Mercury -89250-07-20 06:56 J -30876939.30 -30876939.21 -30876939.12 0.0286 0.0240  
 Earth -89250-08-08 22:18 J -30876919.80 -30876919.57 -30876919.32 0.0286 0.0081  
 Moon -89250-08-09 01:39 J -30876919.66 -30876919.43 -30876919.19 0.0286 0.0096 \*  
 Mercury -89250-10-17 02:51 J -30876850.53 -30876850.38 -30876850.22 0.0286 0.0114  
 Mercury -89249-01-13 22:32 J -30876761.73 -30876761.56 -30876761.40 0.0286 0.0012  
 Venus -89249-01-28 03:06 J -30876747.58 -30876747.37 -30876747.15 0.0286 0.0021  
 Mercury -89249-04-11 17:30 J -30876672.91 -30876672.77 -30876672.62 0.0286 0.0132  
 Mercury -89249-07-09 11:59 J -30876584.07 -30876584.00 -30876583.91 0.0286 0.0251  
 Earth -89249-08-22 11:44 J -30876540.24 -30876540.01 -30876539.78 0.0285 0.0120  
 Moon -89249-08-22 15:06 J -30876540.11 -30876539.87 -30876539.63 0.0285 0.0104 \*  
 Mars -89242-07-24 00:13 J -30874013.75 -30874013.49 -30874013.23 0.0278 0.0091  
 Earth -89236-01-19 13:39 J -30872006.96 -30872006.93 -30872006.89 0.0273 0.0270  
 Earth -89235-01-31 05:30 J -30871630.48 -30871630.27 -30871630.04 0.0273 0.0115  
 Moon -89235-01-31 07:11 J -30871630.40 -30871630.20 -30871629.99 0.0273 0.0126 \*  
 Mercury -89235-02-03 09:06 J -30871627.14 -30871627.12 -30871627.10 0.0273 0.0269

Mercury -89235-05-02 21:06 J -30871538.72 -30871538.62 -30871538.51 0.0273 0.0183

Venus -89235-07-07 17:01 J -30871472.95 -30871472.79 -30871472.63 0.0273 0.0171

Mercury -89235-07-30 09:35 J -30871450.23 -30871450.10 -30871449.96 0.0273 0.0094

Mercury -89235-10-26 22:18 J -30871361.71 -30871361.57 -30871361.43 0.0273 0.0003

Mercury -89234-01-23 11:01 J -30871273.17 -30871273.04 -30871272.90 0.0273 0.0089

Earth -89234-02-11 23:44 J -30871253.75 -30871253.51 -30871253.28 0.0273 0.0046

Moon -89234-02-12 03:06 J -30871253.61 -30871253.37 -30871253.13 0.0273 0.0046 \*

Venus -89234-02-21 18:42 J -30871243.89 -30871243.72 -30871243.54 0.0273 0.0146

Mercury -89234-04-22 00:13 J -30871184.60 -30871184.49 -30871184.38 0.0273 0.0183

Moon -89233-02-23 19:39 J -30870876.82 -30870876.68 -30870876.52 0.0274 0.0218

Earth -89233-02-23 20:37 J -30870876.78 -30870876.64 -30870876.47 0.0274 0.0208 \*

Mars -89228-09-03 09:35 J -30868858.35 -30868858.10 -30868857.83 0.0280 0.0161

Moon -89221-08-01 20:08 J -30866333.85 -30866333.66 -30866333.45 0.0286 0.0177

Earth -89221-08-01 23:44 J -30866333.71 -30866333.51 -30866333.29 0.0286 0.0162 \*

Mercury -89221-12-06 07:25 J -30866207.23 -30866207.19 -30866207.13 0.0286 0.0272

Mercury -89220-03-05 03:35 J -30866118.49 -30866118.35 -30866118.20 0.0286 0.0145

Mercury -89220-06-01 23:15 J -30866029.70 -30866029.53 -30866029.36 0.0286 0.0020

Venus -89220-08-09 11:30 J -30865961.22 -30865961.02 -30865960.81 0.0286 0.0077

Moon -89220-08-16 11:15 J -30865954.28 -30865954.03 -30865953.78 0.0286 0.0022

Earth -89220-08-16 14:08 J -30865954.16 -30865953.91 -30865953.66 0.0286 0.0038 \*

Mercury -89220-08-29 18:27 J -30865940.89 -30865940.73 -30865940.58 0.0286 0.0102

Mercury -89220-11-26 13:11 J -30865852.05 -30865851.95 -30865851.85 0.0286 0.0221

Earth -89219-08-31 00:13 J -30865574.64 -30865574.49 -30865574.35 0.0285 0.0231

Moon -89219-08-30 23:59 J -30865574.64 -30865574.50 -30865574.33 0.0285 0.0218 \*

Mars -89214-09-13 22:03 J -30863734.77 -30863734.58 -30863734.38 0.0279 0.0189

Mars -89212-09-09 00:42 J -30863008.59 -30863008.47 -30863008.31 0.0276 0.0239

Moon -89206-01-26 05:59 J -30861043.41 -30861043.25 -30861043.07 0.0273 0.0198

Earth -89206-01-26 07:25 J -30861043.36 -30861043.19 -30861043.01 0.0273 0.0184 \*

Mercury -89206-09-19 22:32 J -30860806.65 -30860806.56 -30860806.47 0.0273 0.0213

Mercury -89206-12-17 10:47 J -30860718.17 -30860718.05 -30860717.92 0.0273 0.0125



Venus -89205-01-17 17:59 J -30860686.92 -30860686.75 -30860686.57 0.0273 0.0137  
 Moon -89205-02-06 20:51 J -30860666.87 -30860666.63 -30860666.40 0.0273 0.0030  
 Earth -89205-02-06 23:59 J -30860666.74 -30860666.50 -30860666.27 0.0273 0.0026 \*  
 Mercury -89205-03-14 23:15 J -30860629.67 -30860629.53 -30860629.38 0.0273 0.0036  
 Mercury -89205-06-11 11:59 J -30860541.14 -30860541.00 -30860540.85 0.0273 0.0056  
 Venus -89205-09-02 19:39 J -30860457.83 -30860457.68 -30860457.52 0.0273 0.0180  
 Mercury -89205-09-08 01:11 J -30860452.58 -30860452.45 -30860452.33 0.0273 0.0149  
 Mercury -89205-12-05 14:08 J -30860363.97 -30860363.91 -30860363.84 0.0273 0.0243  
 Earth -89204-02-17 18:42 J -30860289.92 -30860289.72 -30860289.51 0.0274 0.0136  
 Moon -89204-02-17 19:39 J -30860289.87 -30860289.68 -30860289.47 0.0274 0.0146 \*  
 Mars -89198-10-26 05:15 J -30857848.60 -30857848.28 -30857847.96 0.0281 0.0020  
 Earth -89192-07-26 13:25 J -30855748.04 -30855747.94 -30855747.81 0.0286 0.0254  
 Moon -89192-07-26 17:15 J -30855747.85 -30855747.78 -30855747.68 0.0286 0.0269 \*  
 Venus -89191-07-04 15:20 J -30855404.93 -30855404.86 -30855404.77 0.0286 0.0264  
 Mercury -89191-07-23 01:39 J -30855386.55 -30855386.43 -30855386.30 0.0286 0.0190  
 Earth -89191-08-10 05:30 J -30855368.51 -30855368.27 -30855368.02 0.0286 0.0057  
 Moon -89191-08-10 08:23 J -30855368.40 -30855368.15 -30855367.90 0.0286 0.0071 \*  
 Mercury -89191-10-19 21:35 J -30855297.76 -30855297.60 -30855297.44 0.0286 0.0064  
 Mercury -89190-01-16 17:01 J -30855208.96 -30855208.79 -30855208.63 0.0286 0.0060  
 Venus -89190-02-19 13:54 J -30855175.11 -30855174.92 -30855174.71 0.0286 0.0120  
 Mercury -89190-04-15 11:59 J -30855120.13 -30855120.00 -30855119.88 0.0286 0.0180  
 Moon -89190-08-24 17:30 J -30854989.00 -30854988.77 -30854988.53 0.0285 0.0128  
 Earth -89190-08-24 18:27 J -30854988.95 -30854988.73 -30854988.51 0.0285 0.0142 \*  
 Mars -89184-10-30 18:56 J -30852729.97 -30852729.71 -30852729.43 0.0279 0.0047  
 Earth -89177-01-21 18:42 J -30850455.82 -30850455.72 -30850455.62 0.0273 0.0248  
 Moon -89177-01-21 18:56 J -30850455.76 -30850455.71 -30850455.64 0.0273 0.0263 \*  
 Earth -89176-02-01 11:01 J -30850079.26 -30850079.04 -30850078.82 0.0273 0.0093  
 Moon -89176-02-01 14:23 J -30850079.12 -30850078.90 -30850078.68 0.0273 0.0104 \*  
 Mercury -89176-02-06 01:39 J -30850074.50 -30850074.43 -30850074.35 0.0273 0.0231  
 Mercury -89176-05-05 13:54 J -30849986.03 -30849985.92 -30849985.79 0.0273 0.0143

Venus -89176-07-30 01:25 J -30849900.63 -30849900.44 -30849900.23 0.0273 0.0083  
 Mercury -89176-08-02 02:37 J -30849897.53 -30849897.39 -30849897.25 0.0273 0.0053  
 Mercury -89176-10-29 15:20 J -30849809.00 -30849808.86 -30849808.72 0.0273 0.0039  
 Mercury -89175-01-26 04:18 J -30849720.45 -30849720.32 -30849720.20 0.0273 0.0132  
 Moon -89175-02-13 04:18 J -30849702.55 -30849702.32 -30849702.07 0.0273 0.0072  
 Earth -89175-02-13 05:15 J -30849702.51 -30849702.28 -30849702.04 0.0273 0.0068 \*  
 Venus -89175-03-16 03:35 J -30849671.45 -30849671.35 -30849671.24 0.0273 0.0237  
 Mercury -89175-04-24 17:15 J -30849631.85 -30849631.78 -30849631.69 0.0273 0.0226  
 Moon -89174-02-24 22:47 J -30849325.64 -30849325.55 -30849325.42 0.0274 0.0242  
 Earth -89174-02-25 02:37 J -30849325.51 -30849325.39 -30849325.24 0.0274 0.0228 \*  
 Mars -89168-12-18 05:59 J -30846837.45 -30846837.25 -30846837.04 0.0282 0.0209  
 Moon -89162-08-04 07:39 J -30844782.39 -30844782.18 -30844781.97 0.0286 0.0151  
 Earth -89162-08-04 10:03 J -30844782.30 -30844782.08 -30844781.85 0.0286 0.0136 \*  
 Mercury -89162-12-10 03:06 J -30844654.47 -30844654.37 -30844654.25 0.0286 0.0217  
 Venus -89161-01-15 02:23 J -30844618.55 -30844618.40 -30844618.25 0.0286 0.0201  
 Mercury -89161-03-07 23:01 J -30844565.70 -30844565.54 -30844565.38 0.0286 0.0090  
 Mercury -89161-06-04 18:27 J -30844476.89 -30844476.73 -30844476.56 0.0286 0.0034  
 Earth -89161-08-17 23:59 J -30844402.74 -30844402.50 -30844402.25 0.0286 0.0062  
 Moon -89161-08-18 00:56 J -30844402.70 -30844402.46 -30844402.22 0.0286 0.0048 \*  
 Venus -89161-09-01 00:27 J -30844388.65 -30844388.48 -30844388.31 0.0286 0.0181  
 Mercury -89161-09-01 13:25 J -30844388.07 -30844387.94 -30844387.80 0.0286 0.0155  
 Mercury -89161-11-29 07:54 J -30844299.21 -30844299.17 -30844299.11 0.0286 0.0273  
 Earth -89160-09-01 09:20 J -30844023.21 -30844023.11 -30844022.99 0.0285 0.0254  
 Moon -89160-09-01 13:11 J -30844023.08 -30844022.95 -30844022.82 0.0285 0.0240 \*  
 Mars -89154-12-17 20:37 J -30841724.90 -30841724.64 -30841724.39 0.0277 0.0104  
 Moon -89147-01-27 10:18 J -30839492.24 -30839492.07 -30839491.88 0.0273 0.0177  
 Earth -89147-01-27 13:54 J -30839492.10 -30839491.92 -30839491.72 0.0273 0.0162 \*  
 Mercury -89147-06-26 03:20 J -30839342.40 -30839342.36 -30839342.32 0.0273 0.0259  
 Mercury -89147-09-22 15:35 J -30839253.96 -30839253.85 -30839253.74 0.0273 0.0172  
 Mercury -89147-12-20 04:03 J -30839165.47 -30839165.33 -30839165.20 0.0273 0.0083

Earth -89146-02-08 06:42 J -30839115.45 -30839115.22 -30839114.98 0.0273 0.0005  
 Moon -89146-02-08 07:11 J -30839115.43 -30839115.20 -30839114.97 0.0273 0.0006 \*  
 Venus -89146-02-09 03:35 J -30839114.55 -30839114.35 -30839114.14 0.0273 0.0045  
 Mercury -89146-03-18 16:32 J -30839076.95 -30839076.81 -30839076.66 0.0273 0.0010  
 Mercury -89146-06-15 05:30 J -30838988.41 -30838988.27 -30838988.14 0.0273 0.0100  
 Mercury -89146-09-11 18:27 J -30838899.83 -30838899.73 -30838899.62 0.0273 0.0194  
 Venus -89146-09-26 05:30 J -30838885.27 -30838885.27 -30838885.26 0.0273 0.0273  
 Earth -89145-02-20 01:54 J -30838738.61 -30838738.42 -30838738.22 0.0274 0.0158  
 Moon -89145-02-20 05:44 J -30838738.44 -30838738.26 -30838738.07 0.0274 0.0169 \*  
 Mars -89139-01-27 19:54 J -30836569.93 -30836569.67 -30836569.39 0.0280 0.0152  
 Earth -89133-07-27 23:44 J -30834196.65 -30834196.51 -30834196.34 0.0286 0.0228  
 Moon -89133-07-28 01:25 J -30834196.56 -30834196.44 -30834196.29 0.0286 0.0243 \*  
 Mercury -89132-04-28 00:56 J -30833922.51 -30833922.46 -30833922.39 0.0286 0.0263  
 Mercury -89132-07-25 21:06 J -30833833.76 -30833833.62 -30833833.47 0.0286 0.0135  
 Venus -89132-07-27 04:32 J -30833832.48 -30833832.31 -30833832.12 0.0286 0.0160  
 Moon -89132-08-11 14:08 J -30833817.17 -30833816.91 -30833816.66 0.0286 0.0046  
 Earth -89132-08-11 15:35 J -30833817.10 -30833816.85 -30833816.59 0.0286 0.0031 \*  
 Mercury -89132-10-22 16:47 J -30833744.96 -30833744.80 -30833744.63 0.0286 0.0012  
 Mercury -89131-01-19 11:59 J -30833656.15 -30833656.00 -30833655.84 0.0285 0.0112  
 Venus -89131-03-14 02:37 J -30833602.52 -30833602.39 -30833602.25 0.0285 0.0223  
 Mercury -89131-04-18 06:42 J -30833567.31 -30833567.22 -30833567.12 0.0285 0.0231  
 Moon -89131-08-26 00:13 J -30833437.70 -30833437.49 -30833437.28 0.0285 0.0151  
 Earth -89131-08-26 03:49 J -30833437.54 -30833437.34 -30833437.13 0.0285 0.0165 \*  
 Mars -89125-02-07 17:30 J -30831445.96 -30831445.77 -30831445.55 0.0280 0.0182  
 Mars -89123-02-03 00:42 J -30830719.58 -30830719.47 -30830719.34 0.0277 0.0248  
 Earth -89118-01-23 00:42 J -30828904.60 -30828904.47 -30828904.34 0.0274 0.0225  
 Moon -89118-01-23 04:03 J -30828904.42 -30828904.33 -30828904.20 0.0274 0.0242 \*  
 Earth -89117-02-03 17:30 J -30828528.00 -30828527.77 -30828527.54 0.0273 0.0069  
 Moon -89117-02-03 17:59 J -30828527.98 -30828527.75 -30828527.51 0.0273 0.0079 \*  
 Mercury -89117-02-09 18:42 J -30828521.82 -30828521.72 -30828521.62 0.0273 0.0190

Mercury -89117-05-08 07:11 J -30828433.33 -30828433.20 -30828433.07 0.0273 0.0101

Mercury -89117-08-04 19:54 J -30828344.82 -30828344.67 -30828344.53 0.0273 0.0013

Venus -89117-08-21 11:15 J -30828328.24 -30828328.03 -30828327.82 0.0273 0.0010

Mercury -89117-11-01 08:37 J -30828256.28 -30828256.14 -30828256.00 0.0274 0.0082

Mercury -89116-01-28 21:35 J -30828167.71 -30828167.60 -30828167.48 0.0274 0.0177

Moon -89116-02-14 08:37 J -30828151.35 -30828151.14 -30828150.91 0.0274 0.0098

Earth -89116-02-14 12:27 J -30828151.21 -30828150.98 -30828150.76 0.0274 0.0090 \*

Mercury -89116-04-27 11:01 J -30828079.05 -30828079.04 -30828079.03 0.0274 0.0272

Earth -89115-02-26 10:18 J -30827774.16 -30827774.07 -30827773.97 0.0274 0.0248

Moon -89115-02-26 09:35 J -30827774.15 -30827774.10 -30827774.03 0.0274 0.0264 \*

Mars -89109-03-22 05:15 J -30825558.59 -30825558.28 -30825557.97 0.0281 0.0042

Earth -89103-08-05 22:18 J -30823230.81 -30823230.57 -30823230.34 0.0286 0.0108

Moon -89103-08-06 00:13 J -30823230.71 -30823230.49 -30823230.27 0.0286 0.0125 \*

Mercury -89103-12-12 23:15 J -30823101.67 -30823101.53 -30823101.39 0.0286 0.0159

Venus -89102-02-06 16:32 J -30823046.02 -30823045.81 -30823045.61 0.0286 0.0094

Mercury -89102-03-11 18:56 J -30823012.88 -30823012.71 -30823012.54 0.0286 0.0033

Mercury -89102-06-08 14:08 J -30822924.07 -30822923.91 -30822923.75 0.0286 0.0090

Earth -89102-08-20 11:30 J -30822851.25 -30822851.02 -30822850.77 0.0286 0.0089

Moon -89102-08-20 15:20 J -30822851.10 -30822850.86 -30822850.62 0.0286 0.0072 \*

Mercury -89102-09-05 08:51 J -30822835.23 -30822835.13 -30822835.01 0.0286 0.0210

Earth -89101-09-02 20:23 J -30822471.69 -30822471.65 -30822471.58 0.0285 0.0277

Moon -89101-09-02 22:32 J -30822471.64 -30822471.56 -30822471.45 0.0285 0.0264 \*

Mars -89095-03-26 21:35 J -30820440.87 -30820440.60 -30820440.32 0.0278 0.0031

Moon -89088-01-28 20:51 J -30817940.81 -30817940.63 -30817940.43 0.0273 0.0152

Earth -89088-01-28 21:49 J -30817940.79 -30817940.59 -30817940.38 0.0273 0.0138 \*

Mercury -89088-06-28 20:37 J -30817789.72 -30817789.64 -30817789.55 0.0273 0.0216

Venus -89088-07-17 12:42 J -30817771.01 -30817770.97 -30817770.93 0.0273 0.0267

Mercury -89088-09-25 08:51 J -30817701.25 -30817701.13 -30817701.00 0.0273 0.0128

Mercury -89088-12-22 21:35 J -30817612.75 -30817612.60 -30817612.46 0.0273 0.0039

Earth -89087-02-09 15:06 J -30817564.11 -30817563.87 -30817563.64 0.0273 0.0021

Moon -89087-02-09 18:13 J -30817563.97 -30817563.74 -30817563.50 0.0273 0.0020 \*  
 Venus -89087-03-03 14:08 J -30817542.11 -30817541.91 -30817541.70 0.0273 0.0050  
 Mercury -89087-03-21 10:18 J -30817524.22 -30817524.07 -30817523.93 0.0273 0.0054  
 Mercury -89087-06-17 23:01 J -30817435.66 -30817435.54 -30817435.41 0.0273 0.0147  
 Mercury -89087-09-14 12:13 J -30817347.05 -30817346.99 -30817346.92 0.0273 0.0242  
 Earth -89086-02-21 10:32 J -30817187.23 -30817187.06 -30817186.87 0.0274 0.0180  
 Moon -89086-02-21 11:15 J -30817187.20 -30817187.03 -30817186.84 0.0274 0.0192 \*  
 Mars -89079-05-13 22:03 J -30814548.77 -30814548.58 -30814548.39 0.0282 0.0221  
 Moon -89074-07-30 09:49 J -30812645.25 -30812645.09 -30812644.91 0.0286 0.0216  
 Earth -89074-07-30 12:56 J -30812645.13 -30812644.96 -30812644.77 0.0286 0.0200 \*  
 Mercury -89073-04-30 21:20 J -30812369.72 -30812369.61 -30812369.49 0.0286 0.0203  
 Mercury -89073-07-28 17:15 J -30812280.94 -30812280.78 -30812280.61 0.0285 0.0077  
 Moon -89073-08-13 00:27 J -30812265.73 -30812265.48 -30812265.23 0.0285 0.0020  
 Earth -89073-08-13 04:18 J -30812265.57 -30812265.32 -30812265.06 0.0285 0.0006 \*  
 Venus -89073-08-18 19:25 J -30812259.90 -30812259.69 -30812259.48 0.0285 0.0051  
 Mercury -89073-10-25 12:42 J -30812192.13 -30812191.97 -30812191.80 0.0285 0.0048  
 Mercury -89072-01-22 07:39 J -30812103.31 -30812103.18 -30812103.04 0.0285 0.0169  
 Moon -89072-08-27 14:08 J -30811886.10 -30811885.91 -30811885.72 0.0285 0.0178  
 Earth -89072-08-27 16:03 J -30811886.02 -30811885.83 -30811885.65 0.0285 0.0190 \*  
 Mars -89065-05-12 20:23 J -30809435.90 -30809435.65 -30809435.40 0.0278 0.0115  
 Earth -89059-01-24 07:11 J -30807353.34 -30807353.20 -30807353.03 0.0274 0.0202  
 Moon -89059-01-24 08:37 J -30807353.29 -30807353.14 -30807352.99 0.0274 0.0216 \*  
 Mercury -89059-11-15 23:44 J -30807057.58 -30807057.51 -30807057.44 0.0274 0.0236  
 Venus -89058-01-27 19:11 J -30806984.82 -30806984.70 -30806984.57 0.0274 0.0216  
 Moon -89058-02-04 21:20 J -30806976.84 -30806976.61 -30806976.37 0.0274 0.0054  
 Earth -89058-02-05 00:42 J -30806976.70 -30806976.47 -30806976.23 0.0274 0.0046 \*  
 Mercury -89058-02-12 11:59 J -30806969.12 -30806969.00 -30806968.88 0.0274 0.0148  
 Mercury -89058-05-12 00:27 J -30806880.62 -30806880.48 -30806880.34 0.0274 0.0058  
 Mercury -89058-08-08 13:11 J -30806792.09 -30806791.95 -30806791.81 0.0274 0.0034  
 Venus -89058-09-13 21:06 J -30806755.81 -30806755.62 -30806755.42 0.0274 0.0103

Mercury -89058-11-05 01:54 J -30806703.54 -30806703.42 -30806703.28 0.0274 0.0128

Mercury -89057-02-01 15:06 J -30806614.95 -30806614.87 -30806614.78 0.0274 0.0223

Moon -89057-02-16 18:42 J -30806599.92 -30806599.72 -30806599.51 0.0274 0.0120

Earth -89057-02-16 19:54 J -30806599.88 -30806599.67 -30806599.45 0.0274 0.0113 \*

Earth -89056-02-27 18:27 J -30806222.77 -30806222.73 -30806222.69 0.0274 0.0270

Mars -89051-06-25 01:25 J -30804279.72 -30804279.44 -30804279.15 0.0280 0.0126

Earth -89045-07-23 20:37 J -30802058.70 -30802058.64 -30802058.56 0.0286 0.0273

Earth -89044-08-07 12:27 J -30801679.21 -30801678.98 -30801678.73 0.0286 0.0080

Moon -89044-08-07 16:32 J -30801679.05 -30801678.81 -30801678.57 0.0286 0.0097 \*

Mercury -89044-09-17 23:44 J -30801637.61 -30801637.51 -30801637.40 0.0286 0.0225

Mercury -89044-12-15 19:39 J -30801548.83 -30801548.68 -30801548.52 0.0286 0.0098

Venus -89043-03-01 07:54 J -30801473.39 -30801473.17 -30801472.95 0.0286 0.0018

Mercury -89043-03-14 15:20 J -30801460.03 -30801459.86 -30801459.70 0.0286 0.0027

Mercury -89043-06-11 10:18 J -30801371.21 -30801371.07 -30801370.93 0.0286 0.0148

Earth -89043-08-22 01:39 J -30801299.66 -30801299.43 -30801299.20 0.0286 0.0116

Moon -89043-08-22 03:35 J -30801299.60 -30801299.35 -30801299.11 0.0286 0.0100 \*

Mercury -89043-09-08 04:47 J -30801282.35 -30801282.30 -30801282.23 0.0286 0.0267

Mars -89037-07-04 03:49 J -30799156.56 -30799156.34 -30799156.12 0.0279 0.0163

Mars -89035-06-30 08:08 J -30798430.22 -30798430.16 -30798430.08 0.0277 0.0267

Earth -89030-01-19 14:08 J -30796765.95 -30796765.91 -30796765.85 0.0273 0.0266

Earth -89029-01-31 06:13 J -30796389.45 -30796389.24 -30796389.02 0.0273 0.0114

Moon -89029-01-31 09:20 J -30796389.31 -30796389.11 -30796388.89 0.0273 0.0128 \*

Mercury -89029-04-04 01:54 J -30796325.46 -30796325.42 -30796325.38 0.0273 0.0259

Mercury -89029-07-01 13:54 J -30796237.02 -30796236.92 -30796236.80 0.0273 0.0173

Venus -89029-08-08 23:15 J -30796198.69 -30796198.53 -30796198.37 0.0273 0.0172

Mercury -89029-09-28 02:23 J -30796148.53 -30796148.40 -30796148.26 0.0273 0.0083

Mercury -89029-12-25 15:06 J -30796060.01 -30796059.87 -30796059.73 0.0273 0.0008

Earth -89028-02-10 23:59 J -30796012.74 -30796012.50 -30796012.27 0.0273 0.0044

Moon -89028-02-11 01:54 J -30796012.66 -30796012.42 -30796012.18 0.0273 0.0043 \*

Mercury -89028-03-24 03:49 J -30795971.47 -30795971.34 -30795971.20 0.0273 0.0101

Venus	-89028-03-26 00:56 J	-30795969.63	-30795969.46	-30795969.28	0.0273	0.0146
Mercury	-89028-06-20 17:01 J	-30795882.89	-30795882.79	-30795882.69	0.0273	0.0195
Moon	-89027-02-22 16:47 J	-30795635.94	-30795635.80	-30795635.64	0.0274	0.0216
Earth	-89027-02-22 20:08 J	-30795635.82	-30795635.66	-30795635.50	0.0274	0.0202 *
Mars	-89021-08-16 03:35 J	-30793269.65	-30793269.35	-30793269.04	0.0281	0.0057
Moon	-89015-08-01 00:42 J	-30791093.65	-30791093.47	-30791093.28	0.0286	0.0188
Earth	-89015-08-01 03:49 J	-30791093.53	-30791093.34	-30791093.13	0.0286	0.0171 *
Mercury	-89014-02-04 21:49 J	-30790905.64	-30790905.59	-30790905.53	0.0285	0.0269
Mercury	-89014-05-04 17:59 J	-30790816.89	-30790816.75	-30790816.60	0.0285	0.0142
Mercury	-89014-08-01 13:54 J	-30790728.09	-30790727.92	-30790727.76	0.0285	0.0017
Moon	-89014-08-15 17:59 J	-30790713.99	-30790713.75	-30790713.51	0.0285	0.0009
Earth	-89014-08-15 18:42 J	-30790713.97	-30790713.72	-30790713.47	0.0285	0.0025 *
Venus	-89014-09-11 10:47 J	-30790687.26	-30790687.05	-30790686.84	0.0285	0.0061
Mercury	-89014-10-29 09:06 J	-30790639.28	-30790639.12	-30790638.97	0.0285	0.0107
Mercury	-89013-01-26 03:35 J	-30790550.44	-30790550.35	-30790550.24	0.0285	0.0227
Earth	-89013-08-29 05:30 J	-30790334.43	-30790334.27	-30790334.11	0.0285	0.0216
Moon	-89013-08-29 07:54 J	-30790334.34	-30790334.17	-30790334.00	0.0285	0.0203 *
Mars	-89007-08-20 20:51 J	-30788151.90	-30788151.63	-30788151.35	0.0279	0.0019

# 89TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 89th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-89000-01-25 11:15 J	-30785802.19	-30785802.03	-30785801.85	0.0274	0.0192		

Earth -89000-01-25 14:37 J -30785802.07 -30785801.89 -30785801.71 0.0274 0.0178 \*  
 Mercury -89000-11-18 16:47 J -30785504.90 -30785504.80 -30785504.70 0.0274 0.0194  
 Moon -88999-02-06 05:44 J -30785425.49 -30785425.26 -30785425.03 0.0274 0.0028  
 Earth -88999-02-06 08:08 J -30785425.40 -30785425.16 -30785424.92 0.0274 0.0022 \*  
 Mercury -88999-02-15 05:15 J -30785416.41 -30785416.28 -30785416.15 0.0274 0.0105  
 Venus -88999-02-19 05:01 J -30785412.47 -30785412.29 -30785412.10 0.0274 0.0124  
 Mercury -88999-05-14 17:44 J -30785327.90 -30785327.76 -30785327.62 0.0274 0.0014  
 Mercury -88999-08-11 06:27 J -30785239.36 -30785239.23 -30785239.09 0.0274 0.0079  
 Venus -88999-10-06 06:56 J -30785183.34 -30785183.21 -30785183.05 0.0274 0.0197  
 Mercury -88999-11-07 19:39 J -30785150.79 -30785150.68 -30785150.57 0.0274 0.0173  
 Mercury -88998-02-04 08:51 J -30785062.15 -30785062.13 -30785062.10 0.0274 0.0269  
 Earth -88998-02-18 03:35 J -30785048.55 -30785048.35 -30785048.13 0.0274 0.0136  
 Moon -88998-02-18 06:13 J -30785048.43 -30785048.24 -30785048.04 0.0274 0.0145 \*  
 Mars -88991-10-09 04:47 J -30782258.43 -30782258.30 -30782258.14 0.0282 0.0249  
 Earth -88986-07-26 12:27 J -30780507.11 -30780506.98 -30780506.85 0.0286 0.0244  
 Moon -88986-07-26 15:20 J -30780506.96 -30780506.86 -30780506.75 0.0286 0.0259 \*  
 Venus -88985-08-06 01:39 J -30780130.53 -30780130.43 -30780130.33 0.0286 0.0252  
 Earth -88985-08-09 04:18 J -30780127.57 -30780127.32 -30780127.07 0.0286 0.0051  
 Moon -88985-08-09 04:18 J -30780127.57 -30780127.32 -30780127.06 0.0286 0.0067 \*  
 Mercury -88985-09-20 20:37 J -30780084.78 -30780084.64 -30780084.50 0.0286 0.0161  
 Mercury -88985-12-18 16:32 J -30779995.98 -30779995.81 -30779995.65 0.0286 0.0035  
 Mercury -88984-03-17 11:44 J -30779907.17 -30779907.01 -30779906.85 0.0286 0.0088  
 Venus -88984-03-23 23:59 J -30779900.69 -30779900.50 -30779900.31 0.0286 0.0132  
 Mercury -88984-06-14 06:27 J -30779818.33 -30779818.23 -30779818.11 0.0286 0.0209  
 Moon -88984-08-23 13:54 J -30779748.14 -30779747.92 -30779747.68 0.0286 0.0128  
 Earth -88984-08-23 17:01 J -30779748.01 -30779747.79 -30779747.57 0.0286 0.0143 \*  
 Mars -88977-10-07 08:37 J -30777146.37 -30777146.14 -30777145.89 0.0277 0.0136  
 Earth -88971-01-20 22:18 J -30775214.67 -30775214.57 -30775214.46 0.0273 0.0243  
 Moon -88971-01-21 01:11 J -30775214.52 -30775214.45 -30775214.38 0.0273 0.0258 \*  
 Earth -88970-02-01 14:37 J -30774838.11 -30774837.89 -30774837.66 0.0273 0.0090



Moon -88970-02-01 17:15 J -30774838.01 -30774837.78 -30774837.56 0.0273 0.0101 \*  
 Mercury -88970-04-07 19:11 J -30774772.78 -30774772.70 -30774772.61 0.0273 0.0216  
 Mercury -88970-07-05 07:25 J -30774684.31 -30774684.19 -30774684.06 0.0273 0.0128  
 Venus -88970-09-01 09:49 J -30774626.29 -30774626.09 -30774625.89 0.0273 0.0077  
 Mercury -88970-10-01 20:08 J -30774595.81 -30774595.66 -30774595.52 0.0273 0.0038  
 Mercury -88970-12-29 08:37 J -30774507.28 -30774507.14 -30774506.99 0.0273 0.0055  
 Moon -88969-02-13 06:13 J -30774461.47 -30774461.24 -30774461.00 0.0273 0.0070  
 Earth -88969-02-13 08:23 J -30774461.37 -30774461.15 -30774460.91 0.0273 0.0068 \*  
 Mercury -88969-03-26 21:35 J -30774418.72 -30774418.60 -30774418.47 0.0273 0.0148  
 Venus -88969-04-17 11:30 J -30774397.10 -30774397.02 -30774396.92 0.0273 0.0243  
 Mercury -88969-06-23 10:47 J -30774330.11 -30774330.05 -30774329.98 0.0273 0.0242  
 Moon -88968-02-24 02:37 J -30774084.50 -30774084.39 -30774084.27 0.0274 0.0238  
 Earth -88968-02-24 05:01 J -30774084.42 -30774084.29 -30774084.14 0.0274 0.0224 \*  
 Mars -88963-11-19 03:35 J -30771990.64 -30771990.35 -30771990.05 0.0280 0.0108  
 Earth -88956-08-02 19:54 J -30769541.89 -30769541.67 -30769541.45 0.0286 0.0141  
 Moon -88956-08-02 20:37 J -30769541.83 -30769541.64 -30769541.43 0.0286 0.0157 \*  
 Mercury -88955-02-07 18:56 J -30769352.82 -30769352.71 -30769352.59 0.0285 0.0205  
 Venus -88955-02-16 04:47 J -30769344.45 -30769344.30 -30769344.16 0.0285 0.0209  
 Mercury -88955-05-07 14:51 J -30769264.04 -30769263.88 -30769263.71 0.0285 0.0079  
 Mercury -88955-08-04 10:18 J -30769175.23 -30769175.07 -30769174.90 0.0285 0.0046  
 Earth -88955-08-17 10:18 J -30769162.32 -30769162.07 -30769161.83 0.0285 0.0054  
 Moon -88955-08-17 13:39 J -30769162.17 -30769161.93 -30769161.68 0.0285 0.0038 \*  
 Venus -88955-10-04 02:37 J -30769114.55 -30769114.39 -30769114.21 0.0285 0.0176  
 Mercury -88955-11-01 05:15 J -30769086.40 -30769086.28 -30769086.14 0.0285 0.0168  
 Mercury -88954-01-28 23:59 J -30768997.50 -30768997.50 -30768997.49 0.0285 0.0285  
 Earth -88954-08-31 20:23 J -30768782.78 -30768782.65 -30768782.52 0.0285 0.0242  
 Moon -88954-08-31 23:59 J -30768782.64 -30768782.50 -30768782.34 0.0285 0.0228 \*  
 Mars -88949-11-28 01:39 J -30766867.65 -30766867.43 -30766867.19 0.0279 0.0150  
 Moon -88941-01-27 18:42 J -30764250.90 -30764250.72 -30764250.53 0.0274 0.0168  
 Earth -88941-01-27 21:06 J -30764250.81 -30764250.62 -30764250.42 0.0274 0.0155 \*

Mercury -88941-08-24 21:35 J -30764040.66 -30764040.60 -30764040.53 0.0274 0.0241  
 Mercury -88941-11-21 09:49 J -30763952.20 -30763952.09 -30763951.97 0.0274 0.0152  
 Earth -88940-02-07 14:51 J -30763874.12 -30763873.88 -30763873.64 0.0274 0.0002  
 Moon -88940-02-07 17:01 J -30763874.02 -30763873.79 -30763873.56 0.0274 0.0003 \*  
 Mercury -88940-02-17 22:18 J -30763863.71 -30763863.57 -30763863.43 0.0274 0.0062  
 Venus -88940-03-13 14:37 J -30763840.10 -30763839.89 -30763839.68 0.0274 0.0032  
 Mercury -88940-05-17 11:01 J -30763775.18 -30763775.04 -30763774.90 0.0274 0.0030  
 Mercury -88940-08-13 23:44 J -30763686.63 -30763686.51 -30763686.37 0.0274 0.0124  
 Mercury -88940-11-10 13:11 J -30763598.04 -30763597.95 -30763597.87 0.0274 0.0218  
 Earth -88939-02-19 10:47 J -30763497.24 -30763497.05 -30763496.85 0.0274 0.0158  
 Moon -88939-02-19 13:54 J -30763497.11 -30763496.92 -30763496.72 0.0274 0.0167 \*  
 Mars -88932-01-11 08:51 J -30760979.43 -30760979.13 -30760978.83 0.0281 0.0086  
 Moon -88927-07-28 02:51 J -30758955.53 -30758955.38 -30758955.22 0.0286 0.0230  
 Earth -88927-07-28 03:49 J -30758955.50 -30758955.34 -30758955.17 0.0286 0.0216 \*  
 Mercury -88926-06-27 21:20 J -30758620.71 -30758620.61 -30758620.50 0.0286 0.0226  
 Moon -88926-08-11 15:49 J -30758576.09 -30758575.84 -30758575.58 0.0286 0.0038  
 Earth -88926-08-11 19:39 J -30758575.94 -30758575.68 -30758575.43 0.0286 0.0023 \*  
 Venus -88926-08-29 17:44 J -30758557.95 -30758557.76 -30758557.57 0.0286 0.0138  
 Mercury -88926-09-24 17:30 J -30758531.93 -30758531.77 -30758531.61 0.0286 0.0098  
 Mercury -88926-12-22 13:11 J -30758443.12 -30758442.95 -30758442.79 0.0286 0.0028  
 Mercury -88925-03-20 08:08 J -30758354.30 -30758354.16 -30758354.02 0.0286 0.0149  
 Venus -88925-04-15 15:49 J -30758327.95 -30758327.84 -30758327.73 0.0286 0.0246  
 Mercury -88925-06-17 02:51 J -30758265.43 -30758265.38 -30758265.32 0.0286 0.0267  
 Moon -88925-08-25 04:18 J -30758196.52 -30758196.32 -30758196.11 0.0285 0.0155  
 Earth -88925-08-25 07:54 J -30758196.37 -30758196.17 -30758195.97 0.0285 0.0170 \*  
 Mars -88918-01-15 12:13 J -30755862.26 -30755861.99 -30755861.72 0.0278 0.0005  
 Earth -88912-01-22 05:44 J -30753663.39 -30753663.26 -30753663.11 0.0273 0.0220  
 Moon -88912-01-22 08:51 J -30753663.25 -30753663.13 -30753663.00 0.0273 0.0234 \*  
 Mercury -88911-01-12 00:13 J -30753308.52 -30753308.49 -30753308.45 0.0273 0.0261  
 Moon -88911-02-02 20:08 J -30753286.89 -30753286.66 -30753286.42 0.0273 0.0074

Earth -88911-02-02 22:18 J -30753286.80 -30753286.57 -30753286.34 0.0273 0.0068 \*  
 Mercury -88911-04-10 12:27 J -30753220.09 -30753219.98 -30753219.87 0.0273 0.0173  
 Mercury -88911-07-08 00:56 J -30753131.60 -30753131.46 -30753131.33 0.0273 0.0084  
 Venus -88911-09-23 19:54 J -30753053.88 -30753053.67 -30753053.46 0.0273 0.0017  
 Mercury -88911-10-04 13:25 J -30753043.08 -30753042.94 -30753042.80 0.0273 0.0007  
 Mercury -88910-01-01 02:08 J -30752954.54 -30752954.41 -30752954.27 0.0273 0.0100  
 Moon -88910-02-14 12:56 J -30752910.17 -30752909.96 -30752909.73 0.0273 0.0095  
 Earth -88910-02-14 16:18 J -30752910.04 -30752909.82 -30752909.59 0.0273 0.0090 \*  
 Mercury -88910-03-30 15:06 J -30752865.96 -30752865.87 -30752865.76 0.0273 0.0194  
 Earth -88909-02-26 13:11 J -30752533.04 -30752532.95 -30752532.83 0.0274 0.0245  
 Moon -88909-02-26 14:37 J -30752532.95 -30752532.89 -30752532.81 0.0274 0.0259 \*  
 Mars -88904-02-20 19:25 J -30750711.74 -30750711.69 -30750711.61 0.0279 0.0273  
 Mars -88902-03-05 05:30 J -30749969.36 -30749969.27 -30749969.15 0.0282 0.0265  
 Earth -88897-08-04 10:47 J -30747990.27 -30747990.05 -30747989.81 0.0286 0.0113  
 Moon -88897-08-04 14:37 J -30747990.11 -30747989.89 -30747989.67 0.0286 0.0128 \*  
 Mercury -88897-11-13 19:39 J -30747888.73 -30747888.68 -30747888.63 0.0286 0.0271  
 Mercury -88896-02-10 15:49 J -30747799.99 -30747799.84 -30747799.69 0.0285 0.0143  
 Venus -88896-03-10 20:37 J -30747771.84 -30747771.64 -30747771.44 0.0285 0.0095  
 Mercury -88896-05-10 11:30 J -30747711.19 -30747711.02 -30747710.85 0.0285 0.0017  
 Mercury -88896-08-07 06:42 J -30747622.37 -30747622.22 -30747622.06 0.0285 0.0107  
 Earth -88896-08-19 00:56 J -30747610.69 -30747610.46 -30747610.21 0.0285 0.0082  
 Moon -88896-08-19 03:49 J -30747610.59 -30747610.34 -30747610.08 0.0285 0.0067 \*  
 Mercury -88896-11-04 01:39 J -30747533.53 -30747533.43 -30747533.33 0.0285 0.0226  
 Moon -88895-09-02 10:18 J -30747231.17 -30747231.07 -30747230.94 0.0285 0.0255  
 Earth -88895-09-02 10:47 J -30747231.13 -30747231.05 -30747230.97 0.0285 0.0267 \*  
 Mars -88890-03-08 10:03 J -30745583.10 -30745583.08 -30745583.03 0.0280 0.0277  
 Mars -88888-03-03 04:47 J -30744857.53 -30744857.30 -30744857.06 0.0278 0.0150  
 Earth -88882-01-29 03:06 J -30742699.58 -30742699.37 -30742699.16 0.0274 0.0132  
 Moon -88882-01-29 04:47 J -30742699.50 -30742699.30 -30742699.11 0.0274 0.0143 \*  
 Venus -88882-08-19 21:49 J -30742496.64 -30742496.59 -30742496.52 0.0274 0.0262

Mercury -88882-08-28 14:23 J -30742487.99 -30742487.90 -30742487.80 0.0274 0.0200  
 Mercury -88882-11-25 02:51 J -30742399.51 -30742399.38 -30742399.25 0.0274 0.0111  
 Earth -88881-02-09 20:51 J -30742322.87 -30742322.63 -30742322.40 0.0274 0.0023  
 Moon -88881-02-10 00:13 J -30742322.73 -30742322.49 -30742322.25 0.0274 0.0024 \*  
 Mercury -88881-02-21 15:20 J -30742311.00 -30742310.86 -30742310.72 0.0274 0.0020  
 Venus -88881-04-04 23:44 J -30742267.71 -30742267.51 -30742267.31 0.0274 0.0059  
 Mercury -88881-05-20 04:03 J -30742222.47 -30742222.33 -30742222.19 0.0274 0.0073  
 Mercury -88881-08-16 17:01 J -30742133.90 -30742133.79 -30742133.67 0.0274 0.0167  
 Mercury -88881-11-13 06:13 J -30742045.27 -30742045.24 -30742045.19 0.0274 0.0263  
 Moon -88880-02-20 16:03 J -30741946.01 -30741945.83 -30741945.65 0.0274 0.0190  
 Earth -88880-02-20 16:47 J -30741945.97 -30741945.80 -30741945.61 0.0274 0.0179 \*  
 Mars -88874-04-16 00:42 J -30739700.78 -30739700.47 -30739700.17 0.0280 0.0081  
 Moon -88868-07-29 14:23 J -30737404.07 -30737403.90 -30737403.72 0.0286 0.0205  
 Earth -88868-07-29 17:59 J -30737403.93 -30737403.75 -30737403.55 0.0286 0.0189 \*  
 Mercury -88867-06-30 17:59 J -30737067.88 -30737067.75 -30737067.60 0.0286 0.0164  
 Moon -88867-08-13 07:25 J -30737024.44 -30737024.19 -30737023.94 0.0286 0.0010  
 Earth -88867-08-13 09:49 J -30737024.34 -30737024.09 -30737023.84 0.0286 0.0005 \*  
 Venus -88867-09-21 09:20 J -30736985.32 -30736985.11 -30736984.89 0.0286 0.0025  
 Mercury -88867-09-27 13:54 J -30736979.08 -30736978.92 -30736978.75 0.0286 0.0037  
 Mercury -88867-12-25 09:20 J -30736890.27 -30736890.11 -30736889.95 0.0286 0.0087  
 Mercury -88866-03-24 04:18 J -30736801.43 -30736801.32 -30736801.21 0.0286 0.0208  
 Earth -88866-08-27 21:35 J -30736644.77 -30736644.60 -30736644.41 0.0286 0.0196  
 Moon -88866-08-27 22:18 J -30736644.74 -30736644.57 -30736644.37 0.0286 0.0184 \*  
 Mars -88860-04-24 19:25 J -30734577.93 -30734577.69 -30734577.45 0.0279 0.0126  
 Moon -88853-01-24 11:30 J -30732112.17 -30732112.02 -30732111.86 0.0273 0.0211  
 Earth -88853-01-24 12:13 J -30732112.14 -30732111.99 -30732111.82 0.0273 0.0198 \*  
 Mercury -88852-01-14 17:01 J -30731755.86 -30731755.79 -30731755.70 0.0273 0.0220  
 Moon -88852-02-04 01:25 J -30731735.67 -30731735.44 -30731735.21 0.0273 0.0050  
 Earth -88852-02-04 04:32 J -30731735.54 -30731735.31 -30731735.07 0.0273 0.0046 \*  
 Venus -88852-03-01 03:35 J -30731710.48 -30731710.35 -30731710.21 0.0273 0.0210

Mercury -88852-04-13 05:30 J -30731667.39 -30731667.27 -30731667.15 0.0273 0.0131

Mercury -88852-07-10 17:59 J -30731578.89 -30731578.75 -30731578.61 0.0273 0.0041

Mercury -88852-10-07 06:27 J -30731490.37 -30731490.23 -30731490.08 0.0273 0.0052

Venus -88852-10-16 05:15 J -30731481.47 -30731481.28 -30731481.09 0.0273 0.0109

Mercury -88851-01-03 19:25 J -30731401.81 -30731401.69 -30731401.56 0.0273 0.0144

Earth -88851-02-15 22:47 J -30731358.77 -30731358.55 -30731358.33 0.0273 0.0110

Moon -88851-02-15 23:15 J -30731358.73 -30731358.53 -30731358.31 0.0273 0.0120 \*

Mercury -88851-04-02 08:37 J -30731313.21 -30731313.14 -30731313.07 0.0273 0.0239

Earth -88850-02-27 20:08 J -30730981.72 -30730981.66 -30730981.60 0.0274 0.0264

Mars -88844-06-07 06:13 J -30728690.52 -30728690.24 -30728689.93 0.0281 0.0103

Earth -88839-07-23 08:08 J -30726818.21 -30726818.16 -30726818.07 0.0286 0.0275

Earth -88838-08-07 00:56 J -30726438.70 -30726438.46 -30726438.22 0.0286 0.0085

Moon -88838-08-07 02:51 J -30726438.62 -30726438.38 -30726438.13 0.0286 0.0100 \*

Mercury -88838-11-17 16:18 J -30726335.94 -30726335.82 -30726335.71 0.0286 0.0209

Mercury -88837-02-14 12:13 J -30726247.15 -30726246.99 -30726246.83 0.0286 0.0082

Venus -88837-04-02 11:59 J -30726199.22 -30726199.00 -30726198.78 0.0285 0.0017

Mercury -88837-05-13 07:54 J -30726158.34 -30726158.17 -30726158.01 0.0285 0.0044

Mercury -88837-08-10 02:51 J -30726069.51 -30726069.38 -30726069.24 0.0285 0.0165

Moon -88837-08-20 13:11 J -30726059.19 -30726058.95 -30726058.70 0.0285 0.0095

Earth -88837-08-20 14:51 J -30726059.11 -30726058.88 -30726058.64 0.0285 0.0107 \*

Mercury -88837-11-06 21:35 J -30725980.61 -30725980.60 -30725980.58 0.0285 0.0283

Moon -88836-09-03 19:54 J -30725679.69 -30725679.67 -30725679.62 0.0285 0.0282

Mars -88830-06-11 06:13 J -30723573.51 -30723573.24 -30723572.96 0.0278 0.0019

Earth -88824-01-18 15:06 J -30721524.93 -30721524.87 -30721524.79 0.0274 0.0261

Earth -88823-01-30 07:39 J -30721148.40 -30721148.18 -30721147.96 0.0274 0.0111

Moon -88823-01-30 11:01 J -30721148.25 -30721148.04 -30721147.82 0.0274 0.0122 \*

Mercury -88823-06-03 18:56 J -30721023.76 -30721023.71 -30721023.65 0.0274 0.0249

Mercury -88823-08-31 07:11 J -30720935.31 -30720935.20 -30720935.09 0.0274 0.0161

Venus -88823-09-11 05:59 J -30720924.40 -30720924.25 -30720924.08 0.0274 0.0174

Mercury -88823-11-27 19:25 J -30720846.82 -30720846.69 -30720846.55 0.0274 0.0072

Moon -88822-02-11 00:27 J -30720771.72 -30720771.48 -30720771.23 0.0274 0.0048  
 Earth -88822-02-11 01:25 J -30720771.68 -30720771.44 -30720771.21 0.0274 0.0044 \*  
 Mercury -88822-02-24 08:08 J -30720758.30 -30720758.16 -30720758.02 0.0274 0.0021  
 Venus -88822-04-28 07:54 J -30720695.34 -30720695.17 -30720694.99 0.0274 0.0147  
 Mercury -88822-05-23 20:51 J -30720669.76 -30720669.63 -30720669.49 0.0274 0.0114  
 Mercury -88822-08-20 09:49 J -30720581.17 -30720581.09 -30720580.99 0.0274 0.0209  
 Moon -88821-02-22 17:30 J -30720394.90 -30720394.77 -30720394.60 0.0274 0.0214  
 Earth -88821-02-22 21:35 J -30720394.76 -30720394.60 -30720394.44 0.0274 0.0198 \*  
 Mars -88816-07-18 05:30 J -30718422.40 -30718422.27 -30718422.11 0.0279 0.0250  
 Moon -88809-07-31 03:49 J -30715852.52 -30715852.34 -30715852.14 0.0286 0.0180  
 Earth -88809-07-31 05:44 J -30715852.46 -30715852.26 -30715852.05 0.0286 0.0164 \*  
 Mercury -88808-04-05 17:59 J -30715603.85 -30715603.75 -30715603.65 0.0286 0.0234  
 Mercury -88808-07-03 14:08 J -30715515.07 -30715514.91 -30715514.75 0.0286 0.0105  
 Earth -88808-08-14 21:35 J -30715472.85 -30715472.60 -30715472.34 0.0286 0.0030  
 Moon -88808-08-14 23:30 J -30715472.77 -30715472.52 -30715472.28 0.0286 0.0017 \*  
 Mercury -88808-09-30 09:49 J -30715426.26 -30715426.09 -30715425.92 0.0286 0.0021  
 Venus -88808-10-13 23:15 J -30715412.73 -30715412.53 -30715412.32 0.0286 0.0084  
 Mercury -88808-12-28 05:01 J -30715337.43 -30715337.29 -30715337.15 0.0286 0.0143  
 Mercury -88807-03-26 23:44 J -30715248.57 -30715248.51 -30715248.44 0.0286 0.0263  
 Earth -88807-08-29 09:20 J -30715093.26 -30715093.11 -30715092.94 0.0286 0.0219  
 Moon -88807-08-29 13:11 J -30715093.11 -30715092.95 -30715092.77 0.0286 0.0208 \*  
 Mars -88802-08-03 03:20 J -30713293.46 -30713293.36 -30713293.24 0.0280 0.0254  
 Mars -88800-07-28 19:54 J -30712567.88 -30712567.67 -30712567.45 0.0277 0.0173  
 Moon -88794-01-25 14:08 J -30710561.07 -30710560.91 -30710560.74 0.0273 0.0192  
 Earth -88794-01-25 17:44 J -30710560.94 -30710560.76 -30710560.58 0.0273 0.0177 \*  
 Mercury -88794-10-21 21:49 J -30710291.61 -30710291.59 -30710291.56 0.0273 0.0267  
 Mercury -88793-01-18 09:49 J -30710203.19 -30710203.09 -30710202.98 0.0273 0.0180  
 Earth -88793-02-06 09:49 J -30710184.33 -30710184.09 -30710183.85 0.0273 0.0025  
 Moon -88793-02-06 09:49 J -30710184.31 -30710184.09 -30710183.85 0.0273 0.0028 \*  
 Venus -88793-03-23 11:59 J -30710138.18 -30710138.00 -30710137.81 0.0273 0.0121

Mercury -88793-04-15 22:18 J -30710114.70 -30710114.57 -30710114.44 0.0273 0.0091

Mercury -88793-07-13 10:47 J -30710026.19 -30710026.05 -30710025.91 0.0273 0.0001

Mercury -88793-10-09 23:30 J -30709937.65 -30709937.52 -30709937.38 0.0273 0.0092

Venus -88793-11-07 13:39 J -30709909.06 -30709908.93 -30709908.78 0.0273 0.0199

Mercury -88792-01-06 12:27 J -30709849.08 -30709848.98 -30709848.87 0.0273 0.0186

Earth -88792-02-17 03:35 J -30709807.55 -30709807.35 -30709807.13 0.0273 0.0130

Moon -88792-02-17 07:39 J -30709807.39 -30709807.18 -30709806.98 0.0273 0.0141 \*

Mars -88786-09-09 17:59 J -30707412.06 -30707411.75 -30707411.44 0.0280 0.0066

Earth -88780-07-24 20:08 J -30705266.78 -30705266.66 -30705266.53 0.0286 0.0249

Moon -88780-07-24 20:51 J -30705266.71 -30705266.63 -30705266.52 0.0286 0.0265 \*

Moon -88779-08-08 10:32 J -30704887.31 -30704887.06 -30704886.81 0.0286 0.0074

Earth -88779-08-08 12:42 J -30704887.21 -30704886.97 -30704886.72 0.0286 0.0060 \*

Mercury -88779-08-23 15:49 J -30704871.87 -30704871.84 -30704871.80 0.0286 0.0280

Venus -88779-09-08 03:20 J -30704856.44 -30704856.36 -30704856.28 0.0286 0.0262

Mercury -88779-11-20 12:13 J -30704783.13 -30704782.99 -30704782.85 0.0286 0.0151

Mercury -88778-02-17 08:08 J -30704694.33 -30704694.16 -30704693.99 0.0286 0.0025

Venus -88778-04-26 01:54 J -30704626.61 -30704626.42 -30704626.22 0.0286 0.0125

Mercury -88778-05-17 03:35 J -30704605.51 -30704605.35 -30704605.20 0.0286 0.0100

Mercury -88778-08-13 22:18 J -30704516.67 -30704516.57 -30704516.46 0.0285 0.0221

Moon -88778-08-22 23:01 J -30704507.77 -30704507.54 -30704507.31 0.0285 0.0121

Earth -88778-08-23 02:23 J -30704507.61 -30704507.40 -30704507.16 0.0285 0.0133 \*

Mars -88772-09-18 10:47 J -30702289.29 -30702289.05 -30702288.80 0.0279 0.0113

Earth -88765-01-20 18:42 J -30699973.82 -30699973.72 -30699973.60 0.0273 0.0242

Moon -88765-01-20 22:32 J -30699973.63 -30699973.56 -30699973.48 0.0273 0.0257 \*

Earth -88764-01-31 11:01 J -30699597.27 -30699597.04 -30699596.82 0.0273 0.0091

Moon -88764-01-31 11:15 J -30699597.25 -30699597.03 -30699596.79 0.0273 0.0100 \*

Mercury -88764-06-06 11:15 J -30699471.12 -30699471.03 -30699470.94 0.0273 0.0212

Mercury -88764-09-02 23:30 J -30699382.65 -30699382.52 -30699382.39 0.0273 0.0123

Venus -88764-10-03 13:25 J -30699352.14 -30699351.94 -30699351.75 0.0273 0.0088

Mercury -88764-11-30 11:59 J -30699294.14 -30699294.00 -30699293.86 0.0274 0.0033

Moon -88763-02-12 00:42 J -30699220.69 -30699220.47 -30699220.23 0.0274 0.0072  
 Earth -88763-02-12 04:18 J -30699220.55 -30699220.32 -30699220.08 0.0274 0.0063 \*  
 Mercury -88763-02-27 00:42 J -30699205.61 -30699205.47 -30699205.33 0.0274 0.0060  
 Venus -88763-05-20 14:51 J -30699122.97 -30699122.88 -30699122.76 0.0274 0.0234  
 Mercury -88763-05-26 13:25 J -30699117.06 -30699116.94 -30699116.82 0.0274 0.0153  
 Mercury -88763-08-23 02:23 J -30699028.45 -30699028.40 -30699028.33 0.0274 0.0249  
 Moon -88762-02-23 23:44 J -30698843.63 -30698843.51 -30698843.38 0.0274 0.0232  
 Earth -88762-02-24 00:27 J -30698843.62 -30698843.48 -30698843.33 0.0274 0.0216 \*  
 Mars -88756-11-01 07:11 J -30696401.47 -30696401.20 -30696400.91 0.0281 0.0125  
 Earth -88750-08-02 14:51 J -30694301.09 -30694300.88 -30694300.65 0.0286 0.0142  
 Moon -88750-08-02 17:44 J -30694300.96 -30694300.76 -30694300.55 0.0286 0.0157 \*  
 Venus -88749-03-20 12:56 J -30694070.10 -30694069.96 -30694069.79 0.0286 0.0200  
 Mercury -88749-04-08 13:25 J -30694051.07 -30694050.94 -30694050.81 0.0286 0.0178  
 Mercury -88749-07-06 09:20 J -30693962.27 -30693962.11 -30693961.94 0.0286 0.0051  
 Earth -88749-08-16 07:25 J -30693921.44 -30693921.19 -30693920.94 0.0286 0.0053  
 Moon -88749-08-16 11:01 J -30693921.29 -30693921.04 -30693920.79 0.0286 0.0038 \*  
 Mercury -88749-10-03 05:01 J -30693873.45 -30693873.29 -30693873.13 0.0286 0.0075  
 Venus -88749-11-05 11:59 J -30693840.16 -30693840.00 -30693839.84 0.0286 0.0190  
 Mercury -88749-12-30 23:59 J -30693784.61 -30693784.50 -30693784.37 0.0286 0.0197  
 Earth -88748-08-30 19:11 J -30693541.83 -30693541.70 -30693541.56 0.0286 0.0240  
 Moon -88748-08-30 20:51 J -30693541.78 -30693541.63 -30693541.47 0.0286 0.0230 \*  
 Mars -88742-11-05 19:54 J -30691283.94 -30691283.67 -30691283.40 0.0278 0.0040  
 Moon -88735-01-26 20:23 J -30689009.83 -30689009.65 -30689009.47 0.0273 0.0171  
 Earth -88735-01-26 21:20 J -30689009.80 -30689009.61 -30689009.41 0.0273 0.0157 \*  
 Mercury -88735-10-24 14:08 J -30688738.98 -30688738.91 -30688738.83 0.0273 0.0229  
 Mercury -88734-01-21 02:23 J -30688650.52 -30688650.40 -30688650.28 0.0273 0.0142  
 Earth -88734-02-07 13:11 J -30688633.18 -30688632.95 -30688632.71 0.0273 0.0008  
 Moon -88734-02-07 16:32 J -30688633.04 -30688632.81 -30688632.57 0.0273 0.0007 \*  
 Venus -88734-04-15 19:25 J -30688565.89 -30688565.69 -30688565.48 0.0273 0.0035  
 Mercury -88734-04-19 14:37 J -30688562.02 -30688561.89 -30688561.74 0.0273 0.0053



Mercury -88734-07-17 03:20 J -30688473.50 -30688473.36 -30688473.22 0.0273 0.0039

Mercury -88734-10-13 16:03 J -30688384.95 -30688384.83 -30688384.70 0.0273 0.0132

Mercury -88733-01-10 05:01 J -30688296.36 -30688296.29 -30688296.20 0.0273 0.0227

Earth -88733-02-19 07:11 J -30688256.40 -30688256.20 -30688256.00 0.0273 0.0148

Moon -88733-02-19 08:08 J -30688256.36 -30688256.16 -30688255.96 0.0273 0.0160 \*

Mars -88728-12-11 18:27 J -30686133.89 -30686133.73 -30686133.55 0.0279 0.0238

Moon -88721-07-26 01:25 J -30683715.57 -30683715.44 -30683715.30 0.0286 0.0242

Earth -88721-07-26 04:47 J -30683715.44 -30683715.30 -30683715.13 0.0286 0.0226 \*

Moon -88720-08-09 18:13 J -30683335.99 -30683335.74 -30683335.50 0.0286 0.0051

Earth -88720-08-09 21:49 J -30683335.84 -30683335.59 -30683335.34 0.0286 0.0036 \*

Mercury -88720-08-26 11:15 J -30683319.13 -30683319.03 -30683318.92 0.0286 0.0226

Venus -88720-09-30 15:20 J -30683284.03 -30683283.86 -30683283.67 0.0286 0.0159

Mercury -88720-11-23 07:25 J -30683230.35 -30683230.19 -30683230.03 0.0286 0.0097

Mercury -88719-02-20 03:06 J -30683141.53 -30683141.37 -30683141.20 0.0286 0.0029

Venus -88719-05-18 14:23 J -30683054.03 -30683053.90 -30683053.78 0.0286 0.0229

Mercury -88719-05-19 22:18 J -30683052.70 -30683052.57 -30683052.42 0.0286 0.0152

Mercury -88719-08-16 17:01 J -30682963.83 -30682963.79 -30682963.73 0.0286 0.0272

Moon -88719-08-24 10:32 J -30682956.27 -30682956.06 -30682955.85 0.0286 0.0144

Earth -88719-08-24 11:15 J -30682956.23 -30682956.03 -30682955.81 0.0286 0.0155 \*

Mars -88714-12-27 14:08 J -30681005.04 -30681004.91 -30681004.78 0.0280 0.0244

Mars -88712-12-22 06:13 J -30680279.44 -30680279.24 -30680279.03 0.0277 0.0183

Earth -88706-01-21 21:35 J -30678422.73 -30678422.60 -30678422.45 0.0273 0.0222

Moon -88706-01-21 22:47 J -30678422.67 -30678422.55 -30678422.43 0.0273 0.0237 \*

Moon -88705-02-02 09:49 J -30678046.31 -30678046.09 -30678045.85 0.0273 0.0080

Earth -88705-02-02 13:11 J -30678046.17 -30678045.95 -30678045.71 0.0273 0.0073 \*

Mercury -88705-03-12 15:06 J -30678006.89 -30678006.87 -30678006.83 0.0273 0.0264

Mercury -88705-06-09 03:20 J -30677918.46 -30677918.36 -30677918.25 0.0273 0.0176

Mercury -88705-09-05 15:35 J -30677829.98 -30677829.85 -30677829.71 0.0273 0.0087

Venus -88705-10-25 19:54 J -30677779.88 -30677779.67 -30677779.46 0.0273 0.0004

Mercury -88705-12-03 04:18 J -30677741.47 -30677741.32 -30677741.18 0.0273 0.0009

Moon -88704-02-13 05:15 J -30677669.49 -30677669.28 -30677669.06 0.0273 0.0090  
 Earth -88704-02-13 06:13 J -30677669.46 -30677669.24 -30677669.01 0.0273 0.0081 \*  
 Mercury -88704-03-01 16:47 J -30677652.93 -30677652.80 -30677652.66 0.0273 0.0098  
 Mercury -88704-05-29 05:44 J -30677564.36 -30677564.26 -30677564.15 0.0273 0.0192  
 Earth -88703-02-25 01:54 J -30677292.53 -30677292.42 -30677292.28 0.0274 0.0233  
 Moon -88703-02-25 05:44 J -30677292.36 -30677292.26 -30677292.17 0.0274 0.0249 \*  
 Mars -88697-02-03 05:44 J -30675123.57 -30675123.26 -30675122.94 0.0280 0.0050  
 Earth -88691-08-03 21:06 J -30672749.85 -30672749.62 -30672749.39 0.0286 0.0120  
 Moon -88691-08-04 00:42 J -30672749.70 -30672749.47 -30672749.24 0.0286 0.0136 \*  
 Mercury -88690-01-13 11:44 J -30672587.08 -30672587.01 -30672586.94 0.0286 0.0258  
 Mercury -88690-04-12 07:54 J -30672498.32 -30672498.17 -30672498.01 0.0286 0.0128  
 Venus -88690-04-12 23:59 J -30672497.70 -30672497.50 -30672497.29 0.0286 0.0099  
 Mercury -88690-07-10 03:49 J -30672409.50 -30672409.34 -30672409.17 0.0286 0.0008  
 Earth -88690-08-18 13:39 J -30672370.17 -30672369.93 -30672369.68 0.0286 0.0073  
 Moon -88690-08-18 14:23 J -30672370.15 -30672369.90 -30672369.64 0.0286 0.0061 \*  
 Mercury -88690-10-06 23:15 J -30672320.67 -30672320.53 -30672320.37 0.0286 0.0124  
 Mercury -88689-01-03 18:13 J -30672231.82 -30672231.74 -30672231.65 0.0286 0.0245  
 Moon -88689-08-31 23:15 J -30671990.64 -30671990.53 -30671990.41 0.0286 0.0252  
 Earth -88689-09-01 01:54 J -30671990.51 -30671990.42 -30671990.30 0.0286 0.0259 \*  
 Mars -88683-02-12 19:11 J -30669999.95 -30669999.70 -30669999.44 0.0279 0.0095  
 Earth -88676-01-27 23:30 J -30667458.71 -30667458.52 -30667458.30 0.0272 0.0140  
 Moon -88676-01-28 02:51 J -30667458.57 -30667458.38 -30667458.18 0.0272 0.0151 \*  
 Venus -88676-09-21 01:11 J -30667222.49 -30667222.45 -30667222.41 0.0272 0.0267  
 Mercury -88676-10-27 06:13 J -30667186.33 -30667186.24 -30667186.14 0.0272 0.0194  
 Mercury -88675-01-23 18:27 J -30667097.86 -30667097.73 -30667097.59 0.0272 0.0105  
 Earth -88675-02-08 15:20 J -30667082.09 -30667081.86 -30667081.62 0.0272 0.0013  
 Moon -88675-02-08 17:15 J -30667082.02 -30667081.78 -30667081.53 0.0272 0.0014 \*  
 Mercury -88675-04-22 06:56 J -30667009.35 -30667009.21 -30667009.07 0.0272 0.0015  
 Venus -88675-05-08 02:08 J -30666993.62 -30666993.41 -30666993.21 0.0272 0.0050  
 Mercury -88675-07-19 19:39 J -30666920.82 -30666920.68 -30666920.54 0.0273 0.0077

Mercury -88675-10-16 08:23 J -30666832.26 -30666832.15 -30666832.03 0.0273 0.0170

Mercury -88674-01-12 21:35 J -30666743.63 -30666743.60 -30666743.57 0.0273 0.0265

Moon -88674-02-20 05:44 J -30666705.43 -30666705.26 -30666705.07 0.0273 0.0179

Earth -88674-02-20 09:06 J -30666705.30 -30666705.12 -30666704.92 0.0273 0.0165 \*

Mars -88667-03-27 13:39 J -30664113.19 -30664112.93 -30664112.64 0.0281 0.0135

Moon -88662-07-28 08:51 J -30662164.28 -30662164.13 -30662163.96 0.0286 0.0220

Earth -88662-07-28 11:15 J -30662164.19 -30662164.03 -30662163.84 0.0286 0.0205 \*

Earth -88661-08-11 04:32 J -30661784.56 -30661784.31 -30661784.06 0.0286 0.0014

Moon -88661-08-11 04:47 J -30661784.54 -30661784.30 -30661784.06 0.0286 0.0027 \*

Mercury -88661-08-29 05:59 J -30661766.38 -30661766.25 -30661766.11 0.0286 0.0175

Venus -88661-10-23 02:37 J -30661711.60 -30661711.39 -30661711.17 0.0286 0.0058

Mercury -88661-11-26 02:08 J -30661677.58 -30661677.41 -30661677.24 0.0286 0.0047

Mercury -88660-02-22 21:35 J -30661588.76 -30661588.60 -30661588.43 0.0286 0.0079

Mercury -88660-05-22 16:47 J -30661499.91 -30661499.80 -30661499.68 0.0286 0.0201

Earth -88660-08-25 18:13 J -30661404.93 -30661404.74 -30661404.54 0.0286 0.0175

Moon -88660-08-25 21:06 J -30661404.81 -30661404.62 -30661404.41 0.0286 0.0166 \*

Jupiter -88655-03-18 17:59 J -30659739.17 -30659738.75 -30659738.33 0.0281 0.0093

Mars -88653-03-31 02:08 J -30658995.68 -30658995.41 -30658995.14 0.0278 0.0049

Moon -88647-01-22 19:54 J -30656871.82 -30656871.67 -30656871.53 0.0273 0.0217

Earth -88647-01-22 23:01 J -30656871.69 -30656871.54 -30656871.38 0.0273 0.0204 \*

Moon -88646-02-03 12:13 J -30656495.22 -30656494.99 -30656494.76 0.0273 0.0059

Earth -88646-02-03 14:23 J -30656495.14 -30656494.90 -30656494.67 0.0273 0.0055 \*

Mercury -88646-03-16 07:11 J -30656454.27 -30656454.20 -30656454.12 0.0273 0.0228

Venus -88646-04-03 00:27 J -30656436.57 -30656436.48 -30656436.38 0.0273 0.0239

Mercury -88646-06-12 19:11 J -30656365.81 -30656365.70 -30656365.57 0.0273 0.0141

Mercury -88646-09-09 07:39 J -30656277.32 -30656277.18 -30656277.04 0.0273 0.0051

Venus -88646-11-18 01:39 J -30656207.62 -30656207.43 -30656207.23 0.0273 0.0080

Mercury -88646-12-06 20:08 J -30656188.80 -30656188.66 -30656188.52 0.0273 0.0041

Earth -88645-02-15 06:42 J -30656118.44 -30656118.22 -30656117.99 0.0273 0.0098

Moon -88645-02-15 09:35 J -30656118.30 -30656118.10 -30656117.88 0.0273 0.0109 \*

Mercury -88645-03-04 08:51 J -30656100.25 -30656100.13 -30656100.00 0.0273 0.0134

Mercury -88645-05-31 21:49 J -30656011.66 -30656011.59 -30656011.51 0.0273 0.0228

Earth -88644-02-26 02:23 J -30655741.49 -30655741.40 -30655741.29 0.0274 0.0248

Moon -88644-02-26 04:32 J -30655741.37 -30655741.31 -30655741.24 0.0274 0.0262 \*

Mars -88639-05-06 17:30 J -30653845.94 -30653845.77 -30653845.57 0.0279 0.0228

Moon -88632-08-04 23:01 J -30651198.77 -30651198.54 -30651198.29 0.0287 0.0114

Earth -88632-08-05 00:27 J -30651198.71 -30651198.48 -30651198.24 0.0287 0.0100 \*

Mercury -88631-01-16 05:30 J -30651034.38 -30651034.27 -30651034.15 0.0287 0.0212

Mercury -88631-04-15 01:54 J -30650945.58 -30650945.42 -30650945.26 0.0287 0.0082

Venus -88631-05-05 09:35 J -30650925.32 -30650925.10 -30650924.89 0.0287 0.0005

Mercury -88631-07-12 21:49 J -30650856.76 -30650856.59 -30650856.43 0.0286 0.0045

Moon -88631-08-19 13:39 J -30650819.17 -30650818.93 -30650818.68 0.0286 0.0081

Earth -88631-08-19 17:15 J -30650819.01 -30650818.78 -30650818.54 0.0286 0.0092 \*

Mercury -88631-10-09 17:01 J -30650767.92 -30650767.79 -30650767.65 0.0286 0.0169

Moon -88630-09-03 02:37 J -30650439.46 -30650439.39 -30650439.30 0.0286 0.0270

Earth -88630-09-03 05:44 J -30650439.31 -30650439.26 -30650439.18 0.0286 0.0276 \*

Mars -88625-05-22 17:30 J -30648715.91 -30648715.77 -30648715.61 0.0280 0.0231

Mars -88623-05-18 10:18 J -30647990.24 -30647990.07 -30647989.87 0.0277 0.0200

Earth -88618-01-18 10:32 J -30646284.10 -30646284.06 -30646284.00 0.0273 0.0267

Earth -88617-01-30 01:11 J -30645907.65 -30645907.45 -30645907.23 0.0272 0.0122

Moon -88617-01-30 03:35 J -30645907.56 -30645907.35 -30645907.13 0.0272 0.0130 \*

Mercury -88617-08-02 10:18 J -30645722.13 -30645722.07 -30645722.01 0.0272 0.0245

Venus -88617-10-13 07:11 J -30645650.34 -30645650.20 -30645650.04 0.0272 0.0184

Mercury -88617-10-29 22:18 J -30645633.68 -30645633.57 -30645633.45 0.0272 0.0158

Mercury -88616-01-26 10:32 J -30645545.19 -30645545.06 -30645544.92 0.0272 0.0069

Moon -88616-02-09 14:08 J -30645531.15 -30645530.91 -30645530.66 0.0272 0.0035

Earth -88616-02-09 16:47 J -30645531.04 -30645530.80 -30645530.56 0.0272 0.0029 \*

Mercury -88616-04-24 23:01 J -30645456.68 -30645456.54 -30645456.39 0.0272 0.0022

Venus -88616-05-30 08:08 J -30645421.33 -30645421.16 -30645420.97 0.0272 0.0134

Mercury -88616-07-22 11:44 J -30645368.14 -30645368.01 -30645367.88 0.0272 0.0114

Mercury -88616-10-19 00:42 J -30645279.56 -30645279.47 -30645279.38 0.0272 0.0208  
 Moon -88615-02-21 08:08 J -30645154.32 -30645154.16 -30645153.99 0.0273 0.0195  
 Earth -88615-02-21 10:03 J -30645154.24 -30645154.08 -30645153.89 0.0273 0.0181 \*  
 Mars -88609-06-28 10:18 J -30642835.39 -30642835.07 -30642834.75 0.0280 0.0043  
 Earth -88603-07-29 15:06 J -30640613.06 -30640612.87 -30640612.67 0.0286 0.0184  
 Moon -88603-07-29 17:15 J -30640612.94 -30640612.78 -30640612.59 0.0286 0.0198 \*  
 Mercury -88602-06-05 03:35 J -30640302.41 -30640302.35 -30640302.27 0.0286 0.0258  
 Earth -88602-08-13 08:23 J -30640233.40 -30640233.15 -30640232.89 0.0286 0.0007  
 Moon -88602-08-13 12:27 J -30640233.23 -30640232.98 -30640232.73 0.0286 0.0006 \*  
 Mercury -88602-09-01 23:59 J -30640213.65 -30640213.50 -30640213.34 0.0286 0.0128  
 Venus -88602-11-15 12:13 J -30640139.20 -30640138.99 -30640138.77 0.0286 0.0038  
 Mercury -88602-11-29 20:08 J -30640124.83 -30640124.66 -30640124.49 0.0286 0.0006  
 Mercury -88601-02-26 15:35 J -30640036.00 -30640035.85 -30640035.70 0.0286 0.0124  
 Mercury -88601-05-25 10:32 J -30639947.14 -30639947.06 -30639946.98 0.0286 0.0246  
 Earth -88601-08-26 22:32 J -30639853.74 -30639853.56 -30639853.37 0.0286 0.0193  
 Moon -88601-08-27 01:39 J -30639853.63 -30639853.43 -30639853.23 0.0286 0.0184 \*  
 Mars -88595-07-08 23:15 J -30637711.78 -30637711.53 -30637711.27 0.0279 0.0088  
 Moon -88588-01-23 21:35 J -30635320.74 -30635320.60 -30635320.43 0.0273 0.0199  
 Earth -88588-01-23 23:59 J -30635320.67 -30635320.50 -30635320.32 0.0273 0.0187 \*  
 Earth -88587-02-04 14:51 J -30634944.12 -30634943.88 -30634943.65 0.0273 0.0038  
 Moon -88587-02-04 17:15 J -30634944.01 -30634943.78 -30634943.55 0.0273 0.0038 \*  
 Mercury -88587-03-18 22:47 J -30634901.64 -30634901.55 -30634901.44 0.0273 0.0195  
 Venus -88587-04-25 05:59 J -30634864.41 -30634864.25 -30634864.07 0.0273 0.0158  
 Mercury -88587-06-15 11:01 J -30634813.16 -30634813.04 -30634812.90 0.0273 0.0106  
 Mercury -88587-09-11 23:30 J -30634724.66 -30634724.52 -30634724.38 0.0273 0.0016  
 Mercury -88587-12-09 11:59 J -30634636.13 -30634636.00 -30634635.86 0.0273 0.0077  
 Venus -88587-12-10 07:11 J -30634635.36 -30634635.20 -30634635.03 0.0273 0.0161  
 Earth -88586-02-16 06:56 J -30634567.42 -30634567.21 -30634566.99 0.0273 0.0113  
 Moon -88586-02-16 09:35 J -30634567.31 -30634567.10 -30634566.88 0.0273 0.0125 \*  
 Mercury -88586-03-08 00:56 J -30634547.57 -30634547.46 -30634547.35 0.0273 0.0169

Mercury -88586-06-04 13:54 J -30634458.95 -30634458.92 -30634458.88 0.0273 0.0264

Moon -88585-02-27 23:30 J -30634190.52 -30634190.52 -30634190.50 0.0273 0.0273

Earth -88585-02-28 02:23 J -30634190.46 -30634190.40 -30634190.32 0.0273 0.0262

Mars -88579-08-20 08:08 J -30631825.43 -30631825.16 -30631824.89 0.0281 0.0143

Moon -88574-07-23 04:18 J -30630027.36 -30630027.32 -30630027.26 0.0286 0.0281

Earth -88574-07-23 07:39 J -30630027.26 -30630027.18 -30630027.09 0.0286 0.0269 \*

Moon -88573-08-05 22:32 J -30629647.79 -30629647.56 -30629647.31 0.0287 0.0093

Earth -88573-08-06 02:37 J -30629647.63 -30629647.39 -30629647.15 0.0287 0.0082 \*

Mercury -88572-01-18 23:01 J -30629481.67 -30629481.54 -30629481.39 0.0287 0.0168

Mercury -88572-04-17 19:25 J -30629392.86 -30629392.69 -30629392.52 0.0287 0.0038

Venus -88572-05-27 17:59 J -30629352.96 -30629352.75 -30629352.55 0.0287 0.0090

Mercury -88572-07-15 15:06 J -30629304.03 -30629303.87 -30629303.71 0.0287 0.0088

Moon -88572-08-20 17:01 J -30629268.01 -30629267.79 -30629267.56 0.0287 0.0102

Earth -88572-08-20 19:25 J -30629267.92 -30629267.69 -30629267.45 0.0287 0.0109 \*

Mercury -88572-10-12 10:18 J -30629215.18 -30629215.07 -30629214.96 0.0287 0.0211

Mars -88565-08-25 02:37 J -30626706.65 -30626706.39 -30626706.12 0.0278 0.0062

Earth -88559-01-19 11:30 J -30624733.11 -30624733.02 -30624732.92 0.0272 0.0249

Moon -88559-01-19 14:08 J -30624732.96 -30624732.91 -30624732.84 0.0272 0.0263 \*

Moon -88558-01-30 23:30 J -30624356.74 -30624356.52 -30624356.29 0.0272 0.0107

Earth -88558-01-31 01:54 J -30624356.63 -30624356.42 -30624356.19 0.0272 0.0104 \*

Mercury -88558-08-06 02:08 J -30624169.50 -30624169.41 -30624169.32 0.0272 0.0211

Mercury -88558-11-02 14:08 J -30624081.03 -30624080.91 -30624080.78 0.0272 0.0123

Venus -88558-11-05 12:56 J -30624078.15 -30624077.96 -30624077.77 0.0272 0.0102

Mercury -88557-01-30 02:37 J -30623992.54 -30623992.39 -30623992.25 0.0272 0.0034

Moon -88557-02-11 14:08 J -30623980.14 -30623979.91 -30623979.68 0.0272 0.0054

Earth -88557-02-11 17:15 J -30623980.01 -30623979.78 -30623979.54 0.0272 0.0046 \*

Mercury -88557-04-27 15:06 J -30623904.01 -30623903.87 -30623903.73 0.0272 0.0058

Venus -88557-06-21 13:39 J -30623849.04 -30623848.93 -30623848.79 0.0272 0.0217

Mercury -88557-07-25 03:49 J -30623815.46 -30623815.34 -30623815.22 0.0272 0.0150

Mercury -88557-10-21 16:32 J -30623726.86 -30623726.81 -30623726.74 0.0272 0.0245

Earth -88556-02-22 10:32 J -30623603.22 -30623603.06 -30623602.88 0.0273 0.0195  
 Moon -88556-02-22 12:27 J -30623603.11 -30623602.98 -30623602.82 0.0273 0.0210 \*  
 Mars -88551-09-29 23:44 J -30621557.70 -30621557.51 -30621557.32 0.0279 0.0223  
 Earth -88544-07-30 17:44 J -30619061.96 -30619061.76 -30619061.55 0.0287 0.0164  
 Moon -88544-07-30 21:20 J -30619061.81 -30619061.61 -30619061.40 0.0287 0.0175 \*  
 Venus -88543-04-21 21:35 J -30618796.68 -30618796.60 -30618796.51 0.0287 0.0261  
 Mercury -88543-06-07 21:35 J -30618749.71 -30618749.60 -30618749.49 0.0287 0.0213  
 Earth -88543-08-14 11:15 J -30618682.28 -30618682.03 -30618681.78 0.0286 0.0025  
 Moon -88543-08-14 12:42 J -30618682.24 -30618681.97 -30618681.71 0.0286 0.0017 \*  
 Mercury -88543-09-04 17:44 J -30618660.92 -30618660.76 -30618660.59 0.0286 0.0083  
 Mercury -88543-12-02 13:39 J -30618572.10 -30618571.93 -30618571.77 0.0286 0.0044  
 Venus -88543-12-07 21:06 J -30618566.81 -30618566.62 -30618566.43 0.0286 0.0132  
 Mercury -88542-03-01 08:51 J -30618483.26 -30618483.13 -30618482.99 0.0286 0.0168  
 Moon -88542-08-28 23:44 J -30618302.68 -30618302.51 -30618302.33 0.0286 0.0206  
 Earth -88542-08-29 01:39 J -30618302.60 -30618302.43 -30618302.26 0.0286 0.0211 \*  
 Mars -88537-10-15 19:54 J -30616427.82 -30616427.67 -30616427.50 0.0280 0.0226  
 Mars -88535-10-11 12:13 J -30615702.16 -30615701.99 -30615701.80 0.0277 0.0206  
 Earth -88529-01-26 00:42 J -30613769.65 -30613769.47 -30613769.28 0.0272 0.0170  
 Moon -88529-01-26 02:51 J -30613769.55 -30613769.38 -30613769.20 0.0272 0.0178 \*  
 Mercury -88529-12-23 02:37 J -30613437.44 -30613437.39 -30613437.33 0.0272 0.0248  
 Earth -88528-02-05 15:20 J -30613393.10 -30613392.86 -30613392.62 0.0272 0.0022  
 Moon -88528-02-05 18:27 J -30613392.97 -30613392.73 -30613392.49 0.0272 0.0017 \*  
 Mercury -88528-03-21 14:37 J -30613349.00 -30613348.89 -30613348.77 0.0272 0.0161  
 Venus -88528-05-17 11:30 J -30613292.21 -30613292.02 -30613291.81 0.0272 0.0077  
 Mercury -88528-06-18 03:06 J -30613260.51 -30613260.37 -30613260.24 0.0273 0.0071  
 Mercury -88528-09-14 15:20 J -30613172.00 -30613171.86 -30613171.71 0.0273 0.0021  
 Mercury -88528-12-12 04:03 J -30613083.46 -30613083.33 -30613083.20 0.0273 0.0112  
 Venus -88527-01-01 12:42 J -30613063.06 -30613062.97 -30613062.87 0.0273 0.0243  
 Moon -88527-02-17 05:44 J -30613016.47 -30613016.26 -30613016.05 0.0273 0.0142  
 Earth -88527-02-17 07:11 J -30613016.40 -30613016.20 -30613015.98 0.0273 0.0129 \*

Mercury -88527-03-10 16:47 J -30612994.89 -30612994.80 -30612994.70 0.0273 0.0206  
 Mars -88521-11-20 22:03 J -30610547.89 -30610547.58 -30610547.26 0.0280 0.0039  
 Moon -88515-07-24 05:01 J -30608476.39 -30608476.29 -30608476.19 0.0286 0.0262  
 Earth -88515-07-24 07:39 J -30608476.29 -30608476.18 -30608476.05 0.0286 0.0251 \*  
 Moon -88514-08-08 02:51 J -30608096.62 -30608096.38 -30608096.15 0.0287 0.0071  
 Earth -88514-08-08 02:51 J -30608096.62 -30608096.38 -30608096.13 0.0287 0.0064 \*  
 Mercury -88514-10-25 19:54 J -30608017.74 -30608017.67 -30608017.59 0.0287 0.0257  
 Venus -88514-11-02 01:11 J -30608010.59 -30608010.45 -30608010.30 0.0287 0.0215  
 Mercury -88513-01-22 16:18 J -30607928.97 -30607928.82 -30607928.66 0.0287 0.0126  
 Mercury -88513-04-20 12:27 J -30607840.15 -30607839.98 -30607839.81 0.0287 0.0003  
 Venus -88513-06-19 01:11 J -30607780.62 -30607780.45 -30607780.28 0.0287 0.0180  
 Mercury -88513-07-18 08:08 J -30607751.31 -30607751.16 -30607751.01 0.0287 0.0129  
 Earth -88513-08-21 19:54 J -30607716.89 -30607716.67 -30607716.44 0.0287 0.0126  
 Moon -88513-08-21 22:32 J -30607716.78 -30607716.56 -30607716.33 0.0287 0.0122 \*  
 Mercury -88513-10-15 03:06 J -30607662.44 -30607662.37 -30607662.29 0.0287 0.0251  
 Mars -88507-12-02 18:56 J -30605422.97 -30605422.71 -30605422.45 0.0280 0.0079  
 Moon -88500-01-20 11:01 J -30603182.15 -30603182.04 -30603181.93 0.0272 0.0243  
 Earth -88500-01-20 11:59 J -30603182.11 -30603182.00 -30603181.86 0.0272 0.0232 \*  
 Moon -88499-01-31 23:30 J -30602805.73 -30602805.52 -30602805.29 0.0272 0.0087  
 Earth -88499-02-01 02:51 J -30602805.61 -30602805.38 -30602805.16 0.0272 0.0087 \*  
 Mercury -88499-05-12 05:44 J -30602705.28 -30602705.26 -30602705.22 0.0272 0.0264  
 Mercury -88499-08-08 17:59 J -30602616.86 -30602616.75 -30602616.65 0.0272 0.0177  
 Mercury -88499-11-05 05:59 J -30602528.38 -30602528.25 -30602528.11 0.0272 0.0089  
 Venus -88499-11-27 18:27 J -30602505.93 -30602505.73 -30602505.52 0.0272 0.0022  
 Mercury -88498-02-01 18:27 J -30602439.87 -30602439.73 -30602439.59 0.0272 0.0002  
 Earth -88498-02-12 17:44 J -30602428.99 -30602428.76 -30602428.52 0.0272 0.0062  
 Moon -88498-02-12 18:56 J -30602428.93 -30602428.71 -30602428.48 0.0272 0.0074 \*  
 Mercury -88498-05-01 06:56 J -30602351.34 -30602351.21 -30602351.07 0.0272 0.0094  
 Mercury -88498-07-28 19:54 J -30602262.78 -30602262.67 -30602262.57 0.0272 0.0187  
 Earth -88497-02-24 11:15 J -30602052.18 -30602052.03 -30602051.88 0.0272 0.0210



Moon -88497-02-24 14:23 J -30602052.03 -30602051.90 -30602051.75 0.0272 0.0225 \*  
 Mars -88490-01-13 13:39 J -30599537.19 -30599536.93 -30599536.65 0.0281 0.0147  
 Moon -88485-07-31 19:25 J -30597510.90 -30597510.69 -30597510.45 0.0287 0.0152  
 Earth -88485-07-31 20:08 J -30597510.87 -30597510.66 -30597510.43 0.0287 0.0145 \*  
 Venus -88484-05-14 06:13 J -30597224.41 -30597224.24 -30597224.06 0.0287 0.0168  
 Mercury -88484-06-10 15:06 J -30597197.00 -30597196.87 -30597196.73 0.0287 0.0169  
 Moon -88484-08-15 10:18 J -30597131.33 -30597131.07 -30597130.82 0.0287 0.0041  
 Earth -88484-08-15 13:39 J -30597131.18 -30597130.93 -30597130.68 0.0287 0.0044 \*  
 Mercury -88484-09-07 11:15 J -30597108.19 -30597108.03 -30597107.86 0.0287 0.0040  
 Mercury -88484-12-05 07:11 J -30597019.36 -30597019.20 -30597019.04 0.0287 0.0088  
 Venus -88484-12-30 05:30 J -30596994.40 -30596994.27 -30596994.13 0.0287 0.0225  
 Mercury -88483-03-04 02:08 J -30596930.51 -30596930.41 -30596930.29 0.0287 0.0212  
 Moon -88483-08-30 00:13 J -30596751.63 -30596751.49 -30596751.33 0.0286 0.0228  
 Earth -88483-08-30 04:03 J -30596751.47 -30596751.33 -30596751.17 0.0286 0.0228 \*  
 Mars -88476-01-18 04:03 J -30594418.59 -30594418.33 -30594418.06 0.0278 0.0067  
 Earth -88470-01-27 01:39 J -30592218.62 -30592218.43 -30592218.23 0.0272 0.0152  
 Moon -88470-01-27 04:47 J -30592218.49 -30592218.30 -30592218.10 0.0272 0.0159 \*  
 Mercury -88470-12-26 18:27 J -30591884.81 -30591884.73 -30591884.64 0.0272 0.0213  
 Moon -88469-02-07 14:23 J -30591842.14 -30591841.90 -30591841.65 0.0272 0.0006  
 Earth -88469-02-07 16:03 J -30591842.07 -30591841.83 -30591841.59 0.0272 0.0005 \*  
 Mercury -88469-03-24 06:42 J -30591796.35 -30591796.22 -30591796.10 0.0272 0.0125  
 Venus -88469-06-08 17:30 J -30591719.98 -30591719.77 -30591719.57 0.0272 0.0009  
 Mercury -88469-06-20 18:56 J -30591707.85 -30591707.71 -30591707.57 0.0272 0.0036  
 Mercury -88469-09-17 07:25 J -30591619.33 -30591619.19 -30591619.05 0.0272 0.0055  
 Mercury -88469-12-14 19:54 J -30591530.78 -30591530.67 -30591530.54 0.0272 0.0149  
 Moon -88468-02-18 04:18 J -30591465.50 -30591465.32 -30591465.12 0.0273 0.0160  
 Earth -88468-02-18 07:54 J -30591465.37 -30591465.17 -30591464.96 0.0273 0.0144 \*  
 Mercury -88468-03-13 08:51 J -30591442.19 -30591442.13 -30591442.06 0.0273 0.0242  
 Mars -88462-02-22 07:54 J -30589270.35 -30589270.17 -30589269.96 0.0279 0.0222  
 Earth -88456-07-25 08:37 J -30586925.28 -30586925.14 -30586924.99 0.0286 0.0232

Moon -88456-07-25 09:35 J -30586925.22 -30586925.10 -30586924.95 0.0286 0.0241 \*  
 Earth -88455-08-09 03:35 J -30586545.60 -30586545.35 -30586545.10 0.0287 0.0046  
 Moon -88455-08-09 07:11 J -30586545.44 -30586545.20 -30586544.95 0.0287 0.0049 \*  
 Mercury -88455-10-28 13:11 J -30586465.06 -30586464.95 -30586464.83 0.0287 0.0215  
 Venus -88455-11-24 09:06 J -30586438.32 -30586438.12 -30586437.93 0.0287 0.0124  
 Mercury -88454-01-25 09:35 J -30586376.26 -30586376.10 -30586375.94 0.0287 0.0084  
 Mercury -88454-04-24 05:30 J -30586287.43 -30586287.27 -30586287.10 0.0287 0.0044  
 Venus -88454-07-12 08:23 J -30586208.21 -30586208.15 -30586208.07 0.0287 0.0271  
 Mercury -88454-07-22 00:56 J -30586198.59 -30586198.46 -30586198.32 0.0287 0.0170  
 Earth -88454-08-23 20:37 J -30586165.85 -30586165.64 -30586165.42 0.0287 0.0143  
 Moon -88454-08-23 23:59 J -30586165.71 -30586165.50 -30586165.27 0.0287 0.0143 \*  
 Mars -88448-03-11 10:47 J -30584139.21 -30584139.05 -30584138.88 0.0281 0.0221  
 Mars -88446-03-07 06:42 J -30583413.38 -30583413.22 -30583413.04 0.0278 0.0215  
 Moon -88441-01-22 09:35 J -30581631.22 -30581631.10 -30581630.96 0.0273 0.0226  
 Earth -88441-01-22 12:56 J -30581631.09 -30581630.96 -30581630.80 0.0273 0.0214 \*  
 Earth -88440-02-02 03:35 J -30581254.58 -30581254.35 -30581254.12 0.0272 0.0069  
 Moon -88440-02-02 04:32 J -30581254.53 -30581254.31 -30581254.09 0.0272 0.0066 \*  
 Venus -88440-05-04 23:30 J -30581162.58 -30581162.52 -30581162.44 0.0272 0.0257  
 Mercury -88440-05-14 21:49 J -30581152.66 -30581152.59 -30581152.52 0.0272 0.0230  
 Mercury -88440-08-11 09:49 J -30581064.21 -30581064.09 -30581063.97 0.0272 0.0142  
 Mercury -88440-11-07 22:03 J -30580975.72 -30580975.58 -30580975.44 0.0272 0.0053  
 Venus -88440-12-20 00:13 J -30580933.69 -30580933.49 -30580933.28 0.0272 0.0062  
 Mercury -88439-02-04 10:32 J -30580887.21 -30580887.06 -30580886.92 0.0272 0.0038  
 Earth -88439-02-13 18:42 J -30580877.94 -30580877.72 -30580877.49 0.0272 0.0079  
 Moon -88439-02-13 22:18 J -30580877.79 -30580877.57 -30580877.34 0.0272 0.0093 \*  
 Mercury -88439-05-03 23:01 J -30580798.66 -30580798.54 -30580798.41 0.0272 0.0130  
 Mercury -88439-07-31 11:44 J -30580710.08 -30580710.01 -30580709.92 0.0272 0.0225  
 Moon -88438-02-25 11:59 J -30580501.11 -30580501.00 -30580500.87 0.0272 0.0237  
 Earth -88438-02-25 12:27 J -30580501.11 -30580500.98 -30580500.85 0.0272 0.0225 \*  
 Mars -88432-04-16 09:20 J -30578259.42 -30578259.11 -30578258.79 0.0280 0.0033

Moon -88426-08-02 18:56 J -30575959.93 -30575959.71 -30575959.47 0.0287 0.0130  
 Earth -88426-08-02 22:47 J -30575959.77 -30575959.55 -30575959.32 0.0287 0.0125 \*  
 Mercury -88425-03-16 12:27 J -30575733.06 -30575732.98 -30575732.90 0.0287 0.0255  
 Venus -88425-06-05 14:51 J -30575652.08 -30575651.88 -30575651.67 0.0287 0.0075  
 Mercury -88425-06-13 08:51 J -30575644.28 -30575644.13 -30575643.97 0.0287 0.0124  
 Moon -88425-08-16 13:25 J -30575580.17 -30575579.94 -30575579.69 0.0287 0.0063  
 Earth -88425-08-16 16:03 J -30575580.07 -30575579.83 -30575579.58 0.0287 0.0063 \*  
 Mercury -88425-09-10 05:01 J -30575555.46 -30575555.29 -30575555.12 0.0287 0.0006  
 Mercury -88425-12-08 00:27 J -30575466.62 -30575466.48 -30575466.33 0.0287 0.0131  
 Mercury -88424-03-06 19:39 J -30575377.75 -30575377.68 -30575377.60 0.0287 0.0254  
 Earth -88424-08-31 06:13 J -30575200.36 -30575200.24 -30575200.10 0.0286 0.0244  
 Moon -88424-08-31 06:42 J -30575200.33 -30575200.22 -30575200.10 0.0286 0.0249 \*  
 Mars -88418-04-27 21:49 J -30573134.85 -30573134.59 -30573134.33 0.0279 0.0074  
 Moon -88411-01-28 02:37 J -30570667.59 -30570667.39 -30570667.17 0.0272 0.0138  
 Earth -88411-01-28 03:20 J -30570667.56 -30570667.36 -30570667.15 0.0272 0.0134 \*  
 Mercury -88411-10-01 22:32 J -30570420.58 -30570420.56 -30570420.53 0.0272 0.0265  
 Venus -88411-11-14 23:15 J -30570376.64 -30570376.53 -30570376.42 0.0272 0.0228  
 Mercury -88411-12-29 10:32 J -30570332.16 -30570332.06 -30570331.95 0.0272 0.0178  
 Moon -88410-02-08 14:08 J -30570291.15 -30570290.91 -30570290.68 0.0272 0.0025  
 Earth -88410-02-08 17:30 J -30570291.00 -30570290.77 -30570290.53 0.0272 0.0013 \*  
 Mercury -88410-03-27 22:47 J -30570243.69 -30570243.55 -30570243.42 0.0272 0.0089  
 Mercury -88410-06-24 11:01 J -30570155.18 -30570155.04 -30570154.90 0.0272 0.0003  
 Venus -88410-07-01 23:30 J -30570147.71 -30570147.52 -30570147.32 0.0272 0.0091  
 Mercury -88410-09-20 23:30 J -30570066.65 -30570066.52 -30570066.38 0.0272 0.0093  
 Mercury -88410-12-18 12:13 J -30569978.09 -30569977.99 -30569977.88 0.0272 0.0186  
 Earth -88409-02-20 09:20 J -30569914.30 -30569914.11 -30569913.91 0.0272 0.0160  
 Moon -88409-02-20 09:35 J -30569914.27 -30569914.10 -30569913.92 0.0272 0.0175 \*  
 Mars -88402-06-08 00:42 J -30567249.73 -30567249.47 -30567249.20 0.0281 0.0150  
 Earth -88397-07-26 10:32 J -30565374.23 -30565374.06 -30565373.89 0.0286 0.0212  
 Moon -88397-07-26 14:08 J -30565374.06 -30565373.91 -30565373.74 0.0286 0.0220 \*

Earth -88396-08-10 05:15 J -30564994.53 -30564994.28 -30564994.03 0.0287 0.0026  
 Moon -88396-08-10 07:11 J -30564994.46 -30564994.20 -30564993.94 0.0287 0.0028 \*  
 Mercury -88396-10-31 06:42 J -30564912.35 -30564912.22 -30564912.08 0.0287 0.0171  
 Venus -88396-12-16 17:15 J -30564865.99 -30564865.78 -30564865.56 0.0287 0.0032  
 Mercury -88395-01-28 03:06 J -30564823.54 -30564823.37 -30564823.21 0.0287 0.0041  
 Mercury -88395-04-26 22:47 J -30564734.71 -30564734.55 -30564734.39 0.0287 0.0087  
 Mercury -88395-07-24 18:13 J -30564645.85 -30564645.74 -30564645.63 0.0287 0.0211  
 Moon -88395-08-24 20:37 J -30564614.84 -30564614.64 -30564614.41 0.0287 0.0165  
 Earth -88395-08-24 22:18 J -30564614.77 -30564614.57 -30564614.36 0.0287 0.0160 \*  
 Mars -88388-06-13 20:23 J -30562129.91 -30562129.65 -30562129.38 0.0279 0.0074  
 Moon -88382-01-23 14:23 J -30560080.05 -30560079.90 -30560079.75 0.0273 0.0206  
 Earth -88382-01-23 14:37 J -30560080.04 -30560079.89 -30560079.71 0.0273 0.0195 \*  
 Earth -88381-02-04 05:01 J -30559703.52 -30559703.29 -30559703.05 0.0272 0.0051  
 Moon -88381-02-04 08:37 J -30559703.37 -30559703.14 -30559702.90 0.0272 0.0045 \*  
 Mercury -88381-05-17 13:39 J -30559600.02 -30559599.93 -30559599.83 0.0272 0.0195  
 Venus -88381-05-27 05:59 J -30559590.40 -30559590.25 -30559590.09 0.0272 0.0173  
 Mercury -88381-08-14 01:54 J -30559511.55 -30559511.42 -30559511.29 0.0272 0.0106  
 Mercury -88381-11-10 14:08 J -30559423.05 -30559422.91 -30559422.77 0.0272 0.0017  
 Venus -88380-01-11 06:42 J -30559361.39 -30559361.22 -30559361.04 0.0272 0.0146  
 Mercury -88380-02-07 02:37 J -30559334.52 -30559334.39 -30559334.25 0.0272 0.0075  
 Earth -88380-02-14 20:37 J -30559326.86 -30559326.64 -30559326.42 0.0272 0.0096  
 Moon -88380-02-14 20:23 J -30559326.86 -30559326.65 -30559326.41 0.0272 0.0111 \*  
 Mercury -88380-05-06 15:20 J -30559245.97 -30559245.86 -30559245.74 0.0272 0.0168  
 Mercury -88380-08-03 04:18 J -30559157.35 -30559157.32 -30559157.28 0.0272 0.0262  
 Moon -88379-02-26 10:47 J -30558950.13 -30558950.05 -30558949.96 0.0272 0.0253  
 Earth -88379-02-26 14:08 J -30558950.01 -30558949.91 -30558949.79 0.0272 0.0241 \*  
 Mars -88374-07-19 04:03 J -30556981.52 -30556981.33 -30556981.10 0.0279 0.0213  
 Earth -88368-07-20 08:37 J -30554788.15 -30554788.14 -30554788.10 0.0286 0.0285  
 Moon -88367-08-04 01:39 J -30554408.66 -30554408.43 -30554408.20 0.0287 0.0108  
 Earth -88367-08-04 03:06 J -30554408.60 -30554408.37 -30554408.13 0.0287 0.0104 \*

Mercury -88366-03-20 06:42 J -30554180.34 -30554180.22 -30554180.10 0.0287 0.0207

Mercury -88366-06-17 02:51 J -30554091.54 -30554091.38 -30554091.21 0.0287 0.0077

Venus -88366-06-29 00:42 J -30554079.69 -30554079.47 -30554079.26 0.0287 0.0022

Earth -88366-08-18 20:23 J -30554028.89 -30554028.65 -30554028.41 0.0287 0.0082

Moon -88366-08-18 22:18 J -30554028.80 -30554028.57 -30554028.34 0.0287 0.0086 \*

Mercury -88366-09-13 23:01 J -30554002.71 -30554002.54 -30554002.38 0.0287 0.0052

Mercury -88366-12-11 18:27 J -30553913.86 -30553913.73 -30553913.60 0.0287 0.0177

Earth -88365-09-01 10:18 J -30553649.16 -30553649.07 -30553648.96 0.0286 0.0262

Moon -88365-09-01 14:23 J -30553648.98 -30553648.90 -30553648.81 0.0286 0.0270 \*

Mars -88360-08-04 18:13 J -30551850.91 -30551850.74 -30551850.56 0.0280 0.0215

Mars -88358-07-31 12:56 J -30551125.11 -30551124.96 -30551124.79 0.0277 0.0222

Earth -88353-01-18 15:20 J -30549492.92 -30549492.86 -30549492.77 0.0273 0.0258

Moon -88353-01-18 16:03 J -30549492.85 -30549492.83 -30549492.79 0.0273 0.0270 \*

Moon -88352-01-29 02:23 J -30549116.61 -30549116.40 -30549116.18 0.0272 0.0117

Earth -88352-01-29 05:44 J -30549116.46 -30549116.26 -30549116.03 0.0272 0.0116 \*

Mercury -88352-10-04 14:51 J -30548867.95 -30548867.88 -30548867.81 0.0272 0.0228

Venus -88352-12-07 05:59 J -30548804.42 -30548804.25 -30548804.07 0.0272 0.0143

Mercury -88351-01-01 02:51 J -30548779.50 -30548779.38 -30548779.26 0.0272 0.0140

Earth -88351-02-09 20:08 J -30548739.89 -30548739.66 -30548739.42 0.0272 0.0031

Moon -88351-02-09 20:08 J -30548739.89 -30548739.66 -30548739.43 0.0272 0.0043 \*

Mercury -88351-03-30 15:06 J -30548691.01 -30548690.87 -30548690.73 0.0272 0.0051

Mercury -88351-06-27 03:20 J -30548602.50 -30548602.36 -30548602.21 0.0272 0.0040

Venus -88351-07-24 06:27 J -30548575.38 -30548575.23 -30548575.07 0.0272 0.0177

Mercury -88351-09-23 16:03 J -30548513.96 -30548513.83 -30548513.71 0.0272 0.0132

Mercury -88351-12-21 04:47 J -30548425.38 -30548425.30 -30548425.22 0.0272 0.0226

Earth -88350-02-21 12:13 J -30548363.17 -30548362.99 -30548362.80 0.0272 0.0176

Moon -88350-02-21 15:49 J -30548363.00 -30548362.84 -30548362.66 0.0272 0.0192 \*

Mars -88344-09-09 01:25 J -30545971.76 -30545971.44 -30545971.13 0.0280 0.0030

Earth -88338-07-28 14:37 J -30543823.07 -30543822.89 -30543822.69 0.0286 0.0191

Moon -88338-07-28 15:35 J -30543823.04 -30543822.85 -30543822.65 0.0286 0.0194 \*

Mercury -88337-08-06 04:03 J -30543448.40 -30543448.33 -30543448.25 0.0287 0.0256  
 Moon -88337-08-11 06:42 J -30543443.48 -30543443.22 -30543442.96 0.0287 0.0005  
 Earth -88337-08-11 09:06 J -30543443.37 -30543443.12 -30543442.86 0.0287 0.0007 \*  
 Mercury -88337-11-03 00:42 J -30543359.62 -30543359.47 -30543359.31 0.0287 0.0124  
 Venus -88336-01-08 02:37 J -30543293.60 -30543293.39 -30543293.18 0.0287 0.0064  
 Mercury -88336-01-30 20:51 J -30543270.80 -30543270.63 -30543270.46 0.0287 0.0005  
 Mercury -88336-04-29 16:32 J -30543181.96 -30543181.81 -30543181.66 0.0287 0.0132  
 Mercury -88336-07-27 11:30 J -30543093.08 -30543093.02 -30543092.93 0.0287 0.0256  
 Moon -88336-08-25 22:03 J -30543063.77 -30543063.58 -30543063.39 0.0287 0.0187  
 Earth -88336-08-26 01:54 J -30543063.62 -30543063.42 -30543063.22 0.0287 0.0178 \*  
 Mars -88330-09-21 12:42 J -30540846.23 -30540845.97 -30540845.71 0.0280 0.0069  
 Earth -88323-01-24 17:15 J -30538528.96 -30538528.78 -30538528.60 0.0273 0.0175  
 Moon -88323-01-24 20:23 J -30538528.81 -30538528.65 -30538528.47 0.0273 0.0185 \*  
 Earth -88322-02-05 07:54 J -30538152.41 -30538152.17 -30538151.94 0.0272 0.0032  
 Moon -88322-02-05 08:51 J -30538152.37 -30538152.13 -30538151.88 0.0272 0.0025 \*  
 Mercury -88322-02-21 17:59 J -30538135.80 -30538135.75 -30538135.69 0.0272 0.0246  
 Mercury -88322-05-21 05:59 J -30538047.36 -30538047.25 -30538047.13 0.0272 0.0158  
 Venus -88322-06-19 12:56 J -30538018.15 -30538017.96 -30538017.76 0.0272 0.0088  
 Mercury -88322-08-17 18:13 J -30537958.88 -30537958.74 -30537958.60 0.0272 0.0069  
 Mercury -88322-11-14 06:27 J -30537870.37 -30537870.23 -30537870.08 0.0272 0.0023  
 Venus -88321-02-03 13:39 J -30537789.03 -30537788.93 -30537788.82 0.0272 0.0232  
 Mercury -88321-02-10 19:11 J -30537781.83 -30537781.70 -30537781.57 0.0272 0.0114  
 Moon -88321-02-16 19:39 J -30537775.88 -30537775.68 -30537775.46 0.0272 0.0131  
 Earth -88321-02-16 23:30 J -30537775.73 -30537775.52 -30537775.30 0.0272 0.0114 \*  
 Mercury -88321-05-09 07:54 J -30537693.26 -30537693.17 -30537693.08 0.0272 0.0208  
 Moon -88320-02-27 16:03 J -30537398.86 -30537398.83 -30537398.78 0.0272 0.0268  
 Earth -88320-02-27 17:30 J -30537398.84 -30537398.77 -30537398.68 0.0272 0.0257 \*  
 Mars -88314-11-02 03:49 J -30534960.60 -30534960.34 -30534960.08 0.0281 0.0162  
 Earth -88309-07-21 14:51 J -30533236.97 -30533236.88 -30533236.77 0.0286 0.0263  
 Moon -88309-07-21 14:51 J -30533236.95 -30533236.88 -30533236.79 0.0286 0.0268 \*

Earth -88308-08-05 09:20 J -30532857.35 -30532857.11 -30532856.87 0.0287 0.0081  
 Moon -88308-08-05 11:59 J -30532857.23 -30532857.00 -30532856.76 0.0287 0.0083 \*  
 Venus -88308-12-03 11:30 J -30532737.08 -30532737.02 -30532736.95 0.0287 0.0274  
 Mercury -88307-03-23 01:11 J -30532627.59 -30532627.45 -30532627.30 0.0287 0.0157  
 Mercury -88307-06-19 21:35 J -30532538.77 -30532538.60 -30532538.43 0.0287 0.0027  
 Venus -88307-07-21 11:15 J -30532507.22 -30532507.03 -30532506.83 0.0287 0.0123  
 Earth -88307-08-20 02:23 J -30532477.63 -30532477.40 -30532477.16 0.0287 0.0104  
 Moon -88307-08-20 06:13 J -30532477.47 -30532477.24 -30532477.00 0.0287 0.0107 \*  
 Mercury -88307-09-16 17:15 J -30532449.93 -30532449.78 -30532449.62 0.0287 0.0101  
 Mercury -88307-12-14 12:27 J -30532361.07 -30532360.98 -30532360.87 0.0287 0.0225  
 Earth -88306-09-03 16:32 J -30532097.86 -30532097.81 -30532097.76 0.0287 0.0280  
 Mars -88300-11-07 08:08 J -30529841.42 -30529841.16 -30529840.90 0.0278 0.0083  
 Moon -88294-01-19 16:18 J -30527941.91 -30527941.82 -30527941.72 0.0273 0.0249  
 Earth -88294-01-19 19:54 J -30527941.78 -30527941.67 -30527941.55 0.0273 0.0238 \*  
 Moon -88293-01-31 08:37 J -30527565.35 -30527565.14 -30527564.92 0.0272 0.0096  
 Earth -88293-01-31 10:03 J -30527565.29 -30527565.08 -30527564.85 0.0272 0.0096 \*  
 Mercury -88293-10-07 07:25 J -30527315.29 -30527315.19 -30527315.09 0.0272 0.0189  
 Venus -88293-12-29 13:54 J -30527232.12 -30527231.92 -30527231.71 0.0272 0.0054  
 Mercury -88292-01-03 19:25 J -30527226.82 -30527226.69 -30527226.56 0.0272 0.0101  
 Earth -88292-02-11 00:42 J -30527188.71 -30527188.47 -30527188.24 0.0272 0.0049  
 Moon -88292-02-11 03:49 J -30527188.56 -30527188.34 -30527188.11 0.0272 0.0064 \*  
 Mercury -88292-04-02 07:39 J -30527138.32 -30527138.18 -30527138.04 0.0272 0.0011  
 Mercury -88292-06-29 20:08 J -30527049.80 -30527049.66 -30527049.52 0.0272 0.0081  
 Venus -88292-08-15 14:23 J -30527002.93 -30527002.90 -30527002.85 0.0272 0.0266  
 Mercury -88292-09-26 08:37 J -30526961.24 -30526961.14 -30526961.02 0.0272 0.0175  
 Mercury -88292-12-23 21:35 J -30526872.61 -30526872.60 -30526872.57 0.0272 0.0269  
 Earth -88291-02-22 17:01 J -30526811.96 -30526811.79 -30526811.63 0.0272 0.0194  
 Moon -88291-02-22 17:59 J -30526811.90 -30526811.75 -30526811.58 0.0272 0.0206 \*  
 Mars -88286-12-12 02:37 J -30524693.58 -30524693.39 -30524693.16 0.0279 0.0208  
 Moon -88279-07-29 17:59 J -30522271.95 -30522271.75 -30522271.53 0.0286 0.0169

Earth -88279-07-29 21:20 J -30522271.80 -30522271.61 -30522271.39 0.0286 0.0169 \*  
 Venus -88278-06-15 13:25 J -30521951.05 -30521950.94 -30521950.80 0.0287 0.0233  
 Mercury -88278-08-09 23:01 J -30521895.66 -30521895.54 -30521895.42 0.0287 0.0205  
 Moon -88278-08-13 12:27 J -30521892.23 -30521891.98 -30521891.73 0.0287 0.0019  
 Earth -88278-08-13 15:49 J -30521892.09 -30521891.84 -30521891.59 0.0287 0.0016 \*  
 Mercury -88278-11-06 19:25 J -30521806.85 -30521806.69 -30521806.53 0.0287 0.0073  
 Venus -88277-01-31 13:25 J -30521721.11 -30521720.94 -30521720.76 0.0287 0.0165  
 Mercury -88277-02-03 15:20 J -30521718.02 -30521717.86 -30521717.69 0.0287 0.0055  
 Mercury -88277-05-02 10:47 J -30521629.17 -30521629.05 -30521628.92 0.0287 0.0181  
 Moon -88277-08-27 07:11 J -30521512.36 -30521512.20 -30521512.03 0.0287 0.0207  
 Earth -88277-08-27 07:54 J -30521512.35 -30521512.17 -30521511.98 0.0287 0.0198 \*  
 Mars -88272-12-29 07:54 J -30519562.33 -30519562.17 -30519561.97 0.0281 0.0211  
 Mars -88270-12-25 07:39 J -30518836.32 -30518836.18 -30518836.02 0.0278 0.0230  
 Earth -88264-01-25 20:51 J -30516977.82 -30516977.63 -30516977.43 0.0273 0.0155  
 Moon -88264-01-25 22:47 J -30516977.74 -30516977.55 -30516977.35 0.0273 0.0160 \*  
 Moon -88263-02-06 08:51 J -30516601.37 -30516601.13 -30516600.88 0.0272 0.0004  
 Earth -88263-02-06 11:59 J -30516601.24 -30516601.00 -30516600.77 0.0272 0.0012 \*  
 Mercury -88263-02-24 10:18 J -30516583.15 -30516583.07 -30516582.97 0.0272 0.0209  
 Mercury -88263-05-23 22:32 J -30516494.69 -30516494.56 -30516494.43 0.0272 0.0119  
 Venus -88263-07-11 20:51 J -30516445.84 -30516445.63 -30516445.43 0.0272 0.0006  
 Mercury -88263-08-20 10:47 J -30516406.19 -30516406.05 -30516405.91 0.0272 0.0029  
 Mercury -88263-11-16 23:15 J -30516317.67 -30516317.53 -30516317.39 0.0272 0.0062  
 Mercury -88262-02-13 11:59 J -30516229.12 -30516229.00 -30516228.88 0.0272 0.0156  
 Moon -88262-02-18 02:23 J -30516224.59 -30516224.40 -30516224.20 0.0272 0.0147  
 Earth -88262-02-18 03:49 J -30516224.54 -30516224.34 -30516224.13 0.0272 0.0133 \*  
 Mercury -88262-05-13 00:42 J -30516140.52 -30516140.47 -30516140.41 0.0272 0.0250  
 Mars -88255-02-03 13:54 J -30513682.24 -30513681.92 -30513681.60 0.0279 0.0013  
 Earth -88250-07-24 00:13 J -30511685.62 -30511685.49 -30511685.34 0.0286 0.0238  
 Moon -88250-07-24 04:03 J -30511685.45 -30511685.33 -30511685.18 0.0286 0.0241 \*  
 Earth -88249-08-06 18:27 J -30511305.98 -30511305.73 -30511305.48 0.0287 0.0057



Moon -88249-08-06 21:49 J -30511305.84 -30511305.59 -30511305.33 0.0287 0.0058 \*  
 Venus -88249-12-25 23:59 J -30511164.66 -30511164.50 -30511164.32 0.0287 0.0169  
 Mercury -88249-12-26 23:59 J -30511163.59 -30511163.50 -30511163.39 0.0287 0.0234  
 Mercury -88248-03-25 20:37 J -30511074.80 -30511074.64 -30511074.48 0.0287 0.0102  
 Mercury -88248-06-22 16:47 J -30510985.97 -30510985.80 -30510985.63 0.0287 0.0028  
 Venus -88248-08-12 23:30 J -30510934.64 -30510934.52 -30510934.38 0.0287 0.0228  
 Earth -88248-08-21 11:15 J -30510926.25 -30510926.03 -30510925.79 0.0287 0.0126  
 Moon -88248-08-21 11:59 J -30510926.23 -30510926.00 -30510925.76 0.0287 0.0131 \*  
 Mercury -88248-09-19 12:13 J -30510897.13 -30510896.99 -30510896.85 0.0287 0.0154  
 Mercury -88248-12-17 07:25 J -30510808.23 -30510808.19 -30510808.15 0.0287 0.0277  
 Mars -88241-02-15 06:42 J -30508557.48 -30508557.22 -30508556.95 0.0280 0.0057  
 Moon -88235-01-20 23:30 J -30506390.64 -30506390.52 -30506390.39 0.0273 0.0226  
 Earth -88235-01-21 01:25 J -30506390.58 -30506390.44 -30506390.30 0.0273 0.0217 \*  
 Earth -88234-02-01 15:35 J -30506014.07 -30506013.85 -30506013.62 0.0272 0.0075  
 Moon -88234-02-01 18:27 J -30506013.96 -30506013.73 -30506013.51 0.0272 0.0071 \*  
 Mercury -88234-07-14 12:13 J -30505851.06 -30505850.99 -30505850.92 0.0272 0.0236  
 Mercury -88234-10-11 00:13 J -30505762.61 -30505762.49 -30505762.37 0.0272 0.0148  
 Mercury -88233-01-07 12:13 J -30505674.12 -30505673.99 -30505673.85 0.0272 0.0060  
 Venus -88233-01-21 22:47 J -30505659.76 -30505659.55 -30505659.35 0.0272 0.0038  
 Earth -88233-02-13 06:27 J -30505637.46 -30505637.23 -30505637.00 0.0272 0.0069  
 Moon -88233-02-13 08:23 J -30505637.37 -30505637.15 -30505636.90 0.0272 0.0084 \*  
 Mercury -88233-04-05 00:42 J -30505585.61 -30505585.47 -30505585.33 0.0272 0.0032  
 Mercury -88233-07-02 13:11 J -30505497.08 -30505496.95 -30505496.82 0.0272 0.0124  
 Mercury -88233-09-29 01:54 J -30505408.50 -30505408.42 -30505408.33 0.0272 0.0218  
 Moon -88232-02-23 19:54 J -30505260.80 -30505260.67 -30505260.52 0.0272 0.0221  
 Earth -88232-02-23 23:01 J -30505260.68 -30505260.54 -30505260.38 0.0272 0.0212 \*  
 Mars -88225-03-27 09:06 J -30502672.36 -30502672.12 -30502671.86 0.0281 0.0170  
 Moon -88220-07-31 04:18 J -30500720.53 -30500720.32 -30500720.10 0.0286 0.0142  
 Earth -88220-07-31 06:56 J -30500720.42 -30500720.21 -30500719.99 0.0286 0.0144 \*  
 Mercury -88219-05-15 21:49 J -30500431.62 -30500431.59 -30500431.56 0.0287 0.0282

Venus -88219-07-08 02:23 J -30500378.59 -30500378.40 -30500378.21 0.0287 0.0127  
 Mercury -88219-08-12 18:27 J -30500342.88 -30500342.73 -30500342.59 0.0287 0.0149  
 Earth -88219-08-15 00:56 J -30500340.71 -30500340.46 -30500340.21 0.0287 0.0040  
 Moon -88219-08-15 01:11 J -30500340.69 -30500340.45 -30500340.21 0.0287 0.0045 \*  
 Mercury -88219-11-09 14:37 J -30500254.06 -30500253.89 -30500253.72 0.0287 0.0019  
 Mercury -88218-02-06 10:18 J -30500165.22 -30500165.07 -30500164.91 0.0287 0.0109  
 Venus -88218-02-23 01:39 J -30500148.49 -30500148.43 -30500148.35 0.0287 0.0270  
 Mercury -88218-05-06 05:44 J -30500076.35 -30500076.26 -30500076.16 0.0287 0.0233  
 Earth -88218-08-29 16:18 J -30499960.96 -30499960.82 -30499960.64 0.0287 0.0220  
 Moon -88218-08-29 19:39 J -30499960.82 -30499960.68 -30499960.53 0.0287 0.0230 \*  
 Mars -88211-04-03 02:23 J -30497552.65 -30497552.40 -30497552.14 0.0279 0.0091  
 Earth -88206-01-16 10:47 J -30495803.07 -30495803.05 -30495803.03 0.0274 0.0272  
 Moon -88205-01-27 23:15 J -30495426.73 -30495426.53 -30495426.31 0.0273 0.0134  
 Earth -88205-01-28 02:08 J -30495426.61 -30495426.41 -30495426.20 0.0273 0.0134 \*  
 Mercury -88205-11-30 15:06 J -30495118.91 -30495118.87 -30495118.82 0.0273 0.0256  
 Venus -88205-12-17 04:47 J -30495102.41 -30495102.30 -30495102.19 0.0273 0.0231  
 Moon -88204-02-07 14:37 J -30495050.12 -30495049.89 -30495049.65 0.0273 0.0020  
 Earth -88204-02-07 17:30 J -30495050.01 -30495049.77 -30495049.53 0.0273 0.0010 \*  
 Mercury -88204-02-27 03:20 J -30495030.47 -30495030.36 -30495030.25 0.0273 0.0168  
 Mercury -88204-05-26 15:20 J -30494941.99 -30494941.86 -30494941.72 0.0273 0.0078  
 Venus -88204-08-03 05:30 J -30494873.47 -30494873.27 -30494873.08 0.0272 0.0091  
 Mercury -88204-08-23 03:49 J -30494853.49 -30494853.34 -30494853.20 0.0272 0.0015  
 Mercury -88204-11-19 16:18 J -30494764.95 -30494764.82 -30494764.69 0.0272 0.0105  
 Mercury -88203-02-16 04:47 J -30494676.39 -30494676.30 -30494676.19 0.0272 0.0200  
 Earth -88203-02-19 09:35 J -30494673.29 -30494673.10 -30494672.90 0.0272 0.0153  
 Moon -88203-02-19 11:59 J -30494673.17 -30494673.00 -30494672.80 0.0272 0.0167 \*  
 Mars -88197-05-07 23:01 J -30492403.77 -30492403.54 -30492403.29 0.0278 0.0185  
 Earth -88191-07-25 11:59 J -30490134.16 -30490134.00 -30490133.82 0.0286 0.0213  
 Moon -88191-07-25 13:54 J -30490134.08 -30490133.92 -30490133.73 0.0286 0.0213 \*  
 Moon -88190-08-09 05:15 J -30489754.54 -30489754.28 -30489754.02 0.0287 0.0029

Earth -88190-08-09 05:59 J -30489754.50 -30489754.25 -30489753.99 0.0287 0.0033 \*  
 Mercury -88190-12-30 20:23 J -30489610.79 -30489610.65 -30489610.52 0.0287 0.0174  
 Venus -88189-01-18 14:08 J -30489592.12 -30489591.91 -30489591.69 0.0287 0.0059  
 Mercury -88189-03-28 16:32 J -30489521.98 -30489521.81 -30489521.64 0.0287 0.0043  
 Mercury -88189-06-25 12:27 J -30489433.14 -30489432.98 -30489432.82 0.0287 0.0085  
 Moon -88189-08-22 19:25 J -30489374.90 -30489374.69 -30489374.47 0.0287 0.0157  
 Earth -88189-08-22 22:47 J -30489374.76 -30489374.55 -30489374.33 0.0287 0.0149 \*  
 Mercury -88189-09-22 07:54 J -30489344.28 -30489344.17 -30489344.06 0.0287 0.0210  
 Mars -88183-05-25 11:15 J -30487273.22 -30487273.03 -30487272.83 0.0281 0.0194  
 Mars -88181-05-20 07:54 J -30486547.30 -30486547.17 -30486547.05 0.0278 0.0246  
 Earth -88176-01-22 07:39 J -30484839.33 -30484839.18 -30484839.00 0.0273 0.0196  
 Moon -88176-01-22 10:32 J -30484839.22 -30484839.06 -30484838.91 0.0273 0.0201 \*  
 Earth -88175-02-02 22:32 J -30484462.79 -30484462.56 -30484462.33 0.0272 0.0054  
 Moon -88175-02-03 01:25 J -30484462.67 -30484462.44 -30484462.20 0.0272 0.0048 \*  
 Venus -88175-06-29 07:54 J -30484316.32 -30484316.17 -30484316.02 0.0272 0.0189  
 Mercury -88175-07-17 05:15 J -30484298.38 -30484298.28 -30484298.18 0.0272 0.0194  
 Mercury -88175-10-13 17:15 J -30484209.91 -30484209.78 -30484209.65 0.0272 0.0105  
 Mercury -88174-01-10 05:30 J -30484121.41 -30484121.27 -30484121.13 0.0272 0.0015  
 Venus -88174-02-13 08:08 J -30484087.33 -30484087.16 -30484086.97 0.0272 0.0132  
 Moon -88174-02-14 11:30 J -30484086.24 -30484086.02 -30484085.79 0.0272 0.0104  
 Earth -88174-02-14 13:25 J -30484086.15 -30484085.94 -30484085.70 0.0272 0.0091 \*  
 Mercury -88174-04-08 17:59 J -30484032.89 -30484032.75 -30484032.61 0.0272 0.0077  
 Mercury -88174-07-06 06:27 J -30483944.34 -30483944.23 -30483944.11 0.0272 0.0170  
 Mercury -88174-10-02 19:25 J -30483855.72 -30483855.69 -30483855.66 0.0272 0.0264  
 Moon -88173-02-26 04:03 J -30483709.44 -30483709.33 -30483709.22 0.0272 0.0240  
 Earth -88173-02-26 06:27 J -30483709.34 -30483709.23 -30483709.09 0.0272 0.0232 \*  
 Mars -88167-06-30 02:51 J -30481393.69 -30481393.38 -30481393.05 0.0279 0.0005  
 Earth -88161-08-01 19:25 J -30479168.91 -30479168.69 -30479168.45 0.0286 0.0118  
 Moon -88161-08-01 21:20 J -30479168.82 -30479168.61 -30479168.37 0.0286 0.0114 \*  
 Mercury -88160-05-18 17:59 J -30478878.85 -30478878.75 -30478878.63 0.0287 0.0221

Venus -88160-07-30 17:01 J -30478806.01 -30478805.79 -30478805.58 0.0287 0.0016  
 Mercury -88160-08-15 14:37 J -30478790.05 -30478789.89 -30478789.73 0.0287 0.0089  
 Earth -88160-08-16 13:11 J -30478789.19 -30478788.95 -30478788.70 0.0287 0.0066  
 Moon -88160-08-16 17:01 J -30478789.03 -30478788.79 -30478788.54 0.0287 0.0072 \*  
 Mercury -88160-11-12 10:32 J -30478701.22 -30478701.06 -30478700.89 0.0287 0.0041  
 Mercury -88159-02-09 06:13 J -30478612.37 -30478612.24 -30478612.10 0.0286 0.0166  
 Earth -88159-08-31 04:32 J -30478409.44 -30478409.31 -30478409.18 0.0286 0.0242  
 Moon -88159-08-31 07:25 J -30478409.30 -30478409.19 -30478409.06 0.0286 0.0251 \*  
 Mars -88153-07-11 02:37 J -30476268.65 -30476268.39 -30476268.12 0.0280 0.0047  
 Moon -88147-01-17 14:37 J -30474251.95 -30474251.89 -30474251.81 0.0274 0.0261  
 Earth -88147-01-17 16:32 J -30474251.89 -30474251.81 -30474251.71 0.0274 0.0251 \*  
 Moon -88146-01-29 05:15 J -30473875.49 -30473875.28 -30473875.06 0.0273 0.0110  
 Earth -88146-01-29 08:08 J -30473875.37 -30473875.16 -30473874.94 0.0273 0.0112 \*  
 Mercury -88146-12-04 08:08 J -30473566.24 -30473566.16 -30473566.08 0.0273 0.0215  
 Venus -88145-01-09 13:54 J -30473530.10 -30473529.92 -30473529.74 0.0273 0.0139  
 Earth -88145-02-09 23:44 J -30473498.75 -30473498.51 -30473498.28 0.0273 0.0031  
 Moon -88145-02-10 01:11 J -30473498.68 -30473498.45 -30473498.22 0.0273 0.0044 \*  
 Mercury -88145-03-01 20:08 J -30473477.78 -30473477.66 -30473477.53 0.0273 0.0126  
 Mercury -88145-05-29 08:23 J -30473389.29 -30473389.15 -30473389.01 0.0273 0.0036  
 Venus -88145-08-25 14:37 J -30473301.04 -30473300.89 -30473300.73 0.0273 0.0184  
 Mercury -88145-08-25 20:51 J -30473300.77 -30473300.63 -30473300.49 0.0273 0.0056 \*  
 Mercury -88145-11-22 09:20 J -30473212.22 -30473212.11 -30473211.98 0.0273 0.0150  
 Mercury -88144-02-18 22:18 J -30473123.63 -30473123.57 -30473123.51 0.0273 0.0244  
 Earth -88144-02-20 16:18 J -30473122.00 -30473121.82 -30473121.63 0.0273 0.0173  
 Moon -88144-02-20 19:25 J -30473121.86 -30473121.69 -30473121.51 0.0273 0.0186 \*  
 Mars -88137-08-22 10:47 J -30470382.26 -30470382.05 -30470381.81 0.0280 0.0197  
 Moon -88132-07-26 23:01 J -30468582.73 -30468582.54 -30468582.33 0.0286 0.0184  
 Earth -88132-07-27 01:39 J -30468582.61 -30468582.43 -30468582.22 0.0286 0.0188 \*  
 Moon -88131-08-10 15:49 J -30468203.09 -30468202.84 -30468202.58 0.0287 0.0005  
 Earth -88131-08-10 19:54 J -30468202.92 -30468202.67 -30468202.41 0.0287 0.0007 \*

Mercury -88131-10-05 20:08 J -30468146.74 -30468146.66 -30468146.57 0.0287 0.0244

Mercury -88130-01-02 16:47 J -30468057.96 -30468057.80 -30468057.64 0.0287 0.0112

Venus -88130-02-10 05:30 J -30468019.48 -30468019.27 -30468019.06 0.0287 0.0056

Mercury -88130-04-01 12:56 J -30467969.13 -30467968.96 -30467968.79 0.0287 0.0018

Mercury -88130-06-29 08:37 J -30467880.28 -30467880.14 -30467880.00 0.0287 0.0145

Moon -88130-08-25 09:06 J -30467823.29 -30467823.12 -30467822.92 0.0287 0.0183

Earth -88130-08-25 11:59 J -30467823.19 -30467823.00 -30467822.79 0.0287 0.0174 \*

Mercury -88130-09-26 03:35 J -30467791.39 -30467791.35 -30467791.28 0.0287 0.0269

Mars -88123-08-28 10:03 J -30465263.33 -30465263.08 -30465262.84 0.0279 0.0111

Earth -88117-01-24 15:49 J -30463288.02 -30463287.84 -30463287.65 0.0273 0.0173

Moon -88117-01-24 19:11 J -30463287.88 -30463287.70 -30463287.52 0.0273 0.0178 \*

Moon -88116-02-04 05:01 J -30462911.53 -30462911.29 -30462911.04 0.0272 0.0022

Earth -88116-02-04 06:42 J -30462911.46 -30462911.22 -30462910.99 0.0272 0.0032 \*

Mercury -88116-04-22 10:18 J -30462834.13 -30462834.07 -30462833.99 0.0272 0.0239

Mercury -88116-07-19 22:32 J -30462745.68 -30462745.56 -30462745.45 0.0272 0.0150

Venus -88116-07-21 17:59 J -30462743.94 -30462743.75 -30462743.55 0.0272 0.0093

Mercury -88116-10-16 10:32 J -30462657.19 -30462657.06 -30462656.92 0.0272 0.0061

Mercury -88115-01-12 23:01 J -30462568.68 -30462568.54 -30462568.40 0.0272 0.0031

Moon -88115-02-15 18:27 J -30462534.93 -30462534.73 -30462534.52 0.0272 0.0126

Earth -88115-02-15 21:49 J -30462534.80 -30462534.59 -30462534.36 0.0272 0.0111 \*

Venus -88115-03-07 18:42 J -30462514.83 -30462514.72 -30462514.61 0.0272 0.0228

Mercury -88115-04-11 11:30 J -30462480.15 -30462480.02 -30462479.89 0.0272 0.0123

Mercury -88115-07-09 00:13 J -30462391.57 -30462391.49 -30462391.40 0.0272 0.0217

Earth -88114-02-27 15:20 J -30462157.95 -30462157.86 -30462157.77 0.0272 0.0251

Moon -88114-02-27 16:47 J -30462157.88 -30462157.80 -30462157.73 0.0272 0.0257 \*

Mars -88109-10-01 20:37 J -30460114.89 -30460114.64 -30460114.38 0.0278 0.0170

Earth -88103-07-20 15:35 J -30457996.92 -30457996.85 -30457996.75 0.0286 0.0267

Moon -88103-07-20 18:27 J -30457996.80 -30457996.73 -30457996.62 0.0286 0.0265 \*

Earth -88102-08-04 09:49 J -30457617.33 -30457617.09 -30457616.85 0.0286 0.0091

Moon -88102-08-04 13:39 J -30457617.17 -30457616.93 -30457616.69 0.0286 0.0084 \*

Mercury -88101-05-21 14:51 J -30457326.02 -30457325.88 -30457325.74 0.0287 0.0158  
 Earth -88101-08-18 03:20 J -30457237.59 -30457237.36 -30457237.11 0.0287 0.0091  
 Moon -88101-08-18 05:30 J -30457237.51 -30457237.27 -30457237.02 0.0287 0.0100 \*  
 Mercury -88101-08-18 11:15 J -30457237.20 -30457237.03 -30457236.86 0.0287 0.0028 \*  
 Venus -88101-08-22 08:23 J -30457233.35 -30457233.15 -30457232.94 0.0287 0.0100  
 Mercury -88101-11-15 06:56 J -30457148.36 -30457148.21 -30457148.05 0.0286 0.0101  
 Mercury -88100-02-12 02:23 J -30457059.50 -30457059.40 -30457059.30 0.0286 0.0226  
 Moon -88100-09-01 17:01 J -30456857.84 -30456857.79 -30456857.71 0.0286 0.0276  
 Earth -88100-09-01 17:59 J -30456857.82 -30456857.75 -30456857.64 0.0286 0.0266 \*  
 Mars -88095-10-19 08:08 J -30454984.36 -30454984.16 -30454983.95 0.0281 0.0182  
 Mars -88093-10-14 06:56 J -30454258.30 -30454258.21 -30454258.10 0.0278 0.0258  
 Moon -88088-01-18 19:54 J -30452700.77 -30452700.67 -30452700.55 0.0274 0.0241  
 Earth -88088-01-18 23:30 J -30452700.64 -30452700.52 -30452700.39 0.0274 0.0229 \*  
 Earth -88087-01-30 14:51 J -30452324.10 -30452323.88 -30452323.65 0.0273 0.0090  
 Moon -88087-01-30 16:03 J -30452324.04 -30452323.83 -30452323.61 0.0273 0.0086 \*  
 Mercury -88087-09-09 13:11 J -30452101.98 -30452101.95 -30452101.91 0.0273 0.0261  
 Mercury -88087-12-07 01:11 J -30452013.56 -30452013.45 -30452013.34 0.0273 0.0173  
 Venus -88086-01-31 23:30 J -30451957.73 -30451957.52 -30451957.32 0.0273 0.0046  
 Earth -88086-02-11 06:27 J -30451947.46 -30451947.23 -30451946.99 0.0273 0.0053  
 Moon -88086-02-11 10:18 J -30451947.30 -30451947.07 -30451946.84 0.0273 0.0067 \*  
 Mercury -88086-03-05 13:11 J -30451925.08 -30451924.95 -30451924.81 0.0273 0.0083  
 Mercury -88086-06-02 01:39 J -30451836.57 -30451836.43 -30451836.29 0.0273 0.0009  
 Mercury -88086-08-29 14:08 J -30451748.04 -30451747.91 -30451747.78 0.0273 0.0101  
 Mercury -88086-11-26 02:37 J -30451659.48 -30451659.39 -30451659.28 0.0273 0.0196  
 Moon -88085-02-22 23:15 J -30451570.69 -30451570.53 -30451570.37 0.0273 0.0204  
 Earth -88085-02-22 23:30 J -30451570.67 -30451570.52 -30451570.34 0.0273 0.0194 \*  
 Mars -88079-11-25 08:23 J -30449103.46 -30449103.15 -30449102.83 0.0279 0.0029  
 Moon -88073-07-28 13:54 J -30447031.12 -30447030.92 -30447030.70 0.0286 0.0157  
 Earth -88073-07-28 17:15 J -30447030.98 -30447030.78 -30447030.56 0.0286 0.0161 \*  
 Venus -88072-07-17 22:03 J -30446676.71 -30446676.58 -30446676.45 0.0287 0.0225

Moon -88072-08-12 10:18 J -30446651.32 -30446651.07 -30446650.83 0.0287 0.0028  
 Earth -88072-08-12 11:30 J -30446651.27 -30446651.02 -30446650.76 0.0287 0.0021 \*  
 Mercury -88072-10-08 17:15 J -30446593.91 -30446593.78 -30446593.64 0.0287 0.0178  
 Mercury -88071-01-05 13:39 J -30446505.09 -30446504.93 -30446504.76 0.0287 0.0047  
 Venus -88071-03-04 21:35 J -30446446.76 -30446446.60 -30446446.42 0.0287 0.0174  
 Mercury -88071-04-04 09:35 J -30446416.26 -30446416.10 -30446415.93 0.0287 0.0082  
 Mercury -88071-07-02 05:01 J -30446327.40 -30446327.29 -30446327.17 0.0287 0.0208  
 Earth -88071-08-27 03:20 J -30446271.53 -30446271.36 -30446271.16 0.0287 0.0199  
 Moon -88071-08-27 05:01 J -30446271.45 -30446271.29 -30446271.12 0.0287 0.0210 \*  
 Mars -88065-12-05 16:32 J -30443979.08 -30443978.81 -30443978.54 0.0280 0.0024  
 Moon -88058-01-25 23:30 J -30441736.71 -30441736.52 -30441736.31 0.0273 0.0153  
 Earth -88058-01-25 23:59 J -30441736.69 -30441736.50 -30441736.30 0.0273 0.0151 \*  
 Moon -88057-02-06 11:15 J -30441360.26 -30441360.03 -30441359.79 0.0272 0.0003  
 Earth -88057-02-06 14:51 J -30441360.12 -30441359.88 -30441359.64 0.0272 0.0010 \*  
 Mercury -88057-04-25 03:35 J -30441281.44 -30441281.35 -30441281.24 0.0272 0.0195  
 Mercury -88057-07-22 15:49 J -30441192.97 -30441192.84 -30441192.71 0.0272 0.0105  
 Venus -88057-08-13 04:18 J -30441171.52 -30441171.32 -30441171.11 0.0272 0.0005  
 Mercury -88057-10-19 04:03 J -30441104.47 -30441104.33 -30441104.19 0.0272 0.0015  
 Mercury -88056-01-15 16:32 J -30441015.95 -30441015.81 -30441015.68 0.0272 0.0077  
 Earth -88056-02-17 06:13 J -30440983.44 -30440983.24 -30440983.02 0.0272 0.0132  
 Moon -88056-02-17 06:13 J -30440983.42 -30440983.24 -30440983.03 0.0272 0.0148 \*  
 Mercury -88056-04-14 05:01 J -30440927.40 -30440927.29 -30440927.17 0.0272 0.0171  
 Mercury -88056-07-11 17:59 J -30440838.78 -30440838.75 -30440838.72 0.0272 0.0265  
 Earth -88055-03-01 00:13 J -30440606.52 -30440606.49 -30440606.46 0.0273 0.0270  
 Mars -88048-01-16 11:59 J -30438093.19 -30438093.00 -30438092.78 0.0281 0.0213  
 Earth -88044-07-22 07:25 J -30436445.32 -30436445.19 -30436445.04 0.0286 0.0240  
 Moon -88044-07-22 10:47 J -30436445.18 -30436445.05 -30436444.90 0.0286 0.0239 \*  
 Earth -88043-08-06 01:39 J -30436065.68 -30436065.43 -30436065.19 0.0286 0.0063  
 Moon -88043-08-06 01:54 J -30436065.67 -30436065.42 -30436065.16 0.0286 0.0056 \*  
 Venus -88042-01-28 00:56 J -30435890.62 -30435890.46 -30435890.29 0.0286 0.0181

Mercury -88042-02-25 15:20 J -30435861.97 -30435861.86 -30435861.76 0.0286 0.0225

Mercury -88042-05-25 11:44 J -30435773.17 -30435773.01 -30435772.84 0.0286 0.0093

Moon -88042-08-20 16:03 J -30435686.06 -30435685.83 -30435685.59 0.0286 0.0128

Earth -88042-08-20 18:42 J -30435685.94 -30435685.72 -30435685.48 0.0286 0.0117 \*

Mercury -88042-08-22 07:54 J -30435684.33 -30435684.17 -30435684.00 0.0286 0.0037

Venus -88042-09-15 00:42 J -30435660.61 -30435660.47 -30435660.33 0.0286 0.0217

Mercury -88042-11-19 03:35 J -30435595.48 -30435595.35 -30435595.21 0.0286 0.0164

Mars -88034-01-22 07:25 J -30432974.43 -30432974.19 -30432973.94 0.0279 0.0125

Moon -88029-01-21 06:13 J -30431149.37 -30431149.24 -30431149.10 0.0274 0.0217

Earth -88029-01-21 06:27 J -30431149.37 -30431149.23 -30431149.07 0.0274 0.0208 \*

Earth -88028-01-31 22:03 J -30430772.81 -30430772.58 -30430772.35 0.0273 0.0069

Moon -88028-02-01 01:25 J -30430772.66 -30430772.44 -30430772.20 0.0273 0.0062 \*

Mercury -88028-09-12 06:13 J -30430549.32 -30430549.24 -30430549.16 0.0273 0.0218

Mercury -88028-12-09 18:13 J -30430460.86 -30430460.74 -30430460.61 0.0273 0.0130

Earth -88027-02-12 13:54 J -30430396.15 -30430395.92 -30430395.69 0.0273 0.0074

Moon -88027-02-12 13:54 J -30430396.15 -30430395.92 -30430395.68 0.0273 0.0089 \*

Venus -88027-02-23 09:06 J -30430385.32 -30430385.12 -30430384.92 0.0273 0.0049

Mercury -88027-03-08 06:27 J -30430372.37 -30430372.23 -30430372.09 0.0273 0.0039

Mercury -88027-06-04 18:56 J -30430283.85 -30430283.71 -30430283.57 0.0273 0.0053

Mercury -88027-09-01 07:25 J -30430195.31 -30430195.19 -30430195.07 0.0273 0.0147

Mercury -88027-11-28 20:08 J -30430106.72 -30430106.66 -30430106.59 0.0273 0.0242

Moon -88026-02-24 03:35 J -30430019.47 -30430019.35 -30430019.20 0.0273 0.0225

Earth -88026-02-24 07:25 J -30430019.34 -30430019.19 -30430019.04 0.0273 0.0213 \*

Mars -88020-02-27 00:27 J -30427824.75 -30427824.48 -30427824.20 0.0278 0.0140

Moon -88014-07-31 08:23 J -30425479.36 -30425479.15 -30425478.93 0.0287 0.0131

Earth -88014-07-31 08:51 J -30425479.35 -30425479.13 -30425478.91 0.0287 0.0134 \*

Mercury -88013-07-14 17:30 J -30425129.85 -30425129.77 -30425129.67 0.0287 0.0246

Venus -88013-08-09 14:23 J -30425104.10 -30425103.90 -30425103.70 0.0287 0.0107

Earth -88013-08-14 02:51 J -30425099.63 -30425099.38 -30425099.13 0.0287 0.0047

Moon -88013-08-14 05:59 J -30425099.50 -30425099.25 -30425099.01 0.0287 0.0056 \*



Mercury -88013-10-11 14:23 J -30425041.06 -30425040.90 -30425040.74 0.0287 0.0113

Mercury -88012-01-08 10:32 J -30424952.23 -30424952.06 -30424951.89 0.0287 0.0018

Mercury -88012-04-07 06:13 J -30424863.38 -30424863.24 -30424863.09 0.0287 0.0145

Mercury -88012-07-05 01:39 J -30424774.48 -30424774.43 -30424774.38 0.0287 0.0269

Earth -88012-08-28 18:42 J -30424719.87 -30424719.72 -30424719.55 0.0287 0.0223

Moon -88012-08-28 23:01 J -30424719.68 -30424719.54 -30424719.40 0.0287 0.0235 \*

Mars -88006-03-16 01:39 J -30422694.64 -30422694.43 -30422694.20 0.0281 0.0158

# 88TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 88th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-88000-01-15 16:32 J	-30420561.84	-30420561.81	-30420561.74	0.0273	0.0266		
Moon	-87999-01-27 04:32 J	-30420185.51	-30420185.31	-30420185.09	0.0272	0.0131		
Earth	-87999-01-27 08:08 J	-30420185.37	-30420185.16	-30420184.95	0.0272	0.0129	*	
Venus	-87998-01-19 13:54 J	-30419828.03	-30419827.92	-30419827.79	0.0272	0.0222		
Mercury	-87998-01-30 08:51 J	-30419817.18	-30419817.13	-30419817.05	0.0272	0.0239		
Moon	-87998-02-07 22:32 J	-30419808.79	-30419808.56	-30419808.33	0.0272	0.0024		
Earth	-87998-02-07 23:01 J	-30419808.78	-30419808.54	-30419808.31	0.0272	0.0012	*	
Mercury	-87998-04-28 20:51 J	-30419728.74	-30419728.63	-30419728.51	0.0272	0.0150		
Mercury	-87998-07-26 09:06 J	-30419640.26	-30419640.12	-30419639.98	0.0272	0.0060		
Venus	-87998-09-05 14:23 J	-30419599.08	-30419598.90	-30419598.70	0.0272	0.0100		
Mercury	-87998-10-22 21:20 J	-30419551.75	-30419551.61	-30419551.46	0.0272	0.0032		
Mercury	-87997-01-19 09:49 J	-30419463.21	-30419463.09	-30419462.96	0.0272	0.0124		

Earth -87997-02-19 14:23 J -30419432.09 -30419431.90 -30419431.69 0.0272 0.0153  
 Moon -87997-02-19 18:13 J -30419431.92 -30419431.74 -30419431.55 0.0272 0.0168 \*  
 Mercury -87997-04-16 22:32 J -30419374.64 -30419374.56 -30419374.47 0.0272 0.0218  
 Mars -87990-04-21 11:01 J -30416814.35 -30416814.04 -30416813.72 0.0280 0.0047  
 Moon -87985-07-23 23:15 J -30414893.70 -30414893.53 -30414893.35 0.0286 0.0210  
 Earth -87985-07-23 23:30 J -30414893.68 -30414893.52 -30414893.34 0.0286 0.0213 \*  
 Moon -87984-08-07 14:23 J -30414514.15 -30414513.90 -30414513.64 0.0286 0.0028  
 Earth -87984-08-07 17:44 J -30414514.01 -30414513.76 -30414513.50 0.0286 0.0037 \*  
 Venus -87983-02-19 17:44 J -30414317.97 -30414317.76 -30414317.55 0.0287 0.0062  
 Mercury -87983-02-28 12:27 J -30414309.12 -30414308.98 -30414308.83 0.0287 0.0158  
 Mercury -87983-05-28 08:51 J -30414220.30 -30414220.13 -30414219.96 0.0287 0.0027  
 Moon -87983-08-22 07:25 J -30414134.39 -30414134.19 -30414133.98 0.0287 0.0156  
 Earth -87983-08-22 10:47 J -30414134.26 -30414134.05 -30414133.82 0.0287 0.0143 \*  
 Mercury -87983-08-25 04:47 J -30414131.45 -30414131.30 -30414131.14 0.0287 0.0102  
 Mercury -87983-11-22 00:13 J -30414042.58 -30414042.49 -30414042.39 0.0286 0.0227  
 Mars -87976-05-01 13:54 J -30411690.19 -30411689.92 -30411689.65 0.0280 0.0009  
 Earth -87970-01-22 12:56 J -30409598.12 -30409597.96 -30409597.77 0.0273 0.0188  
 Moon -87970-01-22 16:32 J -30409597.97 -30409597.81 -30409597.64 0.0273 0.0196 \*  
 Earth -87969-02-03 04:32 J -30409221.54 -30409221.31 -30409221.07 0.0273 0.0048  
 Moon -87969-02-03 05:44 J -30409221.50 -30409221.26 -30409221.02 0.0273 0.0041 \*  
 Mercury -87969-06-18 11:01 J -30409085.06 -30409085.04 -30409085.00 0.0273 0.0265  
 Venus -87969-07-31 17:30 J -30409041.92 -30409041.77 -30409041.61 0.0273 0.0182  
 Mercury -87969-09-14 23:01 J -30408996.64 -30408996.54 -30408996.43 0.0273 0.0177  
 Mercury -87969-12-12 11:15 J -30408908.16 -30408908.03 -30408907.90 0.0273 0.0087  
 Moon -87968-02-13 16:47 J -30408845.02 -30408844.80 -30408844.58 0.0273 0.0109  
 Earth -87968-02-13 20:23 J -30408844.87 -30408844.65 -30408844.42 0.0273 0.0094 \*  
 Mercury -87968-03-10 23:30 J -30408819.66 -30408819.52 -30408819.38 0.0273 0.0005  
 Venus -87968-03-17 18:13 J -30408812.91 -30408812.74 -30408812.56 0.0273 0.0142  
 Mercury -87968-06-07 11:59 J -30408731.13 -30408731.00 -30408730.87 0.0273 0.0097  
 Mercury -87968-09-04 00:42 J -30408642.57 -30408642.47 -30408642.37 0.0273 0.0191

Moon -87967-02-25 12:13 J -30408468.09 -30408467.99 -30408467.88 0.0273 0.0242  
 Earth -87967-02-25 13:39 J -30408468.04 -30408467.93 -30408467.80 0.0273 0.0232 \*  
 Mars -87960-06-13 11:59 J -30405803.15 -30405803.00 -30405802.84 0.0281 0.0243  
 Earth -87956-07-18 05:15 J -30404307.31 -30404307.28 -30404307.23 0.0286 0.0282  
 Moon -87956-07-18 05:59 J -30404307.27 -30404307.25 -30404307.20 0.0286 0.0283 \*  
 Earth -87955-08-01 23:30 J -30403927.75 -30403927.52 -30403927.28 0.0287 0.0109  
 Moon -87955-08-02 02:37 J -30403927.61 -30403927.39 -30403927.15 0.0287 0.0105 \*  
 Mercury -87954-07-18 14:37 J -30403577.02 -30403576.89 -30403576.75 0.0287 0.0181  
 Earth -87954-08-16 17:44 J -30403548.00 -30403547.76 -30403547.51 0.0287 0.0071  
 Moon -87954-08-16 21:06 J -30403547.87 -30403547.62 -30403547.37 0.0287 0.0080 \*  
 Venus -87954-09-02 06:27 J -30403531.45 -30403531.23 -30403531.01 0.0287 0.0011  
 Mercury -87954-10-15 11:15 J -30403488.20 -30403488.03 -30403487.86 0.0287 0.0049  
 Mercury -87953-01-12 07:11 J -30403399.36 -30403399.20 -30403399.04 0.0287 0.0081  
 Mercury -87953-04-10 02:37 J -30403310.50 -30403310.39 -30403310.27 0.0287 0.0207  
 Earth -87953-08-30 09:20 J -30403168.22 -30403168.11 -30403167.97 0.0287 0.0246  
 Moon -87953-08-30 10:18 J -30403168.18 -30403168.07 -30403167.95 0.0287 0.0258 \*  
 Mars -87946-06-19 01:25 J -30400684.66 -30400684.44 -30400684.20 0.0279 0.0150  
 Moon -87941-01-17 21:06 J -30399010.70 -30399010.62 -30399010.54 0.0273 0.0256  
 Earth -87941-01-18 00:13 J -30399010.58 -30399010.49 -30399010.38 0.0273 0.0245 \*  
 Moon -87940-01-28 13:25 J -30398634.14 -30398633.94 -30398633.72 0.0272 0.0109  
 Earth -87940-01-28 15:20 J -30398634.07 -30398633.86 -30398633.64 0.0272 0.0109 \*  
 Mercury -87939-02-02 02:08 J -30398264.51 -30398264.41 -30398264.31 0.0272 0.0195  
 Earth -87939-02-09 05:59 J -30398257.48 -30398257.25 -30398257.01 0.0272 0.0032  
 Moon -87939-02-09 09:20 J -30398257.34 -30398257.11 -30398256.88 0.0272 0.0046 \*  
 Venus -87939-02-10 23:44 J -30398255.69 -30398255.51 -30398255.32 0.0272 0.0127  
 Mercury -87939-05-01 14:08 J -30398176.04 -30398175.91 -30398175.78 0.0272 0.0106  
 Mercury -87939-07-29 02:23 J -30398087.54 -30398087.40 -30398087.26 0.0272 0.0016  
 Venus -87939-09-28 00:13 J -30398026.63 -30398026.49 -30398026.34 0.0272 0.0195  
 Mercury -87939-10-25 14:37 J -30397999.02 -30397998.89 -30397998.75 0.0272 0.0077  
 Mercury -87938-01-22 03:20 J -30397910.47 -30397910.36 -30397910.25 0.0272 0.0170

Earth -87938-02-20 22:03 J -30397880.76 -30397880.58 -30397880.39 0.0272 0.0171  
 Moon -87938-02-20 23:30 J -30397880.69 -30397880.52 -30397880.33 0.0272 0.0184 \*  
 Mercury -87938-04-20 16:03 J -30397821.86 -30397821.83 -30397821.79 0.0272 0.0265  
 Mars -87932-07-24 02:37 J -30395535.68 -30395535.39 -30395535.10 0.0279 0.0121  
 Moon -87926-07-26 10:18 J -30393342.26 -30393342.07 -30393341.87 0.0286 0.0184  
 Earth -87926-07-26 14:08 J -30393342.10 -30393341.91 -30393341.71 0.0286 0.0187 \*  
 Moon -87925-08-09 05:30 J -30392962.52 -30392962.27 -30392962.02 0.0287 0.0003  
 Earth -87925-08-09 08:23 J -30392962.40 -30392962.15 -30392961.89 0.0287 0.0011 \*  
 Mercury -87925-12-04 12:42 J -30392845.07 -30392844.97 -30392844.86 0.0287 0.0227  
 Mercury -87924-03-03 09:20 J -30392756.27 -30392756.11 -30392755.95 0.0287 0.0094  
 Venus -87924-03-14 09:35 J -30392745.31 -30392745.10 -30392744.89 0.0287 0.0055  
 Mercury -87924-05-31 05:30 J -30392667.44 -30392667.27 -30392667.10 0.0287 0.0036  
 Earth -87924-08-24 01:11 J -30392582.64 -30392582.45 -30392582.23 0.0287 0.0167  
 Moon -87924-08-24 01:25 J -30392582.62 -30392582.44 -30392582.24 0.0287 0.0180 \*  
 Mercury -87924-08-28 01:11 J -30392578.58 -30392578.45 -30392578.31 0.0287 0.0163  
 Mars -87918-08-09 21:49 J -30390405.82 -30390405.59 -30390405.35 0.0281 0.0143  
 Earth -87911-01-23 18:56 J -30388046.89 -30388046.71 -30388046.52 0.0273 0.0167  
 Moon -87911-01-23 21:06 J -30388046.81 -30388046.62 -30388046.43 0.0273 0.0172 \*  
 Moon -87910-02-04 07:25 J -30387670.44 -30387670.19 -30387669.95 0.0273 0.0018  
 Earth -87910-02-04 10:18 J -30387670.31 -30387670.07 -30387669.84 0.0273 0.0028 \*  
 Mercury -87910-06-22 03:49 J -30387532.41 -30387532.34 -30387532.26 0.0273 0.0225  
 Venus -87910-08-24 02:08 J -30387469.60 -30387469.41 -30387469.21 0.0273 0.0090  
 Mercury -87910-09-18 15:49 J -30387443.96 -30387443.84 -30387443.71 0.0273 0.0136  
 Mercury -87910-12-16 04:03 J -30387355.47 -30387355.33 -30387355.19 0.0273 0.0045  
 Moon -87909-02-15 23:59 J -30387293.70 -30387293.50 -30387293.29 0.0273 0.0128  
 Earth -87909-02-16 01:39 J -30387293.64 -30387293.43 -30387293.21 0.0273 0.0113 \*  
 Mercury -87909-03-13 16:18 J -30387266.96 -30387266.82 -30387266.68 0.0273 0.0048  
 Venus -87909-04-09 02:51 J -30387240.48 -30387240.38 -30387240.27 0.0273 0.0235  
 Mercury -87909-06-10 04:47 J -30387178.42 -30387178.30 -30387178.17 0.0273 0.0141  
 Mercury -87909-09-06 17:44 J -30387089.83 -30387089.76 -30387089.69 0.0273 0.0235

Earth -87908-02-26 18:56 J -30386916.79 -30386916.71 -30386916.60 0.0273 0.0250  
 Moon -87908-02-26 22:03 J -30386916.65 -30386916.58 -30386916.50 0.0273 0.0257 \*  
 Mars -87902-09-16 01:54 J -30384524.73 -30384524.42 -30384524.11 0.0280 0.0075  
 Earth -87897-07-19 17:44 J -30382755.86 -30382755.76 -30382755.65 0.0286 0.0259  
 Moon -87897-07-19 21:49 J -30382755.69 -30382755.59 -30382755.48 0.0286 0.0257 \*  
 Earth -87896-08-03 12:27 J -30382376.22 -30382375.98 -30382375.73 0.0287 0.0085  
 Moon -87896-08-03 15:35 J -30382376.10 -30382375.85 -30382375.60 0.0287 0.0080 \*  
 Venus -87895-02-06 21:06 J -30382188.67 -30382188.62 -30382188.55 0.0287 0.0276  
 Mercury -87895-04-23 14:23 J -30382112.98 -30382112.90 -30382112.81 0.0287 0.0251  
 Mercury -87895-07-21 11:01 J -30382024.19 -30382024.04 -30382023.88 0.0287 0.0118  
 Moon -87895-08-18 06:42 J -30381996.46 -30381996.22 -30381995.97 0.0287 0.0104  
 Earth -87895-08-18 06:56 J -30381996.44 -30381996.21 -30381995.97 0.0287 0.0095 \*  
 Venus -87895-09-24 21:20 J -30381958.80 -30381958.61 -30381958.41 0.0287 0.0126  
 Mercury -87895-10-18 07:25 J -30381935.36 -30381935.19 -30381935.02 0.0287 0.0015  
 Mercury -87894-01-15 03:20 J -30381846.50 -30381846.36 -30381846.21 0.0287 0.0142  
 Mercury -87894-04-13 22:32 J -30381757.61 -30381757.56 -30381757.49 0.0287 0.0267  
 Moon -87894-09-01 19:11 J -30381616.73 -30381616.70 -30381616.64 0.0287 0.0282  
 Earth -87894-09-01 22:47 J -30381616.63 -30381616.55 -30381616.45 0.0287 0.0267  
 Mars -87888-09-26 08:08 J -30379400.43 -30379400.16 -30379399.89 0.0280 0.0015  
 Moon -87882-01-19 04:32 J -30377459.42 -30377459.31 -30377459.19 0.0273 0.0235  
 Earth -87882-01-19 06:27 J -30377459.35 -30377459.23 -30377459.08 0.0273 0.0226 \*  
 Earth -87881-01-30 21:20 J -30377082.83 -30377082.61 -30377082.38 0.0272 0.0089  
 Moon -87881-01-30 23:44 J -30377082.73 -30377082.51 -30377082.29 0.0272 0.0086 \*  
 Mercury -87881-11-08 07:11 J -30376800.27 -30376800.20 -30376800.14 0.0272 0.0241  
 Mercury -87880-02-04 18:56 J -30376711.82 -30376711.71 -30376711.59 0.0272 0.0153  
 Earth -87880-02-10 11:44 J -30376706.24 -30376706.01 -30376705.77 0.0272 0.0051  
 Moon -87880-02-10 14:23 J -30376706.14 -30376705.90 -30376705.66 0.0272 0.0064 \*  
 Venus -87880-03-05 08:37 J -30376683.35 -30376683.14 -30376682.94 0.0272 0.0035  
 Mercury -87880-05-04 06:56 J -30376623.34 -30376623.21 -30376623.07 0.0272 0.0064  
 Mercury -87880-07-31 19:11 J -30376534.84 -30376534.70 -30376534.55 0.0272 0.0028

Mercury -87880-10-28 07:39 J -30376446.31 -30376446.18 -30376446.05 0.0272 0.0120  
 Mercury -87879-01-24 20:23 J -30376357.74 -30376357.65 -30376357.56 0.0272 0.0214  
 Moon -87879-02-22 00:56 J -30376329.63 -30376329.46 -30376329.30 0.0272 0.0198  
 Earth -87879-02-22 03:35 J -30376329.51 -30376329.35 -30376329.17 0.0272 0.0189 \*  
 Mars -87872-11-07 09:35 J -30373514.21 -30373514.10 -30373513.97 0.0281 0.0259  
 Moon -87867-07-28 00:42 J -30371790.66 -30371790.47 -30371790.25 0.0286 0.0158  
 Earth -87867-07-28 02:51 J -30371790.58 -30371790.38 -30371790.16 0.0286 0.0164 \*  
 Earth -87866-08-11 21:20 J -30371410.86 -30371410.61 -30371410.36 0.0287 0.0014  
 Moon -87866-08-11 22:18 J -30371410.81 -30371410.57 -30371410.32 0.0287 0.0023 \*  
 Venus -87866-08-20 00:27 J -30371402.60 -30371402.48 -30371402.35 0.0287 0.0232  
 Mercury -87866-12-08 09:06 J -30371292.25 -30371292.12 -30371291.97 0.0287 0.0165  
 Mercury -87865-03-06 05:44 J -30371203.43 -30371203.26 -30371203.09 0.0287 0.0033  
 Venus -87865-04-06 00:27 J -30371172.65 -30371172.48 -30371172.31 0.0287 0.0169  
 Mercury -87865-06-03 01:39 J -30371114.59 -30371114.43 -30371114.27 0.0287 0.0097  
 Earth -87865-08-25 14:23 J -30371031.09 -30371030.90 -30371030.71 0.0287 0.0189  
 Moon -87865-08-25 17:44 J -30371030.93 -30371030.76 -30371030.58 0.0287 0.0203 \*  
 Mercury -87865-08-30 21:06 J -30371025.72 -30371025.62 -30371025.51 0.0287 0.0223  
 Mars -87860-11-17 04:32 J -30369121.34 -30369121.31 -30369121.25 0.0281 0.0277  
 Mars -87858-11-12 17:59 J -30368395.96 -30368395.75 -30368395.52 0.0279 0.0164  
 Moon -87852-01-24 20:37 J -30366495.84 -30366495.64 -30366495.43 0.0273 0.0148  
 Earth -87852-01-24 23:30 J -30366495.72 -30366495.52 -30366495.32 0.0273 0.0148 \*  
 Moon -87851-02-05 11:30 J -30366119.25 -30366119.02 -30366118.79 0.0273 0.0002  
 Earth -87851-02-05 14:23 J -30366119.14 -30366118.90 -30366118.67 0.0273 0.0010 \*  
 Mercury -87851-06-24 20:23 J -30365979.75 -30365979.65 -30365979.55 0.0273 0.0185  
 Venus -87851-09-15 09:49 J -30365897.29 -30365897.09 -30365896.88 0.0273 0.0004  
 Mercury -87851-09-21 08:23 J -30365891.28 -30365891.15 -30365891.02 0.0273 0.0096  
 Mercury -87851-12-18 20:37 J -30365802.78 -30365802.64 -30365802.50 0.0273 0.0005  
 Earth -87850-02-17 05:30 J -30365742.47 -30365742.27 -30365742.05 0.0273 0.0131  
 Moon -87850-02-17 07:54 J -30365742.36 -30365742.17 -30365741.96 0.0273 0.0144 \*  
 Mercury -87850-03-17 09:06 J -30365714.26 -30365714.12 -30365713.99 0.0273 0.0088

Mercury -87850-06-13 21:35 J -30365625.70 -30365625.60 -30365625.49 0.0273 0.0181

Earth -87849-02-28 22:47 J -30365365.59 -30365365.55 -30365365.48 0.0273 0.0266

Moon -87849-02-29 01:39 J -30365365.45 -30365365.43 -30365365.38 0.0273 0.0269

Mars -87844-12-18 05:01 J -30363246.58 -30363246.29 -30363245.97 0.0279 0.0099

Earth -87838-07-22 03:20 J -30361204.49 -30361204.36 -30361204.21 0.0286 0.0238

Moon -87838-07-22 04:47 J -30361204.44 -30361204.30 -30361204.14 0.0286 0.0232 \*

Moon -87837-08-04 21:06 J -30360824.87 -30360824.62 -30360824.36 0.0287 0.0054

Earth -87837-08-04 22:47 J -30360824.80 -30360824.55 -30360824.30 0.0287 0.0063 \*

Venus -87836-03-01 10:32 J -30360616.23 -30360616.06 -30360615.88 0.0287 0.0166

Mercury -87836-04-26 10:03 J -30360560.20 -30360560.08 -30360559.94 0.0287 0.0194

Mercury -87836-07-24 06:56 J -30360471.38 -30360471.21 -30360471.04 0.0287 0.0060

Moon -87836-08-19 13:54 J -30360445.15 -30360444.92 -30360444.69 0.0287 0.0127

Earth -87836-08-19 17:15 J -30360445.00 -30360444.78 -30360444.54 0.0287 0.0117 \*

Venus -87836-10-17 10:32 J -30360386.17 -30360386.06 -30360385.93 0.0287 0.0237

Mercury -87836-10-21 03:06 J -30360382.54 -30360382.37 -30360382.21 0.0287 0.0071

Mercury -87835-01-17 22:32 J -30360293.67 -30360293.56 -30360293.43 0.0287 0.0199

Earth -87835-09-03 09:06 J -30360065.13 -30360065.12 -30360065.10 0.0287 0.0286

Mars -87829-01-04 11:59 J -30358116.23 -30358116.00 -30358115.75 0.0281 0.0122

Earth -87823-01-20 11:15 J -30355908.18 -30355908.03 -30355907.87 0.0273 0.0207

Moon -87823-01-20 13:39 J -30355908.08 -30355907.93 -30355907.79 0.0273 0.0213 \*

Earth -87822-02-01 01:39 J -30355531.65 -30355531.43 -30355531.19 0.0272 0.0071

Moon -87822-02-01 05:01 J -30355531.52 -30355531.29 -30355531.05 0.0272 0.0064 \*

Venus -87822-08-11 16:18 J -30355339.86 -30355339.82 -30355339.78 0.0272 0.0266

Mercury -87822-11-11 23:30 J -30355247.61 -30355247.52 -30355247.43 0.0272 0.0202

Mercury -87821-02-08 11:30 J -30355159.15 -30355159.02 -30355158.89 0.0272 0.0114

Moon -87821-02-12 14:23 J -30355155.13 -30355154.90 -30355154.67 0.0272 0.0082

Earth -87821-02-12 16:03 J -30355155.06 -30355154.83 -30355154.59 0.0272 0.0068 \*

Venus -87821-03-27 16:18 J -30355111.02 -30355110.82 -30355110.62 0.0272 0.0055

Mercury -87821-05-06 23:30 J -30355070.66 -30355070.52 -30355070.38 0.0272 0.0024

Mercury -87821-08-03 11:44 J -30354982.14 -30354982.01 -30354981.87 0.0272 0.0069

Mercury -87821-10-31 00:27 J -30354893.60 -30354893.48 -30354893.37 0.0272 0.0161  
 Mercury -87820-01-27 12:56 J -30354805.00 -30354804.96 -30354804.90 0.0272 0.0256  
 Moon -87820-02-23 05:01 J -30354778.43 -30354778.29 -30354778.15 0.0272 0.0213  
 Earth -87820-02-23 07:39 J -30354778.33 -30354778.18 -30354778.02 0.0272 0.0205 \*  
 Mars -87813-02-09 18:27 J -30352236.02 -30352235.73 -30352235.42 0.0280 0.0089  
 Earth -87808-07-29 13:11 J -30350239.17 -30350238.95 -30350238.73 0.0287 0.0141  
 Moon -87808-07-29 15:35 J -30350239.06 -30350238.85 -30350238.63 0.0287 0.0133 \*  
 Earth -87807-08-13 07:39 J -30349859.43 -30349859.18 -30349858.93 0.0287 0.0036  
 Moon -87807-08-13 11:30 J -30349859.27 -30349859.02 -30349858.77 0.0287 0.0046 \*  
 Venus -87807-09-11 13:39 J -30349830.12 -30349829.93 -30349829.73 0.0287 0.0123  
 Mercury -87807-09-13 08:08 J -30349828.25 -30349828.16 -30349828.06 0.0287 0.0240  
 Mercury -87807-12-11 05:01 J -30349739.45 -30349739.29 -30349739.13 0.0287 0.0107  
 Mercury -87806-03-10 01:11 J -30349650.62 -30349650.45 -30349650.28 0.0287 0.0025  
 Venus -87806-04-29 13:39 J -30349599.97 -30349599.93 -30349599.88 0.0287 0.0279  
 Mercury -87806-06-06 21:06 J -30349561.76 -30349561.62 -30349561.48 0.0287 0.0153  
 Earth -87806-08-28 00:27 J -30349479.64 -30349479.48 -30349479.30 0.0287 0.0210  
 Moon -87806-08-28 03:06 J -30349479.53 -30349479.37 -30349479.20 0.0287 0.0222 \*  
 Mercury -87806-09-03 16:32 J -30349472.85 -30349472.81 -30349472.77 0.0287 0.0278  
 Mars -87799-02-19 19:54 J -30347111.94 -30347111.67 -30347111.40 0.0279 0.0027  
 Earth -87794-01-15 11:44 J -30345321.07 -30345321.01 -30345320.95 0.0273 0.0265  
 Moon -87793-01-26 23:30 J -30344944.72 -30344944.52 -30344944.30 0.0273 0.0128  
 Earth -87793-01-27 02:37 J -30344944.59 -30344944.39 -30344944.18 0.0273 0.0131 \*  
 Earth -87792-02-06 17:01 J -30344568.03 -30344567.79 -30344567.55 0.0272 0.0008  
 Moon -87792-02-06 18:27 J -30344567.96 -30344567.73 -30344567.50 0.0272 0.0021 \*  
 Venus -87792-02-20 16:18 J -30344553.91 -30344553.82 -30344553.71 0.0272 0.0236  
 Mercury -87792-03-31 00:42 J -30344515.54 -30344515.47 -30344515.40 0.0272 0.0236  
 Mercury -87792-06-27 12:42 J -30344427.09 -30344426.97 -30344426.86 0.0272 0.0148  
 Mercury -87792-09-24 00:42 J -30344338.61 -30344338.47 -30344338.33 0.0272 0.0058  
 Venus -87792-10-07 16:32 J -30344325.00 -30344324.81 -30344324.61 0.0272 0.0087  
 Mercury -87792-12-21 12:56 J -30344250.10 -30344249.96 -30344249.82 0.0272 0.0034



Earth -87791-02-18 07:54 J -30344191.36 -30344191.17 -30344190.96 0.0272 0.0147  
 Moon -87791-02-18 11:15 J -30344191.23 -30344191.03 -30344190.83 0.0272 0.0159 \*  
 Mercury -87791-03-20 01:25 J -30344161.57 -30344161.44 -30344161.32 0.0272 0.0127  
 Mercury -87791-06-16 13:54 J -30344073.00 -30344072.92 -30344072.83 0.0272 0.0221  
 Mars -87785-03-20 21:20 J -30341968.64 -30341968.61 -30341968.54 0.0278 0.0275  
 Mars -87783-04-03 02:23 J -30341225.42 -30341225.40 -30341225.35 0.0281 0.0279  
 Moon -87779-07-23 06:56 J -30339653.38 -30339653.21 -30339653.02 0.0286 0.0208  
 Earth -87779-07-23 10:18 J -30339653.22 -30339653.07 -30339652.89 0.0286 0.0218 \*  
 Moon -87778-08-07 02:23 J -30339273.65 -30339273.40 -30339273.15 0.0287 0.0031  
 Earth -87778-08-07 06:13 J -30339273.49 -30339273.24 -30339272.99 0.0287 0.0042 \*  
 Mercury -87777-01-31 08:23 J -30339096.20 -30339096.15 -30339096.10 0.0287 0.0273  
 Venus -87777-03-23 22:18 J -30339043.78 -30339043.57 -30339043.36 0.0287 0.0061  
 Mercury -87777-04-29 05:15 J -30339007.42 -30339007.28 -30339007.12 0.0287 0.0139  
 Mercury -87777-07-27 01:54 J -30338918.59 -30338918.42 -30338918.25 0.0287 0.0007  
 Moon -87777-08-20 23:15 J -30338893.74 -30338893.53 -30338893.32 0.0287 0.0148  
 Earth -87777-08-21 01:11 J -30338893.67 -30338893.45 -30338893.22 0.0287 0.0135 \*  
 Mercury -87777-10-23 21:49 J -30338829.74 -30338829.59 -30338829.44 0.0287 0.0124  
 Mercury -87776-01-20 17:15 J -30338740.85 -30338740.78 -30338740.69 0.0287 0.0251  
 Mars -87771-04-13 14:37 J -30336831.98 -30336831.89 -30336831.78 0.0282 0.0259  
 Mars -87769-04-08 03:35 J -30336106.54 -30336106.35 -30336106.13 0.0279 0.0183  
 Earth -87764-01-21 14:08 J -30334357.07 -30334356.91 -30334356.73 0.0272 0.0190  
 Moon -87764-01-21 17:15 J -30334356.93 -30334356.78 -30334356.60 0.0272 0.0194 \*  
 Moon -87763-02-02 03:20 J -30333980.60 -30333980.36 -30333980.12 0.0272 0.0043  
 Earth -87763-02-02 04:32 J -30333980.54 -30333980.31 -30333980.07 0.0272 0.0053 \*  
 Mercury -87763-08-18 03:49 J -30333783.39 -30333783.34 -30333783.29 0.0272 0.0252  
 Venus -87763-09-02 22:47 J -30333767.70 -30333767.55 -30333767.39 0.0272 0.0180  
 Mercury -87763-11-14 15:35 J -30333694.96 -30333694.85 -30333694.74 0.0272 0.0165  
 Mercury -87762-02-11 03:35 J -30333606.48 -30333606.35 -30333606.21 0.0272 0.0076  
 Moon -87762-02-13 15:20 J -30333604.08 -30333603.86 -30333603.64 0.0272 0.0100  
 Earth -87762-02-13 18:42 J -30333603.94 -30333603.72 -30333603.49 0.0272 0.0085 \*

Venus -87762-04-19 23:01 J -30333538.72 -30333538.54 -30333538.36 0.0272 0.0142

Mercury -87762-05-10 15:49 J -30333517.98 -30333517.84 -30333517.70 0.0272 0.0015

Mercury -87762-08-07 04:03 J -30333429.45 -30333429.33 -30333429.19 0.0272 0.0108

Mercury -87762-11-03 16:47 J -30333340.90 -30333340.80 -30333340.70 0.0272 0.0201

Earth -87761-02-25 10:03 J -30333227.21 -30333227.08 -30333226.94 0.0272 0.0220

Moon -87761-02-25 11:15 J -30333227.15 -30333227.03 -30333226.89 0.0272 0.0225 \*

Mars -87755-05-13 17:01 J -30330958.10 -30330957.79 -30330957.49 0.0279 0.0088

Moon -87750-07-17 05:44 J -30329067.29 -30329067.26 -30329067.20 0.0286 0.0281

Earth -87749-07-30 20:23 J -30328687.88 -30328687.65 -30328687.42 0.0287 0.0120

Moon -87749-07-30 23:44 J -30328687.74 -30328687.51 -30328687.26 0.0287 0.0109 \*

Earth -87748-08-14 15:06 J -30328308.11 -30328307.87 -30328307.62 0.0287 0.0056

Moon -87748-08-14 16:18 J -30328308.07 -30328307.82 -30328307.56 0.0287 0.0069 \*

Mercury -87748-09-16 03:20 J -30328275.49 -30328275.36 -30328275.23 0.0287 0.0186

Venus -87748-10-04 01:25 J -30328257.65 -30328257.44 -30328257.22 0.0287 0.0019

Mercury -87748-12-13 23:59 J -30328186.67 -30328186.50 -30328186.33 0.0287 0.0053

Mercury -87747-03-12 20:08 J -30328097.82 -30328097.66 -30328097.50 0.0287 0.0078

Mercury -87747-06-09 15:49 J -30328008.95 -30328008.84 -30328008.72 0.0287 0.0205

Moon -87747-08-29 05:59 J -30327928.37 -30327928.25 -30327928.10 0.0287 0.0243

Earth -87747-08-29 08:23 J -30327928.30 -30327928.15 -30327928.00 0.0287 0.0228 \*

Mars -87741-05-29 21:06 J -30325827.87 -30325827.62 -30325827.38 0.0280 0.0112

Moon -87735-01-16 10:32 J -30323770.13 -30323770.06 -30323769.98 0.0273 0.0258

Earth -87735-01-16 13:54 J -30323770.01 -30323769.92 -30323769.82 0.0273 0.0248 \*

Earth -87734-01-28 04:18 J -30323393.52 -30323393.32 -30323393.09 0.0272 0.0115

Moon -87734-01-28 05:44 J -30323393.47 -30323393.26 -30323393.05 0.0272 0.0108 \*

Earth -87733-02-08 18:27 J -30323016.96 -30323016.73 -30323016.49 0.0272 0.0024

Moon -87733-02-08 22:03 J -30323016.81 -30323016.58 -30323016.34 0.0272 0.0040 \*

Venus -87733-03-14 22:18 J -30322981.73 -30322981.57 -30322981.39 0.0272 0.0151

Mercury -87733-04-02 16:32 J -30322962.90 -30322962.81 -30322962.71 0.0272 0.0200

Mercury -87733-06-30 04:32 J -30322874.44 -30322874.31 -30322874.18 0.0272 0.0111

Mercury -87733-09-26 16:32 J -30322785.95 -30322785.81 -30322785.67 0.0272 0.0022

Venus -87733-10-29 22:32 J -30322752.71 -30322752.56 -30322752.40 0.0272 0.0172  
 Mercury -87733-12-24 04:47 J -30322697.43 -30322697.30 -30322697.16 0.0272 0.0072  
 Moon -87732-02-19 08:08 J -30322640.34 -30322640.16 -30322639.96 0.0272 0.0170  
 Earth -87732-02-19 09:06 J -30322640.30 -30322640.12 -30322639.92 0.0272 0.0161 \*  
 Mercury -87732-03-22 17:15 J -30322608.89 -30322608.78 -30322608.66 0.0272 0.0164  
 Mercury -87732-06-19 06:13 J -30322520.29 -30322520.24 -30322520.20 0.0272 0.0259  
 Mars -87725-07-04 22:18 J -30319947.87 -30319947.57 -30319947.27 0.0280 0.0102  
 Moon -87720-07-24 11:44 J -30318102.19 -30318102.01 -30318101.82 0.0287 0.0188  
 Earth -87720-07-24 14:23 J -30318102.08 -30318101.90 -30318101.71 0.0287 0.0199 \*  
 Earth -87719-08-08 10:18 J -30317722.32 -30317722.07 -30317721.82 0.0287 0.0024  
 Moon -87719-08-08 10:18 J -30317722.32 -30317722.07 -30317721.83 0.0287 0.0011 \*  
 Mercury -87718-02-03 02:51 J -30317543.49 -30317543.38 -30317543.27 0.0287 0.0224  
 Venus -87718-04-16 08:23 J -30317471.37 -30317471.15 -30317470.94 0.0287 0.0040  
 Mercury -87718-05-02 23:30 J -30317454.68 -30317454.52 -30317454.35 0.0287 0.0090  
 Mercury -87718-07-30 19:54 J -30317365.83 -30317365.67 -30317365.50 0.0287 0.0043  
 Earth -87718-08-23 05:30 J -30317342.47 -30317342.27 -30317342.05 0.0287 0.0153  
 Moon -87718-08-23 08:08 J -30317342.35 -30317342.16 -30317341.96 0.0287 0.0168 \*  
 Mercury -87718-10-27 15:49 J -30317276.97 -30317276.84 -30317276.70 0.0287 0.0172  
 Mars -87711-07-17 01:25 J -30314822.71 -30314822.44 -30314822.18 0.0280 0.0043  
 Moon -87705-01-23 15:49 J -30312806.03 -30312805.84 -30312805.65 0.0272 0.0173  
 Earth -87705-01-23 16:18 J -30312806.00 -30312805.82 -30312805.63 0.0272 0.0172 \*  
 Moon -87704-02-03 02:37 J -30312429.62 -30312429.39 -30312429.15 0.0272 0.0023  
 Earth -87704-02-03 06:13 J -30312429.47 -30312429.24 -30312429.00 0.0272 0.0037 \*  
 Mercury -87704-08-20 19:54 J -30312230.76 -30312230.67 -30312230.59 0.0272 0.0217  
 Venus -87704-09-25 05:01 J -30312195.48 -30312195.29 -30312195.10 0.0271 0.0095  
 Mercury -87704-11-17 07:39 J -30312142.30 -30312142.18 -30312142.06 0.0271 0.0129  
 Mercury -87703-02-13 19:39 J -30312053.82 -30312053.68 -30312053.54 0.0271 0.0039  
 Earth -87703-02-14 20:08 J -30312052.88 -30312052.66 -30312052.44 0.0271 0.0100  
 Moon -87703-02-14 20:08 J -30312052.87 -30312052.66 -30312052.45 0.0271 0.0114 \*  
 Venus -87703-05-12 05:01 J -30311966.40 -30311966.29 -30311966.18 0.0271 0.0227

Mercury -87703-05-13 07:54 J -30311965.31 -30311965.17 -30311965.03 0.0271 0.0052  
 Mercury -87703-08-09 20:23 J -30311876.77 -30311876.65 -30311876.53 0.0271 0.0145  
 Mercury -87703-11-06 08:51 J -30311788.19 -30311788.13 -30311788.06 0.0271 0.0238  
 Earth -87702-02-26 11:01 J -30311676.15 -30311676.04 -30311675.91 0.0272 0.0234  
 Moon -87702-02-26 14:37 J -30311676.00 -30311675.89 -30311675.77 0.0272 0.0237 \*  
 Mars -87697-08-14 06:27 J -30309680.30 -30309680.23 -30309680.13 0.0277 0.0267  
 Earth -87691-07-18 06:42 J -30307516.30 -30307516.22 -30307516.13 0.0286 0.0269  
 Moon -87691-07-18 08:51 J -30307516.23 -30307516.13 -30307516.02 0.0286 0.0260 \*  
 Moon -87690-08-02 00:13 J -30307136.74 -30307136.49 -30307136.24 0.0287 0.0087  
 Earth -87690-08-02 01:11 J -30307136.68 -30307136.45 -30307136.21 0.0287 0.0101 \*  
 Mercury -87689-06-22 00:42 J -30306811.52 -30306811.47 -30306811.41 0.0287 0.0271  
 Moon -87689-08-15 17:01 J -30306757.04 -30306756.79 -30306756.55 0.0287 0.0091  
 Earth -87689-08-15 20:23 J -30306756.89 -30306756.65 -30306756.40 0.0287 0.0075 \*  
 Mercury -87689-09-18 21:49 J -30306722.74 -30306722.59 -30306722.44 0.0287 0.0136  
 Venus -87689-10-26 11:44 J -30306685.21 -30306685.01 -30306684.80 0.0287 0.0084  
 Mercury -87689-12-16 18:13 J -30306633.91 -30306633.74 -30306633.57 0.0287 0.0008  
 Mercury -87688-03-15 14:08 J -30306545.05 -30306544.91 -30306544.75 0.0287 0.0128  
 Mercury -87688-06-12 09:49 J -30306456.16 -30306456.09 -30306456.01 0.0287 0.0254  
 Moon -87688-08-30 09:49 J -30306377.18 -30306377.09 -30306376.98 0.0287 0.0262  
 Earth -87688-08-30 13:25 J -30306377.06 -30306376.94 -30306376.80 0.0287 0.0245 \*  
 Mars -87683-09-06 21:06 J -30304543.74 -30304543.62 -30304543.50 0.0281 0.0252  
 Mars -87681-09-01 09:06 J -30303818.31 -30303818.12 -30303817.91 0.0278 0.0191  
 Earth -87676-01-17 14:51 J -30302218.99 -30302218.88 -30302218.74 0.0273 0.0232  
 Moon -87676-01-17 15:06 J -30302218.98 -30302218.87 -30302218.76 0.0273 0.0239 \*  
 Earth -87675-01-29 05:15 J -30301842.50 -30301842.28 -30301842.06 0.0272 0.0098  
 Moon -87675-01-29 08:51 J -30301842.36 -30301842.13 -30301841.91 0.0272 0.0088 \*  
 Mercury -87674-01-07 20:37 J -30301498.69 -30301498.64 -30301498.59 0.0272 0.0253  
 Moon -87674-02-09 18:42 J -30301465.96 -30301465.72 -30301465.48 0.0272 0.0054  
 Earth -87674-02-09 18:56 J -30301465.95 -30301465.71 -30301465.47 0.0272 0.0039 \*  
 Mercury -87674-04-06 08:23 J -30301410.26 -30301410.15 -30301410.04 0.0272 0.0165

Venus -87674-04-07 03:49 J -30301409.54 -30301409.34 -30301409.14 0.0272 0.0068  
 Mercury -87674-07-03 20:08 J -30301321.79 -30301321.66 -30301321.52 0.0272 0.0077  
 Mercury -87674-09-30 08:23 J -30301233.29 -30301233.15 -30301233.01 0.0272 0.0015  
 Venus -87674-11-22 03:49 J -30301180.40 -30301180.34 -30301180.26 0.0272 0.0255  
 Mercury -87674-12-27 20:37 J -30301144.76 -30301144.64 -30301144.50 0.0272 0.0107  
 Moon -87673-02-21 05:44 J -30301089.43 -30301089.26 -30301089.08 0.0272 0.0183  
 Earth -87673-02-21 09:06 J -30301089.29 -30301089.12 -30301088.93 0.0272 0.0175 \*  
 Mercury -87673-03-25 09:20 J -30301056.21 -30301056.11 -30301056.01 0.0272 0.0200  
 Mars -87667-10-06 09:35 J -30298670.40 -30298670.10 -30298669.79 0.0279 0.0082  
 Earth -87661-07-25 16:18 J -30296551.00 -30296550.82 -30296550.61 0.0287 0.0181  
 Moon -87661-07-25 18:13 J -30296550.93 -30296550.74 -30296550.54 0.0287 0.0169 \*  
 Earth -87660-08-09 12:42 J -30296171.23 -30296170.97 -30296170.72 0.0287 0.0008  
 Moon -87660-08-09 16:32 J -30296171.06 -30296170.81 -30296170.56 0.0287 0.0010 \*  
 Venus -87660-09-20 16:03 J -30296128.90 -30296128.83 -30296128.76 0.0287 0.0271  
 Mercury -87659-02-05 20:37 J -30295990.78 -30295990.64 -30295990.51 0.0288 0.0178  
 Mercury -87659-05-05 17:15 J -30295901.95 -30295901.78 -30295901.61 0.0288 0.0043  
 Venus -87659-05-08 16:47 J -30295898.98 -30295898.80 -30295898.60 0.0288 0.0137  
 Mercury -87659-08-02 13:25 J -30295813.09 -30295812.94 -30295812.77 0.0288 0.0089  
 Earth -87659-08-24 07:54 J -30295791.36 -30295791.17 -30295790.95 0.0288 0.0169  
 Moon -87659-08-24 11:44 J -30295791.21 -30295791.01 -30295790.82 0.0288 0.0185 \*  
 Mercury -87659-10-30 09:20 J -30295724.22 -30295724.11 -30295724.00 0.0288 0.0217  
 Mars -87653-10-23 21:20 J -30293538.86 -30293538.61 -30293538.36 0.0281 0.0101  
 Moon -87646-01-24 13:39 J -30291255.12 -30291254.93 -30291254.73 0.0272 0.0154  
 Earth -87646-01-24 17:01 J -30291254.98 -30291254.79 -30291254.59 0.0272 0.0156 \*  
 Earth -87645-02-05 06:42 J -30290878.46 -30290878.22 -30290877.98 0.0272 0.0021  
 Moon -87645-02-05 06:42 J -30290878.45 -30290878.22 -30290877.99 0.0272 0.0009 \*  
 Mercury -87645-05-26 23:44 J -30290766.52 -30290766.51 -30290766.50 0.0271 0.0270  
 Mercury -87645-08-23 11:30 J -30290678.12 -30290678.02 -30290677.92 0.0271 0.0182  
 Venus -87645-10-17 10:32 J -30290623.27 -30290623.06 -30290622.85 0.0271 0.0012  
 Mercury -87645-11-19 23:15 J -30290589.66 -30290589.53 -30290589.39 0.0271 0.0095

Earth -87644-02-15 20:23 J -30290501.87 -30290501.65 -30290501.44 0.0271 0.0114  
 Moon -87644-02-15 23:59 J -30290501.71 -30290501.50 -30290501.29 0.0271 0.0129 \*  
 Mercury -87644-02-16 11:30 J -30290501.16 -30290501.02 -30290500.88 0.0271 0.0004  
 Mercury -87644-05-15 23:44 J -30290412.64 -30290412.51 -30290412.37 0.0271 0.0088  
 Mercury -87644-08-12 12:13 J -30290324.10 -30290323.99 -30290323.88 0.0271 0.0181  
 Earth -87643-02-27 11:15 J -30290125.12 -30290125.03 -30290124.92 0.0271 0.0247  
 Moon -87643-02-27 11:44 J -30290125.10 -30290125.01 -30290124.89 0.0271 0.0247 \*  
 Mars -87637-11-28 03:20 J -30287659.65 -30287659.36 -30287659.06 0.0280 0.0107  
 Moon -87632-07-19 06:27 J -30285965.36 -30285965.23 -30285965.08 0.0286 0.0239  
 Earth -87632-07-19 08:51 J -30285965.24 -30285965.13 -30285965.00 0.0286 0.0252 \*  
 Moon -87631-08-02 23:59 J -30285585.74 -30285585.50 -30285585.25 0.0287 0.0067  
 Earth -87631-08-03 03:49 J -30285585.58 -30285585.34 -30285585.09 0.0287 0.0083 \*  
 Venus -87630-04-02 20:08 J -30285342.79 -30285342.66 -30285342.52 0.0287 0.0225  
 Mercury -87630-06-25 18:42 J -30285258.82 -30285258.72 -30285258.61 0.0287 0.0224  
 Moon -87630-08-17 20:51 J -30285205.86 -30285205.63 -30285205.40 0.0287 0.0109  
 Earth -87630-08-17 23:15 J -30285205.77 -30285205.53 -30285205.29 0.0287 0.0092 \*  
 Mercury -87630-09-22 15:35 J -30285170.01 -30285169.85 -30285169.68 0.0287 0.0090  
 Venus -87630-11-18 20:37 J -30285112.80 -30285112.64 -30285112.47 0.0287 0.0181  
 Mercury -87630-12-20 11:59 J -30285081.16 -30285081.00 -30285080.83 0.0287 0.0043  
 Mercury -87629-03-18 07:54 J -30284992.30 -30284992.17 -30284992.03 0.0287 0.0173  
 Earth -87629-08-31 16:47 J -30284825.90 -30284825.80 -30284825.70 0.0287 0.0261  
 Moon -87629-08-31 16:47 J -30284825.85 -30284825.80 -30284825.73 0.0287 0.0278 \*  
 Mars -87623-12-10 04:47 J -30282534.56 -30282534.30 -30282534.03 0.0279 0.0049  
 Earth -87617-01-19 15:49 J -30280667.97 -30280667.84 -30280667.68 0.0273 0.0216  
 Moon -87617-01-19 19:25 J -30280667.82 -30280667.69 -30280667.54 0.0273 0.0221 \*  
 Earth -87616-01-30 05:59 J -30280291.47 -30280291.25 -30280291.02 0.0272 0.0082  
 Moon -87616-01-30 06:27 J -30280291.46 -30280291.23 -30280290.99 0.0272 0.0072 \*  
 Mercury -87615-01-10 12:13 J -30279946.07 -30279945.99 -30279945.91 0.0272 0.0219  
 Moon -87615-02-10 15:35 J -30279915.08 -30279914.85 -30279914.62 0.0272 0.0069  
 Earth -87615-02-10 19:25 J -30279914.93 -30279914.69 -30279914.46 0.0272 0.0054 \*

Mercury -87615-04-08 23:59 J -30279857.62 -30279857.50 -30279857.37 0.0272 0.0131

Venus -87615-04-29 09:20 J -30279837.32 -30279837.11 -30279836.91 0.0272 0.0016

Mercury -87615-07-06 11:59 J -30279769.14 -30279769.00 -30279768.86 0.0272 0.0042

Mercury -87615-10-03 00:13 J -30279680.63 -30279680.49 -30279680.35 0.0272 0.0050

Mercury -87615-12-30 12:42 J -30279592.09 -30279591.97 -30279591.85 0.0272 0.0143

Moon -87614-02-22 08:23 J -30279538.31 -30279538.15 -30279537.99 0.0272 0.0194

Earth -87614-02-22 09:06 J -30279538.28 -30279538.12 -30279537.94 0.0272 0.0188 \*

Mercury -87614-03-29 01:11 J -30279503.52 -30279503.45 -30279503.38 0.0272 0.0236

Mars -87608-01-06 16:03 J -30277392.92 -30277392.83 -30277392.74 0.0277 0.0266

Earth -87602-07-27 16:32 J -30275000.00 -30274999.81 -30274999.59 0.0287 0.0164

Moon -87602-07-27 20:23 J -30274999.86 -30274999.65 -30274999.43 0.0287 0.0149 \*

Earth -87601-08-10 13:11 J -30274620.20 -30274619.95 -30274619.69 0.0287 0.0011

Moon -87601-08-10 14:51 J -30274620.14 -30274619.88 -30274619.62 0.0287 0.0026 \*

Venus -87601-10-12 23:30 J -30274556.68 -30274556.52 -30274556.34 0.0288 0.0179

Mercury -87601-11-11 16:47 J -30274526.85 -30274526.80 -30274526.74 0.0288 0.0270

Mercury -87600-02-08 13:54 J -30274438.07 -30274437.92 -30274437.77 0.0288 0.0134

Mercury -87600-05-08 10:32 J -30274349.23 -30274349.06 -30274348.89 0.0288 0.0001

Venus -87600-05-31 00:27 J -30274326.59 -30274326.48 -30274326.34 0.0288 0.0230

Mercury -87600-08-05 06:42 J -30274260.37 -30274260.22 -30274260.07 0.0288 0.0131

Moon -87600-08-25 07:25 J -30274240.37 -30274240.19 -30274240.00 0.0288 0.0200

Earth -87600-08-25 08:51 J -30274240.32 -30274240.13 -30274239.93 0.0288 0.0184 \*

Mercury -87600-11-02 02:23 J -30274171.47 -30274171.40 -30274171.33 0.0288 0.0259

Mars -87594-01-31 14:23 J -30272255.01 -30272254.90 -30272254.76 0.0282 0.0247

Mars -87592-01-26 05:59 J -30271529.42 -30271529.25 -30271529.04 0.0279 0.0201

Earth -87588-01-14 02:37 J -30270080.42 -30270080.39 -30270080.34 0.0273 0.0269

Moon -87587-01-25 16:03 J -30269704.02 -30269703.83 -30269703.63 0.0272 0.0136

Earth -87587-01-25 17:30 J -30269703.97 -30269703.77 -30269703.56 0.0272 0.0139 \*

Earth -87586-02-06 06:56 J -30269327.45 -30269327.21 -30269326.97 0.0271 0.0005

Moon -87586-02-06 10:18 J -30269327.31 -30269327.07 -30269326.83 0.0271 0.0010 \*

Venus -87586-03-25 15:49 J -30269279.91 -30269279.84 -30269279.76 0.0271 0.0252

Mercury -87586-05-30 15:20 J -30269213.92 -30269213.86 -30269213.79 0.0271 0.0236

Mercury -87586-08-27 03:06 J -30269125.48 -30269125.37 -30269125.25 0.0271 0.0149

Venus -87586-11-09 15:49 J -30269051.04 -30269050.84 -30269050.64 0.0271 0.0070

Mercury -87586-11-23 15:06 J -30269037.01 -30269036.87 -30269036.73 0.0271 0.0059

Earth -87585-02-17 20:08 J -30268950.86 -30268950.66 -30268950.44 0.0271 0.0130

Moon -87585-02-17 21:35 J -30268950.81 -30268950.60 -30268950.39 0.0271 0.0139 \*

Mercury -87585-02-20 03:20 J -30268948.50 -30268948.36 -30268948.22 0.0271 0.0032

Mercury -87585-05-18 15:35 J -30268859.98 -30268859.85 -30268859.72 0.0271 0.0124

Mercury -87585-08-15 04:03 J -30268771.41 -30268771.33 -30268771.24 0.0271 0.0217

Moon -87584-02-28 08:08 J -30268574.23 -30268574.16 -30268574.08 0.0271 0.0255

Earth -87584-02-28 11:15 J -30268574.09 -30268574.03 -30268573.95 0.0271 0.0259 \*

Mars -87578-03-01 16:03 J -30266382.14 -30266381.83 -30266381.52 0.0278 0.0077

Moon -87573-07-20 07:25 J -30264414.34 -30264414.19 -30264414.03 0.0287 0.0221

Earth -87573-07-20 10:47 J -30264414.18 -30264414.05 -30264413.89 0.0287 0.0234 \*

Moon -87572-08-04 05:01 J -30264034.52 -30264034.29 -30264034.04 0.0287 0.0051

Earth -87572-08-04 05:59 J -30264034.49 -30264034.25 -30264034.00 0.0287 0.0064 \*

Venus -87571-04-25 04:47 J -30263770.49 -30263770.30 -30263770.10 0.0288 0.0130

Mercury -87571-06-28 12:42 J -30263706.11 -30263705.97 -30263705.84 0.0288 0.0178

Earth -87571-08-19 01:25 J -30263654.67 -30263654.44 -30263654.20 0.0288 0.0110

Moon -87571-08-19 03:49 J -30263654.56 -30263654.34 -30263654.12 0.0288 0.0126 \*

Mercury -87571-09-25 09:20 J -30263617.28 -30263617.11 -30263616.94 0.0288 0.0044

Venus -87571-12-11 05:15 J -30263540.33 -30263540.28 -30263540.22 0.0288 0.0277

Mercury -87571-12-23 05:30 J -30263528.43 -30263528.27 -30263528.10 0.0288 0.0089

Mercury -87570-03-22 01:25 J -30263439.55 -30263439.44 -30263439.33 0.0288 0.0217

Earth -87570-09-02 19:11 J -30263274.76 -30263274.70 -30263274.63 0.0288 0.0276

Mars -87564-03-18 23:44 J -30261250.76 -30261250.51 -30261250.25 0.0281 0.0096

Earth -87558-01-20 17:01 J -30259116.95 -30259116.79 -30259116.63 0.0272 0.0199

Moon -87558-01-20 18:27 J -30259116.88 -30259116.73 -30259116.55 0.0272 0.0200 \*

Moon -87557-02-01 03:35 J -30258740.59 -30258740.35 -30258740.11 0.0272 0.0053

Earth -87557-02-01 06:42 J -30258740.45 -30258740.22 -30258739.99 0.0272 0.0066 \*



Venus -87557-10-04 14:51 J -30258493.99 -30258493.88 -30258493.76 0.0272 0.0223  
 Mercury -87557-10-16 16:18 J -30258481.82 -30258481.82 -30258481.82 0.0272 0.0271  
 Mercury -87556-01-13 03:49 J -30258393.43 -30258393.34 -30258393.23 0.0271 0.0185  
 Moon -87556-02-11 18:42 J -30258363.94 -30258363.72 -30258363.50 0.0271 0.0082  
 Earth -87556-02-11 19:39 J -30258363.91 -30258363.68 -30258363.45 0.0271 0.0069 \*  
 Mercury -87556-04-11 15:49 J -30258304.97 -30258304.84 -30258304.71 0.0271 0.0096  
 Venus -87556-05-21 14:23 J -30258265.09 -30258264.90 -30258264.70 0.0271 0.0098  
 Mercury -87556-07-09 03:49 J -30258216.48 -30258216.34 -30258216.20 0.0271 0.0007  
 Mercury -87556-10-05 16:03 J -30258127.96 -30258127.83 -30258127.69 0.0271 0.0086  
 Mercury -87555-01-02 04:32 J -30258039.42 -30258039.31 -30258039.20 0.0271 0.0179  
 Earth -87555-02-23 09:20 J -30257987.26 -30257987.11 -30257986.95 0.0271 0.0201  
 Moon -87555-02-23 12:27 J -30257987.12 -30257986.98 -30257986.81 0.0271 0.0205 \*  
 Mars -87548-04-22 10:47 J -30255372.33 -30255372.05 -30255371.74 0.0279 0.0109  
 Moon -87543-07-28 17:01 J -30253449.02 -30253448.79 -30253448.55 0.0287 0.0132  
 Earth -87543-07-28 16:47 J -30253449.01 -30253448.80 -30253448.57 0.0287 0.0146 \*  
 Moon -87542-08-12 10:18 J -30253069.32 -30253069.07 -30253068.81 0.0288 0.0042  
 Earth -87542-08-12 13:25 J -30253069.19 -30253068.94 -30253068.69 0.0288 0.0027 \*  
 Venus -87542-11-05 06:56 J -30252984.41 -30252984.21 -30252984.00 0.0288 0.0087  
 Mercury -87542-11-15 10:03 J -30252974.18 -30252974.08 -30252973.97 0.0288 0.0228  
 Mercury -87541-02-12 07:11 J -30252885.37 -30252885.20 -30252885.04 0.0288 0.0092  
 Mercury -87541-05-11 03:35 J -30252796.52 -30252796.35 -30252796.18 0.0288 0.0042  
 Mercury -87541-08-07 23:44 J -30252707.65 -30252707.51 -30252707.38 0.0288 0.0172  
 Moon -87541-08-26 05:01 J -30252689.44 -30252689.29 -30252689.11 0.0288 0.0215  
 Earth -87541-08-26 08:51 J -30252689.30 -30252689.13 -30252688.93 0.0288 0.0199 \*  
 Mars -87534-05-05 21:20 J -30250245.87 -30250245.61 -30250245.34 0.0280 0.0055  
 Moon -87529-01-16 01:39 J -30248529.49 -30248529.43 -30248529.35 0.0273 0.0258  
 Earth -87529-01-16 03:35 J -30248529.44 -30248529.35 -30248529.26 0.0273 0.0252 \*  
 Earth -87528-01-26 18:13 J -30248152.95 -30248152.74 -30248152.53 0.0272 0.0122  
 Moon -87528-01-26 20:51 J -30248152.83 -30248152.63 -30248152.41 0.0272 0.0115 \*  
 Earth -87527-02-07 07:39 J -30247776.42 -30247776.18 -30247775.94 0.0271 0.0011

Moon -87527-02-07 09:20 J -30247776.35 -30247776.11 -30247775.86 0.0271 0.0026 \*  
 Venus -87527-04-16 21:20 J -30247707.76 -30247707.61 -30247707.44 0.0271 0.0169  
 Mercury -87527-06-02 06:56 J -30247661.29 -30247661.21 -30247661.11 0.0271 0.0203  
 Mercury -87527-08-29 18:56 J -30247572.83 -30247572.71 -30247572.58 0.0271 0.0114  
 Mercury -87527-11-26 06:56 J -30247484.35 -30247484.21 -30247484.07 0.0271 0.0024  
 Venus -87527-12-01 21:06 J -30247478.78 -30247478.62 -30247478.44 0.0271 0.0154  
 Moon -87526-02-18 17:30 J -30247399.96 -30247399.77 -30247399.56 0.0271 0.0150  
 Earth -87526-02-18 20:51 J -30247399.82 -30247399.63 -30247399.42 0.0271 0.0144 \*  
 Mercury -87526-02-22 19:11 J -30247395.84 -30247395.70 -30247395.56 0.0271 0.0068  
 Mercury -87526-05-22 07:25 J -30247307.30 -30247307.19 -30247307.07 0.0271 0.0161  
 Mercury -87526-08-18 20:08 J -30247218.71 -30247218.66 -30247218.61 0.0271 0.0254  
 Moon -87525-03-01 09:35 J -30247023.12 -30247023.10 -30247023.04 0.0271 0.0268  
 Mars -87520-06-02 04:03 J -30245104.42 -30245104.33 -30245104.20 0.0277 0.0260  
 Earth -87514-07-22 12:27 J -30242863.13 -30242862.98 -30242862.80 0.0287 0.0215  
 Moon -87514-07-22 12:56 J -30242863.12 -30242862.96 -30242862.78 0.0287 0.0201 \*  
 Earth -87513-08-05 07:54 J -30242483.42 -30242483.17 -30242482.92 0.0287 0.0046  
 Moon -87513-08-05 11:01 J -30242483.29 -30242483.04 -30242482.79 0.0287 0.0030 \*  
 Mercury -87512-04-03 09:20 J -30242242.17 -30242242.11 -30242242.05 0.0288 0.0269  
 Venus -87512-05-17 13:25 J -30242198.16 -30242197.94 -30242197.73 0.0288 0.0035  
 Mercury -87512-07-01 06:13 J -30242153.39 -30242153.24 -30242153.08 0.0288 0.0133  
 Earth -87512-08-20 03:20 J -30242103.58 -30242103.36 -30242103.13 0.0288 0.0127  
 Moon -87512-08-20 06:56 J -30242103.43 -30242103.21 -30242102.99 0.0288 0.0142 \*  
 Mercury -87512-09-28 02:51 J -30242064.55 -30242064.38 -30242064.21 0.0288 0.0004  
 Mercury -87512-12-25 23:01 J -30241975.69 -30241975.54 -30241975.39 0.0288 0.0133  
 Mercury -87511-03-24 18:42 J -30241886.78 -30241886.72 -30241886.65 0.0288 0.0261  
 Mars -87506-06-26 19:11 J -30239966.83 -30239966.70 -30239966.56 0.0282 0.0242  
 Mars -87504-06-21 09:49 J -30239241.26 -30239241.09 -30239240.90 0.0278 0.0207  
 Moon -87499-01-21 15:20 J -30237566.03 -30237565.86 -30237565.66 0.0272 0.0177  
 Earth -87499-01-21 18:27 J -30237565.90 -30237565.73 -30237565.55 0.0272 0.0182 \*  
 Moon -87498-02-02 05:44 J -30237189.48 -30237189.26 -30237189.03 0.0272 0.0037

Earth -87498-02-02 07:54 J -30237189.40 -30237189.17 -30237188.93 0.0272 0.0050 \*  
 Mercury -87498-10-20 08:08 J -30236929.22 -30236929.16 -30236929.09 0.0271 0.0236  
 Venus -87498-10-27 20:51 J -30236921.81 -30236921.63 -30236921.45 0.0271 0.0139  
 Mercury -87497-01-16 19:54 J -30236840.79 -30236840.67 -30236840.55 0.0271 0.0149  
 Earth -87497-02-13 20:51 J -30236812.86 -30236812.63 -30236812.41 0.0271 0.0085  
 Moon -87497-02-13 23:44 J -30236812.73 -30236812.51 -30236812.29 0.0271 0.0095 \*  
 Mercury -87497-04-14 07:39 J -30236752.31 -30236752.18 -30236752.04 0.0271 0.0060  
 Venus -87497-06-12 20:23 J -30236692.80 -30236692.65 -30236692.50 0.0271 0.0182  
 Mercury -87497-07-11 19:54 J -30236663.81 -30236663.67 -30236663.53 0.0271 0.0031  
 Mercury -87497-10-08 08:08 J -30236575.29 -30236575.16 -30236575.03 0.0271 0.0123  
 Mercury -87496-01-04 20:37 J -30236486.73 -30236486.64 -30236486.56 0.0271 0.0216  
 Earth -87496-02-24 10:18 J -30236436.20 -30236436.07 -30236435.92 0.0271 0.0215  
 Moon -87496-02-24 12:27 J -30236436.12 -30236435.98 -30236435.82 0.0271 0.0214 \*  
 Mars -87490-07-25 00:42 J -30234094.78 -30234094.47 -30234094.16 0.0278 0.0077  
 Moon -87485-07-14 22:03 J -30232277.64 -30232277.58 -30232277.49 0.0286 0.0274  
 Moon -87484-07-29 14:51 J -30231898.11 -30231897.88 -30231897.64 0.0287 0.0111  
 Earth -87484-07-29 18:42 J -30231897.95 -30231897.72 -30231897.50 0.0287 0.0127 \*  
 Moon -87483-08-13 11:59 J -30231518.24 -30231518.00 -30231517.76 0.0288 0.0060  
 Earth -87483-08-13 14:51 J -30231518.13 -30231517.88 -30231517.63 0.0288 0.0045 \*  
 Mercury -87483-11-18 03:35 J -30231421.48 -30231421.35 -30231421.21 0.0288 0.0183  
 Venus -87483-11-27 15:20 J -30231412.08 -30231411.86 -30231411.65 0.0288 0.0008  
 Mercury -87482-02-15 00:27 J -30231332.65 -30231332.48 -30231332.31 0.0288 0.0048  
 Mercury -87482-05-14 20:51 J -30231243.79 -30231243.63 -30231243.46 0.0288 0.0086  
 Mercury -87482-08-11 16:47 J -30231154.90 -30231154.80 -30231154.68 0.0288 0.0215  
 Earth -87482-08-28 10:32 J -30231138.22 -30231138.06 -30231137.89 0.0288 0.0214  
 Moon -87482-08-28 10:18 J -30231138.21 -30231138.07 -30231137.91 0.0288 0.0228 \*  
 Mars -87476-08-12 13:25 J -30228962.20 -30228961.94 -30228961.69 0.0282 0.0092  
 Earth -87470-01-17 04:18 J -30226978.43 -30226978.32 -30226978.19 0.0273 0.0235  
 Moon -87470-01-17 06:56 J -30226978.31 -30226978.21 -30226978.08 0.0273 0.0237 \*  
 Earth -87469-01-28 19:11 J -30226601.91 -30226601.70 -30226601.48 0.0272 0.0105

Moon -87469-01-28 22:03 J -30226601.80 -30226601.58 -30226601.35 0.0272 0.0095 \*  
 Moon -87468-02-08 06:13 J -30226225.48 -30226225.24 -30226224.99 0.0272 0.0041  
 Earth -87468-02-08 08:51 J -30226225.37 -30226225.13 -30226224.90 0.0272 0.0028 \*  
 Mercury -87468-03-08 11:15 J -30226197.07 -30226197.03 -30226196.98 0.0271 0.0255  
 Venus -87468-05-09 03:20 J -30226135.56 -30226135.36 -30226135.16 0.0271 0.0086  
 Mercury -87468-06-04 23:01 J -30226108.65 -30226108.54 -30226108.43 0.0271 0.0167  
 Mercury -87468-09-01 10:47 J -30226020.18 -30226020.05 -30226019.91 0.0271 0.0079  
 Mercury -87468-11-28 23:01 J -30225931.68 -30225931.54 -30225931.40 0.0271 0.0014  
 Venus -87468-12-24 03:06 J -30225906.46 -30225906.37 -30225906.27 0.0271 0.0237  
 Moon -87467-02-19 19:39 J -30225848.85 -30225848.68 -30225848.48 0.0271 0.0163  
 Earth -87467-02-19 22:03 J -30225848.76 -30225848.58 -30225848.38 0.0271 0.0159 \*  
 Mercury -87467-02-25 11:01 J -30225843.16 -30225843.04 -30225842.90 0.0271 0.0106  
 Mercury -87467-05-24 23:30 J -30225754.61 -30225754.52 -30225754.42 0.0271 0.0198  
 Mars -87460-09-16 03:49 J -30223083.63 -30223083.34 -30223083.05 0.0279 0.0116  
 Earth -87455-07-23 15:49 J -30221312.02 -30221311.84 -30221311.66 0.0287 0.0195  
 Moon -87455-07-23 19:25 J -30221311.87 -30221311.69 -30221311.48 0.0287 0.0179 \*  
 Earth -87454-08-07 11:01 J -30220932.29 -30220932.04 -30220931.78 0.0287 0.0027  
 Moon -87454-08-07 13:54 J -30220932.18 -30220931.92 -30220931.66 0.0287 0.0012 \*  
 Mercury -87453-04-06 03:06 J -30220689.47 -30220689.37 -30220689.25 0.0288 0.0222  
 Venus -87453-06-08 22:32 J -30220625.77 -30220625.56 -30220625.35 0.0288 0.0063  
 Mercury -87453-07-04 00:13 J -30220600.65 -30220600.49 -30220600.33 0.0288 0.0086  
 Moon -87453-08-21 05:59 J -30220552.46 -30220552.25 -30220552.02 0.0288 0.0157  
 Earth -87453-08-21 06:42 J -30220552.44 -30220552.22 -30220552.00 0.0288 0.0144 \*  
 Mercury -87453-09-30 20:37 J -30220511.80 -30220511.64 -30220511.47 0.0288 0.0048  
 Mercury -87453-12-28 16:32 J -30220422.93 -30220422.81 -30220422.67 0.0288 0.0179  
 Mars -87446-09-29 04:18 J -30217957.58 -30217957.32 -30217957.06 0.0280 0.0063  
 Moon -87440-01-22 18:13 J -30216014.92 -30216014.74 -30216014.54 0.0272 0.0156  
 Earth -87440-01-22 20:51 J -30216014.81 -30216014.63 -30216014.43 0.0272 0.0164 \*  
 Earth -87439-02-03 10:32 J -30215638.30 -30215638.06 -30215637.83 0.0272 0.0032  
 Moon -87439-02-03 12:27 J -30215638.21 -30215637.98 -30215637.75 0.0272 0.0017 \*

Mercury -87439-10-23 00:13 J -30215376.58 -30215376.49 -30215376.40 0.0271 0.0199

Venus -87439-11-19 03:35 J -30215349.55 -30215349.35 -30215349.14 0.0271 0.0053

Mercury -87438-01-19 11:59 J -30215288.13 -30215288.00 -30215287.87 0.0271 0.0111

Earth -87438-02-14 23:01 J -30215261.75 -30215261.54 -30215261.31 0.0271 0.0102

Moon -87438-02-15 01:39 J -30215261.65 -30215261.43 -30215261.20 0.0271 0.0110 \*

Mercury -87438-04-17 23:59 J -30215199.64 -30215199.50 -30215199.36 0.0271 0.0021

Venus -87438-07-06 03:06 J -30215120.38 -30215120.37 -30215120.34 0.0271 0.0270

Mercury -87438-07-15 12:13 J -30215111.13 -30215110.99 -30215110.86 0.0271 0.0070

Mercury -87438-10-12 00:27 J -30215022.59 -30215022.48 -30215022.37 0.0271 0.0163

Mercury -87437-01-08 12:56 J -30214934.00 -30214933.96 -30214933.91 0.0271 0.0256

Moon -87437-02-26 10:18 J -30214885.20 -30214885.07 -30214884.92 0.0271 0.0223

Earth -87437-02-26 13:11 J -30214885.08 -30214884.95 -30214884.83 0.0271 0.0230 \*

Mars -87432-10-25 18:13 J -30212816.83 -30212816.74 -30212816.60 0.0277 0.0259

Moon -87426-07-16 22:47 J -30210726.65 -30210726.55 -30210726.43 0.0286 0.0254

Earth -87426-07-17 02:37 J -30210726.46 -30210726.39 -30210726.30 0.0286 0.0271 \*

Moon -87425-07-30 19:25 J -30210346.93 -30210346.69 -30210346.46 0.0287 0.0092

Earth -87425-07-30 21:20 J -30210346.84 -30210346.61 -30210346.37 0.0287 0.0108 \*

Earth -87424-08-14 17:15 J -30209967.02 -30209966.78 -30209966.53 0.0288 0.0064

Moon -87424-08-14 18:42 J -30209966.96 -30209966.72 -30209966.49 0.0288 0.0077 \*

Mercury -87424-08-24 00:13 J -30209957.53 -30209957.49 -30209957.43 0.0288 0.0274

Mercury -87424-11-20 21:35 J -30209868.75 -30209868.60 -30209868.45 0.0288 0.0136

Venus -87424-12-20 00:13 J -30209839.69 -30209839.49 -30209839.29 0.0288 0.0104

Mercury -87423-02-17 18:13 J -30209779.91 -30209779.74 -30209779.57 0.0288 0.0003

Mercury -87423-05-17 14:23 J -30209691.04 -30209690.90 -30209690.74 0.0288 0.0131

Mercury -87423-08-14 10:18 J -30209602.14 -30209602.07 -30209602.00 0.0288 0.0259

Earth -87423-08-29 12:42 J -30209587.11 -30209586.97 -30209586.81 0.0288 0.0231

Moon -87423-08-29 16:18 J -30209586.94 -30209586.82 -30209586.67 0.0288 0.0242 \*

Mars -87418-11-20 05:44 J -30207678.39 -30207678.26 -30207678.11 0.0283 0.0240

Mars -87416-11-15 01:54 J -30206952.59 -30206952.42 -30206952.24 0.0280 0.0213

Earth -87411-01-18 06:42 J -30205427.36 -30205427.22 -30205427.07 0.0273 0.0216

Moon -87411-01-18 09:35 J -30205427.25 -30205427.10 -30205426.95 0.0273 0.0214 \*  
 Moon -87410-01-29 19:39 J -30205050.91 -30205050.68 -30205050.44 0.0272 0.0073  
 Earth -87410-01-29 21:35 J -30205050.82 -30205050.60 -30205050.37 0.0272 0.0086 \*  
 Moon -87409-02-10 07:54 J -30204674.39 -30204674.17 -30204673.94 0.0272 0.0060  
 Earth -87409-02-10 11:01 J -30204674.27 -30204674.04 -30204673.80 0.0272 0.0046 \*  
 Mercury -87409-03-11 03:20 J -30204644.44 -30204644.36 -30204644.28 0.0272 0.0218  
 Venus -87409-05-31 10:03 J -30204563.29 -30204563.08 -30204562.87 0.0271 0.0002  
 Mercury -87409-06-07 15:06 J -30204555.99 -30204555.87 -30204555.74 0.0271 0.0130  
 Mercury -87409-09-04 03:06 J -30204467.51 -30204467.37 -30204467.23 0.0271 0.0040  
 Mercury -87409-12-01 15:06 J -30204379.00 -30204378.87 -30204378.73 0.0271 0.0052  
 Earth -87408-02-21 00:42 J -30204297.65 -30204297.47 -30204297.29 0.0271 0.0175  
 Moon -87408-02-21 02:37 J -30204297.56 -30204297.39 -30204297.21 0.0271 0.0176 \*  
 Mercury -87408-02-28 03:20 J -30204290.47 -30204290.36 -30204290.23 0.0271 0.0144  
 Mercury -87408-05-27 16:03 J -30204201.90 -30204201.83 -30204201.76 0.0271 0.0238  
 Mars -87402-12-19 03:06 J -30201805.67 -30201805.37 -30201805.04 0.0278 0.0065  
 Earth -87396-07-24 21:06 J -30199760.81 -30199760.62 -30199760.41 0.0287 0.0175  
 Moon -87396-07-24 22:32 J -30199760.77 -30199760.56 -30199760.33 0.0287 0.0158 \*  
 Moon -87395-08-08 15:06 J -30199381.13 -30199380.87 -30199380.61 0.0288 0.0009  
 Earth -87395-08-08 16:47 J -30199381.05 -30199380.80 -30199380.55 0.0288 0.0006 \*  
 Venus -87395-11-14 07:54 J -30199283.27 -30199283.17 -30199283.05 0.0288 0.0246  
 Mercury -87394-04-09 22:03 J -30199136.72 -30199136.58 -30199136.44 0.0288 0.0170  
 Venus -87394-07-02 09:06 J -30199053.30 -30199053.12 -30199052.94 0.0288 0.0165  
 Mercury -87394-07-07 18:42 J -30199047.89 -30199047.72 -30199047.55 0.0288 0.0035  
 Moon -87394-08-23 08:23 J -30199001.34 -30199001.15 -30199000.94 0.0288 0.0176  
 Earth -87394-08-23 12:13 J -30199001.19 -30199000.99 -30199000.78 0.0288 0.0163 \*  
 Mercury -87394-10-04 15:06 J -30198959.03 -30198958.87 -30198958.71 0.0288 0.0098  
 Mercury -87393-01-01 10:47 J -30198870.14 -30198870.05 -30198869.94 0.0288 0.0228  
 Mars -87387-01-06 01:11 J -30196673.70 -30196673.45 -30196673.19 0.0281 0.0083  
 Earth -87382-01-13 08:37 J -30194840.14 -30194840.14 -30194840.10 0.0273 0.0273  
 Earth -87381-01-25 00:13 J -30194463.68 -30194463.49 -30194463.28 0.0272 0.0146

Moon -87381-01-25 02:08 J -30194463.60 -30194463.41 -30194463.20 0.0272 0.0135 \*  
 Earth -87380-02-04 14:08 J -30194087.15 -30194086.91 -30194086.67 0.0272 0.0014  
 Moon -87380-02-04 17:30 J -30194087.01 -30194086.77 -30194086.53 0.0272 0.0004 \*  
 Mercury -87380-07-29 04:47 J -30193912.35 -30193912.30 -30193912.24 0.0271 0.0249  
 Mercury -87380-10-25 16:32 J -30193823.92 -30193823.81 -30193823.70 0.0271 0.0161  
 Venus -87380-12-11 11:01 J -30193777.24 -30193777.04 -30193776.83 0.0271 0.0036  
 Mercury -87379-01-22 04:32 J -30193735.45 -30193735.31 -30193735.18 0.0271 0.0072  
 Moon -87379-02-16 01:11 J -30193710.66 -30193710.45 -30193710.22 0.0271 0.0123  
 Earth -87379-02-16 02:51 J -30193710.58 -30193710.38 -30193710.16 0.0271 0.0118 \*  
 Mercury -87379-04-20 16:32 J -30193646.95 -30193646.81 -30193646.67 0.0271 0.0019  
 Mercury -87379-07-18 04:32 J -30193558.43 -30193558.31 -30193558.17 0.0271 0.0111  
 Mercury -87379-10-14 17:01 J -30193469.88 -30193469.79 -30193469.69 0.0271 0.0204  
 Moon -87378-02-27 13:54 J -30193334.03 -30193333.92 -30193333.80 0.0271 0.0236  
 Earth -87378-02-27 16:47 J -30193333.89 -30193333.80 -30193333.69 0.0271 0.0245 \*  
 Mars -87371-02-09 00:27 J -30190795.76 -30190795.48 -30190795.19 0.0279 0.0120  
 Moon -87367-07-18 08:37 J -30189175.27 -30189175.14 -30189175.00 0.0286 0.0234  
 Earth -87367-07-18 08:23 J -30189175.26 -30189175.15 -30189175.02 0.0286 0.0250 \*  
 Earth -87366-08-02 03:06 J -30188795.61 -30188795.37 -30188795.12 0.0287 0.0086  
 Moon -87366-08-02 05:44 J -30188795.50 -30188795.26 -30188795.02 0.0287 0.0071 \*  
 Venus -87365-05-26 09:35 J -30188497.24 -30188497.10 -30188496.94 0.0287 0.0205  
 Earth -87365-08-15 23:01 J -30188415.78 -30188415.54 -30188415.30 0.0287 0.0084  
 Moon -87365-08-16 02:37 J -30188415.62 -30188415.39 -30188415.15 0.0287 0.0098 \*  
 Mercury -87365-08-26 19:11 J -30188404.81 -30188404.70 -30188404.59 0.0287 0.0222  
 Mercury -87365-11-23 16:03 J -30188315.99 -30188315.83 -30188315.66 0.0288 0.0086  
 Venus -87364-01-11 10:32 J -30188267.20 -30188267.06 -30188266.90 0.0288 0.0206  
 Mercury -87364-02-20 12:42 J -30188227.14 -30188226.97 -30188226.80 0.0288 0.0048  
 Mercury -87364-05-20 08:37 J -30188138.26 -30188138.14 -30188138.00 0.0288 0.0180  
 Earth -87364-08-30 17:59 J -30188035.86 -30188035.75 -30188035.61 0.0288 0.0249  
 Moon -87364-08-30 20:08 J -30188035.76 -30188035.66 -30188035.54 0.0288 0.0258 \*  
 Mars -87357-02-22 18:13 J -30185669.00 -30185668.74 -30185668.48 0.0281 0.0068

Moon -87352-01-19 08:23 J -30183876.32 -30183876.15 -30183875.97 0.0273 0.0192  
 Earth -87352-01-19 09:49 J -30183876.25 -30183876.09 -30183875.92 0.0273 0.0197 \*  
 Moon -87351-01-30 21:20 J -30183499.84 -30183499.61 -30183499.37 0.0272 0.0052  
 Earth -87351-01-31 00:42 J -30183499.69 -30183499.47 -30183499.23 0.0272 0.0068 \*  
 Venus -87351-11-06 17:30 J -30183219.86 -30183219.77 -30183219.66 0.0272 0.0236  
 Mercury -87351-12-16 08:08 J -30183180.18 -30183180.16 -30183180.15 0.0272 0.0268  
 Earth -87350-02-11 14:37 J -30183123.12 -30183122.89 -30183122.66 0.0272 0.0064  
 Moon -87350-02-11 15:06 J -30183123.08 -30183122.87 -30183122.64 0.0272 0.0077 \*  
 Mercury -87350-03-14 19:39 J -30183091.78 -30183091.68 -30183091.57 0.0272 0.0180  
 Mercury -87350-06-11 07:25 J -30183003.32 -30183003.19 -30183003.05 0.0272 0.0092  
 Venus -87350-06-23 17:15 J -30182990.97 -30182990.78 -30182990.58 0.0272 0.0090  
 Mercury -87350-09-07 19:39 J -30182914.83 -30182914.68 -30182914.54 0.0272 0.0007  
 Mercury -87350-12-05 07:39 J -30182826.31 -30182826.18 -30182826.04 0.0271 0.0092  
 Earth -87349-02-23 04:32 J -30182746.47 -30182746.31 -30182746.14 0.0271 0.0192  
 Moon -87349-02-23 07:54 J -30182746.34 -30182746.17 -30182746.00 0.0271 0.0191 \*  
 Mercury -87349-03-02 20:08 J -30182737.76 -30182737.66 -30182737.55 0.0271 0.0185  
 Mars -87343-03-22 06:13 J -30180527.38 -30180527.24 -30180527.07 0.0276 0.0241  
 Moon -87337-07-26 01:54 J -30178209.65 -30178209.42 -30178209.19 0.0287 0.0136  
 Earth -87337-07-26 05:01 J -30178209.49 -30178209.29 -30178209.06 0.0287 0.0153 \*  
 Moon -87336-08-09 20:37 J -30177829.89 -30177829.64 -30177829.39 0.0288 0.0031  
 Earth -87336-08-10 00:27 J -30177829.73 -30177829.48 -30177829.22 0.0288 0.0016 \*  
 Venus -87336-12-06 19:54 J -30177710.85 -30177710.67 -30177710.47 0.0288 0.0140  
 Mercury -87335-01-13 19:54 J -30177672.74 -30177672.67 -30177672.58 0.0288 0.0253  
 Mercury -87335-04-12 17:01 J -30177583.94 -30177583.79 -30177583.63 0.0288 0.0116  
 Mercury -87335-07-10 13:39 J -30177495.10 -30177494.93 -30177494.76 0.0288 0.0020  
 Venus -87335-07-24 20:37 J -30177480.70 -30177480.64 -30177480.56 0.0288 0.0271  
 Moon -87335-08-24 17:44 J -30177449.92 -30177449.76 -30177449.57 0.0288 0.0196  
 Earth -87335-08-24 19:39 J -30177449.86 -30177449.68 -30177449.47 0.0288 0.0184 \*  
 Mercury -87335-10-07 09:49 J -30177406.23 -30177406.09 -30177405.94 0.0288 0.0151  
 Mercury -87334-01-04 05:44 J -30177317.30 -30177317.26 -30177317.22 0.0288 0.0279



Mars -87329-04-15 00:42 J -30175389.62 -30175389.47 -30175389.30 0.0283 0.0228  
 Mars -87327-04-10 18:13 J -30174663.89 -30174663.74 -30174663.57 0.0279 0.0226  
 Earth -87323-01-14 13:54 J -30173289.00 -30173288.92 -30173288.83 0.0273 0.0253  
 Moon -87323-01-14 14:23 J -30173288.97 -30173288.90 -30173288.82 0.0273 0.0256 \*  
 Earth -87322-01-26 05:30 J -30172912.48 -30172912.27 -30172912.06 0.0272 0.0125  
 Moon -87322-01-26 08:51 J -30172912.34 -30172912.13 -30172911.91 0.0272 0.0113 \*  
 Moon -87321-02-06 18:42 J -30172535.97 -30172535.72 -30172535.48 0.0272 0.0021  
 Earth -87321-02-06 19:11 J -30172535.93 -30172535.70 -30172535.46 0.0272 0.0008 \*  
 Venus -87321-05-18 19:39 J -30172433.82 -30172433.68 -30172433.53 0.0271 0.0196  
 Mercury -87321-07-31 21:35 J -30172359.69 -30172359.60 -30172359.51 0.0271 0.0208  
 Mercury -87321-10-28 09:06 J -30172271.24 -30172271.12 -30172270.99 0.0271 0.0121  
 Venus -87320-01-02 19:25 J -30172204.87 -30172204.69 -30172204.51 0.0271 0.0128  
 Mercury -87320-01-24 21:06 J -30172182.76 -30172182.62 -30172182.48 0.0271 0.0031  
 Moon -87320-02-17 04:47 J -30172159.49 -30172159.30 -30172159.09 0.0271 0.0142  
 Earth -87320-02-17 08:23 J -30172159.35 -30172159.15 -30172158.94 0.0271 0.0136 \*  
 Mercury -87320-04-23 09:20 J -30172094.25 -30172094.11 -30172093.97 0.0271 0.0061  
 Mercury -87320-07-20 21:35 J -30172005.72 -30172005.60 -30172005.48 0.0271 0.0154  
 Mercury -87320-10-17 10:03 J -30171917.13 -30171917.08 -30171917.02 0.0271 0.0248  
 Earth -87319-02-28 22:18 J -30171782.61 -30171782.57 -30171782.49 0.0271 0.0262  
 Moon -87319-02-28 23:30 J -30171782.60 -30171782.52 -30171782.43 0.0271 0.0251 \*  
 Mars -87313-05-13 07:54 J -30169517.49 -30169517.17 -30169516.85 0.0278 0.0057  
 Earth -87308-07-19 17:15 J -30167623.92 -30167623.78 -30167623.62 0.0286 0.0227  
 Moon -87308-07-19 21:06 J -30167623.78 -30167623.62 -30167623.45 0.0286 0.0212 \*  
 Earth -87307-08-03 11:59 J -30167244.24 -30167244.00 -30167243.75 0.0287 0.0064  
 Moon -87307-08-03 15:35 J -30167244.10 -30167243.85 -30167243.59 0.0287 0.0048 \*  
 Venus -87306-06-18 22:18 J -30166924.77 -30166924.57 -30166924.36 0.0287 0.0097  
 Earth -87306-08-18 07:39 J -30166864.41 -30166864.18 -30166863.94 0.0287 0.0105  
 Moon -87306-08-18 08:51 J -30166864.36 -30166864.13 -30166863.89 0.0287 0.0117 \*  
 Mercury -87306-08-30 14:37 J -30166852.03 -30166851.89 -30166851.75 0.0287 0.0165  
 Mercury -87306-11-27 11:30 J -30166763.19 -30166763.02 -30166762.85 0.0288 0.0030

Mercury -87305-02-24 07:54 J -30166674.33 -30166674.17 -30166674.01 0.0288 0.0103  
 Mercury -87305-05-23 03:35 J -30166585.44 -30166585.35 -30166585.24 0.0288 0.0233  
 Moon -87305-09-01 00:13 J -30166484.56 -30166484.49 -30166484.41 0.0288 0.0274  
 Earth -87305-09-01 02:23 J -30166484.48 -30166484.40 -30166484.30 0.0288 0.0268 \*  
 Mars -87299-06-01 16:18 J -30164385.08 -30164384.82 -30164384.56 0.0282 0.0076  
 Moon -87293-01-21 11:01 J -30162325.23 -30162325.04 -30162324.86 0.0274 0.0171  
 Earth -87293-01-21 14:23 J -30162325.08 -30162324.90 -30162324.72 0.0274 0.0177 \*  
 Earth -87292-02-01 05:30 J -30161948.50 -30161948.27 -30161948.03 0.0273 0.0047  
 Moon -87292-02-01 05:59 J -30161948.48 -30161948.25 -30161948.02 0.0273 0.0033 \*  
 Venus -87292-11-29 01:54 J -30161647.60 -30161647.42 -30161647.25 0.0272 0.0145  
 Mercury -87292-12-19 00:27 J -30161627.55 -30161627.48 -30161627.40 0.0272 0.0229  
 Earth -87291-02-12 19:25 J -30161571.92 -30161571.69 -30161571.46 0.0272 0.0083  
 Moon -87291-02-12 23:01 J -30161571.76 -30161571.54 -30161571.31 0.0272 0.0095 \*  
 Mercury -87291-03-17 12:13 J -30161539.11 -30161538.99 -30161538.87 0.0272 0.0140  
 Mercury -87291-06-14 00:13 J -30161450.63 -30161450.49 -30161450.35 0.0272 0.0050  
 Venus -87291-07-16 01:25 J -30161418.58 -30161418.44 -30161418.28 0.0272 0.0181  
 Mercury -87291-09-10 12:13 J -30161362.13 -30161361.99 -30161361.85 0.0272 0.0042  
 Mercury -87291-12-08 00:27 J -30161273.60 -30161273.48 -30161273.35 0.0272 0.0134  
 Moon -87290-02-24 09:35 J -30161195.25 -30161195.10 -30161194.93 0.0272 0.0206  
 Earth -87290-02-24 09:49 J -30161195.24 -30161195.09 -30161194.94 0.0272 0.0210 \*  
 Mercury -87290-03-06 12:56 J -30161185.03 -30161184.96 -30161184.88 0.0272 0.0228  
 Jupiter -87286-08-13 23:30 J -30159563.98 -30159563.52 -30159563.03 0.0274 0.0038  
 Mars -87283-07-06 18:56 J -30158505.98 -30158505.71 -30158505.43 0.0279 0.0143  
 Moon -87279-07-13 19:54 J -30157037.74 -30157037.67 -30157037.58 0.0285 0.0271  
 Moon -87278-07-28 13:39 J -30156658.16 -30156657.93 -30156657.70 0.0287 0.0114  
 Earth -87278-07-28 16:18 J -30156658.04 -30156657.82 -30156657.58 0.0287 0.0129 \*  
 Moon -87277-08-11 11:15 J -30156278.27 -30156278.03 -30156277.79 0.0288 0.0053  
 Earth -87277-08-11 11:30 J -30156278.27 -30156278.02 -30156277.77 0.0288 0.0039 \*  
 Venus -87277-12-29 10:03 J -30156138.30 -30156138.08 -30156137.87 0.0288 0.0027  
 Mercury -87276-01-16 16:03 J -30156119.95 -30156119.83 -30156119.70 0.0288 0.0192

Mercury -87276-04-15 12:56 J -30156031.12 -30156030.96 -30156030.79 0.0288 0.0056

Mercury -87276-07-13 09:35 J -30155942.27 -30155942.10 -30155941.94 0.0288 0.0078

Earth -87276-08-26 06:27 J -30155898.39 -30155898.23 -30155898.04 0.0288 0.0205

Moon -87276-08-26 09:06 J -30155898.28 -30155898.12 -30155897.96 0.0288 0.0216 \*

Mercury -87276-10-10 05:30 J -30155853.38 -30155853.27 -30155853.15 0.0288 0.0208

Mars -87269-07-18 18:42 J -30153379.97 -30153379.72 -30153379.45 0.0281 0.0085

Earth -87264-01-15 19:54 J -30151737.79 -30151737.67 -30151737.54 0.0273 0.0233

Moon -87264-01-15 23:15 J -30151737.64 -30151737.53 -30151737.40 0.0273 0.0235 \*

Moon -87263-01-27 11:44 J -30151361.24 -30151361.01 -30151360.77 0.0272 0.0093

Earth -87263-01-27 11:30 J -30151361.23 -30151361.02 -30151360.79 0.0272 0.0106 \*

Moon -87262-02-07 21:49 J -30150984.83 -30150984.59 -30150984.35 0.0272 0.0039

Earth -87262-02-08 01:39 J -30150984.67 -30150984.43 -30150984.20 0.0272 0.0026 \*

Mercury -87262-05-08 02:37 J -30150895.43 -30150895.39 -30150895.34 0.0272 0.0254

Venus -87262-06-11 04:47 J -30150861.49 -30150861.30 -30150861.10 0.0271 0.0102

Mercury -87262-08-04 14:23 J -30150807.01 -30150806.90 -30150806.79 0.0271 0.0166

Mercury -87262-11-01 02:08 J -30150718.54 -30150718.41 -30150718.27 0.0271 0.0077

Venus -87261-01-26 04:18 J -30150632.42 -30150632.32 -30150632.19 0.0271 0.0223

Mercury -87261-01-28 14:08 J -30150630.05 -30150629.91 -30150629.77 0.0271 0.0015

Moon -87261-02-19 14:37 J -30150608.08 -30150607.89 -30150607.71 0.0271 0.0158

Earth -87261-02-19 15:06 J -30150608.07 -30150607.87 -30150607.67 0.0271 0.0154 \*

Mercury -87261-04-26 02:23 J -30150541.53 -30150541.40 -30150541.27 0.0271 0.0106

Mercury -87261-07-23 14:51 J -30150452.98 -30150452.88 -30150452.79 0.0271 0.0199

Moon -87260-03-02 09:06 J -30150231.16 -30150231.12 -30150231.07 0.0271 0.0265

Mars -87255-08-15 21:20 J -30148238.79 -30148238.61 -30148238.42 0.0277 0.0228

Earth -87249-07-21 05:15 J -30146072.45 -30146072.28 -30146072.10 0.0286 0.0203

Moon -87249-07-21 07:11 J -30146072.38 -30146072.20 -30146071.99 0.0286 0.0189 \*

Moon -87248-08-04 22:47 J -30145692.81 -30145692.55 -30145692.28 0.0287 0.0028

Earth -87248-08-04 23:59 J -30145692.75 -30145692.50 -30145692.25 0.0287 0.0040 \*

Mercury -87247-06-05 13:39 J -30145388.02 -30145387.93 -30145387.84 0.0287 0.0242

Venus -87247-07-11 12:27 J -30145352.20 -30145351.98 -30145351.76 0.0287 0.0017

Moon -87247-08-19 16:03 J -30145313.05 -30145312.83 -30145312.60 0.0287 0.0138  
 Earth -87247-08-19 19:25 J -30145312.91 -30145312.69 -30145312.46 0.0287 0.0128 \*  
 Mercury -87247-09-02 10:47 J -30145299.21 -30145299.05 -30145298.89 0.0287 0.0105  
 Mercury -87247-11-30 07:25 J -30145210.36 -30145210.19 -30145210.02 0.0287 0.0030  
 Mercury -87246-02-27 03:35 J -30145121.49 -30145121.35 -30145121.21 0.0288 0.0161  
 Earth -87246-09-03 13:39 J -30144932.93 -30144932.93 -30144932.92 0.0288 0.0287  
 Mars -87241-09-08 17:01 J -30143100.94 -30143100.79 -30143100.61 0.0283 0.0220  
 Mars -87239-09-04 13:25 J -30142375.08 -30142374.94 -30142374.79 0.0280 0.0235  
 Moon -87234-01-22 18:42 J -30140773.90 -30140773.72 -30140773.52 0.0274 0.0151  
 Earth -87234-01-22 19:54 J -30140773.87 -30140773.67 -30140773.48 0.0274 0.0157 \*  
 Earth -87233-02-03 11:01 J -30140397.27 -30140397.04 -30140396.80 0.0273 0.0027  
 Moon -87233-02-03 14:37 J -30140397.13 -30140396.89 -30140396.66 0.0273 0.0012 \*  
 Venus -87233-12-21 10:32 J -30140075.27 -30140075.06 -30140074.86 0.0272 0.0053  
 Mercury -87233-12-21 17:15 J -30140074.88 -30140074.78 -30140074.68 0.0272 0.0188 \*  
 Earth -87232-02-14 01:11 J -30140020.66 -30140020.45 -30140020.22 0.0272 0.0102  
 Moon -87232-02-14 02:08 J -30140020.63 -30140020.41 -30140020.18 0.0272 0.0111 \*  
 Mercury -87232-03-20 05:01 J -30139986.42 -30139986.29 -30139986.16 0.0272 0.0099  
 Mercury -87232-06-16 17:01 J -30139897.93 -30139897.79 -30139897.65 0.0272 0.0009  
 Mercury -87232-09-13 05:15 J -30139809.41 -30139809.28 -30139809.15 0.0272 0.0085  
 Mercury -87232-12-10 17:30 J -30139720.87 -30139720.77 -30139720.66 0.0272 0.0179  
 Moon -87231-02-25 12:42 J -30139644.11 -30139643.97 -30139643.83 0.0272 0.0221  
 Earth -87231-02-25 15:49 J -30139643.96 -30139643.84 -30139643.70 0.0272 0.0228 \*  
 Mars -87225-10-08 10:03 J -30137227.40 -30137227.08 -30137226.76 0.0277 0.0029  
 Moon -87220-07-15 10:32 J -30135486.17 -30135486.06 -30135485.93 0.0286 0.0250  
 Earth -87220-07-15 12:27 J -30135486.06 -30135485.98 -30135485.87 0.0286 0.0264 \*  
 Earth -87219-07-30 05:44 J -30135106.49 -30135106.26 -30135106.02 0.0287 0.0105  
 Moon -87219-07-30 07:11 J -30135106.43 -30135106.20 -30135105.96 0.0287 0.0092 \*  
 Earth -87218-08-14 00:56 J -30134726.71 -30134726.46 -30134726.21 0.0288 0.0063  
 Moon -87218-08-14 04:32 J -30134726.55 -30134726.31 -30134726.07 0.0288 0.0075 \*  
 Mercury -87218-10-23 15:35 J -30134655.91 -30134655.85 -30134655.78 0.0288 0.0265

Mercury -87217-01-20 12:42 J -30134567.12 -30134566.97 -30134566.81 0.0288 0.0128  
 Venus -87217-01-22 01:11 J -30134565.65 -30134565.45 -30134565.24 0.0288 0.0090  
 Mercury -87217-04-18 09:35 J -30134478.27 -30134478.10 -30134477.93 0.0288 0.0008  
 Mercury -87217-07-16 05:44 J -30134389.40 -30134389.26 -30134389.11 0.0288 0.0140  
 Earth -87217-08-27 19:54 J -30134346.82 -30134346.67 -30134346.51 0.0288 0.0226  
 Moon -87217-08-27 23:30 J -30134346.65 -30134346.52 -30134346.37 0.0288 0.0237 \*  
 Mercury -87217-10-13 01:25 J -30134300.49 -30134300.44 -30134300.37 0.0288 0.0269  
 Mars -87211-10-27 00:13 J -30132095.74 -30132095.49 -30132095.22 0.0282 0.0057  
 Earth -87205-01-18 03:20 J -30130186.50 -30130186.36 -30130186.21 0.0273 0.0212  
 Moon -87205-01-18 04:47 J -30130186.45 -30130186.30 -30130186.14 0.0273 0.0211 \*  
 Moon -87204-01-28 15:49 J -30129810.07 -30129809.84 -30129809.61 0.0272 0.0071  
 Earth -87204-01-28 19:11 J -30129809.93 -30129809.70 -30129809.48 0.0272 0.0085 \*  
 Moon -87203-02-09 07:54 J -30129433.39 -30129433.17 -30129432.94 0.0272 0.0057  
 Earth -87203-02-09 08:51 J -30129433.36 -30129433.13 -30129432.89 0.0272 0.0045 \*  
 Mercury -87203-05-10 19:39 J -30129342.76 -30129342.68 -30129342.59 0.0272 0.0211  
 Venus -87203-07-03 14:37 J -30129289.09 -30129288.89 -30129288.68 0.0271 0.0007  
 Mercury -87203-08-07 07:25 J -30129254.31 -30129254.19 -30129254.06 0.0271 0.0122  
 Mercury -87203-11-03 19:25 J -30129165.83 -30129165.69 -30129165.55 0.0271 0.0032  
 Mercury -87202-01-31 07:25 J -30129077.33 -30129077.19 -30129077.05 0.0271 0.0060  
 Earth -87202-02-20 22:32 J -30129056.74 -30129056.56 -30129056.37 0.0271 0.0173  
 Moon -87202-02-21 01:39 J -30129056.60 -30129056.43 -30129056.24 0.0271 0.0175 \*  
 Mercury -87202-04-29 19:39 J -30128988.79 -30128988.68 -30128988.56 0.0271 0.0153  
 Mercury -87202-07-27 08:08 J -30128900.21 -30128900.16 -30128900.10 0.0271 0.0247  
 Mars -87195-11-30 15:49 J -30126217.09 -30126216.84 -30126216.56 0.0279 0.0158  
 Moon -87190-07-23 17:44 J -30124520.97 -30124520.76 -30124520.55 0.0286 0.0165  
 Earth -87190-07-23 19:54 J -30124520.87 -30124520.67 -30124520.47 0.0286 0.0178 \*  
 Moon -87189-08-06 10:32 J -30124141.32 -30124141.06 -30124140.81 0.0287 0.0006  
 Earth -87189-08-06 14:23 J -30124141.15 -30124140.90 -30124140.65 0.0287 0.0014 \*  
 Venus -87189-12-16 03:20 J -30124009.41 -30124009.36 -30124009.30 0.0287 0.0275  
 Mercury -87188-06-08 10:32 J -30123835.19 -30123835.06 -30123834.92 0.0287 0.0176

Venus -87188-08-03 04:18 J -30123779.51 -30123779.32 -30123779.13 0.0287 0.0135  
 Moon -87188-08-21 06:56 J -30123761.41 -30123761.21 -30123761.01 0.0287 0.0161  
 Earth -87188-08-21 09:49 J -30123761.30 -30123761.09 -30123760.87 0.0287 0.0152 \*  
 Mercury -87188-09-05 07:25 J -30123746.35 -30123746.19 -30123746.01 0.0287 0.0041  
 Mercury -87188-12-03 04:03 J -30123657.49 -30123657.33 -30123657.17 0.0287 0.0094  
 Mercury -87187-03-01 23:59 J -30123568.60 -30123568.50 -30123568.39 0.0287 0.0224  
 Mars -87181-12-12 14:37 J -30121091.13 -30121090.89 -30121090.63 0.0281 0.0097  
 Moon -87176-01-12 06:42 J -30119599.26 -30119599.22 -30119599.16 0.0275 0.0267  
 Earth -87176-01-12 08:23 J -30119599.22 -30119599.15 -30119599.09 0.0275 0.0263 \*  
 Earth -87175-01-24 01:39 J -30119222.62 -30119222.43 -30119222.21 0.0274 0.0138  
 Moon -87175-01-24 04:47 J -30119222.50 -30119222.30 -30119222.09 0.0274 0.0128 \*  
 Earth -87174-02-04 17:15 J -30118846.02 -30118845.78 -30118845.54 0.0273 0.0008  
 Moon -87174-02-04 18:42 J -30118845.96 -30118845.72 -30118845.47 0.0273 0.0008 \*  
 Mercury -87174-09-27 22:18 J -30118610.63 -30118610.57 -30118610.50 0.0272 0.0235  
 Mercury -87174-12-25 10:03 J -30118522.19 -30118522.08 -30118521.96 0.0272 0.0146  
 Venus -87173-01-13 19:39 J -30118502.89 -30118502.68 -30118502.48 0.0272 0.0042  
 Moon -87173-02-16 04:18 J -30118469.53 -30118469.32 -30118469.10 0.0272 0.0126  
 Earth -87173-02-16 07:25 J -30118469.39 -30118469.19 -30118468.96 0.0272 0.0122 \*  
 Mercury -87173-03-22 22:03 J -30118433.72 -30118433.58 -30118433.44 0.0272 0.0056  
 Mercury -87173-06-19 10:03 J -30118345.22 -30118345.08 -30118344.94 0.0272 0.0036  
 Mercury -87173-09-15 22:18 J -30118256.69 -30118256.57 -30118256.44 0.0272 0.0130  
 Mercury -87173-12-13 10:47 J -30118168.13 -30118168.05 -30118167.97 0.0272 0.0224  
 Moon -87172-02-26 20:37 J -30118092.74 -30118092.64 -30118092.52 0.0272 0.0239  
 Earth -87172-02-26 22:32 J -30118092.65 -30118092.56 -30118092.45 0.0272 0.0246 \*  
 Mars -87166-01-11 01:39 J -30115948.64 -30115948.43 -30115948.19 0.0276 0.0198  
 Earth -87161-07-17 03:35 J -30113934.48 -30113934.35 -30113934.21 0.0286 0.0240  
 Moon -87161-07-17 05:30 J -30113934.41 -30113934.27 -30113934.11 0.0286 0.0226 \*  
 Earth -87160-07-31 21:06 J -30113554.86 -30113554.62 -30113554.37 0.0287 0.0080  
 Moon -87160-08-01 00:42 J -30113554.71 -30113554.47 -30113554.22 0.0287 0.0067 \*  
 Venus -87159-06-28 16:32 J -30113222.95 -30113222.81 -30113222.64 0.0287 0.0201

Earth -87159-08-15 16:18 J -30113175.06 -30113174.82 -30113174.58 0.0288 0.0087  
 Moon -87159-08-15 18:42 J -30113174.96 -30113174.72 -30113174.47 0.0288 0.0098 \*  
 Mercury -87159-10-26 12:42 J -30113103.08 -30113102.97 -30113102.83 0.0288 0.0198  
 Mercury -87158-01-23 09:49 J -30113014.25 -30113014.09 -30113013.92 0.0288 0.0061  
 Venus -87158-02-13 17:30 J -30112992.91 -30112992.77 -30112992.62 0.0288 0.0211  
 Mercury -87158-04-22 06:27 J -30112925.40 -30112925.23 -30112925.07 0.0288 0.0073  
 Mercury -87158-07-20 02:37 J -30112836.51 -30112836.39 -30112836.28 0.0288 0.0204  
 Moon -87158-08-30 10:47 J -30112795.17 -30112795.05 -30112794.93 0.0288 0.0255  
 Earth -87158-08-30 10:47 J -30112795.16 -30112795.05 -30112794.91 0.0288 0.0249 \*  
 Mars -87152-02-03 07:11 J -30110811.38 -30110811.20 -30110810.99 0.0283 0.0196  
 Mars -87150-01-30 00:42 J -30110085.57 -30110085.47 -30110085.36 0.0279 0.0258  
 Moon -87146-01-19 07:54 J -30108635.33 -30108635.17 -30108634.98 0.0273 0.0187  
 Earth -87146-01-19 11:01 J -30108635.20 -30108635.04 -30108634.86 0.0273 0.0193 \*  
 Moon -87145-01-31 00:27 J -30108258.70 -30108258.48 -30108258.25 0.0272 0.0051  
 Earth -87145-01-31 02:51 J -30108258.61 -30108258.38 -30108258.15 0.0272 0.0064 \*  
 Venus -87145-12-09 00:56 J -30107945.56 -30107945.46 -30107945.36 0.0272 0.0234  
 Earth -87144-02-10 16:47 J -30107882.04 -30107881.80 -30107881.57 0.0272 0.0065  
 Moon -87144-02-10 19:39 J -30107881.90 -30107881.68 -30107881.46 0.0272 0.0074 \*  
 Mercury -87144-02-14 01:11 J -30107878.49 -30107878.45 -30107878.41 0.0272 0.0255  
 Mercury -87144-05-13 12:42 J -30107790.07 -30107789.97 -30107789.86 0.0271 0.0167  
 Venus -87144-07-26 00:42 J -30107716.67 -30107716.47 -30107716.28 0.0271 0.0092  
 Mercury -87144-08-10 00:42 J -30107701.61 -30107701.47 -30107701.34 0.0271 0.0077  
 Mercury -87144-11-06 12:42 J -30107613.11 -30107612.97 -30107612.83 0.0271 0.0014  
 Mercury -87143-02-03 00:42 J -30107524.60 -30107524.47 -30107524.33 0.0271 0.0107  
 Earth -87143-02-22 06:27 J -30107505.39 -30107505.23 -30107505.05 0.0271 0.0192  
 Moon -87143-02-22 09:06 J -30107505.29 -30107505.12 -30107504.95 0.0271 0.0189 \*  
 Mercury -87143-05-02 13:11 J -30107436.04 -30107435.95 -30107435.85 0.0271 0.0200  
 Mars -87136-03-04 12:27 J -30104938.30 -30104937.98 -30104937.66 0.0278 0.0011  
 Moon -87131-07-25 07:54 J -30102969.39 -30102969.17 -30102968.95 0.0286 0.0139  
 Earth -87131-07-25 11:30 J -30102969.23 -30102969.02 -30102968.80 0.0286 0.0153 \*

Moon -87130-08-09 04:32 J -30102589.56 -30102589.31 -30102589.07 0.0287 0.0021  
 Earth -87130-08-09 05:59 J -30102589.50 -30102589.25 -30102589.00 0.0287 0.0011 \*  
 Venus -87129-01-08 20:08 J -30102436.84 -30102436.66 -30102436.48 0.0287 0.0155  
 Mercury -87129-03-14 10:47 J -30102371.14 -30102371.05 -30102370.96 0.0287 0.0245  
 Mercury -87129-06-11 07:54 J -30102282.33 -30102282.17 -30102282.01 0.0287 0.0108  
 Earth -87129-08-23 01:11 J -30102209.64 -30102209.45 -30102209.24 0.0287 0.0175  
 Moon -87129-08-23 02:37 J -30102209.57 -30102209.39 -30102209.19 0.0287 0.0183 \*  
 Venus -87129-08-25 20:37 J -30102206.73 -30102206.64 -30102206.54 0.0287 0.0257  
 Mercury -87129-09-08 04:32 J -30102193.48 -30102193.31 -30102193.14 0.0287 0.0027  
 Mercury -87129-12-06 00:42 J -30102104.60 -30102104.47 -30102104.32 0.0287 0.0159  
 Mars -87122-03-22 20:51 J -30099806.89 -30099806.63 -30099806.36 0.0282 0.0042  
 Earth -87117-01-14 15:20 J -30098047.95 -30098047.86 -30098047.74 0.0275 0.0244  
 Moon -87117-01-14 18:13 J -30098047.83 -30098047.74 -30098047.62 0.0275 0.0244 \*  
 Earth -87116-01-25 08:51 J -30097671.34 -30097671.13 -30097670.91 0.0273 0.0117  
 Moon -87116-01-25 11:44 J -30097671.23 -30097671.01 -30097670.78 0.0273 0.0106 \*  
 Moon -87115-02-05 21:35 J -30097294.84 -30097294.60 -30097294.36 0.0273 0.0025  
 Earth -87115-02-05 23:59 J -30097294.73 -30097294.50 -30097294.26 0.0273 0.0014 \*  
 Venus -87115-06-21 05:01 J -30097159.43 -30097159.29 -30097159.14 0.0272 0.0190  
 Mercury -87115-09-30 15:20 J -30097057.96 -30097057.86 -30097057.76 0.0272 0.0192  
 Mercury -87115-12-28 03:06 J -30096969.50 -30096969.37 -30096969.24 0.0272 0.0102  
 Venus -87114-02-05 05:01 J -30096930.47 -30096930.29 -30096930.11 0.0272 0.0137  
 Moon -87114-02-17 11:59 J -30096918.18 -30096918.00 -30096917.79 0.0272 0.0144  
 Earth -87114-02-17 14:37 J -30096918.09 -30096917.89 -30096917.69 0.0272 0.0141 \*  
 Mercury -87114-03-26 15:06 J -30096881.01 -30096880.87 -30096880.73 0.0272 0.0012  
 Mercury -87114-06-23 03:06 J -30096792.50 -30096792.37 -30096792.23 0.0272 0.0082  
 Mercury -87114-09-19 15:35 J -30096703.96 -30096703.85 -30096703.74 0.0272 0.0175  
 Mercury -87114-12-17 04:03 J -30096615.34 -30096615.33 -30096615.31 0.0272 0.0270  
 Earth -87113-02-29 05:30 J -30096541.31 -30096541.27 -30096541.20 0.0272 0.0263  
 Moon -87113-02-29 08:08 J -30096541.24 -30096541.16 -30096541.08 0.0272 0.0253 \*  
 Mars -87106-04-27 19:54 J -30093926.88 -30093926.67 -30093926.42 0.0279 0.0191



Earth -87102-07-19 18:56 J -30092382.87 -30092382.71 -30092382.54 0.0286 0.0216  
 Moon -87102-07-19 22:47 J -30092382.73 -30092382.55 -30092382.36 0.0286 0.0200 \*  
 Earth -87101-08-02 12:56 J -30092003.21 -30092002.96 -30092002.71 0.0287 0.0055  
 Moon -87101-08-02 14:23 J -30092003.15 -30092002.90 -30092002.63 0.0287 0.0043 \*  
 Venus -87100-07-21 09:35 J -30091650.31 -30091650.10 -30091649.89 0.0288 0.0077  
 Mercury -87100-08-01 12:56 J -30091639.01 -30091638.96 -30091638.89 0.0288 0.0267  
 Moon -87100-08-17 06:13 J -30091623.47 -30091623.24 -30091622.99 0.0288 0.0119  
 Earth -87100-08-17 08:37 J -30091623.38 -30091623.14 -30091622.91 0.0288 0.0111 \*  
 Mercury -87100-10-29 10:18 J -30091550.22 -30091550.07 -30091549.91 0.0288 0.0128  
 Mercury -87099-01-26 07:11 J -30091461.37 -30091461.20 -30091461.03 0.0288 0.0008  
 Mercury -87099-04-25 03:20 J -30091372.50 -30091372.36 -30091372.21 0.0288 0.0140  
 Mercury -87099-07-22 23:15 J -30091283.58 -30091283.53 -30091283.47 0.0288 0.0270  
 Moon -87099-08-31 23:15 J -30091243.60 -30091243.53 -30091243.45 0.0288 0.0275  
 Earth -87099-09-01 03:20 J -30091243.44 -30091243.36 -30091243.28 0.0288 0.0270  
 Mars -87092-05-09 07:54 J -30088801.40 -30088801.17 -30088800.92 0.0280 0.0122  
 Moon -87087-01-20 16:18 J -30087083.99 -30087083.82 -30087083.62 0.0273 0.0166  
 Earth -87087-01-20 19:25 J -30087083.87 -30087083.69 -30087083.51 0.0273 0.0173 \*  
 Earth -87086-02-01 10:32 J -30086707.29 -30086707.06 -30086706.82 0.0272 0.0045  
 Moon -87086-02-01 12:27 J -30086707.21 -30086706.98 -30086706.75 0.0272 0.0030 \*  
 Venus -87085-01-01 10:47 J -30086373.22 -30086373.05 -30086372.87 0.0272 0.0137  
 Earth -87085-02-13 00:27 J -30086330.70 -30086330.48 -30086330.25 0.0272 0.0084  
 Moon -87085-02-13 03:20 J -30086330.59 -30086330.36 -30086330.14 0.0272 0.0093 \*  
 Mercury -87085-02-17 18:13 J -30086325.82 -30086325.74 -30086325.65 0.0272 0.0211  
 Mercury -87085-05-16 05:59 J -30086237.37 -30086237.25 -30086237.13 0.0271 0.0122  
 Mercury -87085-08-12 17:44 J -30086148.89 -30086148.76 -30086148.61 0.0271 0.0033  
 Venus -87085-08-17 10:32 J -30086144.21 -30086144.06 -30086143.91 0.0271 0.0189  
 Mercury -87085-11-09 05:59 J -30086060.39 -30086060.25 -30086060.11 0.0271 0.0060  
 Mercury -87084-02-05 18:13 J -30085971.86 -30085971.74 -30085971.62 0.0271 0.0153  
 Moon -87084-02-23 11:59 J -30085954.15 -30085954.00 -30085953.82 0.0271 0.0202  
 Earth -87084-02-23 14:23 J -30085954.04 -30085953.90 -30085953.74 0.0271 0.0210 \*

Mercury -87084-05-05 06:27 J -30085883.28 -30085883.23 -30085883.16 0.0271 0.0248  
 Mars -87078-06-07 06:13 J -30083659.48 -30083659.24 -30083658.99 0.0277 0.0178  
 Moon -87073-07-12 08:37 J -30081797.22 -30081797.14 -30081797.04 0.0285 0.0266  
 Earth -87073-07-12 11:59 J -30081797.02 -30081797.00 -30081796.95 0.0285 0.0282  
 Moon -87072-07-27 03:06 J -30081417.59 -30081417.37 -30081417.14 0.0286 0.0115  
 Earth -87072-07-27 04:03 J -30081417.55 -30081417.33 -30081417.10 0.0286 0.0128 \*  
 Earth -87071-08-10 22:32 J -30081037.81 -30081037.56 -30081037.30 0.0287 0.0036  
 Moon -87071-08-11 00:56 J -30081037.70 -30081037.46 -30081037.21 0.0287 0.0045 \*  
 Venus -87070-01-31 13:11 J -30080864.16 -30080863.95 -30080863.73 0.0287 0.0032  
 Mercury -87070-03-18 08:23 J -30080818.29 -30080818.15 -30080818.01 0.0287 0.0175  
 Mercury -87070-06-15 05:15 J -30080729.45 -30080729.28 -30080729.11 0.0287 0.0039  
 Earth -87070-08-25 17:44 J -30080657.93 -30080657.76 -30080657.57 0.0287 0.0198  
 Moon -87070-08-25 21:35 J -30080657.77 -30080657.60 -30080657.42 0.0287 0.0204 \*  
 Mercury -87070-09-12 01:39 J -30080640.59 -30080640.43 -30080640.26 0.0287 0.0095  
 Mercury -87070-12-09 21:49 J -30080551.69 -30080551.59 -30080551.49 0.0287 0.0225  
 Mars -87064-06-30 05:44 J -30078522.46 -30078522.26 -30078522.05 0.0283 0.0180  
 Mars -87062-06-25 23:01 J -30077796.59 -30077796.54 -30077796.48 0.0280 0.0273  
 Earth -87058-01-15 22:47 J -30076496.69 -30076496.55 -30076496.42 0.0274 0.0225  
 Moon -87058-01-16 01:39 J -30076496.57 -30076496.43 -30076496.29 0.0274 0.0222 \*  
 Moon -87057-01-27 13:54 J -30076120.15 -30076119.92 -30076119.68 0.0273 0.0084  
 Earth -87057-01-27 15:49 J -30076120.06 -30076119.84 -30076119.62 0.0273 0.0098 \*  
 Moon -87056-02-07 03:35 J -30075743.58 -30075743.35 -30075743.12 0.0273 0.0045  
 Earth -87056-02-07 06:42 J -30075743.46 -30075743.22 -30075742.98 0.0273 0.0031 \*  
 Mercury -87056-07-06 20:23 J -30075593.71 -30075593.65 -30075593.58 0.0272 0.0238  
 Venus -87056-07-13 14:08 J -30075587.10 -30075586.91 -30075586.71 0.0272 0.0095  
 Mercury -87056-10-03 08:08 J -30075505.27 -30075505.16 -30075505.04 0.0272 0.0149  
 Mercury -87056-12-30 20:08 J -30075416.80 -30075416.66 -30075416.53 0.0272 0.0060  
 Earth -87055-02-18 20:51 J -30075366.81 -30075366.63 -30075366.43 0.0272 0.0159  
 Moon -87055-02-18 23:01 J -30075366.73 -30075366.54 -30075366.35 0.0272 0.0157 \*  
 Venus -87055-02-27 14:08 J -30075358.02 -30075357.91 -30075357.81 0.0272 0.0233

Mercury -87055-03-29 08:08 J -30075328.30 -30075328.16 -30075328.02 0.0272 0.0033  
 Mercury -87055-06-25 20:23 J -30075239.78 -30075239.65 -30075239.53 0.0272 0.0126  
 Mercury -87055-09-22 08:37 J -30075151.22 -30075151.14 -30075151.05 0.0272 0.0221  
 Moon -87054-03-02 15:49 J -30074989.88 -30074989.84 -30074989.79 0.0272 0.0266  
 Mars -87048-07-30 11:44 J -30072648.33 -30072648.01 -30072647.69 0.0278 0.0021  
 Earth -87043-07-21 09:49 J -30070831.27 -30070831.09 -30070830.90 0.0286 0.0193  
 Moon -87043-07-21 10:03 J -30070831.27 -30070831.08 -30070830.86 0.0286 0.0178 \*  
 Moon -87042-08-05 01:25 J -30070451.70 -30070451.44 -30070451.18 0.0287 0.0020  
 Earth -87042-08-05 04:03 J -30070451.58 -30070451.33 -30070451.08 0.0287 0.0032 \*  
 Mercury -87041-08-04 10:18 J -30070086.19 -30070086.07 -30070085.94 0.0288 0.0198  
 Venus -87041-08-13 02:08 J -30070077.63 -30070077.41 -30070077.20 0.0288 0.0045  
 Moon -87041-08-18 20:08 J -30070071.87 -30070071.66 -30070071.43 0.0288 0.0142  
 Earth -87041-08-18 23:44 J -30070071.72 -30070071.51 -30070071.28 0.0288 0.0134 \*  
 Mercury -87041-11-01 07:25 J -30069997.36 -30069997.19 -30069997.02 0.0288 0.0061  
 Mercury -87040-01-29 04:03 J -30069908.49 -30069908.33 -30069908.16 0.0288 0.0074  
 Mercury -87040-04-27 23:59 J -30069819.61 -30069819.50 -30069819.37 0.0288 0.0206  
 Mars -87034-08-17 17:30 J -30067517.03 -30067516.77 -30067516.50 0.0282 0.0016  
 Earth -87028-01-22 03:20 J -30065532.56 -30065532.36 -30065532.16 0.0273 0.0153  
 Moon -87028-01-22 04:32 J -30065532.49 -30065532.31 -30065532.10 0.0273 0.0144 \*  
 Earth -87027-02-02 18:13 J -30065155.98 -30065155.74 -30065155.50 0.0272 0.0025  
 Moon -87027-02-02 21:49 J -30065155.83 -30065155.59 -30065155.35 0.0272 0.0009 \*  
 Mercury -87027-11-23 23:30 J -30064861.56 -30064861.52 -30064861.47 0.0271 0.0256  
 Venus -87026-01-23 20:37 J -30064800.85 -30064800.64 -30064800.44 0.0271 0.0039  
 Moon -87026-02-14 06:27 J -30064779.44 -30064779.23 -30064778.99 0.0271 0.0109  
 Earth -87026-02-14 07:54 J -30064779.38 -30064779.17 -30064778.94 0.0271 0.0103 \*  
 Mercury -87026-02-20 11:15 J -30064773.14 -30064773.03 -30064772.92 0.0271 0.0167  
 Mercury -87026-05-19 23:01 J -30064684.67 -30064684.54 -30064684.40 0.0271 0.0078  
 Mercury -87026-08-16 11:01 J -30064596.18 -30064596.04 -30064595.90 0.0271 0.0014  
 Mercury -87026-11-12 23:01 J -30064507.66 -30064507.54 -30064507.40 0.0271 0.0107  
 Mercury -87025-02-09 11:30 J -30064419.11 -30064419.02 -30064418.92 0.0271 0.0200

Moon	-87025-02-25 18:27 J	-30064402.85	-30064402.73	-30064402.57	0.0271	0.0218
Earth	-87025-02-25 21:49 J	-30064402.70	-30064402.59	-30064402.44	0.0271	0.0226 *
Mars	-87018-09-21 23:30 J	-30061637.72	-30061637.52	-30061637.30	0.0279	0.0210
Earth	-87014-07-15 02:51 J	-30060245.47	-30060245.38	-30060245.27	0.0285	0.0259
Moon	-87014-07-15 03:35 J	-30060245.46	-30060245.35	-30060245.22	0.0285	0.0245 *
Earth	-87013-07-28 19:11 J	-30059865.93	-30059865.70	-30059865.46	0.0286	0.0104
Moon	-87013-07-28 22:32 J	-30059865.80	-30059865.56	-30059865.33	0.0286	0.0090 *
Earth	-87012-08-12 14:23 J	-30059486.15	-30059485.90	-30059485.65	0.0287	0.0060
Moon	-87012-08-12 17:59 J	-30059486.00	-30059485.75	-30059485.50	0.0287	0.0070 *
Mercury	-87012-12-22 08:08 J	-30059354.24	-30059354.16	-30059354.06	0.0287	0.0246
Venus	-87011-02-23 05:44 J	-30059291.46	-30059291.26	-30059291.05	0.0287	0.0091
Mercury	-87011-03-21 05:30 J	-30059265.43	-30059265.27	-30059265.10	0.0287	0.0107
Mercury	-87011-06-18 02:23 J	-30059176.57	-30059176.40	-30059176.23	0.0288	0.0028
Earth	-87011-08-27 09:35 J	-30059106.26	-30059106.10	-30059105.93	0.0288	0.0221
Moon	-87011-08-27 10:47 J	-30059106.21	-30059106.05	-30059105.88	0.0288	0.0225 *
Mercury	-87011-09-14 22:47 J	-30059087.69	-30059087.55	-30059087.41	0.0288	0.0161
Mars	-87004-10-03 05:15 J	-30056512.50	-30056512.28	-30056512.03	0.0280	0.0139

# 87TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 87th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-86999-01-17 04:18 J	-30054945.48	-30054945.32	-30054945.15	0.0274	0.0201		
Earth	-86999-01-17 05:30 J	-30054945.42	-30054945.27	-30054945.11	0.0274	0.0206 *		

Moon -86998-01-28 18:27 J -30054568.96 -30054568.73 -30054568.50 0.0273 0.0064  
 Earth -86998-01-28 22:03 J -30054568.81 -30054568.58 -30054568.35 0.0273 0.0079 \*  
 Earth -86997-02-09 12:27 J -30054192.21 -30054191.98 -30054191.74 0.0272 0.0049  
 Moon -86997-02-09 12:56 J -30054192.18 -30054191.96 -30054191.73 0.0272 0.0062 \*  
 Mercury -86997-07-09 13:11 J -30054041.05 -30054040.95 -30054040.86 0.0272 0.0197  
 Venus -86997-08-04 22:47 J -30054014.75 -30054014.55 -30054014.34 0.0272 0.0003  
 Mercury -86997-10-06 00:56 J -30053952.59 -30053952.46 -30053952.33 0.0272 0.0107  
 Mercury -86996-01-02 12:56 J -30053864.11 -30053863.96 -30053863.82 0.0272 0.0018  
 Earth -86996-02-20 02:37 J -30053815.57 -30053815.39 -30053815.20 0.0272 0.0175  
 Moon -86996-02-20 05:59 J -30053815.43 -30053815.25 -30053815.06 0.0272 0.0172 \*  
 Mercury -86996-04-01 00:56 J -30053775.60 -30053775.46 -30053775.32 0.0272 0.0076  
 Mercury -86996-06-28 13:11 J -30053687.06 -30053686.95 -30053686.84 0.0272 0.0170  
 Mercury -86996-09-25 01:39 J -30053598.46 -30053598.43 -30053598.40 0.0272 0.0265  
 Mars -86990-11-01 19:39 J -30051369.94 -30051369.68 -30051369.40 0.0277 0.0151  
 Moon -86984-07-22 19:25 J -30049279.90 -30049279.69 -30049279.47 0.0286 0.0157  
 Earth -86984-07-22 23:15 J -30049279.73 -30049279.53 -30049279.33 0.0286 0.0171 \*  
 Moon -86983-08-06 14:23 J -30048900.15 -30048899.90 -30048899.65 0.0287 0.0004  
 Earth -86983-08-06 17:59 J -30048900.00 -30048899.75 -30048899.49 0.0287 0.0010 \*  
 Venus -86982-01-18 16:32 J -30048734.91 -30048734.81 -30048734.69 0.0288 0.0249  
 Mercury -86982-05-11 10:03 J -30048622.14 -30048622.08 -30048622.02 0.0288 0.0270  
 Mercury -86982-08-08 07:25 J -30048533.35 -30048533.19 -30048533.04 0.0288 0.0131  
 Moon -86982-08-21 12:56 J -30048520.15 -30048519.96 -30048519.75 0.0288 0.0163  
 Earth -86982-08-21 14:08 J -30048520.12 -30048519.91 -30048519.69 0.0288 0.0155 \*  
 Venus -86982-09-05 17:59 J -30048504.93 -30048504.75 -30048504.58 0.0288 0.0165  
 Mercury -86982-11-05 04:18 J -30048444.49 -30048444.32 -30048444.15 0.0288 0.0006  
 Mercury -86981-02-02 00:42 J -30048355.62 -30048355.47 -30048355.32 0.0288 0.0139  
 Mercury -86981-04-30 20:37 J -30048266.69 -30048266.64 -30048266.58 0.0288 0.0269  
 Mars -86976-11-25 02:23 J -30046232.62 -30046232.40 -30046232.17 0.0283 0.0155  
 Earth -86970-01-12 16:47 J -30044357.87 -30044357.80 -30044357.72 0.0274 0.0258  
 Moon -86970-01-12 17:01 J -30044357.85 -30044357.79 -30044357.72 0.0274 0.0262 \*

Earth -86969-01-24 09:49 J -30043981.28 -30043981.09 -30043980.87 0.0273 0.0135  
 Moon -86969-01-24 13:39 J -30043981.14 -30043980.93 -30043980.72 0.0273 0.0122 \*  
 Moon -86968-02-04 00:27 J -30043604.72 -30043604.48 -30043604.23 0.0272 0.0008  
 Earth -86968-02-04 00:42 J -30043604.71 -30043604.47 -30043604.23 0.0272 0.0007 \*  
 Venus -86968-07-01 05:59 J -30043457.26 -30043457.25 -30043457.23 0.0272 0.0270  
 Mercury -86968-11-26 16:18 J -30043308.90 -30043308.82 -30043308.73 0.0271 0.0213  
 Venus -86967-02-15 05:30 J -30043228.47 -30043228.27 -30043228.07 0.0271 0.0056  
 Moon -86967-02-15 10:32 J -30043228.26 -30043228.06 -30043227.84 0.0271 0.0126 \*  
 Earth -86967-02-15 14:08 J -30043228.12 -30043227.91 -30043227.69 0.0271 0.0120 \*  
 Mercury -86967-02-23 04:03 J -30043220.45 -30043220.33 -30043220.20 0.0271 0.0124  
 Mercury -86967-05-22 15:49 J -30043131.97 -30043131.84 -30043131.70 0.0271 0.0035  
 Mercury -86967-08-19 04:03 J -30043043.47 -30043043.33 -30043043.20 0.0271 0.0058  
 Mercury -86967-11-15 16:03 J -30042954.94 -30042954.83 -30042954.71 0.0271 0.0151  
 Mercury -86966-02-12 04:32 J -30042866.37 -30042866.31 -30042866.25 0.0271 0.0245  
 Earth -86966-02-27 04:03 J -30042851.43 -30042851.33 -30042851.21 0.0271 0.0241  
 Moon -86966-02-27 04:32 J -30042851.41 -30042851.31 -30042851.18 0.0271 0.0232 \*  
 Mars -86960-12-24 12:27 J -30040359.30 -30040358.98 -30040358.66 0.0278 0.0039  
 Earth -86955-07-16 15:49 J -30038693.97 -30038693.84 -30038693.69 0.0285 0.0237  
 Moon -86955-07-16 19:39 J -30038693.82 -30038693.68 -30038693.51 0.0285 0.0224 \*  
 Earth -86954-07-31 08:37 J -30038314.38 -30038314.14 -30038313.89 0.0287 0.0081  
 Moon -86954-07-31 11:44 J -30038314.26 -30038314.01 -30038313.75 0.0287 0.0069 \*  
 Venus -86953-07-30 20:08 J -30037948.80 -30037948.66 -30037948.50 0.0287 0.0203  
 Earth -86953-08-14 04:03 J -30037934.57 -30037934.33 -30037934.09 0.0287 0.0082  
 Moon -86953-08-14 04:18 J -30037934.56 -30037934.32 -30037934.06 0.0287 0.0091 \*  
 Mercury -86953-12-25 05:15 J -30037801.41 -30037801.28 -30037801.14 0.0288 0.0179  
 Venus -86952-03-17 21:06 J -30037718.76 -30037718.62 -30037718.47 0.0288 0.0211  
 Mercury -86952-03-24 02:23 J -30037712.57 -30037712.40 -30037712.23 0.0288 0.0042  
 Mercury -86952-06-20 22:47 J -30037623.71 -30037623.55 -30037623.38 0.0288 0.0093  
 Moon -86952-08-28 20:23 J -30037554.77 -30037554.65 -30037554.50 0.0288 0.0243  
 Earth -86952-08-28 23:30 J -30037554.65 -30037554.52 -30037554.38 0.0288 0.0241 \*

Mercury -86952-09-17 18:56 J -30037534.81 -30037534.71 -30037534.60 0.0288 0.0224

Mars -86945-01-11 11:44 J -30035228.27 -30035228.01 -30035227.74 0.0281 0.0005

Moon -86940-01-18 08:08 J -30033394.33 -30033394.16 -30033393.98 0.0274 0.0182

Earth -86940-01-18 11:30 J -30033394.18 -30033394.02 -30033393.84 0.0274 0.0189 \*

Earth -86939-01-30 03:20 J -30033017.59 -30033017.36 -30033017.12 0.0273 0.0062

Moon -86939-01-30 03:35 J -30033017.57 -30033017.35 -30033017.12 0.0273 0.0047 \*

Venus -86938-01-11 07:11 J -30032671.29 -30032671.20 -30032671.09 0.0272 0.0235

Earth -86938-02-10 17:30 J -30032641.00 -30032640.77 -30032640.54 0.0272 0.0066

Moon -86938-02-10 21:06 J -30032640.84 -30032640.62 -30032640.39 0.0272 0.0078 \*

Mercury -86938-04-15 17:59 J -30032576.80 -30032576.75 -30032576.69 0.0272 0.0244

Mercury -86938-07-13 05:44 J -30032488.37 -30032488.26 -30032488.15 0.0272 0.0155

Venus -86938-08-28 06:56 J -30032442.40 -30032442.21 -30032442.01 0.0272 0.0092

Mercury -86938-10-09 17:30 J -30032399.91 -30032399.77 -30032399.63 0.0272 0.0065

Mercury -86937-01-06 05:30 J -30032311.41 -30032311.27 -30032311.13 0.0272 0.0026

Moon -86937-02-22 07:25 J -30032264.36 -30032264.19 -30032264.00 0.0272 0.0186

Earth -86937-02-22 07:25 J -30032264.35 -30032264.19 -30032264.02 0.0272 0.0191 \*

Mercury -86937-04-03 17:44 J -30032222.89 -30032222.76 -30032222.64 0.0272 0.0119

Mercury -86937-07-01 05:59 J -30032134.34 -30032134.25 -30032134.16 0.0272 0.0213

Mars -86929-02-16 05:44 J -30029348.42 -30029348.26 -30029348.08 0.0279 0.0235

Moon -86925-07-24 06:56 J -30027728.42 -30027728.21 -30027727.99 0.0286 0.0139

Earth -86925-07-24 09:20 J -30027728.32 -30027728.11 -30027727.89 0.0286 0.0151 \*

Earth -86924-08-08 04:47 J -30027348.55 -30027348.30 -30027348.04 0.0287 0.0011

Moon -86924-08-08 05:15 J -30027348.53 -30027348.28 -30027348.04 0.0287 0.0022 \*

Venus -86923-02-10 06:27 J -30027162.41 -30027162.23 -30027162.03 0.0288 0.0135

Mercury -86923-05-14 06:13 J -30027069.36 -30027069.24 -30027069.12 0.0288 0.0208

Mercury -86923-08-11 03:20 J -30026980.52 -30026980.36 -30026980.19 0.0288 0.0070

Earth -86923-08-23 01:11 J -30026968.64 -30026968.45 -30026968.24 0.0288 0.0174

Moon -86923-08-23 04:03 J -30026968.51 -30026968.33 -30026968.13 0.0288 0.0182 \*

Venus -86923-09-28 07:54 J -30026932.21 -30026932.17 -30026932.12 0.0288 0.0280

Mercury -86923-11-08 00:13 J -30026891.66 -30026891.49 -30026891.33 0.0288 0.0066

Mercury -86922-02-04 20:23 J -30026802.77 -30026802.65 -30026802.52 0.0288 0.0199  
 Mars -86915-02-27 21:20 J -30024222.82 -30024222.61 -30024222.37 0.0280 0.0162  
 Earth -86911-01-13 23:15 J -30022806.64 -30022806.53 -30022806.42 0.0274 0.0240  
 Moon -86911-01-14 02:23 J -30022806.50 -30022806.40 -30022806.28 0.0274 0.0243 \*  
 Earth -86910-01-25 15:49 J -30022430.05 -30022429.84 -30022429.62 0.0273 0.0117  
 Moon -86910-01-25 16:18 J -30022430.04 -30022429.82 -30022429.59 0.0273 0.0104 \*  
 Moon -86909-02-06 02:23 J -30022053.64 -30022053.40 -30022053.16 0.0272 0.0024  
 Earth -86909-02-06 05:59 J -30022053.48 -30022053.25 -30022053.01 0.0272 0.0011 \*  
 Venus -86909-07-23 14:08 J -30021885.06 -30021884.91 -30021884.75 0.0271 0.0177  
 Mercury -86909-09-01 21:20 J -30021844.64 -30021844.61 -30021844.57 0.0271 0.0260  
 Mercury -86909-11-29 08:51 J -30021756.23 -30021756.13 -30021756.02 0.0271 0.0172  
 Moon -86908-02-16 18:13 J -30021676.93 -30021676.74 -30021676.54 0.0271 0.0139  
 Earth -86908-02-16 19:11 J -30021676.90 -30021676.70 -30021676.49 0.0271 0.0135 \*  
 Mercury -86908-02-25 20:37 J -30021667.77 -30021667.64 -30021667.50 0.0271 0.0083  
 Venus -86908-03-09 13:39 J -30021656.10 -30021655.93 -30021655.75 0.0271 0.0149  
 Mercury -86908-05-25 08:37 J -30021579.28 -30021579.14 -30021579.00 0.0271 0.0008  
 Mercury -86908-08-21 20:37 J -30021490.77 -30021490.64 -30021490.51 0.0271 0.0100  
 Mercury -86908-11-18 08:51 J -30021402.22 -30021402.13 -30021402.03 0.0271 0.0194  
 Earth -86907-02-28 08:51 J -30021300.20 -30021300.13 -30021300.05 0.0271 0.0255  
 Moon -86907-02-28 12:13 J -30021300.08 -30021299.99 -30021299.88 0.0271 0.0243 \*  
 Mars -86901-03-27 16:03 J -30019081.11 -30019080.83 -30019080.55 0.0277 0.0136  
 Earth -86896-07-18 02:37 J -30017142.55 -30017142.39 -30017142.22 0.0286 0.0217  
 Moon -86896-07-18 04:18 J -30017142.50 -30017142.32 -30017142.14 0.0286 0.0204 \*  
 Moon -86895-08-01 18:13 J -30016763.00 -30016762.74 -30016762.48 0.0287 0.0051  
 Earth -86895-08-01 19:54 J -30016762.92 -30016762.67 -30016762.42 0.0287 0.0060 \*  
 Moon -86894-08-16 11:59 J -30016383.23 -30016383.00 -30016382.76 0.0288 0.0110  
 Earth -86894-08-16 15:35 J -30016383.08 -30016382.85 -30016382.61 0.0288 0.0103 \*  
 Venus -86894-08-23 10:32 J -30016376.26 -30016376.06 -30016375.85 0.0288 0.0088  
 Mercury -86894-10-01 04:03 J -30016337.40 -30016337.33 -30016337.24 0.0288 0.0256  
 Mercury -86894-12-29 01:39 J -30016248.59 -30016248.43 -30016248.28 0.0288 0.0117



Mercury -86893-03-26 22:32 J -30016159.74 -30016159.56 -30016159.39 0.0288 0.0021  
 Mercury -86893-06-23 18:56 J -30016070.86 -30016070.71 -30016070.57 0.0288 0.0153  
 Moon -86893-08-30 07:54 J -30016003.26 -30016003.17 -30016003.07 0.0288 0.0263  
 Earth -86893-08-30 11:01 J -30016003.13 -30016003.04 -30016002.92 0.0288 0.0260 \*  
 Mercury -86893-09-20 14:37 J -30015981.90 -30015981.89 -30015981.85 0.0288 0.0284  
 Mars -86887-04-20 17:15 J -30013944.00 -30013943.78 -30013943.54 0.0282 0.0141  
 Moon -86881-01-20 15:20 J -30011843.04 -30011842.86 -30011842.68 0.0273 0.0164  
 Earth -86881-01-20 16:18 J -30011843.00 -30011842.82 -30011842.63 0.0273 0.0171 \*  
 Earth -86880-01-31 07:25 J -30011466.42 -30011466.19 -30011465.95 0.0272 0.0045  
 Moon -86880-01-31 11:01 J -30011466.27 -30011466.04 -30011465.81 0.0272 0.0030 \*  
 Venus -86879-02-02 14:37 J -30011099.06 -30011098.89 -30011098.71 0.0272 0.0145  
 Earth -86879-02-11 21:06 J -30011089.84 -30011089.62 -30011089.39 0.0272 0.0082  
 Moon -86879-02-11 22:18 J -30011089.80 -30011089.57 -30011089.34 0.0272 0.0090 \*  
 Mercury -86879-04-18 10:18 J -30011024.16 -30011024.07 -30011023.98 0.0272 0.0205  
 Mercury -86879-07-15 22:03 J -30010935.71 -30010935.58 -30010935.46 0.0272 0.0116  
 Venus -86879-09-19 14:08 J -30010870.06 -30010869.91 -30010869.75 0.0272 0.0183  
 Mercury -86879-10-12 09:49 J -30010847.23 -30010847.09 -30010846.95 0.0272 0.0026  
 Mercury -86878-01-08 21:49 J -30010758.72 -30010758.59 -30010758.45 0.0272 0.0067  
 Moon -86878-02-23 07:11 J -30010713.35 -30010713.20 -30010713.02 0.0272 0.0198  
 Earth -86878-02-23 10:47 J -30010713.20 -30010713.05 -30010712.89 0.0272 0.0205 \*  
 Mercury -86878-04-07 10:03 J -30010670.19 -30010670.08 -30010669.96 0.0272 0.0160  
 Mercury -86878-07-04 22:18 J -30010581.61 -30010581.57 -30010581.51 0.0271 0.0255  
 Mars -86871-05-20 04:47 J -30008070.61 -30008070.30 -30008069.97 0.0278 0.0058  
 Moon -86867-07-11 23:30 J -30006556.58 -30006556.52 -30006556.43 0.0285 0.0271  
 Earth -86867-07-12 00:27 J -30006556.50 -30006556.48 -30006556.44 0.0285 0.0283 \*  
 Earth -86866-07-26 16:47 J -30006177.02 -30006176.80 -30006176.57 0.0286 0.0132  
 Moon -86866-07-26 19:11 J -30006176.91 -30006176.70 -30006176.47 0.0286 0.0123 \*  
 Earth -86865-08-09 12:56 J -30005797.21 -30005796.96 -30005796.71 0.0288 0.0030  
 Moon -86865-08-09 16:47 J -30005797.05 -30005796.80 -30005796.55 0.0288 0.0039 \*  
 Venus -86864-03-04 18:56 J -30005589.93 -30005589.71 -30005589.50 0.0288 0.0025

Mercury -86864-05-17 01:39 J -30005516.58 -30005516.43 -30005516.28 0.0288 0.0151

Mercury -86864-08-13 22:47 J -30005427.72 -30005427.55 -30005427.38 0.0288 0.0013

Earth -86864-08-24 09:35 J -30005417.28 -30005417.10 -30005416.90 0.0288 0.0192

Moon -86864-08-24 12:42 J -30005417.14 -30005416.97 -30005416.77 0.0288 0.0199 \*

Mercury -86864-11-10 19:11 J -30005338.85 -30005338.70 -30005338.54 0.0288 0.0123

Mercury -86863-02-07 15:35 J -30005249.93 -30005249.85 -30005249.77 0.0288 0.0254

Mars -86857-06-06 23:59 J -30002938.77 -30002938.50 -30002938.23 0.0282 0.0019

Earth -86852-01-15 03:35 J -30001255.47 -30001255.35 -30001255.20 0.0274 0.0224

Moon -86852-01-15 05:30 J -30001255.40 -30001255.27 -30001255.12 0.0274 0.0222 \*

Moon -86851-01-26 16:47 J -30000879.02 -30000878.80 -30000878.56 0.0272 0.0086

Earth -86851-01-26 20:08 J -30000878.88 -30000878.66 -30000878.44 0.0272 0.0099 \*

Moon -86850-02-07 08:37 J -30000502.37 -30000502.14 -30000501.91 0.0271 0.0038

Earth -86850-02-07 09:49 J -30000502.32 -30000502.09 -30000501.85 0.0271 0.0027 \*

Venus -86850-08-15 21:35 J -30000312.79 -30000312.60 -30000312.40 0.0271 0.0087

Mercury -86850-09-05 13:39 J -30000292.01 -30000291.93 -30000291.85 0.0271 0.0221

Mercury -86850-12-03 01:11 J -30000203.57 -30000203.45 -30000203.32 0.0271 0.0133

Earth -86849-02-18 22:47 J -30000125.74 -30000125.55 -30000125.35 0.0271 0.0150

Moon -86849-02-19 01:54 J -30000125.61 -30000125.42 -30000125.22 0.0271 0.0151 \*

Mercury -86849-02-29 12:56 J -30000115.09 -30000114.96 -30000114.82 0.0271 0.0044

Venus -86849-03-31 20:51 J -30000083.72 -30000083.63 -30000083.53 0.0271 0.0239

Mercury -86849-05-28 00:56 J -30000026.60 -30000026.46 -30000026.32 0.0271 0.0049

Mercury -86849-08-24 13:11 J -29999938.07 -29999937.95 -29999937.83 0.0271 0.0141

Mercury -86849-11-21 01:25 J -29999849.51 -29999849.44 -29999849.37 0.0271 0.0235

Earth -86848-03-01 12:27 J -29999749.01 -29999748.98 -29999748.95 0.0271 0.0268

Moon -86848-03-01 13:39 J -29999749.00 -29999748.93 -29999748.84 0.0271 0.0256 \*

Mars -86841-07-11 19:39 J -29997059.81 -29997059.68 -29997059.52 0.0279 0.0247

Moon -86837-07-19 07:25 J -29995591.39 -29995591.19 -29995591.00 0.0286 0.0188

Earth -86837-07-19 10:03 J -29995591.25 -29995591.08 -29995590.89 0.0286 0.0198 \*

Moon -86836-08-02 23:59 J -29995211.75 -29995211.50 -29995211.25 0.0287 0.0035

Earth -86836-08-03 04:03 J -29995211.59 -29995211.33 -29995211.08 0.0287 0.0041 \*

Moon -86835-08-17 21:20 J -29994831.82 -29994831.61 -29994831.38 0.0288 0.0126  
 Earth -86835-08-17 23:44 J -29994831.73 -29994831.51 -29994831.27 0.0288 0.0122 \*  
 Venus -86835-09-14 22:47 J -29994803.77 -29994803.55 -29994803.33 0.0288 0.0021  
 Mercury -86835-10-03 23:30 J -29994784.64 -29994784.52 -29994784.39 0.0288 0.0199  
 Mercury -86835-12-31 20:51 J -29994695.80 -29994695.63 -29994695.46 0.0288 0.0060  
 Mercury -86834-03-30 17:30 J -29994606.93 -29994606.77 -29994606.60 0.0288 0.0076  
 Mercury -86834-06-27 13:54 J -29994518.03 -29994517.92 -29994517.80 0.0288 0.0208  
 Earth -86834-09-01 19:39 J -29994451.75 -29994451.68 -29994451.61 0.0288 0.0276  
 Moon -86834-09-01 19:54 J -29994451.72 -29994451.67 -29994451.60 0.0288 0.0278 \*  
 Mars -86827-07-24 08:37 J -29991934.35 -29991934.14 -29991933.93 0.0280 0.0172  
 Earth -86822-01-21 19:39 J -29990291.86 -29990291.68 -29990291.47 0.0273 0.0155  
 Moon -86822-01-21 22:32 J -29990291.75 -29990291.56 -29990291.35 0.0273 0.0145 \*  
 Earth -86821-02-02 10:32 J -29989915.30 -29989915.06 -29989914.82 0.0272 0.0029  
 Moon -86821-02-02 11:59 J -29989915.24 -29989915.00 -29989914.75 0.0272 0.0017 \*  
 Mercury -86820-01-22 14:37 J -29989559.93 -29989559.89 -29989559.84 0.0272 0.0256  
 Moon -86820-02-12 20:23 J -29989538.87 -29989538.65 -29989538.42 0.0272 0.0100  
 Earth -86820-02-12 23:44 J -29989538.73 -29989538.51 -29989538.29 0.0272 0.0097 \*  
 Venus -86820-02-24 21:20 J -29989526.81 -29989526.61 -29989526.41 0.0272 0.0056  
 Mercury -86820-04-21 02:23 J -29989471.51 -29989471.40 -29989471.29 0.0271 0.0167  
 Mercury -86820-07-18 14:08 J -29989383.05 -29989382.91 -29989382.78 0.0271 0.0078  
 Venus -86820-10-11 20:37 J -29989297.65 -29989297.64 -29989297.62 0.0271 0.0270  
 Mercury -86820-10-15 01:54 J -29989294.56 -29989294.42 -29989294.28 0.0271 0.0015  
 Mercury -86819-01-11 13:54 J -29989206.04 -29989205.92 -29989205.78 0.0271 0.0106  
 Moon -86819-02-24 11:01 J -29989162.19 -29989162.04 -29989161.90 0.0271 0.0210  
 Earth -86819-02-24 12:56 J -29989162.10 -29989161.96 -29989161.82 0.0271 0.0218 \*  
 Mercury -86819-04-10 02:08 J -29989117.50 -29989117.41 -29989117.31 0.0271 0.0199  
 Mars -86813-08-20 19:25 J -29986792.97 -29986792.69 -29986792.39 0.0277 0.0125  
 Earth -86808-07-13 05:01 J -29985005.37 -29985005.29 -29985005.19 0.0285 0.0265  
 Moon -86808-07-13 08:08 J -29985005.26 -29985005.16 -29985005.04 0.0285 0.0254 \*  
 Earth -86807-07-27 21:49 J -29984625.82 -29984625.59 -29984625.35 0.0287 0.0114

Moon -86807-07-28 01:25 J -29984625.68 -29984625.44 -29984625.20 0.0287 0.0106 \*  
 Earth -86806-08-11 18:27 J -29984245.98 -29984245.73 -29984245.48 0.0288 0.0048  
 Moon -86806-08-11 19:54 J -29984245.93 -29984245.67 -29984245.42 0.0288 0.0052 \*  
 Mercury -86805-02-20 23:01 J -29984052.64 -29984052.54 -29984052.44 0.0288 0.0237  
 Venus -86805-03-27 05:30 J -29984017.48 -29984017.27 -29984017.06 0.0288 0.0080  
 Mercury -86805-05-19 20:23 J -29983963.81 -29983963.65 -29983963.49 0.0288 0.0098  
 Mercury -86805-08-16 17:15 J -29983874.95 -29983874.78 -29983874.61 0.0288 0.0040  
 Moon -86805-08-25 14:08 J -29983866.08 -29983865.91 -29983865.72 0.0288 0.0209  
 Earth -86805-08-25 15:35 J -29983866.01 -29983865.85 -29983865.67 0.0288 0.0208 \*  
 Mercury -86805-11-13 13:39 J -29983786.06 -29983785.93 -29983785.79 0.0288 0.0174  
 Mars -86799-09-14 23:59 J -29981654.73 -29981654.50 -29981654.26 0.0283 0.0127  
 Moon -86793-01-17 04:18 J -29979704.49 -29979704.32 -29979704.16 0.0273 0.0200  
 Earth -86793-01-17 06:56 J -29979704.36 -29979704.21 -29979704.05 0.0273 0.0206 \*  
 Moon -86792-01-27 20:23 J -29979327.87 -29979327.65 -29979327.42 0.0272 0.0070  
 Earth -86792-01-27 22:32 J -29979327.78 -29979327.56 -29979327.33 0.0272 0.0083 \*  
 Earth -86791-02-08 11:59 J -29978951.23 -29978951.00 -29978950.76 0.0271 0.0043  
 Moon -86791-02-08 15:06 J -29978951.10 -29978950.87 -29978950.64 0.0271 0.0051 \*  
 Venus -86791-09-07 04:03 J -29978740.54 -29978740.33 -29978740.13 0.0271 0.0003  
 Mercury -86791-09-08 05:44 J -29978739.36 -29978739.26 -29978739.16 0.0271 0.0184  
 Mercury -86791-12-05 17:15 J -29978650.91 -29978650.78 -29978650.65 0.0271 0.0095  
 Earth -86790-02-20 00:56 J -29978574.65 -29978574.46 -29978574.27 0.0271 0.0164  
 Moon -86790-02-20 03:06 J -29978574.55 -29978574.37 -29978574.16 0.0271 0.0161 \*  
 Mercury -86790-03-04 05:01 J -29978562.43 -29978562.29 -29978562.14 0.0271 0.0010  
 Mercury -86790-05-31 17:01 J -29978473.92 -29978473.79 -29978473.65 0.0271 0.0088  
 Mercury -86790-08-28 05:15 J -29978385.38 -29978385.28 -29978385.17 0.0271 0.0180  
 Moon -86789-03-02 11:15 J -29978198.06 -29978198.03 -29978197.97 0.0271 0.0266  
 Mars -86783-10-13 15:35 J -29975782.16 -29975781.85 -29975781.54 0.0278 0.0066  
 Moon -86778-07-21 11:59 J -29974040.19 -29974040.00 -29974039.79 0.0286 0.0171  
 Earth -86778-07-21 15:06 J -29974040.06 -29974039.87 -29974039.67 0.0286 0.0179 \*  
 Moon -86777-08-04 09:06 J -29973660.36 -29973660.12 -29973659.88 0.0287 0.0018

Earth -86777-08-04 09:20 J -29973660.36 -29973660.11 -29973659.85 0.0287 0.0022 \*  
 Mercury -86776-07-09 20:51 J -29973320.64 -29973320.63 -29973320.61 0.0288 0.0286  
 Earth -86776-08-19 05:30 J -29973280.49 -29973280.27 -29973280.04 0.0288 0.0139  
 Moon -86776-08-19 08:08 J -29973280.37 -29973280.16 -29973279.94 0.0288 0.0139 \*  
 Mercury -86776-10-06 18:13 J -29973231.88 -29973231.74 -29973231.58 0.0288 0.0146  
 Venus -86776-10-07 09:20 J -29973231.30 -29973231.11 -29973230.91 0.0288 0.0126  
 Mercury -86775-01-03 15:35 J -29973143.03 -29973142.85 -29973142.68 0.0288 0.0010  
 Mercury -86775-04-02 12:13 J -29973054.15 -29973053.99 -29973053.84 0.0288 0.0128  
 Mercury -86775-06-30 08:08 J -29972965.22 -29972965.16 -29972965.08 0.0288 0.0259  
 Mars -86769-10-31 07:25 J -29970650.45 -29970650.19 -29970649.92 0.0281 0.0028  
 Earth -86764-01-11 04:47 J -29969117.37 -29969117.30 -29969117.23 0.0274 0.0261  
 Moon -86764-01-11 07:11 J -29969117.26 -29969117.20 -29969117.11 0.0274 0.0259 \*  
 Earth -86763-01-22 21:49 J -29968740.79 -29968740.59 -29968740.38 0.0273 0.0139  
 Moon -86763-01-23 00:27 J -29968740.68 -29968740.48 -29968740.25 0.0273 0.0127 \*  
 Moon -86762-02-03 09:35 J -29968364.34 -29968364.10 -29968363.86 0.0272 0.0002  
 Earth -86762-02-03 12:13 J -29968364.23 -29968363.99 -29968363.75 0.0272 0.0014 \*  
 Mercury -86761-01-26 06:42 J -29968007.30 -29968007.22 -29968007.14 0.0271 0.0219  
 Moon -86761-02-14 22:47 J -29967987.76 -29967987.55 -29967987.34 0.0271 0.0111  
 Earth -86761-02-15 00:56 J -29967987.67 -29967987.46 -29967987.24 0.0271 0.0111 \*  
 Venus -86761-03-19 03:06 J -29967954.57 -29967954.37 -29967954.16 0.0271 0.0030  
 Mercury -86761-04-23 18:13 J -29967918.86 -29967918.74 -29967918.62 0.0271 0.0131  
 Mercury -86761-07-21 05:59 J -29967830.39 -29967830.25 -29967830.11 0.0271 0.0041  
 Mercury -86761-10-17 17:59 J -29967741.89 -29967741.75 -29967741.61 0.0271 0.0051  
 Mercury -86760-01-14 05:59 J -29967653.37 -29967653.25 -29967653.13 0.0271 0.0143  
 Earth -86760-02-25 13:25 J -29967611.05 -29967610.94 -29967610.80 0.0271 0.0230  
 Moon -86760-02-25 15:49 J -29967610.96 -29967610.84 -29967610.69 0.0271 0.0219 \*  
 Mercury -86760-04-12 18:13 J -29967564.80 -29967564.74 -29967564.67 0.0271 0.0237  
 Mars -86753-12-04 15:49 J -29964771.95 -29964771.84 -29964771.70 0.0279 0.0256  
 Earth -86749-07-14 06:56 J -29963454.32 -29963454.21 -29963454.07 0.0285 0.0249  
 Moon -86749-07-14 10:18 J -29963454.21 -29963454.07 -29963453.93 0.0285 0.0237 \*

Moon -86748-07-28 23:44 J -29963074.76 -29963074.51 -29963074.26 0.0287 0.0092  
 Earth -86748-07-28 23:59 J -29963074.73 -29963074.50 -29963074.25 0.0287 0.0097 \*  
 Moon -86747-08-12 17:15 J -29962695.03 -29962694.78 -29962694.52 0.0288 0.0063  
 Earth -86747-08-12 20:37 J -29962694.88 -29962694.64 -29962694.39 0.0288 0.0064 \*  
 Venus -86747-09-01 12:27 J -29962675.09 -29962674.98 -29962674.85 0.0288 0.0240  
 Mercury -86746-02-23 16:47 J -29962499.92 -29962499.80 -29962499.66 0.0288 0.0190  
 Venus -86746-04-19 14:08 J -29962445.07 -29962444.91 -29962444.73 0.0288 0.0180  
 Mercury -86746-05-23 14:08 J -29962411.08 -29962410.91 -29962410.74 0.0288 0.0050  
 Mercury -86746-08-20 11:01 J -29962322.20 -29962322.04 -29962321.88 0.0288 0.0087  
 Moon -86746-08-27 14:08 J -29962315.06 -29962314.91 -29962314.74 0.0288 0.0219  
 Earth -86746-08-27 18:13 J -29962314.89 -29962314.74 -29962314.57 0.0288 0.0223 \*  
 Mercury -86746-11-17 07:11 J -29962233.30 -29962233.20 -29962233.08 0.0289 0.0221  
 Mars -86741-12-22 17:15 J -29960370.83 -29960370.78 -29960370.72 0.0284 0.0277  
 Mars -86739-12-18 09:35 J -29959645.29 -29959645.10 -29959644.88 0.0281 0.0185  
 Moon -86734-01-18 05:44 J -29958153.43 -29958153.26 -29958153.08 0.0273 0.0181  
 Earth -86734-01-18 08:37 J -29958153.31 -29958153.14 -29958152.97 0.0273 0.0190 \*  
 Earth -86733-01-29 23:44 J -29957776.73 -29957776.51 -29957776.27 0.0272 0.0068  
 Moon -86733-01-30 01:39 J -29957776.65 -29957776.43 -29957776.20 0.0272 0.0053 \*  
 Earth -86732-02-09 13:11 J -29957400.18 -29957399.95 -29957399.72 0.0271 0.0057  
 Moon -86732-02-09 15:35 J -29957400.08 -29957399.85 -29957399.60 0.0271 0.0065 \*  
 Venus -86732-02-12 10:18 J -29957397.15 -29957397.07 -29957396.96 0.0271 0.0240  
 Mercury -86732-06-14 09:49 J -29957275.15 -29957275.09 -29957275.02 0.0271 0.0237  
 Mercury -86732-09-10 21:20 J -29957186.72 -29957186.61 -29957186.49 0.0271 0.0149  
 Venus -86732-09-29 09:35 J -29957168.29 -29957168.10 -29957167.90 0.0271 0.0086  
 Mercury -86732-12-08 09:06 J -29957098.26 -29957098.12 -29957097.98 0.0271 0.0059  
 Moon -86731-02-20 23:01 J -29957023.72 -29957023.54 -29957023.34 0.0271 0.0169  
 Earth -86731-02-21 01:25 J -29957023.60 -29957023.44 -29957023.25 0.0271 0.0178 \*  
 Mercury -86731-03-06 21:06 J -29957009.76 -29957009.62 -29957009.48 0.0271 0.0033  
 Mercury -86731-06-03 09:06 J -29956921.25 -29956921.12 -29956921.00 0.0271 0.0124  
 Mercury -86731-08-30 21:06 J -29956832.70 -29956832.62 -29956832.53 0.0270 0.0218

Mars -86724-01-14 04:18 J -29954504.61 -29954504.32 -29954504.02 0.0276 0.0119  
 Earth -86719-07-22 17:44 J -29952488.96 -29952488.76 -29952488.55 0.0286 0.0161  
 Moon -86719-07-22 18:27 J -29952488.92 -29952488.73 -29952488.51 0.0286 0.0157 \*  
 Earth -86718-08-06 12:27 J -29952109.23 -29952108.98 -29952108.72 0.0287 0.0005  
 Moon -86718-08-06 16:03 J -29952109.08 -29952108.83 -29952108.58 0.0287 0.0004 \*  
 Venus -86717-03-13 17:15 J -29951888.94 -29951888.78 -29951888.61 0.0288 0.0191  
 Mercury -86717-07-12 15:06 J -29951767.96 -29951767.87 -29951767.77 0.0288 0.0236  
 Earth -86717-08-20 09:06 J -29951729.33 -29951729.12 -29951728.90 0.0288 0.0155  
 Moon -86717-08-20 12:42 J -29951729.19 -29951728.97 -29951728.75 0.0288 0.0152 \*  
 Mercury -86717-10-09 12:27 J -29951679.14 -29951678.98 -29951678.81 0.0288 0.0097  
 Venus -86717-10-29 18:42 J -29951658.84 -29951658.72 -29951658.58 0.0288 0.0227  
 Mercury -86716-01-06 09:35 J -29951590.27 -29951590.10 -29951589.93 0.0288 0.0041  
 Mercury -86716-04-05 05:59 J -29951501.38 -29951501.25 -29951501.11 0.0288 0.0176  
 Mars -86710-02-08 03:20 J -29949366.60 -29949366.36 -29949366.11 0.0282 0.0121  
 Earth -86705-01-13 06:13 J -29947566.34 -29947566.24 -29947566.13 0.0274 0.0245  
 Moon -86705-01-13 09:06 J -29947566.23 -29947566.12 -29947566.00 0.0274 0.0239 \*  
 Moon -86704-01-23 21:20 J -29947189.84 -29947189.61 -29947189.39 0.0273 0.0108  
 Earth -86704-01-23 23:15 J -29947189.74 -29947189.53 -29947189.32 0.0273 0.0123 \*  
 Moon -86703-02-04 10:18 J -29946813.31 -29946813.07 -29946812.84 0.0272 0.0014  
 Earth -86703-02-04 13:11 J -29946813.19 -29946812.95 -29946812.72 0.0272 0.0004 \*  
 Venus -86703-08-25 09:20 J -29946611.23 -29946611.11 -29946610.97 0.0271 0.0211  
 Mercury -86702-01-28 22:18 J -29946454.67 -29946454.57 -29946454.47 0.0271 0.0184  
 Earth -86702-02-16 01:25 J -29946436.65 -29946436.44 -29946436.23 0.0271 0.0124  
 Moon -86702-02-16 03:35 J -29946436.55 -29946436.35 -29946436.14 0.0271 0.0120 \*  
 Venus -86702-04-11 08:23 J -29946382.33 -29946382.15 -29946381.96 0.0271 0.0115  
 Mercury -86702-04-27 09:49 J -29946366.21 -29946366.09 -29946365.95 0.0271 0.0096  
 Mercury -86702-07-24 21:49 J -29946277.73 -29946277.59 -29946277.45 0.0271 0.0009  
 Mercury -86702-10-21 09:35 J -29946189.23 -29946189.10 -29946188.96 0.0271 0.0087  
 Mercury -86701-01-17 21:49 J -29946100.70 -29946100.59 -29946100.48 0.0271 0.0180  
 Earth -86701-02-27 13:25 J -29946060.03 -29946059.94 -29946059.82 0.0271 0.0242

Moon -86701-02-27 17:01 J -29946059.92 -29946059.79 -29946059.66 0.0271 0.0227 \*  
 Mars -86694-03-08 02:23 J -29943494.71 -29943494.40 -29943494.09 0.0278 0.0069  
 Moon -86690-07-16 05:59 J -29941903.40 -29941903.25 -29941903.08 0.0285 0.0224  
 Earth -86690-07-16 07:39 J -29941903.32 -29941903.18 -29941903.02 0.0285 0.0232 \*  
 Moon -86689-07-29 21:35 J -29941523.85 -29941523.60 -29941523.36 0.0287 0.0078  
 Earth -86689-07-30 01:11 J -29941523.70 -29941523.45 -29941523.21 0.0287 0.0079 \*  
 Moon -86688-08-13 18:56 J -29941143.94 -29941143.71 -29941143.47 0.0288 0.0077  
 Earth -86688-08-13 21:49 J -29941143.84 -29941143.59 -29941143.35 0.0288 0.0080 \*  
 Venus -86688-09-23 20:37 J -29941102.83 -29941102.64 -29941102.45 0.0288 0.0144  
 Mercury -86688-11-29 12:42 J -29941035.98 -29941035.97 -29941035.94 0.0288 0.0285  
 Mercury -86687-02-26 10:18 J -29940947.21 -29940947.07 -29940946.91 0.0288 0.0144  
 Venus -86687-05-11 22:32 J -29940872.62 -29940872.56 -29940872.50 0.0288 0.0276  
 Mercury -86687-05-26 07:39 J -29940858.35 -29940858.18 -29940858.01 0.0288 0.0005  
 Mercury -86687-08-23 04:18 J -29940769.47 -29940769.32 -29940769.17 0.0289 0.0131  
 Moon -86687-08-28 19:11 J -29940763.84 -29940763.70 -29940763.54 0.0289 0.0230  
 Earth -86687-08-28 19:11 J -29940763.83 -29940763.70 -29940763.55 0.0289 0.0237 \*  
 Mercury -86687-11-20 00:42 J -29940680.53 -29940680.47 -29940680.40 0.0289 0.0264  
 Mars -86680-03-27 01:25 J -29938361.71 -29938361.44 -29938361.17 0.0282 0.0035  
 Earth -86675-01-19 08:51 J -29936602.31 -29936602.13 -29936601.94 0.0273 0.0174  
 Moon -86675-01-19 10:32 J -29936602.24 -29936602.06 -29936601.87 0.0273 0.0162 \*  
 Earth -86674-01-31 00:13 J -29936225.73 -29936225.49 -29936225.26 0.0272 0.0051  
 Moon -86674-01-31 03:35 J -29936225.59 -29936225.35 -29936225.11 0.0272 0.0036 \*  
 Moon -86673-02-11 11:30 J -29935849.25 -29935849.02 -29935848.78 0.0271 0.0074  
 Earth -86673-02-11 13:11 J -29935849.18 -29935848.95 -29935848.72 0.0271 0.0071 \*  
 Venus -86673-03-06 15:35 J -29935825.02 -29935824.85 -29935824.68 0.0271 0.0157  
 Mercury -86673-06-17 01:25 J -29935722.53 -29935722.44 -29935722.35 0.0271 0.0203  
 Mercury -86673-09-13 12:56 J -29935634.08 -29935633.96 -29935633.83 0.0271 0.0114  
 Venus -86673-10-21 14:37 J -29935596.05 -29935595.89 -29935595.73 0.0271 0.0169  
 Mercury -86673-12-11 00:42 J -29935545.61 -29935545.47 -29935545.33 0.0271 0.0025  
 Moon -86672-02-21 22:18 J -29935472.74 -29935472.57 -29935472.39 0.0271 0.0179



Earth -86672-02-22 01:25 J -29935472.60 -29935472.44 -29935472.26 0.0271 0.0190 \*  
 Mercury -86672-03-09 12:42 J -29935457.11 -29935456.97 -29935456.83 0.0271 0.0068  
 Mercury -86672-06-06 00:42 J -29935368.58 -29935368.47 -29935368.35 0.0270 0.0160  
 Mercury -86672-09-02 13:11 J -29935280.00 -29935279.95 -29935279.91 0.0270 0.0254  
 Mars -86664-04-29 21:20 J -29932483.71 -29932483.61 -29932483.48 0.0279 0.0260  
 Moon -86661-07-09 07:11 J -29931317.22 -29931317.20 -29931317.15 0.0285 0.0282  
 Earth -86660-07-23 19:11 J -29930937.91 -29930937.70 -29930937.47 0.0286 0.0144  
 Moon -86660-07-23 23:01 J -29930937.75 -29930937.54 -29930937.31 0.0286 0.0139 \*  
 Earth -86659-08-07 14:23 J -29930558.16 -29930557.90 -29930557.65 0.0288 0.0013  
 Moon -86659-08-07 16:32 J -29930558.07 -29930557.81 -29930557.55 0.0288 0.0012 \*  
 Venus -86658-04-06 01:54 J -29930316.62 -29930316.42 -29930316.21 0.0288 0.0094  
 Mercury -86658-07-16 08:51 J -29930215.25 -29930215.13 -29930214.99 0.0288 0.0189  
 Moon -86658-08-22 10:03 J -29930178.29 -29930178.08 -29930177.86 0.0288 0.0163  
 Earth -86658-08-22 11:01 J -29930178.23 -29930178.04 -29930177.83 0.0288 0.0171 \*  
 Mercury -86658-10-13 06:13 J -29930126.41 -29930126.24 -29930126.07 0.0288 0.0050  
 Mercury -86657-01-10 03:06 J -29930037.53 -29930037.37 -29930037.20 0.0288 0.0087  
 Mercury -86657-04-07 23:15 J -29929948.62 -29929948.53 -29929948.41 0.0289 0.0222  
 Mars -86652-05-17 19:54 J -29928082.73 -29928082.67 -29928082.59 0.0284 0.0272  
 Mars -86650-05-13 11:01 J -29927357.23 -29927357.04 -29927356.83 0.0280 0.0190  
 Moon -86646-01-14 05:30 J -29926015.41 -29926015.27 -29926015.12 0.0274 0.0219  
 Earth -86646-01-14 06:56 J -29926015.32 -29926015.21 -29926015.06 0.0274 0.0229 \*  
 Moon -86645-01-25 20:08 J -29925638.87 -29925638.66 -29925638.43 0.0272 0.0092  
 Earth -86645-01-25 23:44 J -29925638.73 -29925638.51 -29925638.29 0.0272 0.0107 \*  
 Earth -86644-02-05 13:25 J -29925262.18 -29925261.94 -29925261.70 0.0271 0.0016  
 Moon -86644-02-05 14:23 J -29925262.13 -29925261.90 -29925261.67 0.0271 0.0025 \*  
 Venus -86644-09-16 14:37 J -29925039.07 -29925038.89 -29925038.71 0.0271 0.0128  
 Mercury -86644-11-04 02:23 J -29924990.46 -29924990.40 -29924990.33 0.0271 0.0238  
 Mercury -86643-01-31 13:54 J -29924902.03 -29924901.92 -29924901.80 0.0271 0.0150  
 Earth -86643-02-17 01:25 J -29924885.64 -29924885.44 -29924885.23 0.0271 0.0138  
 Moon -86643-02-17 04:32 J -29924885.51 -29924885.31 -29924885.09 0.0271 0.0131 \*

Mercury -86643-04-30 01:39 J -29924813.57 -29924813.43 -29924813.30 0.0271 0.0061  
 Venus -86643-05-03 13:25 J -29924810.07 -29924809.94 -29924809.79 0.0271 0.0198  
 Mercury -86643-07-27 13:25 J -29924725.08 -29924724.94 -29924724.80 0.0271 0.0030  
 Mercury -86643-10-24 01:25 J -29924636.57 -29924636.44 -29924636.31 0.0271 0.0122  
 Mercury -86642-01-20 13:39 J -29924548.02 -29924547.93 -29924547.85 0.0271 0.0216  
 Moon -86642-02-28 11:59 J -29924509.11 -29924509.00 -29924508.87 0.0271 0.0237  
 Earth -86642-02-28 13:39 J -29924509.01 -29924508.93 -29924508.84 0.0271 0.0253 \*  
 Mars -86636-06-08 10:32 J -29922217.34 -29922217.06 -29922216.76 0.0276 0.0120  
 Moon -86631-07-17 03:20 J -29920352.51 -29920352.36 -29920352.18 0.0285 0.0212  
 Earth -86631-07-17 07:25 J -29920352.35 -29920352.19 -29920352.02 0.0285 0.0215 \*  
 Moon -86630-07-31 23:30 J -29919972.76 -29919972.52 -29919972.28 0.0287 0.0063  
 Earth -86630-08-01 00:56 J -29919972.70 -29919972.46 -29919972.21 0.0287 0.0063 \*  
 Earth -86629-08-14 21:35 J -29919592.83 -29919592.60 -29919592.35 0.0288 0.0096  
 Moon -86629-08-14 23:30 J -29919592.75 -29919592.52 -29919592.28 0.0288 0.0089 \*  
 Venus -86629-10-16 04:03 J -29919530.55 -29919530.33 -29919530.12 0.0288 0.0050  
 Mercury -86629-12-02 05:59 J -29919483.33 -29919483.25 -29919483.15 0.0288 0.0241  
 Mercury -86628-03-01 03:35 J -29919394.51 -29919394.35 -29919394.18 0.0288 0.0101  
 Mercury -86628-05-29 00:42 J -29919305.64 -29919305.47 -29919305.30 0.0289 0.0038  
 Mercury -86628-08-25 21:20 J -29919216.74 -29919216.61 -29919216.47 0.0289 0.0174  
 Earth -86628-08-29 19:25 J -29919212.82 -29919212.69 -29919212.57 0.0289 0.0250  
 Moon -86628-08-29 23:15 J -29919212.67 -29919212.53 -29919212.39 0.0289 0.0239 \*  
 Mars -86622-07-04 15:49 J -29917078.08 -29917077.84 -29917077.59 0.0284 0.0118  
 Moon -86617-01-09 15:20 J -29915427.86 -29915427.86 -29915427.85 0.0275 0.0275  
 Earth -86616-01-20 09:06 J -29915051.31 -29915051.12 -29915050.92 0.0273 0.0157  
 Moon -86616-01-20 12:42 J -29915051.17 -29915050.97 -29915050.76 0.0273 0.0143 \*  
 Moon -86615-01-31 23:44 J -29914674.75 -29914674.51 -29914674.26 0.0272 0.0022  
 Earth -86615-02-01 00:27 J -29914674.72 -29914674.48 -29914674.25 0.0272 0.0035 \*  
 Moon -86614-02-12 10:03 J -29914298.31 -29914298.08 -29914297.86 0.0271 0.0087  
 Earth -86614-02-12 13:11 J -29914298.17 -29914297.95 -29914297.72 0.0271 0.0086 \*  
 Mercury -86614-03-24 05:30 J -29914258.31 -29914258.27 -29914258.23 0.0271 0.0257

Venus -86614-03-29 20:37 J -29914252.84 -29914252.64 -29914252.44 0.0271 0.0074  
 Mercury -86614-06-20 17:01 J -29914169.90 -29914169.79 -29914169.68 0.0271 0.0169  
 Mercury -86614-09-17 04:32 J -29914081.44 -29914081.31 -29914081.17 0.0271 0.0080  
 Venus -86614-11-13 19:39 J -29914023.75 -29914023.68 -29914023.60 0.0271 0.0253  
 Mercury -86614-12-14 16:32 J -29913992.95 -29913992.81 -29913992.67 0.0271 0.0013  
 Earth -86613-02-24 01:11 J -29913921.59 -29913921.45 -29913921.28 0.0270 0.0204  
 Moon -86613-02-24 02:37 J -29913921.55 -29913921.39 -29913921.23 0.0270 0.0191 \*  
 Mercury -86613-03-12 04:18 J -29913904.45 -29913904.32 -29913904.18 0.0270 0.0104  
 Mercury -86613-06-08 16:32 J -29913815.91 -29913815.81 -29913815.71 0.0270 0.0196  
 Mars -86606-08-01 11:15 J -29911206.34 -29911206.03 -29911205.72 0.0277 0.0075  
 Earth -86602-07-11 05:59 J -29909766.31 -29909766.25 -29909766.17 0.0285 0.0272  
 Moon -86602-07-11 09:35 J -29909766.18 -29909766.10 -29909766.01 0.0285 0.0267 \*  
 Earth -86601-07-24 20:51 J -29909386.85 -29909386.63 -29909386.40 0.0287 0.0126  
 Moon -86601-07-24 21:49 J -29909386.82 -29909386.59 -29909386.35 0.0287 0.0125 \*  
 Moon -86600-08-08 13:39 J -29909007.19 -29909006.93 -29909006.67 0.0288 0.0025  
 Earth -86600-08-08 16:03 J -29909007.08 -29909006.83 -29909006.58 0.0288 0.0030 \*  
 Mercury -86599-04-21 05:15 J -29908751.31 -29908751.28 -29908751.26 0.0288 0.0284  
 Venus -86599-04-28 10:18 J -29908744.28 -29908744.07 -29908743.85 0.0288 0.0005  
 Mercury -86599-07-19 02:37 J -29908662.53 -29908662.39 -29908662.23 0.0288 0.0143  
 Moon -86599-08-23 09:06 J -29908627.31 -29908627.12 -29908626.91 0.0288 0.0176  
 Earth -86599-08-23 12:56 J -29908627.15 -29908626.96 -29908626.76 0.0288 0.0186 \*  
 Mercury -86599-10-15 23:59 J -29908573.67 -29908573.50 -29908573.33 0.0289 0.0005  
 Mercury -86598-01-12 20:37 J -29908484.79 -29908484.64 -29908484.49 0.0289 0.0133  
 Mercury -86598-04-11 17:01 J -29908395.85 -29908395.79 -29908395.73 0.0289 0.0266  
 Mars -86592-08-20 04:03 J -29906073.60 -29906073.33 -29906073.06 0.0282 0.0041  
 Moon -86587-01-15 04:32 J -29904464.46 -29904464.31 -29904464.14 0.0274 0.0202  
 Earth -86587-01-15 08:08 J -29904464.31 -29904464.16 -29904464.01 0.0274 0.0212 \*  
 Earth -86586-01-27 00:13 J -29904087.71 -29904087.49 -29904087.26 0.0272 0.0091  
 Moon -86586-01-27 01:11 J -29904087.67 -29904087.45 -29904087.23 0.0272 0.0077 \*  
 Earth -86585-02-07 13:54 J -29903711.16 -29903710.92 -29903710.69 0.0271 0.0031

Moon -86585-02-07 17:30 J -29903711.01 -29903710.77 -29903710.54 0.0271 0.0040 \*  
 Venus -86585-10-08 19:54 J -29903466.88 -29903466.67 -29903466.47 0.0271 0.0044  
 Mercury -86585-11-06 17:59 J -29903437.84 -29903437.75 -29903437.66 0.0271 0.0204  
 Mercury -86584-02-03 05:30 J -29903349.39 -29903349.27 -29903349.14 0.0271 0.0115  
 Moon -86584-02-18 00:56 J -29903334.66 -29903334.46 -29903334.24 0.0271 0.0142  
 Earth -86584-02-18 01:54 J -29903334.61 -29903334.42 -29903334.22 0.0271 0.0151 \*  
 Mercury -86584-05-02 17:15 J -29903260.92 -29903260.78 -29903260.64 0.0271 0.0025  
 Mercury -86584-07-30 05:15 J -29903172.42 -29903172.28 -29903172.15 0.0271 0.0067  
 Mercury -86584-10-26 17:15 J -29903083.90 -29903083.78 -29903083.67 0.0270 0.0159  
 Mercury -86583-01-23 05:15 J -29902995.32 -29902995.28 -29902995.22 0.0270 0.0253  
 Moon -86583-03-01 10:18 J -29902958.15 -29902958.07 -29902957.97 0.0270 0.0249  
 Earth -86583-03-01 13:39 J -29902957.96 -29902957.93 -29902957.87 0.0270 0.0265  
 Mars -86576-09-22 04:03 J -29900196.43 -29900196.33 -29900196.21 0.0279 0.0260  
 Earth -86572-07-18 07:54 J -29898801.35 -29898801.17 -29898800.98 0.0286 0.0198  
 Moon -86572-07-18 08:08 J -29898801.33 -29898801.16 -29898800.98 0.0286 0.0199 \*  
 Earth -86571-08-02 01:39 J -29898421.68 -29898421.43 -29898421.18 0.0287 0.0045  
 Moon -86571-08-02 04:32 J -29898421.55 -29898421.31 -29898421.06 0.0287 0.0050 \*  
 Earth -86570-08-16 22:18 J -29898041.79 -29898041.57 -29898041.33 0.0288 0.0112  
 Moon -86570-08-17 02:08 J -29898041.65 -29898041.41 -29898041.17 0.0288 0.0104 \*  
 Venus -86570-11-08 11:30 J -29897958.23 -29897958.02 -29897957.80 0.0288 0.0045  
 Mercury -86570-12-05 23:30 J -29897930.64 -29897930.52 -29897930.39 0.0288 0.0197  
 Mercury -86569-03-03 21:06 J -29897841.79 -29897841.62 -29897841.45 0.0288 0.0056  
 Mercury -86569-05-31 17:59 J -29897752.91 -29897752.75 -29897752.58 0.0289 0.0082  
 Mercury -86569-08-28 14:23 J -29897664.00 -29897663.90 -29897663.78 0.0289 0.0217  
 Earth -86569-08-30 19:54 J -29897661.76 -29897661.67 -29897661.56 0.0289 0.0264  
 Moon -86569-08-30 21:20 J -29897661.73 -29897661.61 -29897661.47 0.0289 0.0251 \*  
 Mars -86564-10-11 03:49 J -29895794.40 -29895794.34 -29895794.25 0.0285 0.0272  
 Mars -86562-10-06 23:30 J -29895068.71 -29895068.52 -29895068.32 0.0281 0.0194  
 Earth -86558-01-10 14:23 J -29893876.96 -29893876.90 -29893876.81 0.0275 0.0259  
 Moon -86558-01-10 17:59 J -29893876.82 -29893876.75 -29893876.66 0.0275 0.0256 \*

Moon -86557-01-22 08:51 J -29893500.34 -29893500.13 -29893499.90 0.0273 0.0127  
 Earth -86557-01-22 09:20 J -29893500.31 -29893500.11 -29893499.90 0.0273 0.0140 \*  
 Moon -86556-02-01 20:51 J -29893123.87 -29893123.63 -29893123.39 0.0272 0.0007  
 Earth -86556-02-02 00:27 J -29893123.71 -29893123.48 -29893123.24 0.0272 0.0020 \*  
 Earth -86555-02-13 13:25 J -29892747.16 -29892746.94 -29892746.72 0.0271 0.0101  
 Moon -86555-02-13 13:11 J -29892747.16 -29892746.95 -29892746.73 0.0271 0.0100 \*  
 Mercury -86555-03-26 21:06 J -29892705.69 -29892705.62 -29892705.54 0.0271 0.0223  
 Venus -86555-04-21 01:39 J -29892680.63 -29892680.43 -29892680.22 0.0271 0.0010  
 Mercury -86555-06-23 08:37 J -29892617.26 -29892617.14 -29892617.02 0.0271 0.0135  
 Mercury -86555-09-19 20:23 J -29892528.79 -29892528.65 -29892528.51 0.0271 0.0045  
 Mercury -86555-12-17 08:08 J -29892440.30 -29892440.16 -29892440.02 0.0271 0.0047  
 Earth -86554-02-25 01:25 J -29892370.57 -29892370.44 -29892370.29 0.0271 0.0217  
 Moon -86554-02-25 05:01 J -29892370.44 -29892370.29 -29892370.13 0.0271 0.0202 \*  
 Mercury -86554-03-15 20:08 J -29892351.78 -29892351.66 -29892351.54 0.0270 0.0139  
 Mercury -86554-06-12 08:23 J -29892263.22 -29892263.15 -29892263.08 0.0270 0.0233  
 Mars -86548-11-02 02:08 J -29889928.71 -29889928.41 -29889928.11 0.0276 0.0110  
 Moon -86543-07-12 06:13 J -29888215.34 -29888215.24 -29888215.11 0.0285 0.0255  
 Earth -86543-07-12 07:39 J -29888215.28 -29888215.18 -29888215.06 0.0285 0.0255 \*  
 Moon -86542-07-26 19:11 J -29887835.93 -29887835.70 -29887835.45 0.0287 0.0113  
 Earth -86542-07-26 22:47 J -29887835.77 -29887835.55 -29887835.31 0.0287 0.0109 \*  
 Moon -86541-08-09 14:37 J -29887456.14 -29887455.89 -29887455.64 0.0288 0.0041  
 Earth -86541-08-09 18:13 J -29887455.99 -29887455.74 -29887455.49 0.0288 0.0047 \*  
 Mercury -86540-04-23 23:01 J -29887198.63 -29887198.54 -29887198.44 0.0288 0.0236  
 Venus -86540-05-20 18:56 J -29887171.91 -29887171.71 -29887171.50 0.0288 0.0102  
 Mercury -86540-07-21 20:37 J -29887109.81 -29887109.64 -29887109.48 0.0289 0.0096  
 Moon -86540-08-24 14:08 J -29887076.09 -29887075.91 -29887075.73 0.0289 0.0192  
 Earth -86540-08-24 14:51 J -29887076.05 -29887075.88 -29887075.69 0.0289 0.0203 \*  
 Mercury -86540-10-18 17:30 J -29887020.93 -29887020.77 -29887020.59 0.0289 0.0044  
 Mercury -86539-01-15 14:08 J -29886932.04 -29886931.91 -29886931.77 0.0289 0.0179  
 Mars -86534-11-27 21:20 J -29884789.86 -29884789.61 -29884789.37 0.0283 0.0112

Moon -86528-01-16 09:20 J -29882913.28 -29882913.11 -29882912.94 0.0274 0.0185  
 Earth -86528-01-16 09:20 J -29882913.26 -29882913.11 -29882912.93 0.0274 0.0196 \*  
 Earth -86527-01-28 01:54 J -29882536.65 -29882536.42 -29882536.19 0.0272 0.0074  
 Moon -86527-01-28 05:30 J -29882536.50 -29882536.27 -29882536.04 0.0272 0.0060 \*  
 Earth -86526-02-08 15:20 J -29882160.10 -29882159.86 -29882159.63 0.0271 0.0047  
 Moon -86526-02-08 15:49 J -29882160.08 -29882159.84 -29882159.60 0.0271 0.0051 \*  
 Mercury -86526-08-13 22:18 J -29881973.61 -29881973.57 -29881973.52 0.0271 0.0256  
 Venus -86526-11-01 01:54 J -29881894.63 -29881894.42 -29881894.22 0.0271 0.0042  
 Mercury -86526-11-10 09:49 J -29881885.19 -29881885.09 -29881884.98 0.0271 0.0168  
 Mercury -86525-02-06 21:35 J -29881796.74 -29881796.60 -29881796.47 0.0271 0.0079  
 Moon -86525-02-19 23:44 J -29881783.70 -29881783.51 -29881783.31 0.0271 0.0154  
 Earth -86525-02-20 03:06 J -29881783.55 -29881783.37 -29881783.17 0.0271 0.0166 \*  
 Mercury -86525-05-05 09:20 J -29881708.25 -29881708.11 -29881707.97 0.0271 0.0015  
 Mercury -86525-08-01 21:06 J -29881619.75 -29881619.62 -29881619.49 0.0270 0.0104  
 Mercury -86525-10-29 09:20 J -29881531.21 -29881531.11 -29881531.02 0.0270 0.0197  
 Moon -86524-03-02 15:35 J -29881406.90 -29881406.85 -29881406.81 0.0270 0.0264  
 Mars -86518-12-24 20:37 J -29878918.95 -29878918.64 -29878918.33 0.0277 0.0074  
 Earth -86513-07-19 09:35 J -29877250.29 -29877250.10 -29877249.90 0.0286 0.0179  
 Moon -86513-07-19 13:25 J -29877250.12 -29877249.94 -29877249.73 0.0286 0.0185 \*  
 Earth -86512-08-03 03:35 J -29876870.60 -29876870.35 -29876870.10 0.0287 0.0027  
 Moon -86512-08-03 06:56 J -29876870.47 -29876870.21 -29876869.96 0.0287 0.0034 \*  
 Venus -86511-04-14 18:13 J -29876615.78 -29876615.74 -29876615.68 0.0288 0.0279  
 Moon -86511-08-18 00:42 J -29876490.71 -29876490.47 -29876490.23 0.0288 0.0118  
 Earth -86511-08-18 00:27 J -29876490.70 -29876490.48 -29876490.25 0.0288 0.0129 \*  
 Venus -86511-11-30 20:08 J -29876385.84 -29876385.66 -29876385.47 0.0288 0.0142  
 Mercury -86511-12-08 17:30 J -29876377.92 -29876377.77 -29876377.62 0.0288 0.0149  
 Mercury -86510-03-07 14:37 J -29876289.06 -29876288.89 -29876288.71 0.0288 0.0013  
 Mercury -86510-06-04 11:30 J -29876200.17 -29876200.02 -29876199.86 0.0289 0.0128  
 Mercury -86510-09-01 07:54 J -29876111.23 -29876111.17 -29876111.10 0.0289 0.0261  
 Moon -86510-09-01 18:42 J -29876110.81 -29876110.72 -29876110.60 0.0289 0.0264

Earth -86510-09-01 21:49 J -29876110.64 -29876110.59 -29876110.52 0.0289 0.0279 \*  
 Mars -86503-01-13 13:25 J -29873785.20 -29873784.94 -29873784.67 0.0283 0.0044  
 Earth -86499-01-11 15:20 J -29872325.96 -29872325.86 -29872325.74 0.0275 0.0242  
 Moon -86499-01-11 16:18 J -29872325.93 -29872325.82 -29872325.68 0.0275 0.0235 \*  
 Moon -86498-01-23 06:42 J -29871949.43 -29871949.22 -29871948.99 0.0273 0.0109  
 Earth -86498-01-23 10:03 J -29871949.28 -29871949.08 -29871948.86 0.0273 0.0124 \*  
 Moon -86497-02-04 00:42 J -29871572.70 -29871572.47 -29871572.24 0.0272 0.0008  
 Earth -86497-02-04 01:25 J -29871572.68 -29871572.44 -29871572.20 0.0272 0.0003 \*  
 Venus -86497-09-26 08:08 J -29871337.25 -29871337.16 -29871337.05 0.0272 0.0236  
 Earth -86496-02-14 14:23 J -29871196.11 -29871195.90 -29871195.68 0.0271 0.0117  
 Moon -86496-02-14 17:44 J -29871195.97 -29871195.76 -29871195.54 0.0271 0.0113 \*  
 Mercury -86496-03-29 12:56 J -29871153.06 -29871152.96 -29871152.86 0.0271 0.0188  
 Venus -86496-05-13 07:25 J -29871108.38 -29871108.19 -29871107.99 0.0271 0.0093  
 Mercury -86496-06-26 00:27 J -29871064.61 -29871064.48 -29871064.35 0.0271 0.0099  
 Mercury -86496-09-22 12:13 J -29870976.13 -29870975.99 -29870975.85 0.0271 0.0008  
 Mercury -86496-12-20 00:13 J -29870887.63 -29870887.49 -29870887.36 0.0271 0.0084  
 Earth -86495-02-26 02:51 J -29870819.50 -29870819.38 -29870819.26 0.0271 0.0230  
 Moon -86495-02-26 03:20 J -29870819.50 -29870819.36 -29870819.21 0.0271 0.0216 \*  
 Mercury -86495-03-18 12:13 J -29870799.10 -29870798.99 -29870798.88 0.0271 0.0177  
 Mars -86487-02-15 23:59 J -29867907.57 -29867907.50 -29867907.42 0.0278 0.0271  
 Moon -86484-07-13 07:54 J -29866664.29 -29866664.17 -29866664.03 0.0285 0.0241  
 Earth -86484-07-13 11:44 J -29866664.14 -29866664.01 -29866663.86 0.0285 0.0236 \*  
 Moon -86483-07-28 00:42 J -29866284.70 -29866284.47 -29866284.23 0.0287 0.0097  
 Earth -86483-07-28 03:06 J -29866284.61 -29866284.37 -29866284.12 0.0287 0.0089 \*  
 Earth -86482-08-11 22:32 J -29865904.81 -29865904.56 -29865904.31 0.0288 0.0066  
 Moon -86482-08-11 22:47 J -29865904.78 -29865904.55 -29865904.30 0.0288 0.0057 \*  
 Venus -86482-10-26 03:06 J -29865829.51 -29865829.37 -29865829.22 0.0288 0.0218  
 Mercury -86481-04-26 17:30 J -29865645.90 -29865645.77 -29865645.63 0.0288 0.0185  
 Venus -86481-06-12 05:01 J -29865599.44 -29865599.29 -29865599.14 0.0289 0.0204  
 Mercury -86481-07-24 14:51 J -29865557.05 -29865556.88 -29865556.71 0.0289 0.0045

Earth -86481-08-25 19:11 J -29865524.85 -29865524.70 -29865524.52 0.0289 0.0219  
 Moon -86481-08-25 22:18 J -29865524.73 -29865524.57 -29865524.39 0.0289 0.0207 \*  
 Mercury -86481-10-21 11:44 J -29865468.17 -29865468.01 -29865467.84 0.0289 0.0093  
 Mercury -86480-01-18 08:08 J -29865379.25 -29865379.16 -29865379.05 0.0289 0.0228  
 Mars -86475-03-06 14:08 J -29863505.99 -29863505.91 -29863505.80 0.0285 0.0264  
 Mars -86473-03-01 07:54 J -29862780.34 -29862780.17 -29862779.97 0.0281 0.0204  
 Earth -86469-01-18 11:44 J -29861362.18 -29861362.01 -29861361.82 0.0274 0.0178  
 Moon -86469-01-18 15:06 J -29861362.05 -29861361.87 -29861361.68 0.0274 0.0165 \*  
 Earth -86468-01-29 04:18 J -29860985.55 -29860985.32 -29860985.09 0.0272 0.0057  
 Moon -86468-01-29 05:15 J -29860985.53 -29860985.28 -29860985.04 0.0272 0.0046 \*  
 Moon -86467-02-09 14:08 J -29860609.14 -29860608.91 -29860608.67 0.0271 0.0063  
 Earth -86467-02-09 17:44 J -29860608.99 -29860608.76 -29860608.53 0.0271 0.0063 \*  
 Venus -86467-04-08 09:20 J -29860551.24 -29860551.11 -29860550.96 0.0271 0.0198  
 Mercury -86467-08-16 14:23 J -29860420.97 -29860420.90 -29860420.82 0.0271 0.0219  
 Mercury -86467-11-13 01:54 J -29860332.54 -29860332.42 -29860332.30 0.0271 0.0130  
 Venus -86467-11-23 08:23 J -29860322.33 -29860322.15 -29860321.96 0.0271 0.0130  
 Mercury -86466-02-09 13:39 J -29860244.07 -29860243.93 -29860243.79 0.0271 0.0040  
 Moon -86466-02-21 04:18 J -29860232.49 -29860232.32 -29860232.13 0.0271 0.0169  
 Earth -86466-02-21 05:44 J -29860232.44 -29860232.26 -29860232.08 0.0271 0.0180 \*  
 Mercury -86466-05-09 01:25 J -29860155.58 -29860155.44 -29860155.30 0.0270 0.0051  
 Mercury -86466-08-05 13:25 J -29860067.06 -29860066.94 -29860066.82 0.0270 0.0143  
 Mercury -86466-11-02 01:39 J -29859978.50 -29859978.43 -29859978.37 0.0270 0.0237  
 Mars -86459-03-27 17:30 J -29857641.06 -29857640.77 -29857640.46 0.0276 0.0109  
 Earth -86454-07-21 13:54 J -29855699.13 -29855698.92 -29855698.71 0.0286 0.0160  
 Moon -86454-07-21 14:51 J -29855699.08 -29855698.88 -29855698.66 0.0286 0.0168 \*  
 Moon -86453-08-04 05:59 J -29855319.51 -29855319.25 -29855318.99 0.0287 0.0020  
 Earth -86453-08-04 07:54 J -29855319.43 -29855319.17 -29855318.92 0.0287 0.0009 \*  
 Venus -86452-05-07 04:18 J -29855043.49 -29855043.32 -29855043.15 0.0288 0.0178  
 Moon -86452-08-19 00:56 J -29854939.68 -29854939.46 -29854939.23 0.0288 0.0133  
 Earth -86452-08-19 04:32 J -29854939.52 -29854939.31 -29854939.09 0.0288 0.0147 \*



Mercury -86452-09-13 14:08 J -29854914.00 -29854913.91 -29854913.81 0.0288 0.0241  
 Mercury -86452-12-11 11:44 J -29854825.17 -29854825.01 -29854824.84 0.0288 0.0099  
 Venus -86452-12-23 06:13 J -29854813.36 -29854813.24 -29854813.13 0.0288 0.0244  
 Mercury -86451-03-10 08:51 J -29854736.30 -29854736.13 -29854735.96 0.0288 0.0040  
 Mercury -86451-06-07 05:44 J -29854647.40 -29854647.26 -29854647.13 0.0289 0.0176  
 Moon -86451-09-02 22:47 J -29854559.60 -29854559.55 -29854559.48 0.0289 0.0280  
 Mars -86445-04-22 05:30 J -29852501.50 -29852501.27 -29852501.01 0.0284 0.0109  
 Moon -86440-01-12 14:37 J -29850775.04 -29850774.89 -29850774.74 0.0275 0.0214  
 Earth -86440-01-12 17:44 J -29850774.89 -29850774.76 -29850774.62 0.0275 0.0225 \*  
 Moon -86439-01-24 11:01 J -29850398.25 -29850398.04 -29850397.82 0.0274 0.0092  
 Earth -86439-01-24 12:27 J -29850398.19 -29850397.98 -29850397.75 0.0274 0.0106 \*  
 Earth -86438-02-05 03:49 J -29850021.58 -29850021.34 -29850021.10 0.0272 0.0015  
 Moon -86438-02-05 07:11 J -29850021.43 -29850021.20 -29850020.96 0.0272 0.0020 \*  
 Venus -86438-10-19 15:06 J -29849765.04 -29849764.87 -29849764.70 0.0272 0.0148  
 Mercury -86437-01-03 17:30 J -29849688.83 -29849688.77 -29849688.71 0.0271 0.0240  
 Earth -86437-02-16 16:47 J -29849645.00 -29849644.80 -29849644.58 0.0271 0.0133  
 Moon -86437-02-16 18:56 J -29849644.93 -29849644.71 -29849644.49 0.0271 0.0125 \*  
 Mercury -86437-04-01 05:01 J -29849600.41 -29849600.29 -29849600.18 0.0271 0.0151  
 Venus -86437-06-04 14:08 J -29849536.06 -29849535.91 -29849535.75 0.0271 0.0182  
 Mercury -86437-06-28 16:32 J -29849511.94 -29849511.81 -29849511.67 0.0271 0.0061  
 Mercury -86437-09-25 04:18 J -29849423.45 -29849423.32 -29849423.18 0.0271 0.0032  
 Mercury -86437-12-22 16:18 J -29849334.94 -29849334.82 -29849334.69 0.0271 0.0123  
 Moon -86436-02-27 02:23 J -29849268.52 -29849268.40 -29849268.27 0.0271 0.0230  
 Earth -86436-02-27 05:30 J -29849268.36 -29849268.27 -29849268.16 0.0271 0.0245 \*  
 Mercury -86436-03-21 04:32 J -29849246.39 -29849246.31 -29849246.23 0.0271 0.0217  
 Mars -86429-05-20 01:25 J -29846629.75 -29846629.44 -29846629.14 0.0277 0.0091  
 Moon -86425-07-14 17:01 J -29845112.93 -29845112.79 -29845112.63 0.0285 0.0223  
 Earth -86425-07-14 17:59 J -29845112.91 -29845112.75 -29845112.58 0.0285 0.0216 \*  
 Earth -86424-07-29 09:20 J -29844733.35 -29844733.11 -29844732.86 0.0287 0.0069  
 Moon -86424-07-29 11:59 J -29844733.24 -29844733.00 -29844732.77 0.0287 0.0080 \*

Earth -86423-08-13 05:01 J -29844353.54 -29844353.29 -29844353.05 0.0288 0.0085  
 Moon -86423-08-13 08:51 J -29844353.37 -29844353.13 -29844352.89 0.0288 0.0073 \*  
 Venus -86423-11-17 14:23 J -29844257.09 -29844256.90 -29844256.69 0.0288 0.0112  
 Mercury -86422-01-31 14:51 J -29844181.93 -29844181.88 -29844181.82 0.0288 0.0273  
 Mercury -86422-04-30 12:27 J -29844093.13 -29844092.98 -29844092.82 0.0289 0.0131  
 Mercury -86422-07-28 09:49 J -29844004.26 -29844004.09 -29844003.92 0.0289 0.0010  
 Earth -86422-08-28 01:39 J -29843973.56 -29843973.43 -29843973.27 0.0289 0.0237  
 Moon -86422-08-28 04:47 J -29843973.45 -29843973.30 -29843973.13 0.0289 0.0223 \*  
 Mercury -86422-10-25 06:27 J -29843915.37 -29843915.23 -29843915.08 0.0289 0.0146  
 Mercury -86421-01-22 02:37 J -29843826.42 -29843826.39 -29843826.34 0.0289 0.0280  
 Mars -86415-06-09 05:30 J -29841496.53 -29841496.27 -29841496.01 0.0282 0.0056  
 Moon -86411-01-07 22:47 J -29840187.58 -29840187.55 -29840187.49 0.0275 0.0270  
 Earth -86410-01-19 15:49 J -29839811.02 -29839810.84 -29839810.64 0.0274 0.0160  
 Moon -86410-01-19 17:59 J -29839810.94 -29839810.75 -29839810.53 0.0274 0.0146 \*  
 Moon -86409-01-31 05:15 J -29839434.52 -29839434.28 -29839434.04 0.0272 0.0030  
 Earth -86409-01-31 08:23 J -29839434.38 -29839434.15 -29839433.91 0.0272 0.0039 \*  
 Moon -86408-02-10 20:08 J -29839057.88 -29839057.66 -29839057.44 0.0271 0.0077  
 Earth -86408-02-10 21:49 J -29839057.81 -29839057.59 -29839057.36 0.0271 0.0081 \*  
 Venus -86408-04-30 17:01 J -29838978.98 -29838978.79 -29838978.60 0.0271 0.0107  
 Mercury -86408-05-22 19:25 J -29838956.71 -29838956.69 -29838956.67 0.0271 0.0267  
 Mercury -86408-08-19 06:42 J -29838868.32 -29838868.22 -29838868.11 0.0271 0.0180  
 Mercury -86408-11-15 18:13 J -29838779.86 -29838779.74 -29838779.60 0.0271 0.0091  
 Venus -86408-12-15 16:03 J -29838749.95 -29838749.83 -29838749.71 0.0271 0.0221  
 Mercury -86407-02-12 05:59 J -29838691.39 -29838691.25 -29838691.11 0.0271 0.0008  
 Earth -86407-02-22 09:49 J -29838681.25 -29838681.09 -29838680.92 0.0271 0.0196  
 Moon -86407-02-22 12:42 J -29838681.14 -29838680.97 -29838680.79 0.0271 0.0182 \*  
 Mercury -86407-05-11 17:59 J -29838602.88 -29838602.75 -29838602.62 0.0270 0.0092  
 Mercury -86407-08-08 05:59 J -29838514.35 -29838514.25 -29838514.14 0.0270 0.0185  
 Mars -86399-07-11 23:01 J -29835619.58 -29835619.54 -29835619.50 0.0278 0.0276  
 Earth -86396-07-08 08:37 J -29834527.18 -29834527.14 -29834527.09 0.0284 0.0278

Moon -86396-07-08 08:37 J -29834527.16 -29834527.14 -29834527.11 0.0284 0.0282 \*  
 Moon -86395-07-22 18:13 J -29834147.95 -29834147.74 -29834147.51 0.0286 0.0151  
 Earth -86395-07-22 21:35 J -29834147.82 -29834147.60 -29834147.37 0.0286 0.0139 \*  
 Moon -86394-08-06 11:44 J -29833768.26 -29833768.01 -29833767.76 0.0287 0.0003  
 Earth -86394-08-06 15:35 J -29833768.10 -29833767.85 -29833767.59 0.0287 0.0014 \*  
 Venus -86393-05-29 16:18 J -29833471.02 -29833470.82 -29833470.60 0.0288 0.0070  
 Moon -86393-08-20 10:03 J -29833388.29 -29833388.08 -29833387.87 0.0288 0.0152  
 Earth -86393-08-20 12:13 J -29833388.19 -29833387.99 -29833387.78 0.0288 0.0166 \*  
 Mercury -86393-09-16 09:35 J -29833361.23 -29833361.10 -29833360.96 0.0288 0.0184  
 Mercury -86393-12-14 06:56 J -29833272.38 -29833272.21 -29833272.03 0.0288 0.0044  
 Mercury -86392-03-13 04:03 J -29833183.49 -29833183.33 -29833183.17 0.0288 0.0095  
 Mercury -86392-06-10 00:27 J -29833094.58 -29833094.48 -29833094.37 0.0288 0.0230  
 Mars -86387-07-31 00:13 J -29831217.58 -29831217.49 -29831217.36 0.0285 0.0259  
 Mars -86385-07-25 21:35 J -29830491.76 -29830491.60 -29830491.41 0.0282 0.0211  
 Moon -86381-01-14 18:56 J -29829223.87 -29829223.71 -29829223.54 0.0275 0.0194  
 Earth -86381-01-14 21:20 J -29829223.76 -29829223.61 -29829223.45 0.0275 0.0207 \*  
 Earth -86380-01-25 16:03 J -29828847.05 -29828846.83 -29828846.60 0.0274 0.0087  
 Moon -86380-01-25 18:27 J -29828846.95 -29828846.73 -29828846.50 0.0274 0.0074 \*  
 Earth -86379-02-06 07:25 J -29828470.42 -29828470.19 -29828469.95 0.0272 0.0033  
 Moon -86379-02-06 09:35 J -29828470.34 -29828470.10 -29828469.85 0.0272 0.0036 \*  
 Venus -86379-11-10 22:32 J -29828192.76 -29828192.56 -29828192.36 0.0272 0.0058  
 Mercury -86378-01-06 09:35 J -29828136.18 -29828136.10 -29828136.00 0.0271 0.0202  
 Moon -86378-02-17 17:59 J -29828093.96 -29828093.75 -29828093.54 0.0271 0.0138  
 Earth -86378-02-17 20:51 J -29828093.83 -29828093.63 -29828093.43 0.0271 0.0150 \*  
 Mercury -86378-04-04 21:20 J -29828047.74 -29828047.61 -29828047.49 0.0271 0.0112  
 Mercury -86378-07-02 09:06 J -29827959.26 -29827959.12 -29827958.98 0.0271 0.0022  
 Mercury -86378-09-28 20:51 J -29827870.76 -29827870.63 -29827870.49 0.0271 0.0071  
 Mercury -86378-12-26 08:51 J -29827782.24 -29827782.13 -29827782.02 0.0271 0.0165  
 Moon -86377-02-29 07:11 J -29827717.29 -29827717.20 -29827717.10 0.0271 0.0246  
 Earth -86377-02-29 09:35 J -29827717.15 -29827717.10 -29827717.03 0.0271 0.0260 \*

Mercury -86377-03-23 21:06 J -29827693.66 -29827693.62 -29827693.58 0.0271 0.0259

Mars -86371-08-22 08:23 J -29825351.45 -29825351.15 -29825350.83 0.0275 0.0086

Earth -86366-07-17 03:20 J -29823561.54 -29823561.36 -29823561.18 0.0285 0.0195

Moon -86366-07-17 06:27 J -29823561.40 -29823561.23 -29823561.06 0.0285 0.0204 \*

Earth -86365-07-30 18:56 J -29823181.96 -29823181.71 -29823181.46 0.0287 0.0048

Moon -86365-07-30 22:32 J -29823181.81 -29823181.56 -29823181.31 0.0287 0.0060 \*

Earth -86364-08-14 14:23 J -29822802.13 -29822801.90 -29822801.66 0.0288 0.0106

Moon -86364-08-14 16:03 J -29822802.08 -29822801.83 -29822801.58 0.0288 0.0091 \*

Venus -86364-12-10 03:35 J -29822684.57 -29822684.35 -29822684.13 0.0288 0.0000

Mercury -86363-02-03 10:32 J -29822629.17 -29822629.06 -29822628.93 0.0288 0.0214

Mercury -86363-05-03 08:08 J -29822540.32 -29822540.16 -29822539.99 0.0289 0.0072

Mercury -86363-07-31 05:15 J -29822451.44 -29822451.28 -29822451.11 0.0289 0.0067

Moon -86363-08-29 10:03 J -29822422.22 -29822422.08 -29822421.93 0.0289 0.0239

Earth -86363-08-29 11:30 J -29822422.13 -29822422.02 -29822421.90 0.0289 0.0255 \*

Mercury -86363-10-28 01:54 J -29822362.54 -29822362.42 -29822362.30 0.0289 0.0203

Mars -86357-09-16 05:30 J -29820212.52 -29820212.27 -29820212.01 0.0284 0.0093

Earth -86352-01-09 01:11 J -29818636.52 -29818636.45 -29818636.36 0.0275 0.0258

Moon -86352-01-09 03:35 J -29818636.44 -29818636.35 -29818636.23 0.0275 0.0248 \*

Moon -86351-01-20 19:25 J -29818259.90 -29818259.69 -29818259.47 0.0274 0.0125

Earth -86351-01-20 21:49 J -29818259.79 -29818259.59 -29818259.38 0.0274 0.0141 \*

Moon -86350-02-01 11:30 J -29817883.25 -29817883.02 -29817882.79 0.0272 0.0012

Earth -86350-02-01 14:08 J -29817883.15 -29817882.91 -29817882.67 0.0272 0.0021 \*

Earth -86349-02-13 03:35 J -29817506.57 -29817506.35 -29817506.12 0.0271 0.0098

Moon -86349-02-13 06:13 J -29817506.46 -29817506.24 -29817506.02 0.0271 0.0091 \*

Venus -86349-05-23 01:39 J -29817406.64 -29817406.43 -29817406.22 0.0271 0.0013

Mercury -86349-05-25 11:59 J -29817404.07 -29817404.00 -29817403.92 0.0271 0.0226

Mercury -86349-08-21 23:30 J -29817315.64 -29817315.52 -29817315.40 0.0271 0.0137

Mercury -86349-11-18 11:01 J -29817227.17 -29817227.04 -29817226.90 0.0271 0.0048

Mercury -86348-02-14 23:01 J -29817138.68 -29817138.54 -29817138.40 0.0271 0.0045

Earth -86348-02-23 15:49 J -29817129.98 -29817129.84 -29817129.68 0.0271 0.0212

Moon -86348-02-23 18:42 J -29817129.87 -29817129.72 -29817129.54 0.0271 0.0197 \*  
 Mercury -86348-05-14 10:47 J -29817050.17 -29817050.05 -29817049.92 0.0270 0.0137  
 Mercury -86348-08-10 23:01 J -29816961.61 -29816961.54 -29816961.47 0.0270 0.0230  
 Mars -86341-10-13 11:30 J -29814341.31 -29814341.02 -29814340.71 0.0277 0.0102  
 Moon -86337-07-09 15:06 J -29812975.94 -29812975.87 -29812975.76 0.0284 0.0264  
 Earth -86337-07-09 18:56 J -29812975.81 -29812975.71 -29812975.60 0.0284 0.0257 \*  
 Moon -86336-07-24 05:01 J -29812596.50 -29812596.29 -29812596.06 0.0286 0.0129  
 Earth -86336-07-24 08:08 J -29812596.39 -29812596.16 -29812595.93 0.0286 0.0117 \*  
 Earth -86335-08-08 02:08 J -29812216.66 -29812216.41 -29812216.16 0.0287 0.0034  
 Moon -86335-08-08 01:54 J -29812216.66 -29812216.42 -29812216.17 0.0287 0.0020 \*  
 Venus -86334-06-22 05:59 J -29811898.46 -29811898.25 -29811898.03 0.0288 0.0044  
 Mercury -86334-06-23 07:54 J -29811897.23 -29811897.17 -29811897.10 0.0288 0.0265  
 Earth -86334-08-22 22:32 J -29811836.74 -29811836.56 -29811836.36 0.0288 0.0186  
 Moon -86334-08-23 01:11 J -29811836.65 -29811836.45 -29811836.25 0.0288 0.0170 \*  
 Mercury -86334-09-20 05:30 J -29811808.42 -29811808.27 -29811808.11 0.0288 0.0123  
 Mercury -86334-12-18 02:51 J -29811719.55 -29811719.38 -29811719.21 0.0288 0.0017  
 Mercury -86333-03-15 23:44 J -29811630.66 -29811630.51 -29811630.37 0.0288 0.0154  
 Mercury -86333-06-12 19:54 J -29811541.67 -29811541.67 -29811541.65 0.0288 0.0288  
 Mars -86327-11-02 20:37 J -29809207.90 -29809207.64 -29809207.38 0.0283 0.0065  
 Earth -86322-01-16 02:23 J -29807672.56 -29807672.40 -29807672.22 0.0275 0.0188  
 Moon -86322-01-16 04:32 J -29807672.48 -29807672.31 -29807672.12 0.0275 0.0175 \*  
 Earth -86321-01-27 21:20 J -29807295.84 -29807295.61 -29807295.38 0.0274 0.0068  
 Moon -86321-01-28 00:42 J -29807295.71 -29807295.47 -29807295.24 0.0274 0.0054 \*  
 Moon -86320-02-07 10:47 J -29806919.29 -29806919.05 -29806918.81 0.0272 0.0050  
 Earth -86320-02-07 12:56 J -29806919.20 -29806918.96 -29806918.73 0.0272 0.0051 \*  
 Mercury -86320-10-12 14:51 J -29806671.93 -29806671.88 -29806671.83 0.0272 0.0249  
 Venus -86320-12-03 06:56 J -29806620.42 -29806620.21 -29806620.01 0.0272 0.0036  
 Mercury -86319-01-09 02:08 J -29806583.51 -29806583.41 -29806583.29 0.0272 0.0161  
 Moon -86319-02-18 23:15 J -29806542.72 -29806542.53 -29806542.33 0.0271 0.0154  
 Earth -86319-02-19 02:23 J -29806542.59 -29806542.40 -29806542.22 0.0271 0.0167 \*

Mercury -86319-04-07 13:54 J -29806495.05 -29806494.92 -29806494.78 0.0271 0.0070

Mercury -86319-07-05 01:39 J -29806406.57 -29806406.43 -29806406.29 0.0271 0.0023

Mercury -86319-10-01 13:39 J -29806318.06 -29806317.93 -29806317.80 0.0271 0.0115

Mercury -86319-12-29 01:39 J -29806229.51 -29806229.43 -29806229.33 0.0271 0.0209

Moon -86318-03-02 17:01 J -29806165.84 -29806165.79 -29806165.73 0.0271 0.0262

Mars -86313-11-23 21:35 J -29804072.72 -29804072.60 -29804072.48 0.0274 0.0255

Earth -86307-07-18 15:35 J -29802010.04 -29802009.85 -29802009.64 0.0285 0.0174

Moon -86307-07-18 18:42 J -29802009.91 -29802009.72 -29802009.51 0.0285 0.0180 \*

Moon -86306-08-02 07:39 J -29801630.44 -29801630.18 -29801629.92 0.0287 0.0038

Earth -86306-08-02 07:54 J -29801630.43 -29801630.17 -29801629.92 0.0287 0.0026 \*

Moon -86305-08-16 00:13 J -29801250.73 -29801250.49 -29801250.25 0.0288 0.0111

Earth -86305-08-16 03:20 J -29801250.58 -29801250.36 -29801250.13 0.0288 0.0127 \*

Venus -86304-01-01 18:42 J -29801111.92 -29801111.72 -29801111.52 0.0288 0.0120

Mercury -86304-02-06 07:25 J -29801076.34 -29801076.19 -29801076.04 0.0288 0.0148

Mercury -86304-05-06 04:47 J -29800987.47 -29800987.30 -29800987.13 0.0289 0.0007

Mercury -86304-08-03 01:39 J -29800898.58 -29800898.43 -29800898.28 0.0289 0.0131

Moon -86304-08-30 20:23 J -29800870.76 -29800870.65 -29800870.53 0.0289 0.0257

Earth -86304-08-31 00:27 J -29800870.55 -29800870.48 -29800870.40 0.0289 0.0274 \*

Mercury -86304-10-30 22:03 J -29800809.64 -29800809.58 -29800809.51 0.0289 0.0265

Mars -86299-12-25 07:39 J -29798928.31 -29798928.18 -29798928.02 0.0285 0.0239

Mars -86297-12-20 03:20 J -29798202.51 -29798202.36 -29798202.20 0.0281 0.0230

Moon -86293-01-11 06:27 J -29797085.36 -29797085.23 -29797085.09 0.0275 0.0227

Earth -86293-01-11 08:37 J -29797085.25 -29797085.14 -29797085.02 0.0275 0.0239 \*

Moon -86292-01-22 01:39 J -29796708.65 -29796708.43 -29796708.22 0.0274 0.0106

Earth -86292-01-22 04:47 J -29796708.51 -29796708.30 -29796708.08 0.0274 0.0122 \*

Earth -86291-02-02 21:06 J -29796331.86 -29796331.62 -29796331.38 0.0272 0.0002

Moon -86291-02-02 22:18 J -29796331.80 -29796331.57 -29796331.34 0.0272 0.0006 \*

Venus -86291-10-29 11:44 J -29796063.08 -29796063.01 -29796062.91 0.0271 0.0246

Earth -86290-02-14 10:32 J -29795955.27 -29795955.06 -29795954.84 0.0271 0.0116

Moon -86290-02-14 13:39 J -29795955.15 -29795954.93 -29795954.71 0.0271 0.0107 \*

Mercury -86290-03-01 17:30 J -29795939.77 -29795939.77 -29795939.77 0.0271 0.0271

Mercury -86290-05-29 04:47 J -29795851.40 -29795851.30 -29795851.19 0.0271 0.0183

Venus -86290-06-15 11:01 J -29795834.23 -29795834.04 -29795833.84 0.0271 0.0085

Mercury -86290-08-25 16:18 J -29795762.94 -29795762.82 -29795762.68 0.0271 0.0094

Mercury -86290-11-22 04:03 J -29795674.47 -29795674.33 -29795674.19 0.0271 0.0009

Mercury -86289-02-18 16:03 J -29795585.96 -29795585.83 -29795585.70 0.0271 0.0090

Moon -86289-02-25 21:35 J -29795578.75 -29795578.60 -29795578.44 0.0271 0.0212

Earth -86289-02-25 23:15 J -29795578.65 -29795578.53 -29795578.40 0.0271 0.0228 \*

Mercury -86289-05-17 04:03 J -29795497.43 -29795497.33 -29795497.23 0.0270 0.0183

Mars -86282-01-16 05:01 J -29793062.60 -29793062.29 -29793061.97 0.0276 0.0070

Moon -86278-07-12 05:44 J -29791424.39 -29791424.26 -29791424.13 0.0284 0.0242

Earth -86278-07-12 08:08 J -29791424.29 -29791424.16 -29791424.01 0.0284 0.0236 \*

Earth -86277-07-25 21:35 J -29791044.84 -29791044.60 -29791044.36 0.0286 0.0094

Moon -86277-07-25 22:18 J -29791044.79 -29791044.57 -29791044.34 0.0286 0.0106 \*

Earth -86276-08-09 15:35 J -29790665.09 -29790664.85 -29790664.60 0.0287 0.0057

Moon -86276-08-09 19:11 J -29790664.95 -29790664.70 -29790664.45 0.0287 0.0042 \*

Venus -86276-11-26 19:25 J -29790555.77 -29790555.69 -29790555.59 0.0287 0.0258

Mercury -86275-06-26 04:47 J -29790344.42 -29790344.30 -29790344.17 0.0288 0.0199

Venus -86275-07-14 21:20 J -29790325.79 -29790325.61 -29790325.43 0.0288 0.0164

Earth -86275-08-24 12:13 J -29790285.16 -29790284.99 -29790284.81 0.0288 0.0207

Moon -86275-08-24 15:49 J -29790285.02 -29790284.84 -29790284.64 0.0288 0.0190 \*

Mercury -86275-09-23 02:23 J -29790255.57 -29790255.40 -29790255.23 0.0288 0.0057

Mercury -86275-12-20 23:30 J -29790166.69 -29790166.52 -29790166.36 0.0288 0.0081

Mercury -86274-03-19 19:54 J -29790077.77 -29790077.67 -29790077.55 0.0288 0.0217

Mars -86268-02-09 21:49 J -29787923.84 -29787923.59 -29787923.32 0.0284 0.0081

Earth -86263-01-17 09:06 J -29786121.31 -29786121.12 -29786120.94 0.0275 0.0170

Moon -86263-01-17 12:13 J -29786121.18 -29786120.99 -29786120.78 0.0275 0.0154 \*

Moon -86262-01-29 02:51 J -29785744.63 -29785744.38 -29785744.14 0.0274 0.0038

Earth -86262-01-29 03:49 J -29785744.58 -29785744.34 -29785744.11 0.0274 0.0050 \*

Moon -86261-02-09 16:03 J -29785368.06 -29785367.83 -29785367.60 0.0272 0.0068

Earth -86261-02-09 19:11 J -29785367.93 -29785367.70 -29785367.47 0.0272 0.0070 \*  
 Venus -86261-05-10 16:18 J -29785276.95 -29785276.82 -29785276.67 0.0272 0.0200  
 Mercury -86261-10-15 07:39 J -29785119.27 -29785119.18 -29785119.09 0.0272 0.0207  
 Venus -86261-12-25 15:49 J -29785048.01 -29785047.84 -29785047.65 0.0272 0.0132  
 Mercury -86260-01-11 19:11 J -29785030.83 -29785030.70 -29785030.58 0.0272 0.0117  
 Earth -86260-02-20 08:51 J -29784991.30 -29784991.13 -29784990.96 0.0272 0.0184  
 Moon -86260-02-20 10:03 J -29784991.25 -29784991.08 -29784990.90 0.0272 0.0171 \*  
 Mercury -86260-04-10 06:56 J -29784942.35 -29784942.21 -29784942.07 0.0271 0.0026  
 Mercury -86260-07-07 18:42 J -29784853.86 -29784853.72 -29784853.58 0.0271 0.0067  
 Mercury -86260-10-04 06:42 J -29784765.33 -29784765.22 -29784765.10 0.0271 0.0160  
 Mercury -86260-12-31 18:56 J -29784676.75 -29784676.71 -29784676.66 0.0271 0.0255  
 Mars -86252-03-10 14:51 J -29782051.15 -29782050.88 -29782050.58 0.0277 0.0134  
 Moon -86248-07-20 04:47 J -29780458.51 -29780458.30 -29780458.08 0.0285 0.0160  
 Earth -86248-07-20 05:30 J -29780458.47 -29780458.27 -29780458.04 0.0285 0.0153 \*  
 Moon -86247-08-03 18:42 J -29780078.97 -29780078.72 -29780078.46 0.0287 0.0017  
 Earth -86247-08-03 22:18 J -29780078.82 -29780078.57 -29780078.32 0.0287 0.0003 \*  
 Venus -86246-06-09 08:51 J -29779769.29 -29779769.13 -29779768.95 0.0288 0.0181  
 Moon -86246-08-18 14:37 J -29779699.10 -29779698.89 -29779698.66 0.0288 0.0133  
 Earth -86246-08-18 17:44 J -29779698.97 -29779698.76 -29779698.53 0.0288 0.0149 \*  
 Mercury -86246-11-13 06:56 J -29779612.32 -29779612.21 -29779612.09 0.0288 0.0221  
 Venus -86245-01-25 10:32 J -29779539.17 -29779539.06 -29779538.93 0.0288 0.0242  
 Mercury -86245-02-10 04:32 J -29779523.47 -29779523.31 -29779523.14 0.0288 0.0079  
 Mercury -86245-05-09 01:39 J -29779434.60 -29779434.43 -29779434.26 0.0289 0.0060  
 Mercury -86245-08-05 22:18 J -29779345.69 -29779345.57 -29779345.44 0.0289 0.0197  
 Moon -86245-09-01 13:39 J -29779318.98 -29779318.93 -29779318.85 0.0289 0.0278  
 Mars -86238-03-30 08:37 J -29776918.39 -29776918.14 -29776917.88 0.0283 0.0089  
 Moon -86234-01-12 13:39 J -29775534.08 -29775533.93 -29775533.77 0.0275 0.0208  
 Earth -86234-01-12 17:01 J -29775533.93 -29775533.79 -29775533.64 0.0275 0.0220 \*  
 Earth -86233-01-24 12:56 J -29775157.18 -29775156.96 -29775156.74 0.0273 0.0102  
 Moon -86233-01-24 13:39 J -29775157.14 -29775156.93 -29775156.71 0.0273 0.0088 \*



Earth -86232-02-04 05:01 J -29774780.53 -29774780.29 -29774780.05 0.0272 0.0017  
 Moon -86232-02-04 08:37 J -29774780.38 -29774780.14 -29774779.90 0.0272 0.0024 \*  
 Venus -86232-11-20 22:03 J -29774490.75 -29774490.58 -29774490.41 0.0271 0.0146  
 Moon -86231-02-15 17:59 J -29774403.97 -29774403.75 -29774403.53 0.0271 0.0124  
 Earth -86231-02-15 18:27 J -29774403.93 -29774403.73 -29774403.51 0.0271 0.0134 \*  
 Mercury -86231-03-04 10:18 J -29774387.13 -29774387.07 -29774386.99 0.0271 0.0227  
 Mercury -86231-05-31 21:49 J -29774298.70 -29774298.59 -29774298.46 0.0271 0.0138  
 Venus -86231-07-07 21:06 J -29774261.77 -29774261.62 -29774261.46 0.0271 0.0184  
 Mercury -86231-08-28 09:35 J -29774210.24 -29774210.10 -29774209.96 0.0271 0.0047  
 Mercury -86231-11-24 21:20 J -29774121.75 -29774121.61 -29774121.47 0.0271 0.0045  
 Mercury -86230-02-21 09:20 J -29774033.23 -29774033.11 -29774032.99 0.0271 0.0137  
 Moon -86230-02-27 03:35 J -29774027.46 -29774027.35 -29774027.21 0.0271 0.0229  
 Earth -86230-02-27 07:25 J -29774027.29 -29774027.19 -29774027.09 0.0271 0.0244 \*  
 Mercury -86230-05-20 21:20 J -29773944.67 -29773944.61 -29773944.53 0.0270 0.0231  
 Mars -86224-04-20 00:27 J -29771783.63 -29771783.48 -29771783.30 0.0275 0.0236  
 Earth -86219-07-13 23:30 J -29769872.67 -29769872.52 -29769872.34 0.0284 0.0213  
 Moon -86219-07-14 01:11 J -29769872.59 -29769872.45 -29769872.28 0.0284 0.0223 \*  
 Earth -86218-07-28 13:25 J -29769493.19 -29769492.94 -29769492.70 0.0286 0.0070  
 Moon -86218-07-28 17:01 J -29769493.03 -29769492.79 -29769492.55 0.0286 0.0082 \*  
 Earth -86217-08-11 07:39 J -29769113.42 -29769113.18 -29769112.94 0.0287 0.0080  
 Moon -86217-08-11 10:18 J -29769113.32 -29769113.07 -29769112.81 0.0287 0.0066 \*  
 Venus -86217-12-19 12:27 J -29768983.16 -29768982.98 -29768982.78 0.0288 0.0134  
 Mercury -86216-04-01 04:47 J -29768880.36 -29768880.30 -29768880.24 0.0288 0.0270  
 Mercury -86216-06-29 02:23 J -29768791.55 -29768791.40 -29768791.24 0.0288 0.0128  
 Moon -86216-08-26 03:49 J -29768733.51 -29768733.34 -29768733.15 0.0288 0.0212  
 Earth -86216-08-26 04:18 J -29768733.47 -29768733.32 -29768733.16 0.0288 0.0229 \*  
 Mercury -86216-09-25 23:44 J -29768702.68 -29768702.51 -29768702.34 0.0288 0.0013  
 Mercury -86216-12-23 20:37 J -29768613.78 -29768613.64 -29768613.49 0.0288 0.0150  
 Mercury -86215-03-22 16:47 J -29768524.81 -29768524.80 -29768524.76 0.0288 0.0285  
 Mars -86210-05-21 03:49 J -29766639.49 -29766639.34 -29766639.16 0.0285 0.0224

Mars -86208-05-15 23:59 J -29765913.63 -29765913.50 -29765913.37 0.0282 0.0245  
 Earth -86205-01-07 17:44 J -29764946.81 -29764946.76 -29764946.70 0.0277 0.0268  
 Moon -86205-01-07 21:06 J -29764946.69 -29764946.62 -29764946.54 0.0277 0.0262  
 Moon -86204-01-18 16:03 J -29764570.04 -29764569.83 -29764569.62 0.0275 0.0136  
 Earth -86204-01-18 16:32 J -29764570.00 -29764569.81 -29764569.61 0.0275 0.0151 \*  
 Moon -86203-01-30 07:11 J -29764193.43 -29764193.20 -29764192.96 0.0274 0.0021  
 Earth -86203-01-30 11:01 J -29764193.28 -29764193.04 -29764192.80 0.0274 0.0031 \*  
 Earth -86202-02-11 02:08 J -29763816.63 -29763816.41 -29763816.18 0.0272 0.0087  
 Moon -86202-02-11 02:08 J -29763816.63 -29763816.41 -29763816.19 0.0272 0.0084 \*  
 Venus -86202-06-03 01:54 J -29763704.61 -29763704.42 -29763704.23 0.0272 0.0103  
 Mercury -86202-07-22 12:56 J -29763655.00 -29763654.96 -29763654.91 0.0272 0.0252  
 Mercury -86202-10-19 00:27 J -29763566.59 -29763566.48 -29763566.37 0.0272 0.0163  
 Mercury -86201-01-15 12:13 J -29763478.13 -29763477.99 -29763477.86 0.0272 0.0073  
 Venus -86201-01-18 01:11 J -29763475.55 -29763475.45 -29763475.33 0.0272 0.0230  
 Earth -86201-02-22 15:49 J -29763440.00 -29763439.84 -29763439.68 0.0272 0.0201  
 Moon -86201-02-22 19:11 J -29763439.87 -29763439.70 -29763439.52 0.0272 0.0186 \*  
 Mercury -86201-04-12 23:59 J -29763389.64 -29763389.50 -29763389.36 0.0271 0.0021  
 Mercury -86201-07-10 11:44 J -29763301.14 -29763301.01 -29763300.88 0.0271 0.0113  
 Mercury -86201-10-06 23:59 J -29763212.59 -29763212.50 -29763212.41 0.0271 0.0207  
 Mars -86194-06-13 08:37 J -29760772.46 -29760772.14 -29760771.82 0.0276 0.0036  
 Moon -86190-07-08 07:11 J -29759286.24 -29759286.20 -29759286.12 0.0283 0.0275  
 Earth -86190-07-08 09:35 J -29759286.16 -29759286.10 -29759286.00 0.0283 0.0268 \*  
 Moon -86189-07-21 17:30 J -29758906.99 -29758906.77 -29758906.55 0.0285 0.0140  
 Earth -86189-07-21 21:35 J -29758906.83 -29758906.60 -29758906.38 0.0285 0.0130 \*  
 Moon -86188-08-05 11:44 J -29758527.25 -29758527.01 -29758526.76 0.0287 0.0007  
 Earth -86188-08-05 14:23 J -29758527.15 -29758526.90 -29758526.65 0.0287 0.0019 \*  
 Venus -86187-07-02 02:08 J -29758196.62 -29758196.41 -29758196.19 0.0288 0.0055  
 Earth -86187-08-20 10:18 J -29758147.27 -29758147.07 -29758146.87 0.0288 0.0170  
 Moon -86187-08-20 10:47 J -29758147.25 -29758147.05 -29758146.84 0.0288 0.0156 \*  
 Mercury -86187-11-16 04:32 J -29758059.45 -29758059.31 -29758059.15 0.0288 0.0150

Mercury -86186-02-13 02:08 J -29757970.59 -29757970.41 -29757970.24 0.0288 0.0009

Mercury -86186-05-12 23:01 J -29757881.69 -29757881.54 -29757881.39 0.0289 0.0130

Mercury -86186-08-09 19:25 J -29757792.75 -29757792.69 -29757792.62 0.0289 0.0265

Mars -86180-07-07 16:47 J -29755634.05 -29755633.80 -29755633.53 0.0284 0.0055

Moon -86175-01-14 01:11 J -29753982.60 -29753982.45 -29753982.27 0.0275 0.0191

Earth -86175-01-14 01:25 J -29753982.59 -29753982.44 -29753982.26 0.0275 0.0202 \*

Earth -86174-01-25 21:20 J -29753605.83 -29753605.61 -29753605.38 0.0273 0.0083

Moon -86174-01-26 00:56 J -29753605.69 -29753605.46 -29753605.23 0.0273 0.0070 \*

Earth -86173-02-06 13:25 J -29753229.18 -29753228.94 -29753228.71 0.0272 0.0036

Moon -86173-02-06 14:08 J -29753229.16 -29753228.91 -29753228.67 0.0272 0.0039 \*

Mercury -86173-12-08 16:03 J -29752922.83 -29752922.83 -29752922.82 0.0271 0.0270

Venus -86173-12-13 08:08 J -29752918.36 -29752918.16 -29752917.96 0.0271 0.0047

Moon -86172-02-16 23:30 J -29752852.72 -29752852.52 -29752852.31 0.0271 0.0139

Earth -86172-02-17 02:51 J -29752852.57 -29752852.38 -29752852.18 0.0271 0.0151 \*

Mercury -86172-03-07 03:35 J -29752834.45 -29752834.35 -29752834.25 0.0271 0.0182

Mercury -86172-06-03 15:06 J -29752746.00 -29752745.87 -29752745.74 0.0271 0.0092

Mercury -86172-08-31 02:51 J -29752657.52 -29752657.38 -29752657.24 0.0271 0.0001

Mercury -86172-11-27 14:37 J -29752569.02 -29752568.89 -29752568.75 0.0271 0.0092

Mercury -86171-02-24 02:37 J -29752480.49 -29752480.39 -29752480.28 0.0271 0.0186

Moon -86171-02-28 15:20 J -29752475.94 -29752475.86 -29752475.75 0.0271 0.0247

Earth -86171-02-28 15:35 J -29752475.91 -29752475.85 -29752475.78 0.0271 0.0259 \*

Mars -86164-08-04 21:35 J -29749761.85 -29749761.60 -29749761.31 0.0277 0.0155

Earth -86160-07-15 16:03 J -29748321.01 -29748320.83 -29748320.64 0.0284 0.0191

Moon -86160-07-15 20:08 J -29748320.83 -29748320.66 -29748320.48 0.0284 0.0201 \*

Earth -86159-07-30 06:13 J -29747941.49 -29747941.24 -29747940.99 0.0286 0.0047

Moon -86159-07-30 08:23 J -29747941.40 -29747941.15 -29747940.89 0.0286 0.0059 \*

Moon -86158-08-13 23:15 J -29747561.78 -29747561.53 -29747561.28 0.0287 0.0088

Earth -86158-08-14 00:27 J -29747561.71 -29747561.48 -29747561.24 0.0287 0.0103 \*

Venus -86157-01-12 06:13 J -29747410.46 -29747410.24 -29747410.02 0.0288 0.0006

Mercury -86157-04-04 02:37 J -29747327.52 -29747327.39 -29747327.26 0.0288 0.0197

Mercury -86157-07-02 00:13 J -29747238.66 -29747238.49 -29747238.32 0.0288 0.0056

Moon -86157-08-27 17:15 J -29747181.92 -29747181.78 -29747181.62 0.0288 0.0233

Earth -86157-08-27 21:06 J -29747181.74 -29747181.62 -29747181.49 0.0288 0.0249 \*

Mercury -86157-09-28 21:06 J -29747149.78 -29747149.62 -29747149.45 0.0288 0.0084

Mercury -86157-12-26 17:44 J -29747060.86 -29747060.76 -29747060.64 0.0288 0.0219

Mars -86150-08-24 06:56 J -29744629.46 -29744629.21 -29744628.96 0.0282 0.0105

Earth -86146-01-09 01:54 J -29743395.51 -29743395.42 -29743395.32 0.0276 0.0251

Moon -86146-01-09 02:37 J -29743395.50 -29743395.39 -29743395.26 0.0276 0.0242 \*

Moon -86145-01-20 20:51 J -29743018.84 -29743018.63 -29743018.41 0.0275 0.0118

Earth -86145-01-21 00:13 J -29743018.69 -29743018.49 -29743018.27 0.0275 0.0133 \*

Moon -86144-01-31 17:30 J -29742642.00 -29742641.77 -29742641.53 0.0273 0.0008

Earth -86144-01-31 18:13 J -29742641.97 -29742641.74 -29742641.50 0.0273 0.0014 \*

Earth -86143-02-12 09:06 J -29742265.33 -29742265.12 -29742264.90 0.0272 0.0105

Moon -86143-02-12 12:27 J -29742265.20 -29742264.98 -29742264.76 0.0272 0.0100 \*

Venus -86143-06-25 11:30 J -29742132.23 -29742132.02 -29742131.82 0.0272 0.0007

Mercury -86143-07-25 05:44 J -29742102.34 -29742102.26 -29742102.17 0.0272 0.0209

Mercury -86143-10-21 17:30 J -29742013.90 -29742013.77 -29742013.65 0.0272 0.0119

Mercury -86142-01-18 05:01 J -29741925.43 -29741925.29 -29741925.15 0.0272 0.0028

Earth -86142-02-23 22:47 J -29741888.69 -29741888.55 -29741888.40 0.0272 0.0217

Moon -86142-02-23 23:15 J -29741888.68 -29741888.53 -29741888.35 0.0272 0.0203 \*

Mercury -86142-04-16 16:47 J -29741836.93 -29741836.80 -29741836.66 0.0271 0.0066

Mercury -86142-07-14 04:47 J -29741748.41 -29741748.30 -29741748.18 0.0271 0.0159

Mercury -86142-10-10 17:01 J -29741659.83 -29741659.79 -29741659.74 0.0271 0.0253

Mars -86136-09-14 23:30 J -29739493.72 -29739493.52 -29739493.29 0.0275 0.0205

Moon -86131-07-09 20:51 J -29737734.72 -29737734.63 -29737734.52 0.0284 0.0257

Earth -86131-07-10 00:27 J -29737734.59 -29737734.48 -29737734.35 0.0284 0.0247 \*

Moon -86130-07-24 11:01 J -29737355.25 -29737355.04 -29737354.81 0.0286 0.0121

Earth -86130-07-24 12:42 J -29737355.20 -29737354.97 -29737354.73 0.0286 0.0108 \*

Earth -86129-08-07 06:13 J -29736975.49 -29736975.24 -29736974.99 0.0287 0.0041

Moon -86129-08-07 07:39 J -29736975.42 -29736975.18 -29736974.94 0.0287 0.0028 \*

Venus -86128-07-24 19:11 J -29736623.90 -29736623.70 -29736623.48 0.0288 0.0073  
 Earth -86128-08-22 02:37 J -29736595.57 -29736595.39 -29736595.20 0.0288 0.0191  
 Moon -86128-08-22 05:59 J -29736595.43 -29736595.25 -29736595.04 0.0288 0.0176 \*  
 Mercury -86128-08-22 04:47 J -29736595.42 -29736595.30 -29736595.19 0.0288 0.0219 \*  
 Mercury -86128-11-19 02:23 J -29736506.57 -29736506.40 -29736506.23 0.0288 0.0077  
 Mercury -86127-02-15 23:30 J -29736417.69 -29736417.52 -29736417.35 0.0289 0.0062  
 Mercury -86127-05-15 20:08 J -29736328.78 -29736328.66 -29736328.53 0.0289 0.0199  
 Mars -86122-10-16 02:23 J -29734349.58 -29734349.40 -29734349.20 0.0285 0.0197  
 Mars -86120-10-10 20:08 J -29733623.72 -29733623.66 -29733623.58 0.0281 0.0271  
 Earth -86116-01-15 10:47 J -29732431.22 -29732431.05 -29732430.87 0.0275 0.0183  
 Moon -86116-01-15 13:54 J -29732431.10 -29732430.92 -29732430.73 0.0275 0.0170 \*  
 Earth -86115-01-27 05:59 J -29732054.48 -29732054.25 -29732054.02 0.0273 0.0065  
 Moon -86115-01-27 07:11 J -29732054.44 -29732054.20 -29732053.96 0.0273 0.0053 \*  
 Moon -86114-02-07 17:59 J -29731677.98 -29731677.75 -29731677.51 0.0272 0.0053  
 Earth -86114-02-07 21:35 J -29731677.83 -29731677.60 -29731677.37 0.0272 0.0053 \*  
 Mercury -86114-12-12 09:06 J -29731370.19 -29731370.12 -29731370.04 0.0271 0.0225  
 Venus -86113-01-05 17:59 J -29731345.95 -29731345.75 -29731345.54 0.0271 0.0054  
 Moon -86113-02-19 09:20 J -29731301.30 -29731301.11 -29731300.92 0.0271 0.0156  
 Earth -86113-02-19 10:47 J -29731301.23 -29731301.05 -29731300.86 0.0271 0.0167 \*  
 Mercury -86113-03-09 20:37 J -29731281.76 -29731281.64 -29731281.52 0.0271 0.0136  
 Mercury -86113-06-06 08:08 J -29731193.29 -29731193.16 -29731193.02 0.0271 0.0047  
 Mercury -86113-09-02 20:08 J -29731104.80 -29731104.66 -29731104.53 0.0271 0.0047  
 Mercury -86113-11-30 07:54 J -29731016.29 -29731016.17 -29731016.05 0.0271 0.0139  
 Mercury -86112-02-26 19:54 J -29730927.73 -29730927.67 -29730927.59 0.0270 0.0234  
 Moon -86112-03-02 02:51 J -29730924.43 -29730924.38 -29730924.31 0.0270 0.0262  
 Mars -86106-11-07 16:32 J -29728483.13 -29728482.81 -29728482.48 0.0276 0.0015  
 Earth -86101-07-17 08:08 J -29726769.36 -29726769.16 -29726768.95 0.0285 0.0169  
 Moon -86101-07-17 08:37 J -29726769.33 -29726769.14 -29726768.93 0.0285 0.0180 \*  
 Moon -86100-07-31 20:23 J -29726389.90 -29726389.65 -29726389.39 0.0286 0.0039  
 Earth -86100-07-31 22:47 J -29726389.80 -29726389.55 -29726389.29 0.0286 0.0025 \*

Moon -86099-08-15 13:39 J -29726010.16 -29726009.93 -29726009.69 0.0287 0.0110  
 Earth -86099-08-15 17:15 J -29726010.00 -29726009.78 -29726009.54 0.0287 0.0126 \*  
 Mercury -86098-01-09 02:37 J -29725863.45 -29725863.39 -29725863.32 0.0288 0.0267  
 Venus -86098-02-03 23:30 J -29725837.71 -29725837.52 -29725837.32 0.0288 0.0122  
 Mercury -86098-04-08 00:27 J -29725774.64 -29725774.48 -29725774.32 0.0288 0.0125  
 Mercury -86098-07-05 21:49 J -29725685.77 -29725685.59 -29725685.42 0.0288 0.0016  
 Moon -86098-08-30 11:44 J -29725630.12 -29725630.01 -29725629.89 0.0288 0.0254  
 Earth -86098-08-30 13:54 J -29725630.00 -29725629.92 -29725629.82 0.0288 0.0269 \*  
 Mercury -86098-10-02 18:42 J -29725596.87 -29725596.72 -29725596.58 0.0288 0.0154  
 Mercury -86098-12-30 15:06 J -29725507.87 -29725507.87 -29725507.86 0.0288 0.0288  
 Mars -86092-12-01 15:20 J -29723345.13 -29723344.86 -29723344.60 0.0283 0.0037  
 Moon -86087-01-10 06:42 J -29721844.36 -29721844.22 -29721844.07 0.0276 0.0221  
 Earth -86087-01-10 09:49 J -29721844.20 -29721844.09 -29721843.95 0.0276 0.0233 \*  
 Moon -86086-01-22 05:59 J -29721467.46 -29721467.25 -29721467.03 0.0274 0.0102  
 Earth -86086-01-22 07:39 J -29721467.39 -29721467.18 -29721466.96 0.0274 0.0115 \*  
 Earth -86085-02-03 01:11 J -29721090.69 -29721090.45 -29721090.22 0.0273 0.0005  
 Moon -86085-02-03 04:18 J -29721090.55 -29721090.32 -29721090.08 0.0273 0.0009 \*  
 Venus -86085-11-30 20:37 J -29720788.72 -29720788.64 -29720788.53 0.0272 0.0241  
 Earth -86084-02-13 15:35 J -29720714.06 -29720713.85 -29720713.63 0.0272 0.0121  
 Moon -86084-02-13 17:44 J -29720713.98 -29720713.76 -29720713.53 0.0272 0.0113 \*  
 Mercury -86084-04-30 11:01 J -29720638.08 -29720638.04 -29720637.99 0.0272 0.0255  
 Venus -86084-07-17 20:08 J -29720559.85 -29720559.66 -29720559.46 0.0272 0.0094  
 Mercury -86084-07-27 22:32 J -29720549.66 -29720549.56 -29720549.45 0.0272 0.0166  
 Mercury -86084-10-24 10:03 J -29720461.21 -29720461.08 -29720460.94 0.0272 0.0076  
 Mercury -86083-01-20 21:49 J -29720372.73 -29720372.59 -29720372.45 0.0271 0.0019  
 Moon -86083-02-25 01:54 J -29720337.55 -29720337.42 -29720337.26 0.0271 0.0217  
 Earth -86083-02-25 04:47 J -29720337.40 -29720337.30 -29720337.16 0.0271 0.0232 \*  
 Mercury -86083-04-19 09:49 J -29720284.22 -29720284.09 -29720283.96 0.0271 0.0110  
 Mercury -86083-07-16 21:49 J -29720195.68 -29720195.59 -29720195.49 0.0271 0.0204  
 Mars -86076-12-30 17:01 J -29717472.02 -29717471.79 -29717471.55 0.0277 0.0187

Earth -86072-07-11 14:08 J -29716183.06 -29716182.91 -29716182.76 0.0284 0.0227  
 Moon -86072-07-11 14:23 J -29716183.04 -29716182.90 -29716182.77 0.0284 0.0237 \*  
 Earth -86071-07-26 03:06 J -29715803.61 -29715803.37 -29715803.13 0.0286 0.0087  
 Moon -86071-07-26 05:59 J -29715803.48 -29715803.25 -29715803.02 0.0286 0.0101 \*  
 Earth -86070-08-09 20:51 J -29715423.87 -29715423.63 -29715423.38 0.0287 0.0062  
 Moon -86070-08-10 00:56 J -29715423.71 -29715423.46 -29715423.21 0.0287 0.0047 \*  
 Venus -86070-12-30 09:35 J -29715281.22 -29715281.10 -29715280.95 0.0288 0.0227  
 Venus -86069-08-16 11:30 J -29715051.17 -29715051.02 -29715050.86 0.0288 0.0198  
 Earth -86069-08-23 17:44 J -29715043.93 -29715043.76 -29715043.58 0.0288 0.0210  
 Moon -86069-08-23 20:08 J -29715043.84 -29715043.66 -29715043.46 0.0288 0.0195 \*  
 Mercury -86069-08-25 01:54 J -29715042.56 -29715042.42 -29715042.26 0.0288 0.0150  
 Mercury -86069-11-21 23:30 J -29714953.69 -29714953.52 -29714953.35 0.0288 0.0008  
 Mercury -86068-02-18 20:37 J -29714864.80 -29714864.64 -29714864.49 0.0289 0.0131  
 Mercury -86068-05-18 17:01 J -29714775.85 -29714775.79 -29714775.72 0.0289 0.0266  
 Mars -86061-01-19 02:51 J -29712339.61 -29712339.38 -29712339.13 0.0282 0.0132  
 Moon -86058-01-05 22:32 J -29711256.59 -29711256.56 -29711256.52 0.0276 0.0273  
 Earth -86057-01-17 18:27 J -29710879.90 -29710879.73 -29710879.53 0.0275 0.0166  
 Moon -86057-01-17 21:20 J -29710879.81 -29710879.61 -29710879.41 0.0275 0.0151 \*  
 Moon -86056-01-28 10:32 J -29710503.30 -29710503.06 -29710502.82 0.0273 0.0038  
 Earth -86056-01-28 13:25 J -29710503.17 -29710502.94 -29710502.70 0.0273 0.0048 \*  
 Moon -86055-02-09 02:08 J -29710126.63 -29710126.41 -29710126.18 0.0272 0.0067  
 Earth -86055-02-09 04:32 J -29710126.54 -29710126.31 -29710126.08 0.0272 0.0070 \*  
 Venus -86055-06-13 04:03 J -29710002.48 -29710002.33 -29710002.17 0.0271 0.0180  
 Mercury -86055-09-17 14:37 J -29709905.90 -29709905.89 -29709905.88 0.0271 0.0270  
 Mercury -86055-12-15 01:54 J -29709817.52 -29709817.42 -29709817.31 0.0271 0.0182  
 Venus -86054-01-28 03:06 J -29709773.53 -29709773.37 -29709773.19 0.0271 0.0152  
 Earth -86054-02-20 17:30 J -29709749.94 -29709749.77 -29709749.59 0.0271 0.0183  
 Moon -86054-02-20 19:54 J -29709749.84 -29709749.67 -29709749.48 0.0271 0.0170 \*  
 Mercury -86054-03-13 13:25 J -29709729.07 -29709728.94 -29709728.81 0.0271 0.0092  
 Mercury -86054-06-10 01:11 J -29709640.59 -29709640.45 -29709640.31 0.0271 0.0002

Mercury -86054-09-06 12:56 J -29709552.09 -29709551.96 -29709551.82 0.0271 0.0092  
 Mercury -86054-12-04 00:56 J -29709463.56 -29709463.46 -29709463.35 0.0270 0.0185  
 Mars -86047-02-09 05:15 J -29707204.51 -29707204.28 -29707204.03 0.0275 0.0185  
 Earth -86043-07-05 12:42 J -29705596.99 -29705596.97 -29705596.93 0.0283 0.0280  
 Moon -86042-07-19 18:27 J -29705217.94 -29705217.73 -29705217.51 0.0285 0.0162  
 Earth -86042-07-19 22:03 J -29705217.79 -29705217.58 -29705217.36 0.0285 0.0148 \*  
 Moon -86041-08-02 09:35 J -29704838.35 -29704838.10 -29704837.85 0.0287 0.0019  
 Earth -86041-08-02 13:25 J -29704838.20 -29704837.94 -29704837.69 0.0287 0.0003 \*  
 Venus -86040-07-11 14:08 J -29704495.07 -29704494.91 -29704494.73 0.0288 0.0178  
 Moon -86040-08-17 06:56 J -29704458.43 -29704458.21 -29704457.99 0.0288 0.0131  
 Earth -86040-08-17 08:23 J -29704458.36 -29704458.15 -29704457.92 0.0288 0.0146 \*  
 Mercury -86039-01-11 23:59 J -29704310.62 -29704310.50 -29704310.37 0.0288 0.0197  
 Venus -86039-02-26 15:35 J -29704264.94 -29704264.85 -29704264.73 0.0288 0.0248  
 Mercury -86039-04-10 21:35 J -29704221.77 -29704221.60 -29704221.42 0.0288 0.0055  
 Mercury -86039-07-08 18:56 J -29704132.88 -29704132.71 -29704132.55 0.0288 0.0085  
 Earth -86039-09-01 05:01 J -29704078.29 -29704078.29 -29704078.26 0.0288 0.0288  
 Moon -86039-09-01 06:42 J -29704078.28 -29704078.22 -29704078.14 0.0288 0.0274 \*  
 Mercury -86039-10-05 15:20 J -29704043.96 -29704043.86 -29704043.74 0.0288 0.0222  
 Mars -86033-03-10 22:03 J -29702060.77 -29702060.58 -29702060.36 0.0284 0.0181  
 Moon -86028-01-11 15:06 J -29700293.02 -29700292.87 -29700292.70 0.0276 0.0204  
 Earth -86028-01-11 17:44 J -29700292.90 -29700292.76 -29700292.61 0.0276 0.0216 \*  
 Earth -86027-01-23 14:37 J -29699916.12 -29699915.89 -29699915.67 0.0274 0.0099  
 Moon -86027-01-23 16:47 J -29699916.02 -29699915.80 -29699915.58 0.0274 0.0085 \*  
 Earth -86026-02-04 07:11 J -29699539.43 -29699539.20 -29699538.96 0.0273 0.0021  
 Moon -86026-02-04 09:35 J -29699539.34 -29699539.10 -29699538.85 0.0273 0.0023 \*  
 Venus -86026-12-24 05:30 J -29699216.44 -29699216.27 -29699216.09 0.0272 0.0143  
 Moon -86025-02-15 18:42 J -29699162.93 -29699162.72 -29699162.50 0.0272 0.0124  
 Earth -86025-02-15 21:20 J -29699162.81 -29699162.61 -29699162.40 0.0272 0.0136 \*  
 Mercury -86025-05-03 03:35 J -29699085.43 -29699085.35 -29699085.26 0.0272 0.0213  
 Mercury -86025-07-30 15:20 J -29698996.99 -29698996.86 -29698996.74 0.0272 0.0123



Venus -86025-08-09 04:32 J -29698987.45 -29698987.31 -29698987.15 0.0271 0.0190

Mercury -86025-10-27 02:51 J -29698908.52 -29698908.38 -29698908.24 0.0271 0.0032

Mercury -86024-01-23 14:37 J -29698820.03 -29698819.89 -29698819.75 0.0271 0.0061

Moon -86024-02-26 07:39 J -29698786.29 -29698786.18 -29698786.05 0.0271 0.0231

Earth -86024-02-26 10:18 J -29698786.16 -29698786.07 -29698785.96 0.0271 0.0244 \*

Mercury -86024-04-22 02:37 J -29698731.51 -29698731.39 -29698731.28 0.0271 0.0154

Mercury -86024-07-19 14:37 J -29698642.94 -29698642.89 -29698642.83 0.0271 0.0249

Mars -86017-04-02 23:01 J -29696193.87 -29696193.54 -29696193.22 0.0276 0.0011

Earth -86013-07-13 00:56 J -29694631.62 -29694631.46 -29694631.28 0.0284 0.0208

Moon -86013-07-13 04:18 J -29694631.46 -29694631.32 -29694631.15 0.0284 0.0220 \*

Earth -86012-07-27 14:51 J -29694252.13 -29694251.88 -29694251.64 0.0286 0.0067

Moon -86012-07-27 17:59 J -29694251.99 -29694251.75 -29694251.50 0.0286 0.0082 \*

Earth -86011-08-11 09:20 J -29693872.35 -29693872.11 -29693871.87 0.0287 0.0081

Moon -86011-08-11 10:03 J -29693872.33 -29693872.08 -29693871.82 0.0287 0.0066 \*

Venus -86010-01-22 00:56 J -29693708.66 -29693708.46 -29693708.26 0.0288 0.0106

Mercury -86010-06-01 00:56 J -29693578.56 -29693578.46 -29693578.35 0.0288 0.0226

Moon -86010-08-26 04:32 J -29693492.48 -29693492.31 -29693492.13 0.0288 0.0211

Earth -86010-08-26 06:42 J -29693492.37 -29693492.22 -29693492.06 0.0288 0.0228 \*

Mercury -86010-08-28 22:47 J -29693489.72 -29693489.55 -29693489.38 0.0288 0.0083

Mercury -86010-11-25 20:08 J -29693400.83 -29693400.66 -29693400.49 0.0289 0.0058

Mercury -86009-02-22 16:47 J -29693311.92 -29693311.80 -29693311.67 0.0289 0.0196

Mars -86003-04-28 09:49 J -29691055.36 -29691055.09 -29691054.83 0.0284 0.0014

# 86TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 86th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-85999-01-07 02:37 J	-29689705.45	-29689705.39	-29689705.30	0.0276	0.0263		
Moon	-85999-01-07 05:15 J	-29689705.36	-29689705.28	-29689705.17	0.0276	0.0253	*	
Moon	-85998-01-18 23:30 J	-29689328.73	-29689328.52	-29689328.30	0.0274	0.0132		
Earth	-85998-01-19 01:39 J	-29689328.63	-29689328.43	-29689328.23	0.0274	0.0148	*	
Moon	-85997-01-30 16:47 J	-29688952.03	-29688951.80	-29688951.57	0.0273	0.0021		
Earth	-85997-01-30 19:39 J	-29688951.92	-29688951.68	-29688951.45	0.0273	0.0031	*	
Earth	-85996-02-10 10:03 J	-29688575.30	-29688575.08	-29688574.85	0.0272	0.0085		
Moon	-85996-02-10 12:13 J	-29688575.21	-29688574.99	-29688574.76	0.0272	0.0079	*	
Venus	-85996-07-05 12:27 J	-29688430.17	-29688429.98	-29688429.77	0.0271	0.0085		
Mercury	-85996-09-20 07:11 J	-29688353.27	-29688353.20	-29688353.13	0.0271	0.0228		
Mercury	-85996-12-17 18:27 J	-29688264.84	-29688264.73	-29688264.61	0.0271	0.0140		
Venus	-85995-02-19 11:15 J	-29688201.09	-29688201.03	-29688200.93	0.0271	0.0248		
Earth	-85995-02-21 22:47 J	-29688198.70	-29688198.55	-29688198.38	0.0271	0.0197		
Moon	-85995-02-22 01:54 J	-29688198.59	-29688198.42	-29688198.23	0.0271	0.0182	*	
Mercury	-85995-03-16 06:13 J	-29688176.38	-29688176.24	-29688176.11	0.0271	0.0049		
Mercury	-85995-06-12 17:59 J	-29688087.89	-29688087.75	-29688087.62	0.0270	0.0044		
Mercury	-85995-09-09 05:44 J	-29687999.38	-29687999.26	-29687999.14	0.0270	0.0136		
Mercury	-85995-12-06 17:44 J	-29687910.83	-29687910.76	-29687910.68	0.0270	0.0229		
Mars	-85987-05-26 16:32 J	-29685183.02	-29685182.81	-29685182.58	0.0277	0.0203		
Moon	-85984-07-06 20:23 J	-29684045.72	-29684045.65	-29684045.57	0.0283	0.0271		
Earth	-85984-07-06 23:59 J	-29684045.59	-29684045.50	-29684045.40	0.0283	0.0262	*	
Moon	-85983-07-21 07:11 J	-29683666.40	-29683666.20	-29683665.98	0.0285	0.0142		
Earth	-85983-07-21 09:49 J	-29683666.31	-29683666.09	-29683665.86	0.0285	0.0128	*	
Earth	-85982-08-05 01:39 J	-29683286.68	-29683286.43	-29683286.18	0.0287	0.0018		
Moon	-85982-08-05 01:54 J	-29683286.66	-29683286.42	-29683286.17	0.0287	0.0004	*	
Venus	-85981-08-03 05:15 J	-29682922.49	-29682922.28	-29682922.06	0.0288	0.0057		
Earth	-85981-08-18 21:06 J	-29682906.82	-29682906.62	-29682906.40	0.0288	0.0165		

Moon -85981-08-18 23:59 J -29682906.70 -29682906.50 -29682906.28 0.0288 0.0149 \*  
 Mercury -85981-10-17 22:47 J -29682846.59 -29682846.55 -29682846.49 0.0288 0.0274  
 Mercury -85980-01-14 20:51 J -29682757.78 -29682757.63 -29682757.47 0.0288 0.0130  
 Mercury -85980-04-13 18:13 J -29682668.91 -29682668.74 -29682668.56 0.0288 0.0012  
 Mercury -85980-07-11 15:20 J -29682580.01 -29682579.86 -29682579.72 0.0289 0.0149  
 Moon -85980-09-02 22:03 J -29682526.59 -29682526.58 -29682526.56 0.0289 0.0288  
 Mercury -85980-10-08 11:44 J -29682491.03 -29682491.01 -29682490.98 0.0289 0.0285  
 Mars -85973-06-13 20:08 J -29680050.87 -29680050.66 -29680050.42 0.0282 0.0147  
 Earth -85969-01-13 23:44 J -29678741.67 -29678741.51 -29678741.34 0.0275 0.0199  
 Moon -85969-01-14 01:39 J -29678741.59 -29678741.43 -29678741.25 0.0275 0.0186 \*  
 Earth -85968-01-24 19:54 J -29678364.90 -29678364.67 -29678364.44 0.0274 0.0082  
 Moon -85968-01-24 23:15 J -29678364.76 -29678364.53 -29678364.30 0.0274 0.0068 \*  
 Moon -85967-02-05 10:03 J -29677988.32 -29677988.08 -29677987.84 0.0273 0.0034  
 Earth -85967-02-05 11:59 J -29677988.23 -29677988.00 -29677987.76 0.0273 0.0036 \*  
 Venus -85966-01-15 13:11 J -29677644.15 -29677643.95 -29677643.74 0.0272 0.0050  
 Mercury -85966-02-07 08:37 J -29677621.17 -29677621.14 -29677621.10 0.0272 0.0261  
 Moon -85966-02-16 22:18 J -29677611.76 -29677611.57 -29677611.36 0.0272 0.0137  
 Earth -85966-02-17 01:39 J -29677611.63 -29677611.43 -29677611.23 0.0272 0.0150 \*  
 Mercury -85966-05-06 19:54 J -29677532.77 -29677532.67 -29677532.56 0.0271 0.0173  
 Mercury -85966-08-03 07:25 J -29677444.32 -29677444.19 -29677444.05 0.0271 0.0083  
 Mercury -85966-10-30 19:11 J -29677355.84 -29677355.70 -29677355.56 0.0271 0.0011  
 Mercury -85965-01-27 06:56 J -29677267.33 -29677267.21 -29677267.07 0.0271 0.0103  
 Earth -85965-02-28 14:08 J -29677234.98 -29677234.91 -29677234.83 0.0271 0.0256  
 Moon -85965-02-28 15:49 J -29677234.94 -29677234.84 -29677234.74 0.0271 0.0243 \*  
 Mercury -85965-04-24 18:56 J -29677178.80 -29677178.71 -29677178.61 0.0271 0.0196  
 Mars -85959-07-05 21:49 J -29674915.84 -29674915.59 -29674915.33 0.0275 0.0168  
 Earth -85954-07-15 08:51 J -29673080.31 -29673080.13 -29673079.94 0.0284 0.0190  
 Moon -85954-07-15 11:30 J -29673080.21 -29673080.02 -29673079.84 0.0284 0.0201 \*  
 Moon -85953-07-28 22:03 J -29672700.83 -29672700.58 -29672700.32 0.0286 0.0064  
 Earth -85953-07-28 23:15 J -29672700.78 -29672700.53 -29672700.28 0.0286 0.0049 \*

Moon -85952-08-12 14:51 J -29672321.13 -29672320.88 -29672320.64 0.0288 0.0082  
 Earth -85952-08-12 18:13 J -29672320.97 -29672320.74 -29672320.49 0.0288 0.0100 \*  
 Venus -85951-02-13 13:39 J -29672136.14 -29672135.93 -29672135.71 0.0288 0.0010  
 Mercury -85951-06-03 20:51 J -29672025.77 -29672025.63 -29672025.48 0.0288 0.0165  
 Moon -85951-08-27 12:27 J -29671941.13 -29671940.98 -29671940.83 0.0289 0.0227  
 Earth -85951-08-27 16:03 J -29671940.95 -29671940.83 -29671940.69 0.0289 0.0244 \*  
 Mercury -85951-08-31 18:27 J -29671936.90 -29671936.73 -29671936.55 0.0289 0.0022  
 Mercury -85951-11-28 15:35 J -29671848.00 -29671847.85 -29671847.69 0.0289 0.0118  
 Mercury -85950-02-25 12:27 J -29671759.06 -29671758.98 -29671758.90 0.0289 0.0254  
 Mars -85945-08-05 12:27 J -29669771.18 -29669770.98 -29669770.75 0.0285 0.0162  
 Moon -85940-01-08 06:56 J -29668154.33 -29668154.21 -29668154.07 0.0276 0.0233  
 Earth -85940-01-08 08:51 J -29668154.23 -29668154.13 -29668154.01 0.0276 0.0245 \*  
 Moon -85939-01-20 03:35 J -29667777.56 -29667777.35 -29667777.13 0.0274 0.0115  
 Earth -85939-01-20 06:56 J -29667777.41 -29667777.21 -29667776.99 0.0274 0.0131 \*  
 Earth -85938-02-01 00:27 J -29667400.72 -29667400.48 -29667400.24 0.0273 0.0015  
 Moon -85938-02-01 01:25 J -29667400.67 -29667400.44 -29667400.21 0.0273 0.0008 \*  
 Earth -85937-02-12 14:23 J -29667024.11 -29667023.90 -29667023.67 0.0271 0.0101  
 Moon -85937-02-12 17:44 J -29667023.98 -29667023.76 -29667023.53 0.0271 0.0091 \*  
 Venus -85937-07-27 20:23 J -29666857.86 -29666857.65 -29666857.45 0.0271 0.0010  
 Mercury -85937-09-22 23:30 J -29666800.62 -29666800.52 -29666800.42 0.0271 0.0188  
 Mercury -85937-12-20 11:01 J -29666712.17 -29666712.04 -29666711.91 0.0271 0.0099  
 Moon -85936-02-23 01:39 J -29666647.59 -29666647.43 -29666647.25 0.0270 0.0193  
 Earth -85936-02-23 02:51 J -29666647.52 -29666647.38 -29666647.22 0.0270 0.0209 \*  
 Mercury -85936-03-18 22:32 J -29666623.70 -29666623.56 -29666623.42 0.0270 0.0008  
 Mercury -85936-06-15 10:18 J -29666535.20 -29666535.07 -29666534.94 0.0270 0.0085  
 Mercury -85936-09-11 22:03 J -29666446.68 -29666446.58 -29666446.47 0.0270 0.0178  
 Mars -85929-08-27 17:15 J -29663905.10 -29663904.78 -29663904.45 0.0276 0.0024  
 Moon -85925-07-08 05:15 J -29662494.37 -29662494.28 -29662494.16 0.0284 0.0255  
 Earth -85925-07-08 07:39 J -29662494.31 -29662494.18 -29662494.06 0.0284 0.0244 \*  
 Earth -85924-07-22 18:13 J -29662114.97 -29662114.74 -29662114.50 0.0286 0.0109

Moon -85924-07-22 19:39 J -29662114.89 -29662114.68 -29662114.45 0.0286 0.0124 \*  
 Earth -85923-08-06 10:32 J -29661735.31 -29661735.06 -29661734.81 0.0287 0.0036  
 Moon -85923-08-06 14:23 J -29661735.15 -29661734.90 -29661734.65 0.0287 0.0020 \*  
 Earth -85922-08-21 06:42 J -29661355.41 -29661355.22 -29661355.02 0.0288 0.0182  
 Moon -85922-08-21 10:03 J -29661355.28 -29661355.08 -29661354.86 0.0288 0.0165 \*  
 Venus -85922-08-26 18:27 J -29661349.94 -29661349.73 -29661349.52 0.0288 0.0057  
 Mercury -85922-10-21 18:56 J -29661293.82 -29661293.71 -29661293.59 0.0288 0.0213  
 Mercury -85921-01-18 16:47 J -29661204.97 -29661204.80 -29661204.63 0.0288 0.0069  
 Mercury -85921-04-16 13:54 J -29661116.08 -29661115.92 -29661115.75 0.0289 0.0072  
 Mercury -85921-07-14 10:47 J -29661027.16 -29661027.05 -29661026.93 0.0289 0.0209  
 Mars -85915-09-22 00:13 J -29658766.76 -29658766.49 -29658766.23 0.0283 0.0003  
 Earth -85910-01-15 04:32 J -29657190.48 -29657190.31 -29657190.12 0.0275 0.0183  
 Moon -85910-01-15 07:54 J -29657190.35 -29657190.17 -29657189.97 0.0275 0.0167 \*  
 Moon -85909-01-26 23:15 J -29656813.77 -29656813.53 -29656813.29 0.0273 0.0055  
 Earth -85909-01-26 23:59 J -29656813.72 -29656813.50 -29656813.26 0.0273 0.0067 \*  
 Moon -85908-02-06 12:13 J -29656437.22 -29656436.99 -29656436.76 0.0272 0.0048  
 Earth -85908-02-06 15:35 J -29656437.09 -29656436.85 -29656436.62 0.0272 0.0051 \*  
 Venus -85907-02-06 20:08 J -29656071.87 -29656071.66 -29656071.46 0.0271 0.0042  
 Mercury -85907-02-10 00:42 J -29656068.54 -29656068.47 -29656068.39 0.0271 0.0222  
 Earth -85907-02-18 04:18 J -29656060.50 -29656060.32 -29656060.12 0.0271 0.0163  
 Moon -85907-02-18 05:30 J -29656060.45 -29656060.27 -29656060.07 0.0271 0.0149 \*  
 Mercury -85907-05-09 12:13 J -29655980.11 -29655979.99 -29655979.87 0.0271 0.0133  
 Mercury -85907-08-05 23:44 J -29655891.65 -29655891.51 -29655891.37 0.0271 0.0043  
 Mercury -85907-11-02 11:30 J -29655803.16 -29655803.02 -29655802.89 0.0271 0.0050  
 Mercury -85906-01-29 23:15 J -29655714.65 -29655714.53 -29655714.41 0.0271 0.0142  
 Earth -85906-03-01 16:18 J -29655683.84 -29655683.82 -29655683.77 0.0271 0.0268  
 Moon -85906-03-01 20:08 J -29655683.73 -29655683.66 -29655683.57 0.0271 0.0254  
 Mercury -85906-04-28 11:15 J -29655626.09 -29655626.03 -29655625.96 0.0271 0.0236  
 Mars -85899-10-19 23:44 J -29652894.70 -29652894.51 -29652894.30 0.0277 0.0217  
 Moon -85895-07-16 12:27 J -29651529.18 -29651528.98 -29651528.79 0.0285 0.0186

Earth -85895-07-16 14:23 J -29651529.10 -29651528.90 -29651528.70 0.0285 0.0173 \*  
 Moon -85894-07-31 01:25 J -29651149.69 -29651149.44 -29651149.19 0.0286 0.0047  
 Earth -85894-07-31 05:15 J -29651149.54 -29651149.28 -29651149.03 0.0286 0.0032 \*  
 Moon -85893-08-13 22:18 J -29650769.79 -29650769.57 -29650769.33 0.0288 0.0100  
 Earth -85893-08-14 00:42 J -29650769.69 -29650769.47 -29650769.23 0.0288 0.0116 \*  
 Venus -85892-03-08 00:56 J -29650563.65 -29650563.46 -29650563.26 0.0288 0.0117  
 Mercury -85892-03-09 17:59 J -29650561.83 -29650561.75 -29650561.66 0.0288 0.0253  
 Mercury -85892-06-06 15:49 J -29650472.99 -29650472.84 -29650472.67 0.0289 0.0109  
 Moon -85892-08-28 23:01 J -29650389.66 -29650389.54 -29650389.40 0.0289 0.0244  
 Earth -85892-08-28 22:47 J -29650389.65 -29650389.55 -29650389.43 0.0289 0.0259 \*  
 Mercury -85892-09-03 13:25 J -29650384.11 -29650383.94 -29650383.77 0.0289 0.0034  
 Mercury -85892-12-01 10:18 J -29650295.20 -29650295.07 -29650294.92 0.0289 0.0173  
 Mars -85885-11-08 05:44 J -29647761.48 -29647761.26 -29647761.04 0.0282 0.0162  
 Moon -85881-01-10 09:49 J -29646603.23 -29646603.09 -29646602.94 0.0276 0.0216  
 Earth -85881-01-10 13:11 J -29646603.07 -29646602.95 -29646602.81 0.0276 0.0229 \*  
 Earth -85880-01-21 10:32 J -29646226.27 -29646226.06 -29646225.84 0.0274 0.0115  
 Moon -85880-01-21 11:15 J -29646226.24 -29646226.03 -29646225.81 0.0274 0.0100 \*  
 Earth -85879-02-02 03:35 J -29645849.59 -29645849.35 -29645849.11 0.0272 0.0002  
 Moon -85879-02-02 07:11 J -29645849.44 -29645849.20 -29645848.96 0.0272 0.0008 \*  
 Venus -85878-01-03 03:49 J -29645514.44 -29645514.34 -29645514.23 0.0271 0.0233  
 Moon -85878-02-13 16:32 J -29645473.03 -29645472.81 -29645472.57 0.0271 0.0104  
 Earth -85878-02-13 17:15 J -29645472.99 -29645472.78 -29645472.56 0.0271 0.0114 \*  
 Mercury -85878-06-30 04:03 J -29645336.39 -29645336.33 -29645336.26 0.0271 0.0239  
 Venus -85878-08-20 02:37 J -29645285.57 -29645285.39 -29645285.19 0.0271 0.0100  
 Mercury -85878-09-26 15:35 J -29645247.97 -29645247.85 -29645247.74 0.0271 0.0150  
 Mercury -85878-12-24 02:51 J -29645159.51 -29645159.38 -29645159.24 0.0270 0.0061  
 Moon -85877-02-25 01:25 J -29645096.58 -29645096.44 -29645096.27 0.0270 0.0207  
 Earth -85877-02-25 05:15 J -29645096.41 -29645096.28 -29645096.14 0.0270 0.0221 \*  
 Mercury -85877-03-21 14:37 J -29645071.03 -29645070.89 -29645070.75 0.0270 0.0032  
 Mercury -85877-06-18 02:23 J -29644982.52 -29644982.40 -29644982.27 0.0270 0.0124

Mercury -85877-09-14 14:23 J -29644893.98 -29644893.90 -29644893.82 0.0270 0.0217

Mars -85871-11-29 12:13 J -29642627.24 -29642626.99 -29642626.71 0.0275 0.0159

Earth -85866-07-10 11:44 J -29640943.14 -29640943.01 -29640942.84 0.0284 0.0228

Moon -85866-07-10 14:23 J -29640943.02 -29640942.90 -29640942.76 0.0284 0.0241 \*

Earth -85865-07-23 23:30 J -29640563.76 -29640563.52 -29640563.28 0.0286 0.0092

Moon -85865-07-24 03:06 J -29640563.60 -29640563.37 -29640563.13 0.0286 0.0107 \*

Earth -85864-08-07 16:32 J -29640184.06 -29640183.81 -29640183.56 0.0287 0.0053

Moon -85864-08-07 18:13 J -29640184.00 -29640183.74 -29640183.48 0.0287 0.0038 \*

Venus -85863-01-31 03:35 J -29640007.44 -29640007.35 -29640007.26 0.0288 0.0261

Moon -85863-08-22 11:30 J -29639804.21 -29639804.02 -29639803.81 0.0288 0.0183

Earth -85863-08-22 12:56 J -29639804.13 -29639803.96 -29639803.77 0.0288 0.0198 \*

Venus -85863-09-18 05:30 J -29639777.45 -29639777.27 -29639777.09 0.0288 0.0166

Mercury -85863-10-24 14:08 J -29639741.06 -29639740.91 -29639740.77 0.0289 0.0157

Mercury -85862-01-21 11:44 J -29639652.19 -29639652.01 -29639651.84 0.0289 0.0015

Mercury -85862-04-20 08:52 J -29639563.29 -29639563.13 -29639562.98 0.0289 0.0126

Mercury -85862-07-18 05:30 J -29639474.33 -29639474.27 -29639474.20 0.0289 0.0263

Mars -85857-12-29 22:32 J -29637482.78 -29637482.56 -29637482.33 0.0284 0.0151

Moon -85852-01-04 11:30 J -29636016.05 -29636016.02 -29636015.96 0.0276 0.0271

Moon -85851-01-16 07:40 J -29635639.38 -29635639.18 -29635638.97 0.0275 0.0152

Earth -85851-01-16 08:08 J -29635639.34 -29635639.16 -29635638.96 0.0275 0.0167 \*

Moon -85850-01-27 23:30 J -29635262.76 -29635262.52 -29635262.29 0.0273 0.0042

Earth -85850-01-28 03:06 J -29635262.60 -29635262.37 -29635262.13 0.0273 0.0051 \*

Earth -85849-02-08 17:44 J -29634885.98 -29634885.76 -29634885.52 0.0272 0.0065

Moon -85849-02-08 17:44 J -29634885.98 -29634885.76 -29634885.53 0.0272 0.0060 \*

Venus -85849-07-15 03:20 J -29634728.49 -29634728.36 -29634728.21 0.0271 0.0202

Mercury -85848-02-12 16:32 J -29634515.90 -29634515.81 -29634515.71 0.0271 0.0185

Earth -85848-02-19 06:13 J -29634509.41 -29634509.24 -29634509.05 0.0271 0.0175

Moon -85848-02-19 09:49 J -29634509.28 -29634509.09 -29634508.89 0.0271 0.0160 \*

Venus -85848-03-01 02:08 J -29634499.59 -29634499.41 -29634499.23 0.0271 0.0131

Mercury -85848-05-12 04:04 J -29634427.46 -29634427.33 -29634427.20 0.0271 0.0095

Mercury -85848-08-08 15:35 J -29634338.99 -29634338.85 -29634338.71 0.0271 0.0007

Mercury -85848-11-05 03:20 J -29634250.49 -29634250.36 -29634250.23 0.0270 0.0088

Mercury -85847-02-01 15:06 J -29634161.97 -29634161.87 -29634161.76 0.0270 0.0181

Moon -85847-03-02 17:59 J -29634132.78 -29634132.75 -29634132.71 0.0270 0.0267

Mars -85840-01-20 12:42 J -29631617.30 -29631616.97 -29631616.65 0.0276 0.0030

Moon -85836-07-17 12:56 J -29629978.15 -29629977.96 -29629977.76 0.0285 0.0172

Earth -85836-07-17 16:32 J -29629978.01 -29629977.81 -29629977.59 0.0285 0.0157 \*

Moon -85835-08-01 06:42 J -29629598.47 -29629598.22 -29629597.98 0.0287 0.0030

Earth -85835-08-01 07:40 J -29629598.43 -29629598.18 -29629597.92 0.0287 0.0015 \*

Venus -85834-08-13 07:54 J -29629221.31 -29629221.17 -29629221.02 0.0288 0.0209

Earth -85834-08-16 03:49 J -29629218.56 -29629218.34 -29629218.11 0.0288 0.0131

Moon -85834-08-16 05:59 J -29629218.47 -29629218.25 -29629218.02 0.0288 0.0117 \*

Mercury -85833-03-12 12:28 J -29629009.11 -29629008.98 -29629008.86 0.0289 0.0202

Venus -85833-03-30 10:18 J -29628991.21 -29628991.07 -29628990.93 0.0289 0.0220

Mercury -85833-06-09 10:04 J -29628920.25 -29628920.08 -29628919.90 0.0289 0.0058

Earth -85833-08-30 02:08 J -29628838.48 -29628838.41 -29628838.31 0.0289 0.0272

Moon -85833-08-30 06:13 J -29628838.34 -29628838.24 -29628838.12 0.0289 0.0257 \*

Mercury -85833-09-06 07:25 J -29628831.35 -29628831.19 -29628831.02 0.0289 0.0084

Mercury -85833-12-04 04:18 J -29628742.42 -29628742.32 -29628742.20 0.0289 0.0223

Mars -85826-02-16 01:11 J -29626477.71 -29626477.45 -29626477.18 0.0284 0.0011

Moon -85822-01-11 15:49 J -29625051.99 -29625051.84 -29625051.67 0.0276 0.0200

Earth -85822-01-11 16:04 J -29625051.97 -29625051.83 -29625051.67 0.0276 0.0212 \*

Earth -85821-01-23 13:11 J -29624675.18 -29624674.95 -29624674.73 0.0274 0.0098

Moon -85821-01-23 16:47 J -29624675.03 -29624674.80 -29624674.58 0.0274 0.0085 \*

Earth -85820-02-03 05:30 J -29624298.51 -29624298.27 -29624298.04 0.0272 0.0017

Moon -85820-02-03 06:13 J -29624298.49 -29624298.24 -29624297.99 0.0272 0.0018 \*

Venus -85819-01-25 09:49 J -29623942.26 -29623942.09 -29623941.91 0.0271 0.0145

Moon -85819-02-14 15:20 J -29623922.07 -29623921.86 -29623921.64 0.0271 0.0115

Earth -85819-02-14 18:42 J -29623921.92 -29623921.72 -29623921.51 0.0271 0.0128 \*

Mercury -85819-07-02 19:54 J -29623783.76 -29623783.67 -29623783.58 0.0271 0.0203



Venus -85819-09-11 08:37 J -29623713.29 -29623713.14 -29623712.99 0.0270 0.0187  
 Mercury -85819-09-29 07:11 J -29623695.32 -29623695.20 -29623695.07 0.0270 0.0114  
 Mercury -85819-12-26 18:42 J -29623606.85 -29623606.72 -29623606.58 0.0270 0.0025  
 Moon -85818-02-26 06:28 J -29623545.36 -29623545.23 -29623545.10 0.0270 0.0220  
 Earth -85818-02-26 06:13 J -29623545.34 -29623545.24 -29623545.11 0.0270 0.0233 \*  
 Mercury -85818-03-25 06:28 J -29623518.36 -29623518.23 -29623518.09 0.0270 0.0069  
 Mercury -85818-06-21 18:13 J -29623429.85 -29623429.74 -29623429.62 0.0270 0.0162  
 Mercury -85818-09-18 06:13 J -29623341.28 -29623341.24 -29623341.19 0.0270 0.0256  
 Mars -85810-03-15 07:54 J -29620606.35 -29620606.17 -29620605.97 0.0277 0.0223  
 Earth -85807-07-11 14:37 J -29619392.05 -29619391.89 -29619391.72 0.0284 0.0211  
 Moon -85807-07-11 17:59 J -29619391.89 -29619391.75 -29619391.58 0.0284 0.0226 \*  
 Earth -85806-07-26 02:37 J -29619012.63 -29619012.39 -29619012.14 0.0286 0.0075  
 Moon -85806-07-26 03:06 J -29619012.61 -29619012.37 -29619012.11 0.0286 0.0090 \*  
 Moon -85805-08-08 17:30 J -29618633.02 -29618632.77 -29618632.51 0.0288 0.0055  
 Earth -85805-08-08 20:23 J -29618632.90 -29618632.65 -29618632.41 0.0288 0.0070 \*  
 Venus -85804-02-22 13:11 J -29618435.12 -29618434.95 -29618434.76 0.0288 0.0158  
 Mercury -85804-07-30 10:32 J -29618277.14 -29618277.06 -29618276.97 0.0289 0.0249  
 Moon -85804-08-23 13:25 J -29618253.11 -29618252.94 -29618252.75 0.0289 0.0200  
 Earth -85804-08-23 17:16 J -29618252.94 -29618252.78 -29618252.61 0.0289 0.0213 \*  
 Venus -85804-10-10 15:06 J -29618204.93 -29618204.87 -29618204.78 0.0289 0.0271  
 Mercury -85804-10-27 08:23 J -29618188.31 -29618188.15 -29618187.98 0.0289 0.0105  
 Mercury -85803-01-24 05:59 J -29618099.42 -29618099.25 -29618099.08 0.0289 0.0038  
 Mercury -85803-04-23 03:06 J -29618010.50 -29618010.37 -29618010.24 0.0289 0.0177  
 Mars -85796-04-03 11:30 J -29615473.23 -29615473.02 -29615472.81 0.0282 0.0171  
 Earth -85793-01-06 10:47 J -29614465.11 -29614465.05 -29614464.97 0.0276 0.0263  
 Moon -85793-01-06 11:30 J -29614465.11 -29614465.02 -29614464.91 0.0276 0.0252 \*  
 Moon -85792-01-17 06:56 J -29614088.41 -29614088.21 -29614088.00 0.0274 0.0137  
 Earth -85792-01-17 10:32 J -29614088.26 -29614088.06 -29614087.86 0.0274 0.0151 \*  
 Moon -85791-01-29 04:04 J -29613711.55 -29613711.33 -29613711.10 0.0273 0.0031  
 Earth -85791-01-29 04:47 J -29613711.53 -29613711.30 -29613711.06 0.0273 0.0036 \*

Earth -85790-02-09 18:56 J -29613334.93 -29613334.71 -29613334.47 0.0272 0.0079  
 Moon -85790-02-09 22:18 J -29613334.79 -29613334.57 -29613334.34 0.0272 0.0072 \*  
 Venus -85790-08-07 09:06 J -29613156.30 -29613156.12 -29613155.93 0.0271 0.0114  
 Mercury -85790-11-19 20:52 J -29613051.69 -29613051.63 -29613051.56 0.0271 0.0238  
 Mercury -85789-02-16 08:23 J -29612963.27 -29612963.15 -29612963.04 0.0271 0.0149  
 Earth -85789-02-21 07:11 J -29612958.37 -29612958.20 -29612958.03 0.0271 0.0187  
 Moon -85789-02-21 07:40 J -29612958.37 -29612958.18 -29612957.99 0.0271 0.0173 \*  
 Venus -85789-03-23 07:40 J -29612927.30 -29612927.18 -29612927.06 0.0271 0.0217  
 Mercury -85789-05-14 19:40 J -29612874.81 -29612874.68 -29612874.54 0.0270 0.0059  
 Mercury -85789-08-11 07:25 J -29612786.33 -29612786.19 -29612786.05 0.0270 0.0033  
 Mercury -85789-11-07 19:11 J -29612697.82 -29612697.70 -29612697.58 0.0270 0.0125  
 Mercury -85788-02-04 07:11 J -29612609.28 -29612609.20 -29612609.12 0.0270 0.0218  
 Mars -85782-04-23 23:16 J -29610339.78 -29610339.53 -29610339.25 0.0275 0.0158  
 Earth -85778-07-05 07:40 J -29608806.24 -29608806.18 -29608806.10 0.0283 0.0270  
 Earth -85777-07-18 16:47 J -29608427.01 -29608426.80 -29608426.57 0.0285 0.0141  
 Moon -85777-07-18 17:01 J -29608426.98 -29608426.79 -29608426.58 0.0285 0.0157 \*  
 Earth -85776-08-02 08:23 J -29608047.41 -29608047.15 -29608046.90 0.0287 0.0005  
 Moon -85776-08-02 11:16 J -29608047.28 -29608047.03 -29608046.78 0.0287 0.0015 \*  
 Earth -85775-08-17 04:32 J -29607667.53 -29607667.31 -29607667.09 0.0288 0.0146  
 Moon -85775-08-17 07:54 J -29607667.39 -29607667.17 -29607666.93 0.0288 0.0132 \*  
 Venus -85775-09-04 15:49 J -29607649.03 -29607648.84 -29607648.63 0.0288 0.0113  
 Mercury -85774-03-16 05:44 J -29607456.40 -29607456.26 -29607456.10 0.0289 0.0156  
 Mercury -85774-06-13 03:35 J -29607367.52 -29607367.35 -29607367.17 0.0289 0.0014  
 Earth -85774-09-01 03:06 J -29607287.40 -29607287.37 -29607287.31 0.0289 0.0285  
 Moon -85774-09-01 04:32 J -29607287.38 -29607287.31 -29607287.21 0.0289 0.0272 \*  
 Mercury -85774-09-10 00:56 J -29607278.61 -29607278.46 -29607278.30 0.0289 0.0129  
 Mercury -85774-12-07 21:35 J -29607189.65 -29607189.60 -29607189.53 0.0289 0.0268  
 Mars -85768-05-25 16:04 J -29605194.06 -29605193.83 -29605193.60 0.0285 0.0147  
 Earth -85763-01-12 17:16 J -29603500.94 -29603500.78 -29603500.60 0.0276 0.0196  
 Moon -85763-01-12 20:23 J -29603500.81 -29603500.65 -29603500.46 0.0276 0.0182 \*

Earth -85762-01-24 14:23 J -29603124.13 -29603123.90 -29603123.68 0.0274 0.0082  
 Moon -85762-01-24 15:06 J -29603124.10 -29603123.87 -29603123.63 0.0274 0.0072 \*  
 Moon -85761-02-05 02:52 J -29602747.62 -29602747.38 -29602747.14 0.0272 0.0029  
 Earth -85761-02-05 06:28 J -29602747.47 -29602747.23 -29602747.00 0.0272 0.0032 \*  
 Moon -85760-02-15 18:13 J -29602370.95 -29602370.74 -29602370.54 0.0271 0.0129  
 Earth -85760-02-15 19:25 J -29602370.89 -29602370.69 -29602370.48 0.0271 0.0141 \*  
 Venus -85760-02-16 15:20 J -29602370.06 -29602369.86 -29602369.66 0.0271 0.0059  
 Mercury -85760-04-08 00:13 J -29602319.53 -29602319.49 -29602319.45 0.0271 0.0256  
 Mercury -85760-07-05 11:30 J -29602231.12 -29602231.02 -29602230.91 0.0271 0.0167  
 Mercury -85760-10-01 23:01 J -29602142.67 -29602142.54 -29602142.41 0.0270 0.0077  
 Mercury -85760-12-29 10:32 J -29602054.20 -29602054.06 -29602053.92 0.0270 0.0014  
 Earth -85759-02-27 06:42 J -29601994.31 -29601994.22 -29601994.11 0.0270 0.0245  
 Moon -85759-02-27 10:32 J -29601994.18 -29601994.06 -29601993.94 0.0270 0.0233 \*  
 Mercury -85759-03-27 22:18 J -29601965.70 -29601965.57 -29601965.44 0.0270 0.0106  
 Mercury -85759-06-24 10:04 J -29601877.17 -29601877.08 -29601876.98 0.0270 0.0199  
 Mars -85752-06-15 21:06 J -29599328.94 -29599328.62 -29599328.30 0.0276 0.0036  
 Moon -85748-07-12 14:23 J -29597841.08 -29597840.90 -29597840.73 0.0284 0.0211  
 Earth -85748-07-12 15:20 J -29597841.03 -29597840.86 -29597840.67 0.0284 0.0195 \*  
 Moon -85747-07-26 23:59 J -29597461.74 -29597461.50 -29597461.24 0.0286 0.0075  
 Earth -85747-07-27 03:49 J -29597461.59 -29597461.34 -29597461.09 0.0286 0.0058 \*  
 Moon -85746-08-10 18:28 J -29597081.97 -29597081.73 -29597081.49 0.0288 0.0071  
 Earth -85746-08-10 21:35 J -29597081.84 -29597081.60 -29597081.35 0.0288 0.0086 \*  
 Venus -85745-03-16 21:35 J -29596862.81 -29596862.60 -29596862.38 0.0288 0.0060  
 Mercury -85745-08-02 04:32 J -29596724.44 -29596724.31 -29596724.19 0.0289 0.0201  
 Moon -85745-08-24 18:28 J -29596701.88 -29596701.73 -29596701.56 0.0289 0.0217  
 Earth -85745-08-24 18:56 J -29596701.86 -29596701.71 -29596701.55 0.0289 0.0227 \*  
 Mercury -85745-10-30 02:23 J -29596635.57 -29596635.40 -29596635.23 0.0289 0.0057  
 Mercury -85744-01-26 23:44 J -29596546.68 -29596546.51 -29596546.35 0.0289 0.0085  
 Mercury -85744-04-25 20:37 J -29596457.74 -29596457.64 -29596457.53 0.0289 0.0224  
 Mars -85738-07-12 05:30 J -29594189.54 -29594189.27 -29594189.00 0.0283 0.0017

Moon -85734-01-07 09:20 J -29592914.23 -29592914.11 -29592913.97 0.0276 0.0233  
 Earth -85734-01-07 12:42 J -29592914.06 -29592913.97 -29592913.85 0.0276 0.0247 \*  
 Moon -85733-01-19 10:47 J -29592537.25 -29592537.05 -29592536.84 0.0274 0.0123  
 Earth -85733-01-19 11:44 J -29592537.20 -29592537.01 -29592536.79 0.0274 0.0136 \*  
 Earth -85732-01-30 05:44 J -29592160.49 -29592160.26 -29592160.02 0.0273 0.0021  
 Moon -85732-01-30 09:20 J -29592160.35 -29592160.11 -29592159.88 0.0273 0.0019 \*  
 Earth -85731-02-10 19:54 J -29591783.89 -29591783.67 -29591783.44 0.0271 0.0092  
 Moon -85731-02-10 21:35 J -29591783.83 -29591783.60 -29591783.36 0.0271 0.0083 \*  
 Venus -85731-08-29 14:37 J -29591584.10 -29591583.89 -29591583.69 0.0271 0.0028  
 Mercury -85731-11-22 12:28 J -29591499.06 -29591498.98 -29591498.88 0.0271 0.0203  
 Mercury -85730-02-18 23:59 J -29591410.62 -29591410.50 -29591410.37 0.0270 0.0113  
 Moon -85730-02-22 04:18 J -29591407.48 -29591407.32 -29591407.13 0.0270 0.0186  
 Earth -85730-02-22 07:25 J -29591407.33 -29591407.19 -29591407.01 0.0270 0.0200 \*  
 Mercury -85730-05-18 11:30 J -29591322.16 -29591322.02 -29591321.88 0.0270 0.0023  
 Mercury -85730-08-14 23:01 J -29591233.67 -29591233.54 -29591233.40 0.0270 0.0070  
 Mercury -85730-11-11 10:47 J -29591145.16 -29591145.05 -29591144.93 0.0270 0.0162  
 Mercury -85729-02-07 22:47 J -29591056.59 -29591056.55 -29591056.50 0.0270 0.0255  
 Mars -85722-08-07 15:06 J -29588319.05 -29588318.87 -29588318.67 0.0277 0.0223  
 Earth -85719-07-06 07:11 J -29587255.31 -29587255.20 -29587255.09 0.0283 0.0254  
 Moon -85719-07-06 09:06 J -29587255.17 -29587255.12 -29587255.04 0.0283 0.0271 \*  
 Earth -85718-07-20 16:32 J -29586876.03 -29586875.81 -29586875.58 0.0285 0.0125  
 Moon -85718-07-20 20:23 J -29586875.86 -29586875.65 -29586875.42 0.0285 0.0142 \*  
 Earth -85717-08-03 08:23 J -29586496.40 -29586496.15 -29586495.89 0.0287 0.0017  
 Moon -85717-08-03 11:30 J -29586496.28 -29586496.02 -29586495.76 0.0287 0.0004 \*  
 Moon -85716-08-18 04:32 J -29586116.53 -29586116.31 -29586116.08 0.0288 0.0149  
 Earth -85716-08-18 04:47 J -29586116.50 -29586116.30 -29586116.08 0.0288 0.0160 \*  
 Venus -85716-09-26 23:44 J -29586076.73 -29586076.51 -29586076.29 0.0288 0.0016  
 Mercury -85716-12-20 01:25 J -29585992.52 -29585992.44 -29585992.36 0.0289 0.0255  
 Mercury -85715-03-18 23:30 J -29585903.69 -29585903.52 -29585903.36 0.0289 0.0110  
 Mercury -85715-06-15 21:06 J -29585814.80 -29585814.62 -29585814.45 0.0289 0.0034

Mercury -85715-09-12 17:59 J -29585725.88 -29585725.75 -29585725.60 0.0289 0.0174

Mars -85708-08-28 02:23 J -29583184.60 -29583184.40 -29583184.18 0.0283 0.0176

Earth -85704-01-13 17:44 J -29581949.93 -29581949.76 -29581949.57 0.0276 0.0180

Moon -85704-01-13 19:54 J -29581949.86 -29581949.67 -29581949.47 0.0276 0.0165 \*

Moon -85703-01-25 11:30 J -29581573.26 -29581573.02 -29581572.78 0.0274 0.0060

Earth -85703-01-25 14:37 J -29581573.12 -29581572.89 -29581572.66 0.0274 0.0066 \*

Moon -85702-02-06 04:32 J -29581196.54 -29581196.31 -29581196.08 0.0272 0.0040

Earth -85702-02-06 06:28 J -29581196.46 -29581196.23 -29581195.99 0.0272 0.0047 \*

Earth -85701-02-17 19:11 J -29580819.88 -29580819.70 -29580819.49 0.0271 0.0155

Moon -85701-02-17 22:04 J -29580819.77 -29580819.58 -29580819.38 0.0271 0.0140 \*

Venus -85701-03-10 20:23 J -29580797.86 -29580797.65 -29580797.45 0.0271 0.0025

Mercury -85701-04-10 15:49 J -29580766.92 -29580766.84 -29580766.77 0.0271 0.0222

Mercury -85701-07-08 03:06 J -29580678.49 -29580678.37 -29580678.25 0.0270 0.0133

Mercury -85701-10-04 14:37 J -29580590.03 -29580589.89 -29580589.76 0.0270 0.0043

Mercury -85700-01-01 02:08 J -29580501.55 -29580501.41 -29580501.27 0.0270 0.0049

Earth -85700-02-28 06:56 J -29580443.29 -29580443.21 -29580443.14 0.0270 0.0255

Moon -85700-02-28 08:23 J -29580443.24 -29580443.15 -29580443.04 0.0270 0.0246 \*

Mercury -85700-03-30 13:54 J -29580413.04 -29580412.92 -29580412.80 0.0270 0.0142

Mercury -85700-06-27 01:54 J -29580324.49 -29580324.42 -29580324.35 0.0270 0.0235

Mars -85694-09-17 11:30 J -29578051.28 -29578051.02 -29578050.73 0.0274 0.0150

Moon -85689-07-13 12:13 J -29576290.16 -29576289.99 -29576289.80 0.0284 0.0195

Earth -85689-07-13 16:04 J -29576290.02 -29576289.83 -29576289.62 0.0284 0.0179 \*

Moon -85688-07-28 02:23 J -29575910.64 -29575910.40 -29575910.16 0.0286 0.0057

Earth -85688-07-28 04:32 J -29575910.56 -29575910.31 -29575910.06 0.0286 0.0042 \*

Earth -85687-08-11 22:47 J -29575530.79 -29575530.55 -29575530.32 0.0288 0.0101

Moon -85687-08-11 23:30 J -29575530.75 -29575530.52 -29575530.28 0.0288 0.0089 \*

Venus -85686-04-09 05:44 J -29575290.47 -29575290.26 -29575290.04 0.0289 0.0039

Mercury -85686-08-05 22:18 J -29575171.72 -29575171.57 -29575171.43 0.0289 0.0154

Earth -85686-08-26 20:08 J -29575150.79 -29575150.66 -29575150.51 0.0289 0.0241

Moon -85686-08-26 23:30 J -29575150.66 -29575150.52 -29575150.36 0.0289 0.0233 \*

Mercury -85686-11-02 19:54 J -29575082.84 -29575082.67 -29575082.50 0.0289 0.0010

Mercury -85685-01-30 17:01 J -29574993.94 -29574993.79 -29574993.63 0.0289 0.0132

Mercury -85685-04-28 13:54 J -29574904.97 -29574904.92 -29574904.85 0.0289 0.0269

Mars -85680-10-18 20:23 J -29572905.88 -29572905.65 -29572905.42 0.0285 0.0141

Moon -85675-01-08 11:44 J -29571363.14 -29571363.01 -29571362.86 0.0276 0.0217

Earth -85675-01-08 13:54 J -29571363.04 -29571362.92 -29571362.78 0.0276 0.0231 \*

Earth -85674-01-20 12:42 J -29570986.17 -29570985.97 -29570985.74 0.0274 0.0119

Moon -85674-01-20 15:35 J -29570986.06 -29570985.85 -29570985.63 0.0274 0.0107 \*

Earth -85673-02-01 06:42 J -29570609.46 -29570609.22 -29570608.98 0.0273 0.0006

Moon -85673-02-01 08:37 J -29570609.39 -29570609.14 -29570608.90 0.0273 0.0007 \*

Moon -85672-02-11 17:44 J -29570232.99 -29570232.76 -29570232.53 0.0271 0.0092

Earth -85672-02-11 20:37 J -29570232.86 -29570232.64 -29570232.42 0.0271 0.0106 \*

Mercury -85672-08-28 17:01 J -29570034.83 -29570034.79 -29570034.75 0.0271 0.0256

Venus -85672-09-20 19:54 J -29570011.87 -29570011.67 -29570011.47 0.0271 0.0058

Mercury -85672-11-25 04:04 J -29569946.43 -29569946.33 -29569946.21 0.0270 0.0168

Mercury -85671-02-21 15:35 J -29569857.98 -29569857.85 -29569857.71 0.0270 0.0078

Moon -85671-02-23 05:59 J -29569856.39 -29569856.25 -29569856.08 0.0270 0.0199

Earth -85671-02-23 08:08 J -29569856.30 -29569856.16 -29569856.00 0.0270 0.0211 \*

Mercury -85671-05-21 03:06 J -29569769.50 -29569769.37 -29569769.23 0.0270 0.0016

Mercury -85671-08-17 14:52 J -29569681.01 -29569680.88 -29569680.75 0.0270 0.0106

Mercury -85671-11-14 02:37 J -29569592.48 -29569592.39 -29569592.29 0.0270 0.0199

Mars -85664-11-08 03:49 J -29567041.66 -29567041.34 -29567041.01 0.0275 0.0034

Earth -85660-07-07 06:28 J -29565704.35 -29565704.23 -29565704.08 0.0283 0.0238

Moon -85660-07-07 10:04 J -29565704.18 -29565704.08 -29565703.96 0.0283 0.0254 \*

Earth -85659-07-21 16:04 J -29565325.06 -29565324.83 -29565324.59 0.0285 0.0108

Moon -85659-07-21 17:01 J -29565325.01 -29565324.79 -29565324.54 0.0285 0.0123 \*

Moon -85658-08-05 06:28 J -29564945.49 -29564945.23 -29564944.97 0.0287 0.0020

Earth -85658-08-05 08:23 J -29564945.40 -29564945.15 -29564944.90 0.0287 0.0033 \*

Moon -85657-08-19 01:11 J -29564565.65 -29564565.45 -29564565.24 0.0288 0.0166

Earth -85657-08-19 04:47 J -29564565.49 -29564565.30 -29564565.09 0.0288 0.0175 \*

Venus -85657-10-19 06:56 J -29564504.42 -29564504.21 -29564504.00 0.0288 0.0080

Mercury -85657-12-22 18:42 J -29564439.84 -29564439.72 -29564439.60 0.0289 0.0210

Mercury -85656-03-21 16:32 J -29564350.97 -29564350.81 -29564350.63 0.0289 0.0066

Mercury -85656-06-18 14:08 J -29564262.08 -29564261.91 -29564261.74 0.0289 0.0077

Mercury -85656-09-15 11:16 J -29564173.14 -29564173.03 -29564172.92 0.0289 0.0217

Mars -85650-12-05 14:52 J -29561901.14 -29561900.88 -29561900.61 0.0285 0.0019

Earth -85646-01-03 15:20 J -29560775.88 -29560775.86 -29560775.81 0.0278 0.0274

Moon -85646-01-03 17:30 J -29560775.84 -29560775.77 -29560775.68 0.0278 0.0260 \*

Moon -85645-01-15 15:35 J -29560399.05 -29560398.85 -29560398.64 0.0276 0.0148

Earth -85645-01-15 17:59 J -29560398.93 -29560398.75 -29560398.55 0.0276 0.0164 \*

Moon -85644-01-26 12:28 J -29560022.21 -29560021.98 -29560021.75 0.0274 0.0045

Earth -85644-01-26 14:52 J -29560022.11 -29560021.88 -29560021.65 0.0274 0.0050 \*

Earth -85643-02-07 06:42 J -29559645.45 -29559645.22 -29559644.99 0.0272 0.0062

Moon -85643-02-07 09:20 J -29559645.33 -29559645.11 -29559644.88 0.0272 0.0052 \*

Venus -85643-08-17 02:37 J -29559454.50 -29559454.39 -29559454.27 0.0272 0.0224

Earth -85642-02-18 19:40 J -29559268.86 -29559268.68 -29559268.49 0.0271 0.0168

Moon -85642-02-18 22:18 J -29559268.76 -29559268.57 -29559268.36 0.0271 0.0153 \*

Venus -85642-04-03 01:25 J -29559225.63 -29559225.44 -29559225.25 0.0271 0.0110

Mercury -85642-04-14 07:11 J -29559214.29 -29559214.20 -29559214.10 0.0271 0.0188

Mercury -85642-07-11 18:42 J -29559125.85 -29559125.72 -29559125.59 0.0271 0.0098

Mercury -85642-10-08 06:13 J -29559037.38 -29559037.24 -29559037.10 0.0270 0.0007

Mercury -85641-01-04 17:44 J -29558948.89 -29558948.76 -29558948.62 0.0270 0.0086

Moon -85641-03-01 04:18 J -29558892.37 -29558892.32 -29558892.26 0.0270 0.0262

Earth -85641-03-01 06:56 J -29558892.23 -29558892.21 -29558892.17 0.0270 0.0267

Mercury -85641-04-02 05:44 J -29558860.37 -29558860.26 -29558860.16 0.0270 0.0178

Mars -85633-01-01 03:49 J -29556030.49 -29556030.34 -29556030.14 0.0276 0.0232

Earth -85630-07-15 17:16 J -29554738.98 -29554738.78 -29554738.56 0.0284 0.0162

Moon -85630-07-15 17:01 J -29554738.97 -29554738.79 -29554738.59 0.0284 0.0177 \*

Earth -85629-07-29 05:59 J -29554359.50 -29554359.25 -29554358.99 0.0286 0.0025

Moon -85629-07-29 08:37 J -29554359.38 -29554359.14 -29554358.89 0.0286 0.0039 \*

Earth -85628-08-13 00:13 J -29553979.71 -29553979.49 -29553979.25 0.0288 0.0117  
 Moon -85628-08-13 04:18 J -29553979.56 -29553979.32 -29553979.09 0.0288 0.0105 \*  
 Venus -85627-05-01 14:23 J -29553718.09 -29553717.90 -29553717.71 0.0289 0.0138  
 Mercury -85627-05-11 17:59 J -29553707.83 -29553707.75 -29553707.66 0.0289 0.0252  
 Mercury -85627-08-08 16:04 J -29553618.99 -29553618.83 -29553618.67 0.0289 0.0106  
 Earth -85627-08-27 22:04 J -29553599.69 -29553599.58 -29553599.46 0.0289 0.0255  
 Moon -85627-08-28 00:28 J -29553599.60 -29553599.48 -29553599.34 0.0289 0.0247 \*  
 Mercury -85627-11-05 13:40 J -29553530.10 -29553529.93 -29553529.76 0.0289 0.0037  
 Mercury -85626-02-02 10:47 J -29553441.18 -29553441.05 -29553440.91 0.0289 0.0178  
 Mars -85619-01-21 06:56 J -29550896.40 -29550896.21 -29550895.99 0.0283 0.0184  
 Earth -85616-01-09 15:06 J -29549812.00 -29549811.87 -29549811.70 0.0276 0.0215  
 Moon -85616-01-09 17:59 J -29549811.90 -29549811.75 -29549811.58 0.0276 0.0199 \*  
 Earth -85615-01-21 14:23 J -29549435.12 -29549434.90 -29549434.68 0.0274 0.0102  
 Moon -85615-01-21 17:16 J -29549435.01 -29549434.78 -29549434.55 0.0274 0.0091 \*  
 Moon -85614-02-02 05:30 J -29549058.52 -29549058.27 -29549058.03 0.0272 0.0005  
 Earth -85614-02-02 07:54 J -29549058.41 -29549058.17 -29549057.93 0.0272 0.0011 \*  
 Moon -85613-02-13 18:56 J -29548681.92 -29548681.71 -29548681.49 0.0271 0.0106  
 Earth -85613-02-13 21:49 J -29548681.80 -29548681.59 -29548681.38 0.0271 0.0120 \*  
 Venus -85613-02-27 02:52 J -29548668.52 -29548668.38 -29548668.23 0.0271 0.0189  
 Mercury -85613-08-31 08:37 J -29548482.21 -29548482.14 -29548482.06 0.0271 0.0220  
 Venus -85613-10-13 01:25 J -29548439.61 -29548439.44 -29548439.26 0.0270 0.0144  
 Mercury -85613-11-27 19:54 J -29548393.78 -29548393.67 -29548393.55 0.0270 0.0131  
 Mercury -85612-02-24 07:25 J -29548305.33 -29548305.19 -29548305.05 0.0270 0.0041  
 Earth -85612-02-24 09:20 J -29548305.24 -29548305.11 -29548304.98 0.0270 0.0224 \*  
 Moon -85612-02-24 11:16 J -29548305.16 -29548305.03 -29548304.88 0.0270 0.0213 \*  
 Mercury -85612-05-23 18:56 J -29548216.84 -29548216.71 -29548216.57 0.0270 0.0051  
 Mercury -85612-08-20 06:42 J -29548128.34 -29548128.22 -29548128.10 0.0270 0.0143  
 Mercury -85612-11-16 18:42 J -29548039.79 -29548039.72 -29548039.66 0.0270 0.0237  
 Mars -85605-02-09 21:20 J -29545763.87 -29545763.61 -29545763.32 0.0274 0.0151  
 Moon -85601-07-08 06:56 J -29544153.35 -29544153.21 -29544153.06 0.0283 0.0234



Earth	-85601-07-08 07:40 J	-29544153.33	-29544153.18	-29544153.01	0.0283	0.0221	*
Moon	-85600-07-22 13:40 J	-29543774.16	-29543773.93	-29543773.69	0.0285	0.0103	
Earth	-85600-07-22 17:16 J	-29543774.01	-29543773.78	-29543773.53	0.0285	0.0091	*
Moon	-85599-08-06 05:59 J	-29543394.50	-29543394.25	-29543394.01	0.0287	0.0039	
Earth	-85599-08-06 09:35 J	-29543394.35	-29543394.10	-29543393.85	0.0287	0.0050	*
Venus	-85598-03-26 12:42 J	-29543162.06	-29543161.97	-29543161.86	0.0288	0.0253	
Moon	-85598-08-21 04:32 J	-29543014.49	-29543014.31	-29543014.11	0.0288	0.0184	
Earth	-85598-08-21 05:59 J	-29543014.42	-29543014.25	-29543014.05	0.0288	0.0191	*
Venus	-85598-11-11 15:06 J	-29542932.04	-29542931.87	-29542931.70	0.0288	0.0178	
Mercury	-85598-12-26 12:28 J	-29542887.12	-29542886.98	-29542886.83	0.0289	0.0163	
Mercury	-85597-03-24 10:18 J	-29542798.24	-29542798.07	-29542797.90	0.0289	0.0019	
Mercury	-85597-06-21 07:40 J	-29542709.33	-29542709.18	-29542709.02	0.0289	0.0123	
Mercury	-85597-09-18 04:32 J	-29542620.38	-29542620.31	-29542620.24	0.0289	0.0262	
Mars	-85591-03-14 01:11 J	-29540617.67	-29540617.45	-29540617.21	0.0286	0.0141	
Moon	-85587-01-04 13:11 J	-29539225.06	-29539224.95	-29539224.83	0.0278	0.0243	
Earth	-85587-01-04 15:49 J	-29539224.92	-29539224.84	-29539224.74	0.0278	0.0258	*
Moon	-85586-01-16 15:20 J	-29538848.06	-29538847.86	-29538847.65	0.0276	0.0133	
Earth	-85586-01-16 18:28 J	-29538847.92	-29538847.73	-29538847.52	0.0276	0.0147	*
Earth	-85585-01-28 15:06 J	-29538471.11	-29538470.87	-29538470.63	0.0274	0.0034	
Moon	-85585-01-28 16:47 J	-29538471.03	-29538470.80	-29538470.57	0.0274	0.0032	*
Earth	-85584-02-08 07:11 J	-29538094.43	-29538094.20	-29538093.97	0.0272	0.0077	
Moon	-85584-02-08 10:04 J	-29538094.31	-29538094.08	-29538093.84	0.0272	0.0065	*
Venus	-85584-09-08 07:54 J	-29537882.34	-29537882.17	-29537881.99	0.0272	0.0140	
Mercury	-85583-01-18 11:30 J	-29537750.07	-29537750.02	-29537749.95	0.0271	0.0243	
Moon	-85583-02-19 18:28 J	-29537717.92	-29537717.73	-29537717.54	0.0271	0.0167	
Earth	-85583-02-19 20:23 J	-29537717.83	-29537717.65	-29537717.48	0.0271	0.0182	*
Mercury	-85583-04-16 23:01 J	-29537661.65	-29537661.54	-29537661.43	0.0271	0.0153	
Venus	-85583-04-25 06:42 J	-29537653.36	-29537653.22	-29537653.07	0.0271	0.0195	
Mercury	-85583-07-14 10:18 J	-29537573.20	-29537573.07	-29537572.93	0.0271	0.0063	
Mercury	-85583-10-10 22:04 J	-29537484.72	-29537484.58	-29537484.45	0.0270	0.0031	

Mercury -85582-01-07 09:35 J -29537396.22 -29537396.10 -29537395.97 0.0270 0.0122

Mercury -85582-04-05 21:20 J -29537307.68 -29537307.61 -29537307.52 0.0270 0.0216

Mars -85575-04-03 23:59 J -29534752.82 -29534752.50 -29534752.18 0.0275 0.0048

Earth -85572-07-02 14:23 J -29533566.96 -29533566.90 -29533566.81 0.0282 0.0268

Earth -85571-07-16 20:08 J -29533187.87 -29533187.66 -29533187.44 0.0284 0.0144

Moon -85571-07-16 23:44 J -29533187.71 -29533187.51 -29533187.30 0.0284 0.0157 \*

Earth -85570-07-31 09:06 J -29532808.37 -29532808.12 -29532807.86 0.0286 0.0008

Moon -85570-07-31 12:28 J -29532808.23 -29532807.98 -29532807.72 0.0286 0.0019 \*

Earth -85569-08-14 03:20 J -29532428.57 -29532428.36 -29532428.13 0.0288 0.0134

Moon -85569-08-14 04:32 J -29532428.55 -29532428.31 -29532428.07 0.0288 0.0125 \*

Venus -85569-10-05 21:20 J -29532375.77 -29532375.61 -29532375.44 0.0288 0.0191

Mercury -85568-05-14 12:13 J -29532155.11 -29532154.99 -29532154.86 0.0289 0.0201

Venus -85568-05-23 23:44 J -29532145.63 -29532145.51 -29532145.39 0.0289 0.0240

Mercury -85568-08-11 10:04 J -29532066.25 -29532066.08 -29532065.90 0.0289 0.0057

Moon -85568-08-28 23:01 J -29532048.64 -29532048.54 -29532048.44 0.0289 0.0266

Earth -85568-08-29 01:11 J -29532048.54 -29532048.45 -29532048.36 0.0289 0.0270 \*

Mercury -85568-11-08 07:40 J -29531977.34 -29531977.18 -29531977.01 0.0289 0.0086

Mercury -85567-02-05 04:32 J -29531888.41 -29531888.31 -29531888.20 0.0290 0.0227

Mars -85561-04-29 23:16 J -29529612.79 -29529612.53 -29529612.26 0.0284 0.0029

Earth -85557-01-11 17:16 J -29528260.94 -29528260.78 -29528260.61 0.0276 0.0198

Moon -85557-01-11 20:08 J -29528260.83 -29528260.66 -29528260.47 0.0276 0.0183 \*

Moon -85556-01-22 14:37 J -29527884.12 -29527883.89 -29527883.65 0.0274 0.0078

Earth -85556-01-22 16:04 J -29527884.05 -29527883.83 -29527883.60 0.0274 0.0086 \*

Moon -85555-02-03 06:42 J -29527507.45 -29527507.22 -29527506.98 0.0272 0.0020

Earth -85555-02-03 09:49 J -29527507.33 -29527507.09 -29527506.85 0.0272 0.0027 \*

Earth -85554-02-14 23:30 J -29527130.72 -29527130.52 -29527130.31 0.0271 0.0135

Moon -85554-02-15 01:25 J -29527130.65 -29527130.44 -29527130.23 0.0271 0.0120 \*

Venus -85554-03-21 09:06 J -29527096.31 -29527096.12 -29527095.93 0.0271 0.0101

Mercury -85554-09-04 00:28 J -29526929.57 -29526929.48 -29526929.37 0.0271 0.0184

Venus -85554-11-05 07:25 J -29526867.28 -29526867.19 -29526867.07 0.0270 0.0233

Mercury -85554-12-01 11:59 J -29526841.13 -29526841.00 -29526840.87 0.0270 0.0094

Earth -85553-02-26 11:16 J -29526754.14 -29526754.03 -29526753.92 0.0270 0.0236

Moon -85553-02-26 14:23 J -29526754.02 -29526753.90 -29526753.76 0.0270 0.0226 \*

Mercury -85553-02-27 23:30 J -29526752.66 -29526752.52 -29526752.38 0.0270 0.0006

Mercury -85553-05-26 11:01 J -29526664.17 -29526664.04 -29526663.91 0.0270 0.0089

Mercury -85553-08-22 22:47 J -29526575.65 -29526575.55 -29526575.44 0.0270 0.0182

Mars -85545-05-25 17:44 J -29523742.92 -29523742.76 -29523742.57 0.0276 0.0232

Moon -85542-07-10 06:56 J -29522602.35 -29522602.21 -29522602.03 0.0283 0.0217

Earth -85542-07-10 11:01 J -29522602.21 -29522602.04 -29522601.86 0.0283 0.0203 \*

Moon -85541-07-23 18:13 J -29522222.97 -29522222.74 -29522222.50 0.0285 0.0082

Earth -85541-07-23 20:37 J -29522222.88 -29522222.64 -29522222.39 0.0285 0.0073 \*

Earth -85540-08-07 12:42 J -29521843.21 -29521842.97 -29521842.72 0.0287 0.0067

Moon -85540-08-07 13:25 J -29521843.18 -29521842.94 -29521842.70 0.0287 0.0060 \*

Venus -85539-04-17 22:18 J -29521589.75 -29521589.57 -29521589.38 0.0288 0.0151

Earth -85539-08-22 09:20 J -29521463.27 -29521463.11 -29521462.92 0.0288 0.0206

Moon -85539-08-22 12:13 J -29521463.15 -29521462.99 -29521462.80 0.0288 0.0202 \*

Mercury -85539-10-01 08:37 J -29521423.21 -29521423.14 -29521423.06 0.0288 0.0259

Venus -85539-12-04 00:42 J -29521359.52 -29521359.47 -29521359.42 0.0289 0.0280

Mercury -85539-12-29 06:42 J -29521334.38 -29521334.22 -29521334.05 0.0289 0.0113

Mercury -85538-03-28 04:32 J -29521245.49 -29521245.31 -29521245.14 0.0289 0.0031

Mercury -85538-06-25 01:40 J -29521156.56 -29521156.43 -29521156.29 0.0289 0.0172

Mars -85531-06-16 15:35 J -29518608.05 -29518607.85 -29518607.64 0.0284 0.0187

Moon -85528-01-05 14:23 J -29517674.02 -29517673.90 -29517673.76 0.0278 0.0227

Earth -85528-01-05 17:16 J -29517673.88 -29517673.78 -29517673.65 0.0278 0.0242 \*

Earth -85527-01-17 19:54 J -29517296.87 -29517296.67 -29517296.45 0.0276 0.0131

Moon -85527-01-17 21:20 J -29517296.81 -29517296.61 -29517296.40 0.0276 0.0119 \*

Earth -85526-01-29 16:32 J -29516920.05 -29516919.81 -29516919.57 0.0274 0.0017

Moon -85526-01-29 20:08 J -29516919.90 -29516919.66 -29516919.42 0.0274 0.0017 \*

Moon -85525-02-10 07:25 J -29516543.42 -29516543.19 -29516542.95 0.0272 0.0079

Earth -85525-02-10 08:52 J -29516543.36 -29516543.13 -29516542.91 0.0272 0.0093 \*

Venus -85525-09-30 14:08 J -29516310.11 -29516309.91 -29516309.71 0.0272 0.0052  
 Mercury -85524-01-21 03:20 J -29516197.44 -29516197.36 -29516197.27 0.0271 0.0206  
 Moon -85524-02-20 18:28 J -29516166.90 -29516166.73 -29516166.55 0.0271 0.0183  
 Earth -85524-02-20 21:49 J -29516166.74 -29516166.59 -29516166.42 0.0271 0.0197 \*  
 Mercury -85524-04-19 14:52 J -29516109.01 -29516108.88 -29516108.76 0.0271 0.0116  
 Mercury -85524-07-17 02:23 J -29516020.54 -29516020.40 -29516020.27 0.0271 0.0026  
 Mercury -85524-10-13 13:54 J -29515932.05 -29515931.92 -29515931.78 0.0270 0.0068  
 Mercury -85523-01-10 01:40 J -29515843.54 -29515843.43 -29515843.32 0.0270 0.0161  
 Mercury -85523-04-08 13:25 J -29515754.97 -29515754.94 -29515754.89 0.0270 0.0255  
 Mars -85517-07-06 02:08 J -29513474.69 -29513474.41 -29513474.12 0.0273 0.0132  
 Earth -85513-07-03 19:25 J -29512015.78 -29512015.69 -29512015.56 0.0282 0.0251  
 Moon -85513-07-03 23:30 J -29512015.60 -29512015.52 -29512015.44 0.0282 0.0266 \*  
 Earth -85512-07-18 01:25 J -29511636.65 -29511636.44 -29511636.20 0.0284 0.0126  
 Moon -85512-07-18 03:35 J -29511636.57 -29511636.35 -29511636.11 0.0284 0.0138 \*  
 Moon -85511-08-01 13:40 J -29511257.20 -29511256.93 -29511256.67 0.0286 0.0006  
 Earth -85511-08-01 14:52 J -29511257.13 -29511256.88 -29511256.62 0.0286 0.0012 \*  
 Moon -85510-08-16 05:44 J -29510877.47 -29510877.26 -29510877.03 0.0288 0.0147  
 Earth -85510-08-16 09:20 J -29510877.32 -29510877.11 -29510876.89 0.0288 0.0151 \*  
 Venus -85510-10-29 08:23 J -29510803.36 -29510803.15 -29510802.94 0.0288 0.0084  
 Mercury -85509-05-17 07:11 J -29510602.35 -29510602.20 -29510602.04 0.0289 0.0146  
 Mercury -85509-08-14 05:01 J -29510513.46 -29510513.29 -29510513.11 0.0289 0.0002  
 Moon -85509-08-30 03:06 J -29510497.41 -29510497.37 -29510497.31 0.0289 0.0283  
 Earth -85509-08-30 06:42 J -29510497.24 -29510497.22 -29510497.17 0.0289 0.0285  
 Mercury -85509-11-11 02:23 J -29510424.55 -29510424.40 -29510424.25 0.0289 0.0140  
 Mercury -85508-02-07 23:16 J -29510335.57 -29510335.53 -29510335.49 0.0290 0.0279  
 Mars -85503-08-07 16:47 J -29508329.04 -29508328.80 -29508328.56 0.0286 0.0129  
 Moon -85500-12-31 18:13 J -29507086.75 -29507086.74 -29507086.72 0.0278 0.0278  
 Moon -85498-01-12 18:42 J -29506709.91 -29506709.72 -29506709.52 0.0276 0.0168  
 Earth -85498-01-12 20:23 J -29506709.83 -29506709.65 -29506709.47 0.0276 0.0182 \*  
 Moon -85497-01-24 15:20 J -29506333.09 -29506332.86 -29506332.63 0.0274 0.0064

Earth -85497-01-24 18:56 J -29506332.94 -29506332.71 -29506332.47 0.0274 0.0069 \*  
 Earth -85496-02-04 12:28 J -29505956.21 -29505955.98 -29505955.74 0.0272 0.0044  
 Moon -85496-02-04 13:11 J -29505956.18 -29505955.95 -29505955.72 0.0272 0.0035 \*  
 Earth -85495-02-16 02:37 J -29505579.59 -29505579.39 -29505579.19 0.0271 0.0150  
 Moon -85495-02-16 05:59 J -29505579.45 -29505579.25 -29505579.04 0.0271 0.0135 \*  
 Venus -85495-04-12 16:04 J -29505524.04 -29505523.83 -29505523.63 0.0271 0.0011  
 Mercury -85495-06-10 05:16 J -29505465.34 -29505465.28 -29505465.21 0.0271 0.0234  
 Mercury -85495-09-06 16:47 J -29505376.92 -29505376.80 -29505376.69 0.0271 0.0145  
 Mercury -85495-12-04 04:04 J -29505288.46 -29505288.33 -29505288.19 0.0270 0.0054  
 Moon -85494-02-27 13:25 J -29505203.03 -29505202.94 -29505202.82 0.0270 0.0243  
 Earth -85494-02-27 14:08 J -29505202.99 -29505202.91 -29505202.81 0.0270 0.0250 \*  
 Mercury -85494-03-02 15:35 J -29505199.99 -29505199.85 -29505199.71 0.0270 0.0038  
 Mercury -85494-05-30 03:20 J -29505111.48 -29505111.36 -29505111.24 0.0270 0.0130  
 Mercury -85494-08-26 15:06 J -29505022.94 -29505022.87 -29505022.79 0.0270 0.0224  
 Mars -85487-08-27 23:16 J -29502464.84 -29502464.53 -29502464.20 0.0275 0.0053  
 Moon -85483-07-11 15:35 J -29501051.02 -29501050.85 -29501050.67 0.0283 0.0197  
 Earth -85483-07-11 17:01 J -29501050.97 -29501050.79 -29501050.59 0.0283 0.0185 \*  
 Earth -85482-07-26 03:06 J -29500671.62 -29500671.37 -29500671.12 0.0285 0.0053  
 Moon -85482-07-26 05:16 J -29500671.52 -29500671.28 -29500671.04 0.0285 0.0060 \*  
 Earth -85481-08-08 19:11 J -29500291.93 -29500291.70 -29500291.45 0.0287 0.0086  
 Moon -85481-08-08 23:16 J -29500291.77 -29500291.53 -29500291.28 0.0287 0.0082 \*  
 Venus -85480-05-10 09:49 J -29500017.31 -29500017.09 -29500016.87 0.0288 0.0043  
 Earth -85480-08-23 15:49 J -29499911.99 -29499911.84 -29499911.67 0.0288 0.0223  
 Moon -85480-08-23 18:56 J -29499911.86 -29499911.71 -29499911.53 0.0288 0.0222 \*  
 Mercury -85480-10-04 03:49 J -29499870.46 -29499870.34 -29499870.21 0.0288 0.0202  
 Mercury -85479-01-01 01:54 J -29499781.59 -29499781.42 -29499781.25 0.0289 0.0057  
 Mercury -85479-03-30 23:16 J -29499692.69 -29499692.53 -29499692.36 0.0289 0.0086  
 Mercury -85479-06-27 20:23 J -29499603.75 -29499603.65 -29499603.54 0.0289 0.0226  
 Mars -85473-09-23 08:08 J -29497324.43 -29497324.16 -29497323.90 0.0285 0.0033  
 Earth -85469-01-07 19:40 J -29496122.81 -29496122.68 -29496122.53 0.0278 0.0226

Moon -85469-01-07 20:37 J -29496122.77 -29496122.64 -29496122.48 0.0278 0.0213 \*  
 Earth -85468-01-18 22:18 J -29495745.78 -29495745.57 -29495745.35 0.0276 0.0114  
 Moon -85468-01-19 02:08 J -29495745.63 -29495745.41 -29495745.19 0.0276 0.0104 \*  
 Moon -85467-01-30 19:11 J -29495368.95 -29495368.70 -29495368.46 0.0274 0.0005  
 Earth -85467-01-30 19:11 J -29495368.94 -29495368.70 -29495368.47 0.0274 0.0004 \*  
 Moon -85466-02-11 07:54 J -29494992.39 -29494992.17 -29494991.94 0.0272 0.0094  
 Earth -85466-02-11 11:16 J -29494992.24 -29494992.03 -29494991.81 0.0272 0.0109 \*  
 Venus -85466-10-23 20:52 J -29494737.84 -29494737.63 -29494737.43 0.0272 0.0038  
 Mercury -85466-10-28 08:08 J -29494733.19 -29494733.16 -29494733.12 0.0272 0.0258  
 Mercury -85465-01-24 19:25 J -29494644.79 -29494644.69 -29494644.58 0.0271 0.0168  
 Earth -85465-02-23 00:28 J -29494615.62 -29494615.48 -29494615.32 0.0271 0.0211  
 Moon -85465-02-23 00:56 J -29494615.60 -29494615.46 -29494615.30 0.0271 0.0202 \*  
 Mercury -85465-04-22 06:56 J -29494556.34 -29494556.21 -29494556.08 0.0271 0.0077  
 Mercury -85465-07-19 18:28 J -29494467.87 -29494467.73 -29494467.59 0.0271 0.0015  
 Mercury -85465-10-16 06:13 J -29494379.37 -29494379.24 -29494379.11 0.0271 0.0108  
 Mercury -85464-01-12 17:59 J -29494290.84 -29494290.75 -29494290.66 0.0270 0.0201  
 Mars -85457-10-20 05:30 J -29491453.37 -29491453.27 -29491453.13 0.0276 0.0255  
 Earth -85454-07-06 03:06 J -29490464.50 -29490464.37 -29490464.22 0.0282 0.0233  
 Moon -85454-07-06 04:47 J -29490464.41 -29490464.30 -29490464.16 0.0282 0.0247 \*  
 Moon -85453-07-19 07:11 J -29490085.43 -29490085.20 -29490084.96 0.0284 0.0116  
 Earth -85453-07-19 09:20 J -29490085.33 -29490085.11 -29490084.87 0.0284 0.0107 \*  
 Moon -85452-08-02 19:11 J -29489705.95 -29489705.70 -29489705.45 0.0286 0.0026  
 Earth -85452-08-02 23:01 J -29489705.79 -29489705.54 -29489705.29 0.0286 0.0030 \*  
 Moon -85451-08-17 15:06 J -29489326.06 -29489325.87 -29489325.66 0.0288 0.0168  
 Earth -85451-08-17 17:44 J -29489325.96 -29489325.76 -29489325.55 0.0288 0.0169 \*  
 Venus -85451-11-20 20:52 J -29489230.85 -29489230.63 -29489230.42 0.0288 0.0028  
 Mercury -85450-02-21 04:47 J -29489138.40 -29489138.30 -29489138.19 0.0289 0.0233  
 Mercury -85450-05-21 02:52 J -29489049.55 -29489049.38 -29489049.21 0.0289 0.0087  
 Mercury -85450-08-18 00:28 J -29488960.65 -29488960.48 -29488960.31 0.0289 0.0057  
 Mercury -85450-11-14 21:35 J -29488871.72 -29488871.60 -29488871.47 0.0289 0.0197

Mars	-85445-11-14 11:01 J	-29487045.07	-29487045.04	-29487044.99	0.0287	0.0284
Mars	-85443-11-10 12:13 J	-29486319.17	-29486318.99	-29486318.79	0.0283	0.0202
Moon	-85440-01-01 19:40 J	-29485535.76	-29485535.68	-29485535.59	0.0278	0.0260
Earth	-85440-01-01 20:08 J	-29485535.70	-29485535.66	-29485535.62	0.0278	0.0274 *
Moon	-85439-01-13 21:49 J	-29485158.79	-29485158.59	-29485158.39	0.0276	0.0152
Earth	-85439-01-14 01:11 J	-29485158.63	-29485158.45	-29485158.25	0.0276	0.0164 *
Earth	-85438-01-25 23:44 J	-29484781.74	-29484781.51	-29484781.27	0.0274	0.0051
Moon	-85438-01-25 23:44 J	-29484781.74	-29484781.51	-29484781.28	0.0274	0.0050 *
Earth	-85437-02-06 17:16 J	-29484405.01	-29484404.78	-29484404.55	0.0272	0.0060
Moon	-85437-02-06 20:37 J	-29484404.87	-29484404.64	-29484404.40	0.0272	0.0050 *
Venus	-85437-09-18 00:42 J	-29484180.53	-29484180.47	-29484180.38	0.0272	0.0253
Moon	-85436-02-17 07:11 J	-29484028.40	-29484028.20	-29484027.99	0.0271	0.0153
Earth	-85436-02-17 07:11 J	-29484028.38	-29484028.20	-29484028.00	0.0271	0.0166 *
Venus	-85436-05-04 23:44 J	-29483951.70	-29483951.51	-29483951.31	0.0271	0.0084
Mercury	-85436-06-12 21:49 J	-29483912.69	-29483912.59	-29483912.50	0.0271	0.0194
Mercury	-85436-09-09 09:06 J	-29483824.25	-29483824.12	-29483823.99	0.0271	0.0104
Mercury	-85436-12-06 20:37 J	-29483735.78	-29483735.64	-29483735.50	0.0270	0.0012
Moon	-85435-02-28 15:20 J	-29483651.91	-29483651.86	-29483651.79	0.0270	0.0261
Earth	-85435-02-28 19:11 J	-29483651.74	-29483651.70	-29483651.64	0.0270	0.0263
Mercury	-85435-03-05 08:08 J	-29483647.29	-29483647.16	-29483647.02	0.0270	0.0080
Mercury	-85435-06-01 19:54 J	-29483558.77	-29483558.67	-29483558.56	0.0270	0.0173
Mercury	-85435-08-29 07:54 J	-29483470.18	-29483470.17	-29483470.15	0.0270	0.0267
Mars	-85429-11-29 11:30 J	-29481186.30	-29481186.02	-29481185.72	0.0274	0.0121
Earth	-85424-07-13 02:23 J	-29479499.60	-29479499.40	-29479499.19	0.0283	0.0165
Moon	-85424-07-13 04:47 J	-29479499.48	-29479499.30	-29479499.09	0.0283	0.0178 *
Earth	-85423-07-27 12:42 J	-29479120.22	-29479119.97	-29479119.72	0.0285	0.0033
Moon	-85423-07-27 16:18 J	-29479120.07	-29479119.82	-29479119.57	0.0285	0.0040 *
Earth	-85422-08-11 05:01 J	-29478740.52	-29478740.29	-29478740.05	0.0287	0.0105
Moon	-85422-08-11 06:42 J	-29478740.46	-29478740.22	-29478739.98	0.0287	0.0104 *
Venus	-85421-06-01 23:01 J	-29478444.75	-29478444.54	-29478444.32	0.0288	0.0072

Mercury -85421-07-10 01:40 J -29478406.44 -29478406.43 -29478406.41 0.0288 0.0287

Moon -85421-08-24 23:59 J -29478360.63 -29478360.50 -29478360.35 0.0288 0.0243

Earth -85421-08-25 01:40 J -29478360.56 -29478360.43 -29478360.29 0.0288 0.0241 \*

Mercury -85421-10-06 23:59 J -29478317.66 -29478317.50 -29478317.35 0.0288 0.0141

Mercury -85420-01-03 21:49 J -29478228.77 -29478228.59 -29478228.42 0.0289 0.0008

Mercury -85420-04-02 18:56 J -29478139.85 -29478139.71 -29478139.56 0.0289 0.0146

Mercury -85420-06-30 16:04 J -29478050.86 -29478050.83 -29478050.80 0.0289 0.0284

Mars -85414-01-01 03:20 J -29476040.60 -29476040.36 -29476040.12 0.0286 0.0121

Earth -85410-01-08 23:59 J -29474571.64 -29474571.50 -29474571.33 0.0278 0.0210

Moon -85410-01-09 03:35 J -29474571.51 -29474571.35 -29474571.18 0.0278 0.0195 \*

Moon -85409-01-21 02:37 J -29474194.62 -29474194.39 -29474194.15 0.0276 0.0091

Earth -85409-01-21 02:23 J -29474194.61 -29474194.40 -29474194.17 0.0276 0.0097 \*

Moon -85408-01-31 19:40 J -29473817.92 -29473817.68 -29473817.45 0.0274 0.0010

Earth -85408-01-31 23:16 J -29473817.77 -29473817.53 -29473817.30 0.0274 0.0016 \*

Moon -85407-02-12 14:37 J -29473441.10 -29473440.89 -29473440.68 0.0273 0.0112

Earth -85407-02-12 15:20 J -29473441.07 -29473440.86 -29473440.64 0.0273 0.0125 \*

Venus -85407-03-31 05:01 J -29473394.41 -29473394.29 -29473394.15 0.0272 0.0207

Mercury -85407-10-31 00:28 J -29473180.56 -29473180.48 -29473180.40 0.0272 0.0218

Venus -85407-11-15 04:18 J -29473165.50 -29473165.32 -29473165.13 0.0272 0.0131

Mercury -85406-01-27 11:44 J -29473092.13 -29473092.01 -29473091.89 0.0271 0.0128

Earth -85406-02-24 04:32 J -29473064.43 -29473064.31 -29473064.17 0.0271 0.0226

Moon -85406-02-24 08:08 J -29473064.29 -29473064.16 -29473064.01 0.0271 0.0218 \*

Mercury -85406-04-25 23:16 J -29473003.67 -29473003.53 -29473003.39 0.0271 0.0036

Mercury -85406-07-23 10:47 J -29472915.18 -29472915.05 -29472914.91 0.0271 0.0057

Mercury -85406-10-19 22:32 J -29472826.67 -29472826.56 -29472826.44 0.0271 0.0150

Mercury -85405-01-16 10:32 J -29472738.12 -29472738.06 -29472738.00 0.0270 0.0244

Mars -85398-01-22 18:13 J -29470175.04 -29470174.74 -29470174.42 0.0275 0.0082

Moon -85395-07-07 10:47 J -29468913.19 -29468913.05 -29468912.89 0.0282 0.0228

Earth -85395-07-07 13:54 J -29468913.07 -29468912.92 -29468912.75 0.0282 0.0214 \*

Moon -85394-07-21 17:01 J -29468534.02 -29468533.79 -29468533.55 0.0284 0.0098



Earth -85394-07-21 20:37 J -29468533.87 -29468533.64 -29468533.39 0.0284 0.0088 \*  
 Moon -85393-08-04 09:35 J -29468154.34 -29468154.10 -29468153.86 0.0286 0.0046  
 Earth -85393-08-04 10:32 J -29468154.31 -29468154.06 -29468153.81 0.0286 0.0050 \*  
 Venus -85392-04-27 09:06 J -29467888.14 -29467888.12 -29467888.07 0.0288 0.0283  
 Earth -85392-08-19 05:16 J -29467774.46 -29467774.28 -29467774.08 0.0288 0.0188  
 Moon -85392-08-19 07:25 J -29467774.36 -29467774.19 -29467774.00 0.0288 0.0190 \*  
 Venus -85392-12-13 11:01 J -29467658.21 -29467658.04 -29467657.84 0.0288 0.0149  
 Mercury -85391-02-24 01:25 J -29467585.58 -29467585.44 -29467585.29 0.0289 0.0167  
 Mercury -85391-05-23 23:16 J -29467496.70 -29467496.53 -29467496.35 0.0289 0.0023  
 Mercury -85391-08-20 20:52 J -29467407.79 -29467407.63 -29467407.48 0.0289 0.0121  
 Mercury -85391-11-17 17:30 J -29467318.83 -29467318.77 -29467318.69 0.0289 0.0261  
 Mars -85384-02-17 12:28 J -29465035.24 -29465034.98 -29465034.72 0.0285 0.0053  
 Moon -85381-01-03 23:01 J -29463984.65 -29463984.54 -29463984.42 0.0278 0.0242  
 Earth -85381-01-04 02:23 J -29463984.47 -29463984.40 -29463984.30 0.0278 0.0258 \*  
 Moon -85380-01-15 06:42 J -29463607.41 -29463607.22 -29463607.01 0.0276 0.0137  
 Earth -85380-01-15 07:11 J -29463607.39 -29463607.20 -29463606.98 0.0276 0.0148 \*  
 Earth -85379-01-27 05:44 J -29463230.49 -29463230.26 -29463230.02 0.0274 0.0034  
 Moon -85379-01-27 09:20 J -29463230.34 -29463230.11 -29463229.87 0.0274 0.0036 \*  
 Earth -85378-02-07 23:16 J -29462853.76 -29462853.53 -29462853.30 0.0272 0.0076  
 Moon -85378-02-08 00:42 J -29462853.71 -29462853.47 -29462853.23 0.0272 0.0064 \*  
 Venus -85378-10-11 09:35 J -29462608.26 -29462608.10 -29462607.93 0.0272 0.0156  
 Moon -85377-02-19 09:49 J -29462477.27 -29462477.09 -29462476.89 0.0271 0.0169  
 Earth -85377-02-19 13:11 J -29462477.12 -29462476.95 -29462476.76 0.0271 0.0181 \*  
 Mercury -85377-03-19 03:06 J -29462448.43 -29462448.37 -29462448.31 0.0271 0.0241  
 Venus -85377-05-27 08:23 J -29462379.29 -29462379.15 -29462378.99 0.0271 0.0181  
 Mercury -85377-06-15 14:23 J -29462360.01 -29462359.90 -29462359.78 0.0271 0.0151  
 Mercury -85377-09-12 01:54 J -29462271.56 -29462271.42 -29462271.29 0.0271 0.0060  
 Mercury -85377-12-09 13:25 J -29462183.08 -29462182.94 -29462182.80 0.0270 0.0032  
 Mercury -85376-03-08 00:56 J -29462094.58 -29462094.46 -29462094.33 0.0270 0.0125  
 Mercury -85376-06-04 12:56 J -29462006.04 -29462005.96 -29462005.88 0.0270 0.0218

Mars	-85368-03-15 22:32 J	-29459164.62	-29459164.56	-29459164.47	0.0276	0.0269
Earth	-85366-07-01 11:59 J	-29458327.07	-29458327.00	-29458326.90	0.0281	0.0264
Moon	-85366-07-01 15:20 J	-29458326.87	-29458326.86	-29458326.81	0.0281	0.0279
Earth	-85365-07-14 14:37 J	-29457948.11	-29457947.89	-29457947.67	0.0283	0.0144
Moon	-85365-07-14 17:59 J	-29457947.95	-29457947.75	-29457947.53	0.0283	0.0157 *
Earth	-85364-07-29 01:11 J	-29457568.71	-29457568.45	-29457568.20	0.0285	0.0013
Moon	-85364-07-29 01:40 J	-29457568.69	-29457568.43	-29457568.17	0.0285	0.0017 *
Moon	-85363-08-12 14:37 J	-29457189.11	-29457188.89	-29457188.64	0.0287	0.0128
Earth	-85363-08-12 17:44 J	-29457188.98	-29457188.76	-29457188.53	0.0287	0.0125 *
Venus	-85363-11-07 11:44 J	-29457102.12	-29457102.01	-29457101.88	0.0287	0.0238
Venus	-85362-06-25 13:54 J	-29456872.07	-29456871.92	-29456871.75	0.0288	0.0193
Mercury	-85362-07-13 22:32 J	-29456853.67	-29456853.56	-29456853.44	0.0288	0.0220
Moon	-85362-08-27 10:18 J	-29456809.16	-29456809.07	-29456808.96	0.0288	0.0265
Earth	-85362-08-27 14:23 J	-29456809.01	-29456808.90	-29456808.79	0.0288	0.0259 *
Mercury	-85362-10-10 20:37 J	-29456764.81	-29456764.64	-29456764.47	0.0288	0.0074
Mercury	-85361-01-07 18:13 J	-29456675.91	-29456675.74	-29456675.57	0.0289	0.0069
Mercury	-85361-04-05 15:20 J	-29456586.97	-29456586.86	-29456586.74	0.0289	0.0210
Mars	-85356-04-10 01:25 J	-29454756.52	-29454756.44	-29454756.35	0.0287	0.0272
Mars	-85354-04-06 03:49 J	-29454030.51	-29454030.34	-29454030.16	0.0284	0.0214
Earth	-85351-01-10 06:28 J	-29453020.39	-29453020.23	-29453020.05	0.0278	0.0193
Moon	-85351-01-10 07:40 J	-29453020.35	-29453020.18	-29453019.98	0.0278	0.0179 *
Moon	-85350-01-22 05:16 J	-29452643.51	-29452643.28	-29452643.05	0.0276	0.0078
Earth	-85350-01-22 08:37 J	-29452643.37	-29452643.14	-29452642.91	0.0276	0.0080 *
Moon	-85349-02-03 03:20 J	-29452266.59	-29452266.36	-29452266.13	0.0274	0.0024
Earth	-85349-02-03 05:01 J	-29452266.53	-29452266.29	-29452266.06	0.0274	0.0033 *
Earth	-85348-02-13 21:06 J	-29451889.82	-29451889.62	-29451889.42	0.0273	0.0141
Moon	-85348-02-13 23:59 J	-29451889.70	-29451889.50	-29451889.29	0.0273	0.0126 *
Venus	-85348-04-22 13:40 J	-29451822.11	-29451821.93	-29451821.74	0.0272	0.0110
Mercury	-85348-08-06 05:44 J	-29451716.28	-29451716.26	-29451716.23	0.0272	0.0266
Mercury	-85348-11-02 17:01 J	-29451627.89	-29451627.79	-29451627.69	0.0272	0.0176

Venus -85348-12-07 12:56 J -29451593.07 -29451592.96 -29451592.85 0.0272 0.0228

Mercury -85347-01-30 04:18 J -29451539.44 -29451539.32 -29451539.18 0.0271 0.0086

Earth -85347-02-25 10:18 J -29451513.17 -29451513.07 -29451512.95 0.0271 0.0241

Moon -85347-02-25 11:59 J -29451513.12 -29451513.00 -29451512.88 0.0271 0.0234 \*

Mercury -85347-04-28 16:04 J -29451450.97 -29451450.83 -29451450.69 0.0271 0.0009

Mercury -85347-07-26 03:35 J -29451362.48 -29451362.35 -29451362.22 0.0271 0.0101

Mercury -85347-10-22 15:20 J -29451273.95 -29451273.86 -29451273.76 0.0271 0.0195

Mars -85340-04-26 10:04 J -29448896.38 -29448896.08 -29448895.77 0.0274 0.0090

Moon -85336-07-08 23:01 J -29447361.69 -29447361.54 -29447361.36 0.0282 0.0209

Earth -85336-07-09 02:23 J -29447361.57 -29447361.40 -29447361.21 0.0282 0.0195 \*

Moon -85335-07-23 09:35 J -29446982.33 -29446982.10 -29446981.86 0.0284 0.0075

Earth -85335-07-23 10:04 J -29446982.33 -29446982.08 -29446981.83 0.0284 0.0067 \*

Earth -85334-08-07 00:13 J -29446602.73 -29446602.49 -29446602.24 0.0286 0.0070

Moon -85334-08-07 03:06 J -29446602.61 -29446602.37 -29446602.13 0.0286 0.0068 \*

Venus -85333-05-20 01:11 J -29446315.63 -29446315.45 -29446315.27 0.0288 0.0159

Earth -85333-08-20 19:11 J -29446222.86 -29446222.70 -29446222.51 0.0288 0.0208

Moon -85333-08-20 23:16 J -29446222.70 -29446222.53 -29446222.36 0.0288 0.0209 \*

Mercury -85333-11-30 00:28 J -29446121.57 -29446121.48 -29446121.38 0.0288 0.0244

Venus -85332-01-05 03:06 J -29446085.43 -29446085.37 -29446085.29 0.0289 0.0273

Mercury -85332-02-26 22:32 J -29446032.72 -29446032.56 -29446032.39 0.0289 0.0098

Mercury -85332-05-26 20:23 J -29445943.82 -29445943.65 -29445943.48 0.0289 0.0047

Mercury -85332-08-23 17:30 J -29445854.89 -29445854.77 -29445854.64 0.0289 0.0188

Mars -85326-05-28 16:32 J -29443751.05 -29443750.81 -29443750.55 0.0286 0.0097

Moon -85322-01-05 09:20 J -29442433.23 -29442433.11 -29442432.96 0.0278 0.0226

Earth -85322-01-05 11:01 J -29442433.15 -29442433.04 -29442432.91 0.0278 0.0240 \*

Earth -85321-01-17 15:20 J -29442056.07 -29442055.86 -29442055.65 0.0276 0.0129

Moon -85321-01-17 18:13 J -29442055.95 -29442055.74 -29442055.52 0.0276 0.0120 \*

Earth -85320-01-28 13:25 J -29441679.18 -29441678.94 -29441678.70 0.0274 0.0017

Moon -85320-01-28 15:20 J -29441679.11 -29441678.86 -29441678.62 0.0274 0.0021 \*

Moon -85319-02-09 03:35 J -29441302.57 -29441302.35 -29441302.11 0.0272 0.0079

Earth -85319-02-09 06:42 J -29441302.44 -29441302.22 -29441301.99 0.0272 0.0093 \*  
 Venus -85319-11-02 19:11 J -29441035.90 -29441035.70 -29441035.50 0.0271 0.0056  
 Moon -85318-02-20 18:28 J -29440925.89 -29440925.73 -29440925.56 0.0271 0.0185  
 Earth -85318-02-20 20:37 J -29440925.80 -29440925.64 -29440925.48 0.0271 0.0196 \*  
 Mercury -85318-03-22 19:54 J -29440895.76 -29440895.67 -29440895.57 0.0271 0.0196  
 Mercury -85318-06-19 07:11 J -29440807.32 -29440807.20 -29440807.07 0.0271 0.0106  
 Mercury -85318-09-15 18:42 J -29440718.86 -29440718.72 -29440718.58 0.0270 0.0016  
 Mercury -85318-12-13 06:28 J -29440630.37 -29440630.23 -29440630.10 0.0270 0.0078  
 Mercury -85317-03-10 18:13 J -29440541.85 -29440541.74 -29440541.64 0.0270 0.0172  
 Mercury -85317-06-07 05:59 J -29440453.27 -29440453.25 -29440453.22 0.0270 0.0266  
 Mars -85310-06-18 18:56 J -29437886.00 -29437885.71 -29437885.39 0.0275 0.0100  
 Earth -85307-07-03 02:23 J -29436775.52 -29436775.40 -29436775.27 0.0281 0.0245  
 Moon -85307-07-03 05:01 J -29436775.38 -29436775.29 -29436775.18 0.0281 0.0257 \*  
 Moon -85306-07-17 04:47 J -29436396.52 -29436396.30 -29436396.06 0.0283 0.0133  
 Earth -85306-07-17 05:30 J -29436396.49 -29436396.27 -29436396.04 0.0283 0.0124 \*  
 Moon -85305-07-30 13:11 J -29436017.21 -29436016.95 -29436016.69 0.0285 0.0005  
 Earth -85305-07-30 16:32 J -29436017.07 -29436016.81 -29436016.56 0.0285 0.0009 \*  
 Moon -85304-08-14 05:59 J -29435637.46 -29435637.25 -29435637.03 0.0287 0.0148  
 Earth -85304-08-14 09:20 J -29435637.32 -29435637.11 -29435636.89 0.0287 0.0146 \*  
 Venus -85304-11-30 04:47 J -29435529.50 -29435529.30 -29435529.10 0.0288 0.0112  
 Mercury -85303-07-16 20:23 J -29435300.80 -29435300.65 -29435300.50 0.0288 0.0148  
 Moon -85303-08-29 05:16 J -29435257.31 -29435257.28 -29435257.24 0.0288 0.0285  
 Earth -85303-08-29 05:59 J -29435257.31 -29435257.25 -29435257.18 0.0288 0.0278 \*  
 Mercury -85303-10-13 18:13 J -29435211.92 -29435211.74 -29435211.57 0.0289 0.0006  
 Mercury -85302-01-10 15:20 J -29435123.00 -29435122.86 -29435122.70 0.0289 0.0140  
 Mercury -85302-04-09 12:28 J -29435034.02 -29435033.98 -29435033.93 0.0289 0.0279  
 Jupiter -85299-05-21 04:18 J -29433896.76 -29433896.32 -29433895.88 0.0289 0.0078  
 Mars -85296-07-14 08:08 J -29432746.41 -29432746.16 -29432745.89 0.0285 0.0069  
 Moon -85294-12-31 07:11 J -29431846.25 -29431846.20 -29431846.12 0.0280 0.0270  
 Moon -85292-01-11 11:30 J -29431469.22 -29431469.02 -29431468.82 0.0278 0.0162

Earth -85292-01-11 14:23 J -29431469.08 -29431468.90 -29431468.71 0.0278 0.0176 \*  
 Moon -85291-01-23 13:40 J -29431092.15 -29431091.93 -29431091.70 0.0276 0.0061  
 Earth -85291-01-23 15:35 J -29431092.08 -29431091.85 -29431091.61 0.0276 0.0063 \*  
 Earth -85290-02-04 11:30 J -29430715.25 -29430715.02 -29430714.78 0.0274 0.0050  
 Moon -85290-02-04 14:23 J -29430715.13 -29430714.90 -29430714.66 0.0274 0.0038 \*  
 Earth -85289-02-16 03:35 J -29430338.54 -29430338.35 -29430338.15 0.0272 0.0156  
 Moon -85289-02-16 06:28 J -29430338.44 -29430338.23 -29430338.02 0.0272 0.0141 \*  
 Venus -85289-05-14 22:47 J -29430249.75 -29430249.55 -29430249.34 0.0272 0.0011  
 Mercury -85289-08-08 22:18 J -29430163.64 -29430163.57 -29430163.49 0.0272 0.0223  
 Mercury -85289-11-05 09:49 J -29430075.21 -29430075.09 -29430074.97 0.0272 0.0132  
 Mercury -85288-02-01 21:20 J -29429986.75 -29429986.61 -29429986.48 0.0271 0.0041  
 Moon -85288-02-26 14:23 J -29429961.99 -29429961.90 -29429961.81 0.0271 0.0252  
 Earth -85288-02-26 16:47 J -29429961.86 -29429961.80 -29429961.70 0.0271 0.0255 \*  
 Mercury -85288-05-01 08:52 J -29429898.27 -29429898.13 -29429897.99 0.0271 0.0053  
 Mercury -85288-07-28 20:37 J -29429809.76 -29429809.64 -29429809.52 0.0271 0.0146  
 Mercury -85288-10-25 08:23 J -29429721.21 -29429721.15 -29429721.08 0.0271 0.0241  
 Mars -85282-07-30 05:30 J -29427617.37 -29427617.27 -29427617.15 0.0273 0.0256  
 Earth -85277-07-10 16:18 J -29425810.01 -29425809.82 -29425809.62 0.0282 0.0176  
 Moon -85277-07-10 17:30 J -29425809.95 -29425809.77 -29425809.59 0.0282 0.0187 \*  
 Earth -85276-07-25 00:42 J -29425430.72 -29425430.47 -29425430.22 0.0285 0.0047  
 Moon -85276-07-25 04:04 J -29425430.57 -29425430.33 -29425430.08 0.0285 0.0055 \*  
 Earth -85275-08-08 15:35 J -29425051.09 -29425050.85 -29425050.61 0.0287 0.0090  
 Moon -85275-08-08 19:11 J -29425050.95 -29425050.70 -29425050.46 0.0287 0.0086 \*  
 Venus -85274-06-12 17:59 J -29424742.96 -29424742.75 -29424742.53 0.0288 0.0032  
 Earth -85274-08-23 11:01 J -29424671.19 -29424671.04 -29424670.88 0.0288 0.0226  
 Moon -85274-08-23 11:44 J -29424671.16 -29424671.01 -29424670.84 0.0288 0.0228 \*  
 Mercury -85274-12-03 22:18 J -29424568.71 -29424568.57 -29424568.43 0.0289 0.0170  
 Mercury -85273-03-01 20:08 J -29424479.83 -29424479.66 -29424479.48 0.0289 0.0025  
 Mercury -85273-05-29 17:44 J -29424390.92 -29424390.76 -29424390.60 0.0289 0.0118  
 Mercury -85273-08-26 14:37 J -29424301.96 -29424301.89 -29424301.81 0.0289 0.0258

Mars	-85268-09-04 21:20 J	-29422466.73	-29422466.61	-29422466.46	0.0287	0.0246
Mars	-85266-08-31 21:35 J	-29421740.74	-29421740.60	-29421740.46	0.0283	0.0240
Earth	-85263-01-06 20:37 J	-29420881.77	-29420881.64	-29420881.49	0.0278	0.0223
Moon	-85263-01-06 23:16 J	-29420881.67	-29420881.53	-29420881.36	0.0278	0.0207 *
Earth	-85262-01-19 00:13 J	-29420504.70	-29420504.49	-29420504.27	0.0276	0.0111
Moon	-85262-01-19 03:06 J	-29420504.59	-29420504.37	-29420504.14	0.0276	0.0101 *
Moon	-85261-01-30 19:25 J	-29420127.93	-29420127.69	-29420127.44	0.0274	0.0008
Earth	-85261-01-30 22:04 J	-29420127.82	-29420127.58	-29420127.34	0.0274	0.0002 *
Moon	-85260-02-10 12:13 J	-29419751.21	-29419750.99	-29419750.77	0.0272	0.0094
Earth	-85260-02-10 15:06 J	-29419751.09	-29419750.87	-29419750.65	0.0272	0.0110 *
Venus	-85260-11-25 05:16 J	-29419463.48	-29419463.28	-29419463.07	0.0271	0.0047
Mercury	-85260-12-27 01:40 J	-29419431.49	-29419431.43	-29419431.36	0.0271	0.0240
Earth	-85259-02-22 04:32 J	-29419374.45	-29419374.31	-29419374.15	0.0271	0.0211
Moon	-85259-02-22 06:42 J	-29419374.37	-29419374.22	-29419374.07	0.0271	0.0201 *
Mercury	-85259-03-25 12:56 J	-29419343.07	-29419342.96	-29419342.84	0.0271	0.0150
Mercury	-85259-06-22 00:28 J	-29419254.62	-29419254.48	-29419254.35	0.0271	0.0059
Mercury	-85259-09-18 11:59 J	-29419166.14	-29419166.00	-29419165.86	0.0270	0.0033
Mercury	-85259-12-15 23:30 J	-29419077.64	-29419077.52	-29419077.39	0.0270	0.0126
Mercury	-85258-03-14 11:30 J	-29418989.10	-29418989.02	-29418988.94	0.0270	0.0220
Mars	-85252-09-20 17:16 J	-29416607.09	-29416606.78	-29416606.46	0.0274	0.0068
Moon	-85248-07-04 15:20 J	-29415223.99	-29415223.86	-29415223.71	0.0281	0.0236
Earth	-85248-07-04 17:16 J	-29415223.92	-29415223.78	-29415223.62	0.0281	0.0226 *
Moon	-85247-07-18 17:16 J	-29414845.01	-29414844.78	-29414844.54	0.0284	0.0110
Earth	-85247-07-18 21:20 J	-29414844.84	-29414844.61	-29414844.37	0.0284	0.0103 *
Moon	-85246-08-02 05:44 J	-29414465.51	-29414465.26	-29414465.01	0.0286	0.0027
Earth	-85246-08-02 08:52 J	-29414465.38	-29414465.13	-29414464.88	0.0286	0.0031 *
Earth	-85245-08-16 01:54 J	-29414085.62	-29414085.42	-29414085.21	0.0287	0.0166
Moon	-85245-08-16 01:54 J	-29414085.61	-29414085.42	-29414085.22	0.0287	0.0168 *
Venus	-85245-12-22 22:18 J	-29413956.79	-29413956.57	-29413956.35	0.0288	0.0018
Mercury	-85244-04-21 20:08 J	-29413836.77	-29413836.66	-29413836.55	0.0288	0.0219

Mercury -85244-07-19 18:13 J -29413747.91 -29413747.74 -29413747.57 0.0288 0.0073

Mercury -85244-10-16 15:49 J -29413659.01 -29413658.84 -29413658.67 0.0289 0.0070

Mercury -85243-01-13 12:56 J -29413570.07 -29413569.96 -29413569.84 0.0289 0.0212

Mars -85238-10-22 15:06 J -29411462.12 -29411461.87 -29411461.61 0.0286 0.0079

Moon -85234-01-01 12:42 J -29410295.06 -29410294.97 -29410294.86 0.0279 0.0253

Earth -85234-01-01 15:35 J -29410294.89 -29410294.85 -29410294.77 0.0279 0.0270 \*

Moon -85233-01-13 20:08 J -29409917.85 -29409917.66 -29409917.45 0.0277 0.0147

Earth -85233-01-13 23:16 J -29409917.72 -29409917.53 -29409917.33 0.0277 0.0159 \*

Earth -85232-01-24 23:59 J -29409540.74 -29409540.50 -29409540.27 0.0275 0.0046

Moon -85232-01-25 01:54 J -29409540.65 -29409540.42 -29409540.20 0.0275 0.0047 \*

Earth -85231-02-05 19:11 J -29409163.92 -29409163.70 -29409163.46 0.0274 0.0066

Moon -85231-02-05 22:18 J -29409163.81 -29409163.57 -29409163.33 0.0274 0.0052 \*

Venus -85231-10-21 09:06 J -29408906.20 -29408906.12 -29408906.04 0.0273 0.0250

Moon -85230-02-17 09:06 J -29408787.32 -29408787.12 -29408786.92 0.0272 0.0157

Earth -85230-02-17 10:47 J -29408787.23 -29408787.05 -29408786.86 0.0272 0.0171 \*

Mercury -85230-05-16 03:49 J -29408699.35 -29408699.34 -29408699.31 0.0272 0.0268

Venus -85230-06-07 08:23 J -29408677.35 -29408677.15 -29408676.96 0.0272 0.0090

Mercury -85230-08-12 15:20 J -29408610.96 -29408610.86 -29408610.76 0.0272 0.0178

Mercury -85230-11-09 02:37 J -29408522.52 -29408522.39 -29408522.26 0.0271 0.0087

Mercury -85229-02-05 14:08 J -29408434.05 -29408433.91 -29408433.77 0.0271 0.0007

Moon -85229-02-28 21:06 J -29408410.66 -29408410.62 -29408410.57 0.0271 0.0265

Earth -85229-02-29 00:13 J -29408410.52 -29408410.49 -29408410.45 0.0271 0.0267

Mercury -85229-05-04 01:54 J -29408345.55 -29408345.42 -29408345.29 0.0271 0.0099

Mercury -85229-07-31 13:40 J -29408257.03 -29408256.93 -29408256.83 0.0271 0.0193

Mars -85222-11-13 19:40 J -29405595.96 -29405595.68 -29405595.39 0.0275 0.0134

Earth -85219-06-29 06:13 J -29404637.29 -29404637.24 -29404637.18 0.0280 0.0273

Earth -85218-07-13 06:56 J -29404258.41 -29404258.21 -29404257.99 0.0283 0.0157

Moon -85218-07-13 10:47 J -29404258.25 -29404258.05 -29404257.84 0.0283 0.0166 \*

Earth -85217-07-26 16:04 J -29403879.08 -29403878.83 -29403878.57 0.0285 0.0027

Moon -85217-07-26 18:56 J -29403878.97 -29403878.71 -29403878.45 0.0285 0.0032 \*

Moon -85216-08-10 07:40 J -29403499.42 -29403499.18 -29403498.93 0.0287 0.0108  
 Earth -85216-08-10 07:54 J -29403499.40 -29403499.17 -29403498.93 0.0287 0.0110 \*  
 Venus -85215-07-05 11:30 J -29403170.22 -29403170.02 -29403169.82 0.0288 0.0099  
 Moon -85215-08-25 00:56 J -29403119.59 -29403119.46 -29403119.33 0.0288 0.0248  
 Earth -85215-08-25 04:04 J -29403119.46 -29403119.33 -29403119.19 0.0288 0.0244 \*  
 Mercury -85215-09-08 21:49 J -29403104.67 -29403104.59 -29403104.48 0.0288 0.0243  
 Mercury -85215-12-06 20:08 J -29403015.82 -29403015.66 -29403015.49 0.0289 0.0096  
 Mercury -85214-03-05 17:59 J -29402926.92 -29402926.75 -29402926.58 0.0289 0.0049  
 Mercury -85214-06-02 15:06 J -29402837.99 -29402837.87 -29402837.73 0.0289 0.0191  
 Mars -85208-12-09 06:13 J -29400456.49 -29400456.24 -29400455.98 0.0285 0.0096  
 Earth -85204-01-08 06:42 J -29399330.37 -29399330.22 -29399330.05 0.0278 0.0205  
 Moon -85204-01-08 09:49 J -29399330.26 -29399330.09 -29399329.91 0.0278 0.0189 \*  
 Moon -85203-01-20 08:08 J -29398953.39 -29398953.16 -29398952.92 0.0276 0.0087  
 Earth -85203-01-20 09:35 J -29398953.32 -29398953.10 -29398952.87 0.0276 0.0093 \*  
 Moon -85202-02-01 03:35 J -29398576.58 -29398576.35 -29398576.11 0.0274 0.0011  
 Earth -85202-02-01 06:42 J -29398576.45 -29398576.22 -29398575.98 0.0274 0.0019 \*  
 Earth -85201-02-12 23:16 J -29398199.74 -29398199.53 -29398199.31 0.0272 0.0126  
 Moon -85201-02-13 00:56 J -29398199.67 -29398199.46 -29398199.25 0.0272 0.0111 \*  
 Venus -85201-05-02 16:04 J -29398119.97 -29398119.83 -29398119.68 0.0272 0.0189  
 Venus -85201-12-17 15:20 J -29397891.03 -29397890.86 -29397890.69 0.0271 0.0149  
 Mercury -85201-12-29 18:42 J -29397878.81 -29397878.72 -29397878.62 0.0271 0.0194  
 Earth -85200-02-23 12:42 J -29397823.09 -29397822.97 -29397822.83 0.0271 0.0225  
 Moon -85200-02-23 16:04 J -29397822.96 -29397822.83 -29397822.67 0.0271 0.0215 \*  
 Mercury -85200-03-28 05:59 J -29397790.37 -29397790.25 -29397790.12 0.0271 0.0104  
 Mercury -85200-06-24 17:30 J -29397701.91 -29397701.77 -29397701.63 0.0270 0.0012  
 Mercury -85200-09-21 05:01 J -29397613.42 -29397613.29 -29397613.15 0.0270 0.0081  
 Mercury -85200-12-18 16:47 J -29397524.90 -29397524.80 -29397524.69 0.0270 0.0174  
 Mercury -85199-03-17 04:32 J -29397436.31 -29397436.31 -29397436.29 0.0270 0.0269  
 Mars -85194-12-24 15:35 J -29395328.01 -29395327.85 -29395327.68 0.0273 0.0234  
 Moon -85189-07-06 04:32 J -29393672.45 -29393672.31 -29393672.14 0.0282 0.0217



Earth -85189-07-06 08:23 J -29393672.31 -29393672.15 -29393671.97 0.0282 0.0206 \*  
 Moon -85188-07-20 11:30 J -29393293.25 -29393293.02 -29393292.78 0.0284 0.0087  
 Earth -85188-07-20 13:11 J -29393293.19 -29393292.95 -29393292.70 0.0284 0.0082 \*  
 Earth -85187-08-04 01:11 J -29392913.69 -29392913.45 -29392913.19 0.0286 0.0052  
 Moon -85187-08-04 02:37 J -29392913.63 -29392913.39 -29392913.15 0.0286 0.0050 \*  
 Venus -85186-05-30 13:54 J -29392613.95 -29392613.92 -29392613.87 0.0287 0.0282  
 Earth -85186-08-18 18:42 J -29392533.90 -29392533.72 -29392533.52 0.0287 0.0186  
 Moon -85186-08-18 22:04 J -29392533.76 -29392533.58 -29392533.38 0.0287 0.0189 \*  
 Venus -85185-01-15 15:49 J -29392384.02 -29392383.84 -29392383.65 0.0288 0.0149  
 Mercury -85185-04-24 18:13 J -29392283.89 -29392283.74 -29392283.59 0.0288 0.0144  
 Mercury -85185-07-22 16:04 J -29392195.00 -29392194.83 -29392194.65 0.0289 0.0002  
 Mercury -85185-10-19 13:25 J -29392106.08 -29392105.94 -29392105.79 0.0289 0.0144  
 Mercury -85184-01-16 10:32 J -29392017.09 -29392017.06 -29392017.03 0.0289 0.0283  
 Mars -85179-01-29 20:08 J -29390177.81 -29390177.66 -29390177.49 0.0287 0.0227  
 Mars -85177-01-25 19:54 J -29389451.77 -29389451.67 -29389451.55 0.0283 0.0258  
 Moon -85175-01-02 23:16 J -29388743.65 -29388743.53 -29388743.41 0.0279 0.0237  
 Earth -85175-01-03 01:54 J -29388743.51 -29388743.42 -29388743.31 0.0279 0.0252 \*  
 Earth -85174-01-15 08:08 J -29388366.36 -29388366.16 -29388365.95 0.0277 0.0142  
 Moon -85174-01-15 09:49 J -29388366.30 -29388366.09 -29388365.89 0.0277 0.0131 \*  
 Earth -85173-01-27 08:23 J -29387989.39 -29387989.15 -29387988.92 0.0275 0.0029  
 Moon -85173-01-27 11:44 J -29387989.25 -29387989.01 -29387988.77 0.0275 0.0029 \*  
 Moon -85172-02-07 01:54 J -29387612.66 -29387612.42 -29387612.18 0.0273 0.0068  
 Earth -85172-02-07 03:06 J -29387612.59 -29387612.37 -29387612.14 0.0273 0.0082 \*  
 Venus -85172-11-12 18:42 J -29387333.89 -29387333.72 -29387333.55 0.0272 0.0148  
 Moon -85171-02-18 14:37 J -29387236.07 -29387235.89 -29387235.70 0.0272 0.0173  
 Earth -85171-02-18 17:59 J -29387235.91 -29387235.75 -29387235.56 0.0272 0.0186 \*  
 Mercury -85171-05-18 20:52 J -29387146.71 -29387146.63 -29387146.55 0.0272 0.0223  
 Venus -85171-06-29 17:59 J -29387104.90 -29387104.75 -29387104.61 0.0272 0.0191  
 Mercury -85171-08-15 08:08 J -29387058.28 -29387058.16 -29387058.04 0.0272 0.0132  
 Mercury -85171-11-11 19:40 J -29386969.82 -29386969.68 -29386969.55 0.0271 0.0041

Mercury -85170-02-08 07:11 J -29386881.34 -29386881.20 -29386881.06 0.0271 0.0052

Mercury -85170-05-07 18:56 J -29386792.83 -29386792.71 -29386792.60 0.0271 0.0146

Mercury -85170-08-04 06:42 J -29386704.28 -29386704.22 -29386704.16 0.0271 0.0240

Mars -85163-02-15 10:32 J -29384317.39 -29384317.06 -29384316.74 0.0274 0.0038

Earth -85160-06-30 18:42 J -29383085.81 -29383085.72 -29383085.61 0.0281 0.0256

Moon -85160-06-30 22:18 J -29383085.62 -29383085.57 -29383085.49 0.0281 0.0270 \*

Earth -85159-07-14 20:23 J -29382706.86 -29382706.65 -29382706.42 0.0283 0.0138

Moon -85159-07-14 22:04 J -29382706.80 -29382706.58 -29382706.35 0.0283 0.0145 \*

Moon -85158-07-29 04:18 J -29382327.58 -29382327.32 -29382327.06 0.0285 0.0009

Earth -85158-07-29 06:28 J -29382327.48 -29382327.23 -29382326.98 0.0285 0.0007 \*

Moon -85157-08-11 18:42 J -29381947.94 -29381947.72 -29381947.48 0.0287 0.0130

Earth -85157-08-11 22:47 J -29381947.77 -29381947.55 -29381947.32 0.0287 0.0129 \*

Venus -85157-12-10 01:40 J -29381827.57 -29381827.43 -29381827.27 0.0288 0.0206

Venus -85156-07-28 03:49 J -29381597.46 -29381597.34 -29381597.20 0.0288 0.0228

Moon -85156-08-26 16:18 J -29381567.91 -29381567.82 -29381567.72 0.0289 0.0265

Earth -85156-08-26 19:25 J -29381567.79 -29381567.69 -29381567.58 0.0289 0.0261 \*

Mercury -85156-09-11 19:40 J -29381551.82 -29381551.68 -29381551.53 0.0289 0.0169

Mercury -85156-12-09 17:44 J -29381462.94 -29381462.76 -29381462.59 0.0289 0.0023

Mercury -85155-03-08 15:20 J -29381374.02 -29381373.86 -29381373.70 0.0289 0.0121

Mercury -85155-06-05 12:13 J -29381285.05 -29381284.99 -29381284.91 0.0289 0.0262

Mars -85149-03-18 13:40 J -29379172.19 -29379171.93 -29379171.67 0.0286 0.0052

Moon -85145-01-10 15:20 J -29377779.04 -29377778.86 -29377778.65 0.0278 0.0174

Earth -85145-01-10 16:47 J -29377778.97 -29377778.80 -29377778.61 0.0278 0.0187 \*

Moon -85144-01-21 15:20 J -29377402.09 -29377401.86 -29377401.63 0.0276 0.0071

Earth -85144-01-21 18:56 J -29377401.93 -29377401.71 -29377401.48 0.0276 0.0076 \*

Earth -85143-02-02 15:20 J -29377025.09 -29377024.86 -29377024.62 0.0274 0.0035

Moon -85143-02-02 15:35 J -29377025.08 -29377024.85 -29377024.62 0.0274 0.0026 \*

Earth -85142-02-14 07:11 J -29376648.39 -29376648.20 -29376647.98 0.0272 0.0141

Moon -85142-02-14 11:01 J -29376648.25 -29376648.04 -29376647.83 0.0272 0.0125 \*

Venus -85142-05-26 02:08 J -29376547.60 -29376547.41 -29376547.21 0.0272 0.0086

Mercury -85142-10-06 00:28 J -29376414.54 -29376414.48 -29376414.42 0.0271 0.0238

Mercury -85141-01-02 11:44 J -29376326.13 -29376326.01 -29376325.90 0.0271 0.0148

Venus -85141-01-10 00:56 J -29376318.53 -29376318.46 -29376318.38 0.0271 0.0251

Moon -85141-02-25 20:23 J -29376271.77 -29376271.65 -29376271.52 0.0271 0.0231

Earth -85141-02-25 20:23 J -29376271.75 -29376271.65 -29376271.53 0.0271 0.0239 \*

Mercury -85141-03-30 23:01 J -29376237.67 -29376237.54 -29376237.40 0.0271 0.0057

Mercury -85141-06-27 10:32 J -29376149.20 -29376149.06 -29376148.92 0.0270 0.0035

Mercury -85141-09-23 22:18 J -29376060.70 -29376060.57 -29376060.45 0.0270 0.0128

Mercury -85141-12-21 10:04 J -29375972.16 -29375972.08 -29375972.00 0.0270 0.0222

Mars -85133-04-09 03:20 J -29373306.61 -29373306.36 -29373306.07 0.0275 0.0156

Moon -85130-07-08 20:52 J -29372120.79 -29372120.63 -29372120.44 0.0282 0.0198

Earth -85130-07-08 22:18 J -29372120.75 -29372120.57 -29372120.38 0.0282 0.0187 \*

Earth -85129-07-22 04:04 J -29371741.58 -29371741.33 -29371741.08 0.0284 0.0062

Moon -85129-07-22 06:28 J -29371741.46 -29371741.23 -29371740.98 0.0284 0.0066 \*

Earth -85128-08-05 17:01 J -29371362.04 -29371361.79 -29371361.55 0.0286 0.0071

Moon -85128-08-05 20:52 J -29371361.87 -29371361.63 -29371361.38 0.0286 0.0072 \*

Venus -85127-06-22 06:56 J -29371041.39 -29371041.21 -29371041.02 0.0288 0.0154

Earth -85127-08-20 11:01 J -29370982.21 -29370982.04 -29370981.86 0.0288 0.0205

Moon -85127-08-20 13:40 J -29370982.09 -29370981.93 -29370981.74 0.0288 0.0208 \*

Mercury -85126-01-29 17:44 J -29370819.87 -29370819.76 -29370819.64 0.0288 0.0217

Venus -85126-02-07 09:06 J -29370811.17 -29370811.12 -29370811.07 0.0288 0.0280

Mercury -85126-04-28 16:04 J -29370731.00 -29370730.83 -29370730.66 0.0289 0.0070

Mercury -85126-07-26 13:40 J -29370642.10 -29370641.93 -29370641.76 0.0289 0.0074

Mercury -85126-10-23 10:47 J -29370553.15 -29370553.05 -29370552.93 0.0289 0.0216

Mars -85119-05-05 04:32 J -29368167.55 -29368167.31 -29368167.07 0.0284 0.0114

Earth -85116-01-04 11:30 J -29367192.13 -29367192.02 -29367191.88 0.0279 0.0236

Moon -85116-01-04 12:56 J -29367192.10 -29367191.96 -29367191.82 0.0279 0.0222 \*

Earth -85115-01-16 17:01 J -29366815.00 -29366814.79 -29366814.57 0.0277 0.0125

Moon -85115-01-16 20:52 J -29366814.85 -29366814.63 -29366814.41 0.0277 0.0116 \*

Earth -85114-01-28 16:18 J -29366438.06 -29366437.82 -29366437.58 0.0275 0.0012

Moon -85114-01-28 16:32 J -29366438.06 -29366437.81 -29366437.57 0.0275 0.0016 \*  
 Moon -85113-02-09 06:56 J -29366061.43 -29366061.21 -29366060.98 0.0273 0.0082  
 Earth -85113-02-09 10:18 J -29366061.29 -29366061.07 -29366060.84 0.0273 0.0097 \*  
 Venus -85113-12-05 03:49 J -29365761.54 -29365761.34 -29365761.13 0.0272 0.0048  
 Earth -85112-02-20 00:42 J -29365684.62 -29365684.47 -29365684.30 0.0272 0.0199  
 Moon -85112-02-20 00:56 J -29365684.62 -29365684.46 -29365684.29 0.0272 0.0189 \*  
 Mercury -85112-02-22 02:08 J -29365682.42 -29365682.41 -29365682.39 0.0272 0.0269  
 Mercury -85112-05-21 13:25 J -29365594.04 -29365593.94 -29365593.83 0.0271 0.0179  
 Mercury -85112-08-18 00:56 J -29365505.59 -29365505.46 -29365505.33 0.0271 0.0088  
 Mercury -85112-11-14 12:28 J -29365417.12 -29365416.98 -29365416.85 0.0271 0.0010  
 Mercury -85111-02-10 23:59 J -29365328.63 -29365328.50 -29365328.37 0.0271 0.0098  
 Mercury -85111-05-10 11:44 J -29365240.11 -29365240.01 -29365239.91 0.0271 0.0192  
 Mars -85105-05-19 21:35 J -29363038.79 -29363038.60 -29363038.38 0.0273 0.0211  
 Earth -85101-07-02 05:59 J -29361534.38 -29361534.25 -29361534.12 0.0281 0.0238  
 Moon -85101-07-02 06:42 J -29361534.32 -29361534.22 -29361534.09 0.0281 0.0251 \*  
 Moon -85100-07-16 05:44 J -29361155.49 -29361155.26 -29361155.02 0.0283 0.0124  
 Earth -85100-07-16 08:23 J -29361155.37 -29361155.15 -29361154.91 0.0283 0.0119 \*  
 Moon -85099-07-30 15:20 J -29360776.11 -29360775.86 -29360775.61 0.0285 0.0013  
 Earth -85099-07-30 19:11 J -29360775.95 -29360775.70 -29360775.45 0.0285 0.0012 \*  
 Moon -85098-08-14 10:04 J -29360396.29 -29360396.08 -29360395.87 0.0287 0.0151  
 Earth -85098-08-14 11:44 J -29360396.22 -29360396.01 -29360395.78 0.0287 0.0147 \*  
 Venus -85097-01-02 17:16 J -29360254.99 -29360254.78 -29360254.57 0.0288 0.0082  
 Mercury -85097-06-17 18:28 J -29360087.81 -29360087.73 -29360087.63 0.0288 0.0247  
 Earth -85097-08-28 08:52 J -29360016.18 -29360016.13 -29360016.05 0.0289 0.0277  
 Moon -85097-08-28 10:04 J -29360016.13 -29360016.08 -29360016.04 0.0289 0.0283 \*  
 Mercury -85097-09-14 16:47 J -29359998.96 -29359998.80 -29359998.63 0.0289 0.0099  
 Mercury -85097-12-12 14:37 J -29359910.06 -29359909.89 -29359909.72 0.0289 0.0046  
 Mercury -85096-03-11 12:13 J -29359821.12 -29359820.99 -29359820.86 0.0289 0.0189  
 Mars -85091-06-26 17:16 J -29357887.96 -29357887.78 -29357887.59 0.0287 0.0204  
 Mars -85089-06-21 16:04 J -29357161.84 -29357161.83 -29357161.80 0.0283 0.0282

Moon -85088-12-30 16:47 J -29356604.87 -29356604.80 -29356604.71 0.0280 0.0263  
 Earth -85088-12-30 17:16 J -29356604.81 -29356604.78 -29356604.75 0.0280 0.0277 \*  
 Moon -85086-01-11 22:04 J -29356227.77 -29356227.58 -29356227.38 0.0277 0.0158  
 Earth -85086-01-12 01:25 J -29356227.62 -29356227.44 -29356227.24 0.0277 0.0170 \*  
 Moon -85085-01-24 02:23 J -29355850.62 -29355850.40 -29355850.17 0.0275 0.0058  
 Earth -85085-01-24 03:06 J -29355850.61 -29355850.37 -29355850.14 0.0275 0.0059 \*  
 Earth -85084-02-03 22:47 J -29355473.79 -29355473.55 -29355473.32 0.0273 0.0051  
 Moon -85084-02-04 02:08 J -29355473.65 -29355473.41 -29355473.18 0.0273 0.0040 \*  
 Earth -85083-02-15 14:08 J -29355097.10 -29355096.91 -29355096.71 0.0272 0.0155  
 Moon -85083-02-15 14:37 J -29355097.09 -29355096.89 -29355096.67 0.0272 0.0141 \*  
 Venus -85083-06-17 11:16 J -29354975.23 -29354975.03 -29354974.82 0.0271 0.0015  
 Mercury -85083-10-08 17:01 J -29354861.88 -29354861.79 -29354861.69 0.0271 0.0194  
 Mercury -85082-01-05 04:18 J -29354773.44 -29354773.32 -29354773.19 0.0271 0.0104  
 Moon -85082-02-26 23:30 J -29354720.61 -29354720.52 -29354720.42 0.0270 0.0247  
 Earth -85082-02-27 03:06 J -29354720.45 -29354720.37 -29354720.28 0.0270 0.0251 \*  
 Mercury -85082-04-03 15:49 J -29354684.98 -29354684.84 -29354684.70 0.0270 0.0012  
 Mercury -85082-07-01 03:20 J -29354596.49 -29354596.36 -29354596.23 0.0270 0.0081  
 Mercury -85082-09-27 15:06 J -29354507.98 -29354507.87 -29354507.76 0.0270 0.0174  
 Mercury -85082-12-25 02:52 J -29354419.39 -29354419.38 -29354419.37 0.0270 0.0269  
 Mars -85075-07-12 15:35 J -29352028.18 -29352027.85 -29352027.53 0.0274 0.0020  
 Earth -85071-07-10 09:49 J -29350569.28 -29350569.09 -29350568.88 0.0282 0.0169  
 Moon -85071-07-10 12:28 J -29350569.16 -29350568.98 -29350568.78 0.0282 0.0180 \*  
 Earth -85070-07-24 16:18 J -29350190.07 -29350189.82 -29350189.57 0.0284 0.0043  
 Moon -85070-07-24 19:54 J -29350189.92 -29350189.67 -29350189.42 0.0284 0.0046 \*  
 Earth -85069-08-07 05:44 J -29349810.49 -29349810.26 -29349810.01 0.0286 0.0091  
 Moon -85069-08-07 06:42 J -29349810.46 -29349810.22 -29349809.96 0.0286 0.0094 \*  
 Venus -85068-07-14 22:32 J -29349468.78 -29349468.56 -29349468.34 0.0288 0.0029  
 Moon -85068-08-21 22:32 J -29349430.71 -29349430.56 -29349430.39 0.0288 0.0229  
 Earth -85068-08-22 00:42 J -29349430.62 -29349430.47 -29349430.31 0.0288 0.0222 \*  
 Mercury -85067-02-01 15:06 J -29349267.02 -29349266.87 -29349266.72 0.0289 0.0146

Mercury -85067-05-01 12:56 J -29349178.13 -29349177.96 -29349177.78 0.0289 0.0006

Mercury -85067-07-29 10:32 J -29349089.21 -29349089.06 -29349088.91 0.0289 0.0143

Mercury -85067-10-26 07:25 J -29349000.21 -29349000.19 -29349000.15 0.0289 0.0283

Mars -85061-08-12 09:49 J -29346883.35 -29346883.09 -29346882.82 0.0285 0.0036

Earth -85057-01-06 20:08 J -29345640.80 -29345640.66 -29345640.51 0.0278 0.0218

Moon -85057-01-06 23:30 J -29345640.67 -29345640.52 -29345640.35 0.0278 0.0204 \*

Earth -85056-01-18 00:28 J -29345263.69 -29345263.48 -29345263.25 0.0276 0.0108

Moon -85056-01-18 00:56 J -29345263.69 -29345263.46 -29345263.23 0.0276 0.0103 \*

Moon -85055-01-29 19:25 J -29344886.93 -29344886.69 -29344886.45 0.0274 0.0004

Earth -85055-01-29 23:01 J -29344886.78 -29344886.54 -29344886.30 0.0274 0.0004 \*

Moon -85054-02-10 15:20 J -29344510.07 -29344509.86 -29344509.64 0.0273 0.0098

Earth -85054-02-10 16:18 J -29344510.03 -29344509.82 -29344509.60 0.0273 0.0111 \*

Venus -85054-12-28 12:13 J -29344189.19 -29344188.99 -29344188.78 0.0272 0.0051

Earth -85053-02-22 05:59 J -29344133.38 -29344133.25 -29344133.09 0.0271 0.0212

Moon -85053-02-22 09:35 J -29344133.24 -29344133.10 -29344132.93 0.0271 0.0204 \*

Mercury -85053-02-25 18:42 J -29344129.79 -29344129.72 -29344129.64 0.0271 0.0226

Mercury -85053-05-24 05:59 J -29344041.37 -29344041.25 -29344041.13 0.0271 0.0136

Mercury -85053-08-20 17:30 J -29343952.91 -29343952.77 -29343952.64 0.0271 0.0045

Mercury -85053-11-17 04:47 J -29343864.43 -29343864.30 -29343864.16 0.0271 0.0049

Mercury -85052-02-13 16:32 J -29343775.93 -29343775.81 -29343775.69 0.0271 0.0142

Mercury -85052-05-13 04:18 J -29343687.38 -29343687.32 -29343687.25 0.0270 0.0236

Mars -85045-09-03 01:54 J -29341017.66 -29341017.42 -29341017.16 0.0275 0.0177

Moon -85042-07-04 10:32 J -29339983.19 -29339983.06 -29339982.90 0.0281 0.0234

Earth -85042-07-04 13:54 J -29339983.06 -29339982.92 -29339982.75 0.0281 0.0222 \*

Moon -85041-07-17 14:08 J -29339604.13 -29339603.91 -29339603.67 0.0283 0.0108

Earth -85041-07-17 17:30 J -29339604.00 -29339603.77 -29339603.53 0.0283 0.0102 \*

Moon -85040-08-01 04:32 J -29339224.55 -29339224.31 -29339224.06 0.0286 0.0031

Earth -85040-08-01 05:01 J -29339224.54 -29339224.29 -29339224.04 0.0286 0.0030 \*

Earth -85039-08-15 22:18 J -29338844.77 -29338844.57 -29338844.36 0.0287 0.0163

Moon -85039-08-16 00:56 J -29338844.65 -29338844.46 -29338844.25 0.0287 0.0170 \*

Venus -85038-01-25 07:11 J -29338682.41 -29338682.20 -29338681.98 0.0288 0.0038  
 Mercury -85038-06-21 15:06 J -29338535.01 -29338534.87 -29338534.73 0.0289 0.0181  
 Mercury -85038-09-18 13:11 J -29338446.12 -29338445.95 -29338445.78 0.0289 0.0034  
 Mercury -85038-12-16 10:47 J -29338357.21 -29338357.05 -29338356.88 0.0289 0.0111  
 Mercury -85037-03-14 08:08 J -29338268.24 -29338268.16 -29338268.08 0.0289 0.0252  
 Mars -85031-09-29 21:06 J -29335877.86 -29335877.62 -29335877.39 0.0284 0.0135  
 Moon -85029-12-31 22:04 J -29335053.69 -29335053.58 -29335053.46 0.0279 0.0244  
 Earth -85028-01-01 01:25 J -29335053.52 -29335053.44 -29335053.35 0.0279 0.0260 \*  
 Moon -85027-01-13 07:54 J -29334676.36 -29334676.17 -29334675.97 0.0277 0.0142  
 Earth -85027-01-13 08:37 J -29334676.33 -29334676.14 -29334675.93 0.0277 0.0153 \*  
 Earth -85026-01-25 09:35 J -29334299.34 -29334299.10 -29334298.87 0.0275 0.0042  
 Moon -85026-01-25 12:56 J -29334299.19 -29334298.96 -29334298.73 0.0275 0.0044 \*  
 Earth -85025-02-06 04:32 J -29333922.54 -29333922.31 -29333922.07 0.0273 0.0066  
 Moon -85025-02-06 06:28 J -29333922.47 -29333922.23 -29333921.98 0.0273 0.0055 \*  
 Venus -85025-11-22 20:37 J -29333631.75 -29333631.64 -29333631.53 0.0272 0.0228  
 Moon -85024-02-16 16:04 J -29333546.01 -29333545.83 -29333545.62 0.0272 0.0157  
 Earth -85024-02-16 19:25 J -29333545.87 -29333545.69 -29333545.50 0.0272 0.0169 \*  
 Venus -85024-07-09 19:25 J -29333402.87 -29333402.69 -29333402.50 0.0271 0.0111  
 Mercury -85024-07-14 22:18 J -29333397.63 -29333397.57 -29333397.51 0.0271 0.0242  
 Mercury -85024-10-11 09:35 J -29333309.21 -29333309.10 -29333308.99 0.0271 0.0152  
 Mercury -85023-01-07 20:52 J -29333220.76 -29333220.63 -29333220.50 0.0270 0.0061  
 Moon -85023-02-28 06:28 J -29333169.27 -29333169.23 -29333169.17 0.0270 0.0262  
 Earth -85023-02-28 08:08 J -29333169.22 -29333169.16 -29333169.11 0.0270 0.0262 \*  
 Mercury -85023-04-06 08:23 J -29333132.29 -29333132.15 -29333132.01 0.0270 0.0032  
 Mercury -85023-07-03 19:54 J -29333043.79 -29333043.67 -29333043.54 0.0270 0.0124  
 Mercury -85023-09-30 07:40 J -29332955.26 -29332955.18 -29332955.10 0.0270 0.0218  
 Mars -85017-10-13 22:32 J -29330749.79 -29330749.56 -29330749.34 0.0273 0.0196  
 Earth -85013-06-27 19:40 J -29329396.75 -29329396.68 -29329396.60 0.0280 0.0266  
 Moon -85013-06-27 23:01 J -29329396.54 -29329396.54 -29329396.50 0.0280 0.0280  
 Earth -85012-07-11 18:42 J -29329017.93 -29329017.72 -29329017.50 0.0283 0.0152

Moon	-85012-07-11 22:04 J	-29329017.78	-29329017.58	-29329017.36	0.0283	0.0161	*
Moon	-85011-07-26 02:08 J	-29328638.68	-29328638.41	-29328638.15	0.0285	0.0026	
Earth	-85011-07-26 02:08 J	-29328638.66	-29328638.41	-29328638.16	0.0285	0.0025	*
Moon	-85010-08-09 12:56 J	-29328259.19	-29328258.96	-29328258.72	0.0287	0.0115	
Earth	-85010-08-09 16:18 J	-29328259.05	-29328258.82	-29328258.59	0.0287	0.0108	*
Venus	-85009-08-06 12:28 J	-29327896.19	-29327895.98	-29327895.77	0.0288	0.0090	
Moon	-85009-08-23 07:40 J	-29327879.29	-29327879.18	-29327879.04	0.0288	0.0249	
Earth	-85009-08-23 11:30 J	-29327879.15	-29327879.02	-29327878.87	0.0288	0.0238	*
Mercury	-85009-11-07 13:11 J	-29327803.05	-29327802.95	-29327802.84	0.0288	0.0229	
Mercury	-85008-02-04 11:30 J	-29327714.19	-29327714.02	-29327713.85	0.0289	0.0081	
Mercury	-85008-05-04 09:20 J	-29327625.28	-29327625.11	-29327624.94	0.0289	0.0064	
Mercury	-85008-08-01 06:28 J	-29327536.34	-29327536.23	-29327536.10	0.0289	0.0207	
Mars	-85003-11-20 10:18 J	-29325599.26	-29325599.07	-29325598.86	0.0286	0.0189	

# 85TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 85th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-84998-01-08 02:37 J	-29324089.55	-29324089.39	-29324089.22	0.0278	0.0202		
Moon	-84998-01-08 04:04 J	-29324089.51	-29324089.33	-29324089.15	0.0278	0.0188	*	
Moon	-84997-01-20 02:52 J	-29323712.60	-29323712.38	-29323712.14	0.0276	0.0091		
Earth	-84997-01-20 06:28 J	-29323712.45	-29323712.23	-29323712.00	0.0276	0.0092	*	
Moon	-84996-01-31 02:08 J	-29323335.64	-29323335.41	-29323335.18	0.0274	0.0009		
Earth	-84996-01-31 04:04 J	-29323335.57	-29323335.33	-29323335.10	0.0274	0.0019	*	



Earth -84995-02-11 20:37 J -29322958.85 -29322958.64 -29322958.43 0.0272 0.0124  
 Moon -84995-02-11 23:30 J -29322958.73 -29322958.52 -29322958.31 0.0272 0.0110 \*  
 Venus -84995-06-04 20:37 J -29322845.78 -29322845.64 -29322845.49 0.0272 0.0194  
 Venus -84994-01-19 19:25 J -29322616.85 -29322616.69 -29322616.51 0.0271 0.0146  
 Earth -84994-02-23 10:04 J -29322582.21 -29322582.08 -29322581.94 0.0271 0.0223  
 Moon -84994-02-23 11:44 J -29322582.16 -29322582.01 -29322581.86 0.0271 0.0216 \*  
 Mercury -84994-02-28 11:01 J -29322577.14 -29322577.04 -29322576.94 0.0271 0.0186  
 Mercury -84994-05-27 22:18 J -29322488.70 -29322488.57 -29322488.44 0.0271 0.0095  
 Mercury -84994-08-24 09:35 J -29322400.24 -29322400.10 -29322399.96 0.0271 0.0006  
 Mercury -84994-11-20 21:06 J -29322311.75 -29322311.62 -29322311.49 0.0270 0.0090  
 Mercury -84993-02-17 08:52 J -29322223.23 -29322223.13 -29322223.03 0.0270 0.0183  
 Mars -84987-12-06 00:13 J -29319739.81 -29319739.49 -29319739.16 0.0274 0.0008  
 Moon -84983-07-05 16:32 J -29318431.96 -29318431.81 -29318431.64 0.0281 0.0216  
 Earth -84983-07-05 19:11 J -29318431.85 -29318431.70 -29318431.51 0.0281 0.0207 \*  
 Earth -84982-07-19 23:44 J -29318052.75 -29318052.51 -29318052.27 0.0284 0.0085  
 Moon -84982-07-19 23:59 J -29318052.72 -29318052.50 -29318052.26 0.0284 0.0089 \*  
 Earth -84981-08-02 11:30 J -29317673.27 -29317673.02 -29317672.77 0.0286 0.0046  
 Moon -84981-08-02 14:52 J -29317673.12 -29317672.88 -29317672.63 0.0286 0.0050 \*  
 Venus -84980-07-01 16:32 J -29317339.83 -29317339.81 -29317339.77 0.0287 0.0284  
 Earth -84980-08-17 05:30 J -29317293.47 -29317293.27 -29317293.07 0.0288 0.0179  
 Moon -84980-08-17 08:37 J -29317293.32 -29317293.14 -29317292.93 0.0288 0.0188 \*  
 Venus -84979-02-16 18:56 J -29317109.89 -29317109.71 -29317109.52 0.0288 0.0151  
 Mercury -84979-03-27 11:59 J -29317071.05 -29317071.00 -29317070.93 0.0289 0.0270  
 Mercury -84979-06-24 10:32 J -29316982.22 -29316982.06 -29316981.90 0.0289 0.0122  
 Mercury -84979-09-21 08:23 J -29316893.32 -29316893.15 -29316892.97 0.0289 0.0026  
 Mercury -84979-12-19 05:59 J -29316804.39 -29316804.25 -29316804.11 0.0289 0.0169  
 Mars -84972-01-06 18:28 J -29314593.99 -29314593.73 -29314593.46 0.0286 0.0020  
 Moon -84969-01-03 05:16 J -29313502.40 -29313502.28 -29313502.14 0.0279 0.0228  
 Earth -84969-01-03 06:56 J -29313502.31 -29313502.21 -29313502.08 0.0279 0.0243 \*  
 Earth -84968-01-14 13:40 J -29313125.13 -29313124.93 -29313124.71 0.0277 0.0135

Moon -84968-01-14 16:47 J -29313125.01 -29313124.80 -29313124.60 0.0277 0.0126 \*  
 Earth -84967-01-26 13:54 J -29312748.16 -29312747.92 -29312747.68 0.0275 0.0026  
 Moon -84967-01-26 15:49 J -29312748.08 -29312747.84 -29312747.59 0.0275 0.0031 \*  
 Moon -84966-02-07 05:44 J -29312371.49 -29312371.26 -29312371.02 0.0273 0.0066  
 Earth -84966-02-07 08:23 J -29312371.37 -29312371.15 -29312370.91 0.0273 0.0081 \*  
 Venus -84966-12-16 03:49 J -29312059.52 -29312059.34 -29312059.16 0.0272 0.0135  
 Moon -84965-02-18 20:37 J -29311994.81 -29311994.64 -29311994.45 0.0271 0.0170  
 Earth -84965-02-18 22:47 J -29311994.71 -29311994.55 -29311994.36 0.0271 0.0181 \*  
 Mercury -84965-07-17 14:23 J -29311844.99 -29311844.90 -29311844.81 0.0271 0.0202  
 Venus -84965-08-01 02:23 J -29311830.53 -29311830.40 -29311830.26 0.0271 0.0204  
 Mercury -84965-10-14 01:40 J -29311756.56 -29311756.43 -29311756.31 0.0271 0.0112  
 Mercury -84964-01-10 12:56 J -29311668.10 -29311667.96 -29311667.82 0.0270 0.0021  
 Mercury -84964-04-09 00:28 J -29311579.61 -29311579.48 -29311579.34 0.0270 0.0072  
 Mercury -84964-07-06 12:13 J -29311491.10 -29311490.99 -29311490.88 0.0270 0.0165  
 Mercury -84964-10-02 23:59 J -29311402.54 -29311402.50 -29311402.47 0.0270 0.0259  
 Mars -84956-01-27 18:42 J -29308728.95 -29308728.72 -29308728.48 0.0275 0.0187  
 Earth -84954-06-29 23:59 J -29307845.59 -29307845.50 -29307845.37 0.0280 0.0251  
 Moon -84954-06-30 02:23 J -29307845.48 -29307845.40 -29307845.30 0.0280 0.0260 \*  
 Moon -84953-07-12 22:47 J -29307466.77 -29307466.55 -29307466.32 0.0283 0.0140  
 Earth -84953-07-13 00:13 J -29307466.71 -29307466.49 -29307466.27 0.0283 0.0135 \*  
 Moon -84952-07-27 04:32 J -29307087.56 -29307087.31 -29307087.05 0.0285 0.0008  
 Earth -84952-07-27 08:08 J -29307087.41 -29307087.16 -29307086.90 0.0285 0.0009 \*  
 Moon -84951-08-10 20:08 J -29306707.88 -29306707.66 -29306707.44 0.0287 0.0131  
 Earth -84951-08-10 22:47 J -29306707.77 -29306707.55 -29306707.31 0.0287 0.0124 \*  
 Venus -84950-01-11 22:04 J -29306553.70 -29306553.58 -29306553.45 0.0288 0.0233  
 Earth -84950-08-25 18:42 J -29306327.83 -29306327.72 -29306327.59 0.0289 0.0253  
 Moon -84950-08-25 18:42 J -29306327.80 -29306327.72 -29306327.61 0.0289 0.0265 \*  
 Venus -84950-08-30 00:13 J -29306323.64 -29306323.49 -29306323.33 0.0289 0.0203  
 Mercury -84950-11-11 08:37 J -29306250.28 -29306250.14 -29306249.99 0.0289 0.0170  
 Mercury -84949-02-08 06:42 J -29306161.39 -29306161.22 -29306161.04 0.0289 0.0024

Mercury -84949-05-07 04:32 J -29306072.47 -29306072.31 -29306072.15 0.0289 0.0122  
 Mercury -84949-08-04 01:40 J -29305983.49 -29305983.43 -29305983.36 0.0290 0.0264  
 Mars -84942-02-23 07:25 J -29303589.41 -29303589.19 -29303588.95 0.0284 0.0147  
 Moon -84941-12-27 22:47 J -29302915.58 -29302915.55 -29302915.49 0.0280 0.0275  
 Moon -84939-01-09 05:01 J -29302538.48 -29302538.29 -29302538.10 0.0278 0.0172  
 Earth -84939-01-09 07:40 J -29302538.35 -29302538.18 -29302537.99 0.0278 0.0186 \*  
 Moon -84938-01-21 08:37 J -29302161.36 -29302161.14 -29302160.91 0.0276 0.0076  
 Earth -84938-01-21 10:47 J -29302161.28 -29302161.05 -29302160.82 0.0276 0.0076 \*  
 Earth -84937-02-02 07:40 J -29301784.42 -29301784.18 -29301783.94 0.0274 0.0033  
 Moon -84937-02-02 10:18 J -29301784.30 -29301784.07 -29301783.83 0.0274 0.0021 \*  
 Earth -84936-02-12 23:44 J -29301407.72 -29301407.51 -29301407.31 0.0272 0.0137  
 Moon -84936-02-13 02:23 J -29301407.61 -29301407.40 -29301407.18 0.0272 0.0122 \*  
 Venus -84936-06-27 03:35 J -29301273.54 -29301273.35 -29301273.16 0.0272 0.0102  
 Mercury -84936-12-04 15:35 J -29301112.91 -29301112.85 -29301112.78 0.0271 0.0237  
 Venus -84935-02-11 01:54 J -29301044.51 -29301044.42 -29301044.31 0.0271 0.0237  
 Moon -84935-02-24 09:49 J -29301031.21 -29301031.09 -29301030.96 0.0271 0.0232  
 Earth -84935-02-24 12:13 J -29301031.09 -29301030.99 -29301030.85 0.0271 0.0234 \*  
 Mercury -84935-03-03 02:52 J -29301024.49 -29301024.38 -29301024.26 0.0271 0.0147  
 Mercury -84935-05-30 14:08 J -29300936.04 -29300935.91 -29300935.77 0.0271 0.0056  
 Mercury -84935-08-27 01:40 J -29300847.57 -29300847.43 -29300847.29 0.0270 0.0036  
 Mercury -84935-11-23 13:11 J -29300759.07 -29300758.95 -29300758.83 0.0270 0.0129  
 Mercury -84934-02-20 00:56 J -29300670.54 -29300670.46 -29300670.38 0.0270 0.0223  
 Mars -84928-03-08 18:56 J -29298461.93 -29298461.71 -29298461.47 0.0273 0.0191  
 Earth -84924-07-06 21:49 J -29296880.76 -29296880.59 -29296880.39 0.0282 0.0191  
 Moon -84924-07-07 00:13 J -29296880.67 -29296880.49 -29296880.32 0.0282 0.0196 \*  
 Earth -84923-07-21 02:52 J -29296501.62 -29296501.38 -29296501.13 0.0284 0.0068  
 Moon -84923-07-21 06:42 J -29296501.46 -29296501.22 -29296500.97 0.0284 0.0070 \*  
 Earth -84922-08-04 15:06 J -29296122.11 -29296121.87 -29296121.62 0.0286 0.0063  
 Moon -84922-08-04 17:44 J -29296122.01 -29296121.76 -29296121.50 0.0286 0.0066 \*  
 Venus -84921-07-24 02:23 J -29295767.56 -29295767.40 -29295767.22 0.0288 0.0180

Moon -84921-08-18 08:37 J -29295742.31 -29295742.14 -29295741.94 0.0288 0.0204  
 Earth -84921-08-18 09:35 J -29295742.28 -29295742.10 -29295741.90 0.0288 0.0194 \*  
 Venus -84920-03-11 04:47 J -29295537.38 -29295537.30 -29295537.19 0.0289 0.0258  
 Mercury -84920-03-30 06:56 J -29295518.33 -29295518.21 -29295518.10 0.0289 0.0216  
 Mercury -84920-06-27 05:01 J -29295429.46 -29295429.29 -29295429.11 0.0289 0.0068  
 Mercury -84920-09-24 02:52 J -29295340.54 -29295340.38 -29295340.21 0.0289 0.0079  
 Mercury -84920-12-22 00:13 J -29295251.59 -29295251.49 -29295251.37 0.0290 0.0222  
 Mars -84914-04-16 10:04 J -29293310.28 -29293310.08 -29293309.87 0.0287 0.0180  
 Earth -84910-01-04 10:18 J -29291951.19 -29291951.07 -29291950.92 0.0279 0.0228  
 Moon -84910-01-04 13:25 J -29291951.09 -29291950.94 -29291950.79 0.0279 0.0211 \*  
 Earth -84909-01-16 16:47 J -29291574.01 -29291573.80 -29291573.58 0.0277 0.0119  
 Moon -84909-01-16 19:40 J -29291573.90 -29291573.68 -29291573.45 0.0277 0.0110 \*  
 Moon -84908-01-27 14:08 J -29291197.16 -29291196.91 -29291196.67 0.0275 0.0020  
 Earth -84908-01-27 16:32 J -29291197.05 -29291196.81 -29291196.57 0.0275 0.0010 \*  
 Moon -84907-02-08 07:40 J -29290820.40 -29290820.18 -29290819.96 0.0273 0.0079  
 Earth -84907-02-08 10:32 J -29290820.28 -29290820.06 -29290819.83 0.0273 0.0095 \*  
 Venus -84906-01-07 09:49 J -29290487.30 -29290487.09 -29290486.89 0.0271 0.0045  
 Earth -84906-02-20 00:28 J -29290443.64 -29290443.48 -29290443.30 0.0271 0.0193  
 Moon -84906-02-20 02:23 J -29290443.56 -29290443.40 -29290443.23 0.0271 0.0184 \*  
 Mercury -84906-04-23 18:56 J -29290380.75 -29290380.71 -29290380.66 0.0271 0.0255  
 Mercury -84906-07-21 05:59 J -29290292.35 -29290292.25 -29290292.14 0.0271 0.0166  
 Mercury -84906-10-17 17:16 J -29290203.91 -29290203.78 -29290203.64 0.0270 0.0075  
 Mercury -84905-01-14 04:47 J -29290115.44 -29290115.30 -29290115.16 0.0270 0.0017  
 Mercury -84905-04-11 16:18 J -29290026.94 -29290026.82 -29290026.69 0.0270 0.0110  
 Mercury -84905-07-09 04:04 J -29289938.42 -29289938.33 -29289938.24 0.0270 0.0204  
 Mars -84898-05-01 12:42 J -29287451.29 -29287450.97 -29287450.64 0.0274 0.0005  
 Moon -84895-06-30 23:59 J -29286294.62 -29286294.50 -29286294.36 0.0281 0.0240  
 Earth -84895-07-01 02:52 J -29286294.51 -29286294.38 -29286294.24 0.0281 0.0235 \*  
 Moon -84894-07-14 23:16 J -29285915.76 -29285915.53 -29285915.30 0.0283 0.0120  
 Earth -84894-07-15 03:20 J -29285915.59 -29285915.36 -29285915.14 0.0283 0.0119 \*

Moon -84893-07-28 09:35 J -29285536.34 -29285536.10 -29285535.85 0.0285 0.0012  
 Earth -84893-07-28 11:44 J -29285536.26 -29285536.01 -29285535.75 0.0285 0.0008 \*  
 Earth -84892-08-12 02:52 J -29285156.59 -29285156.38 -29285156.15 0.0287 0.0139  
 Moon -84892-08-12 04:18 J -29285156.53 -29285156.32 -29285156.11 0.0287 0.0148 \*  
 Venus -84891-02-03 08:08 J -29284981.35 -29284981.16 -29284980.96 0.0288 0.0127  
 Mercury -84891-08-17 05:01 J -29284786.36 -29284786.29 -29284786.22 0.0289 0.0264  
 Earth -84891-08-26 23:16 J -29284776.62 -29284776.53 -29284776.43 0.0289 0.0266  
 Moon -84891-08-27 02:52 J -29284776.43 -29284776.38 -29284776.31 0.0289 0.0280 \*  
 Mercury -84891-11-14 03:20 J -29284697.52 -29284697.36 -29284697.19 0.0289 0.0115  
 Mercury -84890-02-11 01:25 J -29284608.62 -29284608.44 -29284608.27 0.0289 0.0031  
 Mercury -84890-05-10 22:47 J -29284519.68 -29284519.55 -29284519.40 0.0290 0.0176  
 Mars -84884-06-02 01:54 J -29282305.68 -29282305.42 -29282305.15 0.0285 0.0011  
 Moon -84882-12-29 21:49 J -29281364.67 -29281364.59 -29281364.49 0.0280 0.0259  
 Earth -84882-12-30 01:11 J -29281364.49 -29281364.45 -29281364.41 0.0280 0.0275 \*  
 Moon -84880-01-10 07:40 J -29280987.36 -29280987.18 -29280986.98 0.0277 0.0159  
 Earth -84880-01-10 10:32 J -29280987.24 -29280987.06 -29280986.86 0.0277 0.0170 \*  
 Earth -84879-01-22 13:11 J -29280610.18 -29280609.95 -29280609.72 0.0275 0.0060  
 Moon -84879-01-22 15:06 J -29280610.09 -29280609.87 -29280609.64 0.0275 0.0063 \*  
 Earth -84878-02-03 09:35 J -29280233.34 -29280233.10 -29280232.87 0.0273 0.0048  
 Moon -84878-02-03 12:28 J -29280233.22 -29280232.98 -29280232.74 0.0273 0.0033 \*  
 Moon -84877-02-14 23:16 J -29279856.74 -29279856.53 -29279856.32 0.0272 0.0136  
 Earth -84877-02-15 00:56 J -29279856.65 -29279856.46 -29279856.26 0.0272 0.0150 \*  
 Venus -84877-07-19 09:06 J -29279701.32 -29279701.12 -29279700.91 0.0271 0.0014  
 Mercury -84877-12-07 07:11 J -29279560.28 -29279560.20 -29279560.10 0.0271 0.0201  
 Moon -84876-02-25 10:18 J -29279480.15 -29279480.07 -29279479.95 0.0271 0.0244  
 Earth -84876-02-25 13:25 J -29279480.03 -29279479.94 -29279479.83 0.0271 0.0244 \*  
 Mercury -84876-03-05 18:28 J -29279471.85 -29279471.73 -29279471.60 0.0270 0.0110  
 Mercury -84876-06-02 05:59 J -29279383.39 -29279383.25 -29279383.12 0.0270 0.0020  
 Mercury -84876-08-29 17:16 J -29279294.91 -29279294.78 -29279294.64 0.0270 0.0074  
 Mercury -84876-11-26 05:01 J -29279206.40 -29279206.29 -29279206.18 0.0270 0.0167

Mercury -84875-02-22 16:32 J -29279117.83 -29279117.81 -29279117.77 0.0270 0.0261  
 Mars -84868-06-22 06:42 J -29276441.44 -29276441.22 -29276440.97 0.0275 0.0190  
 Earth -84865-07-07 21:49 J -29275329.77 -29275329.59 -29275329.38 0.0282 0.0176  
 Moon -84865-07-08 01:40 J -29275329.62 -29275329.43 -29275329.23 0.0282 0.0176 \*  
 Earth -84864-07-22 03:20 J -29274950.60 -29274950.36 -29274950.11 0.0284 0.0053  
 Moon -84864-07-22 04:47 J -29274950.56 -29274950.30 -29274950.05 0.0284 0.0049 \*  
 Moon -84863-08-05 13:54 J -29274571.16 -29274570.92 -29274570.66 0.0286 0.0086  
 Earth -84863-08-05 16:04 J -29274571.07 -29274570.83 -29274570.58 0.0286 0.0077 \*  
 Venus -84862-08-16 10:47 J -29274195.26 -29274195.05 -29274194.84 0.0288 0.0080  
 Moon -84862-08-20 07:11 J -29274191.35 -29274191.20 -29274191.03 0.0288 0.0220  
 Earth -84862-08-20 11:01 J -29274191.21 -29274191.04 -29274190.86 0.0288 0.0207 \*  
 Mercury -84861-04-02 00:28 J -29273965.62 -29273965.48 -29273965.33 0.0289 0.0168  
 Mercury -84861-06-29 22:47 J -29273876.72 -29273876.55 -29273876.37 0.0289 0.0020  
 Mercury -84861-09-26 20:37 J -29273787.79 -29273787.64 -29273787.48 0.0289 0.0126  
 Mercury -84861-12-24 17:59 J -29273698.81 -29273698.75 -29273698.69 0.0290 0.0268  
 Mars -84854-07-20 02:08 J -29271300.63 -29271300.41 -29271300.18 0.0285 0.0154  
 Earth -84851-01-05 12:28 J -29270400.13 -29270399.98 -29270399.82 0.0279 0.0211  
 Moon -84851-01-05 15:20 J -29270400.02 -29270399.86 -29270399.68 0.0279 0.0196 \*  
 Moon -84850-01-17 17:01 J -29270023.02 -29270022.79 -29270022.56 0.0277 0.0099  
 Earth -84850-01-17 18:28 J -29270022.94 -29270022.73 -29270022.50 0.0277 0.0103 \*  
 Moon -84849-01-29 14:52 J -29269646.12 -29269645.88 -29269645.65 0.0275 0.0006  
 Earth -84849-01-29 17:44 J -29269645.99 -29269645.76 -29269645.52 0.0275 0.0007 \*  
 Earth -84848-02-09 11:30 J -29269269.24 -29269269.02 -29269268.80 0.0273 0.0109  
 Moon -84848-02-09 12:56 J -29269269.17 -29269268.96 -29269268.74 0.0273 0.0094 \*  
 Venus -84847-01-29 15:06 J -29268915.07 -29268914.87 -29268914.67 0.0271 0.0042  
 Earth -84847-02-21 01:11 J -29268892.60 -29268892.45 -29268892.29 0.0271 0.0205  
 Moon -84847-02-21 04:32 J -29268892.47 -29268892.31 -29268892.14 0.0271 0.0196 \*  
 Mercury -84847-04-26 10:32 J -29268828.14 -29268828.06 -29268827.98 0.0271 0.0220  
 Mercury -84847-07-23 21:49 J -29268739.71 -29268739.59 -29268739.47 0.0270 0.0130  
 Mercury -84847-10-20 09:06 J -29268651.26 -29268651.12 -29268650.99 0.0270 0.0039

Mercury -84846-01-16 20:23 J -29268562.78 -29268562.65 -29268562.51 0.0270 0.0054

Mercury -84846-04-15 07:54 J -29268474.28 -29268474.17 -29268474.05 0.0270 0.0147

Mercury -84846-07-12 19:40 J -29268385.74 -29268385.68 -29268385.62 0.0269 0.0241

Mars -84840-08-02 06:13 J -29266173.47 -29266173.24 -29266172.99 0.0272 0.0183

Moon -84836-07-01 23:44 J -29264743.65 -29264743.51 -29264743.35 0.0281 0.0223

Earth -84836-07-02 02:52 J -29264743.52 -29264743.38 -29264743.21 0.0281 0.0221 \*

Moon -84835-07-16 03:35 J -29264364.57 -29264364.35 -29264364.12 0.0283 0.0101

Earth -84835-07-16 03:49 J -29264364.57 -29264364.34 -29264364.10 0.0283 0.0104 \*

Earth -84834-07-30 12:56 J -29263985.21 -29263984.96 -29263984.71 0.0285 0.0023

Moon -84834-07-30 15:35 J -29263985.09 -29263984.85 -29263984.60 0.0285 0.0031 \*

Earth -84833-08-13 04:32 J -29263605.51 -29263605.31 -29263605.08 0.0287 0.0155

Moon -84833-08-13 08:23 J -29263605.35 -29263605.15 -29263604.93 0.0287 0.0165 \*

Venus -84832-02-25 16:47 J -29263409.02 -29263408.80 -29263408.58 0.0288 0.0026

Mercury -84832-08-19 23:01 J -29263233.65 -29263233.54 -29263233.42 0.0289 0.0214

Earth -84832-08-28 01:25 J -29263225.49 -29263225.44 -29263225.37 0.0289 0.0279

Mercury -84832-11-16 21:20 J -29263144.78 -29263144.61 -29263144.43 0.0289 0.0066

Mercury -84831-02-13 19:11 J -29263055.86 -29263055.70 -29263055.53 0.0290 0.0081

Mercury -84831-05-13 16:32 J -29262966.91 -29262966.81 -29262966.69 0.0290 0.0225

Mars -84826-09-09 15:20 J -29261022.06 -29261021.86 -29261021.64 0.0287 0.0174

Moon -84823-12-31 00:28 J -29259813.58 -29259813.48 -29259813.36 0.0280 0.0246

Earth -84823-12-31 03:06 J -29259813.45 -29259813.37 -29259813.28 0.0280 0.0260 \*

Earth -84821-01-12 12:13 J -29259436.18 -29259435.99 -29259435.78 0.0277 0.0154

Moon -84821-01-12 13:54 J -29259436.11 -29259435.92 -29259435.72 0.0277 0.0146 \*

Earth -84820-01-23 14:23 J -29259059.14 -29259058.90 -29259058.67 0.0275 0.0045

Moon -84820-01-23 17:44 J -29259059.00 -29259058.76 -29259058.52 0.0275 0.0048 \*

Moon -84819-02-04 08:52 J -29258682.37 -29258682.13 -29258681.89 0.0273 0.0047

Earth -84819-02-04 10:18 J -29258682.30 -29258682.07 -29258681.84 0.0273 0.0062 \*

Venus -84819-12-25 15:35 J -29258357.88 -29258357.85 -29258357.81 0.0272 0.0266

Moon -84818-02-15 22:04 J -29258305.77 -29258305.58 -29258305.38 0.0272 0.0151

Earth -84818-02-16 01:25 J -29258305.62 -29258305.44 -29258305.24 0.0272 0.0162 \*

Venus -84818-08-11 14:08 J -29258129.10 -29258128.91 -29258128.70 0.0271 0.0074

Mercury -84818-09-13 11:44 J -29258096.05 -29258096.01 -29258095.97 0.0271 0.0255

Mercury -84818-12-10 22:47 J -29258007.65 -29258007.55 -29258007.44 0.0270 0.0165

Earth -84817-02-27 13:40 J -29257929.01 -29257928.93 -29257928.85 0.0270 0.0254

Moon -84817-02-27 14:23 J -29257928.96 -29257928.90 -29257928.82 0.0270 0.0257 \*

Mercury -84817-03-08 10:04 J -29257919.21 -29257919.08 -29257918.95 0.0270 0.0075

Mercury -84817-06-04 21:20 J -29257830.74 -29257830.61 -29257830.47 0.0270 0.0019

Mercury -84817-09-01 08:52 J -29257742.25 -29257742.13 -29257742.00 0.0270 0.0110

Mercury -84817-11-28 20:23 J -29257653.73 -29257653.65 -29257653.55 0.0270 0.0204

Mars -84810-09-23 18:56 J -29255164.03 -29255163.71 -29255163.38 0.0274 0.0002

Earth -84807-06-25 23:59 J -29254157.56 -29254157.50 -29254157.43 0.0279 0.0269

Moon -84807-06-26 02:52 J -29254157.41 -29254157.38 -29254157.32 0.0279 0.0275

Moon -84806-07-09 20:08 J -29253778.87 -29253778.66 -29253778.44 0.0282 0.0156

Earth -84806-07-09 21:06 J -29253778.83 -29253778.62 -29253778.41 0.0282 0.0160 \*

Moon -84805-07-22 23:16 J -29253399.79 -29253399.53 -29253399.28 0.0284 0.0029

Earth -84805-07-23 02:52 J -29253399.63 -29253399.38 -29253399.13 0.0284 0.0038 \*

Moon -84804-08-06 12:13 J -29253020.22 -29253019.99 -29253019.76 0.0286 0.0103

Earth -84804-08-06 15:49 J -29253020.08 -29253019.84 -29253019.60 0.0286 0.0092 \*

Moon -84803-08-21 09:49 J -29252640.23 -29252640.09 -29252639.95 0.0288 0.0233

Earth -84803-08-21 10:47 J -29252640.20 -29252640.05 -29252639.88 0.0288 0.0220 \*

Venus -84803-09-07 18:13 J -29252622.96 -29252622.74 -29252622.52 0.0288 0.0017

Mercury -84802-01-06 19:25 J -29252501.74 -29252501.69 -29252501.62 0.0289 0.0271

Mercury -84802-04-05 18:13 J -29252412.90 -29252412.74 -29252412.58 0.0289 0.0121

Mercury -84802-07-03 16:18 J -29252324.00 -29252323.82 -29252323.65 0.0289 0.0026

Mercury -84802-09-30 13:54 J -29252235.06 -29252234.92 -29252234.78 0.0290 0.0171

Mars -84796-10-26 13:25 J -29250017.20 -29250016.94 -29250016.67 0.0286 0.0008

Moon -84792-01-06 10:47 J -29248849.23 -29248849.05 -29248848.86 0.0279 0.0184

Earth -84792-01-06 12:42 J -29248849.13 -29248848.97 -29248848.79 0.0279 0.0195 \*

Moon -84791-01-18 15:06 J -29248472.09 -29248471.87 -29248471.64 0.0277 0.0086

Earth -84791-01-18 18:42 J -29248471.95 -29248471.72 -29248471.49 0.0277 0.0087 \*



Earth -84790-01-30 17:44 J -29248095.00 -29248094.76 -29248094.52 0.0275 0.0020  
 Moon -84790-01-30 18:28 J -29248094.96 -29248094.73 -29248094.50 0.0275 0.0010 \*  
 Earth -84789-02-11 11:01 J -29247718.25 -29247718.04 -29247717.82 0.0273 0.0123  
 Moon -84789-02-11 14:37 J -29247718.11 -29247717.89 -29247717.67 0.0273 0.0108 \*  
 Venus -84789-07-06 20:52 J -29247571.74 -29247571.63 -29247571.49 0.0272 0.0214  
 Venus -84788-02-20 19:40 J -29247342.86 -29247342.68 -29247342.49 0.0271 0.0127  
 Moon -84788-02-22 00:13 J -29247341.64 -29247341.49 -29247341.33 0.0271 0.0212  
 Earth -84788-02-22 00:28 J -29247341.61 -29247341.48 -29247341.33 0.0271 0.0217 \*  
 Mercury -84788-04-29 01:54 J -29247275.52 -29247275.42 -29247275.32 0.0271 0.0186  
 Mercury -84788-07-26 13:11 J -29247187.08 -29247186.95 -29247186.82 0.0270 0.0095  
 Mercury -84788-10-23 00:28 J -29247098.62 -29247098.48 -29247098.34 0.0270 0.0004  
 Mercury -84787-01-19 11:59 J -29247010.13 -29247010.00 -29247009.87 0.0270 0.0089  
 Mercury -84787-04-17 23:30 J -29246921.62 -29246921.52 -29246921.42 0.0270 0.0182  
 Mars -84780-11-15 14:08 J -29244153.12 -29244152.91 -29244152.67 0.0275 0.0197  
 Earth -84777-07-03 02:08 J -29243192.56 -29243192.41 -29243192.22 0.0281 0.0206  
 Moon -84777-07-03 03:06 J -29243192.52 -29243192.37 -29243192.19 0.0281 0.0206 \*  
 Earth -84776-07-17 03:20 J -29242813.59 -29242813.36 -29242813.11 0.0283 0.0089  
 Moon -84776-07-17 07:11 J -29242813.44 -29242813.20 -29242812.96 0.0283 0.0080 \*  
 Earth -84775-07-31 12:42 J -29242434.22 -29242433.97 -29242433.72 0.0285 0.0039  
 Moon -84775-07-31 16:04 J -29242434.08 -29242433.83 -29242433.57 0.0285 0.0050 \*  
 Earth -84774-08-15 04:47 J -29242054.49 -29242054.30 -29242054.08 0.0287 0.0169  
 Moon -84774-08-15 05:30 J -29242054.46 -29242054.27 -29242054.06 0.0287 0.0181 \*  
 Venus -84773-03-20 00:13 J -29241836.69 -29241836.49 -29241836.27 0.0288 0.0073  
 Mercury -84773-08-22 16:32 J -29241680.94 -29241680.81 -29241680.66 0.0289 0.0168  
 Mercury -84773-11-19 14:52 J -29241592.05 -29241591.88 -29241591.70 0.0289 0.0020  
 Mercury -84772-02-16 12:42 J -29241503.12 -29241502.97 -29241502.81 0.0290 0.0127  
 Mercury -84772-05-16 10:04 J -29241414.13 -29241414.08 -29241414.02 0.0290 0.0270  
 Mars -84766-12-13 05:16 J -29239012.49 -29239012.28 -29239012.05 0.0285 0.0161  
 Earth -84763-01-01 04:04 J -29238262.43 -29238262.33 -29238262.20 0.0280 0.0245  
 Moon -84763-01-01 05:59 J -29238262.37 -29238262.25 -29238262.12 0.0280 0.0233 \*

Earth -84762-01-13 13:25 J -29237885.14 -29237884.94 -29237884.73 0.0277 0.0138  
 Moon -84762-01-13 16:47 J -29237885.00 -29237884.80 -29237884.57 0.0277 0.0134 \*  
 Moon -84761-01-25 14:52 J -29237508.12 -29237507.88 -29237507.63 0.0275 0.0037  
 Earth -84761-01-25 15:06 J -29237508.10 -29237507.87 -29237507.63 0.0275 0.0030 \*  
 Moon -84760-02-05 07:25 J -29237131.42 -29237131.19 -29237130.96 0.0273 0.0061  
 Earth -84760-02-05 10:47 J -29237131.27 -29237131.05 -29237130.82 0.0273 0.0076 \*  
 Venus -84759-01-16 20:52 J -29236785.78 -29236785.63 -29236785.47 0.0271 0.0179  
 Earth -84759-02-17 01:54 J -29236754.60 -29236754.42 -29236754.24 0.0271 0.0175  
 Moon -84759-02-17 02:23 J -29236754.58 -29236754.40 -29236754.22 0.0271 0.0168 \*  
 Venus -84759-09-02 19:11 J -29236556.86 -29236556.70 -29236556.53 0.0271 0.0161  
 Mercury -84759-09-16 03:20 J -29236543.44 -29236543.36 -29236543.29 0.0271 0.0220  
 Mercury -84759-12-13 14:23 J -29236455.02 -29236454.90 -29236454.78 0.0270 0.0130  
 Earth -84758-02-28 13:25 J -29236377.98 -29236377.94 -29236377.89 0.0270 0.0264  
 Moon -84758-02-28 17:01 J -29236377.80 -29236377.79 -29236377.76 0.0270 0.0269  
 Mercury -84758-03-12 01:40 J -29236366.57 -29236366.43 -29236366.29 0.0270 0.0039  
 Mercury -84758-06-08 12:56 J -29236278.09 -29236277.96 -29236277.82 0.0270 0.0054  
 Mercury -84758-09-05 00:28 J -29236189.59 -29236189.48 -29236189.36 0.0270 0.0146  
 Mercury -84758-12-02 12:13 J -29236101.05 -29236100.99 -29236100.93 0.0269 0.0240  
 Mars -84752-12-25 11:16 J -29233886.27 -29233886.03 -29233885.79 0.0272 0.0186  
 Moon -84748-06-26 20:52 J -29232606.72 -29232606.63 -29232606.52 0.0279 0.0255  
 Earth -84748-06-26 22:18 J -29232606.66 -29232606.57 -29232606.46 0.0279 0.0254 \*  
 Moon -84747-07-10 15:49 J -29232228.06 -29232227.84 -29232227.62 0.0282 0.0137  
 Earth -84747-07-10 19:25 J -29232227.90 -29232227.69 -29232227.47 0.0282 0.0145 \*  
 Moon -84746-07-24 23:16 J -29231848.78 -29231848.53 -29231848.29 0.0284 0.0011  
 Earth -84746-07-25 01:25 J -29231848.69 -29231848.44 -29231848.19 0.0284 0.0023 \*  
 Earth -84745-08-07 14:52 J -29231469.11 -29231468.88 -29231468.64 0.0286 0.0107  
 Moon -84745-08-07 15:20 J -29231469.07 -29231468.86 -29231468.63 0.0286 0.0121 \*  
 Earth -84744-08-22 10:04 J -29231089.22 -29231089.08 -29231088.92 0.0288 0.0233  
 Moon -84744-08-22 13:11 J -29231089.06 -29231088.95 -29231088.82 0.0288 0.0249 \*  
 Venus -84744-09-30 01:11 J -29231050.64 -29231050.45 -29231050.24 0.0288 0.0113

Mercury -84743-01-09 12:56 J -29230949.07 -29230948.96 -29230948.85 0.0289 0.0225

Mercury -84743-04-08 11:16 J -29230860.19 -29230860.03 -29230859.85 0.0289 0.0077

Mercury -84743-07-06 09:20 J -29230771.28 -29230771.11 -29230770.94 0.0289 0.0071

Mercury -84743-10-03 06:56 J -29230682.32 -29230682.21 -29230682.09 0.0290 0.0215

Mars -84737-02-02 19:25 J -29228733.89 -29228733.69 -29228733.47 0.0288 0.0174

Moon -84735-12-26 21:35 J -29227675.67 -29227675.60 -29227675.53 0.0282 0.0270

Moon -84733-01-08 09:20 J -29227298.30 -29227298.11 -29227297.93 0.0279 0.0173

Earth -84733-01-08 12:28 J -29227298.15 -29227297.98 -29227297.79 0.0279 0.0180 \*

Earth -84732-01-19 18:13 J -29226920.96 -29226920.74 -29226920.50 0.0277 0.0072

Moon -84732-01-19 18:28 J -29226920.95 -29226920.73 -29226920.50 0.0277 0.0075 \*

Earth -84731-01-31 17:16 J -29226544.01 -29226543.78 -29226543.54 0.0275 0.0035

Moon -84731-01-31 20:52 J -29226543.87 -29226543.63 -29226543.40 0.0275 0.0022 \*

Moon -84730-02-12 10:18 J -29226167.28 -29226167.07 -29226166.84 0.0273 0.0125

Earth -84730-02-12 10:47 J -29226167.26 -29226167.05 -29226166.85 0.0273 0.0136 \*

Venus -84730-07-30 01:54 J -29225999.60 -29225999.42 -29225999.24 0.0272 0.0129

Mercury -84729-02-03 06:13 J -29225811.30 -29225811.24 -29225811.18 0.0271 0.0242

Moon -84729-02-23 20:23 J -29225790.77 -29225790.65 -29225790.52 0.0271 0.0229

Earth -84729-02-23 23:59 J -29225790.61 -29225790.50 -29225790.36 0.0271 0.0229 \*

Venus -84729-03-15 00:13 J -29225770.61 -29225770.49 -29225770.36 0.0271 0.0211

Mercury -84729-05-01 17:16 J -29225722.89 -29225722.78 -29225722.67 0.0271 0.0152

Mercury -84729-07-29 04:32 J -29225634.44 -29225634.31 -29225634.18 0.0270 0.0061

Mercury -84729-10-25 15:49 J -29225545.97 -29225545.84 -29225545.70 0.0270 0.0032

Mercury -84728-01-22 03:20 J -29225457.48 -29225457.36 -29225457.23 0.0270 0.0124

Mercury -84728-04-20 15:06 J -29225368.95 -29225368.87 -29225368.79 0.0270 0.0218

Mars -84721-02-17 05:59 J -29222875.58 -29222875.25 -29222874.93 0.0273 0.0010

Earth -84718-07-05 02:23 J -29221641.58 -29221641.40 -29221641.21 0.0281 0.0190

Moon -84718-07-05 05:59 J -29221641.43 -29221641.25 -29221641.06 0.0281 0.0188 \*

Earth -84717-07-18 03:49 J -29221262.58 -29221262.34 -29221262.10 0.0283 0.0073

Moon -84717-07-18 05:30 J -29221262.52 -29221262.27 -29221262.01 0.0283 0.0063 \*

Moon -84716-08-01 11:30 J -29220883.27 -29220883.02 -29220882.76 0.0285 0.0069

Earth -84716-08-01 13:11 J -29220883.19 -29220882.95 -29220882.69 0.0285 0.0055 \*  
 Moon -84715-08-16 01:54 J -29220503.59 -29220503.42 -29220503.22 0.0288 0.0199  
 Earth -84715-08-16 05:44 J -29220503.45 -29220503.26 -29220503.06 0.0288 0.0183 \*  
 Venus -84715-08-25 05:59 J -29220494.32 -29220494.25 -29220494.16 0.0288 0.0266  
 Venus -84714-04-12 08:23 J -29220264.32 -29220264.15 -29220263.97 0.0289 0.0172  
 Mercury -84714-05-29 11:44 J -29220217.06 -29220217.01 -29220216.93 0.0289 0.0269  
 Mercury -84714-08-26 10:18 J -29220128.22 -29220128.07 -29220127.90 0.0289 0.0120  
 Mercury -84714-11-23 08:37 J -29220039.32 -29220039.14 -29220038.97 0.0290 0.0029  
 Mercury -84713-02-20 06:13 J -29219950.37 -29219950.24 -29219950.10 0.0290 0.0174  
 Mars -84707-03-21 17:16 J -29217729.04 -29217728.78 -29217728.51 0.0286 0.0002  
 Earth -84704-01-02 05:16 J -29216711.41 -29216711.28 -29216711.14 0.0280 0.0229  
 Moon -84704-01-02 08:37 J -29216711.29 -29216711.14 -29216710.99 0.0280 0.0217 \*  
 Moon -84703-01-14 13:54 J -29216334.14 -29216333.92 -29216333.70 0.0277 0.0122  
 Earth -84703-01-14 14:08 J -29216334.12 -29216333.91 -29216333.69 0.0277 0.0122 \*  
 Moon -84702-01-26 12:13 J -29215957.23 -29215956.99 -29215956.75 0.0275 0.0026  
 Earth -84702-01-26 15:49 J -29215957.07 -29215956.84 -29215956.60 0.0275 0.0015 \*  
 Moon -84701-02-07 10:47 J -29215580.26 -29215580.05 -29215579.82 0.0273 0.0077  
 Earth -84701-02-07 11:16 J -29215580.25 -29215580.03 -29215579.80 0.0273 0.0090 \*  
 Venus -84700-02-08 02:08 J -29215213.61 -29215213.41 -29215213.22 0.0271 0.0093  
 Earth -84700-02-18 01:54 J -29215203.58 -29215203.42 -29215203.24 0.0271 0.0188  
 Moon -84700-02-18 05:44 J -29215203.43 -29215203.26 -29215203.08 0.0271 0.0183 \*  
 Mercury -84700-09-18 18:42 J -29214990.81 -29214990.72 -29214990.62 0.0270 0.0185  
 Venus -84700-09-25 00:13 J -29214984.56 -29214984.49 -29214984.40 0.0270 0.0247  
 Mercury -84700-12-16 05:59 J -29214902.38 -29214902.25 -29214902.12 0.0270 0.0094  
 Mercury -84699-03-14 17:16 J -29214813.92 -29214813.78 -29214813.64 0.0270 0.0003  
 Mercury -84699-06-11 04:47 J -29214725.44 -29214725.30 -29214725.17 0.0270 0.0090  
 Mercury -84699-09-07 16:18 J -29214636.92 -29214636.82 -29214636.72 0.0269 0.0183  
 Mars -84691-04-09 18:56 J -29211865.93 -29211865.71 -29211865.47 0.0274 0.0194  
 Moon -84689-06-27 18:13 J -29211055.86 -29211055.74 -29211055.60 0.0279 0.0239  
 Earth -84689-06-27 21:49 J -29211055.70 -29211055.59 -29211055.44 0.0279 0.0240 \*

Moon -84688-07-11 17:59 J -29210676.96 -29210676.75 -29210676.53 0.0282 0.0121  
 Earth -84688-07-11 19:11 J -29210676.92 -29210676.70 -29210676.48 0.0282 0.0129 \*  
 Earth -84687-07-26 00:56 J -29210297.71 -29210297.46 -29210297.20 0.0284 0.0007  
 Moon -84687-07-26 03:35 J -29210297.60 -29210297.35 -29210297.10 0.0284 0.0008 \*  
 Earth -84686-08-09 14:37 J -29209918.11 -29209917.89 -29209917.66 0.0286 0.0122  
 Moon -84686-08-09 18:42 J -29209917.94 -29209917.72 -29209917.50 0.0286 0.0138 \*  
 Venus -84685-03-06 06:13 J -29209708.37 -29209708.24 -29209708.11 0.0287 0.0228  
 Earth -84685-08-23 10:04 J -29209538.20 -29209538.08 -29209537.94 0.0288 0.0247  
 Moon -84685-08-23 13:11 J -29209538.05 -29209537.95 -29209537.84 0.0288 0.0262 \*  
 Venus -84685-10-22 08:37 J -29209478.28 -29209478.14 -29209477.99 0.0288 0.0210  
 Mercury -84684-01-12 06:28 J -29209396.37 -29209396.23 -29209396.09 0.0289 0.0179  
 Mercury -84684-04-11 04:47 J -29209307.47 -29209307.30 -29209307.12 0.0289 0.0031  
 Mercury -84684-07-09 02:37 J -29209218.55 -29209218.39 -29209218.23 0.0289 0.0116  
 Mercury -84684-10-06 00:13 J -29209129.56 -29209129.49 -29209129.42 0.0290 0.0259  
 Mars -84677-05-07 10:04 J -29206724.29 -29206724.08 -29206723.85 0.0286 0.0162  
 Moon -84676-12-27 19:11 J -29206124.79 -29206124.70 -29206124.59 0.0282 0.0256  
 Earth -84676-12-27 22:47 J -29206124.61 -29206124.55 -29206124.48 0.0282 0.0271 \*  
 Earth -84674-01-09 12:42 J -29205747.16 -29205746.97 -29205746.77 0.0279 0.0165  
 Moon -84674-01-09 12:56 J -29205747.15 -29205746.96 -29205746.77 0.0279 0.0161 \*  
 Earth -84673-01-21 18:28 J -29205369.96 -29205369.73 -29205369.49 0.0277 0.0056  
 Moon -84673-01-21 22:04 J -29205369.80 -29205369.58 -29205369.34 0.0277 0.0064 \*  
 Earth -84672-02-01 17:30 J -29204993.01 -29204992.77 -29204992.54 0.0275 0.0050  
 Moon -84672-02-01 18:28 J -29204992.97 -29204992.73 -29204992.48 0.0275 0.0037 \*  
 Moon -84671-02-13 07:25 J -29204616.39 -29204616.19 -29204615.98 0.0273 0.0141  
 Earth -84671-02-13 11:01 J -29204616.24 -29204616.04 -29204615.84 0.0273 0.0150 \*  
 Venus -84671-08-21 06:42 J -29204427.42 -29204427.22 -29204427.01 0.0272 0.0044  
 Mercury -84670-02-05 21:35 J -29204258.68 -29204258.60 -29204258.51 0.0271 0.0208  
 Moon -84670-02-24 23:30 J -29204239.60 -29204239.52 -29204239.42 0.0271 0.0246  
 Earth -84670-02-25 00:13 J -29204239.59 -29204239.49 -29204239.37 0.0271 0.0241 \*  
 Mercury -84670-05-05 08:52 J -29204170.25 -29204170.13 -29204170.01 0.0271 0.0117

Mercury -84670-08-01 20:08 J -29204081.80 -29204081.66 -29204081.52 0.0270 0.0025

Mercury -84670-10-29 07:25 J -29203993.32 -29203993.19 -29203993.05 0.0270 0.0068

Mercury -84669-01-25 18:56 J -29203904.82 -29203904.71 -29203904.59 0.0270 0.0161

Mercury -84669-04-23 06:42 J -29203816.26 -29203816.22 -29203816.17 0.0270 0.0255

Mars -84663-05-21 04:32 J -29201597.57 -29201597.31 -29201597.06 0.0272 0.0171

Earth -84660-06-22 11:16 J -29200469.03 -29200469.03 -29200469.03 0.0278 0.0278

Earth -84659-07-06 03:20 J -29200090.55 -29200090.36 -29200090.16 0.0281 0.0175

Moon -84659-07-06 04:32 J -29200090.51 -29200090.31 -29200090.10 0.0281 0.0170 \*

Moon -84658-07-20 02:08 J -29199711.66 -29199711.41 -29199711.15 0.0283 0.0044

Earth -84658-07-20 05:01 J -29199711.53 -29199711.29 -29199711.04 0.0283 0.0057 \*

Moon -84657-08-02 11:01 J -29199332.28 -29199332.04 -29199331.80 0.0286 0.0086

Earth -84657-08-02 14:52 J -29199332.12 -29199331.88 -29199331.63 0.0286 0.0070 \*

Moon -84656-08-17 05:16 J -29198952.43 -29198952.28 -29198952.11 0.0288 0.0214

Earth -84656-08-17 07:25 J -29198952.37 -29198952.19 -29198952.00 0.0288 0.0197 \*

Venus -84656-09-16 14:37 J -29198922.07 -29198921.89 -29198921.71 0.0288 0.0166

Venus -84655-05-04 16:47 J -29198691.86 -29198691.80 -29198691.73 0.0289 0.0273

Mercury -84655-06-01 05:59 J -29198664.36 -29198664.25 -29198664.13 0.0289 0.0219

Mercury -84655-08-29 04:18 J -29198575.49 -29198575.32 -29198575.14 0.0289 0.0070

Mercury -84655-11-26 02:23 J -29198486.57 -29198486.40 -29198486.23 0.0290 0.0078

Mercury -84654-02-22 23:59 J -29198397.61 -29198397.50 -29198397.39 0.0290 0.0222

Mars -84649-06-28 03:20 J -29196445.56 -29196445.36 -29196445.13 0.0288 0.0166

Moon -84645-01-04 06:56 J -29195160.37 -29195160.21 -29195160.03 0.0280 0.0204

Earth -84645-01-04 06:42 J -29195160.36 -29195160.22 -29195160.05 0.0280 0.0214 \*

Moon -84644-01-15 12:13 J -29194783.20 -29194782.99 -29194782.76 0.0277 0.0111

Earth -84644-01-15 15:49 J -29194783.05 -29194782.84 -29194782.61 0.0277 0.0106 \*

Moon -84643-01-27 16:18 J -29194406.05 -29194405.82 -29194405.59 0.0275 0.0012

Earth -84643-01-27 17:30 J -29194406.01 -29194405.77 -29194405.53 0.0275 0.0002 \*

Earth -84642-02-08 12:42 J -29194029.19 -29194028.97 -29194028.75 0.0273 0.0105

Moon -84642-02-08 15:49 J -29194029.06 -29194028.84 -29194028.61 0.0273 0.0091 \*

Earth -84641-02-20 03:20 J -29193652.51 -29193652.36 -29193652.19 0.0271 0.0200

Moon -84641-02-20 04:18 J -29193652.47 -29193652.32 -29193652.14 0.0271 0.0199 \*  
 Venus -84641-03-02 07:54 J -29193641.38 -29193641.17 -29193640.97 0.0271 0.0007  
 Mercury -84641-06-24 23:16 J -29193526.59 -29193526.53 -29193526.46 0.0271 0.0239  
 Mercury -84641-09-21 10:32 J -29193438.18 -29193438.06 -29193437.95 0.0270 0.0148  
 Mercury -84641-12-18 21:35 J -29193349.73 -29193349.60 -29193349.46 0.0270 0.0058  
 Mercury -84640-03-17 09:06 J -29193261.26 -29193261.12 -29193260.98 0.0270 0.0035  
 Mercury -84640-06-13 20:37 J -29193172.77 -29193172.64 -29193172.52 0.0270 0.0128  
 Mercury -84640-09-10 08:08 J -29193084.24 -29193084.16 -29193084.08 0.0269 0.0221  
 Mars -84633-07-11 17:44 J -29190588.09 -29190587.76 -29190587.43 0.0273 0.0010  
 Moon -84630-06-29 23:44 J -29189504.66 -29189504.51 -29189504.36 0.0279 0.0220  
 Earth -84630-06-29 23:59 J -29189504.64 -29189504.50 -29189504.34 0.0279 0.0223 \*  
 Earth -84629-07-12 21:06 J -29189125.84 -29189125.62 -29189125.38 0.0282 0.0112  
 Moon -84629-07-12 23:59 J -29189125.72 -29189125.50 -29189125.26 0.0282 0.0102 \*  
 Earth -84628-07-27 03:06 J -29188746.62 -29188746.37 -29188746.11 0.0284 0.0011  
 Moon -84628-07-27 06:28 J -29188746.48 -29188746.23 -29188745.97 0.0284 0.0026 \*  
 Earth -84627-08-10 17:01 J -29188367.01 -29188366.79 -29188366.56 0.0286 0.0137  
 Moon -84627-08-10 17:44 J -29188366.97 -29188366.76 -29188366.53 0.0286 0.0154 \*  
 Venus -84626-03-29 15:06 J -29188136.06 -29188135.87 -29188135.67 0.0288 0.0127  
 Moon -84626-08-25 10:32 J -29187987.12 -29187987.06 -29187986.98 0.0288 0.0277  
 Earth -84626-08-25 12:28 J -29187987.07 -29187986.98 -29187986.86 0.0288 0.0262 \*  
 Mercury -84626-10-19 02:08 J -29187932.45 -29187932.41 -29187932.37 0.0288 0.0279  
 Mercury -84625-01-16 00:42 J -29187843.63 -29187843.47 -29187843.31 0.0289 0.0129  
 Mercury -84625-04-13 22:47 J -29187754.72 -29187754.55 -29187754.37 0.0289 0.0020  
 Mercury -84625-07-11 20:37 J -29187665.78 -29187665.64 -29187665.50 0.0289 0.0165  
 Mars -84619-08-14 20:37 J -29185440.90 -29185440.64 -29185440.37 0.0287 0.0003  
 Moon -84617-12-28 23:16 J -29184573.64 -29184573.53 -29184573.41 0.0282 0.0244  
 Earth -84617-12-28 23:44 J -29184573.61 -29184573.51 -29184573.41 0.0282 0.0256 \*  
 Earth -84615-01-10 13:25 J -29184196.14 -29184195.94 -29184195.73 0.0279 0.0149  
 Moon -84615-01-10 16:47 J -29184195.99 -29184195.80 -29184195.59 0.0279 0.0147 \*  
 Earth -84614-01-22 19:11 J -29183818.93 -29183818.70 -29183818.46 0.0277 0.0041

Moon -84614-01-22 20:23 J -29183818.89 -29183818.65 -29183818.40 0.0277 0.0051 \*  
 Moon -84613-02-03 14:52 J -29183442.11 -29183441.88 -29183441.63 0.0275 0.0050  
 Earth -84613-02-03 18:13 J -29183441.97 -29183441.74 -29183441.51 0.0275 0.0065 \*  
 Moon -84612-02-14 10:04 J -29183065.26 -29183065.08 -29183064.89 0.0273 0.0157  
 Earth -84612-02-14 11:44 J -29183065.20 -29183065.01 -29183064.82 0.0273 0.0164 \*  
 Venus -84612-09-12 12:13 J -29182855.19 -29182854.99 -29182854.78 0.0272 0.0045  
 Mercury -84612-11-12 02:08 J -29182794.44 -29182794.41 -29182794.38 0.0271 0.0262  
 Mercury -84611-02-08 13:11 J -29182706.05 -29182705.95 -29182705.84 0.0271 0.0172  
 Earth -84611-02-26 01:11 J -29182688.52 -29182688.45 -29182688.36 0.0271 0.0253  
 Moon -84611-02-26 04:32 J -29182688.36 -29182688.31 -29182688.24 0.0271 0.0262 \*  
 Mercury -84611-05-08 00:28 J -29182617.61 -29182617.48 -29182617.35 0.0271 0.0081  
 Mercury -84611-08-04 11:44 J -29182529.14 -29182529.01 -29182528.87 0.0270 0.0015  
 Mercury -84611-10-31 23:16 J -29182440.66 -29182440.53 -29182440.40 0.0270 0.0105  
 Mercury -84610-01-28 10:47 J -29182352.14 -29182352.05 -29182351.95 0.0270 0.0199  
 Mars -84603-09-03 18:28 J -29179576.93 -29179576.73 -29179576.51 0.0274 0.0211  
 Moon -84601-06-23 14:23 J -29178917.98 -29178917.90 -29178917.80 0.0278 0.0261  
 Earth -84601-06-23 14:23 J -29178917.97 -29178917.90 -29178917.81 0.0278 0.0263 \*  
 Moon -84600-07-07 03:49 J -29178539.55 -29178539.34 -29178539.12 0.0281 0.0150  
 Earth -84600-07-07 06:56 J -29178539.41 -29178539.21 -29178538.99 0.0281 0.0159 \*  
 Moon -84599-07-21 05:44 J -29178160.51 -29178160.26 -29178160.01 0.0283 0.0027  
 Earth -84599-07-21 08:52 J -29178160.38 -29178160.13 -29178159.88 0.0283 0.0040 \*  
 Earth -84598-08-04 18:42 J -29177780.95 -29177780.72 -29177780.47 0.0286 0.0087  
 Moon -84598-08-04 18:42 J -29177780.94 -29177780.72 -29177780.49 0.0286 0.0102 \*  
 Earth -84597-08-18 11:16 J -29177401.18 -29177401.03 -29177400.84 0.0288 0.0213  
 Moon -84597-08-18 14:08 J -29177401.04 -29177400.91 -29177400.75 0.0288 0.0230 \*  
 Venus -84597-10-09 00:28 J -29177349.69 -29177349.48 -29177349.26 0.0288 0.0061  
 Mercury -84596-06-04 00:42 J -29177111.62 -29177111.47 -29177111.33 0.0289 0.0165  
 Mercury -84596-08-31 23:01 J -29177022.72 -29177022.54 -29177022.37 0.0289 0.0017  
 Mercury -84596-11-28 20:52 J -29176933.79 -29176933.63 -29176933.48 0.0290 0.0130  
 Mercury -84595-02-25 18:13 J -29176844.79 -29176844.74 -29176844.68 0.0290 0.0273



Mars	-84589-09-30 22:18 J	-29174435.77	-29174435.57	-29174435.35	0.0285	0.0174
Moon	-84586-01-05 06:13 J	-29173609.41	-29173609.24	-29173609.06	0.0280	0.0190
Earth	-84586-01-05 09:35 J	-29173609.27	-29173609.10	-29173608.93	0.0280	0.0198 *
Moon	-84585-01-17 17:16 J	-29173231.99	-29173231.78	-29173231.56	0.0277	0.0096
Earth	-84585-01-17 18:28 J	-29173231.95	-29173231.73	-29173231.50	0.0277	0.0090 *
Earth	-84584-01-28 19:54 J	-29172854.90	-29172854.67	-29172854.43	0.0275	0.0018
Moon	-84584-01-28 23:16 J	-29172854.76	-29172854.53	-29172854.30	0.0275	0.0002 *
Earth	-84583-02-09 15:20 J	-29172478.07	-29172477.86	-29172477.64	0.0273	0.0120
Moon	-84583-02-09 17:44 J	-29172477.98	-29172477.76	-29172477.53	0.0273	0.0106 *
Venus	-84583-08-08 15:20 J	-29172297.92	-29172297.86	-29172297.78	0.0272	0.0255
Moon	-84582-02-21 02:52 J	-29172101.51	-29172101.38	-29172101.22	0.0271	0.0218
Earth	-84582-02-21 06:13 J	-29172101.38	-29172101.24	-29172101.09	0.0271	0.0213 *
Venus	-84582-03-25 14:23 J	-29172069.09	-29172068.90	-29172068.70	0.0271	0.0088
Mercury	-84582-06-28 15:20 J	-29171973.95	-29171973.86	-29171973.77	0.0271	0.0200
Mercury	-84582-09-25 02:23 J	-29171885.52	-29171885.40	-29171885.27	0.0270	0.0110
Mercury	-84582-12-22 13:40 J	-29171797.06	-29171796.93	-29171796.79	0.0270	0.0020
Mercury	-84581-03-20 01:11 J	-29171708.58	-29171708.45	-29171708.32	0.0270	0.0075
Mercury	-84581-06-16 12:42 J	-29171620.08	-29171619.97	-29171619.86	0.0270	0.0168
Mercury	-84581-09-13 00:13 J	-29171531.51	-29171531.49	-29171531.45	0.0269	0.0263
Mars	-84575-10-14 02:52 J	-29169309.62	-29169309.38	-29169309.10	0.0272	0.0165
Earth	-84571-07-01 04:47 J	-29167953.47	-29167953.30	-29167953.13	0.0279	0.0207
Moon	-84571-07-01 08:23 J	-29167953.32	-29167953.15	-29167952.97	0.0279	0.0200 *
Earth	-84570-07-15 01:54 J	-29167574.65	-29167574.42	-29167574.18	0.0282	0.0095
Moon	-84570-07-15 05:01 J	-29167574.54	-29167574.29	-29167574.04	0.0282	0.0083 *
Moon	-84569-07-28 07:11 J	-29167195.46	-29167195.20	-29167194.94	0.0284	0.0042
Earth	-84569-07-28 07:54 J	-29167195.42	-29167195.17	-29167194.91	0.0284	0.0028 *
Moon	-84568-08-11 17:59 J	-29166815.94	-29166815.75	-29166815.53	0.0286	0.0170
Earth	-84568-08-11 21:49 J	-29166815.80	-29166815.59	-29166815.37	0.0286	0.0154 *
Venus	-84567-04-21 01:40 J	-29166563.65	-29166563.43	-29166563.22	0.0288	0.0021
Earth	-84567-08-26 17:30 J	-29166435.83	-29166435.77	-29166435.69	0.0288	0.0276

Mercury -84567-10-21 20:52 J -29166379.73 -29166379.63 -29166379.51 0.0288 0.0224

Mercury -84566-01-18 19:25 J -29166290.86 -29166290.69 -29166290.52 0.0289 0.0075

Mercury -84566-04-17 17:30 J -29166201.94 -29166201.77 -29166201.60 0.0289 0.0073

Mercury -84566-07-15 15:06 J -29166112.98 -29166112.87 -29166112.76 0.0289 0.0217

Mars -84561-11-21 07:11 J -29164157.42 -29164157.20 -29164156.98 0.0288 0.0162

Earth -84558-12-31 01:40 J -29163022.54 -29163022.43 -29163022.29 0.0282 0.0242

Moon -84558-12-31 05:16 J -29163022.40 -29163022.28 -29163022.13 0.0282 0.0230 \*

Earth -84556-01-11 15:49 J -29162645.05 -29162644.84 -29162644.63 0.0279 0.0134

Moon -84556-01-11 17:30 J -29162644.98 -29162644.77 -29162644.55 0.0279 0.0132 \*

Moon -84555-01-23 18:28 J -29162267.97 -29162267.73 -29162267.49 0.0277 0.0039

Earth -84555-01-23 21:35 J -29162267.83 -29162267.60 -29162267.36 0.0277 0.0025 \*

Moon -84554-02-04 17:59 J -29161890.97 -29161890.75 -29161890.52 0.0275 0.0065

Earth -84554-02-04 20:23 J -29161890.87 -29161890.65 -29161890.42 0.0275 0.0081 \*

Earth -84553-02-16 13:54 J -29161514.09 -29161513.92 -29161513.73 0.0273 0.0178

Moon -84553-02-16 16:18 J -29161513.99 -29161513.82 -29161513.63 0.0273 0.0174 \*

Venus -84553-02-18 19:40 J -29161511.80 -29161511.68 -29161511.54 0.0273 0.0209

Venus -84553-10-04 18:42 J -29161282.89 -29161282.72 -29161282.54 0.0272 0.0136

Mercury -84553-11-14 17:59 J -29161241.82 -29161241.75 -29161241.67 0.0272 0.0225

Mercury -84552-02-11 05:16 J -29161153.40 -29161153.28 -29161153.16 0.0271 0.0134

Earth -84552-02-27 03:35 J -29161137.38 -29161137.35 -29161137.29 0.0271 0.0266

Mercury -84552-05-10 16:32 J -29161064.95 -29161064.81 -29161064.67 0.0271 0.0042

Mercury -84552-08-07 03:49 J -29160976.47 -29160976.34 -29160976.20 0.0271 0.0052

Mercury -84552-11-03 15:20 J -29160887.97 -29160887.86 -29160887.74 0.0270 0.0145

Mercury -84551-01-31 03:06 J -29160799.43 -29160799.37 -29160799.31 0.0270 0.0239

Mars -84545-12-06 02:23 J -29158298.72 -29158298.40 -29158298.08 0.0273 0.0035

Moon -84542-06-25 17:01 J -29157366.92 -29157366.79 -29157366.67 0.0278 0.0241

Earth -84542-06-25 20:37 J -29157366.74 -29157366.64 -29157366.52 0.0278 0.0248 \*

Moon -84541-07-08 10:47 J -29156988.26 -29156988.05 -29156987.83 0.0281 0.0132

Earth -84541-07-08 13:40 J -29156988.14 -29156987.93 -29156987.71 0.0281 0.0142 \*

Earth -84540-07-22 15:49 J -29156609.09 -29156608.84 -29156608.59 0.0283 0.0023

Moon -84540-07-22 16:32 J -29156609.06 -29156608.81 -29156608.57 0.0283 0.0010 \*  
 Earth -84539-08-06 02:08 J -29156229.64 -29156229.41 -29156229.17 0.0286 0.0103  
 Moon -84539-08-06 05:30 J -29156229.49 -29156229.27 -29156229.04 0.0286 0.0120 \*  
 Earth -84538-08-20 19:11 J -29155849.85 -29155849.70 -29155849.54 0.0288 0.0228  
 Moon -84538-08-20 22:18 J -29155849.69 -29155849.57 -29155849.42 0.0288 0.0244 \*  
 Venus -84538-11-01 12:28 J -29155777.19 -29155776.98 -29155776.76 0.0288 0.0053  
 Mercury -84537-03-09 21:35 J -29155647.67 -29155647.60 -29155647.51 0.0289 0.0256  
 Mercury -84537-06-06 20:08 J -29155558.82 -29155558.66 -29155558.49 0.0289 0.0106  
 Mercury -84537-09-03 18:28 J -29155469.91 -29155469.73 -29155469.56 0.0289 0.0043  
 Mercury -84537-12-01 16:04 J -29155380.96 -29155380.83 -29155380.70 0.0290 0.0188  
 Mars -84530-01-08 15:49 J -29153152.10 -29153151.84 -29153151.57 0.0287 0.0017  
 Moon -84529-12-24 17:01 J -29152435.83 -29152435.79 -29152435.71 0.0282 0.0274  
 Moon -84527-01-06 11:59 J -29152058.17 -29152058.00 -29152057.81 0.0280 0.0177  
 Earth -84527-01-06 14:08 J -29152058.08 -29152057.91 -29152057.72 0.0280 0.0182 \*  
 Earth -84526-01-18 23:01 J -29151680.77 -29151680.54 -29151680.31 0.0277 0.0074  
 Moon -84526-01-19 01:40 J -29151680.65 -29151680.43 -29151680.21 0.0277 0.0082 \*  
 Earth -84525-01-31 00:13 J -29151303.73 -29151303.49 -29151303.25 0.0275 0.0033  
 Moon -84525-01-31 02:37 J -29151303.63 -29151303.39 -29151303.14 0.0275 0.0018 \*  
 Moon -84524-02-10 17:16 J -29150926.99 -29150926.78 -29150926.56 0.0273 0.0124  
 Earth -84524-02-10 19:25 J -29150926.89 -29150926.69 -29150926.47 0.0273 0.0135 \*  
 Venus -84524-08-30 23:01 J -29150725.70 -29150725.54 -29150725.37 0.0272 0.0160  
 Moon -84523-02-22 07:40 J -29150550.28 -29150550.18 -29150550.04 0.0271 0.0231  
 Earth -84523-02-22 10:18 J -29150550.19 -29150550.07 -29150549.93 0.0271 0.0227 \*  
 Mercury -84523-04-03 20:23 J -29150509.70 -29150509.65 -29150509.60 0.0271 0.0250  
 Venus -84523-04-16 22:04 J -29150496.73 -29150496.58 -29150496.43 0.0271 0.0182  
 Mercury -84523-07-01 07:25 J -29150421.29 -29150421.19 -29150421.07 0.0271 0.0160  
 Mercury -84523-09-27 18:42 J -29150332.85 -29150332.72 -29150332.58 0.0270 0.0068  
 Mercury -84523-12-25 06:13 J -29150244.38 -29150244.24 -29150244.11 0.0270 0.0025  
 Mercury -84522-03-23 17:30 J -29150155.89 -29150155.77 -29150155.64 0.0270 0.0117  
 Mercury -84522-06-20 05:01 J -29150067.37 -29150067.29 -29150067.20 0.0270 0.0211

Mars	-84514-01-28 00:56 J	-29147288.63	-29147288.46	-29147288.25	0.0274	0.0221
Earth	-84512-07-02 12:56 J	-29146402.14	-29146401.96	-29146401.77	0.0279	0.0190
Moon	-84512-07-02 14:52 J	-29146402.06	-29146401.88	-29146401.67	0.0279	0.0180 *
Moon	-84511-07-16 08:52 J	-29146023.38	-29146023.13	-29146022.87	0.0282	0.0063
Earth	-84511-07-16 10:18 J	-29146023.31	-29146023.07	-29146022.82	0.0282	0.0077 *
Moon	-84510-07-30 12:56 J	-29145644.20	-29145643.96	-29145643.71	0.0284	0.0062
Earth	-84510-07-30 16:47 J	-29145644.05	-29145643.80	-29145643.55	0.0284	0.0046 *
Moon	-84509-08-13 03:49 J	-29145264.51	-29145264.34	-29145264.14	0.0286	0.0187
Earth	-84509-08-13 06:28 J	-29145264.42	-29145264.23	-29145264.02	0.0286	0.0171 *
Venus	-84508-05-13 14:08 J	-29144991.11	-29144990.91	-29144990.70	0.0288	0.0095
Mercury	-84508-10-24 16:47 J	-29144826.94	-29144826.80	-29144826.65	0.0289	0.0163
Mercury	-84507-01-21 15:06 J	-29144738.04	-29144737.87	-29144737.69	0.0289	0.0015
Mercury	-84507-04-20 12:56 J	-29144649.11	-29144648.96	-29144648.80	0.0289	0.0133
Mercury	-84507-07-18 10:18 J	-29144560.11	-29144560.07	-29144560.01	0.0289	0.0277
Mars	-84500-02-24 06:56 J	-29142147.41	-29142147.21	-29142147.00	0.0286	0.0182
Earth	-84498-01-01 05:59 J	-29141471.38	-29141471.25	-29141471.10	0.0282	0.0227
Moon	-84498-01-01 08:08 J	-29141471.32	-29141471.16	-29141471.00	0.0282	0.0217 *
Moon	-84497-01-13 17:01 J	-29141094.00	-29141093.79	-29141093.56	0.0279	0.0122
Earth	-84497-01-13 19:40 J	-29141093.89	-29141093.68	-29141093.46	0.0279	0.0118 *
Moon	-84496-01-24 22:47 J	-29140716.78	-29140716.55	-29140716.31	0.0277	0.0024
Earth	-84496-01-25 01:25 J	-29140716.68	-29140716.44	-29140716.20	0.0277	0.0010 *
Earth	-84495-02-05 23:59 J	-29140339.71	-29140339.50	-29140339.27	0.0275	0.0096
Moon	-84495-02-06 02:23 J	-29140339.62	-29140339.40	-29140339.18	0.0275	0.0082 *
Earth	-84494-02-17 17:44 J	-29139962.92	-29139962.76	-29139962.59	0.0273	0.0192
Moon	-84494-02-17 21:06 J	-29139962.80	-29139962.62	-29139962.45	0.0273	0.0187 *
Venus	-84494-03-13 02:52 J	-29139939.56	-29139939.38	-29139939.18	0.0273	0.0115
Venus	-84494-10-28 01:54 J	-29139710.51	-29139710.42	-29139710.30	0.0272	0.0231
Mercury	-84494-11-18 10:18 J	-29139689.17	-29139689.07	-29139688.97	0.0272	0.0185
Mercury	-84493-02-14 21:20 J	-29139600.73	-29139600.61	-29139600.48	0.0271	0.0094
Mercury	-84493-05-13 08:52 J	-29139512.27	-29139512.13	-29139511.99	0.0271	0.0005

Mercury -84493-08-09 20:08 J -29139423.79 -29139423.66 -29139423.53 0.0271 0.0094  
 Mercury -84493-11-06 07:54 J -29139335.27 -29139335.17 -29139335.07 0.0270 0.0187  
 Mars -84486-03-10 18:13 J -29137020.01 -29137019.74 -29137019.44 0.0271 0.0137  
 Moon -84483-06-27 03:49 J -29135815.47 -29135815.34 -29135815.19 0.0278 0.0225  
 Earth -84483-06-27 05:30 J -29135815.39 -29135815.27 -29135815.12 0.0278 0.0232 \*  
 Earth -84482-07-10 23:01 J -29135436.76 -29135436.54 -29135436.31 0.0281 0.0125  
 Moon -84482-07-11 00:56 J -29135436.68 -29135436.46 -29135436.23 0.0281 0.0112 \*  
 Earth -84481-07-24 01:40 J -29135057.69 -29135057.43 -29135057.18 0.0283 0.0006  
 Moon -84481-07-24 05:16 J -29135057.53 -29135057.28 -29135057.03 0.0283 0.0011 \*  
 Earth -84480-08-07 12:13 J -29134678.21 -29134677.99 -29134677.76 0.0286 0.0121  
 Moon -84480-08-07 14:37 J -29134678.11 -29134677.89 -29134677.65 0.0286 0.0136 \*  
 Venus -84479-04-07 23:59 J -29134434.57 -29134434.50 -29134434.41 0.0287 0.0266  
 Moon -84479-08-22 04:32 J -29134298.42 -29134298.31 -29134298.19 0.0288 0.0257  
 Earth -84479-08-22 05:44 J -29134298.39 -29134298.26 -29134298.13 0.0288 0.0244 \*  
 Venus -84479-11-24 02:08 J -29134204.58 -29134204.41 -29134204.23 0.0288 0.0172  
 Mercury -84478-03-13 18:13 J -29134094.87 -29134094.74 -29134094.61 0.0289 0.0190  
 Mercury -84478-06-10 16:32 J -29134005.98 -29134005.81 -29134005.63 0.0289 0.0041  
 Mercury -84478-09-07 14:23 J -29133917.06 -29133916.90 -29133916.73 0.0289 0.0106  
 Mercury -84478-12-05 11:59 J -29133828.08 -29133828.00 -29133827.91 0.0290 0.0250  
 Mars -84472-04-17 10:32 J -29131868.29 -29131868.06 -29131867.83 0.0288 0.0142  
 Moon -84470-12-27 02:08 J -29130884.50 -29130884.41 -29130884.32 0.0282 0.0261  
 Earth -84470-12-27 03:20 J -29130884.41 -29130884.36 -29130884.28 0.0282 0.0272 \*  
 Earth -84468-01-07 20:23 J -29130506.84 -29130506.65 -29130506.45 0.0280 0.0166  
 Moon -84468-01-07 22:47 J -29130506.73 -29130506.55 -29130506.35 0.0280 0.0163 \*  
 Earth -84467-01-20 04:47 J -29130129.53 -29130129.30 -29130129.06 0.0277 0.0058  
 Moon -84467-01-20 07:54 J -29130129.40 -29130129.17 -29130128.93 0.0277 0.0065 \*  
 Moon -84466-02-01 04:04 J -29129752.57 -29129752.33 -29129752.09 0.0275 0.0035  
 Earth -84466-02-01 06:13 J -29129752.48 -29129752.24 -29129752.01 0.0275 0.0049 \*  
 Moon -84465-02-12 22:04 J -29129375.78 -29129375.58 -29129375.38 0.0273 0.0141  
 Earth -84465-02-13 01:11 J -29129375.63 -29129375.45 -29129375.24 0.0273 0.0150 \*

Venus -84465-09-22 07:40 J -29129153.38 -29129153.18 -29129152.98 0.0272 0.0062

Earth -84464-02-23 16:04 J -29128998.92 -29128998.83 -29128998.71 0.0271 0.0241

Moon -84464-02-23 17:44 J -29128998.85 -29128998.76 -29128998.67 0.0271 0.0247 \*

Mercury -84464-04-06 12:56 J -29128957.04 -29128956.96 -29128956.87 0.0271 0.0207

Mercury -84464-07-03 23:59 J -29128868.62 -29128868.50 -29128868.37 0.0271 0.0117

Mercury -84464-09-30 11:30 J -29128780.16 -29128780.02 -29128779.89 0.0270 0.0025

Mercury -84464-12-27 22:47 J -29128691.68 -29128691.55 -29128691.42 0.0270 0.0069

Mercury -84463-03-26 10:18 J -29128603.18 -29128603.07 -29128602.96 0.0270 0.0162

Mercury -84463-06-22 21:49 J -29128514.62 -29128514.59 -29128514.54 0.0270 0.0257

Mars -84456-05-01 19:25 J -29126010.01 -29126009.69 -29126009.37 0.0273 0.0050

Earth -84454-06-21 11:30 J -29125229.05 -29125229.02 -29125228.96 0.0277 0.0272

Moon -84454-06-21 13:11 J -29125229.00 -29125228.95 -29125228.87 0.0277 0.0268 \*

Moon -84453-07-03 21:20 J -29124850.81 -29124850.61 -29124850.39 0.0280 0.0159

Earth -84453-07-04 00:13 J -29124850.68 -29124850.49 -29124850.29 0.0280 0.0172 \*

Moon -84452-07-17 17:59 J -29124471.99 -29124471.75 -29124471.50 0.0282 0.0042

Earth -84452-07-17 21:49 J -29124471.83 -29124471.59 -29124471.33 0.0282 0.0058 \*

Moon -84451-08-01 02:37 J -29124092.62 -29124092.39 -29124092.15 0.0284 0.0081

Earth -84451-08-01 04:32 J -29124092.55 -29124092.31 -29124092.06 0.0284 0.0066 \*

Earth -84450-08-15 18:42 J -29123712.90 -29123712.72 -29123712.53 0.0287 0.0190

Moon -84450-08-15 20:23 J -29123712.82 -29123712.65 -29123712.48 0.0287 0.0203 \*

Venus -84450-10-19 03:06 J -29123648.51 -29123648.37 -29123648.23 0.0287 0.0220

Venus -84449-06-05 04:47 J -29123418.43 -29123418.30 -29123418.14 0.0288 0.0218

Mercury -84449-07-30 15:06 J -29123362.96 -29123362.87 -29123362.77 0.0288 0.0244

Mercury -84449-10-27 13:40 J -29123274.09 -29123273.93 -29123273.76 0.0289 0.0095

Mercury -84448-01-24 11:44 J -29123185.18 -29123185.01 -29123184.83 0.0289 0.0054

Mercury -84448-04-23 09:35 J -29123096.23 -29123096.10 -29123095.97 0.0289 0.0199

Jupiter -84445-04-08 05:01 J -29122015.63 -29122015.29 -29122014.91 0.0291 0.0186

Mars -84442-06-04 05:01 J -29120863.56 -29120863.29 -29120863.03 0.0287 0.0029

Moon -84439-01-02 10:04 J -29119920.24 -29119920.08 -29119919.90 0.0282 0.0207

Earth -84439-01-02 12:56 J -29119920.11 -29119919.96 -29119919.80 0.0282 0.0212 \*

Moon -84438-01-14 22:47 J -29119542.76 -29119542.55 -29119542.33 0.0279 0.0107  
 Earth -84438-01-15 01:54 J -29119542.64 -29119542.42 -29119542.19 0.0279 0.0103 \*  
 Earth -84437-01-27 07:11 J -29119165.44 -29119165.20 -29119164.96 0.0277 0.0007  
 Moon -84437-01-27 08:37 J -29119165.37 -29119165.14 -29119164.91 0.0277 0.0008 \*  
 Earth -84436-02-07 05:44 J -29118788.47 -29118788.26 -29118788.04 0.0275 0.0111  
 Moon -84436-02-07 09:06 J -29118788.34 -29118788.12 -29118787.89 0.0275 0.0098 \*  
 Moon -84435-02-18 22:32 J -29118411.72 -29118411.56 -29118411.40 0.0273 0.0205  
 Earth -84435-02-18 23:16 J -29118411.68 -29118411.53 -29118411.37 0.0273 0.0206 \*  
 Venus -84435-04-04 11:30 J -29118367.23 -29118367.02 -29118366.82 0.0273 0.0017  
 Mercury -84435-08-24 15:35 J -29118224.92 -29118224.85 -29118224.78 0.0272 0.0233  
 Mercury -84435-11-21 02:37 J -29118136.50 -29118136.39 -29118136.27 0.0272 0.0142  
 Mercury -84434-02-17 13:54 J -29118048.05 -29118047.92 -29118047.78 0.0271 0.0050  
 Mercury -84434-05-17 01:25 J -29117959.58 -29117959.44 -29117959.31 0.0271 0.0044  
 Mercury -84434-08-13 12:56 J -29117871.08 -29117870.96 -29117870.84 0.0271 0.0138  
 Mercury -84434-11-10 00:28 J -29117782.54 -29117782.48 -29117782.41 0.0270 0.0233  
 Mars -84426-06-24 23:30 J -29114998.63 -29114998.52 -29114998.39 0.0274 0.0254  
 Earth -84424-06-28 17:16 J -29114263.93 -29114263.78 -29114263.62 0.0278 0.0215  
 Moon -84424-06-28 19:25 J -29114263.83 -29114263.69 -29114263.51 0.0278 0.0208 \*  
 Earth -84423-07-12 11:16 J -29113885.25 -29113885.03 -29113884.78 0.0281 0.0107  
 Moon -84423-07-12 15:20 J -29113885.09 -29113884.86 -29113884.62 0.0281 0.0092 \*  
 Earth -84422-07-26 14:37 J -29113506.14 -29113505.89 -29113505.63 0.0283 0.0015  
 Moon -84422-07-26 16:32 J -29113506.07 -29113505.81 -29113505.55 0.0283 0.0030 \*  
 Moon -84421-08-08 23:59 J -29113126.71 -29113126.50 -29113126.27 0.0286 0.0154  
 Earth -84421-08-09 01:54 J -29113126.64 -29113126.42 -29113126.20 0.0286 0.0139 \*  
 Venus -84420-04-30 16:04 J -29112862.02 -29112861.83 -29112861.64 0.0287 0.0140  
 Moon -84420-08-23 15:35 J -29112746.91 -29112746.85 -29112746.76 0.0288 0.0274  
 Earth -84420-08-23 19:25 J -29112746.79 -29112746.69 -29112746.58 0.0288 0.0261 \*  
 Mercury -84420-12-17 17:01 J -29112630.85 -29112630.79 -29112630.73 0.0288 0.0269  
 Mercury -84419-03-16 15:35 J -29112542.01 -29112541.85 -29112541.69 0.0289 0.0119  
 Mercury -84419-06-13 13:40 J -29112453.10 -29112452.93 -29112452.75 0.0289 0.0030

Mercury -84419-09-10 11:30 J -29112364.16 -29112364.02 -29112363.88 0.0289 0.0175  
 Mars -84412-07-21 17:30 J -29109857.95 -29109857.77 -29109857.58 0.0286 0.0205  
 Earth -84411-12-28 11:59 J -29109333.09 -29109333.00 -29109332.89 0.0282 0.0255  
 Moon -84411-12-28 14:37 J -29109332.99 -29109332.89 -29109332.77 0.0282 0.0247 \*  
 Earth -84409-01-10 04:18 J -29108955.52 -29108955.32 -29108955.11 0.0280 0.0149  
 Moon -84409-01-10 07:40 J -29108955.38 -29108955.18 -29108954.97 0.0280 0.0149 \*  
 Moon -84408-01-21 11:30 J -29108578.26 -29108578.02 -29108577.77 0.0277 0.0051  
 Earth -84408-01-21 12:28 J -29108578.22 -29108577.98 -29108577.74 0.0277 0.0040 \*  
 Moon -84407-02-02 10:04 J -29108201.31 -29108201.08 -29108200.85 0.0275 0.0051  
 Earth -84407-02-02 13:25 J -29108201.18 -29108200.94 -29108200.71 0.0275 0.0065 \*  
 Earth -84406-02-14 08:23 J -29107824.34 -29107824.15 -29107823.96 0.0273 0.0164  
 Moon -84406-02-14 09:06 J -29107824.30 -29107824.12 -29107823.93 0.0273 0.0159 \*  
 Venus -84406-10-15 16:47 J -29107581.00 -29107580.80 -29107580.59 0.0272 0.0040  
 Mercury -84405-01-11 18:28 J -29107492.77 -29107492.73 -29107492.68 0.0271 0.0254  
 Earth -84405-02-25 23:01 J -29107447.61 -29107447.54 -29107447.44 0.0271 0.0254  
 Moon -84405-02-26 02:37 J -29107447.44 -29107447.39 -29107447.31 0.0271 0.0260 \*  
 Mercury -84405-04-09 05:30 J -29107404.37 -29107404.27 -29107404.15 0.0271 0.0163  
 Mercury -84405-07-06 16:47 J -29107315.93 -29107315.80 -29107315.66 0.0271 0.0072  
 Mercury -84405-10-03 04:18 J -29107227.46 -29107227.32 -29107227.18 0.0270 0.0022  
 Mercury -84405-12-30 15:49 J -29107138.97 -29107138.84 -29107138.72 0.0270 0.0116  
 Mercury -84404-03-29 03:06 J -29107050.45 -29107050.37 -29107050.27 0.0270 0.0210  
 Mars -84398-08-04 21:06 J -29104730.91 -29104730.62 -29104730.32 0.0272 0.0116  
 Moon -84395-06-22 22:18 J -29103677.67 -29103677.57 -29103677.45 0.0277 0.0249  
 Earth -84395-06-23 00:56 J -29103677.55 -29103677.46 -29103677.36 0.0277 0.0256 \*  
 Moon -84394-07-06 10:47 J -29103299.26 -29103299.05 -29103298.83 0.0280 0.0140  
 Earth -84394-07-06 13:54 J -29103299.11 -29103298.92 -29103298.70 0.0280 0.0154 \*  
 Moon -84393-07-19 11:44 J -29102920.25 -29102920.01 -29102919.77 0.0282 0.0022  
 Earth -84393-07-19 12:28 J -29102920.23 -29102919.98 -29102919.73 0.0282 0.0038 \*  
 Earth -84392-08-02 19:40 J -29102540.92 -29102540.68 -29102540.44 0.0285 0.0085  
 Moon -84392-08-02 21:49 J -29102540.82 -29102540.59 -29102540.36 0.0285 0.0101 \*



Earth -84391-08-17 09:49 J -29102161.25 -29102161.09 -29102160.91 0.0287 0.0208  
 Moon -84391-08-17 13:25 J -29102161.08 -29102160.94 -29102160.77 0.0287 0.0223 \*  
 Venus -84391-11-10 19:40 J -29102075.89 -29102075.68 -29102075.48 0.0287 0.0092  
 Mercury -84390-08-03 12:56 J -29101810.10 -29101809.96 -29101809.82 0.0288 0.0171  
 Mercury -84390-10-31 11:16 J -29101721.21 -29101721.03 -29101720.85 0.0289 0.0022  
 Mercury -84389-01-28 09:06 J -29101632.27 -29101632.12 -29101631.96 0.0289 0.0125  
 Mercury -84389-04-26 06:28 J -29101543.28 -29101543.23 -29101543.16 0.0289 0.0270  
 Mars -84384-09-11 04:04 J -29099579.56 -29099579.33 -29099579.09 0.0288 0.0126  
 Moon -84380-01-03 17:59 J -29098368.91 -29098368.75 -29098368.57 0.0281 0.0195  
 Earth -84380-01-03 21:06 J -29098368.78 -29098368.62 -29098368.44 0.0281 0.0196 \*  
 Earth -84379-01-16 09:35 J -29097991.33 -29097991.10 -29097990.87 0.0279 0.0086  
 Moon -84379-01-16 10:18 J -29097991.28 -29097991.07 -29097990.85 0.0279 0.0094 \*  
 Earth -84378-01-28 14:08 J -29097614.15 -29097613.91 -29097613.67 0.0277 0.0023  
 Moon -84378-01-28 17:30 J -29097614.01 -29097613.77 -29097613.53 0.0277 0.0008 \*  
 Moon -84377-02-09 11:44 J -29097237.23 -29097237.01 -29097236.78 0.0275 0.0116  
 Earth -84377-02-09 12:13 J -29097237.19 -29097236.99 -29097236.77 0.0275 0.0126 \*  
 Venus -84377-09-09 20:37 J -29097023.69 -29097023.64 -29097023.58 0.0274 0.0263  
 Moon -84376-02-20 01:54 J -29096860.54 -29096860.42 -29096860.27 0.0273 0.0223  
 Earth -84376-02-20 05:30 J -29096860.39 -29096860.27 -29096860.11 0.0273 0.0220 \*  
 Venus -84376-04-26 20:08 J -29096794.85 -29096794.66 -29096794.46 0.0272 0.0086  
 Mercury -84376-08-27 08:08 J -29096672.25 -29096672.16 -29096672.06 0.0272 0.0189  
 Mercury -84376-11-23 19:25 J -29096583.82 -29096583.69 -29096583.56 0.0272 0.0097  
 Mercury -84375-02-20 06:42 J -29096495.36 -29096495.22 -29096495.08 0.0271 0.0004  
 Mercury -84375-05-19 18:13 J -29096406.87 -29096406.74 -29096406.61 0.0271 0.0090  
 Mercury -84375-08-16 05:44 J -29096318.36 -29096318.26 -29096318.16 0.0271 0.0184  
 Mars -84368-09-26 20:23 J -29093719.96 -29093719.65 -29093719.33 0.0273 0.0085  
 Earth -84365-06-30 06:13 J -29092712.41 -29092712.24 -29092712.06 0.0279 0.0199  
 Moon -84365-06-30 09:35 J -29092712.27 -29092712.10 -29092711.91 0.0279 0.0190 \*  
 Earth -84364-07-14 01:11 J -29092333.68 -29092333.45 -29092333.20 0.0281 0.0088  
 Moon -84364-07-14 01:40 J -29092333.68 -29092333.43 -29092333.18 0.0281 0.0073 \*

Moon -84363-07-28 02:23 J -29091954.65 -29091954.40 -29091954.14 0.0284 0.0050  
 Earth -84363-07-28 05:16 J -29091954.52 -29091954.28 -29091954.02 0.0284 0.0034 \*  
 Moon -84362-08-11 13:25 J -29091575.14 -29091574.94 -29091574.74 0.0286 0.0173  
 Earth -84362-08-11 17:16 J -29091574.99 -29091574.78 -29091574.57 0.0286 0.0157 \*  
 Venus -84361-05-23 08:52 J -29091289.35 -29091289.13 -29091288.91 0.0287 0.0011  
 Earth -84361-08-25 11:16 J -29091195.09 -29091195.03 -29091194.96 0.0288 0.0277  
 Mercury -84361-12-20 14:52 J -29091078.01 -29091077.88 -29091077.75 0.0288 0.0193  
 Mercury -84360-03-19 13:11 J -29090989.12 -29090988.95 -29090988.77 0.0289 0.0045  
 Mercury -84360-06-16 11:16 J -29090900.19 -29090900.03 -29090899.86 0.0289 0.0103  
 Mercury -84360-09-13 08:37 J -29090811.21 -29090811.14 -29090811.04 0.0290 0.0249  
 Mars -84354-10-29 22:32 J -29088573.81 -29088573.56 -29088573.29 0.0287 0.0055  
 Earth -84352-12-29 23:01 J -29087781.67 -29087781.54 -29087781.42 0.0282 0.0239  
 Moon -84352-12-30 01:54 J -29087781.55 -29087781.42 -29087781.27 0.0282 0.0230 \*  
 Moon -84350-01-11 13:11 J -29087404.16 -29087403.95 -29087403.72 0.0280 0.0136  
 Earth -84350-01-11 14:08 J -29087404.11 -29087403.91 -29087403.69 0.0280 0.0132 \*  
 Moon -84349-01-23 17:59 J -29087026.99 -29087026.75 -29087026.51 0.0277 0.0037  
 Earth -84349-01-23 21:35 J -29087026.83 -29087026.60 -29087026.36 0.0277 0.0024 \*  
 Earth -84348-02-03 22:04 J -29086649.81 -29086649.58 -29086649.36 0.0275 0.0081  
 Moon -84348-02-03 21:35 J -29086649.81 -29086649.60 -29086649.37 0.0275 0.0069 \*  
 Earth -84347-02-15 16:47 J -29086272.98 -29086272.80 -29086272.62 0.0273 0.0178  
 Moon -84347-02-15 20:23 J -29086272.83 -29086272.65 -29086272.47 0.0273 0.0176 \*  
 Venus -84347-03-23 03:35 J -29086237.49 -29086237.35 -29086237.21 0.0273 0.0202  
 Venus -84347-11-07 02:52 J -29086008.55 -29086008.38 -29086008.20 0.0272 0.0144  
 Mercury -84346-01-14 11:30 J -29085940.11 -29085940.02 -29085939.93 0.0271 0.0207  
 Earth -84346-02-27 07:25 J -29085896.23 -29085896.19 -29085896.15 0.0271 0.0266  
 Mercury -84346-04-12 22:32 J -29085851.68 -29085851.56 -29085851.43 0.0271 0.0116  
 Mercury -84346-07-10 09:49 J -29085763.22 -29085763.09 -29085762.95 0.0271 0.0025  
 Mercury -84346-10-06 21:20 J -29085674.74 -29085674.61 -29085674.48 0.0270 0.0070  
 Mercury -84345-01-03 08:52 J -29085586.24 -29085586.13 -29085586.02 0.0270 0.0164  
 Mercury -84345-03-31 20:23 J -29085497.68 -29085497.65 -29085497.61 0.0270 0.0258

Moon -84336-06-24 11:44 J -29082126.14 -29082126.01 -29082125.88 0.0278 0.0234  
 Earth -84336-06-24 15:20 J -29082125.99 -29082125.86 -29082125.74 0.0278 0.0239 \*  
 Earth -84335-07-08 05:16 J -29081747.50 -29081747.28 -29081747.06 0.0280 0.0135  
 Moon -84335-07-08 05:16 J -29081747.49 -29081747.28 -29081747.06 0.0280 0.0123 \*  
 Earth -84334-07-22 04:32 J -29081368.56 -29081368.31 -29081368.06 0.0282 0.0019  
 Moon -84334-07-22 07:54 J -29081368.42 -29081368.17 -29081367.92 0.0282 0.0002 \*  
 Earth -84333-08-04 12:13 J -29080989.22 -29080988.99 -29080988.75 0.0285 0.0104  
 Moon -84333-08-04 16:04 J -29080989.06 -29080988.83 -29080988.60 0.0285 0.0121 \*  
 Earth -84332-08-19 03:06 J -29080609.51 -29080609.37 -29080609.21 0.0287 0.0226  
 Moon -84332-08-19 04:47 J -29080609.44 -29080609.30 -29080609.15 0.0287 0.0239 \*  
 Venus -84332-12-03 13:25 J -29080503.15 -29080502.94 -29080502.72 0.0287 0.0041  
 Mercury -84331-05-09 12:28 J -29080346.06 -29080345.98 -29080345.87 0.0288 0.0243  
 Mercury -84331-08-06 11:16 J -29080257.20 -29080257.03 -29080256.86 0.0288 0.0093  
 Mercury -84331-11-03 09:20 J -29080168.28 -29080168.11 -29080167.93 0.0289 0.0055  
 Mercury -84330-01-31 07:11 J -29080079.33 -29080079.20 -29080079.08 0.0289 0.0200  
 Mars -84326-12-20 03:35 J -29078295.40 -29078295.35 -29078295.27 0.0289 0.0280  
 Mars -84324-12-15 15:06 J -29077569.03 -29077568.87 -29077568.70 0.0285 0.0223  
 Moon -84323-12-24 07:40 J -29077195.23 -29077195.18 -29077195.10 0.0283 0.0273  
 Earth -84321-01-06 06:56 J -29076817.39 -29076817.21 -29076817.02 0.0281 0.0179  
 Moon -84321-01-06 07:40 J -29076817.34 -29076817.18 -29076816.99 0.0281 0.0180 \*  
 Earth -84320-01-17 18:13 J -29076439.96 -29076439.74 -29076439.50 0.0279 0.0070  
 Moon -84320-01-17 22:04 J -29076439.80 -29076439.58 -29076439.35 0.0279 0.0081 \*  
 Earth -84319-01-29 22:04 J -29076062.81 -29076062.58 -29076062.34 0.0276 0.0039  
 Moon -84319-01-29 23:01 J -29076062.79 -29076062.54 -29076062.29 0.0276 0.0024 \*  
 Moon -84318-02-10 16:18 J -29075686.02 -29075685.82 -29075685.60 0.0274 0.0133  
 Earth -84318-02-10 19:54 J -29075685.87 -29075685.67 -29075685.46 0.0274 0.0140 \*  
 Venus -84318-10-03 06:13 J -29075451.40 -29075451.24 -29075451.07 0.0273 0.0160  
 Moon -84317-02-22 12:13 J -29075309.10 -29075308.99 -29075308.88 0.0273 0.0239  
 Earth -84317-02-22 12:56 J -29075309.08 -29075308.96 -29075308.83 0.0273 0.0232 \*  
 Venus -84317-05-19 05:30 J -29075222.41 -29075222.27 -29075222.11 0.0272 0.0188

Mercury -84317-06-02 13:40 J -29075207.99 -29075207.93 -29075207.86 0.0272 0.0236  
 Mercury -84317-08-30 00:56 J -29075119.58 -29075119.46 -29075119.35 0.0272 0.0144  
 Mercury -84317-11-26 12:13 J -29075031.13 -29075030.99 -29075030.86 0.0271 0.0051  
 Mercury -84316-02-22 23:30 J -29074942.65 -29074942.52 -29074942.38 0.0271 0.0042  
 Mercury -84316-05-22 11:01 J -29074854.16 -29074854.04 -29074853.92 0.0271 0.0136  
 Mercury -84316-08-18 22:32 J -29074765.62 -29074765.56 -29074765.48 0.0271 0.0232  
 Mars -84310-12-30 18:42 J -29072441.02 -29072440.72 -29072440.40 0.0272 0.0084  
 Earth -84306-07-02 20:08 J -29071160.85 -29071160.66 -29071160.47 0.0279 0.0181  
 Moon -84306-07-02 20:23 J -29071160.85 -29071160.65 -29071160.44 0.0279 0.0172 \*  
 Moon -84305-07-15 12:28 J -29070782.22 -29070781.98 -29070781.72 0.0281 0.0054  
 Earth -84305-07-15 16:04 J -29070782.07 -29070781.83 -29070781.59 0.0281 0.0069 \*  
 Moon -84304-07-29 17:30 J -29070403.01 -29070402.77 -29070402.52 0.0284 0.0069  
 Earth -84304-07-29 20:52 J -29070402.87 -29070402.63 -29070402.38 0.0284 0.0052 \*  
 Moon -84303-08-13 08:23 J -29070023.32 -29070023.15 -29070022.96 0.0286 0.0191  
 Earth -84303-08-13 09:35 J -29070023.30 -29070023.10 -29070022.90 0.0286 0.0175 \*  
 Venus -84302-06-16 02:23 J -29069716.59 -29069716.40 -29069716.20 0.0288 0.0123  
 Mercury -84302-09-26 14:23 J -29069613.96 -29069613.90 -29069613.83 0.0288 0.0266  
 Mercury -84302-12-24 13:11 J -29069525.12 -29069524.95 -29069524.79 0.0289 0.0116  
 Mercury -84301-03-22 11:16 J -29069436.20 -29069436.03 -29069435.85 0.0289 0.0033  
 Mercury -84301-06-19 09:06 J -29069347.25 -29069347.12 -29069346.98 0.0289 0.0179  
 Mars -84295-02-06 02:08 J -29067289.66 -29067289.41 -29067289.16 0.0288 0.0099  
 Moon -84293-12-31 09:49 J -29066230.24 -29066230.09 -29066229.92 0.0282 0.0215  
 Earth -84293-12-31 10:18 J -29066230.22 -29066230.07 -29066229.92 0.0282 0.0221 \*  
 Moon -84291-01-12 20:52 J -29065852.84 -29065852.63 -29065852.41 0.0279 0.0122  
 Earth -84291-01-13 00:28 J -29065852.69 -29065852.48 -29065852.25 0.0279 0.0115 \*  
 Moon -84290-01-25 05:59 J -29065475.48 -29065475.25 -29065475.02 0.0277 0.0021  
 Earth -84290-01-25 06:56 J -29065475.44 -29065475.21 -29065474.97 0.0277 0.0008 \*  
 Earth -84289-02-06 06:42 J -29065098.44 -29065098.22 -29065097.99 0.0275 0.0097  
 Moon -84289-02-06 09:49 J -29065098.31 -29065098.09 -29065097.86 0.0275 0.0084 \*  
 Earth -84288-02-17 00:56 J -29064721.62 -29064721.46 -29064721.28 0.0273 0.0193

Moon -84288-02-17 02:08 J -29064721.57 -29064721.41 -29064721.23 0.0273 0.0192 \*  
 Venus -84288-04-14 13:40 J -29064665.12 -29064664.93 -29064664.73 0.0272 0.0097  
 Mercury -84288-10-20 17:16 J -29064475.83 -29064475.78 -29064475.73 0.0271 0.0251  
 Venus -84288-11-29 12:56 J -29064436.04 -29064435.96 -29064435.88 0.0271 0.0249  
 Mercury -84287-01-17 04:18 J -29064387.42 -29064387.32 -29064387.21 0.0271 0.0161  
 Mercury -84287-04-15 15:35 J -29064298.98 -29064298.85 -29064298.71 0.0271 0.0068  
 Mercury -84287-07-13 02:52 J -29064210.51 -29064210.38 -29064210.24 0.0270 0.0026  
 Mercury -84287-10-09 14:23 J -29064122.02 -29064121.90 -29064121.77 0.0270 0.0118  
 Mercury -84286-01-06 01:54 J -29064033.50 -29064033.42 -29064033.33 0.0270 0.0213  
 Mars -84279-02-21 07:25 J -29061430.49 -29061430.19 -29061429.89 0.0273 0.0108  
 Moon -84277-06-26 05:01 J -29060574.44 -29060574.29 -29060574.14 0.0278 0.0216  
 Earth -84277-06-26 04:47 J -29060574.43 -29060574.30 -29060574.13 0.0278 0.0223 \*  
 Earth -84276-07-09 20:08 J -29060195.88 -29060195.66 -29060195.42 0.0280 0.0117  
 Moon -84276-07-09 23:30 J -29060195.74 -29060195.52 -29060195.28 0.0280 0.0103 \*  
 Earth -84275-07-23 20:37 J -29059816.90 -29059816.64 -29059816.39 0.0283 0.0004  
 Moon -84275-07-23 23:30 J -29059816.78 -29059816.52 -29059816.26 0.0283 0.0017 \*  
 Moon -84274-08-07 05:01 J -29059437.52 -29059437.29 -29059437.06 0.0285 0.0138  
 Earth -84274-08-07 05:01 J -29059437.51 -29059437.29 -29059437.06 0.0285 0.0123 \*  
 Venus -84273-05-10 05:30 J -29059160.34 -29059160.27 -29059160.17 0.0287 0.0262  
 Moon -84273-08-20 17:30 J -29059057.87 -29059057.77 -29059057.64 0.0287 0.0257  
 Earth -84273-08-20 20:23 J -29059057.77 -29059057.65 -29059057.51 0.0287 0.0244 \*  
 Venus -84273-12-26 07:25 J -29058930.36 -29058930.19 -29058930.02 0.0288 0.0176  
 Mercury -84272-05-12 11:01 J -29058793.18 -29058793.04 -29058792.89 0.0288 0.0165  
 Mercury -84272-08-09 09:35 J -29058704.28 -29058704.10 -29058703.93 0.0289 0.0016  
 Mercury -84272-11-06 07:25 J -29058615.34 -29058615.19 -29058615.03 0.0289 0.0132  
 Mercury -84271-02-03 04:47 J -29058526.34 -29058526.30 -29058526.24 0.0289 0.0276  
 Mars -84265-03-24 21:35 J -29056284.85 -29056284.60 -29056284.34 0.0286 0.0075  
 Moon -84264-12-25 23:30 J -29055643.61 -29055643.52 -29055643.43 0.0283 0.0258  
 Earth -84264-12-25 23:16 J -29055643.60 -29055643.53 -29055643.45 0.0283 0.0268 \*  
 Earth -84262-01-07 17:44 J -29055265.95 -29055265.76 -29055265.56 0.0281 0.0162

Moon -84262-01-07 21:06 J -29055265.80 -29055265.62 -29055265.41 0.0281 0.0164 \*  
 Earth -84261-01-20 04:18 J -29054888.55 -29054888.32 -29054888.08 0.0278 0.0053  
 Moon -84261-01-20 05:16 J -29054888.52 -29054888.28 -29054888.04 0.0278 0.0065 \*  
 Moon -84260-01-31 04:04 J -29054511.57 -29054511.33 -29054511.09 0.0276 0.0038  
 Earth -84260-01-31 07:11 J -29054511.43 -29054511.20 -29054510.96 0.0276 0.0054 \*  
 Moon -84259-02-12 02:37 J -29054134.58 -29054134.39 -29054134.20 0.0274 0.0148  
 Earth -84259-02-12 04:04 J -29054134.52 -29054134.33 -29054134.12 0.0274 0.0154 \*  
 Venus -84259-10-25 16:04 J -29053879.03 -29053878.83 -29053878.62 0.0273 0.0055  
 Earth -84258-02-23 20:23 J -29053757.74 -29053757.65 -29053757.54 0.0272 0.0244  
 Moon -84258-02-23 23:59 J -29053757.58 -29053757.50 -29053757.42 0.0272 0.0254 \*  
 Mercury -84258-06-06 06:28 J -29053655.32 -29053655.23 -29053655.13 0.0272 0.0190  
 Mercury -84258-09-02 17:44 J -29053566.89 -29053566.76 -29053566.63 0.0272 0.0097  
 Mercury -84258-11-30 05:01 J -29053478.43 -29053478.29 -29053478.15 0.0271 0.0006  
 Mercury -84257-02-26 16:32 J -29053389.94 -29053389.81 -29053389.68 0.0271 0.0090  
 Mercury -84257-05-25 04:04 J -29053301.43 -29053301.33 -29053301.23 0.0271 0.0184  
 Mars -84251-04-03 16:47 J -29051161.91 -29051161.80 -29051161.67 0.0271 0.0251  
 Moon -84248-06-20 21:06 J -29049987.70 -29049987.62 -29049987.53 0.0277 0.0259  
 Earth -84248-06-20 21:20 J -29049987.68 -29049987.61 -29049987.53 0.0277 0.0264 \*  
 Moon -84247-07-04 05:30 J -29049609.47 -29049609.27 -29049609.05 0.0279 0.0153  
 Earth -84247-07-04 09:06 J -29049609.32 -29049609.12 -29049608.91 0.0279 0.0164 \*  
 Moon -84246-07-18 03:20 J -29049230.61 -29049230.36 -29049230.12 0.0282 0.0037  
 Earth -84246-07-18 05:59 J -29049230.50 -29049230.25 -29049230.00 0.0282 0.0051 \*  
 Earth -84245-07-31 11:44 J -29048851.25 -29048851.01 -29048850.76 0.0284 0.0070  
 Moon -84245-07-31 12:28 J -29048851.21 -29048850.98 -29048850.75 0.0284 0.0085 \*  
 Earth -84244-08-15 01:11 J -29048471.63 -29048471.45 -29048471.26 0.0286 0.0192  
 Moon -84244-08-15 04:32 J -29048471.47 -29048471.31 -29048471.13 0.0286 0.0208 \*  
 Venus -84244-11-20 17:30 J -29048373.93 -29048373.77 -29048373.60 0.0287 0.0184  
 Venus -84243-07-08 19:40 J -29048143.77 -29048143.68 -29048143.58 0.0288 0.0256  
 Mercury -84243-09-29 12:28 J -29048061.11 -29048060.98 -29048060.84 0.0288 0.0190  
 Mercury -84243-12-27 11:01 J -29047972.21 -29047972.04 -29047971.86 0.0289 0.0040

Mercury -84242-03-26 09:06 J -29047883.28 -29047883.12 -29047882.95 0.0289 0.0108  
 Mercury -84242-06-23 06:42 J -29047794.29 -29047794.22 -29047794.13 0.0290 0.0254  
 Mars -84237-05-16 05:01 J -29046005.41 -29046005.29 -29046005.16 0.0289 0.0253  
 Mars -84235-05-12 13:54 J -29045279.04 -29045278.92 -29045278.78 0.0285 0.0250  
 Moon -84233-01-02 18:28 J -29044678.90 -29044678.73 -29044678.55 0.0282 0.0198  
 Earth -84233-01-02 21:49 J -29044678.75 -29044678.59 -29044678.42 0.0282 0.0204 \*  
 Moon -84232-01-14 09:49 J -29044301.30 -29044301.09 -29044300.87 0.0279 0.0104  
 Earth -84232-01-14 11:16 J -29044301.25 -29044301.03 -29044300.81 0.0279 0.0097 \*  
 Earth -84231-01-26 16:32 J -29043924.05 -29043923.81 -29043923.57 0.0277 0.0011  
 Moon -84231-01-26 19:40 J -29043923.91 -29043923.68 -29043923.44 0.0277 0.0006 \*  
 Earth -84230-02-07 15:35 J -29043547.07 -29043546.85 -29043546.63 0.0274 0.0112  
 Moon -84230-02-07 17:59 J -29043546.97 -29043546.75 -29043546.52 0.0274 0.0099 \*  
 Moon -84229-02-19 06:28 J -29043170.38 -29043170.23 -29043170.07 0.0272 0.0209  
 Earth -84229-02-19 09:20 J -29043170.26 -29043170.11 -29043169.95 0.0272 0.0205 \*  
 Venus -84229-05-06 23:44 J -29043092.72 -29043092.51 -29043092.30 0.0272 0.0009  
 Mercury -84229-10-23 10:04 J -29042923.16 -29042923.08 -29042922.99 0.0271 0.0205  
 Mercury -84228-01-19 21:20 J -29042834.73 -29042834.61 -29042834.49 0.0271 0.0113  
 Mercury -84228-04-18 08:37 J -29042746.28 -29042746.14 -29042746.00 0.0271 0.0021  
 Mercury -84228-07-15 19:54 J -29042657.80 -29042657.67 -29042657.53 0.0270 0.0072  
 Mercury -84228-10-12 07:25 J -29042569.30 -29042569.19 -29042569.08 0.0270 0.0166  
 Mercury -84227-01-08 19:11 J -29042480.73 -29042480.70 -29042480.67 0.0270 0.0261  
 Mars -84221-05-26 05:01 J -29040151.60 -29040151.29 -29040150.96 0.0272 0.0062  
 Earth -84218-06-28 18:28 J -29039022.90 -29039022.73 -29039022.56 0.0278 0.0206  
 Moon -84218-06-28 21:49 J -29039022.75 -29039022.59 -29039022.40 0.0278 0.0198 \*  
 Earth -84217-07-11 10:47 J -29038644.29 -29038644.05 -29038643.82 0.0281 0.0098  
 Moon -84217-07-11 13:25 J -29038644.18 -29038643.94 -29038643.69 0.0281 0.0085 \*  
 Moon -84216-07-25 10:47 J -29038265.31 -29038265.05 -29038264.79 0.0283 0.0035  
 Earth -84216-07-25 11:59 J -29038265.25 -29038265.00 -29038264.74 0.0283 0.0021 \*  
 Moon -84215-08-08 17:30 J -29037885.97 -29037885.77 -29037885.55 0.0285 0.0156  
 Earth -84215-08-08 21:20 J -29037885.82 -29037885.61 -29037885.38 0.0285 0.0143 \*

Venus -84214-06-02 23:30 J -29037587.72 -29037587.52 -29037587.33 0.0287 0.0129  
 Moon -84214-08-23 10:04 J -29037506.15 -29037506.08 -29037506.00 0.0287 0.0274  
 Earth -84214-08-23 13:25 J -29037506.03 -29037505.94 -29037505.82 0.0287 0.0261 \*  
 Mercury -84213-02-16 10:32 J -29037329.15 -29037329.06 -29037328.95 0.0288 0.0238  
 Mercury -84213-05-15 09:20 J -29037240.28 -29037240.11 -29037239.94 0.0289 0.0087  
 Mercury -84213-08-12 07:40 J -29037151.35 -29037151.18 -29037151.01 0.0289 0.0062  
 Mercury -84213-11-09 05:16 J -29037062.39 -29037062.28 -29037062.15 0.0289 0.0208  
 Mars -84207-07-03 03:20 J -29035000.61 -29035000.36 -29035000.10 0.0287 0.0078  
 Earth -84205-12-27 10:47 J -29034092.15 -29034092.05 -29034091.93 0.0282 0.0252  
 Moon -84205-12-27 14:37 J -29034092.01 -29034091.89 -29034091.77 0.0282 0.0241 \*  
 Earth -84203-01-09 04:18 J -29033714.52 -29033714.32 -29033714.11 0.0280 0.0145  
 Moon -84203-01-09 05:59 J -29033714.45 -29033714.25 -29033714.03 0.0280 0.0146 \*  
 Moon -84202-01-21 10:32 J -29033337.30 -29033337.06 -29033336.82 0.0278 0.0051  
 Earth -84202-01-21 13:40 J -29033337.16 -29033336.93 -29033336.69 0.0278 0.0037 \*  
 Moon -84201-02-02 13:11 J -29032960.17 -29032959.95 -29032959.72 0.0276 0.0054  
 Earth -84201-02-02 15:49 J -29032960.07 -29032959.84 -29032959.61 0.0276 0.0069 \*  
 Earth -84200-02-13 11:59 J -29032583.19 -29032583.00 -29032582.81 0.0274 0.0167  
 Moon -84200-02-13 14:08 J -29032583.09 -29032582.91 -29032582.72 0.0274 0.0163 \*  
 Venus -84200-11-17 01:40 J -29032306.63 -29032306.43 -29032306.23 0.0272 0.0049  
 Earth -84199-02-25 03:35 J -29032206.43 -29032206.35 -29032206.27 0.0272 0.0255  
 Moon -84199-02-25 05:44 J -29032206.30 -29032206.26 -29032206.20 0.0272 0.0265 \*  
 Mercury -84199-03-12 12:13 J -29032191.06 -29032190.99 -29032190.93 0.0272 0.0235  
 Mercury -84199-06-08 23:16 J -29032102.64 -29032102.53 -29032102.41 0.0272 0.0144  
 Mercury -84199-09-05 10:32 J -29032014.20 -29032014.06 -29032013.93 0.0271 0.0052  
 Mercury -84199-12-02 21:49 J -29031925.73 -29031925.59 -29031925.45 0.0271 0.0042  
 Mercury -84198-03-01 09:20 J -29031837.23 -29031837.11 -29031836.99 0.0271 0.0136  
 Mercury -84198-05-28 20:52 J -29031748.70 -29031748.63 -29031748.56 0.0270 0.0231  
 Mars -84191-07-18 17:01 J -29029141.06 -29029140.79 -29029140.50 0.0273 0.0135  
 Moon -84189-06-22 03:20 J -29028436.47 -29028436.36 -29028436.22 0.0277 0.0241  
 Earth -84189-06-22 07:25 J -29028436.29 -29028436.19 -29028436.08 0.0277 0.0249 \*



Moon -84188-07-05 17:30 J -29028057.97 -29028057.77 -29028057.55 0.0279 0.0136  
 Earth -84188-07-05 20:08 J -29028057.86 -29028057.66 -29028057.44 0.0279 0.0148 \*  
 Earth -84187-07-19 18:13 J -29027678.99 -29027678.74 -29027678.49 0.0282 0.0033  
 Moon -84187-07-19 19:11 J -29027678.94 -29027678.70 -29027678.45 0.0282 0.0020 \*  
 Earth -84186-08-03 00:42 J -29027299.71 -29027299.47 -29027299.23 0.0284 0.0088  
 Moon -84186-08-03 04:32 J -29027299.55 -29027299.31 -29027299.08 0.0284 0.0103 \*  
 Earth -84185-08-16 15:06 J -29026920.04 -29026919.87 -29026919.70 0.0287 0.0209  
 Moon -84185-08-16 17:44 J -29026919.91 -29026919.76 -29026919.58 0.0287 0.0223 \*  
 Venus -84185-12-13 09:20 J -29026801.32 -29026801.11 -29026800.89 0.0287 0.0057  
 Mercury -84184-07-05 11:16 J -29026597.09 -29026597.03 -29026596.96 0.0288 0.0268  
 Mercury -84184-10-02 10:04 J -29026508.24 -29026508.08 -29026507.91 0.0289 0.0116  
 Mercury -84184-12-30 08:23 J -29026419.32 -29026419.15 -29026418.97 0.0289 0.0034  
 Mercury -84183-03-29 06:13 J -29026330.37 -29026330.24 -29026330.10 0.0289 0.0180  
 Mars -84177-08-19 20:23 J -29023994.89 -29023994.65 -29023994.40 0.0287 0.0100  
 Moon -84176-12-22 07:40 J -29023505.22 -29023505.18 -29023505.11 0.0284 0.0277  
 Moon -84174-01-04 06:42 J -29023127.40 -29023127.22 -29023127.04 0.0281 0.0182  
 Earth -84174-01-04 08:37 J -29023127.31 -29023127.14 -29023126.95 0.0281 0.0186 \*  
 Earth -84173-01-16 21:06 J -29022749.85 -29022749.62 -29022749.39 0.0279 0.0079  
 Moon -84173-01-16 23:44 J -29022749.73 -29022749.51 -29022749.29 0.0279 0.0088 \*  
 Earth -84172-01-28 01:40 J -29022372.66 -29022372.43 -29022372.19 0.0276 0.0027  
 Moon -84172-01-28 04:32 J -29022372.56 -29022372.31 -29022372.07 0.0276 0.0011 \*  
 Moon -84171-02-08 22:04 J -29021995.80 -29021995.58 -29021995.36 0.0274 0.0115  
 Earth -84171-02-08 23:59 J -29021995.71 -29021995.50 -29021995.29 0.0274 0.0126 \*  
 Venus -84171-10-13 10:04 J -29021749.18 -29021749.08 -29021748.98 0.0273 0.0235  
 Moon -84170-02-20 14:08 J -29021619.04 -29021618.91 -29021618.77 0.0272 0.0221  
 Earth -84170-02-20 16:47 J -29021618.93 -29021618.80 -29021618.64 0.0272 0.0219 \*  
 Venus -84170-05-30 09:06 J -29021520.30 -29021520.12 -29021519.92 0.0272 0.0113  
 Mercury -84170-07-30 15:49 J -29021458.89 -29021458.84 -29021458.79 0.0271 0.0250  
 Mercury -84170-10-27 02:52 J -29021370.49 -29021370.38 -29021370.27 0.0271 0.0159  
 Mercury -84169-01-23 14:08 J -29021282.04 -29021281.91 -29021281.78 0.0271 0.0067

Mercury -84169-04-21 01:25 J -29021193.58 -29021193.44 -29021193.30 0.0270 0.0026

Mercury -84169-07-18 12:42 J -29021105.09 -29021104.97 -29021104.84 0.0270 0.0120

Mercury -84169-10-15 00:13 J -29021016.57 -29021016.49 -29021016.40 0.0270 0.0214

Mars -84163-08-29 00:56 J -29018872.62 -29018872.46 -29018872.29 0.0271 0.0232

Earth -84159-06-30 05:01 J -29017471.46 -29017471.29 -29017471.10 0.0279 0.0190

Moon -84159-06-30 07:25 J -29017471.38 -29017471.19 -29017470.99 0.0279 0.0178 \*

Moon -84158-07-13 20:52 J -29017092.88 -29017092.63 -29017092.37 0.0281 0.0066

Earth -84158-07-13 22:32 J -29017092.80 -29017092.56 -29017092.32 0.0281 0.0080 \*

Moon -84157-07-26 21:06 J -29016713.86 -29016713.62 -29016713.37 0.0283 0.0054

Earth -84157-07-27 00:56 J -29016713.71 -29016713.46 -29016713.21 0.0283 0.0038 \*

Moon -84156-08-10 09:06 J -29016334.31 -29016334.12 -29016333.92 0.0286 0.0173

Earth -84156-08-10 11:01 J -29016334.24 -29016334.04 -29016333.82 0.0286 0.0160 \*

Venus -84155-06-25 15:35 J -29016015.07 -29016014.85 -29016014.64 0.0287 0.0006

Earth -84155-08-25 04:04 J -29015954.39 -29015954.33 -29015954.26 0.0288 0.0276

Moon -84155-08-25 04:47 J -29015954.30 -29015954.30 -29015954.29 0.0288 0.0288 \*

Mercury -84154-02-19 08:37 J -29015776.29 -29015776.14 -29015776.00 0.0289 0.0163

Mercury -84154-05-19 06:56 J -29015687.39 -29015687.21 -29015687.03 0.0289 0.0013

Mercury -84154-08-16 05:01 J -29015598.45 -29015598.29 -29015598.14 0.0289 0.0135

Mercury -84154-11-13 02:23 J -29015509.43 -29015509.40 -29015509.35 0.0290 0.0280

Mars -84149-10-10 05:30 J -29013716.41 -29013716.27 -29013716.10 0.0288 0.0234

Mars -84147-10-06 12:42 J -29012990.04 -29012989.97 -29012989.87 0.0285 0.0269

Earth -84146-12-29 21:49 J -29012540.71 -29012540.59 -29012540.44 0.0282 0.0234

Moon -84146-12-30 00:13 J -29012540.64 -29012540.49 -29012540.35 0.0282 0.0225 \*

Moon -84144-01-10 11:59 J -29012163.21 -29012163.00 -29012162.78 0.0280 0.0132

Earth -84144-01-10 14:23 J -29012163.11 -29012162.90 -29012162.68 0.0280 0.0128 \*

Moon -84143-01-22 19:54 J -29011785.90 -29011785.67 -29011785.44 0.0277 0.0034

Earth -84143-01-22 22:32 J -29011785.80 -29011785.56 -29011785.32 0.0277 0.0020 \*

Earth -84142-02-03 23:30 J -29011408.75 -29011408.52 -29011408.29 0.0275 0.0084

Moon -84142-02-04 01:25 J -29011408.66 -29011408.44 -29011408.21 0.0275 0.0070 \*

Earth -84141-02-15 18:42 J -29011031.89 -29011031.72 -29011031.54 0.0273 0.0180

Moon -84141-02-15 22:04 J -29011031.76 -29011031.58 -29011031.39 0.0273 0.0175 \*  
 Venus -84141-04-24 11:01 J -29010963.17 -29010963.04 -29010962.89 0.0273 0.0197  
 Venus -84141-12-09 10:18 J -29010734.23 -29010734.07 -29010733.89 0.0272 0.0151  
 Earth -84140-02-26 09:35 J -29010655.13 -29010655.10 -29010655.04 0.0272 0.0266  
 Mercury -84140-03-15 04:32 J -29010638.40 -29010638.31 -29010638.21 0.0272 0.0192  
 Mercury -84140-06-11 15:49 J -29010549.97 -29010549.84 -29010549.71 0.0271 0.0099  
 Mercury -84140-09-08 03:06 J -29010461.51 -29010461.37 -29010461.23 0.0271 0.0007  
 Mercury -84140-12-05 14:23 J -29010373.03 -29010372.90 -29010372.76 0.0271 0.0087  
 Mercury -84139-03-04 01:54 J -29010284.52 -29010284.42 -29010284.31 0.0270 0.0181  
 Mars -84133-10-20 02:37 J -29007862.71 -29007862.39 -29007862.07 0.0272 0.0044  
 Moon -84130-06-24 13:25 J -29006885.07 -29006884.94 -29006884.79 0.0277 0.0225  
 Earth -84130-06-24 15:20 J -29006884.99 -29006884.86 -29006884.73 0.0277 0.0234 \*  
 Earth -84129-07-07 05:01 J -29006506.51 -29006506.29 -29006506.07 0.0280 0.0131  
 Moon -84129-07-07 06:56 J -29006506.42 -29006506.21 -29006505.98 0.0280 0.0117 \*  
 Earth -84128-07-21 04:04 J -29006127.58 -29006127.33 -29006127.08 0.0282 0.0016  
 Moon -84128-07-21 07:54 J -29006127.43 -29006127.17 -29006126.92 0.0282 0.0004 \*  
 Earth -84127-08-04 11:30 J -29005748.25 -29005748.02 -29005747.78 0.0285 0.0105  
 Moon -84127-08-04 13:25 J -29005748.17 -29005747.94 -29005747.70 0.0285 0.0118 \*  
 Moon -84126-08-19 00:42 J -29005368.61 -29005368.47 -29005368.31 0.0287 0.0234  
 Earth -84126-08-19 02:37 J -29005368.55 -29005368.39 -29005368.24 0.0287 0.0224 \*  
 Venus -84125-01-05 23:59 J -29005228.71 -29005228.50 -29005228.29 0.0288 0.0067  
 Mercury -84125-07-08 08:08 J -29005044.28 -29005044.16 -29005044.02 0.0289 0.0199  
 Mercury -84125-10-05 06:56 J -29004955.38 -29004955.21 -29004955.03 0.0289 0.0047  
 Mercury -84124-01-02 05:01 J -29004866.45 -29004866.29 -29004866.12 0.0289 0.0102  
 Mercury -84124-04-01 02:52 J -29004777.46 -29004777.38 -29004777.29 0.0290 0.0247  
 Mars -84119-11-27 21:49 J -29002710.84 -29002710.59 -29002710.32 0.0288 0.0057  
 Moon -84117-12-23 19:54 J -29001953.74 -29001953.67 -29001953.57 0.0284 0.0263  
 Earth -84117-12-23 21:35 J -29001953.65 -29001953.60 -29001953.52 0.0284 0.0273 \*  
 Earth -84115-01-05 17:59 J -29001575.94 -29001575.75 -29001575.56 0.0281 0.0168  
 Moon -84115-01-05 20:08 J -29001575.84 -29001575.66 -29001575.47 0.0281 0.0167 \*

Earth -84114-01-18 05:30 J -29001198.50 -29001198.27 -29001198.04 0.0279 0.0062  
 Moon -84114-01-18 08:37 J -29001198.37 -29001198.14 -29001197.90 0.0279 0.0070 \*  
 Moon -84113-01-30 07:40 J -29000821.43 -29000821.18 -29000820.94 0.0276 0.0028  
 Earth -84113-01-30 09:20 J -29000821.35 -29000821.11 -29000820.88 0.0276 0.0043 \*  
 Moon -84112-02-10 03:06 J -29000444.57 -29000444.37 -29000444.16 0.0274 0.0132  
 Earth -84112-02-10 06:28 J -29000444.42 -29000444.23 -29000444.01 0.0274 0.0141 \*  
 Venus -84112-11-04 18:56 J -29000176.89 -29000176.71 -29000176.53 0.0272 0.0134  
 Earth -84111-02-21 22:47 J -29000067.66 -29000067.55 -29000067.41 0.0272 0.0230  
 Moon -84111-02-21 23:44 J -29000067.61 -29000067.51 -29000067.39 0.0272 0.0236 \*  
 Venus -84111-06-21 17:44 J -28999947.88 -28999947.76 -28999947.62 0.0271 0.0213  
 Mercury -84111-08-02 08:08 J -28999906.24 -28999906.16 -28999906.07 0.0271 0.0207  
 Mercury -84111-10-29 19:25 J -28999817.81 -28999817.69 -28999817.57 0.0271 0.0115  
 Mercury -84110-01-26 06:42 J -28999729.36 -28999729.22 -28999729.08 0.0270 0.0023  
 Mercury -84110-04-24 17:59 J -28999640.88 -28999640.75 -28999640.62 0.0270 0.0070  
 Mercury -84110-07-22 05:30 J -28999552.38 -28999552.27 -28999552.16 0.0270 0.0164  
 Mercury -84110-10-18 17:01 J -28999463.82 -28999463.79 -28999463.75 0.0270 0.0259  
 Mars -84103-12-12 18:56 J -28996851.97 -28996851.71 -28996851.43 0.0273 0.0151  
 Earth -84101-06-18 04:18 J -28996298.37 -28996298.32 -28996298.27 0.0276 0.0270  
 Moon -84101-06-18 05:44 J -28996298.32 -28996298.26 -28996298.18 0.0276 0.0264 \*  
 Moon -84100-07-01 10:32 J -28995920.27 -28995920.06 -28995919.84 0.0279 0.0159  
 Earth -84100-07-01 13:11 J -28995920.14 -28995919.95 -28995919.75 0.0279 0.0174 \*  
 Moon -84099-07-15 03:35 J -28995541.60 -28995541.35 -28995541.10 0.0281 0.0047  
 Earth -84099-07-15 07:25 J -28995541.43 -28995541.19 -28995540.94 0.0281 0.0064 \*  
 Moon -84098-07-29 09:06 J -28995162.36 -28995162.12 -28995161.88 0.0284 0.0070  
 Earth -84098-07-29 10:47 J -28995162.30 -28995162.05 -28995161.81 0.0284 0.0055 \*  
 Earth -84097-08-11 21:35 J -28994782.78 -28994782.60 -28994782.39 0.0286 0.0176  
 Moon -84097-08-11 23:44 J -28994782.68 -28994782.51 -28994782.32 0.0286 0.0187 \*  
 Venus -84096-07-18 05:30 J -28994442.46 -28994442.27 -28994442.07 0.0288 0.0122  
 Mercury -84096-11-25 06:28 J -28994312.32 -28994312.23 -28994312.13 0.0288 0.0246  
 Mercury -84095-02-22 05:16 J -28994223.45 -28994223.28 -28994223.11 0.0289 0.0095

Mercury -84095-05-22 03:35 J -28994134.53 -28994134.35 -28994134.18 0.0289 0.0055

Mercury -84095-08-19 01:11 J -28994045.56 -28994045.45 -28994045.32 0.0289 0.0202

Mars -84088-01-13 15:35 J -28991706.09 -28991705.85 -28991705.61 0.0286 0.0116

Moon -84087-12-31 04:18 J -28990989.47 -28990989.32 -28990989.15 0.0282 0.0213

Earth -84087-12-31 06:56 J -28990989.35 -28990989.21 -28990989.04 0.0282 0.0217 \*

Moon -84085-01-12 19:11 J -28990611.91 -28990611.70 -28990611.48 0.0279 0.0117

Earth -84085-01-12 22:32 J -28990611.78 -28990611.56 -28990611.34 0.0279 0.0111 \*

Earth -84084-01-24 05:44 J -28990234.50 -28990234.26 -28990234.02 0.0277 0.0005

Moon -84084-01-24 06:56 J -28990234.44 -28990234.21 -28990233.98 0.0277 0.0018 \*

Earth -84083-02-05 05:44 J -28989857.48 -28989857.26 -28989857.03 0.0275 0.0098

Moon -84083-02-05 09:20 J -28989857.34 -28989857.11 -28989856.88 0.0275 0.0086 \*

Moon -84082-02-16 23:44 J -28989480.67 -28989480.51 -28989480.32 0.0273 0.0192

Earth -84082-02-17 00:28 J -28989480.64 -28989480.48 -28989480.31 0.0273 0.0192 \*

Venus -84082-05-17 19:40 J -28989390.87 -28989390.68 -28989390.49 0.0272 0.0097

Mercury -84082-12-20 09:49 J -28989174.14 -28989174.09 -28989174.02 0.0272 0.0240

Venus -84081-01-01 18:28 J -28989161.80 -28989161.73 -28989161.64 0.0271 0.0249

Mercury -84081-03-17 21:06 J -28989085.73 -28989085.62 -28989085.51 0.0271 0.0148

Mercury -84081-06-14 08:08 J -28988997.29 -28988997.16 -28988997.02 0.0271 0.0056

Mercury -84081-09-10 19:25 J -28988908.82 -28988908.69 -28988908.55 0.0271 0.0038

Mercury -84081-12-08 06:56 J -28988820.33 -28988820.21 -28988820.09 0.0270 0.0131

Mercury -84080-03-06 18:28 J -28988731.81 -28988731.73 -28988731.66 0.0270 0.0225

Mars -84074-01-22 10:32 J -28986584.23 -28986584.06 -28986583.86 0.0271 0.0222

Earth -84071-06-25 19:54 J -28985333.82 -28985333.67 -28985333.51 0.0278 0.0219

Moon -84071-06-25 22:32 J -28985333.71 -28985333.56 -28985333.39 0.0278 0.0208 \*

Earth -84070-07-09 10:18 J -28984955.29 -28984955.07 -28984954.83 0.0280 0.0115

Moon -84070-07-09 14:08 J -28984955.14 -28984954.91 -28984954.67 0.0280 0.0099 \*

Earth -84069-07-22 10:18 J -28984576.32 -28984576.07 -28984575.81 0.0282 0.0004

Moon -84069-07-22 11:30 J -28984576.28 -28984576.02 -28984575.76 0.0282 0.0016 \*

Moon -84068-08-05 16:04 J -28984197.05 -28984196.83 -28984196.59 0.0285 0.0133

Earth -84068-08-05 18:28 J -28984196.95 -28984196.73 -28984196.49 0.0285 0.0121 \*

Venus -84067-06-12 10:04 J -28983886.17 -28983886.08 -28983885.98 0.0287 0.0258  
 Moon -84067-08-20 06:28 J -28983817.35 -28983817.23 -28983817.10 0.0287 0.0247  
 Earth -84067-08-20 10:18 J -28983817.21 -28983817.07 -28983816.93 0.0287 0.0239 \*  
 Venus -84066-01-28 11:59 J -28983656.15 -28983656.00 -28983655.82 0.0288 0.0183  
 Mercury -84066-04-14 05:16 J -28983580.28 -28983580.28 -28983580.27 0.0288 0.0288  
 Mercury -84066-07-12 04:18 J -28983491.48 -28983491.32 -28983491.17 0.0289 0.0136  
 Mercury -84066-10-09 02:37 J -28983402.57 -28983402.39 -28983402.21 0.0289 0.0015  
 Mercury -84065-01-06 00:42 J -28983313.61 -28983313.47 -28983313.32 0.0290 0.0163  
 Mars -84060-03-06 15:20 J -28981427.03 -28981426.86 -28981426.69 0.0289 0.0220  
 Mars -84058-03-03 00:42 J -28980700.47 -28980700.47 -28980700.46 0.0285 0.0285  
 Earth -84058-12-26 05:44 J -28980402.35 -28980402.26 -28980402.15 0.0283 0.0256  
 Moon -84058-12-26 08:23 J -28980402.25 -28980402.15 -28980402.03 0.0283 0.0248 \*  
 Earth -84056-01-07 01:25 J -28980024.64 -28980024.44 -28980024.24 0.0281 0.0151  
 Moon -84056-01-07 04:47 J -28980024.50 -28980024.30 -28980024.09 0.0281 0.0152 \*  
 Moon -84055-01-19 11:30 J -28979647.26 -28979647.02 -28979646.78 0.0278 0.0056  
 Earth -84055-01-19 11:59 J -28979647.23 -28979647.00 -28979646.76 0.0278 0.0045 \*  
 Moon -84054-01-31 11:44 J -28979270.24 -28979270.01 -28979269.77 0.0276 0.0044  
 Earth -84054-01-31 15:06 J -28979270.10 -28979269.87 -28979269.63 0.0276 0.0059 \*  
 Earth -84053-02-12 11:44 J -28978893.20 -28978893.01 -28978892.81 0.0274 0.0155  
 Moon -84053-02-12 12:13 J -28978893.18 -28978892.99 -28978892.80 0.0274 0.0150 \*  
 Venus -84053-11-27 02:52 J -28978604.58 -28978604.38 -28978604.18 0.0272 0.0036  
 Earth -84052-02-23 03:20 J -28978516.46 -28978516.36 -28978516.24 0.0272 0.0242  
 Moon -84052-02-23 06:42 J -28978516.29 -28978516.22 -28978516.11 0.0272 0.0249 \*  
 Mercury -84052-05-08 13:25 J -28978441.98 -28978441.94 -28978441.89 0.0271 0.0256  
 Mercury -84052-08-05 00:28 J -28978353.58 -28978353.48 -28978353.37 0.0271 0.0165  
 Mercury -84052-11-01 11:44 J -28978265.14 -28978265.01 -28978264.88 0.0271 0.0073  
 Mercury -84051-01-28 23:01 J -28978176.68 -28978176.54 -28978176.41 0.0270 0.0021  
 Mercury -84051-04-27 10:18 J -28978088.20 -28978088.07 -28978087.95 0.0270 0.0113  
 Mercury -84051-07-24 21:49 J -28977999.68 -28977999.59 -28977999.50 0.0270 0.0207  
 Mars -84044-03-15 23:59 J -28975573.82 -28975573.50 -28975573.17 0.0272 0.0030

Moon -84042-06-20 05:59 J -28974747.35 -28974747.25 -28974747.13 0.0276 0.0247  
 Earth -84042-06-20 08:37 J -28974747.22 -28974747.14 -28974747.03 0.0276 0.0256 \*  
 Moon -84041-07-02 15:06 J -28974369.07 -28974368.87 -28974368.65 0.0279 0.0143  
 Earth -84041-07-02 18:28 J -28974368.93 -28974368.73 -28974368.52 0.0279 0.0158 \*  
 Moon -84040-07-16 13:11 J -28973990.19 -28973989.95 -28973989.70 0.0281 0.0031  
 Earth -84040-07-16 13:40 J -28973990.18 -28973989.93 -28973989.68 0.0281 0.0047 \*  
 Earth -84039-07-30 17:30 J -28973611.01 -28973610.77 -28973610.52 0.0284 0.0072  
 Moon -84039-07-30 20:08 J -28973610.89 -28973610.66 -28973610.42 0.0284 0.0087 \*  
 Earth -84038-08-14 05:16 J -28973231.45 -28973231.28 -28973231.08 0.0286 0.0192  
 Moon -84038-08-14 09:06 J -28973231.29 -28973231.12 -28973230.94 0.0286 0.0203 \*  
 Venus -84038-12-23 16:04 J -28973099.97 -28973099.83 -28973099.67 0.0287 0.0203  
 Venus -84037-08-09 17:59 J -28972869.86 -28972869.75 -28972869.62 0.0288 0.0239  
 Mercury -84037-11-28 02:37 J -28972759.53 -28972759.39 -28972759.25 0.0289 0.0183  
 Mercury -84036-02-25 01:11 J -28972670.63 -28972670.45 -28972670.27 0.0289 0.0032  
 Mercury -84036-05-24 23:16 J -28972581.69 -28972581.53 -28972581.37 0.0289 0.0117  
 Mercury -84036-08-21 21:06 J -28972492.69 -28972492.62 -28972492.55 0.0290 0.0263  
 Mars -84030-04-23 12:56 J -28970422.22 -28970421.96 -28970421.69 0.0288 0.0044  
 Moon -84027-01-01 11:16 J -28969438.19 -28969438.03 -28969437.86 0.0281 0.0200  
 Earth -84027-01-01 14:23 J -28969438.07 -28969437.90 -28969437.73 0.0281 0.0200 \*  
 Earth -84026-01-14 04:47 J -28969060.52 -28969060.30 -28969060.07 0.0279 0.0094  
 Moon -84026-01-14 05:30 J -28969060.48 -28969060.27 -28969060.05 0.0279 0.0103 \*  
 Earth -84025-01-26 11:16 J -28968683.27 -28968683.03 -28968682.79 0.0277 0.0012  
 Moon -84025-01-26 14:37 J -28968683.13 -28968682.89 -28968682.65 0.0277 0.0005 \*  
 Moon -84024-02-06 10:04 J -28968306.30 -28968306.08 -28968305.84 0.0274 0.0104  
 Earth -84024-02-06 10:47 J -28968306.27 -28968306.05 -28968305.84 0.0274 0.0112 \*  
 Moon -84023-02-18 00:42 J -28967929.62 -28967929.47 -28967929.31 0.0272 0.0208  
 Earth -84023-02-18 04:32 J -28967929.47 -28967929.31 -28967929.15 0.0272 0.0204 \*  
 Venus -84023-06-09 02:52 J -28967818.58 -28967818.38 -28967818.17 0.0272 0.0005  
 Mercury -84023-12-23 01:54 J -28967621.50 -28967621.42 -28967621.32 0.0271 0.0199  
 Mercury -84022-03-21 13:11 J -28967533.08 -28967532.95 -28967532.83 0.0271 0.0108

Mercury -84022-06-18 00:13 J -28967444.62 -28967444.49 -28967444.35 0.0270 0.0017

Mercury -84022-09-14 11:30 J -28967356.15 -28967356.02 -28967355.88 0.0270 0.0079

Mercury -84022-12-11 23:01 J -28967267.64 -28967267.54 -28967267.43 0.0270 0.0172

Mercury -84021-03-09 10:32 J -28967179.07 -28967179.06 -28967179.04 0.0270 0.0266

Mars -84014-05-07 19:25 J -28964563.95 -28964563.69 -28964563.42 0.0273 0.0159

Earth -84012-06-26 22:18 J -28963782.74 -28963782.57 -28963782.40 0.0278 0.0204

Moon -84012-06-27 01:11 J -28963782.62 -28963782.45 -28963782.25 0.0278 0.0192 \*

Moon -84011-07-10 12:42 J -28963404.21 -28963403.97 -28963403.72 0.0280 0.0084

Earth -84011-07-10 13:25 J -28963404.17 -28963403.94 -28963403.71 0.0280 0.0099 \*

Moon -84010-07-24 10:18 J -28963025.32 -28963025.07 -28963024.81 0.0283 0.0032

Earth -84010-07-24 13:54 J -28963025.17 -28963024.92 -28963024.67 0.0283 0.0016 \*

Moon -84009-08-06 19:11 J -28962645.90 -28962645.70 -28962645.48 0.0285 0.0148

Earth -84009-08-06 22:47 J -28962645.77 -28962645.55 -28962645.32 0.0285 0.0135 \*

Venus -84008-07-04 20:08 J -28962313.84 -28962313.66 -28962313.47 0.0287 0.0151

Moon -84008-08-21 14:08 J -28962266.01 -28962265.91 -28962265.81 0.0287 0.0260

Earth -84008-08-21 14:37 J -28962266.00 -28962265.89 -28962265.76 0.0287 0.0252 \*

Mercury -84007-04-17 00:13 J -28962027.59 -28962027.49 -28962027.38 0.0289 0.0232

Mercury -84007-07-14 23:01 J -28961938.71 -28961938.54 -28961938.37 0.0289 0.0080

Mercury -84007-10-11 21:20 J -28961849.78 -28961849.61 -28961849.43 0.0289 0.0070

Mercury -84006-01-08 19:11 J -28961760.80 -28961760.70 -28961760.58 0.0290 0.0218

# 84TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 84th millennium BCE.**

PLANET	MAX- TRANSIT	C	START	MAX	END	SUNRAD	DEPTH	S
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TIME

Mars	-84000-06-09 18:56 J	-28959416.94	-28959416.71	-28959416.46	0.0287	0.0128
Earth	-83999-12-27 10:47 J	-28958851.16	-28958851.05	-28958850.91	0.0283	0.0239
Moon	-83999-12-27 13:54 J	-28958851.04	-28958850.92	-28958850.76	0.0283	0.0233 *
Moon	-83997-01-09 05:16 J	-28958473.49	-28958473.28	-28958473.06	0.0281	0.0139
Earth	-83997-01-09 06:13 J	-28958473.45	-28958473.24	-28958473.03	0.0281	0.0134 *
Moon	-83996-01-20 12:42 J	-28958096.21	-28958095.97	-28958095.73	0.0278	0.0042
Earth	-83996-01-20 16:18 J	-28958096.06	-28958095.82	-28958095.58	0.0278	0.0029 *
Moon	-83995-02-01 18:28 J	-28957718.95	-28957718.73	-28957718.50	0.0276	0.0061
Earth	-83995-02-01 18:42 J	-28957718.94	-28957718.72	-28957718.48	0.0276	0.0074 *
Earth	-83994-02-13 15:06 J	-28957342.05	-28957341.87	-28957341.68	0.0273	0.0168
Moon	-83994-02-13 18:42 J	-28957341.90	-28957341.72	-28957341.53	0.0273	0.0166 *
Venus	-83994-12-20 09:35 J	-28957032.30	-28957032.10	-28957031.90	0.0272	0.0058
Earth	-83993-02-25 06:13 J	-28956965.31	-28956965.24	-28956965.14	0.0271	0.0253
Moon	-83993-02-25 07:11 J	-28956965.25	-28956965.20	-28956965.12	0.0271	0.0262 *
Mercury	-83993-05-11 05:30 J	-28956889.35	-28956889.27	-28956889.19	0.0271	0.0217
Mercury	-83993-08-07 16:32 J	-28956800.93	-28956800.81	-28956800.69	0.0271	0.0126
Mercury	-83993-11-04 03:35 J	-28956712.48	-28956712.35	-28956712.21	0.0270	0.0034
Mercury	-83992-01-31 14:52 J	-28956624.01	-28956623.88	-28956623.74	0.0270	0.0060
Mercury	-83992-04-30 02:23 J	-28956535.52	-28956535.40	-28956535.29	0.0270	0.0153
Mercury	-83992-07-27 13:40 J	-28956446.97	-28956446.93	-28956446.87	0.0269	0.0248
Jupiter	-83989-05-28 20:08 J	-28955410.93	-28955410.66	-28955410.35	0.0268	0.0208
Mars	-83986-06-18 05:01 J	-28954295.48	-28954295.29	-28954295.07	0.0270	0.0210
Moon	-83983-06-21 07:40 J	-28953196.30	-28953196.18	-28953196.04	0.0276	0.0233
Earth	-83983-06-21 10:47 J	-28953196.16	-28953196.05	-28953195.92	0.0276	0.0241 *
Earth	-83982-07-04 20:37 J	-28952817.84	-28952817.64	-28952817.41	0.0279	0.0143
Moon	-83982-07-04 21:49 J	-28952817.80	-28952817.59	-28952817.38	0.0279	0.0128 *
Earth	-83981-07-17 16:32 J	-28952439.06	-28952438.81	-28952438.56	0.0282	0.0031
Moon	-83981-07-17 20:23 J	-28952438.90	-28952438.65	-28952438.40	0.0282	0.0015 *
Earth	-83980-07-31 21:06 J	-28952059.85	-28952059.62	-28952059.37	0.0284	0.0087

Moon -83980-08-01 00:28 J -28952059.71 -28952059.48 -28952059.23 0.0284 0.0101 \*  
 Earth -83979-08-15 09:20 J -28951680.27 -28951680.11 -28951679.92 0.0287 0.0206  
 Moon -83979-08-15 09:49 J -28951680.26 -28951680.09 -28951679.91 0.0287 0.0214 \*  
 Venus -83978-01-15 02:08 J -28951527.61 -28951527.41 -28951527.20 0.0287 0.0096  
 Mercury -83978-09-03 22:32 J -28951295.60 -28951295.56 -28951295.51 0.0289 0.0279  
 Mercury -83978-12-01 21:20 J -28951206.77 -28951206.61 -28951206.45 0.0289 0.0127  
 Mercury -83977-02-28 19:54 J -28951117.85 -28951117.67 -28951117.49 0.0289 0.0023  
 Mercury -83977-05-27 17:59 J -28951028.89 -28951028.75 -28951028.61 0.0290 0.0172  
 Mars -83972-07-31 02:08 J -28949138.58 -28949138.41 -28949138.22 0.0289 0.0210  
 Moon -83970-12-21 16:47 J -28948264.84 -28948264.80 -28948264.74 0.0284 0.0276  
 Earth -83968-01-02 19:11 J -28947886.88 -28947886.70 -28947886.52 0.0281 0.0183  
 Moon -83968-01-02 20:08 J -28947886.83 -28947886.66 -28947886.48 0.0281 0.0186 \*  
 Earth -83967-01-15 09:06 J -28947509.35 -28947509.12 -28947508.89 0.0279 0.0078  
 Moon -83967-01-15 12:42 J -28947509.19 -28947508.97 -28947508.74 0.0279 0.0090 \*  
 Earth -83966-01-27 14:52 J -28947132.11 -28947131.88 -28947131.64 0.0276 0.0027  
 Moon -83966-01-27 15:49 J -28947132.09 -28947131.84 -28947131.59 0.0276 0.0012 \*  
 Moon -83965-02-08 10:18 J -28946755.28 -28946755.07 -28946754.85 0.0274 0.0120  
 Earth -83965-02-08 13:54 J -28946755.13 -28946754.92 -28946754.71 0.0274 0.0126 \*  
 Venus -83965-11-14 10:04 J -28946475.13 -28946475.08 -28946475.00 0.0273 0.0256  
 Moon -83964-02-19 05:59 J -28946378.37 -28946378.25 -28946378.11 0.0272 0.0224  
 Earth -83964-02-19 06:56 J -28946378.35 -28946378.21 -28946378.06 0.0272 0.0216 \*  
 Venus -83964-07-01 09:20 J -28946246.30 -28946246.11 -28946245.91 0.0272 0.0093  
 Mercury -83964-09-28 06:56 J -28946157.26 -28946157.21 -28946157.16 0.0271 0.0251  
 Mercury -83964-12-25 17:44 J -28946068.86 -28946068.76 -28946068.65 0.0271 0.0161  
 Mercury -83963-03-24 05:01 J -28945980.42 -28945980.29 -28945980.16 0.0270 0.0069  
 Mercury -83963-06-20 16:18 J -28945891.96 -28945891.82 -28945891.69 0.0270 0.0026  
 Mercury -83963-09-17 03:20 J -28945803.48 -28945803.36 -28945803.23 0.0270 0.0118  
 Mercury -83963-12-14 14:52 J -28945714.96 -28945714.88 -28945714.79 0.0270 0.0211  
 Mars -83956-08-08 15:35 J -28943286.17 -28943285.85 -28943285.52 0.0272 0.0028  
 Moon -83954-06-15 19:40 J -28942609.70 -28942609.68 -28942609.65 0.0275 0.0274

Moon -83953-06-27 21:20 J -28942231.81 -28942231.61 -28942231.41 0.0278 0.0176  
 Earth -83953-06-27 22:18 J -28942231.74 -28942231.57 -28942231.38 0.0278 0.0190 \*  
 Moon -83952-07-11 10:04 J -28941853.32 -28941853.08 -28941852.83 0.0280 0.0070  
 Earth -83952-07-11 13:54 J -28941853.15 -28941852.92 -28941852.67 0.0280 0.0085 \*  
 Moon -83951-07-25 12:28 J -28941474.22 -28941473.98 -28941473.73 0.0283 0.0044  
 Earth -83951-07-25 15:06 J -28941474.12 -28941473.87 -28941473.62 0.0283 0.0031 \*  
 Earth -83950-08-09 00:13 J -28941094.69 -28941094.49 -28941094.27 0.0285 0.0150  
 Moon -83950-08-09 00:56 J -28941094.66 -28941094.46 -28941094.26 0.0285 0.0160 \*  
 Venus -83949-07-27 05:01 J -28940741.51 -28940741.29 -28940741.08 0.0287 0.0048  
 Earth -83949-08-22 17:01 J -28940714.88 -28940714.79 -28940714.69 0.0287 0.0265  
 Moon -83949-08-22 20:08 J -28940714.73 -28940714.66 -28940714.57 0.0287 0.0271 \*  
 Mercury -83948-04-19 18:28 J -28940474.86 -28940474.73 -28940474.59 0.0289 0.0180  
 Mercury -83948-07-17 17:16 J -28940385.96 -28940385.78 -28940385.60 0.0289 0.0029  
 Mercury -83948-10-14 15:20 J -28940297.01 -28940296.86 -28940296.69 0.0290 0.0121  
 Mercury -83947-01-11 13:11 J -28940208.00 -28940207.95 -28940207.88 0.0290 0.0268  
 Mars -83942-09-17 07:25 J -28938133.45 -28938133.19 -28938132.92 0.0289 0.0038  
 Moon -83940-12-28 13:40 J -28937300.09 -28937299.93 -28937299.78 0.0283 0.0220  
 Earth -83940-12-28 14:08 J -28937300.05 -28937299.91 -28937299.76 0.0283 0.0223 \*  
 Moon -83938-01-10 05:16 J -28936922.49 -28936922.28 -28936922.06 0.0281 0.0128  
 Earth -83938-01-10 09:06 J -28936922.34 -28936922.12 -28936921.91 0.0281 0.0118 \*  
 Moon -83937-01-22 17:44 J -28936544.99 -28936544.76 -28936544.53 0.0278 0.0028  
 Earth -83937-01-22 18:42 J -28936544.96 -28936544.72 -28936544.48 0.0278 0.0013 \*  
 Earth -83936-02-02 20:52 J -28936167.85 -28936167.63 -28936167.40 0.0276 0.0088  
 Moon -83936-02-02 23:59 J -28936167.72 -28936167.50 -28936167.27 0.0276 0.0076 \*  
 Earth -83935-02-14 16:47 J -28935790.98 -28935790.80 -28935790.62 0.0273 0.0181  
 Moon -83935-02-14 17:59 J -28935790.93 -28935790.75 -28935790.57 0.0273 0.0182 \*  
 Venus -83935-05-27 16:04 J -28935688.96 -28935688.83 -28935688.68 0.0273 0.0201  
 Venus -83934-01-11 15:20 J -28935460.03 -28935459.86 -28935459.69 0.0272 0.0148  
 Earth -83934-02-26 07:25 J -28935414.23 -28935414.19 -28935414.12 0.0271 0.0264  
 Mercury -83934-05-14 21:06 J -28935336.72 -28935336.62 -28935336.52 0.0271 0.0181

Mercury -83934-08-11 08:08 J -28935248.29 -28935248.16 -28935248.03 0.0271 0.0089

Mercury -83934-11-07 19:25 J -28935159.83 -28935159.69 -28935159.56 0.0270 0.0008

Mercury -83933-02-04 06:42 J -28935071.35 -28935071.22 -28935071.09 0.0270 0.0097

Mercury -83933-05-02 17:59 J -28934982.84 -28934982.75 -28934982.65 0.0270 0.0191

Mars -83926-10-01 07:25 J -28932275.44 -28932275.19 -28932274.92 0.0273 0.0168

Earth -83924-06-22 11:01 J -28931645.16 -28931645.04 -28931644.88 0.0276 0.0228

Moon -83924-06-22 11:59 J -28931645.13 -28931645.00 -28931644.84 0.0276 0.0217 \*

Earth -83923-07-05 21:20 J -28931266.82 -28931266.61 -28931266.37 0.0279 0.0128

Moon -83923-07-06 01:11 J -28931266.67 -28931266.45 -28931266.22 0.0279 0.0112 \*

Earth -83922-07-19 17:44 J -28930888.01 -28930887.76 -28930887.51 0.0282 0.0016

Moon -83922-07-19 19:40 J -28930887.94 -28930887.68 -28930887.42 0.0282 0.0005 \*

Moon -83921-08-01 21:20 J -28930508.85 -28930508.61 -28930508.37 0.0284 0.0112

Earth -83921-08-01 22:47 J -28930508.78 -28930508.55 -28930508.31 0.0284 0.0102 \*

Moon -83920-08-16 08:08 J -28930129.32 -28930129.16 -28930129.00 0.0287 0.0225

Earth -83920-08-16 11:30 J -28930129.17 -28930129.02 -28930128.85 0.0287 0.0219 \*

Venus -83919-02-06 11:01 J -28929955.26 -28929955.04 -28929954.82 0.0288 0.0007

Mercury -83919-09-06 16:47 J -28929742.90 -28929742.80 -28929742.68 0.0289 0.0228

Mercury -83919-12-04 15:35 J -28929654.02 -28929653.85 -28929653.68 0.0289 0.0076

Mercury -83918-03-03 13:54 J -28929565.09 -28929564.92 -28929564.75 0.0290 0.0075

Mercury -83918-05-31 11:44 J -28929476.11 -28929476.01 -28929475.89 0.0290 0.0223

Mars -83912-11-03 01:54 J -28927128.65 -28927128.42 -28927128.18 0.0287 0.0137

Earth -83911-12-22 22:32 J -28926713.62 -28926713.56 -28926713.48 0.0284 0.0271

Moon -83911-12-22 23:16 J -28926713.60 -28926713.53 -28926713.44 0.0284 0.0264 \*

Earth -83909-01-04 21:35 J -28926335.79 -28926335.60 -28926335.40 0.0281 0.0168

Moon -83909-01-05 00:56 J -28926335.64 -28926335.46 -28926335.26 0.0281 0.0173 \*

Earth -83908-01-16 11:01 J -28925958.27 -28925958.04 -28925957.80 0.0279 0.0062

Moon -83908-01-16 11:44 J -28925958.24 -28925958.01 -28925957.76 0.0279 0.0076 \*

Moon -83907-01-28 13:25 J -28925581.18 -28925580.94 -28925580.70 0.0276 0.0026

Earth -83907-01-28 16:32 J -28925581.04 -28925580.81 -28925580.57 0.0276 0.0042 \*

Moon -83906-02-09 13:40 J -28925204.13 -28925203.93 -28925203.73 0.0274 0.0135

Earth -83906-02-09 15:06 J -28925204.07 -28925203.87 -28925203.66 0.0274 0.0139 \*  
 Venus -83906-12-07 16:04 J -28924902.99 -28924902.83 -28924902.67 0.0272 0.0165  
 Earth -83905-02-21 07:40 J -28924827.30 -28924827.18 -28924827.04 0.0272 0.0227  
 Moon -83905-02-21 11:01 J -28924827.14 -28924827.04 -28924826.92 0.0272 0.0238 \*  
 Venus -83905-07-23 14:37 J -28924674.03 -28924673.89 -28924673.73 0.0271 0.0182  
 Mercury -83905-09-30 22:18 J -28924604.65 -28924604.57 -28924604.48 0.0271 0.0215  
 Mercury -83905-12-28 09:20 J -28924516.23 -28924516.11 -28924515.99 0.0271 0.0124  
 Mercury -83904-03-26 20:37 J -28924427.78 -28924427.64 -28924427.51 0.0270 0.0032  
 Mercury -83904-06-23 07:40 J -28924339.31 -28924339.18 -28924339.04 0.0270 0.0062  
 Mercury -83904-09-19 19:11 J -28924250.81 -28924250.70 -28924250.59 0.0270 0.0155  
 Mercury -83904-12-17 06:28 J -28924162.27 -28924162.23 -28924162.17 0.0269 0.0249  
 Mars -83898-11-10 15:35 J -28922008.04 -28922007.85 -28922007.63 0.0271 0.0211  
 Moon -83895-06-16 13:25 J -28921059.02 -28921058.94 -28921058.83 0.0275 0.0256  
 Earth -83895-06-16 15:06 J -28921058.91 -28921058.87 -28921058.80 0.0275 0.0267 \*  
 Moon -83894-06-29 17:30 J -28920680.97 -28920680.77 -28920680.56 0.0278 0.0160  
 Earth -83894-06-29 21:06 J -28920680.80 -28920680.62 -28920680.42 0.0278 0.0175 \*  
 Moon -83893-07-12 11:59 J -28920302.24 -28920302.00 -28920301.76 0.0280 0.0056  
 Earth -83893-07-12 12:56 J -28920302.20 -28920301.96 -28920301.71 0.0280 0.0069 \*  
 Earth -83892-07-26 14:08 J -28919923.16 -28919922.91 -28919922.66 0.0283 0.0046  
 Moon -83892-07-26 16:32 J -28919923.04 -28919922.81 -28919922.56 0.0283 0.0056 \*  
 Earth -83891-08-09 23:30 J -28919543.71 -28919543.52 -28919543.30 0.0285 0.0165  
 Moon -83891-08-10 03:35 J -28919543.54 -28919543.35 -28919543.14 0.0285 0.0172 \*  
 Venus -83890-08-19 12:13 J -28919169.20 -28919168.99 -28919168.77 0.0288 0.0050  
 Earth -83890-08-24 16:47 J -28919163.86 -28919163.80 -28919163.73 0.0288 0.0277  
 Moon -83890-08-24 19:40 J -28919163.74 -28919163.68 -28919163.63 0.0288 0.0280 \*  
 Mercury -83889-01-24 12:56 J -28919010.97 -28919010.96 -28919010.93 0.0288 0.0287  
 Mercury -83889-04-22 11:59 J -28918922.15 -28918922.00 -28918921.84 0.0289 0.0134  
 Mercury -83889-07-20 10:47 J -28918833.23 -28918833.05 -28918832.88 0.0289 0.0019  
 Mercury -83889-10-17 08:52 J -28918744.27 -28918744.13 -28918743.99 0.0290 0.0167  
 Mars -83884-12-24 10:47 J -28916850.24 -28916850.05 -28916849.87 0.0290 0.0208

Moon	-83881-12-29 11:16 J	-28915749.19	-28915749.03	-28915748.86	0.0283	0.0208
Earth	-83881-12-29 14:52 J	-28915749.04	-28915748.88	-28915748.72	0.0283	0.0209 *
Moon	-83879-01-11 08:37 J	-28915371.35	-28915371.14	-28915370.92	0.0281	0.0114
Earth	-83879-01-11 09:20 J	-28915371.33	-28915371.11	-28915370.88	0.0281	0.0103 *
Earth	-83878-01-23 19:11 J	-28914993.94	-28914993.70	-28914993.46	0.0278	0.0003
Moon	-83878-01-23 22:32 J	-28914993.80	-28914993.56	-28914993.33	0.0278	0.0014 *
Earth	-83877-02-04 21:06 J	-28914616.84	-28914616.62	-28914616.40	0.0276	0.0102
Moon	-83877-02-04 23:30 J	-28914616.75	-28914616.52	-28914616.29	0.0276	0.0091 *
Moon	-83876-02-15 13:40 J	-28914240.09	-28914239.93	-28914239.76	0.0273	0.0200
Earth	-83876-02-15 16:47 J	-28914239.96	-28914239.80	-28914239.63	0.0273	0.0193 *
Venus	-83876-06-18 21:20 J	-28914116.80	-28914116.61	-28914116.42	0.0273	0.0113
Venus	-83875-02-02 19:54 J	-28913887.76	-28913887.67	-28913887.56	0.0271	0.0236
Mercury	-83875-02-18 01:25 J	-28913872.50	-28913872.44	-28913872.37	0.0271	0.0237
Mercury	-83875-05-17 12:28 J	-28913784.09	-28913783.98	-28913783.87	0.0271	0.0146
Mercury	-83875-08-13 23:30 J	-28913695.65	-28913695.52	-28913695.38	0.0271	0.0054
Mercury	-83875-11-10 10:47 J	-28913607.19	-28913607.05	-28913606.91	0.0270	0.0040
Mercury	-83874-02-06 22:04 J	-28913518.70	-28913518.58	-28913518.46	0.0270	0.0133
Mercury	-83874-05-06 09:35 J	-28913430.17	-28913430.10	-28913430.03	0.0269	0.0227
Mars	-83867-01-02 03:06 J	-28910997.70	-28910997.37	-28910997.04	0.0271	0.0018
Earth	-83865-06-23 10:18 J	-28910094.22	-28910094.07	-28910093.91	0.0276	0.0214
Moon	-83865-06-23 14:08 J	-28910094.08	-28910093.91	-28910093.73	0.0276	0.0199 *
Earth	-83864-07-06 20:52 J	-28909715.85	-28909715.63	-28909715.40	0.0279	0.0113
Moon	-83864-07-06 22:04 J	-28909715.82	-28909715.58	-28909715.33	0.0279	0.0099 *
Moon	-83863-07-20 14:23 J	-28909337.16	-28909336.90	-28909336.64	0.0282	0.0009
Earth	-83863-07-20 17:16 J	-28909337.03	-28909336.78	-28909336.53	0.0282	0.0004 *
Moon	-83862-08-03 18:42 J	-28908957.94	-28908957.72	-28908957.49	0.0284	0.0123
Earth	-83862-08-03 22:32 J	-28908957.78	-28908957.56	-28908957.32	0.0284	0.0116 *
Moon	-83861-08-17 09:49 J	-28908578.21	-28908578.09	-28908577.94	0.0287	0.0236
Earth	-83861-08-17 11:59 J	-28908578.14	-28908578.00	-28908577.84	0.0287	0.0232 *
Venus	-83860-02-28 18:42 J	-28908382.92	-28908382.72	-28908382.52	0.0288	0.0107

Mercury -83860-09-09 10:32 J -28908190.19 -28908190.06 -28908189.91 0.0289 0.0179

Mercury -83860-12-07 09:20 J -28908101.29 -28908101.11 -28908100.93 0.0289 0.0027

Mercury -83859-03-06 07:40 J -28908012.34 -28908012.18 -28908012.02 0.0290 0.0123

Mercury -83859-06-03 05:30 J -28907923.33 -28907923.27 -28907923.21 0.0290 0.0270

Mars -83853-02-10 11:16 J -28905845.29 -28905845.03 -28905844.77 0.0288 0.0030

Earth -83852-12-24 00:13 J -28905162.58 -28905162.49 -28905162.38 0.0284 0.0256

Moon -83852-12-24 04:04 J -28905162.44 -28905162.33 -28905162.21 0.0284 0.0250 \*

Earth -83850-01-05 23:01 J -28904784.73 -28904784.54 -28904784.33 0.0281 0.0152

Moon -83850-01-06 00:13 J -28904784.69 -28904784.49 -28904784.28 0.0281 0.0158 \*

Moon -83849-01-18 08:52 J -28904407.36 -28904407.13 -28904406.89 0.0279 0.0063

Earth -83849-01-18 12:28 J -28904407.22 -28904406.98 -28904406.74 0.0279 0.0046 \*

Moon -83848-01-29 15:20 J -28904030.09 -28904029.86 -28904029.63 0.0276 0.0043

Earth -83848-01-29 17:30 J -28904030.00 -28904029.77 -28904029.53 0.0276 0.0056 \*

Earth -83847-02-10 15:35 J -28903653.04 -28903652.85 -28903652.65 0.0274 0.0152

Moon -83847-02-10 18:13 J -28903652.93 -28903652.74 -28903652.54 0.0274 0.0151 \*

Venus -83847-12-29 21:06 J -28903330.81 -28903330.62 -28903330.42 0.0272 0.0077

Earth -83846-02-22 08:08 J -28903276.26 -28903276.16 -28903276.04 0.0272 0.0238

Moon -83846-02-22 10:18 J -28903276.15 -28903276.07 -28903275.97 0.0272 0.0250 \*

Mercury -83846-07-08 02:52 J -28903140.38 -28903140.38 -28903140.37 0.0271 0.0270

Venus -83846-08-15 19:54 J -28903101.69 -28903101.67 -28903101.65 0.0271 0.0269

Mercury -83846-10-04 13:54 J -28903052.02 -28903051.92 -28903051.82 0.0271 0.0180

Mercury -83845-01-01 00:56 J -28902963.59 -28902963.46 -28902963.33 0.0270 0.0088

Mercury -83845-03-29 11:59 J -28902875.13 -28902875.00 -28902874.86 0.0270 0.0009

Mercury -83845-06-25 23:16 J -28902786.65 -28902786.53 -28902786.40 0.0270 0.0098

Mercury -83845-09-22 10:47 J -28902698.15 -28902698.05 -28902697.96 0.0269 0.0191

Mars -83837-02-23 12:13 J -28899988.23 -28899987.99 -28899987.71 0.0273 0.0165

Moon -83836-06-17 09:49 J -28899508.20 -28899508.09 -28899507.96 0.0275 0.0240

Earth -83836-06-17 13:40 J -28899508.02 -28899507.93 -28899507.83 0.0275 0.0254 \*

Moon -83835-06-30 18:56 J -28899129.92 -28899129.71 -28899129.51 0.0278 0.0146

Earth -83835-06-30 19:25 J -28899129.88 -28899129.69 -28899129.48 0.0278 0.0161 \*

Earth -83834-07-14 11:30 J -28898751.27 -28898751.02 -28898750.77 0.0280 0.0054  
 Moon -83834-07-14 14:23 J -28898751.14 -28898750.90 -28898750.65 0.0280 0.0044 \*  
 Earth -83833-07-27 12:42 J -28898372.21 -28898371.97 -28898371.72 0.0283 0.0061  
 Moon -83833-07-27 16:18 J -28898372.07 -28898371.82 -28898371.57 0.0283 0.0067 \*  
 Earth -83832-08-10 22:47 J -28897992.74 -28897992.55 -28897992.35 0.0285 0.0177  
 Moon -83832-08-10 23:16 J -28897992.72 -28897992.53 -28897992.31 0.0285 0.0180 \*  
 Moon -83831-08-25 13:40 J -28897612.94 -28897612.93 -28897612.89 0.0288 0.0286  
 Venus -83831-09-10 19:11 J -28897596.88 -28897596.70 -28897596.50 0.0288 0.0147  
 Mercury -83830-01-27 06:42 J -28897458.32 -28897458.22 -28897458.12 0.0288 0.0240  
 Mercury -83830-04-26 05:30 J -28897369.44 -28897369.27 -28897369.10 0.0289 0.0087  
 Mercury -83830-07-24 03:49 J -28897280.51 -28897280.34 -28897280.16 0.0289 0.0064  
 Mercury -83830-10-21 01:54 J -28897191.53 -28897191.42 -28897191.30 0.0290 0.0212  
 Mars -83823-03-29 06:56 J -28894840.43 -28894840.21 -28894839.96 0.0288 0.0139  
 Moon -83822-12-31 12:56 J -28894198.12 -28894197.96 -28894197.79 0.0284 0.0197  
 Earth -83822-12-31 13:54 J -28894198.08 -28894197.92 -28894197.73 0.0284 0.0195 \*  
 Earth -83820-01-12 08:37 J -28893820.37 -28893820.14 -28893819.91 0.0281 0.0088  
 Moon -83820-01-12 11:44 J -28893820.23 -28893820.01 -28893819.79 0.0281 0.0101 \*  
 Earth -83819-01-24 18:28 J -28893442.97 -28893442.73 -28893442.49 0.0278 0.0018  
 Moon -83819-01-24 20:37 J -28893442.88 -28893442.64 -28893442.39 0.0278 0.0002 \*  
 Moon -83818-02-05 17:59 J -28893065.97 -28893065.75 -28893065.52 0.0276 0.0108  
 Earth -83818-02-05 20:08 J -28893065.86 -28893065.66 -28893065.43 0.0276 0.0117 \*  
 Moon -83817-02-17 12:56 J -28892689.09 -28892688.96 -28892688.80 0.0273 0.0214  
 Earth -83817-02-17 15:49 J -28892688.99 -28892688.84 -28892688.68 0.0273 0.0206 \*  
 Venus -83817-07-11 01:54 J -28892544.63 -28892544.42 -28892544.22 0.0272 0.0028  
 Mercury -83816-02-20 16:47 J -28892319.89 -28892319.80 -28892319.71 0.0271 0.0204  
 Mercury -83816-05-20 03:49 J -28892231.47 -28892231.34 -28892231.22 0.0271 0.0112  
 Mercury -83816-08-16 14:52 J -28892143.01 -28892142.88 -28892142.74 0.0271 0.0019  
 Mercury -83816-11-13 02:08 J -28892054.54 -28892054.41 -28892054.28 0.0270 0.0074  
 Mercury -83815-02-09 13:25 J -28891966.04 -28891965.94 -28891965.83 0.0270 0.0169  
 Mercury -83815-05-09 00:56 J -28891877.48 -28891877.46 -28891877.43 0.0269 0.0263



Mars	-83809-04-05 04:47 J	-28889719.51	-28889719.30	-28889719.06	0.0270	0.0198
Earth	-83806-06-25 09:35 J	-28888543.27	-28888543.10	-28888542.93	0.0276	0.0200
Moon	-83806-06-25 10:04 J	-28888543.27	-28888543.08	-28888542.89	0.0276	0.0184 *
Moon	-83805-07-07 17:16 J	-28888165.02	-28888164.78	-28888164.53	0.0279	0.0084
Earth	-83805-07-07 20:23 J	-28888164.88	-28888164.65	-28888164.41	0.0279	0.0099 *
Moon	-83804-07-21 13:54 J	-28887786.16	-28887785.92	-28887785.67	0.0282	0.0022
Earth	-83804-07-21 16:47 J	-28887786.05	-28887785.80	-28887785.54	0.0282	0.0014 *
Earth	-83803-08-04 22:18 J	-28887406.79	-28887406.57	-28887406.34	0.0284	0.0130
Moon	-83803-08-04 22:32 J	-28887406.78	-28887406.56	-28887406.35	0.0284	0.0133 *
Venus	-83802-08-06 00:13 J	-28887040.61	-28887040.49	-28887040.36	0.0287	0.0237
Earth	-83802-08-19 11:44 J	-28887027.13	-28887027.01	-28887026.87	0.0287	0.0245
Moon	-83802-08-19 14:52 J	-28887027.01	-28887026.88	-28887026.75	0.0287	0.0244 *
Venus	-83801-03-23 01:54 J	-28886810.56	-28886810.42	-28886810.26	0.0288	0.0206
Mercury	-83801-06-15 05:16 J	-28886726.30	-28886726.28	-28886726.25	0.0289	0.0285
Mercury	-83801-09-12 04:18 J	-28886637.48	-28886637.32	-28886637.16	0.0289	0.0131
Mercury	-83801-12-10 02:52 J	-28886548.56	-28886548.38	-28886548.20	0.0289	0.0020
Mercury	-83800-03-09 00:56 J	-28886459.60	-28886459.46	-28886459.31	0.0290	0.0169
Mars	-83795-05-19 14:23 J	-28884562.08	-28884561.90	-28884561.70	0.0290	0.0203
Earth	-83793-12-25 00:13 J	-28883611.60	-28883611.49	-28883611.35	0.0284	0.0242
Moon	-83793-12-25 01:25 J	-28883611.56	-28883611.44	-28883611.30	0.0284	0.0240 *
Moon	-83791-01-06 20:08 J	-28883233.86	-28883233.66	-28883233.44	0.0281	0.0147
Earth	-83791-01-06 23:16 J	-28883233.74	-28883233.53	-28883233.32	0.0281	0.0137 *
Moon	-83790-01-19 10:32 J	-28882856.29	-28882856.06	-28882855.83	0.0279	0.0047
Earth	-83790-01-19 12:42 J	-28882856.21	-28882855.97	-28882855.74	0.0279	0.0032 *
Earth	-83789-01-31 17:30 J	-28882479.00	-28882478.77	-28882478.54	0.0276	0.0070
Moon	-83789-01-31 19:54 J	-28882478.89	-28882478.67	-28882478.44	0.0276	0.0060 *
Earth	-83788-02-11 15:35 J	-28882102.04	-28882101.85	-28882101.66	0.0274	0.0165
Moon	-83788-02-11 18:28 J	-28882101.91	-28882101.73	-28882101.53	0.0274	0.0165 *
Venus	-83787-01-21 02:08 J	-28881758.62	-28881758.41	-28881758.21	0.0272	0.0011
Moon	-83787-02-23 05:30 J	-28881725.32	-28881725.27	-28881725.20	0.0272	0.0263

Earth -83787-02-23 08:08 J -28881725.25 -28881725.16 -28881725.07 0.0272 0.0249 \*  
 Mercury -83787-07-10 18:13 J -28881587.80 -28881587.74 -28881587.67 0.0271 0.0236  
 Mercury -83787-10-07 05:16 J -28881499.39 -28881499.28 -28881499.17 0.0271 0.0145  
 Mercury -83786-01-03 16:18 J -28881410.95 -28881410.82 -28881410.68 0.0270 0.0053  
 Mercury -83786-04-02 03:35 J -28881322.49 -28881322.35 -28881322.22 0.0270 0.0040  
 Mercury -83786-06-29 14:52 J -28881234.00 -28881233.88 -28881233.76 0.0270 0.0134  
 Mercury -83786-09-26 02:23 J -28881145.48 -28881145.40 -28881145.33 0.0269 0.0228  
 Mars -83779-05-27 09:49 J -28878710.41 -28878710.09 -28878709.76 0.0271 0.0020  
 Earth -83777-06-18 12:28 J -28877957.09 -28877956.98 -28877956.85 0.0275 0.0240  
 Moon -83777-06-18 13:11 J -28877957.09 -28877956.95 -28877956.82 0.0275 0.0226 \*  
 Earth -83776-07-01 18:28 J -28877578.94 -28877578.73 -28877578.52 0.0278 0.0146  
 Moon -83776-07-01 21:49 J -28877578.80 -28877578.59 -28877578.37 0.0278 0.0131 \*  
 Earth -83775-07-15 10:18 J -28877200.32 -28877200.07 -28877199.82 0.0280 0.0040  
 Moon -83775-07-15 12:56 J -28877200.21 -28877199.96 -28877199.70 0.0280 0.0029 \*  
 Moon -83774-07-29 10:32 J -28876821.31 -28876821.06 -28876820.81 0.0283 0.0076  
 Earth -83774-07-29 11:44 J -28876821.25 -28876821.01 -28876820.77 0.0283 0.0075 \*  
 Moon -83773-08-11 17:59 J -28876441.94 -28876441.75 -28876441.55 0.0285 0.0187  
 Earth -83773-08-11 21:35 J -28876441.77 -28876441.60 -28876441.40 0.0285 0.0192 \*  
 Venus -83772-02-15 00:13 J -28876254.64 -28876254.49 -28876254.33 0.0287 0.0199  
 Venus -83772-10-03 02:08 J -28876024.51 -28876024.41 -28876024.29 0.0288 0.0244  
 Mercury -83771-01-29 23:59 J -28875905.63 -28875905.50 -28875905.36 0.0289 0.0194  
 Mercury -83771-04-28 22:47 J -28875816.72 -28875816.55 -28875816.37 0.0289 0.0042  
 Mercury -83771-07-26 21:06 J -28875727.78 -28875727.62 -28875727.45 0.0289 0.0109  
 Mercury -83771-10-23 18:56 J -28875638.78 -28875638.71 -28875638.62 0.0290 0.0257  
 Mars -83765-07-05 11:30 J -28873557.28 -28873557.02 -28873556.75 0.0289 0.0031  
 Moon -83764-12-19 08:37 J -28873025.16 -28873025.14 -28873025.09 0.0286 0.0282  
 Earth -83764-12-19 09:06 J -28873025.15 -28873025.12 -28873025.09 0.0286 0.0283 \*  
 Earth -83762-01-01 13:25 J -28872647.12 -28872646.94 -28872646.75 0.0284 0.0180  
 Moon -83762-01-01 16:18 J -28872646.98 -28872646.82 -28872646.63 0.0284 0.0187 \*  
 Earth -83761-01-14 07:54 J -28872269.40 -28872269.17 -28872268.94 0.0281 0.0073

Moon -83761-01-14 10:18 J -28872269.30 -28872269.07 -28872268.83 0.0281 0.0086 \*  
 Moon -83760-01-25 15:06 J -28871892.11 -28871891.87 -28871891.62 0.0278 0.0019  
 Earth -83760-01-25 17:44 J -28871892.00 -28871891.76 -28871891.52 0.0278 0.0032 \*  
 Moon -83759-02-06 16:18 J -28871515.02 -28871514.82 -28871514.60 0.0276 0.0126  
 Earth -83759-02-06 19:40 J -28871514.89 -28871514.68 -28871514.47 0.0276 0.0130 \*  
 Earth -83758-02-18 14:52 J -28871138.01 -28871137.88 -28871137.72 0.0273 0.0218  
 Moon -83758-02-18 16:47 J -28871137.93 -28871137.80 -28871137.68 0.0273 0.0228 \*  
 Venus -83758-08-03 06:13 J -28870972.44 -28870972.24 -28870972.03 0.0272 0.0059  
 Mercury -83758-11-27 21:06 J -28870855.66 -28870855.62 -28870855.59 0.0272 0.0261  
 Mercury -83757-02-24 07:54 J -28870767.27 -28870767.17 -28870767.06 0.0271 0.0170  
 Mercury -83757-05-22 18:56 J -28870678.83 -28870678.71 -28870678.57 0.0271 0.0078  
 Mercury -83757-08-19 06:13 J -28870590.37 -28870590.24 -28870590.10 0.0271 0.0017  
 Mercury -83757-11-15 17:30 J -28870501.89 -28870501.77 -28870501.64 0.0270 0.0110  
 Mercury -83756-02-12 05:01 J -28870413.38 -28870413.29 -28870413.20 0.0270 0.0204  
 Mars -83749-07-19 02:08 J -28867699.63 -28867699.41 -28867699.14 0.0272 0.0179  
 Moon -83748-06-13 07:40 J -28867370.24 -28867370.18 -28867370.09 0.0274 0.0261  
 Moon -83747-06-26 05:44 J -28866992.45 -28866992.26 -28866992.06 0.0276 0.0170  
 Earth -83747-06-26 09:20 J -28866992.28 -28866992.11 -28866991.91 0.0276 0.0186 \*  
 Moon -83746-07-09 17:59 J -28866613.99 -28866613.75 -28866613.51 0.0279 0.0071  
 Earth -83746-07-09 20:37 J -28866613.88 -28866613.64 -28866613.40 0.0279 0.0084 \*  
 Earth -83745-07-22 17:16 J -28866235.03 -28866234.78 -28866234.52 0.0282 0.0029  
 Moon -83745-07-22 18:28 J -28866234.97 -28866234.73 -28866234.48 0.0282 0.0034 \*  
 Earth -83744-08-05 22:47 J -28865855.76 -28865855.55 -28865855.32 0.0284 0.0145  
 Moon -83744-08-06 02:37 J -28865855.60 -28865855.39 -28865855.17 0.0284 0.0143 \*  
 Earth -83743-08-20 12:42 J -28865476.07 -28865475.97 -28865475.85 0.0287 0.0258  
 Moon -83743-08-20 15:49 J -28865475.95 -28865475.84 -28865475.70 0.0287 0.0252 \*  
 Venus -83743-08-28 08:08 J -28865468.34 -28865468.16 -28865467.96 0.0287 0.0137  
 Mercury -83742-06-18 23:16 J -28865173.63 -28865173.53 -28865173.42 0.0289 0.0235  
 Mercury -83742-09-15 22:04 J -28865084.75 -28865084.58 -28865084.40 0.0289 0.0083  
 Mercury -83742-12-13 20:37 J -28864995.81 -28864995.64 -28864995.47 0.0290 0.0069

Mercury -83741-03-11 18:28 J -28864906.83 -28864906.73 -28864906.61 0.0290 0.0218  
 Mars -83735-08-22 12:56 J -28862552.18 -28862551.96 -28862551.72 0.0287 0.0147  
 Moon -83734-12-26 21:35 J -28862060.73 -28862060.60 -28862060.46 0.0284 0.0232  
 Earth -83734-12-27 00:56 J -28862060.59 -28862060.46 -28862060.31 0.0284 0.0228 \*  
 Moon -83732-01-07 21:06 J -28861682.83 -28861682.62 -28861682.41 0.0281 0.0134  
 Earth -83732-01-07 23:30 J -28861682.73 -28861682.52 -28861682.30 0.0281 0.0123 \*  
 Earth -83731-01-20 12:56 J -28861305.20 -28861304.96 -28861304.72 0.0279 0.0017  
 Moon -83731-01-20 15:06 J -28861305.10 -28861304.87 -28861304.64 0.0279 0.0031 \*  
 Earth -83730-02-01 17:44 J -28860927.98 -28860927.76 -28860927.53 0.0276 0.0085  
 Moon -83730-02-01 20:52 J -28860927.86 -28860927.63 -28860927.39 0.0276 0.0077 \*  
 Moon -83729-02-13 14:08 J -28860551.08 -28860550.91 -28860550.71 0.0274 0.0183  
 Earth -83729-02-13 15:35 J -28860551.02 -28860550.85 -28860550.66 0.0274 0.0178 \*  
 Venus -83729-06-28 07:40 J -28860415.25 -28860415.18 -28860415.10 0.0273 0.0253  
 Venus -83728-02-12 07:11 J -28860186.39 -28860186.20 -28860186.01 0.0272 0.0098  
 Earth -83728-02-24 08:08 J -28860174.22 -28860174.16 -28860174.09 0.0272 0.0260  
 Mercury -83728-07-13 09:35 J -28860035.18 -28860035.10 -28860035.01 0.0271 0.0201  
 Mercury -83728-10-09 20:37 J -28859946.76 -28859946.64 -28859946.51 0.0271 0.0110  
 Mercury -83727-01-06 07:54 J -28859858.31 -28859858.17 -28859858.04 0.0270 0.0018  
 Mercury -83727-04-04 18:56 J -28859769.84 -28859769.71 -28859769.57 0.0270 0.0077  
 Mercury -83727-07-02 06:13 J -28859681.34 -28859681.24 -28859681.13 0.0270 0.0171  
 Mercury -83727-09-28 17:59 J -28859592.77 -28859592.75 -28859592.73 0.0269 0.0265  
 Mars -83721-08-28 17:59 J -28857431.97 -28857431.75 -28857431.52 0.0270 0.0195  
 Earth -83718-06-20 13:25 J -28856406.08 -28856405.94 -28856405.80 0.0275 0.0226  
 Moon -83718-06-20 17:16 J -28856405.94 -28856405.78 -28856405.62 0.0275 0.0211 \*  
 Earth -83717-07-02 19:25 J -28856027.91 -28856027.69 -28856027.47 0.0278 0.0131  
 Moon -83717-07-02 21:35 J -28856027.83 -28856027.60 -28856027.36 0.0278 0.0117 \*  
 Moon -83716-07-16 09:35 J -28855649.36 -28855649.10 -28855648.84 0.0280 0.0018  
 Earth -83716-07-16 11:16 J -28855649.28 -28855649.03 -28855648.78 0.0280 0.0024 \*  
 Moon -83715-07-30 08:52 J -28855270.36 -28855270.13 -28855269.88 0.0283 0.0089  
 Earth -83715-07-30 12:42 J -28855270.21 -28855269.97 -28855269.73 0.0283 0.0090 \*

Moon -83714-08-13 20:52 J -28854890.80 -28854890.63 -28854890.45 0.0286 0.0199  
 Earth -83714-08-13 22:47 J -28854890.71 -28854890.55 -28854890.37 0.0286 0.0206 \*  
 Venus -83713-03-09 08:08 J -28854682.36 -28854682.16 -28854681.95 0.0287 0.0100  
 Mercury -83712-02-01 17:59 J -28854352.90 -28854352.75 -28854352.60 0.0289 0.0145  
 Mercury -83712-05-01 16:32 J -28854263.98 -28854263.81 -28854263.63 0.0289 0.0009  
 Mercury -83712-07-29 14:52 J -28854175.03 -28854174.88 -28854174.73 0.0289 0.0157  
 Mars -83707-10-12 12:42 J -28852274.16 -28852273.97 -28852273.78 0.0290 0.0202  
 Earth -83705-12-20 08:23 J -28851474.21 -28851474.15 -28851474.07 0.0286 0.0271  
 Moon -83705-12-20 12:13 J -28851474.06 -28851473.99 -28851473.92 0.0286 0.0274  
 Earth -83703-01-02 12:42 J -28851096.15 -28851095.97 -28851095.76 0.0284 0.0167  
 Moon -83703-01-02 15:20 J -28851096.04 -28851095.86 -28851095.66 0.0284 0.0176 \*  
 Moon -83702-01-15 05:30 J -28850718.51 -28850718.27 -28850718.03 0.0281 0.0074  
 Earth -83702-01-15 07:25 J -28850718.42 -28850718.19 -28850717.95 0.0281 0.0059 \*  
 Moon -83701-01-27 14:08 J -28850341.14 -28850340.91 -28850340.67 0.0278 0.0035  
 Earth -83701-01-27 17:16 J -28850341.02 -28850340.78 -28850340.55 0.0278 0.0046 \*  
 Earth -83700-02-07 18:56 J -28849963.91 -28849963.71 -28849963.50 0.0276 0.0143  
 Moon -83700-02-07 20:08 J -28849963.85 -28849963.66 -28849963.46 0.0276 0.0144 \*  
 Venus -83699-01-08 11:30 J -28849629.15 -28849629.02 -28849628.88 0.0274 0.0207  
 Earth -83699-02-19 14:23 J -28849587.01 -28849586.90 -28849586.76 0.0273 0.0231  
 Moon -83699-02-19 17:59 J -28849586.85 -28849586.75 -28849586.63 0.0273 0.0241 \*  
 Venus -83699-08-25 10:47 J -28849400.21 -28849400.05 -28849399.87 0.0272 0.0147  
 Mercury -83699-11-30 12:13 J -28849303.06 -28849302.99 -28849302.91 0.0272 0.0227  
 Mercury -83698-02-26 23:16 J -28849214.64 -28849214.53 -28849214.41 0.0271 0.0135  
 Mercury -83698-05-26 10:32 J -28849126.20 -28849126.06 -28849125.93 0.0271 0.0042  
 Mercury -83698-08-22 21:49 J -28849037.73 -28849037.59 -28849037.46 0.0271 0.0052  
 Mercury -83698-11-19 09:06 J -28848949.24 -28848949.12 -28848949.00 0.0270 0.0146  
 Mercury -83697-02-15 20:23 J -28848860.70 -28848860.65 -28848860.58 0.0270 0.0241  
 Mars -83691-10-21 06:28 J -28846421.56 -28846421.23 -28846420.90 0.0271 0.0001  
 Moon -83689-06-14 05:59 J -28845819.34 -28845819.25 -28845819.13 0.0274 0.0247  
 Earth -83689-06-14 09:35 J -28845819.16 -28845819.10 -28845819.01 0.0274 0.0262 \*

Moon	-83688-06-27 09:20 J	-28845441.30	-28845441.11	-28845440.90	0.0276	0.0158
Earth	-83688-06-27 11:01 J	-28845441.23	-28845441.04	-28845440.84	0.0276	0.0172 *
Earth	-83687-07-10 22:32 J	-28845062.81	-28845062.56	-28845062.32	0.0279	0.0069
Moon	-83687-07-11 00:13 J	-28845062.72	-28845062.49	-28845062.24	0.0279	0.0059 *
Earth	-83686-07-24 19:25 J	-28844683.94	-28844683.69	-28844683.44	0.0282	0.0043
Moon	-83686-07-24 23:01 J	-28844683.78	-28844683.54	-28844683.29	0.0282	0.0048 *
Earth	-83685-08-07 01:25 J	-28844304.65	-28844304.44	-28844304.23	0.0284	0.0159
Moon	-83685-08-07 03:06 J	-28844304.59	-28844304.37	-28844304.15	0.0284	0.0155 *
Moon	-83684-08-21 13:25 J	-28843925.04	-28843924.94	-28843924.82	0.0287	0.0260
Earth	-83684-08-21 15:06 J	-28843924.93	-28843924.87	-28843924.77	0.0287	0.0271 *
Venus	-83684-09-19 17:16 J	-28843896.00	-28843895.78	-28843895.56	0.0287	0.0033
Mercury	-83683-06-21 17:44 J	-28843620.90	-28843620.76	-28843620.62	0.0289	0.0183
Mercury	-83683-09-18 16:18 J	-28843531.99	-28843531.82	-28843531.64	0.0289	0.0031
Mercury	-83683-12-16 14:37 J	-28843443.04	-28843442.89	-28843442.72	0.0290	0.0120
Mercury	-83682-03-15 12:42 J	-28843354.03	-28843353.97	-28843353.90	0.0290	0.0268
Mars	-83677-11-28 22:04 J	-28841268.84	-28841268.58	-28841268.31	0.0289	0.0020
Moon	-83675-12-28 00:42 J	-28840509.61	-28840509.47	-28840509.32	0.0284	0.0222
Earth	-83675-12-28 02:52 J	-28840509.53	-28840509.38	-28840509.22	0.0284	0.0213 *
Earth	-83673-01-10 01:11 J	-28840131.67	-28840131.45	-28840131.23	0.0282	0.0107
Moon	-83673-01-10 02:52 J	-28840131.58	-28840131.38	-28840131.16	0.0282	0.0122 *
Earth	-83672-01-21 14:23 J	-28839754.14	-28839753.90	-28839753.66	0.0279	0.0002
Moon	-83672-01-21 17:44 J	-28839754.01	-28839753.76	-28839753.52	0.0279	0.0016 *
Moon	-83671-02-02 17:59 J	-28839376.98	-28839376.75	-28839376.51	0.0276	0.0096
Earth	-83671-02-02 19:11 J	-28839376.91	-28839376.70	-28839376.47	0.0276	0.0099 *
Moon	-83670-02-14 13:40 J	-28839000.09	-28838999.93	-28838999.77	0.0274	0.0199
Earth	-83670-02-14 17:01 J	-28838999.95	-28838999.79	-28838999.61	0.0274	0.0191 *
Venus	-83670-07-21 13:40 J	-28838843.09	-28838842.93	-28838842.76	0.0273	0.0162
Earth	-83669-02-26 09:35 J	-28838623.11	-28838623.10	-28838623.08	0.0272	0.0271
Venus	-83669-03-06 12:56 J	-28838614.11	-28838613.96	-28838613.81	0.0272	0.0189
Mercury	-83669-04-18 14:23 J	-28838570.94	-28838570.90	-28838570.86	0.0271	0.0255

Mercury -83669-07-16 01:25 J -28838482.55 -28838482.44 -28838482.33 0.0271 0.0164

Mercury -83669-10-12 12:28 J -28838394.11 -28838393.98 -28838393.85 0.0271 0.0072

Mercury -83668-01-08 23:30 J -28838305.65 -28838305.52 -28838305.38 0.0270 0.0023

Mercury -83668-04-07 10:47 J -28838217.17 -28838217.05 -28838216.92 0.0270 0.0115

Mercury -83668-07-04 22:18 J -28838128.66 -28838128.57 -28838128.48 0.0269 0.0209

Mars -83661-12-11 19:25 J -28835411.92 -28835411.69 -28835411.44 0.0272 0.0182

Earth -83659-06-21 16:04 J -28834854.98 -28834854.83 -28834854.66 0.0275 0.0213

Moon -83659-06-21 17:30 J -28834854.95 -28834854.77 -28834854.59 0.0275 0.0197 \*

Moon -83658-07-04 19:25 J -28834476.92 -28834476.69 -28834476.45 0.0278 0.0105

Earth -83658-07-04 22:18 J -28834476.79 -28834476.57 -28834476.34 0.0278 0.0116 \*

Moon -83657-07-17 10:32 J -28834098.30 -28834098.06 -28834097.81 0.0280 0.0006

Earth -83657-07-17 14:23 J -28834098.15 -28834097.90 -28834097.65 0.0280 0.0008 \*

Moon -83656-07-31 14:52 J -28833719.11 -28833718.88 -28833718.65 0.0283 0.0104

Earth -83656-07-31 15:49 J -28833719.07 -28833718.84 -28833718.60 0.0283 0.0106 \*

Earth -83655-08-15 02:08 J -28833339.56 -28833339.41 -28833339.24 0.0286 0.0220

Moon -83655-08-15 04:47 J -28833339.46 -28833339.30 -28833339.13 0.0286 0.0211 \*

Venus -83654-04-01 17:44 J -28833109.98 -28833109.76 -28833109.54 0.0287 0.0007

Mercury -83654-11-08 13:25 J -28832889.02 -28832888.94 -28832888.84 0.0288 0.0244

Mercury -83653-02-05 12:28 J -28832800.15 -28832799.98 -28832799.81 0.0289 0.0091

Mercury -83653-05-04 11:01 J -28832711.21 -28832711.04 -28832710.86 0.0289 0.0060

Mercury -83653-08-01 09:06 J -28832622.24 -28832622.12 -28832622.00 0.0290 0.0209

Mars -83646-01-15 14:52 J -28830264.09 -28830263.88 -28830263.64 0.0288 0.0151

Earth -83646-12-22 10:04 J -28829923.17 -28829923.08 -28829922.97 0.0286 0.0258

Moon -83646-12-22 11:59 J -28829923.09 -28829923.00 -28829922.90 0.0286 0.0262 \*

Moon -83644-01-03 11:44 J -28829545.20 -28829545.01 -28829544.80 0.0284 0.0166

Earth -83644-01-03 14:08 J -28829545.11 -28829544.91 -28829544.70 0.0284 0.0153 \*

Moon -83643-01-16 05:01 J -28829167.51 -28829167.29 -28829167.05 0.0281 0.0061

Earth -83643-01-16 08:37 J -28829167.38 -28829167.14 -28829166.90 0.0281 0.0045 \*

Earth -83642-01-28 18:13 J -28828789.98 -28828789.74 -28828789.51 0.0278 0.0060

Moon -83642-01-28 18:56 J -28828789.93 -28828789.71 -28828789.48 0.0278 0.0052 \*

Earth -83641-02-09 19:54 J -28828412.86 -28828412.67 -28828412.47 0.0276 0.0156  
 Moon -83641-02-09 23:30 J -28828412.71 -28828412.52 -28828412.32 0.0276 0.0161 \*  
 Venus -83640-01-30 17:16 J -28828056.97 -28828056.78 -28828056.59 0.0274 0.0116  
 Earth -83640-02-20 15:35 J -28828035.96 -28828035.85 -28828035.74 0.0273 0.0242  
 Moon -83640-02-20 15:35 J -28828035.93 -28828035.85 -28828035.76 0.0273 0.0255 \*  
 Venus -83640-09-16 16:18 J -28827827.91 -28827827.82 -28827827.71 0.0272 0.0236  
 Mercury -83640-12-03 03:49 J -28827750.43 -28827750.34 -28827750.24 0.0272 0.0191  
 Mercury -83639-03-01 14:52 J -28827662.00 -28827661.88 -28827661.75 0.0271 0.0099  
 Mercury -83639-05-29 02:08 J -28827573.54 -28827573.41 -28827573.27 0.0271 0.0006  
 Mercury -83639-08-25 13:25 J -28827485.07 -28827484.94 -28827484.81 0.0271 0.0090  
 Mercury -83639-11-22 00:42 J -28827396.56 -28827396.47 -28827396.36 0.0270 0.0185  
 Mars -83632-01-22 20:08 J -28825142.90 -28825142.66 -28825142.40 0.0270 0.0173  
 Moon -83630-06-16 11:59 J -28824268.11 -28824268.00 -28824267.87 0.0274 0.0236  
 Earth -83630-06-16 13:40 J -28824268.02 -28824267.93 -28824267.82 0.0274 0.0249 \*  
 Earth -83629-06-28 15:35 J -28823890.05 -28823889.85 -28823889.64 0.0276 0.0158  
 Moon -83629-06-28 18:28 J -28823889.94 -28823889.73 -28823889.52 0.0276 0.0146 \*  
 Earth -83628-07-12 03:06 J -28823511.61 -28823511.37 -28823511.12 0.0279 0.0054  
 Moon -83628-07-12 06:56 J -28823511.46 -28823511.21 -28823510.96 0.0279 0.0045 \*  
 Earth -83627-07-26 00:28 J -28823132.72 -28823132.48 -28823132.23 0.0282 0.0059  
 Moon -83627-07-26 01:40 J -28823132.69 -28823132.43 -28823132.18 0.0282 0.0060 \*  
 Moon -83626-08-09 04:04 J -28822753.53 -28822753.33 -28822753.11 0.0285 0.0167  
 Earth -83626-08-09 06:56 J -28822753.41 -28822753.21 -28822753.01 0.0285 0.0174 \*  
 Moon -83625-08-22 17:16 J -28822373.84 -28822373.78 -28822373.69 0.0287 0.0272  
 Earth -83625-08-22 21:06 J -28822373.64 -28822373.62 -28822373.58 0.0287 0.0284  
 Venus -83625-10-12 04:04 J -28822323.54 -28822323.33 -28822323.12 0.0287 0.0078  
 Mercury -83624-03-27 13:54 J -28822156.96 -28822156.92 -28822156.87 0.0288 0.0278  
 Mercury -83624-06-24 12:56 J -28822068.12 -28822067.96 -28822067.80 0.0289 0.0124  
 Mercury -83624-09-21 11:30 J -28821979.20 -28821979.02 -28821978.84 0.0289 0.0027  
 Mercury -83624-12-19 09:49 J -28821890.23 -28821890.09 -28821889.95 0.0290 0.0177  
 Mars -83618-03-08 05:30 J -28819985.46 -28819985.27 -28819985.06 0.0290 0.0188



Earth -83616-12-29 05:59 J -28818958.41 -28818958.25 -28818958.06 0.0284 0.0200  
 Moon -83616-12-29 08:37 J -28818958.29 -28818958.14 -28818957.98 0.0284 0.0210 \*  
 Earth -83614-01-11 04:18 J -28818580.54 -28818580.32 -28818580.09 0.0282 0.0092  
 Moon -83614-01-11 07:54 J -28818580.39 -28818580.17 -28818579.94 0.0282 0.0108 \*  
 Moon -83613-01-23 17:01 J -28818203.04 -28818202.79 -28818202.54 0.0279 0.0002  
 Earth -83613-01-23 17:16 J -28818203.02 -28818202.78 -28818202.54 0.0279 0.0014 \*  
 Moon -83612-02-03 18:42 J -28817825.94 -28817825.72 -28817825.50 0.0276 0.0113  
 Earth -83612-02-03 22:04 J -28817825.79 -28817825.58 -28817825.36 0.0276 0.0113 \*  
 Earth -83611-02-15 19:40 J -28817448.82 -28817448.68 -28817448.51 0.0274 0.0204  
 Moon -83611-02-15 19:54 J -28817448.81 -28817448.67 -28817448.53 0.0274 0.0215 \*  
 Venus -83611-08-12 20:23 J -28817270.84 -28817270.65 -28817270.45 0.0273 0.0068  
 Mercury -83610-04-22 06:13 J -28817018.32 -28817018.24 -28817018.16 0.0271 0.0217  
 Mercury -83610-07-19 17:16 J -28816929.90 -28816929.78 -28816929.66 0.0271 0.0125  
 Mercury -83610-10-16 04:18 J -28816841.45 -28816841.32 -28816841.18 0.0270 0.0033  
 Mercury -83609-01-12 15:35 J -28816752.98 -28816752.85 -28816752.71 0.0270 0.0062  
 Mercury -83609-04-10 02:52 J -28816664.49 -28816664.38 -28816664.26 0.0270 0.0156  
 Mercury -83609-07-07 14:23 J -28816575.95 -28816575.90 -28816575.85 0.0269 0.0251  
 Mars -83602-03-16 09:35 J -28814133.42 -28814133.10 -28814132.77 0.0271 0.0009  
 Moon -83601-06-10 02:52 J -28813681.40 -28813681.38 -28813681.32 0.0273 0.0269  
 Moon -83600-06-22 19:11 J -28813303.89 -28813303.70 -28813303.51 0.0275 0.0185  
 Earth -83600-06-22 21:49 J -28813303.75 -28813303.59 -28813303.40 0.0275 0.0198 \*  
 Moon -83599-07-06 01:11 J -28812925.68 -28812925.45 -28812925.21 0.0278 0.0092  
 Earth -83599-07-06 04:32 J -28812925.54 -28812925.31 -28812925.08 0.0278 0.0100 \*  
 Earth -83598-07-19 20:37 J -28812546.89 -28812546.64 -28812546.38 0.0280 0.0010  
 Moon -83598-07-19 20:37 J -28812546.88 -28812546.64 -28812546.40 0.0280 0.0010 \*  
 Earth -83597-08-01 22:18 J -28812167.79 -28812167.57 -28812167.34 0.0283 0.0122  
 Moon -83597-08-02 01:11 J -28812167.67 -28812167.45 -28812167.22 0.0283 0.0118 \*  
 Earth -83596-08-16 08:37 J -28811788.27 -28811788.14 -28811787.99 0.0286 0.0235  
 Moon -83596-08-16 12:13 J -28811788.14 -28811787.99 -28811787.83 0.0286 0.0224 \*  
 Venus -83595-04-24 05:16 J -28811537.47 -28811537.28 -28811537.08 0.0287 0.0119

Mercury -83595-11-11 09:06 J -28811336.25 -28811336.12 -28811335.98 0.0288 0.0184

Mercury -83594-02-08 07:54 J -28811247.35 -28811247.17 -28811246.99 0.0289 0.0032

Mercury -83594-05-08 06:13 J -28811158.40 -28811158.24 -28811158.07 0.0289 0.0119

Mercury -83594-08-05 04:18 J -28811069.38 -28811069.32 -28811069.25 0.0290 0.0267

Mars -83588-04-24 02:23 J -28808980.66 -28808980.40 -28808980.13 0.0289 0.0014

Moon -83587-12-23 11:16 J -28808372.14 -28808372.03 -28808371.91 0.0286 0.0253

Earth -83587-12-23 13:40 J -28808372.04 -28808371.93 -28808371.79 0.0286 0.0245 \*

Moon -83585-01-05 14:23 J -28807994.10 -28807993.90 -28807993.71 0.0284 0.0154

Earth -83585-01-05 17:16 J -28807993.98 -28807993.78 -28807993.56 0.0284 0.0139 \*

Earth -83584-01-17 11:44 J -28807616.25 -28807616.01 -28807615.77 0.0281 0.0030

Moon -83584-01-17 11:59 J -28807616.23 -28807616.00 -28807615.77 0.0281 0.0045 \*

Earth -83583-01-29 20:52 J -28807238.85 -28807238.63 -28807238.39 0.0278 0.0074

Moon -83583-01-30 00:28 J -28807238.71 -28807238.48 -28807238.25 0.0278 0.0067 \*

Earth -83582-02-10 22:32 J -28806861.74 -28806861.56 -28806861.36 0.0276 0.0170

Moon -83582-02-10 22:47 J -28806861.73 -28806861.55 -28806861.35 0.0276 0.0177 \*

Moon -83581-02-22 14:37 J -28806484.92 -28806484.89 -28806484.84 0.0273 0.0269

Earth -83581-02-22 18:13 J -28806484.82 -28806484.74 -28806484.64 0.0273 0.0254

Venus -83581-02-22 23:59 J -28806484.70 -28806484.50 -28806484.29 0.0273 0.0022 \*

Mercury -83581-09-08 08:52 J -28806286.19 -28806286.13 -28806286.07 0.0272 0.0244

Mercury -83581-12-05 19:54 J -28806197.78 -28806197.67 -28806197.56 0.0272 0.0151

Mercury -83580-03-04 06:56 J -28806109.34 -28806109.21 -28806109.07 0.0271 0.0058

Mercury -83580-05-31 18:13 J -28806020.88 -28806020.74 -28806020.60 0.0271 0.0036

Mercury -83580-08-28 05:30 J -28805932.39 -28805932.27 -28805932.15 0.0271 0.0131

Mercury -83580-11-24 17:01 J -28805843.86 -28805843.79 -28805843.72 0.0270 0.0226

Mars -83572-05-08 05:44 J -28803122.46 -28803122.26 -28803122.04 0.0272 0.0210

Earth -83571-06-17 20:08 J -28802716.78 -28802716.66 -28802716.53 0.0274 0.0235

Moon -83571-06-17 22:32 J -28802716.69 -28802716.56 -28802716.41 0.0274 0.0221 \*

Earth -83570-06-30 22:32 J -28802338.77 -28802338.56 -28802338.34 0.0276 0.0143

Moon -83570-07-01 01:54 J -28802338.65 -28802338.42 -28802338.20 0.0276 0.0131 \*

Moon -83569-07-13 10:18 J -28801960.33 -28801960.07 -28801959.81 0.0279 0.0034

Earth -83569-07-13 10:47 J -28801960.30 -28801960.05 -28801959.80 0.0279 0.0038 \*  
 Moon -83568-07-27 05:01 J -28801581.53 -28801581.29 -28801581.04 0.0282 0.0073  
 Earth -83568-07-27 08:23 J -28801581.39 -28801581.15 -28801580.90 0.0282 0.0075 \*  
 Moon -83567-08-10 11:44 J -28801202.19 -28801202.01 -28801201.81 0.0285 0.0183  
 Earth -83567-08-10 15:06 J -28801202.04 -28801201.87 -28801201.67 0.0285 0.0190 \*  
 Venus -83566-03-19 15:06 J -28800980.97 -28800980.87 -28800980.75 0.0286 0.0247  
 Moon -83566-08-25 05:30 J -28800822.28 -28800822.27 -28800822.25 0.0287 0.0287  
 Venus -83566-11-04 16:47 J -28800750.95 -28800750.80 -28800750.64 0.0288 0.0195  
 Mercury -83565-03-30 10:04 J -28800604.19 -28800604.08 -28800603.95 0.0288 0.0214  
 Mercury -83565-06-27 09:06 J -28800515.30 -28800515.12 -28800514.95 0.0289 0.0061  
 Mercury -83565-09-24 07:25 J -28800426.36 -28800426.19 -28800426.02 0.0289 0.0090  
 Mercury -83565-12-22 05:30 J -28800337.37 -28800337.27 -28800337.17 0.0290 0.0239  
 Mars -83558-06-11 15:49 J -28797975.04 -28797974.84 -28797974.61 0.0288 0.0169  
 Earth -83558-12-18 04:47 J -28797785.30 -28797785.30 -28797785.29 0.0287 0.0287  
 Earth -83557-12-30 12:13 J -28797407.17 -28797406.99 -28797406.80 0.0284 0.0184  
 Moon -83557-12-30 15:35 J -28797407.03 -28797406.85 -28797406.67 0.0284 0.0196 \*  
 Moon -83555-01-12 09:35 J -28797029.33 -28797029.10 -28797028.86 0.0282 0.0092  
 Earth -83555-01-12 10:04 J -28797029.31 -28797029.08 -28797028.85 0.0282 0.0077 \*  
 Moon -83554-01-24 19:11 J -28796651.94 -28796651.70 -28796651.46 0.0279 0.0016  
 Earth -83554-01-24 22:32 J -28796651.79 -28796651.56 -28796651.32 0.0279 0.0029 \*  
 Moon -83553-02-06 02:08 J -28796274.60 -28796274.41 -28796274.19 0.0276 0.0130  
 Earth -83553-02-06 03:06 J -28796274.58 -28796274.37 -28796274.16 0.0276 0.0127 \*  
 Earth -83552-02-17 00:28 J -28795897.61 -28795897.48 -28795897.32 0.0274 0.0217  
 Moon -83552-02-17 04:04 J -28795897.44 -28795897.33 -28795897.19 0.0274 0.0231 \*  
 Venus -83552-09-04 04:18 J -28795698.52 -28795698.32 -28795698.11 0.0273 0.0032  
 Mercury -83551-01-26 11:30 J -28795554.04 -28795554.02 -28795553.99 0.0272 0.0266  
 Mercury -83551-04-24 22:32 J -28795465.66 -28795465.56 -28795465.46 0.0271 0.0175  
 Mercury -83551-07-22 09:35 J -28795377.23 -28795377.10 -28795376.97 0.0271 0.0082  
 Mercury -83551-10-18 20:52 J -28795288.77 -28795288.63 -28795288.50 0.0270 0.0013  
 Mercury -83550-01-15 08:08 J -28795200.29 -28795200.16 -28795200.04 0.0270 0.0105

Mercury -83550-04-13 19:25 J -28795111.78 -28795111.69 -28795111.60 0.0270 0.0200

Mars -83544-06-18 10:04 J -28792854.33 -28792854.08 -28792853.80 0.0270 0.0158

Moon -83542-06-12 07:11 J -28792130.29 -28792130.20 -28792130.11 0.0273 0.0254

Earth -83542-06-12 09:49 J -28792130.12 -28792130.09 -28792130.05 0.0273 0.0269 \*

Moon -83541-06-24 04:04 J -28791752.52 -28791752.33 -28791752.13 0.0275 0.0170

Earth -83541-06-24 07:11 J -28791752.38 -28791752.20 -28791752.01 0.0275 0.0183 \*

Earth -83540-07-07 14:08 J -28791374.15 -28791373.91 -28791373.67 0.0278 0.0083

Moon -83540-07-07 15:06 J -28791374.10 -28791373.87 -28791373.64 0.0278 0.0078 \*

Earth -83539-07-21 06:56 J -28790995.46 -28790995.21 -28790994.96 0.0281 0.0026

Moon -83539-07-21 10:32 J -28790995.30 -28790995.06 -28790994.81 0.0281 0.0025 \*

Earth -83538-08-04 08:52 J -28790616.34 -28790616.13 -28790615.90 0.0283 0.0139

Moon -83538-08-04 11:59 J -28790616.21 -28790616.00 -28790615.76 0.0283 0.0134 \*

Moon -83537-08-17 19:25 J -28790236.82 -28790236.69 -28790236.54 0.0286 0.0239

Earth -83537-08-17 19:54 J -28790236.79 -28790236.67 -28790236.55 0.0286 0.0250 \*

Venus -83537-09-28 17:59 J -28790194.90 -28790194.75 -28790194.60 0.0286 0.0201

Venus -83536-05-16 19:25 J -28789964.80 -28789964.69 -28789964.57 0.0287 0.0241

Mercury -83536-08-17 06:42 J -28789872.27 -28789872.22 -28789872.15 0.0288 0.0270

Mercury -83536-11-14 05:59 J -28789783.42 -28789783.25 -28789783.09 0.0288 0.0117

Mercury -83535-02-11 04:32 J -28789694.49 -28789694.31 -28789694.14 0.0289 0.0035

Mercury -83535-05-11 02:37 J -28789605.52 -28789605.39 -28789605.25 0.0289 0.0185

Mars -83530-08-01 15:35 J -28787697.06 -28787696.85 -28787696.64 0.0290 0.0176

Moon -83528-12-24 17:16 J -28786820.90 -28786820.78 -28786820.65 0.0286 0.0240

Earth -83528-12-24 20:23 J -28786820.78 -28786820.65 -28786820.50 0.0286 0.0231 \*

Earth -83526-01-06 23:16 J -28786442.74 -28786442.53 -28786442.31 0.0283 0.0123

Moon -83526-01-06 23:59 J -28786442.70 -28786442.50 -28786442.29 0.0283 0.0139 \*

Earth -83525-01-19 16:47 J -28786065.04 -28786064.80 -28786064.56 0.0281 0.0016

Moon -83525-01-19 20:37 J -28786064.88 -28786064.64 -28786064.41 0.0281 0.0031 \*

Earth -83524-01-31 01:54 J -28785687.65 -28785687.42 -28785687.19 0.0278 0.0088

Moon -83524-01-31 03:06 J -28785687.60 -28785687.37 -28785687.13 0.0278 0.0083 \*

Moon -83523-02-11 23:44 J -28785310.67 -28785310.51 -28785310.33 0.0276 0.0194

Earth -83523-02-12 03:06 J -28785310.53 -28785310.37 -28785310.18 0.0276 0.0183 \*  
 Earth -83522-02-23 23:01 J -28784933.60 -28784933.54 -28784933.49 0.0273 0.0265  
 Venus -83522-03-17 07:40 J -28784912.37 -28784912.18 -28784911.98 0.0273 0.0077  
 Mercury -83522-09-12 00:56 J -28784733.54 -28784733.46 -28784733.37 0.0272 0.0202  
 Mercury -83522-12-09 12:13 J -28784645.12 -28784644.99 -28784644.87 0.0272 0.0109  
 Mercury -83521-03-06 23:16 J -28784556.66 -28784556.53 -28784556.39 0.0271 0.0015  
 Mercury -83521-06-03 10:32 J -28784468.19 -28784468.06 -28784467.93 0.0271 0.0079  
 Mercury -83521-08-30 21:49 J -28784379.69 -28784379.59 -28784379.48 0.0271 0.0175  
 Mercury -83521-11-27 09:20 J -28784291.11 -28784291.11 -28784291.10 0.0270 0.0270  
 Mars -83514-08-11 02:23 J -28781843.72 -28781843.40 -28781843.07 0.0271 0.0041  
 Earth -83512-06-19 05:16 J -28781165.42 -28781165.28 -28781165.13 0.0274 0.0221  
 Moon -83512-06-19 08:52 J -28781165.29 -28781165.13 -28781164.96 0.0274 0.0205 \*  
 Moon -83511-07-02 07:40 J -28780787.41 -28780787.18 -28780786.94 0.0277 0.0118  
 Earth -83511-07-02 08:23 J -28780787.36 -28780787.15 -28780786.92 0.0277 0.0127 \*  
 Moon -83510-07-15 17:30 J -28780409.02 -28780408.77 -28780408.52 0.0279 0.0021  
 Earth -83510-07-15 21:20 J -28780408.86 -28780408.61 -28780408.36 0.0279 0.0021 \*  
 Moon -83509-07-28 16:47 J -28780030.03 -28780029.80 -28780029.57 0.0282 0.0087  
 Earth -83509-07-28 19:40 J -28780029.92 -28780029.68 -28780029.44 0.0282 0.0091 \*  
 Earth -83508-08-12 02:52 J -28779650.55 -28779650.38 -28779650.20 0.0285 0.0205  
 Moon -83508-08-12 03:06 J -28779650.53 -28779650.37 -28779650.18 0.0285 0.0197 \*  
 Venus -83507-04-11 05:59 J -28779408.45 -28779408.25 -28779408.05 0.0286 0.0123  
 Mercury -83506-04-03 07:11 J -28779051.35 -28779051.20 -28779051.04 0.0288 0.0143  
 Mercury -83506-07-01 05:59 J -28778962.43 -28778962.25 -28778962.07 0.0289 0.0010  
 Mercury -83506-09-28 04:04 J -28778873.47 -28778873.33 -28778873.18 0.0289 0.0159  
 Mars -83500-09-18 12:13 J -28776691.25 -28776690.99 -28776690.72 0.0289 0.0011  
 Earth -83499-12-19 13:40 J -28776233.99 -28776233.93 -28776233.84 0.0287 0.0272  
 Moon -83499-12-19 17:16 J -28776233.84 -28776233.78 -28776233.70 0.0287 0.0275 \*  
 Moon -83497-01-01 20:08 J -28775855.85 -28775855.66 -28775855.46 0.0284 0.0180  
 Earth -83497-01-01 20:23 J -28775855.83 -28775855.65 -28775855.45 0.0284 0.0168 \*  
 Moon -83496-01-13 14:08 J -28775478.14 -28775477.91 -28775477.68 0.0281 0.0077

Earth -83496-01-13 17:44 J -28775477.99 -28775477.76 -28775477.52 0.0281 0.0061 \*  
 Moon -83495-01-26 04:18 J -28775100.55 -28775100.32 -28775100.09 0.0279 0.0034  
 Earth -83495-01-26 05:59 J -28775100.49 -28775100.25 -28775100.02 0.0279 0.0044 \*  
 Earth -83494-02-07 10:04 J -28774723.29 -28774723.08 -28774722.88 0.0276 0.0142  
 Moon -83494-02-07 12:42 J -28774723.16 -28774722.97 -28774722.76 0.0276 0.0145 \*  
 Venus -83493-02-10 13:25 J -28774355.05 -28774354.94 -28774354.81 0.0274 0.0221  
 Earth -83493-02-19 07:25 J -28774346.31 -28774346.19 -28774346.06 0.0274 0.0229  
 Moon -83493-02-19 09:06 J -28774346.22 -28774346.12 -28774346.00 0.0274 0.0243 \*  
 Venus -83493-09-26 13:25 J -28774126.12 -28774125.94 -28774125.76 0.0272 0.0134  
 Mercury -83492-01-29 04:04 J -28774001.40 -28774001.33 -28774001.25 0.0272 0.0222  
 Mercury -83492-04-27 15:06 J -28773912.99 -28773912.87 -28773912.75 0.0271 0.0130  
 Mercury -83492-07-25 02:23 J -28773824.54 -28773824.40 -28773824.27 0.0271 0.0037  
 Mercury -83492-10-21 13:25 J -28773736.07 -28773735.94 -28773735.80 0.0270 0.0058  
 Mercury -83491-01-18 00:42 J -28773647.58 -28773647.47 -28773647.35 0.0270 0.0152  
 Mercury -83491-04-16 12:13 J -28773559.04 -28773558.99 -28773558.93 0.0270 0.0247  
 Mars -83484-10-02 05:16 J -28770833.43 -28770833.28 -28770833.08 0.0272 0.0229  
 Moon -83483-06-13 17:01 J -28770578.89 -28770578.79 -28770578.66 0.0273 0.0241  
 Earth -83483-06-13 20:37 J -28770578.72 -28770578.64 -28770578.55 0.0273 0.0256 \*  
 Earth -83482-06-26 18:42 J -28770200.91 -28770200.72 -28770200.52 0.0276 0.0167  
 Moon -83482-06-26 19:11 J -28770200.89 -28770200.70 -28770200.49 0.0276 0.0156 \*  
 Earth -83481-07-09 02:23 J -28769822.64 -28769822.40 -28769822.16 0.0278 0.0066  
 Moon -83481-07-09 05:59 J -28769822.49 -28769822.25 -28769822.00 0.0278 0.0062 \*  
 Earth -83480-07-22 19:40 J -28769443.93 -28769443.68 -28769443.43 0.0281 0.0044  
 Moon -83480-07-22 21:49 J -28769443.85 -28769443.59 -28769443.33 0.0281 0.0040 \*  
 Moon -83479-08-05 21:06 J -28769064.84 -28769064.62 -28769064.39 0.0283 0.0147  
 Earth -83479-08-05 22:18 J -28769064.77 -28769064.57 -28769064.35 0.0283 0.0157 \*  
 Moon -83478-08-20 05:59 J -28768685.36 -28768685.25 -28768685.12 0.0286 0.0253  
 Earth -83478-08-20 09:35 J -28768685.18 -28768685.10 -28768685.00 0.0286 0.0266 \*  
 Venus -83478-10-22 09:35 J -28768622.31 -28768622.10 -28768621.89 0.0286 0.0074  
 Mercury -83477-08-20 04:32 J -28768319.44 -28768319.31 -28768319.18 0.0288 0.0196

Mercury -83477-11-17 03:20 J -28768230.54 -28768230.36 -28768230.18 0.0289 0.0044  
 Mercury -83476-02-14 01:40 J -28768141.59 -28768141.43 -28768141.26 0.0289 0.0107  
 Mercury -83476-05-13 23:44 J -28768052.59 -28768052.51 -28768052.43 0.0289 0.0255  
 Mars -83470-11-05 08:23 J -28765686.34 -28765686.15 -28765685.94 0.0288 0.0185  
 Earth -83469-12-26 05:44 J -28765269.41 -28765269.26 -28765269.10 0.0286 0.0215  
 Moon -83469-12-26 05:59 J -28765269.38 -28765269.25 -28765269.10 0.0286 0.0226 \*  
 Earth -83467-01-08 07:54 J -28764891.39 -28764891.17 -28764890.95 0.0283 0.0108  
 Moon -83467-01-08 11:30 J -28764891.24 -28764891.02 -28764890.81 0.0283 0.0123 \*  
 Earth -83466-01-21 00:42 J -28764513.71 -28764513.47 -28764513.23 0.0280 0.0004  
 Moon -83466-01-21 02:08 J -28764513.65 -28764513.41 -28764513.16 0.0280 0.0013 \*  
 Moon -83465-02-02 06:13 J -28764136.46 -28764136.24 -28764136.01 0.0278 0.0100  
 Earth -83465-02-02 09:06 J -28764136.34 -28764136.12 -28764135.89 0.0278 0.0102 \*  
 Moon -83464-02-13 07:54 J -28763759.31 -28763759.17 -28763759.00 0.0275 0.0207  
 Earth -83464-02-13 10:04 J -28763759.24 -28763759.08 -28763758.90 0.0275 0.0196 \*  
 Venus -83464-08-22 16:32 J -28763568.96 -28763568.81 -28763568.64 0.0274 0.0176  
 Venus -83463-04-08 16:32 J -28763339.96 -28763339.81 -28763339.65 0.0273 0.0180  
 Mercury -83463-06-18 06:28 J -28763269.28 -28763269.23 -28763269.17 0.0273 0.0250  
 Mercury -83463-09-14 17:30 J -28763180.87 -28763180.77 -28763180.66 0.0272 0.0157  
 Mercury -83463-12-12 04:47 J -28763092.43 -28763092.30 -28763092.17 0.0272 0.0064  
 Mercury -83462-03-10 15:49 J -28763003.97 -28763003.84 -28763003.70 0.0271 0.0032  
 Mercury -83462-06-07 03:06 J -28762915.48 -28762915.37 -28762915.24 0.0271 0.0126  
 Mercury -83462-09-03 14:37 J -28762826.96 -28762826.89 -28762826.81 0.0271 0.0221  
 Mars -83456-11-13 05:44 J -28760564.54 -28760564.26 -28760563.96 0.0270 0.0126  
 Moon -83453-06-20 16:04 J -28759614.01 -28759613.83 -28759613.64 0.0274 0.0191  
 Earth -83453-06-20 16:47 J -28759613.96 -28759613.80 -28759613.64 0.0274 0.0207 \*  
 Moon -83452-07-03 17:01 J -28759236.01 -28759235.79 -28759235.55 0.0277 0.0102  
 Earth -83452-07-03 20:37 J -28759235.86 -28759235.64 -28759235.40 0.0277 0.0111 \*  
 Moon -83451-07-17 08:37 J -28758857.38 -28758857.14 -28758856.89 0.0279 0.0005  
 Earth -83451-07-17 10:32 J -28758857.31 -28758857.06 -28758856.81 0.0279 0.0004 \*  
 Earth -83450-07-31 09:35 J -28758478.33 -28758478.10 -28758477.87 0.0282 0.0108

Moon -83450-07-31 11:16 J -28758478.25 -28758478.03 -28758477.80 0.0282 0.0102 \*  
 Earth -83449-08-13 17:30 J -28758098.92 -28758098.77 -28758098.60 0.0285 0.0221  
 Moon -83449-08-13 21:20 J -28758098.77 -28758098.61 -28758098.43 0.0285 0.0211 \*  
 Venus -83448-05-03 22:32 J -28757835.78 -28757835.56 -28757835.34 0.0287 0.0009  
 Mercury -83447-01-07 06:13 J -28757587.35 -28757587.24 -28757587.12 0.0288 0.0220  
 Mercury -83447-04-06 05:16 J -28757498.46 -28757498.28 -28757498.11 0.0289 0.0067  
 Mercury -83447-07-04 03:35 J -28757409.52 -28757409.35 -28757409.18 0.0289 0.0085  
 Mercury -83447-10-01 01:40 J -28757320.53 -28757320.43 -28757320.32 0.0290 0.0234  
 Mars -83442-12-27 08:52 J -28755407.34 -28755407.13 -28755406.89 0.0290 0.0151  
 Earth -83440-12-21 01:40 J -28754682.53 -28754682.43 -28754682.32 0.0287 0.0256  
 Moon -83440-12-21 01:11 J -28754682.53 -28754682.45 -28754682.33 0.0287 0.0262 \*  
 Moon -83438-01-03 03:49 J -28754304.53 -28754304.34 -28754304.14 0.0284 0.0165  
 Earth -83438-01-03 07:11 J -28754304.40 -28754304.20 -28754303.99 0.0284 0.0151 \*  
 Moon -83437-01-16 02:08 J -28753926.64 -28753926.41 -28753926.18 0.0281 0.0058  
 Earth -83437-01-16 03:35 J -28753926.59 -28753926.35 -28753926.11 0.0281 0.0044 \*  
 Earth -83436-01-27 14:52 J -28753549.11 -28753548.88 -28753548.64 0.0279 0.0060  
 Moon -83436-01-27 17:44 J -28753548.99 -28753548.76 -28753548.53 0.0279 0.0052 \*  
 Earth -83435-02-08 18:13 J -28753171.92 -28753171.74 -28753171.53 0.0276 0.0156  
 Moon -83435-02-08 21:06 J -28753171.81 -28753171.62 -28753171.41 0.0276 0.0159 \*  
 Moon -83434-02-20 12:56 J -28752795.03 -28752794.96 -28752794.86 0.0274 0.0255  
 Earth -83434-02-20 15:20 J -28752794.95 -28752794.86 -28752794.73 0.0274 0.0242 \*  
 Venus -83434-03-04 23:44 J -28752782.70 -28752782.51 -28752782.32 0.0273 0.0114  
 Venus -83434-10-19 23:16 J -28752553.62 -28752553.53 -28752553.43 0.0272 0.0240  
 Mercury -83434-11-05 10:04 J -28752537.10 -28752537.08 -28752537.06 0.0272 0.0267  
 Mercury -83433-02-01 20:52 J -28752448.73 -28752448.63 -28752448.52 0.0272 0.0175  
 Mercury -83433-04-30 08:08 J -28752360.29 -28752360.16 -28752360.04 0.0271 0.0082  
 Mercury -83433-07-27 19:11 J -28752271.84 -28752271.70 -28752271.56 0.0271 0.0012  
 Mercury -83433-10-24 06:28 J -28752183.35 -28752183.23 -28752183.10 0.0270 0.0106  
 Mercury -83432-01-20 17:44 J -28752094.84 -28752094.76 -28752094.66 0.0270 0.0201  
 Mars -83425-01-05 11:01 J -28749554.35 -28749554.04 -28749553.72 0.0271 0.0063



Earth -83424-06-15 08:52 J -28749027.23 -28749027.13 -28749027.00 0.0273 0.0242  
 Moon -83424-06-15 09:49 J -28749027.21 -28749027.09 -28749026.94 0.0273 0.0227 \*  
 Earth -83423-06-28 08:08 J -28748649.36 -28748649.16 -28748648.94 0.0276 0.0151  
 Moon -83423-06-28 12:13 J -28748649.21 -28748648.99 -28748648.78 0.0276 0.0137 \*  
 Earth -83422-07-11 17:01 J -28748271.04 -28748270.79 -28748270.54 0.0278 0.0048  
 Moon -83422-07-11 18:56 J -28748270.97 -28748270.71 -28748270.46 0.0278 0.0044 \*  
 Moon -83421-07-24 08:37 J -28747892.40 -28747892.14 -28747891.89 0.0281 0.0055  
 Earth -83421-07-24 11:01 J -28747892.28 -28747892.04 -28747891.79 0.0281 0.0062 \*  
 Moon -83420-08-07 10:18 J -28747513.26 -28747513.07 -28747512.85 0.0284 0.0163  
 Earth -83420-08-07 14:37 J -28747513.09 -28747512.89 -28747512.69 0.0284 0.0174 \*  
 Moon -83419-08-21 23:44 J -28747133.59 -28747133.51 -28747133.43 0.0286 0.0269  
 Earth -83419-08-22 02:23 J -28747133.44 -28747133.40 -28747133.36 0.0286 0.0282 \*  
 Venus -83419-11-14 02:52 J -28747049.59 -28747049.38 -28747049.16 0.0287 0.0060  
 Mercury -83418-05-27 03:49 J -28746855.39 -28746855.34 -28746855.28 0.0288 0.0271  
 Mercury -83418-08-24 02:52 J -28746766.54 -28746766.38 -28746766.22 0.0288 0.0118  
 Mercury -83418-11-21 01:25 J -28746677.61 -28746677.44 -28746677.26 0.0289 0.0034  
 Mercury -83417-02-17 23:30 J -28746588.65 -28746588.52 -28746588.38 0.0289 0.0184  
 Mars -83411-02-12 08:23 J -28744402.41 -28744402.15 -28744401.88 0.0289 0.0030  
 Earth -83410-12-28 17:01 J -28743717.96 -28743717.79 -28743717.61 0.0285 0.0199  
 Moon -83410-12-28 20:23 J -28743717.80 -28743717.65 -28743717.48 0.0285 0.0211 \*  
 Earth -83408-01-09 17:59 J -28743339.97 -28743339.75 -28743339.51 0.0283 0.0092  
 Moon -83408-01-09 19:40 J -28743339.90 -28743339.68 -28743339.44 0.0283 0.0106 \*  
 Moon -83407-01-22 07:11 J -28742962.45 -28742962.20 -28742961.96 0.0280 0.0006  
 Earth -83407-01-22 10:18 J -28742962.31 -28742962.07 -28742961.84 0.0280 0.0016 \*  
 Moon -83406-02-03 14:37 J -28742585.10 -28742584.89 -28742584.67 0.0278 0.0117  
 Earth -83406-02-03 17:30 J -28742584.98 -28742584.77 -28742584.54 0.0278 0.0117 \*  
 Earth -83405-02-15 17:59 J -28742207.89 -28742207.75 -28742207.59 0.0275 0.0208  
 Moon -83405-02-15 19:54 J -28742207.80 -28742207.67 -28742207.53 0.0275 0.0220 \*  
 Venus -83405-09-14 02:37 J -28741996.59 -28741996.39 -28741996.19 0.0274 0.0069  
 Mercury -83404-06-20 23:16 J -28741716.62 -28741716.53 -28741716.44 0.0273 0.0203

Mercury -83404-09-17 10:18 J -28741628.19 -28741628.07 -28741627.94 0.0272 0.0110  
 Mercury -83404-12-14 21:35 J -28741539.74 -28741539.60 -28741539.46 0.0272 0.0016  
 Mercury -83403-03-13 08:52 J -28741451.26 -28741451.13 -28741451.00 0.0271 0.0079  
 Mercury -83403-06-09 20:08 J -28741362.76 -28741362.66 -28741362.55 0.0271 0.0174  
 Mercury -83403-09-06 07:40 J -28741274.18 -28741274.18 -28741274.17 0.0271 0.0270  
 Mars -83395-02-27 06:13 J -28738543.30 -28738543.24 -28738543.15 0.0272 0.0264  
 Moon -83395-06-10 08:23 J -28738440.22 -28738440.15 -28738440.07 0.0273 0.0261  
 Moon -83394-06-23 01:11 J -28738062.63 -28738062.45 -28738062.25 0.0275 0.0177  
 Earth -83394-06-23 05:01 J -28738062.46 -28738062.29 -28738062.10 0.0275 0.0192 \*  
 Moon -83393-07-05 08:08 J -28737684.39 -28737684.16 -28737683.93 0.0277 0.0085  
 Earth -83393-07-05 10:04 J -28737684.31 -28737684.08 -28737683.84 0.0277 0.0094 \*  
 Earth -83392-07-19 00:42 J -28737305.72 -28737305.47 -28737305.22 0.0280 0.0014  
 Moon -83392-07-19 02:52 J -28737305.63 -28737305.38 -28737305.14 0.0280 0.0012 \*  
 Earth -83391-08-02 00:42 J -28736926.70 -28736926.47 -28736926.24 0.0282 0.0126  
 Moon -83391-08-02 04:18 J -28736926.54 -28736926.32 -28736926.08 0.0282 0.0118 \*  
 Earth -83390-08-16 09:35 J -28736547.24 -28736547.10 -28736546.96 0.0285 0.0237  
 Moon -83390-08-16 11:30 J -28736547.17 -28736547.02 -28736546.85 0.0285 0.0224 \*  
 Venus -83389-05-26 15:49 J -28736263.03 -28736262.84 -28736262.65 0.0287 0.0142  
 Mercury -83388-01-10 04:32 J -28736034.46 -28736034.31 -28736034.15 0.0288 0.0141  
 Mercury -83388-04-09 03:20 J -28735945.54 -28735945.36 -28735945.18 0.0289 0.0011  
 Mercury -83388-07-07 01:40 J -28735856.58 -28735856.43 -28735856.28 0.0289 0.0162  
 Mars -83381-04-01 05:16 J -28733396.44 -28733396.28 -28733396.09 0.0288 0.0212  
 Moon -83381-12-22 11:01 J -28733131.15 -28733131.04 -28733130.92 0.0286 0.0249  
 Earth -83381-12-22 14:37 J -28733131.01 -28733130.89 -28733130.75 0.0286 0.0239 \*  
 Moon -83379-01-04 17:16 J -28732752.97 -28732752.78 -28732752.57 0.0284 0.0148  
 Earth -83379-01-04 19:25 J -28732752.90 -28732752.69 -28732752.47 0.0284 0.0134 \*  
 Earth -83378-01-17 14:37 J -28732375.12 -28732374.89 -28732374.65 0.0281 0.0027  
 Moon -83378-01-17 17:16 J -28732375.01 -28732374.78 -28732374.55 0.0281 0.0040 \*  
 Earth -83377-01-30 01:25 J -28731997.67 -28731997.44 -28731997.21 0.0278 0.0076  
 Moon -83377-01-30 04:18 J -28731997.55 -28731997.32 -28731997.08 0.0278 0.0070 \*

Moon -83376-02-10 02:37 J -28731620.56 -28731620.39 -28731620.19 0.0276 0.0177  
 Earth -83376-02-10 04:04 J -28731620.51 -28731620.33 -28731620.13 0.0276 0.0170 \*  
 Moon -83375-02-21 21:35 J -28731243.63 -28731243.60 -28731243.55 0.0273 0.0268  
 Earth -83375-02-22 00:42 J -28731243.55 -28731243.47 -28731243.37 0.0273 0.0253 \*  
 Venus -83375-03-27 10:18 J -28731210.28 -28731210.07 -28731209.86 0.0273 0.0004  
 Mercury -83375-11-08 02:52 J -28730984.45 -28730984.38 -28730984.30 0.0272 0.0219  
 Mercury -83374-02-04 13:54 J -28730896.04 -28730895.92 -28730895.80 0.0271 0.0127  
 Mercury -83374-05-04 01:11 J -28730807.59 -28730807.45 -28730807.32 0.0271 0.0034  
 Mercury -83374-07-31 12:13 J -28730719.12 -28730718.99 -28730718.85 0.0271 0.0062  
 Mercury -83374-10-27 23:30 J -28730630.62 -28730630.52 -28730630.40 0.0270 0.0156  
 Mercury -83373-01-24 11:01 J -28730542.08 -28730542.04 -28730541.99 0.0270 0.0251  
 Mars -83367-04-09 19:11 J -28728275.00 -28728274.70 -28728274.39 0.0270 0.0102  
 Earth -83365-06-16 22:04 J -28727475.71 -28727475.58 -28727475.43 0.0274 0.0227  
 Moon -83365-06-17 01:54 J -28727475.57 -28727475.42 -28727475.25 0.0274 0.0211 \*  
 Earth -83364-06-29 22:32 J -28727097.77 -28727097.56 -28727097.34 0.0276 0.0134  
 Moon -83364-06-30 00:28 J -28727097.71 -28727097.48 -28727097.24 0.0276 0.0122 \*  
 Moon -83363-07-13 06:13 J -28726719.50 -28726719.24 -28726718.99 0.0279 0.0028  
 Earth -83363-07-13 08:23 J -28726719.40 -28726719.15 -28726718.90 0.0279 0.0031 \*  
 Moon -83362-07-26 23:59 J -28726340.74 -28726340.50 -28726340.26 0.0281 0.0073  
 Earth -83362-07-27 03:20 J -28726340.59 -28726340.36 -28726340.11 0.0281 0.0080 \*  
 Moon -83361-08-09 06:42 J -28725961.41 -28725961.22 -28725961.03 0.0284 0.0180  
 Earth -83361-08-09 07:54 J -28725961.36 -28725961.17 -28725960.99 0.0284 0.0191 \*  
 Venus -83360-04-20 20:23 J -28725706.76 -28725706.65 -28725706.54 0.0286 0.0243  
 Moon -83360-08-23 22:04 J -28725581.60 -28725581.58 -28725581.54 0.0286 0.0284  
 Venus -83360-12-06 21:20 J -28725476.76 -28725476.61 -28725476.45 0.0287 0.0198  
 Mercury -83359-05-30 02:52 J -28725302.52 -28725302.38 -28725302.25 0.0288 0.0188  
 Mercury -83359-08-27 01:40 J -28725213.61 -28725213.43 -28725213.25 0.0288 0.0036  
 Mercury -83359-11-23 23:59 J -28725124.66 -28725124.50 -28725124.34 0.0289 0.0115  
 Mercury -83358-02-20 22:04 J -28725035.65 -28725035.58 -28725035.51 0.0289 0.0263  
 Mars -83353-05-22 10:47 J -28723118.29 -28723118.05 -28723117.81 0.0290 0.0128

Earth -83352-12-16 20:37 J -28722544.65 -28722544.64 -28722544.60 0.0287 0.0285  
 Earth -83351-12-30 05:59 J -28722166.42 -28722166.25 -28722166.05 0.0285 0.0182  
 Moon -83351-12-30 08:23 J -28722166.33 -28722166.15 -28722165.97 0.0285 0.0194 \*  
 Moon -83349-01-12 03:35 J -28721788.58 -28721788.35 -28721788.11 0.0282 0.0089  
 Earth -83349-01-12 06:13 J -28721788.47 -28721788.24 -28721788.01 0.0282 0.0074 \*  
 Moon -83348-01-23 18:13 J -28721410.98 -28721410.74 -28721410.51 0.0280 0.0024  
 Earth -83348-01-23 20:52 J -28721410.86 -28721410.63 -28721410.39 0.0280 0.0032 \*  
 Earth -83347-02-05 03:20 J -28721033.56 -28721033.36 -28721033.14 0.0277 0.0131  
 Moon -83347-02-05 04:47 J -28721033.50 -28721033.30 -28721033.10 0.0277 0.0134 \*  
 Earth -83346-02-17 03:06 J -28720656.51 -28720656.37 -28720656.23 0.0275 0.0220  
 Moon -83346-02-17 06:28 J -28720656.35 -28720656.23 -28720656.10 0.0275 0.0233 \*  
 Venus -83346-10-07 12:56 J -28720424.17 -28720423.96 -28720423.76 0.0274 0.0040  
 Mercury -83345-03-27 05:01 J -28720252.33 -28720252.29 -28720252.23 0.0273 0.0249  
 Mercury -83345-06-23 16:18 J -28720163.93 -28720163.82 -28720163.71 0.0272 0.0156  
 Mercury -83345-09-20 03:20 J -28720075.49 -28720075.36 -28720075.23 0.0272 0.0062  
 Mercury -83345-12-17 14:37 J -28719987.03 -28719986.89 -28719986.76 0.0271 0.0034  
 Mercury -83344-03-16 01:40 J -28719898.54 -28719898.43 -28719898.30 0.0271 0.0128  
 Mercury -83344-06-12 13:11 J -28719810.02 -28719809.95 -28719809.87 0.0271 0.0223  
 Mars -83337-06-01 06:13 J -28717264.55 -28717264.24 -28717263.93 0.0271 0.0095  
 Moon -83336-06-11 16:47 J -28716888.89 -28716888.80 -28716888.69 0.0273 0.0247  
 Earth -83336-06-11 20:23 J -28716888.71 -28716888.65 -28716888.58 0.0273 0.0262 \*  
 Moon -83335-06-24 16:04 J -28716511.02 -28716510.83 -28716510.63 0.0275 0.0163  
 Earth -83335-06-24 17:16 J -28716510.95 -28716510.78 -28716510.57 0.0275 0.0176 \*  
 Earth -83334-07-07 23:44 J -28716132.75 -28716132.51 -28716132.27 0.0277 0.0077  
 Moon -83334-07-08 01:54 J -28716132.65 -28716132.42 -28716132.18 0.0277 0.0069 \*  
 Earth -83333-07-20 15:06 J -28715754.12 -28715753.87 -28715753.62 0.0280 0.0031  
 Moon -83333-07-20 18:42 J -28715753.97 -28715753.72 -28715753.46 0.0280 0.0032 \*  
 Earth -83332-08-03 16:18 J -28715375.04 -28715374.82 -28715374.60 0.0283 0.0143  
 Moon -83332-08-03 17:01 J -28715375.02 -28715374.79 -28715374.56 0.0283 0.0134 \*  
 Moon -83331-08-17 23:16 J -28714995.66 -28714995.53 -28714995.38 0.0285 0.0238

Earth -83331-08-18 01:54 J -28714995.53 -28714995.42 -28714995.30 0.0285 0.0252 \*  
 Venus -83331-11-01 07:40 J -28714920.35 -28714920.18 -28714919.99 0.0286 0.0165  
 Venus -83330-06-19 09:20 J -28714690.15 -28714690.11 -28714690.05 0.0287 0.0278  
 Mercury -83330-10-17 03:49 J -28714570.45 -28714570.34 -28714570.21 0.0288 0.0215  
 Mercury -83329-01-14 03:06 J -28714481.55 -28714481.37 -28714481.20 0.0289 0.0062  
 Mercury -83329-04-12 01:40 J -28714392.60 -28714392.43 -28714392.27 0.0289 0.0090  
 Mercury -83329-07-09 23:44 J -28714303.61 -28714303.51 -28714303.41 0.0289 0.0240  
 Mars -83323-07-10 09:49 J -28712112.34 -28712112.09 -28712111.82 0.0289 0.0057  
 Moon -83322-12-25 02:23 J -28711579.53 -28711579.40 -28711579.26 0.0286 0.0233  
 Earth -83322-12-25 04:18 J -28711579.47 -28711579.32 -28711579.17 0.0286 0.0221 \*  
 Earth -83320-01-06 07:54 J -28711201.39 -28711201.17 -28711200.95 0.0283 0.0116  
 Moon -83320-01-06 09:35 J -28711201.29 -28711201.10 -28711200.88 0.0283 0.0132 \*  
 Earth -83319-01-19 02:08 J -28710823.65 -28710823.41 -28710823.17 0.0281 0.0010  
 Moon -83319-01-19 05:16 J -28710823.52 -28710823.28 -28710823.04 0.0281 0.0024 \*  
 Moon -83318-01-31 10:18 J -28710446.30 -28710446.07 -28710445.83 0.0278 0.0090  
 Earth -83318-01-31 11:44 J -28710446.24 -28710446.01 -28710445.79 0.0278 0.0091 \*  
 Moon -83317-02-12 10:04 J -28710069.24 -28710069.08 -28710068.90 0.0276 0.0194  
 Earth -83317-02-12 13:54 J -28710069.09 -28710068.92 -28710068.74 0.0276 0.0184 \*  
 Venus -83317-09-01 20:23 J -28709866.71 -28709866.65 -28709866.56 0.0274 0.0254  
 Earth -83316-02-23 09:35 J -28709692.14 -28709692.10 -28709692.03 0.0273 0.0265  
 Venus -83316-04-18 20:37 J -28709637.82 -28709637.64 -28709637.44 0.0273 0.0105  
 Mercury -83316-08-14 08:52 J -28709520.16 -28709520.13 -28709520.10 0.0272 0.0263  
 Mercury -83316-11-10 19:54 J -28709431.77 -28709431.67 -28709431.57 0.0272 0.0171  
 Mercury -83315-02-07 06:56 J -28709343.34 -28709343.21 -28709343.08 0.0271 0.0078  
 Mercury -83315-05-06 18:13 J -28709254.88 -28709254.74 -28709254.61 0.0271 0.0018  
 Mercury -83315-08-03 05:16 J -28709166.40 -28709166.28 -28709166.15 0.0270 0.0112  
 Mercury -83315-10-30 16:47 J -28709077.89 -28709077.80 -28709077.71 0.0270 0.0206  
 Mars -83309-07-13 06:42 J -28706995.27 -28706995.22 -28706995.16 0.0269 0.0264  
 Earth -83306-06-19 10:47 J -28705924.20 -28705924.05 -28705923.88 0.0274 0.0211  
 Moon -83306-06-19 11:59 J -28705924.16 -28705924.00 -28705923.80 0.0274 0.0197 \*

Moon -83305-07-01 09:20 J -28705546.34 -28705546.11 -28705545.86 0.0276 0.0108  
 Earth -83305-07-01 12:13 J -28705546.21 -28705545.99 -28705545.75 0.0276 0.0118 \*  
 Moon -83304-07-14 19:40 J -28705167.93 -28705167.68 -28705167.44 0.0279 0.0011  
 Earth -83304-07-14 23:16 J -28705167.78 -28705167.53 -28705167.28 0.0279 0.0013 \*  
 Moon -83303-07-28 18:42 J -28704788.94 -28704788.72 -28704788.49 0.0282 0.0093  
 Earth -83303-07-28 19:25 J -28704788.93 -28704788.69 -28704788.45 0.0282 0.0098 \*  
 Earth -83302-08-12 00:28 J -28704409.64 -28704409.48 -28704409.30 0.0284 0.0208  
 Moon -83302-08-12 03:20 J -28704409.53 -28704409.36 -28704409.17 0.0284 0.0196 \*  
 Venus -83301-05-13 14:08 J -28704134.11 -28704133.91 -28704133.70 0.0286 0.0108  
 Mercury -83300-03-05 02:23 J -28703838.47 -28703838.40 -28703838.32 0.0288 0.0261  
 Mercury -83300-06-02 01:25 J -28703749.61 -28703749.44 -28703749.27 0.0288 0.0108  
 Mercury -83300-08-29 23:59 J -28703660.67 -28703660.50 -28703660.32 0.0289 0.0044  
 Mercury -83300-11-26 22:18 J -28703571.70 -28703571.57 -28703571.44 0.0289 0.0194  
 Mars -83295-08-30 09:06 J -28701834.14 -28701834.12 -28701834.08 0.0291 0.0288  
 Mars -83293-08-26 07:25 J -28701107.33 -28701107.19 -28701107.02 0.0287 0.0234  
 Earth -83293-12-18 11:01 J -28700993.12 -28700993.04 -28700992.95 0.0287 0.0268  
 Moon -83293-12-18 12:13 J -28700993.04 -28700992.99 -28700992.91 0.0287 0.0276 \*  
 Moon -83292-12-31 16:18 J -28700615.00 -28700614.82 -28700614.62 0.0284 0.0180  
 Earth -83292-12-31 18:56 J -28700614.90 -28700614.71 -28700614.50 0.0284 0.0165 \*  
 Moon -83290-01-13 14:23 J -28700237.13 -28700236.90 -28700236.67 0.0282 0.0073  
 Earth -83290-01-13 17:44 J -28700236.99 -28700236.76 -28700236.52 0.0282 0.0057 \*  
 Earth -83289-01-26 07:25 J -28699859.42 -28699859.19 -28699858.95 0.0279 0.0047  
 Moon -83289-01-26 08:23 J -28699859.38 -28699859.15 -28699858.92 0.0279 0.0041 \*  
 Earth -83288-02-06 12:56 J -28699482.16 -28699481.96 -28699481.75 0.0277 0.0145  
 Moon -83288-02-06 16:47 J -28699482.00 -28699481.80 -28699481.60 0.0277 0.0151 \*  
 Earth -83287-02-18 11:59 J -28699105.12 -28699105.00 -28699104.87 0.0275 0.0232  
 Moon -83287-02-18 12:13 J -28699105.09 -28699104.99 -28699104.88 0.0275 0.0245 \*  
 Venus -83287-03-14 22:47 J -28699080.67 -28699080.55 -28699080.41 0.0274 0.0210  
 Venus -83287-10-29 22:47 J -28698851.71 -28698851.55 -28698851.37 0.0273 0.0148  
 Mercury -83286-03-30 21:49 J -28698699.67 -28698699.59 -28698699.49 0.0272 0.0202

Mercury -83286-06-27 09:06 J -28698611.25 -28698611.12 -28698611.00 0.0272 0.0108

Mercury -83286-09-23 20:08 J -28698522.79 -28698522.66 -28698522.52 0.0272 0.0014

Mercury -83286-12-21 07:25 J -28698434.32 -28698434.19 -28698434.06 0.0271 0.0081

Mercury -83285-03-18 18:42 J -28698345.82 -28698345.72 -28698345.61 0.0271 0.0176

Mars -83279-09-04 05:59 J -28695985.56 -28695985.25 -28695984.94 0.0270 0.0077

Moon -83277-06-13 04:18 J -28695337.43 -28695337.32 -28695337.19 0.0273 0.0235

Earth -83277-06-13 05:59 J -28695337.34 -28695337.25 -28695337.14 0.0273 0.0248 \*

Earth -83276-06-26 04:04 J -28694959.52 -28694959.33 -28694959.11 0.0275 0.0161

Moon -83276-06-26 07:11 J -28694959.40 -28694959.20 -28694958.99 0.0275 0.0149 \*

Earth -83275-07-09 11:44 J -28694581.26 -28694581.01 -28694580.77 0.0278 0.0060

Moon -83275-07-09 15:20 J -28694581.10 -28694580.86 -28694580.61 0.0278 0.0054 \*

Earth -83274-07-23 04:18 J -28694202.57 -28694202.32 -28694202.07 0.0280 0.0049

Moon -83274-07-23 05:01 J -28694202.55 -28694202.29 -28694202.04 0.0280 0.0047 \*

Moon -83273-08-05 03:06 J -28693823.58 -28693823.37 -28693823.14 0.0283 0.0149

Earth -83273-08-05 06:13 J -28693823.44 -28693823.24 -28693823.02 0.0283 0.0160 \*

Moon -83272-08-19 13:11 J -28693444.05 -28693443.95 -28693443.82 0.0286 0.0253

Earth -83272-08-19 17:01 J -28693443.87 -28693443.79 -28693443.70 0.0286 0.0267 \*

Venus -83272-11-24 00:28 J -28693347.70 -28693347.48 -28693347.26 0.0286 0.0034

Mercury -83271-10-20 02:08 J -28693017.56 -28693017.41 -28693017.25 0.0288 0.0137

Mercury -83270-01-17 00:56 J -28692928.64 -28692928.46 -28692928.28 0.0289 0.0016

Mercury -83270-04-15 23:30 J -28692839.67 -28692839.52 -28692839.38 0.0289 0.0167

Mars -83265-10-17 11:30 J -28690828.26 -28690828.02 -28690827.77 0.0290 0.0103

Earth -83263-12-26 17:44 J -28690027.93 -28690027.76 -28690027.59 0.0286 0.0203

Moon -83263-12-26 20:08 J -28690027.81 -28690027.66 -28690027.50 0.0286 0.0216 \*

Earth -83261-01-08 20:08 J -28689649.88 -28689649.66 -28689649.43 0.0283 0.0097

Moon -83261-01-08 23:59 J -28689649.73 -28689649.50 -28689649.28 0.0283 0.0114 \*

Moon -83260-01-20 13:11 J -28689272.20 -28689271.95 -28689271.70 0.0280 0.0006

Earth -83260-01-20 13:25 J -28689272.18 -28689271.94 -28689271.70 0.0280 0.0008 \*

Moon -83259-02-01 18:28 J -28688894.95 -28688894.73 -28688894.51 0.0278 0.0108

Earth -83259-02-01 21:49 J -28688894.80 -28688894.59 -28688894.36 0.0278 0.0107 \*

Moon -83258-02-13 22:32 J -28688517.70 -28688517.56 -28688517.41 0.0275 0.0209  
 Earth -83258-02-13 23:01 J -28688517.70 -28688517.54 -28688517.37 0.0275 0.0198 \*  
 Venus -83258-09-25 07:11 J -28688294.37 -28688294.20 -28688294.02 0.0274 0.0144  
 Venus -83257-05-11 06:42 J -28688065.34 -28688065.22 -28688065.08 0.0272 0.0213  
 Mercury -83257-08-17 01:40 J -28687967.50 -28687967.43 -28687967.34 0.0272 0.0216  
 Mercury -83257-11-13 12:42 J -28687879.09 -28687878.97 -28687878.85 0.0271 0.0123  
 Mercury -83256-02-09 23:59 J -28687790.64 -28687790.50 -28687790.37 0.0271 0.0030  
 Mercury -83256-05-09 11:01 J -28687702.17 -28687702.04 -28687701.90 0.0271 0.0065  
 Mercury -83256-08-05 22:18 J -28687613.68 -28687613.57 -28687613.46 0.0270 0.0160  
 Mercury -83256-11-02 09:49 J -28687525.13 -28687525.09 -28687525.05 0.0270 0.0255  
 Mars -83249-10-26 18:28 J -28684975.03 -28684974.73 -28684974.43 0.0271 0.0116  
 Moon -83248-06-08 05:59 J -28684750.28 -28684750.25 -28684750.17 0.0272 0.0266  
 Moon -83247-06-20 18:42 J -28684372.89 -28684372.72 -28684372.52 0.0274 0.0183  
 Earth -83247-06-20 21:49 J -28684372.76 -28684372.59 -28684372.42 0.0274 0.0196 \*  
 Moon -83246-07-03 20:52 J -28683994.85 -28683994.63 -28683994.39 0.0277 0.0094  
 Earth -83246-07-04 00:13 J -28683994.72 -28683994.49 -28683994.25 0.0277 0.0100 \*  
 Earth -83245-07-16 12:13 J -28683616.24 -28683615.99 -28683615.74 0.0279 0.0005  
 Moon -83245-07-16 11:59 J -28683616.24 -28683616.00 -28683615.75 0.0279 0.0006 \*  
 Earth -83244-07-30 09:35 J -28683237.33 -28683237.10 -28683236.87 0.0282 0.0115  
 Moon -83244-07-30 12:28 J -28683237.20 -28683236.98 -28683236.74 0.0282 0.0109 \*  
 Earth -83243-08-13 15:49 J -28682857.99 -28682857.84 -28682857.68 0.0285 0.0225  
 Moon -83243-08-13 19:11 J -28682857.87 -28682857.70 -28682857.53 0.0285 0.0212 \*  
 Venus -83242-06-06 07:11 J -28682561.41 -28682561.20 -28682560.98 0.0287 0.0025  
 Mercury -83241-03-08 00:42 J -28682285.60 -28682285.47 -28682285.33 0.0288 0.0183  
 Mercury -83241-06-04 23:30 J -28682196.69 -28682196.52 -28682196.34 0.0289 0.0030  
 Mercury -83241-09-01 22:04 J -28682107.74 -28682107.58 -28682107.42 0.0289 0.0122  
 Mercury -83241-11-29 20:08 J -28682018.72 -28682018.66 -28682018.60 0.0289 0.0271  
 Mars -83235-12-04 11:44 J -28679823.26 -28679823.01 -28679822.75 0.0288 0.0078  
 Moon -83234-12-20 21:35 J -28679441.69 -28679441.60 -28679441.49 0.0286 0.0261  
 Earth -83234-12-21 00:28 J -28679441.59 -28679441.48 -28679441.36 0.0286 0.0251 \*



Moon -83232-01-02 03:49 J -28679063.53 -28679063.34 -28679063.14 0.0284 0.0163  
 Earth -83232-01-02 07:11 J -28679063.40 -28679063.20 -28679062.99 0.0284 0.0147 \*  
 Earth -83231-01-15 04:32 J -28678685.54 -28678685.31 -28678685.07 0.0281 0.0040  
 Moon -83231-01-15 04:47 J -28678685.53 -28678685.30 -28678685.07 0.0281 0.0055 \*  
 Earth -83230-01-27 17:01 J -28678308.02 -28678307.79 -28678307.56 0.0279 0.0063  
 Moon -83230-01-27 20:23 J -28678307.88 -28678307.65 -28678307.41 0.0279 0.0057 \*  
 Earth -83229-02-08 21:35 J -28677930.79 -28677930.60 -28677930.40 0.0276 0.0159  
 Moon -83229-02-08 22:04 J -28677930.77 -28677930.58 -28677930.38 0.0276 0.0167 \*  
 Moon -83228-02-19 16:04 J -28677553.90 -28677553.83 -28677553.75 0.0274 0.0259  
 Earth -83228-02-19 19:40 J -28677553.78 -28677553.68 -28677553.57 0.0274 0.0244 \*  
 Venus -83228-04-06 08:37 J -28677508.33 -28677508.14 -28677507.95 0.0274 0.0103  
 Venus -83228-11-21 08:23 J -28677279.22 -28677279.15 -28677279.07 0.0273 0.0253  
 Mercury -83227-01-04 03:35 J -28677235.40 -28677235.35 -28677235.29 0.0272 0.0248  
 Mercury -83227-04-02 14:37 J -28677147.00 -28677146.89 -28677146.78 0.0272 0.0155  
 Mercury -83227-06-30 01:40 J -28677058.56 -28677058.43 -28677058.30 0.0272 0.0061  
 Mercury -83227-09-26 12:56 J -28676970.10 -28676969.96 -28676969.83 0.0271 0.0033  
 Mercury -83227-12-24 00:13 J -28676881.61 -28676881.49 -28676881.37 0.0271 0.0128  
 Mercury -83226-03-22 11:30 J -28676793.09 -28676793.02 -28676792.94 0.0270 0.0223  
 Mars -83221-12-07 06:28 J -28674706.36 -28674706.23 -28674706.11 0.0270 0.0248  
 Earth -83218-06-15 13:54 J -28673786.04 -28673785.92 -28673785.79 0.0273 0.0234  
 Moon -83218-06-15 16:18 J -28673785.95 -28673785.82 -28673785.67 0.0273 0.0220 \*  
 Earth -83217-06-27 12:56 J -28673408.16 -28673407.96 -28673407.74 0.0276 0.0145  
 Moon -83217-06-27 16:18 J -28673408.04 -28673407.82 -28673407.60 0.0276 0.0134 \*  
 Moon -83216-07-10 21:06 J -28673029.88 -28673029.62 -28673029.37 0.0278 0.0041  
 Earth -83216-07-10 21:35 J -28673029.85 -28673029.60 -28673029.35 0.0278 0.0043 \*  
 Moon -83215-07-24 11:44 J -28672651.26 -28672651.01 -28672650.76 0.0281 0.0060  
 Earth -83215-07-24 15:06 J -28672651.11 -28672650.87 -28672650.62 0.0281 0.0066 \*  
 Moon -83214-08-07 14:52 J -28672272.07 -28672271.88 -28672271.67 0.0283 0.0166  
 Earth -83214-08-07 18:13 J -28672271.94 -28672271.74 -28672271.54 0.0283 0.0176 \*  
 Moon -83213-08-21 05:44 J -28671892.34 -28671892.26 -28671892.18 0.0286 0.0268

Earth -83213-08-21 05:30 J -28671892.31 -28671892.27 -28671892.22 0.0286 0.0281 \*  
 Venus -83213-12-16 15:35 J -28671775.05 -28671774.85 -28671774.64 0.0287 0.0093  
 Mercury -83212-07-26 00:28 J -28671553.59 -28671553.48 -28671553.36 0.0288 0.0218  
 Mercury -83212-10-22 23:30 J -28671464.69 -28671464.52 -28671464.34 0.0289 0.0065  
 Mercury -83211-01-19 22:04 J -28671375.75 -28671375.58 -28671375.41 0.0289 0.0088  
 Mercury -83211-04-18 20:23 J -28671286.75 -28671286.65 -28671286.55 0.0289 0.0238  
 Mars -83206-01-25 03:35 J -28669544.44 -28669544.35 -28669544.23 0.0291 0.0268  
 Earth -83205-12-14 17:30 J -28668854.78 -28668854.77 -28668854.75 0.0288 0.0287  
 Mars -83204-01-21 03:06 J -28668817.49 -28668817.37 -28668817.25 0.0288 0.0255  
 Earth -83204-12-28 04:47 J -28668476.48 -28668476.30 -28668476.11 0.0286 0.0185  
 Moon -83204-12-28 07:54 J -28668476.33 -28668476.17 -28668475.98 0.0286 0.0199 \*  
 Moon -83202-01-10 06:13 J -28668098.47 -28668098.24 -28668098.00 0.0283 0.0095  
 Earth -83202-01-10 06:28 J -28668098.46 -28668098.23 -28668098.00 0.0283 0.0079 \*  
 Moon -83201-01-22 19:11 J -28667720.94 -28667720.70 -28667720.45 0.0280 0.0013  
 Earth -83201-01-22 22:47 J -28667720.79 -28667720.55 -28667720.31 0.0280 0.0025 \*  
 Moon -83200-02-03 05:16 J -28667343.49 -28667343.28 -28667343.07 0.0277 0.0124  
 Earth -83200-02-03 06:13 J -28667343.45 -28667343.24 -28667343.02 0.0277 0.0123 \*  
 Earth -83199-02-15 06:42 J -28666966.37 -28666966.22 -28666966.06 0.0275 0.0210  
 Moon -83199-02-15 10:04 J -28666966.21 -28666966.08 -28666965.94 0.0275 0.0224 \*  
 Venus -83199-10-17 16:32 J -28666722.01 -28666721.81 -28666721.61 0.0273 0.0039  
 Mercury -83198-05-24 07:25 J -28666503.22 -28666503.19 -28666503.16 0.0272 0.0263  
 Mercury -83198-08-20 18:13 J -28666414.84 -28666414.74 -28666414.63 0.0272 0.0171  
 Mercury -83198-11-17 05:16 J -28666326.40 -28666326.28 -28666326.15 0.0271 0.0078  
 Mercury -83197-02-13 16:32 J -28666237.95 -28666237.81 -28666237.68 0.0271 0.0017  
 Mercury -83197-05-12 03:35 J -28666149.47 -28666149.35 -28666149.22 0.0270 0.0112  
 Mercury -83197-08-08 15:06 J -28666060.96 -28666060.87 -28666060.78 0.0270 0.0206  
 Mars -83190-01-29 13:11 J -28663696.26 -28663695.95 -28663695.62 0.0270 0.0059  
 Moon -83189-06-09 08:52 J -28663199.23 -28663199.13 -28663199.03 0.0272 0.0249  
 Earth -83189-06-09 11:16 J -28663199.08 -28663199.03 -28663198.97 0.0272 0.0264 \*  
 Moon -83188-06-22 02:23 J -28662821.59 -28662821.40 -28662821.20 0.0275 0.0168

Earth -83188-06-22 05:30 J -28662821.45 -28662821.27 -28662821.07 0.0275 0.0181 \*  
 Earth -83187-07-05 09:06 J -28662443.36 -28662443.12 -28662442.88 0.0277 0.0084  
 Moon -83187-07-05 10:04 J -28662443.31 -28662443.08 -28662442.85 0.0277 0.0080 \*  
 Earth -83186-07-18 21:49 J -28662064.84 -28662064.59 -28662064.34 0.0280 0.0022  
 Moon -83186-07-19 01:40 J -28662064.68 -28662064.43 -28662064.18 0.0280 0.0019 \*  
 Earth -83185-07-31 20:23 J -28661685.87 -28661685.65 -28661685.43 0.0282 0.0132  
 Moon -83185-07-31 23:16 J -28661685.75 -28661685.53 -28661685.29 0.0282 0.0125 \*  
 Moon -83184-08-15 02:52 J -28661306.52 -28661306.38 -28661306.21 0.0285 0.0227  
 Earth -83184-08-15 03:20 J -28661306.48 -28661306.36 -28661306.21 0.0285 0.0240 \*  
 Venus -83183-06-28 22:04 J -28660988.76 -28660988.58 -28660988.39 0.0287 0.0151  
 Mercury -83183-12-12 23:01 J -28660821.61 -28660821.54 -28660821.47 0.0288 0.0264  
 Mercury -83182-03-11 22:04 J -28660732.75 -28660732.58 -28660732.41 0.0288 0.0110  
 Mercury -83182-06-08 20:52 J -28660643.81 -28660643.63 -28660643.46 0.0289 0.0043  
 Mercury -83182-09-05 18:56 J -28660554.83 -28660554.71 -28660554.57 0.0289 0.0193  
 Mars -83176-03-13 09:49 J -28658539.35 -28658539.09 -28658538.84 0.0290 0.0084  
 Moon -83175-12-22 08:52 J -28657890.24 -28657890.13 -28657889.99 0.0286 0.0244  
 Earth -83175-12-22 12:13 J -28657890.12 -28657889.99 -28657889.85 0.0286 0.0233 \*  
 Earth -83173-01-04 17:59 J -28657511.96 -28657511.75 -28657511.53 0.0284 0.0129  
 Moon -83173-01-04 18:42 J -28657511.92 -28657511.72 -28657511.52 0.0284 0.0144 \*  
 Earth -83172-01-16 14:23 J -28657134.14 -28657133.90 -28657133.66 0.0281 0.0023  
 Moon -83172-01-16 17:59 J -28657133.99 -28657133.75 -28657133.51 0.0281 0.0038 \*  
 Earth -83171-01-29 01:25 J -28656756.66 -28656756.44 -28656756.20 0.0278 0.0080  
 Moon -83171-01-29 03:20 J -28656756.60 -28656756.36 -28656756.12 0.0278 0.0074 \*  
 Moon -83170-02-10 01:40 J -28656379.59 -28656379.43 -28656379.23 0.0276 0.0184  
 Earth -83170-02-10 05:01 J -28656379.46 -28656379.29 -28656379.09 0.0276 0.0173 \*  
 Moon -83169-02-22 00:28 J -28656002.51 -28656002.48 -28656002.45 0.0274 0.0271  
 Earth -83169-02-22 02:08 J -28656002.48 -28656002.41 -28656002.31 0.0274 0.0255 \*  
 Venus -83169-04-28 17:30 J -28655935.97 -28655935.77 -28655935.56 0.0273 0.0006  
 Mercury -83168-01-06 20:08 J -28655682.75 -28655682.66 -28655682.57 0.0272 0.0203  
 Mercury -83168-04-05 06:56 J -28655594.33 -28655594.21 -28655594.08 0.0272 0.0111

Mercury -83168-07-02 18:13 J -28655505.88 -28655505.74 -28655505.61 0.0271 0.0017

Mercury -83168-09-29 05:16 J -28655417.41 -28655417.28 -28655417.14 0.0271 0.0078

Mercury -83168-12-26 16:32 J -28655328.91 -28655328.81 -28655328.70 0.0270 0.0173

Mercury -83167-03-25 04:04 J -28655240.34 -28655240.33 -28655240.32 0.0270 0.0268

Mars -83160-03-22 08:08 J -28652686.43 -28652686.16 -28652685.86 0.0271 0.0131

Earth -83159-06-16 18:42 J -28652234.86 -28652234.72 -28652234.56 0.0274 0.0220

Moon -83159-06-16 22:18 J -28652234.73 -28652234.57 -28652234.40 0.0274 0.0204 \*

Moon -83158-06-29 17:44 J -28651856.99 -28651856.76 -28651856.52 0.0276 0.0122

Earth -83158-06-29 18:42 J -28651856.94 -28651856.72 -28651856.50 0.0276 0.0129 \*

Moon -83157-07-11 23:59 J -28651478.74 -28651478.50 -28651478.24 0.0278 0.0030

Earth -83157-07-12 04:04 J -28651478.58 -28651478.33 -28651478.08 0.0278 0.0027 \*

Moon -83156-07-25 20:08 J -28651099.89 -28651099.66 -28651099.42 0.0281 0.0074

Earth -83156-07-25 22:32 J -28651099.79 -28651099.56 -28651099.31 0.0281 0.0082 \*

Earth -83155-08-09 02:37 J -28650720.58 -28650720.39 -28650720.20 0.0284 0.0191

Moon -83155-08-09 03:06 J -28650720.54 -28650720.37 -28650720.17 0.0284 0.0181 \*

Venus -83154-05-24 03:35 J -28650432.48 -28650432.35 -28650432.23 0.0286 0.0230

Moon -83154-08-23 17:59 J -28650340.79 -28650340.75 -28650340.69 0.0286 0.0280

Venus -83153-01-09 04:47 J -28650202.44 -28650202.30 -28650202.15 0.0287 0.0213

Mercury -83153-07-28 20:52 J -28650000.78 -28650000.63 -28650000.47 0.0288 0.0152

Mercury -83153-10-25 19:54 J -28649911.85 -28649911.67 -28649911.49 0.0289 0.0003

Mercury -83152-01-22 18:28 J -28649822.88 -28649822.73 -28649822.58 0.0289 0.0154

Mars -83146-05-01 00:13 J -28647533.74 -28647533.49 -28647533.24 0.0289 0.0096

Earth -83146-12-17 03:20 J -28647303.43 -28647303.36 -28647303.27 0.0288 0.0271

Moon -83146-12-17 06:56 J -28647303.27 -28647303.21 -28647303.14 0.0288 0.0275 \*

Moon -83145-12-29 13:40 J -28646925.12 -28646924.93 -28646924.73 0.0285 0.0181

Earth -83145-12-29 14:08 J -28646925.10 -28646924.91 -28646924.71 0.0285 0.0168 \*

Moon -83143-01-11 11:01 J -28646547.27 -28646547.04 -28646546.80 0.0283 0.0078

Earth -83143-01-11 14:52 J -28646547.11 -28646546.88 -28646546.64 0.0283 0.0062 \*

Moon -83142-01-24 04:18 J -28646169.55 -28646169.32 -28646169.09 0.0280 0.0031

Earth -83142-01-24 06:13 J -28646169.48 -28646169.24 -28646169.00 0.0280 0.0041 \*

Earth -83141-02-05 12:56 J -28645792.17 -28645791.96 -28645791.75 0.0277 0.0137  
 Moon -83141-02-05 15:35 J -28645792.05 -28645791.85 -28645791.65 0.0277 0.0141 \*  
 Earth -83140-02-16 12:28 J -28645415.11 -28645414.98 -28645414.83 0.0275 0.0223  
 Moon -83140-02-16 14:37 J -28645415.00 -28645414.89 -28645414.76 0.0275 0.0237 \*  
 Venus -83140-11-09 00:42 J -28645149.66 -28645149.47 -28645149.26 0.0273 0.0063  
 Mercury -83139-05-26 23:30 J -28644950.59 -28644950.52 -28644950.44 0.0272 0.0221  
 Mercury -83139-08-23 10:32 J -28644862.18 -28644862.06 -28644861.94 0.0271 0.0128  
 Mercury -83139-11-19 21:35 J -28644773.73 -28644773.60 -28644773.46 0.0271 0.0035  
 Mercury -83138-02-16 08:52 J -28644685.27 -28644685.13 -28644685.00 0.0271 0.0060  
 Mercury -83138-05-15 19:54 J -28644596.77 -28644596.67 -28644596.55 0.0270 0.0155  
 Mercury -83138-08-12 07:25 J -28644508.24 -28644508.19 -28644508.14 0.0270 0.0250  
 Mars -83132-05-03 08:37 J -28642417.31 -28642417.14 -28642416.98 0.0269 0.0231  
 Moon -83130-06-11 12:13 J -28641648.10 -28641647.99 -28641647.86 0.0272 0.0236  
 Earth -83130-06-11 15:35 J -28641647.93 -28641647.85 -28641647.74 0.0272 0.0251 \*  
 Earth -83129-06-23 10:47 J -28641270.24 -28641270.05 -28641269.85 0.0275 0.0166  
 Moon -83129-06-23 11:30 J -28641270.22 -28641270.02 -28641269.82 0.0275 0.0155 \*  
 Earth -83128-07-06 15:06 J -28640892.11 -28640891.87 -28640891.63 0.0277 0.0068  
 Moon -83128-07-06 18:42 J -28640891.96 -28640891.72 -28640891.48 0.0277 0.0066 \*  
 Earth -83127-07-20 04:47 J -28640513.55 -28640513.30 -28640513.05 0.0280 0.0038  
 Moon -83127-07-20 06:42 J -28640513.47 -28640513.22 -28640512.96 0.0280 0.0032 \*  
 Moon -83126-08-03 02:23 J -28640134.62 -28640134.40 -28640134.16 0.0283 0.0136  
 Earth -83126-08-03 03:49 J -28640134.54 -28640134.34 -28640134.11 0.0283 0.0148 \*  
 Moon -83125-08-16 08:23 J -28639755.27 -28639755.15 -28639755.00 0.0285 0.0240  
 Earth -83125-08-16 11:59 J -28639755.10 -28639755.00 -28639754.87 0.0285 0.0254 \*  
 Venus -83125-12-03 09:35 J -28639646.26 -28639646.10 -28639645.92 0.0286 0.0174  
 Venus -83124-07-21 10:47 J -28639416.10 -28639416.05 -28639415.96 0.0287 0.0272  
 Mercury -83124-12-15 19:25 J -28639268.82 -28639268.69 -28639268.56 0.0288 0.0198  
 Mercury -83123-03-14 18:28 J -28639179.91 -28639179.73 -28639179.56 0.0289 0.0045  
 Mercury -83123-06-11 16:47 J -28639090.96 -28639090.80 -28639090.63 0.0289 0.0108  
 Mercury -83123-09-08 15:06 J -28639001.94 -28639001.87 -28639001.79 0.0290 0.0258

Mars	-83118-06-20 22:47 J	-28637255.67	-28637255.55	-28637255.41	0.0291	0.0253
Mars	-83116-06-16 20:08 J	-28636528.74	-28636528.66	-28636528.57	0.0287	0.0271
Earth	-83116-12-23 20:52 J	-28636338.78	-28636338.63	-28636338.47	0.0286	0.0216
Moon	-83116-12-23 21:06 J	-28636338.75	-28636338.62	-28636338.47	0.0286	0.0228 *
Earth	-83114-01-06 01:54 J	-28635960.64	-28635960.42	-28635960.19	0.0283	0.0111
Moon	-83114-01-06 05:16 J	-28635960.48	-28635960.28	-28635960.06	0.0283	0.0127 *
Earth	-83113-01-18 21:20 J	-28635582.85	-28635582.61	-28635582.37	0.0281	0.0007
Moon	-83113-01-18 23:01 J	-28635582.79	-28635582.54	-28635582.29	0.0281	0.0018 *
Moon	-83112-01-30 05:01 J	-28635205.51	-28635205.29	-28635205.05	0.0278	0.0092
Earth	-83112-01-30 07:54 J	-28635205.40	-28635205.17	-28635204.95	0.0278	0.0094 *
Moon	-83111-02-11 08:08 J	-28634828.31	-28634828.16	-28634827.99	0.0276	0.0197
Earth	-83111-02-11 10:32 J	-28634828.23	-28634828.06	-28634827.88	0.0276	0.0185 *
Venus	-83111-10-05 01:11 J	-28634592.50	-28634592.45	-28634592.37	0.0274	0.0258
Earth	-83110-02-23 06:42 J	-28634451.26	-28634451.22	-28634451.15	0.0273	0.0265
Venus	-83110-05-22 01:11 J	-28634363.63	-28634363.45	-28634363.25	0.0273	0.0101
Mercury	-83110-10-14 01:11 J	-28634218.49	-28634218.45	-28634218.40	0.0272	0.0254
Mercury	-83109-01-10 12:13 J	-28634130.10	-28634129.99	-28634129.88	0.0272	0.0161
Mercury	-83109-04-07 23:16 J	-28634041.66	-28634041.53	-28634041.40	0.0271	0.0068
Mercury	-83109-07-05 10:18 J	-28633953.21	-28633953.07	-28633952.93	0.0271	0.0026
Mercury	-83109-10-01 21:35 J	-28633864.72	-28633864.60	-28633864.48	0.0270	0.0120
Mercury	-83109-12-29 08:52 J	-28633776.21	-28633776.13	-28633776.05	0.0270	0.0215
Mars	-83102-06-24 15:35 J	-28631408.16	-28631407.85	-28631407.52	0.0270	0.0052
Moon	-83101-06-05 09:06 J	-28631061.15	-28631061.12	-28631061.08	0.0272	0.0268
Moon	-83100-06-17 20:23 J	-28630683.84	-28630683.65	-28630683.47	0.0274	0.0191
Earth	-83100-06-17 20:52 J	-28630683.78	-28630683.63	-28630683.45	0.0274	0.0206 *
Moon	-83099-06-30 17:44 J	-28630305.99	-28630305.76	-28630305.53	0.0276	0.0108
Earth	-83099-06-30 21:20 J	-28630305.83	-28630305.61	-28630305.38	0.0276	0.0114 *
Moon	-83098-07-14 05:44 J	-28629927.50	-28629927.26	-28629927.01	0.0279	0.0017
Earth	-83098-07-14 07:11 J	-28629927.45	-28629927.20	-28629926.95	0.0279	0.0012 *
Earth	-83097-07-27 02:23 J	-28629548.63	-28629548.40	-28629548.15	0.0281	0.0098

Moon -83097-07-27 04:47 J -28629548.52 -28629548.30 -28629548.06 0.0281 0.0087 \*  
 Earth -83096-08-10 07:11 J -28629169.37 -28629169.20 -28629169.02 0.0284 0.0205  
 Moon -83096-08-10 11:01 J -28629169.22 -28629169.04 -28629168.85 0.0284 0.0192 \*  
 Venus -83095-06-15 13:54 J -28628860.11 -28628859.92 -28628859.72 0.0286 0.0121  
 Mercury -83094-05-04 17:01 J -28628536.87 -28628536.79 -28628536.69 0.0288 0.0248  
 Mercury -83094-08-01 16:04 J -28628447.99 -28628447.83 -28628447.65 0.0289 0.0094  
 Mercury -83094-10-29 14:52 J -28628359.05 -28628358.88 -28628358.70 0.0289 0.0061  
 Mercury -83093-01-26 13:25 J -28628270.06 -28628269.94 -28628269.82 0.0290 0.0212  
 Mars -83088-08-07 12:56 J -28626250.21 -28626249.96 -28626249.70 0.0290 0.0073  
 Moon -83087-12-18 09:49 J -28625752.18 -28625752.09 -28625751.98 0.0288 0.0263  
 Earth -83087-12-18 10:04 J -28625752.18 -28625752.08 -28625751.96 0.0288 0.0255 \*  
 Moon -83086-12-31 17:16 J -28625373.98 -28625373.78 -28625373.58 0.0285 0.0166  
 Earth -83086-12-31 20:23 J -28625373.84 -28625373.65 -28625373.44 0.0285 0.0151 \*  
 Moon -83084-01-12 19:11 J -28624995.93 -28624995.70 -28624995.47 0.0283 0.0059  
 Earth -83084-01-12 20:37 J -28624995.87 -28624995.64 -28624995.40 0.0283 0.0045 \*  
 Earth -83083-01-25 11:16 J -28624618.26 -28624618.03 -28624617.79 0.0280 0.0057  
 Moon -83083-01-25 13:54 J -28624618.15 -28624617.92 -28624617.69 0.0280 0.0051 \*  
 Earth -83082-02-06 17:30 J -28624240.97 -28624240.77 -28624240.57 0.0277 0.0152  
 Moon -83082-02-06 20:37 J -28624240.84 -28624240.64 -28624240.44 0.0277 0.0155 \*  
 Moon -83081-02-18 14:08 J -28623864.00 -28623863.91 -28623863.80 0.0274 0.0249  
 Earth -83081-02-18 16:18 J -28623863.92 -28623863.82 -28623863.68 0.0274 0.0236 \*  
 Venus -83081-04-16 08:08 J -28623806.29 -28623806.16 -28623806.01 0.0274 0.0199  
 Venus -83081-12-01 07:54 J -28623577.33 -28623577.17 -28623577.00 0.0273 0.0160  
 Mercury -83080-05-29 15:35 J -28623397.95 -28623397.85 -28623397.75 0.0272 0.0180  
 Mercury -83080-08-26 02:37 J -28623309.52 -28623309.39 -28623309.26 0.0271 0.0087  
 Mercury -83080-11-22 13:40 J -28623221.07 -28623220.93 -28623220.79 0.0271 0.0007  
 Mercury -83079-02-19 00:42 J -28623132.59 -28623132.47 -28623132.34 0.0270 0.0102  
 Mercury -83079-05-18 11:59 J -28623044.09 -28623044.00 -28623043.90 0.0270 0.0196  
 Mars -83072-08-16 01:54 J -28620397.69 -28620397.42 -28620397.13 0.0271 0.0143  
 Earth -83071-06-12 17:16 J -28620096.89 -28620096.78 -28620096.65 0.0272 0.0238

Moon -83071-06-12 18:28 J -28620096.86 -28620096.73 -28620096.59 0.0272 0.0224 \*  
 Earth -83070-06-25 12:42 J -28619719.17 -28619718.97 -28619718.76 0.0275 0.0152  
 Moon -83070-06-25 16:32 J -28619719.02 -28619718.81 -28619718.59 0.0275 0.0140 \*  
 Earth -83069-07-07 17:44 J -28619341.01 -28619340.76 -28619340.52 0.0277 0.0053  
 Moon -83069-07-07 18:56 J -28619340.96 -28619340.71 -28619340.45 0.0277 0.0053 \*  
 Moon -83068-07-21 05:16 J -28618962.54 -28618962.28 -28618962.03 0.0280 0.0043  
 Earth -83068-07-21 08:08 J -28618962.41 -28618962.16 -28618961.91 0.0280 0.0053 \*  
 Moon -83067-08-04 04:04 J -28618583.53 -28618583.33 -28618583.11 0.0283 0.0148  
 Earth -83067-08-04 08:08 J -28618583.36 -28618583.16 -28618582.95 0.0283 0.0162 \*  
 Moon -83066-08-18 15:06 J -28618203.98 -28618203.87 -28618203.75 0.0286 0.0253  
 Earth -83066-08-18 16:47 J -28618203.87 -28618203.80 -28618203.70 0.0286 0.0268 \*  
 Venus -83066-12-26 20:08 J -28618073.87 -28618073.66 -28618073.44 0.0286 0.0064  
 Mercury -83065-12-18 14:37 J -28617716.04 -28617715.89 -28617715.73 0.0289 0.0140  
 Mercury -83064-03-17 13:40 J -28617627.11 -28617626.93 -28617626.76 0.0289 0.0016  
 Mercury -83064-06-14 11:59 J -28617538.14 -28617538.00 -28617537.85 0.0290 0.0166  
 Mars -83058-09-24 13:11 J -28615245.18 -28615244.95 -28615244.69 0.0289 0.0109  
 Earth -83057-12-25 03:06 J -28614787.53 -28614787.37 -28614787.19 0.0286 0.0200  
 Moon -83057-12-25 06:56 J -28614787.37 -28614787.21 -28614787.05 0.0286 0.0213 \*  
 Earth -83055-01-07 07:40 J -28614409.40 -28614409.18 -28614408.95 0.0283 0.0095  
 Moon -83055-01-07 09:20 J -28614409.34 -28614409.11 -28614408.88 0.0283 0.0109 \*  
 Moon -83054-01-19 23:30 J -28614031.76 -28614031.52 -28614031.27 0.0280 0.0002  
 Earth -83054-01-20 02:37 J -28614031.63 -28614031.39 -28614031.15 0.0280 0.0011 \*  
 Moon -83053-02-01 09:06 J -28613654.33 -28613654.12 -28613653.90 0.0278 0.0110  
 Earth -83053-02-01 12:13 J -28613654.21 -28613653.99 -28613653.77 0.0278 0.0109 \*  
 Earth -83052-02-12 13:54 J -28613277.07 -28613276.92 -28613276.74 0.0275 0.0198  
 Moon -83052-02-12 15:49 J -28613276.98 -28613276.84 -28613276.69 0.0275 0.0210 \*  
 Venus -83052-10-27 08:23 J -28613020.31 -28613020.15 -28613019.98 0.0274 0.0161  
 Venus -83051-06-13 07:54 J -28612791.31 -28612791.17 -28612791.02 0.0272 0.0196  
 Mercury -83051-10-16 17:01 J -28612665.87 -28612665.79 -28612665.71 0.0272 0.0215  
 Mercury -83050-01-13 04:04 J -28612577.45 -28612577.33 -28612577.21 0.0271 0.0122



Mercury -83050-04-11 15:06 J -28612489.01 -28612488.87 -28612488.74 0.0271 0.0029

Mercury -83050-07-09 02:08 J -28612400.54 -28612400.41 -28612400.28 0.0270 0.0066

Mercury -83050-10-05 13:25 J -28612312.05 -28612311.94 -28612311.83 0.0270 0.0160

Mercury -83049-01-02 00:42 J -28612223.51 -28612223.47 -28612223.43 0.0270 0.0255

Mars -83044-09-26 01:54 J -28610129.58 -28610129.42 -28610129.24 0.0269 0.0229

Moon -83042-06-07 04:18 J -28609510.40 -28609510.32 -28609510.23 0.0272 0.0256

Earth -83042-06-07 05:44 J -28609510.26 -28609510.26 -28609510.24 0.0272 0.0271 \*

Moon -83041-06-18 17:01 J -28609132.96 -28609132.79 -28609132.59 0.0274 0.0180

Earth -83041-06-18 21:06 J -28609132.79 -28609132.62 -28609132.44 0.0274 0.0192 \*

Moon -83040-07-01 20:23 J -28608754.87 -28608754.65 -28608754.42 0.0276 0.0096

Earth -83040-07-01 21:35 J -28608754.83 -28608754.60 -28608754.36 0.0276 0.0099 \*

Earth -83039-07-15 07:54 J -28608376.42 -28608376.17 -28608375.92 0.0279 0.0004

Moon -83039-07-15 10:47 J -28608376.29 -28608376.05 -28608375.80 0.0279 0.0005 \*

Earth -83038-07-29 03:49 J -28607997.57 -28607997.34 -28607997.10 0.0281 0.0111

Moon -83038-07-29 07:25 J -28607997.43 -28607997.19 -28607996.95 0.0281 0.0097 \*

Earth -83037-08-11 09:06 J -28607618.27 -28607618.12 -28607617.95 0.0284 0.0219

Moon -83037-08-11 10:18 J -28607618.25 -28607618.07 -28607617.89 0.0284 0.0203 \*

Venus -83036-07-07 23:01 J -28607287.76 -28607287.54 -28607287.32 0.0286 0.0017

Mercury -83035-05-07 11:30 J -28606984.15 -28606984.02 -28606983.88 0.0288 0.0194

Mercury -83035-08-04 10:47 J -28606895.23 -28606895.05 -28606894.88 0.0289 0.0040

Mercury -83035-11-01 09:20 J -28606806.27 -28606806.11 -28606805.95 0.0289 0.0113

Mercury -83034-01-29 07:40 J -28606717.25 -28606717.18 -28606717.11 0.0290 0.0264

Mars -83030-11-14 15:49 J -28604966.97 -28604966.84 -28604966.69 0.0292 0.0247

Mars -83028-11-10 17:16 J -28604239.84 -28604239.78 -28604239.71 0.0288 0.0279

Moon -83028-12-19 10:04 J -28604201.18 -28604201.08 -28604200.96 0.0288 0.0253

Earth -83028-12-19 13:54 J -28604201.04 -28604200.92 -28604200.78 0.0288 0.0240 \*

Moon -83026-01-01 22:04 J -28603822.77 -28603822.58 -28603822.37 0.0285 0.0150

Earth -83026-01-01 23:59 J -28603822.71 -28603822.50 -28603822.28 0.0285 0.0135 \*

Earth -83025-01-14 23:44 J -28603444.74 -28603444.51 -28603444.27 0.0282 0.0029

Moon -83025-01-15 02:23 J -28603444.63 -28603444.40 -28603444.16 0.0282 0.0041 \*

Earth -83024-01-26 13:54 J -28603067.15 -28603066.92 -28603066.69 0.0280 0.0073  
 Moon -83024-01-26 17:01 J -28603067.02 -28603066.79 -28603066.55 0.0280 0.0069 \*  
 Moon -83023-02-07 18:13 J -28602689.91 -28602689.74 -28602689.53 0.0277 0.0174  
 Earth -83023-02-07 19:40 J -28602689.86 -28602689.68 -28602689.48 0.0277 0.0166 \*  
 Moon -83022-02-19 15:06 J -28602312.92 -28602312.87 -28602312.79 0.0274 0.0262  
 Earth -83022-02-19 18:13 J -28602312.83 -28602312.74 -28602312.62 0.0274 0.0247 \*  
 Venus -83022-05-09 14:08 J -28602234.09 -28602233.91 -28602233.71 0.0274 0.0106  
 Venus -83022-12-24 13:40 J -28602004.99 -28602004.93 -28602004.84 0.0272 0.0252  
 Mercury -83021-03-04 20:08 J -28601933.72 -28601933.66 -28601933.59 0.0272 0.0236  
 Mercury -83021-06-01 07:11 J -28601845.31 -28601845.20 -28601845.08 0.0271 0.0143  
 Mercury -83021-08-28 18:13 J -28601756.87 -28601756.74 -28601756.61 0.0271 0.0049  
 Mercury -83021-11-25 05:16 J -28601668.41 -28601668.28 -28601668.14 0.0271 0.0045  
 Mercury -83020-02-21 16:32 J -28601579.93 -28601579.81 -28601579.69 0.0270 0.0139  
 Mercury -83020-05-21 03:49 J -28601491.41 -28601491.34 -28601491.27 0.0270 0.0234  
 Mars -83014-11-18 05:16 J -28599119.60 -28599119.28 -28599118.95 0.0269 0.0040  
 Earth -83012-06-13 17:01 J -28598545.92 -28598545.79 -28598545.64 0.0272 0.0225  
 Moon -83012-06-13 20:52 J -28598545.77 -28598545.63 -28598545.46 0.0272 0.0211 \*  
 Earth -83011-06-26 12:42 J -28598168.18 -28598167.97 -28598167.75 0.0275 0.0138  
 Moon -83011-06-26 13:54 J -28598168.14 -28598167.92 -28598167.69 0.0275 0.0130 \*  
 Moon -83010-07-09 14:52 J -28597790.13 -28597789.88 -28597789.62 0.0277 0.0043  
 Earth -83010-07-09 17:44 J -28597790.00 -28597789.76 -28597789.50 0.0277 0.0040 \*  
 Moon -83009-07-22 05:44 J -28597411.50 -28597411.26 -28597411.01 0.0280 0.0056  
 Earth -83009-07-22 08:52 J -28597411.37 -28597411.13 -28597410.88 0.0280 0.0067 \*  
 Moon -83008-08-05 09:20 J -28597032.31 -28597032.11 -28597031.91 0.0283 0.0161  
 Earth -83008-08-05 09:06 J -28597032.30 -28597032.12 -28597031.91 0.0283 0.0176 \*  
 Earth -83007-08-19 18:13 J -28596652.77 -28596652.74 -28596652.67 0.0286 0.0280  
 Moon -83007-08-19 21:06 J -28596652.70 -28596652.62 -28596652.51 0.0286 0.0264 \*  
 Venus -83006-01-18 04:47 J -28596501.51 -28596501.30 -28596501.08 0.0287 0.0040  
 Mercury -83006-09-24 09:49 J -28596252.18 -28596252.09 -28596251.99 0.0288 0.0242  
 Mercury -83006-12-22 09:06 J -28596163.30 -28596163.12 -28596162.95 0.0289 0.0087

Mercury -83005-03-20 07:40 J -28596074.35 -28596074.18 -28596074.00 0.0289 0.0067

Mercury -83005-06-17 06:13 J -28595985.36 -28595985.24 -28595985.13 0.0290 0.0218

# 83RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 83rd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-83000-12-31 21:06 J	-28593961.88	-28593961.62	-28593961.36	0.0290	0.0063		
Earth	-82999-12-13 16:32 J	-28593614.83	-28593614.81	-28593614.78	0.0288	0.0286		
Earth	-82998-12-27 07:11 J	-28593236.39	-28593236.20	-28593236.02	0.0286	0.0184		
Moon	-82998-12-27 08:37 J	-28593236.31	-28593236.14	-28593235.95	0.0286	0.0199	*	
Moon	-82996-01-08 08:37 J	-28592858.37	-28592858.14	-28592857.90	0.0283	0.0092		
Earth	-82996-01-08 11:16 J	-28592858.26	-28592858.03	-28592857.80	0.0283	0.0078	*	
Moon	-82995-01-21 02:52 J	-28592480.62	-28592480.38	-28592480.15	0.0280	0.0020		
Earth	-82995-01-21 05:30 J	-28592480.51	-28592480.27	-28592480.03	0.0280	0.0026	*	
Earth	-82994-02-02 14:37 J	-28592103.10	-28592102.89	-28592102.67	0.0277	0.0123		
Moon	-82994-02-02 16:04 J	-28592103.03	-28592102.83	-28592102.62	0.0277	0.0129	*	
Earth	-82993-02-14 16:18 J	-28591725.97	-28591725.82	-28591725.67	0.0275	0.0210		
Moon	-82993-02-14 19:40 J	-28591725.81	-28591725.68	-28591725.53	0.0275	0.0224	*	
Venus	-82993-11-18 14:37 J	-28591448.09	-28591447.89	-28591447.69	0.0273	0.0068		
Mercury	-82992-07-22 21:35 J	-28591201.60	-28591201.60	-28591201.58	0.0272	0.0270		
Mercury	-82992-10-19 08:37 J	-28591113.24	-28591113.14	-28591113.04	0.0271	0.0177		
Mercury	-82991-01-15 19:40 J	-28591024.81	-28591024.68	-28591024.55	0.0271	0.0084		

Mercury -82991-04-14 06:42 J -28590936.36 -28590936.22 -28590936.08 0.0270 0.0010

Mercury -82991-07-11 17:44 J -28590847.88 -28590847.76 -28590847.63 0.0270 0.0104

Mercury -82991-10-08 05:01 J -28590759.38 -28590759.29 -28590759.19 0.0270 0.0198

Mars -82983-01-08 10:32 J -28588110.33 -28588110.06 -28588109.78 0.0271 0.0141

Moon -82983-06-08 00:56 J -28587959.57 -28587959.46 -28587959.36 0.0271 0.0245

Earth -82983-06-08 04:04 J -28587959.39 -28587959.33 -28587959.24 0.0271 0.0260 \*

Moon -82982-06-20 18:56 J -28587581.89 -28587581.71 -28587581.51 0.0274 0.0171

Earth -82982-06-20 19:11 J -28587581.87 -28587581.70 -28587581.50 0.0274 0.0179 \*

Earth -82981-07-02 19:54 J -28587203.90 -28587203.67 -28587203.43 0.0276 0.0085

Moon -82981-07-02 23:01 J -28587203.77 -28587203.54 -28587203.30 0.0276 0.0085 \*

Earth -82980-07-16 06:13 J -28586825.49 -28586825.24 -28586824.98 0.0279 0.0019

Moon -82980-07-16 09:20 J -28586825.37 -28586825.11 -28586824.86 0.0279 0.0010 \*

Moon -82979-07-30 01:25 J -28586446.67 -28586446.44 -28586446.19 0.0282 0.0111

Earth -82979-07-30 02:37 J -28586446.61 -28586446.39 -28586446.16 0.0282 0.0125 \*

Moon -82978-08-13 04:32 J -28586067.47 -28586067.31 -28586067.13 0.0284 0.0215

Earth -82978-08-13 08:23 J -28586067.29 -28586067.15 -28586067.00 0.0284 0.0232 \*

Venus -82977-07-30 05:59 J -28585715.46 -28585715.25 -28585715.04 0.0287 0.0083

Mercury -82976-05-10 05:16 J -28585431.43 -28585431.28 -28585431.12 0.0288 0.0146

Mercury -82976-08-07 04:18 J -28585342.50 -28585342.32 -28585342.14 0.0289 0.0009

Mercury -82976-11-04 02:37 J -28585253.53 -28585253.39 -28585253.23 0.0289 0.0162

Mars -82969-02-17 23:44 J -28582956.75 -28582956.51 -28582956.26 0.0290 0.0113

Moon -82969-12-20 14:37 J -28582650.01 -28582649.89 -28582649.76 0.0288 0.0241

Earth -82969-12-20 15:35 J -28582649.99 -28582649.85 -28582649.69 0.0288 0.0226 \*

Earth -82967-01-03 01:40 J -28582271.65 -28582271.43 -28582271.21 0.0285 0.0120

Moon -82967-01-03 04:04 J -28582271.53 -28582271.33 -28582271.12 0.0285 0.0136 \*

Earth -82966-01-16 01:11 J -28581893.69 -28581893.45 -28581893.21 0.0282 0.0015

Moon -82966-01-16 04:18 J -28581893.56 -28581893.32 -28581893.08 0.0282 0.0025 \*

Moon -82965-01-28 13:40 J -28581516.16 -28581515.93 -28581515.69 0.0280 0.0089

Earth -82965-01-28 15:06 J -28581516.09 -28581515.87 -28581515.64 0.0280 0.0088 \*

Moon -82964-02-08 16:47 J -28581138.96 -28581138.80 -28581138.61 0.0277 0.0191

Earth -82964-02-08 20:37 J -28581138.81 -28581138.64 -28581138.45 0.0277 0.0179 \*  
 Earth -82963-02-20 18:56 J -28580761.78 -28580761.71 -28580761.63 0.0274 0.0258  
 Moon -82963-02-20 19:11 J -28580761.71 -28580761.70 -28580761.67 0.0274 0.0273 \*  
 Venus -82963-05-31 19:40 J -28580661.88 -28580661.68 -28580661.47 0.0273 0.0015  
 Mercury -82962-03-08 11:44 J -28580381.10 -28580381.01 -28580380.92 0.0272 0.0200  
 Mercury -82962-06-04 22:32 J -28580292.68 -28580292.56 -28580292.43 0.0271 0.0107  
 Mercury -82962-09-01 09:35 J -28580204.23 -28580204.10 -28580203.96 0.0271 0.0016  
 Mercury -82962-11-28 20:52 J -28580115.76 -28580115.63 -28580115.50 0.0270 0.0081  
 Mercury -82961-02-25 07:54 J -28580027.27 -28580027.17 -28580027.06 0.0270 0.0176  
 Mars -82955-02-19 14:08 J -28577841.09 -28577840.91 -28577840.71 0.0268 0.0216  
 Moon -82953-06-14 16:18 J -28576994.99 -28576994.82 -28576994.65 0.0272 0.0201  
 Earth -82953-06-14 16:04 J -28576994.98 -28576994.83 -28576994.68 0.0272 0.0212 \*  
 Moon -82952-06-27 08:08 J -28576617.38 -28576617.16 -28576616.93 0.0275 0.0122  
 Earth -82952-06-27 11:44 J -28576617.23 -28576617.01 -28576616.78 0.0275 0.0124 \*  
 Moon -82951-07-10 14:08 J -28576239.16 -28576238.91 -28576238.67 0.0277 0.0030  
 Earth -82951-07-10 17:01 J -28576239.04 -28576238.79 -28576238.54 0.0277 0.0025 \*  
 Earth -82950-07-24 08:08 J -28575860.40 -28575860.16 -28575859.92 0.0280 0.0081  
 Moon -82950-07-24 09:20 J -28575860.34 -28575860.11 -28575859.87 0.0280 0.0069 \*  
 Earth -82949-08-06 08:52 J -28575481.31 -28575481.13 -28575480.93 0.0283 0.0189  
 Moon -82949-08-06 12:56 J -28575481.16 -28575480.96 -28575480.76 0.0283 0.0172 \*  
 Moon -82948-08-20 22:04 J -28575101.65 -28575101.58 -28575101.51 0.0286 0.0274  
 Venus -82947-02-09 12:28 J -28574929.17 -28574928.98 -28574928.79 0.0287 0.0140  
 Mercury -82947-09-27 03:35 J -28574699.47 -28574699.35 -28574699.21 0.0289 0.0193  
 Mercury -82947-12-25 02:52 J -28574610.56 -28574610.38 -28574610.20 0.0289 0.0037  
 Mercury -82946-03-24 01:25 J -28574521.60 -28574521.44 -28574521.27 0.0290 0.0116  
 Mercury -82946-06-20 23:44 J -28574432.57 -28574432.51 -28574432.44 0.0290 0.0267  
 Mars -82941-04-08 20:23 J -28572678.80 -28572678.65 -28572678.50 0.0292 0.0240  
 Earth -82940-12-14 18:13 J -28572063.81 -28572063.74 -28572063.65 0.0288 0.0272  
 Moon -82940-12-14 18:42 J -28572063.75 -28572063.72 -28572063.67 0.0288 0.0285 \*  
 Mars -82939-04-05 21:20 J -28571951.61 -28571951.61 -28571951.59 0.0288 0.0288

Moon	-82939-12-28 05:44 J	-28571685.44	-28571685.26	-28571685.07	0.0286	0.0186
Earth	-82939-12-28 08:52 J	-28571685.32	-28571685.13	-28571684.93	0.0286	0.0169 *
Moon	-82937-01-10 09:49 J	-28571307.32	-28571307.09	-28571306.86	0.0283	0.0077
Earth	-82937-01-10 12:56 J	-28571307.19	-28571306.96	-28571306.72	0.0283	0.0063 *
Earth	-82936-01-22 06:42 J	-28570929.45	-28570929.22	-28570928.98	0.0280	0.0041
Moon	-82936-01-22 08:08 J	-28570929.39	-28570929.16	-28570928.93	0.0280	0.0038 *
Earth	-82935-02-03 15:49 J	-28570552.05	-28570551.84	-28570551.63	0.0277	0.0137
Moon	-82935-02-03 19:25 J	-28570551.89	-28570551.69	-28570551.48	0.0277	0.0146 *
Earth	-82934-02-15 16:47 J	-28570174.92	-28570174.80	-28570174.65	0.0275	0.0223
Moon	-82934-02-15 17:01 J	-28570174.91	-28570174.79	-28570174.66	0.0275	0.0236 *
Venus	-82934-12-11 19:54 J	-28569875.88	-28569875.67	-28569875.47	0.0273	0.0023
Mercury	-82933-07-25 13:11 J	-28569649.01	-28569648.95	-28569648.88	0.0272	0.0234
Mercury	-82933-10-21 23:59 J	-28569560.61	-28569560.50	-28569560.38	0.0271	0.0142
Mercury	-82932-01-18 11:01 J	-28569472.17	-28569472.04	-28569471.90	0.0271	0.0048
Mercury	-82932-04-16 22:04 J	-28569383.71	-28569383.58	-28569383.44	0.0270	0.0047
Mercury	-82932-07-14 09:20 J	-28569295.23	-28569295.11	-28569294.99	0.0270	0.0140
Mercury	-82932-10-10 20:37 J	-28569206.70	-28569206.64	-28569206.57	0.0269	0.0235
Mars	-82925-04-11 12:13 J	-28566832.32	-28566831.99	-28566831.67	0.0269	0.0041
Moon	-82924-06-09 02:23 J	-28566408.52	-28566408.40	-28566408.29	0.0271	0.0236
Earth	-82924-06-09 02:08 J	-28566408.49	-28566408.41	-28566408.29	0.0271	0.0248 *
Earth	-82923-06-21 17:30 J	-28566030.97	-28566030.77	-28566030.57	0.0274	0.0165
Moon	-82923-06-21 20:52 J	-28566030.81	-28566030.63	-28566030.42	0.0274	0.0162 *
Earth	-82922-07-04 17:44 J	-28565653.00	-28565652.76	-28565652.51	0.0276	0.0071
Moon	-82922-07-04 20:37 J	-28565652.89	-28565652.64	-28565652.40	0.0276	0.0074 *
Moon	-82921-07-17 02:37 J	-28565274.65	-28565274.39	-28565274.13	0.0279	0.0020
Earth	-82921-07-17 04:18 J	-28565274.57	-28565274.32	-28565274.07	0.0279	0.0032 *
Moon	-82920-07-30 21:06 J	-28564895.85	-28564895.62	-28564895.40	0.0282	0.0123
Earth	-82920-07-31 00:42 J	-28564895.69	-28564895.47	-28564895.25	0.0282	0.0139 *
Moon	-82919-08-14 04:18 J	-28564516.45	-28564516.32	-28564516.17	0.0284	0.0229
Earth	-82919-08-14 06:13 J	-28564516.35	-28564516.24	-28564516.10	0.0284	0.0244 *

Venus -82918-01-04 11:16 J -28564373.10 -28564373.03 -28564372.95 0.0285 0.0266

Venus -82918-08-22 12:13 J -28564143.15 -28564142.99 -28564142.81 0.0287 0.0179

Mercury -82917-02-13 23:16 J -28563967.61 -28563967.53 -28563967.44 0.0288 0.0256

Mercury -82917-05-12 22:32 J -28563878.73 -28563878.56 -28563878.39 0.0289 0.0100

Mercury -82917-08-09 21:20 J -28563789.78 -28563789.61 -28563789.43 0.0289 0.0054

Mercury -82917-11-06 19:54 J -28563700.79 -28563700.67 -28563700.54 0.0290 0.0206

Mars -82911-05-26 23:16 J -28561673.79 -28561673.53 -28561673.27 0.0291 0.0062

Earth -82910-12-22 15:20 J -28561099.02 -28561098.86 -28561098.70 0.0288 0.0212

Moon -82910-12-22 18:28 J -28561098.86 -28561098.73 -28561098.58 0.0288 0.0229 \*

Earth -82908-01-04 01:11 J -28560720.67 -28560720.45 -28560720.22 0.0285 0.0106

Moon -82908-01-04 04:32 J -28560720.54 -28560720.31 -28560720.09 0.0285 0.0122 \*

Moon -82907-01-16 23:59 J -28560342.75 -28560342.50 -28560342.25 0.0283 0.0008

Earth -82907-01-17 00:56 J -28560342.70 -28560342.46 -28560342.22 0.0283 0.0002 \*

Moon -82906-01-29 11:30 J -28559965.24 -28559965.02 -28559964.80 0.0280 0.0107

Earth -82906-01-29 14:52 J -28559965.10 -28559964.88 -28559964.65 0.0280 0.0101 \*

Earth -82905-02-10 20:08 J -28559587.82 -28559587.66 -28559587.48 0.0277 0.0192

Moon -82905-02-10 20:08 J -28559587.80 -28559587.66 -28559587.50 0.0277 0.0206 \*

Earth -82904-02-21 18:28 J -28559210.77 -28559210.73 -28559210.69 0.0274 0.0269

Venus -82904-06-23 00:28 J -28559089.68 -28559089.48 -28559089.28 0.0273 0.0074

Mercury -82904-12-12 16:04 J -28558916.87 -28558916.83 -28558916.79 0.0272 0.0258

Mercury -82903-03-11 02:52 J -28558828.48 -28558828.38 -28558828.27 0.0272 0.0166

Mercury -82903-06-07 13:54 J -28558740.05 -28558739.92 -28558739.79 0.0271 0.0072

Mercury -82903-09-04 00:56 J -28558651.59 -28558651.46 -28558651.32 0.0271 0.0024

Mercury -82903-12-01 12:13 J -28558563.11 -28558562.99 -28558562.87 0.0270 0.0117

Mercury -82902-02-27 23:30 J -28558474.61 -28558474.52 -28558474.44 0.0270 0.0212

Mars -82895-06-03 20:08 J -28555821.92 -28555821.66 -28555821.38 0.0270 0.0154

Moon -82895-06-04 04:32 J -28555821.36 -28555821.31 -28555821.25 0.0270 0.0262

Moon -82894-06-16 10:47 J -28555444.22 -28555444.05 -28555443.87 0.0272 0.0194

Earth -82894-06-16 14:23 J -28555444.06 -28555443.90 -28555443.73 0.0272 0.0200 \*

Moon -82893-06-28 07:54 J -28555066.38 -28555066.17 -28555065.94 0.0275 0.0113

Earth	-82893-06-28 10:18 J	-28555066.30	-28555066.07	-28555065.84	0.0275	0.0111	*
Earth	-82892-07-11 15:20 J	-28554688.11	-28554687.86	-28554687.61	0.0277	0.0012	
Moon	-82892-07-11 17:01 J	-28554688.03	-28554687.79	-28554687.55	0.0277	0.0021	*
Earth	-82891-07-25 06:42 J	-28554309.46	-28554309.22	-28554308.98	0.0280	0.0095	
Moon	-82891-07-25 10:18 J	-28554309.31	-28554309.07	-28554308.83	0.0280	0.0080	*
Earth	-82890-08-08 07:54 J	-28553930.35	-28553930.17	-28553930.00	0.0283	0.0202	
Moon	-82890-08-08 09:06 J	-28553930.31	-28553930.12	-28553929.91	0.0283	0.0186	*
Venus	-82889-07-16 17:59 J	-28553586.89	-28553586.75	-28553586.59	0.0286	0.0207	
Venus	-82888-03-03 19:11 J	-28553356.81	-28553356.70	-28553356.57	0.0287	0.0239	
Mercury	-82888-09-29 21:06 J	-28553146.77	-28553146.62	-28553146.46	0.0289	0.0146	
Mercury	-82888-12-27 20:08 J	-28553057.84	-28553057.66	-28553057.48	0.0289	0.0011	
Mercury	-82887-03-26 18:42 J	-28552968.86	-28552968.72	-28552968.57	0.0290	0.0163	
Mars	-82881-07-13 03:20 J	-28550668.60	-28550668.36	-28550668.12	0.0290	0.0120	
Moon	-82881-12-15 15:20 J	-28550512.92	-28550512.86	-28550512.78	0.0289	0.0275	
Earth	-82881-12-15 18:56 J	-28550512.81	-28550512.71	-28550512.60	0.0289	0.0259	*
Moon	-82880-12-29 06:28 J	-28550134.40	-28550134.23	-28550134.03	0.0286	0.0172	
Earth	-82880-12-29 09:20 J	-28550134.31	-28550134.11	-28550133.90	0.0286	0.0155	*
Earth	-82878-01-11 13:25 J	-28549756.17	-28549755.94	-28549755.70	0.0283	0.0049	
Moon	-82878-01-11 14:37 J	-28549756.12	-28549755.89	-28549755.67	0.0283	0.0060	*
Earth	-82877-01-24 07:25 J	-28549378.43	-28549378.19	-28549377.96	0.0280	0.0055	
Moon	-82877-01-24 10:47 J	-28549378.28	-28549378.05	-28549377.81	0.0280	0.0054	*
Earth	-82876-02-04 16:04 J	-28549001.02	-28549000.83	-28549000.62	0.0277	0.0151	
Moon	-82876-02-04 16:04 J	-28549001.02	-28549000.83	-28549000.62	0.0277	0.0161	*
Moon	-82875-02-16 13:40 J	-28548624.02	-28548623.93	-28548623.82	0.0275	0.0250	
Earth	-82875-02-16 17:30 J	-28548623.89	-28548623.77	-28548623.65	0.0275	0.0234	*
Venus	-82875-05-19 00:42 J	-28548532.54	-28548532.47	-28548532.37	0.0274	0.0248	
Venus	-82874-01-03 00:56 J	-28548303.65	-28548303.46	-28548303.27	0.0273	0.0112	
Mercury	-82874-07-29 04:32 J	-28548096.40	-28548096.31	-28548096.22	0.0271	0.0198	
Mercury	-82874-10-25 15:35 J	-28548007.98	-28548007.85	-28548007.73	0.0271	0.0105	
Mercury	-82873-01-22 02:37 J	-28547919.53	-28547919.39	-28547919.26	0.0271	0.0014	



Mercury -82873-04-19 13:40 J -28547831.06 -28547830.93 -28547830.80 0.0270 0.0083

Mercury -82873-07-17 00:42 J -28547742.57 -28547742.47 -28547742.36 0.0270 0.0177

Mars -82867-07-14 23:30 J -28545553.70 -28545553.52 -28545553.31 0.0268 0.0216

Earth -82865-06-10 00:56 J -28544857.57 -28544857.46 -28544857.33 0.0271 0.0235

Moon -82865-06-10 04:18 J -28544857.44 -28544857.32 -28544857.17 0.0271 0.0224 \*

Earth -82864-06-22 16:04 J -28544480.03 -28544479.83 -28544479.62 0.0273 0.0152

Moon -82864-06-22 17:44 J -28544479.97 -28544479.76 -28544479.54 0.0273 0.0151 \*

Moon -82863-07-05 13:54 J -28544102.17 -28544101.92 -28544101.67 0.0276 0.0066

Earth -82863-07-05 16:18 J -28544102.06 -28544101.82 -28544101.57 0.0276 0.0057 \*

Moon -82862-07-18 23:01 J -28543723.78 -28543723.54 -28543723.29 0.0279 0.0033

Earth -82862-07-19 02:52 J -28543723.63 -28543723.38 -28543723.13 0.0279 0.0046 \*

Moon -82861-07-31 22:32 J -28543344.77 -28543344.56 -28543344.35 0.0282 0.0138

Earth -82861-07-31 23:01 J -28543344.74 -28543344.54 -28543344.31 0.0282 0.0153 \*

Earth -82860-08-15 05:01 J -28542965.39 -28542965.29 -28542965.17 0.0284 0.0256

Moon -82860-08-15 07:54 J -28542965.29 -28542965.17 -28542965.04 0.0284 0.0244 \*

Venus -82859-01-26 17:59 J -28542800.92 -28542800.75 -28542800.57 0.0286 0.0170

Venus -82859-09-13 19:11 J -28542570.75 -28542570.70 -28542570.64 0.0287 0.0276

Mercury -82858-02-16 16:47 J -28542414.92 -28542414.80 -28542414.67 0.0288 0.0209

Mercury -82858-05-16 15:49 J -28542326.01 -28542325.84 -28542325.66 0.0289 0.0055

Mercury -82858-08-13 14:37 J -28542237.05 -28542236.89 -28542236.72 0.0289 0.0100

Mercury -82858-11-10 12:56 J -28542148.04 -28542147.96 -28542147.86 0.0290 0.0252

Mars -82853-09-01 16:32 J -28540390.95 -28540390.81 -28540390.65 0.0292 0.0240

Earth -82851-12-23 14:23 J -28539548.06 -28539547.90 -28539547.72 0.0288 0.0200

Moon -82851-12-23 16:47 J -28539547.96 -28539547.80 -28539547.63 0.0288 0.0215 \*

Moon -82849-01-05 23:01 J -28539169.77 -28539169.54 -28539169.31 0.0285 0.0105

Earth -82849-01-06 00:28 J -28539169.70 -28539169.48 -28539169.25 0.0285 0.0092 \*

Moon -82848-01-17 20:37 J -28538791.88 -28538791.64 -28538791.40 0.0283 0.0008

Earth -82848-01-18 00:13 J -28538791.73 -28538791.49 -28538791.25 0.0283 0.0015 \*

Earth -82847-01-30 14:08 J -28538414.13 -28538413.91 -28538413.69 0.0280 0.0115

Moon -82847-01-30 14:08 J -28538414.12 -28538413.91 -28538413.71 0.0280 0.0122 \*

Earth -82846-02-11 19:25 J -28538036.84 -28538036.69 -28538036.52 0.0277 0.0204  
 Moon -82846-02-11 23:16 J -28538036.67 -28538036.53 -28538036.39 0.0277 0.0220 \*  
 Venus -82846-11-29 05:01 J -28537746.43 -28537746.29 -28537746.15 0.0275 0.0200  
 Venus -82845-07-15 05:01 J -28537517.45 -28537517.29 -28537517.12 0.0273 0.0161  
 Mercury -82845-12-15 07:11 J -28537364.27 -28537364.20 -28537364.12 0.0272 0.0224  
 Mercury -82844-03-13 18:13 J -28537275.86 -28537275.74 -28537275.62 0.0272 0.0131  
 Mercury -82844-06-10 05:16 J -28537187.42 -28537187.28 -28537187.15 0.0271 0.0037  
 Mercury -82844-09-06 16:18 J -28537098.95 -28537098.82 -28537098.69 0.0271 0.0058  
 Mercury -82844-12-04 03:35 J -28537010.46 -28537010.35 -28537010.24 0.0270 0.0153  
 Mercury -82843-03-02 14:52 J -28536921.93 -28536921.88 -28536921.83 0.0270 0.0248  
 Mars -82837-09-05 02:37 J -28534543.72 -28534543.39 -28534543.06 0.0269 0.0024  
 Moon -82836-06-04 23:30 J -28534270.59 -28534270.52 -28534270.42 0.0270 0.0251  
 Earth -82836-06-05 02:52 J -28534270.40 -28534270.38 -28534270.33 0.0270 0.0266  
 Moon -82835-06-17 11:44 J -28533893.18 -28533893.01 -28533892.82 0.0272 0.0183  
 Earth -82835-06-17 13:40 J -28533893.10 -28533892.93 -28533892.74 0.0272 0.0188 \*  
 Earth -82834-06-30 09:35 J -28533515.33 -28533515.10 -28533514.87 0.0274 0.0098  
 Moon -82834-06-30 11:59 J -28533515.22 -28533515.00 -28533514.77 0.0274 0.0105 \*  
 Earth -82833-07-12 14:52 J -28533137.13 -28533136.88 -28533136.63 0.0277 0.0004  
 Moon -82833-07-12 18:42 J -28533136.97 -28533136.72 -28533136.46 0.0277 0.0010 \*  
 Earth -82832-07-26 06:13 J -28532758.46 -28532758.24 -28532758.00 0.0280 0.0109  
 Moon -82832-07-26 06:56 J -28532758.45 -28532758.21 -28532757.95 0.0280 0.0094 \*  
 Moon -82831-08-09 04:18 J -28532379.49 -28532379.32 -28532379.13 0.0283 0.0201  
 Earth -82831-08-09 07:25 J -28532379.35 -28532379.19 -28532379.02 0.0283 0.0214 \*  
 Venus -82830-08-09 01:25 J -28532014.64 -28532014.44 -28532014.24 0.0286 0.0108  
 Mercury -82829-07-05 15:49 J -28531682.93 -28531682.84 -28531682.76 0.0288 0.0253  
 Mercury -82829-10-02 14:52 J -28531594.05 -28531593.88 -28531593.71 0.0289 0.0097  
 Mercury -82829-12-30 13:40 J -28531505.10 -28531504.93 -28531504.75 0.0289 0.0058  
 Mercury -82828-03-29 12:13 J -28531416.11 -28531415.99 -28531415.87 0.0290 0.0210  
 Mars -82823-10-20 04:04 J -28529385.59 -28529385.33 -28529385.07 0.0291 0.0055  
 Moon -82822-12-17 16:47 J -28528961.88 -28528961.80 -28528961.69 0.0289 0.0262

Earth	-82822-12-17 18:56 J	-28528961.83	-28528961.71	-28528961.58	0.0289	0.0246	*
Earth	-82821-12-30 09:20 J	-28528583.31	-28528583.11	-28528582.89	0.0286	0.0141	
Moon	-82821-12-30 11:30 J	-28528583.22	-28528583.02	-28528582.83	0.0286	0.0156	*
Earth	-82819-01-12 13:40 J	-28528205.17	-28528204.93	-28528204.69	0.0283	0.0034	
Moon	-82819-01-12 17:16 J	-28528205.01	-28528204.78	-28528204.54	0.0283	0.0045	*
Earth	-82818-01-25 07:40 J	-28527827.41	-28527827.18	-28527826.95	0.0280	0.0069	
Moon	-82818-01-25 08:08 J	-28527827.40	-28527827.16	-28527826.91	0.0280	0.0070	*
Moon	-82817-02-06 12:56 J	-28527450.14	-28527449.96	-28527449.77	0.0277	0.0178	
Earth	-82817-02-06 16:18 J	-28527450.00	-28527449.82	-28527449.61	0.0277	0.0164	*
Moon	-82816-02-17 16:04 J	-28527072.89	-28527072.83	-28527072.75	0.0275	0.0261	
Earth	-82816-02-17 17:30 J	-28527072.87	-28527072.77	-28527072.66	0.0275	0.0246	*
Venus	-82816-06-10 06:13 J	-28526960.41	-28526960.24	-28526960.07	0.0274	0.0157	
Venus	-82815-01-25 05:59 J	-28526731.38	-28526731.25	-28526731.11	0.0272	0.0202	
Mercury	-82815-05-04 09:06 J	-28526632.16	-28526632.12	-28526632.08	0.0272	0.0255	
Mercury	-82815-07-31 19:54 J	-28526543.77	-28526543.67	-28526543.56	0.0271	0.0163	
Mercury	-82815-10-28 06:56 J	-28526455.34	-28526455.21	-28526455.08	0.0271	0.0069	
Mercury	-82814-01-24 17:59 J	-28526366.88	-28526366.75	-28526366.61	0.0270	0.0025	
Mercury	-82814-04-23 05:01 J	-28526278.41	-28526278.29	-28526278.16	0.0270	0.0120	
Mercury	-82814-07-20 16:18 J	-28526189.90	-28526189.82	-28526189.73	0.0270	0.0215	
Mars	-82807-10-27 06:42 J	-28523534.48	-28523534.22	-28523533.94	0.0270	0.0155	
Earth	-82806-06-12 01:11 J	-28523306.57	-28523306.45	-28523306.30	0.0271	0.0224	
Moon	-82806-06-12 03:49 J	-28523306.50	-28523306.34	-28523306.19	0.0271	0.0213	*
Moon	-82805-06-23 13:25 J	-28522929.15	-28522928.94	-28522928.72	0.0273	0.0143	
Earth	-82805-06-23 16:18 J	-28522929.03	-28522928.82	-28522928.60	0.0273	0.0138	*
Moon	-82804-07-06 12:56 J	-28522551.19	-28522550.96	-28522550.71	0.0276	0.0056	
Earth	-82804-07-06 16:18 J	-28522551.06	-28522550.82	-28522550.57	0.0276	0.0043	*
Earth	-82803-07-20 02:37 J	-28522172.63	-28522172.39	-28522172.14	0.0279	0.0060	
Moon	-82803-07-20 02:37 J	-28522172.63	-28522172.39	-28522172.15	0.0279	0.0045	*
Earth	-82802-08-02 23:01 J	-28521793.74	-28521793.54	-28521793.33	0.0282	0.0166	
Moon	-82802-08-03 02:08 J	-28521793.61	-28521793.41	-28521793.19	0.0282	0.0152	*

Earth -82801-08-16 04:47 J -28521414.37 -28521414.30 -28521414.21 0.0284 0.0269  
 Moon -82801-08-16 08:08 J -28521414.26 -28521414.16 -28521414.05 0.0284 0.0257 \*  
 Venus -82800-02-18 01:11 J -28521228.66 -28521228.45 -28521228.24 0.0286 0.0072  
 Mercury -82799-02-19 10:32 J -28520862.21 -28520862.06 -28520861.91 0.0288 0.0161  
 Mercury -82799-05-19 09:35 J -28520773.28 -28520773.10 -28520772.92 0.0289 0.0009  
 Mercury -82799-08-16 08:08 J -28520684.31 -28520684.16 -28520684.01 0.0289 0.0147  
 Mars -82793-12-06 00:56 J -28518380.70 -28518380.46 -28518380.22 0.0290 0.0122  
 Moon -82792-12-24 11:16 J -28517997.20 -28517997.03 -28517996.84 0.0288 0.0201  
 Earth -82792-12-24 13:40 J -28517997.11 -28517996.93 -28517996.74 0.0288 0.0187 \*  
 Moon -82790-01-06 20:08 J -28517618.88 -28517618.66 -28517618.43 0.0286 0.0090  
 Earth -82790-01-06 23:59 J -28517618.73 -28517618.50 -28517618.27 0.0286 0.0079 \*  
 Moon -82789-01-19 22:47 J -28517240.78 -28517240.55 -28517240.32 0.0283 0.0026  
 Earth -82789-01-19 23:30 J -28517240.76 -28517240.52 -28517240.28 0.0283 0.0028 \*  
 Earth -82788-01-31 13:25 J -28516863.15 -28516862.94 -28516862.72 0.0280 0.0128  
 Moon -82788-01-31 16:47 J -28516863.00 -28516862.80 -28516862.59 0.0280 0.0138 \*  
 Earth -82787-02-12 18:56 J -28516485.85 -28516485.71 -28516485.55 0.0277 0.0216  
 Moon -82787-02-12 20:08 J -28516485.78 -28516485.66 -28516485.51 0.0277 0.0231 \*  
 Venus -82787-12-21 09:49 J -28516174.28 -28516174.09 -28516173.90 0.0275 0.0111  
 Venus -82786-08-07 09:49 J -28515945.17 -28515945.09 -28515945.01 0.0273 0.0250  
 Mercury -82786-12-18 22:32 J -28515811.65 -28515811.56 -28515811.46 0.0272 0.0189  
 Mercury -82785-03-16 09:35 J -28515723.23 -28515723.10 -28515722.97 0.0272 0.0095  
 Mercury -82785-06-12 20:37 J -28515634.77 -28515634.64 -28515634.50 0.0271 0.0002  
 Mercury -82785-09-09 07:40 J -28515546.30 -28515546.18 -28515546.05 0.0271 0.0095  
 Mercury -82785-12-06 18:56 J -28515457.80 -28515457.71 -28515457.61 0.0270 0.0190  
 Mars -82779-12-08 18:56 J -28513264.92 -28513264.71 -28513264.48 0.0268 0.0195  
 Moon -82777-06-06 01:25 J -28512719.53 -28512719.44 -28512719.32 0.0270 0.0243  
 Earth -82777-06-06 04:04 J -28512719.40 -28512719.33 -28512719.25 0.0270 0.0255 \*  
 Earth -82776-06-18 14:37 J -28512342.07 -28512341.89 -28512341.69 0.0272 0.0176  
 Moon -82776-06-18 17:16 J -28512341.97 -28512341.78 -28512341.60 0.0272 0.0173 \*  
 Earth -82775-07-01 10:32 J -28511964.29 -28511964.06 -28511963.82 0.0274 0.0084

Moon -82775-07-01 13:54 J -28511964.16 -28511963.92 -28511963.68 0.0274 0.0093 \*  
 Moon -82774-07-14 16:04 J -28511586.09 -28511585.83 -28511585.57 0.0277 0.0005  
 Earth -82774-07-14 16:18 J -28511586.07 -28511585.82 -28511585.57 0.0277 0.0016 \*  
 Moon -82773-07-27 04:18 J -28511207.54 -28511207.32 -28511207.07 0.0280 0.0106  
 Earth -82773-07-27 07:54 J -28511207.39 -28511207.17 -28511206.94 0.0280 0.0122 \*  
 Moon -82772-08-10 06:28 J -28510828.39 -28510828.23 -28510828.07 0.0283 0.0214  
 Earth -82772-08-10 09:06 J -28510828.26 -28510828.12 -28510827.96 0.0283 0.0227 \*  
 Venus -82771-08-31 09:49 J -28510442.30 -28510442.09 -28510441.87 0.0286 0.0008  
 Mercury -82770-07-09 09:49 J -28510130.21 -28510130.09 -28510129.95 0.0288 0.0201  
 Mercury -82770-10-06 09:06 J -28510041.30 -28510041.12 -28510040.94 0.0289 0.0045  
 Mercury -82769-01-03 07:54 J -28509952.33 -28509952.17 -28509952.00 0.0289 0.0109  
 Mercury -82769-04-01 06:13 J -28509863.31 -28509863.24 -28509863.16 0.0290 0.0261  
 Mars -82764-01-26 00:28 J -28508102.63 -28508102.48 -28508102.31 0.0292 0.0231  
 Earth -82763-12-18 20:52 J -28507410.77 -28507410.63 -28507410.49 0.0289 0.0233  
 Moon -82763-12-18 22:47 J -28507410.66 -28507410.55 -28507410.42 0.0289 0.0249 \*  
 Earth -82761-01-01 10:47 J -28507032.26 -28507032.05 -28507031.82 0.0286 0.0128  
 Moon -82761-01-01 14:23 J -28507032.11 -28507031.90 -28507031.68 0.0286 0.0140 \*  
 Earth -82760-01-13 14:52 J -28506654.12 -28506653.88 -28506653.64 0.0283 0.0020  
 Moon -82760-01-13 15:20 J -28506654.11 -28506653.86 -28506653.61 0.0283 0.0025 \*  
 Moon -82759-01-26 05:30 J -28506276.49 -28506276.27 -28506276.03 0.0280 0.0089  
 Earth -82759-01-26 09:06 J -28506276.35 -28506276.12 -28506275.90 0.0280 0.0083 \*  
 Moon -82758-02-07 16:04 J -28505898.98 -28505898.83 -28505898.65 0.0277 0.0191  
 Earth -82758-02-07 17:59 J -28505898.94 -28505898.75 -28505898.57 0.0277 0.0176 \*  
 Earth -82757-02-19 18:28 J -28505521.80 -28505521.73 -28505521.64 0.0275 0.0257  
 Moon -82757-02-19 21:35 J -28505521.63 -28505521.60 -28505521.55 0.0275 0.0271  
 Venus -82757-07-02 11:59 J -28505388.20 -28505388.00 -28505387.80 0.0274 0.0065  
 Mercury -82756-05-07 00:42 J -28505079.55 -28505079.47 -28505079.39 0.0272 0.0218  
 Mercury -82756-08-03 11:30 J -28504991.13 -28504991.02 -28504990.90 0.0271 0.0125  
 Mercury -82756-10-30 22:32 J -28504902.69 -28504902.56 -28504902.42 0.0271 0.0032  
 Mercury -82755-01-27 09:35 J -28504814.23 -28504814.10 -28504813.96 0.0270 0.0064

Mercury -82755-04-25 20:52 J -28504725.74 -28504725.63 -28504725.52 0.0270 0.0158

Mercury -82755-07-23 08:08 J -28504637.20 -28504637.16 -28504637.11 0.0270 0.0253

Mars -82748-01-28 21:06 J -28502255.94 -28502255.62 -28502255.29 0.0269 0.0019

Moon -82747-06-13 01:11 J -28501755.60 -28501755.45 -28501755.27 0.0271 0.0204

Earth -82747-06-13 03:49 J -28501755.49 -28501755.34 -28501755.18 0.0271 0.0211 \*

Moon -82746-06-25 15:49 J -28501378.05 -28501377.84 -28501377.62 0.0273 0.0130

Earth -82746-06-25 18:56 J -28501377.93 -28501377.71 -28501377.49 0.0273 0.0125 \*

Earth -82745-07-07 19:11 J -28500999.95 -28500999.70 -28500999.45 0.0276 0.0028

Moon -82745-07-07 20:08 J -28500999.89 -28500999.66 -28500999.42 0.0276 0.0042 \*

Earth -82744-07-21 05:16 J -28500621.52 -28500621.28 -28500621.03 0.0279 0.0075

Moon -82744-07-21 09:06 J -28500621.36 -28500621.12 -28500620.87 0.0279 0.0058 \*

Earth -82743-08-04 01:54 J -28500242.61 -28500242.42 -28500242.23 0.0282 0.0180

Moon -82743-08-04 04:32 J -28500242.52 -28500242.31 -28500242.10 0.0282 0.0166 \*

Moon -82742-08-18 06:28 J -28499863.28 -28499863.23 -28499863.14 0.0284 0.0273

Earth -82742-08-18 07:40 J -28499863.20 -28499863.18 -28499863.13 0.0284 0.0282 \*

Venus -82741-03-12 10:18 J -28499656.29 -28499656.07 -28499655.86 0.0286 0.0034

Mercury -82741-11-25 05:30 J -28499398.33 -28499398.27 -28499398.19 0.0288 0.0264

Mercury -82740-02-22 04:47 J -28499309.46 -28499309.30 -28499309.13 0.0288 0.0108

Mercury -82740-05-22 03:49 J -28499220.52 -28499220.34 -28499220.16 0.0289 0.0047

Mercury -82740-08-19 02:23 J -28499131.53 -28499131.40 -28499131.27 0.0289 0.0199

Mars -82734-03-15 00:28 J -28497097.74 -28497097.48 -28497097.21 0.0292 0.0051

Earth -82734-12-12 17:59 J -28496824.81 -28496824.75 -28496824.68 0.0290 0.0280

Moon -82733-12-25 11:01 J -28496446.21 -28496446.04 -28496445.86 0.0288 0.0189

Earth -82733-12-25 14:08 J -28496446.09 -28496445.91 -28496445.71 0.0288 0.0175 \*

Earth -82731-01-08 00:13 J -28496067.72 -28496067.49 -28496067.25 0.0286 0.0066

Moon -82731-01-08 00:28 J -28496067.71 -28496067.48 -28496067.26 0.0286 0.0073 \*

Earth -82730-01-20 23:44 J -28495689.75 -28495689.51 -28495689.27 0.0283 0.0041

Moon -82730-01-21 03:06 J -28495689.60 -28495689.37 -28495689.13 0.0283 0.0043 \*

Earth -82729-02-02 13:40 J -28495312.13 -28495311.93 -28495311.72 0.0280 0.0140

Moon -82729-02-02 15:49 J -28495312.04 -28495311.84 -28495311.63 0.0280 0.0150 \*

Moon -82728-02-13 16:04 J -28494934.93 -28494934.83 -28494934.70 0.0277 0.0241  
 Earth -82728-02-13 19:25 J -28494934.82 -28494934.69 -28494934.55 0.0277 0.0227 \*  
 Venus -82727-01-12 15:06 J -28494602.08 -28494601.87 -28494601.67 0.0275 0.0019  
 Mercury -82727-09-24 03:06 J -28494347.42 -28494347.37 -28494347.31 0.0273 0.0247  
 Mercury -82727-12-21 14:08 J -28494259.02 -28494258.91 -28494258.80 0.0272 0.0153  
 Mercury -82726-03-20 01:11 J -28494170.59 -28494170.45 -28494170.32 0.0272 0.0059  
 Mercury -82726-06-16 12:13 J -28494082.13 -28494081.99 -28494081.86 0.0271 0.0037  
 Mercury -82726-09-12 23:16 J -28493993.64 -28493993.53 -28493993.41 0.0271 0.0132  
 Mercury -82726-12-10 10:47 J -28493905.13 -28493905.05 -28493904.98 0.0270 0.0228  
 Mars -82718-03-23 07:25 J -28491245.43 -28491245.19 -28491244.94 0.0270 0.0179  
 Earth -82718-06-08 06:56 J -28491168.30 -28491168.21 -28491168.10 0.0270 0.0244  
 Moon -82718-06-08 09:35 J -28491168.22 -28491168.10 -28491167.98 0.0270 0.0233 \*  
 Earth -82717-06-19 18:13 J -28490790.93 -28490790.74 -28490790.54 0.0272 0.0163  
 Moon -82717-06-19 21:49 J -28490790.79 -28490790.59 -28490790.39 0.0272 0.0160 \*  
 Moon -82716-07-02 13:25 J -28490413.19 -28490412.94 -28490412.69 0.0274 0.0081  
 Earth -82716-07-02 14:23 J -28490413.14 -28490412.90 -28490412.66 0.0274 0.0070 \*  
 Moon -82715-07-15 16:18 J -28490035.07 -28490034.82 -28490034.57 0.0277 0.0015  
 Earth -82715-07-15 20:08 J -28490034.90 -28490034.66 -28490034.40 0.0277 0.0031 \*  
 Moon -82714-07-29 09:35 J -28489656.31 -28489656.10 -28489655.87 0.0280 0.0121  
 Earth -82714-07-29 11:59 J -28489656.21 -28489656.00 -28489655.77 0.0280 0.0136 \*  
 Earth -82713-08-11 13:25 J -28489277.06 -28489276.94 -28489276.80 0.0283 0.0240  
 Moon -82713-08-11 14:52 J -28489277.02 -28489276.88 -28489276.74 0.0283 0.0230 \*  
 Venus -82712-09-22 19:54 J -28488869.87 -28488869.67 -28488869.46 0.0286 0.0105  
 Mercury -82711-07-12 05:01 J -28488577.44 -28488577.29 -28488577.13 0.0288 0.0143  
 Mercury -82711-10-09 04:04 J -28488488.51 -28488488.33 -28488488.15 0.0289 0.0012  
 Mercury -82710-01-06 02:37 J -28488399.53 -28488399.39 -28488399.24 0.0289 0.0165  
 Mars -82704-05-01 14:37 J -28486092.12 -28486091.89 -28486091.65 0.0290 0.0135  
 Earth -82704-12-19 23:16 J -28485859.67 -28485859.53 -28485859.36 0.0289 0.0220  
 Moon -82704-12-20 02:37 J -28485859.51 -28485859.39 -28485859.23 0.0289 0.0236 \*  
 Moon -82702-01-02 13:11 J -28485481.17 -28485480.95 -28485480.72 0.0286 0.0122

Earth	-82702-01-02 13:40 J	-28485481.15	-28485480.93	-28485480.71	0.0286	0.0113	*
Moon	-82701-01-15 13:40 J	-28485103.18	-28485102.93	-28485102.69	0.0284	0.0007	
Earth	-82701-01-15 17:16 J	-28485103.02	-28485102.78	-28485102.54	0.0284	0.0005	*
Moon	-82700-01-27 08:52 J	-28484725.34	-28484725.13	-28484724.91	0.0281	0.0105	
Earth	-82700-01-27 11:01 J	-28484725.26	-28484725.04	-28484724.81	0.0281	0.0097	*
Earth	-82699-02-08 19:54 J	-28484347.84	-28484347.67	-28484347.49	0.0278	0.0189	
Moon	-82699-02-08 22:18 J	-28484347.72	-28484347.57	-28484347.40	0.0278	0.0204	*
Earth	-82698-02-20 20:52 J	-28483970.67	-28483970.63	-28483970.57	0.0275	0.0268	
Venus	-82698-07-25 18:28 J	-28483815.93	-28483815.73	-28483815.53	0.0274	0.0031	
Mercury	-82697-05-09 16:18 J	-28483526.91	-28483526.82	-28483526.71	0.0272	0.0180	
Mercury	-82697-08-06 03:20 J	-28483438.49	-28483438.36	-28483438.23	0.0271	0.0086	
Mercury	-82697-11-02 14:23 J	-28483350.03	-28483349.90	-28483349.76	0.0271	0.0011	
Mercury	-82696-01-30 01:40 J	-28483261.56	-28483261.43	-28483261.31	0.0270	0.0104	
Mercury	-82696-04-28 12:42 J	-28483173.06	-28483172.97	-28483172.87	0.0270	0.0199	
Mars	-82690-05-03 22:18 J	-28480976.79	-28480976.57	-28480976.32	0.0268	0.0184	
Moon	-82689-06-01 23:01 J	-28480581.59	-28480581.54	-28480581.47	0.0269	0.0262	
Moon	-82688-06-14 05:16 J	-28480204.44	-28480204.28	-28480204.11	0.0271	0.0194	
Earth	-82688-06-14 08:37 J	-28480204.30	-28480204.14	-28480203.97	0.0271	0.0198	*
Earth	-82687-06-26 23:44 J	-28479826.73	-28479826.51	-28479826.28	0.0273	0.0111	
Moon	-82687-06-27 00:42 J	-28479826.68	-28479826.47	-28479826.25	0.0273	0.0118	*
Earth	-82686-07-10 00:28 J	-28479448.73	-28479448.48	-28479448.23	0.0276	0.0013	
Moon	-82686-07-10 04:04 J	-28479448.57	-28479448.33	-28479448.07	0.0276	0.0029	*
Earth	-82685-07-22 11:01 J	-28479070.28	-28479070.04	-28479069.80	0.0279	0.0090	
Moon	-82685-07-22 12:42 J	-28479070.21	-28479069.97	-28479069.71	0.0279	0.0074	*
Moon	-82684-08-05 05:30 J	-28478691.46	-28478691.27	-28478691.06	0.0282	0.0182	
Earth	-82684-08-05 07:25 J	-28478691.36	-28478691.19	-28478691.00	0.0282	0.0195	*
Venus	-82682-04-04 21:06 J	-28478083.80	-28478083.62	-28478083.43	0.0286	0.0146	
Mercury	-82682-11-29 00:56 J	-28477845.58	-28477845.46	-28477845.32	0.0288	0.0204	
Mercury	-82681-02-26 00:13 J	-28477756.66	-28477756.49	-28477756.31	0.0288	0.0048	
Mercury	-82681-05-24 23:01 J	-28477667.70	-28477667.54	-28477667.37	0.0289	0.0106	



Mercury -82681-08-21 21:20 J -28477578.68 -28477578.61 -28477578.52 0.0289 0.0257  
 Mars -82676-06-21 00:13 J -28475814.65 -28475814.49 -28475814.31 0.0292 0.0223  
 Moon -82675-12-13 18:42 J -28475273.76 -28475273.72 -28475273.67 0.0290 0.0285  
 Earth -82675-12-13 21:49 J -28475273.67 -28475273.59 -28475273.49 0.0290 0.0268 \*  
 Earth -82674-12-27 17:30 J -28474894.96 -28474894.77 -28474894.56 0.0288 0.0162  
 Moon -82674-12-27 17:44 J -28474894.93 -28474894.76 -28474894.56 0.0288 0.0174 \*  
 Earth -82672-01-09 03:06 J -28474516.61 -28474516.37 -28474516.13 0.0285 0.0052  
 Moon -82672-01-09 06:42 J -28474516.46 -28474516.22 -28474515.99 0.0285 0.0055 \*  
 Earth -82671-01-22 02:23 J -28474138.63 -28474138.40 -28474138.16 0.0283 0.0055  
 Moon -82671-01-22 04:32 J -28474138.55 -28474138.31 -28474138.07 0.0283 0.0060 \*  
 Moon -82670-02-03 13:54 J -28473761.11 -28473760.92 -28473760.72 0.0280 0.0166  
 Earth -82670-02-03 16:04 J -28473761.02 -28473760.83 -28473760.62 0.0280 0.0153 \*  
 Moon -82669-02-15 18:56 J -28473383.80 -28473383.71 -28473383.61 0.0277 0.0252  
 Earth -82669-02-15 21:20 J -28473383.71 -28473383.61 -28473383.48 0.0277 0.0239 \*  
 Venus -82668-02-03 21:35 J -28473029.80 -28473029.60 -28473029.41 0.0274 0.0077  
 Mercury -82668-09-26 18:56 J -28472794.80 -28472794.71 -28472794.63 0.0273 0.0208  
 Mercury -82668-12-24 05:44 J -28472706.38 -28472706.26 -28472706.13 0.0272 0.0114  
 Mercury -82667-03-22 17:01 J -28472617.93 -28472617.79 -28472617.66 0.0272 0.0020  
 Mercury -82667-06-19 04:04 J -28472529.46 -28472529.33 -28472529.20 0.0271 0.0077  
 Mercury -82667-09-15 15:20 J -28472440.97 -28472440.86 -28472440.76 0.0271 0.0173  
 Mercury -82667-12-13 02:37 J -28472352.40 -28472352.39 -28472352.38 0.0271 0.0269  
 Mars -82660-06-25 03:49 J -28469966.66 -28469966.34 -28469966.01 0.0269 0.0010  
 Earth -82659-06-09 12:28 J -28469617.11 -28469616.98 -28469616.86 0.0270 0.0232  
 Moon -82659-06-09 15:49 J -28469616.98 -28469616.84 -28469616.70 0.0270 0.0223 \*  
 Moon -82658-06-21 23:30 J -28469239.73 -28469239.52 -28469239.30 0.0272 0.0151  
 Earth -82658-06-21 23:59 J -28469239.70 -28469239.50 -28469239.29 0.0272 0.0150 \*  
 Moon -82657-07-03 17:01 J -28468862.03 -28468861.79 -28468861.54 0.0274 0.0069  
 Earth -82657-07-03 20:37 J -28468861.88 -28468861.64 -28468861.39 0.0274 0.0056 \*  
 Moon -82656-07-17 01:40 J -28468483.67 -28468483.43 -28468483.18 0.0277 0.0031  
 Earth -82656-07-17 03:06 J -28468483.62 -28468483.37 -28468483.12 0.0277 0.0045 \*

Earth -82655-07-30 19:11 J -28468104.90 -28468104.70 -28468104.48 0.0280 0.0151  
 Moon -82655-07-30 21:35 J -28468104.81 -28468104.60 -28468104.38 0.0280 0.0136 \*  
 Earth -82654-08-13 21:20 J -28467725.71 -28467725.61 -28467725.49 0.0283 0.0253  
 Moon -82654-08-14 00:56 J -28467725.57 -28467725.46 -28467725.31 0.0283 0.0242 \*  
 Venus -82653-02-28 07:54 J -28467527.31 -28467527.17 -28467527.04 0.0285 0.0220  
 Venus -82653-10-15 08:08 J -28467297.29 -28467297.16 -28467297.01 0.0286 0.0223  
 Mercury -82652-04-17 01:54 J -28467113.52 -28467113.42 -28467113.31 0.0288 0.0234  
 Mercury -82652-07-15 01:11 J -28467024.63 -28467024.45 -28467024.28 0.0288 0.0079  
 Mercury -82652-10-11 23:59 J -28466935.67 -28466935.50 -28466935.33 0.0289 0.0076  
 Mercury -82651-01-08 22:32 J -28466846.67 -28466846.56 -28466846.46 0.0289 0.0228  
 Mars -82646-08-08 23:30 J -28464808.79 -28464808.52 -28464808.26 0.0292 0.0034  
 Moon -82645-12-21 04:32 J -28464308.46 -28464308.31 -28464308.14 0.0289 0.0220  
 Earth -82645-12-21 05:01 J -28464308.45 -28464308.29 -28464308.12 0.0289 0.0206 \*  
 Moon -82643-01-03 15:06 J -28463930.09 -28463929.87 -28463929.64 0.0286 0.0106  
 Earth -82643-01-03 18:28 J -28463929.95 -28463929.73 -28463929.50 0.0286 0.0099 \*  
 Moon -82642-01-16 20:08 J -28463551.90 -28463551.66 -28463551.43 0.0284 0.0013  
 Earth -82642-01-16 21:49 J -28463551.83 -28463551.59 -28463551.35 0.0284 0.0010 \*  
 Earth -82641-01-29 15:06 J -28463174.09 -28463173.87 -28463173.65 0.0281 0.0110  
 Moon -82641-01-29 17:30 J -28463173.98 -28463173.77 -28463173.56 0.0281 0.0122 \*  
 Earth -82640-02-09 23:44 J -28462796.67 -28462796.51 -28462796.34 0.0278 0.0201  
 Moon -82640-02-10 02:52 J -28462796.52 -28462796.38 -28462796.22 0.0278 0.0216 \*  
 Venus -82640-12-31 01:11 J -28462472.56 -28462472.45 -28462472.35 0.0275 0.0235  
 Venus -82639-08-17 01:40 J -28462243.61 -28462243.43 -28462243.25 0.0274 0.0130  
 Mercury -82638-02-13 21:35 J -28462062.67 -28462062.60 -28462062.53 0.0272 0.0232  
 Mercury -82638-05-13 08:23 J -28461974.26 -28461974.15 -28461974.03 0.0272 0.0138  
 Mercury -82638-08-09 19:25 J -28461885.82 -28461885.69 -28461885.55 0.0271 0.0044  
 Mercury -82638-11-06 06:42 J -28461797.36 -28461797.22 -28461797.09 0.0271 0.0052  
 Mercury -82637-02-02 17:44 J -28461708.87 -28461708.76 -28461708.64 0.0270 0.0147  
 Mercury -82637-05-01 05:01 J -28461620.35 -28461620.29 -28461620.23 0.0270 0.0242  
 Moon -82630-06-04 05:30 J -28459030.34 -28459030.27 -28459030.18 0.0269 0.0253

Earth	-82630-06-04 08:37 J	-28459030.18	-28459030.14	-28459030.08	0.0269	0.0263	*
Mars	-82630-08-16 19:25 J	-28458956.90	-28458956.69	-28458956.45	0.0270	0.0194	
Earth	-82629-06-15 16:04 J	-28458653.00	-28458652.83	-28458652.64	0.0271	0.0186	
Moon	-82629-06-15 17:16 J	-28458652.96	-28458652.78	-28458652.61	0.0271	0.0185	*
Earth	-82628-06-28 08:08 J	-28458275.40	-28458275.16	-28458274.93	0.0273	0.0096	
Moon	-82628-06-28 11:30 J	-28458275.24	-28458275.02	-28458274.78	0.0273	0.0105	*
Earth	-82627-07-11 09:20 J	-28457897.36	-28457897.11	-28457896.86	0.0276	0.0004	
Moon	-82627-07-11 10:18 J	-28457897.32	-28457897.07	-28457896.81	0.0276	0.0013	*
Moon	-82626-07-24 17:16 J	-28457519.02	-28457518.78	-28457518.53	0.0279	0.0091	
Earth	-82626-07-24 20:08 J	-28457518.88	-28457518.66	-28457518.42	0.0279	0.0106	*
Moon	-82625-08-06 13:11 J	-28457140.12	-28457139.95	-28457139.76	0.0282	0.0198	
Earth	-82625-08-06 17:16 J	-28457139.95	-28457139.78	-28457139.61	0.0282	0.0209	*
Venus	-82624-09-09 09:49 J	-28456741.25	-28456741.09	-28456740.91	0.0285	0.0177	
Venus	-82623-04-27 10:18 J	-28456511.13	-28456511.07	-28456510.98	0.0286	0.0267	
Mercury	-82623-12-01 21:35 J	-28456292.75	-28456292.60	-28456292.44	0.0288	0.0137	
Mercury	-82622-02-28 20:37 J	-28456203.82	-28456203.64	-28456203.46	0.0288	0.0019	
Mercury	-82622-05-28 19:11 J	-28456114.84	-28456114.70	-28456114.55	0.0289	0.0171	
Mars	-82616-09-24 21:49 J	-28453803.81	-28453803.59	-28453803.35	0.0290	0.0147	
Earth	-82616-12-15 04:04 J	-28453722.44	-28453722.33	-28453722.21	0.0290	0.0254	
Moon	-82616-12-15 05:01 J	-28453722.36	-28453722.29	-28453722.20	0.0290	0.0271	*
Earth	-82615-12-28 23:01 J	-28453343.74	-28453343.54	-28453343.33	0.0288	0.0148	
Moon	-82615-12-29 02:37 J	-28453343.59	-28453343.39	-28453343.19	0.0288	0.0160	*
Earth	-82613-01-11 07:54 J	-28452965.41	-28452965.17	-28452964.93	0.0285	0.0038	
Moon	-82613-01-11 09:35 J	-28452965.35	-28452965.10	-28452964.85	0.0285	0.0040	*
Moon	-82612-01-23 03:49 J	-28452587.57	-28452587.34	-28452587.10	0.0283	0.0079	
Earth	-82612-01-23 06:42 J	-28452587.45	-28452587.22	-28452586.98	0.0283	0.0068	*
Moon	-82611-02-04 16:47 J	-28452209.97	-28452209.80	-28452209.61	0.0280	0.0181	
Earth	-82611-02-04 20:08 J	-28452209.85	-28452209.66	-28452209.46	0.0280	0.0165	*
Earth	-82610-02-17 00:56 J	-28451832.55	-28451832.46	-28451832.34	0.0277	0.0250	
Moon	-82610-02-17 02:37 J	-28451832.46	-28451832.39	-28451832.32	0.0277	0.0261	*

Venus -82610-07-13 03:49 J -28451686.48 -28451686.34 -28451686.19 0.0276 0.0191  
 Venus -82609-02-27 04:47 J -28451457.46 -28451457.30 -28451457.14 0.0274 0.0176  
 Mercury -82609-07-02 23:59 J -28451330.54 -28451330.50 -28451330.46 0.0273 0.0261  
 Mercury -82609-09-29 10:47 J -28451242.15 -28451242.05 -28451241.94 0.0273 0.0167  
 Mercury -82609-12-26 21:49 J -28451153.72 -28451153.59 -28451153.46 0.0272 0.0072  
 Mercury -82608-03-25 09:06 J -28451065.26 -28451065.12 -28451064.99 0.0272 0.0025  
 Mercury -82608-06-21 20:08 J -28450976.78 -28450976.66 -28450976.53 0.0271 0.0120  
 Mercury -82608-09-18 07:25 J -28450888.27 -28450888.19 -28450888.11 0.0271 0.0216  
 Mars -82602-09-28 09:49 J -28448687.35 -28448687.09 -28448686.82 0.0268 0.0155  
 Moon -82600-06-10 18:42 J -28448065.86 -28448065.72 -28448065.56 0.0270 0.0215  
 Earth -82600-06-10 19:40 J -28448065.82 -28448065.68 -28448065.53 0.0270 0.0220 \*  
 Moon -82599-06-23 04:04 J -28447688.53 -28447688.33 -28447688.10 0.0272 0.0142  
 Earth -82599-06-23 07:54 J -28447688.37 -28447688.17 -28447687.94 0.0272 0.0137 \*  
 Moon -82598-07-06 04:04 J -28447310.57 -28447310.33 -28447310.09 0.0275 0.0053  
 Earth -82598-07-06 05:30 J -28447310.51 -28447310.27 -28447310.02 0.0275 0.0041 \*  
 Earth -82597-07-18 12:28 J -28446932.22 -28446931.98 -28446931.73 0.0277 0.0061  
 Moon -82597-07-18 15:20 J -28446932.10 -28446931.86 -28446931.62 0.0277 0.0046 \*  
 Earth -82596-08-01 05:16 J -28446553.48 -28446553.28 -28446553.07 0.0280 0.0165  
 Moon -82596-08-01 09:06 J -28446553.33 -28446553.12 -28446552.90 0.0280 0.0152 \*  
 Earth -82595-08-15 08:08 J -28446174.24 -28446174.16 -28446174.07 0.0283 0.0267  
 Moon -82595-08-15 09:06 J -28446174.21 -28446174.12 -28446174.00 0.0283 0.0257 \*  
 Venus -82594-03-22 21:35 J -28445954.80 -28445954.60 -28445954.39 0.0285 0.0098  
 Mercury -82593-04-19 22:47 J -28445560.69 -28445560.55 -28445560.40 0.0288 0.0164  
 Mercury -82593-07-17 22:04 J -28445471.76 -28445471.58 -28445471.40 0.0288 0.0011  
 Mercury -82593-10-14 20:37 J -28445382.79 -28445382.64 -28445382.48 0.0289 0.0145  
 Mars -82588-11-15 08:08 J -28443525.35 -28443525.16 -28443524.97 0.0292 0.0203  
 Moon -82586-12-23 09:49 J -28442757.25 -28442757.09 -28442756.91 0.0289 0.0206  
 Earth -82586-12-23 13:40 J -28442757.11 -28442756.93 -28442756.74 0.0289 0.0191 \*  
 Moon -82584-01-05 00:28 J -28442378.70 -28442378.48 -28442378.26 0.0286 0.0090  
 Earth -82584-01-05 02:23 J -28442378.63 -28442378.40 -28442378.16 0.0286 0.0083 \*

Earth -82583-01-18 05:01 J -28442000.53 -28442000.29 -28442000.05 0.0283 0.0024  
 Moon -82583-01-18 07:25 J -28442000.42 -28442000.19 -28441999.96 0.0283 0.0030 \*  
 Earth -82582-01-30 21:49 J -28441622.80 -28441622.59 -28441622.37 0.0280 0.0124  
 Moon -82582-01-31 01:25 J -28441622.66 -28441622.44 -28441622.23 0.0280 0.0138 \*  
 Moon -82581-02-12 05:16 J -28441245.41 -28441245.28 -28441245.14 0.0277 0.0227  
 Earth -82581-02-12 05:59 J -28441245.39 -28441245.25 -28441245.09 0.0277 0.0214 \*  
 Venus -82580-01-22 09:49 J -28440900.27 -28440900.09 -28440899.91 0.0275 0.0131  
 Venus -82580-09-08 10:04 J -28440671.17 -28440671.08 -28440670.96 0.0273 0.0234  
 Mercury -82579-02-16 13:54 J -28440510.01 -28440509.92 -28440509.82 0.0272 0.0188  
 Mercury -82579-05-16 00:56 J -28440421.59 -28440421.46 -28440421.33 0.0272 0.0093  
 Mercury -82579-08-12 11:59 J -28440333.14 -28440333.00 -28440332.86 0.0271 0.0002  
 Mercury -82579-11-08 23:01 J -28440244.66 -28440244.54 -28440244.41 0.0271 0.0097  
 Mercury -82578-02-05 10:18 J -28440156.16 -28440156.07 -28440155.97 0.0270 0.0193  
 Mars -82572-11-19 01:54 J -28437677.74 -28437677.42 -28437677.09 0.0269 0.0029  
 Earth -82571-06-05 17:30 J -28437478.84 -28437478.77 -28437478.67 0.0270 0.0251  
 Moon -82571-06-05 18:13 J -28437478.83 -28437478.74 -28437478.63 0.0270 0.0243 \*  
 Earth -82570-06-18 01:54 J -28437101.61 -28437101.42 -28437101.22 0.0271 0.0172  
 Moon -82570-06-18 05:44 J -28437101.44 -28437101.26 -28437101.06 0.0271 0.0174 \*  
 Earth -82569-06-29 18:28 J -28436723.96 -28436723.73 -28436723.49 0.0274 0.0081  
 Moon -82569-06-29 20:08 J -28436723.90 -28436723.66 -28436723.41 0.0274 0.0090 \*  
 Moon -82568-07-12 17:44 J -28436346.02 -28436345.76 -28436345.50 0.0276 0.0003  
 Earth -82568-07-12 20:37 J -28436345.89 -28436345.64 -28436345.39 0.0276 0.0018 \*  
 Moon -82567-07-26 05:01 J -28435967.51 -28435967.29 -28435967.05 0.0279 0.0109  
 Earth -82567-07-26 08:23 J -28435967.37 -28435967.15 -28435966.92 0.0279 0.0122 \*  
 Moon -82566-08-09 05:44 J -28435588.41 -28435588.26 -28435588.10 0.0282 0.0216  
 Earth -82566-08-09 05:59 J -28435588.40 -28435588.25 -28435588.10 0.0282 0.0224 \*  
 Venus -82565-10-02 01:25 J -28435168.66 -28435168.44 -28435168.23 0.0285 0.0049  
 Mercury -82564-09-06 19:54 J -28434828.78 -28434828.67 -28434828.54 0.0287 0.0218  
 Mercury -82564-12-04 19:11 J -28434739.87 -28434739.70 -28434739.52 0.0288 0.0062  
 Mercury -82563-03-03 17:59 J -28434650.92 -28434650.75 -28434650.58 0.0288 0.0092

Mercury -82563-05-31 16:32 J -28434561.90 -28434561.81 -28434561.72 0.0289 0.0243  
 Mars -82557-01-02 12:13 J -28432520.26 -28432519.99 -28432519.73 0.0291 0.0017  
 Earth -82557-12-16 13:54 J -28432171.04 -28432170.92 -28432170.77 0.0290 0.0240  
 Moon -82557-12-16 17:59 J -28432170.86 -28432170.75 -28432170.63 0.0290 0.0255 \*  
 Earth -82556-12-30 07:54 J -28431792.37 -28431792.17 -28431791.95 0.0287 0.0133  
 Moon -82556-12-30 09:49 J -28431792.30 -28431792.09 -28431791.86 0.0287 0.0143 \*  
 Moon -82554-01-12 13:25 J -28431414.19 -28431413.94 -28431413.69 0.0285 0.0021  
 Earth -82554-01-12 15:49 J -28431414.08 -28431413.84 -28431413.60 0.0285 0.0023 \*  
 Moon -82553-01-25 10:47 J -28431036.27 -28431036.05 -28431035.83 0.0282 0.0094  
 Earth -82553-01-25 13:40 J -28431036.15 -28431035.93 -28431035.69 0.0282 0.0082 \*  
 Earth -82552-02-06 02:37 J -28430658.57 -28430658.39 -28430658.21 0.0279 0.0178  
 Moon -82552-02-06 03:06 J -28430658.52 -28430658.37 -28430658.19 0.0279 0.0195 \*  
 Earth -82551-02-18 06:56 J -28430281.28 -28430281.21 -28430281.12 0.0277 0.0261  
 Moon -82551-02-18 10:18 J -28430281.09 -28430281.07 -28430281.02 0.0277 0.0273  
 Venus -82551-08-04 12:28 J -28430114.17 -28430113.98 -28430113.78 0.0276 0.0086  
 Mercury -82550-07-06 16:04 J -28429777.90 -28429777.83 -28429777.74 0.0273 0.0218  
 Mercury -82550-10-03 03:06 J -28429689.48 -28429689.37 -28429689.25 0.0273 0.0123  
 Mercury -82550-12-30 14:23 J -28429601.04 -28429600.90 -28429600.77 0.0272 0.0028  
 Mercury -82549-03-28 01:25 J -28429512.57 -28429512.44 -28429512.31 0.0272 0.0069  
 Mercury -82549-06-24 12:28 J -28429424.08 -28429423.98 -28429423.86 0.0271 0.0166  
 Mercury -82549-09-20 23:59 J -28429335.53 -28429335.50 -28429335.47 0.0271 0.0261  
 Moon -82542-05-31 23:30 J -28426891.53 -28426891.52 -28426891.49 0.0269 0.0268  
 Mars -82541-01-11 14:08 J -28426667.07 -28426666.91 -28426666.72 0.0270 0.0227  
 Moon -82541-06-12 01:11 J -28426514.60 -28426514.45 -28426514.28 0.0271 0.0206  
 Earth -82541-06-12 05:01 J -28426514.44 -28426514.29 -28426514.13 0.0271 0.0207 \*  
 Moon -82540-06-24 17:16 J -28426137.00 -28426136.78 -28426136.57 0.0273 0.0129  
 Earth -82540-06-24 18:13 J -28426136.95 -28426136.74 -28426136.50 0.0273 0.0122 \*  
 Earth -82539-07-07 16:47 J -28425759.05 -28425758.80 -28425758.55 0.0275 0.0025  
 Moon -82539-07-07 19:25 J -28425758.93 -28425758.69 -28425758.45 0.0275 0.0039 \*  
 Earth -82538-07-21 00:42 J -28425380.71 -28425380.47 -28425380.23 0.0278 0.0077

Moon -82538-07-21 04:04 J -28425380.58 -28425380.33 -28425380.08 0.0278 0.0062 \*  
 Moon -82537-08-02 17:59 J -28425001.95 -28425001.75 -28425001.53 0.0281 0.0170  
 Earth -82537-08-02 18:13 J -28425001.92 -28425001.74 -28425001.54 0.0281 0.0181 \*  
 Moon -82536-08-16 18:28 J -28424622.78 -28424622.73 -28424622.66 0.0284 0.0274  
 Earth -82536-08-16 21:49 J -28424622.61 -28424622.59 -28424622.55 0.0284 0.0280  
 Venus -82535-04-14 13:40 J -28424382.15 -28424381.93 -28424381.71 0.0285 0.0033  
 Mercury -82534-01-24 21:35 J -28424096.69 -28424096.60 -28424096.50 0.0287 0.0242  
 Mercury -82534-04-23 20:52 J -28424007.80 -28424007.63 -28424007.46 0.0288 0.0087  
 Mercury -82534-07-21 19:40 J -28423918.85 -28423918.68 -28423918.51 0.0289 0.0067  
 Mercury -82534-10-18 18:13 J -28423829.85 -28423829.74 -28423829.63 0.0289 0.0220  
 Earth -82528-12-11 03:06 J -28421584.42 -28421584.37 -28421584.29 0.0291 0.0279  
 Mars -82527-02-19 11:44 J -28421514.21 -28421514.01 -28421513.79 0.0290 0.0171  
 Moon -82527-12-24 23:16 J -28421205.70 -28421205.53 -28421205.35 0.0289 0.0188  
 Earth -82527-12-25 00:56 J -28421205.65 -28421205.46 -28421205.26 0.0289 0.0174 \*  
 Earth -82525-01-07 12:28 J -28420827.21 -28420826.98 -28420826.74 0.0286 0.0066  
 Moon -82525-01-07 14:37 J -28420827.12 -28420826.89 -28420826.66 0.0286 0.0072 \*  
 Earth -82524-01-19 14:08 J -28420449.14 -28420448.91 -28420448.67 0.0283 0.0040  
 Moon -82524-01-19 17:30 J -28420449.01 -28420448.77 -28420448.53 0.0283 0.0046 \*  
 Moon -82523-02-01 05:16 J -28420071.47 -28420071.28 -28420071.06 0.0280 0.0154  
 Earth -82523-02-01 06:13 J -28420071.44 -28420071.24 -28420071.02 0.0280 0.0139 \*  
 Moon -82522-02-13 10:04 J -28419694.19 -28419694.08 -28419693.96 0.0277 0.0241  
 Earth -82522-02-13 13:40 J -28419694.05 -28419693.93 -28419693.78 0.0277 0.0226 \*  
 Venus -82521-02-14 19:25 J -28419327.89 -28419327.69 -28419327.48 0.0275 0.0023  
 Mercury -82521-11-22 19:40 J -28419045.75 -28419045.68 -28419045.62 0.0273 0.0235  
 Mercury -82520-02-19 06:28 J -28418957.34 -28418957.23 -28418957.11 0.0272 0.0141  
 Mercury -82520-05-18 17:30 J -28418868.90 -28418868.77 -28418868.63 0.0272 0.0047  
 Mercury -82520-08-15 04:47 J -28418780.44 -28418780.30 -28418780.17 0.0271 0.0050  
 Mercury -82520-11-11 15:49 J -28418691.95 -28418691.84 -28418691.72 0.0271 0.0145  
 Mercury -82519-02-08 03:06 J -28418603.43 -28418603.37 -28418603.31 0.0270 0.0241  
 Mars -82513-02-22 16:04 J -28416398.11 -28416397.83 -28416397.55 0.0268 0.0133

Earth	-82512-06-07 03:49 J	-28415927.44	-28415927.34	-28415927.21	0.0270	0.0239
Moon	-82512-06-07 07:25 J	-28415927.31	-28415927.19	-28415927.05	0.0270	0.0230 *
Earth	-82511-06-19 13:25 J	-28415550.14	-28415549.94	-28415549.74	0.0272	0.0157
Moon	-82511-06-19 14:23 J	-28415550.10	-28415549.90	-28415549.68	0.0272	0.0161 *
Moon	-82510-07-02 03:49 J	-28415172.57	-28415172.34	-28415172.09	0.0274	0.0078
Earth	-82510-07-02 06:56 J	-28415172.45	-28415172.21	-28415171.96	0.0274	0.0065 *
Moon	-82509-07-14 06:42 J	-28414794.47	-28414794.22	-28414793.97	0.0277	0.0020
Earth	-82509-07-14 09:49 J	-28414794.33	-28414794.09	-28414793.84	0.0277	0.0035 *
Earth	-82508-07-27 22:18 J	-28414415.78	-28414415.57	-28414415.34	0.0279	0.0139
Moon	-82508-07-27 23:01 J	-28414415.75	-28414415.54	-28414415.32	0.0279	0.0128 *
Earth	-82507-08-10 20:37 J	-28414036.75	-28414036.64	-28414036.49	0.0282	0.0241
Moon	-82507-08-11 00:28 J	-28414036.61	-28414036.48	-28414036.33	0.0282	0.0234 *
Venus	-82506-10-25 18:13 J	-28413595.95	-28413595.74	-28413595.53	0.0285	0.0085
Mercury	-82505-09-09 18:13 J	-28413275.89	-28413275.74	-28413275.57	0.0288	0.0139
Mercury	-82505-12-07 17:30 J	-28413186.95	-28413186.77	-28413186.59	0.0288	0.0017
Mercury	-82504-03-06 15:49 J	-28413097.97	-28413097.84	-28413097.69	0.0289	0.0170
Mars	-82499-04-11 04:04 J	-28411236.54	-28411236.33	-28411236.12	0.0292	0.0182
Earth	-82498-12-19 02:52 J	-28410619.52	-28410619.38	-28410619.22	0.0289	0.0224
Moon	-82498-12-19 03:35 J	-28410619.48	-28410619.35	-28410619.19	0.0289	0.0237 *
Moon	-82497-12-31 17:01 J	-28410241.01	-28410240.79	-28410240.56	0.0287	0.0124
Earth	-82497-12-31 19:40 J	-28410240.89	-28410240.68	-28410240.45	0.0287	0.0116 *
Moon	-82495-01-13 23:16 J	-28409862.77	-28409862.53	-28409862.30	0.0285	0.0008
Earth	-82495-01-14 02:23 J	-28409862.64	-28409862.40	-28409862.15	0.0285	0.0009 *
Earth	-82494-01-26 23:16 J	-28409484.75	-28409484.53	-28409484.30	0.0282	0.0097
Moon	-82494-01-26 23:59 J	-28409484.71	-28409484.50	-28409484.28	0.0282	0.0109 *
Earth	-82493-02-08 11:01 J	-28409107.20	-28409107.04	-28409106.86	0.0279	0.0191
Moon	-82493-02-08 14:52 J	-28409107.03	-28409106.88	-28409106.72	0.0279	0.0207 *
Earth	-82492-02-19 14:52 J	-28408729.91	-28408729.88	-28408729.82	0.0276	0.0272
Venus	-82492-08-26 22:18 J	-28408541.78	-28408541.57	-28408541.37	0.0275	0.0023
Mercury	-82491-04-11 21:49 J	-28408313.61	-28408313.59	-28408313.55	0.0274	0.0265



Mercury -82491-07-09 08:52 J -28408225.23 -28408225.13 -28408225.02 0.0273 0.0170

Mercury -82491-10-05 19:54 J -28408136.80 -28408136.67 -28408136.54 0.0273 0.0075

Mercury -82490-01-02 06:56 J -28408048.34 -28408048.21 -28408048.07 0.0272 0.0021

Mercury -82490-03-31 18:13 J -28407959.86 -28407959.74 -28407959.62 0.0272 0.0117

Mercury -82490-06-28 05:30 J -28407871.35 -28407871.27 -28407871.19 0.0271 0.0213

Mars -82483-04-15 19:40 J -28405387.99 -28405387.68 -28405387.36 0.0269 0.0060

Moon -82483-06-02 05:01 J -28405340.35 -28405340.29 -28405340.20 0.0269 0.0256

Moon -82482-06-14 13:40 J -28404963.09 -28404962.93 -28404962.75 0.0271 0.0192

Earth -82482-06-14 15:06 J -28404963.03 -28404962.87 -28404962.69 0.0271 0.0194 \*

Earth -82481-06-26 05:44 J -28404585.49 -28404585.26 -28404585.03 0.0273 0.0106

Moon -82481-06-26 08:52 J -28404585.35 -28404585.13 -28404584.91 0.0273 0.0116 \*

Earth -82480-07-09 05:16 J -28404207.53 -28404207.28 -28404207.03 0.0275 0.0010

Moon -82480-07-09 08:37 J -28404207.39 -28404207.14 -28404206.88 0.0275 0.0024 \*

Moon -82479-07-22 13:54 J -28403829.17 -28403828.92 -28403828.67 0.0278 0.0079

Earth -82479-07-22 14:08 J -28403829.14 -28403828.91 -28403828.67 0.0278 0.0093 \*

Moon -82478-08-05 05:01 J -28403450.47 -28403450.29 -28403450.09 0.0281 0.0188

Earth -82478-08-05 08:52 J -28403450.31 -28403450.13 -28403449.95 0.0281 0.0196 \*

Venus -82477-09-19 06:13 J -28403039.29 -28403039.24 -28403039.18 0.0284 0.0274

Venus -82476-05-07 06:28 J -28402809.40 -28402809.23 -28402809.05 0.0286 0.0167

Mercury -82475-01-27 19:54 J -28402543.81 -28402543.67 -28402543.52 0.0288 0.0163

Mercury -82475-04-26 19:11 J -28402454.88 -28402454.70 -28402454.52 0.0288 0.0010

Mercury -82475-07-24 17:44 J -28402365.91 -28402365.76 -28402365.60 0.0289 0.0146

Mars -82469-05-29 10:32 J -28400230.33 -28400230.06 -28400229.80 0.0291 0.0010

Moon -82469-12-12 17:16 J -28400032.85 -28400032.78 -28400032.71 0.0290 0.0277

Earth -82469-12-12 17:59 J -28400032.85 -28400032.75 -28400032.64 0.0290 0.0262 \*

Earth -82468-12-26 14:37 J -28399654.09 -28399653.89 -28399653.69 0.0288 0.0157

Moon -82468-12-26 17:30 J -28399653.97 -28399653.77 -28399653.58 0.0288 0.0168 \*

Earth -82466-01-09 00:56 J -28399275.70 -28399275.46 -28399275.22 0.0286 0.0048

Moon -82466-01-09 04:32 J -28399275.55 -28399275.31 -28399275.07 0.0286 0.0054 \*

Moon -82465-01-22 01:25 J -28398897.68 -28398897.44 -28398897.19 0.0283 0.0063

Earth -82465-01-22 01:40 J -28398897.67 -28398897.43 -28398897.20 0.0283 0.0057 \*  
 Moon -82464-02-02 12:56 J -28398520.14 -28398519.96 -28398519.76 0.0280 0.0170  
 Earth -82464-02-02 16:32 J -28398519.99 -28398519.81 -28398519.60 0.0280 0.0154 \*  
 Moon -82463-02-14 22:04 J -28398142.66 -28398142.58 -28398142.47 0.0277 0.0253  
 Earth -82463-02-14 23:30 J -28398142.64 -28398142.52 -28398142.40 0.0277 0.0238 \*  
 Venus -82462-03-09 05:44 J -28397755.45 -28397755.26 -28397755.06 0.0274 0.0089  
 Mercury -82462-11-26 12:28 J -28397493.07 -28397492.98 -28397492.88 0.0273 0.0187  
 Mercury -82461-02-22 23:30 J -28397404.65 -28397404.52 -28397404.39 0.0272 0.0092  
 Mercury -82461-05-21 10:32 J -28397316.20 -28397316.06 -28397315.93 0.0272 0.0004  
 Mercury -82461-08-17 21:35 J -28397227.72 -28397227.60 -28397227.47 0.0271 0.0099  
 Mercury -82461-11-14 08:52 J -28397139.22 -28397139.13 -28397139.03 0.0271 0.0195  
 Mars -82453-06-07 01:40 J -28394377.55 -28394377.43 -28394377.31 0.0270 0.0250  
 Earth -82453-06-08 15:20 J -28394375.98 -28394375.86 -28394375.72 0.0270 0.0225  
 Moon -82453-06-08 17:30 J -28394375.91 -28394375.77 -28394375.61 0.0270 0.0216 \*  
 Moon -82452-06-20 22:32 J -28393998.76 -28393998.56 -28393998.33 0.0272 0.0149  
 Earth -82452-06-21 01:40 J -28393998.63 -28393998.43 -28393998.21 0.0272 0.0142 \*  
 Moon -82451-07-03 17:30 J -28393621.01 -28393620.77 -28393620.53 0.0274 0.0063  
 Earth -82451-07-03 20:37 J -28393620.88 -28393620.64 -28393620.39 0.0274 0.0049 \*  
 Earth -82450-07-17 00:42 J -28393242.71 -28393242.47 -28393242.22 0.0277 0.0052  
 Moon -82450-07-17 01:11 J -28393242.69 -28393242.45 -28393242.21 0.0277 0.0037 \*  
 Earth -82449-07-29 14:23 J -28392864.11 -28392863.90 -28392863.69 0.0280 0.0155  
 Moon -82449-07-29 17:59 J -28392863.97 -28392863.75 -28392863.54 0.0280 0.0143 \*  
 Earth -82448-08-12 13:40 J -28392485.02 -28392484.93 -28392484.81 0.0283 0.0256  
 Moon -82448-08-12 16:18 J -28392484.93 -28392484.82 -28392484.69 0.0283 0.0249 \*  
 Venus -82447-04-01 11:59 J -28392253.13 -28392253.00 -28392252.85 0.0284 0.0219  
 Venus -82447-11-17 11:59 J -28392023.12 -28392023.00 -28392022.85 0.0286 0.0224  
 Mercury -82446-06-16 17:59 J -28391811.86 -28391811.75 -28391811.62 0.0287 0.0211  
 Mercury -82446-09-13 17:16 J -28391722.95 -28391722.78 -28391722.60 0.0288 0.0055  
 Mercury -82446-12-11 16:04 J -28391633.99 -28391633.83 -28391633.66 0.0288 0.0099  
 Mercury -82445-03-09 14:23 J -28391544.97 -28391544.90 -28391544.80 0.0289 0.0251

Mars	-82439-07-16 12:42 J	-28389225.15	-28389224.97	-28389224.76	0.0290	0.0194
Moon	-82439-12-20 14:23 J	-28389068.05	-28389067.90	-28389067.72	0.0289	0.0217
Earth	-82439-12-20 17:59 J	-28389067.92	-28389067.75	-28389067.58	0.0289	0.0206 *
Moon	-82437-01-03 05:44 J	-28388689.48	-28388689.26	-28388689.04	0.0287	0.0104
Earth	-82437-01-03 09:06 J	-28388689.35	-28388689.12	-28388688.89	0.0287	0.0098 *
Earth	-82436-01-15 14:23 J	-28388311.14	-28388310.90	-28388310.65	0.0284	0.0011
Moon	-82436-01-15 14:37 J	-28388311.13	-28388310.89	-28388310.66	0.0284	0.0013 *
Earth	-82435-01-28 10:04 J	-28387933.29	-28387933.08	-28387932.86	0.0281	0.0112
Moon	-82435-01-28 13:25 J	-28387933.15	-28387932.94	-28387932.72	0.0281	0.0125 *
Earth	-82434-02-09 20:52 J	-28387555.79	-28387555.63	-28387555.46	0.0279	0.0204
Moon	-82434-02-09 21:49 J	-28387555.73	-28387555.59	-28387555.43	0.0279	0.0218 *
Venus	-82433-02-02 07:25 J	-28387198.29	-28387198.19	-28387198.08	0.0276	0.0236
Venus	-82433-09-18 08:23 J	-28386969.32	-28386969.15	-28386968.97	0.0275	0.0134
Mercury	-82432-04-14 14:37 J	-28386760.97	-28386760.89	-28386760.81	0.0273	0.0217
Mercury	-82432-07-12 01:40 J	-28386672.55	-28386672.43	-28386672.31	0.0273	0.0122
Mercury	-82432-10-08 12:42 J	-28386584.10	-28386583.97	-28386583.83	0.0272	0.0026
Mercury	-82431-01-04 23:59 J	-28386495.64	-28386495.50	-28386495.37	0.0272	0.0070
Mercury	-82431-04-03 11:01 J	-28386407.14	-28386407.04	-28386406.93	0.0271	0.0166
Mercury	-82431-06-30 22:18 J	-28386318.60	-28386318.57	-28386318.53	0.0271	0.0263
Mars	-82425-07-19 05:59 J	-28384108.54	-28384108.25	-28384107.94	0.0268	0.0107
Moon	-82424-06-03 15:35 J	-28383788.93	-28383788.85	-28383788.74	0.0270	0.0246
Earth	-82424-06-03 17:59 J	-28383788.81	-28383788.75	-28383788.67	0.0270	0.0257 *
Earth	-82423-06-16 01:40 J	-28383411.61	-28383411.43	-28383411.24	0.0271	0.0179
Moon	-82423-06-16 04:04 J	-28383411.50	-28383411.33	-28383411.15	0.0271	0.0179 *
Earth	-82422-06-28 17:16 J	-28383034.01	-28383033.78	-28383033.54	0.0273	0.0090
Moon	-82422-06-28 20:23 J	-28383033.88	-28383033.65	-28383033.41	0.0273	0.0101 *
Moon	-82421-07-10 17:16 J	-28382656.04	-28382655.78	-28382655.52	0.0276	0.0009
Earth	-82421-07-10 17:59 J	-28382656.00	-28382655.75	-28382655.50	0.0276	0.0007 *
Moon	-82420-07-24 00:28 J	-28382277.72	-28382277.48	-28382277.24	0.0278	0.0095
Earth	-82420-07-24 04:04 J	-28382277.56	-28382277.33	-28382277.10	0.0278	0.0110 *

Moon -82419-08-06 21:20 J -28381898.77 -28381898.61 -28381898.43 0.0281 0.0204  
 Earth -82419-08-06 23:30 J -28381898.67 -28381898.52 -28381898.34 0.0281 0.0212 \*  
 Venus -82418-10-12 23:16 J -28381466.72 -28381466.53 -28381466.34 0.0285 0.0141  
 Mercury -82417-11-02 19:11 J -28381079.80 -28381079.70 -28381079.59 0.0287 0.0238  
 Mercury -82416-01-30 18:28 J -28380990.90 -28380990.73 -28380990.55 0.0288 0.0082  
 Mercury -82416-04-29 17:30 J -28380901.94 -28380901.77 -28380901.60 0.0288 0.0073  
 Mercury -82416-07-27 15:49 J -28380812.94 -28380812.84 -28380812.72 0.0289 0.0226  
 Mars -82411-09-06 06:13 J -28378946.45 -28378946.24 -28378946.00 0.0292 0.0156  
 Earth -82410-12-15 09:20 J -28378481.23 -28378481.11 -28378480.97 0.0290 0.0245  
 Moon -82410-12-15 11:59 J -28378481.09 -28378481.00 -28378480.88 0.0290 0.0260 \*  
 Earth -82409-12-28 05:01 J -28378102.50 -28378102.29 -28378102.07 0.0288 0.0138  
 Moon -82409-12-28 08:08 J -28378102.36 -28378102.16 -28378101.94 0.0288 0.0148 \*  
 Moon -82407-01-10 14:23 J -28377724.15 -28377723.90 -28377723.65 0.0285 0.0032  
 Earth -82407-01-10 14:23 J -28377724.14 -28377723.90 -28377723.66 0.0285 0.0030 \*  
 Moon -82406-01-23 10:32 J -28377346.29 -28377346.06 -28377345.83 0.0283 0.0082  
 Earth -82406-01-23 13:54 J -28377346.15 -28377345.92 -28377345.69 0.0283 0.0074 \*  
 Moon -82405-02-05 02:37 J -28376968.56 -28376968.39 -28376968.21 0.0280 0.0183  
 Earth -82405-02-05 03:49 J -28376968.52 -28376968.34 -28376968.14 0.0280 0.0169 \*  
 Earth -82404-02-16 09:35 J -28376591.19 -28376591.10 -28376590.99 0.0277 0.0251  
 Moon -82404-02-16 12:56 J -28376591.03 -28376590.96 -28376590.89 0.0277 0.0263 \*  
 Venus -82404-08-14 16:04 J -28376411.99 -28376411.83 -28376411.67 0.0276 0.0167  
 Venus -82403-03-31 16:47 J -28376182.94 -28376182.80 -28376182.66 0.0274 0.0200  
 Mercury -82403-09-01 18:28 J -28376028.79 -28376028.73 -28376028.66 0.0273 0.0232  
 Mercury -82403-11-29 05:30 J -28375940.39 -28375940.27 -28375940.16 0.0272 0.0137  
 Mercury -82402-02-25 16:32 J -28375851.95 -28375851.81 -28375851.68 0.0272 0.0042  
 Mercury -82402-05-25 03:35 J -28375763.48 -28375763.35 -28375763.22 0.0271 0.0054  
 Mercury -82402-08-21 14:37 J -28375675.00 -28375674.89 -28375674.77 0.0271 0.0150  
 Mercury -82402-11-18 01:54 J -28375586.47 -28375586.42 -28375586.36 0.0270 0.0246  
 Moon -82395-05-30 01:11 J -28373201.45 -28373201.45 -28373201.43 0.0269 0.0268  
 Mars -82395-09-10 10:18 J -28373098.38 -28373098.07 -28373097.75 0.0269 0.0084

Moon -82394-06-11 00:13 J -28372824.65 -28372824.49 -28372824.32 0.0270 0.0204  
 Earth -82394-06-11 02:23 J -28372824.54 -28372824.40 -28372824.24 0.0270 0.0211 \*  
 Moon -82393-06-22 10:47 J -28372447.27 -28372447.05 -28372446.84 0.0272 0.0133  
 Earth -82393-06-22 13:40 J -28372447.14 -28372446.93 -28372446.71 0.0272 0.0126 \*  
 Earth -82392-07-05 09:35 J -28372069.34 -28372069.10 -28372068.85 0.0275 0.0032  
 Moon -82392-07-05 10:47 J -28372069.29 -28372069.05 -28372068.81 0.0275 0.0046 \*  
 Earth -82391-07-18 14:52 J -28371691.12 -28371690.88 -28371690.63 0.0277 0.0069  
 Moon -82391-07-18 18:42 J -28371690.96 -28371690.72 -28371690.47 0.0277 0.0053 \*  
 Earth -82390-08-01 05:44 J -28371312.46 -28371312.26 -28371312.06 0.0280 0.0171  
 Moon -82390-08-01 08:08 J -28371312.37 -28371312.16 -28371311.94 0.0280 0.0159 \*  
 Moon -82389-08-14 04:32 J -28370933.39 -28370933.31 -28370933.22 0.0283 0.0266  
 Earth -82389-08-14 06:28 J -28370933.30 -28370933.23 -28370933.16 0.0283 0.0270 \*  
 Venus -82388-04-24 05:59 J -28370680.46 -28370680.25 -28370680.04 0.0285 0.0082  
 Mercury -82387-03-22 17:44 J -28370347.78 -28370347.76 -28370347.73 0.0287 0.0283  
 Mercury -82387-06-19 17:01 J -28370258.95 -28370258.79 -28370258.62 0.0288 0.0127  
 Mercury -82387-09-16 16:04 J -28370170.01 -28370169.83 -28370169.65 0.0288 0.0028  
 Mercury -82387-12-14 14:37 J -28370081.02 -28370080.89 -28370080.75 0.0289 0.0181  
 Mars -82381-10-23 15:20 J -28367941.12 -28367940.86 -28367940.59 0.0291 0.0035  
 Earth -82381-12-08 10:04 J -28367895.08 -28367895.08 -28367895.08 0.0290 0.0290  
 Moon -82380-12-22 06:42 J -28367516.39 -28367516.22 -28367516.04 0.0289 0.0200  
 Earth -82380-12-22 09:49 J -28367516.28 -28367516.09 -28367515.91 0.0289 0.0188 \*  
 Earth -82378-01-04 23:16 J -28367137.75 -28367137.53 -28367137.29 0.0286 0.0081  
 Moon -82378-01-04 23:59 J -28367137.72 -28367137.50 -28367137.27 0.0286 0.0083 \*  
 Earth -82377-01-18 03:35 J -28366759.59 -28366759.35 -28366759.11 0.0284 0.0027  
 Moon -82377-01-18 06:56 J -28366759.44 -28366759.21 -28366758.97 0.0284 0.0033 \*  
 Earth -82376-01-29 22:04 J -28366381.79 -28366381.58 -28366381.37 0.0281 0.0127  
 Moon -82376-01-29 23:59 J -28366381.71 -28366381.50 -28366381.29 0.0281 0.0139 \*  
 Moon -82375-02-11 04:32 J -28366004.44 -28366004.31 -28366004.17 0.0278 0.0229  
 Earth -82375-02-11 07:40 J -28366004.33 -28366004.18 -28366004.03 0.0278 0.0217 \*  
 Venus -82374-02-24 18:28 J -28365625.91 -28365625.73 -28365625.55 0.0276 0.0122

Venus -82374-10-11 18:56 J -28365396.79 -28365396.71 -28365396.61 0.0274 0.0245

Mercury -82373-01-19 20:37 J -28365296.67 -28365296.64 -28365296.60 0.0273 0.0262

Mercury -82373-04-17 07:40 J -28365208.29 -28365208.18 -28365208.08 0.0273 0.0167

Mercury -82373-07-14 18:42 J -28365119.85 -28365119.72 -28365119.59 0.0272 0.0073

Mercury -82373-10-11 05:44 J -28365031.40 -28365031.26 -28365031.13 0.0272 0.0024

Mercury -82372-01-07 16:47 J -28364942.92 -28364942.80 -28364942.68 0.0272 0.0120

Mercury -82372-04-06 04:04 J -28364854.41 -28364854.33 -28364854.25 0.0271 0.0216

Earth -82365-06-05 02:52 J -28362237.48 -28362237.38 -28362237.27 0.0270 0.0244

Moon -82365-06-05 05:01 J -28362237.40 -28362237.29 -28362237.16 0.0270 0.0234 \*

Earth -82364-06-17 11:16 J -28361860.22 -28361860.03 -28361859.83 0.0271 0.0165

Moon -82364-06-17 14:37 J -28361860.08 -28361859.89 -28361859.68 0.0271 0.0164 \*

Moon -82363-06-30 03:06 J -28361482.61 -28361482.37 -28361482.12 0.0274 0.0086

Earth -82363-06-30 04:04 J -28361482.56 -28361482.33 -28361482.08 0.0274 0.0075 \*

Moon -82362-07-13 02:08 J -28361104.66 -28361104.41 -28361104.16 0.0276 0.0008

Earth -82362-07-13 05:59 J -28361104.49 -28361104.25 -28361104.00 0.0276 0.0025 \*

Moon -82361-07-25 14:52 J -28360726.09 -28360725.88 -28360725.65 0.0279 0.0113

Earth -82361-07-25 17:01 J -28360726.00 -28360725.79 -28360725.55 0.0279 0.0127 \*

Earth -82360-08-08 14:08 J -28360347.05 -28360346.91 -28360346.76 0.0282 0.0227

Moon -82360-08-08 15:49 J -28360346.99 -28360346.84 -28360346.69 0.0282 0.0220 \*

Venus -82359-11-04 16:04 J -28359894.05 -28359893.83 -28359893.61 0.0285 0.0008

Mercury -82358-11-06 17:44 J -28359526.91 -28359526.76 -28359526.61 0.0288 0.0157

Mercury -82357-02-03 16:47 J -28359437.98 -28359437.80 -28359437.61 0.0288 0.0008

Mercury -82357-05-02 15:35 J -28359349.00 -28359348.85 -28359348.69 0.0289 0.0153

Mars -82351-12-11 14:52 J -28356935.04 -28356934.88 -28356934.70 0.0290 0.0220

Earth -82351-12-17 01:11 J -28356929.60 -28356929.45 -28356929.30 0.0290 0.0227

Moon -82351-12-17 04:18 J -28356929.45 -28356929.32 -28356929.17 0.0290 0.0242 \*

Moon -82350-12-30 19:11 J -28356550.93 -28356550.70 -28356550.48 0.0288 0.0126

Earth -82350-12-30 19:40 J -28356550.90 -28356550.68 -28356550.46 0.0288 0.0120 \*

Moon -82348-01-12 00:13 J -28356172.73 -28356172.49 -28356172.25 0.0285 0.0010

Earth -82348-01-12 03:49 J -28356172.58 -28356172.34 -28356172.10 0.0285 0.0012 \*

Moon -82347-01-24 23:44 J -28355794.72 -28355794.51 -28355794.29 0.0282 0.0100  
 Earth -82347-01-25 02:08 J -28355794.64 -28355794.41 -28355794.18 0.0282 0.0091 \*  
 Earth -82346-02-06 14:52 J -28355417.05 -28355416.88 -28355416.69 0.0279 0.0184  
 Moon -82346-02-06 17:16 J -28355416.94 -28355416.78 -28355416.61 0.0279 0.0199 \*  
 Earth -82345-02-18 19:40 J -28355039.74 -28355039.68 -28355039.60 0.0276 0.0264  
 Moon -82345-02-18 22:32 J -28355039.59 -28355039.56 -28355039.52 0.0276 0.0273  
 Venus -82345-09-06 02:52 J -28354839.58 -28354839.38 -28354839.17 0.0275 0.0054  
 Mercury -82344-09-04 11:30 J -28354476.12 -28354476.02 -28354475.92 0.0273 0.0183  
 Mercury -82344-12-01 22:18 J -28354387.69 -28354387.57 -28354387.44 0.0272 0.0088  
 Mercury -82343-02-28 09:20 J -28354299.24 -28354299.11 -28354298.97 0.0272 0.0011  
 Mercury -82343-05-27 20:37 J -28354210.77 -28354210.64 -28354210.52 0.0271 0.0103  
 Mercury -82343-08-24 07:40 J -28354122.27 -28354122.18 -28354122.08 0.0271 0.0200  
 Jupiter -82341-11-07 07:40 J -28353316.50 -28353316.18 -28353315.82 0.0268 0.0176  
 Mars -82337-12-13 20:37 J -28351818.94 -28351818.64 -28351818.32 0.0268 0.0084  
 Moon -82336-05-31 05:30 J -28351650.33 -28351650.27 -28351650.20 0.0269 0.0258  
 Moon -82335-06-12 08:37 J -28351273.30 -28351273.14 -28351272.96 0.0270 0.0192  
 Earth -82335-06-12 12:13 J -28351273.15 -28351272.99 -28351272.82 0.0270 0.0197 \*  
 Earth -82334-06-25 00:13 J -28350895.71 -28350895.49 -28350895.26 0.0272 0.0111  
 Moon -82334-06-25 00:56 J -28350895.68 -28350895.46 -28350895.25 0.0272 0.0118 \*  
 Earth -82333-07-06 21:20 J -28350517.86 -28350517.61 -28350517.36 0.0275 0.0015  
 Moon -82333-07-07 00:56 J -28350517.70 -28350517.46 -28350517.21 0.0275 0.0031 \*  
 Earth -82332-07-20 03:49 J -28350139.58 -28350139.34 -28350139.10 0.0278 0.0086  
 Moon -82332-07-20 05:30 J -28350139.51 -28350139.27 -28350139.01 0.0278 0.0070 \*  
 Moon -82331-08-02 17:44 J -28349760.95 -28349760.76 -28349760.55 0.0280 0.0177  
 Earth -82331-08-02 19:54 J -28349760.85 -28349760.67 -28349760.48 0.0280 0.0188 \*  
 Moon -82330-08-16 17:30 J -28349381.78 -28349381.77 -28349381.72 0.0283 0.0282  
 Venus -82329-05-16 23:01 J -28349107.76 -28349107.54 -28349107.33 0.0285 0.0052  
 Mercury -82328-03-25 16:18 J -28348794.95 -28348794.82 -28348794.69 0.0287 0.0203  
 Mercury -82328-06-22 15:35 J -28348706.03 -28348705.85 -28348705.67 0.0288 0.0047  
 Mercury -82328-09-19 14:23 J -28348617.07 -28348616.90 -28348616.73 0.0289 0.0107

Mercury -82328-12-17 12:42 J -28348528.04 -28348527.97 -28348527.89 0.0289 0.0260

Mars -82322-01-31 11:16 J -28346657.26 -28346657.03 -28346656.79 0.0292 0.0131

Moon -82322-12-10 22:47 J -28346343.55 -28346343.55 -28346343.53 0.0290 0.0290

Earth -82322-12-11 01:40 J -28346343.49 -28346343.43 -28346343.34 0.0290 0.0274

Earth -82321-12-24 00:28 J -28345964.67 -28345964.48 -28345964.27 0.0288 0.0170

Moon -82321-12-24 01:11 J -28345964.63 -28345964.45 -28345964.26 0.0288 0.0180 \*

Earth -82319-01-06 13:11 J -28345586.18 -28345585.95 -28345585.71 0.0286 0.0061

Moon -82319-01-06 16:47 J -28345586.03 -28345585.80 -28345585.56 0.0286 0.0062 \*

Earth -82318-01-19 15:49 J -28345208.07 -28345207.84 -28345207.60 0.0283 0.0045

Moon -82318-01-19 17:59 J -28345207.99 -28345207.75 -28345207.50 0.0283 0.0052 \*

Moon -82317-02-01 06:56 J -28344830.41 -28344830.21 -28344830.00 0.0280 0.0157

Earth -82317-02-01 09:20 J -28344830.31 -28344830.11 -28344829.90 0.0280 0.0143 \*

Moon -82316-02-12 14:52 J -28344452.98 -28344452.88 -28344452.76 0.0278 0.0243

Earth -82316-02-12 17:44 J -28344452.88 -28344452.76 -28344452.62 0.0278 0.0230 \*

Venus -82315-03-19 05:01 J -28344053.49 -28344053.29 -28344053.08 0.0275 0.0010

Mercury -82314-01-22 13:25 J -28343744.02 -28343743.94 -28343743.85 0.0273 0.0213

Mercury -82314-04-21 00:28 J -28343655.60 -28343655.48 -28343655.36 0.0273 0.0118

Mercury -82314-07-18 11:30 J -28343567.16 -28343567.02 -28343566.89 0.0272 0.0023

Mercury -82314-10-14 22:32 J -28343478.69 -28343478.56 -28343478.43 0.0272 0.0073

Mercury -82313-01-11 09:35 J -28343390.20 -28343390.10 -28343389.99 0.0271 0.0169

Mercury -82313-04-08 20:52 J -28343301.65 -28343301.63 -28343301.60 0.0271 0.0266

Mars -82306-02-04 13:40 J -28340809.22 -28340808.93 -28340808.61 0.0269 0.0105

Earth -82306-06-07 10:18 J -28340686.19 -28340686.07 -28340685.94 0.0270 0.0230

Moon -82306-06-07 13:40 J -28340686.06 -28340685.93 -28340685.77 0.0270 0.0222 \*

Moon -82305-06-18 18:56 J -28340308.91 -28340308.71 -28340308.49 0.0272 0.0152

Earth -82305-06-18 19:11 J -28340308.89 -28340308.70 -28340308.48 0.0272 0.0150 \*

Moon -82304-07-01 09:35 J -28339931.34 -28339931.10 -28339930.86 0.0274 0.0071

Earth -82304-07-01 13:11 J -28339931.20 -28339930.95 -28339930.71 0.0274 0.0058 \*

Moon -82303-07-14 14:37 J -28339553.13 -28339552.89 -28339552.65 0.0276 0.0026

Earth -82303-07-14 15:49 J -28339553.08 -28339552.84 -28339552.59 0.0276 0.0041 \*



Earth -82302-07-28 04:04 J -28339174.54 -28339174.33 -28339174.11 0.0279 0.0142  
 Moon -82302-07-28 06:13 J -28339174.44 -28339174.24 -28339174.01 0.0279 0.0130 \*  
 Earth -82301-08-10 02:08 J -28338795.54 -28338795.41 -28338795.28 0.0282 0.0242  
 Moon -82301-08-10 05:59 J -28338795.39 -28338795.25 -28338795.11 0.0282 0.0233 \*  
 Venus -82300-11-27 07:11 J -28338321.39 -28338321.20 -28338321.00 0.0285 0.0121  
 Mercury -82299-08-12 16:04 J -28338062.93 -28338062.83 -28338062.73 0.0287 0.0239  
 Mercury -82299-11-09 15:20 J -28337974.03 -28337973.86 -28337973.68 0.0288 0.0082  
 Mercury -82298-02-06 14:23 J -28337885.07 -28337884.90 -28337884.72 0.0289 0.0073  
 Mercury -82298-05-06 13:11 J -28337796.06 -28337795.95 -28337795.84 0.0289 0.0226  
 Mars -82292-03-20 12:13 J -28335651.24 -28335650.99 -28335650.72 0.0291 0.0058  
 Moon -82292-12-18 14:37 J -28335378.03 -28335377.89 -28335377.71 0.0290 0.0222  
 Earth -82292-12-18 15:06 J -28335378.02 -28335377.87 -28335377.69 0.0290 0.0209 \*  
 Moon -82290-01-01 05:30 J -28334999.50 -28334999.27 -28334999.05 0.0288 0.0107  
 Earth -82290-01-01 08:52 J -28334999.35 -28334999.13 -28334998.90 0.0288 0.0101 \*  
 Moon -82289-01-14 14:23 J -28334621.14 -28334620.90 -28334620.67 0.0285 0.0011  
 Earth -82289-01-14 16:04 J -28334621.07 -28334620.83 -28334620.58 0.0285 0.0008 \*  
 Earth -82288-01-26 13:11 J -28334243.16 -28334242.95 -28334242.72 0.0282 0.0108  
 Moon -82288-01-26 15:20 J -28334243.07 -28334242.86 -28334242.64 0.0282 0.0120 \*  
 Earth -82287-02-08 01:11 J -28333865.61 -28333865.45 -28333865.28 0.0279 0.0198  
 Moon -82287-02-08 04:32 J -28333865.46 -28333865.31 -28333865.15 0.0279 0.0213 \*  
 Earth -82286-02-20 05:01 J -28333488.29 -28333488.29 -28333488.26 0.0276 0.0275  
 Venus -82286-09-29 13:25 J -28333267.14 -28333266.94 -28333266.74 0.0275 0.0057  
 Mercury -82285-06-10 17:16 J -28333011.85 -28333011.78 -28333011.71 0.0273 0.0229  
 Mercury -82285-09-07 04:18 J -28332923.44 -28332923.32 -28332923.21 0.0272 0.0134  
 Mercury -82285-12-04 15:06 J -28332835.00 -28332834.87 -28332834.73 0.0272 0.0040  
 Mercury -82284-03-03 02:08 J -28332746.54 -28332746.41 -28332746.27 0.0271 0.0057  
 Mercury -82284-05-30 13:25 J -28332658.05 -28332657.94 -28332657.83 0.0271 0.0152  
 Mercury -82284-08-27 00:42 J -28332569.52 -28332569.47 -28332569.42 0.0270 0.0248  
 Mars -82278-03-19 08:52 J -28330539.23 -28330539.13 -28330539.00 0.0267 0.0250  
 Moon -82277-06-01 11:16 J -28330099.10 -28330099.03 -28330098.92 0.0269 0.0248

Earth	-82277-06-01 15:06 J	-28330098.94	-28330098.87	-28330098.81	0.0269	0.0258	*
Earth	-82276-06-13 19:54 J	-28329721.84	-28329721.67	-28329721.48	0.0271	0.0182	
Moon	-82276-06-13 20:23 J	-28329721.82	-28329721.65	-28329721.47	0.0271	0.0182	*
Earth	-82275-06-26 09:06 J	-28329344.36	-28329344.12	-28329343.89	0.0273	0.0095	
Moon	-82275-06-26 12:28 J	-28329344.20	-28329343.98	-28329343.74	0.0273	0.0104	*
Earth	-82274-07-09 06:56 J	-28328966.46	-28328966.21	-28328965.96	0.0275	0.0002	
Moon	-82274-07-09 08:23 J	-28328966.41	-28328966.15	-28328965.89	0.0275	0.0013	*
Moon	-82273-07-21 11:16 J	-28328588.26	-28328588.03	-28328587.78	0.0278	0.0089	
Earth	-82273-07-21 14:23 J	-28328588.13	-28328587.90	-28328587.66	0.0278	0.0102	*
Moon	-82272-08-04 03:49 J	-28328209.51	-28328209.34	-28328209.16	0.0281	0.0194	
Earth	-82272-08-04 07:25 J	-28328209.35	-28328209.19	-28328209.00	0.0281	0.0204	*
Venus	-82271-10-22 14:23 J	-28327764.98	-28327764.90	-28327764.81	0.0284	0.0261	
Venus	-82270-06-09 14:23 J	-28327535.06	-28327534.90	-28327534.72	0.0286	0.0182	
Mercury	-82270-12-30 14:37 J	-28327330.91	-28327330.89	-28327330.85	0.0287	0.0283	
Mercury	-82269-03-28 14:08 J	-28327242.07	-28327241.91	-28327241.74	0.0288	0.0126	
Mercury	-82269-06-25 13:11 J	-28327153.13	-28327152.95	-28327152.77	0.0288	0.0030	
Mercury	-82269-09-22 11:59 J	-28327064.14	-28327064.00	-28327063.86	0.0289	0.0183	
Earth	-82263-12-12 16:04 J	-28324791.93	-28324791.83	-28324791.70	0.0290	0.0256	
Moon	-82263-12-12 17:30 J	-28324791.85	-28324791.77	-28324791.69	0.0290	0.0272	*
Mars	-82262-05-07 15:49 J	-28324645.97	-28324645.84	-28324645.68	0.0289	0.0241	
Earth	-82262-12-26 14:08 J	-28324413.11	-28324412.91	-28324412.70	0.0288	0.0151	
Moon	-82262-12-26 17:30 J	-28324412.96	-28324412.77	-28324412.56	0.0288	0.0162	*
Earth	-82260-01-08 01:54 J	-28324034.66	-28324034.42	-28324034.18	0.0286	0.0043	
Moon	-82260-01-08 03:35 J	-28324034.59	-28324034.35	-28324034.10	0.0286	0.0044	*
Moon	-82259-01-21 00:42 J	-28323656.70	-28323656.47	-28323656.23	0.0283	0.0073	
Earth	-82259-01-21 03:20 J	-28323656.59	-28323656.36	-28323656.12	0.0283	0.0062	*
Moon	-82258-02-02 15:49 J	-28323279.01	-28323278.84	-28323278.65	0.0280	0.0174	
Earth	-82258-02-02 19:25 J	-28323278.88	-28323278.69	-28323278.49	0.0280	0.0158	*
Earth	-82257-02-15 02:37 J	-28322901.49	-28322901.39	-28322901.26	0.0277	0.0243	
Moon	-82257-02-15 03:35 J	-28322901.43	-28322901.35	-28322901.25	0.0277	0.0254	*

Venus -82257-08-24 13:54 J -28322709.96 -28322709.92 -28322709.88 0.0276 0.0270

Venus -82256-04-10 14:52 J -28322481.07 -28322480.88 -28322480.69 0.0274 0.0100

Mercury -82256-10-28 19:11 J -28322279.73 -28322279.70 -28322279.66 0.0273 0.0261

Mercury -82255-01-25 05:59 J -28322191.35 -28322191.25 -28322191.14 0.0273 0.0167

Mercury -82255-04-23 17:01 J -28322102.92 -28322102.79 -28322102.66 0.0272 0.0072

Mercury -82255-07-21 04:04 J -28322014.46 -28322014.33 -28322014.19 0.0272 0.0024

Mercury -82255-10-17 15:06 J -28321925.99 -28321925.87 -28321925.74 0.0271 0.0120

Mercury -82254-01-14 02:23 J -28321837.48 -28321837.40 -28321837.32 0.0271 0.0216

Mars -82248-05-09 14:08 J -28319530.22 -28319529.91 -28319529.59 0.0268 0.0071

Moon -82247-06-08 14:52 J -28319135.02 -28319134.88 -28319134.71 0.0270 0.0212

Earth -82247-06-08 15:49 J -28319134.98 -28319134.84 -28319134.69 0.0270 0.0216 \*

Moon -82246-06-20 21:20 J -28318757.81 -28318757.61 -28318757.39 0.0272 0.0141

Earth -82246-06-21 01:25 J -28318757.66 -28318757.44 -28318757.23 0.0272 0.0134 \*

Moon -82245-07-02 17:59 J -28318379.98 -28318379.75 -28318379.51 0.0274 0.0055

Earth -82245-07-02 19:40 J -28318379.93 -28318379.68 -28318379.43 0.0274 0.0042 \*

Earth -82244-07-15 23:16 J -28318001.78 -28318001.53 -28318001.29 0.0277 0.0056

Moon -82244-07-16 02:08 J -28318001.65 -28318001.41 -28318001.17 0.0277 0.0043 \*

Earth -82243-07-29 12:13 J -28317623.19 -28317622.99 -28317622.77 0.0279 0.0158

Moon -82243-07-29 16:04 J -28317623.04 -28317622.83 -28317622.61 0.0279 0.0147 \*

Earth -82242-08-12 11:30 J -28317244.12 -28317244.02 -28317243.92 0.0282 0.0256

Moon -82242-08-12 11:59 J -28317244.10 -28317244.00 -28317243.87 0.0282 0.0251 \*

Venus -82241-05-03 20:37 J -28316978.79 -28316978.64 -28316978.48 0.0284 0.0201

Venus -82241-12-19 20:52 J -28316748.74 -28316748.63 -28316748.51 0.0286 0.0243

Mercury -82240-08-15 12:56 J -28316510.11 -28316509.96 -28316509.81 0.0288 0.0169

Mercury -82240-11-12 12:13 J -28316421.17 -28316420.99 -28316420.81 0.0288 0.0013

Mercury -82239-02-09 11:01 J -28316332.19 -28316332.04 -28316331.88 0.0289 0.0142

Mars -82234-06-28 01:40 J -28314367.67 -28314367.43 -28314367.18 0.0292 0.0113

Moon -82233-12-19 22:47 J -28313826.72 -28313826.55 -28313826.37 0.0290 0.0204

Earth -82233-12-20 02:23 J -28313826.57 -28313826.40 -28313826.21 0.0290 0.0191 \*

Moon -82231-01-02 17:01 J -28313448.01 -28313447.79 -28313447.56 0.0287 0.0089

Earth -82231-01-02 19:11 J -28313447.93 -28313447.70 -28313447.46 0.0287 0.0083 \*  
 Earth -82230-01-16 01:40 J -28313069.67 -28313069.43 -28313069.19 0.0285 0.0024  
 Moon -82230-01-16 04:04 J -28313069.57 -28313069.33 -28313069.10 0.0285 0.0031 \*  
 Earth -82229-01-28 22:04 J -28312691.79 -28312691.58 -28312691.36 0.0282 0.0124  
 Moon -82229-01-29 01:40 J -28312691.64 -28312691.43 -28312691.22 0.0282 0.0138 \*  
 Moon -82228-02-09 08:37 J -28312314.26 -28312314.14 -28312313.98 0.0279 0.0227  
 Earth -82228-02-09 09:20 J -28312314.26 -28312314.11 -28312313.96 0.0279 0.0212 \*  
 Venus -82227-03-06 21:49 J -28311923.73 -28311923.59 -28311923.46 0.0276 0.0206  
 Venus -82227-10-21 22:32 J -28311694.72 -28311694.56 -28311694.40 0.0274 0.0163  
 Mercury -82226-06-14 09:49 J -28311459.19 -28311459.09 -28311458.99 0.0273 0.0184  
 Mercury -82226-09-10 20:37 J -28311370.76 -28311370.64 -28311370.51 0.0272 0.0089  
 Mercury -82226-12-08 07:40 J -28311282.31 -28311282.18 -28311282.04 0.0272 0.0007  
 Mercury -82225-03-05 18:42 J -28311193.84 -28311193.72 -28311193.59 0.0271 0.0102  
 Mercury -82225-06-02 05:44 J -28311105.34 -28311105.26 -28311105.16 0.0271 0.0199  
 Moon -82218-06-03 19:54 J -28308547.77 -28308547.67 -28308547.55 0.0269 0.0237  
 Earth -82218-06-03 20:08 J -28308547.76 -28308547.66 -28308547.57 0.0269 0.0245 \*  
 Mars -82218-07-01 19:11 J -28308519.98 -28308519.70 -28308519.39 0.0269 0.0123  
 Earth -82217-06-15 01:11 J -28308170.63 -28308170.45 -28308170.25 0.0271 0.0168  
 Moon -82217-06-15 05:01 J -28308170.47 -28308170.29 -28308170.09 0.0271 0.0171 \*  
 Earth -82216-06-27 14:52 J -28307793.11 -28307792.88 -28307792.63 0.0273 0.0080  
 Moon -82216-06-27 16:47 J -28307793.04 -28307792.80 -28307792.55 0.0273 0.0090 \*  
 Moon -82215-07-10 11:01 J -28307415.30 -28307415.04 -28307414.79 0.0275 0.0004  
 Earth -82215-07-10 13:40 J -28307415.18 -28307414.93 -28307414.68 0.0275 0.0017 \*  
 Moon -82214-07-23 18:42 J -28307036.94 -28307036.72 -28307036.49 0.0278 0.0106  
 Earth -82214-07-23 21:35 J -28307036.81 -28307036.60 -28307036.36 0.0278 0.0118 \*  
 Earth -82213-08-05 15:49 J -28306657.99 -28306657.84 -28306657.67 0.0281 0.0218  
 Moon -82213-08-05 15:49 J -28306657.99 -28306657.84 -28306657.67 0.0281 0.0212 \*  
 Venus -82212-11-14 03:20 J -28306192.55 -28306192.36 -28306192.17 0.0285 0.0142  
 Mercury -82210-01-02 11:30 J -28305778.14 -28305778.02 -28305777.90 0.0288 0.0214  
 Mercury -82210-04-01 10:47 J -28305689.22 -28305689.05 -28305688.87 0.0288 0.0058

Mercury -82210-06-29 09:49 J -28305600.26 -28305600.09 -28305599.92 0.0289 0.0097

Mercury -82210-09-26 08:23 J -28305511.23 -28305511.15 -28305511.06 0.0289 0.0251

Mars -82204-08-14 10:04 J -28303362.33 -28303362.08 -28303361.82 0.0291 0.0075

Earth -82204-12-14 03:06 J -28303240.50 -28303240.37 -28303240.22 0.0290 0.0239

Moon -82204-12-14 07:11 J -28303240.32 -28303240.20 -28303240.08 0.0290 0.0254 \*

Earth -82203-12-28 00:28 J -28302861.69 -28302861.48 -28302861.26 0.0288 0.0133

Moon -82203-12-28 02:23 J -28302861.61 -28302861.40 -28302861.17 0.0288 0.0142 \*

Moon -82201-01-10 09:06 J -28302483.36 -28302483.12 -28302482.87 0.0285 0.0023

Earth -82201-01-10 11:30 J -28302483.26 -28302483.02 -28302482.78 0.0285 0.0025 \*

Moon -82200-01-22 08:52 J -28302105.35 -28302105.13 -28302104.90 0.0282 0.0091

Earth -82200-01-22 12:13 J -28302105.22 -28302104.99 -28302104.76 0.0282 0.0079 \*

Earth -82199-02-04 03:06 J -28301727.55 -28301727.37 -28301727.18 0.0280 0.0173

Moon -82199-02-04 03:20 J -28301727.52 -28301727.36 -28301727.18 0.0280 0.0190 \*

Earth -82198-02-16 09:35 J -28301350.18 -28301350.10 -28301350.00 0.0277 0.0255

Moon -82198-02-16 12:56 J -28301350.00 -28301349.96 -28301349.88 0.0277 0.0267 \*

Venus -82198-09-16 23:01 J -28301137.70 -28301137.54 -28301137.38 0.0275 0.0164

Venus -82197-05-02 23:30 J -28300908.65 -28300908.52 -28300908.38 0.0274 0.0204

Mercury -82197-10-31 11:30 J -28300727.10 -28300727.02 -28300726.94 0.0273 0.0216

Mercury -82196-01-27 22:18 J -28300638.68 -28300638.57 -28300638.44 0.0272 0.0123

Mercury -82196-04-26 09:20 J -28300550.24 -28300550.11 -28300549.97 0.0272 0.0028

Mercury -82196-07-23 20:23 J -28300461.78 -28300461.65 -28300461.52 0.0271 0.0069

Mercury -82196-10-20 07:25 J -28300373.29 -28300373.19 -28300373.08 0.0271 0.0165

Mercury -82195-01-16 18:56 J -28300284.75 -28300284.71 -28300284.68 0.0270 0.0261

Mars -82190-08-12 17:01 J -28298250.90 -28298250.79 -28298250.63 0.0268 0.0242

Moon -82189-05-28 16:32 J -28297960.85 -28297960.81 -28297960.73 0.0268 0.0262

Moon -82188-06-09 14:52 J -28297584.03 -28297583.88 -28297583.71 0.0270 0.0203

Earth -82188-06-09 18:28 J -28297583.88 -28297583.73 -28297583.56 0.0270 0.0203 \*

Moon -82187-06-22 03:06 J -28297206.57 -28297206.37 -28297206.15 0.0272 0.0129

Earth -82187-06-22 04:18 J -28297206.53 -28297206.32 -28297206.09 0.0272 0.0120 \*

Earth -82186-07-04 23:01 J -28296828.78 -28296828.54 -28296828.29 0.0274 0.0028

Moon -82186-07-05 01:54 J -28296828.66 -28296828.42 -28296828.18 0.0274 0.0042 \*  
 Earth -82185-07-17 03:20 J -28296450.60 -28296450.36 -28296450.12 0.0277 0.0072  
 Moon -82185-07-17 06:28 J -28296450.48 -28296450.23 -28296449.98 0.0277 0.0058 \*  
 Moon -82184-07-30 16:32 J -28296072.01 -28296071.81 -28296071.59 0.0280 0.0166  
 Earth -82184-07-30 17:30 J -28296071.96 -28296071.77 -28296071.57 0.0280 0.0173 \*  
 Moon -82183-08-13 13:25 J -28295693.00 -28295692.94 -28295692.85 0.0282 0.0269  
 Earth -82183-08-13 17:01 J -28295692.84 -28295692.79 -28295692.70 0.0282 0.0271  
 Venus -82182-05-27 07:54 J -28295406.37 -28295406.17 -28295405.96 0.0285 0.0088  
 Mercury -82181-05-21 09:06 J -28295046.18 -28295046.12 -28295046.04 0.0287 0.0264  
 Mercury -82181-08-18 08:52 J -28294957.30 -28294957.13 -28294956.96 0.0288 0.0106  
 Mercury -82181-11-15 07:54 J -28294868.35 -28294868.17 -28294867.99 0.0288 0.0050  
 Mercury -82180-02-12 06:42 J -28294779.34 -28294779.22 -28294779.09 0.0289 0.0204  
 Mars -82176-10-04 05:16 J -28293084.31 -28293084.28 -28293084.23 0.0293 0.0289  
 Earth -82175-12-08 08:23 J -28292654.21 -28292654.15 -28292654.07 0.0292 0.0278  
 Mars -82174-10-01 23:16 J -28292356.65 -28292356.53 -28292356.40 0.0290 0.0255  
 Moon -82174-12-22 09:20 J -28292275.28 -28292275.11 -28292274.92 0.0290 0.0186  
 Earth -82174-12-22 11:01 J -28292275.23 -28292275.04 -28292274.84 0.0290 0.0174 \*  
 Earth -82172-01-04 03:20 J -28291896.60 -28291896.36 -28291896.13 0.0287 0.0065  
 Moon -82172-01-04 05:16 J -28291896.50 -28291896.28 -28291896.05 0.0287 0.0069 \*  
 Earth -82171-01-17 09:06 J -28291518.36 -28291518.12 -28291517.88 0.0284 0.0041  
 Moon -82171-01-17 12:28 J -28291518.22 -28291517.98 -28291517.74 0.0284 0.0048 \*  
 Moon -82170-01-30 04:04 J -28291140.52 -28291140.33 -28291140.11 0.0281 0.0155  
 Earth -82170-01-30 04:47 J -28291140.50 -28291140.30 -28291140.09 0.0281 0.0140 \*  
 Moon -82169-02-11 11:30 J -28290763.13 -28290763.02 -28290762.89 0.0278 0.0241  
 Earth -82169-02-11 15:20 J -28290763.00 -28290762.86 -28290762.72 0.0278 0.0226 \*  
 Venus -82168-03-29 05:59 J -28290351.44 -28290351.25 -28290351.06 0.0275 0.0103  
 Venus -82168-11-13 06:13 J -28290122.28 -28290122.24 -28290122.18 0.0274 0.0265  
 Mercury -82167-03-20 14:52 J -28289994.94 -28289994.88 -28289994.81 0.0273 0.0236  
 Mercury -82167-06-17 01:54 J -28289906.53 -28289906.42 -28289906.31 0.0272 0.0141  
 Mercury -82167-09-13 12:56 J -28289818.10 -28289817.96 -28289817.83 0.0272 0.0047

Mercury -82167-12-10 23:44 J -28289729.64 -28289729.51 -28289729.37 0.0271 0.0050

Mercury -82166-03-09 10:47 J -28289641.16 -28289641.05 -28289640.93 0.0271 0.0146

Mercury -82166-06-05 22:04 J -28289552.63 -28289552.58 -28289552.52 0.0270 0.0241

Mars -82160-10-03 14:23 J -28287241.22 -28287240.90 -28287240.57 0.0268 0.0054

Earth -82159-06-04 22:18 J -28286996.69 -28286996.57 -28286996.44 0.0269 0.0233

Moon -82159-06-05 01:40 J -28286996.55 -28286996.43 -28286996.29 0.0269 0.0225 \*

Earth -82158-06-17 04:04 J -28286619.53 -28286619.33 -28286619.13 0.0271 0.0154

Moon -82158-06-17 05:16 J -28286619.48 -28286619.28 -28286619.07 0.0271 0.0159 \*

Moon -82157-06-28 15:06 J -28286242.11 -28286241.87 -28286241.63 0.0273 0.0079

Earth -82157-06-28 18:13 J -28286241.98 -28286241.74 -28286241.50 0.0273 0.0065 \*

Moon -82156-07-11 14:08 J -28285864.15 -28285863.91 -28285863.66 0.0275 0.0018

Earth -82156-07-11 17:16 J -28285864.02 -28285863.78 -28285863.53 0.0275 0.0032 \*

Earth -82155-07-25 02:08 J -28285485.63 -28285485.41 -28285485.19 0.0278 0.0132

Moon -82155-07-25 03:06 J -28285485.58 -28285485.37 -28285485.15 0.0278 0.0124 \*

Earth -82154-08-07 20:37 J -28285106.77 -28285106.64 -28285106.48 0.0281 0.0232

Moon -82154-08-08 00:28 J -28285106.61 -28285106.48 -28285106.32 0.0281 0.0230 \*

Venus -82153-12-06 14:23 J -28284620.12 -28284619.90 -28284619.68 0.0285 0.0030

Mercury -82151-01-05 07:25 J -28284225.35 -28284225.19 -28284225.04 0.0288 0.0152

Mercury -82151-04-04 06:28 J -28284136.41 -28284136.23 -28284136.05 0.0289 0.0004

Mercury -82151-07-02 05:16 J -28284047.43 -28284047.28 -28284047.13 0.0289 0.0159

Mars -82146-11-21 18:13 J -28282078.98 -28282078.74 -28282078.48 0.0292 0.0099

Earth -82145-12-15 10:47 J -28281689.20 -28281689.05 -28281688.89 0.0290 0.0223

Moon -82145-12-15 11:44 J -28281689.16 -28281689.01 -28281688.86 0.0290 0.0234 \*

Moon -82144-12-29 05:01 J -28281310.52 -28281310.29 -28281310.07 0.0288 0.0121

Earth -82144-12-29 07:25 J -28281310.40 -28281310.19 -28281309.96 0.0288 0.0116 \*

Moon -82142-01-11 14:37 J -28280932.13 -28280931.89 -28280931.65 0.0285 0.0006

Earth -82142-01-11 17:59 J -28280931.99 -28280931.75 -28280931.51 0.0285 0.0008 \*

Earth -82141-01-24 17:59 J -28280553.97 -28280553.75 -28280553.52 0.0282 0.0095

Moon -82141-01-24 18:28 J -28280553.94 -28280553.73 -28280553.51 0.0282 0.0107 \*

Earth -82140-02-05 08:08 J -28280176.33 -28280176.16 -28280175.98 0.0279 0.0187

Moon -82140-02-05 11:59 J -28280176.16 -28280176.00 -28280175.84 0.0279 0.0203 \*  
 Earth -82139-02-17 13:54 J -28279798.97 -28279798.92 -28279798.84 0.0276 0.0266  
 Moon -82139-02-17 15:20 J -28279798.88 -28279798.86 -28279798.83 0.0276 0.0275 \*  
 Venus -82139-10-09 06:28 J -28279565.43 -28279565.23 -28279565.03 0.0275 0.0063  
 Mercury -82138-08-07 16:32 J -28279262.82 -28279262.81 -28279262.79 0.0273 0.0270  
 Mercury -82138-11-04 03:20 J -28279174.45 -28279174.36 -28279174.25 0.0272 0.0176  
 Mercury -82137-01-31 14:23 J -28279086.03 -28279085.90 -28279085.77 0.0272 0.0081  
 Mercury -82137-04-29 01:25 J -28278997.58 -28278997.44 -28278997.31 0.0271 0.0015  
 Mercury -82137-07-26 12:28 J -28278909.11 -28278908.98 -28278908.86 0.0271 0.0110  
 Mercury -82137-10-22 23:30 J -28278820.60 -28278820.52 -28278820.43 0.0270 0.0206  
 Moon -82130-05-30 13:54 J -28276410.00 -28276409.92 -28276409.83 0.0268 0.0251  
 Earth -82130-05-30 17:30 J -28276409.81 -28276409.77 -28276409.72 0.0268 0.0263  
 Mars -82130-11-24 16:32 J -28276232.10 -28276231.81 -28276231.52 0.0269 0.0126  
 Moon -82129-06-10 18:13 J -28276032.90 -28276032.74 -28276032.57 0.0270 0.0191  
 Earth -82129-06-10 19:11 J -28276032.86 -28276032.70 -28276032.51 0.0270 0.0190 \*  
 Earth -82128-06-23 05:30 J -28275655.50 -28275655.27 -28275655.04 0.0272 0.0105  
 Moon -82128-06-23 08:37 J -28275655.35 -28275655.14 -28275654.92 0.0272 0.0118 \*  
 Earth -82127-07-06 00:13 J -28275277.74 -28275277.49 -28275277.24 0.0274 0.0013  
 Moon -82127-07-06 03:35 J -28275277.61 -28275277.35 -28275277.10 0.0274 0.0028 \*  
 Moon -82126-07-19 03:35 J -28274899.60 -28274899.35 -28274899.10 0.0277 0.0075  
 Earth -82126-07-19 04:47 J -28274899.54 -28274899.30 -28274899.06 0.0277 0.0087 \*  
 Moon -82125-07-31 15:35 J -28274521.03 -28274520.85 -28274520.65 0.0280 0.0184  
 Earth -82125-07-31 19:25 J -28274520.87 -28274520.69 -28274520.50 0.0280 0.0187 \*  
 Earth -82124-08-14 19:54 J -28274141.67 -28274141.67 -28274141.67 0.0283 0.0283  
 Venus -82123-06-18 17:16 J -28273834.00 -28273833.78 -28273833.57 0.0285 0.0019  
 Mercury -82122-05-25 04:04 J -28273493.45 -28273493.33 -28273493.20 0.0287 0.0208  
 Mercury -82122-08-22 03:35 J -28273404.53 -28273404.35 -28273404.17 0.0288 0.0051  
 Mercury -82122-11-19 02:23 J -28273315.56 -28273315.40 -28273315.23 0.0289 0.0106  
 Mercury -82121-02-16 00:56 J -28273226.52 -28273226.46 -28273226.37 0.0289 0.0260  
 Earth -82116-12-09 12:42 J -28271103.06 -28271102.97 -28271102.85 0.0292 0.0265



Moon -82116-12-09 12:42 J -28271103.03 -28271102.97 -28271102.89 0.0292 0.0277 \*  
 Mars -82115-01-08 05:30 J -28271073.52 -28271073.27 -28271073.01 0.0292 0.0085  
 Earth -82115-12-23 15:20 J -28270724.06 -28270723.86 -28270723.65 0.0290 0.0159  
 Moon -82115-12-23 18:13 J -28270723.92 -28270723.74 -28270723.54 0.0290 0.0167 \*  
 Earth -82113-01-06 07:25 J -28270345.43 -28270345.19 -28270344.95 0.0287 0.0049  
 Moon -82113-01-06 11:01 J -28270345.28 -28270345.04 -28270344.80 0.0287 0.0051 \*  
 Moon -82112-01-18 12:42 J -28269967.21 -28269966.97 -28269966.72 0.0284 0.0065  
 Earth -82112-01-18 12:56 J -28269967.20 -28269966.96 -28269966.73 0.0284 0.0057 \*  
 Moon -82111-01-31 04:32 J -28269589.50 -28269589.31 -28269589.12 0.0281 0.0170  
 Earth -82111-01-31 08:08 J -28269589.36 -28269589.16 -28269588.96 0.0281 0.0154 \*  
 Moon -82110-02-12 16:47 J -28269211.89 -28269211.80 -28269211.70 0.0278 0.0253  
 Earth -82110-02-12 17:59 J -28269211.86 -28269211.75 -28269211.62 0.0278 0.0239 \*  
 Venus -82109-04-20 12:42 J -28268779.18 -28268778.97 -28268778.77 0.0275 0.0008  
 Mercury -82108-03-23 06:42 J -28268442.31 -28268442.22 -28268442.13 0.0273 0.0197  
 Mercury -82108-06-19 17:30 J -28268353.89 -28268353.77 -28268353.64 0.0272 0.0102  
 Mercury -82108-09-16 04:32 J -28268265.44 -28268265.31 -28268265.17 0.0272 0.0007  
 Mercury -82108-12-13 15:35 J -28268176.98 -28268176.85 -28268176.72 0.0271 0.0089  
 Mercury -82107-03-12 02:37 J -28268088.48 -28268088.39 -28268088.29 0.0271 0.0185  
 Mars -82101-01-06 12:28 J -28265962.14 -28265961.98 -28265961.80 0.0267 0.0225  
 Earth -82100-06-05 22:32 J -28265445.70 -28265445.56 -28265445.42 0.0269 0.0221  
 Moon -82100-06-06 00:28 J -28265445.63 -28265445.48 -28265445.32 0.0269 0.0214 \*  
 Moon -82099-06-18 00:56 J -28265068.66 -28265068.46 -28265068.24 0.0270 0.0151  
 Earth -82099-06-18 04:04 J -28265068.53 -28265068.33 -28265068.11 0.0270 0.0141 \*  
 Moon -82098-06-30 15:35 J -28264691.08 -28264690.85 -28264690.61 0.0273 0.0067  
 Earth -82098-06-30 18:28 J -28264690.97 -28264690.73 -28264690.48 0.0273 0.0051 \*  
 Earth -82097-07-12 17:59 J -28264313.00 -28264312.75 -28264312.50 0.0275 0.0046  
 Moon -82097-07-12 18:56 J -28264312.95 -28264312.71 -28264312.47 0.0275 0.0032 \*  
 Earth -82096-07-26 03:06 J -28263934.58 -28263934.37 -28263934.15 0.0278 0.0146  
 Moon -82096-07-26 06:42 J -28263934.43 -28263934.22 -28263933.99 0.0278 0.0139 \*  
 Earth -82095-08-08 22:32 J -28263555.68 -28263555.56 -28263555.43 0.0281 0.0245

Moon -82095-08-09 00:13 J -28263555.61 -28263555.49 -28263555.36 0.0281 0.0245 \*  
 Venus -82094-12-29 23:16 J -28263047.74 -28263047.53 -28263047.32 0.0285 0.0076  
 Mercury -82093-10-11 02:23 J -28262761.48 -28262761.40 -28262761.31 0.0288 0.0255  
 Mercury -82092-01-08 01:54 J -28262672.59 -28262672.42 -28262672.25 0.0288 0.0097  
 Mercury -82092-04-07 00:56 J -28262583.63 -28262583.46 -28262583.28 0.0289 0.0059  
 Mercury -82092-07-04 23:44 J -28262494.63 -28262494.51 -28262494.39 0.0289 0.0214  
 Mars -82087-02-27 14:37 J -28260795.96 -28260795.89 -28260795.81 0.0293 0.0279  
 Moon -82086-12-17 11:59 J -28260138.15 -28260138.00 -28260137.82 0.0290 0.0216  
 Earth -82086-12-17 15:35 J -28260138.01 -28260137.85 -28260137.67 0.0290 0.0208 \*  
 Mars -82085-02-25 08:08 J -28260068.24 -28260068.16 -28260068.04 0.0290 0.0266  
 Moon -82085-12-30 08:52 J -28259759.35 -28259759.13 -28259758.90 0.0288 0.0102  
 Earth -82085-12-30 12:13 J -28259759.22 -28259758.99 -28259758.76 0.0288 0.0100 \*  
 Earth -82083-01-12 22:04 J -28259380.82 -28259380.58 -28259380.33 0.0285 0.0010  
 Moon -82083-01-12 22:18 J -28259380.80 -28259380.57 -28259380.33 0.0285 0.0014 \*  
 Earth -82082-01-25 21:49 J -28259002.81 -28259002.59 -28259002.37 0.0282 0.0110  
 Moon -82082-01-26 00:56 J -28259002.66 -28259002.46 -28259002.23 0.0282 0.0125 \*  
 Earth -82081-02-07 11:30 J -28258625.18 -28258625.02 -28258624.85 0.0279 0.0200  
 Moon -82081-02-07 12:28 J -28258625.13 -28258624.98 -28258624.81 0.0279 0.0214 \*  
 Venus -82080-10-31 12:56 J -28257993.16 -28257992.96 -28257992.75 0.0274 0.0034  
 Mercury -82079-08-10 08:23 J -28257710.22 -28257710.15 -28257710.08 0.0273 0.0231  
 Mercury -82079-11-06 19:11 J -28257621.82 -28257621.70 -28257621.59 0.0272 0.0136  
 Mercury -82078-02-03 05:59 J -28257533.38 -28257533.25 -28257533.11 0.0271 0.0042  
 Mercury -82078-05-02 17:01 J -28257444.92 -28257444.79 -28257444.66 0.0271 0.0054  
 Mercury -82078-07-30 04:04 J -28257356.44 -28257356.33 -28257356.21 0.0270 0.0150  
 Mercury -82078-10-26 15:20 J -28257267.92 -28257267.86 -28257267.81 0.0270 0.0245  
 Mars -82071-02-26 04:18 J -28254953.63 -28254953.32 -28254952.99 0.0268 0.0053  
 Moon -82071-05-31 14:08 J -28254858.99 -28254858.91 -28254858.79 0.0268 0.0244  
 Earth -82071-05-31 16:32 J -28254858.89 -28254858.81 -28254858.73 0.0268 0.0252 \*  
 Earth -82070-06-12 18:13 J -28254481.92 -28254481.74 -28254481.55 0.0270 0.0177  
 Moon -82070-06-12 20:52 J -28254481.79 -28254481.63 -28254481.44 0.0270 0.0182 \*

Earth	-82069-06-24 04:04 J	-28254104.56	-28254104.33	-28254104.09	0.0272	0.0092
Moon	-82069-06-24 06:28 J	-28254104.45	-28254104.23	-28254103.98	0.0272	0.0106 *
Moon	-82068-07-06 21:20 J	-28253726.86	-28253726.61	-28253726.35	0.0274	0.0015
Earth	-82068-07-06 23:16 J	-28253726.78	-28253726.53	-28253726.28	0.0274	0.0002 *
Moon	-82067-07-19 23:59 J	-28253348.73	-28253348.50	-28253348.26	0.0277	0.0090
Earth	-82067-07-20 03:49 J	-28253348.57	-28253348.34	-28253348.10	0.0277	0.0100 *
Moon	-82066-08-02 17:44 J	-28252969.93	-28252969.76	-28252969.59	0.0280	0.0199
Earth	-82066-08-02 18:28 J	-28252969.89	-28252969.73	-28252969.54	0.0280	0.0200 *
Venus	-82064-07-11 00:28 J	-28252261.67	-28252261.48	-28252261.27	0.0285	0.0119
Mercury	-82063-05-27 22:04 J	-28251940.73	-28251940.58	-28251940.42	0.0288	0.0157
Mercury	-82063-08-24 21:20 J	-28251851.79	-28251851.61	-28251851.43	0.0288	0.0005
Mercury	-82063-11-21 20:23 J	-28251762.80	-28251762.65	-28251762.50	0.0289	0.0155
Mars	-82057-04-16 02:37 J	-28249790.63	-28249790.39	-28249790.13	0.0293	0.0095
Earth	-82057-12-10 14:37 J	-28249552.00	-28249551.89	-28249551.76	0.0292	0.0252
Moon	-82057-12-10 17:59 J	-28249551.84	-28249551.75	-28249551.64	0.0292	0.0262 *
Earth	-82056-12-24 17:01 J	-28249173.00	-28249172.79	-28249172.58	0.0290	0.0144
Moon	-82056-12-24 19:54 J	-28249172.88	-28249172.67	-28249172.46	0.0290	0.0148 *
Moon	-82054-01-07 08:23 J	-28248794.40	-28248794.15	-28248793.90	0.0287	0.0030
Earth	-82054-01-07 09:06 J	-28248794.36	-28248794.12	-28248793.88	0.0287	0.0034 *
Moon	-82053-01-20 10:47 J	-28248416.28	-28248416.05	-28248415.82	0.0284	0.0083
Earth	-82053-01-20 14:23 J	-28248416.13	-28248415.90	-28248415.67	0.0284	0.0072 *
Moon	-82052-02-01 07:40 J	-28248038.34	-28248038.18	-28248037.99	0.0281	0.0184
Earth	-82052-02-01 08:52 J	-28248038.31	-28248038.13	-28248037.92	0.0281	0.0169 *
Earth	-82051-02-13 18:42 J	-28247660.81	-28247660.72	-28247660.61	0.0278	0.0251
Moon	-82051-02-13 21:49 J	-28247660.66	-28247660.59	-28247660.50	0.0278	0.0262 *
Venus	-82050-05-13 17:44 J	-28247206.95	-28247206.76	-28247206.56	0.0275	0.0086
Mercury	-82050-12-28 11:16 J	-28246978.07	-28246978.03	-28246977.99	0.0273	0.0255
Mercury	-82049-03-25 22:04 J	-28246889.69	-28246889.58	-28246889.47	0.0273	0.0161
Mercury	-82049-06-22 08:52 J	-28246801.26	-28246801.13	-28246800.99	0.0272	0.0066
Mercury	-82049-09-18 19:54 J	-28246712.80	-28246712.67	-28246712.53	0.0271	0.0030

Mercury -82049-12-16 06:56 J -28246624.33 -28246624.21 -28246624.09 0.0271 0.0126  
 Mercury -82048-03-14 18:13 J -28246535.82 -28246535.74 -28246535.67 0.0270 0.0222  
 Moon -82042-05-27 00:42 J -28244271.49 -28244271.47 -28244271.44 0.0267 0.0265  
 Mars -82041-04-19 03:49 J -28243943.60 -28243943.34 -28243943.04 0.0268 0.0141  
 Moon -82041-06-06 18:28 J -28243894.88 -28243894.73 -28243894.57 0.0268 0.0207  
 Earth -82041-06-06 21:06 J -28243894.76 -28243894.62 -28243894.46 0.0268 0.0210 \*  
 Moon -82040-06-19 00:13 J -28243517.68 -28243517.49 -28243517.27 0.0270 0.0140  
 Earth -82040-06-19 02:52 J -28243517.59 -28243517.38 -28243517.15 0.0270 0.0129 \*  
 Earth -82039-07-01 17:16 J -28243140.02 -28243139.78 -28243139.53 0.0273 0.0038  
 Moon -82039-07-01 19:11 J -28243139.93 -28243139.70 -28243139.46 0.0273 0.0054 \*  
 Earth -82038-07-14 16:47 J -28242762.04 -28242761.80 -28242761.55 0.0275 0.0060  
 Moon -82038-07-14 20:52 J -28242761.88 -28242761.63 -28242761.38 0.0275 0.0045 \*  
 Earth -82037-07-27 02:23 J -28242383.59 -28242383.40 -28242383.18 0.0278 0.0160  
 Moon -82037-07-27 03:35 J -28242383.56 -28242383.35 -28242383.12 0.0278 0.0154 \*  
 Moon -82036-08-09 18:56 J -28242004.78 -28242004.71 -28242004.60 0.0282 0.0263  
 Earth -82036-08-09 22:18 J -28242004.66 -28242004.57 -28242004.46 0.0282 0.0257 \*  
 Venus -82035-06-05 06:42 J -28241705.28 -28241705.22 -28241705.14 0.0284 0.0266  
 Venus -82034-01-21 06:42 J -28241475.39 -28241475.22 -28241475.05 0.0286 0.0177  
 Mercury -82034-10-14 20:23 J -28241208.77 -28241208.65 -28241208.52 0.0288 0.0204  
 Mercury -82033-01-11 19:40 J -28241119.85 -28241119.68 -28241119.50 0.0288 0.0048  
 Mercury -82033-04-09 18:42 J -28241030.88 -28241030.72 -28241030.55 0.0289 0.0109  
 Mercury -82033-07-07 17:16 J -28240941.84 -28240941.78 -28240941.70 0.0290 0.0264  
 Mars -82027-06-03 11:16 J -28238785.28 -28238785.03 -28238784.78 0.0292 0.0093  
 Moon -82027-12-18 14:37 J -28238587.05 -28238586.89 -28238586.71 0.0290 0.0201  
 Earth -82027-12-18 17:01 J -28238586.96 -28238586.79 -28238586.60 0.0290 0.0194 \*  
 Earth -82025-01-01 13:40 J -28238208.16 -28238207.93 -28238207.70 0.0288 0.0085  
 Moon -82025-01-01 14:52 J -28238208.10 -28238207.88 -28238207.65 0.0288 0.0083 \*  
 Earth -82024-01-13 23:30 J -28237829.76 -28237829.52 -28237829.28 0.0285 0.0023  
 Moon -82024-01-14 03:06 J -28237829.61 -28237829.37 -28237829.13 0.0285 0.0032 \*  
 Earth -82023-01-26 22:32 J -28237451.76 -28237451.56 -28237451.33 0.0282 0.0124

Moon -82023-01-27 00:13 J -28237451.70 -28237451.49 -28237451.27 0.0282 0.0137 \*  
 Moon -82022-02-08 09:06 J -28237074.26 -28237074.12 -28237073.97 0.0279 0.0224  
 Earth -82022-02-08 12:28 J -28237074.13 -28237073.98 -28237073.82 0.0279 0.0213 \*  
 Venus -82021-04-07 17:01 J -28236649.87 -28236649.79 -28236649.69 0.0276 0.0246  
 Venus -82021-11-22 18:13 J -28236420.92 -28236420.74 -28236420.56 0.0274 0.0125  
 Mercury -82020-08-12 23:30 J -28236157.61 -28236157.52 -28236157.42 0.0272 0.0195  
 Mercury -82020-11-09 10:32 J -28236069.19 -28236069.06 -28236068.94 0.0272 0.0100  
 Mercury -82019-02-05 21:20 J -28235980.74 -28235980.61 -28235980.47 0.0271 0.0009  
 Mercury -82019-05-05 08:23 J -28235892.28 -28235892.15 -28235892.02 0.0271 0.0090  
 Mercury -82019-08-01 19:25 J -28235803.78 -28235803.69 -28235803.59 0.0270 0.0186  
 Mars -82013-05-30 23:01 J -28233674.70 -28233674.54 -28233674.35 0.0267 0.0224  
 Earth -82012-06-01 14:08 J -28233308.00 -28233307.91 -28233307.80 0.0268 0.0241  
 Moon -82012-06-01 17:01 J -28233307.89 -28233307.79 -28233307.67 0.0268 0.0236 \*  
 Earth -82011-06-13 16:04 J -28232931.03 -28232930.83 -28232930.64 0.0270 0.0165  
 Moon -82011-06-13 18:42 J -28232930.90 -28232930.72 -28232930.51 0.0270 0.0171 \*  
 Moon -82010-06-25 23:16 J -28232553.76 -28232553.53 -28232553.28 0.0272 0.0094  
 Earth -82010-06-26 01:54 J -28232553.66 -28232553.42 -28232553.19 0.0272 0.0079 \*  
 Moon -82009-07-07 17:01 J -28232176.04 -28232175.79 -28232175.54 0.0274 0.0002  
 Earth -82009-07-07 20:37 J -28232175.89 -28232175.64 -28232175.39 0.0274 0.0015 \*  
 Moon -82008-07-21 00:42 J -28231797.69 -28231797.47 -28231797.25 0.0277 0.0107  
 Earth -82008-07-21 01:11 J -28231797.67 -28231797.45 -28231797.22 0.0277 0.0114 \*  
 Earth -82007-08-03 16:04 J -28231418.98 -28231418.83 -28231418.66 0.0280 0.0212  
 Moon -82007-08-03 19:11 J -28231418.85 -28231418.70 -28231418.53 0.0280 0.0215 \*  
 Venus -82006-12-16 06:28 J -28230919.35 -28230919.23 -28230919.10 0.0284 0.0230  
 Venus -82005-08-02 06:42 J -28230689.36 -28230689.22 -28230689.08 0.0286 0.0215  
 Mercury -82004-03-02 15:35 J -28230476.90 -28230476.85 -28230476.77 0.0287 0.0270  
 Mercury -82004-05-30 15:20 J -28230388.02 -28230387.86 -28230387.69 0.0288 0.0111  
 Mercury -82004-08-27 14:37 J -28230299.07 -28230298.89 -28230298.71 0.0288 0.0046  
 Mercury -82004-11-24 13:25 J -28230210.06 -28230209.94 -28230209.81 0.0289 0.0201

# 82ND MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 82nd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-81999-07-23 13:11 J	-28228508.02	-28228507.95	-28228507.86	0.0294	0.0278		
Earth	-81998-12-12 14:08 J	-28228001.04	-28228000.91	-28228000.76	0.0292	0.0240		
Moon	-81998-12-12 16:18 J	-28228000.94	-28228000.82	-28228000.68	0.0292	0.0248	*	
Mars	-81997-07-20 11:59 J	-28227780.08	-28227780.00	-28227779.88	0.0291	0.0269		
Moon	-81997-12-25 14:52 J	-28227622.11	-28227621.88	-28227621.66	0.0290	0.0129		
Earth	-81997-12-25 16:32 J	-28227622.02	-28227621.81	-28227621.59	0.0290	0.0131	*	
Moon	-81995-01-08 04:47 J	-28227243.54	-28227243.30	-28227243.06	0.0287	0.0012		
Earth	-81995-01-08 08:37 J	-28227243.38	-28227243.14	-28227242.90	0.0287	0.0020	*	
Moon	-81994-01-21 12:13 J	-28226865.20	-28226864.99	-28226864.77	0.0284	0.0099		
Earth	-81994-01-21 13:54 J	-28226865.15	-28226864.92	-28226864.69	0.0284	0.0085	*	
Earth	-81993-02-03 08:23 J	-28226487.32	-28226487.15	-28226486.95	0.0281	0.0182		
Moon	-81993-02-03 11:16 J	-28226487.19	-28226487.03	-28226486.85	0.0281	0.0196	*	
Earth	-81992-02-14 18:13 J	-28226109.81	-28226109.74	-28226109.66	0.0278	0.0262		
Moon	-81992-02-14 20:37 J	-28226109.69	-28226109.64	-28226109.57	0.0278	0.0268	*	
Venus	-81992-10-18 21:20 J	-28225863.75	-28225863.61	-28225863.46	0.0276	0.0196		
Venus	-81991-06-04 22:18 J	-28225634.72	-28225634.57	-28225634.41	0.0275	0.0176		
Mercury	-81991-12-31 02:23 J	-28225425.48	-28225425.40	-28225425.32	0.0273	0.0221		
Mercury	-81990-03-29 13:11 J	-28225337.07	-28225336.95	-28225336.83	0.0272	0.0126		
Mercury	-81990-06-26 00:13 J	-28225248.63	-28225248.49	-28225248.36	0.0272	0.0031		

Mercury -81990-09-22 11:16 J -28225160.16 -28225160.03 -28225159.90 0.0271 0.0066

Mercury -81990-12-19 22:04 J -28225071.68 -28225071.58 -28225071.46 0.0271 0.0162

Mercury -81989-03-17 09:20 J -28224983.14 -28224983.11 -28224983.07 0.0270 0.0258

Moon -81983-05-27 17:30 J -28222720.81 -28222720.77 -28222720.70 0.0267 0.0261

Mars -81983-07-22 15:06 J -28222665.19 -28222664.87 -28222664.54 0.0267 0.0037

Moon -81982-06-08 15:49 J -28222343.99 -28222343.84 -28222343.68 0.0268 0.0200

Earth -81982-06-08 18:56 J -28222343.87 -28222343.71 -28222343.54 0.0268 0.0199 \*

Earth -81981-06-20 00:42 J -28221966.69 -28221966.47 -28221966.24 0.0270 0.0116

Moon -81981-06-20 02:23 J -28221966.61 -28221966.40 -28221966.19 0.0270 0.0129 \*

Earth -81980-07-02 15:06 J -28221589.12 -28221588.87 -28221588.62 0.0273 0.0025

Moon -81980-07-02 18:28 J -28221588.97 -28221588.73 -28221588.47 0.0273 0.0041 \*

Earth -81979-07-15 14:37 J -28221211.13 -28221210.89 -28221210.64 0.0275 0.0072

Moon -81979-07-15 14:52 J -28221211.13 -28221210.88 -28221210.62 0.0275 0.0062 \*

Moon -81978-07-28 21:20 J -28220832.81 -28220832.61 -28220832.40 0.0278 0.0170

Earth -81978-07-29 00:28 J -28220832.67 -28220832.48 -28220832.27 0.0278 0.0172 \*

Moon -81977-08-10 17:30 J -28220453.80 -28220453.77 -28220453.71 0.0282 0.0276

Earth -81977-08-10 20:23 J -28220453.71 -28220453.65 -28220453.56 0.0282 0.0268 \*

Venus -81976-06-27 13:11 J -28220133.12 -28220132.95 -28220132.77 0.0284 0.0171

Venus -81975-02-12 13:11 J -28219903.00 -28219902.95 -28219902.89 0.0286 0.0275

Mercury -81975-10-17 13:54 J -28219656.07 -28219655.92 -28219655.77 0.0288 0.0157

Mercury -81974-01-14 13:11 J -28219567.13 -28219566.95 -28219566.77 0.0289 0.0002

Mercury -81974-04-13 11:59 J -28219478.14 -28219478.00 -28219477.84 0.0289 0.0157

Mars -81969-09-09 05:59 J -28217502.50 -28217502.25 -28217501.99 0.0293 0.0088

Earth -81969-12-05 10:32 J -28217415.09 -28217415.06 -28217414.99 0.0293 0.0286

Earth -81968-12-19 17:16 J -28217035.97 -28217035.78 -28217035.59 0.0291 0.0181

Moon -81968-12-19 18:56 J -28217035.88 -28217035.71 -28217035.51 0.0291 0.0184 \*

Earth -81966-01-02 13:40 J -28216657.16 -28216656.93 -28216656.69 0.0288 0.0071

Moon -81966-01-02 17:16 J -28216657.01 -28216656.78 -28216656.54 0.0288 0.0065 \*

Earth -81965-01-15 23:30 J -28216278.76 -28216278.52 -28216278.28 0.0285 0.0037

Moon -81965-01-16 00:42 J -28216278.71 -28216278.47 -28216278.22 0.0285 0.0049 \*

Moon -81964-01-27 19:54 J -28215900.88 -28215900.67 -28215900.46 0.0282 0.0153  
 Earth -81964-01-27 22:32 J -28215900.76 -28215900.56 -28215900.34 0.0282 0.0137 \*  
 Moon -81963-02-09 09:49 J -28215523.21 -28215523.09 -28215522.97 0.0279 0.0235  
 Earth -81963-02-09 11:59 J -28215523.13 -28215523.00 -28215522.85 0.0279 0.0225 \*  
 Venus -81962-04-30 21:49 J -28215077.75 -28215077.59 -28215077.41 0.0275 0.0156  
 Venus -81962-12-15 22:47 J -28214848.67 -28214848.55 -28214848.42 0.0274 0.0215  
 Mercury -81961-05-19 03:49 J -28214693.38 -28214693.34 -28214693.29 0.0273 0.0255  
 Mercury -81961-08-15 14:52 J -28214604.99 -28214604.88 -28214604.77 0.0272 0.0160  
 Mercury -81961-11-12 01:40 J -28214516.56 -28214516.43 -28214516.30 0.0272 0.0065  
 Mercury -81960-02-08 12:42 J -28214428.11 -28214427.97 -28214427.84 0.0271 0.0030  
 Mercury -81960-05-07 23:44 J -28214339.63 -28214339.51 -28214339.39 0.0271 0.0126  
 Mercury -81960-08-04 10:47 J -28214251.12 -28214251.05 -28214250.97 0.0270 0.0222  
 Earth -81953-06-02 11:59 J -28211757.11 -28211757.00 -28211756.87 0.0268 0.0231  
 Moon -81953-06-02 15:06 J -28211756.99 -28211756.87 -28211756.73 0.0268 0.0229 \*  
 Mars -81953-09-11 10:18 J -28211656.35 -28211656.07 -28211655.79 0.0268 0.0139  
 Moon -81952-06-14 11:59 J -28211380.19 -28211380.00 -28211379.79 0.0270 0.0163  
 Earth -81952-06-14 13:40 J -28211380.12 -28211379.93 -28211379.72 0.0270 0.0154 \*  
 Moon -81951-06-26 20:08 J -28211002.88 -28211002.66 -28211002.42 0.0272 0.0082  
 Earth -81951-06-26 23:30 J -28211002.76 -28211002.52 -28211002.27 0.0272 0.0066 \*  
 Earth -81950-07-09 18:13 J -28210624.99 -28210624.74 -28210624.49 0.0274 0.0028  
 Moon -81950-07-09 18:42 J -28210624.95 -28210624.72 -28210624.47 0.0274 0.0019 \*  
 Earth -81949-07-21 22:47 J -28210246.77 -28210246.55 -28210246.32 0.0277 0.0127  
 Moon -81949-07-22 02:23 J -28210246.61 -28210246.40 -28210246.17 0.0277 0.0123 \*  
 Earth -81948-08-04 13:40 J -28209868.07 -28209867.93 -28209867.77 0.0280 0.0225  
 Moon -81948-08-04 16:32 J -28209867.95 -28209867.81 -28209867.65 0.0280 0.0228 \*  
 Venus -81946-01-07 12:28 J -28209347.17 -28209346.98 -28209346.78 0.0284 0.0135  
 Mercury -81945-03-05 09:06 J -28208924.23 -28208924.12 -28208924.00 0.0287 0.0223  
 Mercury -81945-06-02 08:37 J -28208835.32 -28208835.14 -28208834.96 0.0288 0.0066  
 Mercury -81945-08-30 07:40 J -28208746.35 -28208746.18 -28208746.01 0.0289 0.0091  
 Mercury -81945-11-27 06:28 J -28208657.32 -28208657.23 -28208657.14 0.0289 0.0245



Mars	-81939-10-27 08:08 J	-28206497.40	-28206497.16	-28206496.90	0.0292	0.0094
Moon	-81939-12-13 09:49 J	-28206450.23	-28206450.09	-28206449.93	0.0292	0.0233
Earth	-81939-12-13 12:13 J	-28206450.13	-28206449.99	-28206449.83	0.0292	0.0229 *
Moon	-81938-12-27 11:16 J	-28206071.24	-28206071.03	-28206070.80	0.0290	0.0115
Earth	-81938-12-27 14:37 J	-28206071.10	-28206070.89	-28206070.66	0.0290	0.0119 *
Moon	-81936-01-09 06:13 J	-28205692.48	-28205692.24	-28205692.01	0.0287	0.0006
Earth	-81936-01-09 06:42 J	-28205692.46	-28205692.22	-28205691.98	0.0287	0.0007 *
Earth	-81935-01-22 11:44 J	-28205314.23	-28205314.01	-28205313.78	0.0285	0.0099
Moon	-81935-01-22 14:37 J	-28205314.10	-28205313.89	-28205313.66	0.0285	0.0115 *
Earth	-81934-02-04 06:56 J	-28204936.38	-28204936.21	-28204936.04	0.0281	0.0193
Moon	-81934-02-04 09:35 J	-28204936.26	-28204936.10	-28204935.93	0.0281	0.0207 *
Moon	-81933-02-16 14:08 J	-28204558.95	-28204558.91	-28204558.86	0.0278	0.0273
Earth	-81933-02-16 16:18 J	-28204558.85	-28204558.82	-28204558.77	0.0278	0.0273
Venus	-81933-11-10 01:25 J	-28204291.62	-28204291.44	-28204291.25	0.0276	0.0108
Venus	-81932-06-27 02:08 J	-28204062.45	-28204062.41	-28204062.34	0.0274	0.0264
Mercury	-81931-01-02 17:16 J	-28203872.87	-28203872.78	-28203872.68	0.0273	0.0188
Mercury	-81931-04-01 04:18 J	-28203784.45	-28203784.32	-28203784.19	0.0272	0.0092
Mercury	-81931-06-28 15:20 J	-28203696.00	-28203695.86	-28203695.73	0.0272	0.0008
Mercury	-81931-09-25 02:08 J	-28203607.53	-28203607.41	-28203607.28	0.0271	0.0100
Mercury	-81931-12-22 13:25 J	-28203519.03	-28203518.94	-28203518.85	0.0271	0.0196
Mars	-81925-10-24 10:47 J	-28201386.24	-28201386.05	-28201385.84	0.0266	0.0207
Moon	-81924-05-28 15:49 J	-28201169.90	-28201169.84	-28201169.77	0.0267	0.0255
Earth	-81924-05-28 18:28 J	-28201169.77	-28201169.73	-28201169.67	0.0267	0.0261 *
Earth	-81923-06-09 16:47 J	-28200792.97	-28200792.80	-28200792.62	0.0268	0.0188
Moon	-81923-06-09 18:28 J	-28200792.89	-28200792.73	-28200792.56	0.0268	0.0195 *
Earth	-81922-06-21 22:32 J	-28200415.78	-28200415.56	-28200415.33	0.0270	0.0105
Moon	-81922-06-22 02:08 J	-28200415.63	-28200415.41	-28200415.18	0.0270	0.0119 *
Moon	-81921-07-03 12:28 J	-28200038.24	-28200037.98	-28200037.72	0.0273	0.0025
Earth	-81921-07-03 12:56 J	-28200038.20	-28200037.96	-28200037.71	0.0273	0.0015 *
Moon	-81920-07-16 08:52 J	-28199660.37	-28199660.13	-28199659.89	0.0275	0.0079

Earth -81920-07-16 12:42 J -28199660.20 -28199659.97 -28199659.73 0.0275 0.0084 \*  
 Moon -81919-07-29 19:54 J -28199281.84 -28199281.67 -28199281.48 0.0278 0.0185  
 Earth -81919-07-29 22:32 J -28199281.74 -28199281.56 -28199281.36 0.0278 0.0183 \*  
 Earth -81918-08-12 18:42 J -28198902.75 -28198902.72 -28198902.69 0.0282 0.0279  
 Venus -81917-07-19 19:25 J -28198560.90 -28198560.69 -28198560.47 0.0284 0.0074  
 Mercury -81916-07-23 07:54 J -28198192.24 -28198192.17 -28198192.11 0.0287 0.0268  
 Mercury -81916-10-20 07:11 J -28198103.36 -28198103.20 -28198103.03 0.0288 0.0110  
 Mercury -81915-01-17 06:28 J -28198014.41 -28198014.23 -28198014.05 0.0289 0.0047  
 Mercury -81915-04-16 05:16 J -28197925.40 -28197925.28 -28197925.15 0.0289 0.0202  
 Mars -81911-12-16 15:35 J -28196219.94 -28196219.85 -28196219.75 0.0294 0.0272  
 Earth -81910-12-07 10:18 J -28195864.15 -28195864.07 -28195863.99 0.0293 0.0274  
 Moon -81910-12-07 12:56 J -28195864.01 -28195863.96 -28195863.89 0.0293 0.0282 \*  
 Mars -81909-12-13 15:35 J -28195491.92 -28195491.85 -28195491.76 0.0291 0.0276  
 Earth -81909-12-20 16:32 J -28195485.00 -28195484.81 -28195484.61 0.0291 0.0168  
 Moon -81909-12-20 20:08 J -28195484.86 -28195484.66 -28195484.46 0.0291 0.0169 \*  
 Earth -81907-01-03 13:11 J -28195106.19 -28195105.95 -28195105.71 0.0288 0.0057  
 Moon -81907-01-03 13:25 J -28195106.19 -28195105.94 -28195105.69 0.0288 0.0049 \*  
 Moon -81906-01-16 19:40 J -28194727.92 -28194727.68 -28194727.44 0.0285 0.0067  
 Earth -81906-01-16 23:01 J -28194727.78 -28194727.54 -28194727.30 0.0285 0.0051 \*  
 Moon -81905-01-29 19:11 J -28194349.88 -28194349.70 -28194349.51 0.0282 0.0166  
 Earth -81905-01-29 22:04 J -28194349.78 -28194349.58 -28194349.37 0.0282 0.0150 \*  
 Earth -81904-02-10 11:16 J -28193972.14 -28193972.03 -28193971.89 0.0279 0.0237  
 Moon -81904-02-10 12:56 J -28193972.05 -28193971.96 -28193971.83 0.0279 0.0245 \*  
 Venus -81903-05-23 02:52 J -28193505.58 -28193505.38 -28193505.18 0.0275 0.0064  
 Mercury -81902-05-22 19:11 J -28193140.78 -28193140.70 -28193140.62 0.0273 0.0220  
 Mercury -81902-08-19 05:59 J -28193052.37 -28193052.25 -28193052.13 0.0272 0.0125  
 Mercury -81902-11-15 17:01 J -28192963.93 -28192963.79 -28192963.66 0.0272 0.0030  
 Mercury -81901-02-12 03:49 J -28192875.47 -28192875.34 -28192875.20 0.0271 0.0067  
 Mercury -81901-05-10 14:52 J -28192786.98 -28192786.88 -28192786.76 0.0270 0.0163  
 Mercury -81901-08-07 02:08 J -28192698.44 -28192698.41 -28192698.37 0.0270 0.0258

Mars	-81895-12-15 00:42 J	-28190377.79	-28190377.47	-28190377.14	0.0267	0.0035
Moon	-81894-06-04 08:52 J	-28190206.26	-28190206.13	-28190205.99	0.0268	0.0224
Earth	-81894-06-04 10:47 J	-28190206.18	-28190206.05	-28190205.91	0.0268	0.0221 *
Moon	-81893-06-15 08:52 J	-28189829.32	-28189829.13	-28189828.93	0.0269	0.0155
Earth	-81893-06-15 12:42 J	-28189829.18	-28189828.97	-28189828.76	0.0269	0.0142 *
Earth	-81892-06-27 22:04 J	-28189451.82	-28189451.58	-28189451.34	0.0272	0.0054
Moon	-81892-06-27 22:32 J	-28189451.79	-28189451.56	-28189451.33	0.0272	0.0067 *
Earth	-81891-07-10 16:32 J	-28189074.06	-28189073.81	-28189073.56	0.0274	0.0041
Moon	-81891-07-10 20:23 J	-28189073.90	-28189073.65	-28189073.40	0.0274	0.0034 *
Earth	-81890-07-23 21:06 J	-28188695.83	-28188695.62	-28188695.40	0.0277	0.0139
Moon	-81890-07-23 23:01 J	-28188695.75	-28188695.54	-28188695.31	0.0277	0.0140 *
Moon	-81889-08-05 10:04 J	-28188317.19	-28188317.08	-28188316.94	0.0280	0.0245
Earth	-81889-08-05 12:13 J	-28188317.12	-28188316.99	-28188316.85	0.0280	0.0236 *
Venus	-81887-01-29 18:56 J	-28187774.93	-28187774.71	-28187774.49	0.0284	0.0039
Mercury	-81886-03-09 02:23 J	-28187371.54	-28187371.40	-28187371.25	0.0287	0.0177
Mercury	-81886-06-06 01:54 J	-28187282.60	-28187282.42	-28187282.24	0.0288	0.0019
Mercury	-81886-09-03 00:56 J	-28187193.62	-28187193.46	-28187193.30	0.0289	0.0137
Mars	-81880-02-01 21:49 J	-28185214.84	-28185214.59	-28185214.33	0.0293	0.0086
Moon	-81880-12-14 07:25 J	-28184899.33	-28184899.19	-28184899.02	0.0292	0.0221
Earth	-81880-12-14 10:47 J	-28184899.20	-28184899.05	-28184898.88	0.0292	0.0218 *
Earth	-81879-12-28 13:11 J	-28184520.16	-28184519.95	-28184519.71	0.0290	0.0108
Moon	-81879-12-28 13:25 J	-28184520.16	-28184519.94	-28184519.72	0.0290	0.0101 *
Earth	-81877-01-11 05:16 J	-28184141.52	-28184141.28	-28184141.04	0.0288	0.0006
Moon	-81877-01-11 08:37 J	-28184141.37	-28184141.14	-28184140.90	0.0288	0.0021 *
Earth	-81876-01-23 10:18 J	-28183763.29	-28183763.07	-28183762.84	0.0285	0.0111
Moon	-81876-01-23 12:56 J	-28183763.17	-28183762.96	-28183762.73	0.0285	0.0128 *
Moon	-81875-02-05 03:35 J	-28183385.49	-28183385.35	-28183385.18	0.0281	0.0216
Earth	-81875-02-05 05:16 J	-28183385.43	-28183385.28	-28183385.11	0.0281	0.0205 *
Venus	-81874-12-03 05:59 J	-28182719.46	-28182719.25	-28182719.05	0.0276	0.0019
Mercury	-81873-10-08 21:35 J	-28182408.65	-28182408.60	-28182408.55	0.0274	0.0249

Mercury -81872-01-05 08:23 J -28182320.26 -28182320.15 -28182320.04 0.0273 0.0154

Mercury -81872-04-03 19:25 J -28182231.82 -28182231.69 -28182231.56 0.0272 0.0058

Mercury -81872-07-01 06:28 J -28182143.37 -28182143.23 -28182143.10 0.0272 0.0039

Mercury -81872-09-27 17:30 J -28182054.89 -28182054.77 -28182054.65 0.0271 0.0135

Mercury -81872-12-25 04:32 J -28181966.38 -28181966.31 -28181966.24 0.0271 0.0231

Earth -81865-05-29 17:30 J -28179618.84 -28179618.77 -28179618.68 0.0267 0.0252

Moon -81865-05-29 18:56 J -28179618.78 -28179618.71 -28179618.62 0.0267 0.0250 \*

Mars -81864-02-04 23:16 J -28179367.79 -28179367.53 -28179367.26 0.0268 0.0158

Earth -81864-06-10 16:04 J -28179242.01 -28179241.83 -28179241.64 0.0268 0.0178

Moon -81864-06-10 19:54 J -28179241.84 -28179241.67 -28179241.49 0.0268 0.0187 \*

Earth -81863-06-22 22:04 J -28178864.81 -28178864.58 -28178864.35 0.0270 0.0093

Moon -81863-06-22 22:04 J -28178864.81 -28178864.58 -28178864.34 0.0270 0.0107 \*

Moon -81862-07-05 08:52 J -28178487.38 -28178487.13 -28178486.88 0.0273 0.0012

Earth -81862-07-05 12:28 J -28178487.23 -28178486.98 -28178486.73 0.0273 0.0004 \*

Moon -81861-07-17 11:01 J -28178109.26 -28178109.04 -28178108.81 0.0275 0.0096

Earth -81861-07-17 12:28 J -28178109.21 -28178108.98 -28178108.74 0.0275 0.0097 \*

Earth -81860-07-30 22:18 J -28177730.74 -28177730.57 -28177730.38 0.0278 0.0195

Moon -81860-07-31 00:42 J -28177730.63 -28177730.47 -28177730.30 0.0278 0.0202 \*

Venus -81858-08-12 02:52 J -28176988.59 -28176988.38 -28176988.16 0.0285 0.0027

Mercury -81857-07-26 01:40 J -28176639.54 -28176639.43 -28176639.30 0.0287 0.0217

Mercury -81857-10-23 01:11 J -28176550.63 -28176550.45 -28176550.27 0.0288 0.0060

Mercury -81856-01-20 00:13 J -28176461.66 -28176461.49 -28176461.32 0.0289 0.0097

Mercury -81856-04-18 23:01 J -28176372.62 -28176372.54 -28176372.45 0.0289 0.0252

Earth -81851-12-08 10:32 J -28174313.16 -28174313.06 -28174312.95 0.0293 0.0263

Moon -81851-12-08 13:25 J -28174313.03 -28174312.94 -28174312.82 0.0293 0.0266 \*

Mars -81850-03-22 13:54 J -28174209.16 -28174208.92 -28174208.67 0.0292 0.0103

Moon -81850-12-22 16:32 J -28173934.02 -28173933.81 -28173933.59 0.0291 0.0152

Earth -81850-12-22 17:01 J -28173934.00 -28173933.79 -28173933.59 0.0291 0.0155 \*

Moon -81848-01-04 09:49 J -28173555.33 -28173555.09 -28173554.85 0.0288 0.0032

Earth -81848-01-04 13:11 J -28173555.19 -28173554.95 -28173554.71 0.0288 0.0044 \*

Moon -81847-01-17 20:37 J -28173176.86 -28173176.64 -28173176.41 0.0285 0.0080  
 Earth -81847-01-17 23:01 J -28173176.78 -28173176.54 -28173176.31 0.0285 0.0064 \*  
 Earth -81846-01-30 22:04 J -28172798.77 -28172798.58 -28172798.38 0.0282 0.0162  
 Moon -81846-01-30 23:30 J -28172798.69 -28172798.52 -28172798.33 0.0282 0.0178 \*  
 Earth -81845-02-12 11:01 J -28172421.13 -28172421.04 -28172420.91 0.0279 0.0249  
 Moon -81845-02-12 14:37 J -28172420.98 -28172420.89 -28172420.78 0.0279 0.0254 \*  
 Venus -81844-06-14 07:54 J -28171933.37 -28171933.17 -28171932.96 0.0275 0.0028  
 Mercury -81843-05-25 10:32 J -28171588.16 -28171588.06 -28171587.96 0.0273 0.0184  
 Mercury -81843-08-21 21:20 J -28171499.74 -28171499.61 -28171499.48 0.0272 0.0089  
 Mercury -81843-11-18 08:23 J -28171411.29 -28171411.15 -28171411.02 0.0271 0.0009  
 Mercury -81842-02-14 19:25 J -28171322.82 -28171322.69 -28171322.57 0.0271 0.0103  
 Mercury -81842-05-14 06:28 J -28171234.32 -28171234.23 -28171234.14 0.0270 0.0199  
 Mars -81836-03-19 03:20 J -28169098.57 -28169098.36 -28169098.14 0.0266 0.0200  
 Moon -81835-06-05 07:54 J -28168655.30 -28168655.17 -28168655.03 0.0268 0.0218  
 Earth -81835-06-05 11:16 J -28168655.17 -28168655.03 -28168654.87 0.0268 0.0211 \*  
 Earth -81834-06-17 12:56 J -28168278.17 -28168277.96 -28168277.74 0.0269 0.0130  
 Moon -81834-06-17 13:11 J -28168278.14 -28168277.95 -28168277.74 0.0269 0.0145 \*  
 Earth -81833-06-28 22:32 J -28167900.80 -28167900.56 -28167900.31 0.0271 0.0042  
 Moon -81833-06-29 02:08 J -28167900.65 -28167900.41 -28167900.16 0.0271 0.0055 \*  
 Earth -81832-07-11 17:16 J -28167523.03 -28167522.78 -28167522.54 0.0274 0.0054  
 Moon -81832-07-11 18:13 J -28167522.99 -28167522.74 -28167522.48 0.0274 0.0050 \*  
 Moon -81831-07-24 18:42 J -28167144.93 -28167144.72 -28167144.51 0.0277 0.0158  
 Earth -81831-07-24 21:35 J -28167144.80 -28167144.60 -28167144.38 0.0277 0.0152 \*  
 Moon -81830-08-07 08:52 J -28166766.20 -28166766.13 -28166766.03 0.0280 0.0260  
 Earth -81830-08-07 12:42 J -28166766.08 -28166765.97 -28166765.85 0.0280 0.0248 \*  
 Venus -81828-02-21 02:23 J -28166202.61 -28166202.40 -28166202.18 0.0285 0.0063  
 Mercury -81828-12-12 20:52 J -28165907.65 -28165907.63 -28165907.60 0.0287 0.0284  
 Mercury -81827-03-11 20:37 J -28165818.81 -28165818.64 -28165818.48 0.0287 0.0126  
 Mercury -81827-06-08 19:40 J -28165729.86 -28165729.68 -28165729.50 0.0288 0.0032  
 Mercury -81827-09-05 18:42 J -28165640.85 -28165640.72 -28165640.58 0.0289 0.0187

Mars	-81822-05-11 06:56 J	-28163932.30	-28163932.21	-28163932.09	0.0294	0.0269
Earth	-81821-12-15 10:32 J	-28163348.23	-28163348.06	-28163347.88	0.0292	0.0207
Moon	-81821-12-15 11:30 J	-28163348.18	-28163348.02	-28163347.85	0.0292	0.0204 *
Mars	-81820-05-08 11:16 J	-28163204.09	-28163204.03	-28163203.95	0.0291	0.0281
Earth	-81820-12-29 12:56 J	-28162969.19	-28162968.96	-28162968.73	0.0290	0.0094
Moon	-81820-12-29 16:18 J	-28162969.04	-28162968.82	-28162968.59	0.0290	0.0086 *
Earth	-81818-01-12 04:47 J	-28162590.54	-28162590.30	-28162590.05	0.0288	0.0019
Moon	-81818-01-12 06:56 J	-28162590.46	-28162590.21	-28162589.96	0.0288	0.0032 *
Moon	-81817-01-25 07:40 J	-28162212.39	-28162212.18	-28162211.96	0.0285	0.0138
Earth	-81817-01-25 10:04 J	-28162212.30	-28162212.08	-28162211.86	0.0285	0.0123 *
Moon	-81816-02-06 01:25 J	-28161834.58	-28161834.44	-28161834.30	0.0281	0.0226
Earth	-81816-02-06 05:01 J	-28161834.44	-28161834.29	-28161834.14	0.0281	0.0216 *
Venus	-81815-12-25 10:47 J	-28161147.25	-28161147.05	-28161146.85	0.0276	0.0074
Mercury	-81814-10-12 12:42 J	-28160856.04	-28160855.97	-28160855.88	0.0274	0.0214
Mercury	-81813-01-08 23:44 J	-28160767.63	-28160767.51	-28160767.39	0.0273	0.0117
Mercury	-81813-04-06 10:47 J	-28160679.19	-28160679.05	-28160678.92	0.0273	0.0021
Mercury	-81813-07-03 21:49 J	-28160590.72	-28160590.59	-28160590.46	0.0272	0.0075
Mercury	-81813-09-30 08:52 J	-28160502.23	-28160502.13	-28160502.02	0.0271	0.0172
Mercury	-81813-12-27 20:08 J	-28160413.67	-28160413.66	-28160413.65	0.0271	0.0269
Mars	-81806-05-10 19:40 J	-28158089.00	-28158088.68	-28158088.35	0.0267	0.0012
Earth	-81806-05-31 18:42 J	-28158067.82	-28158067.72	-28158067.62	0.0267	0.0242
Moon	-81806-05-31 22:04 J	-28158067.67	-28158067.58	-28158067.47	0.0267	0.0241 *
Moon	-81805-06-11 17:01 J	-28157690.97	-28157690.79	-28157690.59	0.0268	0.0178
Earth	-81805-06-11 17:30 J	-28157690.96	-28157690.77	-28157690.57	0.0268	0.0166 *
Moon	-81804-06-23 19:40 J	-28157313.90	-28157313.68	-28157313.44	0.0270	0.0098
Earth	-81804-06-23 23:30 J	-28157313.75	-28157313.52	-28157313.28	0.0270	0.0082 *
Moon	-81803-07-06 12:42 J	-28156936.21	-28156935.97	-28156935.73	0.0272	0.0003
Earth	-81803-07-06 14:08 J	-28156936.16	-28156935.91	-28156935.66	0.0272	0.0012 *
Earth	-81802-07-19 14:08 J	-28156558.13	-28156557.91	-28156557.67	0.0275	0.0109
Moon	-81802-07-19 17:16 J	-28156558.00	-28156557.78	-28156557.55	0.0275	0.0112 *

Earth -81801-08-01 00:13 J -28156179.64 -28156179.49 -28156179.31 0.0278 0.0208  
 Moon -81801-08-01 04:04 J -28156179.48 -28156179.33 -28156179.16 0.0278 0.0217 \*  
 Venus -81799-09-03 11:30 J -28155416.20 -28155416.02 -28155415.82 0.0285 0.0133  
 Mercury -81798-07-29 20:23 J -28155086.80 -28155086.65 -28155086.50 0.0287 0.0162  
 Mercury -81798-10-26 19:40 J -28154997.86 -28154997.68 -28154997.50 0.0288 0.0005  
 Mercury -81797-01-23 18:42 J -28154908.87 -28154908.72 -28154908.57 0.0289 0.0151  
 Mars -81792-06-28 09:49 J -28152926.34 -28152926.09 -28152925.82 0.0294 0.0076  
 Moon -81792-12-09 10:47 J -28152762.17 -28152762.05 -28152761.90 0.0293 0.0248  
 Earth -81792-12-09 12:56 J -28152762.08 -28152761.96 -28152761.83 0.0293 0.0251 \*  
 Moon -81791-12-23 15:20 J -28152383.07 -28152382.86 -28152382.64 0.0291 0.0135  
 Earth -81791-12-23 19:11 J -28152382.91 -28152382.70 -28152382.49 0.0291 0.0142 \*  
 Moon -81789-01-06 13:11 J -28152004.19 -28152003.95 -28152003.72 0.0289 0.0019  
 Earth -81789-01-06 15:06 J -28152004.11 -28152003.87 -28152003.63 0.0289 0.0031 \*  
 Earth -81788-01-19 00:28 J -28151625.71 -28151625.48 -28151625.24 0.0286 0.0078  
 Moon -81788-01-19 02:52 J -28151625.60 -28151625.38 -28151625.16 0.0286 0.0093 \*  
 Earth -81787-01-31 23:30 J -28151247.70 -28151247.52 -28151247.32 0.0282 0.0175  
 Moon -81787-02-01 03:06 J -28151247.54 -28151247.37 -28151247.18 0.0282 0.0189 \*  
 Earth -81786-02-13 12:42 J -28150870.04 -28150869.97 -28150869.87 0.0279 0.0260  
 Moon -81786-02-13 12:56 J -28150870.04 -28150869.96 -28150869.87 0.0279 0.0261 \*  
 Venus -81786-11-20 12:13 J -28150590.07 -28150589.99 -28150589.90 0.0277 0.0252  
 Venus -81785-07-06 13:54 J -28150361.10 -28150360.92 -28150360.73 0.0275 0.0124  
 Mercury -81784-02-28 15:06 J -28150123.92 -28150123.87 -28150123.80 0.0273 0.0241  
 Mercury -81784-05-28 01:54 J -28150035.52 -28150035.42 -28150035.30 0.0273 0.0146  
 Mercury -81784-08-24 12:56 J -28149947.09 -28149946.96 -28149946.83 0.0272 0.0050  
 Mercury -81784-11-20 23:59 J -28149858.63 -28149858.50 -28149858.37 0.0271 0.0046  
 Mercury -81783-02-17 11:01 J -28149770.15 -28149770.04 -28149769.92 0.0271 0.0143  
 Mercury -81783-05-16 22:04 J -28149681.63 -28149681.58 -28149681.51 0.0270 0.0239  
 Moon -81777-05-25 15:06 J -28147480.88 -28147480.87 -28147480.82 0.0266 0.0265  
 Earth -81776-06-06 14:08 J -28147104.06 -28147103.91 -28147103.74 0.0268 0.0200  
 Moon -81776-06-06 14:23 J -28147104.04 -28147103.90 -28147103.75 0.0268 0.0209 \*

Mars	-81776-06-30 22:04 J	-28147079.82	-28147079.58	-28147079.31	0.0268	0.0167
Earth	-81775-06-18 16:04 J	-28146727.04	-28146726.83	-28146726.60	0.0269	0.0119
Moon	-81775-06-18 19:54 J	-28146726.87	-28146726.67	-28146726.45	0.0269	0.0135 *
Earth	-81774-07-01 02:08 J	-28146349.65	-28146349.41	-28146349.16	0.0271	0.0029
Moon	-81774-07-01 03:49 J	-28146349.59	-28146349.34	-28146349.08	0.0271	0.0040 *
Moon	-81773-07-12 17:59 J	-28145971.99	-28145971.75	-28145971.50	0.0274	0.0068
Earth	-81773-07-12 21:06 J	-28145971.86	-28145971.62	-28145971.37	0.0274	0.0068 *
Moon	-81772-07-25 22:47 J	-28145593.73	-28145593.55	-28145593.35	0.0277	0.0175
Earth	-81772-07-26 01:54 J	-28145593.61	-28145593.42	-28145593.21	0.0277	0.0165 *
Earth	-81771-08-08 16:47 J	-28145214.87	-28145214.80	-28145214.70	0.0280	0.0261
Moon	-81771-08-08 17:16 J	-28145214.81	-28145214.78	-28145214.73	0.0280	0.0275 *
Venus	-81770-07-29 13:11 J	-28144860.01	-28144859.95	-28144859.87	0.0283	0.0268
Venus	-81769-03-15 12:28 J	-28144630.15	-28144629.98	-28144629.80	0.0285	0.0173
Mercury	-81769-12-15 16:04 J	-28144354.94	-28144354.83	-28144354.71	0.0287	0.0225
Mercury	-81768-03-14 15:35 J	-28144266.03	-28144265.85	-28144265.67	0.0288	0.0068
Mercury	-81768-06-11 14:37 J	-28144177.06	-28144176.89	-28144176.71	0.0288	0.0089
Mercury	-81768-09-08 13:25 J	-28144088.03	-28144087.94	-28144087.84	0.0289	0.0244
Mars	-81762-08-15 12:28 J	-28141921.22	-28141920.98	-28141920.73	0.0293	0.0110
Earth	-81762-12-17 13:11 J	-28141797.13	-28141796.95	-28141796.76	0.0292	0.0194
Moon	-81762-12-17 17:16 J	-28141796.97	-28141796.78	-28141796.60	0.0292	0.0188 *
Earth	-81761-12-30 15:06 J	-28141418.10	-28141417.87	-28141417.63	0.0290	0.0082
Moon	-81761-12-30 17:01 J	-28141418.03	-28141417.79	-28141417.54	0.0290	0.0071 *
Moon	-81759-01-13 04:18 J	-28141039.56	-28141039.32	-28141039.07	0.0287	0.0046
Earth	-81759-01-13 06:42 J	-28141039.46	-28141039.22	-28141038.98	0.0287	0.0030 *
Moon	-81758-01-26 08:08 J	-28140661.36	-28140661.16	-28140660.95	0.0285	0.0149
Earth	-81758-01-26 11:30 J	-28140661.23	-28140661.02	-28140660.81	0.0285	0.0135 *
Earth	-81757-02-08 06:13 J	-28140283.38	-28140283.24	-28140283.10	0.0281	0.0227
Moon	-81757-02-08 06:13 J	-28140283.36	-28140283.24	-28140283.11	0.0281	0.0233 *
Venus	-81756-06-01 14:23 J	-28139804.03	-28139803.90	-28139803.76	0.0278	0.0209
Venus	-81755-01-16 16:32 J	-28139574.97	-28139574.81	-28139574.65	0.0276	0.0170



Mercury -81755-07-18 17:30 J -28139391.79 -28139391.77 -28139391.75 0.0274 0.0271

Mercury -81755-10-15 04:18 J -28139303.42 -28139303.32 -28139303.21 0.0274 0.0175

Mercury -81754-01-11 15:20 J -28139214.99 -28139214.86 -28139214.73 0.0273 0.0079

Mercury -81754-04-10 02:23 J -28139126.54 -28139126.40 -28139126.27 0.0273 0.0018

Mercury -81754-07-07 13:25 J -28139038.06 -28139037.94 -28139037.82 0.0272 0.0115

Mercury -81754-10-04 00:42 J -28138949.56 -28138949.47 -28138949.39 0.0271 0.0212

Mars -81748-08-13 04:32 J -28136809.54 -28136809.31 -28136809.05 0.0266 0.0176

Earth -81747-06-01 21:49 J -28136516.70 -28136516.59 -28136516.46 0.0267 0.0232

Moon -81747-06-01 22:47 J -28136516.67 -28136516.55 -28136516.42 0.0267 0.0232 \*

Moon -81746-06-13 17:30 J -28136139.95 -28136139.77 -28136139.56 0.0268 0.0170

Earth -81746-06-13 21:20 J -28136139.80 -28136139.61 -28136139.40 0.0268 0.0155 \*

Moon -81745-06-25 02:23 J -28135762.62 -28135762.40 -28135762.17 0.0270 0.0083

Earth -81745-06-25 04:04 J -28135762.57 -28135762.33 -28135762.09 0.0270 0.0068 \*

Earth -81744-07-07 18:42 J -28135384.96 -28135384.72 -28135384.47 0.0273 0.0025

Moon -81744-07-07 21:35 J -28135384.85 -28135384.60 -28135384.36 0.0273 0.0018 \*

Earth -81743-07-20 19:11 J -28135006.92 -28135006.70 -28135006.47 0.0275 0.0122

Moon -81743-07-20 22:04 J -28135006.80 -28135006.58 -28135006.34 0.0275 0.0127 \*

Moon -81742-08-03 05:01 J -28134628.43 -28134628.29 -28134628.14 0.0278 0.0231

Earth -81742-08-03 05:59 J -28134628.40 -28134628.25 -28134628.09 0.0278 0.0219 \*

Venus -81740-02-07 23:16 J -28134073.68 -28134073.53 -28134073.37 0.0283 0.0195

Venus -81740-09-25 22:47 J -28133843.66 -28133843.55 -28133843.45 0.0285 0.0246

Mercury -81739-05-04 16:18 J -28133622.89 -28133622.82 -28133622.74 0.0287 0.0258

Mercury -81739-08-01 15:49 J -28133534.01 -28133533.84 -28133533.66 0.0287 0.0101

Mercury -81739-10-29 15:06 J -28133445.05 -28133444.87 -28133444.69 0.0288 0.0056

Mercury -81738-01-26 13:54 J -28133356.04 -28133355.92 -28133355.79 0.0289 0.0211

Mars -81734-10-05 03:35 J -28131643.47 -28131643.35 -28131643.21 0.0294 0.0254

Moon -81733-12-10 13:54 J -28131211.05 -28131210.92 -28131210.76 0.0293 0.0232

Earth -81733-12-10 17:44 J -28131210.89 -28131210.76 -28131210.61 0.0293 0.0238 \*

Moon -81732-12-24 22:04 J -28130831.79 -28130831.58 -28130831.36 0.0291 0.0119

Earth -81732-12-24 23:30 J -28130831.73 -28130831.52 -28130831.30 0.0291 0.0128 \*

Earth -81730-01-07 19:11 J -28130452.94 -28130452.70 -28130452.46 0.0289 0.0016  
 Moon -81730-01-07 21:20 J -28130452.85 -28130452.61 -28130452.38 0.0289 0.0002 \*  
 Earth -81729-01-21 04:04 J -28130074.55 -28130074.33 -28130074.09 0.0286 0.0092  
 Moon -81729-01-21 07:25 J -28130074.41 -28130074.19 -28130073.96 0.0286 0.0107 \*  
 Moon -81728-02-02 02:37 J -28129696.56 -28129696.39 -28129696.20 0.0282 0.0196  
 Earth -81728-02-02 03:06 J -28129696.54 -28129696.37 -28129696.19 0.0282 0.0188 \*  
 Moon -81727-02-14 12:56 J -28129319.02 -28129318.96 -28129318.90 0.0279 0.0269  
 Earth -81727-02-14 16:04 J -28129318.87 -28129318.83 -28129318.75 0.0279 0.0271  
 Venus -81727-12-12 19:11 J -28129017.86 -28129017.70 -28129017.52 0.0277 0.0152  
 Venus -81726-07-29 21:06 J -28128788.74 -28128788.62 -28128788.50 0.0275 0.0224  
 Mercury -81725-03-03 07:11 J -28128571.29 -28128571.20 -28128571.11 0.0273 0.0200  
 Mercury -81725-05-30 17:59 J -28128482.87 -28128482.75 -28128482.63 0.0273 0.0104  
 Mercury -81725-08-27 05:01 J -28128394.43 -28128394.29 -28128394.16 0.0272 0.0008  
 Mercury -81725-11-23 16:04 J -28128305.96 -28128305.83 -28128305.70 0.0271 0.0089  
 Mercury -81724-02-20 03:06 J -28128217.47 -28128217.37 -28128217.27 0.0271 0.0185  
 Moon -81718-05-27 23:01 J -28125929.59 -28125929.54 -28125929.47 0.0267 0.0258  
 Earth -81718-05-27 23:59 J -28125929.53 -28125929.50 -28125929.44 0.0267 0.0262 \*  
 Mars -81718-10-04 06:56 J -28125800.54 -28125800.21 -28125799.88 0.0267 0.0003  
 Earth -81717-06-07 20:08 J -28125552.83 -28125552.66 -28125552.49 0.0268 0.0188  
 Moon -81717-06-07 23:16 J -28125552.68 -28125552.53 -28125552.36 0.0268 0.0199 \*  
 Earth -81716-06-19 22:32 J -28125175.79 -28125175.56 -28125175.33 0.0269 0.0105  
 Moon -81716-06-19 23:59 J -28125175.73 -28125175.50 -28125175.27 0.0269 0.0120 \*  
 Moon -81715-07-02 05:59 J -28124798.51 -28124798.25 -28124798.00 0.0272 0.0025  
 Earth -81715-07-02 08:52 J -28124798.37 -28124798.13 -28124797.88 0.0272 0.0015 \*  
 Moon -81714-07-15 01:25 J -28124420.67 -28124420.44 -28124420.21 0.0274 0.0081  
 Earth -81714-07-15 04:04 J -28124420.56 -28124420.33 -28124420.08 0.0274 0.0083 \*  
 Earth -81713-07-27 09:20 J -28124042.30 -28124042.11 -28124041.91 0.0277 0.0179  
 Moon -81713-07-27 10:32 J -28124042.22 -28124042.06 -28124041.87 0.0277 0.0190 \*  
 Earth -81712-08-10 00:42 J -28123663.52 -28123663.47 -28123663.42 0.0280 0.0273  
 Venus -81711-08-21 01:11 J -28123287.63 -28123287.45 -28123287.26 0.0283 0.0152

Mercury -81710-12-19 12:13 J -28122802.14 -28122801.99 -28122801.83 0.0287 0.0160

Mercury -81709-03-17 11:44 J -28122713.20 -28122713.01 -28122712.83 0.0288 0.0007

Mercury -81709-06-14 10:32 J -28122624.21 -28122624.06 -28122623.90 0.0288 0.0153

Mars -81704-11-21 13:11 J -28120638.21 -28120637.95 -28120637.69 0.0293 0.0064

Earth -81704-12-04 08:37 J -28120625.18 -28120625.14 -28120625.09 0.0293 0.0288

Moon -81704-12-04 11:44 J -28120625.06 -28120625.01 -28120624.93 0.0293 0.0282

Earth -81703-12-18 19:11 J -28120245.89 -28120245.70 -28120245.51 0.0292 0.0181

Moon -81703-12-18 19:54 J -28120245.88 -28120245.67 -28120245.47 0.0292 0.0170 \*

Moon -81701-01-01 17:44 J -28119867.00 -28119866.76 -28119866.51 0.0290 0.0053

Earth -81701-01-01 20:23 J -28119866.88 -28119866.65 -28119866.41 0.0290 0.0068 \*

Moon -81700-01-14 08:08 J -28119488.40 -28119488.16 -28119487.93 0.0287 0.0060

Earth -81700-01-14 11:16 J -28119488.26 -28119488.03 -28119487.79 0.0287 0.0044 \*

Earth -81699-01-27 15:35 J -28119110.05 -28119109.85 -28119109.64 0.0284 0.0148

Moon -81699-01-27 16:18 J -28119110.01 -28119109.82 -28119109.63 0.0284 0.0159 \*

Earth -81698-02-09 10:04 J -28118732.20 -28118732.08 -28118731.95 0.0281 0.0238

Moon -81698-02-09 13:40 J -28118732.04 -28118731.93 -28118731.80 0.0281 0.0241 \*

Venus -81697-06-23 21:49 J -28118231.77 -28118231.59 -28118231.39 0.0277 0.0107

Venus -81696-02-07 23:44 J -28118002.54 -28118002.51 -28118002.47 0.0276 0.0271

Mercury -81696-07-21 09:20 J -28117839.18 -28117839.11 -28117839.04 0.0274 0.0230

Mercury -81696-10-17 20:23 J -28117750.77 -28117750.65 -28117750.54 0.0274 0.0133

Mercury -81695-01-14 07:25 J -28117662.33 -28117662.19 -28117662.06 0.0273 0.0038

Mercury -81695-04-12 18:13 J -28117573.87 -28117573.74 -28117573.60 0.0273 0.0061

Mercury -81695-07-10 05:30 J -28117485.38 -28117485.27 -28117485.16 0.0272 0.0158

Mercury -81695-10-06 16:32 J -28117396.85 -28117396.81 -28117396.76 0.0271 0.0255

Moon -81688-06-03 00:28 J -28114965.61 -28114965.48 -28114965.34 0.0267 0.0225

Earth -81688-06-03 03:35 J -28114965.48 -28114965.35 -28114965.20 0.0267 0.0221 \*

Mars -81688-11-25 08:52 J -28114790.35 -28114790.13 -28114789.91 0.0268 0.0197

Moon -81687-06-15 01:54 J -28114588.60 -28114588.42 -28114588.21 0.0268 0.0157

Earth -81687-06-15 03:35 J -28114588.55 -28114588.35 -28114588.13 0.0268 0.0143 \*

Earth -81686-06-27 11:01 J -28114211.28 -28114211.04 -28114210.80 0.0270 0.0055

Moon -81686-06-27 13:54 J -28114211.15 -28114210.92 -28114210.68 0.0270 0.0068 \*  
 Earth -81685-07-09 02:37 J -28113833.64 -28113833.39 -28113833.14 0.0273 0.0039  
 Moon -81685-07-09 05:59 J -28113833.50 -28113833.25 -28113833.00 0.0273 0.0033 \*  
 Moon -81684-07-22 02:23 J -28113455.61 -28113455.40 -28113455.16 0.0275 0.0143  
 Earth -81684-07-22 03:35 J -28113455.56 -28113455.35 -28113455.12 0.0275 0.0137 \*  
 Moon -81683-08-04 11:01 J -28113077.14 -28113077.04 -28113076.92 0.0279 0.0248  
 Earth -81683-08-04 14:52 J -28113077.01 -28113076.88 -28113076.73 0.0279 0.0233 \*  
 Venus -81681-03-02 12:28 J -28112501.18 -28112500.98 -28112500.76 0.0283 0.0074  
 Mercury -81680-05-07 13:11 J -28112070.08 -28112069.95 -28112069.80 0.0287 0.0188  
 Mercury -81680-08-04 12:42 J -28111981.15 -28111980.97 -28111980.79 0.0288 0.0031  
 Mercury -81680-11-01 11:44 J -28111892.17 -28111892.01 -28111891.85 0.0288 0.0125  
 Mercury -81679-01-29 10:18 J -28111803.10 -28111803.07 -28111803.02 0.0289 0.0280  
 Moon -81674-12-13 02:37 J -28109659.54 -28109659.39 -28109659.22 0.0293 0.0217  
 Earth -81674-12-13 02:52 J -28109659.53 -28109659.38 -28109659.22 0.0293 0.0224 \*  
 Mars -81673-01-09 16:47 J -28109632.04 -28109631.80 -28109631.56 0.0293 0.0130  
 Earth -81673-12-26 07:40 J -28109280.40 -28109280.18 -28109279.95 0.0291 0.0113  
 Moon -81673-12-26 10:47 J -28109280.27 -28109280.05 -28109279.82 0.0291 0.0100 \*  
 Earth -81671-01-09 02:52 J -28108901.62 -28108901.38 -28108901.14 0.0288 0.0003  
 Moon -81671-01-09 06:28 J -28108901.48 -28108901.23 -28108900.99 0.0288 0.0015 \*  
 Moon -81670-01-22 11:01 J -28108523.27 -28108523.04 -28108522.81 0.0285 0.0119  
 Earth -81670-01-22 11:16 J -28108523.26 -28108523.03 -28108522.81 0.0285 0.0106 \*  
 Moon -81669-02-04 05:44 J -28108145.42 -28108145.26 -28108145.09 0.0282 0.0206  
 Earth -81669-02-04 09:20 J -28108145.27 -28108145.11 -28108144.94 0.0282 0.0201 \*  
 Moon -81668-02-15 20:23 J -28107767.67 -28107767.65 -28107767.62 0.0279 0.0277  
 Venus -81667-01-04 04:04 J -28107445.53 -28107445.33 -28107445.13 0.0276 0.0045  
 Mercury -81667-12-08 12:28 J -28107107.03 -28107106.98 -28107106.93 0.0274 0.0251  
 Mercury -81666-03-06 23:16 J -28107018.63 -28107018.53 -28107018.42 0.0273 0.0155  
 Mercury -81666-06-03 10:18 J -28106930.20 -28106930.07 -28106929.94 0.0273 0.0059  
 Mercury -81666-08-30 21:20 J -28106841.74 -28106841.61 -28106841.48 0.0272 0.0038  
 Mercury -81666-11-27 08:23 J -28106753.27 -28106753.15 -28106753.03 0.0271 0.0135

Mercury -81665-02-23 19:25 J -28106664.75 -28106664.69 -28106664.61 0.0271 0.0232  
 Mars -81659-01-07 03:06 J -28104520.64 -28104520.37 -28104520.11 0.0266 0.0156  
 Earth -81659-05-29 07:25 J -28104378.25 -28104378.19 -28104378.09 0.0267 0.0251  
 Moon -81659-05-29 11:01 J -28104378.12 -28104378.04 -28104377.96 0.0267 0.0249 \*  
 Earth -81658-06-10 04:04 J -28104001.50 -28104001.33 -28104001.13 0.0268 0.0176  
 Moon -81658-06-10 06:28 J -28104001.40 -28104001.23 -28104001.04 0.0268 0.0185 \*  
 Moon -81657-06-21 04:32 J -28103624.54 -28103624.31 -28103624.07 0.0270 0.0105  
 Earth -81657-06-21 07:25 J -28103624.41 -28103624.19 -28103623.95 0.0270 0.0092 \*  
 Moon -81656-07-03 15:35 J -28103247.09 -28103246.85 -28103246.61 0.0272 0.0008  
 Earth -81656-07-03 18:42 J -28103246.97 -28103246.72 -28103246.47 0.0272 0.0000 \*  
 Earth -81655-07-16 14:37 J -28102869.12 -28102868.89 -28102868.65 0.0274 0.0097  
 Moon -81655-07-16 15:35 J -28102869.07 -28102868.85 -28102868.62 0.0274 0.0099 \*  
 Earth -81654-07-29 20:37 J -28102490.82 -28102490.64 -28102490.46 0.0277 0.0193  
 Moon -81654-07-29 23:59 J -28102490.65 -28102490.50 -28102490.32 0.0277 0.0205 \*  
 Venus -81652-09-12 16:04 J -28101715.05 -28101714.83 -28101714.61 0.0283 0.0026  
 Mercury -81651-09-24 10:04 J -28101338.16 -28101338.08 -28101337.97 0.0286 0.0244  
 Mercury -81651-12-22 09:49 J -28101249.27 -28101249.09 -28101248.92 0.0287 0.0086  
 Mercury -81650-03-21 08:52 J -28101160.30 -28101160.13 -28101159.95 0.0288 0.0070  
 Mercury -81650-06-18 07:40 J -28101071.29 -28101071.18 -28101071.07 0.0288 0.0225  
 Mars -81645-02-28 14:08 J -28099355.05 -28099354.91 -28099354.74 0.0294 0.0238  
 Moon -81645-12-05 18:13 J -28099073.83 -28099073.74 -28099073.63 0.0293 0.0267  
 Earth -81645-12-05 18:42 J -28099073.79 -28099073.72 -28099073.62 0.0293 0.0274 \*  
 Moon -81644-12-20 01:11 J -28098694.66 -28098694.45 -28098694.24 0.0292 0.0152  
 Earth -81644-12-20 04:32 J -28098694.50 -28098694.31 -28098694.10 0.0292 0.0166 \*  
 Moon -81642-01-03 01:25 J -28098315.67 -28098315.44 -28098315.20 0.0290 0.0037  
 Earth -81642-01-03 04:47 J -28098315.54 -28098315.30 -28098315.06 0.0290 0.0053 \*  
 Earth -81641-01-16 18:42 J -28097936.96 -28097936.72 -28097936.48 0.0287 0.0058  
 Moon -81641-01-16 18:42 J -28097936.94 -28097936.72 -28097936.49 0.0287 0.0074 \*  
 Earth -81640-01-28 22:18 J -28097558.76 -28097558.57 -28097558.37 0.0284 0.0161  
 Moon -81640-01-29 01:40 J -28097558.61 -28097558.43 -28097558.23 0.0284 0.0171 \*

Earth -81639-02-10 16:04 J -28097180.93 -28097180.83 -28097180.71 0.0281 0.0249  
 Moon -81639-02-10 17:44 J -28097180.87 -28097180.76 -28097180.65 0.0281 0.0247 \*  
 Venus -81638-07-17 06:42 J -28096659.43 -28096659.22 -28096659.02 0.0277 0.0002  
 Mercury -81637-07-24 01:40 J -28096286.53 -28096286.43 -28096286.33 0.0274 0.0185  
 Mercury -81637-10-20 12:42 J -28096198.10 -28096197.97 -28096197.85 0.0274 0.0089  
 Mercury -81636-01-16 23:44 J -28096109.65 -28096109.51 -28096109.38 0.0273 0.0012  
 Mercury -81636-04-15 10:47 J -28096021.18 -28096021.05 -28096020.93 0.0272 0.0106  
 Mercury -81636-07-12 21:49 J -28095932.68 -28095932.59 -28095932.50 0.0272 0.0204  
 Mars -81629-02-28 21:20 J -28093510.93 -28093510.61 -28093510.28 0.0267 0.0033  
 Moon -81629-06-04 08:52 J -28093414.26 -28093414.13 -28093413.98 0.0267 0.0216  
 Earth -81629-06-04 11:30 J -28093414.16 -28093414.02 -28093413.86 0.0267 0.0209 \*  
 Earth -81628-06-16 12:28 J -28093037.19 -28093036.98 -28093036.76 0.0269 0.0129  
 Moon -81628-06-16 14:52 J -28093037.08 -28093036.88 -28093036.67 0.0269 0.0143 \*  
 Earth -81627-06-28 20:37 J -28092659.88 -28092659.64 -28092659.39 0.0271 0.0041  
 Moon -81627-06-28 23:44 J -28092659.76 -28092659.51 -28092659.26 0.0271 0.0052 \*  
 Moon -81626-07-11 12:13 J -28092282.24 -28092281.99 -28092281.73 0.0273 0.0052  
 Earth -81626-07-11 13:11 J -28092282.19 -28092281.95 -28092281.70 0.0273 0.0055 \*  
 Moon -81625-07-23 11:30 J -28091904.22 -28091904.02 -28091903.81 0.0276 0.0158  
 Earth -81625-07-23 14:52 J -28091904.07 -28091903.88 -28091903.66 0.0276 0.0152 \*  
 Moon -81624-08-06 01:25 J -28091525.51 -28091525.44 -28091525.35 0.0279 0.0261  
 Earth -81624-08-06 02:52 J -28091525.49 -28091525.38 -28091525.26 0.0279 0.0247 \*  
 Venus -81622-03-26 03:49 J -28090928.56 -28090928.34 -28090928.13 0.0284 0.0055  
 Mercury -81621-02-11 11:30 J -28090606.07 -28090606.02 -28090605.96 0.0286 0.0269  
 Mercury -81621-05-10 11:01 J -28090517.20 -28090517.04 -28090516.87 0.0287 0.0112  
 Mercury -81621-08-07 10:18 J -28090428.25 -28090428.07 -28090427.89 0.0288 0.0045  
 Mercury -81621-11-04 09:06 J -28090339.24 -28090339.12 -28090338.99 0.0288 0.0200  
 Mars -81615-04-18 02:52 J -28088348.64 -28088348.38 -28088348.11 0.0294 0.0041  
 Earth -81615-12-14 14:37 J -28088108.06 -28088107.89 -28088107.72 0.0293 0.0208  
 Moon -81615-12-14 17:44 J -28088107.93 -28088107.76 -28088107.57 0.0293 0.0199 \*  
 Earth -81614-12-28 18:42 J -28087728.95 -28087728.72 -28087728.49 0.0291 0.0096

Moon -81614-12-28 21:35 J -28087728.83 -28087728.60 -28087728.36 0.0291 0.0082 \*  
 Moon -81612-01-10 12:28 J -28087350.22 -28087349.98 -28087349.73 0.0288 0.0032  
 Earth -81612-01-10 12:42 J -28087350.21 -28087349.97 -28087349.72 0.0288 0.0016 \*  
 Moon -81611-01-23 17:01 J -28086972.00 -28086971.79 -28086971.57 0.0285 0.0135  
 Earth -81611-01-23 20:23 J -28086971.86 -28086971.65 -28086971.43 0.0285 0.0121 \*  
 Moon -81610-02-05 16:18 J -28086593.96 -28086593.82 -28086593.67 0.0282 0.0218  
 Earth -81610-02-05 17:44 J -28086593.91 -28086593.76 -28086593.60 0.0282 0.0214 \*  
 Venus -81608-01-26 13:40 J -28085873.13 -28085872.93 -28085872.73 0.0276 0.0066  
 Mercury -81608-12-11 05:01 J -28085554.38 -28085554.29 -28085554.20 0.0274 0.0204  
 Mercury -81607-03-09 15:49 J -28085465.96 -28085465.84 -28085465.71 0.0273 0.0108  
 Mercury -81607-06-06 02:52 J -28085377.51 -28085377.38 -28085377.24 0.0273 0.0014  
 Mercury -81607-09-02 13:54 J -28085289.04 -28085288.92 -28085288.79 0.0272 0.0087  
 Mercury -81607-11-30 01:11 J -28085200.55 -28085200.45 -28085200.35 0.0271 0.0183  
 Earth -81600-05-30 16:47 J -28082826.89 -28082826.80 -28082826.68 0.0267 0.0239  
 Moon -81600-05-30 19:54 J -28082826.77 -28082826.67 -28082826.56 0.0267 0.0239 \*  
 Mars -81599-04-21 15:20 J -28082501.03 -28082500.86 -28082500.66 0.0268 0.0220  
 Moon -81599-06-11 12:28 J -28082450.17 -28082449.98 -28082449.78 0.0268 0.0174  
 Earth -81599-06-11 14:23 J -28082450.08 -28082449.90 -28082449.69 0.0268 0.0163 \*  
 Moon -81598-06-23 15:49 J -28082073.07 -28082072.84 -28082072.61 0.0270 0.0090  
 Earth -81598-06-23 18:42 J -28082072.95 -28082072.72 -28082072.48 0.0270 0.0077 \*  
 Earth -81597-07-05 06:42 J -28081695.47 -28081695.22 -28081694.97 0.0272 0.0016  
 Moon -81597-07-05 07:54 J -28081695.41 -28081695.17 -28081694.92 0.0272 0.0012 \*  
 Earth -81596-07-18 03:35 J -28081317.57 -28081317.35 -28081317.12 0.0275 0.0112  
 Moon -81596-07-18 07:25 J -28081317.41 -28081317.19 -28081316.96 0.0275 0.0115 \*  
 Earth -81595-07-31 10:18 J -28080939.22 -28080939.07 -28080938.89 0.0277 0.0209  
 Moon -81595-07-31 11:59 J -28080939.15 -28080939.00 -28080938.84 0.0277 0.0219 \*  
 Venus -81593-10-05 08:37 J -28080142.34 -28080142.14 -28080141.93 0.0284 0.0109  
 Mercury -81592-09-27 08:37 J -28079785.28 -28079785.14 -28079784.98 0.0287 0.0163  
 Mercury -81592-12-25 08:08 J -28079696.34 -28079696.16 -28079695.98 0.0287 0.0006  
 Mercury -81591-03-24 07:11 J -28079607.35 -28079607.20 -28079607.05 0.0288 0.0150

Moon -81586-12-08 05:59 J -28077522.37 -28077522.25 -28077522.12 0.0293 0.0250  
 Earth -81586-12-08 09:20 J -28077522.21 -28077522.11 -28077521.98 0.0293 0.0258 \*  
 Mars -81585-06-04 11:30 J -28077343.24 -28077343.02 -28077342.78 0.0292 0.0150  
 Moon -81585-12-21 15:20 J -28077143.06 -28077142.86 -28077142.64 0.0291 0.0136  
 Earth -81585-12-21 17:59 J -28077142.96 -28077142.75 -28077142.54 0.0291 0.0149 \*  
 Earth -81583-01-04 16:47 J -28076764.04 -28076763.80 -28076763.55 0.0289 0.0036  
 Moon -81583-01-04 17:44 J -28076763.99 -28076763.76 -28076763.52 0.0289 0.0020 \*  
 Earth -81582-01-18 05:30 J -28076385.50 -28076385.27 -28076385.04 0.0287 0.0074  
 Moon -81582-01-18 09:06 J -28076385.35 -28076385.12 -28076384.89 0.0287 0.0091 \*  
 Earth -81581-01-31 07:54 J -28076007.35 -28076007.17 -28076006.97 0.0284 0.0175  
 Moon -81581-01-31 10:04 J -28076007.27 -28076007.08 -28076006.89 0.0284 0.0183 \*  
 Moon -81580-02-11 22:04 J -28075629.67 -28075629.58 -28075629.47 0.0281 0.0255  
 Earth -81580-02-12 00:56 J -28075629.53 -28075629.46 -28075629.36 0.0281 0.0261 \*  
 Venus -81580-12-22 13:54 J -28075315.96 -28075315.92 -28075315.87 0.0278 0.0270  
 Venus -81579-08-08 16:32 J -28075087.00 -28075086.81 -28075086.62 0.0277 0.0113  
 Mercury -81578-04-30 07:25 J -28074822.26 -28074822.19 -28074822.12 0.0275 0.0234  
 Mercury -81578-07-27 18:13 J -28074733.85 -28074733.74 -28074733.62 0.0274 0.0137  
 Mercury -81578-10-24 05:16 J -28074645.41 -28074645.28 -28074645.15 0.0273 0.0040  
 Mercury -81577-01-20 16:18 J -28074556.95 -28074556.82 -28074556.69 0.0273 0.0057  
 Mercury -81577-04-18 03:20 J -28074468.47 -28074468.36 -28074468.24 0.0272 0.0155  
 Mercury -81577-07-15 14:37 J -28074379.94 -28074379.89 -28074379.84 0.0272 0.0253  
 Moon -81571-05-25 22:32 J -28072239.57 -28072239.56 -28072239.52 0.0267 0.0265  
 Mars -81571-06-03 17:30 J -28072231.04 -28072230.77 -28072230.47 0.0267 0.0129  
 Earth -81570-06-06 20:52 J -28071862.79 -28071862.63 -28071862.46 0.0268 0.0196  
 Moon -81570-06-06 22:32 J -28071862.70 -28071862.56 -28071862.39 0.0268 0.0206 \*  
 Earth -81569-06-17 22:47 J -28071485.77 -28071485.55 -28071485.32 0.0269 0.0114  
 Moon -81569-06-18 02:08 J -28071485.62 -28071485.41 -28071485.18 0.0269 0.0129 \*  
 Moon -81568-06-30 06:42 J -28071108.47 -28071108.22 -28071107.96 0.0271 0.0034  
 Earth -81568-06-30 08:08 J -28071108.41 -28071108.16 -28071107.92 0.0271 0.0025 \*  
 Moon -81567-07-12 21:49 J -28070730.83 -28070730.59 -28070730.35 0.0273 0.0071



Earth -81567-07-13 01:40 J -28070730.66 -28070730.43 -28070730.18 0.0273 0.0071 \*  
 Moon -81566-07-26 02:52 J -28070352.55 -28070352.38 -28070352.18 0.0276 0.0175  
 Earth -81566-07-26 04:32 J -28070352.50 -28070352.31 -28070352.10 0.0276 0.0167 \*  
 Earth -81565-08-07 17:16 J -28069973.85 -28069973.78 -28069973.68 0.0279 0.0261  
 Moon -81565-08-07 19:54 J -28069973.70 -28069973.67 -28069973.63 0.0279 0.0275 \*  
 Venus -81564-08-30 21:49 J -28069585.68 -28069585.59 -28069585.48 0.0282 0.0249  
 Venus -81563-04-17 20:37 J -28069355.80 -28069355.64 -28069355.48 0.0284 0.0190  
 Mercury -81562-02-14 10:04 J -28069053.21 -28069053.08 -28069052.93 0.0287 0.0188  
 Mercury -81562-05-14 09:35 J -28068964.28 -28068964.10 -28068963.92 0.0287 0.0031  
 Mercury -81562-08-11 08:37 J -28068875.30 -28068875.14 -28068874.97 0.0288 0.0126  
 Mercury -81562-11-08 07:11 J -28068786.23 -28068786.20 -28068786.15 0.0289 0.0281  
 Mars -81557-07-25 12:56 J -28067065.14 -28067064.96 -28067064.77 0.0294 0.0212  
 Moon -81557-12-01 21:06 J -28066935.63 -28066935.62 -28066935.61 0.0294 0.0293  
 Earth -81556-12-16 05:16 J -28066556.46 -28066556.28 -28066556.09 0.0292 0.0191  
 Moon -81556-12-16 07:54 J -28066556.36 -28066556.17 -28066555.96 0.0292 0.0182 \*  
 Moon -81555-12-30 07:11 J -28066177.45 -28066177.20 -28066176.95 0.0290 0.0063  
 Earth -81555-12-30 08:08 J -28066177.38 -28066177.16 -28066176.92 0.0290 0.0079 \*  
 Moon -81553-01-12 21:20 J -28065798.85 -28065798.61 -28065798.37 0.0288 0.0050  
 Earth -81553-01-13 01:11 J -28065798.69 -28065798.45 -28065798.21 0.0288 0.0033 \*  
 Moon -81552-01-25 05:30 J -28065420.47 -28065420.27 -28065420.07 0.0285 0.0150  
 Earth -81552-01-25 07:40 J -28065420.39 -28065420.18 -28065419.97 0.0285 0.0137 \*  
 Earth -81551-02-07 04:04 J -28065042.46 -28065042.33 -28065042.18 0.0282 0.0228  
 Moon -81551-02-07 06:28 J -28065042.36 -28065042.23 -28065042.09 0.0282 0.0230 \*  
 Venus -81550-07-04 21:49 J -28064529.72 -28064529.59 -28064529.44 0.0278 0.0202  
 Venus -81549-02-19 00:13 J -28064300.64 -28064300.49 -28064300.33 0.0276 0.0179  
 Mercury -81549-09-16 10:47 J -28064090.09 -28064090.05 -28064089.99 0.0274 0.0252  
 Mercury -81549-12-13 21:49 J -28064001.70 -28064001.59 -28064001.48 0.0274 0.0155  
 Mercury -81548-03-12 08:52 J -28063913.26 -28063913.13 -28063913.00 0.0273 0.0058  
 Mercury -81548-06-08 19:54 J -28063824.81 -28063824.67 -28063824.54 0.0272 0.0039  
 Mercury -81548-09-05 06:56 J -28063736.33 -28063736.21 -28063736.09 0.0272 0.0136

Mercury -81548-12-02 17:59 J -28063647.81 -28063647.75 -28063647.68 0.0271 0.0234

Moon -81541-06-01 01:54 J -28061275.55 -28061275.42 -28061275.30 0.0267 0.0230

Earth -81541-06-01 03:20 J -28061275.47 -28061275.36 -28061275.22 0.0267 0.0226 \*

Mars -81541-07-25 11:01 J -28061221.35 -28061221.04 -28061220.71 0.0267 0.0058

Moon -81540-06-12 22:04 J -28060898.76 -28060898.58 -28060898.37 0.0268 0.0163

Earth -81540-06-13 01:54 J -28060898.62 -28060898.42 -28060898.21 0.0268 0.0148 \*

Earth -81539-06-25 07:11 J -28060521.44 -28060521.20 -28060520.96 0.0270 0.0061

Moon -81539-06-25 07:40 J -28060521.40 -28060521.18 -28060520.95 0.0270 0.0074 \*

Earth -81538-07-07 20:08 J -28060143.90 -28060143.66 -28060143.41 0.0272 0.0033

Moon -81538-07-07 23:59 J -28060143.74 -28060143.50 -28060143.25 0.0272 0.0029 \*

Earth -81537-07-19 18:13 J -28059765.95 -28059765.74 -28059765.51 0.0275 0.0129

Moon -81537-07-19 19:54 J -28059765.89 -28059765.67 -28059765.44 0.0275 0.0133 \*

Moon -81536-08-01 23:44 J -28059387.64 -28059387.51 -28059387.37 0.0278 0.0236

Earth -81536-08-02 02:23 J -28059387.54 -28059387.40 -28059387.25 0.0278 0.0224 \*

Venus -81534-03-13 04:04 J -28058799.49 -28058799.33 -28058799.17 0.0283 0.0192

Venus -81534-10-29 02:23 J -28058569.49 -28058569.40 -28058569.28 0.0284 0.0248

Mercury -81533-07-03 08:23 J -28058321.25 -28058321.15 -28058321.04 0.0286 0.0235

Mercury -81533-09-30 07:54 J -28058232.34 -28058232.17 -28058231.99 0.0287 0.0077

Mercury -81533-12-28 07:11 J -28058143.38 -28058143.20 -28058143.03 0.0288 0.0079

Mercury -81532-03-27 05:44 J -28058054.36 -28058054.26 -28058054.15 0.0288 0.0234

Mars -81527-09-12 05:30 J -28056059.54 -28056059.27 -28056059.01 0.0293 0.0016

Moon -81527-12-09 23:30 J -28055970.65 -28055970.52 -28055970.37 0.0293 0.0234

Earth -81527-12-10 01:54 J -28055970.55 -28055970.42 -28055970.28 0.0293 0.0241 \*

Earth -81526-12-24 08:52 J -28055591.34 -28055591.13 -28055590.90 0.0291 0.0131

Moon -81526-12-24 10:18 J -28055591.28 -28055591.07 -28055590.85 0.0291 0.0118 \*

Earth -81524-01-06 06:28 J -28055212.47 -28055212.23 -28055211.98 0.0289 0.0019

Moon -81524-01-06 10:18 J -28055212.31 -28055212.07 -28055211.83 0.0289 0.0002 \*

Earth -81523-01-19 17:59 J -28054833.98 -28054833.75 -28054833.52 0.0286 0.0091

Moon -81523-01-19 20:08 J -28054833.89 -28054833.66 -28054833.43 0.0286 0.0106 \*

Moon -81522-02-01 17:01 J -28054455.96 -28054455.79 -28054455.60 0.0283 0.0195

Earth -81522-02-01 19:25 J -28054455.87 -28054455.69 -28054455.51 0.0283 0.0188 \*  
 Moon -81521-02-14 08:23 J -28054078.22 -28054078.15 -28054078.08 0.0280 0.0267  
 Earth -81521-02-14 11:01 J -28054078.08 -28054078.04 -28054077.97 0.0280 0.0272 \*  
 Venus -81520-01-14 00:42 J -28053743.63 -28053743.47 -28053743.29 0.0278 0.0154  
 Venus -81520-08-31 02:52 J -28053514.49 -28053514.38 -28053514.26 0.0276 0.0227  
 Mercury -81519-05-03 00:13 J -28053269.59 -28053269.49 -28053269.40 0.0274 0.0185  
 Mercury -81519-07-30 11:01 J -28053181.16 -28053181.04 -28053180.91 0.0274 0.0088  
 Mercury -81519-10-26 22:04 J -28053092.71 -28053092.58 -28053092.44 0.0273 0.0010  
 Mercury -81518-01-23 09:06 J -28053004.24 -28053004.12 -28053003.99 0.0273 0.0107  
 Mercury -81518-04-21 20:23 J -28052915.74 -28052915.65 -28052915.56 0.0272 0.0205  
 Earth -81512-05-27 10:04 J -28050688.14 -28050688.08 -28050688.00 0.0267 0.0255  
 Moon -81512-05-27 11:16 J -28050688.08 -28050688.03 -28050687.95 0.0267 0.0255 \*  
 Earth -81511-06-08 06:28 J -28050311.40 -28050311.23 -28050311.04 0.0268 0.0182  
 Moon -81511-06-08 10:18 J -28050311.24 -28050311.07 -28050310.89 0.0268 0.0193 \*  
 Mars -81511-09-16 10:04 J -28050211.18 -28050211.08 -28050210.95 0.0268 0.0251  
 Moon -81510-06-20 09:20 J -28049934.34 -28049934.11 -28049933.88 0.0269 0.0113  
 Earth -81510-06-20 09:20 J -28049934.33 -28049934.11 -28049933.88 0.0269 0.0099 \*  
 Moon -81509-07-01 16:04 J -28049557.08 -28049556.83 -28049556.58 0.0271 0.0017  
 Earth -81509-07-01 19:40 J -28049556.93 -28049556.68 -28049556.43 0.0271 0.0009 \*  
 Moon -81508-07-14 13:25 J -28049179.17 -28049178.94 -28049178.71 0.0274 0.0089  
 Earth -81508-07-14 14:23 J -28049179.13 -28049178.90 -28049178.66 0.0274 0.0087 \*  
 Earth -81507-07-27 18:42 J -28048800.90 -28048800.72 -28048800.53 0.0276 0.0182  
 Moon -81507-07-27 21:20 J -28048800.78 -28048800.61 -28048800.43 0.0276 0.0193 \*  
 Earth -81506-08-10 08:23 J -28048422.18 -28048422.15 -28048422.10 0.0279 0.0276  
 Venus -81505-09-22 14:52 J -28048013.07 -28048012.88 -28048012.67 0.0283 0.0115  
 Mercury -81504-11-20 09:35 J -28047589.17 -28047589.10 -28047589.02 0.0286 0.0261  
 Mercury -81503-02-17 09:06 J -28047500.29 -28047500.12 -28047499.95 0.0287 0.0104  
 Mercury -81503-05-17 08:23 J -28047411.33 -28047411.15 -28047410.97 0.0288 0.0053  
 Mercury -81503-08-14 07:11 J -28047322.32 -28047322.20 -28047322.07 0.0288 0.0209  
 Earth -81498-12-04 11:01 J -28045384.11 -28045384.04 -28045383.96 0.0294 0.0279

Moon	-81498-12-04 13:11 J	-28045384.03	-28045383.95	-28045383.85	0.0294	0.0274	*
Mars	-81497-10-30 13:25 J	-28045053.14	-28045052.94	-28045052.72	0.0292	0.0177	
Moon	-81497-12-17 20:52 J	-28045004.83	-28045004.63	-28045004.41	0.0292	0.0161	
Earth	-81497-12-17 22:04 J	-28045004.77	-28045004.58	-28045004.37	0.0292	0.0172	*
Moon	-81496-12-31 20:37 J	-28044625.89	-28044625.64	-28044625.40	0.0290	0.0044	
Earth	-81496-12-31 23:59 J	-28044625.73	-28044625.50	-28044625.26	0.0290	0.0059	*
Moon	-81494-01-14 13:40 J	-28044247.15	-28044246.93	-28044246.70	0.0288	0.0068	
Earth	-81494-01-14 15:35 J	-28044247.09	-28044246.85	-28044246.61	0.0288	0.0052	*
Earth	-81493-01-27 20:37 J	-28043868.83	-28043868.64	-28043868.43	0.0285	0.0154	
Moon	-81493-01-27 22:32 J	-28043868.74	-28043868.56	-28043868.36	0.0285	0.0167	*
Earth	-81492-02-08 16:04 J	-28043490.94	-28043490.83	-28043490.70	0.0282	0.0242	
Moon	-81492-02-08 19:25 J	-28043490.80	-28043490.69	-28043490.56	0.0282	0.0245	*
Venus	-81491-07-27 09:35 J	-28042957.29	-28042957.10	-28042956.90	0.0277	0.0084	
Mercury	-81490-09-20 03:49 J	-28042537.42	-28042537.34	-28042537.25	0.0274	0.0201	
Mercury	-81490-12-17 14:52 J	-28042449.00	-28042448.88	-28042448.76	0.0273	0.0104	
Mercury	-81489-03-15 01:54 J	-28042360.56	-28042360.42	-28042360.29	0.0273	0.0008	
Mercury	-81489-06-11 12:56 J	-28042272.09	-28042271.96	-28042271.83	0.0272	0.0091	
Mercury	-81489-09-07 23:59 J	-28042183.59	-28042183.50	-28042183.40	0.0272	0.0188	
Mars	-81483-10-29 10:32 J	-28039941.35	-28039941.06	-28039940.75	0.0267	0.0104	
Moon	-81482-06-03 10:04 J	-28039724.20	-28039724.08	-28039723.93	0.0267	0.0221	
Earth	-81482-06-03 13:54 J	-28039724.06	-28039723.92	-28039723.77	0.0267	0.0212	*
Earth	-81481-06-14 13:11 J	-28039347.16	-28039346.95	-28039346.74	0.0269	0.0133	
Moon	-81481-06-14 13:11 J	-28039347.15	-28039346.95	-28039346.75	0.0269	0.0148	*
Earth	-81480-06-26 19:11 J	-28038969.94	-28038969.70	-28038969.45	0.0270	0.0045	
Moon	-81480-06-26 22:47 J	-28038969.79	-28038969.55	-28038969.31	0.0270	0.0059	*
Earth	-81479-07-09 09:49 J	-28038592.34	-28038592.09	-28038591.85	0.0273	0.0049	
Moon	-81479-07-09 10:47 J	-28038592.30	-28038592.05	-28038591.79	0.0273	0.0047	*
Moon	-81478-07-22 05:59 J	-28038214.46	-28038214.25	-28038214.03	0.0275	0.0154	
Earth	-81478-07-22 09:06 J	-28038214.32	-28038214.12	-28038213.90	0.0275	0.0145	*
Moon	-81477-08-03 14:37 J	-28037835.98	-28037835.89	-28037835.78	0.0278	0.0253	

Earth -81477-08-03 17:59 J -28037835.86 -28037835.75 -28037835.61 0.0278 0.0240 \*  
 Venus -81475-04-04 22:04 J -28037226.80 -28037226.58 -28037226.37 0.0283 0.0054  
 Mercury -81474-07-07 07:54 J -28036768.33 -28036768.17 -28036768.01 0.0287 0.0148  
 Mercury -81474-10-04 07:11 J -28036679.38 -28036679.20 -28036679.02 0.0287 0.0009  
 Mercury -81473-01-01 06:13 J -28036590.39 -28036590.24 -28036590.09 0.0288 0.0164  
 Mars -81469-12-19 20:37 J -28034775.85 -28034775.64 -28034775.43 0.0293 0.0186  
 Earth -81468-12-11 19:54 J -28034418.82 -28034418.67 -28034418.50 0.0292 0.0222  
 Moon -81468-12-11 21:35 J -28034418.75 -28034418.60 -28034418.43 0.0292 0.0214 \*  
 Earth -81467-12-26 01:40 J -28034039.65 -28034039.43 -28034039.20 0.0291 0.0111  
 Moon -81467-12-26 05:16 J -28034039.50 -28034039.28 -28034039.05 0.0291 0.0098 \*  
 Earth -81465-01-08 21:49 J -28033660.83 -28033660.59 -28033660.35 0.0288 0.0002  
 Moon -81465-01-08 23:16 J -28033660.78 -28033660.53 -28033660.28 0.0288 0.0017 \*  
 Moon -81464-01-21 05:16 J -28033282.50 -28033282.28 -28033282.05 0.0286 0.0121  
 Earth -81464-01-21 07:54 J -28033282.39 -28033282.17 -28033281.95 0.0286 0.0108 \*  
 Moon -81463-02-03 04:04 J -28032904.47 -28032904.33 -28032904.16 0.0283 0.0211  
 Earth -81463-02-03 07:54 J -28032904.34 -28032904.17 -28032904.00 0.0283 0.0203 \*  
 Moon -81462-02-15 22:32 J -28032526.56 -28032526.56 -28032526.53 0.0280 0.0279  
 Venus -81461-02-06 12:13 J -28032171.19 -28032170.99 -28032170.79 0.0277 0.0036  
 Mercury -81460-02-06 05:59 J -28031805.31 -28031805.25 -28031805.17 0.0275 0.0231  
 Mercury -81460-05-05 17:01 J -28031716.90 -28031716.79 -28031716.67 0.0274 0.0134  
 Mercury -81460-08-02 04:04 J -28031628.47 -28031628.33 -28031628.20 0.0273 0.0037  
 Mercury -81460-10-29 15:06 J -28031540.00 -28031539.87 -28031539.74 0.0273 0.0061  
 Mercury -81459-01-26 02:08 J -28031451.52 -28031451.41 -28031451.30 0.0272 0.0158  
 Mercury -81459-04-24 13:11 J -28031362.99 -28031362.95 -28031362.90 0.0272 0.0256  
 Earth -81453-05-28 18:42 J -28029136.81 -28029136.72 -28029136.61 0.0267 0.0242  
 Moon -81453-05-28 22:18 J -28029136.67 -28029136.57 -28029136.46 0.0267 0.0242 \*  
 Mars -81453-12-19 23:16 J -28028931.83 -28028931.53 -28028931.21 0.0268 0.0083  
 Earth -81452-06-09 15:49 J -28028760.03 -28028759.84 -28028759.64 0.0268 0.0168  
 Moon -81452-06-09 15:49 J -28028760.02 -28028759.84 -28028759.65 0.0268 0.0180 \*  
 Moon -81451-06-21 15:49 J -28028383.07 -28028382.84 -28028382.60 0.0270 0.0099

Earth -81451-06-21 19:25 J -28028382.92 -28028382.69 -28028382.45 0.0270 0.0084 \*  
 Moon -81450-07-04 05:16 J -28028005.52 -28028005.28 -28028005.04 0.0272 0.0003  
 Earth -81450-07-04 06:56 J -28028005.46 -28028005.21 -28028004.96 0.0272 0.0008 \*  
 Earth -81449-07-16 02:52 J -28027627.61 -28027627.38 -28027627.15 0.0274 0.0103  
 Moon -81449-07-16 05:44 J -28027627.47 -28027627.26 -28027627.03 0.0274 0.0108 \*  
 Earth -81448-07-29 08:08 J -28027249.32 -28027249.16 -28027248.97 0.0277 0.0199  
 Moon -81448-07-29 11:44 J -28027249.16 -28027249.01 -28027248.84 0.0277 0.0210 \*  
 Venus -81446-10-16 07:54 J -28026440.38 -28026440.17 -28026439.95 0.0283 0.0021  
 Mercury -81445-11-23 08:23 J -28026036.29 -28026036.15 -28026036.00 0.0287 0.0179  
 Mercury -81444-02-20 07:54 J -28025947.35 -28025947.17 -28025946.99 0.0287 0.0021  
 Mercury -81444-05-20 06:56 J -28025858.37 -28025858.21 -28025858.05 0.0288 0.0135  
 Moon -81439-12-06 01:54 J -28023832.54 -28023832.42 -28023832.28 0.0293 0.0253  
 Earth -81439-12-06 04:32 J -28023832.42 -28023832.31 -28023832.19 0.0293 0.0261 \*  
 Mars -81438-02-07 07:25 J -28023769.46 -28023769.19 -28023768.92 0.0293 0.0010  
 Moon -81438-12-20 10:47 J -28023453.25 -28023453.05 -28023452.83 0.0292 0.0141  
 Earth -81438-12-20 14:37 J -28023453.09 -28023452.89 -28023452.68 0.0292 0.0152 \*  
 Moon -81436-01-02 13:40 J -28023074.16 -28023073.93 -28023073.69 0.0290 0.0026  
 Earth -81436-01-02 15:20 J -28023074.10 -28023073.86 -28023073.62 0.0290 0.0039 \*  
 Earth -81435-01-16 05:30 J -28022695.50 -28022695.27 -28022695.03 0.0287 0.0070  
 Moon -81435-01-16 07:54 J -28022695.39 -28022695.17 -28022694.94 0.0287 0.0085 \*  
 Earth -81434-01-29 09:35 J -28022317.29 -28022317.10 -28022316.90 0.0284 0.0170  
 Moon -81434-01-29 13:11 J -28022317.13 -28022316.95 -28022316.76 0.0284 0.0181 \*  
 Earth -81433-02-11 03:49 J -28021939.43 -28021939.34 -28021939.23 0.0281 0.0255  
 Moon -81433-02-11 03:49 J -28021939.43 -28021939.34 -28021939.23 0.0281 0.0256 \*  
 Venus -81432-08-18 21:06 J -28021384.83 -28021384.62 -28021384.42 0.0277 0.0034  
 Mercury -81431-06-26 10:04 J -28021073.14 -28021073.08 -28021073.03 0.0274 0.0247  
 Mercury -81431-09-22 20:52 J -28020984.74 -28020984.63 -28020984.52 0.0274 0.0150  
 Mercury -81431-12-20 07:54 J -28020896.30 -28020896.17 -28020896.04 0.0273 0.0053  
 Mercury -81430-03-18 18:42 J -28020807.85 -28020807.72 -28020807.58 0.0272 0.0045  
 Mercury -81430-06-15 05:44 J -28020719.37 -28020719.26 -28020719.14 0.0272 0.0142

Mercury -81430-09-11 17:01 J -28020630.85 -28020630.79 -28020630.73 0.0271 0.0239  
 Mars -81424-02-01 14:23 J -28018660.93 -28018660.90 -28018660.83 0.0266 0.0263  
 Moon -81424-05-24 01:25 J -28018549.48 -28018549.44 -28018549.39 0.0266 0.0261  
 Moon -81423-06-04 22:18 J -28018172.70 -28018172.57 -28018172.41 0.0267 0.0207  
 Earth -81423-06-04 23:01 J -28018172.70 -28018172.54 -28018172.37 0.0267 0.0198 \*  
 Earth -81422-06-16 23:01 J -28017795.76 -28017795.54 -28017795.32 0.0269 0.0118  
 Moon -81422-06-17 02:37 J -28017795.59 -28017795.39 -28017795.17 0.0269 0.0134 \*  
 Earth -81421-06-28 05:59 J -28017418.49 -28017418.25 -28017418.00 0.0271 0.0030  
 Moon -81421-06-28 08:08 J -28017418.41 -28017418.16 -28017417.90 0.0271 0.0042 \*  
 Moon -81420-07-10 18:42 J -28017040.96 -28017040.72 -28017040.47 0.0273 0.0065  
 Earth -81420-07-10 21:35 J -28017040.84 -28017040.60 -28017040.35 0.0273 0.0065 \*  
 Moon -81419-07-23 19:11 J -28016662.88 -28016662.70 -28016662.50 0.0276 0.0172  
 Earth -81419-07-23 22:04 J -28016662.77 -28016662.58 -28016662.36 0.0276 0.0162 \*  
 Earth -81418-08-06 08:37 J -28016284.24 -28016284.14 -28016284.04 0.0279 0.0255  
 Moon -81418-08-06 08:37 J -28016284.18 -28016284.14 -28016284.07 0.0279 0.0271 \*  
 Venus -81416-04-27 15:06 J -28015654.07 -28015653.87 -28015653.66 0.0284 0.0082  
 Mercury -81415-04-12 07:11 J -28015304.31 -28015304.20 -28015304.08 0.0286 0.0222  
 Mercury -81415-07-10 06:42 J -28015215.39 -28015215.22 -28015215.04 0.0287 0.0065  
 Mercury -81415-10-07 05:59 J -28015126.42 -28015126.25 -28015126.08 0.0288 0.0092  
 Mercury -81414-01-04 04:32 J -28015037.39 -28015037.31 -28015037.21 0.0288 0.0248  
 Earth -81409-12-13 13:25 J -28012867.10 -28012866.94 -28012866.75 0.0292 0.0204  
 Moon -81409-12-13 17:16 J -28012866.95 -28012866.78 -28012866.58 0.0292 0.0193 \*  
 Mars -81408-03-26 19:11 J -28012763.88 -28012763.70 -28012763.50 0.0292 0.0202  
 Earth -81408-12-27 18:28 J -28012487.96 -28012487.73 -28012487.50 0.0290 0.0091  
 Moon -81408-12-27 20:08 J -28012487.90 -28012487.66 -28012487.41 0.0290 0.0078 \*  
 Moon -81406-01-10 10:47 J -28012109.30 -28012109.05 -28012108.80 0.0288 0.0035  
 Earth -81406-01-10 13:11 J -28012109.19 -28012108.95 -28012108.70 0.0288 0.0021 \*  
 Moon -81405-01-23 18:28 J -28011730.93 -28011730.73 -28011730.52 0.0285 0.0138  
 Earth -81405-01-23 21:49 J -28011730.80 -28011730.59 -28011730.37 0.0285 0.0125 \*  
 Earth -81404-02-04 20:23 J -28011352.79 -28011352.65 -28011352.49 0.0282 0.0218

Moon -81404-02-04 20:23 J -28011352.78 -28011352.65 -28011352.50 0.0282 0.0223 \*  
 Venus -81402-02-28 23:30 J -28010598.71 -28010598.52 -28010598.32 0.0276 0.0081  
 Mercury -81401-02-09 23:01 J -28010252.64 -28010252.54 -28010252.44 0.0274 0.0181  
 Mercury -81401-05-08 09:49 J -28010164.21 -28010164.09 -28010163.96 0.0273 0.0084  
 Mercury -81401-08-04 20:52 J -28010075.76 -28010075.63 -28010075.49 0.0273 0.0014  
 Mercury -81401-11-01 07:54 J -28009987.29 -28009987.17 -28009987.04 0.0272 0.0111  
 Mercury -81400-01-28 18:56 J -28009898.79 -28009898.71 -28009898.62 0.0272 0.0209  
 Mars -81394-03-25 14:23 J -28007652.20 -28007651.90 -28007651.58 0.0267 0.0086  
 Earth -81394-05-31 01:54 J -28007585.54 -28007585.42 -28007585.29 0.0267 0.0229  
 Moon -81394-05-31 03:06 J -28007585.49 -28007585.37 -28007585.23 0.0267 0.0229 \*  
 Moon -81393-06-10 19:54 J -28007208.86 -28007208.67 -28007208.47 0.0268 0.0167  
 Earth -81393-06-10 23:16 J -28007208.72 -28007208.53 -28007208.31 0.0268 0.0154 \*  
 Moon -81392-06-23 01:54 J -28006831.64 -28006831.42 -28006831.19 0.0270 0.0083  
 Earth -81392-06-23 03:49 J -28006831.58 -28006831.34 -28006831.10 0.0270 0.0068 \*  
 Earth -81391-07-05 16:04 J -28006454.08 -28006453.83 -28006453.58 0.0272 0.0024  
 Moon -81391-07-05 18:28 J -28006453.97 -28006453.73 -28006453.48 0.0272 0.0018 \*  
 Earth -81390-07-18 12:56 J -28006076.17 -28006075.96 -28006075.72 0.0274 0.0120  
 Moon -81390-07-18 16:18 J -28006076.05 -28006075.82 -28006075.59 0.0274 0.0124 \*  
 Moon -81389-07-30 18:42 J -28005697.85 -28005697.72 -28005697.56 0.0277 0.0227  
 Earth -81389-07-30 19:40 J -28005697.83 -28005697.68 -28005697.51 0.0277 0.0214 \*  
 Venus -81387-11-07 23:44 J -28004867.69 -28004867.51 -28004867.32 0.0284 0.0151  
 Mercury -81386-08-30 07:11 J -28004572.28 -28004572.20 -28004572.12 0.0286 0.0257  
 Mercury -81386-11-27 06:42 J -28004483.39 -28004483.22 -28004483.05 0.0287 0.0100  
 Mercury -81385-02-24 05:59 J -28004394.43 -28004394.25 -28004394.07 0.0288 0.0058  
 Mercury -81385-05-23 05:01 J -28004305.41 -28004305.29 -28004305.17 0.0288 0.0213  
 Mars -81380-05-16 20:08 J -28002485.88 -28002485.66 -28002485.43 0.0294 0.0162  
 Moon -81380-12-07 17:30 J -28002280.91 -28002280.77 -28002280.62 0.0293 0.0233  
 Earth -81380-12-07 20:52 J -28002280.75 -28002280.63 -28002280.48 0.0293 0.0244 \*  
 Moon -81379-12-22 05:01 J -28001901.50 -28001901.29 -28001901.07 0.0292 0.0121  
 Earth -81379-12-22 06:13 J -28001901.45 -28001901.24 -28001901.01 0.0292 0.0133 \*



Earth -81377-01-05 05:59 J -28001522.49 -28001522.25 -28001522.01 0.0290 0.0020  
 Moon -81377-01-05 08:08 J -28001522.40 -28001522.16 -28001521.92 0.0290 0.0005 \*  
 Earth -81376-01-17 19:11 J -28001143.93 -28001143.70 -28001143.47 0.0287 0.0089  
 Moon -81376-01-17 22:32 J -28001143.79 -28001143.56 -28001143.33 0.0287 0.0104 \*  
 Earth -81375-01-30 22:04 J -28000765.76 -28000765.58 -28000765.40 0.0284 0.0186  
 Moon -81375-01-30 21:49 J -28000765.76 -28000765.59 -28000765.40 0.0284 0.0194 \*  
 Moon -81374-02-12 11:30 J -28000388.08 -28000388.02 -28000387.94 0.0281 0.0267  
 Earth -81374-02-12 15:06 J -28000387.93 -28000387.87 -28000387.80 0.0281 0.0269  
 Venus -81373-01-25 05:30 J -28000041.37 -28000041.27 -28000041.15 0.0278 0.0234  
 Venus -81373-09-10 07:54 J -27999812.34 -27999812.17 -27999812.00 0.0276 0.0148  
 Mercury -81372-06-29 02:52 J -27999520.47 -27999520.38 -27999520.29 0.0274 0.0197  
 Mercury -81372-09-25 13:40 J -27999432.05 -27999431.93 -27999431.80 0.0273 0.0100  
 Mercury -81372-12-23 00:42 J -27999343.61 -27999343.47 -27999343.34 0.0273 0.0005  
 Mercury -81371-03-21 11:44 J -27999255.14 -27999255.01 -27999254.89 0.0272 0.0094  
 Mercury -81371-06-17 22:47 J -27999166.65 -27999166.55 -27999166.46 0.0272 0.0191  
 Moon -81365-05-25 10:18 J -27996998.14 -27996998.07 -27996997.99 0.0266 0.0252  
 Earth -81365-05-25 11:44 J -27996998.06 -27996998.01 -27996997.93 0.0266 0.0257 \*  
 Mars -81364-05-16 11:59 J -27996642.29 -27996642.00 -27996641.69 0.0267 0.0106  
 Earth -81364-06-06 06:13 J -27996621.40 -27996621.24 -27996621.05 0.0267 0.0185  
 Moon -81364-06-06 09:35 J -27996621.26 -27996621.10 -27996620.93 0.0267 0.0194 \*  
 Earth -81363-06-18 06:56 J -27996244.43 -27996244.21 -27996243.97 0.0269 0.0103  
 Moon -81363-06-18 08:52 J -27996244.35 -27996244.13 -27996243.89 0.0269 0.0118 \*  
 Moon -81362-06-30 12:28 J -27995867.23 -27995866.98 -27995866.73 0.0271 0.0024  
 Earth -81362-06-30 15:06 J -27995867.12 -27995866.87 -27995866.62 0.0271 0.0013 \*  
 Moon -81361-07-12 04:32 J -27995489.55 -27995489.31 -27995489.08 0.0273 0.0081  
 Earth -81361-07-12 07:25 J -27995489.42 -27995489.19 -27995488.94 0.0273 0.0082 \*  
 Earth -81360-07-25 09:20 J -27995111.30 -27995111.11 -27995110.92 0.0276 0.0177  
 Moon -81360-07-25 10:18 J -27995111.24 -27995111.07 -27995110.89 0.0276 0.0188 \*  
 Earth -81359-08-07 20:37 J -27994732.69 -27994732.64 -27994732.57 0.0279 0.0270  
 Venus -81358-10-03 08:37 J -27994311.27 -27994311.14 -27994311.01 0.0282 0.0227

Venus -81357-05-20 07:11 J -27994081.34 -27994081.20 -27994081.06 0.0284 0.0214  
 Mercury -81356-04-15 05:30 J -27993751.42 -27993751.27 -27993751.11 0.0287 0.0143  
 Mercury -81356-07-13 05:01 J -27993662.47 -27993662.29 -27993662.11 0.0288 0.0015  
 Mercury -81356-10-10 03:49 J -27993573.48 -27993573.34 -27993573.19 0.0288 0.0172  
 Earth -81351-12-01 16:18 J -27991694.85 -27991694.82 -27991694.78 0.0293 0.0290  
 Moon -81351-12-01 19:11 J -27991694.75 -27991694.70 -27991694.62 0.0293 0.0282  
 Mars -81350-07-04 13:40 J -27991480.19 -27991479.93 -27991479.67 0.0293 0.0034  
 Earth -81350-12-16 05:16 J -27991315.46 -27991315.28 -27991315.08 0.0292 0.0184  
 Moon -81350-12-16 05:59 J -27991315.46 -27991315.25 -27991315.05 0.0292 0.0172 \*  
 Moon -81349-12-29 06:42 J -27990936.47 -27990936.22 -27990935.98 0.0290 0.0056  
 Earth -81349-12-29 09:20 J -27990936.35 -27990936.11 -27990935.87 0.0290 0.0072 \*  
 Moon -81347-01-11 23:30 J -27990557.75 -27990557.52 -27990557.28 0.0288 0.0055  
 Earth -81347-01-12 02:52 J -27990557.62 -27990557.38 -27990557.14 0.0288 0.0039 \*  
 Earth -81346-01-25 10:04 J -27990179.28 -27990179.08 -27990178.87 0.0285 0.0143  
 Moon -81346-01-25 10:18 J -27990179.26 -27990179.07 -27990178.87 0.0285 0.0153 \*  
 Earth -81345-02-07 07:25 J -27989801.32 -27989801.19 -27989801.05 0.0282 0.0233  
 Moon -81345-02-07 11:01 J -27989801.16 -27989801.04 -27989800.90 0.0282 0.0235 \*  
 Venus -81344-08-06 07:54 J -27989255.32 -27989255.17 -27989255.02 0.0278 0.0188  
 Venus -81343-03-23 10:04 J -27989026.23 -27989026.08 -27989025.94 0.0276 0.0193  
 Mercury -81343-11-16 04:47 J -27988788.37 -27988788.30 -27988788.22 0.0274 0.0229  
 Mercury -81342-02-12 15:35 J -27988699.96 -27988699.85 -27988699.73 0.0274 0.0133  
 Mercury -81342-05-12 02:37 J -27988611.52 -27988611.39 -27988611.26 0.0273 0.0035  
 Mercury -81342-08-08 13:40 J -27988523.06 -27988522.93 -27988522.80 0.0272 0.0062  
 Mercury -81342-11-05 00:42 J -27988434.58 -27988434.47 -27988434.36 0.0272 0.0160  
 Mercury -81341-02-01 11:44 J -27988346.04 -27988346.01 -27988345.96 0.0271 0.0257  
 Mars -81336-06-28 09:49 J -27986372.19 -27986372.09 -27986371.97 0.0267 0.0250  
 Moon -81335-06-01 04:32 J -27986034.45 -27986034.31 -27986034.17 0.0267 0.0220  
 Earth -81335-06-01 07:11 J -27986034.33 -27986034.20 -27986034.04 0.0267 0.0216 \*  
 Moon -81334-06-13 03:06 J -27985657.56 -27985657.37 -27985657.17 0.0268 0.0152  
 Earth -81334-06-13 05:01 J -27985657.49 -27985657.29 -27985657.07 0.0268 0.0139 \*

Earth -81333-06-24 09:49 J -27985280.33 -27985280.09 -27985279.85 0.0270 0.0052  
 Moon -81333-06-24 12:28 J -27985280.21 -27985279.98 -27985279.74 0.0270 0.0065 \*  
 Earth -81332-07-06 22:47 J -27984902.80 -27984902.55 -27984902.31 0.0272 0.0040  
 Moon -81332-07-07 02:08 J -27984902.66 -27984902.41 -27984902.16 0.0272 0.0034 \*  
 Moon -81331-07-19 19:40 J -27984524.89 -27984524.68 -27984524.45 0.0275 0.0142  
 Earth -81331-07-19 20:37 J -27984524.85 -27984524.64 -27984524.41 0.0275 0.0135 \*  
 Moon -81330-08-02 00:13 J -27984146.59 -27984146.49 -27984146.36 0.0278 0.0245  
 Earth -81330-08-02 04:32 J -27984146.45 -27984146.31 -27984146.17 0.0278 0.0229 \*  
 Venus -81328-04-14 14:37 J -27983525.06 -27983524.89 -27983524.71 0.0282 0.0167  
 Venus -81328-11-30 13:25 J -27983294.98 -27983294.94 -27983294.88 0.0284 0.0275  
 Mercury -81327-09-02 04:18 J -27983019.45 -27983019.32 -27983019.18 0.0287 0.0186  
 Mercury -81327-11-30 03:49 J -27982930.52 -27982930.34 -27982930.16 0.0287 0.0028  
 Mercury -81326-02-27 02:52 J -27982841.53 -27982841.38 -27982841.21 0.0288 0.0130  
 Mercury -81326-05-27 01:54 J -27982752.44 -27982752.42 -27982752.39 0.0289 0.0285  
 Earth -81321-12-09 10:32 J -27980729.21 -27980729.06 -27980728.90 0.0293 0.0226  
 Moon -81321-12-09 10:32 J -27980729.21 -27980729.06 -27980728.89 0.0293 0.0217 \*  
 Mars -81320-08-21 12:42 J -27980474.14 -27980473.97 -27980473.80 0.0292 0.0223  
 Earth -81320-12-23 19:25 J -27980349.91 -27980349.69 -27980349.46 0.0292 0.0114  
 Moon -81320-12-23 22:18 J -27980349.79 -27980349.57 -27980349.34 0.0292 0.0100 \*  
 Earth -81318-01-06 18:13 J -27979970.98 -27979970.74 -27979970.50 0.0289 0.0002  
 Moon -81318-01-06 21:49 J -27979970.83 -27979970.59 -27979970.34 0.0289 0.0016 \*  
 Earth -81317-01-20 06:42 J -27979592.44 -27979592.22 -27979591.99 0.0287 0.0107  
 Moon -81317-01-20 06:42 J -27979592.44 -27979592.22 -27979591.99 0.0287 0.0120 \*  
 Moon -81316-02-01 05:01 J -27979214.45 -27979214.29 -27979214.12 0.0284 0.0207  
 Earth -81316-02-01 08:23 J -27979214.30 -27979214.15 -27979213.97 0.0284 0.0203 \*  
 Moon -81315-02-13 22:32 J -27978836.58 -27978836.56 -27978836.54 0.0280 0.0279  
 Venus -81314-02-16 16:04 J -27978469.01 -27978468.83 -27978468.64 0.0277 0.0121  
 Venus -81314-10-03 17:59 J -27978239.82 -27978239.75 -27978239.68 0.0276 0.0259  
 Mercury -81313-04-04 08:23 J -27978056.20 -27978056.15 -27978056.09 0.0274 0.0247  
 Mercury -81313-07-01 19:25 J -27977967.80 -27977967.69 -27977967.58 0.0274 0.0150

Mercury -81313-09-28 06:13 J -27977879.37 -27977879.24 -27977879.10 0.0273 0.0054

Mercury -81313-12-25 17:16 J -27977790.91 -27977790.78 -27977790.65 0.0272 0.0045

Mercury -81312-03-24 04:18 J -27977702.43 -27977702.32 -27977702.20 0.0272 0.0142

Mercury -81312-06-20 15:20 J -27977613.92 -27977613.86 -27977613.79 0.0271 0.0239

Earth -81306-05-27 16:47 J -27975446.89 -27975446.80 -27975446.70 0.0266 0.0244

Moon -81306-05-27 19:25 J -27975446.77 -27975446.69 -27975446.58 0.0266 0.0243 \*

Mars -81306-08-19 23:01 J -27975362.85 -27975362.54 -27975362.22 0.0266 0.0064

Earth -81305-06-07 11:16 J -27975070.20 -27975070.03 -27975069.83 0.0267 0.0172

Moon -81305-06-07 14:23 J -27975070.08 -27975069.90 -27975069.71 0.0267 0.0180 \*

Moon -81304-06-19 09:49 J -27974693.32 -27974693.09 -27974692.85 0.0269 0.0102

Earth -81304-06-19 12:42 J -27974693.20 -27974692.97 -27974692.74 0.0269 0.0088 \*

Moon -81303-07-01 17:59 J -27974316.00 -27974315.75 -27974315.51 0.0271 0.0007

Earth -81303-07-01 21:06 J -27974315.86 -27974315.62 -27974315.37 0.0271 0.0006 \*

Earth -81302-07-14 14:23 J -27973938.13 -27973937.90 -27973937.67 0.0273 0.0097

Moon -81302-07-14 14:52 J -27973938.10 -27973937.88 -27973937.65 0.0273 0.0099 \*

Earth -81301-07-26 16:47 J -27973559.97 -27973559.80 -27973559.61 0.0276 0.0192

Moon -81301-07-26 20:23 J -27973559.81 -27973559.65 -27973559.47 0.0276 0.0204 \*

Venus -81299-10-25 21:49 J -27972738.79 -27972738.59 -27972738.39 0.0283 0.0106

Mercury -81297-01-20 03:06 J -27972287.47 -27972287.37 -27972287.26 0.0287 0.0229

Mercury -81297-04-18 02:37 J -27972198.56 -27972198.39 -27972198.21 0.0287 0.0072

Mercury -81297-07-16 01:54 J -27972109.59 -27972109.42 -27972109.24 0.0288 0.0086

Mercury -81297-10-13 00:42 J -27972020.56 -27972020.47 -27972020.36 0.0289 0.0243

Mars -81292-10-10 22:32 J -27970196.79 -27970196.56 -27970196.32 0.0294 0.0141

Moon -81292-12-03 04:47 J -27970143.39 -27970143.30 -27970143.18 0.0293 0.0264

Earth -81292-12-03 05:30 J -27970143.34 -27970143.27 -27970143.17 0.0293 0.0274 \*

Moon -81291-12-17 14:37 J -27969764.09 -27969763.89 -27969763.67 0.0292 0.0151

Earth -81291-12-17 18:13 J -27969763.93 -27969763.74 -27969763.53 0.0292 0.0166 \*

Moon -81290-12-31 18:13 J -27969384.97 -27969384.74 -27969384.50 0.0290 0.0037

Earth -81290-12-31 21:35 J -27969384.84 -27969384.60 -27969384.36 0.0290 0.0053 \*

Earth -81288-01-13 14:23 J -27969006.13 -27969005.90 -27969005.66 0.0287 0.0058

Moon -81288-01-13 14:23 J -27969006.13 -27969005.90 -27969005.67 0.0287 0.0073 \*  
 Earth -81287-01-26 20:37 J -27968627.83 -27968627.64 -27968627.44 0.0284 0.0159  
 Moon -81287-01-26 23:59 J -27968627.69 -27968627.50 -27968627.30 0.0284 0.0168 \*  
 Earth -81286-02-08 17:01 J -27968249.90 -27968249.79 -27968249.68 0.0281 0.0247  
 Moon -81286-02-08 18:28 J -27968249.83 -27968249.73 -27968249.59 0.0281 0.0246 \*  
 Venus -81285-08-28 17:44 J -27967682.96 -27967682.76 -27967682.56 0.0277 0.0076  
 Mercury -81284-11-18 21:06 J -27967235.71 -27967235.62 -27967235.51 0.0274 0.0183  
 Mercury -81283-02-15 08:08 J -27967147.29 -27967147.16 -27967147.03 0.0273 0.0086  
 Mercury -81283-05-14 19:11 J -27967058.84 -27967058.70 -27967058.57 0.0272 0.0013  
 Mercury -81283-08-11 05:59 J -27966970.37 -27966970.25 -27966970.12 0.0272 0.0109  
 Mercury -81283-11-07 17:01 J -27966881.87 -27966881.79 -27966881.70 0.0271 0.0206  
 Moon -81276-06-02 07:40 J -27964483.32 -27964483.18 -27964483.02 0.0267 0.0210  
 Earth -81276-06-02 10:32 J -27964483.21 -27964483.06 -27964482.89 0.0267 0.0203 \*  
 Mars -81276-10-09 21:20 J -27964353.89 -27964353.61 -27964353.30 0.0267 0.0115  
 Earth -81275-06-14 08:23 J -27964106.36 -27964106.15 -27964105.92 0.0268 0.0125  
 Moon -81275-06-14 10:32 J -27964106.25 -27964106.06 -27964105.85 0.0268 0.0139 \*  
 Earth -81274-06-26 13:25 J -27963729.18 -27963728.94 -27963728.69 0.0270 0.0038  
 Moon -81274-06-26 16:32 J -27963729.06 -27963728.81 -27963728.56 0.0270 0.0048 \*  
 Moon -81273-07-08 01:54 J -27963351.67 -27963351.42 -27963351.17 0.0272 0.0054  
 Earth -81273-07-08 02:52 J -27963351.62 -27963351.38 -27963351.13 0.0272 0.0055 \*  
 Moon -81272-07-20 21:49 J -27962973.79 -27962973.59 -27962973.38 0.0275 0.0159  
 Earth -81272-07-21 01:25 J -27962973.64 -27962973.44 -27962973.22 0.0275 0.0150 \*  
 Moon -81271-08-03 08:37 J -27962595.22 -27962595.14 -27962595.04 0.0278 0.0258  
 Earth -81271-08-03 10:04 J -27962595.20 -27962595.08 -27962594.96 0.0278 0.0243 \*  
 Venus -81269-05-07 02:23 J -27961952.62 -27961952.40 -27961952.19 0.0283 0.0052  
 Mercury -81268-06-08 00:56 J -27961555.50 -27961555.46 -27961555.42 0.0286 0.0278  
 Mercury -81268-09-05 00:28 J -27961466.64 -27961466.48 -27961466.30 0.0287 0.0120  
 Mercury -81268-12-02 23:59 J -27961377.68 -27961377.50 -27961377.32 0.0288 0.0039  
 Mercury -81267-03-01 23:01 J -27961288.67 -27961288.54 -27961288.40 0.0288 0.0195  
 Mars -81262-11-28 21:49 J -27959190.85 -27959190.59 -27959190.33 0.0293 0.0051

Earth	-81262-12-11 20:37 J	-27959177.80	-27959177.64	-27959177.46	0.0293	0.0210
Moon	-81262-12-12 00:13 J	-27959177.67	-27959177.49	-27959177.31	0.0293	0.0197 *
Earth	-81261-12-25 05:01 J	-27958798.51	-27958798.29	-27958798.05	0.0292	0.0097
Moon	-81261-12-25 08:08 J	-27958798.39	-27958798.16	-27958797.92	0.0292	0.0081 *
Moon	-81259-01-08 03:20 J	-27958419.61	-27958419.36	-27958419.11	0.0289	0.0034
Earth	-81259-01-08 03:20 J	-27958419.60	-27958419.36	-27958419.11	0.0289	0.0018 *
Moon	-81258-01-21 11:59 J	-27958041.22	-27958041.00	-27958040.79	0.0287	0.0137
Earth	-81258-01-21 15:06 J	-27958041.08	-27958040.87	-27958040.65	0.0287	0.0124 *
Moon	-81257-02-03 14:23 J	-27957663.04	-27957662.90	-27957662.75	0.0283	0.0222
Earth	-81257-02-03 16:18 J	-27957662.97	-27957662.82	-27957662.66	0.0283	0.0217 *
Venus	-81255-03-11 00:56 J	-27956896.66	-27956896.46	-27956896.25	0.0277	0.0014
Mercury	-81254-04-08 00:42 J	-27956503.55	-27956503.47	-27956503.38	0.0274	0.0202
Mercury	-81254-07-05 11:44 J	-27956415.14	-27956415.01	-27956414.89	0.0273	0.0105
Mercury	-81254-10-01 22:32 J	-27956326.69	-27956326.56	-27956326.42	0.0273	0.0008
Mercury	-81254-12-29 09:35 J	-27956238.23	-27956238.10	-27956237.97	0.0272	0.0089
Mercury	-81253-03-26 20:37 J	-27956149.74	-27956149.64	-27956149.54	0.0271	0.0186
Mars	-81248-11-22 12:56 J	-27954083.11	-27954082.96	-27954082.79	0.0266	0.0229
Earth	-81247-05-28 19:40 J	-27953895.80	-27953895.68	-27953895.56	0.0266	0.0232
Moon	-81247-05-28 22:18 J	-27953895.67	-27953895.57	-27953895.43	0.0266	0.0235 *
Moon	-81246-06-09 12:28 J	-27953519.16	-27953518.98	-27953518.77	0.0267	0.0170
Earth	-81246-06-09 14:08 J	-27953519.09	-27953518.91	-27953518.70	0.0267	0.0158 *
Moon	-81245-06-20 12:28 J	-27953142.21	-27953141.98	-27953141.75	0.0269	0.0087
Earth	-81245-06-20 15:35 J	-27953142.09	-27953141.85	-27953141.61	0.0269	0.0074 *
Earth	-81244-07-03 00:28 J	-27952764.73	-27952764.48	-27952764.23	0.0271	0.0017
Moon	-81244-07-03 01:40 J	-27952764.67	-27952764.43	-27952764.19	0.0271	0.0013 *
Earth	-81243-07-15 17:59 J	-27952386.97	-27952386.75	-27952386.52	0.0274	0.0111
Moon	-81243-07-15 22:04 J	-27952386.81	-27952386.58	-27952386.36	0.0274	0.0116 *
Earth	-81242-07-28 21:06 J	-27952008.77	-27952008.62	-27952008.44	0.0276	0.0207
Moon	-81242-07-28 22:32 J	-27952008.71	-27952008.56	-27952008.39	0.0276	0.0218 *
Venus	-81240-11-17 08:37 J	-27951166.36	-27951166.14	-27951165.92	0.0283	0.0007

Mercury -81238-01-22 23:01 J -27950734.68 -27950734.54 -27950734.38 0.0287 0.0166

Mercury -81238-04-21 22:32 J -27950645.74 -27950645.56 -27950645.37 0.0288 0.0009

Mercury -81238-07-19 21:35 J -27950556.75 -27950556.60 -27950556.44 0.0288 0.0150

Moon -81233-12-04 11:30 J -27948592.14 -27948592.02 -27948591.88 0.0294 0.0248

Earth -81233-12-04 15:20 J -27948591.98 -27948591.86 -27948591.75 0.0294 0.0258 \*

Moon -81232-12-19 01:11 J -27948212.66 -27948212.45 -27948212.24 0.0292 0.0135

Earth -81232-12-19 03:20 J -27948212.56 -27948212.36 -27948212.14 0.0292 0.0149 \*

Mars -81231-01-15 07:25 J -27948185.34 -27948185.19 -27948185.04 0.0292 0.0239

Earth -81230-01-02 06:28 J -27947833.48 -27947833.23 -27947832.99 0.0290 0.0035

Moon -81230-01-02 07:11 J -27947833.43 -27947833.20 -27947832.96 0.0290 0.0020 \*

Earth -81229-01-15 22:32 J -27947454.78 -27947454.56 -27947454.32 0.0287 0.0076

Moon -81229-01-16 02:08 J -27947454.63 -27947454.41 -27947454.18 0.0287 0.0092 \*

Earth -81228-01-28 04:18 J -27947076.50 -27947076.32 -27947076.12 0.0284 0.0175

Moon -81228-01-28 06:28 J -27947076.41 -27947076.23 -27947076.03 0.0284 0.0184 \*

Moon -81227-02-09 21:06 J -27946698.72 -27946698.62 -27946698.51 0.0281 0.0254

Earth -81227-02-09 23:44 J -27946698.59 -27946698.51 -27946698.42 0.0281 0.0261 \*

Venus -81226-09-21 02:23 J -27946110.61 -27946110.40 -27946110.20 0.0276 0.0030

Mercury -81225-08-25 02:37 J -27945771.46 -27945771.39 -27945771.32 0.0274 0.0235

Mercury -81225-11-21 13:25 J -27945683.05 -27945682.94 -27945682.82 0.0273 0.0138

Mercury -81224-02-18 00:13 J -27945594.62 -27945594.49 -27945594.35 0.0273 0.0042

Mercury -81224-05-17 11:16 J -27945506.16 -27945506.03 -27945505.90 0.0272 0.0055

Mercury -81224-08-13 22:18 J -27945417.68 -27945417.57 -27945417.46 0.0271 0.0152

Mercury -81224-11-10 09:20 J -27945329.16 -27945329.11 -27945329.06 0.0271 0.0250

Moon -81218-05-23 17:01 J -27943308.83 -27943308.79 -27943308.73 0.0266 0.0260

Earth -81218-05-23 20:08 J -27943308.70 -27943308.66 -27943308.62 0.0266 0.0262

Mars -81217-01-12 23:59 J -27943074.81 -27943074.50 -27943074.18 0.0267 0.0058

Earth -81217-06-03 11:44 J -27942932.17 -27942932.01 -27942931.83 0.0267 0.0191

Moon -81217-06-03 13:25 J -27942932.08 -27942931.94 -27942931.77 0.0267 0.0202 \*

Earth -81216-06-15 09:35 J -27942555.32 -27942555.10 -27942554.87 0.0268 0.0111

Moon -81216-06-15 13:11 J -27942555.17 -27942554.95 -27942554.73 0.0268 0.0126 \*

Moon -81215-06-27 13:11 J -27942178.20 -27942177.95 -27942177.69 0.0270 0.0030  
 Earth -81215-06-27 14:37 J -27942178.13 -27942177.89 -27942177.64 0.0270 0.0023 \*  
 Moon -81214-07-10 00:13 J -27941800.73 -27941800.49 -27941800.25 0.0272 0.0073  
 Earth -81214-07-10 04:04 J -27941800.56 -27941800.33 -27941800.08 0.0272 0.0069 \*  
 Moon -81213-07-22 01:40 J -27941422.61 -27941422.43 -27941422.24 0.0275 0.0175  
 Earth -81213-07-22 02:52 J -27941422.57 -27941422.38 -27941422.17 0.0275 0.0164 \*  
 Earth -81212-08-04 11:44 J -27941044.09 -27941044.01 -27941043.90 0.0278 0.0257  
 Moon -81212-08-04 14:37 J -27941043.92 -27941043.89 -27941043.83 0.0278 0.0272 \*  
 Venus -81210-05-30 11:30 J -27940380.23 -27940380.02 -27940379.80 0.0283 0.0055  
 Mercury -81209-06-10 20:08 J -27940002.78 -27940002.66 -27940002.55 0.0286 0.0221  
 Mercury -81209-09-07 19:40 J -27939913.86 -27939913.68 -27939913.50 0.0287 0.0062  
 Mercury -81209-12-05 18:56 J -27939824.88 -27939824.71 -27939824.54 0.0288 0.0096  
 Mercury -81208-03-04 17:44 J -27939735.83 -27939735.76 -27939735.66 0.0288 0.0253  
 Moon -81204-11-28 13:25 J -27938005.95 -27938005.94 -27938005.91 0.0295 0.0293  
 Mars -81203-03-06 17:30 J -27937908.00 -27937907.77 -27937907.52 0.0294 0.0131  
 Earth -81203-12-13 03:06 J -27937626.55 -27937626.37 -27937626.18 0.0294 0.0195  
 Moon -81203-12-13 05:30 J -27937626.47 -27937626.27 -27937626.07 0.0294 0.0183 \*  
 Moon -81202-12-27 10:04 J -27937247.32 -27937247.08 -27937246.83 0.0292 0.0065  
 Earth -81202-12-27 11:30 J -27937247.25 -27937247.02 -27937246.78 0.0292 0.0081 \*  
 Moon -81200-01-09 05:44 J -27936868.49 -27936868.26 -27936868.01 0.0289 0.0051  
 Earth -81200-01-09 09:35 J -27936868.34 -27936868.10 -27936867.86 0.0289 0.0034 \*  
 Moon -81199-01-22 18:42 J -27936489.92 -27936489.72 -27936489.52 0.0286 0.0152  
 Earth -81199-01-22 20:52 J -27936489.84 -27936489.63 -27936489.41 0.0286 0.0139 \*  
 Earth -81198-02-04 21:35 J -27936111.73 -27936111.60 -27936111.46 0.0283 0.0231  
 Moon -81198-02-04 23:44 J -27936111.64 -27936111.51 -27936111.38 0.0283 0.0233 \*  
 Venus -81196-04-02 08:37 J -27935324.33 -27935324.14 -27935323.95 0.0277 0.0089  
 Mercury -81195-01-12 05:44 J -27935039.30 -27935039.26 -27935039.21 0.0274 0.0257  
 Mercury -81195-04-10 16:32 J -27934950.91 -27934950.81 -27934950.70 0.0274 0.0161  
 Mercury -81195-07-08 03:35 J -27934862.48 -27934862.35 -27934862.22 0.0273 0.0063  
 Mercury -81195-10-04 14:23 J -27934774.03 -27934773.90 -27934773.76 0.0272 0.0035



Mercury -81194-01-01 01:25 J -27934685.56 -27934685.44 -27934685.32 0.0272 0.0131

Mercury -81194-03-30 12:28 J -27934597.05 -27934596.98 -27934596.90 0.0271 0.0228

Moon -81188-05-29 18:42 J -27932344.85 -27932344.72 -27932344.59 0.0266 0.0227

Earth -81188-05-29 20:23 J -27932344.78 -27932344.65 -27932344.51 0.0266 0.0221 \*

Mars -81187-03-05 16:18 J -27932065.10 -27932064.82 -27932064.53 0.0267 0.0132

Moon -81187-06-10 11:16 J -27931968.21 -27931968.03 -27931967.83 0.0267 0.0160

Earth -81187-06-10 15:06 J -27931968.07 -27931967.87 -27931967.66 0.0267 0.0145 \*

Earth -81186-06-22 16:04 J -27931591.07 -27931590.83 -27931590.58 0.0269 0.0061

Moon -81186-06-22 16:47 J -27931591.02 -27931590.80 -27931590.57 0.0269 0.0072 \*

Earth -81185-07-04 01:11 J -27931213.69 -27931213.45 -27931213.20 0.0271 0.0030

Moon -81185-07-04 05:01 J -27931213.54 -27931213.29 -27931213.04 0.0271 0.0030 \*

Earth -81184-07-16 19:11 J -27930835.91 -27930835.70 -27930835.47 0.0274 0.0125

Moon -81184-07-16 20:23 J -27930835.87 -27930835.65 -27930835.42 0.0274 0.0133 \*

Moon -81183-07-29 19:54 J -27930457.80 -27930457.67 -27930457.53 0.0277 0.0233

Earth -81183-07-29 22:47 J -27930457.69 -27930457.55 -27930457.39 0.0277 0.0220 \*

Venus -81181-12-09 17:44 J -27929593.95 -27929593.76 -27929593.56 0.0284 0.0114

Mercury -81180-10-28 18:28 J -27929270.79 -27929270.73 -27929270.66 0.0287 0.0267

Mercury -81179-01-25 17:59 J -27929181.91 -27929181.75 -27929181.57 0.0287 0.0109

Mercury -81179-04-24 17:30 J -27929092.95 -27929092.77 -27929092.59 0.0288 0.0050

Mercury -81179-07-22 16:32 J -27929003.93 -27929003.81 -27929003.68 0.0289 0.0207

Moon -81174-12-06 19:25 J -27927040.82 -27927040.69 -27927040.54 0.0294 0.0234

Earth -81174-12-06 21:20 J -27927040.74 -27927040.61 -27927040.47 0.0294 0.0244 \*

Mars -81173-04-23 10:04 J -27926902.33 -27926902.08 -27926901.81 0.0293 0.0064

Earth -81173-12-20 09:35 J -27926661.32 -27926661.10 -27926660.88 0.0292 0.0133

Moon -81173-12-20 11:16 J -27926661.24 -27926661.03 -27926660.81 0.0292 0.0119 \*

Earth -81171-01-03 11:59 J -27926282.24 -27926282.00 -27926281.75 0.0290 0.0019

Moon -81171-01-03 15:49 J -27926282.08 -27926281.84 -27926281.60 0.0290 0.0002 \*

Earth -81170-01-17 04:04 J -27925903.55 -27925903.33 -27925903.10 0.0287 0.0091

Moon -81170-01-17 05:59 J -27925903.47 -27925903.25 -27925903.01 0.0287 0.0106 \*

Moon -81169-01-30 07:11 J -27925525.37 -27925525.20 -27925525.01 0.0284 0.0195

Earth -81169-01-30 09:20 J -27925525.28 -27925525.11 -27925524.92 0.0284 0.0190 \*  
 Moon -81168-02-11 00:56 J -27925147.52 -27925147.46 -27925147.38 0.0281 0.0267  
 Earth -81168-02-11 04:04 J -27925147.37 -27925147.33 -27925147.27 0.0281 0.0273  
 Venus -81167-02-26 06:56 J -27924767.28 -27924767.21 -27924767.11 0.0278 0.0253  
 Venus -81167-10-13 09:20 J -27924538.28 -27924538.11 -27924537.92 0.0276 0.0131  
 Mercury -81166-08-28 18:13 J -27924218.82 -27924218.74 -27924218.64 0.0273 0.0195  
 Mercury -81166-11-25 05:16 J -27924130.41 -27924130.28 -27924130.16 0.0273 0.0098  
 Mercury -81165-02-21 16:04 J -27924041.96 -27924041.83 -27924041.69 0.0272 0.0005  
 Mercury -81165-05-20 03:06 J -27923953.50 -27923953.37 -27923953.24 0.0272 0.0096  
 Mercury -81165-08-16 14:08 J -27923865.00 -27923864.91 -27923864.82 0.0271 0.0193  
 Mars -81159-04-17 08:23 J -27921795.31 -27921795.15 -27921794.97 0.0266 0.0224  
 Earth -81159-05-24 19:25 J -27921757.75 -27921757.69 -27921757.59 0.0266 0.0252  
 Moon -81159-05-24 21:06 J -27921757.68 -27921757.62 -27921757.55 0.0266 0.0253 \*  
 Earth -81158-06-05 11:16 J -27921381.20 -27921381.03 -27921380.84 0.0267 0.0180  
 Moon -81158-06-05 14:52 J -27921381.03 -27921380.88 -27921380.69 0.0267 0.0193 \*  
 Moon -81157-06-16 08:37 J -27921004.37 -27921004.14 -27921003.91 0.0268 0.0112  
 Earth -81157-06-16 09:06 J -27921004.35 -27921004.12 -27921003.89 0.0268 0.0098 \*  
 Moon -81156-06-28 10:32 J -27920627.31 -27920627.06 -27920626.81 0.0270 0.0014  
 Earth -81156-06-28 14:08 J -27920627.16 -27920626.91 -27920626.66 0.0270 0.0010 \*  
 Moon -81155-07-11 03:06 J -27920249.59 -27920249.37 -27920249.14 0.0272 0.0090  
 Earth -81155-07-11 03:35 J -27920249.59 -27920249.35 -27920249.12 0.0272 0.0083 \*  
 Earth -81154-07-24 02:08 J -27919871.59 -27919871.41 -27919871.21 0.0275 0.0177  
 Moon -81154-07-24 05:30 J -27919871.44 -27919871.27 -27919871.09 0.0275 0.0191 \*  
 Earth -81153-08-05 11:16 J -27919493.07 -27919493.03 -27919492.95 0.0278 0.0269  
 Venus -81151-06-21 18:56 J -27918807.89 -27918807.71 -27918807.53 0.0284 0.0156  
 Mercury -81150-06-14 13:54 J -27918450.06 -27918449.92 -27918449.76 0.0287 0.0170  
 Mercury -81150-09-11 13:40 J -27918361.11 -27918360.93 -27918360.75 0.0287 0.0011  
 Mercury -81150-12-09 12:56 J -27918272.11 -27918271.96 -27918271.80 0.0288 0.0147  
 Earth -81145-11-29 11:59 J -27916455.03 -27916455.00 -27916454.95 0.0295 0.0290  
 Moon -81145-11-29 13:11 J -27916455.03 -27916454.95 -27916454.86 0.0295 0.0278 \*

Moon -81144-12-14 03:20 J -27916075.56 -27916075.36 -27916075.15 0.0294 0.0167  
 Earth -81144-12-14 05:16 J -27916075.46 -27916075.28 -27916075.07 0.0294 0.0182 \*  
 Mars -81143-06-10 19:11 J -27915896.83 -27915896.70 -27915896.56 0.0293 0.0247  
 Moon -81143-12-28 10:32 J -27915696.30 -27915696.06 -27915695.82 0.0292 0.0050  
 Earth -81143-12-28 13:54 J -27915696.15 -27915695.92 -27915695.68 0.0292 0.0066 \*  
 Moon -81141-01-11 10:47 J -27915317.28 -27915317.05 -27915316.82 0.0289 0.0063  
 Earth -81141-01-11 11:59 J -27915317.23 -27915317.00 -27915316.75 0.0289 0.0049 \*  
 Earth -81140-01-23 23:16 J -27914938.73 -27914938.53 -27914938.33 0.0286 0.0153  
 Moon -81140-01-24 01:40 J -27914938.63 -27914938.43 -27914938.24 0.0286 0.0164 \*  
 Earth -81139-02-05 23:44 J -27914560.63 -27914560.51 -27914560.39 0.0283 0.0244  
 Moon -81139-02-06 02:52 J -27914560.49 -27914560.38 -27914560.25 0.0283 0.0245 \*  
 Venus -81138-09-08 12:13 J -27913981.12 -27913980.99 -27913980.84 0.0278 0.0198  
 Venus -81137-04-24 14:37 J -27913752.04 -27913751.89 -27913751.73 0.0276 0.0186  
 Mercury -81136-01-14 21:20 J -27913486.69 -27913486.61 -27913486.53 0.0274 0.0219  
 Mercury -81136-04-13 08:08 J -27913398.27 -27913398.16 -27913398.04 0.0274 0.0122  
 Mercury -81136-07-10 19:11 J -27913309.84 -27913309.70 -27913309.57 0.0273 0.0025  
 Mercury -81136-10-07 05:59 J -27913221.38 -27913221.25 -27913221.12 0.0272 0.0073  
 Mercury -81135-01-03 17:01 J -27913132.89 -27913132.79 -27913132.68 0.0272 0.0170  
 Mercury -81135-04-02 04:18 J -27913044.34 -27913044.32 -27913044.31 0.0271 0.0267  
 Moon -81129-05-30 16:18 J -27910793.95 -27910793.82 -27910793.68 0.0266 0.0221  
 Earth -81129-05-30 19:54 J -27910793.82 -27910793.67 -27910793.52 0.0266 0.0211 \*  
 Mars -81129-06-07 16:04 J -27910786.16 -27910785.83 -27910785.51 0.0266 0.0040  
 Earth -81128-06-11 14:08 J -27910417.11 -27910416.91 -27910416.69 0.0267 0.0134  
 Moon -81128-06-11 14:37 J -27910417.08 -27910416.89 -27910416.69 0.0267 0.0149 \*  
 Earth -81127-06-23 15:20 J -27910040.11 -27910039.86 -27910039.62 0.0269 0.0048  
 Moon -81127-06-23 18:56 J -27910039.95 -27910039.71 -27910039.47 0.0269 0.0060 \*  
 Earth -81126-07-06 00:28 J -27909662.73 -27909662.48 -27909662.24 0.0271 0.0043  
 Moon -81126-07-06 00:42 J -27909662.72 -27909662.47 -27909662.21 0.0271 0.0046 \*  
 Moon -81125-07-17 14:37 J -27909285.09 -27909284.89 -27909284.67 0.0274 0.0151  
 Earth -81125-07-17 18:13 J -27909284.94 -27909284.74 -27909284.51 0.0274 0.0138 \*

Moon -81124-07-30 19:25 J -27908906.80 -27908906.69 -27908906.58 0.0277 0.0247  
 Earth -81124-07-30 22:04 J -27908906.70 -27908906.58 -27908906.43 0.0277 0.0232 \*  
 Venus -81122-05-17 02:37 J -27908251.51 -27908251.39 -27908251.26 0.0282 0.0226  
 Venus -81121-01-02 00:56 J -27908021.59 -27908021.46 -27908021.31 0.0284 0.0215  
 Mercury -81121-10-31 12:28 J -27907718.10 -27907717.98 -27907717.86 0.0287 0.0216  
 Mercury -81120-01-28 11:59 J -27907629.17 -27907629.00 -27907628.82 0.0287 0.0058  
 Mercury -81120-04-27 11:16 J -27907540.19 -27907540.03 -27907539.85 0.0288 0.0101  
 Mercury -81120-07-25 10:18 J -27907451.14 -27907451.07 -27907450.98 0.0289 0.0258  
 Mars -81115-07-30 23:59 J -27905619.73 -27905619.50 -27905619.25 0.0294 0.0122  
 Earth -81115-12-07 23:30 J -27905489.66 -27905489.52 -27905489.36 0.0294 0.0231  
 Moon -81115-12-08 02:08 J -27905489.57 -27905489.41 -27905489.24 0.0294 0.0217 \*  
 Earth -81114-12-22 11:44 J -27905110.22 -27905110.01 -27905109.78 0.0292 0.0119  
 Moon -81114-12-22 15:20 J -27905110.08 -27905109.86 -27905109.62 0.0292 0.0103 \*  
 Earth -81112-01-04 14:37 J -27904731.14 -27904730.89 -27904730.65 0.0290 0.0006  
 Moon -81112-01-04 15:20 J -27904731.11 -27904730.86 -27904730.61 0.0290 0.0011 \*  
 Moon -81111-01-18 03:35 J -27904352.57 -27904352.35 -27904352.12 0.0287 0.0116  
 Earth -81111-01-18 06:28 J -27904352.45 -27904352.23 -27904352.00 0.0287 0.0106 \*  
 Moon -81110-01-31 08:08 J -27903974.31 -27903974.16 -27903973.99 0.0284 0.0208  
 Earth -81110-01-31 11:30 J -27903974.18 -27903974.02 -27903973.84 0.0284 0.0204 \*  
 Moon -81109-02-13 06:56 J -27903596.24 -27903596.21 -27903596.17 0.0281 0.0277  
 Venus -81108-03-20 13:25 J -27903195.11 -27903194.94 -27903194.77 0.0277 0.0155  
 Venus -81108-11-04 15:20 J -27902965.96 -27902965.86 -27902965.74 0.0276 0.0227  
 Mercury -81107-06-03 23:01 J -27902754.59 -27902754.54 -27902754.49 0.0274 0.0253  
 Mercury -81107-08-31 09:49 J -27902666.20 -27902666.09 -27902665.98 0.0273 0.0156  
 Mercury -81107-11-27 20:37 J -27902577.77 -27902577.64 -27902577.50 0.0273 0.0060  
 Mercury -81106-02-24 07:40 J -27902489.31 -27902489.18 -27902489.05 0.0272 0.0038  
 Mercury -81106-05-23 18:42 J -27902400.84 -27902400.72 -27902400.61 0.0271 0.0135  
 Mercury -81106-08-20 05:30 J -27902312.33 -27902312.27 -27902312.19 0.0271 0.0232  
 Earth -81100-05-25 18:28 J -27900206.82 -27900206.73 -27900206.62 0.0266 0.0242  
 Moon -81100-05-25 22:04 J -27900206.66 -27900206.58 -27900206.48 0.0266 0.0245 \*

Moon	-81099-06-06 09:35 J	-27899830.28	-27899830.10	-27899829.92	0.0267	0.0182
Earth	-81099-06-06 10:04 J	-27899830.26	-27899830.08	-27899829.88	0.0267	0.0168 *
Mars	-81099-07-29 04:04 J	-27899777.61	-27899777.33	-27899777.05	0.0267	0.0133
Moon	-81098-06-18 03:35 J	-27899453.57	-27899453.35	-27899453.12	0.0268	0.0100
Earth	-81098-06-18 07:25 J	-27899453.42	-27899453.19	-27899452.95	0.0268	0.0086 *
Moon	-81097-06-29 11:44 J	-27899076.25	-27899076.01	-27899075.77	0.0270	0.0003
Earth	-81097-06-29 12:13 J	-27899076.24	-27899075.99	-27899075.74	0.0270	0.0003 *
Earth	-81096-07-12 01:25 J	-27898698.67	-27898698.44	-27898698.20	0.0272	0.0096
Moon	-81096-07-12 05:01 J	-27898698.51	-27898698.29	-27898698.06	0.0272	0.0107 *
Earth	-81095-07-25 00:28 J	-27898320.66	-27898320.48	-27898320.30	0.0275	0.0190
Moon	-81095-07-25 02:37 J	-27898320.54	-27898320.39	-27898320.20	0.0275	0.0205 *
Venus	-81093-11-26 02:23 J	-27897465.55	-27897465.40	-27897465.23	0.0282	0.0189
Venus	-81092-07-14 01:25 J	-27897235.54	-27897235.44	-27897235.35	0.0284	0.0253
Mercury	-81091-03-20 07:54 J	-27896986.20	-27896986.17	-27896986.13	0.0286	0.0280
Mercury	-81091-06-17 07:40 J	-27896897.34	-27896897.18	-27896897.01	0.0287	0.0121
Mercury	-81091-09-14 07:11 J	-27896808.38	-27896808.20	-27896808.02	0.0288	0.0038
Mercury	-81091-12-12 06:13 J	-27896719.36	-27896719.24	-27896719.10	0.0288	0.0195
Moon	-81086-12-01 08:37 J	-27894904.23	-27894904.14	-27894904.01	0.0295	0.0264
Earth	-81086-12-01 12:13 J	-27894904.05	-27894903.99	-27894903.90	0.0295	0.0280 *
Mars	-81085-09-16 11:44 J	-27894614.27	-27894614.01	-27894613.75	0.0294	0.0069
Moon	-81085-12-15 02:23 J	-27894524.60	-27894524.40	-27894524.19	0.0294	0.0154
Earth	-81085-12-15 05:59 J	-27894524.45	-27894524.25	-27894524.05	0.0294	0.0169 *
Moon	-81084-12-29 13:54 J	-27894145.15	-27894144.92	-27894144.69	0.0292	0.0038
Earth	-81084-12-29 14:23 J	-27894145.14	-27894144.90	-27894144.66	0.0292	0.0052 *
Earth	-81082-01-12 12:28 J	-27893766.21	-27893765.98	-27893765.74	0.0289	0.0062
Moon	-81082-01-12 15:35 J	-27893766.08	-27893765.85	-27893765.62	0.0289	0.0074 *
Earth	-81081-01-25 23:44 J	-27893387.71	-27893387.51	-27893387.32	0.0287	0.0167
Moon	-81081-01-26 02:52 J	-27893387.56	-27893387.38	-27893387.18	0.0287	0.0174 *
Moon	-81080-02-06 23:16 J	-27893009.63	-27893009.53	-27893009.41	0.0283	0.0252
Earth	-81080-02-06 23:59 J	-27893009.60	-27893009.50	-27893009.40	0.0283	0.0257 *

Venus -81079-09-30 17:30 J -27892408.95 -27892408.77 -27892408.57 0.0278 0.0104  
 Mercury -81077-01-18 12:28 J -27891934.07 -27891933.98 -27891933.87 0.0274 0.0183  
 Mercury -81077-04-15 23:30 J -27891845.65 -27891845.52 -27891845.39 0.0273 0.0086  
 Mercury -81077-07-13 10:18 J -27891757.20 -27891757.07 -27891756.93 0.0273 0.0014  
 Mercury -81077-10-09 21:20 J -27891668.73 -27891668.61 -27891668.49 0.0272 0.0109  
 Mercury -81076-01-06 08:23 J -27891580.23 -27891580.15 -27891580.06 0.0272 0.0207  
 Mars -81071-09-10 22:32 J -27889506.76 -27889506.56 -27889506.35 0.0265 0.0205  
 Earth -81070-06-01 17:59 J -27889242.89 -27889242.75 -27889242.58 0.0266 0.0202  
 Moon -81070-06-01 17:59 J -27889242.87 -27889242.75 -27889242.59 0.0266 0.0213 \*  
 Earth -81069-06-12 12:28 J -27888866.19 -27888865.98 -27888865.76 0.0267 0.0123  
 Moon -81069-06-12 16:04 J -27888866.02 -27888865.83 -27888865.61 0.0267 0.0139 \*  
 Earth -81068-06-24 13:40 J -27888489.18 -27888488.93 -27888488.69 0.0268 0.0037  
 Moon -81068-06-24 14:37 J -27888489.14 -27888488.89 -27888488.63 0.0268 0.0044 \*  
 Moon -81067-07-06 19:11 J -27888111.94 -27888111.70 -27888111.45 0.0271 0.0062  
 Earth -81067-07-06 22:32 J -27888111.80 -27888111.56 -27888111.31 0.0271 0.0055 \*  
 Moon -81066-07-19 14:23 J -27887734.08 -27887733.90 -27887733.70 0.0273 0.0165  
 Earth -81066-07-19 16:32 J -27887734.01 -27887733.81 -27887733.59 0.0273 0.0149 \*  
 Earth -81065-07-31 20:37 J -27887355.75 -27887355.64 -27887355.52 0.0276 0.0243  
 Moon -81065-07-31 22:32 J -27887355.64 -27887355.56 -27887355.48 0.0276 0.0259 \*  
 Venus -81063-06-08 09:06 J -27886679.31 -27886679.12 -27886678.93 0.0282 0.0130  
 Mercury -81062-11-04 05:59 J -27886165.39 -27886165.25 -27886165.10 0.0287 0.0168  
 Mercury -81061-02-01 05:30 J -27886076.45 -27886076.27 -27886076.08 0.0288 0.0011  
 Mercury -81061-04-30 04:47 J -27885987.45 -27885987.30 -27885987.14 0.0288 0.0149  
 Earth -81056-12-08 23:16 J -27883938.68 -27883938.53 -27883938.35 0.0294 0.0220  
 Moon -81056-12-09 02:52 J -27883938.56 -27883938.38 -27883938.20 0.0294 0.0203 \*  
 Mars -81055-11-03 22:47 J -27883608.67 -27883608.55 -27883608.42 0.0293 0.0255  
 Earth -81055-12-23 11:59 J -27883559.23 -27883559.00 -27883558.77 0.0293 0.0105  
 Moon -81055-12-23 11:59 J -27883559.23 -27883559.00 -27883558.75 0.0293 0.0090 \*  
 Moon -81053-01-06 11:30 J -27883180.27 -27883180.02 -27883179.78 0.0290 0.0024  
 Earth -81053-01-06 14:37 J -27883180.13 -27883179.89 -27883179.65 0.0290 0.0011 \*

Moon -81052-01-19 03:35 J -27882801.56 -27882801.35 -27882801.13 0.0287 0.0127  
 Earth -81052-01-19 06:28 J -27882801.44 -27882801.23 -27882801.00 0.0287 0.0120 \*  
 Earth -81051-02-01 11:30 J -27882423.17 -27882423.02 -27882422.86 0.0284 0.0216  
 Moon -81051-02-01 11:59 J -27882423.14 -27882423.00 -27882422.84 0.0284 0.0216 \*  
 Venus -81049-04-11 18:28 J -27881622.92 -27881622.73 -27881622.52 0.0277 0.0061  
 Mercury -81048-06-06 14:08 J -27881201.98 -27881201.91 -27881201.82 0.0274 0.0217  
 Mercury -81048-09-03 01:11 J -27881113.57 -27881113.45 -27881113.33 0.0273 0.0120  
 Mercury -81048-11-30 11:59 J -27881025.13 -27881025.00 -27881024.87 0.0272 0.0023  
 Mercury -81047-02-26 23:01 J -27880936.67 -27880936.54 -27880936.41 0.0272 0.0074  
 Mercury -81047-05-26 10:04 J -27880848.19 -27880848.08 -27880847.98 0.0271 0.0172  
 Mercury -81047-08-22 20:52 J -27880759.63 -27880759.63 -27880759.61 0.0271 0.0269  
 Earth -81041-05-26 17:16 J -27878655.89 -27878655.78 -27878655.66 0.0265 0.0233  
 Moon -81041-05-26 17:44 J -27878655.86 -27878655.76 -27878655.64 0.0265 0.0237 \*  
 Mars -81041-10-31 02:52 J -27878498.70 -27878498.38 -27878498.06 0.0266 0.0037  
 Moon -81040-06-07 04:47 J -27878279.48 -27878279.30 -27878279.11 0.0266 0.0173  
 Earth -81040-06-07 08:37 J -27878279.33 -27878279.14 -27878278.94 0.0266 0.0158 \*  
 Moon -81039-06-19 04:47 J -27877902.52 -27877902.30 -27877902.07 0.0268 0.0085  
 Earth -81039-06-19 05:30 J -27877902.50 -27877902.27 -27877902.03 0.0268 0.0075 \*  
 Earth -81038-07-01 10:04 J -27877525.32 -27877525.08 -27877524.83 0.0270 0.0015  
 Moon -81038-07-01 13:25 J -27877525.18 -27877524.94 -27877524.69 0.0270 0.0016 \*  
 Earth -81037-07-12 23:16 J -27877147.75 -27877147.53 -27877147.30 0.0272 0.0108  
 Moon -81037-07-13 01:11 J -27877147.68 -27877147.45 -27877147.22 0.0272 0.0120 \*  
 Moon -81036-07-25 19:11 J -27876769.84 -27876769.70 -27876769.53 0.0275 0.0217  
 Earth -81036-07-25 22:04 J -27876769.75 -27876769.58 -27876769.41 0.0275 0.0201 \*  
 Venus -81034-12-19 08:08 J -27875893.36 -27875893.16 -27875892.95 0.0282 0.0095  
 Mercury -81032-03-23 00:56 J -27875433.55 -27875433.46 -27875433.34 0.0286 0.0235  
 Mercury -81032-06-20 00:56 J -27875344.64 -27875344.46 -27875344.29 0.0287 0.0076  
 Mercury -81032-09-17 00:13 J -27875255.66 -27875255.49 -27875255.31 0.0288 0.0083  
 Mercury -81032-12-14 23:16 J -27875166.62 -27875166.53 -27875166.43 0.0288 0.0240  
 Moon -81027-12-02 07:54 J -27873353.28 -27873353.17 -27873353.04 0.0295 0.0254

Earth -81027-12-02 10:04 J -27873353.17 -27873353.08 -27873352.97 0.0295 0.0270 \*  
 Mars -81027-12-23 16:04 J -27873332.07 -27873331.83 -27873331.58 0.0295 0.0119  
 Earth -81026-12-17 03:49 J -27872973.54 -27872973.34 -27872973.13 0.0294 0.0158  
 Moon -81026-12-17 04:18 J -27872973.52 -27872973.32 -27872973.10 0.0294 0.0142 \*  
 Earth -81025-12-30 12:13 J -27872594.23 -27872593.99 -27872593.74 0.0292 0.0040  
 Moon -81025-12-30 15:35 J -27872594.09 -27872593.85 -27872593.61 0.0292 0.0025 \*  
 Earth -81023-01-13 10:32 J -27872215.29 -27872215.06 -27872214.82 0.0290 0.0075  
 Moon -81023-01-13 13:11 J -27872215.18 -27872214.95 -27872214.71 0.0290 0.0084 \*  
 Moon -81022-01-26 20:37 J -27871836.83 -27871836.64 -27871836.44 0.0287 0.0179  
 Earth -81022-01-26 21:49 J -27871836.77 -27871836.59 -27871836.39 0.0287 0.0179 \*  
 Moon -81021-02-08 18:42 J -27871458.81 -27871458.72 -27871458.62 0.0283 0.0259  
 Earth -81021-02-08 22:18 J -27871458.64 -27871458.57 -27871458.49 0.0283 0.0267 \*  
 Venus -81020-10-22 22:04 J -27870836.79 -27870836.58 -27870836.38 0.0278 0.0013  
 Mercury -81019-10-24 16:47 J -27870469.85 -27870469.80 -27870469.74 0.0275 0.0246  
 Mercury -81018-01-21 03:35 J -27870381.46 -27870381.35 -27870381.23 0.0274 0.0149  
 Mercury -81018-04-19 14:37 J -27870293.02 -27870292.89 -27870292.76 0.0273 0.0051  
 Mercury -81018-07-17 01:25 J -27870204.57 -27870204.44 -27870204.30 0.0273 0.0047  
 Mercury -81018-10-13 12:28 J -27870116.09 -27870115.98 -27870115.86 0.0272 0.0145  
 Mercury -81017-01-09 23:30 J -27870027.57 -27870027.52 -27870027.46 0.0272 0.0242  
 Moon -81012-05-22 02:08 J -27868068.44 -27868068.41 -27868068.38 0.0265 0.0262  
 Earth -81012-05-22 03:06 J -27868068.39 -27868068.37 -27868068.33 0.0265 0.0262 \*  
 Earth -81011-06-02 16:18 J -27867691.98 -27867691.82 -27867691.64 0.0265 0.0192  
 Moon -81011-06-02 19:40 J -27867691.82 -27867691.68 -27867691.52 0.0265 0.0205 \*  
 Mars -81011-12-22 14:23 J -27867489.15 -27867488.90 -27867488.61 0.0266 0.0152  
 Earth -81010-06-14 10:47 J -27867315.28 -27867315.05 -27867314.83 0.0267 0.0112  
 Moon -81010-06-14 11:16 J -27867315.24 -27867315.03 -27867314.79 0.0267 0.0125 \*  
 Moon -81009-06-25 08:08 J -27866938.40 -27866938.16 -27866937.90 0.0268 0.0029  
 Earth -81009-06-25 11:44 J -27866938.26 -27866938.01 -27866937.77 0.0268 0.0025 \*  
 Moon -81008-07-07 18:28 J -27866560.96 -27866560.73 -27866560.50 0.0271 0.0074  
 Earth -81008-07-07 20:37 J -27866560.88 -27866560.64 -27866560.40 0.0271 0.0067 \*



Earth	-81007-07-20 14:23 J	-27866183.10	-27866182.90	-27866182.69	0.0273	0.0161
Moon	-81007-07-20 17:01 J	-27866182.97	-27866182.79	-27866182.60	0.0273	0.0176 *
Earth	-81006-08-02 18:13 J	-27865804.82	-27865804.74	-27865804.62	0.0276	0.0254
Moon	-81006-08-02 22:04 J	-27865804.62	-27865804.58	-27865804.51	0.0276	0.0269 *
Venus	-81004-06-30 15:06 J	-27865107.09	-27865106.87	-27865106.65	0.0283	0.0034
Mercury	-81003-08-09 23:44 J	-27864701.54	-27864701.51	-27864701.47	0.0286	0.0279
Mercury	-81003-11-06 23:30 J	-27864612.69	-27864612.52	-27864612.35	0.0287	0.0120
Mercury	-81002-02-03 23:01 J	-27864523.72	-27864523.54	-27864523.36	0.0288	0.0039
Mercury	-81002-05-03 22:04 J	-27864434.71	-27864434.58	-27864434.44	0.0288	0.0196

# 81ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 81st millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-80997-12-09 21:20 J	-27862387.79	-27862387.61	-27862387.40	0.0294	0.0191		
Earth	-80997-12-09 23:16 J	-27862387.70	-27862387.53	-27862387.35	0.0294	0.0208 *		
Mars	-80996-02-09 12:56 J	-27862326.22	-27862325.96	-27862325.70	0.0294	0.0075		
Moon	-80996-12-24 07:54 J	-27862008.40	-27862008.17	-27862007.92	0.0293	0.0076		
Earth	-80996-12-24 11:44 J	-27862008.24	-27862008.01	-27862007.78	0.0293	0.0092 *		
Moon	-80994-01-07 11:44 J	-27861629.24	-27861629.01	-27861628.77	0.0290	0.0037		
Earth	-80994-01-07 14:23 J	-27861629.14	-27861628.90	-27861628.66	0.0290	0.0024 *		
Earth	-80993-01-21 06:13 J	-27861250.45	-27861250.24	-27861250.03	0.0288	0.0133		
Moon	-80993-01-21 07:40 J	-27861250.38	-27861250.18	-27861249.97	0.0288	0.0136 *		
Earth	-80992-02-02 10:47 J	-27860872.18	-27860872.05	-27860871.89	0.0284	0.0229		

Moon -80992-02-02 14:37 J -27860872.02 -27860871.89 -27860871.73 0.0284 0.0224 \*  
 Venus -80990-05-04 23:30 J -27860050.72 -27860050.52 -27860050.32 0.0277 0.0033  
 Mercury -80989-06-09 05:30 J -27859649.37 -27859649.27 -27859649.17 0.0274 0.0181  
 Mercury -80989-09-05 16:18 J -27859560.95 -27859560.82 -27859560.69 0.0273 0.0084  
 Mercury -80989-12-03 03:20 J -27859472.50 -27859472.36 -27859472.23 0.0272 0.0016  
 Mercury -80988-03-01 14:08 J -27859384.03 -27859383.91 -27859383.79 0.0272 0.0111  
 Mercury -80988-05-29 01:11 J -27859295.53 -27859295.45 -27859295.36 0.0271 0.0208  
 Mars -80982-02-03 11:16 J -27857219.23 -27857219.03 -27857218.81 0.0265 0.0200  
 Moon -80982-05-28 12:28 J -27857105.08 -27857104.98 -27857104.85 0.0265 0.0233  
 Earth -80982-05-28 15:49 J -27857104.96 -27857104.84 -27857104.70 0.0265 0.0224 \*  
 Moon -80981-06-08 06:13 J -27856728.42 -27856728.24 -27856728.05 0.0266 0.0162  
 Earth -80981-06-08 07:11 J -27856728.40 -27856728.20 -27856727.99 0.0266 0.0148 \*  
 Earth -80980-06-20 04:04 J -27856351.56 -27856351.33 -27856351.08 0.0268 0.0064  
 Moon -80980-06-20 07:40 J -27856351.41 -27856351.18 -27856350.94 0.0268 0.0071 \*  
 Earth -80979-07-02 08:37 J -27855974.38 -27855974.14 -27855973.89 0.0270 0.0027  
 Moon -80979-07-02 11:01 J -27855974.29 -27855974.04 -27855973.78 0.0270 0.0030 \*  
 Moon -80978-07-14 18:56 J -27855596.93 -27855596.71 -27855596.48 0.0272 0.0134  
 Earth -80978-07-14 21:35 J -27855596.81 -27855596.60 -27855596.37 0.0272 0.0120 \*  
 Moon -80977-07-26 17:16 J -27855218.91 -27855218.78 -27855218.64 0.0275 0.0228  
 Earth -80977-07-26 20:23 J -27855218.80 -27855218.65 -27855218.49 0.0275 0.0213 \*  
 Venus -80974-01-10 14:23 J -27854321.12 -27854320.90 -27854320.68 0.0283 0.0002  
 Mercury -80973-03-25 18:42 J -27853880.86 -27853880.72 -27853880.58 0.0286 0.0188  
 Mercury -80973-06-22 18:13 J -27853791.92 -27853791.74 -27853791.56 0.0287 0.0029  
 Mercury -80973-09-19 17:30 J -27853702.93 -27853702.77 -27853702.61 0.0288 0.0129  
 Mercury -80973-12-17 16:32 J -27853613.83 -27853613.81 -27853613.79 0.0288 0.0285  
 Earth -80968-12-03 07:54 J -27851802.28 -27851802.17 -27851802.05 0.0295 0.0260  
 Moon -80968-12-03 10:32 J -27851802.18 -27851802.06 -27851801.92 0.0295 0.0244 \*  
 Earth -80967-12-18 01:25 J -27851422.64 -27851422.44 -27851422.22 0.0294 0.0147  
 Moon -80967-12-18 05:16 J -27851422.49 -27851422.28 -27851422.05 0.0294 0.0130 \*  
 Mars -80966-03-29 14:37 J -27851321.00 -27851320.89 -27851320.76 0.0294 0.0259

Earth	-80965-01-01 10:04 J	-27851043.32	-27851043.08	-27851042.84	0.0292	0.0029
Moon	-80965-01-01 12:28 J	-27851043.23	-27851042.98	-27851042.73	0.0292	0.0015 *
Moon	-80964-01-14 06:28 J	-27850664.47	-27850664.23	-27850663.99	0.0290	0.0091
Earth	-80964-01-14 08:08 J	-27850664.38	-27850664.16	-27850663.92	0.0290	0.0087 *
Moon	-80963-01-27 15:49 J	-27850286.01	-27850285.84	-27850285.65	0.0287	0.0186
Earth	-80963-01-27 19:40 J	-27850285.86	-27850285.68	-27850285.50	0.0287	0.0190 *
Moon	-80962-02-09 18:56 J	-27849907.77	-27849907.71	-27849907.62	0.0283	0.0268
Earth	-80962-02-09 20:08 J	-27849907.70	-27849907.66	-27849907.61	0.0283	0.0278 *
Venus	-80961-11-14 01:54 J	-27849264.61	-27849264.42	-27849264.22	0.0278	0.0078
Mercury	-80960-10-27 07:40 J	-27848917.26	-27848917.18	-27848917.09	0.0275	0.0212
Mercury	-80959-01-23 18:42 J	-27848828.84	-27848828.72	-27848828.60	0.0274	0.0115
Mercury	-80959-04-22 05:30 J	-27848740.40	-27848740.27	-27848740.14	0.0273	0.0017
Mercury	-80959-07-19 16:32 J	-27848651.94	-27848651.81	-27848651.68	0.0273	0.0082
Mercury	-80959-10-16 03:35 J	-27848563.45	-27848563.35	-27848563.25	0.0272	0.0180
Earth	-80953-05-23 01:40 J	-27846517.48	-27846517.43	-27846517.35	0.0265	0.0254
Moon	-80953-05-23 05:01 J	-27846517.33	-27846517.29	-27846517.23	0.0265	0.0258
Mars	-80952-03-26 15:06 J	-27846210.19	-27846209.87	-27846209.54	0.0265	0.0017
Earth	-80952-06-03 15:06 J	-27846141.04	-27846140.87	-27846140.68	0.0265	0.0182
Moon	-80952-06-03 17:01 J	-27846140.95	-27846140.79	-27846140.61	0.0265	0.0195 *
Moon	-80951-06-15 06:13 J	-27845764.46	-27845764.24	-27845764.01	0.0267	0.0111
Earth	-80951-06-15 09:35 J	-27845764.32	-27845764.10	-27845763.87	0.0267	0.0102 *
Moon	-80950-06-27 08:23 J	-27845387.39	-27845387.15	-27845386.91	0.0268	0.0014
Earth	-80950-06-27 10:47 J	-27845387.30	-27845387.05	-27845386.80	0.0268	0.0014 *
Earth	-80949-07-08 19:25 J	-27845009.92	-27845009.69	-27845009.44	0.0271	0.0079
Moon	-80949-07-08 22:04 J	-27845009.81	-27845009.58	-27845009.36	0.0271	0.0089 *
Earth	-80948-07-21 13:25 J	-27844632.12	-27844631.94	-27844631.73	0.0273	0.0172
Moon	-80948-07-21 16:32 J	-27844631.98	-27844631.81	-27844631.61	0.0273	0.0187 *
Earth	-80947-08-03 17:44 J	-27844253.83	-27844253.76	-27844253.68	0.0276	0.0264
Moon	-80947-08-03 17:01 J	-27844253.81	-27844253.79	-27844253.75	0.0276	0.0274 *
Venus	-80945-07-22 21:49 J	-27843534.80	-27843534.59	-27843534.37	0.0283	0.0066

Mercury -80944-08-12 17:30 J -27843148.87 -27843148.77 -27843148.66 0.0286 0.0230  
 Mercury -80944-11-09 17:16 J -27843059.96 -27843059.78 -27843059.60 0.0287 0.0071  
 Mercury -80943-02-06 16:32 J -27842970.98 -27842970.81 -27842970.64 0.0288 0.0087  
 Mercury -80943-05-06 15:35 J -27842881.94 -27842881.85 -27842881.75 0.0288 0.0244  
 Moon -80939-11-26 22:32 J -27841216.60 -27841216.56 -27841216.49 0.0295 0.0288  
 Mars -80938-05-18 19:40 J -27841043.93 -27841043.68 -27841043.43 0.0295 0.0112  
 Moon -80938-12-11 18:28 J -27840836.91 -27840836.73 -27840836.53 0.0295 0.0180  
 Earth -80938-12-11 22:04 J -27840836.75 -27840836.58 -27840836.38 0.0295 0.0197 \*  
 Moon -80937-12-25 08:52 J -27840457.36 -27840457.13 -27840456.90 0.0293 0.0065  
 Earth -80937-12-25 10:32 J -27840457.30 -27840457.06 -27840456.82 0.0293 0.0079 \*  
 Earth -80935-01-08 13:11 J -27840078.19 -27840077.95 -27840077.71 0.0291 0.0037  
 Moon -80935-01-08 14:52 J -27840078.11 -27840077.88 -27840077.64 0.0291 0.0046 \*  
 Earth -80934-01-22 05:01 J -27839699.49 -27839699.29 -27839699.08 0.0288 0.0145  
 Moon -80934-01-22 08:37 J -27839699.35 -27839699.14 -27839698.93 0.0288 0.0145 \*  
 Earth -80933-02-04 09:49 J -27839321.21 -27839321.09 -27839320.95 0.0284 0.0240  
 Moon -80933-02-04 10:18 J -27839321.20 -27839321.07 -27839320.91 0.0284 0.0230 \*  
 Venus -80932-10-10 00:42 J -27838707.52 -27838707.47 -27838707.39 0.0279 0.0264  
 Venus -80931-05-27 04:04 J -27838478.51 -27838478.33 -27838478.15 0.0277 0.0125  
 Mercury -80930-03-16 09:35 J -27838185.15 -27838185.10 -27838185.03 0.0274 0.0243  
 Mercury -80930-06-12 20:37 J -27838096.75 -27838096.64 -27838096.53 0.0274 0.0146  
 Mercury -80930-09-09 07:25 J -27838008.32 -27838008.19 -27838008.06 0.0273 0.0049  
 Mercury -80930-12-06 18:28 J -27837919.86 -27837919.73 -27837919.60 0.0272 0.0049  
 Mercury -80929-03-04 05:30 J -27837831.39 -27837831.27 -27837831.16 0.0272 0.0147  
 Mercury -80929-05-31 16:32 J -27837742.87 -27837742.81 -27837742.76 0.0271 0.0245  
 Moon -80923-05-29 13:25 J -27835554.05 -27835553.94 -27835553.81 0.0265 0.0227  
 Earth -80923-05-29 15:20 J -27835553.99 -27835553.86 -27835553.70 0.0265 0.0215 \*  
 Mars -80922-05-17 04:18 J -27835201.57 -27835201.32 -27835201.05 0.0266 0.0157  
 Earth -80922-06-10 06:42 J -27835177.42 -27835177.22 -27835177.00 0.0266 0.0137  
 Moon -80922-06-10 09:49 J -27835177.28 -27835177.09 -27835176.89 0.0266 0.0150 \*  
 Earth -80921-06-21 04:04 J -27834800.57 -27834800.33 -27834800.09 0.0268 0.0052

Moon -80921-06-21 06:13 J -27834800.49 -27834800.24 -27834799.99 0.0268 0.0055 \*  
 Moon -80920-07-03 05:59 J -27834423.50 -27834423.25 -27834422.99 0.0270 0.0047  
 Earth -80920-07-03 08:37 J -27834423.38 -27834423.14 -27834422.89 0.0270 0.0038 \*  
 Moon -80919-07-15 18:28 J -27834045.93 -27834045.73 -27834045.52 0.0272 0.0146  
 Earth -80919-07-15 21:20 J -27834045.82 -27834045.61 -27834045.38 0.0272 0.0132 \*  
 Earth -80918-07-28 19:54 J -27833667.80 -27833667.67 -27833667.51 0.0275 0.0225  
 Moon -80918-07-28 21:20 J -27833667.72 -27833667.61 -27833667.48 0.0275 0.0237 \*  
 Venus -80915-02-01 21:20 J -27832748.81 -27832748.61 -27832748.40 0.0283 0.0101  
 Mercury -80914-03-29 12:28 J -27832328.14 -27832327.98 -27832327.82 0.0286 0.0138  
 Mercury -80914-06-26 11:59 J -27832239.18 -27832239.00 -27832238.82 0.0287 0.0021  
 Mercury -80914-09-23 11:01 J -27832150.18 -27832150.04 -27832149.89 0.0288 0.0179  
 Earth -80909-12-04 07:25 J -27830251.32 -27830251.19 -27830251.06 0.0295 0.0250  
 Moon -80909-12-04 10:18 J -27830251.21 -27830251.07 -27830250.90 0.0295 0.0234 \*  
 Mars -80908-07-05 02:52 J -27830038.63 -27830038.38 -27830038.11 0.0294 0.0080  
 Earth -80908-12-19 00:28 J -27829871.68 -27829871.48 -27829871.25 0.0294 0.0136  
 Moon -80908-12-19 01:11 J -27829871.67 -27829871.45 -27829871.21 0.0294 0.0121 \*  
 Moon -80906-01-02 06:42 J -27829492.47 -27829492.22 -27829491.97 0.0292 0.0006  
 Earth -80906-01-02 09:06 J -27829492.36 -27829492.12 -27829491.87 0.0292 0.0017 \*  
 Moon -80905-01-16 03:49 J -27829113.56 -27829113.34 -27829113.11 0.0290 0.0102  
 Earth -80905-01-16 07:25 J -27829113.42 -27829113.19 -27829112.97 0.0290 0.0098 \*  
 Moon -80904-01-28 18:13 J -27828734.91 -27828734.74 -27828734.57 0.0287 0.0195  
 Earth -80904-01-28 18:28 J -27828734.90 -27828734.73 -27828734.56 0.0287 0.0201 \*  
 Moon -80903-02-10 22:04 J -27828356.63 -27828356.58 -27828356.51 0.0283 0.0273  
 Venus -80902-04-22 02:52 J -27827921.50 -27827921.38 -27827921.25 0.0280 0.0220  
 Venus -80902-12-07 06:13 J -27827692.39 -27827692.24 -27827692.07 0.0278 0.0172  
 Mercury -80901-08-02 11:59 J -27827453.00 -27827453.00 -27827452.99 0.0276 0.0275  
 Mercury -80901-10-29 22:47 J -27827364.65 -27827364.55 -27827364.45 0.0275 0.0177  
 Mercury -80900-01-26 09:49 J -27827276.22 -27827276.09 -27827275.97 0.0274 0.0079  
 Mercury -80900-04-24 20:37 J -27827187.77 -27827187.64 -27827187.50 0.0274 0.0020  
 Mercury -80900-07-22 07:40 J -27827099.30 -27827099.18 -27827099.06 0.0273 0.0118

Mercury -80900-10-18 18:42 J -27827010.80 -27827010.72 -27827010.64 0.0272 0.0216  
 Earth -80894-05-25 01:11 J -27824966.52 -27824966.45 -27824966.35 0.0265 0.0246  
 Moon -80894-05-25 03:35 J -27824966.41 -27824966.35 -27824966.26 0.0265 0.0253 \*  
 Mars -80894-06-30 02:23 J -27824930.63 -27824930.40 -27824930.16 0.0265 0.0179  
 Moon -80893-06-04 12:28 J -27824590.15 -27824589.98 -27824589.79 0.0266 0.0187  
 Earth -80893-06-04 15:06 J -27824590.05 -27824589.87 -27824589.68 0.0266 0.0173 \*  
 Moon -80892-06-16 07:40 J -27824213.40 -27824213.18 -27824212.95 0.0267 0.0099  
 Earth -80892-06-16 09:49 J -27824213.32 -27824213.09 -27824212.85 0.0267 0.0091 \*  
 Earth -80891-06-28 11:16 J -27823836.28 -27823836.03 -27823835.79 0.0268 0.0005  
 Moon -80891-06-28 13:40 J -27823836.17 -27823835.93 -27823835.69 0.0268 0.0003 \*  
 Earth -80890-07-10 20:23 J -27823458.89 -27823458.65 -27823458.42 0.0271 0.0090  
 Moon -80890-07-10 23:44 J -27823458.74 -27823458.51 -27823458.27 0.0271 0.0102 \*  
 Moon -80889-07-22 13:25 J -27823081.11 -27823080.94 -27823080.75 0.0273 0.0196  
 Earth -80889-07-22 14:37 J -27823081.07 -27823080.89 -27823080.70 0.0273 0.0184 \*  
 Earth -80888-08-04 18:42 J -27822702.73 -27822702.72 -27822702.68 0.0276 0.0275  
 Venus -80887-12-28 08:23 J -27822192.21 -27822192.15 -27822192.07 0.0281 0.0266  
 Venus -80886-08-15 05:44 J -27821962.42 -27821962.26 -27821962.08 0.0283 0.0171  
 Mercury -80885-08-15 11:59 J -27821596.14 -27821596.00 -27821595.85 0.0286 0.0175  
 Mercury -80885-11-12 11:30 J -27821507.20 -27821507.02 -27821506.83 0.0287 0.0017  
 Mercury -80884-02-09 10:47 J -27821418.21 -27821418.05 -27821417.89 0.0288 0.0141  
 Moon -80880-11-28 00:56 J -27819665.54 -27819665.46 -27819665.38 0.0295 0.0279  
 Earth -80880-11-28 03:35 J -27819665.37 -27819665.35 -27819665.33 0.0295 0.0294  
 Earth -80879-12-12 23:30 J -27819285.71 -27819285.52 -27819285.32 0.0295 0.0184  
 Moon -80879-12-12 23:44 J -27819285.70 -27819285.51 -27819285.31 0.0295 0.0170 \*  
 Mars -80878-08-22 23:01 J -27819032.63 -27819032.54 -27819032.42 0.0294 0.0269  
 Earth -80878-12-27 11:16 J -27818906.26 -27818906.03 -27818905.79 0.0293 0.0067  
 Moon -80878-12-27 14:23 J -27818906.13 -27818905.90 -27818905.66 0.0293 0.0054 \*  
 Earth -80876-01-09 13:40 J -27818527.17 -27818526.93 -27818526.69 0.0291 0.0050  
 Moon -80876-01-09 17:16 J -27818527.02 -27818526.78 -27818526.54 0.0291 0.0058 \*  
 Earth -80875-01-23 05:30 J -27818148.47 -27818148.27 -27818148.07 0.0288 0.0157

Moon -80875-01-23 05:44 J -27818148.47 -27818148.26 -27818148.05 0.0288 0.0154 \*  
 Moon -80874-02-05 06:28 J -27817770.35 -27817770.23 -27817770.08 0.0284 0.0237  
 Earth -80874-02-05 10:04 J -27817770.18 -27817770.08 -27817769.96 0.0284 0.0251 \*  
 Venus -80873-11-01 06:13 J -27817135.40 -27817135.24 -27817135.07 0.0279 0.0168  
 Venus -80872-06-18 09:06 J -27816906.23 -27816906.12 -27816905.99 0.0277 0.0221  
 Mercury -80871-03-19 00:56 J -27816632.54 -27816632.46 -27816632.37 0.0274 0.0206  
 Mercury -80871-06-15 11:59 J -27816544.12 -27816544.00 -27816543.88 0.0274 0.0109  
 Mercury -80871-09-11 22:47 J -27816455.68 -27816455.55 -27816455.41 0.0273 0.0012  
 Mercury -80871-12-09 09:49 J -27816367.22 -27816367.09 -27816366.96 0.0272 0.0087  
 Mercury -80870-03-07 20:52 J -27816278.73 -27816278.63 -27816278.53 0.0272 0.0185  
 Earth -80864-05-30 16:47 J -27814002.94 -27814002.80 -27814002.64 0.0265 0.0205  
 Moon -80864-05-30 19:25 J -27814002.81 -27814002.69 -27814002.55 0.0265 0.0220 \*  
 Mars -80864-08-19 13:11 J -27813922.28 -27813921.95 -27813921.63 0.0265 0.0007  
 Earth -80863-06-11 08:23 J -27813626.36 -27813626.15 -27813625.93 0.0266 0.0127  
 Moon -80863-06-11 11:01 J -27813626.24 -27813626.04 -27813625.81 0.0266 0.0139 \*  
 Moon -80862-06-23 03:20 J -27813249.61 -27813249.36 -27813249.11 0.0268 0.0038  
 Earth -80862-06-23 06:13 J -27813249.49 -27813249.24 -27813249.00 0.0268 0.0041 \*  
 Moon -80861-07-04 07:25 J -27812872.42 -27812872.19 -27812871.94 0.0270 0.0063  
 Earth -80861-07-04 11:01 J -27812872.29 -27812872.04 -27812871.80 0.0270 0.0051 \*  
 Earth -80860-07-16 23:59 J -27812494.71 -27812494.50 -27812494.28 0.0272 0.0144  
 Moon -80860-07-17 00:56 J -27812494.65 -27812494.46 -27812494.26 0.0272 0.0158 \*  
 Earth -80859-07-29 22:47 J -27812116.67 -27812116.55 -27812116.41 0.0275 0.0236  
 Moon -80859-07-30 02:37 J -27812116.50 -27812116.39 -27812116.28 0.0275 0.0246 \*  
 Venus -80857-07-09 08:52 J -27811406.25 -27811406.13 -27811406.00 0.0281 0.0228  
 Venus -80856-02-24 06:13 J -27811176.38 -27811176.24 -27811176.09 0.0283 0.0209  
 Mercury -80855-01-02 07:25 J -27810864.28 -27810864.19 -27810864.09 0.0286 0.0240  
 Mercury -80855-04-01 07:11 J -27810775.38 -27810775.20 -27810775.02 0.0286 0.0081  
 Mercury -80855-06-29 06:28 J -27810686.40 -27810686.23 -27810686.05 0.0287 0.0077  
 Mercury -80855-09-26 05:30 J -27810597.37 -27810597.27 -27810597.16 0.0288 0.0234  
 Mars -80850-10-11 12:13 J -27808756.24 -27808755.99 -27808755.74 0.0295 0.0106

Moon	-80850-12-06 07:40 J	-27808700.33	-27808700.18	-27808700.00	0.0295	0.0226
Earth	-80850-12-06 09:06 J	-27808700.25	-27808700.12	-27808699.97	0.0295	0.0239 *
Moon	-80849-12-19 22:18 J	-27808320.80	-27808320.57	-27808320.35	0.0294	0.0112
Earth	-80849-12-20 01:54 J	-27808320.64	-27808320.42	-27808320.20	0.0294	0.0123 *
Moon	-80847-01-03 06:28 J	-27807941.47	-27807941.23	-27807940.99	0.0292	0.0005
Earth	-80847-01-03 09:49 J	-27807941.33	-27807941.09	-27807940.85	0.0292	0.0004 *
Earth	-80846-01-17 07:40 J	-27807562.41	-27807562.18	-27807561.96	0.0290	0.0110
Moon	-80846-01-17 07:25 J	-27807562.40	-27807562.19	-27807561.97	0.0290	0.0111 *
Earth	-80845-01-30 18:13 J	-27807183.89	-27807183.74	-27807183.57	0.0287	0.0212
Moon	-80845-01-30 21:35 J	-27807183.76	-27807183.60	-27807183.43	0.0287	0.0202 *
Moon	-80844-02-11 20:37 J	-27806805.66	-27806805.64	-27806805.59	0.0283	0.0280
Venus	-80843-05-14 08:08 J	-27806349.34	-27806349.16	-27806348.97	0.0279	0.0124
Venus	-80843-12-29 11:30 J	-27806120.07	-27806120.02	-27806119.96	0.0277	0.0266
Mercury	-80842-08-06 03:06 J	-27805900.43	-27805900.37	-27805900.30	0.0276	0.0239
Mercury	-80842-11-02 14:08 J	-27805812.03	-27805811.91	-27805811.80	0.0275	0.0140
Mercury	-80841-01-30 00:56 J	-27805723.59	-27805723.46	-27805723.32	0.0274	0.0042
Mercury	-80841-04-27 11:59 J	-27805635.13	-27805635.00	-27805634.87	0.0274	0.0057
Mercury	-80841-07-24 23:01 J	-27805546.65	-27805546.54	-27805546.43	0.0273	0.0156
Mercury	-80841-10-21 10:04 J	-27805458.12	-27805458.08	-27805458.03	0.0272	0.0254
Moon	-80835-05-25 23:59 J	-27803415.57	-27803415.50	-27803415.40	0.0265	0.0248
Earth	-80835-05-26 02:37 J	-27803415.48	-27803415.39	-27803415.27	0.0265	0.0237 *
Moon	-80834-06-06 13:40 J	-27803039.10	-27803038.93	-27803038.75	0.0266	0.0177
Earth	-80834-06-06 17:01 J	-27803038.99	-27803038.79	-27803038.60	0.0266	0.0162 *
Mars	-80834-10-11 01:40 J	-27802912.67	-27802912.43	-27802912.19	0.0266	0.0182
Earth	-80833-06-17 11:59 J	-27802662.23	-27802662.00	-27802661.76	0.0267	0.0079
Moon	-80833-06-17 13:54 J	-27802662.14	-27802661.92	-27802661.69	0.0267	0.0085 *
Earth	-80832-06-29 13:40 J	-27802285.17	-27802284.93	-27802284.68	0.0268	0.0011
Moon	-80832-06-29 17:01 J	-27802285.04	-27802284.79	-27802284.54	0.0268	0.0018 *
Moon	-80831-07-11 22:18 J	-27801907.79	-27801907.57	-27801907.33	0.0271	0.0117
Earth	-80831-07-11 23:01 J	-27801907.76	-27801907.54	-27801907.30	0.0271	0.0103 *



Moon -80830-07-24 14:08 J -27801530.06 -27801529.91 -27801529.74 0.0273 0.0209  
 Earth -80830-07-24 17:59 J -27801529.92 -27801529.75 -27801529.57 0.0273 0.0195 \*  
 Venus -80827-01-19 17:59 J -27800619.93 -27800619.75 -27800619.56 0.0281 0.0157  
 Venus -80827-09-06 15:20 J -27800389.87 -27800389.86 -27800389.82 0.0283 0.0282  
 Mercury -80826-05-22 07:25 J -27800132.23 -27800132.19 -27800132.14 0.0285 0.0274  
 Mercury -80826-08-19 07:11 J -27800043.37 -27800043.20 -27800043.03 0.0286 0.0116  
 Mercury -80826-11-16 06:42 J -27799954.40 -27799954.22 -27799954.04 0.0287 0.0042  
 Mercury -80825-02-13 05:44 J -27799865.39 -27799865.26 -27799865.13 0.0288 0.0200  
 Earth -80821-11-29 07:25 J -27798114.25 -27798114.19 -27798114.11 0.0295 0.0283  
 Moon -80821-11-29 09:06 J -27798114.21 -27798114.12 -27798114.02 0.0295 0.0269 \*  
 Mars -80820-11-28 18:42 J -27797749.97 -27797749.72 -27797749.47 0.0295 0.0092  
 Earth -80820-12-14 03:20 J -27797734.56 -27797734.36 -27797734.16 0.0295 0.0171  
 Moon -80820-12-14 06:56 J -27797734.41 -27797734.21 -27797734.00 0.0295 0.0159 \*  
 Earth -80819-12-28 14:52 J -27797355.12 -27797354.88 -27797354.64 0.0293 0.0053  
 Moon -80819-12-28 17:59 J -27797355.00 -27797354.75 -27797354.51 0.0293 0.0043 \*  
 Moon -80817-01-11 16:32 J -27796976.05 -27796975.81 -27796975.56 0.0291 0.0067  
 Earth -80817-01-11 16:47 J -27796976.03 -27796975.80 -27796975.56 0.0291 0.0064 \*  
 Moon -80816-01-24 04:47 J -27796597.50 -27796597.30 -27796597.10 0.0288 0.0164  
 Earth -80816-01-24 08:08 J -27796597.35 -27796597.16 -27796596.96 0.0288 0.0170 \*  
 Moon -80815-02-06 10:32 J -27796219.16 -27796219.06 -27796218.94 0.0285 0.0249  
 Earth -80815-02-06 12:42 J -27796219.06 -27796218.97 -27796218.87 0.0285 0.0262 \*  
 Venus -80814-11-24 12:56 J -27795563.16 -27795562.96 -27795562.76 0.0279 0.0066  
 Mercury -80813-12-23 05:44 J -27795168.29 -27795168.26 -27795168.22 0.0275 0.0264  
 Mercury -80812-03-21 16:32 J -27795079.91 -27795079.81 -27795079.70 0.0274 0.0167  
 Mercury -80812-06-18 03:35 J -27794991.48 -27794991.35 -27794991.22 0.0274 0.0068  
 Mercury -80812-09-14 14:37 J -27794903.03 -27794902.89 -27794902.76 0.0273 0.0031  
 Mercury -80812-12-12 01:25 J -27794814.55 -27794814.44 -27794814.32 0.0272 0.0129  
 Mercury -80811-03-10 12:28 J -27794726.05 -27794725.98 -27794725.90 0.0272 0.0227  
 Mars -80806-11-23 09:35 J -27792642.34 -27792642.10 -27792641.84 0.0265 0.0165  
 Earth -80805-05-31 20:08 J -27792451.81 -27792451.66 -27792451.48 0.0265 0.0195

Moon -80805-05-31 23:44 J -27792451.66 -27792451.51 -27792451.36 0.0265 0.0210 \*  
 Moon -80804-06-12 10:47 J -27792075.27 -27792075.05 -27792074.82 0.0266 0.0125  
 Earth -80804-06-12 12:28 J -27792075.20 -27792074.98 -27792074.76 0.0266 0.0115 \*  
 Moon -80803-06-24 07:25 J -27791698.43 -27791698.19 -27791697.95 0.0268 0.0025  
 Earth -80803-06-24 10:32 J -27791698.31 -27791698.06 -27791697.82 0.0268 0.0028 \*  
 Earth -80802-07-06 15:35 J -27791321.09 -27791320.85 -27791320.60 0.0270 0.0063  
 Moon -80802-07-06 16:47 J -27791321.03 -27791320.80 -27791320.57 0.0270 0.0077 \*  
 Earth -80801-07-18 05:01 J -27790943.48 -27790943.29 -27790943.07 0.0272 0.0157  
 Moon -80801-07-18 09:06 J -27790943.31 -27790943.12 -27790942.93 0.0272 0.0173 \*  
 Earth -80800-07-31 04:32 J -27790565.41 -27790565.31 -27790565.20 0.0275 0.0248  
 Moon -80800-07-31 05:30 J -27790565.35 -27790565.27 -27790565.17 0.0275 0.0256 \*  
 Venus -80798-08-01 19:40 J -27789833.87 -27789833.68 -27789833.47 0.0281 0.0115  
 Mercury -80796-01-05 03:20 J -27789311.50 -27789311.36 -27789311.21 0.0286 0.0176  
 Mercury -80796-04-04 02:52 J -27789222.56 -27789222.38 -27789222.19 0.0287 0.0019  
 Mercury -80796-07-02 02:08 J -27789133.56 -27789133.41 -27789133.25 0.0287 0.0140  
 Mars -80791-01-16 20:08 J -27787473.70 -27787473.66 -27787473.60 0.0295 0.0289  
 Moon -80791-12-07 11:16 J -27787149.19 -27787149.03 -27787148.85 0.0295 0.0214  
 Earth -80791-12-07 14:52 J -27787149.03 -27787148.88 -27787148.71 0.0295 0.0226 \*  
 Moon -80790-12-22 04:32 J -27786769.52 -27786769.31 -27786769.08 0.0294 0.0102  
 Earth -80790-12-22 06:42 J -27786769.44 -27786769.22 -27786768.99 0.0294 0.0109 \*  
 Mars -80789-01-15 23:01 J -27786744.62 -27786744.54 -27786744.46 0.0294 0.0279  
 Earth -80788-01-04 13:54 J -27786390.16 -27786389.92 -27786389.68 0.0292 0.0010  
 Moon -80788-01-04 15:06 J -27786390.11 -27786389.87 -27786389.64 0.0292 0.0014 \*  
 Earth -80787-01-18 11:01 J -27786011.26 -27786011.04 -27786010.82 0.0289 0.0123  
 Moon -80787-01-18 14:23 J -27786011.11 -27786010.90 -27786010.68 0.0289 0.0121 \*  
 Earth -80786-01-31 21:20 J -27785632.76 -27785632.61 -27785632.46 0.0286 0.0223  
 Moon -80786-01-31 23:16 J -27785632.69 -27785632.53 -27785632.36 0.0286 0.0213 \*  
 Venus -80784-06-05 14:52 J -27784777.09 -27784776.88 -27784776.68 0.0279 0.0022  
 Mercury -80783-08-08 18:42 J -27784347.81 -27784347.72 -27784347.63 0.0276 0.0199  
 Mercury -80783-11-05 05:44 J -27784259.39 -27784259.26 -27784259.14 0.0275 0.0100

Mercury -80782-02-01 16:47 J -27784170.94 -27784170.80 -27784170.67 0.0274 0.0009  
 Mercury -80782-05-01 03:35 J -27784082.47 -27784082.35 -27784082.22 0.0273 0.0098  
 Mercury -80782-07-28 14:37 J -27783993.98 -27783993.89 -27783993.79 0.0273 0.0197  
 Moon -80776-05-27 02:52 J -27781864.47 -27781864.38 -27781864.27 0.0265 0.0241  
 Earth -80776-05-27 06:13 J -27781864.36 -27781864.24 -27781864.11 0.0265 0.0227 \*  
 Mars -80775-01-13 14:23 J -27781633.22 -27781632.90 -27781632.57 0.0266 0.0019  
 Earth -80775-06-07 20:37 J -27781487.83 -27781487.64 -27781487.43 0.0266 0.0151  
 Moon -80775-06-07 22:04 J -27781487.77 -27781487.58 -27781487.40 0.0266 0.0165 \*  
 Earth -80774-06-19 16:32 J -27781111.04 -27781110.81 -27781110.56 0.0267 0.0067  
 Moon -80774-06-19 20:08 J -27781110.90 -27781110.66 -27781110.42 0.0267 0.0072 \*  
 Moon -80773-06-30 18:13 J -27780734.00 -27780733.74 -27780733.49 0.0269 0.0033  
 Earth -80773-06-30 19:11 J -27780733.95 -27780733.70 -27780733.45 0.0269 0.0023 \*  
 Moon -80772-07-13 01:11 J -27780356.66 -27780356.45 -27780356.22 0.0271 0.0132  
 Earth -80772-07-13 05:16 J -27780356.50 -27780356.28 -27780356.05 0.0271 0.0115 \*  
 Moon -80771-07-25 23:16 J -27779978.67 -27779978.53 -27779978.39 0.0273 0.0221  
 Earth -80771-07-26 00:42 J -27779978.63 -27779978.47 -27779978.31 0.0273 0.0208 \*  
 Venus -80768-02-11 05:59 J -27779047.46 -27779047.25 -27779047.03 0.0281 0.0040  
 Mercury -80767-05-25 03:49 J -27778579.46 -27778579.34 -27778579.20 0.0286 0.0207  
 Mercury -80767-08-22 03:35 J -27778490.53 -27778490.35 -27778490.17 0.0286 0.0048  
 Mercury -80767-11-19 02:52 J -27778401.54 -27778401.38 -27778401.21 0.0287 0.0110  
 Mercury -80766-02-16 01:54 J -27778312.48 -27778312.42 -27778312.35 0.0288 0.0266  
 Earth -80762-12-01 15:35 J -27776562.94 -27776562.85 -27776562.74 0.0295 0.0269  
 Moon -80762-12-01 19:25 J -27776562.81 -27776562.69 -27776562.56 0.0295 0.0254 \*  
 Mars -80761-03-06 12:56 J -27776467.22 -27776466.96 -27776466.70 0.0295 0.0088  
 Earth -80761-12-15 10:47 J -27776183.26 -27776183.05 -27776182.84 0.0295 0.0156  
 Moon -80761-12-15 12:42 J -27776183.19 -27776182.97 -27776182.75 0.0295 0.0144 \*  
 Moon -80760-12-29 19:54 J -27775803.91 -27775803.67 -27775803.41 0.0293 0.0033  
 Earth -80760-12-29 21:49 J -27775803.83 -27775803.59 -27775803.35 0.0293 0.0037 \*  
 Moon -80758-01-12 19:11 J -27775424.94 -27775424.70 -27775424.47 0.0291 0.0078  
 Earth -80758-01-12 22:47 J -27775424.78 -27775424.55 -27775424.31 0.0291 0.0079 \*

Moon -80757-01-26 11:01 J -27775046.22 -27775046.04 -27775045.85 0.0288 0.0178  
 Earth -80757-01-26 13:11 J -27775046.12 -27775045.95 -27775045.75 0.0288 0.0184 \*  
 Earth -80756-02-07 17:30 J -27774667.84 -27774667.77 -27774667.71 0.0284 0.0273  
 Moon -80756-02-07 19:25 J -27774667.77 -27774667.69 -27774667.59 0.0284 0.0259 \*  
 Venus -80755-12-16 20:37 J -27773990.84 -27773990.64 -27773990.43 0.0278 0.0039  
 Mercury -80754-12-26 21:35 J -27773615.67 -27773615.60 -27773615.52 0.0275 0.0222  
 Mercury -80753-03-24 08:37 J -27773527.26 -27773527.14 -27773527.02 0.0274 0.0123  
 Mercury -80753-06-20 19:40 J -27773438.82 -27773438.68 -27773438.55 0.0274 0.0026  
 Mercury -80753-09-17 06:28 J -27773350.36 -27773350.23 -27773350.10 0.0273 0.0074  
 Mercury -80753-12-14 17:30 J -27773261.87 -27773261.77 -27773261.66 0.0272 0.0172  
 Mercury -80752-03-13 04:32 J -27773173.31 -27773173.31 -27773173.29 0.0272 0.0271  
 Earth -80747-05-22 13:40 J -27771276.97 -27771276.93 -27771276.86 0.0265 0.0256  
 Moon -80747-05-22 17:01 J -27771276.80 -27771276.79 -27771276.74 0.0265 0.0263  
 Moon -80746-06-03 00:56 J -27770900.63 -27770900.46 -27770900.29 0.0265 0.0198  
 Earth -80746-06-03 02:08 J -27770900.58 -27770900.41 -27770900.23 0.0265 0.0184 \*  
 Mars -80745-03-05 17:16 J -27770623.97 -27770623.78 -27770623.55 0.0266 0.0200  
 Moon -80745-06-13 15:06 J -27770524.09 -27770523.87 -27770523.65 0.0266 0.0112  
 Earth -80745-06-13 18:42 J -27770523.94 -27770523.72 -27770523.49 0.0266 0.0103 \*  
 Earth -80744-06-25 17:30 J -27770147.02 -27770146.77 -27770146.53 0.0268 0.0015  
 Moon -80744-06-25 17:59 J -27770146.99 -27770146.75 -27770146.51 0.0268 0.0010 \*  
 Earth -80743-07-07 23:16 J -27769769.77 -27769769.53 -27769769.29 0.0270 0.0077  
 Moon -80743-07-08 03:06 J -27769769.60 -27769769.37 -27769769.14 0.0270 0.0092 \*  
 Earth -80742-07-20 13:40 J -27769392.12 -27769391.93 -27769391.73 0.0272 0.0171  
 Moon -80742-07-20 14:52 J -27769392.06 -27769391.88 -27769391.69 0.0272 0.0185 \*  
 Moon -80741-08-01 10:32 J -27769014.11 -27769014.06 -27769013.99 0.0275 0.0267  
 Earth -80741-08-01 13:25 J -27769014.00 -27769013.94 -27769013.85 0.0275 0.0262 \*  
 Venus -80739-08-24 08:52 J -27768261.34 -27768261.13 -27768260.91 0.0282 0.0009  
 Mercury -80738-10-12 00:42 J -27767847.53 -27767847.47 -27767847.40 0.0285 0.0263  
 Mercury -80737-01-09 00:28 J -27767758.65 -27767758.48 -27767758.31 0.0286 0.0105  
 Mercury -80737-04-06 23:44 J -27767669.69 -27767669.51 -27767669.33 0.0287 0.0053

Mercury -80737-07-04 23:01 J -27767580.66 -27767580.54 -27767580.42 0.0287 0.0210  
 Moon -80732-12-08 23:01 J -27765597.71 -27765597.54 -27765597.36 0.0295 0.0200  
 Earth -80732-12-09 00:13 J -27765597.65 -27765597.49 -27765597.31 0.0295 0.0211 \*  
 Mars -80731-04-24 01:40 J -27765461.67 -27765461.43 -27765461.17 0.0294 0.0108  
 Earth -80731-12-23 15:20 J -27765218.09 -27765217.86 -27765217.63 0.0293 0.0094  
 Moon -80731-12-23 17:30 J -27765217.99 -27765217.77 -27765217.54 0.0293 0.0089 \*  
 Earth -80729-01-06 21:35 J -27764838.84 -27764838.60 -27764838.36 0.0292 0.0025  
 Moon -80729-01-07 01:25 J -27764838.68 -27764838.44 -27764838.20 0.0292 0.0025 \*  
 Earth -80728-01-19 17:44 J -27764459.97 -27764459.76 -27764459.54 0.0289 0.0137  
 Moon -80728-01-19 19:40 J -27764459.89 -27764459.68 -27764459.45 0.0289 0.0131 \*  
 Moon -80727-02-02 01:25 J -27764081.60 -27764081.44 -27764081.29 0.0286 0.0222  
 Earth -80727-02-02 03:20 J -27764081.49 -27764081.36 -27764081.22 0.0286 0.0235 \*  
 Venus -80725-06-27 23:01 J -27763204.73 -27763204.54 -27763204.34 0.0279 0.0086  
 Mercury -80724-05-14 23:59 J -27762883.55 -27762883.50 -27762883.45 0.0276 0.0253  
 Mercury -80724-08-11 10:47 J -27762795.16 -27762795.05 -27762794.94 0.0275 0.0155  
 Mercury -80724-11-07 21:49 J -27762706.72 -27762706.59 -27762706.46 0.0275 0.0056  
 Mercury -80723-02-04 08:52 J -27762618.27 -27762618.13 -27762618.00 0.0274 0.0044  
 Mercury -80723-05-03 19:54 J -27762529.79 -27762529.67 -27762529.56 0.0273 0.0143  
 Mercury -80723-07-31 06:56 J -27762441.27 -27762441.21 -27762441.15 0.0273 0.0242  
 Mars -80717-04-18 14:23 J -27760353.16 -27760352.90 -27760352.62 0.0265 0.0142  
 Earth -80717-05-28 11:44 J -27760313.15 -27760313.01 -27760312.86 0.0265 0.0215  
 Moon -80717-05-28 12:28 J -27760313.09 -27760312.98 -27760312.86 0.0265 0.0229 \*  
 Earth -80716-06-09 02:52 J -27759936.59 -27759936.38 -27759936.17 0.0266 0.0138  
 Moon -80716-06-09 06:28 J -27759936.42 -27759936.23 -27759936.02 0.0266 0.0152 \*  
 Earth -80715-06-20 23:30 J -27759559.76 -27759559.52 -27759559.28 0.0267 0.0054  
 Moon -80715-06-20 23:44 J -27759559.76 -27759559.51 -27759559.26 0.0267 0.0055 \*  
 Moon -80714-07-02 23:16 J -27759182.77 -27759182.53 -27759182.29 0.0269 0.0049  
 Earth -80714-07-03 02:52 J -27759182.62 -27759182.38 -27759182.13 0.0269 0.0037 \*  
 Moon -80713-07-14 12:42 J -27758805.16 -27758804.97 -27758804.76 0.0271 0.0145  
 Earth -80713-07-14 13:54 J -27758805.14 -27758804.92 -27758804.70 0.0271 0.0129 \*

Earth -80712-07-27 09:35 J -27758427.23 -27758427.10 -27758426.94 0.0274 0.0222  
 Moon -80712-07-27 12:42 J -27758427.09 -27758426.97 -27758426.84 0.0274 0.0234 \*  
 Venus -80709-03-05 19:54 J -27757474.88 -27757474.67 -27757474.46 0.0282 0.0085  
 Mercury -80708-05-28 01:25 J -27757026.60 -27757026.44 -27757026.27 0.0286 0.0132  
 Mercury -80708-08-25 00:56 J -27756937.64 -27756937.46 -27756937.28 0.0287 0.0026  
 Mercury -80708-11-21 23:59 J -27756848.63 -27756848.50 -27756848.35 0.0287 0.0183  
 Mars -80703-06-13 07:40 J -27755184.28 -27755184.18 -27755184.06 0.0295 0.0269  
 Earth -80703-12-03 04:04 J -27755011.45 -27755011.33 -27755011.20 0.0295 0.0254  
 Moon -80703-12-03 05:01 J -27755011.43 -27755011.29 -27755011.13 0.0295 0.0239 \*  
 Moon -80702-12-17 19:54 J -27754631.89 -27754631.67 -27754631.44 0.0294 0.0130  
 Earth -80702-12-17 22:04 J -27754631.79 -27754631.58 -27754631.35 0.0294 0.0140 \*  
 Moon -80701-12-31 04:47 J -27754252.54 -27754252.30 -27754252.06 0.0293 0.0018  
 Earth -80701-12-31 08:23 J -27754252.39 -27754252.15 -27754251.91 0.0293 0.0020 \*  
 Moon -80699-01-14 07:11 J -27753873.43 -27753873.20 -27753872.98 0.0290 0.0092  
 Earth -80699-01-14 08:37 J -27753873.37 -27753873.14 -27753872.91 0.0290 0.0095 \*  
 Earth -80698-01-27 22:18 J -27753494.75 -27753494.57 -27753494.40 0.0287 0.0198  
 Moon -80698-01-28 00:13 J -27753494.67 -27753494.49 -27753494.31 0.0287 0.0189 \*  
 Moon -80697-02-10 04:47 J -27753116.37 -27753116.30 -27753116.23 0.0284 0.0270  
 Venus -80696-05-24 01:54 J -27752647.51 -27752647.42 -27752647.32 0.0280 0.0244  
 Venus -80695-01-08 05:59 J -27752418.42 -27752418.25 -27752418.07 0.0278 0.0151  
 Mercury -80695-10-02 03:06 J -27752151.38 -27752151.37 -27752151.35 0.0276 0.0274  
 Mercury -80695-12-29 14:08 J -27752063.01 -27752062.91 -27752062.81 0.0275 0.0175  
 Mercury -80694-03-28 00:56 J -27751974.58 -27751974.46 -27751974.33 0.0274 0.0077  
 Mercury -80694-06-24 11:59 J -27751886.13 -27751886.00 -27751885.87 0.0274 0.0022  
 Mercury -80694-09-20 23:01 J -27751797.66 -27751797.54 -27751797.42 0.0273 0.0121  
 Mercury -80694-12-18 10:04 J -27751709.15 -27751709.08 -27751709.00 0.0272 0.0220  
 Earth -80688-05-23 20:52 J -27749725.70 -27749725.63 -27749725.52 0.0265 0.0246  
 Moon -80688-05-23 21:20 J -27749725.68 -27749725.61 -27749725.53 0.0265 0.0252 \*  
 Moon -80687-06-04 06:13 J -27749349.41 -27749349.24 -27749349.06 0.0266 0.0186  
 Earth -80687-06-04 10:04 J -27749349.27 -27749349.08 -27749348.89 0.0266 0.0171 \*

Mars	-80687-06-09 16:47 J	-27749344.12	-27749343.80	-27749343.48	0.0266	0.0040
Moon	-80686-06-16 03:06 J	-27748972.59	-27748972.37	-27748972.15	0.0267	0.0096
Earth	-80686-06-16 03:20 J	-27748972.59	-27748972.36	-27748972.12	0.0267	0.0089 *
Earth	-80685-06-27 02:52 J	-27748595.62	-27748595.38	-27748595.13	0.0268	0.0004
Moon	-80685-06-27 06:28 J	-27748595.48	-27748595.23	-27748594.99	0.0268	0.0005 *
Earth	-80684-07-09 09:35 J	-27748218.33	-27748218.10	-27748217.86	0.0270	0.0092
Moon	-80684-07-09 10:32 J	-27748218.29	-27748218.06	-27748217.82	0.0270	0.0106 *
Moon	-80683-07-21 21:49 J	-27747840.76	-27747840.59	-27747840.41	0.0273	0.0198
Earth	-80683-07-22 01:11 J	-27747840.63	-27747840.45	-27747840.26	0.0273	0.0185 *
Earth	-80682-08-04 01:54 J	-27747462.42	-27747462.42	-27747462.39	0.0275	0.0275
Venus	-80680-09-16 00:42 J	-27746688.66	-27746688.47	-27746688.28	0.0282	0.0138
Mercury	-80679-10-14 23:01 J	-27746294.68	-27746294.54	-27746294.40	0.0285	0.0183
Mercury	-80678-01-11 22:32 J	-27746205.74	-27746205.56	-27746205.37	0.0286	0.0026
Mercury	-80678-04-10 21:49 J	-27746116.75	-27746116.59	-27746116.43	0.0287	0.0132
Moon	-80674-11-26 17:01 J	-27744425.82	-27744425.79	-27744425.75	0.0295	0.0290
Mars	-80673-07-31 06:42 J	-27744178.48	-27744178.22	-27744177.95	0.0295	0.0068
Earth	-80673-12-10 13:54 J	-27744046.09	-27744045.92	-27744045.72	0.0294	0.0195
Moon	-80673-12-10 16:32 J	-27744045.99	-27744045.81	-27744045.61	0.0294	0.0184 *
Earth	-80672-12-25 04:04 J	-27743666.56	-27743666.33	-27743666.09	0.0293	0.0076
Moon	-80672-12-25 07:40 J	-27743666.42	-27743666.18	-27743665.94	0.0293	0.0069 *
Earth	-80670-01-08 09:06 J	-27743287.36	-27743287.12	-27743286.88	0.0291	0.0042
Moon	-80670-01-08 10:04 J	-27743287.33	-27743287.08	-27743286.83	0.0291	0.0040 *
Moon	-80669-01-22 01:11 J	-27742908.66	-27742908.45	-27742908.23	0.0289	0.0142
Earth	-80669-01-22 03:49 J	-27742908.54	-27742908.34	-27742908.13	0.0289	0.0152 *
Moon	-80668-02-03 09:06 J	-27742530.25	-27742530.12	-27742529.98	0.0286	0.0234
Earth	-80668-02-03 12:28 J	-27742530.09	-27742529.98	-27742529.85	0.0286	0.0248 *
Venus	-80667-12-04 04:32 J	-27741861.45	-27741861.31	-27741861.16	0.0280	0.0196
Venus	-80666-07-21 08:37 J	-27741632.28	-27741632.14	-27741631.99	0.0278	0.0199
Mercury	-80665-05-17 16:18 J	-27741330.90	-27741330.82	-27741330.73	0.0276	0.0206
Mercury	-80665-08-14 03:20 J	-27741242.49	-27741242.36	-27741242.24	0.0275	0.0107

Mercury -80665-11-10 14:08 J -27741154.04 -27741153.91 -27741153.77 0.0274 0.0011  
 Mercury -80664-02-07 01:11 J -27741065.57 -27741065.45 -27741065.32 0.0274 0.0092  
 Mercury -80664-05-06 12:13 J -27740977.08 -27740976.99 -27740976.89 0.0273 0.0191  
 Earth -80658-05-30 19:11 J -27738761.86 -27738761.70 -27738761.55 0.0266 0.0203  
 Moon -80658-05-30 22:32 J -27738761.70 -27738761.56 -27738761.42 0.0266 0.0217 \*  
 Earth -80657-06-10 11:01 J -27738385.26 -27738385.04 -27738384.83 0.0266 0.0125  
 Moon -80657-06-10 11:30 J -27738385.24 -27738385.02 -27738384.80 0.0266 0.0135 \*  
 Mars -80657-07-31 06:42 J -27738334.37 -27738334.22 -27738334.04 0.0266 0.0229  
 Moon -80656-06-22 04:47 J -27738008.54 -27738008.30 -27738008.05 0.0267 0.0039  
 Earth -80656-06-22 08:23 J -27738008.39 -27738008.15 -27738007.90 0.0267 0.0039 \*  
 Moon -80655-07-04 11:01 J -27737631.27 -27737631.04 -27737630.80 0.0269 0.0063  
 Earth -80655-07-04 12:28 J -27737631.22 -27737630.98 -27737630.73 0.0269 0.0052 \*  
 Earth -80654-07-17 00:28 J -27737253.68 -27737253.48 -27737253.26 0.0271 0.0145  
 Moon -80654-07-17 03:49 J -27737253.53 -27737253.34 -27737253.14 0.0271 0.0159 \*  
 Earth -80653-07-28 21:35 J -27736875.71 -27736875.60 -27736875.46 0.0274 0.0236  
 Moon -80653-07-29 00:56 J -27736875.56 -27736875.46 -27736875.34 0.0274 0.0246 \*  
 Venus -80651-08-11 14:37 J -27736132.02 -27736131.89 -27736131.75 0.0280 0.0217  
 Venus -80650-03-29 11:30 J -27735902.15 -27735902.02 -27735901.88 0.0282 0.0217  
 Mercury -80649-03-03 00:13 J -27735562.62 -27735562.49 -27735562.37 0.0285 0.0211  
 Mercury -80649-05-30 23:44 J -27735473.69 -27735473.51 -27735473.33 0.0286 0.0052  
 Mercury -80649-08-27 23:01 J -27735384.71 -27735384.54 -27735384.37 0.0287 0.0105  
 Mercury -80649-11-24 22:04 J -27735295.65 -27735295.58 -27735295.50 0.0288 0.0262  
 Moon -80644-12-04 15:49 J -27733459.99 -27733459.84 -27733459.67 0.0295 0.0223  
 Earth -80644-12-04 18:56 J -27733459.84 -27733459.71 -27733459.55 0.0295 0.0237 \*  
 Mars -80643-09-18 21:06 J -27733171.86 -27733171.62 -27733171.39 0.0295 0.0132  
 Moon -80643-12-19 08:52 J -27733080.35 -27733080.13 -27733079.90 0.0294 0.0111  
 Earth -80643-12-19 12:28 J -27733080.20 -27733079.98 -27733079.75 0.0294 0.0121 \*  
 Moon -80641-01-02 20:52 J -27732700.87 -27732700.63 -27732700.40 0.0293 0.0005  
 Earth -80641-01-02 21:35 J -27732700.84 -27732700.60 -27732700.35 0.0293 0.0005 \*  
 Earth -80640-01-15 20:52 J -27732321.85 -27732321.63 -27732321.40 0.0290 0.0112



Moon -80640-01-15 23:30 J -27732321.73 -27732321.52 -27732321.29 0.0290 0.0106 \*  
 Earth -80639-01-29 09:20 J -27731943.26 -27731943.11 -27731942.94 0.0287 0.0213  
 Moon -80639-01-29 13:11 J -27731943.12 -27731942.95 -27731942.77 0.0287 0.0201 \*  
 Moon -80638-02-11 11:44 J -27731565.02 -27731565.01 -27731564.97 0.0284 0.0282  
 Venus -80637-06-15 12:56 J -27731075.14 -27731074.96 -27731074.77 0.0280 0.0126  
 Venus -80636-01-30 16:32 J -27730845.86 -27730845.81 -27730845.75 0.0278 0.0267  
 Mercury -80636-10-04 19:54 J -27730598.74 -27730598.67 -27730598.59 0.0276 0.0224  
 Mercury -80635-01-01 06:56 J -27730510.33 -27730510.21 -27730510.09 0.0275 0.0125  
 Mercury -80635-03-30 17:44 J -27730421.89 -27730421.76 -27730421.62 0.0274 0.0027  
 Mercury -80635-06-27 04:47 J -27730333.43 -27730333.30 -27730333.17 0.0273 0.0073  
 Mercury -80635-09-23 15:49 J -27730244.94 -27730244.84 -27730244.73 0.0273 0.0172  
 Mercury -80635-12-21 02:52 J -27730156.38 -27730156.38 -27730156.36 0.0272 0.0271  
 Moon -80629-05-25 02:37 J -27728174.48 -27728174.39 -27728174.28 0.0265 0.0243  
 Earth -80629-05-25 06:13 J -27728174.35 -27728174.24 -27728174.13 0.0265 0.0233 \*  
 Mars -80629-09-13 01:54 J -27728063.70 -27728063.42 -27728063.12 0.0265 0.0118  
 Moon -80628-06-05 18:28 J -27727797.90 -27727797.73 -27727797.54 0.0266 0.0171  
 Earth -80628-06-05 19:11 J -27727797.88 -27727797.70 -27727797.49 0.0266 0.0158 \*  
 Earth -80627-06-17 13:40 J -27727421.16 -27727420.93 -27727420.69 0.0267 0.0074  
 Moon -80627-06-17 17:16 J -27727421.01 -27727420.78 -27727420.55 0.0267 0.0078 \*  
 Earth -80626-06-29 14:08 J -27727044.16 -27727043.91 -27727043.66 0.0268 0.0015  
 Moon -80626-06-29 16:18 J -27727044.07 -27727043.82 -27727043.57 0.0268 0.0021 \*  
 Moon -80625-07-10 18:56 J -27726666.94 -27726666.71 -27726666.48 0.0270 0.0122  
 Earth -80625-07-10 21:49 J -27726666.81 -27726666.59 -27726666.36 0.0270 0.0108 \*  
 Moon -80624-07-23 11:30 J -27726289.17 -27726289.02 -27726288.86 0.0273 0.0212  
 Earth -80624-07-23 14:23 J -27726289.06 -27726288.90 -27726288.73 0.0273 0.0200 \*  
 Venus -80621-02-21 20:37 J -27725345.81 -27725345.64 -27725345.45 0.0281 0.0161  
 Venus -80621-10-08 17:30 J -27725115.80 -27725115.77 -27725115.71 0.0283 0.0276  
 Mercury -80620-07-20 22:18 J -27724830.64 -27724830.57 -27724830.49 0.0285 0.0258  
 Mercury -80620-10-17 22:04 J -27724741.75 -27724741.58 -27724741.41 0.0286 0.0099  
 Mercury -80619-01-14 21:20 J -27724652.78 -27724652.61 -27724652.43 0.0287 0.0059

Mercury -80619-04-13 20:23 J -27724563.76 -27724563.65 -27724563.52 0.0287 0.0216  
 Mars -80615-11-07 10:47 J -27722895.20 -27722895.05 -27722894.90 0.0295 0.0244  
 Earth -80615-11-28 10:18 J -27722874.11 -27722874.07 -27722874.00 0.0295 0.0287  
 Moon -80615-11-28 14:08 J -27722873.99 -27722873.91 -27722873.81 0.0295 0.0274  
 Earth -80614-12-13 06:56 J -27722494.41 -27722494.21 -27722494.01 0.0294 0.0176  
 Moon -80614-12-13 10:32 J -27722494.27 -27722494.06 -27722493.85 0.0294 0.0164 \*  
 Earth -80613-12-26 19:54 J -27722114.91 -27722114.67 -27722114.43 0.0293 0.0057  
 Moon -80613-12-26 20:37 J -27722114.89 -27722114.64 -27722114.39 0.0293 0.0051 \*  
 Moon -80611-01-09 20:37 J -27721735.88 -27721735.64 -27721735.39 0.0291 0.0055  
 Earth -80611-01-09 23:44 J -27721735.75 -27721735.51 -27721735.27 0.0291 0.0060 \*  
 Moon -80610-01-23 13:54 J -27721357.12 -27721356.92 -27721356.72 0.0288 0.0157  
 Earth -80610-01-23 17:01 J -27721356.98 -27721356.79 -27721356.59 0.0288 0.0168 \*  
 Moon -80609-02-06 00:13 J -27720978.59 -27720978.49 -27720978.37 0.0285 0.0247  
 Earth -80609-02-06 00:13 J -27720978.57 -27720978.49 -27720978.38 0.0285 0.0262 \*  
 Venus -80608-12-26 16:04 J -27720289.03 -27720288.83 -27720288.63 0.0280 0.0076  
 Mercury -80606-02-21 22:18 J -27719866.62 -27719866.57 -27719866.52 0.0276 0.0254  
 Mercury -80606-05-21 09:06 J -27719778.23 -27719778.12 -27719778.01 0.0275 0.0155  
 Mercury -80606-08-17 20:08 J -27719689.79 -27719689.66 -27719689.53 0.0275 0.0056  
 Mercury -80606-11-14 07:11 J -27719601.34 -27719601.20 -27719601.07 0.0274 0.0044  
 Mercury -80605-02-10 18:13 J -27719512.86 -27719512.74 -27719512.63 0.0274 0.0143  
 Mercury -80605-05-09 05:16 J -27719424.34 -27719424.28 -27719424.22 0.0273 0.0242  
 Earth -80600-05-20 14:52 J -27717586.90 -27717586.88 -27717586.82 0.0266 0.0262  
 Earth -80599-06-01 03:20 J -27717210.52 -27717210.36 -27717210.18 0.0266 0.0190  
 Moon -80599-06-01 05:16 J -27717210.43 -27717210.28 -27717210.11 0.0266 0.0203 \*  
 Mars -80599-11-04 06:13 J -27717054.56 -27717054.24 -27717053.92 0.0266 0.0065  
 Moon -80598-06-12 16:32 J -27716834.02 -27716833.81 -27716833.58 0.0267 0.0118  
 Earth -80598-06-12 20:08 J -27716833.88 -27716833.66 -27716833.43 0.0267 0.0110 \*  
 Moon -80597-06-23 16:18 J -27716457.06 -27716456.82 -27716456.58 0.0268 0.0020  
 Earth -80597-06-23 18:28 J -27716456.97 -27716456.73 -27716456.48 0.0268 0.0023 \*  
 Earth -80596-07-05 23:30 J -27716079.76 -27716079.52 -27716079.28 0.0269 0.0068

Moon -80596-07-06 01:54 J -27716079.64 -27716079.42 -27716079.18 0.0269 0.0081 \*  
 Earth -80595-07-18 12:56 J -27715702.16 -27715701.96 -27715701.76 0.0272 0.0160  
 Moon -80595-07-18 15:49 J -27715702.03 -27715701.84 -27715701.64 0.0272 0.0174 \*  
 Moon -80594-07-31 09:49 J -27715324.16 -27715324.09 -27715323.99 0.0274 0.0258  
 Earth -80594-07-31 11:16 J -27715324.12 -27715324.03 -27715323.92 0.0274 0.0251 \*  
 Venus -80592-09-03 07:25 J -27714559.40 -27714559.19 -27714558.98 0.0281 0.0084  
 Mercury -80591-12-07 23:16 J -27714098.53 -27714098.53 -27714098.52 0.0285 0.0285  
 Mercury -80590-03-06 23:01 J -27714009.70 -27714009.54 -27714009.37 0.0286 0.0127  
 Mercury -80590-06-03 22:47 J -27713920.74 -27713920.55 -27713920.37 0.0286 0.0033  
 Mercury -80590-08-31 21:49 J -27713831.72 -27713831.59 -27713831.45 0.0287 0.0189  
 Moon -80585-12-06 10:18 J -27711908.23 -27711908.07 -27711907.89 0.0295 0.0207  
 Earth -80585-12-06 13:25 J -27711908.10 -27711907.94 -27711907.77 0.0295 0.0218 \*  
 Mars -80585-12-26 07:54 J -27711888.44 -27711888.17 -27711887.91 0.0295 0.0041  
 Moon -80584-12-21 05:30 J -27711528.49 -27711528.27 -27711528.04 0.0294 0.0093  
 Earth -80584-12-21 05:59 J -27711528.48 -27711528.25 -27711528.02 0.0294 0.0101 \*  
 Earth -80582-01-04 13:54 J -27711149.16 -27711148.92 -27711148.68 0.0292 0.0018  
 Moon -80582-01-04 16:32 J -27711149.05 -27711148.81 -27711148.57 0.0292 0.0020 \*  
 Earth -80581-01-18 11:44 J -27710770.22 -27710770.01 -27710769.79 0.0290 0.0130  
 Moon -80581-01-18 14:52 J -27710770.10 -27710769.88 -27710769.65 0.0290 0.0124 \*  
 Moon -80580-01-30 23:01 J -27710391.70 -27710391.54 -27710391.37 0.0287 0.0215  
 Earth -80580-01-30 23:16 J -27710391.67 -27710391.53 -27710391.38 0.0287 0.0229 \*  
 Venus -80578-07-09 01:11 J -27709502.66 -27709502.45 -27709502.25 0.0279 0.0005  
 Mercury -80577-07-11 01:54 J -27709134.43 -27709134.42 -27709134.39 0.0276 0.0271  
 Mercury -80577-10-07 12:56 J -27709046.06 -27709045.96 -27709045.86 0.0275 0.0172  
 Mercury -80576-01-03 23:44 J -27708957.63 -27708957.51 -27708957.38 0.0275 0.0074  
 Mercury -80576-04-02 10:47 J -27708869.18 -27708869.05 -27708868.91 0.0274 0.0027  
 Mercury -80576-06-29 21:49 J -27708780.71 -27708780.59 -27708780.47 0.0273 0.0125  
 Mercury -80576-09-26 08:52 J -27708692.20 -27708692.13 -27708692.05 0.0273 0.0225  
 Moon -80570-05-27 13:11 J -27706623.06 -27706622.95 -27706622.83 0.0265 0.0232  
 Earth -80570-05-27 15:35 J -27706622.98 -27706622.85 -27706622.71 0.0265 0.0220 \*

Earth -80569-06-07 05:30 J -27706246.47 -27706246.27 -27706246.06 0.0266 0.0143  
 Moon -80569-06-07 08:08 J -27706246.34 -27706246.16 -27706245.96 0.0266 0.0156 \*  
 Mars -80569-12-26 00:13 J -27706044.57 -27706044.49 -27706044.38 0.0266 0.0255  
 Earth -80568-06-19 00:28 J -27705869.71 -27705869.48 -27705869.23 0.0267 0.0059  
 Moon -80568-06-19 02:52 J -27705869.62 -27705869.38 -27705869.13 0.0267 0.0060 \*  
 Moon -80567-06-30 23:44 J -27705492.76 -27705492.51 -27705492.26 0.0269 0.0041  
 Earth -80567-07-01 02:08 J -27705492.66 -27705492.41 -27705492.17 0.0269 0.0031 \*  
 Moon -80566-07-13 07:40 J -27705115.38 -27705115.18 -27705114.96 0.0271 0.0139  
 Earth -80566-07-13 11:01 J -27705115.26 -27705115.04 -27705114.82 0.0271 0.0124 \*  
 Earth -80565-07-25 04:32 J -27704737.46 -27704737.31 -27704737.15 0.0273 0.0216  
 Moon -80565-07-25 05:44 J -27704737.38 -27704737.26 -27704737.11 0.0273 0.0226 \*  
 Venus -80562-03-16 14:08 J -27703773.12 -27703772.91 -27703772.69 0.0281 0.0025  
 Mercury -80561-07-23 21:49 J -27703277.73 -27703277.59 -27703277.44 0.0285 0.0170  
 Mercury -80561-10-20 21:20 J -27703188.79 -27703188.61 -27703188.42 0.0286 0.0013  
 Mercury -80560-01-17 20:37 J -27703099.79 -27703099.64 -27703099.48 0.0287 0.0145  
 Earth -80556-11-30 05:30 J -27701322.35 -27701322.27 -27701322.16 0.0295 0.0269  
 Moon -80556-11-30 08:08 J -27701322.28 -27701322.16 -27701322.03 0.0295 0.0256 \*  
 Moon -80555-12-15 00:56 J -27700942.68 -27700942.46 -27700942.24 0.0294 0.0147  
 Earth -80555-12-15 01:11 J -27700942.65 -27700942.45 -27700942.23 0.0294 0.0156 \*  
 Mars -80554-02-13 02:52 J -27700882.59 -27700882.38 -27700882.15 0.0294 0.0158  
 Moon -80554-12-29 10:04 J -27700563.32 -27700563.08 -27700562.83 0.0293 0.0033  
 Earth -80554-12-29 13:11 J -27700563.19 -27700562.95 -27700562.70 0.0293 0.0037 \*  
 Moon -80552-01-11 12:42 J -27700184.20 -27700183.97 -27700183.74 0.0290 0.0077  
 Earth -80552-01-11 15:49 J -27700184.07 -27700183.84 -27700183.61 0.0290 0.0079 \*  
 Earth -80551-01-25 07:54 J -27699805.35 -27699805.17 -27699804.98 0.0288 0.0185  
 Moon -80551-01-25 08:23 J -27699805.33 -27699805.15 -27699804.96 0.0288 0.0174 \*  
 Earth -80550-02-07 13:40 J -27699426.98 -27699426.93 -27699426.86 0.0285 0.0275  
 Moon -80550-02-07 17:01 J -27699426.87 -27699426.79 -27699426.68 0.0285 0.0259 \*  
 Venus -80548-01-18 04:04 J -27698716.53 -27698716.33 -27698716.12 0.0279 0.0046  
 Mercury -80547-02-24 15:20 J -27698313.95 -27698313.86 -27698313.78 0.0276 0.0202

Mercury -80547-05-24 02:08 J -27698225.53 -27698225.41 -27698225.29 0.0275 0.0103

Mercury -80547-08-20 13:11 J -27698137.09 -27698136.95 -27698136.82 0.0274 0.0006

Mercury -80547-11-17 00:13 J -27698048.62 -27698048.49 -27698048.37 0.0274 0.0096

Mercury -80546-02-13 11:16 J -27697960.13 -27697960.03 -27697959.94 0.0273 0.0195

Earth -80541-05-21 23:44 J -27696035.58 -27696035.51 -27696035.42 0.0266 0.0249

Moon -80541-05-22 02:37 J -27696035.45 -27696035.39 -27696035.33 0.0266 0.0256 \*

Mars -80540-02-07 13:11 J -27695774.24 -27695773.95 -27695773.64 0.0266 0.0097

Moon -80540-06-02 09:49 J -27695659.25 -27695659.09 -27695658.90 0.0266 0.0190

Earth -80540-06-02 12:42 J -27695659.15 -27695658.97 -27695658.79 0.0266 0.0175 \*

Moon -80539-06-14 03:20 J -27695282.58 -27695282.36 -27695282.14 0.0267 0.0102

Earth -80539-06-14 05:44 J -27695282.49 -27695282.26 -27695282.03 0.0267 0.0094 \*

Earth -80538-06-26 04:47 J -27694905.55 -27694905.30 -27694905.06 0.0268 0.0008

Moon -80538-06-26 07:11 J -27694905.44 -27694905.20 -27694904.96 0.0268 0.0002 \*

Earth -80537-07-07 10:47 J -27694528.29 -27694528.05 -27694527.82 0.0270 0.0084

Moon -80537-07-07 14:08 J -27694528.14 -27694527.91 -27694527.67 0.0270 0.0097 \*

Moon -80536-07-19 23:44 J -27694150.68 -27694150.51 -27694150.31 0.0272 0.0188

Earth -80536-07-20 00:56 J -27694150.64 -27694150.46 -27694150.26 0.0272 0.0177 \*

Moon -80535-08-01 20:37 J -27693772.66 -27693772.64 -27693772.58 0.0275 0.0271

Earth -80535-08-02 00:42 J -27693772.52 -27693772.47 -27693772.40 0.0275 0.0266

Venus -80533-09-25 23:59 J -27692986.71 -27692986.50 -27692986.28 0.0281 0.0050

Mercury -80532-12-10 22:18 J -27692545.69 -27692545.57 -27692545.43 0.0285 0.0201

Mercury -80531-03-09 22:04 J -27692456.76 -27692456.58 -27692456.40 0.0286 0.0042

Mercury -80531-06-06 21:20 J -27692367.77 -27692367.61 -27692367.44 0.0287 0.0116

Mercury -80531-09-03 20:23 J -27692278.70 -27692278.65 -27692278.59 0.0287 0.0273

Mars -80526-04-04 13:54 J -27690605.09 -27690604.92 -27690604.73 0.0295 0.0217

Earth -80526-12-09 07:40 J -27690356.35 -27690356.18 -27690355.99 0.0295 0.0199

Moon -80526-12-09 09:06 J -27690356.31 -27690356.12 -27690355.94 0.0295 0.0189 \*

Earth -80525-12-22 23:44 J -27689976.75 -27689976.51 -27689976.27 0.0294 0.0080

Moon -80525-12-23 03:06 J -27689976.60 -27689976.37 -27689976.13 0.0294 0.0073 \*

Earth -80523-01-06 06:42 J -27689597.46 -27689597.22 -27689596.98 0.0292 0.0038

Moon -80523-01-06 10:04 J -27689597.32 -27689597.08 -27689596.83 0.0292 0.0042 \*  
 Moon -80522-01-20 03:06 J -27689218.59 -27689218.37 -27689218.15 0.0290 0.0142  
 Earth -80522-01-20 03:20 J -27689218.56 -27689218.36 -27689218.15 0.0290 0.0149 \*  
 Moon -80521-02-02 09:49 J -27688840.22 -27688840.09 -27688839.93 0.0287 0.0230  
 Earth -80521-02-02 13:25 J -27688840.05 -27688839.94 -27688839.80 0.0287 0.0246 \*  
 Venus -80520-12-14 09:06 J -27688159.13 -27688159.12 -27688159.10 0.0281 0.0280  
 Venus -80519-07-31 13:25 J -27687930.12 -27687929.94 -27687929.75 0.0279 0.0118  
 Mercury -80518-07-14 19:11 J -27687581.78 -27687581.70 -27687581.62 0.0276 0.0218  
 Mercury -80518-10-11 05:59 J -27687493.37 -27687493.25 -27687493.13 0.0275 0.0119  
 Mercury -80517-01-07 17:01 J -27687404.92 -27687404.79 -27687404.66 0.0274 0.0020  
 Mercury -80517-04-05 04:04 J -27687316.46 -27687316.33 -27687316.21 0.0274 0.0080  
 Mercury -80517-07-02 14:52 J -27687227.97 -27687227.88 -27687227.77 0.0273 0.0179  
 Earth -80511-05-29 00:28 J -27685071.62 -27685071.48 -27685071.31 0.0265 0.0207  
 Moon -80511-05-29 02:37 J -27685071.51 -27685071.39 -27685071.25 0.0265 0.0220 \*  
 Mars -80510-04-01 01:40 J -27684764.73 -27684764.43 -27684764.12 0.0266 0.0092  
 Earth -80510-06-09 15:06 J -27684695.07 -27684694.87 -27684694.64 0.0266 0.0128  
 Moon -80510-06-09 18:28 J -27684694.94 -27684694.73 -27684694.52 0.0266 0.0141 \*  
 Moon -80509-06-20 08:52 J -27684318.38 -27684318.13 -27684317.88 0.0267 0.0041  
 Earth -80509-06-20 11:01 J -27684318.28 -27684318.04 -27684317.79 0.0267 0.0043 \*  
 Moon -80508-07-02 09:49 J -27683941.32 -27683941.09 -27683940.85 0.0269 0.0060  
 Earth -80508-07-02 13:25 J -27683941.18 -27683940.94 -27683940.70 0.0269 0.0048 \*  
 Earth -80507-07-14 23:30 J -27683563.73 -27683563.52 -27683563.31 0.0271 0.0140  
 Moon -80507-07-14 23:44 J -27683563.70 -27683563.51 -27683563.30 0.0271 0.0155 \*  
 Earth -80506-07-27 17:59 J -27683185.87 -27683185.75 -27683185.60 0.0274 0.0232  
 Moon -80506-07-27 22:04 J -27683185.70 -27683185.58 -27683185.47 0.0274 0.0241 \*  
 Venus -80503-04-08 07:40 J -27682200.38 -27682200.18 -27682199.98 0.0282 0.0114  
 Mercury -80502-04-29 21:35 J -27681813.69 -27681813.60 -27681813.50 0.0285 0.0242  
 Mercury -80502-07-27 21:06 J -27681724.79 -27681724.62 -27681724.44 0.0286 0.0084  
 Mercury -80502-10-24 20:37 J -27681635.81 -27681635.64 -27681635.46 0.0287 0.0074  
 Mercury -80501-01-21 19:40 J -27681546.78 -27681546.68 -27681546.57 0.0287 0.0232

Moon -80497-12-01 23:44 J -27679770.65 -27679770.51 -27679770.35 0.0295 0.0240  
 Earth -80497-12-02 01:40 J -27679770.55 -27679770.43 -27679770.29 0.0295 0.0250 \*  
 Mars -80496-05-22 18:42 J -27679598.99 -27679598.72 -27679598.46 0.0294 0.0014  
 Moon -80496-12-16 16:47 J -27679391.01 -27679390.80 -27679390.57 0.0294 0.0129  
 Earth -80496-12-16 20:52 J -27679390.85 -27679390.63 -27679390.41 0.0294 0.0135 \*  
 Moon -80495-12-31 04:32 J -27679011.54 -27679011.31 -27679011.07 0.0292 0.0013  
 Earth -80495-12-31 07:40 J -27679011.42 -27679011.18 -27679010.93 0.0292 0.0016 \*  
 Earth -80493-01-14 08:52 J -27678632.36 -27678632.13 -27678631.90 0.0290 0.0099  
 Moon -80493-01-14 09:06 J -27678632.34 -27678632.12 -27678631.90 0.0290 0.0096 \*  
 Earth -80492-01-26 23:30 J -27678253.68 -27678253.52 -27678253.34 0.0287 0.0203  
 Moon -80492-01-27 02:52 J -27678253.55 -27678253.38 -27678253.19 0.0287 0.0190 \*  
 Moon -80491-02-09 05:59 J -27677875.31 -27677875.25 -27677875.17 0.0284 0.0272  
 Venus -80490-06-26 12:13 J -27677373.10 -27677372.99 -27677372.87 0.0280 0.0228  
 Venus -80489-02-10 16:18 J -27677143.98 -27677143.82 -27677143.65 0.0278 0.0168  
 Mercury -80489-11-30 21:20 J -27676849.66 -27676849.61 -27676849.55 0.0276 0.0248  
 Mercury -80488-02-27 08:23 J -27676761.26 -27676761.15 -27676761.04 0.0275 0.0149  
 Mercury -80488-05-26 19:11 J -27676672.83 -27676672.70 -27676672.57 0.0275 0.0050  
 Mercury -80488-08-23 06:13 J -27676584.37 -27676584.24 -27676584.11 0.0274 0.0049  
 Mercury -80488-11-19 17:16 J -27676495.89 -27676495.78 -27676495.67 0.0273 0.0149  
 Mercury -80487-02-16 04:18 J -27676407.37 -27676407.32 -27676407.27 0.0273 0.0248  
 Mars -80482-05-15 01:54 J -27674493.49 -27674493.42 -27674493.31 0.0266 0.0254  
 Moon -80482-05-24 05:30 J -27674484.35 -27674484.27 -27674484.17 0.0266 0.0247  
 Earth -80482-05-24 07:40 J -27674484.28 -27674484.18 -27674484.06 0.0266 0.0236 \*  
 Moon -80481-06-03 17:16 J -27674107.95 -27674107.78 -27674107.59 0.0266 0.0176  
 Earth -80481-06-03 20:37 J -27674107.83 -27674107.64 -27674107.44 0.0266 0.0161 \*  
 Earth -80480-06-15 14:08 J -27673731.14 -27673730.91 -27673730.67 0.0267 0.0079  
 Moon -80480-06-15 15:49 J -27673731.06 -27673730.84 -27673730.61 0.0267 0.0084 \*  
 Earth -80479-06-27 13:54 J -27673354.16 -27673353.92 -27673353.67 0.0268 0.0010  
 Moon -80479-06-27 17:16 J -27673354.02 -27673353.78 -27673353.52 0.0268 0.0019 \*  
 Moon -80478-07-09 20:08 J -27672976.88 -27672976.66 -27672976.42 0.0270 0.0115

Earth -80478-07-09 20:37 J -27672976.86 -27672976.64 -27672976.40 0.0270 0.0101 \*  
 Moon -80477-07-21 08:37 J -27672599.30 -27672599.14 -27672598.97 0.0272 0.0205  
 Earth -80477-07-21 12:13 J -27672599.16 -27672598.99 -27672598.81 0.0272 0.0192 \*  
 Venus -80474-03-03 19:25 J -27671643.78 -27671643.69 -27671643.59 0.0280 0.0251  
 Venus -80474-10-19 16:04 J -27671413.99 -27671413.83 -27671413.66 0.0282 0.0183  
 Mercury -80473-09-15 21:20 J -27671081.64 -27671081.61 -27671081.57 0.0285 0.0278  
 Mercury -80473-12-13 21:06 J -27670992.78 -27670992.62 -27670992.45 0.0286 0.0119  
 Mercury -80472-03-12 20:37 J -27670903.82 -27670903.64 -27670903.46 0.0286 0.0040  
 Mercury -80472-06-09 19:54 J -27670814.80 -27670814.67 -27670814.54 0.0287 0.0197  
 Earth -80468-11-26 02:52 J -27669184.41 -27669184.38 -27669184.33 0.0295 0.0291  
 Moon -80468-11-26 04:47 J -27669184.36 -27669184.30 -27669184.21 0.0295 0.0280 \*  
 Earth -80467-12-11 01:11 J -27668804.64 -27668804.45 -27668804.25 0.0295 0.0179  
 Moon -80467-12-11 05:01 J -27668804.49 -27668804.29 -27668804.09 0.0295 0.0170 \*  
 Mars -80466-07-11 04:18 J -27668592.51 -27668592.32 -27668592.10 0.0294 0.0185  
 Earth -80466-12-25 16:18 J -27668425.06 -27668424.82 -27668424.58 0.0294 0.0060  
 Moon -80466-12-25 19:11 J -27668424.95 -27668424.70 -27668424.46 0.0294 0.0054 \*  
 Moon -80464-01-07 21:49 J -27668045.83 -27668045.59 -27668045.34 0.0292 0.0059  
 Earth -80464-01-07 22:18 J -27668045.80 -27668045.57 -27668045.33 0.0292 0.0059 \*  
 Moon -80463-01-21 14:37 J -27667667.09 -27667666.89 -27667666.68 0.0289 0.0159  
 Earth -80463-01-21 17:59 J -27667666.94 -27667666.75 -27667666.55 0.0289 0.0167 \*  
 Moon -80462-02-04 00:56 J -27667288.57 -27667288.46 -27667288.34 0.0286 0.0247  
 Earth -80462-02-04 02:52 J -27667288.46 -27667288.38 -27667288.27 0.0286 0.0261 \*  
 Venus -80460-01-05 21:20 J -27666586.77 -27666586.61 -27666586.43 0.0280 0.0157  
 Venus -80460-08-23 00:56 J -27666357.55 -27666357.46 -27666357.34 0.0278 0.0238  
 Mercury -80459-04-20 01:11 J -27666117.48 -27666117.45 -27666117.41 0.0276 0.0265  
 Mercury -80459-07-17 11:59 J -27666029.10 -27666029.00 -27666028.89 0.0275 0.0166  
 Mercury -80459-10-13 23:01 J -27665940.67 -27665940.54 -27665940.41 0.0275 0.0067  
 Mercury -80458-01-10 10:04 J -27665852.22 -27665852.08 -27665851.95 0.0274 0.0033  
 Mercury -80458-04-08 20:52 J -27665763.74 -27665763.63 -27665763.51 0.0273 0.0132  
 Mercury -80458-07-06 08:08 J -27665675.23 -27665675.16 -27665675.09 0.0273 0.0231



Earth	-80453-05-18 21:35 J	-27663896.61	-27663896.60	-27663896.56	0.0265	0.0264
Earth	-80452-05-30 08:37 J	-27663520.29	-27663520.14	-27663519.96	0.0265	0.0192
Moon	-80452-05-30 12:13 J	-27663520.13	-27663519.99	-27663519.83	0.0265	0.0207 *
Mars	-80452-07-05 07:25 J	-27663484.50	-27663484.19	-27663483.87	0.0265	0.0070
Moon	-80451-06-10 22:47 J	-27663143.76	-27663143.55	-27663143.31	0.0266	0.0124
Earth	-80451-06-10 23:44 J	-27663143.72	-27663143.51	-27663143.28	0.0266	0.0113 *
Moon	-80450-06-22 17:01 J	-27662767.04	-27662766.79	-27662766.55	0.0267	0.0024
Earth	-80450-06-22 20:23 J	-27662766.90	-27662766.65	-27662766.41	0.0267	0.0027 *
Earth	-80449-07-03 23:16 J	-27662389.77	-27662389.53	-27662389.29	0.0269	0.0064
Moon	-80449-07-03 23:44 J	-27662389.74	-27662389.51	-27662389.28	0.0269	0.0077 *
Earth	-80448-07-16 10:04 J	-27662012.28	-27662012.08	-27662011.87	0.0271	0.0156
Moon	-80448-07-16 13:40 J	-27662012.11	-27662011.93	-27662011.73	0.0271	0.0173 *
Earth	-80447-07-29 05:59 J	-27661634.34	-27661634.25	-27661634.13	0.0274	0.0247
Moon	-80447-07-29 07:25 J	-27661634.27	-27661634.19	-27661634.09	0.0274	0.0255 *
Venus	-80445-09-13 02:52 J	-27660857.53	-27660857.38	-27660857.21	0.0280	0.0190
Venus	-80444-04-30 23:44 J	-27660627.61	-27660627.51	-27660627.40	0.0282	0.0247
Mercury	-80443-05-02 20:08 J	-27660260.81	-27660260.66	-27660260.50	0.0286	0.0161
Mercury	-80443-07-30 19:54 J	-27660171.86	-27660171.67	-27660171.49	0.0286	0.0004
Mercury	-80443-10-27 19:11 J	-27660082.85	-27660082.70	-27660082.55	0.0287	0.0156
Mars	-80438-08-30 00:42 J	-27658315.67	-27658315.47	-27658315.26	0.0295	0.0191
Moon	-80438-12-04 15:49 J	-27658219.00	-27658218.84	-27658218.68	0.0295	0.0221
Earth	-80438-12-04 19:25 J	-27658218.84	-27658218.69	-27658218.54	0.0295	0.0231 *
Moon	-80437-12-18 11:59 J	-27657839.22	-27657839.00	-27657838.78	0.0294	0.0109
Earth	-80437-12-18 13:40 J	-27657839.15	-27657838.93	-27657838.70	0.0294	0.0115 *
Earth	-80435-01-01 23:44 J	-27657459.75	-27657459.51	-27657459.26	0.0292	0.0008
Moon	-80435-01-02 01:11 J	-27657459.69	-27657459.45	-27657459.22	0.0292	0.0008 *
Earth	-80434-01-15 23:44 J	-27657080.72	-27657080.51	-27657080.28	0.0290	0.0119
Moon	-80434-01-16 03:20 J	-27657080.58	-27657080.36	-27657080.14	0.0290	0.0115 *
Earth	-80433-01-29 13:25 J	-27656702.09	-27656701.94	-27656701.78	0.0287	0.0220
Moon	-80433-01-29 15:49 J	-27656702.01	-27656701.84	-27656701.67	0.0287	0.0208 *

Venus -80431-07-19 00:28 J -27655800.67 -27655800.48 -27655800.29 0.0279 0.0107  
 Mercury -80430-12-04 14:23 J -27655296.99 -27655296.90 -27655296.81 0.0275 0.0197  
 Mercury -80429-03-02 01:11 J -27655208.57 -27655208.45 -27655208.32 0.0275 0.0098  
 Mercury -80429-05-29 12:13 J -27655120.13 -27655119.99 -27655119.86 0.0274 0.0007  
 Mercury -80429-08-25 23:01 J -27655031.66 -27655031.54 -27655031.41 0.0273 0.0101  
 Mercury -80429-11-22 10:04 J -27654943.17 -27654943.08 -27654942.99 0.0273 0.0200  
 Moon -80423-05-25 10:32 J -27652933.15 -27652933.06 -27652932.94 0.0266 0.0237  
 Earth -80423-05-25 14:08 J -27652933.03 -27652932.91 -27652932.77 0.0266 0.0223 \*  
 Earth -80422-06-06 03:06 J -27652556.57 -27652556.37 -27652556.16 0.0266 0.0147  
 Moon -80422-06-06 04:04 J -27652556.52 -27652556.33 -27652556.15 0.0266 0.0161 \*  
 Mars -80422-08-26 02:08 J -27652475.69 -27652475.41 -27652475.10 0.0266 0.0108  
 Earth -80421-06-16 21:06 J -27652179.86 -27652179.62 -27652179.38 0.0267 0.0063  
 Moon -80421-06-17 00:42 J -27652179.71 -27652179.47 -27652179.23 0.0267 0.0069 \*  
 Moon -80420-06-28 20:23 J -27651802.90 -27651802.65 -27651802.39 0.0268 0.0036  
 Earth -80420-06-28 21:06 J -27651802.87 -27651802.62 -27651802.37 0.0268 0.0025 \*  
 Moon -80419-07-11 00:42 J -27651425.68 -27651425.47 -27651425.25 0.0270 0.0133  
 Earth -80419-07-11 04:32 J -27651425.52 -27651425.31 -27651425.08 0.0270 0.0117 \*  
 Moon -80418-07-23 19:11 J -27651047.83 -27651047.70 -27651047.55 0.0273 0.0221  
 Earth -80418-07-23 20:52 J -27651047.78 -27651047.63 -27651047.46 0.0273 0.0208 \*  
 Venus -80415-03-26 09:35 J -27650071.29 -27650071.10 -27650070.91 0.0280 0.0128  
 Mercury -80414-09-19 19:11 J -27649528.82 -27649528.70 -27649528.56 0.0285 0.0202  
 Mercury -80414-12-17 18:56 J -27649439.89 -27649439.71 -27649439.53 0.0286 0.0043  
 Mercury -80413-03-15 18:28 J -27649350.90 -27649350.73 -27649350.57 0.0287 0.0116  
 Mercury -80413-06-12 17:30 J -27649261.82 -27649261.77 -27649261.71 0.0287 0.0273  
 Earth -80409-11-27 18:42 J -27647632.80 -27647632.72 -27647632.62 0.0295 0.0274  
 Moon -80409-11-27 22:18 J -27647632.67 -27647632.57 -27647632.44 0.0295 0.0261 \*  
 Mars -80408-10-17 14:23 J -27647309.16 -27647308.90 -27647308.63 0.0295 0.0011  
 Earth -80408-12-12 16:47 J -27647253.00 -27647252.80 -27647252.59 0.0295 0.0161  
 Moon -80408-12-12 18:28 J -27647252.94 -27647252.73 -27647252.50 0.0295 0.0152 \*  
 Moon -80407-12-27 05:44 J -27646873.51 -27646873.26 -27646873.01 0.0294 0.0038

Earth -80407-12-27 07:25 J -27646873.43 -27646873.19 -27646872.94 0.0294 0.0040 \*  
 Moon -80405-01-10 08:52 J -27646494.36 -27646494.13 -27646493.89 0.0292 0.0075  
 Earth -80405-01-10 12:42 J -27646494.20 -27646493.97 -27646493.73 0.0292 0.0078 \*  
 Moon -80404-01-23 05:01 J -27646115.47 -27646115.29 -27646115.10 0.0289 0.0178  
 Earth -80404-01-23 07:25 J -27646115.37 -27646115.19 -27646115.00 0.0289 0.0185 \*  
 Earth -80403-02-05 15:20 J -27645736.91 -27645736.86 -27645736.79 0.0286 0.0276  
 Moon -80403-02-05 17:01 J -27645736.86 -27645736.79 -27645736.69 0.0286 0.0263 \*  
 Venus -80401-01-29 09:06 J -27645014.33 -27645014.12 -27645013.92 0.0279 0.0038  
 Mercury -80400-04-22 17:59 J -27644564.83 -27644564.75 -27644564.66 0.0276 0.0215  
 Mercury -80400-07-20 05:01 J -27644476.41 -27644476.29 -27644476.17 0.0275 0.0116  
 Mercury -80400-10-16 15:49 J -27644387.97 -27644387.84 -27644387.71 0.0274 0.0017  
 Mercury -80399-01-13 02:52 J -27644299.51 -27644299.38 -27644299.25 0.0273 0.0083  
 Mercury -80399-04-11 13:54 J -27644211.02 -27644210.92 -27644210.82 0.0273 0.0182  
 Earth -80394-05-21 03:49 J -27642345.41 -27642345.34 -27642345.26 0.0265 0.0251  
 Moon -80394-05-21 06:56 J -27642345.25 -27642345.21 -27642345.13 0.0265 0.0257  
 Mars -80394-10-09 15:49 J -27642203.99 -27642203.84 -27642203.67 0.0265 0.0228  
 Moon -80393-05-31 14:08 J -27641969.07 -27641968.91 -27641968.73 0.0265 0.0193  
 Earth -80393-05-31 14:37 J -27641969.06 -27641968.89 -27641968.70 0.0265 0.0179 \*  
 Moon -80392-06-12 02:08 J -27641592.62 -27641592.41 -27641592.18 0.0266 0.0109  
 Earth -80392-06-12 06:13 J -27641592.47 -27641592.24 -27641592.02 0.0266 0.0098 \*  
 Moon -80391-06-24 02:37 J -27641215.63 -27641215.39 -27641215.15 0.0267 0.0008  
 Earth -80391-06-24 02:52 J -27641215.63 -27641215.38 -27641215.13 0.0267 0.0012 \*  
 Earth -80390-07-06 06:28 J -27640838.47 -27640838.23 -27640838.00 0.0269 0.0079  
 Moon -80390-07-06 10:04 J -27640838.31 -27640838.08 -27640837.85 0.0269 0.0094 \*  
 Earth -80389-07-17 17:59 J -27640460.93 -27640460.75 -27640460.55 0.0271 0.0172  
 Moon -80389-07-17 19:54 J -27640460.86 -27640460.67 -27640460.49 0.0271 0.0186 \*  
 Moon -80388-07-30 12:28 J -27640083.03 -27640082.98 -27640082.93 0.0274 0.0268  
 Earth -80388-07-30 15:06 J -27640082.94 -27640082.87 -27640082.79 0.0274 0.0261 \*  
 Venus -80386-10-06 17:01 J -27639285.00 -27639284.79 -27639284.57 0.0281 0.0066  
 Mercury -80384-02-05 18:13 J -27638796.83 -27638796.74 -27638796.64 0.0285 0.0244

Mercury -80384-05-05 17:59 J -27638707.92 -27638707.75 -27638707.57 0.0286 0.0085  
 Mercury -80384-08-02 17:30 J -27638618.95 -27638618.77 -27638618.59 0.0287 0.0074  
 Mercury -80384-10-30 16:47 J -27638529.91 -27638529.80 -27638529.70 0.0287 0.0232  
 Moon -80379-12-06 08:52 J -27636667.29 -27636667.13 -27636666.95 0.0295 0.0204  
 Earth -80379-12-06 10:18 J -27636667.24 -27636667.07 -27636666.90 0.0295 0.0213 \*  
 Mars -80378-12-05 09:49 J -27636303.27 -27636303.09 -27636302.89 0.0294 0.0207  
 Earth -80378-12-21 04:18 J -27636287.56 -27636287.32 -27636287.09 0.0294 0.0095  
 Moon -80378-12-21 06:13 J -27636287.46 -27636287.24 -27636287.01 0.0294 0.0092 \*  
 Earth -80376-01-03 13:25 J -27635908.18 -27635907.94 -27635907.69 0.0292 0.0025  
 Moon -80376-01-03 17:16 J -27635908.02 -27635907.78 -27635907.53 0.0292 0.0023 \*  
 Earth -80375-01-17 12:42 J -27635529.18 -27635528.97 -27635528.76 0.0290 0.0137  
 Moon -80375-01-17 14:37 J -27635529.10 -27635528.89 -27635528.66 0.0290 0.0131 \*  
 Moon -80374-01-30 23:30 J -27635150.68 -27635150.52 -27635150.37 0.0287 0.0222  
 Earth -80374-01-31 01:11 J -27635150.58 -27635150.45 -27635150.31 0.0287 0.0236 \*  
 Venus -80372-08-10 11:01 J -27634228.24 -27634228.04 -27634227.83 0.0279 0.0011  
 Mercury -80371-09-09 20:08 J -27633832.72 -27633832.66 -27633832.61 0.0276 0.0247  
 Mercury -80371-12-07 06:56 J -27633744.32 -27633744.21 -27633744.10 0.0275 0.0148  
 Mercury -80370-03-05 17:44 J -27633655.89 -27633655.76 -27633655.63 0.0274 0.0049  
 Mercury -80370-06-02 04:47 J -27633567.43 -27633567.30 -27633567.17 0.0274 0.0050  
 Mercury -80370-08-29 15:35 J -27633478.96 -27633478.85 -27633478.73 0.0273 0.0149  
 Mercury -80370-11-26 02:37 J -27633390.44 -27633390.39 -27633390.33 0.0272 0.0248  
 Earth -80364-05-26 18:28 J -27631381.87 -27631381.73 -27631381.58 0.0265 0.0211  
 Moon -80364-05-26 18:28 J -27631381.85 -27631381.73 -27631381.60 0.0265 0.0224 \*  
 Mars -80364-11-28 22:32 J -27631195.87 -27631195.56 -27631195.24 0.0266 0.0059  
 Earth -80363-06-07 07:25 J -27631005.39 -27631005.19 -27631004.97 0.0266 0.0133  
 Moon -80363-06-07 11:30 J -27631005.23 -27631005.02 -27631004.82 0.0266 0.0146 \*  
 Earth -80362-06-19 01:25 J -27630628.67 -27630628.44 -27630628.19 0.0267 0.0049  
 Moon -80362-06-19 02:08 J -27630628.65 -27630628.41 -27630628.15 0.0267 0.0051 \*  
 Moon -80361-06-29 22:18 J -27630251.81 -27630251.57 -27630251.33 0.0268 0.0053  
 Earth -80361-06-30 01:54 J -27630251.66 -27630251.42 -27630251.18 0.0268 0.0041 \*

Moon -80360-07-12 08:37 J -27629874.33 -27629874.14 -27629873.93 0.0270 0.0148  
 Earth -80360-07-12 09:49 J -27629874.30 -27629874.09 -27629873.87 0.0270 0.0132 \*  
 Earth -80359-07-25 02:37 J -27629496.52 -27629496.39 -27629496.24 0.0273 0.0223  
 Moon -80359-07-25 05:44 J -27629496.38 -27629496.26 -27629496.14 0.0273 0.0234 \*  
 Venus -80356-04-17 21:35 J -27628498.82 -27628498.60 -27628498.38 0.0281 0.0011  
 Mercury -80355-09-22 16:04 J -27627975.99 -27627975.83 -27627975.67 0.0286 0.0133  
 Mercury -80355-12-20 15:35 J -27627887.03 -27627886.85 -27627886.67 0.0286 0.0027  
 Mercury -80354-03-19 14:52 J -27627798.01 -27627797.88 -27627797.74 0.0287 0.0185  
 Earth -80350-11-30 06:13 J -27626081.35 -27626081.24 -27626081.12 0.0295 0.0259  
 Moon -80350-11-30 07:11 J -27626081.34 -27626081.20 -27626081.06 0.0295 0.0247 \*  
 Mars -80349-01-24 09:20 J -27626026.32 -27626026.11 -27626025.89 0.0295 0.0172  
 Moon -80349-12-14 01:54 J -27625701.64 -27625701.42 -27625701.19 0.0295 0.0137  
 Earth -80349-12-14 04:18 J -27625701.53 -27625701.32 -27625701.10 0.0295 0.0143 \*  
 Moon -80348-12-28 14:52 J -27625322.12 -27625321.88 -27625321.63 0.0294 0.0023  
 Earth -80348-12-28 18:28 J -27625321.97 -27625321.73 -27625321.48 0.0294 0.0023 \*  
 Moon -80346-01-11 21:35 J -27624942.82 -27624942.60 -27624942.38 0.0292 0.0091  
 Earth -80346-01-11 23:01 J -27624942.76 -27624942.54 -27624942.31 0.0292 0.0096 \*  
 Earth -80345-01-25 17:01 J -27624563.95 -27624563.79 -27624563.61 0.0289 0.0202  
 Moon -80345-01-25 18:56 J -27624563.88 -27624563.71 -27624563.53 0.0289 0.0192 \*  
 Moon -80344-02-07 03:35 J -27624185.40 -27624185.35 -27624185.28 0.0286 0.0276  
 Venus -80342-02-20 18:42 J -27623441.92 -27623441.72 -27623441.52 0.0279 0.0075  
 Mercury -80341-01-27 23:30 J -27623100.54 -27623100.52 -27623100.49 0.0276 0.0267  
 Mercury -80341-04-25 10:18 J -27623012.17 -27623012.07 -27623011.96 0.0275 0.0169  
 Mercury -80341-07-22 21:20 J -27622923.74 -27622923.61 -27622923.48 0.0275 0.0069  
 Mercury -80341-10-19 08:08 J -27622835.29 -27622835.16 -27622835.02 0.0274 0.0031  
 Mercury -80340-01-15 19:11 J -27622746.82 -27622746.70 -27622746.58 0.0273 0.0129  
 Mercury -80340-04-14 06:13 J -27622658.31 -27622658.24 -27622658.17 0.0272 0.0228  
 Earth -80335-05-22 07:11 J -27620794.29 -27620794.20 -27620794.09 0.0265 0.0241  
 Moon -80335-05-22 08:08 J -27620794.23 -27620794.16 -27620794.05 0.0265 0.0247 \*  
 Moon -80334-06-02 14:37 J -27620418.06 -27620417.89 -27620417.70 0.0265 0.0181

Earth -80334-06-02 18:28 J -27620417.92 -27620417.73 -27620417.54 0.0265 0.0166 \*  
 Mars -80333-01-20 07:40 J -27620186.45 -27620186.18 -27620185.88 0.0265 0.0130  
 Moon -80333-06-13 08:37 J -27620041.36 -27620041.14 -27620040.91 0.0266 0.0092  
 Earth -80333-06-13 09:35 J -27620041.33 -27620041.10 -27620040.87 0.0266 0.0085 \*  
 Earth -80332-06-25 06:28 J -27619664.48 -27619664.23 -27619663.98 0.0267 0.0003  
 Moon -80332-06-25 09:49 J -27619664.33 -27619664.09 -27619663.85 0.0267 0.0008 \*  
 Earth -80331-07-07 10:18 J -27619287.30 -27619287.07 -27619286.83 0.0269 0.0094  
 Moon -80331-07-07 11:30 J -27619287.24 -27619287.02 -27619286.77 0.0269 0.0108 \*  
 Moon -80330-07-19 19:11 J -27618909.86 -27618909.70 -27618909.51 0.0272 0.0199  
 Earth -80330-07-19 22:47 J -27618909.73 -27618909.55 -27618909.37 0.0272 0.0186 \*  
 Venus -80327-10-29 04:18 J -27617712.53 -27617712.32 -27617712.10 0.0281 0.0050  
 Mercury -80325-02-09 14:37 J -27617244.03 -27617243.89 -27617243.74 0.0286 0.0177  
 Mercury -80325-05-08 14:23 J -27617155.08 -27617154.90 -27617154.72 0.0286 0.0018  
 Mercury -80325-08-05 13:40 J -27617066.08 -27617065.93 -27617065.77 0.0287 0.0141  
 Moon -80321-11-22 21:35 J -27615495.60 -27615495.60 -27615495.59 0.0295 0.0295  
 Earth -80320-12-07 21:20 J -27615115.79 -27615115.61 -27615115.42 0.0295 0.0196  
 Moon -80320-12-07 23:59 J -27615115.68 -27615115.50 -27615115.31 0.0295 0.0188 \*  
 Mars -80319-03-13 12:13 J -27615020.25 -27615019.99 -27615019.72 0.0295 0.0029  
 Earth -80319-12-22 15:06 J -27614736.11 -27614735.87 -27614735.63 0.0294 0.0077  
 Moon -80319-12-22 18:28 J -27614735.97 -27614735.73 -27614735.49 0.0294 0.0073 \*  
 Earth -80317-01-05 23:59 J -27614356.74 -27614356.50 -27614356.26 0.0292 0.0043  
 Moon -80317-01-06 00:56 J -27614356.71 -27614356.46 -27614356.20 0.0292 0.0040 \*  
 Moon -80316-01-18 19:54 J -27613977.87 -27613977.67 -27613977.44 0.0289 0.0144  
 Earth -80316-01-18 22:32 J -27613977.76 -27613977.56 -27613977.35 0.0289 0.0155 \*  
 Moon -80315-02-01 06:56 J -27613599.34 -27613599.21 -27613599.07 0.0286 0.0237  
 Earth -80315-02-01 10:18 J -27613599.17 -27613599.07 -27613598.94 0.0286 0.0252 \*  
 Venus -80313-01-16 16:04 J -27612884.84 -27612884.83 -27612884.79 0.0280 0.0277  
 Venus -80313-09-01 20:23 J -27612655.83 -27612655.65 -27612655.46 0.0278 0.0121  
 Mercury -80312-09-12 12:13 J -27612280.07 -27612279.99 -27612279.90 0.0275 0.0202  
 Mercury -80312-12-09 23:16 J -27612191.66 -27612191.53 -27612191.41 0.0274 0.0103

Mercury -80311-03-08 10:04 J -27612103.21 -27612103.08 -27612102.95 0.0274 0.0004

Mercury -80311-06-04 20:52 J -27612014.75 -27612014.63 -27612014.50 0.0273 0.0096

Mercury -80311-09-01 07:54 J -27611926.26 -27611926.17 -27611926.07 0.0272 0.0195

Mars -80305-03-03 22:32 J -27609915.72 -27609915.56 -27609915.37 0.0265 0.0219

Earth -80305-05-27 20:23 J -27609830.80 -27609830.65 -27609830.48 0.0265 0.0199

Moon -80305-05-27 23:44 J -27609830.64 -27609830.51 -27609830.36 0.0265 0.0213 \*

Earth -80304-06-08 09:20 J -27609454.32 -27609454.11 -27609453.88 0.0266 0.0121

Moon -80304-06-08 10:18 J -27609454.29 -27609454.07 -27609453.85 0.0266 0.0130 \*

Moon -80303-06-19 23:59 J -27609077.75 -27609077.50 -27609077.25 0.0267 0.0033

Earth -80303-06-20 03:35 J -27609077.60 -27609077.35 -27609077.11 0.0267 0.0035 \*

Moon -80302-07-02 02:08 J -27608700.64 -27608700.41 -27608700.18 0.0268 0.0066

Earth -80302-07-02 03:49 J -27608700.59 -27608700.34 -27608700.10 0.0268 0.0055 \*

Earth -80301-07-13 11:44 J -27608323.21 -27608323.01 -27608322.79 0.0271 0.0147

Moon -80301-07-13 14:52 J -27608323.06 -27608322.88 -27608322.67 0.0271 0.0161 \*

Earth -80300-07-26 05:16 J -27607945.40 -27607945.28 -27607945.16 0.0273 0.0236

Moon -80300-07-26 08:08 J -27607945.26 -27607945.16 -27607945.04 0.0273 0.0245 \*

Venus -80297-05-10 07:11 J -27606926.40 -27606926.20 -27606925.99 0.0281 0.0098

Mercury -80296-06-28 11:44 J -27606512.11 -27606512.01 -27606511.90 0.0285 0.0231

Mercury -80296-09-25 11:30 J -27606423.20 -27606423.02 -27606422.84 0.0286 0.0072

Mercury -80296-12-23 11:01 J -27606334.21 -27606334.04 -27606333.86 0.0287 0.0088

Mercury -80295-03-22 10:18 J -27606245.16 -27606245.07 -27606244.98 0.0287 0.0245

Moon -80291-12-01 10:18 J -27604530.21 -27604530.07 -27604529.91 0.0296 0.0236

Earth -80291-12-01 13:40 J -27604530.05 -27604529.93 -27604529.78 0.0296 0.0246 \*

Moon -80290-12-16 08:23 J -27604150.36 -27604150.15 -27604149.92 0.0295 0.0121

Earth -80290-12-16 11:44 J -27604150.22 -27604150.01 -27604149.78 0.0295 0.0128 \*

Mars -80289-04-30 09:20 J -27604014.28 -27604014.11 -27604013.93 0.0295 0.0222

Moon -80289-12-30 01:25 J -27603770.68 -27603770.44 -27603770.21 0.0294 0.0007

Earth -80289-12-30 01:54 J -27603770.66 -27603770.42 -27603770.17 0.0294 0.0007 \*

Earth -80287-01-13 05:59 J -27603391.47 -27603391.25 -27603391.02 0.0291 0.0113

Moon -80287-01-13 08:52 J -27603391.35 -27603391.13 -27603390.91 0.0291 0.0104 \*

Earth -80286-01-26 23:30 J -27603012.67 -27603012.52 -27603012.35 0.0289 0.0217  
 Moon -80286-01-27 03:20 J -27603012.53 -27603012.36 -27603012.19 0.0289 0.0204 \*  
 Venus -80284-07-28 22:32 J -27602098.68 -27602098.56 -27602098.42 0.0281 0.0218  
 Venus -80283-03-15 02:37 J -27601869.54 -27601869.39 -27601869.23 0.0279 0.0181  
 Mercury -80282-01-30 15:20 J -27601547.93 -27601547.86 -27601547.78 0.0276 0.0225  
 Mercury -80282-04-29 02:23 J -27601459.52 -27601459.40 -27601459.28 0.0275 0.0125  
 Mercury -80282-07-26 13:11 J -27601371.08 -27601370.95 -27601370.81 0.0274 0.0027  
 Mercury -80282-10-23 00:13 J -27601282.62 -27601282.49 -27601282.36 0.0274 0.0073  
 Mercury -80281-01-19 11:16 J -27601194.14 -27601194.03 -27601193.93 0.0273 0.0172  
 Mercury -80281-04-16 22:04 J -27601105.58 -27601105.58 -27601105.56 0.0272 0.0271  
 Moon -80276-05-23 05:30 J -27599243.37 -27599243.27 -27599243.17 0.0265 0.0241  
 Earth -80276-05-23 08:23 J -27599243.25 -27599243.15 -27599243.02 0.0265 0.0231 \*  
 Mars -80275-04-24 21:35 J -27598906.92 -27598906.60 -27598906.28 0.0265 0.0037  
 Moon -80275-06-03 18:13 J -27598866.92 -27598866.74 -27598866.56 0.0265 0.0168  
 Earth -80275-06-03 19:25 J -27598866.88 -27598866.69 -27598866.49 0.0265 0.0155 \*  
 Earth -80274-06-15 10:32 J -27598490.29 -27598490.06 -27598489.82 0.0266 0.0073  
 Moon -80274-06-15 14:08 J -27598490.14 -27598489.91 -27598489.68 0.0266 0.0076 \*  
 Earth -80273-06-26 07:40 J -27598113.43 -27598113.18 -27598112.94 0.0267 0.0016  
 Moon -80273-06-26 09:49 J -27598113.34 -27598113.09 -27598112.83 0.0267 0.0024 \*  
 Moon -80272-07-08 08:52 J -27597736.35 -27597736.13 -27597735.90 0.0269 0.0121  
 Earth -80272-07-08 11:44 J -27597736.23 -27597736.01 -27597735.78 0.0269 0.0108 \*  
 Moon -80271-07-20 21:35 J -27597358.75 -27597358.60 -27597358.44 0.0272 0.0210  
 Earth -80271-07-21 00:28 J -27597358.64 -27597358.48 -27597358.31 0.0272 0.0199 \*  
 Venus -80268-04-04 17:16 J -27596369.81 -27596369.78 -27596369.75 0.0280 0.0276  
 Venus -80268-11-20 13:25 J -27596140.11 -27596139.94 -27596139.75 0.0282 0.0158  
 Mercury -80267-11-15 10:04 J -27595780.11 -27595780.08 -27595780.03 0.0285 0.0277  
 Mercury -80266-02-12 10:04 J -27595691.25 -27595691.08 -27595690.91 0.0286 0.0117  
 Mercury -80266-05-12 09:35 J -27595602.28 -27595602.10 -27595601.92 0.0287 0.0042  
 Mercury -80266-08-09 08:52 J -27595513.25 -27595513.13 -27595513.00 0.0287 0.0201  
 Earth -80262-11-25 03:35 J -27593944.36 -27593944.35 -27593944.31 0.0295 0.0294



Moon	-80262-11-25 07:40 J	-27593944.23	-27593944.18	-27593944.11	0.0295	0.0284
Mars	-80261-06-19 00:28 J	-27593737.70	-27593737.48	-27593737.24	0.0295	0.0158
Earth	-80261-12-09 04:04 J	-27593564.52	-27593564.33	-27593564.13	0.0295	0.0181
Moon	-80261-12-09 07:11 J	-27593564.39	-27593564.20	-27593563.98	0.0295	0.0174 *
Earth	-80260-12-23 21:35 J	-27593184.84	-27593184.60	-27593184.36	0.0294	0.0061
Moon	-80260-12-23 21:49 J	-27593184.83	-27593184.59	-27593184.33	0.0294	0.0059 *
Moon	-80258-01-07 03:06 J	-27592805.61	-27592805.37	-27592805.12	0.0292	0.0052
Earth	-80258-01-07 06:13 J	-27592805.48	-27592805.24	-27592805.00	0.0292	0.0059 *
Moon	-80257-01-21 01:11 J	-27592426.64	-27592426.45	-27592426.24	0.0289	0.0158
Earth	-80257-01-21 04:32 J	-27592426.50	-27592426.31	-27592426.11	0.0289	0.0170 *
Moon	-80256-02-02 15:35 J	-27592047.95	-27592047.85	-27592047.73	0.0286	0.0251
Earth	-80256-02-02 15:49 J	-27592047.92	-27592047.84	-27592047.74	0.0286	0.0265 *
Venus	-80254-02-08 00:13 J	-27591312.65	-27591312.49	-27591312.32	0.0280	0.0171
Venus	-80254-09-25 03:49 J	-27591083.45	-27591083.34	-27591083.21	0.0278	0.0225
Mercury	-80253-06-18 17:16 J	-27590815.82	-27590815.78	-27590815.73	0.0275	0.0258
Mercury	-80253-09-15 04:04 J	-27590727.43	-27590727.33	-27590727.22	0.0275	0.0160
Mercury	-80253-12-12 15:06 J	-27590639.00	-27590638.87	-27590638.74	0.0274	0.0061
Mercury	-80252-03-11 01:54 J	-27590550.55	-27590550.42	-27590550.29	0.0273	0.0038
Mercury	-80252-06-07 12:42 J	-27590462.08	-27590461.97	-27590461.85	0.0273	0.0138
Mercury	-80252-09-03 23:44 J	-27590373.57	-27590373.51	-27590373.44	0.0272	0.0236
Earth	-80247-05-18 11:30 J	-27588656.05	-27588656.02	-27588655.98	0.0265	0.0261
Earth	-80246-05-29 20:23 J	-27588279.81	-27588279.65	-27588279.47	0.0265	0.0189
Moon	-80246-05-29 22:32 J	-27588279.72	-27588279.56	-27588279.40	0.0265	0.0202 *
Moon	-80245-06-09 05:44 J	-27587903.48	-27587903.26	-27587903.03	0.0265	0.0115
Earth	-80245-06-09 09:20 J	-27587903.33	-27587903.11	-27587902.89	0.0265	0.0109 *
Mars	-80245-06-14 03:49 J	-27587898.62	-27587898.34	-27587898.06	0.0266	0.0135
Moon	-80244-06-21 00:56 J	-27587526.70	-27587526.46	-27587526.22	0.0267	0.0017
Earth	-80244-06-21 03:06 J	-27587526.62	-27587526.37	-27587526.13	0.0267	0.0023 *
Earth	-80243-07-03 03:06 J	-27587149.61	-27587149.37	-27587149.13	0.0268	0.0068
Moon	-80243-07-03 05:44 J	-27587149.49	-27587149.26	-27587149.03	0.0268	0.0082 *

Earth -80242-07-15 11:16 J -27586772.22 -27586772.03 -27586771.82 0.0271 0.0159  
 Moon -80242-07-15 13:40 J -27586772.11 -27586771.93 -27586771.72 0.0271 0.0172 \*  
 Moon -80241-07-27 02:37 J -27586394.48 -27586394.39 -27586394.28 0.0273 0.0252  
 Earth -80241-07-27 04:32 J -27586394.40 -27586394.31 -27586394.20 0.0273 0.0249 \*  
 Venus -80239-10-15 17:59 J -27585583.86 -27585583.75 -27585583.63 0.0280 0.0236  
 Venus -80238-06-02 14:37 J -27585354.04 -27585353.89 -27585353.73 0.0282 0.0200  
 Mercury -80237-07-01 05:59 J -27584959.39 -27584959.25 -27584959.10 0.0285 0.0178  
 Mercury -80237-09-28 05:44 J -27584870.44 -27584870.26 -27584870.07 0.0286 0.0019  
 Mercury -80237-12-26 05:16 J -27584781.44 -27584781.28 -27584781.12 0.0287 0.0141  
 Moon -80232-12-02 14:52 J -27582979.03 -27582978.88 -27582978.73 0.0296 0.0228  
 Earth -80232-12-02 16:47 J -27582978.93 -27582978.80 -27582978.63 0.0296 0.0234 \*  
 Mars -80231-08-06 23:16 J -27582731.79 -27582731.53 -27582731.26 0.0296 0.0040  
 Earth -80231-12-17 15:06 J -27582599.09 -27582598.87 -27582598.63 0.0295 0.0114  
 Moon -80231-12-17 15:35 J -27582599.07 -27582598.85 -27582598.63 0.0295 0.0111 \*  
 Earth -80229-01-01 05:30 J -27582219.52 -27582219.27 -27582219.03 0.0294 0.0010  
 Moon -80229-01-01 08:37 J -27582219.38 -27582219.14 -27582218.90 0.0294 0.0008 \*  
 Earth -80228-01-14 09:20 J -27581840.32 -27581840.11 -27581839.88 0.0291 0.0128  
 Moon -80228-01-14 12:28 J -27581840.20 -27581839.98 -27581839.75 0.0291 0.0117 \*  
 Moon -80227-01-28 02:23 J -27581461.56 -27581461.40 -27581461.23 0.0289 0.0215  
 Earth -80227-01-28 02:52 J -27581461.52 -27581461.38 -27581461.23 0.0289 0.0231 \*  
 Venus -80225-08-20 05:30 J -27580526.45 -27580526.27 -27580526.08 0.0280 0.0115  
 Mercury -80223-02-02 07:11 J -27579995.30 -27579995.20 -27579995.11 0.0276 0.0185  
 Mercury -80223-05-01 17:59 J -27579906.88 -27579906.75 -27579906.63 0.0275 0.0086  
 Mercury -80223-07-29 04:47 J -27579818.43 -27579818.30 -27579818.16 0.0274 0.0015  
 Mercury -80223-10-25 15:49 J -27579729.96 -27579729.84 -27579729.72 0.0273 0.0113  
 Mercury -80222-01-22 02:52 J -27579641.47 -27579641.38 -27579641.30 0.0273 0.0212  
 Moon -80217-05-24 05:16 J -27577692.38 -27577692.28 -27577692.16 0.0264 0.0234  
 Earth -80217-05-24 07:40 J -27577692.30 -27577692.18 -27577692.03 0.0264 0.0221 \*  
 Mars -80217-07-28 16:32 J -27577627.01 -27577626.81 -27577626.59 0.0264 0.0199  
 Earth -80216-06-04 18:42 J -27577315.92 -27577315.72 -27577315.52 0.0265 0.0144

Moon -80216-06-04 21:20 J -27577315.80 -27577315.61 -27577315.41 0.0265 0.0156 \*  
 Earth -80215-06-16 09:35 J -27576939.33 -27576939.10 -27576938.86 0.0266 0.0061  
 Moon -80215-06-16 11:44 J -27576939.25 -27576939.01 -27576938.76 0.0266 0.0060 \*  
 Moon -80214-06-28 03:49 J -27576562.59 -27576562.34 -27576562.09 0.0267 0.0040  
 Earth -80214-06-28 06:28 J -27576562.47 -27576562.23 -27576561.98 0.0267 0.0028 \*  
 Moon -80213-07-09 07:40 J -27576185.38 -27576185.18 -27576184.96 0.0269 0.0134  
 Earth -80213-07-09 10:47 J -27576185.28 -27576185.05 -27576184.83 0.0269 0.0119 \*  
 Earth -80212-07-21 23:16 J -27575807.68 -27575807.53 -27575807.37 0.0272 0.0211  
 Moon -80212-07-22 00:56 J -27575807.59 -27575807.46 -27575807.30 0.0272 0.0218 \*  
 Venus -80209-04-26 23:59 J -27574797.66 -27574797.50 -27574797.32 0.0280 0.0178  
 Venus -80209-12-12 20:37 J -27574567.71 -27574567.64 -27574567.54 0.0282 0.0259  
 Mercury -80208-11-18 04:18 J -27574227.42 -27574227.32 -27574227.20 0.0285 0.0225  
 Mercury -80207-02-15 04:18 J -27574138.50 -27574138.32 -27574138.14 0.0286 0.0065  
 Mercury -80207-05-15 03:35 J -27574049.52 -27574049.35 -27574049.17 0.0287 0.0095  
 Mercury -80207-08-12 02:52 J -27573960.46 -27573960.38 -27573960.29 0.0288 0.0253  
 Earth -80203-11-26 06:56 J -27572393.28 -27572393.21 -27572393.13 0.0296 0.0282  
 Moon -80203-11-26 08:23 J -27572393.24 -27572393.15 -27572393.06 0.0296 0.0276 \*  
 Moon -80202-12-11 05:59 J -27572013.46 -27572013.25 -27572013.04 0.0295 0.0165  
 Earth -80202-12-11 07:25 J -27572013.39 -27572013.19 -27572012.98 0.0295 0.0168 \*  
 Mars -80201-09-23 18:28 J -27571725.88 -27571725.73 -27571725.56 0.0295 0.0233  
 Moon -80201-12-24 21:35 J -27571633.84 -27571633.60 -27571633.35 0.0294 0.0047  
 Earth -80201-12-25 01:11 J -27571633.70 -27571633.45 -27571633.21 0.0294 0.0046 \*  
 Moon -80199-01-08 06:42 J -27571254.45 -27571254.22 -27571253.99 0.0292 0.0068  
 Earth -80199-01-08 09:20 J -27571254.34 -27571254.11 -27571253.87 0.0292 0.0075 \*  
 Earth -80198-01-22 07:25 J -27570875.37 -27570875.19 -27570875.00 0.0289 0.0185  
 Moon -80198-01-22 08:23 J -27570875.33 -27570875.15 -27570874.96 0.0289 0.0171 \*  
 Earth -80197-02-04 18:28 J -27570496.77 -27570496.73 -27570496.66 0.0286 0.0278  
 Moon -80197-02-04 22:04 J -27570496.66 -27570496.58 -27570496.47 0.0286 0.0262 \*  
 Venus -80195-03-02 06:56 J -27569740.41 -27569740.21 -27569740.01 0.0279 0.0070  
 Mercury -80194-06-22 08:52 J -27569263.21 -27569263.13 -27569263.06 0.0275 0.0220

Mercury -80194-09-18 19:40 J -27569174.80 -27569174.68 -27569174.56 0.0274 0.0121  
 Mercury -80194-12-16 06:28 J -27569086.36 -27569086.23 -27569086.10 0.0274 0.0022  
 Mercury -80193-03-13 17:16 J -27568997.90 -27568997.78 -27568997.65 0.0273 0.0078  
 Mercury -80193-06-10 04:18 J -27568909.42 -27568909.32 -27568909.22 0.0272 0.0176  
 Earth -80188-05-19 10:04 J -27567105.14 -27567105.08 -27567105.00 0.0265 0.0253  
 Moon -80188-05-19 12:28 J -27567104.99 -27567104.98 -27567104.93 0.0265 0.0263  
 Moon -80187-05-30 16:32 J -27566728.98 -27566728.81 -27566728.64 0.0265 0.0193  
 Earth -80187-05-30 19:11 J -27566728.88 -27566728.70 -27566728.52 0.0265 0.0179 \*  
 Mars -80187-09-17 12:28 J -27566619.30 -27566618.98 -27566618.65 0.0265 0.0033  
 Moon -80186-06-11 05:16 J -27566352.49 -27566352.28 -27566352.05 0.0265 0.0102  
 Earth -80186-06-11 07:25 J -27566352.41 -27566352.19 -27566351.96 0.0265 0.0098 \*  
 Earth -80185-06-22 00:56 J -27565975.71 -27565975.46 -27565975.21 0.0266 0.0011  
 Moon -80185-06-22 03:49 J -27565975.58 -27565975.34 -27565975.10 0.0266 0.0003 \*  
 Earth -80184-07-04 00:56 J -27565598.69 -27565598.46 -27565598.22 0.0268 0.0080  
 Moon -80184-07-04 04:18 J -27565598.56 -27565598.32 -27565598.09 0.0268 0.0095 \*  
 Moon -80183-07-16 06:56 J -27565221.39 -27565221.21 -27565221.00 0.0270 0.0180  
 Earth -80183-07-16 09:06 J -27565221.30 -27565221.12 -27565220.92 0.0270 0.0172 \*  
 Moon -80182-07-28 22:32 J -27564843.62 -27564843.56 -27564843.47 0.0273 0.0260  
 Earth -80182-07-29 02:37 J -27564843.46 -27564843.39 -27564843.32 0.0273 0.0261  
 Venus -80180-11-06 23:59 J -27564011.69 -27564011.50 -27564011.32 0.0280 0.0142  
 Mercury -80178-07-04 23:44 J -27563406.67 -27563406.51 -27563406.35 0.0286 0.0130  
 Mercury -80178-10-01 23:16 J -27563317.71 -27563317.53 -27563317.34 0.0286 0.0031  
 Mercury -80178-12-29 22:32 J -27563228.69 -27563228.56 -27563228.41 0.0287 0.0189  
 Mars -80173-11-11 23:30 J -27561449.74 -27561449.52 -27561449.28 0.0296 0.0152  
 Earth -80173-12-03 17:01 J -27561427.94 -27561427.79 -27561427.62 0.0296 0.0223  
 Moon -80173-12-03 19:40 J -27561427.83 -27561427.68 -27561427.52 0.0296 0.0222 \*  
 Earth -80172-12-18 15:20 J -27561048.09 -27561047.86 -27561047.63 0.0295 0.0101  
 Moon -80172-12-18 19:11 J -27561047.92 -27561047.70 -27561047.47 0.0295 0.0102 \*  
 Earth -80170-01-02 05:44 J -27560668.51 -27560668.26 -27560668.02 0.0294 0.0023  
 Moon -80170-01-02 08:23 J -27560668.40 -27560668.15 -27560667.90 0.0294 0.0018 \*

Moon -80169-01-16 08:37 J -27560289.36 -27560289.14 -27560288.91 0.0292 0.0128  
 Earth -80169-01-16 09:49 J -27560289.30 -27560289.09 -27560288.87 0.0292 0.0140 \*  
 Moon -80168-01-28 23:30 J -27559910.67 -27559910.52 -27559910.37 0.0289 0.0226  
 Earth -80168-01-29 03:20 J -27559910.49 -27559910.36 -27559910.23 0.0289 0.0243 \*  
 Venus -80166-09-12 10:47 J -27558954.25 -27558954.05 -27558953.84 0.0280 0.0018  
 Mercury -80165-11-08 11:16 J -27558531.08 -27558531.03 -27558530.97 0.0276 0.0248  
 Mercury -80164-02-04 22:18 J -27558442.68 -27558442.57 -27558442.46 0.0275 0.0148  
 Mercury -80164-05-04 09:06 J -27558354.25 -27558354.12 -27558353.99 0.0275 0.0049  
 Mercury -80164-07-31 20:08 J -27558265.79 -27558265.66 -27558265.53 0.0274 0.0051  
 Mercury -80164-10-28 06:56 J -27558177.32 -27558177.21 -27558177.09 0.0273 0.0150  
 Mercury -80163-01-24 17:59 J -27558088.80 -27558088.75 -27558088.69 0.0273 0.0249  
 Earth -80158-05-26 05:44 J -27556141.39 -27556141.26 -27556141.11 0.0264 0.0212  
 Moon -80158-05-26 08:08 J -27556141.27 -27556141.16 -27556141.04 0.0264 0.0227 \*  
 Earth -80157-06-05 16:18 J -27555765.02 -27555764.82 -27555764.60 0.0264 0.0135  
 Moon -80157-06-05 19:11 J -27555764.90 -27555764.70 -27555764.48 0.0264 0.0146 \*  
 Mars -80157-11-07 14:08 J -27555610.16 -27555609.91 -27555609.63 0.0265 0.0154  
 Moon -80156-06-17 04:47 J -27555388.55 -27555388.30 -27555388.05 0.0265 0.0044  
 Earth -80156-06-17 07:25 J -27555388.43 -27555388.19 -27555387.95 0.0265 0.0050 \*  
 Moon -80155-06-29 00:42 J -27555011.70 -27555011.47 -27555011.22 0.0267 0.0054  
 Earth -80155-06-29 04:04 J -27555011.58 -27555011.33 -27555011.09 0.0267 0.0039 \*  
 Earth -80154-07-11 07:54 J -27554634.38 -27554634.17 -27554633.95 0.0269 0.0131  
 Moon -80154-07-11 09:20 J -27554634.31 -27554634.11 -27554633.90 0.0269 0.0144 \*  
 Earth -80153-07-22 20:37 J -27554256.78 -27554256.64 -27554256.49 0.0271 0.0222  
 Moon -80153-07-23 00:13 J -27554256.63 -27554256.49 -27554256.35 0.0271 0.0225 \*  
 Venus -80150-05-20 05:44 J -27553225.46 -27553225.26 -27553225.04 0.0280 0.0083  
 Mercury -80149-11-20 21:49 J -27552674.73 -27552674.59 -27552674.44 0.0285 0.0177  
 Mercury -80148-02-17 21:35 J -27552585.78 -27552585.60 -27552585.42 0.0286 0.0017  
 Mercury -80148-05-17 20:52 J -27552496.78 -27552496.63 -27552496.46 0.0287 0.0142  
 Moon -80144-11-27 03:35 J -27550842.45 -27550842.35 -27550842.26 0.0296 0.0272  
 Earth -80144-11-27 06:28 J -27550842.31 -27550842.23 -27550842.12 0.0296 0.0272 \*

Moon -80143-12-12 03:35 J -27550462.55 -27550462.35 -27550462.14 0.0296 0.0158  
 Earth -80143-12-12 07:40 J -27550462.39 -27550462.18 -27550461.97 0.0296 0.0155 \*  
 Mars -80143-12-31 02:23 J -27550443.66 -27550443.40 -27550443.13 0.0296 0.0047  
 Moon -80142-12-26 23:16 J -27550082.77 -27550082.53 -27550082.30 0.0294 0.0037  
 Earth -80142-12-27 01:11 J -27550082.69 -27550082.45 -27550082.20 0.0294 0.0032 \*  
 Earth -80140-01-09 09:35 J -27549703.33 -27549703.10 -27549702.86 0.0292 0.0089  
 Moon -80140-01-09 11:01 J -27549703.26 -27549703.04 -27549702.81 0.0292 0.0079 \*  
 Earth -80139-01-23 07:40 J -27549324.35 -27549324.18 -27549324.00 0.0290 0.0198  
 Moon -80139-01-23 11:16 J -27549324.21 -27549324.03 -27549323.84 0.0290 0.0182 \*  
 Moon -80138-02-05 20:08 J -27548945.71 -27548945.66 -27548945.57 0.0286 0.0274  
 Venus -80136-03-24 12:13 J -27548168.19 -27548167.99 -27548167.78 0.0279 0.0028  
 Mercury -80135-06-24 23:59 J -27547710.60 -27547710.50 -27547710.40 0.0275 0.0183  
 Mercury -80135-09-21 10:47 J -27547622.17 -27547622.05 -27547621.92 0.0274 0.0084  
 Mercury -80135-12-18 21:49 J -27547533.73 -27547533.59 -27547533.46 0.0274 0.0017  
 Mercury -80134-03-17 08:37 J -27547445.26 -27547445.14 -27547445.02 0.0273 0.0115  
 Mercury -80134-06-13 19:40 J -27547356.76 -27547356.68 -27547356.60 0.0272 0.0213  
 Moon -80129-05-20 05:44 J -27545554.30 -27545554.26 -27545554.19 0.0264 0.0258  
 Earth -80129-05-20 08:23 J -27545554.23 -27545554.15 -27545554.05 0.0264 0.0245 \*  
 Mars -80129-12-21 05:16 J -27545339.48 -27545339.28 -27545339.04 0.0264 0.0194  
 Moon -80128-05-31 13:54 J -27545178.09 -27545177.92 -27545177.75 0.0264 0.0184  
 Earth -80128-05-31 17:01 J -27545177.97 -27545177.79 -27545177.60 0.0264 0.0170 \*  
 Earth -80127-06-12 05:16 J -27544801.51 -27544801.28 -27544801.05 0.0265 0.0087  
 Moon -80127-06-12 07:11 J -27544801.42 -27544801.20 -27544800.97 0.0265 0.0088 \*  
 Earth -80126-06-23 22:18 J -27544424.82 -27544424.57 -27544424.32 0.0266 0.0001  
 Moon -80126-06-24 01:11 J -27544424.70 -27544424.45 -27544424.20 0.0266 0.0013 \*  
 Moon -80125-07-04 20:23 J -27544047.87 -27544047.65 -27544047.40 0.0268 0.0106  
 Earth -80125-07-04 22:18 J -27544047.80 -27544047.57 -27544047.34 0.0268 0.0091 \*  
 Moon -80124-07-17 02:52 J -27543670.56 -27543670.38 -27543670.21 0.0270 0.0190  
 Earth -80124-07-17 05:59 J -27543670.42 -27543670.25 -27543670.06 0.0270 0.0183 \*  
 Earth -80123-07-29 23:01 J -27543292.56 -27543292.54 -27543292.50 0.0273 0.0271

Moon -80123-07-29 23:44 J -27543292.56 -27543292.51 -27543292.46 0.0273 0.0266 \*  
 Venus -80121-11-29 04:47 J -27542439.51 -27542439.30 -27542439.08 0.0280 0.0050  
 Mercury -80119-04-09 16:47 J -27541942.89 -27541942.80 -27541942.70 0.0285 0.0245  
 Mercury -80119-07-07 16:47 J -27541853.98 -27541853.80 -27541853.62 0.0286 0.0085  
 Mercury -80119-10-04 16:18 J -27541765.00 -27541764.82 -27541764.64 0.0286 0.0075  
 Mercury -80118-01-01 15:35 J -27541675.95 -27541675.85 -27541675.74 0.0287 0.0233  
 Earth -80114-12-05 15:20 J -27539877.03 -27539876.86 -27539876.68 0.0296 0.0212  
 Moon -80114-12-05 18:42 J -27539876.89 -27539876.72 -27539876.55 0.0296 0.0215 \*  
 Earth -80113-12-19 13:54 J -27539497.15 -27539496.92 -27539496.69 0.0295 0.0090  
 Moon -80113-12-19 14:52 J -27539497.12 -27539496.88 -27539496.64 0.0295 0.0096 \*  
 Mars -80112-02-16 12:56 J -27539438.11 -27539437.96 -27539437.80 0.0295 0.0238  
 Moon -80111-01-03 02:08 J -27539117.66 -27539117.41 -27539117.16 0.0294 0.0025  
 Earth -80111-01-03 04:04 J -27539117.57 -27539117.33 -27539117.08 0.0294 0.0035 \*  
 Moon -80110-01-17 05:01 J -27538738.50 -27538738.29 -27538738.07 0.0292 0.0138  
 Earth -80110-01-17 08:23 J -27538738.35 -27538738.15 -27538737.93 0.0292 0.0153 \*  
 Moon -80109-01-31 00:42 J -27538359.59 -27538359.47 -27538359.33 0.0289 0.0240  
 Earth -80109-01-31 01:40 J -27538359.53 -27538359.43 -27538359.30 0.0289 0.0255 \*  
 Venus -80107-10-04 15:06 J -27537382.06 -27537381.87 -27537381.66 0.0280 0.0077  
 Mercury -80106-11-12 02:23 J -27536978.48 -27536978.40 -27536978.32 0.0276 0.0213  
 Mercury -80105-02-08 13:11 J -27536890.07 -27536889.95 -27536889.83 0.0275 0.0114  
 Mercury -80105-05-07 00:13 J -27536801.62 -27536801.49 -27536801.36 0.0275 0.0014  
 Mercury -80105-08-03 11:01 J -27536713.16 -27536713.04 -27536712.91 0.0274 0.0086  
 Mercury -80105-10-30 22:04 J -27536624.68 -27536624.58 -27536624.48 0.0273 0.0185  
 Earth -80099-05-27 03:06 J -27534590.51 -27534590.37 -27534590.20 0.0264 0.0205  
 Moon -80099-05-27 06:42 J -27534590.35 -27534590.22 -27534590.08 0.0264 0.0219 \*  
 Mars -80098-02-10 22:04 J -27534330.90 -27534330.58 -27534330.26 0.0264 0.0013  
 Moon -80098-06-07 12:13 J -27534214.19 -27534213.99 -27534213.76 0.0264 0.0133  
 Earth -80098-06-07 14:08 J -27534214.13 -27534213.91 -27534213.70 0.0264 0.0125 \*  
 Moon -80097-06-18 01:54 J -27533837.66 -27533837.42 -27533837.18 0.0265 0.0032  
 Earth -80097-06-18 04:47 J -27533837.54 -27533837.30 -27533837.05 0.0265 0.0040 \*

Earth -80096-06-30 01:25 J -27533460.68 -27533460.44 -27533460.20 0.0267 0.0050  
 Moon -80096-06-30 02:52 J -27533460.61 -27533460.38 -27533460.14 0.0267 0.0065 \*  
 Earth -80095-07-12 05:01 J -27533083.49 -27533083.29 -27533083.07 0.0269 0.0142  
 Moon -80095-07-12 09:06 J -27533083.33 -27533083.12 -27533082.92 0.0269 0.0154 \*  
 Moon -80094-07-24 17:16 J -27532705.90 -27532705.78 -27532705.63 0.0271 0.0232  
 Earth -80094-07-24 17:30 J -27532705.88 -27532705.77 -27532705.62 0.0271 0.0233 \*  
 Venus -80091-06-11 11:30 J -27531653.24 -27531653.02 -27531652.80 0.0281 0.0012  
 Mercury -80090-11-24 15:20 J -27531122.03 -27531121.86 -27531121.70 0.0286 0.0130  
 Mercury -80089-02-21 14:52 J -27531033.06 -27531032.88 -27531032.70 0.0286 0.0030  
 Mercury -80089-05-20 14:23 J -27530944.04 -27530943.90 -27530943.77 0.0287 0.0189  
 Moon -80085-11-28 03:06 J -27529291.47 -27529291.37 -27529291.26 0.0296 0.0265  
 Earth -80085-11-28 05:30 J -27529291.37 -27529291.27 -27529291.15 0.0296 0.0262 \*  
 Mars -80084-04-07 00:13 J -27529161.71 -27529161.49 -27529161.25 0.0296 0.0146  
 Earth -80084-12-13 06:13 J -27528911.45 -27528911.24 -27528911.02 0.0296 0.0144  
 Moon -80084-12-13 06:28 J -27528911.43 -27528911.23 -27528911.02 0.0296 0.0151 \*  
 Earth -80083-12-28 00:13 J -27528531.73 -27528531.49 -27528531.24 0.0295 0.0019  
 Moon -80083-12-28 02:52 J -27528531.61 -27528531.38 -27528531.14 0.0295 0.0030 \*  
 Earth -80081-01-11 08:37 J -27528152.36 -27528152.14 -27528151.90 0.0293 0.0102  
 Moon -80081-01-11 12:28 J -27528152.21 -27528151.98 -27528151.75 0.0293 0.0089 \*  
 Earth -80080-01-24 06:42 J -27527773.37 -27527773.22 -27527773.04 0.0290 0.0210  
 Moon -80080-01-24 07:40 J -27527773.35 -27527773.18 -27527772.98 0.0290 0.0195 \*  
 Venus -80078-08-30 12:13 J -27526825.00 -27526824.99 -27526824.98 0.0281 0.0280  
 Venus -80077-04-15 16:47 J -27526595.98 -27526595.80 -27526595.61 0.0279 0.0122  
 Mercury -80076-03-31 04:04 J -27526246.38 -27526246.33 -27526246.27 0.0276 0.0247  
 Mercury -80076-06-27 15:06 J -27526157.98 -27526157.87 -27526157.76 0.0275 0.0147  
 Mercury -80076-09-24 01:54 J -27526069.55 -27526069.42 -27526069.29 0.0274 0.0048  
 Mercury -80076-12-21 12:42 J -27525981.10 -27525980.97 -27525980.83 0.0273 0.0053  
 Mercury -80075-03-19 23:44 J -27525892.62 -27525892.51 -27525892.40 0.0273 0.0151  
 Mercury -80075-06-16 10:47 J -27525804.10 -27525804.05 -27525804.00 0.0272 0.0249  
 Moon -80070-05-22 03:20 J -27524003.42 -27524003.36 -27524003.28 0.0264 0.0252



Earth	-80070-05-22 06:28 J	-27524003.33	-27524003.23	-27524003.11	0.0264	0.0237	*
Earth	-80069-06-01 14:52 J	-27523627.06	-27523626.88	-27523626.68	0.0264	0.0161	
Moon	-80069-06-01 16:18 J	-27523626.99	-27523626.82	-27523626.63	0.0264	0.0173	*
Mars	-80068-04-02 00:13 J	-27523322.73	-27523322.49	-27523322.21	0.0265	0.0158	
Earth	-80068-06-13 02:52 J	-27523250.61	-27523250.38	-27523250.14	0.0265	0.0078	
Moon	-80068-06-13 06:28 J	-27523250.47	-27523250.23	-27523249.99	0.0265	0.0077	*
Moon	-80067-06-24 18:13 J	-27522873.99	-27522873.74	-27522873.48	0.0266	0.0025	
Earth	-80067-06-24 20:08 J	-27522873.91	-27522873.66	-27522873.42	0.0266	0.0011	*
Moon	-80066-07-06 16:04 J	-27522497.05	-27522496.83	-27522496.60	0.0268	0.0116	
Earth	-80066-07-06 19:40 J	-27522496.90	-27522496.68	-27522496.44	0.0268	0.0102	*
Earth	-80065-07-18 03:20 J	-27522119.52	-27522119.36	-27522119.18	0.0270	0.0193	
Moon	-80065-07-18 03:49 J	-27522119.50	-27522119.34	-27522119.18	0.0270	0.0197	*
Moon	-80064-07-30 23:59 J	-27521741.51	-27521741.50	-27521741.48	0.0273	0.0272	
Venus	-80062-12-22 10:04 J	-27520867.30	-27520867.08	-27520866.86	0.0281	0.0044	
Mercury	-80060-04-12 10:04 J	-27520390.21	-27520390.08	-27520389.95	0.0285	0.0199	
Mercury	-80060-07-10 09:49 J	-27520301.28	-27520301.09	-27520300.91	0.0286	0.0040	
Mercury	-80060-10-07 09:20 J	-27520212.28	-27520212.11	-27520211.95	0.0287	0.0120	
Mercury	-80059-01-04 08:23 J	-27520123.19	-27520123.15	-27520123.10	0.0287	0.0278	
Moon	-80055-12-06 11:01 J	-27518326.21	-27518326.04	-27518325.85	0.0296	0.0210	
Earth	-80055-12-06 12:28 J	-27518326.15	-27518325.98	-27518325.79	0.0296	0.0202	*
Mars	-80054-05-25 14:23 J	-27518156.16	-27518155.90	-27518155.63	0.0296	0.0051	
Moon	-80054-12-21 07:25 J	-27517946.42	-27517946.19	-27517945.95	0.0296	0.0091	
Earth	-80054-12-21 11:01 J	-27517946.27	-27517946.04	-27517945.80	0.0296	0.0079	*
Moon	-80052-01-03 21:49 J	-27517566.83	-27517566.59	-27517566.35	0.0294	0.0033	
Earth	-80052-01-04 01:25 J	-27517566.68	-27517566.44	-27517566.20	0.0294	0.0046	*
Moon	-80051-01-18 05:16 J	-27517187.48	-27517187.28	-27517187.08	0.0292	0.0149	
Earth	-80051-01-18 05:59 J	-27517187.45	-27517187.25	-27517187.05	0.0292	0.0163	*
Earth	-80050-01-31 23:30 J	-27516808.61	-27516808.52	-27516808.43	0.0289	0.0264	
Moon	-80050-02-01 02:37 J	-27516808.51	-27516808.39	-27516808.28	0.0289	0.0250	*
Venus	-80048-03-11 14:23 J	-27516039.01	-27516038.90	-27516038.79	0.0282	0.0235	

Venus -80048-10-26 19:11 J -27515809.85 -27515809.70 -27515809.53 0.0280 0.0170

Mercury -80047-11-14 17:16 J -27515425.88 -27515425.78 -27515425.68 0.0276 0.0179

Mercury -80046-02-11 04:04 J -27515337.45 -27515337.33 -27515337.20 0.0275 0.0080

Mercury -80046-05-10 15:06 J -27515249.00 -27515248.87 -27515248.74 0.0275 0.0022

Mercury -80046-08-07 02:08 J -27515160.53 -27515160.41 -27515160.29 0.0274 0.0121

Mercury -80046-11-03 12:56 J -27515072.03 -27515071.96 -27515071.87 0.0273 0.0221

Mars -80040-05-16 15:49 J -27513051.06 -27513050.84 -27513050.58 0.0264 0.0174

Moon -80040-05-28 00:13 J -27513039.64 -27513039.49 -27513039.33 0.0264 0.0208

Earth -80040-05-28 01:25 J -27513039.59 -27513039.44 -27513039.27 0.0264 0.0195 \*

Moon -80039-06-08 08:23 J -27512663.36 -27512663.15 -27512662.93 0.0264 0.0121

Earth -80039-06-08 11:59 J -27512663.21 -27512663.00 -27512662.77 0.0264 0.0116 \*

Earth -80038-06-20 02:52 J -27512286.62 -27512286.38 -27512286.14 0.0265 0.0029

Moon -80038-06-20 03:49 J -27512286.58 -27512286.34 -27512286.10 0.0265 0.0020 \*

Earth -80037-06-30 23:16 J -27511909.76 -27511909.53 -27511909.28 0.0267 0.0061

Moon -80037-07-01 03:06 J -27511909.61 -27511909.37 -27511909.13 0.0267 0.0076 \*

Earth -80036-07-13 03:20 J -27511532.56 -27511532.36 -27511532.16 0.0269 0.0152

Moon -80036-07-13 03:06 J -27511532.56 -27511532.37 -27511532.15 0.0269 0.0161 \*

Moon -80035-07-25 11:59 J -27511155.11 -27511155.00 -27511154.87 0.0271 0.0238

Earth -80035-07-25 15:35 J -27511154.95 -27511154.85 -27511154.73 0.0271 0.0242 \*

Venus -80032-07-03 17:01 J -27510080.99 -27510080.79 -27510080.58 0.0281 0.0108

Mercury -80031-08-30 08:37 J -27509658.23 -27509658.14 -27509658.04 0.0285 0.0242

Mercury -80031-11-27 08:37 J -27509569.32 -27509569.14 -27509568.96 0.0286 0.0082

Mercury -80030-02-24 08:08 J -27509480.34 -27509480.16 -27509479.98 0.0286 0.0077

Mercury -80030-05-24 07:25 J -27509391.29 -27509391.19 -27509391.09 0.0287 0.0235

Earth -80026-11-30 04:18 J -27507740.44 -27507740.32 -27507740.19 0.0296 0.0252

Moon -80026-11-30 05:59 J -27507740.36 -27507740.25 -27507740.13 0.0296 0.0259 \*

Earth -80025-12-14 05:01 J -27507360.50 -27507360.29 -27507360.06 0.0296 0.0132

Moon -80025-12-14 08:37 J -27507360.34 -27507360.14 -27507359.92 0.0296 0.0143 \*

Mars -80024-07-12 15:20 J -27507150.00 -27507149.86 -27507149.71 0.0296 0.0245

Earth -80024-12-28 23:01 J -27506980.79 -27506980.54 -27506980.30 0.0295 0.0007

Moon -80024-12-29 02:08 J -27506980.66 -27506980.41 -27506980.16 0.0295 0.0020 \*  
 Earth -80022-01-12 07:40 J -27506601.40 -27506601.18 -27506600.95 0.0293 0.0114  
 Moon -80022-01-12 07:54 J -27506601.40 -27506601.17 -27506600.93 0.0293 0.0099 \*  
 Moon -80021-01-26 02:37 J -27506222.55 -27506222.39 -27506222.20 0.0290 0.0206  
 Earth -80021-01-26 05:44 J -27506222.40 -27506222.26 -27506222.09 0.0290 0.0222 \*  
 Venus -80019-09-21 17:01 J -27505252.94 -27505252.79 -27505252.63 0.0281 0.0184  
 Venus -80018-05-08 21:35 J -27505023.72 -27505023.60 -27505023.47 0.0279 0.0218  
 Mercury -80017-04-02 19:11 J -27504693.78 -27504693.70 -27504693.61 0.0276 0.0211  
 Mercury -80017-06-30 06:13 J -27504605.36 -27504605.24 -27504605.12 0.0275 0.0111  
 Mercury -80017-09-26 17:01 J -27504516.92 -27504516.79 -27504516.65 0.0274 0.0013  
 Mercury -80017-12-24 04:04 J -27504428.46 -27504428.33 -27504428.20 0.0273 0.0088  
 Mercury -80016-03-22 14:52 J -27504339.97 -27504339.88 -27504339.78 0.0273 0.0188  
 Earth -80011-05-23 05:30 J -27502452.38 -27502452.27 -27502452.14 0.0264 0.0228  
 Moon -80011-05-23 06:28 J -27502452.32 -27502452.23 -27502452.14 0.0264 0.0242 \*  
 Earth -80010-06-03 13:54 J -27502076.11 -27502075.92 -27502075.71 0.0264 0.0151  
 Moon -80010-06-03 17:44 J -27502075.95 -27502075.76 -27502075.56 0.0264 0.0160 \*  
 Mars -80010-07-06 14:08 J -27502043.24 -27502042.91 -27502042.59 0.0264 0.0006  
 Moon -80009-06-14 01:40 J -27501699.68 -27501699.43 -27501699.18 0.0265 0.0062  
 Earth -80009-06-14 02:08 J -27501699.64 -27501699.41 -27501699.17 0.0265 0.0067 \*  
 Moon -80008-06-25 15:49 J -27501323.08 -27501322.84 -27501322.60 0.0266 0.0036  
 Earth -80008-06-25 19:11 J -27501322.94 -27501322.70 -27501322.45 0.0266 0.0022 \*  
 Earth -80007-07-07 18:56 J -27500945.93 -27500945.71 -27500945.48 0.0268 0.0113  
 Moon -80007-07-07 19:11 J -27500945.90 -27500945.70 -27500945.48 0.0268 0.0124 \*  
 Earth -80006-07-20 02:23 J -27500568.55 -27500568.40 -27500568.23 0.0270 0.0204  
 Moon -80006-07-20 05:59 J -27500568.40 -27500568.25 -27500568.08 0.0270 0.0206 \*  
 Venus -80002-01-13 16:32 J -27499295.00 -27499294.81 -27499294.62 0.0281 0.0143  
 Mercury -80001-04-15 03:35 J -27498837.50 -27498837.35 -27498837.19 0.0285 0.0150  
 Mercury -80001-07-13 03:20 J -27498748.54 -27498748.36 -27498748.18 0.0286 0.0010  
 Mercury -80001-10-10 02:37 J -27498659.53 -27498659.39 -27498659.24 0.0287 0.0169

# 80TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 80th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-79996-08-30 10:18 J	-27496874.30	-27496874.07	-27496873.83	0.0296	0.0142		
Moon	-79996-12-07 07:40 J	-27496775.35	-27496775.18	-27496774.99	0.0296	0.0203		
Earth	-79996-12-07 11:01 J	-27496775.21	-27496775.04	-27496774.84	0.0296	0.0193	*	
Moon	-79995-12-22 07:40 J	-27496395.41	-27496395.18	-27496394.95	0.0296	0.0081		
Earth	-79995-12-22 09:35 J	-27496395.34	-27496395.10	-27496394.86	0.0296	0.0067	*	
Earth	-79993-01-05 23:44 J	-27496015.75	-27496015.51	-27496015.27	0.0294	0.0058		
Moon	-79993-01-06 00:42 J	-27496015.70	-27496015.47	-27496015.24	0.0294	0.0042	*	
Earth	-79992-01-19 04:04 J	-27495636.52	-27495636.33	-27495636.13	0.0292	0.0174		
Moon	-79992-01-19 07:25 J	-27495636.39	-27495636.19	-27495635.99	0.0292	0.0158	*	
Earth	-79991-02-01 21:35 J	-27495257.67	-27495257.60	-27495257.52	0.0289	0.0274		
Moon	-79991-02-02 00:13 J	-27495257.59	-27495257.49	-27495257.38	0.0289	0.0260	*	
Venus	-79989-04-02 18:56 J	-27494466.89	-27494466.71	-27494466.54	0.0282	0.0140		
Venus	-79989-11-17 23:30 J	-27494237.57	-27494237.52	-27494237.44	0.0279	0.0264		
Mercury	-79988-08-20 21:20 J	-27493961.67	-27493961.61	-27493961.55	0.0277	0.0244		
Mercury	-79988-11-17 08:23 J	-27493873.26	-27493873.15	-27493873.04	0.0276	0.0144		
Mercury	-79987-02-13 19:11 J	-27493784.83	-27493784.70	-27493784.57	0.0275	0.0043		
Mercury	-79987-05-13 06:13 J	-27493696.37	-27493696.24	-27493696.11	0.0275	0.0057		
Mercury	-79987-08-09 17:01 J	-27493607.89	-27493607.79	-27493607.67	0.0274	0.0158		
Mercury	-79987-11-06 04:04 J	-27493519.36	-27493519.33	-27493519.28	0.0273	0.0258		
Earth	-79982-05-18 16:32 J	-27491864.84	-27491864.81	-27491864.75	0.0265	0.0260		

Moon	-79981-05-28 21:06 J	-27491488.77	-27491488.62	-27491488.45	0.0264	0.0198
Earth	-79981-05-29 00:42 J	-27491488.63	-27491488.47	-27491488.29	0.0264	0.0186 *
Earth	-79980-06-09 11:16 J	-27491112.24	-27491112.03	-27491111.79	0.0264	0.0106
Moon	-79980-06-09 11:30 J	-27491112.23	-27491112.02	-27491111.80	0.0264	0.0106 *
Mars	-79980-08-26 14:37 J	-27491034.12	-27491033.89	-27491033.64	0.0264	0.0180
Earth	-79979-06-21 02:23 J	-27490735.65	-27490735.40	-27490735.15	0.0265	0.0018
Moon	-79979-06-21 05:59 J	-27490735.50	-27490735.25	-27490735.01	0.0265	0.0007 *
Moon	-79978-07-02 22:47 J	-27490358.79	-27490358.55	-27490358.30	0.0267	0.0084
Earth	-79978-07-02 23:16 J	-27490358.77	-27490358.53	-27490358.29	0.0267	0.0072 *
Moon	-79977-07-13 23:16 J	-27489981.72	-27489981.53	-27489981.33	0.0269	0.0168
Earth	-79977-07-14 03:06 J	-27489981.56	-27489981.37	-27489981.16	0.0269	0.0163 *
Moon	-79976-07-26 14:08 J	-27489604.00	-27489603.91	-27489603.81	0.0271	0.0247
Earth	-79976-07-26 15:35 J	-27489603.93	-27489603.85	-27489603.75	0.0271	0.0252 *
Venus	-79974-12-09 04:32 J	-27488738.44	-27488738.31	-27488738.18	0.0279	0.0222
Venus	-79973-07-25 23:59 J	-27488508.63	-27488508.50	-27488508.34	0.0281	0.0210
Mercury	-79972-09-02 02:52 J	-27488105.52	-27488105.38	-27488105.24	0.0285	0.0190
Mercury	-79972-11-30 02:37 J	-27488016.58	-27488016.39	-27488016.21	0.0286	0.0031
Mercury	-79971-02-27 01:54 J	-27487927.58	-27487927.42	-27487927.25	0.0286	0.0129
Mercury	-79971-05-27 01:11 J	-27487838.46	-27487838.45	-27487838.43	0.0287	0.0286
Earth	-79967-12-01 04:18 J	-27486189.46	-27486189.32	-27486189.18	0.0296	0.0241
Moon	-79967-12-01 07:40 J	-27486189.30	-27486189.18	-27486189.03	0.0296	0.0249 *
Mars	-79966-10-18 20:52 J	-27485867.89	-27485867.63	-27485867.37	0.0296	0.0058
Earth	-79966-12-16 05:01 J	-27485809.52	-27485809.29	-27485809.07	0.0296	0.0120
Moon	-79966-12-16 06:28 J	-27485809.45	-27485809.23	-27485809.00	0.0296	0.0131 *
Moon	-79965-12-29 20:52 J	-27485429.88	-27485429.63	-27485429.38	0.0295	0.0010
Earth	-79965-12-29 22:32 J	-27485429.80	-27485429.56	-27485429.31	0.0295	0.0008 *
Moon	-79963-01-13 03:35 J	-27485050.58	-27485050.35	-27485050.12	0.0293	0.0109
Earth	-79963-01-13 07:11 J	-27485050.41	-27485050.20	-27485049.97	0.0293	0.0127 *
Moon	-79962-01-27 02:52 J	-27484671.53	-27484671.38	-27484671.22	0.0290	0.0218
Earth	-79962-01-27 05:16 J	-27484671.41	-27484671.28	-27484671.13	0.0290	0.0233 *

Venus -79960-10-13 22:18 J -27483680.77 -27483680.57 -27483680.37 0.0281 0.0086

Mercury -79958-01-07 23:30 J -27483229.53 -27483229.52 -27483229.50 0.0277 0.0274

Mercury -79958-04-06 10:32 J -27483141.16 -27483141.06 -27483140.96 0.0276 0.0174

Mercury -79958-07-03 21:20 J -27483052.73 -27483052.61 -27483052.48 0.0275 0.0074

Mercury -79958-09-30 08:23 J -27482964.28 -27482964.15 -27482964.02 0.0274 0.0027

Mercury -79958-12-27 19:25 J -27482875.81 -27482875.69 -27482875.57 0.0274 0.0127

Mercury -79957-03-25 06:28 J -27482787.31 -27482787.23 -27482787.16 0.0273 0.0226

Earth -79952-05-24 06:28 J -27480901.36 -27480901.23 -27480901.09 0.0264 0.0219

Moon -79952-05-24 10:04 J -27480901.19 -27480901.08 -27480900.97 0.0264 0.0234 \*

Mars -79952-10-09 16:04 J -27480763.08 -27480762.83 -27480762.58 0.0264 0.0162

Moon -79951-06-04 14:52 J -27480525.09 -27480524.88 -27480524.67 0.0264 0.0145

Earth -79951-06-04 15:06 J -27480525.07 -27480524.87 -27480524.66 0.0264 0.0141 \*

Moon -79950-06-15 23:30 J -27480148.76 -27480148.52 -27480148.27 0.0265 0.0048

Earth -79950-06-16 03:20 J -27480148.60 -27480148.36 -27480148.12 0.0265 0.0056 \*

Earth -79949-06-26 20:37 J -27479771.89 -27479771.64 -27479771.40 0.0266 0.0033

Moon -79949-06-26 20:23 J -27479771.88 -27479771.65 -27479771.41 0.0266 0.0047 \*

Earth -79948-07-08 20:08 J -27479394.87 -27479394.66 -27479394.43 0.0268 0.0125

Moon -79948-07-08 23:59 J -27479394.70 -27479394.50 -27479394.28 0.0268 0.0133 \*

Earth -79947-07-21 04:04 J -27479017.47 -27479017.33 -27479017.18 0.0270 0.0215

Moon -79947-07-21 05:44 J -27479017.42 -27479017.26 -27479017.10 0.0270 0.0212 \*

Venus -79944-06-20 04:47 J -27477952.45 -27477952.30 -27477952.13 0.0279 0.0185

Venus -79943-02-05 00:28 J -27477722.58 -27477722.48 -27477722.38 0.0281 0.0247

Mercury -79942-01-19 22:18 J -27477373.65 -27477373.57 -27477373.49 0.0284 0.0254

Mercury -79942-04-18 22:04 J -27477284.75 -27477284.58 -27477284.40 0.0285 0.0095

Mercury -79942-07-16 21:35 J -27477195.78 -27477195.60 -27477195.42 0.0286 0.0064

Mercury -79942-10-13 20:52 J -27477106.74 -27477106.63 -27477106.51 0.0287 0.0222

Earth -79938-11-24 08:52 J -27475604.13 -27475604.13 -27475604.12 0.0296 0.0296

Moon -79937-12-08 11:16 J -27475224.20 -27475224.03 -27475223.84 0.0296 0.0192

Earth -79937-12-08 11:59 J -27475224.19 -27475224.00 -27475223.80 0.0296 0.0180 \*

Mars -79936-12-05 06:28 J -27474862.35 -27474862.23 -27474862.08 0.0296 0.0252

Earth -79936-12-23 09:49 J -27474844.33 -27474844.09 -27474843.85 0.0296 0.0055  
 Moon -79936-12-23 12:13 J -27474844.21 -27474843.99 -27474843.75 0.0296 0.0071 \*  
 Earth -79934-01-06 23:44 J -27474464.74 -27474464.51 -27474464.27 0.0294 0.0070  
 Moon -79934-01-07 03:35 J -27474464.59 -27474464.35 -27474464.11 0.0294 0.0053 \*  
 Earth -79933-01-21 03:49 J -27474085.52 -27474085.34 -27474085.15 0.0292 0.0186  
 Moon -79933-01-21 05:59 J -27474085.44 -27474085.25 -27474085.04 0.0292 0.0169 \*  
 Moon -79932-02-02 19:25 J -27473706.76 -27473706.69 -27473706.61 0.0289 0.0273  
 Earth -79932-02-02 21:20 J -27473706.65 -27473706.61 -27473706.57 0.0289 0.0284 \*  
 Venus -79930-04-25 23:59 J -27472894.70 -27472894.50 -27472894.29 0.0281 0.0042  
 Mercury -79929-08-23 12:28 J -27472409.06 -27472408.98 -27472408.89 0.0277 0.0207  
 Mercury -79929-11-19 23:30 J -27472320.64 -27472320.52 -27472320.40 0.0276 0.0106  
 Mercury -79928-02-16 10:32 J -27472232.20 -27472232.06 -27472231.93 0.0275 0.0008  
 Mercury -79928-05-15 21:20 J -27472143.73 -27472143.61 -27472143.48 0.0275 0.0096  
 Mercury -79928-08-12 08:23 J -27472055.24 -27472055.15 -27472055.05 0.0274 0.0196  
 Moon -79923-05-19 13:54 J -27470313.92 -27470313.92 -27470313.90 0.0265 0.0265  
 Earth -79923-05-19 17:30 J -27470313.84 -27470313.77 -27470313.69 0.0265 0.0251  
 Moon -79922-05-31 01:11 J -27469937.61 -27469937.45 -27469937.28 0.0264 0.0186  
 Earth -79922-05-31 01:25 J -27469937.61 -27469937.44 -27469937.25 0.0264 0.0176 \*  
 Mars -79922-11-30 08:23 J -27469754.47 -27469754.15 -27469753.83 0.0264 0.0017  
 Earth -79921-06-10 12:28 J -27469561.20 -27469560.98 -27469560.74 0.0264 0.0095  
 Moon -79921-06-10 16:32 J -27469561.04 -27469560.81 -27469560.58 0.0264 0.0091 \*  
 Earth -79920-06-22 04:04 J -27469184.58 -27469184.33 -27469184.08 0.0265 0.0007  
 Moon -79920-06-22 05:01 J -27469184.54 -27469184.29 -27469184.03 0.0265 0.0006 \*  
 Moon -79919-07-03 21:35 J -27468807.83 -27468807.60 -27468807.36 0.0267 0.0094  
 Earth -79919-07-04 01:11 J -27468807.68 -27468807.45 -27468807.21 0.0267 0.0083 \*  
 Moon -79918-07-16 04:18 J -27468430.50 -27468430.32 -27468430.14 0.0269 0.0176  
 Earth -79918-07-16 05:16 J -27468430.45 -27468430.28 -27468430.08 0.0269 0.0175 \*  
 Earth -79917-07-27 18:13 J -27468052.79 -27468052.74 -27468052.67 0.0271 0.0263  
 Moon -79917-07-27 20:52 J -27468052.69 -27468052.63 -27468052.53 0.0271 0.0256 \*  
 Venus -79915-12-31 13:25 J -27467166.13 -27467165.94 -27467165.73 0.0279 0.0115

Mercury -79913-09-04 21:49 J -27466552.75 -27466552.59 -27466552.42 0.0285 0.0131  
 Mercury -79913-12-02 21:35 J -27466463.78 -27466463.60 -27466463.42 0.0286 0.0029  
 Mercury -79912-03-01 20:52 J -27466374.76 -27466374.63 -27466374.49 0.0286 0.0187  
 Earth -79908-12-02 07:54 J -27464638.32 -27464638.17 -27464638.00 0.0296 0.0229  
 Moon -79908-12-02 08:08 J -27464638.30 -27464638.16 -27464638.00 0.0296 0.0238 \*  
 Mars -79907-01-23 23:01 J -27464585.78 -27464585.54 -27464585.29 0.0296 0.0132  
 Moon -79907-12-17 05:44 J -27464258.49 -27464258.26 -27464258.03 0.0296 0.0120  
 Earth -79907-12-17 08:23 J -27464258.37 -27464258.15 -27464257.91 0.0296 0.0106 \*  
 Moon -79906-12-31 22:18 J -27463878.81 -27463878.57 -27463878.33 0.0295 0.0004  
 Earth -79905-01-01 01:54 J -27463878.67 -27463878.42 -27463878.18 0.0295 0.0020 \*  
 Moon -79904-01-14 08:23 J -27463499.36 -27463499.15 -27463498.93 0.0293 0.0123  
 Earth -79904-01-14 09:49 J -27463499.30 -27463499.09 -27463498.87 0.0293 0.0140 \*  
 Earth -79903-01-28 07:40 J -27463120.30 -27463120.18 -27463120.05 0.0290 0.0245  
 Moon -79903-01-28 09:35 J -27463120.24 -27463120.10 -27463119.96 0.0290 0.0231 \*  
 Venus -79901-11-05 04:47 J -27462108.51 -27462108.30 -27462108.09 0.0281 0.0016  
 Mercury -79899-01-10 15:06 J -27461676.93 -27461676.87 -27461676.80 0.0277 0.0234  
 Mercury -79899-04-09 01:54 J -27461588.53 -27461588.42 -27461588.30 0.0276 0.0134  
 Mercury -79899-07-06 12:56 J -27461500.09 -27461499.96 -27461499.83 0.0275 0.0033  
 Mercury -79899-10-02 23:59 J -27461411.63 -27461411.50 -27461411.37 0.0274 0.0067  
 Mercury -79899-12-30 11:01 J -27461323.15 -27461323.04 -27461322.94 0.0274 0.0167  
 Mercury -79898-03-28 22:04 J -27461234.60 -27461234.58 -27461234.56 0.0273 0.0267  
 Earth -79893-05-25 08:52 J -27459350.27 -27459350.13 -27459349.97 0.0264 0.0209  
 Moon -79893-05-25 10:04 J -27459350.20 -27459350.08 -27459349.93 0.0264 0.0222 \*  
 Moon -79892-06-05 14:23 J -27458974.11 -27458973.90 -27458973.68 0.0264 0.0130  
 Earth -79892-06-05 17:59 J -27458973.95 -27458973.75 -27458973.53 0.0264 0.0130 \*  
 Mars -79891-01-19 21:06 J -27458745.83 -27458745.62 -27458745.38 0.0264 0.0194  
 Moon -79891-06-17 05:30 J -27458597.50 -27458597.27 -27458597.03 0.0265 0.0034  
 Earth -79891-06-17 06:28 J -27458597.46 -27458597.23 -27458596.98 0.0265 0.0045 \*  
 Earth -79890-06-29 00:28 J -27458220.73 -27458220.48 -27458220.24 0.0266 0.0045  
 Moon -79890-06-29 03:35 J -27458220.58 -27458220.35 -27458220.11 0.0266 0.0060 \*



Earth -79889-07-10 00:28 J -27457843.68 -27457843.48 -27457843.26 0.0268 0.0137  
 Moon -79889-07-10 01:40 J -27457843.63 -27457843.43 -27457843.20 0.0268 0.0142 \*  
 Moon -79888-07-22 05:30 J -27457466.41 -27457466.27 -27457466.12 0.0270 0.0219  
 Earth -79888-07-22 08:37 J -27457466.26 -27457466.14 -27457465.99 0.0270 0.0227 \*  
 Venus -79885-07-12 15:20 J -27456380.07 -27456379.86 -27456379.65 0.0279 0.0073  
 Mercury -79883-01-22 17:59 J -27455820.88 -27455820.75 -27455820.61 0.0284 0.0191  
 Mercury -79883-04-21 17:44 J -27455731.94 -27455731.76 -27455731.58 0.0285 0.0033  
 Mercury -79883-07-19 17:01 J -27455642.95 -27455642.79 -27455642.62 0.0286 0.0126  
 Mercury -79883-10-16 16:04 J -27455553.84 -27455553.83 -27455553.79 0.0287 0.0284  
 Earth -79879-11-25 13:54 J -27454052.98 -27454052.92 -27454052.84 0.0296 0.0284  
 Earth -79878-12-10 16:18 J -27453673.01 -27453672.82 -27453672.60 0.0296 0.0167  
 Moon -79878-12-10 19:40 J -27453672.87 -27453672.68 -27453672.48 0.0296 0.0180 \*  
 Mars -79877-03-12 16:47 J -27453580.05 -27453579.80 -27453579.53 0.0296 0.0069  
 Earth -79877-12-24 13:25 J -27453293.18 -27453292.94 -27453292.69 0.0295 0.0042  
 Moon -79877-12-24 16:47 J -27453293.04 -27453292.80 -27453292.55 0.0295 0.0056 \*  
 Earth -79875-01-08 02:52 J -27452913.61 -27452913.38 -27452913.14 0.0294 0.0084  
 Moon -79875-01-08 03:20 J -27452913.60 -27452913.36 -27452913.11 0.0294 0.0068 \*  
 Moon -79874-01-22 03:35 J -27452534.53 -27452534.35 -27452534.15 0.0292 0.0183  
 Earth -79874-01-22 06:28 J -27452534.40 -27452534.23 -27452534.05 0.0292 0.0198 \*  
 Moon -79873-02-04 19:54 J -27452155.71 -27452155.67 -27452155.64 0.0289 0.0284  
 Venus -79871-05-18 06:13 J -27451322.44 -27451322.24 -27451322.04 0.0281 0.0062  
 Mercury -79870-05-30 17:01 J -27450944.81 -27450944.79 -27450944.75 0.0278 0.0269  
 Mercury -79870-08-27 04:04 J -27450856.43 -27450856.33 -27450856.22 0.0277 0.0167  
 Mercury -79870-11-23 15:06 J -27450768.00 -27450767.87 -27450767.74 0.0276 0.0066  
 Mercury -79869-02-20 01:54 J -27450679.55 -27450679.42 -27450679.28 0.0275 0.0036  
 Mercury -79869-05-18 12:56 J -27450591.07 -27450590.96 -27450590.84 0.0275 0.0136  
 Mercury -79869-08-14 23:59 J -27450502.56 -27450502.50 -27450502.43 0.0274 0.0237  
 Moon -79864-05-20 18:13 J -27448762.79 -27448762.74 -27448762.68 0.0265 0.0256  
 Earth -79864-05-20 20:08 J -27448762.75 -27448762.66 -27448762.56 0.0265 0.0241 \*  
 Mars -79863-03-05 13:54 J -27448474.18 -27448473.92 -27448473.64 0.0264 0.0142

Earth -79863-06-01 04:47 J -27448386.49 -27448386.30 -27448386.11 0.0264 0.0165  
 Moon -79863-06-01 07:40 J -27448386.35 -27448386.18 -27448385.99 0.0264 0.0174 \*  
 Earth -79862-06-12 16:04 J -27448010.05 -27448009.83 -27448009.59 0.0265 0.0082  
 Moon -79862-06-12 17:30 J -27448010.01 -27448009.77 -27448009.53 0.0265 0.0075 \*  
 Moon -79861-06-23 04:47 J -27447633.54 -27447633.30 -27447633.04 0.0265 0.0022  
 Earth -79861-06-23 08:08 J -27447633.40 -27447633.16 -27447632.91 0.0265 0.0007 \*  
 Moon -79860-07-05 04:04 J -27447256.54 -27447256.33 -27447256.11 0.0267 0.0107  
 Earth -79860-07-05 05:59 J -27447256.48 -27447256.25 -27447256.02 0.0267 0.0096 \*  
 Earth -79859-07-17 10:47 J -27446879.23 -27446879.05 -27446878.87 0.0269 0.0187  
 Moon -79859-07-17 13:40 J -27446879.09 -27446878.93 -27446878.74 0.0269 0.0185 \*  
 Moon -79858-07-30 03:20 J -27446501.41 -27446501.36 -27446501.29 0.0271 0.0264  
 Venus -79855-01-23 00:42 J -27445593.69 -27445593.47 -27445593.25 0.0279 0.0001  
 Mercury -79854-06-11 18:13 J -27445088.84 -27445088.74 -27445088.62 0.0284 0.0223  
 Mercury -79854-09-08 17:59 J -27444999.92 -27444999.75 -27444999.56 0.0285 0.0065  
 Mercury -79854-12-06 17:30 J -27444910.94 -27444910.77 -27444910.59 0.0286 0.0094  
 Mercury -79853-03-04 16:47 J -27444821.88 -27444821.80 -27444821.71 0.0287 0.0252  
 Moon -79849-12-03 11:01 J -27443087.19 -27443087.04 -27443086.87 0.0296 0.0228  
 Earth -79849-12-03 14:37 J -27443087.05 -27443086.89 -27443086.71 0.0296 0.0215 \*  
 Moon -79848-12-18 11:30 J -27442707.24 -27442707.02 -27442706.79 0.0296 0.0105  
 Earth -79848-12-18 14:37 J -27442707.12 -27442706.89 -27442706.65 0.0296 0.0091 \*  
 Mars -79847-05-01 04:04 J -27442573.44 -27442573.33 -27442573.21 0.0296 0.0266  
 Earth -79846-01-02 07:25 J -27442327.43 -27442327.19 -27442326.95 0.0295 0.0035  
 Moon -79846-01-02 07:11 J -27442327.43 -27442327.20 -27442326.96 0.0295 0.0020 \*  
 Earth -79845-01-16 14:52 J -27441948.08 -27441947.88 -27441947.67 0.0293 0.0154  
 Moon -79845-01-16 17:44 J -27441947.96 -27441947.76 -27441947.54 0.0293 0.0139 \*  
 Earth -79844-01-29 12:13 J -27441569.10 -27441568.99 -27441568.88 0.0290 0.0257  
 Moon -79844-01-29 15:35 J -27441568.96 -27441568.85 -27441568.70 0.0290 0.0244 \*  
 Venus -79842-11-28 12:13 J -27440536.17 -27440535.99 -27440535.80 0.0281 0.0124  
 Mercury -79840-01-13 06:56 J -27440124.30 -27440124.21 -27440124.11 0.0277 0.0192  
 Mercury -79840-04-11 17:59 J -27440035.88 -27440035.75 -27440035.63 0.0276 0.0091

Mercury -79840-07-09 04:47 J -27439947.43 -27439947.30 -27439947.16 0.0275 0.0013

Mercury -79840-10-05 15:49 J -27439858.96 -27439858.84 -27439858.72 0.0274 0.0111

Mercury -79839-01-02 02:52 J -27439770.46 -27439770.38 -27439770.29 0.0274 0.0211

Moon -79834-05-27 10:32 J -27437799.19 -27437799.06 -27437798.90 0.0264 0.0211

Earth -79834-05-27 13:40 J -27437799.08 -27437798.93 -27437798.77 0.0264 0.0198 \*

Mars -79833-04-25 00:42 J -27437465.78 -27437465.47 -27437465.14 0.0264 0.0035

Moon -79833-06-06 21:35 J -27437422.81 -27437422.60 -27437422.38 0.0264 0.0118

Earth -79833-06-06 23:01 J -27437422.75 -27437422.54 -27437422.31 0.0264 0.0119 \*

Earth -79832-06-18 12:13 J -27437046.23 -27437045.99 -27437045.74 0.0265 0.0032

Moon -79832-06-18 15:35 J -27437046.09 -27437045.85 -27437045.61 0.0265 0.0018 \*

Earth -79831-06-30 06:42 J -27436669.46 -27436669.22 -27436668.98 0.0266 0.0059

Moon -79831-06-30 09:06 J -27436669.36 -27436669.12 -27436668.87 0.0266 0.0072 \*

Moon -79830-07-12 04:32 J -27436292.51 -27436292.31 -27436292.09 0.0268 0.0151

Earth -79830-07-12 07:40 J -27436292.38 -27436292.18 -27436291.97 0.0268 0.0150 \*

Moon -79829-07-23 13:25 J -27435915.05 -27435914.94 -27435914.80 0.0270 0.0231

Earth -79829-07-23 16:18 J -27435914.92 -27435914.82 -27435914.70 0.0270 0.0240 \*

Venus -79826-08-05 03:49 J -27434807.56 -27434807.34 -27434807.13 0.0279 0.0048

Mercury -79825-10-28 15:06 J -27434356.89 -27434356.87 -27434356.83 0.0284 0.0279

Mercury -79824-01-25 14:52 J -27434268.04 -27434267.88 -27434267.71 0.0284 0.0121

Mercury -79824-04-24 14:37 J -27434179.08 -27434178.89 -27434178.71 0.0285 0.0038

Mercury -79824-07-22 13:40 J -27434090.05 -27434089.93 -27434089.79 0.0286 0.0196

Earth -79820-11-26 23:30 J -27432501.61 -27432501.52 -27432501.41 0.0296 0.0270

Moon -79820-11-27 03:35 J -27432501.41 -27432501.35 -27432501.28 0.0296 0.0284 \*

Mars -79819-06-19 05:01 J -27432297.53 -27432297.29 -27432297.03 0.0296 0.0117

Earth -79819-12-12 01:40 J -27432121.63 -27432121.43 -27432121.21 0.0296 0.0151

Moon -79819-12-12 04:32 J -27432121.51 -27432121.31 -27432121.09 0.0296 0.0165 \*

Moon -79818-12-26 21:35 J -27431741.85 -27431741.60 -27431741.34 0.0295 0.0040

Earth -79818-12-26 22:04 J -27431741.83 -27431741.58 -27431741.34 0.0295 0.0025 \*

Moon -79816-01-09 06:56 J -27431362.45 -27431362.21 -27431361.97 0.0294 0.0084

Earth -79816-01-09 10:18 J -27431362.30 -27431362.07 -27431361.84 0.0294 0.0099 \*

Moon -79815-01-23 09:49 J -27430983.26 -27430983.09 -27430982.91 0.0291 0.0198  
 Earth -79815-01-23 12:42 J -27430983.12 -27430982.97 -27430982.79 0.0291 0.0212 \*  
 Venus -79813-10-23 08:23 J -27429979.25 -27429979.15 -27429979.04 0.0283 0.0240  
 Venus -79812-06-09 14:23 J -27429750.06 -27429749.90 -27429749.74 0.0281 0.0171  
 Mercury -79811-06-02 09:06 J -27429392.20 -27429392.12 -27429392.05 0.0278 0.0224  
 Mercury -79811-08-29 19:54 J -27429303.78 -27429303.67 -27429303.55 0.0277 0.0123  
 Mercury -79811-11-26 06:56 J -27429215.34 -27429215.21 -27429215.08 0.0276 0.0022  
 Mercury -79810-02-22 17:59 J -27429126.88 -27429126.75 -27429126.62 0.0275 0.0080  
 Mercury -79810-05-22 05:01 J -27429038.39 -27429038.29 -27429038.19 0.0275 0.0181  
 Earth -79805-05-22 00:28 J -27427211.59 -27427211.48 -27427211.35 0.0265 0.0230  
 Moon -79805-05-22 03:06 J -27427211.44 -27427211.37 -27427211.27 0.0265 0.0246 \*  
 Earth -79804-06-02 09:35 J -27426835.29 -27426835.10 -27426834.89 0.0265 0.0153  
 Moon -79804-06-02 11:59 J -27426835.18 -27426835.00 -27426834.79 0.0265 0.0161 \*  
 Moon -79803-06-13 18:42 J -27426458.96 -27426458.72 -27426458.48 0.0265 0.0058  
 Earth -79803-06-13 21:49 J -27426458.83 -27426458.59 -27426458.35 0.0265 0.0069 \*  
 Mars -79803-06-16 03:06 J -27426456.53 -27426456.37 -27426456.17 0.0265 0.0220  
 Moon -79802-06-25 11:59 J -27426082.24 -27426082.00 -27426081.76 0.0266 0.0035  
 Earth -79802-06-25 14:23 J -27426082.14 -27426081.90 -27426081.65 0.0266 0.0020 \*  
 Earth -79801-07-06 12:56 J -27425705.18 -27425704.96 -27425704.73 0.0267 0.0110  
 Moon -79801-07-06 15:20 J -27425705.08 -27425704.86 -27425704.65 0.0267 0.0119 \*  
 Earth -79800-07-18 18:42 J -27425327.88 -27425327.72 -27425327.55 0.0269 0.0200  
 Moon -79800-07-18 21:35 J -27425327.77 -27425327.60 -27425327.42 0.0269 0.0196 \*  
 Venus -79796-02-14 13:54 J -27424021.10 -27424020.92 -27424020.71 0.0280 0.0125  
 Mercury -79795-06-14 15:49 J -27423536.00 -27423535.84 -27423535.68 0.0284 0.0149  
 Mercury -79795-09-11 15:35 J -27423447.04 -27423446.85 -27423446.67 0.0285 0.0012  
 Mercury -79795-12-09 14:52 J -27423358.03 -27423357.88 -27423357.73 0.0286 0.0168  
 Moon -79790-12-05 23:59 J -27421535.66 -27421535.50 -27421535.33 0.0296 0.0214  
 Earth -79790-12-06 02:08 J -27421535.59 -27421535.41 -27421535.22 0.0296 0.0198 \*  
 Mars -79789-08-07 01:25 J -27421290.69 -27421290.44 -27421290.18 0.0296 0.0088  
 Earth -79789-12-20 01:11 J -27421155.69 -27421155.45 -27421155.21 0.0296 0.0073

Moon -79789-12-20 01:40 J -27421155.65 -27421155.43 -27421155.20 0.0296 0.0089 \*  
 Earth -79787-01-03 17:01 J -27420776.03 -27420775.79 -27420775.55 0.0295 0.0053  
 Moon -79787-01-03 20:23 J -27420775.89 -27420775.65 -27420775.41 0.0295 0.0037 \*  
 Earth -79786-01-17 23:44 J -27420396.70 -27420396.51 -27420396.31 0.0293 0.0170  
 Moon -79786-01-18 02:37 J -27420396.59 -27420396.39 -27420396.17 0.0293 0.0155 \*  
 Moon -79785-01-31 19:25 J -27420017.78 -27420017.69 -27420017.57 0.0290 0.0261  
 Earth -79785-01-31 19:54 J -27420017.75 -27420017.67 -27420017.58 0.0290 0.0271 \*  
 Venus -79783-05-05 15:20 J -27419193.01 -27419192.86 -27419192.69 0.0282 0.0173  
 Venus -79783-12-20 21:06 J -27418963.72 -27418963.62 -27418963.50 0.0280 0.0235  
 Mercury -79782-10-20 12:13 J -27418660.05 -27418659.99 -27418659.93 0.0277 0.0247  
 Mercury -79781-01-16 23:01 J -27418571.65 -27418571.54 -27418571.42 0.0277 0.0146  
 Mercury -79781-04-14 10:04 J -27418483.21 -27418483.08 -27418482.95 0.0276 0.0044  
 Mercury -79781-07-11 21:06 J -27418394.75 -27418394.62 -27418394.49 0.0275 0.0057  
 Mercury -79781-10-08 08:08 J -27418306.27 -27418306.16 -27418306.05 0.0274 0.0158  
 Mercury -79780-01-04 18:56 J -27418217.74 -27418217.71 -27418217.66 0.0273 0.0259  
 Earth -79776-05-17 12:28 J -27416624.02 -27416623.98 -27416623.94 0.0265 0.0260  
 Moon -79775-05-28 17:30 J -27416247.93 -27416247.77 -27416247.62 0.0264 0.0199  
 Earth -79775-05-28 20:08 J -27416247.82 -27416247.66 -27416247.48 0.0264 0.0186 \*  
 Mars -79775-07-30 16:18 J -27416185.10 -27416184.82 -27416184.53 0.0264 0.0120  
 Earth -79774-06-09 06:28 J -27415871.45 -27415871.23 -27415871.01 0.0264 0.0104  
 Moon -79774-06-09 08:52 J -27415871.35 -27415871.13 -27415870.91 0.0264 0.0102 \*  
 Earth -79773-06-19 20:23 J -27415494.90 -27415494.65 -27415494.41 0.0265 0.0017  
 Moon -79773-06-19 23:01 J -27415494.79 -27415494.54 -27415494.29 0.0265 0.0003 \*  
 Moon -79772-07-01 13:11 J -27415118.18 -27415117.95 -27415117.70 0.0266 0.0087  
 Earth -79772-07-01 15:35 J -27415118.09 -27415117.85 -27415117.61 0.0266 0.0073 \*  
 Moon -79771-07-13 14:23 J -27414741.09 -27414740.90 -27414740.71 0.0268 0.0167  
 Earth -79771-07-13 17:16 J -27414740.97 -27414740.78 -27414740.58 0.0268 0.0164 \*  
 Earth -79770-07-26 02:52 J -27414363.45 -27414363.38 -27414363.28 0.0271 0.0254  
 Moon -79770-07-26 04:47 J -27414363.40 -27414363.30 -27414363.20 0.0271 0.0243 \*  
 Venus -79767-01-10 00:13 J -27413464.58 -27413464.49 -27413464.39 0.0278 0.0249

Venus -79767-08-27 18:42 J -27413234.89 -27413234.72 -27413234.55 0.0280 0.0177  
 Mercury -79766-11-01 13:25 J -27412804.07 -27412803.94 -27412803.81 0.0284 0.0200  
 Mercury -79765-01-29 13:11 J -27412715.14 -27412714.95 -27412714.77 0.0285 0.0042  
 Mercury -79765-04-27 12:28 J -27412626.15 -27412625.98 -27412625.81 0.0285 0.0117  
 Mercury -79765-07-25 11:44 J -27412537.06 -27412537.01 -27412536.96 0.0286 0.0274  
 Earth -79761-11-28 12:56 J -27410950.07 -27410949.96 -27410949.82 0.0296 0.0254  
 Moon -79761-11-28 14:23 J -27410950.01 -27410949.90 -27410949.79 0.0296 0.0268 \*  
 Moon -79760-12-13 13:11 J -27410570.17 -27410569.95 -27410569.73 0.0296 0.0149  
 Earth -79760-12-13 14:37 J -27410570.11 -27410569.89 -27410569.67 0.0296 0.0133 \*  
 Mars -79759-09-24 18:42 J -27410284.77 -27410284.72 -27410284.63 0.0295 0.0286  
 Moon -79759-12-28 06:28 J -27410190.48 -27410190.23 -27410189.98 0.0295 0.0024  
 Earth -79759-12-28 09:49 J -27410190.33 -27410190.09 -27410189.84 0.0295 0.0009 \*  
 Moon -79757-01-11 18:28 J -27409810.95 -27409810.73 -27409810.51 0.0293 0.0101  
 Earth -79757-01-11 20:52 J -27409810.85 -27409810.63 -27409810.40 0.0293 0.0116 \*  
 Earth -79756-01-24 22:18 J -27409431.71 -27409431.57 -27409431.41 0.0291 0.0225  
 Moon -79756-01-24 23:16 J -27409431.68 -27409431.53 -27409431.37 0.0291 0.0216 \*  
 Venus -79754-11-15 18:13 J -27408406.93 -27408406.74 -27408406.56 0.0282 0.0124  
 Mercury -79752-06-05 01:25 J -27407839.54 -27407839.44 -27407839.34 0.0277 0.0178  
 Mercury -79752-09-01 12:13 J -27407751.12 -27407750.99 -27407750.86 0.0277 0.0076  
 Mercury -79752-11-28 23:16 J -27407662.66 -27407662.53 -27407662.40 0.0276 0.0026  
 Mercury -79751-02-25 10:18 J -27407574.19 -27407574.07 -27407573.95 0.0275 0.0127  
 Mercury -79751-05-24 21:20 J -27407485.68 -27407485.61 -27407485.53 0.0274 0.0228  
 Earth -79746-05-24 06:28 J -27405660.35 -27405660.23 -27405660.08 0.0265 0.0218  
 Moon -79746-05-24 09:49 J -27405660.20 -27405660.09 -27405659.97 0.0265 0.0233 \*  
 Moon -79745-06-03 14:37 J -27405284.10 -27405283.89 -27405283.68 0.0265 0.0143  
 Earth -79745-06-03 16:18 J -27405284.02 -27405283.82 -27405283.61 0.0265 0.0139 \*  
 Mars -79745-09-19 09:35 J -27405176.41 -27405176.10 -27405175.78 0.0265 0.0059  
 Moon -79744-06-15 02:23 J -27404907.64 -27404907.40 -27404907.17 0.0265 0.0044  
 Earth -79744-06-15 05:01 J -27404907.53 -27404907.29 -27404907.05 0.0265 0.0054 \*  
 Earth -79743-06-26 22:18 J -27404530.81 -27404530.57 -27404530.32 0.0266 0.0035

Moon -79743-06-27 00:28 J -27404530.71 -27404530.48 -27404530.24 0.0266 0.0049 \*  
 Earth -79742-07-08 21:49 J -27404153.80 -27404153.59 -27404153.37 0.0267 0.0125  
 Moon -79742-07-09 01:25 J -27404153.65 -27404153.44 -27404153.22 0.0267 0.0134 \*  
 Moon -79741-07-20 03:20 J -27403776.51 -27403776.36 -27403776.19 0.0269 0.0208  
 Earth -79741-07-20 04:47 J -27403776.45 -27403776.30 -27403776.15 0.0269 0.0215 \*  
 Venus -79738-07-23 10:04 J -27402678.24 -27402678.08 -27402677.90 0.0278 0.0175  
 Venus -79737-03-09 05:01 J -27402448.37 -27402448.29 -27402448.19 0.0280 0.0254  
 Mercury -79736-03-20 14:08 J -27402072.01 -27402071.91 -27402071.79 0.0284 0.0228  
 Mercury -79736-06-17 14:08 J -27401983.09 -27401982.91 -27401982.73 0.0284 0.0069  
 Mercury -79736-09-14 13:40 J -27401894.11 -27401893.93 -27401893.76 0.0285 0.0089  
 Mercury -79736-12-12 12:42 J -27401805.05 -27401804.97 -27401804.87 0.0286 0.0247  
 Earth -79732-11-22 13:54 J -27400363.92 -27400363.92 -27400363.90 0.0296 0.0296  
 Mars -79731-11-13 22:47 J -27400007.80 -27400007.55 -27400007.29 0.0296 0.0093  
 Earth -79731-12-07 17:30 J -27399983.97 -27399983.77 -27399983.58 0.0296 0.0180  
 Moon -79731-12-07 19:25 J -27399983.86 -27399983.69 -27399983.50 0.0296 0.0197 \*  
 Earth -79730-12-22 15:35 J -27399604.09 -27399603.85 -27399603.61 0.0296 0.0054  
 Moon -79730-12-22 19:25 J -27399603.93 -27399603.69 -27399603.46 0.0296 0.0071 \*  
 Earth -79728-01-05 06:28 J -27399224.46 -27399224.23 -27399223.99 0.0295 0.0071  
 Moon -79728-01-05 09:20 J -27399224.36 -27399224.11 -27399223.86 0.0295 0.0055 \*  
 Moon -79727-01-19 11:01 J -27398845.23 -27398845.04 -27398844.83 0.0292 0.0175  
 Earth -79727-01-19 12:13 J -27398845.17 -27398844.99 -27398844.80 0.0292 0.0187 \*  
 Moon -79726-02-02 03:35 J -27398466.41 -27398466.35 -27398466.28 0.0290 0.0279  
 Earth -79726-02-02 07:25 J -27398466.23 -27398466.19 -27398466.15 0.0290 0.0285  
 Venus -79724-05-28 02:37 J -27397620.59 -27397620.39 -27397620.19 0.0282 0.0053  
 Mercury -79723-10-23 04:47 J -27397107.39 -27397107.30 -27397107.21 0.0277 0.0197  
 Mercury -79722-01-19 15:49 J -27397018.96 -27397018.84 -27397018.72 0.0276 0.0095  
 Mercury -79722-04-18 02:52 J -27396930.52 -27396930.38 -27396930.25 0.0276 0.0010  
 Mercury -79722-07-15 13:40 J -27396842.05 -27396841.93 -27396841.80 0.0275 0.0108  
 Mercury -79722-10-12 00:42 J -27396753.55 -27396753.47 -27396753.38 0.0274 0.0208  
 Moon -79717-05-18 16:32 J -27395072.82 -27395072.81 -27395072.77 0.0265 0.0264

Earth	-79717-05-18 19:54 J	-27395072.75	-27395072.67	-27395072.58	0.0265	0.0248
Earth	-79716-05-30 04:18 J	-27394696.50	-27394696.32	-27394696.14	0.0264	0.0173
Moon	-79716-05-30 05:30 J	-27394696.43	-27394696.27	-27394696.09	0.0264	0.0184 *
Earth	-79715-06-10 15:06 J	-27394320.10	-27394319.87	-27394319.64	0.0265	0.0090
Moon	-79715-06-10 18:13 J	-27394319.96	-27394319.74	-27394319.50	0.0265	0.0088 *
Mars	-79715-11-10 13:25 J	-27394167.05	-27394166.94	-27394166.80	0.0265	0.0244
Moon	-79714-06-22 03:49 J	-27393943.59	-27393943.34	-27393943.08	0.0265	0.0013
Earth	-79714-06-22 05:44 J	-27393943.50	-27393943.26	-27393943.01	0.0265	0.0004 *
Moon	-79713-07-02 22:18 J	-27393566.80	-27393566.57	-27393566.34	0.0267	0.0101
Earth	-79713-07-03 01:54 J	-27393566.65	-27393566.42	-27393566.19	0.0267	0.0089 *
Earth	-79712-07-15 04:32 J	-27393189.49	-27393189.31	-27393189.12	0.0268	0.0180
Moon	-79712-07-15 05:01 J	-27393189.46	-27393189.29	-27393189.11	0.0268	0.0181 *
Earth	-79711-07-27 15:35 J	-27392811.88	-27392811.85	-27392811.81	0.0271	0.0267
Moon	-79711-07-27 18:56 J	-27392811.78	-27392811.71	-27392811.62	0.0271	0.0256
Venus	-79708-02-01 16:18 J	-27391892.01	-27391891.82	-27391891.62	0.0278	0.0118
Mercury	-79707-08-07 12:42 J	-27391340.01	-27391339.97	-27391339.92	0.0283	0.0273
Mercury	-79707-11-04 12:28 J	-27391251.15	-27391250.98	-27391250.81	0.0284	0.0115
Mercury	-79706-02-01 11:59 J	-27391162.18	-27391162.00	-27391161.82	0.0285	0.0043
Mercury	-79706-05-01 11:16 J	-27391073.16	-27391073.03	-27391072.90	0.0286	0.0201
Moon	-79702-12-01 03:35 J	-27389398.47	-27389398.35	-27389398.20	0.0296	0.0252
Earth	-79702-12-01 06:42 J	-27389398.35	-27389398.22	-27389398.05	0.0296	0.0236 *
Moon	-79701-12-15 03:49 J	-27389018.56	-27389018.34	-27389018.12	0.0296	0.0131
Earth	-79701-12-15 07:40 J	-27389018.41	-27389018.18	-27389017.95	0.0296	0.0113 *
Mars	-79700-01-01 01:54 J	-27389001.66	-27389001.42	-27389001.16	0.0296	0.0113
Moon	-79700-12-29 23:44 J	-27388638.75	-27388638.51	-27388638.27	0.0295	0.0005
Earth	-79700-12-30 01:54 J	-27388638.66	-27388638.42	-27388638.17	0.0295	0.0014 *
Earth	-79698-01-13 11:30 J	-27388259.23	-27388259.02	-27388258.80	0.0293	0.0134
Moon	-79698-01-13 12:42 J	-27388259.18	-27388258.97	-27388258.75	0.0293	0.0121 *
Earth	-79697-01-27 11:16 J	-27387880.15	-27387880.03	-27387879.89	0.0290	0.0242
Moon	-79697-01-27 14:52 J	-27387880.01	-27387879.88	-27387879.73	0.0290	0.0233 *



Venus -79695-12-08 05:30 J -27386834.48 -27386834.27 -27386834.07 0.0282 0.0003  
 Mercury -79693-03-11 06:56 J -27386375.28 -27386375.21 -27386375.13 0.0278 0.0229  
 Mercury -79693-06-07 17:59 J -27386286.87 -27386286.75 -27386286.63 0.0277 0.0127  
 Mercury -79693-09-04 05:01 J -27386198.43 -27386198.29 -27386198.16 0.0276 0.0026  
 Mercury -79693-12-01 16:04 J -27386109.96 -27386109.83 -27386109.71 0.0275 0.0077  
 Mercury -79692-02-28 02:52 J -27386021.47 -27386021.38 -27386021.27 0.0275 0.0178  
 Moon -79687-05-25 12:42 J -27384109.10 -27384108.97 -27384108.82 0.0265 0.0217  
 Earth -79687-05-25 13:54 J -27384109.06 -27384108.92 -27384108.75 0.0265 0.0205 \*  
 Mars -79687-12-25 01:11 J -27383895.74 -27383895.45 -27383895.15 0.0265 0.0100  
 Moon -79686-06-05 20:23 J -27383732.85 -27383732.65 -27383732.43 0.0265 0.0128  
 Earth -79686-06-06 00:13 J -27383732.70 -27383732.49 -27383732.27 0.0265 0.0125 \*  
 Earth -79685-06-16 13:25 J -27383356.18 -27383355.94 -27383355.69 0.0265 0.0040  
 Moon -79685-06-16 14:23 J -27383356.13 -27383355.90 -27383355.66 0.0265 0.0029 \*  
 Earth -79684-06-28 07:40 J -27382979.42 -27382979.18 -27382978.93 0.0266 0.0050  
 Moon -79684-06-28 11:16 J -27382979.27 -27382979.03 -27382978.79 0.0266 0.0065 \*  
 Moon -79683-07-10 07:40 J -27382602.38 -27382602.18 -27382601.95 0.0268 0.0147  
 Earth -79683-07-10 08:08 J -27382602.36 -27382602.16 -27382601.94 0.0268 0.0141 \*  
 Moon -79682-07-22 12:42 J -27382225.11 -27382224.97 -27382224.83 0.0270 0.0223  
 Earth -79682-07-22 16:18 J -27382224.95 -27382224.82 -27382224.69 0.0270 0.0230 \*  
 Venus -79679-08-15 02:08 J -27381105.62 -27381105.41 -27381105.19 0.0278 0.0044  
 Mercury -79677-03-23 13:25 J -27380519.10 -27380518.94 -27380518.78 0.0284 0.0143  
 Mercury -79677-06-20 12:56 J -27380430.14 -27380429.96 -27380429.77 0.0285 0.0016  
 Mercury -79677-09-17 12:13 J -27380341.13 -27380340.99 -27380340.84 0.0286 0.0174  
 Earth -79673-11-24 08:23 J -27378812.23 -27378812.15 -27378812.06 0.0296 0.0278  
 Moon -79673-11-24 11:30 J -27378812.04 -27378812.02 -27378811.98 0.0296 0.0293  
 Mars -79672-02-19 17:30 J -27378724.86 -27378724.77 -27378724.67 0.0296 0.0275  
 Earth -79672-12-09 11:01 J -27378432.24 -27378432.04 -27378431.82 0.0296 0.0160  
 Moon -79672-12-09 14:52 J -27378432.08 -27378431.88 -27378431.68 0.0296 0.0177 \*  
 Earth -79671-12-24 08:37 J -27378052.38 -27378052.14 -27378051.90 0.0296 0.0034  
 Moon -79671-12-24 10:32 J -27378052.31 -27378052.06 -27378051.81 0.0296 0.0051 \*

Moon -79669-01-07 21:06 J -27377672.86 -27377672.62 -27377672.37 0.0294 0.0075  
 Earth -79669-01-07 22:18 J -27377672.79 -27377672.57 -27377672.33 0.0294 0.0091 \*  
 Moon -79668-01-20 23:16 J -27377293.70 -27377293.53 -27377293.34 0.0292 0.0192  
 Earth -79668-01-21 02:52 J -27377293.55 -27377293.38 -27377293.20 0.0292 0.0204 \*  
 Venus -79665-06-19 14:23 J -27376048.09 -27376047.90 -27376047.69 0.0281 0.0072  
 Mercury -79664-07-29 10:47 J -27375643.11 -27375643.05 -27375642.99 0.0278 0.0246  
 Mercury -79664-10-25 21:35 J -27375554.71 -27375554.60 -27375554.48 0.0277 0.0145  
 Mercury -79663-01-22 08:37 J -27375466.27 -27375466.14 -27375466.01 0.0276 0.0043  
 Mercury -79663-04-20 19:40 J -27375377.81 -27375377.68 -27375377.55 0.0275 0.0058  
 Mercury -79663-07-18 06:42 J -27375289.33 -27375289.22 -27375289.11 0.0275 0.0159  
 Mercury -79663-10-14 17:44 J -27375200.80 -27375200.76 -27375200.72 0.0274 0.0260  
 Earth -79658-05-21 04:04 J -27373521.42 -27373521.33 -27373521.21 0.0265 0.0236  
 Moon -79658-05-21 04:32 J -27373521.37 -27373521.31 -27373521.22 0.0265 0.0250 \*  
 Earth -79657-05-31 12:56 J -27373145.15 -27373144.96 -27373144.76 0.0264 0.0159  
 Moon -79657-05-31 16:47 J -27373144.98 -27373144.80 -27373144.61 0.0264 0.0167 \*  
 Mars -79656-02-14 01:11 J -27372886.75 -27372886.45 -27372886.13 0.0265 0.0085  
 Moon -79656-06-12 00:13 J -27372768.73 -27372768.49 -27372768.24 0.0265 0.0069  
 Earth -79656-06-12 00:13 J -27372768.72 -27372768.49 -27372768.25 0.0265 0.0075 \*  
 Moon -79655-06-23 12:28 J -27372392.22 -27372391.98 -27372391.74 0.0265 0.0028  
 Earth -79655-06-23 15:49 J -27372392.08 -27372391.84 -27372391.59 0.0265 0.0015 \*  
 Earth -79654-07-05 12:42 J -27372015.19 -27372014.97 -27372014.73 0.0267 0.0105  
 Moon -79654-07-05 12:56 J -27372015.16 -27372014.96 -27372014.73 0.0267 0.0115 \*  
 Earth -79653-07-16 16:32 J -27371637.97 -27371637.81 -27371637.63 0.0269 0.0195  
 Moon -79653-07-16 20:08 J -27371637.82 -27371637.66 -27371637.48 0.0269 0.0196 \*  
 Moon -79652-07-29 05:59 J -27371260.26 -27371260.25 -27371260.23 0.0271 0.0270  
 Venus -79649-02-25 09:20 J -27370319.33 -27370319.11 -27370318.89 0.0279 0.0018  
 Mercury -79648-08-10 11:59 J -27369787.13 -27369787.00 -27369786.85 0.0284 0.0187  
 Mercury -79648-11-07 11:59 J -27369698.19 -27369698.00 -27369697.82 0.0285 0.0029  
 Mercury -79647-02-04 11:16 J -27369609.19 -27369609.03 -27369608.86 0.0285 0.0130  
 Moon -79643-12-02 23:30 J -27367846.66 -27367846.52 -27367846.36 0.0296 0.0232

Earth -79643-12-03 02:37 J -27367846.55 -27367846.39 -27367846.22 0.0296 0.0216 \*  
 Mars -79642-04-10 07:11 J -27367718.46 -27367718.20 -27367717.93 0.0296 0.0066  
 Moon -79642-12-18 01:40 J -27367466.64 -27367466.43 -27367466.20 0.0295 0.0109  
 Earth -79642-12-18 02:23 J -27367466.62 -27367466.40 -27367466.16 0.0295 0.0093 \*  
 Earth -79641-12-31 19:54 J -27367086.91 -27367086.67 -27367086.42 0.0294 0.0035  
 Moon -79641-12-31 22:04 J -27367086.82 -27367086.58 -27367086.34 0.0294 0.0018 \*  
 Earth -79639-01-15 04:32 J -27366707.51 -27366707.31 -27366707.10 0.0293 0.0154  
 Moon -79639-01-15 07:54 J -27366707.37 -27366707.17 -27366706.94 0.0293 0.0139 \*  
 Earth -79638-01-29 02:52 J -27366328.48 -27366328.38 -27366328.26 0.0290 0.0258  
 Moon -79638-01-29 04:32 J -27366328.43 -27366328.31 -27366328.17 0.0290 0.0249 \*  
 Venus -79636-12-30 17:59 J -27365261.94 -27365261.75 -27365261.57 0.0281 0.0124  
 Mercury -79635-12-16 12:56 J -27364910.96 -27364910.96 -27364910.95 0.0278 0.0277  
 Mercury -79634-03-14 23:59 J -27364822.60 -27364822.50 -27364822.40 0.0277 0.0175  
 Mercury -79634-06-11 11:01 J -27364734.17 -27364734.04 -27364733.92 0.0276 0.0074  
 Mercury -79634-09-07 21:49 J -27364645.72 -27364645.59 -27364645.45 0.0276 0.0030  
 Mercury -79634-12-05 08:52 J -27364557.24 -27364557.13 -27364557.01 0.0275 0.0130  
 Mercury -79633-03-02 20:08 J -27364468.73 -27364468.66 -27364468.59 0.0274 0.0231  
 Earth -79629-05-15 13:40 J -27362933.93 -27362933.93 -27362933.92 0.0266 0.0266  
 Mars -79628-03-31 01:40 J -27362614.52 -27362614.43 -27362614.34 0.0265 0.0254  
 Moon -79628-05-26 18:42 J -27362557.87 -27362557.72 -27362557.56 0.0265 0.0203  
 Earth -79628-05-26 22:04 J -27362557.73 -27362557.58 -27362557.40 0.0265 0.0191 \*  
 Earth -79627-06-07 08:23 J -27362181.36 -27362181.15 -27362180.92 0.0265 0.0110  
 Moon -79627-06-07 08:23 J -27362181.36 -27362181.15 -27362180.93 0.0265 0.0110 \*  
 Earth -79626-06-18 22:18 J -27361804.81 -27361804.57 -27361804.32 0.0265 0.0024  
 Moon -79626-06-19 01:54 J -27361804.66 -27361804.42 -27361804.17 0.0265 0.0012 \*  
 Moon -79625-06-29 17:16 J -27361428.02 -27361427.78 -27361427.53 0.0266 0.0079  
 Earth -79625-06-29 17:16 J -27361428.01 -27361427.78 -27361427.54 0.0266 0.0067 \*  
 Moon -79624-07-11 14:52 J -27361051.08 -27361050.88 -27361050.68 0.0268 0.0160  
 Earth -79624-07-11 18:42 J -27361050.92 -27361050.72 -27361050.52 0.0268 0.0157 \*  
 Moon -79623-07-24 02:08 J -27360673.52 -27360673.41 -27360673.30 0.0270 0.0239

Earth -79623-07-24 03:49 J -27360673.44 -27360673.34 -27360673.24 0.0270 0.0246 \*  
 Venus -79620-09-06 18:42 J -27359532.93 -27359532.72 -27359532.51 0.0279 0.0090  
 Mercury -79619-12-28 12:42 J -27359055.08 -27359054.97 -27359054.85 0.0284 0.0217  
 Mercury -79618-03-27 12:28 J -27358966.16 -27358965.98 -27358965.80 0.0284 0.0058  
 Mercury -79618-06-24 11:59 J -27358877.17 -27358877.00 -27358876.82 0.0285 0.0101  
 Mercury -79618-09-21 11:16 J -27358788.10 -27358788.03 -27358787.95 0.0286 0.0258  
 Earth -79614-11-27 04:04 J -27357260.43 -27357260.33 -27357260.20 0.0296 0.0260  
 Moon -79614-11-27 07:11 J -27357260.28 -27357260.20 -27357260.09 0.0296 0.0273 \*  
 Earth -79613-12-11 06:42 J -27356880.43 -27356880.22 -27356880.00 0.0296 0.0139  
 Moon -79613-12-11 06:56 J -27356880.42 -27356880.21 -27356879.98 0.0296 0.0154 \*  
 Mars -79612-05-29 05:30 J -27356711.50 -27356711.27 -27356711.03 0.0296 0.0141  
 Moon -79612-12-26 00:56 J -27356500.71 -27356500.46 -27356500.21 0.0296 0.0029  
 Earth -79612-12-26 03:35 J -27356500.60 -27356500.35 -27356500.10 0.0296 0.0012 \*  
 Moon -79610-01-09 12:28 J -27356121.21 -27356120.98 -27356120.75 0.0294 0.0095  
 Earth -79610-01-09 16:18 J -27356121.04 -27356120.82 -27356120.59 0.0294 0.0112 \*  
 Moon -79609-01-23 17:30 J -27355741.93 -27355741.77 -27355741.61 0.0292 0.0211  
 Earth -79609-01-23 19:25 J -27355741.84 -27355741.69 -27355741.53 0.0292 0.0223 \*  
 Venus -79607-11-25 21:06 J -27354704.74 -27354704.62 -27354704.48 0.0283 0.0215  
 Venus -79606-07-13 03:20 J -27354475.51 -27354475.36 -27354475.22 0.0281 0.0197  
 Mercury -79605-08-01 03:49 J -27354090.43 -27354090.34 -27354090.24 0.0277 0.0192  
 Mercury -79605-10-28 14:52 J -27354002.01 -27354001.88 -27354001.76 0.0276 0.0091  
 Mercury -79604-01-25 01:40 J -27353913.56 -27353913.43 -27353913.29 0.0276 0.0013  
 Mercury -79604-04-23 12:42 J -27353825.09 -27353824.97 -27353824.85 0.0275 0.0112  
 Mercury -79604-07-20 23:44 J -27353736.59 -27353736.51 -27353736.42 0.0274 0.0213  
 Earth -79599-05-22 12:42 J -27351970.09 -27351969.97 -27351969.83 0.0265 0.0223  
 Moon -79599-05-22 16:04 J -27351969.92 -27351969.83 -27351969.72 0.0265 0.0237 \*  
 Mars -79598-05-21 19:25 J -27351605.99 -27351605.69 -27351605.37 0.0264 0.0073  
 Earth -79598-06-02 22:04 J -27351593.79 -27351593.58 -27351593.38 0.0264 0.0144  
 Moon -79598-06-02 22:18 J -27351593.77 -27351593.57 -27351593.36 0.0264 0.0149 \*  
 Moon -79597-06-13 05:59 J -27351217.49 -27351217.25 -27351217.00 0.0265 0.0051

Earth -79597-06-13 09:49 J -27351217.33 -27351217.09 -27351216.85 0.0265 0.0059 \*  
 Moon -79596-06-25 01:11 J -27350840.68 -27350840.45 -27350840.22 0.0266 0.0043  
 Earth -79596-06-25 01:54 J -27350840.66 -27350840.42 -27350840.17 0.0266 0.0030 \*  
 Earth -79595-07-06 23:44 J -27350463.73 -27350463.51 -27350463.29 0.0267 0.0121  
 Moon -79595-07-07 03:20 J -27350463.57 -27350463.36 -27350463.14 0.0267 0.0129 \*  
 Earth -79594-07-19 04:32 J -27350086.45 -27350086.31 -27350086.15 0.0269 0.0212  
 Moon -79594-07-19 06:28 J -27350086.38 -27350086.23 -27350086.06 0.0269 0.0209 \*  
 Venus -79591-08-02 07:54 J -27348976.20 -27348976.17 -27348976.11 0.0278 0.0272  
 Venus -79590-03-20 02:08 J -27348746.58 -27348746.41 -27348746.22 0.0280 0.0155  
 Mercury -79589-05-16 11:59 J -27348323.07 -27348323.00 -27348322.92 0.0284 0.0257  
 Mercury -79589-08-13 11:44 J -27348234.18 -27348234.01 -27348233.83 0.0284 0.0099  
 Mercury -79589-11-10 11:16 J -27348145.21 -27348145.03 -27348144.85 0.0285 0.0060  
 Mercury -79588-02-07 10:32 J -27348056.17 -27348056.06 -27348055.94 0.0286 0.0218  
 Mars -79584-07-17 07:40 J -27346435.32 -27346435.18 -27346435.02 0.0296 0.0247  
 Earth -79584-12-04 23:16 J -27346294.71 -27346294.53 -27346294.34 0.0296 0.0195  
 Moon -79584-12-04 23:16 J -27346294.69 -27346294.53 -27346294.35 0.0296 0.0210 \*  
 Earth -79583-12-19 22:18 J -27345914.80 -27345914.57 -27345914.32 0.0295 0.0071  
 Moon -79583-12-20 01:25 J -27345914.67 -27345914.44 -27345914.21 0.0295 0.0087 \*  
 Earth -79581-01-03 14:52 J -27345535.12 -27345534.88 -27345534.64 0.0294 0.0056  
 Moon -79581-01-03 18:28 J -27345534.97 -27345534.73 -27345534.48 0.0294 0.0039 \*  
 Earth -79580-01-16 22:18 J -27345155.76 -27345155.57 -27345155.37 0.0292 0.0173  
 Moon -79580-01-16 23:59 J -27345155.71 -27345155.50 -27345155.29 0.0292 0.0158 \*  
 Moon -79579-01-30 17:01 J -27344776.87 -27344776.79 -27344776.69 0.0290 0.0267  
 Earth -79579-01-30 19:25 J -27344776.76 -27344776.69 -27344776.62 0.0290 0.0275 \*  
 Venus -79577-06-07 00:28 J -27343918.64 -27343918.48 -27343918.30 0.0282 0.0162  
 Venus -79576-01-22 06:28 J -27343689.32 -27343689.23 -27343689.13 0.0280 0.0249  
 Mercury -79576-12-19 06:13 J -27343358.32 -27343358.24 -27343358.17 0.0277 0.0223  
 Mercury -79575-03-17 17:01 J -27343269.91 -27343269.79 -27343269.67 0.0277 0.0121  
 Mercury -79575-06-14 04:04 J -27343181.46 -27343181.33 -27343181.20 0.0276 0.0020  
 Mercury -79575-09-10 15:06 J -27343093.00 -27343092.87 -27343092.75 0.0275 0.0082

Mercury -79575-12-08 01:54 J -27343004.51 -27343004.42 -27343004.31 0.0274 0.0183  
 Earth -79570-05-17 21:35 J -27341382.67 -27341382.60 -27341382.53 0.0266 0.0253  
 Moon -79569-05-28 05:01 J -27341006.45 -27341006.29 -27341006.12 0.0265 0.0188  
 Earth -79569-05-28 05:59 J -27341006.42 -27341006.25 -27341006.07 0.0265 0.0177 \*  
 Earth -79568-06-08 16:32 J -27340630.04 -27340629.81 -27340629.58 0.0265 0.0094  
 Moon -79568-06-08 20:08 J -27340629.89 -27340629.66 -27340629.43 0.0265 0.0091 \*  
 Mars -79568-07-11 08:23 J -27340597.44 -27340597.15 -27340596.84 0.0265 0.0104  
 Earth -79567-06-20 06:42 J -27340253.46 -27340253.22 -27340252.97 0.0266 0.0008  
 Moon -79567-06-20 08:23 J -27340253.41 -27340253.15 -27340252.90 0.0266 0.0006 \*  
 Moon -79566-07-01 23:01 J -27339876.78 -27339876.54 -27339876.31 0.0267 0.0094  
 Earth -79566-07-02 02:23 J -27339876.63 -27339876.40 -27339876.17 0.0267 0.0083 \*  
 Moon -79565-07-13 02:37 J -27339499.57 -27339499.39 -27339499.20 0.0268 0.0175  
 Earth -79565-07-13 04:18 J -27339499.50 -27339499.32 -27339499.13 0.0268 0.0174 \*  
 Earth -79564-07-25 14:08 J -27339121.96 -27339121.91 -27339121.83 0.0271 0.0261  
 Moon -79564-07-25 16:47 J -27339121.87 -27339121.80 -27339121.70 0.0271 0.0253 \*  
 Venus -79561-02-12 15:35 J -27338189.98 -27338189.85 -27338189.69 0.0278 0.0207  
 Venus -79561-09-29 10:18 J -27337960.19 -27337960.07 -27337959.93 0.0280 0.0222  
 Mercury -79560-12-31 11:44 J -27337502.18 -27337502.01 -27337501.85 0.0284 0.0134  
 Mercury -79559-03-30 11:16 J -27337413.21 -27337413.03 -27337412.85 0.0285 0.0025  
 Mercury -79559-06-27 10:47 J -27337324.19 -27337324.05 -27337323.91 0.0286 0.0183  
 Moon -79555-11-28 22:32 J -27335708.68 -27335708.56 -27335708.42 0.0296 0.0255  
 Earth -79555-11-28 23:16 J -27335708.67 -27335708.53 -27335708.39 0.0296 0.0241 \*  
 Mars -79554-09-05 10:47 J -27335428.32 -27335428.05 -27335427.78 0.0296 0.0037  
 Moon -79554-12-13 22:18 J -27335328.80 -27335328.57 -27335328.35 0.0296 0.0135  
 Earth -79554-12-14 01:11 J -27335328.67 -27335328.45 -27335328.21 0.0296 0.0119 \*  
 Moon -79553-12-27 18:13 J -27334948.98 -27334948.74 -27334948.49 0.0295 0.0010  
 Earth -79553-12-27 21:49 J -27334948.84 -27334948.59 -27334948.35 0.0295 0.0010 \*  
 Moon -79551-01-11 08:23 J -27334569.36 -27334569.15 -27334568.93 0.0294 0.0117  
 Earth -79551-01-11 09:35 J -27334569.31 -27334569.10 -27334568.88 0.0294 0.0132 \*  
 Earth -79550-01-25 11:30 J -27334190.15 -27334190.02 -27334189.88 0.0291 0.0242

Moon -79550-01-25 13:40 J -27334190.07 -27334189.93 -27334189.79 0.0291 0.0230 \*  
 Venus -79548-12-18 10:32 J -27333132.25 -27333132.06 -27333131.86 0.0282 0.0086  
 Mercury -79546-05-08 10:04 J -27332626.14 -27332626.08 -27332626.01 0.0278 0.0240  
 Mercury -79546-08-04 21:06 J -27332537.74 -27332537.62 -27332537.51 0.0277 0.0138  
 Mercury -79546-11-01 07:54 J -27332449.30 -27332449.17 -27332449.04 0.0276 0.0037  
 Mercury -79545-01-28 18:56 J -27332360.84 -27332360.71 -27332360.58 0.0275 0.0065  
 Mercury -79545-04-26 05:44 J -27332272.36 -27332272.26 -27332272.15 0.0274 0.0167  
 Mercury -79545-07-23 17:01 J -27332183.82 -27332183.79 -27332183.77 0.0274 0.0267  
 Earth -79540-05-23 20:37 J -27330418.77 -27330418.64 -27330418.48 0.0265 0.0210  
 Moon -79540-05-23 23:01 J -27330418.67 -27330418.54 -27330418.40 0.0265 0.0223 \*  
 Mars -79540-08-25 19:54 J -27330324.82 -27330324.67 -27330324.50 0.0265 0.0226  
 Moon -79539-06-04 02:37 J -27330042.60 -27330042.39 -27330042.17 0.0264 0.0131  
 Earth -79539-06-04 05:59 J -27330042.46 -27330042.25 -27330042.03 0.0264 0.0130 \*  
 Moon -79538-06-15 16:18 J -27329666.05 -27329665.82 -27329665.58 0.0265 0.0034  
 Earth -79538-06-15 18:13 J -27329665.98 -27329665.74 -27329665.50 0.0265 0.0044 \*  
 Earth -79537-06-26 10:47 J -27329289.29 -27329289.05 -27329288.81 0.0266 0.0046  
 Moon -79537-06-26 13:40 J -27329289.16 -27329288.93 -27329288.69 0.0266 0.0060 \*  
 Earth -79536-07-08 09:06 J -27328912.32 -27328912.12 -27328911.90 0.0267 0.0137  
 Moon -79536-07-08 11:01 J -27328912.25 -27328912.04 -27328911.82 0.0267 0.0143 \*  
 Moon -79535-07-20 12:13 J -27328535.13 -27328534.99 -27328534.84 0.0269 0.0220  
 Earth -79535-07-20 14:52 J -27328534.99 -27328534.88 -27328534.73 0.0269 0.0228 \*  
 Venus -79532-08-24 23:30 J -27327403.71 -27327403.52 -27327403.33 0.0278 0.0143  
 Mercury -79530-05-20 11:01 J -27326770.19 -27326770.04 -27326769.89 0.0284 0.0174  
 Mercury -79530-08-17 10:32 J -27326681.24 -27326681.06 -27326680.87 0.0285 0.0017  
 Mercury -79530-11-14 10:04 J -27326592.24 -27326592.08 -27326591.92 0.0286 0.0144  
 Earth -79526-11-22 15:06 J -27325122.91 -27325122.87 -27325122.83 0.0295 0.0291  
 Earth -79525-12-06 18:28 J -27324742.92 -27324742.73 -27324742.52 0.0296 0.0175  
 Moon -79525-12-06 21:49 J -27324742.77 -27324742.59 -27324742.40 0.0296 0.0190 \*  
 Mars -79524-10-23 18:13 J -27324421.95 -27324421.74 -27324421.51 0.0296 0.0169  
 Earth -79524-12-21 17:30 J -27324363.01 -27324362.77 -27324362.53 0.0295 0.0049

Moon -79524-12-21 20:37 J -27324362.88 -27324362.64 -27324362.39 0.0295 0.0065 \*  
 Earth -79522-01-05 09:06 J -27323983.35 -27323983.12 -27323982.88 0.0294 0.0077  
 Moon -79522-01-05 09:20 J -27323983.35 -27323983.11 -27323982.85 0.0294 0.0062 \*  
 Moon -79521-01-19 12:56 J -27323604.16 -27323603.96 -27323603.77 0.0292 0.0179  
 Earth -79521-01-19 15:35 J -27323604.03 -27323603.85 -27323603.67 0.0292 0.0193 \*  
 Moon -79520-02-01 08:08 J -27323225.21 -27323225.16 -27323225.12 0.0289 0.0284  
 Venus -79518-06-30 13:54 J -27322346.12 -27322345.92 -27322345.71 0.0282 0.0033  
 Mercury -79517-09-24 12:13 J -27321894.01 -27321893.99 -27321893.96 0.0278 0.0271  
 Mercury -79517-12-21 23:16 J -27321805.63 -27321805.53 -27321805.43 0.0277 0.0169  
 Mercury -79516-03-20 10:04 J -27321717.20 -27321717.08 -27321716.95 0.0276 0.0068  
 Mercury -79516-06-16 21:06 J -27321628.75 -27321628.62 -27321628.49 0.0275 0.0034  
 Mercury -79516-09-13 08:08 J -27321540.28 -27321540.16 -27321540.05 0.0275 0.0135  
 Mercury -79516-12-10 19:11 J -27321451.77 -27321451.70 -27321451.64 0.0274 0.0236  
 Moon -79511-05-19 01:54 J -27319831.46 -27319831.42 -27319831.35 0.0265 0.0256  
 Earth -79511-05-19 04:32 J -27319831.40 -27319831.31 -27319831.21 0.0265 0.0241 \*  
 Earth -79510-05-30 12:56 J -27319455.15 -27319454.96 -27319454.77 0.0265 0.0163  
 Moon -79510-05-30 15:20 J -27319455.02 -27319454.86 -27319454.67 0.0265 0.0173 \*  
 Mars -79510-10-15 20:52 J -27319316.94 -27319316.63 -27319316.31 0.0265 0.0057  
 Earth -79509-06-09 23:16 J -27319078.76 -27319078.53 -27319078.29 0.0265 0.0080  
 Moon -79509-06-10 01:11 J -27319078.69 -27319078.45 -27319078.21 0.0265 0.0073 \*  
 Moon -79508-06-21 11:01 J -27318702.29 -27318702.04 -27318701.79 0.0266 0.0024  
 Earth -79508-06-21 13:54 J -27318702.16 -27318701.92 -27318701.67 0.0266 0.0009 \*  
 Moon -79507-07-03 07:40 J -27318325.40 -27318325.18 -27318324.96 0.0267 0.0110  
 Earth -79507-07-03 09:49 J -27318325.32 -27318325.09 -27318324.86 0.0267 0.0099 \*  
 Earth -79506-07-15 12:13 J -27317948.15 -27317947.99 -27317947.80 0.0269 0.0190  
 Moon -79506-07-15 15:20 J -27317948.03 -27317947.86 -27317947.69 0.0269 0.0187 \*  
 Moon -79505-07-27 02:23 J -27317570.43 -27317570.40 -27317570.33 0.0271 0.0265  
 Venus -79502-03-07 05:59 J -27316617.46 -27316617.25 -27316617.04 0.0278 0.0083  
 Mercury -79501-10-06 10:04 J -27316038.20 -27316038.08 -27316037.96 0.0284 0.0215  
 Mercury -79500-01-03 09:49 J -27315949.27 -27315949.09 -27315948.91 0.0284 0.0056



Mercury -79500-04-02 09:20 J -27315860.28 -27315860.11 -27315859.94 0.0285 0.0104

Mercury -79500-06-30 08:37 J -27315771.20 -27315771.14 -27315771.06 0.0286 0.0262

Moon -79496-11-30 12:42 J -27314157.11 -27314156.97 -27314156.82 0.0296 0.0239

Earth -79496-11-30 16:32 J -27314156.97 -27314156.81 -27314156.65 0.0296 0.0223 \*

Mars -79496-12-12 05:01 J -27314145.46 -27314145.29 -27314145.10 0.0296 0.0220

Moon -79495-12-15 15:20 J -27313777.08 -27313776.86 -27313776.64 0.0296 0.0114

Earth -79495-12-15 18:13 J -27313776.97 -27313776.74 -27313776.50 0.0296 0.0099 \*

Earth -79494-12-30 14:08 J -27313397.15 -27313396.91 -27313396.67 0.0295 0.0030

Moon -79494-12-30 14:08 J -27313397.15 -27313396.91 -27313396.68 0.0295 0.0015 \*

Earth -79492-01-13 01:25 J -27313017.65 -27313017.44 -27313017.23 0.0294 0.0152

Moon -79492-01-13 04:18 J -27313017.52 -27313017.32 -27313017.11 0.0294 0.0138 \*

Earth -79491-01-27 02:08 J -27312638.51 -27312638.41 -27312638.29 0.0291 0.0259

Moon -79491-01-27 05:44 J -27312638.37 -27312638.26 -27312638.12 0.0291 0.0248 \*

Venus -79488-01-09 23:01 J -27311559.74 -27311559.54 -27311559.34 0.0282 0.0039

Mercury -79487-05-11 03:06 J -27311073.47 -27311073.37 -27311073.28 0.0277 0.0187

Mercury -79487-08-07 13:54 J -27310985.04 -27310984.92 -27310984.79 0.0276 0.0085

Mercury -79487-11-04 00:56 J -27310896.60 -27310896.46 -27310896.33 0.0276 0.0018

Mercury -79486-01-31 11:44 J -27310808.13 -27310808.01 -27310807.89 0.0275 0.0117

Mercury -79486-04-29 22:47 J -27310719.63 -27310719.55 -27310719.47 0.0274 0.0218

Moon -79481-05-25 01:25 J -27308867.59 -27308867.44 -27308867.29 0.0264 0.0210

Earth -79481-05-25 03:35 J -27308867.50 -27308867.35 -27308867.18 0.0264 0.0197 \*

Moon -79480-06-05 10:04 J -27308491.28 -27308491.08 -27308490.86 0.0264 0.0117

Earth -79480-06-05 12:28 J -27308491.19 -27308490.98 -27308490.75 0.0264 0.0115 \*

Mars -79480-12-05 23:01 J -27308307.81 -27308307.54 -27308307.25 0.0264 0.0131

Earth -79479-06-17 00:42 J -27308114.71 -27308114.47 -27308114.22 0.0265 0.0029

Moon -79479-06-17 03:35 J -27308114.59 -27308114.35 -27308114.11 0.0265 0.0016 \*

Earth -79478-06-28 17:44 J -27307738.00 -27307737.76 -27307737.52 0.0266 0.0061

Moon -79478-06-28 20:37 J -27307737.88 -27307737.64 -27307737.39 0.0266 0.0076 \*

Moon -79477-07-09 14:23 J -27307361.11 -27307360.90 -27307360.69 0.0267 0.0155

Earth -79477-07-09 16:32 J -27307361.00 -27307360.81 -27307360.60 0.0267 0.0153 \*

Moon -79476-07-21 20:08 J -27306983.77 -27306983.66 -27306983.53 0.0270 0.0233  
 Earth -79476-07-21 23:16 J -27306983.63 -27306983.53 -27306983.41 0.0270 0.0242 \*  
 Venus -79473-09-16 13:11 J -27305831.17 -27305830.95 -27305830.73 0.0279 0.0021  
 Mercury -79471-02-23 08:52 J -27305306.19 -27305306.13 -27305306.04 0.0284 0.0257  
 Mercury -79471-05-23 08:52 J -27305217.30 -27305217.13 -27305216.95 0.0285 0.0097  
 Mercury -79471-08-20 08:37 J -27305128.32 -27305128.14 -27305127.96 0.0285 0.0062  
 Mercury -79471-11-17 07:40 J -27305039.28 -27305039.18 -27305039.05 0.0286 0.0221  
 Earth -79467-11-24 07:11 J -27303571.28 -27303571.20 -27303571.10 0.0296 0.0274  
 Moon -79467-11-24 11:01 J -27303571.07 -27303571.04 -27303570.98 0.0296 0.0291  
 Earth -79466-12-09 10:47 J -27303191.26 -27303191.05 -27303190.84 0.0296 0.0155  
 Moon -79466-12-09 13:25 J -27303191.14 -27303190.94 -27303190.72 0.0296 0.0171 \*  
 Mars -79465-01-30 18:56 J -27303138.97 -27303138.71 -27303138.44 0.0296 0.0013  
 Moon -79465-12-23 09:06 J -27302811.37 -27302811.12 -27302810.86 0.0295 0.0043  
 Earth -79465-12-23 09:35 J -27302811.35 -27302811.10 -27302810.86 0.0295 0.0028 \*  
 Moon -79463-01-06 21:20 J -27302431.85 -27302431.61 -27302431.37 0.0294 0.0083  
 Earth -79463-01-07 00:28 J -27302431.70 -27302431.48 -27302431.24 0.0294 0.0098 \*  
 Moon -79462-01-21 02:37 J -27302052.55 -27302052.39 -27302052.20 0.0292 0.0201  
 Earth -79462-01-21 05:59 J -27302052.41 -27302052.25 -27302052.08 0.0292 0.0212 \*  
 Venus -79459-07-23 02:08 J -27300773.61 -27300773.41 -27300773.22 0.0281 0.0091  
 Mercury -79458-09-28 05:16 J -27300341.36 -27300341.28 -27300341.20 0.0277 0.0218  
 Mercury -79458-12-25 16:04 J -27300252.95 -27300252.83 -27300252.71 0.0276 0.0117  
 Mercury -79457-03-23 03:06 J -27300164.51 -27300164.37 -27300164.24 0.0276 0.0017  
 Mercury -79457-06-19 13:54 J -27300076.04 -27300075.92 -27300075.79 0.0275 0.0086  
 Mercury -79457-09-16 00:56 J -27299987.56 -27299987.46 -27299987.36 0.0274 0.0187  
 Earth -79452-05-20 10:04 J -27298280.19 -27298280.08 -27298279.95 0.0265 0.0229  
 Moon -79452-05-20 12:13 J -27298280.07 -27298279.99 -27298279.89 0.0265 0.0245 \*  
 Mars -79451-01-19 15:35 J -27298036.04 -27298035.85 -27298035.66 0.0265 0.0211  
 Earth -79451-05-31 17:59 J -27297903.94 -27297903.75 -27297903.54 0.0265 0.0151  
 Moon -79451-05-31 21:20 J -27297903.81 -27297903.61 -27297903.41 0.0265 0.0159 \*  
 Moon -79450-06-12 01:54 J -27297527.66 -27297527.42 -27297527.17 0.0265 0.0056

Earth -79450-06-12 04:32 J -27297527.54 -27297527.31 -27297527.07 0.0265 0.0066 \*  
 Moon -79449-06-22 16:18 J -27297151.06 -27297150.82 -27297150.58 0.0266 0.0039  
 Earth -79449-06-22 19:11 J -27297150.94 -27297150.70 -27297150.45 0.0266 0.0024 \*  
 Earth -79448-07-04 14:52 J -27296774.09 -27296773.88 -27296773.64 0.0267 0.0115  
 Moon -79448-07-04 17:01 J -27296774.00 -27296773.79 -27296773.58 0.0267 0.0124 \*  
 Earth -79447-07-16 17:59 J -27296396.90 -27296396.75 -27296396.58 0.0269 0.0205  
 Moon -79447-07-16 21:20 J -27296396.78 -27296396.61 -27296396.44 0.0269 0.0200 \*  
 Venus -79443-03-29 17:59 J -27295044.97 -27295044.75 -27295044.54 0.0279 0.0035  
 Mercury -79442-10-10 06:56 J -27294485.36 -27294485.21 -27294485.04 0.0284 0.0144  
 Mercury -79441-01-07 06:56 J -27294396.40 -27294396.21 -27294396.03 0.0285 0.0017  
 Mercury -79441-04-05 06:13 J -27294307.38 -27294307.24 -27294307.09 0.0286 0.0175  
 Moon -79437-12-02 03:35 J -27292605.50 -27292605.35 -27292605.19 0.0296 0.0224  
 Earth -79437-12-02 05:30 J -27292605.44 -27292605.27 -27292605.08 0.0296 0.0207 \*  
 Earth -79436-12-17 07:40 J -27292225.41 -27292225.18 -27292224.94 0.0296 0.0080  
 Moon -79436-12-17 08:23 J -27292225.37 -27292225.15 -27292224.92 0.0296 0.0097 \*  
 Mars -79435-03-20 06:28 J -27292132.42 -27292132.23 -27292132.02 0.0296 0.0191  
 Earth -79434-01-01 03:20 J -27291845.60 -27291845.36 -27291845.12 0.0295 0.0049  
 Moon -79434-01-01 06:28 J -27291845.47 -27291845.23 -27291844.99 0.0295 0.0033 \*  
 Earth -79433-01-15 13:54 J -27291466.11 -27291465.92 -27291465.71 0.0294 0.0171  
 Moon -79433-01-15 17:01 J -27291465.99 -27291465.79 -27291465.57 0.0294 0.0157 \*  
 Moon -79432-01-28 14:37 J -27291086.99 -27291086.89 -27291086.79 0.0291 0.0266  
 Earth -79432-01-28 14:23 J -27291086.96 -27291086.90 -27291086.81 0.0291 0.0276 \*  
 Venus -79430-06-18 03:49 J -27290216.42 -27290216.34 -27290216.24 0.0283 0.0255  
 Venus -79429-02-02 10:04 J -27289987.24 -27289987.08 -27289986.91 0.0281 0.0159  
 Mercury -79428-02-14 08:52 J -27289609.20 -27289609.13 -27289609.07 0.0278 0.0238  
 Mercury -79428-05-13 19:40 J -27289520.79 -27289520.68 -27289520.56 0.0277 0.0137  
 Mercury -79428-08-10 06:42 J -27289432.36 -27289432.22 -27289432.09 0.0276 0.0036  
 Mercury -79428-11-06 17:30 J -27289343.90 -27289343.77 -27289343.64 0.0275 0.0066  
 Mercury -79427-02-03 04:32 J -27289255.42 -27289255.31 -27289255.21 0.0274 0.0167  
 Mercury -79427-05-02 15:35 J -27289166.87 -27289166.85 -27289166.83 0.0274 0.0268

Earth	-79423-05-16 00:56 J	-27287692.49	-27287692.46	-27287692.40	0.0265	0.0260
Moon	-79422-05-27 04:47 J	-27287316.44	-27287316.30	-27287316.13	0.0264	0.0199
Earth	-79422-05-27 08:23 J	-27287316.32	-27287316.15	-27287315.97	0.0264	0.0184 *
Mars	-79421-03-11 07:25 J	-27287027.51	-27287027.19	-27287026.87	0.0264	0.0030
Earth	-79421-06-06 17:01 J	-27286940.01	-27286939.79	-27286939.56	0.0264	0.0102
Moon	-79421-06-06 18:42 J	-27286939.93	-27286939.72	-27286939.49	0.0264	0.0101 *
Earth	-79420-06-18 05:16 J	-27286563.52	-27286563.28	-27286563.03	0.0265	0.0015
Moon	-79420-06-18 08:23 J	-27286563.40	-27286563.15	-27286562.90	0.0265	0.0001 *
Moon	-79419-06-29 20:37 J	-27286186.87	-27286186.64	-27286186.39	0.0266	0.0089
Earth	-79419-06-29 22:18 J	-27286186.80	-27286186.57	-27286186.33	0.0266	0.0076 *
Moon	-79418-07-11 18:13 J	-27285809.92	-27285809.74	-27285809.54	0.0267	0.0170
Earth	-79418-07-11 21:49 J	-27285809.78	-27285809.59	-27285809.40	0.0267	0.0167 *
Earth	-79417-07-23 04:32 J	-27285432.37	-27285432.31	-27285432.22	0.0270	0.0256
Moon	-79417-07-23 05:44 J	-27285432.34	-27285432.26	-27285432.15	0.0270	0.0246 *
Venus	-79414-10-10 00:56 J	-27284258.66	-27284258.46	-27284258.25	0.0279	0.0098
Mercury	-79412-02-26 05:59 J	-27283753.38	-27283753.25	-27283753.10	0.0284	0.0186
Mercury	-79412-05-26 05:59 J	-27283664.44	-27283664.25	-27283664.07	0.0285	0.0027
Mercury	-79412-08-23 05:30 J	-27283575.44	-27283575.27	-27283575.11	0.0286	0.0133
Earth	-79408-11-25 20:23 J	-27282019.76	-27282019.65	-27282019.53	0.0296	0.0259
Moon	-79408-11-25 21:06 J	-27282019.70	-27282019.62	-27282019.51	0.0296	0.0275 *
Mars	-79407-05-08 07:25 J	-27281856.38	-27281856.19	-27281855.98	0.0296	0.0199
Moon	-79407-12-10 22:04 J	-27281639.79	-27281639.58	-27281639.36	0.0296	0.0154
Earth	-79407-12-10 23:44 J	-27281639.72	-27281639.51	-27281639.28	0.0296	0.0138 *
Moon	-79406-12-25 18:56 J	-27281259.96	-27281259.71	-27281259.46	0.0296	0.0025
Earth	-79406-12-25 22:32 J	-27281259.81	-27281259.56	-27281259.32	0.0296	0.0008 *
Moon	-79404-01-08 10:32 J	-27280880.28	-27280880.06	-27280879.84	0.0294	0.0103
Earth	-79404-01-08 13:11 J	-27280880.17	-27280879.95	-27280879.72	0.0294	0.0117 *
Earth	-79403-01-22 17:44 J	-27280500.89	-27280500.76	-27280500.60	0.0292	0.0230
Moon	-79403-01-22 18:42 J	-27280500.87	-27280500.72	-27280500.56	0.0292	0.0221 *
Venus	-79401-12-28 06:56 J	-27279430.35	-27279430.21	-27279430.07	0.0282	0.0203

Venus -79400-08-14 12:42 J -27279201.10 -27279200.97 -27279200.83 0.0280 0.0208  
 Mercury -79399-07-04 10:47 J -27278877.07 -27278877.05 -27278877.02 0.0277 0.0271  
 Mercury -79399-09-30 21:49 J -27278788.70 -27278788.59 -27278788.49 0.0277 0.0170  
 Mercury -79399-12-28 08:37 J -27278700.27 -27278700.14 -27278700.01 0.0276 0.0068  
 Mercury -79398-03-26 19:25 J -27278611.82 -27278611.69 -27278611.55 0.0275 0.0034  
 Mercury -79398-06-23 06:28 J -27278523.34 -27278523.23 -27278523.11 0.0274 0.0134  
 Mercury -79398-09-19 17:30 J -27278434.84 -27278434.77 -27278434.70 0.0274 0.0235  
 Earth -79393-05-21 13:40 J -27276729.05 -27276728.93 -27276728.78 0.0265 0.0219  
 Moon -79393-05-21 17:01 J -27276728.89 -27276728.79 -27276728.66 0.0265 0.0234 \*  
 Moon -79392-06-01 20:23 J -27276352.86 -27276352.65 -27276352.44 0.0264 0.0143  
 Earth -79392-06-01 21:20 J -27276352.80 -27276352.61 -27276352.39 0.0264 0.0139 \*  
 Mars -79391-05-01 09:35 J -27276019.37 -27276019.10 -27276018.82 0.0265 0.0142  
 Moon -79391-06-13 04:47 J -27275976.53 -27275976.30 -27275976.06 0.0265 0.0042  
 Earth -79391-06-13 07:54 J -27275976.41 -27275976.17 -27275975.93 0.0265 0.0052 \*  
 Earth -79390-06-24 22:18 J -27275599.82 -27275599.57 -27275599.33 0.0265 0.0038  
 Moon -79390-06-24 23:59 J -27275599.73 -27275599.50 -27275599.27 0.0265 0.0052 \*  
 Earth -79389-07-05 17:59 J -27275222.96 -27275222.75 -27275222.53 0.0267 0.0129  
 Moon -79389-07-05 21:35 J -27275222.80 -27275222.60 -27275222.38 0.0267 0.0138 \*  
 Moon -79388-07-17 20:23 J -27274845.80 -27274845.65 -27274845.49 0.0269 0.0211  
 Earth -79388-07-17 21:06 J -27274845.74 -27274845.62 -27274845.46 0.0269 0.0219 \*  
 Venus -79384-04-21 03:49 J -27273472.52 -27273472.34 -27273472.15 0.0279 0.0145  
 Mercury -79383-07-16 03:06 J -27273021.46 -27273021.37 -27273021.27 0.0284 0.0240  
 Mercury -79383-10-13 03:06 J -27272932.55 -27272932.37 -27272932.20 0.0284 0.0081  
 Mercury -79382-01-10 02:37 J -27272843.57 -27272843.39 -27272843.21 0.0285 0.0079  
 Mercury -79382-04-09 01:54 J -27272754.51 -27272754.42 -27272754.31 0.0286 0.0238  
 Earth -79378-12-04 14:08 J -27271054.09 -27271053.91 -27271053.71 0.0296 0.0193  
 Moon -79378-12-04 16:47 J -27271053.96 -27271053.80 -27271053.62 0.0296 0.0211 \*  
 Mars -79377-06-25 19:40 J -27270849.95 -27270849.68 -27270849.41 0.0297 0.0007  
 Earth -79377-12-18 16:32 J -27270674.05 -27270673.81 -27270673.57 0.0296 0.0064  
 Moon -79377-12-18 20:23 J -27270673.89 -27270673.65 -27270673.41 0.0296 0.0082 \*

Earth -79375-01-02 11:59 J -27270294.23 -27270294.00 -27270293.76 0.0295 0.0066  
 Moon -79375-01-02 14:37 J -27270294.13 -27270293.89 -27270293.63 0.0295 0.0051 \*  
 Moon -79374-01-16 21:35 J -27269914.80 -27269914.60 -27269914.40 0.0294 0.0176  
 Earth -79374-01-16 22:32 J -27269914.74 -27269914.56 -27269914.37 0.0294 0.0187 \*  
 Moon -79373-01-30 18:56 J -27269535.74 -27269535.71 -27269535.66 0.0291 0.0286  
 Earth -79373-01-30 22:32 J -27269535.56 -27269535.56 -27269535.54 0.0291 0.0291  
 Venus -79371-07-10 13:40 J -27268644.11 -27268643.93 -27268643.75 0.0283 0.0140  
 Venus -79370-02-24 19:11 J -27268414.74 -27268414.70 -27268414.64 0.0281 0.0272  
 Mercury -79369-02-18 00:56 J -27268056.55 -27268056.46 -27268056.36 0.0277 0.0193  
 Mercury -79369-05-16 11:44 J -27267968.13 -27267968.01 -27267967.88 0.0276 0.0092  
 Mercury -79369-08-12 22:47 J -27267879.68 -27267879.55 -27267879.42 0.0276 0.0011  
 Mercury -79369-11-09 09:49 J -27267791.21 -27267791.09 -27267790.97 0.0275 0.0112  
 Mercury -79368-02-05 20:37 J -27267702.72 -27267702.64 -27267702.55 0.0274 0.0213  
 Earth -79364-05-17 04:18 J -27266141.40 -27266141.32 -27266141.24 0.0265 0.0250  
 Earth -79363-05-28 11:01 J -27265765.21 -27265765.04 -27265764.85 0.0264 0.0173  
 Moon -79363-05-28 11:59 J -27265765.16 -27265765.00 -27265764.83 0.0264 0.0184 \*  
 Mars -79363-06-15 20:08 J -27265746.87 -27265746.66 -27265746.42 0.0264 0.0186  
 Earth -79362-06-08 19:40 J -27265388.91 -27265388.68 -27265388.45 0.0264 0.0090  
 Moon -79362-06-08 23:16 J -27265388.76 -27265388.53 -27265388.30 0.0264 0.0088 \*  
 Moon -79361-06-19 06:28 J -27265012.48 -27265012.23 -27265011.98 0.0264 0.0012  
 Earth -79361-06-19 07:54 J -27265012.42 -27265012.17 -27265011.93 0.0264 0.0004 \*  
 Moon -79360-06-30 20:52 J -27264635.85 -27264635.63 -27264635.39 0.0266 0.0101  
 Earth -79360-07-01 00:56 J -27264635.70 -27264635.46 -27264635.23 0.0266 0.0089 \*  
 Earth -79359-07-13 00:13 J -27264258.67 -27264258.49 -27264258.31 0.0267 0.0180  
 Moon -79359-07-13 00:13 J -27264258.65 -27264258.49 -27264258.30 0.0267 0.0181 \*  
 Earth -79358-07-25 07:11 J -27263881.21 -27263881.20 -27263881.16 0.0270 0.0268  
 Moon -79358-07-25 10:47 J -27263881.11 -27263881.05 -27263880.96 0.0270 0.0256  
 Venus -79355-03-16 16:04 J -27262915.95 -27262915.83 -27262915.69 0.0278 0.0222  
 Venus -79355-11-01 10:32 J -27262686.21 -27262686.06 -27262685.91 0.0280 0.0206  
 Mercury -79353-03-01 01:40 J -27262200.60 -27262200.43 -27262200.26 0.0284 0.0125

Mercury -79353-05-29 01:25 J -27262111.63 -27262111.44 -27262111.26 0.0285 0.0035  
 Mercury -79353-08-26 00:42 J -27262022.60 -27262022.47 -27262022.33 0.0286 0.0195  
 Moon -79349-11-27 00:28 J -27260468.58 -27260468.48 -27260468.35 0.0296 0.0262  
 Earth -79349-11-27 04:04 J -27260468.46 -27260468.33 -27260468.18 0.0296 0.0245 \*  
 Moon -79348-12-12 03:49 J -27260088.54 -27260088.34 -27260088.11 0.0296 0.0140  
 Earth -79348-12-12 07:40 J -27260088.39 -27260088.18 -27260087.94 0.0296 0.0122 \*  
 Mars -79347-08-14 00:56 J -27259843.65 -27259843.46 -27259843.27 0.0296 0.0208  
 Moon -79347-12-27 04:18 J -27259708.56 -27259708.32 -27259708.08 0.0296 0.0008  
 Earth -79347-12-27 06:28 J -27259708.48 -27259708.23 -27259707.99 0.0296 0.0009 \*  
 Earth -79345-01-10 20:52 J -27259328.84 -27259328.63 -27259328.41 0.0294 0.0134  
 Moon -79345-01-10 22:18 J -27259328.79 -27259328.57 -27259328.36 0.0294 0.0121 \*  
 Earth -79344-01-24 01:40 J -27258949.56 -27258949.43 -27258949.30 0.0292 0.0245  
 Moon -79344-01-24 05:01 J -27258949.42 -27258949.29 -27258949.14 0.0292 0.0238 \*  
 Venus -79341-01-20 16:04 J -27257858.02 -27257857.83 -27257857.63 0.0282 0.0090  
 Mercury -79340-07-07 02:52 J -27257324.45 -27257324.38 -27257324.30 0.0277 0.0226  
 Mercury -79340-10-03 13:54 J -27257236.04 -27257235.92 -27257235.81 0.0276 0.0125  
 Mercury -79340-12-31 00:42 J -27257147.60 -27257147.47 -27257147.34 0.0275 0.0023  
 Mercury -79339-03-29 11:30 J -27257059.14 -27257059.02 -27257058.89 0.0275 0.0079  
 Mercury -79339-06-25 22:32 J -27256970.66 -27256970.56 -27256970.46 0.0274 0.0179  
 Moon -79334-05-23 14:37 J -27255178.01 -27255177.89 -27255177.74 0.0264 0.0220  
 Earth -79334-05-23 15:35 J -27255177.99 -27255177.85 -27255177.69 0.0264 0.0208 \*  
 Moon -79333-06-02 19:11 J -27254801.91 -27254801.70 -27254801.49 0.0264 0.0129  
 Earth -79333-06-02 23:01 J -27254801.75 -27254801.54 -27254801.33 0.0264 0.0127 \*  
 Mars -79333-08-04 11:01 J -27254739.36 -27254739.04 -27254738.72 0.0264 0.0020  
 Earth -79332-06-14 08:52 J -27254425.37 -27254425.13 -27254424.89 0.0264 0.0040  
 Moon -79332-06-14 09:35 J -27254425.33 -27254425.10 -27254424.86 0.0264 0.0029 \*  
 Earth -79331-06-25 23:01 J -27254048.78 -27254048.54 -27254048.30 0.0265 0.0050  
 Moon -79331-06-26 02:37 J -27254048.63 -27254048.39 -27254048.15 0.0265 0.0064 \*  
 Moon -79330-07-07 18:28 J -27253671.94 -27253671.73 -27253671.51 0.0267 0.0145  
 Earth -79330-07-07 18:42 J -27253671.92 -27253671.72 -27253671.50 0.0267 0.0142 \*

Moon -79329-07-18 18:28 J -27253294.86 -27253294.73 -27253294.58 0.0269 0.0222  
 Earth -79329-07-18 22:04 J -27253294.70 -27253294.58 -27253294.45 0.0269 0.0231 \*  
 Venus -79326-09-26 17:16 J -27252129.94 -27252129.78 -27252129.61 0.0278 0.0181  
 Venus -79325-05-13 11:59 J -27251900.10 -27251900.00 -27251899.90 0.0280 0.0249  
 Mercury -79324-07-18 21:49 J -27251468.72 -27251468.59 -27251468.44 0.0284 0.0184  
 Mercury -79324-10-15 21:49 J -27251379.78 -27251379.59 -27251379.41 0.0285 0.0024  
 Mercury -79323-01-12 21:20 J -27251290.77 -27251290.61 -27251290.45 0.0285 0.0136  
 Mars -79319-10-01 17:59 J -27249567.95 -27249567.75 -27249567.53 0.0297 0.0186  
 Earth -79319-12-05 19:11 J -27249502.89 -27249502.70 -27249502.50 0.0297 0.0179  
 Moon -79319-12-05 22:18 J -27249502.75 -27249502.57 -27249502.37 0.0297 0.0197 \*  
 Earth -79318-12-20 21:49 J -27249122.83 -27249122.59 -27249122.35 0.0297 0.0049  
 Moon -79318-12-20 23:01 J -27249122.79 -27249122.54 -27249122.29 0.0297 0.0065 \*  
 Moon -79316-01-03 15:35 J -27248743.09 -27248742.85 -27248742.60 0.0296 0.0067  
 Earth -79316-01-03 17:16 J -27248743.01 -27248742.78 -27248742.54 0.0296 0.0082 \*  
 Moon -79315-01-18 00:13 J -27248363.67 -27248363.49 -27248363.30 0.0294 0.0192  
 Earth -79315-01-18 03:35 J -27248363.51 -27248363.35 -27248363.16 0.0294 0.0202 \*  
 Venus -79312-08-01 21:35 J -27247071.80 -27247071.60 -27247071.39 0.0282 0.0031  
 Mercury -79311-11-24 05:59 J -27246592.30 -27246592.25 -27246592.20 0.0278 0.0252  
 Mercury -79310-02-20 16:47 J -27246503.91 -27246503.80 -27246503.69 0.0277 0.0150  
 Mercury -79310-05-20 03:35 J -27246415.48 -27246415.35 -27246415.22 0.0276 0.0049  
 Mercury -79310-08-16 14:37 J -27246327.02 -27246326.89 -27246326.76 0.0275 0.0053  
 Mercury -79310-11-13 01:25 J -27246238.54 -27246238.44 -27246238.32 0.0275 0.0155  
 Mercury -79309-02-09 12:28 J -27246150.02 -27246149.98 -27246149.93 0.0274 0.0256  
 Earth -79305-05-18 04:47 J -27244590.38 -27244590.30 -27244590.19 0.0265 0.0242  
 Moon -79305-05-18 04:47 J -27244590.35 -27244590.30 -27244590.23 0.0265 0.0255 \*  
 Earth -79304-05-29 11:30 J -27244214.20 -27244214.02 -27244213.83 0.0264 0.0163  
 Moon -79304-05-29 15:06 J -27244214.04 -27244213.87 -27244213.67 0.0264 0.0171 \*  
 Moon -79303-06-09 20:08 J -27243837.90 -27243837.66 -27243837.41 0.0264 0.0072  
 Earth -79303-06-09 19:54 J -27243837.89 -27243837.67 -27243837.43 0.0264 0.0079 \*  
 Mars -79303-09-25 05:30 J -27243730.51 -27243730.27 -27243730.01 0.0264 0.0165



Moon -79302-06-21 04:32 J -27243461.55 -27243461.31 -27243461.07 0.0264 0.0025  
 Earth -79302-06-21 07:54 J -27243461.41 -27243461.17 -27243460.92 0.0264 0.0011 \*  
 Earth -79301-07-02 00:42 J -27243084.69 -27243084.47 -27243084.24 0.0265 0.0101  
 Moon -79301-07-02 00:56 J -27243084.67 -27243084.46 -27243084.24 0.0265 0.0109 \*  
 Earth -79300-07-13 23:59 J -27242707.66 -27242707.50 -27242707.32 0.0267 0.0192  
 Moon -79300-07-14 03:49 J -27242707.51 -27242707.34 -27242707.16 0.0267 0.0189 \*  
 Moon -79299-07-26 08:37 J -27242330.18 -27242330.14 -27242330.10 0.0270 0.0266  
 Venus -79296-04-07 23:30 J -27241343.71 -27241343.52 -27241343.32 0.0278 0.0121  
 Mercury -79295-12-05 20:23 J -27240736.76 -27240736.65 -27240736.54 0.0284 0.0229  
 Mercury -79294-03-04 20:08 J -27240647.84 -27240647.66 -27240647.48 0.0285 0.0070  
 Mercury -79294-06-01 19:54 J -27240558.85 -27240558.67 -27240558.50 0.0285 0.0090  
 Mercury -79294-08-29 19:11 J -27240469.78 -27240469.70 -27240469.61 0.0286 0.0249  
 Moon -79290-11-29 05:30 J -27238917.40 -27238917.27 -27238917.14 0.0296 0.0250  
 Earth -79290-11-29 07:40 J -27238917.32 -27238917.18 -27238917.01 0.0296 0.0234 \*  
 Mars -79289-11-19 06:28 J -27238561.50 -27238561.23 -27238560.96 0.0297 0.0019  
 Earth -79289-12-13 11:44 J -27238537.24 -27238537.01 -27238536.77 0.0297 0.0107  
 Moon -79289-12-13 11:59 J -27238537.22 -27238537.00 -27238536.79 0.0297 0.0123 \*  
 Earth -79288-12-28 10:18 J -27238157.31 -27238157.07 -27238156.82 0.0296 0.0024  
 Moon -79288-12-28 12:56 J -27238157.20 -27238156.96 -27238156.72 0.0296 0.0009 \*  
 Earth -79286-01-12 00:28 J -27237777.68 -27237777.48 -27237777.26 0.0294 0.0149  
 Moon -79286-01-12 04:18 J -27237777.53 -27237777.32 -27237777.10 0.0294 0.0136 \*  
 Earth -79285-01-26 05:16 J -27237398.38 -27237398.28 -27237398.17 0.0292 0.0259  
 Moon -79285-01-26 06:42 J -27237398.34 -27237398.22 -27237398.09 0.0292 0.0253 \*  
 Venus -79282-02-11 23:16 J -27236285.73 -27236285.53 -27236285.32 0.0282 0.0016  
 Mercury -79281-07-09 18:28 J -27235771.82 -27235771.73 -27235771.63 0.0277 0.0185  
 Mercury -79281-10-06 05:30 J -27235683.40 -27235683.27 -27235683.15 0.0276 0.0084  
 Mercury -79280-01-02 16:18 J -27235594.95 -27235594.82 -27235594.69 0.0275 0.0018  
 Mercury -79280-04-01 03:06 J -27235506.48 -27235506.37 -27235506.24 0.0274 0.0119  
 Mercury -79280-06-28 14:08 J -27235417.98 -27235417.91 -27235417.83 0.0274 0.0220  
 Moon -79275-05-24 11:59 J -27233627.14 -27233627.00 -27233626.85 0.0264 0.0209

Earth	-79275-05-24 15:20 J	-27233627.00	-27233626.86	-27233626.69	0.0264	0.0200	*
Mars	-79275-11-08 17:16 J	-27233459.00	-27233458.78	-27233458.53	0.0264	0.0177	
Earth	-79274-06-04 22:32 J	-27233250.78	-27233250.56	-27233250.34	0.0264	0.0116	
Moon	-79274-06-04 22:18 J	-27233250.78	-27233250.57	-27233250.35	0.0264	0.0115	*
Earth	-79273-06-15 08:08 J	-27232874.40	-27232874.16	-27232873.91	0.0264	0.0029	
Moon	-79273-06-15 11:44 J	-27232874.25	-27232874.01	-27232873.76	0.0264	0.0016	*
Moon	-79272-06-26 21:49 J	-27232497.83	-27232497.59	-27232497.34	0.0265	0.0072	
Earth	-79272-06-26 22:04 J	-27232497.81	-27232497.58	-27232497.33	0.0265	0.0062	*
Moon	-79271-07-08 13:54 J	-27232121.12	-27232120.92	-27232120.71	0.0266	0.0152	
Earth	-79271-07-08 17:44 J	-27232120.95	-27232120.76	-27232120.55	0.0266	0.0153	*
Moon	-79270-07-20 19:40 J	-27231743.79	-27231743.68	-27231743.55	0.0269	0.0233	
Earth	-79270-07-20 20:37 J	-27231743.73	-27231743.64	-27231743.52	0.0269	0.0243	*
Venus	-79267-10-18 23:16 J	-27230557.73	-27230557.53	-27230557.32	0.0278	0.0085	
Mercury	-79265-07-21 15:49 J	-27229916.00	-27229915.84	-27229915.68	0.0284	0.0134	
Mercury	-79265-10-18 15:35 J	-27229827.04	-27229826.85	-27229826.67	0.0285	0.0026	
Mercury	-79264-01-15 14:52 J	-27229738.01	-27229737.88	-27229737.73	0.0286	0.0186	
Earth	-79261-11-21 13:25 J	-27228331.98	-27228331.94	-27228331.88	0.0296	0.0289	
Moon	-79260-12-06 18:28 J	-27227951.93	-27227951.73	-27227951.53	0.0297	0.0182	
Earth	-79260-12-06 19:40 J	-27227951.88	-27227951.68	-27227951.47	0.0297	0.0168	*
Moon	-79259-12-21 18:56 J	-27227571.96	-27227571.71	-27227571.47	0.0297	0.0051	
Earth	-79259-12-21 22:18 J	-27227571.81	-27227571.57	-27227571.32	0.0297	0.0037	*
Mars	-79258-01-07 02:37 J	-27227555.56	-27227555.39	-27227555.20	0.0297	0.0218	
Moon	-79257-01-05 14:37 J	-27227192.13	-27227191.89	-27227191.66	0.0296	0.0081	
Earth	-79257-01-05 17:59 J	-27227191.97	-27227191.75	-27227191.51	0.0296	0.0095	*
Moon	-79256-01-19 03:20 J	-27226812.52	-27226812.36	-27226812.19	0.0294	0.0207	
Earth	-79256-01-19 04:32 J	-27226812.47	-27226812.31	-27226812.14	0.0294	0.0214	*
Venus	-79253-08-24 03:20 J	-27225499.56	-27225499.36	-27225499.16	0.0282	0.0070	
Mercury	-79252-11-26 21:06 J	-27225039.70	-27225039.62	-27225039.53	0.0278	0.0214	
Mercury	-79251-02-23 08:08 J	-27224951.28	-27224951.16	-27224951.04	0.0277	0.0112	
Mercury	-79251-05-22 18:56 J	-27224862.84	-27224862.71	-27224862.58	0.0276	0.0010	

Mercury -79251-08-19 05:59 J -27224774.38 -27224774.25 -27224774.13 0.0275 0.0092  
 Mercury -79251-11-15 16:47 J -27224685.89 -27224685.80 -27224685.70 0.0275 0.0193  
 Earth -79246-05-20 03:35 J -27223039.45 -27223039.35 -27223039.23 0.0264 0.0233  
 Moon -79246-05-20 06:56 J -27223039.28 -27223039.21 -27223039.12 0.0264 0.0248 \*  
 Earth -79245-05-30 10:04 J -27222663.27 -27222663.08 -27222662.88 0.0264 0.0154  
 Moon -79245-05-30 10:18 J -27222663.26 -27222663.07 -27222662.85 0.0264 0.0157 \*  
 Mars -79245-12-29 00:56 J -27222450.78 -27222450.46 -27222450.13 0.0264 0.0004  
 Moon -79244-06-10 14:52 J -27222287.12 -27222286.88 -27222286.64 0.0264 0.0058  
 Earth -79244-06-10 18:28 J -27222286.96 -27222286.73 -27222286.49 0.0264 0.0068 \*  
 Moon -79243-06-22 05:44 J -27221910.50 -27221910.26 -27221910.03 0.0264 0.0034  
 Earth -79243-06-22 06:13 J -27221910.48 -27221910.24 -27221909.99 0.0264 0.0021 \*  
 Earth -79242-07-03 22:47 J -27221533.77 -27221533.55 -27221533.33 0.0265 0.0112  
 Moon -79242-07-04 02:23 J -27221533.61 -27221533.40 -27221533.17 0.0265 0.0116 \*  
 Earth -79241-07-14 22:04 J -27221156.73 -27221156.58 -27221156.41 0.0267 0.0203  
 Moon -79241-07-14 23:16 J -27221156.69 -27221156.53 -27221156.34 0.0267 0.0195 \*  
 Venus -79237-04-30 05:16 J -27219771.50 -27219771.28 -27219771.06 0.0278 0.0026  
 Mercury -79236-12-08 14:08 J -27219184.05 -27219183.91 -27219183.77 0.0284 0.0180  
 Mercury -79235-03-07 13:54 J -27219095.11 -27219094.92 -27219094.74 0.0285 0.0020  
 Mercury -79235-06-04 13:25 J -27219006.10 -27219005.94 -27219005.78 0.0286 0.0139  
 Earth -79231-11-30 08:37 J -27217366.30 -27217366.14 -27217365.98 0.0297 0.0222  
 Moon -79231-11-30 10:18 J -27217366.21 -27217366.07 -27217365.92 0.0297 0.0237 \*  
 Mars -79230-02-24 20:52 J -27217279.85 -27217279.63 -27217279.41 0.0297 0.0178  
 Earth -79230-12-15 12:42 J -27216986.20 -27216985.97 -27216985.73 0.0297 0.0094  
 Moon -79230-12-15 16:32 J -27216986.04 -27216985.81 -27216985.58 0.0297 0.0108 \*  
 Earth -79229-12-29 11:30 J -27216606.26 -27216606.02 -27216605.78 0.0296 0.0038  
 Moon -79229-12-29 14:52 J -27216606.13 -27216605.88 -27216605.63 0.0296 0.0024 \*  
 Earth -79227-01-13 01:54 J -27216226.62 -27216226.42 -27216226.22 0.0294 0.0163  
 Moon -79227-01-13 02:37 J -27216226.60 -27216226.39 -27216226.17 0.0294 0.0153 \*  
 Moon -79226-01-27 03:35 J -27215847.43 -27215847.35 -27215847.25 0.0292 0.0270  
 Earth -79226-01-27 06:13 J -27215847.31 -27215847.24 -27215847.14 0.0292 0.0272 \*

Venus -79223-03-06 05:16 J -27214713.47 -27214713.28 -27214713.10 0.0281 0.0117  
 Mercury -79222-04-15 23:01 J -27214307.60 -27214307.54 -27214307.49 0.0277 0.0249  
 Mercury -79222-07-13 09:49 J -27214219.20 -27214219.09 -27214218.98 0.0277 0.0147  
 Mercury -79222-10-09 20:37 J -27214130.77 -27214130.64 -27214130.51 0.0276 0.0046  
 Mercury -79221-01-06 07:40 J -27214042.31 -27214042.18 -27214042.05 0.0275 0.0056  
 Mercury -79221-04-03 18:28 J -27213953.83 -27213953.73 -27213953.62 0.0274 0.0157  
 Mercury -79221-07-01 05:30 J -27213865.31 -27213865.27 -27213865.23 0.0273 0.0258  
 Moon -79216-05-25 12:56 J -27212076.10 -27212075.96 -27212075.80 0.0264 0.0199  
 Earth -79216-05-25 13:54 J -27212076.08 -27212075.92 -27212075.75 0.0264 0.0190 \*  
 Earth -79215-06-05 20:37 J -27211699.86 -27211699.64 -27211699.42 0.0264 0.0107  
 Moon -79215-06-06 00:28 J -27211699.71 -27211699.48 -27211699.26 0.0264 0.0100 \*  
 Mars -79214-02-17 18:42 J -27211442.96 -27211442.72 -27211442.47 0.0264 0.0170  
 Earth -79214-06-17 06:13 J -27211323.49 -27211323.24 -27211323.00 0.0264 0.0019  
 Moon -79214-06-17 07:11 J -27211323.45 -27211323.20 -27211322.94 0.0264 0.0006 \*  
 Moon -79213-06-27 16:18 J -27210947.06 -27210946.82 -27210946.58 0.0265 0.0080  
 Earth -79213-06-27 19:40 J -27210946.91 -27210946.68 -27210946.44 0.0265 0.0073 \*  
 Moon -79212-07-09 14:23 J -27210570.09 -27210569.90 -27210569.70 0.0266 0.0160  
 Earth -79212-07-09 15:06 J -27210570.05 -27210569.87 -27210569.66 0.0266 0.0165 \*  
 Earth -79211-07-21 17:59 J -27210192.82 -27210192.75 -27210192.66 0.0268 0.0253  
 Moon -79211-07-21 21:20 J -27210192.71 -27210192.61 -27210192.50 0.0268 0.0240 \*  
 Venus -79208-11-10 04:32 J -27208985.53 -27208985.31 -27208985.09 0.0278 0.0009  
 Mercury -79206-04-27 09:06 J -27208452.20 -27208452.12 -27208452.03 0.0283 0.0247  
 Mercury -79206-07-25 09:06 J -27208363.30 -27208363.12 -27208362.94 0.0284 0.0087  
 Mercury -79206-10-22 08:37 J -27208274.31 -27208274.14 -27208273.96 0.0285 0.0073  
 Mercury -79205-01-19 08:08 J -27208185.26 -27208185.16 -27208185.05 0.0286 0.0232  
 Moon -79202-11-23 09:06 J -27206781.14 -27206781.12 -27206781.09 0.0296 0.0294  
 Earth -79202-11-23 11:44 J -27206781.08 -27206781.01 -27206780.92 0.0296 0.0280  
 Moon -79201-12-07 14:23 J -27206401.09 -27206400.90 -27206400.69 0.0297 0.0171  
 Earth -79201-12-07 18:13 J -27206400.95 -27206400.74 -27206400.53 0.0297 0.0157 \*  
 Mars -79200-04-13 20:52 J -27206273.89 -27206273.63 -27206273.36 0.0297 0.0026

Moon -79200-12-22 18:28 J -27206020.97 -27206020.73 -27206020.49 0.0297 0.0036  
 Earth -79200-12-22 20:37 J -27206020.88 -27206020.64 -27206020.39 0.0297 0.0025 \*  
 Earth -79198-01-06 16:18 J -27205641.04 -27205640.82 -27205640.59 0.0296 0.0106  
 Moon -79198-01-06 16:47 J -27205641.02 -27205640.80 -27205640.57 0.0296 0.0097 \*  
 Earth -79197-01-21 02:37 J -27205261.53 -27205261.39 -27205261.22 0.0294 0.0226  
 Moon -79197-01-21 05:44 J -27205261.40 -27205261.26 -27205261.09 0.0294 0.0221 \*  
 Venus -79194-01-30 00:42 J -27204156.55 -27204156.47 -27204156.37 0.0284 0.0254  
 Venus -79194-09-16 07:40 J -27203927.34 -27203927.18 -27203927.01 0.0282 0.0165  
 Mercury -79193-11-29 11:59 J -27203487.10 -27203487.00 -27203486.90 0.0278 0.0179  
 Mercury -79192-02-25 23:01 J -27203398.67 -27203398.54 -27203398.42 0.0277 0.0077  
 Mercury -79192-05-25 09:49 J -27203310.22 -27203310.09 -27203309.95 0.0276 0.0026  
 Mercury -79192-08-21 20:52 J -27203221.75 -27203221.63 -27203221.51 0.0275 0.0127  
 Mercury -79192-11-18 07:54 J -27203133.24 -27203133.17 -27203133.10 0.0274 0.0228  
 Earth -79187-05-21 01:11 J -27201488.57 -27201488.45 -27201488.32 0.0264 0.0225  
 Moon -79187-05-21 03:06 J -27201488.47 -27201488.37 -27201488.25 0.0264 0.0238 \*  
 Mars -79186-04-04 02:52 J -27201170.62 -27201170.38 -27201170.11 0.0264 0.0158  
 Moon -79186-06-01 04:04 J -27201112.53 -27201112.33 -27201112.12 0.0264 0.0142  
 Earth -79186-06-01 07:25 J -27201112.38 -27201112.19 -27201111.98 0.0264 0.0145 \*  
 Moon -79185-06-11 14:37 J -27200736.12 -27200735.89 -27200735.66 0.0263 0.0046  
 Earth -79185-06-11 15:49 J -27200736.07 -27200735.84 -27200735.60 0.0263 0.0059 \*  
 Earth -79184-06-23 03:35 J -27200359.59 -27200359.35 -27200359.11 0.0264 0.0031  
 Moon -79184-06-23 06:42 J -27200359.45 -27200359.22 -27200358.98 0.0264 0.0045 \*  
 Earth -79183-07-04 20:08 J -27199982.88 -27199982.66 -27199982.44 0.0265 0.0122  
 Moon -79183-07-04 21:06 J -27199982.84 -27199982.62 -27199982.39 0.0265 0.0123 \*  
 Moon -79182-07-16 15:49 J -27199606.00 -27199605.84 -27199605.67 0.0267 0.0200  
 Earth -79182-07-16 19:25 J -27199605.84 -27199605.69 -27199605.54 0.0267 0.0212 \*  
 Venus -79178-05-23 10:32 J -27198199.27 -27198199.06 -27198198.85 0.0278 0.0068  
 Mercury -79177-12-11 07:25 J -27197631.36 -27197631.19 -27197631.03 0.0284 0.0133  
 Mercury -79176-03-10 07:11 J -27197542.39 -27197542.20 -27197542.02 0.0285 0.0027  
 Mercury -79176-06-07 06:28 J -27197453.36 -27197453.23 -27197453.09 0.0286 0.0186

Earth -79172-12-01 06:13 J -27195815.40 -27195815.24 -27195815.05 0.0297 0.0212  
 Moon -79172-12-01 10:04 J -27195815.24 -27195815.08 -27195814.92 0.0297 0.0226 \*  
 Earth -79171-12-16 10:47 J -27195435.28 -27195435.05 -27195434.81 0.0297 0.0082  
 Moon -79171-12-16 12:28 J -27195435.22 -27195434.98 -27195434.74 0.0297 0.0093 \*  
 Mars -79170-06-02 02:37 J -27195267.55 -27195267.39 -27195267.21 0.0297 0.0224  
 Moon -79170-12-31 08:08 J -27195055.41 -27195055.16 -27195054.91 0.0296 0.0042  
 Earth -79170-12-31 09:35 J -27195055.34 -27195055.10 -27195054.85 0.0296 0.0051 \*  
 Moon -79168-01-13 20:23 J -27194675.84 -27194675.65 -27194675.44 0.0295 0.0170  
 Earth -79168-01-13 23:59 J -27194675.69 -27194675.50 -27194675.30 0.0295 0.0175 \*  
 Moon -79167-01-28 01:40 J -27194296.48 -27194296.43 -27194296.37 0.0292 0.0283  
 Earth -79167-01-28 04:32 J -27194296.36 -27194296.31 -27194296.24 0.0292 0.0283  
 Venus -79165-08-11 02:52 J -27193370.51 -27193370.38 -27193370.23 0.0284 0.0205  
 Venus -79164-03-28 09:35 J -27193141.23 -27193141.10 -27193140.97 0.0281 0.0212  
 Mercury -79163-04-18 13:54 J -27192755.00 -27192754.92 -27192754.84 0.0277 0.0214  
 Mercury -79163-07-16 00:42 J -27192666.59 -27192666.47 -27192666.35 0.0277 0.0112  
 Mercury -79163-10-12 11:44 J -27192578.15 -27192578.01 -27192577.88 0.0276 0.0012  
 Mercury -79162-01-08 22:32 J -27192489.68 -27192489.56 -27192489.43 0.0275 0.0092  
 Mercury -79162-04-07 09:35 J -27192401.19 -27192401.10 -27192401.01 0.0274 0.0193  
 Earth -79158-05-16 05:59 J -27190901.28 -27190901.25 -27190901.20 0.0265 0.0260  
 Earth -79157-05-26 11:16 J -27190525.19 -27190525.03 -27190524.84 0.0264 0.0182  
 Moon -79157-05-26 14:23 J -27190525.06 -27190524.90 -27190524.73 0.0264 0.0188 \*  
 Mars -79156-05-23 13:25 J -27190163.25 -27190162.94 -27190162.61 0.0263 0.0010  
 Earth -79156-06-06 17:59 J -27190148.97 -27190148.75 -27190148.51 0.0263 0.0098  
 Moon -79156-06-06 19:25 J -27190148.92 -27190148.69 -27190148.45 0.0263 0.0088 \*  
 Moon -79155-06-18 00:13 J -27189772.74 -27189772.49 -27189772.24 0.0264 0.0007  
 Earth -79155-06-18 03:35 J -27189772.60 -27189772.35 -27189772.11 0.0264 0.0008 \*  
 Moon -79154-06-29 15:35 J -27189396.08 -27189395.85 -27189395.63 0.0265 0.0089  
 Earth -79154-06-29 17:01 J -27189396.02 -27189395.79 -27189395.56 0.0265 0.0083 \*  
 Earth -79153-07-10 12:13 J -27189019.17 -27189018.99 -27189018.80 0.0266 0.0174  
 Moon -79153-07-10 15:35 J -27189019.03 -27189018.85 -27189018.65 0.0266 0.0165 \*

Earth -79152-07-22 14:52 J -27188641.92 -27188641.88 -27188641.82 0.0268 0.0262  
 Moon -79152-07-22 17:30 J -27188641.86 -27188641.77 -27188641.67 0.0268 0.0247 \*  
 Venus -79149-12-02 09:06 J -27187413.33 -27187413.12 -27187412.92 0.0278 0.0100  
 Mercury -79147-04-30 02:08 J -27186899.54 -27186899.41 -27186899.28 0.0283 0.0202  
 Mercury -79147-07-28 01:54 J -27186810.60 -27186810.42 -27186810.23 0.0284 0.0043  
 Mercury -79147-10-25 01:25 J -27186721.60 -27186721.44 -27186721.27 0.0285 0.0117  
 Mercury -79146-01-22 00:56 J -27186632.50 -27186632.46 -27186632.41 0.0286 0.0275  
 Moon -79143-11-24 05:16 J -27185230.33 -27185230.28 -27185230.21 0.0296 0.0286  
 Earth -79143-11-24 08:37 J -27185230.23 -27185230.14 -27185230.04 0.0296 0.0271 \*  
 Mars -79142-07-20 03:35 J -27184992.57 -27184992.35 -27184992.13 0.0297 0.0175  
 Moon -79142-12-09 14:23 J -27184850.10 -27184849.90 -27184849.70 0.0297 0.0158  
 Earth -79142-12-09 14:52 J -27184850.09 -27184849.88 -27184849.66 0.0297 0.0147 \*  
 Earth -79141-12-23 17:30 J -27184470.02 -27184469.77 -27184469.52 0.0297 0.0014  
 Moon -79141-12-23 19:54 J -27184469.91 -27184469.67 -27184469.43 0.0297 0.0021 \*  
 Earth -79139-01-07 13:11 J -27184090.17 -27184089.95 -27184089.72 0.0296 0.0117  
 Moon -79139-01-07 17:01 J -27184090.01 -27184089.79 -27184089.56 0.0296 0.0113 \*  
 Earth -79138-01-21 23:44 J -27183710.64 -27183710.51 -27183710.36 0.0294 0.0236  
 Moon -79138-01-22 02:37 J -27183710.54 -27183710.39 -27183710.24 0.0294 0.0234 \*  
 Venus -79135-02-21 04:47 J -27182584.47 -27182584.30 -27182584.13 0.0284 0.0159  
 Venus -79135-10-08 11:30 J -27182355.09 -27182355.02 -27182354.94 0.0282 0.0259  
 Mercury -79134-09-05 15:49 J -27182022.89 -27182022.84 -27182022.78 0.0279 0.0248  
 Mercury -79134-12-03 02:52 J -27181934.49 -27181934.38 -27181934.27 0.0278 0.0145  
 Mercury -79133-02-29 13:40 J -27181846.06 -27181845.93 -27181845.79 0.0277 0.0044  
 Mercury -79133-05-28 00:42 J -27181757.60 -27181757.47 -27181757.34 0.0276 0.0060  
 Mercury -79133-08-24 11:44 J -27181669.12 -27181669.01 -27181668.90 0.0275 0.0162  
 Mercury -79133-11-20 22:32 J -27181580.59 -27181580.56 -27181580.52 0.0274 0.0264  
 Moon -79128-05-21 19:40 J -27179937.79 -27179937.68 -27179937.55 0.0264 0.0228  
 Earth -79128-05-21 22:18 J -27179937.69 -27179937.57 -27179937.42 0.0264 0.0217 \*  
 Moon -79127-06-02 02:52 J -27179561.58 -27179561.38 -27179561.17 0.0264 0.0133  
 Earth -79127-06-02 04:32 J -27179561.51 -27179561.31 -27179561.09 0.0264 0.0136 \*

Earth -79126-06-13 12:56 J -27179185.20 -27179184.96 -27179184.72 0.0263 0.0049  
 Moon -79126-06-13 16:04 J -27179185.06 -27179184.83 -27179184.59 0.0263 0.0035 \*  
 Mars -79126-07-14 01:40 J -27179154.64 -27179154.43 -27179154.20 0.0263 0.0190  
 Earth -79125-06-24 00:42 J -27178808.71 -27178808.47 -27178808.23 0.0264 0.0041  
 Moon -79125-06-24 02:52 J -27178808.62 -27178808.38 -27178808.13 0.0264 0.0053 \*  
 Moon -79124-07-05 13:54 J -27178432.13 -27178431.92 -27178431.69 0.0265 0.0129  
 Earth -79124-07-05 17:01 J -27178431.99 -27178431.79 -27178431.56 0.0265 0.0134 \*  
 Moon -79123-07-17 14:08 J -27178055.05 -27178054.91 -27178054.75 0.0267 0.0209  
 Earth -79123-07-17 16:18 J -27178054.94 -27178054.82 -27178054.67 0.0267 0.0222 \*  
 Venus -79120-10-27 21:49 J -27176856.64 -27176856.59 -27176856.50 0.0276 0.0261  
 Venus -79119-06-14 15:35 J -27176627.03 -27176626.85 -27176626.67 0.0278 0.0162  
 Mercury -79118-09-17 00:42 J -27176167.56 -27176167.47 -27176167.38 0.0283 0.0245  
 Mercury -79118-12-15 00:28 J -27176078.65 -27176078.48 -27176078.30 0.0284 0.0087  
 Mercury -79117-03-13 00:13 J -27175989.67 -27175989.49 -27175989.31 0.0285 0.0073  
 Mercury -79117-06-09 23:44 J -27175900.62 -27175900.51 -27175900.41 0.0286 0.0232  
 Earth -79113-12-02 04:32 J -27174264.49 -27174264.31 -27174264.13 0.0297 0.0201  
 Moon -79113-12-02 04:18 J -27174264.49 -27174264.32 -27174264.13 0.0297 0.0212 \*  
 Mars -79112-09-06 20:08 J -27173985.92 -27173985.66 -27173985.39 0.0297 0.0031  
 Moon -79112-12-17 05:59 J -27173884.49 -27173884.25 -27173884.01 0.0297 0.0077  
 Earth -79112-12-17 08:52 J -27173884.37 -27173884.13 -27173883.89 0.0297 0.0071 \*  
 Moon -79110-01-01 04:04 J -27173504.57 -27173504.33 -27173504.09 0.0296 0.0059  
 Earth -79110-01-01 07:40 J -27173504.42 -27173504.18 -27173503.94 0.0296 0.0062 \*  
 Moon -79109-01-15 20:08 J -27173124.83 -27173124.66 -27173124.47 0.0295 0.0187  
 Earth -79109-01-15 22:04 J -27173124.76 -27173124.58 -27173124.39 0.0295 0.0186 \*  
 Venus -79106-09-03 07:11 J -27171798.39 -27171798.20 -27171798.01 0.0283 0.0108  
 Mercury -79104-04-21 04:47 J -27171202.40 -27171202.30 -27171202.20 0.0277 0.0179  
 Mercury -79104-07-18 15:35 J -27171113.98 -27171113.85 -27171113.72 0.0277 0.0077  
 Mercury -79104-10-15 02:37 J -27171025.53 -27171025.39 -27171025.26 0.0276 0.0026  
 Mercury -79103-01-11 13:25 J -27170937.05 -27170936.94 -27170936.82 0.0275 0.0127  
 Mercury -79103-04-10 00:28 J -27170848.55 -27170848.48 -27170848.41 0.0274 0.0228



Earth	-79099-05-17 03:49 J	-27169350.41	-27169350.34	-27169350.26	0.0265	0.0252
Earth	-79098-05-28 09:06 J	-27168974.29	-27168974.12	-27168973.93	0.0264	0.0173
Moon	-79098-05-28 11:59 J	-27168974.18	-27168974.00	-27168973.82	0.0264	0.0177 *
Mars	-79098-08-27 18:28 J	-27168882.98	-27168882.73	-27168882.46	0.0264	0.0149
Moon	-79097-06-07 12:56 J	-27168598.20	-27168597.96	-27168597.72	0.0263	0.0075
Earth	-79097-06-07 16:04 J	-27168598.06	-27168597.83	-27168597.60	0.0263	0.0088 *
Moon	-79096-06-18 23:16 J	-27168221.77	-27168221.53	-27168221.30	0.0264	0.0016
Earth	-79096-06-19 01:25 J	-27168221.69	-27168221.44	-27168221.20	0.0264	0.0002 *
Earth	-79095-06-30 14:37 J	-27167845.11	-27167844.89	-27167844.65	0.0265	0.0094
Moon	-79095-06-30 17:30 J	-27167844.99	-27167844.77	-27167844.54	0.0265	0.0096 *
Earth	-79094-07-12 10:04 J	-27167468.25	-27167468.08	-27167467.89	0.0266	0.0184
Moon	-79094-07-12 12:13 J	-27167468.17	-27167467.99	-27167467.79	0.0266	0.0173 *
Moon	-79093-07-23 10:18 J	-27167091.14	-27167091.07	-27167090.99	0.0268	0.0255
Venus	-79090-05-09 21:06 J	-27166070.74	-27166070.62	-27166070.49	0.0276	0.0227
Venus	-79090-12-25 14:37 J	-27165841.05	-27165840.89	-27165840.74	0.0278	0.0196
Mercury	-79088-05-02 19:25 J	-27165346.84	-27165346.69	-27165346.53	0.0283	0.0155
Mercury	-79088-07-30 19:11 J	-27165257.88	-27165257.70	-27165257.51	0.0284	0.0005
Mercury	-79088-10-27 18:42 J	-27165168.87	-27165168.72	-27165168.57	0.0285	0.0163
Earth	-79084-11-25 05:59 J	-27163679.36	-27163679.25	-27163679.13	0.0296	0.0262
Moon	-79084-11-25 07:11 J	-27163679.28	-27163679.20	-27163679.10	0.0296	0.0274 *
Earth	-79083-12-10 12:13 J	-27163299.21	-27163298.99	-27163298.77	0.0297	0.0136
Moon	-79083-12-10 15:20 J	-27163299.06	-27163298.86	-27163298.64	0.0297	0.0145 *
Mars	-79082-10-25 11:16 J	-27162980.19	-27162980.03	-27162979.85	0.0297	0.0228
Earth	-79082-12-25 14:37 J	-27162919.14	-27162918.89	-27162918.65	0.0297	0.0004
Moon	-79082-12-25 17:44 J	-27162919.01	-27162918.76	-27162918.51	0.0297	0.0008 *
Earth	-79080-01-08 10:04 J	-27162539.30	-27162539.08	-27162538.86	0.0296	0.0128
Moon	-79080-01-08 10:32 J	-27162539.28	-27162539.06	-27162538.82	0.0296	0.0129 *
Moon	-79079-01-22 17:59 J	-27162159.86	-27162159.75	-27162159.61	0.0294	0.0251
Earth	-79079-01-22 20:23 J	-27162159.77	-27162159.65	-27162159.51	0.0294	0.0246 *
Venus	-79076-03-15 08:37 J	-27161012.34	-27161012.14	-27161011.94	0.0284	0.0064

Mercury -79075-09-08 06:28 J -27160470.31 -27160470.23 -27160470.14 0.0279 0.0215

Mercury -79075-12-05 17:30 J -27160381.89 -27160381.77 -27160381.65 0.0278 0.0112

Mercury -79074-03-04 04:32 J -27160293.44 -27160293.31 -27160293.18 0.0277 0.0009

Mercury -79074-05-31 15:35 J -27160204.98 -27160204.85 -27160204.73 0.0276 0.0094

Mercury -79074-08-28 02:23 J -27160116.49 -27160116.40 -27160116.30 0.0275 0.0196

Moon -79069-05-22 17:01 J -27158386.92 -27158386.79 -27158386.66 0.0264 0.0218

Earth -79069-05-22 19:54 J -27158386.81 -27158386.67 -27158386.52 0.0264 0.0209 \*

Earth -79068-06-03 02:23 J -27158010.61 -27158010.40 -27158010.19 0.0264 0.0126

Moon -79068-06-03 04:32 J -27158010.51 -27158010.31 -27158010.09 0.0264 0.0120 \*

Mars -79068-10-16 20:52 J -27157874.95 -27157874.63 -27157874.31 0.0263 0.0027

Earth -79067-06-14 10:47 J -27157634.29 -27157634.05 -27157633.81 0.0263 0.0039

Moon -79067-06-14 13:11 J -27157634.20 -27157633.95 -27157633.70 0.0263 0.0024 \*

Moon -79066-06-25 19:54 J -27157257.91 -27157257.67 -27157257.42 0.0264 0.0060

Earth -79066-06-25 22:32 J -27157257.80 -27157257.56 -27157257.32 0.0264 0.0052 \*

Moon -79065-07-06 12:42 J -27156881.17 -27156880.97 -27156880.76 0.0265 0.0138

Earth -79065-07-06 15:06 J -27156881.07 -27156880.87 -27156880.65 0.0265 0.0143 \*

Earth -79064-07-18 14:23 J -27156504.01 -27156503.90 -27156503.77 0.0267 0.0232

Moon -79064-07-18 17:01 J -27156503.92 -27156503.79 -27156503.64 0.0267 0.0218 \*

Venus -79061-11-19 03:35 J -27155284.52 -27155284.35 -27155284.17 0.0276 0.0165

Venus -79060-07-06 21:06 J -27155054.68 -27155054.62 -27155054.53 0.0279 0.0260

Mercury -79059-09-19 18:13 J -27154614.87 -27154614.74 -27154614.60 0.0283 0.0197

Mercury -79059-12-17 17:59 J -27154525.93 -27154525.75 -27154525.56 0.0284 0.0038

Mercury -79058-03-16 17:44 J -27154436.93 -27154436.76 -27154436.60 0.0285 0.0122

Mercury -79058-06-13 17:01 J -27154347.82 -27154347.79 -27154347.75 0.0286 0.0280

Moon -79054-12-03 23:16 J -27152713.70 -27152713.53 -27152713.33 0.0297 0.0200

Earth -79054-12-04 03:20 J -27152713.55 -27152713.36 -27152713.17 0.0297 0.0190 \*

Mars -79054-12-13 04:32 J -27152704.52 -27152704.31 -27152704.08 0.0297 0.0170

Moon -79053-12-18 04:32 J -27152333.54 -27152333.31 -27152333.07 0.0297 0.0065

Earth -79053-12-18 07:25 J -27152333.43 -27152333.19 -27152332.94 0.0297 0.0059 \*

Earth -79051-01-02 05:59 J -27151953.48 -27151953.25 -27151953.01 0.0297 0.0075

Moon -79051-01-02 05:59 J -27151953.47 -27151953.25 -27151953.02 0.0297 0.0075 \*  
 Earth -79050-01-16 20:37 J -27151573.82 -27151573.64 -27151573.46 0.0295 0.0198  
 Moon -79050-01-16 23:30 J -27151573.69 -27151573.52 -27151573.34 0.0295 0.0204 \*  
 Venus -79047-09-25 11:59 J -27150226.21 -27150226.00 -27150225.80 0.0283 0.0011  
 Mercury -79045-01-26 08:37 J -27149738.19 -27149738.14 -27149738.08 0.0278 0.0246  
 Mercury -79045-04-23 19:40 J -27149649.79 -27149649.68 -27149649.57 0.0277 0.0143  
 Mercury -79045-07-21 06:42 J -27149561.36 -27149561.22 -27149561.09 0.0277 0.0042  
 Mercury -79045-10-17 17:30 J -27149472.90 -27149472.77 -27149472.64 0.0276 0.0062  
 Mercury -79044-01-14 04:32 J -27149384.42 -27149384.31 -27149384.20 0.0275 0.0164  
 Mercury -79044-04-12 15:35 J -27149295.88 -27149295.85 -27149295.82 0.0274 0.0265  
 Earth -79040-05-18 02:23 J -27147799.48 -27147799.40 -27147799.29 0.0265 0.0244  
 Moon -79040-05-18 05:44 J -27147799.31 -27147799.26 -27147799.20 0.0265 0.0256 \*  
 Moon -79039-05-29 06:13 J -27147423.43 -27147423.24 -27147423.04 0.0264 0.0163  
 Earth -79039-05-29 08:08 J -27147423.34 -27147423.16 -27147422.96 0.0264 0.0164 \*  
 Moon -79038-06-09 12:28 J -27147047.20 -27147046.98 -27147046.74 0.0263 0.0065  
 Earth -79038-06-09 15:06 J -27147047.10 -27147046.87 -27147046.64 0.0263 0.0078 \*  
 Mars -79038-12-06 18:28 J -27146866.93 -27146866.73 -27146866.51 0.0263 0.0198  
 Earth -79037-06-20 00:28 J -27146670.72 -27146670.48 -27146670.23 0.0264 0.0012  
 Moon -79037-06-20 03:06 J -27146670.61 -27146670.37 -27146670.13 0.0264 0.0024 \*  
 Earth -79036-07-01 14:08 J -27146294.14 -27146293.91 -27146293.68 0.0264 0.0104  
 Moon -79036-07-01 17:16 J -27146294.01 -27146293.78 -27146293.55 0.0264 0.0105 \*  
 Moon -79035-07-13 06:56 J -27145917.38 -27145917.21 -27145917.01 0.0266 0.0181  
 Earth -79035-07-13 09:35 J -27145917.26 -27145917.10 -27145916.93 0.0266 0.0194 \*  
 Moon -79034-07-25 09:06 J -27145540.13 -27145540.12 -27145540.10 0.0268 0.0267  
 Venus -79031-06-01 03:35 J -27144498.54 -27144498.35 -27144498.15 0.0277 0.0129  
 Mercury -79029-02-06 13:25 J -27143883.00 -27143882.94 -27143882.86 0.0283 0.0262  
 Mercury -79029-05-05 13:25 J -27143794.11 -27143793.94 -27143793.77 0.0283 0.0103  
 Mercury -79029-08-02 12:56 J -27143705.14 -27143704.96 -27143704.77 0.0284 0.0056  
 Mercury -79029-10-30 12:28 J -27143616.10 -27143615.98 -27143615.86 0.0285 0.0214  
 Earth -79025-11-26 05:44 J -27142128.38 -27142128.26 -27142128.12 0.0296 0.0251

Moon -79025-11-26 09:35 J -27142128.20 -27142128.10 -27142127.97 0.0296 0.0260 \*  
 Earth -79024-12-11 11:44 J -27141748.23 -27141748.01 -27141747.78 0.0297 0.0124  
 Moon -79024-12-11 14:23 J -27141748.13 -27141747.90 -27141747.67 0.0297 0.0130 \*  
 Mars -79023-01-30 04:47 J -27141698.56 -27141698.30 -27141698.03 0.0297 0.0035  
 Moon -79023-12-26 13:11 J -27141368.21 -27141367.95 -27141367.70 0.0297 0.0010  
 Earth -79023-12-26 13:54 J -27141368.16 -27141367.92 -27141367.67 0.0297 0.0010 \*  
 Moon -79021-01-10 05:44 J -27140988.48 -27140988.26 -27140988.05 0.0296 0.0146  
 Earth -79021-01-10 09:06 J -27140988.33 -27140988.12 -27140987.90 0.0296 0.0140 \*  
 Moon -79020-01-23 15:49 J -27140608.93 -27140608.84 -27140608.73 0.0294 0.0267  
 Earth -79020-01-23 19:11 J -27140608.81 -27140608.70 -27140608.57 0.0294 0.0256 \*  
 Venus -79017-04-06 12:56 J -27139440.16 -27139439.96 -27139439.75 0.0284 0.0035  
 Mercury -79016-09-10 21:20 J -27138917.70 -27138917.61 -27138917.50 0.0279 0.0180  
 Mercury -79016-12-08 08:23 J -27138829.27 -27138829.15 -27138829.02 0.0278 0.0076  
 Mercury -79015-03-06 19:25 J -27138740.82 -27138740.69 -27138740.56 0.0277 0.0028  
 Mercury -79015-06-03 06:28 J -27138652.35 -27138652.23 -27138652.11 0.0276 0.0130  
 Mercury -79015-08-30 17:30 J -27138563.84 -27138563.77 -27138563.70 0.0275 0.0232  
 Earth -79010-05-24 18:28 J -27136835.87 -27136835.73 -27136835.56 0.0264 0.0199  
 Moon -79010-05-24 20:08 J -27136835.79 -27136835.66 -27136835.50 0.0264 0.0206 \*  
 Mars -79009-01-21 04:04 J -27136594.59 -27136594.33 -27136594.05 0.0264 0.0133  
 Earth -79009-06-04 01:11 J -27136459.66 -27136459.45 -27136459.22 0.0264 0.0116  
 Moon -79009-06-04 04:32 J -27136459.53 -27136459.31 -27136459.08 0.0264 0.0108 \*  
 Moon -79008-06-15 07:40 J -27136083.43 -27136083.18 -27136082.92 0.0263 0.0015  
 Earth -79008-06-15 10:04 J -27136083.32 -27136083.08 -27136082.83 0.0263 0.0028 \*  
 Moon -79007-06-26 18:56 J -27135706.94 -27135706.71 -27135706.48 0.0264 0.0068  
 Earth -79007-06-26 22:04 J -27135706.81 -27135706.58 -27135706.34 0.0264 0.0063 \*  
 Earth -79006-07-08 15:06 J -27135330.06 -27135329.87 -27135329.66 0.0265 0.0154  
 Moon -79006-07-08 16:47 J -27135329.99 -27135329.80 -27135329.59 0.0265 0.0146 \*  
 Earth -79005-07-19 14:52 J -27134952.98 -27134952.88 -27134952.77 0.0267 0.0242  
 Moon -79005-07-19 17:59 J -27134952.87 -27134952.75 -27134952.61 0.0267 0.0227 \*  
 Venus -79002-12-12 11:16 J -27133712.24 -27133712.03 -27133711.82 0.0277 0.0063

# 79TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 79th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-79000-09-22 12:42 J	-27133062.12	-27133061.97	-27133061.80	0.0283	0.0141		
Mercury	-79000-12-20 12:28 J	-27132973.16	-27132972.98	-27132972.79	0.0284	0.0019		
Mercury	-78999-03-19 11:59 J	-27132884.14	-27132884.00	-27132883.85	0.0285	0.0177		
Moon	-78995-12-05 03:06 J	-27131162.55	-27131162.37	-27131162.18	0.0297	0.0184		
Earth	-78995-12-05 04:47 J	-27131162.50	-27131162.30	-27131162.10	0.0297	0.0177	*	
Earth	-78994-12-20 08:52 J	-27130782.38	-27130782.13	-27130781.89	0.0297	0.0045		
Moon	-78994-12-20 10:04 J	-27130782.32	-27130782.08	-27130781.85	0.0297	0.0048	*	
Mars	-78993-03-19 18:56 J	-27130691.86	-27130691.71	-27130691.55	0.0297	0.0237		
Earth	-78992-01-03 06:56 J	-27130402.44	-27130402.21	-27130401.97	0.0297	0.0088		
Moon	-78992-01-03 10:18 J	-27130402.30	-27130402.07	-27130401.83	0.0297	0.0091	*	
Earth	-78991-01-17 21:06 J	-27130022.78	-27130022.62	-27130022.45	0.0295	0.0211		
Moon	-78991-01-17 23:59 J	-27130022.66	-27130022.50	-27130022.33	0.0295	0.0219	*	
Venus	-78988-10-17 17:16 J	-27128653.97	-27128653.78	-27128653.58	0.0283	0.0091		
Mercury	-78986-01-28 23:59 J	-27128185.59	-27128185.50	-27128185.42	0.0278	0.0209		
Mercury	-78986-04-27 10:47 J	-27128097.17	-27128097.05	-27128096.93	0.0277	0.0106		
Mercury	-78986-07-24 21:49 J	-27128008.72	-27128008.59	-27128008.46	0.0277	0.0003		
Mercury	-78986-10-21 08:52 J	-27127920.26	-27127920.13	-27127920.01	0.0276	0.0100		
Mercury	-78985-01-17 19:54 J	-27127831.76	-27127831.67	-27127831.58	0.0275	0.0202		
Moon	-78981-05-19 01:11 J	-27126248.53	-27126248.45	-27126248.34	0.0265	0.0243		

Earth -78981-05-19 02:52 J -27126248.48 -27126248.38 -27126248.26 0.0265 0.0235 \*  
 Moon -78980-05-30 05:30 J -27125872.46 -27125872.27 -27125872.07 0.0264 0.0150  
 Earth -78980-05-30 09:06 J -27125872.32 -27125872.12 -27125871.92 0.0264 0.0153 \*  
 Mars -78979-03-11 22:32 J -27125586.87 -27125586.56 -27125586.24 0.0263 0.0040  
 Earth -78979-06-10 16:04 J -27125496.07 -27125495.83 -27125495.59 0.0263 0.0067  
 Moon -78979-06-10 17:30 J -27125496.00 -27125495.77 -27125495.54 0.0263 0.0054 \*  
 Earth -78978-06-22 01:40 J -27125119.67 -27125119.43 -27125119.18 0.0264 0.0024  
 Moon -78978-06-22 04:47 J -27125119.54 -27125119.30 -27125119.05 0.0264 0.0033 \*  
 Moon -78977-07-02 14:08 J -27124743.13 -27124742.91 -27124742.67 0.0265 0.0111  
 Earth -78977-07-02 15:35 J -27124743.06 -27124742.85 -27124742.62 0.0265 0.0116 \*  
 Moon -78976-07-14 08:23 J -27124366.31 -27124366.15 -27124365.98 0.0266 0.0192  
 Earth -78976-07-14 11:44 J -27124366.17 -27124366.01 -27124365.86 0.0266 0.0205 \*  
 Venus -78972-06-23 12:13 J -27122926.21 -27122925.99 -27122925.77 0.0277 0.0023  
 Mercury -78970-02-09 08:37 J -27122330.27 -27122330.14 -27122330.01 0.0283 0.0204  
 Mercury -78970-05-09 08:23 J -27122241.34 -27122241.15 -27122240.97 0.0283 0.0045  
 Mercury -78970-08-06 07:54 J -27122152.34 -27122152.17 -27122152.00 0.0284 0.0114  
 Mercury -78970-11-03 07:11 J -27122063.25 -27122063.20 -27122063.14 0.0285 0.0272  
 Earth -78966-11-28 08:52 J -27120577.27 -27120577.13 -27120576.98 0.0296 0.0239  
 Moon -78966-11-28 08:52 J -27120577.27 -27120577.13 -27120576.97 0.0296 0.0242 \*  
 Mars -78965-05-06 20:08 J -27120416.88 -27120416.66 -27120416.42 0.0296 0.0162  
 Moon -78965-12-12 11:59 J -27120197.23 -27120197.00 -27120196.76 0.0297 0.0112  
 Earth -78965-12-12 14:23 J -27120197.12 -27120196.90 -27120196.66 0.0297 0.0111 \*  
 Moon -78964-12-27 12:28 J -27119817.23 -27119816.98 -27119816.74 0.0297 0.0026  
 Earth -78964-12-27 16:04 J -27119817.08 -27119816.83 -27119816.59 0.0297 0.0024 \*  
 Moon -78962-01-11 08:23 J -27119437.34 -27119437.15 -27119436.94 0.0296 0.0161  
 Earth -78962-01-11 10:47 J -27119437.26 -27119437.05 -27119436.84 0.0296 0.0153 \*  
 Earth -78961-01-25 20:08 J -27119057.74 -27119057.66 -27119057.55 0.0294 0.0268  
 Moon -78961-01-25 21:20 J -27119057.66 -27119057.61 -27119057.53 0.0294 0.0281 \*  
 Venus -78958-04-29 18:42 J -27117867.90 -27117867.72 -27117867.54 0.0284 0.0137  
 Mercury -78957-06-17 01:40 J -27117453.49 -27117453.43 -27117453.36 0.0279 0.0244

Mercury -78957-09-13 12:42 J -27117365.08 -27117364.97 -27117364.85 0.0279 0.0140

Mercury -78957-12-10 23:44 J -27117276.64 -27117276.51 -27117276.38 0.0278 0.0037

Mercury -78956-03-09 10:47 J -27117188.18 -27117188.05 -27117187.92 0.0277 0.0067

Mercury -78956-06-05 21:49 J -27117099.70 -27117099.59 -27117099.49 0.0276 0.0170

Mercury -78956-09-02 08:52 J -27117011.14 -27117011.13 -27117011.11 0.0275 0.0272

Earth -78951-05-25 19:25 J -27115284.84 -27115284.69 -27115284.51 0.0264 0.0189

Moon -78951-05-25 23:01 J -27115284.69 -27115284.54 -27115284.36 0.0264 0.0191 \*

Moon -78950-06-06 01:54 J -27114908.66 -27114908.42 -27114908.18 0.0264 0.0093

Earth -78950-06-06 02:37 J -27114908.61 -27114908.39 -27114908.16 0.0264 0.0104 \*

Mars -78949-05-01 11:01 J -27114578.21 -27114578.04 -27114577.85 0.0264 0.0220

Moon -78949-06-16 08:37 J -27114532.39 -27114532.14 -27114531.90 0.0264 0.0006

Earth -78949-06-16 11:44 J -27114532.25 -27114532.01 -27114531.77 0.0264 0.0016 \*

Earth -78948-06-27 23:59 J -27114155.73 -27114155.50 -27114155.26 0.0264 0.0075

Moon -78948-06-28 01:25 J -27114155.66 -27114155.44 -27114155.21 0.0264 0.0077 \*

Earth -78947-07-09 17:44 J -27113778.95 -27113778.76 -27113778.57 0.0265 0.0166

Moon -78947-07-09 21:06 J -27113778.81 -27113778.62 -27113778.41 0.0265 0.0157 \*

Moon -78946-07-21 16:47 J -27113401.90 -27113401.80 -27113401.68 0.0267 0.0240

Earth -78946-07-21 17:44 J -27113401.83 -27113401.76 -27113401.68 0.0267 0.0253 \*

Venus -78942-01-03 20:37 J -27112139.86 -27112139.64 -27112139.42 0.0277 0.0047

Mercury -78941-06-28 08:23 J -27111598.24 -27111598.15 -27111598.04 0.0282 0.0238

Mercury -78941-09-25 08:23 J -27111509.33 -27111509.15 -27111508.97 0.0283 0.0079

Mercury -78941-12-23 07:54 J -27111420.34 -27111420.17 -27111419.99 0.0284 0.0080

Mercury -78940-03-22 07:11 J -27111331.29 -27111331.20 -27111331.09 0.0285 0.0238

Earth -78937-11-21 03:35 J -27109991.41 -27109991.35 -27109991.29 0.0296 0.0286

Moon -78937-11-21 04:18 J -27109991.36 -27109991.32 -27109991.27 0.0296 0.0290 \*

Earth -78936-12-06 09:49 J -27109611.29 -27109611.09 -27109610.87 0.0297 0.0163

Moon -78936-12-06 13:11 J -27109611.15 -27109610.95 -27109610.75 0.0297 0.0165 \*

Mars -78935-06-25 21:49 J -27109409.85 -27109409.59 -27109409.32 0.0297 0.0048

Earth -78935-12-21 13:40 J -27109231.17 -27109230.93 -27109230.68 0.0297 0.0030

Moon -78935-12-21 17:30 J -27109231.01 -27109230.77 -27109230.52 0.0297 0.0032 \*

Earth -78933-01-05 11:30 J -27108851.24 -27108851.02 -27108850.79 0.0297 0.0103  
 Moon -78933-01-05 13:54 J -27108851.16 -27108850.92 -27108850.69 0.0297 0.0106 \*  
 Moon -78932-01-18 23:30 J -27108471.66 -27108471.52 -27108471.35 0.0295 0.0235  
 Earth -78932-01-19 01:25 J -27108471.60 -27108471.44 -27108471.29 0.0295 0.0224 \*  
 Venus -78929-03-24 16:32 J -27107310.93 -27107310.81 -27107310.68 0.0285 0.0227  
 Venus -78929-11-09 00:28 J -27107081.62 -27107081.48 -27107081.33 0.0283 0.0198  
 Mercury -78928-11-04 04:32 J -27106721.34 -27106721.31 -27106721.28 0.0279 0.0270  
 Mercury -78927-01-31 15:20 J -27106632.96 -27106632.86 -27106632.75 0.0278 0.0167  
 Mercury -78927-04-30 02:23 J -27106544.52 -27106544.40 -27106544.27 0.0277 0.0064  
 Mercury -78927-07-27 13:25 J -27106456.07 -27106455.94 -27106455.81 0.0277 0.0040  
 Mercury -78927-10-24 00:28 J -27106367.59 -27106367.48 -27106367.37 0.0276 0.0143  
 Mercury -78926-01-20 11:30 J -27106279.08 -27106279.02 -27106278.96 0.0275 0.0245  
 Moon -78922-05-21 02:23 J -27104697.52 -27104697.40 -27104697.28 0.0265 0.0230  
 Earth -78922-05-21 05:30 J -27104697.38 -27104697.27 -27104697.13 0.0265 0.0224 \*  
 Earth -78921-05-31 11:44 J -27104321.20 -27104321.01 -27104320.79 0.0264 0.0142  
 Moon -78921-05-31 12:28 J -27104321.18 -27104320.98 -27104320.77 0.0264 0.0135 \*  
 Mars -78921-06-15 16:32 J -27104306.09 -27104305.81 -27104305.52 0.0264 0.0116  
 Earth -78920-06-11 19:25 J -27103944.93 -27103944.69 -27103944.45 0.0263 0.0054  
 Moon -78920-06-11 23:01 J -27103944.78 -27103944.54 -27103944.30 0.0263 0.0039 \*  
 Moon -78919-06-23 04:32 J -27103568.56 -27103568.31 -27103568.06 0.0264 0.0042  
 Earth -78919-06-23 05:44 J -27103568.50 -27103568.26 -27103568.02 0.0264 0.0037 \*  
 Moon -78918-07-04 16:32 J -27103192.03 -27103191.81 -27103191.59 0.0265 0.0121  
 Earth -78918-07-04 20:23 J -27103191.87 -27103191.65 -27103191.44 0.0265 0.0128 \*  
 Earth -78917-07-15 16:32 J -27102814.94 -27102814.81 -27102814.66 0.0266 0.0218  
 Moon -78917-07-15 16:47 J -27102814.94 -27102814.80 -27102814.64 0.0266 0.0205 \*  
 Venus -78913-07-15 23:16 J -27101353.73 -27101353.53 -27101353.32 0.0277 0.0093  
 Mercury -78911-02-12 05:01 J -27100777.45 -27100777.29 -27100777.12 0.0283 0.0136  
 Mercury -78911-05-12 04:47 J -27100688.49 -27100688.30 -27100688.12 0.0284 0.0023  
 Mercury -78911-08-09 04:04 J -27100599.47 -27100599.33 -27100599.18 0.0285 0.0181  
 Moon -78907-11-29 12:56 J -27099026.11 -27099025.96 -27099025.78 0.0296 0.0223



Earth -78907-11-29 17:01 J -27099025.95 -27099025.79 -27099025.63 0.0296 0.0224 \*  
 Moon -78906-12-14 18:42 J -27098645.95 -27098645.72 -27098645.49 0.0297 0.0093  
 Earth -78906-12-14 22:04 J -27098645.81 -27098645.58 -27098645.34 0.0297 0.0095 \*  
 Mars -78905-08-12 20:23 J -27098403.78 -27098403.65 -27098403.50 0.0297 0.0250  
 Moon -78905-12-28 21:20 J -27098265.84 -27098265.61 -27098265.37 0.0297 0.0044  
 Earth -78905-12-28 22:47 J -27098265.79 -27098265.55 -27098265.30 0.0297 0.0040 \*  
 Earth -78903-01-12 16:47 J -27097886.00 -27097885.80 -27097885.60 0.0295 0.0168  
 Moon -78903-01-12 18:28 J -27097885.91 -27097885.73 -27097885.53 0.0295 0.0178 \*  
 Earth -78902-01-27 01:25 J -27097506.50 -27097506.44 -27097506.36 0.0293 0.0280  
 Venus -78900-10-04 18:13 J -27096524.89 -27096524.74 -27096524.58 0.0285 0.0180  
 Venus -78899-05-22 02:08 J -27096295.51 -27096295.41 -27096295.31 0.0283 0.0245  
 Mercury -78898-06-20 17:16 J -27095900.86 -27095900.78 -27095900.68 0.0279 0.0202  
 Mercury -78898-09-17 04:18 J -27095812.44 -27095812.32 -27095812.19 0.0278 0.0098  
 Mercury -78898-12-14 15:20 J -27095723.99 -27095723.86 -27095723.72 0.0278 0.0009  
 Mercury -78897-03-12 02:23 J -27095635.52 -27095635.40 -27095635.28 0.0277 0.0110  
 Mercury -78897-06-08 13:25 J -27095547.02 -27095546.94 -27095546.85 0.0276 0.0213  
 Earth -78893-05-15 16:04 J -27094109.89 -27094109.83 -27094109.77 0.0266 0.0256  
 Moon -78892-05-26 22:32 J -27093733.74 -27093733.56 -27093733.37 0.0265 0.0174  
 Earth -78892-05-26 22:47 J -27093733.72 -27093733.55 -27093733.36 0.0265 0.0177 \*  
 Moon -78891-06-07 02:23 J -27093357.62 -27093357.40 -27093357.16 0.0264 0.0078  
 Earth -78891-06-07 06:13 J -27093357.46 -27093357.24 -27093357.01 0.0264 0.0091 \*  
 Mars -78891-08-05 21:06 J -27093297.93 -27093297.62 -27093297.30 0.0264 0.0060  
 Earth -78890-06-18 15:35 J -27092981.09 -27092980.85 -27092980.60 0.0264 0.0005  
 Moon -78890-06-18 16:04 J -27092981.07 -27092980.83 -27092980.60 0.0264 0.0010 \*  
 Earth -78889-06-29 04:32 J -27092604.53 -27092604.31 -27092604.07 0.0264 0.0089  
 Moon -78889-06-29 08:23 J -27092604.38 -27092604.15 -27092603.91 0.0264 0.0087 \*  
 Moon -78888-07-10 23:01 J -27092227.73 -27092227.54 -27092227.33 0.0265 0.0167  
 Earth -78888-07-10 22:47 J -27092227.72 -27092227.55 -27092227.36 0.0265 0.0179 \*  
 Moon -78887-07-22 20:08 J -27091850.73 -27091850.66 -27091850.57 0.0267 0.0252  
 Earth -78887-07-22 23:30 J -27091850.52 -27091850.52 -27091850.48 0.0267 0.0266

Venus -78884-06-10 16:04 J -27090796.91 -27090796.83 -27090796.74 0.0275 0.0253  
 Venus -78883-01-26 08:08 J -27090567.32 -27090567.16 -27090566.97 0.0277 0.0166  
 Mercury -78882-07-02 05:30 J -27090045.42 -27090045.27 -27090045.12 0.0282 0.0167  
 Mercury -78882-09-29 05:01 J -27089956.47 -27089956.29 -27089956.10 0.0283 0.0011  
 Mercury -78882-12-27 04:32 J -27089867.46 -27089867.31 -27089867.15 0.0284 0.0150  
 Earth -78878-11-23 12:56 J -27088440.04 -27088439.96 -27088439.85 0.0296 0.0272  
 Moon -78878-11-23 16:47 J -27088439.88 -27088439.80 -27088439.69 0.0296 0.0272 \*  
 Mars -78877-09-30 23:59 J -27088127.74 -27088127.50 -27088127.26 0.0297 0.0145  
 Earth -78877-12-07 19:25 J -27088059.91 -27088059.69 -27088059.48 0.0297 0.0146  
 Moon -78877-12-07 22:18 J -27088059.78 -27088059.57 -27088059.34 0.0297 0.0145 \*  
 Earth -78876-12-22 22:47 J -27087679.80 -27087679.55 -27087679.31 0.0297 0.0013  
 Moon -78876-12-22 23:30 J -27087679.78 -27087679.52 -27087679.26 0.0297 0.0010 \*  
 Moon -78874-01-06 17:44 J -27087299.98 -27087299.76 -27087299.53 0.0297 0.0126  
 Earth -78874-01-06 19:54 J -27087299.89 -27087299.67 -27087299.44 0.0297 0.0120 \*  
 Moon -78873-01-21 05:16 J -27086920.40 -27086920.28 -27086920.15 0.0295 0.0252  
 Earth -78873-01-21 08:37 J -27086920.26 -27086920.14 -27086919.98 0.0295 0.0240 \*  
 Venus -78870-04-17 01:40 J -27085738.62 -27085738.43 -27085738.24 0.0285 0.0111  
 Mercury -78869-11-06 20:23 J -27085168.72 -27085168.65 -27085168.57 0.0279 0.0226  
 Mercury -78868-02-03 07:25 J -27085080.30 -27085080.19 -27085080.07 0.0278 0.0121  
 Mercury -78868-05-02 18:28 J -27084991.86 -27084991.73 -27084991.60 0.0277 0.0018  
 Mercury -78868-07-30 05:30 J -27084903.39 -27084903.27 -27084903.14 0.0277 0.0086  
 Mercury -78868-10-26 16:32 J -27084814.90 -27084814.81 -27084814.71 0.0276 0.0189  
 Moon -78863-05-22 10:18 J -27083146.19 -27083146.07 -27083145.93 0.0265 0.0217  
 Earth -78863-05-22 10:47 J -27083146.18 -27083146.05 -27083145.89 0.0265 0.0212 \*  
 Earth -78862-06-02 17:30 J -27082769.98 -27082769.77 -27082769.55 0.0264 0.0128  
 Moon -78862-06-02 21:20 J -27082769.82 -27082769.61 -27082769.39 0.0264 0.0118 \*  
 Earth -78861-06-13 01:40 J -27082393.67 -27082393.43 -27082393.19 0.0263 0.0040  
 Moon -78861-06-13 02:08 J -27082393.66 -27082393.41 -27082393.15 0.0263 0.0026 \*  
 Mars -78861-09-25 09:49 J -27082289.21 -27082289.09 -27082288.95 0.0263 0.0240  
 Moon -78860-06-24 08:52 J -27082017.37 -27082017.13 -27082016.89 0.0264 0.0054

Earth -78860-06-24 12:28 J -27082017.22 -27082016.98 -27082016.74 0.0264 0.0051 \*  
 Earth -78859-07-06 03:35 J -27081640.56 -27081640.35 -27081640.14 0.0265 0.0142  
 Moon -78859-07-06 03:20 J -27081640.56 -27081640.36 -27081640.15 0.0265 0.0133 \*  
 Earth -78858-07-18 00:28 J -27081263.59 -27081263.48 -27081263.35 0.0266 0.0231  
 Moon -78858-07-18 04:04 J -27081263.46 -27081263.33 -27081263.18 0.0266 0.0216 \*  
 Venus -78855-12-21 20:08 J -27080010.79 -27080010.66 -27080010.50 0.0275 0.0203  
 Venus -78854-08-08 12:28 J -27079781.10 -27079780.98 -27079780.83 0.0278 0.0218  
 Mercury -78853-11-18 02:52 J -27079313.49 -27079313.38 -27079313.26 0.0282 0.0218  
 Mercury -78852-02-15 02:37 J -27079224.57 -27079224.39 -27079224.21 0.0283 0.0060  
 Mercury -78852-05-15 02:08 J -27079135.58 -27079135.41 -27079135.23 0.0284 0.0098  
 Mercury -78852-08-12 01:25 J -27079046.51 -27079046.44 -27079046.36 0.0285 0.0256  
 Moon -78848-12-01 03:06 J -27077474.54 -27077474.37 -27077474.19 0.0296 0.0205  
 Earth -78848-12-01 05:01 J -27077474.46 -27077474.29 -27077474.10 0.0296 0.0207 \*  
 Mars -78847-11-19 10:18 J -27077121.32 -27077121.07 -27077120.80 0.0297 0.0066  
 Earth -78847-12-16 10:04 J -27077094.32 -27077094.08 -27077093.84 0.0297 0.0076  
 Moon -78847-12-16 10:32 J -27077094.29 -27077094.06 -27077093.83 0.0297 0.0072 \*  
 Earth -78846-12-31 09:49 J -27076714.32 -27076714.09 -27076713.84 0.0296 0.0059  
 Moon -78846-12-31 12:42 J -27076714.20 -27076713.97 -27076713.73 0.0296 0.0065 \*  
 Earth -78844-01-14 02:52 J -27076334.56 -27076334.38 -27076334.19 0.0295 0.0185  
 Moon -78844-01-14 06:13 J -27076334.41 -27076334.24 -27076334.04 0.0295 0.0195 \*  
 Venus -78841-10-27 04:04 J -27074952.52 -27074952.33 -27074952.12 0.0285 0.0061  
 Mercury -78839-03-26 22:32 J -27074436.60 -27074436.56 -27074436.51 0.0280 0.0259  
 Mercury -78839-06-23 09:35 J -27074348.21 -27074348.10 -27074347.99 0.0279 0.0154  
 Mercury -78839-09-19 20:37 J -27074259.77 -27074259.64 -27074259.51 0.0278 0.0050  
 Mercury -78839-12-17 07:40 J -27074171.31 -27074171.18 -27074171.05 0.0277 0.0054  
 Mercury -78838-03-15 18:42 J -27074082.83 -27074082.72 -27074082.61 0.0277 0.0158  
 Mercury -78838-06-12 05:44 J -27073994.30 -27073994.26 -27073994.22 0.0276 0.0261  
 Earth -78834-05-17 21:20 J -27072558.70 -27072558.61 -27072558.51 0.0266 0.0244  
 Moon -78834-05-17 22:47 J -27072558.61 -27072558.55 -27072558.48 0.0266 0.0255 \*  
 Moon -78833-05-28 00:42 J -27072182.65 -27072182.47 -27072182.26 0.0265 0.0158

Earth -78833-05-28 04:18 J -27072182.49 -27072182.32 -27072182.12 0.0265 0.0164 \*  
 Mars -78833-11-09 19:54 J -27072016.96 -27072016.67 -27072016.37 0.0264 0.0098  
 Moon -78832-06-08 11:16 J -27071806.25 -27071806.03 -27071805.79 0.0264 0.0063  
 Earth -78832-06-08 12:13 J -27071806.22 -27071805.99 -27071805.75 0.0264 0.0077 \*  
 Earth -78831-06-19 22:04 J -27071429.82 -27071429.58 -27071429.33 0.0264 0.0014  
 Moon -78831-06-20 01:25 J -27071429.67 -27071429.44 -27071429.19 0.0264 0.0025 \*  
 Earth -78830-07-01 11:59 J -27071053.22 -27071053.00 -27071052.77 0.0265 0.0104  
 Moon -78830-07-01 12:28 J -27071053.21 -27071052.98 -27071052.74 0.0265 0.0099 \*  
 Moon -78829-07-12 03:06 J -27070676.54 -27070676.37 -27070676.17 0.0266 0.0179  
 Earth -78829-07-12 06:56 J -27070676.37 -27070676.21 -27070676.03 0.0266 0.0194 \*  
 Moon -78828-07-24 07:11 J -27070299.20 -27070299.20 -27070299.19 0.0267 0.0267  
 Venus -78825-07-03 05:59 J -27069224.44 -27069224.25 -27069224.06 0.0276 0.0130  
 Mercury -78823-04-07 03:49 J -27068581.43 -27068581.34 -27068581.25 0.0282 0.0246  
 Mercury -78823-07-05 03:35 J -27068492.53 -27068492.35 -27068492.17 0.0283 0.0088  
 Mercury -78823-10-02 03:06 J -27068403.55 -27068403.37 -27068403.19 0.0284 0.0070  
 Mercury -78823-12-30 02:23 J -27068314.50 -27068314.40 -27068314.28 0.0284 0.0228  
 Earth -78819-11-25 04:18 J -27066888.44 -27066888.32 -27066888.19 0.0296 0.0254  
 Moon -78819-11-25 05:59 J -27066888.37 -27066888.25 -27066888.11 0.0296 0.0255 \*  
 Moon -78818-12-10 08:37 J -27066508.36 -27066508.14 -27066507.90 0.0297 0.0123  
 Earth -78818-12-10 10:04 J -27066508.30 -27066508.08 -27066507.85 0.0297 0.0127 \*  
 Moon -78817-12-24 09:06 J -27066128.37 -27066128.12 -27066127.87 0.0297 0.0015  
 Earth -78817-12-24 12:42 J -27066128.22 -27066127.97 -27066127.72 0.0297 0.0008 \*  
 Mars -78816-01-07 09:20 J -27066114.21 -27066114.11 -27066113.99 0.0297 0.0271  
 Moon -78815-01-08 05:16 J -27065748.48 -27065748.28 -27065748.06 0.0296 0.0148  
 Earth -78815-01-08 09:06 J -27065748.33 -27065748.12 -27065747.90 0.0296 0.0139 \*  
 Moon -78814-01-22 19:40 J -27065368.76 -27065368.68 -27065368.57 0.0295 0.0269  
 Earth -78814-01-22 20:52 J -27065368.74 -27065368.63 -27065368.50 0.0295 0.0257 \*  
 Venus -78811-05-09 12:42 J -27064166.18 -27064165.97 -27064165.77 0.0284 0.0012  
 Mercury -78810-08-14 02:08 J -27063704.42 -27063704.41 -27063704.41 0.0280 0.0279  
 Mercury -78810-11-10 12:56 J -27063616.06 -27063615.96 -27063615.85 0.0279 0.0175

Mercury -78809-02-06 23:59 J -27063527.62 -27063527.50 -27063527.37 0.0278 0.0071

Mercury -78809-05-05 11:01 J -27063439.17 -27063439.04 -27063438.91 0.0277 0.0034

Mercury -78809-08-01 22:04 J -27063350.69 -27063350.58 -27063350.46 0.0276 0.0137

Mercury -78809-10-29 09:06 J -27063262.18 -27063262.12 -27063262.05 0.0276 0.0240

Earth -78804-05-23 18:13 J -27061594.90 -27061594.74 -27061594.58 0.0265 0.0198

Moon -78804-05-23 21:06 J -27061594.77 -27061594.62 -27061594.46 0.0265 0.0202 \*

Earth -78803-06-04 01:11 J -27061218.67 -27061218.45 -27061218.23 0.0264 0.0114

Moon -78803-06-04 02:23 J -27061218.63 -27061218.40 -27061218.17 0.0264 0.0102 \*

Mars -78803-12-31 05:59 J -27061008.55 -27061008.25 -27061007.94 0.0264 0.0084

Moon -78802-06-15 06:13 J -27060842.48 -27060842.24 -27060841.99 0.0264 0.0012

Earth -78802-06-15 09:49 J -27060842.33 -27060842.09 -27060841.85 0.0264 0.0025 \*

Moon -78801-06-25 19:54 J -27060465.90 -27060465.67 -27060465.44 0.0264 0.0070

Earth -78801-06-25 21:20 J -27060465.85 -27060465.61 -27060465.38 0.0264 0.0066 \*

Earth -78800-07-07 13:11 J -27060089.14 -27060088.95 -27060088.75 0.0265 0.0157

Moon -78800-07-07 16:32 J -27060089.00 -27060088.81 -27060088.59 0.0265 0.0146 \*

Earth -78799-07-19 11:16 J -27059712.12 -27059712.03 -27059711.93 0.0267 0.0246

Moon -78799-07-19 13:25 J -27059712.07 -27059711.94 -27059711.81 0.0267 0.0230 \*

Venus -78795-01-13 11:44 J -27058438.22 -27058438.01 -27058437.80 0.0276 0.0073

Mercury -78794-11-22 01:54 J -27057760.59 -27057760.42 -27057760.26 0.0282 0.0135

Mercury -78793-02-19 01:25 J -27057671.62 -27057671.44 -27057671.25 0.0283 0.0024

Mercury -78793-05-18 00:56 J -27057582.60 -27057582.46 -27057582.32 0.0284 0.0181

Earth -78789-12-02 21:49 J -27055922.79 -27055922.59 -27055922.40 0.0296 0.0188

Moon -78789-12-02 23:44 J -27055922.70 -27055922.51 -27055922.32 0.0296 0.0184 \*

Mars -78788-02-24 23:30 J -27055838.77 -27055838.52 -27055838.27 0.0296 0.0122

Earth -78788-12-18 01:54 J -27055542.66 -27055542.42 -27055542.17 0.0297 0.0056

Moon -78788-12-18 05:44 J -27055542.50 -27055542.26 -27055542.02 0.0297 0.0049 \*

Earth -78786-01-02 01:11 J -27055162.68 -27055162.45 -27055162.21 0.0296 0.0078

Moon -78786-01-02 04:32 J -27055162.55 -27055162.31 -27055162.07 0.0296 0.0086 \*

Earth -78785-01-16 16:47 J -27054782.96 -27054782.80 -27054782.61 0.0295 0.0203

Moon -78785-01-16 17:44 J -27054782.93 -27054782.76 -27054782.58 0.0295 0.0213 \*

Venus -78782-11-19 15:35 J -27053380.05 -27053379.85 -27053379.65 0.0284 0.0064  
 Mercury -78780-03-29 15:06 J -27052883.95 -27052883.87 -27052883.78 0.0280 0.0208  
 Mercury -78780-06-26 02:08 J -27052795.53 -27052795.41 -27052795.28 0.0279 0.0103  
 Mercury -78780-09-22 13:11 J -27052707.08 -27052706.95 -27052706.81 0.0278 0.0008  
 Mercury -78780-12-20 00:13 J -27052618.61 -27052618.49 -27052618.36 0.0277 0.0106  
 Mercury -78779-03-18 11:16 J -27052530.11 -27052530.03 -27052529.94 0.0276 0.0209  
 Moon -78775-05-19 01:40 J -27051007.52 -27051007.43 -27051007.32 0.0266 0.0241  
 Earth -78775-05-19 04:32 J -27051007.42 -27051007.31 -27051007.19 0.0266 0.0231 \*  
 Mars -78774-02-15 05:59 J -27050735.34 -27050735.25 -27050735.14 0.0265 0.0249  
 Moon -78774-05-30 10:18 J -27050631.26 -27050631.07 -27050630.87 0.0265 0.0144  
 Earth -78774-05-30 11:59 J -27050631.19 -27050631.00 -27050630.79 0.0265 0.0149 \*  
 Earth -78773-06-09 20:08 J -27050254.89 -27050254.66 -27050254.42 0.0264 0.0062  
 Moon -78773-06-09 23:30 J -27050254.75 -27050254.52 -27050254.28 0.0264 0.0046 \*  
 Mars -78772-02-19 20:37 J -27049999.64 -27049999.64 -27049999.59 0.0264 0.0264  
 Earth -78772-06-21 06:42 J -27049878.46 -27049878.22 -27049877.98 0.0264 0.0029  
 Moon -78772-06-21 08:52 J -27049878.38 -27049878.13 -27049877.88 0.0264 0.0039 \*  
 Moon -78771-07-02 17:44 J -27049501.98 -27049501.76 -27049501.52 0.0265 0.0113  
 Earth -78771-07-02 21:06 J -27049501.83 -27049501.62 -27049501.40 0.0265 0.0120 \*  
 Moon -78770-07-14 15:06 J -27049125.02 -27049124.87 -27049124.70 0.0266 0.0195  
 Earth -78770-07-14 17:01 J -27049124.93 -27049124.79 -27049124.63 0.0266 0.0209 \*  
 Venus -78766-07-26 21:20 J -27047651.83 -27047651.61 -27047651.39 0.0276 0.0001  
 Mercury -78764-04-10 02:37 J -27047028.54 -27047028.39 -27047028.23 0.0282 0.0163  
 Mercury -78764-07-08 02:23 J -27046939.59 -27046939.40 -27046939.21 0.0283 0.0005  
 Mercury -78764-10-05 01:40 J -27046850.58 -27046850.43 -27046850.27 0.0284 0.0154  
 Moon -78760-11-26 19:54 J -27045336.83 -27045336.67 -27045336.51 0.0296 0.0234  
 Earth -78760-11-26 21:49 J -27045336.72 -27045336.59 -27045336.43 0.0296 0.0236 \*  
 Moon -78759-12-11 23:59 J -27044956.73 -27044956.50 -27044956.27 0.0297 0.0101  
 Earth -78759-12-12 03:35 J -27044956.58 -27044956.35 -27044956.12 0.0297 0.0107 \*  
 Mars -78758-04-16 07:54 J -27044831.42 -27044831.17 -27044830.91 0.0297 0.0092  
 Moon -78758-12-27 02:37 J -27044576.62 -27044576.39 -27044576.15 0.0297 0.0037

Earth -78758-12-27 05:30 J -27044576.52 -27044576.27 -27044576.03 0.0297 0.0029 \*  
 Earth -78756-01-10 00:56 J -27044196.66 -27044196.46 -27044196.25 0.0296 0.0159  
 Moon -78756-01-10 00:56 J -27044196.65 -27044196.46 -27044196.27 0.0296 0.0169 \*  
 Earth -78755-01-24 11:44 J -27043817.08 -27043817.01 -27043816.91 0.0294 0.0274  
 Moon -78755-01-24 14:37 J -27043816.93 -27043816.89 -27043816.84 0.0294 0.0288 \*  
 Venus -78752-06-01 00:56 J -27042593.63 -27042593.46 -27042593.28 0.0284 0.0139  
 Mercury -78751-08-16 18:56 J -27042151.78 -27042151.71 -27042151.63 0.0279 0.0226  
 Mercury -78751-11-13 05:59 J -27042063.37 -27042063.25 -27042063.13 0.0279 0.0121  
 Mercury -78750-02-09 17:01 J -27041974.92 -27041974.79 -27041974.66 0.0278 0.0017  
 Mercury -78750-05-09 04:04 J -27041886.46 -27041886.33 -27041886.21 0.0277 0.0087  
 Mercury -78750-08-05 15:06 J -27041797.97 -27041797.87 -27041797.78 0.0276 0.0190  
 Earth -78746-05-14 19:40 J -27040419.71 -27040419.68 -27040419.65 0.0266 0.0264  
 Earth -78745-05-25 02:52 J -27040043.55 -27040043.38 -27040043.20 0.0265 0.0184  
 Moon -78745-05-25 05:30 J -27040043.43 -27040043.27 -27040043.09 0.0265 0.0188 \*  
 Mars -78744-04-06 11:30 J -27039727.31 -27039727.02 -27039726.70 0.0264 0.0071  
 Moon -78744-06-05 07:25 J -27039667.43 -27039667.19 -27039666.96 0.0264 0.0085  
 Earth -78744-06-05 10:04 J -27039667.29 -27039667.08 -27039666.84 0.0264 0.0099 \*  
 Moon -78743-06-16 16:47 J -27039291.03 -27039290.80 -27039290.56 0.0264 0.0007  
 Earth -78743-06-16 19:11 J -27039290.94 -27039290.70 -27039290.45 0.0264 0.0009 \*  
 Earth -78742-06-28 07:11 J -27038914.42 -27038914.20 -27038913.96 0.0264 0.0083  
 Moon -78742-06-28 09:49 J -27038914.31 -27038914.09 -27038913.86 0.0264 0.0085 \*  
 Earth -78741-07-09 00:13 J -27038537.67 -27038537.49 -27038537.30 0.0265 0.0174  
 Moon -78741-07-09 02:37 J -27038537.59 -27038537.39 -27038537.19 0.0265 0.0161 \*  
 Moon -78740-07-20 20:23 J -27038160.73 -27038160.65 -27038160.54 0.0267 0.0246  
 Earth -78740-07-20 23:16 J -27038160.57 -27038160.53 -27038160.47 0.0267 0.0261 \*  
 Venus -78736-02-05 04:18 J -27036865.53 -27036865.32 -27036865.10 0.0277 0.0062  
 Mercury -78735-08-28 01:40 J -27036296.55 -27036296.43 -27036296.30 0.0282 0.0204  
 Mercury -78735-11-25 01:25 J -27036207.62 -27036207.44 -27036207.25 0.0283 0.0046  
 Mercury -78734-02-22 00:56 J -27036118.63 -27036118.46 -27036118.29 0.0284 0.0112  
 Mercury -78734-05-22 00:13 J -27036029.54 -27036029.49 -27036029.43 0.0285 0.0270

Earth -78731-11-20 12:28 J -27034751.03 -27034750.98 -27034750.93 0.0295 0.0288  
 Moon -78731-11-20 14:52 J -27034750.90 -27034750.88 -27034750.83 0.0295 0.0291  
 Earth -78730-12-05 17:59 J -27034370.95 -27034370.75 -27034370.54 0.0296 0.0166  
 Moon -78730-12-05 21:35 J -27034370.80 -27034370.60 -27034370.39 0.0296 0.0165 \*  
 Earth -78729-12-19 21:49 J -27033990.84 -27033990.59 -27033990.34 0.0297 0.0033  
 Moon -78729-12-19 23:59 J -27033990.76 -27033990.50 -27033990.25 0.0297 0.0027 \*  
 Moon -78727-01-03 19:25 J -27033610.92 -27033610.69 -27033610.45 0.0296 0.0110  
 Earth -78727-01-03 20:23 J -27033610.88 -27033610.65 -27033610.42 0.0296 0.0100 \*  
 Moon -78726-01-18 07:40 J -27033231.32 -27033231.18 -27033231.03 0.0295 0.0236  
 Earth -78726-01-18 11:01 J -27033231.19 -27033231.04 -27033230.88 0.0295 0.0223 \*  
 Venus -78723-04-26 20:08 J -27032036.77 -27032036.66 -27032036.54 0.0286 0.0235  
 Venus -78723-12-12 04:47 J -27031807.45 -27031807.30 -27031807.15 0.0283 0.0194  
 Mercury -78721-01-03 21:20 J -27031419.66 -27031419.61 -27031419.56 0.0280 0.0257  
 Mercury -78721-04-01 08:08 J -27031331.26 -27031331.16 -27031331.04 0.0279 0.0153  
 Mercury -78721-06-28 19:11 J -27031242.83 -27031242.70 -27031242.57 0.0278 0.0049  
 Mercury -78721-09-25 06:13 J -27031154.37 -27031154.24 -27031154.11 0.0277 0.0057  
 Mercury -78721-12-22 17:16 J -27031065.88 -27031065.78 -27031065.67 0.0277 0.0160  
 Mercury -78720-03-21 04:32 J -27030977.35 -27030977.31 -27030977.28 0.0276 0.0263  
 Moon -78716-05-20 09:49 J -27029456.20 -27029456.09 -27029455.96 0.0266 0.0227  
 Earth -78716-05-20 12:56 J -27029456.09 -27029455.96 -27029455.82 0.0266 0.0218 \*  
 Earth -78715-05-31 20:23 J -27029079.85 -27029079.65 -27029079.43 0.0265 0.0134  
 Moon -78715-05-31 22:32 J -27029079.76 -27029079.56 -27029079.35 0.0265 0.0127 \*  
 Mars -78714-05-27 17:16 J -27028719.07 -27028718.78 -27028718.48 0.0264 0.0104  
 Earth -78714-06-12 05:01 J -27028703.53 -27028703.29 -27028703.05 0.0264 0.0045  
 Moon -78714-06-12 07:25 J -27028703.43 -27028703.19 -27028702.94 0.0264 0.0031 \*  
 Moon -78713-06-22 13:25 J -27028327.18 -27028326.94 -27028326.69 0.0264 0.0053  
 Earth -78713-06-22 16:04 J -27028327.07 -27028326.83 -27028326.59 0.0264 0.0046 \*  
 Moon -78712-07-04 04:18 J -27027950.52 -27027950.32 -27027950.10 0.0265 0.0131  
 Earth -78712-07-04 06:56 J -27027950.41 -27027950.21 -27027949.99 0.0265 0.0137 \*  
 Earth -78711-07-16 03:49 J -27027573.47 -27027573.34 -27027573.21 0.0266 0.0225



Moon -78711-07-16 06:13 J -27027573.38 -27027573.24 -27027573.09 0.0266 0.0211 \*  
 Venus -78707-08-18 13:40 J -27026079.12 -27026078.93 -27026078.74 0.0277 0.0133  
 Mercury -78705-01-15 02:08 J -27025564.50 -27025564.41 -27025564.30 0.0282 0.0235  
 Mercury -78705-04-13 02:08 J -27025475.59 -27025475.41 -27025475.23 0.0283 0.0076  
 Mercury -78705-07-11 01:40 J -27025386.60 -27025386.43 -27025386.25 0.0283 0.0082  
 Mercury -78705-10-08 00:56 J -27025297.55 -27025297.46 -27025297.35 0.0284 0.0240  
 Moon -78701-11-28 14:23 J -27023785.06 -27023784.90 -27023784.73 0.0296 0.0217  
 Earth -78701-11-28 17:59 J -27023784.91 -27023784.75 -27023784.57 0.0296 0.0216 \*  
 Mars -78700-07-23 04:18 J -27023548.57 -27023548.32 -27023548.05 0.0297 0.0092  
 Moon -78700-12-13 21:35 J -27023404.83 -27023404.60 -27023404.37 0.0297 0.0082  
 Earth -78700-12-13 23:16 J -27023404.76 -27023404.53 -27023404.28 0.0297 0.0085 \*  
 Earth -78699-12-29 00:28 J -27023024.72 -27023024.48 -27023024.23 0.0297 0.0051  
 Moon -78699-12-29 01:54 J -27023024.65 -27023024.42 -27023024.19 0.0297 0.0059 \*  
 Earth -78697-01-12 18:56 J -27022644.90 -27022644.71 -27022644.51 0.0296 0.0180  
 Moon -78697-01-12 22:32 J -27022644.74 -27022644.56 -27022644.37 0.0296 0.0192 \*  
 Earth -78696-01-26 04:47 J -27022265.32 -27022265.30 -27022265.27 0.0294 0.0292  
 Venus -78694-11-07 06:13 J -27021250.41 -27021250.24 -27021250.07 0.0285 0.0158  
 Venus -78693-06-23 14:08 J -27021020.97 -27021020.91 -27021020.84 0.0283 0.0269  
 Mercury -78692-05-23 01:11 J -27020687.47 -27020687.45 -27020687.43 0.0280 0.0275  
 Mercury -78692-08-19 11:59 J -27020599.10 -27020599.00 -27020598.89 0.0279 0.0171  
 Mercury -78692-11-15 23:01 J -27020510.66 -27020510.54 -27020510.41 0.0278 0.0066  
 Mercury -78691-02-12 10:04 J -27020422.21 -27020422.08 -27020421.95 0.0277 0.0038  
 Mercury -78691-05-11 21:06 J -27020333.73 -27020333.62 -27020333.50 0.0277 0.0142  
 Mercury -78691-08-08 08:08 J -27020245.22 -27020245.16 -27020245.10 0.0276 0.0245  
 Earth -78687-05-16 04:32 J -27018868.38 -27018868.31 -27018868.22 0.0266 0.0251  
 Moon -78687-05-16 07:54 J -27018868.20 -27018868.17 -27018868.13 0.0266 0.0263  
 Moon -78686-05-27 10:32 J -27018492.25 -27018492.06 -27018491.86 0.0265 0.0169  
 Earth -78686-05-27 11:59 J -27018492.18 -27018492.00 -27018491.81 0.0265 0.0170 \*  
 Mars -78686-07-13 01:40 J -27018445.59 -27018445.43 -27018445.24 0.0264 0.0221  
 Moon -78685-06-06 16:47 J -27018116.02 -27018115.80 -27018115.57 0.0264 0.0070

Earth -78685-06-06 19:40 J -27018115.90 -27018115.68 -27018115.44 0.0264 0.0083 \*  
 Earth -78684-06-18 05:01 J -27017739.53 -27017739.29 -27017739.04 0.0264 0.0008  
 Moon -78684-06-18 07:11 J -27017739.43 -27017739.20 -27017738.96 0.0264 0.0020 \*  
 Earth -78683-06-29 17:44 J -27017362.98 -27017362.76 -27017362.52 0.0264 0.0100  
 Moon -78683-06-29 21:20 J -27017362.84 -27017362.61 -27017362.38 0.0264 0.0101 \*  
 Moon -78682-07-11 09:49 J -27016986.28 -27016986.09 -27016985.90 0.0265 0.0177  
 Earth -78682-07-11 11:30 J -27016986.18 -27016986.02 -27016985.83 0.0265 0.0191 \*  
 Moon -78681-07-22 08:23 J -27016609.18 -27016609.15 -27016609.10 0.0267 0.0263  
 Venus -78678-07-14 05:16 J -27015522.40 -27015522.28 -27015522.14 0.0275 0.0221  
 Venus -78677-02-28 21:20 J -27015292.75 -27015292.61 -27015292.45 0.0277 0.0198  
 Mercury -78676-06-03 01:54 J -27014832.46 -27014832.42 -27014832.38 0.0282 0.0273  
 Mercury -78676-08-31 01:25 J -27014743.60 -27014743.44 -27014743.26 0.0283 0.0116  
 Mercury -78676-11-28 01:11 J -27014654.63 -27014654.45 -27014654.27 0.0283 0.0043  
 Mercury -78675-02-25 00:28 J -27014565.60 -27014565.48 -27014565.34 0.0284 0.0201  
 Earth -78672-11-22 09:35 J -27013199.20 -27013199.10 -27013199.00 0.0295 0.0269  
 Moon -78672-11-22 13:11 J -27013199.04 -27013198.95 -27013198.85 0.0295 0.0270 \*  
 Earth -78671-12-07 15:06 J -27012819.08 -27012818.87 -27012818.65 0.0296 0.0144  
 Moon -78671-12-07 16:18 J -27012819.03 -27012818.82 -27012818.58 0.0296 0.0144 \*  
 Mars -78670-09-10 22:32 J -27012541.80 -27012541.56 -27012541.31 0.0297 0.0122  
 Moon -78670-12-22 16:18 J -27012439.08 -27012438.82 -27012438.56 0.0297 0.0003  
 Earth -78670-12-22 18:13 J -27012438.99 -27012438.74 -27012438.50 0.0297 0.0010 \*  
 Moon -78668-01-05 11:59 J -27012059.21 -27012059.00 -27012058.77 0.0296 0.0135  
 Earth -78668-01-05 15:49 J -27012059.06 -27012058.84 -27012058.61 0.0296 0.0123 \*  
 Moon -78667-01-20 02:52 J -27011679.50 -27011679.38 -27011679.27 0.0294 0.0258  
 Earth -78667-01-20 05:30 J -27011679.40 -27011679.27 -27011679.13 0.0294 0.0243 \*  
 Venus -78664-05-19 10:18 J -27010464.26 -27010464.07 -27010463.88 0.0285 0.0101  
 Mercury -78662-01-06 14:23 J -27009866.98 -27009866.90 -27009866.81 0.0279 0.0201  
 Mercury -78662-04-05 01:25 J -27009778.56 -27009778.44 -27009778.31 0.0278 0.0097  
 Mercury -78662-07-02 12:28 J -27009690.11 -27009689.98 -27009689.85 0.0278 0.0008  
 Mercury -78662-09-28 23:30 J -27009601.64 -27009601.52 -27009601.40 0.0277 0.0112

Mercury -78662-12-26 10:32 J -27009513.14 -27009513.06 -27009512.98 0.0276 0.0215  
 Earth -78657-05-21 21:20 J -27007904.75 -27007904.61 -27007904.45 0.0266 0.0204  
 Moon -78657-05-21 22:47 J -27007904.69 -27007904.55 -27007904.41 0.0266 0.0210 \*  
 Earth -78656-06-02 05:01 J -27007528.51 -27007528.29 -27007528.07 0.0265 0.0119  
 Moon -78656-06-02 08:23 J -27007528.37 -27007528.15 -27007527.92 0.0265 0.0111 \*  
 Mars -78656-08-31 20:37 J -27007437.94 -27007437.64 -27007437.32 0.0264 0.0052  
 Moon -78655-06-13 11:44 J -27007152.26 -27007152.01 -27007151.76 0.0264 0.0016  
 Earth -78655-06-13 13:40 J -27007152.17 -27007151.93 -27007151.69 0.0264 0.0029 \*  
 Moon -78654-06-24 21:35 J -27006775.83 -27006775.60 -27006775.36 0.0264 0.0067  
 Earth -78654-06-25 00:56 J -27006775.69 -27006775.46 -27006775.22 0.0264 0.0063 \*  
 Earth -78653-07-05 16:32 J -27006399.00 -27006398.81 -27006398.60 0.0265 0.0154  
 Moon -78653-07-05 17:44 J -27006398.95 -27006398.76 -27006398.55 0.0265 0.0146 \*  
 Earth -78652-07-17 13:54 J -27006022.01 -27006021.92 -27006021.81 0.0267 0.0242  
 Moon -78652-07-17 17:16 J -27006021.90 -27006021.78 -27006021.64 0.0267 0.0227 \*  
 Venus -78648-01-23 13:11 J -27004736.13 -27004735.95 -27004735.77 0.0275 0.0156  
 Venus -78648-09-10 05:30 J -27004506.32 -27004506.27 -27004506.20 0.0277 0.0265  
 Mercury -78646-01-18 01:40 J -27004011.59 -27004011.43 -27004011.27 0.0282 0.0149  
 Mercury -78646-04-17 01:25 J -27003922.63 -27003922.44 -27003922.26 0.0283 0.0010  
 Mercury -78646-07-15 00:42 J -27003833.61 -27003833.47 -27003833.31 0.0284 0.0168  
 Mars -78642-10-29 17:44 J -27002265.84 -27002265.76 -27002265.65 0.0296 0.0277  
 Moon -78642-12-01 13:40 J -27002233.10 -27002232.93 -27002232.74 0.0296 0.0196  
 Earth -78642-12-01 14:23 J -27002233.08 -27002232.90 -27002232.71 0.0296 0.0196 \*  
 Earth -78641-12-15 19:40 J -27001852.92 -27001852.68 -27001852.44 0.0297 0.0063  
 Moon -78641-12-15 21:35 J -27001852.84 -27001852.60 -27001852.37 0.0297 0.0060 \*  
 Earth -78640-12-30 20:23 J -27001472.89 -27001472.65 -27001472.41 0.0297 0.0073  
 Moon -78640-12-30 23:59 J -27001472.74 -27001472.50 -27001472.27 0.0297 0.0081 \*  
 Earth -78638-01-14 13:54 J -27001093.09 -27001092.92 -27001092.73 0.0296 0.0201  
 Moon -78638-01-14 16:18 J -27001092.98 -27001092.82 -27001092.63 0.0296 0.0213 \*  
 Venus -78635-11-29 20:37 J -26999677.85 -26999677.64 -26999677.44 0.0285 0.0023  
 Mercury -78633-05-25 18:13 J -26999134.81 -26999134.74 -26999134.65 0.0279 0.0219

Mercury -78633-08-22 05:16 J -26999046.40 -26999046.28 -26999046.16 0.0279 0.0114

Mercury -78633-11-18 16:18 J -26998957.95 -26998957.82 -26998957.69 0.0278 0.0011

Mercury -78632-02-15 03:20 J -26998869.48 -26998869.36 -26998869.23 0.0277 0.0094

Mercury -78632-05-14 14:23 J -26998780.99 -26998780.90 -26998780.81 0.0276 0.0198

Moon -78628-05-17 12:28 J -26997317.05 -26997316.98 -26997316.88 0.0266 0.0247

Earth -78628-05-17 13:25 J -26997317.03 -26997316.94 -26997316.82 0.0266 0.0238 \*

Moon -78627-05-28 17:01 J -26996940.98 -26996940.79 -26996940.59 0.0264 0.0153

Earth -78627-05-28 20:37 J -26996940.82 -26996940.64 -26996940.43 0.0264 0.0156 \*

Earth -78626-06-09 04:32 J -26996564.54 -26996564.31 -26996564.07 0.0264 0.0067

Moon -78626-06-09 05:16 J -26996564.51 -26996564.28 -26996564.05 0.0264 0.0055 \*

Mars -78626-10-22 13:25 J -26996429.20 -26996428.94 -26996428.65 0.0264 0.0135

Earth -78625-06-19 14:08 J -26996188.16 -26996187.91 -26996187.67 0.0264 0.0024

Moon -78625-06-19 17:30 J -26996188.01 -26996187.77 -26996187.52 0.0264 0.0034 \*

Moon -78624-07-01 02:37 J -26995811.62 -26995811.39 -26995811.16 0.0264 0.0113

Earth -78624-07-01 03:20 J -26995811.57 -26995811.36 -26995811.13 0.0264 0.0116 \*

Moon -78623-07-12 18:28 J -26995434.89 -26995434.73 -26995434.56 0.0266 0.0193

Earth -78623-07-12 22:04 J -26995434.73 -26995434.58 -26995434.42 0.0266 0.0206 \*

Venus -78619-08-05 21:20 J -26993949.82 -26993949.61 -26993949.41 0.0276 0.0091

Mercury -78617-06-06 01:11 J -26993279.58 -26993279.45 -26993279.30 0.0282 0.0187

Mercury -78617-09-03 00:56 J -26993190.64 -26993190.46 -26993190.27 0.0283 0.0029

Mercury -78617-12-01 00:28 J -26993101.64 -26993101.48 -26993101.31 0.0284 0.0130

Moon -78613-11-24 05:59 J -26991647.37 -26991647.25 -26991647.09 0.0295 0.0249

Earth -78613-11-24 06:28 J -26991647.35 -26991647.23 -26991647.09 0.0295 0.0250 \*

Moon -78612-12-09 09:20 J -26991267.34 -26991267.11 -26991266.87 0.0296 0.0119

Earth -78612-12-09 11:59 J -26991267.22 -26991267.00 -26991266.76 0.0296 0.0123 \*

Mars -78612-12-17 20:52 J -26991258.89 -26991258.63 -26991258.36 0.0296 0.0061

Moon -78611-12-24 11:01 J -26990887.28 -26990887.04 -26990886.79 0.0297 0.0019

Earth -78611-12-24 14:37 J -26990887.13 -26990886.89 -26990886.64 0.0297 0.0013 \*

Moon -78609-01-08 09:35 J -26990507.30 -26990507.10 -26990506.90 0.0296 0.0155

Earth -78609-01-08 11:16 J -26990507.23 -26990507.03 -26990506.81 0.0296 0.0145 \*

Earth -78608-01-22 00:13 J -26990127.60 -26990127.49 -26990127.39 0.0294 0.0263  
 Moon -78608-01-22 01:11 J -26990127.51 -26990127.45 -26990127.36 0.0294 0.0278 \*  
 Venus -78605-06-11 00:13 J -26988891.69 -26988891.49 -26988891.28 0.0284 0.0033  
 Mercury -78604-10-12 20:37 J -26988402.69 -26988402.64 -26988402.58 0.0279 0.0250  
 Mercury -78603-01-09 07:40 J -26988314.29 -26988314.18 -26988314.07 0.0279 0.0145  
 Mercury -78603-04-07 18:42 J -26988225.85 -26988225.72 -26988225.59 0.0278 0.0042  
 Mercury -78603-07-05 05:30 J -26988137.40 -26988137.27 -26988137.14 0.0277 0.0063  
 Mercury -78603-10-01 16:32 J -26988048.91 -26988048.81 -26988048.70 0.0276 0.0167  
 Mercury -78603-12-29 03:35 J -26987960.37 -26987960.35 -26987960.32 0.0275 0.0270  
 Earth -78598-05-24 05:16 J -26986353.45 -26986353.28 -26986353.12 0.0265 0.0191  
 Moon -78598-05-24 08:37 J -26986353.29 -26986353.14 -26986352.96 0.0265 0.0194 \*  
 Mars -78598-12-07 05:44 J -26986156.45 -26986156.26 -26986156.05 0.0265 0.0203  
 Moon -78597-06-03 12:28 J -26985977.21 -26985976.98 -26985976.74 0.0264 0.0094  
 Earth -78597-06-03 12:28 J -26985977.20 -26985976.98 -26985976.75 0.0264 0.0104 \*  
 Moon -78596-06-14 17:44 J -26985601.00 -26985600.76 -26985600.51 0.0264 0.0004  
 Earth -78596-06-14 21:20 J -26985600.86 -26985600.61 -26985600.37 0.0264 0.0014 \*  
 Earth -78595-06-26 08:52 J -26985224.36 -26985224.13 -26985223.90 0.0264 0.0078  
 Moon -78595-06-26 09:35 J -26985224.32 -26985224.10 -26985223.87 0.0264 0.0080 \*  
 Earth -78594-07-08 00:56 J -26984847.64 -26984847.46 -26984847.27 0.0265 0.0170  
 Moon -78594-07-08 04:32 J -26984847.49 -26984847.31 -26984847.10 0.0265 0.0161 \*  
 Moon -78593-07-18 22:32 J -26984470.64 -26984470.56 -26984470.44 0.0267 0.0244  
 Earth -78593-07-18 22:47 J -26984470.60 -26984470.55 -26984470.47 0.0267 0.0258 \*  
 Venus -78589-02-16 03:35 J -26983163.56 -26983163.35 -26983163.13 0.0276 0.0031  
 Mercury -78588-10-24 00:13 J -26982547.59 -26982547.49 -26982547.37 0.0282 0.0227  
 Mercury -78587-01-21 00:13 J -26982458.67 -26982458.49 -26982458.30 0.0283 0.0068  
 Mercury -78587-04-19 23:59 J -26982369.68 -26982369.50 -26982369.33 0.0283 0.0091  
 Mercury -78587-07-17 23:16 J -26982280.61 -26982280.53 -26982280.44 0.0284 0.0249  
 Earth -78583-12-03 08:37 J -26980681.33 -26980681.14 -26980680.93 0.0296 0.0177  
 Moon -78583-12-03 12:13 J -26980681.18 -26980680.99 -26980680.79 0.0296 0.0175 \*  
 Earth -78582-12-18 13:40 J -26980301.17 -26980300.93 -26980300.68 0.0297 0.0042

Moon -78582-12-18 17:30 J -26980301.01 -26980300.77 -26980300.52 0.0297 0.0039 \*  
 Mars -78581-02-05 22:18 J -26980251.79 -26980251.57 -26980251.33 0.0297 0.0152  
 Earth -78580-01-01 14:08 J -26979921.14 -26979920.91 -26979920.67 0.0297 0.0095  
 Moon -78580-01-01 16:04 J -26979921.06 -26979920.83 -26979920.58 0.0297 0.0101 \*  
 Moon -78579-01-16 05:16 J -26979541.42 -26979541.28 -26979541.11 0.0296 0.0234  
 Earth -78579-01-16 07:11 J -26979541.36 -26979541.20 -26979541.04 0.0296 0.0221 \*  
 Venus -78576-12-22 09:49 J -26978105.28 -26978105.09 -26978104.90 0.0284 0.0107  
 Mercury -78574-03-02 00:28 J -26977670.51 -26977670.48 -26977670.44 0.0280 0.0268  
 Mercury -78574-05-29 11:16 J -26977582.13 -26977582.03 -26977581.92 0.0279 0.0164  
 Mercury -78574-08-25 22:18 J -26977493.69 -26977493.57 -26977493.44 0.0278 0.0060  
 Mercury -78574-11-22 09:20 J -26977405.24 -26977405.11 -26977404.98 0.0277 0.0045  
 Mercury -78573-02-18 20:23 J -26977316.76 -26977316.65 -26977316.54 0.0276 0.0148  
 Mercury -78573-05-17 07:25 J -26977228.24 -26977228.19 -26977228.14 0.0276 0.0251  
 Moon -78569-05-18 17:16 J -26975765.88 -26975765.78 -26975765.66 0.0265 0.0234  
 Earth -78569-05-18 20:52 J -26975765.74 -26975765.63 -26975765.50 0.0265 0.0226 \*  
 Moon -78568-05-30 03:35 J -26975389.54 -26975389.35 -26975389.14 0.0264 0.0136  
 Earth -78568-05-30 04:04 J -26975389.53 -26975389.33 -26975389.13 0.0264 0.0141 \*  
 Mars -78567-01-26 14:23 J -26975148.22 -26975147.90 -26975147.58 0.0264 0.0021  
 Earth -78567-06-10 11:30 J -26975013.26 -26975013.02 -26975012.78 0.0264 0.0053  
 Moon -78567-06-10 15:06 J -26975013.11 -26975012.87 -26975012.63 0.0264 0.0038 \*  
 Moon -78566-06-21 21:06 J -26974636.87 -26974636.62 -26974636.37 0.0264 0.0046  
 Earth -78566-06-21 21:20 J -26974636.85 -26974636.61 -26974636.37 0.0264 0.0039 \*  
 Moon -78565-07-02 07:11 J -26974260.42 -26974260.20 -26974259.98 0.0264 0.0125  
 Earth -78565-07-02 10:47 J -26974260.25 -26974260.05 -26974259.82 0.0264 0.0132 \*  
 Moon -78564-07-14 05:01 J -26973883.42 -26973883.29 -26973883.13 0.0266 0.0209  
 Earth -78564-07-14 05:59 J -26973883.38 -26973883.25 -26973883.11 0.0266 0.0221 \*  
 Venus -78560-08-28 11:16 J -26972377.25 -26972377.03 -26972376.81 0.0276 0.0033  
 Mercury -78558-03-12 23:44 J -26971815.56 -26971815.51 -26971815.44 0.0282 0.0266  
 Mercury -78558-06-09 23:44 J -26971726.68 -26971726.51 -26971726.34 0.0283 0.0107  
 Mercury -78558-09-06 23:16 J -26971637.71 -26971637.53 -26971637.34 0.0284 0.0053

Mercury -78558-12-04 22:47 J -26971548.67 -26971548.55 -26971548.42 0.0284 0.0211

Moon -78554-11-26 20:37 J -26970095.79 -26970095.64 -26970095.47 0.0296 0.0228

Earth -78554-11-27 00:42 J -26970095.62 -26970095.47 -26970095.31 0.0296 0.0232 \*

Mars -78553-03-25 07:11 J -26969976.34 -26969976.20 -26969976.05 0.0296 0.0249

Moon -78553-12-11 02:52 J -26969715.61 -26969715.38 -26969715.15 0.0297 0.0097

Earth -78553-12-11 06:13 J -26969715.47 -26969715.24 -26969715.00 0.0297 0.0102 \*

Moon -78552-12-26 07:25 J -26969335.43 -26969335.19 -26969334.96 0.0297 0.0041

Earth -78552-12-26 08:37 J -26969335.38 -26969335.14 -26969334.89 0.0297 0.0035 \*

Earth -78550-01-10 04:47 J -26968955.49 -26968955.30 -26968955.09 0.0296 0.0166

Moon -78550-01-10 06:42 J -26968955.41 -26968955.22 -26968955.03 0.0296 0.0177 \*

Earth -78549-01-24 16:18 J -26968575.87 -26968575.82 -26968575.73 0.0294 0.0282

Venus -78547-11-17 05:16 J -26967548.35 -26967548.28 -26967548.21 0.0285 0.0267

Venus -78546-07-04 13:25 J -26967319.10 -26967318.94 -26967318.77 0.0283 0.0163

Mercury -78545-10-15 13:40 J -26966850.02 -26966849.93 -26966849.83 0.0279 0.0195

Mercury -78544-01-12 00:42 J -26966761.60 -26966761.47 -26966761.35 0.0278 0.0091

Mercury -78544-04-10 11:44 J -26966673.15 -26966673.01 -26966672.88 0.0277 0.0016

Mercury -78544-07-07 22:32 J -26966584.68 -26966584.56 -26966584.44 0.0276 0.0117

Mercury -78544-10-04 09:35 J -26966496.17 -26966496.10 -26966496.02 0.0276 0.0220

Earth -78540-05-14 04:04 J -26965178.36 -26965178.33 -26965178.27 0.0267 0.0261

Earth -78539-05-25 11:30 J -26964802.19 -26964802.02 -26964801.84 0.0265 0.0178

Moon -78539-05-25 11:59 J -26964802.18 -26964802.00 -26964801.81 0.0265 0.0177 \*

Moon -78538-06-05 14:52 J -26964426.11 -26964425.88 -26964425.64 0.0264 0.0077

Earth -78538-06-05 18:28 J -26964425.95 -26964425.73 -26964425.49 0.0264 0.0091 \*

Mars -78537-03-17 11:44 J -26964140.26 -26964140.01 -26964139.74 0.0264 0.0150

Moon -78537-06-16 02:23 J -26964049.63 -26964049.40 -26964049.16 0.0264 0.0013

Earth -78537-06-16 03:06 J -26964049.62 -26964049.37 -26964049.13 0.0264 0.0003 \*

Earth -78536-06-27 14:37 J -26963673.12 -26963672.89 -26963672.66 0.0264 0.0093

Moon -78536-06-27 18:13 J -26963672.96 -26963672.74 -26963672.51 0.0264 0.0092 \*

Earth -78535-07-09 06:56 J -26963296.38 -26963296.21 -26963296.03 0.0265 0.0185

Moon -78535-07-09 07:40 J -26963296.36 -26963296.18 -26963295.98 0.0265 0.0172 \*

Moon -78534-07-21 01:54 J -26962919.47 -26962919.42 -26962919.35 0.0267 0.0258  
 Venus -78530-03-10 16:04 J -26961591.04 -26961590.83 -26961590.62 0.0277 0.0088  
 Mercury -78529-10-26 22:04 J -26960994.73 -26960994.58 -26960994.42 0.0282 0.0152  
 Mercury -78528-01-23 21:49 J -26960905.77 -26960905.59 -26960905.40 0.0283 0.0007  
 Mercury -78528-04-22 21:20 J -26960816.76 -26960816.61 -26960816.46 0.0284 0.0166  
 Earth -78525-11-19 17:01 J -26959509.84 -26959509.79 -26959509.71 0.0295 0.0285  
 Moon -78525-11-19 20:52 J -26959509.69 -26959509.63 -26959509.55 0.0295 0.0282  
 Earth -78524-12-05 00:13 J -26959129.70 -26959129.49 -26959129.28 0.0297 0.0159  
 Moon -78524-12-05 02:52 J -26959129.59 -26959129.38 -26959129.15 0.0297 0.0155 \*  
 Mars -78523-05-14 12:28 J -26958969.25 -26958968.98 -26958968.71 0.0297 0.0034  
 Earth -78523-12-20 05:01 J -26958749.53 -26958749.29 -26958749.04 0.0297 0.0023  
 Moon -78523-12-20 05:44 J -26958749.52 -26958749.26 -26958749.00 0.0297 0.0016 \*  
 Moon -78521-01-04 03:06 J -26958369.60 -26958369.37 -26958369.14 0.0297 0.0123  
 Earth -78521-01-04 05:16 J -26958369.50 -26958369.28 -26958369.05 0.0297 0.0114 \*  
 Moon -78520-01-17 18:13 J -26957989.86 -26957989.74 -26957989.61 0.0295 0.0253  
 Earth -78520-01-17 21:49 J -26957989.73 -26957989.59 -26957989.44 0.0295 0.0239 \*  
 Venus -78517-05-29 13:25 J -26956762.08 -26956761.94 -26956761.78 0.0286 0.0197  
 Venus -78516-01-13 21:49 J -26956532.70 -26956532.59 -26956532.47 0.0284 0.0233  
 Mercury -78515-03-04 17:16 J -26956117.86 -26956117.78 -26956117.70 0.0279 0.0216  
 Mercury -78515-06-01 04:18 J -26956029.44 -26956029.32 -26956029.20 0.0279 0.0112  
 Mercury -78515-08-28 15:06 J -26955941.00 -26955940.87 -26955940.73 0.0278 0.0011  
 Mercury -78515-11-25 02:08 J -26955852.53 -26955852.41 -26955852.28 0.0277 0.0097  
 Mercury -78514-02-21 13:11 J -26955764.04 -26955763.95 -26955763.86 0.0276 0.0200  
 Moon -78510-05-21 01:11 J -26954214.58 -26954214.45 -26954214.32 0.0265 0.0222  
 Earth -78510-05-21 02:23 J -26954214.53 -26954214.40 -26954214.25 0.0265 0.0214 \*  
 Mars -78509-05-02 18:56 J -26953866.95 -26953866.71 -26953866.48 0.0264 0.0174  
 Earth -78509-05-31 09:06 J -26953838.32 -26953838.12 -26953837.90 0.0264 0.0129  
 Moon -78509-05-31 12:42 J -26953838.18 -26953837.97 -26953837.75 0.0264 0.0120 \*  
 Earth -78508-06-11 16:32 J -26953462.05 -26953461.81 -26953461.56 0.0263 0.0039  
 Moon -78508-06-11 18:13 J -26953461.99 -26953461.74 -26953461.49 0.0263 0.0024 \*



Moon -78507-06-22 23:01 J -26953085.78 -26953085.54 -26953085.30 0.0264 0.0058  
 Earth -78507-06-23 02:23 J -26953085.63 -26953085.40 -26953085.15 0.0264 0.0054 \*  
 Moon -78506-07-04 15:20 J -26952709.06 -26952708.86 -26952708.65 0.0264 0.0137  
 Earth -78506-07-04 16:04 J -26952709.03 -26952708.83 -26952708.62 0.0264 0.0146 \*  
 Earth -78505-07-15 11:16 J -26952332.13 -26952332.03 -26952331.91 0.0266 0.0235  
 Moon -78505-07-15 14:52 J -26952332.02 -26952331.88 -26952331.75 0.0266 0.0220 \*  
 Venus -78501-02-03 07:25 J -26951034.23 -26951034.19 -26951034.13 0.0275 0.0267  
 Venus -78501-09-19 23:16 J -26950804.71 -26950804.53 -26950804.34 0.0277 0.0151  
 Mercury -78499-03-15 21:06 J -26950262.75 -26950262.62 -26950262.48 0.0282 0.0193  
 Mercury -78499-06-12 21:06 J -26950173.81 -26950173.62 -26950173.44 0.0283 0.0034  
 Mercury -78499-09-09 20:37 J -26950084.80 -26950084.64 -26950084.47 0.0284 0.0125  
 Mercury -78499-12-07 19:54 J -26949995.68 -26949995.67 -26949995.65 0.0285 0.0284  
 Moon -78495-11-28 12:42 J -26948544.13 -26948543.97 -26948543.79 0.0296 0.0211  
 Earth -78495-11-28 14:52 J -26948544.05 -26948543.88 -26948543.71 0.0296 0.0215 \*  
 Earth -78494-12-13 20:23 J -26948163.88 -26948163.65 -26948163.41 0.0297 0.0083  
 Moon -78494-12-13 21:06 J -26948163.85 -26948163.62 -26948163.39 0.0297 0.0076 \*  
 Mars -78493-07-02 05:01 J -26947962.50 -26947962.29 -26947962.06 0.0297 0.0176  
 Earth -78493-12-27 22:47 J -26947783.79 -26947783.55 -26947783.31 0.0297 0.0055  
 Moon -78493-12-28 01:40 J -26947783.66 -26947783.43 -26947783.19 0.0297 0.0063 \*  
 Earth -78491-01-11 18:42 J -26947403.91 -26947403.72 -26947403.53 0.0296 0.0185  
 Moon -78491-01-11 22:04 J -26947403.75 -26947403.58 -26947403.38 0.0296 0.0196 \*  
 Venus -78488-12-09 17:16 J -26945975.95 -26945975.78 -26945975.60 0.0285 0.0141  
 Mercury -78486-07-22 19:25 J -26945385.75 -26945385.69 -26945385.63 0.0279 0.0248  
 Mercury -78486-10-19 06:13 J -26945297.35 -26945297.24 -26945297.12 0.0278 0.0144  
 Mercury -78485-01-15 17:16 J -26945208.91 -26945208.78 -26945208.65 0.0277 0.0040  
 Mercury -78485-04-13 04:18 J -26945120.45 -26945120.32 -26945120.19 0.0277 0.0064  
 Mercury -78485-07-10 15:20 J -26945031.97 -26945031.86 -26945031.76 0.0276 0.0167  
 Mercury -78485-10-07 02:08 J -26944943.43 -26944943.41 -26944943.38 0.0275 0.0270  
 Earth -78481-05-15 08:52 J -26943627.20 -26943627.13 -26943627.04 0.0266 0.0250  
 Moon -78481-05-15 11:16 J -26943627.06 -26943627.03 -26943626.99 0.0266 0.0262 \*

Moon -78480-05-26 12:28 J -26943251.17 -26943250.98 -26943250.78 0.0265 0.0162  
 Earth -78480-05-26 15:35 J -26943251.03 -26943250.85 -26943250.65 0.0265 0.0167 \*  
 Moon -78479-06-06 20:52 J -26942874.85 -26942874.63 -26942874.40 0.0264 0.0064  
 Earth -78479-06-06 22:18 J -26942874.80 -26942874.57 -26942874.33 0.0264 0.0078 \*  
 Mars -78479-06-22 05:01 J -26942859.61 -26942859.29 -26942858.97 0.0264 0.0007  
 Earth -78478-06-18 06:42 J -26942498.47 -26942498.22 -26942497.98 0.0264 0.0015  
 Moon -78478-06-18 09:49 J -26942498.33 -26942498.09 -26942497.85 0.0264 0.0027 \*  
 Earth -78477-06-28 17:59 J -26942121.97 -26942121.75 -26942121.52 0.0264 0.0107  
 Moon -78477-06-28 19:11 J -26942121.93 -26942121.70 -26942121.46 0.0264 0.0104 \*  
 Moon -78476-07-10 06:42 J -26941745.39 -26941745.22 -26941745.03 0.0265 0.0183  
 Earth -78476-07-10 10:18 J -26941745.22 -26941745.07 -26941744.90 0.0265 0.0199 \*  
 Venus -78472-08-15 09:49 J -26940248.21 -26940248.09 -26940247.95 0.0275 0.0221  
 Venus -78471-04-02 01:54 J -26940018.56 -26940018.42 -26940018.26 0.0277 0.0199  
 Mercury -78470-08-02 18:28 J -26939530.82 -26939530.73 -26939530.64 0.0282 0.0246  
 Mercury -78470-10-30 18:28 J -26939441.91 -26939441.73 -26939441.56 0.0283 0.0087  
 Mercury -78469-01-27 17:59 J -26939352.93 -26939352.75 -26939352.57 0.0283 0.0073  
 Mercury -78469-04-25 17:30 J -26939263.87 -26939263.77 -26939263.66 0.0284 0.0231  
 Earth -78466-11-22 03:06 J -26937958.46 -26937958.37 -26937958.27 0.0295 0.0271  
 Moon -78466-11-22 04:47 J -26937958.41 -26937958.30 -26937958.20 0.0295 0.0268 \*  
 Mars -78465-08-19 09:06 J -26937687.28 -26937687.12 -26937686.93 0.0296 0.0227  
 Moon -78465-12-06 08:52 J -26937578.36 -26937578.13 -26937577.90 0.0297 0.0135  
 Earth -78465-12-06 10:32 J -26937578.28 -26937578.06 -26937577.84 0.0297 0.0143 \*  
 Moon -78464-12-21 12:13 J -26937198.24 -26937197.99 -26937197.74 0.0297 0.0007  
 Earth -78464-12-21 15:49 J -26937198.09 -26937197.84 -26937197.59 0.0297 0.0005 \*  
 Moon -78462-01-05 12:13 J -26936818.20 -26936817.99 -26936817.77 0.0297 0.0143  
 Earth -78462-01-05 15:49 J -26936818.05 -26936817.84 -26936817.61 0.0297 0.0132 \*  
 Moon -78461-01-20 06:42 J -26936438.30 -26936438.22 -26936438.11 0.0295 0.0270  
 Earth -78461-01-20 08:08 J -26936438.27 -26936438.16 -26936438.03 0.0295 0.0256 \*  
 Venus -78458-06-22 00:28 J -26935189.68 -26935189.48 -26935189.28 0.0285 0.0074  
 Mercury -78457-12-08 22:32 J -26934653.58 -26934653.56 -26934653.52 0.0280 0.0272

Mercury -78456-03-07 09:35 J -26934565.20 -26934565.10 -26934564.99 0.0279 0.0167

Mercury -78456-06-03 20:37 J -26934476.77 -26934476.64 -26934476.51 0.0278 0.0063

Mercury -78456-08-31 07:40 J -26934388.31 -26934388.18 -26934388.05 0.0277 0.0042

Mercury -78456-11-27 18:28 J -26934299.84 -26934299.73 -26934299.61 0.0276 0.0145

Mercury -78455-02-24 05:30 J -26934211.32 -26934211.27 -26934211.21 0.0276 0.0248

Earth -78451-05-22 05:59 J -26932663.40 -26932663.25 -26932663.09 0.0265 0.0203

Moon -78451-05-22 08:23 J -26932663.28 -26932663.15 -26932663.00 0.0265 0.0209 \*

Earth -78450-06-02 12:13 J -26932287.20 -26932286.99 -26932286.76 0.0264 0.0117

Moon -78450-06-02 14:23 J -26932287.13 -26932286.90 -26932286.67 0.0264 0.0106 \*

Moon -78449-06-12 16:18 J -26931911.06 -26931910.82 -26931910.57 0.0263 0.0012

Earth -78449-06-12 19:25 J -26931910.93 -26931910.69 -26931910.44 0.0263 0.0027 \*

Mars -78449-08-11 16:18 J -26931851.04 -26931850.82 -26931850.56 0.0263 0.0178

Moon -78448-06-24 03:06 J -26931534.59 -26931534.37 -26931534.14 0.0263 0.0071

Earth -78448-06-24 05:01 J -26931534.52 -26931534.29 -26931534.05 0.0263 0.0067 \*

Earth -78447-07-05 18:42 J -26931157.91 -26931157.72 -26931157.52 0.0264 0.0158

Moon -78447-07-05 21:49 J -26931157.78 -26931157.59 -26931157.38 0.0264 0.0148 \*

Earth -78446-07-17 13:40 J -26930781.00 -26930780.93 -26930780.82 0.0266 0.0248

Moon -78446-07-17 16:18 J -26930780.93 -26930780.82 -26930780.69 0.0266 0.0232 \*

Venus -78442-02-25 16:32 J -26929461.98 -26929461.81 -26929461.63 0.0275 0.0161

Venus -78442-10-13 08:37 J -26929232.20 -26929232.14 -26929232.06 0.0277 0.0261

Mercury -78440-03-18 17:01 J -26928709.95 -26928709.79 -26928709.62 0.0283 0.0130

Mercury -78440-06-15 17:01 J -26928620.98 -26928620.79 -26928620.61 0.0284 0.0030

Mercury -78440-09-12 16:18 J -26928531.95 -26928531.82 -26928531.67 0.0284 0.0189

Earth -78436-11-30 00:13 J -26926992.66 -26926992.49 -26926992.30 0.0296 0.0201

Moon -78436-11-30 02:23 J -26926992.57 -26926992.40 -26926992.20 0.0296 0.0195 \*

Mars -78435-10-08 11:16 J -26926680.30 -26926680.03 -26926679.76 0.0297 0.0014

Earth -78435-12-15 06:28 J -26926612.47 -26926612.23 -26926611.99 0.0297 0.0065

Moon -78435-12-15 10:04 J -26926612.32 -26926612.08 -26926611.83 0.0297 0.0056 \*

Earth -78434-12-30 08:52 J -26926232.37 -26926232.13 -26926231.89 0.0297 0.0073

Moon -78434-12-30 11:59 J -26926232.23 -26926232.00 -26926231.75 0.0297 0.0084 \*

Earth -78432-01-13 04:32 J -26925852.48 -26925852.31 -26925852.13 0.0296 0.0203  
 Moon -78432-01-13 05:16 J -26925852.44 -26925852.28 -26925852.10 0.0296 0.0215 \*  
 Venus -78428-01-01 03:35 J -26924403.55 -26924403.35 -26924403.14 0.0284 0.0021  
 Mercury -78427-07-25 11:30 J -26923833.10 -26923833.02 -26923832.92 0.0279 0.0201  
 Mercury -78427-10-21 22:32 J -26923744.68 -26923744.56 -26923744.43 0.0278 0.0097  
 Mercury -78426-01-18 09:35 J -26923656.23 -26923656.10 -26923655.97 0.0277 0.0008  
 Mercury -78426-04-16 20:23 J -26923567.77 -26923567.65 -26923567.52 0.0276 0.0111  
 Mercury -78426-07-14 07:25 J -26923479.27 -26923479.19 -26923479.10 0.0275 0.0214  
 Moon -78422-05-17 09:06 J -26922076.18 -26922076.12 -26922076.02 0.0266 0.0251  
 Earth -78422-05-17 11:44 J -26922076.10 -26922076.01 -26922075.90 0.0266 0.0241 \*  
 Moon -78421-05-27 15:35 J -26921700.03 -26921699.85 -26921699.65 0.0264 0.0152  
 Earth -78421-05-27 17:59 J -26921699.94 -26921699.75 -26921699.55 0.0264 0.0156 \*  
 Mars -78421-09-26 02:08 J -26921578.65 -26921578.41 -26921578.15 0.0264 0.0160  
 Earth -78420-06-08 00:13 J -26921323.73 -26921323.49 -26921323.26 0.0264 0.0066  
 Moon -78420-06-08 03:06 J -26921323.60 -26921323.37 -26921323.13 0.0264 0.0051 \*  
 Earth -78419-06-19 08:08 J -26920947.41 -26920947.16 -26920946.92 0.0264 0.0027  
 Moon -78419-06-19 10:32 J -26920947.31 -26920947.06 -26920946.81 0.0264 0.0037 \*  
 Moon -78418-06-30 16:18 J -26920571.04 -26920570.82 -26920570.59 0.0264 0.0112  
 Earth -78418-06-30 19:11 J -26920570.91 -26920570.70 -26920570.47 0.0264 0.0120 \*  
 Moon -78417-07-11 09:20 J -26920194.26 -26920194.11 -26920193.94 0.0265 0.0196  
 Earth -78417-07-11 11:30 J -26920194.16 -26920194.02 -26920193.87 0.0265 0.0211 \*  
 Venus -78413-09-06 17:44 J -26918675.95 -26918675.76 -26918675.56 0.0275 0.0119  
 Mercury -78411-08-05 13:25 J -26917978.07 -26917977.94 -26917977.79 0.0282 0.0188  
 Mercury -78411-11-02 13:25 J -26917889.12 -26917888.94 -26917888.75 0.0283 0.0028  
 Mercury -78410-01-30 13:11 J -26917800.12 -26917799.95 -26917799.79 0.0284 0.0131  
 Moon -78407-11-23 06:13 J -26916407.37 -26916407.24 -26916407.11 0.0295 0.0253  
 Earth -78407-11-23 09:06 J -26916407.23 -26916407.12 -26916407.00 0.0295 0.0260 \*  
 Moon -78406-12-08 12:56 J -26916027.18 -26916026.96 -26916026.73 0.0297 0.0119  
 Earth -78406-12-08 16:32 J -26916027.03 -26916026.81 -26916026.58 0.0297 0.0129 \*  
 Mars -78405-11-25 21:35 J -26915673.80 -26915673.60 -26915673.39 0.0298 0.0194

Moon -78405-12-22 19:54 J -26915646.91 -26915646.67 -26915646.43 0.0298 0.0023  
 Earth -78405-12-22 22:04 J -26915646.82 -26915646.58 -26915646.33 0.0298 0.0012 \*  
 Earth -78403-01-06 22:18 J -26915266.78 -26915266.57 -26915266.36 0.0297 0.0147  
 Moon -78403-01-06 22:32 J -26915266.75 -26915266.56 -26915266.36 0.0297 0.0161 \*  
 Earth -78402-01-21 14:08 J -26914886.99 -26914886.91 -26914886.80 0.0295 0.0271  
 Moon -78402-01-21 17:16 J -26914886.83 -26914886.78 -26914886.72 0.0295 0.0286 \*  
 Venus -78399-07-14 09:06 J -26913617.32 -26913617.12 -26913616.91 0.0285 0.0040  
 Mercury -78398-12-12 14:37 J -26913100.96 -26913100.89 -26913100.82 0.0280 0.0228  
 Mercury -78397-03-10 01:40 J -26913012.55 -26913012.43 -26913012.32 0.0279 0.0123  
 Mercury -78397-06-06 12:28 J -26912924.11 -26912923.98 -26912923.85 0.0278 0.0019  
 Mercury -78397-09-02 23:30 J -26912835.65 -26912835.52 -26912835.40 0.0277 0.0086  
 Mercury -78397-11-30 10:18 J -26912747.16 -26912747.07 -26912746.97 0.0276 0.0190  
 Earth -78392-05-23 07:25 J -26911112.36 -26911112.19 -26911112.03 0.0265 0.0193  
 Moon -78392-05-23 10:32 J -26911112.23 -26911112.06 -26911111.90 0.0265 0.0197 \*  
 Moon -78391-06-03 10:47 J -26910736.28 -26910736.05 -26910735.82 0.0264 0.0093  
 Earth -78391-06-03 13:25 J -26910736.16 -26910735.94 -26910735.72 0.0264 0.0106 \*  
 Mars -78391-11-16 03:06 J -26910570.69 -26910570.37 -26910570.06 0.0263 0.0019  
 Moon -78390-06-14 17:30 J -26910360.01 -26910359.77 -26910359.53 0.0263 0.0002  
 Earth -78390-06-14 20:08 J -26910359.90 -26910359.66 -26910359.42 0.0263 0.0015 \*  
 Earth -78389-06-25 05:16 J -26909983.50 -26909983.28 -26909983.04 0.0263 0.0079  
 Moon -78389-06-25 07:54 J -26909983.40 -26909983.17 -26909982.95 0.0263 0.0080 \*  
 Earth -78388-07-06 18:42 J -26909606.89 -26909606.72 -26909606.52 0.0264 0.0170  
 Moon -78388-07-06 21:20 J -26909606.81 -26909606.61 -26909606.40 0.0264 0.0157 \*  
 Moon -78387-07-18 11:30 J -26909230.11 -26909230.02 -26909229.92 0.0266 0.0244  
 Earth -78387-07-18 13:54 J -26909229.96 -26909229.92 -26909229.85 0.0266 0.0259 \*  
 Venus -78383-03-19 23:44 J -26907889.72 -26907889.51 -26907889.30 0.0276 0.0060  
 Mercury -78382-12-23 11:59 J -26907246.10 -26907246.00 -26907245.89 0.0282 0.0233  
 Mercury -78381-03-21 11:44 J -26907157.19 -26907157.01 -26907156.82 0.0283 0.0074  
 Mercury -78381-06-18 11:30 J -26907068.20 -26907068.02 -26907067.84 0.0284 0.0086  
 Mercury -78381-09-15 11:01 J -26906979.13 -26906979.04 -26906978.95 0.0285 0.0245

Earth -78377-12-01 04:47 J -26905441.48 -26905441.30 -26905441.09 0.0297 0.0188  
 Moon -78377-12-01 08:37 J -26905441.34 -26905441.14 -26905440.94 0.0297 0.0180 \*  
 Mars -78376-01-12 21:49 J -26905398.77 -26905398.59 -26905398.39 0.0297 0.0213  
 Earth -78376-12-16 11:30 J -26905061.27 -26905061.02 -26905060.78 0.0298 0.0050  
 Moon -78376-12-16 12:56 J -26905061.21 -26905060.96 -26905060.71 0.0298 0.0039 \*  
 Moon -78375-12-31 12:28 J -26904681.21 -26904680.98 -26904680.73 0.0297 0.0103  
 Earth -78375-12-31 14:08 J -26904681.14 -26904680.91 -26904680.68 0.0297 0.0088 \*  
 Moon -78373-01-15 06:28 J -26904301.38 -26904301.23 -26904301.08 0.0296 0.0234  
 Earth -78373-01-15 09:49 J -26904301.24 -26904301.09 -26904300.92 0.0296 0.0218 \*  
 Venus -78369-01-24 11:59 J -26902831.20 -26902831.00 -26902830.81 0.0284 0.0091  
 Mercury -78368-04-30 16:32 J -26902368.85 -26902368.81 -26902368.77 0.0279 0.0261  
 Mercury -78368-07-28 03:20 J -26902280.46 -26902280.36 -26902280.25 0.0278 0.0158  
 Mercury -78368-10-24 14:23 J -26902192.03 -26902191.90 -26902191.77 0.0278 0.0053  
 Mercury -78367-01-21 01:25 J -26902103.57 -26902103.44 -26902103.31 0.0277 0.0051  
 Mercury -78367-04-19 12:28 J -26902015.09 -26902014.98 -26902014.88 0.0276 0.0154  
 Mercury -78367-07-16 23:16 J -26901926.57 -26901926.53 -26901926.48 0.0275 0.0257  
 Moon -78363-05-18 09:35 J -26900525.19 -26900525.10 -26900524.99 0.0265 0.0239  
 Earth -78363-05-18 12:42 J -26900525.07 -26900524.97 -26900524.84 0.0265 0.0231 \*  
 Earth -78362-05-29 18:28 J -26900148.93 -26900148.73 -26900148.52 0.0264 0.0145  
 Moon -78362-05-29 20:23 J -26900148.85 -26900148.65 -26900148.45 0.0264 0.0138 \*  
 Earth -78361-06-08 23:59 J -26899772.73 -26899772.50 -26899772.25 0.0263 0.0056  
 Moon -78361-06-09 02:52 J -26899772.62 -26899772.38 -26899772.13 0.0263 0.0040 \*  
 Mars -78360-01-04 14:37 J -26899563.10 -26899562.89 -26899562.65 0.0263 0.0186  
 Moon -78360-06-20 05:16 J -26899396.52 -26899396.28 -26899396.03 0.0263 0.0044  
 Earth -78360-06-20 07:40 J -26899396.42 -26899396.18 -26899395.93 0.0263 0.0038 \*  
 Moon -78359-07-01 15:49 J -26899020.04 -26899019.84 -26899019.62 0.0264 0.0124  
 Earth -78359-07-01 18:42 J -26899019.93 -26899019.72 -26899019.50 0.0264 0.0131 \*  
 Earth -78358-07-13 10:32 J -26898643.19 -26898643.06 -26898642.93 0.0265 0.0221  
 Moon -78358-07-13 12:56 J -26898643.10 -26898642.96 -26898642.80 0.0265 0.0208 \*  
 Venus -78354-09-29 23:44 J -26897103.73 -26897103.51 -26897103.29 0.0276 0.0024

Mercury -78352-08-08 07:25 J -26896425.35 -26896425.19 -26896425.02 0.0282 0.0137

Mercury -78352-11-05 07:25 J -26896336.38 -26896336.19 -26896336.01 0.0283 0.0023

Mercury -78351-02-02 06:56 J -26896247.35 -26896247.21 -26896247.07 0.0284 0.0182

Moon -78348-11-24 07:25 J -26894856.32 -26894856.19 -26894856.04 0.0296 0.0242

Earth -78348-11-24 10:18 J -26894856.18 -26894856.07 -26894855.92 0.0296 0.0250 \*

Moon -78347-12-09 17:44 J -26894475.98 -26894475.76 -26894475.53 0.0297 0.0107

Earth -78347-12-09 18:13 J -26894475.96 -26894475.74 -26894475.50 0.0297 0.0117 \*

Mars -78346-03-03 11:44 J -26894392.28 -26894392.01 -26894391.74 0.0297 0.0003

Earth -78346-12-25 00:13 J -26894095.73 -26894095.49 -26894095.24 0.0298 0.0024

Moon -78346-12-25 02:37 J -26894095.63 -26894095.39 -26894095.15 0.0298 0.0038 \*

Earth -78344-01-08 00:42 J -26893715.67 -26893715.47 -26893715.26 0.0297 0.0161

Moon -78344-01-08 04:32 J -26893715.50 -26893715.31 -26893715.11 0.0297 0.0177 \*

Earth -78343-01-22 16:47 J -26893335.86 -26893335.80 -26893335.72 0.0296 0.0283

Venus -78340-08-05 16:04 J -26892045.00 -26892044.83 -26892044.65 0.0285 0.0147

Mercury -78339-12-15 05:59 J -26891548.34 -26891548.25 -26891548.15 0.0280 0.0187

Mercury -78338-03-13 17:01 J -26891459.91 -26891459.79 -26891459.66 0.0279 0.0082

Mercury -78338-06-10 04:04 J -26891371.46 -26891371.33 -26891371.20 0.0278 0.0023

Mercury -78338-09-06 14:52 J -26891282.99 -26891282.88 -26891282.76 0.0277 0.0127

Mercury -78338-12-04 01:54 J -26891194.49 -26891194.42 -26891194.34 0.0276 0.0230

Moon -78333-05-24 05:30 J -26889561.44 -26889561.27 -26889561.08 0.0264 0.0182

Earth -78333-05-24 06:56 J -26889561.38 -26889561.21 -26889561.04 0.0264 0.0184 \*

Mars -78332-02-19 19:11 J -26889289.95 -26889289.70 -26889289.42 0.0264 0.0138

Moon -78332-06-04 09:35 J -26889185.33 -26889185.10 -26889184.88 0.0263 0.0083

Earth -78332-06-04 12:28 J -26889185.20 -26889184.98 -26889184.75 0.0263 0.0096 \*

Earth -78331-06-15 19:11 J -26888808.95 -26888808.70 -26888808.46 0.0263 0.0006

Moon -78331-06-15 21:06 J -26888808.85 -26888808.62 -26888808.38 0.0263 0.0008 \*

Earth -78330-06-27 04:04 J -26888432.55 -26888432.33 -26888432.09 0.0263 0.0089

Moon -78330-06-27 07:25 J -26888432.42 -26888432.19 -26888431.95 0.0263 0.0088 \*

Moon -78329-07-07 15:20 J -26888056.05 -26888055.86 -26888055.66 0.0264 0.0167

Earth -78329-07-07 17:16 J -26888055.94 -26888055.78 -26888055.59 0.0264 0.0181 \*

Moon -78328-07-19 09:20 J -26887679.15 -26887679.11 -26887679.04 0.0265 0.0258  
 Venus -78324-04-11 05:30 J -26886317.48 -26886317.27 -26886317.05 0.0276 0.0036  
 Mercury -78323-12-26 05:44 J -26885693.39 -26885693.26 -26885693.11 0.0282 0.0182  
 Mercury -78322-03-25 05:44 J -26885604.45 -26885604.26 -26885604.07 0.0283 0.0023  
 Mercury -78322-06-22 05:16 J -26885515.44 -26885515.28 -26885515.11 0.0284 0.0137  
 Moon -78319-11-18 01:40 J -26884270.45 -26884270.43 -26884270.39 0.0295 0.0293  
 Moon -78318-12-03 06:28 J -26883890.44 -26883890.23 -26883890.01 0.0297 0.0165  
 Earth -78318-12-03 06:42 J -26883890.42 -26883890.22 -26883890.02 0.0297 0.0175 \*  
 Moon -78317-12-17 10:18 J -26883510.32 -26883510.07 -26883509.81 0.0298 0.0023  
 Earth -78317-12-17 13:11 J -26883510.19 -26883509.95 -26883509.70 0.0298 0.0037 \*  
 Mars -78316-04-21 03:35 J -26883385.54 -26883385.35 -26883385.15 0.0298 0.0204  
 Moon -78315-01-01 12:28 J -26883130.21 -26883129.98 -26883129.76 0.0298 0.0119  
 Earth -78315-01-01 16:04 J -26883130.06 -26883129.83 -26883129.60 0.0298 0.0102 \*  
 Moon -78314-01-16 09:35 J -26882750.22 -26882750.10 -26882749.96 0.0296 0.0249  
 Earth -78314-01-16 11:44 J -26882750.15 -26882750.01 -26882749.85 0.0296 0.0232 \*  
 Venus -78311-07-01 09:35 J -26881488.21 -26881488.10 -26881487.98 0.0286 0.0236  
 Venus -78310-02-15 18:13 J -26881258.88 -26881258.74 -26881258.59 0.0284 0.0197  
 Mercury -78309-05-03 07:54 J -26880816.25 -26880816.17 -26880816.09 0.0279 0.0222  
 Mercury -78309-07-30 18:56 J -26880727.83 -26880727.71 -26880727.60 0.0278 0.0117  
 Mercury -78309-10-27 05:44 J -26880639.39 -26880639.26 -26880639.13 0.0277 0.0014  
 Mercury -78308-01-23 16:47 J -26880550.93 -26880550.80 -26880550.68 0.0277 0.0091  
 Mercury -78308-04-22 03:49 J -26880462.44 -26880462.34 -26880462.25 0.0276 0.0194  
 Earth -78304-05-19 12:13 J -26878974.12 -26878973.99 -26878973.86 0.0265 0.0222  
 Moon -78304-05-19 13:25 J -26878974.06 -26878973.94 -26878973.82 0.0265 0.0226 \*  
 Earth -78303-05-30 17:30 J -26878597.98 -26878597.77 -26878597.56 0.0264 0.0136  
 Moon -78303-05-30 20:52 J -26878597.84 -26878597.63 -26878597.41 0.0264 0.0127 \*  
 Mars -78302-04-10 22:18 J -26878282.88 -26878282.57 -26878282.25 0.0263 0.0028  
 Moon -78302-06-10 21:06 J -26878221.87 -26878221.62 -26878221.37 0.0263 0.0033  
 Earth -78302-06-10 22:47 J -26878221.78 -26878221.55 -26878221.30 0.0263 0.0045 \*  
 Moon -78301-06-21 02:52 J -26877845.61 -26877845.38 -26877845.14 0.0263 0.0050



Earth -78301-06-21 06:13 J -26877845.48 -26877845.24 -26877845.00 0.0263 0.0048 \*  
 Earth -78300-07-02 16:32 J -26877469.00 -26877468.81 -26877468.59 0.0264 0.0142  
 Moon -78300-07-02 18:13 J -26877468.94 -26877468.74 -26877468.53 0.0264 0.0131 \*  
 Earth -78299-07-14 08:08 J -26877092.26 -26877092.16 -26877092.03 0.0265 0.0232  
 Moon -78299-07-14 11:16 J -26877092.16 -26877092.03 -26877091.88 0.0265 0.0218 \*  
 Venus -78295-10-22 04:32 J -26875531.52 -26875531.31 -26875531.10 0.0276 0.0070  
 Mercury -78293-05-14 00:56 J -26874961.54 -26874961.46 -26874961.37 0.0281 0.0249  
 Mercury -78293-08-11 00:42 J -26874872.64 -26874872.47 -26874872.29 0.0282 0.0090  
 Mercury -78293-11-08 00:28 J -26874783.66 -26874783.48 -26874783.30 0.0283 0.0069  
 Mercury -78292-02-04 23:59 J -26874694.60 -26874694.50 -26874694.39 0.0284 0.0228  
 Earth -78289-11-25 08:37 J -26873305.27 -26873305.14 -26873304.98 0.0296 0.0240  
 Moon -78289-11-25 10:04 J -26873305.22 -26873305.08 -26873304.92 0.0296 0.0229 \*  
 Mars -78288-06-07 10:47 J -26873111.24 -26873111.05 -26873110.84 0.0297 0.0206  
 Earth -78288-12-10 16:47 J -26872925.03 -26872924.80 -26872924.57 0.0297 0.0106  
 Moon -78288-12-10 19:54 J -26872924.90 -26872924.67 -26872924.43 0.0297 0.0092 \*  
 Earth -78287-12-25 22:47 J -26872544.80 -26872544.55 -26872544.31 0.0298 0.0036  
 Moon -78287-12-26 02:08 J -26872544.66 -26872544.41 -26872544.17 0.0298 0.0051 \*  
 Earth -78285-01-09 23:16 J -26872164.72 -26872164.53 -26872164.32 0.0297 0.0173  
 Moon -78285-01-10 00:28 J -26872164.67 -26872164.48 -26872164.28 0.0297 0.0189 \*  
 Earth -78284-01-23 15:35 J -26871784.86 -26871784.85 -26871784.81 0.0296 0.0294  
 Venus -78281-01-11 12:13 J -26870702.14 -26870701.99 -26870701.83 0.0287 0.0187  
 Venus -78281-08-27 21:06 J -26870472.71 -26870472.62 -26870472.51 0.0284 0.0248  
 Mercury -78280-09-20 10:04 J -26870084.13 -26870084.08 -26870084.02 0.0280 0.0255  
 Mercury -78280-12-17 21:06 J -26869995.73 -26869995.62 -26869995.51 0.0280 0.0150  
 Mercury -78279-03-16 08:08 J -26869907.29 -26869907.16 -26869907.03 0.0279 0.0044  
 Mercury -78279-06-12 19:11 J -26869818.83 -26869818.70 -26869818.57 0.0278 0.0061  
 Mercury -78279-09-09 05:59 J -26869730.35 -26869730.25 -26869730.14 0.0277 0.0165  
 Mercury -78279-12-06 17:01 J -26869641.81 -26869641.79 -26869641.75 0.0276 0.0268  
 Earth -78275-05-14 23:30 J -26868386.58 -26868386.52 -26868386.47 0.0266 0.0259  
 Moon -78275-05-14 22:18 J -26868386.57 -26868386.57 -26868386.55 0.0266 0.0266 \*

Moon -78274-05-26 01:40 J -26868010.61 -26868010.43 -26868010.24 0.0264 0.0169  
 Earth -78274-05-26 05:16 J -26868010.45 -26868010.28 -26868010.09 0.0264 0.0175 \*  
 Earth -78273-06-05 10:32 J -26867634.28 -26867634.06 -26867633.83 0.0263 0.0086  
 Moon -78273-06-05 11:30 J -26867634.25 -26867634.02 -26867633.80 0.0263 0.0073 \*  
 Mars -78272-05-31 01:54 J -26867274.60 -26867274.42 -26867274.21 0.0263 0.0208  
 Earth -78272-06-16 17:01 J -26867258.03 -26867257.79 -26867257.54 0.0263 0.0007  
 Moon -78272-06-16 20:23 J -26867257.89 -26867257.65 -26867257.40 0.0263 0.0014 \*  
 Moon -78271-06-28 00:42 J -26866881.70 -26866881.47 -26866881.22 0.0263 0.0093  
 Earth -78271-06-28 02:08 J -26866881.64 -26866881.41 -26866881.18 0.0263 0.0099 \*  
 Moon -78270-07-09 11:44 J -26866505.18 -26866505.01 -26866504.82 0.0264 0.0177  
 Earth -78270-07-09 14:52 J -26866505.03 -26866504.88 -26866504.69 0.0264 0.0191 \*  
 Venus -78265-05-03 10:18 J -26864745.26 -26864745.07 -26864744.87 0.0276 0.0129  
 Mercury -78264-12-28 23:01 J -26864140.70 -26864140.54 -26864140.37 0.0282 0.0136  
 Mercury -78263-03-27 22:47 J -26864051.73 -26864051.55 -26864051.36 0.0283 0.0025  
 Mercury -78263-06-24 22:18 J -26863962.70 -26863962.57 -26863962.42 0.0284 0.0183  
 Moon -78260-11-18 18:28 J -26862719.80 -26862719.73 -26862719.64 0.0295 0.0279  
 Earth -78260-11-18 21:06 J -26862719.65 -26862719.62 -26862719.58 0.0295 0.0292 \*  
 Moon -78259-12-04 00:42 J -26862339.67 -26862339.47 -26862339.24 0.0297 0.0151  
 Earth -78259-12-04 04:47 J -26862339.51 -26862339.30 -26862339.09 0.0297 0.0164 \*  
 Mars -78258-07-27 12:13 J -26862104.26 -26862103.99 -26862103.72 0.0298 0.0004  
 Moon -78258-12-19 08:52 J -26861959.37 -26861959.13 -26861958.88 0.0298 0.0011  
 Earth -78258-12-19 11:59 J -26861959.25 -26861959.00 -26861958.76 0.0298 0.0025 \*  
 Moon -78256-01-02 14:37 J -26861579.10 -26861578.89 -26861578.67 0.0298 0.0131  
 Earth -78256-01-02 14:52 J -26861579.10 -26861578.88 -26861578.65 0.0298 0.0115 \*  
 Earth -78255-01-17 10:47 J -26861199.18 -26861199.05 -26861198.91 0.0297 0.0244  
 Moon -78255-01-17 13:11 J -26861199.04 -26861198.95 -26861198.82 0.0297 0.0262 \*  
 Venus -78252-07-23 15:06 J -26859916.05 -26859915.87 -26859915.69 0.0286 0.0134  
 Mercury -78250-05-06 23:01 J -26859263.64 -26859263.54 -26859263.44 0.0279 0.0184  
 Mercury -78250-08-03 09:49 J -26859175.21 -26859175.09 -26859174.96 0.0278 0.0080  
 Mercury -78250-10-30 20:52 J -26859086.76 -26859086.63 -26859086.49 0.0277 0.0026

Mercury -78249-01-27 07:54 J -26858998.29 -26858998.17 -26858998.05 0.0276 0.0129  
 Mercury -78249-04-24 18:56 J -26858909.78 -26858909.71 -26858909.64 0.0276 0.0232  
 Earth -78245-05-20 10:32 J -26857423.19 -26857423.06 -26857422.91 0.0265 0.0214  
 Moon -78245-05-20 14:08 J -26857423.04 -26857422.91 -26857422.76 0.0265 0.0213 \*  
 Moon -78244-05-31 15:35 J -26857047.08 -26857046.85 -26857046.63 0.0263 0.0114  
 Earth -78244-05-31 15:49 J -26857047.05 -26857046.84 -26857046.63 0.0263 0.0126 \*  
 Mars -78244-07-15 14:37 J -26857002.16 -26857001.89 -26857001.61 0.0263 0.0127  
 Moon -78243-06-11 17:44 J -26856671.00 -26856670.76 -26856670.52 0.0263 0.0024  
 Earth -78243-06-11 21:06 J -26856670.86 -26856670.62 -26856670.38 0.0263 0.0035 \*  
 Earth -78242-06-23 03:49 J -26856294.57 -26856294.34 -26856294.09 0.0263 0.0059  
 Moon -78242-06-23 05:16 J -26856294.51 -26856294.28 -26856294.05 0.0263 0.0056 \*  
 Earth -78241-07-03 14:08 J -26855918.10 -26855917.91 -26855917.70 0.0263 0.0152  
 Moon -78241-07-03 17:59 J -26855917.95 -26855917.75 -26855917.53 0.0263 0.0139 \*  
 Moon -78240-07-15 04:47 J -26855541.42 -26855541.30 -26855541.17 0.0265 0.0230  
 Earth -78240-07-15 05:59 J -26855541.35 -26855541.25 -26855541.15 0.0265 0.0241 \*  
 Venus -78236-03-28 17:59 J -26854188.82 -26854188.75 -26854188.65 0.0274 0.0252  
 Venus -78236-11-13 09:20 J -26853959.29 -26853959.11 -26853958.94 0.0276 0.0162  
 Mercury -78234-05-17 18:13 J -26853408.87 -26853408.74 -26853408.61 0.0282 0.0203  
 Mercury -78234-08-14 17:59 J -26853319.94 -26853319.75 -26853319.57 0.0282 0.0044  
 Mercury -78234-11-11 17:30 J -26853230.93 -26853230.77 -26853230.60 0.0283 0.0115  
 Mercury -78233-02-08 16:47 J -26853141.83 -26853141.80 -26853141.74 0.0284 0.0275  
 Earth -78230-11-27 06:13 J -26851754.38 -26851754.24 -26851754.07 0.0296 0.0230  
 Moon -78230-11-27 10:18 J -26851754.24 -26851754.07 -26851753.89 0.0296 0.0215 \*  
 Earth -78229-12-11 14:23 J -26851374.13 -26851373.90 -26851373.66 0.0297 0.0094  
 Moon -78229-12-11 16:47 J -26851374.05 -26851373.80 -26851373.55 0.0297 0.0080 \*  
 Mars -78228-09-13 13:25 J -26851098.12 -26851097.94 -26851097.74 0.0298 0.0210  
 Moon -78228-12-26 19:40 J -26850993.93 -26850993.68 -26850993.43 0.0298 0.0062  
 Earth -78228-12-26 20:23 J -26850993.89 -26850993.65 -26850993.41 0.0298 0.0047 \*  
 Moon -78226-01-10 17:44 J -26850613.94 -26850613.76 -26850613.58 0.0297 0.0200  
 Earth -78226-01-10 21:06 J -26850613.81 -26850613.62 -26850613.43 0.0297 0.0184 \*

Venus -78222-02-02 17:01 J -26849129.99 -26849129.79 -26849129.60 0.0287 0.0087  
 Mercury -78221-09-23 00:56 J -26848531.54 -26848531.46 -26848531.38 0.0280 0.0220  
 Mercury -78221-12-20 11:59 J -26848443.12 -26848443.00 -26848442.88 0.0279 0.0114  
 Mercury -78220-03-18 23:01 J -26848354.67 -26848354.54 -26848354.41 0.0279 0.0009  
 Mercury -78220-06-15 10:04 J -26848266.21 -26848266.08 -26848265.96 0.0278 0.0096  
 Mercury -78220-09-11 20:52 J -26848177.71 -26848177.63 -26848177.53 0.0277 0.0201  
 Moon -78216-05-15 17:30 J -26846835.83 -26846835.77 -26846835.70 0.0266 0.0255  
 Earth -78216-05-15 21:06 J -26846835.70 -26846835.62 -26846835.54 0.0266 0.0250 \*  
 Earth -78215-05-27 02:52 J -26846459.56 -26846459.38 -26846459.18 0.0264 0.0166  
 Moon -78215-05-27 03:06 J -26846459.56 -26846459.37 -26846459.18 0.0264 0.0157 \*  
 Earth -78214-06-07 08:08 J -26846083.39 -26846083.16 -26846082.93 0.0263 0.0076  
 Moon -78214-06-07 11:44 J -26846083.24 -26846083.01 -26846082.77 0.0263 0.0061 \*  
 Mars -78214-09-04 07:54 J -26845994.48 -26845994.17 -26845993.86 0.0263 0.0047  
 Moon -78213-06-17 13:54 J -26845707.18 -26845706.92 -26845706.67 0.0263 0.0020  
 Earth -78213-06-17 14:37 J -26845707.13 -26845706.89 -26845706.65 0.0263 0.0017 \*  
 Moon -78212-06-28 19:40 J -26845330.90 -26845330.68 -26845330.44 0.0263 0.0099  
 Earth -78212-06-28 23:30 J -26845330.74 -26845330.52 -26845330.29 0.0263 0.0110 \*  
 Earth -78211-07-10 12:42 J -26844954.13 -26844953.97 -26844953.81 0.0264 0.0200  
 Moon -78211-07-10 12:56 J -26844954.12 -26844953.96 -26844953.79 0.0264 0.0187 \*  
 Venus -78207-10-09 00:13 J -26843402.64 -26843402.49 -26843402.34 0.0274 0.0192  
 Venus -78206-05-26 15:06 J -26843172.99 -26843172.87 -26843172.73 0.0276 0.0223  
 Mercury -78205-10-03 16:32 J -26842676.89 -26842676.81 -26842676.72 0.0281 0.0246  
 Mercury -78205-12-31 16:18 J -26842587.99 -26842587.82 -26842587.64 0.0282 0.0088  
 Mercury -78204-03-30 16:04 J -26842499.01 -26842498.83 -26842498.65 0.0283 0.0071  
 Mercury -78204-06-27 15:35 J -26842409.96 -26842409.85 -26842409.74 0.0284 0.0229  
 Moon -78201-11-19 14:52 J -26841168.97 -26841168.88 -26841168.77 0.0295 0.0268  
 Earth -78201-11-19 18:13 J -26841168.79 -26841168.74 -26841168.66 0.0295 0.0283 \*  
 Mars -78200-10-31 08:52 J -26840823.32 -26840823.13 -26840822.92 0.0297 0.0202  
 Moon -78200-12-05 00:28 J -26840788.69 -26840788.48 -26840788.26 0.0297 0.0138  
 Earth -78200-12-05 01:54 J -26840788.63 -26840788.42 -26840788.20 0.0297 0.0153 \*

Earth -78199-12-20 09:06 J -26840408.37 -26840408.12 -26840407.87 0.0298 0.0013  
 Moon -78199-12-20 10:18 J -26840408.31 -26840408.07 -26840407.83 0.0298 0.0006 \*  
 Earth -78197-01-04 12:13 J -26840028.21 -26840027.99 -26840027.77 0.0298 0.0127  
 Moon -78197-01-04 15:35 J -26840028.06 -26840027.85 -26840027.63 0.0298 0.0144 \*  
 Earth -78196-01-18 08:08 J -26839648.27 -26839648.16 -26839648.03 0.0297 0.0255  
 Moon -78196-01-18 11:16 J -26839648.12 -26839648.03 -26839647.92 0.0297 0.0271 \*  
 Venus -78193-08-14 19:40 J -26838343.89 -26838343.68 -26838343.48 0.0286 0.0035  
 Mercury -78191-02-10 02:52 J -26837799.43 -26837799.38 -26837799.33 0.0280 0.0254  
 Mercury -78191-05-09 13:54 J -26837711.03 -26837710.92 -26837710.81 0.0279 0.0149  
 Mercury -78191-08-06 00:56 J -26837622.59 -26837622.46 -26837622.33 0.0278 0.0044  
 Mercury -78191-11-02 11:44 J -26837534.13 -26837534.01 -26837533.88 0.0277 0.0062  
 Mercury -78190-01-29 22:47 J -26837445.65 -26837445.55 -26837445.44 0.0277 0.0165  
 Mercury -78190-04-28 09:49 J -26837357.11 -26837357.09 -26837357.06 0.0276 0.0268  
 Moon -78186-05-22 09:06 J -26835872.28 -26835872.12 -26835871.95 0.0265 0.0200  
 Earth -78186-05-22 09:06 J -26835872.27 -26835872.12 -26835871.97 0.0265 0.0205 \*  
 Moon -78185-06-01 10:18 J -26835496.29 -26835496.07 -26835495.84 0.0263 0.0102  
 Earth -78185-06-01 14:08 J -26835496.13 -26835495.91 -26835495.69 0.0263 0.0117 \*  
 Earth -78184-06-12 19:25 J -26835119.94 -26835119.69 -26835119.45 0.0263 0.0025  
 Moon -78184-06-12 19:25 J -26835119.93 -26835119.69 -26835119.46 0.0263 0.0016 \*  
 Mars -78184-10-23 17:59 J -26834986.91 -26834986.75 -26834986.55 0.0263 0.0217  
 Earth -78183-06-24 02:23 J -26834743.64 -26834743.40 -26834743.17 0.0263 0.0069  
 Moon -78183-06-24 05:44 J -26834743.49 -26834743.26 -26834743.01 0.0263 0.0063 \*  
 Moon -78182-07-05 12:28 J -26834367.19 -26834366.98 -26834366.77 0.0263 0.0146  
 Earth -78182-07-05 12:28 J -26834367.16 -26834366.98 -26834366.78 0.0263 0.0162 \*  
 Moon -78181-07-16 00:28 J -26833990.57 -26833990.48 -26833990.37 0.0264 0.0241  
 Earth -78181-07-16 03:49 J -26833990.40 -26833990.34 -26833990.25 0.0264 0.0251 \*  
 Venus -78177-04-19 23:16 J -26832616.71 -26832616.53 -26832616.35 0.0274 0.0159  
 Venus -78177-12-05 14:23 J -26832386.98 -26832386.90 -26832386.82 0.0276 0.0256  
 Mercury -78175-05-20 11:16 J -26831856.18 -26831856.03 -26831855.87 0.0281 0.0156  
 Mercury -78175-08-17 11:01 J -26831767.22 -26831767.04 -26831766.85 0.0282 0.0006

Mercury -78175-11-14 10:32 J -26831678.21 -26831678.06 -26831677.90 0.0283 0.0162  
 Moon -78171-11-28 02:52 J -26830203.55 -26830203.38 -26830203.18 0.0296 0.0203  
 Earth -78171-11-28 03:06 J -26830203.53 -26830203.37 -26830203.19 0.0296 0.0220 \*  
 Moon -78170-12-13 08:37 J -26829823.39 -26829823.14 -26829822.89 0.0297 0.0066  
 Earth -78170-12-13 11:01 J -26829823.27 -26829823.04 -26829822.79 0.0297 0.0084 \*  
 Mars -78170-12-19 17:16 J -26829817.05 -26829816.78 -26829816.51 0.0297 0.0008  
 Moon -78169-12-27 13:25 J -26829443.18 -26829442.94 -26829442.71 0.0298 0.0075  
 Earth -78169-12-27 16:47 J -26829443.03 -26829442.80 -26829442.55 0.0298 0.0059 \*  
 Moon -78167-01-11 15:06 J -26829063.03 -26829062.87 -26829062.70 0.0297 0.0210  
 Earth -78167-01-11 17:16 J -26829062.96 -26829062.78 -26829062.59 0.0297 0.0195 \*  
 Venus -78163-02-24 20:52 J -26827557.83 -26827557.63 -26827557.42 0.0287 0.0011  
 Mercury -78162-09-26 15:35 J -26826978.94 -26826978.85 -26826978.75 0.0280 0.0185  
 Mercury -78162-12-24 02:37 J -26826890.51 -26826890.39 -26826890.26 0.0280 0.0080  
 Mercury -78161-03-21 13:40 J -26826802.06 -26826801.93 -26826801.80 0.0279 0.0027  
 Mercury -78161-06-18 00:42 J -26826713.58 -26826713.47 -26826713.35 0.0278 0.0132  
 Mercury -78161-09-14 11:44 J -26826625.07 -26826625.01 -26826624.94 0.0277 0.0236  
 Moon -78157-05-16 17:44 J -26825284.84 -26825284.76 -26825284.66 0.0266 0.0245  
 Earth -78157-05-16 18:56 J -26825284.81 -26825284.71 -26825284.62 0.0266 0.0242 \*  
 Earth -78156-05-28 00:42 J -26824908.66 -26824908.47 -26824908.27 0.0264 0.0156  
 Moon -78156-05-28 04:18 J -26824908.51 -26824908.32 -26824908.11 0.0264 0.0143 \*  
 Mars -78156-12-08 22:47 J -26824713.82 -26824713.55 -26824713.26 0.0264 0.0112  
 Earth -78155-06-08 06:13 J -26824532.48 -26824532.24 -26824532.01 0.0263 0.0066  
 Moon -78155-06-08 06:56 J -26824532.46 -26824532.21 -26824531.96 0.0263 0.0052 \*  
 Moon -78154-06-19 09:06 J -26824156.36 -26824156.12 -26824155.88 0.0263 0.0027  
 Earth -78154-06-19 12:28 J -26824156.22 -26824155.98 -26824155.73 0.0263 0.0028 \*  
 Earth -78153-06-29 21:35 J -26823779.82 -26823779.60 -26823779.38 0.0263 0.0120  
 Moon -78153-06-29 21:35 J -26823779.81 -26823779.60 -26823779.38 0.0263 0.0107 \*  
 Earth -78152-07-11 10:32 J -26823403.20 -26823403.06 -26823402.90 0.0264 0.0210  
 Moon -78152-07-11 14:23 J -26823403.06 -26823402.90 -26823402.73 0.0264 0.0196 \*  
 Venus -78148-10-31 05:30 J -26821830.47 -26821830.27 -26821830.06 0.0274 0.0097

Mercury -78146-10-07 10:04 J -26821124.21 -26821124.08 -26821123.94 0.0281 0.0197

Mercury -78145-01-04 10:04 J -26821035.27 -26821035.08 -26821034.90 0.0282 0.0039

Mercury -78145-04-02 09:35 J -26820946.27 -26820946.10 -26820945.93 0.0283 0.0120

Mercury -78145-06-30 08:52 J -26820857.16 -26820857.13 -26820857.09 0.0284 0.0278

Earth -78142-11-21 17:01 J -26819617.88 -26819617.79 -26819617.69 0.0295 0.0272

Moon -78142-11-21 18:28 J -26819617.85 -26819617.73 -26819617.61 0.0295 0.0257 \*

Earth -78141-12-06 00:28 J -26819237.69 -26819237.48 -26819237.26 0.0297 0.0142

Moon -78141-12-06 03:49 J -26819237.56 -26819237.34 -26819237.12 0.0297 0.0124 \*

Earth -78140-12-21 07:40 J -26818857.43 -26818857.18 -26818856.93 0.0298 0.0001

Moon -78140-12-21 11:30 J -26818857.27 -26818857.02 -26818856.77 0.0298 0.0017 \*

Mars -78139-02-06 13:25 J -26818810.12 -26818809.94 -26818809.75 0.0298 0.0215

Earth -78138-01-05 10:47 J -26818477.26 -26818477.05 -26818476.83 0.0298 0.0140

Moon -78138-01-05 12:42 J -26818477.18 -26818476.97 -26818476.74 0.0298 0.0155 \*

Moon -78137-01-20 05:16 J -26818097.35 -26818097.28 -26818097.18 0.0297 0.0278

Earth -78137-01-20 06:42 J -26818097.31 -26818097.22 -26818097.10 0.0297 0.0267 \*

Venus -78134-09-07 00:13 J -26816771.68 -26816771.49 -26816771.28 0.0286 0.0066

Mercury -78132-02-12 17:44 J -26816246.84 -26816246.76 -26816246.68 0.0280 0.0218

Mercury -78132-05-12 04:47 J -26816158.42 -26816158.30 -26816158.18 0.0279 0.0112

Mercury -78132-08-08 15:49 J -26816069.97 -26816069.84 -26816069.71 0.0278 0.0007

Mercury -78132-11-05 02:52 J -26815981.50 -26815981.38 -26815981.26 0.0277 0.0098

Mercury -78131-02-01 13:40 J -26815893.01 -26815892.93 -26815892.83 0.0277 0.0203

Moon -78127-05-23 04:18 J -26814321.49 -26814321.32 -26814321.14 0.0265 0.0187

Earth -78127-05-23 07:40 J -26814321.33 -26814321.18 -26814321.01 0.0265 0.0196 \*

Moon -78126-06-03 11:59 J -26813945.22 -26813945.00 -26813944.78 0.0263 0.0092

Earth -78126-06-03 12:42 J -26813945.18 -26813944.97 -26813944.74 0.0263 0.0107 \*

Mars -78125-01-28 04:32 J -26813706.62 -26813706.31 -26813706.00 0.0263 0.0058

Earth -78125-06-13 18:13 J -26813568.98 -26813568.74 -26813568.50 0.0263 0.0014

Moon -78125-06-13 21:35 J -26813568.84 -26813568.60 -26813568.36 0.0263 0.0006 \*

Earth -78124-06-25 01:25 J -26813192.67 -26813192.44 -26813192.21 0.0263 0.0080

Moon -78124-06-25 01:40 J -26813192.67 -26813192.43 -26813192.18 0.0263 0.0071 \*

Moon -78123-07-06 07:54 J -26812816.36 -26812816.17 -26812815.96 0.0263 0.0156  
 Earth -78123-07-06 11:44 J -26812816.19 -26812816.01 -26812815.82 0.0263 0.0172 \*  
 Moon -78122-07-18 02:23 J -26812439.45 -26812439.40 -26812439.32 0.0264 0.0254  
 Earth -78122-07-18 03:06 J -26812439.40 -26812439.37 -26812439.31 0.0264 0.0261 \*  
 Venus -78118-05-13 05:30 J -26811044.48 -26811044.27 -26811044.05 0.0274 0.0061  
 Mercury -78116-02-23 05:30 J -26810392.33 -26810392.27 -26810392.20 0.0281 0.0262  
 Mercury -78116-05-23 05:16 J -26810303.45 -26810303.28 -26810303.10 0.0282 0.0104  
 Mercury -78116-08-20 05:01 J -26810214.48 -26810214.29 -26810214.11 0.0282 0.0054  
 Mercury -78116-11-17 04:18 J -26810125.43 -26810125.32 -26810125.19 0.0283 0.0213  
 Moon -78112-11-28 22:18 J -26808652.75 -26808652.57 -26808652.37 0.0296 0.0191  
 Earth -78112-11-29 02:23 J -26808652.58 -26808652.40 -26808652.22 0.0296 0.0208 \*  
 Mars -78111-03-25 15:49 J -26808536.04 -26808535.84 -26808535.63 0.0296 0.0198  
 Moon -78111-12-14 06:42 J -26808272.46 -26808272.22 -26808271.98 0.0297 0.0053  
 Earth -78111-12-14 10:04 J -26808272.32 -26808272.08 -26808271.84 0.0297 0.0071 \*  
 Moon -78110-12-29 14:08 J -26807892.13 -26807891.91 -26807891.68 0.0298 0.0087  
 Earth -78110-12-29 15:20 J -26807892.10 -26807891.86 -26807891.62 0.0298 0.0071 \*  
 Earth -78108-01-12 15:06 J -26807512.03 -26807511.87 -26807511.68 0.0297 0.0207  
 Moon -78108-01-12 17:01 J -26807511.93 -26807511.79 -26807511.62 0.0297 0.0220 \*  
 Venus -78104-03-19 00:56 J -26805985.65 -26805985.46 -26805985.27 0.0286 0.0109  
 Mercury -78103-07-02 19:25 J -26805514.74 -26805514.69 -26805514.64 0.0281 0.0257  
 Mercury -78103-09-29 06:28 J -26805426.34 -26805426.23 -26805426.12 0.0281 0.0150  
 Mercury -78103-12-26 17:30 J -26805337.90 -26805337.77 -26805337.64 0.0280 0.0044  
 Mercury -78102-03-25 04:32 J -26805249.44 -26805249.31 -26805249.18 0.0279 0.0062  
 Mercury -78102-06-21 15:35 J -26805160.95 -26805160.85 -26805160.74 0.0278 0.0167  
 Mercury -78102-09-18 02:37 J -26805072.41 -26805072.39 -26805072.36 0.0277 0.0272  
 Earth -78098-05-18 16:47 J -26803733.90 -26803733.80 -26803733.67 0.0266 0.0233  
 Moon -78098-05-18 19:40 J -26803733.78 -26803733.68 -26803733.55 0.0266 0.0233 \*  
 Earth -78097-05-28 23:01 J -26803357.73 -26803357.54 -26803357.33 0.0264 0.0146  
 Moon -78097-05-29 00:28 J -26803357.70 -26803357.48 -26803357.26 0.0264 0.0132 \*  
 Moon -78096-06-09 01:25 J -26802981.68 -26802981.44 -26802981.20 0.0263 0.0042



Earth -78096-06-09 04:47 J -26802981.53 -26802981.30 -26802981.06 0.0263 0.0055 \*  
 Mars -78095-03-19 04:18 J -26802698.45 -26802698.32 -26802698.17 0.0263 0.0235  
 Moon -78095-06-20 10:18 J -26802605.30 -26802605.07 -26802604.83 0.0263 0.0038  
 Earth -78095-06-20 11:30 J -26802605.26 -26802605.02 -26802604.78 0.0263 0.0039 \*  
 Earth -78094-07-01 20:37 J -26802228.85 -26802228.64 -26802228.42 0.0263 0.0131  
 Moon -78094-07-02 00:13 J -26802228.70 -26802228.49 -26802228.26 0.0263 0.0117 \*  
 Earth -78093-07-12 10:18 J -26801852.20 -26801852.07 -26801851.93 0.0264 0.0221  
 Moon -78093-07-12 11:30 J -26801852.17 -26801852.02 -26801851.86 0.0264 0.0208 \*  
 Venus -78089-11-22 12:13 J -26800258.20 -26800257.99 -26800257.77 0.0274 0.0006  
 Mercury -78087-10-10 04:32 J -26799571.47 -26799571.31 -26799571.15 0.0281 0.0143  
 Mercury -78086-01-07 04:18 J -26799482.51 -26799482.32 -26799482.14 0.0282 0.0016  
 Mercury -78086-04-06 03:49 J -26799393.49 -26799393.34 -26799393.20 0.0283 0.0173  
 Earth -78083-11-22 17:01 J -26798066.89 -26798066.79 -26798066.66 0.0295 0.0261  
 Moon -78083-11-22 20:52 J -26798066.76 -26798066.63 -26798066.48 0.0295 0.0244 \*  
 Earth -78082-12-08 00:42 J -26797686.69 -26797686.47 -26797686.24 0.0297 0.0129  
 Moon -78082-12-08 03:20 J -26797686.59 -26797686.36 -26797686.12 0.0297 0.0111 \*  
 Mars -78081-05-13 22:18 J -26797528.84 -26797528.57 -26797528.29 0.0298 0.0014  
 Earth -78081-12-22 07:25 J -26797306.43 -26797306.19 -26797305.94 0.0298 0.0015  
 Moon -78081-12-22 07:54 J -26797306.43 -26797306.17 -26797305.92 0.0298 0.0030 \*  
 Moon -78079-01-06 07:40 J -26796926.38 -26796926.18 -26796925.96 0.0298 0.0167  
 Earth -78079-01-06 10:18 J -26796926.28 -26796926.07 -26796925.86 0.0298 0.0153 \*  
 Moon -78078-01-21 02:52 J -26796546.43 -26796546.38 -26796546.33 0.0297 0.0289  
 Earth -78078-01-21 05:59 J -26796546.32 -26796546.25 -26796546.15 0.0297 0.0279  
 Venus -78075-02-11 18:56 J -26795428.76 -26795428.71 -26795428.65 0.0288 0.0276  
 Venus -78075-09-29 05:16 J -26795199.44 -26795199.28 -26795199.11 0.0286 0.0167  
 Mercury -78073-02-16 08:37 J -26794694.23 -26794694.14 -26794694.03 0.0280 0.0182  
 Mercury -78073-05-14 19:54 J -26794605.80 -26794605.67 -26794605.55 0.0279 0.0076  
 Mercury -78073-08-11 06:56 J -26794517.35 -26794517.21 -26794517.08 0.0278 0.0032  
 Mercury -78073-11-07 17:59 J -26794428.87 -26794428.75 -26794428.64 0.0278 0.0136  
 Mercury -78072-02-04 05:01 J -26794340.36 -26794340.29 -26794340.23 0.0277 0.0240

Moon -78068-05-24 05:30 J -26792770.43 -26792770.27 -26792770.09 0.0265 0.0177  
 Earth -78068-05-24 07:25 J -26792770.36 -26792770.19 -26792770.01 0.0265 0.0185 \*  
 Mars -78067-05-04 01:25 J -26792425.73 -26792425.44 -26792425.15 0.0263 0.0099  
 Earth -78067-06-04 12:42 J -26792394.19 -26792393.97 -26792393.74 0.0263 0.0095  
 Moon -78067-06-04 16:04 J -26792394.05 -26792393.83 -26792393.60 0.0263 0.0081 \*  
 Earth -78066-06-15 18:28 J -26792017.97 -26792017.73 -26792017.49 0.0263 0.0003  
 Moon -78066-06-15 20:23 J -26792017.91 -26792017.65 -26792017.40 0.0263 0.0005 \*  
 Moon -78065-06-25 22:18 J -26791641.80 -26791641.57 -26791641.32 0.0263 0.0080  
 Earth -78065-06-26 01:40 J -26791641.65 -26791641.43 -26791641.19 0.0263 0.0092 \*  
 Moon -78064-07-07 11:30 J -26791265.20 -26791265.02 -26791264.83 0.0263 0.0170  
 Earth -78064-07-07 12:28 J -26791265.15 -26791264.98 -26791264.79 0.0263 0.0183 \*  
 Venus -78059-06-04 13:25 J -26789472.16 -26789471.94 -26789471.73 0.0274 0.0043  
 Mercury -78057-02-27 00:13 J -26788839.61 -26788839.49 -26788839.36 0.0281 0.0205  
 Mercury -78057-05-25 23:59 J -26788750.68 -26788750.50 -26788750.31 0.0282 0.0047  
 Mercury -78057-08-22 23:30 J -26788661.69 -26788661.52 -26788661.34 0.0283 0.0111  
 Mercury -78057-11-19 23:01 J -26788572.59 -26788572.54 -26788572.48 0.0283 0.0269  
 Moon -78053-11-30 02:52 J -26787101.56 -26787101.38 -26787101.18 0.0296 0.0180  
 Earth -78053-11-30 04:18 J -26787101.50 -26787101.32 -26787101.13 0.0296 0.0195 \*  
 Earth -78052-12-15 11:44 J -26786721.25 -26786721.01 -26786720.77 0.0297 0.0056  
 Moon -78052-12-15 12:56 J -26786721.20 -26786720.96 -26786720.72 0.0297 0.0041 \*  
 Mars -78051-07-02 02:37 J -26786522.55 -26786522.39 -26786522.19 0.0298 0.0222  
 Earth -78051-12-30 16:47 J -26786341.03 -26786340.80 -26786340.56 0.0298 0.0086  
 Moon -78051-12-30 19:54 J -26786340.89 -26786340.67 -26786340.44 0.0298 0.0101 \*  
 Earth -78049-01-14 16:04 J -26785960.98 -26785960.83 -26785960.65 0.0297 0.0220  
 Moon -78049-01-14 19:40 J -26785960.82 -26785960.68 -26785960.52 0.0297 0.0232 \*  
 Venus -78046-08-24 20:08 J -26784642.78 -26784642.66 -26784642.54 0.0288 0.0231  
 Venus -78045-04-10 06:13 J -26784413.37 -26784413.24 -26784413.09 0.0286 0.0212  
 Mercury -78044-07-05 10:18 J -26783962.14 -26783962.07 -26783961.98 0.0281 0.0219  
 Mercury -78044-10-01 21:35 J -26783873.72 -26783873.60 -26783873.48 0.0280 0.0112  
 Mercury -78044-12-29 08:37 J -26783785.27 -26783785.14 -26783785.01 0.0280 0.0006

Mercury -78043-03-27 19:40 J -26783696.80 -26783696.68 -26783696.56 0.0279 0.0100  
 Mercury -78043-06-24 06:42 J -26783608.30 -26783608.22 -26783608.13 0.0278 0.0206  
 Earth -78039-05-19 16:32 J -26782182.93 -26782182.81 -26782182.67 0.0266 0.0222  
 Moon -78039-05-19 19:11 J -26782182.83 -26782182.70 -26782182.55 0.0266 0.0220 \*  
 Moon -78038-05-30 19:54 J -26781806.88 -26781806.67 -26781806.44 0.0264 0.0120  
 Earth -78038-05-30 23:16 J -26781806.74 -26781806.53 -26781806.32 0.0264 0.0134 \*  
 Moon -78037-06-10 03:06 J -26781430.60 -26781430.37 -26781430.13 0.0263 0.0033  
 Earth -78037-06-10 05:01 J -26781430.52 -26781430.29 -26781430.04 0.0263 0.0042 \*  
 Mars -78037-06-22 17:16 J -26781418.08 -26781417.78 -26781417.47 0.0263 0.0074  
 Earth -78036-06-21 12:13 J -26781054.23 -26781053.99 -26781053.75 0.0263 0.0051  
 Moon -78036-06-21 14:52 J -26781054.11 -26781053.88 -26781053.64 0.0263 0.0047 \*  
 Earth -78035-07-02 21:35 J -26780677.80 -26780677.60 -26780677.39 0.0263 0.0143  
 Moon -78035-07-02 23:16 J -26780677.75 -26780677.53 -26780677.31 0.0263 0.0129 \*  
 Moon -78034-07-14 08:08 J -26780301.28 -26780301.16 -26780301.01 0.0264 0.0223  
 Earth -78034-07-14 11:30 J -26780301.12 -26780301.02 -26780300.89 0.0264 0.0233 \*  
 Venus -78030-12-15 20:52 J -26778685.83 -26778685.63 -26778685.43 0.0274 0.0109  
 Mercury -78028-07-15 23:59 J -26778107.59 -26778107.50 -26778107.40 0.0280 0.0240  
 Mercury -78028-10-12 23:44 J -26778018.68 -26778018.51 -26778018.32 0.0281 0.0083  
 Mercury -78027-01-09 23:30 J -26777929.70 -26777929.52 -26777929.34 0.0282 0.0076  
 Mercury -78027-04-08 22:47 J -26777840.65 -26777840.55 -26777840.44 0.0283 0.0234  
 Earth -78024-11-23 21:20 J -26776515.73 -26776515.61 -26776515.46 0.0295 0.0248  
 Moon -78024-11-23 21:49 J -26776515.73 -26776515.59 -26776515.41 0.0295 0.0233 \*  
 Mars -78023-08-19 05:01 J -26776247.48 -26776247.29 -26776247.06 0.0297 0.0189  
 Moon -78023-12-09 02:37 J -26776135.63 -26776135.39 -26776135.15 0.0297 0.0098  
 Earth -78023-12-09 04:47 J -26776135.52 -26776135.30 -26776135.06 0.0297 0.0114 \*  
 Moon -78022-12-24 07:25 J -26775755.43 -26775755.19 -26775754.94 0.0298 0.0044  
 Earth -78022-12-24 11:16 J -26775755.27 -26775755.03 -26775754.78 0.0298 0.0029 \*  
 Moon -78020-01-07 10:04 J -26775375.26 -26775375.08 -26775374.88 0.0298 0.0182  
 Earth -78020-01-07 13:25 J -26775375.14 -26775374.94 -26775374.73 0.0298 0.0168 \*  
 Earth -78019-01-22 08:37 J -26774995.17 -26774995.14 -26774995.09 0.0297 0.0292

Venus -78016-03-06 01:40 J -26773856.59 -26773856.43 -26773856.26 0.0288 0.0168

Venus -78016-10-21 11:30 J -26773627.07 -26773627.02 -26773626.96 0.0285 0.0273

Mercury -78015-11-22 12:56 J -26773230.02 -26773229.96 -26773229.90 0.0281 0.0248

Mercury -78014-02-18 23:59 J -26773141.61 -26773141.50 -26773141.38 0.0280 0.0142

Mercury -78014-05-18 11:01 J -26773053.17 -26773053.04 -26773052.91 0.0279 0.0036

Mercury -78014-08-14 22:04 J -26772964.70 -26772964.58 -26772964.45 0.0278 0.0072

Mercury -78014-11-11 09:06 J -26772876.21 -26772876.12 -26772876.01 0.0278 0.0177

Moon -78010-05-14 22:32 J -26771595.58 -26771595.56 -26771595.51 0.0267 0.0263

Earth -78010-05-15 01:40 J -26771595.48 -26771595.43 -26771595.37 0.0267 0.0259

Earth -78009-05-25 08:37 J -26771219.31 -26771219.14 -26771218.95 0.0265 0.0174

Moon -78009-05-25 11:01 J -26771219.22 -26771219.04 -26771218.85 0.0265 0.0163 \*

Mars -78009-08-08 09:35 J -26771144.17 -26771144.10 -26771143.98 0.0264 0.0252

Earth -78008-06-05 14:23 J -26770843.12 -26770842.90 -26770842.66 0.0263 0.0083

Moon -78008-06-05 16:32 J -26770843.04 -26770842.81 -26770842.56 0.0263 0.0070 \*

Moon -78007-06-16 17:44 J -26770467.01 -26770466.76 -26770466.51 0.0263 0.0011

Earth -78007-06-16 20:37 J -26770466.88 -26770466.64 -26770466.40 0.0263 0.0010 \*

Mars -78007-08-12 13:40 J -26770410.02 -26770409.93 -26770409.83 0.0263 0.0250

Moon -78006-06-28 02:23 J -26770090.62 -26770090.40 -26770090.18 0.0263 0.0093

Earth -78006-06-28 04:18 J -26770090.54 -26770090.32 -26770090.09 0.0263 0.0104 \*

Earth -78005-07-08 15:35 J -26769714.00 -26769713.85 -26769713.68 0.0263 0.0196

Moon -78005-07-08 18:56 J -26769713.88 -26769713.71 -26769713.53 0.0263 0.0184 \*

Venus -78001-11-09 09:20 J -26768129.17 -26768129.11 -26768129.02 0.0273 0.0254

# 78TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 78th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-78000-06-26 23:16 J	-26767899.70	-26767899.53	-26767899.34	0.0275	0.0154		
Mercury	-77998-03-01 20:23 J	-26767286.81	-26767286.65	-26767286.48	0.0281	0.0139		
Mercury	-77998-05-29 20:08 J	-26767197.85	-26767197.66	-26767197.48	0.0282	0.0019		
Mercury	-77998-08-26 19:25 J	-26767108.83	-26767108.69	-26767108.54	0.0283	0.0176		
Moon	-77995-11-17 04:18 J	-26765930.34	-26765930.32	-26765930.29	0.0294	0.0292		
Earth	-77994-12-02 10:04 J	-26765550.27	-26765550.08	-26765549.87	0.0296	0.0180		
Moon	-77994-12-02 13:11 J	-26765550.14	-26765549.95	-26765549.74	0.0296	0.0166	*	
Mars	-77993-10-06 21:20 J	-26765240.88	-26765240.61	-26765240.34	0.0297	0.0025		
Earth	-77993-12-16 17:16 J	-26765170.02	-26765169.78	-26765169.53	0.0297	0.0040		
Moon	-77993-12-16 21:06 J	-26765169.86	-26765169.62	-26765169.37	0.0297	0.0027	*	
Earth	-77992-12-31 21:35 J	-26764789.82	-26764789.60	-26764789.36	0.0298	0.0102		
Moon	-77991-01-01 00:28 J	-26764789.71	-26764789.48	-26764789.24	0.0298	0.0115	*	
Earth	-77990-01-15 20:23 J	-26764409.78	-26764409.65	-26764409.49	0.0297	0.0234		
Moon	-77990-01-15 20:37 J	-26764409.78	-26764409.64	-26764409.49	0.0297	0.0243	*	
Venus	-77987-09-16 02:52 J	-26763070.56	-26763070.38	-26763070.19	0.0288	0.0121		
Mercury	-77985-07-08 01:54 J	-26762409.52	-26762409.42	-26762409.32	0.0281	0.0178		
Mercury	-77985-10-04 12:56 J	-26762321.09	-26762320.96	-26762320.83	0.0280	0.0071		
Mercury	-77985-12-31 23:59 J	-26762232.63	-26762232.50	-26762232.37	0.0279	0.0036		
Mercury	-77984-03-30 11:01 J	-26762144.15	-26762144.04	-26762143.92	0.0279	0.0142		
Mercury	-77984-06-26 22:18 J	-26762055.63	-26762055.57	-26762055.51	0.0278	0.0247		
Moon	-77980-05-20 16:04 J	-26760631.98	-26760631.83	-26760631.66	0.0266	0.0203		
Earth	-77980-05-20 17:59 J	-26760631.88	-26760631.75	-26760631.59	0.0266	0.0211	*	
Moon	-77979-05-31 22:18 J	-26760255.78	-26760255.57	-26760255.35	0.0265	0.0107		
Earth	-77979-06-01 00:42 J	-26760255.67	-26760255.47	-26760255.24	0.0265	0.0122	*	
Mars	-77979-09-27 17:44 J	-26760137.06	-26760136.76	-26760136.47	0.0264	0.0085		
Earth	-77978-06-12 07:11 J	-26759879.44	-26759879.20	-26759878.96	0.0263	0.0029		
Moon	-77978-06-12 09:49 J	-26759879.33	-26759879.09	-26759878.85	0.0263	0.0023	*	

Earth -77977-06-22 14:37 J -26759503.13 -26759502.89 -26759502.65 0.0263 0.0065  
 Moon -77977-06-22 17:30 J -26759503.01 -26759502.77 -26759502.52 0.0263 0.0058 \*  
 Moon -77976-07-03 22:04 J -26759126.79 -26759126.58 -26759126.37 0.0263 0.0143  
 Earth -77976-07-04 00:56 J -26759126.66 -26759126.46 -26759126.27 0.0263 0.0156 \*  
 Moon -77975-07-15 12:56 J -26758750.05 -26758749.96 -26758749.86 0.0264 0.0239  
 Earth -77975-07-15 15:06 J -26758749.94 -26758749.87 -26758749.76 0.0264 0.0245 \*  
 Venus -77971-05-22 17:16 J -26757342.93 -26757342.78 -26757342.61 0.0273 0.0188  
 Venus -77970-01-07 07:25 J -26757113.31 -26757113.19 -26757113.06 0.0275 0.0223  
 Mercury -77969-07-18 20:23 J -26756554.79 -26756554.65 -26756554.49 0.0280 0.0172  
 Mercury -77969-10-15 20:08 J -26756465.84 -26756465.66 -26756465.47 0.0281 0.0015  
 Mercury -77968-01-12 19:40 J -26756376.84 -26756376.68 -26756376.52 0.0282 0.0143  
 Moon -77965-11-25 02:23 J -26754964.56 -26754964.40 -26754964.22 0.0295 0.0217  
 Earth -77965-11-25 05:44 J -26754964.41 -26754964.26 -26754964.10 0.0295 0.0232 \*  
 Moon -77964-12-10 09:20 J -26754584.34 -26754584.11 -26754583.87 0.0297 0.0083  
 Earth -77964-12-10 12:56 J -26754584.19 -26754583.96 -26754583.72 0.0297 0.0096 \*  
 Mars -77963-11-26 01:40 J -26754233.58 -26754233.43 -26754233.26 0.0298 0.0236  
 Moon -77963-12-25 17:16 J -26754204.02 -26754203.78 -26754203.55 0.0298 0.0059  
 Earth -77963-12-25 18:56 J -26754203.95 -26754203.71 -26754203.46 0.0298 0.0047 \*  
 Earth -77961-01-09 20:37 J -26753823.83 -26753823.64 -26753823.45 0.0298 0.0184  
 Moon -77961-01-09 21:20 J -26753823.79 -26753823.61 -26753823.43 0.0298 0.0196 \*  
 Venus -77957-03-28 10:18 J -26752284.27 -26752284.07 -26752283.87 0.0288 0.0052  
 Mercury -77956-11-25 04:47 J -26751677.39 -26751677.30 -26751677.21 0.0281 0.0204  
 Mercury -77955-02-21 15:49 J -26751588.96 -26751588.84 -26751588.71 0.0280 0.0097  
 Mercury -77955-05-21 02:52 J -26751500.51 -26751500.38 -26751500.24 0.0279 0.0012  
 Mercury -77955-08-17 13:54 J -26751412.03 -26751411.92 -26751411.80 0.0278 0.0116  
 Mercury -77955-11-14 00:56 J -26751323.53 -26751323.46 -26751323.37 0.0277 0.0222  
 Earth -77951-05-16 04:47 J -26750044.37 -26750044.30 -26750044.20 0.0267 0.0248  
 Moon -77951-05-16 06:42 J -26750044.30 -26750044.22 -26750044.13 0.0267 0.0247 \*  
 Earth -77950-05-27 12:13 J -26749668.18 -26749667.99 -26749667.80 0.0265 0.0161  
 Moon -77950-05-27 15:20 J -26749668.05 -26749667.86 -26749667.65 0.0265 0.0149 \*

Moon -77949-06-06 16:04 J -26749292.07 -26749291.83 -26749291.58 0.0263 0.0060  
 Earth -77949-06-06 18:28 J -26749291.96 -26749291.73 -26749291.50 0.0263 0.0069 \*  
 Mars -77949-11-16 11:30 J -26749129.31 -26749129.02 -26749128.72 0.0263 0.0093  
 Moon -77948-06-17 22:04 J -26748915.82 -26748915.58 -26748915.35 0.0263 0.0022  
 Earth -77948-06-18 00:56 J -26748915.70 -26748915.46 -26748915.22 0.0263 0.0024 \*  
 Earth -77947-06-29 09:06 J -26748539.33 -26748539.12 -26748538.89 0.0263 0.0118  
 Moon -77947-06-29 11:16 J -26748539.25 -26748539.03 -26748538.81 0.0263 0.0105 \*  
 Earth -77946-07-10 21:06 J -26748162.76 -26748162.62 -26748162.46 0.0263 0.0209  
 Moon -77946-07-10 23:44 J -26748162.66 -26748162.51 -26748162.33 0.0263 0.0198 \*  
 Venus -77942-12-02 21:06 J -26746556.79 -26746556.62 -26746556.42 0.0273 0.0138  
 Venus -77941-07-19 11:16 J -26746327.03 -26746327.03 -26746327.00 0.0275 0.0275  
 Mercury -77940-12-05 17:59 J -26745822.86 -26745822.75 -26745822.63 0.0280 0.0223  
 Mercury -77939-03-04 17:44 J -26745733.94 -26745733.76 -26745733.58 0.0281 0.0066  
 Mercury -77939-06-01 17:16 J -26745644.96 -26745644.78 -26745644.60 0.0282 0.0091  
 Mercury -77939-08-29 16:32 J -26745555.89 -26745555.81 -26745555.72 0.0283 0.0249  
 Earth -77936-11-18 15:06 J -26744378.90 -26744378.87 -26744378.82 0.0294 0.0290  
 Moon -77936-11-18 18:42 J -26744378.80 -26744378.72 -26744378.62 0.0294 0.0274  
 Earth -77935-12-03 21:20 J -26743998.81 -26743998.61 -26743998.39 0.0296 0.0162  
 Moon -77935-12-04 00:42 J -26743998.69 -26743998.47 -26743998.25 0.0296 0.0147 \*  
 Mars -77934-01-12 14:52 J -26743959.09 -26743958.88 -26743958.65 0.0296 0.0172  
 Earth -77934-12-19 04:18 J -26743618.57 -26743618.32 -26743618.07 0.0297 0.0021  
 Moon -77934-12-19 05:01 J -26743618.55 -26743618.29 -26743618.03 0.0297 0.0010 \*  
 Moon -77932-01-02 05:44 J -26743238.48 -26743238.26 -26743238.02 0.0298 0.0130  
 Earth -77932-01-02 08:08 J -26743238.39 -26743238.16 -26743237.94 0.0298 0.0120 \*  
 Moon -77931-01-17 02:23 J -26742858.52 -26742858.40 -26742858.28 0.0297 0.0258  
 Earth -77931-01-17 05:44 J -26742858.37 -26742858.26 -26742858.11 0.0297 0.0251 \*  
 Venus -77928-10-08 12:13 J -26741498.19 -26741497.99 -26741497.78 0.0287 0.0005  
 Mercury -77926-04-14 06:42 J -26740945.29 -26740945.22 -26740945.15 0.0282 0.0240  
 Mercury -77926-07-11 17:44 J -26740856.87 -26740856.76 -26740856.64 0.0281 0.0132  
 Mercury -77926-10-08 04:47 J -26740768.43 -26740768.30 -26740768.17 0.0280 0.0026

Mercury -77925-01-04 15:49 J -26740679.96 -26740679.84 -26740679.71 0.0279 0.0082  
 Mercury -77925-04-02 03:06 J -26740591.47 -26740591.37 -26740591.27 0.0278 0.0187  
 Moon -77921-05-21 18:13 J -26739080.90 -26739080.74 -26739080.57 0.0266 0.0188  
 Earth -77921-05-21 21:35 J -26739080.75 -26739080.60 -26739080.43 0.0266 0.0198 \*  
 Mars -77920-01-02 05:59 J -26738855.38 -26738855.25 -26738855.11 0.0265 0.0239  
 Earth -77920-06-02 04:32 J -26738704.52 -26738704.31 -26738704.08 0.0265 0.0108  
 Moon -77920-06-02 05:59 J -26738704.46 -26738704.25 -26738704.03 0.0265 0.0095 \*  
 Earth -77919-06-13 11:30 J -26738328.27 -26738328.02 -26738327.78 0.0264 0.0014  
 Moon -77919-06-13 14:37 J -26738328.14 -26738327.89 -26738327.65 0.0264 0.0011 \*  
 Moon -77918-06-24 17:30 J -26737952.01 -26737951.77 -26737951.52 0.0263 0.0069  
 Earth -77918-06-24 19:25 J -26737951.92 -26737951.69 -26737951.46 0.0263 0.0079 \*  
 Moon -77917-07-05 03:06 J -26737575.56 -26737575.37 -26737575.17 0.0263 0.0158  
 Earth -77917-07-05 05:59 J -26737575.42 -26737575.25 -26737575.05 0.0263 0.0172 \*  
 Earth -77916-07-16 21:35 J -26737198.64 -26737198.60 -26737198.55 0.0264 0.0259  
 Moon -77916-07-16 23:44 J -26737198.56 -26737198.51 -26737198.46 0.0264 0.0257 \*  
 Venus -77912-06-14 05:59 J -26735770.46 -26735770.25 -26735770.04 0.0273 0.0069  
 Mercury -77910-04-24 18:13 J -26735090.80 -26735090.74 -26735090.65 0.0280 0.0254  
 Mercury -77910-07-22 18:13 J -26735001.92 -26735001.74 -26735001.56 0.0281 0.0097  
 Mercury -77910-10-19 17:44 J -26734912.94 -26734912.76 -26734912.57 0.0282 0.0061  
 Mercury -77909-01-16 17:01 J -26734823.90 -26734823.79 -26734823.66 0.0283 0.0219  
 Moon -77906-11-27 15:49 J -26733413.01 -26733412.84 -26733412.65 0.0295 0.0200  
 Earth -77906-11-27 18:42 J -26733412.88 -26733412.72 -26733412.54 0.0295 0.0214 \*  
 Earth -77905-12-12 01:40 J -26733032.67 -26733032.43 -26733032.19 0.0297 0.0077  
 Moon -77905-12-12 01:25 J -26733032.67 -26733032.44 -26733032.20 0.0297 0.0065 \*  
 Mars -77904-03-03 06:28 J -26732951.50 -26732951.23 -26732950.96 0.0298 0.0046  
 Earth -77904-12-27 07:11 J -26732652.44 -26732652.20 -26732651.96 0.0298 0.0066  
 Moon -77904-12-27 09:49 J -26732652.32 -26732652.09 -26732651.86 0.0298 0.0076 \*  
 Earth -77902-01-11 08:08 J -26732272.33 -26732272.16 -26732271.98 0.0298 0.0203  
 Moon -77902-01-11 11:59 J -26732272.16 -26732272.00 -26732271.82 0.0298 0.0213 \*  
 Venus -77898-04-20 20:37 J -26730711.84 -26730711.64 -26730711.44 0.0287 0.0070



Mercury -77897-08-31 09:49 J -26730213.13 -26730213.09 -26730213.04 0.0282 0.0263  
 Mercury -77897-11-27 21:06 J -26730124.73 -26730124.62 -26730124.51 0.0281 0.0155  
 Mercury -77896-02-24 08:08 J -26730036.29 -26730036.16 -26730036.03 0.0280 0.0048  
 Mercury -77896-05-23 19:11 J -26729947.83 -26729947.70 -26729947.57 0.0279 0.0058  
 Mercury -77896-08-20 06:13 J -26729859.34 -26729859.24 -26729859.13 0.0278 0.0164  
 Mercury -77896-11-16 17:30 J -26729770.80 -26729770.77 -26729770.75 0.0277 0.0270  
 Earth -77892-05-17 10:18 J -26728493.17 -26728493.07 -26728492.95 0.0267 0.0235  
 Moon -77892-05-17 14:08 J -26728493.03 -26728492.91 -26728492.79 0.0267 0.0230 \*  
 Moon -77891-05-28 17:01 J -26728116.99 -26728116.79 -26728116.56 0.0265 0.0133  
 Earth -77891-05-28 17:44 J -26728116.95 -26728116.76 -26728116.55 0.0265 0.0147 \*  
 Mars -77890-02-21 21:06 J -26727847.93 -26727847.62 -26727847.32 0.0264 0.0062  
 Moon -77890-06-08 21:06 J -26727740.86 -26727740.62 -26727740.38 0.0263 0.0045  
 Earth -77890-06-09 00:13 J -26727740.72 -26727740.49 -26727740.25 0.0263 0.0055 \*  
 Earth -77889-06-19 07:11 J -26727364.44 -26727364.20 -26727363.95 0.0263 0.0040  
 Moon -77889-06-19 08:52 J -26727364.37 -26727364.13 -26727363.90 0.0263 0.0034 \*  
 Earth -77888-06-30 16:04 J -26726988.03 -26726987.83 -26726987.61 0.0263 0.0133  
 Moon -77888-06-30 19:40 J -26726987.89 -26726987.68 -26726987.45 0.0263 0.0119 \*  
 Moon -77887-07-12 03:20 J -26726611.50 -26726611.36 -26726611.21 0.0264 0.0215  
 Earth -77887-07-12 05:01 J -26726611.42 -26726611.29 -26726611.16 0.0264 0.0223 \*  
 Venus -77883-12-25 11:16 J -26724984.25 -26724984.03 -26724983.81 0.0274 0.0014  
 Mercury -77881-12-08 16:18 J -26724269.98 -26724269.82 -26724269.65 0.0280 0.0143  
 Mercury -77880-03-07 16:04 J -26724181.02 -26724180.83 -26724180.65 0.0281 0.0014  
 Mercury -77880-06-04 15:20 J -26724092.00 -26724091.86 -26724091.71 0.0282 0.0172  
 Earth -77877-11-20 06:13 J -26722827.31 -26722827.24 -26722827.13 0.0294 0.0272  
 Moon -77877-11-20 09:06 J -26722827.24 -26722827.12 -26722826.99 0.0294 0.0255 \*  
 Moon -77876-12-05 12:13 J -26722447.22 -26722446.99 -26722446.75 0.0296 0.0129  
 Earth -77876-12-05 12:42 J -26722447.18 -26722446.97 -26722446.75 0.0296 0.0142 \*  
 Moon -77875-12-20 16:04 J -26722067.08 -26722066.83 -26722066.58 0.0297 0.0009  
 Earth -77875-12-20 19:11 J -26722066.94 -26722066.70 -26722066.45 0.0297 0.0005 \*  
 Mars -77874-04-21 21:35 J -26721944.72 -26721944.60 -26721944.45 0.0298 0.0258

Moon -77873-01-04 18:42 J -26721686.93 -26721686.72 -26721686.51 0.0298 0.0148  
 Earth -77873-01-04 22:18 J -26721686.78 -26721686.57 -26721686.35 0.0298 0.0140 \*  
 Moon -77872-01-18 17:30 J -26721306.85 -26721306.77 -26721306.68 0.0297 0.0275  
 Earth -77872-01-18 19:25 J -26721306.78 -26721306.69 -26721306.58 0.0297 0.0269 \*  
 Venus -77869-10-30 23:30 J -26719925.70 -26719925.52 -26719925.33 0.0287 0.0124  
 Mercury -77867-04-16 23:01 J -26719392.63 -26719392.54 -26719392.44 0.0281 0.0189  
 Mercury -77867-07-14 10:18 J -26719304.20 -26719304.07 -26719303.95 0.0281 0.0082  
 Mercury -77867-10-10 21:20 J -26719215.74 -26719215.61 -26719215.48 0.0280 0.0026  
 Mercury -77866-01-07 08:23 J -26719127.26 -26719127.15 -26719127.03 0.0279 0.0132  
 Mercury -77866-04-05 19:25 J -26719038.75 -26719038.69 -26719038.62 0.0278 0.0238  
 Earth -77862-05-24 03:35 J -26717529.52 -26717529.35 -26717529.17 0.0266 0.0184  
 Moon -77862-05-24 03:49 J -26717529.50 -26717529.34 -26717529.15 0.0266 0.0174 \*  
 Earth -77861-06-03 10:47 J -26717153.27 -26717153.05 -26717152.82 0.0265 0.0093  
 Moon -77861-06-03 14:23 J -26717153.13 -26717152.90 -26717152.66 0.0265 0.0078 \*  
 Mars -77860-04-12 15:06 J -26716840.15 -26716839.87 -26716839.57 0.0264 0.0111  
 Moon -77860-06-14 17:01 J -26716777.04 -26716776.79 -26716776.54 0.0264 0.0002  
 Earth -77860-06-14 17:59 J -26716776.99 -26716776.75 -26716776.51 0.0264 0.0002 \*  
 Moon -77859-06-25 22:32 J -26716400.79 -26716400.56 -26716400.33 0.0263 0.0082  
 Earth -77859-06-26 02:08 J -26716400.63 -26716400.41 -26716400.17 0.0263 0.0096 \*  
 Earth -77858-07-07 13:40 J -26716024.10 -26716023.93 -26716023.75 0.0264 0.0187  
 Moon -77858-07-07 14:08 J -26716024.08 -26716023.91 -26716023.72 0.0264 0.0175 \*  
 Venus -77853-07-06 19:54 J -26714197.88 -26714197.67 -26714197.45 0.0274 0.0056  
 Mercury -77851-04-27 17:01 J -26713537.94 -26713537.79 -26713537.64 0.0280 0.0173  
 Mercury -77851-07-25 16:47 J -26713448.99 -26713448.80 -26713448.62 0.0281 0.0016  
 Mercury -77851-10-22 16:04 J -26713359.98 -26713359.83 -26713359.66 0.0282 0.0142  
 Earth -77847-11-29 11:44 J -26711861.19 -26711861.01 -26711860.81 0.0296 0.0195  
 Moon -77847-11-29 12:42 J -26711861.15 -26711860.97 -26711860.77 0.0296 0.0181 \*  
 Mars -77846-06-09 11:16 J -26711669.25 -26711669.03 -26711668.77 0.0297 0.0147  
 Earth -77846-12-14 18:42 J -26711480.97 -26711480.72 -26711480.48 0.0297 0.0056  
 Moon -77846-12-14 21:49 J -26711480.83 -26711480.59 -26711480.35 0.0297 0.0043 \*

Earth -77845-12-28 23:30 J -26711100.75 -26711100.52 -26711100.28 0.0298 0.0088  
 Moon -77845-12-29 03:06 J -26711100.60 -26711100.37 -26711100.13 0.0298 0.0098 \*  
 Earth -77843-01-12 23:44 J -26710720.66 -26710720.51 -26710720.34 0.0298 0.0224  
 Moon -77843-01-13 01:11 J -26710720.60 -26710720.45 -26710720.28 0.0298 0.0230 \*  
 Venus -77840-09-25 22:18 J -26709368.67 -26709368.57 -26709368.46 0.0289 0.0246  
 Venus -77839-05-13 08:37 J -26709139.27 -26709139.14 -26709138.98 0.0286 0.0201  
 Mercury -77838-09-04 02:37 J -26708660.47 -26708660.39 -26708660.30 0.0282 0.0209  
 Mercury -77838-12-01 13:54 J -26708572.05 -26708571.92 -26708571.80 0.0281 0.0102  
 Mercury -77837-02-28 00:56 J -26708483.59 -26708483.46 -26708483.33 0.0280 0.0007  
 Mercury -77837-05-26 11:59 J -26708395.12 -26708395.00 -26708394.88 0.0279 0.0112  
 Mercury -77837-08-22 23:01 J -26708306.62 -26708306.54 -26708306.46 0.0278 0.0217  
 Moon -77833-05-18 17:44 J -26706941.89 -26706941.76 -26706941.60 0.0267 0.0215  
 Earth -77833-05-18 17:44 J -26706941.88 -26706941.76 -26706941.62 0.0267 0.0222 \*  
 Mars -77832-05-29 17:01 J -26706565.95 -26706565.79 -26706565.59 0.0265 0.0213  
 Moon -77832-05-29 21:35 J -26706565.81 -26706565.60 -26706565.38 0.0265 0.0117 \*  
 Earth -77832-05-30 01:25 J -26706565.64 -26706565.44 -26706565.23 0.0265 0.0132 \*  
 Earth -77831-06-10 08:08 J -26706189.40 -26706189.16 -26706188.92 0.0264 0.0039  
 Moon -77831-06-10 07:54 J -26706189.40 -26706189.17 -26706188.93 0.0264 0.0031 \*  
 Earth -77830-06-21 15:20 J -26705813.09 -26705812.86 -26705812.62 0.0263 0.0056  
 Moon -77830-06-21 18:56 J -26705812.94 -26705812.71 -26705812.46 0.0263 0.0048 \*  
 Moon -77829-07-02 00:42 J -26705436.68 -26705436.47 -26705436.24 0.0263 0.0134  
 Earth -77829-07-02 00:56 J -26705436.65 -26705436.46 -26705436.25 0.0263 0.0149 \*  
 Moon -77828-07-13 11:16 J -26705060.15 -26705060.03 -26705059.92 0.0264 0.0230  
 Earth -77828-07-13 14:23 J -26705059.99 -26705059.90 -26705059.78 0.0264 0.0239 \*  
 Venus -77823-01-17 02:37 J -26703411.58 -26703411.39 -26703411.19 0.0274 0.0117  
 Mercury -77822-09-14 15:49 J -26702805.95 -26702805.84 -26702805.71 0.0280 0.0215  
 Mercury -77822-12-12 15:49 J -26702717.03 -26702716.84 -26702716.66 0.0281 0.0057  
 Mercury -77821-03-10 15:06 J -26702628.04 -26702627.87 -26702627.69 0.0282 0.0101  
 Mercury -77821-06-07 14:37 J -26702538.96 -26702538.89 -26702538.81 0.0283 0.0258  
 Moon -77818-11-22 23:59 J -26701275.65 -26701275.50 -26701275.34 0.0294 0.0237

Earth -77818-11-23 01:54 J -26701275.54 -26701275.42 -26701275.28 0.0294 0.0252 \*  
 Moon -77817-12-07 04:32 J -26700895.54 -26700895.31 -26700895.07 0.0296 0.0105  
 Earth -77817-12-07 08:08 J -26700895.38 -26700895.16 -26700894.93 0.0296 0.0119 \*  
 Mars -77816-07-28 14:37 J -26700662.15 -26700661.89 -26700661.62 0.0297 0.0073  
 Moon -77816-12-22 11:01 J -26700515.28 -26700515.04 -26700514.79 0.0297 0.0034  
 Earth -77816-12-22 14:08 J -26700515.15 -26700514.91 -26700514.66 0.0297 0.0023 \*  
 Moon -77814-01-06 16:04 J -26700135.02 -26700134.83 -26700134.63 0.0297 0.0169  
 Earth -77814-01-06 16:32 J -26700135.01 -26700134.81 -26700134.60 0.0297 0.0162 \*  
 Earth -77813-01-21 12:28 J -26699755.02 -26699754.98 -26699754.91 0.0296 0.0289  
 Moon -77813-01-21 15:06 J -26699754.91 -26699754.87 -26699754.83 0.0296 0.0292 \*  
 Venus -77810-04-08 01:54 J -26698582.56 -26698582.42 -26698582.26 0.0288 0.0189  
 Venus -77810-11-23 12:28 J -26698353.06 -26698352.98 -26698352.88 0.0286 0.0255  
 Mercury -77808-01-21 04:47 J -26697928.36 -26697928.30 -26697928.23 0.0282 0.0242  
 Mercury -77808-04-19 16:04 J -26697839.95 -26697839.83 -26697839.72 0.0281 0.0134  
 Mercury -77808-07-17 03:06 J -26697751.50 -26697751.37 -26697751.24 0.0280 0.0027  
 Mercury -77808-10-13 14:08 J -26697663.03 -26697662.91 -26697662.78 0.0279 0.0080  
 Mercury -77807-01-10 01:11 J -26697574.54 -26697574.45 -26697574.35 0.0278 0.0186  
 Moon -77804-05-14 01:25 J -26696354.49 -26696354.44 -26696354.38 0.0268 0.0260  
 Earth -77804-05-14 02:08 J -26696354.46 -26696354.41 -26696354.33 0.0268 0.0259 \*  
 Earth -77803-05-25 11:01 J -26695978.21 -26695978.04 -26695977.85 0.0266 0.0170  
 Moon -77803-05-25 14:37 J -26695978.07 -26695977.89 -26695977.68 0.0266 0.0156 \*  
 Earth -77802-06-05 18:28 J -26695601.96 -26695601.73 -26695601.49 0.0265 0.0077  
 Moon -77802-06-05 19:25 J -26695601.93 -26695601.69 -26695601.45 0.0265 0.0063 \*  
 Mars -77802-07-19 03:20 J -26695558.66 -26695558.36 -26695558.04 0.0264 0.0045  
 Moon -77801-06-15 22:18 J -26695225.81 -26695225.57 -26695225.32 0.0264 0.0016  
 Earth -77801-06-16 01:54 J -26695225.66 -26695225.42 -26695225.18 0.0264 0.0018 \*  
 Earth -77800-06-27 10:32 J -26694849.28 -26694849.06 -26694848.84 0.0263 0.0112  
 Moon -77800-06-27 10:32 J -26694849.28 -26694849.06 -26694848.84 0.0263 0.0099 \*  
 Earth -77799-07-08 22:32 J -26694472.71 -26694472.56 -26694472.40 0.0264 0.0203  
 Moon -77799-07-09 01:54 J -26694472.57 -26694472.42 -26694472.24 0.0264 0.0190 \*

Venus -77795-12-12 21:20 J -26692854.73 -26692854.61 -26692854.48 0.0272 0.0224

Venus -77794-07-30 11:16 J -26692625.20 -26692625.03 -26692624.87 0.0274 0.0185

Mercury -77792-01-31 16:18 J -26692073.90 -26692073.82 -26692073.72 0.0280 0.0246

Mercury -77792-04-30 16:04 J -26691985.00 -26691984.83 -26691984.65 0.0281 0.0089

Mercury -77792-07-28 15:35 J -26691896.02 -26691895.85 -26691895.66 0.0281 0.0070

Mercury -77792-10-25 15:06 J -26691806.97 -26691806.87 -26691806.76 0.0282 0.0226

Moon -77789-11-16 04:18 J -26690689.36 -26690689.32 -26690689.26 0.0293 0.0286

Earth -77788-12-01 07:11 J -26690309.40 -26690309.20 -26690309.00 0.0296 0.0174

Moon -77788-12-01 11:01 J -26690309.24 -26690309.04 -26690308.83 0.0296 0.0159 \*

Earth -77787-12-16 13:54 J -26689929.16 -26689928.92 -26689928.67 0.0297 0.0033

Moon -77787-12-16 17:16 J -26689929.04 -26689928.78 -26689928.53 0.0297 0.0019 \*

Mars -77786-09-16 23:44 J -26689654.57 -26689654.51 -26689654.43 0.0298 0.0286

Earth -77786-12-31 18:28 J -26689548.95 -26689548.73 -26689548.50 0.0298 0.0111

Moon -77786-12-31 18:56 J -26689548.94 -26689548.71 -26689548.47 0.0298 0.0119 \*

Moon -77784-01-14 15:20 J -26689168.99 -26689168.86 -26689168.72 0.0298 0.0248

Earth -77784-01-14 17:59 J -26689168.88 -26689168.75 -26689168.60 0.0298 0.0245 \*

Venus -77781-10-18 12:28 J -26687796.16 -26687795.98 -26687795.78 0.0288 0.0109

Mercury -77779-06-10 08:52 J -26687196.18 -26687196.13 -26687196.08 0.0282 0.0260

Mercury -77779-09-06 19:54 J -26687107.78 -26687107.67 -26687107.56 0.0281 0.0152

Mercury -77779-12-04 06:56 J -26687019.34 -26687019.21 -26687019.08 0.0280 0.0045

Mercury -77778-03-02 17:59 J -26686930.88 -26686930.75 -26686930.62 0.0279 0.0062

Mercury -77778-05-30 05:01 J -26686842.39 -26686842.29 -26686842.18 0.0278 0.0168

Mercury -77778-08-26 16:04 J -26686753.84 -26686753.83 -26686753.80 0.0277 0.0274

Moon -77774-05-20 23:16 J -26685390.68 -26685390.53 -26685390.35 0.0266 0.0199

Earth -77774-05-21 02:52 J -26685390.52 -26685390.38 -26685390.22 0.0266 0.0208 \*

Moon -77773-05-31 09:20 J -26685014.33 -26685014.11 -26685013.90 0.0265 0.0102

Earth -77773-05-31 10:18 J -26685014.28 -26685014.07 -26685013.85 0.0265 0.0117 \*

Earth -77772-06-11 17:01 J -26684638.03 -26684637.79 -26684637.54 0.0263 0.0023

Moon -77772-06-11 20:23 J -26684637.89 -26684637.65 -26684637.41 0.0263 0.0015 \*

Mars -77772-09-07 09:06 J -26684550.37 -26684550.12 -26684549.84 0.0263 0.0141

Earth -77771-06-23 00:42 J -26684261.70 -26684261.47 -26684261.23 0.0263 0.0072  
 Moon -77771-06-23 01:25 J -26684261.68 -26684261.44 -26684261.19 0.0263 0.0064 \*  
 Moon -77770-07-04 06:56 J -26683885.40 -26683885.21 -26683885.00 0.0263 0.0150  
 Earth -77770-07-04 11:01 J -26683885.23 -26683885.04 -26683884.85 0.0263 0.0165 \*  
 Moon -77769-07-14 23:44 J -26683508.58 -26683508.51 -26683508.42 0.0264 0.0248  
 Earth -77769-07-15 01:11 J -26683508.51 -26683508.45 -26683508.39 0.0264 0.0255 \*  
 Venus -77765-06-24 05:01 J -26682068.46 -26682068.29 -26682068.11 0.0273 0.0162  
 Venus -77764-02-08 18:42 J -26681838.81 -26681838.72 -26681838.63 0.0275 0.0249  
 Mercury -77763-09-17 15:35 J -26681253.01 -26681252.85 -26681252.68 0.0281 0.0127  
 Mercury -77763-12-15 15:20 J -26681164.05 -26681163.86 -26681163.67 0.0281 0.0031  
 Mercury -77762-03-14 14:52 J -26681075.02 -26681074.88 -26681074.74 0.0282 0.0189  
 Moon -77759-11-24 19:25 J -26679723.85 -26679723.69 -26679723.52 0.0295 0.0218  
 Earth -77759-11-24 23:16 J -26679723.68 -26679723.53 -26679723.37 0.0295 0.0232 \*  
 Mars -77758-11-04 03:20 J -26679379.60 -26679379.36 -26679379.09 0.0296 0.0116  
 Moon -77758-12-10 02:52 J -26679343.61 -26679343.38 -26679343.14 0.0297 0.0083  
 Earth -77758-12-10 05:16 J -26679343.51 -26679343.28 -26679343.04 0.0297 0.0097 \*  
 Earth -77757-12-24 11:16 J -26678963.28 -26678963.03 -26678962.79 0.0297 0.0047  
 Moon -77757-12-24 11:16 J -26678963.26 -26678963.03 -26678962.79 0.0297 0.0057 \*  
 Earth -77755-01-08 12:56 J -26678583.14 -26678582.96 -26678582.76 0.0297 0.0186  
 Moon -77755-01-08 15:49 J -26678583.01 -26678582.84 -26678582.65 0.0297 0.0192 \*  
 Venus -77751-04-30 17:01 J -26677009.99 -26677009.79 -26677009.58 0.0287 0.0049  
 Mercury -77749-01-24 22:18 J -26676375.67 -26676375.57 -26676375.47 0.0281 0.0183  
 Mercury -77749-04-22 09:20 J -26676287.24 -26676287.11 -26676286.98 0.0280 0.0076  
 Mercury -77749-07-19 20:23 J -26676198.78 -26676198.65 -26676198.52 0.0279 0.0031  
 Mercury -77749-10-16 07:25 J -26676110.30 -26676110.19 -26676110.07 0.0279 0.0137  
 Mercury -77748-01-12 18:28 J -26676021.79 -26676021.73 -26676021.66 0.0278 0.0243  
 Earth -77745-05-15 11:16 J -26674803.11 -26674803.03 -26674802.92 0.0268 0.0245  
 Moon -77745-05-15 14:23 J -26674803.00 -26674802.90 -26674802.81 0.0268 0.0244 \*  
 Earth -77744-05-26 19:54 J -26674426.86 -26674426.67 -26674426.47 0.0266 0.0155  
 Moon -77744-05-26 21:20 J -26674426.81 -26674426.61 -26674426.39 0.0266 0.0141 \*

Mars -77744-10-24 00:13 J -26674276.68 -26674276.49 -26674276.26 0.0265 0.0194  
 Moon -77743-06-06 23:44 J -26674050.75 -26674050.51 -26674050.27 0.0264 0.0049  
 Earth -77743-06-07 03:06 J -26674050.60 -26674050.37 -26674050.13 0.0264 0.0061 \*  
 Moon -77742-06-18 08:52 J -26673674.36 -26673674.13 -26673673.89 0.0264 0.0033  
 Earth -77742-06-18 10:32 J -26673674.30 -26673674.06 -26673673.82 0.0264 0.0034 \*  
 Earth -77741-06-28 19:25 J -26673297.90 -26673297.69 -26673297.48 0.0264 0.0129  
 Moon -77741-06-28 22:47 J -26673297.76 -26673297.55 -26673297.32 0.0264 0.0114 \*  
 Earth -77740-07-10 07:40 J -26672921.30 -26672921.18 -26672921.03 0.0264 0.0220  
 Moon -77740-07-10 09:20 J -26672921.26 -26672921.11 -26672920.94 0.0264 0.0207 \*  
 Venus -77735-01-04 12:28 J -26671282.18 -26671281.98 -26671281.77 0.0273 0.0098  
 Mercury -77733-02-04 15:49 J -26670520.99 -26670520.84 -26670520.68 0.0280 0.0160  
 Mercury -77733-05-03 15:35 J -26670432.04 -26670431.85 -26670431.66 0.0281 0.0003  
 Mercury -77733-07-31 15:06 J -26670343.03 -26670342.87 -26670342.72 0.0282 0.0155  
 Earth -77730-11-18 22:18 J -26669137.63 -26669137.57 -26669137.50 0.0293 0.0283  
 Moon -77730-11-19 01:54 J -26669137.52 -26669137.42 -26669137.32 0.0293 0.0268 \*  
 Earth -77729-12-03 04:04 J -26668757.53 -26668757.33 -26668757.11 0.0296 0.0153  
 Moon -77729-12-03 05:59 J -26668757.47 -26668757.25 -26668757.02 0.0296 0.0138 \*  
 Moon -77728-12-18 10:18 J -26668377.33 -26668377.07 -26668376.81 0.0298 0.0003  
 Earth -77728-12-18 11:01 J -26668377.28 -26668377.04 -26668376.79 0.0298 0.0012 \*  
 Mars -77728-12-23 19:40 J -26668371.93 -26668371.68 -26668371.42 0.0298 0.0106  
 Moon -77726-01-02 11:59 J -26667997.21 -26667997.00 -26667996.77 0.0298 0.0143  
 Earth -77726-01-02 15:20 J -26667997.08 -26667996.86 -26667996.64 0.0298 0.0133 \*  
 Moon -77725-01-17 10:47 J -26667617.14 -26667617.05 -26667616.95 0.0297 0.0271  
 Earth -77725-01-17 13:54 J -26667617.02 -26667616.92 -26667616.80 0.0297 0.0266 \*  
 Venus -77722-11-11 03:35 J -26666223.55 -26666223.35 -26666223.15 0.0287 0.0032  
 Mercury -77720-06-13 02:08 J -26665643.50 -26665643.41 -26665643.32 0.0282 0.0201  
 Mercury -77720-09-09 13:11 J -26665555.07 -26665554.95 -26665554.83 0.0281 0.0094  
 Mercury -77720-12-07 00:13 J -26665466.62 -26665466.49 -26665466.36 0.0280 0.0014  
 Mercury -77719-03-05 11:16 J -26665378.15 -26665378.03 -26665377.91 0.0279 0.0120  
 Mercury -77719-06-01 22:32 J -26665289.64 -26665289.56 -26665289.49 0.0278 0.0225

Moon -77715-05-22 09:49 J -26663839.26 -26663839.09 -26663838.92 0.0266 0.0186  
 Earth -77715-05-22 11:59 J -26663839.16 -26663839.00 -26663838.83 0.0266 0.0193 \*  
 Earth -77714-06-02 19:11 J -26663462.91 -26663462.70 -26663462.47 0.0264 0.0102  
 Moon -77714-06-02 22:32 J -26663462.79 -26663462.56 -26663462.34 0.0264 0.0087 \*  
 Mars -77714-12-14 00:28 J -26663268.79 -26663268.48 -26663268.16 0.0264 0.0012  
 Earth -77713-06-13 02:08 J -26663086.65 -26663086.41 -26663086.16 0.0263 0.0007  
 Moon -77713-06-13 04:32 J -26663086.56 -26663086.31 -26663086.06 0.0263 0.0005 \*  
 Moon -77712-06-24 06:56 J -26662710.45 -26662710.21 -26662709.97 0.0263 0.0078  
 Earth -77712-06-24 09:49 J -26662710.31 -26662710.09 -26662709.85 0.0263 0.0089 \*  
 Moon -77711-07-05 18:42 J -26662333.89 -26662333.72 -26662333.53 0.0263 0.0168  
 Earth -77711-07-05 20:37 J -26662333.82 -26662333.64 -26662333.46 0.0263 0.0182 \*  
 Venus -77706-07-17 20:23 J -26660495.87 -26660495.65 -26660495.43 0.0273 0.0033  
 Mercury -77704-06-23 15:20 J -26659788.98 -26659788.86 -26659788.72 0.0280 0.0197  
 Mercury -77704-09-20 15:06 J -26659700.05 -26659699.87 -26659699.68 0.0281 0.0040  
 Mercury -77704-12-18 14:52 J -26659611.05 -26659610.88 -26659610.71 0.0282 0.0118  
 Mercury -77703-03-17 13:54 J -26659521.95 -26659521.92 -26659521.87 0.0283 0.0276  
 Moon -77700-11-26 19:40 J -26658171.85 -26658171.68 -26658171.50 0.0295 0.0199  
 Earth -77700-11-26 20:23 J -26658171.82 -26658171.65 -26658171.47 0.0295 0.0211 \*  
 Earth -77699-12-12 02:37 J -26657791.63 -26657791.39 -26657791.14 0.0297 0.0074  
 Moon -77699-12-12 04:32 J -26657791.54 -26657791.31 -26657791.07 0.0297 0.0061 \*  
 Earth -77698-12-27 08:08 J -26657411.40 -26657411.16 -26657410.92 0.0298 0.0070  
 Moon -77698-12-27 11:30 J -26657411.25 -26657411.02 -26657410.78 0.0298 0.0083 \*  
 Earth -77696-01-10 09:20 J -26657031.27 -26657031.11 -26657030.92 0.0297 0.0209  
 Moon -77696-01-10 12:42 J -26657031.13 -26657030.97 -26657030.79 0.0297 0.0217 \*  
 Venus -77692-05-23 08:08 J -26655437.35 -26655437.16 -26655436.96 0.0287 0.0091  
 Mercury -77691-10-31 04:32 J -26654911.38 -26654911.31 -26654911.24 0.0281 0.0232  
 Mercury -77690-01-27 15:35 J -26654822.96 -26654822.85 -26654822.73 0.0281 0.0125  
 Mercury -77690-04-26 02:37 J -26654734.52 -26654734.39 -26654734.26 0.0280 0.0019  
 Mercury -77690-07-23 13:40 J -26654646.05 -26654645.93 -26654645.80 0.0279 0.0089  
 Mercury -77690-10-20 00:42 J -26654557.56 -26654557.47 -26654557.37 0.0278 0.0195



Earth	-77686-05-17 20:37 J	-26653251.75	-26653251.64	-26653251.51	0.0268	0.0232
Moon	-77686-05-17 23:44 J	-26653251.63	-26653251.51	-26653251.38	0.0268	0.0230 *
Moon	-77685-05-28 02:08 J	-26652875.62	-26652875.41	-26652875.18	0.0266	0.0126
Earth	-77685-05-28 04:47 J	-26652875.50	-26652875.30	-26652875.09	0.0266	0.0141 *
Moon	-77684-06-08 09:20 J	-26652499.34	-26652499.11	-26652498.87	0.0264	0.0036
Earth	-77684-06-08 11:44 J	-26652499.25	-26652499.01	-26652498.77	0.0264	0.0046 *
Mars	-77683-02-01 17:16 J	-26652261.03	-26652260.78	-26652260.53	0.0264	0.0160
Earth	-77683-06-19 18:56 J	-26652122.95	-26652122.71	-26652122.47	0.0264	0.0050
Moon	-77683-06-19 21:20 J	-26652122.84	-26652122.61	-26652122.37	0.0264	0.0047 *
Earth	-77682-07-01 03:49 J	-26651746.53	-26651746.34	-26651746.12	0.0263	0.0146
Moon	-77682-07-01 06:13 J	-26651746.45	-26651746.24	-26651746.02	0.0263	0.0131 *
Moon	-77681-07-11 13:40 J	-26651370.05	-26651369.93	-26651369.79	0.0264	0.0226
Earth	-77681-07-11 17:01 J	-26651369.90	-26651369.79	-26651369.68	0.0264	0.0235 *
Venus	-77676-01-27 02:52 J	-26649709.60	-26649709.38	-26649709.17	0.0274	0.0027
Mercury	-77675-11-10 14:52 J	-26649056.97	-26649056.88	-26649056.77	0.0280	0.0235
Mercury	-77674-02-07 14:37 J	-26648968.07	-26648967.89	-26648967.70	0.0281	0.0078
Mercury	-77674-05-07 14:23 J	-26648879.08	-26648878.90	-26648878.72	0.0282	0.0080
Mercury	-77674-08-04 13:40 J	-26648790.02	-26648789.93	-26648789.82	0.0282	0.0238
Moon	-77671-11-20 16:47 J	-26647585.92	-26647585.80	-26647585.66	0.0294	0.0253
Earth	-77671-11-20 16:47 J	-26647585.89	-26647585.80	-26647585.68	0.0294	0.0266 *
Moon	-77670-12-05 20:23 J	-26647205.87	-26647205.65	-26647205.40	0.0296	0.0122
Earth	-77670-12-05 23:30 J	-26647205.75	-26647205.52	-26647205.30	0.0296	0.0133 *
Mars	-77669-03-31 05:01 J	-26647089.55	-26647089.29	-26647089.02	0.0297	0.0082
Moon	-77669-12-20 02:37 J	-26646825.64	-26646825.39	-26646825.14	0.0298	0.0024
Earth	-77669-12-20 06:28 J	-26646825.48	-26646825.23	-26646824.98	0.0298	0.0012 *
Moon	-77667-01-04 07:25 J	-26646445.38	-26646445.19	-26646444.98	0.0298	0.0166
Earth	-77667-01-04 10:32 J	-26646445.26	-26646445.06	-26646444.84	0.0298	0.0156 *
Earth	-77666-01-19 08:52 J	-26646065.19	-26646065.13	-26646065.06	0.0297	0.0286
Moon	-77666-01-19 08:37 J	-26646065.18	-26646065.14	-26646065.10	0.0297	0.0292 *
Venus	-77663-04-18 07:11 J	-26644880.24	-26644880.20	-26644880.14	0.0289	0.0279

Venus -77663-12-03 18:13 J -26644650.90 -26644650.74 -26644650.57 0.0287 0.0170  
 Mercury -77661-03-19 08:23 J -26644179.20 -26644179.15 -26644179.09 0.0282 0.0251  
 Mercury -77661-06-15 19:25 J -26644090.80 -26644090.69 -26644090.57 0.0281 0.0143  
 Mercury -77661-09-12 06:28 J -26644002.36 -26644002.23 -26644002.10 0.0280 0.0037  
 Mercury -77661-12-09 17:30 J -26643913.89 -26643913.77 -26643913.64 0.0279 0.0072  
 Mercury -77660-03-08 04:32 J -26643825.40 -26643825.31 -26643825.20 0.0278 0.0177  
 Earth -77657-05-12 11:59 J -26642664.00 -26642664.00 -26642663.99 0.0268 0.0268  
 Earth -77656-05-23 20:37 J -26642287.80 -26642287.64 -26642287.45 0.0266 0.0180  
 Moon -77656-05-23 22:18 J -26642287.74 -26642287.57 -26642287.38 0.0266 0.0170 \*  
 Mars -77655-03-20 21:35 J -26641986.84 -26641986.60 -26641986.35 0.0265 0.0161  
 Earth -77655-06-04 03:49 J -26641911.56 -26641911.34 -26641911.10 0.0264 0.0086  
 Moon -77655-06-04 06:42 J -26641911.45 -26641911.22 -26641910.98 0.0264 0.0072 \*  
 Moon -77654-06-15 08:23 J -26641535.40 -26641535.15 -26641534.90 0.0263 0.0011  
 Earth -77654-06-15 10:47 J -26641535.30 -26641535.05 -26641534.81 0.0263 0.0010 \*  
 Moon -77653-06-25 15:35 J -26641159.07 -26641158.85 -26641158.63 0.0263 0.0094  
 Earth -77653-06-25 18:13 J -26641158.95 -26641158.74 -26641158.51 0.0263 0.0105 \*  
 Earth -77652-07-07 05:01 J -26640782.44 -26640782.29 -26640782.12 0.0263 0.0197  
 Moon -77652-07-07 07:40 J -26640782.34 -26640782.18 -26640782.00 0.0263 0.0185 \*  
 Venus -77647-08-09 10:47 J -26638923.26 -26638923.05 -26638922.85 0.0274 0.0092  
 Mercury -77645-03-29 14:52 J -26638324.93 -26638324.88 -26638324.84 0.0280 0.0271  
 Mercury -77645-06-26 14:23 J -26638236.07 -26638235.90 -26638235.72 0.0281 0.0114  
 Mercury -77645-09-23 14:08 J -26638147.10 -26638146.91 -26638146.73 0.0282 0.0044  
 Mercury -77645-12-21 13:40 J -26638058.06 -26638057.93 -26638057.80 0.0283 0.0202  
 Earth -77641-11-28 16:18 J -26636620.01 -26636619.82 -26636619.63 0.0295 0.0191  
 Moon -77641-11-28 19:25 J -26636619.88 -26636619.69 -26636619.50 0.0295 0.0180 \*  
 Earth -77640-12-13 23:01 J -26636239.79 -26636239.54 -26636239.30 0.0297 0.0051  
 Moon -77640-12-14 02:52 J -26636239.63 -26636239.38 -26636239.13 0.0297 0.0039 \*  
 Mars -77639-05-20 11:59 J -26636082.23 -26636082.00 -26636081.75 0.0297 0.0136  
 Earth -77639-12-29 04:04 J -26635859.55 -26635859.33 -26635859.09 0.0298 0.0094  
 Moon -77639-12-29 06:42 J -26635859.45 -26635859.22 -26635858.97 0.0298 0.0105 \*

Moon -77637-01-13 05:01 J -26635479.44 -26635479.29 -26635479.13 0.0297 0.0237  
 Earth -77637-01-13 05:01 J -26635479.43 -26635479.29 -26635479.12 0.0297 0.0230 \*  
 Venus -77634-10-29 12:13 J -26634094.12 -26634093.99 -26634093.85 0.0288 0.0216  
 Venus -77633-06-14 22:47 J -26633864.67 -26633864.55 -26633864.42 0.0286 0.0229  
 Mercury -77632-08-06 10:47 J -26633447.05 -26633447.05 -26633447.04 0.0282 0.0281  
 Mercury -77632-11-02 21:49 J -26633358.69 -26633358.59 -26633358.48 0.0281 0.0174  
 Mercury -77631-01-30 08:52 J -26633270.25 -26633270.13 -26633270.00 0.0280 0.0067  
 Mercury -77631-04-28 19:54 J -26633181.80 -26633181.67 -26633181.54 0.0279 0.0040  
 Mercury -77631-07-26 06:56 J -26633093.32 -26633093.21 -26633093.09 0.0278 0.0146  
 Mercury -77631-10-22 17:59 J -26633004.80 -26633004.75 -26633004.69 0.0277 0.0251  
 Moon -77627-05-19 03:20 J -26631700.49 -26631700.36 -26631700.19 0.0267 0.0213  
 Earth -77627-05-19 04:47 J -26631700.42 -26631700.30 -26631700.15 0.0267 0.0219 \*  
 Moon -77626-05-30 09:35 J -26631324.31 -26631324.10 -26631323.88 0.0265 0.0112  
 Earth -77626-05-30 12:42 J -26631324.18 -26631323.97 -26631323.76 0.0265 0.0126 \*  
 Mars -77625-05-09 03:49 J -26630979.65 -26630979.34 -26630979.02 0.0264 0.0008  
 Earth -77625-06-09 19:11 J -26630947.94 -26630947.70 -26630947.46 0.0264 0.0031  
 Moon -77625-06-09 21:06 J -26630947.85 -26630947.62 -26630947.38 0.0264 0.0025 \*  
 Earth -77624-06-21 02:08 J -26630571.65 -26630571.41 -26630571.18 0.0263 0.0066  
 Moon -77624-06-21 05:16 J -26630571.51 -26630571.28 -26630571.03 0.0263 0.0061 \*  
 Moon -77623-07-02 09:06 J -26630195.32 -26630195.12 -26630194.90 0.0263 0.0147  
 Earth -77623-07-02 11:16 J -26630195.22 -26630195.03 -26630194.83 0.0263 0.0160 \*  
 Moon -77622-07-13 21:35 J -26629818.69 -26629818.60 -26629818.51 0.0264 0.0244  
 Earth -77622-07-14 00:28 J -26629818.55 -26629818.48 -26629818.40 0.0264 0.0250 \*  
 Venus -77618-07-05 02:08 J -26628366.46 -26628366.41 -26628366.34 0.0272 0.0261  
 Venus -77617-02-19 15:35 J -26628137.03 -26628136.85 -26628136.66 0.0274 0.0147  
 Mercury -77616-11-13 12:56 J -26627504.11 -26627503.96 -26627503.80 0.0280 0.0158  
 Mercury -77615-02-10 12:42 J -26627415.15 -26627414.97 -26627414.78 0.0281 0.0006  
 Mercury -77615-05-10 12:13 J -26627326.14 -26627325.99 -26627325.83 0.0282 0.0158  
 Moon -77612-11-22 05:30 J -26626034.40 -26626034.27 -26626034.11 0.0294 0.0237  
 Earth -77612-11-22 08:52 J -26626034.25 -26626034.13 -26626033.99 0.0294 0.0250 \*

Mars -77611-07-07 00:42 J -26625807.56 -26625807.47 -26625807.35 0.0296 0.0274  
 Moon -77611-12-07 12:28 J -26625654.20 -26625653.98 -26625653.74 0.0296 0.0103  
 Earth -77611-12-07 15:49 J -26625654.06 -26625653.84 -26625653.60 0.0296 0.0114 \*  
 Moon -77610-12-22 21:20 J -26625273.84 -26625273.61 -26625273.37 0.0298 0.0043  
 Earth -77610-12-22 23:01 J -26625273.78 -26625273.54 -26625273.29 0.0298 0.0032 \*  
 Earth -77608-01-06 02:52 J -26624893.56 -26624893.38 -26624893.17 0.0298 0.0177  
 Moon -77608-01-06 03:49 J -26624893.51 -26624893.34 -26624893.14 0.0298 0.0185 \*  
 Venus -77604-05-10 21:06 J -26623307.80 -26623307.62 -26623307.44 0.0289 0.0142  
 Mercury -77602-03-23 01:25 J -26622626.53 -26622626.44 -26622626.34 0.0282 0.0195  
 Mercury -77602-06-19 12:28 J -26622538.10 -26622537.98 -26622537.85 0.0281 0.0088  
 Mercury -77602-09-15 23:30 J -26622449.65 -26622449.52 -26622449.39 0.0280 0.0020  
 Mercury -77602-12-13 10:32 J -26622361.17 -26622361.06 -26622360.94 0.0279 0.0126  
 Mercury -77601-03-10 21:35 J -26622272.67 -26622272.60 -26622272.52 0.0278 0.0232  
 Earth -77598-05-14 19:25 J -26621112.74 -26621112.69 -26621112.61 0.0268 0.0257  
 Moon -77598-05-14 20:37 J -26621112.70 -26621112.64 -26621112.57 0.0268 0.0257 \*  
 Earth -77597-05-25 04:04 J -26620736.51 -26620736.33 -26620736.14 0.0266 0.0167  
 Moon -77597-05-25 07:40 J -26620736.37 -26620736.18 -26620735.98 0.0266 0.0155 \*  
 Moon -77596-06-05 09:35 J -26620360.34 -26620360.10 -26620359.85 0.0264 0.0061  
 Earth -77596-06-05 10:47 J -26620360.28 -26620360.05 -26620359.81 0.0264 0.0072 \*  
 Moon -77595-06-16 13:54 J -26619984.16 -26619983.92 -26619983.68 0.0263 0.0022  
 Earth -77595-06-16 17:16 J -26619984.02 -26619983.78 -26619983.53 0.0263 0.0024 \*  
 Mars -77595-06-29 09:20 J -26619971.31 -26619971.11 -26619970.88 0.0263 0.0192  
 Earth -77594-06-28 00:56 J -26619607.67 -26619607.46 -26619607.24 0.0263 0.0119  
 Moon -77594-06-28 02:08 J -26619607.62 -26619607.41 -26619607.19 0.0263 0.0107 \*  
 Earth -77593-07-08 11:44 J -26619231.15 -26619231.01 -26619230.86 0.0263 0.0212  
 Moon -77593-07-08 14:52 J -26619231.03 -26619230.88 -26619230.71 0.0263 0.0199 \*  
 Venus -77588-01-14 09:35 J -26617580.24 -26617580.10 -26617579.94 0.0272 0.0198  
 Venus -77588-08-31 23:01 J -26617350.67 -26617350.54 -26617350.39 0.0275 0.0212  
 Mercury -77586-04-02 12:28 J -26616772.11 -26616771.98 -26616771.84 0.0280 0.0196  
 Mercury -77586-06-30 12:13 J -26616683.17 -26616682.99 -26616682.80 0.0281 0.0039

Mercury -77586-09-27 11:44 J -26616594.17 -26616594.01 -26616593.84 0.0282 0.0120  
 Mercury -77586-12-25 11:01 J -26616505.06 -26616505.04 -26616505.00 0.0283 0.0278  
 Moon -77583-11-16 05:59 J -26615448.29 -26615448.25 -26615448.20 0.0293 0.0287  
 Earth -77582-12-01 07:25 J -26615068.38 -26615068.19 -26615067.98 0.0296 0.0174  
 Moon -77582-12-01 10:47 J -26615068.26 -26615068.05 -26615067.83 0.0296 0.0160 \*  
 Mars -77581-08-25 16:18 J -26614800.09 -26614799.82 -26614799.54 0.0297 0.0055  
 Earth -77581-12-15 14:37 J -26614688.13 -26614687.89 -26614687.64 0.0297 0.0031  
 Moon -77581-12-15 15:20 J -26614688.11 -26614687.86 -26614687.60 0.0297 0.0022 \*  
 Moon -77580-12-30 17:44 J -26614307.98 -26614307.76 -26614307.52 0.0298 0.0122  
 Earth -77580-12-30 20:08 J -26614307.89 -26614307.66 -26614307.43 0.0298 0.0114 \*  
 Moon -77578-01-14 17:01 J -26613927.91 -26613927.79 -26613927.66 0.0297 0.0255  
 Earth -77578-01-14 20:37 J -26613927.76 -26613927.64 -26613927.50 0.0297 0.0250 \*  
 Venus -77575-11-21 01:54 J -26612521.62 -26612521.42 -26612521.22 0.0288 0.0082  
 Mercury -77573-08-09 03:49 J -26611894.42 -26611894.34 -26611894.27 0.0281 0.0227  
 Mercury -77573-11-05 14:52 J -26611806.00 -26611805.88 -26611805.76 0.0280 0.0119  
 Mercury -77572-02-02 01:54 J -26611717.55 -26611717.42 -26611717.29 0.0279 0.0013  
 Mercury -77572-05-01 12:56 J -26611629.09 -26611628.96 -26611628.84 0.0279 0.0094  
 Mercury -77572-07-28 23:44 J -26611540.59 -26611540.51 -26611540.41 0.0278 0.0200  
 Moon -77568-05-20 07:40 J -26610149.33 -26610149.18 -26610149.01 0.0267 0.0198  
 Earth -77568-05-20 11:30 J -26610149.16 -26610149.02 -26610148.86 0.0267 0.0207 \*  
 Earth -77567-05-31 18:28 J -26609772.94 -26609772.73 -26609772.51 0.0265 0.0113  
 Moon -77567-05-31 18:56 J -26609772.92 -26609772.71 -26609772.49 0.0265 0.0100 \*  
 Mars -77567-08-14 18:42 J -26609697.97 -26609697.72 -26609697.45 0.0265 0.0142  
 Earth -77566-06-12 00:42 J -26609396.71 -26609396.47 -26609396.23 0.0264 0.0017  
 Moon -77566-06-12 04:04 J -26609396.57 -26609396.33 -26609396.09 0.0264 0.0012 \*  
 Moon -77565-06-22 06:13 J -26609020.48 -26609020.24 -26609020.00 0.0263 0.0070  
 Earth -77565-06-22 07:11 J -26609020.43 -26609020.20 -26609019.96 0.0263 0.0080 \*  
 Moon -77564-07-03 12:56 J -26608644.15 -26608643.96 -26608643.77 0.0263 0.0160  
 Earth -77564-07-03 16:18 J -26608644.00 -26608643.82 -26608643.63 0.0263 0.0174 \*  
 Earth -77563-07-15 05:16 J -26608267.28 -26608267.28 -26608267.27 0.0264 0.0264

Moon -77563-07-15 06:42 J -26608267.24 -26608267.22 -26608267.18 0.0264 0.0261  
 Venus -77559-07-27 12:42 J -26606794.15 -26606793.97 -26606793.79 0.0273 0.0151  
 Venus -77558-03-14 02:23 J -26606564.46 -26606564.40 -26606564.33 0.0275 0.0261  
 Mercury -77557-08-19 09:49 J -26606040.16 -26606040.09 -26606039.99 0.0280 0.0247  
 Mercury -77557-11-16 09:49 J -26605951.26 -26605951.09 -26605950.91 0.0281 0.0089  
 Mercury -77556-02-13 09:35 J -26605862.28 -26605862.10 -26605861.92 0.0282 0.0070  
 Mercury -77556-05-13 09:06 J -26605773.22 -26605773.12 -26605773.01 0.0282 0.0228  
 Moon -77553-11-23 18:28 J -26604482.88 -26604482.73 -26604482.56 0.0294 0.0222  
 Earth -77553-11-23 21:20 J -26604482.75 -26604482.61 -26604482.46 0.0294 0.0235 \*  
 Earth -77552-12-09 04:47 J -26604102.54 -26604102.30 -26604102.07 0.0297 0.0096  
 Moon -77552-12-09 04:47 J -26604102.53 -26604102.30 -26604102.07 0.0297 0.0087 \*  
 Mars -77551-10-14 19:54 J -26603792.89 -26603792.67 -26603792.44 0.0298 0.0164  
 Earth -77551-12-24 11:59 J -26603722.24 -26603722.00 -26603721.75 0.0298 0.0051  
 Moon -77551-12-24 14:52 J -26603722.12 -26603721.88 -26603721.65 0.0298 0.0058 \*  
 Earth -77549-01-08 16:04 J -26603342.01 -26603341.83 -26603341.64 0.0298 0.0194  
 Moon -77549-01-08 19:54 J -26603341.84 -26603341.67 -26603341.48 0.0298 0.0201 \*  
 Venus -77545-06-02 09:20 J -26601735.31 -26601735.11 -26601734.90 0.0288 0.0014  
 Mercury -77544-12-27 07:11 J -26601162.26 -26601162.20 -26601162.14 0.0282 0.0250  
 Mercury -77543-03-25 17:59 J -26601073.85 -26601073.75 -26601073.63 0.0281 0.0144  
 Mercury -77543-06-22 05:16 J -26600985.41 -26600985.28 -26600985.15 0.0280 0.0036  
 Mercury -77543-09-18 16:18 J -26600896.95 -26600896.82 -26600896.69 0.0279 0.0072  
 Mercury -77543-12-16 03:20 J -26600808.46 -26600808.36 -26600808.26 0.0278 0.0178  
 Earth -77539-05-16 01:11 J -26599561.54 -26599561.45 -26599561.35 0.0268 0.0246  
 Moon -77539-05-16 04:47 J -26599561.39 -26599561.30 -26599561.19 0.0268 0.0242 \*  
 Earth -77538-05-27 09:06 J -26599185.31 -26599185.12 -26599184.92 0.0265 0.0154  
 Moon -77538-05-27 09:20 J -26599185.31 -26599185.11 -26599184.89 0.0265 0.0141 \*  
 Moon -77537-06-06 11:59 J -26598809.24 -26598809.00 -26598808.76 0.0264 0.0048  
 Earth -77537-06-06 15:20 J -26598809.09 -26598808.86 -26598808.62 0.0264 0.0060 \*  
 Mars -77537-10-03 13:11 J -26598690.25 -26598689.95 -26598689.63 0.0263 0.0039  
 Earth -77536-06-17 21:20 J -26598432.84 -26598432.61 -26598432.36 0.0263 0.0038

Moon -77536-06-17 22:04 J -26598432.81 -26598432.58 -26598432.34 0.0263 0.0033 \*  
 Earth -77535-06-29 05:01 J -26598056.50 -26598056.29 -26598056.08 0.0263 0.0133  
 Moon -77535-06-29 08:37 J -26598056.35 -26598056.14 -26598055.91 0.0263 0.0119 \*  
 Moon -77534-07-10 15:20 J -26597680.00 -26597679.86 -26597679.71 0.0263 0.0214  
 Earth -77534-07-10 15:49 J -26597679.96 -26597679.84 -26597679.71 0.0263 0.0224 \*  
 Venus -77529-02-06 19:40 J -26596007.89 -26596007.68 -26596007.47 0.0273 0.0089  
 Mercury -77527-04-05 09:06 J -26595219.29 -26595219.12 -26595218.95 0.0281 0.0129  
 Mercury -77527-07-03 08:52 J -26595130.32 -26595130.13 -26595129.95 0.0282 0.0030  
 Mercury -77527-09-30 08:08 J -26595041.29 -26595041.16 -26595041.01 0.0282 0.0188  
 Earth -77524-11-17 12:56 J -26593896.98 -26593896.96 -26593896.90 0.0293 0.0290  
 Moon -77524-11-17 15:35 J -26593896.93 -26593896.85 -26593896.75 0.0293 0.0274 \*  
 Mars -77523-12-01 03:35 J -26593518.49 -26593518.35 -26593518.20 0.0296 0.0252  
 Moon -77523-12-02 18:28 J -26593516.96 -26593516.73 -26593516.51 0.0296 0.0146  
 Earth -77523-12-02 18:56 J -26593516.92 -26593516.71 -26593516.50 0.0296 0.0157 \*  
 Moon -77522-12-17 23:01 J -26593136.79 -26593136.54 -26593136.28 0.0298 0.0006  
 Earth -77522-12-18 02:23 J -26593136.65 -26593136.40 -26593136.16 0.0298 0.0013 \*  
 Moon -77520-01-01 04:04 J -26592756.54 -26592756.33 -26592756.11 0.0298 0.0138  
 Earth -77520-01-01 07:40 J -26592756.39 -26592756.18 -26592755.95 0.0298 0.0133 \*  
 Moon -77519-01-16 05:59 J -26592376.34 -26592376.25 -26592376.15 0.0298 0.0271  
 Earth -77519-01-16 08:08 J -26592376.26 -26592376.16 -26592376.05 0.0298 0.0268 \*  
 Venus -77516-12-13 13:11 J -26590949.15 -26590948.95 -26590948.75 0.0287 0.0044  
 Mercury -77514-08-12 20:08 J -26590341.76 -26590341.66 -26590341.56 0.0281 0.0177  
 Mercury -77514-11-09 07:11 J -26590253.32 -26590253.20 -26590253.07 0.0280 0.0070  
 Mercury -77513-02-05 18:13 J -26590164.87 -26590164.74 -26590164.61 0.0279 0.0038  
 Mercury -77513-05-04 05:16 J -26590076.39 -26590076.28 -26590076.17 0.0278 0.0143  
 Mercury -77513-07-31 16:18 J -26589987.87 -26589987.82 -26589987.76 0.0277 0.0248  
 Moon -77509-05-21 15:20 J -26588598.03 -26588597.86 -26588597.70 0.0266 0.0185  
 Earth -77509-05-21 15:20 J -26588598.01 -26588597.86 -26588597.69 0.0266 0.0196 \*  
 Earth -77508-06-01 22:04 J -26588221.80 -26588221.58 -26588221.36 0.0264 0.0102  
 Moon -77508-06-02 01:40 J -26588221.66 -26588221.43 -26588221.20 0.0264 0.0086 \*

Moon -77507-06-13 03:35 J -26587845.60 -26587845.35 -26587845.09 0.0263 0.0004  
 Earth -77507-06-13 03:49 J -26587845.59 -26587845.34 -26587845.10 0.0263 0.0005 \*  
 Mars -77507-11-22 20:08 J -26587682.84 -26587682.66 -26587682.45 0.0263 0.0207  
 Moon -77506-06-24 06:13 J -26587469.47 -26587469.24 -26587469.00 0.0263 0.0079  
 Earth -77506-06-24 10:04 J -26587469.30 -26587469.08 -26587468.85 0.0263 0.0092 \*  
 Earth -77505-07-04 18:56 J -26587092.88 -26587092.71 -26587092.54 0.0263 0.0186  
 Moon -77505-07-04 18:56 J -26587092.88 -26587092.71 -26587092.53 0.0263 0.0173 \*  
 Venus -77500-08-18 21:06 J -26585221.84 -26585221.62 -26585221.41 0.0273 0.0047  
 Mercury -77498-08-23 05:44 J -26584487.40 -26584487.26 -26584487.12 0.0280 0.0185  
 Mercury -77498-11-20 05:30 J -26584398.46 -26584398.27 -26584398.08 0.0281 0.0027  
 Mercury -77497-02-17 05:01 J -26584309.45 -26584309.29 -26584309.12 0.0282 0.0131  
 Earth -77494-11-26 04:04 J -26582931.48 -26582931.33 -26582931.15 0.0295 0.0222  
 Moon -77494-11-26 05:44 J -26582931.42 -26582931.26 -26582931.09 0.0295 0.0211 \*  
 Earth -77493-12-10 11:59 J -26582551.24 -26582551.00 -26582550.76 0.0297 0.0081  
 Moon -77493-12-10 15:20 J -26582551.10 -26582550.86 -26582550.62 0.0297 0.0072 \*  
 Mars -77492-01-19 08:08 J -26582511.43 -26582511.16 -26582510.88 0.0297 0.0033  
 Earth -77492-12-25 19:25 J -26582170.93 -26582170.69 -26582170.44 0.0298 0.0067  
 Moon -77492-12-25 22:47 J -26582170.79 -26582170.55 -26582170.30 0.0298 0.0073 \*  
 Earth -77490-01-09 23:44 J -26581790.68 -26581790.51 -26581790.33 0.0298 0.0210  
 Moon -77490-01-10 00:56 J -26581790.64 -26581790.46 -26581790.28 0.0298 0.0212 \*  
 Venus -77486-06-25 18:56 J -26580162.90 -26580162.71 -26580162.51 0.0288 0.0107  
 Mercury -77485-12-29 23:01 J -26579609.62 -26579609.54 -26579609.44 0.0282 0.0204  
 Mercury -77484-03-28 10:18 J -26579521.20 -26579521.07 -26579520.95 0.0281 0.0096  
 Mercury -77484-06-24 21:20 J -26579432.74 -26579432.61 -26579432.48 0.0280 0.0013  
 Mercury -77484-09-21 08:23 J -26579344.27 -26579344.15 -26579344.03 0.0279 0.0118  
 Mercury -77484-12-18 19:11 J -26579255.77 -26579255.70 -26579255.62 0.0278 0.0224  
 Earth -77480-05-17 03:49 J -26578010.44 -26578010.34 -26578010.22 0.0267 0.0236  
 Moon -77480-05-17 04:32 J -26578010.42 -26578010.31 -26578010.17 0.0267 0.0231 \*  
 Moon -77479-05-28 07:54 J -26577634.39 -26577634.17 -26577633.96 0.0265 0.0127  
 Earth -77479-05-28 11:30 J -26577634.22 -26577634.02 -26577633.82 0.0265 0.0143 \*



Mars -77478-01-08 20:37 J -26577408.91 -26577408.64 -26577408.36 0.0264 0.0115  
 Moon -77478-06-08 16:18 J -26577258.05 -26577257.82 -26577257.59 0.0263 0.0039  
 Earth -77478-06-08 17:16 J -26577258.02 -26577257.78 -26577257.54 0.0263 0.0048 \*  
 Earth -77477-06-18 22:47 J -26576881.78 -26576881.55 -26576881.30 0.0263 0.0050  
 Moon -77477-06-19 02:37 J -26576881.63 -26576881.39 -26576881.15 0.0263 0.0042 \*  
 Earth -77476-06-30 06:13 J -26576505.43 -26576505.24 -26576505.03 0.0262 0.0145  
 Moon -77476-06-30 06:42 J -26576505.43 -26576505.22 -26576504.99 0.0262 0.0129 \*  
 Moon -77475-07-11 13:25 J -26576129.05 -26576128.94 -26576128.81 0.0263 0.0227  
 Earth -77475-07-11 17:01 J -26576128.89 -26576128.79 -26576128.68 0.0263 0.0236 \*  
 Venus -77470-03-01 03:06 J -26574435.58 -26574435.37 -26574435.15 0.0273 0.0014  
 Mercury -77468-01-09 04:18 J -26573755.42 -26573755.32 -26573755.21 0.0280 0.0228  
 Mercury -77468-04-08 04:04 J -26573666.51 -26573666.33 -26573666.14 0.0281 0.0071  
 Mercury -77468-07-06 03:49 J -26573577.52 -26573577.34 -26573577.16 0.0282 0.0088  
 Mercury -77468-10-03 03:20 J -26573488.45 -26573488.36 -26573488.27 0.0283 0.0246  
 Moon -77465-11-18 16:32 J -26572345.92 -26572345.81 -26572345.70 0.0294 0.0265  
 Earth -77465-11-18 19:11 J -26572345.78 -26572345.70 -26572345.62 0.0294 0.0277 \*  
 Moon -77464-12-03 21:35 J -26571965.82 -26571965.60 -26571965.38 0.0296 0.0133  
 Earth -77464-12-04 01:11 J -26571965.66 -26571965.45 -26571965.22 0.0296 0.0143 \*  
 Moon -77463-12-19 05:59 J -26571585.49 -26571585.25 -26571585.00 0.0298 0.0011  
 Earth -77463-12-19 08:52 J -26571585.38 -26571585.13 -26571584.88 0.0298 0.0005 \*  
 Mars -77462-03-10 11:30 J -26571504.23 -26571504.02 -26571503.80 0.0298 0.0180  
 Moon -77461-01-03 14:37 J -26571205.10 -26571204.89 -26571204.69 0.0298 0.0153  
 Earth -77461-01-03 14:37 J -26571205.10 -26571204.89 -26571204.67 0.0298 0.0150 \*  
 Earth -77460-01-17 15:20 J -26570824.93 -26570824.86 -26570824.79 0.0298 0.0283  
 Moon -77460-01-17 17:44 J -26570824.82 -26570824.76 -26570824.68 0.0298 0.0283 \*  
 Venus -77457-05-20 11:01 J -26569606.04 -26569606.04 -26569606.03 0.0289 0.0289  
 Venus -77456-01-04 22:18 J -26569376.73 -26569376.57 -26569376.39 0.0287 0.0162  
 Mercury -77455-05-19 00:56 J -26568877.52 -26568877.46 -26568877.38 0.0281 0.0239  
 Mercury -77455-08-15 12:13 J -26568789.11 -26568788.99 -26568788.88 0.0280 0.0131  
 Mercury -77455-11-11 23:16 J -26568700.66 -26568700.53 -26568700.40 0.0280 0.0024

Mercury -77454-02-08 10:18 J -26568612.20 -26568612.07 -26568611.95 0.0279 0.0083  
 Mercury -77454-05-07 21:20 J -26568523.71 -26568523.61 -26568523.52 0.0278 0.0189  
 Earth -77450-05-23 17:01 J -26567046.95 -26567046.79 -26567046.61 0.0266 0.0186  
 Moon -77450-05-23 20:23 J -26567046.82 -26567046.65 -26567046.46 0.0266 0.0173 \*  
 Earth -77449-06-02 23:01 J -26566670.76 -26566670.54 -26566670.30 0.0264 0.0091  
 Moon -77449-06-03 00:28 J -26566670.71 -26566670.48 -26566670.23 0.0264 0.0078 \*  
 Mars -77448-02-26 17:30 J -26566402.07 -26566401.77 -26566401.46 0.0263 0.0052  
 Moon -77448-06-14 00:56 J -26566294.70 -26566294.46 -26566294.21 0.0263 0.0006  
 Earth -77448-06-14 04:32 J -26566294.56 -26566294.31 -26566294.07 0.0263 0.0008 \*  
 Moon -77447-06-25 09:49 J -26565918.30 -26565918.09 -26565917.86 0.0263 0.0091  
 Earth -77447-06-25 10:18 J -26565918.29 -26565918.07 -26565917.84 0.0263 0.0104 \*  
 Earth -77446-07-06 18:42 J -26565541.87 -26565541.72 -26565541.55 0.0263 0.0198  
 Moon -77446-07-06 22:32 J -26565541.73 -26565541.56 -26565541.38 0.0263 0.0184 \*  
 Venus -77441-09-10 03:20 J -26563649.57 -26563649.36 -26563649.14 0.0273 0.0051  
 Mercury -77439-08-25 23:59 J -26562934.66 -26562934.50 -26562934.33 0.0280 0.0132  
 Mercury -77439-11-22 23:44 J -26562845.69 -26562845.51 -26562845.32 0.0281 0.0027  
 Mercury -77438-02-19 23:16 J -26562756.66 -26562756.53 -26562756.38 0.0282 0.0185  
 Earth -77435-11-27 07:11 J -26561380.37 -26561380.20 -26561380.02 0.0295 0.0210  
 Moon -77435-11-27 11:01 J -26561380.22 -26561380.04 -26561379.85 0.0295 0.0200 \*  
 Mars -77434-04-26 04:47 J -26561230.46 -26561230.30 -26561230.13 0.0296 0.0236  
 Earth -77434-12-12 15:06 J -26561000.11 -26560999.87 -26560999.63 0.0297 0.0068  
 Moon -77434-12-12 17:30 J -26561000.02 -26560999.77 -26560999.52 0.0297 0.0060 \*  
 Moon -77433-12-26 22:18 J -26560619.81 -26560619.57 -26560619.32 0.0298 0.0083  
 Earth -77433-12-26 23:01 J -26560619.78 -26560619.54 -26560619.30 0.0298 0.0081 \*  
 Moon -77431-01-10 23:44 J -26560239.66 -26560239.51 -26560239.33 0.0298 0.0221  
 Earth -77431-01-11 03:06 J -26560239.52 -26560239.37 -26560239.20 0.0298 0.0224 \*  
 Venus -77428-11-30 15:06 J -26558819.99 -26558819.87 -26558819.74 0.0290 0.0233  
 Venus -77427-07-18 02:23 J -26558590.52 -26558590.40 -26558590.26 0.0287 0.0219  
 Mercury -77426-10-06 03:35 J -26558145.38 -26558145.35 -26558145.31 0.0283 0.0270  
 Mercury -77425-01-02 14:37 J -26558056.99 -26558056.89 -26558056.78 0.0282 0.0162

Mercury -77425-03-31 01:40 J -26557968.56 -26557968.43 -26557968.30 0.0281 0.0054  
 Mercury -77425-06-27 12:42 J -26557880.10 -26557879.97 -26557879.84 0.0280 0.0054  
 Mercury -77425-09-23 23:44 J -26557791.61 -26557791.51 -26557791.40 0.0279 0.0160  
 Mercury -77425-12-21 10:47 J -26557703.08 -26557703.05 -26557703.01 0.0278 0.0266  
 Moon -77421-05-18 00:56 J -26556459.59 -26556459.46 -26556459.31 0.0267 0.0217  
 Earth -77421-05-18 04:04 J -26556459.45 -26556459.33 -26556459.19 0.0267 0.0226 \*  
 Moon -77420-05-29 09:49 J -26556083.30 -26556083.09 -26556082.88 0.0265 0.0118  
 Earth -77420-05-29 11:01 J -26556083.24 -26556083.04 -26556082.82 0.0265 0.0133 \*  
 Earth -77419-06-09 16:32 J -26555707.04 -26555706.81 -26555706.56 0.0263 0.0038  
 Moon -77419-06-09 19:54 J -26555706.91 -26555706.67 -26555706.44 0.0263 0.0029 \*  
 Mars -77418-04-18 12:56 J -26555394.11 -26555393.96 -26555393.81 0.0263 0.0231  
 Earth -77418-06-20 22:04 J -26555330.81 -26555330.58 -26555330.34 0.0262 0.0060  
 Moon -77418-06-20 23:16 J -26555330.77 -26555330.53 -26555330.28 0.0262 0.0052 \*  
 Moon -77417-07-01 01:40 J -26554954.63 -26554954.43 -26554954.21 0.0262 0.0140  
 Earth -77417-07-01 05:16 J -26554954.46 -26554954.28 -26554954.07 0.0262 0.0155 \*  
 Moon -77416-07-12 14:23 J -26554577.98 -26554577.90 -26554577.79 0.0263 0.0241  
 Earth -77416-07-12 15:49 J -26554577.91 -26554577.84 -26554577.75 0.0263 0.0246 \*  
 Venus -77411-03-23 08:52 J -26552863.33 -26552863.13 -26552862.92 0.0273 0.0110  
 Mercury -77409-01-12 22:32 J -26552202.71 -26552202.56 -26552202.41 0.0280 0.0176  
 Mercury -77409-04-10 22:18 J -26552113.76 -26552113.57 -26552113.38 0.0281 0.0019  
 Mercury -77409-07-08 21:49 J -26552024.75 -26552024.59 -26552024.43 0.0282 0.0140  
 Moon -77406-11-20 16:47 J -26550794.90 -26550794.80 -26550794.68 0.0294 0.0259  
 Earth -77406-11-20 20:23 J -26550794.75 -26550794.65 -26550794.55 0.0294 0.0267 \*  
 Moon -77405-12-05 01:25 J -26550414.65 -26550414.44 -26550414.22 0.0297 0.0124  
 Earth -77405-12-05 02:52 J -26550414.60 -26550414.38 -26550414.15 0.0297 0.0130 \*  
 Mars -77404-06-14 15:20 J -26550223.13 -26550222.86 -26550222.58 0.0298 0.0022  
 Earth -77404-12-20 10:47 J -26550034.30 -26550034.05 -26550033.80 0.0298 0.0017  
 Moon -77404-12-20 11:59 J -26550034.23 -26550034.00 -26550033.76 0.0298 0.0022 \*  
 Earth -77402-01-04 16:47 J -26549654.01 -26549653.80 -26549653.59 0.0299 0.0164  
 Moon -77402-01-04 19:54 J -26549653.86 -26549653.67 -26549653.46 0.0299 0.0164 \*

Earth -77401-01-19 17:30 J -26549273.79 -26549273.77 -26549273.75 0.0298 0.0296  
 Moon -77401-01-19 20:23 J -26549273.68 -26549273.65 -26549273.59 0.0298 0.0292  
 Venus -77398-06-12 17:59 J -26548033.90 -26548033.75 -26548033.58 0.0289 0.0179  
 Venus -77397-01-28 05:01 J -26547804.35 -26547804.29 -26547804.22 0.0286 0.0270  
 Mercury -77396-05-21 16:32 J -26547324.90 -26547324.81 -26547324.72 0.0281 0.0197  
 Mercury -77396-08-18 03:35 J -26547236.47 -26547236.35 -26547236.23 0.0280 0.0090  
 Mercury -77396-11-14 14:37 J -26547148.02 -26547147.89 -26547147.76 0.0279 0.0017  
 Mercury -77395-02-11 01:40 J -26547059.55 -26547059.43 -26547059.31 0.0278 0.0124  
 Mercury -77395-05-10 12:42 J -26546971.04 -26546970.97 -26546970.90 0.0278 0.0229  
 Earth -77392-05-13 08:23 J -26545872.15 -26545872.15 -26545872.13 0.0268 0.0268  
 Moon -77392-05-13 10:47 J -26545872.05 -26545872.05 -26545872.02 0.0268 0.0267  
 Earth -77391-05-24 16:18 J -26545495.99 -26545495.82 -26545495.63 0.0266 0.0177  
 Moon -77391-05-24 18:13 J -26545495.93 -26545495.74 -26545495.53 0.0266 0.0163 \*  
 Mars -77390-06-03 19:40 J -26545120.96 -26545120.68 -26545120.39 0.0264 0.0103  
 Moon -77390-06-04 18:56 J -26545119.94 -26545119.71 -26545119.47 0.0264 0.0070  
 Earth -77390-06-04 22:04 J -26545119.80 -26545119.58 -26545119.34 0.0264 0.0081 \*  
 Moon -77389-06-15 01:11 J -26544743.68 -26544743.45 -26544743.21 0.0263 0.0015  
 Earth -77389-06-15 02:52 J -26544743.62 -26544743.38 -26544743.13 0.0263 0.0018 \*  
 Earth -77388-06-26 08:37 J -26544367.36 -26544367.14 -26544366.92 0.0262 0.0114  
 Moon -77388-06-26 11:59 J -26544367.22 -26544367.00 -26544366.77 0.0262 0.0099 \*  
 Earth -77387-07-07 16:47 J -26543990.94 -26543990.80 -26543990.64 0.0263 0.0207  
 Moon -77387-07-07 18:13 J -26543990.89 -26543990.74 -26543990.56 0.0263 0.0197 \*  
 Venus -77382-02-15 19:25 J -26542306.74 -26542306.69 -26542306.63 0.0271 0.0262  
 Venus -77382-10-03 07:54 J -26542077.35 -26542077.17 -26542076.98 0.0273 0.0143  
 Mercury -77380-05-31 17:30 J -26541470.85 -26541470.77 -26541470.67 0.0279 0.0242  
 Mercury -77380-08-28 17:30 J -26541381.95 -26541381.77 -26541381.59 0.0280 0.0085  
 Mercury -77380-11-25 17:01 J -26541292.97 -26541292.79 -26541292.60 0.0281 0.0074  
 Mercury -77379-02-22 16:47 J -26541203.91 -26541203.80 -26541203.70 0.0282 0.0232  
 Moon -77376-11-28 05:44 J -26539829.44 -26539829.26 -26539829.05 0.0295 0.0195  
 Earth -77376-11-28 05:59 J -26539829.43 -26539829.25 -26539829.06 0.0295 0.0200 \*

Moon -77375-12-13 11:44 J -26539449.26 -26539449.01 -26539448.76 0.0297 0.0053  
 Earth -77375-12-13 14:08 J -26539449.15 -26539448.91 -26539448.66 0.0297 0.0056 \*  
 Mars -77374-08-03 03:20 J -26539216.56 -26539216.36 -26539216.14 0.0298 0.0191  
 Moon -77374-12-28 18:28 J -26539068.96 -26539068.73 -26539068.49 0.0299 0.0094  
 Earth -77374-12-28 22:18 J -26539068.80 -26539068.57 -26539068.33 0.0299 0.0094 \*  
 Moon -77372-01-12 00:13 J -26538688.63 -26538688.49 -26538688.34 0.0299 0.0232  
 Earth -77372-01-12 02:37 J -26538688.53 -26538688.39 -26538688.23 0.0299 0.0236 \*  
 Venus -77369-12-22 21:06 J -26537247.80 -26537247.62 -26537247.44 0.0289 0.0126  
 Mercury -77367-10-08 18:42 J -26536592.79 -26536592.72 -26536592.65 0.0282 0.0232  
 Mercury -77366-01-05 05:44 J -26536504.38 -26536504.26 -26536504.14 0.0281 0.0123  
 Mercury -77366-04-03 16:47 J -26536415.93 -26536415.80 -26536415.67 0.0281 0.0016  
 Mercury -77366-07-01 03:49 J -26536327.46 -26536327.34 -26536327.21 0.0280 0.0092  
 Mercury -77366-09-27 14:52 J -26536238.97 -26536238.88 -26536238.78 0.0279 0.0198  
 Moon -77362-05-20 00:13 J -26534908.63 -26534908.49 -26534908.34 0.0267 0.0208  
 Earth -77362-05-20 02:37 J -26534908.52 -26534908.39 -26534908.25 0.0267 0.0217 \*  
 Earth -77361-05-30 09:20 J -26534532.32 -26534532.11 -26534531.90 0.0265 0.0123  
 Moon -77361-05-30 12:13 J -26534532.20 -26534531.99 -26534531.77 0.0265 0.0110 \*  
 Earth -77360-06-10 14:23 J -26534156.14 -26534155.90 -26534155.65 0.0263 0.0027  
 Moon -77360-06-10 17:01 J -26534156.04 -26534155.79 -26534155.54 0.0263 0.0022 \*  
 Mars -77360-07-23 04:04 J -26534113.62 -26534113.33 -26534113.02 0.0263 0.0072  
 Moon -77359-06-21 16:47 J -26533780.04 -26533779.80 -26533779.56 0.0262 0.0058  
 Earth -77359-06-21 19:54 J -26533779.91 -26533779.67 -26533779.44 0.0262 0.0070 \*  
 Moon -77358-07-03 01:25 J -26533403.63 -26533403.44 -26533403.25 0.0262 0.0152  
 Earth -77358-07-03 02:37 J -26533403.57 -26533403.39 -26533403.19 0.0262 0.0165 \*  
 Earth -77357-07-13 13:11 J -26533027.01 -26533026.95 -26533026.90 0.0263 0.0255  
 Moon -77357-07-13 16:04 J -26533026.88 -26533026.83 -26533026.76 0.0263 0.0253  
 Venus -77353-08-28 00:28 J -26531520.61 -26531520.48 -26531520.33 0.0271 0.0204  
 Venus -77352-04-14 13:11 J -26531291.09 -26531290.95 -26531290.80 0.0273 0.0201  
 Mercury -77350-01-15 15:49 J -26530650.01 -26530649.84 -26530649.68 0.0280 0.0129  
 Mercury -77350-04-14 15:20 J -26530561.04 -26530560.86 -26530560.67 0.0281 0.0029

Mercury -77350-07-12 15:06 J -26530472.01 -26530471.87 -26530471.73 0.0282 0.0186  
 Earth -77347-11-21 18:28 J -26529243.85 -26529243.73 -26529243.61 0.0294 0.0257  
 Moon -77347-11-21 19:40 J -26529243.79 -26529243.68 -26529243.56 0.0294 0.0255 \*  
 Mars -77346-09-19 03:49 J -26528942.50 -26528942.34 -26528942.16 0.0296 0.0232  
 Earth -77346-12-07 01:11 J -26528863.67 -26528863.45 -26528863.21 0.0297 0.0119  
 Moon -77346-12-07 04:32 J -26528863.53 -26528863.31 -26528863.08 0.0297 0.0117 \*  
 Earth -77345-12-21 09:35 J -26528483.34 -26528483.10 -26528482.85 0.0298 0.0031  
 Moon -77345-12-21 13:25 J -26528483.18 -26528482.94 -26528482.69 0.0298 0.0032 \*  
 Earth -77343-01-05 15:35 J -26528103.03 -26528102.85 -26528102.64 0.0299 0.0177  
 Moon -77343-01-05 17:59 J -26528102.95 -26528102.75 -26528102.54 0.0299 0.0175 \*  
 Venus -77339-07-04 23:44 J -26526461.71 -26526461.51 -26526461.31 0.0289 0.0073  
 Mercury -77337-02-25 20:23 J -26525860.68 -26525860.65 -26525860.61 0.0282 0.0268  
 Mercury -77337-05-24 07:25 J -26525772.29 -26525772.19 -26525772.08 0.0281 0.0160  
 Mercury -77337-08-20 18:28 J -26525683.85 -26525683.73 -26525683.60 0.0280 0.0053  
 Mercury -77337-11-17 05:44 J -26525595.39 -26525595.26 -26525595.14 0.0279 0.0056  
 Mercury -77336-02-13 16:47 J -26525506.91 -26525506.80 -26525506.70 0.0278 0.0161  
 Mercury -77336-05-13 03:49 J -26525418.37 -26525418.34 -26525418.31 0.0277 0.0267  
 Earth -77333-05-14 06:28 J -26524321.28 -26524321.23 -26524321.16 0.0268 0.0259  
 Moon -77333-05-14 09:35 J -26524321.17 -26524321.10 -26524321.02 0.0268 0.0255 \*  
 Moon -77332-05-25 11:59 J -26523945.20 -26523945.00 -26523944.80 0.0265 0.0152  
 Earth -77332-05-25 14:37 J -26523945.08 -26523944.89 -26523944.71 0.0265 0.0167 \*  
 Mars -77332-09-08 03:06 J -26523839.43 -26523839.37 -26523839.27 0.0265 0.0255  
 Moon -77331-06-05 17:30 J -26523568.99 -26523568.77 -26523568.54 0.0264 0.0064  
 Earth -77331-06-05 19:54 J -26523568.90 -26523568.67 -26523568.44 0.0264 0.0071 \*  
 Earth -77330-06-17 00:13 J -26523192.73 -26523192.49 -26523192.24 0.0262 0.0028  
 Moon -77330-06-17 02:52 J -26523192.61 -26523192.38 -26523192.14 0.0262 0.0021 \*  
 Mars -77330-09-11 04:18 J -26523106.44 -26523106.32 -26523106.18 0.0262 0.0240  
 Earth -77329-06-27 05:59 J -26522816.47 -26522816.25 -26522816.04 0.0262 0.0123  
 Moon -77329-06-27 07:54 J -26522816.40 -26522816.17 -26522815.94 0.0262 0.0110 \*  
 Moon -77328-07-08 10:47 J -26522440.20 -26522440.05 -26522439.91 0.0262 0.0211

Earth -77328-07-08 13:54 J -26522440.05 -26522439.92 -26522439.78 0.0262 0.0216 \*  
 Venus -77323-03-09 23:16 J -26520734.69 -26520734.53 -26520734.35 0.0272 0.0172  
 Venus -77323-10-25 12:13 J -26520505.10 -26520504.99 -26520504.88 0.0274 0.0234  
 Mercury -77321-06-03 10:47 J -26519918.19 -26519918.05 -26519917.92 0.0280 0.0197  
 Mercury -77321-08-31 10:18 J -26519829.25 -26519829.07 -26519828.88 0.0280 0.0040  
 Mercury -77321-11-28 10:04 J -26519740.25 -26519740.08 -26519739.91 0.0281 0.0119  
 Mercury -77320-02-25 09:20 J -26519651.14 -26519651.11 -26519651.07 0.0282 0.0277  
 Moon -77317-11-28 22:47 J -26518278.73 -26518278.55 -26518278.35 0.0295 0.0192  
 Earth -77317-11-29 02:52 J -26518278.56 -26518278.38 -26518278.18 0.0295 0.0189 \*  
 Mars -77316-11-06 22:04 J -26517935.86 -26517935.58 -26517935.31 0.0297 0.0017  
 Moon -77316-12-14 07:40 J -26517898.42 -26517898.18 -26517897.94 0.0297 0.0046  
 Earth -77316-12-14 11:01 J -26517898.29 -26517898.04 -26517897.79 0.0297 0.0044 \*  
 Moon -77315-12-29 17:44 J -26517517.98 -26517517.76 -26517517.53 0.0299 0.0102  
 Earth -77315-12-29 18:56 J -26517517.94 -26517517.71 -26517517.47 0.0299 0.0105 \*  
 Earth -77313-01-13 23:16 J -26517137.65 -26517137.53 -26517137.38 0.0299 0.0247  
 Moon -77313-01-14 01:25 J -26517137.58 -26517137.44 -26517137.30 0.0299 0.0239 \*  
 Venus -77309-01-15 01:25 J -26515675.65 -26515675.44 -26515675.24 0.0289 0.0026  
 Mercury -77308-10-11 09:20 J -26515040.20 -26515040.11 -26515040.02 0.0282 0.0197  
 Mercury -77307-01-07 20:23 J -26514951.77 -26514951.65 -26514951.52 0.0281 0.0089  
 Mercury -77307-04-06 07:40 J -26514863.32 -26514863.18 -26514863.05 0.0281 0.0022  
 Mercury -77307-07-03 18:28 J -26514774.84 -26514774.73 -26514774.61 0.0280 0.0128  
 Mercury -77307-09-30 05:44 J -26514686.33 -26514686.26 -26514686.19 0.0279 0.0233  
 Earth -77303-05-20 23:30 J -26513357.66 -26513357.52 -26513357.36 0.0267 0.0208  
 Moon -77303-05-21 01:11 J -26513357.60 -26513357.45 -26513357.28 0.0267 0.0197 \*  
 Earth -77302-06-01 06:13 J -26512981.46 -26512981.24 -26512981.02 0.0265 0.0113  
 Moon -77302-06-01 08:52 J -26512981.36 -26512981.13 -26512980.90 0.0265 0.0101 \*  
 Mars -77302-10-28 01:40 J -26512832.72 -26512832.43 -26512832.14 0.0264 0.0087  
 Moon -77301-06-11 08:37 J -26512605.39 -26512605.14 -26512604.89 0.0263 0.0018  
 Earth -77301-06-11 11:16 J -26512605.27 -26512605.03 -26512604.79 0.0263 0.0016 \*  
 Moon -77300-06-22 13:54 J -26512229.15 -26512228.92 -26512228.69 0.0262 0.0068

Earth -77300-06-22 16:32 J -26512229.05 -26512228.81 -26512228.58 0.0262 0.0081 \*  
 Earth -77299-07-03 23:16 J -26511852.71 -26511852.53 -26511852.35 0.0262 0.0174  
 Moon -77299-07-04 02:08 J -26511852.59 -26511852.41 -26511852.22 0.0262 0.0165 \*  
 Venus -77294-09-20 04:18 J -26509948.51 -26509948.32 -26509948.12 0.0271 0.0116  
 Mercury -77292-10-21 08:52 J -26509186.22 -26509186.13 -26509186.03 0.0279 0.0242  
 Mercury -77291-01-18 08:37 J -26509097.32 -26509097.14 -26509096.96 0.0280 0.0085  
 Mercury -77291-04-17 08:08 J -26509008.34 -26509008.16 -26509007.97 0.0281 0.0073  
 Mercury -77291-07-15 07:40 J -26508919.28 -26508919.18 -26508919.07 0.0282 0.0231  
 Earth -77288-11-22 14:23 J -26507693.02 -26507692.90 -26507692.75 0.0294 0.0248  
 Moon -77288-11-22 18:28 J -26507692.86 -26507692.73 -26507692.59 0.0294 0.0249 \*  
 Earth -77287-12-07 21:49 J -26507312.82 -26507312.59 -26507312.35 0.0297 0.0107  
 Moon -77287-12-08 00:28 J -26507312.71 -26507312.48 -26507312.24 0.0297 0.0110 \*  
 Earth -77286-12-23 06:28 J -26506932.47 -26506932.23 -26506931.98 0.0299 0.0042  
 Moon -77286-12-23 06:42 J -26506932.47 -26506932.22 -26506931.96 0.0299 0.0038 \*  
 Mars -77286-12-26 23:30 J -26506928.72 -26506928.52 -26506928.30 0.0299 0.0195  
 Moon -77284-01-06 10:18 J -26506552.26 -26506552.07 -26506551.86 0.0299 0.0181  
 Earth -77284-01-06 12:56 J -26506552.15 -26506551.96 -26506551.77 0.0299 0.0188 \*  
 Venus -77280-07-27 04:18 J -26504889.52 -26504889.32 -26504889.11 0.0289 0.0028  
 Mercury -77278-02-28 11:16 J -26504308.10 -26504308.03 -26504307.96 0.0282 0.0233  
 Mercury -77278-05-27 22:18 J -26504219.69 -26504219.57 -26504219.45 0.0281 0.0124  
 Mercury -77278-08-24 09:20 J -26504131.24 -26504131.11 -26504130.98 0.0280 0.0017  
 Mercury -77278-11-20 20:23 J -26504042.77 -26504042.65 -26504042.52 0.0279 0.0091  
 Mercury -77277-02-17 07:25 J -26503954.28 -26503954.19 -26503954.09 0.0278 0.0198  
 Moon -77274-05-16 02:23 J -26502770.50 -26502770.40 -26502770.28 0.0267 0.0240  
 Earth -77274-05-16 03:49 J -26502770.40 -26502770.34 -26502770.24 0.0267 0.0251 \*  
 Moon -77273-05-26 08:52 J -26502394.32 -26502394.13 -26502393.93 0.0265 0.0143  
 Earth -77273-05-26 11:44 J -26502394.19 -26502394.01 -26502393.81 0.0265 0.0157 \*  
 Earth -77272-06-06 17:01 J -26502018.02 -26502017.79 -26502017.55 0.0263 0.0061  
 Moon -77272-06-06 19:25 J -26502017.92 -26502017.69 -26502017.46 0.0263 0.0058 \*  
 Mars -77272-12-15 19:40 J -26501825.97 -26501825.68 -26501825.37 0.0263 0.0081



Earth -77271-06-17 21:35 J -26501641.84 -26501641.60 -26501641.36 0.0262 0.0037  
 Moon -77271-06-18 00:42 J -26501641.72 -26501641.47 -26501641.22 0.0262 0.0028 \*  
 Moon -77270-06-29 00:28 J -26501265.70 -26501265.48 -26501265.26 0.0262 0.0120  
 Earth -77270-06-29 02:52 J -26501265.58 -26501265.38 -26501265.16 0.0262 0.0133 \*  
 Moon -77269-07-09 08:23 J -26500889.26 -26500889.15 -26500889.02 0.0262 0.0225  
 Earth -77269-07-09 10:47 J -26500889.17 -26500889.05 -26500888.92 0.0262 0.0226 \*  
 Venus -77264-04-01 03:20 J -26499162.57 -26499162.36 -26499162.15 0.0272 0.0083  
 Mercury -77262-06-07 03:20 J -26498365.51 -26498365.36 -26498365.19 0.0280 0.0153  
 Mercury -77262-09-04 03:20 J -26498276.55 -26498276.36 -26498276.18 0.0280 0.0008  
 Mercury -77262-12-02 02:52 J -26498187.53 -26498187.38 -26498187.23 0.0281 0.0163  
 Moon -77258-11-30 21:49 J -26496727.77 -26496727.59 -26496727.39 0.0295 0.0186  
 Earth -77258-11-30 23:01 J -26496727.73 -26496727.54 -26496727.33 0.0295 0.0179 \*  
 Mars -77257-02-11 04:47 J -26496655.47 -26496655.30 -26496655.12 0.0296 0.0229  
 Earth -77257-12-15 07:11 J -26496347.44 -26496347.20 -26496346.95 0.0298 0.0033  
 Moon -77257-12-15 08:37 J -26496347.38 -26496347.14 -26496346.90 0.0298 0.0040 \*  
 Earth -77256-12-30 15:06 J -26495967.09 -26495966.87 -26495966.64 0.0299 0.0117  
 Moon -77256-12-30 18:28 J -26495966.95 -26495966.73 -26495966.50 0.0299 0.0109 \*  
 Earth -77254-01-14 19:40 J -26495586.80 -26495586.68 -26495586.55 0.0299 0.0257  
 Moon -77254-01-14 23:01 J -26495586.66 -26495586.54 -26495586.39 0.0299 0.0248 \*  
 Venus -77250-02-06 05:16 J -26494103.48 -26494103.28 -26494103.08 0.0289 0.0074  
 Mercury -77249-07-17 12:42 J -26493576.00 -26493575.97 -26493575.93 0.0283 0.0272  
 Mercury -77249-10-13 23:59 J -26493487.61 -26493487.50 -26493487.39 0.0282 0.0163  
 Mercury -77248-01-10 11:01 J -26493399.17 -26493399.04 -26493398.91 0.0281 0.0054  
 Mercury -77248-04-08 22:04 J -26493310.70 -26493310.58 -26493310.45 0.0281 0.0055  
 Mercury -77248-07-06 09:20 J -26493222.22 -26493222.11 -26493222.01 0.0280 0.0162  
 Mercury -77248-10-02 20:23 J -26493133.68 -26493133.65 -26493133.62 0.0279 0.0268  
 Earth -77244-05-21 20:23 J -26491806.81 -26491806.65 -26491806.49 0.0267 0.0198  
 Moon -77244-05-21 23:44 J -26491806.68 -26491806.51 -26491806.33 0.0267 0.0184 \*  
 Mars -77243-02-01 07:54 J -26491551.28 -26491551.17 -26491551.05 0.0265 0.0244  
 Moon -77243-06-02 01:11 J -26491430.68 -26491430.45 -26491430.21 0.0265 0.0095

Earth -77243-06-02 02:52 J -26491430.59 -26491430.38 -26491430.15 0.0265 0.0103 \*  
 Moon -77242-06-13 04:47 J -26491054.53 -26491054.30 -26491054.06 0.0263 0.0013  
 Earth -77242-06-13 07:54 J -26491054.41 -26491054.17 -26491053.92 0.0263 0.0007 \*  
 Mars -77241-02-04 08:08 J -26490818.22 -26490818.16 -26490818.09 0.0262 0.0256  
 Earth -77241-06-23 12:56 J -26490678.18 -26490677.96 -26490677.72 0.0262 0.0091  
 Moon -77241-06-23 14:52 J -26490678.10 -26490677.88 -26490677.65 0.0262 0.0077 \*  
 Earth -77240-07-04 20:08 J -26490301.83 -26490301.66 -26490301.49 0.0262 0.0184  
 Moon -77240-07-04 22:47 J -26490301.73 -26490301.55 -26490301.36 0.0262 0.0176 \*  
 Venus -77235-10-12 08:52 J -26488376.35 -26488376.13 -26488375.92 0.0272 0.0025  
 Mercury -77233-10-24 02:08 J -26487633.54 -26487633.41 -26487633.27 0.0279 0.0194  
 Mercury -77232-01-21 01:54 J -26487544.61 -26487544.42 -26487544.24 0.0280 0.0038  
 Mercury -77232-04-20 01:11 J -26487455.61 -26487455.45 -26487455.27 0.0281 0.0120  
 Mercury -77232-07-18 00:42 J -26487366.49 -26487366.47 -26487366.43 0.0282 0.0277  
 Earth -77229-11-23 11:44 J -26486142.15 -26486142.01 -26486141.85 0.0294 0.0236  
 Moon -77229-11-23 12:13 J -26486142.14 -26486141.99 -26486141.84 0.0294 0.0241 \*  
 Moon -77228-12-08 16:18 J -26485762.05 -26485761.82 -26485761.57 0.0297 0.0104  
 Earth -77228-12-08 18:56 J -26485761.94 -26485761.71 -26485761.47 0.0297 0.0095 \*  
 Mars -77227-04-01 17:16 J -26485648.05 -26485647.78 -26485647.50 0.0298 0.0015  
 Moon -77227-12-23 23:44 J -26485381.75 -26485381.51 -26485381.26 0.0299 0.0045  
 Earth -77227-12-24 03:49 J -26485381.59 -26485381.34 -26485381.10 0.0299 0.0055 \*  
 Moon -77225-01-08 06:42 J -26485001.40 -26485001.22 -26485001.03 0.0299 0.0191  
 Earth -77225-01-08 09:49 J -26485001.26 -26485001.09 -26485000.89 0.0299 0.0201 \*  
 Venus -77221-08-18 08:23 J -26483317.33 -26483317.15 -26483316.96 0.0289 0.0128  
 Mercury -77219-03-03 01:54 J -26482755.51 -26482755.42 -26482755.33 0.0282 0.0198  
 Mercury -77219-05-30 12:56 J -26482667.08 -26482666.96 -26482666.83 0.0281 0.0089  
 Mercury -77219-08-27 00:13 J -26482578.63 -26482578.49 -26482578.36 0.0280 0.0021  
 Mercury -77219-11-23 11:16 J -26482490.15 -26482490.03 -26482489.91 0.0279 0.0126  
 Mercury -77218-02-19 22:18 J -26482401.64 -26482401.57 -26482401.50 0.0278 0.0233  
 Moon -77215-05-16 22:04 J -26481219.69 -26481219.58 -26481219.45 0.0267 0.0228  
 Earth -77215-05-17 01:40 J -26481219.52 -26481219.43 -26481219.32 0.0267 0.0241 \*

Earth -77214-05-28 09:20 J -26480843.30 -26480843.11 -26480842.90 0.0265 0.0147  
 Moon -77214-05-28 10:32 J -26480843.26 -26480843.06 -26480842.86 0.0265 0.0135 \*  
 Mars -77213-03-21 20:37 J -26480544.93 -26480544.64 -26480544.34 0.0264 0.0077  
 Earth -77213-06-07 14:37 J -26480467.12 -26480466.89 -26480466.65 0.0263 0.0050  
 Moon -77213-06-07 17:44 J -26480466.99 -26480466.76 -26480466.51 0.0263 0.0051 \*  
 Moon -77212-06-18 17:30 J -26480091.02 -26480090.77 -26480090.52 0.0262 0.0035  
 Earth -77212-06-18 19:11 J -26480090.93 -26480090.70 -26480090.46 0.0262 0.0048 \*  
 Moon -77211-06-29 21:20 J -26479714.80 -26479714.61 -26479714.39 0.0262 0.0132  
 Earth -77211-06-30 00:28 J -26479714.67 -26479714.48 -26479714.26 0.0262 0.0144 \*  
 Earth -77210-07-11 08:23 J -26479338.25 -26479338.15 -26479338.04 0.0262 0.0235  
 Moon -77210-07-11 10:32 J -26479338.14 -26479338.06 -26479337.95 0.0262 0.0239 \*  
 Venus -77205-04-23 08:08 J -26477590.38 -26477590.16 -26477589.94 0.0272 0.0011  
 Mercury -77203-03-12 21:06 J -26476901.68 -26476901.62 -26476901.55 0.0279 0.0260  
 Mercury -77203-06-09 20:52 J -26476812.80 -26476812.63 -26476812.45 0.0280 0.0104  
 Mercury -77203-09-06 20:23 J -26476723.83 -26476723.65 -26476723.46 0.0280 0.0053  
 Mercury -77203-12-04 19:54 J -26476634.79 -26476634.67 -26476634.54 0.0281 0.0210  
 Earth -77199-12-01 19:40 J -26475176.87 -26475176.68 -26475176.46 0.0295 0.0168  
 Moon -77199-12-01 23:16 J -26475176.72 -26475176.53 -26475176.33 0.0295 0.0178 \*  
 Earth -77198-12-17 04:18 J -26474796.57 -26474796.32 -26474796.07 0.0298 0.0020  
 Moon -77198-12-17 08:08 J -26474796.41 -26474796.16 -26474795.91 0.0298 0.0032 \*  
 Mars -77197-05-20 03:35 J -26474641.55 -26474641.35 -26474641.15 0.0298 0.0197  
 Earth -77197-12-31 12:13 J -26474416.21 -26474415.99 -26474415.77 0.0299 0.0129  
 Moon -77197-12-31 14:37 J -26474416.12 -26474415.89 -26474415.65 0.0299 0.0117 \*  
 Moon -77195-01-15 16:04 J -26474035.95 -26474035.83 -26474035.69 0.0299 0.0255  
 Earth -77195-01-15 16:04 J -26474035.92 -26474035.83 -26474035.71 0.0299 0.0269 \*  
 Venus -77192-07-13 20:08 J -26472760.68 -26472760.66 -26472760.63 0.0291 0.0288  
 Venus -77191-02-28 09:06 J -26472531.28 -26472531.12 -26472530.95 0.0289 0.0173  
 Mercury -77190-07-21 03:35 J -26472023.42 -26472023.35 -26472023.29 0.0283 0.0238  
 Mercury -77190-10-17 14:37 J -26471935.01 -26471934.89 -26471934.77 0.0283 0.0128  
 Mercury -77189-01-14 01:40 J -26471846.56 -26471846.43 -26471846.30 0.0282 0.0021

Mercury -77189-04-11 12:56 J -26471758.09 -26471757.96 -26471757.84 0.0281 0.0090

Mercury -77189-07-08 23:59 J -26471669.59 -26471669.50 -26471669.41 0.0280 0.0197

Moon -77185-05-22 17:30 J -26470255.96 -26470255.77 -26470255.58 0.0267 0.0172

Earth -77185-05-22 17:44 J -26470255.92 -26470255.76 -26470255.58 0.0267 0.0188 \*

Moon -77184-06-02 21:20 J -26469879.83 -26469879.61 -26469879.38 0.0265 0.0085

Earth -77184-06-03 00:42 J -26469879.69 -26469879.47 -26469879.24 0.0265 0.0092 \*

Mars -77183-05-11 01:11 J -26469537.74 -26469537.45 -26469537.15 0.0263 0.0095

Earth -77183-06-14 05:44 J -26469503.50 -26469503.26 -26469503.01 0.0263 0.0007

Moon -77183-06-14 07:11 J -26469503.43 -26469503.20 -26469502.96 0.0263 0.0006 \*

Earth -77182-06-25 11:01 J -26469127.26 -26469127.04 -26469126.81 0.0262 0.0102

Moon -77182-06-25 14:37 J -26469127.12 -26469126.89 -26469126.65 0.0262 0.0087 \*

Moon -77181-07-05 16:32 J -26468750.98 -26468750.81 -26468750.64 0.0262 0.0191

Earth -77181-07-05 17:59 J -26468750.90 -26468750.75 -26468750.58 0.0262 0.0195 \*

Venus -77176-11-03 14:08 J -26466804.12 -26466803.91 -26466803.70 0.0272 0.0071

Mercury -77174-10-27 19:54 J -26466080.83 -26466080.67 -26466080.51 0.0279 0.0144

Mercury -77173-01-24 19:25 J -26465991.88 -26465991.69 -26465991.50 0.0280 0.0013

Mercury -77173-04-22 18:56 J -26465902.86 -26465902.71 -26465902.56 0.0281 0.0169

Moon -77170-11-25 06:56 J -26464591.36 -26464591.21 -26464591.05 0.0295 0.0234

Earth -77170-11-25 10:18 J -26464591.22 -26464591.07 -26464590.90 0.0295 0.0224 \*

Mars -77169-07-06 03:35 J -26464367.51 -26464367.35 -26464367.15 0.0296 0.0227

Moon -77169-12-09 14:23 J -26464211.13 -26464210.90 -26464210.67 0.0297 0.0095

Earth -77169-12-09 17:30 J -26464211.00 -26464210.77 -26464210.53 0.0297 0.0082 \*

Moon -77168-12-25 00:42 J -26463830.70 -26463830.47 -26463830.23 0.0299 0.0055

Earth -77168-12-25 02:08 J -26463830.65 -26463830.41 -26463830.17 0.0299 0.0068 \*

Earth -77166-01-09 08:37 J -26463450.31 -26463450.14 -26463449.97 0.0299 0.0214

Moon -77166-01-09 09:35 J -26463450.27 -26463450.10 -26463449.92 0.0299 0.0201 \*

Venus -77162-01-24 00:56 J -26461974.59 -26461974.46 -26461974.34 0.0291 0.0228

Venus -77162-09-10 13:11 J -26461745.06 -26461744.95 -26461744.82 0.0288 0.0231

Mercury -77161-12-07 05:44 J -26461291.30 -26461291.26 -26461291.23 0.0283 0.0271

Mercury -77160-03-05 16:47 J -26461202.91 -26461202.80 -26461202.69 0.0282 0.0161

Mercury -77160-06-02 03:49 J -26461114.46 -26461114.34 -26461114.21 0.0281 0.0053

Mercury -77160-08-29 15:06 J -26461026.00 -26461025.87 -26461025.74 0.0280 0.0057

Mercury -77160-11-26 02:08 J -26460937.51 -26460937.41 -26460937.30 0.0279 0.0164

Mercury -77159-02-22 13:11 J -26460848.97 -26460848.95 -26460848.92 0.0278 0.0271

Earth -77156-05-18 00:28 J -26459668.59 -26459668.48 -26459668.35 0.0267 0.0230

Moon -77156-05-18 00:56 J -26459668.59 -26459668.46 -26459668.32 0.0267 0.0217 \*

Earth -77155-05-29 08:23 J -26459292.35 -26459292.15 -26459291.94 0.0265 0.0135

Moon -77155-05-29 11:59 J -26459292.21 -26459292.00 -26459291.78 0.0265 0.0122 \*

Mars -77155-06-27 09:20 J -26459263.26 -26459263.11 -26459262.96 0.0265 0.0231

Moon -77154-06-09 12:56 J -26458916.21 -26458915.96 -26458915.71 0.0263 0.0042

Earth -77154-06-09 13:54 J -26458916.16 -26458915.92 -26458915.68 0.0263 0.0038 \*

Moon -77153-06-19 15:06 J -26458540.11 -26458539.87 -26458539.63 0.0262 0.0045

Earth -77153-06-19 18:28 J -26458539.96 -26458539.73 -26458539.49 0.0262 0.0060 \*

Earth -77152-07-01 00:13 J -26458163.68 -26458163.49 -26458163.29 0.0262 0.0155

Moon -77152-07-01 01:11 J -26458163.65 -26458163.45 -26458163.25 0.0262 0.0145 \*

Earth -77151-07-12 07:54 J -26457787.23 -26457787.17 -26457787.07 0.0262 0.0246

Moon -77151-07-12 11:16 J -26457787.08 -26457787.03 -26457786.95 0.0262 0.0251 \*

Venus -77146-05-16 14:52 J -26456018.08 -26456017.88 -26456017.68 0.0272 0.0110

Mercury -77144-03-15 15:35 J -26455348.97 -26455348.85 -26455348.72 0.0279 0.0206

Mercury -77144-06-12 15:20 J -26455260.05 -26455259.86 -26455259.67 0.0280 0.0049

Mercury -77144-09-09 14:52 J -26455171.05 -26455170.88 -26455170.71 0.0281 0.0107

Mercury -77144-12-07 13:54 J -26455081.97 -26455081.92 -26455081.84 0.0282 0.0265

Earth -77141-11-17 15:20 J -26454005.90 -26454005.86 -26454005.81 0.0293 0.0287

Earth -77140-12-02 20:23 J -26453625.85 -26453625.65 -26453625.43 0.0296 0.0154

Moon -77140-12-02 23:16 J -26453625.74 -26453625.53 -26453625.32 0.0296 0.0164 \*

Mars -77139-08-25 02:37 J -26453360.67 -26453360.39 -26453360.11 0.0297 0.0009

Moon -77139-12-18 04:47 J -26453245.55 -26453245.30 -26453245.04 0.0298 0.0020

Earth -77139-12-18 05:01 J -26453245.54 -26453245.29 -26453245.05 0.0298 0.0008 \*

Moon -77137-01-02 09:49 J -26452865.31 -26452865.09 -26452864.85 0.0299 0.0128

Earth -77137-01-02 12:28 J -26452865.19 -26452864.98 -26452864.76 0.0299 0.0144 \*

Moon -77136-01-16 12:28 J -26452485.09 -26452484.98 -26452484.87 0.0299 0.0265  
 Earth -77136-01-16 16:04 J -26452484.90 -26452484.83 -26452484.74 0.0299 0.0282 \*  
 Venus -77133-08-05 01:25 J -26451188.59 -26451188.44 -26451188.28 0.0291 0.0183  
 Venus -77132-03-22 13:54 J -26450958.97 -26450958.92 -26450958.85 0.0289 0.0276  
 Mercury -77131-07-23 18:13 J -26450470.83 -26450470.74 -26450470.64 0.0283 0.0201  
 Mercury -77131-10-20 05:30 J -26450382.39 -26450382.27 -26450382.15 0.0282 0.0091  
 Mercury -77130-01-16 16:32 J -26450293.94 -26450293.81 -26450293.68 0.0282 0.0020  
 Mercury -77130-04-15 03:49 J -26450205.46 -26450205.34 -26450205.22 0.0281 0.0127  
 Mercury -77130-07-12 14:52 J -26450116.95 -26450116.88 -26450116.81 0.0280 0.0235  
 Moon -77127-05-13 06:13 J -26449081.29 -26449081.24 -26449081.16 0.0270 0.0259  
 Moon -77126-05-24 13:11 J -26448705.14 -26448704.95 -26448704.76 0.0267 0.0161  
 Earth -77126-05-24 16:32 J -26448704.97 -26448704.81 -26448704.61 0.0267 0.0177 \*  
 Earth -77125-06-03 23:44 J -26448328.74 -26448328.51 -26448328.28 0.0265 0.0079  
 Moon -77125-06-03 23:44 J -26448328.73 -26448328.51 -26448328.29 0.0265 0.0076 \*  
 Mars -77125-08-15 05:44 J -26448256.56 -26448256.26 -26448255.96 0.0264 0.0066  
 Earth -77124-06-15 05:01 J -26447952.53 -26447952.29 -26447952.04 0.0263 0.0020  
 Moon -77124-06-15 08:37 J -26447952.38 -26447952.14 -26447951.89 0.0263 0.0008 \*  
 Moon -77123-06-26 10:04 J -26447576.31 -26447576.08 -26447575.84 0.0262 0.0101  
 Earth -77123-06-26 10:47 J -26447576.27 -26447576.05 -26447575.83 0.0262 0.0115 \*  
 Moon -77122-07-07 14:23 J -26447200.04 -26447199.90 -26447199.74 0.0262 0.0205  
 Earth -77122-07-07 17:59 J -26447199.89 -26447199.75 -26447199.60 0.0262 0.0207 \*  
 Venus -77117-04-10 09:49 J -26445461.19 -26445461.09 -26445460.96 0.0270 0.0226  
 Venus -77117-11-25 21:20 J -26445231.77 -26445231.61 -26445231.44 0.0272 0.0173  
 Mercury -77115-08-02 15:06 J -26444616.96 -26444616.87 -26444616.78 0.0278 0.0242  
 Mercury -77115-10-30 14:37 J -26444528.07 -26444527.89 -26444527.71 0.0279 0.0087  
 Mercury -77114-01-27 14:08 J -26444439.09 -26444438.91 -26444438.72 0.0280 0.0070  
 Mercury -77114-04-26 13:25 J -26444350.04 -26444349.94 -26444349.82 0.0281 0.0227  
 Moon -77111-11-26 10:04 J -26443040.23 -26443040.08 -26443039.91 0.0295 0.0221  
 Earth -77111-11-26 12:13 J -26443040.15 -26443039.99 -26443039.81 0.0295 0.0211 \*  
 Earth -77110-12-11 19:25 J -26442659.93 -26442659.69 -26442659.45 0.0297 0.0067

Moon -77110-12-11 20:08 J -26442659.88 -26442659.66 -26442659.42 0.0297 0.0080 \*  
 Mars -77109-10-13 11:16 J -26442353.22 -26442353.03 -26442352.82 0.0299 0.0205  
 Earth -77109-12-26 03:35 J -26442279.58 -26442279.35 -26442279.11 0.0299 0.0084  
 Moon -77109-12-26 06:56 J -26442279.45 -26442279.21 -26442278.98 0.0299 0.0068 \*  
 Earth -77107-01-10 09:35 J -26441899.25 -26441899.10 -26441898.94 0.0299 0.0228  
 Moon -77107-01-10 13:25 J -26441899.10 -26441898.94 -26441898.76 0.0299 0.0212 \*  
 Venus -77103-02-15 06:56 J -26440402.39 -26440402.21 -26440402.02 0.0291 0.0120  
 Mercury -77102-12-10 20:52 J -26439738.71 -26439738.63 -26439738.56 0.0283 0.0232  
 Mercury -77101-03-08 07:54 J -26439650.29 -26439650.17 -26439650.05 0.0282 0.0122  
 Mercury -77101-06-04 19:11 J -26439561.83 -26439561.70 -26439561.57 0.0281 0.0014  
 Mercury -77101-09-01 06:13 J -26439473.36 -26439473.24 -26439473.12 0.0280 0.0096  
 Mercury -77101-11-28 17:16 J -26439384.86 -26439384.78 -26439384.68 0.0280 0.0204  
 Earth -77097-05-19 00:56 J -26438117.59 -26438117.46 -26438117.31 0.0267 0.0219  
 Moon -77097-05-19 04:32 J -26438117.45 -26438117.31 -26438117.14 0.0267 0.0204 \*  
 Earth -77096-05-30 09:06 J -26437741.32 -26437741.12 -26437740.90 0.0265 0.0123  
 Moon -77096-05-30 09:49 J -26437741.31 -26437741.09 -26437740.86 0.0265 0.0113 \*  
 Moon -77095-06-10 11:30 J -26437365.26 -26437365.02 -26437364.78 0.0263 0.0031  
 Earth -77095-06-10 15:06 J -26437365.11 -26437364.87 -26437364.63 0.0263 0.0025 \*  
 Mars -77095-10-04 08:37 J -26437249.42 -26437249.14 -26437248.85 0.0263 0.0109  
 Earth -77094-06-21 20:08 J -26436988.90 -26436988.66 -26436988.43 0.0262 0.0073  
 Moon -77094-06-21 20:23 J -26436988.88 -26436988.65 -26436988.42 0.0262 0.0059 \*  
 Earth -77093-07-02 01:40 J -26436612.60 -26436612.43 -26436612.23 0.0262 0.0168  
 Moon -77093-07-02 05:44 J -26436612.45 -26436612.26 -26436612.06 0.0262 0.0158 \*  
 Earth -77092-07-13 10:18 J -26436236.10 -26436236.07 -26436236.02 0.0262 0.0258  
 Venus -77088-10-21 12:13 J -26434675.15 -26434674.99 -26434674.83 0.0270 0.0182  
 Venus -77087-06-07 23:30 J -26434445.64 -26434445.52 -26434445.38 0.0272 0.0218  
 Mercury -77085-03-18 11:16 J -26433796.19 -26433796.03 -26433795.87 0.0279 0.0144  
 Mercury -77085-06-15 10:47 J -26433707.24 -26433707.05 -26433706.86 0.0280 0.0012  
 Mercury -77085-09-12 10:04 J -26433618.22 -26433618.08 -26433617.92 0.0281 0.0169  
 Earth -77082-11-19 19:25 J -26432454.77 -26432454.69 -26432454.59 0.0293 0.0273

Moon -77082-11-19 20:52 J -26432454.68 -26432454.63 -26432454.55 0.0293 0.0282 \*  
 Mars -77081-11-28 21:35 J -26432079.78 -26432079.60 -26432079.40 0.0296 0.0219  
 Moon -77081-12-03 22:47 J -26432074.76 -26432074.55 -26432074.32 0.0296 0.0150  
 Earth -77081-12-04 00:42 J -26432074.69 -26432074.47 -26432074.25 0.0296 0.0137 \*  
 Moon -77080-12-19 05:16 J -26431694.53 -26431694.28 -26431694.03 0.0298 0.0008  
 Earth -77080-12-19 08:52 J -26431694.38 -26431694.13 -26431693.88 0.0298 0.0011 \*  
 Moon -77078-01-03 12:42 J -26431314.18 -26431313.97 -26431313.75 0.0299 0.0143  
 Earth -77078-01-03 16:04 J -26431314.03 -26431313.83 -26431313.62 0.0299 0.0160 \*  
 Moon -77077-01-18 17:44 J -26430933.83 -26430933.76 -26430933.67 0.0299 0.0280  
 Earth -77077-01-18 19:11 J -26430933.72 -26430933.70 -26430933.66 0.0299 0.0296 \*  
 Venus -77074-08-28 08:23 J -26429616.35 -26429616.15 -26429615.95 0.0291 0.0072  
 Mercury -77072-04-28 22:32 J -26429006.60 -26429006.56 -26429006.53 0.0284 0.0271  
 Mercury -77072-07-26 09:35 J -26428918.20 -26428918.10 -26428917.99 0.0283 0.0160  
 Mercury -77072-10-22 20:52 J -26428829.76 -26428829.63 -26428829.50 0.0282 0.0050  
 Mercury -77071-01-19 07:54 J -26428741.30 -26428741.17 -26428741.04 0.0281 0.0060  
 Mercury -77071-04-17 19:11 J -26428652.81 -26428652.70 -26428652.60 0.0280 0.0168  
 Mercury -77071-07-15 06:28 J -26428564.25 -26428564.23 -26428564.22 0.0280 0.0276  
 Moon -77068-05-14 03:49 J -26427530.42 -26427530.34 -26427530.23 0.0270 0.0246  
 Earth -77068-05-14 07:25 J -26427530.25 -26427530.19 -26427530.12 0.0270 0.0259 \*  
 Moon -77067-05-25 17:16 J -26427153.97 -26427153.78 -26427153.59 0.0267 0.0151  
 Earth -77067-05-25 17:44 J -26427153.94 -26427153.76 -26427153.56 0.0267 0.0164 \*  
 Mars -77067-11-20 21:35 J -26426974.76 -26426974.60 -26426974.43 0.0266 0.0222  
 Earth -77066-06-06 00:56 J -26426777.69 -26426777.46 -26426777.22 0.0265 0.0066  
 Moon -77066-06-06 04:32 J -26426777.54 -26426777.31 -26426777.08 0.0265 0.0064 \*  
 Earth -77065-06-16 06:42 J -26426401.45 -26426401.22 -26426400.97 0.0263 0.0033  
 Moon -77065-06-16 07:11 J -26426401.45 -26426401.20 -26426400.95 0.0263 0.0021 \*  
 Moon -77064-06-27 08:52 J -26426025.34 -26426025.13 -26426024.90 0.0262 0.0117  
 Earth -77064-06-27 12:42 J -26426025.18 -26426024.97 -26426024.75 0.0262 0.0129 \*  
 Moon -77063-07-08 19:54 J -26425648.79 -26425648.67 -26425648.54 0.0262 0.0222  
 Earth -77063-07-08 20:23 J -26425648.78 -26425648.65 -26425648.51 0.0262 0.0220 \*



Venus -77058-05-03 19:25 J -26423888.88 -26423888.69 -26423888.49 0.0270 0.0118  
 Mercury -77056-08-05 11:01 J -26423064.18 -26423064.04 -26423063.89 0.0278 0.0178  
 Mercury -77056-11-02 10:47 J -26422975.24 -26422975.05 -26422974.86 0.0279 0.0021  
 Mercury -77055-01-30 10:04 J -26422886.24 -26422886.08 -26422885.91 0.0280 0.0136  
 Earth -77052-11-27 19:40 J -26421488.86 -26421488.68 -26421488.49 0.0295 0.0194  
 Moon -77052-11-27 21:35 J -26421488.76 -26421488.60 -26421488.42 0.0295 0.0207 \*  
 Earth -77051-12-13 02:37 J -26421108.63 -26421108.39 -26421108.14 0.0297 0.0049  
 Moon -77051-12-13 06:13 J -26421108.48 -26421108.24 -26421107.99 0.0297 0.0064 \*  
 Mars -77050-01-18 20:08 J -26421071.94 -26421071.66 -26421071.39 0.0297 0.0004  
 Earth -77050-12-28 10:32 J -26420728.28 -26420728.06 -26420727.82 0.0299 0.0102  
 Moon -77050-12-28 13:25 J -26420728.18 -26420727.94 -26420727.69 0.0299 0.0086 \*  
 Moon -77048-01-11 16:32 J -26420347.97 -26420347.81 -26420347.64 0.0299 0.0227  
 Earth -77048-01-11 16:04 J -26420347.96 -26420347.83 -26420347.68 0.0299 0.0245 \*  
 Venus -77044-03-09 15:35 J -26418830.06 -26418829.85 -26418829.65 0.0290 0.0003  
 Mercury -77043-12-13 12:28 J -26418186.08 -26418185.98 -26418185.88 0.0283 0.0188  
 Mercury -77042-03-11 23:30 J -26418097.64 -26418097.52 -26418097.39 0.0282 0.0078  
 Mercury -77042-06-08 10:47 J -26418009.18 -26418009.05 -26418008.92 0.0281 0.0032  
 Mercury -77042-09-04 22:04 J -26417920.70 -26417920.58 -26417920.47 0.0280 0.0141  
 Mercury -77042-12-02 09:06 J -26417832.18 -26417832.12 -26417832.06 0.0279 0.0248  
 Earth -77038-05-21 04:04 J -26416566.48 -26416566.33 -26416566.18 0.0268 0.0206  
 Moon -77038-05-21 05:01 J -26416566.45 -26416566.29 -26416566.11 0.0268 0.0192 \*  
 Moon -77037-05-31 08:37 J -26416190.36 -26416190.14 -26416189.91 0.0265 0.0103  
 Earth -77037-05-31 12:13 J -26416190.20 -26416189.99 -26416189.77 0.0265 0.0109 \*  
 Mars -77036-01-08 22:32 J -26415967.87 -26415967.56 -26415967.26 0.0264 0.0047  
 Moon -77036-06-11 17:01 J -26415814.02 -26415813.79 -26415813.55 0.0263 0.0018  
 Earth -77036-06-11 18:13 J -26415813.98 -26415813.74 -26415813.49 0.0263 0.0012 \*  
 Earth -77035-06-22 23:30 J -26415437.74 -26415437.52 -26415437.28 0.0262 0.0087  
 Moon -77035-06-23 03:20 J -26415437.59 -26415437.36 -26415437.13 0.0262 0.0073 \*  
 Earth -77034-07-04 05:59 J -26415061.42 -26415061.25 -26415061.07 0.0262 0.0182  
 Moon -77034-07-04 06:42 J -26415061.39 -26415061.22 -26415061.02 0.0262 0.0176 \*

Venus -77029-11-12 23:16 J -26413102.74 -26413102.53 -26413102.32 0.0271 0.0069  
 Mercury -77027-12-23 08:37 J -26412332.24 -26412332.14 -26412332.03 0.0278 0.0228  
 Mercury -77026-03-22 08:08 J -26412243.34 -26412243.16 -26412242.97 0.0279 0.0073  
 Mercury -77026-06-19 07:40 J -26412154.36 -26412154.18 -26412154.00 0.0280 0.0084  
 Mercury -77026-09-16 06:56 J -26412065.30 -26412065.21 -26412065.11 0.0281 0.0240  
 Moon -77023-11-21 02:08 J -26410903.51 -26410903.41 -26410903.31 0.0293 0.0269  
 Earth -77023-11-21 05:16 J -26410903.40 -26410903.28 -26410903.16 0.0293 0.0256 \*  
 Moon -77022-12-06 06:13 J -26410523.45 -26410523.24 -26410523.01 0.0296 0.0134  
 Earth -77022-12-06 10:04 J -26410523.30 -26410523.08 -26410522.85 0.0296 0.0119 \*  
 Moon -77021-12-20 15:49 J -26410143.08 -26410142.84 -26410142.60 0.0298 0.0015  
 Earth -77021-12-20 17:44 J -26410143.01 -26410142.76 -26410142.51 0.0298 0.0030 \*  
 Mars -77020-03-08 16:32 J -26410064.98 -26410064.81 -26410064.62 0.0298 0.0219  
 Earth -77019-01-05 00:28 J -26409762.67 -26409762.48 -26409762.28 0.0299 0.0178  
 Moon -77019-01-05 01:25 J -26409762.64 -26409762.44 -26409762.24 0.0299 0.0162 \*  
 Moon -77018-01-20 06:28 J -26409382.27 -26409382.23 -26409382.20 0.0298 0.0295  
 Venus -77015-09-19 17:16 J -26408043.99 -26408043.78 -26408043.58 0.0290 0.0047  
 Mercury -77013-05-01 14:08 J -26407453.99 -26407453.91 -26407453.83 0.0284 0.0226  
 Mercury -77013-07-29 01:25 J -26407365.56 -26407365.44 -26407365.32 0.0283 0.0115  
 Mercury -77013-10-25 12:28 J -26407277.11 -26407276.98 -26407276.85 0.0282 0.0009  
 Mercury -77012-01-21 23:44 J -26407188.63 -26407188.51 -26407188.39 0.0281 0.0105  
 Mercury -77012-04-20 10:47 J -26407100.13 -26407100.05 -26407099.96 0.0280 0.0214  
 Moon -77009-05-15 08:23 J -26405979.25 -26405979.15 -26405979.02 0.0270 0.0235  
 Earth -77009-05-15 10:18 J -26405979.15 -26405979.07 -26405978.96 0.0270 0.0247 \*  
 Earth -77008-05-26 21:06 J -26405602.81 -26405602.62 -26405602.42 0.0267 0.0150  
 Moon -77008-05-27 00:13 J -26405602.68 -26405602.49 -26405602.28 0.0267 0.0140 \*  
 Earth -77007-06-07 04:32 J -26405226.54 -26405226.31 -26405226.07 0.0265 0.0051  
 Moon -77007-06-07 06:28 J -26405226.47 -26405226.23 -26405225.98 0.0265 0.0052 \*  
 Mars -77006-02-28 05:30 J -26404960.55 -26404960.27 -26404959.99 0.0264 0.0124  
 Moon -77006-06-18 07:25 J -26404850.43 -26404850.19 -26404849.94 0.0263 0.0034  
 Earth -77006-06-18 10:47 J -26404850.29 -26404850.05 -26404849.81 0.0263 0.0048 \*

Moon	-77005-06-28 16:18 J	-26404474.02	-26404473.82	-26404473.62	0.0263	0.0135
Earth	-77005-06-28 17:01 J	-26404473.98	-26404473.79	-26404473.58	0.0263	0.0144 *
Earth	-77004-07-10 01:25 J	-26404097.54	-26404097.44	-26404097.33	0.0262	0.0235
Moon	-77004-07-10 04:32 J	-26404097.39	-26404097.31	-26404097.19	0.0262	0.0239 *

# 77TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 77th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-76999-05-26 07:11 J	-26402316.42	-26402316.20	-26402315.98	0.0271	0.0003		
Mercury	-76997-05-11 08:52 J	-26401600.19	-26401600.13	-26401600.06	0.0277	0.0259		
Mercury	-76997-08-08 08:23 J	-26401511.32	-26401511.15	-26401510.97	0.0278	0.0105		
Mercury	-76997-11-05 08:08 J	-26401422.35	-26401422.16	-26401421.98	0.0279	0.0052		
Mercury	-76996-02-02 07:25 J	-26401333.31	-26401333.19	-26401333.06	0.0280	0.0208		
Earth	-76993-11-29 06:56 J	-26399937.41	-26399937.21	-26399937.01	0.0295	0.0176		
Moon	-76993-11-29 10:47 J	-26399937.24	-26399937.05	-26399936.86	0.0295	0.0189 *		
Mars	-76992-04-25 04:32 J	-26399790.51	-26399790.31	-26399790.10	0.0296	0.0200		
Earth	-76992-12-14 13:54 J	-26399557.17	-26399556.92	-26399556.67	0.0297	0.0030		
Moon	-76992-12-14 15:49 J	-26399557.10	-26399556.84	-26399556.59	0.0297	0.0043 *		
Moon	-76991-12-29 20:08 J	-26399176.90	-26399176.66	-26399176.42	0.0299	0.0106		
Earth	-76991-12-29 21:35 J	-26399176.83	-26399176.60	-26399176.38	0.0299	0.0121 *		
Moon	-76989-01-13 22:32 J	-26398796.69	-26398796.56	-26398796.41	0.0299	0.0246		
Earth	-76989-01-14 02:08 J	-26398796.52	-26398796.41	-26398796.29	0.0299	0.0263 *		
Venus	-76985-04-01 01:25 J	-26397257.62	-26397257.44	-26397257.25	0.0290	0.0121		

Mercury -76984-09-18 17:16 J -26396721.83 -26396721.78 -26396721.72 0.0284 0.0250

Mercury -76984-12-16 04:32 J -26396633.42 -26396633.31 -26396633.20 0.0283 0.0139

Mercury -76983-03-14 15:49 J -26396544.97 -26396544.84 -26396544.71 0.0282 0.0030

Mercury -76983-06-11 02:52 J -26396456.50 -26396456.38 -26396456.25 0.0281 0.0080

Mercury -76983-09-07 13:54 J -26396368.01 -26396367.92 -26396367.82 0.0280 0.0189

Moon -76979-05-22 06:13 J -26395015.42 -26395015.24 -26395015.06 0.0268 0.0179

Earth -76979-05-22 08:52 J -26395015.28 -26395015.13 -26395014.95 0.0268 0.0193 \*

Mars -76978-04-16 22:18 J -26394685.75 -26394685.57 -26394685.35 0.0265 0.0201

Moon -76978-06-02 15:35 J -26394639.07 -26394638.85 -26394638.63 0.0265 0.0091

Earth -76978-06-02 17:30 J -26394639.00 -26394638.77 -26394638.54 0.0265 0.0094 \*

Earth -76977-06-12 23:44 J -26394262.75 -26394262.51 -26394262.27 0.0263 0.0005

Moon -76977-06-13 02:37 J -26394262.63 -26394262.39 -26394262.15 0.0263 0.0005 \*

Earth -76976-06-24 05:44 J -26393886.48 -26393886.26 -26393886.04 0.0262 0.0103

Moon -76976-06-24 07:11 J -26393886.43 -26393886.20 -26393885.96 0.0262 0.0090 \*

Moon -76975-07-05 08:52 J -26393510.28 -26393510.13 -26393509.95 0.0262 0.0196

Earth -76975-07-05 12:28 J -26393510.13 -26393509.98 -26393509.81 0.0262 0.0197 \*

Venus -76970-12-06 12:13 J -26391530.20 -26391529.99 -26391529.77 0.0271 0.0052

Mercury -76968-12-26 06:56 J -26390779.37 -26390779.21 -26390779.05 0.0278 0.0149

Mercury -76967-03-25 06:28 J -26390690.42 -26390690.23 -26390690.04 0.0279 0.0007

Mercury -76967-06-22 05:44 J -26390601.41 -26390601.26 -26390601.10 0.0280 0.0163

Moon -76964-11-22 16:32 J -26389351.92 -26389351.81 -26389351.68 0.0293 0.0253

Earth -76964-11-22 19:54 J -26389351.81 -26389351.67 -26389351.52 0.0293 0.0237 \*

Moon -76963-12-07 23:59 J -26388971.72 -26388971.50 -26388971.28 0.0296 0.0113

Earth -76963-12-08 00:56 J -26388971.69 -26388971.46 -26388971.22 0.0296 0.0098 \*

Mars -76962-06-14 15:20 J -26388783.14 -26388782.86 -26388782.58 0.0297 0.0023

Earth -76962-12-23 08:23 J -26388591.40 -26388591.15 -26388590.91 0.0298 0.0052

Moon -76962-12-23 10:04 J -26388591.31 -26388591.08 -26388590.84 0.0298 0.0037 \*

Earth -76960-01-06 14:23 J -26388211.07 -26388210.90 -26388210.71 0.0299 0.0199

Moon -76960-01-06 18:13 J -26388210.94 -26388210.74 -26388210.55 0.0299 0.0182 \*

Venus -76956-02-24 15:06 J -26386700.89 -26386700.87 -26386700.85 0.0292 0.0290

Venus -76956-10-12 04:32 J -26386471.47 -26386471.31 -26386471.14 0.0289 0.0175  
 Mercury -76954-05-05 06:28 J -26385901.33 -26385901.23 -26385901.12 0.0284 0.0175  
 Mercury -76954-08-01 17:44 J -26385812.89 -26385812.76 -26385812.63 0.0283 0.0064  
 Mercury -76954-10-29 05:01 J -26385724.42 -26385724.29 -26385724.16 0.0282 0.0046  
 Mercury -76953-01-25 16:04 J -26385635.94 -26385635.83 -26385635.72 0.0281 0.0155  
 Mercury -76953-04-23 03:20 J -26385547.40 -26385547.36 -26385547.32 0.0280 0.0263  
 Earth -76950-05-17 16:04 J -26384427.95 -26384427.83 -26384427.71 0.0270 0.0233  
 Moon -76950-05-17 17:59 J -26384427.87 -26384427.75 -26384427.60 0.0269 0.0220 \*  
 Earth -76949-05-28 02:23 J -26384051.59 -26384051.40 -26384051.18 0.0267 0.0136  
 Moon -76949-05-28 05:01 J -26384051.50 -26384051.29 -26384051.07 0.0267 0.0126 \*  
 Mars -76948-06-04 23:01 J -26383678.85 -26383678.54 -26383678.23 0.0265 0.0032  
 Moon -76948-06-08 07:25 J -26383675.43 -26383675.19 -26383674.94 0.0265 0.0042  
 Earth -76948-06-08 10:18 J -26383675.31 -26383675.07 -26383674.83 0.0265 0.0036 \*  
 Moon -76947-06-19 14:23 J -26383299.13 -26383298.90 -26383298.67 0.0263 0.0050  
 Earth -76947-06-19 16:47 J -26383299.03 -26383298.80 -26383298.56 0.0263 0.0064 \*  
 Earth -76946-06-30 23:30 J -26382922.71 -26382922.52 -26382922.32 0.0263 0.0160  
 Moon -76946-07-01 02:23 J -26382922.58 -26382922.40 -26382922.19 0.0263 0.0154 \*  
 Earth -76945-07-11 08:23 J -26382546.21 -26382546.15 -26382546.07 0.0263 0.0251  
 Moon -76945-07-11 10:47 J -26382546.10 -26382546.05 -26382546.00 0.0263 0.0256 \*  
 Venus -76940-06-17 20:37 J -26380743.83 -26380743.64 -26380743.44 0.0271 0.0120  
 Mercury -76938-05-15 07:25 J -26380047.33 -26380047.19 -26380047.04 0.0278 0.0179  
 Mercury -76938-08-12 07:11 J -26379958.39 -26379958.20 -26379958.02 0.0279 0.0024  
 Mercury -76938-11-09 06:28 J -26379869.39 -26379869.23 -26379869.06 0.0280 0.0133  
 Earth -76935-11-16 20:23 J -26378765.68 -26378765.65 -26378765.61 0.0291 0.0289  
 Earth -76934-12-01 23:16 J -26378385.74 -26378385.53 -26378385.32 0.0295 0.0156  
 Moon -76934-12-01 23:30 J -26378385.73 -26378385.52 -26378385.31 0.0295 0.0170 \*  
 Moon -76933-12-16 03:35 J -26378005.60 -26378005.35 -26378005.09 0.0297 0.0024  
 Earth -76933-12-16 05:59 J -26378005.50 -26378005.25 -26378005.00 0.0297 0.0009 \*  
 Mars -76932-08-03 09:35 J -26377775.25 -26377775.10 -26377774.94 0.0298 0.0243  
 Moon -76932-12-31 09:35 J -26377625.32 -26377625.10 -26377624.87 0.0299 0.0126

Earth -76932-12-31 13:11 J -26377625.16 -26377624.95 -26377624.73 0.0299 0.0143 \*  
 Moon -76930-01-15 14:52 J -26377244.98 -26377244.88 -26377244.77 0.0299 0.0267  
 Earth -76930-01-15 17:16 J -26377244.85 -26377244.78 -26377244.70 0.0299 0.0283 \*  
 Venus -76927-09-07 00:28 J -26375914.61 -26375914.48 -26375914.33 0.0292 0.0212  
 Venus -76926-04-24 13:25 J -26375685.03 -26375684.94 -26375684.83 0.0289 0.0252  
 Mercury -76925-09-21 10:04 J -26375169.18 -26375169.08 -26375168.99 0.0284 0.0197  
 Mercury -76925-12-18 21:06 J -26375080.74 -26375080.62 -26375080.49 0.0283 0.0087  
 Mercury -76924-03-17 08:23 J -26374992.28 -26374992.15 -26374992.02 0.0282 0.0024  
 Mercury -76924-06-13 19:25 J -26374903.80 -26374903.69 -26374903.57 0.0281 0.0133  
 Mercury -76924-09-10 06:42 J -26374815.28 -26374815.22 -26374815.15 0.0280 0.0241  
 Moon -76921-05-12 01:25 J -26373840.49 -26373840.44 -26373840.36 0.0270 0.0261  
 Moon -76920-05-23 12:56 J -26373464.14 -26373463.96 -26373463.77 0.0267 0.0165  
 Earth -76920-05-23 16:04 J -26373464.01 -26373463.83 -26373463.65 0.0267 0.0178 \*  
 Earth -76919-06-04 00:28 J -26373087.71 -26373087.48 -26373087.25 0.0265 0.0079  
 Moon -76919-06-04 02:52 J -26373087.60 -26373087.38 -26373087.15 0.0265 0.0079 \*  
 Earth -76918-06-15 06:56 J -26372711.45 -26372711.21 -26372710.96 0.0263 0.0022  
 Moon -76918-06-15 10:04 J -26372711.32 -26372711.08 -26372710.83 0.0263 0.0010 \*  
 Mars -76918-07-25 15:35 J -26372671.11 -26372670.85 -26372670.60 0.0263 0.0151  
 Moon -76917-06-25 11:01 J -26372335.27 -26372335.04 -26372334.81 0.0263 0.0107  
 Earth -76917-06-25 13:25 J -26372335.15 -26372334.94 -26372334.72 0.0263 0.0119 \*  
 Moon -76916-07-06 18:42 J -26371958.85 -26371958.72 -26371958.58 0.0262 0.0214  
 Earth -76916-07-06 21:06 J -26371958.76 -26371958.62 -26371958.48 0.0262 0.0213 \*  
 Venus -76911-05-13 16:18 J -26370186.95 -26370186.82 -26370186.69 0.0270 0.0218  
 Venus -76911-12-29 02:52 J -26369957.53 -26369957.38 -26369957.21 0.0272 0.0180  
 Mercury -76909-10-01 06:42 J -26369315.33 -26369315.22 -26369315.10 0.0278 0.0219  
 Mercury -76909-12-29 06:13 J -26369226.42 -26369226.24 -26369226.06 0.0279 0.0064  
 Mercury -76908-03-28 05:30 J -26369137.44 -26369137.27 -26369137.09 0.0280 0.0092  
 Mercury -76908-06-25 04:47 J -26369048.38 -26369048.30 -26369048.21 0.0281 0.0248  
 Earth -76905-11-24 14:08 J -26367800.07 -26367799.91 -26367799.73 0.0293 0.0217  
 Moon -76905-11-24 15:06 J -26367800.00 -26367799.87 -26367799.71 0.0293 0.0233 \*

Mars -76904-09-19 12:42 J -26367501.19 -26367500.97 -26367500.73 0.0295 0.0174  
 Earth -76904-12-09 19:25 J -26367419.93 -26367419.69 -26367419.45 0.0296 0.0075  
 Moon -76904-12-09 22:18 J -26367419.79 -26367419.57 -26367419.33 0.0296 0.0092 \*  
 Earth -76903-12-25 02:23 J -26367039.64 -26367039.40 -26367039.16 0.0298 0.0075  
 Moon -76903-12-25 06:13 J -26367039.48 -26367039.24 -26367038.99 0.0298 0.0059 \*  
 Earth -76901-01-09 07:54 J -26366659.33 -26366659.17 -26366659.00 0.0298 0.0221  
 Moon -76901-01-09 10:04 J -26366659.25 -26366659.08 -26366658.89 0.0298 0.0205 \*  
 Venus -76897-03-19 04:47 J -26365128.47 -26365128.30 -26365128.12 0.0291 0.0152  
 Mercury -76895-02-08 11:59 J -26364437.07 -26364437.00 -26364436.92 0.0284 0.0231  
 Mercury -76895-05-07 23:16 J -26364348.64 -26364348.53 -26364348.41 0.0283 0.0120  
 Mercury -76895-08-04 10:32 J -26364260.19 -26364260.06 -26364259.93 0.0282 0.0010  
 Mercury -76895-10-31 21:49 J -26364171.72 -26364171.59 -26364171.47 0.0281 0.0100  
 Mercury -76894-01-28 08:52 J -26364083.21 -26364083.13 -26364083.04 0.0280 0.0209  
 Earth -76891-05-18 23:16 J -26362876.65 -26362876.53 -26362876.38 0.0269 0.0220  
 Moon -76891-05-19 02:37 J -26362876.53 -26362876.39 -26362876.22 0.0269 0.0205 \*  
 Moon -76890-05-30 07:54 J -26362500.38 -26362500.17 -26362499.93 0.0267 0.0115  
 Earth -76890-05-30 10:04 J -26362500.30 -26362500.08 -26362499.87 0.0267 0.0120 \*  
 Mars -76890-09-11 01:40 J -26362396.65 -26362396.43 -26362396.21 0.0266 0.0184  
 Moon -76889-06-09 14:37 J -26362124.12 -26362123.89 -26362123.65 0.0265 0.0028  
 Earth -76889-06-09 17:44 J -26362124.00 -26362123.76 -26362123.52 0.0265 0.0019 \*  
 Earth -76888-06-21 00:13 J -26361747.72 -26361747.49 -26361747.25 0.0263 0.0080  
 Moon -76888-06-21 02:08 J -26361747.64 -26361747.41 -26361747.19 0.0263 0.0066 \*  
 Earth -76887-07-02 07:25 J -26361371.37 -26361371.19 -26361371.01 0.0263 0.0176  
 Moon -76887-07-02 10:04 J -26361371.26 -26361371.08 -26361370.88 0.0263 0.0170 \*  
 Venus -76882-11-23 23:44 J -26359400.69 -26359400.51 -26359400.33 0.0270 0.0154  
 Venus -76881-07-10 11:01 J -26359171.12 -26359171.04 -26359170.94 0.0272 0.0246  
 Mercury -76879-02-18 06:56 J -26358583.28 -26358583.21 -26358583.12 0.0277 0.0250  
 Mercury -76879-05-18 06:42 J -26358494.40 -26358494.22 -26358494.04 0.0278 0.0095  
 Mercury -76879-08-15 06:13 J -26358405.43 -26358405.24 -26358405.06 0.0279 0.0061  
 Mercury -76879-11-12 05:16 J -26358316.38 -26358316.28 -26358316.15 0.0280 0.0217

Moon	-76876-11-18 13:25 J	-26357213.99	-26357213.94	-26357213.88	0.0292	0.0284
Earth	-76876-11-18 15:06 J	-26357213.95	-26357213.87	-26357213.77	0.0292	0.0271 *
Moon	-76875-12-03 14:52 J	-26356834.09	-26356833.88	-26356833.66	0.0295	0.0151
Earth	-76875-12-03 18:42 J	-26356833.94	-26356833.72	-26356833.50	0.0295	0.0134 *
Mars	-76874-11-09 17:16 J	-26356493.05	-26356492.78	-26356492.51	0.0297	0.0054
Moon	-76874-12-18 21:49 J	-26356453.83	-26356453.59	-26356453.34	0.0297	0.0002
Earth	-76874-12-19 01:25 J	-26356453.68	-26356453.44	-26356453.19	0.0297	0.0017 *
Moon	-76872-01-02 06:28 J	-26356073.43	-26356073.23	-26356073.02	0.0299	0.0150
Earth	-76872-01-02 08:23 J	-26356073.35	-26356073.15	-26356072.94	0.0299	0.0166 *
Moon	-76871-01-17 12:56 J	-26355693.00	-26355692.96	-26355692.89	0.0299	0.0290
Venus	-76868-09-29 15:20 J	-26354342.06	-26354341.86	-26354341.66	0.0291	0.0070
Mercury	-76866-06-28 15:49 J	-26353704.89	-26353704.84	-26353704.78	0.0284	0.0251
Mercury	-76866-09-25 03:06 J	-26353616.48	-26353616.37	-26353616.26	0.0283	0.0140
Mercury	-76866-12-22 14:23 J	-26353528.03	-26353527.90	-26353527.77	0.0282	0.0030
Mercury	-76865-03-20 01:25 J	-26353439.56	-26353439.44	-26353439.31	0.0281	0.0081
Mercury	-76865-06-16 12:28 J	-26353351.07	-26353350.98	-26353350.88	0.0281	0.0190
Moon	-76862-05-14 09:06 J	-26352289.21	-26352289.12	-26352289.02	0.0270	0.0246
Earth	-76862-05-14 12:28 J	-26352289.03	-26352288.98	-26352288.91	0.0270	0.0260 *
Earth	-76861-05-25 00:42 J	-26351912.66	-26351912.47	-26351912.28	0.0267	0.0163
Moon	-76861-05-25 01:11 J	-26351912.63	-26351912.45	-26351912.25	0.0267	0.0151 *
Earth	-76860-06-05 08:52 J	-26351536.36	-26351536.13	-26351535.89	0.0265	0.0063
Moon	-76860-06-05 12:13 J	-26351536.22	-26351535.99	-26351535.75	0.0265	0.0064 *
Mars	-76860-10-30 14:37 J	-26351389.20	-26351388.89	-26351388.58	0.0264	0.0004
Moon	-76859-06-16 14:08 J	-26351160.15	-26351159.91	-26351159.66	0.0263	0.0024
Earth	-76859-06-16 15:49 J	-26351160.08	-26351159.84	-26351159.60	0.0263	0.0038 *
Moon	-76858-06-27 18:56 J	-26350783.91	-26350783.71	-26350783.49	0.0263	0.0123
Earth	-76858-06-27 22:18 J	-26350783.77	-26350783.57	-26350783.36	0.0263	0.0135 *
Earth	-76857-07-08 06:28 J	-26350407.35	-26350407.23	-26350407.11	0.0262	0.0229
Moon	-76857-07-08 08:08 J	-26350407.26	-26350407.16	-26350407.04	0.0262	0.0233 *
Venus	-76852-06-05 07:25 J	-26348614.40	-26348614.19	-26348613.99	0.0270	0.0092



Mercury -76850-10-05 06:28 J -26347762.40 -26347762.23 -26347762.07 0.0278 0.0132

Mercury -76849-01-02 05:59 J -26347673.44 -26347673.25 -26347673.07 0.0279 0.0025

Mercury -76849-03-31 05:16 J -26347584.42 -26347584.28 -26347584.14 0.0280 0.0180

Earth -76846-11-27 11:30 J -26346248.19 -26346248.02 -26346247.82 0.0294 0.0196

Moon -76846-11-27 15:20 J -26346248.02 -26346247.86 -26346247.68 0.0294 0.0212 \*

Earth -76845-12-11 17:01 J -26345868.04 -26345867.79 -26345867.54 0.0296 0.0051

Moon -76845-12-11 20:08 J -26345867.90 -26345867.66 -26345867.41 0.0296 0.0068 \*

Earth -76844-12-26 23:44 J -26345487.73 -26345487.51 -26345487.27 0.0298 0.0100

Moon -76844-12-27 01:11 J -26345487.70 -26345487.45 -26345487.20 0.0298 0.0083 \*

Mars -76844-12-29 00:13 J -26345485.58 -26345485.49 -26345485.37 0.0298 0.0274

Moon -76842-01-11 03:06 J -26345107.52 -26345107.37 -26345107.20 0.0298 0.0227

Earth -76842-01-11 05:01 J -26345107.43 -26345107.29 -26345107.15 0.0298 0.0244 \*

Venus -76838-04-11 20:08 J -26343555.87 -26343555.66 -26343555.46 0.0290 0.0009

Mercury -76837-11-14 17:59 J -26342972.75 -26342972.75 -26342972.73 0.0284 0.0284

Mercury -76836-02-11 05:16 J -26342884.38 -26342884.28 -26342884.17 0.0283 0.0172

Mercury -76836-05-10 16:32 J -26342795.94 -26342795.81 -26342795.68 0.0282 0.0062

Mercury -76836-08-07 03:49 J -26342707.47 -26342707.34 -26342707.21 0.0282 0.0049

Mercury -76836-11-03 14:52 J -26342618.99 -26342618.88 -26342618.77 0.0281 0.0157

Mercury -76835-01-31 01:54 J -26342530.45 -26342530.42 -26342530.37 0.0280 0.0266

Moon -76832-05-20 07:54 J -26341325.34 -26341325.17 -26341324.99 0.0269 0.0189

Earth -76832-05-20 08:08 J -26341325.30 -26341325.16 -26341325.00 0.0269 0.0205 \*

Moon -76831-05-31 14:52 J -26340949.10 -26340948.88 -26340948.65 0.0267 0.0099

Earth -76831-05-31 18:13 J -26340948.95 -26340948.74 -26340948.51 0.0267 0.0105 \*

Earth -76830-06-12 01:54 J -26340572.66 -26340572.42 -26340572.18 0.0265 0.0003

Moon -76830-06-12 03:06 J -26340572.60 -26340572.37 -26340572.14 0.0265 0.0013 \*

Mars -76830-12-19 23:01 J -26340381.77 -26340381.54 -26340381.29 0.0264 0.0171

Earth -76829-06-22 08:37 J -26340196.36 -26340196.14 -26340195.91 0.0263 0.0097

Moon -76829-06-22 12:13 J -26340196.22 -26340195.99 -26340195.75 0.0263 0.0082 \*

Moon -76828-07-03 14:37 J -26339820.05 -26339819.89 -26339819.70 0.0263 0.0189

Earth -76828-07-03 15:49 J -26339819.99 -26339819.84 -26339819.66 0.0263 0.0193 \*

Venus -76823-12-16 14:23 J -26337828.12 -26337827.90 -26337827.68 0.0271 0.0030

Mercury -76820-02-21 06:28 J -26337030.38 -26337030.23 -26337030.07 0.0278 0.0165

Mercury -76820-05-21 06:13 J -26336941.43 -26336941.24 -26336941.05 0.0279 0.0011

Mercury -76820-08-18 05:30 J -26336852.43 -26336852.27 -26336852.11 0.0280 0.0147

Moon -76817-11-20 07:54 J -26335662.27 -26335662.17 -26335662.07 0.0292 0.0266

Earth -76817-11-20 11:16 J -26335662.14 -26335662.03 -26335661.89 0.0292 0.0252 \*

Moon -76816-12-05 13:11 J -26335282.17 -26335281.95 -26335281.73 0.0295 0.0129

Earth -76816-12-05 15:35 J -26335282.08 -26335281.85 -26335281.62 0.0295 0.0112 \*

Mars -76815-02-14 17:59 J -26335210.99 -26335210.75 -26335210.49 0.0296 0.0138

Earth -76815-12-20 22:32 J -26334901.80 -26334901.56 -26334901.31 0.0297 0.0039

Moon -76815-12-20 22:32 J -26334901.80 -26334901.56 -26334901.32 0.0297 0.0023 \*

Earth -76813-01-05 05:01 J -26334521.48 -26334521.29 -26334521.10 0.0299 0.0189

Moon -76813-01-05 07:11 J -26334521.39 -26334521.20 -26334521.00 0.0299 0.0173 \*

Venus -76809-10-22 06:28 J -26332769.42 -26332769.23 -26332769.02 0.0290 0.0075

Mercury -76807-07-01 09:20 J -26332152.21 -26332152.11 -26332152.02 0.0284 0.0191

Mercury -76807-09-27 20:23 J -26332063.77 -26332063.65 -26332063.52 0.0283 0.0080

Mercury -76807-12-25 07:40 J -26331975.31 -26331975.18 -26331975.05 0.0282 0.0031

Mercury -76806-03-23 18:42 J -26331886.83 -26331886.72 -26331886.61 0.0281 0.0139

Mercury -76806-06-20 05:59 J -26331798.31 -26331798.25 -26331798.19 0.0280 0.0247

Moon -76803-05-15 22:04 J -26330737.68 -26330737.58 -26330737.45 0.0270 0.0233

Earth -76803-05-15 22:18 J -26330737.67 -26330737.57 -26330737.48 0.0270 0.0246 \*

Earth -76802-05-27 09:35 J -26330361.30 -26330361.10 -26330360.90 0.0267 0.0148

Moon -76802-05-27 13:11 J -26330361.15 -26330360.95 -26330360.74 0.0267 0.0135 \*

Mars -76801-02-05 20:52 J -26330106.86 -26330106.63 -26330106.36 0.0265 0.0152

Moon -76801-06-06 17:44 J -26329985.01 -26329984.76 -26329984.51 0.0265 0.0050

Earth -76801-06-06 17:59 J -26329984.99 -26329984.75 -26329984.51 0.0265 0.0047 \*

Moon -76800-06-17 20:52 J -26329608.86 -26329608.63 -26329608.39 0.0263 0.0039

Earth -76800-06-18 00:28 J -26329608.71 -26329608.48 -26329608.23 0.0263 0.0055 \*

Earth -76799-06-29 07:11 J -26329232.39 -26329232.20 -26329232.00 0.0263 0.0152

Moon -76799-06-29 07:25 J -26329232.38 -26329232.19 -26329231.99 0.0263 0.0142 \*

Earth -76798-07-10 15:35 J -26328855.93 -26328855.85 -26328855.76 0.0262 0.0245  
 Moon -76798-07-10 19:11 J -26328855.77 -26328855.70 -26328855.62 0.0262 0.0249 \*  
 Venus -76793-06-27 22:18 J -26327041.79 -26327041.57 -26327041.36 0.0271 0.0035  
 Mercury -76791-07-11 06:28 J -26326298.36 -26326298.23 -26326298.10 0.0278 0.0200  
 Mercury -76791-10-08 05:59 J -26326209.44 -26326209.25 -26326209.06 0.0279 0.0045  
 Mercury -76790-01-05 05:16 J -26326120.44 -26326120.28 -26326120.10 0.0280 0.0112  
 Mercury -76790-04-04 04:47 J -26326031.35 -26326031.30 -26326031.25 0.0281 0.0268  
 Earth -76787-11-29 09:20 J -26324696.31 -26324696.11 -26324695.90 0.0294 0.0174  
 Moon -76787-11-29 11:16 J -26324696.22 -26324696.03 -26324695.82 0.0294 0.0188 \*  
 Moon -76786-12-14 14:08 J -26324316.17 -26324315.91 -26324315.65 0.0296 0.0043  
 Earth -76786-12-14 15:06 J -26324316.12 -26324315.87 -26324315.62 0.0296 0.0027 \*  
 Mars -76785-04-05 12:42 J -26324203.23 -26324202.97 -26324202.70 0.0297 0.0088  
 Moon -76785-12-28 18:42 J -26323935.95 -26323935.72 -26323935.48 0.0298 0.0106  
 Earth -76785-12-28 21:49 J -26323935.81 -26323935.59 -26323935.36 0.0298 0.0124 \*  
 Moon -76783-01-12 22:47 J -26323555.67 -26323555.55 -26323555.41 0.0298 0.0250  
 Earth -76783-01-13 02:23 J -26323555.49 -26323555.40 -26323555.28 0.0298 0.0268 \*  
 Venus -76779-05-04 11:59 J -26321983.18 -26321983.00 -26321982.81 0.0289 0.0138  
 Mercury -76778-11-18 11:44 J -26321420.09 -26321420.01 -26321419.93 0.0284 0.0222  
 Mercury -76777-02-14 22:47 J -26321331.67 -26321331.55 -26321331.43 0.0283 0.0112  
 Mercury -76777-05-13 10:04 J -26321243.21 -26321243.08 -26321242.95 0.0282 0.0002  
 Mercury -76777-08-09 21:06 J -26321154.74 -26321154.62 -26321154.49 0.0281 0.0108  
 Mercury -76777-11-06 08:08 J -26321066.23 -26321066.16 -26321066.07 0.0280 0.0217  
 Moon -76773-05-21 13:54 J -26319774.09 -26319773.92 -26319773.73 0.0268 0.0176  
 Earth -76773-05-21 17:44 J -26319773.92 -26319773.76 -26319773.58 0.0268 0.0191 \*  
 Moon -76772-06-02 02:37 J -26319397.61 -26319397.39 -26319397.17 0.0266 0.0085  
 Earth -76772-06-02 03:20 J -26319397.59 -26319397.36 -26319397.14 0.0266 0.0089 \*  
 Mars -76771-03-26 21:35 J -26319099.91 -26319099.60 -26319099.29 0.0265 0.0019  
 Earth -76771-06-13 10:32 J -26319021.31 -26319021.06 -26319020.82 0.0264 0.0013  
 Moon -76771-06-13 13:54 J -26319021.16 -26319020.92 -26319020.67 0.0264 0.0004 \*  
 Moon -76770-06-24 17:01 J -26318645.02 -26318644.79 -26318644.55 0.0263 0.0099

Earth -76770-06-24 16:47 J -26318645.01 -26318644.80 -26318644.57 0.0263 0.0114 \*  
 Moon -76769-07-04 21:06 J -26318268.77 -26318268.62 -26318268.47 0.0263 0.0205  
 Earth -76769-07-05 00:28 J -26318268.62 -26318268.48 -26318268.32 0.0263 0.0209 \*  
 Venus -76763-01-08 04:18 J -26316255.52 -26316255.32 -26316255.11 0.0271 0.0094  
 Mercury -76762-11-28 05:59 J -26315566.34 -26315566.25 -26315566.15 0.0278 0.0237  
 Mercury -76761-02-25 05:44 J -26315477.44 -26315477.26 -26315477.08 0.0278 0.0082  
 Mercury -76761-05-24 05:16 J -26315388.46 -26315388.28 -26315388.10 0.0279 0.0075  
 Mercury -76761-08-21 04:32 J -26315299.41 -26315299.31 -26315299.20 0.0280 0.0231  
 Moon -76758-11-23 05:30 J -26314110.39 -26314110.27 -26314110.14 0.0293 0.0247  
 Earth -76758-11-23 07:11 J -26314110.34 -26314110.20 -26314110.04 0.0293 0.0233 \*  
 Earth -76757-12-07 11:59 J -26313730.23 -26313730.00 -26313729.76 0.0296 0.0091  
 Moon -76757-12-07 13:25 J -26313730.16 -26313729.94 -26313729.71 0.0296 0.0106 \*  
 Earth -76756-12-22 19:25 J -26313349.93 -26313349.69 -26313349.44 0.0298 0.0062  
 Moon -76756-12-22 23:01 J -26313349.78 -26313349.54 -26313349.30 0.0298 0.0045 \*  
 Earth -76754-01-07 01:40 J -26312969.59 -26312969.43 -26312969.24 0.0299 0.0212  
 Moon -76754-01-07 05:30 J -26312969.45 -26312969.27 -26312969.07 0.0299 0.0194 \*  
 Venus -76750-03-30 09:06 J -26311426.23 -26311426.12 -26311426.01 0.0292 0.0247  
 Venus -76750-11-14 22:18 J -26311196.70 -26311196.57 -26311196.43 0.0290 0.0218  
 Mercury -76748-04-06 15:35 J -26310687.92 -26310687.85 -26310687.79 0.0284 0.0241  
 Mercury -76748-07-04 02:37 J -26310599.50 -26310599.39 -26310599.27 0.0283 0.0131  
 Mercury -76748-09-30 13:54 J -26310511.05 -26310510.92 -26310510.79 0.0282 0.0021  
 Mercury -76748-12-28 00:56 J -26310422.58 -26310422.46 -26310422.33 0.0281 0.0089  
 Mercury -76747-03-26 11:59 J -26310334.09 -26310334.00 -26310333.90 0.0280 0.0198  
 Earth -76744-05-17 07:40 J -26309186.29 -26309186.18 -26309186.05 0.0269 0.0233  
 Moon -76744-05-17 11:16 J -26309186.16 -26309186.03 -26309185.89 0.0269 0.0218 \*  
 Earth -76743-05-28 18:28 J -26308809.93 -26308809.73 -26308809.51 0.0267 0.0133  
 Moon -76743-05-28 19:54 J -26308809.89 -26308809.67 -26308809.45 0.0267 0.0122 \*  
 Moon -76742-06-08 23:16 J -26308433.77 -26308433.53 -26308433.29 0.0265 0.0036  
 Earth -76742-06-09 02:37 J -26308433.63 -26308433.39 -26308433.15 0.0265 0.0031 \*  
 Mars -76741-05-15 18:56 J -26308091.89 -26308091.71 -26308091.50 0.0263 0.0205

Moon -76741-06-19 08:37 J -26308057.37 -26308057.14 -26308056.91 0.0263 0.0056  
 Earth -76741-06-19 08:52 J -26308057.36 -26308057.13 -26308056.89 0.0263 0.0070 \*  
 Earth -76740-06-30 15:20 J -26307681.04 -26307680.86 -26307680.66 0.0262 0.0168  
 Moon -76740-06-30 19:11 J -26307680.89 -26307680.70 -26307680.50 0.0262 0.0158 \*  
 Earth -76739-07-12 00:13 J -26307304.51 -26307304.49 -26307304.45 0.0262 0.0260  
 Venus -76735-12-04 01:11 J -26305698.54 -26305698.45 -26305698.34 0.0270 0.0239  
 Venus -76734-07-21 12:13 J -26305469.16 -26305468.99 -26305468.81 0.0272 0.0160  
 Mercury -76732-04-16 05:59 J -26304834.28 -26304834.25 -26304834.22 0.0278 0.0272  
 Mercury -76732-07-14 05:30 J -26304745.44 -26304745.27 -26304745.10 0.0279 0.0117  
 Mercury -76732-10-11 05:01 J -26304656.47 -26304656.29 -26304656.10 0.0280 0.0040  
 Mercury -76731-01-08 04:18 J -26304567.44 -26304567.32 -26304567.18 0.0280 0.0197  
 Earth -76729-11-16 03:49 J -26303524.36 -26303524.34 -26303524.30 0.0291 0.0288  
 Moon -76728-12-01 04:04 J -26303144.54 -26303144.33 -26303144.11 0.0294 0.0167  
 Earth -76728-12-01 05:59 J -26303144.46 -26303144.25 -26303144.03 0.0294 0.0153 \*  
 Mars -76727-07-12 15:06 J -26302921.13 -26302920.87 -26302920.60 0.0296 0.0104  
 Moon -76727-12-16 08:23 J -26302764.40 -26302764.15 -26302763.90 0.0297 0.0021  
 Earth -76727-12-16 12:13 J -26302764.24 -26302763.99 -26302763.74 0.0297 0.0005 \*  
 Moon -76726-12-31 15:49 J -26302384.06 -26302383.84 -26302383.62 0.0298 0.0131  
 Earth -76726-12-31 18:42 J -26302383.92 -26302383.72 -26302383.49 0.0298 0.0149 \*  
 Moon -76724-01-14 22:04 J -26302003.66 -26302003.58 -26302003.48 0.0298 0.0273  
 Earth -76724-01-14 23:16 J -26302003.58 -26302003.53 -26302003.47 0.0298 0.0289 \*  
 Venus -76721-10-09 14:37 J -26300640.04 -26300639.89 -26300639.72 0.0291 0.0181  
 Venus -76720-05-27 03:20 J -26300410.39 -26300410.36 -26300410.30 0.0289 0.0281  
 Mercury -76719-08-24 17:59 J -26299955.78 -26299955.75 -26299955.72 0.0284 0.0272  
 Mercury -76719-11-21 05:01 J -26299867.39 -26299867.29 -26299867.18 0.0283 0.0162  
 Mercury -76718-02-17 16:18 J -26299778.95 -26299778.82 -26299778.69 0.0282 0.0051  
 Mercury -76718-05-17 03:20 J -26299690.48 -26299690.36 -26299690.23 0.0281 0.0058  
 Mercury -76718-08-13 14:23 J -26299602.00 -26299601.90 -26299601.79 0.0280 0.0167  
 Mercury -76718-11-10 01:40 J -26299513.45 -26299513.43 -26299513.41 0.0279 0.0275  
 Moon -76715-05-12 10:32 J -26298599.10 -26298599.06 -26298598.99 0.0271 0.0263

Moon -76714-05-24 01:25 J -26298222.62 -26298222.44 -26298222.26 0.0268 0.0164  
 Earth -76714-05-24 02:23 J -26298222.57 -26298222.40 -26298222.21 0.0268 0.0177 \*  
 Earth -76713-06-03 11:16 J -26297846.25 -26297846.03 -26297845.79 0.0266 0.0075  
 Moon -76713-06-03 14:37 J -26297846.12 -26297845.89 -26297845.66 0.0266 0.0072 \*  
 Mars -76713-07-02 01:54 J -26297817.68 -26297817.42 -26297817.15 0.0266 0.0129  
 Earth -76712-06-14 18:13 J -26297469.98 -26297469.74 -26297469.50 0.0264 0.0028  
 Moon -76712-06-14 19:25 J -26297469.94 -26297469.69 -26297469.44 0.0264 0.0017 \*  
 Moon -76711-06-25 20:52 J -26297093.85 -26297093.63 -26297093.41 0.0263 0.0115  
 Earth -76711-06-26 00:28 J -26297093.69 -26297093.48 -26297093.26 0.0263 0.0128 \*  
 Moon -76710-07-07 06:42 J -26296717.33 -26296717.22 -26296717.09 0.0263 0.0223  
 Earth -76710-07-07 07:40 J -26296717.29 -26296717.18 -26296717.04 0.0263 0.0224 \*  
 Venus -76705-06-15 05:44 J -26294912.41 -26294912.26 -26294912.10 0.0270 0.0187  
 Venus -76704-01-30 16:47 J -26294682.92 -26294682.80 -26294682.65 0.0272 0.0214  
 Mercury -76703-12-01 04:04 J -26294013.48 -26294013.33 -26294013.17 0.0278 0.0160  
 Mercury -76702-02-28 03:49 J -26293924.53 -26293924.34 -26293924.15 0.0279 0.0005  
 Mercury -76702-05-28 03:20 J -26293835.51 -26293835.36 -26293835.20 0.0280 0.0153  
 Earth -76699-11-24 23:59 J -26292558.66 -26292558.50 -26292558.33 0.0293 0.0216  
 Moon -76699-11-25 02:08 J -26292558.55 -26292558.41 -26292558.25 0.0293 0.0231 \*  
 Earth -76698-12-10 05:30 J -26292178.51 -26292178.27 -26292178.03 0.0296 0.0071  
 Moon -76698-12-10 09:06 J -26292178.36 -26292178.12 -26292177.88 0.0296 0.0086 \*  
 Mars -76697-08-31 10:32 J -26291913.31 -26291913.06 -26291912.80 0.0297 0.0124  
 Earth -76697-12-24 13:25 J -26291798.18 -26291797.94 -26291797.70 0.0298 0.0083  
 Moon -76697-12-24 16:04 J -26291798.08 -26291797.83 -26291797.58 0.0298 0.0066 \*  
 Moon -76695-01-08 20:08 J -26291417.82 -26291417.66 -26291417.47 0.0299 0.0215  
 Earth -76695-01-08 20:08 J -26291417.81 -26291417.66 -26291417.50 0.0299 0.0232 \*  
 Venus -76691-04-22 00:13 J -26289853.68 -26289853.49 -26289853.29 0.0291 0.0103  
 Mercury -76689-04-09 08:52 J -26289135.23 -26289135.13 -26289135.03 0.0284 0.0182  
 Mercury -76689-07-06 19:54 J -26289046.79 -26289046.67 -26289046.54 0.0283 0.0072  
 Mercury -76689-10-03 07:11 J -26288958.33 -26288958.20 -26288958.07 0.0282 0.0039  
 Mercury -76689-12-30 18:13 J -26288869.85 -26288869.74 -26288869.63 0.0281 0.0147

Mercury -76688-03-29 05:16 J -26288781.33 -26288781.28 -26288781.22 0.0280 0.0256

Earth -76685-05-18 16:47 J -26287634.94 -26287634.80 -26287634.66 0.0269 0.0219

Moon -76685-05-18 18:28 J -26287634.87 -26287634.73 -26287634.56 0.0269 0.0205 \*

Moon -76684-05-29 23:30 J -26287258.74 -26287258.52 -26287258.29 0.0266 0.0111

Earth -76684-05-30 02:52 J -26287258.60 -26287258.38 -26287258.17 0.0266 0.0119 \*

Moon -76683-06-10 07:54 J -26286882.40 -26286882.17 -26286881.93 0.0264 0.0022

Earth -76683-06-10 10:04 J -26286882.32 -26286882.08 -26286881.84 0.0264 0.0017 \*

Mars -76683-08-21 15:06 J -26286810.17 -26286809.87 -26286809.56 0.0264 0.0054

Earth -76682-06-21 16:04 J -26286506.05 -26286505.83 -26286505.59 0.0263 0.0085

Moon -76682-06-21 19:25 J -26286505.92 -26286505.69 -26286505.46 0.0263 0.0071 \*

Earth -76681-07-01 22:18 J -26286129.73 -26286129.57 -26286129.38 0.0262 0.0183

Moon -76681-07-02 00:13 J -26286129.67 -26286129.49 -26286129.30 0.0262 0.0175 \*

Venus -76676-12-26 13:25 J -26284126.14 -26284125.94 -26284125.75 0.0270 0.0123

Mercury -76673-04-19 03:49 J -26283281.47 -26283281.34 -26283281.20 0.0278 0.0196

Mercury -76673-07-17 03:35 J -26283192.54 -26283192.35 -26283192.16 0.0279 0.0040

Mercury -76673-10-14 02:52 J -26283103.54 -26283103.38 -26283103.20 0.0280 0.0117

Mercury -76672-01-11 02:08 J -26283014.43 -26283014.41 -26283014.36 0.0281 0.0274

Moon -76670-11-18 16:47 J -26281972.83 -26281972.80 -26281972.74 0.0292 0.0287

Earth -76670-11-18 20:08 J -26281972.75 -26281972.66 -26281972.57 0.0292 0.0272 \*

Moon -76669-12-02 19:25 J -26281592.91 -26281592.69 -26281592.48 0.0295 0.0149

Earth -76669-12-02 23:01 J -26281592.76 -26281592.54 -26281592.31 0.0295 0.0134 \*

Moon -76668-12-18 03:49 J -26281212.59 -26281212.34 -26281212.10 0.0297 0.0006

Earth -76668-12-18 05:44 J -26281212.50 -26281212.26 -26281212.01 0.0297 0.0018 \*

Earth -76666-01-02 12:42 J -26280832.17 -26280831.97 -26280831.76 0.0299 0.0170

Moon -76666-01-02 13:25 J -26280832.14 -26280831.94 -26280831.73 0.0299 0.0155 \*

Moon -76665-01-17 19:54 J -26280451.70 -26280451.67 -26280451.61 0.0299 0.0294

Venus -76662-11-02 05:44 J -26279067.46 -26279067.26 -26279067.05 0.0290 0.0038

Mercury -76660-08-27 11:16 J -26278403.12 -26278403.03 -26278402.95 0.0283 0.0214

Mercury -76660-11-23 22:18 J -26278314.69 -26278314.57 -26278314.45 0.0282 0.0103

Mercury -76659-02-20 09:35 J -26278226.23 -26278226.10 -26278225.97 0.0281 0.0010

Mercury -76659-05-19 20:37 J -26278137.76 -26278137.64 -26278137.52 0.0281 0.0115

Mercury -76659-08-16 07:40 J -26278049.25 -26278049.18 -26278049.10 0.0280 0.0224

Moon -76656-05-13 19:54 J -26277047.75 -26277047.67 -26277047.58 0.0270 0.0252

Earth -76656-05-13 22:18 J -26277047.61 -26277047.57 -26277047.51 0.0270 0.0264 \*

Earth -76655-05-25 10:04 J -26276671.26 -26276671.08 -26276670.88 0.0267 0.0164

Moon -76655-05-25 12:56 J -26276671.15 -26276670.96 -26276670.76 0.0267 0.0153 \*

Earth -76654-06-05 18:13 J -26276294.97 -26276294.74 -26276294.50 0.0265 0.0061

Moon -76654-06-05 20:52 J -26276294.87 -26276294.63 -26276294.39 0.0265 0.0061 \*

Moon -76653-06-15 21:49 J -26275918.83 -26275918.59 -26275918.34 0.0264 0.0029

Earth -76653-06-16 00:42 J -26275918.71 -26275918.47 -26275918.23 0.0264 0.0042 \*

Mars -76653-10-09 17:44 J -26275802.90 -26275802.76 -26275802.58 0.0263 0.0225

Moon -76652-06-27 04:47 J -26275542.50 -26275542.30 -26275542.09 0.0263 0.0132

Earth -76652-06-27 06:28 J -26275542.43 -26275542.23 -26275542.03 0.0263 0.0142 \*

Earth -76651-07-08 13:40 J -26275166.03 -26275165.93 -26275165.82 0.0263 0.0237

Moon -76651-07-08 16:47 J -26275165.89 -26275165.80 -26275165.70 0.0263 0.0240 \*

Venus -76646-07-08 16:32 J -26273340.02 -26273339.81 -26273339.60 0.0270 0.0076

Mercury -76644-09-06 01:54 J -26272549.51 -26272549.42 -26272549.33 0.0278 0.0244

Mercury -76644-12-04 01:25 J -26272460.62 -26272460.44 -26272460.26 0.0279 0.0088

Mercury -76643-03-03 01:11 J -26272371.64 -26272371.45 -26272371.27 0.0280 0.0069

Mercury -76643-05-31 00:28 J -26272282.58 -26272282.48 -26272282.36 0.0280 0.0226

Earth -76640-11-26 13:40 J -26271007.10 -26271006.93 -26271006.74 0.0293 0.0200

Moon -76640-11-26 17:30 J -26271006.93 -26271006.77 -26271006.59 0.0293 0.0215 \*

Mars -76639-12-07 00:56 J -26270631.73 -26270631.46 -26270631.19 0.0296 0.0072

Earth -76639-12-11 19:54 J -26270626.91 -26270626.67 -26270626.42 0.0296 0.0052

Moon -76639-12-11 21:35 J -26270626.84 -26270626.60 -26270626.34 0.0296 0.0068 \*

Moon -76638-12-27 02:37 J -26270246.63 -26270246.39 -26270246.14 0.0298 0.0087

Earth -76638-12-27 04:04 J -26270246.56 -26270246.33 -26270246.09 0.0298 0.0103 \*

Moon -76636-01-10 07:11 J -26269866.34 -26269866.20 -26269866.03 0.0299 0.0235

Earth -76636-01-10 11:01 J -26269866.16 -26269866.04 -26269865.90 0.0299 0.0251 \*

Venus -76632-05-14 13:54 J -26268281.13 -26268280.92 -26268280.72 0.0291 0.0035



Mercury -76630-01-14 14:37 J -26267670.96 -26267670.89 -26267670.82 0.0284 0.0238

Mercury -76630-04-13 01:40 J -26267582.54 -26267582.43 -26267582.31 0.0283 0.0127

Mercury -76630-07-10 12:56 J -26267494.09 -26267493.96 -26267493.83 0.0282 0.0018

Mercury -76630-10-06 23:59 J -26267405.62 -26267405.50 -26267405.38 0.0281 0.0093

Mercury -76629-01-03 11:01 J -26267317.13 -26267317.04 -26267316.95 0.0280 0.0202

Moon -76626-05-20 21:20 J -26266083.78 -26266083.61 -26266083.44 0.0269 0.0193

Earth -76626-05-20 23:30 J -26266083.67 -26266083.52 -26266083.37 0.0269 0.0207 \*

Moon -76625-05-31 06:13 J -26265707.45 -26265707.24 -26265707.02 0.0266 0.0101

Earth -76625-05-31 08:52 J -26265707.35 -26265707.13 -26265706.91 0.0266 0.0105 \*

Mars -76625-11-26 14:37 J -26265528.17 -26265527.89 -26265527.60 0.0265 0.0097

Earth -76624-06-11 15:35 J -26265331.09 -26265330.85 -26265330.61 0.0264 0.0003

Moon -76624-06-11 17:44 J -26265330.99 -26265330.76 -26265330.52 0.0264 0.0012 \*

Earth -76623-06-22 21:20 J -26264954.84 -26264954.61 -26264954.38 0.0263 0.0098

Moon -76623-06-22 23:44 J -26264954.74 -26264954.51 -26264954.27 0.0263 0.0084 \*

Moon -76622-07-04 00:13 J -26264578.64 -26264578.49 -26264578.31 0.0262 0.0193

Earth -76622-07-04 03:20 J -26264578.51 -26264578.36 -26264578.18 0.0262 0.0195 \*

Venus -76616-01-17 23:16 J -26262553.74 -26262553.53 -26262553.31 0.0270 0.0015

Mercury -76614-04-23 00:42 J -26261728.64 -26261728.47 -26261728.30 0.0278 0.0128

Mercury -76614-07-21 00:13 J -26261639.67 -26261639.49 -26261639.30 0.0279 0.0029

Mercury -76614-10-17 23:30 J -26261550.65 -26261550.52 -26261550.37 0.0280 0.0187

Moon -76611-11-20 04:18 J -26260421.39 -26260421.32 -26260421.23 0.0292 0.0274

Earth -76611-11-20 07:40 J -26260421.30 -26260421.18 -26260421.07 0.0292 0.0258 \*

Moon -76610-12-05 10:18 J -26260041.28 -26260041.07 -26260040.85 0.0295 0.0132

Earth -76610-12-05 11:16 J -26260041.26 -26260041.03 -26260040.80 0.0295 0.0116 \*

Earth -76609-12-19 18:42 J -26259660.97 -26259660.72 -26259660.47 0.0298 0.0037

Moon -76609-12-19 20:23 J -26259660.89 -26259660.65 -26259660.41 0.0298 0.0022 \*

Mars -76608-01-25 16:47 J -26259624.03 -26259623.80 -26259623.55 0.0298 0.0149

Earth -76607-01-04 02:08 J -26259280.60 -26259280.41 -26259280.22 0.0299 0.0189

Moon -76607-01-04 05:30 J -26259280.46 -26259280.27 -26259280.06 0.0299 0.0173 \*

Venus -76603-11-24 18:42 J -26257494.91 -26257494.72 -26257494.52 0.0290 0.0097

Mercury -76601-06-02 16:47 J -26256938.83 -26256938.80 -26256938.76 0.0284 0.0270

Mercury -76601-08-30 04:04 J -26256850.44 -26256850.33 -26256850.23 0.0283 0.0159

Mercury -76601-11-26 15:06 J -26256762.00 -26256761.87 -26256761.74 0.0282 0.0049

Mercury -76600-02-23 02:08 J -26256673.53 -26256673.41 -26256673.28 0.0281 0.0061

Mercury -76600-05-22 13:25 J -26256585.05 -26256584.94 -26256584.84 0.0280 0.0169

Mercury -76600-08-19 00:28 J -26256496.49 -26256496.48 -26256496.46 0.0279 0.0276

Earth -76597-05-15 04:47 J -26255496.37 -26255496.30 -26255496.20 0.0270 0.0252

Moon -76597-05-15 06:13 J -26255496.33 -26255496.24 -26255496.12 0.0270 0.0239 \*

Earth -76596-05-26 15:49 J -26255120.03 -26255119.84 -26255119.64 0.0267 0.0151

Moon -76596-05-26 18:56 J -26255119.92 -26255119.71 -26255119.50 0.0267 0.0140 \*

Moon -76595-06-06 21:06 J -26254743.86 -26254743.62 -26254743.37 0.0265 0.0053

Earth -76595-06-06 23:30 J -26254743.76 -26254743.52 -26254743.28 0.0265 0.0048 \*

Mars -76594-01-15 08:52 J -26254521.43 -26254521.13 -26254520.83 0.0264 0.0073

Moon -76594-06-18 02:08 J -26254367.64 -26254367.41 -26254367.18 0.0263 0.0041

Earth -76594-06-18 05:01 J -26254367.52 -26254367.29 -26254367.05 0.0263 0.0055 \*

Earth -76593-06-28 10:18 J -26253991.26 -26253991.07 -26253990.87 0.0262 0.0155

Moon -76593-06-28 12:56 J -26253991.15 -26253990.96 -26253990.76 0.0262 0.0148 \*

Earth -76592-07-09 17:01 J -26253614.85 -26253614.79 -26253614.70 0.0262 0.0250

Moon -76592-07-09 19:54 J -26253614.72 -26253614.67 -26253614.60 0.0262 0.0254 \*

Venus -76587-07-31 01:11 J -26251767.67 -26251767.45 -26251767.23 0.0271 0.0030

Mercury -76585-09-08 21:49 J -26250996.74 -26250996.59 -26250996.45 0.0278 0.0181

Mercury -76585-12-06 21:20 J -26250907.80 -26250907.61 -26250907.42 0.0279 0.0025

Mercury -76584-03-05 20:52 J -26250818.79 -26250818.63 -26250818.46 0.0280 0.0132

Moon -76581-11-27 22:04 J -26249455.76 -26249455.58 -26249455.38 0.0294 0.0201

Earth -76581-11-27 22:18 J -26249455.75 -26249455.57 -26249455.36 0.0294 0.0186 \*

Mars -76580-03-12 20:52 J -26249350.72 -26249350.63 -26249350.52 0.0295 0.0274

Moon -76580-12-13 02:37 J -26249075.65 -26249075.39 -26249075.14 0.0297 0.0053

Earth -76580-12-13 05:16 J -26249075.53 -26249075.28 -26249075.03 0.0297 0.0036 \*

Moon -76579-12-28 10:04 J -26248695.31 -26248695.08 -26248694.84 0.0298 0.0103

Earth -76579-12-28 13:40 J -26248695.15 -26248694.93 -26248694.70 0.0298 0.0120 \*

Moon -76577-01-12 18:28 J -26248314.84 -26248314.73 -26248314.59 0.0299 0.0253  
 Earth -76577-01-12 21:06 J -26248314.73 -26248314.62 -26248314.51 0.0299 0.0268 \*  
 Venus -76573-06-06 01:11 J -26246708.62 -26246708.45 -26246708.28 0.0290 0.0164  
 Mercury -76571-01-17 06:56 J -26246118.30 -26246118.21 -26246118.11 0.0284 0.0186  
 Mercury -76571-04-15 18:13 J -26246029.87 -26246029.74 -26246029.62 0.0283 0.0076  
 Mercury -76571-07-13 05:16 J -26245941.41 -26245941.28 -26245941.15 0.0282 0.0035  
 Mercury -76571-10-09 16:18 J -26245852.93 -26245852.82 -26245852.70 0.0281 0.0144  
 Mercury -76570-01-06 03:35 J -26245764.40 -26245764.35 -26245764.30 0.0280 0.0252  
 Moon -76567-05-22 00:56 J -26244532.64 -26244532.46 -26244532.29 0.0268 0.0181  
 Earth -76567-05-22 03:49 J -26244532.49 -26244532.34 -26244532.16 0.0268 0.0196 \*  
 Mars -76566-03-04 18:28 J -26244245.83 -26244245.73 -26244245.60 0.0266 0.0246  
 Earth -76566-06-02 12:42 J -26244156.19 -26244155.97 -26244155.74 0.0266 0.0093  
 Moon -76566-06-02 14:37 J -26244156.11 -26244155.89 -26244155.67 0.0266 0.0092 \*  
 Earth -76565-06-12 19:11 J -26243779.95 -26243779.70 -26243779.46 0.0264 0.0011  
 Moon -76565-06-12 22:32 J -26243779.81 -26243779.56 -26243779.31 0.0264 0.0001 \*  
 Mars -76564-03-05 23:30 J -26243513.59 -26243513.52 -26243513.44 0.0263 0.0254  
 Moon -76564-06-23 22:18 J -26243403.79 -26243403.57 -26243403.33 0.0262 0.0099  
 Earth -76564-06-24 00:13 J -26243403.70 -26243403.49 -26243403.26 0.0262 0.0111 \*  
 Moon -76563-07-05 03:35 J -26243027.49 -26243027.35 -26243027.20 0.0262 0.0208  
 Earth -76563-07-05 06:13 J -26243027.38 -26243027.24 -26243027.08 0.0262 0.0207 \*  
 Venus -76557-02-10 07:25 J -26240981.39 -26240981.19 -26240980.98 0.0271 0.0090  
 Mercury -76555-01-26 20:37 J -26240264.75 -26240264.64 -26240264.52 0.0278 0.0222  
 Mercury -76555-04-25 20:23 J -26240175.84 -26240175.65 -26240175.47 0.0279 0.0066  
 Mercury -76555-07-23 19:54 J -26240086.85 -26240086.67 -26240086.49 0.0280 0.0091  
 Mercury -76555-10-20 19:25 J -26239997.78 -26239997.69 -26239997.61 0.0281 0.0248  
 Earth -76552-11-21 14:52 J -26238870.01 -26238869.88 -26238869.74 0.0293 0.0245  
 Moon -76552-11-21 16:18 J -26238869.92 -26238869.82 -26238869.71 0.0293 0.0262 \*  
 Earth -76551-12-06 19:25 J -26238489.92 -26238489.69 -26238489.46 0.0296 0.0101  
 Moon -76551-12-06 22:32 J -26238489.77 -26238489.56 -26238489.32 0.0296 0.0119 \*  
 Mars -76550-05-02 21:35 J -26238342.87 -26238342.60 -26238342.32 0.0297 0.0053

Earth -76550-12-22 03:20 J -26238109.61 -26238109.36 -26238109.12 0.0298 0.0054  
 Moon -76550-12-22 06:56 J -26238109.45 -26238109.21 -26238108.96 0.0298 0.0037 \*  
 Earth -76548-01-05 11:16 J -26237729.21 -26237729.03 -26237728.85 0.0299 0.0206  
 Moon -76548-01-05 12:56 J -26237729.14 -26237728.96 -26237728.75 0.0299 0.0191 \*  
 Venus -76544-05-01 15:49 J -26236151.95 -26236151.84 -26236151.73 0.0292 0.0244  
 Venus -76544-12-17 05:16 J -26235922.40 -26235922.28 -26235922.14 0.0289 0.0223  
 Mercury -76542-06-06 09:06 J -26235386.20 -26235386.12 -26235386.04 0.0284 0.0220  
 Mercury -76542-09-02 20:08 J -26235297.77 -26235297.66 -26235297.54 0.0283 0.0110  
 Mercury -76542-11-30 07:25 J -26235209.32 -26235209.19 -26235209.06 0.0282 0.0002  
 Mercury -76541-02-26 18:28 J -26235120.85 -26235120.73 -26235120.61 0.0281 0.0110  
 Mercury -76541-05-25 05:30 J -26235032.35 -26235032.27 -26235032.18 0.0280 0.0218  
 Earth -76538-05-17 08:52 J -26233945.23 -26233945.13 -26233945.02 0.0269 0.0240  
 Moon -76538-05-17 12:28 J -26233945.10 -26233944.98 -26233944.84 0.0269 0.0225 \*  
 Moon -76537-05-27 18:13 J -26233568.96 -26233568.74 -26233568.52 0.0267 0.0132  
 Earth -76537-05-27 18:56 J -26233568.90 -26233568.71 -26233568.49 0.0267 0.0140 \*  
 Mars -76536-04-22 03:20 J -26233239.65 -26233239.36 -26233239.06 0.0265 0.0078  
 Moon -76536-06-07 22:47 J -26233192.78 -26233192.55 -26233192.31 0.0264 0.0045  
 Earth -76536-06-08 02:08 J -26233192.65 -26233192.41 -26233192.17 0.0264 0.0036 \*  
 Earth -76535-06-19 07:11 J -26232816.43 -26232816.20 -26232815.96 0.0263 0.0067  
 Moon -76535-06-19 08:23 J -26232816.38 -26232816.15 -26232815.92 0.0263 0.0053 \*  
 Earth -76534-06-30 11:59 J -26232440.18 -26232440.00 -26232439.80 0.0262 0.0166  
 Moon -76534-06-30 15:06 J -26232440.05 -26232439.87 -26232439.66 0.0262 0.0159 \*  
 Earth -76533-07-10 18:28 J -26232063.74 -26232063.73 -26232063.68 0.0262 0.0260  
 Venus -76528-01-04 21:35 J -26230424.62 -26230424.60 -26230424.56 0.0269 0.0266  
 Venus -76528-08-22 07:54 J -26230195.36 -26230195.17 -26230194.97 0.0271 0.0130  
 Mercury -76526-09-12 16:32 J -26229443.98 -26229443.81 -26229443.64 0.0278 0.0126  
 Mercury -76526-12-10 16:04 J -26229355.02 -26229354.83 -26229354.64 0.0279 0.0031  
 Mercury -76525-03-08 15:35 J -26229265.99 -26229265.85 -26229265.71 0.0280 0.0188  
 Moon -76522-11-29 22:18 J -26227904.76 -26227904.57 -26227904.37 0.0294 0.0190  
 Earth -76522-11-30 02:23 J -26227904.60 -26227904.40 -26227904.20 0.0294 0.0172 \*

Moon -76521-12-14 05:59 J -26227524.49 -26227524.25 -26227524.00 0.0297 0.0039  
 Earth -76521-12-14 09:20 J -26227524.36 -26227524.11 -26227523.86 0.0297 0.0021 \*  
 Mars -76520-06-20 23:44 J -26227335.73 -26227335.51 -26227335.27 0.0298 0.0169  
 Moon -76520-12-29 17:01 J -26227144.01 -26227143.79 -26227143.57 0.0299 0.0119  
 Earth -76520-12-29 17:59 J -26227143.96 -26227143.75 -26227143.52 0.0299 0.0135 \*  
 Earth -76518-01-14 01:25 J -26226763.51 -26226763.44 -26226763.35 0.0299 0.0282  
 Moon -76518-01-14 03:20 J -26226763.46 -26226763.36 -26226763.25 0.0299 0.0269 \*  
 Venus -76515-11-11 20:23 J -26225365.81 -26225365.65 -26225365.49 0.0292 0.0185  
 Venus -76514-06-29 10:04 J -26225136.12 -26225136.08 -26225136.04 0.0290 0.0282  
 Mercury -76513-10-23 11:44 J -26224654.07 -26224654.01 -26224653.96 0.0285 0.0252  
 Mercury -76512-01-19 22:47 J -26224565.66 -26224565.55 -26224565.44 0.0284 0.0141  
 Mercury -76512-04-18 10:04 J -26224477.21 -26224477.08 -26224476.95 0.0283 0.0031  
 Mercury -76512-07-15 21:06 J -26224388.75 -26224388.62 -26224388.49 0.0282 0.0080  
 Mercury -76512-10-12 08:08 J -26224300.25 -26224300.16 -26224300.06 0.0281 0.0190  
 Moon -76509-05-11 14:08 J -26223357.94 -26223357.91 -26223357.88 0.0271 0.0268  
 Earth -76508-05-23 06:13 J -26222981.41 -26222981.24 -26222981.06 0.0268 0.0183  
 Moon -76508-05-23 06:13 J -26222981.41 -26222981.24 -26222981.05 0.0268 0.0171 \*  
 Earth -76507-06-03 14:37 J -26222605.12 -26222604.89 -26222604.66 0.0265 0.0081  
 Moon -76507-06-03 17:59 J -26222604.98 -26222604.75 -26222604.52 0.0265 0.0081 \*  
 Mars -76506-06-11 07:40 J -26222232.47 -26222232.18 -26222231.89 0.0263 0.0099  
 Moon -76506-06-14 19:25 J -26222228.94 -26222228.69 -26222228.44 0.0263 0.0009  
 Earth -76506-06-14 20:23 J -26222228.89 -26222228.65 -26222228.41 0.0263 0.0022 \*  
 Moon -76505-06-24 21:35 J -26221852.81 -26221852.60 -26221852.38 0.0262 0.0110  
 Earth -76505-06-25 01:11 J -26221852.66 -26221852.45 -26221852.23 0.0262 0.0122 \*  
 Earth -76504-07-06 06:42 J -26221476.34 -26221476.22 -26221476.08 0.0262 0.0218  
 Moon -76504-07-06 08:23 J -26221476.27 -26221476.15 -26221476.02 0.0262 0.0222 \*  
 Venus -76499-07-18 03:06 J -26219638.49 -26219638.37 -26219638.22 0.0269 0.0208  
 Venus -76498-03-04 13:40 J -26219409.08 -26219408.93 -26219408.77 0.0271 0.0188  
 Mercury -76496-01-29 15:06 J -26218712.02 -26218711.87 -26218711.72 0.0278 0.0168  
 Mercury -76496-04-28 14:37 J -26218623.08 -26218622.89 -26218622.70 0.0279 0.0013

Mercury -76496-07-26 14:08 J -26218534.07 -26218533.91 -26218533.75 0.0280 0.0145  
 Earth -76493-11-22 16:47 J -26217318.94 -26217318.80 -26217318.64 0.0293 0.0233  
 Moon -76493-11-22 20:37 J -26217318.76 -26217318.64 -26217318.50 0.0293 0.0250 \*  
 Mars -76492-08-06 06:28 J -26217062.35 -26217062.23 -26217062.10 0.0295 0.0262  
 Earth -76492-12-07 22:04 J -26216938.82 -26216938.58 -26216938.34 0.0296 0.0087  
 Moon -76492-12-08 00:28 J -26216938.71 -26216938.48 -26216938.23 0.0296 0.0104 \*  
 Earth -76491-12-23 06:13 J -26216558.48 -26216558.24 -26216557.99 0.0298 0.0069  
 Moon -76491-12-23 06:28 J -26216558.48 -26216558.23 -26216557.98 0.0298 0.0052 \*  
 Moon -76489-01-07 11:59 J -26216178.17 -26216178.00 -26216177.80 0.0299 0.0207  
 Earth -76489-01-07 14:37 J -26216178.05 -26216177.89 -26216177.72 0.0299 0.0221 \*  
 Venus -76485-05-23 23:59 J -26214579.68 -26214579.50 -26214579.31 0.0292 0.0127  
 Mercury -76483-06-09 00:42 J -26213833.57 -26213833.47 -26213833.37 0.0283 0.0176  
 Mercury -76483-09-05 11:59 J -26213745.13 -26213745.00 -26213744.87 0.0282 0.0065  
 Mercury -76483-12-02 23:01 J -26213656.67 -26213656.54 -26213656.41 0.0281 0.0045  
 Mercury -76482-03-01 10:18 J -26213568.18 -26213568.07 -26213567.96 0.0280 0.0154  
 Mercury -76482-05-28 21:20 J -26213479.65 -26213479.61 -26213479.57 0.0280 0.0262  
 Moon -76479-05-18 10:32 J -26212394.21 -26212394.06 -26212393.91 0.0269 0.0214  
 Earth -76479-05-18 10:18 J -26212394.18 -26212394.07 -26212393.93 0.0269 0.0230 \*  
 Moon -76478-05-29 16:47 J -26212018.01 -26212017.80 -26212017.58 0.0266 0.0122  
 Earth -76478-05-29 20:08 J -26212017.86 -26212017.66 -26212017.44 0.0266 0.0129 \*  
 Mars -76478-07-29 02:08 J -26211957.55 -26211957.41 -26211957.24 0.0266 0.0229  
 Earth -76477-06-09 02:37 J -26211641.62 -26211641.39 -26211641.14 0.0264 0.0025  
 Moon -76477-06-09 03:20 J -26211641.58 -26211641.36 -26211641.12 0.0264 0.0035 \*  
 Earth -76476-06-20 07:25 J -26211265.42 -26211265.19 -26211264.96 0.0263 0.0078  
 Moon -76476-06-20 11:01 J -26211265.27 -26211265.04 -26211264.80 0.0263 0.0063 \*  
 Moon -76475-07-01 11:16 J -26210889.22 -26210889.03 -26210888.84 0.0262 0.0173  
 Earth -76475-07-01 11:59 J -26210889.17 -26210889.00 -26210888.82 0.0262 0.0177 \*  
 Venus -76469-01-28 03:06 J -26208852.54 -26208852.37 -26208852.20 0.0269 0.0172  
 Venus -76469-09-13 13:11 J -26208623.06 -26208622.95 -26208622.82 0.0271 0.0224  
 Mercury -76467-06-18 10:32 J -26207980.16 -26207980.06 -26207979.95 0.0277 0.0231

Mercury -76467-09-15 10:18 J -26207891.25 -26207891.07 -26207890.89 0.0278 0.0075  
 Mercury -76467-12-13 09:49 J -26207802.27 -26207802.09 -26207801.91 0.0279 0.0082  
 Mercury -76466-03-12 09:20 J -26207713.20 -26207713.11 -26207713.01 0.0280 0.0238  
 Moon -76463-12-01 01:40 J -26206353.62 -26206353.43 -26206353.23 0.0294 0.0176  
 Earth -76463-12-01 02:52 J -26206353.59 -26206353.38 -26206353.17 0.0294 0.0160 \*  
 Mars -76462-09-25 15:06 J -26206055.15 -26206054.87 -26206054.59 0.0296 0.0040  
 Earth -76462-12-16 10:18 J -26205973.32 -26205973.07 -26205972.82 0.0297 0.0009  
 Moon -76462-12-16 11:30 J -26205973.26 -26205973.02 -26205972.78 0.0297 0.0024 \*  
 Earth -76461-12-30 19:11 J -26205592.91 -26205592.70 -26205592.48 0.0299 0.0148  
 Moon -76461-12-30 22:18 J -26205592.78 -26205592.57 -26205592.34 0.0299 0.0133 \*  
 Earth -76459-01-15 02:37 J -26205212.42 -26205212.39 -26205212.33 0.0300 0.0295  
 Moon -76459-01-15 06:28 J -26205212.31 -26205212.23 -26205212.14 0.0300 0.0280  
 Venus -76456-12-04 03:35 J -26203793.55 -26203793.35 -26203793.16 0.0292 0.0072  
 Mercury -76454-10-27 02:52 J -26203101.46 -26203101.38 -26203101.29 0.0285 0.0211  
 Mercury -76453-01-23 14:08 J -26203013.03 -26203012.91 -26203012.79 0.0284 0.0099  
 Mercury -76453-04-21 01:11 J -26202924.58 -26202924.45 -26202924.31 0.0283 0.0015  
 Mercury -76453-07-18 12:28 J -26202836.10 -26202835.98 -26202835.86 0.0282 0.0122  
 Mercury -76453-10-14 23:30 J -26202747.59 -26202747.52 -26202747.44 0.0281 0.0231  
 Moon -76450-05-13 17:44 J -26201806.82 -26201806.76 -26201806.69 0.0271 0.0259  
 Earth -76449-05-24 05:44 J -26201430.43 -26201430.26 -26201430.07 0.0268 0.0173  
 Moon -76449-05-24 09:35 J -26201430.29 -26201430.10 -26201429.91 0.0268 0.0160 \*  
 Earth -76448-06-04 13:54 J -26201054.15 -26201053.92 -26201053.69 0.0265 0.0069  
 Moon -76448-06-04 14:08 J -26201054.15 -26201053.91 -26201053.67 0.0265 0.0072 \*  
 Mars -76448-09-15 18:56 J -26200951.00 -26200950.71 -26200950.40 0.0265 0.0059  
 Moon -76447-06-15 15:49 J -26200678.08 -26200677.84 -26200677.60 0.0263 0.0018  
 Earth -76447-06-15 19:25 J -26200677.93 -26200677.69 -26200677.45 0.0263 0.0033 \*  
 Earth -76446-06-26 23:44 J -26200301.71 -26200301.51 -26200301.29 0.0262 0.0133  
 Moon -76446-06-26 23:59 J -26200301.70 -26200301.50 -26200301.29 0.0262 0.0124 \*  
 Earth -76445-07-07 05:30 J -26199925.39 -26199925.27 -26199925.15 0.0261 0.0228  
 Moon -76445-07-07 08:37 J -26199925.23 -26199925.14 -26199925.02 0.0261 0.0234 \*

Venus -76440-08-09 08:08 J -26198066.35 -26198066.16 -26198065.96 0.0269 0.0115  
 Mercury -76438-11-05 09:06 J -26197248.14 -26197248.12 -26197248.09 0.0277 0.0273  
 Mercury -76437-02-02 08:37 J -26197159.30 -26197159.14 -26197158.96 0.0278 0.0119  
 Mercury -76437-05-01 08:23 J -26197070.34 -26197070.15 -26197069.97 0.0279 0.0038  
 Mercury -76437-07-29 07:40 J -26196981.31 -26196981.18 -26196981.04 0.0280 0.0194  
 Earth -76434-11-24 15:49 J -26195767.99 -26195767.84 -26195767.67 0.0293 0.0222  
 Moon -76434-11-24 16:04 J -26195767.97 -26195767.83 -26195767.67 0.0293 0.0236 \*  
 Moon -76433-12-08 18:42 J -26195387.96 -26195387.72 -26195387.47 0.0296 0.0089  
 Earth -76433-12-08 21:20 J -26195387.85 -26195387.61 -26195387.37 0.0296 0.0074 \*  
 Mars -76432-11-14 02:37 J -26195047.60 -26195047.39 -26195047.16 0.0298 0.0177  
 Moon -76432-12-24 01:54 J -26195007.66 -26195007.42 -26195007.18 0.0298 0.0067  
 Earth -76432-12-24 05:44 J -26195007.50 -26195007.26 -26195007.02 0.0298 0.0082 \*  
 Moon -76430-01-08 10:47 J -26194627.20 -26194627.05 -26194626.88 0.0300 0.0220  
 Earth -76430-01-08 13:54 J -26194627.05 -26194626.92 -26194626.75 0.0300 0.0235 \*  
 Venus -76426-06-16 06:13 J -26193007.44 -26193007.24 -26193007.03 0.0292 0.0018  
 Mercury -76424-03-15 04:32 J -26192369.36 -26192369.31 -26192369.24 0.0285 0.0249  
 Mercury -76424-06-11 15:49 J -26192280.95 -26192280.84 -26192280.72 0.0283 0.0137  
 Mercury -76424-09-08 03:06 J -26192192.50 -26192192.37 -26192192.24 0.0282 0.0026  
 Mercury -76424-12-05 14:08 J -26192104.03 -26192103.91 -26192103.78 0.0281 0.0084  
 Mercury -76423-03-04 01:11 J -26192015.54 -26192015.45 -26192015.35 0.0280 0.0194  
 Moon -76420-05-19 05:44 J -26190843.40 -26190843.26 -26190843.09 0.0269 0.0206  
 Earth -76420-05-19 09:35 J -26190843.23 -26190843.10 -26190842.96 0.0269 0.0220 \*  
 Moon -76419-05-30 18:28 J -26190466.94 -26190466.73 -26190466.52 0.0266 0.0114  
 Earth -76419-05-30 19:11 J -26190466.91 -26190466.70 -26190466.48 0.0266 0.0117 \*  
 Earth -76418-06-11 01:25 J -26190090.68 -26190090.44 -26190090.20 0.0264 0.0014  
 Moon -76418-06-11 05:01 J -26190090.53 -26190090.29 -26190090.05 0.0264 0.0026 \*  
 Mars -76418-11-04 05:59 J -26189944.52 -26189944.25 -26189943.96 0.0263 0.0111  
 Moon -76417-06-21 05:44 J -26189714.50 -26189714.26 -26189714.02 0.0262 0.0076  
 Earth -76417-06-21 05:44 J -26189714.48 -26189714.26 -26189714.03 0.0262 0.0089 \*  
 Moon -76416-07-02 06:42 J -26189338.39 -26189338.22 -26189338.05 0.0262 0.0186



Earth -76416-07-02 10:18 J -26189338.23 -26189338.07 -26189337.90 0.0262 0.0187 \*  
 Venus -76410-02-19 07:11 J -26187280.40 -26187280.20 -26187279.98 0.0269 0.0082  
 Mercury -76408-06-21 03:49 J -26186427.48 -26186427.34 -26186427.19 0.0277 0.0184  
 Mercury -76408-09-18 03:35 J -26186338.54 -26186338.35 -26186338.16 0.0278 0.0029  
 Mercury -76408-12-16 02:52 J -26186249.54 -26186249.38 -26186249.21 0.0279 0.0128  
 Earth -76405-11-16 21:06 J -26185182.64 -26185182.62 -26185182.57 0.0291 0.0288  
 Earth -76404-12-01 23:44 J -26184802.72 -26184802.51 -26184802.29 0.0294 0.0150  
 Moon -76404-12-02 03:06 J -26184802.57 -26184802.37 -26184802.16 0.0294 0.0163 \*  
 Mars -76404-12-29 12:56 J -26184775.09 -26184774.96 -26184774.81 0.0295 0.0256  
 Earth -76403-12-17 07:11 J -26184422.44 -26184422.20 -26184421.95 0.0297 0.0006  
 Moon -76403-12-17 11:16 J -26184422.28 -26184422.03 -26184421.78 0.0297 0.0011 \*  
 Earth -76401-01-01 16:32 J -26184042.02 -26184041.81 -26184041.60 0.0299 0.0160  
 Moon -76401-01-01 18:56 J -26184041.92 -26184041.71 -26184041.48 0.0299 0.0147 \*  
 Moon -76400-01-16 00:13 J -26183661.53 -26183661.49 -26183661.44 0.0300 0.0294  
 Venus -76397-12-26 08:08 J -26182221.36 -26182221.16 -26182220.95 0.0292 0.0034  
 Mercury -76395-10-29 17:44 J -26181548.86 -26181548.76 -26181548.66 0.0285 0.0175  
 Mercury -76394-01-26 04:47 J -26181460.42 -26181460.30 -26181460.17 0.0284 0.0064  
 Mercury -76394-04-24 16:04 J -26181371.96 -26181371.83 -26181371.70 0.0283 0.0048  
 Mercury -76394-07-22 03:20 J -26181283.47 -26181283.36 -26181283.25 0.0282 0.0158  
 Mercury -76394-10-18 14:23 J -26181194.93 -26181194.90 -26181194.86 0.0281 0.0268  
 Earth -76391-05-14 15:20 J -26180255.90 -26180255.86 -26180255.80 0.0271 0.0264  
 Moon -76391-05-14 18:42 J -26180255.79 -26180255.72 -26180255.61 0.0271 0.0249  
 Earth -76390-05-26 03:35 J -26179879.54 -26179879.35 -26179879.15 0.0268 0.0162  
 Moon -76390-05-26 04:47 J -26179879.50 -26179879.30 -26179879.09 0.0268 0.0153 \*  
 Mars -76390-12-22 11:16 J -26179669.19 -26179669.03 -26179668.84 0.0266 0.0216  
 Moon -76389-06-05 08:08 J -26179503.39 -26179503.16 -26179502.92 0.0265 0.0065  
 Earth -76389-06-05 11:30 J -26179503.25 -26179503.02 -26179502.78 0.0265 0.0059 \*  
 Moon -76388-06-16 16:32 J -26179127.04 -26179126.81 -26179126.58 0.0263 0.0031  
 Earth -76388-06-16 16:47 J -26179127.04 -26179126.80 -26179126.56 0.0263 0.0044 \*  
 Earth -76387-06-27 21:06 J -26178750.82 -26178750.62 -26178750.41 0.0262 0.0144

Moon -76387-06-28 00:42 J -26178750.66 -26178750.47 -26178750.25 0.0262 0.0137 \*  
 Earth -76386-07-09 02:37 J -26178374.49 -26178374.39 -26178374.29 0.0261 0.0238  
 Moon -76386-07-09 02:52 J -26178374.46 -26178374.38 -26178374.29 0.0261 0.0245 \*  
 Venus -76381-08-31 11:59 J -26176494.21 -26176494.00 -26176493.78 0.0269 0.0026  
 Mercury -76379-11-08 02:23 J -26175695.51 -26175695.40 -26175695.30 0.0277 0.0227  
 Mercury -76378-02-05 01:54 J -26175606.61 -26175606.42 -26175606.24 0.0278 0.0073  
 Mercury -76378-05-05 01:25 J -26175517.62 -26175517.44 -26175517.26 0.0279 0.0083  
 Mercury -76378-08-02 00:42 J -26175428.56 -26175428.47 -26175428.37 0.0280 0.0239  
 Moon -76375-11-25 09:06 J -26174217.27 -26174217.12 -26174216.95 0.0293 0.0224  
 Earth -76375-11-25 12:42 J -26174217.13 -26174216.97 -26174216.79 0.0293 0.0211 \*  
 Moon -76374-12-10 15:06 J -26173837.10 -26173836.87 -26173836.63 0.0296 0.0075  
 Earth -76374-12-10 18:28 J -26173836.97 -26173836.73 -26173836.49 0.0296 0.0062 \*  
 Mars -76373-02-18 09:49 J -26173767.36 -26173767.09 -26173766.81 0.0297 0.0038  
 Moon -76373-12-25 01:40 J -26173456.65 -26173456.43 -26173456.19 0.0299 0.0084  
 Earth -76373-12-25 03:06 J -26173456.60 -26173456.37 -26173456.13 0.0299 0.0095 \*  
 Earth -76371-01-09 11:30 J -26173076.14 -26173076.02 -26173075.87 0.0300 0.0247  
 Moon -76371-01-09 12:42 J -26173076.10 -26173075.97 -26173075.81 0.0300 0.0237 \*  
 Venus -76367-07-08 11:30 J -26171435.22 -26171435.02 -26171434.83 0.0291 0.0088  
 Mercury -76365-03-17 19:25 J -26170816.77 -26170816.69 -26170816.60 0.0285 0.0212  
 Mercury -76365-06-14 06:42 J -26170728.34 -26170728.22 -26170728.10 0.0284 0.0100  
 Mercury -76365-09-10 17:59 J -26170639.88 -26170639.75 -26170639.62 0.0282 0.0013  
 Mercury -76365-12-08 05:01 J -26170551.41 -26170551.29 -26170551.17 0.0281 0.0121  
 Mercury -76364-03-06 16:18 J -26170462.89 -26170462.82 -26170462.75 0.0280 0.0230  
 Moon -76361-05-20 06:13 J -26169292.39 -26169292.24 -26169292.08 0.0269 0.0199  
 Earth -76361-05-20 07:11 J -26169292.33 -26169292.20 -26169292.04 0.0269 0.0210 \*  
 Earth -76360-05-31 16:47 J -26168916.02 -26168915.80 -26168915.58 0.0266 0.0106  
 Moon -76360-05-31 20:08 J -26168915.87 -26168915.66 -26168915.44 0.0266 0.0107 \*  
 Mars -76359-02-08 15:49 J -26168663.14 -26168662.84 -26168662.54 0.0264 0.0047  
 Earth -76359-06-11 23:01 J -26168539.78 -26168539.54 -26168539.30 0.0264 0.0003  
 Moon -76359-06-11 23:59 J -26168539.75 -26168539.50 -26168539.24 0.0264 0.0016 \*

Moon -76358-06-22 23:30 J -26168163.75 -26168163.52 -26168163.29 0.0262 0.0089  
 Earth -76358-06-23 03:06 J -26168163.59 -26168163.37 -26168163.14 0.0262 0.0100 \*  
 Moon -76357-07-03 06:28 J -26167787.36 -26167787.23 -26167787.06 0.0261 0.0201  
 Earth -76357-07-03 07:25 J -26167787.34 -26167787.19 -26167787.02 0.0261 0.0197 \*  
 Venus -76351-03-13 11:16 J -26165708.25 -26165708.03 -26165707.81 0.0269 0.0008  
 Mercury -76349-06-23 20:52 J -26164874.79 -26164874.63 -26164874.46 0.0277 0.0138  
 Mercury -76349-09-20 20:23 J -26164785.83 -26164785.65 -26164785.46 0.0278 0.0019  
 Mercury -76349-12-18 19:54 J -26164696.81 -26164696.67 -26164696.52 0.0279 0.0173  
 Earth -76346-11-18 17:01 J -26163631.84 -26163631.79 -26163631.70 0.0291 0.0278  
 Earth -76345-12-02 20:08 J -26163251.88 -26163251.66 -26163251.44 0.0294 0.0138  
 Moon -76345-12-02 22:47 J -26163251.78 -26163251.55 -26163251.33 0.0294 0.0149 \*  
 Moon -76344-12-18 03:20 J -26162871.62 -26162871.36 -26162871.11 0.0297 0.0009  
 Earth -76344-12-18 03:20 J -26162871.60 -26162871.36 -26162871.11 0.0297 0.0017 \*  
 Mars -76343-04-08 05:44 J -26162760.47 -26162760.26 -26162760.03 0.0298 0.0180  
 Moon -76342-01-02 09:49 J -26162491.29 -26162491.09 -26162490.87 0.0299 0.0164  
 Earth -76342-01-02 12:28 J -26162491.17 -26162490.98 -26162490.77 0.0299 0.0172 \*  
 Venus -76337-01-18 11:44 J -26160649.19 -26160649.01 -26160648.82 0.0292 0.0133  
 Mercury -76336-08-04 20:52 J -26160084.68 -26160084.63 -26160084.57 0.0286 0.0254  
 Mercury -76336-11-01 08:08 J -26159996.27 -26159996.16 -26159996.05 0.0285 0.0141  
 Mercury -76335-01-28 19:25 J -26159907.82 -26159907.69 -26159907.56 0.0284 0.0029  
 Mercury -76335-04-27 06:42 J -26159819.35 -26159819.22 -26159819.10 0.0283 0.0083  
 Mercury -76335-07-24 17:44 J -26159730.85 -26159730.76 -26159730.66 0.0282 0.0193  
 Earth -76332-05-15 11:44 J -26158705.08 -26158705.01 -26158704.92 0.0271 0.0254  
 Moon -76332-05-15 13:11 J -26158705.05 -26158704.95 -26158704.82 0.0271 0.0240 \*  
 Moon -76331-05-26 20:23 J -26158328.84 -26158328.65 -26158328.43 0.0268 0.0149  
 Earth -76331-05-26 23:59 J -26158328.69 -26158328.50 -26158328.29 0.0268 0.0152 \*  
 Moon -76330-06-07 06:13 J -26157952.47 -26157952.24 -26157952.01 0.0265 0.0056  
 Earth -76330-06-07 08:08 J -26157952.40 -26157952.16 -26157951.93 0.0265 0.0047 \*  
 Mars -76329-03-29 10:18 J -26157656.33 -26157656.07 -26157655.79 0.0264 0.0124  
 Earth -76329-06-17 13:11 J -26157576.18 -26157575.95 -26157575.71 0.0263 0.0055

Moon -76329-06-17 16:32 J -26157576.04 -26157575.81 -26157575.57 0.0263 0.0043 \*  
 Earth -76328-06-28 17:30 J -26157199.95 -26157199.77 -26157199.56 0.0262 0.0155  
 Moon -76328-06-28 18:42 J -26157199.91 -26157199.72 -26157199.51 0.0262 0.0152 \*  
 Moon -76327-07-09 19:54 J -26156823.70 -26156823.67 -26156823.64 0.0261 0.0259  
 Earth -76327-07-09 23:16 J -26156823.60 -26156823.53 -26156823.45 0.0261 0.0248  
 Venus -76322-09-23 16:04 J -26154922.04 -26154921.83 -26154921.62 0.0269 0.0064  
 Mercury -76320-11-10 19:25 J -26154142.83 -26154142.69 -26154142.55 0.0277 0.0181  
 Mercury -76319-02-07 18:56 J -26154053.90 -26154053.71 -26154053.52 0.0278 0.0027  
 Mercury -76319-05-07 18:13 J -26153964.90 -26153964.74 -26153964.57 0.0279 0.0129  
 Moon -76316-11-26 06:42 J -26152666.37 -26152666.22 -26152666.04 0.0293 0.0212  
 Earth -76316-11-26 08:37 J -26152666.31 -26152666.14 -26152665.94 0.0293 0.0200 \*  
 Mars -76315-05-24 06:13 J -26152487.37 -26152487.24 -26152487.10 0.0295 0.0256  
 Earth -76315-12-11 14:23 J -26152286.15 -26152285.90 -26152285.65 0.0296 0.0050  
 Moon -76315-12-11 15:20 J -26152286.09 -26152285.86 -26152285.62 0.0296 0.0059 \*  
 Earth -76314-12-26 23:16 J -26151905.76 -26151905.53 -26151905.30 0.0299 0.0107  
 Moon -76314-12-27 02:23 J -26151905.62 -26151905.40 -26151905.16 0.0299 0.0101 \*  
 Earth -76312-01-10 07:40 J -26151525.30 -26151525.18 -26151525.05 0.0300 0.0258  
 Moon -76312-01-10 11:44 J -26151525.14 -26151525.01 -26151524.88 0.0300 0.0251 \*  
 Venus -76309-12-12 23:59 J -26150092.53 -26150092.50 -26150092.46 0.0294 0.0289  
 Venus -76308-07-30 15:20 J -26149863.02 -26149862.86 -26149862.71 0.0291 0.0188  
 Mercury -76306-03-21 10:04 J -26149264.18 -26149264.08 -26149263.98 0.0285 0.0178  
 Mercury -76306-06-17 21:20 J -26149175.74 -26149175.61 -26149175.49 0.0284 0.0066  
 Mercury -76306-09-14 08:23 J -26149087.28 -26149087.15 -26149087.02 0.0283 0.0046  
 Mercury -76306-12-11 19:40 J -26148998.79 -26148998.68 -26148998.57 0.0282 0.0156  
 Mercury -76305-03-09 06:56 J -26148910.25 -26148910.21 -26148910.17 0.0281 0.0265  
 Earth -76302-05-22 03:49 J -26147741.48 -26147741.34 -26147741.16 0.0269 0.0200  
 Moon -76302-05-22 07:11 J -26147741.36 -26147741.20 -26147741.03 0.0269 0.0192 \*  
 Mars -76301-05-16 07:25 J -26147381.37 -26147381.19 -26147380.99 0.0266 0.0205  
 Earth -76301-06-01 13:40 J -26147365.15 -26147364.93 -26147364.70 0.0266 0.0095  
 Moon -76301-06-01 15:49 J -26147365.07 -26147364.84 -26147364.61 0.0266 0.0100 \*

Moon -76300-06-12 16:47 J -26146989.04 -26146988.80 -26146988.55 0.0264 0.0007  
 Earth -76300-06-12 19:54 J -26146988.91 -26146988.67 -26146988.43 0.0264 0.0008 \*  
 Moon -76299-06-23 23:01 J -26146612.75 -26146612.54 -26146612.32 0.0262 0.0104  
 Earth -76299-06-23 23:59 J -26146612.71 -26146612.50 -26146612.27 0.0262 0.0110 \*  
 Earth -76298-07-05 04:32 J -26146236.46 -26146236.31 -26146236.16 0.0261 0.0207  
 Moon -76298-07-05 07:40 J -26146236.30 -26146236.18 -26146236.03 0.0261 0.0215 \*  
 Venus -76292-04-04 15:20 J -26144136.06 -26144135.86 -26144135.65 0.0269 0.0099  
 Mercury -76290-03-30 14:37 J -26143410.97 -26143410.89 -26143410.80 0.0276 0.0245  
 Mercury -76290-06-27 14:08 J -26143322.09 -26143321.91 -26143321.73 0.0277 0.0092  
 Mercury -76290-09-24 13:40 J -26143233.12 -26143232.93 -26143232.75 0.0278 0.0064  
 Mercury -76290-12-22 12:42 J -26143144.07 -26143143.97 -26143143.84 0.0279 0.0220  
 Earth -76287-11-19 13:11 J -26142081.03 -26142080.95 -26142080.84 0.0291 0.0267  
 Moon -76287-11-19 14:37 J -26142080.96 -26142080.89 -26142080.81 0.0291 0.0277 \*  
 Moon -76286-12-04 13:54 J -26141701.14 -26141700.92 -26141700.68 0.0295 0.0133  
 Earth -76286-12-04 16:18 J -26141701.04 -26141700.82 -26141700.59 0.0295 0.0126 \*  
 Mars -76285-07-12 11:30 J -26141480.30 -26141480.02 -26141479.74 0.0296 0.0036  
 Moon -76285-12-18 19:54 J -26141320.91 -26141320.67 -26141320.42 0.0297 0.0026  
 Earth -76285-12-18 23:44 J -26141320.76 -26141320.51 -26141320.26 0.0297 0.0029 \*  
 Moon -76283-01-03 05:30 J -26140940.46 -26140940.27 -26140940.07 0.0299 0.0182  
 Earth -76283-01-03 08:52 J -26140940.32 -26140940.13 -26140939.94 0.0299 0.0184 \*  
 Venus -76279-06-24 23:59 J -26139306.60 -26139306.50 -26139306.37 0.0294 0.0245  
 Venus -76278-02-09 15:20 J -26139076.97 -26139076.86 -26139076.73 0.0292 0.0233  
 Mercury -76277-08-07 11:16 J -26138532.11 -26138532.03 -26138531.94 0.0286 0.0220  
 Mercury -76277-11-03 22:32 J -26138443.68 -26138443.56 -26138443.43 0.0285 0.0107  
 Mercury -76276-01-31 09:49 J -26138355.22 -26138355.09 -26138354.96 0.0284 0.0010  
 Mercury -76276-04-29 21:06 J -26138266.74 -26138266.62 -26138266.50 0.0283 0.0117  
 Mercury -76276-07-27 08:23 J -26138178.23 -26138178.15 -26138178.07 0.0282 0.0227  
 Moon -76273-05-16 05:16 J -26137154.39 -26137154.28 -26137154.14 0.0271 0.0232  
 Earth -76273-05-16 08:08 J -26137154.25 -26137154.16 -26137154.05 0.0271 0.0244 \*  
 Moon -76272-05-27 18:28 J -26136777.92 -26136777.73 -26136777.53 0.0268 0.0142

Earth -76272-05-27 20:37 J -26136777.84 -26136777.64 -26136777.43 0.0268 0.0140 \*  
 Earth -76271-06-08 04:32 J -26136401.55 -26136401.31 -26136401.07 0.0265 0.0036  
 Moon -76271-06-08 07:25 J -26136401.43 -26136401.19 -26136400.96 0.0265 0.0048 \*  
 Mars -76271-07-04 18:28 J -26136375.03 -26136374.73 -26136374.42 0.0265 0.0039  
 Earth -76270-06-19 09:49 J -26136025.32 -26136025.09 -26136024.85 0.0263 0.0067  
 Moon -76270-06-19 11:59 J -26136025.25 -26136025.00 -26136024.76 0.0263 0.0055 \*  
 Moon -76269-06-29 11:01 J -26135649.22 -26135649.04 -26135648.85 0.0262 0.0169  
 Earth -76269-06-29 14:23 J -26135649.08 -26135648.90 -26135648.70 0.0262 0.0166 \*  
 Earth -76268-07-10 19:54 J -26135272.69 -26135272.67 -26135272.62 0.0261 0.0258  
 Venus -76263-02-28 11:30 J -26133579.11 -26133579.02 -26133578.90 0.0267 0.0233  
 Venus -76263-10-15 20:23 J -26133349.82 -26133349.65 -26133349.46 0.0269 0.0156  
 Mercury -76261-11-13 12:42 J -26132590.13 -26132589.97 -26132589.79 0.0277 0.0133  
 Mercury -76260-02-10 12:13 J -26132501.17 -26132500.99 -26132500.80 0.0278 0.0023  
 Mercury -76260-05-10 11:44 J -26132412.15 -26132412.01 -26132411.87 0.0279 0.0177  
 Earth -76257-11-27 06:28 J -26131115.42 -26131115.23 -26131115.03 0.0293 0.0187  
 Moon -76257-11-27 08:52 J -26131115.30 -26131115.13 -26131114.94 0.0293 0.0197 \*  
 Earth -76256-12-12 11:44 J -26130735.25 -26130735.01 -26130734.76 0.0296 0.0037  
 Moon -76256-12-12 15:35 J -26130735.10 -26130734.85 -26130734.61 0.0296 0.0043 \*  
 Mars -76255-09-01 02:08 J -26130472.62 -26130472.41 -26130472.18 0.0298 0.0182  
 Earth -76255-12-27 20:23 J -26130354.87 -26130354.65 -26130354.41 0.0299 0.0121  
 Moon -76255-12-27 23:01 J -26130354.77 -26130354.54 -26130354.30 0.0299 0.0117 \*  
 Moon -76253-01-12 05:16 J -26129974.39 -26129974.28 -26129974.17 0.0300 0.0269  
 Earth -76253-01-12 05:01 J -26129974.38 -26129974.29 -26129974.18 0.0300 0.0271 \*  
 Venus -76249-01-05 04:32 J -26128520.47 -26128520.31 -26128520.15 0.0293 0.0186  
 Venus -76249-08-21 19:25 J -26128290.71 -26128290.69 -26128290.67 0.0291 0.0289  
 Mercury -76248-12-25 13:25 J -26127800.00 -26127799.94 -26127799.89 0.0286 0.0256  
 Mercury -76247-03-24 00:28 J -26127711.59 -26127711.48 -26127711.36 0.0285 0.0144  
 Mercury -76247-06-20 11:44 J -26127623.14 -26127623.01 -26127622.88 0.0284 0.0032  
 Mercury -76247-09-16 23:01 J -26127534.66 -26127534.54 -26127534.41 0.0283 0.0081  
 Mercury -76247-12-14 10:18 J -26127446.16 -26127446.07 -26127445.97 0.0282 0.0191

Earth -76243-05-23 01:11 J -26126190.61 -26126190.45 -26126190.27 0.0269 0.0189  
 Moon -76243-05-23 03:35 J -26126190.52 -26126190.35 -26126190.16 0.0269 0.0183 \*  
 Moon -76242-06-03 08:08 J -26125814.39 -26125814.16 -26125813.92 0.0266 0.0094  
 Earth -76242-06-03 11:01 J -26125814.26 -26125814.04 -26125813.81 0.0266 0.0084 \*  
 Moon -76241-06-13 14:52 J -26125438.12 -26125437.88 -26125437.65 0.0264 0.0007  
 Earth -76241-06-13 17:16 J -26125438.02 -26125437.78 -26125437.54 0.0264 0.0020 \*  
 Mars -76241-08-22 07:25 J -26125368.45 -26125368.19 -26125367.92 0.0263 0.0135  
 Earth -76240-06-24 21:49 J -26125061.80 -26125061.59 -26125061.37 0.0262 0.0121  
 Moon -76240-06-25 00:42 J -26125061.67 -26125061.47 -26125061.25 0.0262 0.0120 \*  
 Earth -76239-07-06 02:23 J -26124685.53 -26124685.40 -26124685.26 0.0261 0.0218  
 Moon -76239-07-06 04:32 J -26124685.43 -26124685.31 -26124685.19 0.0261 0.0228 \*  
 Venus -76234-09-10 11:44 J -26122793.14 -26122793.01 -26122792.85 0.0268 0.0196  
 Venus -76233-04-26 20:52 J -26122563.78 -26122563.63 -26122563.48 0.0270 0.0194  
 Mercury -76231-04-02 08:23 J -26121858.27 -26121858.15 -26121858.01 0.0276 0.0195  
 Mercury -76231-06-30 08:08 J -26121769.35 -26121769.16 -26121768.98 0.0277 0.0041  
 Mercury -76231-09-27 07:25 J -26121680.36 -26121680.19 -26121680.02 0.0278 0.0115  
 Mercury -76231-12-25 06:42 J -26121591.26 -26121591.22 -26121591.17 0.0279 0.0270  
 Moon -76228-11-20 08:23 J -26120530.25 -26120530.15 -26120530.03 0.0291 0.0263  
 Earth -76228-11-20 11:59 J -26120530.11 -26120530.00 -26120529.87 0.0291 0.0254 \*  
 Mars -76227-10-16 11:16 J -26120200.16 -26120200.03 -26120199.88 0.0294 0.0255  
 Moon -76227-12-05 11:16 J -26120150.26 -26120150.03 -26120149.81 0.0295 0.0118  
 Earth -76227-12-05 14:37 J -26120150.12 -26120149.89 -26120149.65 0.0295 0.0112 \*  
 Moon -76226-12-20 20:37 J -26119769.87 -26119769.64 -26119769.40 0.0297 0.0042  
 Earth -76226-12-20 22:04 J -26119769.82 -26119769.58 -26119769.33 0.0297 0.0043 \*  
 Earth -76224-01-04 06:42 J -26119389.40 -26119389.22 -26119389.03 0.0299 0.0198  
 Moon -76224-01-04 08:23 J -26119389.33 -26119389.15 -26119388.97 0.0299 0.0200 \*  
 Venus -76220-07-17 04:32 J -26117734.48 -26117734.31 -26117734.13 0.0294 0.0142  
 Mercury -76218-08-11 01:54 J -26116979.52 -26116979.42 -26116979.32 0.0286 0.0185  
 Mercury -76218-11-07 13:11 J -26116891.07 -26116890.95 -26116890.82 0.0285 0.0072  
 Mercury -76217-02-04 00:28 J -26116802.61 -26116802.48 -26116802.35 0.0284 0.0040

Mercury -76217-05-02 11:44 J -26116714.12 -26116714.01 -26116713.90 0.0283 0.0151

Mercury -76217-07-29 23:01 J -26116625.59 -26116625.54 -26116625.50 0.0282 0.0262

Moon -76214-05-18 02:23 J -26115603.53 -26115603.40 -26115603.27 0.0271 0.0222

Earth -76214-05-18 05:01 J -26115603.40 -26115603.29 -26115603.16 0.0271 0.0233 \*

Earth -76213-05-28 17:30 J -26115226.97 -26115226.77 -26115226.55 0.0268 0.0129

Moon -76213-05-28 20:08 J -26115226.86 -26115226.66 -26115226.46 0.0268 0.0134 \*

Mars -76213-10-09 09:35 J -26115093.28 -26115093.10 -26115092.89 0.0267 0.0200

Earth -76212-06-09 01:54 J -26114850.66 -26114850.42 -26114850.18 0.0265 0.0024

Moon -76212-06-09 04:47 J -26114850.54 -26114850.30 -26114850.05 0.0265 0.0038 \*

Moon -76211-06-20 05:01 J -26114474.52 -26114474.29 -26114474.04 0.0263 0.0070

Earth -76211-06-20 07:25 J -26114474.41 -26114474.19 -26114473.95 0.0263 0.0080 \*

Moon -76210-07-01 10:18 J -26114098.23 -26114098.07 -26114097.90 0.0262 0.0184

Earth -76210-07-01 12:28 J -26114098.16 -26114097.98 -26114097.80 0.0262 0.0177 \*

Venus -76204-03-22 17:16 J -26112006.96 -26112006.78 -26112006.59 0.0268 0.0138

Venus -76204-11-07 02:08 J -26111777.47 -26111777.41 -26111777.33 0.0269 0.0253

Mercury -76202-08-20 07:40 J -26111126.28 -26111126.18 -26111126.08 0.0276 0.0233

Mercury -76202-11-17 06:56 J -26111037.39 -26111037.21 -26111037.02 0.0277 0.0080

Mercury -76201-02-14 06:28 J -26110948.41 -26110948.23 -26110948.05 0.0278 0.0075

Mercury -76201-05-13 05:30 J -26110859.36 -26110859.27 -26110859.15 0.0279 0.0230

Earth -76198-11-29 06:28 J -26109564.43 -26109564.23 -26109564.03 0.0293 0.0173

Moon -76198-11-29 09:35 J -26109564.29 -26109564.10 -26109563.89 0.0293 0.0181 \*

Mars -76197-12-05 12:56 J -26109192.24 -26109191.96 -26109191.68 0.0296 0.0033

Earth -76197-12-13 11:44 J -26109184.26 -26109184.01 -26109183.76 0.0297 0.0022

Moon -76197-12-13 12:28 J -26109184.23 -26109183.98 -26109183.72 0.0297 0.0026 \*

Moon -76196-12-28 17:59 J -26108803.97 -26108803.75 -26108803.52 0.0299 0.0138

Earth -76196-12-28 20:08 J -26108803.87 -26108803.66 -26108803.43 0.0299 0.0135 \*

Moon -76194-01-13 00:42 J -26108423.52 -26108423.47 -26108423.40 0.0300 0.0290

Earth -76194-01-13 04:32 J -26108423.38 -26108423.31 -26108423.23 0.0300 0.0285

Venus -76190-01-27 10:04 J -26106948.28 -26106948.08 -26106947.88 0.0293 0.0078

Mercury -76189-12-28 04:04 J -26106247.41 -26106247.33 -26106247.24 0.0286 0.0219



Mercury -76188-03-26 15:35 J -26106158.97 -26106158.85 -26106158.73 0.0285 0.0106

Mercury -76188-06-23 02:52 J -26106070.52 -26106070.38 -26106070.25 0.0284 0.0012

Mercury -76188-09-19 13:54 J -26105982.03 -26105981.92 -26105981.80 0.0283 0.0119

Mercury -76188-12-17 01:11 J -26105893.52 -26105893.45 -26105893.37 0.0282 0.0229

Moon -76185-05-12 12:42 J -26105016.03 -26105015.97 -26105015.92 0.0272 0.0264

Moon -76184-05-23 22:04 J -26104639.76 -26104639.58 -26104639.38 0.0269 0.0175

Earth -76184-05-24 00:13 J -26104639.67 -26104639.49 -26104639.31 0.0269 0.0176 \*

Moon -76183-06-04 07:11 J -26104263.42 -26104263.20 -26104262.97 0.0266 0.0084

Earth -76183-06-04 10:04 J -26104263.31 -26104263.08 -26104262.85 0.0266 0.0071 \*

Mars -76183-11-27 20:52 J -26104086.93 -26104086.63 -26104086.33 0.0265 0.0026

Earth -76182-06-15 16:18 J -26103887.06 -26103886.82 -26103886.58 0.0264 0.0033

Moon -76182-06-15 18:13 J -26103886.97 -26103886.74 -26103886.50 0.0264 0.0020 \*

Earth -76181-06-25 21:06 J -26103510.82 -26103510.62 -26103510.41 0.0262 0.0134

Moon -76181-06-25 23:44 J -26103510.72 -26103510.51 -26103510.29 0.0262 0.0133 \*

Moon -76180-07-06 22:47 J -26103134.62 -26103134.55 -26103134.44 0.0261 0.0244

Earth -76180-07-07 02:08 J -26103134.52 -26103134.41 -26103134.29 0.0261 0.0230 \*

Venus -76175-10-02 18:42 J -26101220.92 -26101220.72 -26101220.51 0.0268 0.0097

Mercury -76172-04-05 03:35 J -26100305.52 -26100305.35 -26100305.19 0.0277 0.0137

Mercury -76172-07-03 02:52 J -26100216.57 -26100216.38 -26100216.19 0.0277 0.0017

Mercury -76172-09-30 02:08 J -26100127.55 -26100127.41 -26100127.26 0.0278 0.0172

Moon -76169-11-21 11:59 J -26098979.13 -26098979.00 -26098978.87 0.0291 0.0246

Earth -76169-11-21 14:08 J -26098979.04 -26098978.91 -26098978.76 0.0291 0.0241 \*

Earth -76168-12-06 16:47 J -26098599.03 -26098598.80 -26098598.56 0.0295 0.0096

Moon -76168-12-06 17:01 J -26098599.02 -26098598.79 -26098598.56 0.0295 0.0099 \*

Earth -76167-12-22 00:13 J -26098218.73 -26098218.49 -26098218.25 0.0297 0.0059

Moon -76167-12-22 02:52 J -26098218.61 -26098218.38 -26098218.14 0.0297 0.0062 \*

Mars -76166-01-24 15:20 J -26098185.07 -26098184.86 -26098184.64 0.0298 0.0188

Earth -76165-01-06 08:37 J -26097838.30 -26097838.14 -26097837.96 0.0299 0.0214

Moon -76165-01-06 12:28 J -26097838.14 -26097837.98 -26097837.81 0.0299 0.0219 \*

Venus -76161-08-08 10:47 J -26096162.26 -26096162.05 -26096161.85 0.0293 0.0032

Mercury -76159-05-17 05:30 J -26095515.32 -26095515.27 -26095515.22 0.0287 0.0261  
 Mercury -76159-08-13 16:47 J -26095426.91 -26095426.80 -26095426.68 0.0286 0.0147  
 Mercury -76159-11-10 04:04 J -26095338.45 -26095338.33 -26095338.20 0.0285 0.0036  
 Mercury -76158-02-06 15:20 J -26095249.98 -26095249.86 -26095249.73 0.0284 0.0079  
 Mercury -76158-05-06 02:37 J -26095161.48 -26095161.39 -26095161.29 0.0283 0.0190  
 Earth -76155-05-19 03:49 J -26094052.47 -26094052.34 -26094052.20 0.0271 0.0221  
 Moon -76155-05-19 05:01 J -26094052.42 -26094052.29 -26094052.14 0.0271 0.0214 \*  
 Earth -76154-05-30 16:32 J -26093676.02 -26093675.81 -26093675.59 0.0268 0.0116  
 Moon -76154-05-30 19:25 J -26093675.90 -26093675.69 -26093675.46 0.0268 0.0123 \*  
 Moon -76153-06-09 23:01 J -26093299.78 -26093299.54 -26093299.29 0.0265 0.0026  
 Earth -76153-06-10 01:11 J -26093299.70 -26093299.45 -26093299.21 0.0265 0.0011 \*  
 Mars -76152-01-15 14:52 J -26093080.12 -26093079.88 -26093079.61 0.0264 0.0144  
 Moon -76152-06-21 03:49 J -26092923.56 -26092923.34 -26092923.11 0.0263 0.0085  
 Earth -76152-06-21 06:56 J -26092923.43 -26092923.21 -26092922.98 0.0263 0.0093 \*  
 Earth -76151-07-02 11:59 J -26092547.16 -26092547.00 -26092546.82 0.0262 0.0191  
 Moon -76151-07-02 14:23 J -26092547.04 -26092546.90 -26092546.74 0.0262 0.0201 \*  
 Venus -76145-04-14 00:56 J -26090434.68 -26090434.46 -26090434.25 0.0268 0.0037  
 Mercury -76143-08-23 02:52 J -26089573.52 -26089573.38 -26089573.22 0.0276 0.0173  
 Mercury -76143-11-20 02:23 J -26089484.59 -26089484.40 -26089484.21 0.0277 0.0020  
 Mercury -76142-02-17 01:40 J -26089395.59 -26089395.43 -26089395.26 0.0278 0.0135  
 Moon -76139-11-30 09:35 J -26088013.31 -26088013.10 -26088012.88 0.0293 0.0160  
 Earth -76139-11-30 11:01 J -26088013.25 -26088013.04 -26088012.83 0.0293 0.0158 \*  
 Mars -76138-03-11 23:30 J -26087911.68 -26087911.52 -26087911.37 0.0294 0.0246  
 Moon -76138-12-15 12:56 J -26087633.21 -26087632.96 -26087632.71 0.0297 0.0005  
 Earth -76138-12-15 16:04 J -26087633.07 -26087632.83 -26087632.58 0.0297 0.0008 \*  
 Moon -76137-12-29 20:52 J -26087252.83 -26087252.63 -26087252.41 0.0299 0.0156  
 Earth -76137-12-30 00:28 J -26087252.69 -26087252.48 -26087252.27 0.0299 0.0152 \*  
 Venus -76131-02-18 17:16 J -26085375.99 -26085375.78 -26085375.58 0.0293 0.0036  
 Mercury -76130-12-31 19:25 J -26084694.79 -26084694.69 -26084694.59 0.0286 0.0178  
 Mercury -76129-03-29 06:42 J -26084606.34 -26084606.22 -26084606.09 0.0285 0.0065

Mercury -76129-06-25 17:59 J -26084517.88 -26084517.75 -26084517.62 0.0284 0.0048  
 Mercury -76129-09-22 05:16 J -26084429.39 -26084429.28 -26084429.17 0.0283 0.0160  
 Mercury -76129-12-19 16:32 J -26084340.84 -26084340.81 -26084340.78 0.0282 0.0270  
 Moon -76126-05-14 08:23 J -26083465.23 -26083465.15 -26083465.06 0.0272 0.0254  
 Earth -76126-05-14 09:35 J -26083465.13 -26083465.10 -26083465.05 0.0272 0.0267 \*  
 Moon -76125-05-24 21:06 J -26083088.79 -26083088.62 -26083088.42 0.0269 0.0164  
 Earth -76125-05-25 00:42 J -26083088.66 -26083088.47 -26083088.28 0.0269 0.0163 \*  
 Mars -76124-03-04 19:40 J -26082804.88 -26082804.68 -26082804.45 0.0266 0.0185  
 Earth -76124-06-05 10:47 J -26082712.29 -26082712.05 -26082711.81 0.0266 0.0057  
 Moon -76124-06-05 12:13 J -26082712.21 -26082711.99 -26082711.76 0.0266 0.0071 \*  
 Earth -76123-06-16 17:16 J -26082336.01 -26082335.78 -26082335.54 0.0264 0.0048  
 Moon -76123-06-16 20:52 J -26082335.87 -26082335.63 -26082335.38 0.0264 0.0034 \*  
 Moon -76122-06-27 20:52 J -26081959.83 -26081959.63 -26081959.42 0.0262 0.0150  
 Earth -76122-06-27 22:18 J -26081959.75 -26081959.57 -26081959.35 0.0262 0.0149 \*  
 Moon -76121-07-08 00:56 J -26081583.49 -26081583.46 -26081583.42 0.0261 0.0258  
 Earth -76121-07-08 03:49 J -26081583.42 -26081583.34 -26081583.25 0.0261 0.0243 \*  
 Venus -76116-10-25 03:49 J -26079648.56 -26079648.34 -26079648.12 0.0268 0.0010  
 Mercury -76113-01-09 23:59 J -26078841.60 -26078841.50 -26078841.38 0.0276 0.0225  
 Mercury -76113-04-07 23:30 J -26078752.70 -26078752.52 -26078752.33 0.0277 0.0072  
 Mercury -76113-07-05 22:47 J -26078663.72 -26078663.55 -26078663.36 0.0278 0.0083  
 Mercury -76113-10-02 22:04 J -26078574.67 -26078574.58 -26078574.48 0.0279 0.0237  
 Earth -76110-11-23 20:52 J -26077427.78 -26077427.63 -26077427.46 0.0291 0.0224  
 Moon -76110-11-23 23:01 J -26077427.68 -26077427.54 -26077427.37 0.0291 0.0226 \*  
 Earth -76109-12-07 23:16 J -26077047.77 -26077047.53 -26077047.29 0.0295 0.0078  
 Moon -76109-12-08 03:06 J -26077047.61 -26077047.37 -26077047.13 0.0295 0.0078 \*  
 Mars -76108-04-30 13:54 J -26076904.20 -26076903.92 -26076903.64 0.0296 0.0022  
 Earth -76108-12-23 06:28 J -26076667.47 -26076667.23 -26076666.99 0.0297 0.0078  
 Moon -76108-12-23 09:49 J -26076667.33 -26076667.09 -26076666.84 0.0297 0.0079 \*  
 Earth -76106-01-07 15:06 J -26076287.02 -26076286.87 -26076286.71 0.0299 0.0231  
 Moon -76106-01-07 15:35 J -26076286.99 -26076286.85 -26076286.68 0.0299 0.0237 \*

Venus -76102-08-31 18:56 J -26074589.91 -26074589.71 -26074589.51 0.0293 0.0086  
 Mercury -76100-05-19 21:06 J -26073962.70 -26073962.62 -26073962.54 0.0286 0.0217  
 Mercury -76100-08-16 08:23 J -26073874.27 -26073874.15 -26073874.03 0.0285 0.0104  
 Mercury -76100-11-12 19:40 J -26073785.81 -26073785.68 -26073785.55 0.0284 0.0010  
 Mercury -76099-02-09 06:56 J -26073697.33 -26073697.21 -26073697.09 0.0283 0.0122  
 Mercury -76099-05-08 18:13 J -26073608.81 -26073608.74 -26073608.67 0.0282 0.0233  
 Earth -76096-05-20 05:30 J -26072501.42 -26072501.27 -26072501.12 0.0271 0.0208  
 Moon -76096-05-20 08:52 J -26072501.28 -26072501.13 -26072500.96 0.0271 0.0202 \*  
 Moon -76095-05-31 17:16 J -26072125.00 -26072124.78 -26072124.55 0.0268 0.0111  
 Earth -76095-05-31 18:13 J -26072124.96 -26072124.74 -26072124.52 0.0268 0.0102 \*  
 Mars -76094-04-23 09:06 J -26071798.43 -26071798.12 -26071797.82 0.0266 0.0017  
 Moon -76094-06-11 23:16 J -26071748.76 -26071748.53 -26071748.29 0.0265 0.0011  
 Earth -76094-06-12 02:52 J -26071748.62 -26071748.38 -26071748.14 0.0265 0.0005 \*  
 Earth -76093-06-22 09:06 J -26071372.34 -26071372.12 -26071371.90 0.0263 0.0108  
 Moon -76093-06-22 09:49 J -26071372.30 -26071372.09 -26071371.87 0.0263 0.0103 \*  
 Earth -76092-07-03 14:23 J -26070996.04 -26070995.90 -26070995.74 0.0262 0.0206  
 Moon -76092-07-03 17:30 J -26070995.89 -26070995.77 -26070995.62 0.0262 0.0216 \*  
 Venus -76086-05-07 10:32 J -26068862.27 -26068862.06 -26068861.85 0.0268 0.0072  
 Mercury -76084-05-29 00:13 J -26068109.55 -26068109.49 -26068109.42 0.0275 0.0258  
 Mercury -76084-08-25 23:30 J -26068020.69 -26068020.52 -26068020.34 0.0276 0.0105  
 Mercury -76084-11-22 23:01 J -26067931.73 -26067931.54 -26067931.36 0.0277 0.0049  
 Mercury -76083-02-19 22:04 J -26067842.70 -26067842.58 -26067842.44 0.0278 0.0203  
 Moon -76081-11-16 17:01 J -26066841.84 -26066841.79 -26066841.70 0.0290 0.0279  
 Earth -76081-11-16 20:08 J -26066841.71 -26066841.66 -26066841.58 0.0290 0.0279 \*  
 Moon -76080-12-01 15:49 J -26066462.05 -26066461.84 -26066461.61 0.0293 0.0138  
 Earth -76080-12-01 19:54 J -26066461.89 -26066461.67 -26066461.45 0.0293 0.0140 \*  
 Moon -76079-12-16 22:32 J -26066081.80 -26066081.56 -26066081.32 0.0297 0.0016  
 Earth -76079-12-17 01:25 J -26066081.69 -26066081.44 -26066081.19 0.0297 0.0015 \*  
 Mars -76078-06-20 14:52 J -26065896.07 -26065895.88 -26065895.67 0.0298 0.0203  
 Moon -76077-01-01 09:06 J -26065701.30 -26065701.12 -26065700.92 0.0299 0.0177

Earth -76077-01-01 09:20 J -26065701.30 -26065701.11 -26065700.90 0.0299 0.0172 \*  
 Venus -76072-03-13 02:52 J -26063803.55 -26063803.38 -26063803.20 0.0293 0.0159  
 Mercury -76071-10-06 23:59 J -26063230.56 -26063230.50 -26063230.43 0.0287 0.0245  
 Mercury -76070-01-03 11:16 J -26063142.14 -26063142.03 -26063141.91 0.0286 0.0131  
 Mercury -76070-04-01 22:32 J -26063053.69 -26063053.56 -26063053.43 0.0285 0.0019  
 Mercury -76070-06-29 09:49 J -26062965.21 -26062965.09 -26062964.96 0.0284 0.0096  
 Mercury -76070-09-25 21:06 J -26062876.70 -26062876.62 -26062876.53 0.0282 0.0207  
 Moon -76067-05-15 09:20 J -26061914.20 -26061914.11 -26061914.00 0.0272 0.0245  
 Earth -76067-05-15 13:11 J -26061914.03 -26061913.95 -26061913.86 0.0272 0.0254 \*  
 Earth -76066-05-27 04:04 J -26061537.52 -26061537.33 -26061537.12 0.0269 0.0149  
 Moon -76066-05-27 03:49 J -26061537.51 -26061537.34 -26061537.13 0.0269 0.0153 \*  
 Earth -76065-06-06 14:08 J -26061161.14 -26061160.91 -26061160.67 0.0266 0.0043  
 Moon -76065-06-06 17:44 J -26061161.00 -26061160.76 -26061160.52 0.0266 0.0057 \*  
 Mars -76064-06-11 11:16 J -26060791.27 -26060791.03 -26060790.79 0.0264 0.0164  
 Moon -76064-06-17 20:37 J -26060784.89 -26060784.64 -26060784.40 0.0264 0.0053  
 Earth -76064-06-17 21:06 J -26060784.85 -26060784.62 -26060784.38 0.0264 0.0063 \*  
 Moon -76063-06-28 23:16 J -26060408.72 -26060408.53 -26060408.34 0.0262 0.0167  
 Earth -76063-06-29 02:37 J -26060408.57 -26060408.39 -26060408.19 0.0262 0.0163 \*  
 Earth -76062-07-10 08:08 J -26060032.19 -26060032.16 -26060032.11 0.0262 0.0258  
 Venus -76057-04-01 06:56 J -26058305.25 -26058305.21 -26058305.16 0.0267 0.0261  
 Venus -76057-11-16 14:52 J -26058076.06 -26058075.88 -26058075.68 0.0269 0.0125  
 Mercury -76054-01-12 21:49 J -26057288.75 -26057288.59 -26057288.43 0.0276 0.0151  
 Mercury -76054-04-11 21:06 J -26057199.81 -26057199.62 -26057199.43 0.0277 0.0006  
 Mercury -76054-07-09 20:23 J -26057110.80 -26057110.65 -26057110.49 0.0278 0.0157  
 Earth -76051-11-25 09:20 J -26055876.29 -26055876.11 -26055875.94 0.0291 0.0205  
 Moon -76051-11-25 12:42 J -26055876.14 -26055875.97 -26055875.78 0.0291 0.0203 \*  
 Mars -76050-08-05 14:08 J -26055623.07 -26055622.91 -26055622.72 0.0294 0.0229  
 Earth -76050-12-10 11:44 J -26055496.25 -26055496.01 -26055495.76 0.0295 0.0057  
 Moon -76050-12-10 13:40 J -26055496.18 -26055495.93 -26055495.67 0.0295 0.0054 \*  
 Moon -76049-12-24 17:59 J -26055115.98 -26055115.75 -26055115.50 0.0297 0.0104

Earth -76049-12-24 18:42 J -26055115.95 -26055115.72 -26055115.48 0.0297 0.0100 \*  
 Moon -76047-01-08 23:44 J -26054735.62 -26054735.51 -26054735.38 0.0299 0.0260  
 Earth -76047-01-09 02:37 J -26054735.50 -26054735.39 -26054735.24 0.0299 0.0252 \*  
 Venus -76043-02-05 13:40 J -26053247.01 -26053246.93 -26053246.84 0.0294 0.0268  
 Venus -76043-09-23 05:30 J -26053017.40 -26053017.27 -26053017.13 0.0292 0.0213  
 Mercury -76041-02-24 01:40 J -26052498.44 -26052498.43 -26052498.40 0.0287 0.0283  
 Mercury -76041-05-22 13:11 J -26052410.05 -26052409.95 -26052409.85 0.0286 0.0168  
 Mercury -76041-08-19 00:28 J -26052321.61 -26052321.48 -26052321.35 0.0285 0.0055  
 Mercury -76041-11-15 11:44 J -26052233.14 -26052233.01 -26052232.88 0.0284 0.0059  
 Mercury -76040-02-11 23:01 J -26052144.64 -26052144.54 -26052144.43 0.0283 0.0170  
 Mercury -76040-05-11 10:18 J -26052056.07 -26052056.07 -26052056.06 0.0282 0.0281  
 Earth -76037-05-21 09:20 J -26050950.26 -26050950.11 -26050949.93 0.0271 0.0195  
 Moon -76037-05-21 09:35 J -26050950.26 -26050950.10 -26050949.91 0.0271 0.0192 \*  
 Moon -76036-06-01 18:56 J -26050573.94 -26050573.71 -26050573.49 0.0268 0.0098  
 Earth -76036-06-01 22:18 J -26050573.79 -26050573.57 -26050573.34 0.0268 0.0087 \*  
 Mars -76036-07-29 13:54 J -26050516.15 -26050515.92 -26050515.69 0.0267 0.0173  
 Earth -76035-06-13 06:56 J -26050197.45 -26050197.21 -26050196.97 0.0265 0.0020  
 Moon -76035-06-13 07:25 J -26050197.43 -26050197.19 -26050196.96 0.0265 0.0009 \*  
 Earth -76034-06-24 13:25 J -26049821.15 -26049820.94 -26049820.72 0.0264 0.0123  
 Moon -76034-06-24 17:16 J -26049820.99 -26049820.78 -26049820.56 0.0264 0.0121 \*  
 Moon -76033-07-04 18:56 J -26049444.82 -26049444.71 -26049444.58 0.0262 0.0231  
 Earth -76033-07-04 19:25 J -26049444.82 -26049444.69 -26049444.56 0.0262 0.0221 \*  
 Venus -76028-10-12 13:40 J -26047519.06 -26047518.93 -26047518.78 0.0267 0.0200  
 Venus -76027-05-29 22:18 J -26047289.72 -26047289.57 -26047289.41 0.0269 0.0188  
 Mercury -76025-05-31 22:04 J -26046556.72 -26046556.58 -26046556.44 0.0276 0.0183  
 Mercury -76025-08-28 21:20 J -26046467.80 -26046467.61 -26046467.42 0.0277 0.0030  
 Mercury -76025-11-25 20:37 J -26046378.80 -26046378.64 -26046378.47 0.0277 0.0124  
 Moon -76022-11-19 06:13 J -26045290.33 -26045290.24 -26045290.12 0.0290 0.0262  
 Earth -76022-11-19 09:35 J -26045290.20 -26045290.10 -26045289.98 0.0290 0.0261 \*  
 Moon -76021-12-03 08:23 J -26044910.37 -26044910.15 -26044909.92 0.0294 0.0117

Earth -76021-12-03 09:20 J -26044910.33 -26044910.11 -26044909.88 0.0294 0.0120 \*  
 Mars -76020-09-25 02:37 J -26044614.68 -26044614.39 -26044614.11 0.0296 0.0005  
 Earth -76020-12-18 14:52 J -26044530.12 -26044529.88 -26044529.63 0.0297 0.0036  
 Moon -76020-12-18 16:32 J -26044530.05 -26044529.81 -26044529.57 0.0297 0.0041 \*  
 Earth -76018-01-02 22:47 J -26044149.73 -26044149.55 -26044149.35 0.0299 0.0193  
 Moon -76018-01-03 02:23 J -26044149.58 -26044149.40 -26044149.22 0.0299 0.0199 \*  
 Venus -76014-08-18 23:16 J -26042460.68 -26042460.53 -26042460.37 0.0294 0.0189  
 Venus -76013-04-04 14:37 J -26042230.90 -26042230.89 -26042230.86 0.0292 0.0290  
 Mercury -76012-10-09 16:32 J -26041677.91 -26041677.81 -26041677.72 0.0286 0.0192  
 Mercury -76011-01-06 03:49 J -26041589.46 -26041589.34 -26041589.21 0.0285 0.0078  
 Mercury -76011-04-04 15:06 J -26041501.00 -26041500.87 -26041500.74 0.0284 0.0035  
 Mercury -76011-07-02 02:23 J -26041412.51 -26041412.40 -26041412.29 0.0283 0.0147  
 Mercury -76011-09-28 13:40 J -26041323.98 -26041323.93 -26041323.88 0.0282 0.0258  
 Moon -76008-05-16 18:56 J -26040362.81 -26040362.71 -26040362.58 0.0272 0.0235  
 Earth -76008-05-16 19:25 J -26040362.79 -26040362.69 -26040362.57 0.0272 0.0241 \*  
 Earth -76007-05-28 10:18 J -26039986.27 -26039986.07 -26039985.85 0.0269 0.0134  
 Moon -76007-05-28 13:54 J -26039986.12 -26039985.92 -26039985.71 0.0269 0.0139 \*  
 Earth -76006-06-08 20:37 J -26039609.88 -26039609.64 -26039609.40 0.0266 0.0026  
 Moon -76006-06-08 21:20 J -26039609.86 -26039609.61 -26039609.36 0.0266 0.0039 \*  
 Mars -76006-09-17 14:37 J -26039509.20 -26039508.89 -26039508.59 0.0265 0.0009  
 Moon -76005-06-18 23:59 J -26039233.73 -26039233.50 -26039233.26 0.0264 0.0073  
 Earth -76005-06-19 03:49 J -26039233.57 -26039233.34 -26039233.11 0.0264 0.0079 \*  
 Moon -76004-06-30 08:52 J -26038857.29 -26038857.13 -26038856.96 0.0262 0.0186  
 Earth -76004-06-30 09:20 J -26038857.28 -26038857.11 -26038856.92 0.0262 0.0179 \*

# 76TH MILLENNIUM BCE

## This is a list of transits visible from Saturn in the 76th millennium BCE.

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
	TRANSIT							
	TIME							
Venus	-75998-04-24 19:40 J	-26036732.86	-26036732.68	-26036732.49	0.0267	0.0143		
Venus	-75998-12-10 04:04 J	-26036503.40	-26036503.33	-26036503.23	0.0269	0.0247		
Mercury	-75996-10-18 21:06 J	-26035824.73	-26035824.62	-26035824.51	0.0276	0.0223		
Mercury	-75995-01-15 20:23 J	-26035735.83	-26035735.65	-26035735.46	0.0277	0.0070		
Mercury	-75995-04-14 19:40 J	-26035646.85	-26035646.68	-26035646.49	0.0277	0.0084		
Mercury	-75995-07-12 18:56 J	-26035557.80	-26035557.71	-26035557.61	0.0278	0.0238		
Moon	-75992-11-27 01:40 J	-26034324.62	-26034324.43	-26034324.22	0.0292	0.0181		
Earth	-75992-11-27 01:40 J	-26034324.61	-26034324.43	-26034324.23	0.0292	0.0185	*	
Moon	-75991-12-12 01:54 J	-26033944.67	-26033944.42	-26033944.16	0.0295	0.0028		
Earth	-75991-12-12 04:47 J	-26033944.55	-26033944.30	-26033944.05	0.0295	0.0034	*	
Mars	-75990-11-14 17:59 J	-26033606.91	-26033606.75	-26033606.56	0.0297	0.0228		
Moon	-75990-12-27 07:54 J	-26033564.40	-26033564.17	-26033563.95	0.0298	0.0130		
Earth	-75990-12-27 11:44 J	-26033564.23	-26033564.01	-26033563.78	0.0298	0.0123	*	
Moon	-75988-01-10 16:04 J	-26033183.90	-26033183.83	-26033183.74	0.0299	0.0282		
Earth	-75988-01-10 19:11 J	-26033183.78	-26033183.70	-26033183.59	0.0299	0.0274	*	
Venus	-75984-02-28 03:35 J	-26031674.53	-26031674.35	-26031674.16	0.0294	0.0128		
Mercury	-75982-02-26 18:28 J	-26030945.80	-26030945.73	-26030945.65	0.0286	0.0228		
Mercury	-75982-05-26 05:59 J	-26030857.37	-26030857.25	-26030857.13	0.0285	0.0113		
Mercury	-75982-08-22 17:16 J	-26030768.91	-26030768.78	-26030768.65	0.0284	0.0001		
Mercury	-75982-11-19 04:32 J	-26030680.43	-26030680.31	-26030680.19	0.0284	0.0113		
Mercury	-75981-02-15 15:49 J	-26030591.92	-26030591.84	-26030591.76	0.0283	0.0225		
Moon	-75978-05-23 13:11 J	-26029399.13	-26029398.95	-26029398.77	0.0271	0.0182		
Earth	-75978-05-23 16:47 J	-26029398.97	-26029398.80	-26029398.62	0.0271	0.0180	*	
Moon	-75977-06-03 03:49 J	-26029022.56	-26029022.34	-26029022.11	0.0268	0.0083		
Earth	-75977-06-03 05:16 J	-26029022.51	-26029022.28	-26029022.04	0.0268	0.0071	*	



Earth -75976-06-14 13:54 J -26028646.16 -26028645.92 -26028645.68 0.0265 0.0037  
 Moon -75976-06-14 17:16 J -26028646.01 -26028645.78 -26028645.54 0.0265 0.0025 \*  
 Mars -75976-11-05 13:54 J -26028502.13 -26028501.92 -26028501.68 0.0265 0.0182  
 Earth -75975-06-25 20:37 J -26028269.85 -26028269.64 -26028269.44 0.0264 0.0140  
 Moon -75975-06-25 21:20 J -26028269.82 -26028269.61 -26028269.40 0.0264 0.0141 \*  
 Moon -75974-07-06 23:16 J -26027893.60 -26027893.53 -26027893.46 0.0262 0.0250  
 Earth -75974-07-07 02:23 J -26027893.48 -26027893.40 -26027893.28 0.0262 0.0238 \*  
 Venus -75969-11-04 02:52 J -26025946.59 -26025946.38 -26025946.17 0.0268 0.0081  
 Mercury -75966-03-07 21:35 J -26025092.67 -26025092.60 -26025092.53 0.0275 0.0253  
 Mercury -75966-06-04 20:52 J -26025003.80 -26025003.63 -26025003.45 0.0276 0.0101  
 Mercury -75966-09-01 20:23 J -26024914.84 -26024914.65 -26024914.47 0.0277 0.0053  
 Mercury -75966-11-29 19:40 J -26024825.81 -26024825.68 -26024825.56 0.0278 0.0207  
 Earth -75963-11-21 03:35 J -26023738.48 -26023738.35 -26023738.20 0.0290 0.0242  
 Moon -75963-11-21 03:49 J -26023738.46 -26023738.34 -26023738.20 0.0290 0.0243 \*  
 Earth -75962-12-06 04:04 J -26023358.57 -26023358.33 -26023358.09 0.0294 0.0098  
 Moon -75962-12-06 07:11 J -26023358.43 -26023358.20 -26023357.97 0.0294 0.0093 \*  
 Mars -75962-12-31 13:11 J -26023333.16 -26023332.95 -26023332.73 0.0294 0.0197  
 Earth -75961-12-20 09:49 J -26022978.33 -26022978.09 -26022977.84 0.0297 0.0059  
 Moon -75961-12-20 13:40 J -26022978.17 -26022977.93 -26022977.68 0.0297 0.0066 \*  
 Earth -75959-01-04 17:44 J -26022597.92 -26022597.76 -26022597.58 0.0299 0.0216  
 Moon -75959-01-04 20:52 J -26022597.80 -26022597.63 -26022597.46 0.0299 0.0222 \*  
 Venus -75955-09-10 14:08 J -26020888.11 -26020887.91 -26020887.71 0.0294 0.0045  
 Mercury -75953-07-15 22:04 J -26020213.63 -26020213.58 -26020213.51 0.0287 0.0249  
 Mercury -75953-10-12 09:35 J -26020125.21 -26020125.10 -26020124.99 0.0286 0.0134  
 Mercury -75952-01-08 20:52 J -26020036.76 -26020036.63 -26020036.50 0.0285 0.0021  
 Mercury -75952-04-07 08:08 J -26019948.28 -26019948.16 -26019948.04 0.0284 0.0092  
 Mercury -75952-07-04 19:25 J -26019859.78 -26019859.69 -26019859.60 0.0283 0.0204  
 Earth -75949-05-18 04:04 J -26018811.45 -26018811.33 -26018811.19 0.0272 0.0226  
 Moon -75949-05-18 07:25 J -26018811.32 -26018811.19 -26018811.05 0.0272 0.0222 \*  
 Earth -75948-05-29 18:56 J -26018434.93 -26018434.71 -26018434.50 0.0268 0.0118

Moon -75948-05-29 20:37 J -26018434.85 -26018434.64 -26018434.41 0.0268 0.0126 \*  
 Mars -75948-12-24 03:49 J -26018226.59 -26018226.34 -26018226.08 0.0267 0.0143  
 Moon -75947-06-10 01:40 J -26018058.67 -26018058.43 -26018058.18 0.0266 0.0025  
 Earth -75947-06-10 04:47 J -26018058.54 -26018058.30 -26018058.06 0.0266 0.0010 \*  
 Moon -75946-06-21 10:47 J -26017682.27 -26017682.05 -26017681.83 0.0264 0.0092  
 Earth -75946-06-21 11:59 J -26017682.22 -26017682.00 -26017681.77 0.0264 0.0096 \*  
 Earth -75945-07-01 17:59 J -26017305.91 -26017305.75 -26017305.59 0.0262 0.0196  
 Moon -75945-07-01 21:20 J -26017305.75 -26017305.61 -26017305.45 0.0262 0.0205 \*  
 Venus -75939-05-17 10:04 J -26015160.30 -26015160.08 -26015159.86 0.0268 0.0020  
 Mercury -75937-10-21 20:37 J -26014271.80 -26014271.64 -26014271.47 0.0276 0.0137  
 Mercury -75936-01-18 19:54 J -26014182.85 -26014182.67 -26014182.48 0.0277 0.0018  
 Mercury -75936-04-17 19:11 J -26014093.84 -26014093.70 -26014093.55 0.0278 0.0171  
 Moon -75933-11-28 18:28 J -26012772.93 -26012772.73 -26012772.51 0.0292 0.0158  
 Earth -75933-11-28 22:04 J -26012772.79 -26012772.58 -26012772.37 0.0292 0.0162 \*  
 Moon -75932-12-13 21:49 J -26012392.83 -26012392.59 -26012392.34 0.0295 0.0003  
 Earth -75932-12-14 01:25 J -26012392.69 -26012392.44 -26012392.19 0.0295 0.0011 \*  
 Mars -75931-02-19 16:32 J -26012325.09 -26012324.81 -26012324.53 0.0296 0.0032  
 Moon -75931-12-29 06:13 J -26012012.43 -26012012.24 -26012012.02 0.0298 0.0157  
 Earth -75931-12-29 08:08 J -26012012.37 -26012012.16 -26012011.94 0.0298 0.0148 \*  
 Earth -75929-01-13 15:20 J -26011631.88 -26011631.86 -26011631.83 0.0299 0.0297  
 Venus -75925-03-22 19:25 J -26010101.90 -26010101.69 -26010101.49 0.0293 0.0020  
 Mercury -75924-12-03 00:28 J -26009481.50 -26009481.48 -26009481.46 0.0287 0.0282  
 Mercury -75923-03-01 11:44 J -26009393.11 -26009393.01 -26009392.90 0.0286 0.0168  
 Mercury -75923-05-28 23:16 J -26009304.66 -26009304.53 -26009304.41 0.0285 0.0054  
 Mercury -75923-08-25 10:32 J -26009216.19 -26009216.06 -26009215.94 0.0284 0.0060  
 Mercury -75923-11-21 21:35 J -26009127.70 -26009127.60 -26009127.49 0.0283 0.0172  
 Moon -75920-05-13 05:44 J -26008224.32 -26008224.26 -26008224.18 0.0274 0.0263  
 Earth -75920-05-13 08:52 J -26008224.15 -26008224.13 -26008224.11 0.0274 0.0272  
 Moon -75919-05-24 23:59 J -26007847.67 -26007847.50 -26007847.31 0.0270 0.0169  
 Earth -75919-05-25 01:54 J -26007847.60 -26007847.42 -26007847.22 0.0270 0.0165 \*

Earth -75918-06-05 14:08 J -26007471.15 -26007470.91 -26007470.67 0.0267 0.0055  
 Moon -75918-06-05 16:47 J -26007471.02 -26007470.80 -26007470.57 0.0267 0.0069 \*  
 Mars -75917-02-11 21:35 J -26007219.90 -26007219.60 -26007219.30 0.0266 0.0029  
 Earth -75917-06-15 22:47 J -26007094.79 -26007094.55 -26007094.32 0.0265 0.0054  
 Moon -75917-06-16 00:42 J -26007094.72 -26007094.47 -26007094.22 0.0265 0.0042 \*  
 Moon -75916-06-27 01:40 J -26006718.61 -26006718.43 -26006718.22 0.0263 0.0163  
 Earth -75916-06-27 05:16 J -26006718.47 -26006718.28 -26006718.08 0.0263 0.0157 \*  
 Earth -75915-07-08 11:30 J -26006342.07 -26006342.02 -26006341.95 0.0262 0.0254  
 Venus -75910-11-27 16:47 J -26004374.01 -26004373.80 -26004373.58 0.0268 0.0042  
 Mercury -75907-03-10 20:52 J -26003539.77 -26003539.63 -26003539.48 0.0276 0.0170  
 Mercury -75907-06-07 20:23 J -26003450.84 -26003450.65 -26003450.46 0.0277 0.0016  
 Mercury -75907-09-04 19:25 J -26003361.84 -26003361.69 -26003361.52 0.0277 0.0139  
 Earth -75904-11-22 23:16 J -26002186.68 -26002186.53 -26002186.37 0.0290 0.0223  
 Moon -75904-11-23 02:23 J -26002186.54 -26002186.40 -26002186.23 0.0290 0.0225 \*  
 Earth -75903-12-08 00:28 J -26001806.72 -26001806.48 -26001806.24 0.0294 0.0076  
 Moon -75903-12-08 03:35 J -26001806.59 -26001806.35 -26001806.10 0.0294 0.0072 \*  
 Earth -75902-12-23 06:28 J -26001426.46 -26001426.23 -26001425.98 0.0297 0.0083  
 Moon -75902-12-23 07:40 J -26001426.43 -26001426.18 -26001425.93 0.0297 0.0090 \*  
 Mars -75901-04-10 22:04 J -26001316.70 -26001316.58 -26001316.44 0.0298 0.0263  
 Moon -75900-01-06 12:56 J -26001046.10 -26001045.96 -26001045.82 0.0299 0.0248  
 Earth -75900-01-06 14:23 J -26001046.04 -26001045.90 -26001045.74 0.0299 0.0239 \*  
 Venus -75896-10-03 06:13 J -25999315.43 -25999315.24 -25999315.05 0.0293 0.0105  
 Mercury -75894-07-19 15:35 J -25998660.94 -25998660.85 -25998660.75 0.0286 0.0187  
 Mercury -75894-10-16 03:06 J -25998572.50 -25998572.37 -25998572.25 0.0285 0.0073  
 Mercury -75893-01-12 14:23 J -25998484.03 -25998483.90 -25998483.77 0.0284 0.0041  
 Mercury -75893-04-10 01:25 J -25998395.54 -25998395.44 -25998395.32 0.0283 0.0153  
 Mercury -75893-07-07 12:42 J -25998307.01 -25998306.97 -25998306.92 0.0282 0.0264  
 Earth -75890-05-20 14:37 J -25997260.03 -25997259.89 -25997259.73 0.0271 0.0211  
 Moon -75890-05-20 17:30 J -25997259.93 -25997259.77 -25997259.62 0.0271 0.0206 \*  
 Moon -75889-05-31 01:54 J -25996883.63 -25996883.42 -25996883.18 0.0268 0.0113

Earth -75889-05-31 04:47 J -25996883.52 -25996883.30 -25996883.07 0.0268 0.0102 \*  
 Moon -75888-06-11 11:44 J -25996507.24 -25996507.01 -25996506.77 0.0266 0.0008  
 Earth -75888-06-11 14:37 J -25996507.13 -25996506.89 -25996506.65 0.0266 0.0008 \*  
 Mars -75887-04-02 10:18 J -25996212.23 -25996212.07 -25996211.87 0.0264 0.0216  
 Earth -75887-06-22 21:20 J -25996130.82 -25996130.61 -25996130.38 0.0264 0.0113  
 Moon -75887-06-23 00:13 J -25996130.70 -25996130.49 -25996130.27 0.0264 0.0111 \*  
 Earth -75886-07-04 03:20 J -25995754.49 -25995754.36 -25995754.20 0.0262 0.0213  
 Moon -75886-07-04 05:59 J -25995754.38 -25995754.25 -25995754.12 0.0262 0.0223 \*  
 Venus -75880-06-09 00:56 J -25993587.66 -25993587.46 -25993587.26 0.0269 0.0107  
 Mercury -75878-07-28 21:06 J -25992807.75 -25992807.62 -25992807.49 0.0276 0.0203  
 Mercury -75878-10-25 20:23 J -25992718.83 -25992718.65 -25992718.46 0.0277 0.0050  
 Mercury -75877-01-22 19:54 J -25992629.85 -25992629.67 -25992629.50 0.0278 0.0105  
 Mercury -75877-04-20 18:56 J -25992540.77 -25992540.71 -25992540.64 0.0279 0.0259  
 Moon -75875-11-16 19:25 J -25991600.75 -25991600.69 -25991600.64 0.0289 0.0281  
 Earth -75875-11-16 23:01 J -25991600.59 -25991600.54 -25991600.47 0.0289 0.0279  
 Moon -75874-12-01 17:16 J -25991220.99 -25991220.78 -25991220.56 0.0293 0.0139  
 Earth -75874-12-01 20:23 J -25991220.87 -25991220.65 -25991220.43 0.0293 0.0140 \*  
 Mars -75873-05-27 11:59 J -25991043.23 -25991043.00 -25991042.76 0.0294 0.0162  
 Moon -75873-12-15 23:59 J -25990840.74 -25990840.50 -25990840.26 0.0296 0.0021  
 Earth -75873-12-16 00:13 J -25990840.74 -25990840.49 -25990840.24 0.0296 0.0015 \*  
 Earth -75872-12-31 07:11 J -25990460.39 -25990460.20 -25990459.99 0.0298 0.0173  
 Moon -75872-12-31 09:35 J -25990460.28 -25990460.10 -25990459.90 0.0298 0.0183 \*  
 Venus -75866-04-15 12:13 J -25988529.14 -25988528.99 -25988528.81 0.0292 0.0172  
 Mercury -75865-12-05 18:13 J -25987928.82 -25987928.74 -25987928.66 0.0286 0.0218  
 Mercury -75864-03-04 05:30 J -25987840.39 -25987840.27 -25987840.15 0.0285 0.0104  
 Mercury -75864-05-31 16:47 J -25987751.93 -25987751.80 -25987751.67 0.0284 0.0010  
 Mercury -75864-08-28 04:04 J -25987663.45 -25987663.33 -25987663.21 0.0283 0.0122  
 Mercury -75864-11-24 15:20 J -25987574.93 -25987574.86 -25987574.79 0.0282 0.0233  
 Moon -75861-05-14 17:01 J -25986672.88 -25986672.79 -25986672.68 0.0273 0.0248  
 Earth -75861-05-14 19:54 J -25986672.73 -25986672.67 -25986672.58 0.0273 0.0258 \*

Earth -75860-05-26 12:28 J -25986296.17 -25986295.98 -25986295.77 0.0270 0.0149  
 Moon -75860-05-26 14:52 J -25986296.07 -25986295.88 -25986295.69 0.0270 0.0155 \*  
 Mars -75859-05-20 12:56 J -25985937.23 -25985936.96 -25985936.69 0.0267 0.0119  
 Earth -75859-06-06 23:59 J -25985919.74 -25985919.50 -25985919.26 0.0267 0.0038  
 Moon -75859-06-07 03:06 J -25985919.61 -25985919.37 -25985919.13 0.0267 0.0053 \*  
 Moon -75858-06-18 05:59 J -25985543.49 -25985543.25 -25985543.00 0.0265 0.0061  
 Earth -75858-06-18 08:08 J -25985543.39 -25985543.16 -25985542.93 0.0265 0.0070 \*  
 Moon -75857-06-28 11:59 J -25985167.16 -25985167.00 -25985166.82 0.0263 0.0180  
 Earth -75857-06-28 14:23 J -25985167.07 -25985166.90 -25985166.71 0.0263 0.0174 \*  
 Venus -75851-05-04 22:47 J -25983030.67 -25983030.55 -25983030.43 0.0267 0.0223  
 Venus -75851-12-20 06:56 J -25982801.37 -25982801.21 -25982801.03 0.0269 0.0166  
 Mercury -75849-12-14 21:06 J -25982075.72 -25982075.62 -25982075.53 0.0275 0.0238  
 Mercury -75848-03-13 20:23 J -25981986.83 -25981986.65 -25981986.47 0.0276 0.0085  
 Mercury -75848-06-10 19:40 J -25981897.86 -25981897.68 -25981897.49 0.0277 0.0070  
 Mercury -75848-09-07 18:56 J -25981808.81 -25981808.71 -25981808.59 0.0278 0.0224  
 Earth -75845-11-24 19:40 J -25980634.85 -25980634.68 -25980634.50 0.0291 0.0203  
 Moon -75845-11-24 22:32 J -25980634.73 -25980634.56 -25980634.37 0.0291 0.0205 \*  
 Moon -75844-12-09 21:35 J -25980254.85 -25980254.60 -25980254.34 0.0294 0.0050  
 Earth -75844-12-09 21:35 J -25980254.84 -25980254.60 -25980254.35 0.0294 0.0053 \*  
 Mars -75843-07-17 23:01 J -25980034.81 -25980034.54 -25980034.26 0.0296 0.0074  
 Moon -75843-12-25 01:11 J -25979874.68 -25979874.45 -25979874.21 0.0297 0.0115  
 Earth -75843-12-25 04:18 J -25979874.55 -25979874.32 -25979874.09 0.0297 0.0106 \*  
 Moon -75841-01-09 07:54 J -25979494.25 -25979494.17 -25979494.06 0.0299 0.0274  
 Earth -75841-01-09 11:59 J -25979494.11 -25979494.00 -25979493.88 0.0299 0.0262 \*  
 Venus -75837-03-10 06:56 J -25977972.34 -25977972.21 -25977972.08 0.0294 0.0228  
 Venus -75837-10-25 22:32 J -25977742.65 -25977742.56 -25977742.45 0.0292 0.0254  
 Mercury -75835-04-24 21:49 J -25977196.65 -25977196.59 -25977196.51 0.0287 0.0239  
 Mercury -75835-07-22 09:06 J -25977108.23 -25977108.12 -25977108.00 0.0286 0.0125  
 Mercury -75835-10-18 20:37 J -25977019.77 -25977019.64 -25977019.51 0.0285 0.0013  
 Mercury -75834-01-15 07:40 J -25976931.30 -25976931.18 -25976931.05 0.0284 0.0103

Mercury -75834-04-13 18:56 J -25976842.79 -25976842.71 -25976842.62 0.0283 0.0214  
 Moon -75831-05-21 23:44 J -25975708.66 -25975708.51 -25975708.32 0.0271 0.0194  
 Earth -75831-05-22 01:25 J -25975708.60 -25975708.44 -25975708.27 0.0271 0.0195 \*  
 Moon -75830-06-02 11:44 J -25975332.23 -25975332.01 -25975331.79 0.0268 0.0099  
 Earth -75830-06-02 14:52 J -25975332.11 -25975331.88 -25975331.65 0.0268 0.0086 \*  
 Earth -75829-06-13 00:13 J -25974955.73 -25974955.49 -25974955.25 0.0265 0.0024  
 Moon -75829-06-13 01:40 J -25974955.67 -25974955.43 -25974955.20 0.0265 0.0010 \*  
 Mars -75829-07-08 19:40 J -25974929.97 -25974929.68 -25974929.38 0.0265 0.0066  
 Earth -75828-06-24 06:56 J -25974579.42 -25974579.21 -25974578.99 0.0263 0.0129  
 Moon -75828-06-24 10:04 J -25974579.29 -25974579.08 -25974578.86 0.0263 0.0126 \*  
 Moon -75827-07-05 10:47 J -25974203.14 -25974203.05 -25974202.95 0.0262 0.0240  
 Earth -75827-07-05 12:56 J -25974203.07 -25974202.96 -25974202.83 0.0262 0.0228 \*  
 Venus -75822-11-15 06:28 J -25972244.40 -25972244.23 -25972244.04 0.0267 0.0158  
 Venus -75821-07-01 15:20 J -25972014.97 -25972014.86 -25972014.75 0.0269 0.0232  
 Mercury -75819-05-03 21:06 J -25971343.65 -25971343.62 -25971343.58 0.0275 0.0271  
 Mercury -75819-07-31 20:23 J -25971254.81 -25971254.65 -25971254.47 0.0276 0.0118  
 Mercury -75819-10-28 19:54 J -25971165.86 -25971165.67 -25971165.48 0.0277 0.0036  
 Mercury -75818-01-25 19:11 J -25971076.83 -25971076.70 -25971076.56 0.0278 0.0191  
 Moon -75816-11-18 17:01 J -25970048.89 -25970048.79 -25970048.69 0.0289 0.0263  
 Earth -75816-11-18 19:25 J -25970048.80 -25970048.69 -25970048.59 0.0289 0.0261 \*  
 Earth -75815-12-03 17:30 J -25969669.00 -25969668.77 -25969668.54 0.0293 0.0118  
 Moon -75815-12-03 17:59 J -25969668.97 -25969668.75 -25969668.52 0.0293 0.0116 \*  
 Earth -75814-12-18 21:49 J -25969288.83 -25969288.59 -25969288.34 0.0296 0.0039  
 Moon -75814-12-19 00:56 J -25969288.70 -25969288.46 -25969288.22 0.0296 0.0045 \*  
 Mars -75813-09-05 21:35 J -25969026.60 -25969026.60 -25969026.60 0.0298 0.0298  
 Earth -75812-01-02 05:01 J -25968908.46 -25968908.29 -25968908.09 0.0298 0.0197  
 Moon -75812-01-02 08:37 J -25968908.31 -25968908.14 -25968907.95 0.0298 0.0207 \*  
 Venus -75808-09-20 13:40 J -25967186.10 -25967185.93 -25967185.75 0.0294 0.0156  
 Mercury -75806-09-12 00:28 J -25966464.52 -25966464.48 -25966464.43 0.0286 0.0269  
 Mercury -75806-12-09 11:44 J -25966376.11 -25966376.01 -25966375.90 0.0285 0.0155

Mercury -75805-03-06 23:01 J -25966287.67 -25966287.54 -25966287.41 0.0284 0.0042

Mercury -75805-06-03 10:18 J -25966199.19 -25966199.07 -25966198.94 0.0284 0.0072

Mercury -75805-08-30 21:35 J -25966110.70 -25966110.60 -25966110.50 0.0283 0.0183

Earth -75802-05-17 06:56 J -25965121.31 -25965121.21 -25965121.10 0.0272 0.0243

Moon -75802-05-17 07:54 J -25965121.28 -25965121.17 -25965121.05 0.0272 0.0236 \*

Earth -75801-05-27 22:32 J -25964744.76 -25964744.56 -25964744.34 0.0269 0.0134

Moon -75801-05-28 02:08 J -25964744.62 -25964744.41 -25964744.21 0.0269 0.0140 \*

Mars -75801-08-26 09:06 J -25964654.15 -25964654.12 -25964654.05 0.0269 0.0265

Moon -75800-06-08 07:54 J -25964368.41 -25964368.17 -25964367.92 0.0267 0.0038

Earth -75800-06-08 09:20 J -25964368.35 -25964368.11 -25964367.87 0.0267 0.0023 \*

Moon -75799-06-19 13:25 J -25963992.16 -25963991.94 -25963991.70 0.0264 0.0077

Earth -75799-06-19 17:01 J -25963992.02 -25963991.79 -25963991.56 0.0264 0.0086 \*

Mars -75799-08-27 18:28 J -25963922.84 -25963922.73 -25963922.58 0.0264 0.0240

Earth -75798-06-30 23:16 J -25963615.70 -25963615.53 -25963615.36 0.0263 0.0188

Moon -75798-07-01 00:42 J -25963615.62 -25963615.47 -25963615.31 0.0263 0.0197 \*

Venus -75792-05-27 11:30 J -25961458.22 -25961458.02 -25961457.82 0.0268 0.0105

Mercury -75790-12-18 19:40 J -25960522.83 -25960522.68 -25960522.52 0.0276 0.0158

Mercury -75789-03-16 19:11 J -25960433.89 -25960433.70 -25960433.51 0.0277 0.0004

Mercury -75789-06-13 18:28 J -25960344.89 -25960344.73 -25960344.57 0.0278 0.0151

Moon -75786-11-27 12:42 J -25959083.16 -25959082.97 -25959082.76 0.0291 0.0183

Earth -75786-11-27 14:23 J -25959083.09 -25959082.90 -25959082.70 0.0291 0.0184 \*

Mars -75785-10-22 12:56 J -25958753.21 -25958752.96 -25958752.69 0.0294 0.0121

Moon -75785-12-11 13:40 J -25958703.18 -25958702.93 -25958702.67 0.0295 0.0028

Earth -75785-12-11 17:16 J -25958703.03 -25958702.78 -25958702.53 0.0295 0.0031 \*

Moon -75784-12-26 20:52 J -25958322.84 -25958322.63 -25958322.40 0.0298 0.0137

Earth -75784-12-27 00:28 J -25958322.70 -25958322.48 -25958322.26 0.0298 0.0129 \*

Moon -75782-01-11 07:11 J -25957942.23 -25957942.20 -25957942.16 0.0299 0.0295

Earth -75782-01-11 08:23 J -25957942.22 -25957942.15 -25957942.07 0.0299 0.0284 \*

Venus -75778-04-02 23:44 J -25956399.71 -25956399.51 -25956399.31 0.0294 0.0075

Mercury -75776-04-27 15:35 J -25955643.95 -25955643.85 -25955643.75 0.0286 0.0176

Mercury -75776-07-25 02:52 J -25955555.51 -25955555.38 -25955555.26 0.0285 0.0062

Mercury -75776-10-21 14:08 J -25955467.04 -25955466.91 -25955466.78 0.0284 0.0052

Mercury -75775-01-18 01:11 J -25955378.55 -25955378.45 -25955378.34 0.0283 0.0164

Mercury -75775-04-16 12:28 J -25955290.00 -25955289.98 -25955289.95 0.0282 0.0275

Moon -75772-05-23 08:08 J -25954157.33 -25954157.16 -25954156.97 0.0270 0.0179

Earth -75772-05-23 11:44 J -25954157.18 -25954157.01 -25954156.83 0.0270 0.0180 \*

Earth -75771-06-04 00:13 J -25953780.72 -25953780.49 -25953780.26 0.0267 0.0070

Moon -75771-06-04 00:42 J -25953780.68 -25953780.47 -25953780.24 0.0267 0.0083 \*

Mars -75771-10-15 08:52 J -25953647.41 -25953647.13 -25953646.84 0.0266 0.0084

Earth -75770-06-15 08:52 J -25953404.37 -25953404.13 -25953403.89 0.0265 0.0039

Moon -75770-06-15 12:28 J -25953404.22 -25953403.98 -25953403.73 0.0265 0.0026 \*

Moon -75769-06-25 14:52 J -25953028.09 -25953027.88 -25953027.67 0.0263 0.0143

Earth -75769-06-25 15:20 J -25953028.06 -25953027.86 -25953027.65 0.0263 0.0144 \*

Moon -75768-07-06 17:44 J -25952651.79 -25952651.76 -25952651.70 0.0262 0.0257

Earth -75768-07-06 20:52 J -25952651.70 -25952651.63 -25952651.52 0.0262 0.0243 \*

Venus -75763-12-07 19:11 J -25950671.92 -25950671.70 -25950671.48 0.0268 0.0040

Mercury -75760-05-06 19:40 J -25949790.81 -25949790.68 -25949790.54 0.0276 0.0191

Mercury -75760-08-03 19:11 J -25949701.89 -25949701.70 -25949701.51 0.0277 0.0038

Mercury -75760-10-31 18:28 J -25949612.90 -25949612.73 -25949612.55 0.0278 0.0117

Mercury -75759-01-28 17:44 J -25949523.79 -25949523.76 -25949523.72 0.0279 0.0272

Earth -75757-11-20 12:56 J -25948497.08 -25948496.96 -25948496.81 0.0290 0.0244

Moon -75757-11-20 15:20 J -25948496.98 -25948496.86 -25948496.72 0.0290 0.0243 \*

Earth -75756-12-05 12:42 J -25948117.21 -25948116.97 -25948116.74 0.0294 0.0097

Moon -75756-12-05 16:18 J -25948117.05 -25948116.82 -25948116.58 0.0294 0.0095 \*

Mars -75755-12-12 19:25 J -25947744.94 -25947744.69 -25947744.42 0.0297 0.0107

Earth -75755-12-20 17:30 J -25947737.01 -25947736.77 -25947736.52 0.0297 0.0062

Moon -75755-12-20 20:52 J -25947736.87 -25947736.63 -25947736.38 0.0297 0.0066 \*

Earth -75753-01-05 01:11 J -25947356.61 -25947356.45 -25947356.28 0.0299 0.0220

Moon -75753-01-05 01:40 J -25947356.58 -25947356.43 -25947356.25 0.0299 0.0228 \*

Venus -75749-10-13 05:59 J -25945613.46 -25945613.25 -25945613.05 0.0293 0.0007



Mercury -75747-09-14 17:59 J -25944911.84 -25944911.75 -25944911.66 0.0286 0.0207  
 Mercury -75747-12-12 05:16 J -25944823.40 -25944823.28 -25944823.16 0.0285 0.0094  
 Mercury -75746-03-10 16:32 J -25944734.94 -25944734.81 -25944734.68 0.0284 0.0020  
 Mercury -75746-06-07 03:35 J -25944646.46 -25944646.35 -25944646.23 0.0283 0.0132  
 Mercury -75746-09-03 14:52 J -25944557.94 -25944557.88 -25944557.81 0.0282 0.0243  
 Earth -75743-05-18 16:32 J -25943569.93 -25943569.81 -25943569.67 0.0272 0.0230  
 Moon -75743-05-18 20:23 J -25943569.78 -25943569.65 -25943569.51 0.0272 0.0222 \*  
 Earth -75742-05-30 07:25 J -25943193.40 -25943193.19 -25943192.97 0.0269 0.0119  
 Moon -75742-05-30 07:40 J -25943193.40 -25943193.18 -25943192.96 0.0269 0.0126 \*  
 Moon -75741-06-09 13:54 J -25942817.16 -25942816.92 -25942816.68 0.0266 0.0023  
 Earth -75741-06-09 17:30 J -25942817.01 -25942816.77 -25942816.53 0.0266 0.0008 \*  
 Mars -75741-12-02 23:16 J -25942640.81 -25942640.53 -25942640.24 0.0265 0.0090  
 Earth -75740-06-21 00:28 J -25942440.70 -25942440.48 -25942440.25 0.0264 0.0100  
 Moon -75740-06-21 00:28 J -25942440.69 -25942440.48 -25942440.25 0.0264 0.0094 \*  
 Earth -75739-07-02 05:59 J -25942064.39 -25942064.25 -25942064.08 0.0263 0.0203  
 Moon -75739-07-02 09:35 J -25942064.23 -25942064.10 -25942063.95 0.0263 0.0211 \*  
 Venus -75733-06-18 22:47 J -25939885.77 -25939885.55 -25939885.33 0.0268 0.0008  
 Mercury -75731-09-23 17:59 J -25939058.84 -25939058.75 -25939058.65 0.0275 0.0237  
 Mercury -75731-12-21 17:30 J -25938969.95 -25938969.77 -25938969.59 0.0276 0.0084  
 Mercury -75730-03-20 16:47 J -25938880.98 -25938880.80 -25938880.61 0.0277 0.0071  
 Mercury -75730-06-17 16:04 J -25938791.93 -25938791.83 -25938791.71 0.0278 0.0226  
 Moon -75727-11-29 01:40 J -25937531.64 -25937531.43 -25937531.22 0.0292 0.0162  
 Earth -75727-11-29 05:30 J -25937531.47 -25937531.27 -25937531.06 0.0292 0.0167 \*  
 Moon -75726-12-14 06:13 J -25937151.48 -25937151.24 -25937151.00 0.0295 0.0007  
 Earth -75726-12-14 08:52 J -25937151.38 -25937151.13 -25937150.88 0.0295 0.0013 \*  
 Moon -75725-12-28 16:18 J -25936771.02 -25936770.82 -25936770.61 0.0298 0.0157  
 Earth -75725-12-28 16:32 J -25936771.02 -25936770.81 -25936770.59 0.0298 0.0149 \*  
 Venus -75719-04-25 14:23 J -25934827.10 -25934826.90 -25934826.70 0.0293 0.0070  
 Mercury -75717-02-01 21:06 J -25934179.69 -25934179.62 -25934179.54 0.0287 0.0232  
 Mercury -75717-04-30 08:37 J -25934091.26 -25934091.14 -25934091.02 0.0286 0.0117

Mercury -75717-07-27 19:54 J -25934002.80 -25934002.67 -25934002.54 0.0285 0.0004  
 Mercury -75717-10-24 07:11 J -25933914.32 -25933914.20 -25933914.08 0.0284 0.0109  
 Mercury -75716-01-20 18:13 J -25933825.81 -25933825.74 -25933825.65 0.0283 0.0221  
 Moon -75714-05-13 22:47 J -25932982.59 -25932982.55 -25932982.48 0.0274 0.0266  
 Moon -75713-05-24 18:42 J -25932605.89 -25932605.72 -25932605.53 0.0270 0.0168  
 Earth -75713-05-24 19:40 J -25932605.86 -25932605.68 -25932605.48 0.0270 0.0166 \*  
 Mars -75712-01-21 02:08 J -25932364.55 -25932364.41 -25932364.26 0.0268 0.0231  
 Earth -75712-06-05 07:25 J -25932229.43 -25932229.19 -25932228.96 0.0267 0.0055  
 Moon -75712-06-05 10:47 J -25932229.28 -25932229.05 -25932228.82 0.0267 0.0069 \*  
 Earth -75711-06-16 15:20 J -25931853.09 -25931852.86 -25931852.62 0.0265 0.0054  
 Moon -75711-06-16 15:35 J -25931853.09 -25931852.85 -25931852.60 0.0265 0.0043 \*  
 Moon -75710-06-27 17:44 J -25931476.94 -25931476.76 -25931476.56 0.0263 0.0160  
 Earth -75710-06-27 21:20 J -25931476.79 -25931476.61 -25931476.40 0.0263 0.0158 \*  
 Earth -75709-07-08 02:52 J -25931100.41 -25931100.38 -25931100.32 0.0262 0.0256  
 Venus -75704-12-30 05:30 J -25929099.48 -25929099.27 -25929099.05 0.0268 0.0071  
 Mercury -75701-02-10 17:30 J -25928326.79 -25928326.77 -25928326.75 0.0275 0.0273  
 Mercury -75701-05-09 17:01 J -25928237.96 -25928237.79 -25928237.62 0.0276 0.0120  
 Mercury -75701-08-06 16:18 J -25928149.00 -25928148.82 -25928148.63 0.0277 0.0035  
 Mercury -75701-11-03 15:35 J -25928059.98 -25928059.85 -25928059.70 0.0278 0.0189  
 Earth -75698-11-23 02:08 J -25926945.56 -25926945.41 -25926945.25 0.0290 0.0228  
 Moon -75698-11-23 05:59 J -25926945.41 -25926945.25 -25926945.09 0.0290 0.0224 \*  
 Earth -75697-12-07 02:37 J -25926565.62 -25926565.39 -25926565.14 0.0294 0.0078  
 Moon -75697-12-07 04:47 J -25926565.55 -25926565.30 -25926565.05 0.0294 0.0072 \*  
 Mars -75696-03-19 00:13 J -25926463.75 -25926463.49 -25926463.21 0.0295 0.0093  
 Moon -75696-12-22 07:54 J -25926185.41 -25926185.17 -25926184.92 0.0297 0.0089  
 Earth -75696-12-22 08:37 J -25926185.38 -25926185.14 -25926184.90 0.0297 0.0082 \*  
 Moon -75694-01-06 13:25 J -25925805.07 -25925804.94 -25925804.79 0.0299 0.0250  
 Earth -75694-01-06 16:32 J -25925804.95 -25925804.81 -25925804.66 0.0299 0.0240 \*  
 Venus -75690-11-05 20:08 J -25924040.84 -25924040.66 -25924040.47 0.0293 0.0136  
 Mercury -75688-06-20 23:44 J -25923447.56 -25923447.51 -25923447.46 0.0286 0.0263

Mercury -75688-09-17 11:01 J -25923359.15 -25923359.04 -25923358.93 0.0285 0.0149

Mercury -75688-12-14 22:18 J -25923270.70 -25923270.57 -25923270.44 0.0284 0.0036

Mercury -75687-03-13 09:35 J -25923182.23 -25923182.10 -25923181.98 0.0283 0.0077

Mercury -75687-06-09 20:37 J -25923093.73 -25923093.64 -25923093.54 0.0282 0.0188

Earth -75684-05-20 00:28 J -25922018.61 -25922018.48 -25922018.33 0.0271 0.0216

Moon -75684-05-20 01:25 J -25922018.58 -25922018.44 -25922018.27 0.0271 0.0212 \*

Moon -75683-05-31 10:47 J -25921642.26 -25921642.05 -25921641.82 0.0268 0.0115

Earth -75683-05-31 14:08 J -25921642.12 -25921641.91 -25921641.68 0.0268 0.0105 \*

Mars -75682-03-11 07:54 J -25921358.46 -25921358.17 -25921357.87 0.0266 0.0060

Moon -75682-06-11 23:01 J -25921265.78 -25921265.54 -25921265.31 0.0266 0.0008

Earth -75682-06-11 23:30 J -25921265.76 -25921265.52 -25921265.28 0.0266 0.0007 \*

Earth -75681-06-22 05:44 J -25920889.47 -25920889.26 -25920889.03 0.0264 0.0114

Moon -75681-06-22 09:35 J -25920889.31 -25920889.10 -25920888.88 0.0264 0.0110 \*

Earth -75680-07-03 11:01 J -25920513.17 -25920513.04 -25920512.89 0.0262 0.0215

Moon -75680-07-03 11:44 J -25920513.13 -25920513.01 -25920512.87 0.0262 0.0224 \*

Venus -75674-07-12 07:40 J -25918313.37 -25918313.18 -25918312.97 0.0268 0.0116

Mercury -75672-09-26 14:23 J -25917506.05 -25917505.90 -25917505.75 0.0276 0.0171

Mercury -75672-12-24 13:54 J -25917417.11 -25917416.92 -25917416.73 0.0277 0.0017

Mercury -75671-03-23 13:11 J -25917328.11 -25917327.95 -25917327.78 0.0278 0.0138

Moon -75668-11-30 15:35 J -25915980.06 -25915979.85 -25915979.64 0.0292 0.0145

Earth -75668-11-30 16:04 J -25915980.03 -25915979.83 -25915979.60 0.0292 0.0151 \*

Earth -75667-12-15 20:23 J -25915599.90 -25915599.65 -25915599.40 0.0296 0.0006

Moon -75667-12-15 22:04 J -25915599.82 -25915599.58 -25915599.33 0.0296 0.0015 \*

Mars -75666-05-08 20:23 J -25915455.89 -25915455.65 -25915455.39 0.0297 0.0139

Earth -75666-12-31 04:18 J -25915219.52 -25915219.32 -25915219.11 0.0298 0.0168

Moon -75666-12-31 07:40 J -25915219.37 -25915219.18 -25915218.98 0.0298 0.0177 \*

Venus -75661-09-30 10:18 J -25913484.12 -25913484.07 -25913484.00 0.0295 0.0280

Venus -75660-05-18 02:52 J -25913254.52 -25913254.38 -25913254.23 0.0293 0.0206

Mercury -75658-02-04 13:54 J -25912627.02 -25912626.92 -25912626.82 0.0286 0.0177

Mercury -75658-05-04 01:11 J -25912538.58 -25912538.45 -25912538.32 0.0285 0.0063

Mercury -75658-07-31 12:28 J -25912450.11 -25912449.98 -25912449.85 0.0284 0.0050  
 Mercury -75658-10-27 23:44 J -25912361.62 -25912361.51 -25912361.40 0.0283 0.0162  
 Mercury -75657-01-24 10:47 J -25912273.07 -25912273.05 -25912273.01 0.0282 0.0274  
 Moon -75655-05-15 07:54 J -25911431.25 -25911431.17 -25911431.09 0.0273 0.0256  
 Earth -75655-05-15 08:37 J -25911431.18 -25911431.14 -25911431.06 0.0273 0.0264 \*  
 Earth -75654-05-27 01:11 J -25911054.64 -25911054.45 -25911054.25 0.0270 0.0153  
 Moon -75654-05-27 04:18 J -25911054.50 -25911054.32 -25911054.12 0.0270 0.0158 \*  
 Earth -75653-06-06 12:13 J -25910678.23 -25910677.99 -25910677.75 0.0267 0.0042  
 Moon -75653-06-06 13:54 J -25910678.16 -25910677.92 -25910677.68 0.0267 0.0055 \*  
 Mars -75652-04-29 06:56 J -25910351.47 -25910351.21 -25910350.93 0.0265 0.0121  
 Moon -75652-06-17 16:04 J -25910302.06 -25910301.83 -25910301.59 0.0264 0.0059  
 Earth -75652-06-17 19:40 J -25910301.91 -25910301.68 -25910301.44 0.0264 0.0067 \*  
 Moon -75651-06-28 23:59 J -25909925.67 -25909925.50 -25909925.33 0.0263 0.0176  
 Earth -75651-06-29 00:56 J -25909925.63 -25909925.46 -25909925.26 0.0263 0.0171 \*  
 Venus -75645-06-06 05:59 J -25907756.38 -25907756.25 -25907756.11 0.0267 0.0210  
 Venus -75644-01-21 14:08 J -25907527.08 -25907526.91 -25907526.75 0.0268 0.0176  
 Mercury -75642-02-13 13:40 J -25906774.05 -25906773.93 -25906773.81 0.0276 0.0210  
 Mercury -75642-05-13 12:56 J -25906685.14 -25906684.96 -25906684.77 0.0276 0.0057  
 Mercury -75642-08-10 12:13 J -25906596.16 -25906595.99 -25906595.81 0.0277 0.0099  
 Mercury -75642-11-07 11:30 J -25906507.09 -25906507.02 -25906506.93 0.0278 0.0254  
 Moon -75639-11-24 10:32 J -25905394.24 -25905394.06 -25905393.87 0.0291 0.0207  
 Earth -75639-11-24 10:32 J -25905394.22 -25905394.06 -25905393.88 0.0291 0.0213 \*  
 Moon -75638-12-09 09:06 J -25905014.37 -25905014.12 -25905013.87 0.0295 0.0052  
 Earth -75638-12-09 11:59 J -25905014.24 -25905014.00 -25905013.76 0.0295 0.0061 \*  
 Moon -75637-12-23 14:23 J -25904634.12 -25904633.90 -25904633.66 0.0297 0.0111  
 Earth -75637-12-23 18:28 J -25904633.96 -25904633.73 -25904633.49 0.0297 0.0100 \*  
 Moon -75635-01-07 23:30 J -25904253.61 -25904253.52 -25904253.40 0.0299 0.0269  
 Earth -75635-01-08 02:37 J -25904253.50 -25904253.39 -25904253.25 0.0299 0.0258 \*  
 Venus -75631-04-12 15:49 J -25902697.98 -25902697.84 -25902697.70 0.0294 0.0216  
 Venus -75631-11-28 07:40 J -25902468.25 -25902468.18 -25902468.09 0.0292 0.0268

Mercury -75629-06-23 16:04 J -25901894.91 -25901894.83 -25901894.74 0.0286 0.0211

Mercury -75629-09-20 03:20 J -25901806.48 -25901806.36 -25901806.24 0.0285 0.0098

Mercury -75629-12-17 14:37 J -25901718.02 -25901717.89 -25901717.76 0.0284 0.0016

Mercury -75628-03-16 01:54 J -25901629.54 -25901629.42 -25901629.30 0.0283 0.0128

Mercury -75628-06-12 12:56 J -25901541.02 -25901540.96 -25901540.88 0.0282 0.0239

Moon -75625-05-21 01:54 J -25900467.57 -25900467.42 -25900467.25 0.0271 0.0205

Earth -75625-05-21 05:16 J -25900467.43 -25900467.28 -25900467.11 0.0271 0.0204 \*

Moon -75624-06-01 16:04 J -25900091.04 -25900090.83 -25900090.61 0.0268 0.0104

Earth -75624-06-01 18:13 J -25900090.96 -25900090.74 -25900090.51 0.0268 0.0092 \*

Mars -75624-06-16 19:11 J -25900075.88 -25900075.70 -25900075.51 0.0268 0.0210

Earth -75623-06-13 02:52 J -25899714.62 -25899714.38 -25899714.14 0.0265 0.0019

Moon -75623-06-13 05:59 J -25899714.49 -25899714.25 -25899714.02 0.0265 0.0008 \*

Earth -75622-06-24 08:37 J -25899338.35 -25899338.14 -25899337.92 0.0263 0.0126

Moon -75622-06-24 10:18 J -25899338.29 -25899338.07 -25899337.85 0.0263 0.0126 \*

Moon -75621-07-04 10:04 J -25898962.17 -25898962.08 -25898961.97 0.0262 0.0239

Earth -75621-07-04 13:40 J -25898962.05 -25898961.93 -25898961.81 0.0262 0.0226 \*

Venus -75616-12-17 06:42 J -25896970.38 -25896970.22 -25896970.05 0.0267 0.0172

Venus -75615-08-03 14:37 J -25896741.01 -25896740.89 -25896740.75 0.0269 0.0216

Mercury -75613-07-02 09:49 J -25896042.13 -25896042.09 -25896042.04 0.0275 0.0267

Mercury -75613-09-29 09:20 J -25895953.28 -25895953.11 -25895952.93 0.0276 0.0114

Mercury -75613-12-27 08:52 J -25895864.32 -25895864.13 -25895863.94 0.0277 0.0041

Mercury -75612-03-26 08:08 J -25895775.29 -25895775.16 -25895775.02 0.0278 0.0196

Earth -75610-11-17 23:16 J -25894808.58 -25894808.53 -25894808.46 0.0289 0.0280

Moon -75610-11-17 23:59 J -25894808.56 -25894808.50 -25894808.42 0.0289 0.0276 \*

Earth -75609-12-01 21:20 J -25894428.82 -25894428.61 -25894428.38 0.0293 0.0137

Moon -75609-12-02 00:56 J -25894428.68 -25894428.46 -25894428.24 0.0293 0.0127 \*

Mars -75608-08-12 09:35 J -25894175.37 -25894175.10 -25894174.82 0.0295 0.0070

Earth -75608-12-17 02:08 J -25894048.66 -25894048.41 -25894048.16 0.0296 0.0022

Moon -75608-12-17 05:59 J -25894048.50 -25894048.25 -25894048.00 0.0296 0.0034 \*

Earth -75606-01-01 10:18 J -25893668.25 -25893668.07 -25893667.87 0.0298 0.0184

Moon -75606-01-01 12:56 J -25893668.15 -25893667.96 -25893667.77 0.0298 0.0195 \*  
 Venus -75602-10-23 20:52 J -25891911.80 -25891911.63 -25891911.45 0.0295 0.0152  
 Mercury -75600-11-10 18:42 J -25891162.79 -25891162.72 -25891162.66 0.0287 0.0243  
 Mercury -75599-02-07 05:59 J -25891074.37 -25891074.25 -25891074.13 0.0286 0.0129  
 Mercury -75599-05-06 17:16 J -25890985.91 -25890985.78 -25890985.65 0.0285 0.0015  
 Mercury -75599-08-03 04:32 J -25890897.43 -25890897.31 -25890897.19 0.0284 0.0098  
 Mercury -75599-10-30 15:49 J -25890808.93 -25890808.84 -25890808.76 0.0283 0.0210  
 Earth -75596-05-16 12:28 J -25889880.06 -25889879.98 -25889879.88 0.0273 0.0251  
 Moon -75596-05-16 15:20 J -25889879.95 -25889879.86 -25889879.75 0.0273 0.0247 \*  
 Earth -75595-05-28 04:04 J -25889503.53 -25889503.33 -25889503.12 0.0269 0.0140  
 Moon -75595-05-28 06:42 J -25889503.42 -25889503.22 -25889503.01 0.0269 0.0148 \*  
 Moon -75594-06-08 11:59 J -25889127.24 -25889127.00 -25889126.75 0.0266 0.0043  
 Earth -75594-06-08 14:37 J -25889127.13 -25889126.89 -25889126.65 0.0266 0.0029 \*  
 Mars -75594-08-05 08:23 J -25889069.45 -25889069.15 -25889068.85 0.0266 0.0035  
 Moon -75593-06-18 19:40 J -25888750.90 -25888750.68 -25888750.45 0.0264 0.0074  
 Earth -75593-06-18 21:35 J -25888750.83 -25888750.60 -25888750.37 0.0264 0.0079 \*  
 Earth -75592-06-30 02:08 J -25888374.57 -25888374.41 -25888374.22 0.0262 0.0183  
 Moon -75592-06-30 05:30 J -25888374.43 -25888374.27 -25888374.10 0.0262 0.0192 \*  
 Venus -75586-06-29 11:59 J -25886184.19 -25886184.00 -25886183.80 0.0267 0.0115  
 Mercury -75583-02-16 08:08 J -25885221.31 -25885221.16 -25885221.00 0.0276 0.0155  
 Mercury -75583-05-16 07:40 J -25885132.37 -25885132.18 -25885131.99 0.0277 0.0003  
 Mercury -75583-08-13 06:56 J -25885043.36 -25885043.21 -25885043.05 0.0278 0.0154  
 Moon -75580-11-25 10:32 J -25883843.25 -25883843.06 -25883842.87 0.0291 0.0191  
 Earth -75580-11-25 14:08 J -25883843.09 -25883842.91 -25883842.73 0.0291 0.0200 \*  
 Moon -75579-12-10 12:56 J -25883463.20 -25883462.96 -25883462.71 0.0295 0.0035  
 Earth -75579-12-10 16:04 J -25883463.07 -25883462.83 -25883462.58 0.0295 0.0047 \*  
 Mars -75578-10-02 10:18 J -25883167.30 -25883167.07 -25883166.82 0.0297 0.0154  
 Moon -75578-12-25 22:04 J -25883082.80 -25883082.58 -25883082.36 0.0298 0.0129  
 Earth -75578-12-25 23:01 J -25883082.76 -25883082.54 -25883082.30 0.0298 0.0116 \*  
 Earth -75576-01-09 07:54 J -25882702.25 -25882702.17 -25882702.06 0.0300 0.0274

Moon -75576-01-09 09:20 J -25882702.17 -25882702.11 -25882702.04 0.0300 0.0288 \*  
 Venus -75572-05-05 01:11 J -25881125.64 -25881125.45 -25881125.25 0.0294 0.0091  
 Mercury -75570-03-30 20:37 J -25880430.66 -25880430.64 -25880430.61 0.0287 0.0279  
 Mercury -75570-06-27 07:54 J -25880342.27 -25880342.17 -25880342.06 0.0286 0.0165  
 Mercury -75570-09-23 19:11 J -25880253.82 -25880253.70 -25880253.57 0.0285 0.0051  
 Mercury -75570-12-21 06:28 J -25880165.35 -25880165.23 -25880165.10 0.0284 0.0063  
 Mercury -75569-03-18 17:44 J -25880076.86 -25880076.76 -25880076.66 0.0283 0.0174  
 Moon -75566-05-23 05:16 J -25878916.44 -25878916.28 -25878916.12 0.0270 0.0196  
 Earth -75566-05-23 07:25 J -25878916.35 -25878916.19 -25878916.01 0.0270 0.0192 \*  
 Earth -75565-06-02 19:40 J -25878539.90 -25878539.68 -25878539.44 0.0267 0.0080  
 Moon -75565-06-02 22:04 J -25878539.79 -25878539.58 -25878539.35 0.0267 0.0094 \*  
 Earth -75564-06-14 03:49 J -25878163.58 -25878163.34 -25878163.10 0.0265 0.0031  
 Moon -75564-06-14 06:28 J -25878163.48 -25878163.23 -25878162.98 0.0265 0.0019 \*  
 Mars -75564-09-22 13:40 J -25878063.18 -25878062.93 -25878062.66 0.0264 0.0138  
 Moon -75563-06-25 06:13 J -25877787.45 -25877787.24 -25877787.03 0.0263 0.0142  
 Earth -75563-06-25 09:06 J -25877787.32 -25877787.12 -25877786.90 0.0263 0.0137 \*  
 Moon -75562-07-06 11:01 J -25877411.09 -25877411.04 -25877410.96 0.0262 0.0252  
 Earth -75562-07-06 13:25 J -25877411.03 -25877410.94 -25877410.83 0.0262 0.0237 \*  
 Venus -75556-01-08 11:59 J -25875398.21 -25875398.00 -25875397.79 0.0267 0.0078  
 Mercury -75554-07-06 04:04 J -25874489.45 -25874489.33 -25874489.21 0.0275 0.0215  
 Mercury -75554-10-03 03:20 J -25874400.54 -25874400.36 -25874400.17 0.0276 0.0063  
 Mercury -75554-12-31 02:52 J -25874311.56 -25874311.38 -25874311.20 0.0277 0.0092  
 Mercury -75553-03-29 02:08 J -25874222.49 -25874222.41 -25874222.32 0.0278 0.0247  
 Earth -75551-11-18 23:59 J -25873257.59 -25873257.50 -25873257.41 0.0289 0.0268  
 Moon -75551-11-19 03:35 J -25873257.45 -25873257.35 -25873257.24 0.0289 0.0262 \*  
 Mars -75550-11-16 05:16 J -25872895.33 -25872895.28 -25872895.20 0.0293 0.0285  
 Earth -75550-12-03 22:18 J -25872877.78 -25872877.57 -25872877.33 0.0293 0.0124  
 Moon -75550-12-04 00:56 J -25872877.69 -25872877.46 -25872877.21 0.0293 0.0113 \*  
 Moon -75549-12-18 03:20 J -25872497.61 -25872497.36 -25872497.10 0.0296 0.0050  
 Earth -75549-12-18 03:35 J -25872497.59 -25872497.35 -25872497.10 0.0296 0.0037 \*

Moon -75547-01-02 09:35 J -25872117.27 -25872117.10 -25872116.92 0.0299 0.0213  
 Earth -75547-01-02 12:13 J -25872117.17 -25872116.99 -25872116.80 0.0299 0.0198 \*  
 Venus -75543-11-15 04:32 J -25870339.51 -25870339.31 -25870339.10 0.0295 0.0035  
 Mercury -75541-11-13 10:04 J -25869610.17 -25869610.08 -25869609.99 0.0287 0.0201  
 Mercury -75540-02-09 21:20 J -25869521.73 -25869521.61 -25869521.48 0.0286 0.0086  
 Mercury -75540-05-09 08:37 J -25869433.27 -25869433.14 -25869433.01 0.0285 0.0029  
 Mercury -75540-08-05 19:54 J -25869344.78 -25869344.67 -25869344.56 0.0284 0.0141  
 Mercury -75540-11-02 07:11 J -25869256.25 -25869256.20 -25869256.14 0.0283 0.0253  
 Earth -75537-05-17 12:56 J -25868329.06 -25868328.96 -25868328.83 0.0273 0.0240  
 Moon -75537-05-17 16:04 J -25868328.95 -25868328.83 -25868328.71 0.0273 0.0235 \*  
 Moon -75536-05-29 01:40 J -25867952.63 -25867952.43 -25867952.21 0.0269 0.0140  
 Earth -75536-05-29 04:18 J -25867952.53 -25867952.32 -25867952.10 0.0269 0.0128 \*  
 Mars -75536-11-10 11:44 J -25867787.21 -25867787.01 -25867786.80 0.0268 0.0192  
 Moon -75535-06-09 11:16 J -25867576.26 -25867576.03 -25867575.79 0.0266 0.0032  
 Earth -75535-06-09 14:23 J -25867576.14 -25867575.90 -25867575.66 0.0266 0.0017 \*  
 Earth -75534-06-20 20:52 J -25867199.86 -25867199.63 -25867199.40 0.0264 0.0091  
 Moon -75534-06-20 23:16 J -25867199.75 -25867199.53 -25867199.31 0.0264 0.0089 \*  
 Earth -75533-07-01 01:11 J -25866823.60 -25866823.45 -25866823.28 0.0262 0.0194  
 Moon -75533-07-01 03:35 J -25866823.49 -25866823.35 -25866823.18 0.0262 0.0205 \*  
 Venus -75527-07-21 16:32 J -25864612.02 -25864611.81 -25864611.59 0.0267 0.0024  
 Mercury -75525-11-22 02:08 J -25863757.46 -25863757.41 -25863757.34 0.0275 0.0259  
 Mercury -75524-02-19 01:54 J -25863668.60 -25863668.42 -25863668.25 0.0276 0.0106  
 Mercury -75524-05-19 01:11 J -25863579.64 -25863579.45 -25863579.26 0.0277 0.0048  
 Mercury -75524-08-16 00:28 J -25863490.60 -25863490.48 -25863490.35 0.0278 0.0202  
 Moon -75521-11-26 11:01 J -25862292.22 -25862292.04 -25862291.84 0.0291 0.0180  
 Earth -75521-11-26 12:56 J -25862292.14 -25862291.96 -25862291.76 0.0291 0.0189 \*  
 Earth -75520-12-11 15:35 J -25861912.10 -25861911.85 -25861911.60 0.0295 0.0033  
 Moon -75520-12-11 16:47 J -25861912.04 -25861911.80 -25861911.56 0.0295 0.0020 \*  
 Mars -75519-01-05 11:01 J -25861887.31 -25861887.04 -25861886.75 0.0295 0.0063  
 Earth -75519-12-26 22:47 J -25861531.77 -25861531.55 -25861531.32 0.0298 0.0130



Moon -75519-12-27 02:08 J -25861531.61 -25861531.41 -25861531.19 0.0298 0.0146 \*  
 Earth -75517-01-11 08:23 J -25861151.21 -25861151.15 -25861151.08 0.0300 0.0287  
 Venus -75513-05-27 08:23 J -25859553.35 -25859553.15 -25859552.94 0.0294 0.0024  
 Mercury -75511-04-02 11:44 J -25858878.07 -25858878.01 -25858877.93 0.0287 0.0238  
 Mercury -75511-06-29 23:16 J -25858789.65 -25858789.53 -25858789.41 0.0286 0.0123  
 Mercury -75511-09-26 10:32 J -25858701.19 -25858701.06 -25858700.93 0.0285 0.0009  
 Mercury -75511-12-23 21:49 J -25858612.71 -25858612.59 -25858612.47 0.0284 0.0104  
 Mercury -75510-03-22 09:06 J -25858524.20 -25858524.12 -25858524.04 0.0283 0.0216  
 Earth -75507-05-24 07:11 J -25857365.36 -25857365.20 -25857365.01 0.0270 0.0180  
 Moon -75507-05-24 09:20 J -25857365.27 -25857365.11 -25857364.94 0.0270 0.0187 \*  
 Earth -75506-06-04 19:25 J -25856988.92 -25856988.69 -25856988.46 0.0267 0.0068  
 Moon -75506-06-04 22:32 J -25856988.79 -25856988.56 -25856988.32 0.0267 0.0083 \*  
 Mars -75506-12-29 10:32 J -25856781.36 -25856781.06 -25856780.75 0.0266 0.0021  
 Moon -75505-06-15 01:11 J -25856612.69 -25856612.45 -25856612.20 0.0264 0.0034  
 Earth -75505-06-15 03:06 J -25856612.61 -25856612.37 -25856612.13 0.0264 0.0042 \*  
 Moon -75504-06-26 05:30 J -25856236.46 -25856236.27 -25856236.08 0.0263 0.0156  
 Earth -75504-06-26 07:54 J -25856236.36 -25856236.17 -25856235.96 0.0263 0.0148 \*  
 Earth -75503-07-07 11:44 J -25855860.07 -25855860.01 -25855859.92 0.0261 0.0247  
 Venus -75497-01-31 16:04 J -25853826.05 -25853825.83 -25853825.62 0.0267 0.0012  
 Mercury -75495-07-08 21:06 J -25852936.76 -25852936.62 -25852936.46 0.0275 0.0169  
 Mercury -75495-10-05 20:37 J -25852847.83 -25852847.64 -25852847.45 0.0276 0.0016  
 Mercury -75494-01-02 19:54 J -25852758.83 -25852758.67 -25852758.50 0.0277 0.0138  
 Earth -75492-11-19 20:52 J -25851706.73 -25851706.63 -25851706.51 0.0289 0.0258  
 Moon -75492-11-19 22:04 J -25851706.70 -25851706.58 -25851706.43 0.0289 0.0248 \*  
 Moon -75491-12-04 17:44 J -25851326.99 -25851326.76 -25851326.50 0.0293 0.0098  
 Earth -75491-12-04 20:08 J -25851326.89 -25851326.66 -25851326.43 0.0293 0.0111 \*  
 Moon -75490-12-19 21:49 J -25850946.83 -25850946.59 -25850946.34 0.0296 0.0065  
 Earth -75490-12-20 01:40 J -25850946.68 -25850946.43 -25850946.18 0.0296 0.0049 \*  
 Mars -75489-02-24 19:11 J -25850879.93 -25850879.70 -25850879.47 0.0297 0.0162  
 Moon -75488-01-03 07:25 J -25850566.34 -25850566.19 -25850566.03 0.0299 0.0228

Earth -75488-01-03 10:32 J -25850566.23 -25850566.06 -25850565.88 0.0299 0.0211 \*  
 Venus -75484-12-07 10:18 J -25848767.26 -25848767.07 -25848766.86 0.0294 0.0077  
 Mercury -75482-08-20 13:25 J -25848145.96 -25848145.94 -25848145.90 0.0288 0.0278  
 Mercury -75482-11-17 00:56 J -25848057.56 -25848057.46 -25848057.35 0.0287 0.0162  
 Mercury -75481-02-13 12:13 J -25847969.11 -25847968.99 -25847968.86 0.0286 0.0048  
 Mercury -75481-05-11 23:30 J -25847880.64 -25847880.52 -25847880.39 0.0285 0.0068  
 Mercury -75481-08-08 11:01 J -25847792.14 -25847792.04 -25847791.94 0.0284 0.0180  
 Moon -75478-05-19 10:04 J -25846778.20 -25846778.08 -25846777.93 0.0272 0.0229  
 Earth -75478-05-19 11:30 J -25846778.13 -25846778.02 -25846777.88 0.0272 0.0229 \*  
 Moon -75477-05-29 23:30 J -25846401.72 -25846401.52 -25846401.31 0.0269 0.0130  
 Earth -75477-05-30 02:37 J -25846401.60 -25846401.39 -25846401.17 0.0269 0.0116 \*  
 Earth -75476-06-10 12:28 J -25846025.22 -25846024.98 -25846024.74 0.0266 0.0006  
 Moon -75476-06-10 13:54 J -25846025.16 -25846024.92 -25846024.69 0.0266 0.0018 \*  
 Mars -75475-02-15 23:16 J -25845774.77 -25845774.53 -25845774.27 0.0264 0.0153  
 Earth -75475-06-21 18:28 J -25845648.94 -25845648.73 -25845648.50 0.0264 0.0103  
 Moon -75475-06-21 21:35 J -25845648.82 -25845648.60 -25845648.36 0.0264 0.0102 \*  
 Moon -75474-07-02 20:37 J -25845272.77 -25845272.64 -25845272.50 0.0262 0.0217  
 Earth -75474-07-02 23:01 J -25845272.69 -25845272.54 -25845272.39 0.0262 0.0204 \*  
 Venus -75468-08-12 20:23 J -25843039.86 -25843039.65 -25843039.44 0.0267 0.0066  
 Mercury -75466-11-25 19:40 J -25842204.80 -25842204.68 -25842204.56 0.0275 0.0212  
 Mercury -75465-02-22 18:56 J -25842115.90 -25842115.71 -25842115.52 0.0276 0.0060  
 Mercury -75465-05-21 18:13 J -25842026.92 -25842026.74 -25842026.56 0.0277 0.0094  
 Mercury -75465-08-18 17:16 J -25841937.85 -25841937.78 -25841937.68 0.0278 0.0249  
 Earth -75462-11-28 10:04 J -25840741.27 -25840741.08 -25840740.87 0.0292 0.0176  
 Moon -75462-11-28 12:42 J -25840741.17 -25840740.97 -25840740.77 0.0292 0.0164 \*  
 Mars -75461-04-09 23:16 J -25840607.59 -25840607.53 -25840607.45 0.0293 0.0283  
 Earth -75461-12-12 12:56 J -25840361.21 -25840360.96 -25840360.71 0.0295 0.0021  
 Moon -75461-12-12 16:32 J -25840361.06 -25840360.81 -25840360.56 0.0295 0.0005 \*  
 Earth -75460-12-27 20:23 J -25839980.86 -25839980.65 -25839980.43 0.0298 0.0143  
 Moon -75460-12-27 22:47 J -25839980.76 -25839980.55 -25839980.33 0.0298 0.0159 \*

Earth -75458-01-12 06:13 J -25839600.25 -25839600.24 -25839600.22 0.0300 0.0299  
 Venus -75454-06-19 13:40 J -25837981.11 -25837980.93 -25837980.74 0.0294 0.0132  
 Mercury -75452-04-05 02:37 J -25837325.48 -25837325.39 -25837325.29 0.0287 0.0201  
 Mercury -75452-07-02 14:08 J -25837237.04 -25837236.91 -25837236.79 0.0286 0.0085  
 Mercury -75452-09-29 01:25 J -25837148.57 -25837148.44 -25837148.31 0.0285 0.0029  
 Mercury -75452-12-26 12:42 J -25837060.08 -25837059.97 -25837059.86 0.0284 0.0142  
 Mercury -75451-03-24 23:59 J -25836971.55 -25836971.50 -25836971.44 0.0283 0.0254  
 Earth -75448-05-25 05:30 J -25835814.46 -25835814.27 -25835814.08 0.0270 0.0168  
 Moon -75448-05-25 08:37 J -25835814.31 -25835814.14 -25835813.95 0.0270 0.0177 \*  
 Mars -75447-04-05 10:47 J -25835499.25 -25835499.05 -25835498.82 0.0267 0.0180  
 Moon -75447-06-05 15:35 J -25835438.08 -25835437.85 -25835437.60 0.0267 0.0071  
 Earth -75447-06-05 17:16 J -25835438.01 -25835437.78 -25835437.54 0.0267 0.0056 \*  
 Moon -75446-06-16 21:20 J -25835061.84 -25835061.61 -25835061.37 0.0264 0.0047  
 Earth -75446-06-17 00:56 J -25835061.70 -25835061.46 -25835061.23 0.0264 0.0054 \*  
 Earth -75445-06-27 05:30 J -25834685.46 -25834685.27 -25834685.08 0.0262 0.0159  
 Moon -75445-06-27 07:11 J -25834685.38 -25834685.20 -25834685.02 0.0262 0.0169 \*  
 Earth -75444-07-08 09:06 J -25834309.15 -25834309.12 -25834309.07 0.0261 0.0257  
 Venus -75438-02-22 19:25 J -25832253.89 -25832253.69 -25832253.48 0.0267 0.0100  
 Mercury -75436-07-11 14:08 J -25831384.08 -25831383.91 -25831383.74 0.0275 0.0124  
 Mercury -75436-10-08 13:25 J -25831295.13 -25831294.94 -25831294.75 0.0276 0.0029  
 Mercury -75435-01-05 12:42 J -25831206.11 -25831205.97 -25831205.83 0.0277 0.0183  
 Moon -75433-11-20 12:56 J -25830156.11 -25830155.96 -25830155.81 0.0289 0.0232  
 Earth -75433-11-20 16:04 J -25830155.94 -25830155.83 -25830155.68 0.0289 0.0248 \*  
 Moon -75432-12-05 11:59 J -25829776.23 -25829776.00 -25829775.76 0.0293 0.0085  
 Earth -75432-12-05 15:35 J -25829776.09 -25829775.85 -25829775.62 0.0293 0.0099 \*  
 Mars -75431-05-30 12:42 J -25829600.24 -25829599.97 -25829599.68 0.0295 0.0060  
 Moon -75431-12-20 19:54 J -25829395.90 -25829395.67 -25829395.44 0.0296 0.0077  
 Earth -75431-12-20 21:06 J -25829395.86 -25829395.62 -25829395.38 0.0296 0.0061 \*  
 Earth -75429-01-05 06:13 J -25829015.40 -25829015.24 -25829015.07 0.0299 0.0223  
 Moon -75429-01-05 07:40 J -25829015.31 -25829015.18 -25829015.03 0.0299 0.0240 \*

Venus -75425-12-29 14:37 J -25827195.05 -25827194.89 -25827194.73 0.0294 0.0179

Mercury -75423-08-23 04:04 J -25826593.39 -25826593.33 -25826593.26 0.0288 0.0243

Mercury -75423-11-19 15:35 J -25826504.97 -25826504.85 -25826504.73 0.0287 0.0126

Mercury -75422-02-16 02:52 J -25826416.51 -25826416.38 -25826416.25 0.0286 0.0013

Mercury -75422-05-15 14:23 J -25826328.03 -25826327.90 -25826327.78 0.0285 0.0103

Mercury -75422-08-12 01:25 J -25826239.52 -25826239.44 -25826239.35 0.0284 0.0216

Moon -75419-05-20 05:30 J -25825227.41 -25825227.27 -25825227.13 0.0272 0.0220

Earth -75419-05-20 09:06 J -25825227.27 -25825227.12 -25825226.98 0.0272 0.0217 \*

Earth -75418-05-31 23:44 J -25824850.73 -25824850.51 -25824850.28 0.0269 0.0104

Moon -75418-06-01 00:42 J -25824850.67 -25824850.47 -25824850.26 0.0269 0.0118 \*

Mars -75417-05-23 16:04 J -25824493.13 -25824492.83 -25824492.53 0.0266 0.0010

Earth -75417-06-11 09:35 J -25824474.34 -25824474.10 -25824473.86 0.0266 0.0008

Moon -75417-06-11 13:11 J -25824474.19 -25824473.95 -25824473.71 0.0266 0.0004 \*

Moon -75416-06-22 14:37 J -25824098.10 -25824097.89 -25824097.66 0.0264 0.0118

Earth -75416-06-22 15:35 J -25824098.06 -25824097.85 -25824097.63 0.0264 0.0115 \*

Moon -75415-07-03 16:47 J -25823721.90 -25823721.80 -25823721.68 0.0262 0.0230

Earth -75415-07-03 19:54 J -25823721.80 -25823721.67 -25823721.52 0.0262 0.0215 \*

Venus -75409-01-18 17:16 J -25821696.89 -25821696.78 -25821696.67 0.0265 0.0225

Venus -75409-09-03 23:44 J -25821467.68 -25821467.51 -25821467.33 0.0267 0.0154

Mercury -75407-11-28 12:28 J -25820652.13 -25820651.98 -25820651.83 0.0275 0.0167

Mercury -75406-02-25 11:44 J -25820563.20 -25820563.01 -25820562.82 0.0276 0.0016

Mercury -75406-05-25 11:01 J -25820474.20 -25820474.04 -25820473.87 0.0277 0.0139

Earth -75403-11-29 05:16 J -25819190.47 -25819190.28 -25819190.06 0.0292 0.0165

Moon -75403-11-29 08:37 J -25819190.35 -25819190.14 -25819189.91 0.0292 0.0150 \*

Earth -75402-12-14 08:23 J -25818810.40 -25818810.15 -25818809.90 0.0295 0.0008

Moon -75402-12-14 09:06 J -25818810.38 -25818810.12 -25818809.86 0.0295 0.0007 \*

Mars -75401-07-19 10:32 J -25818592.28 -25818592.06 -25818591.81 0.0297 0.0163

Moon -75401-12-28 13:54 J -25818430.13 -25818429.92 -25818429.71 0.0298 0.0171

Earth -75401-12-28 16:18 J -25818430.03 -25818429.82 -25818429.61 0.0298 0.0156 \*

Venus -75396-11-24 00:42 J -25816638.57 -25816638.47 -25816638.37 0.0296 0.0257

Venus -75395-07-11 18:13 J -25816408.86 -25816408.74 -25816408.61 0.0294 0.0236  
 Mercury -75393-01-10 05:59 J -25815861.27 -25815861.25 -25815861.22 0.0288 0.0281  
 Mercury -75393-04-07 17:16 J -25815772.88 -25815772.78 -25815772.67 0.0287 0.0165  
 Mercury -75393-07-05 04:47 J -25815684.43 -25815684.30 -25815684.17 0.0286 0.0049  
 Mercury -75393-10-01 16:04 J -25815595.96 -25815595.83 -25815595.70 0.0285 0.0065  
 Mercury -75393-12-29 03:20 J -25815507.46 -25815507.36 -25815507.26 0.0284 0.0178  
 Earth -75390-05-15 08:52 J -25814640.16 -25814640.13 -25814640.07 0.0274 0.0269  
 Moon -75390-05-15 12:56 J -25814640.01 -25814639.96 -25814639.90 0.0274 0.0266  
 Moon -75389-05-26 02:23 J -25814263.58 -25814263.40 -25814263.19 0.0270 0.0167  
 Earth -75389-05-26 02:37 J -25814263.57 -25814263.39 -25814263.18 0.0270 0.0157 \*  
 Moon -75388-06-06 11:16 J -25813887.26 -25813887.03 -25813886.80 0.0267 0.0057  
 Earth -75388-06-06 14:52 J -25813887.12 -25813886.88 -25813886.64 0.0267 0.0044 \*  
 Earth -75387-06-17 22:18 J -25813510.81 -25813510.57 -25813510.34 0.0264 0.0066  
 Moon -75387-06-17 22:47 J -25813510.78 -25813510.55 -25813510.33 0.0264 0.0064 \*  
 Mars -75387-07-11 20:08 J -25813486.89 -25813486.66 -25813486.41 0.0264 0.0164  
 Earth -75386-06-29 02:37 J -25813134.56 -25813134.39 -25813134.20 0.0262 0.0170  
 Moon -75386-06-29 05:59 J -25813134.41 -25813134.25 -25813134.06 0.0262 0.0182 \*  
 Venus -75380-07-30 16:47 J -25810910.94 -25810910.80 -25810910.64 0.0265 0.0191  
 Venus -75379-03-16 23:30 J -25810681.67 -25810681.52 -25810681.37 0.0267 0.0189  
 Mercury -75377-04-16 07:54 J -25809920.27 -25809920.17 -25809920.06 0.0274 0.0229  
 Mercury -75377-07-14 07:11 J -25809831.38 -25809831.20 -25809831.01 0.0275 0.0078  
 Mercury -75377-10-11 06:28 J -25809742.41 -25809742.23 -25809742.04 0.0276 0.0075  
 Mercury -75376-01-08 05:44 J -25809653.36 -25809653.26 -25809653.15 0.0277 0.0229  
 Moon -75374-11-22 10:04 J -25808605.23 -25808605.08 -25808604.92 0.0289 0.0220  
 Earth -75374-11-22 12:13 J -25808605.12 -25808604.99 -25808604.83 0.0289 0.0236 \*  
 Mars -75373-09-01 22:32 J -25808320.63 -25808320.56 -25808320.49 0.0292 0.0284  
 Earth -75373-12-06 11:30 J -25808225.25 -25808225.02 -25808224.77 0.0293 0.0087  
 Moon -75373-12-06 11:59 J -25808225.23 -25808225.00 -25808224.76 0.0293 0.0071 \*  
 Earth -75372-12-21 17:16 J -25807845.02 -25807844.78 -25807844.54 0.0297 0.0075  
 Moon -75372-12-21 20:08 J -25807844.89 -25807844.66 -25807844.43 0.0297 0.0091 \*

Earth -75370-01-06 02:23 J -25807464.54 -25807464.40 -25807464.24 0.0299 0.0236  
 Moon -75370-01-06 05:59 J -25807464.37 -25807464.25 -25807464.11 0.0299 0.0252 \*  
 Venus -75366-06-06 00:42 J -25805852.61 -25805852.47 -25805852.32 0.0296 0.0212  
 Venus -75365-01-21 18:28 J -25805622.78 -25805622.73 -25805622.67 0.0294 0.0281  
 Mercury -75364-08-25 18:42 J -25805040.81 -25805040.72 -25805040.63 0.0288 0.0208  
 Mercury -75364-11-22 05:59 J -25804952.37 -25804952.25 -25804952.12 0.0287 0.0092  
 Mercury -75363-02-18 17:30 J -25804863.90 -25804863.77 -25804863.64 0.0286 0.0024  
 Mercury -75363-05-18 04:47 J -25804775.41 -25804775.30 -25804775.19 0.0285 0.0138  
 Mercury -75363-08-14 16:04 J -25804686.89 -25804686.83 -25804686.77 0.0284 0.0251  
 Earth -75360-05-21 05:16 J -25803676.43 -25803676.28 -25803676.12 0.0273 0.0206  
 Moon -75360-05-21 05:01 J -25803676.42 -25803676.29 -25803676.14 0.0273 0.0213 \*  
 Earth -75359-06-01 20:23 J -25803299.87 -25803299.65 -25803299.42 0.0269 0.0092  
 Moon -75359-06-01 23:44 J -25803299.72 -25803299.51 -25803299.28 0.0269 0.0107 \*  
 Mars -75359-08-29 13:25 J -25803211.17 -25803210.94 -25803210.72 0.0268 0.0175  
 Moon -75358-06-13 05:59 J -25802923.50 -25802923.25 -25802923.00 0.0266 0.0013  
 Earth -75358-06-13 06:28 J -25802923.47 -25802923.23 -25802922.99 0.0266 0.0020 \*  
 Moon -75357-06-23 08:52 J -25802547.34 -25802547.13 -25802546.92 0.0264 0.0133  
 Earth -75357-06-23 12:28 J -25802547.19 -25802546.98 -25802546.76 0.0264 0.0127 \*  
 Earth -75356-07-04 16:47 J -25802170.91 -25802170.80 -25802170.67 0.0262 0.0227  
 Moon -75356-07-04 17:30 J -25802170.85 -25802170.77 -25802170.67 0.0262 0.0241 \*  
 Venus -75350-02-09 21:20 J -25800124.79 -25800124.61 -25800124.42 0.0265 0.0136  
 Venus -75350-09-27 04:04 J -25799895.41 -25799895.33 -25799895.24 0.0267 0.0244  
 Mercury -75348-09-03 06:28 J -25799188.25 -25799188.23 -25799188.20 0.0274 0.0271  
 Mercury -75348-12-01 05:59 J -25799099.42 -25799099.25 -25799099.08 0.0275 0.0120  
 Mercury -75347-02-28 05:01 J -25799010.47 -25799010.29 -25799010.10 0.0276 0.0033  
 Mercury -75347-05-28 04:18 J -25798921.46 -25798921.32 -25798921.18 0.0277 0.0185  
 Moon -75345-11-15 08:37 J -25798019.20 -25798019.14 -25798019.06 0.0287 0.0276  
 Moon -75344-11-30 00:28 J -25797639.71 -25797639.48 -25797639.25 0.0292 0.0135  
 Earth -75344-11-30 01:54 J -25797639.63 -25797639.42 -25797639.20 0.0292 0.0152 \*  
 Mars -75343-10-23 05:16 J -25797312.55 -25797312.28 -25797311.99 0.0295 0.0061

Moon -75343-12-15 01:11 J -25797259.70 -25797259.45 -25797259.20 0.0295 0.0022  
 Earth -75343-12-15 04:32 J -25797259.56 -25797259.31 -25797259.06 0.0295 0.0007 \*  
 Moon -75342-12-30 09:06 J -25796879.30 -25796879.12 -25796878.92 0.0298 0.0185  
 Earth -75342-12-30 12:13 J -25796879.18 -25796878.99 -25796878.77 0.0298 0.0170 \*  
 Venus -75337-12-16 05:01 J -25795066.47 -25795066.29 -25795066.11 0.0296 0.0153  
 Mercury -75334-01-12 20:23 J -25794308.71 -25794308.65 -25794308.58 0.0288 0.0247  
 Mercury -75334-04-11 07:54 J -25794220.28 -25794220.17 -25794220.05 0.0287 0.0130  
 Mercury -75334-07-08 19:11 J -25794131.83 -25794131.70 -25794131.57 0.0286 0.0018  
 Mercury -75334-10-05 06:42 J -25794043.34 -25794043.22 -25794043.10 0.0285 0.0100  
 Mercury -75333-01-01 17:59 J -25793954.83 -25793954.75 -25793954.66 0.0284 0.0213  
 Earth -75331-05-16 05:59 J -25793089.31 -25793089.25 -25793089.16 0.0274 0.0258  
 Moon -75331-05-16 06:13 J -25793089.30 -25793089.24 -25793089.15 0.0274 0.0260 \*  
 Moon -75330-05-27 20:37 J -25792712.82 -25792712.64 -25792712.43 0.0270 0.0158  
 Earth -75330-05-28 00:28 J -25792712.69 -25792712.48 -25792712.28 0.0270 0.0144 \*  
 Earth -75329-06-07 12:13 J -25792336.23 -25792335.99 -25792335.75 0.0267 0.0032  
 Moon -75329-06-07 12:13 J -25792336.22 -25792335.99 -25792335.76 0.0267 0.0042 \*  
 Mars -75329-10-16 14:08 J -25792205.21 -25792204.91 -25792204.61 0.0266 0.0002  
 Earth -75328-06-18 19:40 J -25791959.90 -25791959.68 -25791959.44 0.0264 0.0078  
 Moon -75328-06-18 23:30 J -25791959.74 -25791959.52 -25791959.28 0.0264 0.0080 \*  
 Earth -75327-06-30 00:28 J -25791583.64 -25791583.48 -25791583.29 0.0262 0.0183  
 Moon -75327-06-30 00:28 J -25791583.63 -25791583.48 -25791583.29 0.0262 0.0195 \*  
 Venus -75321-08-21 21:49 J -25789338.80 -25789338.59 -25789338.39 0.0266 0.0099  
 Mercury -75318-04-20 01:40 J -25788367.57 -25788367.43 -25788367.28 0.0274 0.0180  
 Mercury -75318-07-18 00:56 J -25788278.65 -25788278.46 -25788278.27 0.0275 0.0028  
 Mercury -75318-10-15 00:13 J -25788189.66 -25788189.49 -25788189.32 0.0276 0.0125  
 Earth -75315-11-23 09:35 J -25787054.25 -25787054.10 -25787053.93 0.0289 0.0222  
 Moon -75315-11-23 12:28 J -25787054.15 -25787053.98 -25787053.81 0.0289 0.0206 \*  
 Earth -75314-12-08 08:52 J -25786674.38 -25786674.13 -25786673.89 0.0293 0.0073  
 Moon -75314-12-08 12:42 J -25786674.22 -25786673.97 -25786673.73 0.0293 0.0055 \*  
 Mars -75313-12-11 13:25 J -25786305.16 -25786304.94 -25786304.69 0.0297 0.0164

Earth -75313-12-22 14:08 J -25786294.14 -25786293.91 -25786293.67 0.0297 0.0089  
 Moon -75313-12-22 17:01 J -25786294.02 -25786293.79 -25786293.54 0.0297 0.0105 \*  
 Earth -75311-01-06 23:30 J -25785913.65 -25785913.52 -25785913.39 0.0299 0.0249  
 Moon -75311-01-06 23:30 J -25785913.64 -25785913.52 -25785913.39 0.0299 0.0261 \*  
 Venus -75307-06-28 05:01 J -25784280.48 -25784280.29 -25784280.09 0.0296 0.0108  
 Mercury -75305-08-28 09:06 J -25783488.22 -25783488.12 -25783488.02 0.0288 0.0174  
 Mercury -75305-11-24 20:37 J -25783399.77 -25783399.64 -25783399.51 0.0287 0.0057  
 Mercury -75304-02-21 07:54 J -25783311.29 -25783311.17 -25783311.04 0.0286 0.0059  
 Mercury -75304-05-20 19:11 J -25783222.80 -25783222.70 -25783222.59 0.0285 0.0174  
 Earth -75301-05-22 02:08 J -25782125.57 -25782125.41 -25782125.23 0.0273 0.0194  
 Moon -75301-05-22 05:44 J -25782125.41 -25782125.26 -25782125.10 0.0273 0.0205 \*  
 Earth -75300-06-02 17:44 J -25781748.99 -25781748.76 -25781748.53 0.0269 0.0079  
 Moon -75300-06-02 18:28 J -25781748.96 -25781748.73 -25781748.49 0.0269 0.0092 \*  
 Moon -75299-06-14 00:13 J -25781372.73 -25781372.49 -25781372.25 0.0266 0.0031  
 Earth -75299-06-14 03:49 J -25781372.58 -25781372.34 -25781372.10 0.0266 0.0033 \*  
 Mars -75299-12-04 23:44 J -25781198.74 -25781198.51 -25781198.27 0.0265 0.0171  
 Moon -75298-06-25 09:20 J -25780996.29 -25780996.11 -25780995.90 0.0264 0.0151  
 Earth -75298-06-25 10:04 J -25780996.28 -25780996.08 -25780995.87 0.0264 0.0140 \*  
 Earth -75297-07-05 14:37 J -25780619.98 -25780619.89 -25780619.78 0.0262 0.0239  
 Moon -75297-07-05 17:59 J -25780619.79 -25780619.75 -25780619.68 0.0262 0.0253 \*  
 Venus -75291-03-04 02:37 J -25778552.61 -25778552.39 -25778552.17 0.0265 0.0043  
 Mercury -75289-09-06 00:42 J -25777635.58 -25777635.47 -25777635.35 0.0274 0.0218  
 Mercury -75289-12-03 23:59 J -25777546.68 -25777546.50 -25777546.31 0.0275 0.0068  
 Mercury -75288-03-02 23:16 J -25777457.71 -25777457.53 -25777457.35 0.0276 0.0085  
 Mercury -75288-05-30 22:04 J -25777368.66 -25777368.58 -25777368.47 0.0277 0.0238  
 Moon -75286-11-17 03:35 J -25776468.45 -25776468.35 -25776468.25 0.0287 0.0263  
 Earth -75286-11-17 06:42 J -25776468.26 -25776468.22 -25776468.16 0.0287 0.0280 \*  
 Moon -75285-11-30 21:35 J -25776088.82 -25776088.60 -25776088.37 0.0292 0.0121  
 Earth -75285-12-01 01:25 J -25776088.65 -25776088.44 -25776088.21 0.0292 0.0138 \*  
 Mars -75284-01-25 19:54 J -25776032.73 -25776032.67 -25776032.58 0.0292 0.0283



Moon -75284-12-16 01:54 J -25775708.66 -25775708.42 -25775708.18 0.0295 0.0037  
 Earth -75284-12-16 04:04 J -25775708.58 -25775708.33 -25775708.08 0.0295 0.0021 \*  
 Earth -75283-12-31 11:44 J -25775328.20 -25775328.01 -25775327.81 0.0298 0.0184  
 Moon -75283-12-31 12:13 J -25775328.16 -25775327.99 -25775327.80 0.0298 0.0198 \*  
 Venus -75277-01-08 10:32 J -25773494.26 -25773494.06 -25773493.86 0.0296 0.0044  
 Mercury -75275-01-15 11:16 J -25772756.12 -25772756.03 -25772755.94 0.0288 0.0209  
 Mercury -75275-04-13 22:47 J -25772667.68 -25772667.55 -25772667.43 0.0287 0.0093  
 Mercury -75275-07-11 10:04 J -25772579.21 -25772579.08 -25772578.95 0.0286 0.0024  
 Mercury -75275-10-07 21:20 J -25772490.72 -25772490.61 -25772490.49 0.0285 0.0138  
 Mercury -75274-01-04 08:52 J -25772402.19 -25772402.13 -25772402.07 0.0284 0.0251  
 Moon -75272-05-17 00:28 J -25771538.55 -25771538.48 -25771538.38 0.0274 0.0255  
 Earth -75272-05-17 04:18 J -25771538.41 -25771538.32 -25771538.21 0.0274 0.0246 \*  
 Moon -75271-05-28 21:20 J -25771161.80 -25771161.61 -25771161.41 0.0270 0.0146  
 Earth -75271-05-28 22:32 J -25771161.76 -25771161.56 -25771161.34 0.0270 0.0132 \*  
 Mars -75270-01-22 15:35 J -25770923.08 -25770922.85 -25770922.61 0.0268 0.0163  
 Earth -75270-06-09 10:47 J -25770785.29 -25770785.05 -25770784.81 0.0267 0.0018  
 Moon -75270-06-09 14:08 J -25770785.15 -25770784.91 -25770784.67 0.0267 0.0027 \*  
 Earth -75269-06-19 18:28 J -25770408.95 -25770408.73 -25770408.50 0.0264 0.0092  
 Moon -75269-06-19 19:11 J -25770408.93 -25770408.70 -25770408.46 0.0264 0.0097 \*  
 Moon -75268-06-30 20:08 J -25770032.80 -25770032.66 -25770032.51 0.0262 0.0210  
 Earth -75268-06-30 23:30 J -25770032.67 -25770032.52 -25770032.34 0.0262 0.0196 \*  
 Venus -75262-09-14 04:04 J -25767766.55 -25767766.33 -25767766.11 0.0266 0.0002  
 Mercury -75259-01-23 21:20 J -25766903.61 -25766903.61 -25766903.60 0.0273 0.0273  
 Mercury -75259-04-22 20:23 J -25766814.81 -25766814.65 -25766814.47 0.0274 0.0124  
 Mercury -75259-07-20 19:40 J -25766725.87 -25766725.68 -25766725.49 0.0275 0.0029  
 Mercury -75259-10-17 18:42 J -25766636.85 -25766636.72 -25766636.57 0.0276 0.0181  
 Earth -75256-11-24 10:47 J -25765503.22 -25765503.05 -25765502.87 0.0289 0.0208  
 Moon -75256-11-24 14:23 J -25765503.10 -25765502.90 -25765502.71 0.0289 0.0191 \*  
 Earth -75255-12-09 09:49 J -25765123.34 -25765123.09 -25765122.85 0.0293 0.0057  
 Moon -75255-12-09 10:47 J -25765123.30 -25765123.05 -25765122.79 0.0293 0.0041 \*

Mars -75254-03-17 15:49 J -25765025.12 -25765024.84 -25765024.56 0.0294 0.0057  
 Moon -75254-12-24 13:25 J -25764743.17 -25764742.94 -25764742.70 0.0297 0.0119  
 Earth -75254-12-24 15:06 J -25764743.10 -25764742.87 -25764742.63 0.0297 0.0106 \*  
 Moon -75252-01-07 20:23 J -25764362.73 -25764362.65 -25764362.55 0.0299 0.0276  
 Earth -75252-01-07 23:59 J -25764362.61 -25764362.50 -25764362.38 0.0299 0.0265 \*  
 Venus -75248-07-20 10:47 J -25762708.26 -25762708.05 -25762707.85 0.0296 0.0003  
 Mercury -75246-06-04 12:28 J -25762024.04 -25762023.98 -25762023.92 0.0289 0.0254  
 Mercury -75246-08-31 23:44 J -25761935.62 -25761935.51 -25761935.39 0.0288 0.0137  
 Mercury -75246-11-28 11:16 J -25761847.16 -25761847.03 -25761846.90 0.0287 0.0021  
 Mercury -75245-02-24 22:47 J -25761758.67 -25761758.55 -25761758.43 0.0286 0.0095  
 Mercury -75245-05-23 10:04 J -25761670.16 -25761670.08 -25761669.99 0.0285 0.0210  
 Earth -75242-05-24 00:13 J -25760574.66 -25760574.49 -25760574.30 0.0273 0.0182  
 Moon -75242-05-24 01:40 J -25760574.60 -25760574.43 -25760574.25 0.0273 0.0195 \*  
 Moon -75241-06-03 12:42 J -25760198.20 -25760197.97 -25760197.73 0.0269 0.0080  
 Earth -75241-06-03 16:04 J -25760198.06 -25760197.83 -25760197.60 0.0269 0.0066 \*  
 Mars -75240-03-11 18:42 J -25759917.02 -25759916.72 -25759916.42 0.0267 0.0007  
 Moon -75240-06-15 01:25 J -25759821.67 -25759821.44 -25759821.21 0.0266 0.0047  
 Earth -75240-06-15 02:23 J -25759821.64 -25759821.40 -25759821.16 0.0266 0.0046 \*  
 Earth -75239-06-26 09:06 J -25759445.31 -25759445.12 -25759444.92 0.0264 0.0153  
 Moon -75239-06-26 12:42 J -25759445.15 -25759444.97 -25759444.78 0.0264 0.0167 \*  
 Earth -75238-07-07 14:08 J -25759068.97 -25759068.91 -25759068.84 0.0262 0.0252  
 Venus -75232-03-26 09:20 J -25756980.32 -25756980.11 -25756979.89 0.0266 0.0056  
 Mercury -75230-09-09 19:40 J -25756082.82 -25756082.68 -25756082.51 0.0274 0.0161  
 Mercury -75230-12-07 19:11 J -25755993.89 -25755993.70 -25755993.51 0.0275 0.0011  
 Mercury -75229-03-05 18:13 J -25755904.90 -25755904.74 -25755904.58 0.0276 0.0143  
 Moon -75227-11-18 06:56 J -25754917.33 -25754917.21 -25754917.09 0.0287 0.0250  
 Earth -75227-11-18 09:20 J -25754917.19 -25754917.11 -25754917.01 0.0287 0.0266 \*  
 Earth -75226-12-03 04:04 J -25754537.55 -25754537.33 -25754537.09 0.0292 0.0122  
 Moon -75226-12-03 04:18 J -25754537.54 -25754537.32 -25754537.09 0.0292 0.0107 \*  
 Earth -75225-12-17 06:28 J -25754157.48 -25754157.23 -25754156.98 0.0295 0.0038

Moon -75225-12-17 09:06 J -25754157.36 -25754157.12 -25754156.88 0.0295 0.0053 \*  
 Mars -75224-05-06 20:52 J -25754016.85 -25754016.63 -25754016.39 0.0297 0.0170  
 Earth -75223-01-01 13:40 J -25753777.10 -25753776.93 -25753776.73 0.0298 0.0202  
 Moon -75223-01-01 17:44 J -25753776.93 -25753776.76 -25753776.59 0.0298 0.0215 \*  
 Venus -75218-01-30 17:01 J -25751921.99 -25751921.79 -25751921.59 0.0296 0.0069  
 Mercury -75217-10-21 14:52 J -25751291.89 -25751291.88 -25751291.87 0.0289 0.0287  
 Mercury -75216-01-18 02:23 J -25751203.51 -25751203.40 -25751203.30 0.0288 0.0170  
 Mercury -75216-04-16 13:40 J -25751115.05 -25751114.93 -25751114.80 0.0287 0.0054  
 Mercury -75216-07-14 01:11 J -25751026.58 -25751026.45 -25751026.32 0.0286 0.0063  
 Mercury -75216-10-10 12:28 J -25750938.08 -25750937.98 -25750937.87 0.0285 0.0178  
 Moon -75213-05-18 02:23 J -25749987.49 -25749987.40 -25749987.28 0.0274 0.0245  
 Earth -75213-05-18 03:49 J -25749987.45 -25749987.34 -25749987.21 0.0274 0.0234 \*  
 Earth -75212-05-29 22:18 J -25749610.78 -25749610.57 -25749610.35 0.0270 0.0118  
 Moon -75212-05-30 01:25 J -25749610.64 -25749610.44 -25749610.23 0.0270 0.0134 \*  
 Earth -75211-06-10 11:01 J -25749234.28 -25749234.04 -25749233.80 0.0267 0.0006  
 Moon -75211-06-10 12:42 J -25749234.21 -25749233.97 -25749233.72 0.0267 0.0012 \*  
 Mars -75210-04-30 07:25 J -25748910.39 -25748910.19 -25748909.96 0.0265 0.0187  
 Moon -75210-06-21 15:20 J -25748858.07 -25748857.86 -25748857.63 0.0264 0.0116  
 Earth -75210-06-21 18:56 J -25748857.93 -25748857.71 -25748857.49 0.0264 0.0106 \*  
 Moon -75209-07-01 22:32 J -25748481.67 -25748481.56 -25748481.42 0.0262 0.0224  
 Earth -75209-07-02 00:28 J -25748481.62 -25748481.48 -25748481.33 0.0262 0.0209 \*  
 Venus -75203-10-06 11:59 J -25746194.20 -25746194.00 -25746193.79 0.0266 0.0101  
 Mercury -75200-01-26 17:16 J -25745350.90 -25745350.78 -25745350.66 0.0273 0.0211  
 Mercury -75200-04-25 16:18 J -25745262.00 -25745261.82 -25745261.63 0.0274 0.0061  
 Mercury -75200-07-23 15:20 J -25745173.03 -25745172.86 -25745172.67 0.0275 0.0092  
 Mercury -75200-10-20 14:37 J -25745083.98 -25745083.89 -25745083.80 0.0276 0.0244  
 Moon -75197-11-25 14:52 J -25743952.07 -25743951.88 -25743951.66 0.0289 0.0177  
 Earth -75197-11-25 16:18 J -25743952.00 -25743951.82 -25743951.63 0.0289 0.0191 \*  
 Mars -75196-06-20 17:44 J -25743744.85 -25743744.76 -25743744.66 0.0292 0.0274  
 Moon -75196-12-10 11:30 J -25743572.27 -25743572.02 -25743571.76 0.0293 0.0025

Earth -75196-12-10 15:06 J -25743572.12 -25743571.87 -25743571.62 0.0293 0.0038 \*  
 Moon -75195-12-25 16:32 J -25743192.02 -25743191.81 -25743191.58 0.0297 0.0137  
 Earth -75195-12-25 20:23 J -25743191.87 -25743191.65 -25743191.42 0.0297 0.0124 \*  
 Moon -75193-01-10 02:37 J -25742811.41 -25742811.39 -25742811.33 0.0299 0.0294  
 Earth -75193-01-10 05:01 J -25742811.36 -25742811.29 -25742811.20 0.0299 0.0283 \*  
 Venus -75189-08-11 18:42 J -25741135.91 -25741135.72 -25741135.53 0.0295 0.0119  
 Mercury -75187-06-07 03:35 J -25740471.43 -25740471.35 -25740471.26 0.0289 0.0212  
 Mercury -75187-09-03 15:06 J -25740382.99 -25740382.87 -25740382.74 0.0288 0.0095  
 Mercury -75187-12-01 02:37 J -25740294.52 -25740294.39 -25740294.26 0.0287 0.0022  
 Mercury -75186-02-27 14:08 J -25740206.03 -25740205.91 -25740205.80 0.0286 0.0138  
 Mercury -75186-05-27 01:25 J -25740117.50 -25740117.44 -25740117.38 0.0285 0.0252  
 Moon -75183-05-24 21:35 J -25739023.77 -25739023.60 -25739023.41 0.0273 0.0184  
 Earth -75183-05-25 00:42 J -25739023.64 -25739023.47 -25739023.27 0.0273 0.0169 \*  
 Moon -75182-06-05 14:08 J -25738647.13 -25738646.91 -25738646.68 0.0269 0.0065  
 Earth -75182-06-05 16:32 J -25738647.04 -25738646.81 -25738646.57 0.0269 0.0052 \*  
 Mars -75182-06-17 23:01 J -25738634.78 -25738634.54 -25738634.29 0.0269 0.0156  
 Earth -75181-06-16 03:06 J -25738270.60 -25738270.37 -25738270.13 0.0266 0.0061  
 Moon -75181-06-16 05:59 J -25738270.48 -25738270.25 -25738270.02 0.0266 0.0065 \*  
 Earth -75180-06-27 10:04 J -25737894.26 -25737894.08 -25737893.89 0.0264 0.0168  
 Moon -75180-06-27 11:59 J -25737894.18 -25737894.00 -25737893.82 0.0264 0.0182 \*  
 Venus -75174-09-01 12:13 J -25735637.11 -25735636.99 -25735636.86 0.0265 0.0217  
 Venus -75173-04-17 18:13 J -25735407.91 -25735407.74 -25735407.57 0.0266 0.0160  
 Mercury -75171-06-15 17:01 J -25734618.87 -25734618.79 -25734618.70 0.0273 0.0245  
 Mercury -75171-09-12 16:18 J -25734530.00 -25734529.82 -25734529.64 0.0274 0.0095  
 Mercury -75171-12-10 15:20 J -25734441.04 -25734440.86 -25734440.67 0.0275 0.0056  
 Mercury -75170-03-09 14:23 J -25734352.02 -25734351.90 -25734351.77 0.0276 0.0209  
 Earth -75168-11-19 17:01 J -25733365.91 -25733365.79 -25733365.66 0.0287 0.0250  
 Moon -75168-11-19 18:28 J -25733365.86 -25733365.73 -25733365.59 0.0287 0.0236 \*  
 Earth -75167-12-04 11:59 J -25732986.23 -25732986.00 -25732985.77 0.0292 0.0104  
 Moon -75167-12-04 15:35 J -25732986.08 -25732985.85 -25732985.61 0.0292 0.0091 \*

Mars -75166-08-11 11:59 J -25732736.28 -25732736.00 -25732735.72 0.0294 0.0042  
 Earth -75166-12-19 14:23 J -25732606.15 -25732605.90 -25732605.66 0.0295 0.0057  
 Moon -75166-12-19 17:59 J -25732606.00 -25732605.75 -25732605.51 0.0295 0.0070 \*  
 Earth -75164-01-02 21:35 J -25732225.76 -25732225.60 -25732225.43 0.0298 0.0220  
 Moon -75164-01-02 23:16 J -25732225.69 -25732225.53 -25732225.37 0.0298 0.0231 \*  
 Venus -75159-02-22 01:54 J -25730349.57 -25730349.42 -25730349.26 0.0295 0.0191  
 Mercury -75158-10-25 06:28 J -25729739.30 -25729739.23 -25729739.16 0.0289 0.0242  
 Mercury -75157-01-21 17:59 J -25729650.87 -25729650.75 -25729650.64 0.0288 0.0125  
 Mercury -75157-04-19 05:16 J -25729562.41 -25729562.28 -25729562.15 0.0287 0.0011  
 Mercury -75157-07-16 16:47 J -25729473.92 -25729473.80 -25729473.68 0.0286 0.0108  
 Mercury -75157-10-13 04:04 J -25729385.41 -25729385.33 -25729385.25 0.0285 0.0222  
 Earth -75154-05-20 05:44 J -25728436.39 -25728436.26 -25728436.11 0.0274 0.0220  
 Moon -75154-05-20 08:37 J -25728436.26 -25728436.14 -25728436.01 0.0274 0.0233 \*  
 Earth -75153-05-31 00:13 J -25728059.70 -25728059.49 -25728059.26 0.0270 0.0104  
 Moon -75153-05-31 03:06 J -25728059.59 -25728059.37 -25728059.15 0.0270 0.0119 \*  
 Moon -75152-06-11 10:32 J -25727683.30 -25727683.06 -25727682.81 0.0267 0.0008  
 Earth -75152-06-11 13:11 J -25727683.19 -25727682.95 -25727682.71 0.0267 0.0011 \*  
 Mars -75152-08-05 10:18 J -25727628.37 -25727628.07 -25727627.77 0.0266 0.0026  
 Moon -75151-06-22 19:11 J -25727306.90 -25727306.70 -25727306.49 0.0264 0.0132  
 Earth -75151-06-22 21:20 J -25727306.82 -25727306.61 -25727306.39 0.0264 0.0121 \*  
 Earth -75150-07-04 03:06 J -25726930.49 -25726930.37 -25726930.24 0.0262 0.0224  
 Moon -75150-07-04 05:59 J -25726930.34 -25726930.25 -25726930.14 0.0262 0.0238 \*  
 Venus -75144-03-13 16:32 J -25724850.98 -25724850.81 -25724850.64 0.0265 0.0166  
 Venus -75144-10-28 22:18 J -25724621.70 -25724621.57 -25724621.44 0.0266 0.0212  
 Mercury -75141-01-30 14:23 J -25723798.06 -25723797.90 -25723797.73 0.0274 0.0140  
 Mercury -75141-04-28 13:25 J -25723709.13 -25723708.94 -25723708.75 0.0275 0.0013  
 Mercury -75141-07-26 12:28 J -25723620.13 -25723619.98 -25723619.82 0.0276 0.0163  
 Moon -75138-11-27 23:01 J -25722400.74 -25722400.54 -25722400.33 0.0290 0.0159  
 Earth -75138-11-28 02:52 J -25722400.58 -25722400.38 -25722400.18 0.0290 0.0172 \*  
 Moon -75137-12-11 23:01 J -25722020.79 -25722020.54 -25722020.30 0.0293 0.0008

Earth -75137-12-12 01:25 J -25722020.69 -25722020.44 -25722020.19 0.0293 0.0018 \*  
 Mars -75136-09-30 08:08 J -25721728.38 -25721728.16 -25721727.94 0.0296 0.0186  
 Moon -75136-12-27 06:13 J -25721640.44 -25721640.24 -25721640.03 0.0297 0.0155  
 Earth -75136-12-27 06:42 J -25721640.44 -25721640.22 -25721640.01 0.0297 0.0145 \*  
 Venus -75130-01-17 10:04 J -25719793.18 -25719793.08 -25719792.97 0.0297 0.0254  
 Venus -75130-09-04 04:18 J -25719563.42 -25719563.32 -25719563.19 0.0295 0.0245  
 Mercury -75128-03-13 08:08 J -25719007.19 -25719007.16 -25719007.14 0.0289 0.0283  
 Mercury -75128-06-09 19:40 J -25718918.79 -25718918.68 -25718918.58 0.0288 0.0165  
 Mercury -75128-09-06 06:56 J -25718830.33 -25718830.21 -25718830.08 0.0287 0.0048  
 Mercury -75128-12-03 18:28 J -25718741.86 -25718741.73 -25718741.60 0.0286 0.0069  
 Mercury -75127-03-02 05:44 J -25718653.35 -25718653.26 -25718653.16 0.0285 0.0184  
 Earth -75125-05-14 05:16 J -25717849.31 -25717849.28 -25717849.23 0.0276 0.0272  
 Moon -75124-05-26 01:11 J -25717472.62 -25717472.45 -25717472.26 0.0272 0.0170  
 Earth -75124-05-26 03:35 J -25717472.54 -25717472.35 -25717472.14 0.0272 0.0155 \*  
 Earth -75123-06-06 19:25 J -25717095.93 -25717095.69 -25717095.45 0.0269 0.0037  
 Moon -75123-06-06 21:35 J -25717095.83 -25717095.60 -25717095.37 0.0269 0.0047 \*  
 Earth -75122-06-18 05:59 J -25716719.48 -25716719.25 -25716719.02 0.0266 0.0076  
 Moon -75122-06-18 08:37 J -25716719.37 -25716719.14 -25716718.90 0.0266 0.0081 \*  
 Mars -75122-09-23 22:32 J -25716621.74 -25716621.56 -25716621.34 0.0266 0.0199  
 Moon -75121-06-28 10:18 J -25716343.22 -25716343.07 -25716342.90 0.0264 0.0198  
 Earth -75121-06-28 13:25 J -25716343.11 -25716342.94 -25716342.77 0.0264 0.0183 \*  
 Venus -75115-09-23 22:18 J -25714064.76 -25714064.57 -25714064.37 0.0265 0.0109  
 Mercury -75112-06-18 14:23 J -25713066.04 -25713065.90 -25713065.75 0.0273 0.0173  
 Mercury -75112-09-15 13:40 J -25712977.12 -25712976.93 -25712976.74 0.0274 0.0023  
 Mercury -75112-12-13 12:42 J -25712888.14 -25712887.97 -25712887.80 0.0275 0.0129  
 Earth -75109-11-21 04:32 J -25711814.45 -25711814.31 -25711814.15 0.0288 0.0233  
 Moon -75109-11-21 08:08 J -25711814.31 -25711814.16 -25711813.98 0.0288 0.0218 \*  
 Mars -75108-11-15 02:08 J -25711455.55 -25711455.41 -25711455.25 0.0292 0.0250  
 Earth -75108-12-05 23:59 J -25711434.74 -25711434.50 -25711434.26 0.0292 0.0084  
 Moon -75108-12-06 02:08 J -25711434.66 -25711434.41 -25711434.16 0.0292 0.0072 \*

Moon -75107-12-21 01:54 J -25711054.66 -25711054.42 -25711054.17 0.0296 0.0087  
 Earth -75107-12-21 02:37 J -25711054.62 -25711054.39 -25711054.14 0.0296 0.0079 \*  
 Moon -75105-01-05 06:56 J -25710674.34 -25710674.21 -25710674.07 0.0298 0.0249  
 Earth -75105-01-05 10:04 J -25710674.22 -25710674.08 -25710673.93 0.0298 0.0241 \*  
 Venus -75101-07-29 19:40 J -25709006.85 -25709006.68 -25709006.51 0.0297 0.0174  
 Mercury -75099-10-27 22:47 J -25708186.65 -25708186.55 -25708186.46 0.0289 0.0191  
 Mercury -75098-01-24 10:04 J -25708098.20 -25708098.08 -25708097.95 0.0288 0.0074  
 Mercury -75098-04-22 21:35 J -25708009.73 -25708009.60 -25708009.47 0.0287 0.0043  
 Mercury -75098-07-20 08:52 J -25707921.23 -25707921.13 -25707921.02 0.0286 0.0159  
 Mercury -75098-10-16 20:23 J -25707832.68 -25707832.65 -25707832.61 0.0285 0.0272  
 Earth -75095-05-21 10:47 J -25706885.20 -25706885.05 -25706884.89 0.0274 0.0206  
 Moon -75095-05-21 13:54 J -25706885.07 -25706884.92 -25706884.77 0.0274 0.0218 \*  
 Moon -75094-06-02 02:52 J -25706508.60 -25706508.38 -25706508.14 0.0270 0.0101  
 Earth -75094-06-02 05:16 J -25706508.50 -25706508.28 -25706508.05 0.0270 0.0088 \*  
 Mars -75094-11-11 22:32 J -25706345.81 -25706345.56 -25706345.30 0.0269 0.0133  
 Moon -75093-06-12 14:37 J -25706132.12 -25706131.89 -25706131.65 0.0267 0.0025  
 Earth -75093-06-12 17:59 J -25706131.99 -25706131.75 -25706131.51 0.0267 0.0027 \*  
 Earth -75092-06-24 02:23 J -25705755.61 -25705755.40 -25705755.20 0.0264 0.0137  
 Moon -75092-06-24 04:04 J -25705755.51 -25705755.33 -25705755.12 0.0264 0.0150 \*  
 Earth -75091-07-05 08:08 J -25705379.24 -25705379.16 -25705379.05 0.0262 0.0239  
 Moon -75091-07-05 11:01 J -25705379.09 -25705379.04 -25705378.96 0.0262 0.0252 \*  
 Venus -75085-04-05 03:49 J -25703278.55 -25703278.34 -25703278.12 0.0265 0.0053  
 Mercury -75083-11-05 13:25 J -25702334.05 -25702333.94 -25702333.82 0.0273 0.0213  
 Mercury -75082-02-02 12:42 J -25702245.16 -25702244.97 -25702244.79 0.0274 0.0063  
 Mercury -75082-05-02 11:44 J -25702156.19 -25702156.01 -25702155.83 0.0275 0.0089  
 Mercury -75082-07-30 10:32 J -25702067.14 -25702067.06 -25702066.96 0.0276 0.0241  
 Moon -75080-11-14 23:30 J -25701228.58 -25701228.52 -25701228.45 0.0286 0.0275  
 Moon -75079-11-29 16:32 J -25700849.02 -25700848.81 -25700848.60 0.0290 0.0139  
 Earth -75079-11-29 17:59 J -25700848.96 -25700848.75 -25700848.53 0.0290 0.0151 \*  
 Earth -75078-12-14 17:16 J -25700469.03 -25700468.78 -25700468.53 0.0294 0.0007

Moon -75078-12-14 18:42 J -25700468.96 -25700468.72 -25700468.47 0.0294 0.0015 \*  
 Mars -75077-01-05 11:59 J -25700447.28 -25700447.00 -25700446.71 0.0294 0.0020  
 Earth -75077-12-28 22:18 J -25700088.77 -25700088.57 -25700088.36 0.0297 0.0168  
 Moon -75077-12-29 01:54 J -25700088.61 -25700088.42 -25700088.22 0.0297 0.0176 \*  
 Venus -75071-02-08 23:44 J -25698220.70 -25698220.51 -25698220.32 0.0296 0.0112  
 Mercury -75069-03-16 00:28 J -25697454.55 -25697454.48 -25697454.40 0.0289 0.0229  
 Mercury -75069-06-12 11:59 J -25697366.11 -25697366.00 -25697365.88 0.0288 0.0111  
 Mercury -75069-09-08 23:30 J -25697277.65 -25697277.52 -25697277.39 0.0287 0.0007  
 Mercury -75069-12-06 11:01 J -25697189.16 -25697189.04 -25697188.92 0.0286 0.0122  
 Mercury -75068-03-04 22:18 J -25697100.64 -25697100.57 -25697100.50 0.0285 0.0236  
 Moon -75066-05-16 08:08 J -25696298.21 -25696298.16 -25696298.09 0.0276 0.0267  
 Earth -75066-05-16 11:30 J -25696298.10 -25696298.02 -25696297.93 0.0276 0.0257 \*  
 Earth -75065-05-27 09:20 J -25695921.31 -25695921.11 -25695920.90 0.0272 0.0139  
 Moon -75065-05-27 11:01 J -25695921.23 -25695921.04 -25695920.85 0.0272 0.0153 \*  
 Earth -75064-06-08 00:42 J -25695544.71 -25695544.47 -25695544.23 0.0269 0.0022  
 Moon -75064-06-08 04:18 J -25695544.56 -25695544.32 -25695544.08 0.0269 0.0028 \*  
 Mars -75064-12-30 06:28 J -25695339.52 -25695339.23 -25695338.93 0.0267 0.0041  
 Moon -75063-06-19 09:49 J -25695168.31 -25695168.09 -25695167.85 0.0266 0.0100  
 Earth -75063-06-19 11:16 J -25695168.25 -25695168.03 -25695167.80 0.0266 0.0092 \*  
 Moon -75062-06-30 15:35 J -25694791.97 -25694791.85 -25694791.70 0.0264 0.0214  
 Earth -75062-06-30 18:42 J -25694791.87 -25694791.72 -25694791.56 0.0264 0.0199 \*  
 Venus -75056-10-16 10:18 J -25692492.29 -25692492.07 -25692491.86 0.0266 0.0007  
 Mercury -75053-03-24 13:40 J -25691602.00 -25691601.93 -25691601.84 0.0273 0.0245  
 Mercury -75053-06-21 12:56 J -25691513.14 -25691512.96 -25691512.78 0.0274 0.0095  
 Mercury -75053-09-18 11:59 J -25691424.18 -25691424.00 -25691423.81 0.0275 0.0056  
 Mercury -75053-12-16 11:01 J -25691335.16 -25691335.04 -25691334.91 0.0276 0.0208  
 Earth -75050-11-23 20:37 J -25690262.80 -25690262.64 -25690262.46 0.0288 0.0214  
 Moon -75050-11-23 22:18 J -25690262.75 -25690262.57 -25690262.38 0.0288 0.0199 \*  
 Moon -75049-12-07 14:37 J -25689883.14 -25689882.89 -25689882.63 0.0292 0.0052  
 Earth -75049-12-07 16:47 J -25689883.05 -25689882.80 -25689882.56 0.0292 0.0062 \*



Moon -75048-12-22 16:04 J -25689503.06 -25689502.83 -25689502.60 0.0296 0.0108  
 Earth -75048-12-22 19:54 J -25689502.91 -25689502.67 -25689502.44 0.0296 0.0101 \*  
 Mars -75047-02-25 01:40 J -25689438.61 -25689438.43 -25689438.22 0.0296 0.0217  
 Moon -75046-01-06 23:30 J -25689122.61 -25689122.52 -25689122.40 0.0298 0.0271  
 Earth -75046-01-07 02:52 J -25689122.48 -25689122.38 -25689122.25 0.0298 0.0263 \*  
 Venus -75042-08-22 10:04 J -25687434.29 -25687434.08 -25687433.88 0.0296 0.0030  
 Mercury -75040-08-03 04:04 J -25686722.39 -25686722.33 -25686722.27 0.0289 0.0252  
 Mercury -75040-10-30 15:35 J -25686633.97 -25686633.85 -25686633.74 0.0288 0.0134  
 Mercury -75039-01-27 02:52 J -25686545.51 -25686545.38 -25686545.25 0.0287 0.0020  
 Mercury -75039-04-25 14:23 J -25686457.02 -25686456.90 -25686456.78 0.0286 0.0099  
 Mercury -75039-07-23 01:54 J -25686368.51 -25686368.42 -25686368.34 0.0285 0.0214  
 Moon -75036-05-22 17:30 J -25685333.93 -25685333.77 -25685333.60 0.0274 0.0204  
 Earth -75036-05-22 18:28 J -25685333.90 -25685333.73 -25685333.55 0.0274 0.0191 \*  
 Moon -75035-06-03 09:06 J -25684957.34 -25684957.12 -25684956.89 0.0270 0.0083  
 Earth -75035-06-03 12:28 J -25684957.21 -25684956.98 -25684956.75 0.0270 0.0072 \*  
 Earth -75034-06-15 00:42 J -25684580.71 -25684580.47 -25684580.23 0.0267 0.0043  
 Moon -75034-06-15 01:25 J -25684580.66 -25684580.44 -25684580.20 0.0267 0.0045 \*  
 Mars -75033-02-18 08:08 J -25684332.31 -25684332.16 -25684332.00 0.0265 0.0227  
 Earth -75033-06-25 09:06 J -25684204.31 -25684204.12 -25684203.92 0.0264 0.0153  
 Moon -75033-06-25 12:42 J -25684204.16 -25684203.97 -25684203.78 0.0264 0.0166 \*  
 Earth -75032-07-06 15:20 J -25683827.90 -25683827.86 -25683827.79 0.0262 0.0255  
 Venus -75026-04-28 16:47 J -25681706.01 -25681705.80 -25681705.59 0.0266 0.0066  
 Mercury -75024-11-08 12:28 J -25680781.14 -25680780.98 -25680780.81 0.0274 0.0131  
 Mercury -75023-02-05 11:44 J -25680692.20 -25680692.01 -25680691.82 0.0275 0.0020  
 Mercury -75023-05-05 10:47 J -25680603.20 -25680603.05 -25680602.90 0.0276 0.0172  
 Moon -75021-11-16 20:08 J -25679676.75 -25679676.66 -25679676.55 0.0286 0.0258  
 Earth -75021-11-16 21:06 J -25679676.69 -25679676.62 -25679676.54 0.0286 0.0272 \*  
 Earth -75020-12-01 12:42 J -25679297.19 -25679296.97 -25679296.75 0.0290 0.0129  
 Moon -75020-12-01 14:52 J -25679297.10 -25679296.88 -25679296.65 0.0290 0.0117 \*  
 Mars -75019-04-11 15:35 J -25679166.03 -25679165.85 -25679165.65 0.0292 0.0221

Earth	-75019-12-16 12:28 J	-25678917.23	-25678916.98	-25678916.73	0.0294	0.0029
Moon	-75019-12-16 16:04 J	-25678917.08	-25678916.83	-25678916.58	0.0294	0.0039 *
Earth	-75018-12-31 17:30 J	-25678536.94	-25678536.77	-25678536.57	0.0297	0.0193
Moon	-75018-12-31 20:08 J	-25678536.84	-25678536.66	-25678536.46	0.0297	0.0200 *
Venus	-75012-03-03 15:35 J	-25676648.05	-25676647.85	-25676647.64	0.0295	0.0038
Mercury	-75011-12-21 06:13 J	-25675990.25	-25675990.24	-25675990.22	0.0289	0.0286
Mercury	-75010-03-19 17:44 J	-25675901.86	-25675901.76	-25675901.65	0.0288	0.0168
Mercury	-75010-06-16 05:16 J	-25675813.41	-25675813.28	-25675813.15	0.0287	0.0051
Mercury	-75010-09-12 16:47 J	-25675724.93	-25675724.80	-25675724.68	0.0286	0.0066
Mercury	-75010-12-10 04:04 J	-25675636.43	-25675636.33	-25675636.23	0.0285	0.0180
Earth	-75007-05-17 20:37 J	-25674746.74	-25674746.64	-25674746.52	0.0276	0.0243
Moon	-75007-05-17 21:06 J	-25674746.70	-25674746.62	-25674746.53	0.0276	0.0255 *
Earth	-75006-05-29 17:59 J	-25674369.97	-25674369.75	-25674369.54	0.0272	0.0123
Moon	-75006-05-29 21:06 J	-25674369.82	-25674369.62	-25674369.40	0.0272	0.0138 *
Mars	-75005-04-07 00:13 J	-25674056.75	-25674056.49	-25674056.21	0.0269	0.0114
Moon	-75005-06-09 08:08 J	-25673993.41	-25673993.16	-25673992.91	0.0269	0.0008
Earth	-75005-06-09 08:52 J	-25673993.37	-25673993.13	-25673992.89	0.0269	0.0005 *
Moon	-75004-06-20 15:20 J	-25673617.07	-25673616.86	-25673616.64	0.0266	0.0118
Earth	-75004-06-20 18:56 J	-25673616.92	-25673616.71	-25673616.48	0.0266	0.0109 *
Earth	-75003-07-02 02:08 J	-25673240.53	-25673240.41	-25673240.26	0.0264	0.0216
Moon	-75003-07-02 02:52 J	-25673240.48	-25673240.38	-25673240.25	0.0264	0.0229 *

# 75TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 75th millennium BCE.

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
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## TRANSIT

## TIME

Venus -74997-03-23 17:01 J -25671148.84 -25671148.79 -25671148.72 0.0265 0.0253  
 Venus -74997-11-07 23:01 J -25670919.73 -25670919.54 -25670919.35 0.0266 0.0125  
 Mercury -74994-03-28 12:42 J -25670049.12 -25670048.97 -25670048.81 0.0273 0.0164  
 Mercury -74994-06-25 11:59 J -25669960.19 -25669960.00 -25669959.81 0.0274 0.0013  
 Mercury -74994-09-22 11:01 J -25669871.20 -25669871.04 -25669870.87 0.0275 0.0139  
 Moon -74991-11-25 12:42 J -25668711.16 -25668710.97 -25668710.76 0.0288 0.0179  
 Earth -74991-11-25 15:35 J -25668711.03 -25668710.85 -25668710.66 0.0288 0.0194 \*  
 Moon -74990-12-10 08:37 J -25668331.38 -25668331.14 -25668330.88 0.0292 0.0029  
 Earth -74990-12-10 12:28 J -25668331.23 -25668330.98 -25668330.73 0.0293 0.0040 \*  
 Mars -74989-06-01 15:06 J -25668157.15 -25668156.87 -25668156.58 0.0294 0.0020  
 Moon -74989-12-24 13:54 J -25667951.13 -25667950.92 -25667950.70 0.0296 0.0133  
 Earth -74989-12-24 16:04 J -25667951.05 -25667950.83 -25667950.60 0.0296 0.0125 \*  
 Earth -74987-01-08 23:44 J -25667570.58 -25667570.51 -25667570.44 0.0299 0.0286  
 Moon -74987-01-09 00:13 J -25667570.53 -25667570.49 -25667570.44 0.0299 0.0292 \*  
 Venus -74983-09-14 02:23 J -25665861.58 -25665861.40 -25665861.21 0.0296 0.0124  
 Mercury -74981-08-05 21:20 J -25665169.70 -25665169.61 -25665169.51 0.0289 0.0190  
 Mercury -74981-11-02 08:52 J -25665081.25 -25665081.13 -25665081.00 0.0288 0.0073  
 Mercury -74980-01-29 20:23 J -25664992.78 -25664992.65 -25664992.52 0.0287 0.0044  
 Mercury -74980-04-28 07:40 J -25664904.28 -25664904.18 -25664904.07 0.0286 0.0160  
 Mercury -74980-07-25 18:56 J -25664815.74 -25664815.71 -25664815.67 0.0285 0.0274  
 Moon -74977-05-24 00:56 J -25663782.63 -25663782.46 -25663782.29 0.0273 0.0189  
 Earth -74977-05-24 04:32 J -25663782.49 -25663782.31 -25663782.13 0.0273 0.0174 \*  
 Earth -74976-06-04 21:35 J -25663405.83 -25663405.60 -25663405.36 0.0270 0.0056  
 Moon -74976-06-04 21:35 J -25663405.82 -25663405.60 -25663405.37 0.0270 0.0065 \*  
 Mars -74975-05-26 22:18 J -25663049.85 -25663049.57 -25663049.27 0.0267 0.0075  
 Earth -74975-06-16 09:20 J -25663029.34 -25663029.11 -25663028.87 0.0267 0.0060  
 Moon -74975-06-16 13:11 J -25663029.18 -25663028.95 -25663028.71 0.0267 0.0065 \*  
 Earth -74974-06-27 17:59 J -25662652.94 -25662652.75 -25662652.57 0.0264 0.0170

Moon -74974-06-27 17:59 J -25662652.92 -25662652.75 -25662652.56 0.0264 0.0183 \*  
 Venus -74968-10-04 00:28 J -25660362.62 -25660362.48 -25660362.32 0.0265 0.0191  
 Venus -74967-05-21 06:28 J -25660133.38 -25660133.23 -25660133.07 0.0266 0.0188  
 Mercury -74965-08-14 12:56 J -25659317.09 -25659316.96 -25659316.83 0.0273 0.0196  
 Mercury -74965-11-11 11:59 J -25659228.18 -25659228.00 -25659227.81 0.0274 0.0047  
 Mercury -74964-02-08 11:16 J -25659139.21 -25659139.03 -25659138.85 0.0275 0.0106  
 Mercury -74964-05-08 10:18 J -25659050.13 -25659050.07 -25659050.00 0.0276 0.0258  
 Earth -74962-11-19 17:30 J -25658124.88 -25658124.77 -25658124.65 0.0287 0.0253  
 Moon -74962-11-19 20:52 J -25658124.76 -25658124.63 -25658124.49 0.0287 0.0238 \*  
 Earth -74961-12-03 10:04 J -25657745.31 -25657745.08 -25657744.85 0.0291 0.0106  
 Moon -74961-12-03 13:54 J -25657745.16 -25657744.92 -25657744.68 0.0291 0.0092 \*  
 Earth -74960-12-18 10:32 J -25657365.30 -25657365.06 -25657364.81 0.0295 0.0055  
 Moon -74960-12-18 12:28 J -25657365.23 -25657364.98 -25657364.73 0.0295 0.0065 \*  
 Mars -74959-07-22 23:16 J -25657148.67 -25657148.53 -25657148.37 0.0296 0.0251  
 Moon -74958-01-02 14:52 J -25656985.04 -25656984.88 -25656984.71 0.0297 0.0223  
 Earth -74958-01-02 16:04 J -25656984.98 -25656984.83 -25656984.65 0.0297 0.0219 \*  
 Venus -74953-03-26 08:52 J -25655075.28 -25655075.13 -25655074.97 0.0295 0.0193  
 Mercury -74952-12-23 23:59 J -25654437.58 -25654437.50 -25654437.42 0.0289 0.0222  
 Mercury -74951-03-22 11:30 J -25654349.14 -25654349.02 -25654348.90 0.0288 0.0105  
 Mercury -74951-06-18 22:47 J -25654260.68 -25654260.55 -25654260.42 0.0287 0.0012  
 Mercury -74951-09-15 10:04 J -25654172.19 -25654172.08 -25654171.96 0.0286 0.0128  
 Mercury -74951-12-12 21:35 J -25654083.67 -25654083.60 -25654083.53 0.0285 0.0242  
 Earth -74948-05-19 07:54 J -25653195.30 -25653195.17 -25653195.03 0.0275 0.0227  
 Moon -74948-05-19 11:16 J -25653195.13 -25653195.03 -25653194.90 0.0275 0.0241 \*  
 Earth -74947-05-31 04:04 J -25652818.55 -25652818.33 -25652818.11 0.0271 0.0107  
 Moon -74947-05-31 05:01 J -25652818.52 -25652818.29 -25652818.07 0.0271 0.0120 \*  
 Mars -74947-07-15 03:06 J -25652773.44 -25652773.37 -25652773.30 0.0271 0.0262  
 Moon -74946-06-11 14:37 J -25652442.13 -25652441.89 -25652441.65 0.0268 0.0012  
 Earth -74946-06-11 18:13 J -25652441.98 -25652441.74 -25652441.49 0.0268 0.0012 \*  
 Moon -74945-06-22 03:20 J -25652065.56 -25652065.36 -25652065.16 0.0266 0.0137

Earth -74945-06-22 03:49 J -25652065.54 -25652065.34 -25652065.11 0.0266 0.0126 \*  
 Mars -74945-07-14 15:20 J -25652042.93 -25652042.86 -25652042.74 0.0265 0.0252  
 Earth -74944-07-03 11:01 J -25651689.14 -25651689.04 -25651688.92 0.0264 0.0231  
 Moon -74944-07-03 14:37 J -25651688.97 -25651688.89 -25651688.80 0.0264 0.0245 \*  
 Venus -74938-04-16 05:59 J -25649576.44 -25649576.25 -25649576.06 0.0265 0.0135  
 Venus -74938-12-01 11:59 J -25649347.07 -25649347.00 -25649346.90 0.0267 0.0246  
 Mercury -74935-01-01 12:42 J -25648585.07 -25648584.97 -25648584.87 0.0273 0.0232  
 Mercury -74935-03-31 11:59 J -25648496.18 -25648496.00 -25648495.82 0.0274 0.0081  
 Mercury -74935-06-28 11:01 J -25648407.22 -25648407.04 -25648406.85 0.0275 0.0071  
 Mercury -74935-09-25 10:04 J -25648318.18 -25648318.08 -25648317.96 0.0276 0.0223  
 Moon -74932-11-27 07:40 J -25647159.38 -25647159.18 -25647158.97 0.0289 0.0160  
 Earth -74932-11-27 11:01 J -25647159.23 -25647159.04 -25647158.83 0.0289 0.0174 \*  
 Mars -74931-09-06 21:35 J -25646875.82 -25646875.60 -25646875.36 0.0292 0.0177  
 Moon -74931-12-12 07:40 J -25646779.42 -25646779.18 -25646778.94 0.0293 0.0006  
 Earth -74931-12-12 09:06 J -25646779.37 -25646779.12 -25646778.87 0.0293 0.0017 \*  
 Earth -74930-12-27 13:11 J -25646399.16 -25646398.95 -25646398.73 0.0296 0.0149  
 Moon -74930-12-27 14:52 J -25646399.08 -25646398.88 -25646398.67 0.0296 0.0157 \*  
 Venus -74924-02-19 01:25 J -25644518.57 -25644518.44 -25644518.30 0.0297 0.0219  
 Venus -74924-10-06 19:40 J -25644288.74 -25644288.68 -25644288.61 0.0295 0.0279  
 Mercury -74922-05-13 03:35 J -25643705.41 -25643705.35 -25643705.28 0.0289 0.0243  
 Mercury -74922-08-09 15:06 J -25643616.98 -25643616.87 -25643616.75 0.0288 0.0125  
 Mercury -74922-11-06 02:37 J -25643528.52 -25643528.39 -25643528.26 0.0287 0.0009  
 Mercury -74921-02-02 13:54 J -25643440.04 -25643439.92 -25643439.80 0.0286 0.0108  
 Mercury -74921-05-01 01:11 J -25643351.52 -25643351.45 -25643351.36 0.0285 0.0223  
 Moon -74918-05-26 14:23 J -25642231.08 -25642230.90 -25642230.72 0.0273 0.0173  
 Earth -74918-05-26 15:49 J -25642231.03 -25642230.84 -25642230.64 0.0273 0.0158 \*  
 Earth -74917-06-06 08:08 J -25641854.39 -25641854.16 -25641853.92 0.0269 0.0039  
 Moon -74917-06-06 11:30 J -25641854.25 -25641854.02 -25641853.79 0.0269 0.0047 \*  
 Mars -74917-09-01 20:52 J -25641766.91 -25641766.63 -25641766.35 0.0268 0.0077  
 Earth -74916-06-17 19:25 J -25641477.92 -25641477.69 -25641477.45 0.0266 0.0077

Moon -74916-06-17 20:37 J -25641477.88 -25641477.64 -25641477.40 0.0266 0.0083 \*  
 Moon -74915-06-28 23:44 J -25641101.65 -25641101.51 -25641101.34 0.0264 0.0201  
 Earth -74915-06-29 03:20 J -25641101.52 -25641101.36 -25641101.18 0.0264 0.0186 \*  
 Venus -74909-10-26 13:40 J -25638790.14 -25638789.93 -25638789.72 0.0265 0.0071  
 Mercury -74906-05-21 12:56 J -25637853.00 -25637852.96 -25637852.90 0.0273 0.0263  
 Mercury -74906-08-18 12:13 J -25637764.16 -25637763.99 -25637763.81 0.0274 0.0113  
 Mercury -74906-11-15 11:30 J -25637675.21 -25637675.02 -25637674.83 0.0275 0.0039  
 Mercury -74905-02-12 10:32 J -25637586.19 -25637586.06 -25637585.92 0.0276 0.0191  
 Earth -74903-11-21 13:40 J -25636573.07 -25636572.93 -25636572.79 0.0287 0.0234  
 Moon -74903-11-21 16:32 J -25636572.96 -25636572.81 -25636572.64 0.0287 0.0219 \*  
 Earth -74902-12-06 07:11 J -25636193.43 -25636193.20 -25636192.95 0.0291 0.0084  
 Moon -74902-12-06 07:40 J -25636193.42 -25636193.18 -25636192.92 0.0291 0.0072 \*  
 Mars -74901-10-27 17:01 J -25635867.07 -25635866.79 -25635866.51 0.0295 0.0057  
 Moon -74901-12-20 06:28 J -25635813.47 -25635813.23 -25635812.98 0.0295 0.0089  
 Earth -74901-12-20 08:52 J -25635813.37 -25635813.13 -25635812.89 0.0295 0.0079 \*  
 Moon -74899-01-04 11:16 J -25635433.15 -25635433.03 -25635432.88 0.0298 0.0250  
 Earth -74899-01-04 15:06 J -25635433.01 -25635432.87 -25635432.72 0.0298 0.0243 \*  
 Venus -74895-09-01 09:06 J -25633732.29 -25633732.12 -25633731.94 0.0296 0.0144  
 Mercury -74893-09-29 06:13 J -25632973.27 -25632973.24 -25632973.19 0.0289 0.0273  
 Mercury -74893-12-26 17:44 J -25632884.86 -25632884.76 -25632884.65 0.0288 0.0155  
 Mercury -74892-03-25 05:16 J -25632796.41 -25632796.28 -25632796.15 0.0287 0.0038  
 Mercury -74892-06-21 16:32 J -25632707.93 -25632707.81 -25632707.68 0.0286 0.0078  
 Mercury -74892-09-18 04:04 J -25632619.43 -25632619.33 -25632619.24 0.0285 0.0192  
 Earth -74889-05-20 19:54 J -25631643.81 -25631643.67 -25631643.50 0.0274 0.0212  
 Moon -74889-05-20 21:49 J -25631643.73 -25631643.59 -25631643.45 0.0274 0.0225 \*  
 Moon -74888-06-01 12:13 J -25631267.21 -25631266.99 -25631266.76 0.0271 0.0104  
 Earth -74888-06-01 15:20 J -25631267.08 -25631266.86 -25631266.63 0.0271 0.0091 \*  
 Moon -74887-06-13 03:06 J -25630890.60 -25630890.37 -25630890.14 0.0268 0.0028  
 Earth -74887-06-13 04:32 J -25630890.55 -25630890.31 -25630890.07 0.0268 0.0028 \*  
 Mars -74887-10-21 07:54 J -25630760.45 -25630760.17 -25630759.89 0.0267 0.0101

Earth -74886-06-24 13:40 J -25630514.13 -25630513.93 -25630513.72 0.0265 0.0141  
 Moon -74886-06-24 17:01 J -25630513.98 -25630513.79 -25630513.59 0.0265 0.0155 \*  
 Earth -74885-07-04 20:23 J -25630137.73 -25630137.65 -25630137.56 0.0263 0.0247  
 Moon -74885-07-04 22:18 J -25630137.61 -25630137.57 -25630137.53 0.0263 0.0259 \*  
 Venus -74879-05-08 18:28 J -25628003.94 -25628003.73 -25628003.51 0.0266 0.0019  
 Mercury -74876-01-04 11:30 J -25627032.17 -25627032.02 -25627031.85 0.0274 0.0152  
 Mercury -74876-04-03 10:47 J -25626943.24 -25626943.05 -25626942.86 0.0275 0.0005  
 Mercury -74876-07-01 10:04 J -25626854.24 -25626854.08 -25626853.92 0.0275 0.0153  
 Moon -74874-11-15 13:54 J -25625986.95 -25625986.92 -25625986.88 0.0285 0.0282  
 Earth -74873-11-29 06:28 J -25625607.43 -25625607.23 -25625607.01 0.0289 0.0154  
 Moon -74873-11-29 06:56 J -25625607.42 -25625607.21 -25625606.99 0.0289 0.0142 \*  
 Earth -74872-12-14 05:30 J -25625227.52 -25625227.27 -25625227.02 0.0293 0.0006  
 Moon -74872-12-14 08:23 J -25625227.40 -25625227.15 -25625226.91 0.0293 0.0018 \*  
 Mars -74871-12-18 02:23 J -25624858.42 -25624858.40 -25624858.35 0.0297 0.0294  
 Earth -74871-12-29 10:18 J -25624847.26 -25624847.07 -25624846.86 0.0297 0.0172  
 Moon -74871-12-29 14:08 J -25624847.10 -25624846.91 -25624846.71 0.0297 0.0182 \*  
 Venus -74865-03-13 19:25 J -25622945.89 -25622945.69 -25622945.48 0.0296 0.0059  
 Mercury -74863-05-15 21:20 J -25622152.71 -25622152.61 -25622152.50 0.0289 0.0177  
 Mercury -74863-08-12 08:52 J -25622064.26 -25622064.13 -25622064.00 0.0288 0.0059  
 Mercury -74863-11-08 20:23 J -25621975.78 -25621975.65 -25621975.53 0.0287 0.0057  
 Mercury -74862-02-05 07:40 J -25621887.28 -25621887.18 -25621887.08 0.0286 0.0172  
 Moon -74860-05-16 03:20 J -25621056.38 -25621056.36 -25621056.32 0.0276 0.0273  
 Earth -74860-05-16 05:16 J -25621056.35 -25621056.28 -25621056.20 0.0276 0.0261 \*  
 Earth -74859-05-28 03:06 J -25620679.57 -25620679.37 -25620679.17 0.0272 0.0141  
 Moon -74859-05-28 05:44 J -25620679.44 -25620679.26 -25620679.06 0.0272 0.0158 \*  
 Mars -74859-12-10 01:40 J -25620483.57 -25620483.43 -25620483.25 0.0270 0.0227  
 Earth -74858-06-08 18:28 J -25620302.97 -25620302.73 -25620302.49 0.0269 0.0023  
 Moon -74858-06-08 21:06 J -25620302.87 -25620302.62 -25620302.37 0.0269 0.0031 \*  
 Moon -74857-06-19 01:54 J -25619926.64 -25619926.42 -25619926.18 0.0266 0.0103  
 Earth -74857-06-19 05:16 J -25619926.51 -25619926.28 -25619926.05 0.0266 0.0093 \*

Moon -74856-06-30 10:18 J -25619550.19 -25619550.07 -25619549.93 0.0264 0.0217  
 Earth -74856-06-30 12:28 J -25619550.12 -25619549.98 -25619549.81 0.0264 0.0202 \*  
 Venus -74850-11-19 02:08 J -25617217.62 -25617217.41 -25617217.19 0.0266 0.0046  
 Mercury -74847-05-24 11:44 J -25616300.15 -25616300.01 -25616299.87 0.0274 0.0184  
 Mercury -74847-08-21 11:01 J -25616211.23 -25616211.04 -25616210.85 0.0274 0.0033  
 Mercury -74847-11-18 10:04 J -25616122.25 -25616122.08 -25616121.90 0.0275 0.0120  
 Mercury -74846-02-15 09:06 J -25616033.14 -25616033.12 -25616033.08 0.0276 0.0273  
 Moon -74844-11-23 06:13 J -25615021.41 -25615021.24 -25615021.04 0.0288 0.0203  
 Earth -74844-11-23 07:40 J -25615021.34 -25615021.18 -25615021.01 0.0288 0.0215 \*  
 Moon -74843-12-07 22:47 J -25614641.79 -25614641.55 -25614641.29 0.0292 0.0052  
 Earth -74843-12-08 02:37 J -25614641.64 -25614641.39 -25614641.15 0.0292 0.0062 \*  
 Mars -74842-02-01 21:06 J -25614585.88 -25614585.62 -25614585.37 0.0293 0.0142  
 Moon -74842-12-23 00:56 J -25614261.68 -25614261.46 -25614261.23 0.0296 0.0113  
 Earth -74842-12-23 04:47 J -25614261.53 -25614261.30 -25614261.06 0.0296 0.0103 \*  
 Moon -74840-01-06 09:35 J -25613881.18 -25613881.10 -25613881.00 0.0298 0.0275  
 Earth -74840-01-06 11:30 J -25613881.11 -25613881.02 -25613880.90 0.0298 0.0267 \*  
 Venus -74836-09-24 02:52 J -25612159.59 -25612159.38 -25612159.18 0.0296 0.0016  
 Mercury -74834-10-02 23:59 J -25611420.58 -25611420.50 -25611420.41 0.0288 0.0207  
 Mercury -74834-12-30 11:30 J -25611332.14 -25611332.02 -25611331.89 0.0287 0.0090  
 Mercury -74833-03-27 23:01 J -25611243.67 -25611243.54 -25611243.41 0.0286 0.0027  
 Mercury -74833-06-24 10:18 J -25611155.18 -25611155.07 -25611154.96 0.0285 0.0141  
 Mercury -74833-09-20 21:35 J -25611066.65 -25611066.60 -25611066.54 0.0284 0.0255  
 Moon -74830-05-23 05:01 J -25610092.44 -25610092.29 -25610092.13 0.0274 0.0210  
 Earth -74830-05-23 07:54 J -25610092.33 -25610092.17 -25610092.00 0.0274 0.0195 \*  
 Moon -74829-06-02 23:01 J -25609715.76 -25609715.54 -25609715.31 0.0270 0.0087  
 Earth -74829-06-03 01:54 J -25609715.65 -25609715.42 -25609715.18 0.0270 0.0074 \*  
 Mars -74828-01-27 06:28 J -25609477.52 -25609477.23 -25609476.93 0.0268 0.0048  
 Earth -74828-06-14 14:08 J -25609339.14 -25609338.91 -25609338.67 0.0267 0.0044  
 Moon -74828-06-14 16:32 J -25609339.04 -25609338.81 -25609338.57 0.0267 0.0047 \*  
 Earth -74827-06-25 22:32 J -25608962.74 -25608962.56 -25608962.35 0.0265 0.0157



Moon -74827-06-26 00:56 J -25608962.64 -25608962.46 -25608962.26 0.0265 0.0171 \*  
 Earth -74826-07-07 04:47 J -25608586.31 -25608586.30 -25608586.26 0.0263 0.0261  
 Venus -74820-05-31 05:59 J -25606431.45 -25606431.25 -25606431.04 0.0266 0.0097  
 Mercury -74818-10-11 10:18 J -25605568.17 -25605568.07 -25605567.96 0.0273 0.0227  
 Mercury -74817-01-08 09:35 J -25605479.28 -25605479.10 -25605478.91 0.0274 0.0076  
 Mercury -74817-04-06 08:52 J -25605390.31 -25605390.13 -25605389.95 0.0275 0.0076  
 Mercury -74817-07-04 08:08 J -25605301.27 -25605301.16 -25605301.06 0.0276 0.0229  
 Earth -74815-11-17 07:11 J -25604435.23 -25604435.20 -25604435.13 0.0286 0.0280  
 Moon -74815-11-17 08:52 J -25604435.21 -25604435.13 -25604435.05 0.0286 0.0267 \*  
 Earth -74814-12-01 22:32 J -25604055.78 -25604055.56 -25604055.33 0.0290 0.0134  
 Moon -74814-12-02 02:23 J -25604055.63 -25604055.40 -25604055.18 0.0290 0.0123 \*  
 Earth -74813-12-15 22:32 J -25603675.81 -25603675.56 -25603675.31 0.0294 0.0027  
 Moon -74813-12-16 01:54 J -25603675.67 -25603675.42 -25603675.17 0.0294 0.0037 \*  
 Mars -74812-03-24 10:47 J -25603577.32 -25603577.05 -25603576.78 0.0295 0.0098  
 Earth -74812-12-31 04:18 J -25603295.50 -25603295.32 -25603295.13 0.0297 0.0193  
 Moon -74812-12-31 05:44 J -25603295.44 -25603295.26 -25603295.07 0.0297 0.0201 \*  
 Venus -74806-04-06 12:13 J -25601373.19 -25601372.99 -25601372.80 0.0296 0.0095  
 Mercury -74804-02-19 03:20 J -25600688.43 -25600688.36 -25600688.28 0.0289 0.0231  
 Mercury -74804-05-18 14:52 J -25600599.99 -25600599.88 -25600599.76 0.0288 0.0113  
 Mercury -74804-08-15 02:23 J -25600511.53 -25600511.40 -25600511.27 0.0287 0.0004  
 Mercury -74804-11-11 13:40 J -25600423.04 -25600422.93 -25600422.81 0.0286 0.0120  
 Mercury -74803-02-08 01:11 J -25600334.52 -25600334.45 -25600334.38 0.0285 0.0234  
 Earth -74801-05-17 16:32 J -25599504.91 -25599504.81 -25599504.70 0.0276 0.0246  
 Moon -74801-05-17 18:42 J -25599504.79 -25599504.72 -25599504.63 0.0276 0.0258 \*  
 Earth -74800-05-29 13:25 J -25599128.15 -25599127.94 -25599127.72 0.0272 0.0125  
 Moon -74800-05-29 16:18 J -25599128.02 -25599127.82 -25599127.60 0.0272 0.0141 \*  
 Moon -74799-06-10 02:08 J -25598751.65 -25598751.41 -25598751.16 0.0268 0.0012  
 Earth -74799-06-10 04:04 J -25598751.57 -25598751.33 -25598751.09 0.0268 0.0007 \*  
 Mars -74798-03-18 03:35 J -25598470.60 -25598470.35 -25598470.09 0.0266 0.0138  
 Moon -74798-06-21 11:01 J -25598375.25 -25598375.04 -25598374.83 0.0265 0.0119

Earth -74798-06-21 13:54 J -25598375.14 -25598374.92 -25598374.70 0.0265 0.0109 \*  
 Earth -74797-07-01 20:23 J -25597998.77 -25597998.65 -25597998.50 0.0263 0.0216  
 Moon -74797-07-01 22:47 J -25597998.65 -25597998.55 -25597998.43 0.0263 0.0231 \*  
 Venus -74791-04-26 07:25 J -25595874.30 -25595874.19 -25595874.06 0.0264 0.0217  
 Venus -74791-12-11 13:11 J -25595645.12 -25595644.95 -25595644.77 0.0266 0.0160  
 Mercury -74788-02-27 10:32 J -25594836.12 -25594836.06 -25594836.01 0.0273 0.0259  
 Mercury -74788-05-27 09:35 J -25594747.27 -25594747.10 -25594746.92 0.0274 0.0109  
 Mercury -74788-08-24 08:52 J -25594658.32 -25594658.13 -25594657.94 0.0275 0.0043  
 Mercury -74788-11-21 07:54 J -25594569.30 -25594569.17 -25594569.03 0.0276 0.0195  
 Moon -74785-11-24 19:11 J -25593469.89 -25593469.70 -25593469.51 0.0288 0.0186  
 Earth -74785-11-24 22:47 J -25593469.73 -25593469.55 -25593469.37 0.0288 0.0198 \*  
 Moon -74784-12-09 16:18 J -25593090.06 -25593089.82 -25593089.58 0.0293 0.0033  
 Earth -74784-12-09 18:56 J -25593089.95 -25593089.71 -25593089.46 0.0293 0.0042 \*  
 Moon -74783-12-24 21:49 J -25592709.80 -25592709.59 -25592709.37 0.0296 0.0133  
 Earth -74783-12-24 22:04 J -25592709.80 -25592709.58 -25592709.35 0.0296 0.0125 \*  
 Earth -74781-01-09 05:30 J -25592329.32 -25592329.27 -25592329.20 0.0299 0.0288  
 Moon -74781-01-09 07:25 J -25592329.21 -25592329.19 -25592329.15 0.0299 0.0296 \*  
 Venus -74777-10-16 18:56 J -25590586.88 -25590586.71 -25590586.54 0.0295 0.0166  
 Mercury -74775-07-09 05:59 J -25589956.30 -25589956.25 -25589956.19 0.0289 0.0262  
 Mercury -74775-10-05 17:30 J -25589867.88 -25589867.77 -25589867.66 0.0288 0.0144  
 Mercury -74774-01-02 05:01 J -25589779.42 -25589779.29 -25589779.16 0.0287 0.0029  
 Mercury -74774-03-31 16:18 J -25589690.94 -25589690.82 -25589690.70 0.0286 0.0088  
 Mercury -74774-06-28 03:35 J -25589602.44 -25589602.35 -25589602.26 0.0285 0.0202  
 Moon -74771-05-24 14:37 J -25588541.04 -25588540.89 -25588540.71 0.0273 0.0195  
 Earth -74771-05-24 17:59 J -25588540.93 -25588540.75 -25588540.57 0.0273 0.0179 \*  
 Mars -74770-05-06 08:37 J -25588194.32 -25588194.14 -25588193.93 0.0270 0.0198  
 Earth -74770-06-05 10:47 J -25588164.28 -25588164.05 -25588163.81 0.0270 0.0059  
 Moon -74770-06-05 12:13 J -25588164.21 -25588163.99 -25588163.76 0.0270 0.0070 \*  
 Earth -74769-06-15 22:18 J -25587787.80 -25587787.57 -25587787.33 0.0267 0.0059  
 Moon -74769-06-16 01:40 J -25587787.67 -25587787.43 -25587787.19 0.0267 0.0061 \*

Moon -74768-06-27 03:49 J -25587411.51 -25587411.34 -25587411.15 0.0264 0.0185  
 Earth -74768-06-27 06:13 J -25587411.42 -25587411.24 -25587411.06 0.0264 0.0171 \*  
 Venus -74762-11-06 10:04 J -25585088.24 -25585088.08 -25585087.91 0.0265 0.0172  
 Venus -74761-06-22 16:04 J -25584858.96 -25584858.83 -25584858.69 0.0266 0.0207  
 Mercury -74759-10-14 07:25 J -25584015.35 -25584015.19 -25584015.03 0.0274 0.0157  
 Mercury -74758-01-11 06:42 J -25583926.41 -25583926.22 -25583926.03 0.0274 0.0007  
 Mercury -74758-04-10 05:44 J -25583837.42 -25583837.26 -25583837.09 0.0275 0.0147  
 Earth -74756-11-18 18:28 J -25582883.81 -25582883.73 -25582883.63 0.0286 0.0264  
 Moon -74756-11-18 22:04 J -25582883.69 -25582883.58 -25582883.45 0.0286 0.0250 \*  
 Earth -74755-12-03 10:47 J -25582504.28 -25582504.05 -25582503.82 0.0290 0.0117  
 Moon -74755-12-03 12:56 J -25582504.20 -25582503.96 -25582503.72 0.0290 0.0106 \*  
 Mars -74754-06-29 02:37 J -25582296.65 -25582296.39 -25582296.11 0.0293 0.0107  
 Moon -74754-12-18 10:18 J -25582124.32 -25582124.07 -25582123.81 0.0294 0.0052  
 Earth -74754-12-18 11:16 J -25582124.27 -25582124.03 -25582123.78 0.0294 0.0046 \*  
 Moon -74752-01-01 14:23 J -25581744.06 -25581743.90 -25581743.72 0.0297 0.0218  
 Earth -74752-01-01 17:44 J -25581743.93 -25581743.76 -25581743.58 0.0297 0.0213 \*  
 Venus -74748-09-11 07:11 J -25580030.29 -25580030.20 -25580030.10 0.0297 0.0262  
 Venus -74747-04-29 01:54 J -25579800.53 -25579800.42 -25579800.29 0.0296 0.0240  
 Mercury -74745-02-22 20:23 J -25579135.75 -25579135.65 -25579135.54 0.0289 0.0173  
 Mercury -74745-05-21 07:54 J -25579047.30 -25579047.17 -25579047.04 0.0288 0.0055  
 Mercury -74745-08-17 19:25 J -25578958.82 -25578958.69 -25578958.57 0.0287 0.0062  
 Mercury -74745-11-14 06:42 J -25578870.32 -25578870.22 -25578870.12 0.0286 0.0177  
 Earth -74742-05-20 00:56 J -25577953.57 -25577953.46 -25577953.32 0.0275 0.0231  
 Moon -74742-05-20 04:32 J -25577953.42 -25577953.31 -25577953.19 0.0275 0.0242 \*  
 Moon -74741-05-30 19:54 J -25577576.89 -25577576.67 -25577576.44 0.0271 0.0122  
 Earth -74741-05-30 21:20 J -25577576.83 -25577576.61 -25577576.39 0.0271 0.0110 \*  
 Moon -74740-06-11 07:25 J -25577200.43 -25577200.19 -25577199.95 0.0268 0.0006  
 Earth -74740-06-11 11:01 J -25577200.28 -25577200.04 -25577199.80 0.0268 0.0010 \*  
 Mars -74740-06-23 21:06 J -25577187.91 -25577187.62 -25577187.32 0.0268 0.0017  
 Earth -74739-06-22 20:08 J -25576823.87 -25576823.66 -25576823.45 0.0265 0.0123

Moon -74739-06-22 21:06 J -25576823.82 -25576823.62 -25576823.42 0.0265 0.0134 \*  
 Earth -74738-07-04 02:08 J -25576447.51 -25576447.41 -25576447.28 0.0263 0.0230  
 Moon -74738-07-04 05:30 J -25576447.35 -25576447.27 -25576447.16 0.0263 0.0243 \*  
 Venus -74732-05-18 16:32 J -25574302.00 -25574301.81 -25574301.61 0.0265 0.0111  
 Mercury -74729-03-02 06:56 J -25573283.34 -25573283.21 -25573283.08 0.0273 0.0194  
 Mercury -74729-05-30 05:59 J -25573194.43 -25573194.25 -25573194.05 0.0274 0.0044  
 Mercury -74729-08-27 05:16 J -25573105.45 -25573105.28 -25573105.10 0.0275 0.0109  
 Mercury -74729-11-24 04:18 J -25573016.37 -25573016.32 -25573016.26 0.0276 0.0262  
 Moon -74726-11-27 06:28 J -25571918.42 -25571918.23 -25571918.03 0.0289 0.0171  
 Earth -74726-11-27 08:08 J -25571918.35 -25571918.16 -25571917.96 0.0289 0.0182 \*  
 Earth -74725-12-11 05:30 J -25571538.52 -25571538.27 -25571538.02 0.0293 0.0023  
 Moon -74725-12-11 06:56 J -25571538.45 -25571538.21 -25571537.96 0.0293 0.0018 \*  
 Mars -74724-08-18 17:01 J -25571288.05 -25571287.79 -25571287.53 0.0295 0.0124  
 Earth -74724-12-26 09:35 J -25571158.32 -25571158.10 -25571157.88 0.0296 0.0144  
 Moon -74724-12-26 13:11 J -25571158.16 -25571157.95 -25571157.74 0.0296 0.0149 \*  
 Venus -74718-03-24 13:25 J -25569244.08 -25569243.94 -25569243.77 0.0297 0.0193  
 Mercury -74716-07-11 22:47 J -25568403.64 -25568403.55 -25568403.46 0.0289 0.0206  
 Mercury -74716-10-08 10:18 J -25568315.19 -25568315.07 -25568314.95 0.0288 0.0088  
 Mercury -74715-01-04 21:49 J -25568226.72 -25568226.59 -25568226.47 0.0287 0.0030  
 Mercury -74715-04-03 09:06 J -25568138.23 -25568138.12 -25568138.01 0.0285 0.0144  
 Mercury -74715-06-30 20:23 J -25568049.70 -25568049.65 -25568049.59 0.0284 0.0258  
 Earth -74712-05-26 00:56 J -25566989.64 -25566989.46 -25566989.26 0.0273 0.0165  
 Moon -74712-05-26 01:54 J -25566989.60 -25566989.42 -25566989.25 0.0273 0.0179 \*  
 Earth -74711-06-06 17:01 J -25566613.02 -25566612.79 -25566612.55 0.0269 0.0044  
 Moon -74711-06-06 20:52 J -25566612.87 -25566612.63 -25566612.39 0.0269 0.0052 \*  
 Moon -74710-06-18 03:35 J -25566236.59 -25566236.35 -25566236.11 0.0266 0.0079  
 Earth -74710-06-18 04:04 J -25566236.56 -25566236.33 -25566236.10 0.0266 0.0073 \*  
 Mars -74710-08-12 01:40 J -25566181.66 -25566181.43 -25566181.18 0.0266 0.0162  
 Moon -74709-06-28 07:25 J -25565860.33 -25565860.19 -25565860.02 0.0264 0.0199  
 Earth -74709-06-28 11:01 J -25565860.21 -25565860.04 -25565859.86 0.0264 0.0184 \*

Venus -74703-11-28 17:59 J -25563515.96 -25563515.75 -25563515.54 0.0265 0.0070  
 Mercury -74700-07-20 03:49 J -25562551.41 -25562551.34 -25562551.25 0.0273 0.0246  
 Mercury -74700-10-17 03:06 J -25562462.55 -25562462.37 -25562462.19 0.0274 0.0096  
 Mercury -74699-01-14 02:23 J -25562373.59 -25562373.40 -25562373.21 0.0275 0.0056  
 Mercury -74699-04-13 01:25 J -25562284.56 -25562284.44 -25562284.31 0.0276 0.0209  
 Earth -74697-11-20 01:11 J -25561332.56 -25561332.45 -25561332.33 0.0287 0.0251  
 Moon -74697-11-20 02:23 J -25561332.53 -25561332.40 -25561332.24 0.0287 0.0238 \*  
 Moon -74696-12-04 16:04 J -25560953.07 -25560952.83 -25560952.58 0.0291 0.0094  
 Earth -74696-12-04 18:28 J -25560952.96 -25560952.73 -25560952.49 0.0291 0.0101 \*  
 Moon -74695-12-19 15:49 J -25560573.08 -25560572.84 -25560572.59 0.0295 0.0067  
 Earth -74695-12-19 19:40 J -25560572.92 -25560572.68 -25560572.43 0.0295 0.0064 \*  
 Moon -74693-01-03 23:30 J -25560192.66 -25560192.52 -25560192.36 0.0298 0.0233  
 Earth -74693-01-04 02:23 J -25560192.54 -25560192.40 -25560192.23 0.0298 0.0231 \*  
 Venus -74689-10-03 19:11 J -25558457.88 -25558457.70 -25558457.51 0.0297 0.0125  
 Mercury -74687-11-29 01:25 J -25557671.51 -25557671.44 -25557671.37 0.0290 0.0238  
 Mercury -74686-02-25 12:56 J -25557583.08 -25557582.96 -25557582.84 0.0289 0.0119  
 Mercury -74686-05-25 00:13 J -25557494.62 -25557494.49 -25557494.36 0.0288 0.0010  
 Mercury -74686-08-21 11:44 J -25557406.13 -25557406.01 -25557405.89 0.0287 0.0114  
 Mercury -74686-11-17 23:01 J -25557317.61 -25557317.54 -25557317.46 0.0285 0.0229  
 Earth -74683-05-21 06:42 J -25556402.35 -25556402.22 -25556402.06 0.0275 0.0217  
 Moon -74683-05-21 06:42 J -25556402.34 -25556402.22 -25556402.07 0.0275 0.0229 \*  
 Moon -74682-06-01 22:47 J -25556025.77 -25556025.55 -25556025.33 0.0271 0.0106  
 Earth -74682-06-02 02:23 J -25556025.63 -25556025.40 -25556025.18 0.0271 0.0095 \*  
 Mars -74682-09-30 14:52 J -25555905.09 -25555904.88 -25555904.64 0.0270 0.0173  
 Earth -74681-06-12 15:20 J -25555649.10 -25555648.86 -25555648.62 0.0268 0.0024  
 Moon -74681-06-12 15:20 J -25555649.09 -25555648.86 -25555648.63 0.0268 0.0024 \*  
 Earth -74680-06-23 23:44 J -25555272.71 -25555272.51 -25555272.30 0.0265 0.0137  
 Moon -74680-06-24 03:20 J -25555272.56 -25555272.36 -25555272.16 0.0265 0.0149 \*  
 Moon -74679-07-05 04:32 J -25554896.36 -25554896.31 -25554896.23 0.0263 0.0252  
 Earth -74679-07-05 05:30 J -25554896.35 -25554896.27 -25554896.17 0.0263 0.0242 \*

Venus -74673-06-09 23:44 J -25552729.73 -25552729.51 -25552729.30 0.0265 0.0012  
 Mercury -74670-03-06 02:08 J -25551730.57 -25551730.41 -25551730.24 0.0273 0.0135  
 Mercury -74670-06-03 01:25 J -25551641.63 -25551641.44 -25551641.25 0.0274 0.0017  
 Mercury -74670-08-31 00:28 J -25551552.62 -25551552.48 -25551552.33 0.0275 0.0169  
 Earth -74667-11-28 13:11 J -25550367.14 -25550366.95 -25550366.73 0.0289 0.0168  
 Moon -74667-11-28 15:49 J -25550367.04 -25550366.84 -25550366.63 0.0289 0.0157 \*  
 Mars -74666-11-22 20:37 J -25550007.91 -25550007.64 -25550007.36 0.0293 0.0089  
 Earth -74666-12-13 11:16 J -25549987.28 -25549987.03 -25549986.78 0.0293 0.0007  
 Moon -74666-12-13 14:52 J -25549987.13 -25549986.88 -25549986.62 0.0293 0.0005 \*  
 Earth -74665-12-27 15:49 J -25549607.04 -25549606.84 -25549606.62 0.0297 0.0161  
 Moon -74665-12-27 17:59 J -25549606.95 -25549606.75 -25549606.52 0.0297 0.0163 \*  
 Venus -74659-04-16 00:13 J -25547671.69 -25547671.49 -25547671.29 0.0297 0.0062  
 Mercury -74657-04-17 03:20 J -25546939.39 -25546939.36 -25546939.32 0.0289 0.0274  
 Mercury -74657-07-14 14:52 J -25546850.99 -25546850.88 -25546850.77 0.0288 0.0156  
 Mercury -74657-10-11 02:23 J -25546762.53 -25546762.40 -25546762.27 0.0287 0.0039  
 Mercury -74656-01-07 13:40 J -25546674.05 -25546673.93 -25546673.80 0.0286 0.0078  
 Mercury -74656-04-06 01:11 J -25546585.55 -25546585.45 -25546585.36 0.0285 0.0193  
 Earth -74654-05-16 05:59 J -25545815.28 -25545815.25 -25545815.21 0.0276 0.0272  
 Earth -74653-05-27 04:32 J -25545438.50 -25545438.31 -25545438.11 0.0272 0.0151  
 Moon -74653-05-27 07:54 J -25545438.35 -25545438.17 -25545437.97 0.0272 0.0166 \*  
 Moon -74652-06-07 20:08 J -25545061.91 -25545061.66 -25545061.41 0.0269 0.0034  
 Earth -74652-06-07 20:08 J -25545061.90 -25545061.66 -25545061.42 0.0269 0.0030 \*  
 Mars -74652-11-17 11:16 J -25544899.32 -25544899.03 -25544898.73 0.0267 0.0006  
 Moon -74651-06-19 02:37 J -25544685.61 -25544685.39 -25544685.16 0.0266 0.0096  
 Earth -74651-06-19 06:13 J -25544685.46 -25544685.24 -25544685.00 0.0266 0.0087 \*  
 Earth -74650-06-30 12:56 J -25544309.11 -25544308.96 -25544308.79 0.0263 0.0196  
 Moon -74650-06-30 12:42 J -25544309.10 -25544308.97 -25544308.82 0.0263 0.0210 \*  
 Venus -74644-12-20 23:59 J -25541943.71 -25541943.50 -25541943.28 0.0265 0.0027  
 Mercury -74641-07-22 22:18 J -25540998.70 -25540998.57 -25540998.43 0.0273 0.0192  
 Mercury -74641-10-19 21:35 J -25540909.79 -25540909.60 -25540909.41 0.0274 0.0042

Mercury -74640-01-16 20:37 J -25540820.80 -25540820.64 -25540820.46 0.0275 0.0111  
 Mercury -74640-04-15 19:54 J -25540731.72 -25540731.67 -25540731.61 0.0276 0.0263  
 Moon -74638-11-21 23:16 J -25539781.67 -25539781.53 -25539781.36 0.0287 0.0228  
 Earth -74638-11-22 02:52 J -25539781.51 -25539781.38 -25539781.24 0.0287 0.0238 \*  
 Moon -74637-12-05 17:16 J -25539402.02 -25539401.78 -25539401.54 0.0291 0.0080  
 Earth -74637-12-05 20:52 J -25539401.87 -25539401.63 -25539401.39 0.0291 0.0086 \*  
 Moon -74636-12-20 21:06 J -25539021.84 -25539021.62 -25539021.38 0.0295 0.0081  
 Earth -74636-12-20 22:32 J -25539021.80 -25539021.56 -25539021.32 0.0295 0.0079 \*  
 Mars -74635-01-11 17:44 J -25539000.00 -25538999.76 -25538999.50 0.0295 0.0142  
 Earth -74634-01-05 05:16 J -25538641.40 -25538641.28 -25538641.13 0.0298 0.0246  
 Moon -74634-01-05 07:11 J -25538641.33 -25538641.20 -25538641.06 0.0298 0.0244 \*  
 Venus -74630-10-27 04:04 J -25536885.54 -25536885.33 -25536885.13 0.0297 0.0004  
 Mercury -74628-12-01 17:01 J -25536118.89 -25536118.79 -25536118.70 0.0289 0.0192  
 Mercury -74627-02-28 04:32 J -25536030.44 -25536030.31 -25536030.19 0.0288 0.0074  
 Mercury -74627-05-27 15:49 J -25535941.96 -25535941.84 -25535941.71 0.0287 0.0044  
 Mercury -74627-08-24 03:20 J -25535853.47 -25535853.36 -25535853.25 0.0286 0.0159  
 Mercury -74627-11-20 14:37 J -25535764.92 -25535764.89 -25535764.85 0.0285 0.0274  
 Moon -74624-05-22 05:01 J -25534851.42 -25534851.29 -25534851.13 0.0275 0.0219  
 Earth -74624-05-22 08:37 J -25534851.29 -25534851.14 -25534850.97 0.0275 0.0203 \*  
 Moon -74623-06-03 02:52 J -25534474.59 -25534474.38 -25534474.16 0.0271 0.0091  
 Earth -74623-06-03 03:35 J -25534474.58 -25534474.35 -25534474.12 0.0271 0.0082 \*  
 Earth -74622-06-14 16:04 J -25534098.06 -25534097.83 -25534097.59 0.0267 0.0037  
 Moon -74622-06-14 19:54 J -25534097.91 -25534097.67 -25534097.44 0.0267 0.0042 \*  
 Mars -74621-01-05 21:06 J -25533892.83 -25533892.62 -25533892.39 0.0266 0.0183  
 Earth -74621-06-25 00:13 J -25533721.68 -25533721.49 -25533721.29 0.0265 0.0150  
 Moon -74621-06-25 01:11 J -25533721.64 -25533721.45 -25533721.25 0.0265 0.0162 \*  
 Moon -74620-07-06 02:08 J -25533345.42 -25533345.41 -25533345.40 0.0262 0.0262  
 Earth -74620-07-06 05:30 J -25533345.32 -25533345.27 -25533345.20 0.0262 0.0254  
 Venus -74614-07-03 04:32 J -25531157.51 -25531157.31 -25531157.10 0.0265 0.0082  
 Mercury -74612-12-09 21:06 J -25530266.71 -25530266.62 -25530266.52 0.0272 0.0233

Mercury -74611-03-08 20:08 J -25530177.84 -25530177.66 -25530177.47 0.0273 0.0084

Mercury -74611-06-05 19:25 J -25530088.88 -25530088.69 -25530088.51 0.0274 0.0068

Mercury -74611-09-02 18:13 J -25529999.84 -25529999.74 -25529999.61 0.0275 0.0221

Earth -74608-11-29 13:54 J -25528816.13 -25528815.92 -25528815.71 0.0289 0.0154

Moon -74608-11-29 17:16 J -25528815.99 -25528815.78 -25528815.55 0.0289 0.0145 \*

Earth -74607-12-14 12:13 J -25528436.24 -25528435.99 -25528435.74 0.0294 0.0008

Moon -74607-12-14 12:56 J -25528436.22 -25528435.96 -25528435.70 0.0294 0.0011 \*

Moon -74606-12-29 14:52 J -25528056.08 -25528055.88 -25528055.67 0.0297 0.0172

Earth -74606-12-29 17:16 J -25528055.97 -25528055.78 -25528055.57 0.0297 0.0176 \*

Venus -74600-05-08 08:23 J -25526099.35 -25526099.15 -25526098.95 0.0297 0.0059

Mercury -74598-04-20 18:42 J -25525386.79 -25525386.72 -25525386.64 0.0289 0.0231

Mercury -74598-07-18 06:13 J -25525298.35 -25525298.24 -25525298.12 0.0288 0.0113

Mercury -74598-10-14 17:44 J -25525209.89 -25525209.76 -25525209.63 0.0287 0.0008

Mercury -74597-01-11 05:16 J -25525121.40 -25525121.28 -25525121.16 0.0286 0.0122

Mercury -74597-04-08 16:32 J -25525032.88 -25525032.81 -25525032.74 0.0285 0.0236

Earth -74595-05-17 06:56 J -25524264.27 -25524264.21 -25524264.11 0.0276 0.0260

Moon -74595-05-17 10:47 J -25524264.07 -25524264.05 -25524264.02 0.0276 0.0274

Earth -74594-05-29 05:16 J -25523887.48 -25523887.28 -25523887.07 0.0272 0.0138

Moon -74594-05-29 06:42 J -25523887.42 -25523887.22 -25523887.01 0.0272 0.0151 \*

Mars -74593-02-23 22:18 J -25523616.80 -25523616.57 -25523616.32 0.0269 0.0156

Moon -74593-06-08 17:01 J -25523511.03 -25523510.79 -25523510.55 0.0268 0.0017

Earth -74593-06-08 20:23 J -25523510.88 -25523510.65 -25523510.40 0.0268 0.0018 \*

Moon -74592-06-20 05:16 J -25523134.49 -25523134.28 -25523134.07 0.0265 0.0111

Earth -74592-06-20 06:13 J -25523134.46 -25523134.24 -25523134.01 0.0265 0.0099 \*

Earth -74591-07-01 12:28 J -25522758.13 -25522757.98 -25522757.83 0.0263 0.0207

Moon -74591-07-01 15:49 J -25522757.97 -25522757.84 -25522757.71 0.0263 0.0221 \*

Venus -74585-05-27 23:44 J -25520600.56 -25520600.51 -25520600.45 0.0264 0.0254

Venus -74584-01-12 04:18 J -25520371.51 -25520371.32 -25520371.12 0.0265 0.0117

Mercury -74582-07-26 16:04 J -25519445.99 -25519445.83 -25519445.67 0.0273 0.0143

Mercury -74582-10-23 15:06 J -25519357.06 -25519356.87 -25519356.68 0.0274 0.0009



Mercury -74581-01-20 14:08 J -25519268.06 -25519267.91 -25519267.75 0.0275 0.0159  
 Moon -74579-11-22 22:18 J -25518230.72 -25518230.57 -25518230.41 0.0287 0.0220  
 Earth -74579-11-23 00:42 J -25518230.61 -25518230.47 -25518230.30 0.0287 0.0226 \*  
 Earth -74578-12-07 19:11 J -25517850.94 -25517850.70 -25517850.45 0.0291 0.0073  
 Moon -74578-12-07 19:25 J -25517850.92 -25517850.69 -25517850.45 0.0291 0.0070 \*  
 Mars -74577-04-16 08:23 J -25517720.42 -25517720.15 -25517719.86 0.0293 0.0080  
 Earth -74577-12-21 21:20 J -25517470.84 -25517470.61 -25517470.37 0.0295 0.0093  
 Moon -74577-12-22 00:28 J -25517470.72 -25517470.48 -25517470.25 0.0295 0.0092 \*  
 Earth -74575-01-06 04:32 J -25517090.42 -25517090.31 -25517090.18 0.0298 0.0260  
 Moon -74575-01-06 08:23 J -25517090.28 -25517090.15 -25517090.02 0.0298 0.0254 \*  
 Venus -74571-11-18 10:18 J -25515313.26 -25515313.07 -25515312.88 0.0297 0.0111  
 Mercury -74569-09-06 20:23 J -25514654.69 -25514654.65 -25514654.61 0.0290 0.0272  
 Mercury -74569-12-04 07:54 J -25514566.28 -25514566.17 -25514566.06 0.0289 0.0153  
 Mercury -74568-03-02 19:25 J -25514477.82 -25514477.69 -25514477.56 0.0288 0.0035  
 Mercury -74568-05-30 06:56 J -25514389.34 -25514389.21 -25514389.09 0.0287 0.0083  
 Mercury -74568-08-26 18:13 J -25514300.83 -25514300.74 -25514300.64 0.0286 0.0199  
 Moon -74565-05-23 05:44 J -25513300.41 -25513300.26 -25513300.10 0.0274 0.0207  
 Earth -74565-05-23 07:25 J -25513300.36 -25513300.19 -25513300.02 0.0274 0.0191 \*  
 Earth -74564-06-04 01:54 J -25512923.65 -25512923.42 -25512923.19 0.0271 0.0069  
 Moon -74564-06-04 04:47 J -25512923.52 -25512923.30 -25512923.07 0.0271 0.0077 \*  
 Mars -74563-04-12 22:32 J -25512610.86 -25512610.56 -25512610.27 0.0268 0.0018  
 Earth -74563-06-15 14:23 J -25512547.14 -25512546.90 -25512546.66 0.0267 0.0050  
 Moon -74563-06-15 15:35 J -25512547.09 -25512546.85 -25512546.60 0.0267 0.0058 \*  
 Moon -74562-06-26 18:56 J -25512170.89 -25512170.71 -25512170.53 0.0264 0.0177  
 Earth -74562-06-26 22:18 J -25512170.76 -25512170.57 -25512170.38 0.0264 0.0162 \*  
 Venus -74556-12-08 03:35 J -25509814.48 -25509814.35 -25509814.20 0.0263 0.0202  
 Venus -74555-07-25 08:23 J -25509585.31 -25509585.15 -25509584.98 0.0265 0.0170  
 Mercury -74553-12-12 14:23 J -25508714.04 -25508713.90 -25508713.76 0.0272 0.0186  
 Mercury -74552-03-11 13:25 J -25508625.13 -25508624.94 -25508624.75 0.0273 0.0037  
 Mercury -74552-06-08 12:28 J -25508536.15 -25508535.98 -25508535.80 0.0274 0.0115

Mercury -74552-09-05 11:30 J -25508447.06 -25508447.02 -25508446.97 0.0275 0.0266  
 Moon -74550-11-16 23:01 J -25507644.58 -25507644.54 -25507644.48 0.0285 0.0278  
 Moon -74549-11-30 09:20 J -25507265.33 -25507265.11 -25507264.87 0.0290 0.0139  
 Earth -74549-11-30 10:32 J -25507265.26 -25507265.06 -25507264.83 0.0290 0.0142 \*  
 Moon -74548-12-15 05:59 J -25506885.50 -25506885.25 -25506885.00 0.0294 0.0020  
 Earth -74548-12-15 09:20 J -25506885.36 -25506885.11 -25506884.86 0.0294 0.0021 \*  
 Mars -74547-06-06 13:40 J -25506712.17 -25506711.93 -25506711.67 0.0295 0.0146  
 Moon -74547-12-30 11:01 J -25506505.22 -25506505.04 -25506504.83 0.0297 0.0186  
 Earth -74547-12-30 14:37 J -25506505.08 -25506504.89 -25506504.70 0.0297 0.0189 \*  
 Venus -74541-05-30 13:40 J -25504527.09 -25504526.93 -25504526.76 0.0297 0.0168  
 Mercury -74539-04-23 09:35 J -25503834.19 -25503834.10 -25503834.00 0.0289 0.0193  
 Mercury -74539-07-20 21:06 J -25503745.74 -25503745.62 -25503745.49 0.0288 0.0074  
 Mercury -74539-10-17 08:37 J -25503657.27 -25503657.14 -25503657.01 0.0287 0.0043  
 Mercury -74538-01-13 20:08 J -25503568.77 -25503568.66 -25503568.56 0.0286 0.0160  
 Mercury -74538-04-12 07:25 J -25503480.22 -25503480.19 -25503480.16 0.0285 0.0274  
 Earth -74536-05-18 05:16 J -25502713.38 -25502713.28 -25502713.17 0.0276 0.0248  
 Moon -74536-05-18 06:28 J -25502713.29 -25502713.23 -25502713.14 0.0276 0.0263 \*  
 Moon -74535-05-30 00:13 J -25502336.70 -25502336.49 -25502336.28 0.0272 0.0138  
 Earth -74535-05-30 03:06 J -25502336.57 -25502336.37 -25502336.15 0.0272 0.0126 \*  
 Moon -74534-06-10 16:32 J -25501960.04 -25501959.81 -25501959.58 0.0268 0.0004  
 Earth -74534-06-10 18:13 J -25501959.98 -25501959.74 -25501959.50 0.0268 0.0006 \*  
 Mars -74533-05-30 20:08 J -25501604.86 -25501604.66 -25501604.45 0.0265 0.0194  
 Earth -74533-06-21 03:35 J -25501583.56 -25501583.35 -25501583.13 0.0265 0.0111  
 Moon -74533-06-21 06:56 J -25501583.41 -25501583.21 -25501583.00 0.0265 0.0125 \*  
 Earth -74532-07-02 09:20 J -25501207.23 -25501207.11 -25501206.96 0.0263 0.0219  
 Moon -74532-07-02 11:30 J -25501207.13 -25501207.02 -25501206.90 0.0263 0.0230 \*  
 Venus -74526-06-20 03:06 J -25499028.54 -25499028.37 -25499028.20 0.0264 0.0168  
 Venus -74525-02-04 07:25 J -25498799.32 -25498799.19 -25498799.04 0.0265 0.0204  
 Mercury -74523-05-01 09:49 J -25497982.16 -25497982.09 -25497982.01 0.0272 0.0248  
 Mercury -74523-07-29 08:52 J -25497893.31 -25497893.13 -25497892.95 0.0273 0.0099

Mercury -74523-10-26 07:54 J -25497804.35 -25497804.17 -25497803.98 0.0274 0.0051

Mercury -74522-01-23 06:56 J -25497715.33 -25497715.21 -25497715.08 0.0275 0.0203

Earth -74520-11-23 19:54 J -25496679.83 -25496679.67 -25496679.50 0.0287 0.0214

Moon -74520-11-23 22:18 J -25496679.72 -25496679.57 -25496679.40 0.0287 0.0214 \*

Earth -74519-12-08 14:23 J -25496300.14 -25496299.90 -25496299.65 0.0291 0.0060

Moon -74519-12-08 18:13 J -25496299.98 -25496299.74 -25496299.49 0.0291 0.0061 \*

Earth -74518-12-23 16:47 J -25495920.03 -25495919.80 -25495919.56 0.0295 0.0106

Moon -74518-12-23 19:40 J -25495919.91 -25495919.68 -25495919.43 0.0295 0.0103 \*

Moon -74516-01-07 00:28 J -25495539.59 -25495539.48 -25495539.35 0.0298 0.0263

Earth -74516-01-07 00:28 J -25495539.57 -25495539.48 -25495539.37 0.0298 0.0272 \*

Venus -74512-04-24 17:59 J -25493970.77 -25493970.75 -25493970.70 0.0299 0.0294

Venus -74512-12-10 14:37 J -25493741.02 -25493740.89 -25493740.75 0.0297 0.0217

Mercury -74510-09-10 11:01 J -25493102.12 -25493102.04 -25493101.97 0.0290 0.0237

Mercury -74510-12-07 22:32 J -25493013.68 -25493013.56 -25493013.44 0.0289 0.0117

Mercury -74509-03-05 10:04 J -25492925.21 -25492925.08 -25492924.95 0.0288 0.0005

Mercury -74509-06-01 21:20 J -25492836.72 -25492836.61 -25492836.49 0.0287 0.0119

Mercury -74509-08-29 08:52 J -25492748.20 -25492748.13 -25492748.05 0.0286 0.0234

Earth -74506-05-25 04:04 J -25491749.51 -25491749.33 -25491749.15 0.0274 0.0179

Moon -74506-05-25 06:56 J -25491749.37 -25491749.21 -25491749.04 0.0274 0.0195 \*

Earth -74505-06-04 22:32 J -25491372.79 -25491372.56 -25491372.33 0.0270 0.0056

Moon -74505-06-05 00:56 J -25491372.70 -25491372.46 -25491372.22 0.0270 0.0062 \*

Mars -74505-07-19 01:54 J -25491328.66 -25491328.42 -25491328.17 0.0270 0.0150

Moon -74504-06-16 07:40 J -25490996.41 -25490996.18 -25490995.94 0.0267 0.0074

Earth -74504-06-16 10:47 J -25490996.28 -25490996.05 -25490995.81 0.0267 0.0063 \*

Moon -74503-06-27 16:32 J -25490619.97 -25490619.81 -25490619.64 0.0264 0.0189

Earth -74503-06-27 18:42 J -25490619.90 -25490619.72 -25490619.54 0.0264 0.0174 \*

Venus -74497-12-30 06:28 J -25488242.42 -25488242.23 -25488242.03 0.0263 0.0117

Venus -74496-08-16 11:16 J -25488013.08 -25488013.03 -25488012.97 0.0265 0.0256

Mercury -74494-12-16 07:11 J -25487161.36 -25487161.20 -25487161.04 0.0272 0.0143

Mercury -74493-03-14 06:13 J -25487072.43 -25487072.24 -25487072.05 0.0273 0.0007

Mercury -74493-06-11 05:16 J -25486983.43 -25486983.28 -25486983.12 0.0274 0.0158

Moon -74491-11-17 13:11 J -25486094.01 -25486093.95 -25486093.88 0.0285 0.0274

Earth -74491-11-17 16:32 J -25486093.88 -25486093.81 -25486093.75 0.0285 0.0274 \*

Moon -74490-12-02 02:08 J -25485714.63 -25485714.41 -25485714.19 0.0290 0.0132

Earth -74490-12-02 05:59 J -25485714.47 -25485714.25 -25485714.02 0.0290 0.0129 \*

Mars -74489-09-08 21:35 J -25485432.87 -25485432.60 -25485432.31 0.0293 0.0082

Moon -74489-12-16 02:23 J -25485334.64 -25485334.40 -25485334.16 0.0294 0.0029

Earth -74489-12-16 04:32 J -25485334.55 -25485334.31 -25485334.06 0.0294 0.0035 \*

Earth -74488-12-31 09:49 J -25484954.26 -25484954.09 -25484953.90 0.0297 0.0203

Moon -74488-12-31 10:32 J -25484954.23 -25484954.06 -25484953.87 0.0297 0.0195 \*

Venus -74483-11-04 22:04 J -25483184.70 -25483184.58 -25483184.45 0.0298 0.0235

Venus -74482-06-22 17:44 J -25482954.83 -25482954.76 -25482954.67 0.0297 0.0273

Mercury -74480-01-27 12:28 J -25482370.01 -25482369.98 -25482369.94 0.0291 0.0278

Mercury -74480-04-25 23:59 J -25482281.60 -25482281.50 -25482281.39 0.0290 0.0158

Mercury -74480-07-23 11:30 J -25482193.14 -25482193.02 -25482192.89 0.0288 0.0041

Mercury -74480-10-19 23:01 J -25482104.66 -25482104.54 -25482104.41 0.0287 0.0079

Mercury -74479-01-16 10:32 J -25482016.15 -25482016.06 -25482015.96 0.0286 0.0194

Moon -74477-05-18 22:18 J -25481162.66 -25481162.57 -25481162.46 0.0276 0.0252

Earth -74477-05-19 01:25 J -25481162.55 -25481162.44 -25481162.31 0.0276 0.0237 \*

Moon -74476-05-30 20:52 J -25480785.83 -25480785.63 -25480785.42 0.0272 0.0124

Earth -74476-05-30 23:30 J -25480785.74 -25480785.52 -25480785.30 0.0272 0.0114 \*

Earth -74475-06-11 14:23 J -25480409.14 -25480408.90 -25480408.66 0.0268 0.0007

Moon -74475-06-11 16:47 J -25480409.03 -25480408.80 -25480408.56 0.0268 0.0014 \*

Mars -74475-09-05 17:44 J -25480323.05 -25480322.76 -25480322.46 0.0267 0.0028

Earth -74474-06-22 23:59 J -25480032.72 -25480032.50 -25480032.29 0.0265 0.0122

Moon -74474-06-23 01:54 J -25480032.62 -25480032.42 -25480032.20 0.0265 0.0137 \*

Moon -74473-07-03 02:52 J -25479656.48 -25479656.38 -25479656.27 0.0263 0.0238

Earth -74473-07-03 05:30 J -25479656.37 -25479656.27 -25479656.14 0.0263 0.0230 \*

Venus -74467-07-12 05:59 J -25477456.45 -25477456.25 -25477456.04 0.0264 0.0083

Mercury -74464-05-04 02:37 J -25476429.51 -25476429.39 -25476429.26 0.0272 0.0204

Mercury -74464-08-01 01:40 J -25476340.61 -25476340.43 -25476340.24 0.0273 0.0055

Mercury -74464-10-29 00:42 J -25476251.65 -25476251.47 -25476251.29 0.0274 0.0095

Mercury -74463-01-25 23:44 J -25476162.59 -25476162.51 -25476162.43 0.0275 0.0246

Earth -74461-11-24 14:37 J -25475129.06 -25475128.89 -25475128.71 0.0287 0.0202

Moon -74461-11-24 17:59 J -25475128.92 -25475128.75 -25475128.57 0.0287 0.0206 \*

Earth -74460-12-09 09:06 J -25474749.37 -25474749.12 -25474748.87 0.0291 0.0047

Moon -74460-12-09 10:04 J -25474749.33 -25474749.08 -25474748.82 0.0291 0.0054 \*

Mars -74459-10-29 12:42 J -25474425.22 -25474424.97 -25474424.72 0.0295 0.0145

Moon -74459-12-24 09:35 J -25474369.34 -25474369.10 -25474368.86 0.0295 0.0109

Earth -74459-12-24 11:30 J -25474369.25 -25474369.02 -25474368.79 0.0295 0.0119 \*

Moon -74457-01-08 15:35 J -25473988.94 -25473988.85 -25473988.74 0.0298 0.0272

Earth -74457-01-08 19:25 J -25473988.76 -25473988.69 -25473988.62 0.0298 0.0285 \*

Venus -74453-05-16 21:35 J -25472398.75 -25472398.60 -25472398.43 0.0298 0.0192

Mercury -74451-09-13 01:11 J -25471549.54 -25471549.45 -25471549.36 0.0290 0.0204

Mercury -74451-12-10 12:42 J -25471461.09 -25471460.97 -25471460.85 0.0289 0.0085

Mercury -74450-03-09 00:13 J -25471372.62 -25471372.49 -25471372.36 0.0288 0.0034

Mercury -74450-06-05 11:44 J -25471284.12 -25471284.01 -25471283.90 0.0287 0.0151

Mercury -74450-09-01 23:01 J -25471195.58 -25471195.54 -25471195.49 0.0286 0.0268

Earth -74447-05-25 23:01 J -25470198.72 -25470198.54 -25470198.34 0.0274 0.0168

Moon -74447-05-26 01:40 J -25470198.61 -25470198.43 -25470198.24 0.0274 0.0180 \*

Moon -74446-06-06 15:35 J -25469822.09 -25469821.85 -25469821.60 0.0271 0.0044

Earth -74446-06-06 17:44 J -25469821.99 -25469821.76 -25469821.52 0.0271 0.0045 \*

Moon -74445-06-17 03:49 J -25469445.56 -25469445.34 -25469445.11 0.0267 0.0087

Earth -74445-06-17 06:13 J -25469445.47 -25469445.24 -25469445.00 0.0267 0.0075 \*

Mars -74445-10-23 19:11 J -25469316.89 -25469316.70 -25469316.49 0.0266 0.0200

Earth -74444-06-28 13:54 J -25469069.08 -25469068.92 -25469068.74 0.0264 0.0186

Moon -74444-06-28 16:47 J -25469068.95 -25469068.80 -25469068.64 0.0264 0.0198 \*

Venus -74437-01-22 09:35 J -25466670.32 -25466670.10 -25466669.89 0.0263 0.0033

Mercury -74435-09-21 00:42 J -25465697.53 -25465697.47 -25465697.38 0.0271 0.0248

Mercury -74435-12-18 23:59 J -25465608.68 -25465608.50 -25465608.32 0.0272 0.0099

Mercury -74434-03-17 23:01 J -25465519.73 -25465519.54 -25465519.35 0.0273 0.0050

Mercury -74434-06-14 21:49 J -25465430.71 -25465430.59 -25465430.45 0.0274 0.0201

Moon -74432-11-18 08:23 J -25464543.22 -25464543.15 -25464543.06 0.0285 0.0267

Earth -74432-11-18 11:01 J -25464543.12 -25464543.04 -25464542.94 0.0285 0.0263 \*

Earth -74431-12-03 00:28 J -25464163.70 -25464163.48 -25464163.24 0.0290 0.0116

Moon -74431-12-03 00:42 J -25464163.68 -25464163.47 -25464163.24 0.0290 0.0125 \*

Earth -74430-12-17 23:16 J -25463783.78 -25463783.53 -25463783.28 0.0294 0.0047

Moon -74430-12-18 01:54 J -25463783.66 -25463783.42 -25463783.17 0.0294 0.0038 \*

Earth -74428-01-01 04:32 J -25463403.47 -25463403.31 -25463403.13 0.0297 0.0216

Moon -74428-01-01 08:23 J -25463403.33 -25463403.15 -25463402.97 0.0297 0.0205 \*

Venus -74424-11-27 01:54 J -25461612.60 -25461612.42 -25461612.23 0.0298 0.0132

Mercury -74421-01-31 02:52 J -25460817.45 -25460817.38 -25460817.31 0.0291 0.0244

Mercury -74421-04-28 14:23 J -25460729.01 -25460728.90 -25460728.78 0.0290 0.0125

Mercury -74421-07-26 01:54 J -25460640.55 -25460640.42 -25460640.29 0.0289 0.0010

Mercury -74421-10-22 13:25 J -25460552.06 -25460551.94 -25460551.82 0.0288 0.0112

Mercury -74420-01-19 00:56 J -25460463.54 -25460463.46 -25460463.38 0.0286 0.0228

Moon -74418-05-20 18:56 J -25459611.81 -25459611.71 -25459611.59 0.0276 0.0240

Earth -74418-05-20 21:35 J -25459611.74 -25459611.60 -25459611.46 0.0276 0.0225 \*

Earth -74417-05-31 19:25 J -25459234.91 -25459234.69 -25459234.47 0.0272 0.0101

Moon -74417-05-31 21:35 J -25459234.81 -25459234.60 -25459234.38 0.0272 0.0107 \*

Mars -74417-12-11 20:37 J -25459040.88 -25459040.64 -25459040.38 0.0270 0.0142

Earth -74416-06-12 10:18 J -25458858.31 -25458858.07 -25458857.82 0.0268 0.0021

Moon -74416-06-12 13:25 J -25458858.18 -25458857.94 -25458857.69 0.0268 0.0027 \*

Moon -74415-06-23 17:30 J -25458481.97 -25458481.77 -25458481.56 0.0265 0.0148

Earth -74415-06-23 19:54 J -25458481.87 -25458481.67 -25458481.45 0.0265 0.0135 \*

Moon -74414-07-04 23:01 J -25458105.61 -25458105.54 -25458105.45 0.0263 0.0247

Earth -74414-07-05 01:40 J -25458105.51 -25458105.43 -25458105.32 0.0263 0.0242 \*

Venus -74408-08-03 09:20 J -25455884.33 -25455884.11 -25455883.89 0.0264 0.0005

Mercury -74405-05-06 19:40 J -25454876.83 -25454876.68 -25454876.52 0.0272 0.0159

Mercury -74405-08-03 18:42 J -25454787.91 -25454787.72 -25454787.53 0.0273 0.0011

Mercury -74405-10-31 17:44 J -25454698.92 -25454698.76 -25454698.60 0.0274 0.0140

Moon -74402-11-26 08:37 J -25453578.32 -25453578.14 -25453577.94 0.0287 0.0198

Earth -74402-11-26 10:18 J -25453578.26 -25453578.07 -25453577.88 0.0287 0.0189 \*

Moon -74401-12-10 00:56 J -25453198.71 -25453198.46 -25453198.21 0.0292 0.0046

Earth -74401-12-10 04:32 J -25453198.55 -25453198.31 -25453198.06 0.0292 0.0034 \*

Mars -74400-01-31 18:56 J -25453145.98 -25453145.71 -25453145.42 0.0292 0.0085

Moon -74400-12-25 03:06 J -25452818.59 -25452818.37 -25452818.14 0.0295 0.0120

Earth -74400-12-25 06:56 J -25452818.43 -25452818.21 -25452817.99 0.0295 0.0133 \*

Moon -74398-01-09 12:56 J -25452438.02 -25452437.96 -25452437.88 0.0298 0.0286

Earth -74398-01-09 14:52 J -25452437.88 -25452437.88 -25452437.87 0.0298 0.0298 \*

Venus -74394-06-09 01:40 J -25450826.63 -25450826.43 -25450826.23 0.0298 0.0088

Mercury -74392-09-15 15:20 J -25449996.96 -25449996.86 -25449996.75 0.0290 0.0172

Mercury -74392-12-13 03:06 J -25449908.50 -25449908.37 -25449908.25 0.0289 0.0052

Mercury -74391-03-11 14:37 J -25449820.02 -25449819.89 -25449819.77 0.0288 0.0067

Mercury -74391-06-08 02:08 J -25449731.51 -25449731.41 -25449731.31 0.0287 0.0185

Moon -74388-05-26 16:18 J -25448648.02 -25448647.82 -25448647.62 0.0274 0.0163

Earth -74388-05-26 18:28 J -25448647.92 -25448647.73 -25448647.52 0.0274 0.0156 \*

Moon -74387-06-07 10:18 J -25448271.31 -25448271.07 -25448270.84 0.0271 0.0028

Earth -74387-06-07 13:25 J -25448271.17 -25448270.94 -25448270.70 0.0271 0.0032 \*

Mars -74386-01-29 15:35 J -25448035.15 -25448034.85 -25448034.56 0.0268 0.0030

Earth -74386-06-19 01:54 J -25447894.64 -25447894.42 -25447894.19 0.0267 0.0088

Moon -74386-06-19 03:35 J -25447894.56 -25447894.35 -25447894.12 0.0267 0.0102 \*

Earth -74385-06-29 09:49 J -25447518.24 -25447518.09 -25447517.92 0.0264 0.0198

Moon -74385-06-29 12:42 J -25447518.11 -25447517.97 -25447517.81 0.0264 0.0208 \*

Venus -74378-02-13 13:11 J -25445098.16 -25445097.95 -25445097.73 0.0263 0.0056

Mercury -74376-09-23 18:28 J -25444144.86 -25444144.73 -25444144.60 0.0271 0.0200

Mercury -74376-12-21 17:16 J -25444055.96 -25444055.78 -25444055.59 0.0272 0.0052

Mercury -74375-03-20 16:18 J -25443966.99 -25443966.82 -25443966.64 0.0273 0.0098

Mercury -74375-06-17 15:06 J -25443877.94 -25443877.87 -25443877.78 0.0274 0.0249

Earth -74373-11-19 07:54 J -25442992.27 -25442992.17 -25442992.04 0.0285 0.0251

Moon -74373-11-19 09:49 J -25442992.18 -25442992.09 -25442991.98 0.0285 0.0258 \*  
 Earth -74372-12-03 21:20 J -25442612.84 -25442612.61 -25442612.37 0.0290 0.0103  
 Moon -74372-12-04 01:11 J -25442612.67 -25442612.45 -25442612.21 0.0290 0.0115 \*  
 Earth -74371-12-18 19:54 J -25442232.91 -25442232.67 -25442232.42 0.0294 0.0062  
 Moon -74371-12-18 23:16 J -25442232.78 -25442232.53 -25442232.28 0.0294 0.0048 \*  
 Mars -74370-03-24 04:04 J -25442137.57 -25442137.33 -25442137.07 0.0295 0.0144  
 Earth -74369-01-03 01:11 J -25441852.59 -25441852.45 -25441852.28 0.0297 0.0231  
 Moon -74369-01-03 02:23 J -25441852.57 -25441852.40 -25441852.22 0.0297 0.0215 \*  
 Venus -74365-12-19 06:28 J -25440040.44 -25440040.23 -25440040.03 0.0298 0.0027  
 Mercury -74362-02-02 17:16 J -25439264.87 -25439264.78 -25439264.69 0.0291 0.0210  
 Mercury -74362-05-02 04:47 J -25439176.42 -25439176.30 -25439176.17 0.0290 0.0091  
 Mercury -74362-07-29 16:32 J -25439087.94 -25439087.81 -25439087.68 0.0289 0.0030  
 Mercury -74362-10-26 03:49 J -25438999.45 -25438999.34 -25438999.22 0.0288 0.0147  
 Mercury -74361-01-22 15:20 J -25438910.91 -25438910.86 -25438910.81 0.0286 0.0263  
 Earth -74359-05-21 17:44 J -25438060.91 -25438060.76 -25438060.61 0.0276 0.0213  
 Moon -74359-05-21 19:25 J -25438060.81 -25438060.69 -25438060.55 0.0276 0.0225 \*  
 Earth -74358-06-02 15:49 J -25437684.06 -25437683.84 -25437683.61 0.0272 0.0089  
 Moon -74358-06-02 19:11 J -25437683.93 -25437683.70 -25437683.47 0.0272 0.0089 \*  
 Moon -74357-06-13 05:44 J -25437307.50 -25437307.26 -25437307.01 0.0268 0.0044  
 Earth -74357-06-13 07:11 J -25437307.44 -25437307.20 -25437306.96 0.0268 0.0033 \*  
 Mars -74356-03-18 16:18 J -25437028.99 -25437028.82 -25437028.62 0.0266 0.0210  
 Moon -74356-06-24 13:40 J -25436931.10 -25436930.93 -25436930.73 0.0265 0.0162  
 Earth -74356-06-24 16:47 J -25436930.99 -25436930.80 -25436930.59 0.0265 0.0148 \*  
 Earth -74355-07-05 22:47 J -25436554.60 -25436554.55 -25436554.48 0.0263 0.0254  
 Moon -74355-07-06 00:56 J -25436554.51 -25436554.46 -25436554.40 0.0263 0.0255 \*  
 Venus -74349-08-25 13:54 J -25434312.12 -25434311.92 -25434311.71 0.0264 0.0095  
 Mercury -74346-02-10 14:52 J -25433412.94 -25433412.88 -25433412.82 0.0271 0.0255  
 Mercury -74346-05-10 13:40 J -25433324.10 -25433323.93 -25433323.75 0.0272 0.0108  
 Mercury -74346-08-07 12:42 J -25433235.16 -25433234.97 -25433234.78 0.0273 0.0041  
 Mercury -74346-11-04 11:16 J -25433146.15 -25433146.03 -25433145.88 0.0274 0.0191



Moon -74343-11-27 04:32 J -25432027.49 -25432027.31 -25432027.11 0.0287 0.0188  
 Earth -74343-11-27 08:08 J -25432027.35 -25432027.16 -25432026.95 0.0287 0.0175 \*  
 Moon -74342-12-12 00:28 J -25431647.72 -25431647.48 -25431647.23 0.0292 0.0034  
 Earth -74342-12-12 02:37 J -25431647.64 -25431647.39 -25431647.14 0.0292 0.0018 \*  
 Earth -74341-12-26 04:47 J -25431267.52 -25431267.30 -25431267.09 0.0295 0.0149  
 Moon -74341-12-26 05:16 J -25431267.49 -25431267.28 -25431267.06 0.0295 0.0134 \*  
 Moon -74339-01-10 14:52 J -25430886.88 -25430886.88 -25430886.84 0.0298 0.0298  
 Venus -74335-07-01 06:28 J -25429254.43 -25429254.23 -25429254.02 0.0298 0.0019  
 Mercury -74333-06-21 18:13 J -25428532.79 -25428532.74 -25428532.68 0.0291 0.0257  
 Mercury -74333-09-18 05:59 J -25428444.36 -25428444.25 -25428444.14 0.0290 0.0136  
 Mercury -74333-12-15 17:30 J -25428355.90 -25428355.77 -25428355.64 0.0289 0.0017  
 Mercury -74332-03-14 05:01 J -25428267.41 -25428267.29 -25428267.17 0.0288 0.0103  
 Mercury -74332-06-10 16:32 J -25428178.89 -25428178.81 -25428178.72 0.0287 0.0220  
 Earth -74330-05-16 12:28 J -25427474.03 -25427473.98 -25427473.92 0.0279 0.0269  
 Moon -74329-05-27 12:13 J -25427097.18 -25427096.99 -25427096.79 0.0275 0.0148  
 Earth -74329-05-27 15:20 J -25427097.06 -25427096.86 -25427096.65 0.0275 0.0143 \*  
 Mars -74328-05-06 19:11 J -25426752.95 -25426752.70 -25426752.45 0.0271 0.0140  
 Earth -74328-06-08 10:32 J -25426720.30 -25426720.06 -25426719.82 0.0271 0.0018  
 Moon -74328-06-08 11:44 J -25426720.25 -25426720.01 -25426719.78 0.0271 0.0011 \*  
 Earth -74327-06-19 23:16 J -25426343.75 -25426343.53 -25426343.31 0.0267 0.0101  
 Moon -74327-06-20 02:23 J -25426343.61 -25426343.40 -25426343.17 0.0267 0.0117 \*  
 Moon -74326-07-01 05:44 J -25425967.40 -25425967.26 -25425967.12 0.0264 0.0216  
 Earth -74326-07-01 07:25 J -25425967.33 -25425967.19 -25425967.04 0.0264 0.0212 \*  
 Venus -74320-07-21 14:37 J -25423755.00 -25423754.89 -25423754.76 0.0262 0.0220  
 Venus -74319-03-07 18:28 J -25423525.91 -25423525.73 -25423525.55 0.0264 0.0148  
 Mercury -74317-09-26 12:42 J -25422592.13 -25422591.97 -25422591.81 0.0271 0.0147  
 Mercury -74317-12-24 11:44 J -25422503.20 -25422503.01 -25422502.82 0.0272 0.0004  
 Mercury -74316-03-23 10:32 J -25422414.22 -25422414.06 -25422413.90 0.0273 0.0150  
 Earth -74314-11-21 08:08 J -25421441.29 -25421441.16 -25421441.02 0.0285 0.0237  
 Moon -74314-11-21 11:30 J -25421441.13 -25421441.02 -25421440.88 0.0285 0.0245 \*

Earth -74313-12-04 21:35 J -25421061.84 -25421061.60 -25421061.36 0.0290 0.0087  
 Moon -74313-12-04 22:47 J -25421061.79 -25421061.55 -25421061.30 0.0290 0.0100 \*  
 Mars -74312-06-26 19:40 J -25420857.96 -25420857.68 -25420857.39 0.0292 0.0081  
 Moon -74312-12-19 18:13 J -25420681.99 -25420681.74 -25420681.49 0.0294 0.0062  
 Earth -74312-12-19 20:08 J -25420681.90 -25420681.66 -25420681.42 0.0294 0.0078 \*  
 Moon -74310-01-03 21:49 J -25420301.74 -25420301.59 -25420301.42 0.0297 0.0228  
 Earth -74310-01-04 01:40 J -25420301.57 -25420301.43 -25420301.29 0.0297 0.0246 \*  
 Venus -74305-01-11 12:28 J -25418468.17 -25418467.98 -25418467.78 0.0298 0.0086  
 Mercury -74303-02-05 08:08 J -25417712.26 -25417712.16 -25417712.06 0.0291 0.0172  
 Mercury -74303-05-04 19:40 J -25417623.80 -25417623.68 -25417623.55 0.0290 0.0053  
 Mercury -74303-08-01 07:25 J -25417535.32 -25417535.19 -25417535.07 0.0289 0.0068  
 Mercury -74303-10-28 18:42 J -25417446.81 -25417446.72 -25417446.62 0.0288 0.0185  
 Earth -74300-05-22 15:49 J -25416509.99 -25416509.84 -25416509.67 0.0276 0.0201  
 Moon -74300-05-22 19:11 J -25416509.84 -25416509.70 -25416509.54 0.0276 0.0212 \*  
 Moon -74299-06-03 13:11 J -25416133.19 -25416132.95 -25416132.71 0.0272 0.0071  
 Earth -74299-06-03 14:23 J -25416133.12 -25416132.90 -25416132.66 0.0272 0.0075 \*  
 Moon -74298-06-15 02:08 J -25415756.64 -25415756.41 -25415756.17 0.0268 0.0061  
 Earth -74298-06-15 05:59 J -25415756.49 -25415756.25 -25415756.02 0.0268 0.0047 \*  
 Mars -74298-06-24 19:11 J -25415746.98 -25415746.70 -25415746.40 0.0268 0.0043  
 Earth -74297-06-25 15:35 J -25415380.03 -25415379.85 -25415379.65 0.0265 0.0162  
 Moon -74297-06-25 16:32 J -25415379.98 -25415379.81 -25415379.63 0.0265 0.0173 \*  
 Venus -74290-01-31 17:01 J -25412968.95 -25412968.79 -25412968.63 0.0263 0.0176  
 Venus -74290-09-17 20:23 J -25412739.79 -25412739.65 -25412739.49 0.0264 0.0192  
 Mercury -74287-02-13 10:04 J -25411860.21 -25411860.08 -25411859.95 0.0271 0.0197  
 Mercury -74287-05-13 08:52 J -25411771.32 -25411771.13 -25411770.94 0.0272 0.0050  
 Mercury -74287-08-10 07:40 J -25411682.35 -25411682.18 -25411682.00 0.0273 0.0100  
 Mercury -74287-11-07 06:28 J -25411593.30 -25411593.23 -25411593.14 0.0274 0.0249  
 Moon -74284-11-28 10:32 J -25410476.24 -25410476.06 -25410475.85 0.0287 0.0172  
 Earth -74284-11-28 11:16 J -25410476.23 -25410476.03 -25410475.81 0.0287 0.0159 \*  
 Earth -74283-12-13 05:30 J -25410096.52 -25410096.27 -25410096.02 0.0292 0.0002

Moon -74283-12-13 08:08 J -25410096.40 -25410096.16 -25410095.91 0.0292 0.0016 \*  
 Mars -74282-08-16 19:54 J -25409849.91 -25409849.67 -25409849.42 0.0294 0.0149  
 Earth -74282-12-28 07:40 J -25409716.38 -25409716.18 -25409715.97 0.0295 0.0167  
 Moon -74282-12-28 11:30 J -25409716.22 -25409716.02 -25409715.80 0.0295 0.0150 \*  
 Venus -74276-07-23 13:40 J -25407682.11 -25407681.93 -25407681.75 0.0298 0.0134  
 Mercury -74274-06-25 09:20 J -25406980.19 -25406980.11 -25406980.02 0.0291 0.0217  
 Mercury -74274-09-21 20:52 J -25406891.75 -25406891.63 -25406891.50 0.0290 0.0097  
 Mercury -74274-12-19 08:37 J -25406803.27 -25406803.14 -25406803.01 0.0289 0.0024  
 Mercury -74273-03-16 20:08 J -25406714.77 -25406714.66 -25406714.55 0.0288 0.0142  
 Mercury -74273-06-13 07:40 J -25406626.23 -25406626.18 -25406626.13 0.0287 0.0259  
 Moon -74271-05-17 07:54 J -25405923.21 -25405923.17 -25405923.11 0.0279 0.0272  
 Earth -74271-05-17 11:30 J -25405923.11 -25405923.02 -25405922.93 0.0279 0.0257 \*  
 Earth -74270-05-29 14:23 J -25405546.11 -25405545.90 -25405545.69 0.0274 0.0130  
 Moon -74270-05-29 14:52 J -25405546.07 -25405545.88 -25405545.66 0.0274 0.0132 \*  
 Earth -74269-06-09 09:35 J -25405169.34 -25405169.10 -25405168.86 0.0271 0.0006  
 Moon -74269-06-09 13:11 J -25405169.19 -25405168.95 -25405168.71 0.0271 0.0008 \*  
 Moon -74268-06-20 22:18 J -25404792.78 -25404792.57 -25404792.35 0.0267 0.0129  
 Earth -74268-06-20 22:32 J -25404792.77 -25404792.56 -25404792.34 0.0267 0.0115 \*  
 Mars -74268-08-11 21:49 J -25404740.75 -25404740.59 -25404740.40 0.0267 0.0217  
 Moon -74267-07-02 03:20 J -25404416.46 -25404416.36 -25404416.23 0.0265 0.0229  
 Earth -74267-07-02 07:11 J -25404416.33 -25404416.20 -25404416.08 0.0265 0.0226 \*  
 Venus -74261-08-12 21:35 J -25402182.79 -25402182.60 -25402182.40 0.0263 0.0123  
 Venus -74260-03-30 01:40 J -25401953.50 -25401953.43 -25401953.36 0.0264 0.0247  
 Jupiter -74258-01-25 12:56 J -25401287.27 -25401286.96 -25401286.60 0.0269 0.0193  
 Mercury -74258-07-03 09:35 J -25401128.20 -25401128.10 -25401128.01 0.0271 0.0234  
 Mercury -74258-09-30 08:08 J -25401039.33 -25401039.16 -25401038.97 0.0271 0.0088  
 Mercury -74258-12-28 07:11 J -25400950.38 -25400950.20 -25400950.01 0.0272 0.0061  
 Mercury -74257-03-26 05:59 J -25400861.36 -25400861.25 -25400861.12 0.0273 0.0211  
 Earth -74255-11-22 12:28 J -25399890.13 -25399889.98 -25399889.81 0.0285 0.0222  
 Moon -74255-11-22 12:56 J -25399890.10 -25399889.96 -25399889.80 0.0285 0.0231 \*

Moon -74254-12-06 23:16 J -25399510.77 -25399510.53 -25399510.28 0.0290 0.0085  
 Earth -74254-12-07 02:23 J -25399510.65 -25399510.40 -25399510.16 0.0290 0.0070 \*  
 Moon -74253-12-20 20:52 J -25399130.86 -25399130.63 -25399130.38 0.0294 0.0079  
 Earth -74253-12-21 00:42 J -25399130.70 -25399130.47 -25399130.23 0.0294 0.0096 \*  
 Moon -74251-01-05 03:49 J -25398750.47 -25398750.34 -25398750.21 0.0297 0.0247  
 Earth -74251-01-05 05:59 J -25398750.36 -25398750.25 -25398750.14 0.0297 0.0264 \*  
 Venus -74246-02-02 20:37 J -25396895.79 -25396895.64 -25396895.49 0.0298 0.0205  
 Mercury -74245-11-11 11:59 J -25396248.07 -25396248.00 -25396247.94 0.0292 0.0250  
 Mercury -74244-02-07 23:30 J -25396159.63 -25396159.52 -25396159.40 0.0291 0.0129  
 Mercury -74244-05-07 11:01 J -25396071.17 -25396071.04 -25396070.91 0.0290 0.0012  
 Mercury -74244-08-03 22:32 J -25395982.67 -25395982.56 -25395982.43 0.0289 0.0111  
 Mercury -74244-10-31 10:18 J -25395894.15 -25395894.07 -25395894.00 0.0288 0.0228  
 Moon -74241-05-23 16:47 J -25394958.97 -25394958.80 -25394958.62 0.0276 0.0194  
 Earth -74241-05-23 16:47 J -25394958.96 -25394958.80 -25394958.61 0.0276 0.0188 \*  
 Moon -74240-06-04 11:59 J -25394582.23 -25394582.00 -25394581.76 0.0272 0.0052  
 Earth -74240-06-04 15:35 J -25394582.08 -25394581.85 -25394581.61 0.0272 0.0060 \*  
 Mars -74240-09-30 05:59 J -25394464.50 -25394464.25 -25394463.98 0.0271 0.0124  
 Earth -74239-06-16 07:11 J -25394205.43 -25394205.20 -25394204.97 0.0268 0.0062  
 Moon -74239-06-16 06:56 J -25394205.43 -25394205.21 -25394204.98 0.0268 0.0078 \*  
 Earth -74238-06-27 17:01 J -25393828.96 -25393828.79 -25393828.60 0.0265 0.0178  
 Moon -74238-06-27 20:37 J -25393828.80 -25393828.64 -25393828.46 0.0265 0.0188 \*  
 Venus -74231-02-23 01:25 J -25391396.65 -25391396.44 -25391396.23 0.0263 0.0074  
 Mercury -74228-02-16 06:28 J -25390307.40 -25390307.23 -25390307.06 0.0271 0.0132  
 Mercury -74228-05-16 05:16 J -25390218.47 -25390218.28 -25390218.09 0.0272 0.0017  
 Mercury -74228-08-13 04:04 J -25390129.47 -25390129.33 -25390129.17 0.0273 0.0165  
 Earth -74225-11-29 18:56 J -25388924.92 -25388924.71 -25388924.49 0.0287 0.0141  
 Moon -74225-11-29 22:04 J -25388924.78 -25388924.58 -25388924.37 0.0287 0.0154 \*  
 Mars -74224-11-20 00:28 J -25388569.76 -25388569.48 -25388569.19 0.0292 0.0070  
 Earth -74224-12-14 13:11 J -25388545.20 -25388544.95 -25388544.70 0.0292 0.0020  
 Moon -74224-12-14 16:32 J -25388545.07 -25388544.81 -25388544.56 0.0292 0.0004 \*

Earth -74223-12-29 15:06 J -25388165.05 -25388164.87 -25388164.66 0.0296 0.0188  
 Moon -74223-12-29 16:18 J -25388165.02 -25388164.82 -25388164.60 0.0296 0.0171 \*  
 Venus -74218-12-29 02:23 J -25386339.50 -25386339.40 -25386339.29 0.0299 0.0254  
 Venus -74217-08-14 23:16 J -25386109.63 -25386109.53 -25386109.43 0.0297 0.0260  
 Mercury -74215-06-28 00:56 J -25385427.56 -25385427.46 -25385427.35 0.0291 0.0171  
 Mercury -74215-09-24 12:42 J -25385339.10 -25385338.97 -25385338.84 0.0290 0.0050  
 Mercury -74215-12-22 00:13 J -25385250.61 -25385250.49 -25385250.36 0.0289 0.0070  
 Mercury -74214-03-20 11:44 J -25385162.10 -25385162.01 -25385161.91 0.0288 0.0188  
 Earth -74212-05-18 13:54 J -25384372.03 -25384371.92 -25384371.80 0.0279 0.0244  
 Moon -74212-05-18 13:40 J -25384372.01 -25384371.93 -25384371.83 0.0279 0.0257 \*  
 Earth -74211-05-30 16:32 J -25383995.02 -25383994.81 -25383994.59 0.0274 0.0115  
 Moon -74211-05-30 19:54 J -25383994.88 -25383994.67 -25383994.45 0.0274 0.0115 \*  
 Earth -74210-06-11 11:44 J -25383618.25 -25383618.01 -25383617.77 0.0271 0.0011  
 Moon -74210-06-11 11:59 J -25383618.25 -25383618.00 -25383617.75 0.0271 0.0024 \*  
 Mars -74210-11-18 05:59 J -25383458.54 -25383458.25 -25383457.96 0.0269 0.0052  
 Moon -74209-06-21 21:06 J -25383241.82 -25383241.62 -25383241.41 0.0267 0.0145  
 Earth -74209-06-22 00:42 J -25383241.67 -25383241.47 -25383241.25 0.0267 0.0131 \*  
 Moon -74208-07-03 09:06 J -25382865.20 -25382865.12 -25382865.02 0.0265 0.0243  
 Earth -74208-07-03 09:20 J -25382865.19 -25382865.11 -25382865.00 0.0265 0.0242 \*  
 Venus -74202-09-05 06:42 J -25380610.43 -25380610.22 -25380610.00 0.0263 0.0018  
 Mercury -74199-07-06 06:13 J -25379575.38 -25379575.24 -25379575.08 0.0271 0.0166  
 Mercury -74199-10-03 05:16 J -25379486.47 -25379486.28 -25379486.09 0.0272 0.0019  
 Mercury -74199-12-31 04:18 J -25379397.49 -25379397.32 -25379397.16 0.0273 0.0131  
 Moon -74196-11-23 19:11 J -25378338.86 -25378338.70 -25378338.53 0.0285 0.0217  
 Earth -74196-11-23 22:47 J -25378338.72 -25378338.55 -25378338.37 0.0285 0.0205 \*  
 Moon -74195-12-08 09:49 J -25377959.33 -25377959.09 -25377958.85 0.0290 0.0065  
 Earth -74195-12-08 12:56 J -25377959.21 -25377958.96 -25377958.71 0.0290 0.0050 \*  
 Moon -74194-12-23 11:16 J -25377579.25 -25377579.03 -25377578.80 0.0294 0.0102  
 Earth -74194-12-23 11:44 J -25377579.24 -25377579.01 -25377578.78 0.0294 0.0117 \*  
 Mars -74193-01-10 21:06 J -25377560.85 -25377560.62 -25377560.38 0.0294 0.0169

Earth -74192-01-06 16:47 J -25377198.86 -25377198.80 -25377198.72 0.0298 0.0284  
 Moon -74192-01-06 19:11 J -25377198.80 -25377198.70 -25377198.59 0.0298 0.0268 \*  
 Venus -74188-07-10 11:16 J -25375553.19 -25375553.03 -25375552.86 0.0299 0.0175  
 Mercury -74186-11-15 04:04 J -25374695.43 -25374695.33 -25374695.24 0.0291 0.0200  
 Mercury -74185-02-11 15:35 J -25374606.97 -25374606.85 -25374606.72 0.0290 0.0079  
 Mercury -74185-05-10 03:06 J -25374518.50 -25374518.37 -25374518.24 0.0289 0.0042  
 Mercury -74185-08-06 14:37 J -25374429.99 -25374429.89 -25374429.78 0.0288 0.0160  
 Mercury -74185-11-03 02:08 J -25374341.44 -25374341.41 -25374341.37 0.0287 0.0277  
 Moon -74182-05-25 17:44 J -25373407.94 -25373407.76 -25373407.58 0.0276 0.0178  
 Earth -74182-05-25 21:06 J -25373407.80 -25373407.62 -25373407.43 0.0276 0.0172 \*  
 Moon -74181-06-05 18:42 J -25373030.95 -25373030.72 -25373030.49 0.0272 0.0037  
 Earth -74181-06-05 19:25 J -25373030.92 -25373030.69 -25373030.45 0.0272 0.0045 \*  
 Earth -74180-06-17 11:01 J -25372654.27 -25372654.04 -25372653.80 0.0268 0.0078  
 Moon -74180-06-17 14:37 J -25372654.11 -25372653.89 -25372653.66 0.0268 0.0094 \*  
 Mars -74179-01-05 19:54 J -25372451.79 -25372451.67 -25372451.53 0.0267 0.0240  
 Earth -74179-06-28 21:20 J -25372277.77 -25372277.61 -25372277.44 0.0265 0.0193  
 Moon -74179-06-28 22:47 J -25372277.71 -25372277.55 -25372277.39 0.0265 0.0201 \*  
 Venus -74172-03-17 11:59 J -25369824.21 -25369824.00 -25369823.78 0.0263 0.0037  
 Mercury -74170-11-23 05:30 J -25368843.39 -25368843.27 -25368843.14 0.0271 0.0205  
 Mercury -74169-02-20 04:18 J -25368754.50 -25368754.32 -25368754.13 0.0272 0.0058  
 Mercury -74169-05-19 03:06 J -25368665.55 -25368665.37 -25368665.19 0.0273 0.0091  
 Mercury -74169-08-16 01:54 J -25368576.50 -25368576.42 -25368576.32 0.0274 0.0240  
 Earth -74167-11-17 23:44 J -25367752.60 -25367752.51 -25367752.43 0.0283 0.0266  
 Moon -74167-11-18 03:06 J -25367752.40 -25367752.37 -25367752.31 0.0283 0.0279  
 Earth -74166-12-02 08:23 J -25367373.38 -25367373.15 -25367372.92 0.0288 0.0120  
 Moon -74166-12-02 11:16 J -25367373.25 -25367373.03 -25367372.79 0.0288 0.0134 \*  
 Mars -74165-02-24 09:06 J -25367289.18 -25367289.12 -25367289.02 0.0289 0.0279  
 Moon -74165-12-16 02:37 J -25366993.65 -25366993.39 -25366993.13 0.0292 0.0027  
 Earth -74165-12-16 02:37 J -25366993.63 -25366993.39 -25366993.14 0.0292 0.0042 \*  
 Moon -74164-12-31 01:40 J -25366613.61 -25366613.43 -25366613.23 0.0296 0.0194

Earth -74164-12-31 04:47 J -25366613.46 -25366613.30 -25366613.12 0.0296 0.0210 \*  
 Venus -74158-01-20 15:20 J -25364767.05 -25364766.86 -25364766.67 0.0298 0.0114  
 Mercury -74156-04-03 05:44 J -25363963.33 -25363963.26 -25363963.19 0.0291 0.0239  
 Mercury -74156-06-30 17:16 J -25363874.89 -25363874.78 -25363874.66 0.0291 0.0119  
 Mercury -74156-09-27 05:01 J -25363786.42 -25363786.29 -25363786.16 0.0290 0.0005  
 Mercury -74156-12-24 16:32 J -25363697.93 -25363697.81 -25363697.69 0.0289 0.0121  
 Mercury -74155-03-23 04:04 J -25363609.40 -25363609.33 -25363609.26 0.0288 0.0239  
 Earth -74153-05-19 19:11 J -25362820.83 -25362820.70 -25362820.56 0.0278 0.0230  
 Moon -74153-05-19 22:47 J -25362820.66 -25362820.55 -25362820.43 0.0278 0.0241 \*  
 Earth -74152-05-31 21:35 J -25362443.81 -25362443.60 -25362443.37 0.0274 0.0100  
 Moon -74152-05-31 23:01 J -25362443.76 -25362443.54 -25362443.30 0.0274 0.0099 \*  
 Mars -74151-02-23 23:01 J -25362175.80 -25362175.54 -25362175.26 0.0271 0.0110  
 Moon -74151-06-12 13:11 J -25362067.18 -25362066.95 -25362066.70 0.0270 0.0042  
 Earth -74151-06-12 16:47 J -25362067.04 -25362066.80 -25362066.56 0.0270 0.0027 \*  
 Moon -74150-06-24 04:18 J -25361690.50 -25361690.32 -25361690.13 0.0267 0.0159  
 Earth -74150-06-24 05:30 J -25361690.46 -25361690.27 -25361690.06 0.0267 0.0147 \*  
 Earth -74149-07-04 14:37 J -25361313.94 -25361313.89 -25361313.83 0.0265 0.0257  
 Moon -74149-07-04 17:30 J -25361313.81 -25361313.77 -25361313.70 0.0265 0.0257  
 Venus -74143-09-27 17:44 J -25359037.96 -25359037.76 -25359037.55 0.0264 0.0094  
 Mercury -74140-04-11 05:44 J -25358111.35 -25358111.26 -25358111.17 0.0270 0.0237  
 Mercury -74140-07-09 04:32 J -25358022.49 -25358022.31 -25358022.13 0.0271 0.0090  
 Mercury -74140-10-06 03:35 J -25357933.54 -25357933.35 -25357933.17 0.0272 0.0059  
 Mercury -74139-01-03 02:23 J -25357844.52 -25357844.40 -25357844.28 0.0273 0.0207  
 Moon -74137-11-25 10:18 J -25356787.23 -25356787.07 -25356786.89 0.0285 0.0201  
 Earth -74137-11-25 13:11 J -25356787.14 -25356786.95 -25356786.76 0.0285 0.0186 \*  
 Earth -74136-12-10 03:35 J -25356407.60 -25356407.35 -25356407.10 0.0290 0.0029  
 Moon -74136-12-10 04:04 J -25356407.57 -25356407.33 -25356407.09 0.0290 0.0044 \*  
 Mars -74135-04-16 16:18 J -25356280.11 -25356279.82 -25356279.53 0.0292 0.0037  
 Earth -74135-12-25 02:37 J -25356027.60 -25356027.39 -25356027.16 0.0294 0.0139  
 Moon -74135-12-25 05:44 J -25356027.47 -25356027.26 -25356027.03 0.0294 0.0124 \*

Moon -74133-01-09 11:44 J -25355647.06 -25355647.01 -25355646.95 0.0298 0.0289  
 Venus -74129-08-02 01:25 J -25353980.64 -25353980.44 -25353980.23 0.0299 0.0031  
 Mercury -74127-08-21 08:52 J -25353231.17 -25353231.13 -25353231.07 0.0292 0.0265  
 Mercury -74127-11-17 20:37 J -25353142.75 -25353142.64 -25353142.52 0.0291 0.0143  
 Mercury -74126-02-14 08:23 J -25353054.28 -25353054.15 -25353054.02 0.0290 0.0024  
 Mercury -74126-05-13 19:54 J -25352965.79 -25352965.67 -25352965.55 0.0289 0.0097  
 Mercury -74126-08-10 07:25 J -25352877.28 -25352877.19 -25352877.11 0.0288 0.0215  
 Moon -74123-05-27 02:37 J -25351856.58 -25351856.39 -25351856.20 0.0276 0.0160  
 Earth -74123-05-27 04:32 J -25351856.51 -25351856.31 -25351856.11 0.0276 0.0156 \*  
 Earth -74122-06-08 02:23 J -25351479.64 -25351479.40 -25351479.16 0.0272 0.0028  
 Moon -74122-06-08 05:16 J -25351479.52 -25351479.28 -25351479.05 0.0272 0.0018 \*  
 Mars -74121-04-13 12:28 J -25351169.26 -25351168.98 -25351168.70 0.0269 0.0081  
 Earth -74121-06-18 17:44 J -25351102.98 -25351102.76 -25351102.53 0.0268 0.0095  
 Moon -74121-06-18 19:25 J -25351102.91 -25351102.69 -25351102.46 0.0268 0.0109 \*  
 Moon -74120-06-30 00:56 J -25350726.59 -25350726.46 -25350726.31 0.0265 0.0214  
 Earth -74120-06-30 04:04 J -25350726.47 -25350726.33 -25350726.17 0.0265 0.0210 \*  
 Venus -74114-08-23 20:37 J -25348480.76 -25348480.64 -25348480.51 0.0263 0.0215  
 Venus -74113-04-09 00:13 J -25348251.67 -25348251.49 -25348251.31 0.0264 0.0153  
 Mercury -74111-11-26 04:18 J -25347290.49 -25347290.32 -25347290.15 0.0271 0.0125  
 Mercury -74110-02-23 03:06 J -25347201.56 -25347201.37 -25347201.17 0.0272 0.0024  
 Mercury -74110-05-23 02:08 J -25347112.56 -25347112.41 -25347112.26 0.0273 0.0172  
 Earth -74108-11-19 16:32 J -25346200.93 -25346200.81 -25346200.68 0.0284 0.0247  
 Moon -74108-11-19 18:13 J -25346200.82 -25346200.74 -25346200.62 0.0284 0.0260 \*  
 Moon -74107-12-04 01:11 J -25345821.69 -25345821.45 -25345821.21 0.0288 0.0113  
 Earth -74107-12-04 02:23 J -25345821.64 -25345821.40 -25345821.16 0.0288 0.0098 \*  
 Moon -74106-12-18 17:59 J -25345442.00 -25345441.75 -25345441.50 0.0292 0.0049  
 Earth -74106-12-18 21:20 J -25345441.85 -25345441.61 -25345441.36 0.0292 0.0066 \*  
 Mars -74105-06-06 07:40 J -25345271.38 -25345271.18 -25345270.96 0.0294 0.0198  
 Moon -74104-01-01 20:52 J -25345061.80 -25345061.63 -25345061.47 0.0296 0.0218  
 Earth -74104-01-01 23:44 J -25345061.65 -25345061.51 -25345061.35 0.0296 0.0234 \*



Venus -74099-02-12 07:25 J -25343194.39 -25343194.19 -25343193.98 0.0298 0.0040

Mercury -74097-04-05 22:47 J -25342410.65 -25342410.55 -25342410.44 0.0291 0.0179

Mercury -74097-07-03 10:32 J -25342322.19 -25342322.06 -25342321.94 0.0290 0.0058

Mercury -74097-09-29 22:04 J -25342233.71 -25342233.58 -25342233.45 0.0289 0.0062

Mercury -74097-12-27 09:35 J -25342145.20 -25342145.10 -25342145.00 0.0288 0.0180

Earth -74094-05-22 04:18 J -25341269.46 -25341269.32 -25341269.16 0.0278 0.0214

Moon -74094-05-22 05:59 J -25341269.38 -25341269.25 -25341269.09 0.0278 0.0221 \*

Moon -74093-06-02 03:20 J -25340892.59 -25340892.36 -25340892.12 0.0274 0.0078

Earth -74093-06-02 06:13 J -25340892.47 -25340892.24 -25340892.01 0.0274 0.0083 \*

Mars -74093-06-02 02:52 J -25340892.43 -25340892.38 -25340892.30 0.0274 0.0266 \*

Moon -74092-06-13 22:32 J -25340515.79 -25340515.56 -25340515.33 0.0270 0.0058

Earth -74092-06-14 00:42 J -25340515.71 -25340515.47 -25340515.23 0.0270 0.0044 \*

Mars -74091-06-01 22:04 J -25340162.63 -25340162.58 -25340162.50 0.0267 0.0261

Earth -74091-06-25 12:56 J -25340139.14 -25340138.96 -25340138.76 0.0267 0.0164

Moon -74091-06-25 16:04 J -25340139.00 -25340138.83 -25340138.64 0.0267 0.0174 \*

Venus -74084-03-05 02:23 J -25337694.57 -25337694.40 -25337694.22 0.0263 0.0159

Venus -74084-10-20 05:59 J -25337465.36 -25337465.25 -25337465.11 0.0264 0.0212

Mercury -74081-04-14 04:32 J -25336558.46 -25336558.31 -25336558.15 0.0271 0.0157

Mercury -74081-07-12 03:35 J -25336469.54 -25336469.35 -25336469.16 0.0272 0.0009

Mercury -74081-10-09 02:23 J -25336380.56 -25336380.40 -25336380.23 0.0273 0.0141

Earth -74078-11-28 07:11 J -25335235.39 -25335235.20 -25335234.98 0.0286 0.0166

Moon -74078-11-28 09:06 J -25335235.30 -25335235.12 -25335234.92 0.0286 0.0181 \*

Mars -74077-07-21 11:59 J -25334999.16 -25334999.00 -25334998.82 0.0289 0.0237

Earth -74077-12-11 22:47 J -25334855.80 -25334855.55 -25334855.30 0.0290 0.0007

Moon -74077-12-12 02:23 J -25334855.65 -25334855.40 -25334855.15 0.0290 0.0023 \*

Earth -74076-12-26 22:32 J -25334475.76 -25334475.56 -25334475.35 0.0294 0.0163

Moon -74076-12-27 01:40 J -25334475.64 -25334475.43 -25334475.20 0.0294 0.0147 \*

Venus -74070-08-25 17:59 J -25332407.94 -25332407.75 -25332407.56 0.0298 0.0124

Mercury -74068-08-24 02:23 J -25331678.49 -25331678.40 -25331678.31 0.0292 0.0203

Mercury -74068-11-20 13:54 J -25331590.04 -25331589.92 -25331589.79 0.0291 0.0082

Mercury -74067-02-17 01:25 J -25331501.56 -25331501.44 -25331501.31 0.0290 0.0040

Mercury -74067-05-16 12:56 J -25331413.06 -25331412.96 -25331412.85 0.0289 0.0158

Mercury -74067-08-13 00:28 J -25331324.51 -25331324.48 -25331324.44 0.0287 0.0275

Earth -74065-05-16 09:06 J -25330682.18 -25330682.12 -25330682.06 0.0280 0.0270

Earth -74064-05-28 14:08 J -25330305.11 -25330304.91 -25330304.70 0.0275 0.0140

Moon -74064-05-28 16:32 J -25330305.00 -25330304.81 -25330304.60 0.0275 0.0141 \*

Earth -74063-06-09 11:30 J -25329928.26 -25329928.02 -25329927.78 0.0271 0.0011

Moon -74063-06-09 14:23 J -25329928.14 -25329927.90 -25329927.65 0.0271 0.0002 \*

Mars -74063-07-21 13:25 J -25329886.22 -25329885.94 -25329885.65 0.0271 0.0076

Moon -74062-06-20 23:44 J -25329551.73 -25329551.51 -25329551.29 0.0268 0.0124

Earth -74062-06-21 02:23 J -25329551.62 -25329551.40 -25329551.18 0.0268 0.0112 \*

Moon -74061-07-01 09:49 J -25329175.20 -25329175.09 -25329174.96 0.0265 0.0229

Earth -74061-07-01 12:28 J -25329175.09 -25329174.98 -25329174.84 0.0265 0.0226 \*

Venus -74055-09-15 09:35 J -25326908.30 -25326908.10 -25326907.89 0.0263 0.0098

Mercury -74052-09-01 05:01 J -25325826.43 -25325826.29 -25325826.15 0.0271 0.0188

Mercury -74052-11-29 03:49 J -25325737.53 -25325737.34 -25325737.15 0.0272 0.0041

Mercury -74051-02-26 02:37 J -25325648.56 -25325648.39 -25325648.21 0.0273 0.0109

Mercury -74051-05-26 01:40 J -25325559.49 -25325559.43 -25325559.37 0.0274 0.0258

Moon -74049-11-21 09:35 J -25324649.22 -25324649.10 -25324648.95 0.0284 0.0241

Earth -74049-11-21 12:13 J -25324649.14 -25324648.99 -25324648.84 0.0284 0.0227 \*

Moon -74048-12-05 18:56 J -25324269.94 -25324269.71 -25324269.47 0.0289 0.0092

Earth -74048-12-05 23:01 J -25324269.78 -25324269.54 -25324269.30 0.0289 0.0075 \*

Mars -74047-09-11 15:20 J -25323990.15 -25323989.86 -25323989.57 0.0292 0.0003

Moon -74047-12-20 15:49 J -25323890.07 -25323889.84 -25323889.60 0.0293 0.0075

Earth -74047-12-20 18:42 J -25323889.95 -25323889.72 -25323889.48 0.0293 0.0091 \*

Moon -74045-01-04 21:35 J -25323509.73 -25323509.60 -25323509.46 0.0296 0.0245

Earth -74045-01-04 21:35 J -25323509.71 -25323509.60 -25323509.47 0.0296 0.0259 \*

Venus -74040-03-07 00:56 J -25321621.61 -25321621.46 -25321621.30 0.0297 0.0197

Mercury -74038-01-11 04:47 J -25320946.37 -25320946.30 -25320946.22 0.0291 0.0235

Mercury -74038-04-09 16:18 J -25320857.93 -25320857.82 -25320857.70 0.0290 0.0115

Mercury -74038-07-07 04:04 J -25320769.46 -25320769.33 -25320769.20 0.0289 0.0007

Mercury -74038-10-03 15:35 J -25320680.97 -25320680.85 -25320680.73 0.0288 0.0125

Mercury -74038-12-31 03:06 J -25320592.44 -25320592.37 -25320592.30 0.0287 0.0242

Moon -74035-05-23 12:56 J -25319718.12 -25319717.96 -25319717.79 0.0277 0.0200

Earth -74035-05-23 15:35 J -25319718.01 -25319717.85 -25319717.67 0.0277 0.0198 \*

Moon -74034-06-04 13:25 J -25319341.17 -25319340.94 -25319340.71 0.0273 0.0059

Earth -74034-06-04 16:32 J -25319341.04 -25319340.81 -25319340.58 0.0273 0.0066 \*

Earth -74033-06-15 10:04 J -25318964.31 -25318964.08 -25318963.84 0.0270 0.0061

Moon -74033-06-15 11:59 J -25318964.22 -25318964.00 -25318963.78 0.0270 0.0075 \*

Mars -74033-09-07 18:28 J -25318879.99 -25318879.73 -25318879.44 0.0269 0.0107

Earth -74032-06-26 22:18 J -25318587.74 -25318587.57 -25318587.39 0.0267 0.0180

Moon -74032-06-27 00:56 J -25318587.62 -25318587.46 -25318587.27 0.0267 0.0188 \*

Venus -74025-03-27 15:06 J -25316122.09 -25316121.87 -25316121.66 0.0263 0.0043

Mercury -74022-01-19 05:01 J -25315094.40 -25315094.29 -25315094.18 0.0271 0.0222

Mercury -74022-04-18 03:49 J -25315005.52 -25315005.34 -25315005.15 0.0272 0.0075

Mercury -74022-07-16 02:52 J -25314916.56 -25314916.38 -25314916.20 0.0272 0.0074

Mercury -74022-10-13 01:40 J -25314827.53 -25314827.43 -25314827.32 0.0273 0.0224

Earth -74019-11-30 03:06 J -25313683.58 -25313683.37 -25313683.15 0.0286 0.0145

Moon -74019-11-30 06:56 J -25313683.41 -25313683.21 -25313682.99 0.0286 0.0160 \*

Earth -74018-12-14 19:40 J -25313303.93 -25313303.68 -25313303.43 0.0291 0.0017

Moon -74018-12-14 22:04 J -25313303.84 -25313303.58 -25313303.33 0.0291 0.0005 \*

Mars -74017-11-01 14:37 J -25312981.04 -25312980.89 -25312980.72 0.0294 0.0243

Moon -74017-12-28 19:40 J -25312923.88 -25312923.68 -25312923.46 0.0295 0.0170

Earth -74017-12-28 20:08 J -25312923.85 -25312923.66 -25312923.46 0.0295 0.0187 \*

Venus -74011-01-30 15:06 J -25311064.99 -25311064.87 -25311064.73 0.0299 0.0229

Venus -74011-09-17 11:44 J -25310835.05 -25310835.01 -25310834.94 0.0298 0.0286

Mercury -74009-05-30 08:23 J -25310214.20 -25310214.15 -25310214.09 0.0292 0.0257

Mercury -74009-08-26 20:08 J -25310125.77 -25310125.66 -25310125.55 0.0291 0.0136

Mercury -74009-11-23 07:40 J -25310037.31 -25310037.18 -25310037.05 0.0290 0.0016

Mercury -74008-02-19 19:11 J -25309948.82 -25309948.70 -25309948.58 0.0289 0.0104

Mercury -74008-05-19 06:42 J -25309860.30 -25309860.22 -25309860.14 0.0288 0.0222

Earth -74006-05-18 21:35 J -25309130.68 -25309130.60 -25309130.48 0.0279 0.0254

Moon -74006-05-18 23:59 J -25309130.57 -25309130.50 -25309130.42 0.0279 0.0263 \*

Earth -74005-05-30 01:54 J -25308753.63 -25308753.42 -25308753.20 0.0275 0.0122

Moon -74005-05-30 05:16 J -25308753.50 -25308753.28 -25308753.06 0.0275 0.0119 \*

Mars -74005-10-27 22:47 J -25308602.69 -25308602.55 -25308602.38 0.0273 0.0230

Moon -74004-06-10 21:06 J -25308376.86 -25308376.62 -25308376.37 0.0271 0.0020

Earth -74004-06-10 22:18 J -25308376.81 -25308376.57 -25308376.33 0.0271 0.0008 \*

Moon -74003-06-22 09:20 J -25308000.31 -25308000.11 -25307999.90 0.0268 0.0142

Earth -74003-06-22 12:28 J -25308000.18 -25307999.98 -25307999.76 0.0268 0.0129 \*

Earth -74002-07-03 22:18 J -25307623.66 -25307623.57 -25307623.47 0.0265 0.0242

Moon -74002-07-03 23:59 J -25307623.59 -25307623.50 -25307623.40 0.0265 0.0242 \*

# 74TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 74th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-73996-10-07 22:47 J	-25305335.77	-25305335.55	-25305335.34	0.0263	0.0022		
Mercury	-73993-06-07 05:30 J	-25304362.33	-25304362.27	-25304362.19	0.0271	0.0252		
Mercury	-73993-09-04 04:32 J	-25304273.49	-25304273.31	-25304273.13	0.0272	0.0104		
Mercury	-73993-12-02 03:20 J	-25304184.55	-25304184.36	-25304184.17	0.0272	0.0045		
Mercury	-73992-03-01 02:08 J	-25304095.53	-25304095.41	-25304095.27	0.0273	0.0194		
Moon	-73990-11-24 05:30 J	-25303097.43	-25303097.27	-25303097.11	0.0285	0.0221		
Earth	-73990-11-24 08:52 J	-25303097.29	-25303097.13	-25303096.95	0.0285	0.0207	*	

Moon -73989-12-07 19:25 J -25302717.92 -25302717.69 -25302717.45 0.0289 0.0068  
 Earth -73989-12-07 20:52 J -25302717.87 -25302717.63 -25302717.38 0.0289 0.0052 \*  
 Mars -73989-12-16 16:47 J -25302709.01 -25302708.80 -25302708.58 0.0289 0.0199  
 Earth -73988-12-22 17:44 J -25302337.98 -25302337.76 -25302337.53 0.0293 0.0117  
 Moon -73988-12-22 19:11 J -25302337.93 -25302337.70 -25302337.47 0.0293 0.0100 \*  
 Earth -73986-01-06 21:06 J -25301957.67 -25301957.62 -25301957.54 0.0297 0.0285  
 Moon -73986-01-07 00:28 J -25301957.57 -25301957.48 -25301957.37 0.0297 0.0268 \*  
 Venus -73982-08-12 23:30 J -25300278.70 -25300278.52 -25300278.34 0.0298 0.0150  
 Mercury -73980-10-17 11:01 J -25299482.05 -25299482.04 -25299482.02 0.0291 0.0288  
 Mercury -73979-01-13 22:47 J -25299393.66 -25299393.55 -25299393.45 0.0291 0.0167  
 Mercury -73979-04-12 10:18 J -25299305.20 -25299305.07 -25299304.94 0.0290 0.0047  
 Mercury -73979-07-09 21:49 J -25299216.71 -25299216.59 -25299216.46 0.0289 0.0073  
 Mercury -73979-10-06 09:20 J -25299128.20 -25299128.11 -25299128.01 0.0288 0.0191  
 Moon -73976-05-25 00:56 J -25298166.63 -25298166.46 -25298166.28 0.0277 0.0183  
 Earth -73976-05-25 04:04 J -25298166.50 -25298166.33 -25298166.14 0.0277 0.0181 \*  
 Earth -73975-06-06 03:49 J -25297789.58 -25297789.34 -25297789.10 0.0273 0.0049  
 Moon -73975-06-06 04:47 J -25297789.53 -25297789.30 -25297789.07 0.0273 0.0040 \*  
 Mars -73975-12-15 23:30 J -25297596.80 -25297596.52 -25297596.22 0.0271 0.0047  
 Earth -73974-06-17 20:37 J -25297412.87 -25297412.64 -25297412.41 0.0269 0.0077  
 Moon -73974-06-18 00:13 J -25297412.72 -25297412.49 -25297412.27 0.0269 0.0093 \*  
 Moon -73973-06-28 06:42 J -25297036.37 -25297036.22 -25297036.04 0.0266 0.0200  
 Earth -73973-06-28 07:54 J -25297036.32 -25297036.17 -25297035.99 0.0266 0.0197 \*  
 Venus -73966-04-20 03:35 J -25294549.56 -25294549.35 -25294549.14 0.0264 0.0075  
 Mercury -73963-01-22 04:04 J -25293541.49 -25293541.33 -25293541.16 0.0271 0.0141  
 Mercury -73963-04-21 03:06 J -25293452.56 -25293452.37 -25293452.18 0.0272 0.0008  
 Mercury -73963-07-19 01:54 J -25293363.57 -25293363.42 -25293363.26 0.0273 0.0157  
 Earth -73961-11-17 15:06 J -25292510.93 -25292510.87 -25292510.80 0.0282 0.0271  
 Moon -73961-11-17 18:42 J -25292510.74 -25292510.72 -25292510.69 0.0282 0.0281  
 Earth -73960-12-01 22:47 J -25292131.77 -25292131.55 -25292131.31 0.0287 0.0124  
 Moon -73960-12-01 23:44 J -25292131.72 -25292131.51 -25292131.27 0.0287 0.0138 \*

Moon -73959-12-16 14:08 J -25291752.16 -25291751.91 -25291751.65 0.0291 0.0024  
 Earth -73959-12-16 16:32 J -25291752.06 -25291751.81 -25291751.56 0.0291 0.0040 \*  
 Mars -73958-02-06 20:23 J -25291699.93 -25291699.65 -25291699.36 0.0292 0.0047  
 Moon -73958-12-31 14:08 J -25291372.10 -25291371.91 -25291371.72 0.0295 0.0193  
 Earth -73958-12-31 17:59 J -25291371.92 -25291371.75 -25291371.57 0.0295 0.0210 \*  
 Venus -73952-02-22 10:04 J -25289492.28 -25289492.08 -25289491.88 0.0299 0.0063  
 Mercury -73950-06-03 02:23 J -25288661.50 -25288661.40 -25288661.30 0.0291 0.0189  
 Mercury -73950-08-30 13:54 J -25288573.04 -25288572.92 -25288572.79 0.0290 0.0068  
 Mercury -73950-11-27 01:25 J -25288484.56 -25288484.44 -25288484.31 0.0289 0.0052  
 Mercury -73949-02-23 12:56 J -25288396.06 -25288395.96 -25288395.85 0.0288 0.0170  
 Mercury -73949-05-22 00:28 J -25288307.48 -25288307.48 -25288307.47 0.0287 0.0287  
 Earth -73947-05-20 10:47 J -25287579.17 -25287579.05 -25287578.91 0.0279 0.0236  
 Moon -73947-05-20 14:08 J -25287579.01 -25287578.91 -25287578.79 0.0279 0.0247 \*  
 Moon -73946-06-01 12:56 J -25287202.19 -25287201.96 -25287201.72 0.0274 0.0099  
 Earth -73946-06-01 13:40 J -25287202.14 -25287201.93 -25287201.70 0.0274 0.0104 \*  
 Moon -73945-06-12 05:30 J -25286825.51 -25286825.27 -25286825.03 0.0271 0.0039  
 Earth -73945-06-12 09:20 J -25286825.35 -25286825.11 -25286824.87 0.0271 0.0025 \*  
 Mars -73944-02-02 16:32 J -25286590.05 -25286589.81 -25286589.55 0.0268 0.0145  
 Earth -73944-06-23 22:18 J -25286448.76 -25286448.57 -25286448.36 0.0267 0.0147  
 Moon -73944-06-23 22:32 J -25286448.74 -25286448.56 -25286448.37 0.0267 0.0158 \*  
 Earth -73943-07-05 07:40 J -25286072.22 -25286072.18 -25286072.12 0.0265 0.0258  
 Moon -73943-07-05 11:16 J -25286072.08 -25286072.03 -25286071.96 0.0265 0.0255  
 Venus -73937-03-15 07:11 J -25283992.29 -25283992.20 -25283992.08 0.0263 0.0230  
 Venus -73937-10-30 10:47 J -25283763.22 -25283763.05 -25283762.85 0.0264 0.0139  
 Mercury -73934-06-11 04:32 J -25282809.46 -25282809.31 -25282809.16 0.0271 0.0172  
 Mercury -73934-09-08 03:20 J -25282720.55 -25282720.36 -25282720.16 0.0272 0.0024  
 Mercury -73934-12-06 02:23 J -25282631.57 -25282631.40 -25282631.23 0.0273 0.0126  
 Moon -73931-11-26 02:52 J -25281545.55 -25281545.38 -25281545.21 0.0285 0.0200  
 Earth -73931-11-26 03:35 J -25281545.53 -25281545.35 -25281545.15 0.0285 0.0187 \*  
 Earth -73930-12-10 17:01 J -25281166.04 -25281165.79 -25281165.54 0.0290 0.0029

Moon -73930-12-10 19:25 J -25281165.93 -25281165.69 -25281165.45 0.0290 0.0045 \*  
 Earth -73929-12-24 14:52 J -25280786.09 -25280785.88 -25280785.65 0.0294 0.0141  
 Moon -73929-12-24 18:56 J -25280785.94 -25280785.71 -25280785.48 0.0294 0.0123 \*  
 Mars -73928-03-29 17:01 J -25280690.86 -25280690.79 -25280690.69 0.0295 0.0282  
 Moon -73927-01-08 22:32 J -25280405.60 -25280405.56 -25280405.50 0.0297 0.0291  
 Venus -73923-09-04 18:28 J -25278705.94 -25278705.73 -25278705.52 0.0298 0.0015  
 Mercury -73921-10-20 05:01 J -25277929.37 -25277929.29 -25277929.20 0.0291 0.0219  
 Mercury -73920-01-16 16:32 J -25277840.93 -25277840.81 -25277840.68 0.0290 0.0099  
 Mercury -73920-04-15 04:18 J -25277752.45 -25277752.32 -25277752.19 0.0289 0.0022  
 Mercury -73920-07-12 15:49 J -25277663.96 -25277663.84 -25277663.73 0.0288 0.0140  
 Mercury -73920-10-09 03:06 J -25277575.42 -25277575.37 -25277575.31 0.0287 0.0257  
 Earth -73917-05-26 16:47 J -25276614.98 -25276614.80 -25276614.60 0.0276 0.0163  
 Moon -73917-05-26 17:01 J -25276614.97 -25276614.79 -25276614.60 0.0276 0.0165 \*  
 Mars -73916-03-24 10:32 J -25276313.25 -25276313.06 -25276312.85 0.0273 0.0199  
 Earth -73916-06-07 15:20 J -25276238.10 -25276237.86 -25276237.62 0.0272 0.0032  
 Moon -73916-06-07 19:11 J -25276237.94 -25276237.70 -25276237.46 0.0272 0.0020 \*  
 Earth -73915-06-19 06:56 J -25275861.43 -25275861.21 -25275860.98 0.0269 0.0094  
 Moon -73915-06-19 07:25 J -25275861.41 -25275861.19 -25275860.95 0.0269 0.0109 \*  
 Moon -73914-06-30 14:08 J -25275485.04 -25275484.91 -25275484.76 0.0266 0.0216  
 Earth -73914-06-30 17:44 J -25275484.90 -25275484.76 -25275484.61 0.0266 0.0212 \*  
 Venus -73908-09-25 11:16 J -25273206.18 -25273206.03 -25273205.87 0.0263 0.0180  
 Venus -73907-05-12 14:52 J -25272977.02 -25272976.88 -25272976.72 0.0264 0.0190  
 Mercury -73905-10-28 03:20 J -25272077.47 -25272077.36 -25272077.24 0.0271 0.0212  
 Mercury -73904-01-25 02:23 J -25271988.59 -25271988.40 -25271988.21 0.0272 0.0064  
 Mercury -73904-04-24 01:11 J -25271899.62 -25271899.45 -25271899.26 0.0273 0.0086  
 Mercury -73904-07-22 00:13 J -25271810.58 -25271810.49 -25271810.39 0.0274 0.0235  
 Earth -73902-11-20 06:56 J -25270959.31 -25270959.21 -25270959.09 0.0283 0.0254  
 Moon -73902-11-20 07:40 J -25270959.26 -25270959.18 -25270959.07 0.0283 0.0264 \*  
 Moon -73901-12-03 13:25 J -25270580.17 -25270579.94 -25270579.70 0.0288 0.0119  
 Earth -73901-12-03 16:18 J -25270580.05 -25270579.82 -25270579.58 0.0288 0.0104 \*

Mars -73900-05-13 14:52 J -25270419.12 -25270418.88 -25270418.62 0.0289 0.0154  
 Moon -73900-12-18 07:40 J -25270200.43 -25270200.18 -25270199.94 0.0292 0.0046  
 Earth -73900-12-18 11:16 J -25270200.27 -25270200.03 -25270199.78 0.0292 0.0063 \*  
 Moon -73898-01-02 11:30 J -25269820.18 -25269820.02 -25269819.86 0.0296 0.0217  
 Earth -73898-01-02 13:25 J -25269820.08 -25269819.94 -25269819.78 0.0296 0.0234 \*  
 Venus -73893-03-17 04:04 J -25267919.52 -25267919.33 -25267919.13 0.0298 0.0099  
 Mercury -73891-03-09 08:23 J -25267197.22 -25267197.15 -25267197.08 0.0292 0.0244  
 Mercury -73891-06-05 19:54 J -25267108.78 -25267108.67 -25267108.55 0.0291 0.0123  
 Mercury -73891-09-02 07:40 J -25267020.31 -25267020.18 -25267020.05 0.0290 0.0003  
 Mercury -73891-11-29 19:11 J -25266931.82 -25266931.70 -25266931.58 0.0289 0.0117  
 Mercury -73890-02-26 06:42 J -25266843.29 -25266843.22 -25266843.15 0.0288 0.0235  
 Earth -73888-05-21 23:16 J -25266027.67 -25266027.53 -25266027.37 0.0278 0.0218  
 Moon -73888-05-21 23:59 J -25266027.63 -25266027.50 -25266027.35 0.0278 0.0226 \*  
 Moon -73887-06-02 21:35 J -25265650.83 -25265650.60 -25265650.37 0.0274 0.0079  
 Earth -73887-06-03 00:56 J -25265650.68 -25265650.46 -25265650.23 0.0274 0.0086 \*  
 Mars -73886-05-12 21:06 J -25265306.92 -25265306.62 -25265306.33 0.0270 0.0011  
 Moon -73886-06-14 18:28 J -25265273.96 -25265273.73 -25265273.50 0.0270 0.0057  
 Earth -73886-06-14 19:11 J -25265273.93 -25265273.70 -25265273.46 0.0270 0.0042 \*  
 Earth -73885-06-25 07:40 J -25264897.36 -25264897.18 -25264896.98 0.0267 0.0162  
 Moon -73885-06-25 11:01 J -25264897.21 -25264897.04 -25264896.85 0.0267 0.0175 \*  
 Venus -73878-04-07 18:13 J -25262419.93 -25262419.74 -25262419.54 0.0263 0.0118  
 Venus -73878-11-22 22:18 J -25262190.63 -25262190.57 -25262190.51 0.0264 0.0253  
 Mercury -73875-03-17 03:35 J -25261345.43 -25261345.35 -25261345.26 0.0271 0.0243  
 Mercury -73875-06-14 02:37 J -25261256.57 -25261256.39 -25261256.21 0.0272 0.0096  
 Mercury -73875-09-11 01:25 J -25261167.62 -25261167.44 -25261167.25 0.0273 0.0053  
 Mercury -73875-12-09 00:28 J -25261078.60 -25261078.48 -25261078.35 0.0273 0.0203  
 Earth -73872-11-27 19:25 J -25259993.89 -25259993.69 -25259993.49 0.0286 0.0168  
 Moon -73872-11-27 22:18 J -25259993.76 -25259993.57 -25259993.38 0.0286 0.0182 \*  
 Earth -73871-12-12 10:04 J -25259614.33 -25259614.08 -25259613.83 0.0290 0.0008  
 Moon -73871-12-12 13:25 J -25259614.19 -25259613.94 -25259613.68 0.0290 0.0023 \*



Mars -73870-07-04 17:59 J -25259410.03 -25259409.75 -25259409.47 0.0293 0.0082  
 Earth -73870-12-27 09:06 J -25259234.32 -25259234.12 -25259233.91 0.0294 0.0163  
 Moon -73870-12-27 10:32 J -25259234.28 -25259234.06 -25259233.84 0.0294 0.0147 \*  
 Venus -73864-09-27 11:30 J -25257133.18 -25257133.02 -25257132.85 0.0298 0.0174  
 Mercury -73862-07-27 11:01 J -25256465.08 -25256465.04 -25256465.00 0.0291 0.0275  
 Mercury -73862-10-23 22:47 J -25256376.66 -25256376.55 -25256376.44 0.0290 0.0154  
 Mercury -73861-01-20 10:18 J -25256288.20 -25256288.07 -25256287.94 0.0289 0.0034  
 Mercury -73861-04-17 21:49 J -25256199.71 -25256199.59 -25256199.47 0.0288 0.0085  
 Mercury -73861-07-15 09:20 J -25256111.20 -25256111.11 -25256111.02 0.0287 0.0203  
 Earth -73859-05-16 22:32 J -25255440.57 -25255440.56 -25255440.52 0.0279 0.0278  
 Earth -73858-05-29 03:49 J -25255063.53 -25255063.34 -25255063.13 0.0275 0.0146  
 Moon -73858-05-29 07:11 J -25255063.40 -25255063.20 -25255063.00 0.0275 0.0147 \*  
 Earth -73857-06-09 01:11 J -25254686.68 -25254686.45 -25254686.20 0.0271 0.0016  
 Moon -73857-06-09 02:23 J -25254686.65 -25254686.40 -25254686.15 0.0271 0.0003 \*  
 Moon -73856-06-20 12:13 J -25254310.19 -25254309.99 -25254309.76 0.0268 0.0125  
 Earth -73856-06-20 15:49 J -25254310.05 -25254309.84 -25254309.61 0.0268 0.0110 \*  
 Mars -73856-06-29 23:59 J -25254300.71 -25254300.50 -25254300.26 0.0268 0.0174  
 Moon -73855-07-02 00:13 J -25253933.59 -25253933.49 -25253933.36 0.0265 0.0231  
 Earth -73855-07-02 01:40 J -25253933.54 -25253933.43 -25253933.29 0.0265 0.0226 \*  
 Venus -73849-10-17 21:06 J -25251633.82 -25251633.62 -25251633.41 0.0263 0.0072  
 Mercury -73846-11-01 00:28 J -25250524.63 -25250524.48 -25250524.31 0.0271 0.0142  
 Mercury -73845-01-28 23:30 J -25250435.71 -25250435.52 -25250435.32 0.0272 0.0009  
 Mercury -73845-04-26 22:32 J -25250346.71 -25250346.56 -25250346.40 0.0273 0.0156  
 Moon -73843-11-21 15:49 J -25249407.95 -25249407.84 -25249407.72 0.0284 0.0251  
 Earth -73843-11-21 18:56 J -25249407.83 -25249407.71 -25249407.56 0.0284 0.0238 \*  
 Moon -73842-12-06 02:23 J -25249028.63 -25249028.40 -25249028.17 0.0288 0.0099  
 Earth -73842-12-06 05:30 J -25249028.50 -25249028.27 -25249028.02 0.0288 0.0084 \*  
 Moon -73841-12-20 00:56 J -25248648.70 -25248648.46 -25248648.23 0.0292 0.0069  
 Earth -73841-12-20 01:25 J -25248648.68 -25248648.44 -25248648.20 0.0292 0.0083 \*  
 Earth -73839-01-04 04:32 J -25248268.43 -25248268.31 -25248268.18 0.0296 0.0254

Moon -73839-01-04 06:56 J -25248268.35 -25248268.21 -25248268.07 0.0296 0.0239 \*  
 Venus -73835-08-22 22:32 J -25246576.65 -25246576.56 -25246576.46 0.0300 0.0264  
 Venus -73834-04-09 19:54 J -25246346.77 -25246346.67 -25246346.56 0.0298 0.0252  
 Mercury -73832-03-12 01:40 J -25245644.53 -25245644.43 -25245644.33 0.0291 0.0181  
 Mercury -73832-06-08 13:25 J -25245556.07 -25245555.94 -25245555.82 0.0290 0.0060  
 Mercury -73832-09-05 00:56 J -25245467.59 -25245467.46 -25245467.33 0.0289 0.0060  
 Mercury -73832-12-02 12:28 J -25245379.08 -25245378.98 -25245378.88 0.0288 0.0178  
 Moon -73829-05-23 06:42 J -25244476.37 -25244476.22 -25244476.06 0.0277 0.0208  
 Earth -73829-05-23 10:04 J -25244476.24 -25244476.08 -25244475.91 0.0277 0.0201 \*  
 Moon -73828-06-04 08:52 J -25244099.36 -25244099.13 -25244098.91 0.0273 0.0063  
 Earth -73828-06-04 10:32 J -25244099.29 -25244099.06 -25244098.83 0.0273 0.0069 \*  
 Mars -73828-08-19 03:35 J -25244023.58 -25244023.35 -25244023.12 0.0272 0.0167  
 Earth -73827-06-16 03:35 J -25243722.58 -25243722.35 -25243722.11 0.0270 0.0059  
 Moon -73827-06-16 06:56 J -25243722.44 -25243722.21 -25243721.98 0.0270 0.0074 \*  
 Earth -73826-06-27 15:20 J -25243346.03 -25243345.86 -25243345.68 0.0266 0.0178  
 Moon -73826-06-27 17:30 J -25243345.94 -25243345.77 -25243345.59 0.0266 0.0188 \*  
 Venus -73819-04-30 03:20 J -25240847.57 -25240847.36 -25240847.14 0.0263 0.0012  
 Mercury -73816-03-20 00:28 J -25239792.63 -25239792.48 -25239792.34 0.0271 0.0176  
 Mercury -73816-06-16 23:16 J -25239703.72 -25239703.53 -25239703.34 0.0272 0.0029  
 Mercury -73816-09-13 22:18 J -25239614.74 -25239614.57 -25239614.40 0.0273 0.0121  
 Mercury -73816-12-11 21:06 J -25239525.63 -25239525.62 -25239525.59 0.0274 0.0272  
 Earth -73813-11-29 06:28 J -25238442.44 -25238442.23 -25238442.02 0.0287 0.0151  
 Moon -73813-11-29 09:35 J -25238442.30 -25238442.10 -25238441.88 0.0287 0.0166 \*  
 Mars -73812-10-08 01:40 J -25238129.69 -25238129.43 -25238129.16 0.0290 0.0126  
 Earth -73812-12-13 22:18 J -25238062.82 -25238062.57 -25238062.32 0.0291 0.0013  
 Moon -73812-12-13 22:47 J -25238062.82 -25238062.55 -25238062.29 0.0291 0.0005 \*  
 Moon -73811-12-28 19:25 J -25237682.88 -25237682.69 -25237682.47 0.0295 0.0169  
 Earth -73811-12-28 22:32 J -25237682.75 -25237682.56 -25237682.36 0.0295 0.0184 \*  
 Venus -73805-03-04 05:59 J -25235790.41 -25235790.25 -25235790.09 0.0299 0.0190  
 Mercury -73803-07-30 04:04 J -25234912.41 -25234912.33 -25234912.24 0.0291 0.0214

Mercury -73803-10-26 15:49 J -25234823.96 -25234823.84 -25234823.72 0.0290 0.0093

Mercury -73802-01-23 03:20 J -25234735.49 -25234735.36 -25234735.23 0.0289 0.0028

Mercury -73802-04-21 14:52 J -25234646.99 -25234646.88 -25234646.77 0.0288 0.0146

Mercury -73802-07-19 02:23 J -25234558.45 -25234558.40 -25234558.35 0.0287 0.0262

Earth -73800-05-18 08:37 J -25233889.21 -25233889.14 -25233889.04 0.0279 0.0261

Moon -73800-05-18 12:13 J -25233889.03 -25233888.99 -25233888.94 0.0279 0.0272

Earth -73799-05-30 12:42 J -25233512.17 -25233511.97 -25233511.75 0.0275 0.0129

Moon -73799-05-30 15:20 J -25233512.08 -25233511.86 -25233511.64 0.0275 0.0129 \*

Moon -73798-06-11 06:13 J -25233135.48 -25233135.24 -25233134.99 0.0271 0.0015

Earth -73798-06-11 09:06 J -25233135.36 -25233135.12 -25233134.88 0.0271 0.0005 \*

Mars -73798-10-06 23:30 J -25233017.81 -25233017.52 -25233017.22 0.0270 0.0017

Moon -73797-06-21 20:37 J -25232758.83 -25232758.64 -25232758.43 0.0267 0.0139

Earth -73797-06-21 22:47 J -25232758.75 -25232758.55 -25232758.33 0.0267 0.0125 \*

Earth -73796-07-03 07:54 J -25232382.26 -25232382.17 -25232382.06 0.0265 0.0240

Moon -73796-07-03 10:32 J -25232382.15 -25232382.06 -25232381.96 0.0265 0.0242 \*

Venus -73790-11-10 05:16 J -25230061.49 -25230061.28 -25230061.06 0.0263 0.0032

Mercury -73787-08-06 21:35 J -25229060.69 -25229060.60 -25229060.48 0.0271 0.0226

Mercury -73787-11-03 20:37 J -25228971.82 -25228971.64 -25228971.45 0.0272 0.0079

Mercury -73786-01-31 19:40 J -25228882.86 -25228882.68 -25228882.49 0.0273 0.0071

Mercury -73786-04-30 18:42 J -25228793.83 -25228793.72 -25228793.61 0.0273 0.0221

Moon -73784-11-23 00:13 J -25227856.61 -25227856.49 -25227856.34 0.0284 0.0238

Earth -73784-11-23 02:52 J -25227856.52 -25227856.38 -25227856.21 0.0284 0.0223 \*

Earth -73783-12-07 14:37 J -25227477.13 -25227476.89 -25227476.65 0.0289 0.0067

Moon -73783-12-07 14:52 J -25227477.11 -25227476.88 -25227476.64 0.0289 0.0083 \*

Mars -73782-11-28 14:52 J -25227121.15 -25227120.88 -25227120.61 0.0293 0.0113

Earth -73782-12-22 11:16 J -25227097.26 -25227097.03 -25227096.79 0.0293 0.0102

Moon -73782-12-22 14:23 J -25227097.13 -25227096.90 -25227096.67 0.0293 0.0087 \*

Earth -73780-01-05 15:06 J -25226716.96 -25226716.87 -25226716.77 0.0297 0.0273

Moon -73780-01-05 18:42 J -25226716.83 -25226716.72 -25226716.59 0.0297 0.0257 \*

Venus -73776-09-14 12:13 J -25225004.18 -25225003.99 -25225003.80 0.0299 0.0120

Mercury -73774-12-17 06:42 J -25224180.28 -25224180.22 -25224180.15 0.0292 0.0246

Mercury -73773-03-14 18:28 J -25224091.85 -25224091.73 -25224091.61 0.0291 0.0124

Mercury -73773-06-11 05:59 J -25224003.38 -25224003.25 -25224003.12 0.0290 0.0005

Mercury -73773-09-07 17:30 J -25223914.89 -25223914.77 -25223914.65 0.0289 0.0116

Mercury -73773-12-05 05:01 J -25223826.36 -25223826.29 -25223826.21 0.0288 0.0234

Moon -73770-05-25 14:37 J -25222925.05 -25222924.89 -25222924.71 0.0277 0.0189

Earth -73770-05-25 17:16 J -25222924.95 -25222924.78 -25222924.60 0.0277 0.0184 \*

Earth -73769-06-05 16:47 J -25222548.03 -25222547.80 -25222547.56 0.0273 0.0053

Moon -73769-06-05 19:11 J -25222547.93 -25222547.70 -25222547.47 0.0273 0.0044 \*

Earth -73768-06-17 09:20 J -25222171.34 -25222171.11 -25222170.88 0.0269 0.0074

Moon -73768-06-17 11:30 J -25222171.24 -25222171.02 -25222170.78 0.0269 0.0090 \*

Mars -73768-11-24 08:08 J -25222011.34 -25222011.16 -25222010.95 0.0268 0.0202

Moon -73767-06-28 17:44 J -25221794.92 -25221794.76 -25221794.60 0.0266 0.0198

Earth -73767-06-28 20:23 J -25221794.82 -25221794.65 -25221794.48 0.0266 0.0192 \*

Venus -73760-05-22 10:47 J -25219275.26 -25219275.05 -25219274.85 0.0263 0.0089

Mercury -73758-12-24 21:06 J -25218328.66 -25218328.62 -25218328.58 0.0270 0.0263

Mercury -73757-03-22 19:54 J -25218239.84 -25218239.67 -25218239.50 0.0271 0.0116

Mercury -73757-06-19 18:42 J -25218150.90 -25218150.72 -25218150.52 0.0272 0.0033

Mercury -73757-09-16 17:30 J -25218061.90 -25218061.77 -25218061.62 0.0273 0.0183

Earth -73755-11-17 05:44 J -25217270.26 -25217270.26 -25217270.25 0.0282 0.0282

Moon -73754-12-01 10:47 J -25216891.26 -25216891.05 -25216890.82 0.0287 0.0151

Earth -73754-12-01 12:13 J -25216891.20 -25216890.99 -25216890.76 0.0287 0.0135 \*

Moon -73753-12-15 01:40 J -25216511.68 -25216511.43 -25216511.17 0.0291 0.0014

Earth -73753-12-15 05:16 J -25216511.53 -25216511.28 -25216511.03 0.0291 0.0030 \*

Moon -73752-12-30 02:52 J -25216131.56 -25216131.38 -25216131.18 0.0295 0.0188

Earth -73752-12-30 05:59 J -25216131.42 -25216131.25 -25216131.05 0.0295 0.0203 \*

Venus -73746-03-27 18:13 J -25214217.94 -25214217.74 -25214217.54 0.0299 0.0051

Mercury -73744-05-05 08:52 J -25213448.16 -25213448.13 -25213448.09 0.0292 0.0281

Mercury -73744-08-01 20:37 J -25213359.75 -25213359.64 -25213359.53 0.0291 0.0160

Mercury -73744-10-29 08:23 J -25213271.28 -25213271.15 -25213271.03 0.0290 0.0040

Mercury -73743-01-25 19:54 J -25213182.80 -25213182.67 -25213182.55 0.0289 0.0081  
 Mercury -73743-04-24 07:25 J -25213094.29 -25213094.19 -25213094.10 0.0288 0.0199  
 Earth -73741-05-19 15:20 J -25212337.95 -25212337.86 -25212337.73 0.0278 0.0246  
 Moon -73741-05-19 17:59 J -25212337.84 -25212337.75 -25212337.64 0.0278 0.0253 \*  
 Moon -73740-05-31 16:47 J -25211961.03 -25211960.80 -25211960.57 0.0274 0.0108  
 Earth -73740-05-31 18:56 J -25211960.93 -25211960.71 -25211960.49 0.0274 0.0113 \*  
 Mars -73739-01-13 00:28 J -25211734.72 -25211734.48 -25211734.23 0.0272 0.0143  
 Moon -73739-06-12 11:30 J -25211584.26 -25211584.02 -25211583.79 0.0270 0.0030  
 Earth -73739-06-12 14:23 J -25211584.14 -25211583.90 -25211583.66 0.0270 0.0018 \*  
 Earth -73738-06-24 03:06 J -25211207.57 -25211207.37 -25211207.16 0.0267 0.0140  
 Moon -73738-06-24 05:44 J -25211207.46 -25211207.26 -25211207.07 0.0267 0.0150 \*  
 Earth -73737-07-04 11:44 J -25210831.07 -25210831.01 -25210830.94 0.0264 0.0253  
 Moon -73737-07-04 14:52 J -25210830.95 -25210830.88 -25210830.80 0.0264 0.0251 \*  
 Venus -73731-04-17 08:52 J -25208718.22 -25208718.13 -25208718.03 0.0262 0.0235  
 Venus -73731-12-02 11:44 J -25208489.20 -25208489.01 -25208488.82 0.0263 0.0129  
 Mercury -73728-08-09 16:32 J -25207507.95 -25207507.81 -25207507.65 0.0271 0.0170  
 Mercury -73728-11-06 15:35 J -25207419.04 -25207418.85 -25207418.66 0.0272 0.0022  
 Mercury -73727-02-03 14:23 J -25207330.06 -25207329.90 -25207329.73 0.0273 0.0127  
 Earth -73725-11-24 05:44 J -25206305.43 -25206305.26 -25206305.09 0.0284 0.0208  
 Moon -73725-11-24 07:54 J -25206305.31 -25206305.17 -25206305.01 0.0284 0.0225 \*  
 Earth -73724-12-08 17:59 J -25205925.99 -25205925.75 -25205925.50 0.0289 0.0051  
 Moon -73724-12-08 22:04 J -25205925.82 -25205925.58 -25205925.34 0.0289 0.0068 \*  
 Mars -73723-03-03 05:59 J -25205841.53 -25205841.25 -25205840.98 0.0290 0.0106  
 Earth -73723-12-23 15:35 J -25205546.07 -25205545.85 -25205545.62 0.0293 0.0119  
 Moon -73723-12-23 18:28 J -25205545.96 -25205545.73 -25205545.48 0.0293 0.0104 \*  
 Moon -73721-01-07 20:08 J -25205165.74 -25205165.66 -25205165.56 0.0297 0.0276  
 Earth -73721-01-07 20:23 J -25205165.70 -25205165.65 -25205165.60 0.0297 0.0289 \*  
 Venus -73717-10-06 22:32 J -25203431.76 -25203431.56 -25203431.35 0.0299 0.0015  
 Mercury -73715-12-19 22:47 J -25202627.64 -25202627.55 -25202627.45 0.0292 0.0195  
 Mercury -73714-03-18 10:32 J -25202539.19 -25202539.06 -25202538.94 0.0291 0.0074

Mercury -73714-06-14 22:04 J -25202450.71 -25202450.58 -25202450.45 0.0290 0.0047

Mercury -73714-09-11 09:35 J -25202362.20 -25202362.10 -25202361.99 0.0289 0.0166

Mercury -73714-12-08 21:06 J -25202273.64 -25202273.62 -25202273.60 0.0288 0.0284

Earth -73711-05-26 21:20 J -25201373.79 -25201373.61 -25201373.41 0.0277 0.0169

Moon -73711-05-26 23:30 J -25201373.70 -25201373.52 -25201373.33 0.0277 0.0169 \*

Earth -73710-06-07 20:37 J -25200996.88 -25200996.64 -25200996.40 0.0273 0.0037

Moon -73710-06-07 23:59 J -25200996.74 -25200996.50 -25200996.26 0.0273 0.0027 \*

Mars -73709-03-02 00:42 J -25200728.76 -25200728.47 -25200728.18 0.0270 0.0038

Moon -73709-06-18 10:32 J -25200620.29 -25200620.06 -25200619.83 0.0269 0.0102

Earth -73709-06-18 12:13 J -25200620.21 -25200619.99 -25200619.75 0.0269 0.0090 \*

Moon -73708-06-29 19:25 J -25200243.82 -25200243.69 -25200243.53 0.0266 0.0210

Earth -73708-06-29 22:32 J -25200243.70 -25200243.56 -25200243.39 0.0266 0.0207 \*

Venus -73702-10-28 13:25 J -25197932.09 -25197931.94 -25197931.78 0.0262 0.0181

Venus -73701-06-13 16:32 J -25197702.97 -25197702.81 -25197702.66 0.0263 0.0184

Mercury -73699-12-27 15:20 J -25196775.97 -25196775.86 -25196775.73 0.0270 0.0209

Mercury -73698-03-26 14:23 J -25196687.08 -25196686.90 -25196686.71 0.0271 0.0062

Mercury -73698-06-23 13:25 J -25196598.12 -25196597.94 -25196597.76 0.0272 0.0087

Mercury -73698-09-20 11:59 J -25196509.08 -25196509.00 -25196508.89 0.0273 0.0237

Earth -73696-11-18 07:11 J -25195719.27 -25195719.20 -25195719.12 0.0283 0.0269

Moon -73695-12-02 10:18 J -25195340.28 -25195340.07 -25195339.84 0.0287 0.0137

Earth -73695-12-02 14:08 J -25195340.13 -25195339.91 -25195339.67 0.0287 0.0121 \*

Moon -73694-12-17 05:30 J -25194960.51 -25194960.27 -25194960.03 0.0292 0.0030

Earth -73694-12-17 07:54 J -25194960.42 -25194960.17 -25194959.93 0.0292 0.0046 \*

Mars -73693-04-22 23:30 J -25194832.78 -25194832.52 -25194832.25 0.0293 0.0125

Earth -73693-12-31 09:20 J -25194580.27 -25194580.11 -25194579.93 0.0296 0.0219

Moon -73693-12-31 10:04 J -25194580.25 -25194580.08 -25194579.90 0.0296 0.0206 \*

Venus -73687-04-19 03:35 J -25192645.54 -25192645.35 -25192645.14 0.0299 0.0077

Mercury -73685-05-08 00:42 J -25191895.54 -25191895.47 -25191895.39 0.0292 0.0234

Mercury -73685-08-04 12:28 J -25191807.10 -25191806.98 -25191806.86 0.0291 0.0112

Mercury -73685-10-31 23:59 J -25191718.63 -25191718.50 -25191718.37 0.0290 0.0010

Mercury -73684-01-28 11:30 J -25191630.13 -25191630.02 -25191629.90 0.0289 0.0128

Mercury -73684-04-26 23:01 J -25191541.60 -25191541.54 -25191541.47 0.0288 0.0246

Moon -73682-05-21 16:18 J -25190786.94 -25190786.82 -25190786.67 0.0278 0.0234

Earth -73682-05-21 18:42 J -25190786.85 -25190786.72 -25190786.58 0.0278 0.0231 \*

Moon -73681-06-01 17:59 J -25190409.97 -25190409.75 -25190409.52 0.0274 0.0090

Earth -73681-06-01 21:20 J -25190409.83 -25190409.61 -25190409.38 0.0274 0.0098 \*

Earth -73680-06-13 16:04 J -25190033.06 -25190032.83 -25190032.59 0.0270 0.0032

Moon -73680-06-13 17:16 J -25190033.01 -25190032.78 -25190032.55 0.0270 0.0046 \*

Mars -73679-04-19 19:54 J -25189722.82 -25189722.67 -25189722.49 0.0267 0.0220

Earth -73679-06-25 04:32 J -25189656.50 -25189656.31 -25189656.10 0.0267 0.0154

Moon -73679-06-25 07:54 J -25189656.36 -25189656.17 -25189655.97 0.0267 0.0162 \*

Moon -73678-07-06 11:01 J -25189280.08 -25189280.04 -25189279.98 0.0264 0.0258

Venus -73672-05-09 13:54 J -25187146.10 -25187145.92 -25187145.74 0.0262 0.0143

Venus -73672-12-24 16:32 J -25186916.92 -25186916.81 -25186916.69 0.0263 0.0222

Mercury -73669-05-15 11:44 J -25186044.04 -25186044.01 -25186043.97 0.0270 0.0265

Mercury -73669-08-12 10:32 J -25185955.23 -25185955.06 -25185954.88 0.0271 0.0119

Mercury -73669-11-09 09:20 J -25185866.30 -25185866.11 -25185865.91 0.0272 0.0029

Mercury -73668-02-06 08:08 J -25185777.30 -25185777.16 -25185777.01 0.0273 0.0178

Earth -73666-11-26 04:18 J -25184754.49 -25184754.32 -25184754.13 0.0285 0.0195

Moon -73666-11-26 07:54 J -25184754.33 -25184754.17 -25184753.99 0.0285 0.0211 \*

Earth -73665-12-09 17:30 J -25184375.02 -25184374.77 -25184374.52 0.0289 0.0036

Moon -73665-12-09 18:42 J -25184374.98 -25184374.72 -25184374.47 0.0289 0.0052 \*

Moon -73664-12-24 13:40 J -25183995.16 -25183994.93 -25183994.69 0.0293 0.0120

Earth -73664-12-24 15:20 J -25183995.08 -25183994.86 -25183994.63 0.0293 0.0134 \*

Moon -73662-01-08 16:47 J -25183614.84 -25183614.80 -25183614.76 0.0297 0.0293

Venus -73658-10-30 05:59 J -25181859.43 -25181859.25 -25181859.06 0.0299 0.0132

Mercury -73656-09-25 02:23 J -25181163.44 -25181163.40 -25181163.36 0.0293 0.0275

Mercury -73656-12-22 13:54 J -25181075.02 -25181074.92 -25181074.80 0.0292 0.0153

Mercury -73655-03-21 01:40 J -25180986.56 -25180986.43 -25180986.30 0.0291 0.0031

Mercury -73655-06-17 13:25 J -25180898.07 -25180897.94 -25180897.82 0.0290 0.0090

Mercury -73655-09-14 00:56 J -25180809.55 -25180809.46 -25180809.37 0.0289 0.0209  
 Earth -73652-05-27 22:04 J -25179822.77 -25179822.58 -25179822.38 0.0277 0.0154  
 Moon -73652-05-28 01:25 J -25179822.64 -25179822.44 -25179822.23 0.0277 0.0151 \*  
 Mars -73651-06-08 16:18 J -25179446.07 -25179445.82 -25179445.56 0.0272 0.0130  
 Moon -73651-06-08 20:08 J -25179445.90 -25179445.66 -25179445.41 0.0272 0.0011 \*  
 Earth -73651-06-08 21:06 J -25179445.86 -25179445.62 -25179445.38 0.0272 0.0022 \*  
 Moon -73650-06-20 09:06 J -25179069.33 -25179069.12 -25179068.90 0.0269 0.0117  
 Earth -73650-06-20 12:28 J -25179069.19 -25179068.98 -25179068.75 0.0269 0.0104 \*  
 Earth -73649-06-30 22:32 J -25178692.68 -25178692.56 -25178692.42 0.0265 0.0220  
 Moon -73649-06-30 23:59 J -25178692.63 -25178692.50 -25178692.37 0.0265 0.0219 \*  
 Venus -73643-11-19 17:44 J -25176359.96 -25176359.76 -25176359.55 0.0262 0.0091  
 Mercury -73640-12-30 09:06 J -25175223.27 -25175223.12 -25175222.96 0.0270 0.0161  
 Mercury -73639-03-29 07:54 J -25175134.36 -25175134.17 -25175133.97 0.0271 0.0015  
 Mercury -73639-06-26 06:42 J -25175045.38 -25175045.22 -25175045.05 0.0272 0.0135  
 Moon -73637-11-19 01:25 J -25174168.50 -25174168.44 -25174168.37 0.0283 0.0273  
 Earth -73637-11-19 04:32 J -25174168.41 -25174168.31 -25174168.21 0.0283 0.0257 \*  
 Earth -73636-12-03 11:59 J -25173789.23 -25173789.00 -25173788.77 0.0287 0.0107  
 Moon -73636-12-03 11:59 J -25173789.22 -25173789.00 -25173788.78 0.0287 0.0122 \*  
 Mars -73635-07-27 02:37 J -25173553.65 -25173553.39 -25173553.10 0.0290 0.0104  
 Earth -73635-12-18 05:30 J -25173409.51 -25173409.27 -25173409.02 0.0292 0.0060  
 Moon -73635-12-18 08:08 J -25173409.40 -25173409.16 -25173408.92 0.0292 0.0046 \*  
 Earth -73633-01-02 07:25 J -25173029.33 -25173029.19 -25173029.03 0.0296 0.0233  
 Moon -73633-01-02 11:30 J -25173029.19 -25173029.02 -25173028.86 0.0296 0.0219 \*  
 Venus -73628-05-11 10:18 J -25171073.22 -25171073.07 -25171072.91 0.0299 0.0193  
 Mercury -73626-05-11 15:49 J -25170342.93 -25170342.84 -25170342.74 0.0292 0.0192  
 Mercury -73626-08-08 03:35 J -25170254.48 -25170254.35 -25170254.23 0.0291 0.0071  
 Mercury -73626-11-04 15:06 J -25170166.00 -25170165.87 -25170165.74 0.0290 0.0051  
 Mercury -73625-02-01 02:37 J -25170077.49 -25170077.39 -25170077.28 0.0289 0.0170  
 Mercury -73625-04-29 14:08 J -25169988.91 -25169988.91 -25169988.90 0.0288 0.0288  
 Moon -73623-05-22 15:20 J -25169235.99 -25169235.86 -25169235.70 0.0278 0.0219



Earth -73623-05-22 18:28 J -25169235.86 -25169235.73 -25169235.56 0.0278 0.0218 \*  
 Earth -73622-06-03 21:20 J -25168858.84 -25168858.61 -25168858.38 0.0274 0.0083  
 Moon -73622-06-03 22:04 J -25168858.80 -25168858.58 -25168858.35 0.0274 0.0073 \*  
 Earth -73621-06-14 15:49 J -25168482.08 -25168481.84 -25168481.61 0.0270 0.0046  
 Moon -73621-06-14 19:11 J -25168481.93 -25168481.70 -25168481.46 0.0270 0.0062 \*  
 Mars -73621-07-26 05:59 J -25168440.53 -25168440.25 -25168439.95 0.0269 0.0054  
 Moon -73620-06-26 03:06 J -25168105.55 -25168105.37 -25168105.17 0.0266 0.0171  
 Earth -73620-06-26 03:49 J -25168105.52 -25168105.34 -25168105.14 0.0266 0.0167 \*  
 Venus -73613-05-31 17:44 J -25165573.97 -25165573.76 -25165573.54 0.0262 0.0055  
 Mercury -73610-05-19 05:01 J -25164491.39 -25164491.29 -25164491.17 0.0270 0.0219  
 Mercury -73610-08-16 03:49 J -25164402.52 -25164402.34 -25164402.15 0.0271 0.0073  
 Mercury -73610-11-13 02:37 J -25164313.57 -25164313.39 -25164313.20 0.0272 0.0076  
 Mercury -73609-02-10 01:40 J -25164224.54 -25164224.43 -25164224.33 0.0273 0.0224  
 Moon -73607-11-26 23:59 J -25163203.68 -25163203.50 -25163203.30 0.0285 0.0195  
 Earth -73607-11-27 00:56 J -25163203.64 -25163203.46 -25163203.26 0.0285 0.0182 \*  
 Moon -73606-12-11 10:32 J -25162824.31 -25162824.06 -25162823.80 0.0289 0.0035  
 Earth -73606-12-11 14:23 J -25162824.15 -25162823.90 -25162823.65 0.0289 0.0023 \*  
 Mars -73605-09-15 05:16 J -25162545.53 -25162545.28 -25162545.01 0.0293 0.0130  
 Moon -73605-12-25 08:52 J -25162444.35 -25162444.13 -25162443.91 0.0294 0.0137  
 Earth -73605-12-25 12:28 J -25162444.19 -25162443.98 -25162443.76 0.0294 0.0149 \*  
 Venus -73599-04-05 12:56 J -25160517.02 -25160516.96 -25160516.88 0.0301 0.0281  
 Venus -73599-11-21 11:30 J -25160287.13 -25160287.02 -25160286.89 0.0299 0.0244  
 Mercury -73597-09-27 17:01 J -25159610.86 -25159610.79 -25159610.71 0.0293 0.0237  
 Mercury -73597-12-25 04:47 J -25159522.42 -25159522.30 -25159522.18 0.0292 0.0114  
 Mercury -73596-03-23 16:32 J -25159433.94 -25159433.81 -25159433.68 0.0291 0.0008  
 Mercury -73596-06-20 04:04 J -25159345.44 -25159345.33 -25159345.21 0.0290 0.0129  
 Mercury -73596-09-16 15:49 J -25159256.91 -25159256.84 -25159256.78 0.0289 0.0247  
 Earth -73594-05-17 12:28 J -25158649.01 -25158648.98 -25158648.92 0.0281 0.0276  
 Moon -73593-05-28 19:25 J -25158271.90 -25158271.69 -25158271.47 0.0277 0.0133  
 Earth -73593-05-28 20:23 J -25158271.85 -25158271.65 -25158271.44 0.0277 0.0141 \*

Moon -73592-06-09 15:20 J -25157895.10 -25157894.86 -25157894.62 0.0272 0.0008  
 Earth -73592-06-09 18:56 J -25157894.95 -25157894.71 -25157894.46 0.0272 0.0010 \*  
 Earth -73591-06-21 10:18 J -25157518.28 -25157518.07 -25157517.84 0.0269 0.0118  
 Moon -73591-06-21 10:18 J -25157518.27 -25157518.07 -25157517.86 0.0269 0.0128 \*  
 Mars -73591-09-13 03:49 J -25157434.48 -25157434.34 -25157434.18 0.0268 0.0230  
 Earth -73590-07-02 20:23 J -25157141.76 -25157141.65 -25157141.53 0.0265 0.0233  
 Moon -73590-07-02 23:59 J -25157141.62 -25157141.50 -25157141.38 0.0265 0.0228 \*  
 Venus -73584-12-11 21:20 J -25154787.83 -25154787.61 -25154787.39 0.0262 0.0004  
 Mercury -73581-10-05 03:20 J -25153759.39 -25153759.36 -25153759.30 0.0269 0.0261  
 Mercury -73580-01-02 02:23 J -25153670.57 -25153670.40 -25153670.23 0.0270 0.0115  
 Mercury -73580-04-01 01:11 J -25153581.64 -25153581.45 -25153581.26 0.0271 0.0032  
 Mercury -73580-06-28 23:44 J -25153492.65 -25153492.51 -25153492.36 0.0272 0.0180  
 Earth -73578-11-20 23:59 J -25152617.61 -25152617.50 -25152617.36 0.0282 0.0245  
 Moon -73578-11-21 01:11 J -25152617.53 -25152617.45 -25152617.35 0.0282 0.0260 \*  
 Earth -73577-12-04 07:40 J -25152238.41 -25152238.18 -25152237.94 0.0287 0.0094  
 Moon -73577-12-04 11:16 J -25152238.25 -25152238.03 -25152237.79 0.0287 0.0107 \*  
 Earth -73576-12-19 01:25 J -25151858.68 -25151858.44 -25151858.20 0.0292 0.0074  
 Moon -73576-12-19 04:32 J -25151858.55 -25151858.31 -25151858.05 0.0292 0.0063 \*  
 Earth -73574-01-03 03:20 J -25151478.49 -25151478.36 -25151478.22 0.0296 0.0246  
 Moon -73574-01-03 04:32 J -25151478.47 -25151478.31 -25151478.16 0.0296 0.0237 \*  
 Venus -73570-10-16 16:47 J -25149730.93 -25149730.80 -25149730.66 0.0301 0.0223  
 Mercury -73567-02-14 18:28 J -25148878.76 -25148878.73 -25148878.69 0.0293 0.0280  
 Mercury -73567-05-14 06:13 J -25148790.34 -25148790.24 -25148790.12 0.0292 0.0158  
 Mercury -73567-08-10 17:59 J -25148701.87 -25148701.75 -25148701.62 0.0291 0.0036  
 Mercury -73567-11-07 05:44 J -25148613.38 -25148613.26 -25148613.14 0.0290 0.0086  
 Mercury -73566-02-03 17:16 J -25148524.87 -25148524.78 -25148524.69 0.0289 0.0206  
 Earth -73564-05-23 15:49 J -25147685.00 -25147684.84 -25147684.68 0.0278 0.0204  
 Moon -73564-05-23 16:04 J -25147684.98 -25147684.83 -25147684.67 0.0278 0.0203 \*  
 Earth -73563-06-04 18:28 J -25147307.96 -25147307.73 -25147307.50 0.0274 0.0070  
 Moon -73563-06-04 22:04 J -25147307.81 -25147307.58 -25147307.34 0.0274 0.0056 \*

Mars -73563-11-01 15:20 J -25147158.11 -25147157.86 -25147157.59 0.0272 0.0119  
 Earth -73562-06-16 12:56 J -25146931.19 -25146930.96 -25146930.72 0.0270 0.0060  
 Moon -73562-06-16 13:25 J -25146931.17 -25146930.94 -25146930.70 0.0270 0.0073 \*  
 Moon -73561-06-26 21:49 J -25146554.76 -25146554.59 -25146554.41 0.0266 0.0181  
 Earth -73561-06-27 01:25 J -25146554.62 -25146554.44 -25146554.26 0.0266 0.0180 \*  
 Venus -73554-06-23 21:06 J -25144001.83 -25144001.62 -25144001.40 0.0262 0.0032  
 Mercury -73551-05-21 22:04 J -25142938.72 -25142938.58 -25142938.42 0.0270 0.0174  
 Mercury -73551-08-18 20:52 J -25142849.82 -25142849.63 -25142849.43 0.0271 0.0028  
 Mercury -73551-11-15 19:40 J -25142760.85 -25142760.68 -25142760.51 0.0272 0.0120  
 Mercury -73550-02-12 18:13 J -25142671.76 -25142671.74 -25142671.70 0.0273 0.0269  
 Moon -73548-11-27 16:18 J -25141653.01 -25141652.82 -25141652.62 0.0285 0.0181  
 Earth -73548-11-27 19:54 J -25141652.86 -25141652.67 -25141652.46 0.0285 0.0169 \*  
 Moon -73547-12-12 06:42 J -25141273.46 -25141273.22 -25141272.97 0.0289 0.0018  
 Earth -73547-12-12 08:52 J -25141273.38 -25141273.13 -25141272.88 0.0289 0.0009 \*  
 Mars -73547-12-19 01:11 J -25141266.72 -25141266.45 -25141266.17 0.0289 0.0105  
 Earth -73546-12-27 06:56 J -25140893.41 -25140893.21 -25140892.99 0.0294 0.0162  
 Moon -73546-12-27 07:40 J -25140893.38 -25140893.18 -25140892.97 0.0294 0.0156 \*  
 Venus -73540-04-27 16:47 J -25138944.96 -25138944.80 -25138944.63 0.0301 0.0177  
 Mercury -73538-10-01 07:25 J -25138058.28 -25138058.19 -25138058.10 0.0293 0.0204  
 Mercury -73538-12-28 19:11 J -25137969.83 -25137969.70 -25137969.58 0.0292 0.0081  
 Mercury -73537-03-26 06:56 J -25137881.34 -25137881.21 -25137881.08 0.0291 0.0042  
 Mercury -73537-06-22 18:28 J -25137792.83 -25137792.73 -25137792.62 0.0290 0.0162  
 Mercury -73537-09-19 05:59 J -25137704.27 -25137704.25 -25137704.22 0.0289 0.0281  
 Earth -73535-05-18 08:23 J -25137098.22 -25137098.15 -25137098.07 0.0281 0.0264  
 Moon -73535-05-18 08:08 J -25137098.22 -25137098.16 -25137098.08 0.0281 0.0267 \*  
 Moon -73534-05-30 12:42 J -25136721.18 -25136720.97 -25136720.75 0.0277 0.0117  
 Earth -73534-05-30 16:18 J -25136721.03 -25136720.82 -25136720.61 0.0277 0.0128 \*  
 Moon -73533-06-10 14:37 J -25136344.12 -25136343.89 -25136343.66 0.0272 0.0021  
 Earth -73533-06-10 15:06 J -25136344.11 -25136343.87 -25136343.63 0.0272 0.0006 \*  
 Mars -73533-12-19 06:13 J -25136152.52 -25136152.24 -25136151.94 0.0270 0.0058

Earth -73532-06-22 06:28 J -25135967.43 -25135967.23 -25135967.01 0.0269 0.0131  
 Moon -73532-06-22 09:49 J -25135967.28 -25135967.09 -25135966.88 0.0269 0.0141 \*  
 Moon -73531-07-03 17:01 J -25135590.90 -25135590.79 -25135590.68 0.0265 0.0237  
 Earth -73531-07-03 16:32 J -25135590.89 -25135590.81 -25135590.71 0.0265 0.0245 \*  
 Venus -73524-01-03 00:28 J -25133215.69 -25133215.48 -25133215.27 0.0262 0.0081  
 Mercury -73522-10-08 20:23 J -25132206.75 -25132206.65 -25132206.53 0.0269 0.0216  
 Mercury -73521-01-05 19:11 J -25132117.88 -25132117.70 -25132117.51 0.0270 0.0071  
 Mercury -73521-04-03 17:59 J -25132028.93 -25132028.75 -25132028.56 0.0271 0.0076  
 Mercury -73521-07-01 16:32 J -25131939.90 -25131939.81 -25131939.69 0.0272 0.0224  
 Earth -73519-11-21 19:25 J -25131066.83 -25131066.69 -25131066.55 0.0282 0.0233  
 Moon -73519-11-21 23:01 J -25131066.65 -25131066.54 -25131066.41 0.0282 0.0248 \*  
 Earth -73518-12-06 02:52 J -25130687.62 -25130687.38 -25130687.13 0.0287 0.0081  
 Moon -73518-12-06 04:32 J -25130687.56 -25130687.31 -25130687.06 0.0287 0.0089 \*  
 Moon -73517-12-19 18:42 J -25130307.96 -25130307.72 -25130307.46 0.0292 0.0083  
 Earth -73517-12-19 20:37 J -25130307.87 -25130307.64 -25130307.40 0.0292 0.0088 \*  
 Mars -73516-02-07 15:49 J -25130258.10 -25130257.84 -25130257.57 0.0293 0.0126  
 Moon -73515-01-03 18:42 J -25129927.83 -25129927.72 -25129927.58 0.0296 0.0256  
 Earth -73515-01-03 22:18 J -25129927.67 -25129927.57 -25129927.44 0.0296 0.0261 \*  
 Venus -73511-11-07 21:06 J -25128158.81 -25128158.62 -25128158.43 0.0301 0.0117  
 Mercury -73508-02-17 08:52 J -25127326.19 -25127326.13 -25127326.05 0.0293 0.0246  
 Mercury -73508-05-16 20:52 J -25127237.75 -25127237.63 -25127237.52 0.0292 0.0123  
 Mercury -73508-08-13 08:23 J -25127149.28 -25127149.15 -25127149.02 0.0291 0.0009  
 Mercury -73508-11-09 20:08 J -25127060.78 -25127060.66 -25127060.54 0.0290 0.0121  
 Mercury -73507-02-06 07:40 J -25126972.25 -25126972.18 -25126972.11 0.0289 0.0241  
 Earth -73505-05-24 11:44 J -25126134.17 -25126134.01 -25126133.83 0.0278 0.0192  
 Moon -73505-05-24 15:20 J -25126134.03 -25126133.86 -25126133.68 0.0278 0.0188 \*  
 Earth -73504-06-05 14:37 J -25125757.12 -25125756.89 -25125756.65 0.0274 0.0057  
 Moon -73504-06-05 15:06 J -25125757.11 -25125756.87 -25125756.62 0.0274 0.0043 \*  
 Moon -73503-06-17 05:44 J -25125380.49 -25125380.26 -25125380.03 0.0270 0.0085  
 Earth -73503-06-17 09:20 J -25125380.34 -25125380.11 -25125379.87 0.0270 0.0073 \*

Mars -73502-02-05 23:30 J -25125146.64 -25125146.52 -25125146.38 0.0267 0.0240  
 Moon -73502-06-28 20:37 J -25125003.80 -25125003.64 -25125003.48 0.0266 0.0193  
 Earth -73502-06-28 21:49 J -25125003.76 -25125003.59 -25125003.43 0.0266 0.0193 \*  
 Venus -73496-11-28 22:32 J -25122658.62 -25122658.56 -25122658.46 0.0261 0.0242  
 Venus -73495-07-16 00:28 J -25122429.67 -25122429.48 -25122429.28 0.0262 0.0118  
 Mercury -73492-05-24 15:20 J -25121386.02 -25121385.86 -25121385.68 0.0270 0.0128  
 Mercury -73492-08-21 14:08 J -25121297.10 -25121296.91 -25121296.72 0.0271 0.0019  
 Mercury -73492-11-18 12:42 J -25121208.11 -25121207.97 -25121207.81 0.0272 0.0166  
 Moon -73489-11-28 14:52 J -25120102.07 -25120101.88 -25120101.68 0.0285 0.0166  
 Earth -73489-11-28 15:35 J -25120102.05 -25120101.85 -25120101.63 0.0285 0.0156 \*  
 Earth -73488-12-13 04:18 J -25119722.57 -25119722.32 -25119722.07 0.0289 0.0005  
 Moon -73488-12-13 06:56 J -25119722.45 -25119722.21 -25119721.97 0.0289 0.0002 \*  
 Earth -73487-12-28 02:23 J -25119342.60 -25119342.40 -25119342.20 0.0294 0.0176  
 Moon -73487-12-28 06:13 J -25119342.44 -25119342.24 -25119342.04 0.0294 0.0175 \*  
 Venus -73481-05-19 20:23 J -25117372.85 -25117372.65 -25117372.45 0.0300 0.0074  
 Mercury -73479-10-03 21:35 J -25116505.71 -25116505.60 -25116505.50 0.0293 0.0172  
 Mercury -73479-12-31 09:20 J -25116417.24 -25116417.11 -25116416.98 0.0292 0.0049  
 Mercury -73478-03-29 21:06 J -25116328.75 -25116328.62 -25116328.50 0.0291 0.0074  
 Mercury -73478-06-26 08:37 J -25116240.23 -25116240.14 -25116240.04 0.0290 0.0194  
 Moon -73476-05-18 23:16 J -25115547.63 -25115547.53 -25115547.42 0.0281 0.0252  
 Earth -73476-05-19 02:52 J -25115547.48 -25115547.38 -25115547.27 0.0281 0.0254 \*  
 Moon -73475-05-31 10:04 J -25115170.29 -25115170.08 -25115169.86 0.0277 0.0105  
 Earth -73475-05-31 11:01 J -25115170.26 -25115170.04 -25115169.82 0.0277 0.0116 \*  
 Mars -73474-03-27 10:04 J -25114870.33 -25114870.08 -25114869.81 0.0273 0.0120  
 Earth -73474-06-12 10:04 J -25114793.32 -25114793.08 -25114792.84 0.0272 0.0018  
 Moon -73474-06-12 13:40 J -25114793.17 -25114792.93 -25114792.70 0.0272 0.0032 \*  
 Earth -73473-06-23 01:40 J -25114416.62 -25114416.43 -25114416.22 0.0269 0.0144  
 Moon -73473-06-23 03:06 J -25114416.56 -25114416.37 -25114416.15 0.0269 0.0149 \*  
 Moon -73472-07-04 08:52 J -25114040.21 -25114040.13 -25114040.04 0.0265 0.0247  
 Earth -73472-07-04 12:13 J -25114040.04 -25114039.99 -25114039.93 0.0265 0.0258 \*

Venus -73466-06-11 02:08 J -25111872.55 -25111872.41 -25111872.27 0.0261 0.0193

Venus -73465-01-26 03:49 J -25111643.50 -25111643.34 -25111643.17 0.0262 0.0167

Mercury -73463-10-11 13:54 J -25110654.06 -25110653.92 -25110653.77 0.0269 0.0170

Mercury -73462-01-08 12:42 J -25110565.16 -25110564.97 -25110564.78 0.0270 0.0025

Mercury -73462-04-07 11:16 J -25110476.20 -25110476.03 -25110475.86 0.0271 0.0122

Mercury -73462-07-05 09:49 J -25110387.10 -25110387.09 -25110387.06 0.0272 0.0270

Earth -73460-11-22 15:35 J -25109516.00 -25109515.85 -25109515.69 0.0282 0.0221

Moon -73460-11-22 16:18 J -25109515.97 -25109515.82 -25109515.68 0.0282 0.0232 \*

Moon -73459-12-06 19:54 J -25109136.92 -25109136.67 -25109136.42 0.0287 0.0071

Earth -73459-12-06 22:47 J -25109136.79 -25109136.55 -25109136.30 0.0287 0.0067 \*

Mars -73458-05-13 15:06 J -25108979.14 -25108978.87 -25108978.59 0.0289 0.0105

Moon -73458-12-21 12:42 J -25108757.20 -25108756.97 -25108756.73 0.0292 0.0102

Earth -73458-12-21 16:18 J -25108757.05 -25108756.82 -25108756.58 0.0292 0.0102 \*

Moon -73456-01-04 16:04 J -25108376.91 -25108376.83 -25108376.74 0.0296 0.0276

Earth -73456-01-04 18:13 J -25108376.83 -25108376.74 -25108376.65 0.0296 0.0273 \*

Venus -73452-11-30 00:56 J -25106586.66 -25106586.46 -25106586.25 0.0301 0.0013

Mercury -73449-02-20 23:16 J -25105773.62 -25105773.53 -25105773.44 0.0293 0.0213

Mercury -73449-05-19 11:01 J -25105685.16 -25105685.04 -25105684.92 0.0292 0.0090

Mercury -73449-08-15 22:47 J -25105596.68 -25105596.55 -25105596.42 0.0291 0.0033

Mercury -73449-11-12 10:18 J -25105508.18 -25105508.07 -25105507.96 0.0290 0.0154

Mercury -73448-02-08 22:04 J -25105419.62 -25105419.58 -25105419.54 0.0289 0.0273

Earth -73446-05-26 06:56 J -25104583.38 -25104583.21 -25104583.02 0.0278 0.0180

Moon -73446-05-26 08:08 J -25104583.34 -25104583.16 -25104582.95 0.0278 0.0173 \*

Moon -73445-06-06 06:42 J -25104206.46 -25104206.22 -25104205.97 0.0274 0.0030

Earth -73445-06-06 10:04 J -25104206.31 -25104206.08 -25104205.84 0.0274 0.0044 \*

Mars -73444-05-14 01:40 J -25103864.71 -25103864.43 -25103864.14 0.0270 0.0066

Moon -73444-06-18 03:35 J -25103829.56 -25103829.35 -25103829.12 0.0270 0.0095

Earth -73444-06-18 05:01 J -25103829.51 -25103829.29 -25103829.06 0.0270 0.0086 \*

Earth -73443-06-29 17:44 J -25103452.91 -25103452.76 -25103452.61 0.0266 0.0206

Moon -73443-06-29 20:52 J -25103452.78 -25103452.63 -25103452.48 0.0266 0.0202 \*

Venus -73437-12-21 02:37 J -25101086.56 -25101086.39 -25101086.21 0.0261 0.0155  
 Venus -73436-08-07 04:18 J -25100857.45 -25100857.32 -25100857.18 0.0262 0.0206  
 Mercury -73433-02-28 10:18 J -25099922.16 -25099922.07 -25099921.96 0.0269 0.0224  
 Mercury -73433-05-27 09:06 J -25099833.30 -25099833.12 -25099832.94 0.0270 0.0079  
 Mercury -73433-08-24 07:40 J -25099744.36 -25099744.18 -25099743.99 0.0271 0.0067  
 Mercury -73433-11-21 06:13 J -25099655.35 -25099655.24 -25099655.12 0.0272 0.0214  
 Earth -73430-11-30 12:42 J -25098551.18 -25098550.97 -25098550.75 0.0285 0.0142  
 Moon -73430-11-30 15:49 J -25098551.04 -25098550.84 -25098550.62 0.0285 0.0150 \*  
 Earth -73429-12-14 01:11 J -25098171.70 -25098171.45 -25098171.20 0.0289 0.0021  
 Moon -73429-12-14 04:32 J -25098171.57 -25098171.31 -25098171.06 0.0289 0.0019 \*  
 Mars -73428-07-02 17:59 J -25097971.01 -25097970.75 -25097970.49 0.0292 0.0124  
 Earth -73428-12-28 22:47 J -25097791.72 -25097791.55 -25097791.35 0.0294 0.0192  
 Moon -73428-12-28 23:30 J -25097791.70 -25097791.52 -25097791.32 0.0294 0.0195 \*  
 Venus -73422-06-12 00:56 J -25095800.67 -25095800.46 -25095800.25 0.0300 0.0032  
 Mercury -73420-07-09 23:59 J -25095041.55 -25095041.50 -25095041.44 0.0294 0.0263  
 Mercury -73420-10-06 11:44 J -25094953.12 -25094953.01 -25094952.89 0.0293 0.0139  
 Mercury -73419-01-02 23:44 J -25094864.64 -25094864.51 -25094864.38 0.0292 0.0016  
 Mercury -73419-04-01 11:16 J -25094776.15 -25094776.03 -25094775.91 0.0291 0.0108  
 Mercury -73419-06-28 23:01 J -25094687.62 -25094687.54 -25094687.46 0.0290 0.0228  
 Moon -73417-05-19 21:06 J -25093996.73 -25093996.62 -25093996.49 0.0281 0.0238  
 Earth -73417-05-19 22:18 J -25093996.68 -25093996.57 -25093996.44 0.0281 0.0242 \*  
 Earth -73416-06-01 06:28 J -25093619.45 -25093619.23 -25093619.00 0.0277 0.0104  
 Moon -73416-06-01 09:35 J -25093619.32 -25093619.10 -25093618.88 0.0277 0.0090 \*  
 Earth -73415-06-13 05:59 J -25093242.49 -25093242.25 -25093242.01 0.0272 0.0031  
 Moon -73415-06-13 07:25 J -25093242.43 -25093242.19 -25093241.94 0.0272 0.0043 \*  
 Moon -73414-06-24 18:42 J -25092865.91 -25092865.72 -25092865.52 0.0269 0.0156  
 Earth -73414-06-24 22:04 J -25092865.77 -25092865.58 -25092865.39 0.0269 0.0157 \*  
 Mars -73414-07-01 20:08 J -25092858.77 -25092858.66 -25092858.52 0.0269 0.0242  
 Moon -73413-07-05 06:13 J -25092489.27 -25092489.24 -25092489.18 0.0265 0.0261  
 Venus -73407-07-03 06:13 J -25090300.44 -25090300.24 -25090300.04 0.0261 0.0106

Venus -73406-02-17 07:54 J -25090071.20 -25090071.17 -25090071.11 0.0262 0.0256  
 Mercury -73404-07-17 09:20 J -25089190.14 -25089190.11 -25089190.07 0.0268 0.0263  
 Mercury -73404-10-14 07:54 J -25089101.34 -25089101.17 -25089101.00 0.0269 0.0120  
 Mercury -73403-01-11 06:28 J -25089012.42 -25089012.23 -25089012.04 0.0270 0.0026  
 Mercury -73403-04-10 05:16 J -25088923.43 -25088923.28 -25088923.14 0.0271 0.0172  
 Moon -73401-11-23 10:32 J -25087965.21 -25087965.06 -25087964.89 0.0282 0.0217  
 Earth -73401-11-23 14:23 J -25087965.06 -25087964.90 -25087964.73 0.0282 0.0208 \*  
 Moon -73400-12-07 18:42 J -25087585.96 -25087585.72 -25087585.48 0.0287 0.0056  
 Earth -73400-12-07 21:35 J -25087585.84 -25087585.60 -25087585.35 0.0287 0.0052 \*  
 Earth -73399-12-22 14:52 J -25087206.10 -25087205.88 -25087205.64 0.0292 0.0117  
 Moon -73399-12-22 15:06 J -25087206.08 -25087205.87 -25087205.64 0.0292 0.0120 \*  
 Earth -73397-01-06 16:32 J -25086825.85 -25086825.81 -25086825.75 0.0296 0.0289  
 Moon -73397-01-06 19:40 J -25086825.68 -25086825.68 -25086825.68 0.0296 0.0296  
 Venus -73393-12-22 06:13 J -25085014.43 -25085014.24 -25085014.04 0.0300 0.0096  
 Mercury -73390-02-23 13:40 J -25084221.03 -25084220.93 -25084220.82 0.0293 0.0178  
 Mercury -73390-05-23 01:25 J -25084132.56 -25084132.44 -25084132.31 0.0292 0.0055  
 Mercury -73390-08-19 13:11 J -25084044.07 -25084043.95 -25084043.82 0.0291 0.0069  
 Mercury -73390-11-16 00:56 J -25083955.56 -25083955.46 -25083955.36 0.0290 0.0189  
 Moon -73387-05-27 00:28 J -25083032.68 -25083032.48 -25083032.28 0.0279 0.0155  
 Earth -73387-05-27 03:35 J -25083032.54 -25083032.35 -25083032.16 0.0279 0.0168 \*  
 Moon -73386-06-08 04:47 J -25082655.53 -25082655.30 -25082655.07 0.0274 0.0017  
 Earth -73386-06-08 06:42 J -25082655.46 -25082655.22 -25082654.98 0.0274 0.0031 \*  
 Mars -73386-08-20 08:23 J -25082582.41 -25082582.15 -25082581.88 0.0273 0.0110  
 Earth -73385-06-19 01:40 J -25082278.64 -25082278.43 -25082278.20 0.0270 0.0100  
 Moon -73385-06-19 04:47 J -25082278.51 -25082278.30 -25082278.07 0.0270 0.0104 \*  
 Earth -73384-06-30 14:37 J -25081902.02 -25081901.89 -25081901.74 0.0266 0.0219  
 Moon -73384-06-30 17:16 J -25081901.93 -25081901.78 -25081901.63 0.0266 0.0211 \*  
 Venus -73377-01-13 07:54 J -25079514.38 -25079514.17 -25079513.96 0.0261 0.0064  
 Mercury -73374-03-03 05:01 J -25078369.43 -25078369.29 -25078369.14 0.0269 0.0170  
 Mercury -73374-05-31 03:49 J -25078280.54 -25078280.34 -25078280.15 0.0270 0.0026



Mercury -73374-08-28 02:08 J -25078191.57 -25078191.41 -25078191.23 0.0271 0.0121  
 Mercury -73374-11-25 00:42 J -25078102.49 -25078102.47 -25078102.43 0.0272 0.0268  
 Earth -73372-11-17 11:59 J -25077379.05 -25077379.00 -25077378.94 0.0280 0.0271  
 Earth -73371-12-01 13:25 J -25077000.16 -25076999.94 -25076999.71 0.0285 0.0126  
 Moon -73371-12-01 16:04 J -25077000.05 -25076999.83 -25076999.59 0.0285 0.0132 \*  
 Mars -73370-10-06 01:54 J -25076691.69 -25076691.42 -25076691.13 0.0289 0.0104  
 Moon -73370-12-16 00:56 J -25076620.72 -25076620.46 -25076620.20 0.0289 0.0039  
 Earth -73370-12-16 01:54 J -25076620.67 -25076620.42 -25076620.17 0.0289 0.0037 \*  
 Moon -73369-12-29 19:54 J -25076240.83 -25076240.67 -25076240.49 0.0294 0.0217  
 Earth -73369-12-29 23:30 J -25076240.69 -25076240.52 -25076240.34 0.0294 0.0208 \*  
 Venus -73363-07-04 06:42 J -25074228.39 -25074228.22 -25074228.03 0.0300 0.0144  
 Mercury -73361-07-12 14:37 J -25073488.97 -25073488.89 -25073488.81 0.0294 0.0226  
 Mercury -73361-10-09 02:37 J -25073400.51 -25073400.39 -25073400.27 0.0293 0.0102  
 Mercury -73360-01-05 14:23 J -25073312.03 -25073311.90 -25073311.77 0.0292 0.0023  
 Mercury -73360-04-04 01:54 J -25073223.53 -25073223.42 -25073223.30 0.0291 0.0144  
 Mercury -73360-07-01 13:40 J -25073134.98 -25073134.93 -25073134.88 0.0290 0.0264  
 Earth -73358-05-21 18:56 J -25072445.83 -25072445.71 -25072445.56 0.0281 0.0232  
 Moon -73358-05-21 22:32 J -25072445.70 -25072445.56 -25072445.41 0.0281 0.0221 \*  
 Earth -73357-06-02 03:20 J -25072068.58 -25072068.36 -25072068.13 0.0277 0.0091  
 Moon -73357-06-02 05:59 J -25072068.49 -25072068.25 -25072068.01 0.0277 0.0076 \*  
 Moon -73356-06-14 00:13 J -25071691.73 -25071691.49 -25071691.25 0.0272 0.0052  
 Earth -73356-06-14 03:06 J -25071691.61 -25071691.37 -25071691.13 0.0272 0.0045 \*  
 Mars -73356-10-06 23:01 J -25071576.82 -25071576.54 -25071576.25 0.0271 0.0068  
 Moon -73355-06-25 17:01 J -25071314.97 -25071314.79 -25071314.61 0.0269 0.0166  
 Earth -73355-06-25 19:11 J -25071314.88 -25071314.70 -25071314.51 0.0269 0.0171 \*  
 Venus -73348-07-25 11:30 J -25068728.24 -25068728.02 -25068727.80 0.0261 0.0015  
 Mercury -73345-07-20 04:04 J -25067637.44 -25067637.33 -25067637.20 0.0268 0.0209  
 Mercury -73345-10-17 02:52 J -25067548.57 -25067548.38 -25067548.20 0.0269 0.0064  
 Mercury -73344-01-14 01:25 J -25067459.62 -25067459.44 -25067459.26 0.0270 0.0081  
 Mercury -73344-04-12 23:44 J -25067370.60 -25067370.51 -25067370.39 0.0271 0.0228

Moon -73342-11-25 14:23 J -25066414.06 -25066413.90 -25066413.72 0.0282 0.0200  
 Earth -73342-11-25 16:18 J -25066413.99 -25066413.82 -25066413.62 0.0282 0.0194 \*  
 Earth -73341-12-08 23:59 J -25066034.75 -25066034.50 -25066034.25 0.0287 0.0036  
 Moon -73341-12-09 01:11 J -25066034.69 -25066034.45 -25066034.21 0.0287 0.0037 \*  
 Mars -73340-11-25 23:16 J -25065682.79 -25065682.53 -25065682.27 0.0292 0.0134  
 Earth -73340-12-23 17:16 J -25065655.00 -25065654.78 -25065654.56 0.0292 0.0134  
 Moon -73340-12-23 20:37 J -25065654.85 -25065654.64 -25065654.41 0.0292 0.0140 \*  
 Venus -73333-01-14 13:25 J -25063442.08 -25063441.94 -25063441.79 0.0300 0.0214  
 Mercury -73332-11-29 16:47 J -25062756.85 -25062756.80 -25062756.74 0.0294 0.0263  
 Mercury -73331-02-26 04:47 J -25062668.41 -25062668.30 -25062668.19 0.0293 0.0137  
 Mercury -73331-05-25 16:32 J -25062579.94 -25062579.81 -25062579.68 0.0292 0.0014  
 Mercury -73331-08-22 04:18 J -25062491.44 -25062491.32 -25062491.20 0.0291 0.0109  
 Mercury -73331-11-18 16:04 J -25062402.91 -25062402.83 -25062402.76 0.0290 0.0230  
 Moon -73328-05-27 23:59 J -25061481.69 -25061481.50 -25061481.29 0.0279 0.0140  
 Earth -73328-05-28 02:23 J -25061481.59 -25061481.40 -25061481.19 0.0279 0.0155 \*  
 Earth -73327-06-09 05:44 J -25061104.50 -25061104.26 -25061104.02 0.0274 0.0017  
 Moon -73327-06-09 07:54 J -25061104.40 -25061104.17 -25061103.93 0.0274 0.0004 \*  
 Earth -73326-06-21 00:56 J -25060727.67 -25060727.46 -25060727.24 0.0270 0.0114  
 Moon -73326-06-21 03:35 J -25060727.57 -25060727.35 -25060727.12 0.0270 0.0115 \*  
 Mars -73326-11-25 00:56 J -25060570.53 -25060570.46 -25060570.36 0.0268 0.0257  
 Moon -73325-07-01 11:30 J -25060351.15 -25060351.02 -25060350.87 0.0266 0.0221  
 Earth -73325-07-01 13:54 J -25060351.02 -25060350.92 -25060350.79 0.0266 0.0234 \*  
 Venus -73318-02-04 14:23 J -25057942.11 -25057941.90 -25057941.68 0.0261 0.0033  
 Mercury -73316-12-07 02:09 J -25056905.46 -25056905.41 -25056905.34 0.0268 0.0254  
 Mercury -73315-03-06 00:42 J -25056816.64 -25056816.47 -25056816.29 0.0269 0.0110  
 Mercury -73315-06-02 23:16 J -25056727.72 -25056727.53 -25056727.34 0.0270 0.0036  
 Mercury -73315-08-30 22:04 J -25056638.72 -25056638.58 -25056638.44 0.0271 0.0181  
 Earth -73313-11-18 16:47 J -25055827.89 -25055827.80 -25055827.69 0.0280 0.0257  
 Moon -73313-11-18 18:13 J -25055827.82 -25055827.74 -25055827.65 0.0280 0.0263 \*  
 Moon -73312-12-02 16:47 J -25055449.04 -25055448.80 -25055448.56 0.0285 0.0109

Earth -73312-12-02 18:42 J -25055448.95 -25055448.72 -25055448.48 0.0285 0.0109 \*  
 Moon -73311-12-17 03:35 J -25055069.59 -25055069.35 -25055069.10 0.0290 0.0060  
 Earth -73311-12-17 07:25 J -25055069.44 -25055069.19 -25055068.95 0.0290 0.0056 \*  
 Moon -73309-01-01 02:37 J -25054689.52 -25054689.39 -25054689.24 0.0294 0.0236  
 Earth -73309-01-01 05:01 J -25054689.44 -25054689.29 -25054689.13 0.0294 0.0227 \*  
 Venus -73305-12-08 16:33 J -25052885.90 -25052885.81 -25052885.70 0.0301 0.0260  
 Venus -73304-07-26 15:35 J -25052655.94 -25052655.85 -25052655.75 0.0300 0.0266  
 Mercury -73302-07-16 05:59 J -25051936.35 -25051936.25 -25051936.15 0.0293 0.0183  
 Mercury -73302-10-12 17:45 J -25051847.88 -25051847.76 -25051847.63 0.0292 0.0059  
 Mercury -73301-01-09 05:30 J -25051759.39 -25051759.27 -25051759.14 0.0291 0.0065  
 Mercury -73301-04-06 17:16 J -25051670.88 -25051670.78 -25051670.68 0.0290 0.0186  
 Earth -73299-05-22 19:11 J -25050894.84 -25050894.70 -25050894.54 0.0281 0.0218  
 Moon -73299-05-22 21:35 J -25050894.76 -25050894.60 -25050894.43 0.0281 0.0204 \*  
 Moon -73298-06-04 01:11 J -25050517.69 -25050517.45 -25050517.21 0.0277 0.0061  
 Earth -73298-06-04 03:21 J -25050517.59 -25050517.36 -25050517.13 0.0277 0.0077 \*  
 Mars -73297-01-13 10:47 J -25050294.31 -25050294.05 -25050293.78 0.0274 0.0104  
 Moon -73297-06-14 23:59 J -25050140.73 -25050140.50 -25050140.27 0.0272 0.0066  
 Earth -73297-06-15 02:52 J -25050140.61 -25050140.38 -25050140.15 0.0272 0.0059 \*  
 Earth -73296-06-26 19:11 J -25049763.87 -25049763.70 -25049763.52 0.0269 0.0185  
 Moon -73296-06-26 21:21 J -25049763.78 -25049763.61 -25049763.43 0.0269 0.0177 \*  
 Venus -73289-08-16 18:42 J -25047155.92 -25047155.72 -25047155.51 0.0262 0.0084  
 Mercury -73286-07-24 00:28 J -25046084.64 -25046084.48 -25046084.32 0.0269 0.0146  
 Mercury -73286-10-20 23:01 J -25045995.73 -25045995.54 -25045995.35 0.0269 0.0004  
 Mercury -73285-01-17 21:35 J -25045906.76 -25045906.60 -25045906.44 0.0270 0.0145  
 Earth -73283-11-26 23:30 J -25044862.71 -25044862.52 -25044862.31 0.0283 0.0177  
 Moon -73283-11-27 02:09 J -25044862.59 -25044862.41 -25044862.21 0.0283 0.0180 \*  
 Earth -73282-12-11 07:25 J -25044483.44 -25044483.19 -25044482.94 0.0287 0.0018  
 Moon -73282-12-11 11:30 J -25044483.27 -25044483.02 -25044482.77 0.0287 0.0017 \*  
 Mars -73281-02-29 20:23 J -25044402.93 -25044402.65 -25044402.36 0.0288 0.0083  
 Earth -73281-12-25 00:57 J -25044103.67 -25044103.46 -25044103.24 0.0292 0.0153

Moon -73281-12-25 03:21 J -25044103.58 -25044103.36 -25044103.14 0.0292 0.0158 \*  
 Venus -73275-06-21 00:28 J -25042099.64 -25042099.48 -25042099.32 0.0301 0.0185  
 Mercury -73273-12-02 08:37 J -25041204.23 -25041204.14 -25041204.05 0.0294 0.0215  
 Mercury -73272-02-28 20:23 J -25041115.77 -25041115.65 -25041115.52 0.0293 0.0091  
 Mercury -73272-05-28 08:09 J -25041027.29 -25041027.16 -25041027.03 0.0292 0.0033  
 Mercury -73272-08-24 19:54 J -25040938.78 -25040938.67 -25040938.56 0.0291 0.0155  
 Mercury -73272-11-21 07:25 J -25040850.22 -25040850.19 -25040850.14 0.0290 0.0275  
 Moon -73270-05-17 14:09 J -25040307.97 -25040307.91 -25040307.85 0.0283 0.0272  
 Earth -73270-05-17 16:04 J -25040307.85 -25040307.83 -25040307.80 0.0283 0.0281 \*  
 Earth -73269-05-29 04:18 J -25039930.52 -25039930.32 -25039930.11 0.0278 0.0140  
 Moon -73269-05-29 06:28 J -25039930.43 -25039930.23 -25039930.02 0.0278 0.0124 \*  
 Earth -73268-06-10 07:25 J -25039553.43 -25039553.19 -25039552.95 0.0274 0.0001  
 Moon -73268-06-10 10:47 J -25039553.29 -25039553.05 -25039552.81 0.0274 0.0012 \*  
 Mars -73267-03-02 12:42 J -25039288.24 -25039287.97 -25039287.69 0.0271 0.0088  
 Moon -73267-06-22 00:57 J -25039176.67 -25039176.46 -25039176.24 0.0270 0.0126  
 Earth -73267-06-22 02:52 J -25039176.59 -25039176.38 -25039176.17 0.0270 0.0129 \*  
 Moon -73266-07-03 12:28 J -25038800.08 -25038799.98 -25038799.86 0.0266 0.0234  
 Earth -73266-07-03 15:49 J -25038799.92 -25038799.84 -25038799.75 0.0266 0.0248 \*  
 Venus -73260-07-12 21:35 J -25036598.70 -25036598.60 -25036598.49 0.0261 0.0224  
 Venus -73259-02-26 22:47 J -25036369.72 -25036369.55 -25036369.35 0.0262 0.0136  
 Mercury -73257-12-09 23:01 J -25035352.67 -25035352.54 -25035352.40 0.0269 0.0187  
 Mercury -73256-03-08 21:35 J -25035263.79 -25035263.60 -25035263.41 0.0270 0.0043  
 Mercury -73256-06-05 20:09 J -25035174.83 -25035174.66 -25035174.48 0.0270 0.0103  
 Mercury -73256-09-02 18:57 J -25035085.79 -25035085.71 -25035085.64 0.0271 0.0250  
 Moon -73254-11-20 23:01 J -25034276.65 -25034276.54 -25034276.40 0.0281 0.0243  
 Earth -73254-11-21 02:23 J -25034276.52 -25034276.40 -25034276.26 0.0281 0.0241 \*  
 Moon -73253-12-04 01:11 J -25033897.69 -25033897.45 -25033897.22 0.0285 0.0087  
 Earth -73253-12-04 04:47 J -25033897.53 -25033897.30 -25033897.06 0.0285 0.0090 \*  
 Moon -73252-12-18 16:04 J -25033518.06 -25033517.83 -25033517.60 0.0290 0.0082  
 Earth -73252-12-18 17:30 J -25033518.01 -25033517.77 -25033517.52 0.0290 0.0077 \*

Mars -73251-04-21 12:42 J -25033394.21 -25033393.97 -25033393.71 0.0291 0.0152  
 Earth -73250-01-02 15:35 J -25033137.98 -25033137.85 -25033137.71 0.0294 0.0248  
 Moon -73250-01-02 17:01 J -25033137.89 -25033137.79 -25033137.67 0.0294 0.0259 \*  
 Venus -73245-01-01 04:47 J -25031313.48 -25031313.30 -25031313.11 0.0300 0.0123  
 Mercury -73243-04-21 10:18 J -25030472.13 -25030472.07 -25030472.01 0.0294 0.0256  
 Mercury -73243-07-18 22:04 J -25030383.69 -25030383.58 -25030383.46 0.0293 0.0132  
 Mercury -73243-10-15 09:49 J -25030295.22 -25030295.09 -25030294.96 0.0292 0.0012  
 Mercury -73242-01-11 21:35 J -25030206.72 -25030206.60 -25030206.48 0.0291 0.0114  
 Mercury -73242-04-10 09:21 J -25030118.18 -25030118.11 -25030118.04 0.0290 0.0235  
 Moon -73240-05-23 20:52 J -25029343.80 -25029343.63 -25029343.43 0.0281 0.0189  
 Earth -73240-05-23 23:16 J -25029343.68 -25029343.53 -25029343.35 0.0281 0.0204 \*  
 Mars -73239-04-21 08:37 J -25029011.18 -25029011.14 -25029011.08 0.0277 0.0272  
 Moon -73239-06-05 03:49 J -25028966.58 -25028966.34 -25028966.11 0.0276 0.0047  
 Earth -73239-06-05 07:11 J -25028966.44 -25028966.20 -25028965.97 0.0276 0.0062 \*  
 Earth -73238-06-17 06:13 J -25028589.47 -25028589.24 -25028589.01 0.0272 0.0074  
 Moon -73238-06-17 07:11 J -25028589.42 -25028589.20 -25028588.98 0.0272 0.0079 \*  
 Earth -73237-06-27 22:04 J -25028212.72 -25028212.58 -25028212.41 0.0269 0.0201  
 Moon -73237-06-28 01:25 J -25028212.60 -25028212.44 -25028212.26 0.0269 0.0190 \*  
 Venus -73230-01-23 02:09 J -25025812.57 -25025812.41 -25025812.24 0.0261 0.0172  
 Venus -73230-09-09 04:04 J -25025583.48 -25025583.33 -25025583.18 0.0262 0.0189  
 Mercury -73227-04-28 23:01 J -25024620.64 -25024620.54 -25024620.43 0.0268 0.0220  
 Mercury -73227-07-26 21:35 J -25024531.78 -25024531.60 -25024531.41 0.0269 0.0077  
 Mercury -73227-10-23 20:09 J -25024442.84 -25024442.66 -25024442.47 0.0270 0.0069  
 Mercury -73226-01-20 18:42 J -25024353.83 -25024353.72 -25024353.60 0.0271 0.0216  
 Earth -73224-11-28 11:01 J -25023311.24 -25023311.04 -25023310.83 0.0283 0.0159  
 Moon -73224-11-28 14:37 J -25023311.10 -25023310.89 -25023310.68 0.0283 0.0158 \*  
 Earth -73223-12-12 19:40 J -25022931.93 -25022931.68 -25022931.43 0.0288 0.0003  
 Moon -73223-12-12 20:37 J -25022931.90 -25022931.64 -25022931.38 0.0288 0.0007 \*  
 Moon -73222-12-27 11:45 J -25022552.21 -25022552.01 -25022551.80 0.0292 0.0182  
 Earth -73222-12-27 13:54 J -25022552.12 -25022551.92 -25022551.72 0.0292 0.0174 \*

Venus -73216-07-13 14:09 J -25020527.11 -25020526.91 -25020526.70 0.0301 0.0041  
 Mercury -73214-09-08 13:11 J -25019739.97 -25019739.95 -25019739.92 0.0295 0.0285  
 Mercury -73214-12-06 01:11 J -25019651.56 -25019651.45 -25019651.34 0.0294 0.0160  
 Mercury -73213-03-03 12:57 J -25019563.09 -25019562.96 -25019562.83 0.0293 0.0036  
 Mercury -73213-05-31 00:42 J -25019474.59 -25019474.47 -25019474.35 0.0292 0.0087  
 Mercury -73213-08-27 12:13 J -25019386.07 -25019385.99 -25019385.89 0.0291 0.0209  
 Earth -73211-05-18 22:33 J -25018756.62 -25018756.56 -25018756.47 0.0283 0.0266  
 Moon -73211-05-19 00:28 J -25018756.57 -25018756.48 -25018756.37 0.0283 0.0256 \*  
 Earth -73210-05-31 10:18 J -25018379.29 -25018379.07 -25018378.86 0.0278 0.0123  
 Moon -73210-05-31 13:25 J -25018379.15 -25018378.94 -25018378.71 0.0278 0.0107 \*  
 Mars -73209-06-08 11:16 J -25018005.30 -25018005.03 -25018004.75 0.0274 0.0078  
 Moon -73209-06-11 12:13 J -25018002.24 -25018001.99 -25018001.74 0.0274 0.0025  
 Earth -73209-06-11 12:57 J -25018002.20 -25018001.96 -25018001.72 0.0274 0.0016 \*  
 Moon -73208-06-23 04:18 J -25017625.51 -25017625.32 -25017625.11 0.0270 0.0142  
 Earth -73208-06-23 07:54 J -25017625.37 -25017625.17 -25017624.96 0.0270 0.0146 \*  
 Moon -73207-07-04 21:49 J -25017248.66 -25017248.59 -25017248.51 0.0266 0.0250  
 Earth -73207-07-04 20:52 J -25017248.65 -25017248.63 -25017248.59 0.0266 0.0264 \*  
 Venus -73201-08-04 07:40 J -25015026.36 -25015026.18 -25015025.97 0.0261 0.0117  
 Venus -73200-03-21 09:35 J -25014797.16 -25014797.10 -25014797.02 0.0262 0.0246  
 Mercury -73198-09-15 22:47 J -25013888.60 -25013888.55 -25013888.49 0.0268 0.0256  
 Mercury -73198-12-13 21:06 J -25013799.79 -25013799.62 -25013799.44 0.0269 0.0112  
 Mercury -73197-03-11 19:54 J -25013710.86 -25013710.67 -25013710.48 0.0270 0.0033  
 Mercury -73197-06-08 18:13 J -25013621.87 -25013621.74 -25013621.59 0.0271 0.0180  
 Moon -73195-11-22 14:09 J -25012725.06 -25012724.91 -25012724.77 0.0281 0.0224  
 Earth -73195-11-22 16:47 J -25012724.94 -25012724.80 -25012724.63 0.0281 0.0222 \*  
 Earth -73194-12-06 20:23 J -25012345.90 -25012345.65 -25012345.41 0.0286 0.0068  
 Moon -73194-12-06 20:23 J -25012345.89 -25012345.65 -25012345.42 0.0286 0.0064 \*  
 Mars -73193-07-26 02:37 J -25012113.68 -25012113.39 -25012113.09 0.0288 0.0057  
 Earth -73193-12-20 09:35 J -25011966.33 -25011966.10 -25011965.86 0.0290 0.0100  
 Moon -73193-12-20 12:13 J -25011966.21 -25011965.99 -25011965.75 0.0290 0.0109 \*

Earth -73191-01-04 08:09 J -25011586.25 -25011586.16 -25011586.07 0.0294 0.0272  
 Moon -73191-01-04 11:45 J -25011586.07 -25011586.01 -25011585.93 0.0294 0.0282 \*  
 Venus -73186-01-23 20:09 J -25009740.86 -25009740.66 -25009740.45 0.0300 0.0029  
 Mercury -73184-04-24 03:06 J -25008919.46 -25008919.37 -25008919.27 0.0293 0.0198  
 Mercury -73184-07-21 14:52 J -25008831.00 -25008830.88 -25008830.75 0.0292 0.0074  
 Mercury -73184-10-18 02:37 J -25008742.51 -25008742.39 -25008742.26 0.0292 0.0050  
 Mercury -73183-01-14 14:23 J -25008654.00 -25008653.90 -25008653.79 0.0291 0.0171  
 Moon -73181-05-25 04:04 J -25007792.51 -25007792.33 -25007792.14 0.0280 0.0173  
 Earth -73181-05-25 07:11 J -25007792.37 -25007792.20 -25007792.02 0.0280 0.0188 \*  
 Earth -73180-06-06 14:09 J -25007415.15 -25007414.91 -25007414.68 0.0276 0.0045  
 Moon -73180-06-06 14:37 J -25007415.11 -25007414.89 -25007414.65 0.0276 0.0033 \*  
 Earth -73179-06-18 12:28 J -25007038.20 -25007037.98 -25007037.75 0.0272 0.0091  
 Moon -73179-06-18 16:04 J -25007038.05 -25007037.83 -25007037.60 0.0272 0.0095 \*  
 Mars -73179-07-27 09:06 J -25006999.38 -25006999.12 -25006998.85 0.0272 0.0108  
 Moon -73178-06-30 04:04 J -25006661.49 -25006661.33 -25006661.16 0.0268 0.0205  
 Earth -73178-06-30 04:18 J -25006661.45 -25006661.32 -25006661.17 0.0268 0.0216 \*  
 Venus -73171-02-14 12:57 J -25004240.17 -25004239.96 -25004239.75 0.0261 0.0063  
 Mercury -73168-05-01 21:06 J -25003067.77 -25003067.62 -25003067.45 0.0269 0.0146  
 Mercury -73168-07-29 19:54 J -25002978.86 -25002978.67 -25002978.48 0.0270 0.0002  
 Mercury -73168-10-26 18:28 J -25002889.89 -25002889.73 -25002889.57 0.0270 0.0146  
 Moon -73165-11-30 02:09 J -25001759.63 -25001759.41 -25001759.17 0.0283 0.0137  
 Earth -73165-11-30 02:52 J -25001759.60 -25001759.38 -25001759.16 0.0283 0.0139 \*  
 Moon -73164-12-14 08:37 J -25001380.39 -25001380.14 -25001379.88 0.0288 0.0033  
 Earth -73164-12-14 12:13 J -25001380.24 -25001379.99 -25001379.74 0.0288 0.0025 \*  
 Mars -73163-09-16 09:06 J -25001104.33 -25001104.12 -25001103.89 0.0291 0.0190  
 Moon -73163-12-29 03:06 J -25001000.53 -25001000.37 -25001000.19 0.0293 0.0208  
 Earth -73163-12-29 06:57 J -25001000.38 -25001000.21 -25001000.02 0.0293 0.0198 \*  
 Venus -73157-08-05 06:28 J -24998954.42 -24998954.23 -24998954.04 0.0300 0.0115  
 Mercury -73155-09-11 06:28 J -24998187.31 -24998187.23 -24998187.15 0.0294 0.0223  
 Mercury -73155-12-08 18:13 J -24998098.86 -24998098.74 -24998098.61 0.0293 0.0099

Mercury -73154-03-07 05:59 J -24998010.37 -24998010.25 -24998010.12 0.0292 0.0027

Mercury -73154-06-03 17:45 J -24997921.87 -24997921.76 -24997921.65 0.0291 0.0147

Mercury -73154-08-31 05:16 J -24997833.32 -24997833.28 -24997833.22 0.0290 0.0268

Earth -73152-05-20 09:06 J -24997205.23 -24997205.12 -24997205.01 0.0282 0.0249

Moon -73152-05-20 12:42 J -24997205.10 -24997204.97 -24997204.85 0.0282 0.0238 \*

Moon -73151-06-01 19:11 J -24996827.93 -24996827.70 -24996827.46 0.0278 0.0091

Earth -73151-06-01 19:40 J -24996827.90 -24996827.68 -24996827.46 0.0278 0.0106 \*

Mars -73151-09-15 18:57 J -24996721.82 -24996721.71 -24996721.55 0.0277 0.0242

Moon -73150-06-13 17:45 J -24996451.00 -24996450.76 -24996450.52 0.0273 0.0041

Earth -73150-06-13 21:35 J -24996450.84 -24996450.60 -24996450.36 0.0273 0.0033 \*

Moon -73149-06-24 15:21 J -24996074.04 -24996073.86 -24996073.67 0.0270 0.0158

Earth -73149-06-24 16:04 J -24996074.02 -24996073.83 -24996073.63 0.0270 0.0163 \*

Moon -73148-07-06 08:09 J -24995697.16 -24995697.16 -24995697.12 0.0266 0.0266

Venus -73142-08-27 19:40 J -24993453.90 -24993453.68 -24993453.46 0.0261 0.0002

Mercury -73139-09-18 21:35 J -24992335.74 -24992335.60 -24992335.45 0.0269 0.0177

Mercury -73139-12-16 20:09 J -24992246.85 -24992246.66 -24992246.47 0.0270 0.0032

Mercury -73138-03-15 18:42 J -24992157.89 -24992157.72 -24992157.54 0.0270 0.0114

Mercury -73138-06-12 17:16 J -24992068.82 -24992068.78 -24992068.72 0.0271 0.0261

Earth -73136-11-24 10:18 J -24991173.23 -24991173.07 -24991172.88 0.0282 0.0203

Moon -73136-11-24 11:01 J -24991173.20 -24991173.04 -24991172.88 0.0282 0.0205 \*

Mars -73135-10-30 16:04 J -24990832.95 -24990832.83 -24990832.69 0.0286 0.0258

Earth -73135-12-08 14:52 J -24990794.12 -24990793.88 -24990793.63 0.0286 0.0046

Moon -73135-12-08 18:28 J -24990793.97 -24990793.73 -24990793.48 0.0286 0.0039 \*

Earth -73134-12-23 05:16 J -24990414.50 -24990414.28 -24990414.05 0.0291 0.0124

Moon -73134-12-23 08:52 J -24990414.35 -24990414.13 -24990413.90 0.0291 0.0134 \*

Venus -73127-02-15 14:09 J -24988168.07 -24988167.91 -24988167.75 0.0300 0.0190

Mercury -73125-01-29 08:52 J -24987455.18 -24987455.13 -24987455.06 0.0294 0.0256

Mercury -73125-04-26 20:52 J -24987366.75 -24987366.63 -24987366.52 0.0293 0.0132

Mercury -73125-07-24 08:37 J -24987278.27 -24987278.14 -24987278.01 0.0292 0.0010

Mercury -73125-10-20 20:09 J -24987189.77 -24987189.66 -24987189.54 0.0291 0.0114



Mercury -73124-01-17 07:54 J -24987101.24 -24987101.17 -24987101.09 0.0290 0.0235  
 Moon -73122-05-27 18:28 J -24986240.91 -24986240.73 -24986240.53 0.0280 0.0157  
 Earth -73122-05-27 18:42 J -24986240.90 -24986240.72 -24986240.52 0.0280 0.0170 \*  
 Earth -73121-06-08 00:28 J -24985863.71 -24985863.48 -24985863.24 0.0275 0.0028  
 Moon -73121-06-08 04:18 J -24985863.56 -24985863.32 -24985863.08 0.0275 0.0016 \*  
 Mars -73121-11-02 16:04 J -24985716.11 -24985715.83 -24985715.54 0.0274 0.0052  
 Earth -73120-06-19 22:18 J -24985486.79 -24985486.57 -24985486.34 0.0271 0.0108  
 Moon -73120-06-19 23:30 J -24985486.75 -24985486.52 -24985486.29 0.0271 0.0109 \*  
 Moon -73119-07-01 10:04 J -24985110.21 -24985110.08 -24985109.93 0.0268 0.0220  
 Earth -73119-07-01 13:25 J -24985110.04 -24985109.94 -24985109.81 0.0268 0.0233 \*  
 Venus -73112-03-09 00:57 J -24982667.68 -24982667.46 -24982667.25 0.0262 0.0052  
 Mercury -73109-02-05 21:35 J -24981603.71 -24981603.60 -24981603.47 0.0269 0.0210  
 Mercury -73109-05-04 20:23 J -24981514.84 -24981514.65 -24981514.46 0.0269 0.0065  
 Mercury -73109-08-01 18:57 J -24981425.89 -24981425.71 -24981425.52 0.0270 0.0081  
 Mercury -73109-10-29 17:30 J -24981336.86 -24981336.77 -24981336.66 0.0271 0.0228  
 Moon -73107-11-18 21:49 J -24980586.65 -24980586.59 -24980586.53 0.0279 0.0272  
 Earth -73107-11-18 21:49 J -24980586.65 -24980586.59 -24980586.50 0.0279 0.0266 \*  
 Moon -73106-12-02 18:28 J -24980207.96 -24980207.73 -24980207.49 0.0284 0.0115  
 Earth -73106-12-02 22:04 J -24980207.81 -24980207.58 -24980207.35 0.0284 0.0117 \*  
 Moon -73105-12-16 05:30 J -24979828.51 -24979828.27 -24979828.03 0.0289 0.0057  
 Earth -73105-12-16 08:23 J -24979828.39 -24979828.15 -24979827.90 0.0289 0.0049 \*  
 Mars -73105-12-21 06:42 J -24979823.51 -24979823.22 -24979822.92 0.0289 0.0010  
 Moon -73104-12-31 03:49 J -24979448.48 -24979448.34 -24979448.19 0.0293 0.0233  
 Earth -73104-12-31 04:04 J -24979448.48 -24979448.33 -24979448.15 0.0293 0.0222 \*  
 Venus -73098-01-11 01:54 J -24977611.52 -24977611.42 -24977611.29 0.0301 0.0248  
 Venus -73098-08-29 00:57 J -24977381.53 -24977381.46 -24977381.38 0.0300 0.0279  
 Mercury -73096-06-17 12:28 J -24976723.01 -24976722.98 -24976722.94 0.0294 0.0280  
 Mercury -73096-09-14 00:13 J -24976634.59 -24976634.49 -24976634.38 0.0294 0.0155  
 Mercury -73096-12-11 12:13 J -24976546.12 -24976545.99 -24976545.87 0.0293 0.0032  
 Mercury -73095-03-09 23:45 J -24976457.63 -24976457.51 -24976457.38 0.0292 0.0092

Mercury -73095-06-06 11:30 J -24976369.11 -24976369.02 -24976368.93 0.0291 0.0213

Earth -73093-05-21 22:04 J -24975653.70 -24975653.58 -24975653.43 0.0282 0.0231

Moon -73093-05-21 23:01 J -24975653.69 -24975653.54 -24975653.38 0.0282 0.0218 \*

Moon -73092-06-03 04:18 J -24975276.55 -24975276.32 -24975276.08 0.0277 0.0073

Earth -73092-06-03 07:40 J -24975276.40 -24975276.18 -24975275.95 0.0277 0.0087 \*

Moon -73091-06-15 07:25 J -24974899.42 -24974899.19 -24974898.96 0.0273 0.0057

Earth -73091-06-15 08:37 J -24974899.37 -24974899.14 -24974898.90 0.0273 0.0051 \*

Mars -73091-12-22 03:49 J -24974709.58 -24974709.34 -24974709.08 0.0271 0.0145

Earth -73090-06-27 02:09 J -24974522.58 -24974522.41 -24974522.22 0.0269 0.0180

Moon -73090-06-27 05:30 J -24974522.45 -24974522.27 -24974522.09 0.0269 0.0174 \*

Venus -73083-02-02 06:28 J -24972110.29 -24972110.23 -24972110.14 0.0261 0.0245

Venus -73083-09-19 08:09 J -24971881.35 -24971881.16 -24971880.96 0.0262 0.0116

Mercury -73080-06-24 22:18 J -24970871.65 -24970871.57 -24970871.48 0.0268 0.0238

Mercury -73080-09-21 20:52 J -24970782.81 -24970782.63 -24970782.45 0.0269 0.0094

Mercury -73080-12-19 19:40 J -24970693.87 -24970693.68 -24970693.50 0.0270 0.0052

Mercury -73079-03-18 18:13 J -24970604.87 -24970604.74 -24970604.61 0.0271 0.0198

Earth -73077-11-26 05:59 J -24969621.44 -24969621.25 -24969621.05 0.0282 0.0182

Moon -73077-11-26 09:21 J -24969621.29 -24969621.11 -24969620.92 0.0282 0.0185 \*

Earth -73076-12-10 11:45 J -24969242.26 -24969242.01 -24969241.76 0.0287 0.0022

Moon -73076-12-10 14:37 J -24969242.15 -24969241.89 -24969241.64 0.0287 0.0018 \*

Moon -73075-12-25 02:52 J -24968862.59 -24968862.38 -24968862.16 0.0291 0.0160

Earth -73075-12-25 03:21 J -24968862.57 -24968862.36 -24968862.14 0.0291 0.0150 \*

Mars -73074-02-11 11:45 J -24968814.18 -24968814.01 -24968813.82 0.0292 0.0229

Venus -73069-07-23 10:33 J -24966825.23 -24966825.06 -24966824.89 0.0300 0.0168

Mercury -73066-02-01 03:06 J -24965902.47 -24965902.37 -24965902.27 0.0293 0.0186

Mercury -73066-04-30 14:52 J -24965814.01 -24965813.88 -24965813.76 0.0292 0.0063

Mercury -73066-07-28 02:23 J -24965725.52 -24965725.40 -24965725.27 0.0291 0.0061

Mercury -73066-10-24 14:09 J -24965637.01 -24965636.91 -24965636.81 0.0290 0.0182

Earth -73063-05-29 08:23 J -24964689.35 -24964689.15 -24964688.95 0.0279 0.0151

Moon -73063-05-29 11:30 J -24964689.22 -24964689.02 -24964688.81 0.0279 0.0135 \*

Mars -73062-02-10 07:40 J -24964432.36 -24964432.18 -24964431.99 0.0276 0.0209  
 Earth -73062-06-10 12:57 J -24964312.20 -24964311.96 -24964311.72 0.0275 0.0010  
 Moon -73062-06-10 14:37 J -24964312.14 -24964311.89 -24964311.64 0.0275 0.0002 \*  
 Moon -73061-06-21 06:28 J -24963935.44 -24963935.23 -24963935.00 0.0271 0.0123  
 Earth -73061-06-21 09:49 J -24963935.30 -24963935.09 -24963934.87 0.0271 0.0126 \*  
 Moon -73060-07-02 22:04 J -24963558.67 -24963558.58 -24963558.46 0.0268 0.0238  
 Earth -73060-07-03 00:13 J -24963558.56 -24963558.49 -24963558.39 0.0268 0.0250 \*  
 Venus -73054-08-15 11:45 J -24961324.16 -24961324.01 -24961323.86 0.0261 0.0192  
 Venus -73053-03-31 13:11 J -24961095.10 -24961094.95 -24961094.77 0.0262 0.0171  
 Mercury -73050-02-08 20:37 J -24960050.80 -24960050.64 -24960050.46 0.0269 0.0129  
 Mercury -73050-05-08 19:25 J -24959961.88 -24959961.69 -24959961.50 0.0270 0.0017  
 Mercury -73050-08-05 17:59 J -24959872.89 -24959872.75 -24959872.59 0.0271 0.0164  
 Moon -73048-11-20 12:13 J -24959035.08 -24959034.99 -24959034.87 0.0280 0.0253  
 Earth -73048-11-20 16:18 J -24959034.93 -24959034.82 -24959034.70 0.0280 0.0247 \*  
 Moon -73047-12-04 14:37 J -24958656.11 -24958655.89 -24958655.65 0.0284 0.0096  
 Earth -73047-12-04 17:30 J -24958656.00 -24958655.77 -24958655.53 0.0284 0.0095 \*  
 Mars -73046-03-27 22:47 J -24958542.75 -24958542.55 -24958542.34 0.0286 0.0208  
 Earth -73046-12-19 05:01 J -24958276.53 -24958276.29 -24958276.05 0.0289 0.0072  
 Moon -73046-12-19 05:45 J -24958276.49 -24958276.26 -24958276.03 0.0289 0.0080 \*  
 Earth -73044-01-02 01:54 J -24957896.55 -24957896.42 -24957896.28 0.0293 0.0246  
 Moon -73044-01-02 05:16 J -24957896.39 -24957896.28 -24957896.16 0.0293 0.0259 \*  
 Venus -73039-02-02 21:49 J -24956038.79 -24956038.59 -24956038.39 0.0301 0.0077  
 Mercury -73037-06-20 06:28 J -24955170.31 -24955170.23 -24955170.13 0.0294 0.0209  
 Mercury -73037-09-16 18:28 J -24955081.86 -24955081.73 -24955081.61 0.0293 0.0084  
 Mercury -73037-12-14 06:13 J -24954993.37 -24954993.24 -24954993.12 0.0292 0.0040  
 Mercury -73036-03-12 17:45 J -24954904.86 -24954904.76 -24954904.65 0.0291 0.0161  
 Mercury -73036-06-09 05:30 J -24954816.30 -24954816.27 -24954816.24 0.0290 0.0281  
 Moon -73034-05-24 09:49 J -24954102.26 -24954102.09 -24954101.91 0.0281 0.0196  
 Earth -73034-05-24 13:11 J -24954102.11 -24954101.95 -24954101.79 0.0281 0.0211 \*  
 Moon -73033-06-04 19:11 J -24953724.93 -24953724.70 -24953724.47 0.0277 0.0053

Earth -73033-06-04 21:21 J -24953724.84 -24953724.61 -24953724.38 0.0277 0.0067 \*  
 Mars -73032-03-30 16:33 J -24953426.10 -24953425.81 -24953425.52 0.0273 0.0013  
 Earth -73032-06-16 21:06 J -24953347.85 -24953347.62 -24953347.39 0.0273 0.0071  
 Moon -73032-06-16 23:59 J -24953347.73 -24953347.50 -24953347.27 0.0273 0.0073 \*  
 Earth -73031-06-28 13:54 J -24952971.08 -24952970.92 -24952970.76 0.0269 0.0198  
 Moon -73031-06-28 16:33 J -24952970.98 -24952970.81 -24952970.63 0.0269 0.0189 \*  
 Venus -73024-02-24 19:11 J -24950537.89 -24950537.70 -24950537.51 0.0261 0.0128  
 Venus -73024-10-11 20:37 J -24950308.72 -24950308.64 -24950308.53 0.0262 0.0234  
 Mercury -73021-06-27 21:35 J -24949318.75 -24949318.60 -24949318.44 0.0269 0.0157  
 Mercury -73021-09-24 20:09 J -24949229.85 -24949229.66 -24949229.46 0.0270 0.0013  
 Mercury -73021-12-22 18:57 J -24949140.88 -24949140.71 -24949140.55 0.0271 0.0135  
 Earth -73018-11-29 01:40 J -24948069.63 -24948069.43 -24948069.21 0.0283 0.0161  
 Moon -73018-11-29 04:33 J -24948069.51 -24948069.31 -24948069.09 0.0283 0.0164 \*  
 Moon -73017-12-12 08:09 J -24947690.42 -24947690.16 -24947689.90 0.0288 0.0007  
 Earth -73017-12-12 09:06 J -24947690.37 -24947690.12 -24947689.87 0.0288 0.0004 \*  
 Mars -73016-05-18 13:25 J -24947533.24 -24947532.94 -24947532.65 0.0289 0.0031  
 Moon -73016-12-26 22:18 J -24947310.75 -24947310.57 -24947310.37 0.0292 0.0187  
 Earth -73016-12-27 02:09 J -24947310.61 -24947310.41 -24947310.21 0.0292 0.0175 \*  
 Venus -73010-08-16 07:11 J -24945252.41 -24945252.20 -24945252.00 0.0300 0.0008  
 Mercury -73008-11-07 09:21 J -24944438.18 -24944438.11 -24944438.03 0.0294 0.0238  
 Mercury -73007-02-03 21:06 J -24944349.73 -24944349.62 -24944349.50 0.0293 0.0115  
 Mercury -73007-05-03 08:52 J -24944261.25 -24944261.13 -24944261.00 0.0292 0.0014  
 Mercury -73007-07-30 20:37 J -24944172.75 -24944172.64 -24944172.52 0.0291 0.0131  
 Mercury -73007-10-27 08:09 J -24944084.21 -24944084.16 -24944084.09 0.0290 0.0252  
 Earth -73005-05-18 10:47 J -24943515.10 -24943515.05 -24943514.99 0.0283 0.0275  
 Moon -73005-05-18 13:54 J -24943514.99 -24943514.92 -24943514.83 0.0283 0.0264 \*  
 Earth -73004-05-30 23:01 J -24943137.75 -24943137.54 -24943137.33 0.0278 0.0131  
 Moon -73004-05-31 01:40 J -24943137.65 -24943137.43 -24943137.20 0.0278 0.0115 \*  
 Moon -73003-06-11 23:45 J -24942760.75 -24942760.51 -24942760.26 0.0274 0.0019  
 Earth -73003-06-12 02:23 J -24942760.64 -24942760.40 -24942760.16 0.0274 0.0011 \*

Mars	-73002-05-18 18:42 J	-24942419.94	-24942419.72	-24942419.50	0.0271	0.0178
Moon	-73002-06-23 19:11 J	-24942383.90	-24942383.70	-24942383.49	0.0270	0.0139
Earth	-73002-06-23 21:49 J	-24942383.79	-24942383.59	-24942383.38	0.0270	0.0144 *
Earth	-73001-07-04 11:30 J	-24942007.04	-24942007.02	-24942006.99	0.0267	0.0265
Moon	-73001-07-04 13:25 J	-24942007.01	-24942006.94	-24942006.86	0.0267	0.0252 *

# 73RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 73rd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-72995-09-06 23:30 J	-24939751.72	-24939751.52	-24939751.31	0.0262	0.0077		
Mercury	-72992-11-14 21:06 J	-24938586.75	-24938586.62	-24938586.49	0.0269	0.0194		
Mercury	-72991-02-11 19:40 J	-24938497.87	-24938497.68	-24938497.49	0.0270	0.0049		
Mercury	-72991-05-11 18:13 J	-24938408.91	-24938408.74	-24938408.56	0.0270	0.0097		
Mercury	-72991-08-08 16:47 J	-24938319.87	-24938319.80	-24938319.71	0.0271	0.0245		
Moon	-72989-11-22 06:57 J	-24937483.33	-24937483.21	-24937483.06	0.0280	0.0234		
Earth	-72989-11-22 09:21 J	-24937483.25	-24937483.11	-24937482.96	0.0280	0.0229 *		
Earth	-72988-12-06 11:59 J	-24937104.24	-24937104.00	-24937103.75	0.0285	0.0074		
Moon	-72988-12-06 13:11 J	-24937104.18	-24937103.95	-24937103.71	0.0285	0.0072 *		
Earth	-72987-12-21 00:42 J	-24936724.70	-24936724.47	-24936724.23	0.0290	0.0096		
Moon	-72987-12-21 04:18 J	-24936724.55	-24936724.32	-24936724.09	0.0290	0.0103 *		
Mars	-72986-07-09 15:21 J	-24936523.93	-24936523.86	-24936523.76	0.0292	0.0278		
Earth	-72985-01-04 22:47 J	-24936344.65	-24936344.55	-24936344.45	0.0294	0.0269		

Moon -72985-01-05 01:25 J -24936344.50 -24936344.44 -24936344.35 0.0294 0.0281 \*  
 Venus -72980-02-25 17:01 J -24934465.99 -24934465.79 -24934465.60 0.0300 0.0091  
 Mercury -72978-03-27 12:42 J -24933706.02 -24933705.97 -24933705.91 0.0294 0.0264  
 Mercury -72978-06-24 00:28 J -24933617.59 -24933617.48 -24933617.36 0.0293 0.0139  
 Mercury -72978-09-20 12:13 J -24933529.11 -24933528.99 -24933528.86 0.0292 0.0019  
 Mercury -72978-12-17 23:59 J -24933440.62 -24933440.50 -24933440.38 0.0291 0.0108  
 Mercury -72977-03-15 11:45 J -24933352.09 -24933352.01 -24933351.93 0.0290 0.0229  
 Moon -72975-05-26 00:42 J -24932550.65 -24932550.47 -24932550.29 0.0281 0.0176  
 Earth -72975-05-26 03:21 J -24932550.53 -24932550.36 -24932550.18 0.0281 0.0191 \*  
 Earth -72974-06-07 10:18 J -24932173.31 -24932173.07 -24932172.84 0.0276 0.0048  
 Moon -72974-06-07 11:45 J -24932173.24 -24932173.01 -24932172.77 0.0276 0.0034 \*  
 Mars -72974-07-08 08:52 J -24932142.34 -24932142.13 -24932141.90 0.0276 0.0172  
 Earth -72973-06-18 08:52 J -24931796.35 -24931796.13 -24931795.90 0.0272 0.0089  
 Moon -72973-06-18 11:45 J -24931796.23 -24931796.01 -24931795.77 0.0272 0.0092 \*  
 Moon -72972-06-29 23:01 J -24931419.70 -24931419.54 -24931419.38 0.0268 0.0203  
 Earth -72972-06-30 00:42 J -24931419.60 -24931419.47 -24931419.32 0.0268 0.0215 \*  
 Venus -72965-03-19 06:42 J -24928965.44 -24928965.22 -24928965.00 0.0261 0.0014  
 Mercury -72962-04-03 21:21 J -24927854.70 -24927854.61 -24927854.50 0.0269 0.0224  
 Mercury -72962-07-01 20:09 J -24927765.84 -24927765.66 -24927765.48 0.0269 0.0079  
 Mercury -72962-09-28 18:42 J -24927676.90 -24927676.72 -24927676.53 0.0270 0.0067  
 Mercury -72962-12-26 17:16 J -24927587.89 -24927587.78 -24927587.65 0.0271 0.0214  
 Moon -72959-11-30 17:01 J -24926518.02 -24926517.79 -24926517.57 0.0283 0.0140  
 Earth -72959-11-30 18:42 J -24926517.93 -24926517.72 -24926517.50 0.0283 0.0140 \*  
 Mars -72958-08-23 02:09 J -24926252.65 -24926252.41 -24926252.17 0.0287 0.0171  
 Moon -72958-12-14 23:30 J -24926138.77 -24926138.52 -24926138.27 0.0288 0.0030  
 Earth -72958-12-15 03:06 J -24926138.62 -24926138.37 -24926138.12 0.0288 0.0025 \*  
 Moon -72957-12-28 18:28 J -24925758.89 -24925758.73 -24925758.55 0.0293 0.0209  
 Earth -72957-12-28 21:21 J -24925758.79 -24925758.61 -24925758.43 0.0293 0.0199 \*  
 Venus -72951-09-08 01:40 J -24923679.60 -24923679.43 -24923679.26 0.0300 0.0171  
 Mercury -72949-08-13 15:35 J -24922973.85 -24922973.85 -24922973.85 0.0294 0.0293

Mercury -72949-11-10 03:21 J -24922885.46 -24922885.36 -24922885.25 0.0293 0.0169  
 Mercury -72948-02-06 15:06 J -24922797.00 -24922796.87 -24922796.74 0.0292 0.0045  
 Mercury -72948-05-06 02:52 J -24922708.50 -24922708.38 -24922708.26 0.0291 0.0077  
 Mercury -72948-08-02 14:37 J -24922619.99 -24922619.89 -24922619.80 0.0290 0.0199  
 Earth -72946-05-21 01:11 J -24921963.54 -24921963.45 -24921963.34 0.0282 0.0256  
 Moon -72946-05-21 04:04 J -24921963.45 -24921963.33 -24921963.21 0.0282 0.0243 \*  
 Moon -72945-06-01 10:33 J -24921586.29 -24921586.06 -24921585.82 0.0278 0.0095  
 Earth -72945-06-01 12:13 J -24921586.21 -24921585.99 -24921585.77 0.0278 0.0111 \*  
 Moon -72944-06-13 11:01 J -24921209.28 -24921209.04 -24921208.81 0.0273 0.0038  
 Earth -72944-06-13 14:23 J -24921209.14 -24921208.90 -24921208.66 0.0273 0.0030 \*  
 Mars -72944-08-25 05:30 J -24921136.55 -24921136.27 -24921135.98 0.0273 0.0021  
 Earth -72943-06-25 08:23 J -24920832.33 -24920832.15 -24920831.94 0.0270 0.0162  
 Moon -72943-06-25 10:04 J -24920832.27 -24920832.08 -24920831.88 0.0270 0.0155 \*  
 Moon -72942-07-07 00:57 J -24920455.47 -24920455.46 -24920455.43 0.0266 0.0266  
 Venus -72936-09-29 10:18 J -24918179.29 -24918179.07 -24918178.86 0.0262 0.0035  
 Mercury -72933-08-20 20:09 J -24917122.68 -24917122.66 -24917122.63 0.0268 0.0265  
 Mercury -72933-11-17 18:42 J -24917033.89 -24917033.72 -24917033.54 0.0269 0.0121  
 Mercury -72932-02-14 17:30 J -24916944.96 -24916944.77 -24916944.58 0.0270 0.0025  
 Mercury -72932-05-14 16:04 J -24916855.97 -24916855.83 -24916855.68 0.0271 0.0172  
 Earth -72930-11-24 23:16 J -24915931.70 -24915931.53 -24915931.37 0.0281 0.0211  
 Moon -72930-11-25 01:25 J -24915931.59 -24915931.44 -24915931.27 0.0281 0.0212 \*  
 Earth -72929-12-08 03:21 J -24915552.61 -24915552.36 -24915552.12 0.0286 0.0053  
 Moon -72929-12-08 07:11 J -24915552.45 -24915552.20 -24915551.95 0.0286 0.0050 \*  
 Mars -72928-10-13 07:25 J -24915243.48 -24915243.19 -24915242.90 0.0289 0.0074  
 Earth -72928-12-22 17:30 J -24915173.00 -24915172.77 -24915172.54 0.0290 0.0118  
 Moon -72928-12-22 19:54 J -24915172.90 -24915172.67 -24915172.43 0.0290 0.0125 \*  
 Earth -72926-01-06 16:33 J -24914792.84 -24914792.81 -24914792.79 0.0294 0.0292  
 Venus -72922-08-03 11:16 J -24913123.11 -24913123.03 -24913122.94 0.0301 0.0275  
 Venus -72921-03-20 10:33 J -24912893.16 -24912893.06 -24912892.94 0.0300 0.0254  
 Mercury -72919-03-30 06:28 J -24912153.32 -24912153.23 -24912153.13 0.0294 0.0196

Mercury -72919-06-26 18:13 J -24912064.86 -24912064.74 -24912064.61 0.0293 0.0072

Mercury -72919-09-23 05:59 J -24911976.38 -24911976.25 -24911976.12 0.0292 0.0052

Mercury -72919-12-20 17:45 J -24911887.86 -24911887.76 -24911887.66 0.0291 0.0174

Earth -72916-05-27 16:04 J -24910999.02 -24910998.83 -24910998.64 0.0280 0.0171

Moon -72916-05-27 17:30 J -24910998.96 -24910998.77 -24910998.57 0.0280 0.0156 \*

Earth -72915-06-08 21:35 J -24910621.83 -24910621.60 -24910621.36 0.0276 0.0029

Moon -72915-06-09 01:25 J -24910621.68 -24910621.44 -24910621.20 0.0276 0.0013 \*

Moon -72914-06-20 18:42 J -24910244.95 -24910244.72 -24910244.49 0.0271 0.0107

Earth -72914-06-20 19:25 J -24910244.91 -24910244.69 -24910244.47 0.0271 0.0108 \*

Mars -72914-10-13 14:23 J -24910130.08 -24910129.90 -24910129.72 0.0270 0.0213

Moon -72913-07-01 06:42 J -24909868.35 -24909868.22 -24909868.08 0.0268 0.0218

Earth -72913-07-01 10:04 J -24909868.18 -24909868.08 -24909867.95 0.0268 0.0232 \*

Venus -72906-04-11 16:47 J -24907393.01 -24907392.80 -24907392.60 0.0261 0.0096

Mercury -72903-04-06 18:42 J -24906301.87 -24906301.72 -24906301.55 0.0269 0.0153

Mercury -72903-07-04 17:30 J -24906212.96 -24906212.77 -24906212.57 0.0270 0.0009

Mercury -72903-10-01 16:04 J -24906123.99 -24906123.83 -24906123.66 0.0271 0.0140

Moon -72901-11-18 05:45 J -24905345.30 -24905345.26 -24905345.20 0.0279 0.0273

Earth -72901-11-18 08:37 J -24905345.19 -24905345.14 -24905345.08 0.0279 0.0271

Moon -72900-12-02 04:04 J -24904966.56 -24904966.33 -24904966.10 0.0284 0.0118

Earth -72900-12-02 07:54 J -24904966.39 -24904966.17 -24904965.94 0.0284 0.0121 \*

Moon -72899-12-16 15:35 J -24904587.09 -24904586.85 -24904586.61 0.0289 0.0052

Earth -72899-12-16 17:30 J -24904587.02 -24904586.77 -24904586.52 0.0289 0.0046 \*

Earth -72898-12-31 12:28 J -24904207.13 -24904206.98 -24904206.80 0.0293 0.0221

Moon -72898-12-31 13:40 J -24904207.07 -24904206.93 -24904206.77 0.0293 0.0232 \*

Venus -72892-02-12 18:57 J -24902336.86 -24902336.71 -24902336.55 0.0301 0.0199

Mercury -72890-08-17 08:52 J -24901421.20 -24901421.13 -24901421.05 0.0294 0.0229

Mercury -72890-11-13 20:52 J -24901332.75 -24901332.63 -24901332.51 0.0293 0.0105

Mercury -72889-02-10 08:37 J -24901244.27 -24901244.14 -24901244.01 0.0292 0.0020

Mercury -72889-05-08 20:09 J -24901155.77 -24901155.66 -24901155.54 0.0291 0.0141

Mercury -72889-08-05 07:54 J -24901067.22 -24901067.17 -24901067.12 0.0290 0.0261



Moon -72887-05-22 11:16 J -24900412.17 -24900412.03 -24900411.87 0.0282 0.0224  
 Earth -72887-05-22 13:11 J -24900412.08 -24900411.95 -24900411.83 0.0282 0.0237 \*  
 Moon -72886-06-03 18:57 J -24900034.93 -24900034.71 -24900034.47 0.0277 0.0077  
 Earth -72886-06-03 22:47 J -24900034.78 -24900034.55 -24900034.32 0.0277 0.0092 \*  
 Mars -72886-12-02 17:45 J -24899853.00 -24899852.76 -24899852.52 0.0275 0.0140  
 Earth -72885-06-14 23:30 J -24899657.75 -24899657.52 -24899657.28 0.0273 0.0048  
 Moon -72885-06-14 23:30 J -24899657.74 -24899657.52 -24899657.29 0.0273 0.0055 \*  
 Earth -72884-06-26 16:47 J -24899280.97 -24899280.80 -24899280.61 0.0269 0.0178  
 Moon -72884-06-26 20:23 J -24899280.83 -24899280.65 -24899280.45 0.0269 0.0170 \*  
 Venus -72877-03-06 17:59 J -24896835.86 -24896835.75 -24896835.62 0.0261 0.0218  
 Venus -72877-10-21 19:11 J -24896606.88 -24896606.70 -24896606.51 0.0262 0.0141  
 Mercury -72874-08-24 16:47 J -24895569.92 -24895569.80 -24895569.67 0.0269 0.0198  
 Mercury -72874-11-21 15:21 J -24895481.04 -24895480.86 -24895480.67 0.0269 0.0055  
 Mercury -72873-02-18 14:09 J -24895392.09 -24895391.91 -24895391.73 0.0270 0.0092  
 Mercury -72873-05-17 12:42 J -24895303.05 -24895302.97 -24895302.88 0.0271 0.0239  
 Earth -72871-11-26 08:23 J -24894380.32 -24894380.15 -24894379.96 0.0282 0.0194  
 Moon -72871-11-26 11:59 J -24894380.17 -24894380.00 -24894379.80 0.0282 0.0192 \*  
 Earth -72870-12-10 13:40 J -24894001.17 -24894000.93 -24894000.68 0.0286 0.0034  
 Moon -72870-12-10 14:52 J -24894001.14 -24894000.88 -24894000.62 0.0286 0.0027 \*  
 Mars -72869-01-17 04:47 J -24893963.56 -24893963.30 -24893963.03 0.0287 0.0138  
 Moon -72869-12-24 02:52 J -24893621.59 -24893621.38 -24893621.15 0.0291 0.0149  
 Earth -72869-12-24 05:01 J -24893621.51 -24893621.29 -24893621.07 0.0291 0.0139 \*  
 Venus -72863-08-26 02:09 J -24891550.60 -24891550.41 -24891550.22 0.0301 0.0124  
 Mercury -72860-01-03 11:30 J -24890689.07 -24890689.02 -24890688.96 0.0295 0.0261  
 Mercury -72860-04-01 23:30 J -24890600.64 -24890600.52 -24890600.41 0.0294 0.0136  
 Mercury -72860-06-29 11:16 J -24890512.16 -24890512.03 -24890511.90 0.0293 0.0013  
 Mercury -72860-09-25 22:47 J -24890423.66 -24890423.55 -24890423.42 0.0292 0.0112  
 Mercury -72860-12-23 10:33 J -24890335.13 -24890335.06 -24890334.98 0.0291 0.0232  
 Earth -72857-05-29 00:57 J -24889447.66 -24889447.46 -24889447.26 0.0280 0.0153  
 Moon -72857-05-29 04:33 J -24889447.52 -24889447.31 -24889447.10 0.0280 0.0137 \*

Earth -72856-06-10 05:45 J -24889070.50 -24889070.26 -24889070.02 0.0275 0.0011  
 Moon -72856-06-10 06:13 J -24889070.49 -24889070.24 -24889069.99 0.0275 0.0004 \*  
 Mars -72855-01-19 18:42 J -24888847.00 -24888846.72 -24888846.44 0.0273 0.0049  
 Moon -72855-06-21 23:01 J -24888693.75 -24888693.54 -24888693.33 0.0271 0.0123  
 Earth -72855-06-22 02:23 J -24888693.61 -24888693.40 -24888693.18 0.0271 0.0125 \*  
 Moon -72854-07-03 16:33 J -24888316.92 -24888316.81 -24888316.70 0.0267 0.0235  
 Earth -72854-07-03 16:33 J -24888316.89 -24888316.81 -24888316.71 0.0267 0.0248 \*  
 Venus -72848-09-16 23:16 J -24886049.69 -24886049.53 -24886049.35 0.0261 0.0161  
 Venus -72847-05-04 00:28 J -24885820.61 -24885820.48 -24885820.33 0.0261 0.0198  
 Mercury -72844-01-10 16:18 J -24884837.91 -24884837.82 -24884837.72 0.0268 0.0233  
 Mercury -72844-04-09 14:52 J -24884749.06 -24884748.88 -24884748.69 0.0269 0.0090  
 Mercury -72844-07-07 13:40 J -24884660.12 -24884659.93 -24884659.74 0.0270 0.0056  
 Mercury -72844-10-04 11:59 J -24884571.11 -24884571.00 -24884570.86 0.0271 0.0203  
 Moon -72842-11-20 11:59 J -24883794.09 -24883794.00 -24883793.90 0.0280 0.0258  
 Earth -72842-11-20 15:06 J -24883793.95 -24883793.87 -24883793.75 0.0280 0.0256 \*  
 Moon -72841-12-03 15:06 J -24883415.09 -24883414.87 -24883414.64 0.0284 0.0099  
 Earth -72841-12-03 15:35 J -24883415.09 -24883414.85 -24883414.62 0.0284 0.0104 \*  
 Earth -72840-12-18 02:09 J -24883035.65 -24883035.41 -24883035.16 0.0289 0.0065  
 Moon -72840-12-18 04:47 J -24883035.53 -24883035.30 -24883035.06 0.0289 0.0076 \*  
 Mars -72839-03-09 10:04 J -24882954.36 -24882954.08 -24882953.80 0.0290 0.0098  
 Earth -72838-01-01 22:18 J -24882655.70 -24882655.57 -24882655.42 0.0294 0.0240  
 Moon -72838-01-02 02:09 J -24882655.53 -24882655.41 -24882655.28 0.0294 0.0252 \*  
 Venus -72833-03-07 09:06 J -24880764.32 -24880764.12 -24880763.92 0.0301 0.0052  
 Mercury -72831-08-20 01:40 J -24879868.53 -24879868.43 -24879868.32 0.0293 0.0171  
 Mercury -72831-11-16 13:25 J -24879780.06 -24879779.94 -24879779.81 0.0292 0.0048  
 Mercury -72830-02-13 01:11 J -24879691.57 -24879691.45 -24879691.32 0.0291 0.0077  
 Mercury -72830-05-12 12:57 J -24879603.05 -24879602.96 -24879602.86 0.0290 0.0198  
 Moon -72828-05-23 17:59 J -24878860.91 -24878860.75 -24878860.58 0.0281 0.0205  
 Earth -72828-05-23 21:21 J -24878860.75 -24878860.61 -24878860.45 0.0281 0.0219 \*  
 Earth -72827-06-05 06:13 J -24878483.47 -24878483.24 -24878483.01 0.0277 0.0074

Moon -72827-06-05 05:59 J -24878483.47 -24878483.25 -24878483.02 0.0277 0.0061 \*  
 Earth -72826-06-17 05:59 J -24878106.48 -24878106.25 -24878106.01 0.0272 0.0065  
 Moon -72826-06-17 09:35 J -24878106.33 -24878106.10 -24878105.87 0.0272 0.0070 \*  
 Mars -72825-03-08 13:54 J -24877841.05 -24877840.92 -24877840.78 0.0270 0.0238  
 Earth -72825-06-27 22:47 J -24877729.71 -24877729.55 -24877729.38 0.0269 0.0193  
 Moon -72825-06-27 23:30 J -24877729.69 -24877729.52 -24877729.33 0.0269 0.0185 \*  
 Venus -72818-03-30 00:57 J -24875263.65 -24875263.46 -24875263.27 0.0261 0.0119  
 Venus -72818-11-14 01:54 J -24875034.49 -24875034.42 -24875034.32 0.0262 0.0241  
 Mercury -72815-08-27 12:13 J -24874017.15 -24874016.99 -24874016.83 0.0269 0.0140  
 Mercury -72815-11-24 10:47 J -24873928.24 -24873928.05 -24873927.86 0.0270 0.0005  
 Mercury -72814-02-21 09:21 J -24873839.26 -24873839.11 -24873838.95 0.0270 0.0151  
 Moon -72812-11-27 12:57 J -24872829.17 -24872828.96 -24872828.75 0.0282 0.0173  
 Earth -72812-11-27 12:57 J -24872829.14 -24872828.96 -24872828.75 0.0282 0.0178 \*  
 Moon -72811-12-11 15:49 J -24872450.10 -24872449.84 -24872449.59 0.0287 0.0007  
 Earth -72811-12-11 19:11 J -24872449.95 -24872449.70 -24872449.45 0.0287 0.0017 \*  
 Moon -72810-12-26 07:25 J -24872070.38 -24872070.19 -24872069.98 0.0291 0.0170  
 Earth -72810-12-26 11:16 J -24872070.23 -24872070.03 -24872069.81 0.0291 0.0157 \*  
 Venus -72804-09-17 13:54 J -24869978.13 -24869977.92 -24869977.72 0.0301 0.0015  
 Mercury -72801-01-07 03:49 J -24869136.43 -24869136.34 -24869136.25 0.0294 0.0208  
 Mercury -72801-04-04 15:35 J -24869047.97 -24869047.85 -24869047.72 0.0293 0.0083  
 Mercury -72801-07-02 03:21 J -24868959.48 -24868959.36 -24868959.23 0.0292 0.0042  
 Mercury -72801-09-28 15:06 J -24868870.97 -24868870.87 -24868870.76 0.0291 0.0164  
 Mercury -72801-12-26 02:52 J -24868782.40 -24868782.38 -24868782.36 0.0290 0.0284  
 Earth -72799-05-18 16:18 J -24868273.84 -24868273.82 -24868273.78 0.0284 0.0282  
 Moon -72799-05-18 19:54 J -24868273.73 -24868273.67 -24868273.60 0.0284 0.0271  
 Earth -72798-05-31 06:13 J -24867896.45 -24867896.24 -24867896.03 0.0279 0.0135  
 Moon -72798-05-31 06:42 J -24867896.44 -24867896.22 -24867895.99 0.0279 0.0121 \*  
 Mars -72797-04-27 21:06 J -24867563.87 -24867563.62 -24867563.36 0.0275 0.0121  
 Moon -72797-06-11 06:42 J -24867519.46 -24867519.22 -24867518.97 0.0275 0.0016  
 Earth -72797-06-11 10:33 J -24867519.30 -24867519.06 -24867518.82 0.0275 0.0008 \*

Moon -72796-06-23 04:47 J -24867142.50 -24867142.30 -24867142.10 0.0271 0.0138  
 Earth -72796-06-23 06:13 J -24867142.44 -24867142.24 -24867142.03 0.0271 0.0141 \*  
 Earth -72795-07-04 19:40 J -24866765.71 -24866765.68 -24866765.63 0.0267 0.0262  
 Moon -72795-07-04 22:47 J -24866765.62 -24866765.55 -24866765.45 0.0267 0.0249  
 Venus -72789-10-09 05:16 J -24864477.49 -24864477.28 -24864477.07 0.0260 0.0066  
 Mercury -72785-01-14 11:01 J -24863285.17 -24863285.04 -24863284.89 0.0268 0.0179  
 Mercury -72785-04-12 09:49 J -24863196.28 -24863196.09 -24863195.90 0.0269 0.0034  
 Mercury -72785-07-10 08:23 J -24863107.32 -24863107.15 -24863106.97 0.0270 0.0112  
 Mercury -72785-10-07 06:57 J -24863018.26 -24863018.21 -24863018.15 0.0271 0.0258  
 Earth -72783-11-21 17:45 J -24862242.89 -24862242.76 -24862242.64 0.0280 0.0241  
 Moon -72783-11-21 17:45 J -24862242.86 -24862242.76 -24862242.63 0.0280 0.0242 \*  
 Earth -72782-12-05 18:13 J -24861863.98 -24861863.74 -24861863.50 0.0285 0.0088  
 Moon -72782-12-05 21:49 J -24861863.83 -24861863.59 -24861863.35 0.0285 0.0079 \*  
 Mars -72781-06-11 17:01 J -24861675.05 -24861674.79 -24861674.51 0.0287 0.0124  
 Earth -72781-12-19 05:45 J -24861484.50 -24861484.26 -24861484.02 0.0289 0.0082  
 Moon -72781-12-19 09:06 J -24861484.36 -24861484.12 -24861483.87 0.0289 0.0095 \*  
 Earth -72779-01-03 02:23 J -24861104.50 -24861104.40 -24861104.27 0.0294 0.0258  
 Moon -72779-01-03 03:35 J -24861104.44 -24861104.35 -24861104.24 0.0294 0.0271 \*  
 Venus -72774-03-30 19:25 J -24859191.89 -24859191.69 -24859191.49 0.0301 0.0080  
 Mercury -72772-05-26 05:45 J -24858404.33 -24858404.26 -24858404.19 0.0294 0.0246  
 Mercury -72772-08-22 17:30 J -24858315.88 -24858315.77 -24858315.65 0.0293 0.0122  
 Mercury -72772-11-19 05:30 J -24858227.40 -24858227.27 -24858227.14 0.0292 0.0006  
 Mercury -72771-02-15 17:16 J -24858138.90 -24858138.78 -24858138.67 0.0291 0.0126  
 Mercury -72771-05-15 04:47 J -24858050.36 -24858050.30 -24858050.23 0.0290 0.0247  
 Moon -72769-05-25 00:28 J -24857309.65 -24857309.48 -24857309.31 0.0281 0.0190  
 Earth -72769-05-25 01:25 J -24857309.60 -24857309.44 -24857309.27 0.0281 0.0203 \*  
 Earth -72768-06-06 09:35 J -24856932.34 -24856932.10 -24856931.87 0.0276 0.0058  
 Moon -72768-06-06 12:57 J -24856932.19 -24856931.96 -24856931.73 0.0276 0.0047 \*  
 Mars -72767-06-15 10:04 J -24856558.35 -24856558.08 -24856557.79 0.0272 0.0070  
 Earth -72767-06-18 08:52 J -24856555.36 -24856555.13 -24856554.90 0.0272 0.0080

Moon -72767-06-18 10:33 J -24856555.29 -24856555.06 -24856554.82 0.0272 0.0081 \*  
 Moon -72766-06-29 21:49 J -24856178.75 -24856178.59 -24856178.41 0.0268 0.0196  
 Earth -72766-06-30 00:57 J -24856178.60 -24856178.46 -24856178.30 0.0268 0.0208 \*  
 Venus -72759-04-21 05:59 J -24853691.47 -24853691.25 -24853691.04 0.0261 0.0027  
 Mercury -72756-06-02 07:40 J -24852553.27 -24852553.18 -24852553.08 0.0268 0.0232  
 Mercury -72756-08-30 06:13 J -24852464.42 -24852464.24 -24852464.05 0.0269 0.0089  
 Mercury -72756-11-27 04:47 J -24852375.48 -24852375.30 -24852375.11 0.0270 0.0057  
 Mercury -72755-02-24 03:21 J -24852286.48 -24852286.36 -24852286.23 0.0271 0.0203  
 Moon -72753-11-28 08:52 J -24851278.33 -24851278.13 -24851277.91 0.0282 0.0157  
 Earth -72753-11-28 12:42 J -24851278.17 -24851277.97 -24851277.76 0.0282 0.0163 \*  
 Moon -72752-12-12 17:01 J -24850899.04 -24850898.79 -24850898.55 0.0287 0.0013  
 Earth -72752-12-12 19:25 J -24850898.94 -24850898.69 -24850898.44 0.0287 0.0004 \*  
 Mars -72751-08-02 05:59 J -24850666.52 -24850666.25 -24850665.97 0.0290 0.0112  
 Earth -72751-12-27 11:59 J -24850519.20 -24850519.00 -24850518.80 0.0291 0.0173  
 Moon -72751-12-27 12:13 J -24850519.16 -24850518.99 -24850518.80 0.0291 0.0189 \*  
 Venus -72745-10-09 22:18 J -24848405.75 -24848405.57 -24848405.38 0.0301 0.0139  
 Mercury -72743-10-13 07:25 J -24847672.21 -24847672.19 -24847672.16 0.0295 0.0288  
 Mercury -72742-01-09 19:11 J -24847583.80 -24847583.70 -24847583.59 0.0294 0.0163  
 Mercury -72742-04-08 07:11 J -24847495.33 -24847495.20 -24847495.07 0.0293 0.0037  
 Mercury -72742-07-05 18:57 J -24847406.83 -24847406.71 -24847406.59 0.0292 0.0087  
 Mercury -72742-10-02 06:42 J -24847318.31 -24847318.22 -24847318.13 0.0291 0.0209  
 Earth -72740-05-19 18:28 J -24846722.80 -24846722.73 -24846722.64 0.0284 0.0267  
 Moon -72740-05-19 19:40 J -24846722.78 -24846722.68 -24846722.56 0.0284 0.0253 \*  
 Moon -72739-06-01 04:47 J -24846345.52 -24846345.30 -24846345.07 0.0279 0.0105  
 Earth -72739-06-01 08:09 J -24846345.38 -24846345.16 -24846344.95 0.0279 0.0119 \*  
 Moon -72738-06-13 10:04 J -24845968.31 -24845968.08 -24845967.85 0.0275 0.0028  
 Earth -72738-06-13 11:45 J -24845968.25 -24845968.01 -24845967.77 0.0275 0.0023 \*  
 Earth -72737-06-24 06:57 J -24845591.40 -24845591.21 -24845591.00 0.0270 0.0156  
 Moon -72737-06-24 09:49 J -24845591.28 -24845591.09 -24845590.89 0.0270 0.0149 \*  
 Mars -72737-08-02 06:42 J -24845552.31 -24845552.22 -24845552.11 0.0270 0.0253

Moon -72736-07-05 22:04 J -24845214.61 -24845214.58 -24845214.52 0.0267 0.0262  
 Venus -72730-11-01 09:35 J -24842905.32 -24842905.10 -24842904.88 0.0260 0.0024  
 Mercury -72726-01-17 04:47 J -24841732.46 -24841732.30 -24841732.13 0.0268 0.0130  
 Mercury -72726-04-16 03:21 J -24841643.55 -24841643.36 -24841643.16 0.0269 0.0016  
 Mercury -72726-07-14 01:54 J -24841554.57 -24841554.42 -24841554.26 0.0270 0.0160  
 Earth -72724-11-22 15:35 J -24840691.99 -24840691.85 -24840691.70 0.0280 0.0228  
 Moon -72724-11-22 19:11 J -24840691.84 -24840691.70 -24840691.55 0.0280 0.0226 \*  
 Earth -72723-12-06 16:33 J -24840313.05 -24840312.81 -24840312.56 0.0285 0.0073  
 Moon -72723-12-06 18:42 J -24840312.97 -24840312.72 -24840312.47 0.0285 0.0063 \*  
 Moon -72722-12-21 03:06 J -24839933.61 -24839933.37 -24839933.13 0.0290 0.0112  
 Earth -72722-12-21 04:33 J -24839933.54 -24839933.31 -24839933.07 0.0290 0.0098 \*  
 Moon -72720-01-03 22:33 J -24839553.60 -24839553.56 -24839553.52 0.0294 0.0290  
 Earth -72720-01-04 01:40 J -24839553.50 -24839553.43 -24839553.32 0.0294 0.0274  
 Venus -72715-04-22 03:06 J -24837619.52 -24837619.37 -24837619.22 0.0301 0.0201  
 Mercury -72713-05-28 20:52 J -24836851.72 -24836851.63 -24836851.53 0.0294 0.0204  
 Mercury -72713-08-25 08:52 J -24836763.25 -24836763.13 -24836763.00 0.0293 0.0078  
 Mercury -72713-11-21 20:37 J -24836674.77 -24836674.64 -24836674.51 0.0292 0.0046  
 Mercury -72712-02-18 08:23 J -24836586.25 -24836586.15 -24836586.04 0.0291 0.0169  
 Mercury -72712-05-17 20:09 J -24836497.67 -24836497.66 -24836497.66 0.0290 0.0289  
 Earth -72710-05-27 01:54 J -24835758.60 -24835758.42 -24835758.24 0.0281 0.0188  
 Moon -72710-05-27 04:47 J -24835758.48 -24835758.30 -24835758.11 0.0281 0.0173 \*  
 Earth -72709-06-07 09:35 J -24835381.33 -24835381.10 -24835380.86 0.0276 0.0043  
 Moon -72709-06-07 11:45 J -24835381.26 -24835381.01 -24835380.77 0.0276 0.0033 \*  
 Mars -72709-09-21 03:49 J -24835275.59 -24835275.34 -24835275.07 0.0275 0.0106  
 Moon -72708-06-19 05:30 J -24835004.50 -24835004.27 -24835004.04 0.0272 0.0090  
 Earth -72708-06-19 08:37 J -24835004.36 -24835004.14 -24835003.91 0.0272 0.0095 \*  
 Moon -72707-06-30 21:35 J -24834627.74 -24834627.60 -24834627.44 0.0268 0.0209  
 Earth -72707-07-01 00:28 J -24834627.62 -24834627.48 -24834627.35 0.0268 0.0221 \*  
 Venus -72700-05-13 09:35 J -24832119.31 -24832119.10 -24832118.89 0.0261 0.0061  
 Mercury -72697-06-05 01:11 J -24831000.59 -24831000.45 -24831000.31 0.0268 0.0185

Mercury -72697-09-01 23:45 J -24830911.70 -24830911.51 -24830911.32 0.0269 0.0042

Mercury -72697-11-29 22:04 J -24830822.75 -24830822.58 -24830822.40 0.0270 0.0103

Mercury -72696-02-26 20:37 J -24830733.71 -24830733.64 -24830733.56 0.0270 0.0249

Moon -72694-11-30 07:40 J -24829727.39 -24829727.18 -24829726.97 0.0282 0.0142

Earth -72694-11-30 09:21 J -24829727.32 -24829727.11 -24829726.90 0.0282 0.0150 \*

Mars -72693-11-03 23:45 J -24829387.79 -24829387.51 -24829387.24 0.0287 0.0121

Earth -72693-12-13 16:04 J -24829348.08 -24829347.83 -24829347.58 0.0287 0.0014

Moon -72693-12-13 18:13 J -24829347.98 -24829347.74 -24829347.50 0.0287 0.0028 \*

Earth -72692-12-28 08:52 J -24828968.31 -24828968.13 -24828967.93 0.0292 0.0188

Moon -72692-12-28 12:57 J -24828968.13 -24828967.96 -24828967.78 0.0292 0.0205 \*

Venus -72686-03-17 03:35 J -24827063.41 -24827063.35 -24827063.27 0.0302 0.0283

Venus -72686-11-02 04:04 J -24826833.44 -24826833.33 -24826833.21 0.0301 0.0252

Mercury -72684-10-15 22:04 J -24826119.64 -24826119.58 -24826119.51 0.0295 0.0250

Mercury -72683-01-12 10:04 J -24826031.19 -24826031.08 -24826030.96 0.0294 0.0123

Mercury -72683-04-10 22:04 J -24825942.71 -24825942.58 -24825942.46 0.0293 0.0011

Mercury -72683-07-08 09:49 J -24825854.21 -24825854.09 -24825853.98 0.0292 0.0126

Mercury -72683-10-04 21:35 J -24825765.67 -24825765.60 -24825765.54 0.0291 0.0248

Moon -72681-05-20 13:11 J -24825172.07 -24825171.95 -24825171.81 0.0284 0.0237

Earth -72681-05-20 16:47 J -24825171.90 -24825171.80 -24825171.69 0.0284 0.0253 \*

Moon -72680-06-02 03:35 J -24824794.56 -24824794.35 -24824794.12 0.0279 0.0092

Earth -72680-06-02 05:59 J -24824794.47 -24824794.25 -24824794.03 0.0279 0.0105 \*

Earth -72679-06-14 09:35 J -24824417.34 -24824417.10 -24824416.86 0.0274 0.0038

Moon -72679-06-14 12:13 J -24824417.22 -24824416.99 -24824416.76 0.0274 0.0038 \*

Mars -72679-11-08 16:47 J -24824270.07 -24824269.80 -24824269.52 0.0273 0.0077

Earth -72678-06-26 04:47 J -24824040.48 -24824040.30 -24824040.11 0.0270 0.0170

Moon -72678-06-26 07:40 J -24824040.37 -24824040.18 -24824039.98 0.0270 0.0159 \*

Venus -72671-04-08 12:13 J -24821562.05 -24821561.99 -24821561.92 0.0260 0.0245

Venus -72671-11-23 12:28 J -24821333.17 -24821332.98 -24821332.78 0.0260 0.0109

Mercury -72668-10-22 23:16 J -24820268.62 -24820268.53 -24820268.42 0.0267 0.0228

Mercury -72667-01-19 21:49 J -24820179.77 -24820179.59 -24820179.41 0.0268 0.0086

Mercury -72667-04-18 20:23 J -24820090.84 -24820090.65 -24820090.46 0.0269 0.0058  
 Mercury -72667-07-16 18:42 J -24820001.84 -24820001.72 -24820001.59 0.0270 0.0204  
 Earth -72665-11-23 10:33 J -24819141.21 -24819141.06 -24819140.89 0.0280 0.0216  
 Moon -72665-11-23 11:59 J -24819141.16 -24819141.00 -24819140.82 0.0280 0.0209 \*  
 Moon -72664-12-07 09:21 J -24818762.37 -24818762.11 -24818761.86 0.0285 0.0047  
 Earth -72664-12-07 11:45 J -24818762.25 -24818762.01 -24818761.76 0.0285 0.0060 \*  
 Moon -72663-12-21 20:09 J -24818382.88 -24818382.66 -24818382.43 0.0290 0.0128  
 Earth -72663-12-21 23:59 J -24818382.73 -24818382.50 -24818382.27 0.0290 0.0111 \*  
 Mars -72663-12-25 19:11 J -24818378.97 -24818378.70 -24818378.42 0.0290 0.0111  
 Earth -72661-01-05 21:21 J -24818002.66 -24818002.61 -24818002.55 0.0294 0.0286  
 Venus -72657-09-26 07:40 J -24816277.31 -24816277.18 -24816277.03 0.0302 0.0223  
 Mercury -72654-03-04 23:45 J -24815387.52 -24815387.51 -24815387.50 0.0296 0.0293  
 Mercury -72654-06-01 11:30 J -24815299.12 -24815299.02 -24815298.91 0.0295 0.0167  
 Mercury -72654-08-28 23:30 J -24815210.65 -24815210.52 -24815210.39 0.0294 0.0041  
 Mercury -72654-11-25 11:16 J -24815122.15 -24815122.03 -24815121.90 0.0293 0.0084  
 Mercury -72653-02-21 23:01 J -24815033.63 -24815033.54 -24815033.45 0.0291 0.0206  
 Earth -72651-05-27 23:16 J -24814207.71 -24814207.53 -24814207.34 0.0281 0.0174  
 Moon -72651-05-28 01:54 J -24814207.62 -24814207.42 -24814207.22 0.0281 0.0158 \*  
 Moon -72650-06-09 04:47 J -24813830.54 -24813830.30 -24813830.05 0.0276 0.0023  
 Earth -72650-06-09 07:11 J -24813830.43 -24813830.20 -24813829.96 0.0276 0.0029 \*  
 Moon -72649-06-20 03:21 J -24813453.57 -24813453.36 -24813453.14 0.0272 0.0101  
 Earth -72649-06-20 05:59 J -24813453.47 -24813453.25 -24813453.03 0.0272 0.0109 \*  
 Mars -72649-12-26 05:59 J -24813264.30 -24813264.25 -24813264.18 0.0270 0.0264  
 Earth -72648-07-01 21:21 J -24813076.71 -24813076.61 -24813076.48 0.0268 0.0235  
 Moon -72648-07-01 23:16 J -24813076.65 -24813076.53 -24813076.38 0.0268 0.0221 \*  
 Venus -72642-10-19 11:59 J -24810776.11 -24810776.00 -24810775.86 0.0260 0.0210  
 Venus -72641-06-04 12:13 J -24810547.16 -24810546.99 -24810546.80 0.0261 0.0145  
 Mercury -72638-06-08 17:59 J -24809447.91 -24809447.75 -24809447.59 0.0268 0.0142  
 Mercury -72638-09-05 16:33 J -24809359.01 -24809358.81 -24809358.62 0.0269 0.0006  
 Mercury -72638-12-03 14:52 J -24809270.04 -24809269.88 -24809269.72 0.0270 0.0146



Moon -72636-11-17 07:40 J -24808555.19 -24808555.18 -24808555.15 0.0278 0.0276  
 Earth -72635-12-01 03:35 J -24808176.57 -24808176.35 -24808176.13 0.0282 0.0137  
 Moon -72635-12-01 06:28 J -24808176.45 -24808176.23 -24808176.01 0.0282 0.0125 \*  
 Earth -72634-12-15 10:18 J -24807797.32 -24807797.07 -24807796.82 0.0287 0.0028  
 Moon -72634-12-15 13:40 J -24807797.18 -24807796.93 -24807796.68 0.0287 0.0043 \*  
 Earth -72633-12-29 03:21 J -24807417.53 -24807417.36 -24807417.17 0.0292 0.0202  
 Moon -72633-12-29 04:18 J -24807417.49 -24807417.32 -24807417.14 0.0292 0.0217 \*  
 Venus -72627-04-08 08:09 J -24805491.33 -24805491.16 -24805490.99 0.0302 0.0176  
 Mercury -72625-10-18 12:28 J -24804567.06 -24804566.98 -24804566.89 0.0295 0.0215  
 Mercury -72624-01-15 00:28 J -24804478.60 -24804478.48 -24804478.36 0.0294 0.0089  
 Mercury -72624-04-13 12:28 J -24804390.11 -24804389.98 -24804389.86 0.0293 0.0038  
 Mercury -72624-07-11 00:13 J -24804301.60 -24804301.49 -24804301.38 0.0292 0.0160  
 Mercury -72624-10-07 11:59 J -24804213.03 -24804213.00 -24804212.97 0.0291 0.0282  
 Moon -72622-05-22 10:33 J -24803621.19 -24803621.06 -24803620.91 0.0284 0.0225  
 Earth -72622-05-22 12:42 J -24803621.09 -24803620.97 -24803620.84 0.0284 0.0241 \*  
 Earth -72621-06-03 01:54 J -24803243.64 -24803243.42 -24803243.18 0.0279 0.0092  
 Moon -72621-06-03 04:18 J -24803243.55 -24803243.32 -24803243.10 0.0279 0.0080 \*  
 Mars -72620-02-14 02:52 J -24802987.64 -24802987.38 -24802987.11 0.0276 0.0105  
 Earth -72620-06-15 05:30 J -24802866.50 -24802866.27 -24802866.03 0.0274 0.0052  
 Moon -72620-06-15 08:23 J -24802866.39 -24802866.15 -24802865.90 0.0274 0.0050 \*  
 Moon -72619-06-26 22:47 J -24802489.73 -24802489.55 -24802489.35 0.0270 0.0170  
 Earth -72619-06-27 00:57 J -24802489.63 -24802489.46 -24802489.28 0.0270 0.0184 \*  
 Venus -72612-04-30 14:52 J -24799990.05 -24799989.88 -24799989.71 0.0260 0.0163  
 Venus -72612-12-15 15:06 J -24799761.02 -24799760.87 -24799760.72 0.0260 0.0192  
 Jupiter -72610-06-12 00:42 J -24799217.93 -24799217.47 -24799216.99 0.0263 0.0058  
 Mercury -72609-10-25 16:18 J -24798715.96 -24798715.82 -24798715.68 0.0267 0.0185  
 Mercury -72608-01-22 14:37 J -24798627.08 -24798626.89 -24798626.70 0.0268 0.0043  
 Mercury -72608-04-21 13:11 J -24798538.13 -24798537.95 -24798537.77 0.0269 0.0101  
 Mercury -72608-07-19 11:16 J -24798449.09 -24798449.03 -24798448.94 0.0270 0.0247  
 Moon -72606-11-25 01:40 J -24797590.60 -24797590.43 -24797590.23 0.0280 0.0192

Earth -72606-11-25 05:16 J -24797590.44 -24797590.28 -24797590.10 0.0280 0.0204 \*  
 Moon -72605-12-08 03:06 J -24797211.61 -24797211.37 -24797211.12 0.0285 0.0033  
 Earth -72605-12-08 06:28 J -24797211.48 -24797211.23 -24797210.98 0.0285 0.0047 \*  
 Mars -72604-03-29 08:37 J -24797100.41 -24797100.14 -24797099.86 0.0286 0.0124  
 Earth -72604-12-22 18:28 J -24796831.96 -24796831.73 -24796831.51 0.0290 0.0125  
 Moon -72604-12-22 18:13 J -24796831.95 -24796831.74 -24796831.52 0.0290 0.0140 \*  
 Venus -72598-10-19 11:59 J -24794705.19 -24794705.00 -24794704.81 0.0302 0.0117  
 Mercury -72595-03-07 13:54 J -24793834.97 -24793834.92 -24793834.86 0.0296 0.0260  
 Mercury -72595-06-04 01:54 J -24793746.53 -24793746.42 -24793746.30 0.0295 0.0133  
 Mercury -72595-08-31 13:54 J -24793658.05 -24793657.92 -24793657.79 0.0294 0.0009  
 Mercury -72595-11-28 01:40 J -24793569.55 -24793569.43 -24793569.31 0.0293 0.0117  
 Mercury -72594-02-24 13:25 J -24793481.01 -24793480.94 -24793480.87 0.0292 0.0240  
 Moon -72592-05-28 16:18 J -24792657.02 -24792656.82 -24792656.60 0.0281 0.0147  
 Earth -72592-05-28 18:42 J -24792656.91 -24792656.72 -24792656.52 0.0281 0.0162 \*  
 Moon -72591-06-09 23:45 J -24792279.74 -24792279.51 -24792279.27 0.0276 0.0011  
 Earth -72591-06-10 02:52 J -24792279.62 -24792279.38 -24792279.14 0.0276 0.0015 \*  
 Mars -72590-04-03 12:42 J -24791982.24 -24791981.97 -24791981.69 0.0272 0.0086  
 Earth -72590-06-22 01:40 J -24791902.64 -24791902.43 -24791902.21 0.0272 0.0123  
 Moon -72590-06-22 03:35 J -24791902.56 -24791902.35 -24791902.13 0.0272 0.0112 \*  
 Earth -72589-07-02 17:16 J -24791525.86 -24791525.78 -24791525.68 0.0268 0.0248  
 Moon -72589-07-02 20:37 J -24791525.74 -24791525.64 -24791525.50 0.0268 0.0232 \*  
 Venus -72583-11-10 14:37 J -24789204.07 -24789203.89 -24789203.69 0.0260 0.0127  
 Venus -72582-06-27 14:52 J -24788974.97 -24788974.88 -24788974.77 0.0260 0.0228  
 Mercury -72579-03-14 12:28 J -24787984.06 -24787983.98 -24787983.89 0.0267 0.0241  
 Mercury -72579-06-11 10:47 J -24787895.23 -24787895.05 -24787894.87 0.0268 0.0099  
 Mercury -72579-09-08 09:06 J -24787806.30 -24787806.12 -24787805.93 0.0269 0.0045  
 Mercury -72579-12-06 07:25 J -24787717.32 -24787717.19 -24787717.04 0.0269 0.0189  
 Earth -72577-11-18 02:23 J -24787004.44 -24787004.40 -24787004.34 0.0277 0.0271  
 Moon -72577-11-18 05:59 J -24787004.32 -24787004.25 -24787004.15 0.0277 0.0260  
 Earth -72576-12-01 21:21 J -24786625.83 -24786625.61 -24786625.38 0.0282 0.0124

Moon -72576-12-02 00:13 J -24786625.72 -24786625.49 -24786625.24 0.0282 0.0110 \*  
 Moon -72575-12-16 03:21 J -24786246.61 -24786246.36 -24786246.10 0.0287 0.0056  
 Earth -72575-12-16 04:04 J -24786246.58 -24786246.33 -24786246.08 0.0287 0.0041 \*  
 Mars -72574-05-19 15:06 J -24786092.14 -24786091.87 -24786091.59 0.0289 0.0106  
 Moon -72574-12-30 17:30 J -24785866.92 -24785866.77 -24785866.61 0.0292 0.0229  
 Earth -72574-12-30 21:06 J -24785866.79 -24785866.62 -24785866.45 0.0292 0.0215 \*  
 Venus -72568-04-30 11:30 J -24783919.22 -24783919.02 -24783918.82 0.0302 0.0074  
 Mercury -72566-10-22 02:37 J -24783014.49 -24783014.39 -24783014.29 0.0295 0.0183  
 Mercury -72565-01-18 14:37 J -24782926.02 -24782925.89 -24782925.76 0.0294 0.0057  
 Mercury -72565-04-16 02:23 J -24782837.52 -24782837.40 -24782837.27 0.0293 0.0070  
 Mercury -72565-07-13 14:23 J -24782749.00 -24782748.90 -24782748.81 0.0292 0.0193  
 Earth -72563-05-23 07:11 J -24782070.33 -24782070.20 -24782070.05 0.0284 0.0229  
 Moon -72563-05-23 10:04 J -24782070.23 -24782070.08 -24782069.93 0.0284 0.0214 \*  
 Earth -72562-06-04 21:06 J -24781692.85 -24781692.62 -24781692.39 0.0279 0.0079  
 Moon -72562-06-05 00:28 J -24781692.71 -24781692.48 -24781692.24 0.0279 0.0069 \*  
 Moon -72561-06-15 23:16 J -24781315.76 -24781315.53 -24781315.28 0.0274 0.0060  
 Earth -72561-06-16 00:42 J -24781315.70 -24781315.47 -24781315.23 0.0274 0.0066 \*  
 Mars -72560-05-21 02:37 J -24780976.43 -24780976.39 -24780976.32 0.0271 0.0266  
 Moon -72560-06-27 17:01 J -24780938.95 -24780938.79 -24780938.60 0.0270 0.0182  
 Earth -72560-06-27 20:23 J -24780938.81 -24780938.65 -24780938.48 0.0270 0.0197 \*  
 Venus -72553-05-22 17:30 J -24778417.97 -24778417.77 -24778417.56 0.0260 0.0080  
 Mercury -72550-10-29 09:06 J -24777163.27 -24777163.12 -24777162.95 0.0267 0.0142  
 Mercury -72549-01-26 07:40 J -24777074.37 -24777074.18 -24777073.99 0.0268 0.0002  
 Mercury -72549-04-24 05:59 J -24776985.41 -24776985.25 -24776985.09 0.0269 0.0144  
 Moon -72547-11-25 21:35 J -24776039.78 -24776039.60 -24776039.40 0.0280 0.0178  
 Earth -72547-11-25 23:59 J -24776039.68 -24776039.50 -24776039.31 0.0280 0.0192 \*  
 Earth -72546-12-10 00:57 J -24775660.71 -24775660.46 -24775660.21 0.0285 0.0034  
 Moon -72546-12-10 01:54 J -24775660.66 -24775660.42 -24775660.17 0.0285 0.0019 \*  
 Earth -72545-12-23 12:42 J -24775281.19 -24775280.97 -24775280.75 0.0290 0.0139  
 Moon -72545-12-23 16:04 J -24775281.03 -24775280.83 -24775280.61 0.0290 0.0154 \*

Venus -72539-11-10 15:49 J -24773133.05 -24773132.84 -24773132.64 0.0302 0.0014  
 Mercury -72536-03-10 04:04 J -24772282.40 -24772282.33 -24772282.24 0.0296 0.0227  
 Mercury -72536-06-06 16:18 J -24772193.95 -24772193.82 -24772193.70 0.0295 0.0100  
 Mercury -72536-09-03 04:04 J -24772105.46 -24772105.33 -24772105.20 0.0294 0.0026  
 Mercury -72536-11-30 15:49 J -24772016.95 -24772016.84 -24772016.73 0.0293 0.0151  
 Mercury -72535-02-27 03:35 J -24771928.39 -24771928.35 -24771928.30 0.0292 0.0273  
 Moon -72534-05-17 16:47 J -24771483.82 -24771483.80 -24771483.77 0.0286 0.0284  
 Moon -72533-05-29 11:01 J -24771106.24 -24771106.04 -24771105.83 0.0281 0.0138  
 Earth -72533-05-29 14:09 J -24771106.10 -24771105.91 -24771105.70 0.0281 0.0149 \*  
 Earth -72532-06-10 22:33 J -24770728.80 -24770728.56 -24770728.32 0.0276 0.0003  
 Moon -72532-06-10 23:30 J -24770728.76 -24770728.52 -24770728.29 0.0276 0.0004 \*  
 Mars -72532-07-09 22:18 J -24770699.83 -24770699.57 -24770699.30 0.0276 0.0097  
 Earth -72531-06-22 21:35 J -24770351.80 -24770351.60 -24770351.39 0.0272 0.0137  
 Moon -72531-06-23 00:57 J -24770351.67 -24770351.46 -24770351.24 0.0272 0.0124 \*  
 Moon -72530-07-04 12:13 J -24769975.07 -24769974.99 -24769974.88 0.0268 0.0247  
 Earth -72530-07-04 13:25 J -24769974.98 -24769974.94 -24769974.88 0.0268 0.0261 \*  
 Venus -72524-12-02 17:59 J -24767631.96 -24767631.75 -24767631.53 0.0260 0.0042  
 Mercury -72520-03-17 05:59 J -24766431.38 -24766431.25 -24766431.12 0.0267 0.0194  
 Mercury -72520-06-14 04:18 J -24766342.51 -24766342.32 -24766342.13 0.0268 0.0053  
 Mercury -72520-09-11 02:37 J -24766253.57 -24766253.39 -24766253.21 0.0268 0.0090  
 Mercury -72520-12-09 00:57 J -24766164.55 -24766164.46 -24766164.36 0.0269 0.0235  
 Earth -72518-11-19 23:01 J -24765453.63 -24765453.54 -24765453.45 0.0277 0.0259  
 Moon -72518-11-20 00:13 J -24765453.60 -24765453.49 -24765453.35 0.0277 0.0245 \*  
 Moon -72517-12-02 15:49 J -24765075.08 -24765074.84 -24765074.59 0.0282 0.0093  
 Earth -72517-12-02 17:45 J -24765074.98 -24765074.76 -24765074.52 0.0282 0.0110 \*  
 Mars -72516-08-21 07:40 J -24764813.45 -24764813.18 -24764812.90 0.0286 0.0129  
 Moon -72516-12-16 20:23 J -24764695.89 -24764695.65 -24764695.40 0.0287 0.0072  
 Earth -72516-12-17 00:13 J -24764695.73 -24764695.49 -24764695.24 0.0287 0.0056 \*  
 Moon -72515-12-31 14:52 J -24764316.01 -24764315.88 -24764315.75 0.0292 0.0243  
 Earth -72515-12-31 16:47 J -24764315.94 -24764315.80 -24764315.63 0.0292 0.0231 \*

Venus -72509-05-22 15:35 J -24762347.05 -24762346.85 -24762346.64 0.0302 0.0033  
 Mercury -72507-07-28 04:47 J -24761550.34 -24761550.30 -24761550.25 0.0296 0.0278  
 Mercury -72507-10-24 17:01 J -24761461.90 -24761461.79 -24761461.68 0.0295 0.0151  
 Mercury -72506-01-21 04:47 J -24761373.43 -24761373.30 -24761373.17 0.0294 0.0025  
 Mercury -72506-04-19 16:47 J -24761284.92 -24761284.80 -24761284.68 0.0293 0.0102  
 Mercury -72506-07-17 04:33 J -24761196.39 -24761196.31 -24761196.23 0.0292 0.0225  
 Earth -72504-05-24 02:09 J -24760519.55 -24760519.41 -24760519.25 0.0284 0.0217  
 Moon -72504-05-24 05:01 J -24760519.45 -24760519.29 -24760519.11 0.0284 0.0204 \*  
 Moon -72503-06-05 15:06 J -24760142.11 -24760141.87 -24760141.63 0.0279 0.0062  
 Earth -72503-06-05 16:04 J -24760142.06 -24760141.83 -24760141.59 0.0279 0.0066 \*  
 Moon -72502-06-17 16:47 J -24759765.03 -24759764.80 -24759764.57 0.0275 0.0070  
 Earth -72502-06-17 20:09 J -24759764.88 -24759764.66 -24759764.42 0.0275 0.0079 \*  
 Mars -72502-08-27 06:57 J -24759694.48 -24759694.21 -24759693.93 0.0274 0.0086  
 Earth -72501-06-28 15:49 J -24759387.98 -24759387.84 -24759387.68 0.0270 0.0211  
 Moon -72501-06-28 16:47 J -24759387.95 -24759387.80 -24759387.64 0.0270 0.0197 \*  
 Venus -72494-06-14 21:06 J -24756845.84 -24756845.62 -24756845.40 0.0260 0.0005  
 Mercury -72491-08-04 04:33 J -24755699.39 -24755699.31 -24755699.21 0.0266 0.0235  
 Mercury -72491-11-01 02:52 J -24755610.56 -24755610.38 -24755610.20 0.0267 0.0094  
 Mercury -72490-01-29 01:11 J -24755521.64 -24755521.45 -24755521.26 0.0268 0.0049  
 Mercury -72490-04-27 23:30 J -24755432.65 -24755432.52 -24755432.38 0.0269 0.0192  
 Earth -72488-11-26 20:52 J -24754488.81 -24754488.63 -24754488.42 0.0280 0.0180  
 Moon -72488-11-26 23:45 J -24754488.70 -24754488.51 -24754488.30 0.0280 0.0164 \*  
 Earth -72487-12-10 21:49 J -24754109.84 -24754109.59 -24754109.34 0.0285 0.0020  
 Moon -72487-12-11 01:54 J -24754109.68 -24754109.42 -24754109.17 0.0285 0.0006 \*  
 Mars -72486-10-12 06:42 J -24753804.49 -24753804.22 -24753803.94 0.0289 0.0108  
 Earth -72486-12-25 09:35 J -24753730.31 -24753730.10 -24753729.89 0.0290 0.0153  
 Moon -72486-12-25 11:16 J -24753730.23 -24753730.03 -24753729.81 0.0290 0.0167 \*  
 Venus -72480-12-02 20:09 J -24751560.85 -24751560.66 -24751560.46 0.0302 0.0094  
 Mercury -72477-03-12 18:28 J -24750729.82 -24750729.73 -24750729.63 0.0296 0.0193  
 Mercury -72477-06-09 06:28 J -24750641.35 -24750641.23 -24750641.10 0.0295 0.0066

Mercury -72477-09-05 18:28 J -24750552.86 -24750552.73 -24750552.60 0.0294 0.0060

Mercury -72477-12-03 06:13 J -24750464.34 -24750464.24 -24750464.14 0.0293 0.0185

Moon -72475-05-18 12:28 J -24749933.04 -24749932.98 -24749932.91 0.0286 0.0275

Earth -72474-05-31 10:04 J -24749555.29 -24749555.08 -24749554.87 0.0281 0.0136

Moon -72474-05-31 11:30 J -24749555.22 -24749555.02 -24749554.81 0.0281 0.0130 \*

Earth -72473-06-11 18:28 J -24749177.97 -24749177.73 -24749177.49 0.0276 0.0013

Moon -72473-06-11 22:18 J -24749177.81 -24749177.57 -24749177.33 0.0276 0.0009 \*

Moon -72472-06-23 17:59 J -24748800.96 -24748800.75 -24748800.53 0.0272 0.0137

Earth -72472-06-23 18:13 J -24748800.94 -24748800.74 -24748800.54 0.0272 0.0150 \*

Moon -72471-07-05 06:42 J -24748424.25 -24748424.22 -24748424.17 0.0268 0.0264

Venus -72465-12-24 22:33 J -24746059.77 -24746059.56 -24746059.34 0.0260 0.0047

Mercury -72461-03-19 23:59 J -24744878.65 -24744878.50 -24744878.33 0.0267 0.0144

Mercury -72461-06-16 22:33 J -24744789.75 -24744789.56 -24744789.37 0.0268 0.0003

Mercury -72461-09-13 20:37 J -24744700.79 -24744700.64 -24744700.47 0.0269 0.0142

Moon -72459-11-20 18:57 J -24743902.85 -24743902.71 -24743902.56 0.0277 0.0230

Earth -72459-11-20 22:04 J -24743902.69 -24743902.58 -24743902.46 0.0277 0.0246 \*

Moon -72458-12-04 13:25 J -24743524.18 -24743523.94 -24743523.70 0.0282 0.0079

Earth -72458-12-04 16:47 J -24743524.03 -24743523.80 -24743523.55 0.0282 0.0096 \*

Moon -72457-12-17 21:49 J -24743144.81 -24743144.59 -24743144.35 0.0287 0.0087

Earth -72457-12-17 23:01 J -24743144.78 -24743144.54 -24743144.29 0.0287 0.0072 \*

Earth -72455-01-01 15:06 J -24742764.98 -24742764.87 -24742764.72 0.0292 0.0247

Moon -72455-01-01 17:30 J -24742764.88 -24742764.77 -24742764.65 0.0292 0.0257 \*

Venus -72450-06-14 21:06 J -24740774.80 -24740774.62 -24740774.44 0.0302 0.0142

Mercury -72448-07-30 19:25 J -24739997.76 -24739997.69 -24739997.62 0.0296 0.0243

Mercury -72448-10-27 07:25 J -24739909.31 -24739909.19 -24739909.07 0.0295 0.0115

Mercury -72447-01-23 19:25 J -24739820.82 -24739820.69 -24739820.56 0.0294 0.0012

Mercury -72447-04-22 07:11 J -24739732.31 -24739732.20 -24739732.08 0.0293 0.0137

Mercury -72447-07-19 19:11 J -24739643.76 -24739643.70 -24739643.65 0.0292 0.0261

Moon -72445-05-24 21:06 J -24738968.79 -24738968.62 -24738968.44 0.0284 0.0197

Earth -72445-05-24 22:33 J -24738968.71 -24738968.56 -24738968.38 0.0284 0.0206 \*

Moon -72444-06-06 09:06 J -24738591.35 -24738591.12 -24738590.89 0.0279 0.0055  
 Earth -72444-06-06 12:42 J -24738591.20 -24738590.97 -24738590.73 0.0279 0.0053 \*  
 Mars -72444-12-02 17:01 J -24738412.05 -24738411.79 -24738411.52 0.0277 0.0096  
 Moon -72443-06-18 16:47 J -24738214.02 -24738213.80 -24738213.58 0.0275 0.0081  
 Earth -72443-06-18 17:01 J -24738214.01 -24738213.79 -24738213.56 0.0275 0.0092 \*  
 Earth -72442-06-30 12:57 J -24737837.08 -24737836.96 -24737836.82 0.0270 0.0224  
 Moon -72442-06-30 16:18 J -24737836.95 -24737836.82 -24737836.65 0.0270 0.0211 \*  
 Venus -72436-11-20 02:09 J -24735502.43 -24735502.41 -24735502.39 0.0259 0.0258  
 Venus -72435-07-07 01:54 J -24735273.62 -24735273.42 -24735273.21 0.0260 0.0095  
 Mercury -72432-08-06 23:16 J -24734146.67 -24734146.53 -24734146.39 0.0266 0.0182  
 Mercury -72432-11-03 21:35 J -24734057.79 -24734057.60 -24734057.41 0.0267 0.0041  
 Mercury -72431-01-31 19:54 J -24733968.85 -24733968.67 -24733968.49 0.0268 0.0102  
 Mercury -72431-04-30 17:59 J -24733879.81 -24733879.75 -24733879.66 0.0269 0.0246  
 Earth -72429-11-27 22:18 J -24732937.77 -24732937.57 -24732937.36 0.0280 0.0165  
 Moon -72429-11-28 01:25 J -24732937.65 -24732937.44 -24732937.21 0.0280 0.0149 \*  
 Earth -72428-12-11 23:16 J -24732558.78 -24732558.53 -24732558.28 0.0285 0.0004  
 Moon -72428-12-11 23:30 J -24732558.78 -24732558.52 -24732558.26 0.0285 0.0011 \*  
 Mars -72427-01-14 08:52 J -24732525.41 -24732525.13 -24732524.85 0.0285 0.0117  
 Moon -72427-12-26 07:54 J -24732179.36 -24732179.17 -24732178.96 0.0290 0.0181  
 Earth -72427-12-26 10:47 J -24732179.25 -24732179.05 -24732178.84 0.0290 0.0170 \*  
 Venus -72421-12-25 03:21 J -24729988.51 -24729988.36 -24729988.21 0.0302 0.0211  
 Mercury -72419-12-17 21:21 J -24729265.64 -24729265.61 -24729265.57 0.0297 0.0282  
 Mercury -72418-03-16 09:21 J -24729177.21 -24729177.11 -24729176.99 0.0296 0.0154  
 Mercury -72418-06-12 21:21 J -24729088.74 -24729088.61 -24729088.48 0.0295 0.0027  
 Mercury -72418-09-09 09:21 J -24729000.23 -24729000.11 -24728999.99 0.0294 0.0100  
 Mercury -72418-12-06 21:06 J -24728911.70 -24728911.62 -24728911.53 0.0293 0.0224  
 Earth -72416-05-19 13:11 J -24728381.99 -24728381.95 -24728381.87 0.0286 0.0277  
 Moon -72416-05-19 14:23 J -24728381.97 -24728381.90 -24728381.80 0.0286 0.0265 \*  
 Earth -72415-06-01 08:09 J -24728004.37 -24728004.16 -24728003.94 0.0281 0.0123  
 Moon -72415-06-01 11:45 J -24728004.22 -24728004.01 -24728003.79 0.0281 0.0120 \*

Earth -72414-06-13 16:47 J -24727627.04 -24727626.80 -24727626.56 0.0276 0.0027  
 Moon -72414-06-13 17:01 J -24727627.03 -24727626.79 -24727626.54 0.0276 0.0019 \*  
 Mars -72413-01-20 10:04 J -24727406.34 -24727406.08 -24727405.81 0.0274 0.0099  
 Moon -72413-06-24 13:11 J -24727250.15 -24727249.95 -24727249.75 0.0272 0.0149  
 Earth -72413-06-24 16:18 J -24727250.00 -24727249.82 -24727249.62 0.0272 0.0165 \*  
 Venus -72406-06-02 05:01 J -24724716.41 -24724716.29 -24724716.17 0.0259 0.0212  
 Venus -72405-01-17 04:33 J -24724487.48 -24724487.31 -24724487.12 0.0260 0.0141  
 Mercury -72403-12-24 21:21 J -24723414.70 -24723414.61 -24723414.51 0.0266 0.0226  
 Mercury -72402-03-23 19:25 J -24723325.86 -24723325.69 -24723325.50 0.0267 0.0086  
 Mercury -72402-06-20 17:45 J -24723236.94 -24723236.76 -24723236.57 0.0268 0.0057  
 Mercury -72402-09-17 16:04 J -24723147.95 -24723147.83 -24723147.70 0.0269 0.0200  
 Moon -72400-11-21 22:47 J -24722351.69 -24722351.55 -24722351.39 0.0278 0.0217  
 Earth -72400-11-22 01:40 J -24722351.56 -24722351.43 -24722351.28 0.0278 0.0231 \*  
 Earth -72399-12-05 20:37 J -24721972.88 -24721972.64 -24721972.39 0.0282 0.0078  
 Moon -72399-12-05 21:21 J -24721972.84 -24721972.61 -24721972.37 0.0282 0.0064 \*  
 Earth -72398-12-20 02:37 J -24721593.62 -24721593.39 -24721593.14 0.0287 0.0090  
 Moon -72398-12-20 05:59 J -24721593.47 -24721593.25 -24721593.01 0.0287 0.0103 \*  
 Mars -72397-03-06 02:09 J -24721516.67 -24721516.41 -24721516.13 0.0288 0.0115  
 Earth -72396-01-02 19:11 J -24721213.81 -24721213.70 -24721213.60 0.0292 0.0264  
 Moon -72396-01-02 22:33 J -24721213.63 -24721213.56 -24721213.47 0.0292 0.0274 \*  
 Venus -72392-11-19 04:04 J -24719432.41 -24719432.33 -24719432.25 0.0302 0.0276  
 Venus -72391-07-07 05:01 J -24719202.39 -24719202.29 -24719202.19 0.0301 0.0261  
 Mercury -72389-08-02 10:18 J -24718445.16 -24718445.07 -24718444.97 0.0296 0.0202  
 Mercury -72389-10-29 22:33 J -24718356.69 -24718356.56 -24718356.44 0.0295 0.0074  
 Mercury -72388-01-26 10:18 J -24718268.19 -24718268.07 -24718267.94 0.0294 0.0053  
 Mercury -72388-04-24 22:18 J -24718179.67 -24718179.57 -24718179.47 0.0293 0.0177  
 Moon -72386-05-26 18:13 J -24717417.91 -24717417.74 -24717417.56 0.0284 0.0187  
 Earth -72386-05-26 21:35 J -24717417.77 -24717417.60 -24717417.42 0.0284 0.0193 \*  
 Mars -72385-03-10 08:23 J -24717129.19 -24717129.15 -24717129.10 0.0280 0.0276  
 Earth -72385-06-07 11:30 J -24717040.26 -24717040.02 -24717039.78 0.0279 0.0039



Moon -72385-06-07 11:30 J -24717040.25 -24717040.02 -24717039.79 0.0279 0.0045 \*  
 Earth -72384-06-19 15:35 J -24716663.06 -24716662.85 -24716662.62 0.0275 0.0107  
 Moon -72384-06-19 19:11 J -24716662.92 -24716662.70 -24716662.47 0.0275 0.0092 \*  
 Earth -72383-07-01 11:59 J -24716286.10 -24716286.00 -24716285.88 0.0270 0.0238  
 Moon -72383-07-01 13:11 J -24716286.08 -24716285.95 -24716285.81 0.0270 0.0226 \*  
 Venus -72377-12-12 08:23 J -24713930.31 -24713930.15 -24713929.98 0.0260 0.0164  
 Venus -72376-07-29 08:23 J -24713701.28 -24713701.15 -24713700.99 0.0260 0.0191  
 Mercury -72373-05-12 20:52 J -24712682.65 -24712682.63 -24712682.60 0.0266 0.0262  
 Mercury -72373-08-09 18:57 J -24712593.87 -24712593.71 -24712593.53 0.0266 0.0123  
 Mercury -72373-11-06 17:16 J -24712504.97 -24712504.78 -24712504.58 0.0267 0.0020  
 Mercury -72372-02-03 15:35 J -24712416.00 -24712415.85 -24712415.69 0.0268 0.0163  
 Moon -72370-11-30 02:37 J -24711386.61 -24711386.39 -24711386.16 0.0280 0.0135  
 Earth -72370-11-30 03:49 J -24711386.55 -24711386.34 -24711386.13 0.0280 0.0149 \*  
 Moon -72369-12-13 00:57 J -24711007.71 -24711007.46 -24711007.20 0.0285 0.0026  
 Earth -72369-12-13 04:47 J -24711007.55 -24711007.30 -24711007.05 0.0285 0.0014 \*  
 Moon -72368-12-27 12:57 J -24710628.13 -24710627.96 -24710627.77 0.0290 0.0198  
 Earth -72368-12-27 16:18 J -24710628.00 -24710627.82 -24710627.62 0.0290 0.0188 \*  
 Venus -72362-06-01 11:16 J -24708646.18 -24708646.03 -24708645.87 0.0303 0.0203  
 Mercury -72360-12-20 12:57 J -24707713.04 -24707712.96 -24707712.89 0.0297 0.0237  
 Mercury -72359-03-19 00:57 J -24707624.58 -24707624.46 -24707624.34 0.0296 0.0109  
 Mercury -72359-06-15 12:42 J -24707536.09 -24707535.97 -24707535.84 0.0295 0.0021  
 Mercury -72359-09-12 00:42 J -24707447.58 -24707447.47 -24707447.36 0.0294 0.0143  
 Mercury -72359-12-09 12:28 J -24707359.03 -24707358.98 -24707358.93 0.0293 0.0267  
 Earth -72357-05-20 14:09 J -24706830.99 -24706830.91 -24706830.80 0.0286 0.0263  
 Moon -72357-05-20 17:59 J -24706830.86 -24706830.75 -24706830.63 0.0286 0.0250 \*  
 Earth -72356-06-02 08:52 J -24706453.34 -24706453.13 -24706452.90 0.0281 0.0108  
 Moon -72356-06-02 09:21 J -24706453.34 -24706453.11 -24706452.88 0.0281 0.0108 \*  
 Mars -72355-04-28 02:52 J -24706123.64 -24706123.38 -24706123.10 0.0277 0.0079  
 Moon -72355-06-14 13:54 J -24706076.16 -24706075.92 -24706075.68 0.0276 0.0028  
 Earth -72355-06-14 17:30 J -24706076.00 -24706075.77 -24706075.53 0.0276 0.0041 \*

Moon -72354-06-26 15:35 J -24705699.03 -24705698.85 -24705698.66 0.0272 0.0165  
 Earth -72354-06-26 17:16 J -24705698.96 -24705698.78 -24705698.60 0.0272 0.0179 \*  
 Venus -72347-06-24 12:28 J -24703144.17 -24703143.98 -24703143.78 0.0260 0.0114  
 Venus -72346-02-08 12:13 J -24702915.05 -24702914.99 -24702914.90 0.0260 0.0242  
 Mercury -72344-12-27 17:45 J -24701861.90 -24701861.76 -24701861.60 0.0267 0.0163  
 Mercury -72343-03-26 16:04 J -24701773.02 -24701772.83 -24701772.64 0.0267 0.0021  
 Mercury -72343-06-23 14:09 J -24701684.07 -24701683.91 -24701683.73 0.0268 0.0123  
 Mercury -72343-09-20 12:42 J -24701595.00 -24701594.97 -24701594.94 0.0269 0.0265  
 Earth -72341-11-23 09:35 J -24700800.25 -24700800.10 -24700799.93 0.0278 0.0215  
 Moon -72341-11-23 10:47 J -24700800.21 -24700800.05 -24700799.88 0.0278 0.0201 \*  
 Earth -72340-12-07 05:16 J -24700421.53 -24700421.28 -24700421.04 0.0283 0.0060  
 Moon -72340-12-07 08:52 J -24700421.37 -24700421.13 -24700420.88 0.0283 0.0047 \*  
 Mars -72339-06-09 20:09 J -24700236.93 -24700236.66 -24700236.37 0.0285 0.0102  
 Earth -72339-12-21 11:30 J -24700042.24 -24700042.02 -24700041.78 0.0287 0.0111  
 Moon -72339-12-21 14:23 J -24700042.13 -24700041.90 -24700041.66 0.0287 0.0120 \*  
 Earth -72337-01-05 04:04 J -24699662.37 -24699662.33 -24699662.26 0.0292 0.0285  
 Moon -72337-01-05 04:04 J -24699662.34 -24699662.33 -24699662.29 0.0292 0.0290 \*  
 Venus -72333-12-11 15:49 J -24697860.02 -24697859.84 -24697859.66 0.0302 0.0140  
 Mercury -72330-05-09 14:23 J -24696980.94 -24696980.90 -24696980.86 0.0296 0.0280  
 Mercury -72330-08-06 02:23 J -24696892.51 -24696892.40 -24696892.29 0.0296 0.0152  
 Mercury -72330-11-02 14:23 J -24696804.03 -24696803.90 -24696803.77 0.0295 0.0025  
 Mercury -72329-01-30 02:09 J -24696715.53 -24696715.41 -24696715.28 0.0294 0.0101  
 Mercury -72329-04-27 14:09 J -24696626.99 -24696626.91 -24696626.83 0.0293 0.0225  
 Moon -72327-05-27 23:59 J -24695866.67 -24695866.50 -24695866.31 0.0284 0.0174  
 Earth -72327-05-28 00:28 J -24695866.65 -24695866.48 -24695866.28 0.0284 0.0179 \*  
 Earth -72326-06-09 13:54 J -24695489.16 -24695488.92 -24695488.68 0.0279 0.0024  
 Moon -72326-06-09 17:30 J -24695489.01 -24695488.77 -24695488.54 0.0279 0.0034 \*  
 Mars -72325-06-14 17:59 J -24695118.01 -24695117.75 -24695117.48 0.0274 0.0111  
 Earth -72325-06-20 17:59 J -24695111.96 -24695111.75 -24695111.53 0.0274 0.0121  
 Moon -72325-06-20 19:40 J -24695111.90 -24695111.68 -24695111.45 0.0274 0.0106 \*

Moon -72324-07-02 11:16 J -24694735.13 -24694735.03 -24694734.91 0.0270 0.0242  
 Earth -72324-07-02 14:23 J -24694734.98 -24694734.90 -24694734.82 0.0270 0.0253 \*  
 Venus -72317-01-04 16:33 J -24692358.02 -24692357.81 -24692357.60 0.0260 0.0063  
 Mercury -72314-05-16 17:45 J -24691129.88 -24691129.76 -24691129.63 0.0266 0.0196  
 Mercury -72314-08-13 16:04 J -24691041.02 -24691040.83 -24691040.64 0.0267 0.0055  
 Mercury -72314-11-10 14:09 J -24690952.08 -24690951.91 -24690951.72 0.0268 0.0088  
 Mercury -72313-02-07 12:28 J -24690863.07 -24690862.98 -24690862.87 0.0268 0.0231  
 Moon -72312-11-17 22:33 J -24690213.63 -24690213.56 -24690213.48 0.0275 0.0263  
 Moon -72311-12-01 10:18 J -24689835.29 -24689835.07 -24689834.83 0.0280 0.0117  
 Earth -72311-12-01 13:54 J -24689835.13 -24689834.92 -24689834.69 0.0280 0.0132 \*  
 Moon -72310-12-15 13:40 J -24689456.17 -24689455.93 -24689455.69 0.0285 0.0044  
 Earth -72310-12-15 15:49 J -24689456.09 -24689455.84 -24689455.59 0.0285 0.0034 \*  
 Mars -72309-07-31 06:57 J -24689227.46 -24689227.21 -24689226.95 0.0288 0.0145  
 Earth -72309-12-29 03:35 J -24689076.51 -24689076.35 -24689076.17 0.0290 0.0208  
 Moon -72309-12-29 04:33 J -24689076.46 -24689076.31 -24689076.14 0.0290 0.0216 \*  
 Venus -72303-06-24 00:13 J -24687073.69 -24687073.49 -24687073.29 0.0302 0.0061  
 Mercury -72301-12-23 05:01 J -24686160.39 -24686160.29 -24686160.19 0.0296 0.0184  
 Mercury -72300-03-21 17:01 J -24686071.92 -24686071.79 -24686071.66 0.0295 0.0057  
 Mercury -72300-06-18 05:01 J -24685983.42 -24685983.29 -24685983.17 0.0294 0.0070  
 Mercury -72300-09-14 16:47 J -24685894.89 -24685894.80 -24685894.70 0.0293 0.0194  
 Earth -72298-05-22 19:25 J -24685279.80 -24685279.69 -24685279.57 0.0286 0.0248  
 Moon -72298-05-22 20:09 J -24685279.78 -24685279.66 -24685279.51 0.0286 0.0238 \*  
 Moon -72297-06-03 10:04 J -24684902.30 -24684902.08 -24684901.85 0.0281 0.0096  
 Earth -72297-06-03 13:25 J -24684902.17 -24684901.94 -24684901.71 0.0281 0.0092 \*  
 Mars -72297-08-04 03:49 J -24684840.44 -24684840.34 -24684840.21 0.0280 0.0254  
 Moon -72296-06-15 19:40 J -24684524.90 -24684524.68 -24684524.44 0.0276 0.0044  
 Earth -72296-06-15 21:21 J -24684524.84 -24684524.61 -24684524.37 0.0276 0.0058 \*  
 Earth -72295-06-27 20:52 J -24684147.79 -24684147.63 -24684147.46 0.0272 0.0195  
 Moon -72295-06-27 23:30 J -24684147.69 -24684147.52 -24684147.34 0.0272 0.0181 \*  
 Venus -72288-07-16 21:49 J -24681571.81 -24681571.59 -24681571.37 0.0260 0.0009

Mercury -72285-10-02 17:16 J -24680397.87 -24680397.78 -24680397.68 0.0266 0.0232

Mercury -72285-12-30 15:35 J -24680309.03 -24680308.85 -24680308.67 0.0267 0.0091

Mercury -72284-03-29 13:54 J -24680220.11 -24680219.92 -24680219.73 0.0268 0.0051

Mercury -72284-06-26 11:59 J -24680131.12 -24680131.00 -24680130.86 0.0269 0.0195

Earth -72282-11-25 22:33 J -24679248.74 -24679248.56 -24679248.38 0.0278 0.0197

Moon -72282-11-26 01:54 J -24679248.60 -24679248.42 -24679248.22 0.0278 0.0182 \*

Earth -72281-12-08 18:42 J -24678869.97 -24678869.72 -24678869.47 0.0283 0.0039

Moon -72281-12-08 20:23 J -24678869.91 -24678869.65 -24678869.39 0.0283 0.0027 \*

Moon -72280-12-22 23:30 J -24678490.74 -24678490.52 -24678490.28 0.0288 0.0139

Earth -72280-12-23 01:25 J -24678490.65 -24678490.44 -24678490.21 0.0288 0.0133 \*

Venus -72273-01-04 06:13 J -24676287.44 -24676287.24 -24676287.03 0.0302 0.0010

Mercury -72271-05-12 06:57 J -24675428.29 -24675428.21 -24675428.13 0.0296 0.0224

Mercury -72271-08-08 18:57 J -24675339.83 -24675339.71 -24675339.59 0.0295 0.0096

Mercury -72271-11-05 06:57 J -24675251.34 -24675251.21 -24675251.08 0.0294 0.0031

Mercury -72270-02-01 18:42 J -24675162.83 -24675162.72 -24675162.61 0.0293 0.0156

Mercury -72270-05-01 06:28 J -24675074.26 -24675074.23 -24675074.19 0.0292 0.0279

Earth -72268-05-29 06:57 J -24674315.40 -24674315.21 -24674315.01 0.0283 0.0162

Moon -72268-05-29 10:04 J -24674315.27 -24674315.08 -24674314.88 0.0283 0.0159 \*

Earth -72267-06-10 19:40 J -24673937.92 -24673937.68 -24673937.44 0.0278 0.0009

Moon -72267-06-10 21:35 J -24673937.84 -24673937.60 -24673937.35 0.0278 0.0018 \*

Mars -72267-09-21 18:28 J -24673835.00 -24673834.73 -24673834.45 0.0277 0.0060

Moon -72266-06-22 20:09 J -24673560.87 -24673560.66 -24673560.43 0.0274 0.0121

Earth -72266-06-22 23:16 J -24673560.73 -24673560.53 -24673560.32 0.0274 0.0137 \*

Moon -72265-07-03 16:18 J -24673183.87 -24673183.82 -24673183.74 0.0270 0.0258

Earth -72265-07-03 19:25 J -24673183.72 -24673183.69 -24673183.66 0.0270 0.0268

Venus -72258-01-27 02:23 J -24670785.62 -24670785.40 -24670785.19 0.0260 0.0043

Mercury -72255-02-19 17:16 J -24669665.79 -24669665.78 -24669665.76 0.0266 0.0265

Mercury -72255-05-19 15:35 J -24669577.02 -24669576.85 -24669576.68 0.0267 0.0124

Mercury -72255-08-16 13:54 J -24669488.11 -24669487.92 -24669487.73 0.0267 0.0018

Mercury -72255-11-13 11:59 J -24669399.14 -24669399.00 -24669398.84 0.0268 0.0161

Moon -72253-11-19 08:37 J -24668662.24 -24668662.14 -24668662.02 0.0276 0.0245  
 Earth -72253-11-19 12:42 J -24668662.04 -24668661.97 -24668661.89 0.0276 0.0261 \*  
 Moon -72252-12-03 02:09 J -24668283.63 -24668283.41 -24668283.18 0.0280 0.0099  
 Earth -72252-12-03 04:04 J -24668283.56 -24668283.33 -24668283.10 0.0280 0.0112 \*  
 Mars -72251-11-04 13:11 J -24667947.24 -24667946.95 -24667946.65 0.0285 0.0061  
 Earth -72251-12-17 06:28 J -24667904.47 -24667904.23 -24667903.98 0.0285 0.0055  
 Moon -72251-12-17 08:37 J -24667904.37 -24667904.14 -24667903.90 0.0285 0.0063 \*  
 Earth -72250-12-31 19:11 J -24667524.84 -24667524.70 -24667524.54 0.0290 0.0231  
 Moon -72250-12-31 23:16 J -24667524.67 -24667524.53 -24667524.38 0.0290 0.0235 \*  
 Venus -72244-07-16 16:18 J -24665501.02 -24665500.82 -24665500.63 0.0302 0.0094  
 Mercury -72242-09-29 10:04 J -24664696.14 -24664696.08 -24664696.01 0.0297 0.0251  
 Mercury -72242-12-26 22:04 J -24664607.70 -24664607.58 -24664607.46 0.0296 0.0123  
 Mercury -72241-03-24 10:04 J -24664519.21 -24664519.08 -24664518.95 0.0295 0.0004  
 Mercury -72241-06-20 21:49 J -24664430.70 -24664430.59 -24664430.47 0.0294 0.0130  
 Mercury -72241-09-17 09:49 J -24664342.15 -24664342.09 -24664342.03 0.0293 0.0253  
 Moon -72239-05-24 01:40 J -24663728.58 -24663728.43 -24663728.28 0.0285 0.0223  
 Earth -72239-05-24 04:47 J -24663728.43 -24663728.30 -24663728.15 0.0285 0.0230 \*  
 Moon -72238-06-05 19:11 J -24663350.91 -24663350.70 -24663350.47 0.0281 0.0078  
 Earth -72238-06-05 21:49 J -24663350.82 -24663350.59 -24663350.36 0.0281 0.0074 \*  
 Earth -72237-06-17 04:47 J -24662973.52 -24662973.30 -24662973.06 0.0276 0.0076  
 Moon -72237-06-17 07:25 J -24662973.41 -24662973.19 -24662972.96 0.0276 0.0061 \*  
 Mars -72237-11-08 23:16 J -24662828.77 -24662828.53 -24662828.28 0.0274 0.0141  
 Earth -72236-06-29 04:04 J -24662596.48 -24662596.33 -24662596.18 0.0272 0.0212  
 Moon -72236-06-29 06:57 J -24662596.37 -24662596.21 -24662596.03 0.0272 0.0198 \*  
 Venus -72230-12-23 08:23 J -24660228.19 -24660228.15 -24660228.09 0.0260 0.0252  
 Venus -72229-08-08 08:23 J -24659999.34 -24659999.15 -24659998.94 0.0260 0.0102  
 Mercury -72226-10-06 15:49 J -24658844.99 -24658844.84 -24658844.68 0.0267 0.0156  
 Mercury -72225-01-03 14:09 J -24658756.10 -24658755.91 -24658755.72 0.0267 0.0014  
 Mercury -72225-04-01 12:13 J -24658667.15 -24658666.99 -24658666.81 0.0268 0.0130  
 Earth -72223-11-27 14:37 J -24657697.07 -24657696.89 -24657696.69 0.0279 0.0177

Moon -72223-11-27 16:47 J -24657697.01 -24657696.80 -24657696.59 0.0279 0.0161 \*  
 Moon -72222-12-11 10:04 J -24657318.34 -24657318.08 -24657317.82 0.0283 0.0006  
 Earth -72222-12-11 12:13 J -24657318.24 -24657317.99 -24657317.74 0.0283 0.0016 \*  
 Moon -72221-12-24 16:33 J -24656939.02 -24656938.81 -24656938.61 0.0288 0.0162  
 Earth -72221-12-24 20:09 J -24656938.87 -24656938.66 -24656938.45 0.0288 0.0157 \*  
 Mars -72221-12-25 22:47 J -24656937.77 -24656937.55 -24656937.30 0.0288 0.0178  
 Venus -72214-01-26 23:45 J -24654714.68 -24654714.51 -24654714.34 0.0301 0.0170  
 Mercury -72212-02-15 12:28 J -24653964.01 -24653963.98 -24653963.95 0.0296 0.0287  
 Mercury -72212-05-15 00:28 J -24653875.59 -24653875.48 -24653875.37 0.0295 0.0159  
 Mercury -72212-08-11 12:28 J -24653787.11 -24653786.98 -24653786.86 0.0294 0.0033  
 Mercury -72212-11-08 00:13 J -24653698.61 -24653698.49 -24653698.37 0.0293 0.0094  
 Mercury -72211-02-04 11:59 J -24653610.08 -24653610.00 -24653609.91 0.0293 0.0218  
 Earth -72209-05-30 17:16 J -24652763.98 -24652763.78 -24652763.57 0.0282 0.0144  
 Moon -72209-05-30 19:54 J -24652763.87 -24652763.67 -24652763.45 0.0282 0.0143 \*  
 Mars -72209-12-29 05:45 J -24652551.41 -24652551.26 -24652551.09 0.0280 0.0228  
 Moon -72208-06-12 02:52 J -24652386.62 -24652386.38 -24652386.13 0.0278 0.0004  
 Earth -72208-06-12 05:01 J -24652386.53 -24652386.29 -24652386.05 0.0278 0.0011 \*  
 Moon -72207-06-24 04:47 J -24652009.50 -24652009.30 -24652009.09 0.0274 0.0139  
 Earth -72207-06-24 07:54 J -24652009.37 -24652009.17 -24652008.97 0.0274 0.0154 \*  
 Venus -72200-07-04 13:11 J -24649442.08 -24649441.95 -24649441.81 0.0260 0.0200  
 Venus -72199-02-18 13:25 J -24649213.11 -24649212.94 -24649212.77 0.0261 0.0155  
 Mercury -72196-02-22 15:49 J -24648112.97 -24648112.84 -24648112.70 0.0266 0.0189  
 Mercury -72196-05-22 14:09 J -24648024.10 -24648023.91 -24648023.72 0.0267 0.0047  
 Mercury -72196-08-19 12:28 J -24647935.15 -24647934.98 -24647934.80 0.0268 0.0096  
 Mercury -72196-11-16 10:47 J -24647846.13 -24647846.05 -24647845.96 0.0269 0.0240  
 Moon -72194-11-22 03:35 J -24647110.48 -24647110.35 -24647110.21 0.0276 0.0228  
 Earth -72194-11-22 05:01 J -24647110.41 -24647110.29 -24647110.17 0.0276 0.0243 \*  
 Earth -72193-12-04 21:35 J -24646731.83 -24646731.60 -24646731.36 0.0281 0.0090  
 Moon -72193-12-04 23:45 J -24646731.74 -24646731.51 -24646731.27 0.0281 0.0076 \*  
 Mars -72192-02-07 21:21 J -24646666.71 -24646666.61 -24646666.47 0.0282 0.0260

Earth -72192-12-19 01:11 J -24646352.69 -24646352.45 -24646352.21 0.0286 0.0078  
 Moon -72192-12-19 04:47 J -24646352.54 -24646352.30 -24646352.06 0.0286 0.0088 \*  
 Earth -72190-01-02 14:52 J -24645972.98 -24645972.88 -24645972.74 0.0291 0.0255  
 Moon -72190-01-02 16:33 J -24645972.91 -24645972.81 -24645972.68 0.0291 0.0258 \*  
 Venus -72186-12-22 09:21 J -24644158.17 -24644158.11 -24644158.02 0.0302 0.0280  
 Venus -72185-08-08 10:18 J -24643928.17 -24643928.07 -24643927.96 0.0302 0.0259  
 Mercury -72183-10-02 03:49 J -24643143.44 -24643143.34 -24643143.24 0.0296 0.0184  
 Mercury -72183-12-29 15:35 J -24643054.97 -24643054.85 -24643054.72 0.0295 0.0058  
 Mercury -72182-03-28 03:35 J -24642966.47 -24642966.35 -24642966.22 0.0294 0.0069  
 Mercury -72182-06-24 15:21 J -24642877.95 -24642877.86 -24642877.76 0.0293 0.0194  
 Moon -72180-05-25 14:37 J -24642177.04 -24642176.89 -24642176.72 0.0285 0.0207  
 Earth -72180-05-25 17:16 J -24642176.93 -24642176.78 -24642176.61 0.0285 0.0211 \*  
 Earth -72179-06-07 08:52 J -24641799.36 -24641799.13 -24641798.89 0.0280 0.0054  
 Moon -72179-06-07 10:33 J -24641799.29 -24641799.06 -24641798.84 0.0280 0.0060 \*  
 Mars -72178-02-16 10:04 J -24641545.36 -24641545.08 -24641544.80 0.0277 0.0026  
 Earth -72178-06-19 14:52 J -24641422.09 -24641421.88 -24641421.64 0.0275 0.0095  
 Moon -72178-06-19 18:13 J -24641421.97 -24641421.74 -24641421.50 0.0275 0.0080 \*  
 Moon -72177-06-30 11:59 J -24641045.14 -24641045.00 -24641044.85 0.0271 0.0218  
 Earth -72177-06-30 13:11 J -24641045.07 -24641044.95 -24641044.81 0.0271 0.0229 \*  
 Venus -72170-01-14 19:40 J -24638655.85 -24638655.68 -24638655.49 0.0260 0.0140  
 Venus -72170-08-31 19:54 J -24638426.78 -24638426.67 -24638426.54 0.0261 0.0217  
 Mercury -72167-07-12 16:33 J -24637380.92 -24637380.81 -24637380.70 0.0266 0.0217  
 Mercury -72167-10-09 14:52 J -24637292.07 -24637291.88 -24637291.70 0.0267 0.0076  
 Mercury -72166-01-06 13:11 J -24637203.14 -24637202.95 -24637202.77 0.0268 0.0066  
 Mercury -72166-04-05 11:30 J -24637114.14 -24637114.02 -24637113.90 0.0269 0.0210  
 Moon -72164-11-29 05:59 J -24636145.46 -24636145.25 -24636145.01 0.0279 0.0141  
 Earth -72164-11-29 08:52 J -24636145.33 -24636145.13 -24636144.92 0.0279 0.0156 \*  
 Moon -72163-12-13 04:04 J -24635766.58 -24635766.33 -24635766.08 0.0284 0.0020  
 Earth -72163-12-13 07:54 J -24635766.42 -24635766.17 -24635765.92 0.0284 0.0008 \*  
 Mars -72162-04-01 15:49 J -24635657.14 -24635656.84 -24635656.53 0.0285 0.0023

Moon -72162-12-27 15:35 J -24635387.03 -24635386.85 -24635386.66 0.0289 0.0188  
 Earth -72162-12-27 16:47 J -24635386.98 -24635386.80 -24635386.60 0.0289 0.0182 \*  
 Venus -72156-07-03 18:28 J -24633371.88 -24633371.73 -24633371.56 0.0302 0.0197  
 Mercury -72153-02-19 06:28 J -24632411.32 -24632411.23 -24632411.14 0.0296 0.0215  
 Mercury -72153-05-17 18:28 J -24632322.85 -24632322.73 -24632322.61 0.0295 0.0088  
 Mercury -72153-08-14 06:13 J -24632234.36 -24632234.24 -24632234.11 0.0294 0.0039  
 Mercury -72153-11-10 17:59 J -24632145.85 -24632145.75 -24632145.64 0.0293 0.0163  
 Mercury -72152-02-07 05:45 J -24632057.27 -24632057.26 -24632057.23 0.0292 0.0286  
 Earth -72151-05-20 10:47 J -24631590.08 -24631590.05 -24631590.00 0.0286 0.0282  
 Moon -72151-05-20 13:11 J -24631590.01 -24631589.95 -24631589.86 0.0286 0.0273 \*  
 Moon -72150-06-02 05:16 J -24631212.50 -24631212.28 -24631212.05 0.0282 0.0126  
 Earth -72150-06-02 06:57 J -24631212.42 -24631212.21 -24631211.99 0.0282 0.0124 \*  
 Moon -72149-06-13 13:54 J -24630835.15 -24630834.92 -24630834.68 0.0277 0.0018  
 Earth -72149-06-13 17:16 J -24630835.01 -24630834.78 -24630834.53 0.0277 0.0031 \*  
 Mars -72148-04-05 08:23 J -24630539.36 -24630539.15 -24630538.92 0.0274 0.0172  
 Earth -72148-06-25 18:57 J -24630457.89 -24630457.71 -24630457.52 0.0273 0.0172  
 Moon -72148-06-25 19:40 J -24630457.85 -24630457.68 -24630457.48 0.0273 0.0160 \*  
 Venus -72141-07-27 00:42 J -24627869.67 -24627869.47 -24627869.26 0.0260 0.0087  
 Mercury -72138-11-29 16:18 J -24626648.87 -24626648.82 -24626648.75 0.0266 0.0251  
 Mercury -72137-02-26 14:37 J -24626560.06 -24626559.89 -24626559.71 0.0267 0.0110  
 Mercury -72137-05-25 13:11 J -24626471.14 -24626470.95 -24626470.76 0.0268 0.0033  
 Mercury -72137-08-22 11:16 J -24626382.16 -24626382.03 -24626381.88 0.0269 0.0177  
 Earth -72135-11-23 22:04 J -24625558.72 -24625558.58 -24625558.42 0.0277 0.0224  
 Moon -72135-11-24 01:11 J -24625558.61 -24625558.45 -24625558.29 0.0277 0.0208 \*  
 Earth -72134-12-07 16:33 J -24625180.05 -24625179.81 -24625179.56 0.0282 0.0068  
 Moon -72134-12-07 20:23 J -24625179.90 -24625179.65 -24625179.40 0.0282 0.0053 \*  
 Earth -72133-12-20 21:35 J -24624800.84 -24624800.60 -24624800.37 0.0286 0.0103  
 Moon -72133-12-20 22:47 J -24624800.79 -24624800.55 -24624800.31 0.0286 0.0112 \*  
 Mars -72132-05-23 05:16 J -24624647.44 -24624647.28 -24624647.08 0.0288 0.0230  
 Moon -72131-01-04 10:18 J -24624421.13 -24624421.07 -24624421.00 0.0291 0.0280



Earth -72131-01-04 12:28 J -24624421.03 -24624420.98 -24624420.90 0.0291 0.0279 \*  
 Venus -72126-01-14 05:59 J -24622585.44 -24622585.25 -24622585.05 0.0302 0.0104  
 Mercury -72124-07-08 09:49 J -24621679.16 -24621679.09 -24621679.01 0.0296 0.0240  
 Mercury -72124-10-04 21:49 J -24621590.71 -24621590.59 -24621590.47 0.0296 0.0112  
 Mercury -72123-01-01 09:49 J -24621502.22 -24621502.09 -24621501.96 0.0295 0.0015  
 Mercury -72123-03-30 21:35 J -24621413.71 -24621413.60 -24621413.48 0.0294 0.0140  
 Mercury -72123-06-27 09:21 J -24621325.16 -24621325.11 -24621325.05 0.0293 0.0264  
 Earth -72121-05-27 08:23 J -24620625.32 -24620625.15 -24620624.97 0.0284 0.0189  
 Moon -72121-05-27 10:04 J -24620625.25 -24620625.08 -24620624.90 0.0284 0.0188 \*  
 Mars -72120-05-26 05:16 J -24620261.48 -24620261.28 -24620261.08 0.0280 0.0191  
 Earth -72120-06-08 22:33 J -24620247.80 -24620247.56 -24620247.32 0.0279 0.0034  
 Moon -72120-06-09 02:23 J -24620247.64 -24620247.40 -24620247.16 0.0279 0.0041 \*  
 Moon -72119-06-21 03:21 J -24619870.58 -24619870.36 -24619870.12 0.0275 0.0100  
 Earth -72119-06-21 03:21 J -24619870.57 -24619870.36 -24619870.13 0.0275 0.0114 \*  
 Moon -72118-07-02 21:06 J -24619493.73 -24619493.62 -24619493.51 0.0271 0.0238  
 Earth -72118-07-03 00:42 J -24619493.56 -24619493.47 -24619493.37 0.0271 0.0247 \*  
 Venus -72111-02-06 07:40 J -24617083.39 -24617083.18 -24617082.96 0.0260 0.0025  
 Mercury -72108-07-15 15:35 J -24615828.01 -24615827.85 -24615827.69 0.0267 0.0138  
 Mercury -72108-10-12 13:54 J -24615739.11 -24615738.92 -24615738.73 0.0268 0.0005  
 Mercury -72107-01-09 11:59 J -24615650.15 -24615650.00 -24615649.83 0.0268 0.0149  
 Moon -72106-11-18 11:01 J -24614972.08 -24614972.04 -24614971.97 0.0276 0.0268  
 Moon -72105-12-01 00:13 J -24614593.71 -24614593.49 -24614593.26 0.0280 0.0120  
 Earth -72105-12-01 03:35 J -24614593.56 -24614593.35 -24614593.12 0.0280 0.0135 \*  
 Mars -72104-07-06 04:47 J -24614376.48 -24614376.30 -24614376.10 0.0283 0.0220  
 Moon -72104-12-15 03:21 J -24614214.60 -24614214.36 -24614214.12 0.0285 0.0043  
 Earth -72104-12-15 04:18 J -24614214.57 -24614214.32 -24614214.07 0.0285 0.0031 \*  
 Earth -72103-12-29 14:37 J -24613835.05 -24613834.89 -24613834.70 0.0290 0.0208  
 Moon -72103-12-29 17:01 J -24613834.94 -24613834.79 -24613834.61 0.0290 0.0215 \*  
 Venus -72097-07-26 15:35 J -24611799.06 -24611798.85 -24611798.65 0.0302 0.0021  
 Mercury -72095-11-25 12:42 J -24610947.02 -24610946.97 -24610946.92 0.0296 0.0270

Mercury -72094-02-22 00:42 J -24610858.58 -24610858.47 -24610858.36 0.0295 0.0142

Mercury -72094-05-21 12:42 J -24610770.10 -24610769.97 -24610769.84 0.0294 0.0016

Mercury -72094-08-18 00:28 J -24610681.60 -24610681.48 -24610681.36 0.0293 0.0110

Mercury -72094-11-14 12:13 J -24610593.06 -24610592.99 -24610592.91 0.0292 0.0234

Moon -72092-05-22 01:54 J -24610038.52 -24610038.42 -24610038.30 0.0286 0.0254

Earth -72092-05-22 03:35 J -24610038.44 -24610038.35 -24610038.25 0.0286 0.0260 \*

Moon -72091-06-03 18:13 J -24609660.95 -24609660.74 -24609660.51 0.0281 0.0108

Earth -72091-06-03 22:04 J -24609660.80 -24609660.58 -24609660.36 0.0281 0.0102 \*

Moon -72090-06-16 06:28 J -24609283.46 -24609283.23 -24609283.00 0.0276 0.0038

Earth -72090-06-16 06:42 J -24609283.45 -24609283.22 -24609282.98 0.0276 0.0050 \*

Mars -72090-07-14 00:57 J -24609255.74 -24609255.46 -24609255.17 0.0276 0.0011

Earth -72089-06-27 07:11 J -24608906.37 -24608906.20 -24608906.03 0.0272 0.0190

Moon -72089-06-27 10:18 J -24608906.23 -24608906.07 -24608905.87 0.0272 0.0178 \*

Venus -72082-08-19 12:13 J -24606297.21 -24606296.99 -24606296.77 0.0261 0.0027

Mercury -72079-12-02 15:06 J -24605096.02 -24605095.87 -24605095.73 0.0267 0.0174

Mercury -72078-03-01 13:25 J -24605007.13 -24605006.94 -24605006.75 0.0267 0.0032

Mercury -72078-05-29 11:45 J -24604918.18 -24604918.01 -24604917.83 0.0268 0.0111

Mercury -72078-08-26 10:18 J -24604829.13 -24604829.07 -24604829.02 0.0269 0.0256

Earth -72076-11-25 14:37 J -24604007.06 -24604006.89 -24604006.72 0.0278 0.0204

Moon -72076-11-25 17:59 J -24604006.93 -24604006.75 -24604006.56 0.0278 0.0188 \*

Earth -72075-12-09 10:33 J -24603628.30 -24603628.06 -24603627.81 0.0282 0.0045

Moon -72075-12-09 10:47 J -24603628.30 -24603628.05 -24603627.79 0.0282 0.0033 \*

Mars -72074-08-27 21:06 J -24603366.92 -24603366.62 -24603366.32 0.0286 0.0028

Moon -72074-12-23 13:54 J -24603249.14 -24603248.92 -24603248.68 0.0287 0.0136

Earth -72074-12-23 16:47 J -24603249.02 -24603248.80 -24603248.57 0.0287 0.0127 \*

Venus -72067-02-06 02:09 J -24601012.61 -24601012.41 -24601012.21 0.0302 0.0070

Mercury -72065-04-13 16:04 J -24600214.84 -24600214.83 -24600214.82 0.0297 0.0294

Mercury -72065-07-11 04:04 J -24600126.43 -24600126.33 -24600126.22 0.0296 0.0166

Mercury -72065-10-07 16:04 J -24600037.96 -24600037.83 -24600037.70 0.0295 0.0039

Mercury -72064-01-04 04:04 J -24599949.46 -24599949.33 -24599949.21 0.0294 0.0087

Mercury -72064-04-02 15:49 J -24599860.93 -24599860.84 -24599860.75 0.0293 0.0211

Earth -72062-05-29 23:59 J -24599073.68 -24599073.50 -24599073.30 0.0283 0.0168

Moon -72062-05-30 03:35 J -24599073.53 -24599073.35 -24599073.15 0.0283 0.0167 \*

Earth -72061-06-10 13:11 J -24598696.19 -24598695.95 -24598695.71 0.0279 0.0012

Moon -72061-06-10 13:40 J -24598696.17 -24598695.93 -24598695.68 0.0279 0.0022 \*

Moon -72060-06-22 13:25 J -24598319.15 -24598318.94 -24598318.72 0.0274 0.0118

Earth -72060-06-22 16:47 J -24598319.01 -24598318.80 -24598318.59 0.0274 0.0134 \*

Mars -72060-08-31 08:23 J -24598249.32 -24598249.15 -24598248.96 0.0273 0.0211

Moon -72059-07-04 11:30 J -24597942.07 -24597942.02 -24597941.94 0.0270 0.0258

Earth -72059-07-04 12:28 J -24597942.01 -24597941.98 -24597941.92 0.0270 0.0266 \*

Venus -72052-02-28 19:11 J -24595510.90 -24595510.70 -24595510.50 0.0260 0.0089

Mercury -72049-04-20 15:49 J -24594363.96 -24594363.84 -24594363.72 0.0267 0.0202

Mercury -72049-07-18 14:09 J -24594275.10 -24594274.91 -24594274.73 0.0267 0.0061

Mercury -72049-10-15 12:28 J -24594186.16 -24594185.98 -24594185.80 0.0268 0.0083

Mercury -72048-01-12 10:33 J -24594097.15 -24594097.06 -24594096.95 0.0269 0.0227

Moon -72047-11-20 02:23 J -24593420.49 -24593420.40 -24593420.29 0.0276 0.0250

Earth -72047-11-20 05:45 J -24593420.32 -24593420.26 -24593420.19 0.0276 0.0265 \*

Earth -72046-12-03 20:52 J -24593041.86 -24593041.63 -24593041.40 0.0281 0.0113

Moon -72046-12-03 21:06 J -24593041.85 -24593041.62 -24593041.39 0.0281 0.0100 \*

Earth -72045-12-16 22:33 J -24592662.80 -24592662.56 -24592662.31 0.0286 0.0055

Moon -72045-12-17 01:54 J -24592662.66 -24592662.42 -24592662.18 0.0286 0.0067 \*

Mars -72044-10-18 11:01 J -24592357.14 -24592357.04 -24592356.93 0.0289 0.0269

Earth -72044-12-31 10:47 J -24592283.19 -24592283.05 -24592282.89 0.0290 0.0232

Moon -72044-12-31 14:37 J -24592283.02 -24592282.89 -24592282.75 0.0290 0.0240 \*

Venus -72038-08-19 11:45 J -24590226.18 -24590226.01 -24590225.83 0.0301 0.0153

Mercury -72036-11-28 06:57 J -24589394.30 -24589394.21 -24589394.11 0.0296 0.0196

Mercury -72035-02-24 18:57 J -24589305.83 -24589305.71 -24589305.58 0.0295 0.0069

Mercury -72035-05-24 06:57 J -24589217.34 -24589217.21 -24589217.09 0.0294 0.0058

Mercury -72035-08-20 18:42 J -24589128.82 -24589128.72 -24589128.62 0.0293 0.0181

Moon -72033-05-23 16:47 J -24588486.93 -24588486.80 -24588486.66 0.0285 0.0231

Earth -72033-05-23 20:09 J -24588486.78 -24588486.66 -24588486.52 0.0285 0.0238 \*  
 Moon -72032-06-05 12:42 J -24588109.19 -24588108.97 -24588108.75 0.0280 0.0087  
 Earth -72032-06-05 13:11 J -24588109.18 -24588108.95 -24588108.72 0.0280 0.0080 \*  
 Mars -72032-10-20 21:49 J -24587971.81 -24587971.59 -24587971.35 0.0279 0.0154  
 Earth -72031-06-17 20:23 J -24587731.88 -24587731.65 -24587731.41 0.0276 0.0071  
 Moon -72031-06-17 23:45 J -24587731.74 -24587731.51 -24587731.27 0.0276 0.0056 \*  
 Earth -72030-06-29 19:25 J -24587354.83 -24587354.69 -24587354.53 0.0272 0.0209  
 Moon -72030-06-29 21:21 J -24587354.77 -24587354.61 -24587354.43 0.0272 0.0196 \*  
 Venus -72023-01-24 23:16 J -24584953.65 -24584953.53 -24584953.40 0.0260 0.0214  
 Venus -72023-09-10 23:16 J -24584724.71 -24584724.53 -24584724.35 0.0261 0.0140  
 Mercury -72020-09-07 14:37 J -24583631.96 -24583631.89 -24583631.80 0.0266 0.0241  
 Mercury -72020-12-05 13:11 J -24583543.13 -24583542.95 -24583542.77 0.0267 0.0099  
 Mercury -72019-03-04 11:30 J -24583454.21 -24583454.02 -24583453.83 0.0268 0.0043  
 Mercury -72019-06-01 09:49 J -24583365.22 -24583365.09 -24583364.95 0.0269 0.0187  
 Moon -72017-11-27 04:47 J -24582455.50 -24582455.30 -24582455.08 0.0278 0.0170  
 Earth -72017-11-27 05:16 J -24582455.46 -24582455.28 -24582455.09 0.0278 0.0184 \*  
 Mars -72016-12-01 01:25 J -24582086.67 -24582086.44 -24582086.19 0.0283 0.0177  
 Moon -72016-12-10 23:16 J -24582076.79 -24582076.53 -24582076.28 0.0283 0.0013  
 Earth -72016-12-11 02:52 J -24582076.63 -24582076.38 -24582076.13 0.0283 0.0023 \*  
 Moon -72015-12-25 07:11 J -24581697.40 -24581697.20 -24581696.99 0.0288 0.0159  
 Earth -72015-12-25 10:33 J -24581697.26 -24581697.06 -24581696.84 0.0288 0.0151 \*  
 Venus -72009-07-13 19:40 J -24579669.69 -24579669.68 -24579669.64 0.0302 0.0301  
 Venus -72008-02-28 21:06 J -24579439.74 -24579439.62 -24579439.49 0.0302 0.0239  
 Mercury -72006-04-17 10:04 J -24578662.16 -24578662.08 -24578661.99 0.0296 0.0223  
 Mercury -72006-07-14 22:04 J -24578573.70 -24578573.58 -24578573.46 0.0295 0.0095  
 Mercury -72006-10-11 10:04 J -24578485.21 -24578485.08 -24578484.95 0.0295 0.0031  
 Mercury -72005-01-07 21:49 J -24578396.70 -24578396.59 -24578396.48 0.0294 0.0157  
 Mercury -72005-04-05 09:35 J -24578308.13 -24578308.10 -24578308.06 0.0293 0.0280  
 Earth -72003-05-31 14:37 J -24577522.09 -24577521.89 -24577521.68 0.0283 0.0145  
 Moon -72003-05-31 15:35 J -24577522.05 -24577521.85 -24577521.63 0.0283 0.0144 \*

**Moon**   -72002-06-12 22:47 J -24577144.79 -24577144.55 -24577144.30 0.0278 0.0004  
**Earth**   -72002-06-13 02:23 J -24577144.64 -24577144.40 -24577144.16 0.0278 0.0011 \*  
**Mars**   -72002-12-09 00:28 J -24576965.75 -24576965.48 -24576965.19 0.0276 0.0046  
**Moon**   -72001-06-24 02:23 J -24576767.60 -24576767.40 -24576767.20 0.0274 0.0139  
**Earth**   -72001-06-24 04:33 J -24576767.50 -24576767.31 -24576767.10 0.0274 0.0154 \*

# 72ND MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 72nd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-71994-08-07 05:45 J	-24574167.44	-24574167.26	-24574167.09	0.0260	0.0154		
Venus	-71993-03-23 05:30 J	-24573938.40	-24573938.27	-24573938.13	0.0260	0.0200		
Mercury	-71990-04-24 13:25 J	-24572811.11	-24572810.94	-24572810.77	0.0267	0.0130		
Mercury	-71990-07-22 11:45 J	-24572722.20	-24572722.01	-24572721.82	0.0268	0.0012		
Mercury	-71990-10-19 10:04 J	-24572633.23	-24572633.08	-24572632.92	0.0268	0.0156		
Moon	-71988-11-21 18:13 J	-24571868.87	-24571868.74	-24571868.61	0.0277	0.0233		
Earth	-71988-11-21 17:45 J	-24571868.86	-24571868.76	-24571868.63	0.0277	0.0247	*	
Earth	-71987-12-05 10:18 J	-24571490.30	-24571490.07	-24571489.83	0.0281	0.0093		
Moon	-71987-12-05 13:54 J	-24571490.16	-24571489.92	-24571489.68	0.0281	0.0080	*	
Earth	-71986-12-19 13:25 J	-24571111.18	-24571110.94	-24571110.69	0.0286	0.0078		
Moon	-71986-12-19 16:33 J	-24571111.05	-24571110.81	-24571110.56	0.0286	0.0087	*	
Mars	-71985-01-22 17:16 J	-24571077.08	-24571076.78	-24571076.49	0.0287	0.0062		
Earth	-71984-01-02 03:06 J	-24570731.48	-24570731.37	-24570731.25	0.0291	0.0255		

Moon -71984-01-02 03:21 J -24570731.47 -24570731.36 -24570731.24 0.0291 0.0260 \*  
 Venus -71979-01-24 04:47 J -24568883.44 -24568883.30 -24568883.15 0.0302 0.0220  
 Mercury -71977-09-03 12:42 J -24567930.03 -24567929.97 -24567929.90 0.0296 0.0255  
 Mercury -71977-12-01 00:42 J -24567841.58 -24567841.47 -24567841.35 0.0295 0.0127  
 Mercury -71976-02-27 12:42 J -24567753.10 -24567752.97 -24567752.84 0.0294 0.0005  
 Mercury -71976-05-27 00:42 J -24567664.59 -24567664.47 -24567664.36 0.0293 0.0125  
 Mercury -71976-08-23 12:28 J -24567576.05 -24567575.98 -24567575.91 0.0292 0.0249  
 Moon -71974-05-26 09:06 J -24566935.26 -24566935.12 -24566934.95 0.0284 0.0210  
 Earth -71974-05-26 10:33 J -24566935.20 -24566935.06 -24566934.89 0.0284 0.0216 \*  
 Earth -71973-06-07 02:23 J -24566557.63 -24566557.40 -24566557.16 0.0280 0.0059  
 Moon -71973-06-07 05:30 J -24566557.50 -24566557.27 -24566557.04 0.0280 0.0067 \*  
 Earth -71972-06-19 08:23 J -24566180.37 -24566180.15 -24566179.92 0.0275 0.0091  
 Moon -71972-06-19 11:01 J -24566180.28 -24566180.04 -24566179.80 0.0275 0.0075 \*  
 Mars -71971-01-25 21:35 J -24565959.71 -24565959.60 -24565959.46 0.0273 0.0244  
 Moon -71971-07-01 04:04 J -24565803.47 -24565803.33 -24565803.18 0.0271 0.0214  
 Earth -71971-07-01 06:13 J -24565803.36 -24565803.24 -24565803.10 0.0271 0.0227 \*  
 Venus -71964-02-16 09:06 J -24563381.32 -24563381.12 -24563380.93 0.0260 0.0107  
 Venus -71964-10-03 08:37 J -24563152.19 -24563152.14 -24563152.06 0.0261 0.0249  
 Mercury -71961-09-10 11:59 J -24562079.15 -24562079.00 -24562078.86 0.0267 0.0172  
 Mercury -71961-12-08 10:04 J -24561990.27 -24561990.08 -24561989.88 0.0267 0.0031  
 Mercury -71960-03-07 08:23 J -24561901.32 -24561901.15 -24561900.97 0.0268 0.0113  
 Mercury -71960-06-04 06:42 J -24561812.26 -24561812.22 -24561812.15 0.0269 0.0257  
 Moon -71958-11-29 11:59 J -24560904.20 -24560904.00 -24560903.77 0.0279 0.0152  
 Earth -71958-11-29 15:35 J -24560904.04 -24560903.85 -24560903.64 0.0279 0.0166 \*  
 Moon -71957-12-12 11:59 J -24560525.24 -24560525.00 -24560524.75 0.0284 0.0008  
 Earth -71957-12-12 14:23 J -24560525.15 -24560524.90 -24560524.65 0.0284 0.0004 \*  
 Earth -71956-12-26 23:45 J -24560145.71 -24560145.51 -24560145.31 0.0288 0.0173  
 Moon -71956-12-27 00:13 J -24560145.67 -24560145.49 -24560145.29 0.0288 0.0179 \*  
 Venus -71950-08-06 12:42 J -24558097.14 -24558096.97 -24558096.78 0.0302 0.0141  
 Mercury -71947-01-21 15:35 J -24557197.88 -24557197.85 -24557197.82 0.0297 0.0285

Mercury -71947-04-20 03:35 J -24557109.46 -24557109.35 -24557109.24 0.0296 0.0157

Mercury -71947-07-17 15:35 J -24557020.98 -24557020.85 -24557020.72 0.0295 0.0029

Mercury -71947-10-14 03:35 J -24556932.48 -24556932.35 -24556932.23 0.0294 0.0097

Mercury -71946-01-10 15:21 J -24556843.94 -24556843.86 -24556843.78 0.0293 0.0221

Earth -71945-05-20 06:13 J -24556348.27 -24556348.24 -24556348.19 0.0287 0.0282

Moon -71945-05-20 07:54 J -24556348.24 -24556348.17 -24556348.09 0.0287 0.0271 \*

Moon -71944-06-02 00:13 J -24555970.71 -24555970.49 -24555970.27 0.0282 0.0125

Earth -71944-06-02 02:52 J -24555970.59 -24555970.38 -24555970.16 0.0282 0.0123 \*

Mars -71943-03-17 16:47 J -24555682.05 -24555681.80 -24555681.55 0.0279 0.0124

Moon -71943-06-14 11:01 J -24555593.27 -24555593.04 -24555592.81 0.0278 0.0018

Earth -71943-06-14 13:25 J -24555593.18 -24555592.94 -24555592.70 0.0278 0.0031 \*

Earth -71942-06-26 14:37 J -24555216.07 -24555215.89 -24555215.70 0.0273 0.0173

Moon -71942-06-26 16:47 J -24555215.99 -24555215.80 -24555215.61 0.0273 0.0158 \*

Venus -71935-08-29 14:37 J -24552595.10 -24552594.89 -24552594.68 0.0260 0.0049

Mercury -71931-01-28 11:45 J -24551347.13 -24551347.01 -24551346.88 0.0266 0.0205

Mercury -71931-04-27 10:04 J -24551258.27 -24551258.08 -24551257.89 0.0267 0.0064

Mercury -71931-07-25 08:23 J -24551169.33 -24551169.15 -24551168.96 0.0268 0.0079

Mercury -71931-10-22 06:42 J -24551080.32 -24551080.22 -24551080.11 0.0269 0.0223

Earth -71929-11-23 02:37 J -24550317.52 -24550317.39 -24550317.25 0.0277 0.0229

Moon -71929-11-23 06:13 J -24550317.39 -24550317.24 -24550317.08 0.0277 0.0213 \*

Earth -71928-12-06 20:09 J -24549938.90 -24549938.66 -24549938.41 0.0282 0.0073

Moon -71928-12-06 22:33 J -24549938.81 -24549938.56 -24549938.30 0.0282 0.0061 \*

Mars -71927-04-27 09:21 J -24549797.36 -24549797.11 -24549796.85 0.0284 0.0152

Moon -71927-12-20 23:01 J -24549559.78 -24549559.54 -24549559.30 0.0287 0.0104

Earth -71927-12-21 00:28 J -24549559.71 -24549559.48 -24549559.24 0.0287 0.0099 \*

Moon -71925-01-04 11:30 J -24549180.09 -24549180.02 -24549179.95 0.0291 0.0278

Earth -71925-01-04 15:06 J -24549179.94 -24549179.87 -24549179.78 0.0291 0.0276

Venus -71920-02-15 20:52 J -24547310.83 -24547310.63 -24547310.43 0.0302 0.0063

Mercury -71918-09-07 05:59 J -24546377.34 -24546377.25 -24546377.15 0.0296 0.0191

Mercury -71918-12-04 17:59 J -24546288.87 -24546288.75 -24546288.62 0.0295 0.0064

Mercury -71917-03-02 05:59 J -24546200.38 -24546200.25 -24546200.12 0.0294 0.0063

Mercury -71917-05-29 17:45 J -24546111.85 -24546111.76 -24546111.66 0.0293 0.0188

Earth -71915-05-27 21:49 J -24545383.76 -24545383.59 -24545383.41 0.0284 0.0195

Moon -71915-05-28 00:13 J -24545383.65 -24545383.49 -24545383.31 0.0284 0.0191 \*

Earth -71914-06-09 12:42 J -24545006.21 -24545005.97 -24545005.74 0.0279 0.0038

Moon -71914-06-09 15:21 J -24545006.10 -24545005.86 -24545005.61 0.0279 0.0045 \*

Mars -71913-05-04 08:23 J -24544676.42 -24544676.15 -24544675.87 0.0275 0.0076

Moon -71913-06-20 15:21 J -24544629.08 -24544628.86 -24544628.62 0.0275 0.0095

Earth -71913-06-20 17:45 J -24544628.98 -24544628.76 -24544628.54 0.0275 0.0110 \*

Moon -71912-07-02 11:16 J -24544252.15 -24544252.03 -24544251.91 0.0270 0.0233

Earth -71912-07-02 14:23 J -24544251.99 -24544251.90 -24544251.79 0.0270 0.0245 \*

Venus -71905-03-10 17:01 J -24541809.01 -24541808.79 -24541808.57 0.0260 0.0004

Mercury -71902-06-17 09:35 J -24540615.16 -24540615.10 -24540615.03 0.0266 0.0250

Mercury -71902-09-14 07:54 J -24540526.35 -24540526.17 -24540525.99 0.0267 0.0110

Mercury -71902-12-12 06:13 J -24540437.43 -24540437.24 -24540437.05 0.0268 0.0032

Mercury -71901-03-10 04:18 J -24540348.45 -24540348.32 -24540348.17 0.0268 0.0176

Moon -71899-11-30 19:40 J -24539352.88 -24539352.68 -24539352.46 0.0279 0.0135

Earth -71899-11-30 21:49 J -24539352.79 -24539352.59 -24539352.37 0.0279 0.0148 \*

Earth -71898-12-14 21:21 J -24538973.86 -24538973.61 -24538973.36 0.0284 0.0017

Moon -71898-12-14 23:16 J -24538973.77 -24538973.53 -24538973.29 0.0284 0.0024 \*

Mars -71897-06-17 11:16 J -24538788.31 -24538788.03 -24538787.74 0.0286 0.0089

Earth -71897-12-28 07:25 J -24538594.37 -24538594.19 -24538594.00 0.0289 0.0193

Moon -71897-12-28 11:16 J -24538594.21 -24538594.03 -24538593.84 0.0289 0.0195 \*

Venus -71891-08-29 02:09 J -24536524.62 -24536524.41 -24536524.20 0.0302 0.0005

Mercury -71888-01-24 08:09 J -24535645.24 -24535645.16 -24535645.08 0.0297 0.0228

Mercury -71888-04-22 20:09 J -24535556.78 -24535556.66 -24535556.53 0.0296 0.0100

Mercury -71888-07-20 08:09 J -24535468.29 -24535468.16 -24535468.03 0.0295 0.0029

Mercury -71888-10-16 20:09 J -24535379.77 -24535379.66 -24535379.55 0.0294 0.0154

Mercury -71887-01-13 07:54 J -24535291.21 -24535291.17 -24535291.13 0.0293 0.0278

Moon -71886-05-22 11:45 J -24534797.10 -24534797.01 -24534796.89 0.0287 0.0256



Earth -71886-05-22 14:52 J -24534796.96 -24534796.88 -24534796.78 0.0287 0.0263 \*  
 Moon -71885-06-03 07:54 J -24534419.38 -24534419.17 -24534418.95 0.0282 0.0105  
 Earth -71885-06-03 11:01 J -24534419.26 -24534419.04 -24534418.81 0.0282 0.0103 \*  
 Earth -71884-06-15 20:37 J -24534041.87 -24534041.64 -24534041.40 0.0277 0.0050  
 Moon -71884-06-15 22:18 J -24534041.80 -24534041.57 -24534041.34 0.0277 0.0037 \*  
 Mars -71883-06-22 06:57 J -24533670.25 -24533670.21 -24533670.15 0.0273 0.0268  
 Earth -71883-06-27 21:21 J -24533664.78 -24533664.61 -24533664.44 0.0273 0.0191  
 Moon -71883-06-28 00:57 J -24533664.65 -24533664.46 -24533664.28 0.0273 0.0176 \*  
 Venus -71876-09-20 21:49 J -24531022.80 -24531022.59 -24531022.38 0.0259 0.0051  
 Mercury -71872-01-31 07:11 J -24529794.36 -24529794.20 -24529794.04 0.0266 0.0146  
 Mercury -71872-04-30 05:30 J -24529705.46 -24529705.27 -24529705.08 0.0267 0.0005  
 Mercury -71872-07-28 03:49 J -24529616.50 -24529616.34 -24529616.18 0.0268 0.0138  
 Earth -71870-11-25 06:28 J -24528766.38 -24528766.23 -24528766.07 0.0277 0.0214  
 Moon -71870-11-25 08:23 J -24528766.32 -24528766.15 -24528765.96 0.0277 0.0198 \*  
 Moon -71869-12-07 22:33 J -24528387.82 -24528387.56 -24528387.30 0.0282 0.0046  
 Earth -71869-12-08 00:28 J -24528387.72 -24528387.48 -24528387.23 0.0282 0.0056 \*  
 Moon -71868-12-22 01:54 J -24528008.64 -24528008.42 -24528008.19 0.0287 0.0120  
 Earth -71868-12-22 05:45 J -24528008.49 -24528008.26 -24528008.03 0.0287 0.0117 \*  
 Venus -71861-03-10 08:52 J -24525738.33 -24525738.13 -24525737.93 0.0302 0.0077  
 Mercury -71859-06-13 10:18 J -24524913.12 -24524913.07 -24524913.01 0.0297 0.0265  
 Mercury -71859-09-09 22:18 J -24524824.68 -24524824.57 -24524824.45 0.0296 0.0137  
 Mercury -71859-12-07 10:18 J -24524736.20 -24524736.07 -24524735.94 0.0295 0.0010  
 Mercury -71858-03-05 22:18 J -24524647.69 -24524647.57 -24524647.45 0.0294 0.0117  
 Mercury -71858-06-02 10:04 J -24524559.15 -24524559.08 -24524559.01 0.0293 0.0241  
 Earth -71856-05-29 04:18 J -24523832.49 -24523832.32 -24523832.12 0.0284 0.0177  
 Moon -71856-05-29 07:54 J -24523832.36 -24523832.17 -24523831.98 0.0284 0.0174 \*  
 Moon -71855-06-10 17:30 J -24523455.01 -24523454.77 -24523454.52 0.0279 0.0029  
 Earth -71855-06-10 18:42 J -24523454.96 -24523454.72 -24523454.48 0.0279 0.0020 \*  
 Mars -71855-08-11 15:06 J -24523393.13 -24523392.87 -24523392.61 0.0278 0.0099  
 Moon -71854-06-22 19:54 J -24523077.89 -24523077.67 -24523077.45 0.0274 0.0113

Earth -71854-06-22 23:01 J -24523077.74 -24523077.54 -24523077.32 0.0274 0.0128 \*  
 Earth -71853-07-03 19:11 J -24522700.75 -24522700.70 -24522700.63 0.0270 0.0260  
 Moon -71853-07-03 19:40 J -24522700.74 -24522700.68 -24522700.58 0.0270 0.0253 \*  
 Venus -71847-08-17 00:13 J -24520465.51 -24520465.49 -24520465.47 0.0259 0.0258  
 Venus -71846-04-02 23:01 J -24520236.73 -24520236.54 -24520236.33 0.0260 0.0093  
 Mercury -71843-06-20 04:33 J -24519062.44 -24519062.31 -24519062.18 0.0266 0.0195  
 Mercury -71843-09-17 02:37 J -24518973.57 -24518973.39 -24518973.20 0.0267 0.0055  
 Mercury -71843-12-15 00:57 J -24518884.64 -24518884.46 -24518884.28 0.0268 0.0088  
 Mercury -71842-03-13 23:16 J -24518795.62 -24518795.53 -24518795.43 0.0268 0.0231  
 Moon -71841-11-18 09:49 J -24518180.14 -24518180.09 -24518180.02 0.0275 0.0265  
 Earth -71840-12-01 23:59 J -24517801.72 -24517801.50 -24517801.28 0.0280 0.0132  
 Moon -71840-12-02 02:09 J -24517801.62 -24517801.41 -24517801.18 0.0280 0.0120 \*  
 Mars -71839-09-20 11:01 J -24517509.29 -24517509.04 -24517508.76 0.0283 0.0138  
 Earth -71839-12-15 23:45 J -24517422.76 -24517422.51 -24517422.26 0.0284 0.0035  
 Moon -71839-12-16 03:21 J -24517422.61 -24517422.36 -24517422.10 0.0284 0.0041 \*  
 Earth -71838-12-30 10:47 J -24517043.22 -24517043.05 -24517042.88 0.0289 0.0210  
 Moon -71838-12-30 11:45 J -24517043.18 -24517043.01 -24517042.82 0.0289 0.0210 \*  
 Venus -71832-09-20 12:28 J -24514952.16 -24514951.98 -24514951.79 0.0302 0.0139  
 Mercury -71829-01-27 23:59 J -24514092.60 -24514092.50 -24514092.39 0.0297 0.0178  
 Mercury -71829-04-25 12:13 J -24514004.12 -24514003.99 -24514003.86 0.0296 0.0049  
 Mercury -71829-07-22 23:59 J -24513915.62 -24513915.50 -24513915.37 0.0295 0.0079  
 Mercury -71829-10-19 11:59 J -24513827.09 -24513827.00 -24513826.91 0.0294 0.0204  
 Moon -71827-05-23 16:33 J -24513245.92 -24513245.81 -24513245.68 0.0287 0.0243  
 Earth -71827-05-23 19:25 J -24513245.80 -24513245.69 -24513245.56 0.0287 0.0246 \*  
 Earth -71826-06-05 15:06 J -24512868.10 -24512867.87 -24512867.64 0.0282 0.0085  
 Moon -71826-06-05 16:04 J -24512868.05 -24512867.83 -24512867.61 0.0282 0.0091 \*  
 Earth -71825-06-17 00:13 J -24512490.72 -24512490.49 -24512490.25 0.0277 0.0068  
 Moon -71825-06-17 03:49 J -24512490.58 -24512490.34 -24512490.11 0.0277 0.0054 \*  
 Mars -71825-09-28 05:59 J -24512387.51 -24512387.25 -24512386.98 0.0276 0.0092  
 Moon -71824-06-28 23:30 J -24512113.68 -24512113.52 -24512113.34 0.0272 0.0196

Earth -71824-06-29 00:13 J -24512113.64 -24512113.49 -24512113.33 0.0272 0.0208 \*  
 Venus -71817-02-27 03:49 J -24509679.46 -24509679.34 -24509679.20 0.0259 0.0207  
 Venus -71817-10-13 03:06 J -24509450.55 -24509450.37 -24509450.19 0.0259 0.0143  
 Mercury -71814-11-07 03:21 J -24508330.44 -24508330.36 -24508330.26 0.0265 0.0233  
 Mercury -71813-02-04 01:25 J -24508241.61 -24508241.44 -24508241.25 0.0266 0.0095  
 Mercury -71813-05-02 23:45 J -24508152.69 -24508152.51 -24508152.32 0.0267 0.0048  
 Mercury -71813-07-30 22:04 J -24508063.71 -24508063.58 -24508063.44 0.0268 0.0190  
 Moon -71811-11-26 03:35 J -24507215.53 -24507215.35 -24507215.15 0.0277 0.0185  
 Earth -71811-11-26 06:28 J -24507215.39 -24507215.23 -24507215.04 0.0277 0.0199 \*  
 Moon -71810-12-09 21:21 J -24506836.86 -24506836.61 -24506836.36 0.0282 0.0031  
 Earth -71810-12-10 00:57 J -24506836.71 -24506836.46 -24506836.21 0.0282 0.0040 \*  
 Mars -71809-11-10 16:04 J -24506500.11 -24506499.83 -24506499.54 0.0287 0.0098  
 Moon -71809-12-23 05:30 J -24506457.47 -24506457.27 -24506457.05 0.0287 0.0135  
 Earth -71809-12-23 06:13 J -24506457.45 -24506457.24 -24506457.01 0.0287 0.0134 \*  
 Venus -71802-04-02 17:30 J -24504165.92 -24504165.77 -24504165.62 0.0303 0.0202  
 Mercury -71800-06-16 01:40 J -24503360.51 -24503360.43 -24503360.34 0.0297 0.0220  
 Mercury -71800-09-12 13:54 J -24503272.05 -24503271.92 -24503271.80 0.0296 0.0091  
 Mercury -71800-12-10 01:54 J -24503183.55 -24503183.42 -24503183.30 0.0295 0.0037  
 Mercury -71799-03-08 13:40 J -24503095.03 -24503094.93 -24503094.82 0.0294 0.0162  
 Mercury -71799-06-05 01:40 J -24503006.46 -24503006.43 -24503006.41 0.0293 0.0286  
 Moon -71797-05-30 05:16 J -24502281.48 -24502281.28 -24502281.08 0.0284 0.0163  
 Earth -71797-05-30 06:28 J -24502281.42 -24502281.23 -24502281.03 0.0284 0.0160 \*  
 Moon -71796-06-11 16:47 J -24501904.04 -24501903.80 -24501903.56 0.0279 0.0015  
 Earth -71796-06-11 20:23 J -24501903.89 -24501903.65 -24501903.41 0.0279 0.0005 \*  
 Earth -71795-06-24 00:13 J -24501526.68 -24501526.49 -24501526.27 0.0274 0.0144  
 Moon -71795-06-24 00:28 J -24501526.67 -24501526.48 -24501526.27 0.0274 0.0131 \*  
 Venus -71788-09-08 04:33 J -24498893.46 -24498893.31 -24498893.14 0.0259 0.0168  
 Venus -71787-04-25 03:35 J -24498664.50 -24498664.35 -24498664.19 0.0260 0.0183  
 Mercury -71784-06-22 22:18 J -24497509.72 -24497509.57 -24497509.40 0.0266 0.0146  
 Mercury -71784-09-19 20:37 J -24497420.83 -24497420.64 -24497420.45 0.0267 0.0006

Mercury -71784-12-17 18:42 J -24497331.88 -24497331.72 -24497331.55 0.0267 0.0137  
 Earth -71782-11-20 09:06 J -24496629.18 -24496629.12 -24496629.06 0.0275 0.0266  
 Moon -71782-11-20 12:13 J -24496629.07 -24496628.99 -24496628.88 0.0275 0.0253 \*  
 Earth -71781-12-02 21:35 J -24496250.82 -24496250.60 -24496250.36 0.0280 0.0118  
 Moon -71781-12-03 01:11 J -24496250.68 -24496250.45 -24496250.21 0.0280 0.0107 \*  
 Earth -71780-12-16 21:49 J -24495871.83 -24495871.59 -24495871.34 0.0284 0.0050  
 Moon -71780-12-16 22:04 J -24495871.83 -24495871.58 -24495871.32 0.0284 0.0052 \*  
 Moon -71779-12-31 05:45 J -24495492.42 -24495492.26 -24495492.09 0.0289 0.0220  
 Earth -71779-12-31 08:52 J -24495492.28 -24495492.13 -24495491.97 0.0289 0.0226 \*  
 Venus -71773-02-25 16:47 J -24493609.85 -24493609.80 -24493609.73 0.0303 0.0289  
 Venus -71773-10-12 19:11 J -24493379.81 -24493379.70 -24493379.59 0.0302 0.0255  
 Mercury -71771-11-03 02:52 J -24492628.43 -24492628.38 -24492628.32 0.0298 0.0266  
 Mercury -71770-01-30 15:06 J -24492539.98 -24492539.87 -24492539.75 0.0297 0.0136  
 Mercury -71770-04-29 03:06 J -24492451.50 -24492451.37 -24492451.24 0.0296 0.0010  
 Mercury -71770-07-26 15:06 J -24492362.99 -24492362.87 -24492362.75 0.0295 0.0119  
 Mercury -71770-10-23 02:52 J -24492274.44 -24492274.38 -24492274.30 0.0294 0.0245  
 Earth -71768-05-24 18:42 J -24491694.85 -24491694.72 -24491694.57 0.0287 0.0231  
 Moon -71768-05-24 20:37 J -24491694.77 -24491694.64 -24491694.51 0.0287 0.0232 \*  
 Earth -71767-06-06 14:23 J -24491317.13 -24491316.90 -24491316.66 0.0282 0.0069  
 Moon -71767-06-06 18:13 J -24491316.97 -24491316.74 -24491316.51 0.0282 0.0079 \*  
 Mars -71766-01-05 00:13 J -24491104.75 -24491104.49 -24491104.23 0.0279 0.0092  
 Earth -71766-06-18 23:30 J -24490939.74 -24490939.52 -24490939.29 0.0277 0.0084  
 Moon -71766-06-18 23:59 J -24490939.74 -24490939.50 -24490939.25 0.0277 0.0070 \*  
 Moon -71765-06-29 19:54 J -24490562.81 -24490562.67 -24490562.52 0.0272 0.0214  
 Earth -71765-06-29 23:30 J -24490562.65 -24490562.52 -24490562.38 0.0272 0.0223 \*  
 Venus -71758-03-21 07:40 J -24488107.37 -24488107.18 -24488106.99 0.0259 0.0120  
 Venus -71758-11-05 06:28 J -24487878.32 -24487878.23 -24487878.12 0.0259 0.0230  
 Mercury -71755-11-09 20:52 J -24486777.76 -24486777.63 -24486777.49 0.0265 0.0187  
 Mercury -71754-02-06 18:57 J -24486688.90 -24486688.71 -24486688.52 0.0266 0.0048  
 Mercury -71754-05-06 17:01 J -24486599.96 -24486599.79 -24486599.60 0.0267 0.0094

Mercury -71754-08-03 15:21 J -24486510.94 -24486510.86 -24486510.77 0.0268 0.0236

Moon -71752-11-26 23:59 J -24485664.68 -24485664.50 -24485664.30 0.0277 0.0177

Earth -71752-11-27 02:52 J -24485664.55 -24485664.38 -24485664.18 0.0277 0.0186 \*

Earth -71751-12-10 21:21 J -24485285.86 -24485285.61 -24485285.36 0.0282 0.0026

Moon -71751-12-10 21:35 J -24485285.84 -24485285.60 -24485285.35 0.0282 0.0022 \*

Mars -71750-02-13 03:35 J -24485221.62 -24485221.35 -24485221.08 0.0283 0.0134

Earth -71750-12-25 02:52 J -24484906.59 -24484906.38 -24484906.16 0.0287 0.0148

Moon -71750-12-25 06:13 J -24484906.45 -24484906.24 -24484906.03 0.0287 0.0146 \*

Venus -71744-09-06 21:21 J -24482823.74 -24482823.61 -24482823.46 0.0303 0.0228

Mercury -71741-06-18 16:33 J -24481807.91 -24481807.81 -24481807.70 0.0297 0.0181

Mercury -71741-09-15 04:47 J -24481719.43 -24481719.30 -24481719.18 0.0296 0.0052

Mercury -71741-12-12 16:47 J -24481630.93 -24481630.80 -24481630.68 0.0295 0.0077

Mercury -71740-03-11 04:33 J -24481542.40 -24481542.31 -24481542.21 0.0294 0.0202

Moon -71738-06-01 01:25 J -24480730.63 -24480730.44 -24480730.23 0.0284 0.0154

Earth -71738-06-01 05:01 J -24480730.49 -24480730.29 -24480730.08 0.0284 0.0145 \*

Moon -71737-06-12 18:28 J -24480352.97 -24480352.73 -24480352.50 0.0279 0.0004

Earth -71737-06-12 18:57 J -24480352.95 -24480352.71 -24480352.47 0.0279 0.0013 \*

Mars -71736-02-21 08:23 J -24480099.41 -24480099.15 -24480098.88 0.0275 0.0105

Earth -71736-06-24 22:33 J -24479975.75 -24479975.56 -24479975.36 0.0274 0.0159

Moon -71736-06-25 01:54 J -24479975.61 -24479975.42 -24479975.21 0.0274 0.0146 \*

Venus -71729-09-30 07:54 J -24477321.38 -24477321.17 -24477320.97 0.0259 0.0083

Mercury -71725-03-28 17:30 J -24476045.85 -24476045.77 -24476045.69 0.0265 0.0240

Mercury -71725-06-25 15:35 J -24475957.03 -24475956.85 -24475956.67 0.0266 0.0101

Mercury -71725-09-22 13:40 J -24475868.12 -24475867.93 -24475867.74 0.0267 0.0039

Mercury -71725-12-20 11:45 J -24475779.14 -24475779.01 -24475778.86 0.0267 0.0181

Earth -71723-11-21 04:33 J -24475078.40 -24475078.31 -24475078.21 0.0275 0.0254

Moon -71723-11-21 06:42 J -24475078.32 -24475078.22 -24475078.08 0.0275 0.0243 \*

Moon -71722-12-04 15:35 J -24474700.09 -24474699.85 -24474699.60 0.0280 0.0099

Earth -71722-12-04 17:01 J -24474700.02 -24474699.79 -24474699.55 0.0280 0.0104 \*

Moon -71721-12-17 13:25 J -24474321.18 -24474320.94 -24474320.69 0.0284 0.0063

Earth -71721-12-17 17:16 J -24474321.02 -24474320.78 -24474320.53 0.0284 0.0064 \*  
 Mars -71720-04-04 17:59 J -24474213.03 -24474212.75 -24474212.46 0.0286 0.0098  
 Moon -71719-01-01 01:25 J -24473941.57 -24473941.44 -24473941.29 0.0289 0.0234  
 Earth -71719-01-01 04:18 J -24473941.45 -24473941.32 -24473941.18 0.0289 0.0241 \*  
 Venus -71714-03-19 21:49 J -24472037.76 -24472037.59 -24472037.43 0.0303 0.0180  
 Mercury -71712-11-05 17:16 J -24471075.85 -24471075.78 -24471075.70 0.0298 0.0232  
 Mercury -71711-02-02 05:30 J -24470987.39 -24470987.27 -24470987.15 0.0297 0.0102  
 Mercury -71711-05-01 17:30 J -24470898.90 -24470898.77 -24470898.64 0.0296 0.0027  
 Mercury -71711-07-29 05:30 J -24470810.38 -24470810.27 -24470810.16 0.0295 0.0154  
 Mercury -71711-10-25 17:30 J -24470721.81 -24470721.77 -24470721.73 0.0294 0.0279  
 Earth -71709-05-25 14:37 J -24470144.03 -24470143.89 -24470143.73 0.0287 0.0218  
 Moon -71709-05-25 18:13 J -24470143.89 -24470143.74 -24470143.59 0.0287 0.0222 \*  
 Earth -71708-06-07 10:33 J -24469766.30 -24469766.06 -24469765.83 0.0282 0.0056  
 Moon -71708-06-07 10:33 J -24469766.29 -24469766.06 -24469765.81 0.0282 0.0069 \*  
 Moon -71707-06-19 16:04 J -24469389.05 -24469388.83 -24469388.59 0.0277 0.0082  
 Earth -71707-06-19 19:40 J -24469388.90 -24469388.68 -24469388.45 0.0277 0.0098 \*  
 Moon -71706-07-01 18:28 J -24469011.84 -24469011.73 -24469011.60 0.0272 0.0231  
 Earth -71706-07-01 19:25 J -24469011.80 -24469011.69 -24469011.56 0.0272 0.0237 \*  
 Venus -71699-04-12 10:04 J -24466535.29 -24466535.08 -24466534.86 0.0259 0.0038  
 Mercury -71696-11-12 13:54 J -24465225.08 -24465224.92 -24465224.76 0.0265 0.0144  
 Mercury -71695-02-09 11:59 J -24465136.20 -24465136.00 -24465135.81 0.0266 0.0007  
 Mercury -71695-05-09 09:49 J -24465047.25 -24465047.09 -24465046.92 0.0267 0.0137  
 Earth -71693-11-27 21:21 J -24464113.79 -24464113.61 -24464113.40 0.0277 0.0174  
 Moon -71693-11-27 23:30 J -24464113.71 -24464113.52 -24464113.32 0.0277 0.0169 \*  
 Earth -71692-12-11 15:35 J -24463735.10 -24463734.85 -24463734.59 0.0282 0.0013  
 Moon -71692-12-11 19:40 J -24463734.93 -24463734.68 -24463734.43 0.0282 0.0013 \*  
 Earth -71691-12-25 21:06 J -24463355.82 -24463355.62 -24463355.41 0.0287 0.0162  
 Moon -71691-12-25 23:45 J -24463355.73 -24463355.51 -24463355.29 0.0287 0.0157 \*  
 Venus -71685-09-29 01:25 J -24461251.63 -24461251.44 -24461251.25 0.0303 0.0122  
 Mercury -71682-03-25 18:42 J -24460343.76 -24460343.72 -24460343.68 0.0298 0.0278

Mercury -71682-06-22 06:42 J -24460255.33 -24460255.22 -24460255.10 0.0297 0.0148

Mercury -71682-09-18 18:57 J -24460166.84 -24460166.71 -24460166.58 0.0296 0.0019

Mercury -71682-12-16 06:57 J -24460078.33 -24460078.21 -24460078.09 0.0295 0.0109

Mercury -71681-03-13 18:42 J -24459989.79 -24459989.72 -24459989.64 0.0294 0.0235

Earth -71679-06-01 23:59 J -24459179.71 -24459179.50 -24459179.28 0.0284 0.0132

Moon -71679-06-01 23:59 J -24459179.69 -24459179.50 -24459179.29 0.0284 0.0143 \*

Mars -71678-05-30 19:25 J -24458816.95 -24458816.69 -24458816.42 0.0279 0.0085

Earth -71678-06-14 14:09 J -24458802.15 -24458801.91 -24458801.68 0.0279 0.0027

Moon -71678-06-14 17:30 J -24458802.00 -24458801.77 -24458801.53 0.0279 0.0012 \*

Earth -71677-06-25 17:45 J -24458424.93 -24458424.76 -24458424.56 0.0274 0.0173

Moon -71677-06-25 19:40 J -24458424.88 -24458424.68 -24458424.47 0.0274 0.0161 \*

Venus -71670-10-23 10:04 J -24455749.29 -24455749.08 -24455748.86 0.0259 0.0003

Mercury -71666-04-01 10:18 J -24454493.20 -24454493.07 -24454492.94 0.0265 0.0198

Mercury -71666-06-29 08:09 J -24454404.34 -24454404.16 -24454403.97 0.0266 0.0060

Mercury -71666-09-26 06:13 J -24454315.42 -24454315.24 -24454315.05 0.0266 0.0081

Mercury -71666-12-24 04:18 J -24454226.42 -24454226.32 -24454226.21 0.0267 0.0223

Moon -71664-11-21 20:09 J -24453527.79 -24453527.66 -24453527.52 0.0275 0.0236

Earth -71664-11-21 22:47 J -24453527.67 -24453527.55 -24453527.44 0.0275 0.0242 \*

Moon -71663-12-05 06:57 J -24453149.44 -24453149.21 -24453148.97 0.0280 0.0092

Earth -71663-12-05 10:47 J -24453149.28 -24453149.05 -24453148.81 0.0280 0.0090 \*

Mars -71662-07-07 23:16 J -24452934.79 -24452934.53 -24452934.26 0.0282 0.0140

Moon -71662-12-19 09:06 J -24452770.35 -24452770.12 -24452769.88 0.0284 0.0072

Earth -71662-12-19 10:33 J -24452770.29 -24452770.06 -24452769.81 0.0284 0.0078 \*

Earth -71660-01-01 21:21 J -24452390.71 -24452390.61 -24452390.48 0.0289 0.0255

Moon -71660-01-01 23:16 J -24452390.65 -24452390.53 -24452390.39 0.0289 0.0244 \*

Venus -71655-04-11 01:11 J -24450465.65 -24450465.45 -24450465.25 0.0303 0.0078

Mercury -71653-11-08 07:25 J -24449523.28 -24449523.19 -24449523.09 0.0298 0.0200

Mercury -71652-02-04 19:40 J -24449434.81 -24449434.68 -24449434.56 0.0297 0.0071

Mercury -71652-05-04 07:40 J -24449346.31 -24449346.18 -24449346.06 0.0296 0.0059

Mercury -71652-07-31 19:25 J -24449257.78 -24449257.69 -24449257.58 0.0295 0.0186

Moon -71650-05-27 08:52 J -24448593.29 -24448593.13 -24448592.96 0.0287 0.0213  
 Earth -71650-05-27 09:06 J -24448593.28 -24448593.12 -24448592.95 0.0287 0.0206 \*  
 Moon -71649-06-08 01:11 J -24448215.68 -24448215.45 -24448215.21 0.0282 0.0059  
 Earth -71649-06-08 05:01 J -24448215.53 -24448215.29 -24448215.06 0.0282 0.0043 \*  
 Moon -71648-06-20 12:28 J -24447838.20 -24447837.98 -24447837.76 0.0277 0.0097  
 Earth -71648-06-20 14:09 J -24447838.13 -24447837.91 -24447837.69 0.0277 0.0111 \*  
 Mars -71648-07-17 01:11 J -24447811.71 -24447811.45 -24447811.18 0.0276 0.0103  
 Earth -71647-07-02 14:09 J -24447461.00 -24447460.91 -24447460.81 0.0272 0.0250  
 Moon -71647-07-02 17:01 J -24447460.87 -24447460.79 -24447460.68 0.0272 0.0248 \*  
 Venus -71640-05-04 11:59 J -24444963.21 -24444963.00 -24444962.78 0.0259 0.0042  
 Mercury -71637-08-18 08:37 J -24443761.22 -24443761.14 -24443761.06 0.0264 0.0241  
 Mercury -71637-11-15 06:28 J -24443672.40 -24443672.23 -24443672.05 0.0265 0.0103  
 Mercury -71636-02-12 04:33 J -24443583.50 -24443583.31 -24443583.12 0.0266 0.0037  
 Mercury -71636-05-12 02:37 J -24443494.53 -24443494.39 -24443494.24 0.0267 0.0177  
 Earth -71634-11-29 15:21 J -24442563.05 -24442562.86 -24442562.64 0.0277 0.0162  
 Moon -71634-11-29 19:11 J -24442562.91 -24442562.70 -24442562.49 0.0277 0.0160 \*  
 Earth -71633-12-12 09:49 J -24442184.34 -24442184.09 -24442183.84 0.0282 0.0003  
 Moon -71633-12-12 10:33 J -24442184.32 -24442184.06 -24442183.80 0.0282 0.0007 \*  
 Mars -71632-08-28 00:42 J -24441925.76 -24441925.47 -24441925.18 0.0285 0.0096  
 Moon -71632-12-26 12:13 J -24441805.18 -24441804.99 -24441804.76 0.0287 0.0165  
 Earth -71632-12-26 15:06 J -24441805.06 -24441804.87 -24441804.67 0.0287 0.0175 \*  
 Venus -71626-10-22 04:47 J -24439679.51 -24439679.30 -24439679.09 0.0303 0.0019  
 Mercury -71623-03-28 08:37 J -24438791.21 -24438791.14 -24438791.07 0.0298 0.0247  
 Mercury -71623-06-24 20:52 J -24438702.75 -24438702.63 -24438702.51 0.0297 0.0116  
 Mercury -71623-09-21 08:52 J -24438614.26 -24438614.13 -24438614.00 0.0296 0.0015  
 Mercury -71623-12-18 20:52 J -24438525.74 -24438525.63 -24438525.51 0.0295 0.0141  
 Mercury -71622-03-17 08:52 J -24438437.18 -24438437.13 -24438437.08 0.0294 0.0266  
 Earth -71621-05-20 16:33 J -24438006.84 -24438006.81 -24438006.76 0.0289 0.0284  
 Moon -71621-05-20 16:47 J -24438006.80 -24438006.80 -24438006.79 0.0289 0.0288 \*  
 Earth -71620-06-02 17:59 J -24437628.97 -24437628.75 -24437628.54 0.0284 0.0119



Moon -71620-06-02 21:21 J -24437628.82 -24437628.61 -24437628.40 0.0284 0.0133 \*  
 Mars -71620-09-05 04:33 J -24437534.34 -24437534.31 -24437534.26 0.0282 0.0279  
 Earth -71619-06-15 08:09 J -24437251.40 -24437251.16 -24437250.92 0.0279 0.0039  
 Moon -71619-06-15 09:35 J -24437251.34 -24437251.10 -24437250.85 0.0279 0.0024 \*  
 Moon -71618-06-27 09:21 J -24436874.29 -24436874.11 -24436873.91 0.0274 0.0177  
 Earth -71618-06-27 12:28 J -24436874.15 -24436873.98 -24436873.80 0.0274 0.0185 \*  
 Venus -71611-11-14 12:13 J -24434177.19 -24434176.99 -24434176.78 0.0259 0.0079  
 Mercury -71607-04-04 03:06 J -24432940.52 -24432940.37 -24432940.21 0.0265 0.0156  
 Mercury -71607-07-02 01:11 J -24432851.64 -24432851.45 -24432851.26 0.0266 0.0017  
 Mercury -71607-09-28 23:16 J -24432762.70 -24432762.53 -24432762.36 0.0266 0.0124  
 Mercury -71607-12-26 21:06 J -24432673.63 -24432673.62 -24432673.59 0.0267 0.0265  
 Moon -71605-11-22 14:09 J -24431977.04 -24431976.91 -24431976.76 0.0275 0.0227  
 Earth -71605-11-22 17:16 J -24431976.90 -24431976.78 -24431976.63 0.0275 0.0231 \*  
 Earth -71604-12-06 05:16 J -24431598.52 -24431598.28 -24431598.03 0.0279 0.0077  
 Moon -71604-12-06 05:45 J -24431598.49 -24431598.26 -24431598.03 0.0279 0.0083 \*  
 Earth -71603-12-20 05:01 J -24431219.53 -24431219.29 -24431219.06 0.0284 0.0092  
 Moon -71603-12-20 08:09 J -24431219.39 -24431219.16 -24431218.92 0.0284 0.0081 \*  
 Earth -71601-01-03 15:21 J -24430839.94 -24430839.86 -24430839.76 0.0289 0.0268  
 Moon -71601-01-03 19:11 J -24430839.81 -24430839.70 -24430839.58 0.0289 0.0254 \*  
 Venus -71596-05-03 04:18 J -24428893.52 -24428893.32 -24428893.11 0.0303 0.0025  
 Mercury -71594-11-11 21:21 J -24427970.71 -24427970.61 -24427970.50 0.0298 0.0170  
 Mercury -71593-02-08 09:21 J -24427882.23 -24427882.11 -24427881.98 0.0297 0.0042  
 Mercury -71593-05-06 21:35 J -24427793.72 -24427793.60 -24427793.48 0.0296 0.0088  
 Mercury -71593-08-03 09:35 J -24427705.19 -24427705.10 -24427705.01 0.0295 0.0215  
 Moon -71591-05-27 22:33 J -24427042.72 -24427042.56 -24427042.39 0.0287 0.0207  
 Earth -71591-05-28 02:09 J -24427042.58 -24427042.41 -24427042.23 0.0287 0.0195 \*  
 Moon -71590-06-09 21:06 J -24426664.85 -24426664.62 -24426664.39 0.0282 0.0046  
 Earth -71590-06-09 22:18 J -24426664.81 -24426664.57 -24426664.33 0.0282 0.0031 \*  
 Mars -71590-10-23 06:57 J -24426529.47 -24426529.21 -24426528.94 0.0280 0.0089  
 Earth -71589-06-21 07:40 J -24426287.40 -24426287.18 -24426286.97 0.0277 0.0123

Moon -71589-06-21 10:33 J -24426287.27 -24426287.06 -24426286.84 0.0277 0.0112 \*  
 Earth -71588-07-03 08:09 J -24425910.22 -24425910.16 -24425910.10 0.0272 0.0262  
 Moon -71588-07-03 10:47 J -24425910.12 -24425910.05 -24425909.98 0.0272 0.0261 \*  
 Venus -71582-10-10 15:35 J -24423619.94 -24423619.85 -24423619.74 0.0259 0.0226  
 Venus -71581-05-26 14:09 J -24423391.09 -24423390.91 -24423390.71 0.0259 0.0123  
 Mercury -71578-08-22 01:25 J -24422208.56 -24422208.44 -24422208.31 0.0264 0.0198  
 Mercury -71578-11-18 23:30 J -24422119.71 -24422119.52 -24422119.33 0.0265 0.0060  
 Mercury -71577-02-15 21:35 J -24422030.79 -24422030.60 -24422030.42 0.0266 0.0080  
 Mercury -71577-05-14 19:25 J -24421941.79 -24421941.69 -24421941.57 0.0267 0.0221  
 Moon -71575-11-30 09:49 J -24421012.30 -24421012.09 -24421011.86 0.0277 0.0153  
 Earth -71575-11-30 10:33 J -24421012.26 -24421012.06 -24421011.84 0.0277 0.0150 \*  
 Mars -71574-11-30 08:23 J -24420647.42 -24420647.15 -24420646.88 0.0282 0.0137  
 Moon -71574-12-14 00:57 J -24420633.72 -24420633.46 -24420633.21 0.0282 0.0003  
 Earth -71574-12-14 04:47 J -24420633.56 -24420633.30 -24420633.05 0.0282 0.0014 \*  
 Moon -71573-12-27 06:28 J -24420254.42 -24420254.23 -24420254.03 0.0287 0.0174  
 Earth -71573-12-27 09:35 J -24420254.27 -24420254.10 -24420253.90 0.0287 0.0189 \*  
 Venus -71567-11-13 08:23 J -24418107.35 -24418107.15 -24418106.95 0.0303 0.0084  
 Mercury -71564-03-30 22:47 J -24417238.64 -24417238.55 -24417238.46 0.0298 0.0215  
 Mercury -71564-06-27 11:01 J -24417150.17 -24417150.04 -24417149.92 0.0297 0.0085  
 Mercury -71564-09-23 23:01 J -24417061.67 -24417061.54 -24417061.41 0.0296 0.0045  
 Mercury -71564-12-21 11:01 J -24416973.14 -24416973.04 -24416972.94 0.0295 0.0172  
 Earth -71562-05-22 10:47 J -24416456.12 -24416456.05 -24416455.97 0.0289 0.0273  
 Moon -71562-05-22 14:09 J -24416455.95 -24416455.91 -24416455.84 0.0289 0.0281  
 Earth -71561-06-03 12:13 J -24416078.21 -24416077.99 -24416077.77 0.0284 0.0107  
 Moon -71561-06-03 13:40 J -24416078.16 -24416077.93 -24416077.71 0.0284 0.0120 \*  
 Moon -71560-06-15 23:16 J -24415700.77 -24415700.53 -24415700.28 0.0279 0.0039  
 Earth -71560-06-16 02:23 J -24415700.63 -24415700.40 -24415700.16 0.0279 0.0053 \*  
 Mars -71560-12-09 16:33 J -24415524.06 -24415523.81 -24415523.54 0.0277 0.0111  
 Moon -71559-06-28 04:18 J -24415323.48 -24415323.32 -24415323.15 0.0274 0.0194  
 Earth -71559-06-28 07:11 J -24415323.36 -24415323.20 -24415323.03 0.0274 0.0198 \*

Venus -71552-04-21 16:47 J -24412833.95 -24412833.80 -24412833.65 0.0259 0.0186  
 Venus -71552-12-06 15:06 J -24412605.04 -24412604.87 -24412604.70 0.0259 0.0162  
 Mercury -71548-01-07 22:47 J -24411476.61 -24411476.55 -24411476.48 0.0264 0.0247  
 Mercury -71548-04-06 20:37 J -24411387.81 -24411387.64 -24411387.46 0.0265 0.0110  
 Mercury -71548-07-04 18:42 J -24411298.91 -24411298.72 -24411298.53 0.0266 0.0029  
 Mercury -71548-10-01 16:33 J -24411209.95 -24411209.81 -24411209.66 0.0266 0.0169  
 Earth -71546-11-24 13:54 J -24410426.05 -24410425.92 -24410425.75 0.0275 0.0219  
 Moon -71546-11-24 14:37 J -24410426.02 -24410425.89 -24410425.73 0.0275 0.0219 \*  
 Earth -71545-12-07 02:09 J -24410047.66 -24410047.41 -24410047.17 0.0279 0.0063  
 Moon -71545-12-07 05:45 J -24410047.50 -24410047.26 -24410047.02 0.0279 0.0073 \*  
 Earth -71544-12-21 01:25 J -24409668.67 -24409668.44 -24409668.20 0.0284 0.0107  
 Moon -71544-12-21 04:04 J -24409668.57 -24409668.33 -24409668.08 0.0284 0.0092 \*  
 Mars -71543-01-20 00:57 J -24409638.74 -24409638.46 -24409638.17 0.0285 0.0092  
 Moon -71542-01-04 11:16 J -24409289.12 -24409289.03 -24409288.92 0.0289 0.0266  
 Earth -71542-01-04 11:59 J -24409289.05 -24409289.00 -24409288.95 0.0289 0.0283 \*  
 Venus -71537-05-25 08:52 J -24407321.31 -24407321.13 -24407320.94 0.0303 0.0131  
 Mercury -71535-08-17 23:16 J -24406506.58 -24406506.53 -24406506.47 0.0298 0.0268  
 Mercury -71535-11-14 11:30 J -24406418.13 -24406418.02 -24406417.90 0.0298 0.0137  
 Mercury -71534-02-10 23:45 J -24406329.64 -24406329.51 -24406329.38 0.0297 0.0009  
 Mercury -71534-05-10 11:45 J -24406241.13 -24406241.01 -24406240.89 0.0296 0.0121  
 Mercury -71534-08-06 23:45 J -24406152.58 -24406152.51 -24406152.44 0.0295 0.0248  
 Moon -71532-05-28 18:57 J -24405491.87 -24405491.71 -24405491.54 0.0287 0.0197  
 Earth -71532-05-28 20:23 J -24405491.83 -24405491.65 -24405491.46 0.0287 0.0184 \*  
 Mars -71531-01-28 16:18 J -24405246.84 -24405246.82 -24405246.79 0.0283 0.0282  
 Earth -71531-06-10 16:33 J -24405114.04 -24405113.81 -24405113.57 0.0282 0.0019  
 Moon -71531-06-10 19:40 J -24405113.91 -24405113.68 -24405113.45 0.0282 0.0033 \*  
 Earth -71530-06-23 02:09 J -24404736.61 -24404736.41 -24404736.19 0.0277 0.0136  
 Moon -71530-06-23 04:47 J -24404736.51 -24404736.30 -24404736.07 0.0277 0.0128 \*  
 Venus -71523-11-01 18:42 J -24402047.89 -24402047.72 -24402047.53 0.0259 0.0143  
 Venus -71522-06-18 17:30 J -24401818.89 -24401818.77 -24401818.64 0.0259 0.0207

Mercury -71519-08-24 19:25 J -24400655.85 -24400655.69 -24400655.53 0.0264 0.0151

Mercury -71519-11-21 17:16 J -24400566.97 -24400566.78 -24400566.58 0.0265 0.0013

Mercury -71518-02-18 15:06 J -24400478.03 -24400477.87 -24400477.69 0.0266 0.0128

Moon -71516-12-01 05:16 J -24399461.49 -24399461.28 -24399461.06 0.0277 0.0143

Earth -71516-12-01 08:52 J -24399461.34 -24399461.13 -24399460.90 0.0277 0.0137 \*

Moon -71515-12-15 01:11 J -24399082.69 -24399082.45 -24399082.21 0.0282 0.0015

Earth -71515-12-15 02:52 J -24399082.63 -24399082.38 -24399082.13 0.0282 0.0028 \*

Earth -71514-12-29 07:54 J -24398703.34 -24398703.17 -24398702.98 0.0287 0.0203

Moon -71514-12-29 09:21 J -24398703.28 -24398703.11 -24398702.92 0.0287 0.0188 \*

Venus -71508-12-05 13:54 J -24396535.08 -24396534.92 -24396534.76 0.0303 0.0195

Mercury -71505-04-02 13:11 J -24395686.05 -24395685.95 -24395685.85 0.0298 0.0180

Mercury -71505-06-30 01:25 J -24395597.57 -24395597.44 -24395597.31 0.0297 0.0050

Mercury -71505-09-26 13:25 J -24395509.06 -24395508.94 -24395508.81 0.0296 0.0079

Mercury -71505-12-24 01:25 J -24395420.53 -24395420.44 -24395420.35 0.0295 0.0207

Earth -71503-05-23 06:13 J -24394905.33 -24394905.24 -24394905.13 0.0289 0.0262

Moon -71503-05-23 07:54 J -24394905.25 -24394905.17 -24394905.09 0.0289 0.0272 \*

Moon -71502-06-05 05:01 J -24394527.51 -24394527.29 -24394527.06 0.0284 0.0109

Earth -71502-06-05 07:54 J -24394527.40 -24394527.17 -24394526.94 0.0284 0.0094 \*

Mars -71501-03-17 02:37 J -24394241.65 -24394241.39 -24394241.11 0.0280 0.0081

Moon -71501-06-16 19:54 J -24394149.90 -24394149.67 -24394149.44 0.0279 0.0056

Earth -71501-06-16 22:04 J -24394149.81 -24394149.58 -24394149.34 0.0279 0.0066 \*

Earth -71500-06-29 02:52 J -24393772.53 -24393772.38 -24393772.22 0.0274 0.0212

Moon -71500-06-29 04:47 J -24393772.43 -24393772.30 -24393772.14 0.0274 0.0213 \*

Venus -71493-05-13 20:37 J -24391261.84 -24391261.64 -24391261.44 0.0259 0.0100

Venus -71493-12-28 19:11 J -24391032.74 -24391032.70 -24391032.63 0.0259 0.0250

Mercury -71489-01-11 17:01 J -24389923.91 -24389923.79 -24389923.66 0.0264 0.0197

Mercury -71489-04-09 15:06 J -24389835.06 -24389834.87 -24389834.69 0.0265 0.0059

Mercury -71489-07-07 12:57 J -24389746.14 -24389745.96 -24389745.78 0.0266 0.0080

Mercury -71489-10-04 10:47 J -24389657.15 -24389657.05 -24389656.93 0.0267 0.0221

Earth -71487-11-25 14:09 J -24388875.07 -24388874.91 -24388874.74 0.0275 0.0205

Moon -71487-11-25 17:59 J -24388874.91 -24388874.75 -24388874.58 0.0275 0.0206 \*  
 Earth -71486-12-09 02:23 J -24388496.65 -24388496.40 -24388496.15 0.0280 0.0048  
 Moon -71486-12-09 03:49 J -24388496.59 -24388496.34 -24388496.08 0.0280 0.0058 \*  
 Mars -71485-04-23 20:23 J -24388359.91 -24388359.65 -24388359.36 0.0281 0.0135  
 Moon -71485-12-21 23:16 J -24388117.77 -24388117.53 -24388117.29 0.0285 0.0107  
 Earth -71485-12-22 01:40 J -24388117.65 -24388117.43 -24388117.20 0.0285 0.0123 \*  
 Moon -71483-01-05 07:54 J -24387738.21 -24387738.17 -24387738.11 0.0289 0.0282  
 Venus -71479-10-30 12:42 J -24385978.98 -24385978.97 -24385978.93 0.0303 0.0300  
 Venus -71478-06-17 15:21 J -24385748.97 -24385748.86 -24385748.73 0.0303 0.0246  
 Mercury -71476-08-20 14:09 J -24384953.99 -24384953.91 -24384953.83 0.0298 0.0230  
 Mercury -71476-11-17 02:09 J -24384865.53 -24384865.41 -24384865.28 0.0297 0.0100  
 Mercury -71475-02-13 14:23 J -24384777.03 -24384776.90 -24384776.77 0.0296 0.0030  
 Mercury -71475-05-13 02:23 J -24384688.50 -24384688.40 -24384688.29 0.0296 0.0158  
 Mercury -71475-08-09 14:23 J -24384599.93 -24384599.90 -24384599.87 0.0295 0.0285  
 Earth -71473-05-29 17:30 J -24383940.96 -24383940.77 -24383940.57 0.0287 0.0172  
 Moon -71473-05-29 20:09 J -24383940.82 -24383940.66 -24383940.47 0.0287 0.0188 \*  
 Earth -71472-06-11 13:40 J -24383563.17 -24383562.93 -24383562.69 0.0282 0.0006  
 Moon -71472-06-11 16:18 J -24383563.06 -24383562.82 -24383562.57 0.0282 0.0019 \*  
 Mars -71471-05-04 10:47 J -24383236.30 -24383236.05 -24383235.78 0.0278 0.0114  
 Moon -71471-06-23 21:06 J -24383185.82 -24383185.62 -24383185.40 0.0277 0.0147  
 Earth -71471-06-23 23:30 J -24383185.72 -24383185.52 -24383185.31 0.0277 0.0149 \*  
 Venus -71464-11-23 23:30 J -24380475.73 -24380475.52 -24380475.31 0.0259 0.0054  
 Mercury -71460-05-30 16:04 J -24379191.90 -24379191.83 -24379191.73 0.0264 0.0235  
 Mercury -71460-08-27 14:09 J -24379103.09 -24379102.91 -24379102.73 0.0265 0.0098  
 Mercury -71460-11-24 12:13 J -24379014.18 -24379013.99 -24379013.80 0.0265 0.0042  
 Mercury -71459-02-21 10:04 J -24378925.22 -24378925.08 -24378924.94 0.0266 0.0181  
 Moon -71458-11-20 00:13 J -24378288.51 -24378288.49 -24378288.44 0.0272 0.0270  
 Earth -71458-11-20 04:04 J -24378288.34 -24378288.33 -24378288.28 0.0272 0.0271  
 Moon -71457-12-02 09:35 J -24377910.31 -24377910.10 -24377909.88 0.0277 0.0129  
 Earth -71457-12-02 11:01 J -24377910.26 -24377910.04 -24377909.81 0.0277 0.0122 \*

Earth -71456-12-16 05:16 J -24377531.53 -24377531.28 -24377531.03 0.0282 0.0044  
 Moon -71456-12-16 07:40 J -24377531.42 -24377531.18 -24377530.93 0.0282 0.0030 \*  
 Mars -71455-06-15 05:45 J -24377350.53 -24377350.26 -24377349.97 0.0284 0.0109  
 Earth -71455-12-30 10:18 J -24377152.22 -24377152.07 -24377151.90 0.0287 0.0220  
 Moon -71455-12-30 14:23 J -24377152.08 -24377151.90 -24377151.72 0.0287 0.0202 \*  
 Venus -71449-05-11 19:25 J -24375192.82 -24375192.69 -24375192.56 0.0303 0.0230  
 Mercury -71446-01-07 16:04 J -24374221.88 -24374221.83 -24374221.77 0.0299 0.0269  
 Mercury -71446-04-06 04:18 J -24374133.43 -24374133.32 -24374133.20 0.0298 0.0138  
 Mercury -71446-07-03 16:33 J -24374044.94 -24374044.81 -24374044.68 0.0297 0.0008  
 Mercury -71446-09-30 04:33 J -24373956.43 -24373956.31 -24373956.19 0.0296 0.0121  
 Mercury -71446-12-27 16:33 J -24373867.88 -24373867.81 -24373867.74 0.0295 0.0248  
 Moon -71444-05-24 02:23 J -24373354.48 -24373354.40 -24373354.28 0.0289 0.0264  
 Earth -71444-05-24 05:59 J -24373354.36 -24373354.25 -24373354.12 0.0289 0.0248 \*  
 Moon -71443-06-06 04:18 J -24372976.54 -24372976.32 -24372976.10 0.0284 0.0095  
 Earth -71443-06-06 07:11 J -24372976.43 -24372976.20 -24372975.97 0.0284 0.0080 \*  
 Mars -71443-06-23 20:52 J -24372958.71 -24372958.63 -24372958.55 0.0284 0.0269  
 Earth -71442-06-18 21:21 J -24372598.84 -24372598.61 -24372598.38 0.0279 0.0080  
 Moon -71442-06-18 23:16 J -24372598.76 -24372598.53 -24372598.31 0.0279 0.0074 \*  
 Earth -71441-06-30 01:40 J -24372221.55 -24372221.43 -24372221.28 0.0274 0.0226  
 Moon -71441-06-30 05:30 J -24372221.40 -24372221.27 -24372221.14 0.0274 0.0231 \*  
 Venus -71434-06-06 02:37 J -24369689.60 -24369689.39 -24369689.17 0.0259 0.0008  
 Mercury -71430-01-14 12:42 J -24368371.13 -24368370.97 -24368370.80 0.0265 0.0139  
 Mercury -71430-04-13 10:47 J -24368282.25 -24368282.05 -24368281.86 0.0265 0.0005  
 Mercury -71430-07-11 08:37 J -24368193.30 -24368193.14 -24368192.97 0.0266 0.0140  
 Earth -71428-11-26 19:25 J -24367323.87 -24367323.69 -24367323.50 0.0275 0.0190  
 Moon -71428-11-26 20:37 J -24367323.81 -24367323.64 -24367323.44 0.0275 0.0194 \*  
 Moon -71427-12-10 05:16 J -24366945.54 -24366945.28 -24366945.03 0.0280 0.0044  
 Earth -71427-12-10 07:54 J -24366945.42 -24366945.17 -24366944.92 0.0280 0.0031 \*  
 Moon -71426-12-24 04:04 J -24366566.54 -24366566.33 -24366566.10 0.0285 0.0126  
 Earth -71426-12-24 07:25 J -24366566.39 -24366566.19 -24366565.96 0.0285 0.0142 \*

Venus -71420-11-21 23:16 J -24364406.70 -24364406.53 -24364406.36 0.0303 0.0169  
 Mercury -71417-08-23 05:30 J -24363401.37 -24363401.27 -24363401.16 0.0298 0.0185  
 Mercury -71417-11-19 17:45 J -24363312.89 -24363312.76 -24363312.63 0.0297 0.0054  
 Mercury -71416-02-16 05:45 J -24363224.38 -24363224.26 -24363224.13 0.0296 0.0076  
 Mercury -71416-05-15 17:45 J -24363135.85 -24363135.76 -24363135.66 0.0295 0.0203  
 Earth -71414-05-31 18:28 J -24362389.92 -24362389.73 -24362389.52 0.0286 0.0158  
 Moon -71414-05-31 21:35 J -24362389.80 -24362389.60 -24362389.41 0.0286 0.0174 \*  
 Moon -71413-06-12 12:42 J -24362012.22 -24362011.97 -24362011.72 0.0281 0.0003  
 Earth -71413-06-12 14:23 J -24362012.14 -24362011.90 -24362011.66 0.0281 0.0010 \*  
 Mars -71413-08-10 04:18 J -24361953.59 -24361953.32 -24361953.05 0.0281 0.0071  
 Moon -71412-06-24 20:23 J -24361634.83 -24361634.65 -24361634.45 0.0277 0.0166  
 Earth -71412-06-24 23:45 J -24361634.70 -24361634.51 -24361634.31 0.0277 0.0164 \*  
 Venus -71405-12-16 05:59 J -24358903.46 -24358903.25 -24358903.03 0.0259 0.0042  
 Mercury -71401-06-02 12:13 J -24357639.13 -24357638.99 -24357638.84 0.0264 0.0175  
 Mercury -71401-08-30 10:18 J -24357550.26 -24357550.07 -24357549.88 0.0265 0.0037  
 Mercury -71401-11-27 08:09 J -24357461.33 -24357461.16 -24357460.98 0.0266 0.0103  
 Mercury -71400-02-24 06:13 J -24357372.31 -24357372.24 -24357372.16 0.0266 0.0243  
 Moon -71399-11-21 09:35 J -24356737.16 -24356737.10 -24356737.01 0.0273 0.0260  
 Earth -71399-11-21 10:33 J -24356737.13 -24356737.06 -24356736.96 0.0273 0.0256 \*  
 Earth -71398-12-04 17:59 J -24356358.98 -24356358.75 -24356358.51 0.0277 0.0105  
 Moon -71398-12-04 20:37 J -24356358.86 -24356358.64 -24356358.41 0.0277 0.0115 \*  
 Mars -71397-09-17 17:01 J -24356071.07 -24356070.79 -24356070.50 0.0281 0.0105  
 Earth -71397-12-17 12:28 J -24355980.22 -24355979.98 -24355979.73 0.0282 0.0062  
 Moon -71397-12-17 15:49 J -24355980.09 -24355979.84 -24355979.58 0.0282 0.0048 \*  
 Moon -71396-12-31 18:28 J -24355600.89 -24355600.73 -24355600.56 0.0287 0.0223  
 Earth -71396-12-31 17:59 J -24355600.88 -24355600.75 -24355600.60 0.0287 0.0239 \*  
 Venus -71390-06-04 06:42 J -24353620.41 -24353620.22 -24353620.02 0.0303 0.0094  
 Mercury -71387-01-10 07:54 J -24352669.25 -24352669.17 -24352669.08 0.0299 0.0220  
 Mercury -71387-04-08 20:09 J -24352580.78 -24352580.66 -24352580.53 0.0298 0.0089  
 Mercury -71387-07-06 08:23 J -24352492.28 -24352492.15 -24352492.02 0.0297 0.0042

Mercury -71387-10-02 20:23 J -24352403.76 -24352403.65 -24352403.55 0.0296 0.0169

Moon -71385-05-25 07:11 J -24351803.31 -24351803.20 -24351803.09 0.0289 0.0250

Earth -71385-05-25 09:35 J -24351803.24 -24351803.10 -24351802.96 0.0289 0.0233 \*

Earth -71384-06-07 10:04 J -24351425.31 -24351425.08 -24351424.84 0.0284 0.0064

Moon -71384-06-07 11:30 J -24351425.24 -24351425.02 -24351424.80 0.0284 0.0079 \*

Earth -71383-06-19 23:59 J -24351047.72 -24351047.50 -24351047.27 0.0279 0.0096

Moon -71383-06-20 03:21 J -24351047.58 -24351047.36 -24351047.13 0.0279 0.0090 \*

Mars -71383-09-28 00:42 J -24350947.71 -24350947.47 -24350947.21 0.0278 0.0135

Moon -71382-07-02 03:35 J -24350670.44 -24350670.35 -24350670.24 0.0274 0.0249

Earth -71382-07-02 04:18 J -24350670.42 -24350670.32 -24350670.19 0.0274 0.0242 \*

Venus -71376-11-11 11:59 J -24348346.03 -24348346.00 -24348345.96 0.0259 0.0254

Venus -71375-06-28 10:47 J -24348117.25 -24348117.05 -24348116.85 0.0259 0.0094

Mercury -71372-10-20 11:45 J -24346907.12 -24346907.01 -24346906.89 0.0264 0.0210

Mercury -71371-01-17 09:35 J -24346818.28 -24346818.10 -24346817.91 0.0265 0.0073

Mercury -71371-04-16 07:40 J -24346729.37 -24346729.18 -24346729.00 0.0266 0.0067

Mercury -71371-07-14 05:30 J -24346640.38 -24346640.27 -24346640.14 0.0266 0.0207

Moon -71369-11-28 01:40 J -24345772.61 -24345772.43 -24345772.23 0.0275 0.0181

Earth -71369-11-28 05:01 J -24345772.48 -24345772.29 -24345772.09 0.0275 0.0173 \*

Moon -71368-12-11 14:52 J -24345394.12 -24345393.88 -24345393.63 0.0280 0.0025

Earth -71368-12-11 18:13 J -24345393.99 -24345393.74 -24345393.49 0.0280 0.0012 \*

Mars -71367-11-09 00:57 J -24345061.72 -24345061.46 -24345061.18 0.0284 0.0130

Earth -71367-12-25 18:28 J -24345014.93 -24345014.73 -24345014.52 0.0285 0.0162

Moon -71367-12-25 18:28 J -24345014.93 -24345014.73 -24345014.52 0.0285 0.0148 \*

Venus -71361-12-14 12:57 J -24342834.17 -24342833.96 -24342833.75 0.0303 0.0024

Mercury -71358-05-30 09:49 J -24341937.15 -24341937.09 -24341937.03 0.0298 0.0260

Mercury -71358-08-26 22:04 J -24341848.70 -24341848.58 -24341848.47 0.0297 0.0129

Mercury -71358-11-23 10:04 J -24341760.20 -24341760.08 -24341759.95 0.0297 0.0009

Mercury -71357-02-19 22:18 J -24341671.69 -24341671.57 -24341671.46 0.0296 0.0129

Mercury -71357-05-18 10:04 J -24341583.14 -24341583.08 -24341583.01 0.0295 0.0256

Moon -71355-06-01 22:18 J -24340838.76 -24340838.57 -24340838.35 0.0286 0.0157



Earth -71355-06-02 00:13 J -24340838.69 -24340838.49 -24340838.27 0.0286 0.0141 \*  
 Mars -71355-11-17 08:23 J -24340670.26 -24340670.15 -24340670.01 0.0284 0.0252  
 Moon -71354-06-14 15:49 J -24340461.08 -24340460.84 -24340460.60 0.0281 0.0015  
 Earth -71354-06-14 19:11 J -24340460.93 -24340460.70 -24340460.46 0.0281 0.0026 \*  
 Earth -71353-06-26 04:04 J -24340083.50 -24340083.33 -24340083.14 0.0276 0.0180  
 Moon -71353-06-26 04:33 J -24340083.47 -24340083.31 -24340083.13 0.0276 0.0183 \*  
 Venus -71346-05-24 15:49 J -24337559.96 -24337559.84 -24337559.69 0.0259 0.0206  
 Venus -71345-01-08 14:52 J -24337331.05 -24337330.88 -24337330.70 0.0259 0.0145  
 Mercury -71342-03-09 11:45 J -24336175.08 -24336175.01 -24336174.94 0.0264 0.0243  
 Mercury -71342-06-06 09:35 J -24336086.27 -24336086.10 -24336085.92 0.0265 0.0106  
 Mercury -71342-09-03 07:40 J -24335997.37 -24335997.18 -24335996.99 0.0265 0.0033  
 Mercury -71342-12-01 05:30 J -24335908.41 -24335908.27 -24335908.12 0.0266 0.0173  
 Earth -71340-11-22 21:49 J -24335185.70 -24335185.59 -24335185.46 0.0273 0.0239  
 Moon -71340-11-23 01:11 J -24335185.54 -24335185.45 -24335185.33 0.0273 0.0245 \*  
 Earth -71339-12-06 06:28 J -24334807.47 -24334807.23 -24334806.99 0.0278 0.0086  
 Moon -71339-12-06 09:49 J -24334807.32 -24334807.09 -24334806.84 0.0278 0.0097 \*  
 Moon -71338-12-20 01:54 J -24334428.67 -24334428.42 -24334428.17 0.0283 0.0069  
 Earth -71338-12-20 01:54 J -24334428.66 -24334428.42 -24334428.18 0.0283 0.0083 \*  
 Moon -71336-01-02 04:47 J -24334049.43 -24334049.30 -24334049.16 0.0288 0.0245  
 Earth -71336-01-02 08:09 J -24334049.26 -24334049.16 -24334049.05 0.0288 0.0260 \*  
 Venus -71331-06-26 22:04 J -24332047.78 -24332047.58 -24332047.37 0.0303 0.0060  
 Mercury -71329-10-16 12:42 J -24331205.00 -24331204.97 -24331204.94 0.0299 0.0291  
 Mercury -71328-01-13 00:57 J -24331116.57 -24331116.46 -24331116.35 0.0298 0.0160  
 Mercury -71328-04-11 12:57 J -24331028.08 -24331027.96 -24331027.83 0.0297 0.0031  
 Mercury -71328-07-09 01:11 J -24330939.57 -24330939.45 -24330939.33 0.0296 0.0100  
 Mercury -71328-10-05 12:57 J -24330851.03 -24330850.96 -24330850.87 0.0296 0.0228  
 Earth -71326-05-27 17:45 J -24330251.90 -24330251.76 -24330251.59 0.0288 0.0216  
 Moon -71326-05-27 19:54 J -24330251.80 -24330251.67 -24330251.53 0.0288 0.0231 \*  
 Earth -71325-06-08 17:30 J -24329874.00 -24329873.77 -24329873.53 0.0283 0.0046  
 Moon -71325-06-08 21:21 J -24329873.84 -24329873.61 -24329873.37 0.0283 0.0060 \*

Mars -71324-01-04 06:57 J -24329664.48 -24329664.21 -24329663.93 0.0281 0.0044  
 Earth -71324-06-21 06:42 J -24329496.43 -24329496.22 -24329496.00 0.0278 0.0114  
 Moon -71324-06-21 07:11 J -24329496.43 -24329496.20 -24329495.97 0.0278 0.0110 \*  
 Moon -71323-07-03 07:11 J -24329119.23 -24329119.20 -24329119.15 0.0274 0.0269  
 Earth -71323-07-03 10:33 J -24329119.12 -24329119.06 -24329118.97 0.0274 0.0258  
 Venus -71317-12-03 21:35 J -24326773.77 -24326773.60 -24326773.42 0.0259 0.0148  
 Venus -71316-07-20 20:37 J -24326544.77 -24326544.64 -24326544.50 0.0259 0.0202  
 Mercury -71313-10-23 09:49 J -24325354.25 -24325354.09 -24325353.92 0.0265 0.0137  
 Mercury -71312-01-20 07:54 J -24325265.37 -24325265.17 -24325264.98 0.0265 0.0007  
 Mercury -71312-04-19 05:45 J -24325176.42 -24325176.26 -24325176.10 0.0266 0.0141  
 Moon -71310-11-30 16:33 J -24324221.01 -24324220.81 -24324220.61 0.0276 0.0164  
 Earth -71310-11-30 19:25 J -24324220.89 -24324220.69 -24324220.47 0.0276 0.0153 \*  
 Earth -71309-12-13 09:35 J -24323842.35 -24323842.10 -24323841.84 0.0281 0.0011  
 Moon -71309-12-13 10:04 J -24323842.33 -24323842.08 -24323841.84 0.0281 0.0005 \*  
 Mars -71308-02-12 05:16 J -24323781.58 -24323781.28 -24323780.98 0.0281 0.0074  
 Earth -71308-12-27 10:47 J -24323463.24 -24323463.05 -24323462.86 0.0285 0.0185  
 Moon -71308-12-27 13:54 J -24323463.11 -24323462.92 -24323462.72 0.0285 0.0170 \*  
 Venus -71301-01-07 05:30 J -24321261.45 -24321261.27 -24321261.08 0.0303 0.0134  
 Mercury -71299-06-02 03:06 J -24320384.47 -24320384.37 -24320384.28 0.0298 0.0197  
 Mercury -71299-08-29 15:06 J -24320295.99 -24320295.87 -24320295.74 0.0297 0.0068  
 Mercury -71299-11-26 03:21 J -24320207.49 -24320207.36 -24320207.24 0.0296 0.0062  
 Mercury -71298-02-22 15:06 J -24320118.96 -24320118.87 -24320118.76 0.0295 0.0191  
 Moon -71296-06-03 06:28 J -24319287.43 -24319287.23 -24319287.01 0.0285 0.0138  
 Earth -71296-06-03 10:04 J -24319287.29 -24319287.08 -24319286.86 0.0285 0.0122 \*  
 Moon -71295-06-16 03:35 J -24318909.58 -24318909.35 -24318909.12 0.0281 0.0035  
 Earth -71295-06-16 04:04 J -24318909.56 -24318909.33 -24318909.09 0.0281 0.0044 \*  
 Mars -71294-02-21 23:59 J -24318658.72 -24318658.50 -24318658.26 0.0278 0.0161  
 Earth -71294-06-28 12:13 J -24318532.15 -24318531.99 -24318531.82 0.0276 0.0196  
 Moon -71294-06-28 15:35 J -24318532.01 -24318531.85 -24318531.68 0.0276 0.0201 \*  
 Venus -71287-06-16 02:37 J -24315987.59 -24315987.39 -24315987.19 0.0260 0.0096

Venus -71286-01-31 01:25 J -24315758.47 -24315758.44 -24315758.40 0.0260 0.0256  
 Mercury -71283-03-12 10:04 J -24314622.23 -24314622.08 -24314621.93 0.0264 0.0170  
 Mercury -71283-06-09 07:54 J -24314533.36 -24314533.17 -24314532.98 0.0265 0.0031  
 Mercury -71283-09-06 05:59 J -24314444.43 -24314444.25 -24314444.07 0.0266 0.0109  
 Mercury -71283-12-04 03:49 J -24314355.39 -24314355.34 -24314355.26 0.0267 0.0250  
 Earth -71281-11-24 12:28 J -24313634.11 -24313633.98 -24313633.82 0.0274 0.0221  
 Moon -71281-11-24 15:21 J -24313633.99 -24313633.86 -24313633.70 0.0274 0.0227 \*  
 Moon -71280-12-07 21:21 J -24313255.86 -24313255.61 -24313255.36 0.0278 0.0078  
 Earth -71280-12-07 22:18 J -24313255.81 -24313255.57 -24313255.33 0.0278 0.0065 \*  
 Moon -71279-12-21 15:21 J -24312877.10 -24312876.86 -24312876.62 0.0283 0.0089  
 Earth -71279-12-21 18:42 J -24312876.95 -24312876.72 -24312876.48 0.0283 0.0106 \*  
 Mars -71278-04-05 23:59 J -24312771.73 -24312771.50 -24312771.25 0.0284 0.0177  
 Moon -71277-01-04 23:01 J -24312497.62 -24312497.54 -24312497.45 0.0288 0.0268  
 Earth -71277-01-05 01:54 J -24312497.45 -24312497.42 -24312497.37 0.0288 0.0283 \*  
 Venus -71272-07-19 16:04 J -24310474.96 -24310474.83 -24310474.69 0.0303 0.0224  
 Mercury -71270-10-20 06:13 J -24309652.32 -24309652.24 -24309652.15 0.0299 0.0224  
 Mercury -71269-01-16 18:28 J -24309563.85 -24309563.73 -24309563.61 0.0298 0.0093  
 Mercury -71269-04-14 06:28 J -24309475.36 -24309475.23 -24309475.10 0.0297 0.0037  
 Mercury -71269-07-11 18:28 J -24309386.83 -24309386.73 -24309386.62 0.0296 0.0165  
 Mercury -71269-10-08 06:28 J -24309298.24 -24309298.23 -24309298.21 0.0295 0.0291  
 Earth -71267-05-29 06:13 J -24308700.40 -24308700.24 -24308700.05 0.0288 0.0195  
 Moon -71267-05-29 10:04 J -24308700.24 -24308700.08 -24308699.92 0.0288 0.0210 \*  
 Mars -71266-04-13 21:49 J -24308380.75 -24308380.59 -24308380.40 0.0284 0.0220  
 Earth -71266-06-11 04:47 J -24308322.53 -24308322.30 -24308322.06 0.0283 0.0026  
 Moon -71266-06-11 05:16 J -24308322.52 -24308322.28 -24308322.03 0.0283 0.0037 \*  
 Moon -71265-06-22 13:40 J -24307945.14 -24307944.93 -24307944.71 0.0278 0.0131  
 Earth -71265-06-22 17:01 J -24307944.99 -24307944.79 -24307944.57 0.0278 0.0133 \*  
 Venus -71258-12-27 08:52 J -24305201.34 -24305201.13 -24305200.91 0.0259 0.0036  
 Mercury -71254-07-30 10:47 J -24303890.18 -24303890.05 -24303889.92 0.0264 0.0198  
 Mercury -71254-10-27 08:37 J -24303801.33 -24303801.14 -24303800.95 0.0265 0.0060

Mercury -71253-01-24 06:42 J -24303712.40 -24303712.22 -24303712.04 0.0266 0.0080  
 Mercury -71253-04-22 04:47 J -24303623.41 -24303623.30 -24303623.20 0.0267 0.0221  
 Earth -71251-12-02 12:57 J -24302669.18 -24302668.96 -24302668.73 0.0277 0.0132  
 Moon -71251-12-02 13:54 J -24302669.11 -24302668.92 -24302668.70 0.0277 0.0144 \*  
 Mars -71250-05-19 12:42 J -24302501.02 -24302500.97 -24302500.88 0.0279 0.0271  
 Earth -71250-12-16 04:33 J -24302290.56 -24302290.31 -24302290.06 0.0281 0.0034  
 Moon -71250-12-16 08:23 J -24302290.40 -24302290.15 -24302289.90 0.0281 0.0019 \*  
 Earth -71249-12-29 06:42 J -24301911.38 -24301911.22 -24301911.04 0.0286 0.0211  
 Moon -71249-12-29 09:49 J -24301911.27 -24301911.09 -24301910.89 0.0286 0.0194 \*  
 Venus -71243-06-13 23:01 J -24299918.66 -24299918.54 -24299918.41 0.0303 0.0238  
 Mercury -71240-03-08 08:52 J -24298920.19 -24298920.13 -24298920.06 0.0298 0.0256  
 Mercury -71240-06-04 21:06 J -24298831.74 -24298831.62 -24298831.50 0.0297 0.0125  
 Mercury -71240-09-01 09:06 J -24298743.24 -24298743.12 -24298742.99 0.0296 0.0011  
 Mercury -71240-11-28 21:06 J -24298654.73 -24298654.62 -24298654.50 0.0296 0.0133  
 Mercury -71239-02-25 09:06 J -24298566.17 -24298566.12 -24298566.06 0.0295 0.0259  
 Moon -71238-05-23 17:16 J -24298113.79 -24298113.78 -24298113.74 0.0289 0.0288  
 Earth -71238-05-23 20:52 J -24298113.70 -24298113.63 -24298113.54 0.0289 0.0272  
 Moon -71237-06-04 23:45 J -24297735.72 -24297735.51 -24297735.29 0.0285 0.0114  
 Earth -71237-06-04 23:59 J -24297735.72 -24297735.50 -24297735.27 0.0285 0.0101 \*  
 Mars -71236-05-31 16:18 J -24297375.10 -24297374.82 -24297374.54 0.0280 0.0011  
 Earth -71236-06-17 16:47 J -24297358.03 -24297357.80 -24297357.57 0.0280 0.0064  
 Moon -71236-06-17 20:09 J -24297357.89 -24297357.66 -24297357.43 0.0280 0.0058 \*  
 Earth -71235-06-29 23:59 J -24296980.65 -24296980.50 -24296980.35 0.0275 0.0215  
 Moon -71235-06-30 02:09 J -24296980.56 -24296980.41 -24296980.26 0.0275 0.0219 \*  
 Venus -71228-07-08 13:54 J -24294415.13 -24294414.92 -24294414.70 0.0260 0.0018  
 Mercury -71225-12-16 10:47 J -24293158.14 -24293158.05 -24293157.95 0.0264 0.0229  
 Mercury -71224-03-15 08:52 J -24293069.31 -24293069.13 -24293068.95 0.0265 0.0091  
 Mercury -71224-06-12 06:57 J -24292980.40 -24292980.21 -24292980.02 0.0266 0.0048  
 Mercury -71224-09-09 05:01 J -24292891.43 -24292891.29 -24292891.16 0.0266 0.0189  
 Moon -71222-11-27 04:47 J -24292082.46 -24292082.30 -24292082.12 0.0274 0.0207

Earth -71222-11-27 05:30 J -24292082.42 -24292082.27 -24292082.08 0.0274 0.0202 \*  
 Moon -71221-12-09 12:57 J -24291704.20 -24291703.96 -24291703.71 0.0279 0.0058  
 Earth -71221-12-09 17:01 J -24291704.04 -24291703.79 -24291703.54 0.0279 0.0042 \*  
 Mars -71220-07-10 12:57 J -24291491.26 -24291490.96 -24291490.65 0.0281 0.0023  
 Moon -71220-12-23 11:59 J -24291325.22 -24291325.00 -24291324.77 0.0284 0.0114  
 Earth -71220-12-23 14:37 J -24291325.10 -24291324.89 -24291324.66 0.0284 0.0131 \*  
 Venus -71214-12-25 10:04 J -24289132.26 -24289132.08 -24289131.89 0.0303 0.0147  
 Mercury -71211-07-26 11:59 J -24288188.03 -24288188.00 -24288187.95 0.0299 0.0283  
 Mercury -71211-10-23 00:13 J -24288099.60 -24288099.49 -24288099.37 0.0298 0.0152  
 Mercury -71210-01-19 12:28 J -24288011.11 -24288010.98 -24288010.85 0.0297 0.0021  
 Mercury -71210-04-18 00:28 J -24287922.60 -24287922.48 -24287922.36 0.0296 0.0107  
 Mercury -71210-07-15 12:28 J -24287834.05 -24287833.98 -24287833.90 0.0295 0.0234  
 Earth -71208-05-30 21:35 J -24287148.78 -24287148.60 -24287148.40 0.0287 0.0172  
 Moon -71208-05-30 22:18 J -24287148.74 -24287148.57 -24287148.37 0.0287 0.0186 \*  
 Moon -71207-06-12 15:21 J -24286771.10 -24286770.86 -24286770.62 0.0282 0.0012  
 Earth -71207-06-12 18:42 J -24286770.96 -24286770.72 -24286770.48 0.0282 0.0004 \*  
 Moon -71206-06-25 03:06 J -24286393.56 -24286393.37 -24286393.17 0.0278 0.0154  
 Earth -71206-06-25 05:30 J -24286393.46 -24286393.27 -24286393.06 0.0278 0.0154 \*  
 Mars -71206-07-19 20:37 J -24286368.83 -24286368.64 -24286368.44 0.0277 0.0198  
 Venus -71198-01-18 20:52 J -24283628.84 -24283628.63 -24283628.42 0.0259 0.0079  
 Mercury -71195-05-05 11:59 J -24282426.05 -24282426.00 -24282425.95 0.0264 0.0255  
 Mercury -71195-08-02 09:49 J -24282337.26 -24282337.09 -24282336.92 0.0265 0.0118  
 Mercury -71195-10-30 07:54 J -24282248.37 -24282248.17 -24282247.98 0.0266 0.0022  
 Mercury -71194-01-27 05:45 J -24282159.41 -24282159.26 -24282159.10 0.0266 0.0162  
 Earth -71193-11-21 00:57 J -24281495.51 -24281495.46 -24281495.37 0.0273 0.0262  
 Moon -71193-11-21 01:25 J -24281495.48 -24281495.44 -24281495.36 0.0273 0.0264 \*  
 Earth -71192-12-04 07:40 J -24281117.41 -24281117.18 -24281116.95 0.0277 0.0110  
 Moon -71192-12-04 11:16 J -24281117.25 -24281117.03 -24281116.80 0.0277 0.0121 \*  
 Earth -71191-12-18 00:42 J -24280738.71 -24280738.47 -24280738.22 0.0282 0.0059  
 Moon -71191-12-18 02:52 J -24280738.63 -24280738.38 -24280738.12 0.0282 0.0043 \*

Mars -71190-09-01 08:52 J -24280481.31 -24280481.13 -24280480.92 0.0285 0.0220  
 Moon -71189-01-01 03:06 J -24280359.52 -24280359.37 -24280359.19 0.0287 0.0219  
 Earth -71189-01-01 04:18 J -24280359.45 -24280359.32 -24280359.17 0.0287 0.0236 \*  
 Venus -71184-07-06 20:09 J -24278345.86 -24278345.66 -24278345.45 0.0303 0.0061  
 Mercury -71181-03-11 03:06 J -24277367.46 -24277367.37 -24277367.26 0.0298 0.0182  
 Mercury -71181-06-07 15:21 J -24277278.98 -24277278.86 -24277278.73 0.0297 0.0052  
 Mercury -71181-09-04 03:21 J -24277190.48 -24277190.36 -24277190.23 0.0296 0.0078  
 Mercury -71181-12-01 15:21 J -24277101.95 -24277101.86 -24277101.76 0.0295 0.0205  
 Moon -71179-05-25 13:11 J -24276562.03 -24276561.95 -24276561.85 0.0289 0.0264  
 Earth -71179-05-25 14:09 J -24276562.02 -24276561.91 -24276561.78 0.0289 0.0249 \*  
 Earth -71178-06-07 15:35 J -24276184.07 -24276183.85 -24276183.61 0.0284 0.0078  
 Moon -71178-06-07 18:42 J -24276183.94 -24276183.72 -24276183.49 0.0284 0.0091 \*  
 Mars -71178-09-08 13:25 J -24276091.14 -24276090.94 -24276090.72 0.0283 0.0182  
 Earth -71177-06-19 06:57 J -24275806.44 -24275806.21 -24275805.98 0.0279 0.0085  
 Moon -71177-06-19 09:21 J -24275806.34 -24275806.11 -24275805.87 0.0279 0.0081 \*  
 Moon -71176-07-01 10:47 J -24275429.16 -24275429.05 -24275428.93 0.0275 0.0241  
 Earth -71176-07-01 12:42 J -24275429.08 -24275428.97 -24275428.84 0.0275 0.0234 \*  
 Venus -71170-12-15 02:23 J -24273071.50 -24273071.40 -24273071.27 0.0260 0.0219  
 Venus -71169-07-31 01:40 J -24272842.61 -24272842.43 -24272842.24 0.0260 0.0133  
 Mercury -71166-12-20 09:35 J -24271605.25 -24271605.10 -24271604.94 0.0265 0.0152  
 Mercury -71165-03-18 07:40 J -24271516.37 -24271516.18 -24271515.99 0.0265 0.0013  
 Mercury -71165-06-15 05:45 J -24271427.43 -24271427.26 -24271427.09 0.0266 0.0128  
 Moon -71163-11-28 19:11 J -24270530.88 -24270530.70 -24270530.51 0.0275 0.0187  
 Earth -71163-11-28 22:47 J -24270530.73 -24270530.55 -24270530.35 0.0275 0.0180 \*  
 Mars -71162-10-14 20:37 J -24270210.82 -24270210.64 -24270210.44 0.0279 0.0221  
 Moon -71162-12-12 09:49 J -24270152.33 -24270152.09 -24270151.85 0.0279 0.0032  
 Earth -71162-12-12 11:45 J -24270152.27 -24270152.01 -24270151.76 0.0279 0.0019 \*  
 Earth -71161-12-25 10:47 J -24269773.25 -24269773.05 -24269772.84 0.0284 0.0156  
 Moon -71161-12-25 12:42 J -24269773.18 -24269772.97 -24269772.76 0.0284 0.0140 \*  
 Venus -71154-01-17 07:25 J -24267559.39 -24267559.19 -24267558.98 0.0303 0.0033

Mercury -71152-07-29 06:28 J -24266635.31 -24266635.23 -24266635.13 0.0298 0.0207

Mercury -71152-10-25 18:42 J -24266546.84 -24266546.72 -24266546.59 0.0297 0.0076

Mercury -71151-01-22 06:57 J -24266458.34 -24266458.21 -24266458.09 0.0297 0.0054

Mercury -71151-04-20 18:42 J -24266369.81 -24266369.72 -24266369.61 0.0296 0.0182

Moon -71149-06-01 11:59 J -24265597.19 -24265597.00 -24265596.79 0.0286 0.0163

Earth -71149-06-01 14:52 J -24265597.08 -24265596.88 -24265596.67 0.0286 0.0148 \*

Moon -71148-06-14 07:54 J -24265219.40 -24265219.17 -24265218.93 0.0282 0.0011

Earth -71148-06-14 10:18 J -24265219.30 -24265219.07 -24265218.83 0.0282 0.0021 \*

Mars -71148-10-26 17:01 J -24265085.06 -24265084.79 -24265084.51 0.0280 0.0028

Earth -71147-06-26 19:40 J -24264841.86 -24264841.68 -24264841.49 0.0277 0.0175

Moon -71147-06-26 21:49 J -24264841.77 -24264841.59 -24264841.41 0.0277 0.0178 \*

Venus -71140-06-26 09:35 J -24262285.27 -24262285.10 -24262284.92 0.0259 0.0157

Venus -71139-02-10 08:23 J -24262056.28 -24262056.15 -24262056.00 0.0259 0.0194

Mercury -71136-05-08 10:33 J -24260873.20 -24260873.06 -24260872.91 0.0265 0.0178

Mercury -71136-08-05 08:37 J -24260784.33 -24260784.14 -24260783.95 0.0265 0.0040

Mercury -71136-11-02 06:42 J -24260695.40 -24260695.22 -24260695.04 0.0266 0.0100

Mercury -71135-01-30 04:33 J -24260606.38 -24260606.31 -24260606.22 0.0267 0.0242

Earth -71134-11-23 17:16 J -24259943.88 -24259943.78 -24259943.65 0.0273 0.0243

Moon -71134-11-23 21:06 J -24259943.72 -24259943.62 -24259943.50 0.0273 0.0244 \*

Earth -71133-12-06 01:40 J -24259565.67 -24259565.43 -24259565.19 0.0278 0.0087

Moon -71133-12-06 03:35 J -24259565.59 -24259565.35 -24259565.10 0.0278 0.0097 \*

Mars -71132-12-05 21:21 J -24259200.91 -24259200.61 -24259200.30 0.0282 0.0020

Moon -71132-12-19 18:13 J -24259186.99 -24259186.74 -24259186.49 0.0283 0.0068

Earth -71132-12-19 20:09 J -24259186.89 -24259186.66 -24259186.41 0.0283 0.0084 \*

Moon -71130-01-02 21:35 J -24258807.72 -24258807.60 -24258807.46 0.0287 0.0245

Earth -71130-01-03 01:40 J -24258807.52 -24258807.43 -24258807.32 0.0287 0.0261 \*

Venus -71125-07-29 17:30 J -24256772.96 -24256772.77 -24256772.58 0.0303 0.0118

Mercury -71123-12-16 09:35 J -24255903.18 -24255903.10 -24255903.03 0.0298 0.0236

Mercury -71122-03-14 21:35 J -24255814.72 -24255814.60 -24255814.48 0.0297 0.0106

Mercury -71122-06-11 09:49 J -24255726.22 -24255726.09 -24255725.96 0.0296 0.0024

Mercury -71122-09-07 21:49 J -24255637.70 -24255637.59 -24255637.48 0.0295 0.0151

Mercury -71122-12-05 09:35 J -24255549.13 -24255549.10 -24255549.05 0.0294 0.0278

Earth -71120-05-27 07:54 J -24255010.31 -24255010.17 -24255010.01 0.0288 0.0224

Moon -71120-05-27 10:47 J -24255010.17 -24255010.05 -24255009.92 0.0288 0.0241 \*

Earth -71119-06-09 07:40 J -24254632.41 -24254632.18 -24254631.94 0.0283 0.0055

Moon -71119-06-09 10:47 J -24254632.29 -24254632.05 -24254631.81 0.0283 0.0067 \*

Moon -71118-06-21 19:25 J -24254254.91 -24254254.69 -24254254.46 0.0278 0.0107

Earth -71118-06-21 21:21 J -24254254.83 -24254254.61 -24254254.38 0.0278 0.0107 \*

Mars -71118-12-14 14:09 J -24254079.06 -24254078.91 -24254078.76 0.0276 0.0235

Moon -71117-07-02 22:33 J -24253877.63 -24253877.56 -24253877.50 0.0274 0.0263

Earth -71117-07-03 01:54 J -24253877.50 -24253877.42 -24253877.32 0.0274 0.0253 \*

Venus -71110-01-06 13:54 J -24251499.11 -24251498.92 -24251498.72 0.0260 0.0105

Venus -71110-08-23 12:57 J -24251270.02 -24251269.96 -24251269.89 0.0260 0.0247

Mercury -71107-09-25 10:04 J -24250141.19 -24250141.08 -24250140.96 0.0265 0.0214

Mercury -71107-12-23 08:09 J -24250052.35 -24250052.16 -24250051.98 0.0265 0.0076

Mercury -71106-03-22 06:13 J -24249963.43 -24249963.24 -24249963.06 0.0266 0.0064

Mercury -71106-06-19 04:18 J -24249874.44 -24249874.32 -24249874.20 0.0267 0.0205

Moon -71104-11-30 11:59 J -24248979.19 -24248979.00 -24248978.80 0.0276 0.0166

Earth -71104-11-30 14:09 J -24248979.11 -24248978.91 -24248978.70 0.0276 0.0159 \*

Earth -71103-12-14 04:33 J -24248600.56 -24248600.31 -24248600.06 0.0280 0.0006

Moon -71103-12-14 06:28 J -24248600.47 -24248600.23 -24248599.98 0.0280 0.0010 \*

Earth -71102-12-28 05:16 J -24248221.47 -24248221.28 -24248221.09 0.0285 0.0180

Moon -71102-12-28 08:52 J -24248221.32 -24248221.13 -24248220.91 0.0285 0.0164 \*

Mars -71101-01-27 11:59 J -24248191.10 -24248191.00 -24248190.90 0.0285 0.0269

Venus -71095-02-09 03:21 J -24245986.50 -24245986.36 -24245986.20 0.0303 0.0207

Mercury -71093-05-04 12:28 J -24245171.03 -24245170.98 -24245170.91 0.0299 0.0264

Mercury -71093-08-01 00:42 J -24245082.58 -24245082.47 -24245082.35 0.0298 0.0133

Mercury -71093-10-28 12:57 J -24244994.09 -24244993.96 -24244993.83 0.0297 0.0003

Mercury -71092-01-25 00:57 J -24244905.57 -24244905.46 -24244905.34 0.0296 0.0126

Mercury -71092-04-23 12:57 J -24244817.02 -24244816.96 -24244816.89 0.0295 0.0253



Moon -71090-06-04 03:35 J -24244045.55 -24244045.35 -24244045.14 0.0286 0.0140  
 Earth -71090-06-04 06:57 J -24244045.43 -24244045.21 -24244045.00 0.0286 0.0123 \*  
 Mars -71089-02-03 15:06 J -24243801.10 -24243800.87 -24243800.63 0.0283 0.0146  
 Earth -71089-06-16 00:57 J -24243667.70 -24243667.46 -24243667.23 0.0281 0.0043  
 Moon -71089-06-16 02:09 J -24243667.64 -24243667.41 -24243667.18 0.0281 0.0036 \*  
 Earth -71088-06-28 08:52 J -24243290.29 -24243290.13 -24243289.95 0.0276 0.0196  
 Moon -71088-06-28 12:28 J -24243290.13 -24243289.98 -24243289.81 0.0276 0.0202 \*  
 Venus -71081-07-18 20:23 J -24240712.86 -24240712.65 -24240712.44 0.0259 0.0045  
 Mercury -71077-02-12 10:33 J -24239409.13 -24239409.06 -24239408.98 0.0264 0.0242  
 Mercury -71077-05-11 08:37 J -24239320.32 -24239320.14 -24239319.96 0.0265 0.0105  
 Mercury -71077-08-08 06:42 J -24239231.41 -24239231.22 -24239231.03 0.0266 0.0035  
 Mercury -71077-11-05 04:33 J -24239142.45 -24239142.31 -24239142.16 0.0266 0.0175  
 Earth -71075-11-25 06:42 J -24238392.35 -24238392.22 -24238392.06 0.0274 0.0223  
 Moon -71075-11-25 08:52 J -24238392.26 -24238392.13 -24238391.97 0.0274 0.0226 \*  
 Moon -71074-12-08 14:09 J -24238014.16 -24238013.91 -24238013.66 0.0278 0.0077  
 Earth -71074-12-08 16:18 J -24238014.06 -24238013.82 -24238013.58 0.0278 0.0065 \*  
 Mars -71073-03-10 21:35 J -24237920.84 -24237920.60 -24237920.37 0.0280 0.0185  
 Moon -71073-12-21 08:52 J -24237635.37 -24237635.13 -24237634.89 0.0283 0.0091  
 Earth -71073-12-21 12:13 J -24237635.21 -24237634.99 -24237634.75 0.0283 0.0107 \*  
 Moon -71071-01-04 17:45 J -24237255.83 -24237255.76 -24237255.67 0.0288 0.0271  
 Earth -71071-01-04 19:25 J -24237255.72 -24237255.69 -24237255.66 0.0288 0.0286 \*  
 Venus -71066-01-04 10:33 J -24235430.16 -24235430.06 -24235429.94 0.0303 0.0254  
 Venus -71066-08-22 12:57 J -24235200.01 -24235199.96 -24235199.89 0.0303 0.0290  
 Mercury -71064-09-21 15:21 J -24234438.87 -24234438.86 -24234438.84 0.0298 0.0294  
 Mercury -71064-12-19 03:35 J -24234350.45 -24234350.35 -24234350.24 0.0298 0.0163  
 Mercury -71063-03-17 15:49 J -24234261.97 -24234261.84 -24234261.71 0.0297 0.0033  
 Mercury -71063-06-14 03:49 J -24234173.46 -24234173.34 -24234173.22 0.0296 0.0096  
 Mercury -71063-09-10 15:49 J -24234084.92 -24234084.84 -24234084.76 0.0295 0.0222  
 Earth -71061-05-29 00:13 J -24233458.65 -24233458.49 -24233458.31 0.0287 0.0201  
 Moon -71061-05-29 03:35 J -24233458.50 -24233458.35 -24233458.18 0.0287 0.0217 \*

Moon -71060-06-10 22:04 J -24233080.82 -24233080.58 -24233080.33 0.0282 0.0043  
 Earth -71060-06-10 23:01 J -24233080.78 -24233080.54 -24233080.30 0.0282 0.0030 \*  
 Mars -71059-03-23 09:49 J -24232795.36 -24232795.09 -24232794.82 0.0279 0.0065  
 Moon -71059-06-23 07:25 J -24232703.39 -24232703.19 -24232702.97 0.0278 0.0130  
 Earth -71059-06-23 11:01 J -24232703.25 -24232703.04 -24232702.82 0.0278 0.0129 \*  
 Earth -71058-07-05 14:09 J -24232325.92 -24232325.91 -24232325.89 0.0273 0.0273  
 Venus -71051-01-29 00:13 J -24229926.71 -24229926.49 -24229926.28 0.0260 0.0006  
 Mercury -71048-09-28 07:25 J -24228588.35 -24228588.19 -24228588.02 0.0265 0.0144  
 Mercury -71048-12-26 05:30 J -24228499.46 -24228499.27 -24228499.08 0.0265 0.0005  
 Mercury -71047-03-25 03:35 J -24228410.52 -24228410.35 -24228410.18 0.0266 0.0135  
 Earth -71045-12-02 01:54 J -24227427.63 -24227427.42 -24227427.20 0.0276 0.0139  
 Moon -71045-12-02 04:04 J -24227427.53 -24227427.33 -24227427.11 0.0276 0.0149 \*  
 Earth -71044-12-15 17:30 J -24227049.01 -24227048.77 -24227048.51 0.0281 0.0028  
 Moon -71044-12-15 21:21 J -24227048.86 -24227048.61 -24227048.36 0.0281 0.0013 \*  
 Mars -71043-05-02 12:13 J -24226911.28 -24226910.99 -24226910.68 0.0283 0.0060  
 Earth -71043-12-29 19:54 J -24226669.84 -24226669.67 -24226669.49 0.0286 0.0204  
 Moon -71043-12-29 20:52 J -24226669.82 -24226669.63 -24226669.43 0.0286 0.0188 \*  
 Venus -71037-07-16 19:11 J -24224643.87 -24224643.70 -24224643.53 0.0303 0.0172  
 Mercury -71034-05-08 06:28 J -24223618.33 -24223618.23 -24223618.13 0.0298 0.0193  
 Mercury -71034-08-04 18:42 J -24223529.85 -24223529.72 -24223529.60 0.0297 0.0063  
 Mercury -71034-11-01 06:42 J -24223441.35 -24223441.22 -24223441.09 0.0297 0.0067  
 Mercury -71033-01-28 18:42 J -24223352.82 -24223352.72 -24223352.62 0.0296 0.0194  
 Moon -71032-05-23 13:54 J -24222871.93 -24222871.92 -24222871.90 0.0290 0.0289  
 Earth -71032-05-23 16:47 J -24222871.87 -24222871.80 -24222871.71 0.0290 0.0272  
 Earth -71031-06-05 20:23 J -24222493.87 -24222493.65 -24222493.42 0.0285 0.0099  
 Moon -71031-06-05 21:06 J -24222493.83 -24222493.62 -24222493.41 0.0285 0.0115 \*  
 Earth -71030-06-18 13:11 J -24222116.18 -24222115.95 -24222115.72 0.0280 0.0066  
 Moon -71030-06-18 16:47 J -24222116.04 -24222115.80 -24222115.57 0.0280 0.0058 \*  
 Mars -71029-05-10 10:04 J -24221789.14 -24221789.08 -24221788.99 0.0276 0.0267  
 Earth -71029-06-29 20:09 J -24221738.80 -24221738.66 -24221738.51 0.0276 0.0217

Moon -71029-06-29 20:23 J -24221738.79 -24221738.65 -24221738.50 0.0276 0.0223 \*  
 Venus -71022-08-11 05:45 J -24219140.47 -24219140.26 -24219140.05 0.0259 0.0062  
 Mercury -71018-02-15 07:25 J -24217856.32 -24217856.19 -24217856.04 0.0264 0.0176  
 Mercury -71018-05-15 05:30 J -24217767.46 -24217767.27 -24217767.08 0.0265 0.0037  
 Mercury -71018-08-12 03:35 J -24217678.53 -24217678.35 -24217678.17 0.0266 0.0103  
 Mercury -71018-11-09 01:40 J -24217589.50 -24217589.43 -24217589.35 0.0267 0.0243  
 Moon -71016-11-26 13:54 J -24216841.08 -24216840.92 -24216840.76 0.0274 0.0212  
 Earth -71016-11-26 16:33 J -24216840.97 -24216840.81 -24216840.64 0.0274 0.0204 \*  
 Moon -71015-12-09 23:16 J -24216462.77 -24216462.53 -24216462.28 0.0279 0.0058  
 Earth -71015-12-10 03:06 J -24216462.62 -24216462.37 -24216462.12 0.0279 0.0044 \*  
 Moon -71014-12-23 23:30 J -24216083.74 -24216083.52 -24216083.30 0.0284 0.0115  
 Earth -71014-12-24 00:13 J -24216083.71 -24216083.49 -24216083.26 0.0284 0.0129 \*  
 Venus -71007-01-27 03:49 J -24213857.54 -24213857.34 -24213857.15 0.0303 0.0093  
 Mercury -71005-09-24 08:52 J -24212886.21 -24212886.13 -24212886.04 0.0298 0.0227  
 Mercury -71005-12-21 21:06 J -24212797.74 -24212797.62 -24212797.50 0.0297 0.0097  
 Mercury -71004-03-20 09:06 J -24212709.24 -24212709.12 -24212708.99 0.0297 0.0035  
 Mercury -71004-06-16 21:21 J -24212620.72 -24212620.61 -24212620.51 0.0296 0.0161  
 Mercury -71004-09-13 09:21 J -24212532.14 -24212532.11 -24212532.09 0.0295 0.0287  
 Moon -71002-05-31 11:59 J -24211907.17 -24211907.00 -24211906.81 0.0287 0.0193  
 Earth -71002-05-31 13:11 J -24211907.13 -24211906.95 -24211906.76 0.0287 0.0177 \*  
 Moon -71001-06-12 06:57 J -24211529.45 -24211529.21 -24211528.97 0.0282 0.0020  
 Earth -71001-06-12 10:33 J -24211529.29 -24211529.06 -24211528.82 0.0282 0.0009 \*  
 Mars -71001-06-30 02:52 J -24211511.62 -24211511.38 -24211511.12 0.0282 0.0113

# 71ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 71st millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-71000-06-24 20:37 J	-24211151.83	-24211151.64	-24211151.44	0.0277	0.0151		
Earth	-71000-06-24 21:21 J	-24211151.80	-24211151.61	-24211151.40	0.0277	0.0150	*	
Venus	-70993-07-06 10:04 J	-24208583.15	-24208583.08	-24208582.99	0.0259	0.0240		
Venus	-70992-02-20 08:23 J	-24208354.34	-24208354.15	-24208353.95	0.0259	0.0109		
Mercury	-70989-07-04 05:45 J	-24207124.36	-24207124.26	-24207124.15	0.0264	0.0218		
Mercury	-70989-10-01 03:49 J	-24207035.52	-24207035.34	-24207035.16	0.0265	0.0080		
Mercury	-70989-12-29 01:40 J	-24206946.61	-24206946.43	-24206946.24	0.0266	0.0059		
Mercury	-70988-03-27 23:45 J	-24206857.63	-24206857.51	-24206857.38	0.0266	0.0199		
Earth	-70987-11-21 03:21 J	-24206254.38	-24206254.36	-24206254.32	0.0272	0.0270		
Earth	-70986-12-04 09:06 J	-24205876.34	-24205876.12	-24205875.89	0.0277	0.0120		
Moon	-70986-12-04 12:42 J	-24205876.18	-24205875.97	-24205875.74	0.0277	0.0132	*	
Mars	-70985-08-04 20:09 J	-24205631.90	-24205631.66	-24205631.39	0.0280	0.0159		
Earth	-70985-12-17 01:40 J	-24205497.67	-24205497.43	-24205497.18	0.0281	0.0048		
Moon	-70985-12-17 02:23 J	-24205497.66	-24205497.40	-24205497.14	0.0281	0.0033	*	
Moon	-70984-12-31 02:09 J	-24205118.57	-24205118.41	-24205118.23	0.0286	0.0210		
Earth	-70984-12-31 05:01 J	-24205118.43	-24205118.29	-24205118.12	0.0286	0.0225	*	
Venus	-70978-08-09 10:18 J	-24203071.28	-24203071.07	-24203070.87	0.0303	0.0020		
Mercury	-70975-02-11 11:16 J	-24202154.09	-24202154.03	-24202153.97	0.0299	0.0262		
Mercury	-70975-05-10 23:30 J	-24202065.64	-24202065.52	-24202065.40	0.0298	0.0131		
Mercury	-70975-08-07 11:45 J	-24201977.14	-24201977.01	-24201976.89	0.0297	0.0009		
Mercury	-70975-11-03 23:45 J	-24201888.63	-24201888.51	-24201888.39	0.0296	0.0128		
Mercury	-70974-01-31 11:45 J	-24201800.07	-24201800.01	-24201799.95	0.0295	0.0255		
Earth	-70973-05-25 04:04 J	-24201320.45	-24201320.33	-24201320.21	0.0290	0.0250		
Moon	-70973-05-25 05:01 J	-24201320.37	-24201320.29	-24201320.19	0.0290	0.0266	*	
Earth	-70972-06-07 06:42 J	-24200942.45	-24200942.22	-24200941.99	0.0285	0.0077		
Moon	-70972-06-07 10:33 J	-24200942.29	-24200942.06	-24200941.83	0.0285	0.0092	*	

Earth -70971-06-19 22:33 J -24200564.78 -24200564.56 -24200564.33 0.0280 0.0087  
 Moon -70971-06-19 23:59 J -24200564.73 -24200564.50 -24200564.26 0.0280 0.0081 \*  
 Mars -70971-08-17 21:06 J -24200505.87 -24200505.62 -24200505.35 0.0279 0.0090  
 Moon -70970-07-02 01:25 J -24200187.54 -24200187.44 -24200187.33 0.0275 0.0245  
 Earth -70970-07-02 04:33 J -24200187.42 -24200187.31 -24200187.18 0.0275 0.0236 \*  
 Venus -70963-01-16 14:37 J -24197797.03 -24197796.89 -24197796.73 0.0259 0.0186  
 Venus -70963-09-02 12:57 J -24197568.11 -24197567.96 -24197567.78 0.0259 0.0163  
 Mercury -70960-11-21 05:30 J -24196392.32 -24196392.27 -24196392.22 0.0264 0.0252  
 Mercury -70959-02-18 03:21 J -24196303.53 -24196303.36 -24196303.19 0.0264 0.0115  
 Mercury -70959-05-18 01:11 J -24196214.64 -24196214.45 -24196214.25 0.0265 0.0024  
 Mercury -70959-08-14 23:16 J -24196125.68 -24196125.53 -24196125.38 0.0266 0.0163  
 Moon -70957-11-27 17:59 J -24195289.91 -24195289.75 -24195289.57 0.0274 0.0198  
 Earth -70957-11-27 21:21 J -24195289.79 -24195289.61 -24195289.42 0.0275 0.0187 \*  
 Earth -70956-12-11 08:37 J -24194911.39 -24194911.14 -24194910.89 0.0279 0.0026  
 Moon -70956-12-11 08:37 J -24194911.38 -24194911.14 -24194910.90 0.0279 0.0040 \*  
 Mars -70955-09-26 11:16 J -24194622.32 -24194622.03 -24194621.73 0.0283 0.0080  
 Earth -70955-12-25 06:42 J -24194532.42 -24194532.22 -24194532.00 0.0284 0.0149  
 Moon -70955-12-25 09:49 J -24194532.30 -24194532.09 -24194531.87 0.0284 0.0133 \*  
 Venus -70948-02-18 17:30 J -24192284.97 -24192284.77 -24192284.56 0.0303 0.0055  
 Mercury -70946-09-28 01:40 J -24191333.53 -24191333.43 -24191333.32 0.0298 0.0168  
 Mercury -70946-12-25 13:54 J -24191245.05 -24191244.92 -24191244.79 0.0297 0.0038  
 Mercury -70945-03-23 01:54 J -24191156.54 -24191156.42 -24191156.30 0.0296 0.0092  
 Mercury -70945-06-19 13:54 J -24191068.00 -24191067.92 -24191067.83 0.0295 0.0219  
 Moon -70943-06-01 18:13 J -24190355.92 -24190355.74 -24190355.54 0.0287 0.0172  
 Earth -70943-06-01 22:04 J -24190355.78 -24190355.58 -24190355.38 0.0287 0.0156 \*  
 Moon -70942-06-14 17:16 J -24189978.01 -24189977.78 -24189977.54 0.0282 0.0007  
 Earth -70942-06-14 18:42 J -24189977.96 -24189977.72 -24189977.48 0.0282 0.0013 \*  
 Earth -70941-06-26 04:33 J -24189600.49 -24189600.31 -24189600.11 0.0277 0.0170  
 Moon -70941-06-26 07:40 J -24189600.36 -24189600.18 -24189600.00 0.0277 0.0172 \*  
 Venus -70934-07-29 17:01 J -24187010.97 -24187010.79 -24187010.61 0.0259 0.0142

Venus -70933-03-14 14:52 J -24186781.99 -24186781.88 -24186781.73 0.0259 0.0207

Mercury -70930-07-08 00:57 J -24185571.61 -24185571.46 -24185571.30 0.0264 0.0161

Mercury -70930-10-04 23:01 J -24185482.73 -24185482.54 -24185482.35 0.0265 0.0024

Mercury -70929-01-01 20:52 J -24185393.80 -24185393.63 -24185393.45 0.0266 0.0116

Mercury -70929-03-30 18:42 J -24185304.76 -24185304.72 -24185304.66 0.0266 0.0257

Earth -70928-11-22 05:59 J -24184703.32 -24184703.25 -24184703.15 0.0272 0.0254

Moon -70928-11-22 09:21 J -24184703.17 -24184703.11 -24184703.03 0.0272 0.0261 \*

Moon -70927-12-05 11:30 J -24184325.25 -24184325.02 -24184324.78 0.0277 0.0116

Earth -70927-12-05 12:13 J -24184325.22 -24184324.99 -24184324.75 0.0277 0.0102 \*

Moon -70926-12-19 01:54 J -24183946.67 -24183946.42 -24183946.17 0.0282 0.0050

Earth -70926-12-19 05:16 J -24183946.52 -24183946.28 -24183946.03 0.0282 0.0067 \*

Moon -70924-01-01 06:42 J -24183567.36 -24183567.22 -24183567.07 0.0286 0.0230

Earth -70924-01-01 09:49 J -24183567.22 -24183567.09 -24183566.96 0.0287 0.0244 \*

Venus -70919-08-31 21:49 J -24181498.78 -24181498.59 -24181498.40 0.0303 0.0118

Mercury -70916-02-14 03:21 J -24180601.45 -24180601.36 -24180601.26 0.0299 0.0209

Mercury -70916-05-13 15:35 J -24180512.97 -24180512.85 -24180512.72 0.0298 0.0078

Mercury -70916-08-10 03:49 J -24180424.47 -24180424.34 -24180424.21 0.0297 0.0053

Mercury -70916-11-06 15:49 J -24180335.94 -24180335.84 -24180335.74 0.0296 0.0181

Earth -70914-05-27 10:18 J -24179769.21 -24179769.07 -24179768.93 0.0289 0.0231

Moon -70914-05-27 13:40 J -24179769.05 -24179768.93 -24179768.80 0.0289 0.0247 \*

Earth -70913-06-08 12:28 J -24179391.21 -24179390.98 -24179390.74 0.0285 0.0057

Moon -70913-06-08 13:25 J -24179391.17 -24179390.94 -24179390.69 0.0285 0.0070 \*

Mars -70913-11-24 03:21 J -24179222.62 -24179222.36 -24179222.10 0.0282 0.0096

Moon -70912-06-21 00:42 J -24179013.69 -24179013.47 -24179013.24 0.0280 0.0104

Earth -70912-06-21 03:35 J -24179013.56 -24179013.35 -24179013.12 0.0280 0.0107 \*

Moon -70911-07-03 06:42 J -24178636.28 -24178636.22 -24178636.15 0.0275 0.0263

Earth -70911-07-03 09:06 J -24178636.20 -24178636.12 -24178636.03 0.0275 0.0254 \*

Venus -70904-02-07 20:37 J -24176224.84 -24176224.64 -24176224.44 0.0259 0.0092

Venus -70904-09-24 18:57 J -24175995.74 -24175995.71 -24175995.68 0.0259 0.0256

Mercury -70901-11-23 23:59 J -24174839.62 -24174839.50 -24174839.37 0.0264 0.0199

Mercury -70900-02-20 21:49 J -24174750.77 -24174750.59 -24174750.40 0.0264 0.0063  
 Mercury -70900-05-20 19:54 J -24174661.86 -24174661.67 -24174661.49 0.0265 0.0076  
 Mercury -70900-08-17 17:45 J -24174572.87 -24174572.76 -24174572.65 0.0266 0.0216  
 Earth -70898-11-29 21:49 J -24173738.78 -24173738.59 -24173738.39 0.0275 0.0172  
 Moon -70898-11-29 23:01 J -24173738.72 -24173738.54 -24173738.36 0.0275 0.0184 \*  
 Earth -70897-12-12 09:35 J -24173360.35 -24173360.10 -24173359.85 0.0279 0.0009  
 Moon -70897-12-12 13:25 J -24173360.19 -24173359.94 -24173359.69 0.0279 0.0026 \*  
 Mars -70897-12-29 03:49 J -24173343.60 -24173343.34 -24173343.07 0.0280 0.0147  
 Earth -70896-12-26 08:09 J -24172981.35 -24172981.16 -24172980.95 0.0284 0.0167  
 Moon -70896-12-26 11:16 J -24172981.24 -24172981.03 -24172980.81 0.0284 0.0150 \*  
 Venus -70889-03-13 03:35 J -24170712.52 -24170712.35 -24170712.19 0.0303 0.0186  
 Mercury -70887-07-04 05:16 J -24169869.35 -24169869.28 -24169869.21 0.0299 0.0250  
 Mercury -70887-09-30 17:30 J -24169780.89 -24169780.77 -24169780.65 0.0298 0.0118  
 Mercury -70887-12-28 05:45 J -24169692.39 -24169692.26 -24169692.13 0.0297 0.0013  
 Mercury -70886-03-26 17:45 J -24169603.87 -24169603.76 -24169603.64 0.0296 0.0141  
 Mercury -70886-06-23 05:45 J -24169515.31 -24169515.26 -24169515.20 0.0295 0.0268  
 Moon -70884-06-03 01:11 J -24168804.64 -24168804.45 -24168804.24 0.0286 0.0151  
 Earth -70884-06-03 02:23 J -24168804.61 -24168804.40 -24168804.19 0.0286 0.0137 \*  
 Earth -70883-06-15 22:33 J -24168426.80 -24168426.56 -24168426.32 0.0281 0.0032  
 Moon -70883-06-16 01:40 J -24168426.67 -24168426.43 -24168426.20 0.0281 0.0026 \*  
 Mars -70882-01-11 14:09 J -24168217.16 -24168216.91 -24168216.65 0.0279 0.0111  
 Earth -70882-06-28 08:09 J -24168049.33 -24168049.16 -24168048.98 0.0276 0.0188  
 Moon -70882-06-28 11:16 J -24168049.21 -24168049.03 -24168048.86 0.0276 0.0191 \*  
 Venus -70875-08-20 22:04 J -24165438.79 -24165438.58 -24165438.37 0.0259 0.0051  
 Mercury -70871-04-12 21:21 J -24164107.67 -24164107.61 -24164107.54 0.0264 0.0247  
 Mercury -70871-07-10 19:11 J -24164018.87 -24164018.70 -24164018.53 0.0264 0.0111  
 Mercury -70871-10-07 17:01 J -24163929.98 -24163929.79 -24163929.60 0.0265 0.0027  
 Mercury -70870-01-04 14:52 J -24163841.02 -24163840.88 -24163840.73 0.0266 0.0166  
 Moon -70869-11-23 03:35 J -24163152.44 -24163152.35 -24163152.24 0.0272 0.0249  
 Earth -70869-11-23 04:47 J -24163152.41 -24163152.30 -24163152.17 0.0272 0.0240 \*

Moon -70868-12-06 07:11 J -24162774.43 -24162774.20 -24162773.96 0.0277 0.0103  
 Earth -70868-12-06 11:01 J -24162774.27 -24162774.04 -24162773.80 0.0277 0.0086 \*  
 Moon -70867-12-20 02:09 J -24162395.64 -24162395.41 -24162395.17 0.0282 0.0068  
 Earth -70867-12-20 04:18 J -24162395.56 -24162395.32 -24162395.08 0.0282 0.0083 \*  
 Mars -70866-02-19 03:21 J -24162334.65 -24162334.36 -24162334.06 0.0283 0.0087  
 Earth -70865-01-03 08:52 J -24162016.22 -24162016.13 -24162016.02 0.0287 0.0261  
 Moon -70865-01-03 10:04 J -24162016.19 -24162016.08 -24162015.95 0.0287 0.0249 \*  
 Venus -70860-09-23 05:59 J -24159926.37 -24159926.25 -24159926.12 0.0303 0.0243  
 Mercury -70858-11-21 06:28 J -24159137.24 -24159137.23 -24159137.21 0.0300 0.0296  
 Mercury -70857-02-17 18:57 J -24159048.82 -24159048.71 -24159048.60 0.0299 0.0163  
 Mercury -70857-05-16 07:11 J -24158960.33 -24158960.20 -24158960.07 0.0298 0.0033  
 Mercury -70857-08-12 19:11 J -24158871.82 -24158871.70 -24158871.57 0.0297 0.0098  
 Mercury -70857-11-09 07:25 J -24158783.27 -24158783.19 -24158783.11 0.0296 0.0227  
 Earth -70855-05-28 12:13 J -24158218.15 -24158217.99 -24158217.83 0.0289 0.0214  
 Moon -70855-05-28 13:25 J -24158218.09 -24158217.94 -24158217.79 0.0289 0.0228 \*  
 Moon -70854-06-10 11:01 J -24157840.27 -24157840.04 -24157839.79 0.0284 0.0048  
 Earth -70854-06-10 14:23 J -24157840.13 -24157839.90 -24157839.66 0.0284 0.0040 \*  
 Moon -70853-06-22 02:37 J -24157462.60 -24157462.39 -24157462.18 0.0279 0.0126  
 Earth -70853-06-22 05:16 J -24157462.49 -24157462.28 -24157462.06 0.0279 0.0124 \*  
 Earth -70852-07-04 10:04 J -24157085.11 -24157085.08 -24157085.03 0.0275 0.0271  
 Venus -70845-03-02 00:57 J -24154652.68 -24154652.46 -24154652.24 0.0258 0.0003  
 Mercury -70842-11-27 17:45 J -24153286.91 -24153286.76 -24153286.60 0.0263 0.0152  
 Mercury -70841-02-24 15:35 J -24153198.04 -24153197.85 -24153197.65 0.0264 0.0016  
 Mercury -70841-05-23 13:25 J -24153109.10 -24153108.94 -24153108.76 0.0265 0.0124  
 Mercury -70841-08-20 11:16 J -24153020.04 -24153020.03 -24153020.00 0.0266 0.0264  
 Earth -70839-11-30 19:25 J -24152187.88 -24152187.69 -24152187.47 0.0275 0.0158  
 Moon -70839-11-30 23:16 J -24152187.72 -24152187.53 -24152187.33 0.0275 0.0171 \*  
 Earth -70838-12-14 07:25 J -24151809.44 -24151809.19 -24151808.94 0.0279 0.0006  
 Moon -70838-12-14 08:52 J -24151809.39 -24151809.13 -24151808.87 0.0279 0.0010 \*  
 Moon -70837-12-27 04:33 J -24151430.52 -24151430.31 -24151430.11 0.0285 0.0168



Earth -70837-12-27 06:13 J -24151430.42 -24151430.24 -24151430.03 0.0285 0.0183 \*  
 Venus -70831-08-18 07:11 J -24149370.31 -24149370.20 -24149370.06 0.0304 0.0245  
 Mercury -70828-07-06 20:23 J -24148316.74 -24148316.65 -24148316.56 0.0299 0.0208  
 Mercury -70828-10-03 08:37 J -24148228.26 -24148228.14 -24148228.01 0.0298 0.0076  
 Mercury -70828-12-30 20:52 J -24148139.76 -24148139.63 -24148139.51 0.0297 0.0055  
 Mercury -70827-03-29 08:52 J -24148051.23 -24148051.13 -24148051.03 0.0296 0.0183  
 Earth -70825-06-04 02:23 J -24147253.62 -24147253.40 -24147253.18 0.0286 0.0120  
 Moon -70825-06-04 05:01 J -24147253.49 -24147253.29 -24147253.07 0.0286 0.0133 \*  
 Mars -70824-04-19 11:01 J -24146934.30 -24146934.04 -24146933.78 0.0282 0.0082  
 Earth -70824-06-16 22:18 J -24146875.80 -24146875.57 -24146875.33 0.0281 0.0049  
 Moon -70824-06-17 00:57 J -24146875.70 -24146875.46 -24146875.22 0.0281 0.0047 \*  
 Moon -70823-06-29 05:59 J -24146498.40 -24146498.25 -24146498.08 0.0276 0.0212  
 Earth -70823-06-29 07:54 J -24146498.33 -24146498.17 -24146498.01 0.0276 0.0204 \*  
 Venus -70816-09-12 01:40 J -24143866.64 -24143866.43 -24143866.21 0.0258 0.0036  
 Mercury -70812-04-15 14:52 J -24142555.00 -24142554.88 -24142554.76 0.0263 0.0202  
 Mercury -70812-07-13 12:28 J -24142466.16 -24142465.98 -24142465.79 0.0264 0.0066  
 Mercury -70812-10-10 10:18 J -24142377.25 -24142377.07 -24142376.88 0.0265 0.0072  
 Mercury -70811-01-07 08:09 J -24142288.27 -24142288.16 -24142288.04 0.0265 0.0211  
 Moon -70810-11-24 21:06 J -24141601.73 -24141601.62 -24141601.49 0.0272 0.0239  
 Earth -70810-11-25 00:57 J -24141601.59 -24141601.46 -24141601.32 0.0272 0.0227 \*  
 Moon -70809-12-07 06:13 J -24141223.47 -24141223.24 -24141223.01 0.0277 0.0087  
 Earth -70809-12-07 06:57 J -24141223.46 -24141223.21 -24141222.97 0.0277 0.0072 \*  
 Mars -70808-05-23 09:06 J -24141056.38 -24141056.12 -24141055.85 0.0279 0.0147  
 Earth -70808-12-20 23:59 J -24140844.73 -24140844.50 -24140844.26 0.0282 0.0098  
 Moon -70808-12-21 02:52 J -24140844.61 -24140844.38 -24140844.14 0.0282 0.0085 \*  
 Earth -70806-01-04 04:33 J -24140465.36 -24140465.31 -24140465.23 0.0287 0.0276  
 Moon -70806-01-04 08:37 J -24140465.23 -24140465.14 -24140465.04 0.0287 0.0264 \*  
 Venus -70801-02-28 08:09 J -24138584.32 -24138584.16 -24138584.00 0.0303 0.0195  
 Mercury -70799-11-23 21:06 J -24137584.68 -24137584.62 -24137584.55 0.0300 0.0259  
 Mercury -70798-02-20 09:35 J -24137496.22 -24137496.10 -24137495.99 0.0299 0.0126

Mercury -70798-05-19 21:49 J -24137407.72 -24137407.59 -24137407.46 0.0298 0.0008  
 Mercury -70798-08-16 09:49 J -24137319.20 -24137319.09 -24137318.97 0.0297 0.0136  
 Mercury -70798-11-12 21:49 J -24137230.64 -24137230.59 -24137230.53 0.0296 0.0264  
 Moon -70796-05-29 06:57 J -24136667.37 -24136667.21 -24136667.04 0.0289 0.0214  
 Earth -70796-05-29 09:49 J -24136667.25 -24136667.09 -24136666.91 0.0289 0.0200 \*  
 Moon -70795-06-11 09:49 J -24136289.32 -24136289.09 -24136288.86 0.0284 0.0030  
 Earth -70795-06-11 12:13 J -24136289.23 -24136288.99 -24136288.75 0.0284 0.0024 \*  
 Mars -70794-06-06 18:28 J -24135928.99 -24135928.73 -24135928.48 0.0280 0.0115  
 Earth -70794-06-24 03:06 J -24135911.57 -24135911.37 -24135911.15 0.0279 0.0140  
 Moon -70794-06-24 05:01 J -24135911.48 -24135911.29 -24135911.08 0.0279 0.0147 \*  
 Venus -70786-03-25 04:04 J -24133080.53 -24133080.33 -24133080.12 0.0258 0.0081  
 Mercury -70783-09-02 13:11 J -24131823.01 -24131822.95 -24131822.87 0.0263 0.0243  
 Mercury -70783-11-30 11:01 J -24131734.21 -24131734.04 -24131733.86 0.0263 0.0107  
 Mercury -70782-02-27 08:52 J -24131645.32 -24131645.13 -24131644.94 0.0264 0.0030  
 Mercury -70782-05-27 06:28 J -24131556.37 -24131556.23 -24131556.07 0.0265 0.0168  
 Earth -70780-12-01 14:37 J -24130637.10 -24130636.89 -24130636.67 0.0274 0.0145  
 Moon -70780-12-01 15:35 J -24130637.06 -24130636.85 -24130636.64 0.0274 0.0158 \*  
 Moon -70779-12-14 22:47 J -24130258.81 -24130258.55 -24130258.29 0.0279 0.0007  
 Earth -70779-12-15 02:09 J -24130258.66 -24130258.41 -24130258.16 0.0279 0.0020 \*  
 Mars -70778-07-14 14:37 J -24130047.18 -24130046.89 -24130046.60 0.0282 0.0088  
 Moon -70778-12-28 21:35 J -24129879.78 -24129879.60 -24129879.41 0.0284 0.0186  
 Earth -70778-12-29 01:11 J -24129879.63 -24129879.45 -24129879.27 0.0284 0.0196 \*  
 Venus -70772-09-09 12:13 J -24127798.17 -24127797.99 -24127797.80 0.0304 0.0136  
 Mercury -70769-07-09 10:47 J -24126764.15 -24126764.05 -24126763.94 0.0299 0.0172  
 Mercury -70769-10-05 23:01 J -24126675.66 -24126675.54 -24126675.41 0.0299 0.0041  
 Mercury -70768-01-02 11:16 J -24126587.15 -24126587.03 -24126586.90 0.0298 0.0091  
 Mercury -70768-03-31 23:30 J -24126498.61 -24126498.52 -24126498.44 0.0297 0.0220  
 Earth -70767-05-23 15:35 J -24126080.90 -24126080.85 -24126080.79 0.0292 0.0283  
 Earth -70766-06-05 23:16 J -24125702.75 -24125702.53 -24125702.30 0.0287 0.0106  
 Moon -70766-06-06 01:54 J -24125702.64 -24125702.42 -24125702.19 0.0287 0.0117 \*

Mars -70766-07-27 02:23 J -24125651.44 -24125651.40 -24125651.34 0.0286 0.0281  
 Moon -70765-06-17 17:30 J -24125325.01 -24125324.77 -24125324.53 0.0281 0.0067  
 Earth -70765-06-17 19:25 J -24125324.92 -24125324.69 -24125324.45 0.0281 0.0065 \*  
 Moon -70764-06-30 01:40 J -24124947.56 -24124947.43 -24124947.30 0.0276 0.0232  
 Earth -70764-06-30 05:01 J -24124947.43 -24124947.29 -24124947.14 0.0276 0.0218 \*  
 Venus -70757-02-18 06:57 J -24122523.30 -24122523.21 -24122523.10 0.0258 0.0226  
 Venus -70757-10-04 04:18 J -24122294.50 -24122294.32 -24122294.12 0.0258 0.0120  
 Mercury -70753-04-18 07:54 J -24121002.32 -24121002.17 -24121002.01 0.0263 0.0158  
 Mercury -70753-07-16 05:45 J -24120913.46 -24120913.26 -24120913.07 0.0264 0.0022  
 Mercury -70753-10-13 03:21 J -24120824.53 -24120824.36 -24120824.18 0.0265 0.0116  
 Mercury -70752-01-10 01:11 J -24120735.49 -24120735.45 -24120735.39 0.0265 0.0255  
 Moon -70751-11-25 19:25 J -24120050.81 -24120050.69 -24120050.55 0.0272 0.0228  
 Earth -70751-11-25 20:09 J -24120050.81 -24120050.66 -24120050.51 0.0272 0.0214 \*  
 Earth -70750-12-09 01:40 J -24119672.68 -24119672.43 -24119672.18 0.0277 0.0059  
 Moon -70750-12-09 04:47 J -24119672.53 -24119672.30 -24119672.05 0.0277 0.0073 \*  
 Earth -70749-12-21 18:42 J -24119293.94 -24119293.72 -24119293.48 0.0282 0.0112  
 Moon -70749-12-21 21:35 J -24119293.83 -24119293.60 -24119293.35 0.0282 0.0102 \*  
 Moon -70747-01-04 23:01 J -24118914.56 -24118914.54 -24118914.49 0.0287 0.0284  
 Venus -70742-03-22 12:28 J -24117012.17 -24117011.98 -24117011.78 0.0303 0.0090  
 Mercury -70740-11-26 11:16 J -24116032.10 -24116032.03 -24116031.94 0.0300 0.0226  
 Mercury -70739-02-22 23:45 J -24115943.63 -24115943.51 -24115943.38 0.0299 0.0093  
 Mercury -70739-05-22 11:59 J -24115855.13 -24115855.00 -24115854.87 0.0298 0.0040  
 Mercury -70739-08-19 00:13 J -24115766.60 -24115766.49 -24115766.39 0.0297 0.0169  
 Moon -70737-05-30 02:37 J -24115116.55 -24115116.39 -24115116.21 0.0289 0.0200  
 Earth -70737-05-30 05:16 J -24115116.46 -24115116.28 -24115116.09 0.0289 0.0187 \*  
 Earth -70736-06-12 07:40 J -24114738.42 -24114738.18 -24114737.94 0.0284 0.0011  
 Moon -70736-06-12 09:35 J -24114738.33 -24114738.10 -24114737.87 0.0284 0.0012 \*  
 Mars -70736-09-12 05:16 J -24114646.53 -24114646.28 -24114646.01 0.0283 0.0083  
 Earth -70735-06-24 22:47 J -24114360.74 -24114360.55 -24114360.35 0.0279 0.0153  
 Moon -70735-06-25 02:09 J -24114360.60 -24114360.41 -24114360.21 0.0279 0.0164 \*

Venus -70728-08-30 09:06 J -24111737.27 -24111737.12 -24111736.97 0.0258 0.0183  
 Venus -70727-04-16 06:42 J -24111508.39 -24111508.22 -24111508.05 0.0258 0.0163  
 Mercury -70724-09-05 06:28 J -24110270.35 -24110270.23 -24110270.11 0.0263 0.0200  
 Mercury -70724-12-03 04:04 J -24110181.52 -24110181.33 -24110181.14 0.0263 0.0065  
 Mercury -70723-03-02 01:54 J -24110092.61 -24110092.42 -24110092.24 0.0264 0.0072  
 Mercury -70723-05-29 23:16 J -24110003.63 -24110003.53 -24110003.40 0.0265 0.0211  
 Moon -70721-12-02 05:59 J -24109086.46 -24109086.25 -24109086.03 0.0274 0.0148  
 Earth -70721-12-02 09:35 J -24109086.32 -24109086.10 -24109085.88 0.0274 0.0133 \*  
 Mars -70720-10-15 18:13 J -24108769.01 -24108768.74 -24108768.47 0.0278 0.0144  
 Moon -70720-12-15 18:13 J -24108707.99 -24108707.74 -24108707.50 0.0279 0.0022  
 Earth -70720-12-15 20:37 J -24108707.89 -24108707.64 -24108707.39 0.0279 0.0032 \*  
 Earth -70719-12-29 19:11 J -24108328.87 -24108328.70 -24108328.53 0.0284 0.0208  
 Moon -70719-12-29 20:09 J -24108328.82 -24108328.66 -24108328.48 0.0284 0.0204 \*  
 Venus -70713-10-01 15:35 J -24106226.05 -24106225.85 -24106225.64 0.0304 0.0033  
 Mercury -70710-04-15 12:28 J -24105300.02 -24105299.98 -24105299.92 0.0300 0.0274  
 Mercury -70710-07-13 00:57 J -24105211.57 -24105211.46 -24105211.35 0.0300 0.0141  
 Mercury -70710-10-09 13:11 J -24105123.08 -24105122.95 -24105122.82 0.0299 0.0008  
 Mercury -70709-01-06 01:25 J -24105034.56 -24105034.44 -24105034.32 0.0298 0.0122  
 Mercury -70709-04-03 13:25 J -24104946.00 -24104945.94 -24104945.87 0.0297 0.0251  
 Earth -70708-05-24 09:21 J -24104530.19 -24104530.11 -24104530.02 0.0292 0.0272  
 Moon -70708-05-24 11:16 J -24104530.06 -24104530.03 -24104529.96 0.0292 0.0286 \*  
 Moon -70707-06-06 15:35 J -24104152.07 -24104151.85 -24104151.61 0.0287 0.0099  
 Earth -70707-06-06 17:30 J -24104151.99 -24104151.77 -24104151.54 0.0287 0.0093 \*  
 Moon -70706-06-19 11:01 J -24103774.27 -24103774.04 -24103773.82 0.0281 0.0084  
 Earth -70706-06-19 14:09 J -24103774.14 -24103773.91 -24103773.68 0.0281 0.0077 \*  
 Mars -70706-10-30 11:45 J -24103641.25 -24103641.01 -24103640.75 0.0280 0.0123  
 Earth -70705-06-30 23:59 J -24103396.63 -24103396.50 -24103396.37 0.0276 0.0232  
 Moon -70705-07-01 00:28 J -24103396.57 -24103396.48 -24103396.37 0.0276 0.0248 \*  
 Venus -70698-03-12 09:35 J -24100951.28 -24100951.10 -24100950.92 0.0258 0.0144  
 Venus -70698-10-27 06:57 J -24100722.33 -24100722.21 -24100722.06 0.0258 0.0201

Mercury -70694-01-23 03:21 J -24099538.41 -24099538.36 -24099538.29 0.0263 0.0250

Mercury -70694-04-22 00:57 J -24099449.63 -24099449.46 -24099449.28 0.0263 0.0115

Mercury -70694-07-19 22:47 J -24099360.74 -24099360.55 -24099360.36 0.0264 0.0021

Mercury -70694-10-16 20:23 J -24099271.80 -24099271.65 -24099271.49 0.0265 0.0159

Earth -70692-11-26 14:52 J -24098500.03 -24098499.88 -24098499.70 0.0272 0.0203

Moon -70692-11-26 18:42 J -24098499.86 -24098499.72 -24098499.57 0.0272 0.0219 \*

Earth -70691-12-09 20:09 J -24098121.90 -24098121.66 -24098121.41 0.0277 0.0046

Moon -70691-12-09 22:33 J -24098121.81 -24098121.56 -24098121.30 0.0277 0.0058 \*

Mars -70690-12-06 11:45 J -24097760.30 -24097760.01 -24097759.70 0.0282 0.0084

Moon -70690-12-23 11:01 J -24097743.27 -24097743.04 -24097742.80 0.0282 0.0121

Earth -70690-12-23 12:57 J -24097743.18 -24097742.96 -24097742.73 0.0282 0.0126 \*

Venus -70683-04-13 15:49 J -24095440.04 -24095439.84 -24095439.63 0.0304 0.0013

Mercury -70681-11-29 01:25 J -24094479.54 -24094479.44 -24094479.34 0.0300 0.0195

Mercury -70680-02-25 13:40 J -24094391.05 -24094390.93 -24094390.80 0.0299 0.0063

Mercury -70680-05-25 01:54 J -24094302.54 -24094302.42 -24094302.29 0.0298 0.0070

Mercury -70680-08-21 14:09 J -24094214.00 -24094213.91 -24094213.82 0.0297 0.0199

Earth -70678-05-31 22:47 J -24093565.74 -24093565.55 -24093565.36 0.0290 0.0176

Moon -70678-06-01 00:42 J -24093565.64 -24093565.47 -24093565.28 0.0290 0.0186 \*

Mars -70678-12-19 14:23 J -24093363.92 -24093363.90 -24093363.86 0.0287 0.0285

Earth -70677-06-13 01:25 J -24093187.68 -24093187.44 -24093187.20 0.0285 0.0004

Moon -70677-06-13 05:01 J -24093187.54 -24093187.29 -24093187.05 0.0285 0.0006 \*

Moon -70676-06-25 15:49 J -24092810.02 -24092809.84 -24092809.63 0.0279 0.0179

Earth -70676-06-25 17:01 J -24092809.98 -24092809.79 -24092809.60 0.0279 0.0166 \*

Venus -70669-09-21 11:16 J -24090165.22 -24090165.03 -24090164.83 0.0258 0.0102

Venus -70668-05-08 08:52 J -24089936.19 -24089936.13 -24089936.05 0.0258 0.0244

Mercury -70665-09-07 23:30 J -24088717.67 -24088717.52 -24088717.36 0.0263 0.0157

Mercury -70665-12-05 21:06 J -24088628.81 -24088628.62 -24088628.42 0.0263 0.0022

Mercury -70664-03-04 18:42 J -24088539.88 -24088539.72 -24088539.54 0.0264 0.0116

Mercury -70664-06-01 16:33 J -24088450.86 -24088450.81 -24088450.75 0.0265 0.0253

Earth -70663-11-21 05:01 J -24087913.30 -24087913.29 -24087913.27 0.0270 0.0269

Moon -70662-12-04 02:37 J -24087535.60 -24087535.39 -24087535.18 0.0274 0.0135  
 Earth -70662-12-04 05:01 J -24087535.52 -24087535.29 -24087535.07 0.0274 0.0121 \*  
 Earth -70661-12-16 15:49 J -24087157.09 -24087156.84 -24087156.59 0.0279 0.0045  
 Moon -70661-12-16 17:59 J -24087156.99 -24087156.75 -24087156.51 0.0279 0.0038 \*  
 Earth -70660-12-30 14:23 J -24086778.06 -24086777.90 -24086777.75 0.0284 0.0222  
 Moon -70660-12-30 17:59 J -24086777.90 -24086777.75 -24086777.59 0.0284 0.0222 \*  
 Venus -70654-10-24 19:25 J -24084653.89 -24084653.69 -24084653.48 0.0304 0.0072  
 Mercury -70651-04-18 02:37 J -24083747.46 -24083747.39 -24083747.31 0.0300 0.0242  
 Mercury -70651-07-15 15:06 J -24083658.99 -24083658.87 -24083658.75 0.0300 0.0109  
 Mercury -70651-10-12 03:21 J -24083570.49 -24083570.36 -24083570.23 0.0299 0.0024  
 Mercury -70650-01-08 15:21 J -24083481.96 -24083481.86 -24083481.74 0.0298 0.0155  
 Mercury -70650-04-07 03:35 J -24083393.38 -24083393.35 -24083393.31 0.0297 0.0283  
 Moon -70649-05-25 00:28 J -24082979.55 -24082979.48 -24082979.37 0.0292 0.0270  
 Earth -70649-05-25 03:21 J -24082979.45 -24082979.36 -24082979.24 0.0292 0.0261 \*  
 Moon -70648-06-07 08:23 J -24082601.37 -24082601.15 -24082600.92 0.0287 0.0083  
 Earth -70648-06-07 11:45 J -24082601.23 -24082601.01 -24082600.77 0.0287 0.0081 \*  
 Mars -70647-02-04 21:21 J -24082358.87 -24082358.61 -24082358.34 0.0283 0.0077  
 Earth -70647-06-20 08:37 J -24082223.37 -24082223.14 -24082222.91 0.0282 0.0090  
 Moon -70647-06-20 09:06 J -24082223.33 -24082223.12 -24082222.90 0.0282 0.0099 \*  
 Earth -70646-07-02 18:42 J -24081845.83 -24081845.72 -24081845.61 0.0277 0.0245  
 Moon -70646-07-02 22:18 J -24081845.64 -24081845.57 -24081845.49 0.0277 0.0261 \*  
 Venus -70639-04-03 12:13 J -24079379.20 -24079378.99 -24079378.78 0.0258 0.0062  
 Mercury -70635-01-25 20:52 J -24077985.74 -24077985.63 -24077985.50 0.0263 0.0205  
 Mercury -70635-04-24 18:28 J -24077896.91 -24077896.73 -24077896.54 0.0263 0.0070  
 Mercury -70635-07-22 16:04 J -24077808.01 -24077807.83 -24077807.64 0.0264 0.0067  
 Mercury -70635-10-19 13:54 J -24077719.04 -24077718.92 -24077718.80 0.0265 0.0204  
 Earth -70633-11-27 11:59 J -24076949.18 -24076949.00 -24076948.82 0.0272 0.0191  
 Moon -70633-11-27 13:54 J -24076949.08 -24076948.92 -24076948.75 0.0272 0.0206 \*  
 Moon -70632-12-10 14:37 J -24076571.15 -24076570.89 -24076570.63 0.0277 0.0042  
 Earth -70632-12-10 17:01 J -24076571.04 -24076570.79 -24076570.54 0.0277 0.0033 \*

Mars -70631-03-09 20:37 J -24076481.89 -24076481.64 -24076481.36 0.0278 0.0146  
 Moon -70631-12-24 05:45 J -24076192.46 -24076192.26 -24076192.03 0.0282 0.0139  
 Earth -70631-12-24 09:21 J -24076192.32 -24076192.11 -24076191.89 0.0282 0.0140 \*  
 Venus -70624-05-05 19:54 J -24073867.86 -24073867.67 -24073867.48 0.0303 0.0118  
 Mercury -70622-09-05 03:06 J -24073015.38 -24073015.37 -24073015.36 0.0300 0.0298  
 Mercury -70622-12-02 15:21 J -24072926.96 -24072926.86 -24072926.75 0.0300 0.0164  
 Mercury -70621-02-29 03:49 J -24072838.47 -24072838.34 -24072838.21 0.0299 0.0032  
 Mercury -70621-05-27 16:04 J -24072749.95 -24072749.83 -24072749.71 0.0298 0.0100  
 Mercury -70621-08-24 04:04 J -24072661.40 -24072661.33 -24072661.24 0.0297 0.0230  
 Earth -70619-06-01 16:18 J -24072015.02 -24072014.82 -24072014.63 0.0290 0.0165  
 Moon -70619-06-01 19:25 J -24072014.88 -24072014.69 -24072014.49 0.0290 0.0169 \*  
 Moon -70618-06-14 18:42 J -24071636.97 -24071636.72 -24071636.47 0.0285 0.0019  
 Earth -70618-06-14 19:11 J -24071636.94 -24071636.70 -24071636.46 0.0285 0.0013 \*  
 Mars -70617-03-24 00:28 J -24071353.73 -24071353.48 -24071353.23 0.0281 0.0122  
 Moon -70617-06-26 07:25 J -24071259.36 -24071259.19 -24071259.02 0.0280 0.0193  
 Earth -70617-06-26 11:01 J -24071259.23 -24071259.04 -24071258.86 0.0280 0.0178 \*  
 Venus -70610-10-14 14:09 J -24068593.12 -24068592.91 -24068592.69 0.0258 0.0020  
 Mercury -70606-06-14 19:40 J -24067253.74 -24067253.68 -24067253.61 0.0262 0.0245  
 Mercury -70606-09-11 17:01 J -24067164.96 -24067164.79 -24067164.61 0.0263 0.0111  
 Mercury -70606-12-09 14:52 J -24067076.07 -24067075.88 -24067075.69 0.0263 0.0025  
 Mercury -70605-03-07 12:28 J -24066987.13 -24066986.98 -24066986.83 0.0264 0.0162  
 Earth -70604-11-22 02:37 J -24066362.45 -24066362.39 -24066362.31 0.0270 0.0258  
 Earth -70603-12-05 02:09 J -24065984.63 -24065984.41 -24065984.17 0.0274 0.0108  
 Moon -70603-12-05 04:47 J -24065984.52 -24065984.30 -24065984.08 0.0274 0.0121 \*  
 Earth -70602-12-18 13:11 J -24065606.20 -24065605.95 -24065605.70 0.0279 0.0059  
 Moon -70602-12-18 16:47 J -24065606.05 -24065605.80 -24065605.55 0.0279 0.0052 \*  
 Mars -70601-04-30 03:21 J -24065472.64 -24065472.36 -24065472.06 0.0281 0.0094  
 Earth -70601-12-31 11:30 J -24065227.16 -24065227.02 -24065226.88 0.0284 0.0235  
 Moon -70601-12-31 11:30 J -24065227.15 -24065227.02 -24065226.87 0.0284 0.0239 \*  
 Venus -70595-11-15 23:59 J -24063081.66 -24063081.50 -24063081.33 0.0304 0.0179

Mercury -70592-04-20 16:47 J -24062194.89 -24062194.80 -24062194.70 0.0300 0.0210

Mercury -70592-07-18 05:16 J -24062106.41 -24062106.28 -24062106.16 0.0300 0.0076

Mercury -70592-10-14 17:30 J -24062017.90 -24062017.77 -24062017.64 0.0299 0.0056

Mercury -70591-01-11 05:45 J -24061929.36 -24061929.26 -24061929.16 0.0298 0.0187

Moon -70590-05-26 19:25 J -24061428.80 -24061428.69 -24061428.58 0.0292 0.0255

Earth -70590-05-26 22:04 J -24061428.69 -24061428.58 -24061428.45 0.0292 0.0250 \*

Mars -70589-05-13 07:40 J -24061076.23 -24061076.18 -24061076.11 0.0287 0.0280

Earth -70589-06-08 06:13 J -24061050.46 -24061050.24 -24061050.00 0.0287 0.0069

Moon -70589-06-08 07:11 J -24061050.43 -24061050.20 -24061049.98 0.0287 0.0066 \*

Earth -70588-06-21 03:06 J -24060672.59 -24060672.37 -24060672.14 0.0282 0.0103

Moon -70588-06-21 06:42 J -24060672.44 -24060672.22 -24060672.00 0.0282 0.0115 \*

Earth -70587-07-03 13:25 J -24060295.01 -24060294.94 -24060294.84 0.0277 0.0258

Moon -70587-07-03 14:09 J -24060294.95 -24060294.91 -24060294.86 0.0277 0.0271 \*

Venus -70580-04-25 15:35 J -24057807.06 -24057806.85 -24057806.63 0.0258 0.0023

Mercury -70576-01-28 14:52 J -24056433.03 -24056432.88 -24056432.72 0.0263 0.0157

Mercury -70576-04-27 12:28 J -24056344.17 -24056343.98 -24056343.78 0.0263 0.0023

Mercury -70576-07-25 10:18 J -24056255.24 -24056255.07 -24056254.90 0.0264 0.0115

Mercury -70576-10-22 07:54 J -24056166.22 -24056166.17 -24056166.11 0.0265 0.0253

Moon -70574-11-29 07:54 J -24055398.35 -24055398.17 -24055397.99 0.0272 0.0191

Earth -70574-11-29 10:47 J -24055398.23 -24055398.05 -24055397.85 0.0272 0.0178 \*

Moon -70573-12-11 12:42 J -24055020.22 -24055019.97 -24055019.73 0.0277 0.0027

Earth -70573-12-11 16:04 J -24055020.08 -24055019.83 -24055019.58 0.0277 0.0018 \*

Earth -70572-12-25 08:23 J -24054641.35 -24054641.15 -24054640.94 0.0282 0.0155

Moon -70572-12-25 08:37 J -24054641.34 -24054641.14 -24054640.94 0.0282 0.0156 \*

Venus -70565-05-28 01:54 J -24052295.55 -24052295.42 -24052295.29 0.0303 0.0230

Mercury -70563-09-07 17:30 J -24051462.83 -24051462.77 -24051462.70 0.0300 0.0262

Mercury -70563-12-05 05:59 J -24051374.37 -24051374.25 -24051374.13 0.0300 0.0128

Mercury -70562-03-03 18:13 J -24051285.87 -24051285.74 -24051285.61 0.0299 0.0007

Mercury -70562-05-31 06:28 J -24051197.34 -24051197.23 -24051197.11 0.0298 0.0136

Mercury -70562-08-27 18:42 J -24051108.78 -24051108.72 -24051108.67 0.0297 0.0265



Moon -70560-06-02 10:33 J -24050464.26 -24050464.06 -24050463.84 0.0289 0.0151  
 Earth -70560-06-02 11:59 J -24050464.19 -24050464.00 -24050463.79 0.0289 0.0153 \*  
 Moon -70559-06-15 11:16 J -24050086.26 -24050086.03 -24050085.79 0.0285 0.0036  
 Earth -70559-06-15 15:06 J -24050086.11 -24050085.87 -24050085.63 0.0284 0.0026 \*  
 Mars -70559-06-30 11:16 J -24050071.29 -24050071.03 -24050070.76 0.0284 0.0076  
 Moon -70558-06-28 05:59 J -24049708.41 -24049708.25 -24049708.09 0.0280 0.0205  
 Earth -70558-06-28 06:42 J -24049708.39 -24049708.22 -24049708.04 0.0280 0.0191 \*  
 Venus -70551-11-05 17:59 J -24047020.96 -24047020.75 -24047020.54 0.0259 0.0067  
 Mercury -70547-06-17 13:54 J -24045701.04 -24045700.92 -24045700.79 0.0262 0.0195  
 Mercury -70547-09-14 11:30 J -24045612.20 -24045612.02 -24045611.83 0.0263 0.0061  
 Mercury -70547-12-12 09:21 J -24045523.30 -24045523.11 -24045522.93 0.0263 0.0076  
 Mercury -70546-03-11 06:42 J -24045434.32 -24045434.22 -24045434.09 0.0264 0.0213  
 Earth -70545-11-23 03:06 J -24044811.46 -24044811.37 -24044811.26 0.0270 0.0246  
 Moon -70545-11-23 06:28 J -24044811.29 -24044811.23 -24044811.17 0.0270 0.0260 \*  
 Earth -70544-12-06 03:06 J -24044433.60 -24044433.37 -24044433.13 0.0274 0.0094  
 Moon -70544-12-06 06:42 J -24044433.46 -24044433.22 -24044432.99 0.0274 0.0105 \*  
 Mars -70543-08-02 23:01 J -24044193.81 -24044193.54 -24044193.25 0.0277 0.0126  
 Moon -70543-12-19 13:54 J -24044055.17 -24044054.92 -24044054.66 0.0279 0.0072  
 Earth -70543-12-19 14:09 J -24044055.15 -24044054.91 -24044054.66 0.0279 0.0074 \*  
 Moon -70541-01-02 08:52 J -24043676.22 -24043676.13 -24043676.01 0.0284 0.0258  
 Earth -70541-01-02 12:42 J -24043676.09 -24043675.97 -24043675.85 0.0284 0.0251 \*  
 Venus -70536-04-22 03:35 J -24041739.46 -24041739.35 -24041739.24 0.0304 0.0254  
 Venus -70536-12-08 06:57 J -24041509.24 -24041509.21 -24041509.16 0.0304 0.0297  
 Mercury -70533-04-23 07:40 J -24040642.28 -24040642.18 -24040642.07 0.0300 0.0170  
 Mercury -70533-07-20 19:54 J -24040553.79 -24040553.67 -24040553.54 0.0299 0.0039  
 Mercury -70533-10-17 08:09 J -24040465.28 -24040465.16 -24040465.03 0.0299 0.0095  
 Mercury -70532-01-13 20:23 J -24040376.73 -24040376.65 -24040376.57 0.0298 0.0225  
 Earth -70531-05-27 19:25 J -24039877.82 -24039877.69 -24039877.55 0.0292 0.0237  
 Moon -70531-05-27 21:06 J -24039877.75 -24039877.62 -24039877.48 0.0292 0.0238 \*  
 Earth -70530-06-10 03:21 J -24039499.59 -24039499.36 -24039499.12 0.0287 0.0056

Moon -70530-06-10 07:11 J -24039499.43 -24039499.20 -24039498.96 0.0287 0.0048 \*  
 Earth -70529-06-21 23:59 J -24039121.71 -24039121.50 -24039121.27 0.0282 0.0117  
 Moon -70529-06-22 01:11 J -24039121.66 -24039121.45 -24039121.22 0.0282 0.0130 \*  
 Mars -70529-08-16 23:01 J -24039065.78 -24039065.54 -24039065.29 0.0281 0.0134  
 Earth -70528-07-04 10:33 J -24038744.10 -24038744.06 -24038744.00 0.0277 0.0271  
 Venus -70522-10-01 22:33 J -24036463.64 -24036463.56 -24036463.46 0.0259 0.0235  
 Venus -70521-05-17 20:23 J -24036234.84 -24036234.65 -24036234.45 0.0258 0.0112  
 Mercury -70518-11-04 12:28 J -24034969.06 -24034968.98 -24034968.89 0.0262 0.0236  
 Mercury -70517-02-01 10:04 J -24034880.26 -24034880.08 -24034879.90 0.0263 0.0102  
 Mercury -70517-04-30 07:40 J -24034791.37 -24034791.18 -24034790.99 0.0263 0.0033  
 Mercury -70517-07-28 05:16 J -24034702.42 -24034702.28 -24034702.13 0.0264 0.0170  
 Moon -70515-11-30 10:47 J -24033847.22 -24033847.05 -24033846.85 0.0272 0.0176  
 Earth -70515-11-30 13:54 J -24033847.11 -24033846.92 -24033846.71 0.0272 0.0164 \*  
 Earth -70514-12-13 19:25 J -24033468.94 -24033468.69 -24033468.44 0.0277 0.0003  
 Moon -70514-12-13 20:09 J -24033468.90 -24033468.66 -24033468.42 0.0277 0.0007 \*  
 Mars -70513-09-23 02:52 J -24033184.66 -24033184.38 -24033184.08 0.0281 0.0104  
 Earth -70513-12-26 11:45 J -24033090.20 -24033090.01 -24033089.80 0.0282 0.0172  
 Moon -70513-12-26 15:21 J -24033090.05 -24033089.86 -24033089.66 0.0282 0.0175 \*  
 Venus -70507-11-02 06:57 J -24030953.37 -24030953.21 -24030953.05 0.0303 0.0195  
 Mercury -70504-09-10 08:37 J -24029910.22 -24029910.14 -24029910.05 0.0300 0.0220  
 Mercury -70504-12-07 21:06 J -24029821.74 -24029821.62 -24029821.50 0.0299 0.0086  
 Mercury -70503-03-06 09:21 J -24029733.24 -24029733.11 -24029732.98 0.0298 0.0046  
 Mercury -70503-06-02 21:35 J -24029644.70 -24029644.60 -24029644.50 0.0298 0.0177  
 Moon -70501-06-03 07:11 J -24028913.40 -24028913.20 -24028912.98 0.0289 0.0133  
 Earth -70501-06-03 10:47 J -24028913.25 -24028913.05 -24028912.84 0.0289 0.0140 \*  
 Mars -70501-10-06 02:52 J -24028788.45 -24028788.38 -24028788.28 0.0288 0.0273  
 Moon -70500-06-16 12:28 J -24028535.21 -24028534.98 -24028534.75 0.0284 0.0052  
 Earth -70500-06-16 13:25 J -24028535.18 -24028534.94 -24028534.70 0.0284 0.0039 \*  
 Earth -70499-06-29 05:01 J -24028157.45 -24028157.29 -24028157.13 0.0279 0.0204  
 Moon -70499-06-29 07:54 J -24028157.31 -24028157.17 -24028157.02 0.0279 0.0219 \*

Venus -70492-04-13 01:11 J -24025677.58 -24025677.45 -24025677.29 0.0259 0.0190  
 Venus -70492-11-27 23:16 J -24025448.70 -24025448.53 -24025448.36 0.0259 0.0158  
 Mercury -70488-06-20 09:21 J -24024148.27 -24024148.11 -24024147.95 0.0262 0.0140  
 Mercury -70488-09-17 06:57 J -24024059.40 -24024059.21 -24024059.02 0.0263 0.0004  
 Mercury -70488-12-15 04:33 J -24023970.47 -24023970.31 -24023970.14 0.0264 0.0132  
 Earth -70486-11-25 07:11 J -24023260.31 -24023260.20 -24023260.06 0.0270 0.0232  
 Moon -70486-11-25 10:04 J -24023260.17 -24023260.08 -24023259.96 0.0270 0.0245 \*  
 Moon -70485-12-07 06:28 J -24022882.47 -24022882.23 -24022881.98 0.0274 0.0084  
 Earth -70485-12-07 07:40 J -24022882.41 -24022882.18 -24022881.93 0.0274 0.0079 \*  
 Moon -70484-12-20 15:21 J -24022504.09 -24022503.86 -24022503.61 0.0279 0.0091  
 Earth -70484-12-20 19:11 J -24022503.93 -24022503.70 -24022503.46 0.0279 0.0091 \*  
 Moon -70482-01-03 15:21 J -24022124.90 -24022124.86 -24022124.79 0.0284 0.0276  
 Earth -70482-01-03 17:45 J -24022124.83 -24022124.76 -24022124.67 0.0284 0.0268 \*  
 Venus -70477-05-14 13:54 J -24020167.11 -24020166.92 -24020166.73 0.0304 0.0122  
 Mercury -70474-01-28 10:47 J -24019178.11 -24019178.05 -24019177.98 0.0301 0.0258  
 Mercury -70474-04-26 23:16 J -24019089.65 -24019089.53 -24019089.41 0.0300 0.0124  
 Mercury -70474-07-24 11:30 J -24019001.15 -24019001.02 -24019000.89 0.0299 0.0010  
 Mercury -70474-10-20 23:45 J -24018912.62 -24018912.51 -24018912.40 0.0298 0.0140  
 Mercury -70473-01-17 11:59 J -24018824.05 -24018824.00 -24018823.95 0.0297 0.0270  
 Earth -70472-05-28 20:52 J -24018326.77 -24018326.63 -24018326.47 0.0292 0.0223  
 Moon -70472-05-29 00:13 J -24018326.63 -24018326.49 -24018326.32 0.0292 0.0221 \*  
 Earth -70471-06-11 04:47 J -24017948.54 -24017948.30 -24017948.07 0.0287 0.0040  
 Moon -70471-06-11 05:16 J -24017948.53 -24017948.28 -24017948.03 0.0287 0.0029 \*  
 Mars -70471-11-23 19:11 J -24017782.96 -24017782.70 -24017782.43 0.0284 0.0060  
 Moon -70470-06-23 21:35 J -24017570.80 -24017570.60 -24017570.38 0.0282 0.0148  
 Earth -70470-06-24 00:57 J -24017570.67 -24017570.46 -24017570.25 0.0282 0.0132 \*  
 Venus -70463-10-24 04:47 J -24014891.47 -24014891.30 -24014891.11 0.0259 0.0140  
 Venus -70462-06-10 02:52 J -24014662.50 -24014662.38 -24014662.25 0.0259 0.0208  
 Mercury -70459-11-07 08:37 J -24013416.28 -24013416.14 -24013416.00 0.0262 0.0177  
 Mercury -70458-02-04 06:13 J -24013327.43 -24013327.24 -24013327.05 0.0263 0.0042

Mercury -70458-05-04 03:49 J -24013238.52 -24013238.34 -24013238.16 0.0264 0.0095  
 Mercury -70458-08-01 01:25 J -24013149.52 -24013149.44 -24013149.35 0.0264 0.0232  
 Earth -70456-12-01 21:06 J -24012295.83 -24012295.62 -24012295.41 0.0273 0.0147  
 Moon -70456-12-01 22:33 J -24012295.76 -24012295.56 -24012295.36 0.0273 0.0156 \*  
 Earth -70455-12-15 03:21 J -24011917.61 -24011917.36 -24011917.11 0.0277 0.0017  
 Moon -70455-12-15 07:11 J -24011917.45 -24011917.20 -24011916.95 0.0277 0.0015 \*  
 Mars -70455-12-27 12:57 J -24011905.24 -24011904.96 -24011904.66 0.0277 0.0107  
 Earth -70454-12-28 20:23 J -24011538.83 -24011538.65 -24011538.46 0.0282 0.0191  
 Moon -70454-12-28 22:47 J -24011538.73 -24011538.55 -24011538.36 0.0282 0.0195 \*  
 Venus -70448-11-24 19:25 J -24009380.89 -24009380.69 -24009380.48 0.0303 0.0055  
 Mercury -70445-09-13 00:42 J -24008357.57 -24008357.47 -24008357.36 0.0300 0.0168  
 Mercury -70445-12-10 13:11 J -24008269.08 -24008268.95 -24008268.82 0.0299 0.0035  
 Mercury -70444-03-09 01:25 J -24008180.56 -24008180.44 -24008180.32 0.0298 0.0097  
 Mercury -70444-06-05 13:25 J -24008092.02 -24008091.94 -24008091.85 0.0297 0.0227  
 Moon -70442-06-05 14:09 J -24007362.12 -24007361.91 -24007361.70 0.0289 0.0116  
 Earth -70442-06-05 14:23 J -24007362.11 -24007361.90 -24007361.68 0.0289 0.0124 \*  
 Earth -70441-06-17 15:49 J -24006984.07 -24006983.84 -24006983.60 0.0284 0.0055  
 Moon -70441-06-17 19:11 J -24006983.92 -24006983.70 -24006983.46 0.0284 0.0071 \*  
 Mars -70440-01-10 05:45 J -24006777.48 -24006777.26 -24006777.01 0.0281 0.0150  
 Earth -70440-06-30 07:11 J -24006606.35 -24006606.20 -24006606.05 0.0279 0.0219  
 Moon -70440-06-30 09:49 J -24006606.22 -24006606.09 -24006605.96 0.0279 0.0233 \*  
 Venus -70433-05-05 08:09 J -24004105.35 -24004105.16 -24004104.95 0.0259 0.0093  
 Venus -70433-12-20 06:28 J -24003876.26 -24003876.23 -24003876.20 0.0259 0.0256  
 Mercury -70429-03-26 08:09 J -24002684.27 -24002684.16 -24002684.04 0.0262 0.0211  
 Mercury -70429-06-23 05:45 J -24002595.44 -24002595.26 -24002595.07 0.0263 0.0077  
 Mercury -70429-09-20 03:35 J -24002506.54 -24002506.35 -24002506.17 0.0263 0.0060  
 Mercury -70429-12-18 00:57 J -24002417.57 -24002417.46 -24002417.32 0.0264 0.0198  
 Moon -70427-11-26 14:37 J -24001709.03 -24001708.89 -24001708.74 0.0270 0.0227  
 Earth -70427-11-26 15:35 J -24001708.98 -24001708.85 -24001708.69 0.0270 0.0217 \*  
 Moon -70426-12-09 13:25 J -24001331.18 -24001330.94 -24001330.69 0.0275 0.0063

Earth -70426-12-09 17:16 J -24001331.02 -24001330.78 -24001330.53 0.0275 0.0060 \*  
 Moon -70425-12-22 03:35 J -24000952.57 -24000952.35 -24000952.12 0.0280 0.0114  
 Earth -70425-12-22 05:30 J -24000952.50 -24000952.27 -24000952.04 0.0280 0.0110 \*  
 Mars -70424-02-17 05:59 J -24000895.50 -24000895.25 -24000894.97 0.0280 0.0140  
 Venus -70418-06-07 03:35 J -23998594.55 -23998594.35 -23998594.14 0.0303 0.0026  
 Mercury -70415-01-31 03:06 J -23997625.46 -23997625.37 -23997625.27 0.0300 0.0203  
 Mercury -70415-04-29 15:35 J -23997536.97 -23997536.85 -23997536.72 0.0300 0.0069  
 Mercury -70415-07-27 03:49 J -23997448.46 -23997448.34 -23997448.21 0.0299 0.0064  
 Mercury -70415-10-23 16:04 J -23997359.93 -23997359.83 -23997359.73 0.0298 0.0194  
 Earth -70413-05-30 03:06 J -23996775.53 -23996775.37 -23996775.19 0.0291 0.0205  
 Moon -70413-05-30 03:49 J -23996775.52 -23996775.34 -23996775.16 0.0291 0.0201 \*  
 Mars -70412-03-01 23:01 J -23996499.67 -23996499.54 -23996499.41 0.0288 0.0251  
 Moon -70412-06-12 06:28 J -23996397.47 -23996397.23 -23996396.98 0.0286 0.0008  
 Earth -70412-06-12 09:49 J -23996397.32 -23996397.09 -23996396.85 0.0286 0.0023 \*  
 Moon -70411-06-25 02:52 J -23996019.56 -23996019.38 -23996019.19 0.0281 0.0165  
 Earth -70411-06-25 05:30 J -23996019.47 -23996019.27 -23996019.07 0.0281 0.0149 \*  
 Venus -70404-11-15 12:57 J -23993319.17 -23993318.96 -23993318.74 0.0259 0.0038  
 Mercury -70400-08-13 07:54 J -23991952.22 -23991952.17 -23991952.09 0.0262 0.0245  
 Mercury -70400-11-10 05:45 J -23991863.44 -23991863.26 -23991863.09 0.0263 0.0110  
 Mercury -70399-02-07 03:21 J -23991774.55 -23991774.36 -23991774.17 0.0263 0.0026  
 Mercury -70399-05-07 00:57 J -23991685.61 -23991685.46 -23991685.30 0.0264 0.0163  
 Earth -70397-12-03 08:09 J -23990744.37 -23990744.16 -23990743.93 0.0273 0.0129  
 Moon -70397-12-03 11:59 J -23990744.22 -23990744.00 -23990743.78 0.0273 0.0136 \*  
 Earth -70396-12-16 15:35 J -23990366.10 -23990365.85 -23990365.60 0.0278 0.0037  
 Moon -70396-12-16 16:47 J -23990366.05 -23990365.80 -23990365.54 0.0278 0.0038 \*  
 Moon -70395-12-30 07:25 J -23989987.35 -23989987.19 -23989987.03 0.0283 0.0220  
 Earth -70395-12-30 09:35 J -23989987.26 -23989987.10 -23989986.93 0.0283 0.0213 \*  
 Venus -70389-12-17 11:01 J -23987808.23 -23987808.04 -23987807.84 0.0303 0.0100  
 Mercury -70386-06-20 05:16 J -23986893.35 -23986893.28 -23986893.20 0.0300 0.0240  
 Mercury -70386-09-16 17:45 J -23986804.88 -23986804.76 -23986804.64 0.0299 0.0107

Mercury -70386-12-14 05:59 J -23986716.38 -23986716.25 -23986716.12 0.0298 0.0025

Mercury -70385-03-11 18:13 J -23986627.85 -23986627.74 -23986627.63 0.0298 0.0156

Mercury -70385-06-08 06:13 J -23986539.27 -23986539.24 -23986539.20 0.0297 0.0285

Moon -70384-05-24 10:18 J -23986189.08 -23986189.07 -23986189.03 0.0293 0.0291

Earth -70384-05-24 10:47 J -23986189.07 -23986189.05 -23986189.00 0.0293 0.0290 \*

Earth -70383-06-06 22:47 J -23985810.77 -23985810.55 -23985810.32 0.0288 0.0105

Moon -70383-06-07 01:54 J -23985810.64 -23985810.42 -23985810.19 0.0288 0.0095 \*

Mars -70382-04-19 13:11 J -23985494.22 -23985493.95 -23985493.68 0.0284 0.0035

Earth -70382-06-19 23:16 J -23985432.75 -23985432.53 -23985432.29 0.0283 0.0074

Moon -70382-06-20 01:40 J -23985432.66 -23985432.43 -23985432.19 0.0283 0.0089 \*

Moon -70381-07-01 11:45 J -23985055.11 -23985055.01 -23985054.90 0.0279 0.0249

Earth -70381-07-01 13:25 J -23985055.05 -23985054.94 -23985054.80 0.0279 0.0236 \*

Venus -70374-05-28 17:16 J -23982533.00 -23982532.78 -23982532.56 0.0259 0.0013

Mercury -70370-03-30 05:30 J -23981131.42 -23981131.27 -23981131.10 0.0263 0.0143

Mercury -70370-06-27 03:21 J -23981042.55 -23981042.36 -23981042.17 0.0263 0.0007

Mercury -70370-09-24 00:57 J -23980953.62 -23980953.46 -23980953.29 0.0264 0.0130

Moon -70368-11-27 23:59 J -23980157.65 -23980157.50 -23980157.33 0.0271 0.0210

Earth -70368-11-28 03:35 J -23980157.51 -23980157.35 -23980157.17 0.0271 0.0198 \*

Moon -70367-12-11 05:30 J -23979779.51 -23979779.27 -23979779.03 0.0275 0.0042

Earth -70367-12-11 06:42 J -23979779.47 -23979779.22 -23979778.97 0.0275 0.0040 \*

Mars -70366-05-24 05:59 J -23979615.55 -23979615.25 -23979614.94 0.0277 0.0063

Earth -70366-12-24 19:54 J -23979400.89 -23979400.67 -23979400.45 0.0280 0.0133

Moon -70366-12-24 22:33 J -23979400.77 -23979400.56 -23979400.34 0.0280 0.0139 \*

Venus -70359-06-29 21:06 J -23977021.78 -23977021.62 -23977021.46 0.0303 0.0187

Mercury -70357-11-06 08:09 J -23976161.21 -23976161.16 -23976161.10 0.0301 0.0271

Mercury -70356-02-02 20:37 J -23976072.75 -23976072.64 -23976072.52 0.0300 0.0137

Mercury -70356-05-02 08:52 J -23975984.26 -23975984.13 -23975984.00 0.0299 0.0008

Mercury -70356-07-29 21:06 J -23975895.73 -23975895.62 -23975895.50 0.0298 0.0127

Mercury -70356-10-26 09:21 J -23975807.17 -23975807.11 -23975807.05 0.0297 0.0257

Moon -70354-06-01 11:30 J -23975224.20 -23975224.02 -23975223.82 0.0291 0.0178

Earth -70354-06-01 14:37 J -23975224.07 -23975223.89 -23975223.70 0.0291 0.0184 \*  
 Moon -70353-06-13 17:45 J -23974845.99 -23974845.76 -23974845.53 0.0286 0.0012  
 Earth -70353-06-13 20:09 J -23974845.90 -23974845.66 -23974845.42 0.0286 0.0004 \*  
 Mars -70352-06-06 12:57 J -23974488.16 -23974487.96 -23974487.73 0.0281 0.0179  
 Earth -70352-06-26 14:37 J -23974468.08 -23974467.89 -23974467.70 0.0281 0.0168  
 Moon -70352-06-26 16:33 J -23974467.99 -23974467.81 -23974467.64 0.0281 0.0184 \*  
 Venus -70345-12-07 22:47 J -23971746.75 -23971746.55 -23971746.34 0.0259 0.0070  
 Mercury -70341-08-16 06:13 J -23970399.38 -23970399.24 -23970399.09 0.0263 0.0172  
 Mercury -70341-11-13 03:49 J -23970310.53 -23970310.34 -23970310.15 0.0263 0.0036  
 Mercury -70340-02-10 01:25 J -23970221.61 -23970221.44 -23970221.26 0.0264 0.0101  
 Mercury -70340-05-09 23:01 J -23970132.61 -23970132.54 -23970132.44 0.0265 0.0239  
 Earth -70339-11-23 01:11 J -23969570.50 -23969570.45 -23969570.38 0.0270 0.0260  
 Earth -70338-12-05 23:30 J -23969192.75 -23969192.52 -23969192.29 0.0274 0.0108  
 Moon -70338-12-06 00:57 J -23969192.69 -23969192.46 -23969192.22 0.0274 0.0116 \*  
 Moon -70337-12-18 05:01 J -23968814.54 -23968814.29 -23968814.04 0.0278 0.0064  
 Earth -70337-12-18 08:09 J -23968814.41 -23968814.16 -23968813.92 0.0278 0.0060 \*  
 Mars -70336-07-15 01:54 J -23968605.64 -23968605.42 -23968605.16 0.0281 0.0176  
 Moon -70336-12-31 23:30 J -23968435.63 -23968435.52 -23968435.39 0.0283 0.0247  
 Earth -70335-01-01 03:35 J -23968435.49 -23968435.35 -23968435.22 0.0283 0.0237 \*  
 Venus -70330-05-25 02:37 J -23966465.47 -23966465.39 -23966465.31 0.0303 0.0279  
 Venus -70329-01-10 05:59 J -23966235.34 -23966235.25 -23966235.15 0.0303 0.0267  
 Mercury -70327-06-22 23:16 J -23965340.64 -23965340.53 -23965340.43 0.0299 0.0171  
 Mercury -70327-09-19 11:30 J -23965252.15 -23965252.02 -23965251.89 0.0299 0.0038  
 Mercury -70327-12-16 23:45 J -23965163.63 -23965163.51 -23965163.39 0.0298 0.0093  
 Mercury -70326-03-15 11:45 J -23965075.09 -23965075.01 -23965074.92 0.0297 0.0223  
 Earth -70325-05-26 01:11 J -23964637.53 -23964637.45 -23964637.34 0.0292 0.0268  
 Moon -70325-05-26 04:33 J -23964637.40 -23964637.31 -23964637.21 0.0292 0.0266 \*  
 Earth -70324-06-08 11:45 J -23964259.24 -23964259.01 -23964258.78 0.0288 0.0083  
 Moon -70324-06-08 14:23 J -23964259.13 -23964258.90 -23964258.66 0.0288 0.0074 \*  
 Mars -70324-07-27 04:47 J -23964210.48 -23964210.30 -23964210.13 0.0287 0.0218

Moon -70323-06-21 08:52 J -23963881.35 -23963881.13 -23963880.90 0.0283 0.0109  
 Earth -70323-06-21 10:47 J -23963881.27 -23963881.05 -23963880.82 0.0283 0.0094 \*  
 Moon -70322-07-03 20:09 J -23963503.71 -23963503.66 -23963503.58 0.0278 0.0267  
 Earth -70322-07-03 23:45 J -23963503.59 -23963503.51 -23963503.40 0.0278 0.0254 \*  
 Venus -70316-11-03 05:16 J -23961189.38 -23961189.28 -23961189.17 0.0260 0.0226  
 Venus -70315-06-20 03:35 J -23960960.53 -23960960.35 -23960960.15 0.0260 0.0123  
 Mercury -70311-01-03 06:13 J -23959667.36 -23959667.24 -23959667.12 0.0263 0.0204  
 Mercury -70311-04-02 03:49 J -23959578.52 -23959578.34 -23959578.15 0.0263 0.0069  
 Mercury -70311-06-30 01:40 J -23959489.62 -23959489.43 -23959489.25 0.0264 0.0068  
 Mercury -70311-09-26 23:16 J -23959400.64 -23959400.53 -23959400.40 0.0264 0.0206  
 Moon -70309-11-29 16:33 J -23958605.97 -23958605.81 -23958605.63 0.0272 0.0190  
 Earth -70309-11-29 18:28 J -23958605.92 -23958605.73 -23958605.54 0.0272 0.0178 \*  
 Mars -70308-08-27 08:37 J -23958335.22 -23958335.14 -23958335.03 0.0275 0.0261  
 Earth -70308-12-12 22:33 J -23958227.81 -23958227.56 -23958227.31 0.0276 0.0017  
 Moon -70308-12-13 01:11 J -23958227.69 -23958227.45 -23958227.20 0.0276 0.0019 \*  
 Earth -70307-12-26 13:11 J -23957849.15 -23957848.95 -23957848.73 0.0281 0.0157  
 Moon -70307-12-26 16:47 J -23957849.00 -23957848.80 -23957848.59 0.0281 0.0164 \*  
 Venus -70301-12-04 13:40 J -23955679.10 -23955678.93 -23955678.77 0.0303 0.0188  
 Mercury -70298-11-10 02:23 J -23954608.50 -23954608.40 -23954608.30 0.0300 0.0198  
 Mercury -70297-02-06 14:37 J -23954520.01 -23954519.89 -23954519.76 0.0299 0.0065  
 Mercury -70297-05-05 02:52 J -23954431.50 -23954431.38 -23954431.25 0.0299 0.0068  
 Mercury -70297-08-01 15:06 J -23954342.97 -23954342.87 -23954342.78 0.0298 0.0198  
 Moon -70295-06-03 03:21 J -23953672.56 -23953672.36 -23953672.16 0.0290 0.0153  
 Earth -70295-06-03 06:13 J -23953672.44 -23953672.24 -23953672.04 0.0290 0.0159 \*  
 Earth -70294-06-16 10:04 J -23953294.32 -23953294.08 -23953293.84 0.0285 0.0022  
 Moon -70294-06-16 11:16 J -23953294.26 -23953294.03 -23953293.80 0.0285 0.0036 \*  
 Mars -70294-09-14 06:42 J -23953204.49 -23953204.22 -23953203.95 0.0284 0.0001  
 Earth -70293-06-28 03:21 J -23952916.54 -23952916.36 -23952916.19 0.0280 0.0190  
 Moon -70293-06-28 06:42 J -23952916.38 -23952916.22 -23952916.05 0.0280 0.0205 \*  
 Venus -70286-05-16 11:59 J -23950403.17 -23950403.00 -23950402.84 0.0259 0.0166



Venus -70286-12-31 09:49 J -23950174.23 -23950174.09 -23950173.92 0.0259 0.0183  
 Mercury -70282-05-23 07:11 J -23948935.29 -23948935.20 -23948935.11 0.0263 0.0230  
 Mercury -70282-08-20 04:47 J -23948846.48 -23948846.30 -23948846.12 0.0263 0.0096  
 Mercury -70282-11-17 02:37 J -23948757.59 -23948757.39 -23948757.20 0.0264 0.0041  
 Mercury -70281-02-14 00:13 J -23948668.63 -23948668.49 -23948668.35 0.0264 0.0178  
 Earth -70280-11-24 16:33 J -23948018.92 -23948018.81 -23948018.69 0.0270 0.0240  
 Moon -70280-11-24 18:13 J -23948018.81 -23948018.74 -23948018.64 0.0270 0.0254 \*  
 Moon -70279-12-07 13:40 J -23947641.17 -23947640.93 -23947640.68 0.0274 0.0092  
 Earth -70279-12-07 16:18 J -23947641.06 -23947640.82 -23947640.58 0.0274 0.0086 \*  
 Mars -70278-10-19 10:47 J -23947325.36 -23947325.05 -23947324.73 0.0278 0.0024  
 Moon -70278-12-20 23:01 J -23947262.77 -23947262.54 -23947262.30 0.0279 0.0088  
 Earth -70278-12-21 02:23 J -23947262.64 -23947262.40 -23947262.16 0.0279 0.0084 \*  
 Earth -70276-01-02 23:01 J -23946883.62 -23946883.54 -23946883.44 0.0284 0.0262  
 Moon -70276-01-02 23:01 J -23946883.60 -23946883.54 -23946883.48 0.0284 0.0273 \*  
 Venus -70271-06-16 23:59 J -23944892.70 -23944892.50 -23944892.31 0.0303 0.0101  
 Mercury -70268-03-29 05:16 J -23943876.36 -23943876.28 -23943876.20 0.0300 0.0227  
 Mercury -70268-06-25 17:30 J -23943787.89 -23943787.77 -23943787.64 0.0299 0.0095  
 Mercury -70268-09-22 05:45 J -23943699.38 -23943699.26 -23943699.13 0.0298 0.0039  
 Mercury -70268-12-19 17:59 J -23943610.85 -23943610.75 -23943610.64 0.0297 0.0168  
 Mercury -70267-03-18 06:13 J -23943522.25 -23943522.24 -23943522.24 0.0297 0.0296  
 Earth -70266-05-28 19:54 J -23943085.80 -23943085.67 -23943085.54 0.0292 0.0242  
 Moon -70266-05-28 22:33 J -23943085.70 -23943085.56 -23943085.42 0.0292 0.0238 \*  
 Moon -70265-06-10 03:21 J -23942707.61 -23942707.36 -23942707.12 0.0287 0.0047  
 Earth -70265-06-10 04:18 J -23942707.55 -23942707.32 -23942707.08 0.0287 0.0058 \*  
 Moon -70264-06-22 22:47 J -23942329.76 -23942329.55 -23942329.34 0.0282 0.0132  
 Earth -70264-06-23 01:54 J -23942329.63 -23942329.42 -23942329.19 0.0282 0.0117 \*  
 Mars -70264-11-01 03:35 J -23942198.52 -23942198.35 -23942198.16 0.0280 0.0216  
 Earth -70263-07-05 13:25 J -23941951.96 -23941951.94 -23941951.89 0.0277 0.0275  
 Venus -70257-11-25 16:47 J -23939616.99 -23939616.80 -23939616.60 0.0260 0.0112  
 Venus -70256-07-12 15:06 J -23939387.95 -23939387.87 -23939387.78 0.0260 0.0238

Mercury -70253-10-09 07:25 J -23938203.20 -23938203.19 -23938203.18 0.0263 0.0262

Mercury -70252-01-06 05:01 J -23938114.46 -23938114.29 -23938114.12 0.0263 0.0127

Mercury -70252-04-05 02:37 J -23938025.58 -23938025.39 -23938025.20 0.0264 0.0009

Mercury -70252-07-03 00:13 J -23937936.64 -23937936.49 -23937936.32 0.0264 0.0147

Earth -70250-12-02 10:47 J -23937054.25 -23937054.05 -23937053.84 0.0272 0.0156

Moon -70250-12-02 13:25 J -23937054.13 -23937053.94 -23937053.74 0.0272 0.0168 \*

Earth -70249-12-14 16:47 J -23936676.05 -23936675.80 -23936675.55 0.0277 0.0008

Moon -70249-12-14 20:23 J -23936675.91 -23936675.65 -23936675.40 0.0277 0.0006 \*

Mars -70248-12-10 09:21 J -23936315.27 -23936315.11 -23936314.91 0.0281 0.0227

Earth -70248-12-28 08:52 J -23936297.31 -23936297.13 -23936296.93 0.0281 0.0183

Moon -70248-12-28 09:06 J -23936297.31 -23936297.12 -23936296.92 0.0281 0.0189 \*

Venus -70242-12-28 11:16 J -23934106.24 -23934106.03 -23934105.82 0.0303 0.0009

Mercury -70239-08-16 08:23 J -23933144.21 -23933144.15 -23933144.08 0.0300 0.0254

Mercury -70239-11-12 20:52 J -23933055.75 -23933055.63 -23933055.51 0.0300 0.0120

Mercury -70238-02-09 09:06 J -23932967.25 -23932967.12 -23932966.99 0.0299 0.0013

Mercury -70238-05-08 21:21 J -23932878.72 -23932878.61 -23932878.50 0.0298 0.0143

Mercury -70238-08-05 09:21 J -23932790.15 -23932790.11 -23932790.05 0.0297 0.0272

Earth -70236-06-04 23:59 J -23932120.71 -23932120.50 -23932120.28 0.0290 0.0133

Moon -70236-06-05 01:11 J -23932120.66 -23932120.45 -23932120.24 0.0290 0.0125 \*

Mars -70236-12-22 06:42 J -23931920.42 -23931920.22 -23931920.00 0.0287 0.0182

Earth -70235-06-18 02:09 J -23931742.64 -23931742.41 -23931742.17 0.0285 0.0048

Moon -70235-06-18 05:45 J -23931742.49 -23931742.26 -23931742.02 0.0285 0.0062 \*

Earth -70234-06-30 17:59 J -23931364.90 -23931364.75 -23931364.59 0.0280 0.0213

Moon -70234-06-30 18:28 J -23931364.87 -23931364.73 -23931364.58 0.0280 0.0225 \*

Venus -70227-06-07 23:45 J -23928830.72 -23928830.51 -23928830.30 0.0259 0.0051

Mercury -70223-05-26 05:45 J -23927382.41 -23927382.26 -23927382.10 0.0263 0.0154

Mercury -70223-08-23 03:35 J -23927293.54 -23927293.35 -23927293.16 0.0263 0.0018

Mercury -70223-11-20 01:11 J -23927204.61 -23927204.45 -23927204.27 0.0264 0.0120

Mercury -70222-02-16 23:16 J -23927115.57 -23927115.53 -23927115.49 0.0265 0.0257

Moon -70221-11-26 05:30 J -23926467.40 -23926467.27 -23926467.13 0.0271 0.0232

Earth -70221-11-26 08:23 J -23926467.29 -23926467.15 -23926467.00 0.0271 0.0220 \*  
 Moon -70220-12-09 05:59 J -23926089.49 -23926089.25 -23926089.01 0.0275 0.0069  
 Earth -70220-12-09 09:35 J -23926089.34 -23926089.10 -23926088.85 0.0275 0.0062 \*  
 Mars -70219-01-22 15:49 J -23926045.02 -23926044.84 -23926044.64 0.0276 0.0221  
 Moon -70219-12-22 21:06 J -23925710.84 -23925710.62 -23925710.40 0.0280 0.0112  
 Earth -70219-12-22 21:06 J -23925710.84 -23925710.62 -23925710.38 0.0280 0.0110 \*  
 Venus -70212-07-09 21:35 J -23923319.80 -23923319.60 -23923319.40 0.0303 0.0079  
 Mercury -70209-01-03 11:30 J -23922412.06 -23922412.02 -23922411.98 0.0300 0.0283  
 Mercury -70209-03-31 23:45 J -23922323.62 -23922323.51 -23922323.39 0.0299 0.0150  
 Mercury -70209-06-28 12:13 J -23922235.12 -23922234.99 -23922234.86 0.0299 0.0019  
 Mercury -70209-09-25 00:13 J -23922146.60 -23922146.49 -23922146.37 0.0298 0.0114  
 Mercury -70209-12-22 12:28 J -23922058.05 -23922057.98 -23922057.91 0.0297 0.0243  
 Moon -70207-05-30 13:25 J -23921534.10 -23921533.94 -23921533.76 0.0291 0.0209  
 Earth -70207-05-30 15:21 J -23921534.02 -23921533.86 -23921533.70 0.0291 0.0215 \*  
 Moon -70206-06-12 18:28 J -23921155.97 -23921155.73 -23921155.49 0.0286 0.0019  
 Earth -70206-06-12 22:04 J -23921155.81 -23921155.58 -23921155.34 0.0286 0.0032 \*  
 Mars -70205-02-09 03:49 J -23920914.61 -23920914.34 -23920914.06 0.0283 0.0041  
 Moon -70205-06-24 17:16 J -23920777.97 -23920777.78 -23920777.59 0.0281 0.0156  
 Earth -70205-06-24 17:59 J -23920777.94 -23920777.75 -23920777.53 0.0281 0.0142 \*  
 Venus -70198-12-19 04:47 J -23918044.52 -23918044.30 -23918044.09 0.0260 0.0006  
 Mercury -70194-10-13 05:59 J -23916650.39 -23916650.25 -23916650.12 0.0263 0.0186  
 Mercury -70193-01-10 03:21 J -23916561.54 -23916561.36 -23916561.16 0.0263 0.0052  
 Mercury -70193-04-08 01:11 J -23916472.63 -23916472.45 -23916472.27 0.0264 0.0086  
 Mercury -70193-07-05 23:01 J -23916383.64 -23916383.54 -23916383.44 0.0265 0.0224  
 Earth -70191-12-04 02:23 J -23915502.62 -23915502.40 -23915502.18 0.0273 0.0134  
 Moon -70191-12-04 05:45 J -23915502.46 -23915502.26 -23915502.03 0.0273 0.0144 \*  
 Earth -70190-12-17 09:49 J -23915124.34 -23915124.09 -23915123.84 0.0277 0.0032  
 Moon -70190-12-17 09:49 J -23915124.34 -23915124.09 -23915123.82 0.0277 0.0031 \*  
 Mars -70189-03-15 15:35 J -23915035.16 -23915034.85 -23915034.53 0.0278 0.0025  
 Moon -70189-12-30 00:13 J -23914745.65 -23914745.49 -23914745.32 0.0282 0.0216

Earth -70189-12-30 03:21 J -23914745.51 -23914745.36 -23914745.18 0.0282 0.0208 \*  
 Venus -70182-01-20 08:23 J -23912533.32 -23912533.15 -23912532.97 0.0303 0.0170  
 Mercury -70180-08-19 03:06 J -23911591.47 -23911591.37 -23911591.27 0.0300 0.0176  
 Mercury -70180-11-15 15:21 J -23911502.99 -23911502.86 -23911502.73 0.0299 0.0043  
 Mercury -70179-02-12 03:35 J -23911414.47 -23911414.35 -23911414.23 0.0298 0.0089  
 Mercury -70179-05-11 15:49 J -23911325.93 -23911325.84 -23911325.75 0.0298 0.0219  
 Earth -70178-05-25 06:13 J -23910947.26 -23910947.24 -23910947.21 0.0294 0.0292  
 Moon -70178-05-25 07:40 J -23910947.20 -23910947.18 -23910947.14 0.0294 0.0291  
 Earth -70177-06-06 18:28 J -23910568.95 -23910568.73 -23910568.51 0.0289 0.0106  
 Moon -70177-06-06 22:04 J -23910568.80 -23910568.58 -23910568.35 0.0289 0.0096 \*  
 Earth -70176-06-19 19:25 J -23910190.92 -23910190.69 -23910190.46 0.0284 0.0073  
 Moon -70176-06-19 20:52 J -23910190.86 -23910190.63 -23910190.39 0.0284 0.0087 \*  
 Mars -70175-03-29 07:11 J -23909908.31 -23909908.20 -23909908.07 0.0280 0.0253  
 Moon -70175-07-02 06:28 J -23909813.33 -23909813.23 -23909813.11 0.0279 0.0248  
 Earth -70175-07-02 09:49 J -23909813.22 -23909813.09 -23909812.96 0.0279 0.0235 \*  
 Venus -70168-06-30 11:16 J -23907258.24 -23907258.03 -23907257.82 0.0259 0.0064  
 Mercury -70164-03-01 06:42 J -23905918.33 -23905918.22 -23905918.11 0.0263 0.0213  
 Mercury -70164-05-29 04:18 J -23905829.50 -23905829.32 -23905829.13 0.0263 0.0078  
 Mercury -70164-08-26 01:54 J -23905740.60 -23905740.42 -23905740.23 0.0264 0.0059  
 Mercury -70164-11-22 23:45 J -23905651.63 -23905651.51 -23905651.38 0.0264 0.0196  
 Moon -70162-11-28 19:40 J -23904915.83 -23904915.68 -23904915.52 0.0271 0.0211  
 Earth -70162-11-28 22:47 J -23904915.71 -23904915.55 -23904915.37 0.0271 0.0199 \*  
 Earth -70161-12-11 01:40 J -23904537.68 -23904537.43 -23904537.18 0.0276 0.0039  
 Moon -70161-12-11 01:40 J -23904537.67 -23904537.43 -23904537.19 0.0276 0.0044 \*  
 Earth -70160-12-24 14:37 J -23904159.10 -23904158.89 -23904158.66 0.0280 0.0135  
 Moon -70160-12-24 17:59 J -23904158.96 -23904158.75 -23904158.53 0.0280 0.0137 \*  
 Mars -70159-05-07 14:52 J -23904024.97 -23904024.88 -23904024.78 0.0282 0.0267  
 Venus -70154-12-15 15:35 J -23901976.91 -23901976.85 -23901976.80 0.0303 0.0289  
 Venus -70153-08-01 18:57 J -23901746.82 -23901746.71 -23901746.60 0.0303 0.0257  
 Mercury -70150-01-06 05:59 J -23900859.34 -23900859.25 -23900859.15 0.0300 0.0205

Mercury -70150-04-04 18:28 J -23900770.86 -23900770.73 -23900770.61 0.0299 0.0073

Mercury -70150-07-02 06:42 J -23900682.35 -23900682.22 -23900682.10 0.0298 0.0060

Mercury -70150-09-28 18:42 J -23900593.81 -23900593.72 -23900593.62 0.0297 0.0190

Moon -70148-06-01 06:28 J -23899982.41 -23899982.23 -23899982.03 0.0290 0.0181

Earth -70148-06-01 10:04 J -23899982.25 -23899982.08 -23899981.89 0.0290 0.0189 \*

Mars -70147-05-19 05:59 J -23899630.48 -23899630.25 -23899630.00 0.0286 0.0140

Moon -70147-06-14 14:23 J -23899604.14 -23899603.90 -23899603.67 0.0285 0.0010

Earth -70147-06-14 15:35 J -23899604.09 -23899603.85 -23899603.61 0.0285 0.0006 \*

Earth -70146-06-27 09:49 J -23899226.27 -23899226.09 -23899225.88 0.0281 0.0166

Moon -70146-06-27 12:28 J -23899226.14 -23899225.98 -23899225.79 0.0281 0.0182 \*

Venus -70139-05-26 17:30 J -23896700.85 -23896700.77 -23896700.66 0.0260 0.0232

Venus -70138-01-10 15:49 J -23896472.03 -23896471.84 -23896471.65 0.0259 0.0117

Mercury -70135-07-19 06:13 J -23895186.30 -23895186.24 -23895186.18 0.0263 0.0248

Mercury -70135-10-16 03:49 J -23895097.51 -23895097.34 -23895097.17 0.0263 0.0113

Mercury -70134-01-13 01:25 J -23895008.63 -23895008.44 -23895008.24 0.0264 0.0023

Mercury -70134-04-11 23:01 J -23894919.68 -23894919.54 -23894919.38 0.0264 0.0161

Earth -70133-11-22 17:30 J -23894328.81 -23894328.77 -23894328.71 0.0269 0.0264

Moon -70132-12-05 15:06 J -23893951.10 -23893950.87 -23893950.63 0.0273 0.0118

Earth -70132-12-05 15:35 J -23893951.07 -23893950.85 -23893950.61 0.0273 0.0113 \*

Mars -70131-06-19 11:59 J -23893755.23 -23893755.00 -23893754.75 0.0276 0.0182

Moon -70131-12-18 20:52 J -23893572.88 -23893572.63 -23893572.38 0.0278 0.0056

Earth -70131-12-19 00:28 J -23893572.73 -23893572.48 -23893572.23 0.0278 0.0055 \*

Moon -70129-01-01 16:33 J -23893193.93 -23893193.81 -23893193.67 0.0283 0.0240

Earth -70129-01-01 19:40 J -23893193.82 -23893193.68 -23893193.54 0.0283 0.0232 \*

Venus -70124-06-26 23:59 J -23891190.64 -23891190.50 -23891190.34 0.0303 0.0207

Mercury -70121-05-25 08:52 J -23890127.21 -23890127.13 -23890127.05 0.0300 0.0236

Mercury -70121-08-21 21:06 J -23890038.74 -23890038.62 -23890038.49 0.0300 0.0103

Mercury -70121-11-18 09:35 J -23889950.23 -23889950.10 -23889949.98 0.0299 0.0032

Mercury -70120-02-14 21:35 J -23889861.70 -23889861.60 -23889861.49 0.0298 0.0161

Mercury -70120-05-14 09:49 J -23889773.11 -23889773.09 -23889773.06 0.0297 0.0290

Earth -70119-05-26 23:30 J -23889395.61 -23889395.52 -23889395.41 0.0293 0.0266  
 Moon -70119-05-27 03:06 J -23889395.46 -23889395.37 -23889395.26 0.0293 0.0265 \*  
 Earth -70118-06-09 10:33 J -23889017.28 -23889017.06 -23889016.83 0.0288 0.0080  
 Moon -70118-06-09 11:45 J -23889017.24 -23889017.01 -23889016.76 0.0288 0.0069 \*  
 Moon -70117-06-21 07:25 J -23888639.41 -23888639.19 -23888638.96 0.0283 0.0114  
 Earth -70117-06-21 10:18 J -23888639.29 -23888639.07 -23888638.84 0.0283 0.0098 \*  
 Mars -70117-07-06 04:33 J -23888624.58 -23888624.31 -23888624.05 0.0283 0.0074  
 Moon -70116-07-03 20:37 J -23888261.69 -23888261.64 -23888261.60 0.0278 0.0272  
 Earth -70116-07-03 23:16 J -23888261.61 -23888261.53 -23888261.43 0.0278 0.0258 \*  
 Venus -70110-12-06 23:45 J -23885914.67 -23885914.51 -23885914.35 0.0259 0.0173  
 Venus -70109-07-22 21:35 J -23885685.75 -23885685.60 -23885685.43 0.0259 0.0175  
 Mercury -70105-03-04 04:18 J -23884365.48 -23884365.32 -23884365.16 0.0263 0.0143  
 Mercury -70105-06-01 01:54 J -23884276.61 -23884276.42 -23884276.23 0.0263 0.0007  
 Mercury -70105-08-28 23:30 J -23884187.68 -23884187.52 -23884187.35 0.0264 0.0130  
 Earth -70103-11-30 10:04 J -23883364.26 -23883364.08 -23883363.88 0.0272 0.0179  
 Moon -70103-11-30 10:33 J -23883364.23 -23883364.06 -23883363.88 0.0272 0.0189 \*  
 Earth -70102-12-13 13:40 J -23882986.18 -23882985.93 -23882985.67 0.0276 0.0018  
 Moon -70102-12-13 17:30 J -23882986.01 -23882985.77 -23882985.52 0.0276 0.0019 \*  
 Mars -70101-08-10 11:16 J -23882745.33 -23882745.03 -23882744.72 0.0279 0.0058  
 Earth -70101-12-26 03:49 J -23882607.54 -23882607.34 -23882607.12 0.0281 0.0158  
 Moon -70101-12-26 06:57 J -23882607.41 -23882607.21 -23882606.99 0.0281 0.0162 \*  
 Venus -70094-01-07 09:49 J -23880404.28 -23880404.09 -23880403.90 0.0303 0.0124  
 Mercury -70092-10-12 11:30 J -23879395.07 -23879395.02 -23879394.96 0.0300 0.0268  
 Mercury -70091-01-08 23:59 J -23879306.62 -23879306.50 -23879306.39 0.0300 0.0135  
 Mercury -70091-04-07 12:13 J -23879218.12 -23879217.99 -23879217.86 0.0299 0.0002  
 Mercury -70091-07-05 00:28 J -23879129.60 -23879129.48 -23879129.37 0.0298 0.0129  
 Mercury -70091-10-01 12:28 J -23879041.04 -23879040.98 -23879040.91 0.0297 0.0259  
 Moon -70089-06-03 00:28 J -23878430.67 -23878430.48 -23878430.28 0.0290 0.0157  
 Earth -70089-06-03 01:40 J -23878430.62 -23878430.43 -23878430.23 0.0290 0.0163 \*  
 Earth -70088-06-16 05:59 J -23878052.49 -23878052.25 -23878052.01 0.0285 0.0020

Moon -70088-06-16 08:52 J -23878052.36 -23878052.13 -23878051.90 0.0285 0.0035 \*  
 Earth -70087-06-28 23:16 J -23877674.70 -23877674.53 -23877674.35 0.0280 0.0188  
 Moon -70087-06-29 02:37 J -23877674.55 -23877674.39 -23877674.22 0.0280 0.0204 \*  
 Venus -70080-06-18 03:35 J -23875128.53 -23875128.35 -23875128.16 0.0259 0.0123  
 Venus -70079-02-02 01:40 J -23874899.54 -23874899.43 -23874899.33 0.0259 0.0225  
 Mercury -70076-07-22 03:21 J -23873633.50 -23873633.36 -23873633.23 0.0263 0.0181  
 Mercury -70076-10-19 00:42 J -23873544.66 -23873544.47 -23873544.28 0.0263 0.0047  
 Mercury -70075-01-15 22:33 J -23873455.74 -23873455.56 -23873455.38 0.0264 0.0090  
 Mercury -70075-04-14 20:09 J -23873366.75 -23873366.66 -23873366.56 0.0265 0.0228  
 Earth -70074-11-25 02:09 J -23872777.51 -23872777.41 -23872777.30 0.0270 0.0245  
 Moon -70074-11-25 01:54 J -23872777.48 -23872777.42 -23872777.33 0.0270 0.0257 \*  
 Moon -70073-12-06 21:21 J -23872399.84 -23872399.61 -23872399.37 0.0274 0.0095  
 Earth -70073-12-07 01:11 J -23872399.68 -23872399.45 -23872399.21 0.0274 0.0091 \*  
 Moon -70072-12-20 08:23 J -23872021.38 -23872021.15 -23872020.91 0.0278 0.0082  
 Earth -70072-12-20 10:47 J -23872021.29 -23872021.05 -23872020.81 0.0278 0.0077 \*  
 Earth -70070-01-03 06:57 J -23871642.30 -23871642.21 -23871642.09 0.0283 0.0256  
 Moon -70070-01-03 08:09 J -23871642.23 -23871642.16 -23871642.06 0.0283 0.0265 \*  
 Venus -70065-07-19 17:16 J -23869617.98 -23869617.78 -23869617.57 0.0303 0.0046  
 Mercury -70062-05-29 02:23 J -23868574.51 -23868574.40 -23868574.29 0.0300 0.0168  
 Mercury -70062-08-25 14:37 J -23868486.01 -23868485.89 -23868485.76 0.0299 0.0036  
 Mercury -70062-11-22 02:52 J -23868397.50 -23868397.38 -23868397.25 0.0299 0.0098  
 Mercury -70061-02-18 15:06 J -23868308.95 -23868308.87 -23868308.78 0.0298 0.0227  
 Earth -70060-05-28 13:40 J -23867844.05 -23867843.93 -23867843.78 0.0293 0.0242  
 Moon -70060-05-28 15:21 J -23867843.99 -23867843.86 -23867843.71 0.0293 0.0240 \*  
 Moon -70059-06-10 20:52 J -23867465.87 -23867465.63 -23867465.38 0.0288 0.0042  
 Earth -70059-06-10 23:45 J -23867465.74 -23867465.51 -23867465.27 0.0288 0.0055 \*  
 Mars -70059-10-13 21:35 J -23867340.85 -23867340.60 -23867340.35 0.0286 0.0112  
 Moon -70058-06-23 19:11 J -23867087.90 -23867087.70 -23867087.49 0.0283 0.0139  
 Earth -70058-06-23 22:18 J -23867087.78 -23867087.57 -23867087.35 0.0283 0.0122 \*  
 Venus -70051-12-29 08:37 J -23864342.35 -23864342.14 -23864341.93 0.0259 0.0068

Mercury -70047-12-09 03:06 J -23862901.48 -23862901.37 -23862901.26 0.0262 0.0213  
 Mercury -70046-03-08 00:42 J -23862812.65 -23862812.47 -23862812.29 0.0263 0.0079  
 Mercury -70046-06-04 22:18 J -23862723.76 -23862723.57 -23862723.38 0.0263 0.0057  
 Mercury -70046-09-01 19:54 J -23862634.79 -23862634.67 -23862634.53 0.0264 0.0194  
 Earth -70044-12-01 17:30 J -23861812.97 -23861812.77 -23861812.57 0.0272 0.0160  
 Moon -70044-12-01 20:52 J -23861812.82 -23861812.63 -23861812.43 0.0272 0.0169 \*  
 Mars -70043-11-13 17:59 J -23861466.01 -23861465.75 -23861465.49 0.0276 0.0157  
 Earth -70043-12-14 21:49 J -23861434.84 -23861434.59 -23861434.33 0.0276 0.0006  
 Moon -70043-12-14 23:59 J -23861434.76 -23861434.50 -23861434.24 0.0276 0.0005 \*  
 Moon -70042-12-28 11:01 J -23861056.22 -23861056.04 -23861055.84 0.0281 0.0187  
 Earth -70042-12-28 12:57 J -23861056.14 -23861055.96 -23861055.76 0.0281 0.0179 \*  
 Venus -70035-01-30 01:11 J -23858831.66 -23858831.45 -23858831.24 0.0303 0.0030  
 Mercury -70033-10-15 04:33 J -23857842.40 -23857842.31 -23857842.21 0.0300 0.0206  
 Mercury -70032-01-11 17:01 J -23857753.92 -23857753.79 -23857753.67 0.0300 0.0072  
 Mercury -70032-04-10 05:16 J -23857665.41 -23857665.28 -23857665.15 0.0299 0.0060  
 Mercury -70032-07-07 17:30 J -23857576.87 -23857576.77 -23857576.67 0.0298 0.0191  
 Earth -70030-06-05 12:13 J -23856879.19 -23856878.99 -23856878.77 0.0290 0.0140  
 Moon -70030-06-05 14:52 J -23856879.08 -23856878.88 -23856878.67 0.0290 0.0132 \*  
 Earth -70029-06-17 16:04 J -23856501.07 -23856500.83 -23856500.59 0.0285 0.0043  
 Moon -70029-06-17 18:57 J -23856500.94 -23856500.71 -23856500.47 0.0285 0.0058 \*  
 Mars -70029-11-30 11:59 J -23856335.25 -23856335.00 -23856334.74 0.0282 0.0106  
 Moon -70028-06-30 07:25 J -23856123.33 -23856123.19 -23856123.04 0.0279 0.0223  
 Earth -70028-06-30 08:23 J -23856123.30 -23856123.15 -23856122.98 0.0279 0.0209 \*  
 Venus -70021-07-10 11:30 J -23853556.23 -23853556.02 -23853555.80 0.0259 0.0022  
 Mercury -70017-04-27 01:25 J -23852169.47 -23852169.44 -23852169.39 0.0262 0.0255  
 Mercury -70017-07-24 23:01 J -23852080.71 -23852080.54 -23852080.37 0.0263 0.0121  
 Mercury -70017-10-21 20:37 J -23851991.83 -23851991.64 -23851991.45 0.0263 0.0014  
 Mercury -70016-01-18 18:13 J -23851902.89 -23851902.74 -23851902.58 0.0264 0.0151  
 Moon -70015-11-26 03:06 J -23851226.48 -23851226.37 -23851226.25 0.0270 0.0240  
 Earth -70015-11-26 06:42 J -23851226.35 -23851226.22 -23851226.08 0.0270 0.0228 \*



Moon	-70014-12-09 04:33 J	-23850848.55	-23850848.31	-23850848.08	0.0274	0.0076
Earth	-70014-12-09 05:59 J	-23850848.49	-23850848.25	-23850848.00	0.0274	0.0073 *
Earth	-70013-12-21 16:04 J	-23850470.06	-23850469.83	-23850469.59	0.0279	0.0098
Moon	-70013-12-21 18:42 J	-23850469.95	-23850469.72	-23850469.49	0.0279	0.0105 *
Mars	-70012-01-04 02:52 J	-23850456.68	-23850456.38	-23850456.08	0.0279	0.0079
Earth	-70011-01-04 13:25 J	-23850090.99	-23850090.94	-23850090.87	0.0284	0.0276
Venus	-70006-08-12 06:13 J	-23848045.44	-23848045.24	-23848045.04	0.0303	0.0097
Mercury	-70003-03-04 06:28 J	-23847110.30	-23847110.23	-23847110.16	0.0301	0.0245
Mercury	-70003-05-31 18:57 J	-23847021.83	-23847021.71	-23847021.59	0.0300	0.0111
Mercury	-70003-08-28 07:11 J	-23846933.33	-23846933.20	-23846933.07	0.0299	0.0022
Mercury	-70003-11-24 19:25 J	-23846844.80	-23846844.69	-23846844.58	0.0299	0.0154
Mercury	-70002-02-21 07:40 J	-23846756.22	-23846756.18	-23846756.14	0.0298	0.0283
Moon	-70001-05-29 19:25 J	-23846292.85	-23846292.69	-23846292.52	0.0292	0.0215
Earth	-70001-05-29 22:04 J	-23846292.73	-23846292.58	-23846292.41	0.0292	0.0220 *

# 70TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 70th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-70000-06-12 04:33 J	-23845914.54	-23845914.31	-23845914.08	0.0287	0.0021		
Earth	-70000-06-12 07:25 J	-23845914.42	-23845914.19	-23845913.95	0.0287	0.0033 *		
Earth	-69999-06-25 05:16 J	-23845536.48	-23845536.28	-23845536.07	0.0282	0.0143		
Moon	-69999-06-25 06:13 J	-23845536.42	-23845536.24	-23845536.04	0.0282	0.0159 *		
Venus	-69991-01-20 15:21 J	-23842770.07	-23842769.86	-23842769.64	0.0259	0.0030		

Mercury -69988-12-11 22:04 J -23841348.72 -23841348.58 -23841348.42 0.0262 0.0158

Mercury -69987-03-10 19:54 J -23841259.87 -23841259.67 -23841259.48 0.0263 0.0024

Mercury -69987-06-07 17:30 J -23841170.95 -23841170.77 -23841170.60 0.0263 0.0113

Mercury -69987-09-04 14:52 J -23841081.93 -23841081.88 -23841081.81 0.0264 0.0250

Earth -69985-12-02 19:54 J -23840261.89 -23840261.67 -23840261.46 0.0272 0.0143

Moon -69985-12-02 21:49 J -23840261.80 -23840261.59 -23840261.37 0.0272 0.0151 \*

Moon -69984-12-15 22:04 J -23839883.84 -23839883.58 -23839883.32 0.0277 0.0026

Earth -69984-12-16 00:42 J -23839883.72 -23839883.47 -23839883.22 0.0277 0.0021 \*

Moon -69983-12-29 12:42 J -23839505.13 -23839504.97 -23839504.80 0.0282 0.0210

Earth -69983-12-29 16:18 J -23839504.99 -23839504.82 -23839504.63 0.0282 0.0198 \*

Venus -69976-02-21 12:28 J -23837259.14 -23837258.98 -23837258.80 0.0304 0.0168

Mercury -69974-07-22 08:23 J -23836378.19 -23836378.15 -23836378.11 0.0301 0.0286

Mercury -69974-10-18 20:52 J -23836289.74 -23836289.63 -23836289.52 0.0300 0.0152

Mercury -69973-01-15 09:06 J -23836201.25 -23836201.12 -23836200.99 0.0300 0.0020

Mercury -69973-04-12 21:21 J -23836112.72 -23836112.61 -23836112.49 0.0299 0.0114

Mercury -69973-07-10 09:35 J -23836024.17 -23836024.10 -23836024.03 0.0298 0.0244

Earth -69971-06-06 18:28 J -23835327.94 -23835327.73 -23835327.50 0.0289 0.0119

Moon -69971-06-06 22:04 J -23835327.81 -23835327.58 -23835327.36 0.0289 0.0110 \*

Mars -69970-03-09 18:28 J -23835051.99 -23835051.73 -23835051.47 0.0286 0.0089

Moon -69970-06-19 20:52 J -23834949.87 -23834949.63 -23834949.39 0.0284 0.0078

Earth -69970-06-19 21:49 J -23834949.83 -23834949.59 -23834949.36 0.0284 0.0063 \*

Moon -69969-07-01 10:04 J -23834572.20 -23834572.08 -23834571.96 0.0279 0.0242

Earth -69969-07-01 13:54 J -23834572.06 -23834571.92 -23834571.79 0.0279 0.0229 \*

Venus -69962-08-02 17:16 J -23831983.98 -23831983.78 -23831983.57 0.0259 0.0072

Mercury -69958-04-30 19:54 J -23830616.78 -23830616.67 -23830616.54 0.0262 0.0203

Mercury -69958-07-28 17:30 J -23830527.95 -23830527.77 -23830527.58 0.0263 0.0069

Mercury -69958-10-25 15:06 J -23830439.05 -23830438.87 -23830438.68 0.0263 0.0067

Mercury -69957-01-22 12:42 J -23830350.09 -23830349.97 -23830349.84 0.0264 0.0203

Moon -69956-11-27 05:16 J -23829675.42 -23829675.28 -23829675.15 0.0270 0.0223

Earth -69956-11-27 06:57 J -23829675.35 -23829675.21 -23829675.05 0.0270 0.0213 \*

Earth -69955-12-10 06:28 J -23829297.47 -23829297.23 -23829296.98 0.0274 0.0056  
 Moon -69955-12-10 09:06 J -23829297.36 -23829297.12 -23829296.88 0.0274 0.0056 \*  
 Mars -69954-04-08 17:01 J -23829178.06 -23829177.79 -23829177.52 0.0276 0.0147  
 Earth -69954-12-23 16:47 J -23828919.02 -23828918.80 -23828918.56 0.0279 0.0115  
 Moon -69954-12-23 20:23 J -23828918.88 -23828918.65 -23828918.42 0.0279 0.0125 \*  
 Venus -69947-09-03 15:35 J -23826472.98 -23826472.85 -23826472.70 0.0303 0.0226  
 Mercury -69944-03-06 22:04 J -23825557.67 -23825557.58 -23825557.48 0.0301 0.0198  
 Mercury -69944-06-03 10:33 J -23825469.19 -23825469.06 -23825468.93 0.0300 0.0063  
 Mercury -69944-08-30 22:47 J -23825380.67 -23825380.55 -23825380.42 0.0299 0.0070  
 Mercury -69944-11-27 11:01 J -23825292.13 -23825292.04 -23825291.94 0.0298 0.0201  
 Moon -69942-05-31 22:18 J -23824741.74 -23824741.57 -23824741.39 0.0292 0.0194  
 Earth -69942-06-01 01:11 J -23824741.61 -23824741.45 -23824741.27 0.0292 0.0202 \*  
 Earth -69941-06-13 10:18 J -23824363.30 -23824363.07 -23824362.83 0.0287 0.0015  
 Moon -69941-06-13 11:01 J -23824363.27 -23824363.04 -23824362.81 0.0287 0.0003 \*  
 Mars -69940-04-26 04:18 J -23824046.57 -23824046.32 -23824046.07 0.0283 0.0118  
 Earth -69940-06-26 07:40 J -23823985.37 -23823985.18 -23823984.98 0.0282 0.0161  
 Moon -69940-06-26 11:16 J -23823985.21 -23823985.03 -23823984.84 0.0282 0.0176 \*  
 Venus -69933-06-27 22:47 J -23821426.65 -23821426.55 -23821426.45 0.0259 0.0226  
 Venus -69932-02-11 19:54 J -23821197.85 -23821197.67 -23821197.47 0.0258 0.0120  
 Mercury -69929-09-16 18:57 J -23819884.78 -23819884.71 -23819884.64 0.0261 0.0241  
 Mercury -69929-12-14 16:18 J -23819795.99 -23819795.82 -23819795.64 0.0262 0.0109  
 Mercury -69928-03-13 13:54 J -23819707.11 -23819706.92 -23819706.73 0.0262 0.0026  
 Mercury -69928-06-10 11:30 J -23819618.17 -23819618.02 -23819617.87 0.0263 0.0162  
 Moon -69926-12-04 15:21 J -23818711.07 -23818710.86 -23818710.62 0.0272 0.0133  
 Earth -69926-12-04 18:13 J -23818710.95 -23818710.74 -23818710.51 0.0272 0.0129 \*  
 Moon -69925-12-16 20:09 J -23818332.90 -23818332.66 -23818332.42 0.0277 0.0043  
 Earth -69925-12-16 23:16 J -23818332.78 -23818332.53 -23818332.28 0.0277 0.0037 \*  
 Mars -69924-05-30 02:09 J -23818168.70 -23818168.41 -23818168.10 0.0279 0.0089  
 Earth -69924-12-30 15:06 J -23817954.02 -23817953.87 -23817953.70 0.0282 0.0214  
 Moon -69924-12-30 15:35 J -23817953.98 -23817953.85 -23817953.70 0.0282 0.0228 \*

Venus -69918-07-29 16:04 J -23815916.92 -23815916.83 -23815916.72 0.0303 0.0263  
 Venus -69917-03-15 20:23 J -23815686.71 -23815686.65 -23815686.59 0.0304 0.0288  
 Mercury -69915-07-24 23:30 J -23814825.59 -23814825.52 -23814825.44 0.0301 0.0243  
 Mercury -69915-10-21 11:59 J -23814737.12 -23814737.00 -23814736.88 0.0300 0.0108  
 Mercury -69914-01-18 00:28 J -23814648.61 -23814648.48 -23814648.35 0.0300 0.0026  
 Mercury -69914-04-16 12:42 J -23814560.08 -23814559.97 -23814559.86 0.0299 0.0157  
 Mercury -69914-07-14 00:57 J -23814471.49 -23814471.46 -23814471.43 0.0298 0.0287  
 Earth -69913-05-25 05:01 J -23814155.33 -23814155.29 -23814155.26 0.0294 0.0291  
 Moon -69913-05-25 07:25 J -23814155.24 -23814155.19 -23814155.12 0.0294 0.0283  
 Moon -69912-06-07 18:28 J -23813776.96 -23813776.73 -23813776.49 0.0289 0.0088  
 Earth -69912-06-07 19:25 J -23813776.91 -23813776.69 -23813776.47 0.0289 0.0101 \*  
 Moon -69911-06-20 18:42 J -23813398.94 -23813398.72 -23813398.49 0.0284 0.0097  
 Earth -69911-06-20 22:04 J -23813398.80 -23813398.58 -23813398.34 0.0284 0.0082 \*  
 Moon -69910-07-03 13:11 J -23813021.03 -23813020.95 -23813020.85 0.0279 0.0256  
 Earth -69910-07-03 13:54 J -23813021.02 -23813020.92 -23813020.80 0.0279 0.0245 \*  
 Venus -69903-01-07 23:45 J -23810640.65 -23810640.51 -23810640.36 0.0259 0.0186  
 Venus -69903-08-24 20:52 J -23810411.79 -23810411.63 -23810411.45 0.0258 0.0160  
 Mercury -69899-05-03 13:40 J -23809064.08 -23809063.93 -23809063.78 0.0262 0.0157  
 Mercury -69899-07-31 11:01 J -23808975.23 -23808975.04 -23808974.84 0.0262 0.0023  
 Mercury -69899-10-28 08:37 J -23808886.31 -23808886.14 -23808885.97 0.0263 0.0112  
 Mercury -69898-01-25 05:59 J -23808797.30 -23808797.25 -23808797.18 0.0264 0.0249  
 Earth -69897-11-28 03:35 J -23808124.52 -23808124.35 -23808124.18 0.0270 0.0199  
 Moon -69897-11-28 06:28 J -23808124.38 -23808124.23 -23808124.07 0.0270 0.0206 \*  
 Earth -69896-12-11 03:06 J -23807746.62 -23807746.37 -23807746.12 0.0274 0.0042  
 Moon -69896-12-11 06:28 J -23807746.49 -23807746.23 -23807745.98 0.0274 0.0040 \*  
 Moon -69895-12-24 12:13 J -23807368.20 -23807367.99 -23807367.75 0.0279 0.0143  
 Earth -69895-12-24 13:25 J -23807368.16 -23807367.94 -23807367.72 0.0279 0.0130 \*  
 Venus -69888-02-07 17:59 J -23805130.90 -23805130.75 -23805130.60 0.0303 0.0210  
 Mercury -69886-12-12 00:28 J -23804093.51 -23804093.48 -23804093.45 0.0301 0.0293  
 Mercury -69885-03-09 12:57 J -23804005.07 -23804004.96 -23804004.85 0.0301 0.0158

Mercury -69885-06-06 01:25 J -23803916.57 -23803916.44 -23803916.31 0.0300 0.0024

Mercury -69885-09-02 13:40 J -23803828.05 -23803827.93 -23803827.81 0.0299 0.0109

Mercury -69885-11-30 01:54 J -23803739.49 -23803739.42 -23803739.34 0.0298 0.0240

Earth -69883-06-01 23:59 J -23803190.68 -23803190.50 -23803190.31 0.0292 0.0187

Moon -69883-06-02 01:25 J -23803190.62 -23803190.44 -23803190.25 0.0292 0.0175 \*

Earth -69882-06-15 09:06 J -23802812.36 -23802812.12 -23802811.88 0.0287 0.0002

Moon -69882-06-15 12:42 J -23802812.21 -23802811.97 -23802811.73 0.0287 0.0018 \*

Mars -69882-08-02 21:21 J -23802763.87 -23802763.61 -23802763.35 0.0287 0.0085

Earth -69881-06-27 06:28 J -23802434.41 -23802434.23 -23802434.04 0.0282 0.0177

Moon -69881-06-27 07:11 J -23802434.38 -23802434.20 -23802434.01 0.0282 0.0189 \*

Venus -69874-07-21 01:54 J -23799854.60 -23799854.42 -23799854.24 0.0259 0.0142

Venus -69873-03-05 23:16 J -23799625.66 -23799625.53 -23799625.40 0.0258 0.0203

Mercury -69870-09-20 11:59 J -23798332.12 -23798332.00 -23798331.87 0.0261 0.0198

Mercury -69870-12-18 09:21 J -23798243.29 -23798243.11 -23798242.92 0.0262 0.0066

Mercury -69869-03-16 06:57 J -23798154.39 -23798154.21 -23798154.02 0.0262 0.0069

Mercury -69869-06-13 04:18 J -23798065.43 -23798065.32 -23798065.19 0.0263 0.0205

Earth -69868-11-22 19:40 J -23797537.70 -23797537.68 -23797537.66 0.0268 0.0266

Moon -69867-12-05 10:33 J -23797160.28 -23797160.06 -23797159.84 0.0272 0.0116

Earth -69867-12-05 13:40 J -23797160.15 -23797159.93 -23797159.70 0.0272 0.0116 \*

Mars -69866-09-01 05:59 J -23796890.52 -23796890.25 -23796889.98 0.0275 0.0141

Earth -69866-12-18 18:28 J -23796781.98 -23796781.73 -23796781.48 0.0277 0.0050

Moon -69866-12-18 19:25 J -23796781.93 -23796781.69 -23796781.46 0.0277 0.0060 \*

Earth -69865-12-31 10:18 J -23796403.20 -23796403.07 -23796402.91 0.0282 0.0228

Moon -69865-12-31 14:09 J -23796403.02 -23796402.91 -23796402.78 0.0282 0.0243 \*

Venus -69859-08-20 21:49 J -23794344.77 -23794344.59 -23794344.41 0.0304 0.0152

Mercury -69856-07-27 14:09 J -23793273.00 -23793272.91 -23793272.81 0.0301 0.0206

Mercury -69856-10-24 02:37 J -23793184.52 -23793184.39 -23793184.26 0.0301 0.0071

Mercury -69855-01-20 14:52 J -23793096.00 -23793095.88 -23793095.75 0.0300 0.0063

Mercury -69855-04-19 03:21 J -23793007.46 -23793007.36 -23793007.27 0.0299 0.0194

Moon -69854-05-26 23:30 J -23792604.62 -23792604.52 -23792604.41 0.0294 0.0265

Earth -69854-05-27 01:40 J -23792604.50 -23792604.43 -23792604.34 0.0294 0.0277 \*  
 Moon -69853-06-08 12:42 J -23792226.20 -23792225.97 -23792225.74 0.0289 0.0070  
 Earth -69853-06-08 16:33 J -23792226.04 -23792225.81 -23792225.58 0.0289 0.0086 \*  
 Moon -69852-06-21 17:59 J -23791847.95 -23791847.75 -23791847.53 0.0284 0.0112  
 Earth -69852-06-21 19:11 J -23791847.92 -23791847.70 -23791847.47 0.0284 0.0096 \*  
 Mars -69852-09-19 03:06 J -23791758.60 -23791758.37 -23791758.11 0.0283 0.0128  
 Earth -69851-07-04 10:47 J -23791470.13 -23791470.05 -23791469.96 0.0279 0.0260  
 Moon -69851-07-04 14:09 J -23791469.97 -23791469.91 -23791469.84 0.0279 0.0266 \*  
 Venus -69844-01-30 02:23 J -23789068.59 -23789068.40 -23789068.20 0.0259 0.0104  
 Venus -69844-09-15 23:30 J -23788839.59 -23788839.52 -23788839.44 0.0258 0.0241  
 Mercury -69840-02-06 09:06 J -23787600.17 -23787600.12 -23787600.05 0.0261 0.0247  
 Mercury -69840-05-06 06:28 J -23787511.40 -23787511.23 -23787511.05 0.0262 0.0115  
 Mercury -69840-08-03 04:04 J -23787422.52 -23787422.33 -23787422.14 0.0262 0.0019  
 Mercury -69840-10-31 01:25 J -23787333.59 -23787333.44 -23787333.28 0.0263 0.0154  
 Earth -69838-11-29 22:18 J -23786573.75 -23786573.57 -23786573.39 0.0270 0.0187  
 Moon -69838-11-30 00:57 J -23786573.63 -23786573.46 -23786573.27 0.0270 0.0189 \*  
 Moon -69837-12-11 20:09 J -23786195.92 -23786195.66 -23786195.40 0.0274 0.0021  
 Earth -69837-12-11 21:35 J -23786195.85 -23786195.60 -23786195.35 0.0274 0.0029 \*  
 Mars -69836-10-22 02:09 J -23785881.71 -23785881.41 -23785881.11 0.0278 0.0085  
 Moon -69836-12-25 04:04 J -23785817.53 -23785817.33 -23785817.12 0.0279 0.0158  
 Earth -69836-12-25 07:40 J -23785817.39 -23785817.18 -23785816.96 0.0279 0.0144 \*  
 Venus -69829-03-01 22:04 J -23783558.77 -23783558.58 -23783558.38 0.0303 0.0105  
 Mercury -69827-12-14 14:37 J -23782540.95 -23782540.89 -23782540.83 0.0301 0.0261  
 Mercury -69826-03-13 03:06 J -23782452.49 -23782452.37 -23782452.25 0.0301 0.0125  
 Mercury -69826-06-09 15:35 J -23782363.98 -23782363.85 -23782363.72 0.0300 0.0009  
 Mercury -69826-09-06 03:49 J -23782275.45 -23782275.34 -23782275.22 0.0299 0.0142  
 Mercury -69826-12-03 16:04 J -23782186.88 -23782186.83 -23782186.78 0.0298 0.0273  
 Earth -69824-06-02 18:28 J -23781639.91 -23781639.73 -23781639.53 0.0292 0.0174  
 Moon -69824-06-02 22:04 J -23781639.77 -23781639.58 -23781639.37 0.0292 0.0159 \*  
 Earth -69823-06-16 03:49 J -23781261.58 -23781261.34 -23781261.10 0.0287 0.0016

Moon -69823-06-16 04:47 J -23781261.55 -23781261.30 -23781261.05 0.0287 0.0032 \*  
 Moon -69822-06-28 22:33 J -23780883.73 -23780883.56 -23780883.39 0.0282 0.0201  
 Earth -69822-06-29 01:25 J -23780883.61 -23780883.44 -23780883.26 0.0282 0.0191 \*  
 Venus -69815-08-12 03:49 J -23778282.54 -23778282.34 -23778282.13 0.0259 0.0062  
 Mercury -69811-09-23 04:47 J -23776779.45 -23776779.30 -23776779.14 0.0261 0.0158  
 Mercury -69811-12-21 02:09 J -23776690.60 -23776690.41 -23776690.22 0.0262 0.0025  
 Mercury -69810-03-19 23:30 J -23776601.69 -23776601.52 -23776601.34 0.0262 0.0109  
 Mercury -69810-06-16 20:52 J -23776512.68 -23776512.63 -23776512.55 0.0263 0.0245  
 Moon -69809-11-23 10:47 J -23775987.09 -23775987.05 -23775986.98 0.0268 0.0261  
 Earth -69809-11-23 13:25 J -23775987.00 -23775986.94 -23775986.86 0.0268 0.0256 \*  
 Earth -69808-12-06 07:11 J -23775609.42 -23775609.20 -23775608.96 0.0272 0.0105  
 Moon -69808-12-06 08:52 J -23775609.35 -23775609.13 -23775608.90 0.0272 0.0100 \*  
 Earth -69807-12-19 11:45 J -23775231.25 -23775231.01 -23775230.76 0.0276 0.0063  
 Moon -69807-12-19 15:35 J -23775231.09 -23775230.85 -23775230.61 0.0276 0.0075 \*  
 Earth -69805-01-02 03:49 J -23774852.47 -23774852.34 -23774852.21 0.0282 0.0240  
 Moon -69805-01-02 04:47 J -23774852.40 -23774852.30 -23774852.18 0.0282 0.0254 \*  
 Venus -69800-09-12 00:57 J -23772772.66 -23772772.46 -23772772.25 0.0304 0.0050  
 Mercury -69797-07-30 04:18 J -23771720.43 -23771720.32 -23771720.22 0.0301 0.0174  
 Mercury -69797-10-26 16:33 J -23771631.93 -23771631.81 -23771631.68 0.0301 0.0041  
 Mercury -69796-01-23 05:01 J -23771543.41 -23771543.29 -23771543.17 0.0300 0.0094  
 Mercury -69796-04-21 17:16 J -23771454.86 -23771454.78 -23771454.69 0.0299 0.0226  
 Moon -69795-05-27 16:18 J -23771053.93 -23771053.82 -23771053.68 0.0295 0.0252  
 Earth -69795-05-27 19:40 J -23771053.77 -23771053.68 -23771053.57 0.0295 0.0266 \*  
 Moon -69794-06-10 10:18 J -23770675.29 -23770675.07 -23770674.84 0.0290 0.0057  
 Earth -69794-06-10 10:33 J -23770675.29 -23770675.06 -23770674.82 0.0290 0.0073 \*  
 Mars -69794-12-26 13:25 J -23770476.19 -23770475.94 -23770475.67 0.0287 0.0080  
 Earth -69793-06-22 13:25 J -23770297.15 -23770296.94 -23770296.71 0.0284 0.0111  
 Moon -69793-06-22 16:47 J -23770297.01 -23770296.80 -23770296.59 0.0284 0.0125 \*  
 Earth -69792-07-05 05:16 J -23769919.31 -23769919.28 -23769919.22 0.0279 0.0274  
 Moon -69792-07-05 07:25 J -23769919.20 -23769919.19 -23769919.15 0.0279 0.0277

Venus -69785-02-22 04:18 J -23767496.53 -23767496.32 -23767496.10 0.0258 0.0024  
 Mercury -69781-02-10 01:54 J -23766047.53 -23766047.42 -23766047.30 0.0261 0.0207  
 Mercury -69781-05-08 23:16 J -23765958.71 -23765958.53 -23765958.35 0.0262 0.0075  
 Mercury -69781-08-05 20:37 J -23765869.83 -23765869.64 -23765869.45 0.0262 0.0059  
 Mercury -69781-11-02 17:59 J -23765780.87 -23765780.75 -23765780.61 0.0263 0.0194  
 Moon -69779-11-30 13:25 J -23765023.13 -23765022.94 -23765022.73 0.0270 0.0172  
 Earth -69779-11-30 15:49 J -23765023.02 -23765022.84 -23765022.64 0.0270 0.0177 \*  
 Moon -69778-12-13 11:01 J -23764645.29 -23764645.04 -23764644.79 0.0274 0.0005  
 Earth -69778-12-13 14:52 J -23764645.13 -23764644.88 -23764644.63 0.0274 0.0016 \*  
 Mars -69777-01-24 01:40 J -23764603.70 -23764603.43 -23764603.16 0.0275 0.0147  
 Moon -69777-12-25 23:59 J -23764266.69 -23764266.50 -23764266.31 0.0279 0.0171  
 Earth -69777-12-26 00:42 J -23764266.67 -23764266.47 -23764266.26 0.0279 0.0157 \*  
 Venus -69770-03-25 01:25 J -23761986.65 -23761986.44 -23761986.23 0.0303 0.0005  
 Mercury -69768-12-17 04:33 J -23760988.39 -23760988.31 -23760988.23 0.0301 0.0231  
 Mercury -69767-03-15 17:01 J -23760899.91 -23760899.79 -23760899.66 0.0301 0.0095  
 Mercury -69767-06-12 05:30 J -23760811.40 -23760811.27 -23760811.14 0.0300 0.0039  
 Mercury -69767-09-08 17:45 J -23760722.86 -23760722.76 -23760722.65 0.0299 0.0172  
 Moon -69765-06-03 11:30 J -23760089.23 -23760089.02 -23760088.81 0.0292 0.0146  
 Earth -69765-06-03 11:59 J -23760089.20 -23760089.00 -23760088.80 0.0292 0.0163 \*  
 Moon -69764-06-16 17:45 J -23759710.99 -23759710.76 -23759710.52 0.0287 0.0044  
 Earth -69764-06-16 21:21 J -23759710.84 -23759710.61 -23759710.37 0.0287 0.0028 \*  
 Mars -69763-02-11 15:35 J -23759471.09 -23759470.85 -23759470.60 0.0284 0.0126  
 Moon -69763-06-29 16:47 J -23759332.94 -23759332.80 -23759332.64 0.0282 0.0212  
 Earth -69763-06-29 19:11 J -23759332.86 -23759332.70 -23759332.53 0.0282 0.0203 \*  
 Venus -69756-09-03 05:30 J -23756710.48 -23756710.27 -23756710.05 0.0259 0.0018  
 Mercury -69752-06-29 00:13 J -23755315.54 -23755315.49 -23755315.43 0.0261 0.0249  
 Mercury -69752-09-25 21:21 J -23755226.77 -23755226.61 -23755226.43 0.0261 0.0119  
 Mercury -69752-12-23 18:57 J -23755137.90 -23755137.71 -23755137.52 0.0262 0.0015  
 Mercury -69751-03-22 16:18 J -23755048.97 -23755048.82 -23755048.66 0.0262 0.0150  
 Earth -69750-11-25 07:40 J -23754436.27 -23754436.18 -23754436.07 0.0267 0.0246



Moon -69750-11-25 09:49 J -23754436.17 -23754436.09 -23754435.98 0.0267 0.0246 \*  
 Earth -69749-12-07 01:25 J -23754058.67 -23754058.44 -23754058.20 0.0272 0.0093  
 Moon -69749-12-07 05:16 J -23754058.52 -23754058.28 -23754058.04 0.0272 0.0083 \*  
 Earth -69748-12-20 05:45 J -23753680.50 -23753680.26 -23753680.02 0.0276 0.0075  
 Moon -69748-12-20 06:28 J -23753680.48 -23753680.23 -23753679.99 0.0276 0.0089 \*  
 Mars -69747-03-16 06:28 J -23753594.51 -23753594.23 -23753593.92 0.0277 0.0090  
 Moon -69746-01-02 17:59 J -23753301.82 -23753301.75 -23753301.66 0.0281 0.0266  
 Earth -69746-01-02 21:06 J -23753301.71 -23753301.62 -23753301.50 0.0281 0.0253 \*  
 Venus -69741-10-04 04:04 J -23751200.53 -23751200.33 -23751200.12 0.0304 0.0051  
 Mercury -69738-05-06 05:30 J -23750256.31 -23750256.27 -23750256.22 0.0302 0.0281  
 Mercury -69738-08-02 17:59 J -23750167.86 -23750167.75 -23750167.63 0.0301 0.0145  
 Mercury -69738-10-30 06:28 J -23750079.36 -23750079.23 -23750079.10 0.0301 0.0013  
 Mercury -69737-01-26 18:57 J -23749990.83 -23749990.71 -23749990.59 0.0300 0.0124  
 Mercury -69737-04-24 07:11 J -23749902.26 -23749902.20 -23749902.13 0.0299 0.0255  
 Earth -69736-05-28 12:13 J -23749503.10 -23749502.99 -23749502.86 0.0295 0.0255  
 Moon -69736-05-28 13:11 J -23749503.08 -23749502.95 -23749502.81 0.0295 0.0241 \*  
 Earth -69735-06-11 03:35 J -23749124.59 -23749124.35 -23749124.12 0.0290 0.0061  
 Moon -69735-06-11 07:11 J -23749124.43 -23749124.20 -23749123.96 0.0290 0.0044 \*  
 Earth -69734-06-24 06:57 J -23748746.43 -23748746.21 -23748746.00 0.0284 0.0123  
 Moon -69734-06-24 09:06 J -23748746.33 -23748746.12 -23748745.90 0.0284 0.0134 \*  
 Venus -69726-03-16 05:59 J -23745924.45 -23745924.25 -23745924.03 0.0258 0.0056  
 Mercury -69722-02-12 18:42 J -23744494.86 -23744494.72 -23744494.57 0.0261 0.0166  
 Mercury -69722-05-12 16:04 J -23744406.02 -23744405.83 -23744405.64 0.0262 0.0034  
 Mercury -69722-08-09 13:25 J -23744317.11 -23744316.94 -23744316.76 0.0262 0.0100  
 Mercury -69722-11-06 10:47 J -23744228.12 -23744228.05 -23744227.96 0.0263 0.0235  
 Moon -69720-12-01 07:25 J -23743472.39 -23743472.19 -23743471.98 0.0270 0.0157  
 Earth -69720-12-01 10:47 J -23743472.24 -23743472.05 -23743471.85 0.0270 0.0165 \*  
 Earth -69719-12-14 09:21 J -23743094.37 -23743094.11 -23743093.86 0.0274 0.0005  
 Moon -69719-12-14 09:21 J -23743094.35 -23743094.11 -23743093.86 0.0274 0.0011 \*  
 Earth -69718-12-27 18:42 J -23742715.91 -23742715.72 -23742715.51 0.0279 0.0170

Moon -69718-12-27 22:04 J -23742715.76 -23742715.58 -23742715.39 0.0279 0.0186 \*  
 Venus -69711-04-16 04:33 J -23740414.51 -23740414.31 -23740414.11 0.0303 0.0096  
 Mercury -69709-12-19 18:28 J -23739435.82 -23739435.73 -23739435.63 0.0301 0.0201  
 Mercury -69708-03-18 06:57 J -23739347.33 -23739347.21 -23739347.08 0.0301 0.0066  
 Mercury -69708-06-14 19:25 J -23739258.82 -23739258.69 -23739258.57 0.0300 0.0069  
 Mercury -69708-09-11 07:40 J -23739170.27 -23739170.18 -23739170.08 0.0299 0.0201  
 Moon -69706-06-05 01:11 J -23738538.66 -23738538.45 -23738538.23 0.0292 0.0136  
 Earth -69706-06-05 04:47 J -23738538.50 -23738538.30 -23738538.09 0.0292 0.0152 \*  
 Mars -69705-05-19 22:33 J -23738188.81 -23738188.56 -23738188.29 0.0288 0.0083  
 Moon -69705-06-17 12:42 J -23738160.19 -23738159.97 -23738159.73 0.0287 0.0052  
 Earth -69705-06-17 14:37 J -23738160.13 -23738159.89 -23738159.66 0.0287 0.0039 \*  
 Earth -69704-06-30 12:28 J -23737782.13 -23737781.98 -23737781.82 0.0282 0.0215  
 Moon -69704-06-30 14:52 J -23737782.03 -23737781.88 -23737781.74 0.0282 0.0220 \*  
 Venus -69697-02-09 10:33 J -23735367.11 -23735367.06 -23735367.00 0.0259 0.0248  
 Venus -69697-09-25 07:40 J -23735138.38 -23735138.18 -23735137.98 0.0259 0.0097  
 Mercury -69693-07-01 17:16 J -23733762.89 -23733762.78 -23733762.66 0.0261 0.0208  
 Mercury -69693-09-28 14:37 J -23733674.07 -23733673.89 -23733673.70 0.0261 0.0076  
 Mercury -69693-12-26 11:59 J -23733585.19 -23733585.00 -23733584.81 0.0262 0.0057  
 Mercury -69692-03-25 09:21 J -23733496.24 -23733496.11 -23733495.98 0.0262 0.0192  
 Earth -69691-11-26 03:21 J -23732885.47 -23732885.36 -23732885.23 0.0267 0.0235  
 Moon -69691-11-26 06:57 J -23732885.33 -23732885.21 -23732885.08 0.0267 0.0232 \*  
 Moon -69690-12-08 20:23 J -23732507.90 -23732507.65 -23732507.40 0.0271 0.0068  
 Earth -69690-12-08 21:06 J -23732507.86 -23732507.62 -23732507.38 0.0271 0.0082 \*  
 Mars -69689-06-17 11:59 J -23732316.27 -23732316.00 -23732315.71 0.0274 0.0136  
 Moon -69689-12-20 21:21 J -23732129.84 -23732129.61 -23732129.37 0.0276 0.0103  
 Earth -69689-12-21 01:11 J -23732129.69 -23732129.45 -23732129.21 0.0276 0.0087 \*  
 Moon -69687-01-03 13:54 J -23731750.95 -23731750.92 -23731750.89 0.0281 0.0279  
 Earth -69687-01-03 16:33 J -23731750.89 -23731750.81 -23731750.73 0.0281 0.0264 \*  
 Venus -69682-10-27 07:54 J -23729628.34 -23729628.17 -23729627.99 0.0304 0.0155  
 Mercury -69679-05-08 19:40 J -23728703.75 -23728703.68 -23728703.61 0.0302 0.0249

Mercury -69679-08-05 08:09 J -23728615.28 -23728615.16 -23728615.04 0.0302 0.0113

Mercury -69679-11-01 20:37 J -23728526.77 -23728526.64 -23728526.51 0.0301 0.0022

Mercury -69678-01-29 08:52 J -23728438.23 -23728438.13 -23728438.01 0.0300 0.0156

Mercury -69678-04-27 21:06 J -23728349.64 -23728349.62 -23728349.58 0.0299 0.0288

Earth -69677-05-29 06:13 J -23727952.36 -23727952.24 -23727952.10 0.0295 0.0244

Moon -69677-05-29 09:49 J -23727952.23 -23727952.09 -23727951.93 0.0295 0.0228 \*

Earth -69676-06-11 21:35 J -23727573.83 -23727573.60 -23727573.36 0.0290 0.0049

Moon -69676-06-11 23:01 J -23727573.79 -23727573.54 -23727573.30 0.0290 0.0035 \*

Moon -69675-06-24 22:18 J -23727195.77 -23727195.57 -23727195.35 0.0285 0.0141

Earth -69675-06-25 01:11 J -23727195.66 -23727195.45 -23727195.24 0.0285 0.0135 \*

Mars -69675-07-07 06:42 J -23727183.46 -23727183.22 -23727182.98 0.0284 0.0132

Venus -69668-08-21 11:45 J -23724581.14 -23724581.01 -23724580.88 0.0259 0.0207

Venus -69667-04-07 08:37 J -23724352.31 -23724352.14 -23724351.95 0.0258 0.0138

Mercury -69664-11-18 15:06 J -23723030.91 -23723030.87 -23723030.82 0.0261 0.0252

Mercury -69663-02-15 12:28 J -23722942.15 -23722941.98 -23722941.81 0.0261 0.0121

Mercury -69663-05-15 09:49 J -23722853.29 -23722853.09 -23722852.90 0.0262 0.0012

Mercury -69663-08-12 06:57 J -23722764.36 -23722764.21 -23722764.04 0.0262 0.0146

Earth -69661-12-02 08:23 J -23721921.35 -23721921.15 -23721920.94 0.0270 0.0153

Moon -69661-12-02 09:06 J -23721921.32 -23721921.12 -23721920.91 0.0270 0.0144 \*

Earth -69660-12-15 06:57 J -23721543.46 -23721543.21 -23721542.96 0.0274 0.0010

Moon -69660-12-15 10:47 J -23721543.30 -23721543.05 -23721542.80 0.0274 0.0026 \*

Mars -69659-08-08 12:13 J -23721307.28 -23721306.99 -23721306.68 0.0277 0.0090

Earth -69659-12-28 16:18 J -23721165.00 -23721164.82 -23721164.62 0.0279 0.0184

Moon -69659-12-28 18:42 J -23721164.89 -23721164.72 -23721164.53 0.0279 0.0198 \*

Venus -69652-05-08 09:35 J -23718842.25 -23718842.10 -23718841.94 0.0304 0.0206

Mercury -69650-12-23 08:52 J -23717883.24 -23717883.13 -23717883.03 0.0301 0.0167

Mercury -69649-03-20 21:21 J -23717794.74 -23717794.61 -23717794.49 0.0301 0.0033

Mercury -69649-06-17 09:35 J -23717706.22 -23717706.10 -23717705.98 0.0300 0.0102

Mercury -69649-09-13 21:49 J -23717617.66 -23717617.59 -23717617.50 0.0299 0.0235

Moon -69647-06-05 22:33 J -23716987.76 -23716987.56 -23716987.35 0.0292 0.0128

Earth -69647-06-05 23:16 J -23716987.73 -23716987.53 -23716987.31 0.0292 0.0142 \*  
 Earth -69646-06-19 09:06 J -23716609.35 -23716609.12 -23716608.88 0.0287 0.0051  
 Moon -69646-06-19 12:13 J -23716609.22 -23716608.99 -23716608.76 0.0287 0.0059 \*  
 Earth -69645-07-01 07:11 J -23716231.34 -23716231.20 -23716231.05 0.0282 0.0227  
 Moon -69645-07-01 10:18 J -23716231.20 -23716231.07 -23716230.91 0.0282 0.0228 \*  
 Venus -69638-03-03 13:25 J -23713795.10 -23713794.94 -23713794.77 0.0259 0.0165  
 Venus -69638-10-18 10:33 J -23713566.20 -23713566.06 -23713565.89 0.0259 0.0181  
 Mercury -69634-07-05 11:16 J -23712210.18 -23712210.03 -23712209.88 0.0261 0.0161  
 Mercury -69634-10-02 08:37 J -23712121.33 -23712121.14 -23712120.95 0.0261 0.0029  
 Mercury -69634-12-30 05:45 J -23712032.43 -23712032.26 -23712032.08 0.0262 0.0105  
 Mercury -69633-03-28 03:06 J -23711943.43 -23711943.37 -23711943.28 0.0262 0.0240  
 Moon -69632-11-27 01:54 J -23711334.56 -23711334.42 -23711334.26 0.0267 0.0217  
 Earth -69632-11-27 02:09 J -23711334.53 -23711334.41 -23711334.26 0.0267 0.0224 \*  
 Moon -69631-12-09 16:04 J -23710957.07 -23710956.83 -23710956.58 0.0271 0.0053  
 Earth -69631-12-09 19:54 J -23710956.91 -23710956.67 -23710956.43 0.0271 0.0068 \*  
 Moon -69630-12-22 22:04 J -23710578.79 -23710578.58 -23710578.35 0.0276 0.0117  
 Earth -69630-12-22 23:45 J -23710578.73 -23710578.51 -23710578.27 0.0276 0.0101 \*  
 Earth -69628-01-04 15:06 J -23710199.90 -23710199.87 -23710199.83 0.0281 0.0278  
 Venus -69623-04-02 09:21 J -23708286.18 -23708286.11 -23708286.03 0.0303 0.0283  
 Venus -69623-11-18 13:40 J -23708056.02 -23708055.93 -23708055.83 0.0304 0.0267  
 Mercury -69620-05-11 10:04 J -23707151.17 -23707151.08 -23707150.99 0.0302 0.0213  
 Mercury -69620-08-07 22:33 J -23707062.68 -23707062.56 -23707062.43 0.0301 0.0078  
 Mercury -69620-11-04 11:01 J -23706974.16 -23706974.04 -23706973.91 0.0301 0.0058  
 Mercury -69619-01-31 23:30 J -23706885.62 -23706885.52 -23706885.42 0.0300 0.0191  
 Earth -69618-05-31 02:23 J -23706401.54 -23706401.40 -23706401.25 0.0295 0.0232  
 Moon -69618-05-31 03:06 J -23706401.53 -23706401.37 -23706401.19 0.0295 0.0217 \*  
 Moon -69617-06-12 14:37 J -23706023.14 -23706022.89 -23706022.65 0.0290 0.0027  
 Earth -69617-06-12 17:45 J -23706023.00 -23706022.76 -23706022.53 0.0290 0.0036 \*  
 Mars -69617-10-12 17:30 J -23705901.03 -23705900.77 -23705900.51 0.0288 0.0075  
 Moon -69616-06-25 18:13 J -23705644.94 -23705644.74 -23705644.54 0.0285 0.0150

Earth -69616-06-25 21:06 J -23705644.82 -23705644.62 -23705644.41 0.0285 0.0148 \*  
 Venus -69609-09-12 15:35 J -23703009.04 -23703008.85 -23703008.66 0.0259 0.0121  
 Venus -69608-04-29 12:42 J -23702780.06 -23702779.97 -23702779.85 0.0258 0.0225  
 Mercury -69605-11-21 09:49 J -23701478.21 -23701478.09 -23701477.97 0.0261 0.0202  
 Mercury -69604-02-18 06:57 J -23701389.39 -23701389.21 -23701389.02 0.0261 0.0070  
 Mercury -69604-05-18 04:18 J -23701300.51 -23701300.32 -23701300.13 0.0262 0.0063  
 Mercury -69604-08-15 01:25 J -23701211.55 -23701211.44 -23701211.30 0.0262 0.0198  
 Earth -69602-12-04 09:06 J -23700370.32 -23700370.12 -23700369.89 0.0270 0.0140  
 Moon -69602-12-04 12:57 J -23700370.18 -23700369.96 -23700369.74 0.0270 0.0128 \*  
 Mars -69601-11-10 06:28 J -23700028.51 -23700028.23 -23700027.94 0.0274 0.0127  
 Earth -69601-12-16 07:54 J -23699992.42 -23699992.17 -23699991.91 0.0274 0.0025  
 Moon -69601-12-16 09:21 J -23699992.37 -23699992.11 -23699991.86 0.0274 0.0039 \*  
 Moon -69600-12-29 14:52 J -23699614.04 -23699613.88 -23699613.71 0.0279 0.0211  
 Earth -69600-12-29 17:30 J -23699613.94 -23699613.77 -23699613.59 0.0279 0.0199 \*  
 Venus -69594-10-13 12:42 J -23697500.10 -23697499.97 -23697499.83 0.0303 0.0225  
 Mercury -69591-09-28 11:01 J -23696419.10 -23696419.04 -23696418.97 0.0302 0.0263  
 Mercury -69591-12-25 23:45 J -23696330.63 -23696330.51 -23696330.40 0.0301 0.0128  
 Mercury -69590-03-24 12:13 J -23696242.12 -23696241.99 -23696241.86 0.0301 0.0012  
 Mercury -69590-06-21 00:28 J -23696153.59 -23696153.48 -23696153.36 0.0300 0.0141  
 Mercury -69590-09-17 12:42 J -23696065.01 -23696064.97 -23696064.91 0.0299 0.0273  
 Earth -69588-06-06 21:06 J -23695436.83 -23695436.62 -23695436.40 0.0292 0.0128  
 Moon -69588-06-07 00:13 J -23695436.71 -23695436.49 -23695436.27 0.0292 0.0115 \*  
 Earth -69587-06-20 06:42 J -23695058.45 -23695058.22 -23695057.98 0.0287 0.0065  
 Moon -69587-06-20 09:21 J -23695058.34 -23695058.11 -23695057.87 0.0287 0.0069 \*  
 Mars -69587-11-30 00:28 J -23694895.72 -23694895.48 -23694895.24 0.0285 0.0139  
 Moon -69586-07-03 03:21 J -23694680.49 -23694680.36 -23694680.22 0.0282 0.0233  
 Earth -69586-07-03 04:47 J -23694680.42 -23694680.30 -23694680.17 0.0282 0.0240 \*  
 Venus -69579-03-25 17:59 J -23692222.95 -23692222.75 -23692222.54 0.0259 0.0076  
 Mercury -69575-04-10 08:52 J -23690746.20 -23690746.13 -23690746.05 0.0260 0.0239  
 Mercury -69575-07-08 06:13 J -23690657.41 -23690657.24 -23690657.06 0.0261 0.0108

Mercury -69575-10-05 03:35 J -23690568.54 -23690568.35 -23690568.16 0.0261 0.0025

Mercury -69574-01-02 00:57 J -23690479.61 -23690479.46 -23690479.31 0.0262 0.0159

Moon -69573-11-28 01:25 J -23689783.59 -23689783.44 -23689783.27 0.0268 0.0202

Earth -69573-11-28 05:16 J -23689783.43 -23689783.28 -23689783.12 0.0268 0.0210 \*

Moon -69572-12-10 21:49 J -23689405.83 -23689405.59 -23689405.34 0.0272 0.0040

Earth -69572-12-10 23:01 J -23689405.78 -23689405.54 -23689405.29 0.0272 0.0053 \*

Earth -69571-12-24 03:21 J -23689027.58 -23689027.36 -23689027.12 0.0276 0.0117

Moon -69571-12-24 06:13 J -23689027.44 -23689027.24 -23689027.01 0.0276 0.0132 \*

Mars -69570-01-01 20:09 J -23689018.94 -23689018.66 -23689018.37 0.0276 0.0116

Venus -69564-04-24 18:57 J -23686713.88 -23686713.71 -23686713.53 0.0303 0.0155

Mercury -69561-05-14 01:25 J -23685598.54 -23685598.44 -23685598.33 0.0302 0.0169

Mercury -69561-08-10 13:54 J -23685510.04 -23685509.92 -23685509.79 0.0301 0.0034

Mercury -69561-11-07 02:23 J -23685421.52 -23685421.40 -23685421.28 0.0301 0.0101

Mercury -69560-02-03 14:37 J -23685332.96 -23685332.89 -23685332.81 0.0300 0.0234

Moon -69559-05-31 23:30 J -23684850.68 -23684850.52 -23684850.33 0.0295 0.0202

Earth -69559-06-01 02:52 J -23684850.53 -23684850.38 -23684850.21 0.0295 0.0217 \*

Mars -69558-01-19 10:47 J -23684618.11 -23684618.05 -23684617.98 0.0292 0.0282

Moon -69558-06-14 15:06 J -23684472.10 -23684471.87 -23684471.64 0.0290 0.0012

Earth -69558-06-14 17:45 J -23684472.00 -23684471.76 -23684471.52 0.0290 0.0020 \*

Earth -69557-06-26 20:37 J -23684093.83 -23684093.64 -23684093.44 0.0285 0.0164

Moon -69557-06-26 22:18 J -23684093.76 -23684093.57 -23684093.38 0.0285 0.0161 \*

Venus -69550-10-05 21:06 J -23681436.83 -23681436.62 -23681436.40 0.0259 0.0029

Mercury -69546-11-25 05:16 J -23679925.43 -23679925.28 -23679925.11 0.0261 0.0145

Mercury -69545-02-22 02:37 J -23679836.58 -23679836.39 -23679836.19 0.0261 0.0014

Mercury -69545-05-20 23:59 J -23679747.67 -23679747.50 -23679747.33 0.0262 0.0121

Mercury -69545-08-17 21:21 J -23679658.64 -23679658.61 -23679658.56 0.0263 0.0256

Earth -69543-12-05 14:52 J -23678819.10 -23678818.88 -23678818.65 0.0270 0.0124

Moon -69543-12-05 16:18 J -23678819.05 -23678818.82 -23678818.57 0.0270 0.0112 \*

Moon -69542-12-18 11:01 J -23678441.29 -23678441.04 -23678440.78 0.0274 0.0055

Earth -69542-12-18 14:23 J -23678441.15 -23678440.90 -23678440.66 0.0274 0.0042 \*

Moon -69541-12-30 20:52 J -23678062.77 -23678062.63 -23678062.49 0.0279 0.0228  
 Earth -69541-12-30 23:59 J -23678062.64 -23678062.50 -23678062.33 0.0279 0.0218 \*  
 Venus -69535-11-04 23:45 J -23675927.71 -23675927.51 -23675927.31 0.0303 0.0092  
 Mercury -69532-10-01 02:37 J -23674866.47 -23674866.39 -23674866.29 0.0301 0.0216  
 Mercury -69532-12-28 15:21 J -23674777.98 -23674777.86 -23674777.74 0.0301 0.0080  
 Mercury -69531-03-27 03:49 J -23674689.47 -23674689.34 -23674689.22 0.0300 0.0055  
 Mercury -69531-06-23 16:04 J -23674600.93 -23674600.83 -23674600.73 0.0299 0.0187  
 Moon -69530-05-26 06:13 J -23674264.26 -23674264.24 -23674264.22 0.0296 0.0295  
 Earth -69529-06-07 23:01 J -23673885.76 -23673885.54 -23673885.32 0.0292 0.0112  
 Moon -69529-06-08 01:40 J -23673885.66 -23673885.43 -23673885.20 0.0292 0.0100 \*  
 Mars -69528-03-07 19:40 J -23673612.94 -23673612.68 -23673612.41 0.0288 0.0061  
 Moon -69528-06-21 06:13 J -23673507.48 -23673507.24 -23673507.00 0.0287 0.0079  
 Earth -69528-06-21 07:54 J -23673507.40 -23673507.17 -23673506.94 0.0287 0.0080 \*  
 Moon -69527-07-04 01:40 J -23673129.53 -23673129.43 -23673129.30 0.0282 0.0244  
 Earth -69527-07-04 05:45 J -23673129.36 -23673129.26 -23673129.16 0.0282 0.0254 \*  
 Venus -69520-04-17 00:28 J -23670650.69 -23670650.48 -23670650.27 0.0260 0.0020  
 Mercury -69516-04-13 05:01 J -23669193.43 -23669193.29 -23669193.15 0.0261 0.0180  
 Mercury -69516-07-11 02:23 J -23669104.59 -23669104.40 -23669104.21 0.0261 0.0048  
 Mercury -69516-10-07 23:45 J -23669015.69 -23669015.51 -23669015.33 0.0262 0.0086  
 Mercury -69515-01-04 21:06 J -23668926.72 -23668926.62 -23668926.51 0.0262 0.0220  
 Moon -69514-11-30 10:04 J -23668232.24 -23668232.08 -23668231.89 0.0268 0.0185  
 Earth -69514-11-30 11:59 J -23668232.17 -23668232.00 -23668231.82 0.0268 0.0194 \*  
 Earth -69513-12-12 06:42 J -23667854.47 -23667854.22 -23667853.97 0.0272 0.0036  
 Moon -69513-12-12 09:21 J -23667854.35 -23667854.11 -23667853.86 0.0272 0.0021 \*  
 Mars -69512-04-06 06:42 J -23667739.51 -23667739.22 -23667738.91 0.0273 0.0091  
 Earth -69512-12-25 11:30 J -23667476.23 -23667476.02 -23667475.79 0.0277 0.0136  
 Moon -69512-12-25 14:37 J -23667476.10 -23667475.89 -23667475.66 0.0277 0.0148 \*  
 Venus -69505-05-17 07:25 J -23665141.39 -23665141.19 -23665140.98 0.0303 0.0015  
 Mercury -69502-02-18 05:01 J -23664134.36 -23664134.29 -23664134.22 0.0302 0.0252  
 Mercury -69502-05-17 17:30 J -23664045.89 -23664045.77 -23664045.65 0.0302 0.0116

Mercury -69502-08-14 05:59 J -23663957.38 -23663957.25 -23663957.12 0.0301 0.0019  
 Mercury -69502-11-10 18:28 J -23663868.84 -23663868.73 -23663868.62 0.0300 0.0152  
 Mercury -69501-02-07 06:42 J -23663780.26 -23663780.22 -23663780.18 0.0299 0.0284  
 Moon -69500-06-02 04:47 J -23663299.47 -23663299.30 -23663299.11 0.0294 0.0186  
 Earth -69500-06-02 07:25 J -23663299.36 -23663299.19 -23663299.01 0.0294 0.0200 \*  
 Earth -69499-06-15 21:35 J -23662920.84 -23662920.60 -23662920.36 0.0290 0.0003  
 Moon -69499-06-15 23:01 J -23662920.78 -23662920.54 -23662920.31 0.0290 0.0006 \*  
 Mars -69498-04-25 14:37 J -23662607.11 -23662606.89 -23662606.66 0.0285 0.0160  
 Earth -69498-06-28 23:45 J -23662542.68 -23662542.51 -23662542.32 0.0284 0.0181  
 Moon -69498-06-29 03:21 J -23662542.54 -23662542.36 -23662542.16 0.0284 0.0174 \*  
 Venus -69491-10-28 04:33 J -23659864.51 -23659864.31 -23659864.10 0.0259 0.0071  
 Mercury -69487-08-31 04:47 J -23658461.40 -23658461.30 -23658461.18 0.0261 0.0213  
 Mercury -69487-11-28 02:09 J -23658372.59 -23658372.41 -23658372.23 0.0261 0.0081  
 Mercury -69486-02-24 23:30 J -23658283.71 -23658283.52 -23658283.33 0.0262 0.0052  
 Mercury -69486-05-24 20:52 J -23658194.76 -23658194.63 -23658194.49 0.0262 0.0186  
 Earth -69485-11-24 10:18 J -23657645.12 -23657645.07 -23657645.00 0.0267 0.0258  
 Moon -69485-11-24 11:59 J -23657645.08 -23657645.00 -23657644.91 0.0267 0.0250 \*  
 Moon -69484-12-06 21:49 J -23657267.83 -23657267.59 -23657267.35 0.0270 0.0091  
 Earth -69484-12-07 00:28 J -23657267.70 -23657267.48 -23657267.24 0.0270 0.0106 \*  
 Moon -69483-12-19 21:49 J -23656889.83 -23656889.59 -23656889.35 0.0275 0.0075  
 Earth -69483-12-20 00:42 J -23656889.71 -23656889.47 -23656889.22 0.0275 0.0062 \*  
 Mars -69482-05-28 22:04 J -23656729.85 -23656729.58 -23656729.31 0.0277 0.0142  
 Earth -69481-01-02 11:45 J -23656511.14 -23656511.01 -23656510.88 0.0280 0.0238  
 Moon -69481-01-02 12:13 J -23656511.09 -23656510.99 -23656510.86 0.0280 0.0247 \*  
 Venus -69476-11-27 14:37 J -23654355.09 -23654354.89 -23654354.68 0.0303 0.0059  
 Mercury -69473-07-07 06:57 J -23653402.24 -23653402.21 -23653402.18 0.0302 0.0292  
 Mercury -69473-10-03 19:40 J -23653313.79 -23653313.68 -23653313.57 0.0301 0.0156  
 Mercury -69473-12-31 08:09 J -23653225.29 -23653225.16 -23653225.04 0.0301 0.0024  
 Mercury -69472-03-29 20:23 J -23653136.77 -23653136.65 -23653136.53 0.0300 0.0112  
 Mercury -69472-06-26 08:37 J -23653048.21 -23653048.14 -23653048.06 0.0299 0.0244



Earth -69471-05-27 11:16 J -23652713.05 -23652713.03 -23652712.98 0.0296 0.0292  
 Moon -69471-05-27 13:25 J -23652713.02 -23652712.94 -23652712.85 0.0296 0.0276 \*  
 Moon -69470-06-10 05:01 J -23652334.53 -23652334.29 -23652334.05 0.0291 0.0083  
 Earth -69470-06-10 06:28 J -23652334.45 -23652334.23 -23652334.00 0.0291 0.0093 \*  
 Mars -69470-06-15 00:42 J -23652329.59 -23652329.47 -23652329.35 0.0291 0.0259  
 Moon -69469-06-22 10:47 J -23651956.27 -23651956.05 -23651955.82 0.0287 0.0097  
 Earth -69469-06-22 14:09 J -23651956.13 -23651955.91 -23651955.68 0.0287 0.0099 \*  
 Moon -69468-07-05 10:47 J -23651578.12 -23651578.05 -23651577.95 0.0282 0.0261  
 Earth -69468-07-05 11:16 J -23651578.09 -23651578.03 -23651577.97 0.0282 0.0271 \*  
 Venus -69462-09-23 10:33 J -23649307.15 -23649307.06 -23649306.94 0.0260 0.0227  
 Venus -69461-05-09 08:23 J -23649078.33 -23649078.15 -23649077.95 0.0260 0.0123  
 Mercury -69457-01-18 04:47 J -23647729.36 -23647729.30 -23647729.23 0.0261 0.0245  
 Mercury -69457-04-16 02:09 J -23647640.58 -23647640.41 -23647640.24 0.0261 0.0114  
 Mercury -69457-07-13 23:30 J -23647551.71 -23647551.52 -23647551.33 0.0262 0.0019  
 Mercury -69457-10-10 20:52 J -23647462.78 -23647462.63 -23647462.47 0.0262 0.0154  
 Earth -69455-12-01 22:33 J -23646680.74 -23646680.56 -23646680.36 0.0268 0.0176  
 Moon -69455-12-02 01:11 J -23646680.63 -23646680.45 -23646680.24 0.0268 0.0165 \*  
 Earth -69454-12-14 18:42 J -23646302.97 -23646302.72 -23646302.47 0.0272 0.0016  
 Moon -69454-12-14 22:04 J -23646302.84 -23646302.58 -23646302.33 0.0272 0.0001 \*  
 Moon -69453-12-26 23:59 J -23645924.71 -23645924.50 -23645924.29 0.0277 0.0166  
 Earth -69453-12-27 00:42 J -23645924.67 -23645924.47 -23645924.26 0.0277 0.0157 \*  
 Venus -69446-06-09 23:45 J -23643568.69 -23643568.51 -23643568.32 0.0303 0.0143  
 Mercury -69443-02-20 22:04 J -23642581.68 -23642581.58 -23642581.48 0.0302 0.0190  
 Mercury -69443-05-20 10:33 J -23642493.18 -23642493.06 -23642492.93 0.0301 0.0055  
 Mercury -69443-08-16 23:01 J -23642404.66 -23642404.54 -23642404.42 0.0301 0.0080  
 Mercury -69443-11-13 11:16 J -23642316.12 -23642316.03 -23642315.94 0.0300 0.0213  
 Earth -69441-06-03 17:16 J -23641747.97 -23641747.78 -23641747.59 0.0294 0.0178  
 Moon -69441-06-03 19:11 J -23641747.89 -23641747.70 -23641747.51 0.0294 0.0167 \*  
 Earth -69440-06-17 06:13 J -23641369.48 -23641369.24 -23641369.00 0.0289 0.0018  
 Moon -69440-06-17 09:49 J -23641369.33 -23641369.09 -23641368.85 0.0289 0.0024 \*

Mars -69440-08-01 21:35 J -23641323.86 -23641323.60 -23641323.33 0.0288 0.0035  
 Earth -69439-06-30 07:40 J -23640991.35 -23640991.18 -23640991.01 0.0284 0.0199  
 Moon -69439-06-30 08:09 J -23640991.34 -23640991.16 -23640990.97 0.0284 0.0192 \*  
 Venus -69432-04-04 15:35 J -23638521.00 -23638520.85 -23638520.68 0.0260 0.0171  
 Venus -69432-11-19 13:40 J -23638292.08 -23638291.93 -23638291.77 0.0259 0.0177  
 Mercury -69428-09-03 02:37 J -23636908.55 -23636908.39 -23636908.23 0.0261 0.0143  
 Mercury -69428-11-30 23:59 J -23636819.70 -23636819.50 -23636819.31 0.0262 0.0012  
 Mercury -69427-02-27 21:21 J -23636730.78 -23636730.61 -23636730.44 0.0262 0.0123  
 Mercury -69427-05-27 18:28 J -23636641.75 -23636641.73 -23636641.68 0.0263 0.0259  
 Moon -69426-11-26 19:25 J -23636093.81 -23636093.69 -23636093.55 0.0267 0.0229  
 Earth -69426-11-26 22:18 J -23636093.66 -23636093.57 -23636093.45 0.0267 0.0240 \*  
 Moon -69425-12-08 10:33 J -23635716.30 -23635716.06 -23635715.82 0.0271 0.0070  
 Earth -69425-12-08 13:54 J -23635716.15 -23635715.92 -23635715.68 0.0271 0.0085 \*  
 Mars -69424-08-31 23:30 J -23635449.83 -23635449.52 -23635449.21 0.0274 0.0057  
 Earth -69424-12-21 15:21 J -23635338.10 -23635337.86 -23635337.62 0.0275 0.0084  
 Moon -69424-12-21 15:49 J -23635338.06 -23635337.84 -23635337.61 0.0275 0.0097 \*  
 Earth -69422-01-04 03:06 J -23634959.44 -23634959.37 -23634959.26 0.0280 0.0261  
 Moon -69422-01-04 07:11 J -23634959.27 -23634959.20 -23634959.13 0.0280 0.0268 \*  
 Venus -69417-12-20 08:23 J -23632782.28 -23632782.15 -23632782.00 0.0303 0.0222  
 Mercury -69414-07-11 00:28 J -23631849.56 -23631849.48 -23631849.39 0.0301 0.0225  
 Mercury -69414-10-07 12:57 J -23631761.08 -23631760.96 -23631760.83 0.0301 0.0090  
 Mercury -69413-01-04 01:25 J -23631672.57 -23631672.44 -23631672.31 0.0300 0.0045  
 Mercury -69413-04-01 13:40 J -23631584.03 -23631583.93 -23631583.82 0.0299 0.0178  
 Moon -69412-05-28 22:04 J -23631161.70 -23631161.58 -23631161.46 0.0295 0.0256  
 Earth -69412-05-29 00:28 J -23631161.57 -23631161.48 -23631161.38 0.0295 0.0269 \*  
 Moon -69411-06-11 14:23 J -23630783.12 -23630782.90 -23630782.66 0.0291 0.0063  
 Earth -69411-06-11 18:13 J -23630782.97 -23630782.74 -23630782.50 0.0291 0.0070 \*  
 Moon -69410-06-24 23:45 J -23630404.72 -23630404.51 -23630404.30 0.0286 0.0118  
 Earth -69410-06-25 00:42 J -23630404.69 -23630404.47 -23630404.26 0.0286 0.0119 \*  
 Mars -69410-09-19 15:06 J -23630318.06 -23630317.87 -23630317.66 0.0285 0.0190

Moon -69409-07-06 23:45 J -23630026.55 -23630026.51 -23630026.47 0.0281 0.0276  
 Venus -69403-10-15 20:23 J -23627734.84 -23627734.65 -23627734.46 0.0260 0.0118  
 Venus -69402-06-01 18:13 J -23627505.83 -23627505.74 -23627505.64 0.0260 0.0231  
 Mercury -69398-01-21 02:37 J -23626176.53 -23626176.39 -23626176.24 0.0261 0.0175  
 Mercury -69398-04-19 23:59 J -23626087.69 -23626087.50 -23626087.31 0.0262 0.0042  
 Mercury -69398-07-17 21:21 J -23625998.79 -23625998.61 -23625998.43 0.0262 0.0092  
 Mercury -69398-10-14 18:42 J -23625909.80 -23625909.72 -23625909.61 0.0263 0.0227  
 Earth -69396-12-03 11:45 J -23625129.20 -23625129.01 -23625128.79 0.0269 0.0156  
 Moon -69396-12-03 15:21 J -23625129.07 -23625128.86 -23625128.64 0.0269 0.0142 \*  
 Moon -69395-12-16 09:06 J -23624751.38 -23624751.12 -23624750.86 0.0273 0.0022  
 Earth -69395-12-16 09:35 J -23624751.36 -23624751.10 -23624750.85 0.0273 0.0008 \*  
 Mars -69394-10-23 22:18 J -23624439.78 -23624439.57 -23624439.33 0.0277 0.0191  
 Moon -69394-12-29 13:25 J -23624373.12 -23624372.94 -23624372.75 0.0278 0.0191  
 Earth -69394-12-29 17:01 J -23624372.98 -23624372.79 -23624372.60 0.0278 0.0181 \*  
 Venus -69388-11-14 15:06 J -23622225.99 -23622225.87 -23622225.73 0.0302 0.0233  
 Mercury -69385-11-27 03:21 J -23621117.42 -23621117.36 -23621117.29 0.0302 0.0254  
 Mercury -69384-02-23 16:04 J -23621028.95 -23621028.83 -23621028.71 0.0301 0.0118  
 Mercury -69384-05-23 04:33 J -23620940.44 -23620940.31 -23620940.18 0.0301 0.0018  
 Mercury -69384-08-19 16:47 J -23620851.91 -23620851.80 -23620851.69 0.0300 0.0150  
 Mercury -69384-11-16 05:01 J -23620763.33 -23620763.29 -23620763.25 0.0299 0.0281  
 Earth -69382-06-06 07:54 J -23620196.36 -23620196.17 -23620195.96 0.0293 0.0154  
 Moon -69382-06-06 11:45 J -23620196.22 -23620196.01 -23620195.80 0.0293 0.0143 \*  
 Mars -69382-11-09 13:54 J -23620040.07 -23620039.92 -23620039.74 0.0291 0.0229  
 Earth -69381-06-18 19:25 J -23619817.93 -23619817.69 -23619817.45 0.0288 0.0042  
 Moon -69381-06-18 20:23 J -23619817.89 -23619817.65 -23619817.40 0.0288 0.0045 \*  
 Moon -69380-07-01 16:47 J -23619439.96 -23619439.80 -23619439.64 0.0283 0.0212  
 Earth -69380-07-01 19:25 J -23619439.82 -23619439.69 -23619439.53 0.0283 0.0222 \*  
 Venus -69373-04-27 02:09 J -23616948.61 -23616948.41 -23616948.20 0.0260 0.0060  
 Mercury -69369-06-09 03:21 J -23615444.47 -23615444.36 -23615444.23 0.0261 0.0202  
 Mercury -69369-09-06 00:57 J -23615355.65 -23615355.46 -23615355.28 0.0262 0.0070

Mercury -69369-12-03 22:18 J -23615266.76 -23615266.57 -23615266.38 0.0262 0.0064  
 Mercury -69368-03-02 19:40 J -23615177.80 -23615177.68 -23615177.55 0.0263 0.0199  
 Moon -69367-11-28 09:21 J -23614542.25 -23614542.11 -23614541.94 0.0268 0.0210  
 Earth -69367-11-28 12:42 J -23614542.10 -23614541.97 -23614541.82 0.0268 0.0220 \*  
 Mars -69366-12-06 02:37 J -23614169.49 -23614169.39 -23614169.25 0.0272 0.0251  
 Earth -69366-12-11 05:45 J -23614164.50 -23614164.26 -23614164.01 0.0272 0.0063  
 Moon -69366-12-11 06:28 J -23614164.47 -23614164.23 -23614163.99 0.0272 0.0048 \*  
 Earth -69365-12-23 08:37 J -23613786.36 -23613786.14 -23613785.90 0.0276 0.0108  
 Moon -69365-12-23 12:13 J -23613786.20 -23613785.99 -23613785.76 0.0276 0.0123 \*  
 Venus -69358-05-28 01:25 J -23611439.62 -23611439.44 -23611439.25 0.0302 0.0147  
 Mercury -69355-04-16 06:13 J -23610385.28 -23610385.24 -23610385.20 0.0301 0.0285  
 Mercury -69355-07-13 18:42 J -23610296.83 -23610296.72 -23610296.60 0.0301 0.0150  
 Mercury -69355-10-10 07:11 J -23610208.33 -23610208.20 -23610208.07 0.0300 0.0017  
 Mercury -69354-01-06 19:40 J -23610119.80 -23610119.68 -23610119.56 0.0300 0.0118  
 Mercury -69354-04-05 07:54 J -23610031.24 -23610031.17 -23610031.10 0.0299 0.0249  
 Moon -69353-05-30 14:37 J -23609610.03 -23609609.89 -23609609.74 0.0295 0.0231  
 Earth -69353-05-30 17:59 J -23609609.88 -23609609.75 -23609609.61 0.0295 0.0243 \*  
 Moon -69352-06-13 09:21 J -23609231.33 -23609231.11 -23609230.88 0.0290 0.0040  
 Earth -69352-06-13 10:04 J -23609231.32 -23609231.08 -23609230.84 0.0290 0.0044 \*  
 Mars -69352-12-27 10:33 J -23609034.33 -23609034.06 -23609033.79 0.0287 0.0003  
 Earth -69351-06-26 14:37 J -23608853.09 -23608852.89 -23608852.68 0.0285 0.0143  
 Moon -69351-06-26 17:30 J -23608852.97 -23608852.77 -23608852.56 0.0285 0.0140 \*  
 Venus -69344-11-07 07:11 J -23606162.41 -23606162.20 -23606161.98 0.0260 0.0006  
 Mercury -69340-10-27 03:49 J -23604712.43 -23604712.34 -23604712.26 0.0261 0.0232  
 Mercury -69339-01-24 00:57 J -23604623.63 -23604623.46 -23604623.28 0.0262 0.0101  
 Mercury -69339-04-22 22:33 J -23604534.76 -23604534.56 -23604534.37 0.0262 0.0034  
 Mercury -69339-07-20 19:54 J -23604445.82 -23604445.67 -23604445.52 0.0263 0.0168  
 Moon -69337-12-05 02:23 J -23603577.63 -23603577.40 -23603577.16 0.0270 0.0120  
 Earth -69337-12-05 03:21 J -23603577.58 -23603577.36 -23603577.14 0.0270 0.0134 \*  
 Moon -69336-12-17 22:18 J -23603199.81 -23603199.57 -23603199.32 0.0274 0.0047

Earth -69336-12-18 02:09 J -23603199.65 -23603199.41 -23603199.15 0.0274 0.0032 \*  
 Mars -69335-01-27 04:33 J -23603159.63 -23603159.31 -23603158.99 0.0274 0.0008  
 Moon -69335-12-31 09:06 J -23602821.27 -23602821.12 -23602820.97 0.0278 0.0218  
 Earth -69335-12-31 11:16 J -23602821.19 -23602821.03 -23602820.85 0.0278 0.0207 \*  
 Venus -69329-12-07 12:28 J -23600653.18 -23600652.98 -23600652.77 0.0302 0.0056  
 Mercury -69326-11-30 21:49 J -23599564.69 -23599564.59 -23599564.48 0.0301 0.0177  
 Mercury -69325-02-27 10:18 J -23599476.19 -23599476.07 -23599475.94 0.0301 0.0043  
 Mercury -69325-05-25 22:47 J -23599387.67 -23599387.55 -23599387.43 0.0300 0.0092  
 Mercury -69325-08-22 11:01 J -23599299.12 -23599299.04 -23599298.95 0.0300 0.0224  
 Earth -69323-06-08 01:40 J -23598644.64 -23598644.43 -23598644.21 0.0293 0.0126  
 Moon -69323-06-08 01:54 J -23598644.64 -23598644.42 -23598644.18 0.0293 0.0118 \*  
 Moon -69322-06-21 08:09 J -23598266.39 -23598266.16 -23598265.92 0.0288 0.0068  
 Earth -69322-06-21 11:16 J -23598266.26 -23598266.03 -23598265.79 0.0288 0.0069 \*  
 Mars -69321-02-14 12:42 J -23598028.13 -23598027.97 -23598027.79 0.0285 0.0225  
 Moon -69321-07-03 06:57 J -23597888.32 -23597888.21 -23597888.07 0.0283 0.0237  
 Earth -69321-07-03 09:49 J -23597888.19 -23597888.09 -23597887.96 0.0283 0.0245 \*  
 Venus -69314-05-20 13:25 J -23595376.15 -23595375.94 -23595375.73 0.0260 0.0054  
 Jupiter -69313-03-22 15:06 J -23595069.30 -23595068.87 -23595068.43 0.0259 0.0102  
 Mercury -69310-03-16 04:33 J -23593980.32 -23593980.31 -23593980.28 0.0261 0.0259  
 Mercury -69310-06-13 01:54 J -23593891.58 -23593891.42 -23593891.25 0.0261 0.0127  
 Mercury -69310-09-09 23:16 J -23593802.72 -23593802.53 -23593802.33 0.0262 0.0007  
 Mercury -69310-12-07 20:37 J -23593713.79 -23593713.64 -23593713.47 0.0262 0.0141  
 Earth -69308-11-30 03:35 J -23592990.52 -23592990.35 -23592990.18 0.0268 0.0199  
 Moon -69308-11-30 03:49 J -23592990.51 -23592990.34 -23592990.17 0.0268 0.0189 \*  
 Earth -69307-12-12 22:04 J -23592612.82 -23592612.58 -23592612.33 0.0272 0.0039  
 Moon -69307-12-13 01:54 J -23592612.66 -23592612.42 -23592612.17 0.0272 0.0024 \*  
 Earth -69306-12-26 02:37 J -23592234.60 -23592234.39 -23592234.16 0.0277 0.0134  
 Moon -69306-12-26 05:16 J -23592234.50 -23592234.28 -23592234.06 0.0277 0.0147 \*  
 Mars -69305-03-20 05:45 J -23592149.42 -23592149.26 -23592149.08 0.0278 0.0233  
 Venus -69299-06-19 23:30 J -23589866.73 -23589866.52 -23589866.31 0.0303 0.0033

Mercury -69296-04-19 00:57 J -23588832.55 -23588832.46 -23588832.37 0.0301 0.0206  
 Mercury -69296-07-16 13:25 J -23588744.06 -23588743.94 -23588743.81 0.0301 0.0071  
 Mercury -69296-10-13 01:54 J -23588655.55 -23588655.42 -23588655.30 0.0300 0.0063  
 Mercury -69295-01-09 14:09 J -23588567.00 -23588566.91 -23588566.81 0.0299 0.0195  
 Moon -69294-06-02 13:25 J -23588058.10 -23588057.94 -23588057.76 0.0294 0.0204  
 Earth -69294-06-02 13:54 J -23588058.07 -23588057.92 -23588057.75 0.0294 0.0214 \*  
 Mars -69293-04-05 11:30 J -23587750.22 -23587750.02 -23587749.81 0.0290 0.0186  
 Earth -69293-06-15 04:18 J -23587679.56 -23587679.32 -23587679.08 0.0289 0.0017  
 Moon -69293-06-15 07:40 J -23587679.42 -23587679.18 -23587678.95 0.0289 0.0014 \*  
 Earth -69292-06-28 07:25 J -23587301.38 -23587301.19 -23587300.99 0.0284 0.0168  
 Moon -69292-06-28 10:33 J -23587301.25 -23587301.06 -23587300.86 0.0284 0.0164 \*  
 Venus -69285-04-14 20:23 J -23584818.72 -23584818.65 -23584818.56 0.0261 0.0241  
 Venus -69285-11-29 18:28 J -23584589.92 -23584589.73 -23584589.53 0.0260 0.0109  
 Mercury -69281-10-30 01:54 J -23583159.56 -23583159.42 -23583159.26 0.0262 0.0159  
 Mercury -69280-01-26 23:30 J -23583070.72 -23583070.52 -23583070.33 0.0262 0.0026  
 Mercury -69280-04-25 20:52 J -23582981.80 -23582981.63 -23582981.45 0.0263 0.0109  
 Mercury -69280-07-23 18:13 J -23582892.80 -23582892.74 -23582892.66 0.0263 0.0244  
 Moon -69279-11-25 04:04 J -23582403.40 -23582403.33 -23582403.27 0.0267 0.0257  
 Earth -69279-11-25 03:35 J -23582403.38 -23582403.35 -23582403.31 0.0267 0.0263 \*  
 Moon -69278-12-07 14:37 J -23582026.12 -23582025.89 -23582025.65 0.0270 0.0096  
 Earth -69278-12-07 18:13 J -23582025.96 -23582025.74 -23582025.50 0.0270 0.0111 \*  
 Mars -69277-05-02 05:59 J -23581879.44 -23581879.25 -23581879.02 0.0272 0.0208  
 Moon -69277-12-19 16:47 J -23581648.03 -23581647.80 -23581647.56 0.0274 0.0071  
 Earth -69277-12-19 18:42 J -23581647.96 -23581647.72 -23581647.47 0.0274 0.0056 \*  
 Earth -69275-01-02 05:30 J -23581269.40 -23581269.27 -23581269.13 0.0279 0.0232  
 Moon -69275-01-02 07:25 J -23581269.31 -23581269.19 -23581269.07 0.0279 0.0244 \*  
 Venus -69270-12-31 10:18 J -23579080.25 -23579080.07 -23579079.87 0.0303 0.0125  
 Mercury -69267-09-06 04:04 J -23578100.41 -23578100.33 -23578100.25 0.0302 0.0233  
 Mercury -69267-12-03 16:33 J -23578011.93 -23578011.81 -23578011.68 0.0301 0.0098  
 Mercury -69266-03-02 05:01 J -23577923.42 -23577923.29 -23577923.16 0.0300 0.0037

Mercury -69266-05-29 17:16 J -23577834.88 -23577834.78 -23577834.67 0.0300 0.0170

Moon -69265-05-27 02:09 J -23577471.48 -23577471.41 -23577471.33 0.0296 0.0281

Moon -69264-06-09 17:59 J -23577092.98 -23577092.75 -23577092.52 0.0292 0.0090

Earth -69264-06-09 21:06 J -23577092.85 -23577092.62 -23577092.39 0.0292 0.0096 \*

Mars -69263-05-24 13:25 J -23576744.21 -23576743.94 -23576743.67 0.0287 0.0039

Moon -69263-06-23 02:09 J -23576714.63 -23576714.41 -23576714.19 0.0287 0.0094

Earth -69263-06-23 05:01 J -23576714.51 -23576714.29 -23576714.06 0.0287 0.0096 \*

Earth -69262-07-06 01:54 J -23576336.48 -23576336.42 -23576336.34 0.0282 0.0269

Moon -69262-07-06 02:37 J -23576336.46 -23576336.39 -23576336.29 0.0282 0.0260 \*

Venus -69256-10-26 02:37 J -23574032.53 -23574032.39 -23574032.22 0.0260 0.0181

Venus -69255-06-12 00:57 J -23573803.62 -23573803.46 -23573803.30 0.0259 0.0168

Mercury -69251-03-19 02:52 J -23572427.51 -23572427.38 -23572427.24 0.0261 0.0185

Mercury -69251-06-16 00:13 J -23572338.68 -23572338.49 -23572338.30 0.0262 0.0053

Mercury -69251-09-12 21:35 J -23572249.78 -23572249.60 -23572249.41 0.0262 0.0082

Mercury -69251-12-10 19:11 J -23572160.80 -23572160.70 -23572160.59 0.0263 0.0216

Earth -69249-12-01 17:30 J -23571438.95 -23571438.77 -23571438.57 0.0269 0.0177

Moon -69249-12-01 21:06 J -23571438.81 -23571438.62 -23571438.42 0.0269 0.0166 \*

Earth -69248-12-14 13:54 J -23571061.17 -23571060.92 -23571060.67 0.0273 0.0015

Moon -69248-12-14 15:49 J -23571061.10 -23571060.84 -23571060.58 0.0273 0.0004 \*

Mars -69247-06-24 09:49 J -23570869.40 -23570869.09 -23570868.77 0.0275 0.0031

Moon -69247-12-27 17:45 J -23570682.96 -23570682.76 -23570682.56 0.0277 0.0171

Earth -69247-12-27 19:54 J -23570682.87 -23570682.67 -23570682.46 0.0277 0.0159 \*

Venus -69240-07-12 20:52 J -23568293.77 -23568293.63 -23568293.47 0.0303 0.0212

Mercury -69237-01-24 07:11 J -23567368.26 -23567368.20 -23567368.14 0.0302 0.0263

Mercury -69237-04-21 19:25 J -23567279.80 -23567279.69 -23567279.57 0.0301 0.0128

Mercury -69237-07-19 08:09 J -23567191.29 -23567191.16 -23567191.04 0.0300 0.0013

Mercury -69237-10-15 20:23 J -23567102.76 -23567102.65 -23567102.54 0.0300 0.0140

Mercury -69236-01-12 08:37 J -23567014.19 -23567014.14 -23567014.09 0.0299 0.0271

Earth -69235-06-04 09:35 J -23566506.27 -23566506.10 -23566505.90 0.0293 0.0186

Moon -69235-06-04 12:28 J -23566506.16 -23566505.98 -23566505.78 0.0293 0.0174 \*

Earth -69234-06-17 22:33 J -23566127.80 -23566127.56 -23566127.32 0.0289 0.0013  
 Moon -69234-06-18 01:25 J -23566127.68 -23566127.44 -23566127.19 0.0289 0.0016 \*  
 Moon -69233-06-29 23:01 J -23565749.72 -23565749.54 -23565749.35 0.0284 0.0186  
 Earth -69233-06-29 23:59 J -23565749.66 -23565749.50 -23565749.31 0.0284 0.0195 \*  
 Mars -69233-07-11 11:01 J -23565738.12 -23565738.04 -23565737.93 0.0283 0.0266  
 Venus -69226-05-08 07:54 J -23563246.36 -23563246.17 -23563245.98 0.0260 0.0127  
 Venus -69226-12-23 05:45 J -23563017.37 -23563017.26 -23563017.15 0.0260 0.0222  
 Mercury -69222-08-06 02:37 J -23561695.49 -23561695.39 -23561695.28 0.0261 0.0218  
 Mercury -69222-11-02 23:59 J -23561606.68 -23561606.50 -23561606.32 0.0262 0.0086  
 Mercury -69221-01-30 21:21 J -23561517.80 -23561517.61 -23561517.42 0.0262 0.0048  
 Mercury -69221-04-28 18:42 J -23561428.85 -23561428.72 -23561428.57 0.0263 0.0183  
 Moon -69220-11-26 12:13 J -23560852.11 -23560851.99 -23560851.87 0.0267 0.0235  
 Earth -69220-11-26 15:35 J -23560851.95 -23560851.85 -23560851.74 0.0267 0.0243 \*  
 Moon -69219-12-09 05:30 J -23560474.50 -23560474.27 -23560474.04 0.0271 0.0075  
 Earth -69219-12-09 07:25 J -23560474.42 -23560474.19 -23560473.95 0.0271 0.0088 \*  
 Earth -69218-12-22 09:06 J -23560096.35 -23560096.12 -23560095.87 0.0275 0.0081  
 Moon -69218-12-22 11:45 J -23560096.24 -23560096.01 -23560095.78 0.0275 0.0094 \*  
 Mars -69217-08-15 05:45 J -23559859.27 -23559859.26 -23559859.20 0.0278 0.0276  
 Earth -69216-01-03 21:21 J -23559717.69 -23559717.61 -23559717.51 0.0280 0.0258  
 Moon -69216-01-04 01:11 J -23559717.51 -23559717.45 -23559717.37 0.0280 0.0268 \*  
 Venus -69211-06-07 02:37 J -23557737.50 -23557737.39 -23557737.26 0.0302 0.0247  
 Venus -69210-01-23 06:42 J -23557507.24 -23557507.22 -23557507.18 0.0303 0.0298  
 Mercury -69208-06-12 09:49 J -23556636.11 -23556636.09 -23556636.05 0.0302 0.0292  
 Mercury -69208-09-08 22:33 J -23556547.67 -23556547.56 -23556547.45 0.0301 0.0156  
 Mercury -69208-12-06 11:01 J -23556459.17 -23556459.04 -23556458.91 0.0301 0.0021  
 Mercury -69207-03-04 23:30 J -23556370.64 -23556370.52 -23556370.40 0.0300 0.0113  
 Mercury -69207-06-01 11:45 J -23556282.08 -23556282.01 -23556281.94 0.0299 0.0244  
 Moon -69206-05-29 18:13 J -23555919.86 -23555919.74 -23555919.61 0.0296 0.0252  
 Earth -69206-05-29 21:06 J -23555919.71 -23555919.62 -23555919.51 0.0296 0.0268 \*  
 Moon -69205-06-11 12:28 J -23555541.21 -23555540.98 -23555540.75 0.0291 0.0059



Earth -69205-06-11 15:35 J -23555541.09 -23555540.85 -23555540.62 0.0291 0.0067 \*  
 Mars -69205-08-31 12:42 J -23555460.20 -23555459.97 -23555459.74 0.0290 0.0151  
 Earth -69204-06-24 21:49 J -23555162.79 -23555162.59 -23555162.36 0.0286 0.0124  
 Moon -69204-06-24 23:01 J -23555162.74 -23555162.54 -23555162.33 0.0286 0.0120 \*  
 Moon -69203-07-07 21:21 J -23554784.61 -23554784.61 -23554784.60 0.0281 0.0281  
 Venus -69197-11-17 13:54 J -23552460.13 -23552459.92 -23552459.71 0.0260 0.0068  
 Mercury -69193-12-23 03:21 J -23550963.42 -23550963.36 -23550963.30 0.0261 0.0246  
 Mercury -69192-03-22 00:28 J -23550874.65 -23550874.48 -23550874.30 0.0261 0.0115  
 Mercury -69192-06-18 21:49 J -23550785.78 -23550785.59 -23550785.39 0.0262 0.0019  
 Mercury -69192-09-15 19:25 J -23550696.85 -23550696.69 -23550696.53 0.0262 0.0152  
 Earth -69190-12-04 05:01 J -23549887.48 -23549887.29 -23549887.08 0.0269 0.0156  
 Moon -69190-12-04 07:54 J -23549887.39 -23549887.17 -23549886.95 0.0269 0.0144 \*  
 Mars -69189-09-27 03:21 J -23549589.59 -23549589.36 -23549589.10 0.0272 0.0175  
 Moon -69189-12-15 23:59 J -23549509.75 -23549509.50 -23549509.23 0.0273 0.0023  
 Earth -69189-12-16 02:23 J -23549509.65 -23549509.40 -23549509.14 0.0273 0.0009 \*  
 Moon -69188-12-29 06:13 J -23549131.41 -23549131.24 -23549131.06 0.0278 0.0194  
 Earth -69188-12-29 10:04 J -23549131.27 -23549131.08 -23549130.89 0.0278 0.0183 \*  
 Venus -69182-12-18 13:11 J -23546951.13 -23546950.95 -23546950.77 0.0302 0.0162  
 Mercury -69178-01-27 01:25 J -23545815.54 -23545815.44 -23545815.34 0.0301 0.0187  
 Mercury -69178-04-25 13:54 J -23545727.05 -23545726.92 -23545726.79 0.0301 0.0052  
 Mercury -69178-07-23 02:23 J -23545638.53 -23545638.40 -23545638.28 0.0300 0.0082  
 Mercury -69178-10-19 14:37 J -23545549.98 -23545549.89 -23545549.80 0.0299 0.0214  
 Earth -69176-06-06 04:04 J -23544954.53 -23544954.33 -23544954.12 0.0293 0.0156  
 Moon -69176-06-06 07:11 J -23544954.40 -23544954.20 -23544953.98 0.0293 0.0143 \*  
 Moon -69175-06-19 14:52 J -23544576.13 -23544575.88 -23544575.64 0.0288 0.0041  
 Earth -69175-06-19 15:35 J -23544576.09 -23544575.85 -23544575.61 0.0288 0.0040 \*  
 Mars -69175-10-19 09:49 J -23544454.34 -23544454.09 -23544453.82 0.0286 0.0081  
 Moon -69174-07-02 11:59 J -23544198.15 -23544198.00 -23544197.83 0.0283 0.0209  
 Earth -69174-07-02 15:35 J -23544197.99 -23544197.85 -23544197.69 0.0283 0.0220 \*  
 Venus -69167-05-30 18:13 J -23541673.95 -23541673.74 -23541673.52 0.0260 0.0017

Mercury -69163-08-08 23:45 J -23540142.66 -23540142.51 -23540142.34 0.0261 0.0151  
 Mercury -69163-11-05 21:21 J -23540053.80 -23540053.61 -23540053.42 0.0262 0.0018  
 Mercury -69162-02-02 18:42 J -23539964.89 -23539964.72 -23539964.55 0.0262 0.0117  
 Mercury -69162-05-02 16:04 J -23539875.87 -23539875.83 -23539875.77 0.0263 0.0252  
 Moon -69161-11-27 22:33 J -23539300.69 -23539300.56 -23539300.40 0.0268 0.0214  
 Earth -69161-11-28 01:11 J -23539300.58 -23539300.45 -23539300.30 0.0268 0.0223 \*  
 Earth -69160-12-10 17:59 J -23538922.99 -23538922.75 -23538922.50 0.0271 0.0066  
 Moon -69160-12-10 19:54 J -23538922.90 -23538922.67 -23538922.43 0.0271 0.0052 \*  
 Mars -69159-11-18 21:35 J -23538579.90 -23538579.60 -23538579.28 0.0275 0.0064  
 Earth -69159-12-23 20:52 J -23538544.86 -23538544.63 -23538544.39 0.0276 0.0104  
 Moon -69159-12-24 00:28 J -23538544.71 -23538544.48 -23538544.25 0.0276 0.0117 \*  
 Venus -69152-06-29 21:06 J -23536164.82 -23536164.62 -23536164.42 0.0302 0.0083  
 Mercury -69149-06-15 03:49 J -23535083.42 -23535083.34 -23535083.25 0.0302 0.0221  
 Mercury -69149-09-11 16:33 J -23534994.94 -23534994.81 -23534994.69 0.0301 0.0085  
 Mercury -69149-12-09 05:01 J -23534906.42 -23534906.29 -23534906.17 0.0301 0.0051  
 Mercury -69148-03-07 17:16 J -23534817.88 -23534817.78 -23534817.68 0.0300 0.0183  
 Moon -69147-05-31 10:47 J -23534368.19 -23534368.05 -23534367.90 0.0295 0.0227  
 Earth -69147-05-31 13:40 J -23534368.06 -23534367.93 -23534367.78 0.0295 0.0241 \*  
 Earth -69146-06-14 06:42 J -23533989.45 -23533989.22 -23533988.98 0.0291 0.0040  
 Moon -69146-06-14 07:11 J -23533989.43 -23533989.20 -23533988.97 0.0291 0.0033 \*  
 Earth -69145-06-26 12:13 J -23533611.19 -23533610.99 -23533610.78 0.0286 0.0149  
 Moon -69145-06-26 15:35 J -23533611.05 -23533610.85 -23533610.64 0.0286 0.0145 \*  
 Venus -69138-12-10 23:30 J -23530887.73 -23530887.52 -23530887.31 0.0259 0.0040  
 Mercury -69134-12-26 23:59 J -23529410.63 -23529410.50 -23529410.36 0.0261 0.0182  
 Mercury -69133-03-24 21:21 J -23529321.80 -23529321.61 -23529321.42 0.0261 0.0050  
 Mercury -69133-06-21 18:42 J -23529232.90 -23529232.72 -23529232.54 0.0262 0.0084  
 Mercury -69133-09-18 16:04 J -23529143.93 -23529143.83 -23529143.72 0.0262 0.0218  
 Moon -69131-12-05 11:01 J -23528336.26 -23528336.04 -23528335.80 0.0269 0.0123  
 Earth -69131-12-05 13:11 J -23528336.16 -23528335.95 -23528335.73 0.0269 0.0136 \*  
 Moon -69130-12-18 07:54 J -23527958.42 -23527958.17 -23527957.93 0.0274 0.0044

Earth -69130-12-18 11:16 J -23527958.28 -23527958.03 -23527957.78 0.0274 0.0029 \*  
 Earth -69129-12-30 19:40 J -23527579.85 -23527579.68 -23527579.51 0.0278 0.0206  
 Moon -69129-12-30 19:25 J -23527579.83 -23527579.69 -23527579.53 0.0278 0.0215 \*  
 Venus -69122-01-10 05:45 J -23525378.47 -23525378.26 -23525378.05 0.0303 0.0005  
 Mercury -69120-11-02 06:13 J -23524351.30 -23524351.24 -23524351.17 0.0302 0.0256  
 Mercury -69119-01-29 18:57 J -23524262.83 -23524262.71 -23524262.59 0.0301 0.0120  
 Mercury -69119-04-28 07:25 J -23524174.32 -23524174.19 -23524174.06 0.0301 0.0015  
 Mercury -69119-07-25 19:40 J -23524085.79 -23524085.68 -23524085.56 0.0300 0.0149  
 Mercury -69119-10-22 07:54 J -23523997.20 -23523997.17 -23523997.12 0.0299 0.0280  
 Moon -69117-06-07 17:30 J -23523403.00 -23523402.77 -23523402.55 0.0293 0.0119  
 Earth -69117-06-07 17:59 J -23523402.96 -23523402.75 -23523402.53 0.0293 0.0130 \*  
 Mars -69116-01-26 03:35 J -23523170.59 -23523170.35 -23523170.10 0.0290 0.0115  
 Moon -69116-06-21 01:11 J -23523024.68 -23523024.45 -23523024.21 0.0288 0.0067  
 Earth -69116-06-21 04:47 J -23523024.53 -23523024.30 -23523024.07 0.0288 0.0066 \*  
 Moon -69115-07-04 02:37 J -23522646.51 -23522646.39 -23522646.26 0.0282 0.0234  
 Earth -69115-07-04 03:49 J -23522646.45 -23522646.34 -23522646.21 0.0282 0.0244 \*  
 Venus -69109-11-05 05:59 J -23520330.28 -23520330.25 -23520330.23 0.0260 0.0258  
 Venus -69108-06-22 03:21 J -23520101.56 -23520101.36 -23520101.15 0.0259 0.0090  
 Mercury -69104-05-14 23:01 J -23518678.64 -23518678.54 -23518678.43 0.0261 0.0219  
 Mercury -69104-08-11 20:09 J -23518589.84 -23518589.66 -23518589.47 0.0261 0.0088  
 Mercury -69104-11-08 17:30 J -23518500.96 -23518500.77 -23518500.58 0.0262 0.0045  
 Mercury -69103-02-05 14:52 J -23518412.01 -23518411.88 -23518411.73 0.0262 0.0179  
 Earth -69102-11-30 06:42 J -23517749.37 -23517749.22 -23517749.04 0.0268 0.0205  
 Moon -69102-11-30 09:06 J -23517749.28 -23517749.12 -23517748.94 0.0268 0.0193 \*  
 Earth -69101-12-12 00:13 J -23517371.74 -23517371.49 -23517371.24 0.0272 0.0046  
 Moon -69101-12-12 04:04 J -23517371.59 -23517371.33 -23517371.08 0.0272 0.0030 \*  
 Mars -69100-02-21 00:42 J -23517300.73 -23517300.47 -23517300.20 0.0272 0.0153  
 Moon -69100-12-25 03:49 J -23516993.57 -23516993.34 -23516993.11 0.0276 0.0136  
 Earth -69100-12-25 03:49 J -23516993.56 -23516993.34 -23516993.12 0.0276 0.0125 \*  
 Venus -69093-07-22 11:59 J -23514592.20 -23514592.00 -23514591.79 0.0303 0.0067

Mercury -69090-03-22 08:23 J -23513619.17 -23513619.15 -23513619.12 0.0302 0.0294  
 Mercury -69090-06-18 21:06 J -23513530.73 -23513530.62 -23513530.51 0.0302 0.0157  
 Mercury -69090-09-15 09:35 J -23513442.23 -23513442.10 -23513441.97 0.0301 0.0022  
 Mercury -69090-12-12 22:04 J -23513353.70 -23513353.58 -23513353.46 0.0300 0.0113  
 Mercury -69089-03-10 10:18 J -23513265.14 -23513265.07 -23513264.99 0.0300 0.0245  
 Earth -69088-06-02 01:40 J -23512816.58 -23512816.43 -23512816.25 0.0295 0.0217  
 Moon -69088-06-02 03:06 J -23512816.53 -23512816.37 -23512816.20 0.0295 0.0205 \*  
 Earth -69087-06-15 18:13 J -23512437.98 -23512437.74 -23512437.50 0.0290 0.0015  
 Moon -69087-06-15 21:49 J -23512437.83 -23512437.59 -23512437.35 0.0290 0.0008 \*  
 Mars -69086-03-15 20:52 J -23512164.87 -23512164.63 -23512164.37 0.0287 0.0105  
 Earth -69086-06-28 22:47 J -23512059.73 -23512059.55 -23512059.35 0.0285 0.0173  
 Moon -69086-06-29 00:28 J -23512059.67 -23512059.48 -23512059.27 0.0285 0.0169 \*  
 Venus -69079-05-18 10:18 J -23509544.20 -23509544.07 -23509543.94 0.0260 0.0205  
 Venus -69078-01-02 07:40 J -23509315.35 -23509315.18 -23509314.99 0.0259 0.0142  
 Mercury -69075-10-01 22:47 J -23507946.59 -23507946.55 -23507946.51 0.0260 0.0253  
 Mercury -69075-12-29 19:40 J -23507857.84 -23507857.68 -23507857.50 0.0261 0.0123  
 Mercury -69074-03-28 17:16 J -23507768.98 -23507768.78 -23507768.59 0.0261 0.0011  
 Mercury -69074-06-25 14:37 J -23507680.05 -23507679.89 -23507679.73 0.0262 0.0143  
 Moon -69073-11-24 02:52 J -23507162.43 -23507162.38 -23507162.32 0.0266 0.0259  
 Moon -69072-12-06 14:09 J -23506785.13 -23506784.91 -23506784.67 0.0269 0.0103  
 Earth -69072-12-06 17:59 J -23506784.97 -23506784.75 -23506784.52 0.0269 0.0118 \*  
 Moon -69071-12-19 16:18 J -23506407.06 -23506406.82 -23506406.59 0.0274 0.0062  
 Earth -69071-12-19 16:18 J -23506407.06 -23506406.82 -23506406.57 0.0274 0.0049 \*  
 Mars -69070-04-14 17:45 J -23506291.05 -23506290.76 -23506290.45 0.0275 0.0085  
 Earth -69069-01-02 01:11 J -23506028.59 -23506028.45 -23506028.30 0.0279 0.0226  
 Moon -69069-01-02 04:33 J -23506028.43 -23506028.31 -23506028.16 0.0279 0.0233 \*  
 Venus -69063-02-01 19:11 J -23503805.88 -23503805.70 -23503805.51 0.0303 0.0140  
 Mercury -69061-11-04 23:01 J -23502798.63 -23502798.54 -23502798.44 0.0302 0.0197  
 Mercury -69060-02-01 11:45 J -23502710.14 -23502710.01 -23502709.89 0.0301 0.0061  
 Mercury -69060-04-30 23:59 J -23502621.62 -23502621.50 -23502621.37 0.0301 0.0075

Mercury -69060-07-28 12:28 J -23502533.07 -23502532.98 -23502532.89 0.0300 0.0207  
 Moon -69059-05-27 03:49 J -23502230.35 -23502230.34 -23502230.33 0.0297 0.0296  
 Moon -69058-06-09 23:30 J -23501851.74 -23501851.52 -23501851.29 0.0292 0.0099  
 Earth -69058-06-10 03:21 J -23501851.58 -23501851.36 -23501851.13 0.0292 0.0106 \*  
 Moon -69057-06-22 11:30 J -23501473.24 -23501473.02 -23501472.80 0.0287 0.0089  
 Earth -69057-06-22 13:11 J -23501473.17 -23501472.95 -23501472.71 0.0287 0.0090 \*  
 Earth -69056-07-05 11:45 J -23501095.08 -23501095.01 -23501094.92 0.0282 0.0265  
 Moon -69056-07-05 14:23 J -23501094.99 -23501094.90 -23501094.79 0.0282 0.0254 \*  
 Venus -69050-11-28 12:57 J -23498758.12 -23498757.96 -23498757.78 0.0260 0.0159  
 Venus -69049-07-14 10:18 J -23498529.20 -23498529.07 -23498528.91 0.0259 0.0188  
 Mercury -69045-05-17 18:13 J -23497125.88 -23497125.74 -23497125.58 0.0261 0.0164  
 Mercury -69045-08-14 15:35 J -23497037.04 -23497036.85 -23497036.66 0.0261 0.0032  
 Mercury -69045-11-11 12:57 J -23496948.14 -23496947.96 -23496947.79 0.0262 0.0101  
 Mercury -69044-02-08 10:04 J -23496859.16 -23496859.08 -23496858.99 0.0262 0.0235  
 Earth -69043-12-01 09:06 J -23496198.29 -23496198.12 -23496197.93 0.0268 0.0188  
 Moon -69043-12-01 12:28 J -23496198.16 -23496197.98 -23496197.77 0.0268 0.0174 \*  
 Moon -69042-12-14 02:37 J -23495820.65 -23495820.39 -23495820.13 0.0272 0.0014  
 Earth -69042-12-14 02:37 J -23495820.64 -23495820.39 -23495820.14 0.0272 0.0028 \*  
 Moon -69041-12-26 02:52 J -23495442.59 -23495442.38 -23495442.17 0.0276 0.0153  
 Earth -69041-12-26 06:13 J -23495442.44 -23495442.24 -23495442.01 0.0276 0.0145 \*  
 Venus -69034-08-14 23:01 J -23493019.69 -23493019.54 -23493019.38 0.0303 0.0200  
 Mercury -69031-03-25 00:28 J -23492066.55 -23492066.48 -23492066.40 0.0302 0.0242  
 Mercury -69031-06-21 13:11 J -23491978.07 -23491977.95 -23491977.83 0.0302 0.0105  
 Mercury -69031-09-18 01:40 J -23491889.56 -23491889.43 -23491889.30 0.0301 0.0031  
 Mercury -69031-12-15 14:09 J -23491801.02 -23491800.91 -23491800.81 0.0300 0.0165  
 Mercury -69030-03-14 02:23 J -23491712.41 -23491712.40 -23491712.38 0.0300 0.0297  
 Earth -69029-06-03 07:54 J -23491265.34 -23491265.17 -23491264.98 0.0295 0.0196  
 Moon -69029-06-03 11:45 J -23491265.19 -23491265.01 -23491264.82 0.0295 0.0186 \*  
 Earth -69028-06-16 23:59 J -23490886.73 -23490886.50 -23490886.26 0.0290 0.0008  
 Moon -69028-06-17 01:40 J -23490886.67 -23490886.43 -23490886.18 0.0290 0.0009 \*

Mars	-69028-06-22 01:40 J	-23490881.68	-23490881.43	-23490881.17	0.0290	0.0100
Moon	-69027-06-30 01:54 J	-23490508.60	-23490508.42	-23490508.23	0.0285	0.0185
Earth	-69027-06-30 04:18 J	-23490508.49	-23490508.32	-23490508.14	0.0285	0.0193 *
Venus	-69020-06-09 16:47 J	-23487971.99	-23487971.80	-23487971.60	0.0260	0.0109
Venus	-69019-01-24 14:09 J	-23487742.99	-23487742.91	-23487742.82	0.0259	0.0236
Mercury	-69016-10-04 17:30 J	-23486393.89	-23486393.77	-23486393.64	0.0260	0.0200
Mercury	-69015-01-01 14:37 J	-23486305.07	-23486304.89	-23486304.70	0.0261	0.0070
Mercury	-69015-03-31 11:45 J	-23486216.19	-23486216.01	-23486215.81	0.0261	0.0063
Mercury	-69015-06-28 09:06 J	-23486127.24	-23486127.12	-23486126.99	0.0262	0.0196
Moon	-69014-11-26 02:23 J	-23485611.49	-23485611.40	-23485611.30	0.0266	0.0244
Earth	-69014-11-26 05:45 J	-23485611.32	-23485611.26	-23485611.18	0.0266	0.0255 *
Earth	-69013-12-07 18:13 J	-23485233.97	-23485233.74	-23485233.50	0.0269	0.0102
Moon	-69013-12-07 18:57 J	-23485233.94	-23485233.71	-23485233.48	0.0269	0.0087 *
Mars	-69012-07-17 07:54 J	-23485012.44	-23485012.17	-23485011.88	0.0272	0.0136
Earth	-69012-12-20 16:47 J	-23484856.04	-23484855.80	-23484855.55	0.0274	0.0065
Moon	-69012-12-20 20:23 J	-23484855.88	-23484855.65	-23484855.41	0.0274	0.0079 *
Earth	-69010-01-03 01:54 J	-23484477.54	-23484477.42	-23484477.29	0.0279	0.0243
Moon	-69010-01-03 04:04 J	-23484477.44	-23484477.33	-23484477.20	0.0279	0.0248 *
Venus	-69005-07-08 23:45 J	-23482463.57	-23482463.51	-23482463.43	0.0303	0.0282
Venus	-69004-02-24 04:18 J	-23482233.41	-23482233.32	-23482233.21	0.0304	0.0267
Mercury	-69002-08-12 02:09 J	-23481334.45	-23481334.41	-23481334.37	0.0303	0.0285
Mercury	-69002-11-08 14:52 J	-23481245.99	-23481245.88	-23481245.77	0.0302	0.0148
Mercury	-69001-02-05 03:21 J	-23481157.49	-23481157.36	-23481157.23	0.0302	0.0012
Mercury	-69001-05-03 15:49 J	-23481068.96	-23481068.84	-23481068.72	0.0301	0.0122
Mercury	-69001-07-31 04:04 J	-23480980.39	-23480980.33	-23480980.26	0.0300	0.0255

# 69TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 69th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-69000-05-28 06:13 J		-23480679.31	-23480679.24	-23480679.16	0.0297	0.0280	
Earth	-69000-05-28 09:35 J		-23480679.14	-23480679.10	-23480679.05	0.0297	0.0290	
Moon	-68999-06-11 06:13 J		-23480300.46	-23480300.24	-23480300.01	0.0292	0.0083	
Earth	-68999-06-11 07:11 J		-23480300.43	-23480300.20	-23480299.97	0.0292	0.0086	*
Earth	-68998-06-24 16:47 J		-23479922.01	-23479921.80	-23479921.57	0.0287	0.0110	
Moon	-68998-06-24 19:40 J		-23479921.90	-23479921.68	-23479921.46	0.0287	0.0105	*
Mars	-68998-08-09 12:57 J		-23479876.20	-23479875.96	-23479875.71	0.0287	0.0126	
Moon	-68997-07-06 18:13 J		-23479543.79	-23479543.74	-23479543.66	0.0282	0.0272	
Venus	-68991-12-20 18:42 J		-23477185.93	-23477185.72	-23477185.51	0.0259	0.0066	
Mercury	-68986-02-21 15:21 J		-23475661.91	-23475661.86	-23475661.78	0.0260	0.0244	
Mercury	-68986-05-21 12:42 J		-23475573.15	-23475572.97	-23475572.80	0.0261	0.0114	
Mercury	-68986-08-18 09:49 J		-23475484.28	-23475484.09	-23475483.90	0.0261	0.0018	
Mercury	-68986-11-15 06:57 J		-23475395.36	-23475395.21	-23475395.05	0.0262	0.0151	
Moon	-68984-12-02 07:25 J		-23474647.39	-23474647.19	-23474646.98	0.0268	0.0159	
Earth	-68984-12-02 08:09 J		-23474647.34	-23474647.16	-23474646.96	0.0268	0.0174	*
Moon	-68983-12-14 21:49 J		-23474269.85	-23474269.59	-23474269.34	0.0272	0.0005	
Earth	-68983-12-15 01:40 J		-23474269.68	-23474269.43	-23474269.18	0.0272	0.0012	*
Mars	-68982-09-07 11:45 J		-23474003.31	-23474003.01	-23474002.71	0.0275	0.0092	
Moon	-68982-12-28 03:06 J		-23473891.55	-23473891.37	-23473891.17	0.0276	0.0169	
Earth	-68982-12-28 05:01 J		-23473891.48	-23473891.29	-23473891.07	0.0276	0.0162	*
Venus	-68975-01-19 02:52 J		-23471677.52	-23471677.38	-23471677.24	0.0302	0.0226	
Mercury	-68972-03-27 15:49 J		-23470513.93	-23470513.84	-23470513.74	0.0302	0.0197	

Mercury -68972-06-24 04:33 J -23470425.44 -23470425.31 -23470425.19 0.0302 0.0061

Mercury -68972-09-20 17:01 J -23470336.92 -23470336.79 -23470336.67 0.0301 0.0075

Mercury -68972-12-18 05:16 J -23470248.37 -23470248.28 -23470248.18 0.0300 0.0209

Earth -68970-06-05 09:35 J -23469714.29 -23469714.10 -23469713.91 0.0295 0.0178

Moon -68970-06-05 10:04 J -23469714.28 -23469714.08 -23469713.88 0.0295 0.0172 \*

Moon -68969-06-17 22:33 J -23469335.81 -23469335.56 -23469335.32 0.0290 0.0021

Earth -68969-06-18 01:40 J -23469335.67 -23469335.43 -23469335.19 0.0290 0.0024 \*

Moon -68968-07-01 02:37 J -23468957.56 -23468957.39 -23468957.23 0.0285 0.0201

Earth -68968-07-01 05:30 J -23468957.42 -23468957.27 -23468957.10 0.0285 0.0211 \*

Venus -68961-07-01 21:21 J -23466399.82 -23466399.61 -23466399.39 0.0259 0.0021

Mercury -68957-10-07 11:30 J -23464841.18 -23464841.02 -23464840.87 0.0260 0.0153

Mercury -68956-01-04 08:37 J -23464752.33 -23464752.14 -23464751.95 0.0260 0.0023

Mercury -68956-04-03 05:45 J -23464663.43 -23464663.26 -23464663.08 0.0261 0.0110

Mercury -68956-07-01 03:06 J -23464574.44 -23464574.37 -23464574.30 0.0261 0.0243

Earth -68955-11-27 03:21 J -23464060.45 -23464060.36 -23464060.25 0.0265 0.0242

Moon -68955-11-27 03:49 J -23464060.45 -23464060.34 -23464060.22 0.0265 0.0231 \*

Earth -68954-12-09 15:49 J -23463683.08 -23463682.84 -23463682.60 0.0269 0.0089

Moon -68954-12-09 19:40 J -23463682.92 -23463682.68 -23463682.44 0.0269 0.0074 \*

Earth -68953-12-21 14:09 J -23463305.15 -23463304.91 -23463304.67 0.0274 0.0080

Moon -68953-12-21 16:04 J -23463305.08 -23463304.83 -23463304.59 0.0274 0.0089 \*

Moon -68951-01-03 20:52 J -23462926.72 -23462926.63 -23462926.52 0.0279 0.0257

Earth -68951-01-03 23:16 J -23462926.61 -23462926.53 -23462926.43 0.0279 0.0258 \*

Venus -68946-08-01 06:13 J -23460891.41 -23460891.24 -23460891.06 0.0303 0.0168

Mercury -68943-08-14 17:01 J -23459781.86 -23459781.79 -23459781.72 0.0303 0.0246

Mercury -68943-11-11 05:30 J -23459693.39 -23459693.27 -23459693.14 0.0302 0.0109

Mercury -68942-02-07 18:13 J -23459604.87 -23459604.74 -23459604.61 0.0302 0.0028

Mercury -68942-05-07 06:28 J -23459516.33 -23459516.23 -23459516.12 0.0301 0.0162

Mercury -68942-08-03 18:57 J -23459427.73 -23459427.71 -23459427.69 0.0300 0.0294

Moon -68941-05-29 07:40 J -23459128.26 -23459128.18 -23459128.07 0.0297 0.0269

Earth -68941-05-29 08:09 J -23459128.25 -23459128.16 -23459128.07 0.0297 0.0275 \*



Earth -68940-06-12 05:45 J -23458749.49 -23458749.26 -23458749.03 0.0292 0.0070  
 Moon -68940-06-12 08:52 J -23458749.35 -23458749.13 -23458748.90 0.0292 0.0071 \*  
 Mars -68940-11-15 05:30 J -23458593.52 -23458593.27 -23458593.01 0.0290 0.0087  
 Earth -68939-06-25 15:21 J -23458371.07 -23458370.86 -23458370.64 0.0287 0.0126  
 Moon -68939-06-25 18:28 J -23458370.94 -23458370.73 -23458370.50 0.0287 0.0118 \*  
 Venus -68931-01-11 22:33 J -23455613.78 -23455613.56 -23455613.35 0.0259 0.0020  
 Mercury -68927-02-24 09:06 J -23454109.24 -23454109.12 -23454109.00 0.0260 0.0199  
 Mercury -68927-05-24 06:13 J -23454020.43 -23454020.24 -23454020.06 0.0260 0.0069  
 Mercury -68927-08-21 03:21 J -23453931.55 -23453931.36 -23453931.17 0.0261 0.0063  
 Mercury -68927-11-18 00:28 J -23453842.60 -23453842.48 -23453842.35 0.0261 0.0195  
 Moon -68925-12-03 00:57 J -23453096.66 -23453096.46 -23453096.24 0.0268 0.0146  
 Earth -68925-12-03 04:33 J -23453096.50 -23453096.31 -23453096.10 0.0268 0.0161 \*  
 Mars -68924-12-09 16:04 J -23452725.10 -23452724.83 -23452724.54 0.0272 0.0135  
 Moon -68924-12-15 20:37 J -23452718.88 -23452718.64 -23452718.40 0.0272 0.0012  
 Earth -68924-12-15 21:35 J -23452718.85 -23452718.60 -23452718.35 0.0272 0.0004 \*  
 Earth -68923-12-29 00:42 J -23452340.65 -23452340.47 -23452340.26 0.0276 0.0175  
 Moon -68923-12-29 03:35 J -23452340.53 -23452340.35 -23452340.16 0.0276 0.0179 \*  
 Venus -68916-02-10 07:40 J -23450105.37 -23450105.18 -23450104.99 0.0302 0.0118  
 Mercury -68913-01-01 17:30 J -23449049.78 -23449049.77 -23449049.75 0.0303 0.0300  
 Mercury -68913-03-30 06:13 J -23448961.35 -23448961.24 -23448961.13 0.0302 0.0162  
 Mercury -68913-06-26 18:57 J -23448872.84 -23448872.71 -23448872.59 0.0302 0.0028  
 Mercury -68913-09-23 07:25 J -23448784.31 -23448784.19 -23448784.07 0.0301 0.0110  
 Mercury -68913-12-20 19:40 J -23448695.75 -23448695.68 -23448695.60 0.0301 0.0244  
 Moon -68911-06-06 02:09 J -23448163.60 -23448163.41 -23448163.20 0.0295 0.0165  
 Earth -68911-06-06 05:30 J -23448163.46 -23448163.27 -23448163.06 0.0295 0.0165 \*  
 Moon -68910-06-19 19:25 J -23447784.92 -23447784.69 -23447784.46 0.0290 0.0031  
 Earth -68910-06-19 21:49 J -23447784.82 -23447784.59 -23447784.35 0.0290 0.0039 \*  
 Mars -68909-01-02 11:01 J -23447588.27 -23447588.04 -23447587.79 0.0288 0.0130  
 Earth -68909-07-02 02:09 J -23447406.55 -23447406.41 -23447406.26 0.0285 0.0225  
 Moon -68909-07-02 03:06 J -23447406.51 -23447406.37 -23447406.20 0.0285 0.0213 \*

Venus -68902-07-25 00:13 J -23444827.69 -23444827.49 -23444827.28 0.0259 0.0063

Mercury -68898-07-14 07:25 J -23443377.25 -23443377.19 -23443377.11 0.0259 0.0240

Mercury -68898-10-11 04:33 J -23443288.48 -23443288.31 -23443288.13 0.0260 0.0111

Mercury -68897-01-08 01:40 J -23443199.62 -23443199.43 -23443199.24 0.0260 0.0020

Mercury -68897-04-05 22:47 J -23443110.70 -23443110.55 -23443110.39 0.0261 0.0152

Earth -68896-11-27 22:47 J -23442509.66 -23442509.55 -23442509.42 0.0265 0.0231

Moon -68896-11-28 02:23 J -23442509.53 -23442509.40 -23442509.25 0.0265 0.0218 \*

Earth -68895-12-10 11:01 J -23442132.28 -23442132.04 -23442131.80 0.0269 0.0076

Moon -68895-12-10 11:45 J -23442132.26 -23442132.01 -23442131.75 0.0269 0.0065 \*

Moon -68894-12-23 05:30 J -23441754.50 -23441754.27 -23441754.02 0.0274 0.0097

Earth -68894-12-23 08:52 J -23441754.36 -23441754.13 -23441753.88 0.0274 0.0093 \*

Mars -68893-01-30 21:49 J -23441715.88 -23441715.59 -23441715.28 0.0274 0.0100

Moon -68892-01-04 14:37 J -23441375.95 -23441375.89 -23441375.82 0.0279 0.0268

Earth -68892-01-04 17:59 J -23441375.80 -23441375.75 -23441375.68 0.0279 0.0271

Venus -68887-08-23 10:33 J -23439319.26 -23439319.06 -23439318.85 0.0303 0.0063

Mercury -68884-08-17 07:11 J -23438229.29 -23438229.20 -23438229.11 0.0303 0.0212

Mercury -68884-11-13 19:54 J -23438140.79 -23438140.67 -23438140.54 0.0302 0.0075

Mercury -68883-02-10 08:23 J -23438052.27 -23438052.15 -23438052.02 0.0302 0.0061

Mercury -68883-05-09 20:52 J -23437963.73 -23437963.63 -23437963.53 0.0301 0.0195

Earth -68882-05-31 03:06 J -23437577.47 -23437577.37 -23437577.25 0.0297 0.0263

Moon -68882-05-31 06:42 J -23437577.34 -23437577.22 -23437577.10 0.0297 0.0258 \*

Earth -68881-06-13 01:11 J -23437198.69 -23437198.45 -23437198.22 0.0293 0.0056

Moon -68881-06-13 03:21 J -23437198.60 -23437198.36 -23437198.12 0.0293 0.0060 \*

Moon -68880-06-26 09:06 J -23436820.33 -23436820.12 -23436819.89 0.0287 0.0127

Earth -68880-06-26 11:01 J -23436820.24 -23436820.04 -23436819.83 0.0287 0.0140 \*

Venus -68873-06-19 03:49 J -23434270.41 -23434270.34 -23434270.27 0.0260 0.0244

Venus -68872-02-03 00:57 J -23434041.66 -23434041.46 -23434041.26 0.0259 0.0101

Mercury -68868-02-27 01:54 J -23432556.56 -23432556.42 -23432556.26 0.0260 0.0158

Mercury -68868-05-26 23:01 J -23432467.73 -23432467.54 -23432467.34 0.0260 0.0028

Mercury -68868-08-23 20:09 J -23432378.83 -23432378.66 -23432378.48 0.0261 0.0104

Mercury -68868-11-20 17:16 J -23432289.85 -23432289.78 -23432289.69 0.0261 0.0237  
 Moon -68866-12-04 22:33 J -23431545.76 -23431545.56 -23431545.35 0.0267 0.0137  
 Earth -68866-12-04 23:16 J -23431545.73 -23431545.53 -23431545.31 0.0267 0.0149 \*  
 Earth -68865-12-16 16:04 J -23431168.08 -23431167.83 -23431167.57 0.0272 0.0014  
 Moon -68865-12-16 19:40 J -23431167.93 -23431167.68 -23431167.43 0.0272 0.0020 \*  
 Earth -68864-12-29 18:57 J -23430789.88 -23430789.71 -23430789.51 0.0276 0.0189  
 Moon -68864-12-29 22:18 J -23430789.75 -23430789.57 -23430789.37 0.0276 0.0186 \*  
 Venus -68857-03-04 11:16 J -23428533.24 -23428533.03 -23428532.82 0.0303 0.0016  
 Mercury -68854-01-04 07:25 J -23427497.24 -23427497.19 -23427497.13 0.0303 0.0270  
 Mercury -68854-04-02 20:09 J -23427408.77 -23427408.66 -23427408.54 0.0302 0.0132  
 Mercury -68854-06-30 08:52 J -23427320.26 -23427320.13 -23427320.00 0.0302 0.0007  
 Mercury -68854-09-26 21:21 J -23427231.72 -23427231.61 -23427231.50 0.0301 0.0140  
 Mercury -68854-12-24 09:35 J -23427143.14 -23427143.10 -23427143.04 0.0301 0.0274  
 Moon -68852-06-06 20:52 J -23426612.83 -23426612.63 -23426612.44 0.0295 0.0155  
 Earth -68852-06-06 22:33 J -23426612.75 -23426612.56 -23426612.35 0.0295 0.0154 \*  
 Mars -68851-04-09 17:45 J -23426306.01 -23426305.76 -23426305.50 0.0291 0.0088  
 Earth -68851-06-20 15:06 J -23426234.10 -23426233.87 -23426233.63 0.0290 0.0051  
 Moon -68851-06-20 17:16 J -23426234.01 -23426233.78 -23426233.55 0.0290 0.0040 \*  
 Earth -68850-07-03 19:54 J -23425855.80 -23425855.67 -23425855.54 0.0285 0.0238  
 Moon -68850-07-03 23:16 J -23425855.67 -23425855.53 -23425855.37 0.0285 0.0222 \*  
 Venus -68844-12-30 04:47 J -23423484.42 -23423484.30 -23423484.16 0.0260 0.0204  
 Venus -68843-08-16 02:09 J -23423255.59 -23423255.41 -23423255.23 0.0259 0.0142  
 Mercury -68839-07-17 00:13 J -23421824.60 -23421824.49 -23421824.36 0.0259 0.0200  
 Mercury -68839-10-13 21:21 J -23421735.79 -23421735.61 -23421735.42 0.0260 0.0071  
 Mercury -68838-01-10 18:28 J -23421646.92 -23421646.73 -23421646.54 0.0260 0.0060  
 Mercury -68838-04-09 15:35 J -23421557.97 -23421557.85 -23421557.72 0.0261 0.0192  
 Earth -68837-11-28 17:30 J -23420958.90 -23420958.77 -23420958.62 0.0265 0.0221  
 Moon -68837-11-28 18:42 J -23420958.87 -23420958.72 -23420958.54 0.0265 0.0206 \*  
 Moon -68836-12-11 01:54 J -23420581.66 -23420581.42 -23420581.16 0.0269 0.0057  
 Earth -68836-12-11 05:16 J -23420581.52 -23420581.28 -23420581.03 0.0269 0.0065 \*

Mars -68835-05-04 00:42 J -23420437.75 -23420437.47 -23420437.18 0.0271 0.0124  
 Moon -68835-12-24 00:28 J -23420203.70 -23420203.48 -23420203.25 0.0273 0.0104  
 Earth -68835-12-24 02:52 J -23420203.60 -23420203.38 -23420203.14 0.0273 0.0105 \*  
 Moon -68833-01-06 12:57 J -23419824.99 -23419824.96 -23419824.93 0.0278 0.0275  
 Venus -68828-09-14 13:25 J -23417747.14 -23417746.94 -23417746.73 0.0303 0.0037  
 Mercury -68825-08-19 21:06 J -23416676.72 -23416676.62 -23416676.52 0.0303 0.0183  
 Mercury -68825-11-16 09:35 J -23416588.22 -23416588.10 -23416587.97 0.0303 0.0048  
 Mercury -68824-02-12 22:18 J -23416499.70 -23416499.57 -23416499.45 0.0302 0.0090  
 Mercury -68824-05-12 10:33 J -23416411.14 -23416411.06 -23416410.97 0.0301 0.0225  
 Earth -68823-05-31 19:25 J -23416026.81 -23416026.69 -23416026.56 0.0297 0.0253  
 Moon -68823-05-31 21:06 J -23416026.74 -23416026.62 -23416026.48 0.0297 0.0251 \*  
 Moon -68822-06-14 15:21 J -23415648.10 -23415647.86 -23415647.62 0.0293 0.0054  
 Earth -68822-06-14 17:30 J -23415648.00 -23415647.77 -23415647.53 0.0293 0.0045 \*  
 Mars -68821-05-26 23:59 J -23415300.74 -23415300.50 -23415300.26 0.0288 0.0133  
 Moon -68821-06-27 00:28 J -23415269.68 -23415269.48 -23415269.27 0.0288 0.0136  
 Earth -68821-06-27 03:49 J -23415269.54 -23415269.34 -23415269.13 0.0287 0.0152 \*  
 Venus -68814-07-12 05:16 J -23412698.44 -23412698.28 -23412698.11 0.0260 0.0166  
 Venus -68813-02-26 02:23 J -23412469.55 -23412469.40 -23412469.24 0.0259 0.0180  
 Mercury -68810-12-03 22:04 J -23411092.64 -23411092.58 -23411092.53 0.0259 0.0247  
 Mercury -68809-03-01 18:42 J -23411003.89 -23411003.72 -23411003.54 0.0260 0.0118  
 Mercury -68809-05-29 15:49 J -23410915.03 -23410914.84 -23410914.65 0.0260 0.0012  
 Mercury -68809-08-26 12:57 J -23410826.12 -23410825.96 -23410825.80 0.0261 0.0144  
 Earth -68807-12-05 17:30 J -23409994.97 -23409994.77 -23409994.54 0.0267 0.0139  
 Moon -68807-12-05 21:06 J -23409994.84 -23409994.62 -23409994.41 0.0267 0.0126 \*  
 Earth -68806-12-18 10:04 J -23409617.33 -23409617.08 -23409616.82 0.0271 0.0026  
 Moon -68806-12-18 12:28 J -23409617.24 -23409616.98 -23409616.72 0.0271 0.0028 \*  
 Mars -68805-06-23 21:06 J -23409428.91 -23409428.62 -23409428.31 0.0274 0.0098  
 Moon -68805-12-30 11:01 J -23409239.22 -23409239.04 -23409238.85 0.0276 0.0192  
 Earth -68805-12-30 12:57 J -23409239.12 -23409238.96 -23409238.78 0.0276 0.0201 \*  
 Venus -68798-03-27 14:09 J -23406961.10 -23406960.91 -23406960.70 0.0303 0.0084

Mercury -68795-01-06 21:21 J -23405944.68 -23405944.61 -23405944.53 0.0303 0.0240  
 Mercury -68795-04-05 10:04 J -23405856.20 -23405856.08 -23405855.96 0.0302 0.0103  
 Mercury -68795-07-02 22:33 J -23405767.68 -23405767.56 -23405767.43 0.0302 0.0035  
 Mercury -68795-09-29 11:01 J -23405679.14 -23405679.04 -23405678.93 0.0301 0.0169  
 Earth -68793-06-07 15:06 J -23405062.08 -23405061.87 -23405061.66 0.0295 0.0143  
 Moon -68793-06-07 17:16 J -23405061.97 -23405061.78 -23405061.57 0.0295 0.0150 \*  
 Earth -68792-06-21 07:40 J -23404683.41 -23404683.18 -23404682.95 0.0290 0.0062  
 Moon -68792-06-21 10:47 J -23404683.29 -23404683.05 -23404682.81 0.0290 0.0048 \*  
 Moon -68791-07-04 11:59 J -23404305.13 -23404305.00 -23404304.85 0.0285 0.0232  
 Earth -68791-07-04 12:13 J -23404305.09 -23404304.99 -23404304.86 0.0285 0.0249 \*  
 Venus -68784-01-21 06:13 J -23401912.41 -23401912.24 -23401912.04 0.0260 0.0126  
 Venus -68784-09-07 03:35 J -23401683.46 -23401683.35 -23401683.23 0.0259 0.0220  
 Mercury -68780-07-19 17:01 J -23400271.93 -23400271.79 -23400271.63 0.0259 0.0161  
 Mercury -68780-10-16 14:09 J -23400183.10 -23400182.91 -23400182.72 0.0260 0.0031  
 Mercury -68779-01-13 11:16 J -23400094.21 -23400094.03 -23400093.85 0.0260 0.0100  
 Mercury -68779-04-12 08:23 J -23400005.23 -23400005.15 -23400005.06 0.0261 0.0232  
 Moon -68778-11-30 09:06 J -23399408.28 -23399408.12 -23399407.94 0.0265 0.0195  
 Earth -68778-11-30 12:28 J -23399408.12 -23399407.98 -23399407.82 0.0265 0.0210 \*  
 Moon -68777-12-11 22:04 J -23399030.83 -23399030.58 -23399030.34 0.0269 0.0047  
 Earth -68777-12-12 00:13 J -23399030.74 -23399030.49 -23399030.24 0.0269 0.0054 \*  
 Earth -68776-12-24 21:35 J -23398652.82 -23398652.60 -23398652.37 0.0273 0.0116  
 Moon -68776-12-24 23:59 J -23398652.72 -23398652.50 -23398652.28 0.0273 0.0111 \*  
 Venus -68769-10-06 16:47 J -23396174.98 -23396174.80 -23396174.61 0.0303 0.0138  
 Mercury -68766-05-26 22:18 J -23395212.60 -23395212.57 -23395212.54 0.0304 0.0292  
 Mercury -68766-08-23 11:01 J -23395124.15 -23395124.04 -23395123.93 0.0303 0.0154  
 Mercury -68766-11-19 23:30 J -23395035.65 -23395035.52 -23395035.39 0.0303 0.0018  
 Mercury -68765-02-16 11:59 J -23394947.11 -23394947.00 -23394946.88 0.0302 0.0120  
 Mercury -68765-05-15 00:28 J -23394858.54 -23394858.48 -23394858.41 0.0301 0.0253  
 Moon -68764-06-01 08:37 J -23394476.26 -23394476.14 -23394475.99 0.0297 0.0248  
 Earth -68764-06-01 11:45 J -23394476.14 -23394476.01 -23394475.86 0.0297 0.0242 \*

Moon -68763-06-15 06:57 J -23394097.44 -23394097.21 -23394096.98 0.0293 0.0044  
 Earth -68763-06-15 10:04 J -23394097.32 -23394097.08 -23394096.84 0.0293 0.0033 \*  
 Mars -68763-09-02 04:04 J -23394018.58 -23394018.33 -23394018.07 0.0292 0.0087  
 Earth -68762-06-28 20:23 J -23393718.84 -23393718.65 -23393718.45 0.0288 0.0164  
 Moon -68762-06-28 21:06 J -23393718.82 -23393718.62 -23393718.42 0.0288 0.0149 \*  
 Venus -68755-08-03 06:57 J -23391126.41 -23391126.21 -23391126.01 0.0260 0.0087  
 Venus -68754-03-20 04:04 J -23390897.33 -23390897.33 -23390897.32 0.0259 0.0259  
 Mercury -68751-12-06 14:52 J -23389539.99 -23389539.88 -23389539.76 0.0259 0.0206  
 Mercury -68750-03-05 11:45 J -23389451.19 -23389451.01 -23389450.82 0.0260 0.0077  
 Mercury -68750-06-02 08:52 J -23389362.32 -23389362.13 -23389361.94 0.0260 0.0054  
 Mercury -68750-08-30 05:59 J -23389273.38 -23389273.25 -23389273.11 0.0261 0.0186  
 Moon -68749-11-24 10:33 J -23388821.09 -23388821.06 -23388821.03 0.0264 0.0261  
 Earth -68748-12-06 13:54 J -23388444.14 -23388443.92 -23388443.70 0.0267 0.0127  
 Moon -68748-12-06 16:18 J -23388444.05 -23388443.82 -23388443.58 0.0267 0.0116 \*  
 Mars -68747-09-26 04:47 J -23388150.58 -23388150.30 -23388150.00 0.0270 0.0123  
 Moon -68747-12-19 03:35 J -23388066.61 -23388066.35 -23388066.09 0.0271 0.0035  
 Earth -68747-12-19 05:59 J -23388066.49 -23388066.25 -23388066.00 0.0271 0.0038 \*  
 Moon -68745-01-01 05:16 J -23387688.44 -23387688.28 -23387688.11 0.0276 0.0201  
 Earth -68745-01-01 08:37 J -23387688.29 -23387688.14 -23387687.97 0.0276 0.0213 \*  
 Venus -68739-04-18 17:59 J -23385388.91 -23385388.75 -23385388.58 0.0303 0.0186  
 Mercury -68736-01-09 11:16 J -23384392.12 -23384392.03 -23384391.94 0.0303 0.0210  
 Mercury -68736-04-07 23:59 J -23384303.62 -23384303.50 -23384303.37 0.0302 0.0073  
 Mercury -68736-07-05 12:28 J -23384215.10 -23384214.98 -23384214.85 0.0302 0.0064  
 Mercury -68736-10-02 00:57 J -23384126.55 -23384126.46 -23384126.36 0.0301 0.0198  
 Earth -68734-06-09 07:25 J -23383511.40 -23383511.19 -23383510.97 0.0295 0.0133  
 Moon -68734-06-09 10:47 J -23383511.26 -23383511.05 -23383510.84 0.0295 0.0142 \*  
 Moon -68733-06-21 23:30 J -23383132.76 -23383132.52 -23383132.28 0.0290 0.0058  
 Earth -68733-06-22 00:13 J -23383132.72 -23383132.49 -23383132.26 0.0290 0.0072 \*  
 Mars -68733-10-19 07:25 J -23383013.43 -23383013.19 -23383012.95 0.0289 0.0133  
 Moon -68732-07-05 01:25 J -23382754.55 -23382754.44 -23382754.31 0.0285 0.0245

Earth -68732-07-05 05:16 J -23382754.38 -23382754.28 -23382754.18 0.0285 0.0259 \*  
 Venus -68725-02-13 08:09 J -23380340.36 -23380340.16 -23380339.94 0.0260 0.0046  
 Mercury -68721-04-24 13:11 J -23378807.99 -23378807.95 -23378807.88 0.0259 0.0247  
 Mercury -68721-07-22 10:18 J -23378719.24 -23378719.07 -23378718.90 0.0260 0.0118  
 Mercury -68721-10-19 07:25 J -23378630.38 -23378630.19 -23378630.00 0.0260 0.0012  
 Mercury -68720-01-16 04:18 J -23378541.47 -23378541.32 -23378541.15 0.0260 0.0144  
 Moon -68719-12-01 06:42 J -23377857.39 -23377857.22 -23377857.04 0.0265 0.0187  
 Earth -68719-12-01 09:06 J -23377857.28 -23377857.12 -23377856.95 0.0265 0.0200 \*  
 Earth -68718-12-13 20:52 J -23377479.88 -23377479.63 -23377479.38 0.0269 0.0042  
 Moon -68718-12-13 22:47 J -23377479.78 -23377479.55 -23377479.30 0.0269 0.0039 \*  
 Mars -68717-11-16 10:47 J -23377141.33 -23377141.05 -23377140.75 0.0273 0.0113  
 Earth -68717-12-25 17:59 J -23377101.96 -23377101.75 -23377101.51 0.0273 0.0130  
 Moon -68717-12-25 21:35 J -23377101.82 -23377101.60 -23377101.37 0.0273 0.0121 \*  
 Venus -68710-03-13 17:01 J -23374832.80 -23374832.79 -23374832.77 0.0302 0.0300  
 Venus -68710-10-29 21:21 J -23374602.73 -23374602.61 -23374602.48 0.0303 0.0245  
 Mercury -68707-05-29 12:28 J -23373660.04 -23373659.98 -23373659.91 0.0304 0.0259  
 Mercury -68707-08-26 01:11 J -23373571.57 -23373571.45 -23373571.33 0.0303 0.0121  
 Mercury -68707-11-22 13:40 J -23373483.05 -23373482.93 -23373482.80 0.0303 0.0018  
 Mercury -68706-02-19 02:09 J -23373394.51 -23373394.41 -23373394.29 0.0302 0.0152  
 Mercury -68706-05-18 14:37 J -23373305.92 -23373305.89 -23373305.85 0.0301 0.0285  
 Moon -68705-06-02 03:21 J -23372925.49 -23372925.36 -23372925.22 0.0297 0.0241  
 Earth -68705-06-02 05:59 J -23372925.39 -23372925.25 -23372925.09 0.0297 0.0231 \*  
 Earth -68704-06-16 04:04 J -23372546.57 -23372546.33 -23372546.09 0.0293 0.0021  
 Moon -68704-06-16 04:47 J -23372546.52 -23372546.30 -23372546.06 0.0293 0.0035 \*  
 Earth -68703-06-29 14:23 J -23372168.08 -23372167.90 -23372167.70 0.0288 0.0176  
 Moon -68703-06-29 17:45 J -23372167.94 -23372167.76 -23372167.55 0.0288 0.0161 \*  
 Venus -68696-08-25 09:35 J -23369554.32 -23369554.10 -23369553.89 0.0260 0.0007  
 Mercury -68692-12-09 08:37 J -23367987.29 -23367987.14 -23367986.99 0.0260 0.0161  
 Mercury -68691-03-08 05:30 J -23367898.46 -23367898.27 -23367898.08 0.0260 0.0032  
 Mercury -68691-06-05 02:37 J -23367809.57 -23367809.39 -23367809.21 0.0260 0.0100

Mercury -68691-09-01 23:30 J -23367720.59 -23367720.52 -23367720.42 0.0261 0.0232  
 Moon -68690-11-26 06:57 J -23367270.27 -23367270.21 -23367270.12 0.0264 0.0251  
 Moon -68689-12-07 09:49 J -23366893.32 -23366893.09 -23366892.85 0.0267 0.0107  
 Earth -68689-12-07 12:13 J -23366893.21 -23366892.99 -23366892.76 0.0267 0.0114 \*  
 Moon -68688-12-20 01:11 J -23366515.69 -23366515.45 -23366515.20 0.0272 0.0048  
 Earth -68688-12-20 04:33 J -23366515.55 -23366515.31 -23366515.06 0.0272 0.0052 \*  
 Earth -68686-01-02 07:11 J -23366137.33 -23366137.20 -23366137.04 0.0276 0.0227  
 Moon -68686-01-02 08:09 J -23366137.31 -23366137.16 -23366137.01 0.0276 0.0214 \*  
 Venus -68681-09-22 19:40 J -23364046.79 -23364046.68 -23364046.55 0.0302 0.0246  
 Venus -68680-05-10 23:59 J -23363816.52 -23363816.50 -23363816.46 0.0303 0.0299  
 Mercury -68677-01-13 01:54 J -23362839.52 -23362839.42 -23362839.31 0.0303 0.0174  
 Mercury -68677-04-10 14:37 J -23362751.02 -23362750.89 -23362750.77 0.0302 0.0037  
 Mercury -68677-07-08 03:06 J -23362662.49 -23362662.37 -23362662.25 0.0302 0.0099  
 Mercury -68677-10-04 15:35 J -23362573.93 -23362573.85 -23362573.77 0.0301 0.0233  
 Moon -68675-06-10 01:40 J -23361960.65 -23361960.43 -23361960.21 0.0295 0.0135  
 Earth -68675-06-10 03:06 J -23361960.58 -23361960.37 -23361960.15 0.0295 0.0121 \*  
 Mars -68674-01-25 15:49 J -23361731.09 -23361730.84 -23361730.58 0.0292 0.0083  
 Moon -68674-06-23 16:04 J -23361582.06 -23361581.83 -23361581.59 0.0290 0.0069  
 Earth -68674-06-23 19:25 J -23361581.91 -23361581.69 -23361581.45 0.0290 0.0086 \*  
 Moon -68673-07-05 23:30 J -23361203.61 -23361203.52 -23361203.43 0.0285 0.0260  
 Earth -68673-07-06 00:13 J -23361203.55 -23361203.49 -23361203.41 0.0285 0.0271 \*  
 Venus -68666-03-07 11:16 J -23358768.24 -23358768.03 -23358767.82 0.0260 0.0038  
 Mercury -68662-04-28 07:11 J -23357255.31 -23357255.20 -23357255.07 0.0259 0.0201  
 Mercury -68662-07-26 04:18 J -23357166.50 -23357166.32 -23357166.13 0.0260 0.0071  
 Mercury -68662-10-23 01:25 J -23357077.62 -23357077.44 -23357077.25 0.0260 0.0060  
 Mercury -68661-01-19 22:33 J -23356988.68 -23356988.56 -23356988.43 0.0261 0.0191  
 Earth -68660-12-02 09:06 J -23356306.30 -23356306.12 -23356305.94 0.0265 0.0187  
 Moon -68660-12-02 11:30 J -23356306.19 -23356306.02 -23356305.83 0.0265 0.0177 \*  
 Earth -68659-12-14 21:06 J -23355928.87 -23355928.62 -23355928.37 0.0269 0.0028  
 Moon -68659-12-15 00:42 J -23355928.72 -23355928.47 -23355928.22 0.0269 0.0026 \*



Mars -68658-02-19 05:59 J -23355862.54 -23355862.25 -23355861.94 0.0270 0.0099  
 Moon -68658-12-27 18:13 J -23355550.96 -23355550.74 -23355550.51 0.0273 0.0133  
 Earth -68658-12-27 18:57 J -23355550.92 -23355550.71 -23355550.49 0.0273 0.0144 \*  
 Venus -68651-04-05 00:42 J -23353260.64 -23353260.47 -23353260.30 0.0302 0.0181  
 Mercury -68648-06-01 03:21 J -23352107.45 -23352107.36 -23352107.27 0.0303 0.0219  
 Mercury -68648-08-28 16:04 J -23352018.96 -23352018.83 -23352018.71 0.0303 0.0082  
 Mercury -68648-11-25 04:33 J -23351930.44 -23351930.31 -23351930.18 0.0302 0.0055  
 Mercury -68647-02-21 17:01 J -23351841.89 -23351841.79 -23351841.69 0.0302 0.0190  
 Earth -68646-06-04 03:21 J -23351374.51 -23351374.36 -23351374.19 0.0297 0.0217  
 Moon -68646-06-04 05:30 J -23351374.41 -23351374.27 -23351374.12 0.0297 0.0232 \*  
 Earth -68645-06-17 01:11 J -23350995.69 -23350995.45 -23350995.21 0.0293 0.0007  
 Moon -68645-06-17 04:47 J -23350995.54 -23350995.30 -23350995.06 0.0293 0.0023 \*  
 Mars -68644-03-14 04:04 J -23350725.55 -23350725.33 -23350725.08 0.0289 0.0142  
 Earth -68644-06-30 11:01 J -23350617.21 -23350617.04 -23350616.85 0.0288 0.0190  
 Moon -68644-06-30 12:13 J -23350617.18 -23350616.99 -23350616.79 0.0288 0.0175 \*  
 Venus -68637-09-16 13:25 J -23347982.15 -23347981.94 -23347981.74 0.0260 0.0083  
 Mercury -68633-09-14 05:59 J -23346523.31 -23346523.25 -23346523.16 0.0259 0.0240  
 Mercury -68633-12-12 03:06 J -23346434.54 -23346434.37 -23346434.19 0.0260 0.0110  
 Mercury -68632-03-11 00:13 J -23346345.68 -23346345.49 -23346345.30 0.0260 0.0020  
 Mercury -68632-06-07 21:06 J -23346256.77 -23346256.62 -23346256.45 0.0261 0.0152  
 Moon -68631-11-27 03:35 J -23345719.44 -23345719.35 -23345719.24 0.0264 0.0242  
 Earth -68631-11-27 06:13 J -23345719.30 -23345719.24 -23345719.16 0.0264 0.0253 \*  
 Moon -68630-12-09 10:33 J -23345342.29 -23345342.06 -23345341.83 0.0268 0.0097  
 Earth -68630-12-09 14:09 J -23345342.14 -23345341.91 -23345341.68 0.0268 0.0100 \*  
 Earth -68629-12-21 06:57 J -23344964.45 -23344964.21 -23344963.96 0.0272 0.0067  
 Moon -68629-12-21 07:25 J -23344964.43 -23344964.19 -23344963.95 0.0272 0.0061 \*  
 Mars -68628-04-11 11:45 J -23344853.29 -23344853.01 -23344852.72 0.0273 0.0127  
 Earth -68627-01-03 10:04 J -23344586.19 -23344586.08 -23344585.96 0.0276 0.0243  
 Moon -68627-01-03 13:40 J -23344586.06 -23344585.93 -23344585.78 0.0276 0.0228 \*  
 Venus -68622-10-16 04:47 J -23342474.49 -23342474.30 -23342474.10 0.0302 0.0121

Mercury -68619-10-19 04:33 J -23341375.37 -23341375.31 -23341375.25 0.0303 0.0267  
 Mercury -68618-01-15 17:16 J -23341286.90 -23341286.78 -23341286.67 0.0302 0.0130  
 Mercury -68618-04-14 05:45 J -23341198.39 -23341198.26 -23341198.13 0.0302 0.0008  
 Mercury -68618-07-11 18:13 J -23341109.85 -23341109.74 -23341109.62 0.0301 0.0142  
 Mercury -68618-10-08 06:42 J -23341021.27 -23341021.22 -23341021.17 0.0301 0.0276  
 Moon -68616-06-10 23:16 J -23340409.74 -23340409.53 -23340409.31 0.0295 0.0122  
 Earth -68616-06-11 02:52 J -23340409.60 -23340409.38 -23340409.15 0.0295 0.0106 \*  
 Moon -68615-06-24 17:45 J -23340030.98 -23340030.76 -23340030.53 0.0290 0.0085  
 Earth -68615-06-24 18:42 J -23340030.94 -23340030.72 -23340030.49 0.0290 0.0100 \*  
 Earth -68614-07-07 23:16 J -23339652.53 -23339652.53 -23339652.53 0.0285 0.0285  
 Moon -68614-07-08 02:09 J -23339652.46 -23339652.41 -23339652.35 0.0285 0.0276  
 Venus -68608-08-12 18:28 J -23337424.85 -23337424.73 -23337424.62 0.0261 0.0220  
 Venus -68607-03-29 16:04 J -23337196.02 -23337195.83 -23337195.64 0.0260 0.0130  
 Mercury -68603-05-01 02:23 J -23335702.55 -23335702.40 -23335702.24 0.0260 0.0147  
 Mercury -68603-07-28 23:30 J -23335613.71 -23335613.52 -23335613.33 0.0260 0.0017  
 Mercury -68603-10-25 20:37 J -23335524.81 -23335524.64 -23335524.47 0.0260 0.0114  
 Mercury -68602-01-22 17:45 J -23335435.82 -23335435.76 -23335435.69 0.0261 0.0246  
 Earth -68601-12-03 12:28 J -23334755.17 -23334754.98 -23334754.79 0.0266 0.0172  
 Moon -68601-12-03 15:49 J -23334755.03 -23334754.84 -23334754.63 0.0266 0.0165 \*  
 Moon -68600-12-16 00:42 J -23334377.73 -23334377.47 -23334377.21 0.0269 0.0015  
 Earth -68600-12-16 01:11 J -23334377.70 -23334377.45 -23334377.20 0.0269 0.0011 \*  
 Moon -68599-12-28 19:54 J -23333999.88 -23333999.67 -23333999.45 0.0274 0.0149  
 Earth -68599-12-28 23:30 J -23333999.72 -23333999.52 -23333999.31 0.0274 0.0161 \*  
 Venus -68592-04-27 11:45 J -23331688.22 -23331688.01 -23331687.80 0.0302 0.0048  
 Mercury -68589-06-03 18:57 J -23330554.81 -23330554.71 -23330554.60 0.0303 0.0170  
 Mercury -68589-08-31 07:40 J -23330466.31 -23330466.18 -23330466.05 0.0303 0.0033  
 Mercury -68589-11-27 20:09 J -23330377.78 -23330377.66 -23330377.53 0.0302 0.0103  
 Mercury -68588-02-24 08:37 J -23330289.21 -23330289.14 -23330289.06 0.0301 0.0237  
 Earth -68587-06-05 06:28 J -23329823.41 -23329823.23 -23329823.05 0.0297 0.0199  
 Moon -68587-06-05 09:49 J -23329823.25 -23329823.09 -23329822.92 0.0297 0.0215 \*

Earth -68586-06-19 03:21 J -23329444.59 -23329444.36 -23329444.12 0.0292 0.0012  
 Moon -68586-06-19 04:04 J -23329444.57 -23329444.33 -23329444.08 0.0292 0.0008 \*  
 Mars -68586-06-20 23:59 J -23329442.76 -23329442.50 -23329442.24 0.0292 0.0070  
 Moon -68585-07-01 09:49 J -23329066.26 -23329066.09 -23329065.90 0.0287 0.0193  
 Earth -68585-07-01 12:57 J -23329066.13 -23329065.96 -23329065.80 0.0287 0.0206 \*  
 Venus -68578-02-22 21:21 J -23326638.76 -23326638.61 -23326638.44 0.0261 0.0171  
 Venus -68578-10-09 19:11 J -23326409.85 -23326409.70 -23326409.54 0.0260 0.0178  
 Mercury -68574-09-18 01:54 J -23324970.55 -23324970.42 -23324970.28 0.0260 0.0182  
 Mercury -68574-12-15 23:01 J -23324881.73 -23324881.54 -23324881.35 0.0260 0.0052  
 Mercury -68573-03-13 20:09 J -23324792.84 -23324792.66 -23324792.48 0.0260 0.0079  
 Mercury -68573-06-10 17:01 J -23324703.89 -23324703.79 -23324703.67 0.0261 0.0211  
 Moon -68572-11-28 08:52 J -23324168.25 -23324168.13 -23324168.00 0.0265 0.0228  
 Earth -68572-11-28 12:13 J -23324168.10 -23324167.99 -23324167.88 0.0265 0.0238 \*  
 Earth -68571-12-10 20:37 J -23323790.87 -23323790.64 -23323790.40 0.0268 0.0083  
 Moon -68571-12-10 21:35 J -23323790.83 -23323790.60 -23323790.37 0.0268 0.0083 \*  
 Mars -68570-07-15 22:47 J -23323573.85 -23323573.55 -23323573.23 0.0270 0.0078  
 Earth -68570-12-23 14:23 J -23323413.13 -23323412.90 -23323412.65 0.0272 0.0086  
 Moon -68570-12-23 18:13 J -23323412.98 -23323412.74 -23323412.50 0.0272 0.0077 \*  
 Earth -68568-01-04 18:28 J -23323034.80 -23323034.73 -23323034.65 0.0277 0.0262  
 Moon -68568-01-04 20:09 J -23323034.76 -23323034.66 -23323034.54 0.0277 0.0248 \*  
 Venus -68563-11-07 17:59 J -23320901.96 -23320901.75 -23320901.54 0.0302 0.0021  
 Mercury -68560-10-21 20:52 J -23319822.72 -23319822.63 -23319822.54 0.0303 0.0212  
 Mercury -68559-01-18 09:21 J -23319734.23 -23319734.11 -23319733.98 0.0302 0.0076  
 Mercury -68559-04-16 22:04 J -23319645.71 -23319645.58 -23319645.46 0.0302 0.0061  
 Mercury -68559-07-14 10:18 J -23319557.16 -23319557.07 -23319556.96 0.0301 0.0195  
 Earth -68557-06-12 07:54 J -23318858.39 -23318858.17 -23318857.94 0.0294 0.0087  
 Moon -68557-06-12 07:54 J -23318858.38 -23318858.17 -23318857.95 0.0294 0.0104 \*  
 Earth -68556-06-25 22:47 J -23318479.76 -23318479.55 -23318479.33 0.0289 0.0117  
 Moon -68556-06-26 01:54 J -23318479.64 -23318479.42 -23318479.20 0.0289 0.0102 \*  
 Mars -68556-08-07 12:28 J -23318437.20 -23318436.98 -23318436.75 0.0289 0.0161

Venus -68549-09-04 00:57 J -23315852.64 -23315852.46 -23315852.27 0.0261 0.0122  
 Venus -68548-04-20 22:47 J -23315623.65 -23315623.55 -23315623.44 0.0260 0.0228  
 Mercury -68544-02-04 01:40 J -23314238.53 -23314238.43 -23314238.32 0.0260 0.0215  
 Mercury -68544-05-03 22:47 J -23314149.73 -23314149.55 -23314149.37 0.0260 0.0086  
 Mercury -68544-07-31 19:54 J -23314060.86 -23314060.67 -23314060.48 0.0260 0.0045  
 Mercury -68544-10-28 17:01 J -23313971.93 -23313971.79 -23313971.65 0.0261 0.0176  
 Moon -68542-12-05 19:11 J -23313203.91 -23313203.70 -23313203.48 0.0266 0.0151  
 Earth -68542-12-05 19:54 J -23313203.86 -23313203.67 -23313203.46 0.0266 0.0155 \*  
 Moon -68541-12-17 05:45 J -23312826.51 -23312826.26 -23312826.00 0.0270 0.0003  
 Earth -68541-12-17 09:49 J -23312826.34 -23312826.09 -23312825.84 0.0270 0.0008 \*  
 Mars -68540-09-05 17:01 J -23312564.03 -23312563.79 -23312563.53 0.0273 0.0165  
 Moon -68540-12-30 07:11 J -23312448.39 -23312448.20 -23312448.01 0.0274 0.0169  
 Earth -68540-12-30 09:06 J -23312448.31 -23312448.12 -23312447.93 0.0274 0.0181 \*  
 Venus -68533-05-20 02:09 J -23310115.61 -23310115.41 -23310115.21 0.0302 0.0100  
 Mercury -68530-03-10 23:01 J -23309090.61 -23309090.54 -23309090.47 0.0303 0.0249  
 Mercury -68530-06-07 11:45 J -23309002.13 -23309002.01 -23309001.89 0.0303 0.0112  
 Mercury -68530-09-04 00:13 J -23308913.61 -23308913.49 -23308913.36 0.0302 0.0027  
 Mercury -68530-12-01 12:42 J -23308825.07 -23308824.97 -23308824.86 0.0302 0.0161  
 Mercury -68529-02-28 01:11 J -23308736.47 -23308736.45 -23308736.42 0.0301 0.0294  
 Moon -68528-06-06 14:09 J -23308272.10 -23308271.91 -23308271.72 0.0297 0.0193  
 Earth -68528-06-06 14:37 J -23308272.08 -23308271.89 -23308271.70 0.0297 0.0178 \*  
 Mars -68528-09-27 02:23 J -23308159.48 -23308159.40 -23308159.32 0.0295 0.0280  
 Moon -68527-06-20 07:11 J -23307893.44 -23307893.20 -23307892.96 0.0292 0.0015  
 Earth -68527-06-20 10:47 J -23307893.29 -23307893.05 -23307892.81 0.0292 0.0032 \*  
 Moon -68526-07-03 16:18 J -23307514.97 -23307514.82 -23307514.66 0.0287 0.0213  
 Earth -68526-07-03 18:57 J -23307514.84 -23307514.71 -23307514.55 0.0287 0.0225 \*  
 Venus -68519-03-17 05:30 J -23305066.47 -23305066.27 -23305066.06 0.0261 0.0068  
 Mercury -68515-06-24 01:54 J -23303506.47 -23303506.42 -23303506.35 0.0260 0.0246  
 Mercury -68515-09-20 23:01 J -23303417.71 -23303417.54 -23303417.37 0.0260 0.0117  
 Mercury -68515-12-18 20:09 J -23303328.86 -23303328.66 -23303328.47 0.0260 0.0015

Mercury -68514-03-17 17:16 J -23303239.94 -23303239.78 -23303239.62 0.0261 0.0145

Earth -68513-11-29 21:35 J -23302616.73 -23302616.60 -23302616.46 0.0265 0.0220

Moon -68513-11-29 21:35 J -23302616.73 -23302616.60 -23302616.45 0.0265 0.0212 \*

Earth -68512-12-12 07:11 J -23302239.44 -23302239.20 -23302238.95 0.0268 0.0063

Moon -68512-12-12 11:01 J -23302239.28 -23302239.04 -23302238.80 0.0268 0.0066 \*

Earth -68511-12-25 02:09 J -23301861.64 -23301861.41 -23301861.18 0.0273 0.0107

Moon -68511-12-25 04:04 J -23301861.57 -23301861.33 -23301861.09 0.0273 0.0096 \*

Moon -68509-01-07 04:33 J -23301483.36 -23301483.31 -23301483.23 0.0277 0.0269

Venus -68504-11-30 10:33 J -23299329.22 -23299329.06 -23299328.89 0.0302 0.0178

Mercury -68501-07-28 01:25 J -23298358.48 -23298358.44 -23298358.40 0.0303 0.0285

Mercury -68501-10-24 13:54 J -23298270.02 -23298269.92 -23298269.80 0.0302 0.0149

Mercury -68500-01-21 02:37 J -23298181.52 -23298181.39 -23298181.26 0.0302 0.0012

Mercury -68500-04-19 15:06 J -23298092.98 -23298092.87 -23298092.75 0.0301 0.0124

Mercury -68500-07-17 03:35 J -23298004.41 -23298004.35 -23298004.28 0.0301 0.0257

Earth -68499-05-31 18:13 J -23297685.82 -23297685.74 -23297685.64 0.0298 0.0276

Moon -68499-05-31 18:57 J -23297685.76 -23297685.71 -23297685.66 0.0298 0.0290 \*

Earth -68498-06-14 18:57 J -23297306.94 -23297306.71 -23297306.47 0.0294 0.0063

Moon -68498-06-14 22:33 J -23297306.79 -23297306.56 -23297306.33 0.0294 0.0080 \*

Mars -68498-11-14 21:49 J -23297153.85 -23297153.59 -23297153.32 0.0292 0.0041

Earth -68497-06-27 08:23 J -23296928.35 -23296928.15 -23296927.93 0.0289 0.0139

Moon -68497-06-27 11:16 J -23296928.25 -23296928.03 -23296927.80 0.0289 0.0124 \*

Venus -68490-09-27 10:04 J -23294280.30 -23294280.08 -23294279.87 0.0261 0.0016

Mercury -68485-02-07 23:01 J -23292685.69 -23292685.54 -23292685.38 0.0260 0.0148

Mercury -68485-05-06 20:09 J -23292596.85 -23292596.66 -23292596.47 0.0260 0.0018

Mercury -68485-08-03 17:16 J -23292507.95 -23292507.78 -23292507.60 0.0261 0.0114

Mercury -68485-10-31 14:23 J -23292418.95 -23292418.90 -23292418.83 0.0261 0.0246

Moon -68483-12-07 04:04 J -23291652.54 -23291652.33 -23291652.10 0.0267 0.0133

Earth -68483-12-07 07:40 J -23291652.39 -23291652.18 -23291651.96 0.0267 0.0135 \*

Mars -68482-12-10 16:18 J -23291284.14 -23291283.82 -23291283.50 0.0270 0.0034

Moon -68482-12-19 21:21 J -23291274.85 -23291274.61 -23291274.36 0.0270 0.0022

Earth -68482-12-19 22:47 J -23291274.80 -23291274.55 -23291274.30 0.0270 0.0030 \*  
 Earth -68481-12-31 23:16 J -23290896.68 -23290896.53 -23290896.35 0.0275 0.0204  
 Moon -68480-01-01 01:54 J -23290896.59 -23290896.42 -23290896.24 0.0275 0.0190 \*  
 Venus -68475-10-25 16:47 J -23288772.88 -23288772.80 -23288772.71 0.0301 0.0274  
 Venus -68474-06-12 20:23 J -23288542.74 -23288542.65 -23288542.54 0.0302 0.0266  
 Mercury -68471-03-13 16:47 J -23287537.90 -23287537.80 -23287537.70 0.0303 0.0179  
 Mercury -68471-06-10 05:30 J -23287449.40 -23287449.27 -23287449.15 0.0302 0.0043  
 Mercury -68471-09-06 17:59 J -23287360.87 -23287360.75 -23287360.63 0.0302 0.0093  
 Mercury -68471-12-04 06:28 J -23287272.31 -23287272.23 -23287272.15 0.0301 0.0227  
 Moon -68469-06-08 01:11 J -23286720.65 -23286720.45 -23286720.25 0.0296 0.0169  
 Earth -68469-06-08 04:33 J -23286720.51 -23286720.31 -23286720.10 0.0296 0.0152 \*  
 Moon -68468-06-21 20:52 J -23286341.86 -23286341.63 -23286341.40 0.0292 0.0041  
 Earth -68468-06-21 23:16 J -23286341.77 -23286341.53 -23286341.30 0.0292 0.0056 \*  
 Mars -68467-01-01 21:49 J -23286147.78 -23286147.59 -23286147.37 0.0289 0.0190  
 Earth -68467-07-05 06:28 J -23285963.35 -23285963.23 -23285963.11 0.0287 0.0247  
 Moon -68467-07-05 07:40 J -23285963.30 -23285963.18 -23285963.04 0.0287 0.0238 \*  
 Venus -68460-04-08 15:21 J -23283494.07 -23283493.86 -23283493.64 0.0261 0.0042  
 Mercury -68456-06-26 23:45 J -23281953.64 -23281953.51 -23281953.36 0.0260 0.0176  
 Mercury -68456-09-23 20:52 J -23281864.82 -23281864.63 -23281864.44 0.0260 0.0046  
 Mercury -68456-12-21 17:59 J -23281775.93 -23281775.75 -23281775.57 0.0261 0.0085  
 Mercury -68455-03-20 15:21 J -23281686.97 -23281686.86 -23281686.76 0.0261 0.0217  
 Earth -68454-12-02 10:18 J -23281065.23 -23281065.07 -23281064.90 0.0265 0.0201  
 Moon -68454-12-02 13:40 J -23281065.09 -23281064.93 -23281064.75 0.0265 0.0191 \*  
 Earth -68453-12-13 21:21 J -23280687.86 -23280687.61 -23280687.36 0.0269 0.0041  
 Moon -68453-12-13 23:01 J -23280687.80 -23280687.54 -23280687.28 0.0269 0.0044 \*  
 Moon -68452-12-26 14:37 J -23280310.12 -23280309.89 -23280309.65 0.0273 0.0117  
 Earth -68452-12-26 17:30 J -23280309.98 -23280309.77 -23280309.54 0.0273 0.0130 \*  
 Mars -68451-01-31 14:37 J -23280274.09 -23280273.89 -23280273.66 0.0274 0.0203  
 Venus -68445-05-07 02:23 J -23277986.56 -23277986.40 -23277986.24 0.0301 0.0192  
 Mercury -68442-07-31 19:25 J -23276805.78 -23276805.69 -23276805.60 0.0303 0.0213

Mercury -68442-10-28 08:09 J -23276717.29 -23276717.16 -23276717.04 0.0302 0.0076

Mercury -68441-01-24 20:37 J -23276628.77 -23276628.64 -23276628.51 0.0302 0.0060

Mercury -68441-04-22 09:06 J -23276540.22 -23276540.12 -23276540.02 0.0301 0.0194

Earth -68440-06-02 11:01 J -23276134.17 -23276134.04 -23276133.91 0.0297 0.0249

Moon -68440-06-02 14:23 J -23276134.01 -23276133.90 -23276133.79 0.0297 0.0264 \*

Mars -68439-02-21 13:54 J -23275870.06 -23275869.92 -23275869.76 0.0294 0.0242

Earth -68439-06-16 10:18 J -23275755.30 -23275755.07 -23275754.83 0.0293 0.0037

Moon -68439-06-16 12:42 J -23275755.21 -23275754.97 -23275754.73 0.0293 0.0052 \*

Moon -68438-06-29 20:37 J -23275376.85 -23275376.64 -23275376.43 0.0288 0.0151

Earth -68438-06-29 22:18 J -23275376.76 -23275376.57 -23275376.37 0.0288 0.0164 \*

Venus -68431-03-04 22:18 J -23272936.61 -23272936.57 -23272936.51 0.0262 0.0255

Venus -68431-10-19 20:37 J -23272707.84 -23272707.64 -23272707.44 0.0261 0.0097

Mercury -68427-11-14 00:13 J -23271221.60 -23271221.49 -23271221.37 0.0260 0.0205

Mercury -68426-02-10 21:21 J -23271132.80 -23271132.61 -23271132.43 0.0260 0.0075

Mercury -68426-05-10 18:28 J -23271043.92 -23271043.73 -23271043.54 0.0261 0.0056

Mercury -68426-08-07 15:21 J -23270954.98 -23270954.86 -23270954.72 0.0261 0.0189

Moon -68425-11-26 10:33 J -23270478.12 -23270478.06 -23270477.97 0.0264 0.0251

Moon -68424-12-08 19:40 J -23270100.90 -23270100.68 -23270100.45 0.0267 0.0109

Earth -68424-12-08 21:49 J -23270100.81 -23270100.59 -23270100.36 0.0267 0.0112 \*

Mars -68423-03-15 18:42 J -23270003.87 -23270003.72 -23270003.53 0.0268 0.0229

Earth -68423-12-21 14:23 J -23269723.15 -23269722.90 -23269722.66 0.0271 0.0054

Moon -68423-12-21 17:01 J -23269723.03 -23269722.79 -23269722.55 0.0271 0.0044 \*

Earth -68421-01-03 16:04 J -23269344.95 -23269344.83 -23269344.67 0.0275 0.0230

Moon -68421-01-03 19:54 J -23269344.82 -23269344.67 -23269344.50 0.0275 0.0214 \*

Venus -68416-11-17 13:25 J -23267200.14 -23267199.94 -23267199.74 0.0301 0.0102

Mercury -68413-12-17 22:18 J -23266073.64 -23266073.57 -23266073.49 0.0303 0.0241

Mercury -68412-03-16 11:01 J -23265985.16 -23265985.04 -23265984.91 0.0303 0.0104

Mercury -68412-06-12 23:45 J -23265896.64 -23265896.51 -23265896.38 0.0302 0.0033

Mercury -68412-09-09 12:13 J -23265808.10 -23265807.99 -23265807.88 0.0302 0.0167

Mercury -68412-12-07 00:28 J -23265719.48 -23265719.48 -23265719.47 0.0301 0.0301

Moon -68410-06-10 19:54 J -23265168.87 -23265168.67 -23265168.46 0.0296 0.0140  
 Earth -68410-06-10 22:18 J -23265168.78 -23265168.57 -23265168.35 0.0296 0.0124 \*  
 Mars -68409-04-10 17:45 J -23264864.03 -23264863.76 -23264863.49 0.0292 0.0007  
 Earth -68409-06-23 15:21 J -23264790.08 -23264789.86 -23264789.62 0.0291 0.0084  
 Moon -68409-06-23 17:01 J -23264790.01 -23264789.79 -23264789.56 0.0291 0.0071 \*  
 Earth -68408-07-06 21:06 J -23264411.68 -23264411.62 -23264411.53 0.0286 0.0272  
 Moon -68408-07-07 00:57 J -23264411.54 -23264411.46 -23264411.35 0.0286 0.0263 \*  
 Venus -68402-09-15 04:18 J -23262150.45 -23262150.32 -23262150.17 0.0262 0.0196  
 Venus -68401-05-01 02:37 J -23261921.56 -23261921.39 -23261921.21 0.0260 0.0156  
 Mercury -68397-04-02 01:11 J -23260489.53 -23260489.45 -23260489.36 0.0260 0.0231  
 Mercury -68397-06-29 22:04 J -23260400.75 -23260400.58 -23260400.39 0.0260 0.0102  
 Mercury -68397-09-26 19:25 J -23260311.88 -23260311.69 -23260311.50 0.0261 0.0029  
 Mercury -68397-12-24 16:33 J -23260222.96 -23260222.81 -23260222.66 0.0261 0.0161  
 Earth -68395-12-04 00:42 J -23259513.64 -23259513.47 -23259513.27 0.0266 0.0179  
 Moon -68395-12-04 03:35 J -23259513.54 -23259513.35 -23259513.14 0.0266 0.0169 \*  
 Moon -68394-12-16 11:01 J -23259136.29 -23259136.04 -23259135.78 0.0270 0.0022  
 Earth -68394-12-16 13:25 J -23259136.19 -23259135.94 -23259135.69 0.0270 0.0017 \*  
 Mars -68393-05-06 21:49 J -23258993.92 -23258993.59 -23258993.27 0.0271 0.0007  
 Moon -68393-12-28 07:54 J -23258758.38 -23258758.17 -23258757.96 0.0274 0.0142  
 Earth -68393-12-28 11:16 J -23258758.23 -23258758.03 -23258757.82 0.0274 0.0156 \*  
 Venus -68386-05-31 00:28 J -23256413.69 -23256413.48 -23256413.27 0.0301 0.0013  
 Mercury -68383-05-07 01:25 J -23255341.49 -23255341.44 -23255341.38 0.0303 0.0270  
 Mercury -68383-08-03 14:09 J -23255253.02 -23255252.91 -23255252.79 0.0302 0.0133  
 Mercury -68383-10-31 02:52 J -23255164.51 -23255164.38 -23255164.25 0.0302 0.0009  
 Mercury -68382-01-27 15:21 J -23255075.98 -23255075.86 -23255075.75 0.0301 0.0138  
 Mercury -68382-04-26 03:35 J -23254987.40 -23254987.35 -23254987.29 0.0301 0.0272  
 Earth -68381-06-04 07:40 J -23254582.34 -23254582.18 -23254582.01 0.0297 0.0218  
 Moon -68381-06-04 10:04 J -23254582.22 -23254582.08 -23254581.92 0.0297 0.0233 \*  
 Moon -68380-06-18 04:04 J -23254203.58 -23254203.33 -23254203.08 0.0292 0.0022  
 Earth -68380-06-18 05:30 J -23254203.51 -23254203.27 -23254203.03 0.0292 0.0009 \*



Mars -68379-05-29 17:59 J -23253857.90 -23253857.75 -23253857.58 0.0288 0.0231  
 Moon -68379-07-01 12:28 J -23253825.17 -23253824.98 -23253824.80 0.0287 0.0180  
 Earth -68379-07-01 15:49 J -23253825.01 -23253824.84 -23253824.66 0.0287 0.0190 \*  
 Venus -68372-03-27 10:04 J -23251364.25 -23251364.08 -23251363.89 0.0262 0.0139  
 Venus -68372-11-11 08:09 J -23251135.27 -23251135.16 -23251135.03 0.0261 0.0212  
 Mercury -68368-08-20 01:40 J -23249757.43 -23249757.43 -23249757.42 0.0260 0.0260  
 Mercury -68368-11-16 22:47 J -23249668.72 -23249668.55 -23249668.38 0.0260 0.0130  
 Mercury -68367-02-13 19:54 J -23249579.87 -23249579.67 -23249579.48 0.0261 0.0004  
 Mercury -68367-05-13 16:47 J -23249490.96 -23249490.80 -23249490.62 0.0261 0.0133  
 Moon -68366-11-29 01:40 J -23248926.54 -23248926.43 -23248926.30 0.0265 0.0232  
 Earth -68366-11-29 04:33 J -23248926.41 -23248926.31 -23248926.22 0.0265 0.0243 \*  
 Earth -68365-12-10 12:57 J -23248549.19 -23248548.96 -23248548.71 0.0268 0.0089  
 Moon -68365-12-10 14:52 J -23248549.11 -23248548.88 -23248548.64 0.0268 0.0087 \*  
 Earth -68364-12-23 06:57 J -23248171.45 -23248171.21 -23248170.97 0.0272 0.0080  
 Moon -68364-12-23 10:18 J -23248171.31 -23248171.07 -23248170.82 0.0272 0.0071 \*  
 Mars -68363-06-28 23:16 J -23247983.65 -23247983.53 -23247983.40 0.0274 0.0251  
 Moon -68362-01-05 10:33 J -23247793.18 -23247793.06 -23247792.93 0.0276 0.0239  
 Earth -68362-01-05 10:47 J -23247793.14 -23247793.05 -23247792.95 0.0276 0.0255 \*  
 Venus -68357-12-10 11:16 J -23245627.23 -23245627.03 -23245626.82 0.0302 0.0077  
 Mercury -68354-09-24 04:18 J -23244609.33 -23244609.32 -23244609.29 0.0303 0.0299  
 Mercury -68354-12-21 17:16 J -23244520.89 -23244520.78 -23244520.67 0.0303 0.0161  
 Mercury -68353-03-19 05:45 J -23244432.39 -23244432.26 -23244432.13 0.0302 0.0025  
 Mercury -68353-06-15 18:13 J -23244343.85 -23244343.74 -23244343.62 0.0302 0.0112  
 Mercury -68353-09-12 06:42 J -23244255.29 -23244255.22 -23244255.14 0.0301 0.0245  
 Earth -68351-06-12 18:13 J -23243616.96 -23243616.74 -23243616.51 0.0295 0.0093  
 Moon -68351-06-12 19:40 J -23243616.90 -23243616.68 -23243616.47 0.0295 0.0109 \*  
 Mars -68351-07-19 15:35 J -23243580.03 -23243579.85 -23243579.65 0.0294 0.0206  
 Earth -68350-06-26 09:35 J -23243238.32 -23243238.10 -23243237.87 0.0290 0.0113  
 Moon -68350-06-26 13:11 J -23243238.17 -23243237.95 -23243237.72 0.0290 0.0098 \*  
 Venus -68343-10-07 16:18 J -23240578.02 -23240577.82 -23240577.61 0.0261 0.0080

Mercury -68338-04-05 23:30 J -23238936.66 -23238936.52 -23238936.36 0.0260 0.0157

Mercury -68338-07-03 20:52 J -23238847.82 -23238847.63 -23238847.44 0.0260 0.0027

Mercury -68338-09-30 17:59 J -23238758.93 -23238758.75 -23238758.57 0.0261 0.0105

Mercury -68338-12-28 15:06 J -23238669.94 -23238669.87 -23238669.79 0.0261 0.0237

Moon -68336-12-05 13:25 J -23237962.14 -23237961.94 -23237961.71 0.0266 0.0149

Earth -68336-12-05 15:35 J -23237962.05 -23237961.85 -23237961.64 0.0266 0.0156 \*

Mars -68335-08-11 02:09 J -23237713.64 -23237713.41 -23237713.18 0.0269 0.0189

Moon -68335-12-18 01:54 J -23237584.67 -23237584.42 -23237584.17 0.0270 0.0006

Earth -68335-12-18 05:30 J -23237584.52 -23237584.27 -23237584.02 0.0270 0.0009 \*

Earth -68334-12-31 04:18 J -23237206.49 -23237206.32 -23237206.12 0.0274 0.0183

Moon -68334-12-31 04:47 J -23237206.49 -23237206.30 -23237206.11 0.0274 0.0170 \*

Venus -68327-06-22 22:18 J -23234840.74 -23234840.57 -23234840.39 0.0302 0.0165

Mercury -68324-05-09 20:09 J -23233788.75 -23233788.66 -23233788.55 0.0303 0.0190

Mercury -68324-08-06 08:52 J -23233700.26 -23233700.13 -23233700.00 0.0302 0.0053

Mercury -68324-11-02 21:21 J -23233611.73 -23233611.61 -23233611.48 0.0301 0.0083

Mercury -68323-01-30 09:49 J -23233523.17 -23233523.09 -23233523.00 0.0301 0.0216

Moon -68322-06-07 02:52 J -23233030.55 -23233030.38 -23233030.19 0.0296 0.0203

Earth -68322-06-07 04:33 J -23233030.48 -23233030.31 -23233030.11 0.0296 0.0188 \*

Moon -68321-06-19 21:35 J -23232651.84 -23232651.60 -23232651.36 0.0292 0.0007

Earth -68321-06-20 01:11 J -23232651.69 -23232651.45 -23232651.21 0.0292 0.0023 \*

Mars -68321-09-05 18:13 J -23232574.01 -23232573.74 -23232573.48 0.0291 0.0039

Moon -68320-07-03 08:52 J -23232273.28 -23232273.13 -23232272.97 0.0287 0.0209

Earth -68320-07-03 09:49 J -23232273.23 -23232273.09 -23232272.93 0.0287 0.0218 \*

Venus -68313-04-18 22:04 J -23229791.79 -23229791.58 -23229791.37 0.0261 0.0022

Mercury -68309-08-22 23:59 J -23228204.63 -23228204.50 -23228204.37 0.0260 0.0187

Mercury -68309-11-19 21:06 J -23228115.81 -23228115.62 -23228115.44 0.0261 0.0057

Mercury -68308-02-16 17:59 J -23228026.93 -23228026.75 -23228026.56 0.0261 0.0075

Mercury -68308-05-16 15:21 J -23227937.98 -23227937.86 -23227937.74 0.0261 0.0207

Earth -68307-11-30 17:16 J -23227374.91 -23227374.78 -23227374.64 0.0265 0.0222

Moon -68307-11-30 19:11 J -23227374.84 -23227374.70 -23227374.55 0.0265 0.0212 \*

Earth -68306-12-13 03:06 J -23226997.61 -23226997.37 -23226997.12 0.0268 0.0065  
 Moon -68306-12-13 06:57 J -23226997.45 -23226997.21 -23226996.96 0.0268 0.0063 \*  
 Mars -68305-10-02 01:11 J -23226703.77 -23226703.45 -23226703.13 0.0271 0.0048  
 Moon -68305-12-24 22:47 J -23226619.80 -23226619.55 -23226619.31 0.0272 0.0096  
 Earth -68305-12-24 22:18 J -23226619.79 -23226619.57 -23226619.33 0.0272 0.0105 \*  
 Moon -68303-01-06 23:59 J -23226241.56 -23226241.50 -23226241.42 0.0277 0.0266  
 Venus -68298-05-18 04:47 J -23224284.35 -23224284.30 -23224284.22 0.0300 0.0284  
 Venus -68297-01-03 08:52 J -23224054.24 -23224054.13 -23224054.01 0.0302 0.0254  
 Mercury -68295-09-26 23:16 J -23223056.62 -23223056.53 -23223056.44 0.0303 0.0217  
 Mercury -68295-12-24 11:59 J -23222968.12 -23222968.00 -23222967.88 0.0302 0.0080  
 Mercury -68294-03-23 00:28 J -23222879.60 -23222879.48 -23222879.35 0.0302 0.0056  
 Mercury -68294-06-19 12:57 J -23222791.06 -23222790.96 -23222790.86 0.0301 0.0190  
 Earth -68293-05-31 13:11 J -23222444.03 -23222443.95 -23222443.85 0.0298 0.0276  
 Moon -68293-05-31 15:21 J -23222443.90 -23222443.86 -23222443.81 0.0298 0.0292 \*  
 Earth -68292-06-14 14:37 J -23222065.12 -23222064.89 -23222064.65 0.0294 0.0062  
 Moon -68292-06-14 18:28 J -23222064.96 -23222064.73 -23222064.50 0.0294 0.0079 \*  
 Earth -68291-06-28 04:33 J -23221686.51 -23221686.31 -23221686.10 0.0289 0.0142  
 Moon -68291-06-28 06:13 J -23221686.46 -23221686.24 -23221686.02 0.0289 0.0128 \*  
 Mars -68291-10-24 20:23 J -23221567.75 -23221567.65 -23221567.55 0.0288 0.0267  
 Venus -68284-10-30 04:04 J -23219005.54 -23219005.33 -23219005.11 0.0261 0.0037  
 Mercury -68279-01-10 00:42 J -23217472.57 -23217472.47 -23217472.36 0.0260 0.0214  
 Mercury -68279-04-08 21:49 J -23217383.77 -23217383.59 -23217383.41 0.0260 0.0085  
 Mercury -68279-07-06 18:57 J -23217294.90 -23217294.71 -23217294.52 0.0261 0.0046  
 Mercury -68279-10-03 16:04 J -23217205.97 -23217205.83 -23217205.69 0.0261 0.0178  
 Moon -68277-12-07 00:28 J -23216410.69 -23216410.48 -23216410.25 0.0267 0.0130  
 Earth -68277-12-07 04:18 J -23216410.53 -23216410.32 -23216410.10 0.0267 0.0134 \*  
 Moon -68276-12-19 18:42 J -23216032.96 -23216032.72 -23216032.47 0.0271 0.0028  
 Earth -68276-12-19 19:25 J -23216032.94 -23216032.69 -23216032.44 0.0271 0.0032 \*  
 Earth -68274-01-01 19:54 J -23215654.83 -23215654.67 -23215654.50 0.0275 0.0207  
 Moon -68274-01-01 23:16 J -23215654.70 -23215654.53 -23215654.35 0.0275 0.0194 \*

Venus -68269-11-27 15:21 J -23213498.01 -23213497.86 -23213497.70 0.0301 0.0199  
 Mercury -68265-02-14 02:09 J -23212324.48 -23212324.41 -23212324.34 0.0303 0.0249  
 Mercury -68265-05-12 14:52 J -23212236.00 -23212235.88 -23212235.76 0.0302 0.0112  
 Mercury -68265-08-09 03:21 J -23212147.49 -23212147.36 -23212147.23 0.0302 0.0025  
 Mercury -68265-11-05 15:49 J -23212058.95 -23212058.84 -23212058.73 0.0301 0.0159  
 Mercury -68264-02-02 04:18 J -23211970.35 -23211970.32 -23211970.29 0.0301 0.0292  
 Moon -68263-06-08 20:37 J -23211478.82 -23211478.64 -23211478.44 0.0296 0.0174  
 Earth -68263-06-09 00:13 J -23211478.68 -23211478.49 -23211478.27 0.0296 0.0157 \*  
 Mars -68263-12-14 17:16 J -23211290.00 -23211289.78 -23211289.55 0.0294 0.0161  
 Moon -68262-06-22 17:45 J -23211099.99 -23211099.76 -23211099.53 0.0291 0.0037  
 Earth -68262-06-22 19:25 J -23211099.93 -23211099.69 -23211099.46 0.0291 0.0053 \*  
 Earth -68261-07-05 02:37 J -23210721.50 -23210721.39 -23210721.26 0.0286 0.0245  
 Moon -68261-07-05 05:16 J -23210721.40 -23210721.28 -23210721.14 0.0286 0.0236 \*  
 Venus -68255-09-25 11:01 J -23208448.05 -23208448.04 -23208448.01 0.0262 0.0260  
 Venus -68254-05-12 09:06 J -23208219.32 -23208219.12 -23208218.92 0.0261 0.0091  
 Mercury -68250-05-30 00:28 J -23206740.53 -23206740.48 -23206740.41 0.0260 0.0246  
 Mercury -68250-08-26 21:35 J -23206651.77 -23206651.60 -23206651.43 0.0260 0.0117  
 Mercury -68250-11-23 18:42 J -23206562.91 -23206562.72 -23206562.53 0.0261 0.0014  
 Mercury -68249-02-20 15:49 J -23206474.00 -23206473.84 -23206473.68 0.0261 0.0145  
 Earth -68248-12-02 04:04 J -23205823.49 -23205823.33 -23205823.16 0.0265 0.0200  
 Moon -68248-12-02 07:54 J -23205823.35 -23205823.17 -23205823.00 0.0265 0.0192 \*  
 Earth -68247-12-14 14:52 J -23205446.12 -23205445.88 -23205445.62 0.0269 0.0042  
 Moon -68247-12-14 15:21 J -23205446.11 -23205445.86 -23205445.60 0.0269 0.0043 \*  
 Mars -68246-01-05 18:42 J -23205423.97 -23205423.72 -23205423.44 0.0269 0.0157  
 Moon -68246-12-27 07:54 J -23205068.40 -23205068.17 -23205067.94 0.0273 0.0118  
 Earth -68246-12-27 11:16 J -23205068.25 -23205068.03 -23205067.80 0.0273 0.0130 \*  
 Venus -68239-06-09 23:59 J -23202711.69 -23202711.50 -23202711.30 0.0301 0.0119  
 Mercury -68236-07-03 04:47 J -23201592.34 -23201592.30 -23201592.25 0.0303 0.0281  
 Mercury -68236-09-29 17:30 J -23201503.88 -23201503.77 -23201503.66 0.0303 0.0143  
 Mercury -68236-12-27 06:13 J -23201415.37 -23201415.24 -23201415.11 0.0302 0.0010

Mercury -68235-03-25 18:42 J -23201326.84 -23201326.72 -23201326.61 0.0302 0.0128  
 Mercury -68235-06-22 07:11 J -23201238.26 -23201238.20 -23201238.14 0.0301 0.0262  
 Earth -68234-06-03 07:25 J -23200892.32 -23200892.19 -23200892.05 0.0298 0.0246  
 Moon -68234-06-03 11:01 J -23200892.15 -23200892.04 -23200891.92 0.0298 0.0262 \*  
 Earth -68233-06-16 07:54 J -23200513.41 -23200513.17 -23200512.93 0.0294 0.0032  
 Moon -68233-06-16 09:06 J -23200513.36 -23200513.12 -23200512.87 0.0294 0.0049 \*  
 Mars -68232-01-31 16:47 J -23200284.06 -23200283.80 -23200283.54 0.0291 0.0072  
 Moon -68232-06-29 18:13 J -23200134.94 -23200134.74 -23200134.53 0.0289 0.0155  
 Earth -68232-06-29 20:37 J -23200134.83 -23200134.64 -23200134.44 0.0289 0.0170 \*  
 Venus -68225-04-06 16:33 J -23197661.94 -23197661.81 -23197661.67 0.0262 0.0204  
 Venus -68225-11-21 14:37 J -23197433.07 -23197432.89 -23197432.71 0.0260 0.0147  
 Mercury -68220-01-12 21:49 J -23195919.74 -23195919.59 -23195919.43 0.0260 0.0147  
 Mercury -68220-04-11 18:57 J -23195830.90 -23195830.71 -23195830.52 0.0260 0.0017  
 Mercury -68220-07-09 16:04 J -23195742.00 -23195741.83 -23195741.66 0.0261 0.0114  
 Mercury -68220-10-06 12:57 J -23195653.01 -23195652.96 -23195652.88 0.0261 0.0246  
 Moon -68219-11-27 03:21 J -23195236.42 -23195236.36 -23195236.29 0.0264 0.0253  
 Earth -68218-12-09 13:25 J -23194859.15 -23194858.94 -23194858.70 0.0267 0.0114  
 Moon -68218-12-09 13:40 J -23194859.15 -23194858.93 -23194858.71 0.0267 0.0111 \*  
 Earth -68217-12-21 05:30 J -23194481.51 -23194481.27 -23194481.02 0.0271 0.0055  
 Moon -68217-12-21 09:06 J -23194481.37 -23194481.12 -23194480.88 0.0271 0.0047 \*  
 Mars -68216-02-26 16:18 J -23194414.12 -23194413.82 -23194413.51 0.0272 0.0081  
 Earth -68215-01-03 07:11 J -23194103.33 -23194103.20 -23194103.06 0.0275 0.0231  
 Moon -68215-01-03 09:49 J -23194103.24 -23194103.09 -23194102.92 0.0275 0.0217 \*  
 Venus -68210-12-21 09:35 J -23191925.31 -23191925.10 -23191924.89 0.0302 0.0038  
 Mercury -68206-02-16 20:09 J -23190771.76 -23190771.66 -23190771.56 0.0303 0.0177  
 Mercury -68206-05-16 08:52 J -23190683.26 -23190683.13 -23190683.01 0.0302 0.0041  
 Mercury -68206-08-12 21:21 J -23190594.73 -23190594.61 -23190594.49 0.0302 0.0095  
 Mercury -68206-11-09 09:49 J -23190506.17 -23190506.09 -23190506.01 0.0301 0.0229  
 Moon -68204-06-10 16:18 J -23189927.02 -23189926.82 -23189926.62 0.0295 0.0144  
 Earth -68204-06-10 16:47 J -23189927.01 -23189926.80 -23189926.58 0.0295 0.0127 \*

Earth -68203-06-24 10:33 J -23189548.28 -23189548.06 -23189547.82 0.0291 0.0082  
 Moon -68203-06-24 13:11 J -23189548.17 -23189547.95 -23189547.72 0.0291 0.0066 \*  
 Earth -68202-07-07 17:01 J -23189169.86 -23189169.79 -23189169.71 0.0286 0.0271  
 Moon -68202-07-07 20:09 J -23189169.74 -23189169.66 -23189169.55 0.0286 0.0260 \*  
 Venus -68196-10-17 20:52 J -23186875.79 -23186875.63 -23186875.45 0.0261 0.0152  
 Venus -68195-06-03 18:57 J -23186646.85 -23186646.71 -23186646.57 0.0260 0.0199  
 Mercury -68191-06-01 21:21 J -23185187.74 -23185187.61 -23185187.47 0.0260 0.0182  
 Mercury -68191-08-29 18:13 J -23185098.93 -23185098.74 -23185098.55 0.0260 0.0053  
 Mercury -68191-11-26 15:21 J -23185010.04 -23185009.86 -23185009.68 0.0261 0.0078  
 Mercury -68190-02-23 12:13 J -23184921.09 -23184920.99 -23184920.86 0.0261 0.0210  
 Earth -68189-12-03 11:16 J -23184272.21 -23184272.03 -23184271.84 0.0266 0.0181  
 Moon -68189-12-03 11:59 J -23184272.20 -23184272.00 -23184271.81 0.0266 0.0174 \*  
 Moon -68188-12-15 19:11 J -23183894.95 -23183894.70 -23183894.45 0.0269 0.0027  
 Earth -68188-12-15 23:01 J -23183894.79 -23183894.54 -23183894.29 0.0269 0.0020 \*  
 Moon -68187-12-28 17:16 J -23183516.98 -23183516.78 -23183516.57 0.0273 0.0140  
 Earth -68187-12-28 19:54 J -23183516.87 -23183516.67 -23183516.46 0.0273 0.0152 \*  
 Venus -68180-07-02 16:33 J -23181139.02 -23181138.81 -23181138.60 0.0301 0.0035  
 Mercury -68177-07-05 22:18 J -23180039.66 -23180039.57 -23180039.48 0.0303 0.0214  
 Mercury -68177-10-02 11:01 J -23179951.17 -23179951.04 -23179950.92 0.0303 0.0077  
 Mercury -68177-12-29 23:30 J -23179862.64 -23179862.52 -23179862.39 0.0302 0.0060  
 Mercury -68176-03-28 11:59 J -23179774.09 -23179774.00 -23179773.90 0.0301 0.0195  
 Earth -68175-06-04 21:49 J -23179340.74 -23179340.59 -23179340.42 0.0298 0.0220  
 Moon -68175-06-04 22:18 J -23179340.72 -23179340.57 -23179340.41 0.0298 0.0234 \*  
 Mars -68174-05-11 07:25 J -23179000.42 -23179000.19 -23178999.95 0.0294 0.0134  
 Moon -68174-06-18 18:13 J -23178961.98 -23178961.74 -23178961.50 0.0293 0.0022  
 Earth -68174-06-18 21:21 J -23178961.85 -23178961.61 -23178961.37 0.0293 0.0005 \*  
 Moon -68173-07-01 05:45 J -23178583.44 -23178583.26 -23178583.08 0.0288 0.0182  
 Earth -68173-07-01 09:06 J -23178583.29 -23178583.12 -23178582.94 0.0288 0.0195 \*  
 Venus -68166-04-30 01:40 J -23176089.63 -23176089.43 -23176089.23 0.0261 0.0098  
 Venus -68166-12-14 23:30 J -23175860.58 -23175860.52 -23175860.47 0.0260 0.0250

Mercury -68162-10-19 21:06 J -23174455.72 -23174455.62 -23174455.51 0.0259 0.0215

Mercury -68161-01-16 17:59 J -23174366.93 -23174366.75 -23174366.56 0.0260 0.0087

Mercury -68161-04-14 15:06 J -23174278.06 -23174277.87 -23174277.68 0.0260 0.0043

Mercury -68161-07-12 12:13 J -23174189.13 -23174188.99 -23174188.85 0.0261 0.0175

Moon -68160-11-28 10:47 J -23173685.13 -23173685.05 -23173684.93 0.0264 0.0238

Earth -68160-11-28 11:59 J -23173685.07 -23173685.00 -23173684.90 0.0264 0.0248 \*

Earth -68159-12-10 19:25 J -23173307.92 -23173307.69 -23173307.45 0.0267 0.0093

Moon -68159-12-10 22:47 J -23173307.77 -23173307.55 -23173307.31 0.0267 0.0095 \*

Mars -68158-06-01 20:09 J -23173134.93 -23173134.66 -23173134.36 0.0269 0.0131

Earth -68158-12-23 11:45 J -23172930.25 -23172930.01 -23172929.77 0.0271 0.0075

Moon -68158-12-23 14:09 J -23172930.16 -23172929.91 -23172929.65 0.0271 0.0064 \*

Moon -68156-01-04 12:13 J -23172552.11 -23172551.99 -23172551.85 0.0276 0.0236

Earth -68156-01-04 13:54 J -23172552.01 -23172551.92 -23172551.81 0.0276 0.0252 \*

Venus -68150-01-12 23:59 J -23170352.69 -23170352.50 -23170352.30 0.0302 0.0109

Mercury -68148-11-23 00:28 J -23169307.55 -23169307.48 -23169307.41 0.0303 0.0253

Mercury -68147-02-19 13:11 J -23169219.07 -23169218.95 -23169218.83 0.0303 0.0115

Mercury -68147-05-19 01:40 J -23169130.56 -23169130.43 -23169130.30 0.0302 0.0022

Mercury -68147-08-15 14:09 J -23169042.01 -23169041.91 -23169041.79 0.0302 0.0157

Mercury -68147-11-12 02:37 J -23168953.42 -23168953.39 -23168953.35 0.0301 0.0290

Earth -68145-06-12 03:49 J -23168375.56 -23168375.34 -23168375.11 0.0295 0.0102

Moon -68145-06-12 06:57 J -23168375.42 -23168375.21 -23168374.99 0.0295 0.0118 \*

Earth -68144-06-25 20:52 J -23167996.85 -23167996.63 -23167996.40 0.0290 0.0106

Moon -68144-06-26 00:13 J -23167996.72 -23167996.49 -23167996.26 0.0290 0.0091 \*

Mars -68144-06-28 01:11 J -23167994.70 -23167994.45 -23167994.20 0.0290 0.0104

Moon -68143-07-09 02:23 J -23167618.41 -23167618.40 -23167618.39 0.0285 0.0285

Venus -68137-11-09 05:01 J -23165303.50 -23165303.29 -23165303.08 0.0261 0.0049

Mercury -68132-03-07 19:54 J -23163723.70 -23163723.67 -23163723.63 0.0259 0.0254

Mercury -68132-06-04 16:47 J -23163634.96 -23163634.80 -23163634.63 0.0260 0.0126

Mercury -68132-09-01 13:54 J -23163546.12 -23163545.92 -23163545.73 0.0260 0.0007

Mercury -68132-11-29 10:47 J -23163457.21 -23163457.05 -23163456.88 0.0261 0.0135

Moon -68130-12-05 11:01 J -23162721.23 -23162721.04 -23162720.83 0.0266 0.0160  
 Earth -68130-12-05 14:23 J -23162721.09 -23162720.90 -23162720.70 0.0266 0.0164 \*  
 Moon -68129-12-17 00:13 J -23162343.73 -23162343.49 -23162343.24 0.0269 0.0010  
 Earth -68129-12-17 02:09 J -23162343.66 -23162343.41 -23162343.15 0.0269 0.0005 \*  
 Mars -68128-07-23 05:30 J -23162125.57 -23162125.27 -23162124.96 0.0272 0.0098  
 Earth -68128-12-29 23:30 J -23161965.71 -23161965.52 -23161965.32 0.0274 0.0172  
 Moon -68128-12-30 01:40 J -23161965.62 -23161965.43 -23161965.23 0.0274 0.0158 \*  
 Venus -68121-07-25 05:01 J -23159566.46 -23159566.29 -23159566.12 0.0302 0.0173  
 Mercury -68118-04-12 01:54 J -23158575.44 -23158575.42 -23158575.39 0.0303 0.0296  
 Mercury -68118-07-09 14:52 J -23158486.99 -23158486.88 -23158486.77 0.0303 0.0157  
 Mercury -68118-10-06 03:35 J -23158398.48 -23158398.35 -23158398.22 0.0303 0.0021  
 Mercury -68117-01-02 16:04 J -23158309.95 -23158309.83 -23158309.71 0.0302 0.0116  
 Mercury -68117-03-31 04:33 J -23158221.38 -23158221.31 -23158221.24 0.0301 0.0250  
 Moon -68116-06-06 03:49 J -23157789.51 -23157789.34 -23157789.17 0.0298 0.0213  
 Earth -68116-06-06 06:42 J -23157789.39 -23157789.22 -23157789.03 0.0298 0.0197 \*  
 Moon -68115-06-20 02:52 J -23157410.61 -23157410.38 -23157410.14 0.0293 0.0006  
 Earth -68115-06-20 05:45 J -23157410.50 -23157410.26 -23157410.02 0.0293 0.0018 \*  
 Earth -68114-07-03 17:01 J -23157031.94 -23157031.79 -23157031.63 0.0288 0.0218  
 Moon -68114-07-03 17:30 J -23157031.92 -23157031.77 -23157031.60 0.0288 0.0208 \*  
 Venus -68107-05-22 08:52 J -23154517.35 -23154517.13 -23154516.92 0.0261 0.0001  
 Mercury -68103-10-22 16:04 J -23152902.97 -23152902.83 -23152902.67 0.0259 0.0162  
 Mercury -68102-01-19 13:11 J -23152814.14 -23152813.95 -23152813.76 0.0260 0.0033  
 Mercury -68102-04-18 10:04 J -23152725.26 -23152725.08 -23152724.90 0.0260 0.0097  
 Mercury -68102-07-16 06:57 J -23152636.29 -23152636.21 -23152636.11 0.0260 0.0229  
 Earth -68101-11-29 13:25 J -23152134.05 -23152133.94 -23152133.82 0.0264 0.0233  
 Moon -68101-11-29 16:33 J -23152133.93 -23152133.81 -23152133.67 0.0264 0.0223 \*  
 Earth -68100-12-11 20:52 J -23151756.87 -23151756.63 -23151756.39 0.0267 0.0077  
 Moon -68100-12-11 23:01 J -23151756.78 -23151756.54 -23151756.28 0.0267 0.0080 \*  
 Moon -68099-12-24 10:47 J -23151379.29 -23151379.05 -23151378.80 0.0271 0.0079  
 Earth -68099-12-24 13:25 J -23151379.17 -23151378.94 -23151378.70 0.0271 0.0092 \*



Moon -68097-01-06 12:28 J -23151001.08 -23151000.98 -23151000.89 0.0276 0.0253  
 Earth -68097-01-06 15:49 J -23151000.87 -23151000.84 -23151000.77 0.0276 0.0270  
 Venus -68092-06-19 06:28 J -23149010.24 -23149010.23 -23149010.21 0.0301 0.0300  
 Venus -68091-02-04 10:47 J -23148780.17 -23148780.05 -23148779.92 0.0303 0.0241  
 Mercury -68089-11-25 16:33 J -23147754.91 -23147754.81 -23147754.71 0.0303 0.0200  
 Mercury -68088-02-22 05:16 J -23147666.41 -23147666.28 -23147666.16 0.0303 0.0063  
 Mercury -68088-05-21 17:45 J -23147577.88 -23147577.76 -23147577.63 0.0302 0.0075  
 Mercury -68088-08-18 06:28 J -23147489.33 -23147489.23 -23147489.14 0.0302 0.0209  
 Earth -68087-05-31 05:30 J -23147203.29 -23147203.27 -23147203.24 0.0299 0.0297  
 Earth -68086-06-14 09:49 J -23146824.32 -23146824.09 -23146823.85 0.0295 0.0080  
 Moon -68086-06-14 12:42 J -23146824.20 -23146823.97 -23146823.74 0.0295 0.0095 \*  
 Mars -68086-10-05 03:06 J -23146711.61 -23146711.37 -23146711.12 0.0294 0.0111  
 Moon -68085-06-27 01:25 J -23146445.66 -23146445.44 -23146445.21 0.0290 0.0117  
 Earth -68085-06-27 02:37 J -23146445.60 -23146445.39 -23146445.17 0.0290 0.0128 \*  
 Venus -68078-12-02 11:01 J -23143731.25 -23143731.04 -23143730.83 0.0260 0.0045  
 Mercury -68073-03-10 14:23 J -23142171.01 -23142170.90 -23142170.77 0.0259 0.0203  
 Mercury -68073-06-07 11:30 J -23142082.21 -23142082.02 -23142081.84 0.0260 0.0075  
 Mercury -68073-09-04 08:23 J -23141993.34 -23141993.15 -23141992.96 0.0260 0.0055  
 Mercury -68073-12-02 05:16 J -23141904.41 -23141904.28 -23141904.14 0.0260 0.0186  
 Moon -68071-12-06 11:45 J -23141170.20 -23141170.01 -23141169.80 0.0266 0.0147  
 Earth -68071-12-06 14:23 J -23141170.10 -23141169.90 -23141169.69 0.0266 0.0149 \*  
 Mars -68070-10-25 19:40 J -23140846.95 -23140846.68 -23140846.37 0.0269 0.0122  
 Earth -68070-12-19 02:09 J -23140792.66 -23140792.41 -23140792.16 0.0269 0.0015  
 Moon -68070-12-19 04:33 J -23140792.55 -23140792.31 -23140792.06 0.0269 0.0005 \*  
 Earth -68069-12-30 23:30 J -23140414.70 -23140414.52 -23140414.33 0.0274 0.0189  
 Moon -68069-12-31 02:52 J -23140414.56 -23140414.38 -23140414.17 0.0274 0.0173 \*  
 Venus -68063-12-30 09:49 J -23138224.20 -23138224.09 -23138223.96 0.0301 0.0243  
 Venus -68062-08-17 13:54 J -23137993.94 -23137993.92 -23137993.87 0.0302 0.0298  
 Mercury -68059-04-14 17:45 J -23137022.84 -23137022.76 -23137022.69 0.0303 0.0249  
 Mercury -68059-07-12 06:28 J -23136934.35 -23136934.23 -23136934.11 0.0303 0.0111

Mercury -68059-10-08 18:57 J -23136845.83 -23136845.71 -23136845.58 0.0303 0.0028

Mercury -68058-01-05 07:40 J -23136757.29 -23136757.18 -23136757.07 0.0302 0.0162

Mercury -68058-04-03 20:09 J -23136668.68 -23136668.66 -23136668.64 0.0301 0.0296

Moon -68057-06-07 07:11 J -23136238.38 -23136238.20 -23136238.03 0.0297 0.0195

Earth -68057-06-07 09:35 J -23136238.28 -23136238.10 -23136237.90 0.0297 0.0179 \*

Earth -68056-06-21 08:23 J -23135859.39 -23135859.15 -23135858.91 0.0293 0.0037

Moon -68056-06-21 09:35 J -23135859.33 -23135859.10 -23135858.87 0.0293 0.0025 \*

Mars -68056-11-21 14:09 J -23135706.15 -23135705.91 -23135705.66 0.0291 0.0117

Earth -68055-07-04 19:25 J -23135480.82 -23135480.69 -23135480.55 0.0288 0.0236

Moon -68055-07-04 23:01 J -23135480.67 -23135480.54 -23135480.39 0.0288 0.0229 \*

Venus -68049-10-27 16:04 J -23133173.85 -23133173.83 -23133173.79 0.0262 0.0259

Venus -68048-06-13 13:54 J -23132945.12 -23132944.92 -23132944.72 0.0260 0.0091

Mercury -68044-07-28 13:25 J -23131439.00 -23131438.94 -23131438.87 0.0259 0.0242

Mercury -68044-10-25 10:18 J -23131350.24 -23131350.07 -23131349.90 0.0259 0.0114

Mercury -68043-01-22 07:11 J -23131261.39 -23131261.20 -23131261.01 0.0259 0.0015

Mercury -68043-04-21 04:04 J -23131172.49 -23131172.33 -23131172.17 0.0260 0.0145

Earth -68042-12-01 11:30 J -23130583.14 -23130583.02 -23130582.87 0.0264 0.0220

Moon -68042-12-01 14:23 J -23130583.04 -23130582.90 -23130582.74 0.0264 0.0212 \*

Moon -68041-12-12 16:33 J -23130206.05 -23130205.81 -23130205.55 0.0267 0.0069

Earth -68041-12-12 18:57 J -23130205.95 -23130205.71 -23130205.46 0.0267 0.0063 \*

Mars -68040-12-16 03:06 J -23129837.65 -23129837.37 -23129837.07 0.0271 0.0112

Moon -68040-12-25 08:09 J -23129828.39 -23129828.16 -23129827.92 0.0271 0.0092

Earth -68040-12-25 11:16 J -23129828.25 -23129828.03 -23129827.79 0.0271 0.0107 \*

Moon -68038-01-07 14:09 J -23129449.95 -23129449.91 -23129449.86 0.0276 0.0270

Venus -68033-07-11 13:40 J -23127438.09 -23127437.93 -23127437.76 0.0301 0.0185

Mercury -68030-09-01 18:42 J -23126290.74 -23126290.72 -23126290.69 0.0304 0.0296

Mercury -68030-11-29 07:40 J -23126202.29 -23126202.18 -23126202.07 0.0304 0.0157

Mercury -68029-02-25 20:23 J -23126113.78 -23126113.65 -23126113.52 0.0303 0.0020

Mercury -68029-05-24 08:52 J -23126025.24 -23126025.13 -23126025.01 0.0303 0.0117

Mercury -68029-08-20 21:21 J -23125936.67 -23125936.61 -23125936.53 0.0302 0.0252

Earth	-68028-06-01 06:28 J	-23125652.31	-23125652.23	-23125652.15	0.0299	0.0281
Moon	-68028-06-01 08:37 J	-23125652.16	-23125652.14	-23125652.10	0.0299	0.0297 *
Moon	-68027-06-15 09:06 J	-23125273.35	-23125273.12	-23125272.87	0.0295	0.0076
Earth	-68027-06-15 10:33 J	-23125273.29	-23125273.06	-23125272.82	0.0295	0.0062 *
Moon	-68026-06-28 23:45 J	-23124894.71	-23124894.51	-23124894.29	0.0290	0.0138
Earth	-68026-06-29 03:21 J	-23124894.56	-23124894.36	-23124894.15	0.0290	0.0146 *
Venus	-68019-05-09 17:45 J	-23122387.87	-23122387.76	-23122387.63	0.0261	0.0216
Venus	-68019-12-24 15:21 J	-23122159.04	-23122158.86	-23122158.67	0.0260	0.0133
Mercury	-68014-03-14 08:09 J	-23120618.31	-23120618.16	-23120618.00	0.0259	0.0158
Mercury	-68014-06-11 05:01 J	-23120529.48	-23120529.29	-23120529.10	0.0259	0.0030
Mercury	-68014-09-08 01:54 J	-23120440.59	-23120440.42	-23120440.24	0.0260	0.0100
Mercury	-68014-12-05 23:01 J	-23120351.63	-23120351.54	-23120351.45	0.0260	0.0230
Earth	-68012-12-07 11:01 J	-23119619.25	-23119619.04	-23119618.81	0.0266	0.0136
Moon	-68012-12-07 13:11 J	-23119619.15	-23119618.95	-23119618.73	0.0266	0.0138 *
Earth	-68011-12-19 22:33 J	-23119241.80	-23119241.56	-23119241.30	0.0269	0.0029
Moon	-68011-12-20 01:54 J	-23119241.67	-23119241.42	-23119241.16	0.0269	0.0017 *
Moon	-68009-01-01 18:57 J	-23118863.90	-23118863.71	-23118863.52	0.0274	0.0188
Earth	-68009-01-01 19:40 J	-23118863.83	-23118863.68	-23118863.50	0.0274	0.0204 *
Venus	-68003-01-21 16:04 J	-23116652.02	-23116651.83	-23116651.64	0.0301	0.0132

# 68TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 68th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
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Mercury -68000-04-17 08:23 J -23115470.24 -23115470.15 -23115470.06 0.0304 0.0210

Mercury -68000-07-14 21:06 J -23115381.74 -23115381.62 -23115381.49 0.0303 0.0072

Mercury -68000-10-11 09:49 J -23115293.22 -23115293.09 -23115292.96 0.0303 0.0065

Mercury -67999-01-07 22:18 J -23115204.66 -23115204.57 -23115204.47 0.0302 0.0201

Earth -67998-06-09 08:09 J -23114687.36 -23114687.16 -23114686.96 0.0297 0.0164

Moon -67998-06-09 09:49 J -23114687.27 -23114687.09 -23114686.90 0.0297 0.0180 \*

Mars -67997-02-28 03:49 J -23114423.58 -23114423.34 -23114423.09 0.0294 0.0104

Earth -67997-06-22 07:11 J -23114308.44 -23114308.20 -23114307.97 0.0293 0.0053

Moon -67997-06-22 10:33 J -23114308.30 -23114308.06 -23114307.82 0.0293 0.0041 \*

Earth -67996-07-05 17:59 J -23113929.85 -23113929.75 -23113929.62 0.0288 0.0252

Moon -67996-07-05 18:57 J -23113929.83 -23113929.71 -23113929.58 0.0288 0.0248 \*

Venus -67990-11-19 19:54 J -23111601.83 -23111601.67 -23111601.51 0.0261 0.0172

Venus -67989-07-05 17:16 J -23111372.92 -23111372.78 -23111372.61 0.0260 0.0177

Mercury -67985-07-31 06:42 J -23109886.33 -23109886.22 -23109886.09 0.0259 0.0199

Mercury -67985-10-28 03:35 J -23109797.53 -23109797.35 -23109797.16 0.0259 0.0071

Mercury -67984-01-25 00:28 J -23109708.67 -23109708.48 -23109708.29 0.0259 0.0058

Mercury -67984-04-23 21:21 J -23109619.74 -23109619.61 -23109619.47 0.0260 0.0188

Moon -67983-12-02 05:30 J -23109032.42 -23109032.27 -23109032.10 0.0263 0.0206

Earth -67983-12-02 08:09 J -23109032.31 -23109032.16 -23109032.01 0.0263 0.0208 \*

Moon -67982-12-14 11:30 J -23108655.26 -23108655.02 -23108654.77 0.0267 0.0059

Earth -67982-12-14 15:06 J -23108655.12 -23108654.87 -23108654.63 0.0267 0.0050 \*

Mars -67981-03-19 10:18 J -23108559.36 -23108559.07 -23108558.76 0.0268 0.0108

Earth -67981-12-26 06:57 J -23108277.43 -23108277.21 -23108276.98 0.0271 0.0120

Moon -67981-12-26 08:09 J -23108277.38 -23108277.16 -23108276.94 0.0271 0.0106 \*

Venus -67974-08-03 18:42 J -23105865.92 -23105865.72 -23105865.51 0.0302 0.0078

Mercury -67971-09-04 09:21 J -23104738.17 -23104738.11 -23104738.04 0.0304 0.0260

Mercury -67971-12-01 22:04 J -23104649.69 -23104649.58 -23104649.46 0.0304 0.0122

Mercury -67970-02-28 10:47 J -23104561.18 -23104561.05 -23104560.92 0.0303 0.0018

Mercury -67970-05-27 23:30 J -23104472.63 -23104472.52 -23104472.41 0.0303 0.0152

Mercury -67970-08-24 11:59 J -23104384.04 -23104384.00 -23104383.96 0.0302 0.0287

Moon -67969-06-02 00:13 J -23104101.56 -23104101.49 -23104101.41 0.0300 0.0284  
 Earth -67969-06-02 03:06 J -23104101.48 -23104101.37 -23104101.27 0.0300 0.0267 \*  
 Moon -67968-06-16 03:35 J -23103722.58 -23103722.35 -23103722.11 0.0295 0.0062  
 Earth -67968-06-16 07:11 J -23103722.43 -23103722.20 -23103721.96 0.0295 0.0047 \*  
 Mars -67967-04-16 12:28 J -23103418.22 -23103417.98 -23103417.73 0.0291 0.0126  
 Moon -67967-06-29 23:16 J -23103343.72 -23103343.53 -23103343.33 0.0290 0.0156  
 Earth -67967-06-29 23:59 J -23103343.70 -23103343.50 -23103343.30 0.0290 0.0161 \*  
 Venus -67960-05-31 20:52 J -23100815.81 -23100815.63 -23100815.44 0.0261 0.0132  
 Venus -67959-01-15 18:13 J -23100586.85 -23100586.74 -23100586.61 0.0260 0.0216  
 Mercury -67956-12-18 04:33 J -23099154.36 -23099154.31 -23099154.24 0.0259 0.0243  
 Mercury -67955-03-17 01:25 J -23099065.61 -23099065.44 -23099065.27 0.0259 0.0116  
 Mercury -67955-06-13 22:04 J -23098976.77 -23098976.58 -23098976.38 0.0259 0.0013  
 Mercury -67955-09-10 18:57 J -23098887.87 -23098887.71 -23098887.54 0.0260 0.0142  
 Earth -67953-12-08 06:13 J -23098068.46 -23098068.24 -23098068.01 0.0265 0.0124  
 Moon -67953-12-08 09:49 J -23098068.31 -23098068.09 -23098067.86 0.0265 0.0129 \*  
 Moon -67952-12-20 16:33 J -23097691.07 -23097690.81 -23097690.55 0.0269 0.0028  
 Earth -67952-12-20 17:30 J -23097691.02 -23097690.77 -23097690.52 0.0269 0.0041 \*  
 Mars -67951-05-10 07:11 J -23097550.48 -23097550.20 -23097549.89 0.0271 0.0113  
 Moon -67950-01-02 10:33 J -23097313.22 -23097313.06 -23097312.89 0.0274 0.0203  
 Earth -67950-01-02 14:09 J -23097313.05 -23097312.91 -23097312.75 0.0274 0.0216 \*  
 Venus -67944-02-12 19:40 J -23095079.88 -23095079.68 -23095079.47 0.0301 0.0031  
 Mercury -67941-04-19 22:33 J -23093917.66 -23093917.56 -23093917.45 0.0304 0.0178  
 Mercury -67941-07-17 11:16 J -23093829.16 -23093829.03 -23093828.90 0.0303 0.0040  
 Mercury -67941-10-13 23:59 J -23093740.62 -23093740.50 -23093740.38 0.0303 0.0097  
 Mercury -67940-01-10 12:28 J -23093652.06 -23093651.98 -23093651.89 0.0302 0.0233  
 Earth -67939-06-10 02:37 J -23093136.59 -23093136.39 -23093136.18 0.0298 0.0152  
 Moon -67939-06-10 05:59 J -23093136.44 -23093136.25 -23093136.04 0.0298 0.0168 \*  
 Earth -67938-06-24 01:54 J -23092757.65 -23092757.42 -23092757.18 0.0293 0.0066  
 Moon -67938-06-24 02:37 J -23092757.64 -23092757.39 -23092757.15 0.0293 0.0057 \*  
 Moon -67937-07-06 09:49 J -23092379.16 -23092379.09 -23092378.99 0.0288 0.0268

Earth -67937-07-06 13:11 J -23092379.03 -23092378.95 -23092378.85 0.0288 0.0265 \*  
 Venus -67931-12-11 22:33 J -23090029.76 -23090029.56 -23090029.36 0.0261 0.0089  
 Venus -67930-07-28 20:09 J -23089800.68 -23089800.66 -23089800.64 0.0260 0.0258  
 Mercury -67926-08-03 23:45 J -23088333.66 -23088333.51 -23088333.35 0.0258 0.0158  
 Mercury -67926-10-31 20:37 J -23088244.83 -23088244.64 -23088244.45 0.0259 0.0030  
 Mercury -67925-01-28 17:30 J -23088155.95 -23088155.77 -23088155.59 0.0259 0.0099  
 Mercury -67925-04-26 14:09 J -23088066.99 -23088066.91 -23088066.81 0.0260 0.0229  
 Moon -67924-12-02 23:45 J -23087481.66 -23087481.51 -23087481.35 0.0263 0.0201  
 Earth -67924-12-03 02:52 J -23087481.53 -23087481.38 -23087481.20 0.0263 0.0198 \*  
 Earth -67923-12-15 09:35 J -23087104.35 -23087104.10 -23087103.85 0.0267 0.0039  
 Moon -67923-12-15 10:18 J -23087104.31 -23087104.07 -23087103.83 0.0267 0.0051 \*  
 Earth -67922-12-28 01:11 J -23086726.66 -23086726.45 -23086726.23 0.0271 0.0132  
 Moon -67922-12-28 04:47 J -23086726.52 -23086726.30 -23086726.07 0.0271 0.0117 \*  
 Venus -67915-08-25 22:04 J -23084293.79 -23084293.58 -23084293.37 0.0302 0.0022  
 Mercury -67912-09-06 23:16 J -23083185.61 -23083185.53 -23083185.44 0.0304 0.0230  
 Mercury -67912-12-04 12:13 J -23083097.11 -23083096.99 -23083096.87 0.0304 0.0091  
 Mercury -67911-03-03 00:57 J -23083008.59 -23083008.46 -23083008.33 0.0303 0.0047  
 Mercury -67911-05-30 13:25 J -23082920.04 -23082919.94 -23082919.84 0.0303 0.0183  
 Moon -67910-06-03 17:30 J -23082550.86 -23082550.77 -23082550.66 0.0300 0.0272  
 Earth -67910-06-03 20:37 J -23082550.76 -23082550.64 -23082550.51 0.0300 0.0256 \*  
 Earth -67909-06-17 01:11 J -23082171.68 -23082171.45 -23082171.21 0.0295 0.0035  
 Moon -67909-06-17 01:11 J -23082171.68 -23082171.45 -23082171.22 0.0295 0.0045 \*  
 Mars -67909-07-22 17:59 J -23082135.99 -23082135.75 -23082135.50 0.0295 0.0101  
 Earth -67908-06-30 18:13 J -23081792.93 -23081792.74 -23081792.55 0.0290 0.0174  
 Moon -67908-06-30 21:21 J -23081792.79 -23081792.61 -23081792.42 0.0290 0.0172 \*  
 Venus -67901-06-22 23:16 J -23079243.74 -23079243.53 -23079243.32 0.0261 0.0050  
 Mercury -67897-12-20 21:35 J -23077601.71 -23077601.60 -23077601.48 0.0259 0.0203  
 Mercury -67896-03-19 18:13 J -23077512.92 -23077512.74 -23077512.55 0.0259 0.0076  
 Mercury -67896-06-16 15:06 J -23077424.06 -23077423.87 -23077423.68 0.0259 0.0053  
 Mercury -67896-09-13 11:45 J -23077335.13 -23077335.01 -23077334.86 0.0260 0.0183

Moon -67894-12-09 23:59 J -23076517.72 -23076517.50 -23076517.26 0.0265 0.0124  
 Earth -67894-12-10 01:25 J -23076517.66 -23076517.44 -23076517.21 0.0265 0.0113 \*  
 Mars -67893-08-11 13:54 J -23076272.21 -23076271.92 -23076271.61 0.0268 0.0106  
 Moon -67893-12-21 08:37 J -23076140.39 -23076140.14 -23076139.89 0.0269 0.0038  
 Earth -67893-12-21 12:13 J -23076140.23 -23076139.99 -23076139.74 0.0269 0.0053 \*  
 Moon -67891-01-03 08:09 J -23075762.29 -23075762.16 -23075762.00 0.0274 0.0219  
 Earth -67891-01-03 08:52 J -23075762.26 -23075762.13 -23075761.99 0.0274 0.0228 \*  
 Venus -67885-03-06 23:16 J -23073507.73 -23073507.53 -23073507.32 0.0302 0.0071  
 Mercury -67882-01-24 23:30 J -23072453.55 -23072453.52 -23072453.47 0.0304 0.0287  
 Mercury -67882-04-23 12:28 J -23072365.09 -23072364.98 -23072364.86 0.0304 0.0148  
 Mercury -67882-07-21 01:11 J -23072276.57 -23072276.45 -23072276.32 0.0303 0.0013  
 Mercury -67882-10-17 13:54 J -23072188.03 -23072187.92 -23072187.80 0.0303 0.0127  
 Mercury -67881-01-14 02:23 J -23072099.45 -23072099.40 -23072099.33 0.0302 0.0263  
 Moon -67880-06-10 18:42 J -23071585.92 -23071585.72 -23071585.50 0.0298 0.0151  
 Earth -67880-06-10 19:40 J -23071585.89 -23071585.68 -23071585.46 0.0298 0.0141 \*  
 Moon -67879-06-24 15:49 J -23071207.08 -23071206.84 -23071206.61 0.0293 0.0072  
 Earth -67879-06-24 19:11 J -23071206.93 -23071206.70 -23071206.47 0.0293 0.0078 \*  
 Mars -67879-09-08 22:18 J -23071130.80 -23071130.57 -23071130.32 0.0292 0.0129  
 Moon -67878-07-08 04:47 J -23070828.34 -23070828.30 -23070828.25 0.0288 0.0281  
 Earth -67878-07-08 06:57 J -23070828.27 -23070828.21 -23070828.15 0.0288 0.0276 \*  
 Venus -67871-01-03 00:42 J -23068457.69 -23068457.47 -23068457.26 0.0261 0.0010  
 Mercury -67867-05-09 20:09 J -23066869.72 -23066869.66 -23066869.60 0.0258 0.0244  
 Mercury -67867-08-06 16:47 J -23066780.97 -23066780.80 -23066780.63 0.0258 0.0117  
 Mercury -67867-11-03 13:40 J -23066692.13 -23066691.93 -23066691.74 0.0259 0.0011  
 Mercury -67866-01-31 10:18 J -23066603.23 -23066603.07 -23066602.90 0.0259 0.0140  
 Earth -67865-12-03 22:33 J -23065930.73 -23065930.56 -23065930.38 0.0263 0.0187  
 Moon -67865-12-03 23:45 J -23065930.67 -23065930.51 -23065930.34 0.0263 0.0195 \*  
 Earth -67864-12-16 04:47 J -23065553.55 -23065553.30 -23065553.05 0.0267 0.0027  
 Moon -67864-12-16 08:37 J -23065553.38 -23065553.14 -23065552.89 0.0267 0.0042 \*  
 Mars -67863-10-02 16:47 J -23065263.08 -23065262.80 -23065262.51 0.0270 0.0127

Earth -67863-12-28 20:09 J -23065175.87 -23065175.66 -23065175.45 0.0271 0.0143  
 Moon -67863-12-28 20:52 J -23065175.86 -23065175.63 -23065175.40 0.0271 0.0130 \*  
 Venus -67856-09-17 00:57 J -23062721.64 -23062721.46 -23062721.26 0.0302 0.0122  
 Mercury -67853-09-09 13:11 J -23061633.04 -23061632.95 -23061632.85 0.0304 0.0201  
 Mercury -67853-12-07 01:54 J -23061544.54 -23061544.42 -23061544.29 0.0304 0.0063  
 Mercury -67852-03-05 14:37 J -23061456.01 -23061455.89 -23061455.76 0.0303 0.0076  
 Mercury -67852-06-02 03:21 J -23061367.45 -23061367.36 -23061367.27 0.0303 0.0212  
 Earth -67851-06-04 12:42 J -23061000.10 -23060999.97 -23060999.83 0.0300 0.0246  
 Moon -67851-06-04 14:23 J -23061000.01 -23060999.90 -23060999.77 0.0300 0.0257 \*  
 Earth -67850-06-18 17:45 J -23060621.00 -23060620.76 -23060620.52 0.0296 0.0023  
 Moon -67850-06-18 21:21 J -23060620.84 -23060620.61 -23060620.37 0.0296 0.0031 \*  
 Earth -67849-07-01 11:01 J -23060242.22 -23060242.04 -23060241.85 0.0291 0.0186  
 Moon -67849-07-01 13:11 J -23060242.13 -23060241.95 -23060241.75 0.0291 0.0186 \*  
 Venus -67842-07-16 01:25 J -23057671.66 -23057671.44 -23057671.23 0.0261 0.0031  
 Mercury -67838-12-24 14:37 J -23056049.03 -23056048.89 -23056048.73 0.0258 0.0162  
 Mercury -67837-03-22 11:30 J -23055960.21 -23055960.02 -23055959.83 0.0259 0.0034  
 Mercury -67837-06-19 08:23 J -23055871.33 -23055871.15 -23055870.97 0.0259 0.0095  
 Mercury -67837-09-16 05:16 J -23055782.38 -23055782.28 -23055782.19 0.0260 0.0224  
 Moon -67836-11-28 17:59 J -23055343.78 -23055343.75 -23055343.69 0.0262 0.0258  
 Earth -67836-11-28 18:57 J -23055343.75 -23055343.71 -23055343.64 0.0262 0.0255 \*  
 Moon -67835-12-10 17:16 J -23054966.99 -23054966.78 -23054966.54 0.0265 0.0117  
 Earth -67835-12-10 21:21 J -23054966.84 -23054966.61 -23054966.37 0.0265 0.0102 \*  
 Moon -67834-12-23 07:11 J -23054589.43 -23054589.20 -23054588.96 0.0269 0.0051  
 Earth -67834-12-23 07:54 J -23054589.41 -23054589.17 -23054588.92 0.0269 0.0065 \*  
 Earth -67832-01-04 04:18 J -23054211.44 -23054211.32 -23054211.20 0.0273 0.0240  
 Moon -67832-01-04 07:40 J -23054211.31 -23054211.18 -23054211.05 0.0273 0.0232 \*  
 Venus -67826-03-30 02:52 J -23051935.56 -23051935.38 -23051935.21 0.0302 0.0171  
 Mercury -67823-01-27 13:40 J -23050901.00 -23050900.93 -23050900.86 0.0304 0.0257  
 Mercury -67823-04-26 02:23 J -23050812.51 -23050812.40 -23050812.28 0.0304 0.0118  
 Mercury -67823-07-23 15:06 J -23050723.99 -23050723.87 -23050723.74 0.0303 0.0023



Mercury -67823-10-20 03:49 J -23050635.45 -23050635.34 -23050635.23 0.0303 0.0157

Mercury -67822-01-16 16:18 J -23050546.84 -23050546.82 -23050546.78 0.0302 0.0292

Moon -67821-06-11 08:23 J -23050035.35 -23050035.15 -23050034.93 0.0298 0.0137

Earth -67821-06-11 12:13 J -23050035.20 -23050034.99 -23050034.77 0.0298 0.0131 \*

Mars -67821-12-15 00:42 J -23049848.71 -23049848.47 -23049848.21 0.0296 0.0101

Moon -67820-06-25 10:04 J -23049656.30 -23049656.08 -23049655.86 0.0293 0.0088

Earth -67820-06-25 11:59 J -23049656.23 -23049656.00 -23049655.77 0.0293 0.0088 \*

Earth -67819-07-08 23:30 J -23049277.52 -23049277.52 -23049277.49 0.0288 0.0287

Venus -67812-01-25 02:37 J -23046885.59 -23046885.39 -23046885.18 0.0261 0.0073

Mercury -67808-05-12 13:11 J -23045317.06 -23045316.95 -23045316.82 0.0258 0.0202

Mercury -67808-08-09 10:04 J -23045228.26 -23045228.08 -23045227.90 0.0259 0.0075

Mercury -67808-11-06 06:57 J -23045139.40 -23045139.21 -23045139.03 0.0259 0.0053

Mercury -67807-02-03 03:35 J -23045050.48 -23045050.35 -23045050.21 0.0259 0.0182

Earth -67806-12-05 19:11 J -23044379.88 -23044379.70 -23044379.51 0.0263 0.0175

Moon -67806-12-05 22:33 J -23044379.72 -23044379.56 -23044379.37 0.0263 0.0187 \*

Earth -67805-12-17 01:40 J -23044002.68 -23044002.43 -23044002.18 0.0267 0.0016

Moon -67805-12-17 01:54 J -23044002.68 -23044002.42 -23044002.16 0.0267 0.0031 \*

Mars -67804-01-04 05:01 J -23043984.59 -23043984.29 -23043983.98 0.0267 0.0087

Moon -67804-12-29 13:11 J -23043625.15 -23043624.95 -23043624.72 0.0271 0.0144

Earth -67804-12-29 16:47 J -23043625.00 -23043624.80 -23043624.59 0.0271 0.0156 \*

Venus -67797-10-09 05:30 J -23041149.40 -23041149.27 -23041149.12 0.0302 0.0228

Mercury -67794-09-13 03:21 J -23040080.46 -23040080.36 -23040080.25 0.0304 0.0168

Mercury -67794-12-10 16:04 J -23039991.95 -23039991.83 -23039991.70 0.0304 0.0032

Mercury -67793-03-08 04:47 J -23039903.42 -23039903.30 -23039903.18 0.0303 0.0108

Mercury -67793-06-04 17:30 J -23039814.85 -23039814.77 -23039814.70 0.0303 0.0244

Earth -67792-06-05 06:57 J -23039449.36 -23039449.21 -23039449.06 0.0300 0.0234

Moon -67792-06-05 10:04 J -23039449.21 -23039449.08 -23039448.93 0.0300 0.0241 \*

Earth -67791-06-19 11:45 J -23039070.25 -23039070.01 -23039069.77 0.0296 0.0011

Moon -67791-06-19 12:57 J -23039070.21 -23039069.96 -23039069.72 0.0296 0.0013 \*

Mars -67790-02-01 10:47 J -23038843.28 -23038843.05 -23038842.80 0.0293 0.0131

Moon -67790-07-03 02:37 J -23038691.56 -23038691.39 -23038691.21 0.0291 0.0205  
 Earth -67790-07-03 05:01 J -23038691.46 -23038691.29 -23038691.11 0.0291 0.0198 \*  
 Venus -67784-12-21 05:45 J -23036328.35 -23036328.26 -23036328.17 0.0262 0.0238  
 Venus -67783-08-07 03:49 J -23036099.54 -23036099.34 -23036099.15 0.0261 0.0113  
 Mercury -67779-09-29 11:45 J -23034585.07 -23034585.01 -23034584.95 0.0258 0.0243  
 Mercury -67779-12-27 08:09 J -23034496.32 -23034496.16 -23034495.98 0.0259 0.0118  
 Mercury -67778-03-26 05:01 J -23034407.48 -23034407.29 -23034407.09 0.0259 0.0012  
 Mercury -67778-06-23 01:54 J -23034318.58 -23034318.42 -23034318.26 0.0259 0.0139  
 Moon -67777-11-29 13:40 J -23033793.00 -23033792.93 -23033792.85 0.0262 0.0249  
 Earth -67777-11-29 17:30 J -23033792.86 -23033792.77 -23033792.68 0.0262 0.0244 \*  
 Earth -67776-12-11 19:25 J -23033415.92 -23033415.69 -23033415.45 0.0265 0.0089  
 Moon -67776-12-11 19:25 J -23033415.91 -23033415.69 -23033415.46 0.0265 0.0104 \*  
 Earth -67775-12-24 05:59 J -23033038.48 -23033038.25 -23033038.00 0.0269 0.0078  
 Moon -67775-12-24 09:49 J -23033038.33 -23033038.09 -23033037.85 0.0269 0.0064 \*  
 Mars -67774-02-25 05:16 J -23032975.55 -23032975.28 -23032974.99 0.0270 0.0135  
 Earth -67773-01-06 02:37 J -23032660.48 -23032660.39 -23032660.30 0.0273 0.0253  
 Moon -67773-01-06 05:01 J -23032660.40 -23032660.29 -23032660.18 0.0273 0.0246 \*  
 Venus -67768-09-03 04:04 J -23030593.43 -23030593.33 -23030593.22 0.0300 0.0256  
 Venus -67767-04-21 07:40 J -23030363.24 -23030363.18 -23030363.09 0.0302 0.0280  
 Mercury -67764-01-30 03:49 J -23029348.42 -23029348.34 -23029348.25 0.0304 0.0223  
 Mercury -67764-04-28 16:47 J -23029259.92 -23029259.80 -23029259.68 0.0303 0.0084  
 Mercury -67764-07-26 05:30 J -23029171.40 -23029171.27 -23029171.14 0.0303 0.0053  
 Mercury -67764-10-22 17:59 J -23029082.84 -23029082.75 -23029082.65 0.0303 0.0190  
 Earth -67762-06-13 06:42 J -23028484.44 -23028484.22 -23028484.00 0.0297 0.0119  
 Moon -67762-06-13 06:28 J -23028484.44 -23028484.23 -23028484.01 0.0297 0.0120 \*  
 Earth -67761-06-26 05:59 J -23028105.47 -23028105.25 -23028105.02 0.0293 0.0100  
 Moon -67761-06-26 08:52 J -23028105.35 -23028105.13 -23028104.91 0.0293 0.0105 \*  
 Venus -67754-07-03 07:25 J -23025542.33 -23025542.19 -23025542.05 0.0263 0.0195  
 Venus -67753-02-17 05:30 J -23025313.44 -23025313.27 -23025313.10 0.0261 0.0157  
 Mercury -67749-05-15 07:11 J -23023764.35 -23023764.20 -23023764.04 0.0258 0.0156

Mercury -67749-08-12 03:49 J -23023675.53 -23023675.34 -23023675.14 0.0259 0.0030

Mercury -67749-11-09 00:42 J -23023586.64 -23023586.47 -23023586.29 0.0259 0.0100

Mercury -67748-02-05 21:35 J -23023497.68 -23023497.60 -23023497.51 0.0259 0.0229

Earth -67747-12-06 18:13 J -23022828.93 -23022828.74 -23022828.54 0.0263 0.0163

Moon -67747-12-06 18:42 J -23022828.91 -23022828.72 -23022828.52 0.0263 0.0174 \*

Moon -67746-12-18 21:06 J -23022451.87 -23022451.62 -23022451.36 0.0267 0.0017

Earth -67746-12-19 00:57 J -23022451.71 -23022451.46 -23022451.20 0.0267 0.0004 \*

Moon -67745-12-30 14:09 J -23022074.10 -23022073.91 -23022073.71 0.0271 0.0161

Earth -67745-12-30 16:18 J -23022074.00 -23022073.82 -23022073.61 0.0271 0.0170 \*

Venus -67738-03-16 08:09 J -23019807.31 -23019807.16 -23019807.00 0.0300 0.0195

Mercury -67735-06-19 05:01 J -23018616.34 -23018616.29 -23018616.23 0.0304 0.0271

Mercury -67735-09-15 17:59 J -23018527.87 -23018527.75 -23018527.64 0.0304 0.0132

Mercury -67735-12-13 06:42 J -23018439.35 -23018439.22 -23018439.09 0.0304 0.0007

Mercury -67734-03-11 19:25 J -23018350.81 -23018350.69 -23018350.58 0.0303 0.0144

Mercury -67734-06-08 07:54 J -23018262.21 -23018262.17 -23018262.12 0.0303 0.0279

Moon -67733-06-06 02:23 J -23017898.57 -23017898.40 -23017898.24 0.0300 0.0222

Earth -67733-06-06 02:37 J -23017898.54 -23017898.39 -23017898.22 0.0300 0.0222 \*

Mars -67732-05-09 17:30 J -23017561.02 -23017560.77 -23017560.52 0.0296 0.0097

Moon -67732-06-20 03:49 J -23017519.58 -23017519.34 -23017519.09 0.0296 0.0010

Earth -67732-06-20 07:25 J -23017519.43 -23017519.19 -23017518.95 0.0296 0.0003 \*

Moon -67731-07-03 21:21 J -23017140.75 -23017140.61 -23017140.45 0.0291 0.0222

Earth -67731-07-04 00:42 J -23017140.63 -23017140.47 -23017140.31 0.0291 0.0211 \*

Venus -67724-01-12 09:06 J -23014756.30 -23014756.12 -23014755.95 0.0262 0.0151

Venus -67724-08-29 06:57 J -23014527.34 -23014527.21 -23014527.06 0.0261 0.0200

Mercury -67720-10-02 05:59 J -23013032.37 -23013032.25 -23013032.12 0.0258 0.0196

Mercury -67720-12-30 02:37 J -23012943.57 -23012943.39 -23012943.20 0.0259 0.0069

Mercury -67719-03-28 23:30 J -23012854.71 -23012854.52 -23012854.33 0.0259 0.0059

Mercury -67719-06-25 20:09 J -23012765.78 -23012765.66 -23012765.52 0.0259 0.0189

Moon -67718-12-01 16:33 J -23012241.90 -23012241.81 -23012241.70 0.0262 0.0239

Earth -67718-12-01 17:16 J -23012241.88 -23012241.78 -23012241.64 0.0262 0.0232 \*

Earth -67717-12-12 20:09 J -23011864.89 -23011864.66 -23011864.41 0.0265 0.0076  
 Moon -67717-12-12 23:59 J -23011864.74 -23011864.50 -23011864.27 0.0265 0.0090 \*  
 Mars -67716-05-30 04:33 J -23011696.62 -23011696.31 -23011695.99 0.0267 0.0072  
 Earth -67716-12-25 07:11 J -23011487.43 -23011487.20 -23011486.96 0.0269 0.0093  
 Moon -67716-12-25 09:21 J -23011487.35 -23011487.11 -23011486.86 0.0269 0.0081 \*  
 Moon -67714-01-07 01:54 J -23011109.48 -23011109.42 -23011109.36 0.0274 0.0265  
 Earth -67714-01-07 04:04 J -23011109.37 -23011109.33 -23011109.28 0.0274 0.0268 \*  
 Venus -67709-09-25 12:13 J -23009021.17 -23009020.99 -23009020.80 0.0300 0.0136  
 Mercury -67705-02-02 18:57 J -23007795.81 -23007795.71 -23007795.60 0.0304 0.0181  
 Mercury -67705-05-01 07:54 J -23007707.30 -23007707.17 -23007707.04 0.0303 0.0043  
 Mercury -67705-07-28 20:37 J -23007618.77 -23007618.64 -23007618.52 0.0303 0.0095  
 Mercury -67705-10-25 09:06 J -23007530.20 -23007530.12 -23007530.04 0.0302 0.0230  
 Earth -67703-06-14 05:16 J -23006933.50 -23006933.28 -23006933.05 0.0297 0.0104  
 Moon -67703-06-14 08:37 J -23006933.36 -23006933.14 -23006932.91 0.0297 0.0100 \*  
 Mars -67702-06-27 03:49 J -23006555.58 -23006555.34 -23006555.11 0.0293 0.0140  
 Earth -67702-06-28 03:49 J -23006554.55 -23006554.34 -23006554.11 0.0293 0.0115  
 Moon -67702-06-28 06:42 J -23006554.44 -23006554.22 -23006553.99 0.0293 0.0124 \*  
 Venus -67695-07-25 11:16 J -23003970.22 -23003970.03 -23003969.83 0.0263 0.0106  
 Venus -67694-03-11 09:21 J -23003741.17 -23003741.11 -23003741.03 0.0261 0.0245  
 Mercury -67690-02-19 05:01 J -23002300.36 -23002300.29 -23002300.20 0.0259 0.0233  
 Mercury -67690-05-19 01:54 J -23002211.60 -23002211.42 -23002211.25 0.0259 0.0106  
 Mercury -67690-08-15 22:33 J -23002122.75 -23002122.56 -23002122.36 0.0259 0.0023  
 Mercury -67690-11-12 19:25 J -23002033.84 -23002033.69 -23002033.53 0.0259 0.0151  
 Moon -67688-12-07 17:01 J -23001277.98 -23001277.79 -23001277.58 0.0264 0.0162  
 Earth -67688-12-07 20:23 J -23001277.85 -23001277.65 -23001277.43 0.0264 0.0149 \*  
 Moon -67687-12-20 02:09 J -23000900.66 -23000900.41 -23000900.17 0.0267 0.0005  
 Earth -67687-12-20 03:49 J -23000900.59 -23000900.34 -23000900.09 0.0267 0.0014 \*  
 Mars -67686-07-21 16:04 J -23000687.08 -23000686.83 -23000686.57 0.0269 0.0164  
 Earth -67685-01-01 19:40 J -23000522.85 -23000522.68 -23000522.49 0.0271 0.0186  
 Moon -67685-01-01 22:33 J -23000522.74 -23000522.56 -23000522.38 0.0271 0.0180 \*

Venus -67679-04-07 17:59 J -22998234.95 -22998234.75 -22998234.54 0.0300 0.0068  
 Mercury -67676-06-21 20:23 J -22997063.73 -22997063.65 -22997063.56 0.0304 0.0226  
 Mercury -67676-09-18 09:21 J -22996975.23 -22996975.11 -22996974.99 0.0304 0.0086  
 Mercury -67676-12-15 22:04 J -22996886.71 -22996886.58 -22996886.45 0.0304 0.0051  
 Mercury -67675-03-14 10:33 J -22996798.15 -22996798.06 -22996797.95 0.0303 0.0188  
 Moon -67674-06-07 23:45 J -22996347.67 -22996347.51 -22996347.32 0.0300 0.0204  
 Earth -67674-06-08 03:35 J -22996347.52 -22996347.35 -22996347.18 0.0300 0.0205 \*  
 Moon -67673-06-21 05:16 J -22995968.51 -22995968.28 -22995968.05 0.0295 0.0027  
 Earth -67673-06-21 07:25 J -22995968.43 -22995968.19 -22995967.95 0.0295 0.0019 \*  
 Earth -67672-07-04 23:45 J -22995589.65 -22995589.51 -22995589.35 0.0290 0.0227  
 Moon -67672-07-05 01:25 J -22995589.57 -22995589.44 -22995589.31 0.0290 0.0241 \*  
 Venus -67665-02-04 13:40 J -22993184.13 -22993183.93 -22993183.71 0.0262 0.0060  
 Mercury -67661-10-05 01:11 J -22991479.61 -22991479.45 -22991479.29 0.0259 0.0142  
 Mercury -67660-01-01 21:49 J -22991390.78 -22991390.59 -22991390.39 0.0259 0.0015  
 Mercury -67660-03-31 18:42 J -22991301.89 -22991301.72 -22991301.54 0.0259 0.0115  
 Mercury -67660-06-28 15:35 J -22991212.91 -22991212.85 -22991212.78 0.0260 0.0244  
 Earth -67659-12-02 21:06 J -22990690.74 -22990690.62 -22990690.46 0.0263 0.0217  
 Moon -67659-12-03 00:13 J -22990690.60 -22990690.49 -22990690.35 0.0263 0.0227 \*  
 Earth -67658-12-15 00:57 J -22990313.70 -22990313.46 -22990313.21 0.0266 0.0059  
 Moon -67658-12-15 02:52 J -22990313.62 -22990313.38 -22990313.12 0.0266 0.0073 \*  
 Moon -67657-12-26 09:49 J -22989936.33 -22989936.09 -22989935.85 0.0269 0.0103  
 Earth -67657-12-26 12:42 J -22989936.20 -22989935.97 -22989935.74 0.0269 0.0110 \*  
 Venus -67650-10-18 23:45 J -22987448.72 -22987448.51 -22987448.30 0.0300 0.0003  
 Mercury -67647-11-08 22:04 J -22986331.64 -22986331.58 -22986331.52 0.0304 0.0269  
 Mercury -67646-02-05 10:47 J -22986243.16 -22986243.05 -22986242.93 0.0303 0.0131  
 Mercury -67646-05-04 23:45 J -22986154.64 -22986154.51 -22986154.38 0.0303 0.0011  
 Mercury -67646-08-01 12:13 J -22986066.10 -22986065.99 -22986065.87 0.0303 0.0143  
 Mercury -67646-10-29 00:42 J -22985977.51 -22985977.47 -22985977.42 0.0302 0.0278  
 Earth -67644-06-15 08:09 J -22985382.39 -22985382.16 -22985381.93 0.0297 0.0085  
 Moon -67644-06-15 10:04 J -22985382.32 -22985382.08 -22985381.84 0.0297 0.0080 \*

Mars -67644-10-02 20:09 J -22985272.91 -22985272.66 -22985272.40 0.0296 0.0080  
 Moon -67643-06-29 03:49 J -22985003.55 -22985003.34 -22985003.12 0.0292 0.0145  
 Earth -67643-06-29 05:59 J -22985003.46 -22985003.25 -22985003.03 0.0292 0.0131 \*  
 Venus -67636-08-16 17:01 J -22982398.01 -22982397.79 -22982397.58 0.0263 0.0012  
 Mercury -67631-02-22 00:28 J -22980747.61 -22980747.48 -22980747.33 0.0259 0.0177  
 Mercury -67631-05-21 21:21 J -22980658.79 -22980658.61 -22980658.42 0.0259 0.0049  
 Mercury -67631-08-18 18:13 J -22980569.92 -22980569.74 -22980569.55 0.0259 0.0080  
 Mercury -67631-11-15 15:21 J -22980480.98 -22980480.86 -22980480.75 0.0260 0.0209  
 Moon -67629-12-08 23:16 J -22979726.72 -22979726.53 -22979726.32 0.0264 0.0145  
 Earth -67629-12-09 02:09 J -22979726.63 -22979726.41 -22979726.20 0.0264 0.0131 \*  
 Mars -67628-10-24 02:52 J -22979407.70 -22979407.38 -22979407.05 0.0267 0.0039  
 Earth -67628-12-21 10:04 J -22979349.33 -22979349.08 -22979348.83 0.0267 0.0032  
 Moon -67628-12-21 12:28 J -22979349.22 -22979348.98 -22979348.73 0.0267 0.0022 \*  
 Earth -67626-01-03 03:06 J -22978971.53 -22978971.37 -22978971.21 0.0271 0.0205  
 Moon -67626-01-03 06:42 J -22978971.39 -22978971.22 -22978971.05 0.0271 0.0202 \*  
 Venus -67620-04-30 07:11 J -22976662.40 -22976662.20 -22976661.99 0.0300 0.0074  
 Mercury -67617-06-24 12:57 J -22975511.07 -22975510.96 -22975510.85 0.0304 0.0170  
 Mercury -67617-09-21 01:40 J -22975422.56 -22975422.43 -22975422.30 0.0304 0.0031  
 Mercury -67617-12-18 14:23 J -22975334.02 -22975333.90 -22975333.78 0.0303 0.0106  
 Mercury -67616-03-17 02:52 J -22975245.45 -22975245.38 -22975245.30 0.0303 0.0241  
 Moon -67615-06-09 08:09 J -22974796.34 -22974796.16 -22974795.97 0.0299 0.0182  
 Earth -67615-06-09 10:04 J -22974796.27 -22974796.08 -22974795.89 0.0299 0.0183 \*  
 Earth -67614-06-23 12:42 J -22974417.20 -22974416.97 -22974416.73 0.0295 0.0040  
 Moon -67614-06-23 14:52 J -22974417.11 -22974416.88 -22974416.65 0.0295 0.0050 \*  
 Mars -67614-11-20 16:33 J -22974267.03 -22974266.81 -22974266.58 0.0293 0.0156  
 Earth -67613-07-06 04:18 J -22974038.44 -22974038.32 -22974038.19 0.0290 0.0245  
 Moon -67613-07-06 08:09 J -22974038.26 -22974038.16 -22974038.06 0.0290 0.0261 \*  
 Venus -67606-02-26 20:37 J -22971611.85 -22971611.64 -22971611.43 0.0262 0.0039  
 Mercury -67602-07-12 00:42 J -22970015.58 -22970015.47 -22970015.36 0.0259 0.0209  
 Mercury -67602-10-08 21:21 J -22969926.79 -22969926.61 -22969926.43 0.0259 0.0082

Mercury -67601-01-05 18:13 J -22969837.93 -22969837.74 -22969837.55 0.0259 0.0047

Mercury -67601-04-03 15:06 J -22969749.01 -22969748.87 -22969748.73 0.0260 0.0176

Earth -67600-12-04 04:33 J -22969139.47 -22969139.31 -22969139.14 0.0263 0.0199

Moon -67600-12-04 07:40 J -22969139.33 -22969139.18 -22969139.03 0.0263 0.0210 \*

Moon -67599-12-16 06:57 J -22968762.46 -22968762.21 -22968761.95 0.0266 0.0053

Earth -67599-12-16 09:06 J -22968762.36 -22968762.12 -22968761.87 0.0266 0.0040 \*

Mars -67598-12-15 17:30 J -22968398.00 -22968397.77 -22968397.54 0.0270 0.0191

Moon -67598-12-28 18:57 J -22968384.93 -22968384.71 -22968384.49 0.0270 0.0125

Earth -67598-12-28 21:49 J -22968384.80 -22968384.59 -22968384.36 0.0270 0.0131 \*

Venus -67591-11-10 14:52 J -22965876.06 -22965875.88 -22965875.69 0.0301 0.0148

Mercury -67588-11-11 14:52 J -22964778.97 -22964778.88 -22964778.78 0.0303 0.0209

Mercury -67587-02-08 03:49 J -22964690.47 -22964690.34 -22964690.22 0.0303 0.0071

Mercury -67587-05-07 16:33 J -22964601.94 -22964601.81 -22964601.69 0.0303 0.0067

Mercury -67587-08-04 05:01 J -22964513.38 -22964513.29 -22964513.19 0.0302 0.0202

Earth -67586-06-03 09:21 J -22964210.17 -22964210.11 -22964210.04 0.0300 0.0287

Moon -67586-06-03 10:47 J -22964210.11 -22964210.05 -22964209.97 0.0300 0.0287 \*

Moon -67585-06-16 14:37 J -22963831.13 -22963830.89 -22963830.65 0.0296 0.0054

Earth -67585-06-16 16:47 J -22963831.03 -22963830.80 -22963830.56 0.0296 0.0062 \*

Moon -67584-06-30 09:49 J -22963452.27 -22963452.09 -22963451.89 0.0292 0.0168

Earth -67584-06-30 13:11 J -22963452.14 -22963451.95 -22963451.74 0.0292 0.0153 \*

Venus -67577-09-08 00:28 J -22960825.68 -22960825.48 -22960825.28 0.0262 0.0091

Mercury -67573-11-28 00:28 J -22959283.54 -22959283.48 -22959283.40 0.0259 0.0241

Mercury -67572-02-24 21:06 J -22959194.78 -22959194.62 -22959194.44 0.0259 0.0114

Mercury -67572-05-24 18:13 J -22959105.94 -22959105.74 -22959105.55 0.0259 0.0016

Mercury -67572-08-21 14:52 J -22959017.03 -22959016.88 -22959016.71 0.0260 0.0144

Earth -67570-12-11 11:01 J -22958175.26 -22958175.04 -22958174.81 0.0265 0.0112

Moon -67570-12-11 12:42 J -22958175.18 -22958174.97 -22958174.75 0.0265 0.0127 \*

Mars -67569-01-27 22:04 J -22958127.71 -22958127.58 -22958127.41 0.0265 0.0235

Earth -67569-12-22 20:23 J -22957797.90 -22957797.65 -22957797.40 0.0268 0.0053

Moon -67569-12-22 23:59 J -22957797.76 -22957797.50 -22957797.25 0.0268 0.0042 \*

Moon -67567-01-04 13:40 J -22957420.05 -22957419.93 -22957419.77 0.0272 0.0227  
 Earth -67567-01-04 14:23 J -22957420.02 -22957419.90 -22957419.75 0.0272 0.0227 \*  
 Venus -67561-05-22 23:45 J -22955089.63 -22955089.51 -22955089.37 0.0301 0.0230  
 Mercury -67558-03-31 17:16 J -22954046.85 -22954046.78 -22954046.70 0.0304 0.0243  
 Mercury -67558-06-28 06:13 J -22953958.36 -22953958.24 -22953958.12 0.0304 0.0105  
 Mercury -67558-09-24 18:57 J -22953869.84 -22953869.71 -22953869.58 0.0303 0.0033  
 Mercury -67558-12-22 07:25 J -22953781.29 -22953781.19 -22953781.08 0.0303 0.0169  
 Earth -67556-06-10 21:35 J -22953244.81 -22953244.60 -22953244.40 0.0299 0.0158  
 Moon -67556-06-10 23:30 J -22953244.71 -22953244.52 -22953244.31 0.0299 0.0155 \*  
 Mars -67555-02-26 22:18 J -22952983.82 -22952983.57 -22952983.30 0.0296 0.0058  
 Earth -67555-06-24 23:01 J -22952865.77 -22952865.54 -22952865.30 0.0294 0.0064  
 Moon -67555-06-25 02:23 J -22952865.63 -22952865.40 -22952865.16 0.0294 0.0075 \*  
 Earth -67554-07-08 13:25 J -22952487.02 -22952486.94 -22952486.84 0.0290 0.0267  
 Moon -67554-07-08 13:40 J -22952486.97 -22952486.93 -22952486.86 0.0290 0.0282 \*  
 Venus -67548-08-04 06:13 J -22950268.36 -22950268.24 -22950268.11 0.0264 0.0211  
 Venus -67547-03-21 05:01 J -22950039.46 -22950039.29 -22950039.11 0.0262 0.0144  
 Mercury -67543-07-14 21:35 J -22948462.76 -22948462.60 -22948462.44 0.0259 0.0144  
 Mercury -67543-10-11 18:28 J -22948373.92 -22948373.73 -22948373.54 0.0259 0.0016  
 Mercury -67542-01-08 15:06 J -22948285.03 -22948284.87 -22948284.69 0.0260 0.0114  
 Mercury -67542-04-07 12:13 J -22948196.05 -22948195.99 -22948195.92 0.0260 0.0243  
 Moon -67541-12-05 12:57 J -22947588.13 -22947587.96 -22947587.78 0.0263 0.0193  
 Earth -67541-12-05 14:37 J -22947588.06 -22947587.89 -22947587.69 0.0263 0.0180 \*  
 Moon -67540-12-17 16:47 J -22947211.04 -22947210.80 -22947210.55 0.0267 0.0033  
 Earth -67540-12-17 20:37 J -22947210.89 -22947210.64 -22947210.39 0.0267 0.0018 \*  
 Mars -67539-03-20 16:33 J -22947118.14 -22947117.81 -22947117.49 0.0268 0.0006  
 Earth -67539-12-30 10:33 J -22946833.26 -22946833.06 -22946832.84 0.0270 0.0154  
 Moon -67539-12-30 11:01 J -22946833.24 -22946833.04 -22946832.83 0.0270 0.0149 \*  
 Venus -67532-04-17 05:59 J -22944533.39 -22944533.25 -22944533.10 0.0299 0.0220  
 Mercury -67529-08-17 19:54 J -22943314.72 -22943314.67 -22943314.62 0.0304 0.0277  
 Mercury -67529-11-14 08:52 J -22943226.25 -22943226.13 -22943226.02 0.0303 0.0138



Mercury -67528-02-10 21:35 J -22943137.73 -22943137.60 -22943137.47 0.0303 0.0006  
 Mercury -67528-05-10 10:04 J -22943049.19 -22943049.08 -22943048.96 0.0302 0.0135  
 Mercury -67528-08-06 22:33 J -22942960.61 -22942960.56 -22942960.50 0.0302 0.0270  
 Moon -67527-06-04 22:18 J -22942658.70 -22942658.57 -22942658.45 0.0300 0.0256  
 Earth -67527-06-05 01:11 J -22942658.57 -22942658.45 -22942658.33 0.0300 0.0260 \*  
 Moon -67526-06-19 03:35 J -22942279.58 -22942279.35 -22942279.11 0.0296 0.0028  
 Earth -67526-06-19 07:11 J -22942279.44 -22942279.20 -22942278.96 0.0296 0.0035 \*  
 Mars -67525-04-15 21:49 J -22941977.79 -22941977.59 -22941977.38 0.0292 0.0190  
 Moon -67525-07-02 01:40 J -22941900.60 -22941900.43 -22941900.26 0.0291 0.0191  
 Earth -67525-07-02 02:09 J -22941900.60 -22941900.41 -22941900.22 0.0291 0.0178 \*  
 Venus -67518-02-14 11:16 J -22939482.20 -22939482.03 -22939481.86 0.0264 0.0156  
 Venus -67518-10-01 09:49 J -22939253.22 -22939253.09 -22939252.94 0.0262 0.0199  
 Mercury -67514-12-01 21:49 J -22937730.72 -22937730.59 -22937730.44 0.0259 0.0174  
 Mercury -67513-02-28 18:42 J -22937641.91 -22937641.72 -22937641.53 0.0260 0.0046  
 Mercury -67513-05-27 15:35 J -22937553.03 -22937552.85 -22937552.67 0.0260 0.0083  
 Mercury -67513-08-24 12:28 J -22937464.08 -22937463.98 -22937463.86 0.0260 0.0213  
 Earth -67512-11-30 20:09 J -22937000.74 -22937000.66 -22937000.57 0.0262 0.0245  
 Moon -67512-11-30 21:49 J -22937000.64 -22937000.59 -22937000.54 0.0262 0.0256 \*  
 Earth -67511-12-12 22:47 J -22936623.78 -22936623.55 -22936623.31 0.0265 0.0090  
 Moon -67511-12-13 02:52 J -22936623.61 -22936623.38 -22936623.15 0.0265 0.0106 \*  
 Earth -67510-12-25 09:35 J -22936246.34 -22936246.10 -22936245.86 0.0269 0.0077  
 Moon -67510-12-25 09:49 J -22936246.34 -22936246.09 -22936245.83 0.0269 0.0067 \*  
 Mars -67509-05-11 14:37 J -22936108.04 -22936107.89 -22936107.72 0.0270 0.0234  
 Moon -67508-01-06 01:40 J -22935868.51 -22935868.43 -22935868.33 0.0273 0.0254  
 Earth -67508-01-06 05:01 J -22935868.37 -22935868.29 -22935868.18 0.0273 0.0252 \*  
 Venus -67503-10-28 16:33 J -22933747.00 -22933746.81 -22933746.62 0.0299 0.0133  
 Mercury -67499-04-03 11:30 J -22932494.12 -22932494.02 -22932493.91 0.0304 0.0169  
 Mercury -67499-07-01 00:28 J -22932405.61 -22932405.48 -22932405.36 0.0303 0.0033  
 Mercury -67499-09-27 12:57 J -22932317.08 -22932316.96 -22932316.84 0.0303 0.0106  
 Mercury -67499-12-25 01:40 J -22932228.51 -22932228.43 -22932228.36 0.0302 0.0241

Mars	-67497-06-05 12:28 J	-22931700.08	-22931699.98	-22931699.86	0.0298	0.0269
Earth	-67497-06-12 14:37 J	-22931693.11	-22931692.89	-22931692.68	0.0298	0.0128
Moon	-67497-06-12 17:59 J	-22931692.96	-22931692.75	-22931692.52	0.0298	0.0123 *
Earth	-67496-06-26 14:37 J	-22931314.11	-22931313.89	-22931313.66	0.0294	0.0092
Moon	-67496-06-26 15:35 J	-22931314.09	-22931313.85	-22931313.62	0.0294	0.0102 *
Venus	-67489-08-26 16:47 J	-22928696.00	-22928695.80	-22928695.60	0.0263	0.0099
Venus	-67488-04-12 15:35 J	-22928466.90	-22928466.85	-22928466.81	0.0262	0.0255
Mercury	-67484-04-19 22:33 J	-22926998.67	-22926998.56	-22926998.43	0.0259	0.0202
Mercury	-67484-07-17 19:25 J	-22926909.87	-22926909.69	-22926909.50	0.0259	0.0074
Mercury	-67484-10-14 16:18 J	-22926821.01	-22926820.82	-22926820.63	0.0260	0.0055
Mercury	-67483-01-11 13:11 J	-22926732.08	-22926731.95	-22926731.81	0.0260	0.0185
Moon	-67482-12-07 23:45 J	-22926036.69	-22926036.51	-22926036.32	0.0264	0.0173
Earth	-67482-12-08 03:21 J	-22926036.55	-22926036.36	-22926036.15	0.0264	0.0158 *
Mars	-67481-06-23 19:54 J	-22925837.87	-22925837.67	-22925837.44	0.0266	0.0200
Moon	-67481-12-19 10:04 J	-22925659.32	-22925659.08	-22925658.84	0.0267	0.0008
Earth	-67481-12-19 10:33 J	-22925659.31	-22925659.06	-22925658.81	0.0267	0.0006 *
Earth	-67479-01-01 02:09 J	-22925281.60	-22925281.41	-22925281.22	0.0271	0.0178
Moon	-67479-01-01 05:30 J	-22925281.46	-22925281.27	-22925281.08	0.0271	0.0173 *
Venus	-67473-05-10 02:52 J	-22922960.58	-22922960.38	-22922960.17	0.0300	0.0049
Mercury	-67470-08-21 14:23 J	-22921761.99	-22921761.90	-22921761.80	0.0303	0.0199
Mercury	-67470-11-18 03:21 J	-22921673.49	-22921673.36	-22921673.24	0.0303	0.0062
Mercury	-67469-02-14 15:49 J	-22921584.96	-22921584.84	-22921584.71	0.0303	0.0076
Mercury	-67469-05-13 04:33 J	-22921496.40	-22921496.31	-22921496.22	0.0302	0.0210
Moon	-67468-06-06 17:16 J	-22921106.92	-22921106.78	-22921106.61	0.0299	0.0225
Earth	-67468-06-06 20:37 J	-22921106.78	-22921106.64	-22921106.48	0.0299	0.0229 *
Moon	-67467-06-21 00:42 J	-22920727.70	-22920727.47	-22920727.24	0.0295	0.0006
Earth	-67467-06-21 01:25 J	-22920727.68	-22920727.44	-22920727.20	0.0295	0.0006 *
Mars	-67467-07-24 16:18 J	-22920694.08	-22920693.82	-22920693.55	0.0295	0.0016
Earth	-67466-07-04 18:28 J	-22920348.89	-22920348.73	-22920348.55	0.0291	0.0206
Moon	-67466-07-04 21:21 J	-22920348.75	-22920348.61	-22920348.45	0.0291	0.0221 *

Venus -67459-03-08 22:18 J -22917909.78 -22917909.57 -22917909.35 0.0263 0.0042  
 Mercury -67455-09-06 23:16 J -22916266.62 -22916266.53 -22916266.45 0.0259 0.0230  
 Mercury -67455-12-04 19:54 J -22916177.85 -22916177.67 -22916177.49 0.0260 0.0102  
 Mercury -67454-03-03 16:47 J -22916088.99 -22916088.80 -22916088.61 0.0260 0.0026  
 Mercury -67454-05-31 13:40 J -22916000.08 -22915999.93 -22915999.77 0.0260 0.0156  
 Earth -67453-12-02 08:23 J -22915449.27 -22915449.15 -22915449.01 0.0263 0.0223  
 Moon -67453-12-02 12:13 J -22915449.10 -22915448.99 -22915448.88 0.0263 0.0234 \*  
 Earth -67452-12-14 12:13 J -22915072.23 -22915071.99 -22915071.74 0.0266 0.0066  
 Moon -67452-12-14 12:28 J -22915072.22 -22915071.98 -22915071.72 0.0266 0.0081 \*  
 Mars -67451-08-15 18:28 J -22914828.06 -22914827.73 -22914827.41 0.0268 0.0035  
 Moon -67451-12-26 20:52 J -22914694.87 -22914694.63 -22914694.39 0.0269 0.0092  
 Earth -67451-12-27 00:13 J -22914694.72 -22914694.49 -22914694.25 0.0269 0.0103 \*  
 Venus -67444-11-20 13:40 J -22912174.14 -22912173.93 -22912173.72 0.0300 0.0040  
 Mercury -67440-01-07 17:30 J -22911029.85 -22911029.77 -22911029.68 0.0304 0.0227  
 Mercury -67440-04-06 06:13 J -22910941.36 -22910941.24 -22910941.11 0.0303 0.0090  
 Mercury -67440-07-03 18:57 J -22910852.84 -22910852.71 -22910852.58 0.0303 0.0048  
 Mercury -67440-09-30 07:25 J -22910764.28 -22910764.19 -22910764.08 0.0303 0.0184  
 Moon -67438-06-15 11:01 J -22910141.28 -22910141.04 -22910140.80 0.0298 0.0088  
 Earth -67438-06-15 10:47 J -22910141.27 -22910141.05 -22910140.81 0.0298 0.0097 \*  
 Moon -67437-06-28 06:28 J -22909762.44 -22909762.23 -22909762.01 0.0293 0.0135  
 Earth -67437-06-28 09:35 J -22909762.32 -22909762.10 -22909761.88 0.0293 0.0122 \*  
 Mars -67437-09-10 20:09 J -22909687.82 -22909687.66 -22909687.48 0.0292 0.0224  
 Venus -67430-09-19 04:33 J -22907123.52 -22907123.31 -22907123.09 0.0263 0.0018  
 Mercury -67425-01-24 23:59 J -22905534.52 -22905534.50 -22905534.47 0.0259 0.0256  
 Mercury -67425-04-22 20:52 J -22905445.80 -22905445.63 -22905445.46 0.0259 0.0129  
 Mercury -67425-07-20 17:45 J -22905356.96 -22905356.76 -22905356.57 0.0259 0.0005  
 Mercury -67425-10-17 14:23 J -22905268.06 -22905267.90 -22905267.72 0.0260 0.0129  
 Mercury -67424-01-14 11:45 J -22905179.03 -22905179.01 -22905179.00 0.0260 0.0259  
 Moon -67423-12-09 16:04 J -22904485.02 -22904484.83 -22904484.62 0.0264 0.0149  
 Earth -67423-12-09 17:01 J -22904485.01 -22904484.79 -22904484.58 0.0264 0.0135 \*

Earth -67422-12-22 01:11 J -22904107.70 -22904107.45 -22904107.20 0.0268 0.0030  
 Moon -67422-12-22 04:47 J -22904107.55 -22904107.30 -22904107.06 0.0268 0.0017 \*  
 Earth -67420-01-02 18:13 J -22903729.90 -22903729.74 -22903729.57 0.0272 0.0204  
 Moon -67420-01-02 21:06 J -22903729.80 -22903729.62 -22903729.45 0.0272 0.0198 \*  
 Venus -67414-06-03 00:42 J -22901387.65 -22901387.47 -22901387.27 0.0300 0.0128  
 Mercury -67411-05-27 20:37 J -22900297.71 -22900297.64 -22900297.57 0.0303 0.0256  
 Mercury -67411-08-24 09:21 J -22900209.23 -22900209.11 -22900208.99 0.0303 0.0118  
 Mercury -67411-11-20 22:04 J -22900120.71 -22900120.58 -22900120.45 0.0303 0.0020  
 Mercury -67410-02-17 10:47 J -22900032.16 -22900032.05 -22900031.94 0.0302 0.0155  
 Mercury -67410-05-16 23:16 J -22899943.56 -22899943.53 -22899943.50 0.0302 0.0289  
 Earth -67409-06-08 18:42 J -22899554.89 -22899554.72 -22899554.53 0.0299 0.0196  
 Moon -67409-06-08 19:11 J -22899554.87 -22899554.70 -22899554.52 0.0299 0.0191 \*  
 Mars -67409-10-31 15:06 J -22899410.03 -22899409.87 -22899409.68 0.0297 0.0222  
 Earth -67408-06-22 22:04 J -22899175.82 -22899175.58 -22899175.34 0.0295 0.0028  
 Moon -67408-06-23 01:25 J -22899175.68 -22899175.44 -22899175.21 0.0295 0.0039 \*  
 Earth -67407-07-06 13:54 J -22898797.05 -22898796.92 -22898796.78 0.0290 0.0235  
 Moon -67407-07-06 17:16 J -22898796.90 -22898796.78 -22898796.66 0.0290 0.0249 \*  
 Venus -67400-03-31 10:33 J -22896337.27 -22896337.06 -22896336.86 0.0263 0.0076  
 Mercury -67396-09-09 21:21 J -22894713.76 -22894713.61 -22894713.46 0.0259 0.0157  
 Mercury -67396-12-07 18:13 J -22894624.93 -22894624.74 -22894624.55 0.0260 0.0030  
 Mercury -67395-03-06 15:06 J -22894536.05 -22894535.87 -22894535.69 0.0260 0.0100  
 Mercury -67395-06-03 11:45 J -22894447.08 -22894447.01 -22894446.91 0.0260 0.0231  
 Earth -67394-12-04 21:35 J -22893897.76 -22893897.60 -22893897.44 0.0263 0.0201  
 Moon -67394-12-04 22:47 J -22893897.70 -22893897.55 -22893897.39 0.0263 0.0211 \*  
 Mars -67393-11-18 20:52 J -22893547.88 -22893547.63 -22893547.36 0.0266 0.0163  
 Moon -67393-12-15 22:47 J -22893520.80 -22893520.55 -22893520.30 0.0266 0.0055  
 Earth -67393-12-16 02:23 J -22893520.65 -22893520.40 -22893520.15 0.0266 0.0042 \*  
 Moon -67392-12-28 12:57 J -22893143.17 -22893142.96 -22893142.74 0.0270 0.0120  
 Earth -67392-12-28 15:35 J -22893143.07 -22893142.85 -22893142.62 0.0270 0.0129 \*  
 Venus -67385-12-13 11:30 J -22890601.16 -22890601.02 -22890600.87 0.0300 0.0216

Mercury -67382-10-14 23:30 J -22889565.56 -22889565.52 -22889565.47 0.0304 0.0284

Mercury -67381-01-11 12:28 J -22889477.09 -22889476.98 -22889476.87 0.0303 0.0146

Mercury -67381-04-09 01:11 J -22889388.58 -22889388.45 -22889388.32 0.0303 0.0008

Mercury -67381-07-06 13:54 J -22889300.04 -22889299.92 -22889299.81 0.0303 0.0128

Mercury -67381-10-03 02:23 J -22889211.46 -22889211.40 -22889211.34 0.0302 0.0263

Moon -67380-06-02 23:45 J -22888968.57 -22888968.51 -22888968.42 0.0301 0.0287

Earth -67380-06-03 00:28 J -22888968.53 -22888968.48 -22888968.41 0.0301 0.0290 \*

Moon -67379-06-17 05:01 J -22888589.53 -22888589.29 -22888589.05 0.0297 0.0053

Earth -67379-06-17 08:37 J -22888589.37 -22888589.14 -22888588.91 0.0297 0.0063 \*

Mars -67379-12-19 20:23 J -22888403.91 -22888403.65 -22888403.38 0.0295 0.0023

Moon -67378-07-01 02:09 J -22888210.59 -22888210.41 -22888210.20 0.0292 0.0169

Earth -67378-07-01 05:16 J -22888210.47 -22888210.28 -22888210.06 0.0292 0.0155 \*

Venus -67371-02-24 17:59 J -22885779.87 -22885779.75 -22885779.64 0.0264 0.0221

Venus -67371-10-11 16:47 J -22885550.99 -22885550.80 -22885550.62 0.0262 0.0135

Mercury -67366-01-27 22:04 J -22883981.71 -22883981.58 -22883981.44 0.0259 0.0185

Mercury -67366-04-26 18:57 J -22883892.90 -22883892.71 -22883892.52 0.0259 0.0057

Mercury -67366-07-24 15:49 J -22883804.02 -22883803.84 -22883803.65 0.0260 0.0072

Mercury -67366-10-21 12:42 J -22883715.08 -22883714.97 -22883714.84 0.0260 0.0202

Earth -67364-12-11 05:30 J -22882933.49 -22882933.27 -22882933.04 0.0265 0.0112

Moon -67364-12-11 08:37 J -22882933.35 -22882933.14 -22882932.92 0.0265 0.0126 \*

Earth -67363-12-23 15:06 J -22882556.12 -22882555.87 -22882555.62 0.0268 0.0055

Moon -67363-12-23 17:45 J -22882556.02 -22882555.76 -22882555.51 0.0268 0.0043 \*

Mars -67362-01-10 20:09 J -22882537.96 -22882537.66 -22882537.34 0.0268 0.0075

Moon -67361-01-05 07:40 J -22882178.32 -22882178.18 -22882178.03 0.0272 0.0227

Earth -67361-01-05 09:35 J -22882178.24 -22882178.10 -22882177.97 0.0272 0.0230 \*

Venus -67356-11-07 18:42 J -22880044.85 -22880044.72 -22880044.58 0.0299 0.0228

Venus -67355-06-25 21:49 J -22879814.59 -22879814.59 -22879814.58 0.0301 0.0301

Mercury -67352-05-30 15:21 J -22878744.96 -22878744.86 -22878744.75 0.0303 0.0176

Mercury -67352-08-27 04:04 J -22878656.46 -22878656.33 -22878656.20 0.0303 0.0039

Mercury -67352-11-23 16:47 J -22878567.92 -22878567.80 -22878567.68 0.0303 0.0098

Mercury -67351-02-20 05:16 J -22878479.36 -22878479.28 -22878479.19 0.0302 0.0233

Earth -67350-06-11 16:18 J -22878003.02 -22878002.82 -22878002.62 0.0298 0.0163

Moon -67350-06-11 19:40 J -22878002.88 -22878002.68 -22878002.48 0.0298 0.0157 \*

Earth -67349-06-24 18:13 J -22877623.97 -22877623.74 -22877623.50 0.0294 0.0060

Moon -67349-06-24 21:06 J -22877623.85 -22877623.62 -22877623.38 0.0294 0.0072 \*

Mars -67348-02-05 23:16 J -22877397.61 -22877397.53 -22877397.42 0.0291 0.0270

Earth -67348-07-08 09:06 J -22877245.21 -22877245.12 -22877245.02 0.0289 0.0265

Moon -67348-07-08 08:23 J -22877245.20 -22877245.15 -22877245.08 0.0289 0.0279 \*

Venus -67342-09-06 23:45 J -22874993.66 -22874993.51 -22874993.33 0.0264 0.0163

Venus -67341-04-22 22:18 J -22874764.70 -22874764.57 -22874764.41 0.0262 0.0193

Mercury -67337-06-15 22:33 J -22873249.66 -22873249.56 -22873249.45 0.0259 0.0214

Mercury -67337-09-12 19:11 J -22873160.87 -22873160.70 -22873160.51 0.0260 0.0087

Mercury -67337-12-10 16:04 J -22873072.02 -22873071.83 -22873071.64 0.0260 0.0043

Mercury -67336-03-09 12:57 J -22872983.10 -22872982.96 -22872982.81 0.0260 0.0172

Moon -67335-12-06 05:59 J -22872346.41 -22872346.25 -22872346.06 0.0264 0.0192

Earth -67335-12-06 08:52 J -22872346.30 -22872346.13 -22872345.94 0.0264 0.0179 \*

Moon -67334-12-18 12:13 J -22871969.24 -22871968.99 -22871968.75 0.0267 0.0031

Earth -67334-12-18 14:37 J -22871969.14 -22871968.89 -22871968.64 0.0267 0.0018 \*

Earth -67333-12-30 04:47 J -22871591.50 -22871591.30 -22871591.09 0.0270 0.0154

Moon -67333-12-30 06:42 J -22871591.42 -22871591.22 -22871591.01 0.0270 0.0148 \*

Venus -67326-05-21 04:18 J -22869258.50 -22869258.32 -22869258.13 0.0299 0.0145

Mercury -67323-10-17 18:13 J -22868012.83 -22868012.74 -22868012.64 0.0304 0.0206

Mercury -67322-01-14 06:57 J -22867924.33 -22867924.21 -22867924.08 0.0303 0.0069

Mercury -67322-04-12 19:40 J -22867835.80 -22867835.68 -22867835.55 0.0303 0.0070

Mercury -67322-07-10 08:23 J -22867747.24 -22867747.15 -22867747.06 0.0303 0.0205

Moon -67321-06-04 18:42 J -22867416.85 -22867416.72 -22867416.60 0.0300 0.0256

Earth -67321-06-04 21:49 J -22867416.70 -22867416.59 -22867416.46 0.0300 0.0258 \*

Mars -67320-03-28 17:59 J -22867119.94 -22867119.75 -22867119.53 0.0297 0.0186

Moon -67320-06-19 02:23 J -22867037.63 -22867037.40 -22867037.16 0.0296 0.0022

Earth -67320-06-19 05:01 J -22867037.53 -22867037.29 -22867037.05 0.0296 0.0031 \*

Earth -67319-07-03 00:28 J -22866658.66 -22866658.48 -22866658.29 0.0292 0.0185  
 Moon -67319-07-03 01:25 J -22866658.60 -22866658.44 -22866658.26 0.0292 0.0200 \*  
 Venus -67312-03-19 05:59 J -22864207.44 -22864207.25 -22864207.05 0.0263 0.0104  
 Venus -67312-11-03 04:18 J -22863978.37 -22863978.32 -22863978.25 0.0262 0.0250  
 Mercury -67308-11-02 23:01 J -22862517.59 -22862517.54 -22862517.46 0.0259 0.0242  
 Mercury -67307-01-30 19:54 J -22862428.84 -22862428.67 -22862428.50 0.0259 0.0115  
 Mercury -67307-04-29 16:33 J -22862340.00 -22862339.81 -22862339.61 0.0259 0.0015  
 Mercury -67307-07-27 13:25 J -22862251.09 -22862250.94 -22862250.77 0.0260 0.0142  
 Earth -67306-12-01 14:23 J -22861758.98 -22861758.90 -22861758.80 0.0262 0.0245  
 Moon -67306-12-01 17:16 J -22861758.84 -22861758.78 -22861758.73 0.0262 0.0255 \*  
 Earth -67305-12-12 16:33 J -22861382.04 -22861381.81 -22861381.57 0.0265 0.0090  
 Moon -67305-12-12 19:40 J -22861381.91 -22861381.68 -22861381.44 0.0265 0.0104 \*  
 Mars -67304-04-15 16:04 J -22861258.10 -22861257.83 -22861257.53 0.0266 0.0127  
 Moon -67304-12-25 00:57 J -22861004.71 -22861004.46 -22861004.21 0.0269 0.0070  
 Earth -67304-12-25 02:52 J -22861004.61 -22861004.38 -22861004.13 0.0269 0.0079 \*  
 Moon -67302-01-06 18:13 J -22860626.81 -22860626.74 -22860626.63 0.0273 0.0255  
 Earth -67302-01-06 22:33 J -22860626.65 -22860626.56 -22860626.47 0.0273 0.0254 \*  
 Venus -67297-11-30 14:09 J -22858472.11 -22858471.91 -22858471.70 0.0300 0.0064  
 Mercury -67293-03-05 20:52 J -22857280.70 -22857280.63 -22857280.55 0.0304 0.0238  
 Mercury -67293-06-02 09:49 J -22857192.21 -22857192.09 -22857191.97 0.0303 0.0100  
 Mercury -67293-08-29 22:33 J -22857103.69 -22857103.56 -22857103.43 0.0303 0.0038  
 Mercury -67293-11-26 11:01 J -22857015.14 -22857015.04 -22857014.93 0.0303 0.0174  
 Earth -67291-06-13 11:45 J -22856451.22 -22856451.01 -22856450.79 0.0298 0.0131  
 Moon -67291-06-13 14:23 J -22856451.12 -22856450.90 -22856450.67 0.0298 0.0127 \*  
 Mars -67290-05-16 21:06 J -22856113.88 -22856113.62 -22856113.36 0.0294 0.0067  
 Moon -67290-06-27 11:16 J -22856072.26 -22856072.03 -22856071.79 0.0294 0.0104  
 Earth -67290-06-27 12:28 J -22856072.20 -22856071.98 -22856071.74 0.0294 0.0092 \*  
 Venus -67283-09-29 11:30 J -22853421.23 -22853421.02 -22853420.81 0.0263 0.0048  
 Mercury -67278-06-19 19:54 J -22851696.83 -22851696.67 -22851696.51 0.0259 0.0147  
 Mercury -67278-09-16 16:33 J -22851608.00 -22851607.81 -22851607.61 0.0259 0.0020

Mercury -67278-12-14 13:25 J -22851519.11 -22851518.94 -22851518.76 0.0260 0.0110  
 Mercury -67277-03-12 10:33 J -22851430.14 -22851430.06 -22851429.99 0.0260 0.0240  
 Moon -67276-12-07 14:52 J -22850795.06 -22850794.88 -22850794.69 0.0264 0.0172  
 Earth -67276-12-07 18:13 J -22850794.94 -22850794.74 -22850794.54 0.0264 0.0158 \*  
 Earth -67275-12-20 00:28 J -22850417.73 -22850417.48 -22850417.23 0.0267 0.0005  
 Moon -67275-12-20 01:54 J -22850417.66 -22850417.42 -22850417.18 0.0267 0.0007 \*  
 Mars -67274-06-07 08:37 J -22850248.44 -22850248.14 -22850247.84 0.0269 0.0105  
 Earth -67273-01-01 15:21 J -22850040.05 -22850039.86 -22850039.67 0.0271 0.0177  
 Moon -67273-01-01 18:57 J -22850039.89 -22850039.71 -22850039.51 0.0271 0.0174 \*  
 Venus -67267-06-12 21:49 J -22847685.80 -22847685.59 -22847685.38 0.0300 0.0011  
 Mercury -67264-07-23 23:16 J -22846548.58 -22846548.53 -22846548.48 0.0304 0.0274  
 Mercury -67264-10-20 12:13 J -22846460.11 -22846459.99 -22846459.88 0.0304 0.0136  
 Mercury -67263-01-17 00:57 J -22846371.59 -22846371.46 -22846371.33 0.0303 0.0006  
 Mercury -67263-04-15 13:25 J -22846283.05 -22846282.94 -22846282.82 0.0303 0.0139  
 Mercury -67263-07-13 02:09 J -22846194.46 -22846194.41 -22846194.36 0.0302 0.0274  
 Moon -67262-06-07 12:13 J -22845865.13 -22845864.99 -22845864.83 0.0300 0.0229  
 Earth -67262-06-07 14:52 J -22845865.03 -22845864.88 -22845864.73 0.0300 0.0229 \*  
 Earth -67261-06-20 21:06 J -22845485.86 -22845485.62 -22845485.38 0.0296 0.0005  
 Moon -67261-06-20 22:04 J -22845485.81 -22845485.58 -22845485.34 0.0296 0.0009 \*  
 Earth -67260-07-04 15:35 J -22845107.00 -22845106.85 -22845106.67 0.0291 0.0213  
 Moon -67260-07-04 19:40 J -22845106.83 -22845106.68 -22845106.54 0.0291 0.0228 \*  
 Venus -67253-04-10 16:47 J -22842635.02 -22842634.80 -22842634.59 0.0263 0.0009  
 Mercury -67249-11-05 20:09 J -22840964.80 -22840964.66 -22840964.52 0.0259 0.0178  
 Mercury -67248-02-02 16:47 J -22840875.99 -22840875.80 -22840875.61 0.0259 0.0051  
 Mercury -67248-05-02 13:40 J -22840787.12 -22840786.93 -22840786.75 0.0259 0.0077  
 Mercury -67248-07-30 10:18 J -22840698.18 -22840698.07 -22840697.95 0.0259 0.0207  
 Earth -67247-12-02 22:04 J -22840207.70 -22840207.58 -22840207.46 0.0262 0.0227  
 Moon -67247-12-03 01:40 J -22840207.54 -22840207.43 -22840207.33 0.0262 0.0238 \*  
 Moon -67246-12-14 23:30 J -22839830.77 -22839830.52 -22839830.28 0.0265 0.0083  
 Earth -67246-12-15 00:28 J -22839830.72 -22839830.48 -22839830.24 0.0265 0.0069 \*



Moon -67245-12-26 07:25 J -22839453.41 -22839453.19 -22839452.95 0.0269 0.0093  
 Earth -67245-12-26 11:01 J -22839453.27 -22839453.04 -22839452.80 0.0269 0.0100 \*  
 Venus -67238-12-24 05:59 J -22836899.45 -22836899.25 -22836899.05 0.0300 0.0086  
 Mercury -67234-03-09 14:23 J -22835728.00 -22835727.90 -22835727.79 0.0304 0.0172  
 Mercury -67234-06-06 03:21 J -22835639.49 -22835639.36 -22835639.24 0.0304 0.0035  
 Mercury -67234-09-02 15:49 J -22835550.96 -22835550.84 -22835550.71 0.0303 0.0104  
 Mercury -67234-11-30 04:33 J -22835462.39 -22835462.31 -22835462.23 0.0303 0.0239  
 Moon -67232-06-15 00:42 J -22834899.70 -22834899.47 -22834899.23 0.0298 0.0097  
 Earth -67232-06-15 02:09 J -22834899.63 -22834899.41 -22834899.18 0.0298 0.0103 \*  
 Mars -67232-08-23 08:09 J -22834830.38 -22834830.16 -22834829.92 0.0297 0.0149  
 Moon -67231-06-28 22:33 J -22834520.77 -22834520.56 -22834520.34 0.0293 0.0132  
 Earth -67231-06-29 02:09 J -22834520.63 -22834520.41 -22834520.19 0.0293 0.0119 \*  
 Venus -67224-10-21 20:52 J -22831848.83 -22831848.63 -22831848.41 0.0262 0.0060  
 Mercury -67219-03-25 19:25 J -22830232.79 -22830232.69 -22830232.57 0.0259 0.0213  
 Mercury -67219-06-22 16:04 J -22830144.00 -22830143.83 -22830143.64 0.0259 0.0086  
 Mercury -67219-09-19 12:57 J -22830055.15 -22830054.96 -22830054.77 0.0259 0.0042  
 Mercury -67219-12-17 09:49 J -22829966.23 -22829966.09 -22829965.95 0.0260 0.0171  
 Earth -67217-12-08 23:30 J -22829243.72 -22829243.52 -22829243.29 0.0264 0.0140  
 Moon -67217-12-09 00:28 J -22829243.66 -22829243.48 -22829243.27 0.0264 0.0155 \*  
 Mars -67216-09-09 16:04 J -22828969.13 -22828968.83 -22828968.53 0.0266 0.0104  
 Earth -67216-12-21 06:13 J -22828866.49 -22828866.24 -22828865.98 0.0267 0.0025  
 Moon -67216-12-21 10:04 J -22828866.33 -22828866.08 -22828865.83 0.0267 0.0012 \*  
 Earth -67214-01-02 21:35 J -22828488.76 -22828488.60 -22828488.42 0.0271 0.0198  
 Moon -67214-01-02 21:49 J -22828488.76 -22828488.59 -22828488.40 0.0271 0.0197 \*  
 Venus -67208-07-05 12:13 J -22826113.17 -22826112.99 -22826112.81 0.0300 0.0155  
 Mercury -67205-07-26 16:18 J -22824995.91 -22824995.82 -22824995.73 0.0304 0.0212  
 Mercury -67205-10-23 05:16 J -22824907.41 -22824907.28 -22824907.16 0.0304 0.0074  
 Mercury -67204-01-19 17:59 J -22824818.88 -22824818.75 -22824818.62 0.0303 0.0064  
 Mercury -67204-04-18 06:28 J -22824730.32 -22824730.23 -22824730.13 0.0303 0.0201  
 Earth -67203-06-09 03:06 J -22824313.54 -22824313.37 -22824313.19 0.0300 0.0204

Moon -67203-06-09 04:33 J -22824313.47 -22824313.31 -22824313.13 0.0300 0.0201 \*  
 Earth -67202-06-23 08:37 J -22823934.38 -22823934.14 -22823933.90 0.0296 0.0025  
 Moon -67202-06-23 12:13 J -22823934.23 -22823933.99 -22823933.75 0.0296 0.0034 \*  
 Mars -67202-10-11 04:33 J -22823824.56 -22823824.31 -22823824.05 0.0295 0.0094  
 Earth -67201-07-06 02:52 J -22823555.51 -22823555.38 -22823555.23 0.0291 0.0237  
 Moon -67201-07-06 04:18 J -22823555.43 -22823555.32 -22823555.18 0.0291 0.0251 \*  
 Venus -67195-09-17 02:52 J -22821291.45 -22821291.38 -22821291.29 0.0264 0.0243  
 Venus -67194-05-04 01:25 J -22821062.63 -22821062.44 -22821062.25 0.0262 0.0112  
 Mercury -67190-08-12 19:11 J -22819500.75 -22819500.70 -22819500.64 0.0258 0.0246  
 Mercury -67190-11-09 15:49 J -22819412.01 -22819411.84 -22819411.67 0.0258 0.0120  
 Mercury -67189-02-06 12:28 J -22819323.17 -22819322.98 -22819322.78 0.0259 0.0010  
 Mercury -67189-05-05 09:21 J -22819234.27 -22819234.11 -22819233.94 0.0259 0.0135  
 Moon -67188-12-04 00:42 J -22818656.59 -22818656.47 -22818656.32 0.0262 0.0223  
 Earth -67188-12-04 01:54 J -22818656.56 -22818656.42 -22818656.27 0.0262 0.0210 \*  
 Moon -67187-12-16 00:28 J -22818279.71 -22818279.48 -22818279.23 0.0265 0.0067  
 Earth -67187-12-16 04:33 J -22818279.56 -22818279.31 -22818279.06 0.0265 0.0052 \*  
 Mars -67186-11-01 04:18 J -22817959.60 -22817959.32 -22817959.03 0.0268 0.0131  
 Moon -67186-12-28 14:52 J -22817902.10 -22817901.88 -22817901.66 0.0269 0.0113  
 Earth -67186-12-28 15:21 J -22817902.08 -22817901.86 -22817901.63 0.0269 0.0118 \*  
 Venus -67178-01-15 18:13 J -22815326.88 -22815326.74 -22815326.60 0.0301 0.0222  
 Mercury -67176-12-13 17:59 J -22814263.81 -22814263.75 -22814263.68 0.0304 0.0255  
 Mercury -67175-03-12 06:57 J -22814175.33 -22814175.21 -22814175.09 0.0304 0.0116  
 Mercury -67175-06-08 19:40 J -22814086.81 -22814086.68 -22814086.55 0.0304 0.0023  
 Mercury -67175-09-05 08:23 J -22813998.26 -22813998.15 -22813998.04 0.0303 0.0159  
 Mercury -67175-12-02 20:52 J -22813909.65 -22813909.63 -22813909.60 0.0303 0.0294  
 Moon -67173-06-16 06:42 J -22813348.45 -22813348.22 -22813347.99 0.0298 0.0071  
 Earth -67173-06-16 10:18 J -22813348.30 -22813348.07 -22813347.83 0.0298 0.0079 \*  
 Moon -67172-06-30 08:37 J -22812969.34 -22812969.14 -22812968.95 0.0293 0.0155  
 Earth -67172-06-30 09:49 J -22812969.29 -22812969.09 -22812968.87 0.0293 0.0142 \*  
 Venus -67165-03-29 05:59 J -22810505.39 -22810505.25 -22810505.10 0.0263 0.0194

Venus -67165-11-13 04:18 J -22810276.48 -22810276.32 -22810276.14 0.0262 0.0159  
 Mercury -67160-03-28 14:37 J -22808680.03 -22808679.89 -22808679.73 0.0259 0.0159  
 Mercury -67160-06-25 11:30 J -22808591.21 -22808591.02 -22808590.83 0.0259 0.0032  
 Mercury -67160-09-22 08:09 J -22808502.34 -22808502.16 -22808501.98 0.0259 0.0096  
 Mercury -67160-12-20 05:01 J -22808413.38 -22808413.29 -22808413.20 0.0260 0.0225  
 Earth -67158-12-11 01:40 J -22807692.65 -22807692.43 -22807692.21 0.0264 0.0123  
 Moon -67158-12-11 05:30 J -22807692.48 -22807692.27 -22807692.05 0.0264 0.0139 \*  
 Earth -67157-12-22 08:09 J -22807315.40 -22807315.16 -22807314.91 0.0267 0.0042  
 Moon -67157-12-22 09:06 J -22807315.38 -22807315.12 -22807314.86 0.0267 0.0032 \*  
 Moon -67155-01-03 20:23 J -22806937.80 -22806937.65 -22806937.50 0.0271 0.0218  
 Earth -67155-01-03 23:45 J -22806937.65 -22806937.51 -22806937.35 0.0271 0.0216 \*  
 Venus -67150-12-10 18:57 J -22804770.82 -22804770.71 -22804770.58 0.0299 0.0247  
 Venus -67149-07-27 22:33 J -22804540.63 -22804540.56 -22804540.49 0.0301 0.0282  
 Mercury -67146-05-02 19:11 J -22803531.71 -22803531.70 -22803531.68 0.0304 0.0301  
 Mercury -67146-07-30 08:23 J -22803443.26 -22803443.15 -22803443.04 0.0304 0.0162  
 Mercury -67146-10-26 21:06 J -22803354.75 -22803354.62 -22803354.49 0.0304 0.0023  
 Mercury -67145-01-23 09:49 J -22803266.21 -22803266.09 -22803265.97 0.0303 0.0114  
 Mercury -67145-04-20 22:33 J -22803177.63 -22803177.56 -22803177.49 0.0303 0.0250  
 Earth -67144-06-10 08:23 J -22802762.34 -22802762.15 -22802761.96 0.0300 0.0184  
 Moon -67144-06-10 11:59 J -22802762.19 -22802762.00 -22802761.80 0.0300 0.0176 \*  
 Mars -67143-01-17 02:09 J -22802541.64 -22802541.41 -22802541.17 0.0298 0.0129  
 Earth -67143-06-24 13:40 J -22802383.16 -22802382.93 -22802382.69 0.0296 0.0046  
 Moon -67143-06-24 15:06 J -22802383.11 -22802382.87 -22802382.62 0.0296 0.0056 \*  
 Moon -67142-07-08 05:01 J -22802004.36 -22802004.29 -22802004.20 0.0291 0.0272  
 Earth -67142-07-08 07:40 J -22802004.28 -22802004.18 -22802004.06 0.0291 0.0257 \*  
 Venus -67136-10-09 09:21 J -22799719.28 -22799719.11 -22799718.93 0.0263 0.0146  
 Venus -67135-05-26 07:40 J -22799490.30 -22799490.18 -22799490.05 0.0262 0.0207  
 Mercury -67131-08-15 13:40 J -22797948.04 -22797947.93 -22797947.79 0.0258 0.0196  
 Mercury -67131-11-12 10:33 J -22797859.25 -22797859.06 -22797858.88 0.0258 0.0070  
 Mercury -67130-02-09 07:11 J -22797770.39 -22797770.20 -22797770.01 0.0259 0.0057

Mercury -67130-05-09 03:49 J -22797681.46 -22797681.34 -22797681.20 0.0259 0.0186  
 Moon -67129-12-04 22:04 J -22797105.71 -22797105.58 -22797105.42 0.0262 0.0211  
 Earth -67129-12-05 01:54 J -22797105.58 -22797105.42 -22797105.25 0.0262 0.0196 \*  
 Moon -67128-12-17 03:49 J -22796728.58 -22796728.34 -22796728.10 0.0265 0.0049  
 Earth -67128-12-17 04:33 J -22796728.56 -22796728.31 -22796728.06 0.0265 0.0036 \*  
 Mars -67127-02-02 23:01 J -22796680.85 -22796680.54 -22796680.23 0.0265 0.0082  
 Earth -67127-12-29 15:06 J -22796351.08 -22796350.87 -22796350.64 0.0269 0.0134  
 Moon -67127-12-29 18:28 J -22796350.94 -22796350.73 -22796350.51 0.0269 0.0131 \*  
 Venus -67120-06-21 23:16 J -22793984.69 -22793984.53 -22793984.37 0.0299 0.0188  
 Mercury -67117-12-16 09:35 J -22792711.19 -22792711.10 -22792711.00 0.0304 0.0208  
 Mercury -67116-03-14 22:33 J -22792622.69 -22792622.56 -22792622.44 0.0304 0.0069  
 Mercury -67116-06-11 11:16 J -22792534.16 -22792534.03 -22792533.90 0.0304 0.0069  
 Mercury -67116-09-07 23:59 J -22792445.59 -22792445.50 -22792445.41 0.0303 0.0205  
 Moon -67115-06-03 23:30 J -22792176.59 -22792176.52 -22792176.43 0.0301 0.0283  
 Earth -67115-06-04 02:52 J -22792176.44 -22792176.38 -22792176.32 0.0301 0.0291 \*  
 Moon -67114-06-18 12:42 J -22791797.20 -22791796.97 -22791796.74 0.0298 0.0048  
 Earth -67114-06-18 13:11 J -22791797.18 -22791796.95 -22791796.71 0.0298 0.0060 \*  
 Mars -67113-03-05 16:47 J -22791536.04 -22791535.80 -22791535.55 0.0295 0.0113  
 Earth -67113-07-01 12:42 J -22791418.16 -22791417.97 -22791417.76 0.0293 0.0162  
 Moon -67113-07-01 15:21 J -22791418.04 -22791417.86 -22791417.67 0.0293 0.0177 \*  
 Venus -67106-04-21 11:16 J -22788933.22 -22788933.03 -22788932.82 0.0263 0.0102  
 Venus -67106-12-06 09:21 J -22788704.15 -22788704.11 -22788704.04 0.0261 0.0251  
 Mercury -67101-01-02 12:13 J -22787216.05 -22787215.99 -22787215.91 0.0258 0.0237  
 Mercury -67101-03-31 08:52 J -22787127.30 -22787127.13 -22787126.95 0.0258 0.0111  
 Mercury -67101-06-28 05:30 J -22787038.46 -22787038.27 -22787038.08 0.0259 0.0016  
 Mercury -67101-09-25 02:09 J -22786949.56 -22786949.41 -22786949.25 0.0259 0.0144  
 Earth -67099-12-12 00:13 J -22786141.72 -22786141.49 -22786141.26 0.0264 0.0110  
 Moon -67099-12-12 00:42 J -22786141.70 -22786141.47 -22786141.24 0.0264 0.0123 \*  
 Moon -67098-12-24 03:06 J -22785764.62 -22785764.37 -22785764.12 0.0267 0.0049  
 Earth -67098-12-24 06:42 J -22785764.47 -22785764.22 -22785763.98 0.0267 0.0056 \*

Mars -67097-03-25 23:45 J -22785671.77 -22785671.51 -22785671.22 0.0268 0.0140  
 Moon -67096-01-04 19:40 J -22785386.79 -22785386.68 -22785386.55 0.0271 0.0235  
 Earth -67096-01-04 22:04 J -22785386.71 -22785386.58 -22785386.45 0.0271 0.0230 \*  
 Venus -67090-01-02 02:23 J -22783198.59 -22783198.40 -22783198.21 0.0299 0.0133  
 Mercury -67087-05-05 10:18 J -22781979.13 -22781979.07 -22781979.00 0.0304 0.0260  
 Mercury -67087-08-01 23:16 J -22781890.64 -22781890.53 -22781890.41 0.0304 0.0121  
 Mercury -67087-10-29 12:13 J -22781802.12 -22781801.99 -22781801.86 0.0304 0.0018  
 Mercury -67086-01-26 00:57 J -22781713.57 -22781713.46 -22781713.35 0.0303 0.0155  
 Mercury -67086-04-24 13:25 J -22781624.97 -22781624.94 -22781624.90 0.0303 0.0290  
 Moon -67085-06-11 07:40 J -22781211.39 -22781211.18 -22781210.96 0.0300 0.0155  
 Earth -67085-06-11 08:09 J -22781211.36 -22781211.16 -22781210.96 0.0300 0.0168 \*  
 Moon -67084-06-25 10:04 J -22780832.31 -22780832.08 -22780831.83 0.0296 0.0078  
 Earth -67084-06-25 13:25 J -22780832.17 -22780831.94 -22780831.70 0.0296 0.0062 \*  
 Moon -67083-07-09 04:18 J -22780453.33 -22780453.32 -22780453.29 0.0291 0.0289  
 Earth -67083-07-09 07:25 J -22780453.27 -22780453.19 -22780453.11 0.0291 0.0273  
 Venus -67077-10-31 13:40 J -22778147.13 -22778146.93 -22778146.72 0.0263 0.0057  
 Mercury -67072-08-18 07:40 J -22776395.34 -22776395.18 -22776395.03 0.0258 0.0151  
 Mercury -67072-11-15 04:04 J -22776306.52 -22776306.33 -22776306.13 0.0258 0.0026  
 Mercury -67071-02-12 00:42 J -22776217.64 -22776217.47 -22776217.29 0.0258 0.0102  
 Mercury -67071-05-11 21:35 J -22776128.68 -22776128.60 -22776128.51 0.0259 0.0230  
 Moon -67070-12-06 22:18 J -22775554.71 -22775554.57 -22775554.40 0.0262 0.0198  
 Earth -67070-12-06 23:01 J -22775554.70 -22775554.54 -22775554.35 0.0262 0.0184 \*  
 Earth -67069-12-18 01:25 J -22775177.69 -22775177.44 -22775177.19 0.0265 0.0023  
 Moon -67069-12-18 05:01 J -22775177.53 -22775177.29 -22775177.04 0.0265 0.0033 \*  
 Earth -67068-12-30 11:45 J -22774800.20 -22774800.01 -22774799.79 0.0269 0.0148  
 Moon -67068-12-30 14:23 J -22774800.11 -22774799.90 -22774799.68 0.0269 0.0147 \*  
 Venus -67061-07-14 04:33 J -22772412.51 -22772412.31 -22772412.10 0.0300 0.0081  
 Mercury -67058-12-20 00:13 J -22771158.59 -22771158.49 -22771158.38 0.0305 0.0171  
 Mercury -67057-03-17 13:11 J -22771070.08 -22771069.95 -22771069.82 0.0304 0.0033  
 Mercury -67057-06-14 01:54 J -22770981.54 -22770981.42 -22770981.30 0.0304 0.0106

Mercury -67057-09-10 14:37 J -22770892.97 -22770892.89 -22770892.82 0.0303 0.0242  
 Earth -67056-06-04 23:59 J -22770625.59 -22770625.50 -22770625.40 0.0302 0.0277  
 Moon -67056-06-05 01:11 J -22770625.55 -22770625.45 -22770625.34 0.0302 0.0266 \*  
 Mars -67055-06-12 01:40 J -22770253.67 -22770253.43 -22770253.19 0.0298 0.0121  
 Earth -67055-06-19 10:33 J -22770246.30 -22770246.06 -22770245.82 0.0298 0.0044  
 Moon -67055-06-19 14:09 J -22770246.15 -22770245.91 -22770245.68 0.0298 0.0029 \*  
 Earth -67054-07-03 10:04 J -22769867.27 -22769867.08 -22769866.89 0.0293 0.0177  
 Moon -67054-07-03 13:11 J -22769867.13 -22769866.95 -22769866.77 0.0293 0.0194 \*  
 Venus -67047-05-13 14:52 J -22767361.10 -22767360.88 -22767360.67 0.0263 0.0017  
 Mercury -67042-01-05 05:30 J -22765663.39 -22765663.27 -22765663.14 0.0258 0.0195  
 Mercury -67042-04-04 02:09 J -22765574.59 -22765574.41 -22765574.23 0.0258 0.0069  
 Mercury -67042-07-01 22:47 J -22765485.74 -22765485.55 -22765485.36 0.0259 0.0058  
 Mercury -67042-09-28 19:25 J -22765396.82 -22765396.69 -22765396.55 0.0259 0.0185  
 Earth -67041-11-30 21:21 J -22764967.66 -22764967.61 -22764967.54 0.0261 0.0253  
 Moon -67040-12-12 16:04 J -22764591.05 -22764590.83 -22764590.59 0.0264 0.0109  
 Earth -67040-12-12 19:54 J -22764590.90 -22764590.67 -22764590.43 0.0264 0.0098 \*  
 Mars -67039-06-28 09:35 J -22764393.41 -22764393.10 -22764392.78 0.0265 0.0076  
 Moon -67039-12-24 23:45 J -22764213.74 -22764213.51 -22764213.26 0.0267 0.0067  
 Earth -67039-12-25 01:54 J -22764213.66 -22764213.42 -22764213.17 0.0267 0.0069 \*  
 Earth -67037-01-06 16:47 J -22763835.90 -22763835.80 -22763835.68 0.0271 0.0243  
 Moon -67037-01-06 19:25 J -22763835.78 -22763835.69 -22763835.60 0.0271 0.0252 \*  
 Venus -67031-01-24 06:42 J -22761626.43 -22761626.22 -22761626.01 0.0299 0.0031  
 Mercury -67028-05-08 00:42 J -22760426.55 -22760426.47 -22760426.38 0.0304 0.0226  
 Mercury -67028-08-04 13:40 J -22760338.05 -22760337.93 -22760337.81 0.0304 0.0087  
 Mercury -67028-11-01 02:23 J -22760249.52 -22760249.40 -22760249.27 0.0304 0.0052  
 Mercury -67027-01-28 15:06 J -22760160.97 -22760160.87 -22760160.77 0.0303 0.0189  
 Moon -67026-06-12 23:59 J -22759660.71 -22759660.50 -22759660.29 0.0300 0.0139  
 Earth -67026-06-13 03:21 J -22759660.55 -22759660.36 -22759660.14 0.0300 0.0156 \*  
 Moon -67025-06-26 06:42 J -22759281.44 -22759281.22 -22759281.00 0.0296 0.0093  
 Earth -67025-06-26 09:06 J -22759281.35 -22759281.12 -22759280.88 0.0296 0.0076 \*

Mars	-67025-07-29 09:49 J	-22759248.32	-22759248.09	-22759247.84	0.0295	0.0119
Earth	-67024-07-10 03:06 J	-22758902.40	-22758902.37	-22758902.32	0.0291	0.0287
Venus	-67018-11-23 16:33 J	-22756575.03	-22756574.81	-22756574.60	0.0263	0.0027
Mercury	-67013-05-24 04:04 J	-22754931.40	-22754931.33	-22754931.25	0.0258	0.0236
Mercury	-67013-08-21 00:28 J	-22754842.65	-22754842.48	-22754842.30	0.0258	0.0111
Mercury	-67013-11-17 21:06 J	-22754753.81	-22754753.62	-22754753.43	0.0258	0.0015
Mercury	-67012-02-14 17:45 J	-22754664.92	-22754664.76	-22754664.60	0.0258	0.0142
Earth	-67011-12-07 18:13 J	-22754003.92	-22754003.74	-22754003.55	0.0262	0.0173
Moon	-67011-12-07 21:21 J	-22754003.77	-22754003.61	-22754003.43	0.0262	0.0187 *
Earth	-67010-12-19 20:09 J	-22753626.91	-22753626.66	-22753626.40	0.0265	0.0013
Moon	-67010-12-19 22:04 J	-22753626.84	-22753626.58	-22753626.32	0.0265	0.0017 *
Mars	-67009-08-18 10:33 J	-22753384.33	-22753384.06	-22753383.80	0.0267	0.0154
Moon	-67009-12-31 03:35 J	-22753249.54	-22753249.35	-22753249.13	0.0269	0.0165
Earth	-67009-12-31 06:28 J	-22753249.42	-22753249.23	-22753249.02	0.0269	0.0159 *
Venus	-67002-08-06 08:23 J	-22750840.36	-22750840.15	-22750839.94	0.0300	0.0020

# 67TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 67th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-66999-09-25 01:25 J	-22749694.49	-22749694.44	-22749694.39	0.0305	0.0279		
Mercury	-66999-12-22 14:23 J	-22749606.02	-22749605.90	-22749605.79	0.0305	0.0140		
Mercury	-66998-03-21 03:06 J	-22749517.50	-22749517.37	-22749517.24	0.0304	0.0008		
Mercury	-66998-06-17 15:49 J	-22749428.95	-22749428.84	-22749428.72	0.0304	0.0137		

Mercury -66998-09-14 04:33 J -22749340.36 -22749340.31 -22749340.25 0.0304 0.0273

Earth -66997-06-05 17:59 J -22749074.86 -22749074.75 -22749074.64 0.0302 0.0265

Moon -66997-06-05 21:06 J -22749074.74 -22749074.62 -22749074.47 0.0302 0.0251 \*

Earth -66996-06-20 04:33 J -22748695.55 -22748695.31 -22748695.07 0.0298 0.0031

Moon -66996-06-20 06:13 J -22748695.49 -22748695.24 -22748694.99 0.0298 0.0014 \*

Moon -66995-07-04 02:23 J -22748316.57 -22748316.40 -22748316.22 0.0293 0.0206

Earth -66995-07-04 04:04 J -22748316.50 -22748316.33 -22748316.14 0.0293 0.0191 \*

Venus -66988-06-04 16:47 J -22745789.01 -22745788.80 -22745788.59 0.0262 0.0064

Mercury -66983-01-07 22:18 J -22744110.72 -22744110.57 -22744110.41 0.0258 0.0156

Mercury -66983-04-06 18:57 J -22744021.90 -22744021.71 -22744021.52 0.0258 0.0030

Mercury -66983-07-04 15:21 J -22743933.03 -22743932.86 -22743932.68 0.0258 0.0097

Mercury -66983-10-01 12:13 J -22743844.08 -22743843.99 -22743843.90 0.0259 0.0224

Moon -66982-12-02 12:42 J -22743416.99 -22743416.97 -22743416.91 0.0261 0.0257

Earth -66982-12-02 16:04 J -22743416.91 -22743416.83 -22743416.73 0.0261 0.0243 \*

Moon -66981-12-13 12:28 J -22743040.20 -22743039.98 -22743039.75 0.0264 0.0096

Earth -66981-12-13 14:23 J -22743040.14 -22743039.90 -22743039.66 0.0264 0.0087 \*

Earth -66980-12-25 20:09 J -22742662.90 -22742662.66 -22742662.42 0.0267 0.0080

Moon -66980-12-25 23:01 J -22742662.77 -22742662.54 -22742662.30 0.0267 0.0084 \*

Earth -66978-01-07 10:33 J -22742285.13 -22742285.06 -22742284.96 0.0271 0.0255

Moon -66978-01-07 14:09 J -22742284.95 -22742284.91 -22742284.85 0.0271 0.0265

Venus -66972-02-15 09:35 J -22740054.31 -22740054.10 -22740053.90 0.0300 0.0067

Mercury -66969-05-10 14:37 J -22738873.99 -22738873.89 -22738873.79 0.0304 0.0197

Mercury -66969-08-07 03:35 J -22738785.48 -22738785.35 -22738785.23 0.0304 0.0058

Mercury -66969-11-03 16:18 J -22738696.94 -22738696.82 -22738696.69 0.0304 0.0080

Mercury -66968-01-31 05:01 J -22738608.38 -22738608.29 -22738608.20 0.0303 0.0217

Moon -66967-06-13 18:57 J -22738109.92 -22738109.71 -22738109.50 0.0300 0.0129

Earth -66967-06-13 19:40 J -22738109.88 -22738109.68 -22738109.46 0.0300 0.0145 \*

Mars -66967-11-04 09:21 J -22737966.35 -22737966.11 -22737965.87 0.0298 0.0120

Earth -66966-06-28 01:25 J -22737730.66 -22737730.44 -22737730.21 0.0296 0.0087

Moon -66966-06-28 03:49 J -22737730.55 -22737730.34 -22737730.11 0.0296 0.0104 \*



Venus -66959-04-30 18:57 J -22735231.76 -22735231.71 -22735231.63 0.0265 0.0251

Venus -66959-12-15 17:45 J -22735002.95 -22735002.76 -22735002.56 0.0263 0.0106

Mercury -66954-05-27 20:37 J -22733378.76 -22733378.64 -22733378.52 0.0258 0.0198

Mercury -66954-08-24 17:01 J -22733289.97 -22733289.79 -22733289.60 0.0258 0.0073

Mercury -66954-11-21 13:40 J -22733201.12 -22733200.93 -22733200.74 0.0258 0.0053

Mercury -66953-02-18 10:18 J -22733112.20 -22733112.07 -22733111.93 0.0258 0.0180

Earth -66952-12-08 12:28 J -22732453.17 -22732452.98 -22732452.78 0.0262 0.0163

Moon -66952-12-08 14:52 J -22732453.07 -22732452.88 -22732452.69 0.0262 0.0175 \*

Mars -66951-11-20 17:59 J -22732106.07 -22732105.75 -22732105.43 0.0264 0.0061

Moon -66951-12-20 11:16 J -22732076.29 -22732076.03 -22732075.78 0.0265 0.0005

Earth -66951-12-20 14:09 J -22732076.16 -22732075.91 -22732075.65 0.0265 0.0005 \*

Moon -66949-01-01 20:52 J -22731698.80 -22731698.63 -22731698.44 0.0268 0.0180

Earth -66949-01-02 00:13 J -22731698.68 -22731698.49 -22731698.30 0.0268 0.0170 \*

Venus -66943-08-28 11:01 J -22729268.23 -22729268.04 -22729267.85 0.0300 0.0116

Mercury -66940-09-27 15:06 J -22728141.94 -22728141.87 -22728141.80 0.0305 0.0251

Mercury -66940-12-25 04:04 J -22728053.45 -22728053.33 -22728053.21 0.0305 0.0112

Mercury -66939-03-23 17:01 J -22727964.92 -22727964.79 -22727964.66 0.0304 0.0028

Mercury -66939-06-20 05:45 J -22727876.37 -22727876.26 -22727876.15 0.0304 0.0165

Mercury -66939-09-16 18:28 J -22727787.75 -22727787.73 -22727787.72 0.0304 0.0301

Moon -66938-06-07 09:49 J -22727524.23 -22727524.09 -22727523.93 0.0302 0.0240

Earth -66938-06-07 09:35 J -22727524.22 -22727524.10 -22727523.96 0.0302 0.0255 \*

Moon -66937-06-20 17:30 J -22727145.01 -22727144.77 -22727144.52 0.0298 0.0004

Earth -66937-06-20 20:37 J -22727144.88 -22727144.64 -22727144.40 0.0298 0.0020 \*

Mars -66937-12-21 18:57 J -22726960.95 -22726960.71 -22726960.46 0.0296 0.0117

Moon -66936-07-04 16:47 J -22726765.95 -22726765.80 -22726765.63 0.0293 0.0217

Earth -66936-07-04 20:23 J -22726765.81 -22726765.65 -22726765.47 0.0293 0.0202 \*

Venus -66930-11-10 19:25 J -22724445.81 -22724445.69 -22724445.56 0.0264 0.0211

Venus -66929-06-26 18:13 J -22724216.92 -22724216.74 -22724216.56 0.0262 0.0143

Mercury -66925-10-13 18:28 J -22722646.78 -22722646.73 -22722646.66 0.0258 0.0242

Mercury -66924-01-10 14:52 J -22722558.04 -22722557.88 -22722557.70 0.0258 0.0118

Mercury -66924-04-09 11:30 J -22722469.21 -22722469.02 -22722468.83 0.0258 0.0008

Mercury -66924-07-07 08:09 J -22722380.32 -22722380.16 -22722380.00 0.0258 0.0135

Moon -66923-12-03 07:54 J -22721866.23 -22721866.17 -22721866.09 0.0261 0.0248

Earth -66923-12-03 10:33 J -22721866.16 -22721866.06 -22721865.94 0.0261 0.0233 \*

Earth -66922-12-15 08:37 J -22721489.38 -22721489.14 -22721488.90 0.0263 0.0076

Moon -66922-12-15 11:16 J -22721489.26 -22721489.03 -22721488.80 0.0263 0.0082 \*

Earth -66921-12-26 14:09 J -22721112.14 -22721111.91 -22721111.67 0.0267 0.0091

Moon -66921-12-26 17:16 J -22721112.02 -22721111.78 -22721111.54 0.0267 0.0098 \*

Mars -66920-01-10 12:13 J -22721097.24 -22721096.99 -22721096.72 0.0267 0.0156

Earth -66919-01-08 04:33 J -22720734.34 -22720734.31 -22720734.25 0.0271 0.0266

Venus -66913-03-09 12:28 J -22718482.15 -22718481.98 -22718481.80 0.0300 0.0164

Mercury -66910-05-14 04:33 J -22717321.42 -22717321.31 -22717321.20 0.0304 0.0168

Mercury -66910-08-10 17:16 J -22717232.90 -22717232.78 -22717232.65 0.0304 0.0031

Mercury -66910-11-07 06:13 J -22717144.36 -22717144.24 -22717144.12 0.0304 0.0109

Mercury -66909-02-03 18:42 J -22717055.79 -22717055.72 -22717055.64 0.0303 0.0245

Earth -66908-06-14 11:30 J -22716559.23 -22716559.02 -22716558.80 0.0300 0.0134

Moon -66908-06-14 14:52 J -22716559.10 -22716558.88 -22716558.66 0.0300 0.0118 \*

Earth -66907-06-28 17:16 J -22716180.00 -22716179.78 -22716179.55 0.0296 0.0098

Moon -66907-06-28 20:23 J -22716179.87 -22716179.65 -22716179.42 0.0296 0.0113 \*

Venus -66900-05-22 20:37 J -22713659.81 -22713659.64 -22713659.48 0.0264 0.0171

Venus -66899-01-06 18:57 J -22713430.85 -22713430.71 -22713430.55 0.0263 0.0185

Mercury -66895-05-30 13:11 J -22711826.09 -22711825.95 -22711825.79 0.0258 0.0160

Mercury -66895-08-27 09:49 J -22711737.28 -22711737.09 -22711736.90 0.0258 0.0034

Mercury -66895-11-24 06:28 J -22711648.41 -22711648.23 -22711648.05 0.0258 0.0092

Mercury -66894-02-21 03:06 J -22711559.47 -22711559.37 -22711559.27 0.0258 0.0219

Moon -66893-12-09 05:16 J -22710902.48 -22710902.28 -22710902.08 0.0262 0.0162

Earth -66893-12-09 07:25 J -22710902.38 -22710902.19 -22710901.98 0.0262 0.0153 \*

Moon -66892-12-21 06:42 J -22710525.47 -22710525.22 -22710524.98 0.0265 0.0013

Earth -66892-12-21 09:21 J -22710525.36 -22710525.11 -22710524.86 0.0265 0.0010 \*

Earth -66890-01-02 18:57 J -22710147.88 -22710147.71 -22710147.52 0.0268 0.0181

Moon -66890-01-02 20:52 J -22710147.79 -22710147.63 -22710147.46 0.0268 0.0195 \*  
 Venus -66884-09-19 14:23 J -22707696.04 -22707695.90 -22707695.75 0.0300 0.0216  
 Mercury -66881-09-30 05:01 J -22706589.38 -22706589.29 -22706589.20 0.0305 0.0222  
 Mercury -66881-12-27 17:59 J -22706500.87 -22706500.75 -22706500.63 0.0305 0.0082  
 Mercury -66880-03-26 06:42 J -22706412.34 -22706412.22 -22706412.09 0.0304 0.0057  
 Mercury -66880-06-22 19:25 J -22706323.78 -22706323.69 -22706323.59 0.0304 0.0194  
 Moon -66879-06-07 22:18 J -22705973.72 -22705973.57 -22705973.41 0.0302 0.0228  
 Earth -66879-06-08 01:40 J -22705973.56 -22705973.43 -22705973.28 0.0302 0.0245 \*  
 Mars -66878-03-29 17:01 J -22705679.03 -22705678.79 -22705678.55 0.0299 0.0124  
 Moon -66878-06-22 10:18 J -22705594.31 -22705594.07 -22705593.84 0.0298 0.0007  
 Earth -66878-06-22 12:42 J -22705594.21 -22705593.97 -22705593.73 0.0298 0.0008 \*  
 Earth -66877-07-05 12:28 J -22705215.13 -22705214.98 -22705214.81 0.0294 0.0214  
 Moon -66877-07-05 13:25 J -22705215.08 -22705214.94 -22705214.79 0.0294 0.0224 \*  
 Venus -66871-12-02 20:37 J -22702873.82 -22702873.64 -22702873.45 0.0264 0.0132  
 Venus -66870-07-19 19:40 J -22702644.79 -22702644.68 -22702644.57 0.0262 0.0222  
 Mercury -66866-10-17 11:16 J -22701094.14 -22701094.03 -22701093.90 0.0258 0.0203  
 Mercury -66865-01-14 07:54 J -22701005.35 -22701005.17 -22701004.99 0.0258 0.0078  
 Mercury -66865-04-12 04:33 J -22700916.50 -22700916.31 -22700916.13 0.0258 0.0048  
 Mercury -66865-07-10 00:57 J -22700827.59 -22700827.46 -22700827.31 0.0258 0.0175  
 Earth -66864-12-04 05:59 J -22700315.36 -22700315.25 -22700315.11 0.0261 0.0223  
 Moon -66864-12-04 08:23 J -22700315.24 -22700315.15 -22700315.04 0.0261 0.0237 \*  
 Earth -66863-12-16 04:18 J -22699938.56 -22699938.32 -22699938.07 0.0263 0.0065  
 Moon -66863-12-16 07:25 J -22699938.43 -22699938.19 -22699937.94 0.0263 0.0070 \*  
 Mars -66862-04-15 01:54 J -22699818.74 -22699818.42 -22699818.09 0.0264 0.0055  
 Moon -66862-12-28 07:40 J -22699561.40 -22699561.18 -22699560.93 0.0267 0.0114  
 Earth -66862-12-28 09:49 J -22699561.31 -22699561.09 -22699560.85 0.0267 0.0103 \*  
 Venus -66855-08-14 13:11 J -22697140.05 -22697139.95 -22697139.84 0.0298 0.0258  
 Venus -66854-04-01 16:18 J -22696909.92 -22696909.82 -22696909.73 0.0300 0.0265  
 Mercury -66851-02-17 05:30 J -22695857.32 -22695857.27 -22695857.21 0.0304 0.0277  
 Mercury -66851-05-16 18:28 J -22695768.84 -22695768.73 -22695768.61 0.0304 0.0137

Mercury -66851-08-13 07:25 J -22695680.32 -22695680.19 -22695680.06 0.0304 0.0004

Mercury -66851-11-09 20:09 J -22695591.77 -22695591.66 -22695591.54 0.0304 0.0139

Mercury -66850-02-06 08:52 J -22695503.18 -22695503.13 -22695503.08 0.0303 0.0275

Earth -66849-06-15 04:33 J -22695008.52 -22695008.31 -22695008.08 0.0300 0.0123

Moon -66849-06-15 06:57 J -22695008.44 -22695008.21 -22695007.98 0.0300 0.0107 \*

Mars -66848-05-16 01:54 J -22694673.65 -22694673.42 -22694673.17 0.0296 0.0120

Moon -66848-06-29 08:37 J -22694629.36 -22694629.14 -22694628.91 0.0296 0.0119

Earth -66848-06-29 10:18 J -22694629.29 -22694629.07 -22694628.84 0.0296 0.0109 \*

Venus -66841-06-13 22:18 J -22692087.76 -22692087.57 -22692087.36 0.0264 0.0089

Mercury -66836-03-05 10:18 J -22690362.14 -22690362.07 -22690362.01 0.0258 0.0242

Mercury -66836-06-02 06:28 J -22690273.39 -22690273.23 -22690273.05 0.0258 0.0118

Mercury -66836-08-30 03:06 J -22690184.56 -22690184.37 -22690184.18 0.0258 0.0008

Mercury -66836-11-26 23:45 J -22690095.67 -22690095.51 -22690095.35 0.0258 0.0134

Moon -66834-12-11 00:57 J -22689351.66 -22689351.46 -22689351.25 0.0262 0.0149

Earth -66834-12-11 04:18 J -22689351.53 -22689351.32 -22689351.10 0.0262 0.0141 \*

Earth -66833-12-22 06:13 J -22688974.49 -22688974.24 -22688973.98 0.0265 0.0023

Moon -66833-12-22 07:40 J -22688974.41 -22688974.18 -22688973.93 0.0265 0.0029 \*

Mars -66832-06-05 05:01 J -22688809.53 -22688809.29 -22688809.05 0.0266 0.0176

Earth -66831-01-03 16:18 J -22688596.99 -22688596.82 -22688596.65 0.0268 0.0194

Moon -66831-01-03 19:54 J -22688596.83 -22688596.67 -22688596.51 0.0268 0.0209 \*

Venus -66825-02-24 16:33 J -22686353.96 -22686353.81 -22686353.65 0.0298 0.0200

Mercury -66822-10-03 19:25 J -22685036.79 -22685036.69 -22685036.59 0.0305 0.0188

Mercury -66822-12-31 08:23 J -22684948.28 -22684948.15 -22684948.02 0.0305 0.0049

Mercury -66821-03-28 21:06 J -22684859.74 -22684859.62 -22684859.50 0.0304 0.0090

Mercury -66821-06-25 09:49 J -22684771.17 -22684771.09 -22684771.00 0.0304 0.0227

Moon -66820-06-08 18:42 J -22684422.87 -22684422.72 -22684422.55 0.0302 0.0217

Earth -66820-06-08 20:37 J -22684422.78 -22684422.64 -22684422.48 0.0302 0.0232 \*

Earth -66819-06-23 07:25 J -22684043.43 -22684043.19 -22684042.95 0.0298 0.0005

Moon -66819-06-23 09:06 J -22684043.35 -22684043.12 -22684042.88 0.0298 0.0018 \*

Earth -66818-07-07 07:11 J -22683664.35 -22683664.20 -22683664.04 0.0294 0.0226

Moon -66818-07-07 10:47 J -22683664.19 -22683664.05 -22683663.90 0.0294 0.0232 \*  
 Venus -66812-12-24 23:16 J -22681301.74 -22681301.53 -22681301.32 0.0264 0.0048  
 Mercury -66807-10-20 05:01 J -22679541.44 -22679541.29 -22679541.14 0.0258 0.0159  
 Mercury -66806-01-17 01:25 J -22679452.62 -22679452.44 -22679452.24 0.0258 0.0034  
 Mercury -66806-04-15 22:04 J -22679363.75 -22679363.58 -22679363.40 0.0258 0.0093  
 Mercury -66806-07-13 18:42 J -22679274.81 -22679274.72 -22679274.61 0.0259 0.0221  
 Earth -66805-12-05 04:33 J -22678764.44 -22678764.31 -22678764.15 0.0261 0.0211  
 Moon -66805-12-05 07:54 J -22678764.29 -22678764.17 -22678764.02 0.0261 0.0222 \*  
 Mars -66804-07-18 01:40 J -22678539.48 -22678539.43 -22678539.33 0.0262 0.0256  
 Moon -66804-12-17 01:54 J -22678387.67 -22678387.42 -22678387.16 0.0264 0.0052  
 Earth -66804-12-17 03:06 J -22678387.61 -22678387.37 -22678387.12 0.0264 0.0053 \*  
 Moon -66803-12-29 05:45 J -22678010.48 -22678010.26 -22678010.04 0.0267 0.0129  
 Earth -66803-12-29 09:06 J -22678010.34 -22678010.12 -22678009.89 0.0267 0.0117 \*  
 Venus -66796-09-05 19:54 J -22675567.85 -22675567.67 -22675567.48 0.0298 0.0145  
 Mercury -66792-02-19 20:23 J -22674304.73 -22674304.65 -22674304.57 0.0304 0.0238  
 Mercury -66792-05-19 09:21 J -22674216.24 -22674216.11 -22674215.99 0.0304 0.0099  
 Mercury -66792-08-15 22:04 J -22674127.71 -22674127.58 -22674127.45 0.0304 0.0039  
 Mercury -66792-11-12 10:47 J -22674039.15 -22674039.05 -22674038.94 0.0304 0.0176  
 Moon -66790-06-16 23:16 J -22673457.76 -22673457.53 -22673457.29 0.0300 0.0095  
 Earth -66790-06-17 01:25 J -22673457.66 -22673457.44 -22673457.21 0.0300 0.0108 \*  
 Mars -66790-08-22 05:30 J -22673391.51 -22673391.27 -22673391.02 0.0299 0.0117  
 Moon -66789-06-30 03:06 J -22673078.58 -22673078.37 -22673078.15 0.0296 0.0130  
 Earth -66789-06-30 06:28 J -22673078.44 -22673078.23 -22673078.00 0.0295 0.0123 \*  
 Venus -66782-07-07 01:25 J -22670515.65 -22670515.44 -22670515.22 0.0264 0.0005  
 Mercury -66777-03-08 04:04 J -22668809.45 -22668809.33 -22668809.20 0.0258 0.0196  
 Mercury -66777-06-05 00:28 J -22668720.66 -22668720.48 -22668720.29 0.0258 0.0072  
 Mercury -66777-09-01 21:06 J -22668631.80 -22668631.62 -22668631.43 0.0258 0.0055  
 Mercury -66777-11-29 17:45 J -22668542.89 -22668542.76 -22668542.62 0.0258 0.0182  
 Earth -66775-12-12 04:04 J -22667800.54 -22667800.33 -22667800.10 0.0262 0.0127  
 Moon -66775-12-12 05:30 J -22667800.48 -22667800.27 -22667800.06 0.0262 0.0131 \*

Mars	-66774-09-08 05:45 J	-22667530.58	-22667530.26	-22667529.92	0.0264	0.0030
Earth	-66774-12-24 06:42 J	-22667423.47	-22667423.22	-22667422.97	0.0265	0.0037
Moon	-66774-12-24 10:18 J	-22667423.32	-22667423.07	-22667422.82	0.0265	0.0044 *
Moon	-66772-01-04 16:33 J	-22667045.94	-22667045.81	-22667045.65	0.0269	0.0223
Earth	-66772-01-04 17:01 J	-22667045.94	-22667045.79	-22667045.63	0.0269	0.0209 *
Venus	-66766-03-19 00:13 J	-22664781.69	-22664781.49	-22664781.28	0.0298	0.0083
Mercury	-66763-07-09 21:21 J	-22663572.65	-22663572.61	-22663572.56	0.0305	0.0286
Mercury	-66763-10-06 10:18 J	-22663484.18	-22663484.07	-22663483.95	0.0305	0.0147
Mercury	-66762-01-02 23:16 J	-22663395.66	-22663395.53	-22663395.40	0.0305	0.0008
Mercury	-66762-04-01 11:59 J	-22663307.11	-22663307.00	-22663306.88	0.0304	0.0130
Mercury	-66762-06-29 00:42 J	-22663218.53	-22663218.47	-22663218.41	0.0304	0.0266
Earth	-66761-06-09 18:57 J	-22662871.87	-22662871.71	-22662871.53	0.0302	0.0216
Moon	-66761-06-09 21:49 J	-22662871.76	-22662871.59	-22662871.42	0.0302	0.0201 *
Earth	-66760-06-24 05:16 J	-22662492.51	-22662492.28	-22662492.04	0.0298	0.0021
Moon	-66760-06-24 08:52 J	-22662492.37	-22662492.13	-22662491.89	0.0298	0.0032 *
Mars	-66760-10-08 21:49 J	-22662385.83	-22662385.59	-22662385.35	0.0297	0.0124
Earth	-66759-07-08 04:47 J	-22662113.42	-22662113.30	-22662113.15	0.0293	0.0242
Moon	-66759-07-08 05:16 J	-22662113.41	-22662113.28	-22662113.13	0.0293	0.0243 *
Venus	-66752-01-16 03:35 J	-22659729.56	-22659729.35	-22659729.14	0.0264	0.0042
Mercury	-66748-07-26 03:21 J	-22658077.44	-22658077.36	-22658077.28	0.0258	0.0233
Mercury	-66748-10-22 23:45 J	-22657988.68	-22657988.51	-22657988.34	0.0258	0.0108
Mercury	-66747-01-19 20:09 J	-22657899.85	-22657899.66	-22657899.46	0.0258	0.0019
Mercury	-66747-04-18 16:47 J	-22657810.95	-22657810.80	-22657810.64	0.0258	0.0144
Moon	-66746-12-07 05:01 J	-22657213.44	-22657213.29	-22657213.12	0.0261	0.0203
Earth	-66746-12-07 06:28 J	-22657213.39	-22657213.23	-22657213.06	0.0261	0.0196 *
Moon	-66745-12-18 01:40 J	-22656836.68	-22656836.43	-22656836.18	0.0264	0.0033
Earth	-66745-12-18 05:30 J	-22656836.51	-22656836.27	-22656836.02	0.0264	0.0037 *
Mars	-66744-10-29 10:04 J	-22656521.29	-22656521.08	-22656520.85	0.0267	0.0194
Earth	-66744-12-30 11:45 J	-22656459.22	-22656459.01	-22656458.79	0.0267	0.0133
Moon	-66744-12-30 11:30 J	-22656459.21	-22656459.02	-22656458.81	0.0267	0.0146 *

Venus -66737-09-28 05:30 J -22653995.48 -22653995.27 -22653995.05 0.0298 0.0021  
 Mercury -66733-02-23 11:45 J -22652752.11 -22652752.01 -22652751.91 0.0304 0.0192  
 Mercury -66733-05-22 00:42 J -22652663.60 -22652663.47 -22652663.34 0.0304 0.0053  
 Mercury -66733-08-18 13:25 J -22652575.06 -22652574.94 -22652574.81 0.0304 0.0085  
 Mercury -66733-11-15 02:09 J -22652486.49 -22652486.41 -22652486.32 0.0303 0.0221  
 Moon -66731-06-17 23:30 J -22651906.75 -22651906.52 -22651906.29 0.0299 0.0078  
 Earth -66731-06-18 02:52 J -22651906.61 -22651906.38 -22651906.15 0.0299 0.0090 \*  
 Moon -66730-07-02 06:42 J -22651527.41 -22651527.22 -22651527.01 0.0295 0.0146  
 Earth -66730-07-02 07:25 J -22651527.40 -22651527.19 -22651526.98 0.0295 0.0140 \*  
 Venus -66723-07-29 06:28 J -22648943.43 -22648943.23 -22648943.03 0.0264 0.0091  
 Mercury -66718-03-11 23:01 J -22647256.69 -22647256.54 -22647256.37 0.0258 0.0144  
 Mercury -66718-06-08 19:40 J -22647167.87 -22647167.68 -22647167.48 0.0258 0.0018  
 Mercury -66718-09-05 16:18 J -22647078.99 -22647078.82 -22647078.64 0.0259 0.0109  
 Mercury -66718-12-03 12:57 J -22646990.03 -22646989.96 -22646989.88 0.0259 0.0237  
 Mars -66716-12-11 17:16 J -22646250.93 -22646250.78 -22646250.61 0.0262 0.0228  
 Earth -66716-12-13 07:54 J -22646249.39 -22646249.17 -22646248.93 0.0262 0.0111  
 Moon -66716-12-13 11:59 J -22646249.22 -22646249.00 -22646248.77 0.0262 0.0111 \*  
 Earth -66715-12-25 11:16 J -22645872.27 -22645872.03 -22645871.78 0.0265 0.0055  
 Moon -66715-12-25 11:45 J -22645872.25 -22645872.01 -22645871.75 0.0265 0.0065 \*  
 Moon -66713-01-06 18:57 J -22645494.81 -22645494.71 -22645494.59 0.0269 0.0241  
 Earth -66713-01-06 22:33 J -22645494.69 -22645494.56 -22645494.42 0.0269 0.0227 \*  
 Venus -66707-04-10 12:28 J -22643209.19 -22643208.98 -22643208.78 0.0298 0.0052  
 Mercury -66704-07-12 13:25 J -22642020.02 -22642019.94 -22642019.85 0.0305 0.0234  
 Mercury -66704-10-09 02:23 J -22641931.52 -22641931.40 -22641931.28 0.0304 0.0095  
 Mercury -66703-01-05 15:21 J -22641842.99 -22641842.86 -22641842.74 0.0304 0.0044  
 Mercury -66703-04-04 03:49 J -22641754.44 -22641754.34 -22641754.23 0.0304 0.0181  
 Earth -66702-06-11 23:45 J -22641320.68 -22641320.51 -22641320.32 0.0301 0.0195  
 Moon -66702-06-12 03:06 J -22641320.56 -22641320.37 -22641320.17 0.0301 0.0181 \*  
 Mars -66701-01-15 13:25 J -22641103.18 -22641102.94 -22641102.69 0.0299 0.0107  
 Earth -66701-06-25 09:21 J -22640941.35 -22640941.11 -22640940.88 0.0298 0.0041

Moon	-66701-06-25 09:21 J	-22640941.35	-22640941.11	-22640940.86	0.0298	0.0049	*
Moon	-66700-07-09 04:33 J	-22640562.41	-22640562.31	-22640562.19	0.0293	0.0257	
Earth	-66700-07-09 07:40 J	-22640562.27	-22640562.18	-22640562.06	0.0293	0.0260	*
Venus	-66694-06-24 09:35 J	-22638386.20	-22638386.10	-22638385.97	0.0266	0.0222	
Venus	-66693-02-08 09:35 J	-22638157.28	-22638157.10	-22638156.92	0.0264	0.0139	
Mercury	-66689-07-28 22:47 J	-22636524.68	-22636524.55	-22636524.41	0.0258	0.0177	
Mercury	-66689-10-25 19:25 J	-22636435.88	-22636435.69	-22636435.50	0.0258	0.0052	
Mercury	-66688-01-22 16:04 J	-22636347.01	-22636346.83	-22636346.65	0.0258	0.0075	
Mercury	-66688-04-21 12:28 J	-22636258.09	-22636257.98	-22636257.85	0.0259	0.0203	
Moon	-66687-12-08 08:23 J	-22635662.33	-22635662.15	-22635661.97	0.0261	0.0184	
Earth	-66687-12-08 11:59 J	-22635662.17	-22635662.00	-22635661.81	0.0261	0.0180	*
Moon	-66686-12-20 11:16 J	-22635285.27	-22635285.03	-22635284.78	0.0264	0.0013	
Earth	-66686-12-20 11:59 J	-22635285.25	-22635285.00	-22635284.75	0.0264	0.0019	*
Mars	-66685-02-02 01:40 J	-22635241.76	-22635241.43	-22635241.10	0.0264	0.0004	
Earth	-66685-12-31 19:11 J	-22634907.90	-22634907.70	-22634907.49	0.0267	0.0152	
Moon	-66685-12-31 22:18 J	-22634907.75	-22634907.57	-22634907.37	0.0267	0.0166	*
Venus	-66678-10-21 18:42 J	-22632422.90	-22632422.72	-22632422.52	0.0299	0.0121	
Mercury	-66675-11-29 15:21 J	-22631287.91	-22631287.86	-22631287.81	0.0304	0.0275	
Mercury	-66674-02-26 04:18 J	-22631199.44	-22631199.32	-22631199.21	0.0304	0.0136	
Mercury	-66674-05-25 17:01 J	-22631110.91	-22631110.79	-22631110.66	0.0304	0.0010	
Mercury	-66674-08-22 05:45 J	-22631022.37	-22631022.26	-22631022.14	0.0304	0.0140	
Mercury	-66674-11-18 18:28 J	-22630933.78	-22630933.73	-22630933.67	0.0303	0.0275	
Moon	-66673-06-04 17:16 J	-22630734.82	-22630734.78	-22630734.72	0.0302	0.0293	
Earth	-66672-06-19 09:06 J	-22630355.35	-22630355.12	-22630354.88	0.0299	0.0068	
Moon	-66672-06-19 09:35 J	-22630355.32	-22630355.10	-22630354.87	0.0299	0.0059	*
Mars	-66671-03-04 09:35 J	-22630097.32	-22630097.10	-22630096.86	0.0296	0.0148	
Earth	-66671-07-03 12:28 J	-22629976.17	-22629975.98	-22629975.77	0.0295	0.0161	
Moon	-66671-07-03 15:35 J	-22629976.03	-22629975.85	-22629975.64	0.0295	0.0165	*
Venus	-66664-01-03 13:25 J	-22627600.09	-22627599.94	-22627599.76	0.0266	0.0170	
Venus	-66664-08-20 13:25 J	-22627371.08	-22627370.94	-22627370.79	0.0264	0.0191	



Mercury -66660-12-15 22:47 J -22625792.65 -22625792.55 -22625792.43 0.0258 0.0209

Mercury -66659-03-14 19:11 J -22625703.87 -22625703.70 -22625703.51 0.0259 0.0084

Mercury -66659-06-11 15:49 J -22625615.02 -22625614.84 -22625614.64 0.0259 0.0044

Mercury -66659-09-08 12:28 J -22625526.11 -22625525.98 -22625525.83 0.0259 0.0171

Earth -66658-12-03 18:28 J -22625074.81 -22625074.73 -22625074.65 0.0261 0.0246

Moon -66658-12-03 21:49 J -22625074.62 -22625074.59 -22625074.54 0.0261 0.0257

Earth -66657-12-14 15:35 J -22624698.08 -22624697.85 -22624697.61 0.0263 0.0091

Moon -66657-12-14 16:18 J -22624698.06 -22624697.82 -22624697.57 0.0263 0.0088 \*

Moon -66656-12-26 16:04 J -22624321.07 -22624320.83 -22624320.58 0.0266 0.0088

Earth -66656-12-26 19:40 J -22624320.92 -22624320.68 -22624320.44 0.0266 0.0075 \*

Mars -66655-03-25 16:18 J -22624231.96 -22624231.82 -22624231.63 0.0266 0.0231

Moon -66654-01-08 05:30 J -22623943.31 -22623943.27 -22623943.20 0.0269 0.0263

Earth -66654-01-08 08:09 J -22623943.26 -22623943.16 -22623943.07 0.0269 0.0248 \*

Venus -66648-05-03 03:21 J -22621636.51 -22621636.36 -22621636.20 0.0299 0.0198

Mercury -66645-07-15 06:28 J -22620467.34 -22620467.23 -22620467.12 0.0304 0.0173

Mercury -66645-10-11 19:25 J -22620378.82 -22620378.69 -22620378.57 0.0304 0.0035

Mercury -66644-01-08 08:09 J -22620290.28 -22620290.16 -22620290.04 0.0304 0.0103

Mercury -66644-04-06 20:37 J -22620201.71 -22620201.64 -22620201.55 0.0304 0.0240

Moon -66643-06-13 08:23 J -22619769.35 -22619769.15 -22619768.93 0.0301 0.0160

Earth -66643-06-13 09:49 J -22619769.28 -22619769.09 -22619768.89 0.0301 0.0170 \*

Moon -66642-06-27 14:37 J -22619390.12 -22619389.89 -22619389.65 0.0297 0.0071

Earth -66642-06-27 17:59 J -22619389.98 -22619389.75 -22619389.51 0.0297 0.0066 \*

Moon -66641-07-10 12:57 J -22619011.01 -22619010.96 -22619010.89 0.0293 0.0281

Earth -66641-07-10 15:35 J -22619010.90 -22619010.85 -22619010.78 0.0293 0.0282 \*

Venus -66635-07-16 17:59 J -22616813.94 -22616813.75 -22616813.56 0.0265 0.0117

Venus -66634-03-02 17:30 J -22616584.84 -22616584.77 -22616584.68 0.0264 0.0242

Mercury -66630-05-04 23:01 J -22615060.60 -22615060.54 -22615060.47 0.0258 0.0240

Mercury -66630-08-01 19:25 J -22614971.86 -22614971.69 -22614971.51 0.0258 0.0115

Mercury -66630-10-29 16:04 J -22614883.02 -22614882.83 -22614882.63 0.0259 0.0012

Mercury -66629-01-26 12:42 J -22614794.13 -22614793.97 -22614793.80 0.0259 0.0139

Moon -66628-12-09 19:40 J -22614110.86 -22614110.68 -22614110.49 0.0262 0.0164  
 Earth -66628-12-09 20:52 J -22614110.82 -22614110.63 -22614110.43 0.0262 0.0160 \*  
 Mars -66627-05-08 00:57 J -22613961.66 -22613961.46 -22613961.23 0.0263 0.0198  
 Earth -66627-12-21 21:49 J -22613733.84 -22613733.59 -22613733.34 0.0265 0.0003  
 Moon -66627-12-22 01:11 J -22613733.69 -22613733.45 -22613733.20 0.0265 0.0014 \*  
 Earth -66625-01-03 06:13 J -22613356.42 -22613356.24 -22613356.04 0.0268 0.0174  
 Moon -66625-01-03 09:06 J -22613356.30 -22613356.12 -22613355.94 0.0268 0.0188 \*  
 Venus -66619-03-28 09:49 J -22611080.20 -22611080.09 -22611079.96 0.0297 0.0241  
 Venus -66619-11-13 11:59 J -22610850.07 -22610850.00 -22610849.91 0.0299 0.0276  
 Mercury -66616-12-02 08:52 J -22609735.22 -22609735.13 -22609735.03 0.0304 0.0208  
 Mercury -66615-02-28 21:49 J -22609646.72 -22609646.59 -22609646.46 0.0304 0.0069  
 Mercury -66615-05-28 10:33 J -22609558.18 -22609558.06 -22609557.93 0.0304 0.0068  
 Mercury -66615-08-24 23:16 J -22609469.62 -22609469.53 -22609469.43 0.0303 0.0204  
 Earth -66614-06-07 09:49 J -22609183.17 -22609183.09 -22609182.99 0.0302 0.0278  
 Moon -66614-06-07 11:59 J -22609183.11 -22609183.00 -22609182.90 0.0302 0.0268 \*  
 Mars -66613-06-10 16:18 J -22608814.07 -22608813.82 -22608813.56 0.0298 0.0074  
 Earth -66613-06-20 22:18 J -22608803.81 -22608803.57 -22608803.33 0.0298 0.0040  
 Moon -66613-06-21 01:54 J -22608803.65 -22608803.42 -22608803.18 0.0298 0.0033 \*  
 Earth -66612-07-05 00:28 J -22608424.66 -22608424.48 -22608424.29 0.0294 0.0186  
 Moon -66612-07-05 03:06 J -22608424.55 -22608424.37 -22608424.18 0.0294 0.0188 \*  
 Venus -66605-01-26 22:47 J -22606027.75 -22606027.55 -22606027.34 0.0266 0.0061  
 Mercury -66601-12-18 19:54 J -22604239.83 -22604239.67 -22604239.51 0.0259 0.0144  
 Mercury -66600-03-17 16:33 J -22604151.00 -22604150.81 -22604150.62 0.0259 0.0017  
 Mercury -66600-06-14 13:11 J -22604062.12 -22604061.95 -22604061.78 0.0259 0.0110  
 Mercury -66600-09-11 10:04 J -22603973.16 -22603973.08 -22603973.01 0.0259 0.0238  
 Earth -66599-12-05 03:49 J -22603523.45 -22603523.34 -22603523.21 0.0261 0.0226  
 Moon -66599-12-05 05:45 J -22603523.35 -22603523.26 -22603523.14 0.0261 0.0236 \*  
 Moon -66598-12-16 23:01 J -22603146.78 -22603146.54 -22603146.29 0.0263 0.0063  
 Earth -66598-12-17 02:23 J -22603146.64 -22603146.40 -22603146.15 0.0263 0.0069 \*  
 Mars -66597-06-28 18:13 J -22602952.06 -22602951.74 -22602951.40 0.0265 0.0034

Moon -66597-12-28 05:01 J -22602769.51 -22602769.29 -22602769.06 0.0266 0.0113  
 Earth -66597-12-28 07:40 J -22602769.41 -22602769.18 -22602768.94 0.0266 0.0098 \*  
 Venus -66590-10-08 19:40 J -22600293.86 -22600293.68 -22600293.50 0.0297 0.0158  
 Mercury -66586-04-21 11:30 J -22599003.10 -22599003.02 -22599002.94 0.0304 0.0241  
 Mercury -66586-07-19 00:13 J -22598914.61 -22598914.49 -22598914.36 0.0304 0.0103  
 Mercury -66586-10-15 13:11 J -22598826.08 -22598825.95 -22598825.82 0.0304 0.0036  
 Mercury -66585-01-12 01:54 J -22598737.53 -22598737.42 -22598737.32 0.0304 0.0172  
 Moon -66584-06-14 21:21 J -22598217.82 -22598217.61 -22598217.39 0.0300 0.0134  
 Earth -66584-06-15 01:11 J -22598217.66 -22598217.45 -22598217.24 0.0300 0.0140 \*  
 Moon -66583-06-29 05:45 J -22597838.47 -22597838.26 -22597838.03 0.0297 0.0097  
 Earth -66583-06-29 08:09 J -22597838.39 -22597838.16 -22597837.93 0.0297 0.0093 \*  
 Mars -66583-07-29 17:59 J -22597807.96 -22597807.75 -22597807.53 0.0296 0.0174  
 Venus -66576-08-08 03:49 J -22595241.55 -22595241.34 -22595241.13 0.0265 0.0006  
 Mercury -66571-05-07 20:23 J -22593507.79 -22593507.65 -22593507.50 0.0258 0.0173  
 Mercury -66571-08-04 17:01 J -22593418.98 -22593418.79 -22593418.60 0.0259 0.0047  
 Mercury -66571-11-01 13:40 J -22593330.11 -22593329.93 -22593329.74 0.0259 0.0081  
 Mercury -66570-01-29 10:18 J -22593241.17 -22593241.07 -22593240.95 0.0259 0.0208  
 Earth -66569-12-11 08:09 J -22592559.36 -22592559.16 -22592558.93 0.0262 0.0139  
 Moon -66569-12-11 10:47 J -22592559.24 -22592559.05 -22592558.83 0.0262 0.0141 \*  
 Earth -66568-12-23 10:33 J -22592182.31 -22592182.06 -22592181.81 0.0265 0.0026  
 Moon -66568-12-23 12:57 J -22592182.21 -22592181.96 -22592181.70 0.0265 0.0037 \*  
 Moon -66566-01-04 18:13 J -22591804.89 -22591804.74 -22591804.58 0.0269 0.0214  
 Earth -66566-01-04 20:09 J -22591804.82 -22591804.66 -22591804.48 0.0269 0.0199 \*  
 Venus -66560-04-20 05:45 J -22589507.46 -22589507.26 -22589507.06 0.0297 0.0077  
 Mercury -66557-09-07 14:09 J -22588270.96 -22588270.91 -22588270.85 0.0304 0.0272  
 Mercury -66557-12-05 03:06 J -22588182.48 -22588182.37 -22588182.25 0.0304 0.0134  
 Mercury -66556-03-03 16:04 J -22588093.96 -22588093.83 -22588093.70 0.0304 0.0009  
 Mercury -66556-05-31 04:33 J -22588005.42 -22588005.31 -22588005.19 0.0303 0.0142  
 Mercury -66556-08-27 17:16 J -22587916.83 -22587916.78 -22587916.72 0.0303 0.0276  
 Earth -66555-06-09 04:18 J -22587631.46 -22587631.32 -22587631.18 0.0301 0.0247

Moon -66555-06-09 07:40 J -22587631.32 -22587631.18 -22587631.02 0.0301 0.0236 \*  
 Mars -66555-09-18 03:06 J -22587530.41 -22587530.37 -22587530.31 0.0300 0.0294  
 Earth -66554-06-23 15:21 J -22587252.10 -22587251.86 -22587251.62 0.0298 0.0010  
 Moon -66554-06-23 17:01 J -22587252.03 -22587251.79 -22587251.54 0.0298 0.0006 \*  
 Moon -66553-07-06 14:09 J -22586873.07 -22586872.91 -22586872.73 0.0294 0.0212  
 Earth -66553-07-06 16:04 J -22586872.99 -22586872.83 -22586872.67 0.0294 0.0214 \*  
 Venus -66546-02-18 09:35 J -22584455.31 -22584455.10 -22584454.89 0.0265 0.0052  
 Mercury -66542-09-24 21:06 J -22582775.74 -22582775.62 -22582775.50 0.0259 0.0200  
 Mercury -66542-12-22 17:30 J -22582686.95 -22582686.77 -22582686.58 0.0259 0.0075  
 Mercury -66541-03-20 14:09 J -22582598.09 -22582597.91 -22582597.72 0.0259 0.0053  
 Mercury -66541-06-17 10:47 J -22582509.18 -22582509.05 -22582508.90 0.0259 0.0181  
 Moon -66540-12-06 12:57 J -22581972.10 -22581971.96 -22581971.80 0.0261 0.0213  
 Earth -66540-12-06 15:21 J -22581972.00 -22581971.86 -22581971.69 0.0261 0.0205 \*  
 Mars -66539-10-02 23:01 J -22581671.78 -22581671.54 -22581671.26 0.0263 0.0163  
 Moon -66539-12-18 11:59 J -22581595.24 -22581595.00 -22581594.75 0.0264 0.0041  
 Earth -66539-12-18 14:52 J -22581595.12 -22581594.88 -22581594.63 0.0264 0.0046 \*  
 Earth -66538-12-30 21:21 J -22581217.83 -22581217.61 -22581217.38 0.0267 0.0124  
 Moon -66538-12-30 23:30 J -22581217.73 -22581217.52 -22581217.31 0.0267 0.0138 \*  
 Venus -66531-10-31 16:18 J -22578721.03 -22578720.82 -22578720.61 0.0297 0.0010  
 Mercury -66527-01-25 17:01 J -22577538.80 -22577538.79 -22577538.77 0.0304 0.0301  
 Mercury -66527-04-24 05:59 J -22577450.35 -22577450.25 -22577450.14 0.0304 0.0163  
 Mercury -66527-07-21 18:57 J -22577361.84 -22577361.71 -22577361.58 0.0304 0.0024  
 Mercury -66527-10-18 07:40 J -22577273.30 -22577273.18 -22577273.06 0.0304 0.0113  
 Mercury -66526-01-14 20:23 J -22577184.72 -22577184.65 -22577184.58 0.0303 0.0248  
 Moon -66525-06-16 19:54 J -22576665.89 -22576665.67 -22576665.45 0.0300 0.0100  
 Earth -66525-06-16 21:06 J -22576665.84 -22576665.62 -22576665.39 0.0300 0.0108 \*  
 Mars -66525-11-05 11:30 J -22576524.28 -22576524.02 -22576523.76 0.0299 0.0040  
 Earth -66524-07-01 02:23 J -22576286.61 -22576286.40 -22576286.17 0.0296 0.0125  
 Moon -66524-07-01 04:33 J -22576286.51 -22576286.31 -22576286.09 0.0296 0.0126 \*  
 Venus -66517-01-14 14:52 J -22573897.93 -22573897.88 -22573897.80 0.0267 0.0254

Venus -66517-08-30 15:21 J -22573669.05 -22573668.86 -22573668.67 0.0265 0.0110  
 Mercury -66512-02-10 21:49 J -22572043.67 -22572043.59 -22572043.50 0.0259 0.0228  
 Mercury -66512-05-10 18:13 J -22571954.91 -22571954.74 -22571954.56 0.0259 0.0103  
 Mercury -66512-08-07 15:06 J -22571866.06 -22571865.87 -22571865.68 0.0259 0.0025  
 Mercury -66512-11-04 11:45 J -22571777.16 -22571777.01 -22571776.85 0.0259 0.0152  
 Earth -66510-12-13 21:06 J -22571007.84 -22571007.62 -22571007.39 0.0263 0.0115  
 Moon -66510-12-14 00:42 J -22571007.70 -22571007.47 -22571007.24 0.0263 0.0118 \*  
 Mars -66509-11-23 19:11 J -22570662.01 -22570661.70 -22570661.37 0.0265 0.0072  
 Moon -66509-12-24 22:47 J -22570630.80 -22570630.55 -22570630.29 0.0266 0.0062  
 Earth -66509-12-25 00:28 J -22570630.72 -22570630.48 -22570630.23 0.0266 0.0051 \*  
 Moon -66507-01-06 07:54 J -22570253.27 -22570253.17 -22570253.05 0.0269 0.0240  
 Earth -66507-01-06 11:45 J -22570253.14 -22570253.01 -22570252.87 0.0269 0.0224 \*  
 Venus -66501-05-13 03:06 J -22567934.57 -22567934.37 -22567934.17 0.0298 0.0095  
 Mercury -66498-09-11 09:06 J -22566718.22 -22566718.12 -22566718.02 0.0304 0.0192  
 Mercury -66498-12-08 21:49 J -22566629.71 -22566629.59 -22566629.46 0.0304 0.0055  
 Mercury -66497-03-06 10:47 J -22566541.18 -22566541.05 -22566540.93 0.0303 0.0083  
 Mercury -66497-06-02 23:16 J -22566452.61 -22566452.53 -22566452.44 0.0303 0.0219  
 Earth -66496-06-11 01:40 J -22566079.58 -22566079.43 -22566079.25 0.0301 0.0213  
 Moon -66496-06-11 03:21 J -22566079.54 -22566079.36 -22566079.17 0.0301 0.0201 \*  
 Moon -66495-06-25 09:21 J -22565700.36 -22565700.11 -22565699.86 0.0297 0.0026  
 Earth -66495-06-25 11:45 J -22565700.25 -22565700.01 -22565699.77 0.0297 0.0024 \*  
 Mars -66495-12-24 17:59 J -22565517.93 -22565517.75 -22565517.57 0.0295 0.0219  
 Moon -66494-07-09 06:57 J -22565321.34 -22565321.21 -22565321.07 0.0293 0.0241  
 Earth -66494-07-09 10:33 J -22565321.18 -22565321.06 -22565320.92 0.0293 0.0245 \*  
 Venus -66488-07-26 21:21 J -22563111.75 -22563111.61 -22563111.46 0.0266 0.0193  
 Venus -66487-03-12 21:21 J -22562882.77 -22562882.61 -22562882.44 0.0264 0.0169  
 Mercury -66483-06-30 22:18 J -22561311.59 -22561311.57 -22561311.52 0.0259 0.0255  
 Mercury -66483-09-27 19:11 J -22561222.87 -22561222.70 -22561222.54 0.0259 0.0129  
 Mercury -66483-12-25 15:35 J -22561134.04 -22561133.85 -22561133.65 0.0259 0.0006  
 Mercury -66482-03-24 12:28 J -22561045.15 -22561044.98 -22561044.82 0.0259 0.0125

Mercury -66482-06-21 09:06 J -22560956.15 -22560956.12 -22560956.08 0.0260 0.0253

Moon -66481-12-08 00:13 J -22560420.65 -22560420.49 -22560420.31 0.0262 0.0189

Earth -66481-12-08 03:49 J -22560420.51 -22560420.34 -22560420.15 0.0262 0.0182 \*

Earth -66480-12-20 04:18 J -22560043.57 -22560043.32 -22560043.07 0.0264 0.0021

Moon -66480-12-20 05:01 J -22560043.53 -22560043.29 -22560043.05 0.0264 0.0015 \*

Earth -66478-01-01 11:59 J -22559666.20 -22559666.00 -22559665.79 0.0267 0.0150

Moon -66478-01-01 15:35 J -22559666.04 -22559665.85 -22559665.64 0.0267 0.0165 \*

Venus -66472-11-23 13:25 J -22557148.10 -22557147.94 -22557147.76 0.0298 0.0180

Mercury -66468-01-28 11:59 J -22555986.08 -22555986.00 -22555985.91 0.0304 0.0220

Mercury -66468-04-27 00:57 J -22555897.58 -22555897.46 -22555897.34 0.0304 0.0082

Mercury -66468-07-24 13:40 J -22555809.05 -22555808.93 -22555808.80 0.0304 0.0056

Mercury -66468-10-21 02:23 J -22555720.50 -22555720.40 -22555720.30 0.0303 0.0192

Moon -66467-06-05 03:35 J -22555493.37 -22555493.35 -22555493.31 0.0302 0.0299

Mars -66466-02-13 06:13 J -22555240.37 -22555240.24 -22555240.10 0.0300 0.0257

Earth -66466-06-19 18:42 J -22555113.95 -22555113.72 -22555113.49 0.0299 0.0073

Moon -66466-06-19 20:52 J -22555113.85 -22555113.63 -22555113.40 0.0299 0.0066 \*

Earth -66465-07-02 22:33 J -22554734.76 -22554734.56 -22554734.35 0.0295 0.0157

Moon -66465-07-03 02:09 J -22554734.61 -22554734.41 -22554734.20 0.0295 0.0157 \*

Venus -66458-02-06 03:35 J -22552325.53 -22552325.35 -22552325.16 0.0266 0.0134

Venus -66458-09-23 03:06 J -22552096.46 -22552096.37 -22552096.25 0.0264 0.0227

Mercury -66453-02-14 19:40 J -22550490.82 -22550490.68 -22550490.52 0.0259 0.0158

Mercury -66453-05-13 16:18 J -22550402.01 -22550401.82 -22550401.63 0.0259 0.0032

Mercury -66453-08-10 12:57 J -22550313.13 -22550312.96 -22550312.78 0.0259 0.0096

Mercury -66453-11-07 09:35 J -22550224.18 -22550224.10 -22550223.99 0.0259 0.0224

Earth -66452-12-03 11:59 J -22549833.07 -22549833.00 -22549832.92 0.0261 0.0248

Moon -66452-12-03 15:35 J -22549832.87 -22549832.85 -22549832.82 0.0261 0.0259

Moon -66451-12-15 09:21 J -22549456.36 -22549456.11 -22549455.87 0.0263 0.0091

Earth -66451-12-15 09:35 J -22549456.33 -22549456.10 -22549455.86 0.0263 0.0092 \*

Mars -66450-02-27 23:45 J -22549381.79 -22549381.51 -22549381.21 0.0263 0.0123

Moon -66450-12-27 10:18 J -22549079.30 -22549079.07 -22549078.82 0.0266 0.0088

Earth -66450-12-27 14:09 J -22549079.15 -22549078.91 -22549078.67 0.0266 0.0076 \*  
 Earth -66448-01-08 02:37 J -22548701.48 -22548701.39 -22548701.30 0.0270 0.0250  
 Moon -66448-01-08 02:09 J -22548701.45 -22548701.41 -22548701.36 0.0270 0.0265 \*  
 Venus -66443-10-18 22:04 J -22546591.68 -22546591.58 -22546591.45 0.0296 0.0250  
 Venus -66442-06-06 00:13 J -22546361.58 -22546361.49 -22546361.39 0.0299 0.0266  
 Mercury -66439-06-17 15:06 J -22545253.94 -22545253.87 -22545253.80 0.0304 0.0249  
 Mercury -66439-09-14 04:04 J -22545165.45 -22545165.33 -22545165.21 0.0304 0.0111  
 Mercury -66439-12-11 16:47 J -22545076.93 -22545076.80 -22545076.67 0.0304 0.0027  
 Mercury -66438-03-10 05:30 J -22544988.38 -22544988.27 -22544988.16 0.0303 0.0163  
 Mercury -66438-06-06 17:59 J -22544899.76 -22544899.75 -22544899.72 0.0303 0.0298  
 Moon -66437-06-12 22:04 J -22544527.78 -22544527.58 -22544527.37 0.0300 0.0166  
 Earth -66437-06-13 00:28 J -22544527.67 -22544527.48 -22544527.28 0.0300 0.0178 \*  
 Mars -66436-04-02 16:04 J -22544234.09 -22544233.83 -22544233.56 0.0298 0.0008  
 Moon -66436-06-27 05:30 J -22544148.50 -22544148.27 -22544148.03 0.0297 0.0062  
 Earth -66436-06-27 09:06 J -22544148.36 -22544148.12 -22544147.89 0.0297 0.0058 \*  
 Moon -66435-07-11 05:45 J -22543769.33 -22543769.26 -22543769.17 0.0292 0.0273  
 Earth -66435-07-11 06:42 J -22543769.29 -22543769.22 -22543769.14 0.0292 0.0276 \*  
 Venus -66429-08-18 10:04 J -22541539.29 -22541539.08 -22541538.88 0.0266 0.0074  
 Mercury -66424-07-03 20:23 J -22539758.78 -22539758.65 -22539758.51 0.0259 0.0185  
 Mercury -66424-09-30 17:01 J -22539669.98 -22539669.79 -22539669.61 0.0259 0.0059  
 Mercury -66424-12-28 13:40 J -22539581.12 -22539580.93 -22539580.75 0.0259 0.0068  
 Mercury -66423-03-27 10:18 J -22539492.19 -22539492.07 -22539491.94 0.0259 0.0196  
 Earth -66422-12-10 15:21 J -22538869.05 -22538868.86 -22538868.65 0.0262 0.0159  
 Moon -66422-12-10 15:35 J -22538869.02 -22538868.85 -22538868.65 0.0262 0.0164 \*  
 Earth -66421-12-21 16:33 J -22538492.06 -22538491.81 -22538491.56 0.0265 0.0004  
 Moon -66421-12-21 20:23 J -22538491.90 -22538491.65 -22538491.40 0.0265 0.0011 \*  
 Mars -66420-04-20 17:59 J -22538372.04 -22538371.75 -22538371.44 0.0266 0.0108  
 Earth -66419-01-03 01:25 J -22538114.62 -22538114.44 -22538114.24 0.0268 0.0176  
 Moon -66419-01-03 02:23 J -22538114.58 -22538114.40 -22538114.21 0.0268 0.0188 \*  
 Venus -66413-04-30 08:23 J -22535805.32 -22535805.15 -22535804.97 0.0296 0.0167

Mercury -66410-11-04 17:59 J -22534521.80 -22534521.75 -22534521.70 0.0304 0.0279  
 Mercury -66409-02-01 06:57 J -22534433.33 -22534433.21 -22534433.10 0.0304 0.0140  
 Mercury -66409-04-29 19:40 J -22534344.81 -22534344.68 -22534344.55 0.0304 0.0006  
 Mercury -66409-07-27 08:23 J -22534256.26 -22534256.15 -22534256.03 0.0303 0.0134  
 Mercury -66409-10-23 21:06 J -22534167.67 -22534167.62 -22534167.56 0.0303 0.0269  
 Earth -66408-06-07 03:35 J -22533941.44 -22533941.35 -22533941.26 0.0302 0.0278  
 Moon -66408-06-07 06:13 J -22533941.34 -22533941.24 -22533941.12 0.0302 0.0265 \*  
 Earth -66407-06-21 16:18 J -22533562.06 -22533561.82 -22533561.58 0.0299 0.0039  
 Moon -66407-06-21 19:54 J -22533561.91 -22533561.67 -22533561.43 0.0299 0.0029 \*  
 Mars -66406-05-21 20:52 J -22533227.75 -22533227.63 -22533227.50 0.0295 0.0256  
 Earth -66406-07-05 18:42 J -22533182.90 -22533182.72 -22533182.53 0.0295 0.0190  
 Moon -66406-07-05 19:40 J -22533182.87 -22533182.68 -22533182.49 0.0295 0.0190 \*  
 Venus -66399-02-28 16:04 J -22530753.04 -22530752.83 -22530752.62 0.0265 0.0016  
 Mercury -66395-11-20 20:52 J -22529026.73 -22529026.63 -22529026.52 0.0258 0.0214  
 Mercury -66394-02-17 17:30 J -22528937.95 -22528937.77 -22528937.59 0.0259 0.0088  
 Mercury -66394-05-17 14:09 J -22528849.10 -22528848.91 -22528848.72 0.0259 0.0038  
 Mercury -66394-08-14 10:47 J -22528760.19 -22528760.05 -22528759.90 0.0259 0.0166  
 Moon -66393-12-04 22:18 J -22528281.67 -22528281.57 -22528281.45 0.0261 0.0235  
 Earth -66393-12-04 22:47 J -22528281.67 -22528281.55 -22528281.43 0.0261 0.0227 \*  
 Moon -66392-12-16 16:47 J -22527905.04 -22527904.80 -22527904.55 0.0263 0.0066  
 Earth -66392-12-16 20:52 J -22527904.87 -22527904.63 -22527904.39 0.0263 0.0069 \*  
 Moon -66391-12-29 00:42 J -22527527.68 -22527527.47 -22527527.24 0.0266 0.0112  
 Earth -66391-12-29 02:09 J -22527527.64 -22527527.41 -22527527.17 0.0266 0.0100 \*  
 Venus -66384-11-10 17:59 J -22525018.95 -22525018.75 -22525018.55 0.0297 0.0087  
 Mercury -66380-06-20 09:35 J -22523701.20 -22523701.10 -22523700.99 0.0304 0.0172  
 Mercury -66380-09-16 22:33 J -22523612.69 -22523612.56 -22523612.43 0.0304 0.0034  
 Mercury -66380-12-14 11:16 J -22523524.15 -22523524.03 -22523523.91 0.0304 0.0103  
 Mercury -66379-03-12 23:59 J -22523435.58 -22523435.50 -22523435.42 0.0303 0.0239  
 Moon -66378-06-15 17:30 J -22522975.98 -22522975.77 -22522975.56 0.0300 0.0133  
 Earth -66378-06-15 20:52 J -22522975.83 -22522975.63 -22522975.41 0.0300 0.0145 \*



Mars -66378-07-11 09:06 J -22522950.30 -22522950.12 -22522949.93 0.0300 0.0210  
 Moon -66377-06-29 03:21 J -22522596.58 -22522596.36 -22522596.14 0.0296 0.0096  
 Earth -66377-06-29 04:18 J -22522596.54 -22522596.32 -22522596.09 0.0296 0.0091 \*  
 Venus -66370-09-10 21:49 J -22519966.80 -22519966.59 -22519966.38 0.0265 0.0043  
 Mercury -66365-04-08 21:21 J -22518294.67 -22518294.61 -22518294.55 0.0259 0.0243  
 Mercury -66365-07-06 17:45 J -22518205.93 -22518205.76 -22518205.59 0.0259 0.0118  
 Mercury -66365-10-03 14:23 J -22518117.09 -22518116.90 -22518116.71 0.0259 0.0008  
 Mercury -66365-12-31 11:01 J -22518028.20 -22518028.04 -22518027.88 0.0259 0.0135  
 Earth -66363-12-12 00:57 J -22517317.67 -22517317.46 -22517317.25 0.0262 0.0138  
 Moon -66363-12-12 04:33 J -22517317.51 -22517317.31 -22517317.09 0.0262 0.0139 \*  
 Mars -66362-07-25 15:06 J -22517092.17 -22517091.87 -22517091.55 0.0264 0.0094  
 Earth -66362-12-24 02:37 J -22516940.64 -22516940.39 -22516940.14 0.0265 0.0027  
 Moon -66362-12-24 04:18 J -22516940.58 -22516940.32 -22516940.06 0.0265 0.0035 \*  
 Moon -66360-01-04 09:06 J -22516563.26 -22516563.12 -22516562.96 0.0268 0.0214  
 Earth -66360-01-04 11:59 J -22516563.15 -22516563.00 -22516562.82 0.0268 0.0200 \*  
 Venus -66354-05-24 02:37 J -22514232.60 -22514232.39 -22514232.18 0.0297 0.0011  
 Mercury -66351-11-07 12:13 J -22512969.08 -22512968.99 -22512968.89 0.0304 0.0205  
 Mercury -66350-02-04 01:11 J -22512880.58 -22512880.45 -22512880.32 0.0304 0.0067  
 Mercury -66350-05-03 13:54 J -22512792.04 -22512791.92 -22512791.79 0.0304 0.0071  
 Mercury -66350-07-31 02:37 J -22512703.48 -22512703.39 -22512703.29 0.0303 0.0207  
 Earth -66349-06-08 23:01 J -22512389.67 -22512389.54 -22512389.40 0.0302 0.0247  
 Moon -66349-06-09 02:23 J -22512389.54 -22512389.40 -22512389.24 0.0302 0.0234 \*  
 Earth -66348-06-23 11:16 J -22512010.27 -22512010.03 -22512009.79 0.0298 0.0007  
 Moon -66348-06-23 12:13 J -22512010.24 -22512009.99 -22512009.75 0.0298 0.0004 \*  
 Mars -66348-08-28 14:09 J -22511944.17 -22511943.91 -22511943.65 0.0298 0.0045  
 Moon -66347-07-07 10:04 J -22511631.24 -22511631.08 -22511630.92 0.0294 0.0219  
 Earth -66347-07-07 12:28 J -22511631.12 -22511630.98 -22511630.81 0.0294 0.0221 \*  
 Venus -66341-08-06 03:35 J -22509409.37 -22509409.35 -22509409.31 0.0267 0.0263  
 Venus -66340-03-23 03:21 J -22509180.55 -22509180.36 -22509180.15 0.0265 0.0100  
 Mercury -66336-11-23 17:59 J -22507473.90 -22507473.75 -22507473.59 0.0258 0.0149

Mercury -66335-02-20 14:37 J -22507385.08 -22507384.89 -22507384.70 0.0258 0.0023  
 Mercury -66335-05-20 11:01 J -22507296.21 -22507296.04 -22507295.86 0.0259 0.0104  
 Mercury -66335-08-17 07:54 J -22507207.25 -22507207.17 -22507207.08 0.0259 0.0231  
 Moon -66334-12-07 03:06 J -22506730.50 -22506730.37 -22506730.22 0.0261 0.0214  
 Earth -66334-12-07 06:42 J -22506730.36 -22506730.22 -22506730.06 0.0261 0.0208 \*  
 Moon -66333-12-18 03:35 J -22506353.59 -22506353.35 -22506353.11 0.0263 0.0043  
 Earth -66333-12-18 05:01 J -22506353.53 -22506353.29 -22506353.04 0.0263 0.0049 \*  
 Mars -66332-09-15 05:45 J -22506082.53 -22506082.26 -22506081.97 0.0266 0.0142  
 Earth -66332-12-30 11:01 J -22505976.26 -22505976.04 -22505975.82 0.0267 0.0122  
 Moon -66332-12-30 13:54 J -22505976.13 -22505975.92 -22505975.71 0.0267 0.0136 \*  
 Venus -66325-12-03 11:01 J -22503446.24 -22503446.04 -22503445.83 0.0298 0.0065  
 Mercury -66321-03-26 14:37 J -22502236.96 -22502236.89 -22502236.81 0.0304 0.0240  
 Mercury -66321-06-23 03:35 J -22502148.47 -22502148.35 -22502148.23 0.0304 0.0101  
 Mercury -66321-09-19 16:33 J -22502059.94 -22502059.81 -22502059.68 0.0304 0.0037  
 Mercury -66321-12-17 05:16 J -22501971.39 -22501971.28 -22501971.18 0.0304 0.0173  
 Earth -66319-06-17 14:23 J -22501424.12 -22501423.90 -22501423.68 0.0300 0.0113  
 Moon -66319-06-17 14:23 J -22501424.12 -22501423.90 -22501423.69 0.0300 0.0104 \*  
 Earth -66318-07-01 20:37 J -22501044.85 -22501044.64 -22501044.42 0.0296 0.0121  
 Moon -66318-07-01 23:30 J -22501044.73 -22501044.52 -22501044.31 0.0296 0.0126 \*  
 Venus -66311-02-16 08:52 J -22498623.26 -22498623.13 -22498623.00 0.0266 0.0207  
 Venus -66311-10-03 08:23 J -22498394.32 -22498394.15 -22498393.97 0.0264 0.0154  
 Mercury -66306-04-12 17:59 J -22496741.88 -22496741.75 -22496741.61 0.0259 0.0181  
 Mercury -66306-07-10 14:23 J -22496653.08 -22496652.90 -22496652.71 0.0259 0.0056  
 Mercury -66306-10-07 11:01 J -22496564.22 -22496564.04 -22496563.86 0.0259 0.0071  
 Mercury -66305-01-04 07:40 J -22496475.30 -22496475.18 -22496475.06 0.0259 0.0198  
 Earth -66304-12-13 07:40 J -22495766.40 -22495766.18 -22495765.95 0.0262 0.0119  
 Moon -66304-12-13 09:21 J -22495766.33 -22495766.11 -22495765.87 0.0262 0.0118 \*  
 Moon -66303-12-25 06:42 J -22495389.47 -22495389.22 -22495388.97 0.0265 0.0060  
 Earth -66303-12-25 09:49 J -22495389.33 -22495389.09 -22495388.84 0.0265 0.0048 \*  
 Moon -66301-01-06 17:01 J -22495011.90 -22495011.79 -22495011.67 0.0269 0.0236

Earth -66301-01-06 19:54 J -22495011.80 -22495011.67 -22495011.52 0.0269 0.0221 \*  
 Venus -66295-06-15 17:59 J -22492659.93 -22492659.75 -22492659.56 0.0298 0.0135  
 Mercury -66292-08-13 16:47 J -22491504.85 -22491504.80 -22491504.75 0.0304 0.0278  
 Mercury -66292-11-10 05:45 J -22491416.38 -22491416.26 -22491416.15 0.0304 0.0139  
 Mercury -66291-02-06 18:42 J -22491327.85 -22491327.72 -22491327.59 0.0304 0.0009  
 Mercury -66291-05-06 07:25 J -22491239.31 -22491239.19 -22491239.08 0.0304 0.0136  
 Mercury -66291-08-02 20:09 J -22491150.72 -22491150.66 -22491150.61 0.0303 0.0272  
 Moon -66290-06-11 13:11 J -22490838.13 -22490837.95 -22490837.78 0.0302 0.0210  
 Earth -66290-06-11 13:40 J -22490838.09 -22490837.93 -22490837.76 0.0302 0.0220 \*  
 Mars -66290-12-05 22:18 J -22490660.77 -22490660.57 -22490660.35 0.0300 0.0178  
 Moon -66289-06-24 22:04 J -22490458.82 -22490458.58 -22490458.34 0.0298 0.0026  
 Earth -66289-06-25 01:25 J -22490458.68 -22490458.44 -22490458.20 0.0298 0.0021 \*  
 Moon -66288-07-08 22:47 J -22490079.66 -22490079.55 -22490079.41 0.0294 0.0247  
 Earth -66288-07-09 02:23 J -22490079.53 -22490079.40 -22490079.27 0.0294 0.0246 \*  
 Venus -66282-08-29 13:54 J -22487837.09 -22487836.92 -22487836.74 0.0266 0.0152  
 Venus -66281-04-14 13:25 J -22487608.07 -22487607.94 -22487607.81 0.0264 0.0207  
 Mercury -66277-08-29 17:45 J -22486009.86 -22486009.76 -22486009.65 0.0258 0.0214  
 Mercury -66277-11-26 14:09 J -22485921.08 -22485920.91 -22485920.72 0.0258 0.0090  
 Mercury -66276-02-23 10:47 J -22485832.24 -22485832.05 -22485831.86 0.0258 0.0036  
 Mercury -66276-05-23 07:25 J -22485743.34 -22485743.19 -22485743.04 0.0258 0.0163  
 Moon -66275-12-08 09:35 J -22485179.25 -22485179.10 -22485178.94 0.0261 0.0197  
 Earth -66275-12-08 11:45 J -22485179.17 -22485179.01 -22485178.83 0.0261 0.0191 \*  
 Mars -66274-12-19 15:49 J -22484803.16 -22484802.84 -22484802.52 0.0263 0.0062  
 Earth -66274-12-20 10:18 J -22484802.32 -22484802.07 -22484801.82 0.0263 0.0030  
 Moon -66274-12-20 13:11 J -22484802.19 -22484801.95 -22484801.70 0.0263 0.0021 \*  
 Earth -66273-12-31 16:18 J -22484425.03 -22484424.82 -22484424.61 0.0267 0.0141  
 Moon -66273-12-31 19:40 J -22484424.89 -22484424.68 -22484424.47 0.0267 0.0156 \*  
 Venus -66266-12-27 00:13 J -22481873.63 -22481873.49 -22481873.33 0.0299 0.0203  
 Mercury -66262-03-30 07:40 J -22480684.28 -22480684.18 -22480684.08 0.0305 0.0179  
 Mercury -66262-06-26 20:37 J -22480595.77 -22480595.64 -22480595.51 0.0304 0.0041

Mercury -66262-09-23 09:21 J -22480507.23 -22480507.11 -22480506.99 0.0304 0.0097

Mercury -66262-12-20 22:04 J -22480418.66 -22480418.58 -22480418.50 0.0304 0.0233

Earth -66260-06-19 01:54 J -22479872.65 -22479872.42 -22479872.19 0.0300 0.0087

Moon -66260-06-19 05:30 J -22479872.50 -22479872.27 -22479872.04 0.0300 0.0080 \*

Mars -66259-01-22 22:18 J -22479654.82 -22479654.57 -22479654.31 0.0298 0.0078

Earth -66259-07-03 07:54 J -22479493.38 -22479493.17 -22479492.97 0.0296 0.0147

Moon -66259-07-03 11:01 J -22479493.25 -22479493.04 -22479492.83 0.0296 0.0150 \*

Venus -66252-03-10 17:59 J -22477050.94 -22477050.75 -22477050.55 0.0265 0.0100

Venus -66252-10-25 17:16 J -22476821.81 -22476821.78 -22476821.73 0.0263 0.0258

Mercury -66247-01-16 17:16 J -22475277.82 -22475277.78 -22475277.73 0.0258 0.0249

Mercury -66247-04-15 13:40 J -22475189.09 -22475188.93 -22475188.76 0.0258 0.0125

Mercury -66247-07-13 10:04 J -22475100.27 -22475100.08 -22475099.88 0.0258 0.0006

Mercury -66247-10-10 06:42 J -22475011.38 -22475011.22 -22475011.05 0.0259 0.0127

Mercury -66246-01-07 03:06 J -22474922.39 -22474922.37 -22474922.32 0.0259 0.0255

Earth -66246-12-03 15:49 J -22474591.86 -22474591.84 -22474591.80 0.0260 0.0257

Moon -66245-12-14 08:23 J -22474215.38 -22474215.15 -22474214.90 0.0262 0.0097

Earth -66245-12-14 11:01 J -22474215.26 -22474215.04 -22474214.80 0.0262 0.0102 \*

Moon -66244-12-26 10:18 J -22473838.30 -22473838.07 -22473837.83 0.0265 0.0080

Earth -66244-12-26 13:25 J -22473838.18 -22473837.94 -22473837.70 0.0265 0.0066 \*

Mars -66243-02-08 21:49 J -22473793.84 -22473793.59 -22473793.32 0.0266 0.0162

Earth -66242-01-07 23:16 J -22473460.63 -22473460.53 -22473460.40 0.0269 0.0240

Moon -66242-01-08 00:42 J -22473460.54 -22473460.47 -22473460.39 0.0269 0.0255 \*

Venus -66237-11-20 03:35 J -22471317.46 -22471317.35 -22471317.23 0.0296 0.0248

Venus -66236-07-08 05:59 J -22471087.34 -22471087.25 -22471087.15 0.0298 0.0267

Mercury -66233-08-16 09:21 J -22469952.20 -22469952.11 -22469952.02 0.0304 0.0222

Mercury -66233-11-12 22:18 J -22469863.70 -22469863.57 -22469863.45 0.0304 0.0084

Mercury -66232-02-09 11:01 J -22469775.16 -22469775.04 -22469774.91 0.0304 0.0056

Mercury -66232-05-08 23:59 J -22469686.60 -22469686.50 -22469686.40 0.0304 0.0192

Moon -66231-06-12 19:25 J -22469286.87 -22469286.69 -22469286.50 0.0302 0.0191

Earth -66231-06-12 23:01 J -22469286.72 -22469286.54 -22469286.36 0.0302 0.0197 \*

Moon -66230-06-27 07:40 J -22468907.41 -22468907.18 -22468906.94 0.0298 0.0047  
 Earth -66230-06-27 10:18 J -22468907.31 -22468907.07 -22468906.83 0.0298 0.0045 \*  
 Earth -66229-07-10 10:47 J -22468528.13 -22468528.05 -22468527.95 0.0294 0.0269  
 Moon -66229-07-10 11:30 J -22468528.11 -22468528.02 -22468527.93 0.0294 0.0267 \*  
 Venus -66223-09-20 22:18 J -22466264.78 -22466264.57 -22466264.36 0.0265 0.0049  
 Mercury -66218-09-02 13:11 J -22464457.10 -22464456.95 -22464456.80 0.0258 0.0160  
 Mercury -66218-11-30 09:35 J -22464368.29 -22464368.10 -22464367.91 0.0258 0.0035  
 Mercury -66217-02-27 05:59 J -22464279.42 -22464279.25 -22464279.07 0.0258 0.0090  
 Mercury -66217-05-26 02:52 J -22464190.49 -22464190.38 -22464190.28 0.0258 0.0217  
 Earth -66216-12-09 14:09 J -22463628.09 -22463627.91 -22463627.72 0.0261 0.0175  
 Moon -66216-12-09 15:49 J -22463628.00 -22463627.84 -22463627.65 0.0261 0.0180 \*  
 Mars -66215-03-23 23:45 J -22463523.52 -22463523.51 -22463523.49 0.0261 0.0261  
 Earth -66215-12-21 12:28 J -22463251.23 -22463250.98 -22463250.73 0.0263 0.0014  
 Moon -66215-12-21 15:35 J -22463251.11 -22463250.85 -22463250.59 0.0263 0.0003 \*  
 Moon -66213-01-02 16:47 J -22462873.99 -22462873.80 -22462873.60 0.0267 0.0173  
 Earth -66213-01-02 18:28 J -22462873.93 -22462873.73 -22462873.52 0.0267 0.0158 \*  
 Venus -66207-06-02 08:09 J -22460531.32 -22460531.16 -22460530.99 0.0297 0.0188  
 Mercury -66203-01-03 10:47 J -22459220.11 -22459220.05 -22459219.99 0.0305 0.0267  
 Mercury -66203-04-01 23:45 J -22459131.63 -22459131.51 -22459131.39 0.0305 0.0128  
 Mercury -66203-06-29 12:42 J -22459043.10 -22459042.97 -22459042.84 0.0305 0.0012  
 Mercury -66203-09-26 01:25 J -22458954.55 -22458954.44 -22458954.33 0.0304 0.0148  
 Mercury -66203-12-23 14:09 J -22458865.95 -22458865.91 -22458865.86 0.0304 0.0284  
 Moon -66202-06-06 19:25 J -22458700.72 -22458700.69 -22458700.64 0.0303 0.0298  
 Mars -66201-04-30 17:45 J -22458371.97 -22458371.76 -22458371.53 0.0300 0.0155  
 Earth -66201-06-20 07:54 J -22458321.40 -22458321.17 -22458320.93 0.0300 0.0065  
 Moon -66201-06-20 10:04 J -22458321.32 -22458321.08 -22458320.84 0.0300 0.0060 \*  
 Moon -66200-07-04 12:28 J -22457942.18 -22457941.98 -22457941.78 0.0296 0.0166  
 Earth -66200-07-04 13:40 J -22457942.12 -22457941.93 -22457941.73 0.0296 0.0170 \*  
 Venus -66193-04-02 01:11 J -22455478.66 -22455478.45 -22455478.24 0.0265 0.0002  
 Mercury -66188-01-19 11:59 J -22453725.11 -22453725.00 -22453724.87 0.0258 0.0198

Mercury -66188-04-18 08:23 J -22453636.33 -22453636.15 -22453635.96 0.0258 0.0074

Mercury -66188-07-16 04:47 J -22453547.48 -22453547.30 -22453547.11 0.0258 0.0052

Mercury -66188-10-13 01:11 J -22453458.57 -22453458.45 -22453458.30 0.0258 0.0179

Moon -66187-12-04 14:37 J -22453040.95 -22453040.89 -22453040.82 0.0260 0.0251

Earth -66187-12-04 16:18 J -22453040.88 -22453040.82 -22453040.72 0.0260 0.0244 \*

Moon -66186-12-16 08:23 J -22452664.38 -22452664.15 -22452663.91 0.0262 0.0082

Earth -66186-12-16 11:45 J -22452664.25 -22452664.01 -22452663.78 0.0262 0.0087 \*

Mars -66185-05-13 21:49 J -22452514.91 -22452514.59 -22452514.26 0.0263 0.0046

Earth -66185-12-27 13:25 J -22452287.17 -22452286.94 -22452286.70 0.0265 0.0081

Moon -66185-12-27 15:06 J -22452287.09 -22452286.87 -22452286.64 0.0265 0.0095 \*

Earth -66183-01-08 23:30 J -22451909.59 -22451909.52 -22451909.44 0.0269 0.0255

Venus -66178-12-13 11:45 J -22449745.19 -22449745.01 -22449744.81 0.0297 0.0133

Mercury -66174-08-20 00:42 J -22448399.57 -22448399.47 -22448399.36 0.0304 0.0178

Mercury -66174-11-16 13:40 J -22448311.05 -22448310.93 -22448310.80 0.0304 0.0039

Mercury -66173-02-13 02:37 J -22448222.51 -22448222.39 -22448222.27 0.0304 0.0100

Mercury -66173-05-11 15:21 J -22448133.94 -22448133.86 -22448133.78 0.0304 0.0236

Moon -66172-06-14 00:13 J -22447735.67 -22447735.49 -22447735.30 0.0302 0.0174

Earth -66172-06-14 01:40 J -22447735.62 -22447735.43 -22447735.23 0.0302 0.0179 \*

Mars -66171-06-18 10:18 J -22447366.31 -22447366.07 -22447365.81 0.0298 0.0097

Earth -66171-06-28 12:57 J -22447356.19 -22447355.96 -22447355.72 0.0298 0.0064

Moon -66171-06-28 14:52 J -22447356.10 -22447355.88 -22447355.65 0.0298 0.0062 \*

Earth -66170-07-12 13:25 J -22446976.97 -22446976.94 -22446976.89 0.0294 0.0288

Moon -66170-07-12 17:16 J -22446976.84 -22446976.78 -22446976.70 0.0294 0.0281

Venus -66164-10-13 04:33 J -22444692.52 -22444692.31 -22444692.10 0.0265 0.0047

Mercury -66159-06-08 11:01 J -22442993.10 -22442993.04 -22442992.95 0.0258 0.0236

Mercury -66159-09-05 07:25 J -22442904.35 -22442904.19 -22442904.01 0.0258 0.0112

Mercury -66159-12-03 04:04 J -22442815.52 -22442815.33 -22442815.14 0.0258 0.0014

Mercury -66158-03-02 00:13 J -22442726.64 -22442726.49 -22442726.32 0.0258 0.0139

Earth -66157-12-10 13:25 J -22442077.14 -22442076.94 -22442076.75 0.0260 0.0162

Moon -66157-12-10 16:47 J -22442076.99 -22442076.80 -22442076.59 0.0260 0.0164 \*

Moon -66156-12-22 10:18 J -22441700.33 -22441700.07 -22441699.81 0.0263 0.0012  
 Earth -66156-12-22 11:30 J -22441700.27 -22441700.02 -22441699.76 0.0263 0.0005 \*  
 Mars -66155-07-04 23:59 J -22441505.73 -22441505.50 -22441505.26 0.0265 0.0184  
 Moon -66154-01-03 13:25 J -22441323.11 -22441322.94 -22441322.76 0.0266 0.0187  
 Earth -66154-01-03 17:01 J -22441322.97 -22441322.79 -22441322.59 0.0266 0.0173 \*  
 Venus -66148-06-24 14:52 J -22438959.08 -22438958.88 -22438958.67 0.0297 0.0078  
 Mercury -66144-01-06 01:54 J -22437667.51 -22437667.42 -22437667.34 0.0305 0.0226  
 Mercury -66144-04-04 14:52 J -22437579.01 -22437578.88 -22437578.76 0.0305 0.0087  
 Mercury -66144-07-02 03:49 J -22437490.47 -22437490.34 -22437490.22 0.0305 0.0053  
 Mercury -66144-09-28 16:33 J -22437401.91 -22437401.81 -22437401.71 0.0304 0.0190  
 Earth -66143-06-07 16:33 J -22437149.87 -22437149.81 -22437149.75 0.0303 0.0291  
 Moon -66143-06-07 17:16 J -22437149.85 -22437149.78 -22437149.68 0.0303 0.0285 \*  
 Moon -66142-06-22 05:59 J -22436770.49 -22436770.25 -22436770.00 0.0300 0.0049  
 Earth -66142-06-22 08:37 J -22436770.38 -22436770.14 -22436769.90 0.0300 0.0047 \*  
 Moon -66141-07-05 10:47 J -22436391.24 -22436391.05 -22436390.86 0.0296 0.0179  
 Earth -66141-07-05 14:37 J -22436391.08 -22436390.89 -22436390.71 0.0296 0.0187 \*  
 Venus -66134-04-25 06:13 J -22433906.44 -22433906.24 -22433906.04 0.0264 0.0091  
 Mercury -66129-01-23 06:13 J -22432172.40 -22432172.24 -22432172.09 0.0258 0.0152  
 Mercury -66129-04-21 02:23 J -22432083.59 -22432083.40 -22432083.21 0.0258 0.0028  
 Mercury -66129-07-18 22:47 J -22431994.72 -22431994.55 -22431994.37 0.0258 0.0098  
 Mercury -66129-10-15 19:25 J -22431905.78 -22431905.69 -22431905.59 0.0258 0.0223  
 Moon -66128-12-05 11:16 J -22431490.13 -22431490.03 -22431489.93 0.0260 0.0236  
 Earth -66128-12-05 14:37 J -22431489.99 -22431489.89 -22431489.77 0.0260 0.0232 \*  
 Mars -66127-08-16 21:06 J -22431235.71 -22431235.62 -22431235.51 0.0261 0.0248  
 Earth -66127-12-17 09:21 J -22431113.34 -22431113.11 -22431112.86 0.0262 0.0074  
 Moon -66127-12-17 10:18 J -22431113.30 -22431113.07 -22431112.83 0.0262 0.0066 \*  
 Earth -66126-12-29 11:16 J -22430736.27 -22430736.03 -22430735.80 0.0265 0.0094  
 Moon -66126-12-29 14:37 J -22430736.11 -22430735.89 -22430735.65 0.0265 0.0109 \*  
 Earth -66124-01-09 21:06 J -22430358.62 -22430358.62 -22430358.61 0.0269 0.0269  
 Venus -66118-01-04 17:59 J -22428172.96 -22428172.75 -22428172.54 0.0297 0.0025

Mercury -66115-05-26 02:23 J -22426935.44 -22426935.40 -22426935.34 0.0305 0.0279  
 Mercury -66115-08-22 15:35 J -22426846.96 -22426846.85 -22426846.73 0.0305 0.0139  
 Mercury -66115-11-19 04:33 J -22426758.44 -22426758.31 -22426758.18 0.0304 0.0002  
 Mercury -66114-02-15 17:16 J -22426669.89 -22426669.78 -22426669.66 0.0304 0.0138  
 Mercury -66114-05-15 06:13 J -22426581.29 -22426581.24 -22426581.19 0.0304 0.0274  
 Earth -66113-06-14 23:59 J -22426184.69 -22426184.50 -22426184.29 0.0302 0.0164  
 Moon -66113-06-15 02:37 J -22426184.58 -22426184.39 -22426184.19 0.0302 0.0163 \*  
 Mars -66113-09-23 15:35 J -22426084.08 -22426083.85 -22426083.62 0.0301 0.0143  
 Earth -66112-06-29 11:30 J -22425805.25 -22425805.02 -22425804.79 0.0298 0.0079  
 Moon -66112-06-29 14:52 J -22425805.12 -22425804.88 -22425804.65 0.0298 0.0074 \*  
 Moon -66111-07-13 12:42 J -22425425.99 -22425425.97 -22425425.92 0.0294 0.0291  
 Venus -66105-03-20 08:52 J -22423349.24 -22423349.13 -22423349.01 0.0267 0.0225  
 Venus -66105-11-04 08:23 J -22423120.32 -22423120.15 -22423119.96 0.0265 0.0137  
 Mercury -66100-06-11 04:47 J -22421440.42 -22421440.30 -22421440.17 0.0257 0.0192  
 Mercury -66100-09-08 01:11 J -22421351.63 -22421351.45 -22421351.26 0.0258 0.0068  
 Mercury -66100-12-05 21:35 J -22421262.79 -22421262.60 -22421262.41 0.0258 0.0057  
 Mercury -66099-03-04 17:59 J -22421173.88 -22421173.75 -22421173.61 0.0258 0.0183  
 Moon -66098-12-12 09:49 J -22420526.30 -22420526.09 -22420525.87 0.0260 0.0146  
 Earth -66098-12-12 10:18 J -22420526.26 -22420526.07 -22420525.85 0.0260 0.0151 \*  
 Mars -66097-10-06 17:45 J -22420227.08 -22420226.76 -22420226.42 0.0262 0.0025  
 Moon -66097-12-23 05:01 J -22420149.54 -22420149.29 -22420149.04 0.0263 0.0027  
 Earth -66097-12-23 08:37 J -22420149.39 -22420149.14 -22420148.89 0.0263 0.0013 \*  
 Earth -66095-01-04 13:54 J -22419772.10 -22419771.92 -22419771.74 0.0266 0.0185  
 Moon -66095-01-04 14:09 J -22419772.07 -22419771.91 -22419771.75 0.0266 0.0196 \*  
 Venus -66089-07-16 19:25 J -22417386.90 -22417386.69 -22417386.48 0.0297 0.0025  
 Mercury -66085-01-09 16:04 J -22416114.92 -22416114.83 -22416114.72 0.0305 0.0193  
 Mercury -66085-04-07 05:16 J -22416026.41 -22416026.28 -22416026.16 0.0305 0.0054  
 Mercury -66085-07-04 17:59 J -22415937.87 -22415937.75 -22415937.62 0.0305 0.0086  
 Mercury -66085-10-01 06:57 J -22415849.30 -22415849.21 -22415849.13 0.0305 0.0223  
 Moon -66084-06-08 08:37 J -22415599.23 -22415599.14 -22415599.03 0.0303 0.0276



Earth	-66084-06-08 11:45 J	-22415599.09	-22415599.01	-22415598.91	0.0303	0.0279	*
Moon	-66083-06-23 00:57 J	-22415219.69	-22415219.46	-22415219.23	0.0300	0.0037	
Earth	-66083-06-23 04:04 J	-22415219.57	-22415219.33	-22415219.09	0.0300	0.0033	*
Mars	-66083-11-11 04:18 J	-22415078.56	-22415078.32	-22415078.06	0.0299	0.0103	
Earth	-66082-07-07 10:04 J	-22414840.25	-22414840.08	-22414839.90	0.0296	0.0201	
Moon	-66082-07-07 09:49 J	-22414840.25	-22414840.09	-22414839.90	0.0296	0.0192	*
Venus	-66076-09-30 09:35 J	-22412563.24	-22412563.10	-22412562.94	0.0266	0.0184	
Venus	-66075-05-17 09:21 J	-22412334.26	-22412334.11	-22412333.95	0.0264	0.0176	
Mercury	-66071-10-29 03:06 J	-22410708.44	-22410708.37	-22410708.29	0.0258	0.0234	
Mercury	-66070-01-25 23:16 J	-22410619.69	-22410619.53	-22410619.35	0.0258	0.0111	
Mercury	-66070-04-24 19:40 J	-22410530.87	-22410530.68	-22410530.48	0.0258	0.0016	
Mercury	-66070-07-22 16:18 J	-22410441.98	-22410441.82	-22410441.66	0.0258	0.0139	
Earth	-66069-12-06 11:01 J	-22409939.16	-22409939.04	-22409938.90	0.0260	0.0221	
Moon	-66069-12-06 11:59 J	-22409939.12	-22409939.00	-22409938.87	0.0260	0.0221	*
Earth	-66068-12-18 05:45 J	-22409562.50	-22409562.26	-22409562.02	0.0262	0.0062	
Moon	-66068-12-18 09:35 J	-22409562.35	-22409562.10	-22409561.85	0.0262	0.0051	*
Mars	-66067-11-27 11:16 J	-22409218.24	-22409218.03	-22409217.79	0.0265	0.0193	
Earth	-66067-12-30 07:11 J	-22409185.43	-22409185.20	-22409184.97	0.0265	0.0106	
Moon	-66067-12-30 07:11 J	-22409185.43	-22409185.20	-22409184.96	0.0265	0.0119	*
Venus	-66059-01-26 21:35 J	-22406600.81	-22406600.60	-22406600.40	0.0297	0.0074	
Mercury	-66056-05-28 16:33 J	-22405382.88	-22405382.81	-22405382.73	0.0305	0.0248	
Mercury	-66056-08-25 05:45 J	-22405294.38	-22405294.26	-22405294.14	0.0305	0.0108	
Mercury	-66056-11-21 18:42 J	-22405205.85	-22405205.72	-22405205.59	0.0304	0.0031	
Mercury	-66055-02-18 07:25 J	-22405117.29	-22405117.19	-22405117.08	0.0304	0.0169	
Earth	-66054-06-16 17:45 J	-22404633.96	-22404633.76	-22404633.55	0.0302	0.0152	
Moon	-66054-06-16 20:52 J	-22404633.84	-22404633.63	-22404633.42	0.0302	0.0152	*
Moon	-66053-06-30 05:01 J	-22404254.53	-22404254.29	-22404254.05	0.0298	0.0082	
Earth	-66053-06-30 05:30 J	-22404254.50	-22404254.27	-22404254.04	0.0298	0.0091	*
Venus	-66046-04-12 11:16 J	-22401777.20	-22401777.03	-22401776.84	0.0267	0.0141	
Venus	-66046-11-27 11:01 J	-22401548.15	-22401548.04	-22401547.92	0.0264	0.0220	

Mercury -66041-06-13 21:49 J -22399887.74 -22399887.59 -22399887.43 0.0257 0.0151  
 Mercury -66041-09-10 18:13 J -22399798.93 -22399798.74 -22399798.55 0.0258 0.0028  
 Mercury -66041-12-08 14:37 J -22399710.06 -22399709.89 -22399709.71 0.0258 0.0097  
 Mercury -66040-03-07 11:01 J -22399621.13 -22399621.04 -22399620.94 0.0258 0.0223  
 Moon -66039-12-13 02:09 J -22398975.61 -22398975.41 -22398975.18 0.0260 0.0130  
 Earth -66039-12-13 06:13 J -22398975.45 -22398975.24 -22398975.02 0.0260 0.0139 \*  
 Mars -66038-01-09 12:57 J -22398948.10 -22398947.96 -22398947.78 0.0260 0.0228  
 Moon -66038-12-25 03:21 J -22398598.59 -22398598.36 -22398598.11 0.0263 0.0039  
 Earth -66038-12-25 04:04 J -22398598.58 -22398598.33 -22398598.08 0.0263 0.0025 \*  
 Earth -66036-01-05 08:52 J -22398221.29 -22398221.13 -22398220.95 0.0266 0.0196  
 Moon -66036-01-05 12:42 J -22398221.12 -22398220.97 -22398220.81 0.0266 0.0205 \*  
 Venus -66030-08-08 23:01 J -22395814.73 -22395814.54 -22395814.35 0.0298 0.0124  
 Mercury -66027-10-15 17:01 J -22394650.80 -22394650.79 -22394650.77 0.0305 0.0302  
 Mercury -66026-01-12 06:13 J -22394562.35 -22394562.24 -22394562.13 0.0305 0.0162  
 Mercury -66026-04-10 19:11 J -22394473.83 -22394473.70 -22394473.57 0.0305 0.0022  
 Mercury -66026-07-08 08:09 J -22394385.28 -22394385.16 -22394385.04 0.0305 0.0116  
 Mercury -66026-10-04 20:52 J -22394296.70 -22394296.63 -22394296.56 0.0305 0.0253  
 Moon -66025-06-09 02:52 J -22394048.48 -22394048.38 -22394048.27 0.0303 0.0270  
 Earth -66025-06-09 05:01 J -22394048.39 -22394048.29 -22394048.16 0.0303 0.0268 \*  
 Mars -66024-02-16 00:57 J -22393796.69 -22393796.46 -22393796.23 0.0302 0.0146  
 Earth -66024-06-23 21:21 J -22393668.85 -22393668.61 -22393668.37 0.0300 0.0021  
 Moon -66024-06-23 22:18 J -22393668.80 -22393668.57 -22393668.34 0.0300 0.0028 \*  
 Earth -66023-07-08 03:21 J -22393289.51 -22393289.36 -22393289.18 0.0296 0.0215  
 Moon -66023-07-08 06:57 J -22393289.38 -22393289.21 -22393289.03 0.0296 0.0200 \*  
 Venus -66017-10-22 11:30 J -22390991.20 -22390991.02 -22390990.81 0.0266 0.0103  
 Venus -66016-06-08 11:30 J -22390762.06 -22390762.02 -22390761.98 0.0264 0.0257  
 Mercury -66012-10-31 19:54 J -22389155.78 -22389155.67 -22389155.54 0.0257 0.0195  
 Mercury -66011-01-28 16:18 J -22389067.00 -22389066.82 -22389066.63 0.0258 0.0071  
 Mercury -66011-04-27 12:42 J -22388978.16 -22388977.97 -22388977.78 0.0258 0.0054  
 Mercury -66011-07-25 09:06 J -22388889.25 -22388889.12 -22388888.98 0.0258 0.0179

Earth	-66010-12-08 06:28 J	-22388388.37	-22388388.23	-22388388.08	0.0260	0.0211
Moon	-66010-12-08 10:04 J	-22388388.22	-22388388.08	-22388387.91	0.0260	0.0206 *
Earth	-66009-12-19 01:11 J	-22388011.70	-22388011.45	-22388011.20	0.0262	0.0051
Moon	-66009-12-19 01:40 J	-22388011.68	-22388011.43	-22388011.17	0.0262	0.0038 *
Mars	-66008-03-01 03:21 J	-22387939.69	-22387939.36	-22387939.03	0.0262	0.0016
Moon	-66008-12-30 23:01 J	-22387634.76	-22387634.54	-22387634.32	0.0265	0.0130
Earth	-66008-12-31 02:23 J	-22387634.62	-22387634.40	-22387634.17	0.0265	0.0118 *

# 66TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 66th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-66000-02-18 00:28 J	-22385028.64	-22385028.48	-22385028.30	0.0297	0.0172		
Mercury	-65997-05-31 06:42 J	-22383830.31	-22383830.22	-22383830.13	0.0305	0.0218		
Mercury	-65997-08-27 19:40 J	-22383741.81	-22383741.68	-22383741.56	0.0305	0.0079		
Mercury	-65997-11-24 08:23 J	-22383653.27	-22383653.15	-22383653.02	0.0304	0.0061		
Mercury	-65996-02-20 21:21 J	-22383564.71	-22383564.61	-22383564.51	0.0304	0.0197		
Moon	-65995-06-17 08:09 J	-22383083.37	-22383083.16	-22383082.94	0.0302	0.0149		
Earth	-65995-06-17 09:35 J	-22383083.30	-22383083.10	-22383082.88	0.0302	0.0142 *		
Mars	-65994-04-05 11:16 J	-22382791.27	-22382791.03	-22382790.78	0.0299	0.0106		
Moon	-65994-07-01 17:59 J	-22382703.98	-22382703.75	-22382703.52	0.0298	0.0089		
Earth	-65994-07-01 21:35 J	-22382703.83	-22382703.60	-22382703.38	0.0298	0.0102 *		
Venus	-65987-05-04 12:57 J	-22380205.17	-22380204.96	-22380204.75	0.0266	0.0060		
Mercury	-65982-03-20 18:42 J	-22378423.80	-22378423.72	-22378423.65	0.0257	0.0235		

Mercury -65982-06-17 14:52 J -22378335.05 -22378334.88 -22378334.71 0.0257 0.0112  
 Mercury -65982-09-14 11:01 J -22378246.23 -22378246.04 -22378245.84 0.0258 0.0014  
 Mercury -65982-12-12 07:40 J -22378157.35 -22378157.18 -22378157.02 0.0258 0.0137  
 Moon -65980-12-14 01:25 J -22377424.66 -22377424.44 -22377424.23 0.0260 0.0117  
 Earth -65980-12-14 01:25 J -22377424.64 -22377424.44 -22377424.21 0.0260 0.0129 \*  
 Earth -65979-12-25 23:30 J -22377047.77 -22377047.52 -22377047.27 0.0263 0.0036  
 Moon -65979-12-26 02:52 J -22377047.62 -22377047.38 -22377047.13 0.0263 0.0052 \*  
 Mars -65978-04-21 23:30 J -22376930.70 -22376930.52 -22376930.30 0.0264 0.0211  
 Earth -65977-01-07 04:18 J -22376670.47 -22376670.32 -22376670.16 0.0266 0.0208  
 Moon -65977-01-07 05:45 J -22376670.40 -22376670.26 -22376670.10 0.0266 0.0214 \*  
 Venus -65971-01-13 00:28 J -22374472.52 -22374472.48 -22374472.43 0.0295 0.0287  
 Venus -65971-08-31 02:09 J -22374242.55 -22374242.41 -22374242.27 0.0298 0.0221  
 Mercury -65968-10-18 06:57 J -22373098.26 -22373098.21 -22373098.15 0.0305 0.0273  
 Mercury -65967-01-14 19:54 J -22373009.78 -22373009.67 -22373009.55 0.0305 0.0134  
 Mercury -65967-04-13 08:52 J -22372921.25 -22372921.13 -22372921.00 0.0305 0.0012  
 Mercury -65967-07-10 21:49 J -22372832.70 -22372832.59 -22372832.48 0.0305 0.0144  
 Mercury -65967-10-07 10:33 J -22372744.10 -22372744.06 -22372744.01 0.0305 0.0281  
 Earth -65966-06-10 20:52 J -22372497.75 -22372497.63 -22372497.50 0.0303 0.0257  
 Moon -65966-06-10 23:16 J -22372497.63 -22372497.53 -22372497.41 0.0303 0.0266 \*  
 Earth -65965-06-24 13:11 J -22372118.19 -22372117.95 -22372117.71 0.0300 0.0011  
 Moon -65965-06-24 16:47 J -22372118.04 -22372117.80 -22372117.56 0.0300 0.0020 \*  
 Earth -65964-07-08 19:11 J -22371738.84 -22371738.70 -22371738.54 0.0296 0.0225  
 Moon -65964-07-08 20:52 J -22371738.80 -22371738.63 -22371738.45 0.0296 0.0211 \*  
 Venus -65958-11-14 13:11 J -22369419.16 -22369418.95 -22369418.74 0.0266 0.0022  
 Mercury -65953-11-03 12:42 J -22367603.11 -22367602.97 -22367602.81 0.0257 0.0156  
 Mercury -65952-01-31 09:06 J -22367514.31 -22367514.12 -22367513.93 0.0258 0.0032  
 Mercury -65952-04-30 05:30 J -22367425.45 -22367425.27 -22367425.09 0.0258 0.0093  
 Mercury -65952-07-28 01:54 J -22367336.51 -22367336.42 -22367336.31 0.0258 0.0219  
 Earth -65951-12-09 01:54 J -22366837.57 -22366837.42 -22366837.25 0.0260 0.0200  
 Moon -65951-12-09 02:52 J -22366837.56 -22366837.38 -22366837.21 0.0260 0.0192 \*

Mars -65950-06-03 23:01 J -22366660.70 -22366660.54 -22366660.34 0.0261 0.0219  
 Moon -65950-12-20 16:47 J -22366461.05 -22366460.80 -22366460.54 0.0262 0.0025  
 Earth -65950-12-20 20:37 J -22366460.88 -22366460.64 -22366460.39 0.0262 0.0040 \*  
 Moon -65949-12-31 19:54 J -22366083.87 -22366083.67 -22366083.46 0.0265 0.0141  
 Earth -65949-12-31 21:35 J -22366083.80 -22366083.60 -22366083.37 0.0265 0.0130 \*  
 Venus -65942-07-26 02:23 J -22363686.52 -22363686.40 -22363686.27 0.0295 0.0238  
 Venus -65941-03-12 04:04 J -22363456.41 -22363456.33 -22363456.24 0.0298 0.0271  
 Mercury -65938-06-03 20:37 J -22362277.74 -22362277.64 -22362277.54 0.0305 0.0187  
 Mercury -65938-08-31 09:35 J -22362189.23 -22362189.10 -22362188.97 0.0304 0.0049  
 Mercury -65938-11-27 22:33 J -22362100.69 -22362100.56 -22362100.44 0.0304 0.0090  
 Mercury -65937-02-24 11:16 J -22362012.11 -22362012.03 -22362011.94 0.0304 0.0226  
 Moon -65936-06-17 23:01 J -22361532.75 -22361532.54 -22361532.33 0.0302 0.0142  
 Earth -65936-06-18 02:23 J -22361532.61 -22361532.40 -22361532.18 0.0302 0.0130 \*  
 Mars -65936-07-11 05:01 J -22361509.51 -22361509.29 -22361509.05 0.0301 0.0145  
 Moon -65935-07-02 12:42 J -22361153.18 -22361152.97 -22361152.75 0.0298 0.0101  
 Earth -65935-07-02 13:54 J -22361153.14 -22361152.92 -22361152.70 0.0298 0.0114 \*  
 Venus -65928-05-26 14:23 J -22358633.11 -22358632.90 -22358632.69 0.0266 0.0022  
 Mercury -65923-03-23 11:16 J -22356871.14 -22356871.03 -22356870.90 0.0258 0.0196  
 Mercury -65923-06-20 07:40 J -22356782.36 -22356782.18 -22356781.99 0.0258 0.0072  
 Mercury -65923-09-17 04:04 J -22356693.52 -22356693.33 -22356693.14 0.0258 0.0053  
 Mercury -65923-12-15 00:28 J -22356604.61 -22356604.48 -22356604.34 0.0258 0.0178  
 Earth -65921-12-14 21:35 J -22355873.81 -22355873.60 -22355873.36 0.0260 0.0117  
 Moon -65921-12-15 01:11 J -22355873.67 -22355873.45 -22355873.21 0.0260 0.0103 \*  
 Mars -65920-07-24 19:11 J -22355652.03 -22355651.70 -22355651.37 0.0262 0.0003  
 Earth -65920-12-26 19:40 J -22355496.92 -22355496.68 -22355496.43 0.0263 0.0049  
 Moon -65920-12-26 21:49 J -22355496.84 -22355496.59 -22355496.34 0.0263 0.0062 \*  
 Moon -65918-01-07 22:04 J -22355119.72 -22355119.58 -22355119.44 0.0266 0.0223  
 Earth -65918-01-08 00:42 J -22355119.60 -22355119.47 -22355119.32 0.0266 0.0220 \*  
 Venus -65912-02-04 05:01 J -22352900.45 -22352900.29 -22352900.12 0.0295 0.0184  
 Mercury -65909-10-20 21:06 J -22351545.70 -22351545.62 -22351545.54 0.0305 0.0241

Mercury -65908-01-17 10:04 J -22351457.20 -22351457.08 -22351456.95 0.0305 0.0102

Mercury -65908-04-15 23:01 J -22351368.67 -22351368.54 -22351368.41 0.0305 0.0038

Mercury -65908-07-13 11:59 J -22351280.11 -22351280.00 -22351279.90 0.0305 0.0175

Earth -65907-06-11 14:09 J -22350947.04 -22350946.91 -22350946.76 0.0303 0.0244

Moon -65907-06-11 17:01 J -22350946.90 -22350946.79 -22350946.65 0.0303 0.0258 \*

Earth -65906-06-26 06:13 J -22350567.48 -22350567.24 -22350567.00 0.0300 0.0005

Moon -65906-06-26 06:42 J -22350567.47 -22350567.22 -22350566.97 0.0300 0.0012 \*

Mars -65906-08-28 18:42 J -22350503.96 -22350503.72 -22350503.47 0.0300 0.0101

Moon -65905-07-09 09:35 J -22350188.26 -22350188.10 -22350187.94 0.0296 0.0220

Earth -65905-07-09 12:13 J -22350188.12 -22350187.99 -22350187.84 0.0296 0.0237 \*

Venus -65899-12-06 14:37 J -22347847.10 -22347846.89 -22347846.68 0.0266 0.0060

Mercury -65894-08-10 09:35 J -22346139.16 -22346139.10 -22346139.02 0.0258 0.0238

Mercury -65894-11-07 05:59 J -22346050.42 -22346050.25 -22346050.08 0.0258 0.0114

Mercury -65893-02-04 02:23 J -22345961.59 -22345961.40 -22345961.21 0.0258 0.0010

Mercury -65893-05-02 22:47 J -22345872.71 -22345872.55 -22345872.39 0.0258 0.0135

Moon -65892-12-09 19:40 J -22345286.86 -22345286.68 -22345286.49 0.0260 0.0177

Earth -65892-12-09 23:01 J -22345286.71 -22345286.54 -22345286.36 0.0260 0.0188 \*

Moon -65891-12-21 16:18 J -22344910.06 -22344909.82 -22344909.57 0.0262 0.0013

Earth -65891-12-21 17:59 J -22344910.00 -22344909.75 -22344909.50 0.0262 0.0027 \*

Mars -65890-09-14 13:11 J -22344643.11 -22344642.95 -22344642.76 0.0264 0.0221

Earth -65889-01-02 19:11 J -22344532.90 -22344532.70 -22344532.48 0.0265 0.0143

Moon -65889-01-02 22:04 J -22344532.78 -22344532.58 -22344532.37 0.0265 0.0151 \*

Venus -65883-08-17 07:54 J -22342114.36 -22342114.17 -22342113.98 0.0295 0.0132

Mercury -65879-03-09 21:49 J -22340813.62 -22340813.59 -22340813.55 0.0304 0.0293

Mercury -65879-06-06 11:01 J -22340725.15 -22340725.04 -22340724.93 0.0304 0.0154

Mercury -65879-09-02 23:59 J -22340636.63 -22340636.50 -22340636.37 0.0304 0.0017

Mercury -65879-11-30 12:42 J -22340548.08 -22340547.97 -22340547.85 0.0304 0.0123

Mercury -65878-02-27 01:40 J -22340459.50 -22340459.43 -22340459.37 0.0304 0.0259

Earth -65877-06-18 20:52 J -22339981.85 -22339981.63 -22339981.40 0.0301 0.0116

Moon -65877-06-18 21:35 J -22339981.81 -22339981.60 -22339981.39 0.0301 0.0132 \*

Earth -65876-07-03 07:40 J -22339602.39 -22339602.18 -22339601.95 0.0298 0.0127  
 Moon -65876-07-03 11:01 J -22339602.26 -22339602.04 -22339601.82 0.0298 0.0110 \*  
 Venus -65870-11-01 15:21 J -22337289.89 -22337289.86 -22337289.81 0.0269 0.0263  
 Venus -65869-06-17 16:33 J -22337061.01 -22337060.81 -22337060.62 0.0266 0.0105  
 Mercury -65864-03-26 04:47 J -22335318.45 -22335318.30 -22335318.14 0.0258 0.0153  
 Mercury -65864-06-23 01:11 J -22335229.64 -22335229.45 -22335229.26 0.0258 0.0029  
 Mercury -65864-09-19 21:35 J -22335140.78 -22335140.60 -22335140.42 0.0258 0.0096  
 Mercury -65864-12-17 17:59 J -22335051.84 -22335051.75 -22335051.65 0.0258 0.0221  
 Earth -65863-12-05 03:06 J -22334699.38 -22334699.37 -22334699.34 0.0259 0.0258  
 Moon -65863-12-05 05:59 J -22334699.28 -22334699.25 -22334699.19 0.0259 0.0254  
 Mars -65862-10-27 20:52 J -22334372.83 -22334372.63 -22334372.41 0.0260 0.0199  
 Earth -65862-12-16 19:40 J -22334322.90 -22334322.68 -22334322.44 0.0261 0.0103  
 Moon -65862-12-16 21:35 J -22334322.84 -22334322.60 -22334322.35 0.0261 0.0089 \*  
 Moon -65861-12-27 15:06 J -22333946.12 -22333945.87 -22333945.62 0.0263 0.0073  
 Earth -65861-12-27 18:13 J -22333945.98 -22333945.74 -22333945.49 0.0263 0.0063 \*  
 Moon -65859-01-08 20:23 J -22333568.75 -22333568.65 -22333568.53 0.0266 0.0236  
 Earth -65859-01-08 23:16 J -22333568.63 -22333568.53 -22333568.39 0.0266 0.0235 \*  
 Venus -65853-02-27 11:45 J -22331328.21 -22331328.01 -22331327.80 0.0295 0.0073  
 Mercury -65850-10-24 11:45 J -22329993.10 -22329993.01 -22329992.91 0.0305 0.0203  
 Mercury -65849-01-21 00:42 J -22329904.59 -22329904.47 -22329904.34 0.0305 0.0065  
 Mercury -65849-04-18 13:40 J -22329816.05 -22329815.93 -22329815.80 0.0305 0.0075  
 Mercury -65849-07-16 02:23 J -22329727.49 -22329727.40 -22329727.30 0.0305 0.0212  
 Moon -65848-06-12 09:06 J -22329396.26 -22329396.12 -22329395.97 0.0303 0.0244  
 Earth -65848-06-12 10:47 J -22329396.19 -22329396.05 -22329395.88 0.0303 0.0229 \*  
 Mars -65848-12-03 18:42 J -22329221.95 -22329221.72 -22329221.50 0.0302 0.0147  
 Moon -65847-06-26 23:01 J -22329016.78 -22329016.54 -22329016.30 0.0300 0.0001  
 Earth -65847-06-27 02:37 J -22329016.63 -22329016.39 -22329016.15 0.0300 0.0019 \*  
 Moon -65846-07-11 05:30 J -22328637.40 -22328637.27 -22328637.12 0.0296 0.0236  
 Earth -65846-07-11 08:23 J -22328637.27 -22328637.15 -22328637.02 0.0296 0.0252 \*  
 Venus -65840-05-13 16:33 J -22326503.92 -22326503.81 -22326503.69 0.0268 0.0220

Venus -65840-12-28 17:30 J -22326274.95 -22326274.77 -22326274.59 0.0266 0.0146  
 Mercury -65835-08-13 03:21 J -22324586.47 -22324586.36 -22324586.22 0.0258 0.0193  
 Mercury -65835-11-09 23:45 J -22324497.69 -22324497.51 -22324497.32 0.0258 0.0069  
 Mercury -65834-02-06 20:09 J -22324408.84 -22324408.66 -22324408.47 0.0258 0.0056  
 Mercury -65834-05-06 16:33 J -22324319.94 -22324319.81 -22324319.67 0.0258 0.0181  
 Moon -65833-12-10 19:54 J -22323735.85 -22323735.67 -22323735.48 0.0260 0.0164  
 Earth -65833-12-10 22:04 J -22323735.75 -22323735.58 -22323735.38 0.0260 0.0175 \*  
 Mars -65832-12-17 16:47 J -22323364.13 -22323363.80 -22323363.47 0.0262 0.0017  
 Earth -65832-12-22 17:45 J -22323359.01 -22323358.76 -22323358.51 0.0262 0.0012  
 Moon -65832-12-22 20:37 J -22323358.88 -22323358.64 -22323358.39 0.0262 0.0004 \*  
 Earth -65830-01-03 19:25 J -22322981.88 -22322981.69 -22322981.48 0.0265 0.0158  
 Moon -65830-01-03 22:33 J -22322981.75 -22322981.56 -22322981.35 0.0265 0.0163 \*  
 Venus -65824-09-08 16:04 J -22320542.04 -22320541.83 -22320541.61 0.0296 0.0016  
 Mercury -65820-03-12 12:57 J -22319261.03 -22319260.96 -22319260.88 0.0304 0.0250  
 Mercury -65820-06-09 02:09 J -22319172.53 -22319172.41 -22319172.29 0.0304 0.0111  
 Mercury -65820-09-05 15:06 J -22319084.00 -22319083.87 -22319083.75 0.0304 0.0029  
 Mercury -65820-12-03 03:49 J -22318995.45 -22318995.34 -22318995.23 0.0304 0.0164  
 Mercury -65819-03-01 16:33 J -22318906.82 -22318906.81 -22318906.79 0.0304 0.0300  
 Earth -65818-06-20 20:09 J -22318430.89 -22318430.66 -22318430.43 0.0301 0.0098  
 Moon -65818-06-20 23:45 J -22318430.72 -22318430.51 -22318430.28 0.0301 0.0117 \*  
 Mars -65817-01-21 12:57 J -22318216.20 -22318215.96 -22318215.71 0.0299 0.0112  
 Earth -65817-07-04 06:28 J -22318051.44 -22318051.23 -22318051.02 0.0298 0.0143  
 Moon -65817-07-04 08:52 J -22318051.35 -22318051.13 -22318050.90 0.0298 0.0126 \*  
 Venus -65811-11-23 18:57 J -22315717.87 -22315717.71 -22315717.55 0.0268 0.0174  
 Venus -65810-07-10 19:40 J -22315488.81 -22315488.68 -22315488.52 0.0266 0.0194  
 Mercury -65806-12-31 02:52 J -22313854.47 -22313854.38 -22313854.29 0.0258 0.0228  
 Mercury -65805-03-28 23:01 J -22313765.71 -22313765.54 -22313765.36 0.0258 0.0105  
 Mercury -65805-06-25 19:25 J -22313676.88 -22313676.69 -22313676.50 0.0258 0.0020  
 Mercury -65805-09-22 15:49 J -22313587.99 -22313587.84 -22313587.68 0.0258 0.0145  
 Earth -65804-12-06 03:35 J -22313148.42 -22313148.35 -22313148.26 0.0259 0.0244



Moon -65804-12-06 06:42 J -22313148.32 -22313148.22 -22313148.11 0.0259 0.0236 \*  
 Moon -65803-12-17 18:28 J -22312771.98 -22312771.73 -22312771.48 0.0261 0.0073  
 Earth -65803-12-17 20:52 J -22312771.86 -22312771.63 -22312771.39 0.0261 0.0087 \*  
 Moon -65802-12-29 17:01 J -22312395.02 -22312394.79 -22312394.56 0.0263 0.0087  
 Earth -65802-12-29 19:54 J -22312394.91 -22312394.67 -22312394.43 0.0263 0.0079 \*  
 Mars -65801-02-07 21:21 J -22312354.72 -22312354.61 -22312354.48 0.0264 0.0246  
 Earth -65800-01-10 02:09 J -22312017.49 -22312017.41 -22312017.33 0.0267 0.0251  
 Moon -65800-01-10 03:21 J -22312017.44 -22312017.36 -22312017.27 0.0267 0.0249 \*  
 Venus -65794-03-21 21:21 J -22309755.81 -22309755.61 -22309755.40 0.0296 0.0050  
 Mercury -65791-07-30 14:09 J -22308528.93 -22308528.91 -22308528.87 0.0305 0.0296  
 Mercury -65791-10-27 03:21 J -22308440.47 -22308440.36 -22308440.25 0.0305 0.0157  
 Mercury -65790-01-23 16:18 J -22308351.95 -22308351.82 -22308351.69 0.0305 0.0018  
 Mercury -65790-04-22 05:16 J -22308263.40 -22308263.28 -22308263.17 0.0305 0.0120  
 Mercury -65790-07-19 17:59 J -22308174.82 -22308174.75 -22308174.68 0.0304 0.0256  
 Moon -65789-06-13 08:52 J -22307845.28 -22307845.13 -22307844.97 0.0303 0.0227  
 Earth -65789-06-13 12:28 J -22307845.15 -22307844.98 -22307844.80 0.0303 0.0209 \*  
 Moon -65788-06-28 01:40 J -22307465.66 -22307465.43 -22307465.20 0.0300 0.0020  
 Earth -65788-06-28 03:21 J -22307465.60 -22307465.36 -22307465.12 0.0300 0.0038 \*  
 Earth -65787-07-12 08:09 J -22307086.25 -22307086.16 -22307086.05 0.0296 0.0269  
 Moon -65787-07-12 09:49 J -22307086.20 -22307086.09 -22307085.97 0.0296 0.0254 \*  
 Venus -65781-06-04 21:06 J -22304931.80 -22304931.62 -22304931.43 0.0268 0.0128  
 Venus -65780-01-19 21:49 J -22304702.67 -22304702.59 -22304702.49 0.0266 0.0238  
 Mercury -65776-08-15 22:18 J -22303033.73 -22303033.57 -22303033.41 0.0258 0.0142  
 Mercury -65776-11-12 18:28 J -22302944.92 -22302944.73 -22302944.53 0.0258 0.0019  
 Mercury -65775-02-09 15:06 J -22302856.05 -22302855.87 -22302855.70 0.0258 0.0107  
 Mercury -65775-05-09 11:30 J -22302767.10 -22302767.02 -22302766.93 0.0258 0.0233  
 Earth -65774-12-13 00:42 J -22302184.67 -22302184.47 -22302184.27 0.0260 0.0158  
 Moon -65774-12-13 02:23 J -22302184.59 -22302184.40 -22302184.19 0.0260 0.0146 \*  
 Mars -65773-03-22 05:30 J -22302084.49 -22302084.27 -22302084.02 0.0261 0.0181  
 Earth -65773-12-23 20:52 J -22301807.88 -22301807.63 -22301807.38 0.0262 0.0005

Moon -65773-12-23 23:59 J -22301807.76 -22301807.50 -22301807.25 0.0262 0.0017 \*  
 Moon -65771-01-04 21:21 J -22301430.79 -22301430.61 -22301430.40 0.0265 0.0176  
 Earth -65771-01-04 23:30 J -22301430.70 -22301430.52 -22301430.33 0.0265 0.0175 \*  
 Venus -65765-10-01 03:21 J -22298969.55 -22298969.36 -22298969.16 0.0296 0.0115  
 Mercury -65761-03-15 05:01 J -22297708.38 -22297708.29 -22297708.19 0.0304 0.0199  
 Mercury -65761-06-11 17:59 J -22297619.87 -22297619.75 -22297619.62 0.0304 0.0061  
 Mercury -65761-09-08 06:57 J -22297531.33 -22297531.21 -22297531.08 0.0304 0.0077  
 Mercury -65761-12-05 19:40 J -22297442.77 -22297442.68 -22297442.59 0.0304 0.0214  
 Mars -65759-04-29 01:25 J -22296933.67 -22296933.44 -22296933.19 0.0301 0.0129  
 Earth -65759-06-22 00:28 J -22296879.71 -22296879.48 -22296879.25 0.0301 0.0077  
 Moon -65759-06-22 01:25 J -22296879.68 -22296879.44 -22296879.20 0.0301 0.0093 \*  
 Moon -65758-07-06 07:25 J -22296500.39 -22296500.19 -22296499.97 0.0297 0.0147  
 Earth -65758-07-06 10:04 J -22296500.28 -22296500.08 -22296499.88 0.0297 0.0164 \*  
 Venus -65752-12-16 00:42 J -22294145.67 -22294145.47 -22294145.27 0.0268 0.0077  
 Mercury -65746-01-02 21:49 J -22292301.72 -22292301.59 -22292301.44 0.0258 0.0175  
 Mercury -65746-04-01 18:13 J -22292212.92 -22292212.74 -22292212.55 0.0258 0.0051  
 Mercury -65746-06-29 14:37 J -22292124.07 -22292123.89 -22292123.70 0.0258 0.0075  
 Mercury -65746-09-26 11:01 J -22292035.15 -22292035.04 -22292034.91 0.0258 0.0201  
 Moon -65745-12-07 05:16 J -22291597.40 -22291597.28 -22291597.12 0.0259 0.0216  
 Earth -65745-12-07 07:11 J -22291597.31 -22291597.20 -22291597.07 0.0259 0.0227 \*  
 Moon -65744-12-18 22:04 J -22291220.82 -22291220.58 -22291220.34 0.0261 0.0055  
 Earth -65744-12-19 01:25 J -22291220.68 -22291220.44 -22291220.20 0.0261 0.0069 \*  
 Mars -65743-05-13 11:59 J -22291075.32 -22291075.00 -22291074.67 0.0262 0.0045  
 Earth -65743-12-31 00:57 J -22290843.68 -22290843.46 -22290843.22 0.0264 0.0099  
 Moon -65743-12-31 02:37 J -22290843.61 -22290843.39 -22290843.17 0.0264 0.0103 \*  
 Moon -65741-01-12 11:59 J -22290466.02 -22290466.00 -22290465.96 0.0267 0.0265  
 Venus -65735-04-13 10:33 J -22288183.21 -22288183.06 -22288182.89 0.0296 0.0187  
 Mercury -65732-08-02 06:57 J -22286976.29 -22286976.21 -22286976.13 0.0304 0.0238  
 Mercury -65732-10-29 19:54 J -22286887.79 -22286887.67 -22286887.55 0.0304 0.0100  
 Mercury -65731-01-26 08:52 J -22286799.26 -22286799.13 -22286799.00 0.0304 0.0038

Mercury -65731-04-24 21:35 J -22286710.70 -22286710.60 -22286710.49 0.0304 0.0175  
 Moon -65730-06-15 20:09 J -22286293.83 -22286293.66 -22286293.48 0.0303 0.0201  
 Earth -65730-06-15 20:37 J -22286293.83 -22286293.64 -22286293.45 0.0303 0.0185 \*  
 Mars -65729-06-16 01:54 J -22285927.66 -22285927.42 -22285927.18 0.0300 0.0125  
 Earth -65729-06-29 10:18 J -22285914.31 -22285914.07 -22285913.84 0.0300 0.0061  
 Moon -65729-06-29 12:57 J -22285914.19 -22285913.96 -22285913.72 0.0300 0.0046 \*  
 Earth -65728-07-13 14:09 J -22285534.94 -22285534.91 -22285534.86 0.0295 0.0291  
 Moon -65728-07-13 17:59 J -22285534.83 -22285534.75 -22285534.66 0.0295 0.0275  
 Venus -65722-06-28 04:04 J -22283359.54 -22283359.33 -22283359.12 0.0268 0.0027  
 Mercury -65717-05-21 21:49 J -22281569.70 -22281569.59 -22281569.48 0.0258 0.0209  
 Mercury -65717-08-18 17:59 J -22281480.93 -22281480.75 -22281480.57 0.0258 0.0085  
 Mercury -65717-11-15 14:23 J -22281392.09 -22281391.90 -22281391.71 0.0258 0.0040  
 Mercury -65716-02-12 11:01 J -22281303.19 -22281303.04 -22281302.89 0.0258 0.0166  
 Earth -65715-12-14 06:42 J -22280633.43 -22280633.22 -22280633.00 0.0260 0.0140  
 Moon -65715-12-14 10:33 J -22280633.28 -22280633.06 -22280632.84 0.0260 0.0125 \*  
 Moon -65714-12-26 03:06 J -22280256.63 -22280256.37 -22280256.11 0.0263 0.0034  
 Earth -65714-12-26 04:04 J -22280256.58 -22280256.33 -22280256.08 0.0263 0.0025 \*  
 Moon -65712-01-06 03:49 J -22279879.50 -22279879.34 -22279879.16 0.0266 0.0193  
 Earth -65712-01-06 07:25 J -22279879.34 -22279879.19 -22279879.01 0.0266 0.0197 \*  
 Venus -65706-03-08 17:45 J -22277626.87 -22277626.76 -22277626.63 0.0294 0.0240  
 Venus -65706-10-24 18:28 J -22277396.83 -22277396.73 -22277396.63 0.0296 0.0259  
 Mercury -65703-12-20 09:06 J -22276244.17 -22276244.12 -22276244.07 0.0304 0.0276  
 Mercury -65702-03-18 22:04 J -22276155.69 -22276155.58 -22276155.46 0.0304 0.0137  
 Mercury -65702-06-15 11:01 J -22276067.17 -22276067.04 -22276066.91 0.0304 0.0004  
 Mercury -65702-09-11 23:59 J -22275978.62 -22275978.50 -22275978.39 0.0304 0.0138  
 Mercury -65702-12-09 12:28 J -22275890.02 -22275889.98 -22275889.92 0.0304 0.0274  
 Earth -65701-06-08 17:30 J -22275707.81 -22275707.77 -22275707.73 0.0303 0.0297  
 Moon -65700-06-23 07:54 J -22275328.41 -22275328.17 -22275327.93 0.0300 0.0066  
 Earth -65700-06-23 10:47 J -22275328.28 -22275328.05 -22275327.81 0.0300 0.0050 \*  
 Moon -65699-07-07 15:49 J -22274949.03 -22274948.84 -22274948.65 0.0297 0.0174

Earth -65699-07-07 18:57 J -22274948.88 -22274948.71 -22274948.51 0.0297 0.0189 \*  
 Venus -65692-01-07 08:37 J -22272573.35 -22272573.14 -22272572.93 0.0268 0.0028  
 Mercury -65688-10-08 21:49 J -22270837.65 -22270837.59 -22270837.51 0.0259 0.0239  
 Mercury -65687-01-05 18:13 J -22270748.91 -22270748.74 -22270748.57 0.0259 0.0115  
 Mercury -65687-04-04 14:37 J -22270660.08 -22270659.89 -22270659.70 0.0259 0.0010  
 Mercury -65687-07-02 11:01 J -22270571.20 -22270571.04 -22270570.87 0.0259 0.0136  
 Moon -65686-12-09 10:33 J -22270046.21 -22270046.06 -22270045.89 0.0260 0.0194  
 Earth -65686-12-09 14:23 J -22270046.04 -22270045.90 -22270045.74 0.0260 0.0207 \*  
 Mars -65685-08-16 11:45 J -22269795.27 -22269795.01 -22269794.73 0.0261 0.0152  
 Earth -65685-12-20 09:21 J -22269669.36 -22269669.11 -22269668.87 0.0262 0.0048  
 Moon -65685-12-20 09:21 J -22269669.34 -22269669.11 -22269668.86 0.0262 0.0035 \*  
 Earth -65683-01-01 10:04 J -22269292.31 -22269292.08 -22269291.86 0.0264 0.0121  
 Moon -65683-01-01 13:25 J -22269292.15 -22269291.94 -22269291.71 0.0264 0.0125 \*  
 Venus -65677-09-18 02:23 J -22266840.57 -22266840.40 -22266840.22 0.0294 0.0164  
 Mercury -65673-08-05 00:28 J -22265423.59 -22265423.48 -22265423.37 0.0304 0.0172  
 Mercury -65673-11-01 13:25 J -22265335.07 -22265334.94 -22265334.81 0.0304 0.0034  
 Mercury -65672-01-29 02:09 J -22265246.53 -22265246.41 -22265246.28 0.0304 0.0104  
 Mercury -65672-04-27 15:06 J -22265157.95 -22265157.87 -22265157.80 0.0304 0.0239  
 Earth -65671-06-17 10:04 J -22264742.28 -22264742.08 -22264741.87 0.0302 0.0156  
 Moon -65671-06-17 12:57 J -22264742.14 -22264741.96 -22264741.76 0.0302 0.0173 \*  
 Mars -65671-09-23 03:35 J -22264644.59 -22264644.35 -22264644.10 0.0302 0.0106  
 Earth -65670-07-01 22:47 J -22264362.77 -22264362.55 -22264362.32 0.0299 0.0090  
 Moon -65670-07-02 01:54 J -22264362.65 -22264362.42 -22264362.18 0.0299 0.0074 \*  
 Venus -65663-07-20 13:25 J -22261787.14 -22261786.94 -22261786.74 0.0267 0.0082  
 Mercury -65658-05-25 18:28 J -22260016.88 -22260016.73 -22260016.57 0.0258 0.0146  
 Mercury -65658-08-22 14:52 J -22259928.07 -22259927.88 -22259927.69 0.0258 0.0021  
 Mercury -65658-11-19 11:16 J -22259839.20 -22259839.03 -22259838.85 0.0258 0.0105  
 Mercury -65657-02-16 07:54 J -22259750.25 -22259750.17 -22259750.08 0.0258 0.0231  
 Moon -65656-12-15 15:49 J -22259082.07 -22259081.84 -22259081.59 0.0261 0.0104  
 Earth -65656-12-15 15:49 J -22259082.05 -22259081.84 -22259081.61 0.0261 0.0119 \*

Mars -65655-10-07 22:18 J -22258785.87 -22258785.57 -22258785.24 0.0263 0.0078  
 Moon -65655-12-27 10:33 J -22258705.30 -22258705.06 -22258704.81 0.0263 0.0057  
 Earth -65655-12-27 14:09 J -22258705.15 -22258704.91 -22258704.66 0.0263 0.0047 \*  
 Moon -65653-01-08 18:28 J -22258327.87 -22258327.73 -22258327.59 0.0266 0.0216  
 Earth -65653-01-08 19:11 J -22258327.84 -22258327.70 -22258327.56 0.0266 0.0220 \*  
 Venus -65647-03-31 11:45 J -22256054.21 -22256054.01 -22256053.80 0.0294 0.0087  
 Mercury -65644-12-23 03:06 J -22254691.46 -22254691.37 -22254691.27 0.0304 0.0204  
 Mercury -65643-03-21 16:04 J -22254602.95 -22254602.83 -22254602.70 0.0304 0.0066  
 Mercury -65643-06-18 05:01 J -22254514.42 -22254514.29 -22254514.16 0.0304 0.0071  
 Mercury -65643-09-14 17:45 J -22254425.85 -22254425.76 -22254425.66 0.0304 0.0207  
 Moon -65642-06-11 07:11 J -22254156.27 -22254156.20 -22254156.11 0.0303 0.0284  
 Earth -65642-06-11 10:33 J -22254156.16 -22254156.06 -22254155.94 0.0303 0.0267 \*  
 Moon -65641-06-24 23:59 J -22253776.73 -22253776.50 -22253776.26 0.0300 0.0036  
 Earth -65641-06-25 03:06 J -22253776.61 -22253776.37 -22253776.13 0.0300 0.0019 \*  
 Mars -65641-11-10 12:28 J -22253638.20 -22253637.98 -22253637.76 0.0299 0.0163  
 Earth -65640-07-09 10:04 J -22253397.23 -22253397.08 -22253396.91 0.0296 0.0218  
 Moon -65640-07-09 10:18 J -22253397.23 -22253397.07 -22253396.90 0.0296 0.0205 \*  
 Venus -65634-06-15 17:30 J -22251229.87 -22251229.77 -22251229.66 0.0269 0.0230  
 Venus -65633-01-30 18:57 J -22251000.88 -22251000.71 -22251000.52 0.0267 0.0140  
 Mercury -65629-10-11 19:11 J -22249284.84 -22249284.70 -22249284.56 0.0259 0.0173  
 Mercury -65628-01-08 15:35 J -22249196.04 -22249195.85 -22249195.66 0.0259 0.0048  
 Mercury -65628-04-07 11:59 J -22249107.18 -22249107.00 -22249106.82 0.0259 0.0077  
 Mercury -65628-07-05 08:37 J -22249018.26 -22249018.14 -22249018.02 0.0259 0.0203  
 Moon -65627-12-11 00:13 J -22248494.66 -22248494.49 -22248494.30 0.0260 0.0173  
 Earth -65627-12-11 00:42 J -22248494.64 -22248494.47 -22248494.29 0.0260 0.0186 \*  
 Earth -65626-12-22 20:23 J -22248117.90 -22248117.65 -22248117.40 0.0262 0.0024  
 Moon -65626-12-23 00:13 J -22248117.74 -22248117.49 -22248117.24 0.0262 0.0010 \*  
 Earth -65624-01-02 22:18 J -22247740.78 -22247740.57 -22247740.36 0.0265 0.0145  
 Moon -65624-01-02 23:30 J -22247740.72 -22247740.52 -22247740.29 0.0265 0.0149 \*  
 Venus -65618-10-11 21:49 J -22245267.80 -22245267.59 -22245267.37 0.0294 0.0008

Mercury -65614-05-12 05:59 J -22243959.33 -22243959.25 -22243959.17 0.0304 0.0234  
 Mercury -65614-08-08 18:57 J -22243870.83 -22243870.71 -22243870.59 0.0304 0.0096  
 Mercury -65614-11-05 07:54 J -22243782.30 -22243782.17 -22243782.05 0.0304 0.0042  
 Mercury -65613-02-01 20:37 J -22243693.75 -22243693.64 -22243693.54 0.0304 0.0177  
 Earth -65612-06-19 05:16 J -22243190.49 -22243190.28 -22243190.05 0.0302 0.0123  
 Moon -65612-06-19 08:37 J -22243190.36 -22243190.14 -22243189.92 0.0302 0.0139 \*  
 Moon -65611-07-03 16:33 J -22242811.04 -22242810.81 -22242810.57 0.0299 0.0108  
 Earth -65611-07-03 16:47 J -22242811.02 -22242810.80 -22242810.58 0.0299 0.0122 \*  
 Venus -65605-12-25 23:01 J -22240443.69 -22240443.54 -22240443.37 0.0269 0.0173  
 Venus -65604-08-12 00:28 J -22240214.61 -22240214.48 -22240214.33 0.0267 0.0197  
 Mercury -65599-02-28 19:40 J -22238552.79 -22238552.68 -22238552.56 0.0258 0.0202  
 Mercury -65599-05-28 16:04 J -22238464.01 -22238463.83 -22238463.64 0.0258 0.0077  
 Mercury -65599-08-25 12:28 J -22238375.16 -22238374.98 -22238374.79 0.0258 0.0049  
 Mercury -65599-11-22 09:06 J -22238286.26 -22238286.12 -22238285.98 0.0259 0.0174  
 Earth -65598-12-06 10:04 J -22237907.12 -22237907.08 -22237907.02 0.0259 0.0253  
 Moon -65598-12-06 10:47 J -22237907.12 -22237907.05 -22237906.95 0.0259 0.0245 \*  
 Moon -65597-12-16 23:59 J -22237530.73 -22237530.50 -22237530.25 0.0261 0.0081  
 Earth -65597-12-17 03:49 J -22237530.57 -22237530.34 -22237530.10 0.0261 0.0096 \*  
 Mars -65596-01-11 06:57 J -22237505.50 -22237505.21 -22237504.91 0.0261 0.0115  
 Moon -65596-12-29 00:57 J -22237153.68 -22237153.46 -22237153.22 0.0264 0.0081  
 Earth -65596-12-29 02:52 J -22237153.62 -22237153.38 -22237153.13 0.0264 0.0072 \*  
 Earth -65594-01-10 08:52 J -22236776.22 -22236776.13 -22236776.02 0.0267 0.0245  
 Moon -65594-01-10 11:45 J -22236776.10 -22236776.01 -22236775.89 0.0267 0.0241 \*  
 Venus -65588-04-23 07:54 J -22234481.37 -22234481.17 -22234480.96 0.0295 0.0076  
 Mercury -65585-09-28 08:52 J -22233227.19 -22233227.13 -22233227.07 0.0304 0.0265  
 Mercury -65585-12-25 21:49 J -22233138.71 -22233138.59 -22233138.47 0.0304 0.0127  
 Mercury -65584-03-24 10:47 J -22233050.18 -22233050.05 -22233049.92 0.0304 0.0014  
 Mercury -65584-06-20 23:30 J -22232961.63 -22232961.52 -22232961.41 0.0304 0.0147  
 Mercury -65584-09-17 12:13 J -22232873.03 -22232872.99 -22232872.94 0.0304 0.0282  
 Moon -65583-06-13 04:47 J -22232604.43 -22232604.30 -22232604.17 0.0302 0.0251

Earth -65583-06-13 07:25 J -22232604.33 -22232604.19 -22232604.03 0.0302 0.0233 \*  
 Mars -65582-02-18 02:52 J -22232354.64 -22232354.38 -22232354.13 0.0301 0.0060  
 Earth -65582-06-27 22:47 J -22232224.79 -22232224.55 -22232224.31 0.0300 0.0015  
 Moon -65582-06-27 23:01 J -22232224.77 -22232224.54 -22232224.31 0.0300 0.0001 \*  
 Earth -65581-07-11 04:18 J -22231845.43 -22231845.32 -22231845.18 0.0296 0.0249  
 Moon -65581-07-11 07:40 J -22231845.31 -22231845.18 -22231845.03 0.0296 0.0237 \*  
 Venus -65575-07-08 05:45 J -22229657.44 -22229657.26 -22229657.06 0.0269 0.0111  
 Venus -65574-02-22 06:57 J -22229428.25 -22229428.21 -22229428.15 0.0267 0.0258  
 Mercury -65570-07-18 20:37 J -22227820.72 -22227820.64 -22227820.54 0.0259 0.0227  
 Mercury -65570-10-15 17:01 J -22227731.96 -22227731.79 -22227731.61 0.0259 0.0103  
 Mercury -65569-01-12 13:25 J -22227643.13 -22227642.94 -22227642.75 0.0259 0.0023  
 Mercury -65569-04-10 10:04 J -22227554.24 -22227554.08 -22227553.92 0.0259 0.0148  
 Earth -65568-12-12 12:28 J -22226943.17 -22226942.98 -22226942.78 0.0261 0.0163  
 Moon -65568-12-12 16:04 J -22226943.03 -22226942.83 -22226942.63 0.0261 0.0149 \*  
 Earth -65567-12-24 09:21 J -22226566.36 -22226566.11 -22226565.86 0.0263 0.0003  
 Moon -65567-12-24 11:16 J -22226566.29 -22226566.03 -22226565.77 0.0263 0.0013 \*  
 Mars -65566-03-04 23:16 J -22226495.83 -22226495.53 -22226495.24 0.0263 0.0115  
 Moon -65565-01-05 09:21 J -22226189.29 -22226189.11 -22226188.90 0.0265 0.0173  
 Earth -65565-01-05 12:13 J -22226189.17 -22226188.99 -22226188.79 0.0265 0.0171 \*  
 Venus -65559-11-03 18:28 J -22223694.90 -22223694.73 -22223694.55 0.0295 0.0160  
 Mercury -65555-02-15 11:45 J -22222495.04 -22222495.01 -22222494.98 0.0304 0.0293  
 Mercury -65555-05-15 00:42 J -22222406.58 -22222406.47 -22222406.35 0.0304 0.0155  
 Mercury -65555-08-11 13:40 J -22222318.06 -22222317.93 -22222317.80 0.0304 0.0018  
 Mercury -65555-11-08 02:37 J -22222229.51 -22222229.39 -22222229.27 0.0304 0.0120  
 Mercury -65554-02-04 15:06 J -22222140.93 -22222140.87 -22222140.79 0.0304 0.0256  
 Moon -65553-06-21 02:52 J -22221638.61 -22221638.38 -22221638.14 0.0301 0.0104  
 Earth -65553-06-21 03:35 J -22221638.58 -22221638.35 -22221638.12 0.0301 0.0088 \*  
 Mars -65552-04-07 12:28 J -22221348.17 -22221347.98 -22221347.78 0.0299 0.0201  
 Moon -65552-07-05 10:18 J -22221259.28 -22221259.07 -22221258.85 0.0298 0.0140  
 Earth -65552-07-05 13:40 J -22221259.13 -22221258.93 -22221258.72 0.0298 0.0155 \*

Venus -65545-01-18 12:13 J -22218871.19 -22218870.99 -22218870.78 0.0268 0.0051

Mercury -65541-12-04 21:21 J -22217088.63 -22217088.61 -22217088.57 0.0258 0.0255

Mercury -65540-03-03 17:45 J -22216999.92 -22216999.76 -22216999.59 0.0258 0.0131

Mercury -65540-05-31 14:23 J -22216911.10 -22216910.90 -22216910.71 0.0258 0.0009

Mercury -65540-08-28 10:47 J -22216822.22 -22216822.05 -22216821.88 0.0259 0.0120

Mercury -65540-11-25 07:25 J -22216733.25 -22216733.19 -22216733.13 0.0259 0.0246

Moon -65539-12-07 19:11 J -22216355.82 -22216355.70 -22216355.56 0.0260 0.0221

Earth -65539-12-07 22:18 J -22216355.68 -22216355.57 -22216355.46 0.0260 0.0231 \*

Moon -65538-12-19 14:37 J -22215979.13 -22215978.89 -22215978.65 0.0261 0.0058

Earth -65538-12-19 16:47 J -22215979.04 -22215978.80 -22215978.56 0.0261 0.0072 \*

Earth -65537-12-30 16:33 J -22215602.04 -22215601.81 -22215601.57 0.0264 0.0097

Moon -65537-12-30 19:11 J -22215601.92 -22215601.70 -22215601.47 0.0264 0.0105 \*

Moon -65535-01-12 03:21 J -22215224.36 -22215224.36 -22215224.35 0.0267 0.0267

Venus -65530-09-29 05:01 J -22213138.40 -22213138.29 -22213138.19 0.0293 0.0254

Venus -65529-05-16 05:16 J -22212908.39 -22212908.28 -22212908.16 0.0296 0.0244

Mercury -65526-10-02 03:49 J -22211674.44 -22211674.34 -22211674.24 0.0304 0.0183

Mercury -65526-12-29 16:47 J -22211585.93 -22211585.80 -22211585.67 0.0304 0.0046

Mercury -65525-03-27 05:45 J -22211497.39 -22211497.26 -22211497.14 0.0304 0.0092

Mercury -65525-06-23 18:28 J -22211408.81 -22211408.73 -22211408.65 0.0304 0.0227

Mars -65524-05-27 19:25 J -22211070.76 -22211070.69 -22211070.59 0.0302 0.0284

Earth -65524-06-15 07:11 J -22211052.38 -22211052.20 -22211052.01 0.0302 0.0196

Moon -65524-06-15 08:23 J -22211052.31 -22211052.15 -22211051.98 0.0302 0.0214 \*

Earth -65523-06-29 21:21 J -22210672.85 -22210672.61 -22210672.37 0.0299 0.0051

Moon -65523-06-30 00:42 J -22210672.70 -22210672.47 -22210672.23 0.0299 0.0034 \*

Earth -65522-07-14 01:25 J -22210293.49 -22210293.44 -22210293.36 0.0295 0.0282

Moon -65522-07-14 04:33 J -22210293.41 -22210293.31 -22210293.20 0.0295 0.0267 \*

Venus -65516-07-30 19:11 J -22208084.91 -22208084.70 -22208084.49 0.0268 0.0012

Mercury -65511-07-21 18:42 J -22206267.86 -22206267.72 -22206267.56 0.0259 0.0157

Mercury -65511-10-18 15:06 J -22206179.06 -22206178.87 -22206178.68 0.0259 0.0032

Mercury -65510-01-15 11:30 J -22206090.19 -22206090.02 -22206089.83 0.0259 0.0094



Mercury -65510-04-14 08:09 J -22206001.25 -22206001.16 -22206001.05 0.0259 0.0220

Earth -65509-12-14 00:57 J -22205391.67 -22205391.46 -22205391.24 0.0261 0.0140

Moon -65509-12-14 03:49 J -22205391.57 -22205391.34 -22205391.12 0.0261 0.0126 \*

Mars -65508-06-08 08:09 J -22205215.46 -22205215.16 -22205214.83 0.0262 0.0080

Moon -65508-12-25 19:40 J -22205014.93 -22205014.68 -22205014.42 0.0263 0.0035

Earth -65508-12-25 22:18 J -22205014.82 -22205014.57 -22205014.32 0.0263 0.0026 \*

Moon -65506-01-06 22:47 J -22204637.70 -22204637.55 -22204637.38 0.0266 0.0198

Earth -65506-01-07 02:23 J -22204637.56 -22204637.40 -22204637.23 0.0266 0.0197 \*

Venus -65500-04-10 14:52 J -22202352.04 -22202351.88 -22202351.70 0.0293 0.0173

Mercury -65496-02-18 06:42 J -22200942.31 -22200942.22 -22200942.13 0.0304 0.0213

Mercury -65496-05-17 19:40 J -22200853.80 -22200853.68 -22200853.55 0.0304 0.0075

Mercury -65496-08-14 08:37 J -22200765.27 -22200765.14 -22200765.01 0.0304 0.0062

Mercury -65496-11-10 21:21 J -22200676.70 -22200676.61 -22200676.51 0.0304 0.0198

Earth -65495-06-09 08:23 J -22200466.17 -22200466.15 -22200466.13 0.0303 0.0302

Moon -65494-06-23 22:18 J -22200086.80 -22200086.57 -22200086.33 0.0301 0.0070

Earth -65494-06-24 02:09 J -22200086.65 -22200086.41 -22200086.18 0.0301 0.0052 \*

Mars -65494-07-16 06:57 J -22200064.47 -22200064.21 -22200063.95 0.0301 0.0018

Moon -65493-07-07 07:54 J -22199707.35 -22199707.17 -22199706.97 0.0297 0.0174

Earth -65493-07-07 10:47 J -22199707.23 -22199707.05 -22199706.86 0.0297 0.0189 \*

Venus -65486-02-10 01:40 J -22197298.63 -22197298.43 -22197298.23 0.0268 0.0072

Mercury -65482-12-08 19:25 J -22195535.81 -22195535.69 -22195535.55 0.0258 0.0185

Mercury -65481-03-06 15:49 J -22195447.02 -22195446.84 -22195446.65 0.0258 0.0060

Mercury -65481-06-03 12:13 J -22195358.17 -22195357.99 -22195357.80 0.0258 0.0065

Mercury -65481-08-31 08:52 J -22195269.25 -22195269.13 -22195269.00 0.0259 0.0191

Moon -65480-12-09 06:28 J -22194804.37 -22194804.23 -22194804.06 0.0260 0.0200

Earth -65480-12-09 09:35 J -22194804.23 -22194804.10 -22194803.94 0.0260 0.0210 \*

Earth -65479-12-21 04:47 J -22194427.55 -22194427.30 -22194427.05 0.0262 0.0048

Moon -65479-12-21 06:42 J -22194427.45 -22194427.22 -22194426.97 0.0262 0.0037 \*

Mars -65478-07-30 23:16 J -22194205.79 -22194205.53 -22194205.26 0.0263 0.0156

Earth -65477-01-02 05:30 J -22194050.49 -22194050.27 -22194050.04 0.0264 0.0122

Moon -65477-01-02 09:06 J -22194050.34 -22194050.12 -22194049.89 0.0264 0.0127 \*  
 Venus -65471-10-22 00:42 J -22191565.67 -22191565.47 -22191565.27 0.0294 0.0095  
 Mercury -65467-07-08 09:35 J -22190210.17 -22190210.10 -22190210.02 0.0304 0.0243  
 Mercury -65467-10-04 22:33 J -22190121.68 -22190121.56 -22190121.43 0.0304 0.0105  
 Mercury -65466-01-01 11:30 J -22190033.15 -22190033.02 -22190032.89 0.0304 0.0033  
 Mercury -65466-03-31 00:28 J -22189944.59 -22189944.48 -22189944.38 0.0304 0.0169  
 Earth -65465-06-17 05:16 J -22189500.48 -22189500.28 -22189500.08 0.0302 0.0161  
 Moon -65465-06-17 08:52 J -22189500.32 -22189500.13 -22189499.93 0.0302 0.0179 \*  
 Earth -65464-07-01 18:28 J -22189120.96 -22189120.73 -22189120.50 0.0299 0.0086  
 Moon -65464-07-01 21:06 J -22189120.86 -22189120.62 -22189120.38 0.0299 0.0068 \*  
 Mars -65464-09-02 16:18 J -22189057.95 -22189057.82 -22189057.66 0.0298 0.0249  
 Venus -65457-01-06 06:42 J -22186741.31 -22186741.22 -22186741.12 0.0269 0.0238  
 Venus -65457-08-22 08:09 J -22186512.34 -22186512.16 -22186511.97 0.0267 0.0133  
 Mercury -65452-04-26 20:09 J -22184803.76 -22184803.66 -22184803.54 0.0259 0.0212  
 Mercury -65452-07-24 16:33 J -22184714.99 -22184714.81 -22184714.63 0.0259 0.0088  
 Mercury -65452-10-21 12:57 J -22184626.15 -22184625.96 -22184625.77 0.0259 0.0038  
 Mercury -65451-01-18 09:35 J -22184537.25 -22184537.10 -22184536.95 0.0259 0.0163  
 Moon -65450-12-16 10:33 J -22183840.29 -22183840.06 -22183839.82 0.0261 0.0104  
 Earth -65450-12-16 11:59 J -22183840.22 -22183840.00 -22183839.77 0.0261 0.0117 \*  
 Moon -65449-12-27 06:28 J -22183463.47 -22183463.23 -22183462.99 0.0263 0.0058  
 Earth -65449-12-27 09:49 J -22183463.34 -22183463.09 -22183462.84 0.0263 0.0049 \*  
 Earth -65447-01-08 14:23 J -22183086.03 -22183085.90 -22183085.75 0.0266 0.0222  
 Moon -65447-01-08 15:06 J -22183086.00 -22183085.87 -22183085.73 0.0266 0.0220 \*  
 Venus -65441-05-03 10:18 J -22180779.28 -22180779.07 -22180778.86 0.0294 0.0016  
 Jupiter -65441-05-25 20:09 J -22180756.96 -22180756.66 -22180756.34 0.0294 0.0218  
 Mercury -65438-11-25 12:28 J -22179478.04 -22179477.98 -22179477.93 0.0304 0.0274  
 Mercury -65437-02-22 01:25 J -22179389.56 -22179389.44 -22179389.32 0.0304 0.0136  
 Mercury -65437-05-20 14:23 J -22179301.03 -22179300.90 -22179300.77 0.0304 0.0003  
 Mercury -65437-08-17 03:06 J -22179212.48 -22179212.37 -22179212.25 0.0304 0.0139  
 Mercury -65437-11-13 16:04 J -22179123.89 -22179123.83 -22179123.78 0.0304 0.0274

Moon -65436-06-11 02:37 J -22178914.46 -22178914.39 -22178914.30 0.0303 0.0286  
 Earth -65436-06-11 05:59 J -22178914.34 -22178914.25 -22178914.13 0.0303 0.0269 \*  
 Mars -65436-10-22 21:21 J -22178780.76 -22178780.61 -22178780.45 0.0302 0.0241  
 Moon -65435-06-25 21:21 J -22178534.84 -22178534.61 -22178534.37 0.0301 0.0036  
 Earth -65435-06-25 23:16 J -22178534.76 -22178534.53 -22178534.29 0.0301 0.0019 \*  
 Earth -65434-07-10 06:57 J -22178155.36 -22178155.21 -22178155.04 0.0297 0.0222  
 Moon -65434-07-10 08:09 J -22178155.32 -22178155.16 -22178154.99 0.0297 0.0207 \*  
 Venus -65428-07-18 13:11 J -22175955.10 -22175954.95 -22175954.79 0.0269 0.0178  
 Venus -65427-03-04 14:09 J -22175726.05 -22175725.91 -22175725.75 0.0267 0.0191  
 Mercury -65423-09-13 20:52 J -22174071.69 -22174071.63 -22174071.56 0.0258 0.0241  
 Mercury -65423-12-11 17:01 J -22173982.96 -22173982.79 -22173982.62 0.0258 0.0118  
 Mercury -65422-03-10 13:25 J -22173894.13 -22173893.94 -22173893.75 0.0258 0.0008  
 Mercury -65422-06-07 09:49 J -22173805.25 -22173805.09 -22173804.92 0.0258 0.0133  
 Mercury -65422-09-04 06:28 J -22173716.23 -22173716.23 -22173716.22 0.0258 0.0258  
 Earth -65421-12-10 19:40 J -22173252.85 -22173252.68 -22173252.51 0.0260 0.0189  
 Moon -65421-12-10 20:37 J -22173252.82 -22173252.64 -22173252.47 0.0260 0.0177 \*  
 Mars -65420-11-03 01:40 J -22172925.75 -22172925.43 -22172925.10 0.0261 0.0040  
 Earth -65420-12-22 14:52 J -22172876.13 -22172875.88 -22172875.63 0.0262 0.0026  
 Moon -65420-12-22 18:28 J -22172875.98 -22172875.73 -22172875.48 0.0262 0.0013 \*  
 Moon -65418-01-03 15:35 J -22172499.06 -22172498.85 -22172498.63 0.0265 0.0146  
 Earth -65418-01-03 16:18 J -22172499.02 -22172498.82 -22172498.60 0.0265 0.0145 \*  
 Venus -65412-11-13 18:42 J -22169992.93 -22169992.72 -22169992.51 0.0295 0.0058  
 Mercury -65408-07-11 03:49 J -22168657.44 -22168657.34 -22168657.23 0.0304 0.0170  
 Mercury -65408-10-07 16:47 J -22168568.92 -22168568.80 -22168568.67 0.0304 0.0033  
 Mercury -65407-01-04 05:45 J -22168480.38 -22168480.26 -22168480.14 0.0304 0.0105  
 Mercury -65407-04-02 18:28 J -22168391.80 -22168391.73 -22168391.65 0.0304 0.0241  
 Earth -65406-06-20 00:13 J -22167948.70 -22167948.49 -22167948.27 0.0302 0.0129  
 Moon -65406-06-20 01:40 J -22167948.64 -22167948.43 -22167948.20 0.0302 0.0145 \*  
 Mars -65406-12-11 06:28 J -22167774.49 -22167774.23 -22167773.97 0.0300 0.0027  
 Moon -65405-07-03 10:47 J -22167569.28 -22167569.05 -22167568.82 0.0299 0.0102

Earth -65405-07-03 12:28 J -22167569.19 -22167568.98 -22167568.75 0.0299 0.0118 \*  
 Venus -65398-01-28 18:57 J -22165168.90 -22165168.71 -22165168.52 0.0268 0.0119  
 Venus -65398-09-14 19:40 J -22164939.74 -22164939.68 -22164939.59 0.0266 0.0248  
 Mercury -65393-04-29 17:16 J -22163250.93 -22163250.78 -22163250.62 0.0259 0.0147  
 Mercury -65393-07-27 13:40 J -22163162.12 -22163161.93 -22163161.74 0.0259 0.0023  
 Mercury -65393-10-24 10:04 J -22163073.25 -22163073.08 -22163072.90 0.0259 0.0102  
 Mercury -65392-01-21 06:42 J -22162984.31 -22162984.22 -22162984.13 0.0259 0.0228  
 Moon -65392-12-06 02:52 J -22162665.45 -22162665.38 -22162665.29 0.0259 0.0245  
 Earth -65392-12-06 03:49 J -22162665.38 -22162665.34 -22162665.30 0.0259 0.0255 \*  
 Moon -65391-12-17 16:33 J -22162289.04 -22162288.81 -22162288.56 0.0261 0.0082  
 Earth -65391-12-17 20:23 J -22162288.88 -22162288.65 -22162288.41 0.0261 0.0097 \*  
 Mars -65390-12-25 11:16 J -22161916.24 -22161916.03 -22161915.78 0.0263 0.0187  
 Earth -65390-12-29 18:42 J -22161911.97 -22161911.72 -22161911.48 0.0263 0.0071  
 Moon -65390-12-29 18:42 J -22161911.95 -22161911.72 -22161911.49 0.0263 0.0078 \*  
 Earth -65388-01-09 23:30 J -22161534.60 -22161534.52 -22161534.41 0.0267 0.0245  
 Moon -65388-01-10 03:49 J -22161534.45 -22161534.34 -22161534.23 0.0267 0.0239 \*  
 Venus -65382-05-27 02:37 J -22159206.58 -22159206.39 -22159206.20 0.0295 0.0130  
 Mercury -65379-11-28 06:13 J -22157925.33 -22157925.24 -22157925.14 0.0304 0.0206  
 Mercury -65378-02-24 19:11 J -22157836.82 -22157836.70 -22157836.57 0.0304 0.0068  
 Mercury -65378-05-24 08:09 J -22157748.29 -22157748.16 -22157748.03 0.0304 0.0070  
 Mercury -65378-08-20 20:52 J -22157659.72 -22157659.63 -22157659.53 0.0304 0.0206  
 Moon -65377-06-12 21:35 J -22157362.71 -22157362.60 -22157362.47 0.0303 0.0256  
 Earth -65377-06-12 22:47 J -22157362.68 -22157362.55 -22157362.39 0.0303 0.0240 \*  
 Earth -65376-06-27 15:35 J -22156983.09 -22156982.85 -22156982.61 0.0300 0.0012  
 Moon -65376-06-27 17:45 J -22156982.99 -22156982.76 -22156982.53 0.0300 0.0004 \*  
 Mars -65375-01-28 10:33 J -22156768.13 -22156768.06 -22156767.99 0.0298 0.0286  
 Earth -65375-07-11 22:18 J -22156603.68 -22156603.57 -22156603.43 0.0297 0.0251  
 Moon -65375-07-12 02:23 J -22156603.54 -22156603.40 -22156603.25 0.0297 0.0236 \*  
 Venus -65369-08-10 00:42 J -22154382.68 -22154382.47 -22154382.26 0.0268 0.0062  
 Mercury -65364-09-16 17:30 J -22152518.91 -22152518.77 -22152518.64 0.0258 0.0179

Mercury -65364-12-14 13:40 J -22152430.11 -22152429.93 -22152429.74 0.0258 0.0056  
 Mercury -65363-03-13 10:04 J -22152341.26 -22152341.08 -22152340.89 0.0258 0.0069  
 Mercury -65363-06-10 06:28 J -22152252.35 -22152252.23 -22152252.10 0.0258 0.0194  
 Earth -65362-12-13 02:09 J -22151701.58 -22151701.41 -22151701.21 0.0260 0.0171  
 Moon -65362-12-13 06:13 J -22151701.43 -22151701.24 -22151701.03 0.0260 0.0156 \*  
 Mars -65361-02-07 00:42 J -22151645.60 -22151645.47 -22151645.31 0.0260 0.0232  
 Earth -65361-12-23 21:35 J -22151324.85 -22151324.60 -22151324.35 0.0262 0.0007  
 Moon -65361-12-23 22:18 J -22151324.83 -22151324.57 -22151324.31 0.0262 0.0006 \*  
 Moon -65359-01-04 19:40 J -22150947.87 -22150947.68 -22150947.48 0.0265 0.0163  
 Earth -65359-01-04 23:16 J -22150947.72 -22150947.53 -22150947.33 0.0265 0.0165 \*  
 Venus -65353-12-06 09:06 J -22148420.26 -22148420.12 -22148419.95 0.0296 0.0199  
 Mercury -65349-04-16 08:23 J -22147193.23 -22147193.15 -22147193.08 0.0304 0.0243  
 Mercury -65349-07-13 21:21 J -22147104.73 -22147104.61 -22147104.49 0.0304 0.0105  
 Mercury -65349-10-10 10:18 J -22147016.20 -22147016.07 -22147015.94 0.0304 0.0033  
 Mercury -65348-01-06 23:01 J -22146927.64 -22146927.54 -22146927.43 0.0304 0.0170  
 Mars -65347-03-19 10:04 J -22146491.27 -22146491.08 -22146490.89 0.0302 0.0206  
 Moon -65347-06-21 12:13 J -22146397.21 -22146396.99 -22146396.76 0.0302 0.0116  
 Earth -65347-06-21 14:37 J -22146397.11 -22146396.89 -22146396.66 0.0302 0.0100 \*  
 Moon -65346-07-05 22:47 J -22146017.76 -22146017.55 -22146017.33 0.0298 0.0132  
 Earth -65346-07-06 02:23 J -22146017.61 -22146017.40 -22146017.19 0.0298 0.0146 \*  
 Venus -65339-02-20 05:16 J -22143596.49 -22143596.28 -22143596.06 0.0268 0.0010  
 Mercury -65334-02-03 17:01 J -22141786.88 -22141786.79 -22141786.67 0.0258 0.0213  
 Mercury -65334-05-03 13:25 J -22141698.11 -22141697.94 -22141697.76 0.0258 0.0089  
 Mercury -65334-07-31 09:49 J -22141609.28 -22141609.09 -22141608.90 0.0258 0.0036  
 Mercury -65334-10-28 06:13 J -22141520.39 -22141520.24 -22141520.09 0.0258 0.0161  
 Moon -65333-12-07 04:47 J -22141114.41 -22141114.30 -22141114.17 0.0259 0.0226  
 Earth -65333-12-07 08:37 J -22141114.22 -22141114.14 -22141114.03 0.0259 0.0239 \*  
 Moon -65332-12-19 00:28 J -22140737.71 -22140737.48 -22140737.24 0.0261 0.0065  
 Earth -65332-12-19 01:11 J -22140737.68 -22140737.45 -22140737.20 0.0261 0.0079 \*  
 Mars -65331-03-30 02:23 J -22140636.73 -22140636.40 -22140636.07 0.0262 0.0014

Earth -65331-12-30 23:45 J -22140360.75 -22140360.51 -22140360.28 0.0264 0.0090  
 Moon -65331-12-31 02:52 J -22140360.60 -22140360.38 -22140360.14 0.0264 0.0097 \*  
 Earth -65329-01-12 05:01 J -22139983.31 -22139983.29 -22139983.25 0.0267 0.0264  
 Moon -65329-01-12 06:13 J -22139983.30 -22139983.24 -22139983.15 0.0267 0.0256 \*  
 Venus -65324-10-31 14:52 J -22137864.00 -22137863.88 -22137863.74 0.0293 0.0233  
 Venus -65323-06-18 15:35 J -22137633.93 -22137633.85 -22137633.75 0.0296 0.0265  
 Mercury -65320-09-03 10:04 J -22136461.12 -22136461.08 -22136461.03 0.0304 0.0285  
 Mercury -65320-11-30 23:16 J -22136372.65 -22136372.53 -22136372.42 0.0304 0.0146  
 Mercury -65319-02-27 12:13 J -22136284.12 -22136283.99 -22136283.86 0.0304 0.0010  
 Mercury -65319-05-27 00:57 J -22136195.57 -22136195.46 -22136195.34 0.0304 0.0129  
 Mercury -65319-08-23 13:54 J -22136106.98 -22136106.92 -22136106.86 0.0304 0.0265  
 Earth -65318-06-15 10:18 J -22135811.23 -22135811.07 -22135810.90 0.0303 0.0215  
 Moon -65318-06-15 12:42 J -22135811.11 -22135810.97 -22135810.81 0.0303 0.0232 \*  
 Mars -65317-05-06 12:57 J -22135485.22 -22135484.96 -22135484.70 0.0301 0.0059  
 Earth -65317-06-29 02:37 J -22135431.62 -22135431.39 -22135431.15 0.0300 0.0038  
 Moon -65317-06-29 06:13 J -22135431.48 -22135431.24 -22135431.00 0.0300 0.0022 \*  
 Earth -65316-07-13 09:21 J -22135052.19 -22135052.11 -22135052.02 0.0296 0.0274  
 Moon -65316-07-13 10:04 J -22135052.18 -22135052.08 -22135051.95 0.0296 0.0263 \*  
 Venus -65310-09-02 09:49 J -22132810.29 -22132810.09 -22132809.88 0.0268 0.0046  
 Mercury -65305-06-22 17:01 J -22131054.84 -22131054.79 -22131054.74 0.0258 0.0246  
 Mercury -65305-09-19 12:57 J -22130966.12 -22130965.96 -22130965.79 0.0258 0.0124  
 Mercury -65305-12-17 09:21 J -22130877.30 -22130877.11 -22130876.92 0.0258 0.0002  
 Mercury -65304-03-16 05:30 J -22130788.43 -22130788.27 -22130788.09 0.0258 0.0125  
 Mercury -65304-06-13 02:09 J -22130699.45 -22130699.41 -22130699.36 0.0258 0.0250  
 Earth -65303-12-14 05:59 J -22130150.45 -22130150.25 -22130150.05 0.0260 0.0154  
 Moon -65303-12-14 06:57 J -22130150.43 -22130150.21 -22130149.99 0.0260 0.0139 \*  
 Moon -65302-12-25 21:35 J -22129773.85 -22129773.60 -22129773.34 0.0262 0.0021  
 Earth -65302-12-26 01:11 J -22129773.70 -22129773.45 -22129773.20 0.0262 0.0011 \*  
 Mars -65301-05-20 05:16 J -22129627.45 -22129627.28 -22129627.08 0.0263 0.0217  
 Moon -65300-01-06 01:11 J -22129396.62 -22129396.45 -22129396.27 0.0265 0.0181

Earth -65300-01-06 02:37 J -22129396.56 -22129396.39 -22129396.20 0.0265 0.0183 \*  
 Venus -65294-05-13 19:40 J -22127077.85 -22127077.68 -22127077.51 0.0294 0.0174  
 Mercury -65290-04-20 00:42 J -22125640.57 -22125640.47 -22125640.37 0.0305 0.0190  
 Mercury -65290-07-17 13:40 J -22125552.06 -22125551.93 -22125551.80 0.0305 0.0052  
 Mercury -65290-10-14 02:37 J -22125463.51 -22125463.39 -22125463.27 0.0305 0.0086  
 Mercury -65289-01-10 15:21 J -22125374.94 -22125374.86 -22125374.77 0.0304 0.0223  
 Moon -65288-06-22 19:11 J -22124845.92 -22124845.70 -22124845.47 0.0302 0.0093  
 Earth -65288-06-22 22:33 J -22124845.79 -22124845.56 -22124845.32 0.0302 0.0076 \*  
 Moon -65287-07-07 09:06 J -22124466.31 -22124466.12 -22124465.92 0.0298 0.0158  
 Earth -65287-07-07 09:35 J -22124466.28 -22124466.10 -22124465.89 0.0298 0.0171 \*  
 Venus -65280-03-14 13:11 J -22122024.15 -22122023.95 -22122023.75 0.0267 0.0094  
 Mercury -65275-02-06 12:13 J -22120234.13 -22120233.99 -22120233.84 0.0258 0.0160  
 Mercury -65275-05-06 08:37 J -22120145.33 -22120145.14 -22120144.95 0.0258 0.0037  
 Mercury -65275-08-03 04:47 J -22120056.47 -22120056.30 -22120056.12 0.0258 0.0088  
 Mercury -65275-10-31 01:25 J -22119967.55 -22119967.44 -22119967.34 0.0258 0.0213  
 Moon -65274-12-09 09:06 J -22119563.25 -22119563.12 -22119562.97 0.0259 0.0213  
 Earth -65274-12-09 10:04 J -22119563.19 -22119563.08 -22119562.94 0.0259 0.0225 \*  
 Mars -65273-07-02 13:54 J -22119357.10 -22119356.92 -22119356.72 0.0260 0.0212  
 Earth -65273-12-20 02:37 J -22119186.63 -22119186.39 -22119186.15 0.0261 0.0063  
 Moon -65273-12-20 05:59 J -22119186.48 -22119186.25 -22119186.00 0.0261 0.0050 \*  
 Earth -65271-01-01 00:42 J -22118809.69 -22118809.47 -22118809.23 0.0264 0.0107  
 Moon -65271-01-01 03:06 J -22118809.60 -22118809.37 -22118809.13 0.0264 0.0110 \*  
 Venus -65265-11-23 00:13 J -22116291.68 -22116291.49 -22116291.29 0.0294 0.0116  
 Mercury -65261-09-06 01:54 J -22114908.49 -22114908.42 -22114908.33 0.0304 0.0236  
 Mercury -65261-12-03 15:06 J -22114819.99 -22114819.87 -22114819.75 0.0304 0.0097  
 Mercury -65260-03-02 04:04 J -22114731.46 -22114731.33 -22114731.20 0.0304 0.0041  
 Mercury -65260-05-29 16:47 J -22114642.90 -22114642.80 -22114642.69 0.0304 0.0178  
 Earth -65259-06-16 15:35 J -22114260.03 -22114259.85 -22114259.66 0.0303 0.0195  
 Moon -65259-06-16 18:42 J -22114259.88 -22114259.72 -22114259.53 0.0303 0.0212 \*  
 Mars -65259-08-13 00:28 J -22114202.68 -22114202.48 -22114202.26 0.0303 0.0182

Earth -65258-07-01 07:54 J -22113880.40 -22113880.17 -22113879.93 0.0300 0.0058  
 Moon -65258-07-01 08:09 J -22113880.40 -22113880.16 -22113879.91 0.0300 0.0045 \*  
 Moon -65257-07-14 11:30 J -22113501.08 -22113501.02 -22113500.96 0.0296 0.0286  
 Earth -65257-07-14 14:23 J -22113500.91 -22113500.90 -22113500.87 0.0296 0.0295  
 Venus -65251-02-07 15:35 J -22111466.95 -22111466.85 -22111466.72 0.0270 0.0225  
 Venus -65251-09-24 16:47 J -22111237.97 -22111237.80 -22111237.62 0.0267 0.0145  
 Mercury -65246-06-26 11:30 J -22109502.14 -22109502.02 -22109501.90 0.0258 0.0197  
 Mercury -65246-09-23 07:40 J -22109413.36 -22109413.18 -22109413.00 0.0258 0.0075  
 Mercury -65246-12-21 03:49 J -22109324.52 -22109324.34 -22109324.15 0.0258 0.0050  
 Mercury -65245-03-19 00:13 J -22109235.62 -22109235.49 -22109235.34 0.0258 0.0174  
 Moon -65244-12-15 02:23 J -22108599.61 -22108599.40 -22108599.17 0.0260 0.0126  
 Earth -65244-12-15 05:45 J -22108599.46 -22108599.26 -22108599.03 0.0260 0.0141 \*  
 Mars -65243-08-23 10:04 J -22108348.42 -22108348.08 -22108347.75 0.0261 0.0013  
 Moon -65243-12-26 22:47 J -22108222.79 -22108222.55 -22108222.31 0.0262 0.0033  
 Earth -65243-12-27 00:57 J -22108222.71 -22108222.46 -22108222.21 0.0262 0.0025 \*  
 Earth -65241-01-08 02:09 J -22107845.56 -22107845.41 -22107845.23 0.0265 0.0198  
 Moon -65241-01-08 04:47 J -22107845.45 -22107845.30 -22107845.12 0.0265 0.0193 \*  
 Venus -65235-06-05 03:21 J -22105505.56 -22105505.36 -22105505.15 0.0294 0.0062  
 Mercury -65231-01-24 03:06 J -22104176.41 -22104176.37 -22104176.33 0.0305 0.0284  
 Mercury -65231-04-22 16:04 J -22104087.94 -22104087.83 -22104087.71 0.0305 0.0145  
 Mercury -65231-07-20 05:16 J -22103999.41 -22103999.28 -22103999.15 0.0305 0.0010  
 Mercury -65231-10-16 17:59 J -22103910.86 -22103910.75 -22103910.63 0.0305 0.0131  
 Mercury -65230-01-13 06:57 J -22103822.27 -22103822.21 -22103822.15 0.0305 0.0267  
 Earth -65229-06-24 00:57 J -22103294.69 -22103294.46 -22103294.22 0.0302 0.0057  
 Moon -65229-06-24 01:11 J -22103294.67 -22103294.45 -22103294.22 0.0302 0.0072 \*  
 Mars -65229-09-29 21:49 J -22103196.85 -22103196.59 -22103196.34 0.0301 0.0075  
 Earth -65228-07-08 12:13 J -22102915.17 -22102914.99 -22102914.80 0.0298 0.0189  
 Moon -65228-07-08 15:21 J -22102915.04 -22102914.86 -22102914.67 0.0298 0.0179 \*  
 Venus -65222-08-20 17:45 J -22100680.91 -22100680.76 -22100680.60 0.0269 0.0179  
 Venus -65221-04-05 18:42 J -22100451.86 -22100451.72 -22100451.57 0.0267 0.0188



Mercury -65217-11-12 10:18 J -22098770.14 -22098770.07 -22098769.99 0.0258 0.0236

Mercury -65216-02-09 06:28 J -22098681.40 -22098681.23 -22098681.06 0.0258 0.0114

Mercury -65216-05-09 02:37 J -22098592.58 -22098592.39 -22098592.20 0.0258 0.0010

Mercury -65216-08-05 22:47 J -22098503.70 -22098503.55 -22098503.38 0.0258 0.0134

Earth -65215-12-10 09:06 J -22098012.26 -22098012.12 -22098011.97 0.0259 0.0211

Moon -65215-12-10 11:59 J -22098012.15 -22098012.00 -22098011.84 0.0259 0.0198 \*

Earth -65214-12-22 01:11 J -22097635.70 -22097635.45 -22097635.20 0.0261 0.0050

Moon -65214-12-22 03:21 J -22097635.61 -22097635.36 -22097635.10 0.0261 0.0039 \*

Mars -65213-10-13 04:18 J -22097339.46 -22097339.32 -22097339.14 0.0263 0.0231

Moon -65212-01-01 20:23 J -22097258.87 -22097258.65 -22097258.41 0.0263 0.0120

Earth -65212-01-01 23:16 J -22097258.75 -22097258.53 -22097258.30 0.0263 0.0120 \*

Venus -65206-12-16 06:42 J -22094719.43 -22094719.22 -22094719.01 0.0294 0.0009

Mercury -65202-09-09 17:01 J -22093355.89 -22093355.79 -22093355.69 0.0304 0.0196

Mercury -65202-12-07 05:59 J -22093267.37 -22093267.25 -22093267.12 0.0304 0.0058

Mercury -65201-03-04 18:57 J -22093178.83 -22093178.71 -22093178.58 0.0304 0.0081

Mercury -65201-06-01 07:54 J -22093090.26 -22093090.17 -22093090.08 0.0304 0.0217

Moon -65200-06-17 13:54 J -22092709.11 -22092708.92 -22092708.73 0.0303 0.0194

Earth -65200-06-17 15:06 J -22092709.06 -22092708.87 -22092708.67 0.0303 0.0179 \*

Moon -65199-07-02 03:49 J -22092329.57 -22092329.34 -22092329.10 0.0300 0.0062

Earth -65199-07-02 07:25 J -22092329.42 -22092329.19 -22092328.96 0.0300 0.0075 \*

Venus -65192-03-01 20:23 J -22089894.82 -22089894.65 -22089894.46 0.0269 0.0132

Venus -65192-10-16 21:35 J -22089665.70 -22089665.60 -22089665.50 0.0267 0.0235

Mercury -65187-06-29 05:01 J -22087949.43 -22087949.29 -22087949.13 0.0258 0.0154

Mercury -65187-09-26 01:25 J -22087860.63 -22087860.44 -22087860.25 0.0258 0.0031

Mercury -65187-12-23 21:35 J -22087771.77 -22087771.60 -22087771.42 0.0258 0.0093

Mercury -65186-03-22 17:59 J -22087682.85 -22087682.75 -22087682.64 0.0258 0.0217

Mars -65185-11-25 12:57 J -22087069.17 -22087068.96 -22087068.72 0.0259 0.0188

Moon -65185-12-16 01:11 J -22087048.67 -22087048.45 -22087048.23 0.0259 0.0115

Earth -65185-12-16 03:21 J -22087048.58 -22087048.36 -22087048.14 0.0259 0.0128 \*

Earth -65184-12-27 22:04 J -22086671.83 -22086671.58 -22086671.33 0.0262 0.0038

Moon -65184-12-28 00:42 J -22086671.71 -22086671.47 -22086671.22 0.0262 0.0042 \*  
 Earth -65182-01-08 23:16 J -22086294.68 -22086294.53 -22086294.37 0.0264 0.0210  
 Moon -65182-01-09 02:37 J -22086294.55 -22086294.39 -22086294.23 0.0264 0.0203 \*  
 Venus -65176-06-27 08:23 J -22083933.36 -22083933.15 -22083932.94 0.0295 0.0040  
 Mercury -65172-01-26 17:45 J -22082623.84 -22082623.76 -22082623.69 0.0305 0.0248  
 Mercury -65172-04-25 06:42 J -22082535.34 -22082535.22 -22082535.10 0.0305 0.0109  
 Mercury -65172-07-22 19:40 J -22082446.80 -22082446.68 -22082446.55 0.0305 0.0031  
 Mercury -65172-10-19 08:37 J -22082358.24 -22082358.14 -22082358.03 0.0305 0.0167  
 Mercury -65171-01-15 21:35 J -22082269.61 -22082269.60 -22082269.59 0.0305 0.0303  
 Earth -65171-06-11 01:54 J -22082123.47 -22082123.42 -22082123.37 0.0304 0.0296  
 Mars -65170-01-05 20:23 J -22081914.86 -22081914.65 -22081914.43 0.0303 0.0177  
 Earth -65170-06-25 22:18 J -22081743.81 -22081743.57 -22081743.33 0.0302 0.0041  
 Moon -65170-06-26 01:54 J -22081743.65 -22081743.42 -22081743.18 0.0302 0.0056 \*  
 Earth -65169-07-09 09:35 J -22081364.26 -22081364.10 -22081363.91 0.0298 0.0206  
 Moon -65169-07-09 12:28 J -22081364.16 -22081363.98 -22081363.79 0.0298 0.0195 \*  
 Venus -65163-09-11 21:35 J -22079108.79 -22079108.60 -22079108.39 0.0269 0.0090  
 Mercury -65158-11-16 03:35 J -22077217.47 -22077217.35 -22077217.22 0.0258 0.0195  
 Mercury -65157-02-12 23:45 J -22077128.69 -22077128.51 -22077128.32 0.0258 0.0072  
 Mercury -65157-05-11 19:54 J -22077039.85 -22077039.67 -22077039.48 0.0258 0.0052  
 Mercury -65157-08-08 16:18 J -22076950.96 -22076950.82 -22076950.68 0.0258 0.0175  
 Earth -65156-12-11 05:30 J -22076461.42 -22076461.27 -22076461.11 0.0259 0.0200  
 Moon -65156-12-11 08:23 J -22076461.33 -22076461.15 -22076460.97 0.0259 0.0186 \*  
 Moon -65155-12-22 18:28 J -22076084.98 -22076084.73 -22076084.47 0.0261 0.0033  
 Earth -65155-12-22 21:21 J -22076084.85 -22076084.61 -22076084.36 0.0261 0.0038 \*  
 Mars -65154-01-16 01:25 J -22076060.77 -22076060.44 -22076060.11 0.0261 0.0025  
 Moon -65153-01-03 15:49 J -22075708.05 -22075707.84 -22075707.62 0.0263 0.0127  
 Earth -65153-01-03 19:11 J -22075707.92 -22075707.70 -22075707.48 0.0263 0.0132 \*  
 Venus -65146-01-07 10:47 J -22073147.25 -22073147.05 -22073146.85 0.0294 0.0090  
 Mercury -65143-06-15 18:28 J -22071891.75 -22071891.73 -22071891.72 0.0304 0.0301  
 Mercury -65143-09-12 07:25 J -22071803.30 -22071803.19 -22071803.08 0.0304 0.0162

Mercury -65143-12-09 20:23 J -22071714.77 -22071714.65 -22071714.52 0.0304 0.0026  
 Mercury -65142-03-08 09:21 J -22071626.23 -22071626.11 -22071625.99 0.0304 0.0114  
 Mercury -65142-06-04 22:18 J -22071537.64 -22071537.57 -22071537.50 0.0304 0.0250  
 Moon -65141-06-18 07:11 J -22071158.39 -22071158.20 -22071158.01 0.0303 0.0178  
 Earth -65141-06-18 10:47 J -22071158.24 -22071158.05 -22071157.84 0.0303 0.0165 \*  
 Mars -65140-02-22 13:40 J -22070909.18 -22070908.93 -22070908.67 0.0301 0.0086  
 Moon -65140-07-03 01:11 J -22070778.67 -22070778.45 -22070778.22 0.0300 0.0079  
 Earth -65140-07-03 03:06 J -22070778.60 -22070778.37 -22070778.14 0.0300 0.0089 \*  
 Venus -65133-03-23 23:45 J -22068322.72 -22068322.51 -22068322.30 0.0269 0.0044  
 Mercury -65128-04-04 02:09 J -22066485.48 -22066485.41 -22066485.32 0.0258 0.0235  
 Mercury -65128-07-01 22:18 J -22066396.74 -22066396.57 -22066396.39 0.0258 0.0113  
 Mercury -65128-09-28 18:28 J -22066307.92 -22066307.73 -22066307.53 0.0257 0.0012  
 Mercury -65128-12-26 14:37 J -22066219.04 -22066218.89 -22066218.72 0.0257 0.0135  
 Earth -65126-12-17 23:01 J -22065497.75 -22065497.54 -22065497.30 0.0259 0.0117  
 Moon -65126-12-18 01:25 J -22065497.66 -22065497.44 -22065497.21 0.0259 0.0106 \*  
 Earth -65125-12-28 17:59 J -22065121.00 -22065120.75 -22065120.51 0.0261 0.0050  
 Moon -65125-12-28 21:06 J -22065120.87 -22065120.62 -22065120.37 0.0261 0.0049 \*  
 Mars -65124-03-07 18:57 J -22065051.79 -22065051.71 -22065051.59 0.0262 0.0250  
 Moon -65123-01-09 17:30 J -22064743.92 -22064743.77 -22064743.61 0.0264 0.0210  
 Earth -65123-01-09 18:57 J -22064743.84 -22064743.71 -22064743.57 0.0264 0.0222 \*  
 Venus -65117-07-19 11:59 J -22062361.18 -22062361.00 -22062360.81 0.0295 0.0138  
 Mercury -65113-01-30 07:40 J -22061071.26 -22061071.18 -22061071.08 0.0305 0.0217  
 Mercury -65113-04-27 20:52 J -22060982.75 -22060982.63 -22060982.50 0.0305 0.0078  
 Mercury -65113-07-25 09:49 J -22060894.22 -22060894.09 -22060893.96 0.0305 0.0061  
 Mercury -65113-10-21 22:47 J -22060805.65 -22060805.55 -22060805.45 0.0305 0.0198  
 Earth -65112-06-11 19:40 J -22060572.76 -22060572.68 -22060572.59 0.0304 0.0285  
 Moon -65112-06-11 22:47 J -22060572.59 -22060572.55 -22060572.48 0.0304 0.0297 \*  
 Earth -65111-06-26 16:04 J -22060193.06 -22060192.83 -22060192.59 0.0302 0.0029  
 Moon -65111-06-26 17:16 J -22060193.03 -22060192.78 -22060192.53 0.0302 0.0038 \*  
 Moon -65110-07-11 01:40 J -22059813.59 -22059813.43 -22059813.25 0.0299 0.0213

Earth -65110-07-11 03:49 J -22059813.50 -22059813.34 -22059813.17 0.0299 0.0218 \*  
 Venus -65104-10-03 23:59 J -22057536.71 -22057536.50 -22057536.28 0.0268 0.0008  
 Mercury -65099-11-18 20:23 J -22055664.79 -22055664.65 -22055664.49 0.0258 0.0156  
 Mercury -65098-02-15 16:47 J -22055575.99 -22055575.80 -22055575.61 0.0257 0.0033  
 Mercury -65098-05-15 12:57 J -22055487.14 -22055486.96 -22055486.78 0.0258 0.0091  
 Mercury -65098-08-12 09:06 J -22055398.21 -22055398.12 -22055398.01 0.0258 0.0215  
 Moon -65097-12-11 23:01 J -22054910.72 -22054910.54 -22054910.35 0.0259 0.0176  
 Earth -65097-12-12 00:42 J -22054910.63 -22054910.47 -22054910.29 0.0259 0.0190 \*  
 Mars -65096-04-20 01:11 J -22054781.68 -22054781.45 -22054781.20 0.0259 0.0176  
 Moon -65096-12-23 13:40 J -22054534.17 -22054533.93 -22054533.68 0.0261 0.0024  
 Earth -65096-12-23 16:33 J -22054534.05 -22054533.81 -22054533.55 0.0261 0.0028 \*  
 Earth -65094-01-04 13:54 J -22054157.12 -22054156.92 -22054156.70 0.0263 0.0143  
 Moon -65094-01-04 15:35 J -22054157.05 -22054156.85 -22054156.63 0.0263 0.0134 \*  
 Venus -65087-01-29 13:25 J -22051575.09 -22051574.94 -22051574.77 0.0295 0.0185  
 Mercury -65084-06-18 08:09 J -22050339.21 -22050339.16 -22050339.10 0.0304 0.0272  
 Mercury -65084-09-14 21:21 J -22050250.72 -22050250.61 -22050250.49 0.0305 0.0133  
 Mercury -65084-12-12 10:18 J -22050162.20 -22050162.07 -22050161.94 0.0305 0.0012  
 Mercury -65083-03-10 23:16 J -22050073.64 -22050073.53 -22050073.41 0.0305 0.0143  
 Mercury -65083-06-07 11:59 J -22049985.04 -22049985.00 -22049984.94 0.0304 0.0280  
 Mars -65082-05-31 04:18 J -22049627.53 -22049627.32 -22049627.10 0.0303 0.0173  
 Earth -65082-06-20 03:21 J -22049607.56 -22049607.36 -22049607.15 0.0303 0.0154  
 Moon -65082-06-20 03:35 J -22049607.54 -22049607.35 -22049607.15 0.0303 0.0162 \*  
 Earth -65081-07-03 19:54 J -22049227.89 -22049227.67 -22049227.44 0.0300 0.0100  
 Moon -65081-07-03 22:47 J -22049227.77 -22049227.55 -22049227.33 0.0300 0.0095 \*  
 Venus -65074-04-16 01:54 J -22046750.63 -22046750.42 -22046750.21 0.0269 0.0039  
 Mercury -65069-04-06 19:11 J -22044932.82 -22044932.70 -22044932.57 0.0258 0.0195  
 Mercury -65069-07-04 15:06 J -22044844.04 -22044843.87 -22044843.68 0.0258 0.0074  
 Mercury -65069-10-01 11:30 J -22044755.21 -22044755.02 -22044754.83 0.0257 0.0050  
 Mercury -65069-12-29 07:40 J -22044666.31 -22044666.18 -22044666.03 0.0257 0.0174  
 Moon -65068-12-07 06:42 J -22044323.28 -22044323.22 -22044323.15 0.0258 0.0248

Earth -65067-12-18 18:28 J -22043946.95 -22043946.73 -22043946.49 0.0259 0.0105  
 Moon -65067-12-18 21:49 J -22043946.82 -22043946.59 -22043946.34 0.0259 0.0095 \*  
 Mars -65066-06-10 15:35 J -22043773.18 -22043772.85 -22043772.53 0.0260 0.0044  
 Moon -65066-12-30 11:16 J -22043570.28 -22043570.03 -22043569.77 0.0261 0.0055  
 Earth -65066-12-30 13:11 J -22043570.19 -22043569.95 -22043569.71 0.0261 0.0061 \*  
 Moon -65064-01-10 10:04 J -22043193.21 -22043193.08 -22043192.93 0.0264 0.0218  
 Earth -65064-01-10 14:09 J -22043193.03 -22043192.91 -22043192.79 0.0264 0.0233 \*  
 Venus -65059-12-24 14:52 J -22041018.97 -22041018.88 -22041018.77 0.0292 0.0257  
 Venus -65058-08-11 15:06 J -22040789.00 -22040788.87 -22040788.74 0.0295 0.0233  
 Mercury -65054-02-01 21:35 J -22039518.70 -22039518.60 -22039518.49 0.0305 0.0188  
 Mercury -65054-05-01 10:47 J -22039430.18 -22039430.05 -22039429.92 0.0305 0.0049  
 Mercury -65054-07-28 23:45 J -22039341.63 -22039341.51 -22039341.39 0.0305 0.0089  
 Mercury -65054-10-25 12:42 J -22039253.06 -22039252.97 -22039252.89 0.0305 0.0226  
 Moon -65053-06-12 11:01 J -22039022.13 -22039022.04 -22039021.94 0.0304 0.0279  
 Earth -65053-06-12 12:13 J -22039022.08 -22039021.99 -22039021.87 0.0304 0.0274 \*  
 Moon -65052-06-27 05:16 J -22038642.52 -22038642.28 -22038642.03 0.0302 0.0019  
 Earth -65052-06-27 08:52 J -22038642.37 -22038642.13 -22038641.89 0.0302 0.0017 \*  
 Mars -65052-07-17 20:23 J -22038621.90 -22038621.65 -22038621.40 0.0302 0.0080  
 Moon -65051-07-11 17:16 J -22038262.92 -22038262.78 -22038262.62 0.0299 0.0231  
 Earth -65051-07-11 20:52 J -22038262.78 -22038262.63 -22038262.48 0.0299 0.0230 \*  
 Venus -65045-10-26 01:54 J -22035964.62 -22035964.42 -22035964.21 0.0268 0.0077  
 Mercury -65040-08-24 17:16 J -22034200.84 -22034200.78 -22034200.70 0.0258 0.0238  
 Mercury -65040-11-21 13:25 J -22034112.11 -22034111.94 -22034111.77 0.0258 0.0116  
 Mercury -65039-02-18 09:35 J -22034023.29 -22034023.10 -22034022.91 0.0257 0.0007  
 Mercury -65039-05-18 05:45 J -22033934.42 -22033934.26 -22033934.09 0.0257 0.0130  
 Mercury -65039-08-15 01:54 J -22033845.43 -22033845.42 -22033845.38 0.0258 0.0255  
 Moon -65038-12-13 16:33 J -22033359.98 -22033359.81 -22033359.61 0.0259 0.0166  
 Earth -65038-12-13 20:09 J -22033359.82 -22033359.66 -22033359.46 0.0259 0.0179 \*  
 Earth -65037-12-24 12:13 J -22032983.24 -22032982.99 -22032982.74 0.0261 0.0016  
 Moon -65037-12-24 13:25 J -22032983.18 -22032982.94 -22032982.69 0.0261 0.0017 \*

Mars	-65036-07-31 04:47 J	-22032764.33	-22032764.30	-22032764.24	0.0262	0.0259
Earth	-65035-01-05 09:35 J	-22032606.29	-22032606.10	-22032605.89	0.0263	0.0155
Moon	-65035-01-05 13:25 J	-22032606.15	-22032605.94	-22032605.72	0.0263	0.0142 *
Venus	-65029-07-05 17:01 J	-22030232.93	-22030232.79	-22030232.64	0.0292	0.0209
Venus	-65028-02-20 17:16 J	-22030002.84	-22030002.78	-22030002.72	0.0295	0.0282
Mercury	-65025-06-20 22:18 J	-22028786.65	-22028786.57	-22028786.49	0.0304	0.0241
Mercury	-65025-09-17 11:30 J	-22028698.14	-22028698.02	-22028697.90	0.0304	0.0102
Mercury	-65025-12-15 00:28 J	-22028609.61	-22028609.48	-22028609.35	0.0305	0.0036
Mercury	-65024-03-13 13:11 J	-22028521.05	-22028520.95	-22028520.84	0.0304	0.0174
Earth	-65023-06-20 20:23 J	-22028056.86	-22028056.65	-22028056.44	0.0303	0.0141
Moon	-65023-06-20 23:59 J	-22028056.71	-22028056.50	-22028056.29	0.0303	0.0144 *
Earth	-65022-07-05 12:42 J	-22027677.19	-22027676.97	-22027676.75	0.0300	0.0113
Moon	-65022-07-05 15:35 J	-22027677.08	-22027676.85	-22027676.62	0.0300	0.0113 *
Venus	-65016-09-21 01:25 J	-22025407.51	-22025407.44	-22025407.37	0.0271	0.0253
Venus	-65015-05-08 03:21 J	-22025178.54	-22025178.36	-22025178.16	0.0269	0.0122
Mercury	-65010-04-10 11:59 J	-22023380.14	-22023380.00	-22023379.84	0.0258	0.0156
Mercury	-65010-07-08 08:09 J	-22023291.34	-22023291.16	-22023290.97	0.0258	0.0034
Mercury	-65010-10-05 04:18 J	-22023202.49	-22023202.32	-22023202.13	0.0258	0.0091
Mercury	-65009-01-02 00:42 J	-22023113.57	-22023113.47	-22023113.36	0.0258	0.0214
Earth	-65009-12-08 00:42 J	-22022772.50	-22022772.47	-22022772.39	0.0258	0.0251
Moon	-65009-12-08 04:47 J	-22022772.39	-22022772.30	-22022772.19	0.0258	0.0235 *
Mars	-65008-09-12 17:45 J	-22022494.00	-22022493.76	-22022493.48	0.0259	0.0159
Moon	-65008-12-19 14:09 J	-22022396.16	-22022395.91	-22022395.67	0.0259	0.0087
Earth	-65008-12-19 14:37 J	-22022396.12	-22022395.89	-22022395.65	0.0259	0.0093 *
Moon	-65007-12-31 05:45 J	-22022019.50	-22022019.26	-22022019.02	0.0261	0.0064
Earth	-65007-12-31 09:21 J	-22022019.35	-22022019.11	-22022018.87	0.0261	0.0073 *
Moon	-65005-01-12 10:18 J	-22021642.18	-22021642.07	-22021641.95	0.0264	0.0230
Earth	-65005-01-12 10:04 J	-22021642.17	-22021642.08	-22021641.98	0.0264	0.0245 *

# 65TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 65th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-64999-01-15 18:57 J	-22019446.88	-22019446.71	-22019446.53	0.0292	0.0159		
Mercury	-64996-11-07 22:33 J	-22018054.58	-22018054.56	-22018054.53	0.0305	0.0296		
Mercury	-64995-02-04 11:45 J	-22017966.12	-22017966.01	-22017965.90	0.0305	0.0158		
Mercury	-64995-05-04 00:42 J	-22017877.60	-22017877.47	-22017877.34	0.0305	0.0020		
Mercury	-64995-07-31 13:40 J	-22017789.05	-22017788.93	-22017788.81	0.0305	0.0119		
Mercury	-64995-10-28 02:37 J	-22017700.46	-22017700.39	-22017700.32	0.0305	0.0255		
Moon	-64994-06-14 01:25 J	-22017471.55	-22017471.44	-22017471.32	0.0304	0.0263		
Earth	-64994-06-14 04:47 J	-22017471.41	-22017471.30	-22017471.17	0.0304	0.0262	*	
Mars	-64994-10-23 09:21 J	-22017340.32	-22017340.11	-22017339.90	0.0304	0.0181		
Moon	-64993-06-27 23:45 J	-22017091.75	-22017091.51	-22017091.28	0.0302	0.0005		
Earth	-64993-06-28 01:25 J	-22017091.68	-22017091.44	-22017091.20	0.0302	0.0004	*	
Earth	-64992-07-12 12:57 J	-22016712.09	-22016711.96	-22016711.81	0.0299	0.0242		
Moon	-64992-07-12 14:09 J	-22016712.02	-22016711.91	-22016711.77	0.0299	0.0249	*	
Venus	-64986-04-03 01:25 J	-22014621.56	-22014621.44	-22014621.30	0.0271	0.0213		
Venus	-64986-11-18 03:35 J	-22014392.51	-22014392.35	-22014392.17	0.0268	0.0160		
Mercury	-64981-08-27 10:18 J	-22012648.18	-22012648.07	-22012647.94	0.0258	0.0198		
Mercury	-64981-11-24 06:28 J	-22012559.41	-22012559.23	-22012559.04	0.0258	0.0076		
Mercury	-64980-02-21 02:52 J	-22012470.57	-22012470.38	-22012470.20	0.0258	0.0048		
Mercury	-64980-05-20 23:01 J	-22012381.68	-22012381.54	-22012381.39	0.0258	0.0171		
Earth	-64979-12-14 16:47 J	-22011808.97	-22011808.80	-22011808.59	0.0259	0.0167		

Moon -64979-12-14 17:16 J -22011808.96 -22011808.78 -22011808.57 0.0259 0.0157 \*  
 Mars -64978-11-03 05:16 J -22011485.59 -22011485.28 -22011484.95 0.0260 0.0056  
 Earth -64978-12-26 09:06 J -22011432.37 -22011432.12 -22011431.87 0.0261 0.0003  
 Moon -64978-12-26 12:42 J -22011432.22 -22011431.97 -22011431.72 0.0261 0.0005 \*  
 Moon -64976-01-06 06:13 J -22011055.45 -22011055.24 -22011055.02 0.0263 0.0153  
 Earth -64976-01-06 06:42 J -22011055.41 -22011055.22 -22011055.02 0.0263 0.0167 \*  
 Venus -64970-07-28 21:35 J -22008660.79 -22008660.60 -22008660.40 0.0292 0.0108  
 Mercury -64966-06-24 12:28 J -22007234.07 -22007233.98 -22007233.88 0.0304 0.0209  
 Mercury -64966-09-21 01:40 J -22007145.56 -22007145.43 -22007145.31 0.0304 0.0070  
 Mercury -64966-12-18 14:37 J -22007057.02 -22007056.89 -22007056.76 0.0305 0.0068  
 Mercury -64965-03-16 03:21 J -22006968.45 -22006968.36 -22006968.26 0.0304 0.0205  
 Earth -64964-06-21 14:09 J -22006506.12 -22006505.91 -22006505.68 0.0303 0.0128  
 Moon -64964-06-21 15:21 J -22006506.08 -22006505.86 -22006505.63 0.0303 0.0126 \*  
 Mars -64964-12-10 05:01 J -22006334.54 -22006334.29 -22006334.03 0.0302 0.0085  
 Moon -64963-07-06 04:04 J -22006126.54 -22006126.33 -22006126.10 0.0300 0.0133  
 Earth -64963-07-06 06:13 J -22006126.45 -22006126.24 -22006126.01 0.0300 0.0126 \*  
 Venus -64957-10-13 03:21 J -22003835.52 -22003835.36 -22003835.19 0.0271 0.0168  
 Venus -64956-05-30 05:30 J -22003606.40 -22003606.27 -22003606.13 0.0269 0.0206  
 Mercury -64951-01-14 09:21 J -22001916.18 -22001916.11 -22001916.03 0.0258 0.0235  
 Mercury -64951-04-13 05:30 J -22001827.44 -22001827.27 -22001827.10 0.0258 0.0113  
 Mercury -64951-07-11 01:40 J -22001738.62 -22001738.43 -22001738.24 0.0258 0.0010  
 Mercury -64951-10-07 21:49 J -22001649.75 -22001649.59 -22001649.42 0.0258 0.0133  
 Mercury -64950-01-04 18:13 J -22001560.74 -22001560.74 -22001560.73 0.0258 0.0257  
 Moon -64950-12-09 22:04 J -22001221.70 -22001221.58 -22001221.45 0.0258 0.0224  
 Earth -64950-12-09 22:33 J -22001221.65 -22001221.56 -22001221.46 0.0258 0.0238 \*  
 Moon -64949-12-20 08:52 J -22000845.37 -22000845.13 -22000844.89 0.0259 0.0076  
 Earth -64949-12-20 12:28 J -22000845.21 -22000844.98 -22000844.74 0.0259 0.0079 \*  
 Earth -64947-01-01 07:25 J -22000468.43 -22000468.19 -22000467.95 0.0262 0.0088  
 Moon -64947-01-01 07:11 J -22000468.42 -22000468.20 -22000467.96 0.0262 0.0078 \*  
 Earth -64946-01-13 08:23 J -22000091.19 -22000091.15 -22000091.10 0.0264 0.0259



Moon -64946-01-13 11:59 J -22000091.08 -22000091.00 -22000090.89 0.0264 0.0244  
 Venus -64940-02-07 01:11 J -21997874.66 -21997874.45 -21997874.24 0.0292 0.0052  
 Mercury -64937-11-10 13:11 J -21996502.01 -21996501.95 -21996501.88 0.0305 0.0260  
 Mercury -64936-02-07 02:09 J -21996413.52 -21996413.41 -21996413.28 0.0305 0.0122  
 Mercury -64936-05-06 15:21 J -21996324.99 -21996324.86 -21996324.73 0.0305 0.0017  
 Mercury -64936-08-03 04:18 J -21996236.43 -21996236.32 -21996236.21 0.0305 0.0154  
 Mercury -64936-10-30 17:01 J -21996147.82 -21996147.79 -21996147.75 0.0305 0.0290  
 Moon -64935-06-15 00:28 J -21995920.60 -21995920.48 -21995920.33 0.0304 0.0247  
 Earth -64935-06-15 00:57 J -21995920.59 -21995920.46 -21995920.31 0.0304 0.0246 \*  
 Earth -64934-06-29 21:06 J -21995540.86 -21995540.62 -21995540.38 0.0302 0.0012  
 Moon -64934-06-29 23:59 J -21995540.74 -21995540.50 -21995540.27 0.0302 0.0019 \*  
 Earth -64933-07-13 08:37 J -21995161.26 -21995161.14 -21995161.02 0.0299 0.0256  
 Moon -64933-07-13 12:13 J -21995161.09 -21995160.99 -21995160.88 0.0299 0.0268 \*  
 Venus -64927-04-25 04:04 J -21993049.51 -21993049.33 -21993049.14 0.0271 0.0127  
 Venus -64927-12-10 06:13 J -21992820.32 -21992820.24 -21992820.15 0.0268 0.0245  
 Mercury -64922-08-31 04:04 J -21991095.48 -21991095.33 -21991095.18 0.0258 0.0154  
 Mercury -64922-11-28 00:13 J -21991006.68 -21991006.49 -21991006.30 0.0258 0.0031  
 Mercury -64921-02-24 20:23 J -21990917.82 -21990917.65 -21990917.47 0.0258 0.0093  
 Mercury -64921-05-23 16:33 J -21990828.90 -21990828.81 -21990828.69 0.0258 0.0217  
 Earth -64920-12-15 15:49 J -21990258.04 -21990257.84 -21990257.63 0.0259 0.0153  
 Moon -64920-12-15 19:40 J -21990257.88 -21990257.68 -21990257.46 0.0259 0.0145 \*  
 Mars -64919-02-05 15:21 J -21990206.13 -21990205.86 -21990205.58 0.0259 0.0144  
 Earth -64919-12-27 08:23 J -21989881.40 -21989881.15 -21989880.90 0.0261 0.0012  
 Moon -64919-12-27 09:06 J -21989881.38 -21989881.12 -21989880.85 0.0261 0.0008 \*  
 Moon -64917-01-08 02:37 J -21989504.57 -21989504.39 -21989504.19 0.0263 0.0168  
 Earth -64917-01-08 06:13 J -21989504.41 -21989504.24 -21989504.05 0.0263 0.0183 \*  
 Venus -64911-08-20 04:47 J -21987088.51 -21987088.30 -21987088.09 0.0293 0.0004  
 Mercury -64907-06-27 03:21 J -21985681.47 -21985681.36 -21985681.25 0.0304 0.0170  
 Mercury -64907-09-23 16:18 J -21985592.94 -21985592.82 -21985592.69 0.0304 0.0034  
 Mercury -64907-12-21 05:16 J -21985504.40 -21985504.28 -21985504.15 0.0304 0.0106

Mercury -64906-03-19 18:13 J -21985415.82 -21985415.74 -21985415.66 0.0304 0.0242

Mars -64905-03-17 01:25 J -21985052.64 -21985052.44 -21985052.21 0.0303 0.0172

Moon -64905-06-22 08:23 J -21984955.37 -21984955.15 -21984954.91 0.0303 0.0105

Earth -64905-06-22 11:30 J -21984955.24 -21984955.02 -21984954.79 0.0303 0.0112 \*

Moon -64904-07-06 23:45 J -21984575.71 -21984575.51 -21984575.30 0.0300 0.0153

Earth -64904-07-07 03:06 J -21984575.58 -21984575.37 -21984575.16 0.0300 0.0141 \*

Venus -64898-11-05 06:28 J -21982263.43 -21982263.23 -21982263.03 0.0271 0.0080

Mercury -64892-01-17 03:21 J -21980363.49 -21980363.36 -21980363.23 0.0258 0.0189

Mercury -64892-04-15 23:30 J -21980274.71 -21980274.52 -21980274.34 0.0258 0.0067

Mercury -64892-07-13 19:40 J -21980185.86 -21980185.68 -21980185.49 0.0258 0.0057

Mercury -64892-10-10 16:04 J -21980096.97 -21980096.83 -21980096.69 0.0258 0.0180

Moon -64891-12-10 18:28 J -21979670.86 -21979670.73 -21979670.58 0.0258 0.0213

Earth -64891-12-10 22:18 J -21979670.69 -21979670.57 -21979670.44 0.0258 0.0223 \*

Moon -64890-12-22 11:45 J -21979294.24 -21979294.01 -21979293.77 0.0260 0.0064

Earth -64890-12-22 12:42 J -21979294.21 -21979293.97 -21979293.72 0.0260 0.0063 \*

Mars -64889-03-28 11:45 J -21979197.33 -21979197.01 -21979196.70 0.0260 0.0076

Earth -64888-01-02 08:09 J -21978917.39 -21978917.16 -21978916.93 0.0262 0.0104

Moon -64888-01-02 11:30 J -21978917.25 -21978917.02 -21978916.78 0.0262 0.0092 \*

Moon -64887-01-14 10:47 J -21978540.07 -21978540.05 -21978540.00 0.0265 0.0262

Venus -64881-03-01 09:21 J -21976302.31 -21976302.11 -21976301.90 0.0292 0.0065

Mercury -64878-11-14 04:18 J -21974949.40 -21974949.32 -21974949.22 0.0304 0.0217

Mercury -64877-02-10 17:30 J -21974860.90 -21974860.77 -21974860.64 0.0305 0.0079

Mercury -64877-05-09 06:28 J -21974772.36 -21974772.23 -21974772.10 0.0305 0.0059

Mercury -64877-08-05 19:11 J -21974683.79 -21974683.70 -21974683.59 0.0305 0.0196

Earth -64876-06-16 00:42 J -21974369.63 -21974369.47 -21974369.31 0.0304 0.0227

Moon -64876-06-16 03:49 J -21974369.49 -21974369.34 -21974369.18 0.0304 0.0224 \*

Mars -64875-05-04 23:45 J -21974046.76 -21974046.51 -21974046.26 0.0302 0.0085

Earth -64875-06-30 20:09 J -21973989.90 -21973989.66 -21973989.42 0.0302 0.0030

Moon -64875-06-30 23:01 J -21973989.78 -21973989.54 -21973989.29 0.0302 0.0039 \*

Earth -64874-07-15 06:57 J -21973610.29 -21973610.21 -21973610.11 0.0298 0.0273

Moon -64874-07-15 06:42 J -21973610.27 -21973610.22 -21973610.13 0.0298 0.0287 \*  
 Venus -64868-05-17 08:09 J -21971477.37 -21971477.16 -21971476.95 0.0271 0.0036  
 Mercury -64863-06-06 02:09 J -21969631.49 -21969631.41 -21969631.32 0.0258 0.0228  
 Mercury -64863-09-02 22:18 J -21969542.74 -21969542.57 -21969542.39 0.0258 0.0106  
 Mercury -64863-11-30 18:42 J -21969453.91 -21969453.72 -21969453.53 0.0258 0.0018  
 Mercury -64862-02-27 14:52 J -21969365.04 -21969364.88 -21969364.72 0.0258 0.0142  
 Earth -64861-12-16 17:16 J -21968706.99 -21968706.78 -21968706.57 0.0259 0.0136  
 Moon -64861-12-16 18:13 J -21968706.96 -21968706.74 -21968706.52 0.0259 0.0133 \*  
 Moon -64860-12-28 06:57 J -21968330.46 -21968330.21 -21968329.96 0.0261 0.0020  
 Earth -64860-12-28 10:18 J -21968330.31 -21968330.07 -21968329.82 0.0261 0.0029 \*  
 Moon -64858-01-09 07:11 J -21967953.36 -21967953.20 -21967953.02 0.0264 0.0187  
 Earth -64858-01-09 08:52 J -21967953.29 -21967953.13 -21967952.96 0.0264 0.0200 \*  
 Venus -64852-09-11 14:52 J -21965516.07 -21965515.88 -21965515.68 0.0293 0.0126  
 Mercury -64848-04-02 05:59 J -21964217.31 -21964217.25 -21964217.18 0.0304 0.0260  
 Mercury -64848-06-29 19:11 J -21964128.82 -21964128.70 -21964128.58 0.0304 0.0122  
 Mercury -64848-09-26 08:09 J -21964040.29 -21964040.16 -21964040.03 0.0304 0.0016  
 Mercury -64848-12-23 21:06 J -21963951.73 -21963951.62 -21963951.51 0.0304 0.0153  
 Mercury -64847-03-22 09:49 J -21963863.13 -21963863.09 -21963863.05 0.0304 0.0288  
 Moon -64846-06-24 11:45 J -21963404.23 -21963404.01 -21963403.78 0.0302 0.0084  
 Earth -64846-06-24 14:23 J -21963404.12 -21963403.90 -21963403.66 0.0302 0.0091 \*  
 Earth -64845-07-08 05:01 J -21963024.49 -21963024.29 -21963024.08 0.0300 0.0162  
 Moon -64845-07-08 05:30 J -21963024.45 -21963024.27 -21963024.07 0.0300 0.0175 \*  
 Venus -64839-11-27 11:30 J -21960691.24 -21960691.02 -21960690.81 0.0271 0.0016  
 Mercury -64833-01-20 22:04 J -21958810.74 -21958810.58 -21958810.42 0.0258 0.0139  
 Mercury -64833-04-18 18:13 J -21958721.93 -21958721.74 -21958721.55 0.0258 0.0016  
 Mercury -64833-07-16 14:37 J -21958633.06 -21958632.89 -21958632.72 0.0258 0.0108  
 Mercury -64833-10-13 10:47 J -21958544.12 -21958544.05 -21958543.96 0.0258 0.0233  
 Moon -64832-12-11 23:01 J -21958119.68 -21958119.54 -21958119.37 0.0259 0.0199  
 Earth -64832-12-12 00:28 J -21958119.62 -21958119.48 -21958119.32 0.0259 0.0206 \*  
 Mars -64831-07-02 05:59 J -21957917.53 -21957917.25 -21957916.95 0.0259 0.0124

Earth -64831-12-23 15:49 J -21957743.09 -21957742.84 -21957742.59 0.0260 0.0045  
 Moon -64831-12-23 19:11 J -21957742.94 -21957742.70 -21957742.45 0.0260 0.0050 \*  
 Earth -64829-01-04 11:45 J -21957366.22 -21957366.01 -21957365.78 0.0262 0.0124  
 Moon -64829-01-04 14:09 J -21957366.13 -21957365.91 -21957365.67 0.0262 0.0111 \*  
 Venus -64823-08-06 22:33 J -21954959.58 -21954959.56 -21954959.52 0.0290 0.0287  
 Venus -64822-03-24 21:21 J -21954729.77 -21954729.61 -21954729.45 0.0293 0.0193  
 Mercury -64819-08-20 07:25 J -21953485.20 -21953485.19 -21953485.17 0.0304 0.0302  
 Mercury -64819-11-16 20:37 J -21953396.75 -21953396.64 -21953396.53 0.0304 0.0164  
 Mercury -64818-02-13 09:35 J -21953308.23 -21953308.10 -21953307.97 0.0304 0.0027  
 Mercury -64818-05-12 22:33 J -21953219.68 -21953219.56 -21953219.44 0.0304 0.0110  
 Mercury -64818-08-09 11:16 J -21953131.10 -21953131.03 -21953130.95 0.0304 0.0246  
 Earth -64817-06-17 06:13 J -21952818.41 -21952818.24 -21952818.06 0.0304 0.0204  
 Moon -64817-06-17 08:37 J -21952818.32 -21952818.14 -21952817.95 0.0304 0.0198 \*  
 Mars -64817-08-10 07:54 J -21952764.39 -21952764.17 -21952763.95 0.0303 0.0165  
 Moon -64816-07-01 23:45 J -21952438.75 -21952438.51 -21952438.26 0.0301 0.0063  
 Earth -64816-07-02 00:42 J -21952438.70 -21952438.47 -21952438.23 0.0301 0.0053 \*  
 Earth -64815-07-16 10:33 J -21952059.08 -21952059.06 -21952059.01 0.0298 0.0294  
 Venus -64809-06-08 13:54 J -21949905.12 -21949904.92 -21949904.71 0.0270 0.0062  
 Mercury -64804-06-08 21:21 J -21948078.74 -21948078.61 -21948078.47 0.0258 0.0175  
 Mercury -64804-09-05 17:30 J -21947989.95 -21947989.77 -21947989.58 0.0258 0.0052  
 Mercury -64804-12-03 13:54 J -21947901.10 -21947900.92 -21947900.73 0.0258 0.0072  
 Mercury -64803-03-02 10:18 J -21947812.19 -21947812.07 -21947811.94 0.0258 0.0196  
 Moon -64802-12-18 17:59 J -21947155.96 -21947155.75 -21947155.51 0.0259 0.0120  
 Earth -64802-12-18 21:35 J -21947155.82 -21947155.60 -21947155.37 0.0259 0.0118 \*  
 Mars -64801-08-22 04:33 J -21946908.60 -21946908.31 -21946907.99 0.0261 0.0101  
 Moon -64801-12-29 13:11 J -21946779.19 -21946778.95 -21946778.71 0.0261 0.0037  
 Earth -64801-12-29 15:35 J -21946779.09 -21946778.85 -21946778.60 0.0261 0.0048 \*  
 Earth -64799-01-10 14:52 J -21946402.01 -21946401.88 -21946401.73 0.0264 0.0220  
 Moon -64799-01-10 17:30 J -21946401.92 -21946401.77 -21946401.62 0.0264 0.0206 \*  
 Venus -64793-02-17 05:16 J -21944173.41 -21944173.28 -21944173.13 0.0290 0.0221

Venus -64793-10-04 04:04 J -21943943.42 -21943943.33 -21943943.23 0.0293 0.0261

Mercury -64789-04-04 22:33 J -21942664.65 -21942664.56 -21942664.46 0.0304 0.0203

Mercury -64789-07-02 11:45 J -21942576.14 -21942576.01 -21942575.89 0.0304 0.0066

Mercury -64789-09-29 00:42 J -21942487.60 -21942487.47 -21942487.35 0.0304 0.0072

Mercury -64789-12-26 13:25 J -21942399.03 -21942398.94 -21942398.84 0.0304 0.0207

Earth -64787-06-25 22:04 J -21941852.81 -21941852.58 -21941852.34 0.0302 0.0065

Moon -64787-06-25 23:30 J -21941852.75 -21941852.52 -21941852.29 0.0302 0.0055 \*

Mars -64787-09-28 15:06 J -21941758.11 -21941757.87 -21941757.62 0.0301 0.0110

Earth -64786-07-10 11:59 J -21941473.19 -21941473.00 -21941472.81 0.0299 0.0186

Moon -64786-07-10 15:06 J -21941473.03 -21941472.87 -21941472.68 0.0299 0.0200 \*

Venus -64780-05-04 14:52 J -21939347.92 -21939347.88 -21939347.82 0.0273 0.0264

Venus -64780-12-19 18:13 J -21939118.93 -21939118.74 -21939118.54 0.0270 0.0116

Mercury -64775-10-26 21:35 J -21937346.71 -21937346.60 -21937346.49 0.0259 0.0205

Mercury -64774-01-23 17:30 J -21937257.94 -21937257.77 -21937257.58 0.0259 0.0083

Mercury -64774-04-22 13:54 J -21937169.10 -21937168.92 -21937168.73 0.0259 0.0042

Mercury -64774-07-20 10:04 J -21937080.21 -21937080.08 -21937079.92 0.0259 0.0167

Earth -64773-12-13 05:30 J -21936568.43 -21936568.27 -21936568.08 0.0259 0.0187

Moon -64773-12-13 08:23 J -21936568.32 -21936568.15 -21936567.97 0.0259 0.0181 \*

Earth -64772-12-24 21:49 J -21936191.84 -21936191.59 -21936191.34 0.0260 0.0025

Moon -64772-12-25 00:28 J -21936191.74 -21936191.48 -21936191.23 0.0260 0.0032 \*

Moon -64770-01-05 16:33 J -21935815.03 -21935814.81 -21935814.58 0.0263 0.0129

Earth -64770-01-05 18:42 J -21935814.92 -21935814.72 -21935814.50 0.0263 0.0145 \*

Venus -64764-08-29 13:25 J -21933387.12 -21933386.94 -21933386.75 0.0290 0.0149

Mercury -64760-08-23 00:42 J -21931932.55 -21931932.47 -21931932.39 0.0304 0.0239

Mercury -64760-11-19 13:54 J -21931844.05 -21931843.92 -21931843.80 0.0304 0.0102

Mercury -64759-02-16 02:52 J -21931755.51 -21931755.38 -21931755.25 0.0304 0.0036

Mercury -64759-05-15 15:35 J -21931666.95 -21931666.85 -21931666.74 0.0304 0.0171

Moon -64758-06-19 16:04 J -21931267.04 -21931266.83 -21931266.62 0.0303 0.0166

Earth -64758-06-19 18:13 J -21931266.94 -21931266.74 -21931266.55 0.0303 0.0176 \*

Moon -64757-07-03 07:54 J -21930887.40 -21930887.17 -21930886.94 0.0301 0.0092

Earth -64757-07-03 11:30 J -21930887.25 -21930887.02 -21930886.79 0.0301 0.0080 \*  
 Venus -64751-11-14 18:57 J -21928561.84 -21928561.71 -21928561.58 0.0272 0.0212  
 Venus -64750-07-01 22:04 J -21928332.74 -21928332.58 -21928332.41 0.0270 0.0167  
 Mercury -64745-03-14 21:06 J -21926614.68 -21926614.62 -21926614.53 0.0259 0.0239  
 Mercury -64745-06-11 17:30 J -21926525.94 -21926525.77 -21926525.60 0.0258 0.0116  
 Mercury -64745-09-08 13:54 J -21926437.11 -21926436.92 -21926436.73 0.0258 0.0009  
 Mercury -64745-12-06 10:04 J -21926348.24 -21926348.08 -21926347.91 0.0258 0.0133  
 Mercury -64744-03-05 06:28 J -21926259.23 -21926259.23 -21926259.20 0.0258 0.0257  
 Moon -64744-12-08 11:45 J -21925981.07 -21925981.01 -21925980.91 0.0259 0.0245  
 Earth -64744-12-08 14:09 J -21925980.93 -21925980.91 -21925980.87 0.0259 0.0257 \*  
 Mars -64743-11-26 08:23 J -21925628.46 -21925628.15 -21925627.84 0.0260 0.0095  
 Moon -64743-12-20 01:54 J -21925604.63 -21925604.42 -21925604.18 0.0260 0.0100  
 Earth -64743-12-20 04:33 J -21925604.53 -21925604.31 -21925604.06 0.0260 0.0098 \*  
 Earth -64742-12-31 23:45 J -21925227.75 -21925227.51 -21925227.27 0.0262 0.0070  
 Moon -64741-01-01 01:54 J -21925227.65 -21925227.42 -21925227.17 0.0262 0.0058 \*  
 Earth -64740-01-11 23:59 J -21924850.58 -21924850.50 -21924850.38 0.0264 0.0243  
 Moon -64740-01-12 03:35 J -21924850.46 -21924850.35 -21924850.21 0.0264 0.0228 \*  
 Venus -64734-03-11 21:49 J -21922600.79 -21922600.59 -21922600.38 0.0291 0.0077  
 Mercury -64730-01-10 03:06 J -21921200.42 -21921200.37 -21921200.31 0.0304 0.0274  
 Mercury -64730-04-08 16:18 J -21921111.94 -21921111.82 -21921111.70 0.0304 0.0136  
 Mercury -64730-07-06 05:16 J -21921023.41 -21921023.28 -21921023.15 0.0304 0.0003  
 Mercury -64730-10-02 18:13 J -21920934.86 -21920934.74 -21920934.63 0.0304 0.0137  
 Mercury -64730-12-30 06:57 J -21920846.26 -21920846.21 -21920846.15 0.0304 0.0272  
 Earth -64729-06-12 15:21 J -21920680.92 -21920680.86 -21920680.78 0.0304 0.0290  
 Moon -64729-06-12 17:59 J -21920680.82 -21920680.75 -21920680.65 0.0304 0.0282 \*  
 Mars -64728-01-04 15:21 J -21920475.09 -21920474.86 -21920474.62 0.0303 0.0130  
 Earth -64728-06-27 11:59 J -21920301.24 -21920301.00 -21920300.76 0.0302 0.0034  
 Moon -64728-06-27 15:49 J -21920301.08 -21920300.84 -21920300.60 0.0302 0.0023 \*  
 Earth -64727-07-12 00:28 J -21919921.63 -21919921.48 -21919921.30 0.0299 0.0215  
 Moon -64727-07-12 02:52 J -21919921.54 -21919921.38 -21919921.22 0.0299 0.0227 \*

Venus -64721-05-27 00:28 J -21917775.65 -21917775.48 -21917775.31 0.0272 0.0153  
 Venus -64720-01-11 03:35 J -21917546.47 -21917546.35 -21917546.24 0.0270 0.0224  
 Mercury -64716-10-29 17:59 J -21915793.90 -21915793.75 -21915793.59 0.0259 0.0144  
 Mercury -64715-01-26 14:23 J -21915705.09 -21915704.90 -21915704.71 0.0259 0.0021  
 Mercury -64715-04-25 10:33 J -21915616.23 -21915616.06 -21915615.88 0.0259 0.0104  
 Mercury -64715-07-23 07:11 J -21915527.29 -21915527.20 -21915527.11 0.0259 0.0229  
 Earth -64714-12-15 13:54 J -21915017.11 -21915016.92 -21915016.72 0.0259 0.0166  
 Moon -64714-12-15 17:16 J -21915016.98 -21915016.78 -21915016.58 0.0259 0.0159 \*  
 Moon -64713-12-26 04:47 J -21914640.55 -21914640.30 -21914640.04 0.0261 0.0012  
 Earth -64713-12-26 06:57 J -21914640.46 -21914640.21 -21914639.96 0.0261 0.0003 \*  
 Mars -64712-01-16 16:04 J -21914619.10 -21914618.83 -21914618.53 0.0261 0.0131  
 Moon -64711-01-07 01:11 J -21914263.64 -21914263.45 -21914263.24 0.0263 0.0154  
 Earth -64711-01-07 05:01 J -21914263.48 -21914263.29 -21914263.09 0.0263 0.0168 \*  
 Venus -64705-09-21 07:11 J -21911814.41 -21911814.20 -21911813.99 0.0291 0.0003  
 Mercury -64701-08-25 18:42 J -21910379.82 -21910379.72 -21910379.61 0.0304 0.0169  
 Mercury -64701-11-22 07:54 J -21910291.30 -21910291.17 -21910291.04 0.0304 0.0032  
 Mercury -64700-02-18 20:37 J -21910202.76 -21910202.64 -21910202.51 0.0304 0.0105  
 Mercury -64700-05-18 09:35 J -21910114.18 -21910114.10 -21910114.02 0.0304 0.0240  
 Moon -64699-06-21 07:11 J -21909715.41 -21909715.20 -21909714.98 0.0303 0.0132  
 Earth -64699-06-21 10:47 J -21909715.25 -21909715.05 -21909714.83 0.0303 0.0144 \*  
 Mars -64698-02-23 00:28 J -21909468.70 -21909468.48 -21909468.24 0.0302 0.0137  
 Moon -64698-07-06 01:25 J -21909335.65 -21909335.44 -21909335.23 0.0301 0.0125  
 Earth -64698-07-06 03:06 J -21909335.59 -21909335.37 -21909335.14 0.0301 0.0112 \*  
 Venus -64692-12-07 05:30 J -21906989.46 -21906989.27 -21906989.07 0.0272 0.0097  
 Mercury -64686-03-18 18:13 J -21905061.87 -21905061.74 -21905061.60 0.0259 0.0175  
 Mercury -64686-06-15 14:37 J -21904973.08 -21904972.89 -21904972.71 0.0259 0.0052  
 Mercury -64686-09-12 10:47 J -21904884.23 -21904884.05 -21904883.86 0.0258 0.0073  
 Mercury -64686-12-10 07:11 J -21904795.32 -21904795.20 -21904795.07 0.0258 0.0197  
 Moon -64685-12-09 19:25 J -21904429.80 -21904429.69 -21904429.56 0.0259 0.0225  
 Earth -64685-12-09 23:01 J -21904429.63 -21904429.54 -21904429.43 0.0259 0.0236 \*

Earth -64684-12-21 14:23 J -21904053.14 -21904052.90 -21904052.66 0.0260 0.0075  
 Moon -64684-12-21 15:35 J -21904053.08 -21904052.85 -21904052.62 0.0260 0.0078 \*  
 Earth -64682-01-02 10:04 J -21903676.31 -21903676.08 -21903675.84 0.0262 0.0094  
 Moon -64682-01-02 13:54 J -21903676.16 -21903675.92 -21903675.68 0.0262 0.0079 \*  
 Moon -64681-01-14 11:45 J -21903299.08 -21903299.01 -21903298.93 0.0265 0.0252  
 Venus -64675-04-03 16:33 J -21901028.01 -21901027.81 -21901027.60 0.0292 0.0077  
 Mercury -64671-01-12 21:35 J -21899647.69 -21899647.60 -21899647.50 0.0304 0.0199  
 Mercury -64671-04-11 10:33 J -21899559.18 -21899559.06 -21899558.93 0.0304 0.0063  
 Mercury -64671-07-08 23:30 J -21899470.64 -21899470.52 -21899470.39 0.0304 0.0075  
 Mercury -64671-10-05 12:28 J -21899382.07 -21899381.98 -21899381.89 0.0304 0.0210  
 Earth -64670-06-15 11:01 J -21899129.15 -21899129.04 -21899128.90 0.0303 0.0257  
 Moon -64670-06-15 14:37 J -21899129.03 -21899128.89 -21899128.75 0.0303 0.0246 \*  
 Earth -64669-06-29 06:42 J -21898749.46 -21898749.22 -21898748.98 0.0301 0.0004  
 Moon -64669-06-29 07:54 J -21898749.41 -21898749.17 -21898748.92 0.0301 0.0013 \*  
 Moon -64668-07-13 16:18 J -21898369.93 -21898369.82 -21898369.70 0.0298 0.0260  
 Earth -64668-07-13 18:13 J -21898369.87 -21898369.74 -21898369.60 0.0298 0.0246 \*  
 Venus -64662-06-19 12:13 J -21896203.20 -21896202.99 -21896202.78 0.0271 0.0035  
 Mercury -64657-08-04 19:11 J -21894329.82 -21894329.70 -21894329.58 0.0259 0.0201  
 Mercury -64657-11-01 15:21 J -21894241.04 -21894240.86 -21894240.68 0.0259 0.0078  
 Mercury -64656-01-29 11:45 J -21894152.20 -21894152.01 -21894151.83 0.0259 0.0046  
 Mercury -64656-04-28 08:09 J -21894063.30 -21894063.16 -21894063.02 0.0259 0.0171  
 Moon -64655-12-16 23:30 J -21893465.73 -21893465.52 -21893465.29 0.0260 0.0139  
 Earth -64655-12-17 00:13 J -21893465.70 -21893465.49 -21893465.28 0.0260 0.0143 \*  
 Mars -64654-04-23 02:23 J -21893338.72 -21893338.40 -21893338.08 0.0260 0.0064  
 Moon -64654-12-28 14:23 J -21893089.15 -21893088.90 -21893088.65 0.0261 0.0012  
 Earth -64654-12-28 17:59 J -21893089.00 -21893088.75 -21893088.50 0.0261 0.0022 \*  
 Earth -64652-01-08 16:47 J -21892711.96 -21892711.80 -21892711.62 0.0264 0.0194  
 Moon -64652-01-08 17:16 J -21892711.95 -21892711.78 -21892711.60 0.0264 0.0180 \*  
 Venus -64646-10-15 02:52 J -21890241.56 -21890241.38 -21890241.20 0.0292 0.0157  
 Mercury -64642-06-02 00:28 J -21888915.56 -21888915.48 -21888915.39 0.0303 0.0228



Mercury -64642-08-29 13:40 J -21888827.06 -21888826.93 -21888826.81 0.0304 0.0091  
 Mercury -64642-11-26 02:37 J -21888738.52 -21888738.39 -21888738.27 0.0304 0.0047  
 Mercury -64641-02-22 15:21 J -21888649.96 -21888649.86 -21888649.76 0.0304 0.0181  
 Mars -64640-06-01 13:11 J -21888185.20 -21888184.95 -21888184.70 0.0303 0.0093  
 Moon -64640-06-23 08:09 J -21888163.38 -21888163.16 -21888162.94 0.0303 0.0096  
 Earth -64640-06-23 08:37 J -21888163.37 -21888163.14 -21888162.92 0.0303 0.0108 \*  
 Earth -64639-07-07 23:30 J -21887783.73 -21887783.52 -21887783.31 0.0300 0.0146  
 Moon -64639-07-08 01:54 J -21887783.62 -21887783.42 -21887783.22 0.0300 0.0161 \*  
 Venus -64633-12-29 17:59 J -21885416.96 -21885416.75 -21885416.53 0.0271 0.0024  
 Mercury -64628-12-22 19:25 J -21883597.76 -21883597.69 -21883597.59 0.0259 0.0231  
 Mercury -64627-03-21 15:49 J -21883509.01 -21883508.84 -21883508.67 0.0259 0.0108  
 Mercury -64627-06-18 12:13 J -21883420.18 -21883419.99 -21883419.80 0.0259 0.0017  
 Mercury -64627-09-15 08:37 J -21883331.30 -21883331.14 -21883330.98 0.0259 0.0141  
 Earth -64626-12-12 09:35 J -21882878.23 -21882878.10 -21882877.95 0.0259 0.0214  
 Moon -64626-12-12 09:49 J -21882878.22 -21882878.09 -21882877.93 0.0259 0.0206 \*  
 Earth -64625-12-23 01:40 J -21882501.67 -21882501.43 -21882501.18 0.0260 0.0052  
 Moon -64625-12-23 05:30 J -21882501.52 -21882501.27 -21882501.03 0.0260 0.0054 \*  
 Mars -64624-06-13 11:16 J -21882329.27 -21882329.03 -21882328.77 0.0261 0.0169  
 Moon -64623-01-03 22:33 J -21882124.80 -21882124.56 -21882124.32 0.0262 0.0105  
 Earth -64623-01-03 22:18 J -21882124.78 -21882124.57 -21882124.34 0.0262 0.0119 \*  
 Venus -64617-09-08 14:23 J -21879685.01 -21879684.90 -21879684.78 0.0290 0.0242  
 Venus -64616-04-26 12:42 J -21879455.09 -21879454.97 -21879454.84 0.0293 0.0237  
 Mercury -64613-10-19 03:21 J -21878183.42 -21878183.36 -21878183.29 0.0304 0.0258  
 Mercury -64612-01-15 16:33 J -21878094.93 -21878094.81 -21878094.69 0.0304 0.0120  
 Mercury -64612-04-14 05:30 J -21878006.40 -21878006.27 -21878006.14 0.0304 0.0017  
 Mercury -64612-07-11 18:13 J -21877917.84 -21877917.74 -21877917.62 0.0304 0.0153  
 Mercury -64612-10-08 07:11 J -21877829.24 -21877829.20 -21877829.16 0.0304 0.0287  
 Moon -64611-06-17 09:49 J -21877577.26 -21877577.09 -21877576.91 0.0303 0.0211  
 Earth -64611-06-17 10:04 J -21877577.25 -21877577.08 -21877576.92 0.0303 0.0221 \*  
 Moon -64610-07-02 01:25 J -21877197.68 -21877197.44 -21877197.20 0.0301 0.0051

Earth -64610-07-02 04:18 J -21877197.55 -21877197.32 -21877197.08 0.0301 0.0037 \*  
 Mars -64610-07-21 03:21 J -21877178.56 -21877178.36 -21877178.15 0.0301 0.0185  
 Moon -64609-07-15 10:47 J -21876818.07 -21876818.05 -21876818.03 0.0298 0.0296  
 Earth -64609-07-15 14:23 J -21876817.97 -21876817.90 -21876817.81 0.0298 0.0280  
 Venus -64603-07-12 01:11 J -21874630.65 -21874630.45 -21874630.25 0.0271 0.0086  
 Mercury -64598-05-11 20:37 J -21872865.66 -21872865.64 -21872865.61 0.0259 0.0256  
 Mercury -64598-08-08 16:47 J -21872776.96 -21872776.80 -21872776.63 0.0259 0.0133  
 Mercury -64598-11-05 13:11 J -21872688.14 -21872687.95 -21872687.76 0.0259 0.0010  
 Mercury -64597-02-02 09:21 J -21872599.27 -21872599.11 -21872598.93 0.0259 0.0115  
 Mercury -64597-05-01 05:59 J -21872510.32 -21872510.25 -21872510.18 0.0259 0.0240  
 Mars -64596-07-27 17:45 J -21872057.83 -21872057.76 -21872057.68 0.0260 0.0252  
 Moon -64596-12-18 07:11 J -21871914.41 -21871914.20 -21871913.96 0.0260 0.0119  
 Earth -64596-12-18 11:01 J -21871914.25 -21871914.04 -21871913.80 0.0260 0.0121 \*  
 Moon -64595-12-30 04:47 J -21871537.53 -21871537.30 -21871537.05 0.0262 0.0038  
 Earth -64595-12-30 05:45 J -21871537.51 -21871537.26 -21871537.01 0.0262 0.0047 \*  
 Earth -64593-01-11 05:45 J -21871160.40 -21871160.26 -21871160.12 0.0264 0.0219  
 Moon -64593-01-11 09:06 J -21871160.26 -21871160.12 -21871159.95 0.0264 0.0205 \*  
 Jupiter -64587-03-17 02:52 J -21868903.79 -21868903.38 -21868902.97 0.0290 0.0123  
 Venus -64587-03-22 00:13 J -21868898.66 -21868898.49 -21868898.31 0.0290 0.0164  
 Mercury -64583-03-08 06:28 J -21867451.27 -21867451.23 -21867451.19 0.0303 0.0286  
 Mercury -64583-06-04 19:40 J -21867362.80 -21867362.68 -21867362.57 0.0304 0.0149  
 Mercury -64583-09-01 08:37 J -21867274.27 -21867274.14 -21867274.01 0.0304 0.0015  
 Mercury -64583-11-28 21:21 J -21867185.73 -21867185.61 -21867185.49 0.0304 0.0124  
 Mercury -64582-02-25 10:18 J -21867097.14 -21867097.07 -21867097.01 0.0304 0.0259  
 Earth -64581-06-25 07:40 J -21866611.42 -21866611.18 -21866610.95 0.0302 0.0072  
 Moon -64581-06-25 10:33 J -21866611.29 -21866611.06 -21866610.83 0.0302 0.0059 \*  
 Earth -64580-07-09 21:21 J -21866231.79 -21866231.61 -21866231.41 0.0300 0.0182  
 Moon -64580-07-10 01:11 J -21866231.63 -21866231.45 -21866231.27 0.0300 0.0197 \*  
 Venus -64574-06-07 04:33 J -21864073.41 -21864073.31 -21864073.19 0.0273 0.0233  
 Venus -64573-01-22 07:40 J -21863844.35 -21863844.18 -21863843.99 0.0270 0.0147

Mercury -64569-12-25 17:30 J -21862044.91 -21862044.77 -21862044.62 0.0259 0.0162  
 Mercury -64568-03-24 13:40 J -21861956.11 -21861955.93 -21861955.74 0.0259 0.0039  
 Mercury -64568-06-21 10:04 J -21861867.26 -21861867.08 -21861866.90 0.0259 0.0086  
 Mercury -64568-09-18 06:28 J -21861778.33 -21861778.23 -21861778.12 0.0259 0.0210  
 Earth -64567-12-13 20:52 J -21861326.79 -21861326.63 -21861326.46 0.0259 0.0192  
 Moon -64567-12-14 00:42 J -21861326.64 -21861326.47 -21861326.30 0.0259 0.0186 \*  
 Mars -64566-09-17 22:47 J -21861048.88 -21861048.55 -21861048.22 0.0260 0.0023  
 Earth -64566-12-25 13:25 J -21860950.19 -21860949.94 -21860949.69 0.0261 0.0028  
 Moon -64566-12-25 14:52 J -21860950.14 -21860949.88 -21860949.62 0.0261 0.0033 \*  
 Moon -64564-01-05 07:11 J -21860573.41 -21860573.20 -21860572.97 0.0263 0.0129  
 Earth -64564-01-05 10:33 J -21860573.26 -21860573.06 -21860572.84 0.0263 0.0143 \*  
 Venus -64558-10-02 09:49 J -21858112.29 -21858112.09 -21858111.88 0.0291 0.0088  
 Mercury -64554-10-22 22:33 J -21856630.67 -21856630.56 -21856630.46 0.0304 0.0178  
 Mercury -64553-01-19 11:30 J -21856542.15 -21856542.02 -21856541.89 0.0304 0.0041  
 Mercury -64553-04-17 00:28 J -21856453.61 -21856453.48 -21856453.36 0.0304 0.0096  
 Mercury -64553-07-14 13:11 J -21856365.03 -21856364.95 -21856364.86 0.0304 0.0231  
 Moon -64552-06-19 06:13 J -21856025.43 -21856025.24 -21856025.03 0.0303 0.0174  
 Earth -64552-06-19 09:35 J -21856025.29 -21856025.10 -21856024.91 0.0303 0.0184 \*  
 Mars -64552-10-27 19:40 J -21855894.94 -21855894.68 -21855894.42 0.0302 0.0041  
 Moon -64551-07-03 23:59 J -21855645.72 -21855645.50 -21855645.27 0.0301 0.0087  
 Earth -64551-07-04 03:06 J -21855645.60 -21855645.37 -21855645.13 0.0301 0.0073 \*  
 Venus -64545-12-17 11:45 J -21853287.17 -21853287.01 -21853286.84 0.0272 0.0168  
 Venus -64544-08-03 14:52 J -21853058.01 -21853057.88 -21853057.74 0.0270 0.0209  
 Mercury -64539-05-14 18:28 J -21851312.86 -21851312.73 -21851312.60 0.0259 0.0188  
 Mercury -64539-08-11 14:37 J -21851224.07 -21851223.89 -21851223.70 0.0259 0.0065  
 Mercury -64539-11-08 11:01 J -21851135.23 -21851135.04 -21851134.86 0.0259 0.0060  
 Mercury -64538-02-05 07:11 J -21851046.32 -21851046.20 -21851046.06 0.0259 0.0185  
 Moon -64538-12-09 04:18 J -21850739.38 -21850739.32 -21850739.24 0.0259 0.0248  
 Earth -64538-12-09 08:09 J -21850739.17 -21850739.16 -21850739.15 0.0259 0.0259  
 Moon -64537-12-19 20:52 J -21850362.85 -21850362.63 -21850362.40 0.0260 0.0099

Earth -64537-12-19 22:18 J -21850362.79 -21850362.57 -21850362.33 0.0260 0.0099 \*  
 Mars -64536-11-08 09:35 J -21850039.28 -21850039.10 -21850038.88 0.0262 0.0206  
 Earth -64536-12-31 17:16 J -21849986.02 -21849985.78 -21849985.53 0.0262 0.0071  
 Moon -64536-12-31 20:23 J -21849985.89 -21849985.65 -21849985.41 0.0262 0.0059 \*  
 Earth -64534-01-12 17:59 J -21849608.83 -21849608.75 -21849608.64 0.0265 0.0244  
 Moon -64534-01-12 20:23 J -21849608.77 -21849608.65 -21849608.52 0.0265 0.0230 \*  
 Venus -64528-04-13 19:54 J -21847325.89 -21847325.67 -21847325.46 0.0291 0.0012  
 Mercury -64524-03-11 01:25 J -21845898.54 -21845898.44 -21845898.35 0.0303 0.0208  
 Mercury -64524-06-07 14:23 J -21845810.03 -21845809.90 -21845809.77 0.0304 0.0071  
 Mercury -64524-09-04 03:21 J -21845721.49 -21845721.36 -21845721.23 0.0304 0.0066  
 Mercury -64524-12-01 16:04 J -21845632.92 -21845632.83 -21845632.73 0.0304 0.0202  
 Earth -64523-06-13 09:35 J -21845439.15 -21845439.10 -21845439.05 0.0304 0.0295  
 Moon -64523-06-13 12:28 J -21845439.04 -21845438.98 -21845438.90 0.0304 0.0290  
 Earth -64522-06-28 06:13 J -21845059.48 -21845059.24 -21845059.00 0.0302 0.0036  
 Moon -64522-06-28 09:21 J -21845059.35 -21845059.11 -21845058.87 0.0302 0.0026 \*  
 Mars -64522-12-16 07:40 J -21844888.33 -21844888.18 -21844888.00 0.0301 0.0231  
 Earth -64521-07-11 19:11 J -21844679.86 -21844679.70 -21844679.53 0.0299 0.0215  
 Moon -64521-07-11 19:25 J -21844679.85 -21844679.69 -21844679.53 0.0299 0.0229 \*  
 Venus -64515-06-29 18:57 J -21842500.90 -21842500.71 -21842500.52 0.0272 0.0106  
 Venus -64514-02-13 21:35 J -21842271.61 -21842271.60 -21842271.59 0.0269 0.0269  
 Mercury -64510-10-01 18:57 J -21840580.80 -21840580.71 -21840580.60 0.0259 0.0217  
 Mercury -64510-12-29 15:06 J -21840492.04 -21840491.87 -21840491.69 0.0259 0.0095  
 Mercury -64509-03-27 11:30 J -21840403.21 -21840403.02 -21840402.83 0.0258 0.0029  
 Mercury -64509-06-24 07:54 J -21840314.32 -21840314.17 -21840314.02 0.0258 0.0154  
 Earth -64508-12-15 07:11 J -21839775.38 -21839775.20 -21839775.01 0.0259 0.0171  
 Moon -64508-12-15 09:06 J -21839775.31 -21839775.12 -21839774.92 0.0259 0.0166 \*  
 Mars -64508-12-22 11:59 J -21839768.18 -21839768.00 -21839767.79 0.0259 0.0209  
 Moon -64507-12-26 20:52 J -21839398.88 -21839398.63 -21839398.37 0.0261 0.0015  
 Earth -64507-12-26 23:59 J -21839398.75 -21839398.50 -21839398.25 0.0261 0.0007 \*  
 Moon -64505-01-07 19:11 J -21839021.89 -21839021.70 -21839021.50 0.0263 0.0152

Earth -64505-01-07 21:35 J -21839021.78 -21839021.60 -21839021.39 0.0263 0.0166 \*  
 Venus -64499-10-25 03:49 J -21836539.55 -21836539.34 -21836539.13 0.0292 0.0062  
 Mercury -64495-07-29 03:49 J -21835166.41 -21835166.34 -21835166.26 0.0304 0.0240  
 Mercury -64495-10-25 17:01 J -21835077.91 -21835077.79 -21835077.67 0.0304 0.0103  
 Mercury -64494-01-22 05:59 J -21834989.38 -21834989.25 -21834989.12 0.0304 0.0034  
 Mercury -64494-04-20 18:42 J -21834900.82 -21834900.72 -21834900.61 0.0304 0.0171  
 Mars -64493-02-04 04:18 J -21834611.43 -21834611.32 -21834611.21 0.0304 0.0274  
 Moon -64493-06-21 03:21 J -21834473.56 -21834473.36 -21834473.14 0.0303 0.0142  
 Earth -64493-06-21 06:28 J -21834473.43 -21834473.23 -21834473.02 0.0303 0.0150 \*  
 Earth -64492-07-05 23:30 J -21834093.74 -21834093.52 -21834093.29 0.0301 0.0107  
 Moon -64492-07-05 23:30 J -21834093.73 -21834093.52 -21834093.30 0.0301 0.0120 \*  
 Venus -64485-01-10 01:40 J -21831714.64 -21831714.43 -21831714.22 0.0271 0.0044  
 Mercury -64480-02-17 19:40 J -21829848.73 -21829848.68 -21829848.61 0.0259 0.0244  
 Mercury -64480-05-17 16:04 J -21829760.00 -21829759.83 -21829759.66 0.0259 0.0121  
 Mercury -64480-08-14 12:13 J -21829671.18 -21829670.99 -21829670.80 0.0259 0.0003  
 Mercury -64480-11-11 08:23 J -21829582.31 -21829582.15 -21829581.98 0.0259 0.0127  
 Mercury -64479-02-08 05:01 J -21829493.33 -21829493.29 -21829493.25 0.0259 0.0251  
 Moon -64479-12-10 15:06 J -21829187.97 -21829187.87 -21829187.75 0.0259 0.0229  
 Earth -64479-12-10 17:16 J -21829187.86 -21829187.78 -21829187.67 0.0259 0.0239 \*  
 Earth -64478-12-22 08:09 J -21828811.40 -21828811.16 -21828810.92 0.0260 0.0077  
 Moon -64478-12-22 11:01 J -21828811.27 -21828811.04 -21828810.80 0.0260 0.0081 \*  
 Mars -64477-02-12 16:47 J -21828759.13 -21828758.80 -21828758.46 0.0260 0.0013  
 Earth -64476-01-02 03:06 J -21828434.60 -21828434.37 -21828434.13 0.0262 0.0093  
 Moon -64476-01-02 06:28 J -21828434.48 -21828434.23 -21828433.99 0.0262 0.0080 \*  
 Moon -64475-01-14 02:23 J -21828057.46 -21828057.40 -21828057.32 0.0265 0.0254  
 Venus -64469-05-06 12:57 J -21825753.15 -21825752.96 -21825752.78 0.0292 0.0135  
 Mercury -64466-12-16 06:28 J -21824434.28 -21824434.23 -21824434.17 0.0303 0.0273  
 Mercury -64465-03-13 19:40 J -21824345.80 -21824345.68 -21824345.56 0.0304 0.0136  
 Mercury -64465-06-10 08:37 J -21824257.27 -21824257.14 -21824257.01 0.0304 0.0002  
 Mercury -64465-09-06 21:35 J -21824168.72 -21824168.60 -21824168.49 0.0304 0.0137

Mercury -64465-12-04 10:18 J -21824080.12 -21824080.07 -21824080.01 0.0304 0.0273  
 Earth -64464-06-15 05:01 J -21823887.39 -21823887.29 -21823887.16 0.0304 0.0265  
 Moon -64464-06-15 08:09 J -21823887.28 -21823887.16 -21823887.03 0.0304 0.0257 \*  
 Mars -64463-03-24 19:11 J -21823604.96 -21823604.70 -21823604.44 0.0302 0.0005  
 Moon -64463-06-30 01:40 J -21823507.68 -21823507.43 -21823507.18 0.0302 0.0008  
 Earth -64463-06-30 01:54 J -21823507.66 -21823507.42 -21823507.18 0.0302 0.0004 \*  
 Moon -64462-07-14 11:01 J -21823128.15 -21823128.04 -21823127.92 0.0299 0.0262  
 Earth -64462-07-14 14:09 J -21823128.03 -21823127.91 -21823127.77 0.0299 0.0247 \*  
 Venus -64456-07-22 08:23 J -21820928.36 -21820928.15 -21820927.94 0.0271 0.0018  
 Mercury -64451-10-04 16:18 J -21819027.97 -21819027.82 -21819027.66 0.0258 0.0152  
 Mercury -64450-01-01 12:28 J -21818939.17 -21818938.98 -21818938.79 0.0258 0.0029  
 Mercury -64450-03-31 08:52 J -21818850.31 -21818850.13 -21818849.95 0.0258 0.0095  
 Mercury -64450-06-28 05:01 J -21818761.38 -21818761.29 -21818761.18 0.0258 0.0219  
 Moon -64449-12-16 13:40 J -21818224.14 -21818223.93 -21818223.72 0.0259 0.0150  
 Earth -64449-12-16 15:49 J -21818224.03 -21818223.84 -21818223.62 0.0259 0.0152 \*  
 Moon -64448-12-28 05:45 J -21817847.50 -21817847.26 -21817847.01 0.0261 0.0005  
 Earth -64448-12-28 08:52 J -21817847.38 -21817847.13 -21817846.88 0.0261 0.0015 \*  
 Mars -64447-04-04 21:49 J -21817749.69 -21817749.59 -21817749.47 0.0261 0.0245  
 Earth -64446-01-09 06:57 J -21817470.38 -21817470.21 -21817470.03 0.0263 0.0187  
 Moon -64446-01-09 08:23 J -21817470.33 -21817470.15 -21817469.96 0.0263 0.0173 \*  
 Venus -64440-03-31 21:06 J -21815196.68 -21815196.62 -21815196.54 0.0290 0.0274  
 Venus -64440-11-16 19:54 J -21814966.82 -21814966.67 -21814966.52 0.0293 0.0204  
 Mercury -64436-07-31 21:49 J -21813613.69 -21813613.59 -21813613.48 0.0304 0.0171  
 Mercury -64436-10-28 11:01 J -21813525.17 -21813525.04 -21813524.91 0.0304 0.0035  
 Mercury -64435-01-24 23:45 J -21813436.63 -21813436.51 -21813436.38 0.0304 0.0104  
 Mercury -64435-04-23 12:42 J -21813348.05 -21813347.97 -21813347.89 0.0304 0.0238  
 Earth -64434-06-23 23:59 J -21812921.72 -21812921.50 -21812921.28 0.0303 0.0119  
 Moon -64434-06-24 00:28 J -21812921.69 -21812921.48 -21812921.26 0.0303 0.0109 \*  
 Mars -64433-05-12 03:21 J -21812598.46 -21812598.36 -21812598.24 0.0301 0.0273  
 Earth -64433-07-07 16:18 J -21812542.03 -21812541.82 -21812541.60 0.0300 0.0139

Moon -64433-07-07 19:25 J -21812541.89 -21812541.69 -21812541.48 0.0300 0.0152 \*  
 Venus -64426-02-01 13:54 J -21810142.12 -21810141.92 -21810141.72 0.0270 0.0074  
 Mercury -64421-02-21 16:47 J -21808295.93 -21808295.80 -21808295.67 0.0259 0.0182  
 Mercury -64421-05-20 12:42 J -21808207.15 -21808206.97 -21808206.78 0.0259 0.0060  
 Mercury -64421-08-17 09:06 J -21808118.30 -21808118.12 -21808117.94 0.0258 0.0064  
 Mercury -64421-11-14 05:30 J -21808029.40 -21808029.27 -21808029.14 0.0258 0.0189  
 Earth -64420-12-12 00:42 J -21807636.59 -21807636.47 -21807636.33 0.0259 0.0221  
 Moon -64420-12-12 02:09 J -21807636.53 -21807636.41 -21807636.26 0.0259 0.0213 \*  
 Mars -64419-05-18 22:47 J -21807478.78 -21807478.55 -21807478.30 0.0259 0.0177  
 Earth -64419-12-23 15:21 J -21807260.10 -21807259.86 -21807259.61 0.0260 0.0058  
 Moon -64419-12-23 18:28 J -21807259.97 -21807259.73 -21807259.48 0.0260 0.0063 \*  
 Moon -64417-01-04 08:52 J -21806883.36 -21806883.13 -21806882.88 0.0262 0.0098  
 Earth -64417-01-04 10:33 J -21806883.28 -21806883.06 -21806882.83 0.0262 0.0113 \*  
 Venus -64411-10-12 04:04 J -21804410.47 -21804410.33 -21804410.18 0.0290 0.0208  
 Venus -64410-05-30 02:52 J -21804180.45 -21804180.38 -21804180.29 0.0293 0.0271  
 Mercury -64407-12-18 23:45 J -21802881.59 -21802881.51 -21802881.41 0.0304 0.0211  
 Mercury -64406-03-17 12:57 J -21802793.08 -21802792.96 -21802792.83 0.0304 0.0073  
 Mercury -64406-06-14 01:54 J -21802704.54 -21802704.42 -21802704.29 0.0304 0.0064  
 Mercury -64406-09-10 14:52 J -21802615.98 -21802615.88 -21802615.78 0.0304 0.0200  
 Moon -64405-06-16 17:45 J -21802335.92 -21802335.76 -21802335.59 0.0304 0.0226  
 Earth -64405-06-16 19:25 J -21802335.83 -21802335.69 -21802335.53 0.0304 0.0237 \*  
 Mars -64405-06-30 16:04 J -21802322.00 -21802321.83 -21802321.66 0.0304 0.0233  
 Moon -64404-07-01 12:28 J -21801956.22 -21801955.98 -21801955.74 0.0302 0.0037  
 Earth -64404-07-01 15:49 J -21801956.07 -21801955.84 -21801955.60 0.0302 0.0025 \*  
 Moon -64403-07-16 00:57 J -21801576.51 -21801576.46 -21801576.39 0.0299 0.0289  
 Earth -64403-07-16 03:49 J -21801576.43 -21801576.34 -21801576.24 0.0299 0.0274 \*  
 Venus -64398-12-28 16:18 J -21799584.90 -21799584.82 -21799584.73 0.0273 0.0247  
 Venus -64397-08-13 19:25 J -21799355.87 -21799355.69 -21799355.50 0.0270 0.0132  
 Mercury -64392-07-10 16:33 J -21797563.90 -21797563.81 -21797563.69 0.0258 0.0214  
 Mercury -64392-10-07 12:42 J -21797475.14 -21797474.97 -21797474.79 0.0258 0.0092

Mercury -64391-01-04 09:06 J -21797386.31 -21797386.12 -21797385.93 0.0258 0.0031

Mercury -64391-04-03 05:01 J -21797297.43 -21797297.29 -21797297.12 0.0258 0.0155

Moon -64390-12-18 18:42 J -21796672.92 -21796672.72 -21796672.50 0.0259 0.0133

Earth -64390-12-18 22:04 J -21796672.79 -21796672.58 -21796672.36 0.0259 0.0134 \*

Mars -64389-07-08 20:37 J -21796469.96 -21796469.64 -21796469.31 0.0260 0.0051

Earth -64389-12-29 14:37 J -21796296.14 -21796295.89 -21796295.64 0.0261 0.0033

Moon -64389-12-29 16:04 J -21796296.07 -21796295.83 -21796295.59 0.0261 0.0021 \*

Earth -64387-01-10 12:28 J -21795919.12 -21795918.98 -21795918.81 0.0263 0.0206

Moon -64387-01-10 16:33 J -21795918.98 -21795918.81 -21795918.63 0.0263 0.0190 \*

Venus -64381-04-23 09:21 J -21793624.29 -21793624.11 -21793623.92 0.0290 0.0148

Mercury -64377-05-07 01:40 J -21792149.50 -21792149.43 -21792149.36 0.0304 0.0251

Mercury -64377-08-03 14:52 J -21792061.00 -21792060.88 -21792060.76 0.0304 0.0114

Mercury -64377-10-31 03:49 J -21791972.47 -21791972.34 -21791972.21 0.0305 0.0024

Mercury -64376-01-27 16:47 J -21791883.91 -21791883.80 -21791883.69 0.0305 0.0161

Mercury -64376-04-26 05:30 J -21791795.29 -21791795.27 -21791795.24 0.0305 0.0296

Earth -64375-06-25 11:16 J -21791370.26 -21791370.03 -21791369.80 0.0303 0.0093

Moon -64375-06-25 14:52 J -21791370.10 -21791369.88 -21791369.64 0.0303 0.0080 \*

Mars -64375-08-18 23:59 J -21791315.76 -21791315.50 -21791315.24 0.0303 0.0037

Earth -64374-07-10 03:21 J -21790990.56 -21790990.36 -21790990.16 0.0300 0.0165

Moon -64374-07-10 05:59 J -21790990.44 -21790990.25 -21790990.04 0.0300 0.0178 \*

Venus -64368-07-09 20:52 J -21788798.77 -21788798.63 -21788798.48 0.0272 0.0193

Venus -64367-02-23 23:45 J -21788569.66 -21788569.51 -21788569.35 0.0270 0.0184

Mercury -64363-11-27 16:33 J -21786831.86 -21786831.81 -21786831.75 0.0258 0.0247

Mercury -64362-02-24 12:28 J -21786743.14 -21786742.98 -21786742.81 0.0258 0.0126

Mercury -64362-05-24 08:52 J -21786654.32 -21786654.13 -21786653.94 0.0258 0.0006

Mercury -64362-08-21 04:47 J -21786565.46 -21786565.30 -21786565.12 0.0258 0.0121

Mercury -64362-11-18 01:11 J -21786476.50 -21786476.45 -21786476.38 0.0258 0.0245

Earth -64361-12-13 04:47 J -21786085.44 -21786085.30 -21786085.14 0.0259 0.0205

Moon -64361-12-13 08:52 J -21786085.29 -21786085.13 -21786084.97 0.0259 0.0196 \*

Moon -64360-12-24 18:28 J -21785708.99 -21785708.73 -21785708.48 0.0260 0.0048



Earth -64360-12-24 19:25 J -21785708.94 -21785708.69 -21785708.44 0.0260 0.0041 \*  
 Moon -64358-01-05 10:33 J -21785332.27 -21785332.06 -21785331.83 0.0262 0.0115  
 Earth -64358-01-05 14:23 J -21785332.11 -21785331.90 -21785331.67 0.0262 0.0131 \*  
 Venus -64352-11-03 15:06 J -21782838.07 -21782837.87 -21782837.67 0.0291 0.0086  
 Mercury -64348-09-24 03:21 J -21781417.39 -21781417.36 -21781417.33 0.0304 0.0293  
 Mercury -64348-12-21 16:33 J -21781328.92 -21781328.81 -21781328.70 0.0304 0.0156  
 Mercury -64347-03-20 05:30 J -21781240.40 -21781240.27 -21781240.14 0.0304 0.0018  
 Mercury -64347-06-16 18:28 J -21781151.85 -21781151.73 -21781151.61 0.0304 0.0118  
 Mercury -64347-09-13 07:25 J -21781063.26 -21781063.19 -21781063.12 0.0304 0.0254  
 Moon -64346-06-19 00:28 J -21780784.64 -21780784.48 -21780784.29 0.0304 0.0201  
 Earth -64346-06-19 04:18 J -21780784.48 -21780784.32 -21780784.14 0.0304 0.0215 \*  
 Moon -64345-07-02 22:33 J -21780404.78 -21780404.56 -21780404.33 0.0302 0.0063  
 Earth -64345-07-03 00:42 J -21780404.70 -21780404.47 -21780404.23 0.0302 0.0048 \*  
 Earth -64344-07-17 12:28 J -21780025.00 -21780024.98 -21780024.95 0.0298 0.0296  
 Venus -64338-01-20 01:40 J -21778012.61 -21778012.43 -21778012.25 0.0272 0.0138  
 Venus -64338-09-06 04:18 J -21777783.41 -21777783.32 -21777783.22 0.0270 0.0238  
 Mercury -64333-07-13 12:13 J -21776011.14 -21776010.99 -21776010.84 0.0258 0.0160  
 Mercury -64333-10-10 08:09 J -21775922.34 -21775922.16 -21775921.97 0.0258 0.0039  
 Mercury -64332-01-07 04:18 J -21775833.49 -21775833.32 -21775833.13 0.0258 0.0085  
 Mercury -64332-04-06 00:42 J -21775744.58 -21775744.47 -21775744.36 0.0258 0.0208  
 Mars -64331-10-12 17:16 J -21775190.05 -21775189.78 -21775189.50 0.0259 0.0143  
 Earth -64331-12-20 00:57 J -21775121.68 -21775121.46 -21775121.24 0.0259 0.0118  
 Moon -64331-12-20 00:57 J -21775121.67 -21775121.46 -21775121.24 0.0259 0.0120 \*  
 Earth -64330-12-31 17:01 J -21774745.03 -21774744.79 -21774744.54 0.0260 0.0050  
 Moon -64330-12-31 20:52 J -21774744.88 -21774744.63 -21774744.38 0.0260 0.0036 \*  
 Moon -64328-01-11 15:06 J -21774368.02 -21774367.87 -21774367.70 0.0263 0.0208  
 Earth -64328-01-11 14:52 J -21774368.00 -21774367.88 -21774367.73 0.0263 0.0222 \*  
 Venus -64322-05-16 18:28 J -21772051.94 -21772051.73 -21772051.52 0.0291 0.0032  
 Mercury -64318-05-10 17:30 J -21770596.86 -21770596.77 -21770596.67 0.0304 0.0203  
 Mercury -64318-08-07 06:42 J -21770508.35 -21770508.22 -21770508.09 0.0305 0.0065

Mercury -64318-11-03 19:40 J -21770419.81 -21770419.68 -21770419.55 0.0305 0.0072

Mercury -64317-01-31 08:23 J -21770331.24 -21770331.15 -21770331.05 0.0305 0.0209

Mars -64317-11-24 05:59 J -21770033.43 -21770033.25 -21770033.06 0.0304 0.0215

Earth -64316-06-26 16:04 J -21769819.06 -21769818.83 -21769818.59 0.0303 0.0071

Moon -64316-06-26 17:16 J -21769819.02 -21769818.78 -21769818.53 0.0303 0.0056 \*

Moon -64315-07-11 06:13 J -21769439.41 -21769439.24 -21769439.05 0.0300 0.0202

Earth -64315-07-11 08:09 J -21769439.34 -21769439.16 -21769438.97 0.0300 0.0186 \*

Venus -64309-08-01 04:18 J -21767226.51 -21767226.32 -21767226.12 0.0272 0.0090

Mercury -64304-11-30 11:30 J -21765279.14 -21765279.02 -21765278.90 0.0258 0.0197

Mercury -64303-02-27 07:25 J -21765190.37 -21765190.19 -21765190.01 0.0258 0.0075

Mercury -64303-05-27 03:35 J -21765101.54 -21765101.35 -21765101.16 0.0258 0.0048

Mercury -64303-08-23 23:45 J -21765012.65 -21765012.51 -21765012.36 0.0258 0.0171

Earth -64302-12-15 05:59 J -21764534.41 -21764534.25 -21764534.07 0.0259 0.0191

Moon -64302-12-15 06:13 J -21764534.41 -21764534.24 -21764534.05 0.0259 0.0186 \*

Mars -64301-12-02 07:25 J -21764181.50 -21764181.19 -21764180.87 0.0260 0.0073

Moon -64301-12-25 16:33 J -21764158.05 -21764157.81 -21764157.56 0.0260 0.0036

Earth -64301-12-25 20:09 J -21764157.90 -21764157.66 -21764157.41 0.0260 0.0026 \*

Earth -64299-01-06 15:06 J -21763781.07 -21763780.87 -21763780.66 0.0262 0.0145

Moon -64299-01-06 15:06 J -21763781.07 -21763780.87 -21763780.66 0.0262 0.0132 \*

Venus -64293-11-25 22:33 J -21761265.77 -21761265.56 -21761265.35 0.0291 0.0023

Mercury -64289-09-26 18:42 J -21759864.79 -21759864.72 -21759864.65 0.0304 0.0250

Mercury -64289-12-24 07:54 J -21759776.29 -21759776.17 -21759776.05 0.0304 0.0112

Mercury -64288-03-22 20:52 J -21759687.76 -21759687.63 -21759687.50 0.0304 0.0025

Mercury -64288-06-19 09:49 J -21759599.20 -21759599.09 -21759598.98 0.0304 0.0161

Mercury -64288-09-15 22:33 J -21759510.58 -21759510.56 -21759510.53 0.0304 0.0297

Moon -64287-06-20 05:59 J -21759233.43 -21759233.25 -21759233.06 0.0304 0.0183

Earth -64287-06-20 05:59 J -21759233.42 -21759233.25 -21759233.05 0.0304 0.0197 \*

Mars -64286-01-12 08:23 J -21759027.40 -21759027.15 -21759026.89 0.0303 0.0060

Earth -64286-07-05 02:23 J -21758853.63 -21758853.40 -21758853.16 0.0302 0.0067

Moon -64286-07-05 05:01 J -21758853.51 -21758853.29 -21758853.06 0.0302 0.0084 \*

Venus -64279-02-11 07:54 J -21756440.37 -21756440.17 -21756439.96 0.0272 0.0039

Mercury -64274-04-19 10:18 J -21754547.13 -21754547.07 -21754546.98 0.0258 0.0234

Mercury -64274-07-17 06:28 J -21754458.40 -21754458.23 -21754458.06 0.0258 0.0113

Mercury -64274-10-14 02:37 J -21754369.58 -21754369.39 -21754369.20 0.0258 0.0010

Mercury -64273-01-10 22:47 J -21754280.71 -21754280.55 -21754280.38 0.0258 0.0132

Mercury -64273-04-08 18:57 J -21754191.72 -21754191.71 -21754191.68 0.0258 0.0256

Moon -64273-12-09 11:45 J -21753947.01 -21753947.01 -21753946.98 0.0258 0.0257

Earth -64272-12-20 23:59 J -21753570.72 -21753570.50 -21753570.26 0.0259 0.0105

Moon -64272-12-21 03:49 J -21753570.56 -21753570.34 -21753570.11 0.0259 0.0108 \*

Earth -64270-01-01 16:33 J -21753194.06 -21753193.81 -21753193.57 0.0260 0.0064

Moon -64270-01-01 17:01 J -21753194.05 -21753193.79 -21753193.54 0.0260 0.0051 \*

Moon -64269-01-13 10:18 J -21752817.19 -21752817.07 -21752816.94 0.0263 0.0225

Earth -64269-01-13 13:54 J -21752817.01 -21752816.92 -21752816.80 0.0263 0.0236 \*

Venus -64263-06-08 00:42 J -21750479.67 -21750479.47 -21750479.26 0.0291 0.0073

Mercury -64259-02-13 19:25 J -21749132.71 -21749132.69 -21749132.67 0.0304 0.0301

Mercury -64259-05-13 08:37 J -21749044.25 -21749044.14 -21749044.03 0.0305 0.0163

Mercury -64259-08-09 21:35 J -21748955.73 -21748955.60 -21748955.47 0.0305 0.0027

Mercury -64259-11-06 10:33 J -21748867.18 -21748867.06 -21748866.93 0.0305 0.0112

Mercury -64258-02-02 23:30 J -21748778.59 -21748778.52 -21748778.44 0.0305 0.0248

Moon -64258-06-13 15:21 J -21748647.88 -21748647.86 -21748647.82 0.0305 0.0302

Moon -64257-06-27 12:42 J -21748268.22 -21748267.97 -21748267.73 0.0303 0.0036

Earth -64257-06-27 16:04 J -21748268.07 -21748267.83 -21748267.60 0.0303 0.0054 \*

Moon -64256-07-12 04:33 J -21747888.47 -21747888.31 -21747888.15 0.0300 0.0222

Earth -64256-07-12 07:54 J -21747888.33 -21747888.17 -21747887.98 0.0300 0.0204 \*

Venus -64250-08-24 09:35 J -21745654.31 -21745654.10 -21745653.89 0.0271 0.0006

Mercury -64245-12-03 05:16 J -21743726.43 -21743726.28 -21743726.13 0.0258 0.0152

Mercury -64244-03-02 01:11 J -21743637.63 -21743637.45 -21743637.26 0.0258 0.0031

Mercury -64244-05-29 21:21 J -21743548.78 -21743548.61 -21743548.43 0.0258 0.0092

Mercury -64244-08-26 17:45 J -21743459.86 -21743459.76 -21743459.66 0.0258 0.0215

Moon -64243-12-16 00:28 J -21742983.66 -21742983.48 -21742983.30 0.0258 0.0178

Earth -64243-12-16 04:18 J -21742983.50 -21742983.32 -21742983.14 0.0258 0.0178 \*  
 Mars -64242-03-07 17:30 J -21742902.04 -21742901.77 -21742901.46 0.0259 0.0126  
 Moon -64242-12-27 17:01 J -21742607.03 -21742606.79 -21742606.55 0.0260 0.0024  
 Earth -64242-12-27 17:59 J -21742607.00 -21742606.75 -21742606.50 0.0260 0.0013 \*  
 Earth -64240-01-07 12:42 J -21742230.16 -21742229.97 -21742229.77 0.0262 0.0158  
 Moon -64240-01-07 16:18 J -21742230.02 -21742229.82 -21742229.61 0.0262 0.0146 \*  
 Venus -64234-12-19 03:35 J -21739693.54 -21739693.35 -21739693.15 0.0291 0.0124  
 Mercury -64230-09-30 09:21 J -21738312.20 -21738312.11 -21738312.02 0.0304 0.0214  
 Mercury -64230-12-27 22:33 J -21738223.69 -21738223.56 -21738223.44 0.0304 0.0076  
 Mercury -64229-03-25 11:30 J -21738135.15 -21738135.02 -21738134.89 0.0304 0.0061  
 Mercury -64229-06-22 00:28 J -21738046.58 -21738046.48 -21738046.38 0.0304 0.0197  
 Mars -64228-04-19 01:25 J -21737745.63 -21737745.44 -21737745.24 0.0304 0.0201  
 Earth -64228-06-21 03:06 J -21737682.55 -21737682.37 -21737682.17 0.0304 0.0182  
 Moon -64228-06-21 06:42 J -21737682.42 -21737682.22 -21737682.02 0.0304 0.0165 \*  
 Earth -64227-07-05 23:30 J -21737302.75 -21737302.52 -21737302.29 0.0302 0.0082  
 Moon -64227-07-06 02:23 J -21737302.62 -21737302.40 -21737302.16 0.0302 0.0100 \*  
 Venus -64220-03-05 11:45 J -21734868.21 -21734868.01 -21734867.80 0.0272 0.0052  
 Mercury -64215-04-22 04:04 J -21732994.45 -21732994.33 -21732994.20 0.0258 0.0191  
 Mercury -64215-07-19 23:59 J -21732905.68 -21732905.50 -21732905.32 0.0258 0.0070  
 Mercury -64215-10-16 20:09 J -21732816.85 -21732816.66 -21732816.47 0.0258 0.0052  
 Mercury -64214-01-13 16:18 J -21732727.96 -21732727.82 -21732727.68 0.0258 0.0175  
 Earth -64214-12-11 09:21 J -21732396.16 -21732396.11 -21732396.06 0.0258 0.0252  
 Moon -64214-12-11 12:57 J -21732396.02 -21732395.96 -21732395.89 0.0258 0.0248  
 Earth -64213-12-21 21:06 J -21732019.85 -21732019.62 -21732019.38 0.0259 0.0092  
 Moon -64213-12-21 22:33 J -21732019.79 -21732019.56 -21732019.31 0.0259 0.0100 \*  
 Mars -64212-04-27 04:18 J -21731893.62 -21731893.32 -21731893.01 0.0259 0.0095  
 Moon -64211-01-02 09:49 J -21731643.33 -21731643.09 -21731642.84 0.0260 0.0063  
 Earth -64211-01-02 13:25 J -21731643.18 -21731642.94 -21731642.70 0.0260 0.0076 \*  
 Moon -64210-01-14 09:21 J -21731266.19 -21731266.11 -21731266.01 0.0263 0.0242  
 Earth -64210-01-14 10:47 J -21731266.12 -21731266.05 -21731265.96 0.0263 0.0248 \*

Venus -64204-06-30 04:47 J -21728907.47 -21728907.30 -21728907.13 0.0292 0.0171  
 Mercury -64200-02-16 09:35 J -21727580.15 -21727580.10 -21727580.04 0.0304 0.0269  
 Mercury -64200-05-15 22:47 J -21727491.66 -21727491.55 -21727491.43 0.0305 0.0131  
 Mercury -64200-08-12 11:59 J -21727403.13 -21727403.00 -21727402.87 0.0305 0.0010  
 Mercury -64200-11-09 00:57 J -21727314.58 -21727314.46 -21727314.35 0.0305 0.0144  
 Mercury -64199-02-05 13:40 J -21727225.97 -21727225.93 -21727225.88 0.0305 0.0280  
 Moon -64199-06-14 07:11 J -21727097.26 -21727097.20 -21727097.11 0.0305 0.0288  
 Earth -64199-06-14 10:47 J -21727097.06 -21727097.05 -21727097.02 0.0305 0.0304  
 Mars -64198-06-06 21:35 J -21726739.86 -21726739.60 -21726739.35 0.0304 0.0059  
 Moon -64198-06-29 08:23 J -21726717.38 -21726717.15 -21726716.92 0.0303 0.0023  
 Earth -64198-06-29 10:33 J -21726717.30 -21726717.06 -21726716.82 0.0303 0.0040 \*  
 Earth -64197-07-13 02:37 J -21726337.54 -21726337.39 -21726337.21 0.0301 0.0218  
 Moon -64197-07-13 03:21 J -21726337.49 -21726337.36 -21726337.21 0.0301 0.0235 \*  
 Venus -64191-09-15 12:13 J -21724082.18 -21724081.99 -21724081.79 0.0271 0.0091  
 Mercury -64186-09-09 02:09 J -21722262.48 -21722262.41 -21722262.32 0.0258 0.0234  
 Mercury -64186-12-06 22:04 J -21722173.74 -21722173.58 -21722173.40 0.0258 0.0113  
 Mercury -64185-03-04 18:13 J -21722084.93 -21722084.74 -21722084.55 0.0258 0.0010  
 Mercury -64185-06-01 14:23 J -21721996.06 -21721995.90 -21721995.73 0.0258 0.0132  
 Mercury -64185-08-29 10:33 J -21721907.08 -21721907.06 -21721907.03 0.0258 0.0255  
 Moon -64184-12-16 22:33 J -21721432.73 -21721432.56 -21721432.37 0.0258 0.0172  
 Earth -64184-12-16 23:59 J -21721432.69 -21721432.50 -21721432.31 0.0258 0.0166 \*  
 Earth -64183-12-28 13:40 J -21721056.18 -21721055.93 -21721055.68 0.0260 0.0001  
 Moon -64183-12-28 16:47 J -21721056.04 -21721055.80 -21721055.55 0.0260 0.0015 \*  
 Earth -64181-01-09 08:09 J -21720679.35 -21720679.16 -21720678.97 0.0262 0.0170  
 Moon -64181-01-09 09:49 J -21720679.29 -21720679.09 -21720678.88 0.0262 0.0159 \*  
 Venus -64175-05-25 08:23 J -21718351.23 -21718351.15 -21718351.03 0.0289 0.0254  
 Venus -64174-01-10 06:57 J -21718121.34 -21718121.21 -21718121.07 0.0292 0.0219  
 Mercury -64171-10-02 23:30 J -21716759.62 -21716759.52 -21716759.41 0.0304 0.0183  
 Mercury -64171-12-30 12:42 J -21716671.10 -21716670.97 -21716670.84 0.0304 0.0046  
 Mercury -64170-03-29 01:40 J -21716582.55 -21716582.43 -21716582.31 0.0304 0.0091

Mercury -64170-06-25 14:23 J -21716493.98 -21716493.90 -21716493.81 0.0304 0.0228  
 Earth -64169-06-21 21:21 J -21716131.81 -21716131.61 -21716131.41 0.0304 0.0168  
 Moon -64169-06-21 23:01 J -21716131.75 -21716131.54 -21716131.33 0.0304 0.0152 \*  
 Moon -64168-07-06 15:35 J -21715752.08 -21715751.85 -21715751.62 0.0302 0.0110  
 Earth -64168-07-06 17:16 J -21715752.00 -21715751.78 -21715751.55 0.0302 0.0095 \*  
 Venus -64162-08-11 10:04 J -21713525.16 -21713525.08 -21713524.98 0.0274 0.0246  
 Venus -64161-03-27 13:54 J -21713296.09 -21713295.92 -21713295.73 0.0271 0.0137  
 Mercury -64156-04-24 20:37 J -21711441.78 -21711441.64 -21711441.48 0.0258 0.0153  
 Mercury -64156-07-22 16:47 J -21711352.99 -21711352.80 -21711352.61 0.0258 0.0031  
 Mercury -64156-10-19 12:57 J -21711264.14 -21711263.96 -21711263.78 0.0258 0.0091  
 Mercury -64155-01-16 09:06 J -21711175.22 -21711175.12 -21711175.01 0.0258 0.0214  
 Earth -64155-12-12 04:33 J -21710845.39 -21710845.31 -21710845.21 0.0258 0.0241  
 Moon -64155-12-12 06:13 J -21710845.32 -21710845.24 -21710845.14 0.0258 0.0239 \*  
 Mars -64154-07-31 09:21 J -21710614.40 -21710614.11 -21710613.80 0.0258 0.0109  
 Moon -64154-12-23 12:57 J -21710469.19 -21710468.96 -21710468.71 0.0259 0.0092  
 Earth -64154-12-23 16:33 J -21710469.05 -21710468.81 -21710468.57 0.0259 0.0080 \*  
 Moon -64152-01-03 06:13 J -21710092.47 -21710092.24 -21710092.00 0.0260 0.0075  
 Earth -64152-01-03 08:23 J -21710092.38 -21710092.15 -21710091.91 0.0260 0.0089 \*  
 Earth -64151-01-15 05:30 J -21709715.29 -21709715.27 -21709715.21 0.0263 0.0260  
 Moon -64151-01-15 08:52 J -21709715.16 -21709715.13 -21709715.08 0.0263 0.0258  
 Venus -64146-12-05 09:49 J -21707565.23 -21707565.09 -21707564.93 0.0289 0.0207  
 Venus -64145-07-22 07:54 J -21707335.25 -21707335.17 -21707335.08 0.0292 0.0265  
 Mercury -64141-02-19 23:30 J -21706027.59 -21706027.52 -21706027.43 0.0304 0.0240  
 Mercury -64141-05-18 12:42 J -21705939.09 -21705938.97 -21705938.84 0.0305 0.0102  
 Mercury -64141-08-15 01:54 J -21705850.55 -21705850.42 -21705850.29 0.0305 0.0036  
 Mercury -64141-11-11 14:52 J -21705761.99 -21705761.88 -21705761.78 0.0305 0.0173  
 Moon -64140-06-15 02:23 J -21705546.48 -21705546.40 -21705546.29 0.0305 0.0277  
 Earth -64140-06-15 03:21 J -21705546.41 -21705546.36 -21705546.28 0.0305 0.0292 \*  
 Mars -64140-09-11 05:16 J -21705458.47 -21705458.28 -21705458.09 0.0305 0.0210  
 Earth -64139-06-30 03:06 J -21705166.61 -21705166.37 -21705166.13 0.0303 0.0027

Moon -64139-06-30 05:16 J -21705166.51 -21705166.28 -21705166.05 0.0303 0.0012 \*  
 Earth -64138-07-14 19:25 J -21704786.84 -21704786.69 -21704786.54 0.0301 0.0230  
 Moon -64138-07-14 23:01 J -21704786.67 -21704786.54 -21704786.40 0.0301 0.0244 \*  
 Venus -64132-02-20 09:49 J -21702739.21 -21702739.09 -21702738.95 0.0274 0.0209  
 Venus -64132-10-07 13:54 J -21702510.09 -21702509.92 -21702509.76 0.0271 0.0172  
 Mercury -64127-09-11 18:42 J -21700709.83 -21700709.72 -21700709.59 0.0258 0.0197  
 Mercury -64127-12-09 14:52 J -21700621.06 -21700620.88 -21700620.70 0.0258 0.0075  
 Mercury -64126-03-08 11:01 J -21700532.23 -21700532.04 -21700531.86 0.0258 0.0047  
 Mercury -64126-06-05 06:57 J -21700443.34 -21700443.21 -21700443.06 0.0258 0.0170  
 Earth -64125-12-17 18:42 J -21699881.91 -21699881.72 -21699881.51 0.0258 0.0155  
 Moon -64125-12-17 22:04 J -21699881.77 -21699881.58 -21699881.39 0.0258 0.0165 \*  
 Mars -64124-09-19 13:54 J -21699606.21 -21699605.92 -21699605.61 0.0259 0.0105  
 Earth -64124-12-29 08:37 J -21699505.39 -21699505.14 -21699504.89 0.0260 0.0011  
 Moon -64124-12-29 11:16 J -21699505.29 -21699505.03 -21699504.78 0.0260 0.0006 \*  
 Moon -64122-01-10 00:13 J -21699128.67 -21699128.49 -21699128.29 0.0262 0.0174  
 Earth -64122-01-10 02:52 J -21699128.54 -21699128.38 -21699128.18 0.0262 0.0182 \*  
 Venus -64116-06-16 11:30 J -21696779.19 -21696779.02 -21696778.84 0.0289 0.0161  
 Mercury -64112-07-09 00:13 J -21695295.52 -21695295.49 -21695295.46 0.0304 0.0292  
 Mercury -64112-10-05 13:25 J -21695207.05 -21695206.94 -21695206.83 0.0304 0.0155  
 Mercury -64111-01-02 02:23 J -21695118.53 -21695118.40 -21695118.27 0.0304 0.0019  
 Mercury -64111-03-31 15:21 J -21695029.97 -21695029.86 -21695029.74 0.0304 0.0120  
 Mercury -64111-06-28 04:18 J -21694941.39 -21694941.32 -21694941.25 0.0304 0.0255  
 Moon -64110-06-23 10:04 J -21694581.29 -21694581.08 -21694580.85 0.0304 0.0141  
 Earth -64110-06-23 12:57 J -21694581.16 -21694580.96 -21694580.75 0.0304 0.0156 \*  
 Mars -64110-10-30 03:06 J -21694452.63 -21694452.37 -21694452.12 0.0303 0.0062  
 Moon -64109-07-07 05:30 J -21694201.48 -21694201.27 -21694201.05 0.0302 0.0120  
 Earth -64109-07-07 08:52 J -21694201.35 -21694201.13 -21694200.90 0.0302 0.0107 \*  
 Venus -64103-09-02 11:16 J -21691953.19 -21691953.03 -21691952.85 0.0274 0.0165  
 Venus -64102-04-19 15:06 J -21691723.99 -21691723.87 -21691723.74 0.0271 0.0217  
 Mercury -64097-01-29 17:16 J -21689977.84 -21689977.78 -21689977.70 0.0258 0.0237

Mercury -64097-04-27 13:25 J -21689889.11 -21689888.94 -21689888.77 0.0258 0.0115  
 Mercury -64097-07-25 09:21 J -21689800.30 -21689800.11 -21689799.92 0.0258 0.0008  
 Mercury -64097-10-22 05:30 J -21689711.43 -21689711.27 -21689711.10 0.0258 0.0129  
 Mercury -64096-01-19 01:40 J -21689622.46 -21689622.43 -21689622.38 0.0258 0.0252  
 Moon -64096-12-12 20:23 J -21689294.74 -21689294.65 -21689294.53 0.0258 0.0233  
 Earth -64096-12-12 23:30 J -21689294.63 -21689294.52 -21689294.40 0.0258 0.0229 \*  
 Moon -64095-12-24 09:06 J -21688918.35 -21688918.12 -21688917.89 0.0259 0.0082  
 Earth -64095-12-24 11:16 J -21688918.27 -21688918.03 -21688917.78 0.0259 0.0068 \*  
 Earth -64093-01-05 03:21 J -21688541.59 -21688541.36 -21688541.13 0.0260 0.0100  
 Moon -64093-01-05 05:45 J -21688541.49 -21688541.26 -21688541.03 0.0260 0.0088 \*  
 Venus -64087-12-27 13:11 J -21685993.14 -21685992.95 -21685992.75 0.0289 0.0114  
 Mercury -64082-02-22 13:25 J -21684475.03 -21684474.94 -21684474.84 0.0304 0.0210  
 Mercury -64082-05-22 02:37 J -21684386.51 -21684386.39 -21684386.26 0.0305 0.0073  
 Mercury -64082-08-18 15:35 J -21684297.97 -21684297.85 -21684297.72 0.0305 0.0065  
 Mercury -64082-11-15 04:33 J -21684209.40 -21684209.31 -21684209.21 0.0305 0.0201  
 Earth -64081-06-15 19:25 J -21683995.77 -21683995.69 -21683995.58 0.0305 0.0280  
 Moon -64081-06-15 22:47 J -21683995.66 -21683995.55 -21683995.42 0.0305 0.0263 \*  
 Earth -64080-06-30 18:57 J -21683615.95 -21683615.71 -21683615.47 0.0303 0.0014  
 Moon -64080-06-30 22:18 J -21683615.82 -21683615.57 -21683615.33 0.0303 0.0005 \*  
 Earth -64079-07-15 11:01 J -21683236.16 -21683236.04 -21683235.88 0.0301 0.0243  
 Moon -64079-07-15 11:30 J -21683236.14 -21683236.02 -21683235.87 0.0301 0.0251 \*  
 Venus -64073-03-14 11:16 J -21681167.22 -21681167.03 -21681166.85 0.0274 0.0127  
 Venus -64073-10-29 14:52 J -21680937.95 -21680937.88 -21680937.80 0.0271 0.0253  
 Mercury -64068-09-14 11:30 J -21679157.17 -21679157.02 -21679156.88 0.0258 0.0159  
 Mercury -64068-12-12 07:25 J -21679068.38 -21679068.19 -21679068.00 0.0258 0.0038  
 Mercury -64067-03-11 03:35 J -21678979.53 -21678979.35 -21678979.17 0.0258 0.0084  
 Mercury -64067-06-07 23:30 J -21678890.62 -21678890.52 -21678890.40 0.0258 0.0208  
 Earth -64066-12-19 13:40 J -21678331.13 -21678330.93 -21678330.72 0.0258 0.0143  
 Moon -64066-12-19 16:04 J -21678331.02 -21678330.83 -21678330.61 0.0258 0.0154 \*  
 Mars -64066-12-23 19:25 J -21678327.00 -21678326.69 -21678326.39 0.0258 0.0099



Moon -64065-12-30 01:11 J -21677954.71 -21677954.45 -21677954.19 0.0260 0.0009  
 Earth -64065-12-30 03:49 J -21677954.59 -21677954.34 -21677954.09 0.0260 0.0023 \*  
 Moon -64063-01-10 19:25 J -21677577.85 -21677577.69 -21677577.52 0.0262 0.0188  
 Earth -64063-01-10 22:18 J -21677577.73 -21677577.57 -21677577.39 0.0262 0.0194 \*  
 Venus -64057-07-08 15:21 J -21675207.07 -21675206.86 -21675206.65 0.0289 0.0066  
 Mercury -64053-07-11 14:09 J -21673742.97 -21673742.91 -21673742.84 0.0304 0.0262  
 Mercury -64053-10-08 03:21 J -21673654.47 -21673654.36 -21673654.24 0.0304 0.0124  
 Mercury -64052-01-04 16:33 J -21673565.94 -21673565.81 -21673565.68 0.0304 0.0013  
 Mercury -64052-04-03 05:30 J -21673477.38 -21673477.27 -21673477.16 0.0304 0.0149  
 Mercury -64052-06-30 18:13 J -21673388.78 -21673388.74 -21673388.69 0.0304 0.0284  
 Mars -64051-02-03 11:59 J -21673171.19 -21673171.00 -21673170.81 0.0304 0.0207  
 Moon -64051-06-24 03:06 J -21673030.58 -21673030.37 -21673030.15 0.0304 0.0128  
 Earth -64051-06-24 05:59 J -21673030.46 -21673030.25 -21673030.04 0.0304 0.0143 \*  
 Earth -64050-07-09 01:40 J -21672650.65 -21672650.43 -21672650.21 0.0302 0.0120  
 Moon -64050-07-09 01:54 J -21672650.63 -21672650.42 -21672650.21 0.0302 0.0130 \*  
 Venus -64044-09-24 12:42 J -21670381.17 -21670380.97 -21670380.77 0.0274 0.0082  
 Mercury -64038-02-01 10:04 J -21668425.19 -21668425.08 -21668424.96 0.0258 0.0198  
 Mercury -64038-05-01 05:59 J -21668336.42 -21668336.25 -21668336.06 0.0258 0.0077  
 Mercury -64038-07-29 02:09 J -21668247.59 -21668247.41 -21668247.22 0.0258 0.0045  
 Mercury -64038-10-25 22:18 J -21668158.71 -21668158.57 -21668158.42 0.0258 0.0168  
 Moon -64037-12-13 16:04 J -21667743.94 -21667743.83 -21667743.70 0.0258 0.0222  
 Earth -64037-12-13 18:42 J -21667743.83 -21667743.72 -21667743.57 0.0258 0.0217 \*  
 Earth -64036-12-25 07:11 J -21667367.44 -21667367.20 -21667366.95 0.0259 0.0055  
 Moon -64036-12-25 09:49 J -21667367.33 -21667367.09 -21667366.86 0.0259 0.0069 \*  
 Mars -64035-02-12 05:45 J -21667318.55 -21667318.26 -21667317.96 0.0259 0.0119  
 Earth -64034-01-05 23:30 J -21666990.74 -21666990.52 -21666990.29 0.0260 0.0113  
 Moon -64034-01-06 02:37 J -21666990.61 -21666990.39 -21666990.14 0.0260 0.0104 \*  
 Venus -64027-01-18 17:45 J -21664420.97 -21664420.76 -21664420.54 0.0289 0.0016  
 Mercury -64023-02-25 03:49 J -21662922.45 -21662922.34 -21662922.24 0.0304 0.0178  
 Mercury -64023-05-24 16:47 J -21662833.93 -21662833.80 -21662833.67 0.0304 0.0041

Mercury -64023-08-21 05:45 J -21662745.38 -21662745.26 -21662745.13 0.0305 0.0097

Mercury -64023-11-17 18:42 J -21662656.80 -21662656.72 -21662656.63 0.0305 0.0232

Earth -64022-06-17 13:11 J -21662445.05 -21662444.95 -21662444.82 0.0305 0.0266

Moon -64022-06-17 15:35 J -21662444.98 -21662444.85 -21662444.70 0.0305 0.0250 \*

Mars -64021-03-23 07:54 J -21662165.43 -21662165.17 -21662164.91 0.0304 0.0052

Moon -64021-07-01 11:45 J -21662065.26 -21662065.01 -21662064.77 0.0303 0.0012

Earth -64021-07-01 12:28 J -21662065.22 -21662064.98 -21662064.74 0.0303 0.0002 \*

Moon -64020-07-16 00:57 J -21661685.57 -21661685.46 -21661685.33 0.0301 0.0260

Earth -64020-07-16 04:18 J -21661685.43 -21661685.32 -21661685.19 0.0301 0.0256 \*

Venus -64014-04-06 12:42 J -21659595.18 -21659594.97 -21659594.76 0.0274 0.0044

Mercury -64009-06-20 08:09 J -21657693.21 -21657693.16 -21657693.08 0.0258 0.0241

Mercury -64009-09-17 04:18 J -21657604.49 -21657604.32 -21657604.15 0.0258 0.0120

Mercury -64009-12-15 00:28 J -21657515.67 -21657515.48 -21657515.29 0.0258 0.0006

Mercury -64008-03-13 20:23 J -21657426.81 -21657426.65 -21657426.48 0.0258 0.0125

Mercury -64008-06-10 16:33 J -21657337.85 -21657337.81 -21657337.75 0.0258 0.0248

Moon -64007-12-20 08:09 J -21656780.38 -21656780.16 -21656779.95 0.0258 0.0143

Earth -64007-12-20 10:04 J -21656780.29 -21656780.08 -21656779.86 0.0258 0.0131 \*

Moon -64006-12-31 21:21 J -21656403.85 -21656403.61 -21656403.36 0.0260 0.0024

Earth -64005-01-01 00:28 J -21656403.72 -21656403.48 -21656403.23 0.0260 0.0036 \*

Earth -64004-01-11 19:11 J -21656026.84 -21656026.70 -21656026.53 0.0262 0.0207

Moon -64004-01-11 20:37 J -21656026.78 -21656026.64 -21656026.48 0.0262 0.0206 \*

# 64TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 64th millennium BCE.

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
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TRANSIT

TIME

Venus -63998-07-31 20:37 J -21653634.85 -21653634.64 -21653634.43 0.0289 0.0036

Mercury -63994-07-15 04:47 J -21652190.39 -21652190.30 -21652190.21 0.0304 0.0227

Mercury -63994-10-11 17:59 J -21652101.88 -21652101.75 -21652101.63 0.0304 0.0090

Mercury -63993-01-08 06:57 J -21652013.34 -21652013.21 -21652013.08 0.0304 0.0047

Mercury -63993-04-05 19:54 J -21651924.77 -21651924.67 -21651924.57 0.0304 0.0183

Earth -63992-06-25 01:11 J -21651479.66 -21651479.45 -21651479.23 0.0304 0.0127

Moon -63992-06-25 02:52 J -21651479.59 -21651479.38 -21651479.16 0.0304 0.0116 \*

Earth -63991-07-09 20:37 J -21651099.85 -21651099.64 -21651099.42 0.0301 0.0136

Moon -63991-07-10 00:13 J -21651099.70 -21651099.49 -21651099.28 0.0301 0.0144 \*

Venus -63985-10-16 15:06 J -21648809.08 -21648808.87 -21648808.66 0.0274 0.0004

Mercury -63979-02-04 03:21 J -21646872.51 -21646872.36 -21646872.21 0.0259 0.0156

Mercury -63979-05-03 23:30 J -21646783.71 -21646783.52 -21646783.33 0.0258 0.0035

Mercury -63979-07-31 19:25 J -21646694.86 -21646694.69 -21646694.50 0.0258 0.0088

Mercury -63979-10-28 15:35 J -21646605.95 -21646605.85 -21646605.73 0.0258 0.0211

Earth -63978-12-15 16:33 J -21646192.96 -21646192.81 -21646192.66 0.0258 0.0202

Moon -63978-12-15 17:45 J -21646192.89 -21646192.76 -21646192.62 0.0258 0.0211 \*

Mars -63977-05-17 17:16 J -21646039.09 -21646038.78 -21646038.46 0.0258 0.0085

Earth -63977-12-26 05:01 J -21645816.53 -21645816.29 -21645816.04 0.0259 0.0040

Moon -63977-12-26 08:23 J -21645816.40 -21645816.15 -21645815.90 0.0259 0.0053 \*

Moon -63975-01-06 20:23 J -21645439.88 -21645439.65 -21645439.42 0.0261 0.0123

Earth -63975-01-06 21:49 J -21645439.80 -21645439.59 -21645439.37 0.0261 0.0129 \*

Venus -63968-02-10 00:28 J -21642848.68 -21642848.48 -21642848.27 0.0289 0.0092

Mercury -63965-12-01 05:30 J -21641458.32 -21641458.27 -21641458.21 0.0304 0.0275

Mercury -63964-02-27 18:42 J -21641369.84 -21641369.72 -21641369.60 0.0304 0.0139

Mercury -63964-05-27 07:40 J -21641281.31 -21641281.18 -21641281.05 0.0304 0.0007

Mercury -63964-08-23 20:37 J -21641192.75 -21641192.64 -21641192.52 0.0304 0.0134

Mercury -63964-11-20 09:35 J -21641104.16 -21641104.10 -21641104.04 0.0305 0.0269

Moon -63963-06-18 08:37 J -21640894.28 -21640894.14 -21640893.98 0.0305 0.0237

Earth -63963-06-18 11:30 J -21640894.15 -21640894.02 -21640893.88 0.0305 0.0248 \*  
 Mars -63963-06-28 23:30 J -21640883.71 -21640883.52 -21640883.33 0.0304 0.0214  
 Moon -63962-07-03 06:28 J -21640514.47 -21640514.23 -21640513.99 0.0303 0.0026  
 Earth -63962-07-03 10:04 J -21640514.32 -21640514.08 -21640513.84 0.0303 0.0018 \*  
 Moon -63961-07-16 23:30 J -21640134.60 -21640134.52 -21640134.42 0.0300 0.0276  
 Earth -63961-07-17 01:25 J -21640134.53 -21640134.44 -21640134.33 0.0300 0.0272 \*  
 Venus -63955-04-28 15:49 J -21638023.05 -21638022.84 -21638022.63 0.0273 0.0045  
 Mercury -63950-06-24 01:54 J -21636140.54 -21636140.42 -21636140.30 0.0259 0.0197  
 Mercury -63950-09-20 21:49 J -21636051.76 -21636051.59 -21636051.40 0.0258 0.0076  
 Mercury -63950-12-18 17:59 J -21635962.93 -21635962.75 -21635962.56 0.0258 0.0047  
 Mercury -63949-03-16 14:09 J -21635874.04 -21635873.91 -21635873.76 0.0258 0.0170  
 Moon -63948-12-21 05:59 J -21635229.46 -21635229.25 -21635229.03 0.0258 0.0129  
 Earth -63948-12-21 09:21 J -21635229.33 -21635229.11 -21635228.88 0.0258 0.0115 \*  
 Mars -63947-07-08 03:49 J -21635030.62 -21635030.34 -21635030.05 0.0259 0.0135  
 Earth -63946-01-02 00:13 J -21634852.73 -21634852.49 -21634852.24 0.0260 0.0052  
 Moon -63946-01-02 01:40 J -21634852.67 -21634852.43 -21634852.19 0.0260 0.0044 \*  
 Earth -63945-01-13 19:25 J -21634475.80 -21634475.69 -21634475.55 0.0262 0.0223  
 Moon -63945-01-13 23:30 J -21634475.64 -21634475.52 -21634475.38 0.0262 0.0224 \*  
 Venus -63939-08-23 05:01 J -21632062.47 -21632062.29 -21632062.11 0.0290 0.0149  
 Mercury -63935-07-17 20:09 J -21630637.77 -21630637.66 -21630637.56 0.0303 0.0183  
 Mercury -63935-10-14 09:06 J -21630549.25 -21630549.12 -21630548.99 0.0304 0.0047  
 Mercury -63934-01-10 22:04 J -21630460.70 -21630460.58 -21630460.45 0.0304 0.0090  
 Mercury -63934-04-09 11:01 J -21630372.12 -21630372.04 -21630371.95 0.0304 0.0224  
 Earth -63933-06-26 01:25 J -21629928.66 -21629928.44 -21629928.21 0.0303 0.0107  
 Moon -63933-06-26 05:16 J -21629928.51 -21629928.28 -21629928.05 0.0303 0.0098 \*  
 Mars -63933-08-16 05:45 J -21629877.52 -21629877.26 -21629877.00 0.0303 0.0064  
 Earth -63932-07-10 20:23 J -21629548.85 -21629548.65 -21629548.44 0.0301 0.0155  
 Moon -63932-07-10 22:04 J -21629548.79 -21629548.58 -21629548.37 0.0301 0.0159 \*  
 Venus -63926-11-08 18:57 J -21627236.91 -21627236.71 -21627236.51 0.0273 0.0095  
 Mercury -63921-11-10 01:25 J -21625408.52 -21625408.44 -21625408.35 0.0259 0.0231

Mercury -63920-02-06 21:21 J -21625319.77 -21625319.61 -21625319.43 0.0259 0.0110

Mercury -63920-05-06 17:30 J -21625230.96 -21625230.77 -21625230.58 0.0259 0.0013

Mercury -63920-08-03 13:40 J -21625142.09 -21625141.93 -21625141.76 0.0258 0.0136

Earth -63919-12-16 16:33 J -21624641.97 -21624641.81 -21624641.63 0.0258 0.0186

Moon -63919-12-16 20:37 J -21624641.80 -21624641.64 -21624641.48 0.0258 0.0197 \*

Moon -63918-12-28 05:01 J -21624265.54 -21624265.29 -21624265.03 0.0259 0.0034

Earth -63918-12-28 05:59 J -21624265.50 -21624265.25 -21624265.00 0.0259 0.0023 \*

Moon -63916-01-07 19:25 J -21623888.89 -21623888.69 -21623888.47 0.0261 0.0145

Earth -63916-01-07 23:30 J -21623888.73 -21623888.52 -21623888.32 0.0261 0.0146 \*

Venus -63910-07-18 13:11 J -21621506.04 -21621505.95 -21621505.84 0.0286 0.0252

Venus -63909-03-04 09:49 J -21621276.22 -21621276.09 -21621275.93 0.0290 0.0210

Mercury -63906-12-04 21:06 J -21619905.70 -21619905.62 -21619905.53 0.0303 0.0229

Mercury -63905-03-02 10:18 J -21619817.19 -21619817.07 -21619816.94 0.0304 0.0092

Mercury -63905-05-29 23:30 J -21619728.65 -21619728.52 -21619728.40 0.0304 0.0046

Mercury -63905-08-26 12:13 J -21619640.09 -21619639.99 -21619639.88 0.0304 0.0180

Moon -63904-06-19 11:16 J -21619343.19 -21619343.03 -21619342.87 0.0304 0.0220

Earth -63904-06-19 14:09 J -21619343.06 -21619342.91 -21619342.74 0.0304 0.0226 \*

Moon -63903-07-04 11:30 J -21618963.25 -21618963.02 -21618962.79 0.0303 0.0044

Earth -63903-07-04 12:13 J -21618963.22 -21618962.99 -21618962.75 0.0303 0.0039 \*

Earth -63902-07-19 03:06 J -21618583.42 -21618583.37 -21618583.31 0.0300 0.0292

Moon -63902-07-19 05:16 J -21618583.32 -21618583.28 -21618583.22 0.0300 0.0292 \*

Venus -63897-10-03 15:49 J -21616679.92 -21616679.84 -21616679.75 0.0276 0.0249

Venus -63896-05-20 20:52 J -21616450.81 -21616450.63 -21616450.45 0.0273 0.0140

Mercury -63891-06-26 20:23 J -21614587.80 -21614587.65 -21614587.49 0.0259 0.0148

Mercury -63891-09-23 16:33 J -21614498.99 -21614498.81 -21614498.62 0.0258 0.0026

Mercury -63891-12-21 12:42 J -21614410.14 -21614409.97 -21614409.79 0.0258 0.0098

Mercury -63890-03-20 08:52 J -21614321.21 -21614321.13 -21614321.02 0.0258 0.0221

Mars -63889-10-11 01:11 J -21613750.76 -21613750.45 -21613750.12 0.0259 0.0065

Earth -63889-12-22 11:45 J -21613678.24 -21613678.01 -21613677.78 0.0259 0.0098

Moon -63889-12-22 11:45 J -21613678.22 -21613678.01 -21613677.79 0.0259 0.0111 \*

Earth -63887-01-03 03:21 J -21613301.60 -21613301.36 -21613301.12 0.0260 0.0070  
 Moon -63887-01-03 06:42 J -21613301.45 -21613301.22 -21613300.97 0.0260 0.0064 \*  
 Earth -63886-01-14 23:16 J -21612924.62 -21612924.53 -21612924.43 0.0262 0.0242  
 Moon -63886-01-14 23:30 J -21612924.60 -21612924.52 -21612924.43 0.0262 0.0247 \*  
 Venus -63880-01-27 19:11 J -21610719.85 -21610719.70 -21610719.53 0.0287 0.0191  
 Venus -63880-09-14 16:04 J -21610489.89 -21610489.83 -21610489.75 0.0290 0.0273  
 Mercury -63876-04-22 23:01 J -21609173.59 -21609173.54 -21609173.47 0.0303 0.0268  
 Mercury -63876-07-20 12:13 J -21609085.10 -21609084.99 -21609084.87 0.0303 0.0132  
 Mercury -63876-10-17 01:25 J -21608996.57 -21608996.44 -21608996.31 0.0304 0.0011  
 Mercury -63875-01-13 14:09 J -21608908.02 -21608907.91 -21608907.79 0.0304 0.0141  
 Mercury -63875-04-12 03:06 J -21608819.42 -21608819.37 -21608819.31 0.0304 0.0275  
 Mars -63875-11-22 11:01 J -21608595.24 -21608595.04 -21608594.83 0.0304 0.0193  
 Moon -63874-06-28 07:11 J -21608377.44 -21608377.20 -21608376.96 0.0303 0.0078  
 Earth -63874-06-28 07:11 J -21608377.42 -21608377.20 -21608376.96 0.0303 0.0083 \*  
 Moon -63873-07-11 22:47 J -21607997.75 -21607997.55 -21607997.35 0.0301 0.0178  
 Earth -63873-07-12 01:25 J -21607997.63 -21607997.44 -21607997.24 0.0301 0.0178 \*  
 Venus -63867-04-15 20:09 J -21605893.80 -21605893.66 -21605893.51 0.0276 0.0194  
 Venus -63867-12-01 01:11 J -21605664.59 -21605664.45 -21605664.30 0.0273 0.0194  
 Mercury -63862-11-13 20:23 J -21603855.78 -21603855.65 -21603855.51 0.0259 0.0179  
 Mercury -63861-02-10 16:33 J -21603766.99 -21603766.81 -21603766.62 0.0259 0.0057  
 Mercury -63861-05-09 12:42 J -21603678.15 -21603677.97 -21603677.78 0.0259 0.0067  
 Mercury -63861-08-06 09:06 J -21603589.25 -21603589.12 -21603588.99 0.0259 0.0190  
 Earth -63860-12-17 20:23 J -21603090.83 -21603090.65 -21603090.46 0.0259 0.0168  
 Moon -63860-12-17 20:52 J -21603090.81 -21603090.63 -21603090.44 0.0259 0.0180 \*  
 Mars -63859-12-01 23:16 J -21602741.79 -21602741.53 -21602741.27 0.0259 0.0158  
 Moon -63859-12-29 06:57 J -21602714.46 -21602714.21 -21602713.96 0.0260 0.0015  
 Earth -63859-12-29 10:33 J -21602714.31 -21602714.06 -21602713.81 0.0260 0.0003 \*  
 Earth -63857-01-10 04:33 J -21602337.50 -21602337.31 -21602337.12 0.0261 0.0167  
 Moon -63857-01-10 04:18 J -21602337.50 -21602337.32 -21602337.13 0.0261 0.0169 \*  
 Venus -63851-08-10 02:37 J -21599933.58 -21599933.39 -21599933.19 0.0287 0.0122

Mercury -63847-12-07 14:09 J -21598353.02 -21598352.91 -21598352.80 0.0303 0.0170  
 Mercury -63846-03-06 03:06 J -21598264.50 -21598264.37 -21598264.24 0.0304 0.0035  
 Mercury -63846-06-02 16:04 J -21598175.95 -21598175.83 -21598175.70 0.0304 0.0102  
 Mercury -63846-08-30 05:01 J -21598087.37 -21598087.29 -21598087.21 0.0304 0.0236  
 Earth -63845-06-20 23:59 J -21597791.68 -21597791.50 -21597791.31 0.0304 0.0199  
 Moon -63845-06-21 00:57 J -21597791.62 -21597791.46 -21597791.27 0.0304 0.0196 \*  
 Mars -63844-01-09 19:25 J -21597588.94 -21597588.69 -21597588.43 0.0303 0.0078  
 Earth -63844-07-05 20:52 J -21597411.86 -21597411.63 -21597411.39 0.0303 0.0067  
 Moon -63844-07-06 00:28 J -21597411.71 -21597411.48 -21597411.25 0.0303 0.0068 \*  
 Venus -63838-10-26 23:45 J -21595107.69 -21595107.51 -21595107.33 0.0275 0.0144  
 Venus -63837-06-12 04:18 J -21594878.40 -21594878.32 -21594878.22 0.0273 0.0243  
 Mercury -63832-04-01 19:54 J -21593123.76 -21593123.67 -21593123.55 0.0259 0.0214  
 Mercury -63832-06-29 16:04 J -21593035.00 -21593034.83 -21593034.65 0.0259 0.0092  
 Mercury -63832-09-26 12:13 J -21592946.17 -21592945.99 -21592945.79 0.0259 0.0032  
 Mercury -63832-12-24 08:37 J -21592857.29 -21592857.14 -21592856.99 0.0258 0.0154  
 Earth -63831-12-13 04:18 J -21592503.40 -21592503.32 -21592503.22 0.0258 0.0241  
 Moon -63831-12-13 03:49 J -21592503.38 -21592503.34 -21592503.27 0.0258 0.0252 \*  
 Mars -63830-01-15 10:04 J -21592470.09 -21592470.08 -21592470.04 0.0258 0.0258  
 Earth -63830-12-24 17:16 J -21592127.01 -21592126.78 -21592126.53 0.0259 0.0078  
 Moon -63830-12-24 21:06 J -21592126.85 -21592126.62 -21592126.39 0.0259 0.0092 \*  
 Earth -63828-01-04 09:49 J -21591750.32 -21591750.09 -21591749.85 0.0260 0.0091  
 Moon -63828-01-04 10:33 J -21591750.30 -21591750.06 -21591749.81 0.0260 0.0086 \*  
 Venus -63821-02-20 09:49 J -21589147.29 -21589147.09 -21589146.87 0.0288 0.0056  
 Mercury -63817-04-25 16:18 J -21587620.91 -21587620.82 -21587620.72 0.0303 0.0206  
 Mercury -63817-07-23 05:30 J -21587532.40 -21587532.27 -21587532.15 0.0303 0.0071  
 Mercury -63817-10-19 18:28 J -21587443.86 -21587443.73 -21587443.61 0.0304 0.0065  
 Mercury -63816-01-16 07:11 J -21587355.29 -21587355.20 -21587355.10 0.0304 0.0200  
 Moon -63815-06-29 14:52 J -21586826.11 -21586825.88 -21586825.64 0.0303 0.0054  
 Earth -63815-06-29 18:42 J -21586825.96 -21586825.72 -21586825.48 0.0303 0.0054 \*  
 Moon -63814-07-14 08:37 J -21586446.30 -21586446.14 -21586445.96 0.0301 0.0204

Earth -63814-07-14 11:45 J -21586446.17 -21586446.01 -21586445.82 0.0301 0.0206 \*  
 Venus -63808-05-08 05:01 J -21584321.48 -21584321.29 -21584321.08 0.0275 0.0085  
 Mercury -63803-08-19 20:37 J -21582391.70 -21582391.64 -21582391.57 0.0260 0.0242  
 Mercury -63803-11-16 16:33 J -21582302.97 -21582302.81 -21582302.64 0.0259 0.0120  
 Mercury -63802-02-13 12:57 J -21582214.15 -21582213.96 -21582213.77 0.0259 0.0005  
 Mercury -63802-05-13 09:06 J -21582125.28 -21582125.12 -21582124.95 0.0259 0.0126  
 Mercury -63802-08-10 05:30 J -21582036.31 -21582036.27 -21582036.22 0.0259 0.0250  
 Moon -63801-12-18 23:30 J -21581539.71 -21581539.52 -21581539.31 0.0259 0.0162  
 Earth -63801-12-19 03:21 J -21581539.56 -21581539.36 -21581539.15 0.0259 0.0147 \*  
 Mars -63800-03-07 07:54 J -21581461.50 -21581461.17 -21581460.85 0.0259 0.0038  
 Moon -63800-12-30 16:33 J -21581163.05 -21581162.81 -21581162.57 0.0260 0.0009  
 Earth -63800-12-30 18:13 J -21581162.99 -21581162.74 -21581162.49 0.0260 0.0019 \*  
 Earth -63798-01-11 12:42 J -21580786.13 -21580785.97 -21580785.78 0.0262 0.0190  
 Moon -63798-01-11 16:04 J -21580785.98 -21580785.83 -21580785.65 0.0262 0.0194 \*  
 Venus -63792-09-01 18:42 J -21578360.93 -21578360.72 -21578360.51 0.0288 0.0017  
 Mercury -63788-09-12 18:42 J -21576888.80 -21576888.72 -21576888.64 0.0303 0.0240  
 Mercury -63788-12-10 07:54 J -21576800.30 -21576800.17 -21576800.05 0.0303 0.0104  
 Mercury -63787-03-08 20:52 J -21576711.76 -21576711.63 -21576711.50 0.0304 0.0032  
 Mercury -63787-06-05 09:35 J -21576623.20 -21576623.10 -21576622.99 0.0304 0.0167  
 Mercury -63787-09-01 22:33 J -21576534.58 -21576534.56 -21576534.54 0.0304 0.0300  
 Mars -63786-04-18 15:49 J -21576306.05 -21576305.84 -21576305.61 0.0304 0.0168  
 Earth -63786-06-23 14:52 J -21576240.07 -21576239.88 -21576239.67 0.0304 0.0168  
 Moon -63786-06-23 18:28 J -21576239.93 -21576239.73 -21576239.52 0.0304 0.0165 \*  
 Earth -63785-07-07 11:01 J -21575860.27 -21575860.04 -21575859.81 0.0302 0.0097  
 Moon -63785-07-07 13:40 J -21575860.16 -21575859.93 -21575859.70 0.0302 0.0095 \*  
 Venus -63779-11-18 09:49 J -21573535.29 -21573535.09 -21573534.88 0.0275 0.0030  
 Mercury -63773-04-04 16:33 J -21571570.95 -21571570.81 -21571570.65 0.0259 0.0153  
 Mercury -63773-07-02 12:57 J -21571482.15 -21571481.96 -21571481.77 0.0259 0.0030  
 Mercury -63773-09-29 09:06 J -21571393.30 -21571393.12 -21571392.94 0.0259 0.0093  
 Mercury -63773-12-27 05:30 J -21571304.37 -21571304.27 -21571304.17 0.0259 0.0217



Earth -63772-12-14 12:13 J -21570952.11 -21570951.99 -21570951.85 0.0259 0.0220  
 Moon -63772-12-14 15:35 J -21570951.94 -21570951.85 -21570951.73 0.0259 0.0232 \*  
 Earth -63771-12-26 02:09 J -21570575.66 -21570575.41 -21570575.17 0.0259 0.0056  
 Moon -63771-12-26 04:04 J -21570575.58 -21570575.33 -21570575.08 0.0259 0.0069 \*  
 Mars -63770-04-28 07:11 J -21570452.42 -21570452.20 -21570451.98 0.0260 0.0191  
 Moon -63769-01-06 16:04 J -21570199.05 -21570198.83 -21570198.59 0.0261 0.0111  
 Earth -63769-01-06 19:11 J -21570198.92 -21570198.70 -21570198.47 0.0261 0.0115 \*  
 Venus -63762-03-15 03:35 J -21567574.56 -21567574.35 -21567574.15 0.0289 0.0090  
 Mercury -63758-01-30 21:21 J -21566156.66 -21566156.61 -21566156.55 0.0303 0.0271  
 Mercury -63758-04-29 10:33 J -21566068.18 -21566068.06 -21566067.94 0.0303 0.0135  
 Mercury -63758-07-26 23:30 J -21565979.65 -21565979.52 -21565979.39 0.0303 0.0005  
 Mercury -63758-10-23 12:28 J -21565891.09 -21565890.98 -21565890.86 0.0304 0.0135  
 Mercury -63757-01-20 01:11 J -21565802.50 -21565802.45 -21565802.39 0.0304 0.0270  
 Moon -63757-06-16 09:49 J -21565654.17 -21565654.09 -21565653.99 0.0304 0.0279  
 Earth -63757-06-16 13:25 J -21565654.02 -21565653.94 -21565653.85 0.0304 0.0284 \*  
 Mars -63756-06-06 09:49 J -21565299.32 -21565299.09 -21565298.84 0.0303 0.0119  
 Moon -63756-07-01 10:04 J -21565274.31 -21565274.08 -21565273.84 0.0303 0.0020  
 Earth -63756-07-01 12:13 J -21565274.23 -21565273.99 -21565273.75 0.0303 0.0020 \*  
 Earth -63755-07-16 04:04 J -21564894.46 -21564894.33 -21564894.17 0.0300 0.0239  
 Moon -63755-07-16 05:16 J -21564894.42 -21564894.28 -21564894.13 0.0300 0.0234 \*  
 Venus -63749-05-30 16:33 J -21562749.02 -21562748.81 -21562748.60 0.0274 0.0032  
 Mercury -63744-08-22 17:30 J -21560838.90 -21560838.77 -21560838.63 0.0260 0.0179  
 Mercury -63744-11-19 13:40 J -21560750.11 -21560749.93 -21560749.74 0.0259 0.0056  
 Mercury -63743-02-16 09:49 J -21560661.27 -21560661.09 -21560660.90 0.0259 0.0068  
 Mercury -63743-05-16 06:13 J -21560572.36 -21560572.24 -21560572.11 0.0259 0.0191  
 Mars -63742-06-12 01:25 J -21560180.60 -21560180.44 -21560180.29 0.0259 0.0228  
 Moon -63742-12-21 10:47 J -21559988.25 -21559988.05 -21559987.84 0.0259 0.0140  
 Earth -63742-12-21 12:42 J -21559988.18 -21559987.97 -21559987.74 0.0259 0.0125 \*  
 Earth -63740-01-01 04:18 J -21559611.56 -21559611.32 -21559611.07 0.0260 0.0043  
 Moon -63740-01-01 06:57 J -21559611.45 -21559611.21 -21559610.96 0.0260 0.0034 \*

Earth -63739-01-12 23:59 J -21559234.63 -21559234.50 -21559234.35 0.0262 0.0214  
 Moon -63739-01-13 02:52 J -21559234.52 -21559234.38 -21559234.24 0.0262 0.0216 \*  
 Venus -63733-09-24 13:11 J -21556788.12 -21556787.95 -21556787.77 0.0289 0.0166  
 Mercury -63729-06-18 23:59 J -21555424.50 -21555424.50 -21555424.49 0.0302 0.0302  
 Mercury -63729-09-15 13:11 J -21555336.06 -21555335.95 -21555335.84 0.0303 0.0166  
 Mercury -63729-12-13 02:23 J -21555247.53 -21555247.40 -21555247.27 0.0303 0.0032  
 Mercury -63728-03-11 15:06 J -21555158.99 -21555158.87 -21555158.74 0.0303 0.0105  
 Mercury -63728-06-08 04:04 J -21555070.41 -21555070.33 -21555070.25 0.0304 0.0239  
 Earth -63727-06-25 10:47 J -21554688.26 -21554688.05 -21554687.83 0.0303 0.0134  
 Moon -63727-06-25 12:57 J -21554688.18 -21554687.96 -21554687.73 0.0303 0.0129 \*  
 Moon -63726-07-10 04:18 J -21554308.54 -21554308.32 -21554308.09 0.0302 0.0127  
 Earth -63726-07-10 05:59 J -21554308.46 -21554308.25 -21554308.03 0.0302 0.0131 \*  
 Venus -63720-12-10 22:04 J -21551962.77 -21551962.58 -21551962.38 0.0274 0.0090  
 Mercury -63714-01-09 17:45 J -21550106.86 -21550106.76 -21550106.64 0.0259 0.0210  
 Mercury -63714-04-08 13:54 J -21550018.09 -21550017.92 -21550017.74 0.0259 0.0088  
 Mercury -63714-07-06 10:18 J -21549929.26 -21549929.07 -21549928.88 0.0259 0.0036  
 Mercury -63714-10-03 06:28 J -21549840.37 -21549840.23 -21549840.08 0.0259 0.0160  
 Earth -63713-12-15 22:33 J -21549400.72 -21549400.56 -21549400.40 0.0259 0.0198  
 Moon -63713-12-16 00:42 J -21549400.60 -21549400.47 -21549400.30 0.0259 0.0210 \*  
 Mars -63712-08-01 22:47 J -21549171.88 -21549171.55 -21549171.22 0.0259 0.0003  
 Moon -63712-12-27 10:04 J -21549024.33 -21549024.08 -21549023.83 0.0260 0.0045  
 Earth -63712-12-27 12:42 J -21549024.21 -21549023.97 -21549023.72 0.0260 0.0033 \*  
 Moon -63710-01-08 03:35 J -21548647.55 -21548647.35 -21548647.13 0.0261 0.0136  
 Earth -63710-01-08 06:42 J -21548647.43 -21548647.22 -21548647.00 0.0261 0.0139 \*  
 Venus -63704-08-20 02:09 J -21546231.54 -21546231.41 -21546231.27 0.0287 0.0218  
 Venus -63703-04-06 22:18 J -21546001.67 -21546001.57 -21546001.44 0.0290 0.0242  
 Mercury -63699-02-02 16:04 J -21544603.92 -21544603.83 -21544603.73 0.0303 0.0195  
 Mercury -63699-05-02 05:16 J -21544515.41 -21544515.28 -21544515.15 0.0303 0.0060  
 Mercury -63699-07-29 18:13 J -21544426.87 -21544426.74 -21544426.62 0.0304 0.0076  
 Mercury -63699-10-26 06:57 J -21544338.30 -21544338.21 -21544338.11 0.0304 0.0210

Moon -63698-06-19 09:21 J -21544102.25 -21544102.11 -21544101.97 0.0304 0.0243  
 Earth -63698-06-19 10:47 J -21544102.18 -21544102.05 -21544101.90 0.0304 0.0249 \*  
 Mars -63698-09-13 16:18 J -21544016.06 -21544015.82 -21544015.57 0.0304 0.0120  
 Earth -63697-07-03 08:37 J -21543722.38 -21543722.14 -21543721.90 0.0302 0.0017  
 Moon -63697-07-03 10:18 J -21543722.30 -21543722.07 -21543721.84 0.0302 0.0016 \*  
 Earth -63696-07-17 23:45 J -21543342.60 -21543342.51 -21543342.40 0.0300 0.0272  
 Moon -63696-07-18 03:21 J -21543342.46 -21543342.36 -21543342.24 0.0300 0.0266 \*  
 Venus -63691-11-06 00:13 J -21541405.60 -21541405.49 -21541405.38 0.0276 0.0235  
 Venus -63690-06-23 05:16 J -21541176.44 -21541176.28 -21541176.10 0.0273 0.0155  
 Mercury -63685-05-28 18:57 J -21539374.78 -21539374.71 -21539374.62 0.0260 0.0235  
 Mercury -63685-08-25 15:06 J -21539286.04 -21539285.87 -21539285.70 0.0260 0.0112  
 Mercury -63685-11-22 11:16 J -21539197.22 -21539197.03 -21539196.84 0.0259 0.0012  
 Mercury -63684-02-19 07:25 J -21539108.34 -21539108.19 -21539108.02 0.0259 0.0135  
 Mercury -63684-05-19 04:04 J -21539019.33 -21539019.33 -21539019.33 0.0259 0.0259  
 Earth -63683-12-22 23:45 J -21538436.74 -21538436.51 -21538436.28 0.0259 0.0102  
 Moon -63683-12-23 01:54 J -21538436.64 -21538436.42 -21538436.20 0.0259 0.0116 \*  
 Mars -63682-09-23 05:16 J -21538162.42 -21538162.28 -21538162.10 0.0260 0.0228  
 Earth -63681-01-03 15:49 J -21538060.08 -21538059.84 -21538059.60 0.0261 0.0067  
 Moon -63681-01-03 19:11 J -21538059.94 -21538059.70 -21538059.45 0.0261 0.0059 \*  
 Moon -63680-01-14 11:01 J -21537683.13 -21537683.04 -21537682.94 0.0263 0.0244  
 Earth -63680-01-14 12:13 J -21537683.07 -21537682.99 -21537682.87 0.0263 0.0240 \*  
 Venus -63674-03-02 12:28 J -21535445.17 -21535444.98 -21535444.80 0.0287 0.0141  
 Mercury -63670-06-22 19:11 J -21533871.79 -21533871.70 -21533871.61 0.0303 0.0223  
 Mercury -63670-09-19 08:09 J -21533783.28 -21533783.16 -21533783.03 0.0303 0.0088  
 Mercury -63670-12-16 21:06 J -21533694.74 -21533694.62 -21533694.49 0.0303 0.0049  
 Mercury -63669-03-14 10:04 J -21533606.18 -21533606.08 -21533605.98 0.0303 0.0182  
 Moon -63668-06-27 08:23 J -21533136.38 -21533136.15 -21533135.91 0.0303 0.0093  
 Earth -63668-06-27 10:18 J -21533136.30 -21533136.07 -21533135.84 0.0303 0.0096 \*  
 Mars -63668-11-01 10:47 J -21533009.27 -21533009.05 -21533008.82 0.0303 0.0162  
 Moon -63667-07-12 00:42 J -21532756.66 -21532756.47 -21532756.26 0.0301 0.0164

Earth -63667-07-12 04:18 J -21532756.51 -21532756.32 -21532756.11 0.0301 0.0167 \*  
 Venus -63661-05-18 06:57 J -21530619.36 -21530619.21 -21530619.04 0.0276 0.0173  
 Venus -63660-01-02 11:59 J -21530390.13 -21530390.00 -21530389.87 0.0273 0.0214  
 Mercury -63655-01-12 15:35 J -21528554.00 -21528553.85 -21528553.69 0.0259 0.0142  
 Mercury -63655-04-11 11:45 J -21528465.20 -21528465.01 -21528464.82 0.0259 0.0020  
 Mercury -63655-07-09 07:54 J -21528376.34 -21528376.17 -21528375.99 0.0259 0.0105  
 Mercury -63655-10-06 04:18 J -21528287.40 -21528287.32 -21528287.22 0.0259 0.0229  
 Mars -63654-11-06 18:57 J -21527890.92 -21527890.71 -21527890.47 0.0259 0.0187  
 Moon -63654-12-18 07:54 J -21527849.33 -21527849.17 -21527848.98 0.0259 0.0188  
 Earth -63654-12-18 09:35 J -21527849.28 -21527849.10 -21527848.91 0.0259 0.0176 \*  
 Moon -63653-12-28 21:06 J -21527472.87 -21527472.62 -21527472.37 0.0260 0.0020  
 Earth -63653-12-29 00:28 J -21527472.73 -21527472.48 -21527472.23 0.0260 0.0009 \*  
 Earth -63651-01-09 18:42 J -21527095.90 -21527095.72 -21527095.51 0.0261 0.0163  
 Moon -63651-01-09 19:54 J -21527095.85 -21527095.67 -21527095.48 0.0261 0.0163 \*  
 Venus -63645-09-11 21:21 J -21524658.81 -21524658.61 -21524658.39 0.0288 0.0069  
 Mercury -63641-11-08 22:04 J -21523139.65 -21523139.58 -21523139.51 0.0303 0.0252  
 Mercury -63640-02-05 11:01 J -21523051.16 -21523051.04 -21523050.92 0.0303 0.0117  
 Mercury -63640-05-04 23:59 J -21522962.63 -21522962.50 -21522962.36 0.0303 0.0022  
 Mercury -63640-08-01 12:57 J -21522874.07 -21522873.96 -21522873.85 0.0304 0.0153  
 Mercury -63640-10-29 01:54 J -21522785.46 -21522785.42 -21522785.38 0.0304 0.0287  
 Earth -63639-06-21 10:18 J -21522550.24 -21522550.07 -21522549.89 0.0304 0.0212  
 Moon -63639-06-21 12:28 J -21522550.14 -21522549.98 -21522549.80 0.0304 0.0207 \*  
 Earth -63638-07-06 07:11 J -21522170.43 -21522170.20 -21522169.96 0.0302 0.0054  
 Moon -63638-07-06 10:47 J -21522170.28 -21522170.05 -21522169.81 0.0302 0.0056 \*  
 Venus -63632-11-28 14:23 J -21519833.09 -21519832.90 -21519832.70 0.0275 0.0108  
 Mercury -63626-06-01 16:47 J -21517821.94 -21517821.80 -21517821.65 0.0260 0.0167  
 Mercury -63626-08-29 12:57 J -21517733.15 -21517732.96 -21517732.77 0.0259 0.0044  
 Mercury -63626-11-26 09:06 J -21517644.30 -21517644.12 -21517643.94 0.0259 0.0079  
 Mercury -63625-02-23 05:30 J -21517555.38 -21517555.27 -21517555.15 0.0259 0.0203  
 Earth -63625-12-12 21:21 J -21517261.68 -21517261.61 -21517261.52 0.0259 0.0244

Moon -63625-12-12 21:49 J -21517261.62 -21517261.59 -21517261.52 0.0259 0.0254 \*  
 Earth -63624-12-24 10:47 J -21516885.28 -21516885.05 -21516884.81 0.0260 0.0079  
 Moon -63624-12-24 14:23 J -21516885.14 -21516884.90 -21516884.66 0.0260 0.0093 \*  
 Mars -63624-12-27 21:49 J -21516881.92 -21516881.59 -21516881.26 0.0260 0.0037  
 Moon -63622-01-05 02:37 J -21516508.64 -21516508.39 -21516508.15 0.0261 0.0086  
 Earth -63622-01-05 03:35 J -21516508.58 -21516508.35 -21516508.11 0.0261 0.0091 \*  
 Venus -63615-03-25 07:25 J -21513872.41 -21513872.19 -21513871.98 0.0288 0.0008  
 Mercury -63611-03-29 00:57 J -21512407.50 -21512407.46 -21512407.41 0.0302 0.0281  
 Mercury -63611-06-25 14:09 J -21512319.03 -21512318.91 -21512318.80 0.0303 0.0146  
 Mercury -63611-09-22 03:06 J -21512230.50 -21512230.37 -21512230.24 0.0303 0.0010  
 Mercury -63611-12-19 16:04 J -21512141.95 -21512141.83 -21512141.71 0.0303 0.0124  
 Mercury -63610-03-18 04:47 J -21512053.36 -21512053.30 -21512053.23 0.0304 0.0258  
 Mars -63609-02-08 21:35 J -21511725.85 -21511725.60 -21511725.34 0.0303 0.0070  
 Moon -63609-06-29 05:16 J -21511584.51 -21511584.28 -21511584.04 0.0303 0.0057  
 Earth -63609-06-29 09:06 J -21511584.35 -21511584.12 -21511583.88 0.0303 0.0060 \*  
 Moon -63608-07-14 00:13 J -21511204.65 -21511204.49 -21511204.31 0.0301 0.0202  
 Earth -63608-07-14 02:23 J -21511204.57 -21511204.40 -21511204.22 0.0301 0.0202 \*  
 Venus -63602-06-10 21:49 J -21509046.80 -21509046.59 -21509046.39 0.0275 0.0045  
 Mercury -63597-10-18 17:16 J -21507089.90 -21507089.78 -21507089.65 0.0259 0.0197  
 Mercury -63596-01-15 13:25 J -21507001.12 -21507000.94 -21507000.76 0.0259 0.0074  
 Mercury -63596-04-14 09:35 J -21506912.29 -21506912.10 -21506911.91 0.0259 0.0049  
 Mercury -63596-07-12 05:45 J -21506823.39 -21506823.26 -21506823.11 0.0259 0.0173  
 Moon -63595-12-19 16:33 J -21506297.99 -21506297.81 -21506297.61 0.0259 0.0168  
 Earth -63595-12-19 20:23 J -21506297.85 -21506297.65 -21506297.45 0.0259 0.0154 \*  
 Earth -63594-12-31 11:16 J -21505921.28 -21505921.03 -21505920.78 0.0260 0.0014  
 Moon -63594-12-31 11:45 J -21505921.25 -21505921.01 -21505920.77 0.0260 0.0006 \*  
 Earth -63592-01-11 05:59 J -21505544.41 -21505544.25 -21505544.06 0.0262 0.0187  
 Moon -63592-01-11 09:49 J -21505544.25 -21505544.09 -21505543.90 0.0262 0.0189 \*  
 Venus -63586-10-05 15:49 J -21503086.05 -21503085.84 -21503085.64 0.0289 0.0079  
 Mercury -63582-11-12 16:47 J -21501586.90 -21501586.80 -21501586.69 0.0303 0.0176

Mercury -63581-02-09 05:59 J -21501498.38 -21501498.25 -21501498.13 0.0303 0.0042

Mercury -63581-05-07 18:57 J -21501409.84 -21501409.71 -21501409.59 0.0304 0.0095

Mercury -63581-08-04 07:40 J -21501321.26 -21501321.18 -21501321.09 0.0304 0.0229

Earth -63580-06-23 08:52 J -21500998.32 -21500998.13 -21500997.93 0.0304 0.0176

Moon -63580-06-23 12:28 J -21500998.17 -21500997.98 -21500997.77 0.0304 0.0171 \*

Mars -63579-03-29 15:21 J -21500719.04 -21500718.86 -21500718.67 0.0303 0.0212

Earth -63579-07-08 05:16 J -21500618.51 -21500618.28 -21500618.05 0.0302 0.0090

Moon -63579-07-08 06:57 J -21500618.44 -21500618.21 -21500617.97 0.0302 0.0092 \*

Venus -63573-12-21 04:47 J -21498260.51 -21498260.30 -21498260.09 0.0274 0.0020

Mercury -63567-03-07 18:13 J -21496357.83 -21496357.74 -21496357.64 0.0260 0.0223

Mercury -63567-06-04 14:23 J -21496269.07 -21496268.90 -21496268.73 0.0259 0.0101

Mercury -63567-09-01 10:33 J -21496180.25 -21496180.06 -21496179.87 0.0259 0.0022

Mercury -63567-11-29 06:42 J -21496091.37 -21496091.22 -21496091.06 0.0259 0.0146

Earth -63566-12-15 07:25 J -21495710.31 -21495710.19 -21495710.06 0.0259 0.0223

Moon -63566-12-15 11:16 J -21495710.13 -21495710.03 -21495709.92 0.0259 0.0234 \*

Mars -63565-04-02 15:06 J -21495601.13 -21495600.87 -21495600.59 0.0259 0.0150

Earth -63565-12-25 20:52 J -21495333.87 -21495333.63 -21495333.38 0.0260 0.0058

Moon -63565-12-25 21:21 J -21495333.86 -21495333.61 -21495333.36 0.0260 0.0070 \*

Moon -63563-01-06 10:04 J -21494957.30 -21494957.08 -21494956.85 0.0261 0.0112

Earth -63563-01-06 13:40 J -21494957.14 -21494956.93 -21494956.69 0.0261 0.0114 \*

Venus -63556-04-17 00:57 J -21492299.64 -21492299.46 -21492299.27 0.0289 0.0152

Mercury -63552-03-31 19:25 J -21490854.78 -21490854.69 -21490854.59 0.0303 0.0208

Mercury -63552-06-28 08:37 J -21490766.27 -21490766.14 -21490766.01 0.0303 0.0072

Mercury -63552-09-24 21:35 J -21490677.73 -21490677.60 -21490677.47 0.0303 0.0063

Mercury -63552-12-22 10:33 J -21490589.16 -21490589.06 -21490588.96 0.0303 0.0197

Moon -63551-06-17 04:04 J -21490412.38 -21490412.33 -21490412.25 0.0304 0.0290

Earth -63551-06-17 07:25 J -21490412.24 -21490412.19 -21490412.12 0.0304 0.0293

Moon -63550-07-02 05:16 J -21490032.51 -21490032.28 -21490032.05 0.0303 0.0024

Earth -63550-07-02 06:13 J -21490032.48 -21490032.24 -21490032.00 0.0303 0.0026 \*

Earth -63549-07-15 22:33 J -21489652.69 -21489652.56 -21489652.40 0.0301 0.0236

Moon -63549-07-16 00:28 J -21489652.61 -21489652.48 -21489652.32 0.0301 0.0235 \*  
 Venus -63543-07-03 11:45 J -21487474.21 -21487474.01 -21487473.81 0.0274 0.0081  
 Mercury -63538-07-25 18:28 J -21485625.76 -21485625.73 -21485625.68 0.0259 0.0254  
 Mercury -63538-10-22 14:37 J -21485537.05 -21485536.89 -21485536.72 0.0259 0.0132  
 Mercury -63537-01-19 10:47 J -21485448.24 -21485448.05 -21485447.86 0.0259 0.0009  
 Mercury -63537-04-17 06:57 J -21485359.38 -21485359.21 -21485359.04 0.0259 0.0114  
 Mercury -63537-07-15 03:06 J -21485270.43 -21485270.37 -21485270.29 0.0259 0.0238  
 Moon -63536-12-21 04:33 J -21484746.51 -21484746.31 -21484746.11 0.0259 0.0148  
 Earth -63536-12-21 05:30 J -21484746.48 -21484746.27 -21484746.05 0.0259 0.0134 \*  
 Mars -63535-05-24 11:30 J -21484592.33 -21484592.02 -21484591.70 0.0259 0.0079  
 Earth -63534-01-01 20:37 J -21484369.89 -21484369.64 -21484369.39 0.0260 0.0035  
 Moon -63534-01-01 23:59 J -21484369.74 -21484369.50 -21484369.25 0.0260 0.0027 \*  
 Earth -63533-01-13 15:49 J -21483992.99 -21483992.84 -21483992.68 0.0262 0.0208  
 Moon -63533-01-13 16:47 J -21483992.94 -21483992.80 -21483992.64 0.0262 0.0212 \*  
 Venus -63527-03-12 11:16 J -21481743.14 -21481743.03 -21481742.90 0.0286 0.0239  
 Venus -63527-10-28 07:40 J -21481513.30 -21481513.18 -21481513.03 0.0289 0.0220  
 Mercury -63523-08-18 21:49 J -21480122.66 -21480122.59 -21480122.51 0.0303 0.0242  
 Mercury -63523-11-15 11:01 J -21480034.16 -21480034.04 -21480033.92 0.0303 0.0106  
 Mercury -63522-02-11 23:59 J -21479945.63 -21479945.50 -21479945.37 0.0304 0.0029  
 Mercury -63522-05-11 12:57 J -21479857.07 -21479856.96 -21479856.85 0.0304 0.0164  
 Mercury -63522-08-08 01:40 J -21479768.45 -21479768.43 -21479768.40 0.0304 0.0298  
 Earth -63521-06-25 03:35 J -21479446.56 -21479446.35 -21479446.13 0.0304 0.0143  
 Moon -63521-06-25 03:35 J -21479446.56 -21479446.35 -21479446.12 0.0304 0.0141 \*  
 Mars -63521-07-05 19:11 J -21479435.96 -21479435.70 -21479435.43 0.0304 0.0026  
 Moon -63520-07-09 20:52 J -21479066.85 -21479066.63 -21479066.40 0.0302 0.0121  
 Earth -63520-07-09 23:30 J -21479066.73 -21479066.52 -21479066.30 0.0302 0.0123 \*  
 Jupiter -63514-04-08 04:18 J -21476968.43 -21476968.32 -21476968.15 0.0277 0.0265  
 Venus -63514-05-29 12:42 J -21476917.05 -21476916.97 -21476916.87 0.0276 0.0247  
 Venus -63513-01-13 17:45 J -21476687.93 -21476687.76 -21476687.57 0.0273 0.0141  
 Mercury -63508-03-10 15:06 J -21474805.01 -21474804.87 -21474804.71 0.0259 0.0160

Mercury -63508-06-07 11:16 J -21474716.21 -21474716.03 -21474715.84 0.0259 0.0038

Mercury -63508-09-04 07:25 J -21474627.36 -21474627.19 -21474627.01 0.0259 0.0085

Mercury -63508-12-02 03:35 J -21474538.45 -21474538.35 -21474538.23 0.0259 0.0209

Earth -63507-12-16 15:06 J -21474159.01 -21474158.87 -21474158.70 0.0259 0.0205

Moon -63507-12-16 16:33 J -21474158.94 -21474158.81 -21474158.66 0.0259 0.0217 \*

Moon -63506-12-28 01:25 J -21473782.69 -21473782.44 -21473782.19 0.0260 0.0051

Earth -63506-12-28 04:47 J -21473782.55 -21473782.30 -21473782.05 0.0260 0.0038 \*

Moon -63504-01-07 20:09 J -21473405.85 -21473405.66 -21473405.44 0.0261 0.0134

Earth -63504-01-07 21:35 J -21473405.81 -21473405.60 -21473405.38 0.0261 0.0134 \*

Venus -63498-09-22 19:11 J -21470956.87 -21470956.70 -21470956.53 0.0286 0.0173

Venus -63497-05-09 15:49 J -21470726.86 -21470726.84 -21470726.81 0.0289 0.0287

Mercury -63493-01-06 00:13 J -21469390.54 -21469390.49 -21469390.44 0.0303 0.0277

Mercury -63493-04-03 13:25 J -21469302.06 -21469301.94 -21469301.83 0.0303 0.0141

Mercury -63493-07-01 02:23 J -21469213.53 -21469213.40 -21469213.27 0.0303 0.0007

Mercury -63493-09-27 15:21 J -21469124.98 -21469124.86 -21469124.74 0.0304 0.0129

Mercury -63493-12-25 04:18 J -21469036.38 -21469036.32 -21469036.26 0.0304 0.0263

Earth -63492-06-19 00:13 J -21468860.60 -21468860.49 -21468860.36 0.0304 0.0264

Moon -63492-06-19 00:42 J -21468860.57 -21468860.47 -21468860.34 0.0304 0.0262 \*

Earth -63491-07-03 23:01 J -21468480.78 -21468480.54 -21468480.29 0.0303 0.0007

Moon -63491-07-04 02:09 J -21468480.64 -21468480.41 -21468480.17 0.0303 0.0007 \*

Mars -63491-08-24 08:23 J -21468429.28 -21468429.15 -21468429.01 0.0303 0.0257

Earth -63490-07-18 15:21 J -21468100.97 -21468100.86 -21468100.75 0.0300 0.0265

Moon -63490-07-18 18:57 J -21468100.82 -21468100.71 -21468100.59 0.0300 0.0262 \*

Venus -63485-12-08 19:25 J -21466130.85 -21466130.69 -21466130.54 0.0276 0.0186

Venus -63484-07-26 00:13 J -21465901.63 -21465901.49 -21465901.35 0.0273 0.0201

Mercury -63479-07-28 15:21 J -21464072.98 -21464072.86 -21464072.73 0.0259 0.0192

Mercury -63479-10-25 11:30 J -21463984.20 -21463984.02 -21463983.84 0.0259 0.0070

Mercury -63478-01-22 07:25 J -21463895.37 -21463895.19 -21463895.00 0.0259 0.0053

Mercury -63478-04-21 03:35 J -21463806.48 -21463806.35 -21463806.20 0.0258 0.0176

Mars -63477-08-27 22:33 J -21463311.86 -21463311.56 -21463311.26 0.0258 0.0110



Earth -63477-12-22 12:13 J -21463195.21 -21463194.99 -21463194.76 0.0259 0.0116  
 Moon -63477-12-22 15:35 J -21463195.06 -21463194.85 -21463194.63 0.0259 0.0130 \*  
 Earth -63475-01-03 03:06 J -21462818.61 -21462818.37 -21462818.12 0.0260 0.0055  
 Moon -63475-01-03 05:16 J -21462818.53 -21462818.28 -21462818.02 0.0260 0.0047 \*  
 Moon -63474-01-14 19:11 J -21462441.80 -21462441.70 -21462441.58 0.0262 0.0236  
 Earth -63474-01-14 22:18 J -21462441.67 -21462441.57 -21462441.43 0.0262 0.0228 \*  
 Venus -63468-04-04 00:28 J -21460170.67 -21460170.48 -21460170.28 0.0287 0.0113  
 Mercury -63464-08-21 15:06 J -21458569.97 -21458569.87 -21458569.76 0.0303 0.0181  
 Mercury -63464-11-18 04:18 J -21458481.45 -21458481.32 -21458481.19 0.0304 0.0044  
 Mercury -63463-02-14 17:16 J -21458392.90 -21458392.78 -21458392.65 0.0304 0.0091  
 Mercury -63463-05-14 06:13 J -21458304.32 -21458304.24 -21458304.15 0.0304 0.0226  
 Mars -63463-10-12 10:33 J -21458153.17 -21458153.06 -21458152.93 0.0304 0.0271  
 Moon -63462-06-27 14:09 J -21457895.13 -21457894.91 -21457894.68 0.0304 0.0117  
 Earth -63462-06-27 17:45 J -21457894.98 -21457894.76 -21457894.53 0.0304 0.0115 \*  
 Moon -63461-07-11 10:04 J -21457515.28 -21457515.08 -21457514.87 0.0302 0.0148  
 Earth -63461-07-11 13:25 J -21457515.14 -21457514.94 -21457514.73 0.0302 0.0152 \*  
 Venus -63455-06-21 00:13 J -21455344.66 -21455344.49 -21455344.29 0.0275 0.0130  
 Venus -63454-02-05 04:47 J -21455115.36 -21455115.30 -21455115.21 0.0273 0.0256  
 Mercury -63450-12-15 15:21 J -21453340.94 -21453340.86 -21453340.76 0.0259 0.0224  
 Mercury -63449-03-13 11:30 J -21453252.19 -21453252.02 -21453251.85 0.0259 0.0102  
 Mercury -63449-06-10 07:40 J -21453163.37 -21453163.18 -21453162.99 0.0259 0.0021  
 Mercury -63449-09-07 03:35 J -21453074.50 -21453074.35 -21453074.18 0.0259 0.0144  
 Moon -63448-12-17 17:30 J -21452607.92 -21452607.77 -21452607.61 0.0259 0.0202  
 Earth -63448-12-17 20:37 J -21452607.80 -21452607.64 -21452607.46 0.0259 0.0188 \*  
 Mars -63447-10-18 15:21 J -21452303.15 -21452302.86 -21452302.55 0.0259 0.0111  
 Moon -63447-12-29 07:25 J -21452231.43 -21452231.19 -21452230.94 0.0259 0.0033  
 Earth -63447-12-29 10:04 J -21452231.33 -21452231.08 -21452230.83 0.0259 0.0020 \*  
 Earth -63445-01-10 02:52 J -21451854.58 -21451854.38 -21451854.18 0.0261 0.0152  
 Moon -63445-01-10 05:30 J -21451854.46 -21451854.27 -21451854.07 0.0261 0.0154 \*  
 Venus -63439-10-15 06:42 J -21449384.43 -21449384.22 -21449384.01 0.0287 0.0051

Mercury -63434-01-08 17:01 J -21447837.87 -21447837.79 -21447837.69 0.0303 0.0220  
 Mercury -63434-04-07 06:13 J -21447749.36 -21447749.24 -21447749.11 0.0303 0.0084  
 Mercury -63434-07-04 19:11 J -21447660.82 -21447660.70 -21447660.57 0.0303 0.0052  
 Mercury -63434-10-01 08:09 J -21447572.26 -21447572.16 -21447572.05 0.0304 0.0186  
 Earth -63433-06-20 11:16 J -21447309.17 -21447309.03 -21447308.87 0.0304 0.0239  
 Moon -63433-06-20 14:52 J -21447309.03 -21447308.88 -21447308.73 0.0304 0.0237 \*  
 Mars -63433-11-30 00:28 J -21447146.74 -21447146.48 -21447146.21 0.0304 0.0015  
 Earth -63432-07-05 10:04 J -21446929.31 -21446929.08 -21446928.84 0.0303 0.0031  
 Moon -63432-07-05 12:57 J -21446929.20 -21446928.96 -21446928.71 0.0303 0.0029 \*  
 Moon -63431-07-20 02:09 J -21446549.48 -21446549.41 -21446549.32 0.0300 0.0282  
 Earth -63431-07-20 02:09 J -21446549.47 -21446549.41 -21446549.35 0.0300 0.0290 \*  
 Venus -63425-01-01 05:45 J -21444558.46 -21444558.26 -21444558.05 0.0275 0.0072  
 Mercury -63420-05-03 15:21 J -21442608.88 -21442608.86 -21442608.83 0.0259 0.0257  
 Mercury -63420-07-31 11:16 J -21442520.19 -21442520.03 -21442519.87 0.0259 0.0136  
 Mercury -63420-10-28 07:11 J -21442431.39 -21442431.20 -21442431.01 0.0259 0.0015  
 Mercury -63419-01-25 03:21 J -21442342.53 -21442342.36 -21442342.19 0.0258 0.0108  
 Mercury -63419-04-23 23:16 J -21442253.60 -21442253.53 -21442253.43 0.0258 0.0232  
 Earth -63418-12-24 16:18 J -21441644.05 -21441643.82 -21441643.58 0.0258 0.0099  
 Moon -63418-12-24 18:57 J -21441643.93 -21441643.71 -21441643.47 0.0258 0.0113 \*  
 Moon -63416-01-04 04:33 J -21441267.56 -21441267.31 -21441267.06 0.0260 0.0066  
 Earth -63416-01-04 06:57 J -21441267.45 -21441267.21 -21441266.97 0.0260 0.0071 \*  
 Moon -63415-01-15 23:16 J -21440890.57 -21440890.53 -21440890.45 0.0262 0.0254  
 Earth -63415-01-16 02:09 J -21440890.49 -21440890.41 -21440890.32 0.0262 0.0244 \*  
 Venus -63409-04-26 10:18 J -21438598.28 -21438598.07 -21438597.85 0.0288 0.0004  
 Mercury -63405-05-27 18:28 J -21437105.79 -21437105.73 -21437105.67 0.0303 0.0265  
 Mercury -63405-08-24 07:25 J -21437017.30 -21437017.19 -21437017.07 0.0304 0.0129  
 Mercury -63405-11-20 20:37 J -21436928.77 -21436928.64 -21436928.51 0.0304 0.0008  
 Mercury -63404-02-17 09:35 J -21436840.21 -21436840.10 -21436839.98 0.0304 0.0143  
 Mercury -63404-05-16 22:18 J -21436751.61 -21436751.57 -21436751.51 0.0304 0.0278  
 Moon -63403-06-28 23:16 J -21436343.74 -21436343.53 -21436343.30 0.0304 0.0093

Earth -63403-06-29 01:40 J -21436343.66 -21436343.43 -21436343.20 0.0304 0.0091 \*  
 Mars -63402-01-18 05:30 J -21436140.36 -21436140.27 -21436140.18 0.0303 0.0282  
 Earth -63402-07-13 21:21 J -21435963.80 -21435963.61 -21435963.41 0.0302 0.0176  
 Moon -63402-07-13 21:49 J -21435963.77 -21435963.59 -21435963.39 0.0302 0.0170 \*  
 Venus -63396-07-13 09:49 J -21433772.30 -21433772.09 -21433771.88 0.0275 0.0019  
 Mercury -63391-12-18 10:47 J -21431788.19 -21431788.05 -21431787.91 0.0259 0.0171  
 Mercury -63390-03-17 06:42 J -21431699.40 -21431699.22 -21431699.03 0.0259 0.0050  
 Mercury -63390-06-14 02:52 J -21431610.56 -21431610.38 -21431610.20 0.0258 0.0073  
 Mercury -63390-09-10 23:01 J -21431521.66 -21431521.54 -21431521.41 0.0258 0.0196  
 Moon -63389-12-18 20:52 J -21431056.80 -21431056.63 -21431056.47 0.0258 0.0187  
 Earth -63389-12-18 23:16 J -21431056.71 -21431056.53 -21431056.34 0.0258 0.0172 \*  
 Mars -63388-01-21 16:47 J -21431023.12 -21431022.80 -21431022.49 0.0258 0.0082  
 Earth -63388-12-30 12:13 J -21430680.24 -21430679.99 -21430679.74 0.0259 0.0005  
 Moon -63388-12-30 14:23 J -21430680.14 -21430679.90 -21430679.66 0.0259 0.0014 \*  
 Earth -63386-01-11 04:47 J -21430303.49 -21430303.30 -21430303.11 0.0261 0.0168  
 Moon -63386-01-11 07:54 J -21430303.36 -21430303.17 -21430302.97 0.0261 0.0170 \*  
 Venus -63380-11-06 15:06 J -21427812.07 -21427811.87 -21427811.66 0.0288 0.0060  
 Mercury -63375-01-11 09:06 J -21426285.23 -21426285.12 -21426285.01 0.0303 0.0172  
 Mercury -63375-04-09 22:18 J -21426196.70 -21426196.57 -21426196.44 0.0303 0.0037  
 Mercury -63375-07-07 11:16 J -21426108.15 -21426108.03 -21426107.91 0.0304 0.0099  
 Mercury -63375-10-03 23:59 J -21426019.57 -21426019.50 -21426019.41 0.0304 0.0234  
 Mars -63374-03-08 01:40 J -21425864.58 -21425864.43 -21425864.26 0.0304 0.0241  
 Earth -63374-06-22 16:47 J -21425757.96 -21425757.80 -21425757.63 0.0304 0.0218  
 Moon -63374-06-22 18:42 J -21425757.88 -21425757.72 -21425757.54 0.0304 0.0216 \*  
 Moon -63373-07-06 14:23 J -21425378.15 -21425377.90 -21425377.65 0.0303 0.0046  
 Earth -63373-07-06 15:35 J -21425378.08 -21425377.85 -21425377.61 0.0303 0.0053 \*  
 Moon -63372-07-21 04:04 J -21424998.34 -21424998.33 -21424998.30 0.0300 0.0299  
 Venus -63366-01-23 14:09 J -21422986.12 -21422985.91 -21422985.70 0.0275 0.0035  
 Mercury -63361-05-06 10:18 J -21421056.18 -21421056.07 -21421055.96 0.0259 0.0206  
 Mercury -63361-08-03 06:13 J -21420967.42 -21420967.24 -21420967.06 0.0259 0.0085

Mercury -63361-10-31 02:09 J -21420878.59 -21420878.41 -21420878.22 0.0258 0.0037  
 Mercury -63360-01-27 22:18 J -21420789.72 -21420789.57 -21420789.42 0.0258 0.0159  
 Earth -63360-12-14 06:28 J -21420469.30 -21420469.23 -21420469.16 0.0258 0.0247  
 Moon -63360-12-14 09:35 J -21420469.10 -21420469.10 -21420469.09 0.0258 0.0258  
 Moon -63359-12-25 15:21 J -21420093.09 -21420092.86 -21420092.61 0.0258 0.0095  
 Earth -63359-12-25 17:45 J -21420092.99 -21420092.76 -21420092.52 0.0258 0.0083 \*  
 Mars -63358-03-14 03:21 J -21420014.63 -21420014.36 -21420014.08 0.0258 0.0142  
 Moon -63357-01-06 04:33 J -21419716.54 -21419716.31 -21419716.07 0.0260 0.0084  
 Earth -63357-01-06 08:09 J -21419716.40 -21419716.16 -21419715.92 0.0260 0.0087 \*  
 Earth -63356-01-17 03:06 J -21419339.40 -21419339.37 -21419339.34 0.0262 0.0259  
 Venus -63350-05-19 17:45 J -21417025.95 -21417025.76 -21417025.56 0.0288 0.0111  
 Mercury -63346-05-31 09:49 J -21415553.18 -21415553.09 -21415553.00 0.0304 0.0221  
 Mercury -63346-08-27 23:01 J -21415464.66 -21415464.54 -21415464.41 0.0304 0.0085  
 Mercury -63346-11-24 11:59 J -21415376.12 -21415376.00 -21415375.87 0.0304 0.0053  
 Mercury -63345-02-21 00:57 J -21415287.56 -21415287.46 -21415287.35 0.0304 0.0187  
 Mars -63344-04-25 06:57 J -21414858.47 -21414858.21 -21414857.94 0.0304 0.0028  
 Earth -63344-06-30 04:18 J -21414792.56 -21414792.32 -21414792.09 0.0304 0.0071  
 Moon -63344-06-30 05:59 J -21414792.47 -21414792.25 -21414792.02 0.0304 0.0076 \*  
 Earth -63343-07-14 23:45 J -21414412.69 -21414412.51 -21414412.32 0.0302 0.0196  
 Moon -63343-07-15 03:21 J -21414412.54 -21414412.36 -21414412.17 0.0302 0.0186 \*  
 Venus -63337-08-04 16:18 J -21412200.02 -21412199.82 -21412199.62 0.0274 0.0081  
 Mercury -63332-09-23 09:06 J -21410324.17 -21410324.12 -21410324.05 0.0259 0.0244  
 Mercury -63332-12-21 05:16 J -21410235.45 -21410235.28 -21410235.12 0.0259 0.0123  
 Mercury -63331-03-20 01:11 J -21410146.64 -21410146.45 -21410146.26 0.0258 0.0003  
 Mercury -63331-06-16 21:21 J -21410057.78 -21410057.61 -21410057.44 0.0258 0.0120  
 Mercury -63331-09-13 17:16 J -21409968.83 -21409968.78 -21409968.71 0.0258 0.0243  
 Earth -63330-12-20 23:16 J -21409505.73 -21409505.53 -21409505.34 0.0258 0.0159  
 Moon -63330-12-21 00:42 J -21409505.64 -21409505.47 -21409505.28 0.0258 0.0172 \*  
 Earth -63329-12-31 11:45 J -21409129.26 -21409129.01 -21409128.76 0.0259 0.0010  
 Moon -63329-12-31 15:06 J -21409129.12 -21409128.87 -21409128.61 0.0259 0.0005 \*

Moon -63327-01-12 02:52 J -21408752.55 -21408752.38 -21408752.19 0.0261 0.0188  
 Earth -63327-01-12 04:04 J -21408752.50 -21408752.33 -21408752.14 0.0261 0.0182 \*  
 Venus -63321-11-28 21:06 J -21406239.80 -21406239.62 -21406239.45 0.0288 0.0162  
 Mercury -63317-10-17 10:47 J -21404821.10 -21404821.05 -21404820.98 0.0303 0.0269  
 Mercury -63316-01-13 23:59 J -21404732.61 -21404732.50 -21404732.38 0.0303 0.0133  
 Mercury -63316-04-12 13:11 J -21404644.08 -21404643.95 -21404643.82 0.0304 0.0003  
 Mercury -63316-07-10 02:09 J -21404555.52 -21404555.41 -21404555.29 0.0304 0.0138  
 Mercury -63316-10-06 15:06 J -21404466.92 -21404466.87 -21404466.81 0.0304 0.0272  
 Moon -63315-06-23 13:40 J -21404207.10 -21404206.93 -21404206.74 0.0304 0.0205  
 Earth -63315-06-23 16:18 J -21404207.00 -21404206.82 -21404206.64 0.0304 0.0201 \*  
 Moon -63314-07-08 11:45 J -21403827.24 -21403827.01 -21403826.77 0.0303 0.0061  
 Earth -63314-07-08 15:06 J -21403827.10 -21403826.87 -21403826.63 0.0303 0.0070 \*  
 Venus -63308-06-30 14:09 J -21401642.98 -21401642.91 -21401642.83 0.0278 0.0259  
 Venus -63307-02-14 19:54 J -21401413.85 -21401413.67 -21401413.49 0.0275 0.0133  
 Mercury -63302-05-10 04:18 J -21399503.46 -21399503.32 -21399503.17 0.0259 0.0160  
 Mercury -63302-08-07 00:13 J -21399414.67 -21399414.49 -21399414.30 0.0258 0.0039  
 Mercury -63302-11-03 20:23 J -21399325.83 -21399325.65 -21399325.47 0.0258 0.0083  
 Mercury -63301-01-31 16:18 J -21399236.92 -21399236.82 -21399236.70 0.0258 0.0205  
 Moon -63301-12-15 04:18 J -21398918.38 -21398918.32 -21398918.23 0.0258 0.0246  
 Earth -63301-12-15 05:30 J -21398918.36 -21398918.27 -21398918.16 0.0258 0.0234 \*  
 Mars -63300-06-16 21:49 J -21398734.91 -21398734.59 -21398734.26 0.0258 0.0057  
 Moon -63300-12-26 13:11 J -21398542.18 -21398541.95 -21398541.71 0.0258 0.0079  
 Earth -63300-12-26 16:33 J -21398542.05 -21398541.81 -21398541.56 0.0258 0.0070 \*  
 Earth -63298-01-07 06:28 J -21398165.45 -21398165.23 -21398164.99 0.0259 0.0101  
 Moon -63298-01-07 07:40 J -21398165.40 -21398165.18 -21398164.95 0.0259 0.0103 \*  
 Venus -63292-10-24 02:52 J -21395683.49 -21395683.38 -21395683.27 0.0285 0.0242  
 Venus -63291-06-10 22:47 J -21395453.69 -21395453.55 -21395453.40 0.0288 0.0209  
 Mercury -63287-06-03 00:28 J -21394000.58 -21394000.48 -21394000.37 0.0304 0.0185  
 Mercury -63287-08-30 13:40 J -21393912.06 -21393911.93 -21393911.80 0.0304 0.0049  
 Mercury -63287-11-27 02:37 J -21393823.51 -21393823.39 -21393823.26 0.0304 0.0088

Mercury -63286-02-23 15:35 J -21393734.93 -21393734.85 -21393734.76 0.0305 0.0222  
 Mars -63286-07-31 17:01 J -21393576.94 -21393576.79 -21393576.62 0.0305 0.0241  
 Earth -63285-07-01 01:40 J -21393241.67 -21393241.43 -21393241.19 0.0304 0.0055  
 Moon -63285-07-01 05:16 J -21393241.52 -21393241.28 -21393241.04 0.0304 0.0061 \*  
 Earth -63284-07-15 21:21 J -21392861.77 -21392861.61 -21392861.43 0.0302 0.0212  
 Moon -63284-07-15 22:33 J -21392861.74 -21392861.56 -21392861.37 0.0302 0.0200 \*  
 Venus -63278-01-10 15:06 J -21390856.99 -21390856.87 -21390856.73 0.0277 0.0216  
 Venus -63278-08-27 20:37 J -21390627.79 -21390627.64 -21390627.47 0.0274 0.0174  
 Mercury -63273-09-26 02:52 J -21388771.49 -21388771.38 -21388771.26 0.0259 0.0201  
 Mercury -63273-12-23 22:47 J -21388682.72 -21388682.55 -21388682.37 0.0258 0.0080  
 Mercury -63272-03-22 18:57 J -21388593.90 -21388593.71 -21388593.53 0.0258 0.0042  
 Mercury -63272-06-19 14:52 J -21388505.02 -21388504.88 -21388504.73 0.0258 0.0164  
 Earth -63271-12-21 20:37 J -21387954.83 -21387954.64 -21387954.42 0.0258 0.0146  
 Moon -63271-12-22 00:13 J -21387954.68 -21387954.49 -21387954.28 0.0258 0.0159 \*  
 Mars -63270-08-07 01:25 J -21387726.68 -21387726.44 -21387726.16 0.0258 0.0160  
 Moon -63269-01-02 08:09 J -21387578.42 -21387578.16 -21387577.90 0.0259 0.0022  
 Earth -63269-01-02 09:21 J -21387578.36 -21387578.11 -21387577.86 0.0259 0.0023 \*  
 Moon -63268-01-12 21:35 J -21387201.74 -21387201.60 -21387201.44 0.0261 0.0205  
 Earth -63268-01-13 01:25 J -21387201.60 -21387201.44 -21387201.27 0.0261 0.0195 \*  
 Venus -63262-05-06 05:16 J -21384897.42 -21384897.28 -21384897.11 0.0285 0.0195  
 Venus -63262-12-22 01:40 J -21384667.52 -21384667.43 -21384667.34 0.0289 0.0259  
 Mercury -63258-10-21 01:25 J -21383268.52 -21383268.44 -21383268.35 0.0303 0.0234  
 Mercury -63257-01-17 14:37 J -21383180.01 -21383179.89 -21383179.76 0.0303 0.0098  
 Mercury -63257-04-15 03:49 J -21383091.47 -21383091.34 -21383091.21 0.0304 0.0038  
 Mercury -63257-07-12 16:47 J -21383002.91 -21383002.80 -21383002.70 0.0304 0.0172  
 Moon -63256-06-24 09:21 J -21382656.28 -21382656.11 -21382655.92 0.0304 0.0194  
 Earth -63256-06-24 12:28 J -21382656.16 -21382655.98 -21382655.78 0.0304 0.0186 \*  
 Mars -63256-09-17 23:16 J -21382570.79 -21382570.53 -21382570.27 0.0304 0.0040  
 Moon -63255-07-09 10:47 J -21382276.27 -21382276.05 -21382275.82 0.0303 0.0075  
 Earth -63255-07-09 11:30 J -21382276.25 -21382276.02 -21382275.79 0.0303 0.0085 \*

Venus -63249-07-22 17:59 J -21380070.92 -21380070.75 -21380070.58 0.0277 0.0167  
 Venus -63248-03-08 23:16 J -21379841.64 -21379841.53 -21379841.40 0.0274 0.0223  
 Mercury -63243-02-13 01:54 J -21378039.48 -21378039.42 -21378039.34 0.0259 0.0238  
 Mercury -63243-05-12 21:49 J -21377950.76 -21377950.59 -21377950.42 0.0259 0.0118  
 Mercury -63243-08-09 17:45 J -21377861.95 -21377861.76 -21377861.57 0.0258 0.0004  
 Mercury -63243-11-06 13:40 J -21377773.09 -21377772.93 -21377772.76 0.0258 0.0125  
 Mercury -63242-02-03 09:49 J -21377684.13 -21377684.09 -21377684.03 0.0258 0.0247  
 Mars -63242-09-20 17:45 J -21377454.79 -21377454.76 -21377454.69 0.0258 0.0255  
 Moon -63242-12-16 23:16 J -21377367.63 -21377367.53 -21377367.43 0.0258 0.0235  
 Earth -63242-12-17 02:37 J -21377367.50 -21377367.39 -21377367.25 0.0258 0.0221 \*  
 Earth -63241-12-27 13:40 J -21376991.17 -21376990.93 -21376990.68 0.0258 0.0056  
 Moon -63241-12-27 14:09 J -21376991.14 -21376990.91 -21376990.67 0.0258 0.0063 \*  
 Earth -63239-01-08 03:35 J -21376614.57 -21376614.35 -21376614.12 0.0259 0.0113  
 Moon -63239-01-08 07:25 J -21376614.40 -21376614.19 -21376613.96 0.0259 0.0120 \*  
 Venus -63233-11-15 06:42 J -21374111.40 -21374111.22 -21374111.04 0.0285 0.0149  
 Mercury -63228-03-09 01:25 J -21372536.47 -21372536.44 -21372536.40 0.0303 0.0290  
 Mercury -63228-06-05 14:37 J -21372448.00 -21372447.89 -21372447.77 0.0304 0.0155  
 Mercury -63228-09-02 03:49 J -21372359.47 -21372359.34 -21372359.21 0.0304 0.0018  
 Mercury -63228-11-29 16:47 J -21372270.92 -21372270.80 -21372270.68 0.0304 0.0117  
 Mercury -63227-02-26 05:45 J -21372182.33 -21372182.26 -21372182.19 0.0305 0.0252  
 Moon -63226-07-02 18:57 J -21371690.95 -21371690.71 -21371690.46 0.0304 0.0053  
 Earth -63226-07-02 19:25 J -21371690.93 -21371690.69 -21371690.45 0.0304 0.0041 \*  
 Mars -63226-11-05 17:16 J -21371564.80 -21371564.78 -21371564.73 0.0304 0.0300  
 Moon -63225-07-16 12:13 J -21371311.16 -21371310.99 -21371310.81 0.0302 0.0210  
 Earth -63225-07-16 15:21 J -21371311.01 -21371310.86 -21371310.70 0.0302 0.0225 \*  
 Venus -63219-02-01 17:45 J -21369284.94 -21369284.76 -21369284.57 0.0277 0.0129  
 Venus -63219-09-18 23:16 J -21369055.58 -21369055.53 -21369055.46 0.0274 0.0260  
 Mercury -63214-09-29 19:54 J -21367218.81 -21367218.67 -21367218.52 0.0259 0.0161  
 Mercury -63214-12-27 16:04 J -21367130.02 -21367129.83 -21367129.65 0.0258 0.0040  
 Mercury -63213-03-25 11:59 J -21367041.18 -21367041.00 -21367040.82 0.0258 0.0082

Mercury -63213-06-22 08:09 J -21366952.27 -21366952.16 -21366952.04 0.0258 0.0204  
 Mars -63212-11-09 14:52 J -21366447.20 -21366446.88 -21366446.55 0.0258 0.0043  
 Earth -63212-12-22 17:16 J -21366403.99 -21366403.78 -21366403.56 0.0258 0.0133  
 Moon -63212-12-22 17:16 J -21366403.99 -21366403.78 -21366403.56 0.0258 0.0144 \*  
 Moon -63210-01-03 01:54 J -21366027.66 -21366027.42 -21366027.17 0.0259 0.0039  
 Earth -63210-01-03 05:30 J -21366027.51 -21366027.27 -21366027.02 0.0259 0.0036 \*  
 Earth -63209-01-14 21:35 J -21365650.74 -21365650.60 -21365650.44 0.0261 0.0207  
 Moon -63209-01-14 21:35 J -21365650.72 -21365650.60 -21365650.47 0.0261 0.0220 \*  
 Venus -63203-05-28 08:52 J -21363325.33 -21363325.13 -21363324.93 0.0286 0.0102  
 Mercury -63199-10-23 15:35 J -21361715.95 -21361715.85 -21361715.76 0.0303 0.0204  
 Mercury -63198-01-20 04:33 J -21361627.43 -21361627.31 -21361627.18 0.0303 0.0070  
 Mercury -63198-04-18 17:45 J -21361538.89 -21361538.76 -21361538.63 0.0304 0.0067  
 Mercury -63198-07-16 06:42 J -21361450.32 -21361450.22 -21361450.12 0.0304 0.0201  
 Mars -63198-12-24 02:52 J -21361289.53 -21361289.38 -21361289.20 0.0304 0.0235  
 Earth -63197-06-25 05:45 J -21361105.46 -21361105.26 -21361105.06 0.0304 0.0173  
 Moon -63197-06-25 06:57 J -21361105.38 -21361105.21 -21361105.02 0.0304 0.0186 \*  
 Earth -63196-07-10 04:18 J -21360725.54 -21360725.32 -21360725.09 0.0303 0.0098  
 Moon -63196-07-10 07:40 J -21360725.41 -21360725.18 -21360724.95 0.0303 0.0084 \*  
 Venus -63190-08-14 20:09 J -21358498.86 -21358498.66 -21358498.46 0.0277 0.0081  
 Mercury -63184-02-15 18:57 J -21356486.83 -21356486.71 -21356486.59 0.0259 0.0199  
 Mercury -63184-05-15 14:52 J -21356398.06 -21356397.88 -21356397.70 0.0259 0.0078  
 Mercury -63184-08-12 10:47 J -21356309.24 -21356309.05 -21356308.86 0.0258 0.0043  
 Mercury -63184-11-09 06:42 J -21356220.36 -21356220.22 -21356220.07 0.0258 0.0165  
 Earth -63183-12-17 22:47 J -21355816.69 -21355816.55 -21355816.40 0.0258 0.0208  
 Moon -63183-12-17 22:33 J -21355816.68 -21355816.56 -21355816.44 0.0258 0.0222 \*  
 Earth -63182-12-29 09:35 J -21355440.34 -21355440.10 -21355439.85 0.0258 0.0043  
 Moon -63182-12-29 13:11 J -21355440.19 -21355439.95 -21355439.70 0.0258 0.0048 \*  
 Mars -63182-12-30 20:09 J -21355438.88 -21355438.66 -21355438.40 0.0258 0.0176  
 Earth -63180-01-08 23:45 J -21355063.72 -21355063.51 -21355063.29 0.0259 0.0127  
 Moon -63180-01-08 23:45 J -21355063.72 -21355063.51 -21355063.28 0.0259 0.0136 \*



Venus -63174-12-08 10:18 J -21352539.27 -21352539.07 -21352538.85 0.0285 0.0056

Mercury -63169-03-11 15:35 J -21350983.91 -21350983.85 -21350983.78 0.0303 0.0259

Mercury -63169-06-08 04:47 J -21350895.42 -21350895.30 -21350895.18 0.0304 0.0124

Mercury -63169-09-04 17:59 J -21350806.88 -21350806.75 -21350806.62 0.0304 0.0014

Mercury -63169-12-02 06:57 J -21350718.32 -21350718.21 -21350718.10 0.0304 0.0147

Mercury -63168-02-28 19:40 J -21350629.72 -21350629.68 -21350629.63 0.0305 0.0282

Earth -63168-06-18 11:01 J -21350520.07 -21350520.04 -21350519.98 0.0305 0.0299

Mars -63167-02-10 02:09 J -21350283.67 -21350283.41 -21350283.15 0.0305 0.0030

Moon -63167-07-03 08:52 J -21350140.37 -21350140.13 -21350139.90 0.0304 0.0043

Earth -63167-07-03 12:28 J -21350140.22 -21350139.98 -21350139.74 0.0304 0.0028 \*

Moon -63166-07-18 05:59 J -21349760.40 -21349760.25 -21349760.09 0.0302 0.0224

Earth -63166-07-18 08:23 J -21349760.29 -21349760.15 -21349760.00 0.0302 0.0239 \*

Venus -63160-02-23 19:40 J -21347712.88 -21347712.68 -21347712.47 0.0277 0.0045

Mercury -63155-07-05 17:01 J -21345754.85 -21345754.79 -21345754.73 0.0259 0.0242

Mercury -63155-10-02 12:57 J -21345666.13 -21345665.96 -21345665.80 0.0259 0.0122

Mercury -63155-12-30 08:52 J -21345577.32 -21345577.13 -21345576.94 0.0258 0.0003

Mercury -63154-03-29 04:47 J -21345488.46 -21345488.30 -21345488.13 0.0258 0.0121

Mercury -63154-06-26 00:57 J -21345399.51 -21345399.46 -21345399.39 0.0258 0.0243

Mars -63153-02-13 08:09 J -21345167.25 -21345167.16 -21345167.04 0.0258 0.0243

Moon -63153-12-23 09:21 J -21344853.32 -21344853.11 -21344852.89 0.0258 0.0130

Earth -63153-12-23 13:11 J -21344853.17 -21344852.95 -21344852.73 0.0258 0.0120 \*

Moon -63151-01-04 01:11 J -21344476.69 -21344476.45 -21344476.21 0.0259 0.0054

Earth -63151-01-04 01:40 J -21344476.68 -21344476.43 -21344476.18 0.0259 0.0048 \*

Earth -63150-01-15 17:45 J -21344099.89 -21344099.76 -21344099.62 0.0261 0.0220

Moon -63150-01-15 21:35 J -21344099.70 -21344099.60 -21344099.49 0.0261 0.0235 \*

Venus -63144-06-19 12:28 J -21341753.19 -21341752.98 -21341752.76 0.0286 0.0010

Mercury -63140-10-26 05:30 J -21340163.37 -21340163.27 -21340163.16 0.0303 0.0175

Mercury -63139-01-22 18:42 J -21340074.85 -21340074.72 -21340074.59 0.0303 0.0039

Mercury -63139-04-21 07:40 J -21339986.30 -21339986.18 -21339986.05 0.0304 0.0096

Mercury -63139-07-18 20:37 J -21339897.72 -21339897.64 -21339897.55 0.0304 0.0230

Earth -63138-06-26 22:18 J -21339554.77 -21339554.57 -21339554.36 0.0304 0.0159  
 Moon -63138-06-27 01:54 J -21339554.61 -21339554.42 -21339554.22 0.0304 0.0175 \*  
 Earth -63137-07-10 20:52 J -21339174.85 -21339174.63 -21339174.41 0.0303 0.0112  
 Moon -63137-07-10 22:47 J -21339174.79 -21339174.55 -21339174.32 0.0303 0.0096 \*  
 Venus -63131-09-05 21:35 J -21336926.81 -21336926.60 -21336926.39 0.0277 0.0003  
 Mercury -63125-02-19 11:30 J -21334934.16 -21334934.02 -21334933.86 0.0259 0.0160  
 Mercury -63125-05-18 07:40 J -21334845.37 -21334845.18 -21334844.99 0.0259 0.0039  
 Mercury -63125-08-15 03:35 J -21334756.53 -21334756.35 -21334756.17 0.0259 0.0083  
 Mercury -63125-11-11 23:45 J -21334667.62 -21334667.51 -21334667.39 0.0258 0.0205  
 Earth -63124-12-18 18:28 J -21334265.87 -21334265.73 -21334265.55 0.0258 0.0195  
 Moon -63124-12-18 22:33 J -21334265.70 -21334265.56 -21334265.41 0.0258 0.0208 \*  
 Mars -63123-04-04 09:49 J -21334159.41 -21334159.09 -21334158.76 0.0258 0.0030  
 Earth -63123-12-30 05:59 J -21333889.50 -21333889.25 -21333889.00 0.0258 0.0029  
 Moon -63123-12-30 07:11 J -21333889.46 -21333889.20 -21333888.94 0.0258 0.0031 \*  
 Moon -63121-01-10 16:33 J -21333513.01 -21333512.81 -21333512.60 0.0259 0.0153  
 Earth -63121-01-10 20:09 J -21333512.86 -21333512.66 -21333512.44 0.0259 0.0140 \*  
 Venus -63115-12-30 14:37 J -21330967.10 -21330966.89 -21330966.67 0.0286 0.0041  
 Mercury -63110-03-15 05:45 J -21329431.34 -21329431.26 -21329431.17 0.0303 0.0228  
 Mercury -63110-06-11 18:57 J -21329342.83 -21329342.71 -21329342.58 0.0303 0.0093  
 Mercury -63110-09-08 07:54 J -21329254.30 -21329254.17 -21329254.04 0.0304 0.0043  
 Mercury -63110-12-05 20:52 J -21329165.73 -21329165.63 -21329165.52 0.0304 0.0177  
 Mars -63109-05-17 05:30 J -21329002.42 -21329002.27 -21329002.11 0.0305 0.0249  
 Moon -63109-06-19 01:25 J -21328969.46 -21328969.44 -21328969.40 0.0305 0.0302  
 Earth -63109-06-19 04:33 J -21328969.39 -21328969.31 -21328969.22 0.0305 0.0284  
 Moon -63108-07-04 04:47 J -21328589.54 -21328589.30 -21328589.07 0.0304 0.0030  
 Earth -63108-07-04 05:16 J -21328589.52 -21328589.28 -21328589.04 0.0304 0.0013 \*  
 Earth -63107-07-19 00:57 J -21328209.59 -21328209.46 -21328209.33 0.0302 0.0252  
 Moon -63107-07-19 03:06 J -21328209.51 -21328209.37 -21328209.23 0.0302 0.0236 \*  
 Venus -63101-03-17 21:06 J -21326140.82 -21326140.62 -21326140.41 0.0277 0.0040  
 Mercury -63096-07-08 09:35 J -21324202.21 -21324202.10 -21324201.98 0.0259 0.0204

Mercury -63096-10-05 05:30 J -21324113.44 -21324113.27 -21324113.09 0.0259 0.0084  
 Mercury -63095-01-02 01:40 J -21324024.62 -21324024.43 -21324024.24 0.0259 0.0038  
 Mercury -63095-03-31 21:49 J -21323935.74 -21323935.59 -21323935.44 0.0258 0.0160  
 Moon -63094-12-25 07:40 J -21323302.40 -21323302.18 -21323301.96 0.0258 0.0113  
 Earth -63094-12-25 09:06 J -21323302.34 -21323302.12 -21323301.89 0.0258 0.0107 \*  
 Mars -63093-05-24 10:18 J -21323151.28 -21323151.07 -21323150.83 0.0258 0.0188  
 Earth -63092-01-04 22:04 J -21322925.82 -21322925.58 -21322925.34 0.0259 0.0062  
 Moon -63092-01-05 01:11 J -21322925.68 -21322925.45 -21322925.20 0.0259 0.0071 \*  
 Earth -63091-01-16 14:23 J -21322549.00 -21322548.90 -21322548.78 0.0261 0.0234  
 Moon -63091-01-16 15:35 J -21322548.91 -21322548.85 -21322548.75 0.0261 0.0248 \*  
 Venus -63085-07-11 17:16 J -21320180.97 -21320180.78 -21320180.57 0.0286 0.0091  
 Mercury -63081-08-01 06:42 J -21318699.27 -21318699.22 -21318699.17 0.0302 0.0276  
 Mercury -63081-10-28 19:54 J -21318610.78 -21318610.67 -21318610.55 0.0303 0.0141  
 Mercury -63080-01-25 09:06 J -21318522.25 -21318522.12 -21318521.99 0.0303 0.0008  
 Mercury -63080-04-23 22:04 J -21318433.70 -21318433.58 -21318433.46 0.0304 0.0129  
 Mercury -63080-07-21 11:01 J -21318345.11 -21318345.04 -21318344.98 0.0304 0.0262  
 Moon -63079-06-27 16:47 J -21318004.01 -21318003.80 -21318003.59 0.0304 0.0159  
 Earth -63079-06-27 17:16 J -21318003.99 -21318003.78 -21318003.57 0.0304 0.0143 \*  
 Mars -63079-07-05 13:11 J -21317996.21 -21317995.95 -21317995.69 0.0304 0.0034  
 Moon -63078-07-12 12:28 J -21317624.20 -21317623.98 -21317623.75 0.0303 0.0110  
 Earth -63078-07-12 15:35 J -21317624.07 -21317623.85 -21317623.63 0.0303 0.0128 \*  
 Venus -63072-09-27 23:30 J -21315354.72 -21315354.52 -21315354.32 0.0277 0.0087  
 Mercury -63067-11-25 08:37 J -21313470.20 -21313470.14 -21313470.06 0.0260 0.0241  
 Mercury -63066-02-22 04:33 J -21313381.47 -21313381.31 -21313381.14 0.0259 0.0120  
 Mercury -63066-05-22 00:42 J -21313292.66 -21313292.47 -21313292.28 0.0259 0.0003  
 Mercury -63066-08-18 20:37 J -21313203.80 -21313203.64 -21313203.47 0.0259 0.0124  
 Mercury -63066-11-15 17:01 J -21313114.85 -21313114.79 -21313114.74 0.0259 0.0246  
 Mars -63065-07-08 05:30 J -21312879.39 -21312879.27 -21312879.12 0.0258 0.0234  
 Earth -63065-12-19 15:35 J -21312715.03 -21312714.85 -21312714.67 0.0258 0.0180  
 Moon -63065-12-19 17:01 J -21312714.95 -21312714.79 -21312714.61 0.0258 0.0190 \*

Moon -63064-12-30 23:59 J -21312338.76 -21312338.50 -21312338.25 0.0258 0.0012  
 Earth -63064-12-31 03:06 J -21312338.62 -21312338.37 -21312338.12 0.0258 0.0015 \*  
 Moon -63062-01-11 16:04 J -21311962.00 -21311961.83 -21311961.64 0.0260 0.0169  
 Earth -63062-01-11 17:45 J -21311961.96 -21311961.76 -21311961.55 0.0260 0.0156 \*  
 Venus -63055-01-21 20:52 J -21309394.81 -21309394.63 -21309394.44 0.0286 0.0142  
 Mercury -63051-03-17 20:23 J -21307878.75 -21307878.65 -21307878.54 0.0303 0.0192  
 Mercury -63051-06-14 09:35 J -21307790.23 -21307790.10 -21307789.97 0.0303 0.0057  
 Mercury -63051-09-10 22:33 J -21307701.68 -21307701.56 -21307701.43 0.0304 0.0078  
 Mercury -63051-12-08 11:30 J -21307613.11 -21307613.02 -21307612.93 0.0304 0.0212  
 Earth -63050-06-21 00:42 J -21307418.57 -21307418.47 -21307418.34 0.0304 0.0268  
 Moon -63050-06-21 02:37 J -21307418.47 -21307418.39 -21307418.31 0.0304 0.0284 \*  
 Earth -63049-07-05 01:11 J -21307038.69 -21307038.45 -21307038.21 0.0304 0.0007  
 Moon -63049-07-05 04:47 J -21307038.53 -21307038.30 -21307038.06 0.0304 0.0014 \*  
 Mars -63049-08-22 09:49 J -21306990.14 -21306990.09 -21306990.02 0.0304 0.0296  
 Earth -63048-07-19 20:23 J -21306658.76 -21306658.65 -21306658.54 0.0302 0.0268  
 Moon -63048-07-19 23:45 J -21306658.64 -21306658.51 -21306658.37 0.0302 0.0251 \*  
 Venus -63043-08-23 16:18 J -21304797.85 -21304797.82 -21304797.78 0.0279 0.0274  
 Venus -63042-04-09 23:16 J -21304568.71 -21304568.53 -21304568.33 0.0276 0.0125  
 Mercury -63037-07-11 02:52 J -21302649.52 -21302649.38 -21302649.23 0.0259 0.0163  
 Mercury -63037-10-07 22:47 J -21302560.73 -21302560.55 -21302560.36 0.0259 0.0042  
 Mercury -63036-01-04 18:57 J -21302471.89 -21302471.71 -21302471.53 0.0259 0.0080  
 Mercury -63036-04-03 15:06 J -21302382.98 -21302382.87 -21302382.75 0.0258 0.0203  
 Earth -63036-12-14 19:40 J -21302127.69 -21302127.68 -21302127.63 0.0258 0.0257  
 Mars -63035-08-28 03:35 J -21301871.68 -21301871.35 -21301871.02 0.0258 0.0017  
 Earth -63035-12-26 06:42 J -21301751.44 -21301751.22 -21301750.98 0.0258 0.0092  
 Moon -63035-12-26 10:04 J -21301751.31 -21301751.08 -21301750.85 0.0258 0.0094 \*  
 Earth -63033-01-06 20:09 J -21301374.89 -21301374.66 -21301374.41 0.0259 0.0078  
 Moon -63033-01-06 22:33 J -21301374.80 -21301374.56 -21301374.31 0.0259 0.0087 \*  
 Earth -63032-01-17 13:25 J -21300998.01 -21300997.94 -21300997.86 0.0261 0.0249  
 Venus -63027-12-17 05:45 J -21298838.35 -21298838.26 -21298838.15 0.0283 0.0247

Venus -63026-08-04 00:13 J -21298608.63 -21298608.49 -21298608.32 0.0287 0.0196

Mercury -63022-08-04 21:35 J -21297146.67 -21297146.60 -21297146.51 0.0302 0.0237

Mercury -63022-11-01 10:47 J -21297058.17 -21297058.05 -21297057.92 0.0303 0.0103

Mercury -63021-01-28 23:59 J -21296969.63 -21296969.50 -21296969.37 0.0303 0.0033

Mercury -63021-04-26 12:57 J -21296881.07 -21296880.96 -21296880.85 0.0304 0.0166

Mercury -63021-07-24 01:40 J -21296792.44 -21296792.43 -21296792.41 0.0304 0.0300

Mars -63021-10-10 00:42 J -21296714.63 -21296714.47 -21296714.31 0.0304 0.0239

Moon -63020-06-28 11:16 J -21296453.23 -21296453.03 -21296452.81 0.0304 0.0141

Earth -63020-06-28 15:06 J -21296453.09 -21296452.87 -21296452.65 0.0304 0.0124 \*

Moon -63019-07-13 10:04 J -21296073.28 -21296073.08 -21296072.86 0.0302 0.0131

Earth -63019-07-13 12:42 J -21296073.17 -21296072.97 -21296072.75 0.0302 0.0147 \*

Venus -63013-03-04 19:11 J -21294011.81 -21294011.70 -21294011.57 0.0279 0.0224

Venus -63013-10-20 02:09 J -21293782.56 -21293782.41 -21293782.24 0.0276 0.0175

Mercury -63008-11-28 02:09 J -21291917.53 -21291917.41 -21291917.29 0.0260 0.0198

Mercury -63007-02-24 22:04 J -21291828.76 -21291828.58 -21291828.40 0.0260 0.0077

Mercury -63007-05-24 18:13 J -21291739.93 -21291739.74 -21291739.55 0.0259 0.0045

Mercury -63007-08-21 14:09 J -21291651.04 -21291650.91 -21291650.76 0.0259 0.0168

Moon -63006-12-21 10:33 J -21291164.24 -21291164.06 -21291163.86 0.0258 0.0170

Earth -63006-12-21 14:09 J -21291164.10 -21291163.91 -21291163.72 0.0258 0.0165 \*

Mars -63005-10-17 14:23 J -21290863.10 -21290862.90 -21290862.70 0.0259 0.0202

Moon -63005-12-31 23:30 J -21290787.76 -21290787.52 -21290787.27 0.0259 0.0010

Earth -63004-01-01 02:09 J -21290787.66 -21290787.41 -21290787.15 0.0259 0.0006 \*

Earth -63003-01-12 17:16 J -21290410.96 -21290410.78 -21290410.58 0.0260 0.0173

Moon -63003-01-12 19:40 J -21290410.83 -21290410.68 -21290410.49 0.0260 0.0187 \*

# 63RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 63rd millennium BCE.**

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
	TRANSIT							
	TIME							
Venus	-62997-06-28 10:18 J	-21288052.22	-21288052.07	-21288051.90	0.0283	0.0190		
Venus	-62996-02-13 05:01 J	-21287822.38	-21287822.29	-21287822.19	0.0286	0.0251		
Mercury	-62993-12-21 22:47 J	-21286414.59	-21286414.55	-21286414.50	0.0302	0.0282		
Mercury	-62992-03-20 11:59 J	-21286326.12	-21286326.00	-21286325.89	0.0303	0.0148		
Mercury	-62992-06-17 00:57 J	-21286237.59	-21286237.46	-21286237.33	0.0303	0.0014		
Mercury	-62992-09-13 13:54 J	-21286149.04	-21286148.92	-21286148.80	0.0303	0.0121		
Mercury	-62992-12-11 02:52 J	-21286060.45	-21286060.38	-21286060.31	0.0304	0.0254		
Earth	-62991-06-22 01:54 J	-21285867.55	-21285867.42	-21285867.27	0.0304	0.0246		
Moon	-62991-06-22 05:30 J	-21285867.39	-21285867.27	-21285867.15	0.0304	0.0263	*	
Mars	-62991-11-28 06:57 J	-21285708.47	-21285708.21	-21285707.95	0.0304	0.0032		
Earth	-62990-07-07 01:54 J	-21285487.66	-21285487.42	-21285487.18	0.0304	0.0025		
Moon	-62990-07-07 03:35 J	-21285487.59	-21285487.35	-21285487.10	0.0304	0.0012	*	
Moon	-62989-07-20 18:57 J	-21285107.80	-21285107.71	-21285107.59	0.0302	0.0274		
Earth	-62989-07-20 20:09 J	-21285107.72	-21285107.66	-21285107.58	0.0302	0.0288	*	
Venus	-62984-09-14 20:37 J	-21283225.79	-21283225.64	-21283225.48	0.0279	0.0181		
Venus	-62983-05-02 03:21 J	-21282996.48	-21282996.36	-21282996.22	0.0276	0.0216		
Mercury	-62978-04-17 00:42 J	-21281185.53	-21281185.47	-21281185.39	0.0260	0.0239		
Mercury	-62978-07-14 20:37 J	-21281096.80	-21281096.64	-21281096.47	0.0259	0.0118		
Mercury	-62978-10-11 16:47 J	-21281007.99	-21281007.80	-21281007.61	0.0259	0.0004		
Mercury	-62977-01-08 12:42 J	-21280919.12	-21280918.97	-21280918.79	0.0259	0.0127		
Mercury	-62977-04-06 09:21 J	-21280830.16	-21280830.11	-21280830.07	0.0259	0.0249		
Mars	-62977-12-01 05:30 J	-21280591.44	-21280591.27	-21280591.09	0.0258	0.0218		
Earth	-62977-12-15 19:25 J	-21280576.77	-21280576.69	-21280576.60	0.0258	0.0240		
Moon	-62977-12-15 22:04 J	-21280576.63	-21280576.58	-21280576.52	0.0258	0.0251	*	

Earth -62976-12-27 06:57 J -21280200.44 -21280200.21 -21280199.97 0.0258 0.0075  
 Moon -62976-12-27 09:35 J -21280200.34 -21280200.10 -21280199.85 0.0258 0.0074 \*  
 Moon -62974-01-07 18:42 J -21279823.95 -21279823.72 -21279823.48 0.0259 0.0107  
 Earth -62974-01-07 21:06 J -21279823.85 -21279823.62 -21279823.39 0.0259 0.0095 \*  
 Venus -62967-01-08 15:35 J -21277266.04 -21277265.85 -21277265.66 0.0284 0.0133  
 Mercury -62963-08-07 13:40 J -21275594.03 -21275593.93 -21275593.83 0.0302 0.0189  
 Mercury -62963-11-04 02:37 J -21275505.52 -21275505.39 -21275505.26 0.0303 0.0055  
 Mercury -62962-01-31 15:35 J -21275416.97 -21275416.85 -21275416.72 0.0303 0.0080  
 Mercury -62962-04-30 04:33 J -21275328.40 -21275328.31 -21275328.22 0.0303 0.0213  
 Moon -62961-06-29 17:16 J -21274901.99 -21274901.78 -21274901.56 0.0304 0.0116  
 Earth -62961-06-29 18:28 J -21274901.96 -21274901.73 -21274901.50 0.0304 0.0101 \*  
 Earth -62960-07-14 15:21 J -21274522.05 -21274521.86 -21274521.66 0.0302 0.0168  
 Moon -62960-07-14 17:16 J -21274521.97 -21274521.78 -21274521.57 0.0302 0.0156 \*  
 Venus -62954-03-28 00:28 J -21272439.66 -21272439.48 -21272439.29 0.0279 0.0127  
 Venus -62954-11-12 07:11 J -21272210.24 -21272210.20 -21272210.15 0.0276 0.0268  
 Mercury -62949-11-30 20:23 J -21270364.80 -21270364.65 -21270364.49 0.0260 0.0151  
 Mercury -62948-02-27 16:33 J -21270276.00 -21270275.81 -21270275.62 0.0260 0.0029  
 Mercury -62948-05-27 12:28 J -21270187.15 -21270186.98 -21270186.80 0.0259 0.0095  
 Mercury -62948-08-24 08:37 J -21270098.23 -21270098.14 -21270098.03 0.0259 0.0218  
 Moon -62947-12-22 12:28 J -21269613.17 -21269612.98 -21269612.77 0.0259 0.0151  
 Earth -62947-12-22 15:21 J -21269613.06 -21269612.86 -21269612.65 0.0259 0.0147 \*  
 Mars -62946-01-21 15:35 J -21269583.18 -21269582.85 -21269582.52 0.0259 0.0002  
 Earth -62945-01-03 04:04 J -21269236.57 -21269236.33 -21269236.07 0.0259 0.0022  
 Moon -62945-01-03 06:13 J -21269236.48 -21269236.24 -21269235.99 0.0259 0.0031 \*  
 Earth -62944-01-13 19:54 J -21268859.82 -21268859.67 -21268859.49 0.0260 0.0192  
 Moon -62944-01-13 23:16 J -21268859.67 -21268859.53 -21268859.36 0.0260 0.0206 \*  
 Venus -62938-07-21 21:49 J -21266479.80 -21266479.59 -21266479.39 0.0284 0.0072  
 Mercury -62934-12-25 15:06 J -21264861.95 -21264861.87 -21264861.78 0.0302 0.0230  
 Mercury -62933-03-23 04:18 J -21264773.45 -21264773.32 -21264773.20 0.0302 0.0096  
 Mercury -62933-06-19 17:16 J -21264684.91 -21264684.78 -21264684.65 0.0303 0.0038

Mercury -62933-09-16 06:13 J -21264596.35 -21264596.24 -21264596.13 0.0303 0.0171  
 Mars -62932-03-05 08:37 J -21264426.31 -21264426.14 -21264425.96 0.0304 0.0230  
 Earth -62932-06-23 08:37 J -21264316.31 -21264316.14 -21264315.98 0.0304 0.0221  
 Moon -62932-06-23 09:06 J -21264316.27 -21264316.12 -21264315.96 0.0304 0.0235 \*  
 Moon -62931-07-08 05:01 J -21263936.54 -21263936.29 -21263936.05 0.0303 0.0038  
 Earth -62931-07-08 07:40 J -21263936.42 -21263936.18 -21263935.95 0.0303 0.0050 \*  
 Moon -62930-07-22 21:21 J -21263556.61 -21263556.61 -21263556.60 0.0301 0.0301  
 Venus -62925-10-07 03:06 J -21261653.57 -21261653.37 -21261653.17 0.0279 0.0080  
 Mercury -62919-04-19 19:25 J -21259632.81 -21259632.69 -21259632.56 0.0260 0.0189  
 Mercury -62919-07-17 15:35 J -21259544.03 -21259543.85 -21259543.67 0.0260 0.0067  
 Mercury -62919-10-14 11:45 J -21259455.20 -21259455.01 -21259454.83 0.0259 0.0055  
 Mercury -62918-01-11 07:54 J -21259366.31 -21259366.17 -21259366.03 0.0259 0.0178  
 Earth -62918-12-17 21:49 J -21259025.71 -21259025.59 -21259025.46 0.0258 0.0223  
 Moon -62918-12-18 00:57 J -21259025.56 -21259025.46 -21259025.34 0.0258 0.0233 \*  
 Moon -62917-12-28 07:54 J -21258649.42 -21258649.17 -21258648.92 0.0259 0.0050  
 Earth -62917-12-28 10:04 J -21258649.32 -21258649.08 -21258648.83 0.0259 0.0056 \*  
 Mars -62916-03-13 01:40 J -21258574.58 -21258574.43 -21258574.25 0.0259 0.0225  
 Moon -62915-01-08 21:21 J -21258272.82 -21258272.61 -21258272.39 0.0260 0.0129  
 Earth -62915-01-09 00:42 J -21258272.69 -21258272.47 -21258272.24 0.0260 0.0115 \*  
 Venus -62908-01-31 04:04 J -21255693.55 -21255693.33 -21255693.12 0.0285 0.0010  
 Mercury -62904-05-13 17:16 J -21254129.84 -21254129.78 -21254129.72 0.0302 0.0267  
 Mercury -62904-08-10 06:13 J -21254041.35 -21254041.24 -21254041.12 0.0302 0.0133  
 Mercury -62904-11-06 19:25 J -21253952.82 -21253952.69 -21253952.56 0.0303 0.0003  
 Mercury -62903-02-03 08:23 J -21253864.27 -21253864.15 -21253864.04 0.0303 0.0135  
 Mercury -62903-05-02 21:06 J -21253775.67 -21253775.62 -21253775.56 0.0303 0.0268  
 Mars -62902-04-24 02:52 J -21253419.63 -21253419.38 -21253419.12 0.0304 0.0059  
 Earth -62902-07-02 03:21 J -21253350.59 -21253350.36 -21253350.12 0.0303 0.0073  
 Moon -62902-07-02 05:59 J -21253350.47 -21253350.25 -21253350.02 0.0303 0.0087 \*  
 Earth -62901-07-15 23:45 J -21252970.69 -21252970.51 -21252970.32 0.0302 0.0195  
 Moon -62901-07-16 03:06 J -21252970.55 -21252970.37 -21252970.17 0.0302 0.0184 \*



Venus -62895-04-19 08:23 J -21250867.36 -21250867.15 -21250866.94 0.0278 0.0022  
 Mercury -62890-09-06 19:54 J -21248900.77 -21248900.67 -21248900.57 0.0261 0.0219  
 Mercury -62890-12-04 15:49 J -21248812.01 -21248811.84 -21248811.67 0.0260 0.0097  
 Mercury -62889-03-02 11:59 J -21248723.19 -21248723.00 -21248722.81 0.0260 0.0026  
 Mercury -62889-05-30 08:09 J -21248634.31 -21248634.16 -21248634.01 0.0260 0.0149  
 Mars -62888-04-27 02:37 J -21248302.58 -21248302.39 -21248302.16 0.0259 0.0198  
 Earth -62888-12-23 19:25 J -21248061.90 -21248061.69 -21248061.46 0.0259 0.0128  
 Moon -62888-12-23 20:52 J -21248061.83 -21248061.63 -21248061.41 0.0259 0.0129 \*  
 Earth -62886-01-04 09:06 J -21247685.36 -21247685.12 -21247684.87 0.0259 0.0042  
 Moon -62886-01-04 12:42 J -21247685.21 -21247684.97 -21247684.72 0.0259 0.0054 \*  
 Moon -62885-01-16 00:57 J -21247308.58 -21247308.46 -21247308.32 0.0261 0.0227  
 Earth -62885-01-16 01:40 J -21247308.56 -21247308.43 -21247308.27 0.0261 0.0214 \*  
 Jupiter -62880-11-23 09:35 J -21245170.46 -21245170.10 -21245169.69 0.0281 0.0152  
 Venus -62879-08-13 11:45 J -21244907.21 -21244907.01 -21244906.79 0.0284 0.0058  
 Mercury -62875-12-28 08:37 J -21243309.25 -21243309.14 -21243309.03 0.0302 0.0168  
 Mercury -62874-03-26 21:35 J -21243220.73 -21243220.60 -21243220.47 0.0302 0.0034  
 Mercury -62874-06-23 10:33 J -21243132.18 -21243132.06 -21243131.94 0.0303 0.0099  
 Mercury -62874-09-19 23:16 J -21243043.60 -21243043.53 -21243043.44 0.0303 0.0232  
 Moon -62873-06-24 18:28 J -21242764.90 -21242764.73 -21242764.54 0.0304 0.0207  
 Earth -62873-06-24 21:35 J -21242764.78 -21242764.60 -21242764.41 0.0304 0.0192 \*  
 Moon -62872-07-09 16:33 J -21242385.04 -21242384.81 -21242384.58 0.0303 0.0068  
 Earth -62872-07-09 19:54 J -21242384.90 -21242384.67 -21242384.44 0.0303 0.0080 \*  
 Venus -62866-10-30 12:28 J -21240081.19 -21240080.98 -21240080.77 0.0278 0.0030  
 Mercury -62860-01-23 19:11 J -21238168.73 -21238168.70 -21238168.65 0.0260 0.0255  
 Mercury -62860-04-22 15:06 J -21238080.02 -21238079.87 -21238079.70 0.0260 0.0133  
 Mercury -62860-07-20 11:30 J -21237991.21 -21237991.02 -21237990.83 0.0260 0.0011  
 Mercury -62860-10-17 07:40 J -21237902.35 -21237902.18 -21237902.01 0.0259 0.0113  
 Mercury -62859-01-14 03:49 J -21237813.41 -21237813.34 -21237813.26 0.0259 0.0236  
 Moon -62859-12-19 02:37 J -21237474.53 -21237474.39 -21237474.23 0.0259 0.0211  
 Earth -62859-12-19 03:21 J -21237474.50 -21237474.36 -21237474.20 0.0259 0.0204 \*

Mars -62858-06-17 12:57 J -21237294.28 -21237293.96 -21237293.63 0.0259 0.0028  
 Moon -62858-12-30 12:57 J -21237098.20 -21237097.96 -21237097.71 0.0259 0.0027  
 Earth -62858-12-30 16:18 J -21237098.06 -21237097.82 -21237097.57 0.0259 0.0036 \*  
 Earth -62856-01-10 07:40 J -21236721.38 -21236721.18 -21236720.95 0.0260 0.0137  
 Moon -62856-01-10 08:23 J -21236721.33 -21236721.15 -21236720.94 0.0260 0.0152 \*  
 Venus -62849-02-23 19:25 J -21234120.88 -21234120.69 -21234120.49 0.0285 0.0124  
 Mercury -62845-05-16 11:01 J -21232577.14 -21232577.04 -21232576.94 0.0302 0.0201  
 Mercury -62845-08-12 23:59 J -21232488.62 -21232488.50 -21232488.37 0.0302 0.0068  
 Mercury -62845-11-09 12:57 J -21232400.08 -21232399.96 -21232399.83 0.0303 0.0067  
 Mercury -62844-02-06 01:54 J -21232311.51 -21232311.42 -21232311.32 0.0303 0.0199  
 Mars -62844-07-30 18:28 J -21232136.92 -21232136.73 -21232136.52 0.0303 0.0193  
 Earth -62843-07-03 18:13 J -21231798.97 -21231798.74 -21231798.49 0.0303 0.0042  
 Moon -62843-07-03 21:35 J -21231798.84 -21231798.60 -21231798.35 0.0303 0.0056 \*  
 Earth -62842-07-18 13:54 J -21231419.08 -21231418.92 -21231418.76 0.0302 0.0226  
 Moon -62842-07-18 14:23 J -21231419.07 -21231418.90 -21231418.73 0.0302 0.0216 \*  
 Venus -62836-05-11 18:42 J -21229294.91 -21229294.72 -21229294.52 0.0277 0.0092  
 Mercury -62831-09-09 16:04 J -21227347.97 -21227347.83 -21227347.68 0.0261 0.0160  
 Mercury -62831-12-07 12:13 J -21227259.18 -21227258.99 -21227258.81 0.0260 0.0038  
 Mercury -62830-03-06 08:09 J -21227170.33 -21227170.16 -21227169.97 0.0260 0.0086  
 Mercury -62830-06-03 04:33 J -21227081.42 -21227081.31 -21227081.19 0.0260 0.0209  
 Earth -62829-12-25 02:52 J -21226510.60 -21226510.38 -21226510.15 0.0259 0.0107  
 Moon -62829-12-25 06:28 J -21226510.45 -21226510.23 -21226510.00 0.0259 0.0107 \*  
 Mars -62828-08-07 11:59 J -21226285.05 -21226285.00 -21226284.93 0.0259 0.0255  
 Moon -62827-01-05 16:33 J -21226134.05 -21226133.81 -21226133.56 0.0260 0.0077  
 Earth -62827-01-05 17:16 J -21226134.03 -21226133.78 -21226133.54 0.0260 0.0064 \*  
 Moon -62826-01-17 06:42 J -21225757.28 -21225757.22 -21225757.14 0.0261 0.0250  
 Earth -62826-01-17 10:47 J -21225757.15 -21225757.05 -21225756.95 0.0261 0.0236 \*  
 Venus -62820-01-18 10:18 J -21223564.17 -21223564.07 -21223563.95 0.0282 0.0242  
 Venus -62820-09-05 04:18 J -21223334.47 -21223334.32 -21223334.16 0.0285 0.0195  
 Mercury -62816-10-03 13:40 J -21221845.01 -21221844.93 -21221844.85 0.0302 0.0233

Mercury -62816-12-31 02:37 J -21221756.51 -21221756.39 -21221756.26 0.0302 0.0099  
 Mercury -62815-03-29 15:35 J -21221667.98 -21221667.85 -21221667.72 0.0303 0.0035  
 Mercury -62815-06-26 04:33 J -21221579.42 -21221579.31 -21221579.20 0.0303 0.0167  
 Mercury -62815-09-22 17:16 J -21221490.79 -21221490.78 -21221490.76 0.0303 0.0299  
 Moon -62814-06-27 12:42 J -21221213.16 -21221212.97 -21221212.78 0.0304 0.0175  
 Earth -62814-06-27 15:35 J -21221213.05 -21221212.85 -21221212.64 0.0304 0.0159 \*  
 Mars -62814-09-18 14:23 J -21221130.15 -21221129.90 -21221129.65 0.0303 0.0092  
 Moon -62813-07-11 12:57 J -21220833.18 -21220832.96 -21220832.74 0.0303 0.0102  
 Earth -62813-07-11 13:11 J -21220833.17 -21220832.95 -21220832.73 0.0303 0.0113 \*  
 Venus -62807-04-06 17:16 J -21218737.87 -21218737.78 -21218737.69 0.0280 0.0251  
 Venus -62807-11-22 00:28 J -21218508.66 -21218508.48 -21218508.31 0.0277 0.0150  
 Mercury -62801-01-27 16:04 J -21216615.95 -21216615.83 -21216615.70 0.0260 0.0192  
 Mercury -62801-04-25 12:13 J -21216527.17 -21216526.99 -21216526.81 0.0260 0.0070  
 Mercury -62801-07-23 08:23 J -21216438.33 -21216438.15 -21216437.96 0.0260 0.0053  
 Mercury -62801-10-20 04:33 J -21216349.44 -21216349.31 -21216349.17 0.0259 0.0176  
 Mars -62800-09-21 09:35 J -21216013.34 -21216013.10 -21216012.83 0.0259 0.0162  
 Moon -62800-12-20 08:09 J -21215923.32 -21215923.16 -21215922.98 0.0259 0.0189  
 Earth -62800-12-20 11:59 J -21215923.17 -21215923.00 -21215922.81 0.0259 0.0183 \*  
 Moon -62798-01-01 01:11 J -21215546.69 -21215546.45 -21215546.21 0.0259 0.0006  
 Earth -62798-01-01 01:25 J -21215546.69 -21215546.44 -21215546.19 0.0259 0.0013 \*  
 Earth -62797-01-12 17:16 J -21215169.96 -21215169.78 -21215169.57 0.0260 0.0160  
 Moon -62797-01-12 21:06 J -21215169.79 -21215169.62 -21215169.42 0.0260 0.0175 \*  
 Venus -62791-07-31 18:42 J -21212777.89 -21212777.72 -21212777.55 0.0283 0.0174  
 Venus -62790-03-18 12:57 J -21212548.03 -21212547.96 -21212547.88 0.0286 0.0266  
 Mercury -62786-02-20 16:18 J -21211112.88 -21211112.82 -21211112.75 0.0302 0.0262  
 Mercury -62786-05-20 05:30 J -21211024.39 -21211024.27 -21211024.15 0.0302 0.0128  
 Mercury -62786-08-16 18:28 J -21210935.86 -21210935.73 -21210935.60 0.0303 0.0007  
 Mercury -62786-11-13 07:25 J -21210847.30 -21210847.19 -21210847.07 0.0303 0.0138  
 Mercury -62785-02-09 20:23 J -21210758.71 -21210758.65 -21210758.60 0.0303 0.0270  
 Earth -62785-06-20 14:37 J -21210626.98 -21210626.89 -21210626.78 0.0303 0.0276

Moon -62785-06-20 17:01 J -21210626.84 -21210626.79 -21210626.71 0.0303 0.0292 \*  
 Moon -62784-07-05 14:09 J -21210247.16 -21210246.91 -21210246.66 0.0303 0.0019  
 Earth -62784-07-05 14:09 J -21210247.15 -21210246.91 -21210246.67 0.0303 0.0007 \*  
 Moon -62783-07-20 05:45 J -21209867.38 -21209867.26 -21209867.12 0.0301 0.0251  
 Earth -62783-07-20 08:37 J -21209867.24 -21209867.14 -21209867.01 0.0301 0.0261 \*  
 Venus -62778-10-18 00:28 J -21207951.63 -21207951.48 -21207951.31 0.0279 0.0185  
 Venus -62777-06-03 07:40 J -21207722.31 -21207722.18 -21207722.04 0.0276 0.0213  
 Mercury -62772-06-15 17:01 J -21205883.88 -21205883.79 -21205883.67 0.0261 0.0218  
 Mercury -62772-09-12 13:11 J -21205795.12 -21205794.95 -21205794.77 0.0260 0.0096  
 Mercury -62772-12-10 09:21 J -21205706.29 -21205706.11 -21205705.92 0.0260 0.0028  
 Mercury -62771-03-09 05:45 J -21205617.41 -21205617.26 -21205617.11 0.0260 0.0151  
 Earth -62771-12-16 00:13 J -21205335.54 -21205335.49 -21205335.43 0.0259 0.0252  
 Mars -62770-11-12 06:57 J -21205004.53 -21205004.21 -21205003.89 0.0259 0.0063  
 Earth -62770-12-27 12:57 J -21204959.19 -21204958.96 -21204958.72 0.0259 0.0084  
 Moon -62770-12-27 14:09 J -21204959.15 -21204958.91 -21204958.66 0.0259 0.0083 \*  
 Moon -62768-01-06 23:59 J -21204582.72 -21204582.50 -21204582.26 0.0260 0.0102  
 Earth -62768-01-07 03:35 J -21204582.58 -21204582.35 -21204582.10 0.0260 0.0088 \*  
 Earth -62767-01-18 22:04 J -21204205.59 -21204205.58 -21204205.57 0.0262 0.0261  
 Venus -62761-02-11 04:47 J -21201991.50 -21201991.30 -21201991.10 0.0283 0.0100  
 Mercury -62757-07-09 19:11 J -21200380.72 -21200380.70 -21200380.66 0.0301 0.0291  
 Mercury -62757-10-06 08:23 J -21200292.26 -21200292.15 -21200292.04 0.0302 0.0157  
 Mercury -62756-01-02 21:35 J -21200203.73 -21200203.60 -21200203.47 0.0302 0.0025  
 Mercury -62756-04-01 10:33 J -21200115.19 -21200115.06 -21200114.94 0.0303 0.0110  
 Mercury -62756-06-28 23:16 J -21200026.60 -21200026.53 -21200026.45 0.0303 0.0242  
 Mars -62756-12-25 19:11 J -21199846.92 -21199846.70 -21199846.46 0.0303 0.0146  
 Earth -62755-06-29 14:09 J -21199661.12 -21199660.91 -21199660.68 0.0303 0.0122  
 Moon -62755-06-29 15:06 J -21199661.07 -21199660.87 -21199660.66 0.0303 0.0137 \*  
 Earth -62754-07-14 10:47 J -21199281.25 -21199281.05 -21199280.84 0.0302 0.0149  
 Moon -62754-07-14 13:54 J -21199281.13 -21199280.92 -21199280.70 0.0302 0.0136 \*  
 Venus -62748-04-29 07:25 J -21197165.37 -21197165.19 -21197165.00 0.0279 0.0122

Venus -62748-12-14 14:09 J -21196935.93 -21196935.91 -21196935.88 0.0276 0.0274

Mercury -62743-11-02 17:45 J -21195151.81 -21195151.76 -21195151.70 0.0261 0.0248

Mercury -62742-01-30 13:40 J -21195063.09 -21195062.93 -21195062.76 0.0260 0.0126

Mercury -62742-04-29 09:49 J -21194974.28 -21194974.09 -21194973.90 0.0260 0.0004

Mercury -62742-07-27 05:59 J -21194885.41 -21194885.25 -21194885.08 0.0260 0.0120

Mercury -62742-10-24 02:09 J -21194796.46 -21194796.41 -21194796.33 0.0259 0.0243

Moon -62741-12-21 21:06 J -21194371.80 -21194371.62 -21194371.43 0.0259 0.0165

Earth -62741-12-21 22:33 J -21194371.74 -21194371.56 -21194371.35 0.0259 0.0161 \*

Earth -62739-01-02 12:28 J -21193995.23 -21193994.98 -21193994.73 0.0259 0.0010

Moon -62739-01-02 15:35 J -21193995.09 -21193994.85 -21193994.60 0.0259 0.0019 \*

Earth -62738-01-14 04:47 J -21193618.46 -21193618.30 -21193618.11 0.0260 0.0184

Moon -62738-01-14 06:13 J -21193618.40 -21193618.24 -21193618.06 0.0260 0.0197 \*

Venus -62732-08-23 12:57 J -21191205.17 -21191204.96 -21191204.75 0.0284 0.0032

Mercury -62727-02-23 11:16 J -21189560.13 -21189560.03 -21189559.93 0.0302 0.0187

Mercury -62727-05-23 00:13 J -21189471.62 -21189471.49 -21189471.36 0.0302 0.0053

Mercury -62727-08-19 13:11 J -21189383.07 -21189382.95 -21189382.82 0.0303 0.0081

Mercury -62727-11-16 02:09 J -21189294.50 -21189294.41 -21189294.32 0.0303 0.0213

Moon -62726-06-23 11:30 J -21189075.15 -21189075.02 -21189074.88 0.0304 0.0254

Earth -62726-06-23 13:25 J -21189075.08 -21189074.94 -21189074.79 0.0304 0.0240 \*

Mars -62725-02-13 18:57 J -21188839.93 -21188839.71 -21188839.47 0.0303 0.0144

Moon -62725-07-07 08:37 J -21188695.38 -21188695.14 -21188694.89 0.0303 0.0019

Earth -62725-07-07 12:13 J -21188695.22 -21188694.99 -21188694.75 0.0303 0.0033 \*

Moon -62724-07-22 03:06 J -21188315.44 -21188315.37 -21188315.30 0.0301 0.0284

Earth -62724-07-22 06:13 J -21188315.28 -21188315.24 -21188315.20 0.0301 0.0295

Venus -62719-11-09 15:35 J -21186379.05 -21186378.85 -21186378.64 0.0278 0.0054

Mercury -62713-06-18 15:06 J -21184331.02 -21184330.87 -21184330.72 0.0261 0.0150

Mercury -62713-09-15 11:01 J -21184242.22 -21184242.04 -21184241.85 0.0260 0.0029

Mercury -62713-12-13 07:11 J -21184153.37 -21184153.20 -21184153.02 0.0260 0.0096

Mercury -62712-03-12 03:35 J -21184064.45 -21184064.35 -21184064.25 0.0260 0.0219

Earth -62712-12-17 11:16 J -21183784.13 -21183784.03 -21183783.91 0.0259 0.0230

Moon -62712-12-17 13:11 J -21183784.04 -21183783.95 -21183783.84 0.0259 0.0238 \*  
 Mars -62711-02-16 08:52 J -21183723.41 -21183723.13 -21183722.83 0.0259 0.0123  
 Moon -62711-12-28 21:06 J -21183407.86 -21183407.62 -21183407.36 0.0259 0.0058  
 Earth -62711-12-29 00:13 J -21183407.73 -21183407.49 -21183407.24 0.0259 0.0062 \*  
 Moon -62709-01-09 13:25 J -21183031.15 -21183030.94 -21183030.73 0.0260 0.0124  
 Earth -62709-01-09 15:35 J -21183031.08 -21183030.85 -21183030.63 0.0260 0.0112 \*  
 Venus -62702-03-05 23:01 J -21180418.75 -21180418.54 -21180418.32 0.0284 0.0043  
 Mercury -62698-07-13 14:23 J -21178827.99 -21178827.90 -21178827.81 0.0301 0.0214  
 Mercury -62698-10-10 03:21 J -21178739.48 -21178739.36 -21178739.23 0.0302 0.0081  
 Mercury -62697-01-06 16:33 J -21178650.94 -21178650.81 -21178650.69 0.0302 0.0054  
 Mercury -62697-04-04 05:16 J -21178562.38 -21178562.28 -21178562.18 0.0303 0.0186  
 Earth -62696-07-01 13:54 J -21178109.15 -21178108.92 -21178108.69 0.0303 0.0086  
 Moon -62696-07-01 17:30 J -21178108.99 -21178108.77 -21178108.54 0.0303 0.0100 \*  
 Earth -62695-07-16 09:49 J -21177729.27 -21177729.09 -21177728.89 0.0302 0.0186  
 Moon -62695-07-16 13:11 J -21177729.15 -21177728.95 -21177728.75 0.0302 0.0172 \*  
 Venus -62689-05-21 23:16 J -21175592.74 -21175592.53 -21175592.32 0.0278 0.0012  
 Mercury -62684-11-05 15:35 J -21173598.98 -21173598.85 -21173598.71 0.0260 0.0180  
 Mercury -62683-02-02 11:30 J -21173510.20 -21173510.02 -21173509.83 0.0260 0.0058  
 Mercury -62683-05-02 07:40 J -21173421.36 -21173421.18 -21173420.99 0.0260 0.0066  
 Mercury -62683-07-30 04:04 J -21173332.46 -21173332.33 -21173332.20 0.0259 0.0188  
 Earth -62682-12-24 10:18 J -21172820.28 -21172820.07 -21172819.86 0.0259 0.0138  
 Moon -62682-12-24 12:57 J -21172820.16 -21172819.96 -21172819.75 0.0259 0.0140 \*  
 Mars -62681-04-08 01:54 J -21172714.71 -21172714.42 -21172714.11 0.0259 0.0109  
 Earth -62680-01-04 00:13 J -21172443.74 -21172443.49 -21172443.25 0.0259 0.0034  
 Moon -62680-01-04 03:06 J -21172443.63 -21172443.37 -21172443.12 0.0259 0.0043 \*  
 Moon -62679-01-15 14:23 J -21172067.04 -21172066.90 -21172066.76 0.0261 0.0219  
 Earth -62679-01-15 16:47 J -21172066.93 -21172066.80 -21172066.63 0.0261 0.0208 \*  
 Venus -62673-09-15 07:11 J -21169632.39 -21169632.20 -21169631.99 0.0285 0.0113  
 Mercury -62669-11-29 17:01 J -21168095.86 -21168095.79 -21168095.71 0.0302 0.0243  
 Mercury -62668-02-26 06:13 J -21168007.36 -21168007.24 -21168007.12 0.0302 0.0110

Mercury -62668-05-25 19:11 J -21167918.83 -21167918.70 -21167918.57 0.0303 0.0025  
 Mercury -62668-08-22 08:09 J -21167830.27 -21167830.16 -21167830.05 0.0303 0.0157  
 Mercury -62668-11-18 20:52 J -21167741.66 -21167741.63 -21167741.59 0.0303 0.0289  
 Mars -62667-05-23 02:09 J -21167556.66 -21167556.41 -21167556.16 0.0304 0.0094  
 Moon -62667-06-25 09:35 J -21167523.26 -21167523.10 -21167522.93 0.0304 0.0218  
 Earth -62667-06-25 13:11 J -21167523.12 -21167522.95 -21167522.76 0.0304 0.0203 \*  
 Moon -62666-07-10 09:21 J -21167143.34 -21167143.11 -21167142.88 0.0303 0.0057  
 Earth -62666-07-10 11:45 J -21167143.24 -21167143.01 -21167142.78 0.0303 0.0070 \*  
 Jupiter -62660-02-11 11:30 J -21165100.40 -21165100.02 -21165099.60 0.0281 0.0150  
 Venus -62660-12-02 06:57 J -21164806.41 -21164806.21 -21164806.01 0.0277 0.0078  
 Mercury -62654-03-25 17:01 J -21162866.90 -21162866.79 -21162866.67 0.0261 0.0204  
 Mercury -62654-06-22 12:57 J -21162778.14 -21162777.96 -21162777.78 0.0260 0.0082  
 Mercury -62654-09-19 09:06 J -21162689.31 -21162689.12 -21162688.93 0.0260 0.0041  
 Mercury -62654-12-17 05:16 J -21162600.42 -21162600.28 -21162600.13 0.0260 0.0164  
 Moon -62653-12-18 19:54 J -21162232.81 -21162232.67 -21162232.52 0.0259 0.0214  
 Earth -62653-12-18 22:33 J -21162232.70 -21162232.56 -21162232.41 0.0259 0.0209 \*  
 Moon -62652-12-30 08:23 J -21161856.39 -21161856.15 -21161855.90 0.0259 0.0033  
 Earth -62652-12-30 11:30 J -21161856.26 -21161856.02 -21161855.77 0.0259 0.0039 \*  
 Earth -62650-01-11 02:52 J -21161479.59 -21161479.38 -21161479.16 0.0260 0.0135  
 Moon -62650-01-11 04:33 J -21161479.50 -21161479.31 -21161479.10 0.0260 0.0149 \*  
 Venus -62644-08-10 22:33 J -21159075.65 -21159075.56 -21159075.46 0.0282 0.0252  
 Venus -62643-03-28 16:47 J -21158845.96 -21158845.80 -21158845.64 0.0285 0.0184  
 Mercury -62639-04-18 19:54 J -21157363.72 -21157363.67 -21157363.61 0.0301 0.0273  
 Mercury -62639-07-16 09:06 J -21157275.24 -21157275.12 -21157275.00 0.0302 0.0140  
 Mercury -62639-10-12 22:04 J -21157186.71 -21157186.58 -21157186.45 0.0302 0.0009  
 Mercury -62638-01-09 11:01 J -21157098.16 -21157098.04 -21157097.92 0.0303 0.0127  
 Mercury -62638-04-07 23:59 J -21157009.57 -21157009.50 -21157009.44 0.0303 0.0259  
 Earth -62637-07-03 11:59 J -21156557.24 -21156557.00 -21156556.76 0.0303 0.0050  
 Moon -62637-07-03 13:54 J -21156557.16 -21156556.92 -21156556.68 0.0303 0.0064 \*  
 Mars -62637-07-10 23:45 J -21156549.70 -21156549.51 -21156549.31 0.0303 0.0198

Moon -62636-07-18 06:28 J -21156177.40 -21156177.23 -21156177.04 0.0302 0.0209  
 Earth -62636-07-18 07:40 J -21156177.33 -21156177.18 -21156177.01 0.0302 0.0220 \*  
 Venus -62631-10-28 06:57 J -21154249.28 -21154249.21 -21154249.12 0.0280 0.0258  
 Venus -62630-06-14 14:23 J -21154020.07 -21154019.90 -21154019.72 0.0277 0.0143  
 Mercury -62625-08-11 17:30 J -21152134.85 -21152134.77 -21152134.68 0.0260 0.0233  
 Mercury -62625-11-08 13:25 J -21152046.10 -21152045.94 -21152045.77 0.0260 0.0112  
 Mercury -62624-02-05 09:35 J -21151957.29 -21151957.10 -21151956.91 0.0260 0.0010  
 Mercury -62624-05-05 05:45 J -21151868.42 -21151868.26 -21151868.10 0.0259 0.0133  
 Mercury -62624-08-02 01:54 J -21151779.44 -21151779.42 -21151779.39 0.0259 0.0256  
 Mars -62623-07-14 03:21 J -21151433.66 -21151433.36 -21151433.04 0.0259 0.0077  
 Earth -62623-12-25 20:52 J -21151268.84 -21151268.63 -21151268.40 0.0259 0.0117  
 Moon -62623-12-25 23:59 J -21151268.72 -21151268.50 -21151268.26 0.0259 0.0116 \*  
 Moon -62621-01-06 09:21 J -21150892.35 -21150892.11 -21150891.85 0.0259 0.0068  
 Earth -62621-01-06 11:01 J -21150892.28 -21150892.04 -21150891.79 0.0259 0.0056 \*  
 Moon -62620-01-17 00:42 J -21150515.55 -21150515.47 -21150515.37 0.0261 0.0243  
 Earth -62620-01-17 04:04 J -21150515.44 -21150515.33 -21150515.21 0.0261 0.0230 \*  
 Venus -62614-02-21 05:30 J -21148289.42 -21148289.27 -21148289.10 0.0283 0.0188  
 Venus -62614-10-08 23:59 J -21148059.60 -21148059.50 -21148059.40 0.0286 0.0250  
 Mercury -62610-12-03 11:30 J -21146543.12 -21146543.02 -21146542.91 0.0302 0.0172  
 Mercury -62609-03-01 00:42 J -21146454.60 -21146454.47 -21146454.34 0.0303 0.0039  
 Mercury -62609-05-28 13:40 J -21146366.06 -21146365.93 -21146365.81 0.0303 0.0095  
 Mercury -62609-08-25 02:37 J -21146277.48 -21146277.39 -21146277.31 0.0303 0.0228  
 Moon -62608-06-27 08:09 J -21145971.33 -21145971.16 -21145970.96 0.0304 0.0184  
 Earth -62608-06-27 09:49 J -21145971.29 -21145971.09 -21145970.89 0.0304 0.0169 \*  
 Earth -62607-07-12 07:54 J -21145591.39 -21145591.17 -21145590.94 0.0303 0.0104  
 Moon -62607-07-12 09:35 J -21145591.32 -21145591.10 -21145590.87 0.0303 0.0094 \*  
 Venus -62601-05-09 14:23 J -21143463.04 -21143462.90 -21143462.74 0.0279 0.0191  
 Venus -62601-12-24 21:21 J -21143233.74 -21143233.61 -21143233.46 0.0276 0.0205  
 Mercury -62596-12-29 18:28 J -21141402.74 -21141402.73 -21141402.71 0.0261 0.0260  
 Mercury -62595-03-28 14:23 J -21141314.05 -21141313.90 -21141313.74 0.0260 0.0138



Mercury -62595-06-25 10:33 J -21141225.25 -21141225.06 -21141224.87 0.0260 0.0016

Mercury -62595-09-22 06:28 J -21141136.39 -21141136.23 -21141136.05 0.0260 0.0107

Mercury -62595-12-20 02:52 J -21141047.46 -21141047.38 -21141047.29 0.0259 0.0229

Moon -62594-12-21 05:01 J -21140681.45 -21140681.29 -21140681.12 0.0259 0.0194

Earth -62594-12-21 08:09 J -21140681.32 -21140681.16 -21140680.98 0.0259 0.0189 \*

Mars -62593-09-02 22:18 J -21140424.82 -21140424.57 -21140424.29 0.0259 0.0150

Earth -62593-12-31 21:06 J -21140304.87 -21140304.62 -21140304.37 0.0259 0.0018

Moon -62593-12-31 22:33 J -21140304.80 -21140304.56 -21140304.32 0.0259 0.0009 \*

Earth -62591-01-12 12:13 J -21139928.18 -21139927.99 -21139927.78 0.0260 0.0157

Moon -62591-01-12 16:18 J -21139928.01 -21139927.82 -21139927.63 0.0260 0.0171 \*

Venus -62585-09-02 14:09 J -21137503.10 -21137502.91 -21137502.72 0.0283 0.0120

Mercury -62580-04-21 14:09 J -21135811.00 -21135810.91 -21135810.81 0.0302 0.0204

Mercury -62580-07-19 03:21 J -21135722.49 -21135722.36 -21135722.23 0.0302 0.0070

Mercury -62580-10-15 16:18 J -21135633.95 -21135633.82 -21135633.69 0.0303 0.0063

Mercury -62579-01-12 05:16 J -21135545.38 -21135545.28 -21135545.18 0.0303 0.0196

Earth -62579-06-21 07:40 J -21135385.25 -21135385.18 -21135385.12 0.0303 0.0291

Mars -62579-10-17 23:59 J -21135266.76 -21135266.50 -21135266.23 0.0303 0.0041

Moon -62578-07-06 05:30 J -21135005.52 -21135005.27 -21135005.02 0.0303 0.0029

Earth -62578-07-06 07:40 J -21135005.42 -21135005.18 -21135004.94 0.0303 0.0018 \*

Moon -62577-07-19 23:01 J -21134625.67 -21134625.54 -21134625.38 0.0302 0.0244

Earth -62577-07-20 03:06 J -21134625.50 -21134625.37 -21134625.24 0.0302 0.0252 \*

Venus -62572-11-19 21:49 J -21132676.78 -21132676.59 -21132676.41 0.0279 0.0127

Venus -62571-07-07 04:18 J -21132447.35 -21132447.32 -21132447.26 0.0276 0.0269

Mercury -62566-08-15 14:37 J -21130582.02 -21130581.89 -21130581.74 0.0260 0.0169

Mercury -62566-11-12 10:47 J -21130493.23 -21130493.05 -21130492.86 0.0260 0.0047

Mercury -62565-02-09 06:57 J -21130404.39 -21130404.21 -21130404.03 0.0259 0.0075

Mercury -62565-05-08 03:06 J -21130315.49 -21130315.37 -21130315.25 0.0259 0.0197

Moon -62564-12-27 04:47 J -21129717.54 -21129717.30 -21129717.06 0.0259 0.0093

Earth -62564-12-27 05:45 J -21129717.49 -21129717.26 -21129717.02 0.0259 0.0097 \*

Moon -62562-01-07 15:49 J -21129341.07 -21129340.84 -21129340.60 0.0259 0.0090

Earth -62562-01-07 19:40 J -21129340.91 -21129340.68 -21129340.44 0.0259 0.0076 \*  
 Earth -62561-01-19 12:42 J -21128964.03 -21128963.97 -21128963.89 0.0261 0.0250  
 Venus -62555-03-15 19:40 J -21126716.88 -21126716.68 -21126716.47 0.0284 0.0061  
 Mercury -62551-09-08 16:04 J -21125078.90 -21125078.83 -21125078.75 0.0302 0.0242  
 Mercury -62551-12-06 05:16 J -21124990.40 -21124990.28 -21124990.16 0.0303 0.0108  
 Mercury -62550-03-04 18:13 J -21124901.87 -21124901.74 -21124901.61 0.0303 0.0028  
 Mercury -62550-06-01 07:11 J -21124813.31 -21124813.20 -21124813.09 0.0303 0.0160  
 Mercury -62550-08-28 20:09 J -21124724.69 -21124724.66 -21124724.63 0.0304 0.0291  
 Earth -62549-06-29 01:40 J -21124419.64 -21124419.43 -21124419.21 0.0304 0.0139  
 Moon -62549-06-29 03:49 J -21124419.53 -21124419.34 -21124419.13 0.0304 0.0153 \*  
 Mars -62549-12-05 14:52 J -21124260.03 -21124259.88 -21124259.71 0.0304 0.0238  
 Earth -62548-07-13 23:30 J -21124039.72 -21124039.52 -21124039.29 0.0303 0.0136  
 Moon -62548-07-14 03:06 J -21124039.58 -21124039.37 -21124039.14 0.0303 0.0125 \*  
 Venus -62542-06-02 03:21 J -21121890.56 -21121890.36 -21121890.15 0.0279 0.0068  
 Mercury -62536-01-01 15:21 J -21119849.98 -21119849.86 -21119849.74 0.0260 0.0199  
 Mercury -62536-03-31 11:16 J -21119761.21 -21119761.03 -21119760.85 0.0260 0.0077  
 Mercury -62536-06-28 07:11 J -21119672.38 -21119672.20 -21119672.01 0.0260 0.0045  
 Mercury -62536-09-25 03:21 J -21119583.50 -21119583.36 -21119583.21 0.0259 0.0167  
 Mars -62535-12-08 15:21 J -21119144.18 -21119143.86 -21119143.53 0.0259 0.0039  
 Earth -62535-12-22 15:35 J -21119130.03 -21119129.85 -21119129.66 0.0259 0.0170  
 Moon -62535-12-22 15:21 J -21119130.02 -21119129.86 -21119129.67 0.0259 0.0175 \*  
 Earth -62533-01-03 04:18 J -21118753.57 -21118753.32 -21118753.07 0.0259 0.0005  
 Moon -62533-01-03 07:54 J -21118753.42 -21118753.17 -21118752.92 0.0259 0.0013 \*  
 Earth -62532-01-13 19:25 J -21118376.87 -21118376.69 -21118376.50 0.0260 0.0176  
 Moon -62532-01-13 19:25 J -21118376.86 -21118376.69 -21118376.50 0.0260 0.0190 \*  
 Venus -62526-09-26 02:37 J -21115930.60 -21115930.39 -21115930.17 0.0284 0.0003  
 Mercury -62521-01-26 18:13 J -21114346.78 -21114346.74 -21114346.68 0.0301 0.0277  
 Mercury -62521-04-24 07:25 J -21114258.30 -21114258.19 -21114258.07 0.0302 0.0144  
 Mercury -62521-07-21 20:37 J -21114169.77 -21114169.64 -21114169.51 0.0302 0.0011  
 Mercury -62521-10-18 09:35 J -21114081.22 -21114081.10 -21114080.98 0.0303 0.0123

Mercury -62520-01-14 22:18 J -21113992.63 -21113992.57 -21113992.50 0.0303 0.0255  
 Mars -62520-01-23 08:23 J -21113984.21 -21113984.15 -21113984.07 0.0303 0.0291  
 Moon -62520-06-22 18:13 J -21113833.84 -21113833.74 -21113833.65 0.0303 0.0279  
 Earth -62520-06-22 20:52 J -21113833.74 -21113833.63 -21113833.51 0.0303 0.0264 \*  
 Moon -62519-07-07 17:30 J -21113454.01 -21113453.77 -21113453.53 0.0303 0.0002  
 Earth -62519-07-07 21:06 J -21113453.87 -21113453.62 -21113453.38 0.0303 0.0012 \*  
 Moon -62518-07-22 14:37 J -21113073.98 -21113073.89 -21113073.78 0.0302 0.0272  
 Earth -62518-07-22 15:49 J -21113073.91 -21113073.84 -21113073.74 0.0302 0.0280 \*  
 Venus -62513-12-12 09:49 J -21111104.30 -21111104.09 -21111103.88 0.0279 0.0006  
 Mercury -62507-05-21 15:21 J -21109117.94 -21109117.86 -21109117.77 0.0260 0.0231  
 Mercury -62507-08-18 11:16 J -21109029.20 -21109029.03 -21109028.86 0.0260 0.0110  
 Mercury -62507-11-15 07:11 J -21108940.39 -21108940.20 -21108940.01 0.0259 0.0012  
 Mercury -62506-02-12 03:21 J -21108851.52 -21108851.36 -21108851.20 0.0259 0.0134  
 Mercury -62506-05-11 23:16 J -21108762.54 -21108762.53 -21108762.49 0.0259 0.0256  
 Earth -62506-12-17 23:59 J -21108542.56 -21108542.50 -21108542.42 0.0259 0.0247  
 Moon -62506-12-18 00:28 J -21108542.50 -21108542.48 -21108542.43 0.0259 0.0256 \*  
 Moon -62505-12-28 08:09 J -21108166.40 -21108166.16 -21108165.92 0.0258 0.0073  
 Earth -62505-12-28 11:30 J -21108166.25 -21108166.02 -21108165.77 0.0258 0.0079 \*  
 Mars -62504-01-28 01:40 J -21108135.63 -21108135.43 -21108135.18 0.0258 0.0189  
 Earth -62503-01-09 01:11 J -21107789.68 -21107789.45 -21107789.21 0.0259 0.0094  
 Moon -62503-01-09 00:57 J -21107789.67 -21107789.46 -21107789.24 0.0259 0.0109 \*  
 Venus -62496-04-07 06:42 J -21105144.43 -21105144.22 -21105144.01 0.0284 0.0057  
 Mercury -62492-09-11 08:52 J -21103526.23 -21103526.13 -21103526.02 0.0302 0.0186  
 Mercury -62492-12-08 22:04 J -21103437.71 -21103437.58 -21103437.45 0.0303 0.0052  
 Mercury -62491-03-07 11:01 J -21103349.16 -21103349.04 -21103348.91 0.0303 0.0082  
 Mercury -62491-06-03 23:59 J -21103260.59 -21103260.50 -21103260.41 0.0304 0.0215  
 Mars -62490-03-14 00:28 J -21102977.75 -21102977.48 -21102977.22 0.0304 0.0013  
 Earth -62490-07-01 12:28 J -21102868.21 -21102867.98 -21102867.76 0.0304 0.0113  
 Moon -62490-07-01 15:49 J -21102868.06 -21102867.84 -21102867.62 0.0304 0.0127 \*  
 Earth -62489-07-15 10:18 J -21102488.26 -21102488.07 -21102487.86 0.0303 0.0162

Moon -62489-07-15 11:30 J -21102488.23 -21102488.02 -21102487.80 0.0303 0.0152 \*  
 Venus -62483-06-24 14:09 J -21100318.12 -21100317.91 -21100317.70 0.0278 0.0048  
 Mercury -62477-01-05 10:47 J -21098297.19 -21098297.05 -21098296.88 0.0260 0.0144  
 Mercury -62477-04-03 06:57 J -21098208.40 -21098208.21 -21098208.02 0.0260 0.0022  
 Mercury -62477-07-01 02:52 J -21098119.55 -21098119.38 -21098119.20 0.0259 0.0100  
 Mercury -62477-09-27 23:01 J -21098030.63 -21098030.54 -21098030.44 0.0259 0.0222  
 Mars -62476-03-14 06:42 J -21097863.36 -21097863.22 -21097863.06 0.0259 0.0228  
 Earth -62476-12-23 19:25 J -21097578.88 -21097578.69 -21097578.48 0.0259 0.0154  
 Moon -62476-12-23 22:47 J -21097578.73 -21097578.55 -21097578.34 0.0259 0.0157 \*  
 Earth -62474-01-04 07:54 J -21097202.41 -21097202.17 -21097201.92 0.0259 0.0019  
 Moon -62474-01-04 08:37 J -21097202.40 -21097202.14 -21097201.88 0.0259 0.0029 \*  
 Moon -62473-01-15 18:57 J -21096825.85 -21096825.71 -21096825.54 0.0260 0.0207  
 Earth -62473-01-15 23:01 J -21096825.70 -21096825.54 -21096825.37 0.0260 0.0192 \*  
 Venus -62467-10-18 12:13 J -21094358.18 -21094357.99 -21094357.79 0.0285 0.0115  
 Mercury -62462-01-29 10:47 J -21092794.14 -21092794.05 -21092793.97 0.0302 0.0226  
 Mercury -62462-04-27 23:45 J -21092705.63 -21092705.51 -21092705.38 0.0302 0.0093  
 Mercury -62462-07-25 12:57 J -21092617.09 -21092616.96 -21092616.83 0.0303 0.0041  
 Mercury -62462-10-22 01:40 J -21092528.53 -21092528.43 -21092528.32 0.0303 0.0174  
 Moon -62461-06-24 01:11 J -21092282.57 -21092282.45 -21092282.31 0.0304 0.0256  
 Earth -62461-06-24 04:18 J -21092282.46 -21092282.32 -21092282.16 0.0304 0.0241 \*  
 Mars -62460-05-01 13:11 J -21091971.05 -21091970.95 -21091970.83 0.0303 0.0274  
 Moon -62460-07-09 03:49 J -21091902.57 -21091902.34 -21091902.11 0.0303 0.0024  
 Earth -62460-07-09 04:33 J -21091902.55 -21091902.31 -21091902.07 0.0303 0.0035 \*  
 Moon -62459-07-24 01:54 J -21091522.45 -21091522.42 -21091522.38 0.0301 0.0298  
 Venus -62453-01-04 18:57 J -21089531.90 -21089531.71 -21089531.52 0.0278 0.0104  
 Mercury -62448-05-24 10:33 J -21087565.19 -21087565.06 -21087564.92 0.0260 0.0178  
 Mercury -62448-08-21 06:28 J -21087476.41 -21087476.23 -21087476.04 0.0260 0.0057  
 Mercury -62448-11-18 02:37 J -21087387.58 -21087387.39 -21087387.21 0.0259 0.0065  
 Mercury -62447-02-14 22:33 J -21087298.69 -21087298.56 -21087298.43 0.0259 0.0186  
 Moon -62447-12-18 23:16 J -21086991.61 -21086991.53 -21086991.42 0.0258 0.0237

Earth -62447-12-19 02:52 J -21086991.47 -21086991.38 -21086991.25 0.0258 0.0231 \*  
 Mars -62446-05-04 09:21 J -21086855.43 -21086855.11 -21086854.78 0.0258 0.0008  
 Moon -62446-12-30 12:57 J -21086615.19 -21086614.96 -21086614.72 0.0258 0.0056  
 Earth -62446-12-30 14:23 J -21086615.14 -21086614.90 -21086614.66 0.0258 0.0062 \*  
 Earth -62444-01-10 03:21 J -21086238.58 -21086238.36 -21086238.12 0.0259 0.0111  
 Moon -62444-01-10 07:11 J -21086238.42 -21086238.20 -21086237.98 0.0259 0.0125 \*  
 Venus -62438-09-12 21:21 J -21083801.68 -21083801.61 -21083801.55 0.0282 0.0267  
 Venus -62437-04-29 14:52 J -21083572.05 -21083571.88 -21083571.70 0.0285 0.0165  
 Mercury -62433-06-17 11:30 J -21082062.07 -21082062.02 -21082061.97 0.0302 0.0274  
 Mercury -62433-09-14 00:42 J -21081973.59 -21081973.47 -21081973.35 0.0303 0.0140  
 Mercury -62433-12-11 13:54 J -21081885.06 -21081884.92 -21081884.79 0.0303 0.0012  
 Mercury -62432-03-10 02:52 J -21081796.50 -21081796.38 -21081796.26 0.0303 0.0127  
 Mercury -62432-06-06 15:35 J -21081707.91 -21081707.85 -21081707.78 0.0304 0.0260  
 Mars -62432-06-18 16:18 J -21081695.91 -21081695.82 -21081695.70 0.0304 0.0278  
 Moon -62431-07-02 16:04 J -21081317.06 -21081316.83 -21081316.59 0.0304 0.0102  
 Earth -62431-07-02 16:33 J -21081317.04 -21081316.81 -21081316.58 0.0304 0.0091 \*  
 Moon -62430-07-17 11:30 J -21080937.21 -21080937.02 -21080936.82 0.0303 0.0176  
 Earth -62430-07-17 14:23 J -21080937.08 -21080936.90 -21080936.70 0.0303 0.0184 \*  
 Venus -62425-11-29 13:54 J -21078975.01 -21078974.92 -21078974.83 0.0281 0.0249  
 Venus -62424-07-16 21:35 J -21078745.77 -21078745.60 -21078745.42 0.0278 0.0151  
 Mercury -62419-10-11 09:49 J -21076833.19 -21076833.09 -21076832.99 0.0260 0.0215  
 Mercury -62418-01-08 05:30 J -21076744.44 -21076744.27 -21076744.09 0.0260 0.0095  
 Mercury -62418-04-07 01:40 J -21076655.62 -21076655.43 -21076655.24 0.0259 0.0027  
 Mercury -62418-07-04 21:35 J -21076566.75 -21076566.60 -21076566.44 0.0259 0.0149  
 Earth -62417-12-24 20:23 J -21076027.86 -21076027.65 -21076027.44 0.0258 0.0139  
 Moon -62417-12-24 22:04 J -21076027.78 -21076027.58 -21076027.35 0.0258 0.0139 \*  
 Mars -62416-06-23 13:40 J -21075847.11 -21075846.93 -21075846.74 0.0258 0.0213  
 Moon -62415-01-05 05:01 J -21075651.54 -21075651.29 -21075651.04 0.0259 0.0046  
 Earth -62415-01-05 08:23 J -21075651.40 -21075651.15 -21075650.90 0.0259 0.0033 \*  
 Moon -62414-01-16 21:35 J -21075274.72 -21075274.60 -21075274.46 0.0260 0.0219

Earth -62414-01-16 23:16 J -21075274.67 -21075274.53 -21075274.37 0.0260 0.0207 \*  
 Venus -62408-03-25 00:42 J -21073015.59 -21073015.47 -21073015.32 0.0282 0.0216  
 Venus -62408-11-09 18:42 J -21072785.85 -21072785.72 -21072785.57 0.0285 0.0218  
 Mercury -62403-02-01 02:09 J -21071241.51 -21071241.41 -21071241.31 0.0302 0.0184  
 Mercury -62403-04-30 15:21 J -21071152.99 -21071152.86 -21071152.73 0.0302 0.0051  
 Mercury -62403-07-28 04:18 J -21071064.45 -21071064.32 -21071064.20 0.0303 0.0083  
 Mercury -62403-10-24 17:16 J -21070975.87 -21070975.78 -21070975.69 0.0303 0.0215  
 Earth -62402-06-26 05:59 J -21070731.40 -21070731.25 -21070731.07 0.0304 0.0222  
 Moon -62402-06-26 07:40 J -21070731.33 -21070731.18 -21070731.03 0.0304 0.0233 \*  
 Mars -62402-08-07 07:40 J -21070689.44 -21070689.18 -21070688.92 0.0304 0.0012  
 Earth -62401-07-10 06:13 J -21070351.47 -21070351.24 -21070351.00 0.0303 0.0055  
 Moon -62401-07-10 09:49 J -21070351.33 -21070351.09 -21070350.86 0.0303 0.0046 \*  
 Venus -62395-06-11 17:59 J -21068188.89 -21068188.75 -21068188.59 0.0281 0.0194  
 Venus -62394-01-27 01:25 J -21067959.57 -21067959.44 -21067959.29 0.0278 0.0206  
 Mercury -62389-02-28 08:52 J -21066101.16 -21066101.13 -21066101.07 0.0260 0.0251  
 Mercury -62389-05-27 04:47 J -21066012.45 -21066012.30 -21066012.13 0.0260 0.0131  
 Mercury -62389-08-24 00:57 J -21065923.65 -21065923.46 -21065923.28 0.0259 0.0012  
 Mercury -62389-11-20 20:52 J -21065834.80 -21065834.63 -21065834.46 0.0259 0.0112  
 Mercury -62388-02-17 17:01 J -21065745.87 -21065745.79 -21065745.71 0.0259 0.0233  
 Mars -62388-08-07 16:33 J -21065575.01 -21065574.81 -21065574.61 0.0258 0.0204  
 Moon -62388-12-20 00:42 J -21065440.59 -21065440.47 -21065440.33 0.0258 0.0219  
 Earth -62388-12-20 02:52 J -21065440.51 -21065440.38 -21065440.24 0.0258 0.0215 \*  
 Earth -62387-12-31 13:40 J -21065064.17 -21065063.93 -21065063.68 0.0258 0.0047  
 Moon -62387-12-31 16:33 J -21065064.05 -21065063.81 -21065063.56 0.0258 0.0038 \*  
 Earth -62385-01-12 02:37 J -21064687.60 -21064687.39 -21064687.16 0.0259 0.0126  
 Moon -62385-01-12 04:33 J -21064687.52 -21064687.31 -21064687.09 0.0259 0.0138 \*  
 Venus -62379-10-05 02:37 J -21062229.55 -21062229.39 -21062229.21 0.0282 0.0170  
 Venus -62378-05-22 20:37 J -21061999.71 -21061999.64 -21061999.55 0.0285 0.0264  
 Mercury -62374-06-21 02:23 J -21060509.47 -21060509.40 -21060509.31 0.0302 0.0236  
 Mercury -62374-09-17 15:35 J -21060420.97 -21060420.85 -21060420.72 0.0303 0.0103

Mercury -62374-12-15 04:47 J -21060332.43 -21060332.30 -21060332.17 0.0303 0.0032  
 Mercury -62373-03-12 17:45 J -21060243.87 -21060243.76 -21060243.65 0.0304 0.0165  
 Mercury -62373-06-09 06:42 J -21060155.24 -21060155.22 -21060155.20 0.0304 0.0297  
 Moon -62372-07-03 11:59 J -21059766.23 -21059766.00 -21059765.77 0.0304 0.0080  
 Earth -62372-07-03 15:49 J -21059766.07 -21059765.84 -21059765.61 0.0304 0.0073 \*  
 Mars -62372-09-24 09:21 J -21059683.21 -21059683.11 -21059683.01 0.0304 0.0279  
 Moon -62371-07-18 10:47 J -21059386.22 -21059386.05 -21059385.86 0.0303 0.0197  
 Earth -62371-07-18 13:40 J -21059386.10 -21059385.93 -21059385.75 0.0303 0.0202 \*  
 Venus -62366-12-22 18:57 J -21057402.88 -21057402.71 -21057402.53 0.0280 0.0152  
 Venus -62365-08-08 02:23 J -21057173.48 -21057173.40 -21057173.29 0.0277 0.0246  
 Mercury -62360-10-14 03:21 J -21055280.49 -21055280.36 -21055280.21 0.0260 0.0172  
 Mercury -62359-01-10 23:16 J -21055191.71 -21055191.53 -21055191.34 0.0259 0.0051  
 Mercury -62359-04-09 19:25 J -21055102.87 -21055102.69 -21055102.51 0.0259 0.0070  
 Mercury -62359-07-07 15:21 J -21055013.98 -21055013.86 -21055013.73 0.0259 0.0192  
 Mars -62358-09-27 10:47 J -21054567.37 -21054567.05 -21054566.72 0.0258 0.0013  
 Moon -62358-12-26 15:21 J -21054477.08 -21054476.86 -21054476.63 0.0258 0.0119  
 Earth -62358-12-26 18:13 J -21054476.95 -21054476.74 -21054476.51 0.0258 0.0126 \*  
 Moon -62356-01-06 03:49 J -21054100.57 -21054100.34 -21054100.10 0.0259 0.0060  
 Earth -62356-01-06 06:13 J -21054100.48 -21054100.24 -21054099.99 0.0259 0.0047 \*  
 Earth -62355-01-17 20:37 J -21053723.75 -21053723.64 -21053723.49 0.0260 0.0221  
 Moon -62355-01-17 23:45 J -21053723.61 -21053723.51 -21053723.38 0.0260 0.0229 \*  
 Venus -62349-04-16 05:30 J -21051443.46 -21051443.27 -21051443.07 0.0282 0.0122  
 Mercury -62345-11-07 03:21 J -21049777.39 -21049777.36 -21049777.31 0.0301 0.0284  
 Mercury -62344-02-03 16:47 J -21049688.92 -21049688.80 -21049688.69 0.0302 0.0150  
 Mercury -62344-05-03 05:45 J -21049600.39 -21049600.26 -21049600.13 0.0302 0.0018  
 Mercury -62344-07-30 18:42 J -21049511.83 -21049511.72 -21049511.59 0.0303 0.0118  
 Mercury -62344-10-27 07:40 J -21049423.25 -21049423.18 -21049423.10 0.0303 0.0250  
 Mars -62344-11-11 12:28 J -21049408.10 -21049407.98 -21049407.84 0.0303 0.0263  
 Earth -62343-06-27 02:52 J -21049180.55 -21049180.38 -21049180.20 0.0304 0.0206  
 Moon -62343-06-27 06:28 J -21049180.39 -21049180.23 -21049180.05 0.0304 0.0212 \*

Earth -62342-07-12 02:52 J -21048800.60 -21048800.38 -21048800.14 0.0303 0.0072  
 Moon -62342-07-12 05:16 J -21048800.52 -21048800.28 -21048800.04 0.0303 0.0066 \*  
 Venus -62336-07-03 22:18 J -21046616.77 -21046616.57 -21046616.38 0.0280 0.0101  
 Mercury -62330-03-03 02:23 J -21044548.50 -21044548.40 -21044548.28 0.0260 0.0209  
 Mercury -62330-05-30 22:18 J -21044459.74 -21044459.57 -21044459.39 0.0260 0.0089  
 Mercury -62330-08-27 18:13 J -21044370.93 -21044370.74 -21044370.55 0.0259 0.0032  
 Mercury -62330-11-24 14:09 J -21044282.05 -21044281.91 -21044281.75 0.0259 0.0154  
 Earth -62329-12-20 23:45 J -21043889.65 -21043889.51 -21043889.34 0.0258 0.0202  
 Moon -62329-12-21 02:52 J -21043889.53 -21043889.38 -21043889.22 0.0258 0.0201 \*  
 Mars -62328-11-16 12:28 J -21043559.11 -21043558.98 -21043558.83 0.0258 0.0232  
 Earth -62327-01-01 10:47 J -21043513.30 -21043513.05 -21043512.80 0.0258 0.0033  
 Moon -62327-01-01 13:54 J -21043513.18 -21043512.92 -21043512.67 0.0258 0.0022 \*  
 Moon -62326-01-12 20:52 J -21043136.83 -21043136.63 -21043136.41 0.0259 0.0150  
 Earth -62326-01-12 23:45 J -21043136.72 -21043136.51 -21043136.30 0.0259 0.0139 \*  
 Venus -62320-10-27 06:42 J -21040657.43 -21040657.22 -21040657.02 0.0282 0.0078  
 Mercury -62315-06-23 16:47 J -21038956.89 -21038956.80 -21038956.70 0.0302 0.0204  
 Mercury -62315-09-20 05:59 J -21038868.38 -21038868.25 -21038868.12 0.0303 0.0070  
 Mercury -62315-12-17 18:57 J -21038779.83 -21038779.71 -21038779.58 0.0303 0.0064  
 Mercury -62314-03-16 07:54 J -21038691.26 -21038691.17 -21038691.07 0.0304 0.0196  
 Mars -62314-12-30 15:49 J -21038402.10 -21038401.84 -21038401.57 0.0304 0.0006  
 Moon -62313-07-04 09:49 J -21038215.32 -21038215.09 -21038214.86 0.0304 0.0060  
 Earth -62313-07-04 10:33 J -21038215.29 -21038215.06 -21038214.82 0.0304 0.0058 \*  
 Earth -62312-07-19 08:37 J -21037835.30 -21037835.14 -21037834.97 0.0303 0.0216  
 Moon -62312-07-19 10:18 J -21037835.22 -21037835.07 -21037834.90 0.0303 0.0218 \*  
 Venus -62306-01-13 22:18 J -21035830.77 -21035830.57 -21035830.36 0.0280 0.0062  
 Mercury -62301-07-20 00:42 J -21033816.51 -21033816.47 -21033816.42 0.0260 0.0252  
 Mercury -62301-10-16 20:23 J -21033727.80 -21033727.65 -21033727.48 0.0260 0.0132  
 Mercury -62300-01-13 16:18 J -21033639.00 -21033638.82 -21033638.63 0.0259 0.0013  
 Mercury -62300-04-12 12:28 J -21033550.15 -21033549.98 -21033549.81 0.0259 0.0110  
 Mercury -62300-07-10 08:23 J -21033461.22 -21033461.15 -21033461.06 0.0259 0.0232



Mars -62300-12-31 10:04 J -21033287.29 -21033287.08 -21033286.85 0.0258 0.0189  
 Moon -62299-12-27 11:45 J -21032926.23 -21032926.01 -21032925.78 0.0258 0.0102  
 Earth -62299-12-27 14:37 J -21032926.11 -21032925.89 -21032925.66 0.0258 0.0112 \*  
 Earth -62297-01-08 02:09 J -21032549.65 -21032549.41 -21032549.16 0.0259 0.0060  
 Moon -62297-01-08 04:18 J -21032549.55 -21032549.32 -21032549.09 0.0259 0.0074 \*  
 Earth -62296-01-18 16:47 J -21032172.90 -21032172.80 -21032172.68 0.0260 0.0233  
 Moon -62296-01-18 19:25 J -21032172.78 -21032172.69 -21032172.58 0.0260 0.0238 \*  
 Venus -62290-05-09 08:52 J -21029871.34 -21029871.13 -21029870.92 0.0283 0.0032  
 Mercury -62286-11-10 17:45 J -21028224.83 -21028224.76 -21028224.69 0.0302 0.0252  
 Mercury -62285-02-07 06:57 J -21028136.33 -21028136.21 -21028136.09 0.0302 0.0119  
 Mercury -62285-05-05 19:54 J -21028047.80 -21028047.67 -21028047.53 0.0303 0.0017  
 Mercury -62285-08-02 08:52 J -21027959.24 -21027959.13 -21027959.01 0.0303 0.0148  
 Mercury -62285-10-29 21:49 J -21027870.63 -21027870.59 -21027870.54 0.0303 0.0280  
 Moon -62284-06-27 20:37 J -21027629.82 -21027629.64 -21027629.44 0.0304 0.0191  
 Earth -62284-06-27 21:21 J -21027629.80 -21027629.61 -21027629.43 0.0304 0.0191 \*  
 Mars -62283-02-16 21:49 J -21027395.66 -21027395.59 -21027395.50 0.0304 0.0288  
 Moon -62283-07-12 18:13 J -21027249.98 -21027249.74 -21027249.51 0.0303 0.0089  
 Earth -62283-07-12 21:06 J -21027249.85 -21027249.62 -21027249.39 0.0303 0.0086 \*  
 Venus -62277-07-26 00:42 J -21025044.67 -21025044.47 -21025044.26 0.0280 0.0015  
 Mercury -62271-03-05 19:25 J -21022995.83 -21022995.69 -21022995.55 0.0260 0.0170  
 Mercury -62271-06-02 15:21 J -21022907.05 -21022906.86 -21022906.68 0.0260 0.0050  
 Mercury -62271-08-30 11:16 J -21022818.21 -21022818.03 -21022817.85 0.0259 0.0072  
 Mercury -62271-11-27 07:11 J -21022729.32 -21022729.20 -21022729.07 0.0259 0.0193  
 Earth -62270-12-22 20:09 J -21022338.83 -21022338.66 -21022338.49 0.0258 0.0189  
 Moon -62270-12-22 22:47 J -21022338.72 -21022338.55 -21022338.36 0.0258 0.0183 \*  
 Mars -62269-02-20 06:13 J -21022279.56 -21022279.24 -21022278.91 0.0258 0.0026  
 Moon -62268-01-02 04:47 J -21021962.56 -21021962.30 -21021962.05 0.0258 0.0007  
 Earth -62268-01-02 06:42 J -21021962.47 -21021962.22 -21021961.97 0.0258 0.0020 \*  
 Moon -62267-01-13 16:33 J -21021586.00 -21021585.81 -21021585.62 0.0259 0.0163  
 Earth -62267-01-13 19:25 J -21021585.88 -21021585.69 -21021585.47 0.0259 0.0153 \*

Venus -62261-11-18 10:04 J -21019085.29 -21019085.08 -21019084.87 0.0282 0.0012  
 Mercury -62256-06-26 06:57 J -21017404.32 -21017404.21 -21017404.10 0.0302 0.0174  
 Mercury -62256-09-22 20:09 J -21017315.79 -21017315.66 -21017315.53 0.0303 0.0041  
 Mercury -62256-12-20 09:06 J -21017227.24 -21017227.12 -21017227.00 0.0303 0.0092  
 Mercury -62255-03-18 22:04 J -21017138.67 -21017138.58 -21017138.50 0.0304 0.0225  
 Mars -62255-04-05 13:40 J -21017121.02 -21017120.93 -21017120.81 0.0304 0.0277  
 Earth -62254-07-06 03:21 J -21016664.59 -21016664.36 -21016664.12 0.0304 0.0044  
 Moon -62254-07-06 06:57 J -21016664.45 -21016664.21 -21016663.97 0.0304 0.0039 \*  
 Earth -62253-07-20 01:25 J -21016284.59 -21016284.44 -21016284.28 0.0303 0.0230  
 Moon -62253-07-20 05:01 J -21016284.44 -21016284.29 -21016284.14 0.0303 0.0236 \*  
 Venus -62247-02-05 00:13 J -21014258.70 -21014258.49 -21014258.28 0.0280 0.0023  
 Mercury -62242-07-23 17:16 J -21012263.88 -21012263.78 -21012263.67 0.0260 0.0215  
 Mercury -62242-10-20 13:11 J -21012175.13 -21012174.95 -21012174.78 0.0260 0.0095  
 Mercury -62241-01-17 09:06 J -21012086.31 -21012086.12 -21012085.93 0.0259 0.0026  
 Mercury -62241-04-15 05:01 J -21011997.44 -21011997.29 -21011997.13 0.0259 0.0148  
 Earth -62240-12-28 09:49 J -21011375.32 -21011375.09 -21011374.86 0.0258 0.0099  
 Moon -62240-12-28 11:45 J -21011375.23 -21011375.01 -21011374.78 0.0258 0.0087 \*  
 Mars -62239-04-11 00:28 J -21011271.56 -21011271.48 -21011271.36 0.0258 0.0244  
 Earth -62238-01-08 21:21 J -21010998.84 -21010998.61 -21010998.36 0.0258 0.0073  
 Moon -62238-01-09 00:57 J -21010998.69 -21010998.46 -21010998.22 0.0258 0.0087 \*  
 Moon -62237-01-20 10:18 J -21010622.15 -21010622.07 -21010621.98 0.0260 0.0245  
 Earth -62237-01-20 11:59 J -21010622.07 -21010622.00 -21010621.91 0.0260 0.0246 \*  
 Venus -62231-05-31 11:45 J -21008299.22 -21008299.01 -21008298.80 0.0283 0.0057  
 Mercury -62227-11-13 07:40 J -21006672.27 -21006672.18 -21006672.09 0.0302 0.0224  
 Mercury -62226-02-09 20:52 J -21006583.76 -21006583.63 -21006583.50 0.0302 0.0090  
 Mercury -62226-05-09 09:49 J -21006495.22 -21006495.09 -21006494.96 0.0303 0.0044  
 Mercury -62226-08-05 23:01 J -21006406.65 -21006406.54 -21006406.44 0.0303 0.0176  
 Mars -62225-05-24 00:57 J -21006114.73 -21006114.46 -21006114.20 0.0304 0.0010  
 Moon -62225-06-28 10:04 J -21006079.28 -21006079.08 -21006078.88 0.0304 0.0172  
 Earth -62225-06-28 13:40 J -21006079.12 -21006078.93 -21006078.73 0.0304 0.0178 \*

Moon -62224-07-13 10:47 J -21005699.26 -21005699.05 -21005698.82 0.0303 0.0109  
 Earth -62224-07-13 13:40 J -21005699.16 -21005698.93 -21005698.70 0.0303 0.0100 \*  
 Venus -62218-08-18 02:23 J -21003472.59 -21003472.40 -21003472.19 0.0280 0.0072  
 Mercury -62213-12-09 16:04 J -21001531.86 -21001531.83 -21001531.77 0.0261 0.0253  
 Mercury -62212-03-08 11:59 J -21001443.16 -21001443.00 -21001442.83 0.0260 0.0132  
 Mercury -62212-06-05 07:54 J -21001354.36 -21001354.17 -21001353.98 0.0260 0.0012  
 Mercury -62212-09-02 03:49 J -21001265.50 -21001265.34 -21001265.16 0.0259 0.0110  
 Mercury -62212-11-29 23:59 J -21001176.58 -21001176.50 -21001176.41 0.0259 0.0232  
 Mars -62211-05-26 04:33 J -21000999.53 -21000999.31 -21000999.07 0.0259 0.0180  
 Moon -62211-12-23 13:40 J -21000788.11 -21000787.93 -21000787.72 0.0258 0.0166  
 Earth -62211-12-23 15:35 J -21000788.03 -21000787.85 -21000787.66 0.0258 0.0175 \*  
 Moon -62209-01-03 23:01 J -21000411.79 -21000411.54 -21000411.30 0.0258 0.0010  
 Earth -62209-01-04 02:23 J -21000411.65 -21000411.40 -21000411.15 0.0258 0.0006 \*  
 Earth -62208-01-14 15:21 J -21000035.05 -21000034.86 -21000034.66 0.0259 0.0166  
 Moon -62208-01-14 16:18 J -21000034.99 -21000034.82 -21000034.63 0.0259 0.0174 \*  
 Venus -62202-12-11 13:40 J -20997513.13 -20997512.93 -20997512.73 0.0282 0.0102  
 Mercury -62197-04-01 07:40 J -20995940.22 -20995940.18 -20995940.12 0.0301 0.0278  
 Mercury -62197-06-28 21:06 J -20995851.74 -20995851.62 -20995851.51 0.0302 0.0144  
 Mercury -62197-09-25 10:04 J -20995763.21 -20995763.08 -20995762.95 0.0303 0.0013  
 Mercury -62197-12-22 23:01 J -20995674.65 -20995674.54 -20995674.42 0.0303 0.0122  
 Mercury -62196-03-21 11:59 J -20995586.07 -20995586.00 -20995585.93 0.0304 0.0254  
 Moon -62196-06-21 22:33 J -20995493.58 -20995493.56 -20995493.52 0.0304 0.0301  
 Earth -62195-07-06 20:23 J -20995113.88 -20995113.65 -20995113.40 0.0304 0.0031  
 Moon -62195-07-06 22:18 J -20995113.82 -20995113.57 -20995113.32 0.0304 0.0021 \*  
 Mars -62195-07-11 22:47 J -20995108.65 -20995108.55 -20995108.43 0.0304 0.0276  
 Moon -62194-07-21 17:30 J -20994733.90 -20994733.77 -20994733.64 0.0303 0.0256  
 Earth -62194-07-21 18:28 J -20994733.86 -20994733.73 -20994733.58 0.0303 0.0244 \*  
 Venus -62188-02-27 02:09 J -20992686.61 -20992686.41 -20992686.22 0.0280 0.0107  
 Mercury -62183-07-26 10:04 J -20990711.22 -20990711.08 -20990710.95 0.0260 0.0178  
 Mercury -62183-10-23 05:45 J -20990622.44 -20990622.26 -20990622.07 0.0260 0.0057

Mercury -62182-01-20 01:54 J -20990533.61 -20990533.42 -20990533.24 0.0259 0.0065  
 Mercury -62182-04-18 21:49 J -20990444.72 -20990444.59 -20990444.45 0.0259 0.0186  
 Earth -62182-12-18 18:42 J -20990200.75 -20990200.72 -20990200.67 0.0258 0.0254  
 Moon -62182-12-18 19:54 J -20990200.72 -20990200.67 -20990200.62 0.0258 0.0252 \*  
 Mars -62181-07-14 17:59 J -20989992.06 -20989991.75 -20989991.42 0.0258 0.0038  
 Earth -62181-12-29 05:16 J -20989824.51 -20989824.28 -20989824.03 0.0258 0.0086  
 Moon -62181-12-29 08:52 J -20989824.37 -20989824.13 -20989823.88 0.0258 0.0072 \*  
 Moon -62179-01-09 16:18 J -20989448.05 -20989447.82 -20989447.57 0.0259 0.0098  
 Earth -62179-01-09 17:30 J -20989448.00 -20989447.77 -20989447.53 0.0259 0.0087 \*  
 Moon -62178-01-21 04:47 J -20989071.32 -20989071.30 -20989071.26 0.0260 0.0258  
 Earth -62178-01-21 08:23 J -20989071.16 -20989071.15 -20989071.13 0.0260 0.0259  
 Venus -62173-11-04 23:30 J -20986956.56 -20986956.52 -20986956.46 0.0280 0.0272  
 Venus -62172-06-22 16:04 J -20986727.01 -20986726.83 -20986726.65 0.0283 0.0150  
 Mercury -62168-11-15 22:04 J -20985119.68 -20985119.58 -20985119.48 0.0302 0.0192  
 Mercury -62167-02-12 11:01 J -20985031.17 -20985031.04 -20985030.91 0.0302 0.0059  
 Mercury -62167-05-12 00:13 J -20984942.62 -20984942.49 -20984942.37 0.0303 0.0074  
 Mercury -62167-08-08 13:11 J -20984854.05 -20984853.95 -20984853.86 0.0303 0.0206  
 Mars -62167-08-28 23:59 J -20984833.61 -20984833.50 -20984833.38 0.0303 0.0273  
 Moon -62166-06-30 06:42 J -20984528.42 -20984528.22 -20984528.02 0.0304 0.0155  
 Earth -62166-06-30 07:54 J -20984528.37 -20984528.17 -20984527.97 0.0304 0.0162 \*  
 Earth -62165-07-14 07:25 J -20984148.40 -20984148.19 -20984147.96 0.0303 0.0115  
 Moon -62165-07-14 09:35 J -20984148.31 -20984148.10 -20984147.89 0.0303 0.0128 \*  
 Venus -62159-01-22 19:25 J -20982129.78 -20982129.69 -20982129.60 0.0283 0.0252  
 Venus -62159-09-09 04:18 J -20981900.49 -20981900.32 -20981900.14 0.0280 0.0155  
 Mercury -62154-12-13 09:06 J -20979979.22 -20979979.12 -20979979.02 0.0261 0.0214  
 Mercury -62153-03-11 04:47 J -20979890.47 -20979890.30 -20979890.12 0.0260 0.0094  
 Mercury -62153-06-08 00:42 J -20979801.65 -20979801.47 -20979801.28 0.0260 0.0029  
 Mercury -62153-09-04 20:52 J -20979712.78 -20979712.63 -20979712.47 0.0260 0.0150  
 Moon -62152-12-24 08:23 J -20979237.35 -20979237.15 -20979236.94 0.0258 0.0150  
 Earth -62152-12-24 11:45 J -20979237.19 -20979237.01 -20979236.80 0.0258 0.0161 \*

Mars	-62151-09-03 20:37 J	-20978983.66	-20978983.64	-20978983.58	0.0258	0.0256
Earth	-62150-01-04 23:01 J	-20978860.79	-20978860.54	-20978860.29	0.0258	0.0009
Moon	-62150-01-04 23:59 J	-20978860.74	-20978860.50	-20978860.26	0.0258	0.0022 *
Earth	-62149-01-16 11:59 J	-20978484.17	-20978484.00	-20978483.81	0.0259	0.0181
Moon	-62149-01-16 16:04 J	-20978484.00	-20978483.83	-20978483.65	0.0259	0.0186 *
Venus	-62143-05-18 02:09 J	-20976170.53	-20976170.41	-20976170.28	0.0279	0.0224
Venus	-62142-01-02 18:28 J	-20975940.87	-20975940.73	-20975940.57	0.0283	0.0198
Mercury	-62138-04-04 22:18 J	-20974387.65	-20974387.57	-20974387.49	0.0301	0.0244
Mercury	-62138-07-02 11:30 J	-20974299.14	-20974299.02	-20974298.90	0.0302	0.0111
Mercury	-62138-09-29 00:28 J	-20974210.61	-20974210.48	-20974210.35	0.0302	0.0022
Mercury	-62138-12-26 13:25 J	-20974122.05	-20974121.94	-20974121.83	0.0303	0.0154
Mercury	-62137-03-24 02:23 J	-20974033.44	-20974033.40	-20974033.36	0.0303	0.0285
Moon	-62137-06-22 14:23 J	-20973942.99	-20973942.90	-20973942.80	0.0304	0.0281
Earth	-62137-06-22 13:54 J	-20973942.98	-20973942.92	-20973942.84	0.0304	0.0289 *
Mars	-62137-10-16 04:47 J	-20973827.57	-20973827.30	-20973827.04	0.0304	0.0003
Moon	-62136-07-07 12:13 J	-20973563.24	-20973562.99	-20973562.74	0.0304	0.0001
Earth	-62136-07-07 15:06 J	-20973563.11	-20973562.87	-20973562.63	0.0304	0.0014 *
Moon	-62135-07-22 08:52 J	-20973183.22	-20973183.13	-20973183.02	0.0303	0.0276
Earth	-62135-07-22 12:42 J	-20973183.09	-20973182.97	-20973182.85	0.0303	0.0259 *
Venus	-62130-08-04 19:11 J	-20971343.83	-20971343.70	-20971343.56	0.0283	0.0214
Venus	-62129-03-21 04:04 J	-20971114.47	-20971114.33	-20971114.17	0.0280	0.0193
Mercury	-62124-05-01 07:11 J	-20969247.22	-20969247.20	-20969247.18	0.0261	0.0258
Mercury	-62124-07-29 02:52 J	-20969158.53	-20969158.38	-20969158.22	0.0260	0.0138
Mercury	-62124-10-25 22:47 J	-20969069.73	-20969069.55	-20969069.36	0.0260	0.0018
Mercury	-62123-01-22 18:57 J	-20968980.88	-20968980.71	-20968980.54	0.0259	0.0105
Mercury	-62123-04-21 14:52 J	-20968891.96	-20968891.88	-20968891.78	0.0259	0.0228
Mars	-62123-10-18 18:57 J	-20968711.94	-20968711.71	-20968711.45	0.0259	0.0169
Earth	-62123-12-19 15:21 J	-20968649.94	-20968649.86	-20968649.75	0.0259	0.0240
Moon	-62123-12-19 19:25 J	-20968649.79	-20968649.69	-20968649.59	0.0259	0.0235 *
Moon	-62122-12-31 01:54 J	-20968273.67	-20968273.42	-20968273.16	0.0258	0.0058

Earth -62122-12-31 02:23 J -20968273.63 -20968273.40 -20968273.15 0.0258 0.0072 \*  
 Moon -62120-01-10 11:01 J -20967897.25 -20967897.04 -20967896.80 0.0259 0.0110  
 Earth -62120-01-10 15:06 J -20967897.10 -20967896.87 -20967896.64 0.0259 0.0102 \*  
 Venus -62114-11-28 05:16 J -20965384.44 -20965384.28 -20965384.11 0.0280 0.0175  
 Venus -62113-07-14 21:49 J -20965154.69 -20965154.59 -20965154.49 0.0283 0.0248  
 Mercury -62109-08-21 23:16 J -20963655.55 -20963655.53 -20963655.49 0.0301 0.0289  
 Mercury -62109-11-18 12:42 J -20963567.08 -20963566.97 -20963566.86 0.0302 0.0156  
 Mercury -62108-02-15 01:40 J -20963478.56 -20963478.43 -20963478.29 0.0302 0.0025  
 Mercury -62108-05-14 14:37 J -20963390.00 -20963389.89 -20963389.76 0.0303 0.0110  
 Mercury -62108-08-11 03:35 J -20963301.42 -20963301.35 -20963301.27 0.0303 0.0241  
 Earth -62107-07-01 04:18 J -20962977.53 -20962977.32 -20962977.11 0.0304 0.0144  
 Moon -62107-07-01 07:11 J -20962977.41 -20962977.20 -20962976.99 0.0304 0.0133 \*  
 Mars -62107-12-04 14:52 J -20962820.95 -20962820.88 -20962820.77 0.0304 0.0284  
 Earth -62106-07-16 03:35 J -20962597.55 -20962597.35 -20962597.12 0.0303 0.0134  
 Moon -62106-07-16 07:11 J -20962597.41 -20962597.20 -20962596.99 0.0303 0.0147 \*  
 Venus -62100-02-13 22:18 J -20960557.74 -20960557.57 -20960557.40 0.0282 0.0163  
 Venus -62100-10-01 07:11 J -20960328.30 -20960328.20 -20960328.10 0.0279 0.0242  
 Mercury -62095-12-16 02:09 J -20958426.54 -20958426.41 -20958426.26 0.0261 0.0173  
 Mercury -62094-03-14 22:18 J -20958337.76 -20958337.57 -20958337.39 0.0261 0.0052  
 Mercury -62094-06-11 18:13 J -20958248.92 -20958248.74 -20958248.56 0.0260 0.0070  
 Mercury -62094-09-08 14:09 J -20958160.03 -20958159.91 -20958159.77 0.0260 0.0193  
 Mars -62093-12-07 19:54 J -20957703.99 -20957703.67 -20957703.35 0.0259 0.0049  
 Moon -62093-12-25 09:35 J -20957686.30 -20957686.10 -20957685.89 0.0259 0.0135  
 Earth -62093-12-25 09:35 J -20957686.29 -20957686.10 -20957685.88 0.0259 0.0146 \*  
 Earth -62091-01-05 21:21 J -20957309.86 -20957309.61 -20957309.36 0.0259 0.0026  
 Moon -62091-01-06 01:11 J -20957309.70 -20957309.45 -20957309.20 0.0259 0.0037 \*  
 Earth -62090-01-17 11:01 J -20956933.19 -20956933.04 -20956932.87 0.0259 0.0198  
 Moon -62090-01-17 11:16 J -20956933.18 -20956933.03 -20956932.85 0.0259 0.0198 \*  
 Venus -62084-06-09 09:35 J -20954598.29 -20954598.10 -20954597.90 0.0280 0.0122  
 Mercury -62079-04-07 13:25 J -20952835.03 -20952834.94 -20952834.84 0.0301 0.0203

Mercury -62079-07-05 02:37 J -20952746.52 -20952746.39 -20952746.26 0.0302 0.0070

Mercury -62079-10-01 15:35 J -20952657.97 -20952657.85 -20952657.72 0.0302 0.0062

Mercury -62079-12-29 04:33 J -20952569.41 -20952569.31 -20952569.21 0.0303 0.0194

Mars -62078-01-21 13:54 J -20952546.03 -20952545.92 -20952545.81 0.0303 0.0276

Moon -62078-06-24 10:18 J -20952392.18 -20952392.07 -20952391.93 0.0304 0.0258

Earth -62078-06-24 13:54 J -20952392.02 -20952391.92 -20952391.80 0.0304 0.0269 \*

Moon -62077-07-08 11:30 J -20952012.26 -20952012.02 -20952011.79 0.0304 0.0020

Earth -62077-07-08 14:23 J -20952012.14 -20952011.90 -20952011.66 0.0304 0.0007 \*

Earth -62076-07-23 11:01 J -20951632.12 -20951632.04 -20951631.93 0.0303 0.0279

Moon -62076-07-23 11:01 J -20951632.08 -20951632.04 -20951631.98 0.0303 0.0295 \*

Venus -62071-08-26 23:01 J -20949771.72 -20949771.54 -20949771.35 0.0282 0.0122

Mercury -62065-05-04 00:28 J -20947694.57 -20947694.48 -20947694.37 0.0261 0.0216

Mercury -62065-07-31 20:23 J -20947605.82 -20947605.65 -20947605.47 0.0260 0.0095

Mercury -62065-10-28 16:33 J -20947517.00 -20947516.81 -20947516.62 0.0260 0.0027

Mercury -62064-01-25 12:28 J -20947428.12 -20947427.98 -20947427.82 0.0260 0.0150

Earth -62064-12-20 14:23 J -20947099.02 -20947098.90 -20947098.77 0.0259 0.0224

Moon -62064-12-20 15:06 J -20947099.01 -20947098.87 -20947098.72 0.0259 0.0215 \*

Moon -62063-12-31 22:18 J -20946722.81 -20946722.57 -20946722.32 0.0258 0.0041

Earth -62062-01-01 01:54 J -20946722.66 -20946722.42 -20946722.17 0.0258 0.0054 \*

Moon -62061-01-12 14:37 J -20946346.10 -20946345.89 -20946345.67 0.0259 0.0123

Earth -62061-01-12 14:52 J -20946346.10 -20946345.88 -20946345.65 0.0259 0.0119 \*

Venus -62055-12-20 13:54 J -20943812.13 -20943811.92 -20943811.71 0.0281 0.0069

Mercury -62050-08-25 14:52 J -20942102.95 -20942102.88 -20942102.80 0.0301 0.0245

Mercury -62050-11-22 04:04 J -20942014.45 -20942014.33 -20942014.21 0.0301 0.0113

Mercury -62049-02-18 17:16 J -20941925.92 -20941925.78 -20941925.65 0.0302 0.0021

Mercury -62049-05-17 05:59 J -20941837.36 -20941837.25 -20941837.13 0.0302 0.0151

Mercury -62049-08-13 18:57 J -20941748.75 -20941748.71 -20941748.66 0.0303 0.0282

Mars -62048-03-11 07:11 J -20941539.46 -20941539.20 -20941538.93 0.0303 0.0013

Earth -62048-07-02 05:01 J -20941426.51 -20941426.29 -20941426.07 0.0304 0.0122

Moon -62048-07-02 07:54 J -20941426.40 -20941426.17 -20941425.94 0.0304 0.0110 \*

Moon -62047-07-17 03:35 J -20941046.55 -20941046.35 -20941046.13 0.0303 0.0168  
 Earth -62047-07-17 04:04 J -20941046.53 -20941046.33 -20941046.12 0.0303 0.0154 \*  
 Venus -62041-03-08 02:52 J -20938985.58 -20938985.38 -20938985.18 0.0282 0.0069  
 Mercury -62036-09-21 00:13 J -20936962.54 -20936962.49 -20936962.43 0.0262 0.0249  
 Mercury -62036-12-18 20:09 J -20936873.82 -20936873.66 -20936873.49 0.0261 0.0127  
 Mercury -62035-03-17 16:18 J -20936785.01 -20936784.82 -20936784.63 0.0261 0.0006  
 Mercury -62035-06-14 12:13 J -20936696.15 -20936695.99 -20936695.82 0.0260 0.0117  
 Mercury -62035-09-11 08:23 J -20936607.21 -20936607.15 -20936607.07 0.0260 0.0240  
 Mars -62034-03-14 04:04 J -20936423.58 -20936423.33 -20936423.06 0.0259 0.0155  
 Earth -62034-12-27 10:04 J -20936135.29 -20936135.08 -20936134.86 0.0259 0.0128  
 Moon -62034-12-27 13:25 J -20936135.15 -20936134.94 -20936134.71 0.0259 0.0115 \*  
 Earth -62032-01-06 22:33 J -20935758.81 -20935758.56 -20935758.32 0.0259 0.0044  
 Moon -62032-01-06 23:01 J -20935758.79 -20935758.54 -20935758.28 0.0259 0.0053 \*  
 Moon -62031-01-18 08:52 J -20935382.26 -20935382.13 -20935381.97 0.0260 0.0212  
 Earth -62031-01-18 12:57 J -20935382.09 -20935381.96 -20935381.82 0.0260 0.0217 \*  
 Jupiter -62026-10-20 14:09 J -20933281.06 -20933280.91 -20933280.74 0.0277 0.0259  
 Venus -62025-07-01 19:25 J -20933025.91 -20933025.69 -20933025.48 0.0280 0.0012  
 Mercury -62020-01-11 16:18 J -20931370.85 -20931370.82 -20931370.78 0.0300 0.0287  
 Mercury -62020-04-10 05:30 J -20931282.38 -20931282.27 -20931282.16 0.0301 0.0155  
 Mercury -62020-07-07 18:28 J -20931193.86 -20931193.73 -20931193.59 0.0302 0.0025  
 Mercury -62020-10-04 07:25 J -20931105.31 -20931105.19 -20931105.06 0.0302 0.0109  
 Mercury -62020-12-31 20:23 J -20931016.73 -20931016.65 -20931016.57 0.0303 0.0240  
 Moon -62019-06-25 16:04 J -20930840.97 -20930840.83 -20930840.67 0.0303 0.0234  
 Earth -62019-06-25 17:59 J -20930840.87 -20930840.75 -20930840.60 0.0303 0.0247 \*  
 Mars -62018-04-29 16:04 J -20930532.91 -20930532.83 -20930532.75 0.0304 0.0288  
 Earth -62018-07-10 17:59 J -20930460.99 -20930460.75 -20930460.51 0.0304 0.0031  
 Moon -62018-07-10 18:57 J -20930460.94 -20930460.71 -20930460.48 0.0304 0.0045 \*  
 Earth -62017-07-24 14:09 J -20930080.92 -20930080.91 -20930080.88 0.0302 0.0301  
 Venus -62012-09-18 05:01 J -20928199.50 -20928199.29 -20928199.08 0.0282 0.0023  
 Mercury -62006-05-07 18:57 J -20926141.85 -20926141.71 -20926141.57 0.0261 0.0168



Mercury	-62006-08-04 14:52 J	-20926053.06	-20926052.88	-20926052.69	0.0261	0.0046
Mercury	-62006-11-01 11:01 J	-20925964.22	-20925964.04	-20925963.86	0.0260	0.0076
Mercury	-62005-01-29 07:11 J	-20925875.32	-20925875.20	-20925875.08	0.0260	0.0199
Moon	-62005-12-21 12:13 J	-20925548.16	-20925547.99	-20925547.83	0.0259	0.0194
Earth	-62005-12-21 15:35 J	-20925547.99	-20925547.85	-20925547.69	0.0259	0.0207 *
Mars	-62004-05-03 01:25 J	-20925415.75	-20925415.44	-20925415.12	0.0259	0.0070
Moon	-62003-01-02 02:23 J	-20925171.64	-20925171.40	-20925171.16	0.0259	0.0024
Earth	-62003-01-02 03:49 J	-20925171.59	-20925171.34	-20925171.09	0.0259	0.0036 *
Earth	-62002-01-13 17:16 J	-20924794.98	-20924794.78	-20924794.56	0.0259	0.0138
Moon	-62002-01-13 21:06 J	-20924794.83	-20924794.62	-20924794.41	0.0259	0.0138 *

# 62ND MILLENNIUM BCE

This is a list of transits visible from Saturn in the 62nd millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-61995-01-12 00:57 J	-20922239.67	-20922239.46	-20922239.24	0.0281	0.0047		
Mercury	-61991-08-28 07:25 J	-20920550.29	-20920550.19	-20920550.09	0.0301	0.0192		
Mercury	-61991-11-24 20:37 J	-20920461.77	-20920461.64	-20920461.51	0.0301	0.0061		
Mercury	-61990-02-21 09:35 J	-20920373.23	-20920373.10	-20920372.97	0.0302	0.0071		
Mercury	-61990-05-20 22:18 J	-20920284.66	-20920284.57	-20920284.47	0.0302	0.0203		
Mars	-61990-06-17 04:18 J	-20920257.45	-20920257.32	-20920257.16	0.0303	0.0255		
Moon	-61989-07-03 10:47 J	-20919875.29	-20919875.05	-20919874.81	0.0303	0.0080		
Earth	-61989-07-03 12:13 J	-20919875.21	-20919874.99	-20919874.76	0.0303	0.0096 *		

Moon -61988-07-18 07:11 J -20919495.38 -20919495.20 -20919495.01 0.0303 0.0196  
 Earth -61988-07-18 10:33 J -20919495.25 -20919495.06 -20919494.86 0.0303 0.0180 \*  
 Venus -61982-03-31 10:04 J -20917413.29 -20917413.08 -20917412.88 0.0281 0.0035  
 Mercury -61977-09-23 18:57 J -20915409.82 -20915409.71 -20915409.58 0.0262 0.0199  
 Mercury -61977-12-21 15:06 J -20915321.05 -20915320.87 -20915320.69 0.0261 0.0077  
 Mercury -61976-03-20 11:16 J -20915232.22 -20915232.03 -20915231.85 0.0261 0.0046  
 Mercury -61976-06-17 07:25 J -20915143.33 -20915143.19 -20915143.05 0.0260 0.0169  
 Earth -61975-12-28 13:11 J -20914584.17 -20914583.95 -20914583.72 0.0259 0.0109  
 Moon -61975-12-28 15:21 J -20914584.10 -20914583.86 -20914583.62 0.0259 0.0095 \*  
 Moon -61973-01-08 23:01 J -20914207.78 -20914207.54 -20914207.29 0.0259 0.0070  
 Earth -61973-01-09 02:09 J -20914207.65 -20914207.41 -20914207.16 0.0259 0.0064 \*  
 Moon -61972-01-19 15:35 J -20913830.95 -20913830.85 -20913830.73 0.0260 0.0231  
 Earth -61972-01-19 17:30 J -20913830.87 -20913830.77 -20913830.67 0.0260 0.0237 \*  
 Venus -61966-07-25 08:09 J -20911453.36 -20911453.16 -20911452.96 0.0281 0.0109  
 Mercury -61961-01-15 09:21 J -20909818.19 -20909818.11 -20909818.02 0.0300 0.0229  
 Mercury -61961-04-12 22:33 J -20909729.69 -20909729.56 -20909729.44 0.0301 0.0098  
 Mercury -61961-07-10 11:30 J -20909641.15 -20909641.02 -20909640.89 0.0302 0.0033  
 Mercury -61961-10-07 00:28 J -20909552.59 -20909552.48 -20909552.37 0.0302 0.0164  
 Mercury -61960-01-03 13:11 J -20909463.97 -20909463.95 -20909463.92 0.0302 0.0295  
 Earth -61960-06-27 04:33 J -20909289.47 -20909289.31 -20909289.14 0.0303 0.0218  
 Moon -61960-06-27 06:57 J -20909289.38 -20909289.21 -20909289.03 0.0303 0.0203 \*  
 Mars -61960-08-04 23:01 J -20909250.80 -20909250.54 -20909250.28 0.0303 0.0031  
 Earth -61959-07-12 03:35 J -20908909.58 -20908909.35 -20908909.11 0.0303 0.0059  
 Moon -61959-07-12 07:25 J -20908909.42 -20908909.19 -20908908.96 0.0303 0.0075 \*  
 Venus -61953-10-10 13:11 J -20906627.14 -20906626.95 -20906626.75 0.0281 0.0084  
 Mercury -61947-02-10 18:13 J -20904677.81 -20904677.74 -20904677.66 0.0262 0.0236  
 Mercury -61947-05-10 14:09 J -20904589.07 -20904588.91 -20904588.74 0.0261 0.0115  
 Mercury -61947-08-07 10:18 J -20904500.26 -20904500.07 -20904499.88 0.0261 0.0008  
 Mercury -61947-11-04 06:28 J -20904411.39 -20904411.23 -20904411.06 0.0260 0.0130  
 Mercury -61946-02-01 02:52 J -20904322.42 -20904322.38 -20904322.34 0.0260 0.0253

Mars	-61946-08-07 17:59 J	-20904135.02	-20904134.75	-20904134.46	0.0259	0.0129
Moon	-61946-12-23 17:45 J	-20903996.93	-20903996.76	-20903996.57	0.0259	0.0175
Earth	-61946-12-23 19:54 J	-20903996.83	-20903996.67	-20903996.49	0.0259	0.0188 *
Earth	-61944-01-03 08:37 J	-20903620.39	-20903620.14	-20903619.89	0.0259	0.0016
Moon	-61944-01-03 11:30 J	-20903620.27	-20903620.02	-20903619.78	0.0259	0.0005 *
Earth	-61943-01-14 22:47 J	-20903243.73	-20903243.55	-20903243.34	0.0259	0.0160
Moon	-61943-01-15 00:57 J	-20903243.65	-20903243.46	-20903243.25	0.0259	0.0158 *
Venus	-61937-06-18 23:01 J	-20900896.64	-20900896.54	-20900896.44	0.0279	0.0245
Venus	-61936-02-03 14:37 J	-20900667.05	-20900666.89	-20900666.71	0.0282	0.0172
Mercury	-61932-06-03 11:45 J	-20899086.07	-20899086.01	-20899085.95	0.0300	0.0263
Mercury	-61932-08-31 00:42 J	-20898997.58	-20898997.47	-20898997.35	0.0301	0.0132
Mercury	-61932-11-27 13:54 J	-20898909.05	-20898908.92	-20898908.79	0.0301	0.0007
Mercury	-61931-02-24 02:37 J	-20898820.50	-20898820.39	-20898820.27	0.0302	0.0131
Mercury	-61931-05-23 15:35 J	-20898731.91	-20898731.85	-20898731.79	0.0302	0.0261
Moon	-61930-07-05 20:52 J	-20898323.86	-20898323.63	-20898323.39	0.0303	0.0049
Earth	-61930-07-06 00:42 J	-20898323.70	-20898323.47	-20898323.23	0.0303	0.0065 *
Moon	-61929-07-19 20:09 J	-20897943.81	-20897943.66	-20897943.51	0.0303	0.0226
Earth	-61929-07-19 22:04 J	-20897943.75	-20897943.58	-20897943.40	0.0303	0.0209 *
Venus	-61924-09-05 09:49 J	-20896070.15	-20896070.09	-20896070.02	0.0283	0.0266
Venus	-61923-04-22 19:25 J	-20895840.87	-20895840.69	-20895840.51	0.0281	0.0145
Mercury	-61918-09-27 14:52 J	-20893857.04	-20893856.88	-20893856.72	0.0262	0.0143
Mercury	-61918-12-25 10:47 J	-20893768.23	-20893768.05	-20893767.86	0.0261	0.0022
Mercury	-61917-03-23 06:57 J	-20893679.38	-20893679.21	-20893679.03	0.0261	0.0103
Mercury	-61917-06-20 03:21 J	-20893590.45	-20893590.36	-20893590.27	0.0261	0.0226
Earth	-61917-12-18 06:28 J	-20893409.23	-20893409.23	-20893409.22	0.0260	0.0260
Moon	-61917-12-18 08:52 J	-20893409.19	-20893409.13	-20893409.05	0.0260	0.0249
Mars	-61916-09-27 05:30 J	-20893126.56	-20893126.27	-20893125.95	0.0259	0.0097
Moon	-61916-12-29 16:18 J	-20893033.06	-20893032.82	-20893032.57	0.0259	0.0074
Earth	-61916-12-29 19:11 J	-20893032.94	-20893032.70	-20893032.47	0.0259	0.0089 *
Moon	-61914-01-10 05:45 J	-20892656.48	-20892656.26	-20892656.02	0.0259	0.0093

Earth -61914-01-10 08:37 J -20892656.37 -20892656.14 -20892655.90 0.0259 0.0086 \*  
 Earth -61913-01-22 00:28 J -20892279.49 -20892279.48 -20892279.46 0.0260 0.0260  
 Moon -61913-01-22 03:21 J -20892279.42 -20892279.36 -20892279.30 0.0260 0.0251  
 Venus -61908-12-30 07:25 J -20890110.35 -20890110.19 -20890110.02 0.0279 0.0179  
 Venus -61907-08-16 23:16 J -20889880.64 -20889880.53 -20889880.41 0.0282 0.0239  
 Mercury -61903-10-21 14:09 J -20888353.93 -20888353.91 -20888353.89 0.0300 0.0295  
 Mercury -61902-01-18 03:21 J -20888265.47 -20888265.36 -20888265.25 0.0300 0.0164  
 Mercury -61902-04-16 16:18 J -20888176.95 -20888176.82 -20888176.69 0.0301 0.0033  
 Mercury -61902-07-14 05:16 J -20888088.40 -20888088.28 -20888088.16 0.0302 0.0098  
 Mercury -61902-10-10 17:59 J -20887999.83 -20887999.75 -20887999.66 0.0302 0.0229  
 Mars -61902-11-11 12:28 J -20887968.15 -20887967.98 -20887967.79 0.0302 0.0220  
 Earth -61901-06-28 20:52 J -20887737.81 -20887737.63 -20887737.44 0.0303 0.0186  
 Moon -61901-06-29 00:28 J -20887737.68 -20887737.48 -20887737.28 0.0303 0.0169 \*  
 Earth -61900-07-13 19:25 J -20887357.92 -20887357.69 -20887357.46 0.0303 0.0091  
 Moon -61900-07-13 20:52 J -20887357.86 -20887357.63 -20887357.39 0.0303 0.0108 \*  
 Venus -61894-03-18 15:06 J -20885284.00 -20885283.87 -20885283.72 0.0283 0.0209  
 Venus -61894-11-03 00:13 J -20885054.62 -20885054.49 -20885054.33 0.0280 0.0201  
 Mercury -61888-02-13 14:23 J -20883125.03 -20883124.90 -20883124.76 0.0262 0.0178  
 Mercury -61888-05-13 10:33 J -20883036.24 -20883036.06 -20883035.88 0.0261 0.0056  
 Mercury -61888-08-10 06:42 J -20882947.40 -20882947.22 -20882947.04 0.0261 0.0067  
 Mercury -61888-11-07 02:37 J -20882858.50 -20882858.39 -20882858.25 0.0260 0.0191  
 Earth -61887-12-25 02:52 J -20882445.57 -20882445.38 -20882445.19 0.0259 0.0167  
 Moon -61887-12-25 05:16 J -20882445.47 -20882445.28 -20882445.08 0.0259 0.0154 \*  
 Earth -61885-01-05 16:04 J -20882069.08 -20882068.83 -20882068.58 0.0259 0.0007  
 Moon -61885-01-05 19:25 J -20882068.94 -20882068.69 -20882068.43 0.0259 0.0018 \*  
 Moon -61884-01-16 04:47 J -20881692.48 -20881692.30 -20881692.10 0.0260 0.0178  
 Earth -61884-01-16 07:11 J -20881692.37 -20881692.20 -20881692.02 0.0260 0.0182 \*  
 Venus -61878-07-12 14:52 J -20879324.07 -20879323.88 -20879323.68 0.0280 0.0116  
 Mercury -61873-06-06 05:59 J -20877533.35 -20877533.25 -20877533.15 0.0300 0.0195  
 Mercury -61873-09-02 18:57 J -20877444.84 -20877444.71 -20877444.58 0.0301 0.0064

Mercury -61873-11-30 07:54 J -20877356.30 -20877356.17 -20877356.04 0.0302 0.0068

Mercury -61872-02-26 20:52 J -20877267.73 -20877267.63 -20877267.53 0.0302 0.0198

Moon -61872-06-22 16:04 J -20877151.89 -20877151.83 -20877151.76 0.0303 0.0290

Mars -61872-12-30 15:49 J -20876961.09 -20876960.84 -20876960.57 0.0303 0.0074

Moon -61871-07-07 17:59 J -20876771.98 -20876771.75 -20876771.52 0.0303 0.0014

Earth -61871-07-07 18:28 J -20876771.97 -20876771.73 -20876771.49 0.0303 0.0031 \*

Earth -61870-07-22 14:52 J -20876392.01 -20876391.88 -20876391.73 0.0302 0.0243

Moon -61870-07-22 17:16 J -20876391.90 -20876391.78 -20876391.66 0.0302 0.0261 \*

Venus -61865-09-27 22:18 J -20874497.74 -20874497.57 -20874497.39 0.0283 0.0143

Venus -61864-05-15 07:11 J -20874268.26 -20874268.20 -20874268.12 0.0280 0.0263

Mercury -61859-07-03 15:35 J -20872392.97 -20872392.85 -20872392.74 0.0262 0.0204

Mercury -61859-09-30 11:30 J -20872304.20 -20872304.02 -20872303.84 0.0262 0.0082

Mercury -61859-12-28 07:40 J -20872215.37 -20872215.18 -20872215.00 0.0261 0.0041

Mercury -61858-03-27 03:49 J -20872126.48 -20872126.34 -20872126.19 0.0261 0.0164

Moon -61858-12-20 12:28 J -20871858.10 -20871857.98 -20871857.85 0.0260 0.0228

Earth -61858-12-20 14:09 J -20871857.99 -20871857.91 -20871857.80 0.0260 0.0240 \*

Mars -61857-01-02 05:59 J -20871845.55 -20871845.25 -20871844.95 0.0260 0.0096

Moon -61857-12-31 00:13 J -20871481.73 -20871481.49 -20871481.25 0.0259 0.0054

Earth -61857-12-31 03:21 J -20871481.59 -20871481.36 -20871481.11 0.0259 0.0068 \*

Earth -61855-01-11 17:30 J -20871104.99 -20871104.77 -20871104.54 0.0260 0.0109

Moon -61855-01-11 18:57 J -20871104.93 -20871104.71 -20871104.49 0.0260 0.0113 \*

Venus -61848-01-22 00:13 J -20868537.70 -20868537.49 -20868537.27 0.0280 0.0047

Mercury -61844-10-24 08:37 J -20866801.22 -20866801.14 -20866801.05 0.0300 0.0224

Mercury -61843-01-20 21:49 J -20866712.72 -20866712.59 -20866712.47 0.0301 0.0093

Mercury -61843-04-19 10:47 J -20866624.18 -20866624.05 -20866623.92 0.0301 0.0038

Mercury -61843-07-16 23:45 J -20866535.62 -20866535.51 -20866535.40 0.0302 0.0168

Mercury -61843-10-13 12:28 J -20866446.99 -20866446.98 -20866446.96 0.0302 0.0298

Moon -61842-07-01 17:01 J -20866186.01 -20866185.79 -20866185.56 0.0303 0.0136

Earth -61842-07-01 17:16 J -20866185.98 -20866185.78 -20866185.57 0.0303 0.0152 \*

Moon -61841-07-15 12:13 J -20865806.20 -20865805.99 -20865805.77 0.0303 0.0143

Earth -61841-07-15 15:06 J -20865806.08 -20865805.87 -20865805.65 0.0303 0.0126 \*  
 Venus -61835-04-10 04:47 J -20863711.49 -20863711.30 -20863711.09 0.0283 0.0082  
 Mercury -61830-11-20 15:35 J -20861660.92 -20861660.85 -20861660.77 0.0262 0.0237  
 Mercury -61829-02-17 11:30 J -20861572.19 -20861572.02 -20861571.85 0.0261 0.0115  
 Mercury -61829-05-16 07:40 J -20861483.37 -20861483.18 -20861482.99 0.0261 0.0008  
 Mercury -61829-08-13 03:35 J -20861394.50 -20861394.35 -20861394.18 0.0261 0.0131  
 Mercury -61829-11-09 23:59 J -20861305.53 -20861305.50 -20861305.45 0.0260 0.0254  
 Earth -61828-12-26 11:45 J -20860894.20 -20860894.01 -20860893.79 0.0259 0.0147  
 Moon -61828-12-26 15:21 J -20860894.07 -20860893.86 -20860893.64 0.0259 0.0132 \*  
 Mars -61827-02-21 14:23 J -20860837.17 -20860836.90 -20860836.61 0.0259 0.0136  
 Moon -61826-01-07 00:28 J -20860517.74 -20860517.48 -20860517.23 0.0259 0.0037  
 Earth -61826-01-07 01:40 J -20860517.68 -20860517.43 -20860517.18 0.0259 0.0029 \*  
 Moon -61825-01-18 13:40 J -20860141.08 -20860140.93 -20860140.77 0.0260 0.0201  
 Earth -61825-01-18 17:01 J -20860140.93 -20860140.79 -20860140.63 0.0260 0.0205 \*  
 Venus -61819-08-04 07:54 J -20857751.38 -20857751.17 -20857750.95 0.0281 0.0019  
 Mercury -61814-03-13 11:30 J -20856069.09 -20856069.02 -20856068.95 0.0300 0.0253  
 Mercury -61814-06-10 00:42 J -20855980.59 -20855980.47 -20855980.35 0.0301 0.0122  
 Mercury -61814-09-06 13:40 J -20855892.06 -20855891.93 -20855891.80 0.0301 0.0010  
 Mercury -61814-12-04 02:37 J -20855803.51 -20855803.39 -20855803.28 0.0302 0.0140  
 Mercury -61813-03-01 15:21 J -20855714.91 -20855714.86 -20855714.80 0.0302 0.0270  
 Mars -61813-04-07 14:23 J -20855678.12 -20855677.90 -20855677.68 0.0302 0.0172  
 Earth -61813-06-24 16:33 J -20855599.91 -20855599.81 -20855599.69 0.0303 0.0270  
 Moon -61813-06-24 17:16 J -20855599.90 -20855599.78 -20855599.66 0.0303 0.0256 \*  
 Earth -61812-07-09 15:49 J -20855220.08 -20855219.84 -20855219.60 0.0303 0.0007  
 Moon -61812-07-09 18:57 J -20855219.94 -20855219.71 -20855219.47 0.0303 0.0023 \*  
 Earth -61811-07-24 11:30 J -20854840.10 -20854840.02 -20854839.92 0.0302 0.0279  
 Moon -61811-07-24 15:21 J -20854839.89 -20854839.86 -20854839.81 0.0302 0.0296  
 Venus -61806-10-21 13:11 J -20852925.16 -20852924.95 -20852924.74 0.0282 0.0014  
 Mercury -61800-04-08 16:47 J -20850928.80 -20850928.80 -20850928.78 0.0262 0.0262  
 Mercury -61800-07-06 12:42 J -20850840.12 -20850839.97 -20850839.81 0.0262 0.0140

Mercury -61800-10-03 08:52 J -20850751.32 -20850751.13 -20850750.94 0.0261 0.0017  
 Mercury -61800-12-31 05:01 J -20850662.46 -20850662.29 -20850662.12 0.0261 0.0106  
 Mercury -61799-03-30 01:25 J -20850573.53 -20850573.44 -20850573.36 0.0261 0.0229  
 Moon -61799-12-21 20:37 J -20850306.78 -20850306.64 -20850306.48 0.0260 0.0207  
 Earth -61799-12-22 00:13 J -20850306.61 -20850306.49 -20850306.35 0.0260 0.0219 \*  
 Earth -61797-01-02 13:25 J -20849930.18 -20849929.94 -20849929.69 0.0260 0.0045  
 Moon -61797-01-02 14:23 J -20849930.13 -20849929.90 -20849929.65 0.0260 0.0034 \*  
 Earth -61796-01-13 03:49 J -20849553.54 -20849553.34 -20849553.11 0.0260 0.0132  
 Moon -61796-01-13 07:40 J -20849553.38 -20849553.18 -20849552.95 0.0260 0.0135 \*  
 Venus -61789-02-14 17:59 J -20846964.96 -20846964.75 -20846964.55 0.0281 0.0090  
 Mercury -61785-07-30 14:37 J -20845336.93 -20845336.89 -20845336.85 0.0300 0.0280  
 Mercury -61785-10-27 03:35 J -20845248.46 -20845248.35 -20845248.23 0.0300 0.0150  
 Mercury -61784-01-23 16:47 J -20845159.93 -20845159.80 -20845159.67 0.0301 0.0019  
 Mercury -61784-04-22 05:45 J -20845071.38 -20845071.26 -20845071.14 0.0301 0.0113  
 Mercury -61784-07-19 18:28 J -20844982.80 -20844982.73 -20844982.65 0.0302 0.0242  
 Mars -61783-05-27 19:40 J -20844670.91 -20844670.68 -20844670.43 0.0303 0.0128  
 Moon -61783-07-03 13:25 J -20844634.17 -20844633.94 -20844633.71 0.0303 0.0099  
 Earth -61783-07-03 16:47 J -20844634.02 -20844633.80 -20844633.58 0.0303 0.0115 \*  
 Moon -61782-07-18 10:33 J -20844254.24 -20844254.06 -20844253.86 0.0303 0.0181  
 Earth -61782-07-18 14:09 J -20844254.11 -20844253.91 -20844253.71 0.0303 0.0163 \*  
 Venus -61776-05-02 20:23 J -20842138.85 -20842138.65 -20842138.44 0.0282 0.0052  
 Mercury -61771-11-23 13:11 J -20840108.09 -20840107.95 -20840107.81 0.0262 0.0171  
 Mercury -61770-02-20 09:06 J -20840019.30 -20840019.12 -20840018.93 0.0261 0.0049  
 Mercury -61770-05-20 05:16 J -20839930.46 -20839930.28 -20839930.10 0.0261 0.0074  
 Mercury -61770-08-17 01:25 J -20839841.56 -20839841.44 -20839841.31 0.0260 0.0197  
 Mars -61769-05-28 19:40 J -20839555.99 -20839555.68 -20839555.36 0.0260 0.0052  
 Moon -61769-12-27 22:18 J -20839342.80 -20839342.57 -20839342.33 0.0259 0.0112  
 Earth -61769-12-27 22:33 J -20839342.77 -20839342.56 -20839342.33 0.0259 0.0124 \*  
 Moon -61767-01-08 08:37 J -20838966.38 -20838966.14 -20838965.89 0.0259 0.0057  
 Earth -61767-01-08 12:28 J -20838966.22 -20838965.98 -20838965.73 0.0259 0.0052 \*

Moon -61766-01-20 03:49 J -20838589.45 -20838589.34 -20838589.21 0.0260 0.0223  
 Earth -61766-01-20 04:04 J -20838589.43 -20838589.33 -20838589.20 0.0260 0.0229 \*  
 Venus -61760-01-09 09:35 J -20836408.17 -20836408.10 -20836408.02 0.0279 0.0260  
 Venus -61760-08-27 01:25 J -20836178.61 -20836178.44 -20836178.26 0.0282 0.0156  
 Mercury -61755-03-16 06:28 J -20834516.34 -20834516.23 -20834516.13 0.0301 0.0179  
 Mercury -61755-06-12 19:25 J -20834427.82 -20834427.69 -20834427.56 0.0301 0.0048  
 Mercury -61755-09-09 08:23 J -20834339.27 -20834339.15 -20834339.02 0.0302 0.0084  
 Mercury -61755-12-06 21:06 J -20834250.70 -20834250.62 -20834250.52 0.0302 0.0215  
 Earth -61754-06-27 15:35 J -20834048.00 -20834047.85 -20834047.69 0.0303 0.0234  
 Moon -61754-06-27 18:57 J -20834047.87 -20834047.71 -20834047.55 0.0303 0.0219 \*  
 Earth -61753-07-11 14:23 J -20833668.14 -20833667.90 -20833667.66 0.0303 0.0044  
 Moon -61753-07-11 17:16 J -20833668.01 -20833667.78 -20833667.53 0.0303 0.0061 \*  
 Venus -61747-11-13 04:33 J -20831352.50 -20831352.31 -20831352.12 0.0281 0.0119  
 Mercury -61741-04-11 14:23 J -20829376.02 -20829375.90 -20829375.77 0.0262 0.0196  
 Mercury -61741-07-09 10:33 J -20829287.24 -20829287.06 -20829286.88 0.0261 0.0074  
 Mercury -61741-10-06 06:28 J -20829198.41 -20829198.23 -20829198.04 0.0261 0.0049  
 Mercury -61740-01-03 02:52 J -20829109.52 -20829109.38 -20829109.24 0.0261 0.0172  
 Moon -61740-12-23 09:49 J -20828755.24 -20828755.09 -20828754.91 0.0260 0.0187  
 Earth -61740-12-23 10:33 J -20828755.20 -20828755.06 -20828754.88 0.0260 0.0198 \*  
 Mars -61739-07-19 12:57 J -20828547.19 -20828546.96 -20828546.72 0.0260 0.0178  
 Earth -61738-01-03 23:59 J -20828378.74 -20828378.50 -20828378.25 0.0260 0.0023  
 Moon -61738-01-04 03:49 J -20828378.59 -20828378.34 -20828378.09 0.0260 0.0012 \*  
 Earth -61737-01-15 14:37 J -20828002.08 -20828001.89 -20828001.68 0.0260 0.0155  
 Moon -61737-01-15 15:21 J -20828002.06 -20828001.86 -20828001.64 0.0260 0.0153 \*  
 Venus -61731-07-22 18:42 J -20825621.87 -20825621.72 -20825621.56 0.0279 0.0192  
 Venus -61730-03-09 10:47 J -20825392.17 -20825392.05 -20825391.91 0.0282 0.0226  
 Mercury -61726-08-03 09:35 J -20823784.20 -20823784.10 -20823784.01 0.0300 0.0206  
 Mercury -61726-10-30 22:33 J -20823695.69 -20823695.56 -20823695.43 0.0301 0.0075  
 Mercury -61725-01-27 11:30 J -20823607.15 -20823607.02 -20823606.89 0.0301 0.0055  
 Mercury -61725-04-25 00:28 J -20823518.58 -20823518.48 -20823518.38 0.0302 0.0186



Mars	-61725-09-02 19:54 J	-20823387.92	-20823387.67	-20823387.42	0.0302	0.0111
Moon	-61724-07-05 12:57 J	-20823082.19	-20823081.96	-20823081.73	0.0303	0.0064
Earth	-61724-07-05 15:49 J	-20823082.07	-20823081.84	-20823081.61	0.0303	0.0079 *
Earth	-61723-07-20 12:57 J	-20822702.14	-20822701.96	-20822701.78	0.0302	0.0199
Moon	-61723-07-20 12:57 J	-20822702.12	-20822701.96	-20822701.79	0.0302	0.0215 *
Venus	-61718-10-09 03:06 J	-20820795.48	-20820795.37	-20820795.23	0.0284	0.0223
Venus	-61717-05-25 12:28 J	-20820566.13	-20820565.98	-20820565.82	0.0281	0.0186
Mercury	-61712-08-29 15:06 J	-20818643.96	-20818643.87	-20818643.78	0.0262	0.0225
Mercury	-61712-11-26 11:01 J	-20818555.21	-20818555.04	-20818554.87	0.0261	0.0104
Mercury	-61711-02-23 06:57 J	-20818466.39	-20818466.21	-20818466.02	0.0261	0.0019
Mercury	-61711-05-23 03:06 J	-20818377.52	-20818377.37	-20818377.21	0.0261	0.0141
Mars	-61711-09-03 06:57 J	-20818274.33	-20818274.21	-20818274.06	0.0260	0.0236
Moon	-61710-12-30 05:59 J	-20817791.48	-20817791.25	-20817791.00	0.0259	0.0089
Earth	-61710-12-30 09:35 J	-20817791.33	-20817791.10	-20817790.87	0.0259	0.0102 *
Moon	-61708-01-09 22:18 J	-20817414.79	-20817414.57	-20817414.33	0.0259	0.0079
Earth	-61708-01-09 23:16 J	-20817414.77	-20817414.53	-20817414.29	0.0259	0.0074 *
Earth	-61707-01-21 15:06 J	-20817037.93	-20817037.87	-20817037.80	0.0260	0.0250
Moon	-61707-01-21 18:28 J	-20817037.80	-20817037.73	-20817037.63	0.0260	0.0243 *
Venus	-61701-02-02 01:54 J	-20814835.61	-20814835.42	-20814835.23	0.0280	0.0130
Mercury	-61697-12-20 11:59 J	-20813052.08	-20813052.00	-20813051.92	0.0300	0.0237
Mercury	-61696-03-19 01:11 J	-20812963.58	-20812963.45	-20812963.33	0.0301	0.0106
Mercury	-61696-06-15 14:09 J	-20812875.04	-20812874.91	-20812874.78	0.0302	0.0025
Mercury	-61696-09-12 03:06 J	-20812786.48	-20812786.37	-20812786.26	0.0302	0.0156
Mercury	-61696-12-09 15:49 J	-20812697.88	-20812697.84	-20812697.80	0.0302	0.0286
Earth	-61695-06-29 13:40 J	-20812496.10	-20812495.93	-20812495.74	0.0303	0.0199
Moon	-61695-06-29 16:33 J	-20812496.00	-20812495.81	-20812495.61	0.0303	0.0184 *
Mars	-61695-10-22 22:04 J	-20812380.78	-20812380.58	-20812380.36	0.0303	0.0178
Moon	-61694-07-14 11:59 J	-20812116.23	-20812116.00	-20812115.75	0.0303	0.0096
Earth	-61694-07-14 12:28 J	-20812116.21	-20812115.98	-20812115.74	0.0303	0.0080 *
Venus	-61688-04-20 11:01 J	-20810009.21	-20810009.04	-20810008.86	0.0283	0.0155

Venus -61688-12-05 20:09 J -20809779.75 -20809779.66 -20809779.57 0.0280 0.0250  
 Mercury -61682-01-16 16:04 J -20807911.87 -20807911.83 -20807911.77 0.0262 0.0251  
 Mercury -61682-04-15 11:59 J -20807823.15 -20807823.00 -20807822.83 0.0261 0.0130  
 Mercury -61682-07-13 08:09 J -20807734.35 -20807734.16 -20807733.97 0.0261 0.0007  
 Mercury -61682-10-10 04:04 J -20807645.49 -20807645.33 -20807645.15 0.0261 0.0116  
 Mercury -61681-01-07 00:28 J -20807556.55 -20807556.48 -20807556.40 0.0260 0.0238  
 Mars -61681-10-23 17:30 J -20807266.10 -20807265.77 -20807265.45 0.0260 0.0009  
 Earth -61681-12-24 21:06 J -20807203.79 -20807203.62 -20807203.43 0.0260 0.0177  
 Moon -61681-12-25 00:13 J -20807203.67 -20807203.49 -20807203.29 0.0260 0.0164 \*  
 Earth -61679-01-05 10:18 J -20806827.32 -20806827.07 -20806826.82 0.0259 0.0003  
 Moon -61679-01-05 11:59 J -20806827.26 -20806827.00 -20806826.74 0.0259 0.0009 \*  
 Moon -61678-01-16 21:21 J -20806450.79 -20806450.61 -20806450.41 0.0260 0.0171  
 Earth -61678-01-17 01:11 J -20806450.63 -20806450.45 -20806450.26 0.0260 0.0176 \*  
 Venus -61672-08-14 10:33 J -20804049.27 -20804049.06 -20804048.85 0.0280 0.0062  
 Mercury -61667-05-09 14:52 J -20802319.94 -20802319.88 -20802319.82 0.0300 0.0267  
 Mercury -61667-08-06 03:49 J -20802231.45 -20802231.34 -20802231.22 0.0300 0.0137  
 Mercury -61667-11-02 17:01 J -20802142.92 -20802142.79 -20802142.66 0.0301 0.0005  
 Mercury -61666-01-30 05:59 J -20802054.37 -20802054.25 -20802054.13 0.0301 0.0126  
 Mercury -61666-04-28 18:42 J -20801965.78 -20801965.72 -20801965.65 0.0302 0.0256  
 Earth -61665-07-07 12:28 J -20801530.21 -20801529.98 -20801529.74 0.0303 0.0045  
 Moon -61665-07-07 13:11 J -20801530.18 -20801529.95 -20801529.72 0.0303 0.0029 \*  
 Earth -61664-07-22 09:35 J -20801150.25 -20801150.10 -20801149.95 0.0302 0.0233  
 Moon -61664-07-22 12:28 J -20801150.10 -20801149.98 -20801149.84 0.0302 0.0249 \*  
 Venus -61659-10-31 18:57 J -20799222.90 -20799222.71 -20799222.51 0.0283 0.0088  
 Mercury -61653-09-01 12:28 J -20797091.12 -20797090.98 -20797090.83 0.0261 0.0160  
 Mercury -61653-11-29 08:37 J -20797002.33 -20797002.14 -20797001.96 0.0261 0.0038  
 Mercury -61652-02-26 04:33 J -20796913.48 -20796913.31 -20796913.13 0.0261 0.0085  
 Mercury -61652-05-26 00:42 J -20796824.58 -20796824.47 -20796824.35 0.0260 0.0207  
 Moon -61652-12-20 03:35 J -20796616.44 -20796616.35 -20796616.26 0.0260 0.0242  
 Earth -61652-12-20 06:42 J -20796616.25 -20796616.22 -20796616.16 0.0260 0.0255

Mars -61651-12-14 03:06 J -20796257.51 -20796257.37 -20796257.19 0.0259 0.0224  
 Moon -61651-12-31 17:01 J -20796240.02 -20796239.79 -20796239.55 0.0259 0.0068  
 Earth -61651-12-31 19:25 J -20796239.93 -20796239.69 -20796239.45 0.0259 0.0081 \*  
 Earth -61649-01-12 08:52 J -20795863.36 -20795863.13 -20795862.89 0.0259 0.0095  
 Moon -61649-01-12 11:45 J -20795863.22 -20795863.01 -20795862.77 0.0259 0.0097 \*  
 Venus -61642-02-24 16:04 J -20793263.04 -20793262.83 -20793262.61 0.0280 0.0005  
 Mercury -61638-12-24 05:59 J -20791499.36 -20791499.25 -20791499.14 0.0301 0.0172  
 Mercury -61637-03-21 19:11 J -20791410.83 -20791410.70 -20791410.57 0.0302 0.0041  
 Mercury -61637-06-18 08:09 J -20791322.29 -20791322.16 -20791322.04 0.0302 0.0091  
 Mercury -61637-09-14 20:52 J -20791233.71 -20791233.63 -20791233.54 0.0302 0.0222  
 Mars -61636-01-28 13:54 J -20791098.18 -20791097.92 -20791097.65 0.0303 0.0069  
 Moon -61636-07-01 06:13 J -20790944.45 -20790944.24 -20790944.02 0.0303 0.0151  
 Earth -61636-07-01 07:40 J -20790944.37 -20790944.18 -20790943.97 0.0303 0.0167 \*  
 Moon -61635-07-16 03:06 J -20790564.58 -20790564.37 -20790564.14 0.0303 0.0130  
 Earth -61635-07-16 06:28 J -20790564.44 -20790564.23 -20790564.00 0.0303 0.0114 \*  
 Venus -61629-05-13 01:54 J -20788436.63 -20788436.42 -20788436.21 0.0282 0.0024  
 Mercury -61623-01-19 13:25 J -20786359.07 -20786358.94 -20786358.81 0.0261 0.0187  
 Mercury -61623-04-18 09:21 J -20786270.29 -20786270.11 -20786269.93 0.0261 0.0066  
 Mercury -61623-07-16 05:30 J -20786181.46 -20786181.27 -20786181.09 0.0261 0.0057  
 Mercury -61623-10-13 01:25 J -20786092.57 -20786092.44 -20786092.30 0.0260 0.0179  
 Mars -61622-01-29 00:42 J -20785984.68 -20785984.47 -20785984.25 0.0260 0.0193  
 Earth -61622-12-27 06:13 J -20785652.44 -20785652.24 -20785652.04 0.0259 0.0157  
 Moon -61622-12-27 08:52 J -20785652.33 -20785652.13 -20785651.91 0.0259 0.0142 \*  
 Moon -61620-01-06 16:33 J -20785276.07 -20785275.81 -20785275.56 0.0259 0.0027  
 Earth -61620-01-06 18:57 J -20785275.96 -20785275.71 -20785275.46 0.0259 0.0020 \*  
 Moon -61619-01-18 06:57 J -20784899.36 -20784899.21 -20784899.03 0.0260 0.0191  
 Earth -61619-01-18 09:21 J -20784899.26 -20784899.11 -20784898.94 0.0260 0.0197 \*  
 Venus -61613-09-05 23:45 J -20782476.72 -20782476.51 -20782476.30 0.0281 0.0060  
 Mercury -61608-05-12 08:37 J -20780767.24 -20780767.14 -20780767.04 0.0300 0.0204  
 Mercury -61608-08-08 21:35 J -20780678.72 -20780678.60 -20780678.47 0.0301 0.0073

Mercury -61608-11-05 10:47 J -20780590.18 -20780590.05 -20780589.92 0.0301 0.0059

Mercury -61607-02-01 23:30 J -20780501.62 -20780501.52 -20780501.41 0.0302 0.0189

Earth -61607-06-25 05:01 J -20780358.34 -20780358.29 -20780358.22 0.0302 0.0292

Moon -61607-06-25 07:25 J -20780358.28 -20780358.19 -20780358.09 0.0302 0.0276 \*

Mars -61606-03-19 15:49 J -20780091.00 -20780090.84 -20780090.66 0.0303 0.0231

Earth -61606-07-10 05:01 J -20779978.53 -20779978.29 -20779978.05 0.0303 0.0014

Moon -61606-07-10 08:37 J -20779978.38 -20779978.14 -20779977.90 0.0303 0.0005 \*

Earth -61605-07-24 01:54 J -20779598.53 -20779598.42 -20779598.29 0.0302 0.0263

Moon -61605-07-24 04:47 J -20779598.38 -20779598.30 -20779598.20 0.0302 0.0279 \*

Venus -61600-11-23 09:06 J -20777650.32 -20777650.12 -20777649.91 0.0282 0.0042

Mercury -61594-06-08 13:54 J -20775627.02 -20775626.92 -20775626.82 0.0262 0.0217

Mercury -61594-09-05 09:35 J -20775538.27 -20775538.10 -20775537.92 0.0261 0.0096

Mercury -61594-12-03 05:45 J -20775449.45 -20775449.26 -20775449.08 0.0261 0.0026

Mercury -61593-03-01 01:40 J -20775360.58 -20775360.43 -20775360.27 0.0260 0.0147

Moon -61593-12-21 12:42 J -20775065.09 -20775064.97 -20775064.85 0.0259 0.0222

Earth -61593-12-21 15:06 J -20775064.96 -20775064.87 -20775064.75 0.0259 0.0235 \*

Mars -61592-03-20 03:49 J -20774976.66 -20774976.34 -20774976.01 0.0259 0.0034

Earth -61591-01-02 03:21 J -20774688.60 -20774688.36 -20774688.12 0.0259 0.0061

Moon -61591-01-02 05:16 J -20774688.51 -20774688.28 -20774688.03 0.0259 0.0049 \*

Earth -61590-01-13 16:33 J -20774312.03 -20774311.81 -20774311.58 0.0259 0.0115

Moon -61590-01-13 19:25 J -20774311.91 -20774311.69 -20774311.46 0.0259 0.0117 \*

Venus -61583-03-19 04:18 J -20771690.51 -20771690.32 -20771690.12 0.0281 0.0115

Mercury -61579-09-29 10:04 J -20770035.15 -20770035.08 -20770035.00 0.0301 0.0244

Mercury -61579-12-26 23:16 J -20769946.65 -20769946.53 -20769946.41 0.0301 0.0113

Mercury -61578-03-25 12:28 J -20769858.12 -20769857.98 -20769857.85 0.0302 0.0021

Mercury -61578-06-22 01:11 J -20769769.56 -20769769.45 -20769769.33 0.0302 0.0151

Mercury -61578-09-18 14:09 J -20769680.95 -20769680.91 -20769680.86 0.0303 0.0280

Moon -61577-07-02 17:30 J -20769392.98 -20769392.77 -20769392.54 0.0304 0.0121

Earth -61577-07-02 21:21 J -20769392.82 -20769392.61 -20769392.39 0.0304 0.0138 \*

Moon -61576-07-17 17:59 J -20769012.95 -20769012.75 -20769012.55 0.0303 0.0159

Earth -61576-07-17 20:23 J -20769012.86 -20769012.65 -20769012.44 0.0303 0.0143 \*  
 Venus -61570-06-05 14:23 J -20766864.10 -20766863.90 -20766863.71 0.0281 0.0098  
 Mercury -61565-10-25 13:54 J -20764894.96 -20764894.92 -20764894.85 0.0262 0.0249  
 Mercury -61564-01-22 09:49 J -20764806.25 -20764806.09 -20764805.92 0.0261 0.0128  
 Mercury -61564-04-21 05:45 J -20764717.44 -20764717.26 -20764717.07 0.0261 0.0009  
 Mercury -61564-07-19 01:54 J -20764628.59 -20764628.42 -20764628.25 0.0260 0.0116  
 Mercury -61564-10-15 21:49 J -20764539.65 -20764539.59 -20764539.50 0.0260 0.0238  
 Moon -61563-12-28 10:18 J -20764101.28 -20764101.07 -20764100.83 0.0259 0.0124  
 Earth -61563-12-28 12:28 J -20764101.18 -20764100.98 -20764100.76 0.0259 0.0138 \*  
 Moon -61561-01-08 21:35 J -20763724.83 -20763724.60 -20763724.35 0.0259 0.0046  
 Earth -61561-01-09 01:11 J -20763724.70 -20763724.45 -20763724.20 0.0259 0.0038 \*  
 Earth -61560-01-19 15:06 J -20763348.00 -20763347.87 -20763347.72 0.0260 0.0215  
 Moon -61560-01-19 17:16 J -20763347.92 -20763347.78 -20763347.64 0.0260 0.0207 \*  
 Venus -61554-02-11 18:42 J -20761133.83 -20761133.72 -20761133.61 0.0278 0.0240  
 Venus -61554-09-29 10:18 J -20760904.23 -20760904.07 -20760903.89 0.0281 0.0174  
 Mercury -61549-02-16 11:59 J -20759303.03 -20759303.00 -20759302.95 0.0300 0.0281  
 Mercury -61549-05-15 01:25 J -20759214.56 -20759214.44 -20759214.33 0.0301 0.0150  
 Mercury -61549-08-11 14:23 J -20759126.03 -20759125.90 -20759125.77 0.0301 0.0020  
 Mercury -61549-11-08 03:21 J -20759037.48 -20759037.36 -20759037.23 0.0302 0.0113  
 Mercury -61548-02-04 16:18 J -20758948.89 -20758948.82 -20758948.74 0.0302 0.0242  
 Mars -61548-06-24 19:11 J -20758808.97 -20758808.70 -20758808.43 0.0303 0.0026  
 Earth -61548-06-26 15:06 J -20758806.97 -20758806.87 -20758806.74 0.0303 0.0267  
 Moon -61548-06-26 18:42 J -20758806.85 -20758806.72 -20758806.57 0.0303 0.0249 \*  
 Earth -61547-07-11 15:21 J -20758427.10 -20758426.86 -20758426.62 0.0303 0.0013  
 Moon -61547-07-11 17:01 J -20758427.04 -20758426.79 -20758426.54 0.0303 0.0030 \*  
 Earth -61546-07-26 12:28 J -20758047.05 -20758046.98 -20758046.91 0.0302 0.0289  
 Venus -61541-04-30 10:47 J -20756307.14 -20756307.05 -20756306.95 0.0284 0.0249  
 Venus -61541-12-15 20:23 J -20756077.81 -20756077.65 -20756077.47 0.0281 0.0161  
 Mercury -61535-06-11 09:49 J -20754074.23 -20754074.09 -20754073.93 0.0261 0.0160  
 Mercury -61535-09-08 05:45 J -20753985.44 -20753985.26 -20753985.07 0.0261 0.0039

Mercury -61535-12-06 01:40 J -20753896.60 -20753896.43 -20753896.24 0.0260 0.0084

Mercury -61534-03-04 21:49 J -20753807.70 -20753807.59 -20753807.47 0.0260 0.0205

Mars -61534-06-25 04:47 J -20753695.54 -20753695.30 -20753695.03 0.0260 0.0159

Earth -61534-12-23 20:52 J -20753513.76 -20753513.63 -20753513.49 0.0259 0.0216

Moon -61534-12-23 22:47 J -20753513.70 -20753513.55 -20753513.40 0.0259 0.0203 \*

Earth -61532-01-03 08:37 J -20753137.39 -20753137.14 -20753136.89 0.0259 0.0043

Moon -61532-01-03 12:13 J -20753137.24 -20753136.99 -20753136.74 0.0259 0.0031 \*

Moon -61531-01-14 20:09 J -20752760.88 -20752760.66 -20752760.43 0.0259 0.0131

Earth -61531-01-14 21:35 J -20752760.82 -20752760.60 -20752760.39 0.0259 0.0133 \*

Venus -61525-08-23 22:04 J -20750347.73 -20750347.58 -20750347.42 0.0278 0.0190

Venus -61524-04-10 13:25 J -20750118.05 -20750117.94 -20750117.80 0.0282 0.0225

Mercury -61520-10-02 02:23 J -20748482.50 -20748482.40 -20748482.30 0.0301 0.0195

Mercury -61520-12-29 15:35 J -20748393.98 -20748393.85 -20748393.72 0.0302 0.0063

Mercury -61519-03-28 04:33 J -20748305.44 -20748305.31 -20748305.18 0.0302 0.0068

Mercury -61519-06-24 17:30 J -20748216.87 -20748216.77 -20748216.67 0.0303 0.0199

Moon -61518-07-05 04:04 J -20747841.55 -20747841.33 -20747841.11 0.0304 0.0098

Earth -61518-07-05 04:33 J -20747841.53 -20747841.31 -20747841.09 0.0304 0.0114 \*

Mars -61518-08-13 07:25 J -20747802.33 -20747802.19 -20747802.04 0.0304 0.0252

Earth -61517-07-19 03:49 J -20747461.54 -20747461.34 -20747461.14 0.0303 0.0167

Moon -61517-07-19 05:45 J -20747461.44 -20747461.26 -20747461.07 0.0303 0.0184 \*

Venus -61512-11-10 14:23 J -20745521.04 -20745520.90 -20745520.75 0.0284 0.0198

Venus -61511-06-27 23:59 J -20745291.63 -20745291.50 -20745291.36 0.0281 0.0211

Mercury -61506-10-29 09:35 J -20743342.22 -20743342.10 -20743341.98 0.0261 0.0195

Mercury -61505-01-26 05:30 J -20743253.45 -20743253.27 -20743253.10 0.0261 0.0074

Mercury -61505-04-24 01:25 J -20743164.63 -20743164.44 -20743164.26 0.0260 0.0048

Mercury -61505-07-21 21:21 J -20743075.75 -20743075.61 -20743075.46 0.0260 0.0169

Mars -61504-08-14 01:54 J -20742687.73 -20742687.42 -20742687.10 0.0259 0.0065

Moon -61504-12-29 12:28 J -20742550.20 -20742549.98 -20742549.75 0.0259 0.0108

Earth -61504-12-29 16:04 J -20742550.05 -20742549.83 -20742549.61 0.0259 0.0121 \*

Earth -61502-01-10 04:04 J -20742173.57 -20742173.33 -20742173.08 0.0259 0.0055

Moon -61502-01-10 04:47 J -20742173.53 -20742173.30 -20742173.06 0.0259 0.0060 \*  
 Earth -61501-01-21 17:45 J -20741796.85 -20741796.76 -20741796.63 0.0260 0.0232  
 Moon -61501-01-21 21:21 J -20741796.72 -20741796.61 -20741796.47 0.0260 0.0223 \*  
 Venus -61495-03-06 02:37 J -20739561.57 -20739561.39 -20739561.19 0.0279 0.0136  
 Venus -61495-10-21 18:28 J -20739331.74 -20739331.73 -20739331.70 0.0282 0.0280  
 Mercury -61490-02-19 04:04 J -20737750.41 -20737750.33 -20737750.24 0.0300 0.0234  
 Mercury -61490-05-18 17:16 J -20737661.90 -20737661.78 -20737661.65 0.0301 0.0103  
 Mercury -61490-08-15 06:28 J -20737573.36 -20737573.23 -20737573.10 0.0301 0.0029  
 Mars -61490-09-30 07:54 J -20737527.22 -20737527.17 -20737527.10 0.0302 0.0294  
 Mercury -61490-11-11 19:11 J -20737484.80 -20737484.70 -20737484.58 0.0302 0.0159  
 Mercury -61489-02-08 08:09 J -20737396.19 -20737396.16 -20737396.12 0.0302 0.0289  
 Moon -61489-06-27 19:54 J -20737255.82 -20737255.67 -20737255.50 0.0303 0.0228  
 Earth -61489-06-27 20:23 J -20737255.78 -20737255.65 -20737255.50 0.0303 0.0244 \*  
 Moon -61488-07-12 17:45 J -20736876.01 -20736875.76 -20736875.52 0.0303 0.0053  
 Earth -61488-07-12 20:52 J -20736875.87 -20736875.63 -20736875.39 0.0303 0.0036 \*  
 Venus -61482-05-23 19:25 J -20734734.86 -20734734.69 -20734734.50 0.0284 0.0139  
 Venus -61481-01-08 04:47 J -20734505.34 -20734505.30 -20734505.23 0.0281 0.0269  
 Mercury -61476-03-17 09:21 J -20732610.20 -20732610.11 -20732610.02 0.0262 0.0228  
 Mercury -61476-06-14 05:01 J -20732521.46 -20732521.29 -20732521.12 0.0261 0.0108  
 Mercury -61476-09-11 00:57 J -20732432.65 -20732432.46 -20732432.27 0.0261 0.0014  
 Mercury -61476-12-08 20:52 J -20732343.78 -20732343.63 -20732343.46 0.0260 0.0135  
 Mercury -61475-03-07 17:16 J -20732254.81 -20732254.78 -20732254.76 0.0260 0.0256  
 Earth -61475-12-24 23:16 J -20731962.68 -20731962.53 -20731962.36 0.0259 0.0199  
 Moon -61475-12-25 02:52 J -20731962.54 -20731962.38 -20731962.20 0.0259 0.0185 \*  
 Moon -61473-01-05 10:04 J -20731586.34 -20731586.08 -20731585.82 0.0258 0.0018  
 Earth -61473-01-05 10:47 J -20731586.30 -20731586.05 -20731585.80 0.0258 0.0026 \*  
 Moon -61472-01-15 19:25 J -20731209.88 -20731209.69 -20731209.47 0.0259 0.0146  
 Earth -61472-01-15 23:16 J -20731209.73 -20731209.53 -20731209.32 0.0259 0.0150 \*  
 Venus -61466-09-16 05:01 J -20728775.49 -20728775.29 -20728775.08 0.0279 0.0089  
 Mercury -61461-07-08 04:33 J -20727018.35 -20727018.31 -20727018.27 0.0300 0.0284

Mercury -61461-10-04 17:45 J -20726929.87 -20726929.76 -20726929.64 0.0301 0.0153  
 Mercury -61460-01-01 06:57 J -20726841.34 -20726841.21 -20726841.08 0.0302 0.0022  
 Mercury -61460-03-30 19:54 J -20726752.79 -20726752.67 -20726752.55 0.0302 0.0109  
 Mercury -61460-06-27 08:52 J -20726664.21 -20726664.13 -20726664.05 0.0303 0.0240  
 Mars -61460-11-17 19:40 J -20726520.95 -20726520.68 -20726520.41 0.0303 0.0018  
 Earth -61459-07-06 05:45 J -20726290.48 -20726290.26 -20726290.03 0.0304 0.0094  
 Moon -61459-07-06 09:21 J -20726290.34 -20726290.11 -20726289.88 0.0304 0.0078 \*  
 Earth -61458-07-21 05:01 J -20725910.48 -20725910.29 -20725910.10 0.0304 0.0187  
 Moon -61458-07-21 08:23 J -20725910.33 -20725910.15 -20725909.96 0.0304 0.0203 \*  
 Venus -61453-12-02 21:06 J -20723948.81 -20723948.62 -20723948.42 0.0283 0.0094  
 Mercury -61447-11-01 03:49 J -20721789.49 -20721789.34 -20721789.18 0.0261 0.0147  
 Mercury -61446-01-28 23:45 J -20721700.69 -20721700.51 -20721700.32 0.0261 0.0027  
 Mercury -61446-04-27 19:40 J -20721611.85 -20721611.68 -20721611.50 0.0260 0.0095  
 Mercury -61446-07-25 15:49 J -20721522.94 -20721522.84 -20721522.73 0.0260 0.0217  
 Mars -61446-11-18 16:04 J -20721407.11 -20721406.83 -20721406.56 0.0259 0.0134  
 Earth -61445-12-30 16:33 J -20720999.04 -20720998.81 -20720998.59 0.0259 0.0105  
 Moon -61445-12-30 17:01 J -20720999.02 -20720998.79 -20720998.57 0.0259 0.0095 \*  
 Earth -61443-01-11 04:18 J -20720622.56 -20720622.32 -20720622.08 0.0259 0.0071  
 Moon -61443-01-11 08:09 J -20720622.40 -20720622.16 -20720621.92 0.0259 0.0072 \*  
 Moon -61442-01-22 17:59 J -20720245.84 -20720245.75 -20720245.63 0.0259 0.0236  
 Earth -61442-01-22 17:59 J -20720245.82 -20720245.75 -20720245.66 0.0259 0.0246 \*  
 Venus -61436-03-28 08:23 J -20717989.36 -20717989.15 -20717988.93 0.0279 0.0040  
 Mercury -61431-02-21 19:11 J -20716197.80 -20716197.70 -20716197.60 0.0300 0.0197  
 Mercury -61431-05-21 08:23 J -20716109.28 -20716109.15 -20716109.03 0.0301 0.0066  
 Mercury -61431-08-17 21:21 J -20716020.74 -20716020.61 -20716020.48 0.0302 0.0065  
 Mercury -61431-11-14 10:18 J -20715932.17 -20715932.07 -20715931.97 0.0302 0.0196  
 Moon -61430-06-29 15:49 J -20715705.00 -20715704.84 -20715704.66 0.0303 0.0211  
 Earth -61430-06-29 19:25 J -20715704.84 -20715704.69 -20715704.52 0.0303 0.0226 \*  
 Mars -61429-01-06 10:33 J -20715514.16 -20715514.06 -20715513.93 0.0303 0.0273  
 Moon -61429-07-13 17:01 J -20715325.01 -20715324.79 -20715324.55 0.0303 0.0070



Earth -61429-07-13 19:40 J -20715324.91 -20715324.68 -20715324.44 0.0303 0.0055 \*  
 Venus -61423-06-15 01:25 J -20713162.65 -20713162.44 -20713162.24 0.0283 0.0039  
 Mercury -61417-03-20 03:06 J -20711057.49 -20711057.37 -20711057.23 0.0261 0.0183  
 Mercury -61417-06-16 23:01 J -20710968.72 -20710968.54 -20710968.35 0.0261 0.0062  
 Mercury -61417-09-13 18:57 J -20710879.89 -20710879.71 -20710879.52 0.0260 0.0060  
 Mercury -61417-12-11 15:06 J -20710791.00 -20710790.87 -20710790.73 0.0260 0.0180  
 Moon -61416-12-25 23:01 J -20710411.73 -20710411.54 -20710411.34 0.0259 0.0170  
 Earth -61416-12-25 22:47 J -20710411.72 -20710411.55 -20710411.37 0.0259 0.0183 \*  
 Mars -61415-01-07 10:33 J -20710399.36 -20710399.06 -20710398.75 0.0259 0.0087  
 Moon -61414-01-06 06:13 J -20710035.49 -20710035.24 -20710034.99 0.0258 0.0006  
 Earth -61414-01-06 10:04 J -20710035.33 -20710035.08 -20710034.83 0.0258 0.0009 \*  
 Moon -61413-01-17 21:35 J -20709658.78 -20709658.60 -20709658.40 0.0259 0.0159  
 Earth -61413-01-17 22:04 J -20709658.76 -20709658.58 -20709658.38 0.0259 0.0166 \*  
 Venus -61407-10-08 10:04 J -20707203.29 -20707203.08 -20707202.86 0.0279 0.0005  
 Mercury -61402-07-11 19:25 J -20705465.76 -20705465.69 -20705465.62 0.0300 0.0249  
 Mercury -61402-10-08 08:37 J -20705377.26 -20705377.14 -20705377.02 0.0301 0.0118  
 Mercury -61401-01-04 21:35 J -20705288.73 -20705288.60 -20705288.47 0.0302 0.0013  
 Mars -61401-02-22 18:57 J -20705239.74 -20705239.71 -20705239.66 0.0302 0.0298  
 Mercury -61401-04-02 10:33 J -20705200.17 -20705200.06 -20705199.94 0.0302 0.0144  
 Mercury -61401-06-29 23:30 J -20705111.57 -20705111.52 -20705111.47 0.0303 0.0274  
 Earth -61400-07-07 03:21 J -20704739.60 -20704739.36 -20704739.13 0.0304 0.0076  
 Moon -61400-07-07 05:01 J -20704739.53 -20704739.29 -20704739.04 0.0304 0.0063 \*  
 Moon -61399-07-22 01:11 J -20704359.62 -20704359.45 -20704359.27 0.0304 0.0215  
 Earth -61399-07-22 02:23 J -20704359.57 -20704359.40 -20704359.22 0.0304 0.0205 \*  
 Venus -61394-12-26 01:40 J -20702376.64 -20702376.43 -20702376.22 0.0283 0.0002  
 Mercury -61388-08-07 01:25 J -20700325.52 -20700325.44 -20700325.34 0.0261 0.0226  
 Mercury -61388-11-03 21:21 J -20700236.78 -20700236.61 -20700236.44 0.0261 0.0105  
 Mercury -61387-01-31 17:16 J -20700147.97 -20700147.78 -20700147.59 0.0260 0.0016  
 Mercury -61387-04-30 13:25 J -20700059.10 -20700058.94 -20700058.78 0.0260 0.0137  
 Mercury -61387-07-28 09:21 J -20699970.11 -20699970.11 -20699970.09 0.0260 0.0259

Moon -61387-12-21 01:40 J -20699824.47 -20699824.43 -20699824.36 0.0259 0.0252  
 Earth -61385-01-01 13:54 J -20699448.15 -20699447.92 -20699447.68 0.0258 0.0091  
 Moon -61385-01-01 17:30 J -20699448.00 -20699447.77 -20699447.53 0.0258 0.0082 \*  
 Earth -61384-01-12 01:40 J -20699071.66 -20699071.43 -20699071.19 0.0258 0.0086  
 Moon -61384-01-12 02:09 J -20699071.65 -20699071.41 -20699071.16 0.0258 0.0081 \*  
 Moon -61383-01-23 11:59 J -20698695.07 -20698695.00 -20698694.92 0.0259 0.0247  
 Venus -61377-04-19 12:42 J -20696417.18 -20696416.97 -20696416.76 0.0279 0.0051  
 Mercury -61373-11-27 20:23 J -20694733.67 -20694733.65 -20694733.63 0.0300 0.0295  
 Mercury -61372-02-24 09:35 J -20694645.21 -20694645.10 -20694644.99 0.0300 0.0164  
 Mercury -61372-05-23 22:47 J -20694556.68 -20694556.55 -20694556.42 0.0301 0.0034  
 Mercury -61372-08-20 11:45 J -20694468.14 -20694468.01 -20694467.89 0.0302 0.0097  
 Mercury -61372-11-17 00:42 J -20694379.56 -20694379.47 -20694379.39 0.0302 0.0227  
 Mars -61371-04-12 13:40 J -20694233.20 -20694232.93 -20694232.67 0.0303 0.0008  
 Moon -61371-06-30 13:25 J -20694154.11 -20694153.94 -20694153.76 0.0303 0.0197  
 Earth -61371-06-30 14:37 J -20694154.05 -20694153.89 -20694153.71 0.0303 0.0210 \*  
 Earth -61370-07-15 14:52 J -20693774.11 -20693773.88 -20693773.64 0.0303 0.0071  
 Moon -61370-07-15 16:47 J -20693774.02 -20693773.80 -20693773.57 0.0303 0.0082 \*  
 Venus -61364-07-07 04:33 J -20691590.51 -20691590.31 -20691590.10 0.0283 0.0051  
 Mercury -61359-12-25 00:42 J -20689593.47 -20689593.47 -20689593.46 0.0262 0.0262  
 Mercury -61358-03-23 20:23 J -20689504.80 -20689504.65 -20689504.49 0.0261 0.0142  
 Mercury -61358-06-20 16:18 J -20689416.01 -20689415.82 -20689415.63 0.0261 0.0021  
 Mercury -61358-09-17 12:13 J -20689327.16 -20689326.99 -20689326.81 0.0260 0.0100  
 Mercury -61358-12-15 08:23 J -20689238.25 -20689238.15 -20689238.05 0.0260 0.0221  
 Mars -61357-04-12 17:01 J -20689119.07 -20689118.79 -20689118.50 0.0260 0.0121  
 Moon -61357-12-26 16:04 J -20688861.02 -20688860.83 -20688860.62 0.0259 0.0156  
 Earth -61357-12-26 19:40 J -20688860.86 -20688860.68 -20688860.48 0.0259 0.0169 \*  
 Moon -61355-01-07 06:28 J -20688484.48 -20688484.23 -20688483.99 0.0258 0.0007  
 Earth -61355-01-07 06:57 J -20688484.46 -20688484.21 -20688483.96 0.0258 0.0005 \*  
 Earth -61354-01-18 19:11 J -20688107.88 -20688107.70 -20688107.52 0.0259 0.0180  
 Moon -61354-01-18 22:47 J -20688107.73 -20688107.55 -20688107.35 0.0259 0.0169 \*

Venus -61348-10-30 13:54 J -20685631.13 -20685630.92 -20685630.72 0.0279 0.0094  
 Mercury -61343-07-14 09:35 J -20683913.19 -20683913.10 -20683913.01 0.0300 0.0218  
 Mercury -61343-10-10 22:47 J -20683824.68 -20683824.55 -20683824.43 0.0301 0.0088  
 Mercury -61342-01-07 11:45 J -20683736.14 -20683736.01 -20683735.88 0.0302 0.0043  
 Mercury -61342-04-06 00:42 J -20683647.58 -20683647.47 -20683647.36 0.0302 0.0173  
 Mars -61341-05-30 14:52 J -20683227.00 -20683226.88 -20683226.74 0.0304 0.0263  
 Moon -61341-07-07 17:59 J -20683188.99 -20683188.75 -20683188.50 0.0304 0.0052  
 Earth -61341-07-07 20:52 J -20683188.87 -20683188.63 -20683188.40 0.0304 0.0061 \*  
 Moon -61340-07-22 16:04 J -20682808.98 -20682808.83 -20682808.66 0.0304 0.0226  
 Earth -61340-07-22 19:40 J -20682808.84 -20682808.68 -20682808.51 0.0304 0.0220 \*  
 Venus -61334-01-17 03:49 J -20680804.53 -20680804.34 -20680804.13 0.0283 0.0087  
 Mercury -61329-08-09 18:13 J -20678772.86 -20678772.74 -20678772.61 0.0261 0.0187  
 Mercury -61329-11-06 14:09 J -20678684.09 -20678683.91 -20678683.73 0.0261 0.0067  
 Mercury -61328-02-03 10:04 J -20678595.26 -20678595.08 -20678594.89 0.0260 0.0054  
 Mercury -61328-05-03 05:59 J -20678506.38 -20678506.25 -20678506.10 0.0260 0.0176  
 Earth -61328-12-21 22:18 J -20678273.63 -20678273.57 -20678273.50 0.0259 0.0250  
 Moon -61328-12-22 01:40 J -20678273.52 -20678273.43 -20678273.32 0.0259 0.0235 \*  
 Mars -61327-06-02 01:40 J -20678111.72 -20678111.43 -20678111.12 0.0259 0.0099  
 Earth -61326-01-02 09:49 J -20677897.33 -20677897.09 -20677896.85 0.0258 0.0076  
 Moon -61326-01-02 11:01 J -20677897.29 -20677897.04 -20677896.79 0.0258 0.0070 \*  
 Moon -61325-01-13 17:45 J -20677520.99 -20677520.76 -20677520.52 0.0258 0.0090  
 Earth -61325-01-13 21:21 J -20677520.83 -20677520.61 -20677520.37 0.0258 0.0100 \*  
 Venus -61319-09-25 01:40 J -20675074.49 -20675074.43 -20675074.37 0.0277 0.0265  
 Venus -61318-05-12 15:49 J -20674845.02 -20674844.84 -20674844.65 0.0280 0.0139  
 Mercury -61314-12-01 10:33 J -20673181.12 -20673181.06 -20673181.00 0.0300 0.0265  
 Mercury -61313-02-27 23:45 J -20673092.63 -20673092.51 -20673092.39 0.0300 0.0135  
 Mercury -61313-05-26 12:42 J -20673004.10 -20673003.97 -20673003.84 0.0301 0.0006  
 Mars -61313-07-17 05:45 J -20672952.31 -20672952.26 -20672952.20 0.0301 0.0294  
 Mercury -61313-08-23 01:40 J -20672915.55 -20672915.43 -20672915.31 0.0302 0.0127  
 Mercury -61313-11-19 14:37 J -20672826.95 -20672826.89 -20672826.82 0.0302 0.0256

Earth -61312-07-01 07:54 J -20672603.34 -20672603.17 -20672602.98 0.0303 0.0195  
 Moon -61312-07-01 11:01 J -20672603.22 -20672603.04 -20672602.85 0.0303 0.0183 \*  
 Earth -61311-07-16 08:09 J -20672223.39 -20672223.16 -20672222.93 0.0303 0.0087  
 Moon -61311-07-16 11:30 J -20672223.25 -20672223.02 -20672222.79 0.0303 0.0095 \*  
 Venus -61306-12-12 19:11 J -20670247.72 -20670247.70 -20670247.65 0.0286 0.0281  
 Venus -61305-07-29 06:28 J -20670018.41 -20670018.23 -20670018.04 0.0283 0.0136  
 Mercury -61300-12-27 17:16 J -20668040.87 -20668040.78 -20668040.68 0.0262 0.0225  
 Mercury -61299-03-26 12:57 J -20667952.12 -20667951.96 -20667951.78 0.0261 0.0105  
 Mercury -61299-06-23 08:52 J -20667863.31 -20667863.13 -20667862.94 0.0261 0.0018  
 Mercury -61299-09-20 04:47 J -20667774.45 -20667774.30 -20667774.13 0.0261 0.0139  
 Mercury -61299-12-18 00:57 J -20667685.46 -20667685.46 -20667685.44 0.0260 0.0260  
 Moon -61298-12-28 13:11 J -20667310.14 -20667309.95 -20667309.74 0.0259 0.0144  
 Earth -61298-12-28 15:06 J -20667310.06 -20667309.87 -20667309.66 0.0259 0.0155 \*  
 Earth -61296-01-08 02:23 J -20666933.65 -20666933.40 -20666933.15 0.0258 0.0020  
 Moon -61296-01-08 05:45 J -20666933.50 -20666933.26 -20666933.01 0.0258 0.0016 \*  
 Earth -61295-01-19 14:37 J -20666557.04 -20666556.89 -20666556.71 0.0259 0.0195  
 Moon -61295-01-19 16:18 J -20666556.99 -20666556.82 -20666556.62 0.0259 0.0181 \*  
 Venus -61289-04-06 03:06 J -20664288.49 -20664288.37 -20664288.23 0.0276 0.0222  
 Venus -61289-11-21 17:30 J -20664058.93 -20664058.77 -20664058.61 0.0279 0.0182  
 Mercury -61284-07-16 23:45 J -20662360.61 -20662360.51 -20662360.41 0.0300 0.0188  
 Mercury -61284-10-13 12:42 J -20662272.09 -20662271.97 -20662271.83 0.0301 0.0059  
 Mercury -61283-01-10 01:54 J -20662183.55 -20662183.42 -20662183.29 0.0302 0.0072  
 Mercury -61283-04-08 14:52 J -20662094.98 -20662094.88 -20662094.79 0.0302 0.0202  
 Mars -61283-09-04 12:57 J -20661946.22 -20661945.96 -20661945.69 0.0303 0.0022  
 Moon -61282-07-09 10:47 J -20661638.28 -20661638.05 -20661637.81 0.0304 0.0038  
 Earth -61282-07-09 13:40 J -20661638.16 -20661637.93 -20661637.69 0.0304 0.0047 \*  
 Earth -61281-07-23 12:28 J -20661258.13 -20661257.98 -20661257.82 0.0304 0.0234  
 Moon -61281-07-23 12:28 J -20661258.12 -20661257.98 -20661257.84 0.0304 0.0237 \*  
 Venus -61276-06-23 18:28 J -20659461.83 -20659461.73 -20659461.62 0.0286 0.0246  
 Venus -61275-02-08 05:16 J -20659232.44 -20659232.28 -20659232.11 0.0283 0.0170

Mercury -61270-08-13 10:33 J -20657220.20 -20657220.06 -20657219.90 0.0261 0.0152

Mercury -61270-11-10 06:28 J -20657131.41 -20657131.23 -20657131.04 0.0261 0.0031

Mercury -61269-02-07 02:37 J -20657042.57 -20657042.39 -20657042.22 0.0261 0.0091

Mercury -61269-05-05 22:47 J -20656953.66 -20656953.55 -20656953.45 0.0260 0.0212

Mars -61269-09-05 03:21 J -20656831.64 -20656831.36 -20656831.06 0.0260 0.0112

Earth -61269-12-22 17:01 J -20656722.88 -20656722.79 -20656722.68 0.0259 0.0237

Moon -61269-12-22 18:57 J -20656722.83 -20656722.71 -20656722.57 0.0259 0.0222 \*

Moon -61267-01-03 01:40 J -20656346.67 -20656346.43 -20656346.18 0.0258 0.0060

Earth -61267-01-03 04:47 J -20656346.54 -20656346.30 -20656346.06 0.0258 0.0063 \*

Moon -61266-01-14 15:06 J -20655970.08 -20655969.87 -20655969.64 0.0258 0.0103

Earth -61266-01-14 16:47 J -20655970.02 -20655969.80 -20655969.57 0.0258 0.0113 \*

Venus -61260-10-17 05:01 J -20653502.45 -20653502.29 -20653502.12 0.0277 0.0178

Venus -61259-06-03 19:25 J -20653272.81 -20653272.69 -20653272.56 0.0280 0.0227

Mercury -61255-12-04 00:28 J -20651628.55 -20651628.48 -20651628.39 0.0300 0.0236

Mercury -61254-03-02 13:40 J -20651540.05 -20651539.93 -20651539.80 0.0300 0.0106

Mercury -61254-05-30 02:52 J -20651451.51 -20651451.38 -20651451.25 0.0301 0.0026

Mercury -61254-08-26 15:49 J -20651362.95 -20651362.84 -20651362.73 0.0302 0.0155

Mercury -61254-11-23 04:33 J -20651274.35 -20651274.31 -20651274.26 0.0302 0.0284

Earth -61253-07-02 00:57 J -20651052.65 -20651052.46 -20651052.26 0.0303 0.0180

Moon -61253-07-02 03:35 J -20651052.55 -20651052.35 -20651052.14 0.0303 0.0170 \*

Mars -61253-10-23 00:42 J -20650939.58 -20650939.47 -20650939.33 0.0303 0.0267

Moon -61252-07-17 00:13 J -20650672.72 -20650672.49 -20650672.25 0.0303 0.0104

Earth -61252-07-17 00:42 J -20650672.69 -20650672.47 -20650672.24 0.0303 0.0102 \*

Venus -61246-01-03 20:37 J -20648675.78 -20648675.64 -20648675.48 0.0286 0.0198

Venus -61246-08-21 07:40 J -20648446.30 -20648446.18 -20648446.04 0.0283 0.0218

Mercury -61241-12-30 09:35 J -20646488.22 -20646488.10 -20646487.97 0.0262 0.0189

Mercury -61240-03-29 05:30 J -20646399.45 -20646399.27 -20646399.09 0.0262 0.0068

Mercury -61240-06-26 01:25 J -20646310.62 -20646310.44 -20646310.25 0.0261 0.0053

Mercury -61240-09-22 21:21 J -20646221.74 -20646221.61 -20646221.46 0.0261 0.0176

Mars -61239-10-25 19:40 J -20645823.96 -20645823.68 -20645823.37 0.0259 0.0107

Earth -61239-12-29 10:18 J -20645759.28 -20645759.07 -20645758.86 0.0259 0.0140  
 Moon -61239-12-29 12:57 J -20645759.16 -20645758.96 -20645758.74 0.0259 0.0132 \*  
 Earth -61237-01-09 21:49 J -20645382.84 -20645382.59 -20645382.34 0.0258 0.0034  
 Moon -61237-01-09 23:59 J -20645382.76 -20645382.50 -20645382.24 0.0258 0.0030 \*  
 Moon -61236-01-20 07:11 J -20645006.36 -20645006.20 -20645006.03 0.0259 0.0194  
 Earth -61236-01-20 10:33 J -20645006.20 -20645006.06 -20645005.91 0.0259 0.0209 \*  
 Venus -61230-04-29 07:11 J -20642716.38 -20642716.20 -20642716.00 0.0276 0.0133  
 Venus -61230-12-14 21:35 J -20642486.65 -20642486.60 -20642486.55 0.0279 0.0271  
 Mercury -61225-04-22 00:57 J -20640896.50 -20640896.46 -20640896.43 0.0299 0.0287  
 Mercury -61225-07-19 14:09 J -20640808.03 -20640807.91 -20640807.80 0.0300 0.0157  
 Mercury -61225-10-16 03:06 J -20640719.50 -20640719.37 -20640719.24 0.0301 0.0027  
 Mercury -61224-01-12 16:04 J -20640630.95 -20640630.83 -20640630.71 0.0301 0.0103  
 Mercury -61224-04-11 05:01 J -20640542.37 -20640542.29 -20640542.21 0.0302 0.0232  
 Moon -61224-06-25 05:59 J -20640467.25 -20640467.25 -20640467.24 0.0302 0.0302  
 Earth -61223-07-10 07:25 J -20640087.43 -20640087.19 -20640086.95 0.0304 0.0031  
 Moon -61223-07-10 08:52 J -20640087.36 -20640087.13 -20640086.90 0.0304 0.0027 \*  
 Earth -61222-07-25 05:59 J -20639707.38 -20639707.25 -20639707.11 0.0303 0.0250  
 Moon -61222-07-25 09:06 J -20639707.24 -20639707.12 -20639706.97 0.0303 0.0249 \*  
 Venus -61217-07-15 20:09 J -20637889.82 -20637889.66 -20637889.48 0.0286 0.0162  
 Venus -61216-03-02 07:11 J -20637660.29 -20637660.20 -20637660.11 0.0283 0.0253  
 Mercury -61211-05-19 07:25 J -20635756.27 -20635756.19 -20635756.11 0.0262 0.0236  
 Mercury -61211-08-16 03:06 J -20635667.53 -20635667.37 -20635667.20 0.0262 0.0115  
 Mercury -61211-11-12 23:01 J -20635578.72 -20635578.54 -20635578.35 0.0261 0.0007  
 Mercury -61210-02-09 19:11 J -20635489.86 -20635489.70 -20635489.54 0.0261 0.0128  
 Mercury -61210-05-09 15:06 J -20635400.91 -20635400.87 -20635400.81 0.0260 0.0250  
 Moon -61210-12-24 09:06 J -20635172.26 -20635172.12 -20635171.97 0.0259 0.0212  
 Earth -61210-12-24 11:59 J -20635172.11 -20635172.00 -20635171.86 0.0259 0.0224 \*  
 Moon -61208-01-03 21:35 J -20634795.84 -20634795.60 -20634795.36 0.0259 0.0049  
 Earth -61208-01-04 00:13 J -20634795.73 -20634795.49 -20634795.24 0.0259 0.0049 \*  
 Earth -61207-01-15 12:28 J -20634419.19 -20634418.98 -20634418.76 0.0259 0.0128

Moon -61207-01-15 15:21 J -20634419.07 -20634418.86 -20634418.64 0.0259 0.0115 \*  
 Venus -61201-11-08 09:49 J -20631930.30 -20631930.09 -20631929.89 0.0277 0.0087  
 Mercury -61196-12-06 15:06 J -20630075.96 -20630075.87 -20630075.77 0.0300 0.0202  
 Mercury -61195-03-05 04:18 J -20629987.45 -20629987.32 -20629987.19 0.0300 0.0072  
 Mercury -61195-06-01 17:16 J -20629898.91 -20629898.78 -20629898.65 0.0301 0.0058  
 Mercury -61195-08-29 05:59 J -20629810.34 -20629810.25 -20629810.14 0.0302 0.0188  
 Mars -61194-01-28 03:06 J -20629658.64 -20629658.37 -20629658.10 0.0302 0.0016  
 Moon -61194-07-03 17:45 J -20629501.96 -20629501.76 -20629501.54 0.0303 0.0160  
 Earth -61194-07-03 20:09 J -20629501.85 -20629501.66 -20629501.45 0.0303 0.0163 \*  
 Moon -61193-07-17 16:18 J -20629122.04 -20629121.82 -20629121.60 0.0303 0.0118  
 Earth -61193-07-17 19:40 J -20629121.89 -20629121.68 -20629121.45 0.0303 0.0119 \*  
 Venus -61187-01-25 23:01 J -20627103.73 -20627103.54 -20627103.35 0.0285 0.0112  
 Mercury -61181-01-03 02:23 J -20624935.55 -20624935.40 -20624935.25 0.0262 0.0152  
 Mercury -61181-03-31 22:04 J -20624846.76 -20624846.58 -20624846.39 0.0262 0.0031  
 Mercury -61181-06-28 18:13 J -20624757.91 -20624757.74 -20624757.56 0.0261 0.0092  
 Mercury -61181-09-25 14:23 J -20624669.00 -20624668.90 -20624668.79 0.0261 0.0214  
 Mars -61180-01-29 00:13 J -20624543.78 -20624543.49 -20624543.19 0.0260 0.0104  
 Earth -61180-12-30 06:28 J -20624208.45 -20624208.23 -20624208.01 0.0259 0.0126  
 Moon -61180-12-30 09:21 J -20624208.33 -20624208.11 -20624207.88 0.0259 0.0120 \*  
 Moon -61178-01-10 16:04 J -20623832.09 -20623831.83 -20623831.58 0.0259 0.0041  
 Earth -61178-01-10 18:28 J -20623831.98 -20623831.73 -20623831.49 0.0259 0.0050 \*  
 Moon -61177-01-22 05:01 J -20623455.42 -20623455.29 -20623455.14 0.0259 0.0212  
 Earth -61177-01-22 07:25 J -20623455.30 -20623455.19 -20623455.05 0.0259 0.0225 \*  
 Venus -61171-05-21 13:11 J -20621144.16 -20621143.95 -20621143.74 0.0277 0.0039  
 Mercury -61166-04-25 15:49 J -20619343.91 -20619343.84 -20619343.77 0.0299 0.0250  
 Mercury -61166-07-23 04:47 J -20619255.42 -20619255.30 -20619255.18 0.0300 0.0121  
 Mercury -61166-10-19 17:59 J -20619166.89 -20619166.75 -20619166.62 0.0301 0.0013  
 Mercury -61165-01-16 06:42 J -20619078.33 -20619078.22 -20619078.10 0.0301 0.0138  
 Mercury -61165-04-13 19:40 J -20618989.74 -20618989.68 -20618989.62 0.0302 0.0267  
 Earth -61165-06-26 04:47 J -20618916.36 -20618916.30 -20618916.23 0.0302 0.0290

Moon -61165-06-26 07:54 J -20618916.23 -20618916.17 -20618916.09 0.0302 0.0289 \*  
 Mars -61164-03-17 09:06 J -20618652.24 -20618652.12 -20618651.97 0.0303 0.0259  
 Earth -61164-07-11 04:18 J -20618536.56 -20618536.32 -20618536.08 0.0303 0.0013  
 Moon -61164-07-11 07:54 J -20618536.41 -20618536.17 -20618535.93 0.0303 0.0011 \*  
 Earth -61163-07-26 02:09 J -20618156.52 -20618156.41 -20618156.29 0.0303 0.0267  
 Moon -61163-07-26 03:49 J -20618156.45 -20618156.34 -20618156.21 0.0303 0.0263 \*  
 Venus -61158-08-07 23:01 J -20616317.74 -20616317.54 -20616317.33 0.0285 0.0074  
 Mercury -61152-05-21 23:59 J -20614203.61 -20614203.50 -20614203.37 0.0262 0.0198  
 Mercury -61152-08-18 20:09 J -20614114.84 -20614114.66 -20614114.48 0.0262 0.0076  
 Mercury -61152-11-15 16:04 J -20614026.01 -20614025.83 -20614025.64 0.0261 0.0046  
 Mercury -61151-02-12 12:13 J -20613937.13 -20613936.99 -20613936.85 0.0261 0.0168  
 Moon -61151-12-25 06:13 J -20613621.38 -20613621.24 -20613621.08 0.0259 0.0201  
 Earth -61151-12-25 08:52 J -20613621.27 -20613621.13 -20613620.98 0.0259 0.0209 \*  
 Mars -61150-03-20 09:49 J -20613536.36 -20613536.09 -20613535.79 0.0259 0.0120  
 Earth -61149-01-05 21:06 J -20613244.86 -20613244.62 -20613244.37 0.0259 0.0033  
 Moon -61149-01-05 23:16 J -20613244.77 -20613244.53 -20613244.29 0.0259 0.0037 \*  
 Earth -61148-01-16 09:49 J -20612868.28 -20612868.09 -20612867.87 0.0259 0.0144  
 Moon -61148-01-16 12:57 J -20612868.18 -20612867.96 -20612867.73 0.0259 0.0131 \*  
 Venus -61142-12-01 16:18 J -20610358.04 -20610357.82 -20610357.61 0.0278 0.0011  
 Mercury -61137-09-11 17:01 J -20608611.81 -20608611.79 -20608611.77 0.0299 0.0293  
 Mercury -61137-12-09 06:13 J -20608523.35 -20608523.24 -20608523.13 0.0300 0.0164  
 Mercury -61136-03-07 19:11 J -20608434.83 -20608434.70 -20608434.57 0.0300 0.0035  
 Mars -61136-05-04 05:16 J -20608377.30 -20608377.28 -20608377.22 0.0301 0.0297  
 Mercury -61136-06-04 08:09 J -20608346.28 -20608346.16 -20608346.03 0.0301 0.0096  
 Mercury -61136-08-31 21:06 J -20608257.70 -20608257.62 -20608257.53 0.0302 0.0224  
 Moon -61135-07-04 15:35 J -20607951.06 -20607950.85 -20607950.64 0.0303 0.0145  
 Earth -61135-07-04 18:57 J -20607950.92 -20607950.71 -20607950.50 0.0303 0.0143 \*  
 Moon -61134-07-19 17:01 J -20607571.00 -20607570.79 -20607570.58 0.0303 0.0135  
 Earth -61134-07-19 17:59 J -20607570.96 -20607570.75 -20607570.53 0.0303 0.0139 \*  
 Venus -61128-02-17 02:52 J -20605531.59 -20605531.38 -20605531.17 0.0285 0.0020



Mercury -61123-10-08 23:45 J -20603471.59 -20603471.51 -20603471.42 0.0263 0.0231  
 Mercury -61122-01-05 19:25 J -20603382.85 -20603382.69 -20603382.51 0.0262 0.0111  
 Mercury -61122-04-04 15:35 J -20603294.04 -20603293.85 -20603293.66 0.0262 0.0012  
 Mercury -61122-07-02 11:30 J -20603205.17 -20603205.02 -20603204.85 0.0261 0.0135  
 Mercury -61122-09-29 07:40 J -20603116.20 -20603116.18 -20603116.14 0.0261 0.0257  
 Moon -61121-12-31 02:23 J -20602657.62 -20602657.40 -20602657.16 0.0259 0.0110  
 Earth -61121-12-31 04:47 J -20602657.53 -20602657.30 -20602657.07 0.0259 0.0110 \*  
 Moon -61119-01-11 13:54 J -20602281.16 -20602280.92 -20602280.68 0.0259 0.0056  
 Earth -61119-01-11 17:01 J -20602281.02 -20602280.79 -20602280.54 0.0259 0.0067 \*  
 Earth -61118-01-23 06:57 J -20601904.30 -20601904.21 -20601904.12 0.0259 0.0242  
 Moon -61118-01-23 08:37 J -20601904.23 -20601904.14 -20601904.02 0.0259 0.0232 \*  
 Venus -61112-06-12 21:06 J -20599571.83 -20599571.62 -20599571.41 0.0277 0.0062  
 Mercury -61107-04-28 07:25 J -20597791.28 -20597791.19 -20597791.09 0.0299 0.0207  
 Mercury -61107-07-25 20:23 J -20597702.77 -20597702.65 -20597702.52 0.0300 0.0078  
 Mercury -61107-10-22 09:21 J -20597614.23 -20597614.11 -20597613.98 0.0301 0.0053  
 Mercury -61106-01-18 22:18 J -20597525.67 -20597525.57 -20597525.46 0.0301 0.0181  
 Mars -61106-06-22 23:01 J -20597370.81 -20597370.54 -20597370.27 0.0302 0.0013  
 Earth -61106-06-28 07:11 J -20597365.30 -20597365.20 -20597365.09 0.0302 0.0269  
 Moon -61106-06-28 09:49 J -20597365.19 -20597365.09 -20597364.97 0.0302 0.0271 \*  
 Moon -61105-07-12 06:13 J -20596985.49 -20596985.24 -20596984.99 0.0303 0.0007  
 Earth -61105-07-12 06:13 J -20596985.48 -20596985.24 -20596985.00 0.0303 0.0010 \*  
 Moon -61104-07-27 00:42 J -20596605.55 -20596605.47 -20596605.37 0.0303 0.0279  
 Earth -61104-07-27 03:35 J -20596605.42 -20596605.35 -20596605.28 0.0303 0.0288 \*  
 Venus -61099-08-30 04:18 J -20594745.53 -20594745.32 -20594745.12 0.0285 0.0023  
 Mercury -61093-05-24 17:59 J -20592650.90 -20592650.75 -20592650.61 0.0262 0.0154  
 Mercury -61093-08-21 13:54 J -20592562.11 -20592561.92 -20592561.74 0.0262 0.0032  
 Mercury -61093-11-18 09:49 J -20592473.26 -20592473.09 -20592472.91 0.0261 0.0091  
 Mercury -61092-02-15 05:59 J -20592384.35 -20592384.25 -20592384.14 0.0261 0.0213  
 Mars -61092-06-23 21:06 J -20592255.92 -20592255.62 -20592255.31 0.0260 0.0088  
 Earth -61092-12-26 07:54 J -20592070.32 -20592070.17 -20592069.99 0.0260 0.0193

Moon -61092-12-26 10:04 J -20592070.24 -20592070.08 -20592069.91 0.0260 0.0189 \*  
 Earth -61090-01-06 21:06 J -20591693.87 -20591693.62 -20591693.37 0.0259 0.0016  
 Moon -61090-01-07 00:42 J -20591693.72 -20591693.47 -20591693.22 0.0259 0.0023 \*  
 Moon -61089-01-18 09:06 J -20591317.33 -20591317.12 -20591316.90 0.0259 0.0148  
 Earth -61089-01-18 10:33 J -20591317.25 -20591317.06 -20591316.86 0.0259 0.0161 \*  
 Venus -61083-12-24 01:40 J -20588785.63 -20588785.43 -20588785.24 0.0278 0.0116  
 Mercury -61078-09-15 09:06 J -20587059.19 -20587059.12 -20587059.04 0.0299 0.0245  
 Mercury -61078-12-12 22:18 J -20586970.69 -20586970.57 -20586970.45 0.0300 0.0117  
 Mercury -61077-03-10 11:16 J -20586882.16 -20586882.03 -20586881.90 0.0300 0.0013  
 Mercury -61077-06-07 00:13 J -20586793.61 -20586793.49 -20586793.38 0.0301 0.0142  
 Mercury -61077-09-03 12:57 J -20586705.01 -20586704.96 -20586704.90 0.0301 0.0270  
 Earth -61076-07-05 23:16 J -20586399.75 -20586399.53 -20586399.31 0.0303 0.0118  
 Moon -61076-07-06 00:13 J -20586399.70 -20586399.49 -20586399.28 0.0303 0.0124 \*  
 Mars -61076-08-10 18:13 J -20586363.83 -20586363.74 -20586363.63 0.0303 0.0278  
 Earth -61075-07-20 21:49 J -20586019.79 -20586019.59 -20586019.38 0.0303 0.0163  
 Moon -61075-07-21 00:57 J -20586019.66 -20586019.46 -20586019.25 0.0303 0.0156 \*  
 Venus -61069-03-11 08:52 J -20583959.33 -20583959.13 -20583958.93 0.0284 0.0078  
 Mercury -61064-10-11 17:45 J -20581918.88 -20581918.76 -20581918.62 0.0263 0.0186  
 Mercury -61063-01-08 13:54 J -20581830.10 -20581829.92 -20581829.74 0.0263 0.0064  
 Mercury -61063-04-07 09:49 J -20581741.27 -20581741.09 -20581740.91 0.0262 0.0059  
 Mercury -61063-07-05 05:59 J -20581652.38 -20581652.25 -20581652.11 0.0262 0.0182  
 Moon -61063-12-21 15:21 J -20581482.89 -20581482.86 -20581482.82 0.0261 0.0258  
 Mars -61062-08-13 22:33 J -20581247.82 -20581247.56 -20581247.27 0.0260 0.0138  
 Moon -61061-01-02 02:09 J -20581106.63 -20581106.41 -20581106.17 0.0260 0.0097  
 Earth -61061-01-02 05:45 J -20581106.49 -20581106.26 -20581106.03 0.0260 0.0092 \*  
 Earth -61060-01-12 18:42 J -20580729.95 -20580729.72 -20580729.48 0.0259 0.0086  
 Moon -61060-01-12 19:40 J -20580729.91 -20580729.68 -20580729.45 0.0259 0.0073 \*  
 Moon -61059-01-24 12:28 J -20580353.03 -20580352.98 -20580352.90 0.0260 0.0250  
 Venus -61054-11-18 18:13 J -20578228.86 -20578228.74 -20578228.61 0.0275 0.0224  
 Venus -61053-07-05 07:25 J -20577999.35 -20577999.19 -20577999.01 0.0278 0.0173

Mercury -61048-02-01 10:47 J -20576327.08 -20576327.05 -20576327.01 0.0298 0.0284  
 Mercury -61048-04-30 23:59 J -20576238.61 -20576238.50 -20576238.39 0.0299 0.0156  
 Mercury -61048-07-28 12:57 J -20576150.09 -20576149.96 -20576149.83 0.0300 0.0027  
 Mars -61048-09-27 16:33 J -20576088.91 -20576088.81 -20576088.70 0.0300 0.0277  
 Mercury -61048-10-25 01:54 J -20576061.55 -20576061.42 -20576061.30 0.0300 0.0102  
 Mercury -61047-01-21 14:37 J -20575972.97 -20575972.89 -20575972.80 0.0301 0.0230  
 Moon -61047-06-29 12:42 J -20575814.10 -20575813.97 -20575813.82 0.0302 0.0250  
 Earth -61047-06-29 14:37 J -20575814.02 -20575813.89 -20575813.74 0.0302 0.0244 \*  
 Moon -61046-07-14 09:35 J -20575434.34 -20575434.10 -20575433.86 0.0303 0.0027  
 Earth -61046-07-14 13:25 J -20575434.18 -20575433.94 -20575433.70 0.0303 0.0037 \*  
 Venus -61040-09-21 11:59 J -20573173.19 -20573173.00 -20573172.82 0.0284 0.0128  
 Mercury -61034-02-28 16:33 J -20571186.89 -20571186.81 -20571186.71 0.0263 0.0226  
 Mercury -61034-05-28 12:42 J -20571098.14 -20571097.97 -20571097.80 0.0262 0.0104  
 Mercury -61034-08-25 08:37 J -20571009.32 -20571009.14 -20571008.95 0.0262 0.0019  
 Mercury -61034-11-22 04:47 J -20570920.45 -20570920.30 -20570920.14 0.0261 0.0141  
 Earth -61033-12-27 10:33 J -20570519.23 -20570519.06 -20570518.86 0.0260 0.0175  
 Moon -61033-12-27 14:23 J -20570519.08 -20570518.90 -20570518.71 0.0260 0.0172 \*  
 Moon -61031-01-07 23:16 J -20570142.79 -20570142.53 -20570142.27 0.0259 0.0008  
 Earth -61031-01-08 00:13 J -20570142.74 -20570142.49 -20570142.24 0.0259 0.0004 \*  
 Moon -61030-01-19 10:18 J -20569766.25 -20569766.07 -20569765.87 0.0259 0.0167  
 Earth -61030-01-19 13:54 J -20569766.08 -20569765.92 -20569765.73 0.0259 0.0181 \*  
 Venus -61024-05-30 23:45 J -20567442.68 -20567442.51 -20567442.34 0.0276 0.0169  
 Venus -61023-01-15 13:11 J -20567213.06 -20567212.95 -20567212.82 0.0279 0.0231  
 Mercury -61019-09-18 02:09 J -20565506.51 -20565506.41 -20565506.31 0.0299 0.0190  
 Mercury -61019-12-15 15:06 J -20565418.00 -20565417.87 -20565417.74 0.0300 0.0061  
 Mercury -61018-03-14 04:04 J -20565329.46 -20565329.33 -20565329.20 0.0300 0.0068  
 Mercury -61018-06-10 17:01 J -20565240.89 -20565240.79 -20565240.69 0.0301 0.0196  
 Mars -61018-11-16 21:49 J -20565081.86 -20565081.59 -20565081.32 0.0302 0.0016  
 Earth -61017-07-07 09:06 J -20564848.34 -20564848.12 -20564847.88 0.0303 0.0090  
 Moon -61017-07-07 12:57 J -20564848.19 -20564847.96 -20564847.73 0.0303 0.0099 \*

Earth	-61016-07-22 07:11 J	-20564468.38	-20564468.20	-20564468.00	0.0303	0.0192
Moon	-61016-07-22 10:04 J	-20564468.27	-20564468.08	-20564467.88	0.0303	0.0180 *
Venus	-61011-08-17 06:28 J	-20562616.35	-20562616.23	-20562616.11	0.0287	0.0231
Venus	-61010-04-03 17:45 J	-20562386.90	-20562386.76	-20562386.59	0.0284	0.0188
Mercury	-61005-07-17 17:16 J	-20560454.82	-20560454.78	-20560454.74	0.0264	0.0255
Mercury	-61005-10-14 13:11 J	-20560366.11	-20560365.95	-20560365.79	0.0263	0.0133
Mercury	-61004-01-11 09:06 J	-20560277.30	-20560277.12	-20560276.93	0.0263	0.0011
Mercury	-61004-04-10 05:16 J	-20560188.45	-20560188.28	-20560188.11	0.0262	0.0112
Mercury	-61004-07-08 01:25 J	-20560099.51	-20560099.44	-20560099.35	0.0262	0.0236
Mars	-61004-11-17 19:40 J	-20559966.99	-20559966.68	-20559966.36	0.0261	0.0062
Moon	-61004-12-22 16:47 J	-20559931.88	-20559931.80	-20559931.69	0.0261	0.0241
Earth	-61004-12-22 20:23 J	-20559931.71	-20559931.65	-20559931.57	0.0261	0.0250 *
Earth	-61002-01-03 10:04 J	-20559555.32	-20559555.08	-20559554.84	0.0260	0.0072
Moon	-61002-01-03 10:33 J	-20559555.28	-20559555.06	-20559554.83	0.0260	0.0079 *
Earth	-61001-01-14 23:45 J	-20559178.74	-20559178.51	-20559178.28	0.0259	0.0106
Moon	-61001-01-15 03:35 J	-20559178.58	-20559178.35	-20559178.11	0.0259	0.0092 *

# 61ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 61st millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-60995-12-11 07:40 J	-20556656.38	-20556656.18	-20556655.98	0.0276	0.0107		
Mercury	-60989-02-05 04:18 J	-20554774.40	-20554774.32	-20554774.23	0.0298	0.0223		
Mercury	-60989-05-03 17:30 J	-20554685.90	-20554685.77	-20554685.65	0.0299	0.0095		

Mercury -60989-07-31 06:28 J -20554597.36 -20554597.23 -20554597.10 0.0300 0.0034

Mercury -60989-10-27 19:11 J -20554508.81 -20554508.70 -20554508.59 0.0301 0.0162

Mercury -60988-01-24 07:54 J -20554420.19 -20554420.17 -20554420.13 0.0301 0.0290

Moon -60988-07-01 01:25 J -20554262.60 -20554262.44 -20554262.27 0.0302 0.0222

Earth -60988-07-01 04:47 J -20554262.46 -20554262.30 -20554262.12 0.0302 0.0214 \*

Moon -60987-07-16 01:11 J -20553882.68 -20553882.45 -20553882.22 0.0303 0.0057

Earth -60987-07-16 03:06 J -20553882.60 -20553882.37 -20553882.13 0.0303 0.0068 \*

Venus -60981-02-27 11:16 J -20551830.19 -20551830.03 -20551829.86 0.0287 0.0175

Venus -60981-10-13 22:18 J -20551600.67 -20551600.57 -20551600.45 0.0284 0.0242

Mercury -60975-03-03 12:28 J -20549634.12 -20549633.98 -20549633.84 0.0263 0.0170

Mercury -60975-05-31 08:23 J -20549545.33 -20549545.15 -20549544.96 0.0262 0.0049

Mercury -60975-08-28 04:33 J -20549456.49 -20549456.31 -20549456.13 0.0262 0.0075

Mercury -60975-11-25 00:57 J -20549367.58 -20549367.46 -20549367.34 0.0261 0.0198

Earth -60974-12-29 16:33 J -20548968.00 -20548967.81 -20548967.60 0.0260 0.0155

Moon -60974-12-29 17:01 J -20548967.99 -20548967.79 -20548967.58 0.0260 0.0154 \*

Mars -60973-01-07 17:59 J -20548958.98 -20548958.75 -20548958.49 0.0260 0.0170

Moon -60972-01-09 02:52 J -20548591.63 -20548591.38 -20548591.13 0.0259 0.0012

Earth -60972-01-09 06:28 J -20548591.47 -20548591.23 -20548590.98 0.0259 0.0025 \*

Moon -60971-01-20 20:09 J -20548214.81 -20548214.66 -20548214.48 0.0259 0.0191

Earth -60971-01-20 20:52 J -20548214.77 -20548214.63 -20548214.46 0.0259 0.0203 \*

Venus -60965-06-22 13:54 J -20545870.13 -20545869.92 -20545869.71 0.0277 0.0048

Mercury -60960-06-24 06:42 J -20544042.28 -20544042.22 -20544042.15 0.0299 0.0255

Mercury -60960-09-20 19:54 J -20543953.79 -20543953.67 -20543953.55 0.0299 0.0127

Mercury -60960-12-18 08:52 J -20543865.26 -20543865.13 -20543865.00 0.0300 0.0002

Mars -60959-02-22 04:33 J -20543799.47 -20543799.31 -20543799.14 0.0300 0.0240

Mercury -60959-03-16 21:35 J -20543776.71 -20543776.60 -20543776.48 0.0301 0.0131

Mercury -60959-06-13 10:33 J -20543688.12 -20543688.06 -20543687.99 0.0301 0.0258

Earth -60958-07-10 00:28 J -20543296.71 -20543296.48 -20543296.24 0.0303 0.0058

Moon -60958-07-10 01:54 J -20543296.66 -20543296.42 -20543296.17 0.0303 0.0066 \*

Moon -60957-07-23 20:09 J -20542916.83 -20542916.66 -20542916.48 0.0303 0.0209

Earth -60957-07-23 21:49 J -20542916.74 -20542916.59 -20542916.42 0.0303 0.0224 \*  
 Venus -60952-09-08 18:28 J -20541043.92 -20541043.73 -20541043.53 0.0286 0.0109  
 Mercury -60946-07-21 13:25 J -20538902.06 -20538901.94 -20538901.81 0.0263 0.0197  
 Mercury -60946-10-18 09:21 J -20538813.28 -20538813.11 -20538812.93 0.0263 0.0075  
 Mercury -60945-01-15 05:30 J -20538724.45 -20538724.27 -20538724.08 0.0262 0.0049  
 Mars -60945-02-23 03:06 J -20538685.42 -20538685.37 -20538685.28 0.0262 0.0255  
 Mercury -60945-04-13 01:40 J -20538635.56 -20538635.43 -20538635.28 0.0262 0.0172  
 Moon -60945-12-24 02:37 J -20538380.50 -20538380.39 -20538380.26 0.0261 0.0223  
 Earth -60945-12-24 03:35 J -20538380.45 -20538380.35 -20538380.22 0.0261 0.0230 \*  
 Earth -60943-01-04 17:45 J -20538004.01 -20538003.76 -20538003.52 0.0260 0.0051  
 Moon -60943-01-04 21:06 J -20538003.85 -20538003.62 -20538003.37 0.0260 0.0059 \*  
 Earth -60942-01-16 07:40 J -20537627.39 -20537627.18 -20537626.95 0.0260 0.0129  
 Moon -60942-01-16 08:37 J -20537627.37 -20537627.14 -20537626.90 0.0260 0.0114 \*  
 Venus -60935-01-02 23:01 J -20535083.76 -20535083.54 -20535083.33 0.0277 0.0018  
 Mercury -60931-11-11 09:35 J -20533310.14 -20533310.10 -20533310.06 0.0298 0.0284  
 Mercury -60930-02-07 22:33 J -20533221.67 -20533221.56 -20533221.44 0.0299 0.0157  
 Mercury -60930-05-07 11:45 J -20533133.14 -20533133.01 -20533132.88 0.0299 0.0029  
 Mercury -60930-08-04 00:28 J -20533044.60 -20533044.48 -20533044.35 0.0300 0.0101  
 Mercury -60930-10-31 13:25 J -20532956.02 -20532955.94 -20532955.86 0.0301 0.0228  
 Mars -60929-04-12 13:25 J -20532792.19 -20532791.94 -20532791.67 0.0302 0.0062  
 Moon -60929-07-02 22:18 J -20532710.74 -20532710.57 -20532710.38 0.0302 0.0187  
 Earth -60929-07-02 23:16 J -20532710.71 -20532710.53 -20532710.33 0.0302 0.0181 \*  
 Earth -60928-07-17 21:06 J -20532330.84 -20532330.62 -20532330.39 0.0303 0.0102  
 Moon -60928-07-17 23:16 J -20532330.75 -20532330.53 -20532330.30 0.0303 0.0091 \*  
 Venus -60922-03-22 00:57 J -20530257.66 -20530257.46 -20530257.25 0.0286 0.0048  
 Mercury -60917-12-07 13:11 J -20528170.03 -20528169.95 -20528169.85 0.0263 0.0231  
 Mercury -60916-03-06 09:06 J -20528081.28 -20528081.12 -20528080.94 0.0263 0.0109  
 Mercury -60916-06-03 05:16 J -20527992.46 -20527992.28 -20527992.09 0.0262 0.0015  
 Mercury -60916-08-31 01:25 J -20527903.59 -20527903.44 -20527903.27 0.0262 0.0137  
 Mercury -60916-11-27 21:35 J -20527814.60 -20527814.60 -20527814.57 0.0261 0.0261

Mars -60915-04-13 23:59 J -20527677.82 -20527677.50 -20527677.18 0.0261 0.0024  
 Moon -60915-12-30 21:49 J -20527416.79 -20527416.59 -20527416.36 0.0260 0.0135  
 Earth -60915-12-31 01:25 J -20527416.65 -20527416.44 -20527416.22 0.0260 0.0133 \*  
 Moon -60913-01-11 14:23 J -20527040.14 -20527039.90 -20527039.66 0.0259 0.0034  
 Earth -60913-01-11 15:35 J -20527040.10 -20527039.85 -20527039.61 0.0259 0.0047 \*  
 Earth -60912-01-22 06:13 J -20526663.35 -20526663.24 -20526663.10 0.0260 0.0226  
 Moon -60912-01-22 09:49 J -20526663.22 -20526663.09 -20526662.94 0.0260 0.0213 \*  
 Venus -60906-07-16 05:59 J -20524297.45 -20524297.25 -20524297.04 0.0278 0.0080  
 Mercury -60901-06-27 01:25 J -20522489.54 -20522489.44 -20522489.34 0.0299 0.0185  
 Mercury -60901-09-23 14:23 J -20522401.03 -20522400.90 -20522400.77 0.0300 0.0057  
 Mercury -60901-12-21 03:21 J -20522312.49 -20522312.36 -20522312.23 0.0300 0.0072  
 Mercury -60900-03-19 16:04 J -20522223.92 -20522223.83 -20522223.73 0.0301 0.0200  
 Earth -60900-06-26 23:01 J -20522124.56 -20522124.54 -20522124.51 0.0301 0.0299  
 Moon -60899-07-11 18:42 J -20521744.96 -20521744.72 -20521744.47 0.0303 0.0031  
 Earth -60899-07-11 21:06 J -20521744.86 -20521744.62 -20521744.38 0.0303 0.0021 \*  
 Moon -60898-07-26 14:23 J -20521365.03 -20521364.90 -20521364.75 0.0302 0.0245  
 Earth -60898-07-26 18:13 J -20521364.87 -20521364.74 -20521364.62 0.0302 0.0259 \*  
 Venus -60893-10-01 09:21 J -20519471.32 -20519471.11 -20519470.91 0.0285 0.0022  
 Mercury -60887-04-26 14:23 J -20517437.93 -20517437.90 -20517437.84 0.0264 0.0256  
 Mercury -60887-07-24 10:33 J -20517349.22 -20517349.06 -20517348.90 0.0263 0.0134  
 Mercury -60887-10-21 06:42 J -20517260.41 -20517260.22 -20517260.04 0.0263 0.0011  
 Mercury -60886-01-18 02:52 J -20517171.55 -20517171.38 -20517171.21 0.0262 0.0112  
 Mercury -60886-04-16 23:01 J -20517082.61 -20517082.54 -20517082.45 0.0262 0.0236  
 Earth -60886-12-26 13:11 J -20516829.09 -20516828.95 -20516828.79 0.0261 0.0209  
 Moon -60886-12-26 16:18 J -20516828.96 -20516828.82 -20516828.66 0.0261 0.0204 \*  
 Mars -60885-06-03 12:28 J -20516669.16 -20516668.98 -20516668.78 0.0260 0.0210  
 Earth -60884-01-06 03:35 J -20516452.60 -20516452.35 -20516452.11 0.0260 0.0029  
 Moon -60884-01-06 05:30 J -20516452.52 -20516452.27 -20516452.01 0.0260 0.0036 \*  
 Moon -60883-01-17 14:23 J -20516076.10 -20516075.90 -20516075.67 0.0260 0.0138  
 Earth -60883-01-17 17:59 J -20516075.95 -20516075.75 -20516075.54 0.0260 0.0151 \*

Venus -60877-06-10 02:09 J -20513740.50 -20513740.41 -20513740.31 0.0275 0.0247  
 Venus -60876-01-25 15:49 J -20513511.02 -20513510.84 -20513510.66 0.0278 0.0149  
 Mercury -60872-11-14 04:18 J -20511757.41 -20511757.32 -20511757.22 0.0298 0.0212  
 Mercury -60871-02-10 17:30 J -20511668.90 -20511668.77 -20511668.65 0.0299 0.0084  
 Mercury -60871-05-10 06:28 J -20511580.36 -20511580.23 -20511580.10 0.0300 0.0045  
 Mars -60871-07-20 07:11 J -20511509.42 -20511509.20 -20511508.99 0.0300 0.0182  
 Mercury -60871-08-06 19:11 J -20511491.80 -20511491.70 -20511491.59 0.0300 0.0172  
 Mercury -60871-11-03 07:54 J -20511403.18 -20511403.17 -20511403.15 0.0301 0.0299  
 Earth -60870-07-05 21:21 J -20511158.81 -20511158.61 -20511158.39 0.0302 0.0145  
 Moon -60870-07-05 23:59 J -20511158.70 -20511158.50 -20511158.29 0.0302 0.0152 \*  
 Earth -60869-07-19 18:57 J -20510778.93 -20510778.71 -20510778.50 0.0303 0.0138  
 Moon -60869-07-19 22:18 J -20510778.79 -20510778.57 -20510778.35 0.0303 0.0127 \*  
 Venus -60863-04-13 16:33 J -20508685.01 -20508684.81 -20508684.62 0.0285 0.0086  
 Mercury -60858-12-11 10:47 J -20506617.19 -20506617.05 -20506616.90 0.0263 0.0165  
 Mercury -60857-03-09 06:42 J -20506528.40 -20506528.22 -20506528.03 0.0263 0.0044  
 Mercury -60857-06-06 02:52 J -20506439.55 -20506439.38 -20506439.20 0.0262 0.0080  
 Mars -60857-07-19 15:21 J -20506396.03 -20506395.86 -20506395.66 0.0262 0.0213  
 Mercury -60857-09-02 23:16 J -20506350.65 -20506350.53 -20506350.41 0.0262 0.0203  
 Moon -60855-01-01 09:21 J -20505865.32 -20505865.11 -20505864.89 0.0260 0.0114  
 Earth -60855-01-01 11:59 J -20505865.22 -20505865.00 -20505864.77 0.0260 0.0111 \*  
 Earth -60854-01-13 02:09 J -20505488.65 -20505488.41 -20505488.16 0.0259 0.0070  
 Moon -60854-01-13 05:01 J -20505488.53 -20505488.29 -20505488.05 0.0259 0.0057 \*  
 Earth -60853-01-24 17:16 J -20505111.83 -20505111.78 -20505111.69 0.0260 0.0249  
 Moon -60853-01-24 19:54 J -20505111.76 -20505111.67 -20505111.56 0.0260 0.0238 \*  
 Venus -60848-12-21 09:06 J -20502954.27 -20502954.12 -20502953.95 0.0276 0.0187  
 Venus -60847-08-07 22:47 J -20502724.68 -20502724.55 -20502724.40 0.0279 0.0211  
 Mercury -60842-04-03 06:57 J -20501025.28 -20501025.21 -20501025.13 0.0299 0.0242  
 Mercury -60842-06-30 20:09 J -20500936.78 -20500936.66 -20500936.54 0.0299 0.0113  
 Mercury -60842-09-27 09:06 J -20500848.25 -20500848.12 -20500847.99 0.0300 0.0016  
 Mercury -60842-12-24 22:04 J -20500759.70 -20500759.58 -20500759.47 0.0301 0.0143



Mercury -60841-03-22 10:47 J -20500671.10 -20500671.05 -20500670.99 0.0301 0.0271  
 Moon -60841-06-28 17:45 J -20500572.85 -20500572.76 -20500572.64 0.0302 0.0270  
 Earth -60841-06-28 21:06 J -20500572.73 -20500572.62 -20500572.50 0.0302 0.0264 \*  
 Mars -60841-09-07 16:18 J -20500502.06 -20500501.82 -20500501.57 0.0302 0.0112  
 Moon -60840-07-13 15:35 J -20500193.08 -20500192.85 -20500192.61 0.0303 0.0010  
 Earth -60840-07-13 19:11 J -20500192.94 -20500192.70 -20500192.46 0.0303 0.0017 \*  
 Moon -60839-07-28 14:09 J -20499812.97 -20499812.91 -20499812.82 0.0302 0.0284  
 Earth -60839-07-28 15:21 J -20499812.89 -20499812.86 -20499812.80 0.0302 0.0296 \*  
 Venus -60834-03-09 13:25 J -20498128.01 -20498127.94 -20498127.85 0.0287 0.0264  
 Venus -60834-10-25 00:57 J -20497898.63 -20497898.46 -20497898.28 0.0284 0.0155  
 Mercury -60828-04-29 12:13 J -20495885.11 -20495884.99 -20495884.86 0.0263 0.0190  
 Mercury -60828-07-27 08:09 J -20495796.34 -20495796.16 -20495795.98 0.0263 0.0068  
 Mercury -60828-10-24 04:18 J -20495707.50 -20495707.32 -20495707.13 0.0262 0.0056  
 Mercury -60827-01-21 00:28 J -20495618.61 -20495618.48 -20495618.34 0.0262 0.0179  
 Mars -60827-09-08 22:47 J -20495387.87 -20495387.55 -20495387.23 0.0261 0.0021  
 Earth -60827-12-27 23:59 J -20495277.66 -20495277.50 -20495277.32 0.0261 0.0187  
 Moon -60827-12-28 02:52 J -20495277.55 -20495277.38 -20495277.19 0.0261 0.0184 \*  
 Moon -60825-01-08 12:13 J -20494901.25 -20494900.99 -20494900.73 0.0260 0.0016  
 Earth -60825-01-08 14:23 J -20494901.15 -20494900.90 -20494900.65 0.0260 0.0006 \*  
 Moon -60824-01-19 02:23 J -20494524.59 -20494524.40 -20494524.21 0.0260 0.0162  
 Earth -60824-01-19 05:01 J -20494524.47 -20494524.29 -20494524.10 0.0260 0.0174 \*  
 Venus -60818-07-03 18:28 J -20492167.92 -20492167.73 -20492167.53 0.0276 0.0119  
 Mercury -60813-08-20 10:18 J -20490293.13 -20490293.07 -20490293.01 0.0298 0.0267  
 Mercury -60813-11-16 23:16 J -20490204.64 -20490204.53 -20490204.41 0.0299 0.0139  
 Mercury -60812-02-13 12:28 J -20490116.12 -20490115.98 -20490115.85 0.0299 0.0015  
 Mercury -60812-05-13 01:11 J -20490027.57 -20490027.45 -20490027.33 0.0300 0.0117  
 Mercury -60812-08-09 13:54 J -20489938.99 -20489938.92 -20489938.84 0.0301 0.0245  
 Earth -60811-07-07 21:06 J -20489606.85 -20489606.62 -20489606.40 0.0302 0.0108  
 Moon -60811-07-08 00:28 J -20489606.70 -20489606.48 -20489606.24 0.0302 0.0115 \*  
 Earth -60810-07-22 17:59 J -20489226.93 -20489226.75 -20489226.54 0.0302 0.0176

Moon -60810-07-22 19:25 J -20489226.89 -20489226.69 -20489226.48 0.0302 0.0166 \*  
 Venus -60805-09-18 21:49 J -20487341.74 -20487341.59 -20487341.43 0.0287 0.0194  
 Venus -60804-05-06 09:06 J -20487112.25 -20487112.12 -20487111.99 0.0284 0.0222  
 Mercury -60799-09-16 12:42 J -20485153.07 -20485152.97 -20485152.87 0.0263 0.0220  
 Mercury -60799-12-14 08:37 J -20485064.31 -20485064.14 -20485063.96 0.0263 0.0098  
 Mercury -60798-03-13 04:47 J -20484975.49 -20484975.30 -20484975.12 0.0262 0.0025  
 Mercury -60798-06-10 00:57 J -20484886.62 -20484886.46 -20484886.31 0.0262 0.0147  
 Moon -60798-12-23 06:13 J -20484690.24 -20484690.24 -20484690.23 0.0261 0.0261  
 Mars -60797-10-29 04:33 J -20484379.34 -20484379.31 -20484379.23 0.0260 0.0256  
 Earth -60796-01-02 23:16 J -20484313.76 -20484313.53 -20484313.30 0.0260 0.0088  
 Moon -60796-01-03 00:57 J -20484313.68 -20484313.46 -20484313.23 0.0260 0.0094 \*  
 Earth -60795-01-14 13:25 J -20483937.17 -20483936.94 -20483936.71 0.0259 0.0093  
 Moon -60795-01-14 16:33 J -20483937.04 -20483936.81 -20483936.56 0.0259 0.0080 \*  
 Venus -60788-01-13 01:25 J -20481381.65 -20481381.44 -20481381.23 0.0277 0.0059  
 Mercury -60783-01-07 12:42 J -20479560.97 -20479560.97 -20479560.96 0.0298 0.0298  
 Mercury -60783-04-06 01:54 J -20479472.53 -20479472.42 -20479472.31 0.0299 0.0170  
 Mercury -60783-07-03 14:52 J -20479384.01 -20479383.88 -20479383.75 0.0300 0.0042  
 Mercury -60783-09-30 03:49 J -20479295.46 -20479295.34 -20479295.21 0.0300 0.0087  
 Mars -60783-12-15 10:18 J -20479219.30 -20479219.07 -20479218.82 0.0301 0.0133  
 Mercury -60783-12-27 16:33 J -20479206.89 -20479206.81 -20479206.71 0.0301 0.0215  
 Moon -60782-07-01 16:18 J -20479020.96 -20479020.82 -20479020.67 0.0302 0.0236  
 Earth -60782-07-01 19:11 J -20479020.84 -20479020.70 -20479020.53 0.0302 0.0229 \*  
 Moon -60781-07-15 16:33 J -20478641.04 -20478640.81 -20478640.58 0.0303 0.0045  
 Earth -60781-07-15 17:16 J -20478641.02 -20478640.78 -20478640.54 0.0303 0.0054 \*  
 Venus -60775-04-01 05:45 J -20476555.44 -20476555.26 -20476555.07 0.0286 0.0126  
 Mercury -60769-02-03 13:54 J -20474420.98 -20474420.92 -20474420.85 0.0264 0.0245  
 Mercury -60769-05-02 09:49 J -20474332.25 -20474332.09 -20474331.92 0.0263 0.0123  
 Mercury -60769-07-30 05:59 J -20474243.44 -20474243.25 -20474243.06 0.0263 0.0002  
 Mercury -60769-10-27 02:09 J -20474154.58 -20474154.41 -20474154.25 0.0262 0.0122  
 Mars -60769-12-14 14:23 J -20474106.14 -20474105.90 -20474105.65 0.0262 0.0167

Mercury -60768-01-23 22:18 J -20474065.63 -20474065.57 -20474065.50 0.0262 0.0245  
 Moon -60768-12-29 09:06 J -20473726.31 -20473726.12 -20473725.92 0.0260 0.0166  
 Earth -60768-12-29 11:01 J -20473726.23 -20473726.04 -20473725.85 0.0260 0.0165 \*  
 Moon -60766-01-09 21:21 J -20473349.85 -20473349.61 -20473349.36 0.0260 0.0006  
 Earth -60766-01-10 01:11 J -20473349.70 -20473349.45 -20473349.20 0.0260 0.0017 \*  
 Earth -60765-01-21 15:35 J -20472973.00 -20472972.85 -20472972.68 0.0260 0.0197  
 Moon -60765-01-21 16:47 J -20472972.95 -20472972.80 -20472972.62 0.0260 0.0186 \*  
 Venus -60759-07-26 10:18 J -20470595.29 -20470595.07 -20470594.85 0.0277 0.0008  
 Mercury -60754-08-24 04:47 J -20468740.39 -20468740.30 -20468740.19 0.0298 0.0197  
 Mercury -60754-11-20 17:59 J -20468651.88 -20468651.75 -20468651.62 0.0299 0.0069  
 Mercury -60753-02-17 06:57 J -20468563.34 -20468563.21 -20468563.08 0.0300 0.0059  
 Mercury -60753-05-15 19:40 J -20468474.78 -20468474.68 -20468474.57 0.0300 0.0187  
 Mars -60752-02-02 21:35 J -20468211.81 -20468211.60 -20468211.38 0.0302 0.0174  
 Moon -60752-07-09 18:13 J -20468054.97 -20468054.74 -20468054.49 0.0302 0.0082  
 Earth -60752-07-09 18:28 J -20468054.96 -20468054.73 -20468054.50 0.0302 0.0073 \*  
 Moon -60751-07-24 12:57 J -20467675.14 -20467674.96 -20467674.77 0.0302 0.0198  
 Earth -60751-07-24 15:35 J -20467675.01 -20467674.85 -20467674.67 0.0302 0.0210 \*  
 Venus -60746-10-12 14:23 J -20465769.10 -20465768.90 -20465768.70 0.0286 0.0056  
 Mercury -60740-09-19 10:18 J -20463600.21 -20463600.07 -20463599.91 0.0263 0.0153  
 Mercury -60740-12-17 06:28 J -20463511.42 -20463511.23 -20463511.05 0.0262 0.0031  
 Mercury -60739-03-16 02:23 J -20463422.57 -20463422.40 -20463422.22 0.0262 0.0091  
 Mercury -60739-06-12 22:33 J -20463333.66 -20463333.56 -20463333.45 0.0262 0.0214  
 Earth -60739-12-24 19:54 J -20463138.75 -20463138.67 -20463138.59 0.0261 0.0245  
 Moon -60739-12-24 21:06 J -20463138.71 -20463138.62 -20463138.53 0.0261 0.0241 \*  
 Mars -60738-02-03 15:21 J -20463098.17 -20463097.86 -20463097.55 0.0261 0.0066  
 Earth -60737-01-05 09:35 J -20462762.34 -20462762.10 -20462761.85 0.0260 0.0066  
 Moon -60737-01-05 13:25 J -20462762.18 -20462761.94 -20462761.69 0.0260 0.0074 \*  
 Moon -60736-01-15 23:01 J -20462385.77 -20462385.54 -20462385.29 0.0259 0.0101  
 Earth -60736-01-15 23:45 J -20462385.73 -20462385.51 -20462385.28 0.0259 0.0115 \*  
 Venus -60729-02-05 16:04 J -20459809.04 -20459808.83 -20459808.62 0.0277 0.0065

Mercury -60724-01-10 06:57 J -20458008.29 -20458008.21 -20458008.12 0.0299 0.0231

Mercury -60724-04-08 20:09 J -20457919.78 -20457919.66 -20457919.53 0.0300 0.0102

Mercury -60724-07-06 09:06 J -20457831.25 -20457831.12 -20457830.99 0.0300 0.0027

Mercury -60724-10-02 22:04 J -20457742.69 -20457742.58 -20457742.47 0.0301 0.0154

Mercury -60724-12-30 10:47 J -20457654.09 -20457654.05 -20457654.00 0.0301 0.0282

Earth -60723-07-03 14:52 J -20457469.06 -20457468.88 -20457468.69 0.0302 0.0195

Moon -60723-07-03 15:49 J -20457469.00 -20457468.84 -20457468.66 0.0302 0.0205 \*

Earth -60722-07-18 12:57 J -20457089.18 -20457088.96 -20457088.72 0.0303 0.0089

Moon -60722-07-18 16:18 J -20457089.05 -20457088.82 -20457088.59 0.0303 0.0078 \*

Venus -60716-04-23 21:35 J -20454982.81 -20454982.60 -20454982.39 0.0285 0.0009

Mercury -60710-02-06 11:30 J -20452868.16 -20452868.02 -20452867.89 0.0263 0.0180

Mercury -60710-05-06 07:25 J -20452779.38 -20452779.19 -20452779.01 0.0263 0.0059

Mercury -60710-08-03 03:21 J -20452690.54 -20452690.36 -20452690.18 0.0262 0.0064

Mercury -60710-10-30 23:16 J -20452601.65 -20452601.53 -20452601.39 0.0262 0.0187

Moon -60709-12-30 16:47 J -20452174.99 -20452174.80 -20452174.59 0.0260 0.0148

Earth -60709-12-30 20:23 J -20452174.85 -20452174.65 -20452174.43 0.0260 0.0144 \*

Earth -60707-01-11 10:18 J -20451798.32 -20451798.07 -20451797.82 0.0260 0.0037

Moon -60707-01-11 10:18 J -20451798.31 -20451798.07 -20451797.82 0.0260 0.0025 \*

Earth -60706-01-23 00:28 J -20451421.60 -20451421.48 -20451421.33 0.0260 0.0218

Moon -60706-01-23 04:18 J -20451421.46 -20451421.32 -20451421.16 0.0260 0.0205 \*

Venus -60701-12-31 10:33 J -20449252.11 -20449252.06 -20449252.00 0.0275 0.0265

Venus -60700-08-17 23:59 J -20449022.68 -20449022.50 -20449022.30 0.0278 0.0129

Mercury -60695-05-30 09:49 J -20447276.15 -20447276.09 -20447276.02 0.0298 0.0260

Mercury -60695-08-26 23:01 J -20447187.66 -20447187.54 -20447187.42 0.0299 0.0132

Mercury -60695-11-23 11:59 J -20447099.13 -20447099.00 -20447098.87 0.0299 0.0004

Mercury -60694-02-20 00:57 J -20447010.58 -20447010.46 -20447010.34 0.0300 0.0124

Mars -60694-05-12 09:35 J -20446929.36 -20446929.10 -20446928.83 0.0301 0.0075

Mercury -60694-05-19 13:40 J -20446922.00 -20446921.93 -20446921.86 0.0301 0.0251

Moon -60693-07-11 08:52 J -20446503.37 -20446503.13 -20446502.89 0.0302 0.0052

Earth -60693-07-11 12:28 J -20446503.21 -20446502.98 -20446502.73 0.0302 0.0040 \*

Moon -60692-07-26 06:13 J -20446123.38 -20446123.24 -20446123.07 0.0302 0.0231  
 Earth -60692-07-26 09:49 J -20446123.23 -20446123.09 -20446122.94 0.0302 0.0243 \*  
 Venus -60687-11-04 05:16 J -20444196.48 -20444196.28 -20444196.08 0.0285 0.0077  
 Mercury -60681-06-25 11:45 J -20442136.11 -20442136.01 -20442135.90 0.0263 0.0210  
 Mercury -60681-09-22 07:40 J -20442047.35 -20442047.18 -20442047.00 0.0263 0.0089  
 Mercury -60681-12-20 03:35 J -20441958.53 -20441958.35 -20441958.16 0.0262 0.0033  
 Mercury -60680-03-18 23:45 J -20441869.66 -20441869.51 -20441869.36 0.0262 0.0155  
 Mars -60680-05-11 04:04 J -20441816.60 -20441816.33 -20441816.05 0.0261 0.0126  
 Earth -60680-12-26 05:01 J -20441587.41 -20441587.29 -20441587.16 0.0260 0.0224  
 Moon -60680-12-26 08:23 J -20441587.27 -20441587.15 -20441587.01 0.0260 0.0220 \*  
 Moon -60678-01-06 18:28 J -20441210.98 -20441210.73 -20441210.48 0.0259 0.0054  
 Earth -60678-01-06 18:28 J -20441210.97 -20441210.73 -20441210.48 0.0259 0.0045 \*  
 Moon -60677-01-18 04:18 J -20440834.53 -20440834.32 -20440834.09 0.0259 0.0121  
 Earth -60677-01-18 08:23 J -20440834.37 -20440834.15 -20440833.94 0.0259 0.0136 \*  
 Venus -60671-07-13 14:52 J -20438466.00 -20438465.88 -20438465.73 0.0275 0.0213  
 Venus -60670-02-28 04:47 J -20438236.46 -20438236.30 -20438236.14 0.0278 0.0182  
 Mercury -60665-01-14 00:28 J -20436455.58 -20436455.48 -20436455.36 0.0299 0.0172  
 Mercury -60665-04-11 13:40 J -20436367.06 -20436366.93 -20436366.80 0.0300 0.0042  
 Mercury -60665-07-09 02:37 J -20436278.51 -20436278.39 -20436278.26 0.0301 0.0086  
 Mercury -60665-10-05 15:35 J -20436189.94 -20436189.85 -20436189.76 0.0301 0.0214  
 Mars -60664-06-30 07:11 J -20435922.38 -20435922.20 -20435921.99 0.0302 0.0211  
 Earth -60664-07-05 05:30 J -20435917.46 -20435917.27 -20435917.06 0.0302 0.0166  
 Moon -60664-07-05 09:21 J -20435917.30 -20435917.11 -20435916.91 0.0302 0.0176 \*  
 Earth -60663-07-20 04:04 J -20435537.55 -20435537.33 -20435537.11 0.0303 0.0119  
 Moon -60663-07-20 06:57 J -20435537.44 -20435537.21 -20435536.98 0.0303 0.0107 \*  
 Venus -60658-09-29 23:01 J -20433639.56 -20433639.54 -20433639.51 0.0287 0.0284  
 Venus -60657-05-16 10:47 J -20433410.23 -20433410.05 -20433409.86 0.0284 0.0135  
 Mercury -60652-11-12 11:59 J -20431404.06 -20431404.00 -20431403.92 0.0263 0.0241  
 Mercury -60651-02-09 07:54 J -20431315.33 -20431315.17 -20431315.00 0.0263 0.0120  
 Mercury -60651-05-09 04:04 J -20431226.52 -20431226.33 -20431226.15 0.0262 0.0005

Mercury -60651-08-05 23:59 J -20431137.66 -20431137.50 -20431137.33 0.0262 0.0124

Mercury -60651-11-02 20:09 J -20431048.71 -20431048.66 -20431048.59 0.0261 0.0246

Mars -60650-07-01 02:23 J -20430808.68 -20430808.40 -20430808.09 0.0260 0.0106

Moon -60649-01-02 03:06 J -20430623.57 -20430623.37 -20430623.16 0.0260 0.0129

Earth -60649-01-02 03:35 J -20430623.56 -20430623.35 -20430623.12 0.0260 0.0124 \*

Earth -60648-01-12 17:01 J -20430247.03 -20430246.79 -20430246.55 0.0259 0.0057

Moon -60648-01-12 20:52 J -20430246.87 -20430246.63 -20430246.39 0.0259 0.0043 \*

Earth -60647-01-24 06:57 J -20429870.29 -20429870.21 -20429870.09 0.0260 0.0237

Moon -60647-01-24 08:37 J -20429870.27 -20429870.14 -20429870.01 0.0260 0.0225 \*

Venus -60641-01-23 21:35 J -20427679.78 -20427679.60 -20427679.42 0.0276 0.0155

Venus -60641-09-09 11:16 J -20427450.13 -20427450.03 -20427449.92 0.0278 0.0242

Mercury -60636-06-02 03:06 J -20425723.47 -20425723.37 -20425723.28 0.0299 0.0204

Mercury -60636-08-29 16:04 J -20425634.96 -20425634.83 -20425634.70 0.0299 0.0076

Mercury -60636-11-26 05:01 J -20425546.42 -20425546.29 -20425546.16 0.0300 0.0054

Mercury -60635-02-22 17:59 J -20425457.85 -20425457.75 -20425457.64 0.0300 0.0181

Moon -60635-06-28 23:16 J -20425331.54 -20425331.53 -20425331.50 0.0301 0.0300

Earth -60635-06-29 02:52 J -20425331.43 -20425331.38 -20425331.32 0.0301 0.0291

Moon -60634-07-13 23:16 J -20424951.76 -20424951.53 -20424951.29 0.0303 0.0023

Earth -60634-07-14 01:25 J -20424951.68 -20424951.44 -20424951.20 0.0303 0.0011 \*

Earth -60633-07-27 22:33 J -20424571.65 -20424571.56 -20424571.45 0.0302 0.0272

Moon -60633-07-27 23:30 J -20424571.64 -20424571.52 -20424571.40 0.0302 0.0258 \*

Venus -60628-04-11 06:13 J -20422853.36 -20422853.24 -20422853.09 0.0287 0.0218

Venus -60628-11-26 17:45 J -20422623.89 -20422623.76 -20422623.60 0.0284 0.0201

Mercury -60622-06-29 08:09 J -20420583.30 -20420583.16 -20420583.00 0.0263 0.0151

Mercury -60622-09-26 04:04 J -20420494.51 -20420494.33 -20420494.14 0.0262 0.0030

Mercury -60622-12-24 00:13 J -20420405.67 -20420405.49 -20420405.32 0.0262 0.0092

Mercury -60621-03-21 20:09 J -20420316.76 -20420316.66 -20420316.55 0.0261 0.0214

Earth -60621-12-27 11:30 J -20420036.16 -20420036.02 -20420035.86 0.0260 0.0204

Moon -60621-12-27 13:11 J -20420036.11 -20420035.95 -20420035.78 0.0260 0.0200 \*

Moon -60619-01-07 21:06 J -20419659.87 -20419659.62 -20419659.37 0.0259 0.0037

Earth -60619-01-08 00:42 J -20419659.72 -20419659.47 -20419659.22 0.0259 0.0025 \*  
 Moon -60618-01-19 12:28 J -20419283.17 -20419282.98 -20419282.77 0.0259 0.0142  
 Earth -60618-01-19 13:40 J -20419283.11 -20419282.93 -20419282.71 0.0259 0.0155 \*  
 Venus -60612-08-05 00:57 J -20416893.65 -20416893.46 -20416893.25 0.0276 0.0106  
 Mercury -60607-10-20 04:04 J -20414991.40 -20414991.33 -20414991.25 0.0299 0.0247  
 Mercury -60606-01-16 17:16 J -20414902.90 -20414902.78 -20414902.66 0.0300 0.0118  
 Mercury -60606-04-15 06:28 J -20414814.37 -20414814.23 -20414814.10 0.0300 0.0014  
 Mercury -60606-07-12 19:11 J -20414725.81 -20414725.70 -20414725.58 0.0301 0.0139  
 Mars -60606-10-06 04:18 J -20414640.59 -20414640.32 -20414640.05 0.0301 0.0052  
 Mercury -60606-10-09 08:09 J -20414637.22 -20414637.16 -20414637.10 0.0301 0.0266  
 Earth -60605-07-06 15:21 J -20414366.07 -20414365.86 -20414365.64 0.0303 0.0139  
 Moon -60605-07-06 17:01 J -20414366.01 -20414365.79 -20414365.57 0.0303 0.0148 \*  
 Moon -60604-07-21 12:28 J -20413986.21 -20413985.98 -20413985.76 0.0303 0.0132  
 Earth -60604-07-21 14:09 J -20413986.12 -20413985.91 -20413985.70 0.0303 0.0147 \*  
 Venus -60599-10-22 10:18 J -20412067.24 -20412067.07 -20412066.90 0.0287 0.0165  
 Venus -60598-06-08 21:49 J -20411837.68 -20411837.59 -20411837.49 0.0284 0.0251  
 Mercury -60593-11-15 07:54 J -20409851.30 -20409851.17 -20409851.04 0.0263 0.0186  
 Mercury -60592-02-12 03:49 J -20409762.52 -20409762.34 -20409762.16 0.0262 0.0065  
 Mercury -60592-05-11 23:45 J -20409673.69 -20409673.51 -20409673.33 0.0262 0.0057  
 Mercury -60592-08-08 19:54 J -20409584.81 -20409584.67 -20409584.53 0.0261 0.0179  
 Mars -60592-10-05 06:13 J -20409527.54 -20409527.24 -20409526.94 0.0261 0.0091  
 Earth -60590-01-03 07:54 J -20409072.39 -20409072.17 -20409071.93 0.0260 0.0106  
 Moon -60590-01-03 11:16 J -20409072.25 -20409072.03 -20409071.81 0.0260 0.0112 \*  
 Earth -60589-01-14 21:06 J -20408695.86 -20408695.62 -20408695.38 0.0259 0.0075  
 Moon -60589-01-14 22:33 J -20408695.81 -20408695.56 -20408695.30 0.0259 0.0061 \*  
 Moon -60588-01-25 07:54 J -20408319.25 -20408319.17 -20408319.09 0.0260 0.0245  
 Earth -60588-01-25 10:47 J -20408319.08 -20408319.05 -20408318.98 0.0260 0.0255  
 Venus -60582-02-15 06:28 J -20406107.45 -20406107.23 -20406107.02 0.0276 0.0052  
 Mercury -60577-03-08 06:13 J -20404259.28 -20404259.24 -20404259.20 0.0298 0.0283  
 Mercury -60577-06-04 19:11 J -20404170.81 -20404170.70 -20404170.58 0.0299 0.0156

Mercury -60577-09-01 08:23 J -20404082.28 -20404082.15 -20404082.02 0.0300 0.0027

Mercury -60577-11-28 21:21 J -20403993.73 -20403993.61 -20403993.49 0.0300 0.0101

Mercury -60576-02-25 10:04 J -20403905.16 -20403905.08 -20403904.99 0.0301 0.0229

Moon -60576-06-30 08:37 J -20403780.22 -20403780.14 -20403780.05 0.0301 0.0277

Earth -60576-06-30 09:49 J -20403780.20 -20403780.09 -20403779.98 0.0301 0.0268 \*

Mars -60576-11-24 05:45 J -20403633.40 -20403633.26 -20403633.10 0.0302 0.0247

Earth -60575-07-15 08:23 J -20403400.39 -20403400.15 -20403399.91 0.0303 0.0015

Moon -60575-07-15 10:33 J -20403400.30 -20403400.06 -20403399.83 0.0303 0.0002 \*

Earth -60574-07-30 05:30 J -20403020.31 -20403020.27 -20403020.21 0.0302 0.0296

Moon -60574-07-30 09:06 J -20403020.19 -20403020.12 -20403020.01 0.0302 0.0280

Venus -60569-05-03 16:18 J -20401281.01 -20401280.82 -20401280.62 0.0287 0.0102

Mercury -60563-04-04 07:40 J -20399119.27 -20399119.18 -20399119.07 0.0263 0.0218

Mercury -60563-07-02 03:35 J -20399030.52 -20399030.35 -20399030.17 0.0263 0.0098

Mercury -60563-09-28 23:30 J -20398941.70 -20398941.52 -20398941.33 0.0262 0.0024

Mercury -60563-12-26 19:25 J -20398852.84 -20398852.69 -20398852.53 0.0261 0.0146

Mars -60562-11-25 00:13 J -20398519.75 -20398519.49 -20398519.20 0.0260 0.0136

Moon -60562-12-29 12:13 J -20398485.15 -20398484.99 -20398484.80 0.0260 0.0186

Earth -60562-12-29 15:06 J -20398485.03 -20398484.87 -20398484.68 0.0260 0.0186 \*

Moon -60560-01-09 01:54 J -20398108.66 -20398108.42 -20398108.17 0.0259 0.0019

Earth -60560-01-09 03:49 J -20398108.59 -20398108.34 -20398108.09 0.0259 0.0007 \*

Earth -60559-01-20 16:47 J -20397731.99 -20397731.80 -20397731.62 0.0259 0.0172

Moon -60559-01-20 19:40 J -20397731.86 -20397731.68 -20397731.47 0.0259 0.0161 \*

Venus -60553-08-27 08:37 J -20395321.36 -20395321.14 -20395320.92 0.0276 0.0006

Mercury -60548-10-22 19:54 J -20393438.77 -20393438.67 -20393438.57 0.0299 0.0203

Mercury -60547-01-19 09:06 J -20393350.25 -20393350.12 -20393350.00 0.0300 0.0075

Mercury -60547-04-17 22:04 J -20393261.71 -20393261.58 -20393261.45 0.0300 0.0054

Mercury -60547-07-15 10:47 J -20393173.15 -20393173.05 -20393172.94 0.0301 0.0182

Moon -60546-07-08 16:18 J -20392815.04 -20392814.82 -20392814.59 0.0303 0.0130

Earth -60546-07-08 18:57 J -20392814.93 -20392814.71 -20392814.48 0.0303 0.0117 \*

Moon -60545-07-22 14:23 J -20392435.10 -20392434.90 -20392434.69 0.0303 0.0153



Earth -60545-07-22 17:45 J -20392434.95 -20392434.76 -20392434.55 0.0303 0.0170 \*  
 Venus -60540-11-13 18:42 J -20390494.92 -20390494.72 -20390494.51 0.0287 0.0055  
 Mercury -60534-08-22 06:57 J -20388387.24 -20388387.21 -20388387.17 0.0263 0.0256  
 Mercury -60534-11-19 02:52 J -20388298.54 -20388298.38 -20388298.23 0.0263 0.0136  
 Mercury -60533-02-15 22:33 J -20388209.74 -20388209.56 -20388209.37 0.0262 0.0016  
 Mercury -60533-05-14 18:42 J -20388120.89 -20388120.72 -20388120.55 0.0261 0.0107  
 Mercury -60533-08-11 14:37 J -20388031.97 -20388031.89 -20388031.79 0.0261 0.0229  
 Earth -60531-01-04 09:35 J -20387521.33 -20387521.10 -20387520.86 0.0259 0.0088  
 Moon -60531-01-04 12:28 J -20387521.22 -20387520.98 -20387520.74 0.0259 0.0095 \*  
 Moon -60530-01-15 19:25 J -20387144.93 -20387144.69 -20387144.45 0.0259 0.0079  
 Earth -60530-01-15 22:18 J -20387144.79 -20387144.57 -20387144.33 0.0259 0.0092 \*  
 Venus -60523-03-09 12:28 J -20384535.19 -20384534.98 -20384534.76 0.0276 0.0045  
 Mercury -60518-03-11 21:21 J -20382706.68 -20382706.61 -20382706.53 0.0298 0.0244  
 Mercury -60518-06-08 10:33 J -20382618.18 -20382618.06 -20382617.93 0.0299 0.0115  
 Mercury -60518-09-04 23:45 J -20382529.64 -20382529.51 -20382529.38 0.0300 0.0013  
 Mercury -60518-12-02 12:42 J -20382441.09 -20382440.97 -20382440.86 0.0300 0.0141  
 Mercury -60517-02-29 01:25 J -20382352.49 -20382352.44 -20382352.38 0.0301 0.0269  
 Mars -60517-02-29 13:40 J -20382352.20 -20382351.93 -20382351.66 0.0301 0.0026  
 Earth -60517-07-01 11:01 J -20382229.16 -20382229.04 -20382228.89 0.0302 0.0248  
 Moon -60517-07-01 14:09 J -20382229.02 -20382228.91 -20382228.79 0.0302 0.0260 \*  
 Earth -60516-07-16 10:18 J -20381849.31 -20381849.07 -20381848.83 0.0303 0.0036  
 Moon -60516-07-16 13:40 J -20381849.17 -20381848.93 -20381848.69 0.0303 0.0022 \*  
 Moon -60515-07-31 08:37 J -20381469.16 -20381469.14 -20381469.10 0.0303 0.0300  
 Venus -60510-05-26 23:45 J -20379708.72 -20379708.51 -20379708.30 0.0286 0.0004  
 Mercury -60504-04-07 02:23 J -20377566.54 -20377566.40 -20377566.26 0.0263 0.0170  
 Mercury -60504-07-04 22:04 J -20377477.76 -20377477.58 -20377477.39 0.0262 0.0050  
 Mercury -60504-10-01 17:59 J -20377388.92 -20377388.75 -20377388.56 0.0262 0.0073  
 Mercury -60504-12-29 14:09 J -20377300.03 -20377299.91 -20377299.78 0.0261 0.0194  
 Mars -60503-02-28 21:06 J -20377238.93 -20377238.62 -20377238.31 0.0261 0.0069  
 Moon -60503-12-30 13:11 J -20376934.12 -20376933.95 -20376933.76 0.0260 0.0173

Earth -60503-12-30 16:18 J -20376934.00 -20376933.82 -20376933.63 0.0260 0.0168 \*  
 Earth -60501-01-11 04:33 J -20376557.56 -20376557.31 -20376557.06 0.0259 0.0011  
 Moon -60501-01-11 06:57 J -20376557.46 -20376557.21 -20376556.97 0.0259 0.0004 \*  
 Earth -60500-01-21 17:01 J -20376180.95 -20376180.79 -20376180.61 0.0259 0.0189  
 Moon -60500-01-21 19:25 J -20376180.86 -20376180.69 -20376180.49 0.0259 0.0180 \*  
 Venus -60494-09-19 14:23 J -20373749.10 -20373748.90 -20373748.69 0.0276 0.0088  
 Mercury -60489-07-28 21:49 J -20371974.61 -20371974.59 -20371974.57 0.0298 0.0294  
 Mercury -60489-10-25 11:01 J -20371886.15 -20371886.04 -20371885.93 0.0299 0.0166  
 Mercury -60488-01-21 23:59 J -20371797.63 -20371797.50 -20371797.37 0.0300 0.0038  
 Mercury -60488-04-20 12:57 J -20371709.08 -20371708.96 -20371708.83 0.0301 0.0091  
 Mercury -60488-07-18 01:54 J -20371620.51 -20371620.42 -20371620.33 0.0301 0.0219  
 Mars -60487-04-18 22:47 J -20371345.69 -20371345.55 -20371345.39 0.0303 0.0250  
 Moon -60487-07-09 15:06 J -20371264.08 -20371263.87 -20371263.65 0.0303 0.0112  
 Earth -60487-07-09 18:13 J -20371263.97 -20371263.74 -20371263.51 0.0303 0.0097 \*  
 Moon -60486-07-24 16:47 J -20370883.99 -20370883.80 -20370883.61 0.0303 0.0174  
 Earth -60486-07-24 17:01 J -20370883.97 -20370883.79 -20370883.60 0.0303 0.0189 \*  
 Venus -60481-12-06 00:28 J -20368922.69 -20368922.48 -20368922.28 0.0286 0.0044  
 Mercury -60475-08-25 00:42 J -20366834.57 -20366834.47 -20366834.36 0.0263 0.0212  
 Mercury -60475-11-21 20:37 J -20366745.81 -20366745.64 -20366745.47 0.0262 0.0091  
 Mercury -60474-02-18 16:33 J -20366656.99 -20366656.81 -20366656.62 0.0262 0.0030  
 Mercury -60474-05-18 12:28 J -20366568.13 -20366567.98 -20366567.82 0.0261 0.0151  
 Earth -60474-12-25 19:40 J -20366346.73 -20366346.68 -20366346.60 0.0260 0.0252  
 Moon -60474-12-25 22:47 J -20366346.61 -20366346.55 -20366346.47 0.0260 0.0251 \*  
 Mars -60473-04-19 04:33 J -20366231.56 -20366231.31 -20366231.05 0.0260 0.0157  
 Moon -60472-01-05 06:42 J -20365970.46 -20365970.22 -20365969.97 0.0259 0.0084  
 Earth -60472-01-05 08:52 J -20365970.37 -20365970.13 -20365969.89 0.0259 0.0073 \*  
 Moon -60471-01-16 18:28 J -20365593.95 -20365593.73 -20365593.50 0.0259 0.0095  
 Earth -60471-01-16 21:06 J -20365593.84 -20365593.62 -20365593.38 0.0259 0.0108 \*  
 Venus -60465-08-14 04:18 J -20363192.39 -20363192.32 -20363192.22 0.0274 0.0253  
 Venus -60464-03-31 17:01 J -20362962.97 -20362962.79 -20362962.60 0.0277 0.0135

Mercury -60459-03-14 12:13 J -20361154.09 -20361153.99 -20361153.90 0.0299 0.0209  
 Mercury -60459-06-11 01:11 J -20361065.57 -20361065.45 -20361065.32 0.0299 0.0082  
 Mercury -60459-09-07 14:23 J -20360977.03 -20360976.90 -20360976.77 0.0300 0.0047  
 Mercury -60459-12-05 03:06 J -20360888.47 -20360888.37 -20360888.26 0.0301 0.0175  
 Earth -60458-07-03 07:40 J -20360678.32 -20360678.18 -20360678.01 0.0302 0.0231  
 Moon -60458-07-03 10:18 J -20360678.20 -20360678.07 -20360677.91 0.0302 0.0245 \*  
 Moon -60457-07-17 06:57 J -20360298.46 -20360298.21 -20360297.96 0.0303 0.0039  
 Earth -60457-07-17 07:11 J -20360298.44 -20360298.20 -20360297.96 0.0303 0.0054 \*  
 Venus -60451-06-18 04:18 J -20358136.51 -20358136.32 -20358136.12 0.0286 0.0099  
 Mercury -60445-01-12 00:13 J -20356102.54 -20356102.49 -20356102.42 0.0264 0.0247  
 Mercury -60445-04-09 20:09 J -20356013.82 -20356013.66 -20356013.50 0.0263 0.0126  
 Mercury -60445-07-07 15:49 J -20355925.02 -20355924.84 -20355924.65 0.0262 0.0008  
 Mercury -60445-10-04 11:59 J -20355836.17 -20355836.00 -20355835.84 0.0262 0.0116  
 Mercury -60444-01-01 07:54 J -20355747.24 -20355747.17 -20355747.09 0.0261 0.0238  
 Earth -60444-12-31 14:52 J -20355383.08 -20355382.88 -20355382.67 0.0260 0.0152  
 Moon -60444-12-31 16:33 J -20355382.99 -20355382.81 -20355382.61 0.0260 0.0161 \*  
 Earth -60442-01-12 03:06 J -20355006.62 -20355006.37 -20355006.12 0.0259 0.0027  
 Moon -60442-01-12 06:28 J -20355006.48 -20355006.23 -20355005.98 0.0259 0.0013 \*  
 Moon -60441-01-23 13:11 J -20354630.10 -20354629.95 -20354629.78 0.0259 0.0200  
 Earth -60441-01-23 15:06 J -20354630.00 -20354629.87 -20354629.70 0.0259 0.0205 \*  
 Venus -60435-02-24 06:28 J -20352406.37 -20352406.23 -20352406.10 0.0273 0.0210  
 Venus -60435-10-11 18:42 J -20352176.88 -20352176.72 -20352176.55 0.0276 0.0176  
 Mercury -60430-08-01 12:13 J -20350422.05 -20350421.99 -20350421.92 0.0298 0.0261  
 Mercury -60430-10-29 01:25 J -20350333.56 -20350333.44 -20350333.32 0.0299 0.0133  
 Mercury -60429-01-25 14:23 J -20350245.03 -20350244.90 -20350244.76 0.0300 0.0011  
 Mercury -60429-04-23 03:21 J -20350156.48 -20350156.36 -20350156.24 0.0301 0.0123  
 Mercury -60429-07-20 16:18 J -20350067.89 -20350067.82 -20350067.75 0.0301 0.0250  
 Mars -60429-07-23 19:25 J -20350064.96 -20350064.69 -20350064.42 0.0301 0.0034  
 Earth -60428-07-10 13:40 J -20349713.16 -20349712.93 -20349712.69 0.0303 0.0081  
 Moon -60428-07-10 14:52 J -20349713.09 -20349712.88 -20349712.65 0.0303 0.0097 \*

Earth -60427-07-25 12:28 J -20349333.15 -20349332.98 -20349332.80 0.0304 0.0206  
 Moon -60427-07-25 15:49 J -20349333.02 -20349332.84 -20349332.65 0.0304 0.0189 \*  
 Venus -60422-05-13 15:21 J -20347579.87 -20347579.86 -20347579.84 0.0289 0.0288  
 Venus -60422-12-29 04:04 J -20347350.51 -20347350.33 -20347350.14 0.0286 0.0136  
 Mercury -60416-08-27 17:45 J -20345281.89 -20345281.76 -20345281.61 0.0263 0.0172  
 Mercury -60416-11-24 13:54 J -20345193.10 -20345192.92 -20345192.74 0.0262 0.0051  
 Mercury -60415-02-21 09:49 J -20345104.27 -20345104.09 -20345103.91 0.0262 0.0071  
 Mercury -60415-05-21 05:45 J -20345015.38 -20345015.26 -20345015.13 0.0261 0.0193  
 Mars -60415-07-24 17:01 J -20344951.10 -20344950.79 -20344950.48 0.0261 0.0054  
 Moon -60415-12-26 15:21 J -20344795.96 -20344795.86 -20344795.77 0.0260 0.0241  
 Earth -60415-12-26 17:01 J -20344795.88 -20344795.79 -20344795.68 0.0260 0.0236 \*  
 Moon -60413-01-07 02:23 J -20344419.63 -20344419.40 -20344419.16 0.0259 0.0071  
 Earth -60413-01-07 05:59 J -20344419.49 -20344419.25 -20344419.01 0.0259 0.0057 \*  
 Earth -60412-01-17 18:13 J -20344042.95 -20344042.74 -20344042.51 0.0259 0.0123  
 Moon -60412-01-17 19:40 J -20344042.89 -20344042.68 -20344042.46 0.0259 0.0113 \*  
 Venus -60406-09-06 08:37 J -20341620.31 -20341620.14 -20341619.96 0.0274 0.0166  
 Venus -60405-04-22 20:52 J -20341390.74 -20341390.63 -20341390.49 0.0277 0.0223  
 Mercury -60400-03-17 02:37 J -20339601.50 -20339601.39 -20339601.29 0.0299 0.0178  
 Mercury -60400-06-13 15:35 J -20339512.98 -20339512.85 -20339512.72 0.0299 0.0050  
 Mercury -60400-09-10 04:33 J -20339424.43 -20339424.31 -20339424.18 0.0300 0.0078  
 Mercury -60400-12-07 17:30 J -20339335.86 -20339335.77 -20339335.67 0.0301 0.0205  
 Moon -60399-07-04 00:28 J -20339127.63 -20339127.48 -20339127.32 0.0302 0.0231  
 Earth -60399-07-04 02:52 J -20339127.55 -20339127.38 -20339127.21 0.0302 0.0214 \*  
 Mars -60399-09-11 14:09 J -20339058.04 -20339057.91 -20339057.76 0.0302 0.0258  
 Moon -60398-07-18 22:18 J -20338747.80 -20338747.57 -20338747.32 0.0303 0.0054  
 Earth -60398-07-19 02:09 J -20338747.65 -20338747.41 -20338747.18 0.0303 0.0071 \*  
 Venus -60393-11-22 18:28 J -20336793.84 -20336793.73 -20336793.61 0.0289 0.0236  
 Venus -60392-07-10 07:25 J -20336564.34 -20336564.19 -20336564.03 0.0286 0.0187  
 Mercury -60386-01-14 17:16 J -20334549.89 -20334549.78 -20334549.67 0.0264 0.0207  
 Mercury -60386-04-13 12:57 J -20334461.13 -20334460.96 -20334460.78 0.0263 0.0087

Mercury -60386-07-11 08:52 J -20334372.31 -20334372.13 -20334371.94 0.0262 0.0035

Mercury -60386-10-08 05:01 J -20334283.44 -20334283.29 -20334283.14 0.0262 0.0156

Mars -60385-09-12 05:45 J -20333943.49 -20333943.26 -20333943.00 0.0260 0.0169

Earth -60384-01-01 11:30 J -20333832.22 -20333832.02 -20333831.80 0.0260 0.0137

Moon -60384-01-01 15:21 J -20333832.07 -20333831.86 -20333831.65 0.0260 0.0148 \*

Moon -60383-01-12 23:01 J -20333455.80 -20333455.54 -20333455.28 0.0259 0.0029

Earth -60383-01-12 23:59 J -20333455.75 -20333455.50 -20333455.25 0.0259 0.0042 \*

Moon -60382-01-24 08:52 J -20333079.25 -20333079.13 -20333078.98 0.0259 0.0218

Earth -60382-01-24 12:13 J -20333079.11 -20333078.99 -20333078.85 0.0259 0.0220 \*

Jupiter -60377-03-19 06:13 J -20331198.67 -20331198.24 -20331197.78 0.0269 0.0063

Venus -60376-03-18 10:18 J -20330834.26 -20330834.07 -20330833.87 0.0273 0.0123

Venus -60376-11-02 22:33 J -20330604.62 -20330604.56 -20330604.49 0.0276 0.0264

Mercury -60371-08-04 02:23 J -20328869.47 -20328869.40 -20328869.31 0.0298 0.0232

Mercury -60371-10-31 15:35 J -20328780.97 -20328780.85 -20328780.72 0.0299 0.0104

Mercury -60370-01-28 04:47 J -20328692.44 -20328692.30 -20328692.17 0.0300 0.0026

Mercury -60370-04-26 17:30 J -20328603.88 -20328603.77 -20328603.65 0.0300 0.0152

Mercury -60370-07-24 06:28 J -20328515.28 -20328515.23 -20328515.18 0.0301 0.0278

Earth -60369-07-11 07:11 J -20328162.43 -20328162.20 -20328161.96 0.0303 0.0065

Moon -60369-07-11 11:01 J -20328162.27 -20328162.04 -20328161.81 0.0303 0.0082 \*

Earth -60368-07-26 05:45 J -20327782.42 -20327782.26 -20327782.09 0.0303 0.0221

Moon -60368-07-26 07:54 J -20327782.36 -20327782.17 -20327781.99 0.0303 0.0205 \*

Venus -60363-06-04 17:45 J -20326007.91 -20326007.76 -20326007.61 0.0289 0.0201

Venus -60362-01-20 06:13 J -20325778.36 -20325778.24 -20325778.10 0.0286 0.0222

Mercury -60357-06-02 15:06 J -20323817.92 -20323817.87 -20323817.83 0.0264 0.0254

Mercury -60357-08-30 10:33 J -20323729.21 -20323729.06 -20323728.89 0.0263 0.0134

Mercury -60357-11-27 06:42 J -20323640.41 -20323640.22 -20323640.04 0.0262 0.0013

Mercury -60356-02-24 02:37 J -20323551.56 -20323551.39 -20323551.22 0.0262 0.0109

Mercury -60356-05-23 22:33 J -20323462.63 -20323462.56 -20323462.46 0.0261 0.0232

Moon -60356-12-27 09:35 J -20323245.20 -20323245.10 -20323244.98 0.0260 0.0231

Earth -60356-12-27 13:11 J -20323245.07 -20323244.95 -20323244.82 0.0260 0.0222 \*

Earth -60354-01-08 02:09 J -20322868.66 -20322868.41 -20322868.16 0.0259 0.0042  
 Moon -60354-01-08 02:52 J -20322868.61 -20322868.38 -20322868.14 0.0259 0.0057 \*  
 Earth -60353-01-19 14:23 J -20322492.10 -20322491.90 -20322491.68 0.0259 0.0138  
 Moon -60353-01-19 18:13 J -20322491.95 -20322491.74 -20322491.52 0.0259 0.0128 \*  
 Venus -60347-09-28 12:28 J -20320048.19 -20320047.98 -20320047.77 0.0274 0.0080  
 Mercury -60342-12-22 03:35 J -20318137.40 -20318137.35 -20318137.30 0.0298 0.0276  
 Mercury -60341-03-19 16:47 J -20318048.92 -20318048.80 -20318048.69 0.0299 0.0148  
 Mercury -60341-06-16 05:45 J -20317960.39 -20317960.26 -20317960.13 0.0299 0.0021  
 Mercury -60341-09-12 18:42 J -20317871.84 -20317871.72 -20317871.60 0.0300 0.0107  
 Mercury -60341-12-10 07:40 J -20317783.26 -20317783.18 -20317783.10 0.0301 0.0234  
 Mars -60341-12-16 07:25 J -20317777.46 -20317777.19 -20317776.92 0.0301 0.0030  
 Moon -60340-07-04 17:01 J -20317576.96 -20317576.79 -20317576.63 0.0302 0.0216  
 Earth -60340-07-04 19:54 J -20317576.84 -20317576.67 -20317576.47 0.0302 0.0199 \*  
 Moon -60339-07-19 18:13 J -20317196.97 -20317196.74 -20317196.52 0.0303 0.0071  
 Earth -60339-07-19 18:57 J -20317196.93 -20317196.71 -20317196.47 0.0303 0.0087 \*  
 Venus -60334-12-15 20:23 J -20315221.81 -20315221.65 -20315221.46 0.0289 0.0151  
 Venus -60333-08-01 09:21 J -20314992.16 -20314992.11 -20314992.04 0.0286 0.0272  
 Mercury -60327-01-17 09:49 J -20312997.23 -20312997.09 -20312996.95 0.0264 0.0170  
 Mercury -60327-04-16 05:45 J -20312908.44 -20312908.26 -20312908.08 0.0263 0.0049  
 Mercury -60327-07-14 01:40 J -20312819.60 -20312819.43 -20312819.25 0.0262 0.0073  
 Mercury -60327-10-10 21:49 J -20312730.71 -20312730.59 -20312730.46 0.0262 0.0195  
 Mars -60327-12-17 15:35 J -20312663.16 -20312662.85 -20312662.54 0.0262 0.0045  
 Moon -60325-01-03 06:42 J -20312281.43 -20312281.22 -20312280.99 0.0260 0.0135  
 Earth -60325-01-03 07:40 J -20312281.39 -20312281.18 -20312280.95 0.0260 0.0122 \*  
 Moon -60324-01-13 16:18 J -20311905.06 -20311904.82 -20311904.57 0.0259 0.0045  
 Earth -60324-01-13 20:09 J -20311904.90 -20311904.66 -20311904.41 0.0259 0.0058 \*  
 Earth -60323-01-25 08:52 J -20311528.22 -20311528.13 -20311528.02 0.0259 0.0235  
 Moon -60323-01-25 09:21 J -20311528.20 -20311528.11 -20311528.01 0.0259 0.0236 \*  
 Venus -60317-04-09 14:37 J -20309262.10 -20309261.89 -20309261.67 0.0274 0.0037  
 Mercury -60312-08-06 17:01 J -20307316.89 -20307316.79 -20307316.69 0.0298 0.0199

Mercury -60312-11-03 05:59 J -20307228.37 -20307228.25 -20307228.12 0.0299 0.0072  
 Mercury -60311-01-30 18:57 J -20307139.83 -20307139.71 -20307139.58 0.0300 0.0057  
 Mercury -60311-04-29 07:54 J -20307051.27 -20307051.17 -20307051.06 0.0300 0.0182  
 Mars -60310-02-03 15:35 J -20306771.00 -20306770.85 -20306770.69 0.0302 0.0247  
 Moon -60310-07-13 01:25 J -20306611.68 -20306611.44 -20306611.19 0.0303 0.0063  
 Earth -60310-07-13 01:54 J -20306611.66 -20306611.42 -20306611.18 0.0303 0.0048 \*  
 Moon -60309-07-26 21:06 J -20306231.77 -20306231.62 -20306231.44 0.0303 0.0224  
 Earth -60309-07-26 23:59 J -20306231.64 -20306231.50 -20306231.34 0.0303 0.0237 \*  
 Venus -60304-06-26 19:54 J -20304435.85 -20304435.67 -20304435.47 0.0289 0.0115  
 Mercury -60298-06-06 07:25 J -20302265.29 -20302265.19 -20302265.08 0.0264 0.0218  
 Mercury -60298-09-03 03:06 J -20302176.53 -20302176.37 -20302176.19 0.0263 0.0097  
 Mercury -60298-11-30 23:16 J -20302087.71 -20302087.53 -20302087.34 0.0262 0.0025  
 Mercury -60297-02-27 19:25 J -20301998.85 -20301998.69 -20301998.54 0.0262 0.0147  
 Earth -60297-12-28 08:37 J -20301694.28 -20301694.14 -20301693.98 0.0260 0.0208  
 Moon -60297-12-28 08:52 J -20301694.25 -20301694.13 -20301693.99 0.0260 0.0218 \*  
 Mars -60296-02-04 17:45 J -20301655.98 -20301655.76 -20301655.52 0.0260 0.0180  
 Earth -60295-01-08 22:04 J -20301317.83 -20301317.58 -20301317.33 0.0259 0.0027  
 Moon -60295-01-09 01:54 J -20301317.66 -20301317.42 -20301317.17 0.0259 0.0042 \*  
 Earth -60294-01-20 10:47 J -20300941.24 -20300941.05 -20300940.84 0.0259 0.0153  
 Moon -60294-01-20 11:01 J -20300941.24 -20300941.04 -20300940.82 0.0259 0.0147 \*  
 Venus -60288-10-20 17:01 J -20298476.01 -20298475.79 -20298475.57 0.0274 0.0008  
 Mercury -60283-12-24 17:59 J -20296584.82 -20296584.75 -20296584.67 0.0298 0.0243  
 Mercury -60282-03-23 07:11 J -20296496.32 -20296496.20 -20296496.08 0.0298 0.0116  
 Mercury -60282-06-19 20:09 J -20296407.79 -20296407.66 -20296407.53 0.0299 0.0011  
 Mercury -60282-09-16 09:06 J -20296319.24 -20296319.12 -20296319.01 0.0300 0.0138  
 Mercury -60282-12-13 21:49 J -20296230.65 -20296230.59 -20296230.53 0.0301 0.0264  
 Earth -60281-07-05 14:37 J -20296026.07 -20296025.89 -20296025.69 0.0302 0.0182  
 Moon -60281-07-05 16:18 J -20296026.00 -20296025.82 -20296025.64 0.0302 0.0196 \*  
 Earth -60280-07-20 13:11 J -20295646.17 -20295645.95 -20295645.72 0.0303 0.0104  
 Moon -60280-07-20 16:47 J -20295646.03 -20295645.80 -20295645.57 0.0303 0.0090 \*

Venus -60274-01-06 22:33 J -20293649.75 -20293649.56 -20293649.35 0.0288 0.0066

Mercury -60269-10-23 06:28 J -20291533.26 -20291533.23 -20291533.17 0.0264 0.0255

Mercury -60268-01-20 02:23 J -20291444.55 -20291444.40 -20291444.23 0.0264 0.0133

Mars -60268-03-23 04:33 J -20291382.35 -20291382.31 -20291382.24 0.0263 0.0259

Mercury -60268-04-18 22:33 J -20291355.75 -20291355.56 -20291355.38 0.0263 0.0012

Mercury -60268-07-16 18:28 J -20291266.90 -20291266.73 -20291266.56 0.0263 0.0111

Mercury -60268-10-13 14:37 J -20291177.97 -20291177.89 -20291177.80 0.0262 0.0234

Moon -60266-01-04 00:28 J -20290730.70 -20290730.48 -20290730.26 0.0260 0.0121

Earth -60266-01-04 04:04 J -20290730.55 -20290730.33 -20290730.10 0.0260 0.0107 \*

Moon -60265-01-15 16:33 J -20290354.04 -20290353.81 -20290353.57 0.0259 0.0065

Earth -60265-01-15 16:47 J -20290354.03 -20290353.80 -20290353.55 0.0259 0.0074 \*

Earth -60264-01-26 05:59 J -20289977.30 -20289977.25 -20289977.18 0.0259 0.0251

Moon -60264-01-26 09:35 J -20289977.13 -20289977.10 -20289977.04 0.0259 0.0254

Venus -60258-05-02 20:09 J -20287689.87 -20287689.66 -20287689.45 0.0274 0.0054

Mercury -60253-05-12 18:28 J -20285852.75 -20285852.73 -20285852.70 0.0297 0.0291

Mercury -60253-08-09 07:40 J -20285764.29 -20285764.18 -20285764.07 0.0298 0.0165

Mercury -60253-11-05 20:52 J -20285675.77 -20285675.63 -20285675.50 0.0299 0.0039

Mercury -60252-02-02 09:35 J -20285587.22 -20285587.10 -20285586.97 0.0299 0.0089

Mercury -60252-05-01 22:33 J -20285498.65 -20285498.56 -20285498.47 0.0300 0.0215

Mars -60252-05-10 14:23 J -20285490.17 -20285489.90 -20285489.63 0.0300 0.0036

Moon -60251-07-13 17:59 J -20285060.99 -20285060.75 -20285060.51 0.0303 0.0042

Earth -60251-07-13 21:49 J -20285060.83 -20285060.59 -20285060.35 0.0303 0.0030 \*

Moon -60250-07-28 16:33 J -20284680.93 -20284680.81 -20284680.66 0.0303 0.0245

Earth -60250-07-28 19:40 J -20284680.81 -20284680.68 -20284680.55 0.0303 0.0254 \*

Venus -60245-07-18 22:47 J -20282863.76 -20282863.55 -20282863.35 0.0288 0.0028

Mercury -60239-06-09 00:13 J -20280712.62 -20280712.49 -20280712.36 0.0264 0.0180

Mercury -60239-09-05 20:09 J -20280623.84 -20280623.66 -20280623.48 0.0263 0.0059

Mercury -60239-12-03 16:04 J -20280535.01 -20280534.83 -20280534.65 0.0263 0.0064

Mercury -60238-03-02 12:13 J -20280446.12 -20280445.99 -20280445.86 0.0262 0.0186

Mars -60238-05-12 02:52 J -20280375.69 -20280375.38 -20280375.06 0.0262 0.0035



Earth -60238-12-30 05:01 J -20280143.45 -20280143.29 -20280143.12 0.0261 0.0193  
 Moon -60238-12-30 08:23 J -20280143.29 -20280143.15 -20280142.99 0.0261 0.0205 \*  
 Earth -60236-01-09 18:57 J -20279766.96 -20279766.71 -20279766.47 0.0259 0.0013  
 Moon -60236-01-09 19:11 J -20279766.96 -20279766.70 -20279766.45 0.0259 0.0023 \*  
 Moon -60235-01-21 04:18 J -20279390.51 -20279390.32 -20279390.12 0.0259 0.0167  
 Earth -60235-01-21 07:54 J -20279390.34 -20279390.17 -20279389.97 0.0259 0.0169 \*  
 Venus -60229-11-11 22:47 J -20276903.75 -20276903.55 -20276903.34 0.0275 0.0101  
 Mercury -60224-12-27 08:52 J -20275032.22 -20275032.13 -20275032.03 0.0298 0.0207  
 Mercury -60223-03-25 22:04 J -20274943.71 -20274943.58 -20274943.45 0.0298 0.0080  
 Mercury -60223-06-22 11:01 J -20274855.17 -20274855.04 -20274854.91 0.0299 0.0047  
 Mercury -60223-09-18 23:59 J -20274766.61 -20274766.50 -20274766.39 0.0300 0.0174  
 Mercury -60223-12-16 12:42 J -20274677.97 -20274677.97 -20274677.96 0.0300 0.0299  
 Mars -60222-06-29 11:01 J -20274483.18 -20274483.04 -20274482.90 0.0302 0.0255  
 Earth -60222-07-07 12:57 J -20274475.16 -20274474.96 -20274474.76 0.0302 0.0162  
 Moon -60222-07-07 16:18 J -20274475.01 -20274474.82 -20274474.61 0.0302 0.0174 \*  
 Earth -60221-07-21 11:01 J -20274095.26 -20274095.04 -20274094.82 0.0303 0.0123  
 Moon -60221-07-21 12:57 J -20274095.18 -20274094.96 -20274094.72 0.0303 0.0114 \*  
 Venus -60215-01-29 02:09 J -20272077.61 -20272077.41 -20272077.20 0.0288 0.0025  
 Mercury -60210-10-26 23:30 J -20269980.62 -20269980.52 -20269980.41 0.0265 0.0216  
 Mercury -60209-01-23 19:25 J -20269891.86 -20269891.69 -20269891.51 0.0264 0.0094  
 Mercury -60209-04-21 15:35 J -20269803.04 -20269802.85 -20269802.67 0.0263 0.0029  
 Mercury -60209-07-19 11:30 J -20269714.16 -20269714.02 -20269713.86 0.0263 0.0152  
 Mars -60208-06-30 19:11 J -20269367.90 -20269367.70 -20269367.47 0.0261 0.0192  
 Moon -60207-01-05 00:42 J -20269179.69 -20269179.47 -20269179.25 0.0260 0.0104  
 Earth -60207-01-05 01:25 J -20269179.67 -20269179.44 -20269179.20 0.0260 0.0091 \*  
 Earth -60206-01-16 14:37 J -20268803.11 -20268802.89 -20268802.65 0.0259 0.0091  
 Moon -60206-01-16 18:28 J -20268802.96 -20268802.73 -20268802.49 0.0259 0.0085 \*  
 Venus -60200-10-07 16:04 J -20266346.94 -20266346.83 -20266346.71 0.0272 0.0228  
 Venus -60199-05-25 03:21 J -20266117.54 -20266117.36 -20266117.18 0.0274 0.0151  
 Mercury -60194-05-16 10:04 J -20264300.15 -20264300.08 -20264300.01 0.0297 0.0250

Mercury -60194-08-12 23:16 J -20264211.65 -20264211.53 -20264211.41 0.0298 0.0124

Mercury -60194-11-09 12:13 J -20264123.13 -20264122.99 -20264122.86 0.0299 0.0008

Mercury -60193-02-06 00:57 J -20264034.58 -20264034.46 -20264034.34 0.0299 0.0129

Mercury -60193-05-04 13:40 J -20263945.99 -20263945.93 -20263945.86 0.0300 0.0254

Earth -60193-06-30 00:57 J -20263889.50 -20263889.46 -20263889.38 0.0300 0.0290

Moon -60192-07-14 21:06 J -20263509.85 -20263509.62 -20263509.38 0.0302 0.0017

Earth -60192-07-14 22:04 J -20263509.82 -20263509.58 -20263509.34 0.0302 0.0009 \*

Earth -60191-07-29 18:57 J -20263129.80 -20263129.71 -20263129.60 0.0303 0.0275

Moon -60191-07-29 21:06 J -20263129.72 -20263129.62 -20263129.52 0.0303 0.0270 \*

Venus -60186-08-11 02:52 J -20261291.58 -20261291.38 -20261291.18 0.0288 0.0065

Mercury -60180-03-14 21:21 J -20259248.63 -20259248.61 -20259248.58 0.0265 0.0262

Mercury -60180-06-11 17:16 J -20259159.93 -20259159.78 -20259159.62 0.0264 0.0140

Mars -60180-08-15 19:11 J -20259094.79 -20259094.70 -20259094.57 0.0264 0.0246

Mercury -60180-09-08 13:25 J -20259071.13 -20259070.94 -20259070.76 0.0263 0.0018

Mercury -60180-12-06 09:35 J -20258982.27 -20258982.10 -20258981.93 0.0263 0.0105

Mercury -60179-03-05 05:30 J -20258893.35 -20258893.27 -20258893.17 0.0262 0.0228

Earth -60179-12-31 02:52 J -20258592.55 -20258592.38 -20258592.18 0.0261 0.0178

Moon -60179-12-31 04:33 J -20258592.47 -20258592.31 -20258592.12 0.0261 0.0190 \*

Moon -60177-01-11 13:54 J -20258216.18 -20258215.92 -20258215.67 0.0260 0.0005

Earth -60177-01-11 17:30 J -20258216.02 -20258215.77 -20258215.52 0.0260 0.0007 \*

Moon -60176-01-22 05:45 J -20257839.42 -20257839.26 -20257839.09 0.0259 0.0189

Earth -60176-01-22 06:57 J -20257839.37 -20257839.21 -20257839.02 0.0259 0.0187 \*

Venus -60170-04-19 19:25 J -20255560.84 -20255560.69 -20255560.52 0.0273 0.0182

Venus -60170-12-05 06:57 J -20255331.36 -20255331.21 -20255331.06 0.0275 0.0199

Mercury -60165-10-02 11:45 J -20253568.04 -20253568.01 -20253567.99 0.0297 0.0289

Mercury -60165-12-30 00:42 J -20253479.58 -20253479.47 -20253479.36 0.0298 0.0163

Mercury -60164-03-28 13:40 J -20253391.06 -20253390.93 -20253390.80 0.0298 0.0037

Mercury -60164-06-25 02:37 J -20253302.52 -20253302.39 -20253302.26 0.0299 0.0089

Mercury -60164-09-21 15:21 J -20253213.94 -20253213.86 -20253213.76 0.0300 0.0215

Mars -60164-10-03 19:25 J -20253201.96 -20253201.69 -20253201.42 0.0300 0.0021

Earth -60163-07-08 14:52 J -20252924.09 -20252923.88 -20252923.67 0.0302 0.0140  
 Moon -60163-07-08 14:52 J -20252924.09 -20252923.88 -20252923.65 0.0302 0.0148 \*  
 Moon -60162-07-23 09:35 J -20252544.31 -20252544.10 -20252543.87 0.0303 0.0142  
 Earth -60162-07-23 12:28 J -20252544.19 -20252543.98 -20252543.76 0.0303 0.0146 \*  
 Venus -60156-02-20 07:11 J -20250505.38 -20250505.20 -20250505.00 0.0287 0.0121  
 Mercury -60151-10-29 17:16 J -20248427.92 -20248427.78 -20248427.64 0.0265 0.0173  
 Mercury -60150-01-26 13:11 J -20248339.13 -20248338.95 -20248338.77 0.0264 0.0051  
 Mercury -60150-04-25 09:06 J -20248250.29 -20248250.12 -20248249.93 0.0263 0.0073  
 Mercury -60150-07-23 05:30 J -20248161.39 -20248161.27 -20248161.15 0.0263 0.0195  
 Mars -60150-10-05 09:49 J -20248087.40 -20248087.09 -20248086.77 0.0262 0.0019  
 Earth -60150-12-26 09:49 J -20248005.13 -20248005.09 -20248005.03 0.0262 0.0256  
 Earth -60148-01-06 00:42 J -20247628.70 -20247628.47 -20247628.22 0.0260 0.0075  
 Moon -60148-01-06 03:49 J -20247628.56 -20247628.34 -20247628.10 0.0260 0.0088 \*  
 Earth -60147-01-17 14:37 J -20247252.10 -20247251.89 -20247251.65 0.0260 0.0109  
 Moon -60147-01-17 16:33 J -20247252.04 -20247251.81 -20247251.57 0.0260 0.0106 \*  
 Venus -60141-10-30 01:11 J -20244774.64 -20244774.45 -20244774.26 0.0272 0.0128  
 Venus -60140-06-16 12:42 J -20244545.05 -20244544.97 -20244544.89 0.0275 0.0253  
 Mercury -60135-05-19 02:23 J -20242747.50 -20242747.40 -20242747.30 0.0297 0.0202  
 Mercury -60135-08-15 15:21 J -20242658.99 -20242658.86 -20242658.73 0.0298 0.0076  
 Mercury -60135-11-12 04:18 J -20242570.45 -20242570.32 -20242570.19 0.0298 0.0050  
 Mercury -60134-02-08 17:01 J -20242481.89 -20242481.79 -20242481.68 0.0299 0.0175  
 Earth -60134-07-02 06:57 J -20242338.31 -20242338.21 -20242338.09 0.0300 0.0266  
 Moon -60134-07-02 07:11 J -20242338.28 -20242338.20 -20242338.11 0.0300 0.0276 \*  
 Mars -60134-11-22 15:35 J -20242194.97 -20242194.85 -20242194.73 0.0301 0.0268  
 Earth -60133-07-16 03:21 J -20241958.60 -20241958.36 -20241958.11 0.0302 0.0016  
 Moon -60133-07-16 06:28 J -20241958.46 -20241958.23 -20241957.99 0.0302 0.0012 \*  
 Earth -60132-07-30 23:45 J -20241578.53 -20241578.51 -20241578.46 0.0303 0.0299  
 Moon -60132-07-31 03:35 J -20241578.39 -20241578.35 -20241578.30 0.0303 0.0297  
 Venus -60127-01-15 19:54 J -20239948.74 -20239948.67 -20239948.57 0.0290 0.0262  
 Venus -60127-09-02 09:49 J -20239719.26 -20239719.09 -20239718.92 0.0287 0.0167

Mercury -60121-03-17 15:21 J -20237695.95 -20237695.86 -20237695.75 0.0265 0.0217

Mercury -60121-06-14 11:30 J -20237607.19 -20237607.02 -20237606.85 0.0264 0.0094

Mercury -60121-09-11 07:40 J -20237518.37 -20237518.18 -20237518.00 0.0263 0.0029

Mercury -60121-12-09 03:35 J -20237429.49 -20237429.35 -20237429.19 0.0263 0.0152

Mars -60120-11-23 19:40 J -20237079.86 -20237079.68 -20237079.49 0.0261 0.0212

Moon -60119-01-01 00:42 J -20237041.65 -20237041.47 -20237041.27 0.0261 0.0175

Earth -60119-01-01 04:04 J -20237041.53 -20237041.33 -20237041.14 0.0261 0.0160 \*

Moon -60118-01-12 16:33 J -20236665.05 -20236664.81 -20236664.57 0.0260 0.0016

Earth -60118-01-12 18:28 J -20236664.98 -20236664.73 -20236664.48 0.0260 0.0023 \*

Earth -60117-01-24 08:37 J -20236288.28 -20236288.14 -20236287.97 0.0259 0.0205

Moon -60117-01-24 12:13 J -20236288.13 -20236287.99 -20236287.85 0.0259 0.0212 \*

Venus -60111-05-12 05:45 J -20233988.47 -20233988.26 -20233988.05 0.0273 0.0077

Mercury -60106-10-06 04:18 J -20232015.40 -20232015.32 -20232015.24 0.0297 0.0238

Mercury -60105-01-02 17:16 J -20231926.90 -20231926.78 -20231926.65 0.0298 0.0112

Mars -60105-01-09 08:23 J -20231920.21 -20231920.15 -20231920.07 0.0298 0.0288

Mercury -60105-03-31 06:13 J -20231838.37 -20231838.24 -20231838.11 0.0298 0.0014

Mercury -60105-06-27 19:11 J -20231749.82 -20231749.70 -20231749.59 0.0299 0.0140

Mercury -60105-09-24 07:54 J -20231661.23 -20231661.17 -20231661.11 0.0300 0.0265

Moon -60104-07-09 19:25 J -20231372.91 -20231372.69 -20231372.46 0.0301 0.0119

Earth -60104-07-09 22:47 J -20231372.77 -20231372.55 -20231372.33 0.0301 0.0113 \*

Moon -60103-07-24 16:47 J -20230992.99 -20230992.80 -20230992.60 0.0302 0.0171

Earth -60103-07-24 19:54 J -20230992.87 -20230992.67 -20230992.47 0.0302 0.0173 \*

Venus -60098-07-29 01:54 J -20229162.56 -20229162.42 -20229162.27 0.0289 0.0201

Venus -60097-03-14 15:21 J -20228932.99 -20228932.86 -20228932.73 0.0287 0.0224

Mercury -60092-08-04 15:49 J -20226963.90 -20226963.84 -20226963.78 0.0265 0.0247

Mercury -60092-11-01 11:30 J -20226875.17 -20226875.02 -20226874.85 0.0265 0.0126

Mars -60091-01-09 09:49 J -20226806.24 -20226806.09 -20226805.91 0.0264 0.0224

Mercury -60091-01-29 07:40 J -20226786.36 -20226786.18 -20226785.99 0.0264 0.0007

Mercury -60091-04-28 03:49 J -20226697.50 -20226697.34 -20226697.17 0.0264 0.0121

Mercury -60091-07-26 00:13 J -20226608.55 -20226608.49 -20226608.42 0.0263 0.0244

Earth -60091-12-27 11:45 J -20226454.10 -20226454.01 -20226453.91 0.0262 0.0240  
 Moon -60091-12-27 14:23 J -20226453.94 -20226453.90 -20226453.83 0.0262 0.0254 \*  
 Earth -60089-01-08 03:21 J -20226077.61 -20226077.36 -20226077.12 0.0261 0.0056  
 Moon -60089-01-08 05:59 J -20226077.49 -20226077.25 -20226077.00 0.0261 0.0069 \*  
 Moon -60088-01-18 14:52 J -20225701.09 -20225700.88 -20225700.65 0.0260 0.0130  
 Earth -60088-01-18 17:45 J -20225700.97 -20225700.76 -20225700.53 0.0260 0.0128 \*  
 Venus -60082-11-22 12:42 J -20223202.19 -20223201.97 -20223201.75 0.0273 0.0019  
 Mercury -60076-02-22 06:13 J -20221283.28 -20221283.24 -20221283.18 0.0296 0.0273  
 Mercury -60076-05-21 19:25 J -20221194.80 -20221194.69 -20221194.57 0.0297 0.0147  
 Mercury -60076-08-18 08:23 J -20221106.28 -20221106.15 -20221106.02 0.0298 0.0022  
 Mercury -60076-11-14 21:21 J -20221017.74 -20221017.61 -20221017.49 0.0299 0.0104  
 Mercury -60075-02-11 10:04 J -20220929.16 -20220929.08 -20220929.00 0.0299 0.0229  
 Mars -60075-02-27 16:04 J -20220913.10 -20220912.83 -20220912.56 0.0299 0.0010  
 Earth -60075-07-03 17:59 J -20220786.89 -20220786.75 -20220786.60 0.0300 0.0239  
 Moon -60075-07-03 21:21 J -20220786.73 -20220786.61 -20220786.47 0.0300 0.0249 \*  
 Earth -60074-07-18 14:23 J -20220407.14 -20220406.90 -20220406.67 0.0302 0.0044  
 Moon -60074-07-18 17:01 J -20220407.03 -20220406.79 -20220406.54 0.0302 0.0040 \*  
 Venus -60068-02-07 05:59 J -20218376.42 -20218376.25 -20218376.07 0.0290 0.0147  
 Venus -60068-09-24 18:57 J -20218146.75 -20218146.71 -20218146.65 0.0287 0.0277  
 Mercury -60062-03-21 10:33 J -20216143.20 -20216143.06 -20216142.91 0.0265 0.0166  
 Mercury -60062-06-18 06:42 J -20216054.41 -20216054.22 -20216054.04 0.0264 0.0043  
 Mercury -60062-09-15 02:37 J -20215965.56 -20215965.39 -20215965.21 0.0263 0.0081  
 Mercury -60062-12-12 22:47 J -20215876.65 -20215876.55 -20215876.42 0.0263 0.0204  
 Mars -60061-02-28 19:11 J -20215799.02 -20215798.70 -20215798.39 0.0262 0.0009  
 Moon -60060-01-02 04:33 J -20215490.50 -20215490.31 -20215490.11 0.0261 0.0157  
 Earth -60060-01-02 07:25 J -20215490.39 -20215490.19 -20215489.97 0.0261 0.0142 \*  
 Earth -60059-01-13 22:33 J -20215113.80 -20215113.56 -20215113.31 0.0260 0.0042  
 Moon -60059-01-14 00:42 J -20215113.71 -20215113.47 -20215113.23 0.0260 0.0038 \*  
 Earth -60058-01-25 13:11 J -20214737.06 -20214736.95 -20214736.81 0.0260 0.0225  
 Moon -60058-01-25 16:18 J -20214736.93 -20214736.82 -20214736.71 0.0260 0.0233 \*

Venus -60052-06-03 17:59 J -20212415.97 -20212415.75 -20212415.54 0.0274 0.0035  
 Mercury -60047-10-08 21:49 J -20210462.70 -20210462.59 -20210462.49 0.0297 0.0179  
 Mercury -60046-01-05 10:47 J -20210374.18 -20210374.05 -20210373.92 0.0298 0.0054  
 Mercury -60046-04-03 23:30 J -20210285.64 -20210285.52 -20210285.39 0.0299 0.0073  
 Mercury -60046-07-01 12:28 J -20210197.08 -20210196.98 -20210196.88 0.0299 0.0197  
 Moon -60045-07-11 09:06 J -20209821.34 -20209821.12 -20209820.89 0.0301 0.0089  
 Earth -60045-07-11 11:59 J -20209821.23 -20209821.00 -20209820.77 0.0301 0.0082 \*  
 Earth -60044-07-26 08:23 J -20209441.32 -20209441.15 -20209440.96 0.0302 0.0203  
 Moon -60044-07-26 08:52 J -20209441.29 -20209441.13 -20209440.95 0.0302 0.0204 \*  
 Venus -60039-08-20 13:25 J -20207590.14 -20207589.94 -20207589.74 0.0289 0.0082  
 Mercury -60033-08-07 11:16 J -20205411.15 -20205411.03 -20205410.90 0.0265 0.0194  
 Mercury -60033-11-04 07:25 J -20205322.37 -20205322.19 -20205322.01 0.0265 0.0071  
 Mercury -60032-02-01 03:21 J -20205233.54 -20205233.36 -20205233.17 0.0264 0.0053  
 Mercury -60032-04-30 23:30 J -20205144.65 -20205144.52 -20205144.37 0.0263 0.0177  
 Earth -60032-12-28 16:47 J -20204902.92 -20204902.80 -20204902.66 0.0262 0.0221  
 Moon -60032-12-28 19:54 J -20204902.77 -20204902.67 -20204902.55 0.0262 0.0235 \*  
 Mars -60031-04-19 22:18 J -20204790.68 -20204790.57 -20204790.45 0.0262 0.0244  
 Moon -60030-01-09 06:57 J -20204526.46 -20204526.21 -20204525.95 0.0261 0.0047  
 Earth -60030-01-09 08:37 J -20204526.38 -20204526.14 -20204525.89 0.0261 0.0036 \*  
 Moon -60029-01-20 20:37 J -20204149.83 -20204149.64 -20204149.44 0.0260 0.0151  
 Earth -60029-01-20 23:45 J -20204149.71 -20204149.51 -20204149.30 0.0260 0.0148 \*  
 Venus -60023-12-15 02:23 J -20201629.61 -20201629.40 -20201629.20 0.0274 0.0097  
 Mercury -60017-02-26 00:28 J -20199730.57 -20199730.48 -20199730.39 0.0296 0.0209  
 Mercury -60017-05-24 13:25 J -20199642.07 -20199641.94 -20199641.81 0.0297 0.0084  
 Mars -60017-06-04 19:54 J -20199630.81 -20199630.67 -20199630.49 0.0297 0.0242  
 Mercury -60017-08-21 02:23 J -20199553.53 -20199553.40 -20199553.27 0.0298 0.0042  
 Mercury -60017-11-17 15:06 J -20199464.98 -20199464.87 -20199464.76 0.0299 0.0166  
 Mercury -60016-02-14 03:49 J -20199376.36 -20199376.34 -20199376.31 0.0299 0.0291  
 Earth -60016-07-05 10:47 J -20199235.22 -20199235.05 -20199234.87 0.0300 0.0208  
 Moon -60016-07-05 13:11 J -20199235.11 -20199234.95 -20199234.77 0.0300 0.0216 \*

Moon	-60015-07-20 06:13 J	-20198855.48	-20198855.24	-20198855.00	0.0302	0.0074	
Earth	-60015-07-20 06:57 J	-20198855.44	-20198855.21	-20198854.98	0.0302	0.0077	*
Venus	-60009-03-01 19:11 J	-20196803.91	-20196803.70	-20196803.49	0.0289	0.0022	
Mercury	-60004-12-25 10:47 J	-20194679.13	-20194679.05	-20194678.96	0.0265	0.0230	
Mercury	-60003-03-24 06:42 J	-20194590.38	-20194590.22	-20194590.05	0.0265	0.0108	
Mars	-60003-06-05 05:59 J	-20194517.45	-20194517.25	-20194517.02	0.0264	0.0190	
Mercury	-60003-06-21 02:52 J	-20194501.56	-20194501.38	-20194501.19	0.0264	0.0015	
Mercury	-60003-09-17 23:01 J	-20194412.69	-20194412.54	-20194412.38	0.0263	0.0139	
Mercury	-60003-12-15 19:25 J	-20194323.70	-20194323.69	-20194323.68	0.0263	0.0262	
Earth	-60001-01-04 14:23 J	-20193939.11	-20193938.90	-20193938.67	0.0261	0.0122	
Moon	-60001-01-04 16:04 J	-20193939.03	-20193938.83	-20193938.62	0.0261	0.0135	*

# 60TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 60th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-60000-01-15 05:45 J	-20193562.50	-20193562.26	-20193562.01	0.0260	0.0064		
Moon	-60000-01-15 09:21 J	-20193562.35	-20193562.11	-20193561.86	0.0260	0.0059	*	
Moon	-59999-01-26 19:25 J	-20193185.72	-20193185.69	-20193185.63	0.0260	0.0256		
Earth	-59999-01-26 21:06 J	-20193185.69	-20193185.62	-20193185.53	0.0260	0.0246	*	
Venus	-59994-11-09 20:52 J	-20191072.74	-20191072.63	-20191072.50	0.0272	0.0224		
Venus	-59993-06-26 08:23 J	-20190843.32	-20190843.15	-20190842.97	0.0275	0.0155		
Mercury	-59988-07-15 02:52 J	-20188998.45	-20188998.38	-20188998.30	0.0297	0.0239		
Mercury	-59988-10-11 15:49 J	-20188909.96	-20188909.84	-20188909.71	0.0297	0.0114		

Mercury -59987-01-08 04:47 J -20188821.43 -20188821.30 -20188821.16 0.0298 0.0014  
 Mercury -59987-04-06 17:45 J -20188732.88 -20188732.76 -20188732.64 0.0299 0.0137  
 Mercury -59987-07-04 06:28 J -20188644.29 -20188644.23 -20188644.17 0.0300 0.0261  
 Mars -59987-07-25 08:23 J -20188623.41 -20188623.15 -20188622.88 0.0300 0.0054  
 Earth -59986-07-14 05:59 J -20188269.49 -20188269.25 -20188269.01 0.0302 0.0048  
 Moon -59986-07-14 07:11 J -20188269.43 -20188269.20 -20188268.97 0.0302 0.0053 \*  
 Earth -59985-07-28 01:54 J -20187889.55 -20187889.42 -20187889.26 0.0302 0.0238  
 Moon -59985-07-28 05:30 J -20187889.41 -20187889.27 -20187889.12 0.0302 0.0237 \*  
 Venus -59980-09-12 03:06 J -20186017.57 -20186017.37 -20186017.16 0.0288 0.0046  
 Mercury -59974-05-14 11:45 J -20183947.04 -20183947.01 -20183946.95 0.0266 0.0257  
 Mercury -59974-08-11 07:54 J -20183858.33 -20183858.17 -20183858.01 0.0265 0.0134  
 Mercury -59974-11-08 04:04 J -20183769.52 -20183769.33 -20183769.15 0.0264 0.0011  
 Mercury -59973-02-05 00:13 J -20183680.66 -20183680.49 -20183680.32 0.0264 0.0113  
 Mercury -59973-05-03 20:23 J -20183591.72 -20183591.65 -20183591.56 0.0263 0.0237  
 Mars -59973-07-25 06:57 J -20183509.52 -20183509.21 -20183508.90 0.0263 0.0048  
 Moon -59973-12-29 23:30 J -20183351.65 -20183351.52 -20183351.36 0.0262 0.0214  
 Earth -59973-12-30 00:57 J -20183351.61 -20183351.46 -20183351.29 0.0262 0.0201 \*  
 Moon -59971-01-10 13:11 J -20182975.20 -20182974.95 -20182974.70 0.0261 0.0024  
 Earth -59971-01-10 17:01 J -20182975.04 -20182974.79 -20182974.54 0.0261 0.0015 \*  
 Earth -59970-01-22 07:54 J -20182598.34 -20182598.17 -20182597.97 0.0260 0.0170  
 Moon -59970-01-22 08:37 J -20182598.31 -20182598.14 -20182597.95 0.0260 0.0174 \*  
 Venus -59964-05-22 05:30 J -20180286.43 -20180286.27 -20180286.08 0.0272 0.0161  
 Venus -59963-01-06 17:16 J -20180056.90 -20180056.78 -20180056.64 0.0275 0.0220  
 Mercury -59959-12-02 05:59 J -20178266.31 -20178266.25 -20178266.20 0.0296 0.0266  
 Mercury -59958-02-28 18:57 J -20178177.83 -20178177.71 -20178177.59 0.0297 0.0141  
 Mercury -59958-05-28 07:54 J -20178089.30 -20178089.17 -20178089.04 0.0298 0.0016  
 Mercury -59958-08-24 20:37 J -20178000.76 -20178000.64 -20178000.51 0.0298 0.0109  
 Mercury -59958-11-21 09:35 J -20177912.18 -20177912.10 -20177912.02 0.0299 0.0233  
 Moon -59957-07-07 05:16 J -20177683.48 -20177683.28 -20177683.08 0.0300 0.0179  
 Earth -59957-07-07 07:11 J -20177683.39 -20177683.20 -20177683.00 0.0300 0.0174 \*



Moon -59956-07-21 23:45 J -20177303.74 -20177303.51 -20177303.28 0.0302 0.0109  
 Earth -59956-07-22 03:21 J -20177303.58 -20177303.36 -20177303.14 0.0302 0.0112 \*  
 Venus -59950-03-25 10:33 J -20175231.25 -20175231.06 -20175230.86 0.0288 0.0111  
 Mercury -59945-12-28 07:54 J -20173126.31 -20173126.17 -20173126.02 0.0265 0.0167  
 Mercury -59944-03-27 04:04 J -20173037.51 -20173037.33 -20173037.15 0.0264 0.0044  
 Mercury -59944-06-24 00:13 J -20172948.67 -20172948.49 -20172948.31 0.0264 0.0079  
 Mercury -59944-09-20 20:23 J -20172859.76 -20172859.65 -20172859.53 0.0263 0.0202  
 Earth -59942-01-05 23:59 J -20172387.72 -20172387.50 -20172387.26 0.0261 0.0100  
 Moon -59942-01-06 03:49 J -20172387.56 -20172387.34 -20172387.11 0.0261 0.0112 \*  
 Moon -59941-01-17 15:35 J -20172011.10 -20172010.85 -20172010.61 0.0260 0.0084  
 Earth -59941-01-17 15:35 J -20172011.08 -20172010.85 -20172010.61 0.0260 0.0086 \*  
 Venus -59935-12-02 12:13 J -20169500.19 -20169499.99 -20169499.79 0.0273 0.0103  
 Mercury -59929-04-20 08:23 J -20167534.15 -20167534.15 -20167534.13 0.0296 0.0296  
 Mercury -59929-07-17 21:35 J -20167445.71 -20167445.60 -20167445.49 0.0297 0.0170  
 Mercury -59929-10-14 10:33 J -20167357.19 -20167357.06 -20167356.93 0.0298 0.0045  
 Mars -59929-10-30 20:09 J -20167340.87 -20167340.66 -20167340.45 0.0298 0.0193  
 Mercury -59928-01-10 23:30 J -20167268.65 -20167268.52 -20167268.39 0.0299 0.0081  
 Mercury -59928-04-09 12:13 J -20167180.08 -20167179.99 -20167179.89 0.0299 0.0206  
 Earth -59928-07-01 07:54 J -20167097.22 -20167097.17 -20167097.12 0.0300 0.0292  
 Moon -59928-07-01 10:18 J -20167097.07 -20167097.07 -20167097.05 0.0300 0.0299  
 Earth -59927-07-16 03:35 J -20166717.59 -20166717.35 -20166717.11 0.0302 0.0011  
 Moon -59927-07-16 07:25 J -20166717.43 -20166717.19 -20166716.95 0.0302 0.0016 \*  
 Earth -59926-07-30 23:30 J -20166337.62 -20166337.52 -20166337.42 0.0302 0.0273  
 Moon -59926-07-31 02:23 J -20166337.51 -20166337.40 -20166337.29 0.0302 0.0271 \*  
 Venus -59921-02-18 05:45 J -20164674.35 -20164674.26 -20164674.14 0.0290 0.0245  
 Venus -59921-10-04 19:11 J -20164444.85 -20164444.70 -20164444.53 0.0287 0.0180  
 Mercury -59915-05-17 09:21 J -20162394.23 -20162394.11 -20162393.98 0.0265 0.0192  
 Mercury -59915-08-14 05:16 J -20162305.45 -20162305.28 -20162305.10 0.0265 0.0069  
 Mars -59915-10-31 01:25 J -20162227.69 -20162227.44 -20162227.17 0.0264 0.0145  
 Mercury -59915-11-11 01:25 J -20162216.62 -20162216.44 -20162216.25 0.0264 0.0055

Mercury -59914-02-07 21:49 J -20162127.73 -20162127.59 -20162127.45 0.0263 0.0178  
 Moon -59913-01-01 07:54 J -20161800.33 -20161800.17 -20161800.00 0.0262 0.0193  
 Earth -59913-01-01 11:30 J -20161800.19 -20161800.02 -20161799.83 0.0262 0.0179 \*  
 Earth -59912-01-12 03:21 J -20161423.61 -20161423.36 -20161423.11 0.0261 0.0008  
 Moon -59912-01-12 03:06 J -20161423.61 -20161423.37 -20161423.12 0.0261 0.0006 \*  
 Earth -59911-01-23 18:42 J -20161046.88 -20161046.72 -20161046.55 0.0260 0.0192  
 Moon -59911-01-23 22:18 J -20161046.72 -20161046.57 -20161046.40 0.0260 0.0198 \*  
 Venus -59905-06-13 21:35 J -20158713.82 -20158713.60 -20158713.39 0.0273 0.0037  
 Mercury -59900-12-05 00:42 J -20156713.56 -20156713.47 -20156713.36 0.0296 0.0196  
 Mercury -59899-03-03 13:54 J -20156625.05 -20156624.92 -20156624.79 0.0297 0.0070  
 Mercury -59899-05-31 02:37 J -20156536.51 -20156536.39 -20156536.26 0.0298 0.0056  
 Mercury -59899-08-27 15:35 J -20156447.96 -20156447.85 -20156447.75 0.0299 0.0180  
 Mars -59899-12-20 14:37 J -20156333.13 -20156332.89 -20156332.63 0.0299 0.0118  
 Moon -59898-07-10 02:37 J -20156131.60 -20156131.39 -20156131.18 0.0301 0.0141  
 Earth -59898-07-10 06:28 J -20156131.45 -20156131.23 -20156131.02 0.0301 0.0137 \*  
 Moon -59897-07-23 23:59 J -20155751.70 -20155751.50 -20155751.29 0.0302 0.0148  
 Earth -59897-07-24 02:09 J -20155751.61 -20155751.41 -20155751.19 0.0302 0.0150 \*  
 Venus -59892-08-30 14:23 J -20153888.06 -20153887.90 -20153887.73 0.0290 0.0174  
 Venus -59891-04-17 03:21 J -20153658.45 -20153658.36 -20153658.25 0.0287 0.0249  
 Mercury -59886-10-04 09:35 J -20151662.18 -20151662.10 -20151661.99 0.0265 0.0223  
 Mercury -59885-01-01 05:45 J -20151573.43 -20151573.26 -20151573.09 0.0265 0.0100  
 Mercury -59885-03-30 01:54 J -20151484.61 -20151484.42 -20151484.24 0.0264 0.0023  
 Mercury -59885-06-26 21:49 J -20151395.73 -20151395.59 -20151395.42 0.0263 0.0147  
 Mars -59885-12-19 21:35 J -20151219.89 -20151219.60 -20151219.30 0.0262 0.0093  
 Earth -59885-12-26 19:25 J -20151212.70 -20151212.69 -20151212.68 0.0262 0.0262  
 Earth -59883-01-07 11:16 J -20150836.26 -20150836.03 -20150835.78 0.0261 0.0077  
 Moon -59883-01-07 11:45 J -20150836.25 -20150836.01 -20150835.76 0.0261 0.0087 \*  
 Moon -59882-01-18 23:01 J -20150459.77 -20150459.54 -20150459.31 0.0260 0.0110  
 Earth -59882-01-19 02:37 J -20150459.61 -20150459.39 -20150459.15 0.0260 0.0109 \*  
 Venus -59876-12-25 03:49 J -20147927.56 -20147927.34 -20147927.13 0.0274 0.0020

Mercury -59870-04-24 03:21 J -20145981.45 -20145981.36 -20145981.28 0.0297 0.0226

Mercury -59870-07-21 16:18 J -20145892.94 -20145892.82 -20145892.69 0.0298 0.0100

Mercury -59870-10-18 05:16 J -20145804.41 -20145804.28 -20145804.15 0.0298 0.0025

Mercury -59869-01-14 17:59 J -20145715.86 -20145715.75 -20145715.63 0.0299 0.0151

Mercury -59869-04-12 06:42 J -20145627.26 -20145627.22 -20145627.16 0.0300 0.0275

Earth -59869-07-03 05:16 J -20145545.39 -20145545.28 -20145545.15 0.0300 0.0258

Moon -59869-07-03 08:52 J -20145545.24 -20145545.13 -20145545.01 0.0300 0.0264 \*

Earth -59868-07-18 01:25 J -20145165.68 -20145165.44 -20145165.20 0.0302 0.0026

Moon -59868-07-18 02:52 J -20145165.63 -20145165.38 -20145165.13 0.0302 0.0023 \*

Venus -59862-03-12 23:16 J -20143101.72 -20143101.53 -20143101.34 0.0289 0.0103

Mercury -59856-02-20 11:16 J -20140930.09 -20140930.03 -20140929.96 0.0265 0.0246

Mercury -59856-05-20 07:25 J -20140841.36 -20140841.19 -20140841.03 0.0265 0.0124

Mercury -59856-08-17 03:21 J -20140752.55 -20140752.36 -20140752.17 0.0264 0.0001

Mercury -59856-11-13 23:30 J -20140663.68 -20140663.52 -20140663.35 0.0264 0.0122

Mercury -59855-02-10 19:40 J -20140574.74 -20140574.68 -20140574.61 0.0263 0.0245

Moon -59854-01-02 21:35 J -20140248.77 -20140248.60 -20140248.40 0.0262 0.0170

Earth -59854-01-02 23:16 J -20140248.73 -20140248.53 -20140248.33 0.0262 0.0156 \*

Earth -59853-01-14 14:37 J -20139872.13 -20139871.89 -20139871.64 0.0260 0.0031

Moon -59853-01-14 18:13 J -20139871.98 -20139871.74 -20139871.49 0.0260 0.0028 \*

Earth -59852-01-25 05:59 J -20139495.38 -20139495.25 -20139495.11 0.0260 0.0215

Moon -59852-01-25 07:40 J -20139495.30 -20139495.18 -20139495.03 0.0260 0.0223 \*

Venus -59846-07-07 12:57 J -20137141.17 -20137140.96 -20137140.76 0.0274 0.0086

Mercury -59841-09-10 06:28 J -20135249.29 -20135249.23 -20135249.16 0.0296 0.0250

Mercury -59841-12-07 19:25 J -20135160.80 -20135160.69 -20135160.56 0.0297 0.0126

Mercury -59840-03-06 08:37 J -20135072.28 -20135072.14 -20135072.01 0.0298 0.0008

Mars -59840-03-28 04:18 J -20135050.57 -20135050.32 -20135050.07 0.0298 0.0128

Mercury -59840-06-02 21:21 J -20134983.73 -20134983.61 -20134983.49 0.0298 0.0125

Mercury -59840-08-30 10:04 J -20134895.15 -20134895.08 -20134895.00 0.0299 0.0249

Moon -59839-07-12 03:49 J -20134579.56 -20134579.34 -20134579.12 0.0301 0.0105

Earth -59839-07-12 04:33 J -20134579.54 -20134579.31 -20134579.08 0.0301 0.0101 \*

Earth -59838-07-27 00:28 J -20134199.66 -20134199.48 -20134199.28 0.0302 0.0186  
 Moon -59838-07-27 02:37 J -20134199.57 -20134199.39 -20134199.20 0.0302 0.0186 \*  
 Venus -59833-09-22 08:23 J -20132315.36 -20132315.15 -20132314.95 0.0289 0.0031  
 Mercury -59827-10-07 07:54 J -20130109.32 -20130109.17 -20130109.02 0.0265 0.0153  
 Mercury -59826-01-04 03:49 J -20130020.52 -20130020.34 -20130020.15 0.0264 0.0031  
 Mars -59826-03-27 21:21 J -20129937.90 -20129937.61 -20129937.32 0.0264 0.0099  
 Mercury -59826-04-02 23:59 J -20129931.67 -20129931.50 -20129931.32 0.0264 0.0092  
 Mercury -59826-06-30 20:09 J -20129842.76 -20129842.66 -20129842.55 0.0263 0.0215  
 Earth -59826-12-29 07:40 J -20129661.28 -20129661.18 -20129661.08 0.0262 0.0238  
 Moon -59826-12-29 09:35 J -20129661.16 -20129661.10 -20129661.02 0.0262 0.0251 \*  
 Moon -59824-01-08 19:54 J -20129284.91 -20129284.67 -20129284.42 0.0261 0.0062  
 Earth -59824-01-08 23:16 J -20129284.77 -20129284.53 -20129284.28 0.0261 0.0053 \*  
 Moon -59823-01-20 12:28 J -20128908.18 -20128907.98 -20128907.77 0.0260 0.0136  
 Earth -59823-01-20 14:23 J -20128908.12 -20128907.90 -20128907.69 0.0260 0.0132 \*  
 Venus -59817-06-01 07:11 J -20126584.30 -20126584.20 -20126584.08 0.0272 0.0235  
 Venus -59816-01-16 18:57 J -20126354.89 -20126354.71 -20126354.52 0.0275 0.0142  
 Mercury -59811-01-28 08:52 J -20124517.17 -20124517.13 -20124517.09 0.0297 0.0283  
 Mercury -59811-04-26 21:49 J -20124428.70 -20124428.59 -20124428.47 0.0297 0.0158  
 Mercury -59811-07-24 10:47 J -20124340.18 -20124340.05 -20124339.91 0.0298 0.0033  
 Mercury -59811-10-20 23:45 J -20124251.63 -20124251.51 -20124251.38 0.0299 0.0093  
 Mercury -59810-01-17 12:28 J -20124163.06 -20124162.98 -20124162.89 0.0300 0.0219  
 Mars -59810-05-17 13:40 J -20124043.14 -20124042.93 -20124042.69 0.0300 0.0166  
 Earth -59810-07-06 02:23 J -20123993.56 -20123993.40 -20123993.24 0.0301 0.0223  
 Moon -59810-07-06 02:37 J -20123993.54 -20123993.39 -20123993.22 0.0301 0.0229 \*  
 Moon -59809-07-19 19:54 J -20123613.91 -20123613.67 -20123613.43 0.0302 0.0062  
 Earth -59809-07-19 22:47 J -20123613.79 -20123613.55 -20123613.32 0.0302 0.0062 \*  
 Venus -59803-04-04 16:04 J -20121529.04 -20121528.83 -20121528.63 0.0288 0.0036  
 Mercury -59797-02-24 09:06 J -20119377.25 -20119377.12 -20119376.98 0.0265 0.0179  
 Mercury -59797-05-23 05:01 J -20119288.47 -20119288.29 -20119288.11 0.0264 0.0057  
 Mercury -59797-08-20 01:11 J -20119199.63 -20119199.45 -20119199.27 0.0264 0.0065

Mercury -59797-11-16 21:21 J -20119110.74 -20119110.61 -20119110.48 0.0263 0.0188

Mars -59796-05-16 21:06 J -20118929.89 -20118929.62 -20118929.35 0.0262 0.0142

Earth -59795-01-04 10:04 J -20118697.28 -20118697.08 -20118696.86 0.0261 0.0133

Moon -59795-01-04 12:28 J -20118697.17 -20118696.98 -20118696.77 0.0261 0.0148 \*

Earth -59794-01-16 01:25 J -20118320.68 -20118320.44 -20118320.19 0.0260 0.0054

Moon -59794-01-16 03:49 J -20118320.59 -20118320.34 -20118320.09 0.0260 0.0051 \*

Moon -59793-01-27 13:54 J -20117943.99 -20117943.92 -20117943.84 0.0260 0.0247

Earth -59793-01-27 16:33 J -20117943.90 -20117943.81 -20117943.70 0.0260 0.0237 \*

Venus -59788-12-12 15:21 J -20115798.02 -20115797.86 -20115797.68 0.0272 0.0173

Venus -59787-07-30 03:06 J -20115568.51 -20115568.37 -20115568.22 0.0275 0.0206

Mercury -59782-09-14 00:57 J -20113696.57 -20113696.46 -20113696.36 0.0297 0.0185

Mercury -59782-12-11 13:54 J -20113608.05 -20113607.92 -20113607.79 0.0297 0.0060

Mercury -59781-03-09 02:37 J -20113519.51 -20113519.39 -20113519.26 0.0298 0.0066

Mercury -59781-06-05 15:35 J -20113430.95 -20113430.85 -20113430.75 0.0299 0.0190

Earth -59780-07-13 23:45 J -20113027.74 -20113027.51 -20113027.27 0.0301 0.0066

Moon -59780-07-14 02:37 J -20113027.62 -20113027.39 -20113027.16 0.0301 0.0069 \*

Earth -59779-07-28 20:09 J -20112647.82 -20112647.66 -20112647.50 0.0302 0.0220

Moon -59779-07-28 23:45 J -20112647.67 -20112647.51 -20112647.34 0.0302 0.0222 \*

Venus -59774-10-16 00:28 J -20110742.67 -20110742.48 -20110742.28 0.0288 0.0107

Mercury -59768-07-13 09:49 J -20108645.20 -20108645.09 -20108644.97 0.0265 0.0207

Mercury -59768-10-10 05:45 J -20108556.43 -20108556.26 -20108556.09 0.0264 0.0086

Mercury -59767-01-07 01:40 J -20108467.61 -20108467.43 -20108467.24 0.0264 0.0037

Mercury -59767-04-05 21:49 J -20108378.74 -20108378.59 -20108378.44 0.0263 0.0159

Moon -59767-12-30 16:04 J -20108109.93 -20108109.83 -20108109.69 0.0262 0.0230

Earth -59767-12-30 18:57 J -20108109.85 -20108109.71 -20108109.57 0.0262 0.0215 \*

Moon -59765-01-11 07:11 J -20107733.44 -20107733.20 -20107732.96 0.0260 0.0039

Earth -59765-01-11 10:04 J -20107733.33 -20107733.08 -20107732.83 0.0260 0.0030 \*

Earth -59764-01-22 00:28 J -20107356.67 -20107356.48 -20107356.27 0.0260 0.0155

Moon -59764-01-22 03:06 J -20107356.55 -20107356.37 -20107356.17 0.0260 0.0162 \*

Venus -59758-06-24 20:23 J -20105011.84 -20105011.65 -20105011.45 0.0272 0.0120

Venus -59757-02-09 08:09 J -20104782.22 -20104782.16 -20104782.08 0.0275 0.0259

Mercury -59752-01-31 02:37 J -20102964.48 -20102964.39 -20102964.30 0.0297 0.0221

Mercury -59752-04-29 15:35 J -20102875.97 -20102875.85 -20102875.72 0.0298 0.0096

Mercury -59752-07-27 04:33 J -20102787.44 -20102787.31 -20102787.17 0.0299 0.0032

Mars -59752-08-22 16:18 J -20102761.08 -20102760.82 -20102760.55 0.0299 0.0090

Mercury -59752-10-23 17:30 J -20102698.88 -20102698.77 -20102698.66 0.0299 0.0155

Mercury -59751-01-20 06:13 J -20102610.28 -20102610.24 -20102610.19 0.0300 0.0280

Moon -59751-07-07 15:35 J -20102442.02 -20102441.85 -20102441.65 0.0301 0.0197

Earth -59751-07-07 18:42 J -20102441.89 -20102441.72 -20102441.52 0.0301 0.0192 \*

Moon -59750-07-22 12:28 J -20102062.21 -20102061.98 -20102061.76 0.0302 0.0095

Earth -59750-07-22 15:35 J -20102062.08 -20102061.85 -20102061.62 0.0302 0.0095 \*

Venus -59745-09-09 17:16 J -20100185.87 -20100185.78 -20100185.68 0.0290 0.0258

Venus -59744-04-27 06:57 J -20099956.38 -20099956.21 -20099956.04 0.0287 0.0168

Mercury -59739-11-30 10:18 J -20097913.14 -20097913.07 -20097912.98 0.0265 0.0237

Mercury -59738-02-27 06:13 J -20097824.40 -20097824.24 -20097824.07 0.0264 0.0116

Mercury -59738-05-27 02:23 J -20097735.59 -20097735.40 -20097735.22 0.0264 0.0007

Mars -59738-08-22 15:49 J -20097648.15 -20097647.84 -20097647.53 0.0263 0.0054

Mercury -59738-08-23 22:18 J -20097646.73 -20097646.57 -20097646.40 0.0263 0.0129

Mercury -59738-11-20 18:42 J -20097557.77 -20097557.72 -20097557.67 0.0263 0.0252

Earth -59736-01-05 19:25 J -20097145.91 -20097145.69 -20097145.46 0.0261 0.0111

Moon -59736-01-05 22:47 J -20097145.76 -20097145.55 -20097145.32 0.0261 0.0125 \*

Moon -59735-01-17 08:23 J -20096769.40 -20096769.15 -20096768.90 0.0260 0.0075

Earth -59735-01-17 10:18 J -20096769.31 -20096769.07 -20096768.83 0.0260 0.0075 \*

Earth -59734-01-29 01:11 J -20096392.47 -20096392.45 -20096392.42 0.0260 0.0258

Venus -59728-01-04 03:35 J -20094225.56 -20094225.35 -20094225.13 0.0273 0.0061

Mercury -59723-06-20 05:16 J -20092232.34 -20092232.28 -20092232.20 0.0296 0.0251

Mercury -59723-09-16 18:28 J -20092143.85 -20092143.73 -20092143.61 0.0297 0.0125

Mercury -59723-12-14 07:25 J -20092055.32 -20092055.19 -20092055.06 0.0298 0.0001

Mercury -59722-03-12 20:23 J -20091966.77 -20091966.65 -20091966.53 0.0299 0.0125

Mercury -59722-06-09 09:06 J -20091878.19 -20091878.12 -20091878.05 0.0299 0.0249

Mars	-59722-10-12 06:42 J	-20091753.39	-20091753.22	-20091753.02	0.0300	0.0218
Earth	-59721-07-15 15:06 J	-20091476.11	-20091475.87	-20091475.63	0.0301	0.0035
Moon	-59721-07-15 18:28 J	-20091475.97	-20091475.73	-20091475.49	0.0301	0.0039 *
Earth	-59720-07-30 11:45 J	-20091096.13	-20091096.01	-20091095.87	0.0302	0.0252
Moon	-59720-07-30 12:13 J	-20091096.12	-20091095.99	-20091095.85	0.0302	0.0254 *
Venus	-59715-03-23 01:40 J	-20089399.59	-20089399.43	-20089399.27	0.0290	0.0187
Venus	-59715-11-07 14:52 J	-20089169.99	-20089169.88	-20089169.76	0.0287	0.0236
Mercury	-59709-04-18 11:16 J	-20087181.03	-20087181.03	-20087181.03	0.0265	0.0265
Mercury	-59709-07-16 06:42 J	-20087092.36	-20087092.22	-20087092.06	0.0265	0.0145
Mercury	-59709-10-13 02:52 J	-20087003.57	-20087003.38	-20087003.20	0.0264	0.0023
Mercury	-59708-01-09 22:47 J	-20086914.72	-20086914.55	-20086914.38	0.0263	0.0099
Mercury	-59708-04-08 18:42 J	-20086825.81	-20086825.72	-20086825.61	0.0263	0.0222
Mars	-59708-10-11 10:04 J	-20086640.30	-20086640.08	-20086639.84	0.0262	0.0181
Moon	-59708-12-31 23:59 J	-20086558.63	-20086558.50	-20086558.34	0.0261	0.0208
Earth	-59707-01-01 03:35 J	-20086558.51	-20086558.35	-20086558.18	0.0261	0.0193 *
Earth	-59706-01-12 18:13 J	-20086181.98	-20086181.74	-20086181.49	0.0260	0.0009
Moon	-59706-01-12 19:25 J	-20086181.93	-20086181.69	-20086181.45	0.0260	0.0015 *
Earth	-59705-01-24 08:37 J	-20085805.32	-20085805.14	-20085804.96	0.0259	0.0176
Moon	-59705-01-24 11:45 J	-20085805.18	-20085805.01	-20085804.82	0.0259	0.0183 *
Venus	-59699-07-17 07:40 J	-20083439.40	-20083439.18	-20083438.97	0.0273	0.0013
Mercury	-59694-11-07 06:28 J	-20081500.24	-20081500.23	-20081500.20	0.0296	0.0292
Mercury	-59693-02-03 19:40 J	-20081411.79	-20081411.68	-20081411.57	0.0297	0.0167
Mercury	-59693-05-02 08:37 J	-20081323.27	-20081323.14	-20081323.00	0.0298	0.0042
Mercury	-59693-07-29 21:35 J	-20081234.72	-20081234.60	-20081234.47	0.0299	0.0084
Mercury	-59693-10-26 10:18 J	-20081146.16	-20081146.07	-20081145.97	0.0300	0.0210
Moon	-59692-07-09 03:35 J	-20080890.55	-20080890.35	-20080890.15	0.0301	0.0169
Earth	-59692-07-09 06:28 J	-20080890.43	-20080890.23	-20080890.02	0.0301	0.0163 *
Earth	-59691-07-24 03:21 J	-20080510.58	-20080510.36	-20080510.14	0.0303	0.0125
Moon	-59691-07-24 03:21 J	-20080510.57	-20080510.36	-20080510.15	0.0303	0.0126 *
Venus	-59686-10-03 05:59 J	-20078613.43	-20078613.25	-20078613.07	0.0290	0.0133

Mars -59680-11-27 10:33 J -20076366.14 -20076366.06 -20076365.96 0.0265 0.0253  
 Mercury -59680-12-03 06:42 J -20076360.35 -20076360.22 -20076360.08 0.0265 0.0178  
 Mercury -59679-03-02 02:37 J -20076271.57 -20076271.39 -20076271.21 0.0264 0.0057  
 Mercury -59679-05-29 22:47 J -20076182.73 -20076182.55 -20076182.37 0.0263 0.0065  
 Mercury -59679-08-26 18:42 J -20076093.84 -20076093.72 -20076093.58 0.0263 0.0188  
 Moon -59677-01-08 01:11 J -20075594.69 -20075594.45 -20075594.21 0.0261 0.0102  
 Earth -59677-01-08 01:54 J -20075594.64 -20075594.42 -20075594.18 0.0261 0.0091 \*  
 Moon -59676-01-18 12:57 J -20075218.19 -20075217.96 -20075217.73 0.0260 0.0096  
 Earth -59676-01-18 16:33 J -20075218.04 -20075217.81 -20075217.58 0.0260 0.0095 \*  
 Venus -59669-01-27 13:25 J -20072653.15 -20072652.94 -20072652.73 0.0273 0.0044  
 Mercury -59664-06-22 22:04 J -20070679.68 -20070679.58 -20070679.49 0.0297 0.0200  
 Mercury -59664-09-19 11:01 J -20070591.17 -20070591.04 -20070590.91 0.0297 0.0075  
 Mercury -59664-12-16 23:59 J -20070502.63 -20070502.50 -20070502.37 0.0298 0.0050  
 Mars -59663-01-16 21:35 J -20070471.87 -20070471.60 -20070471.33 0.0298 0.0049  
 Mercury -59663-03-15 12:57 J -20070414.07 -20070413.96 -20070413.86 0.0299 0.0175  
 Mercury -59663-06-12 01:40 J -20070325.43 -20070325.43 -20070325.43 0.0300 0.0299  
 Earth -59663-07-03 03:49 J -20070304.39 -20070304.34 -20070304.28 0.0300 0.0290  
 Moon -59663-07-03 06:13 J -20070304.27 -20070304.24 -20070304.19 0.0300 0.0296  
 Moon -59662-07-17 23:45 J -20069924.76 -20069924.51 -20069924.26 0.0302 0.0009  
 Earth -59662-07-18 00:13 J -20069924.73 -20069924.49 -20069924.25 0.0302 0.0008 \*  
 Moon -59661-07-31 17:45 J -20069544.84 -20069544.76 -20069544.67 0.0302 0.0284  
 Earth -59661-07-31 20:37 J -20069544.71 -20069544.64 -20069544.53 0.0302 0.0280 \*  
 Venus -59656-04-14 12:57 J -20067827.16 -20067826.96 -20067826.76 0.0290 0.0067  
 Mercury -59650-04-22 06:57 J -20065628.31 -20065628.21 -20065628.09 0.0265 0.0209  
 Mercury -59650-07-20 02:52 J -20065539.55 -20065539.38 -20065539.20 0.0264 0.0087  
 Mercury -59650-10-16 22:47 J -20065450.73 -20065450.55 -20065450.36 0.0264 0.0034  
 Mercury -59649-01-13 18:42 J -20065361.86 -20065361.72 -20065361.56 0.0263 0.0156  
 Mars -59649-01-16 21:35 J -20065358.91 -20065358.60 -20065358.28 0.0263 0.0023  
 Earth -59648-01-02 09:06 J -20065007.30 -20065007.12 -20065006.92 0.0261 0.0172  
 Moon -59648-01-02 09:49 J -20065007.24 -20065007.09 -20065006.91 0.0261 0.0186 \*



Earth -59647-01-13 23:30 J -20064630.77 -20064630.52 -20064630.27 0.0260 0.0013  
 Moon -59647-01-14 03:21 J -20064630.61 -20064630.36 -20064630.11 0.0260 0.0006 \*  
 Moon -59646-01-25 12:57 J -20064254.12 -20064253.96 -20064253.80 0.0259 0.0203  
 Earth -59646-01-25 13:11 J -20064254.10 -20064253.95 -20064253.78 0.0259 0.0196 \*  
 Venus -59640-08-08 16:18 J -20061867.03 -20061866.82 -20061866.62 0.0273 0.0089  
 Mercury -59635-11-09 22:47 J -20059947.62 -20059947.55 -20059947.48 0.0297 0.0245  
 Mercury -59634-02-06 11:45 J -20059859.13 -20059859.01 -20059858.88 0.0298 0.0120  
 Mercury -59634-05-06 00:57 J -20059770.60 -20059770.46 -20059770.33 0.0298 0.0009  
 Mercury -59634-08-02 13:40 J -20059682.04 -20059681.93 -20059681.81 0.0299 0.0131  
 Mercury -59634-10-30 02:23 J -20059593.46 -20059593.40 -20059593.32 0.0300 0.0256  
 Mars -59633-03-06 16:33 J -20059464.97 -20059464.81 -20059464.63 0.0301 0.0234  
 Earth -59633-07-10 12:28 J -20059339.19 -20059338.98 -20059338.76 0.0301 0.0138  
 Moon -59633-07-10 13:54 J -20059339.12 -20059338.92 -20059338.71 0.0301 0.0140 \*  
 Earth -59632-07-25 09:35 J -20058959.30 -20058959.10 -20058958.88 0.0303 0.0151  
 Moon -59632-07-25 13:11 J -20058959.15 -20058958.95 -20058958.74 0.0303 0.0153 \*  
 Venus -59627-10-25 15:35 J -20057041.05 -20057040.85 -20057040.64 0.0289 0.0021  
 Mercury -59621-09-08 05:59 J -20054896.30 -20054896.25 -20054896.17 0.0265 0.0247  
 Mercury -59621-12-06 01:54 J -20054807.58 -20054807.42 -20054807.25 0.0264 0.0126  
 Mercury -59620-03-04 21:49 J -20054718.77 -20054718.59 -20054718.40 0.0264 0.0008  
 Mercury -59620-06-01 17:59 J -20054629.91 -20054629.75 -20054629.58 0.0263 0.0118  
 Mercury -59620-08-29 14:09 J -20054540.98 -20054540.91 -20054540.83 0.0263 0.0240  
 Earth -59620-12-28 13:40 J -20054419.96 -20054419.93 -20054419.87 0.0262 0.0257  
 Mars -59619-03-07 06:13 J -20054351.42 -20054351.24 -20054351.05 0.0262 0.0211  
 Moon -59618-01-09 01:11 J -20054043.68 -20054043.45 -20054043.21 0.0260 0.0081  
 Earth -59618-01-09 05:16 J -20054043.52 -20054043.28 -20054043.04 0.0260 0.0071 \*  
 Moon -59617-01-20 18:42 J -20053666.92 -20053666.72 -20053666.49 0.0260 0.0118  
 Earth -59617-01-20 19:11 J -20053666.92 -20053666.70 -20053666.47 0.0260 0.0114 \*  
 Venus -59611-07-04 09:35 J -20051310.20 -20051310.10 -20051309.98 0.0271 0.0232  
 Venus -59610-02-18 20:37 J -20051080.82 -20051080.64 -20051080.45 0.0274 0.0141  
 Mercury -59605-03-29 00:28 J -20049215.51 -20049215.48 -20049215.44 0.0296 0.0282

Mercury -59605-06-25 13:40 J -20049127.04 -20049126.93 -20049126.81 0.0297 0.0157  
 Mercury -59605-09-22 02:37 J -20049038.52 -20049038.39 -20049038.25 0.0298 0.0034  
 Mercury -59605-12-19 15:35 J -20048949.97 -20048949.85 -20048949.72 0.0298 0.0093  
 Mercury -59604-03-18 04:33 J -20048861.40 -20048861.31 -20048861.22 0.0299 0.0218  
 Moon -59604-07-04 04:47 J -20048753.40 -20048753.30 -20048753.18 0.0300 0.0268  
 Earth -59604-07-04 07:11 J -20048753.30 -20048753.20 -20048753.08 0.0300 0.0268 \*  
 Moon -59603-07-19 00:13 J -20048373.73 -20048373.49 -20048373.25 0.0302 0.0018  
 Earth -59603-07-19 03:49 J -20048373.58 -20048373.34 -20048373.09 0.0302 0.0017 \*  
 Earth -59602-08-03 00:28 J -20047993.48 -20047993.48 -20047993.47 0.0302 0.0302  
 Venus -59597-05-06 21:06 J -20046254.82 -20046254.62 -20046254.41 0.0289 0.0041  
 Mars -59591-04-23 06:28 J -20044077.36 -20044077.23 -20044077.06 0.0265 0.0231  
 Mercury -59591-04-25 01:40 J -20044075.57 -20044075.43 -20044075.27 0.0265 0.0159  
 Mercury -59591-07-22 21:35 J -20043986.78 -20043986.60 -20043986.41 0.0264 0.0038  
 Mercury -59591-10-19 17:45 J -20043897.94 -20043897.76 -20043897.59 0.0263 0.0084  
 Mercury -59590-01-16 13:54 J -20043809.04 -20043808.92 -20043808.81 0.0263 0.0206  
 Earth -59589-01-04 11:30 J -20043456.22 -20043456.02 -20043455.82 0.0261 0.0153  
 Moon -59589-01-04 14:52 J -20043456.06 -20043455.88 -20043455.68 0.0261 0.0166 \*  
 Earth -59588-01-15 01:25 J -20043079.69 -20043079.44 -20043079.19 0.0260 0.0031  
 Moon -59588-01-15 02:09 J -20043079.67 -20043079.41 -20043079.16 0.0260 0.0029 \*  
 Moon -59587-01-26 11:16 J -20042703.14 -20042703.03 -20042702.90 0.0259 0.0224  
 Earth -59587-01-26 14:52 J -20042703.01 -20042702.88 -20042702.73 0.0259 0.0213 \*  
 Venus -59581-01-14 11:59 J -20040524.15 -20040524.00 -20040523.84 0.0271 0.0188  
 Venus -59581-08-30 22:47 J -20040294.71 -20040294.55 -20040294.39 0.0273 0.0183  
 Mercury -59576-11-12 14:09 J -20038395.01 -20038394.91 -20038394.82 0.0297 0.0206  
 Mercury -59575-02-09 03:06 J -20038306.50 -20038306.37 -20038306.24 0.0298 0.0081  
 Mercury -59575-05-08 16:04 J -20038217.96 -20038217.83 -20038217.70 0.0298 0.0044  
 Mars -59575-06-11 16:47 J -20038184.07 -20038183.80 -20038183.52 0.0299 0.0045  
 Mercury -59575-08-05 04:47 J -20038129.40 -20038129.30 -20038129.18 0.0299 0.0170  
 Mercury -59575-11-01 17:45 J -20038040.78 -20038040.76 -20038040.73 0.0300 0.0293  
 Earth -59574-07-12 12:57 J -20037788.18 -20037787.96 -20037787.74 0.0302 0.0118

Moon -59574-07-12 16:47 J -20037788.03 -20037787.80 -20037787.58 0.0302 0.0114 \*  
 Earth -59573-07-26 10:18 J -20037408.27 -20037408.07 -20037407.87 0.0303 0.0171  
 Moon -59573-07-26 12:28 J -20037408.18 -20037407.98 -20037407.78 0.0303 0.0176 \*  
 Venus -59568-11-16 22:04 J -20035468.77 -20035468.58 -20035468.38 0.0289 0.0083  
 Mercury -59562-09-12 00:13 J -20033343.60 -20033343.49 -20033343.37 0.0265 0.0201  
 Mercury -59562-12-09 20:09 J -20033254.84 -20033254.66 -20033254.48 0.0264 0.0080  
 Mercury -59561-03-07 16:04 J -20033166.01 -20033165.83 -20033165.65 0.0263 0.0042  
 Mercury -59561-06-04 11:59 J -20033077.14 -20033077.00 -20033076.85 0.0263 0.0164  
 Mars -59561-06-11 05:01 J -20033070.60 -20033070.29 -20033069.98 0.0263 0.0001  
 Moon -59561-12-29 10:18 J -20032869.12 -20032869.07 -20032869.00 0.0262 0.0254  
 Earth -59561-12-29 13:54 J -20032869.01 -20032868.92 -20032868.81 0.0262 0.0240 \*  
 Moon -59559-01-10 04:18 J -20032492.55 -20032492.32 -20032492.08 0.0260 0.0060  
 Earth -59559-01-10 05:01 J -20032492.53 -20032492.29 -20032492.05 0.0260 0.0054 \*  
 Earth -59558-01-21 18:42 J -20032115.93 -20032115.72 -20032115.50 0.0259 0.0131  
 Moon -59558-01-21 22:18 J -20032115.77 -20032115.57 -20032115.35 0.0259 0.0137 \*  
 Venus -59552-07-26 15:06 J -20029738.06 -20029737.87 -20029737.69 0.0272 0.0143  
 Venus -59551-03-13 01:54 J -20029508.53 -20029508.42 -20029508.30 0.0274 0.0230  
 Mercury -59546-04-01 15:35 J -20027662.92 -20027662.85 -20027662.78 0.0296 0.0246  
 Mercury -59546-06-29 04:33 J -20027574.43 -20027574.31 -20027574.18 0.0297 0.0122  
 Mercury -59546-09-25 17:45 J -20027485.90 -20027485.76 -20027485.63 0.0298 0.0010  
 Mercury -59546-12-23 06:28 J -20027397.34 -20027397.23 -20027397.11 0.0299 0.0129  
 Mercury -59545-03-20 19:25 J -20027308.76 -20027308.69 -20027308.62 0.0299 0.0253  
 Moon -59545-07-05 02:23 J -20027202.53 -20027202.40 -20027202.25 0.0300 0.0245  
 Earth -59545-07-05 05:45 J -20027202.38 -20027202.26 -20027202.12 0.0300 0.0249 \*  
 Mars -59545-07-30 19:54 J -20027176.81 -20027176.67 -20027176.52 0.0300 0.0253  
 Moon -59544-07-20 01:25 J -20026822.67 -20026822.44 -20026822.20 0.0302 0.0044  
 Earth -59544-07-20 02:37 J -20026822.63 -20026822.39 -20026822.15 0.0302 0.0037 \*  
 Venus -59539-10-12 12:13 J -20024912.00 -20024911.99 -20024911.97 0.0292 0.0291  
 Venus -59538-05-30 02:52 J -20024682.56 -20024682.38 -20024682.20 0.0289 0.0139  
 Mercury -59532-01-28 23:45 J -20022611.58 -20022611.51 -20022611.42 0.0265 0.0236

Mercury -59532-04-27 19:40 J -20022522.84 -20022522.68 -20022522.51 0.0265 0.0114  
 Mercury -59532-07-25 15:35 J -20022434.04 -20022433.85 -20022433.67 0.0264 0.0007  
 Mercury -59532-10-22 11:30 J -20022345.18 -20022345.02 -20022344.85 0.0263 0.0129  
 Mercury -59531-01-19 07:40 J -20022256.23 -20022256.18 -20022256.12 0.0263 0.0251  
 Mars -59531-07-31 15:35 J -20022063.00 -20022062.85 -20022062.69 0.0262 0.0228  
 Earth -59530-01-05 10:33 J -20021905.27 -20021905.06 -20021904.85 0.0261 0.0136  
 Moon -59530-01-05 11:30 J -20021905.23 -20021905.02 -20021904.80 0.0261 0.0146 \*  
 Moon -59529-01-16 20:37 J -20021528.88 -20021528.64 -20021528.39 0.0260 0.0052  
 Earth -59529-01-17 00:28 J -20021528.72 -20021528.48 -20021528.23 0.0260 0.0048 \*  
 Moon -59528-01-27 12:13 J -20021152.07 -20021151.99 -20021151.91 0.0259 0.0242  
 Earth -59528-01-27 13:25 J -20021152.04 -20021151.94 -20021151.81 0.0259 0.0230 \*  
 Venus -59522-02-05 16:47 J -20018952.00 -20018951.80 -20018951.59 0.0271 0.0102  
 Venus -59522-09-23 03:21 J -20018722.38 -20018722.36 -20018722.32 0.0274 0.0271  
 Mercury -59517-11-15 04:47 J -20016842.41 -20016842.30 -20016842.19 0.0297 0.0172  
 Mercury -59516-02-11 17:45 J -20016753.89 -20016753.76 -20016753.63 0.0298 0.0048  
 Mercury -59516-05-11 06:42 J -20016665.35 -20016665.22 -20016665.09 0.0298 0.0077  
 Mercury -59516-08-07 19:25 J -20016576.78 -20016576.69 -20016576.59 0.0299 0.0202  
 Moon -59515-07-13 09:35 J -20016237.33 -20016237.10 -20016236.86 0.0302 0.0091  
 Earth -59515-07-13 09:49 J -20016237.32 -20016237.09 -20016236.86 0.0302 0.0100 \*  
 Moon -59514-07-28 04:04 J -20015857.50 -20015857.33 -20015857.13 0.0303 0.0201  
 Earth -59514-07-28 06:57 J -20015857.39 -20015857.21 -20015857.02 0.0303 0.0190 \*  
 Venus -59509-04-23 11:45 J -20014126.10 -20014126.01 -20014125.90 0.0292 0.0254  
 Venus -59509-12-09 02:09 J -20013896.56 -20013896.41 -20013896.24 0.0289 0.0176  
 Mercury -59503-09-14 17:30 J -20011790.91 -20011790.77 -20011790.62 0.0265 0.0161  
 Mars -59503-09-16 02:52 J -20011789.54 -20011789.38 -20011789.18 0.0265 0.0216  
 Mercury -59503-12-12 13:25 J -20011702.12 -20011701.94 -20011701.76 0.0264 0.0040  
 Mercury -59502-03-11 09:21 J -20011613.28 -20011613.11 -20011612.93 0.0263 0.0082  
 Mercury -59502-06-08 05:16 J -20011524.38 -20011524.28 -20011524.15 0.0263 0.0205  
 Moon -59502-12-31 09:35 J -20011318.19 -20011318.10 -20011317.99 0.0262 0.0238  
 Earth -59502-12-31 11:01 J -20011318.15 -20011318.04 -20011317.90 0.0262 0.0225 \*

Earth -59500-01-11 02:09 J -20010941.65 -20010941.41 -20010941.16 0.0260 0.0039  
 Moon -59500-01-11 05:45 J -20010941.50 -20010941.26 -20010941.02 0.0260 0.0040 \*  
 Earth -59499-01-22 15:49 J -20010565.03 -20010564.84 -20010564.62 0.0259 0.0147  
 Moon -59499-01-22 17:59 J -20010564.95 -20010564.75 -20010564.54 0.0259 0.0156 \*  
 Venus -59493-08-17 19:11 J -20008165.91 -20008165.70 -20008165.49 0.0272 0.0058  
 Mercury -59487-04-04 05:59 J -20006110.34 -20006110.25 -20006110.16 0.0296 0.0215  
 Mercury -59487-07-01 18:57 J -20006021.83 -20006021.71 -20006021.58 0.0297 0.0091  
 Mercury -59487-09-28 07:54 J -20005933.30 -20005933.17 -20005933.03 0.0298 0.0035  
 Mars -59487-11-04 11:01 J -20005896.31 -20005896.04 -20005895.77 0.0298 0.0035  
 Mercury -59487-12-25 20:52 J -20005844.74 -20005844.63 -20005844.52 0.0299 0.0159  
 Mercury -59486-03-24 09:35 J -20005756.13 -20005756.10 -20005756.05 0.0299 0.0283  
 Earth -59486-07-07 00:42 J -20005651.62 -20005651.47 -20005651.32 0.0300 0.0233  
 Moon -59486-07-07 01:40 J -20005651.58 -20005651.43 -20005651.27 0.0300 0.0225 \*  
 Earth -59485-07-20 21:21 J -20005271.84 -20005271.61 -20005271.37 0.0302 0.0054  
 Moon -59485-07-21 00:57 J -20005271.69 -20005271.46 -20005271.23 0.0302 0.0066 \*  
 Venus -59480-11-03 15:21 J -20003340.00 -20003339.86 -20003339.71 0.0291 0.0201  
 Venus -59479-06-21 05:45 J -20003110.37 -20003110.26 -20003110.12 0.0289 0.0228  
 Mercury -59473-02-01 16:47 J -20001058.92 -20001058.80 -20001058.68 0.0265 0.0197  
 Mercury -59473-04-30 12:28 J -20000970.15 -20000969.98 -20000969.80 0.0265 0.0076  
 Mercury -59473-07-28 08:37 J -20000881.33 -20000881.14 -20000880.96 0.0264 0.0046  
 Mercury -59473-10-25 04:33 J -20000792.45 -20000792.31 -20000792.16 0.0263 0.0168  
 Mars -59473-11-04 07:25 J -20000782.50 -20000782.19 -20000781.87 0.0263 0.0011  
 Moon -59471-01-06 04:04 J -20000354.55 -20000354.33 -20000354.11 0.0261 0.0127  
 Earth -59471-01-06 07:11 J -20000354.42 -20000354.20 -20000353.98 0.0261 0.0121 \*  
 Moon -59470-01-17 19:25 J -19999977.92 -19999977.69 -19999977.45 0.0260 0.0071  
 Earth -59470-01-17 21:06 J -19999977.86 -19999977.62 -19999977.37 0.0260 0.0064 \*  
 Earth -59469-01-29 10:18 J -19999601.14 -19999601.07 -19999600.99 0.0259 0.0245  
 Venus -59463-02-27 20:37 J -19997379.86 -19997379.64 -19997379.42 0.0271 0.0018  
 Mercury -59458-08-22 05:59 J -19995378.30 -19995378.25 -19995378.19 0.0296 0.0267  
 Mercury -59458-11-18 19:11 J -19995289.82 -19995289.70 -19995289.59 0.0297 0.0142

Mercury -59457-02-15 08:09 J -19995201.29 -19995201.16 -19995201.03 0.0298 0.0018

Mercury -59457-05-13 20:52 J -19995112.75 -19995112.63 -19995112.50 0.0298 0.0107

Mercury -59457-08-10 09:49 J -19995024.17 -19995024.09 -19995024.01 0.0299 0.0231

Mars -59457-12-22 21:35 J -19994889.74 -19994889.60 -19994889.43 0.0300 0.0244

Moon -59456-07-14 00:13 J -19994686.72 -19994686.49 -19994686.25 0.0301 0.0070

Earth -59456-07-14 04:04 J -19994686.56 -19994686.33 -19994686.10 0.0301 0.0084 \*

Moon -59455-07-28 21:49 J -19994306.74 -19994306.59 -19994306.42 0.0303 0.0222

Earth -59455-07-29 00:57 J -19994306.63 -19994306.46 -19994306.28 0.0303 0.0206 \*

Venus -59450-05-16 14:37 J -19992554.05 -19992553.89 -19992553.72 0.0292 0.0166

Venus -59449-01-01 05:01 J -19992324.37 -19992324.29 -19992324.20 0.0289 0.0262

Mercury -59444-06-20 14:23 J -19990326.97 -19990326.90 -19990326.83 0.0265 0.0245

Mercury -59444-09-17 10:04 J -19990238.24 -19990238.08 -19990237.92 0.0265 0.0124

Mercury -59444-12-15 05:59 J -19990149.43 -19990149.25 -19990149.06 0.0264 0.0003

Mercury -59443-03-14 01:54 J -19990060.58 -19990060.42 -19990060.25 0.0263 0.0121

Mercury -59443-06-10 22:18 J -19989971.64 -19989971.57 -19989971.50 0.0263 0.0242

Mars -59443-12-24 04:18 J -19989775.42 -19989775.32 -19989775.17 0.0262 0.0240

Earth -59442-01-01 06:57 J -19989767.36 -19989767.21 -19989767.06 0.0262 0.0210

Moon -59442-01-01 09:35 J -19989767.22 -19989767.10 -19989766.97 0.0262 0.0223 \*

Earth -59441-01-12 22:04 J -19989390.83 -19989390.58 -19989390.33 0.0260 0.0024

Moon -59441-01-12 23:59 J -19989390.75 -19989390.50 -19989390.24 0.0260 0.0023 \*

Moon -59440-01-23 08:23 J -19989014.33 -19989014.15 -19989013.95 0.0259 0.0175

Earth -59440-01-23 11:59 J -19989014.20 -19989014.00 -19989013.81 0.0259 0.0161 \*

Venus -59434-09-09 22:33 J -19986593.78 -19986593.56 -19986593.35 0.0272 0.0024

Mercury -59428-04-06 20:09 J -19984557.76 -19984557.66 -19984557.55 0.0296 0.0186

Mercury -59428-07-04 09:06 J -19984469.24 -19984469.12 -19984468.98 0.0297 0.0062

Mercury -59428-09-30 22:04 J -19984380.70 -19984380.58 -19984380.45 0.0298 0.0064

Mercury -59428-12-28 11:01 J -19984292.14 -19984292.04 -19984291.94 0.0299 0.0187

Earth -59427-07-07 17:59 J -19984100.90 -19984100.75 -19984100.57 0.0300 0.0218

Moon -59427-07-07 21:49 J -19984100.77 -19984100.59 -19984100.41 0.0300 0.0205 \*

Earth -59426-07-22 14:52 J -19983721.11 -19983720.88 -19983720.64 0.0302 0.0070

Moon -59426-07-22 17:01 J -19983721.02 -19983720.79 -19983720.55 0.0302 0.0085 \*  
 Venus -59421-11-25 17:30 J -19981767.95 -19981767.77 -19981767.57 0.0291 0.0116  
 Mercury -59414-02-04 09:06 J -19979506.26 -19979506.12 -19979505.97 0.0265 0.0161  
 Mars -59414-02-09 00:42 J -19979501.65 -19979501.47 -19979501.27 0.0265 0.0208  
 Mercury -59414-05-04 05:01 J -19979417.47 -19979417.29 -19979417.10 0.0265 0.0039  
 Mercury -59414-08-01 01:11 J -19979328.63 -19979328.45 -19979328.28 0.0264 0.0083  
 Mercury -59414-10-28 21:06 J -19979239.73 -19979239.62 -19979239.50 0.0263 0.0206  
 Moon -59412-01-06 23:59 J -19978803.71 -19978803.50 -19978803.27 0.0261 0.0112  
 Earth -59412-01-07 02:37 J -19978803.61 -19978803.39 -19978803.16 0.0261 0.0106 \*  
 Earth -59411-01-18 16:47 J -19978427.03 -19978426.80 -19978426.56 0.0260 0.0079  
 Moon -59411-01-18 19:40 J -19978426.90 -19978426.68 -19978426.45 0.0260 0.0090 \*  
 Venus -59404-03-22 00:28 J -19975807.69 -19975807.48 -19975807.27 0.0271 0.0065  
 Mercury -59399-08-24 20:23 J -19973825.73 -19973825.65 -19973825.57 0.0296 0.0236  
 Mercury -59399-11-21 09:21 J -19973737.23 -19973737.11 -19973736.98 0.0297 0.0113  
 Mercury -59398-02-17 22:18 J -19973648.70 -19973648.57 -19973648.43 0.0297 0.0013  
 Mars -59398-03-29 11:59 J -19973609.27 -19973609.00 -19973608.72 0.0298 0.0045  
 Mercury -59398-05-17 11:16 J -19973560.15 -19973560.03 -19973559.91 0.0298 0.0136  
 Mercury -59398-08-13 23:59 J -19973471.56 -19973471.50 -19973471.43 0.0299 0.0259  
 Moon -59397-07-14 20:52 J -19973135.86 -19973135.63 -19973135.40 0.0301 0.0053  
 Earth -59397-07-14 21:49 J -19973135.82 -19973135.59 -19973135.35 0.0301 0.0067 \*  
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 Mercury -59385-09-20 02:23 J -19968685.57 -19968685.40 -19968685.23 0.0265 0.0089  
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 Moon -59383-01-02 04:47 J -19968216.45 -19968216.30 -19968216.14 0.0262 0.0206 \*

Moon -59382-01-13 14:37 J -19967840.14 -19967839.89 -19967839.63 0.0260 0.0004  
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 Venus -59375-10-02 01:54 J -19965021.61 -19965021.42 -19965021.22 0.0272 0.0107  
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Mercury -59340-11-23 23:59 J -19952184.63 -19952184.50 -19952184.37 0.0296 0.0080  
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 Earth -59337-07-30 13:25 J -19951205.08 -19951204.94 -19951204.79 0.0302 0.0238  
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 Mars -59326-07-04 08:23 J -19947214.33 -19947214.15 -19947213.93 0.0266 0.0200  
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 Earth -59323-01-14 13:11 J -19946289.20 -19946288.95 -19946288.70 0.0260 0.0006 \*  
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 Moon -59322-01-26 05:45 J -19945912.41 -19945912.26 -19945912.12 0.0259 0.0205 \*  
 Venus -59316-03-08 21:35 J -19943678.77 -19943678.60 -19943678.44 0.0270 0.0171  
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 Mercury -59310-01-14 12:13 J -19941541.06 -19941540.99 -19941540.92 0.0295 0.0245  
 Mercury -59310-04-13 01:11 J -19941452.57 -19941452.45 -19941452.33 0.0296 0.0122  
 Mercury -59310-07-10 14:09 J -19941364.04 -19941363.91 -19941363.78 0.0297 0.0004  
 Mars -59310-08-22 04:47 J -19941321.57 -19941321.30 -19941321.02 0.0298 0.0038  
 Mercury -59310-10-07 03:06 J -19941275.49 -19941275.37 -19941275.25 0.0298 0.0125  
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 Earth -59309-07-09 08:37 J -19940999.32 -19940999.14 -19940998.94 0.0300 0.0183 \*

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 Earth -59308-07-24 04:47 J -19940619.53 -19940619.30 -19940619.07 0.0302 0.0105 \*  
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 Earth -59293-01-21 09:49 J -19935325.32 -19935325.09 -19935324.87 0.0260 0.0110 \*  
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 Earth -59278-08-01 11:16 J -19929654.14 -19929654.03 -19929653.90 0.0302 0.0258 \*  
 Venus -59273-07-21 23:16 J -19927837.72 -19927837.53 -19927837.33 0.0291 0.0098  
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Moon -59265-01-04 15:06 J -19925115.05 -19925114.87 -19925114.67 0.0262 0.0168

Earth -59265-01-04 18:42 J -19925114.90 -19925114.72 -19925114.52 0.0262 0.0167 \*

Earth -59264-01-15 10:47 J -19924738.29 -19924738.05 -19924737.80 0.0260 0.0022

Moon -59264-01-15 11:45 J -19924738.25 -19924738.01 -19924737.77 0.0260 0.0032 \*

Earth -59263-01-27 01:25 J -19924361.57 -19924361.44 -19924361.28 0.0260 0.0208

Moon -59263-01-27 05:01 J -19924361.41 -19924361.29 -19924361.15 0.0260 0.0221 \*

Venus -59257-03-31 04:04 J -19922106.54 -19922106.33 -19922106.12 0.0270 0.0081

Mercury -59251-01-17 03:35 J -19919988.44 -19919988.35 -19919988.25 0.0295 0.0206

Mercury -59251-04-15 16:33 J -19919899.94 -19919899.81 -19919899.68 0.0296 0.0083

Mercury -59251-07-13 05:30 J -19919811.40 -19919811.27 -19919811.14 0.0297 0.0040

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Mercury -59250-01-06 06:57 J -19919634.24 -19919634.21 -19919634.17 0.0299 0.0286

Moon -59250-07-11 06:42 J -19919448.42 -19919448.22 -19919448.01 0.0300 0.0146

Earth -59250-07-11 09:06 J -19919448.32 -19919448.12 -19919447.92 0.0300 0.0162 \*

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Moon -59249-07-25 05:30 J -19919068.47 -19919068.27 -19919068.06 0.0302 0.0141 \*

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Venus -59243-02-01 03:49 J -19917051.52 -19917051.34 -19917051.17 0.0290 0.0152

Mercury -59238-11-16 15:49 J -19914936.98 -19914936.84 -19914936.70 0.0266 0.0170

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Mercury -59237-02-13 11:45 J -19914848.19 -19914848.01 -19914847.83 0.0266 0.0047

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Mercury -59237-08-09 04:04 J -19914670.45 -19914670.33 -19914670.21 0.0264 0.0200

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Moon -59237-12-30 03:21 J -19914527.40 -19914527.36 -19914527.29 0.0264 0.0256

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Earth -59235-01-10 17:30 J -19914151.01 -19914150.77 -19914150.52 0.0262 0.0060 \*

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Earth -59234-01-22 08:52 J -19913774.34 -19913774.13 -19913773.91 0.0260 0.0128 \*

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 Mercury -59222-09-02 17:59 J -19909167.87 -19909167.75 -19909167.62 0.0295 0.0123  
 Mercury -59222-11-30 06:57 J -19909079.34 -19909079.21 -19909079.08 0.0296 0.0004  
 Mars -59221-01-15 06:42 J -19909033.49 -19909033.22 -19909032.94 0.0297 0.0022  
 Mercury -59221-02-26 19:40 J -19908990.79 -19908990.68 -19908990.55 0.0297 0.0123  
 Mercury -59221-05-25 08:23 J -19908902.22 -19908902.15 -19908902.07 0.0298 0.0245  
 Earth -59221-07-04 01:40 J -19908862.47 -19908862.43 -19908862.37 0.0298 0.0290  
 Moon -59221-07-04 03:21 J -19908862.45 -19908862.36 -19908862.25 0.0298 0.0272 \*  
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 Earth -59220-07-18 19:25 J -19908482.93 -19908482.69 -19908482.45 0.0301 0.0008 \*  
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 Mercury -59208-07-02 09:35 J -19904116.27 -19904116.10 -19904115.92 0.0266 0.0093  
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 Earth -59205-01-17 11:01 J -19903187.29 -19903187.04 -19903186.79 0.0261 0.0039  
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 Moon -59204-01-28 02:23 J -19902810.50 -19902810.40 -19902810.29 0.0260 0.0236 \*  
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 Earth -59191-07-12 13:54 J -19897897.12 -19897896.92 -19897896.69 0.0300 0.0138  
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 Mercury -59178-05-16 02:09 J -19893206.57 -19893206.41 -19893206.24 0.0265 0.0123  
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 Moon -59177-01-01 00:42 J -19892976.57 -19892976.47 -19892976.34 0.0264 0.0236  
 Earth -59177-01-01 00:57 J -19892976.56 -19892976.46 -19892976.34 0.0264 0.0234 \*  
 Moon -59176-01-11 15:06 J -19892600.11 -19892599.87 -19892599.62 0.0262 0.0031  
 Earth -59176-01-11 18:57 J -19892599.95 -19892599.71 -19892599.46 0.0262 0.0043 \*  
 Moon -59175-01-23 10:18 J -19892223.26 -19892223.07 -19892222.88 0.0261 0.0161  
 Earth -59175-01-23 10:47 J -19892223.25 -19892223.05 -19892222.84 0.0261 0.0146 \*  
 Venus -59169-11-02 19:25 J -19889747.90 -19889747.69 -19889747.48 0.0271 0.0073  
 Mars -59163-04-21 17:01 J -19887751.85 -19887751.79 -19887751.71 0.0294 0.0284  
 Mercury -59163-06-08 21:49 J -19887703.69 -19887703.59 -19887703.49 0.0295 0.0194  
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 Mercury -59163-12-02 23:30 J -19887526.64 -19887526.52 -19887526.38 0.0296 0.0052  
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 Mercury -59162-05-29 01:11 J -19887349.47 -19887349.45 -19887349.44 0.0298 0.0294  
 Moon -59162-07-06 07:25 J -19887311.32 -19887311.19 -19887311.04 0.0298 0.0247  
 Earth -59162-07-06 10:18 J -19887311.16 -19887311.07 -19887310.94 0.0298 0.0265 \*  
 Moon -59161-07-20 00:13 J -19886931.73 -19886931.49 -19886931.25 0.0301 0.0036

Earth -59161-07-20 03:49 J -19886931.58 -19886931.34 -19886931.10 0.0301 0.0019 \*  
 Venus -59155-01-18 23:45 J -19884922.70 -19884922.51 -19884922.33 0.0292 0.0125  
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 Mars -59149-04-21 17:16 J -19882638.02 -19882637.78 -19882637.53 0.0266 0.0162  
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 Mercury -59149-12-29 20:52 J -19882385.74 -19882385.63 -19882385.51 0.0265 0.0204  
 Earth -59147-01-06 21:06 J -19882012.83 -19882012.62 -19882012.40 0.0262 0.0132  
 Moon -59147-01-07 00:42 J -19882012.68 -19882012.47 -19882012.24 0.0262 0.0126 \*  
 Earth -59146-01-18 14:09 J -19881636.15 -19881635.91 -19881635.67 0.0261 0.0058  
 Moon -59146-01-18 14:52 J -19881636.13 -19881635.88 -19881635.63 0.0261 0.0073 \*  
 Moon -59145-01-30 02:23 J -19881259.43 -19881259.40 -19881259.35 0.0260 0.0256  
 Earth -59145-01-30 05:59 J -19881259.32 -19881259.25 -19881259.16 0.0260 0.0245  
 Venus -59140-09-28 14:37 J -19879190.98 -19879190.89 -19879190.78 0.0269 0.0238  
 Venus -59139-05-15 23:59 J -19878961.68 -19878961.50 -19878961.30 0.0271 0.0124  
 Mercury -59134-10-26 23:59 J -19876971.58 -19876971.50 -19876971.41 0.0295 0.0227  
 Mercury -59133-01-23 12:57 J -19876883.08 -19876882.96 -19876882.83 0.0296 0.0105  
 Mercury -59133-04-21 01:54 J -19876794.56 -19876794.42 -19876794.29 0.0297 0.0019  
 Mars -59133-06-10 07:11 J -19876744.48 -19876744.20 -19876743.93 0.0297 0.0009  
 Mercury -59133-07-18 14:37 J -19876706.01 -19876705.89 -19876705.77 0.0297 0.0140  
 Mercury -59133-10-15 03:21 J -19876617.42 -19876617.36 -19876617.30 0.0298 0.0262  
 Earth -59132-07-14 01:25 J -19876345.66 -19876345.44 -19876345.21 0.0300 0.0108  
 Moon -59132-07-14 05:16 J -19876345.52 -19876345.28 -19876345.05 0.0300 0.0090 \*  
 Earth -59131-07-28 20:09 J -19875965.84 -19875965.66 -19875965.46 0.0302 0.0181  
 Moon -59131-07-28 21:35 J -19875965.77 -19875965.60 -19875965.40 0.0302 0.0196 \*  
 Venus -59126-08-01 06:42 J -19874136.42 -19874136.22 -19874136.02 0.0291 0.0061  
 Mercury -59120-08-25 08:52 J -19871920.24 -19871920.13 -19871920.00 0.0267 0.0196  
 Mercury -59120-11-22 05:01 J -19871831.46 -19871831.29 -19871831.11 0.0266 0.0073  
 Mercury -59119-02-19 01:11 J -19871742.63 -19871742.45 -19871742.27 0.0266 0.0051  
 Mercury -59119-05-18 21:35 J -19871653.74 -19871653.60 -19871653.46 0.0265 0.0175

Mars -59119-06-11 09:06 J -19871630.41 -19871630.12 -19871629.81 0.0265 0.0080  
 Moon -59118-01-02 01:40 J -19871425.57 -19871425.43 -19871425.28 0.0264 0.0216  
 Earth -59118-01-02 05:01 J -19871425.42 -19871425.29 -19871425.14 0.0264 0.0216 \*  
 Moon -59117-01-13 22:18 J -19871048.81 -19871048.57 -19871048.33 0.0262 0.0011  
 Earth -59117-01-13 23:16 J -19871048.78 -19871048.53 -19871048.28 0.0262 0.0023 \*  
 Earth -59116-01-24 15:21 J -19870672.04 -19870671.86 -19870671.66 0.0261 0.0167  
 Moon -59116-01-24 18:57 J -19870671.88 -19870671.71 -19870671.53 0.0261 0.0182 \*  
 Venus -59110-04-10 22:18 J -19868404.72 -19868404.57 -19868404.40 0.0269 0.0179  
 Venus -59110-11-26 07:54 J -19868175.33 -19868175.17 -19868175.01 0.0272 0.0183  
 Mercury -59104-03-15 02:23 J -19866239.46 -19866239.40 -19866239.33 0.0294 0.0258  
 Mercury -59104-06-11 15:35 J -19866150.97 -19866150.85 -19866150.74 0.0295 0.0136  
 Mercury -59104-09-08 04:18 J -19866062.45 -19866062.32 -19866062.18 0.0296 0.0015  
 Mercury -59104-12-05 17:16 J -19865973.91 -19865973.78 -19865973.66 0.0296 0.0109  
 Mercury -59103-03-04 05:45 J -19865885.34 -19865885.26 -19865885.17 0.0297 0.0230  
 Moon -59103-07-07 21:49 J -19865759.74 -19865759.59 -19865759.42 0.0298 0.0219  
 Earth -59103-07-08 00:57 J -19865759.60 -19865759.46 -19865759.31 0.0298 0.0235 \*  
 Moon -59102-07-22 17:30 J -19865380.00 -19865379.77 -19865379.54 0.0301 0.0066  
 Earth -59102-07-22 17:59 J -19865379.98 -19865379.75 -19865379.50 0.0301 0.0051 \*  
 Venus -59096-02-10 11:45 J -19863350.22 -19863350.01 -19863349.80 0.0291 0.0003  
 Mercury -59090-01-12 08:09 J -19861188.24 -19861188.16 -19861188.07 0.0267 0.0234  
 Mercury -59090-04-11 04:04 J -19861099.49 -19861099.33 -19861099.16 0.0266 0.0112  
 Mercury -59090-07-09 00:13 J -19861010.67 -19861010.49 -19861010.30 0.0266 0.0012  
 Mercury -59090-10-05 20:23 J -19860921.80 -19860921.65 -19860921.48 0.0265 0.0136  
 Mercury -59089-01-02 16:47 J -19860832.82 -19860832.80 -19860832.76 0.0264 0.0260  
 Earth -59088-01-08 02:52 J -19860461.60 -19860461.38 -19860461.15 0.0262 0.0113  
 Moon -59088-01-08 04:33 J -19860461.54 -19860461.31 -19860461.07 0.0262 0.0106 \*  
 Moon -59087-01-19 16:33 J -19860085.04 -19860084.81 -19860084.57 0.0261 0.0094  
 Earth -59087-01-19 20:09 J -19860084.89 -19860084.66 -19860084.42 0.0261 0.0079 \*  
 Venus -59081-10-21 03:35 J -19857618.54 -19857618.35 -19857618.16 0.0270 0.0128  
 Venus -59080-06-07 13:11 J -19857389.05 -19857388.95 -19857388.83 0.0272 0.0236

Mercury -59075-08-02 04:47 J -19855507.32 -19855507.30 -19855507.27 0.0294 0.0289  
 Mars -59075-09-16 04:33 J -19855462.45 -19855462.31 -19855462.15 0.0295 0.0246  
 Mercury -59075-10-29 17:45 J -19855418.86 -19855418.76 -19855418.64 0.0295 0.0167  
 Mercury -59074-01-26 06:42 J -19855330.35 -19855330.22 -19855330.09 0.0296 0.0045  
 Mercury -59074-04-24 19:40 J -19855241.81 -19855241.68 -19855241.55 0.0297 0.0078  
 Mercury -59074-07-22 08:23 J -19855153.25 -19855153.15 -19855153.05 0.0298 0.0200  
 Moon -59073-07-15 17:01 J -19854794.03 -19854793.79 -19854793.54 0.0300 0.0061  
 Earth -59073-07-15 17:16 J -19854794.01 -19854793.78 -19854793.54 0.0300 0.0076 \*  
 Moon -59072-07-30 08:37 J -19854414.29 -19854414.14 -19854413.97 0.0301 0.0227  
 Earth -59072-07-30 11:45 J -19854414.18 -19854414.01 -19854413.84 0.0301 0.0213 \*  
 Venus -59067-08-23 19:40 J -19852563.88 -19852563.68 -19852563.48 0.0291 0.0064  
 Mercury -59061-05-31 09:06 J -19850456.15 -19850456.12 -19850456.08 0.0267 0.0262  
 Mercury -59061-08-28 05:01 J -19850367.44 -19850367.29 -19850367.13 0.0267 0.0139  
 Mars -59061-09-16 00:28 J -19850348.75 -19850348.48 -19850348.20 0.0267 0.0124  
 Mercury -59061-11-25 01:11 J -19850278.63 -19850278.45 -19850278.26 0.0266 0.0017  
 Mercury -59060-02-21 21:35 J -19850189.77 -19850189.60 -19850189.43 0.0265 0.0109  
 Mercury -59060-05-21 17:45 J -19850100.84 -19850100.76 -19850100.67 0.0265 0.0233  
 Moon -59059-01-03 09:49 J -19849874.25 -19849874.09 -19849873.93 0.0264 0.0196  
 Earth -59059-01-03 11:59 J -19849874.16 -19849874.00 -19849873.83 0.0264 0.0195 \*  
 Earth -59058-01-15 06:13 J -19849497.49 -19849497.24 -19849496.99 0.0262 0.0002  
 Moon -59058-01-15 09:21 J -19849497.36 -19849497.11 -19849496.87 0.0262 0.0012 \*  
 Earth -59057-01-26 22:47 J -19849120.71 -19849120.55 -19849120.37 0.0261 0.0188  
 Moon -59057-01-27 01:11 J -19849120.60 -19849120.45 -19849120.28 0.0261 0.0201 \*  
 Venus -59051-05-03 11:59 J -19846832.21 -19846832.00 -19846831.78 0.0270 0.0067  
 Mercury -59045-03-17 20:52 J -19844686.73 -19844686.63 -19844686.53 0.0294 0.0193  
 Mercury -59045-06-14 09:49 J -19844598.22 -19844598.09 -19844597.96 0.0295 0.0071  
 Mercury -59045-09-10 22:33 J -19844509.69 -19844509.56 -19844509.42 0.0296 0.0052  
 Mars -59045-11-05 02:52 J -19844454.64 -19844454.38 -19844454.11 0.0296 0.0065  
 Mercury -59045-12-08 11:16 J -19844421.13 -19844421.03 -19844420.92 0.0297 0.0173  
 Mercury -59044-03-06 23:59 J -19844332.51 -19844332.50 -19844332.48 0.0298 0.0294



Earth -59044-07-09 19:54 J -19844207.84 -19844207.67 -19844207.49 0.0298 0.0202  
 Moon -59044-07-09 20:37 J -19844207.82 -19844207.64 -19844207.46 0.0298 0.0188 \*  
 Earth -59043-07-24 13:11 J -19843828.18 -19843827.95 -19843827.72 0.0301 0.0085  
 Moon -59043-07-24 16:18 J -19843828.04 -19843827.82 -19843827.59 0.0301 0.0100 \*  
 Venus -59037-03-05 02:37 J -19841777.57 -19841777.39 -19841777.20 0.0291 0.0128  
 Mercury -59031-01-15 04:47 J -19839635.43 -19839635.30 -19839635.16 0.0267 0.0174  
 Mercury -59031-04-14 00:57 J -19839546.64 -19839546.46 -19839546.28 0.0266 0.0051  
 Mercury -59031-07-11 21:06 J -19839457.80 -19839457.62 -19839457.44 0.0266 0.0073  
 Mercury -59031-10-08 17:16 J -19839368.90 -19839368.78 -19839368.65 0.0265 0.0197  
 Mars -59031-11-05 11:01 J -19839341.30 -19839341.04 -19839340.75 0.0265 0.0118  
 Moon -59029-01-10 08:52 J -19838910.37 -19838910.13 -19838909.88 0.0262 0.0082  
 Earth -59029-01-10 11:30 J -19838910.25 -19838910.02 -19838909.78 0.0262 0.0091 \*  
 Moon -59028-01-21 02:23 J -19838533.61 -19838533.40 -19838533.18 0.0261 0.0116  
 Earth -59028-01-21 04:47 J -19838533.53 -19838533.30 -19838533.07 0.0261 0.0101 \*  
 Venus -59022-11-13 17:59 J -19836045.97 -19836045.75 -19836045.54 0.0271 0.0014  
 Mercury -59016-08-04 23:16 J -19833954.61 -19833954.53 -19833954.44 0.0295 0.0223  
 Mercury -59016-11-01 12:28 J -19833866.11 -19833865.98 -19833865.86 0.0296 0.0101  
 Mercury -59015-01-29 01:11 J -19833777.58 -19833777.45 -19833777.32 0.0296 0.0022  
 Mercury -59015-04-27 13:54 J -19833689.03 -19833688.92 -19833688.80 0.0297 0.0144  
 Mercury -59015-07-25 02:37 J -19833600.44 -19833600.39 -19833600.33 0.0298 0.0265  
 Moon -59014-07-18 09:49 J -19833242.34 -19833242.09 -19833241.85 0.0300 0.0027  
 Earth -59014-07-18 13:11 J -19833242.19 -19833241.95 -19833241.71 0.0300 0.0040 \*  
 Moon -59013-08-01 03:49 J -19832862.44 -19832862.34 -19832862.21 0.0301 0.0262  
 Earth -59013-08-01 07:11 J -19832862.32 -19832862.20 -19832862.05 0.0301 0.0249 \*  
 Venus -59008-01-28 19:54 J -19831220.79 -19831220.67 -19831220.54 0.0292 0.0235  
 Venus -59008-09-15 11:01 J -19830991.19 -19830991.04 -19830990.89 0.0290 0.0195  
 Mercury -59002-06-04 05:59 J -19828903.36 -19828903.25 -19828903.12 0.0267 0.0200  
 Mercury -59002-09-01 02:09 J -19828814.58 -19828814.41 -19828814.23 0.0266 0.0077  
 Mercury -59002-11-28 22:18 J -19828725.75 -19828725.57 -19828725.39 0.0266 0.0047  
 Mercury -59001-02-25 18:28 J -19828636.86 -19828636.73 -19828636.58 0.0265 0.0171

# 59TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 59th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-59000-01-04 21:21 J	-19828322.79	-19828322.61	-19828322.42	0.0263	0.0174		
Moon	-59000-01-04 23:30 J	-19828322.70	-19828322.52	-19828322.33	0.0263	0.0171	*	
Earth	-58999-01-16 15:35 J	-19827946.10	-19827945.85	-19827945.60	0.0262	0.0020		
Moon	-58999-01-16 18:28 J	-19827945.98	-19827945.73	-19827945.47	0.0262	0.0033	*	
Moon	-58998-01-28 05:59 J	-19827569.38	-19827569.25	-19827569.11	0.0261	0.0220		
Earth	-58998-01-28 08:23 J	-19827569.29	-19827569.15	-19827569.00	0.0261	0.0210	*	
Venus	-58992-05-26 02:52 J	-19825259.59	-19825259.38	-19825259.16	0.0271	0.0051		
Mercury	-58987-12-23 02:37 J	-19823222.46	-19823222.39	-19823222.32	0.0294	0.0247		
Mars	-58986-02-11 10:33 J	-19823172.27	-19823172.06	-19823171.83	0.0294	0.0182		
Mercury	-58986-03-21 15:35 J	-19823133.97	-19823133.85	-19823133.73	0.0295	0.0125		
Mercury	-58986-06-18 04:33 J	-19823045.45	-19823045.31	-19823045.18	0.0296	0.0008		
Mercury	-58986-09-14 17:16 J	-19822956.90	-19822956.78	-19822956.66	0.0296	0.0118		
Mercury	-58986-12-12 05:59 J	-19822868.33	-19822868.25	-19822868.18	0.0297	0.0239		
Earth	-58985-07-11 16:47 J	-19822655.99	-19822655.80	-19822655.59	0.0299	0.0167		
Moon	-58985-07-11 20:23 J	-19822655.86	-19822655.65	-19822655.44	0.0299	0.0151	*	
Earth	-58984-07-26 10:18 J	-19822276.29	-19822276.07	-19822275.85	0.0301	0.0122		
Moon	-58984-07-26 13:11 J	-19822276.16	-19822275.95	-19822275.72	0.0301	0.0135	*	
Venus	-58979-08-11 04:18 J	-19820434.48	-19820434.32	-19820434.14	0.0292	0.0164		
Venus	-58978-03-28 18:57 J	-19820204.78	-19820204.71	-19820204.62	0.0290	0.0264		

Mercury -58973-10-21 06:28 J -19818171.32 -19818171.23 -19818171.14 0.0267 0.0231

Mercury -58972-01-18 02:23 J -19818082.57 -19818082.40 -19818082.23 0.0266 0.0109

Mars -58972-02-10 11:45 J -19818059.30 -19818059.01 -19818058.71 0.0266 0.0082

Mercury -58972-04-16 22:18 J -19817993.75 -19817993.57 -19817993.38 0.0266 0.0016

Mercury -58972-07-14 18:28 J -19817904.88 -19817904.73 -19817904.56 0.0265 0.0138

Mercury -58972-10-11 14:52 J -19817815.90 -19817815.88 -19817815.85 0.0265 0.0262

Moon -58972-12-31 00:42 J -19817735.50 -19817735.47 -19817735.42 0.0264 0.0261

Earth -58972-12-31 03:06 J -19817735.40 -19817735.37 -19817735.33 0.0264 0.0260

Moon -58970-01-11 18:28 J -19817358.97 -19817358.73 -19817358.49 0.0262 0.0058

Earth -58970-01-11 21:49 J -19817358.82 -19817358.59 -19817358.34 0.0262 0.0068 \*

Earth -58969-01-23 15:06 J -19816982.09 -19816981.87 -19816981.65 0.0261 0.0124

Moon -58969-01-23 16:47 J -19816982.00 -19816981.80 -19816981.59 0.0261 0.0137 \*

Venus -58963-04-20 23:01 J -19814702.60 -19814702.54 -19814702.47 0.0269 0.0255

Venus -58963-12-06 08:37 J -19814473.34 -19814473.14 -19814472.94 0.0271 0.0105

Mercury -58957-05-11 05:01 J -19812490.33 -19812490.29 -19812490.24 0.0294 0.0277

Mercury -58957-08-07 17:59 J -19812401.86 -19812401.75 -19812401.63 0.0295 0.0155

Mercury -58957-11-04 06:57 J -19812313.34 -19812313.21 -19812313.08 0.0296 0.0033

Mercury -58956-01-31 19:54 J -19812224.80 -19812224.67 -19812224.55 0.0297 0.0090

Mars -58956-04-02 03:21 J -19812164.61 -19812164.36 -19812164.10 0.0297 0.0114

Mercury -58956-04-30 08:23 J -19812136.23 -19812136.15 -19812136.05 0.0298 0.0212

Moon -58956-07-05 14:37 J -19812069.99 -19812069.89 -19812069.79 0.0298 0.0269

Earth -58956-07-05 18:13 J -19812069.80 -19812069.74 -19812069.68 0.0298 0.0287 \*

Moon -58955-07-20 08:09 J -19811690.39 -19811690.16 -19811689.92 0.0300 0.0012

Earth -58955-07-20 10:47 J -19811690.29 -19811690.05 -19811689.81 0.0300 0.0004 \*

Earth -58954-08-04 05:01 J -19811310.36 -19811310.29 -19811310.21 0.0302 0.0285

Moon -58954-08-04 05:30 J -19811310.31 -19811310.27 -19811310.24 0.0302 0.0297 \*

Venus -58949-02-21 13:25 J -19809648.14 -19809647.94 -19809647.75 0.0292 0.0094

Mercury -58943-03-10 07:54 J -19807439.22 -19807439.17 -19807439.12 0.0267 0.0257

Mercury -58943-06-07 03:35 J -19807350.50 -19807350.35 -19807350.19 0.0267 0.0135

Mercury -58943-09-03 23:45 J -19807261.69 -19807261.51 -19807261.32 0.0266 0.0011

Mercury -58943-12-01 19:54 J -19807172.83 -19807172.67 -19807172.50 0.0265 0.0113

Mercury -58942-02-28 16:04 J -19807083.90 -19807083.83 -19807083.74 0.0265 0.0237

Mars -58942-04-02 08:09 J -19807051.40 -19807051.16 -19807050.91 0.0265 0.0166

Earth -58941-01-07 08:09 J -19806771.35 -19806771.16 -19806770.95 0.0263 0.0151

Moon -58941-01-07 11:45 J -19806771.20 -19806771.01 -19806770.79 0.0263 0.0146 \*

Moon -58940-01-18 01:25 J -19806394.69 -19806394.44 -19806394.19 0.0262 0.0056

Earth -58940-01-18 02:09 J -19806394.65 -19806394.41 -19806394.16 0.0262 0.0043 \*

Moon -58939-01-29 15:21 J -19806017.94 -19806017.86 -19806017.76 0.0261 0.0242

Earth -58939-01-29 18:42 J -19806017.81 -19806017.72 -19806017.59 0.0261 0.0233 \*

Venus -58934-11-01 07:54 J -19803916.32 -19803916.17 -19803916.02 0.0270 0.0192

Venus -58933-06-17 17:30 J -19803686.93 -19803686.77 -19803686.59 0.0272 0.0170

Mercury -58928-12-25 21:21 J -19801669.71 -19801669.61 -19801669.50 0.0294 0.0178

Mercury -58927-03-24 10:18 J -19801581.20 -19801581.07 -19801580.94 0.0295 0.0057

Mercury -58927-06-20 23:16 J -19801492.66 -19801492.53 -19801492.40 0.0296 0.0065

Mercury -58927-09-17 11:59 J -19801404.10 -19801404.00 -19801403.90 0.0297 0.0187

Earth -58926-07-14 15:06 J -19801104.08 -19801103.87 -19801103.65 0.0299 0.0130

Moon -58926-07-14 17:59 J -19801103.98 -19801103.75 -19801103.52 0.0299 0.0114 \*

Moon -58925-07-28 07:54 J -19800724.36 -19800724.17 -19800723.95 0.0301 0.0171

Earth -58925-07-28 08:37 J -19800724.33 -19800724.14 -19800723.93 0.0301 0.0159 \*

Venus -58920-09-02 22:18 J -19798861.78 -19798861.57 -19798861.36 0.0291 0.0021

Mercury -58914-10-25 04:18 J -19796618.46 -19796618.32 -19796618.18 0.0267 0.0164

Mercury -58913-01-22 00:13 J -19796529.67 -19796529.49 -19796529.31 0.0266 0.0041

Mercury -58913-04-19 20:23 J -19796440.83 -19796440.65 -19796440.47 0.0265 0.0082

Mercury -58913-07-17 16:33 J -19796351.92 -19796351.81 -19796351.69 0.0265 0.0205

Moon -58912-01-01 11:30 J -19796184.13 -19796184.02 -19796183.91 0.0264 0.0235

Earth -58912-01-01 14:52 J -19796183.98 -19796183.88 -19796183.76 0.0264 0.0237 \*

Earth -58911-01-13 09:21 J -19795807.36 -19795807.11 -19795806.86 0.0262 0.0044

Moon -58911-01-13 09:35 J -19795807.34 -19795807.10 -19795806.86 0.0262 0.0032 \*

Earth -58910-01-25 02:09 J -19795430.61 -19795430.41 -19795430.20 0.0261 0.0148

Moon -58910-01-25 05:30 J -19795430.45 -19795430.27 -19795430.06 0.0261 0.0162 \*

Venus -58904-05-13 13:25 J -19793130.12 -19793129.94 -19793129.75 0.0270 0.0140  
 Venus -58904-12-28 23:16 J -19792900.65 -19792900.53 -19792900.40 0.0272 0.0223  
 Mercury -58898-05-14 23:30 J -19790937.61 -19790937.52 -19790937.42 0.0295 0.0211  
 Mars -58898-07-09 08:23 J -19790882.39 -19790882.15 -19790881.89 0.0295 0.0136  
 Mercury -58898-08-11 12:42 J -19790849.10 -19790848.97 -19790848.85 0.0296 0.0089  
 Mercury -58898-11-08 01:25 J -19790760.57 -19790760.44 -19790760.31 0.0297 0.0034  
 Mercury -58897-02-04 14:09 J -19790672.02 -19790671.91 -19790671.79 0.0297 0.0156  
 Mercury -58897-05-03 02:52 J -19790583.42 -19790583.38 -19790583.33 0.0298 0.0277  
 Moon -58897-07-07 11:59 J -19790518.13 -19790518.00 -19790517.85 0.0299 0.0236  
 Earth -58897-07-07 14:23 J -19790518.02 -19790517.90 -19790517.77 0.0299 0.0252 \*  
 Earth -58896-07-22 07:40 J -19790138.42 -19790138.18 -19790137.94 0.0301 0.0034  
 Moon -58896-07-22 08:23 J -19790138.38 -19790138.15 -19790137.92 0.0301 0.0048 \*  
 Venus -58890-03-16 06:13 J -19788075.44 -19788075.24 -19788075.03 0.0291 0.0046  
 Mercury -58884-03-13 05:16 J -19785886.40 -19785886.28 -19785886.14 0.0267 0.0191  
 Mercury -58884-06-10 01:25 J -19785797.62 -19785797.44 -19785797.26 0.0266 0.0068  
 Mars -58884-07-08 10:47 J -19785769.36 -19785769.05 -19785768.74 0.0266 0.0033  
 Mercury -58884-09-06 21:21 J -19785708.78 -19785708.61 -19785708.42 0.0265 0.0056  
 Mercury -58884-12-04 17:30 J -19785619.90 -19785619.77 -19785619.62 0.0265 0.0179  
 Moon -58882-01-08 19:11 J -19785219.93 -19785219.70 -19785219.47 0.0263 0.0119  
 Earth -58882-01-08 19:11 J -19785219.91 -19785219.70 -19785219.47 0.0263 0.0128 \*  
 Moon -58881-01-20 09:06 J -19784843.36 -19784843.12 -19784842.88 0.0261 0.0081  
 Earth -58881-01-20 12:42 J -19784843.20 -19784842.97 -19784842.72 0.0261 0.0067 \*  
 Earth -58880-01-31 05:16 J -19784466.32 -19784466.28 -19784466.22 0.0261 0.0255  
 Venus -58875-11-23 21:35 J -19782343.81 -19782343.60 -19782343.39 0.0270 0.0079  
 Mercury -58869-10-01 02:52 J -19780205.46 -19780205.38 -19780205.30 0.0294 0.0235  
 Mercury -58869-12-28 15:49 J -19780116.96 -19780116.84 -19780116.72 0.0295 0.0113  
 Mercury -58868-03-27 04:47 J -19780028.44 -19780028.30 -19780028.17 0.0296 0.0010  
 Mercury -58868-06-23 17:30 J -19779939.89 -19779939.77 -19779939.65 0.0297 0.0130  
 Mars -58868-08-28 08:37 J -19779874.35 -19779874.14 -19779873.91 0.0297 0.0178  
 Mercury -58868-09-20 06:13 J -19779851.31 -19779851.24 -19779851.17 0.0297 0.0252

Moon -58867-07-16 10:18 J -19779552.31 -19779552.07 -19779551.83 0.0299 0.0079  
 Earth -58867-07-16 11:16 J -19779552.25 -19779552.03 -19779551.79 0.0299 0.0095 \*  
 Moon -58866-07-31 01:54 J -19779172.59 -19779172.42 -19779172.24 0.0301 0.0208  
 Earth -58866-07-31 05:16 J -19779172.45 -19779172.28 -19779172.09 0.0301 0.0195 \*  
 Venus -58861-09-25 15:49 J -19777289.03 -19777288.84 -19777288.66 0.0291 0.0120  
 Mercury -58855-07-31 06:13 J -19775154.34 -19775154.24 -19775154.13 0.0267 0.0218  
 Mercury -58855-10-28 02:09 J -19775065.58 -19775065.41 -19775065.24 0.0266 0.0096  
 Mercury -58854-01-24 22:04 J -19774976.76 -19774976.58 -19774976.39 0.0266 0.0027  
 Mercury -58854-04-23 18:13 J -19774887.89 -19774887.74 -19774887.58 0.0265 0.0150  
 Mars -58854-08-28 03:06 J -19774761.56 -19774761.37 -19774761.18 0.0264 0.0210  
 Moon -58853-01-04 02:23 J -19774632.53 -19774632.40 -19774632.24 0.0263 0.0211  
 Earth -58853-01-04 02:37 J -19774632.52 -19774632.39 -19774632.23 0.0263 0.0212 \*  
 Earth -58852-01-14 20:37 J -19774255.89 -19774255.64 -19774255.39 0.0262 0.0020  
 Moon -58852-01-15 00:28 J -19774255.73 -19774255.48 -19774255.24 0.0262 0.0007 \*  
 Earth -58851-01-26 12:57 J -19773879.15 -19773878.96 -19773878.77 0.0260 0.0171  
 Moon -58851-01-26 13:54 J -19773879.09 -19773878.92 -19773878.73 0.0260 0.0183 \*  
 Venus -58845-06-05 02:37 J -19771557.61 -19771557.39 -19771557.18 0.0270 0.0028  
 Mercury -58839-02-18 04:47 J -19769473.35 -19769473.30 -19769473.25 0.0294 0.0270  
 Mercury -58839-05-17 17:45 J -19769384.88 -19769384.76 -19769384.64 0.0295 0.0148  
 Mercury -58839-08-14 06:42 J -19769296.35 -19769296.22 -19769296.09 0.0296 0.0026  
 Mercury -58839-11-10 19:25 J -19769207.81 -19769207.69 -19769207.56 0.0297 0.0097  
 Mercury -58838-02-07 08:09 J -19769119.24 -19769119.16 -19769119.07 0.0298 0.0219  
 Earth -58838-07-10 08:09 J -19768966.31 -19768966.16 -19768965.99 0.0299 0.0220  
 Moon -58838-07-10 10:18 J -19768966.24 -19768966.07 -19768965.90 0.0299 0.0203 \*  
 Earth -58837-07-24 01:54 J -19768586.65 -19768586.42 -19768586.18 0.0301 0.0068  
 Moon -58837-07-24 05:30 J -19768586.50 -19768586.27 -19768586.04 0.0301 0.0085 \*  
 Venus -58832-08-21 06:57 J -19766732.31 -19766732.21 -19766732.09 0.0293 0.0249  
 Venus -58831-04-07 22:18 J -19766502.73 -19766502.57 -19766502.41 0.0290 0.0181  
 Mars -58826-10-14 17:30 J -19764486.91 -19764486.77 -19764486.61 0.0267 0.0233  
 Mercury -58826-12-18 06:57 J -19764422.27 -19764422.21 -19764422.14 0.0267 0.0247

Mercury -58825-03-16 02:52 J -19764333.54 -19764333.38 -19764333.22 0.0266 0.0126

Mercury -58825-06-12 22:47 J -19764244.73 -19764244.55 -19764244.36 0.0266 0.0006

Mercury -58825-09-09 18:57 J -19764155.87 -19764155.71 -19764155.54 0.0265 0.0120

Mercury -58825-12-07 15:06 J -19764066.93 -19764066.87 -19764066.79 0.0264 0.0243

Moon -58823-01-10 01:40 J -19763668.65 -19763668.43 -19763668.18 0.0262 0.0093

Earth -58823-01-10 05:30 J -19763668.49 -19763668.27 -19763668.04 0.0262 0.0104 \*

Moon -58822-01-21 20:52 J -19763291.84 -19763291.63 -19763291.40 0.0261 0.0104

Earth -58822-01-21 22:33 J -19763291.79 -19763291.56 -19763291.32 0.0261 0.0089 \*

Venus -58816-12-16 10:04 J -19760771.29 -19760771.08 -19760770.86 0.0271 0.0032

Mercury -58810-10-04 20:37 J -19758652.74 -19758652.64 -19758652.53 0.0295 0.0175

Mars -58810-12-04 07:40 J -19758592.45 -19758592.18 -19758591.91 0.0295 0.0079

Mercury -58809-01-01 09:35 J -19758564.23 -19758564.10 -19758563.97 0.0296 0.0053

Mercury -58809-03-29 22:33 J -19758475.69 -19758475.56 -19758475.43 0.0296 0.0069

Mercury -58809-06-26 11:16 J -19758387.13 -19758387.03 -19758386.93 0.0297 0.0191

Moon -58808-07-18 00:13 J -19758000.73 -19758000.49 -19758000.25 0.0300 0.0045

Earth -58808-07-18 04:04 J -19758000.56 -19758000.33 -19758000.09 0.0300 0.0061 \*

Moon -58807-08-01 19:40 J -19757620.81 -19757620.68 -19757620.53 0.0301 0.0243

Earth -58807-08-01 22:18 J -19757620.72 -19757620.57 -19757620.41 0.0301 0.0229 \*

Venus -58802-03-03 16:04 J -19755945.99 -19755945.83 -19755945.66 0.0293 0.0176

Venus -58802-10-19 07:11 J -19755716.30 -19755716.20 -19755716.10 0.0290 0.0252

Mercury -58796-08-03 03:35 J -19753601.50 -19753601.35 -19753601.20 0.0267 0.0153

Mercury -58796-10-30 23:30 J -19753512.70 -19753512.52 -19753512.34 0.0266 0.0031

Mars -58796-12-03 04:18 J -19753479.62 -19753479.32 -19753479.01 0.0266 0.0009

Mercury -58795-01-27 19:40 J -19753423.86 -19753423.68 -19753423.51 0.0265 0.0091

Mercury -58795-04-26 15:49 J -19753334.95 -19753334.84 -19753334.73 0.0265 0.0214

Earth -58794-01-05 12:57 J -19753081.13 -19753080.96 -19753080.78 0.0263 0.0188

Moon -58794-01-05 16:04 J -19753081.00 -19753080.83 -19753080.65 0.0263 0.0185 \*

Earth -58793-01-17 06:13 J -19752704.49 -19752704.24 -19752703.99 0.0261 0.0005

Moon -58793-01-17 07:54 J -19752704.43 -19752704.17 -19752703.92 0.0261 0.0018 \*

Moon -58792-01-27 18:42 J -19752327.87 -19752327.72 -19752327.56 0.0260 0.0205

Earth -58792-01-27 21:49 J -19752327.75 -19752327.59 -19752327.41 0.0260 0.0193 \*  
 Venus -58786-06-28 13:54 J -19749985.13 -19749984.92 -19749984.71 0.0271 0.0080  
 Mercury -58780-02-20 22:04 J -19747920.67 -19747920.58 -19747920.49 0.0295 0.0214  
 Mercury -58780-05-20 11:01 J -19747832.17 -19747832.04 -19747831.91 0.0296 0.0092  
 Mercury -58780-08-16 23:59 J -19747743.63 -19747743.50 -19747743.37 0.0297 0.0030  
 Mercury -58780-11-13 12:42 J -19747655.08 -19747654.97 -19747654.85 0.0297 0.0152  
 Mars -58779-01-22 12:42 J -19747585.16 -19747584.97 -19747584.77 0.0298 0.0210  
 Mercury -58779-02-10 01:25 J -19747566.49 -19747566.44 -19747566.39 0.0298 0.0274  
 Earth -58779-07-11 21:06 J -19747414.79 -19747414.62 -19747414.42 0.0299 0.0191  
 Moon -58779-07-12 00:57 J -19747414.65 -19747414.46 -19747414.25 0.0299 0.0174 \*  
 Earth -58778-07-26 15:35 J -19747035.08 -19747034.85 -19747034.62 0.0301 0.0099  
 Moon -58778-07-26 17:30 J -19747035.00 -19747034.77 -19747034.54 0.0301 0.0114 \*  
 Venus -58773-09-12 21:21 J -19745159.79 -19745159.61 -19745159.42 0.0292 0.0118  
 Mercury -58767-12-21 03:49 J -19742869.47 -19742869.34 -19742869.21 0.0266 0.0186  
 Mercury -58766-03-19 23:45 J -19742780.69 -19742780.51 -19742780.33 0.0266 0.0064  
 Mercury -58766-06-16 19:40 J -19742691.86 -19742691.68 -19742691.50 0.0265 0.0059  
 Mercury -58766-09-13 15:49 J -19742602.97 -19742602.84 -19742602.70 0.0265 0.0182  
 Mars -58765-01-22 15:21 J -19742471.93 -19742471.86 -19742471.74 0.0264 0.0252  
 Moon -58764-01-11 11:45 J -19742117.24 -19742117.01 -19742116.77 0.0262 0.0071  
 Earth -58764-01-11 13:54 J -19742117.16 -19742116.92 -19742116.69 0.0262 0.0081 \*  
 Earth -58763-01-23 05:59 J -19741740.47 -19741740.25 -19741740.01 0.0261 0.0111  
 Moon -58763-01-23 09:06 J -19741740.33 -19741740.12 -19741739.90 0.0261 0.0126 \*  
 Venus -58757-05-23 11:01 J -19739428.16 -19739428.04 -19739427.92 0.0269 0.0221  
 Venus -58756-01-07 20:23 J -19739198.83 -19739198.65 -19739198.46 0.0271 0.0137  
 Mercury -58751-07-11 00:42 J -19737188.55 -19737188.47 -19737188.40 0.0294 0.0244  
 Mercury -58751-10-07 13:40 J -19737100.05 -19737099.93 -19737099.81 0.0295 0.0122  
 Mercury -58750-01-04 02:37 J -19737011.52 -19737011.39 -19737011.26 0.0296 0.0001  
 Mercury -58750-04-02 15:21 J -19736922.98 -19736922.86 -19736922.73 0.0297 0.0123  
 Mercury -58750-06-30 04:04 J -19736834.40 -19736834.33 -19736834.25 0.0298 0.0244  
 Moon -58749-07-19 14:37 J -19736449.12 -19736448.89 -19736448.66 0.0300 0.0017



Earth -58749-07-19 15:35 J -19736449.09 -19736448.85 -19736448.61 0.0300 0.0032 \*  
 Earth -58748-08-03 10:18 J -19736069.18 -19736069.07 -19736068.94 0.0301 0.0259  
 Moon -58748-08-03 12:13 J -19736069.09 -19736068.99 -19736068.89 0.0301 0.0272 \*  
 Venus -58743-03-26 05:30 J -19734373.47 -19734373.27 -19734373.06 0.0292 0.0048  
 Mars -58737-03-10 06:28 J -19732197.43 -19732197.23 -19732197.03 0.0267 0.0199  
 Mercury -58737-05-09 04:33 J -19732137.42 -19732137.31 -19732137.21 0.0267 0.0214  
 Mercury -58737-08-06 00:13 J -19732048.66 -19732048.49 -19732048.32 0.0266 0.0093  
 Mercury -58737-11-02 20:09 J -19731959.84 -19731959.66 -19731959.47 0.0265 0.0029  
 Mercury -58736-01-30 16:18 J -19731870.97 -19731870.82 -19731870.67 0.0265 0.0152  
 Earth -58735-01-06 20:52 J -19731529.82 -19731529.63 -19731529.44 0.0263 0.0165  
 Moon -58735-01-06 23:30 J -19731529.71 -19731529.52 -19731529.31 0.0263 0.0162 \*  
 Moon -58734-01-18 10:33 J -19731153.31 -19731153.06 -19731152.80 0.0261 0.0041  
 Earth -58734-01-18 13:25 J -19731153.18 -19731152.94 -19731152.69 0.0261 0.0027 \*  
 Moon -58733-01-30 01:40 J -19730776.54 -19730776.43 -19730776.30 0.0260 0.0226  
 Earth -58733-01-30 04:33 J -19730776.43 -19730776.31 -19730776.15 0.0260 0.0215 \*  
 Jupiter -58729-09-04 16:47 J -19729097.06 -19729096.80 -19729096.50 0.0265 0.0211  
 Venus -58728-12-03 14:23 J -19728642.06 -19728641.90 -19728641.73 0.0269 0.0176  
 Venus -58727-07-20 23:30 J -19728412.67 -19728412.52 -19728412.35 0.0271 0.0182  
 Mercury -58722-11-28 01:40 J -19726456.46 -19726456.43 -19726456.40 0.0294 0.0286  
 Mercury -58721-02-24 14:37 J -19726368.00 -19726367.89 -19726367.78 0.0295 0.0165  
 Mars -58721-04-28 22:18 J -19726303.84 -19726303.57 -19726303.30 0.0296 0.0059  
 Mercury -58721-05-23 03:35 J -19726279.48 -19726279.35 -19726279.22 0.0296 0.0043  
 Mercury -58721-08-19 16:33 J -19726190.94 -19726190.81 -19726190.68 0.0297 0.0080  
 Mercury -58721-11-16 05:16 J -19726102.37 -19726102.28 -19726102.18 0.0298 0.0201  
 Moon -58720-07-13 06:13 J -19725863.45 -19725863.24 -19725863.02 0.0300 0.0149  
 Earth -58720-07-13 05:59 J -19725863.44 -19725863.25 -19725863.04 0.0300 0.0163 \*  
 Moon -58719-07-27 21:49 J -19725483.81 -19725483.59 -19725483.37 0.0302 0.0139  
 Earth -58719-07-28 00:42 J -19725483.69 -19725483.47 -19725483.25 0.0302 0.0128 \*  
 Venus -58714-10-06 08:52 J -19723587.33 -19723587.13 -19723586.92 0.0292 0.0004  
 Mercury -58708-09-26 03:49 J -19721405.39 -19721405.34 -19721405.28 0.0267 0.0251

Mercury -58708-12-23 23:30 J -19721316.67 -19721316.52 -19721316.35 0.0266 0.0130

Mercury -58707-03-22 19:40 J -19721227.87 -19721227.68 -19721227.50 0.0265 0.0008

Mars -58707-04-29 06:42 J -19721190.52 -19721190.22 -19721189.91 0.0265 0.0042

Mercury -58707-06-19 15:35 J -19721139.01 -19721138.85 -19721138.68 0.0265 0.0115

Mercury -58707-09-16 11:45 J -19721050.08 -19721050.01 -19721049.92 0.0264 0.0238

Moon -58706-01-01 22:04 J -19720942.63 -19720942.58 -19720942.51 0.0264 0.0255

Earth -58706-01-02 01:25 J -19720942.51 -19720942.44 -19720942.38 0.0264 0.0253 \*

Earth -58705-01-13 18:57 J -19720565.94 -19720565.71 -19720565.46 0.0262 0.0061

Moon -58705-01-13 21:06 J -19720565.85 -19720565.62 -19720565.38 0.0262 0.0049 \*

Earth -58704-01-24 11:01 J -19720189.25 -19720189.04 -19720188.82 0.0260 0.0131

Moon -58704-01-24 13:54 J -19720189.12 -19720188.92 -19720188.70 0.0260 0.0144 \*

Venus -58698-06-15 19:11 J -19717855.89 -19717855.70 -19717855.50 0.0269 0.0125

Venus -58697-01-31 04:47 J -19717626.40 -19717626.30 -19717626.19 0.0272 0.0234

Mercury -58692-07-13 16:47 J -19715635.90 -19715635.80 -19715635.70 0.0295 0.0199

Mercury -58692-10-10 05:45 J -19715547.39 -19715547.26 -19715547.13 0.0296 0.0077

Mercury -58691-01-06 18:42 J -19715458.86 -19715458.72 -19715458.59 0.0296 0.0045

Mercury -58691-04-05 07:25 J -19715370.30 -19715370.19 -19715370.08 0.0297 0.0167

Mars -58691-06-18 11:30 J -19715296.17 -19715296.02 -19715295.86 0.0298 0.0245

Mercury -58691-07-02 20:09 J -19715281.69 -19715281.66 -19715281.63 0.0298 0.0288

Moon -58691-07-07 04:04 J -19715277.41 -19715277.33 -19715277.24 0.0298 0.0278

Earth -58691-07-07 03:49 J -19715277.39 -19715277.34 -19715277.29 0.0298 0.0290 \*

Earth -58690-07-21 21:06 J -19714897.86 -19714897.62 -19714897.37 0.0300 0.0008

Moon -58690-07-22 00:28 J -19714897.72 -19714897.48 -19714897.25 0.0300 0.0007 \*

Earth -58689-08-04 16:18 J -19714517.89 -19714517.82 -19714517.74 0.0302 0.0284

Moon -58689-08-04 19:40 J -19714517.71 -19714517.68 -19714517.61 0.0302 0.0295

Venus -58684-04-17 15:35 J -19712801.05 -19712800.85 -19712800.65 0.0292 0.0066

Mercury -58678-05-12 23:59 J -19710584.64 -19710584.50 -19710584.35 0.0267 0.0160

Mercury -58678-08-09 19:54 J -19710495.85 -19710495.67 -19710495.49 0.0266 0.0038

Mercury -58678-11-06 15:49 J -19710407.01 -19710406.84 -19710406.66 0.0265 0.0084

Mercury -58677-02-03 11:59 J -19710318.11 -19710318.00 -19710317.88 0.0265 0.0207

Moon -58676-01-07 23:59 J -19709978.71 -19709978.50 -19709978.27 0.0262 0.0137  
 Earth -58676-01-08 01:25 J -19709978.63 -19709978.44 -19709978.22 0.0262 0.0145 \*  
 Moon -58675-01-19 14:52 J -19709602.12 -19709601.88 -19709601.64 0.0261 0.0062  
 Earth -58675-01-19 17:59 J -19709601.99 -19709601.75 -19709601.50 0.0261 0.0047 \*  
 Earth -58674-01-31 08:37 J -19709225.23 -19709225.14 -19709225.02 0.0260 0.0235  
 Moon -58674-01-31 10:18 J -19709225.14 -19709225.07 -19709224.97 0.0260 0.0243 \*  
 Venus -58669-12-25 22:04 J -19707069.78 -19707069.58 -19707069.37 0.0269 0.0082  
 Mercury -58663-11-30 17:16 J -19704903.85 -19704903.78 -19704903.71 0.0294 0.0245  
 Mercury -58662-02-27 06:13 J -19704815.36 -19704815.24 -19704815.11 0.0295 0.0124  
 Mercury -58662-05-26 19:11 J -19704726.83 -19704726.70 -19704726.56 0.0296 0.0009  
 Mercury -58662-08-23 08:09 J -19704638.28 -19704638.16 -19704638.04 0.0297 0.0121  
 Mercury -58662-11-19 20:52 J -19704549.70 -19704549.63 -19704549.55 0.0298 0.0242  
 Moon -58661-07-14 05:45 J -19704312.48 -19704312.26 -19704312.04 0.0300 0.0129  
 Earth -58661-07-14 09:06 J -19704312.33 -19704312.12 -19704311.90 0.0300 0.0140 \*  
 Moon -58660-07-29 00:42 J -19703932.66 -19703932.47 -19703932.26 0.0302 0.0160  
 Earth -58660-07-29 03:49 J -19703932.54 -19703932.34 -19703932.13 0.0302 0.0152 \*  
 Venus -58655-10-28 17:16 J -19702014.96 -19702014.78 -19702014.58 0.0292 0.0111  
 Mars -58649-08-03 21:06 J -19699908.85 -19699908.62 -19699908.38 0.0267 0.0172  
 Mercury -58649-09-28 22:47 J -19699852.67 -19699852.55 -19699852.43 0.0267 0.0201  
 Mercury -58649-12-26 18:28 J -19699763.90 -19699763.73 -19699763.55 0.0266 0.0080  
 Mercury -58648-03-25 14:23 J -19699675.08 -19699674.90 -19699674.71 0.0265 0.0044  
 Mercury -58648-06-22 10:33 J -19699586.20 -19699586.06 -19699585.91 0.0265 0.0165  
 Earth -58647-01-03 03:35 J -19699391.45 -19699391.35 -19699391.23 0.0263 0.0234  
 Moon -58647-01-03 05:16 J -19699391.39 -19699391.28 -19699391.16 0.0263 0.0231 \*  
 Earth -58646-01-14 21:21 J -19699014.85 -19699014.61 -19699014.36 0.0261 0.0041  
 Moon -58646-01-15 00:57 J -19699014.71 -19699014.46 -19699014.21 0.0261 0.0028 \*  
 Moon -58645-01-26 11:30 J -19698638.22 -19698638.02 -19698637.81 0.0260 0.0160  
 Earth -58645-01-26 13:11 J -19698638.15 -19698637.95 -19698637.74 0.0260 0.0150 \*  
 Venus -58639-07-08 01:54 J -19696283.64 -19696283.42 -19696283.20 0.0269 0.0034  
 Mercury -58633-04-18 18:57 J -19694171.74 -19694171.71 -19694171.67 0.0294 0.0282

Mercury -58633-07-16 08:09 J -19694083.27 -19694083.16 -19694083.05 0.0295 0.0160  
 Mars -58633-09-22 07:54 J -19694015.45 -19694015.17 -19694014.89 0.0296 0.0036  
 Mercury -58633-10-12 21:06 J -19693994.75 -19693994.62 -19693994.49 0.0296 0.0038  
 Mercury -58632-01-09 10:04 J -19693906.21 -19693906.08 -19693905.96 0.0297 0.0084  
 Mercury -58632-04-07 22:47 J -19693817.64 -19693817.55 -19693817.45 0.0297 0.0205  
 Earth -58632-07-08 05:01 J -19693726.39 -19693726.29 -19693726.18 0.0298 0.0269  
 Moon -58632-07-08 08:37 J -19693726.26 -19693726.14 -19693726.02 0.0298 0.0255 \*  
 Earth -58631-07-22 22:47 J -19693346.79 -19693346.55 -19693346.31 0.0300 0.0017  
 Moon -58631-07-23 01:25 J -19693346.68 -19693346.44 -19693346.19 0.0300 0.0027 \*  
 Venus -58626-09-23 06:42 J -19691458.30 -19691458.22 -19691458.12 0.0294 0.0264  
 Venus -58625-05-09 22:47 J -19691228.71 -19691228.55 -19691228.38 0.0291 0.0170  
 Mercury -58619-02-15 22:33 J -19689120.64 -19689120.56 -19689120.47 0.0267 0.0233  
 Mercury -58619-05-15 18:28 J -19689031.90 -19689031.73 -19689031.57 0.0267 0.0112  
 Mercury -58619-08-12 14:23 J -19688943.08 -19688942.90 -19688942.72 0.0266 0.0010  
 Mars -58619-09-23 01:11 J -19688901.74 -19688901.45 -19688901.14 0.0265 0.0064  
 Mercury -58619-11-09 10:33 J -19688854.22 -19688854.06 -19688853.90 0.0265 0.0133  
 Mercury -58618-02-06 06:42 J -19688765.27 -19688765.22 -19688765.17 0.0264 0.0255  
 Moon -58617-01-09 23:16 J -19688427.74 -19688427.53 -19688427.30 0.0262 0.0115  
 Earth -58617-01-10 03:06 J -19688427.58 -19688427.37 -19688427.15 0.0262 0.0125 \*  
 Earth -58616-01-20 19:11 J -19688050.94 -19688050.70 -19688050.46 0.0261 0.0067  
 Moon -58616-01-20 19:54 J -19688050.90 -19688050.67 -19688050.44 0.0261 0.0079 \*  
 Earth -58615-02-01 09:49 J -19687674.13 -19687674.09 -19687674.03 0.0260 0.0253  
 Moon -58615-02-01 13:25 J -19687673.96 -19687673.94 -19687673.90 0.0260 0.0257  
 Venus -58609-01-18 04:18 J -19685497.54 -19685497.32 -19685497.10 0.0269 0.0008  
 Mercury -58604-12-03 08:23 J -19683351.24 -19683351.15 -19683351.06 0.0294 0.0209  
 Mercury -58603-03-01 21:21 J -19683262.74 -19683262.61 -19683262.48 0.0295 0.0087  
 Mercury -58603-05-29 10:18 J -19683174.20 -19683174.07 -19683173.94 0.0296 0.0034  
 Mercury -58603-08-25 23:01 J -19683085.65 -19683085.54 -19683085.43 0.0297 0.0156  
 Mars -58603-11-11 01:25 J -19683008.60 -19683008.44 -19683008.29 0.0298 0.0245  
 Mercury -58603-11-22 11:45 J -19682997.05 -19682997.01 -19682996.96 0.0298 0.0277

Moon -58602-07-16 05:30 J -19682761.48 -19682761.27 -19682761.05 0.0300 0.0111  
 Earth -58602-07-16 07:40 J -19682761.40 -19682761.18 -19682760.96 0.0300 0.0120 \*  
 Earth -58601-07-30 02:09 J -19682381.60 -19682381.41 -19682381.20 0.0302 0.0172  
 Moon -58601-07-30 03:21 J -19682381.54 -19682381.36 -19682381.16 0.0302 0.0176 \*  
 Venus -58596-04-04 06:42 J -19680672.34 -19680672.22 -19680672.08 0.0294 0.0226  
 Venus -58596-11-19 22:47 J -19680442.69 -19680442.55 -19680442.40 0.0292 0.0208  
 Mercury -58590-10-02 16:18 J -19678299.96 -19678299.82 -19678299.67 0.0267 0.0158  
 Mercury -58590-12-30 12:28 J -19678211.17 -19678210.98 -19678210.80 0.0266 0.0036  
 Mercury -58589-03-28 08:23 J -19678122.32 -19678122.15 -19678121.97 0.0265 0.0087  
 Mercury -58589-06-25 04:33 J -19678033.42 -19678033.31 -19678033.19 0.0265 0.0210  
 Earth -58588-01-04 03:06 J -19677840.50 -19677840.37 -19677840.22 0.0263 0.0216  
 Moon -58588-01-04 06:57 J -19677840.35 -19677840.21 -19677840.05 0.0263 0.0208 \*  
 Moon -58587-01-15 20:37 J -19677463.89 -19677463.64 -19677463.38 0.0261 0.0010  
 Earth -58587-01-15 20:52 J -19677463.88 -19677463.63 -19677463.38 0.0261 0.0023 \*  
 Moon -58586-01-27 08:52 J -19677087.30 -19677087.13 -19677086.94 0.0260 0.0176  
 Earth -58586-01-27 12:42 J -19677087.16 -19677086.97 -19677086.78 0.0260 0.0168 \*  
 Venus -58580-07-30 06:57 J -19674711.42 -19674711.21 -19674711.00 0.0270 0.0051  
 Mercury -58574-04-22 09:49 J -19672619.16 -19672619.09 -19672619.02 0.0294 0.0248  
 Mercury -58574-07-19 22:47 J -19672530.67 -19672530.55 -19672530.43 0.0295 0.0127  
 Mercury -58574-10-16 11:45 J -19672442.14 -19672442.01 -19672441.88 0.0296 0.0006  
 Mercury -58573-01-13 00:28 J -19672353.60 -19672353.48 -19672353.35 0.0297 0.0117  
 Mercury -58573-04-10 13:25 J -19672265.02 -19672264.94 -19672264.86 0.0297 0.0237  
 Earth -58573-07-09 01:25 J -19672175.56 -19672175.44 -19672175.30 0.0298 0.0251  
 Moon -58573-07-09 03:21 J -19672175.50 -19672175.36 -19672175.20 0.0298 0.0239 \*  
 Moon -58572-07-23 17:45 J -19671796.01 -19671795.76 -19671795.51 0.0301 0.0040  
 Earth -58572-07-23 19:25 J -19671795.93 -19671795.69 -19671795.45 0.0301 0.0036 \*  
 Venus -58567-10-15 11:16 J -19669886.19 -19669886.03 -19669885.85 0.0294 0.0170  
 Venus -58566-06-02 03:21 J -19669656.44 -19669656.36 -19669656.27 0.0291 0.0263  
 Mars -58561-12-28 06:13 J -19667620.48 -19667620.24 -19667619.99 0.0268 0.0158  
 Mercury -58560-02-18 16:04 J -19667567.95 -19667567.83 -19667567.70 0.0267 0.0192

Mercury -58560-05-18 11:59 J -19667479.18 -19667479.00 -19667478.83 0.0266 0.0070  
 Mercury -58560-08-15 07:54 J -19667390.35 -19667390.17 -19667389.99 0.0266 0.0053  
 Mercury -58560-11-12 04:04 J -19667301.47 -19667301.33 -19667301.19 0.0265 0.0175  
 Earth -58558-01-11 01:40 J -19666876.65 -19666876.43 -19666876.20 0.0262 0.0108  
 Moon -58558-01-11 01:54 J -19666876.64 -19666876.42 -19666876.20 0.0262 0.0095 \*  
 Earth -58557-01-22 17:45 J -19666499.99 -19666499.76 -19666499.52 0.0261 0.0084  
 Moon -58557-01-22 21:21 J -19666499.83 -19666499.61 -19666499.37 0.0261 0.0098 \*  
 Venus -58551-06-25 00:42 J -19664154.52 -19664154.47 -19664154.41 0.0267 0.0257  
 Venus -58550-02-09 08:52 J -19663925.33 -19663925.13 -19663924.92 0.0269 0.0092  
 Mercury -58545-12-05 23:01 J -19661798.64 -19661798.54 -19661798.43 0.0294 0.0176  
 Mars -58544-02-14 13:25 J -19661728.21 -19661727.94 -19661727.65 0.0295 0.0042  
 Mercury -58544-03-04 11:59 J -19661710.13 -19661710.00 -19661709.87 0.0295 0.0055  
 Mercury -58544-06-01 00:57 J -19661621.59 -19661621.46 -19661621.33 0.0296 0.0066  
 Mercury -58544-08-28 13:40 J -19661533.03 -19661532.93 -19661532.83 0.0297 0.0187  
 Earth -58543-07-17 03:49 J -19661210.57 -19661210.34 -19661210.11 0.0300 0.0102  
 Moon -58543-07-17 05:59 J -19661210.47 -19661210.25 -19661210.02 0.0300 0.0096 \*  
 Earth -58542-07-31 22:18 J -19660830.75 -19660830.57 -19660830.38 0.0302 0.0190  
 Moon -58542-08-01 01:40 J -19660830.61 -19660830.43 -19660830.23 0.0302 0.0191 \*  
 Venus -58537-04-26 10:47 J -19659100.23 -19659100.05 -19659099.87 0.0294 0.0134  
 Mercury -58531-07-08 13:25 J -19656836.01 -19656835.94 -19656835.85 0.0267 0.0240  
 Mercury -58531-10-05 09:21 J -19656747.27 -19656747.11 -19656746.94 0.0267 0.0118  
 Mercury -58530-01-02 05:30 J -19656658.46 -19656658.27 -19656658.09 0.0266 0.0007  
 Mars -58530-02-15 17:59 J -19656614.04 -19656613.75 -19656613.45 0.0266 0.0077  
 Mercury -58530-04-01 01:25 J -19656569.60 -19656569.44 -19656569.27 0.0265 0.0127  
 Mercury -58530-06-28 21:35 J -19656480.65 -19656480.60 -19656480.53 0.0265 0.0250  
 Moon -58529-01-05 23:59 J -19656289.67 -19656289.50 -19656289.32 0.0263 0.0189  
 Earth -58529-01-06 00:13 J -19656289.64 -19656289.49 -19656289.32 0.0263 0.0200 \*  
 Moon -58528-01-16 14:09 J -19655913.16 -19655912.91 -19655912.66 0.0261 0.0009  
 Earth -58528-01-16 17:59 J -19655913.00 -19655912.75 -19655912.50 0.0261 0.0007 \*  
 Moon -58527-01-28 09:06 J -19655536.28 -19655536.12 -19655535.95 0.0260 0.0190

Earth -58527-01-28 09:35 J -19655536.27 -19655536.10 -19655535.92 0.0260 0.0184 \*  
 Venus -58521-01-05 02:52 J -19653368.50 -19653368.38 -19653368.25 0.0268 0.0217  
 Venus -58521-08-21 11:01 J -19653139.22 -19653139.04 -19653138.85 0.0270 0.0134  
 Mercury -58515-04-25 00:13 J -19651066.58 -19651066.49 -19651066.40 0.0294 0.0218  
 Mercury -58515-07-22 13:11 J -19650978.08 -19650977.95 -19650977.82 0.0295 0.0097  
 Mercury -58515-10-19 02:09 J -19650889.54 -19650889.41 -19650889.28 0.0296 0.0025  
 Mercury -58514-01-15 14:52 J -19650800.99 -19650800.88 -19650800.76 0.0297 0.0146  
 Mars -58514-04-05 18:28 J -19650720.86 -19650720.73 -19650720.58 0.0297 0.0254  
 Mercury -58514-04-14 03:35 J -19650712.40 -19650712.35 -19650712.29 0.0297 0.0266  
 Moon -58514-07-10 17:01 J -19650624.93 -19650624.79 -19650624.62 0.0298 0.0228  
 Earth -58514-07-10 20:09 J -19650624.80 -19650624.66 -19650624.50 0.0298 0.0234 \*  
 Moon -58513-07-24 10:18 J -19650245.30 -19650245.07 -19650244.83 0.0301 0.0056  
 Earth -58513-07-24 13:54 J -19650245.16 -19650244.92 -19650244.68 0.0301 0.0053 \*  
 Venus -58508-11-06 14:09 J -19648314.10 -19648313.91 -19648313.71 0.0293 0.0083  
 Mercury -58501-02-22 08:37 J -19646015.28 -19646015.14 -19646014.99 0.0267 0.0155  
 Mercury -58501-05-21 04:47 J -19645926.49 -19645926.30 -19645926.12 0.0267 0.0033  
 Mercury -58501-08-18 00:42 J -19645837.64 -19645837.47 -19645837.29 0.0266 0.0091  
 Mercury -58501-11-14 20:52 J -19645748.73 -19645748.63 -19645748.52 0.0265 0.0214  
 Earth -58499-01-11 22:18 J -19645325.80 -19645325.57 -19645325.34 0.0262 0.0092  
 Moon -58499-01-12 01:54 J -19645325.65 -19645325.42 -19645325.18 0.0262 0.0077 \*  
 Earth -58498-01-23 14:37 J -19644949.12 -19644948.89 -19644948.66 0.0261 0.0101  
 Moon -58498-01-23 15:49 J -19644949.07 -19644948.84 -19644948.61 0.0261 0.0112 \*  
 Venus -58492-07-17 05:01 J -19642582.45 -19642582.29 -19642582.12 0.0267 0.0176  
 Venus -58491-03-03 13:11 J -19642353.11 -19642352.95 -19642352.78 0.0269 0.0174  
 Mercury -58486-09-12 00:28 J -19640334.53 -19640334.48 -19640334.42 0.0293 0.0266  
 Mercury -58486-12-09 13:25 J -19640246.05 -19640245.94 -19640245.82 0.0294 0.0146  
 Mercury -58485-03-07 02:23 J -19640157.53 -19640157.40 -19640157.27 0.0295 0.0025  
 Mercury -58485-06-03 15:06 J -19640068.99 -19640068.87 -19640068.74 0.0296 0.0096  
 Mercury -58485-08-31 04:04 J -19639980.42 -19639980.33 -19639980.25 0.0297 0.0216  
 Earth -58484-07-17 22:04 J -19639659.81 -19639659.58 -19639659.34 0.0299 0.0085

Moon -58484-07-18 01:25 J -19639659.67 -19639659.44 -19639659.20 0.0299 0.0082 \*  
 Earth -58483-08-01 16:04 J -19639280.00 -19639279.83 -19639279.65 0.0302 0.0207  
 Moon -58483-08-01 16:47 J -19639279.99 -19639279.80 -19639279.62 0.0302 0.0203 \*  
 Venus -58478-05-19 13:11 J -19637528.15 -19637527.95 -19637527.75 0.0294 0.0048  
 Mars -58472-05-22 14:23 J -19635333.14 -19635332.90 -19635332.64 0.0268 0.0150  
 Mercury -58472-07-11 05:45 J -19635283.37 -19635283.26 -19635283.14 0.0268 0.0205  
 Mercury -58472-10-08 01:54 J -19635194.60 -19635194.42 -19635194.25 0.0267 0.0083  
 Mercury -58471-01-04 21:49 J -19635105.77 -19635105.59 -19635105.40 0.0266 0.0040  
 Mercury -58471-04-03 17:59 J -19635016.89 -19635016.75 -19635016.60 0.0265 0.0163  
 Moon -58470-01-06 15:49 J -19634739.02 -19634738.84 -19634738.64 0.0263 0.0173  
 Earth -58470-01-06 19:25 J -19634738.85 -19634738.69 -19634738.50 0.0263 0.0186 \*  
 Moon -58469-01-18 12:42 J -19634362.21 -19634361.97 -19634361.73 0.0261 0.0023  
 Earth -58469-01-18 13:40 J -19634362.18 -19634361.93 -19634361.68 0.0261 0.0009 \*  
 Earth -58468-01-29 05:16 J -19633985.43 -19633985.28 -19633985.11 0.0260 0.0199  
 Moon -58468-01-29 08:52 J -19633985.28 -19633985.13 -19633984.98 0.0260 0.0203 \*  
 Venus -58462-01-27 06:42 J -19631796.40 -19631796.22 -19631796.03 0.0268 0.0137  
 Venus -58462-09-13 14:37 J -19631567.00 -19631566.89 -19631566.74 0.0270 0.0215  
 Mercury -58456-04-27 14:37 J -19629513.99 -19629513.89 -19629513.79 0.0294 0.0188  
 Mars -58456-07-10 03:06 J -19629440.65 -19629440.37 -19629440.09 0.0295 0.0036  
 Mercury -58456-07-25 03:35 J -19629425.48 -19629425.35 -19629425.22 0.0295 0.0067  
 Mercury -58456-10-21 16:33 J -19629336.94 -19629336.81 -19629336.68 0.0296 0.0054  
 Mercury -58455-01-18 05:16 J -19629248.39 -19629248.28 -19629248.17 0.0297 0.0175  
 Mercury -58455-04-16 17:59 J -19629159.76 -19629159.75 -19629159.74 0.0297 0.0295  
 Moon -58455-07-11 11:59 J -19629074.16 -19629074.00 -19629073.84 0.0298 0.0216  
 Earth -58455-07-11 14:23 J -19629074.05 -19629073.90 -19629073.72 0.0298 0.0219 \*  
 Earth -58454-07-26 07:54 J -19628694.40 -19628694.17 -19628693.93 0.0301 0.0071  
 Moon -58454-07-26 07:54 J -19628694.39 -19628694.17 -19628693.94 0.0301 0.0069 \*  
 Venus -58449-11-28 16:33 J -19626742.01 -19626741.81 -19626741.60 0.0293 0.0007  
 Mercury -58443-11-28 05:01 J -19624551.36 -19624551.29 -19624551.21 0.0268 0.0242  
 Mercury -58442-02-25 00:57 J -19624462.62 -19624462.46 -19624462.29 0.0267 0.0120



Mercury -58442-05-24 21:06 J -19624373.80 -19624373.62 -19624373.44 0.0267 0.0004  
 Mars -58442-07-11 15:06 J -19624326.16 -19624325.87 -19624325.57 0.0266 0.0086  
 Mercury -58442-08-21 17:01 J -19624284.94 -19624284.79 -19624284.62 0.0266 0.0127  
 Mercury -58442-11-18 13:11 J -19624195.99 -19624195.95 -19624195.88 0.0265 0.0251  
 Moon -58441-01-02 01:25 J -19624151.45 -19624151.44 -19624151.42 0.0265 0.0264  
 Earth -58440-01-12 17:45 J -19623775.00 -19623774.76 -19623774.52 0.0263 0.0077  
 Moon -58440-01-12 18:42 J -19623774.97 -19623774.72 -19623774.47 0.0263 0.0063 \*  
 Moon -58439-01-24 06:57 J -19623398.43 -19623398.21 -19623397.99 0.0261 0.0124  
 Earth -58439-01-24 10:18 J -19623398.29 -19623398.07 -19623397.84 0.0261 0.0116 \*  
 Venus -58433-08-08 09:35 J -19621010.30 -19621010.10 -19621009.89 0.0267 0.0094  
 Venus -58432-03-25 17:30 J -19620780.82 -19620780.77 -19620780.69 0.0269 0.0257  
 Mercury -58427-09-14 15:06 J -19618781.95 -19618781.87 -19618781.79 0.0293 0.0235  
 Mercury -58427-12-12 04:04 J -19618693.45 -19618693.33 -19618693.20 0.0294 0.0115  
 Mercury -58426-03-10 17:01 J -19618604.93 -19618604.79 -19618604.66 0.0295 0.0008  
 Mercury -58426-06-07 05:45 J -19618516.38 -19618516.26 -19618516.14 0.0296 0.0126  
 Mars -58426-08-28 22:18 J -19618433.71 -19618433.57 -19618433.42 0.0297 0.0250  
 Mercury -58426-09-03 18:28 J -19618427.80 -19618427.73 -19618427.66 0.0297 0.0246  
 Moon -58425-07-18 16:33 J -19618109.05 -19618108.81 -19618108.57 0.0299 0.0072  
 Earth -58425-07-18 17:30 J -19618109.00 -19618108.77 -19618108.53 0.0299 0.0069 \*  
 Moon -58424-08-02 07:40 J -19617729.34 -19617729.18 -19617729.00 0.0301 0.0215  
 Earth -58424-08-02 11:01 J -19617729.19 -19617729.04 -19617728.87 0.0301 0.0224 \*  
 Venus -58419-06-10 15:35 J -19615956.05 -19615955.85 -19615955.64 0.0293 0.0037  
 Mercury -58413-07-13 21:49 J -19613730.72 -19613730.59 -19613730.44 0.0268 0.0172  
 Mercury -58413-10-10 17:59 J -19613641.93 -19613641.75 -19613641.57 0.0267 0.0049  
 Mercury -58412-01-07 14:09 J -19613553.08 -19613552.91 -19613552.73 0.0266 0.0075  
 Mercury -58412-04-06 10:18 J -19613464.18 -19613464.07 -19613463.94 0.0265 0.0199  
 Moon -58411-01-07 13:11 J -19613188.14 -19613187.95 -19613187.76 0.0263 0.0159  
 Earth -58411-01-07 14:37 J -19613188.08 -19613187.89 -19613187.70 0.0263 0.0172 \*  
 Earth -58410-01-19 08:52 J -19612811.38 -19612811.13 -19612810.88 0.0261 0.0024  
 Moon -58410-01-19 12:28 J -19612811.22 -19612810.98 -19612810.74 0.0261 0.0035 \*

Earth -58409-01-31 01:11 J -19612434.59 -19612434.45 -19612434.31 0.0260 0.0215  
 Moon -58409-01-31 03:21 J -19612434.50 -19612434.36 -19612434.21 0.0260 0.0215 \*  
 Venus -58403-02-18 11:16 J -19610224.25 -19610224.03 -19610223.82 0.0268 0.0055  
 Mercury -58397-02-01 16:04 J -19608049.86 -19608049.83 -19608049.78 0.0293 0.0276  
 Mercury -58397-04-30 05:16 J -19607961.39 -19607961.28 -19607961.17 0.0294 0.0156  
 Mercury -58397-07-27 18:13 J -19607872.88 -19607872.74 -19607872.61 0.0295 0.0036  
 Mercury -58397-10-24 06:57 J -19607784.34 -19607784.21 -19607784.08 0.0296 0.0085  
 Mercury -58396-01-20 19:40 J -19607695.77 -19607695.68 -19607695.58 0.0297 0.0205  
 Earth -58396-07-12 10:18 J -19607523.25 -19607523.07 -19607522.89 0.0298 0.0200  
 Moon -58396-07-12 12:13 J -19607523.15 -19607522.99 -19607522.81 0.0298 0.0205 \*  
 Earth -58395-07-27 02:52 J -19607143.61 -19607143.38 -19607143.14 0.0300 0.0088  
 Moon -58395-07-27 06:42 J -19607143.45 -19607143.22 -19607142.99 0.0300 0.0082 \*  
 Venus -58390-12-21 19:11 J -19605169.90 -19605169.70 -19605169.51 0.0293 0.0088  
 Mars -58384-10-15 10:04 J -19603045.33 -19603045.08 -19603044.82 0.0269 0.0140  
 Mercury -58384-11-30 21:35 J -19602998.72 -19602998.60 -19602998.49 0.0268 0.0208  
 Mercury -58383-02-27 17:30 J -19602909.95 -19602909.77 -19602909.60 0.0268 0.0085  
 Mercury -58383-05-27 13:25 J -19602821.12 -19602820.94 -19602820.75 0.0267 0.0039  
 Mercury -58383-08-24 09:49 J -19602732.24 -19602732.09 -19602731.95 0.0266 0.0162  
 Earth -58382-01-02 17:16 J -19602600.82 -19602600.78 -19602600.73 0.0265 0.0259  
 Moon -58382-01-02 19:11 J -19602600.77 -19602600.70 -19602600.60 0.0265 0.0249 \*  
 Moon -58381-01-14 10:04 J -19602224.33 -19602224.08 -19602223.83 0.0263 0.0050  
 Earth -58381-01-14 13:11 J -19602224.19 -19602223.95 -19602223.70 0.0263 0.0063 \*  
 Moon -58380-01-25 04:18 J -19601847.53 -19601847.32 -19601847.12 0.0261 0.0135  
 Earth -58380-01-25 06:28 J -19601847.45 -19601847.23 -19601847.01 0.0261 0.0131 \*  
 Venus -58374-08-31 14:37 J -19599438.11 -19599437.89 -19599437.67 0.0268 0.0011  
 Mercury -58368-09-17 05:59 J -19597229.34 -19597229.25 -19597229.15 0.0293 0.0200  
 Mars -58368-12-02 14:23 J -19597153.18 -19597152.90 -19597152.62 0.0294 0.0030  
 Mercury -58368-12-14 18:57 J -19597140.84 -19597140.71 -19597140.58 0.0294 0.0080  
 Mercury -58367-03-13 07:54 J -19597052.30 -19597052.17 -19597052.04 0.0295 0.0040  
 Mercury -58367-06-09 20:37 J -19596963.75 -19596963.64 -19596963.53 0.0296 0.0160

Mercury -58367-09-06 09:21 J -19596875.15 -19596875.11 -19596875.07 0.0297 0.0279  
 Moon -58366-07-20 11:30 J -19596558.26 -19596558.02 -19596557.78 0.0299 0.0059  
 Earth -58366-07-20 15:21 J -19596558.10 -19596557.86 -19596557.62 0.0299 0.0050 \*  
 Moon -58365-08-03 06:13 J -19596178.38 -19596178.24 -19596178.08 0.0301 0.0232  
 Earth -58365-08-03 08:23 J -19596178.29 -19596178.15 -19596178.00 0.0301 0.0242 \*  
 Venus -58360-07-02 19:11 J -19594383.88 -19594383.70 -19594383.51 0.0293 0.0127  
 Mercury -58354-04-19 18:42 J -19592266.76 -19592266.72 -19592266.67 0.0269 0.0258  
 Mercury -58354-07-17 14:37 J -19592178.04 -19592177.89 -19592177.73 0.0268 0.0135  
 Mercury -58354-10-14 10:47 J -19592089.24 -19592089.05 -19592088.87 0.0267 0.0012  
 Mars -58354-12-03 22:18 J -19592038.85 -19592038.57 -19592038.27 0.0267 0.0097  
 Mercury -58353-01-11 06:42 J -19592000.38 -19592000.22 -19592000.04 0.0266 0.0113  
 Mercury -58353-04-09 03:06 J -19591911.45 -19591911.37 -19591911.28 0.0266 0.0236  
 Earth -58352-01-08 10:18 J -19591637.26 -19591637.07 -19591636.86 0.0264 0.0158  
 Moon -58352-01-08 13:25 J -19591637.15 -19591636.94 -19591636.74 0.0264 0.0144 \*  
 Earth -58351-01-20 05:16 J -19591260.52 -19591260.28 -19591260.03 0.0262 0.0039  
 Moon -58351-01-20 07:25 J -19591260.44 -19591260.19 -19591259.93 0.0262 0.0047 \*  
 Moon -58350-01-31 18:57 J -19590883.83 -19590883.71 -19590883.57 0.0260 0.0225  
 Earth -58350-01-31 21:49 J -19590883.69 -19590883.59 -19590883.47 0.0260 0.0231 \*  
 Venus -58344-03-12 16:47 J -19588652.02 -19588651.80 -19588651.58 0.0268 0.0030  
 Mercury -58338-02-04 07:25 J -19586497.26 -19586497.19 -19586497.11 0.0293 0.0239  
 Mercury -58338-05-03 20:23 J -19586408.77 -19586408.65 -19586408.52 0.0294 0.0119  
 Mercury -58338-07-31 09:21 J -19586320.25 -19586320.11 -19586319.98 0.0295 0.0004  
 Mercury -58338-10-27 22:04 J -19586231.70 -19586231.58 -19586231.46 0.0296 0.0121  
 Mars -58337-01-21 20:09 J -19586145.77 -19586145.66 -19586145.52 0.0296 0.0262  
 Mercury -58337-01-24 10:33 J -19586143.13 -19586143.06 -19586142.98 0.0296 0.0241  
 Earth -58337-07-13 09:21 J -19585972.30 -19585972.11 -19585971.91 0.0298 0.0181  
 Moon -58337-07-13 12:57 J -19585972.15 -19585971.96 -19585971.77 0.0298 0.0189 \*  
 Earth -58336-07-28 01:40 J -19585592.66 -19585592.43 -19585592.21 0.0300 0.0108  
 Moon -58336-07-28 02:52 J -19585592.61 -19585592.38 -19585592.14 0.0300 0.0097 \*  
 Venus -58331-05-28 06:28 J -19583827.32 -19583827.23 -19583827.12 0.0295 0.0257

Venus -58330-01-12 23:16 J -19583597.69 -19583597.53 -19583597.37 0.0292 0.0178  
 Mercury -58325-12-03 13:54 J -19581446.05 -19581445.92 -19581445.77 0.0268 0.0172  
 Mercury -58324-03-02 10:18 J -19581357.25 -19581357.07 -19581356.89 0.0268 0.0048  
 Mercury -58324-05-30 06:13 J -19581268.41 -19581268.24 -19581268.06 0.0267 0.0077  
 Mercury -58324-08-27 02:37 J -19581179.51 -19581179.39 -19581179.27 0.0266 0.0201  
 Moon -58323-01-03 11:16 J -19581050.15 -19581050.03 -19581049.91 0.0265 0.0232  
 Earth -58323-01-03 13:54 J -19581050.01 -19581049.92 -19581049.83 0.0265 0.0246 \*  
 Moon -58322-01-15 07:54 J -19580673.41 -19580673.17 -19580672.93 0.0263 0.0036  
 Earth -58322-01-15 10:18 J -19580673.31 -19580673.07 -19580672.82 0.0263 0.0048 \*  
 Earth -58321-01-27 03:49 J -19580296.54 -19580296.34 -19580296.13 0.0261 0.0148  
 Moon -58321-01-27 06:28 J -19580296.42 -19580296.23 -19580296.02 0.0261 0.0147 \*  
 Venus -58315-09-22 21:21 J -19577865.81 -19577865.61 -19577865.40 0.0268 0.0078  
 Mercury -58309-06-23 08:37 J -19575765.17 -19575765.14 -19575765.09 0.0292 0.0279  
 Mercury -58309-09-19 21:49 J -19575676.70 -19575676.59 -19575676.48 0.0293 0.0160  
 Mercury -58309-12-17 10:33 J -19575588.19 -19575588.06 -19575587.92 0.0294 0.0041  
 Mercury -58308-03-15 23:16 J -19575499.65 -19575499.53 -19575499.40 0.0295 0.0080  
 Mercury -58308-06-12 11:59 J -19575411.09 -19575411.00 -19575410.90 0.0296 0.0199  
 Moon -58307-07-21 16:33 J -19575007.04 -19575006.81 -19575006.58 0.0299 0.0040  
 Earth -58307-07-21 16:47 J -19575007.04 -19575006.80 -19575006.56 0.0299 0.0028 \*  
 Earth -58306-08-05 09:21 J -19574627.22 -19574627.11 -19574626.99 0.0301 0.0263  
 Moon -58306-08-05 11:59 J -19574627.13 -19574627.00 -19574626.87 0.0301 0.0249 \*  
 Venus -58302-12-08 07:40 J -19573041.31 -19573041.18 -19573041.03 0.0295 0.0214  
 Venus -58301-07-25 00:28 J -19572811.61 -19572811.48 -19572811.34 0.0293 0.0221  
 Mars -58295-03-09 22:18 J -19570757.82 -19570757.57 -19570757.29 0.0269 0.0127  
 Mercury -58295-04-22 11:45 J -19570714.11 -19570714.01 -19570713.90 0.0269 0.0219  
 Mercury -58295-07-20 07:40 J -19570625.34 -19570625.18 -19570625.00 0.0268 0.0096  
 Mercury -58295-10-17 03:49 J -19570536.52 -19570536.34 -19570536.15 0.0267 0.0029  
 Mercury -58294-01-13 23:59 J -19570447.64 -19570447.50 -19570447.34 0.0266 0.0153  
 Earth -58293-01-10 08:23 J -19570086.35 -19570086.15 -19570085.94 0.0264 0.0143  
 Moon -58293-01-10 11:30 J -19570086.24 -19570086.02 -19570085.80 0.0264 0.0128 \*

Moon -58292-01-21 00:57 J -19569709.70 -19569709.46 -19569709.20 0.0262 0.0058  
 Earth -58292-01-21 03:35 J -19569709.59 -19569709.35 -19569709.10 0.0262 0.0055 \*  
 Moon -58291-02-01 17:45 J -19569332.85 -19569332.76 -19569332.66 0.0261 0.0238  
 Earth -58291-02-01 20:52 J -19569332.70 -19569332.63 -19569332.55 0.0261 0.0247 \*  
 Venus -58286-08-18 16:04 J -19567308.94 -19567308.83 -19567308.71 0.0267 0.0226  
 Venus -58285-04-03 23:59 J -19567079.69 -19567079.50 -19567079.31 0.0269 0.0121  
 Mercury -58279-02-06 23:16 J -19564944.62 -19564944.53 -19564944.43 0.0293 0.0197  
 Mars -58279-04-27 21:06 J -19564864.90 -19564864.62 -19564864.34 0.0294 0.0012  
 Mercury -58279-05-06 12:13 J -19564856.12 -19564855.99 -19564855.86 0.0294 0.0078  
 Mercury -58279-08-03 01:11 J -19564767.59 -19564767.45 -19564767.32 0.0295 0.0043  
 Mercury -58279-10-30 13:54 J -19564679.03 -19564678.92 -19564678.81 0.0296 0.0162  
 Mercury -58278-01-27 02:23 J -19564590.44 -19564590.40 -19564590.36 0.0297 0.0281  
 Moon -58278-07-15 11:59 J -19564421.20 -19564421.00 -19564420.79 0.0298 0.0169  
 Earth -58278-07-15 12:28 J -19564421.17 -19564420.98 -19564420.77 0.0298 0.0159 \*  
 Moon -58277-07-29 01:11 J -19564041.67 -19564041.45 -19564041.22 0.0300 0.0116  
 Earth -58277-07-29 04:33 J -19564041.52 -19564041.31 -19564041.09 0.0300 0.0131 \*  
 Venus -58272-06-19 13:25 J -19562255.11 -19562254.94 -19562254.76 0.0294 0.0155  
 Venus -58271-02-04 05:45 J -19562025.32 -19562025.26 -19562025.19 0.0292 0.0277  
 Mercury -58266-09-09 11:45 J -19559982.06 -19559982.01 -19559981.94 0.0269 0.0252  
 Mercury -58266-12-07 07:40 J -19559893.33 -19559893.18 -19559893.01 0.0268 0.0129  
 Mercury -58265-03-05 03:49 J -19559804.52 -19559804.34 -19559804.15 0.0268 0.0007  
 Mars -58265-04-28 05:16 J -19559750.55 -19559750.28 -19559750.00 0.0267 0.0118  
 Mercury -58265-06-02 00:13 J -19559715.66 -19559715.49 -19559715.33 0.0267 0.0119  
 Mercury -58265-08-29 20:37 J -19559626.71 -19559626.64 -19559626.57 0.0266 0.0244  
 Moon -58264-01-04 10:04 J -19559499.22 -19559499.08 -19559498.94 0.0265 0.0216  
 Earth -58264-01-04 12:57 J -19559499.07 -19559498.96 -19559498.83 0.0265 0.0231 \*  
 Earth -58263-01-16 09:49 J -19559122.33 -19559122.09 -19559121.84 0.0263 0.0031  
 Moon -58263-01-16 11:30 J -19559122.25 -19559122.02 -19559121.77 0.0263 0.0023 \*  
 Earth -58262-01-28 03:49 J -19558745.53 -19558745.34 -19558745.14 0.0262 0.0165  
 Moon -58262-01-28 06:57 J -19558745.40 -19558745.21 -19558745.00 0.0262 0.0161 \*

Venus -58256-02-27 22:04 J -19556522.74 -19556522.58 -19556522.41 0.0267 0.0174  
 Venus -58256-10-15 05:59 J -19556293.41 -19556293.25 -19556293.08 0.0269 0.0173  
 Mercury -58250-06-27 01:11 J -19554212.52 -19554212.45 -19554212.36 0.0292 0.0232  
 Mercury -58250-09-23 14:09 J -19554124.03 -19554123.91 -19554123.78 0.0293 0.0113  
 Mercury -58250-12-21 03:06 J -19554035.51 -19554035.37 -19554035.24 0.0294 0.0009  
 Mercury -58249-03-18 15:49 J -19553946.96 -19553946.84 -19553946.72 0.0295 0.0126  
 Mercury -58249-06-15 04:18 J -19553858.39 -19553858.32 -19553858.24 0.0296 0.0244  
 Mars -58249-06-16 06:28 J -19553857.28 -19553857.23 -19553857.16 0.0296 0.0288  
 Earth -58249-07-08 10:04 J -19553835.13 -19553835.08 -19553835.01 0.0296 0.0287  
 Moon -58249-07-08 11:16 J -19553835.03 -19553835.03 -19553835.03 0.0296 0.0296 \*  
 Earth -58248-07-22 23:30 J -19553455.76 -19553455.52 -19553455.28 0.0299 0.0004  
 Moon -58248-07-23 03:06 J -19553455.61 -19553455.37 -19553455.13 0.0299 0.0018 \*  
 Earth -58247-08-06 15:49 J -19553075.90 -19553075.84 -19553075.77 0.0301 0.0288  
 Moon -58247-08-06 19:11 J -19553075.79 -19553075.70 -19553075.59 0.0301 0.0271 \*  
 Venus -58243-12-30 16:18 J -19551469.01 -19551468.82 -19551468.62 0.0294 0.0106  
 Mercury -58236-04-25 05:59 J -19549161.39 -19549161.25 -19549161.12 0.0269 0.0174  
 Mercury -58236-07-23 01:54 J -19549072.60 -19549072.42 -19549072.24 0.0268 0.0051  
 Mercury -58236-10-19 22:04 J -19548983.75 -19548983.58 -19548983.40 0.0267 0.0074  
 Mercury -58235-01-16 18:28 J -19548894.85 -19548894.73 -19548894.60 0.0266 0.0198  
 Moon -58234-01-11 07:54 J -19548535.40 -19548535.17 -19548534.93 0.0264 0.0112  
 Earth -58234-01-11 09:21 J -19548535.32 -19548535.11 -19548534.88 0.0264 0.0126 \*  
 Moon -58233-01-23 01:40 J -19548158.66 -19548158.43 -19548158.19 0.0262 0.0075  
 Earth -58233-01-23 05:01 J -19548158.53 -19548158.29 -19548158.05 0.0262 0.0073 \*  
 Moon -58232-02-02 23:45 J -19547781.54 -19547781.51 -19547781.44 0.0261 0.0255  
 Venus -58227-09-10 01:40 J -19545736.62 -19545736.43 -19545736.24 0.0267 0.0129  
 Venus -58226-04-27 09:35 J -19545507.22 -19545507.10 -19545506.97 0.0269 0.0219  
 Mars -58221-08-02 01:25 J -19543583.52 -19543583.44 -19543583.34 0.0291 0.0275  
 Mercury -58221-11-13 03:06 J -19543480.42 -19543480.37 -19543480.31 0.0292 0.0266  
 Mercury -58220-02-09 16:04 J -19543391.94 -19543391.83 -19543391.71 0.0293 0.0147  
 Mercury -58220-05-09 05:01 J -19543303.42 -19543303.29 -19543303.16 0.0294 0.0028

Mercury -58220-08-05 17:45 J -19543214.89 -19543214.76 -19543214.63 0.0295 0.0092

Mercury -58220-11-02 06:28 J -19543126.32 -19543126.23 -19543126.14 0.0296 0.0211

Moon -58219-07-16 17:59 J -19542869.96 -19542869.75 -19542869.54 0.0298 0.0145

Earth -58219-07-16 21:21 J -19542869.82 -19542869.61 -19542869.38 0.0298 0.0132 \*

Moon -58218-07-31 10:18 J -19542490.27 -19542490.07 -19542489.85 0.0300 0.0143

Earth -58218-07-31 12:57 J -19542490.15 -19542489.96 -19542489.75 0.0300 0.0159 \*

Venus -58213-07-11 23:16 J -19540682.74 -19540682.53 -19540682.33 0.0294 0.0044

Mars -58207-08-03 14:37 J -19538469.16 -19538468.89 -19538468.60 0.0269 0.0099

Mercury -58207-09-12 06:13 J -19538429.35 -19538429.24 -19538429.12 0.0269 0.0205

Mercury -58207-12-10 02:23 J -19538340.57 -19538340.40 -19538340.22 0.0268 0.0081

Mercury -58206-03-08 22:33 J -19538251.74 -19538251.56 -19538251.38 0.0268 0.0043

Mercury -58206-06-05 18:57 J -19538162.85 -19538162.71 -19538162.57 0.0267 0.0168

Earth -58205-01-06 15:21 J -19537948.00 -19537947.86 -19537947.71 0.0265 0.0214

Moon -58205-01-06 16:33 J -19537947.95 -19537947.81 -19537947.64 0.0265 0.0200 \*

Earth -58204-01-17 12:28 J -19537571.23 -19537570.98 -19537570.73 0.0263 0.0013

Moon -58204-01-17 16:18 J -19537571.07 -19537570.82 -19537570.57 0.0263 0.0005 \*

Moon -58203-01-29 05:59 J -19537194.44 -19537194.25 -19537194.06 0.0262 0.0176

Earth -58203-01-29 06:42 J -19537194.38 -19537194.22 -19537194.03 0.0262 0.0184 \*

Venus -58197-03-22 08:23 J -19534950.36 -19534950.15 -19534949.94 0.0268 0.0074

Mercury -58191-06-29 18:28 J -19532659.83 -19532659.73 -19532659.62 0.0292 0.0178

Mars -58191-09-21 22:33 J -19532575.83 -19532575.56 -19532575.28 0.0293 0.0031

Mercury -58191-09-26 07:25 J -19532571.32 -19532571.19 -19532571.06 0.0293 0.0060

Mercury -58191-12-23 20:09 J -19532482.79 -19532482.66 -19532482.53 0.0294 0.0059

Mercury -58190-03-22 08:52 J -19532394.24 -19532394.13 -19532394.03 0.0295 0.0178

Earth -58190-07-10 21:35 J -19532283.70 -19532283.60 -19532283.47 0.0296 0.0260

Moon -58190-07-11 01:11 J -19532283.54 -19532283.45 -19532283.34 0.0296 0.0269 \*

Earth -58189-07-24 11:16 J -19531904.27 -19531904.03 -19531903.79 0.0299 0.0026

Moon -58189-07-24 13:25 J -19531904.18 -19531903.94 -19531903.69 0.0299 0.0013 \*

Moon -58188-08-08 02:09 J -19531524.42 -19531524.41 -19531524.37 0.0301 0.0299

Venus -58183-01-22 04:04 J -19529896.54 -19529896.33 -19529896.13 0.0294 0.0014

Mercury -58177-01-30 05:01 J -19527697.35 -19527697.29 -19527697.20 0.0269 0.0246  
 Mercury -58177-04-28 01:11 J -19527608.61 -19527608.45 -19527608.28 0.0268 0.0122  
 Mercury -58177-07-25 21:21 J -19527519.79 -19527519.61 -19527519.42 0.0268 0.0004  
 Mars -58177-09-21 15:06 J -19527462.11 -19527461.87 -19527461.60 0.0267 0.0147  
 Mercury -58177-10-22 17:30 J -19527430.92 -19527430.77 -19527430.60 0.0267 0.0127  
 Mercury -58176-01-19 13:54 J -19527341.97 -19527341.92 -19527341.85 0.0266 0.0251  
 Moon -58175-01-12 10:18 J -19526984.30 -19526984.07 -19526983.84 0.0264 0.0094  
 Earth -58175-01-12 14:09 J -19526984.13 -19526983.91 -19526983.68 0.0264 0.0106 \*  
 Earth -58174-01-24 09:35 J -19526607.33 -19526607.10 -19526606.86 0.0262 0.0093  
 Moon -58174-01-24 09:49 J -19526607.31 -19526607.09 -19526606.86 0.0262 0.0093 \*  
 Venus -58168-10-02 12:57 J -19524164.18 -19524163.96 -19524163.74 0.0268 0.0026  
 Mercury -58162-11-16 20:37 J -19521927.73 -19521927.64 -19521927.54 0.0293 0.0210  
 Mercury -58161-02-13 09:35 J -19521839.22 -19521839.10 -19521838.97 0.0294 0.0091  
 Mercury -58161-05-11 22:33 J -19521750.70 -19521750.56 -19521750.43 0.0294 0.0029  
 Mercury -58161-08-08 11:16 J -19521662.15 -19521662.03 -19521661.92 0.0295 0.0148  
 Mercury -58161-11-04 23:45 J -19521573.56 -19521573.51 -19521573.45 0.0296 0.0266  
 Moon -58160-07-18 09:06 J -19521318.33 -19521318.12 -19521317.90 0.0298 0.0113  
 Earth -58160-07-18 11:16 J -19521318.26 -19521318.03 -19521317.80 0.0298 0.0101 \*  
 Earth -58159-08-02 02:37 J -19520938.57 -19520938.39 -19520938.20 0.0300 0.0190  
 Moon -58159-08-02 04:04 J -19520938.51 -19520938.33 -19520938.14 0.0300 0.0175 \*  
 Venus -58154-08-04 11:45 J -19519110.20 -19519110.01 -19519109.81 0.0293 0.0079  
 Mercury -58148-09-15 02:09 J -19516876.56 -19516876.41 -19516876.26 0.0269 0.0150  
 Mercury -58148-12-12 22:18 J -19516787.76 -19516787.57 -19516787.39 0.0268 0.0026  
 Mercury -58147-03-11 18:28 J -19516698.90 -19516698.73 -19516698.56 0.0267 0.0098  
 Mercury -58147-06-08 14:52 J -19516609.98 -19516609.88 -19516609.78 0.0267 0.0223  
 Earth -58146-01-07 21:06 J -19516396.77 -19516396.62 -19516396.43 0.0265 0.0194  
 Moon -58146-01-08 00:57 J -19516396.63 -19516396.46 -19516396.26 0.0265 0.0180 \*  
 Earth -58145-01-19 18:28 J -19516019.98 -19516019.73 -19516019.48 0.0263 0.0008  
 Moon -58145-01-19 18:57 J -19516019.97 -19516019.71 -19516019.46 0.0263 0.0014 \*  
 Moon -58144-01-30 09:35 J -19515643.26 -19515643.10 -19515642.93 0.0262 0.0196



Earth -58144-01-30 13:25 J -19515643.10 -19515642.94 -19515642.79 0.0262 0.0204 \*  
 Venus -58138-04-14 21:06 J -19513377.84 -19513377.62 -19513377.41 0.0268 0.0033  
 Mars -58133-12-27 18:28 J -19511293.90 -19511293.73 -19511293.53 0.0291 0.0220  
 Mercury -58132-04-04 23:45 J -19511195.59 -19511195.51 -19511195.43 0.0292 0.0236  
 Mercury -58132-07-02 12:28 J -19511107.10 -19511106.98 -19511106.85 0.0293 0.0118  
 Mercury -58132-09-29 01:25 J -19511018.57 -19511018.44 -19511018.31 0.0294 0.0002  
 Mercury -58132-12-26 14:09 J -19510930.03 -19510929.91 -19510929.79 0.0294 0.0120  
 Mercury -58131-03-25 02:37 J -19510841.46 -19510841.39 -19510841.31 0.0295 0.0239  
 Earth -58131-07-12 14:52 J -19510732.03 -19510731.88 -19510731.72 0.0296 0.0228  
 Moon -58131-07-12 17:01 J -19510731.93 -19510731.79 -19510731.64 0.0296 0.0237 \*  
 Moon -58130-07-27 03:06 J -19510352.62 -19510352.37 -19510352.12 0.0299 0.0045  
 Earth -58130-07-27 04:33 J -19510352.54 -19510352.31 -19510352.07 0.0299 0.0059 \*  
 Venus -58125-06-29 01:54 J -19508553.44 -19508553.42 -19508553.40 0.0295 0.0293  
 Venus -58124-02-13 18:13 J -19508323.91 -19508323.74 -19508323.55 0.0293 0.0142  
 Mars -58119-12-28 13:40 J -19506180.23 -19506179.93 -19506179.64 0.0269 0.0064  
 Mercury -58118-02-02 01:40 J -19506144.56 -19506144.43 -19506144.30 0.0269 0.0186  
 Mercury -58118-05-01 21:35 J -19506055.77 -19506055.60 -19506055.42 0.0268 0.0063  
 Mercury -58118-07-29 17:45 J -19505966.93 -19505966.76 -19505966.58 0.0267 0.0062  
 Mercury -58118-10-26 14:09 J -19505878.04 -19505877.91 -19505877.77 0.0267 0.0186  
 Earth -58116-01-13 21:49 J -19505432.82 -19505432.59 -19505432.35 0.0264 0.0085  
 Moon -58116-01-13 21:35 J -19505432.82 -19505432.60 -19505432.36 0.0264 0.0075 \*  
 Earth -58115-01-25 17:30 J -19505055.99 -19505055.77 -19505055.54 0.0262 0.0114  
 Moon -58115-01-25 20:52 J -19505055.84 -19505055.63 -19505055.40 0.0262 0.0114 \*  
 Venus -58109-03-09 17:59 J -19502820.78 -19502820.75 -19502820.70 0.0267 0.0262  
 Venus -58109-10-25 01:54 J -19502591.62 -19502591.42 -19502591.20 0.0269 0.0084  
 Mercury -58103-08-23 01:54 J -19500463.47 -19500463.42 -19500463.36 0.0292 0.0267  
 Mercury -58103-11-19 14:52 J -19500374.99 -19500374.88 -19500374.76 0.0293 0.0148  
 Mercury -58102-02-16 03:49 J -19500286.47 -19500286.34 -19500286.21 0.0294 0.0029  
 Mars -58102-02-16 14:23 J -19500286.17 -19500285.90 -19500285.63 0.0294 0.0074  
 Mercury -58102-05-15 16:33 J -19500197.94 -19500197.81 -19500197.68 0.0295 0.0090

Mercury -58102-08-12 05:16 J -19500109.37 -19500109.28 -19500109.19 0.0296 0.0209  
 Earth -58101-07-20 04:47 J -19499766.54 -19499766.30 -19499766.07 0.0298 0.0067  
 Moon -58101-07-20 06:28 J -19499766.46 -19499766.23 -19499766.00 0.0298 0.0080 \*  
 Earth -58100-08-03 20:09 J -19499386.81 -19499386.66 -19499386.49 0.0300 0.0224  
 Moon -58100-08-03 23:45 J -19499386.68 -19499386.51 -19499386.34 0.0300 0.0208 \*  
 Venus -58095-01-09 10:18 J -19497767.20 -19497767.07 -19497766.94 0.0295 0.0224  
 Venus -58095-08-27 02:52 J -19497537.52 -19497537.38 -19497537.24 0.0292 0.0209  
 Mercury -58089-06-21 02:52 J -19495412.49 -19495412.38 -19495412.27 0.0269 0.0213  
 Mercury -58089-09-17 22:47 J -19495323.71 -19495323.55 -19495323.37 0.0268 0.0090  
 Mercury -58089-12-15 19:11 J -19495234.88 -19495234.70 -19495234.52 0.0268 0.0035  
 Mars -58088-02-16 04:47 J -19495172.51 -19495172.30 -19495172.08 0.0267 0.0191  
 Mercury -58088-03-14 15:21 J -19495146.00 -19495145.86 -19495145.71 0.0267 0.0160  
 Earth -58087-01-09 06:42 J -19494845.41 -19494845.22 -19494845.03 0.0265 0.0171  
 Moon -58087-01-09 07:25 J -19494845.40 -19494845.19 -19494844.99 0.0265 0.0158 \*  
 Moon -58086-01-20 23:45 J -19494468.76 -19494468.51 -19494468.26 0.0263 0.0033  
 Earth -58086-01-21 03:35 J -19494468.60 -19494468.35 -19494468.10 0.0263 0.0030 \*  
 Moon -58085-02-01 20:37 J -19494091.76 -19494091.64 -19494091.50 0.0262 0.0219  
 Earth -58085-02-01 22:04 J -19494091.69 -19494091.58 -19494091.44 0.0262 0.0227 \*  
 Venus -58080-09-20 02:37 J -19492034.52 -19492034.39 -19492034.24 0.0267 0.0201  
 Venus -58079-05-07 11:01 J -19491805.23 -19491805.04 -19491804.86 0.0269 0.0145  
 Mercury -58073-01-10 05:16 J -19489731.29 -19489731.28 -19489731.27 0.0291 0.0289  
 Mercury -58073-04-07 18:13 J -19489642.85 -19489642.74 -19489642.63 0.0292 0.0171  
 Mercury -58073-07-05 07:11 J -19489554.34 -19489554.20 -19489554.07 0.0293 0.0053  
 Mercury -58073-10-01 19:54 J -19489465.80 -19489465.67 -19489465.54 0.0294 0.0066  
 Mercury -58073-12-29 08:37 J -19489377.25 -19489377.14 -19489377.04 0.0295 0.0184  
 Moon -58072-07-14 08:23 J -19489180.32 -19489180.15 -19489179.96 0.0297 0.0205  
 Earth -58072-07-14 10:33 J -19489180.23 -19489180.06 -19489179.87 0.0297 0.0194 \*  
 Moon -58071-07-28 21:06 J -19488800.85 -19488800.62 -19488800.38 0.0299 0.0081  
 Earth -58071-07-29 00:42 J -19488800.69 -19488800.47 -19488800.24 0.0299 0.0095 \*  
 Venus -58066-07-22 18:57 J -19486980.88 -19486980.71 -19486980.53 0.0294 0.0153

Venus -58065-03-08 11:01 J -19486751.10 -19486751.04 -19486750.98 0.0292 0.0277  
 Mars -58060-04-04 23:45 J -19484897.51 -19484897.51 -19484897.49 0.0271 0.0271  
 Mercury -58060-11-08 03:06 J -19484680.44 -19484680.37 -19484680.30 0.0269 0.0245  
 Mercury -58059-02-04 23:01 J -19484591.70 -19484591.54 -19484591.38 0.0269 0.0122  
 Mercury -58059-05-04 19:11 J -19484502.89 -19484502.70 -19484502.52 0.0268 0.0004  
 Mercury -58059-08-01 15:21 J -19484414.02 -19484413.86 -19484413.70 0.0267 0.0126  
 Mercury -58059-10-29 11:30 J -19484325.07 -19484325.02 -19484324.95 0.0266 0.0251  
 Moon -58058-01-04 09:06 J -19484258.19 -19484258.12 -19484258.03 0.0266 0.0249  
 Earth -58058-01-04 10:18 J -19484258.10 -19484258.07 -19484258.02 0.0266 0.0262 \*  
 Earth -58057-01-16 08:23 J -19483881.39 -19483881.15 -19483880.91 0.0264 0.0061  
 Moon -58057-01-16 11:59 J -19483881.24 -19483881.00 -19483880.76 0.0264 0.0053 \*  
 Earth -58056-01-27 03:49 J -19483504.55 -19483504.34 -19483504.13 0.0262 0.0138  
 Moon -58056-01-27 05:59 J -19483504.47 -19483504.25 -19483504.03 0.0262 0.0134 \*  
 Venus -58050-04-02 08:09 J -19481248.34 -19481248.16 -19481247.98 0.0267 0.0150  
 Venus -58050-11-17 16:04 J -19481018.96 -19481018.83 -19481018.67 0.0269 0.0198  
 Mars -58044-05-24 15:21 J -19479004.08 -19479003.86 -19479003.62 0.0292 0.0175  
 Mercury -58044-08-25 20:37 J -19478910.73 -19478910.64 -19478910.54 0.0293 0.0201  
 Mercury -58044-11-22 09:35 J -19478822.23 -19478822.10 -19478821.97 0.0294 0.0082  
 Mercury -58043-02-18 22:18 J -19478733.70 -19478733.57 -19478733.44 0.0294 0.0037  
 Mercury -58043-05-18 11:01 J -19478645.15 -19478645.04 -19478644.93 0.0295 0.0156  
 Mercury -58043-08-14 23:45 J -19478556.56 -19478556.51 -19478556.46 0.0296 0.0274  
 Earth -58042-07-23 01:40 J -19478214.67 -19478214.43 -19478214.19 0.0299 0.0031  
 Moon -58042-07-23 05:30 J -19478214.51 -19478214.27 -19478214.03 0.0299 0.0044 \*  
 Earth -58041-08-05 17:30 J -19477834.89 -19477834.77 -19477834.65 0.0300 0.0261  
 Moon -58041-08-05 19:25 J -19477834.83 -19477834.69 -19477834.55 0.0300 0.0246 \*  
 Venus -58036-02-01 03:35 J -19476194.55 -19476194.35 -19476194.15 0.0294 0.0084  
 Mars -58030-05-25 10:04 J -19473890.38 -19473890.08 -19473889.77 0.0269 0.0016  
 Mercury -58030-06-25 00:13 J -19473859.63 -19473859.49 -19473859.33 0.0269 0.0148  
 Mercury -58030-09-21 20:23 J -19473770.83 -19473770.65 -19473770.46 0.0268 0.0024  
 Mercury -58030-12-19 16:47 J -19473681.97 -19473681.80 -19473681.63 0.0267 0.0100

Mercury -58029-03-17 12:57 J -19473593.05 -19473592.96 -19473592.86 0.0267 0.0225

Moon -58028-01-10 14:37 J -19473294.10 -19473293.89 -19473293.67 0.0265 0.0136

Earth -58028-01-10 17:45 J -19473293.96 -19473293.76 -19473293.55 0.0265 0.0147 \*

Moon -58027-01-22 12:13 J -19472917.23 -19472916.99 -19472916.75 0.0263 0.0054

Earth -58027-01-22 14:23 J -19472917.15 -19472916.90 -19472916.66 0.0263 0.0054 \*

Earth -58026-02-03 08:52 J -19472540.19 -19472540.13 -19472540.05 0.0262 0.0250

Moon -58026-02-03 11:16 J -19472540.11 -19472540.03 -19472539.92 0.0262 0.0240 \*

Venus -58021-10-12 17:01 J -19470461.99 -19470461.79 -19470461.58 0.0268 0.0088

Venus -58020-05-30 01:11 J -19470232.49 -19470232.45 -19470232.38 0.0270 0.0261

Mercury -58014-01-12 23:59 J -19468178.58 -19468178.50 -19468178.41 0.0292 0.0223

Mercury -58014-04-11 12:57 J -19468090.08 -19468089.96 -19468089.83 0.0293 0.0105

Mercury -58014-07-09 01:40 J -19468001.56 -19468001.43 -19468001.29 0.0294 0.0017

Mars -58014-07-14 22:18 J -19467995.80 -19467995.57 -19467995.31 0.0294 0.0141

Mercury -58014-10-05 14:23 J -19467913.01 -19467912.90 -19467912.78 0.0294 0.0132

Mercury -58013-01-02 03:06 J -19467824.44 -19467824.37 -19467824.30 0.0295 0.0250

Moon -58013-07-16 04:18 J -19467628.51 -19467628.32 -19467628.12 0.0297 0.0171

Earth -58013-07-16 07:54 J -19467628.37 -19467628.17 -19467627.96 0.0297 0.0157 \*

Moon -58012-07-30 20:37 J -19467248.86 -19467248.64 -19467248.43 0.0299 0.0118

Earth -58012-07-30 22:18 J -19467248.79 -19467248.57 -19467248.36 0.0299 0.0133 \*

Venus -58007-08-14 12:42 J -19465408.17 -19465407.97 -19465407.76 0.0294 0.0013

Mercury -58001-11-11 00:57 J -19463127.59 -19463127.46 -19463127.32 0.0269 0.0177

# 58TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 58th millennium BCE.

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
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TRANSIT

TIME

Mercury -58000-02-07 20:52 J -19463038.80 -19463038.63 -19463038.45 0.0268 0.0054

Mercury -58000-05-07 17:01 J -19462949.96 -19462949.79 -19462949.61 0.0267 0.0070

Mars -58000-07-13 21:06 J -19462882.75 -19462882.62 -19462882.46 0.0267 0.0234

Mercury -58000-08-04 13:25 J -19462861.07 -19462860.94 -19462860.81 0.0267 0.0194

Earth -57999-01-05 22:47 J -19462706.65 -19462706.55 -19462706.43 0.0266 0.0237

Moon -57999-01-06 01:25 J -19462706.56 -19462706.44 -19462706.30 0.0266 0.0223 \*

Earth -57998-01-17 20:23 J -19462329.90 -19462329.65 -19462329.40 0.0263 0.0035

Moon -57998-01-17 22:47 J -19462329.80 -19462329.55 -19462329.29 0.0263 0.0029 \*

Moon -57997-01-29 12:42 J -19461953.17 -19461952.97 -19461952.76 0.0262 0.0155

Earth -57997-01-29 15:21 J -19461953.04 -19461952.86 -19461952.65 0.0262 0.0163 \*

Venus -57991-04-24 22:18 J -19459675.79 -19459675.57 -19459675.35 0.0268 0.0038

Mercury -57985-06-01 02:09 J -19457446.47 -19457446.41 -19457446.34 0.0292 0.0255

Mercury -57985-08-28 15:06 J -19457357.98 -19457357.87 -19457357.75 0.0293 0.0136

Mercury -57985-11-25 04:04 J -19457269.46 -19457269.33 -19457269.20 0.0294 0.0017

Mercury -57984-02-21 16:47 J -19457180.92 -19457180.80 -19457180.67 0.0295 0.0102

Mercury -57984-05-21 05:30 J -19457092.36 -19457092.27 -19457092.18 0.0296 0.0220

Earth -57984-07-10 09:06 J -19457042.20 -19457042.12 -19457042.04 0.0296 0.0279

Moon -57984-07-10 12:13 J -19457042.02 -19457041.99 -19457041.93 0.0296 0.0290

Earth -57983-07-24 22:18 J -19456662.81 -19456662.57 -19456662.32 0.0299 0.0008

Moon -57983-07-24 23:16 J -19456662.78 -19456662.53 -19456662.28 0.0299 0.0009 \*

Moon -57982-08-08 11:59 J -19456283.07 -19456283.00 -19456282.90 0.0301 0.0281

Earth -57982-08-08 14:09 J -19456282.93 -19456282.91 -19456282.87 0.0301 0.0298 \*

Venus -57977-02-24 21:06 J -19454621.82 -19454621.62 -19454621.42 0.0293 0.0057

Mars -57972-08-30 23:16 J -19452607.69 -19452607.53 -19452607.34 0.0271 0.0221

Mercury -57971-03-31 01:54 J -19452395.52 -19452395.42 -19452395.29 0.0269 0.0204

Mercury -57971-06-27 22:04 J -19452306.75 -19452306.58 -19452306.40 0.0268 0.0081

Mercury -57971-09-24 18:13 J -19452217.92 -19452217.74 -19452217.56 0.0267 0.0044

Mercury -57971-12-22 14:23 J -19452129.03 -19452128.90 -19452128.75 0.0267 0.0168

Moon -57969-01-13 02:23 J -19451742.61 -19451742.40 -19451742.17 0.0264 0.0111  
 Earth -57969-01-13 05:30 J -19451742.49 -19451742.27 -19451742.05 0.0264 0.0122 \*  
 Earth -57968-01-24 01:25 J -19451365.67 -19451365.44 -19451365.19 0.0263 0.0079  
 Moon -57968-01-24 03:49 J -19451365.57 -19451365.34 -19451365.11 0.0263 0.0077 \*  
 Moon -57967-02-04 23:16 J -19450988.53 -19450988.53 -19450988.50 0.0261 0.0261  
 Venus -57962-11-05 06:57 J -19448889.43 -19448889.21 -19448888.99 0.0268 0.0024  
 Mercury -57956-10-19 05:30 J -19446714.30 -19446714.27 -19446714.22 0.0292 0.0277  
 Mars -57956-10-20 00:13 J -19446713.75 -19446713.49 -19446713.22 0.0292 0.0110  
 Mercury -57955-01-15 18:42 J -19446625.83 -19446625.72 -19446625.61 0.0293 0.0158  
 Mercury -57955-04-14 07:25 J -19446537.32 -19446537.19 -19446537.05 0.0293 0.0040  
 Mercury -57955-07-11 20:23 J -19446448.78 -19446448.65 -19446448.53 0.0294 0.0080  
 Mercury -57955-10-08 08:52 J -19446360.22 -19446360.13 -19446360.03 0.0295 0.0197  
 Moon -57954-07-19 04:18 J -19446076.52 -19446076.32 -19446076.10 0.0297 0.0134  
 Earth -57954-07-19 04:47 J -19446076.52 -19446076.30 -19446076.08 0.0297 0.0120 \*  
 Earth -57953-08-01 19:25 J -19445696.88 -19445696.69 -19445696.49 0.0300 0.0170  
 Moon -57953-08-01 22:04 J -19445696.78 -19445696.58 -19445696.38 0.0300 0.0155 \*  
 Venus -57948-09-06 06:57 J -19443835.40 -19443835.21 -19443835.03 0.0293 0.0132  
 Mercury -57942-08-18 02:52 J -19441663.46 -19441663.38 -19441663.28 0.0269 0.0231  
 Mars -57942-10-20 07:11 J -19441600.50 -19441600.20 -19441599.89 0.0269 0.0028  
 Mercury -57942-11-14 23:01 J -19441574.71 -19441574.54 -19441574.38 0.0268 0.0108  
 Mercury -57941-02-11 18:57 J -19441485.89 -19441485.71 -19441485.52 0.0268 0.0015  
 Mercury -57941-05-10 15:06 J -19441397.02 -19441396.87 -19441396.71 0.0267 0.0139  
 Mercury -57941-08-07 11:30 J -19441308.04 -19441308.02 -19441307.99 0.0266 0.0262  
 Earth -57940-01-07 11:30 J -19441155.16 -19441155.02 -19441154.86 0.0265 0.0210  
 Moon -57940-01-07 14:52 J -19441155.03 -19441154.88 -19441154.70 0.0265 0.0195 \*  
 Moon -57939-01-19 06:42 J -19440778.48 -19440778.22 -19440777.96 0.0263 0.0006  
 Earth -57939-01-19 08:23 J -19440778.40 -19440778.15 -19440777.90 0.0263 0.0010 \*  
 Moon -57938-01-30 23:30 J -19440401.69 -19440401.52 -19440401.33 0.0261 0.0178  
 Earth -57938-01-31 02:52 J -19440401.54 -19440401.38 -19440401.20 0.0261 0.0188 \*  
 Venus -57932-05-17 11:45 J -19438103.21 -19438103.01 -19438102.79 0.0268 0.0074

Mercury -57926-06-04 20:37 J -19435893.74 -19435893.64 -19435893.54 0.0293 0.0192  
 Mercury -57926-09-01 09:21 J -19435805.24 -19435805.11 -19435804.98 0.0294 0.0074  
 Mercury -57926-11-28 22:18 J -19435716.70 -19435716.57 -19435716.44 0.0295 0.0046  
 Mars -57926-12-09 15:35 J -19435706.07 -19435705.85 -19435705.63 0.0295 0.0184  
 Mercury -57925-02-25 11:01 J -19435628.15 -19435628.04 -19435627.93 0.0295 0.0164  
 Mercury -57925-05-23 23:45 J -19435539.55 -19435539.51 -19435539.48 0.0296 0.0283  
 Earth -57925-07-12 03:21 J -19435490.49 -19435490.36 -19435490.22 0.0297 0.0245  
 Moon -57925-07-12 03:06 J -19435490.48 -19435490.37 -19435490.23 0.0297 0.0256 \*  
 Moon -57924-07-26 14:09 J -19435111.16 -19435110.91 -19435110.67 0.0299 0.0026  
 Earth -57924-07-26 17:16 J -19435111.02 -19435110.78 -19435110.54 0.0299 0.0043 \*  
 Venus -57919-08-01 20:52 J -19433278.74 -19433278.63 -19433278.50 0.0295 0.0239  
 Venus -57918-03-19 13:40 J -19433049.08 -19433048.93 -19433048.78 0.0293 0.0193  
 Mercury -57912-01-04 03:49 J -19430931.38 -19430931.34 -19430931.29 0.0269 0.0260  
 Mercury -57912-04-02 23:45 J -19430842.66 -19430842.51 -19430842.35 0.0268 0.0138  
 Mercury -57912-06-30 19:54 J -19430753.86 -19430753.67 -19430753.49 0.0268 0.0016  
 Mercury -57912-09-27 16:04 J -19430665.00 -19430664.83 -19430664.67 0.0267 0.0109  
 Mercury -57912-12-25 12:13 J -19430576.07 -19430575.99 -19430575.90 0.0266 0.0233  
 Earth -57910-01-14 16:18 J -19430191.04 -19430190.82 -19430190.58 0.0264 0.0098  
 Moon -57910-01-14 17:16 J -19430191.00 -19430190.78 -19430190.55 0.0264 0.0087 \*  
 Earth -57909-01-26 11:59 J -19429814.22 -19429814.00 -19429813.76 0.0262 0.0103  
 Moon -57909-01-26 15:35 J -19429814.08 -19429813.85 -19429813.61 0.0262 0.0100 \*  
 Venus -57903-04-12 11:30 J -19427546.14 -19427546.02 -19427545.88 0.0267 0.0212  
 Venus -57903-11-27 19:40 J -19427316.87 -19427316.68 -19427316.49 0.0269 0.0133  
 Mercury -57897-10-21 23:45 J -19425161.60 -19425161.51 -19425161.42 0.0292 0.0216  
 Mercury -57896-01-18 12:42 J -19425073.10 -19425072.97 -19425072.85 0.0293 0.0098  
 Mercury -57896-04-17 01:25 J -19424984.57 -19424984.44 -19424984.30 0.0294 0.0021  
 Mercury -57896-07-14 14:09 J -19424896.02 -19424895.91 -19424895.79 0.0295 0.0139  
 Mercury -57896-10-11 02:52 J -19424807.44 -19424807.38 -19424807.32 0.0296 0.0257  
 Earth -57895-07-20 22:04 J -19424524.81 -19424524.58 -19424524.35 0.0298 0.0086  
 Moon -57895-07-21 01:11 J -19424524.67 -19424524.45 -19424524.22 0.0298 0.0100 \*

Earth -57894-08-04 12:57 J -19424145.12 -19424144.96 -19424144.77 0.0300 0.0206  
 Moon -57894-08-04 16:33 J -19424144.99 -19424144.81 -19424144.61 0.0300 0.0189 \*  
 Venus -57889-02-12 06:57 J -19422492.38 -19422492.21 -19422492.04 0.0295 0.0163  
 Venus -57889-09-28 23:01 J -19422262.61 -19422262.54 -19422262.45 0.0292 0.0267  
 Mars -57883-01-25 20:09 J -19420317.87 -19420317.66 -19420317.43 0.0271 0.0181  
 Mercury -57883-08-21 00:28 J -19420110.61 -19420110.48 -19420110.33 0.0269 0.0165  
 Mercury -57883-11-17 20:37 J -19420021.82 -19420021.64 -19420021.46 0.0268 0.0042  
 Mercury -57882-02-14 16:33 J -19419932.98 -19419932.81 -19419932.63 0.0267 0.0082  
 Mercury -57882-05-14 12:57 J -19419844.08 -19419843.96 -19419843.84 0.0266 0.0205  
 Moon -57881-01-09 22:18 J -19419603.76 -19419603.57 -19419603.37 0.0265 0.0170  
 Earth -57881-01-09 22:47 J -19419603.71 -19419603.55 -19419603.36 0.0265 0.0185 \*  
 Moon -57880-01-20 15:35 J -19419227.10 -19419226.85 -19419226.61 0.0263 0.0020  
 Earth -57880-01-20 19:11 J -19419226.95 -19419226.70 -19419226.45 0.0263 0.0016 \*  
 Earth -57879-02-01 12:57 J -19418850.10 -19418849.96 -19418849.81 0.0261 0.0212  
 Moon -57879-02-01 13:25 J -19418850.08 -19418849.94 -19418849.78 0.0261 0.0202 \*  
 Venus -57874-10-23 15:49 J -19416760.01 -19416759.84 -19416759.67 0.0267 0.0165  
 Venus -57873-06-08 23:45 J -19416530.66 -19416530.51 -19416530.34 0.0269 0.0180  
 Mercury -57867-03-11 01:11 J -19414429.51 -19414429.45 -19414429.38 0.0292 0.0254  
 Mars -57867-03-16 06:42 J -19414424.50 -19414424.22 -19414423.95 0.0292 0.0077  
 Mercury -57867-06-07 14:09 J -19414341.03 -19414340.91 -19414340.79 0.0293 0.0135  
 Mercury -57867-09-04 03:06 J -19414252.51 -19414252.37 -19414252.24 0.0294 0.0017  
 Mercury -57867-12-01 15:49 J -19414163.96 -19414163.84 -19414163.72 0.0295 0.0103  
 Mercury -57866-02-28 04:33 J -19414075.40 -19414075.31 -19414075.22 0.0296 0.0221  
 Moon -57866-07-14 14:37 J -19413939.04 -19413938.89 -19413938.72 0.0297 0.0226  
 Earth -57866-07-14 18:13 J -19413938.91 -19413938.74 -19413938.58 0.0297 0.0213 \*  
 Moon -57865-07-28 05:30 J -19413559.50 -19413559.27 -19413559.03 0.0300 0.0060  
 Earth -57865-07-28 08:23 J -19413559.38 -19413559.15 -19413558.91 0.0300 0.0076 \*  
 Venus -57860-08-24 12:13 J -19411706.18 -19411705.99 -19411705.79 0.0295 0.0106  
 Mercury -57853-01-08 00:57 J -19409378.58 -19409378.46 -19409378.34 0.0269 0.0197  
 Mars -57853-03-15 21:21 J -19409310.89 -19409310.61 -19409310.30 0.0268 0.0073



Mercury -57853-04-05 20:37 J -19409289.81 -19409289.64 -19409289.46 0.0268 0.0075

Mercury -57853-07-03 16:47 J -19409200.98 -19409200.80 -19409200.62 0.0267 0.0049

Mercury -57853-09-30 13:11 J -19409112.09 -19409111.95 -19409111.81 0.0266 0.0172

Moon -57852-01-04 04:18 J -19409016.35 -19409016.32 -19409016.27 0.0266 0.0261

Earth -57851-01-16 01:25 J -19408639.67 -19408639.44 -19408639.19 0.0263 0.0074

Moon -57851-01-16 05:16 J -19408639.51 -19408639.28 -19408639.03 0.0263 0.0063 \*

Earth -57850-01-27 20:52 J -19408262.85 -19408262.63 -19408262.41 0.0262 0.0126

Moon -57850-01-27 21:06 J -19408262.85 -19408262.62 -19408262.39 0.0262 0.0122 \*

Venus -57844-05-04 22:33 J -19405973.76 -19405973.56 -19405973.36 0.0267 0.0110

Venus -57844-12-20 06:28 J -19405744.32 -19405744.23 -19405744.11 0.0269 0.0237

Mercury -57838-07-29 03:49 J -19403697.37 -19403697.34 -19403697.30 0.0292 0.0281

Mercury -57838-10-25 17:01 J -19403608.90 -19403608.79 -19403608.68 0.0293 0.0162

Mercury -57837-01-22 05:59 J -19403520.39 -19403520.25 -19403520.12 0.0294 0.0044

Mercury -57837-04-19 18:42 J -19403431.85 -19403431.72 -19403431.59 0.0294 0.0075

Mars -57837-05-05 08:52 J -19403416.30 -19403416.13 -19403415.96 0.0295 0.0234

Mercury -57837-07-17 07:25 J -19403343.29 -19403343.19 -19403343.09 0.0295 0.0193

Earth -57836-07-22 11:01 J -19402973.27 -19402973.04 -19402972.80 0.0298 0.0054

Moon -57836-07-22 13:54 J -19402973.16 -19402972.92 -19402972.67 0.0298 0.0067 \*

Moon -57835-08-06 02:23 J -19402593.56 -19402593.40 -19402593.23 0.0300 0.0221

Earth -57835-08-06 02:37 J -19402593.53 -19402593.39 -19402593.24 0.0300 0.0238 \*

Venus -57830-03-06 20:52 J -19400919.83 -19400919.63 -19400919.42 0.0294 0.0035

Mercury -57824-05-27 01:25 J -19398646.53 -19398646.44 -19398646.33 0.0269 0.0225

Mercury -57824-08-23 21:21 J -19398557.77 -19398557.61 -19398557.44 0.0268 0.0103

Mercury -57824-11-20 17:30 J -19398468.96 -19398468.77 -19398468.59 0.0268 0.0020

Mercury -57823-02-17 13:25 J -19398380.09 -19398379.94 -19398379.78 0.0267 0.0143

Mercury -57823-05-17 09:49 J -19398291.09 -19398291.09 -19398291.09 0.0266 0.0266

Moon -57822-01-11 03:49 J -19398052.54 -19398052.34 -19398052.13 0.0264 0.0148

Earth -57822-01-11 07:40 J -19398052.37 -19398052.18 -19398051.97 0.0264 0.0161 \*

Moon -57821-01-23 02:23 J -19397675.64 -19397675.40 -19397675.16 0.0262 0.0042

Earth -57821-01-23 03:21 J -19397675.60 -19397675.36 -19397675.11 0.0262 0.0040 \*

Earth -57820-02-02 20:37 J -19397298.73 -19397298.64 -19397298.52 0.0261 0.0235  
 Moon -57820-02-03 00:13 J -19397298.61 -19397298.49 -19397298.35 0.0261 0.0223 \*  
 Venus -57815-11-15 02:09 J -19395187.62 -19395187.41 -19395187.20 0.0267 0.0065  
 Mercury -57808-03-13 17:59 J -19392876.84 -19392876.75 -19392876.65 0.0293 0.0203  
 Mercury -57808-06-10 06:57 J -19392788.34 -19392788.21 -19392788.08 0.0294 0.0085  
 Mercury -57808-09-06 19:40 J -19392699.81 -19392699.68 -19392699.54 0.0294 0.0036  
 Mercury -57808-12-04 08:37 J -19392611.26 -19392611.14 -19392611.03 0.0295 0.0153  
 Mercury -57807-03-02 21:06 J -19392522.67 -19392522.62 -19392522.56 0.0296 0.0271  
 Moon -57807-07-16 01:11 J -19392387.62 -19392387.45 -19392387.27 0.0297 0.0198  
 Earth -57807-07-16 03:35 J -19392387.53 -19392387.35 -19392387.15 0.0297 0.0186 \*  
 Earth -57806-07-30 18:28 J -19392007.96 -19392007.73 -19392007.51 0.0300 0.0105  
 Moon -57806-07-30 19:11 J -19392007.92 -19392007.70 -19392007.48 0.0300 0.0091 \*  
 Venus -57801-09-16 00:42 J -19390133.68 -19390133.47 -19390133.27 0.0294 0.0017  
 Mars -57795-06-22 00:13 J -19388028.73 -19388028.49 -19388028.22 0.0270 0.0144  
 Mercury -57795-10-14 00:57 J -19387914.49 -19387914.46 -19387914.41 0.0269 0.0262  
 Mercury -57794-01-10 20:52 J -19387825.78 -19387825.63 -19387825.47 0.0268 0.0140  
 Mercury -57794-04-09 16:47 J -19387736.98 -19387736.80 -19387736.61 0.0267 0.0019  
 Mercury -57794-07-07 12:57 J -19387648.12 -19387647.96 -19387647.79 0.0267 0.0106  
 Mercury -57794-10-04 09:06 J -19387559.20 -19387559.12 -19387559.02 0.0266 0.0229  
 Earth -57793-01-06 10:18 J -19387465.13 -19387465.07 -19387464.98 0.0265 0.0253  
 Moon -57793-01-06 14:09 J -19387465.01 -19387464.91 -19387464.79 0.0265 0.0238 \*  
 Earth -57792-01-17 07:40 J -19387088.42 -19387088.18 -19387087.93 0.0263 0.0051  
 Moon -57792-01-17 09:06 J -19387088.38 -19387088.12 -19387087.87 0.0263 0.0044 \*  
 Moon -57791-01-28 23:01 J -19386711.74 -19386711.54 -19386711.32 0.0262 0.0141  
 Earth -57791-01-29 02:23 J -19386711.60 -19386711.40 -19386711.19 0.0262 0.0148 \*  
 Venus -57785-05-27 07:25 J -19384401.41 -19384401.19 -19384400.98 0.0268 0.0015  
 Mercury -57779-07-31 20:23 J -19382144.73 -19382144.65 -19382144.57 0.0292 0.0234  
 Mars -57779-08-10 09:49 J -19382135.37 -19382135.09 -19382134.80 0.0292 0.0039  
 Mercury -57779-10-28 09:21 J -19382056.23 -19382056.11 -19382055.99 0.0293 0.0116  
 Mercury -57778-01-24 22:18 J -19381967.71 -19381967.57 -19381967.44 0.0294 0.0008

Mercury -57778-04-23 11:01 J -19381879.16 -19381879.04 -19381878.92 0.0295 0.0122

Mercury -57778-07-20 23:45 J -19381790.59 -19381790.51 -19381790.44 0.0296 0.0240

Moon -57777-07-23 17:30 J -19381422.01 -19381421.77 -19381421.52 0.0298 0.0041

Earth -57777-07-23 18:42 J -19381421.96 -19381421.72 -19381421.48 0.0298 0.0027 \*

Moon -57776-08-07 07:25 J -19381042.32 -19381042.19 -19381042.05 0.0300 0.0249

Earth -57776-08-07 10:47 J -19381042.15 -19381042.05 -19381041.93 0.0300 0.0266 \*

Venus -57771-03-29 08:23 J -19379347.35 -19379347.15 -19379346.96 0.0294 0.0083

Mercury -57765-05-29 21:21 J -19377093.75 -19377093.61 -19377093.47 0.0269 0.0169

Mars -57765-08-10 04:18 J -19377021.59 -19377021.32 -19377021.03 0.0268 0.0102

Mercury -57765-08-26 17:16 J -19377004.96 -19377004.78 -19377004.60 0.0268 0.0047

Mercury -57765-11-23 13:11 J -19376916.12 -19376915.95 -19376915.77 0.0267 0.0077

Mercury -57764-02-20 09:35 J -19376827.22 -19376827.10 -19376826.98 0.0266 0.0199

Moon -57763-01-12 12:13 J -19376501.19 -19376500.99 -19376500.77 0.0264 0.0128

Earth -57763-01-12 13:25 J -19376501.14 -19376500.94 -19376500.72 0.0264 0.0138 \*

Earth -57762-01-24 08:37 J -19376124.38 -19376124.14 -19376123.90 0.0262 0.0062

Moon -57762-01-24 11:45 J -19376124.24 -19376124.01 -19376123.76 0.0262 0.0062 \*

Earth -57761-02-05 01:54 J -19375747.47 -19375747.42 -19375747.37 0.0261 0.0255

Moon -57761-02-05 03:35 J -19375747.43 -19375747.35 -19375747.25 0.0261 0.0244 \*

Venus -57756-12-07 10:18 J -19373615.29 -19373615.07 -19373614.85 0.0267 0.0028

Mercury -57750-12-18 21:06 J -19371412.66 -19371412.62 -19371412.58 0.0292 0.0278

Mercury -57749-03-16 10:04 J -19371324.19 -19371324.08 -19371323.97 0.0293 0.0160

Mercury -57749-06-12 23:01 J -19371235.67 -19371235.54 -19371235.41 0.0294 0.0041

Mercury -57749-09-09 11:45 J -19371147.14 -19371147.01 -19371146.88 0.0295 0.0078

Mars -57749-09-28 13:11 J -19371128.09 -19371127.95 -19371127.79 0.0295 0.0248

Mercury -57749-12-07 00:28 J -19371058.58 -19371058.48 -19371058.38 0.0296 0.0196

Earth -57748-07-17 08:37 J -19370836.34 -19370836.14 -19370835.93 0.0297 0.0161

Moon -57748-07-17 10:18 J -19370836.25 -19370836.07 -19370835.87 0.0297 0.0176 \*

Earth -57747-07-31 23:45 J -19370456.73 -19370456.51 -19370456.29 0.0300 0.0131

Moon -57747-08-01 03:06 J -19370456.59 -19370456.37 -19370456.14 0.0300 0.0115 \*

Venus -57742-10-09 10:04 J -19368561.26 -19368561.08 -19368560.89 0.0294 0.0128

Mercury -57736-10-16 20:09 J -19366361.77 -19366361.66 -19366361.55 0.0269 0.0211  
 Mercury -57735-01-13 15:49 J -19366273.00 -19366272.84 -19366272.66 0.0268 0.0089  
 Mercury -57735-04-12 11:59 J -19366184.18 -19366184.00 -19366183.82 0.0267 0.0034  
 Mercury -57735-07-10 08:09 J -19366095.31 -19366095.16 -19366095.01 0.0267 0.0157  
 Earth -57734-01-07 14:09 J -19365914.03 -19365913.91 -19365913.79 0.0265 0.0231  
 Moon -57734-01-07 15:35 J -19365913.98 -19365913.85 -19365913.69 0.0265 0.0218 \*  
 Moon -57733-01-19 07:40 J -19365537.43 -19365537.18 -19365536.93 0.0263 0.0028  
 Earth -57733-01-19 11:01 J -19365537.28 -19365537.04 -19365536.79 0.0263 0.0030 \*  
 Moon -57732-01-30 02:37 J -19365160.57 -19365160.39 -19365160.18 0.0261 0.0161  
 Earth -57732-01-30 05:30 J -19365160.46 -19365160.27 -19365160.08 0.0261 0.0168 \*  
 Venus -57727-11-02 06:57 J -19363058.23 -19363058.21 -19363058.18 0.0266 0.0263  
 Venus -57726-06-19 14:23 J -19362829.11 -19362828.90 -19362828.69 0.0268 0.0076  
 Mercury -57720-08-03 11:59 J -19360592.10 -19360592.00 -19360591.90 0.0292 0.0194  
 Mercury -57720-10-31 00:57 J -19360503.59 -19360503.46 -19360503.33 0.0293 0.0076  
 Mercury -57719-01-27 13:40 J -19360415.06 -19360414.93 -19360414.79 0.0294 0.0044  
 Mercury -57719-04-26 02:37 J -19360326.50 -19360326.39 -19360326.28 0.0295 0.0161  
 Earth -57719-07-11 07:25 J -19360250.23 -19360250.19 -19360250.13 0.0296 0.0288  
 Mercury -57719-07-23 15:06 J -19360237.91 -19360237.87 -19360237.82 0.0296 0.0279  
 Moon -57718-07-25 17:30 J -19359871.01 -19359870.77 -19359870.53 0.0299 0.0020  
 Earth -57718-07-25 21:06 J -19359870.86 -19359870.62 -19359870.38 0.0299 0.0003 \*  
 Moon -57717-08-08 11:30 J -19359491.10 -19359491.02 -19359490.92 0.0300 0.0275  
 Earth -57717-08-08 13:40 J -19359490.99 -19359490.93 -19359490.87 0.0300 0.0290 \*  
 Venus -57713-09-02 23:01 J -19358004.64 -19358004.54 -19358004.42 0.0296 0.0246  
 Venus -57712-04-20 16:18 J -19357774.97 -19357774.82 -19357774.66 0.0294 0.0189  
 Mars -57707-11-15 22:04 J -19355739.84 -19355739.58 -19355739.31 0.0270 0.0121  
 Mercury -57706-03-05 20:09 J -19355629.73 -19355629.66 -19355629.58 0.0269 0.0242  
 Mercury -57706-06-02 16:04 J -19355540.99 -19355540.83 -19355540.67 0.0269 0.0120  
 Mercury -57706-08-30 11:59 J -19355452.18 -19355452.00 -19355451.82 0.0268 0.0004  
 Mercury -57706-11-27 08:09 J -19355363.32 -19355363.16 -19355363.00 0.0267 0.0125  
 Mercury -57705-02-24 04:18 J -19355274.38 -19355274.32 -19355274.25 0.0266 0.0249

Earth -57704-01-13 15:49 J -19354950.06 -19354949.84 -19354949.61 0.0264 0.0117  
 Moon -57704-01-13 18:57 J -19354949.93 -19354949.71 -19354949.49 0.0264 0.0110 \*  
 Earth -57703-01-25 10:47 J -19354573.29 -19354573.05 -19354572.81 0.0262 0.0082  
 Moon -57703-01-25 13:11 J -19354573.18 -19354572.95 -19354572.70 0.0262 0.0078 \*  
 Moon -57702-02-06 01:11 J -19354196.45 -19354196.45 -19354196.43 0.0261 0.0260  
 Venus -57697-05-14 09:21 J -19352272.22 -19352272.11 -19352271.98 0.0265 0.0222  
 Venus -57697-12-29 16:33 J -19352043.00 -19352042.81 -19352042.61 0.0267 0.0116  
 Mercury -57691-12-21 12:28 J -19349860.06 -19349859.98 -19349859.91 0.0292 0.0241  
 Mars -57690-01-03 02:37 J -19349847.67 -19349847.39 -19349847.11 0.0292 0.0034  
 Mercury -57690-03-20 01:25 J -19349771.57 -19349771.44 -19349771.32 0.0293 0.0123  
 Mercury -57690-06-16 14:09 J -19349683.04 -19349682.91 -19349682.77 0.0294 0.0008  
 Mercury -57690-09-13 03:06 J -19349594.50 -19349594.37 -19349594.25 0.0295 0.0114  
 Mercury -57690-12-10 15:35 J -19349505.93 -19349505.85 -19349505.77 0.0296 0.0232  
 Earth -57689-07-18 08:37 J -19349285.35 -19349285.14 -19349284.92 0.0298 0.0140  
 Moon -57689-07-18 12:13 J -19349285.19 -19349284.99 -19349284.78 0.0298 0.0157 \*  
 Earth -57688-08-01 23:45 J -19348905.71 -19348905.51 -19348905.30 0.0300 0.0153  
 Moon -57688-08-02 01:11 J -19348905.67 -19348905.45 -19348905.22 0.0300 0.0137 \*  
 Venus -57683-03-15 23:45 J -19347218.65 -19347218.51 -19347218.36 0.0296 0.0206  
 Venus -57683-10-31 17:01 J -19346988.92 -19346988.79 -19346988.66 0.0294 0.0228  
 Mercury -57677-10-19 14:09 J -19344809.05 -19344808.91 -19344808.77 0.0269 0.0165  
 Mars -57676-01-03 09:49 J -19344733.36 -19344733.09 -19344732.82 0.0268 0.0123  
 Mercury -57676-01-16 10:04 J -19344720.26 -19344720.08 -19344719.90 0.0268 0.0043  
 Mercury -57676-04-15 06:13 J -19344631.42 -19344631.24 -19344631.07 0.0267 0.0080  
 Mercury -57676-07-13 02:23 J -19344542.51 -19344542.40 -19344542.28 0.0266 0.0203  
 Moon -57675-01-08 11:59 J -19344363.16 -19344363.00 -19344362.83 0.0265 0.0201  
 Earth -57675-01-08 14:23 J -19344363.03 -19344362.90 -19344362.74 0.0265 0.0214 \*  
 Moon -57674-01-20 09:06 J -19343986.36 -19343986.12 -19343985.88 0.0263 0.0012  
 Earth -57674-01-20 11:30 J -19343986.27 -19343986.02 -19343985.77 0.0263 0.0011 \*  
 Earth -57673-02-01 05:30 J -19343609.44 -19343609.27 -19343609.09 0.0261 0.0186  
 Moon -57673-02-01 07:40 J -19343609.35 -19343609.18 -19343608.99 0.0261 0.0175 \*

Venus -57668-11-24 12:13 J -19341486.15 -19341485.99 -19341485.82 0.0266 0.0180

Venus -57667-07-11 19:25 J -19341256.86 -19341256.69 -19341256.51 0.0268 0.0160

Mercury -57661-05-09 13:54 J -19339127.95 -19339127.92 -19339127.88 0.0292 0.0278

Mercury -57661-08-06 02:52 J -19339039.49 -19339039.38 -19339039.26 0.0293 0.0160

Mercury -57661-11-02 15:49 J -19338950.97 -19338950.84 -19338950.70 0.0293 0.0042

Mercury -57660-01-30 04:33 J -19338862.43 -19338862.31 -19338862.18 0.0294 0.0078

Mars -57660-02-21 17:01 J -19338839.89 -19338839.79 -19338839.66 0.0295 0.0266

Mercury -57660-04-28 17:16 J -19338773.87 -19338773.78 -19338773.67 0.0295 0.0195

Moon -57660-07-12 02:23 J -19338699.44 -19338699.40 -19338699.33 0.0296 0.0287

Earth -57660-07-12 05:45 J -19338699.35 -19338699.26 -19338699.16 0.0296 0.0269 \*

Moon -57659-07-26 18:57 J -19338319.95 -19338319.71 -19338319.48 0.0299 0.0004

Earth -57659-07-26 19:25 J -19338319.93 -19338319.69 -19338319.44 0.0299 0.0018 \*

Moon -57658-08-10 14:23 J -19337939.93 -19337939.90 -19337939.86 0.0301 0.0296

Venus -57654-09-26 04:47 J -19336432.47 -19336432.30 -19336432.11 0.0295 0.0149

Venus -57653-05-12 22:04 J -19336202.63 -19336202.58 -19336202.53 0.0293 0.0284

Mercury -57647-03-08 13:54 J -19334077.04 -19334076.92 -19334076.80 0.0269 0.0199

Mercury -57647-06-05 09:49 J -19333988.26 -19333988.09 -19333987.92 0.0269 0.0077

Mercury -57647-09-02 05:45 J -19333899.43 -19333899.26 -19333899.07 0.0268 0.0047

Mercury -57647-11-30 01:54 J -19333810.55 -19333810.42 -19333810.27 0.0267 0.0170

Earth -57645-01-15 15:21 J -19333399.08 -19333398.86 -19333398.62 0.0264 0.0099

Moon -57645-01-15 18:13 J -19333398.97 -19333398.74 -19333398.49 0.0264 0.0093 \*

Moon -57644-01-26 07:54 J -19333022.41 -19333022.17 -19333021.93 0.0262 0.0091

Earth -57644-01-26 10:18 J -19333022.29 -19333022.07 -19333021.83 0.0262 0.0101 \*

Venus -57638-06-06 14:52 J -19330700.07 -19330699.88 -19330699.69 0.0265 0.0139

Venus -57637-01-21 21:49 J -19330470.72 -19330470.59 -19330470.44 0.0267 0.0200

Mercury -57632-12-24 03:06 J -19328307.46 -19328307.37 -19328307.27 0.0292 0.0208

Mercury -57631-03-22 16:18 J -19328218.95 -19328218.82 -19328218.70 0.0293 0.0090

Mercury -57631-06-19 05:01 J -19328130.42 -19328130.29 -19328130.16 0.0294 0.0028

Mercury -57631-09-15 17:45 J -19328041.87 -19328041.76 -19328041.64 0.0295 0.0146

Mercury -57631-12-13 06:28 J -19327953.29 -19327953.23 -19327953.17 0.0296 0.0264

Moon -57630-07-20 05:01 J -19327734.50 -19327734.29 -19327734.06 0.0298 0.0138  
 Earth -57630-07-20 05:59 J -19327734.47 -19327734.25 -19327734.03 0.0298 0.0121 \*  
 Moon -57629-08-02 17:45 J -19327354.96 -19327354.76 -19327354.54 0.0300 0.0156  
 Earth -57629-08-02 20:52 J -19327354.82 -19327354.63 -19327354.42 0.0300 0.0173 \*  
 Venus -57624-04-07 04:18 J -19325646.50 -19325646.32 -19325646.12 0.0296 0.0113  
 Mars -57618-04-10 16:18 J -19323452.09 -19323451.82 -19323451.54 0.0271 0.0107  
 Mercury -57618-07-26 11:30 J -19323345.09 -19323345.02 -19323344.95 0.0269 0.0248  
 Mercury -57618-10-23 07:11 J -19323256.35 -19323256.20 -19323256.03 0.0269 0.0126  
 Mercury -57617-01-20 03:21 J -19323167.54 -19323167.36 -19323167.18 0.0268 0.0003  
 Mercury -57617-04-17 23:30 J -19323078.68 -19323078.52 -19323078.36 0.0267 0.0121  
 Mercury -57617-07-15 19:40 J -19322989.74 -19322989.68 -19322989.60 0.0266 0.0244  
 Moon -57616-01-09 09:21 J -19322812.27 -19322812.11 -19322811.93 0.0265 0.0186  
 Earth -57616-01-09 12:28 J -19322812.14 -19322811.98 -19322811.81 0.0265 0.0196 \*  
 Earth -57615-01-21 09:21 J -19322435.36 -19322435.11 -19322434.86 0.0263 0.0006  
 Moon -57615-01-21 11:30 J -19322435.27 -19322435.02 -19322434.78 0.0263 0.0005 \*  
 Earth -57614-02-02 03:21 J -19322058.51 -19322058.36 -19322058.20 0.0261 0.0203  
 Moon -57614-02-02 06:42 J -19322058.38 -19322058.22 -19322058.04 0.0261 0.0189 \*  
 Venus -57609-12-16 16:47 J -19319914.01 -19319913.80 -19319913.60 0.0266 0.0100  
 Venus -57608-08-02 23:45 J -19319684.60 -19319684.51 -19319684.41 0.0268 0.0240  
 Mercury -57602-05-13 04:18 J -19317575.38 -19317575.32 -19317575.24 0.0292 0.0248  
 Mars -57602-05-28 21:49 J -19317559.87 -19317559.59 -19317559.30 0.0292 0.0025  
 Mercury -57602-08-09 17:30 J -19317486.89 -19317486.77 -19317486.65 0.0293 0.0130  
 Mercury -57602-11-06 06:13 J -19317398.37 -19317398.24 -19317398.10 0.0294 0.0015  
 Mercury -57601-02-02 19:11 J -19317309.83 -19317309.70 -19317309.58 0.0294 0.0107  
 Mercury -57601-05-01 07:40 J -19317221.26 -19317221.18 -19317221.09 0.0295 0.0225  
 Earth -57601-07-13 00:42 J -19317148.58 -19317148.47 -19317148.33 0.0296 0.0252  
 Moon -57601-07-13 02:23 J -19317148.49 -19317148.40 -19317148.30 0.0296 0.0268 \*  
 Earth -57600-07-27 14:37 J -19316769.13 -19316768.89 -19316768.65 0.0299 0.0036  
 Moon -57600-07-27 18:13 J -19316768.98 -19316768.74 -19316768.50 0.0299 0.0019 \*  
 Venus -57595-10-18 08:52 J -19314860.33 -19314860.13 -19314859.93 0.0295 0.0058

Mercury -57588-03-11 06:57 J -19312524.35 -19312524.21 -19312524.06 0.0269 0.0160  
 Mars -57588-05-29 14:52 J -19312445.14 -19312444.88 -19312444.62 0.0269 0.0138  
 Mercury -57588-06-08 02:52 J -19312435.56 -19312435.38 -19312435.20 0.0269 0.0038  
 Mercury -57588-09-04 23:01 J -19312346.71 -19312346.54 -19312346.37 0.0268 0.0086  
 Mercury -57588-12-02 19:11 J -19312257.81 -19312257.70 -19312257.58 0.0267 0.0210  
 Moon -57586-01-16 11:45 J -19311848.25 -19311848.01 -19311847.76 0.0264 0.0080  
 Earth -57586-01-16 13:11 J -19311848.18 -19311847.95 -19311847.71 0.0264 0.0082 \*  
 Moon -57585-01-28 04:47 J -19311471.52 -19311471.30 -19311471.07 0.0262 0.0106  
 Earth -57585-01-28 08:09 J -19311471.38 -19311471.16 -19311470.93 0.0262 0.0118 \*  
 Venus -57579-06-28 19:11 J -19309127.91 -19309127.70 -19309127.49 0.0266 0.0059  
 Mercury -57573-12-26 17:45 J -19306754.86 -19306754.76 -19306754.65 0.0292 0.0177  
 Mercury -57572-03-25 06:42 J -19306666.35 -19306666.22 -19306666.09 0.0293 0.0060  
 Mercury -57572-06-21 19:25 J -19306577.82 -19306577.69 -19306577.55 0.0294 0.0059  
 Mars -57572-07-16 21:06 J -19306552.73 -19306552.62 -19306552.48 0.0294 0.0263  
 Mercury -57572-09-18 08:09 J -19306489.26 -19306489.16 -19306489.05 0.0295 0.0176  
 Mercury -57572-12-15 20:52 J -19306400.64 -19306400.63 -19306400.62 0.0295 0.0293  
 Moon -57571-07-20 21:35 J -19306183.82 -19306183.60 -19306183.38 0.0297 0.0119  
 Earth -57571-07-21 01:25 J -19306183.67 -19306183.44 -19306183.21 0.0297 0.0104 \*  
 Moon -57570-08-04 13:40 J -19305804.12 -19305803.93 -19305803.74 0.0300 0.0176  
 Earth -57570-08-04 16:04 J -19305804.01 -19305803.83 -19305803.64 0.0300 0.0190 \*  
 Venus -57565-04-29 07:54 J -19304074.37 -19304074.17 -19304073.96 0.0296 0.0023  
 Mercury -57559-07-29 04:04 J -19301792.44 -19301792.33 -19301792.22 0.0270 0.0211  
 Mercury -57559-10-25 23:59 J -19301703.67 -19301703.50 -19301703.33 0.0269 0.0089  
 Mercury -57558-01-22 20:09 J -19301614.84 -19301614.66 -19301614.48 0.0268 0.0035  
 Mercury -57558-04-21 16:18 J -19301525.96 -19301525.82 -19301525.67 0.0267 0.0159  
 Earth -57557-01-11 08:37 J -19301261.31 -19301261.14 -19301260.95 0.0265 0.0181  
 Moon -57557-01-11 09:49 J -19301261.26 -19301261.09 -19301260.90 0.0265 0.0175 \*  
 Earth -57556-01-22 05:45 J -19300884.50 -19300884.26 -19300884.01 0.0263 0.0023  
 Moon -57556-01-22 09:21 J -19300884.36 -19300884.11 -19300883.86 0.0263 0.0016 \*  
 Moon -57555-02-02 22:33 J -19300507.71 -19300507.56 -19300507.39 0.0261 0.0204



Earth -57555-02-02 23:59 J -19300507.62 -19300507.50 -19300507.36 0.0261 0.0219 \*  
 Venus -57549-01-08 20:52 J -19298341.85 -19298341.63 -19298341.41 0.0266 0.0020  
 Mercury -57543-05-15 18:57 J -19296022.79 -19296022.71 -19296022.61 0.0292 0.0217  
 Mercury -57543-08-12 07:54 J -19295934.29 -19295934.17 -19295934.04 0.0293 0.0100  
 Mercury -57543-11-08 20:52 J -19295845.77 -19295845.63 -19295845.50 0.0293 0.0019  
 Mercury -57542-02-05 09:35 J -19295757.22 -19295757.10 -19295756.98 0.0294 0.0136  
 Mercury -57542-05-04 22:04 J -19295668.64 -19295668.58 -19295668.51 0.0295 0.0254  
 Earth -57542-07-14 19:54 J -19295597.81 -19295597.67 -19295597.52 0.0296 0.0235  
 Moon -57542-07-14 23:30 J -19295597.64 -19295597.52 -19295597.38 0.0296 0.0250 \*  
 Earth -57541-07-28 09:35 J -19295218.34 -19295218.10 -19295217.86 0.0299 0.0053  
 Moon -57541-07-28 11:16 J -19295218.28 -19295218.03 -19295217.78 0.0299 0.0040 \*  
 Venus -57536-11-09 11:45 J -19293288.21 -19293288.01 -19293287.80 0.0295 0.0028  
 Mars -57530-09-03 16:04 J -19291164.10 -19291163.83 -19291163.54 0.0271 0.0095  
 Mercury -57530-12-16 03:35 J -19291060.42 -19291060.35 -19291060.28 0.0270 0.0247  
 Mercury -57529-03-13 23:30 J -19290971.68 -19290971.52 -19290971.36 0.0269 0.0125  
 Mercury -57529-06-10 19:25 J -19290882.87 -19290882.69 -19290882.50 0.0269 0.0006  
 Mercury -57529-09-07 15:35 J -19290794.01 -19290793.85 -19290793.68 0.0268 0.0123  
 Mercury -57529-12-05 11:45 J -19290705.06 -19290705.01 -19290704.93 0.0267 0.0247  
 Moon -57528-01-05 09:06 J -19290674.17 -19290674.12 -19290674.06 0.0267 0.0260  
 Moon -57527-01-17 05:45 J -19290297.50 -19290297.26 -19290297.02 0.0264 0.0067  
 Earth -57527-01-17 09:21 J -19290297.35 -19290297.11 -19290296.87 0.0264 0.0067 \*  
 Earth -57526-01-29 04:33 J -19289920.52 -19289920.31 -19289920.09 0.0262 0.0134  
 Moon -57526-01-29 05:16 J -19289920.48 -19289920.28 -19289920.05 0.0262 0.0123 \*  
 Venus -57520-07-20 23:45 J -19287555.73 -19287555.51 -19287555.29 0.0266 0.0021  
 Mercury -57514-10-02 19:25 J -19285290.74 -19285290.69 -19285290.63 0.0291 0.0263  
 Mars -57514-10-21 04:04 J -19285272.61 -19285272.33 -19285272.04 0.0291 0.0021  
 Mercury -57514-12-30 08:23 J -19285202.26 -19285202.15 -19285202.03 0.0292 0.0146  
 Mercury -57513-03-27 21:21 J -19285113.75 -19285113.61 -19285113.48 0.0293 0.0029  
 Mercury -57513-06-24 10:04 J -19285025.21 -19285025.08 -19285024.95 0.0294 0.0088  
 Mercury -57513-09-20 22:33 J -19284936.65 -19284936.56 -19284936.46 0.0294 0.0205

Moon -57512-07-21 19:54 J -19284632.89 -19284632.67 -19284632.45 0.0297 0.0099  
 Earth -57512-07-21 20:23 J -19284632.87 -19284632.65 -19284632.41 0.0297 0.0088 \*  
 Earth -57511-08-05 10:47 J -19284253.22 -19284253.05 -19284252.87 0.0300 0.0206  
 Moon -57511-08-05 13:11 J -19284253.12 -19284252.95 -19284252.77 0.0300 0.0198 \*  
 Venus -57506-05-22 10:33 J -19282502.26 -19282502.06 -19282501.86 0.0295 0.0063  
 Mercury -57500-07-31 20:23 J -19280239.78 -19280239.65 -19280239.51 0.0270 0.0177  
 Mars -57500-10-21 22:33 J -19280157.81 -19280157.56 -19280157.30 0.0269 0.0147  
 Mercury -57500-10-28 16:33 J -19280150.99 -19280150.81 -19280150.63 0.0269 0.0053  
 Mercury -57499-01-25 12:42 J -19280062.15 -19280061.97 -19280061.79 0.0268 0.0071  
 Mercury -57499-04-24 08:52 J -19279973.25 -19279973.13 -19279973.00 0.0267 0.0195  
 Earth -57498-01-12 04:33 J -19279710.50 -19279710.31 -19279710.11 0.0265 0.0166  
 Moon -57498-01-12 08:23 J -19279710.34 -19279710.15 -19279709.95 0.0265 0.0162 \*  
 Moon -57497-01-24 01:40 J -19279333.69 -19279333.43 -19279333.17 0.0263 0.0029  
 Earth -57497-01-24 01:54 J -19279333.66 -19279333.42 -19279333.17 0.0263 0.0038 \*  
 Moon -57496-02-03 16:33 J -19278956.92 -19278956.81 -19278956.66 0.0261 0.0222  
 Earth -57496-02-03 20:23 J -19278956.75 -19278956.65 -19278956.54 0.0261 0.0235 \*  
 Venus -57490-01-31 01:11 J -19276769.66 -19276769.45 -19276769.23 0.0266 0.0060  
 Mercury -57484-05-18 09:35 J -19274470.20 -19274470.10 -19274469.99 0.0292 0.0186  
 Mercury -57484-08-14 22:33 J -19274381.69 -19274381.56 -19274381.43 0.0293 0.0069  
 Mercury -57484-11-11 11:16 J -19274293.16 -19274293.03 -19274292.90 0.0293 0.0049  
 Mars -57484-12-09 13:25 J -19274265.04 -19274264.94 -19274264.82 0.0294 0.0270  
 Mercury -57483-02-07 23:59 J -19274204.61 -19274204.50 -19274204.39 0.0294 0.0166  
 Mercury -57483-05-07 12:42 J -19274116.01 -19274115.97 -19274115.94 0.0295 0.0282  
 Earth -57483-07-15 15:21 J -19274047.01 -19274046.86 -19274046.69 0.0296 0.0219  
 Moon -57483-07-15 15:21 J -19274047.00 -19274046.86 -19274046.69 0.0296 0.0230 \*  
 Moon -57482-07-30 01:25 J -19273667.68 -19273667.44 -19273667.20 0.0299 0.0063  
 Earth -57482-07-30 04:33 J -19273667.54 -19273667.31 -19273667.07 0.0299 0.0070 \*  
 Venus -57477-12-01 14:37 J -19271716.08 -19271715.89 -19271715.70 0.0295 0.0114  
 Mercury -57471-12-18 19:54 J -19269507.78 -19269507.67 -19269507.56 0.0270 0.0213  
 Mercury -57470-03-17 15:49 J -19269419.01 -19269418.84 -19269418.66 0.0270 0.0090

Mercury -57470-06-14 11:59 J -19269330.18 -19269330.00 -19269329.82 0.0269 0.0035

Mercury -57470-09-11 08:23 J -19269241.30 -19269241.15 -19269241.00 0.0268 0.0159

Moon -57469-01-07 02:09 J -19269123.48 -19269123.41 -19269123.32 0.0267 0.0252

Earth -57469-01-07 05:45 J -19269123.30 -19269123.26 -19269123.18 0.0267 0.0258

Moon -57468-01-18 05:16 J -19268746.52 -19268746.28 -19268746.05 0.0264 0.0057

Earth -57468-01-18 05:16 J -19268746.52 -19268746.28 -19268746.03 0.0264 0.0052 \*

Earth -57467-01-30 00:57 J -19268369.65 -19268369.46 -19268369.25 0.0262 0.0150

Moon -57467-01-30 04:47 J -19268369.51 -19268369.30 -19268369.09 0.0262 0.0136 \*

Venus -57462-12-26 22:18 J -19266212.67 -19266212.57 -19266212.45 0.0265 0.0230

Venus -57461-08-12 04:47 J -19265983.49 -19265983.30 -19265983.09 0.0266 0.0103

Mercury -57455-10-05 10:33 J -19263738.14 -19263738.06 -19263737.97 0.0291 0.0228

Mercury -57454-01-01 23:30 J -19263649.64 -19263649.52 -19263649.40 0.0292 0.0112

Mercury -57454-03-31 12:13 J -19263561.12 -19263560.99 -19263560.85 0.0292 0.0006

Mercury -57454-06-28 00:57 J -19263472.58 -19263472.46 -19263472.34 0.0293 0.0121

Mercury -57454-09-24 13:40 J -19263384.01 -19263383.93 -19263383.86 0.0294 0.0238

Earth -57453-07-22 18:13 J -19263081.97 -19263081.74 -19263081.50 0.0297 0.0069

Moon -57453-07-22 21:35 J -19263081.83 -19263081.60 -19263081.37 0.0297 0.0077 \*

Earth -57452-08-06 08:09 J -19262702.32 -19262702.16 -19262702.00 0.0300 0.0225

Moon -57452-08-06 11:30 J -19262702.19 -19262702.02 -19262701.86 0.0300 0.0220 \*

Venus -57448-10-26 20:23 J -19261159.69 -19261159.65 -19261159.59 0.0297 0.0286

Venus -57447-06-13 14:23 J -19260930.08 -19260929.90 -19260929.72 0.0295 0.0151

Mars -57441-01-26 23:45 J -19258876.79 -19258876.51 -19258876.22 0.0272 0.0087

Mercury -57441-05-06 16:47 J -19258775.82 -19258775.80 -19258775.75 0.0271 0.0265

Mercury -57441-08-03 12:57 J -19258687.11 -19258686.96 -19258686.80 0.0270 0.0141

Mercury -57441-10-31 09:06 J -19258598.30 -19258598.12 -19258597.94 0.0269 0.0017

Mercury -57440-01-28 05:16 J -19258509.45 -19258509.28 -19258509.11 0.0268 0.0107

Mercury -57440-04-27 01:40 J -19258420.52 -19258420.43 -19258420.34 0.0267 0.0232

Moon -57439-01-13 00:13 J -19258159.69 -19258159.49 -19258159.27 0.0265 0.0154

Earth -57439-01-13 00:28 J -19258159.68 -19258159.48 -19258159.27 0.0265 0.0152 \*

Moon -57438-01-24 18:42 J -19257782.96 -19257782.72 -19257782.47 0.0263 0.0041

Earth -57438-01-24 22:33 J -19257782.81 -19257782.56 -19257782.32 0.0263 0.0053 \*  
 Moon -57437-02-05 16:47 J -19257405.88 -19257405.80 -19257405.69 0.0261 0.0240  
 Earth -57437-02-05 17:01 J -19257405.84 -19257405.79 -19257405.71 0.0261 0.0251 \*  
 Venus -57432-07-07 23:59 J -19255426.65 -19255426.50 -19255426.35 0.0265 0.0192  
 Venus -57431-02-22 06:28 J -19255197.40 -19255197.23 -19255197.03 0.0267 0.0143  
 Mercury -57425-02-22 11:45 J -19253006.05 -19253006.01 -19253005.95 0.0291 0.0268  
 Mars -57425-03-15 00:57 J -19252984.75 -19252984.46 -19252984.18 0.0291 0.0011  
 Mercury -57425-05-21 00:42 J -19252917.58 -19252917.47 -19252917.35 0.0291 0.0151  
 Mercury -57425-08-17 13:40 J -19252829.07 -19252828.93 -19252828.80 0.0292 0.0035  
 Mercury -57425-11-14 02:23 J -19252740.53 -19252740.40 -19252740.27 0.0293 0.0082  
 Mercury -57424-02-10 14:52 J -19252651.97 -19252651.88 -19252651.78 0.0294 0.0199  
 Moon -57424-07-16 10:18 J -19252496.24 -19252496.07 -19252495.90 0.0296 0.0210  
 Earth -57424-07-16 13:40 J -19252496.10 -19252495.93 -19252495.75 0.0296 0.0200 \*  
 Moon -57423-07-30 23:16 J -19252116.75 -19252116.53 -19252116.29 0.0299 0.0086  
 Earth -57423-07-31 02:09 J -19252116.64 -19252116.41 -19252116.18 0.0299 0.0090 \*  
 Venus -57418-05-09 00:42 J -19250373.59 -19250373.47 -19250373.34 0.0296 0.0233  
 Venus -57418-12-24 18:28 J -19250143.88 -19250143.73 -19250143.58 0.0294 0.0203  
 Mercury -57412-12-21 12:28 J -19247955.11 -19247954.98 -19247954.84 0.0270 0.0177  
 Mars -57411-03-16 22:18 J -19247869.79 -19247869.57 -19247869.31 0.0270 0.0164  
 Mercury -57411-03-20 08:37 J -19247866.32 -19247866.14 -19247865.96 0.0270 0.0053  
 Mercury -57411-06-17 04:47 J -19247777.47 -19247777.30 -19247777.12 0.0269 0.0072  
 Mercury -57411-09-14 01:11 J -19247688.57 -19247688.45 -19247688.32 0.0268 0.0196  
 Earth -57410-01-08 02:23 J -19247572.49 -19247572.40 -19247572.30 0.0267 0.0244  
 Moon -57410-01-08 02:37 J -19247572.49 -19247572.39 -19247572.29 0.0267 0.0243 \*  
 Earth -57409-01-20 02:09 J -19247195.65 -19247195.41 -19247195.16 0.0265 0.0037  
 Moon -57409-01-20 05:59 J -19247195.49 -19247195.25 -19247195.00 0.0265 0.0046 \*  
 Earth -57408-01-30 22:18 J -19246818.75 -19246818.57 -19246818.36 0.0263 0.0166  
 Moon -57408-01-30 23:45 J -19246818.72 -19246818.51 -19246818.30 0.0263 0.0152 \*  
 Venus -57402-01-18 04:33 J -19244640.49 -19244640.31 -19244640.12 0.0265 0.0146  
 Venus -57402-09-04 11:01 J -19244411.18 -19244411.04 -19244410.88 0.0267 0.0189

Mercury -57396-10-08 02:09 J -19242185.51 -19242185.41 -19242185.31 0.0290 0.0191

Mercury -57395-01-04 14:52 J -19242097.01 -19242096.88 -19242096.75 0.0291 0.0075

Mercury -57395-04-03 03:35 J -19242008.48 -19242008.35 -19242008.21 0.0292 0.0042

Mars -57395-05-04 09:21 J -19241977.15 -19241977.11 -19241977.03 0.0293 0.0286

Mercury -57395-06-30 16:18 J -19241919.93 -19241919.82 -19241919.71 0.0293 0.0158

Mercury -57395-09-27 04:47 J -19241831.34 -19241831.30 -19241831.25 0.0294 0.0274

Earth -57394-07-24 18:42 J -19241530.96 -19241530.72 -19241530.48 0.0297 0.0049

Moon -57394-07-24 21:06 J -19241530.86 -19241530.62 -19241530.37 0.0297 0.0056 \*

Moon -57393-08-07 06:42 J -19241151.35 -19241151.22 -19241151.06 0.0299 0.0246

Earth -57393-08-07 08:09 J -19241151.29 -19241151.16 -19241151.02 0.0299 0.0245 \*

Venus -57389-11-18 01:40 J -19239587.58 -19239587.43 -19239587.27 0.0297 0.0191

Venus -57388-07-05 19:11 J -19239357.80 -19239357.70 -19239357.58 0.0295 0.0245

Mercury -57382-05-10 09:49 J -19237223.18 -19237223.09 -19237222.99 0.0271 0.0227

Mercury -57382-08-07 05:59 J -19237134.42 -19237134.25 -19237134.09 0.0270 0.0103

Mercury -57382-11-04 02:09 J -19237045.59 -19237045.41 -19237045.23 0.0269 0.0022

Mercury -57381-01-31 22:18 J -19236956.72 -19236956.57 -19236956.41 0.0268 0.0146

Moon -57380-01-13 18:13 J -19236608.95 -19236608.74 -19236608.53 0.0266 0.0144

Earth -57380-01-13 22:04 J -19236608.79 -19236608.58 -19236608.37 0.0266 0.0136 \*

Moon -57379-01-25 18:57 J -19236231.94 -19236231.71 -19236231.47 0.0263 0.0056

Earth -57379-01-25 20:23 J -19236231.89 -19236231.65 -19236231.41 0.0263 0.0069 \*

Moon -57378-02-06 18:57 J -19235854.75 -19235854.71 -19235854.66 0.0262 0.0257

Venus -57373-07-30 06:42 J -19233854.42 -19233854.22 -19233854.02 0.0265 0.0107

Venus -57372-03-16 13:25 J -19233625.05 -19233624.94 -19233624.83 0.0267 0.0229

Mars -57367-06-19 13:11 J -19231703.98 -19231703.95 -19231703.89 0.0288 0.0284

Mercury -57366-02-25 03:35 J -19231453.43 -19231453.35 -19231453.26 0.0291 0.0227

Mercury -57366-05-24 16:33 J -19231364.94 -19231364.81 -19231364.69 0.0292 0.0111

Mercury -57366-08-21 05:16 J -19231276.41 -19231276.28 -19231276.15 0.0292 0.0005

Mercury -57366-11-17 17:59 J -19231187.87 -19231187.75 -19231187.63 0.0293 0.0122

Mercury -57365-02-14 06:28 J -19231099.30 -19231099.23 -19231099.15 0.0294 0.0238

Moon -57365-07-17 13:54 J -19230945.10 -19230944.92 -19230944.73 0.0296 0.0188

Earth -57365-07-17 16:04 J -19230945.02 -19230944.83 -19230944.63 0.0296 0.0178 \*  
 Earth -57364-08-01 03:49 J -19230565.56 -19230565.34 -19230565.11 0.0299 0.0112  
 Moon -57364-08-01 05:16 J -19230565.49 -19230565.28 -19230565.06 0.0299 0.0111 \*  
 Venus -57359-05-31 06:57 J -19228801.39 -19228801.21 -19228801.02 0.0296 0.0134  
 Mars -57353-06-21 04:04 J -19226588.61 -19226588.33 -19226588.03 0.0272 0.0067  
 Mercury -57353-09-26 09:35 J -19226491.13 -19226491.10 -19226491.04 0.0271 0.0262  
 Mercury -57353-12-24 05:45 J -19226402.41 -19226402.26 -19226402.10 0.0270 0.0137  
 Mercury -57352-03-23 01:54 J -19226313.60 -19226313.42 -19226313.24 0.0270 0.0013  
 Mercury -57352-06-19 22:18 J -19226224.74 -19226224.57 -19226224.41 0.0269 0.0112  
 Mercury -57352-09-16 18:42 J -19226135.80 -19226135.72 -19226135.64 0.0268 0.0237  
 Earth -57351-01-09 00:28 J -19226021.59 -19226021.48 -19226021.34 0.0267 0.0230  
 Moon -57351-01-09 04:18 J -19226021.44 -19226021.32 -19226021.20 0.0267 0.0231 \*  
 Earth -57350-01-21 00:57 J -19225644.71 -19225644.46 -19225644.21 0.0265 0.0021  
 Moon -57350-01-21 02:23 J -19225644.65 -19225644.40 -19225644.14 0.0265 0.0033 \*  
 Moon -57349-02-01 18:13 J -19225267.92 -19225267.74 -19225267.53 0.0263 0.0168  
 Earth -57349-02-01 21:21 J -19225267.77 -19225267.61 -19225267.41 0.0263 0.0183 \*  
 Venus -57343-02-09 12:13 J -19223068.20 -19223067.99 -19223067.77 0.0265 0.0057  
 Mercury -57337-07-14 05:30 J -19220721.33 -19220721.27 -19220721.21 0.0290 0.0262  
 Mars -57337-08-08 10:18 J -19220696.35 -19220696.07 -19220695.78 0.0290 0.0020  
 Mercury -57337-10-10 18:13 J -19220632.85 -19220632.74 -19220632.62 0.0290 0.0147  
 Mercury -57336-01-07 07:11 J -19220544.34 -19220544.20 -19220544.07 0.0291 0.0032  
 Mercury -57336-04-05 19:40 J -19220455.80 -19220455.68 -19220455.55 0.0292 0.0085  
 Mercury -57336-07-03 08:23 J -19220367.25 -19220367.15 -19220367.05 0.0293 0.0200  
 Moon -57335-07-25 22:04 J -19219979.83 -19219979.58 -19219979.33 0.0297 0.0028  
 Earth -57335-07-25 23:59 J -19219979.74 -19219979.50 -19219979.26 0.0297 0.0025 \*  
 Moon -57334-08-09 09:21 J -19219600.20 -19219600.11 -19219600.01 0.0299 0.0272  
 Earth -57334-08-09 12:57 J -19219600.06 -19219599.96 -19219599.85 0.0299 0.0268 \*  
 Venus -57330-12-11 09:06 J -19218015.31 -19218015.12 -19218014.92 0.0296 0.0087  
 Mercury -57323-05-13 03:21 J -19215670.48 -19215670.36 -19215670.22 0.0271 0.0185  
 Mars -57323-08-09 17:01 J -19215582.00 -19215581.79 -19215581.55 0.0270 0.0180

Mercury -57323-08-09 23:30 J -19215581.69 -19215581.52 -19215581.34 0.0270 0.0061 \*  
 Mercury -57323-11-06 19:54 J -19215492.85 -19215492.67 -19215492.49 0.0269 0.0064  
 Mercury -57322-02-03 16:18 J -19215403.95 -19215403.82 -19215403.69 0.0268 0.0189  
 Moon -57321-01-15 20:23 J -19215057.85 -19215057.65 -19215057.43 0.0266 0.0130  
 Earth -57321-01-15 21:35 J -19215057.81 -19215057.60 -19215057.37 0.0266 0.0121 \*  
 Earth -57320-01-26 20:23 J -19214680.88 -19214680.65 -19214680.41 0.0263 0.0087  
 Moon -57320-01-26 23:30 J -19214680.75 -19214680.52 -19214680.28 0.0263 0.0072 \*  
 Venus -57314-08-22 15:06 J -19212282.09 -19212281.87 -19212281.65 0.0266 0.0015  
 Mercury -57307-02-27 19:54 J -19209900.77 -19209900.67 -19209900.56 0.0291 0.0182  
 Mercury -57307-05-27 08:52 J -19209812.26 -19209812.13 -19209812.00 0.0292 0.0066  
 Mercury -57307-08-23 21:35 J -19209723.73 -19209723.60 -19209723.47 0.0293 0.0051  
 Mercury -57307-11-20 10:18 J -19209635.18 -19209635.07 -19209634.96 0.0293 0.0167  
 Mercury -57306-02-16 22:47 J -19209546.58 -19209546.55 -19209546.51 0.0294 0.0282  
 Earth -57306-07-19 22:33 J -19209393.76 -19209393.56 -19209393.35 0.0296 0.0154  
 Moon -57306-07-20 00:57 J -19209393.66 -19209393.46 -19209393.26 0.0296 0.0160 \*  
 Earth -57305-08-02 10:04 J -19209014.29 -19209014.08 -19209013.86 0.0298 0.0138  
 Moon -57305-08-02 13:40 J -19209014.14 -19209013.93 -19209013.71 0.0298 0.0136 \*  
 Venus -57300-06-22 15:35 J -19207229.05 -19207228.85 -19207228.64 0.0295 0.0028  
 Mercury -57294-09-30 03:49 J -19204938.44 -19204938.34 -19204938.23 0.0271 0.0217  
 Mercury -57294-12-27 23:59 J -19204849.67 -19204849.50 -19204849.33 0.0270 0.0093  
 Mercury -57293-03-25 20:09 J -19204760.84 -19204760.66 -19204760.48 0.0270 0.0032  
 Mercury -57293-06-22 16:18 J -19204671.96 -19204671.82 -19204671.66 0.0269 0.0158  
 Earth -57292-01-10 01:25 J -19204470.58 -19204470.44 -19204470.28 0.0267 0.0213  
 Moon -57292-01-10 03:21 J -19204470.50 -19204470.36 -19204470.20 0.0267 0.0215 \*  
 Moon -57291-01-21 22:47 J -19204093.80 -19204093.55 -19204093.29 0.0265 0.0018  
 Earth -57291-01-22 02:09 J -19204093.66 -19204093.41 -19204093.16 0.0265 0.0003 \*  
 Moon -57290-02-02 20:23 J -19203716.81 -19203716.65 -19203716.47 0.0263 0.0187  
 Earth -57290-02-02 23:16 J -19203716.69 -19203716.53 -19203716.37 0.0263 0.0200 \*  
 Venus -57284-03-03 21:35 J -19201495.81 -19201495.60 -19201495.38 0.0266 0.0038  
 Mars -57279-11-13 14:23 J -19199415.06 -19199414.90 -19199414.74 0.0287 0.0239

Mercury -57278-07-17 22:33 J -19199168.65 -19199168.56 -19199168.47 0.0290 0.0212  
 Mercury -57278-10-14 11:16 J -19199080.15 -19199080.03 -19199079.90 0.0291 0.0097  
 Mercury -57277-01-10 23:59 J -19198991.63 -19198991.50 -19198991.36 0.0292 0.0020  
 Mercury -57277-04-08 12:42 J -19198903.09 -19198902.97 -19198902.85 0.0293 0.0135  
 Mercury -57277-07-06 01:11 J -19198814.52 -19198814.45 -19198814.38 0.0293 0.0250  
 Moon -57277-07-12 22:04 J -19198807.62 -19198807.58 -19198807.52 0.0294 0.0287  
 Earth -57277-07-13 01:11 J -19198807.52 -19198807.45 -19198807.38 0.0294 0.0281 \*  
 Moon -57276-07-27 06:13 J -19198428.48 -19198428.24 -19198428.00 0.0297 0.0005  
 Earth -57276-07-27 10:04 J -19198428.33 -19198428.08 -19198427.84 0.0297 0.0004 \*  
 Earth -57275-08-10 22:33 J -19198048.58 -19198048.56 -19198048.51 0.0299 0.0297  
 Venus -57270-01-02 19:54 J -19196442.87 -19196442.67 -19196442.46 0.0295 0.0028  
 Mars -57265-11-14 09:06 J -19194300.41 -19194300.12 -19194299.82 0.0272 0.0045  
 Mercury -57264-02-16 02:23 J -19194206.45 -19194206.40 -19194206.35 0.0271 0.0260  
 Mercury -57264-05-15 22:18 J -19194117.72 -19194117.57 -19194117.41 0.0271 0.0136  
 Mercury -57264-08-12 18:28 J -19194028.91 -19194028.73 -19194028.55 0.0270 0.0011  
 Mercury -57264-11-09 14:37 J -19193940.05 -19193939.89 -19193939.72 0.0269 0.0114  
 Mercury -57263-02-06 11:01 J -19193851.11 -19193851.04 -19193850.95 0.0268 0.0239  
 Earth -57262-01-17 00:42 J -19193506.70 -19193506.47 -19193506.24 0.0266 0.0101  
 Moon -57262-01-17 03:35 J -19193506.57 -19193506.35 -19193506.13 0.0266 0.0113 \*  
 Earth -57261-01-28 23:16 J -19193129.75 -19193129.53 -19193129.30 0.0263 0.0106  
 Moon -57261-01-29 02:09 J -19193129.65 -19193129.41 -19193129.17 0.0263 0.0091 \*  
 Venus -57255-01-27 18:28 J -19190938.79 -19190938.73 -19190938.65 0.0265 0.0250  
 Venus -57255-09-14 01:11 J -19190709.65 -19190709.45 -19190709.24 0.0266 0.0082  
 Mercury -57249-12-04 00:28 J -19188436.55 -19188436.48 -19188436.40 0.0290 0.0244  
 Mars -57248-01-02 11:45 J -19188407.29 -19188407.01 -19188406.72 0.0290 0.0053  
 Mercury -57248-03-02 13:25 J -19188348.06 -19188347.94 -19188347.82 0.0291 0.0128  
 Mercury -57248-05-30 02:09 J -19188259.54 -19188259.41 -19188259.28 0.0292 0.0013  
 Mercury -57248-08-26 14:52 J -19188171.01 -19188170.88 -19188170.76 0.0293 0.0103  
 Mercury -57248-11-23 03:21 J -19188082.45 -19188082.36 -19188082.27 0.0294 0.0218  
 Earth -57247-07-21 10:18 J -19187842.28 -19187842.07 -19187841.84 0.0296 0.0125



Moon -57247-07-21 13:54 J -19187842.13 -19187841.92 -19187841.69 0.0296 0.0129 \*  
 Earth -57246-08-04 21:49 J -19187462.78 -19187462.59 -19187462.38 0.0299 0.0167  
 Moon -57246-08-04 23:01 J -19187462.74 -19187462.54 -19187462.32 0.0299 0.0168 \*  
 Venus -57241-07-15 03:06 J -19185656.56 -19185656.37 -19185656.17 0.0295 0.0091  
 Mercury -57235-10-02 22:47 J -19183385.68 -19183385.55 -19183385.40 0.0271 0.0167  
 Mercury -57235-12-30 18:57 J -19183296.89 -19183296.71 -19183296.53 0.0270 0.0042  
 Mars -57234-01-03 15:35 J -19183293.03 -19183292.85 -19183292.67 0.0270 0.0216  
 Mercury -57234-03-29 15:21 J -19183208.03 -19183207.86 -19183207.69 0.0269 0.0083  
 Mercury -57234-06-26 11:45 J -19183119.12 -19183119.01 -19183118.89 0.0269 0.0209  
 Moon -57233-01-12 03:21 J -19182919.52 -19182919.36 -19182919.19 0.0267 0.0200  
 Earth -57233-01-12 05:30 J -19182919.43 -19182919.27 -19182919.09 0.0267 0.0195 \*  
 Moon -57232-01-23 03:49 J -19182542.59 -19182542.34 -19182542.10 0.0265 0.0005  
 Earth -57232-01-23 06:28 J -19182542.48 -19182542.23 -19182541.99 0.0265 0.0016 \*  
 Earth -57231-02-04 03:21 J -19182165.48 -19182165.36 -19182165.21 0.0263 0.0220  
 Moon -57231-02-04 05:30 J -19182165.40 -19182165.27 -19182165.11 0.0263 0.0209 \*  
 Venus -57226-08-10 01:54 J -19180152.56 -19180152.42 -19180152.27 0.0265 0.0194  
 Venus -57225-03-26 08:37 J -19179923.31 -19179923.14 -19179922.94 0.0267 0.0140  
 Mercury -57219-04-23 03:21 J -19177704.40 -19177704.36 -19177704.31 0.0289 0.0270  
 Mercury -57219-07-20 16:04 J -19177615.94 -19177615.83 -19177615.71 0.0290 0.0156  
 Mercury -57219-10-17 05:01 J -19177527.43 -19177527.29 -19177527.16 0.0291 0.0041  
 Mercury -57218-01-13 17:30 J -19177438.89 -19177438.77 -19177438.64 0.0292 0.0076  
 Mercury -57218-04-12 06:13 J -19177350.34 -19177350.24 -19177350.14 0.0293 0.0190  
 Moon -57218-07-15 12:13 J -19177256.09 -19177255.99 -19177255.86 0.0294 0.0256  
 Earth -57218-07-15 15:35 J -19177255.97 -19177255.85 -19177255.72 0.0294 0.0251 \*  
 Moon -57217-07-28 23:59 J -19176876.73 -19176876.50 -19176876.27 0.0297 0.0035  
 Earth -57217-07-29 00:28 J -19176876.72 -19176876.48 -19176876.24 0.0297 0.0035 \*  
 Venus -57212-06-09 15:35 J -19175099.90 -19175099.85 -19175099.78 0.0297 0.0283  
 Venus -57211-01-25 09:21 J -19174870.29 -19174870.11 -19174869.93 0.0295 0.0151  
 Mars -57206-02-20 12:57 J -19173018.02 -19173017.96 -19173017.87 0.0275 0.0266  
 Mercury -57205-02-19 22:04 J -19172653.69 -19172653.58 -19172653.46 0.0271 0.0205

Mercury -57205-05-18 18:13 J -19172564.92 -19172564.74 -19172564.57 0.0270 0.0081

Mercury -57205-08-15 14:23 J -19172476.08 -19172475.90 -19172475.72 0.0270 0.0044

Mercury -57205-11-12 10:47 J -19172387.19 -19172387.05 -19172386.91 0.0269 0.0169

Earth -57203-01-18 06:42 J -19171955.45 -19171955.22 -19171954.98 0.0266 0.0081

Moon -57203-01-18 09:49 J -19171955.32 -19171955.09 -19171954.84 0.0266 0.0092 \*

Moon -57202-01-30 03:21 J -19171578.59 -19171578.36 -19171578.13 0.0263 0.0114

Earth -57202-01-30 05:30 J -19171578.49 -19171578.27 -19171578.05 0.0263 0.0127 \*

Venus -57196-02-19 05:59 J -19169366.43 -19169366.25 -19169366.07 0.0265 0.0149

Venus -57196-10-06 12:57 J -19169137.11 -19169136.96 -19169136.80 0.0267 0.0185

Mars -57190-04-10 00:57 J -19167125.67 -19167125.46 -19167125.25 0.0288 0.0201

Mercury -57190-12-07 18:28 J -19166883.83 -19166883.73 -19166883.63 0.0291 0.0186

Mercury -57189-03-05 07:11 J -19166795.33 -19166795.20 -19166795.07 0.0291 0.0071

Mercury -57189-06-01 19:54 J -19166706.80 -19166706.67 -19166706.54 0.0292 0.0045

Mercury -57189-08-29 08:37 J -19166618.25 -19166618.14 -19166618.03 0.0293 0.0160

Mercury -57189-11-25 21:06 J -19166529.66 -19166529.62 -19166529.58 0.0294 0.0275

Moon -57188-07-23 01:54 J -19166290.66 -19166290.42 -19166290.18 0.0296 0.0093

Earth -57188-07-23 02:09 J -19166290.64 -19166290.41 -19166290.18 0.0296 0.0092 \*

Moon -57187-08-06 10:47 J -19165911.22 -19165911.05 -19165910.86 0.0299 0.0204

Earth -57187-08-06 13:40 J -19165911.10 -19165910.93 -19165910.74 0.0299 0.0201 \*

Venus -57183-12-20 23:45 J -19164313.64 -19164313.51 -19164313.36 0.0296 0.0216

Venus -57182-08-07 17:16 J -19164083.90 -19164083.78 -19164083.63 0.0294 0.0218

Mars -57176-04-10 17:01 J -19162011.09 -19162010.79 -19162010.49 0.0272 0.0004

Mercury -57176-07-08 23:16 J -19161921.62 -19161921.53 -19161921.44 0.0271 0.0233

Mercury -57176-10-05 19:11 J -19161832.86 -19161832.70 -19161832.53 0.0270 0.0109

Mercury -57175-01-02 15:21 J -19161744.04 -19161743.86 -19161743.68 0.0270 0.0016

Mercury -57175-04-01 11:45 J -19161655.17 -19161655.01 -19161654.85 0.0269 0.0141

Mercury -57175-06-29 08:09 J -19161566.17 -19161566.16 -19161566.14 0.0268 0.0267

Moon -57174-01-13 09:49 J -19161368.26 -19161368.09 -19161367.90 0.0267 0.0180

Earth -57174-01-13 13:11 J -19161368.13 -19161367.95 -19161367.75 0.0267 0.0173 \*

Earth -57173-01-25 13:40 J -19160991.18 -19160990.93 -19160990.68 0.0265 0.0038

Moon -57173-01-25 14:52 J -19160991.11 -19160990.88 -19160990.64 0.0265 0.0025 \*  
 Earth -57172-02-05 11:01 J -19160614.13 -19160614.04 -19160613.94 0.0263 0.0241  
 Moon -57172-02-05 14:23 J -19160614.00 -19160613.90 -19160613.76 0.0263 0.0232 \*  
 Venus -57167-09-01 14:09 J -19158580.11 -19158579.91 -19158579.70 0.0266 0.0091  
 Venus -57166-04-18 21:35 J -19158350.69 -19158350.60 -19158350.52 0.0267 0.0245  
 Mercury -57160-04-25 21:35 J -19156151.69 -19156151.60 -19156151.50 0.0290 0.0210  
 Mars -57160-05-30 11:45 J -19156117.27 -19156117.01 -19156116.74 0.0290 0.0114  
 Mercury -57160-07-23 10:33 J -19156063.19 -19156063.06 -19156062.93 0.0291 0.0094  
 Mercury -57160-10-19 23:16 J -19155974.67 -19155974.53 -19155974.40 0.0291 0.0021  
 Mercury -57159-01-16 11:45 J -19155886.12 -19155886.01 -19155885.89 0.0292 0.0136  
 Mercury -57159-04-15 00:28 J -19155797.55 -19155797.48 -19155797.42 0.0293 0.0251  
 Earth -57159-07-17 09:49 J -19155704.25 -19155704.09 -19155703.93 0.0294 0.0218  
 Moon -57159-07-17 10:33 J -19155704.21 -19155704.06 -19155703.91 0.0294 0.0221 \*  
 Earth -57158-07-31 19:11 J -19155324.93 -19155324.70 -19155324.46 0.0297 0.0070  
 Moon -57158-07-31 22:33 J -19155324.79 -19155324.56 -19155324.32 0.0297 0.0072 \*  
 Venus -57153-07-02 08:09 J -19153527.33 -19153527.16 -19153526.98 0.0296 0.0146  
 Venus -57152-02-17 01:11 J -19153297.49 -19153297.45 -19153297.39 0.0294 0.0284  
 Mercury -57147-11-25 23:01 J -19151189.57 -19151189.54 -19151189.51 0.0272 0.0267  
 Mercury -57146-02-22 18:57 J -19151100.86 -19151100.71 -19151100.56 0.0271 0.0143  
 Mercury -57146-05-22 15:06 J -19151012.05 -19151011.87 -19151011.69 0.0270 0.0019  
 Mars -57146-05-30 19:11 J -19151003.79 -19151003.70 -19151003.58 0.0270 0.0252  
 Mercury -57146-08-19 11:16 J -19150923.19 -19150923.03 -19150922.86 0.0269 0.0106  
 Mercury -57146-11-16 07:40 J -19150834.27 -19150834.18 -19150834.08 0.0268 0.0231  
 Earth -57145-01-08 14:23 J -19150780.91 -19150780.90 -19150780.89 0.0268 0.0267  
 Moon -57144-01-19 15:21 J -19150404.10 -19150403.86 -19150403.61 0.0265 0.0069  
 Earth -57144-01-19 16:04 J -19150404.07 -19150403.83 -19150403.58 0.0265 0.0057 \*  
 Moon -57143-01-31 11:01 J -19150027.25 -19150027.04 -19150026.83 0.0263 0.0138  
 Earth -57143-01-31 14:23 J -19150027.10 -19150026.90 -19150026.69 0.0263 0.0150 \*  
 Venus -57137-03-13 18:57 J -19147793.92 -19147793.71 -19147793.49 0.0266 0.0043  
 Mercury -57131-09-12 23:45 J -19145419.58 -19145419.51 -19145419.43 0.0290 0.0240

Mercury -57131-12-10 12:42 J -19145331.09 -19145330.97 -19145330.84 0.0291 0.0125  
 Mercury -57130-03-09 01:40 J -19145242.57 -19145242.43 -19145242.30 0.0292 0.0012  
 Mercury -57130-06-05 14:09 J -19145154.03 -19145153.91 -19145153.78 0.0293 0.0107  
 Mercury -57130-09-02 02:52 J -19145065.47 -19145065.38 -19145065.30 0.0294 0.0222  
 Moon -57129-07-24 17:30 J -19144739.01 -19144738.77 -19144738.53 0.0296 0.0055  
 Earth -57129-07-24 21:06 J -19144738.86 -19144738.62 -19144738.38 0.0296 0.0057 \*  
 Moon -57128-08-08 05:59 J -19144359.39 -19144359.25 -19144359.11 0.0299 0.0242  
 Earth -57128-08-08 08:52 J -19144359.27 -19144359.13 -19144358.97 0.0299 0.0236 \*  
 Venus -57123-01-12 16:18 J -19142741.01 -19142740.82 -19142740.62 0.0296 0.0080  
 Mars -57118-07-18 06:13 J -19140728.41 -19140728.24 -19140728.05 0.0274 0.0218  
 Mercury -57117-07-11 20:09 J -19140368.80 -19140368.66 -19140368.52 0.0271 0.0170  
 Mercury -57117-10-08 16:18 J -19140280.00 -19140279.82 -19140279.64 0.0270 0.0046  
 Mercury -57116-01-05 12:28 J -19140191.15 -19140190.98 -19140190.80 0.0269 0.0079  
 Mercury -57116-04-04 08:52 J -19140102.24 -19140102.13 -19140102.01 0.0269 0.0204  
 Earth -57115-01-14 23:16 J -19139816.73 -19139816.53 -19139816.31 0.0267 0.0149  
 Moon -57115-01-14 23:30 J -19139816.70 -19139816.52 -19139816.32 0.0267 0.0159 \*  
 Earth -57114-01-26 23:16 J -19139439.77 -19139439.53 -19139439.29 0.0264 0.0062  
 Moon -57114-01-27 02:52 J -19139439.62 -19139439.38 -19139439.13 0.0264 0.0047 \*  
 Moon -57113-02-07 20:23 J -19139062.69 -19139062.65 -19139062.59 0.0263 0.0257  
 Venus -57108-09-24 03:35 J -19137007.57 -19137007.35 -19137007.13 0.0266 0.0017  
 Mars -57102-09-05 07:54 J -19134835.42 -19134835.17 -19134834.91 0.0288 0.0137  
 Mercury -57101-01-31 03:21 J -19134687.41 -19134687.36 -19134687.30 0.0289 0.0261  
 Mercury -57101-04-28 16:18 J -19134598.94 -19134598.82 -19134598.71 0.0290 0.0146  
 Mercury -57101-07-26 05:01 J -19134510.42 -19134510.29 -19134510.16 0.0291 0.0031  
 Mercury -57101-10-22 17:45 J -19134421.89 -19134421.76 -19134421.63 0.0292 0.0084  
 Mercury -57100-01-19 06:13 J -19134333.33 -19134333.24 -19134333.14 0.0293 0.0199  
 Earth -57100-07-19 05:30 J -19134152.45 -19134152.27 -19134152.07 0.0295 0.0183  
 Moon -57100-07-19 09:06 J -19134152.31 -19134152.12 -19134151.94 0.0295 0.0186 \*  
 Earth -57099-08-02 15:49 J -19133773.07 -19133772.84 -19133772.61 0.0297 0.0107  
 Moon -57099-08-02 18:42 J -19133772.95 -19133772.72 -19133772.49 0.0297 0.0110 \*

Venus -57094-07-26 02:09 J -19131954.61 -19131954.41 -19131954.20 0.0295 0.0008  
 Mars -57088-09-05 08:23 J -19129721.44 -19129721.15 -19129720.85 0.0272 0.0039  
 Mercury -57088-11-28 20:37 J -19129636.75 -19129636.64 -19129636.51 0.0271 0.0200  
 Mercury -57087-02-25 16:47 J -19129547.98 -19129547.80 -19129547.63 0.0270 0.0076  
 Mercury -57087-05-25 12:57 J -19129459.14 -19129458.96 -19129458.78 0.0269 0.0048  
 Mercury -57087-08-22 09:06 J -19129370.25 -19129370.12 -19129369.97 0.0269 0.0173  
 Moon -57086-01-10 02:23 J -19129229.49 -19129229.40 -19129229.30 0.0268 0.0247  
 Earth -57086-01-10 02:37 J -19129229.49 -19129229.39 -19129229.28 0.0268 0.0241 \*  
 Moon -57085-01-21 23:59 J -19128852.74 -19128852.50 -19128852.25 0.0265 0.0046  
 Earth -57085-01-22 03:49 J -19128852.59 -19128852.34 -19128852.09 0.0265 0.0031 \*  
 Moon -57084-02-02 00:57 J -19128475.64 -19128475.46 -19128475.26 0.0263 0.0164  
 Earth -57084-02-02 01:40 J -19128475.61 -19128475.43 -19128475.24 0.0263 0.0174 \*  
 Jupiter -57080-01-17 18:28 J -19127030.13 -19127029.73 -19127029.30 0.0262 0.0116  
 Venus -57078-04-06 08:23 J -19126221.36 -19126221.15 -19126220.94 0.0266 0.0065  
 Mercury -57072-09-15 18:28 J -19123866.84 -19123866.73 -19123866.62 0.0291 0.0177  
 Mars -57072-10-25 07:11 J -19123827.43 -19123827.20 -19123826.95 0.0291 0.0160  
 Mercury -57072-12-13 07:11 J -19123778.33 -19123778.20 -19123778.06 0.0292 0.0062  
 Mercury -57071-03-11 19:54 J -19123689.80 -19123689.67 -19123689.53 0.0292 0.0055  
 Mercury -57071-06-08 08:37 J -19123601.25 -19123601.14 -19123601.03 0.0293 0.0170  
 Mercury -57071-09-04 21:06 J -19123512.65 -19123512.62 -19123512.59 0.0294 0.0285  
 Moon -57070-07-27 14:52 J -19123187.11 -19123186.88 -19123186.64 0.0297 0.0020  
 Earth -57070-07-27 17:16 J -19123187.02 -19123186.78 -19123186.53 0.0297 0.0021 \*  
 Earth -57069-08-10 05:30 J -19122807.36 -19122807.27 -19122807.16 0.0299 0.0273  
 Moon -57069-08-10 06:28 J -19122807.30 -19122807.23 -19122807.15 0.0299 0.0281 \*  
 Venus -57064-02-04 10:18 J -19121168.27 -19121168.07 -19121167.87 0.0295 0.0062  
 Mercury -57058-04-17 21:49 J -19118904.68 -19118904.59 -19118904.49 0.0271 0.0227  
 Mercury -57058-07-15 17:59 J -19118815.92 -19118815.75 -19118815.59 0.0270 0.0103  
 Mercury -57058-10-12 14:09 J -19118727.10 -19118726.91 -19118726.73 0.0269 0.0022  
 Mercury -57057-01-09 10:18 J -19118638.22 -19118638.07 -19118637.91 0.0269 0.0146  
 Earth -57056-01-16 11:16 J -19118265.25 -19118265.03 -19118264.81 0.0266 0.0122

Moon -57056-01-16 15:06 J -19118265.08 -19118264.87 -19118264.66 0.0266 0.0134 \*  
 Earth -57055-01-28 10:33 J -19117888.29 -19117888.06 -19117887.82 0.0264 0.0087  
 Moon -57055-01-28 11:59 J -19117888.24 -19117888.00 -19117887.74 0.0264 0.0073 \*  
 Venus -57049-03-01 10:04 J -19115664.21 -19115664.08 -19115663.94 0.0266 0.0207  
 Venus -57049-10-16 17:01 J -19115434.98 -19115434.79 -19115434.59 0.0267 0.0126  
 Mercury -57042-02-02 21:49 J -19113134.68 -19113134.59 -19113134.49 0.0290 0.0198  
 Mercury -57042-05-02 10:47 J -19113046.18 -19113046.05 -19113045.92 0.0291 0.0082  
 Mercury -57042-07-29 23:30 J -19112957.65 -19112957.52 -19112957.39 0.0292 0.0033  
 Mercury -57042-10-26 12:13 J -19112869.11 -19112868.99 -19112868.88 0.0293 0.0148  
 Mercury -57041-01-23 00:42 J -19112780.52 -19112780.47 -19112780.41 0.0293 0.0263  
 Earth -57041-07-21 01:54 J -19112600.62 -19112600.42 -19112600.20 0.0295 0.0146  
 Moon -57041-07-21 04:33 J -19112600.52 -19112600.31 -19112600.09 0.0295 0.0151 \*  
 Moon -57040-08-04 11:45 J -19112221.22 -19112221.01 -19112220.79 0.0298 0.0149  
 Earth -57040-08-04 12:42 J -19112221.18 -19112220.97 -19112220.75 0.0298 0.0145 \*  
 Venus -57036-12-31 02:37 J -19110611.40 -19110611.39 -19110611.36 0.0297 0.0295  
 Venus -57035-08-17 20:23 J -19110381.82 -19110381.65 -19110381.46 0.0295 0.0138  
 Mars -57030-12-13 05:16 J -19108438.50 -19108438.28 -19108438.05 0.0274 0.0175  
 Mercury -57029-09-03 23:01 J -19108172.60 -19108172.54 -19108172.48 0.0271 0.0254  
 Mercury -57029-12-01 18:42 J -19108083.87 -19108083.72 -19108083.56 0.0271 0.0131  
 Mercury -57028-02-28 14:52 J -19107995.06 -19107994.88 -19107994.70 0.0270 0.0007  
 Mercury -57028-05-28 11:01 J -19107906.20 -19107906.04 -19107905.87 0.0269 0.0117  
 Mercury -57028-08-25 07:25 J -19107817.27 -19107817.19 -19107817.11 0.0268 0.0241  
 Moon -57027-01-11 12:13 J -19107678.11 -19107677.99 -19107677.84 0.0267 0.0223  
 Earth -57027-01-11 15:49 J -19107677.97 -19107677.84 -19107677.68 0.0267 0.0215 \*  
 Moon -57026-01-23 14:37 J -19107301.13 -19107300.89 -19107300.65 0.0265 0.0019  
 Earth -57026-01-23 16:18 J -19107301.07 -19107300.82 -19107300.57 0.0265 0.0005 \*  
 Earth -57025-02-04 13:40 J -19106924.09 -19106923.93 -19106923.77 0.0263 0.0200  
 Moon -57025-02-04 16:18 J -19106923.97 -19106923.82 -19106923.64 0.0263 0.0190 \*  
 Venus -57020-09-11 14:52 J -19104878.05 -19104877.88 -19104877.71 0.0265 0.0159  
 Venus -57019-04-28 21:49 J -19104648.75 -19104648.59 -19104648.42 0.0267 0.0173

Mars	-57013-01-30 23:59 J	-19102545.77	-19102545.50	-19102545.22	0.0289	0.0095
Mercury	-57013-06-21 23:45 J	-19102402.59	-19102402.51	-19102402.43	0.0290	0.0231
Mercury	-57013-09-18 12:42 J	-19102314.09	-19102313.97	-19102313.85	0.0291	0.0116
Mercury	-57013-12-16 01:25 J	-19102225.57	-19102225.44	-19102225.30	0.0292	0.0005
Mercury	-57012-03-14 14:09 J	-19102137.03	-19102136.91	-19102136.79	0.0293	0.0115
Mercury	-57012-06-11 02:37 J	-19102048.46	-19102048.39	-19102048.30	0.0294	0.0231
Moon	-57012-07-15 00:13 J	-19102014.56	-19102014.49	-19102014.41	0.0294	0.0277
Earth	-57012-07-15 02:37 J	-19102014.48	-19102014.39	-19102014.29	0.0294	0.0270 *
Earth	-57011-07-29 11:59 J	-19101635.24	-19101635.00	-19101634.76	0.0297	0.0016
Moon	-57011-07-29 13:11 J	-19101635.19	-19101634.95	-19101634.72	0.0297	0.0017 *
Venus	-57006-07-13 10:04 J	-19099825.20	-19099825.08	-19099824.95	0.0297	0.0232
Venus	-57005-02-28 03:49 J	-19099595.49	-19099595.34	-19099595.19	0.0295	0.0200

# 57TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 57th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-56999-01-31 07:25 J	-19097431.46	-19097431.19	-19097430.90	0.0271	0.0089		
Mercury	-56999-04-20 19:40 J	-19097351.82	-19097351.68	-19097351.53	0.0270	0.0159		
Mercury	-56999-07-18 15:49 J	-19097263.02	-19097262.84	-19097262.66	0.0270	0.0036		
Mercury	-56999-10-15 11:59 J	-19097174.17	-19097174.00	-19097173.83	0.0269	0.0089		
Mercury	-56998-01-12 08:09 J	-19097085.26	-19097085.16	-19097085.04	0.0268	0.0214		
Earth	-56997-01-18 23:30 J	-19096713.75	-19096713.52	-19096713.28	0.0266	0.0096		
Moon	-56997-01-19 01:25 J	-19096713.67	-19096713.44	-19096713.21	0.0266	0.0108 *		

Moon -56996-01-29 19:25 J -19096336.92 -19096336.69 -19096336.45 0.0264 0.0098  
 Earth -56996-01-29 22:18 J -19096336.79 -19096336.57 -19096336.34 0.0264 0.0113 \*  
 Venus -56990-03-24 22:47 J -19094091.75 -19094091.55 -19094091.34 0.0266 0.0101  
 Venus -56990-11-09 05:45 J -19093862.35 -19093862.26 -19093862.14 0.0267 0.0234  
 Mercury -56984-11-09 03:06 J -19091670.43 -19091670.37 -19091670.30 0.0290 0.0253  
 Mercury -56983-02-05 16:04 J -19091581.95 -19091581.83 -19091581.71 0.0291 0.0138  
 Mars -56983-03-22 13:11 J -19091537.12 -19091536.95 -19091536.75 0.0291 0.0221  
 Mercury -56983-05-05 04:47 J -19091493.43 -19091493.30 -19091493.16 0.0292 0.0025  
 Mercury -56983-08-01 17:45 J -19091404.89 -19091404.76 -19091404.64 0.0292 0.0094  
 Mercury -56983-10-29 06:13 J -19091316.33 -19091316.24 -19091316.15 0.0293 0.0208  
 Moon -56982-07-23 18:42 J -19091048.95 -19091048.72 -19091048.49 0.0295 0.0113  
 Earth -56982-07-23 19:54 J -19091048.89 -19091048.67 -19091048.44 0.0295 0.0111 \*  
 Moon -56981-08-06 03:49 J -19090669.52 -19090669.34 -19090669.14 0.0298 0.0186  
 Earth -56981-08-06 07:25 J -19090669.38 -19090669.19 -19090668.99 0.0298 0.0182 \*  
 Venus -56976-01-22 20:37 J -19089038.81 -19089038.64 -19089038.46 0.0296 0.0154  
 Venus -56976-09-09 14:09 J -19088808.98 -19088808.91 -19088808.84 0.0294 0.0276  
 Mercury -56970-09-07 20:52 J -19086619.76 -19086619.63 -19086619.50 0.0271 0.0185  
 Mercury -56970-12-05 16:47 J -19086530.97 -19086530.80 -19086530.62 0.0270 0.0062  
 Mercury -56969-03-03 12:57 J -19086442.14 -19086441.96 -19086441.78 0.0269 0.0062  
 Mercury -56969-05-31 09:06 J -19086353.25 -19086353.12 -19086352.98 0.0268 0.0186  
 Moon -56968-01-13 03:06 J -19086126.53 -19086126.37 -19086126.20 0.0267 0.0194  
 Earth -56968-01-13 05:01 J -19086126.46 -19086126.29 -19086126.10 0.0267 0.0186 \*  
 Earth -56967-01-25 04:33 J -19085749.56 -19085749.31 -19085749.06 0.0264 0.0023  
 Moon -56967-01-25 07:25 J -19085749.44 -19085749.19 -19085748.95 0.0264 0.0009 \*  
 Earth -56966-02-06 01:11 J -19085372.57 -19085372.45 -19085372.32 0.0263 0.0226  
 Moon -56966-02-06 04:18 J -19085372.46 -19085372.32 -19085372.17 0.0263 0.0215 \*  
 Venus -56961-10-04 03:35 J -19083305.57 -19083305.35 -19083305.14 0.0265 0.0055  
 Mercury -56954-03-29 04:47 J -19080938.31 -19080938.30 -19080938.29 0.0290 0.0288  
 Mercury -56954-06-25 17:45 J -19080849.87 -19080849.76 -19080849.65 0.0291 0.0173  
 Mercury -56954-09-22 06:42 J -19080761.36 -19080761.22 -19080761.09 0.0292 0.0058



Mercury -56954-12-19 19:25 J -19080672.83 -19080672.69 -19080672.56 0.0293 0.0059  
 Mercury -56953-03-17 07:54 J -19080584.27 -19080584.17 -19080584.06 0.0293 0.0174  
 Mercury -56953-06-13 20:37 J -19080495.66 -19080495.64 -19080495.62 0.0294 0.0288  
 Earth -56953-07-16 18:42 J -19080462.86 -19080462.72 -19080462.58 0.0295 0.0237  
 Moon -56953-07-16 20:37 J -19080462.77 -19080462.64 -19080462.51 0.0295 0.0242 \*  
 Earth -56952-07-31 04:33 J -19080083.54 -19080083.31 -19080083.07 0.0298 0.0052  
 Moon -56952-07-31 08:09 J -19080083.39 -19080083.16 -19080082.92 0.0298 0.0052 \*  
 Venus -56947-08-05 02:23 J -19078252.59 -19078252.40 -19078252.20 0.0296 0.0096  
 Mars -56941-05-08 23:30 J -19076148.77 -19076148.52 -19076148.25 0.0273 0.0129  
 Mercury -56940-01-24 21:06 J -19075887.72 -19075887.62 -19075887.50 0.0271 0.0217  
 Mercury -56940-04-23 17:01 J -19075798.95 -19075798.79 -19075798.61 0.0270 0.0094  
 Mercury -56940-07-21 13:11 J -19075710.13 -19075709.95 -19075709.76 0.0269 0.0031  
 Mercury -56940-10-18 09:21 J -19075621.25 -19075621.11 -19075620.95 0.0268 0.0155  
 Moon -56938-01-20 07:54 J -19075162.41 -19075162.17 -19075161.93 0.0265 0.0083  
 Earth -56938-01-20 10:18 J -19075162.30 -19075162.07 -19075161.82 0.0265 0.0070 \*  
 Moon -56937-02-01 05:30 J -19074785.48 -19074785.27 -19074785.05 0.0263 0.0125  
 Earth -56937-02-01 08:37 J -19074785.35 -19074785.14 -19074784.92 0.0263 0.0138 \*  
 Venus -56931-04-16 10:33 J -19072519.28 -19072519.06 -19072518.84 0.0266 0.0004  
 Mars -56925-06-26 21:35 J -19070255.89 -19070255.60 -19070255.32 0.0289 0.0044  
 Mercury -56925-11-11 20:37 J -19070117.73 -19070117.64 -19070117.54 0.0290 0.0198  
 Mercury -56924-02-08 09:35 J -19070029.23 -19070029.10 -19070028.97 0.0291 0.0083  
 Mercury -56924-05-07 22:18 J -19069940.70 -19069940.57 -19069940.43 0.0292 0.0033  
 Mercury -56924-08-04 11:01 J -19069852.15 -19069852.04 -19069851.92 0.0293 0.0148  
 Mercury -56924-10-31 23:30 J -19069763.57 -19069763.52 -19069763.46 0.0294 0.0263  
 Moon -56923-07-25 06:13 J -19069497.47 -19069497.24 -19069497.00 0.0296 0.0079  
 Earth -56923-07-25 10:18 J -19069497.31 -19069497.07 -19069496.84 0.0296 0.0077 \*  
 Moon -56922-08-08 19:54 J -19069117.82 -19069117.67 -19069117.50 0.0298 0.0220  
 Earth -56922-08-08 22:04 J -19069117.74 -19069117.58 -19069117.41 0.0298 0.0216 \*  
 Venus -56917-02-15 11:59 J -19067466.20 -19067466.00 -19067465.79 0.0296 0.0023  
 Mercury -56911-06-13 22:18 J -19065155.64 -19065155.57 -19065155.49 0.0271 0.0242

Mars -56911-06-28 03:49 J -19065141.60 -19065141.34 -19065141.08 0.0271 0.0128  
 Mercury -56911-09-10 18:13 J -19065066.90 -19065066.74 -19065066.58 0.0270 0.0120  
 Mercury -56911-12-08 14:09 J -19064978.09 -19064977.91 -19064977.72 0.0270 0.0008  
 Mercury -56910-03-07 10:18 J -19064889.22 -19064889.07 -19064888.90 0.0269 0.0127  
 Mercury -56910-06-04 06:42 J -19064800.28 -19064800.22 -19064800.15 0.0268 0.0251  
 Earth -56909-01-15 16:18 J -19064575.02 -19064574.82 -19064574.62 0.0266 0.0159  
 Moon -56909-01-15 18:13 J -19064574.93 -19064574.74 -19064574.56 0.0266 0.0168 \*  
 Earth -56908-01-26 15:06 J -19064198.11 -19064197.87 -19064197.63 0.0264 0.0050  
 Moon -56908-01-26 18:13 J -19064197.99 -19064197.74 -19064197.48 0.0264 0.0035 \*  
 Moon -56907-02-07 09:35 J -19063821.18 -19063821.10 -19063820.98 0.0262 0.0243  
 Earth -56907-02-07 11:01 J -19063821.10 -19063821.04 -19063820.96 0.0262 0.0251 \*  
 Venus -56902-10-27 14:37 J -19061733.10 -19061732.89 -19061732.67 0.0266 0.0046  
 Mercury -56895-03-31 21:49 J -19059385.66 -19059385.59 -19059385.51 0.0290 0.0237  
 Mercury -56895-06-28 10:47 J -19059297.17 -19059297.05 -19059296.92 0.0291 0.0122  
 Mars -56895-08-16 11:01 J -19059248.18 -19059248.04 -19059247.89 0.0292 0.0249  
 Mercury -56895-09-24 23:45 J -19059208.65 -19059208.51 -19059208.38 0.0292 0.0010  
 Mercury -56895-12-22 12:13 J -19059120.11 -19059119.99 -19059119.86 0.0293 0.0110  
 Mercury -56894-03-21 00:57 J -19059031.54 -19059031.46 -19059031.37 0.0294 0.0225  
 Earth -56894-07-19 05:45 J -19058911.43 -19058911.26 -19058911.09 0.0295 0.0207  
 Moon -56894-07-19 09:35 J -19058911.28 -19058911.10 -19058910.93 0.0295 0.0208 \*  
 Earth -56893-08-01 16:18 J -19058532.05 -19058531.82 -19058531.59 0.0298 0.0083  
 Moon -56893-08-01 17:59 J -19058531.99 -19058531.75 -19058531.51 0.0298 0.0085 \*  
 Venus -56888-08-27 16:18 J -19056680.02 -19056679.82 -19056679.61 0.0296 0.0030  
 Mercury -56881-01-28 17:59 J -19054334.90 -19054334.75 -19054334.60 0.0270 0.0156  
 Mercury -56881-04-26 13:54 J -19054246.10 -19054245.92 -19054245.74 0.0270 0.0033  
 Mercury -56881-07-24 10:04 J -19054157.25 -19054157.08 -19054156.91 0.0269 0.0091  
 Mercury -56881-10-21 06:13 J -19054068.34 -19054068.24 -19054068.12 0.0268 0.0215  
 Moon -56880-01-09 16:33 J -19053987.86 -19053987.81 -19053987.73 0.0267 0.0258  
 Earth -56880-01-09 17:59 J -19053987.81 -19053987.75 -19053987.67 0.0267 0.0254 \*  
 Moon -56879-01-21 15:35 J -19053611.08 -19053610.85 -19053610.60 0.0265 0.0058

Earth -56879-01-21 18:57 J -19053610.95 -19053610.71 -19053610.46 0.0265 0.0044 \*  
 Earth -56878-02-02 16:18 J -19053234.00 -19053233.82 -19053233.61 0.0263 0.0163  
 Moon -56878-02-02 17:30 J -19053233.95 -19053233.77 -19053233.56 0.0263 0.0152 \*  
 Venus -56873-09-21 13:54 J -19051176.02 -19051175.92 -19051175.81 0.0265 0.0231  
 Venus -56872-05-08 20:23 J -19050946.84 -19050946.65 -19050946.44 0.0266 0.0099  
 Mercury -56866-08-19 00:28 J -19048653.53 -19048653.48 -19048653.42 0.0290 0.0264  
 Mercury -56866-11-15 13:25 J -19048565.05 -19048564.94 -19048564.82 0.0291 0.0149  
 Mercury -56865-02-12 02:23 J -19048476.53 -19048476.40 -19048476.27 0.0292 0.0034  
 Mercury -56865-05-10 15:06 J -19048388.00 -19048387.87 -19048387.74 0.0292 0.0082  
 Mercury -56865-08-07 03:35 J -19048299.44 -19048299.35 -19048299.24 0.0293 0.0198  
 Moon -56864-07-26 19:11 J -19047945.93 -19047945.70 -19047945.47 0.0296 0.0045  
 Earth -56864-07-26 20:09 J -19047945.90 -19047945.66 -19047945.42 0.0296 0.0047 \*  
 Earth -56863-08-10 08:37 J -19047566.27 -19047566.14 -19047566.00 0.0299 0.0247  
 Moon -56863-08-10 10:47 J -19047566.17 -19047566.05 -19047565.93 0.0299 0.0254 \*  
 Venus -56858-03-10 00:42 J -19045893.66 -19045893.47 -19045893.27 0.0295 0.0100  
 Mars -56853-10-03 12:57 J -19043859.24 -19043858.96 -19043858.68 0.0273 0.0095  
 Mercury -56852-06-16 18:42 J -19043602.85 -19043602.72 -19043602.59 0.0271 0.0183  
 Mercury -56852-09-13 14:37 J -19043514.06 -19043513.89 -19043513.71 0.0270 0.0061  
 Mercury -56852-12-11 10:47 J -19043425.23 -19043425.05 -19043424.87 0.0269 0.0063  
 Mercury -56851-03-10 06:57 J -19043336.34 -19043336.21 -19043336.08 0.0269 0.0187  
 Earth -56850-01-16 23:59 J -19043023.70 -19043023.50 -19043023.27 0.0266 0.0134  
 Moon -56850-01-17 03:49 J -19043023.54 -19043023.34 -19043023.12 0.0266 0.0143 \*  
 Moon -56849-01-28 21:49 J -19042646.84 -19042646.59 -19042646.34 0.0264 0.0061  
 Earth -56849-01-28 22:33 J -19042646.79 -19042646.56 -19042646.31 0.0264 0.0075 \*  
 Venus -56843-04-03 17:30 J -19040389.91 -19040389.77 -19040389.60 0.0264 0.0188  
 Venus -56843-11-18 23:59 J -19040160.68 -19040160.50 -19040160.31 0.0266 0.0141  
 Mars -56837-11-20 07:40 J -19037967.47 -19037967.18 -19037966.89 0.0289 0.0024  
 Mercury -56836-04-03 14:23 J -19037833.00 -19037832.90 -19037832.80 0.0290 0.0191  
 Mercury -56836-07-01 03:21 J -19037744.49 -19037744.36 -19037744.23 0.0291 0.0076  
 Mercury -56836-09-27 16:04 J -19037655.97 -19037655.83 -19037655.70 0.0292 0.0040

Mercury -56836-12-25 04:33 J -19037567.42 -19037567.31 -19037567.19 0.0293 0.0155  
 Mercury -56835-03-23 17:16 J -19037478.83 -19037478.78 -19037478.73 0.0294 0.0269  
 Moon -56835-07-20 12:13 J -19037360.18 -19037359.99 -19037359.78 0.0295 0.0178  
 Earth -56835-07-20 12:28 J -19037360.17 -19037359.98 -19037359.79 0.0295 0.0181 \*  
 Moon -56834-08-03 20:09 J -19036980.88 -19036980.66 -19036980.43 0.0298 0.0118  
 Earth -56834-08-03 23:16 J -19036980.75 -19036980.53 -19036980.30 0.0298 0.0111 \*  
 Venus -56829-02-02 08:52 J -19035337.17 -19035337.13 -19035337.09 0.0298 0.0290  
 Venus -56829-09-19 02:52 J -19035107.55 -19035107.38 -19035107.20 0.0296 0.0144  
 Mercury -56823-11-03 17:30 J -19032870.86 -19032870.77 -19032870.66 0.0271 0.0224  
 Mars -56823-11-22 01:40 J -19032852.66 -19032852.43 -19032852.19 0.0271 0.0161  
 Mercury -56822-01-31 13:25 J -19032782.10 -19032781.94 -19032781.77 0.0270 0.0102  
 Mercury -56822-04-30 09:35 J -19032693.28 -19032693.10 -19032692.92 0.0269 0.0022  
 Mercury -56822-07-28 05:45 J -19032604.41 -19032604.26 -19032604.10 0.0269 0.0146  
 Moon -56821-01-11 20:09 J -19032436.77 -19032436.66 -19032436.55 0.0267 0.0239  
 Earth -56821-01-11 23:45 J -19032436.63 -19032436.51 -19032436.38 0.0267 0.0231 \*  
 Earth -56820-01-23 00:13 J -19032059.74 -19032059.49 -19032059.24 0.0265 0.0021  
 Moon -56820-01-23 00:28 J -19032059.72 -19032059.48 -19032059.25 0.0265 0.0034 \*  
 Earth -56819-02-03 21:21 J -19031682.78 -19031682.61 -19031682.43 0.0263 0.0185  
 Moon -56819-02-04 00:57 J -19031682.63 -19031682.46 -19031682.26 0.0263 0.0176 \*  
 Venus -56814-10-14 22:04 J -19029603.76 -19029603.58 -19029603.39 0.0265 0.0141  
 Venus -56813-05-31 04:47 J -19029374.46 -19029374.30 -19029374.15 0.0266 0.0189  
 Mercury -56807-08-21 16:18 J -19027100.90 -19027100.82 -19027100.72 0.0290 0.0223  
 Mercury -56807-11-18 05:30 J -19027012.40 -19027012.27 -19027012.15 0.0291 0.0108  
 Mars -56806-01-10 08:23 J -19026959.22 -19026959.15 -19026959.07 0.0291 0.0280  
 Mercury -56806-02-14 18:13 J -19026923.87 -19026923.74 -19026923.60 0.0292 0.0008  
 Mercury -56806-05-14 06:57 J -19026835.33 -19026835.21 -19026835.09 0.0293 0.0123  
 Mercury -56806-08-10 19:40 J -19026746.76 -19026746.68 -19026746.61 0.0294 0.0238  
 Earth -56805-07-27 23:59 J -19026394.74 -19026394.50 -19026394.26 0.0297 0.0022  
 Moon -56805-07-28 03:21 J -19026394.59 -19026394.36 -19026394.12 0.0297 0.0015 \*  
 Earth -56804-08-11 13:11 J -19026015.04 -19026014.95 -19026014.85 0.0299 0.0273

Moon -56804-08-11 16:33 J -19026014.87 -19026014.81 -19026014.72 0.0299 0.0283 \*  
 Venus -56800-08-14 16:04 J -19024550.96 -19024550.83 -19024550.69 0.0297 0.0225  
 Venus -56799-04-01 10:18 J -19024321.22 -19024321.07 -19024320.93 0.0295 0.0208  
 Mercury -56793-03-22 17:59 J -19022138.80 -19022138.75 -19022138.68 0.0272 0.0254  
 Mercury -56793-06-19 13:54 J -19022050.08 -19022049.92 -19022049.76 0.0271 0.0131  
 Mercury -56793-09-16 09:49 J -19021961.27 -19021961.09 -19021960.90 0.0270 0.0010  
 Mercury -56793-12-14 05:59 J -19021872.41 -19021872.25 -19021872.08 0.0269 0.0116  
 Mercury -56792-03-13 02:23 J -19021783.48 -19021783.40 -19021783.32 0.0268 0.0240  
 Earth -56791-01-18 04:33 J -19021472.53 -19021472.31 -19021472.08 0.0266 0.0111  
 Moon -56791-01-18 04:47 J -19021472.52 -19021472.30 -19021472.06 0.0266 0.0123 \*  
 Moon -56790-01-29 23:16 J -19021095.77 -19021095.53 -19021095.29 0.0264 0.0084  
 Earth -56790-01-30 02:52 J -19021095.61 -19021095.38 -19021095.15 0.0264 0.0097 \*  
 Venus -56784-04-26 01:11 J -19018817.65 -19018817.45 -19018817.24 0.0264 0.0100  
 Venus -56784-12-11 07:25 J -19018588.29 -19018588.19 -19018588.07 0.0266 0.0229  
 Mercury -56777-01-08 17:01 J -19016368.83 -19016368.79 -19016368.73 0.0289 0.0266  
 Mercury -56777-04-06 05:59 J -19016280.36 -19016280.25 -19016280.13 0.0290 0.0152  
 Mercury -56777-07-03 18:57 J -19016191.85 -19016191.71 -19016191.58 0.0291 0.0037  
 Mercury -56777-09-30 07:40 J -19016103.31 -19016103.18 -19016103.05 0.0292 0.0079  
 Mercury -56777-12-27 20:09 J -19016014.75 -19016014.66 -19016014.56 0.0293 0.0194  
 Moon -56776-07-21 11:16 J -19015809.23 -19015809.03 -19015808.81 0.0295 0.0151  
 Earth -56776-07-21 14:52 J -19015809.08 -19015808.88 -19015808.67 0.0295 0.0158 \*  
 Moon -56775-08-04 23:01 J -19015429.74 -19015429.54 -19015429.33 0.0298 0.0147  
 Earth -56775-08-05 01:40 J -19015429.63 -19015429.43 -19015429.20 0.0298 0.0136 \*  
 Venus -56770-02-24 17:01 J -19013764.94 -19013764.79 -19013764.62 0.0297 0.0185  
 Venus -56770-10-12 11:01 J -19013535.14 -19013535.04 -19013534.93 0.0295 0.0248  
 Mars -56764-02-26 20:52 J -19011570.91 -19011570.63 -19011570.34 0.0273 0.0072  
 Mercury -56764-11-06 11:59 J -19011318.13 -19011318.00 -19011317.86 0.0271 0.0177  
 Mercury -56763-02-03 07:54 J -19011229.34 -19011229.17 -19011228.99 0.0270 0.0054  
 Mercury -56763-05-03 04:04 J -19011140.50 -19011140.33 -19011140.15 0.0269 0.0071  
 Mercury -56763-07-31 00:13 J -19011051.60 -19011051.49 -19011051.35 0.0268 0.0195

Earth -56762-01-13 01:40 J -19010885.57 -19010885.43 -19010885.27 0.0267 0.0211  
 Moon -56762-01-13 01:25 J -19010885.56 -19010885.44 -19010885.30 0.0267 0.0222 \*  
 Earth -56761-01-25 02:09 J -19010508.66 -19010508.41 -19010508.16 0.0264 0.0001  
 Moon -56761-01-25 05:45 J -19010508.51 -19010508.26 -19010508.02 0.0264 0.0015 \*  
 Earth -56760-02-04 23:01 J -19010131.69 -19010131.54 -19010131.38 0.0263 0.0205  
 Moon -56760-02-04 23:45 J -19010131.67 -19010131.51 -19010131.33 0.0263 0.0198 \*  
 Venus -56755-11-06 04:33 J -19008031.52 -19008031.31 -19008031.10 0.0265 0.0056  
 Mars -56748-04-15 17:01 J -19005679.08 -19005678.79 -19005678.50 0.0289 0.0005  
 Mercury -56748-08-24 07:54 J -19005548.28 -19005548.17 -19005548.07 0.0290 0.0186  
 Mercury -56748-11-20 20:37 J -19005459.77 -19005459.64 -19005459.51 0.0291 0.0072  
 Mercury -56747-02-17 09:21 J -19005371.24 -19005371.11 -19005370.97 0.0292 0.0045  
 Mercury -56747-05-16 22:04 J -19005282.69 -19005282.58 -19005282.46 0.0293 0.0159  
 Earth -56747-07-15 14:37 J -19005222.93 -19005222.89 -19005222.82 0.0293 0.0285  
 Moon -56747-07-15 18:28 J -19005222.79 -19005222.73 -19005222.67 0.0293 0.0283  
 Mercury -56747-08-13 10:47 J -19005194.10 -19005194.05 -19005194.01 0.0294 0.0273  
 Earth -56746-07-29 23:59 J -19004843.74 -19004843.50 -19004843.26 0.0297 0.0000  
 Moon -56746-07-30 02:23 J -19004843.65 -19004843.40 -19004843.15 0.0297 0.0010 \*  
 Earth -56745-08-12 13:11 J -19004463.98 -19004463.95 -19004463.91 0.0299 0.0295  
 Venus -56741-09-05 22:47 J -19002978.74 -19002978.55 -19002978.36 0.0297 0.0126  
 Mercury -56734-03-26 11:59 J -19000586.11 -19000586.00 -19000585.88 0.0271 0.0210  
 Mars -56734-04-17 17:16 J -19000563.99 -19000563.78 -19000563.55 0.0271 0.0183  
 Mercury -56734-06-23 07:54 J -19000497.34 -19000497.17 -19000497.00 0.0271 0.0087  
 Mercury -56734-09-20 04:04 J -19000408.51 -19000408.33 -19000408.15 0.0270 0.0037  
 Mercury -56734-12-18 00:13 J -19000319.63 -19000319.49 -19000319.34 0.0269 0.0161  
 Moon -56732-01-19 01:40 J -18999921.65 -18999921.43 -18999921.20 0.0266 0.0107  
 Earth -56732-01-19 05:16 J -18999921.50 -18999921.28 -18999921.04 0.0266 0.0092 \*  
 Moon -56731-01-31 01:54 J -18999544.63 -18999544.42 -18999544.19 0.0264 0.0106  
 Earth -56731-01-31 03:21 J -18999544.57 -18999544.36 -18999544.13 0.0264 0.0117 \*  
 Venus -56725-05-18 07:25 J -18997245.41 -18997245.19 -18997244.97 0.0264 0.0017  
 Mercury -56718-01-11 08:09 J -18994816.23 -18994816.16 -18994816.07 0.0289 0.0232

Mercury -56718-04-09 21:06 J -18994727.74 -18994727.62 -18994727.50 0.0290 0.0117  
 Mars -56718-06-04 20:52 J -18994671.67 -18994671.63 -18994671.56 0.0291 0.0285  
 Mercury -56718-07-07 09:49 J -18994639.22 -18994639.09 -18994638.95 0.0291 0.0008  
 Mercury -56718-10-03 22:33 J -18994550.68 -18994550.56 -18994550.43 0.0292 0.0112  
 Mercury -56718-12-31 11:16 J -18994462.12 -18994462.03 -18994461.95 0.0293 0.0226  
 Moon -56717-07-22 11:16 J -18994258.23 -18994258.03 -18994257.81 0.0295 0.0132  
 Earth -56717-07-22 13:11 J -18994258.16 -18994257.95 -18994257.73 0.0295 0.0138 \*  
 Earth -56716-08-05 23:59 J -18993878.70 -18993878.50 -18993878.29 0.0298 0.0155  
 Moon -56716-08-06 01:40 J -18993878.62 -18993878.43 -18993878.23 0.0298 0.0170 \*  
 Venus -56711-03-18 22:33 J -18992192.76 -18992192.56 -18992192.37 0.0297 0.0090  
 Mercury -56705-08-12 09:21 J -18989854.15 -18989854.11 -18989854.05 0.0272 0.0259  
 Mercury -56705-11-09 05:16 J -18989765.43 -18989765.28 -18989765.12 0.0271 0.0136  
 Mercury -56704-02-06 01:25 J -18989676.62 -18989676.44 -18989676.26 0.0270 0.0013  
 Mercury -56704-05-05 21:35 J -18989587.76 -18989587.60 -18989587.43 0.0269 0.0112  
 Mercury -56704-08-02 17:59 J -18989498.83 -18989498.75 -18989498.66 0.0268 0.0236  
 Earth -56703-01-14 00:28 J -18989334.64 -18989334.48 -18989334.31 0.0267 0.0193  
 Moon -56703-01-14 04:04 J -18989334.47 -18989334.33 -18989334.17 0.0267 0.0207 \*  
 Earth -56702-01-26 00:57 J -18988957.71 -18988957.46 -18988957.21 0.0264 0.0018  
 Moon -56702-01-26 02:52 J -18988957.64 -18988957.38 -18988957.13 0.0264 0.0005 \*  
 Moon -56701-02-06 18:28 J -18988580.85 -18988580.73 -18988580.58 0.0262 0.0220  
 Earth -56701-02-06 21:49 J -18988580.71 -18988580.59 -18988580.45 0.0262 0.0223 \*  
 Venus -56696-11-28 09:21 J -18986459.33 -18986459.11 -18986458.89 0.0265 0.0023  
 Mercury -56689-05-30 09:35 J -18984084.14 -18984084.10 -18984084.05 0.0289 0.0269  
 Mercury -56689-08-26 22:33 J -18983995.67 -18983995.56 -18983995.44 0.0290 0.0155  
 Mercury -56689-11-23 11:30 J -18983907.16 -18983907.02 -18983906.89 0.0291 0.0040  
 Mercury -56688-02-20 00:13 J -18983818.62 -18983818.49 -18983818.36 0.0292 0.0075  
 Mercury -56688-05-19 12:42 J -18983730.07 -18983729.97 -18983729.86 0.0293 0.0190  
 Earth -56688-07-16 11:30 J -18983672.11 -18983672.02 -18983671.91 0.0293 0.0267  
 Moon -56688-07-16 13:11 J -18983672.05 -18983671.95 -18983671.83 0.0293 0.0262 \*  
 Moon -56687-07-30 18:28 J -18983292.98 -18983292.73 -18983292.48 0.0297 0.0032

Earth -56687-07-30 20:37 J -18983292.88 -18983292.64 -18983292.40 0.0297 0.0020 \*  
 Venus -56682-09-29 03:21 J -18981406.56 -18981406.36 -18981406.15 0.0297 0.0034  
 Mars -56676-07-23 03:35 J -18979282.64 -18979282.35 -18979282.06 0.0274 0.0055  
 Mercury -56675-03-29 05:01 J -18979033.42 -18979033.29 -18979033.15 0.0271 0.0171  
 Mercury -56675-06-26 01:11 J -18978944.63 -18978944.45 -18978944.27 0.0271 0.0047  
 Mercury -56675-09-22 21:06 J -18978855.79 -18978855.62 -18978855.44 0.0270 0.0078  
 Mercury -56675-12-20 17:30 J -18978766.88 -18978766.77 -18978766.65 0.0269 0.0202  
 Moon -56673-01-21 01:40 J -18978370.65 -18978370.43 -18978370.20 0.0266 0.0090  
 Earth -56673-01-21 03:21 J -18978370.59 -18978370.36 -18978370.11 0.0266 0.0075 \*  
 Earth -56672-02-01 01:40 J -18977993.64 -18977993.43 -18977993.21 0.0264 0.0134  
 Moon -56672-02-01 04:33 J -18977993.52 -18977993.31 -18977993.09 0.0264 0.0124 \*  
 Venus -56667-10-24 06:28 J -18975902.26 -18975902.23 -18975902.20 0.0263 0.0259  
 Venus -56666-06-10 11:59 J -18975673.21 -18975673.00 -18975672.78 0.0265 0.0063  
 Mars -56660-09-08 00:42 J -18973391.76 -18973391.47 -18973391.18 0.0288 0.0003  
 Mercury -56659-01-13 23:01 J -18973263.63 -18973263.54 -18973263.44 0.0289 0.0200  
 Mercury -56659-04-12 11:59 J -18973175.13 -18973175.00 -18973174.87 0.0290 0.0086  
 Mercury -56659-07-10 00:42 J -18973086.61 -18973086.47 -18973086.34 0.0291 0.0029  
 Mercury -56659-10-06 13:11 J -18972998.06 -18972997.95 -18972997.83 0.0292 0.0143  
 Mercury -56658-01-03 01:54 J -18972909.48 -18972909.42 -18972909.36 0.0293 0.0256  
 Earth -56658-07-24 09:35 J -18972707.32 -18972707.10 -18972706.87 0.0295 0.0121  
 Moon -56658-07-24 12:13 J -18972707.21 -18972706.99 -18972706.77 0.0295 0.0109 \*  
 Earth -56657-08-06 20:09 J -18972327.85 -18972327.66 -18972327.46 0.0298 0.0173  
 Moon -56657-08-06 23:30 J -18972327.70 -18972327.52 -18972327.32 0.0298 0.0189 \*  
 Venus -56652-04-10 02:09 J -18970620.61 -18970620.41 -18970620.20 0.0297 0.0004  
 Mercury -56646-08-16 02:09 J -18968301.51 -18968301.41 -18968301.31 0.0272 0.0223  
 Mars -56646-09-10 05:01 J -18968276.49 -18968276.29 -18968276.07 0.0272 0.0194  
 Mercury -56646-11-12 22:04 J -18968212.75 -18968212.58 -18968212.41 0.0271 0.0099  
 Mercury -56645-02-09 18:13 J -18968123.92 -18968123.74 -18968123.56 0.0270 0.0025  
 Mercury -56645-05-08 14:23 J -18968035.05 -18968034.90 -18968034.74 0.0269 0.0149  
 Earth -56644-01-14 20:37 J -18967783.81 -18967783.64 -18967783.45 0.0267 0.0178



Moon -56644-01-14 22:18 J -18967783.74 -18967783.57 -18967783.39 0.0267 0.0192 \*  
 Moon -56643-01-26 18:13 J -18967406.99 -18967406.74 -18967406.48 0.0264 0.0022  
 Earth -56643-01-26 21:35 J -18967406.85 -18967406.60 -18967406.36 0.0264 0.0034 \*  
 Moon -56642-02-07 16:04 J -18967029.92 -18967029.83 -18967029.72 0.0262 0.0238  
 Earth -56642-02-07 18:42 J -18967029.82 -18967029.72 -18967029.62 0.0262 0.0239 \*  
 Venus -56637-05-05 07:25 J -18965116.29 -18965116.19 -18965116.06 0.0264 0.0224  
 Venus -56637-12-20 13:25 J -18964887.14 -18964886.94 -18964886.73 0.0265 0.0100  
 Mercury -56630-06-03 00:13 J -18962531.56 -18962531.49 -18962531.41 0.0289 0.0239  
 Mercury -56630-08-30 13:11 J -18962443.07 -18962442.95 -18962442.83 0.0290 0.0125  
 Mercury -56630-11-27 01:54 J -18962354.55 -18962354.42 -18962354.28 0.0291 0.0011  
 Mercury -56629-02-23 14:37 J -18962266.02 -18962265.89 -18962265.77 0.0292 0.0104  
 Mercury -56629-05-22 03:06 J -18962177.45 -18962177.37 -18962177.28 0.0293 0.0218  
 Moon -56629-07-17 03:49 J -18962121.48 -18962121.34 -18962121.20 0.0293 0.0240  
 Earth -56629-07-17 06:42 J -18962121.34 -18962121.22 -18962121.09 0.0293 0.0251 \*  
 Moon -56628-07-31 12:13 J -18961742.22 -18961741.99 -18961741.75 0.0297 0.0051  
 Earth -56628-07-31 15:35 J -18961742.09 -18961741.85 -18961741.61 0.0297 0.0037 \*  
 Venus -56623-10-21 06:13 J -18959834.44 -18959834.24 -18959834.03 0.0296 0.0052  
 Mercury -56616-01-02 01:25 J -18957569.48 -18957569.44 -18957569.38 0.0272 0.0260  
 Mercury -56616-03-31 21:35 J -18957480.76 -18957480.60 -18957480.45 0.0272 0.0136  
 Mercury -56616-06-28 17:30 J -18957391.95 -18957391.77 -18957391.58 0.0271 0.0014  
 Mercury -56616-09-25 13:54 J -18957303.09 -18957302.92 -18957302.76 0.0270 0.0113  
 Mercury -56616-12-23 10:04 J -18957214.15 -18957214.08 -18957213.99 0.0269 0.0238  
 Earth -56614-01-21 23:30 J -18956819.77 -18956819.52 -18956819.28 0.0266 0.0059  
 Moon -56614-01-22 02:23 J -18956819.63 -18956819.40 -18956819.16 0.0266 0.0074 \*  
 Earth -56613-02-02 21:49 J -18956442.79 -18956442.59 -18956442.38 0.0264 0.0150  
 Moon -56613-02-03 00:57 J -18956442.67 -18956442.46 -18956442.24 0.0264 0.0142 \*  
 Venus -56608-11-15 10:18 J -18954330.22 -18954330.07 -18954329.90 0.0263 0.0183  
 Venus -56607-07-02 16:04 J -18954101.01 -18954100.83 -18954100.64 0.0265 0.0140  
 Mars -56602-12-12 20:37 J -18952111.68 -18952111.64 -18952111.58 0.0284 0.0280  
 Mercury -56601-10-20 00:42 J -18951799.49 -18951799.47 -18951799.44 0.0288 0.0284

Mercury -56600-01-16 13:40 J -18951711.04 -18951710.93 -18951710.82 0.0289 0.0170  
 Mercury -56600-04-15 02:23 J -18951622.53 -18951622.40 -18951622.26 0.0290 0.0057  
 Mercury -56600-07-12 15:06 J -18951534.00 -18951533.87 -18951533.73 0.0291 0.0058  
 Mercury -56600-10-09 03:49 J -18951445.45 -18951445.34 -18951445.23 0.0292 0.0171  
 Mercury -56599-01-05 16:04 J -18951356.85 -18951356.83 -18951356.79 0.0293 0.0285  
 Earth -56599-07-25 05:16 J -18951156.51 -18951156.28 -18951156.05 0.0295 0.0104  
 Moon -56599-07-25 08:23 J -18951156.38 -18951156.15 -18951155.91 0.0295 0.0091 \*  
 Earth -56598-08-08 15:35 J -18950777.04 -18950776.85 -18950776.67 0.0298 0.0190  
 Moon -56598-08-08 15:06 J -18950777.04 -18950776.87 -18950776.68 0.0298 0.0205 \*  
 Venus -56593-05-02 05:16 J -18949048.48 -18949048.28 -18949048.08 0.0297 0.0085  
 Mars -56588-12-15 09:21 J -18946995.39 -18946995.11 -18946994.81 0.0274 0.0049  
 Mercury -56587-08-18 18:13 J -18946748.86 -18946748.74 -18946748.61 0.0272 0.0189  
 Mercury -56587-11-15 14:23 J -18946660.07 -18946659.90 -18946659.72 0.0271 0.0065  
 Mercury -56586-02-12 10:33 J -18946571.24 -18946571.06 -18946570.88 0.0270 0.0060  
 Mercury -56586-05-12 06:57 J -18946482.34 -18946482.21 -18946482.08 0.0269 0.0184  
 Moon -56585-01-16 12:57 J -18946233.14 -18946232.96 -18946232.76 0.0267 0.0178  
 Earth -56585-01-16 16:04 J -18946233.02 -18946232.83 -18946232.63 0.0267 0.0164 \*  
 Moon -56584-01-27 14:23 J -18945856.14 -18945855.90 -18945855.66 0.0265 0.0040  
 Earth -56584-01-27 17:01 J -18945856.03 -18945855.79 -18945855.54 0.0265 0.0050 \*  
 Earth -56583-02-08 14:09 J -18945478.95 -18945478.91 -18945478.83 0.0263 0.0255  
 Moon -56583-02-08 16:18 J -18945478.85 -18945478.82 -18945478.76 0.0263 0.0257 \*  
 Venus -56578-05-28 11:30 J -18943544.20 -18943544.02 -18943543.84 0.0264 0.0148  
 Venus -56577-01-12 17:16 J -18943314.93 -18943314.78 -18943314.61 0.0265 0.0177  
 Mars -56571-01-31 15:06 J -18941104.16 -18941103.87 -18941103.58 0.0288 0.0009  
 Mercury -56571-06-05 14:52 J -18940978.97 -18940978.88 -18940978.78 0.0289 0.0209  
 Mercury -56571-09-02 03:49 J -18940890.47 -18940890.34 -18940890.22 0.0290 0.0095  
 Mercury -56571-11-29 16:33 J -18940801.95 -18940801.81 -18940801.68 0.0291 0.0020  
 Mercury -56570-02-26 05:01 J -18940713.40 -18940713.29 -18940713.17 0.0292 0.0133  
 Mercury -56570-05-25 17:45 J -18940624.83 -18940624.76 -18940624.69 0.0293 0.0246  
 Moon -56570-07-18 23:30 J -18940570.67 -18940570.52 -18940570.36 0.0293 0.0222

Earth -56570-07-19 02:09 J -18940570.55 -18940570.41 -18940570.26 0.0293 0.0235 \*  
 Earth -56569-08-01 10:33 J -18940191.29 -18940191.06 -18940190.82 0.0297 0.0054  
 Moon -56569-08-01 11:16 J -18940191.26 -18940191.03 -18940190.81 0.0297 0.0069 \*  
 Venus -56564-11-12 09:21 J -18938262.29 -18938262.11 -18938261.93 0.0296 0.0136  
 Mercury -56557-01-05 17:30 J -18936016.85 -18936016.77 -18936016.66 0.0272 0.0227  
 Mars -56557-02-03 02:37 J -18935988.58 -18935988.39 -18935988.20 0.0272 0.0209  
 Mercury -56557-04-03 13:40 J -18935928.09 -18935927.93 -18935927.76 0.0272 0.0102  
 Mercury -56557-07-01 09:49 J -18935839.27 -18935839.09 -18935838.91 0.0271 0.0023  
 Mercury -56557-09-28 05:59 J -18935750.39 -18935750.25 -18935750.09 0.0270 0.0148  
 Earth -56556-01-10 15:21 J -18935645.90 -18935645.86 -18935645.79 0.0269 0.0261  
 Earth -56555-01-22 18:42 J -18935268.96 -18935268.72 -18935268.47 0.0266 0.0045  
 Moon -56555-01-22 21:21 J -18935268.85 -18935268.61 -18935268.36 0.0266 0.0057 \*  
 Moon -56554-02-03 15:35 J -18934892.04 -18934891.85 -18934891.64 0.0264 0.0163  
 Earth -56554-02-03 17:45 J -18934891.95 -18934891.76 -18934891.56 0.0264 0.0165 \*  
 Venus -56549-12-07 14:52 J -18932758.07 -18932757.88 -18932757.67 0.0264 0.0106  
 Venus -56548-07-24 20:37 J -18932528.75 -18932528.64 -18932528.51 0.0265 0.0218  
 Mercury -56542-10-23 15:49 J -18930246.91 -18930246.84 -18930246.78 0.0288 0.0251  
 Mercury -56541-01-20 04:33 J -18930158.43 -18930158.31 -18930158.19 0.0289 0.0138  
 Mercury -56541-04-17 17:16 J -18930069.91 -18930069.78 -18930069.64 0.0290 0.0026  
 Mercury -56541-07-15 05:59 J -18929981.38 -18929981.25 -18929981.12 0.0291 0.0089  
 Mercury -56541-10-11 18:28 J -18929892.82 -18929892.73 -18929892.63 0.0292 0.0202  
 Moon -56540-07-26 00:42 J -18929605.71 -18929605.47 -18929605.22 0.0295 0.0071  
 Earth -56540-07-26 01:54 J -18929605.64 -18929605.42 -18929605.18 0.0295 0.0087 \*  
 Moon -56539-08-09 08:09 J -18929226.31 -18929226.16 -18929226.00 0.0298 0.0224  
 Earth -56539-08-09 11:45 J -18929226.18 -18929226.01 -18929225.84 0.0298 0.0208 \*  
 Venus -56535-10-07 13:54 J -18927706.01 -18927705.92 -18927705.82 0.0298 0.0263  
 Venus -56534-05-25 08:23 J -18927476.31 -18927476.15 -18927475.98 0.0296 0.0171  
 Mercury -56528-08-21 10:33 J -18925196.20 -18925196.06 -18925195.91 0.0272 0.0156  
 Mercury -56528-11-18 06:42 J -18925107.40 -18925107.22 -18925107.04 0.0271 0.0031  
 Mercury -56527-02-15 02:52 J -18925018.55 -18925018.38 -18925018.21 0.0270 0.0094

Mercury -56527-05-14 23:16 J -18924929.63 -18924929.53 -18924929.42 0.0269 0.0219  
 Moon -56526-01-17 08:37 J -18924682.33 -18924682.14 -18924681.95 0.0267 0.0164  
 Earth -56526-01-17 11:16 J -18924682.23 -18924682.03 -18924681.82 0.0267 0.0150 \*  
 Earth -56525-01-29 12:42 J -18924305.21 -18924304.97 -18924304.73 0.0265 0.0064  
 Moon -56525-01-29 14:52 J -18924305.11 -18924304.88 -18924304.64 0.0265 0.0059 \*  
 Venus -56519-06-19 15:49 J -18921972.05 -18921971.84 -18921971.63 0.0264 0.0071  
 Venus -56518-02-03 21:35 J -18921742.64 -18921742.60 -18921742.53 0.0265 0.0255  
 Mars -56513-05-06 12:57 J -18919824.03 -18919823.96 -18919823.86 0.0285 0.0272  
 Mercury -56512-06-08 05:45 J -18919426.36 -18919426.26 -18919426.15 0.0289 0.0177  
 Mercury -56512-09-04 18:28 J -18919337.86 -18919337.73 -18919337.59 0.0290 0.0064  
 Mercury -56512-12-02 07:11 J -18919249.33 -18919249.20 -18919249.07 0.0291 0.0050  
 Mercury -56511-02-28 19:54 J -18919160.78 -18919160.67 -18919160.56 0.0292 0.0163  
 Mercury -56511-05-28 08:09 J -18919072.19 -18919072.16 -18919072.11 0.0293 0.0277  
 Earth -56511-07-19 23:01 J -18919019.70 -18919019.54 -18919019.38 0.0293 0.0218  
 Moon -56511-07-20 00:57 J -18919019.62 -18919019.46 -18919019.28 0.0293 0.0202 \*  
 Earth -56510-08-03 06:57 J -18918640.44 -18918640.21 -18918639.97 0.0297 0.0072  
 Moon -56510-08-03 10:47 J -18918640.28 -18918640.05 -18918639.82 0.0297 0.0089 \*  
 Venus -56505-04-18 18:42 J -18916919.87 -18916919.72 -18916919.58 0.0297 0.0209  
 Venus -56505-12-04 12:42 J -18916690.09 -18916689.97 -18916689.82 0.0296 0.0224  
 Mars -56499-05-10 06:57 J -18914707.50 -18914707.21 -18914706.92 0.0275 0.0033  
 Mercury -56498-01-08 10:04 J -18914464.20 -18914464.08 -18914463.95 0.0273 0.0192  
 Mercury -56498-04-07 06:13 J -18914375.41 -18914375.24 -18914375.07 0.0272 0.0067  
 Mercury -56498-07-05 02:23 J -18914286.57 -18914286.40 -18914286.22 0.0271 0.0058  
 Mercury -56498-10-01 22:47 J -18914197.68 -18914197.55 -18914197.41 0.0270 0.0183  
 Earth -56497-01-12 11:01 J -18914095.12 -18914095.04 -18914094.93 0.0269 0.0248  
 Moon -56497-01-12 14:23 J -18914094.94 -18914094.90 -18914094.83 0.0269 0.0262 \*  
 Moon -56496-01-23 12:57 J -18913718.21 -18913717.96 -18913717.70 0.0266 0.0039  
 Earth -56496-01-23 14:52 J -18913718.12 -18913717.88 -18913717.63 0.0266 0.0031 \*  
 Moon -56495-02-04 11:01 J -18913341.22 -18913341.04 -18913340.86 0.0264 0.0183  
 Earth -56495-02-04 14:23 J -18913341.08 -18913340.90 -18913340.71 0.0264 0.0180 \*

Venus -56490-12-30 20:09 J -18911185.87 -18911185.66 -18911185.44 0.0264 0.0026  
 Mars -56483-06-26 09:21 J -18908816.40 -18908816.11 -18908815.82 0.0287 0.0029  
 Mercury -56483-10-26 06:57 J -18908694.29 -18908694.21 -18908694.11 0.0288 0.0216  
 Mercury -56482-01-22 19:54 J -18908605.80 -18908605.67 -18908605.54 0.0289 0.0103  
 Mercury -56482-04-21 08:37 J -18908517.28 -18908517.14 -18908517.01 0.0290 0.0011  
 Mercury -56482-07-18 21:06 J -18908428.74 -18908428.62 -18908428.50 0.0291 0.0123  
 Mercury -56482-10-15 09:35 J -18908340.17 -18908340.10 -18908340.02 0.0292 0.0236  
 Moon -56481-07-26 21:49 J -18908054.82 -18908054.59 -18908054.35 0.0295 0.0050  
 Earth -56481-07-27 01:40 J -18908054.67 -18908054.43 -18908054.19 0.0295 0.0068 \*  
 Moon -56480-08-10 09:06 J -18907675.25 -18907675.12 -18907674.98 0.0298 0.0243  
 Earth -56480-08-10 11:01 J -18907675.20 -18907675.04 -18907674.89 0.0298 0.0227 \*  
 Venus -56476-10-29 19:11 J -18906133.87 -18906133.70 -18906133.53 0.0298 0.0169  
 Venus -56475-06-16 13:11 J -18905904.03 -18905903.95 -18905903.85 0.0296 0.0263  
 Mercury -56469-05-27 06:57 J -18903732.27 -18903732.21 -18903732.12 0.0273 0.0244  
 Mars -56469-06-27 10:18 J -18903701.23 -18903701.07 -18903700.88 0.0273 0.0218  
 Mercury -56469-08-24 03:21 J -18903643.52 -18903643.36 -18903643.20 0.0272 0.0119  
 Mercury -56469-11-20 23:30 J -18903554.70 -18903554.52 -18903554.34 0.0271 0.0008  
 Mercury -56468-02-17 19:40 J -18903465.83 -18903465.68 -18903465.52 0.0270 0.0131  
 Mercury -56468-05-17 16:04 J -18903376.87 -18903376.83 -18903376.77 0.0270 0.0257  
 Earth -56467-01-18 07:54 J -18903131.38 -18903131.17 -18903130.95 0.0267 0.0136  
 Moon -56467-01-18 09:06 J -18903131.31 -18903131.12 -18903130.91 0.0267 0.0149 \*  
 Earth -56466-01-30 09:35 J -18902754.33 -18902754.10 -18902753.86 0.0265 0.0079  
 Moon -56466-01-30 12:57 J -18902754.20 -18902753.96 -18902753.71 0.0265 0.0078 \*  
 Venus -56460-07-11 21:35 J -18900399.82 -18900399.60 -18900399.38 0.0264 0.0011  
 Mercury -56453-03-14 08:23 J -18897962.21 -18897962.15 -18897962.08 0.0288 0.0253  
 Mercury -56453-06-10 21:21 J -18897873.73 -18897873.61 -18897873.49 0.0289 0.0140  
 Mercury -56453-09-07 10:04 J -18897785.22 -18897785.08 -18897784.95 0.0290 0.0027  
 Mercury -56453-12-04 22:33 J -18897696.68 -18897696.56 -18897696.43 0.0291 0.0087  
 Mercury -56452-03-03 11:16 J -18897608.13 -18897608.03 -18897607.93 0.0292 0.0199  
 Earth -56452-07-20 23:59 J -18897468.67 -18897468.50 -18897468.32 0.0293 0.0198

Moon -56452-07-21 03:35 J -18897468.54 -18897468.35 -18897468.16 0.0293 0.0180 \*  
 Earth -56451-08-04 07:25 J -18897089.41 -18897089.19 -18897088.95 0.0297 0.0093  
 Moon -56451-08-04 08:37 J -18897089.37 -18897089.14 -18897088.91 0.0297 0.0109 \*  
 Venus -56446-05-11 23:59 J -18895347.68 -18895347.50 -18895347.30 0.0297 0.0114  
 Mars -56441-08-14 18:28 J -18893425.75 -18893425.73 -18893425.68 0.0278 0.0275  
 Mercury -56439-01-11 03:06 J -18892911.52 -18892911.37 -18892911.23 0.0273 0.0155  
 Mercury -56439-04-09 23:16 J -18892822.71 -18892822.53 -18892822.35 0.0272 0.0030  
 Mercury -56439-07-07 19:25 J -18892733.86 -18892733.69 -18892733.52 0.0271 0.0096  
 Mercury -56439-10-04 15:49 J -18892644.93 -18892644.84 -18892644.73 0.0270 0.0222  
 Moon -56438-01-13 07:11 J -18892544.28 -18892544.20 -18892544.09 0.0269 0.0248  
 Earth -56438-01-13 08:23 J -18892544.26 -18892544.15 -18892544.01 0.0269 0.0234 \*  
 Moon -56437-01-25 09:06 J -18892167.36 -18892167.12 -18892166.87 0.0266 0.0024  
 Earth -56437-01-25 12:42 J -18892167.22 -18892166.97 -18892166.72 0.0266 0.0016 \*  
 Earth -56436-02-05 12:13 J -18891790.14 -18891789.99 -18891789.81 0.0264 0.0196  
 Moon -56436-02-05 13:11 J -18891790.09 -18891789.95 -18891789.79 0.0264 0.0203 \*  
 Venus -56431-06-06 21:06 J -18889842.64 -18889842.62 -18889842.59 0.0263 0.0261  
 Venus -56430-01-22 02:52 J -18889613.59 -18889613.38 -18889613.16 0.0264 0.0059  
 Mars -56425-09-29 20:23 J -18887535.80 -18887535.65 -18887535.48 0.0284 0.0240  
 Mercury -56424-10-28 23:01 J -18887141.65 -18887141.54 -18887141.43 0.0288 0.0176  
 Mercury -56423-01-25 11:45 J -18887053.14 -18887053.01 -18887052.88 0.0289 0.0063  
 Mercury -56423-04-24 00:28 J -18886964.62 -18886964.48 -18886964.35 0.0290 0.0050  
 Mercury -56423-07-21 12:57 J -18886876.07 -18886875.96 -18886875.85 0.0291 0.0162  
 Mercury -56423-10-18 01:25 J -18886787.48 -18886787.44 -18886787.40 0.0292 0.0274  
 Earth -56422-07-29 04:47 J -18886503.54 -18886503.30 -18886503.06 0.0295 0.0046  
 Moon -56422-07-29 04:33 J -18886503.54 -18886503.31 -18886503.07 0.0295 0.0030 \*  
 Earth -56421-08-11 13:25 J -18886124.06 -18886123.94 -18886123.80 0.0297 0.0250  
 Moon -56421-08-11 16:18 J -18886123.92 -18886123.82 -18886123.71 0.0297 0.0265 \*  
 Venus -56417-11-21 02:09 J -18884561.61 -18884561.41 -18884561.21 0.0297 0.0069  
 Mars -56411-10-02 22:04 J -18882419.87 -18882419.58 -18882419.28 0.0275 0.0022  
 Mercury -56410-05-31 00:28 J -18882179.59 -18882179.48 -18882179.35 0.0273 0.0203

Mercury -56410-08-27 20:37 J -18882090.81 -18882090.64 -18882090.46 0.0272 0.0079

Mercury -56410-11-24 17:01 J -18882001.97 -18882001.79 -18882001.61 0.0271 0.0047

Mercury -56409-02-21 13:25 J -18881913.08 -18881912.94 -18881912.80 0.0270 0.0173

Earth -56408-01-19 06:57 J -18881580.43 -18881580.21 -18881579.98 0.0268 0.0119

Moon -56408-01-19 10:47 J -18881580.27 -18881580.05 -18881579.83 0.0268 0.0132 \*

Moon -56407-01-31 08:37 J -18881203.38 -18881203.14 -18881202.90 0.0265 0.0098

Earth -56407-01-31 09:06 J -18881203.35 -18881203.12 -18881202.89 0.0265 0.0096 \*

Venus -56402-12-17 23:16 J -18879056.65 -18879056.53 -18879056.42 0.0264 0.0224

Venus -56401-08-03 05:01 J -18878827.49 -18878827.29 -18878827.09 0.0265 0.0098

Mars -56395-11-19 18:13 J -18876528.03 -18876527.74 -18876527.45 0.0287 0.0050

Mercury -56394-03-18 00:42 J -18876409.56 -18876409.47 -18876409.38 0.0288 0.0210

Mercury -56394-06-14 13:25 J -18876321.07 -18876320.94 -18876320.81 0.0289 0.0098

Mercury -56394-09-11 02:09 J -18876232.55 -18876232.41 -18876232.28 0.0290 0.0015

Mercury -56394-12-08 14:37 J -18876144.01 -18876143.89 -18876143.77 0.0291 0.0128

Mercury -56393-03-06 03:06 J -18876055.44 -18876055.37 -18876055.29 0.0292 0.0241

Moon -56393-07-22 04:04 J -18875917.54 -18875917.33 -18875917.11 0.0293 0.0159

Earth -56393-07-22 04:47 J -18875917.49 -18875917.30 -18875917.10 0.0293 0.0174 \*

Moon -56392-08-05 08:23 J -18875538.36 -18875538.15 -18875537.92 0.0297 0.0132

Earth -56392-08-05 11:59 J -18875538.22 -18875538.00 -18875537.77 0.0297 0.0117 \*

Venus -56387-06-03 08:09 J -18873775.36 -18873775.16 -18873774.95 0.0297 0.0012

Mercury -56381-10-17 00:42 J -18871447.55 -18871447.47 -18871447.38 0.0273 0.0236

Mars -56381-11-20 20:37 J -18871412.76 -18871412.64 -18871412.50 0.0273 0.0245

Mercury -56380-01-13 20:52 J -18871358.79 -18871358.63 -18871358.47 0.0272 0.0112

Mercury -56380-04-12 17:01 J -18871269.97 -18871269.79 -18871269.61 0.0272 0.0014

Mercury -56380-07-10 13:25 J -18871181.09 -18871180.94 -18871180.78 0.0271 0.0140

Mercury -56380-10-07 10:04 J -18871092.11 -18871092.08 -18871092.05 0.0270 0.0265

Moon -56379-01-14 04:47 J -18870993.41 -18870993.30 -18870993.16 0.0269 0.0233

Earth -56379-01-14 08:52 J -18870993.27 -18870993.13 -18870992.98 0.0269 0.0217 \*

Moon -56378-01-26 12:57 J -18870616.20 -18870615.96 -18870615.72 0.0266 0.0003

Earth -56378-01-26 13:11 J -18870616.20 -18870615.95 -18870615.70 0.0266 0.0004 \*

Earth -56377-02-07 12:57 J -18870239.09 -18870238.96 -18870238.80 0.0264 0.0214  
 Moon -56377-02-07 16:47 J -18870238.92 -18870238.80 -18870238.66 0.0264 0.0223 \*  
 Venus -56372-06-29 05:16 J -18868270.44 -18868270.28 -18868270.11 0.0264 0.0173  
 Venus -56371-02-13 11:16 J -18868041.20 -18868041.03 -18868040.84 0.0265 0.0150  
 Mercury -56365-08-04 02:52 J -18865677.45 -18865677.38 -18865677.30 0.0287 0.0241  
 Mercury -56365-10-31 15:49 J -18865588.96 -18865588.84 -18865588.72 0.0288 0.0128  
 Mercury -56364-01-28 04:33 J -18865500.45 -18865500.31 -18865500.18 0.0289 0.0017  
 Mercury -56364-04-26 17:01 J -18865411.92 -18865411.79 -18865411.66 0.0290 0.0096  
 Moon -56364-07-16 09:49 J -18865331.12 -18865331.09 -18865331.06 0.0291 0.0287  
 Mercury -56364-07-24 05:30 J -18865323.36 -18865323.27 -18865323.18 0.0291 0.0208  
 Earth -56363-07-30 12:57 J -18864952.20 -18864951.96 -18864951.71 0.0295 0.0020  
 Moon -56363-07-30 16:33 J -18864952.05 -18864951.81 -18864951.57 0.0295 0.0006 \*  
 Earth -56362-08-13 22:04 J -18864572.67 -18864572.58 -18864572.49 0.0297 0.0276  
 Moon -56362-08-14 01:25 J -18864572.50 -18864572.44 -18864572.39 0.0297 0.0289 \*  
 Venus -56358-12-14 11:59 J -18862989.20 -18862989.00 -18862988.80 0.0297 0.0043  
 Mars -56352-01-07 21:06 J -18861137.73 -18861137.62 -18861137.52 0.0278 0.0258  
 Mercury -56351-06-02 18:57 J -18860626.85 -18860626.71 -18860626.56 0.0273 0.0157  
 Mercury -56351-08-30 15:06 J -18860538.05 -18860537.87 -18860537.69 0.0272 0.0032  
 Mercury -56351-11-27 11:30 J -18860449.19 -18860449.02 -18860448.85 0.0271 0.0094  
 Mercury -56350-02-24 07:54 J -18860360.27 -18860360.17 -18860360.06 0.0270 0.0220  
 Earth -56349-01-21 09:06 J -18860029.35 -18860029.12 -18860028.89 0.0268 0.0101  
 Moon -56349-01-21 09:21 J -18860029.34 -18860029.11 -18860028.87 0.0268 0.0110 \*  
 Moon -56348-02-01 07:54 J -18859652.40 -18859652.17 -18859651.95 0.0265 0.0119  
 Earth -56348-02-01 11:16 J -18859652.25 -18859652.03 -18859651.80 0.0265 0.0115 \*  
 Venus -56342-01-09 08:09 J -18857484.34 -18857484.16 -18857483.96 0.0264 0.0133  
 Venus -56342-08-26 14:23 J -18857255.05 -18857254.90 -18857254.75 0.0265 0.0190  
 Mars -56336-02-23 16:04 J -18855247.02 -18855246.83 -18855246.63 0.0284 0.0212  
 Mercury -56336-12-22 04:47 J -18854945.34 -18854945.30 -18854945.26 0.0288 0.0274  
 Mercury -56335-03-20 17:30 J -18854856.88 -18854856.77 -18854856.65 0.0289 0.0162  
 Mercury -56335-06-17 06:13 J -18854768.37 -18854768.24 -18854768.10 0.0289 0.0050



Mercury -56335-09-13 18:57 J -18854679.84 -18854679.71 -18854679.58 0.0290 0.0063  
 Mercury -56335-12-11 07:25 J -18854591.29 -18854591.19 -18854591.08 0.0291 0.0176  
 Mercury -56334-03-09 19:54 J -18854502.69 -18854502.67 -18854502.65 0.0292 0.0287  
 Moon -56334-07-24 10:33 J -18854366.27 -18854366.06 -18854365.84 0.0293 0.0133  
 Earth -56334-07-24 14:09 J -18854366.12 -18854365.91 -18854365.70 0.0293 0.0147 \*  
 Moon -56333-08-06 18:42 J -18853986.92 -18853986.72 -18853986.52 0.0297 0.0157  
 Earth -56333-08-06 21:06 J -18853986.82 -18853986.62 -18853986.40 0.0297 0.0145 \*  
 Venus -56328-06-25 18:42 J -18852202.91 -18852202.72 -18852202.52 0.0296 0.0103  
 Mars -56322-02-26 16:47 J -18850131.10 -18850130.80 -18850130.51 0.0275 0.0012  
 Mercury -56322-10-20 19:25 J -18849894.81 -18849894.69 -18849894.55 0.0273 0.0188  
 Mercury -56321-01-17 15:35 J -18849806.02 -18849805.85 -18849805.67 0.0272 0.0063  
 Mercury -56321-04-15 11:59 J -18849717.18 -18849717.00 -18849716.82 0.0271 0.0063  
 Mercury -56321-07-13 08:23 J -18849628.27 -18849628.15 -18849628.02 0.0271 0.0189  
 Earth -56320-01-15 12:13 J -18849442.15 -18849441.99 -18849441.82 0.0269 0.0198  
 Moon -56320-01-15 11:45 J -18849442.14 -18849442.01 -18849441.85 0.0269 0.0211 \*  
 Earth -56319-01-27 16:33 J -18849065.06 -18849064.81 -18849064.56 0.0266 0.0022  
 Moon -56319-01-27 20:09 J -18849064.91 -18849064.66 -18849064.42 0.0266 0.0018 \*  
 Earth -56318-02-08 16:47 J -18848687.91 -18848687.80 -18848687.68 0.0264 0.0233  
 Moon -56318-02-08 17:59 J -18848687.84 -18848687.75 -18848687.64 0.0264 0.0242 \*  
 Venus -56313-07-21 15:21 J -18846698.06 -18846697.86 -18846697.64 0.0264 0.0079  
 Venus -56312-03-07 21:49 J -18846468.67 -18846468.59 -18846468.51 0.0266 0.0246  
 Mars -56306-04-16 03:35 J -18844238.62 -18844238.35 -18844238.07 0.0286 0.0101  
 Mercury -56306-08-07 20:23 J -18844124.75 -18844124.65 -18844124.55 0.0288 0.0188  
 Mercury -56306-11-04 09:06 J -18844036.25 -18844036.12 -18844035.99 0.0289 0.0076  
 Mercury -56305-01-31 21:49 J -18843947.73 -18843947.59 -18843947.46 0.0289 0.0036  
 Mercury -56305-04-29 10:18 J -18843859.18 -18843859.07 -18843858.96 0.0290 0.0148  
 Earth -56305-07-17 21:06 J -18843779.69 -18843779.62 -18843779.53 0.0291 0.0273  
 Moon -56305-07-18 00:28 J -18843779.58 -18843779.48 -18843779.36 0.0291 0.0257 \*  
 Mercury -56305-07-26 22:47 J -18843770.61 -18843770.55 -18843770.49 0.0291 0.0259  
 Earth -56304-08-01 01:25 J -18843400.68 -18843400.44 -18843400.20 0.0295 0.0012

Moon -56304-08-01 03:35 J -18843400.59 -18843400.35 -18843400.10 0.0295 0.0026 \*  
 Venus -56299-05-21 06:13 J -18841646.32 -18841646.24 -18841646.14 0.0298 0.0268  
 Venus -56298-01-06 00:42 J -18841416.64 -18841416.47 -18841416.30 0.0296 0.0163  
 Mercury -56292-03-08 18:28 J -18839162.82 -18839162.73 -18839162.63 0.0273 0.0227  
 Mars -56292-04-16 08:52 J -18839124.14 -18839124.13 -18839124.08 0.0273 0.0271  
 Mercury -56292-06-05 14:23 J -18839074.06 -18839073.90 -18839073.73 0.0272 0.0104  
 Mercury -56292-09-02 10:47 J -18838985.23 -18838985.05 -18838984.87 0.0272 0.0022  
 Mercury -56292-11-30 07:11 J -18838896.35 -18838896.20 -18838896.05 0.0271 0.0148  
 Moon -56290-01-22 10:47 J -18838478.28 -18838478.05 -18838477.80 0.0267 0.0086  
 Earth -56290-01-22 14:37 J -18838478.12 -18838477.89 -18838477.65 0.0267 0.0080 \*  
 Moon -56289-02-03 14:37 J -18838101.08 -18838100.89 -18838100.67 0.0265 0.0142  
 Earth -56289-02-03 16:33 J -18838101.02 -18838100.81 -18838100.59 0.0265 0.0136 \*  
 Venus -56283-01-31 18:57 J -18835911.92 -18835911.71 -18835911.49 0.0264 0.0036  
 Mercury -56277-12-24 22:33 J -18833392.65 -18833392.56 -18833392.47 0.0288 0.0219  
 Mercury -56276-03-23 11:16 J -18833304.16 -18833304.03 -18833303.90 0.0289 0.0107  
 Mercury -56276-06-19 23:59 J -18833215.64 -18833215.50 -18833215.37 0.0290 0.0006  
 Mercury -56276-09-16 12:28 J -18833127.10 -18833126.98 -18833126.85 0.0291 0.0118  
 Mercury -56276-12-14 00:57 J -18833038.54 -18833038.46 -18833038.38 0.0292 0.0230  
 Moon -56275-07-26 02:23 J -18832814.62 -18832814.40 -18832814.18 0.0294 0.0102  
 Earth -56275-07-26 04:18 J -18832814.54 -18832814.32 -18832814.09 0.0294 0.0116 \*  
 Earth -56274-08-09 11:45 J -18832435.20 -18832435.01 -18832434.82 0.0297 0.0177  
 Moon -56274-08-09 13:11 J -18832435.12 -18832434.95 -18832434.76 0.0297 0.0188 \*  
 Venus -56270-12-01 14:09 J -18830860.06 -18830859.91 -18830859.76 0.0297 0.0204  
 Venus -56269-07-18 08:09 J -18830630.28 -18830630.16 -18830630.02 0.0296 0.0226  
 Mars -56264-06-04 01:11 J -18828848.61 -18828848.45 -18828848.26 0.0278 0.0219  
 Mercury -56263-07-26 19:25 J -18828430.75 -18828430.69 -18828430.63 0.0273 0.0257  
 Mercury -56263-10-23 15:21 J -18828342.01 -18828341.86 -18828341.70 0.0273 0.0133  
 Mercury -56262-01-20 11:30 J -18828253.20 -18828253.02 -18828252.84 0.0272 0.0009  
 Mercury -56262-04-19 07:54 J -18828164.33 -18828164.17 -18828164.00 0.0271 0.0119  
 Mercury -56262-07-17 04:33 J -18828075.39 -18828075.31 -18828075.23 0.0270 0.0244

Earth -56261-01-17 18:57 J -18827890.90 -18827890.71 -18827890.53 0.0269 0.0176  
 Moon -56261-01-17 22:18 J -18827890.74 -18827890.57 -18827890.39 0.0269 0.0186 \*  
 Earth -56260-01-28 23:01 J -18827513.78 -18827513.54 -18827513.29 0.0266 0.0043  
 Moon -56260-01-29 01:11 J -18827513.70 -18827513.45 -18827513.19 0.0266 0.0043 \*  
 Earth -56259-02-09 23:16 J -18827136.58 -18827136.53 -18827136.45 0.0264 0.0255  
 Venus -56254-08-14 03:06 J -18825125.58 -18825125.37 -18825125.15 0.0265 0.0023  
 Mars -56248-07-21 13:40 J -18822957.17 -18822956.93 -18822956.67 0.0284 0.0153  
 Mercury -56247-05-14 01:40 J -18822660.50 -18822660.43 -18822660.35 0.0287 0.0242  
 Mercury -56247-08-10 14:37 J -18822572.02 -18822571.89 -18822571.77 0.0288 0.0130  
 Mercury -56247-11-07 03:06 J -18822483.50 -18822483.37 -18822483.23 0.0289 0.0019  
 Mercury -56246-02-03 15:49 J -18822394.97 -18822394.84 -18822394.72 0.0290 0.0094  
 Mercury -56246-05-03 04:18 J -18822306.42 -18822306.32 -18822306.23 0.0291 0.0205  
 Earth -56246-07-20 13:40 J -18822228.06 -18822227.93 -18822227.79 0.0291 0.0241  
 Moon -56246-07-20 15:49 J -18822227.99 -18822227.84 -18822227.67 0.0291 0.0224 \*  
 Moon -56245-08-02 16:33 J -18821849.06 -18821848.81 -18821848.56 0.0295 0.0057  
 Earth -56245-08-02 18:13 J -18821848.98 -18821848.74 -18821848.50 0.0295 0.0045 \*  
 Venus -56240-06-12 21:49 J -18820073.77 -18820073.59 -18820073.40 0.0297 0.0137  
 Venus -56239-01-28 15:49 J -18819843.88 -18819843.84 -18819843.81 0.0296 0.0290  
 Mars -56234-07-23 18:13 J -18817842.03 -18817841.74 -18817841.45 0.0275 0.0044  
 Mercury -56233-03-11 14:52 J -18817610.01 -18817609.88 -18817609.73 0.0273 0.0168  
 Mercury -56233-06-08 11:01 J -18817521.21 -18817521.04 -18817520.86 0.0272 0.0044  
 Mercury -56233-09-05 07:25 J -18817432.36 -18817432.19 -18817432.02 0.0271 0.0082  
 Mercury -56233-12-03 03:49 J -18817343.45 -18817343.34 -18817343.22 0.0271 0.0208  
 Moon -56231-01-23 21:21 J -18816926.85 -18816926.61 -18816926.38 0.0267 0.0059  
 Earth -56231-01-23 23:16 J -18816926.77 -18816926.53 -18816926.29 0.0267 0.0056 \*  
 Earth -56230-02-05 00:42 J -18816549.66 -18816549.47 -18816549.26 0.0265 0.0160  
 Moon -56230-02-05 03:21 J -18816549.54 -18816549.36 -18816549.17 0.0265 0.0168 \*  
 Venus -56225-07-09 00:57 J -18814568.50 -18814568.46 -18814568.40 0.0264 0.0255  
 Venus -56224-02-23 07:25 J -18814339.40 -18814339.19 -18814338.98 0.0265 0.0066  
 Mars -56218-09-10 16:18 J -18811949.07 -18811948.82 -18811948.57 0.0287 0.0143

Mercury -56218-10-01 03:49 J -18811928.38 -18811928.34 -18811928.30 0.0287 0.0273

Mercury -56218-12-28 16:33 J -18811839.92 -18811839.81 -18811839.69 0.0288 0.0161

Mercury -56217-03-26 05:16 J -18811751.41 -18811751.28 -18811751.14 0.0289 0.0049

Mercury -56217-06-22 17:59 J -18811662.88 -18811662.75 -18811662.62 0.0290 0.0064

Mercury -56217-09-19 06:28 J -18811574.33 -18811574.23 -18811574.12 0.0291 0.0176

Mercury -56217-12-16 18:57 J -18811485.73 -18811485.71 -18811485.69 0.0292 0.0287

Earth -56216-07-27 21:06 J -18811262.85 -18811262.62 -18811262.38 0.0294 0.0082

Moon -56216-07-27 23:01 J -18811262.77 -18811262.54 -18811262.31 0.0294 0.0067 \*

Earth -56215-08-11 04:47 J -18810883.46 -18810883.30 -18810883.12 0.0297 0.0212

Moon -56215-08-11 08:23 J -18810883.30 -18810883.15 -18810882.99 0.0297 0.0223 \*

Venus -56211-12-24 05:45 J -18809287.46 -18809287.26 -18809287.06 0.0297 0.0072

Mercury -56204-07-29 16:04 J -18806877.95 -18806877.83 -18806877.71 0.0273 0.0196

Mercury -56204-10-26 12:13 J -18806789.17 -18806788.99 -18806788.82 0.0272 0.0072

Mercury -56203-01-23 08:23 J -18806700.33 -18806700.15 -18806699.97 0.0271 0.0054

Mercury -56203-04-22 04:47 J -18806611.43 -18806611.30 -18806611.16 0.0271 0.0180

Earth -56202-01-19 04:18 J -18806339.52 -18806339.32 -18806339.11 0.0269 0.0152

Moon -56202-01-19 06:42 J -18806339.42 -18806339.22 -18806339.02 0.0269 0.0160 \*

Moon -56201-01-31 05:16 J -18805962.52 -18805962.28 -18805962.03 0.0266 0.0072

Earth -56201-01-31 08:09 J -18805962.40 -18805962.16 -18805961.92 0.0266 0.0067 \*

Venus -56195-01-19 09:35 J -18803782.24 -18803782.10 -18803781.95 0.0264 0.0197

Venus -56195-09-05 15:49 J -18803553.03 -18803552.84 -18803552.64 0.0265 0.0126

Mercury -56188-05-16 20:09 J -18801107.76 -18801107.66 -18801107.55 0.0288 0.0181

Mercury -56188-08-13 08:52 J -18801019.26 -18801019.13 -18801019.00 0.0289 0.0069

Mercury -56188-11-09 21:35 J -18800930.74 -18800930.60 -18800930.47 0.0290 0.0043

Mercury -56187-02-06 10:04 J -18800842.19 -18800842.08 -18800841.97 0.0290 0.0154

Mercury -56187-05-05 22:33 J -18800753.61 -18800753.56 -18800753.51 0.0291 0.0266

Moon -56187-07-22 06:28 J -18800676.42 -18800676.23 -18800676.04 0.0292 0.0189

Earth -56187-07-22 08:23 J -18800676.31 -18800676.15 -18800675.97 0.0292 0.0206 \*

Moon -56186-08-05 10:18 J -18800297.30 -18800297.07 -18800296.84 0.0295 0.0097

Earth -56186-08-05 13:54 J -18800297.15 -18800296.92 -18800296.69 0.0295 0.0083 \*

Venus -56181-07-05 15:35 J -18798501.06 -18798500.85 -18798500.65 0.0297 0.0004  
 Mars -56176-10-29 14:09 J -18796559.12 -18796558.91 -18796558.68 0.0277 0.0181  
 Mercury -56175-12-16 16:18 J -18796145.91 -18796145.82 -18796145.72 0.0273 0.0227  
 Mercury -56174-03-15 12:13 J -18796057.15 -18796056.99 -18796056.82 0.0272 0.0104  
 Mercury -56174-06-12 08:37 J -18795968.32 -18795968.14 -18795967.96 0.0272 0.0022  
 Mercury -56174-09-09 04:47 J -18795879.45 -18795879.30 -18795879.14 0.0271 0.0147  
 Moon -56173-01-14 02:23 J -18795752.45 -18795752.40 -18795752.34 0.0270 0.0262  
 Earth -56173-01-14 05:01 J -18795752.37 -18795752.29 -18795752.19 0.0270 0.0249 \*  
 Earth -56172-01-25 10:04 J -18795375.32 -18795375.08 -18795374.83 0.0267 0.0030  
 Moon -56172-01-25 12:28 J -18795375.21 -18795374.98 -18795374.73 0.0267 0.0030 \*  
 Earth -56171-02-06 11:16 J -18794998.20 -18794998.03 -18794997.85 0.0265 0.0185  
 Moon -56171-02-06 14:52 J -18794998.04 -18794997.88 -18794997.71 0.0265 0.0195 \*  
 Venus -56166-08-01 13:54 J -18792996.09 -18792995.92 -18792995.73 0.0264 0.0152  
 Venus -56165-03-17 20:23 J -18792766.81 -18792766.65 -18792766.48 0.0265 0.0171  
 Mars -56160-12-16 05:59 J -18790667.52 -18790667.25 -18790666.97 0.0285 0.0110  
 Mercury -56159-10-03 22:18 J -18790375.66 -18790375.57 -18790375.48 0.0288 0.0212  
 Mercury -56159-12-31 11:01 J -18790287.17 -18790287.04 -18790286.91 0.0289 0.0100  
 Mercury -56158-03-29 23:45 J -18790198.65 -18790198.51 -18790198.38 0.0290 0.0012  
 Mercury -56158-06-26 12:13 J -18790110.11 -18790109.99 -18790109.87 0.0291 0.0125  
 Mercury -56158-09-23 00:42 J -18790021.54 -18790021.47 -18790021.39 0.0292 0.0236  
 Earth -56157-07-29 16:18 J -18789711.06 -18789710.82 -18789710.58 0.0294 0.0045  
 Moon -56157-07-29 20:09 J -18789710.90 -18789710.66 -18789710.42 0.0294 0.0029 \*  
 Earth -56156-08-13 00:13 J -18789331.61 -18789331.49 -18789331.35 0.0297 0.0249  
 Moon -56156-08-13 01:54 J -18789331.53 -18789331.42 -18789331.29 0.0297 0.0260 \*  
 Venus -56151-01-15 23:01 J -18787714.74 -18787714.54 -18787714.34 0.0296 0.0065  
 Mars -56146-12-18 12:42 J -18785552.24 -18785551.97 -18785551.68 0.0275 0.0094  
 Mercury -56145-05-04 17:16 J -18785413.83 -18785413.78 -18785413.71 0.0273 0.0256  
 Mercury -56145-08-01 13:25 J -18785325.10 -18785324.94 -18785324.78 0.0272 0.0132  
 Mercury -56145-10-29 09:35 J -18785236.28 -18785236.10 -18785235.92 0.0272 0.0007  
 Mercury -56144-01-26 05:45 J -18785147.42 -18785147.26 -18785147.09 0.0271 0.0119

Mercury -56144-04-25 02:09 J -18785058.47 -18785058.41 -18785058.32 0.0270 0.0245  
 Moon -56143-01-20 13:40 J -18784788.15 -18784787.93 -18784787.70 0.0268 0.0131  
 Earth -56143-01-20 15:35 J -18784788.06 -18784787.85 -18784787.63 0.0268 0.0125 \*  
 Moon -56142-02-01 15:06 J -18784411.08 -18784410.87 -18784410.63 0.0266 0.0101  
 Earth -56142-02-01 18:42 J -18784410.95 -18784410.72 -18784410.48 0.0266 0.0093 \*  
 Venus -56136-02-10 22:33 J -18782209.76 -18782209.56 -18782209.35 0.0265 0.0093  
 Venus -56136-09-28 05:01 J -18781980.39 -18781980.29 -18781980.18 0.0266 0.0230  
 Mars -56129-02-06 01:40 J -18779658.63 -18779658.43 -18779658.23 0.0287 0.0208  
 Mercury -56129-02-21 01:40 J -18779643.50 -18779643.43 -18779643.34 0.0287 0.0232  
 Mercury -56129-05-19 14:37 J -18779555.01 -18779554.89 -18779554.77 0.0288 0.0120  
 Mercury -56129-08-16 03:21 J -18779466.50 -18779466.36 -18779466.23 0.0289 0.0009  
 Mercury -56129-11-12 15:49 J -18779377.96 -18779377.84 -18779377.71 0.0290 0.0104  
 Mercury -56128-02-09 04:18 J -18779289.40 -18779289.32 -18779289.23 0.0291 0.0216  
 Moon -56128-07-23 23:59 J -18779124.70 -18779124.50 -18779124.29 0.0292 0.0153  
 Earth -56128-07-24 03:49 J -18779124.54 -18779124.34 -18779124.14 0.0292 0.0170 \*  
 Moon -56127-08-07 08:09 J -18778745.37 -18778745.16 -18778744.95 0.0296 0.0135  
 Earth -56127-08-07 09:35 J -18778745.31 -18778745.10 -18778744.87 0.0296 0.0121 \*  
 Venus -56123-12-11 14:52 J -18777157.91 -18777157.88 -18777157.82 0.0297 0.0289  
 Venus -56122-07-29 09:21 J -18776928.28 -18776928.11 -18776927.92 0.0296 0.0140  
 Mercury -56116-12-19 14:09 J -18774593.05 -18774592.91 -18774592.76 0.0273 0.0160  
 Mercury -56115-03-18 10:18 J -18774504.25 -18774504.07 -18774503.89 0.0272 0.0035  
 Mercury -56115-06-15 06:28 J -18774415.40 -18774415.23 -18774415.06 0.0271 0.0090  
 Mercury -56115-09-12 02:52 J -18774326.49 -18774326.38 -18774326.27 0.0270 0.0215  
 Earth -56114-01-15 17:59 J -18774200.88 -18774200.75 -18774200.60 0.0269 0.0221  
 Moon -56114-01-15 19:11 J -18774200.81 -18774200.70 -18774200.57 0.0269 0.0234 \*  
 Earth -56113-01-27 22:33 J -18773823.81 -18773823.56 -18773823.31 0.0267 0.0004  
 Moon -56113-01-28 01:54 J -18773823.67 -18773823.42 -18773823.17 0.0267 0.0002 \*  
 Moon -56112-02-07 22:18 J -18773446.70 -18773446.57 -18773446.43 0.0264 0.0223  
 Earth -56112-02-07 22:47 J -18773446.68 -18773446.55 -18773446.39 0.0264 0.0212 \*  
 Venus -56107-08-24 03:06 J -18771423.59 -18771423.37 -18771423.15 0.0264 0.0048

Mercury -56100-07-10 03:35 J -18768911.40 -18768911.35 -18768911.29 0.0288 0.0265

Mercury -56100-10-06 16:33 J -18768822.92 -18768822.81 -18768822.69 0.0289 0.0152

Mercury -56099-01-03 05:16 J -18768734.41 -18768734.28 -18768734.14 0.0290 0.0040

Mercury -56099-04-01 17:59 J -18768645.88 -18768645.75 -18768645.62 0.0290 0.0072

Mercury -56099-06-29 06:28 J -18768557.33 -18768557.23 -18768557.13 0.0291 0.0184

Moon -56099-07-18 10:18 J -18768538.14 -18768538.07 -18768537.99 0.0292 0.0276

Earth -56098-08-01 11:01 J -18768159.28 -18768159.04 -18768158.80 0.0295 0.0009

Moon -56098-08-01 11:59 J -18768159.25 -18768159.00 -18768158.75 0.0295 0.0006 \*

Moon -56097-08-14 17:16 J -18767779.79 -18767779.78 -18767779.75 0.0298 0.0297

Earth -56097-08-14 19:40 J -18767779.73 -18767779.68 -18767779.61 0.0298 0.0286

Venus -56093-06-22 22:33 J -18766371.69 -18766371.56 -18766371.43 0.0298 0.0226

Venus -56092-02-07 16:33 J -18766141.95 -18766141.81 -18766141.66 0.0296 0.0202

Mars -56087-03-26 10:18 J -18764269.32 -18764269.07 -18764268.81 0.0277 0.0131

Mercury -56086-05-08 15:06 J -18763861.00 -18763860.87 -18763860.74 0.0273 0.0189

Mercury -56086-08-05 11:01 J -18763772.21 -18763772.04 -18763771.86 0.0272 0.0065

Mercury -56086-11-02 07:11 J -18763683.37 -18763683.20 -18763683.02 0.0271 0.0061

Mercury -56085-01-30 03:35 J -18763594.48 -18763594.35 -18763594.21 0.0270 0.0185

Moon -56084-01-21 23:59 J -18763236.72 -18763236.50 -18763236.27 0.0268 0.0105

Earth -56084-01-22 03:35 J -18763236.57 -18763236.35 -18763236.11 0.0268 0.0098 \*

Earth -56083-02-03 05:59 J -18762859.47 -18762859.25 -18762859.02 0.0265 0.0120

Moon -56083-02-03 06:28 J -18762859.44 -18762859.23 -18762859.02 0.0265 0.0128 \*

Venus -56077-03-05 11:16 J -18760637.25 -18760637.03 -18760636.81 0.0265 0.0010

Mars -56071-05-13 12:57 J -18758377.24 -18758376.96 -18758376.66 0.0285 0.0051

Mercury -56071-11-27 07:11 J -18758179.21 -18758179.20 -18758179.19 0.0287 0.0285

Mercury -56070-02-23 19:54 J -18758090.77 -18758090.67 -18758090.56 0.0288 0.0173

Mercury -56070-05-23 08:52 J -18758002.26 -18758002.13 -18758002.00 0.0289 0.0061

Mercury -56070-08-19 21:21 J -18757913.74 -18757913.61 -18757913.47 0.0290 0.0053

Mercury -56070-11-16 10:04 J -18757825.19 -18757825.08 -18757824.97 0.0291 0.0163

Mercury -56069-02-12 22:33 J -18757736.60 -18757736.56 -18757736.52 0.0292 0.0275

Moon -56069-07-25 21:21 J -18757572.82 -18757572.61 -18757572.39 0.0293 0.0119

Earth -56069-07-25 21:35 J -18757572.81 -18757572.60 -18757572.38 0.0293 0.0134 \*  
 Earth -56068-08-09 04:18 J -18757193.51 -18757193.32 -18757193.10 0.0296 0.0159  
 Moon -56068-08-09 07:11 J -18757193.39 -18757193.20 -18757193.01 0.0296 0.0172 \*  
 Venus -56063-01-03 09:06 J -18755585.30 -18755585.12 -18755584.94 0.0297 0.0149  
 Venus -56063-08-21 02:52 J -18755355.44 -18755355.38 -18755355.30 0.0296 0.0277  
 Mars -56057-05-14 10:47 J -18753262.29 -18753262.05 -18753261.79 0.0274 0.0137  
 Mercury -56057-09-24 16:04 J -18753128.93 -18753128.83 -18753128.72 0.0273 0.0215  
 Mercury -56057-12-22 11:59 J -18753040.16 -18753040.00 -18753039.83 0.0272 0.0092  
 Mercury -56056-03-21 08:09 J -18752951.34 -18752951.16 -18752950.98 0.0271 0.0033  
 Mercury -56056-06-18 04:18 J -18752862.46 -18752862.32 -18752862.16 0.0271 0.0158  
 Earth -56055-01-17 07:11 J -18752649.36 -18752649.20 -18752649.02 0.0269 0.0192  
 Moon -56055-01-17 11:16 J -18752649.19 -18752649.03 -18752648.87 0.0269 0.0204 \*  
 Earth -56054-01-29 10:47 J -18752272.30 -18752272.05 -18752271.80 0.0266 0.0027  
 Moon -56054-01-29 11:01 J -18752272.29 -18752272.04 -18752271.78 0.0266 0.0028 \*  
 Moon -56053-02-10 06:42 J -18751895.27 -18751895.22 -18751895.13 0.0264 0.0252  
 Earth -56053-02-10 10:33 J -18751895.15 -18751895.06 -18751894.94 0.0264 0.0238 \*  
 Venus -56048-09-15 15:49 J -18749851.06 -18749850.84 -18749850.63 0.0265 0.0054  
 Mars -56041-07-02 11:01 J -18747369.18 -18747369.04 -18747368.88 0.0288 0.0246  
 Mercury -56041-07-12 21:35 J -18747358.69 -18747358.60 -18747358.50 0.0288 0.0207  
 Mercury -56041-10-09 10:33 J -18747270.19 -18747270.06 -18747269.93 0.0289 0.0095  
 Mercury -56040-01-05 23:16 J -18747181.67 -18747181.53 -18747181.40 0.0290 0.0019  
 Mercury -56040-04-04 11:45 J -18747093.13 -18747093.01 -18747092.89 0.0291 0.0129  
 Mercury -56040-07-02 00:13 J -18747004.56 -18747004.49 -18747004.41 0.0292 0.0241  
 Moon -56040-07-19 22:18 J -18746986.69 -18746986.57 -18746986.42 0.0292 0.0245  
 Earth -56040-07-19 22:33 J -18746986.66 -18746986.56 -18746986.45 0.0292 0.0260 \*  
 Moon -56039-08-03 00:13 J -18746607.73 -18746607.49 -18746607.24 0.0295 0.0039  
 Earth -56039-08-03 03:35 J -18746607.59 -18746607.35 -18746607.11 0.0295 0.0027 \*  
 Venus -56034-07-16 14:52 J -18744799.07 -18744798.88 -18744798.68 0.0297 0.0092  
 Mercury -56027-02-11 16:33 J -18742396.88 -18742396.81 -18742396.73 0.0273 0.0247  
 Mercury -56027-05-11 12:28 J -18742308.14 -18742307.98 -18742307.82 0.0272 0.0123



Mercury -56027-08-08 08:37 J -18742219.32 -18742219.14 -18742218.96 0.0271 0.0001

Mercury -56027-11-05 04:47 J -18742130.46 -18742130.30 -18742130.13 0.0271 0.0126

Mercury -56026-02-02 01:25 J -18742041.51 -18742041.44 -18742041.38 0.0270 0.0250

Moon -56025-01-24 13:54 J -18741685.14 -18741684.92 -18741684.69 0.0267 0.0076

Earth -56025-01-24 14:52 J -18741685.11 -18741684.88 -18741684.64 0.0267 0.0070 \*

Earth -56024-02-04 16:33 J -18741308.01 -18741307.81 -18741307.60 0.0265 0.0146

Moon -56024-02-04 19:54 J -18741307.86 -18741307.67 -18741307.46 0.0265 0.0155 \*

Venus -56019-08-11 16:33 J -18739293.93 -18739293.81 -18739293.67 0.0264 0.0211

Venus -56018-03-28 22:47 J -18739064.74 -18739064.55 -18739064.34 0.0265 0.0110

Mercury -56012-11-30 00:42 J -18736626.55 -18736626.47 -18736626.38 0.0288 0.0230

Mercury -56011-02-26 13:40 J -18736538.05 -18736537.93 -18736537.81 0.0289 0.0118

Mercury -56011-05-26 02:23 J -18736449.53 -18736449.40 -18736449.26 0.0290 0.0006

Mercury -56011-08-22 15:06 J -18736361.00 -18736360.87 -18736360.75 0.0290 0.0106

Mercury -56011-11-19 03:35 J -18736272.44 -18736272.35 -18736272.26 0.0291 0.0218

Earth -56010-07-28 12:28 J -18736021.21 -18736020.98 -18736020.75 0.0294 0.0100

Moon -56010-07-28 15:35 J -18736021.07 -18736020.85 -18736020.62 0.0294 0.0086 \*

Earth -56009-08-10 19:54 J -18735641.84 -18735641.67 -18735641.48 0.0296 0.0194

Moon -56009-08-10 23:30 J -18735641.69 -18735641.52 -18735641.34 0.0296 0.0206 \*

Venus -56004-01-26 01:25 J -18734012.65 -18734012.44 -18734012.24 0.0297 0.0017

# 56TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 56th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
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Mars -55999-08-21 07:54 J -18731979.44 -18731979.17 -18731978.89 0.0277 0.0090  
 Mercury -55998-07-01 17:59 J -18731664.77 -18731664.75 -18731664.74 0.0274 0.0272  
 Mercury -55998-09-28 13:40 J -18731576.08 -18731575.93 -18731575.78 0.0273 0.0149  
 Mercury -55998-12-26 09:35 J -18731487.27 -18731487.10 -18731486.92 0.0272 0.0026  
 Mercury -55997-03-24 05:45 J -18731398.42 -18731398.26 -18731398.09 0.0271 0.0099  
 Mercury -55997-06-21 02:09 J -18731309.51 -18731309.41 -18731309.30 0.0270 0.0224  
 Earth -55996-01-18 19:11 J -18731097.89 -18731097.70 -18731097.49 0.0268 0.0164  
 Moon -55996-01-18 20:09 J -18731097.84 -18731097.66 -18731097.45 0.0268 0.0173 \*  
 Moon -55995-01-30 18:42 J -18730720.96 -18730720.72 -18730720.47 0.0266 0.0057  
 Earth -55995-01-30 22:04 J -18730720.82 -18730720.58 -18730720.34 0.0266 0.0055 \*  
 Venus -55989-02-21 21:06 J -18728507.78 -18728507.62 -18728507.44 0.0264 0.0166  
 Venus -55989-10-08 03:06 J -18728278.54 -18728278.37 -18728278.19 0.0265 0.0153  
 Mars -55983-10-07 13:11 J -18726088.25 -18726087.95 -18726087.66 0.0285 0.0019  
 Mercury -55982-04-19 02:09 J -18725894.46 -18725894.41 -18725894.36 0.0288 0.0267  
 Mercury -55982-07-16 15:06 J -18725805.99 -18725805.87 -18725805.76 0.0289 0.0155  
 Mercury -55982-10-13 03:49 J -18725717.47 -18725717.34 -18725717.21 0.0289 0.0043  
 Mercury -55981-01-09 16:33 J -18725628.94 -18725628.81 -18725628.68 0.0290 0.0070  
 Mercury -55981-04-07 05:01 J -18725540.39 -18725540.29 -18725540.18 0.0291 0.0181  
 Moon -55981-07-21 07:40 J -18725435.34 -18725435.18 -18725435.01 0.0292 0.0214  
 Earth -55981-07-21 10:47 J -18725435.19 -18725435.05 -18725434.89 0.0292 0.0230 \*  
 Moon -55980-08-04 13:54 J -18725056.15 -18725055.92 -18725055.69 0.0296 0.0072  
 Earth -55980-08-04 16:33 J -18725056.04 -18725055.81 -18725055.56 0.0296 0.0061 \*  
 Venus -55975-08-08 05:45 J -18723226.46 -18723226.26 -18723226.05 0.0297 0.0037  
 Mars -55969-10-08 22:18 J -18720972.79 -18720972.57 -18720972.34 0.0274 0.0179  
 Mercury -55968-02-14 13:25 J -18720844.07 -18720843.94 -18720843.81 0.0273 0.0185  
 Mercury -55968-05-14 09:21 J -18720755.28 -18720755.11 -18720754.93 0.0272 0.0061  
 Mercury -55968-08-11 05:30 J -18720666.44 -18720666.27 -18720666.09 0.0271 0.0063  
 Mercury -55968-11-08 01:54 J -18720577.55 -18720577.42 -18720577.29 0.0270 0.0188  
 Earth -55967-01-13 19:11 J -18720510.74 -18720510.70 -18720510.64 0.0270 0.0264  
 Earth -55966-01-26 00:13 J -18720133.73 -18720133.49 -18720133.24 0.0267 0.0044

Moon -55966-01-26 03:35 J -18720133.59 -18720133.35 -18720133.11 0.0267 0.0046 \*  
 Earth -55965-02-07 01:25 J -18719756.62 -18719756.44 -18719756.25 0.0265 0.0172  
 Moon -55965-02-07 03:49 J -18719756.52 -18719756.34 -18719756.15 0.0265 0.0180 \*  
 Venus -55960-09-03 03:21 J -18717721.56 -18717721.36 -18717721.16 0.0264 0.0115  
 Venus -55959-04-20 09:06 J -18717492.24 -18717492.12 -18717491.97 0.0265 0.0206  
 Mercury -55953-12-02 17:45 J -18715073.86 -18715073.76 -18715073.65 0.0288 0.0181  
 Mercury -55952-03-01 06:42 J -18714985.35 -18714985.22 -18714985.09 0.0289 0.0068  
 Mercury -55952-05-28 19:25 J -18714896.83 -18714896.69 -18714896.56 0.0290 0.0044  
 Mercury -55952-08-25 07:54 J -18714808.28 -18714808.17 -18714808.05 0.0291 0.0156  
 Mercury -55952-11-21 20:23 J -18714719.69 -18714719.65 -18714719.59 0.0292 0.0268  
 Earth -55951-07-29 23:16 J -18714469.76 -18714469.53 -18714469.29 0.0294 0.0069  
 Moon -55951-07-30 02:09 J -18714469.66 -18714469.41 -18714469.17 0.0294 0.0055 \*  
 Moon -55950-08-13 06:42 J -18714090.36 -18714090.22 -18714090.06 0.0297 0.0234  
 Earth -55950-08-13 07:25 J -18714090.34 -18714090.19 -18714090.03 0.0297 0.0227 \*  
 Venus -55945-02-18 14:52 J -18712440.06 -18712439.88 -18712439.68 0.0297 0.0106  
 Mercury -55939-07-04 14:23 J -18710112.01 -18710111.90 -18710111.78 0.0273 0.0212  
 Mercury -55939-10-01 10:18 J -18710023.24 -18710023.07 -18710022.90 0.0272 0.0088  
 Mercury -55939-12-29 06:28 J -18709934.41 -18709934.23 -18709934.05 0.0271 0.0036  
 Mercury -55938-03-28 02:37 J -18709845.53 -18709845.39 -18709845.24 0.0271 0.0161  
 Moon -55937-01-21 01:25 J -18709546.65 -18709546.44 -18709546.23 0.0268 0.0142  
 Earth -55937-01-21 04:33 J -18709546.51 -18709546.31 -18709546.09 0.0268 0.0137 \*  
 Moon -55936-02-01 04:04 J -18709169.55 -18709169.33 -18709169.10 0.0266 0.0085  
 Earth -55936-02-01 06:42 J -18709169.45 -18709169.22 -18709168.98 0.0266 0.0081 \*  
 Venus -55930-03-16 07:11 J -18706935.41 -18706935.20 -18706934.99 0.0264 0.0072  
 Venus -55930-10-31 12:57 J -18706706.03 -18706705.96 -18706705.88 0.0265 0.0247  
 Mercury -55923-04-21 18:42 J -18704341.80 -18704341.72 -18704341.63 0.0288 0.0221  
 Mercury -55923-07-19 07:40 J -18704253.31 -18704253.18 -18704253.05 0.0289 0.0109  
 Mercury -55923-10-15 20:23 J -18704164.79 -18704164.65 -18704164.51 0.0290 0.0003  
 Mercury -55922-01-12 08:52 J -18704076.25 -18704076.13 -18704076.00 0.0291 0.0116  
 Mercury -55922-04-10 21:35 J -18703987.68 -18703987.60 -18703987.52 0.0292 0.0227

Moon -55922-07-23 16:18 J -18703884.00 -18703883.82 -18703883.64 0.0293 0.0188  
 Earth -55922-07-23 18:42 J -18703883.89 -18703883.72 -18703883.54 0.0293 0.0202 \*  
 Earth -55921-08-06 00:42 J -18703504.69 -18703504.47 -18703504.23 0.0296 0.0090  
 Moon -55921-08-06 02:09 J -18703504.63 -18703504.41 -18703504.19 0.0296 0.0098 \*  
 Venus -55916-01-12 23:01 J -18701883.60 -18701883.54 -18701883.45 0.0298 0.0276  
 Venus -55916-08-30 17:45 J -18701653.93 -18701653.76 -18701653.58 0.0297 0.0154  
 Mars -55910-01-15 09:06 J -18699690.40 -18699690.12 -18699689.83 0.0276 0.0054  
 Mercury -55910-11-21 13:40 J -18699380.00 -18699379.93 -18699379.86 0.0273 0.0251  
 Mercury -55909-02-18 09:35 J -18699291.26 -18699291.10 -18699290.95 0.0272 0.0128  
 Mercury -55909-05-17 05:30 J -18699202.45 -18699202.27 -18699202.09 0.0272 0.0005  
 Mercury -55909-08-14 01:40 J -18699113.59 -18699113.43 -18699113.26 0.0271 0.0121  
 Mercury -55909-11-10 22:18 J -18699024.65 -18699024.57 -18699024.50 0.0270 0.0245  
 Earth -55908-01-15 02:52 J -18698959.49 -18698959.38 -18698959.26 0.0269 0.0239  
 Moon -55908-01-15 05:45 J -18698959.34 -18698959.26 -18698959.16 0.0269 0.0249 \*  
 Earth -55907-01-27 07:25 J -18698582.44 -18698582.19 -18698581.94 0.0266 0.0018  
 Moon -55907-01-27 10:04 J -18698582.33 -18698582.08 -18698581.82 0.0266 0.0018 \*  
 Moon -55906-02-08 05:59 J -18698205.40 -18698205.25 -18698205.09 0.0264 0.0207  
 Earth -55906-02-08 07:40 J -18698205.33 -18698205.18 -18698205.00 0.0264 0.0197 \*  
 Venus -55901-09-25 11:59 J -18696149.21 -18696149.00 -18696148.78 0.0264 0.0026  
 Mars -55894-03-03 14:37 J -18693799.18 -18693798.89 -18693798.59 0.0286 0.0014  
 Mercury -55894-09-08 21:06 J -18693609.68 -18693609.62 -18693609.55 0.0288 0.0250  
 Mercury -55894-12-06 10:04 J -18693521.20 -18693521.08 -18693520.96 0.0289 0.0137  
 Mercury -55893-03-03 22:47 J -18693432.68 -18693432.55 -18693432.41 0.0289 0.0026  
 Mercury -55893-05-31 11:30 J -18693344.15 -18693344.02 -18693343.89 0.0290 0.0087  
 Mercury -55893-08-27 23:59 J -18693255.59 -18693255.50 -18693255.40 0.0291 0.0199  
 Moon -55892-07-31 04:04 J -18692918.58 -18692918.33 -18692918.08 0.0294 0.0030  
 Earth -55892-07-31 05:16 J -18692918.52 -18692918.28 -18692918.04 0.0294 0.0041 \*  
 Moon -55891-08-14 10:33 J -18692539.17 -18692539.06 -18692538.94 0.0297 0.0260  
 Earth -55891-08-14 14:09 J -18692539.03 -18692538.91 -18692538.78 0.0297 0.0255 \*  
 Venus -55887-07-26 07:40 J -18691097.33 -18691097.18 -18691097.04 0.0298 0.0209

Venus -55886-03-13 02:09 J -18690867.55 -18690867.41 -18690867.27 0.0296 0.0219

Mars -55880-03-05 05:59 J -18688683.43 -18688683.25 -18688683.06 0.0274 0.0212

Mercury -55880-07-07 10:18 J -18688559.22 -18688559.07 -18688558.93 0.0273 0.0156

Mercury -55880-10-04 06:13 J -18688470.42 -18688470.24 -18688470.06 0.0272 0.0033

Mercury -55879-01-01 02:09 J -18688381.57 -18688381.41 -18688381.23 0.0271 0.0093

Mercury -55879-03-30 22:33 J -18688292.66 -18688292.56 -18688292.45 0.0270 0.0217

Moon -55878-01-22 08:37 J -18687995.36 -18687995.14 -18687994.92 0.0268 0.0116

Earth -55878-01-22 11:01 J -18687995.26 -18687995.04 -18687994.81 0.0268 0.0113 \*

Earth -55877-02-03 12:57 J -18687618.19 -18687617.96 -18687617.73 0.0265 0.0105

Moon -55877-02-03 14:37 J -18687618.10 -18687617.89 -18687617.66 0.0265 0.0113 \*

Venus -55871-04-07 15:49 J -18685363.06 -18685362.84 -18685362.62 0.0264 0.0017

Mercury -55864-04-24 11:01 J -18682789.15 -18682789.04 -18682788.94 0.0288 0.0179

Mercury -55864-07-21 23:45 J -18682700.64 -18682700.51 -18682700.38 0.0289 0.0067

Mercury -55864-10-18 12:28 J -18682612.12 -18682611.98 -18682611.85 0.0290 0.0045

Mercury -55863-01-15 00:57 J -18682523.57 -18682523.46 -18682523.35 0.0291 0.0156

Mercury -55863-04-13 13:25 J -18682434.99 -18682434.94 -18682434.89 0.0292 0.0267

Earth -55863-07-24 23:01 J -18682332.73 -18682332.54 -18682332.34 0.0293 0.0177

Moon -55863-07-25 00:57 J -18682332.65 -18682332.46 -18682332.27 0.0293 0.0164 \*

Earth -55862-08-08 05:16 J -18681953.50 -18681953.28 -18681953.05 0.0296 0.0116

Moon -55862-08-08 08:52 J -18681953.35 -18681953.13 -18681952.91 0.0296 0.0124 \*

Venus -55857-02-05 08:37 J -18680311.30 -18680311.14 -18680310.96 0.0298 0.0168

Venus -55857-09-22 03:06 J -18680081.46 -18680081.37 -18680081.27 0.0297 0.0260

Mercury -55851-11-24 08:23 J -18677827.26 -18677827.15 -18677827.02 0.0273 0.0201

Mercury -55850-02-21 04:33 J -18677738.48 -18677738.31 -18677738.14 0.0272 0.0077

Mercury -55850-05-21 00:42 J -18677649.65 -18677649.47 -18677649.30 0.0271 0.0047

Mercury -55850-08-17 20:52 J -18677560.77 -18677560.63 -18677560.49 0.0271 0.0172

Earth -55849-01-17 06:57 J -18677408.35 -18677408.21 -18677408.06 0.0269 0.0217

Moon -55849-01-17 09:49 J -18677408.22 -18677408.09 -18677407.95 0.0269 0.0226 \*

Moon -55848-01-28 09:06 J -18677031.37 -18677031.12 -18677030.86 0.0266 0.0010

Earth -55848-01-28 11:16 J -18677031.28 -18677031.03 -18677030.78 0.0266 0.0004 \*

Moon -55847-02-09 07:54 J -18676654.28 -18676654.17 -18676654.05 0.0264 0.0231  
 Earth -55847-02-09 11:45 J -18676654.15 -18676654.01 -18676653.87 0.0264 0.0218 \*  
 Venus -55842-03-03 13:40 J -18674805.97 -18674805.93 -18674805.87 0.0263 0.0256  
 Venus -55842-10-18 19:11 J -18674576.91 -18674576.70 -18674576.48 0.0264 0.0060  
 Mars -55836-06-06 13:40 J -18672519.01 -18672518.93 -18672518.83 0.0283 0.0269  
 Mercury -55835-09-11 12:42 J -18672057.06 -18672056.97 -18672056.87 0.0288 0.0212  
 Mercury -55835-12-09 01:40 J -18671968.56 -18671968.43 -18671968.30 0.0289 0.0100  
 Mercury -55834-03-07 14:23 J -18671880.04 -18671879.90 -18671879.77 0.0290 0.0012  
 Mercury -55834-06-04 03:06 J -18671791.50 -18671791.37 -18671791.25 0.0291 0.0124  
 Moon -55834-07-18 23:45 J -18671746.54 -18671746.51 -18671746.47 0.0291 0.0287  
 Mercury -55834-08-31 15:21 J -18671702.93 -18671702.86 -18671702.77 0.0291 0.0236  
 Moon -55833-08-01 02:52 J -18671367.62 -18671367.38 -18671367.13 0.0294 0.0008  
 Earth -55833-08-01 06:42 J -18671367.46 -18671367.22 -18671366.98 0.0294 0.0018 \*  
 Moon -55832-08-15 14:23 J -18670987.97 -18670987.90 -18670987.84 0.0297 0.0284  
 Earth -55832-08-15 15:35 J -18670987.92 -18670987.85 -18670987.76 0.0297 0.0279 \*  
 Venus -55828-08-17 15:35 J -18669525.04 -18669524.85 -18669524.66 0.0298 0.0107  
 Mars -55822-06-11 06:57 J -18667401.50 -18667401.21 -18667400.92 0.0277 0.0027  
 Mercury -55821-04-12 08:52 J -18667095.22 -18667095.13 -18667095.03 0.0274 0.0231  
 Mercury -55821-07-10 04:47 J -18667006.46 -18667006.30 -18667006.13 0.0273 0.0108  
 Mercury -55821-10-07 00:57 J -18666917.64 -18666917.46 -18666917.28 0.0272 0.0017  
 Mercury -55820-01-03 21:06 J -18666828.77 -18666828.62 -18666828.46 0.0271 0.0141  
 Mercury -55820-04-02 17:30 J -18666739.79 -18666739.77 -18666739.73 0.0270 0.0266  
 Earth -55819-01-23 14:09 J -18666444.14 -18666443.91 -18666443.67 0.0268 0.0091  
 Moon -55819-01-23 15:49 J -18666444.06 -18666443.84 -18666443.61 0.0268 0.0091 \*  
 Earth -55818-02-04 16:04 J -18666067.05 -18666066.83 -18666066.62 0.0265 0.0127  
 Moon -55818-02-04 19:25 J -18666066.89 -18666066.69 -18666066.46 0.0265 0.0138 \*  
 Venus -55813-09-12 17:30 J -18664019.90 -18664019.77 -18664019.65 0.0263 0.0214  
 Venus -55812-04-29 22:33 J -18663790.76 -18663790.56 -18663790.35 0.0264 0.0101  
 Mars -55806-07-27 09:06 J -18661511.41 -18661511.12 -18661510.82 0.0285 0.0028  
 Mercury -55805-01-29 13:25 J -18661325.00 -18661324.94 -18661324.88 0.0287 0.0254

Mercury -55805-04-27 02:23 J -18661236.52 -18661236.40 -18661236.28 0.0288 0.0143  
 Mercury -55805-07-24 15:06 J -18661148.01 -18661147.87 -18661147.74 0.0289 0.0032  
 Mercury -55805-10-21 03:35 J -18661059.48 -18661059.35 -18661059.22 0.0290 0.0080  
 Mercury -55804-01-17 16:18 J -18660970.92 -18660970.82 -18660970.72 0.0291 0.0191  
 Earth -55804-07-25 23:16 J -18660781.73 -18660781.53 -18660781.32 0.0293 0.0156  
 Moon -55804-07-26 02:52 J -18660781.58 -18660781.38 -18660781.15 0.0293 0.0144 \*  
 Earth -55803-08-09 05:30 J -18660402.48 -18660402.27 -18660402.05 0.0296 0.0138  
 Moon -55803-08-09 06:42 J -18660402.43 -18660402.22 -18660402.00 0.0296 0.0143 \*  
 Venus -55798-02-27 15:49 J -18658739.04 -18658738.84 -18658738.64 0.0298 0.0069  
 Mars -55792-07-29 08:37 J -18656395.28 -18656395.14 -18656394.97 0.0274 0.0232  
 Mercury -55792-11-27 02:23 J -18656274.54 -18656274.40 -18656274.25 0.0273 0.0156  
 Mercury -55791-02-23 22:33 J -18656185.74 -18656185.56 -18656185.38 0.0272 0.0032  
 Mercury -55791-05-23 18:42 J -18656096.89 -18656096.72 -18656096.55 0.0271 0.0093  
 Mercury -55791-08-20 15:06 J -18656007.97 -18656007.87 -18656007.76 0.0270 0.0217  
 Moon -55790-01-18 06:28 J -18655857.39 -18655857.23 -18655857.05 0.0269 0.0202  
 Earth -55790-01-18 07:54 J -18655857.33 -18655857.17 -18655857.00 0.0269 0.0197 \*  
 Moon -55789-01-30 08:52 J -18655480.38 -18655480.13 -18655479.89 0.0266 0.0033  
 Earth -55789-01-30 12:13 J -18655480.24 -18655479.99 -18655479.74 0.0266 0.0025 \*  
 Earth -55788-02-10 12:28 J -18655103.09 -18655102.98 -18655102.87 0.0264 0.0237  
 Moon -55788-02-10 12:42 J -18655103.02 -18655102.97 -18655102.89 0.0264 0.0253 \*  
 Venus -55783-03-25 19:40 J -18653233.83 -18653233.68 -18653233.51 0.0263 0.0176  
 Venus -55783-11-10 01:11 J -18653004.63 -18653004.45 -18653004.26 0.0264 0.0141  
 Mercury -55776-09-14 03:49 J -18650504.44 -18650504.34 -18650504.23 0.0288 0.0178  
 Mercury -55776-12-11 16:47 J -18650415.93 -18650415.80 -18650415.67 0.0289 0.0066  
 Mercury -55775-03-10 05:30 J -18650327.40 -18650327.27 -18650327.14 0.0290 0.0046  
 Mercury -55775-06-06 17:59 J -18650238.86 -18650238.75 -18650238.63 0.0291 0.0157  
 Moon -55775-07-19 21:49 J -18650195.66 -18650195.59 -18650195.50 0.0291 0.0272  
 Earth -55775-07-20 00:57 J -18650195.50 -18650195.46 -18650195.39 0.0291 0.0283 \*  
 Mercury -55775-09-03 06:28 J -18650150.28 -18650150.23 -18650150.18 0.0292 0.0268  
 Moon -55774-08-03 04:47 J -18649816.53 -18649816.30 -18649816.06 0.0295 0.0010

Earth -55774-08-03 05:16 J -18649816.52 -18649816.28 -18649816.03 0.0295 0.0006 \*  
 Venus -55769-09-08 21:21 J -18647952.81 -18647952.61 -18647952.40 0.0297 0.0012  
 Mars -55764-09-16 03:49 J -18646119.38 -18646119.34 -18646119.26 0.0280 0.0274  
 Mercury -55762-04-16 02:23 J -18645542.52 -18645542.40 -18645542.27 0.0274 0.0190  
 Mercury -55762-07-13 22:33 J -18645453.73 -18645453.56 -18645453.39 0.0273 0.0065  
 Mercury -55762-10-10 18:42 J -18645364.90 -18645364.72 -18645364.54 0.0272 0.0059  
 Mercury -55761-01-07 15:06 J -18645276.00 -18645275.87 -18645275.74 0.0271 0.0184  
 Earth -55760-01-24 13:54 J -18644893.15 -18644892.92 -18644892.67 0.0268 0.0072  
 Moon -55760-01-24 17:30 J -18644893.00 -18644892.77 -18644892.52 0.0268 0.0071 \*  
 Moon -55759-02-05 15:21 J -18644516.06 -18644515.86 -18644515.65 0.0265 0.0158  
 Earth -55759-02-05 15:49 J -18644516.04 -18644515.84 -18644515.63 0.0265 0.0146 \*  
 Venus -55754-10-05 23:16 J -18642447.72 -18642447.53 -18642447.34 0.0263 0.0134  
 Venus -55753-05-22 04:18 J -18642218.47 -18642218.32 -18642218.15 0.0264 0.0181  
 Mars -55748-10-30 04:47 J -18640231.42 -18640231.30 -18640231.16 0.0281 0.0253  
 Mercury -55746-02-01 04:33 J -18639772.40 -18639772.31 -18639772.22 0.0287 0.0221  
 Mercury -55746-04-30 17:16 J -18639683.90 -18639683.78 -18639683.65 0.0288 0.0111  
 Mercury -55746-07-28 05:59 J -18639595.38 -18639595.25 -18639595.11 0.0289 0.0001  
 Mercury -55746-10-24 18:28 J -18639506.85 -18639506.73 -18639506.60 0.0290 0.0112  
 Mercury -55745-01-21 06:57 J -18639418.29 -18639418.21 -18639418.12 0.0291 0.0223  
 Moon -55745-07-26 20:23 J -18639230.87 -18639230.65 -18639230.42 0.0293 0.0131  
 Earth -55745-07-26 21:06 J -18639230.83 -18639230.62 -18639230.40 0.0293 0.0137 \*  
 Moon -55744-08-09 23:45 J -18638851.71 -18638851.51 -18638851.29 0.0296 0.0158  
 Earth -55744-08-10 03:06 J -18638851.57 -18638851.37 -18638851.16 0.0296 0.0158 \*  
 Venus -55739-03-21 20:23 J -18637166.85 -18637166.65 -18637166.44 0.0298 0.0022  
 Mars -55734-11-03 23:01 J -18635113.83 -18635113.54 -18635113.25 0.0277 0.0016  
 Mercury -55733-09-01 23:30 J -18634810.59 -18634810.52 -18634810.43 0.0274 0.0241  
 Mercury -55733-11-29 19:40 J -18634721.84 -18634721.68 -18634721.52 0.0273 0.0117  
 Mercury -55732-02-26 15:49 J -18634633.02 -18634632.84 -18634632.66 0.0272 0.0009  
 Mercury -55732-05-26 11:59 J -18634544.15 -18634544.00 -18634543.84 0.0271 0.0133  
 Mercury -55732-08-23 08:23 J -18634455.19 -18634455.15 -18634455.09 0.0270 0.0258



Moon -55731-01-19 02:09 J -18634306.57 -18634306.41 -18634306.22 0.0269 0.0184  
 Earth -55731-01-19 05:59 J -18634306.42 -18634306.25 -18634306.06 0.0269 0.0180 \*  
 Earth -55730-01-31 10:33 J -18633929.30 -18633929.06 -18633928.81 0.0266 0.0043  
 Moon -55730-01-31 10:47 J -18633929.28 -18633929.05 -18633928.81 0.0266 0.0052 \*  
 Earth -55729-02-12 10:47 J -18633552.10 -18633552.05 -18633551.98 0.0264 0.0256  
 Venus -55724-04-17 00:42 J -18631661.67 -18631661.47 -18631661.26 0.0263 0.0098  
 Venus -55724-12-02 05:59 J -18631432.36 -18631432.25 -18631432.12 0.0264 0.0218  
 Mars -55718-12-20 05:59 J -18629223.54 -18629223.25 -18629222.96 0.0285 0.0039  
 Mercury -55717-06-20 05:45 J -18629040.31 -18629040.26 -18629040.20 0.0287 0.0258  
 Mercury -55717-09-16 18:42 J -18628951.84 -18628951.72 -18628951.60 0.0288 0.0147  
 Mercury -55717-12-14 07:25 J -18628863.32 -18628863.19 -18628863.05 0.0289 0.0036  
 Mercury -55716-03-12 20:09 J -18628774.79 -18628774.66 -18628774.53 0.0290 0.0075  
 Mercury -55716-06-09 08:37 J -18628686.24 -18628686.14 -18628686.04 0.0291 0.0186  
 Earth -55716-07-20 21:21 J -18628644.70 -18628644.61 -18628644.51 0.0291 0.0265  
 Moon -55716-07-20 22:33 J -18628644.65 -18628644.56 -18628644.44 0.0291 0.0260 \*  
 Earth -55715-08-04 01:11 J -18628265.69 -18628265.45 -18628265.20 0.0295 0.0022  
 Moon -55715-08-04 05:01 J -18628265.53 -18628265.29 -18628265.05 0.0295 0.0024 \*  
 Venus -55710-10-02 01:25 J -18626380.64 -18626380.44 -18626380.24 0.0297 0.0076  
 Mars -55704-12-22 14:23 J -18624107.00 -18624106.90 -18624106.77 0.0275 0.0252  
 Mercury -55703-04-18 19:11 J -18623989.84 -18623989.70 -18623989.54 0.0274 0.0153  
 Mercury -55703-07-16 15:21 J -18623901.03 -18623900.86 -18623900.68 0.0273 0.0028  
 Mercury -55703-10-13 11:30 J -18623812.18 -18623812.02 -18623811.84 0.0272 0.0098  
 Mercury -55702-01-10 07:54 J -18623723.26 -18623723.17 -18623723.06 0.0271 0.0224  
 Earth -55701-01-26 11:45 J -18623342.25 -18623342.01 -18623341.77 0.0268 0.0055  
 Moon -55701-01-26 12:13 J -18623342.24 -18623341.99 -18623341.74 0.0268 0.0051 \*  
 Moon -55700-02-06 10:18 J -18622965.25 -18622965.07 -18622964.89 0.0265 0.0178  
 Earth -55700-02-06 13:40 J -18622965.11 -18622964.93 -18622964.72 0.0265 0.0164 \*  
 Venus -55695-10-28 04:18 J -18620875.54 -18620875.32 -18620875.11 0.0263 0.0056  
 Venus -55694-06-14 09:21 J -18620646.14 -18620646.11 -18620646.06 0.0264 0.0258  
 Mercury -55687-02-03 19:25 J -18618219.79 -18618219.69 -18618219.58 0.0287 0.0190

Mercury -55687-05-03 08:09 J -18618131.29 -18618131.16 -18618131.03 0.0288 0.0079  
 Mercury -55687-07-30 20:52 J -18618042.76 -18618042.63 -18618042.50 0.0289 0.0032  
 Mercury -55687-10-27 09:21 J -18617954.22 -18617954.11 -18617953.99 0.0290 0.0143  
 Mercury -55686-01-23 21:49 J -18617865.65 -18617865.59 -18617865.52 0.0291 0.0253  
 Moon -55686-07-28 14:37 J -18617680.12 -18617679.89 -18617679.67 0.0292 0.0119  
 Earth -55686-07-28 18:13 J -18617679.96 -18617679.74 -18617679.51 0.0292 0.0119 \*  
 Moon -55685-08-10 21:35 J -18617300.79 -18617300.60 -18617300.41 0.0296 0.0173  
 Earth -55685-08-10 23:59 J -18617300.69 -18617300.50 -18617300.30 0.0296 0.0176 \*  
 Venus -55680-04-13 00:13 J -18615594.67 -18615594.49 -18615594.29 0.0298 0.0110  
 Mars -55675-02-08 12:42 J -18613832.04 -18613831.97 -18613831.89 0.0280 0.0270  
 Mercury -55674-09-05 16:04 J -18613257.94 -18613257.83 -18613257.71 0.0274 0.0206  
 Mercury -55674-12-03 11:59 J -18613169.16 -18613169.00 -18613168.82 0.0273 0.0082  
 Mercury -55673-03-01 08:23 J -18613080.33 -18613080.15 -18613079.97 0.0272 0.0043  
 Mercury -55673-05-29 04:33 J -18612991.44 -18612991.31 -18612991.16 0.0271 0.0170  
 Moon -55672-01-20 01:54 J -18612755.60 -18612755.42 -18612755.23 0.0269 0.0164  
 Earth -55672-01-20 02:23 J -18612755.59 -18612755.40 -18612755.20 0.0269 0.0165 \*  
 Earth -55671-02-01 07:11 J -18612378.44 -18612378.20 -18612377.96 0.0266 0.0059  
 Moon -55671-02-01 10:33 J -18612378.29 -18612378.06 -18612377.82 0.0266 0.0071 \*  
 Venus -55665-05-09 05:16 J -18610089.50 -18610089.28 -18610089.06 0.0263 0.0022  
 Mars -55659-03-24 23:16 J -18607943.68 -18607943.53 -18607943.38 0.0282 0.0243  
 Mercury -55658-06-23 20:37 J -18607487.72 -18607487.64 -18607487.55 0.0287 0.0227  
 Mercury -55658-09-20 09:35 J -18607399.23 -18607399.10 -18607398.98 0.0288 0.0117  
 Mercury -55658-12-17 22:18 J -18607310.71 -18607310.57 -18607310.44 0.0289 0.0011  
 Mercury -55657-03-15 10:47 J -18607222.18 -18607222.05 -18607221.92 0.0290 0.0105  
 Mercury -55657-06-11 23:16 J -18607133.62 -18607133.53 -18607133.44 0.0291 0.0215  
 Earth -55657-07-21 17:45 J -18607093.88 -18607093.76 -18607093.64 0.0291 0.0248  
 Moon -55657-07-21 21:06 J -18607093.74 -18607093.62 -18607093.48 0.0291 0.0246 \*  
 Earth -55656-08-04 21:06 J -18606714.86 -18606714.62 -18606714.38 0.0294 0.0039  
 Moon -55656-08-04 22:47 J -18606714.80 -18606714.55 -18606714.30 0.0294 0.0036 \*  
 Venus -55651-03-08 09:35 J -18605038.18 -18605038.10 -18605038.01 0.0298 0.0269

Venus -55651-10-24 04:33 J -18604808.48 -18604808.31 -18604808.13 0.0297 0.0160

Mars -55645-03-28 22:33 J -18602825.85 -18602825.56 -18602825.27 0.0278 0.0001

Mercury -55644-01-22 15:35 J -18602525.92 -18602525.85 -18602525.76 0.0275 0.0243

Mercury -55644-04-21 11:30 J -18602437.17 -18602437.02 -18602436.85 0.0274 0.0119

Mercury -55644-07-19 07:54 J -18602348.35 -18602348.17 -18602347.99 0.0273 0.0008

Mercury -55644-10-16 04:04 J -18602259.48 -18602259.33 -18602259.17 0.0272 0.0133

Mercury -55643-01-13 00:42 J -18602170.52 -18602170.47 -18602170.41 0.0271 0.0258

Earth -55643-01-15 00:13 J -18602168.52 -18602168.49 -18602168.44 0.0271 0.0267

Moon -55643-01-15 00:42 J -18602168.50 -18602168.47 -18602168.44 0.0271 0.0269 \*

Moon -55642-01-27 04:18 J -18601791.57 -18601791.32 -18601791.07 0.0268 0.0032

Earth -55642-01-27 07:54 J -18601791.42 -18601791.17 -18601790.93 0.0268 0.0040 \*

Moon -55641-02-08 09:06 J -18601414.28 -18601414.12 -18601413.95 0.0265 0.0193

Earth -55641-02-08 10:33 J -18601414.25 -18601414.06 -18601413.88 0.0265 0.0179 \*

Venus -55636-11-19 09:06 J -18599303.34 -18599303.12 -18599302.90 0.0263 0.0021

Mars -55629-05-13 20:09 J -18596935.95 -18596935.66 -18596935.36 0.0283 0.0057

Mercury -55629-11-09 21:35 J -18596755.64 -18596755.60 -18596755.55 0.0286 0.0268

Mercury -55628-02-06 10:33 J -18596667.18 -18596667.06 -18596666.95 0.0287 0.0158

Mercury -55628-05-05 23:01 J -18596578.67 -18596578.54 -18596578.40 0.0288 0.0049

Mercury -55628-08-02 11:45 J -18596490.14 -18596490.01 -18596489.88 0.0289 0.0063

Mercury -55628-10-30 00:13 J -18596401.60 -18596401.49 -18596401.38 0.0289 0.0172

Mercury -55627-01-26 12:28 J -18596313.00 -18596312.98 -18596312.94 0.0290 0.0282

Moon -55627-07-29 14:23 J -18596129.11 -18596128.90 -18596128.67 0.0292 0.0106

Earth -55627-07-29 15:21 J -18596129.09 -18596128.86 -18596128.63 0.0292 0.0101 \*

Earth -55626-08-12 20:23 J -18595749.83 -18595749.65 -18595749.46 0.0296 0.0194

Moon -55626-08-12 23:01 J -18595749.72 -18595749.54 -18595749.36 0.0296 0.0185 \*

Venus -55622-09-18 08:52 J -18594252.25 -18594252.13 -18594252.00 0.0299 0.0233

Venus -55621-05-05 03:35 J -18594022.49 -18594022.35 -18594022.19 0.0297 0.0196

Mars -55615-05-16 19:54 J -18591819.75 -18591819.67 -18591819.55 0.0275 0.0258

Mercury -55615-09-08 08:23 J -18591705.29 -18591705.15 -18591705.01 0.0274 0.0173

Mercury -55615-12-06 04:33 J -18591616.49 -18591616.31 -18591616.14 0.0273 0.0048

Mercury -55614-03-05 00:42 J -18591527.64 -18591527.47 -18591527.29 0.0272 0.0078

Mercury -55614-06-01 21:21 J -18591438.73 -18591438.61 -18591438.49 0.0272 0.0204

Earth -55613-01-21 21:49 J -18591204.79 -18591204.59 -18591204.38 0.0269 0.0151

Moon -55613-01-22 01:25 J -18591204.64 -18591204.44 -18591204.23 0.0269 0.0145 \*

Earth -55612-02-02 03:06 J -18590827.61 -18590827.37 -18590827.13 0.0266 0.0074

Moon -55612-02-02 04:33 J -18590827.54 -18590827.31 -18590827.06 0.0266 0.0087 \*

Venus -55607-10-15 04:33 J -18588746.34 -18588746.31 -18588746.26 0.0263 0.0258

Venus -55606-06-01 09:49 J -18588517.30 -18588517.09 -18588516.87 0.0263 0.0054

Mercury -55599-06-26 11:45 J -18585935.11 -18585935.01 -18585934.91 0.0287 0.0195

Mercury -55599-09-23 00:28 J -18585846.61 -18585846.48 -18585846.35 0.0288 0.0085

Mercury -55599-12-20 12:57 J -18585758.09 -18585757.96 -18585757.82 0.0289 0.0028

Mercury -55598-03-19 01:40 J -18585669.55 -18585669.43 -18585669.31 0.0290 0.0136

Mercury -55598-06-15 14:09 J -18585580.98 -18585580.91 -18585580.84 0.0290 0.0246

Earth -55598-07-23 15:06 J -18585543.01 -18585542.87 -18585542.72 0.0291 0.0231

Moon -55598-07-23 15:21 J -18585543.00 -18585542.86 -18585542.70 0.0291 0.0231 \*

Moon -55597-08-05 15:06 J -18585164.12 -18585163.87 -18585163.63 0.0294 0.0048

Earth -55597-08-05 18:13 J -18585163.98 -18585163.74 -18585163.50 0.0294 0.0058 \*

Venus -55592-03-30 13:40 J -18583466.09 -18583465.93 -18583465.76 0.0298 0.0180

Venus -55592-11-15 08:23 J -18583236.26 -18583236.15 -18583236.03 0.0297 0.0246

Mars -55587-07-04 10:47 J -18581544.16 -18581544.05 -18581543.92 0.0281 0.0254

Mercury -55585-01-26 07:54 J -18580973.28 -18580973.17 -18580973.05 0.0275 0.0210

Mercury -55585-04-24 04:04 J -18580884.50 -18580884.33 -18580884.16 0.0274 0.0085

Mercury -55585-07-22 00:13 J -18580795.67 -18580795.49 -18580795.31 0.0273 0.0041

Mercury -55585-10-18 20:37 J -18580706.78 -18580706.64 -18580706.49 0.0272 0.0167

Moon -55584-01-15 15:49 J -18580617.92 -18580617.84 -18580617.73 0.0271 0.0250

Earth -55584-01-15 19:54 J -18580617.75 -18580617.67 -18580617.58 0.0271 0.0254 \*

Moon -55583-01-28 01:54 J -18580240.66 -18580240.42 -18580240.18 0.0268 0.0015

Earth -55583-01-28 03:35 J -18580240.59 -18580240.35 -18580240.10 0.0268 0.0026 \*

Earth -55582-02-09 06:28 J -18579863.39 -18579863.23 -18579863.05 0.0266 0.0194

Moon -55582-02-09 09:21 J -18579863.25 -18579863.11 -18579862.95 0.0266 0.0209 \*

Venus -55577-04-26 08:52 J -18577960.25 -18577960.13 -18577959.99 0.0263 0.0214

Venus -55577-12-11 14:09 J -18577731.11 -18577730.91 -18577730.70 0.0263 0.0099

Mars -55571-08-17 20:23 J -18575655.82 -18575655.65 -18575655.44 0.0280 0.0218

Mercury -55570-11-13 12:57 J -18575203.03 -18575202.96 -18575202.88 0.0286 0.0233

Mercury -55569-02-10 01:40 J -18575114.55 -18575114.43 -18575114.30 0.0286 0.0124

Mercury -55569-05-08 14:23 J -18575026.04 -18575025.90 -18575025.76 0.0287 0.0014

Mercury -55569-08-05 02:52 J -18574937.50 -18574937.38 -18574937.25 0.0288 0.0096

Mercury -55569-11-01 15:21 J -18574848.95 -18574848.86 -18574848.77 0.0289 0.0206

Earth -55568-07-30 14:37 J -18574578.12 -18574577.89 -18574577.66 0.0292 0.0082

Moon -55568-07-30 17:45 J -18574577.98 -18574577.76 -18574577.53 0.0292 0.0090 \*

Earth -55567-08-13 19:11 J -18574198.86 -18574198.70 -18574198.53 0.0295 0.0213

Moon -55567-08-13 22:33 J -18574198.74 -18574198.56 -18574198.38 0.0295 0.0200 \*

Venus -55563-10-10 13:40 J -18572680.11 -18572679.93 -18572679.75 0.0298 0.0142

Venus -55562-05-28 07:54 J -18572450.21 -18572450.17 -18572450.10 0.0297 0.0284

Mars -55557-08-21 05:30 J -18570538.56 -18570538.27 -18570537.98 0.0278 0.0005

Mercury -55556-06-14 04:33 J -18570241.35 -18570241.31 -18570241.25 0.0275 0.0263

Mercury -55556-09-11 00:42 J -18570152.62 -18570152.47 -18570152.31 0.0274 0.0138

Mercury -55556-12-08 21:06 J -18570063.80 -18570063.62 -18570063.45 0.0273 0.0015

Mercury -55555-03-07 17:16 J -18569974.94 -18569974.78 -18569974.61 0.0272 0.0113

Mercury -55555-06-04 13:40 J -18569886.00 -18569885.93 -18569885.84 0.0272 0.0240

Earth -55554-01-22 17:45 J -18569653.97 -18569653.76 -18569653.54 0.0270 0.0137

Moon -55554-01-22 19:11 J -18569653.92 -18569653.70 -18569653.47 0.0270 0.0126 \*

Moon -55553-02-03 20:23 J -18569276.88 -18569276.65 -18569276.41 0.0267 0.0104

Earth -55553-02-03 23:30 J -18569276.75 -18569276.52 -18569276.28 0.0267 0.0089 \*

Venus -55548-11-06 09:49 J -18567174.25 -18567174.09 -18567173.93 0.0263 0.0180

Venus -55547-06-23 15:06 J -18566945.06 -18566944.87 -18566944.68 0.0264 0.0133

Mars -55541-10-06 18:57 J -18564648.00 -18564647.71 -18564647.42 0.0284 0.0071

Mercury -55540-04-01 14:23 J -18564470.94 -18564470.90 -18564470.86 0.0286 0.0270

Mercury -55540-06-29 03:06 J -18564382.48 -18564382.37 -18564382.26 0.0287 0.0160

Mercury -55540-09-25 15:49 J -18564293.98 -18564293.84 -18564293.71 0.0288 0.0051

Mercury -55540-12-23 04:18 J -18564205.45 -18564205.32 -18564205.19 0.0289 0.0060  
 Mercury -55539-03-21 16:47 J -18564116.91 -18564116.80 -18564116.69 0.0290 0.0169  
 Mercury -55539-06-18 05:16 J -18564028.31 -18564028.28 -18564028.25 0.0290 0.0279  
 Moon -55539-07-24 11:16 J -18563992.18 -18563992.03 -18563991.86 0.0291 0.0217  
 Earth -55539-07-24 14:52 J -18563992.05 -18563991.88 -18563991.72 0.0291 0.0212 \*  
 Moon -55538-08-07 14:37 J -18563613.11 -18563612.89 -18563612.65 0.0294 0.0066  
 Earth -55538-08-07 17:16 J -18563613.01 -18563612.78 -18563612.54 0.0294 0.0078 \*  
 Venus -55533-04-21 18:28 J -18561893.92 -18561893.73 -18561893.53 0.0298 0.0089  
 Mercury -55526-01-29 00:28 J -18559420.61 -18559420.48 -18559420.34 0.0275 0.0174  
 Mercury -55526-04-27 20:37 J -18559331.81 -18559331.64 -18559331.46 0.0274 0.0049  
 Mercury -55526-07-25 17:01 J -18559242.96 -18559242.79 -18559242.62 0.0273 0.0077  
 Mercury -55526-10-22 13:25 J -18559154.05 -18559153.94 -18559153.82 0.0272 0.0204  
 Moon -55525-01-17 14:52 J -18559067.00 -18559066.88 -18559066.76 0.0271 0.0235  
 Earth -55525-01-17 16:04 J -18559066.93 -18559066.83 -18559066.71 0.0271 0.0240 \*  
 Earth -55524-01-29 00:13 J -18558689.73 -18558689.49 -18558689.24 0.0268 0.0012  
 Moon -55524-01-29 03:21 J -18558689.60 -18558689.36 -18558689.12 0.0268 0.0003 \*  
 Earth -55523-02-10 03:35 J -18558312.49 -18558312.35 -18558312.18 0.0266 0.0210  
 Moon -55523-02-10 06:42 J -18558312.35 -18558312.22 -18558312.08 0.0266 0.0223 \*  
 Venus -55518-05-19 14:52 J -18556388.07 -18556387.88 -18556387.69 0.0263 0.0133  
 Venus -55517-01-03 20:09 J -18556158.81 -18556158.66 -18556158.50 0.0264 0.0180  
 Mercury -55511-11-16 04:47 J -18553650.40 -18553650.30 -18553650.20 0.0286 0.0195  
 Mercury -55510-02-12 17:30 J -18553561.90 -18553561.77 -18553561.64 0.0287 0.0085  
 Mercury -55510-05-12 06:13 J -18553473.38 -18553473.24 -18553473.11 0.0288 0.0025  
 Mercury -55510-08-08 18:28 J -18553384.84 -18553384.73 -18553384.61 0.0288 0.0134  
 Mercury -55510-11-05 06:57 J -18553296.28 -18553296.21 -18553296.14 0.0289 0.0242  
 Earth -55509-07-31 17:01 J -18553027.03 -18553026.79 -18553026.55 0.0292 0.0061  
 Moon -55509-07-31 19:40 J -18553026.92 -18553026.68 -18553026.44 0.0292 0.0068 \*  
 Moon -55508-08-14 19:54 J -18552647.82 -18552647.67 -18552647.49 0.0295 0.0220  
 Earth -55508-08-14 21:21 J -18552647.75 -18552647.61 -18552647.46 0.0295 0.0234 \*  
 Venus -55504-11-01 20:23 J -18551107.85 -18551107.65 -18551107.45 0.0298 0.0045

Mars -55499-11-26 23:59 J -18549256.63 -18549256.50 -18549256.36 0.0281 0.0248  
 Mercury -55497-06-16 21:35 J -18548688.69 -18548688.60 -18548688.49 0.0275 0.0225  
 Mercury -55497-09-13 17:45 J -18548599.92 -18548599.76 -18548599.59 0.0274 0.0100  
 Mercury -55497-12-11 14:09 J -18548511.09 -18548510.91 -18548510.73 0.0273 0.0026  
 Mercury -55496-03-10 10:33 J -18548422.21 -18548422.06 -18548421.91 0.0272 0.0152  
 Moon -55495-01-23 12:28 J -18548103.21 -18548102.98 -18548102.75 0.0270 0.0107  
 Earth -55495-01-23 15:49 J -18548103.06 -18548102.84 -18548102.62 0.0270 0.0121 \*  
 Moon -55494-02-04 18:42 J -18547725.93 -18547725.72 -18547725.50 0.0267 0.0120  
 Earth -55494-02-04 21:35 J -18547725.82 -18547725.60 -18547725.37 0.0267 0.0105 \*  
 Venus -55489-11-28 15:49 J -18545602.03 -18545601.84 -18545601.63 0.0263 0.0099  
 Venus -55488-07-15 21:21 J -18545372.72 -18545372.61 -18545372.47 0.0264 0.0215  
 Mars -55482-01-11 02:09 J -18543367.62 -18543367.41 -18543367.19 0.0281 0.0198  
 Mercury -55481-04-04 06:13 J -18542918.31 -18542918.24 -18542918.15 0.0286 0.0230  
 Mercury -55481-07-01 18:57 J -18542829.83 -18542829.71 -18542829.58 0.0287 0.0121  
 Mercury -55481-09-28 07:40 J -18542741.31 -18542741.18 -18542741.04 0.0288 0.0011  
 Mercury -55481-12-25 20:09 J -18542652.78 -18542652.66 -18542652.53 0.0289 0.0099  
 Mercury -55480-03-24 08:37 J -18542564.23 -18542564.14 -18542564.05 0.0290 0.0208  
 Moon -55480-07-25 16:04 J -18542441.00 -18542440.83 -18542440.66 0.0291 0.0196  
 Earth -55480-07-25 18:28 J -18542440.91 -18542440.73 -18542440.55 0.0291 0.0190 \*  
 Earth -55479-08-08 20:37 J -18542061.86 -18542061.64 -18542061.41 0.0294 0.0100  
 Moon -55479-08-08 22:04 J -18542061.80 -18542061.58 -18542061.35 0.0294 0.0088 \*  
 Venus -55474-05-15 01:54 J -18540321.63 -18540321.42 -18540321.22 0.0297 0.0012  
 Mars -55468-01-14 11:59 J -18538250.28 -18538250.00 -18538249.71 0.0278 0.0031  
 Mercury -55468-11-03 21:49 J -18537956.65 -18537956.59 -18537956.54 0.0275 0.0260  
 Mercury -55467-01-31 17:45 J -18537867.91 -18537867.76 -18537867.60 0.0275 0.0135  
 Mercury -55467-04-30 13:54 J -18537779.10 -18537778.92 -18537778.74 0.0274 0.0011  
 Mercury -55467-07-28 10:18 J -18537690.23 -18537690.07 -18537689.90 0.0273 0.0118  
 Mercury -55467-10-25 06:57 J -18537601.28 -18537601.21 -18537601.13 0.0272 0.0244  
 Earth -55466-01-18 14:52 J -18537516.01 -18537515.88 -18537515.74 0.0271 0.0225  
 Moon -55466-01-18 17:30 J -18537515.91 -18537515.77 -18537515.62 0.0271 0.0216 \*

Earth -55465-01-30 23:16 J -18537138.78 -18537138.53 -18537138.28 0.0268 0.0005  
 Moon -55465-01-31 02:09 J -18537138.66 -18537138.41 -18537138.16 0.0268 0.0020 \*  
 Moon -55464-02-11 01:11 J -18536761.55 -18536761.45 -18536761.33 0.0266 0.0237  
 Earth -55464-02-11 03:06 J -18536761.50 -18536761.37 -18536761.24 0.0266 0.0226 \*  
 Venus -55459-06-10 22:04 J -18534815.79 -18534815.58 -18534815.36 0.0263 0.0049  
 Mars -55452-03-02 12:28 J -18532359.25 -18532358.98 -18532358.70 0.0283 0.0111  
 Mercury -55452-08-22 08:37 J -18532186.19 -18532186.14 -18532186.09 0.0285 0.0260  
 Mercury -55452-11-18 21:21 J -18532097.73 -18532097.61 -18532097.50 0.0286 0.0151  
 Mercury -55451-02-15 09:49 J -18532009.22 -18532009.09 -18532008.95 0.0287 0.0043  
 Mercury -55451-05-14 22:33 J -18531920.69 -18531920.56 -18531920.43 0.0288 0.0067  
 Mercury -55451-08-11 11:01 J -18531832.15 -18531832.04 -18531831.94 0.0289 0.0176  
 Mercury -55451-11-07 23:01 J -18531743.55 -18531743.54 -18531743.51 0.0289 0.0285  
 Moon -55450-08-02 21:35 J -18531475.84 -18531475.60 -18531475.34 0.0292 0.0047  
 Earth -55450-08-02 23:16 J -18531475.77 -18531475.53 -18531475.29 0.0292 0.0036 \*  
 Moon -55449-08-15 23:59 J -18531096.63 -18531096.50 -18531096.36 0.0295 0.0243  
 Earth -55449-08-16 03:21 J -18531096.46 -18531096.36 -18531096.23 0.0295 0.0259 \*  
 Venus -55445-11-24 05:01 J -18529535.48 -18529535.29 -18529535.08 0.0297 0.0061  
 Mercury -55438-06-20 15:35 J -18527135.98 -18527135.85 -18527135.71 0.0275 0.0182  
 Mercury -55438-09-17 11:45 J -18527047.18 -18527047.01 -18527046.83 0.0274 0.0056  
 Mercury -55438-12-15 08:09 J -18526958.33 -18526958.16 -18526957.99 0.0273 0.0070  
 Mercury -55437-03-13 04:33 J -18526869.43 -18526869.31 -18526869.18 0.0272 0.0197  
 Moon -55436-01-24 13:40 J -18526552.15 -18526551.93 -18526551.70 0.0270 0.0090  
 Earth -55436-01-24 16:18 J -18526552.05 -18526551.82 -18526551.59 0.0270 0.0103 \*  
 Earth -55435-02-05 22:04 J -18526174.79 -18526174.58 -18526174.35 0.0267 0.0123  
 Moon -55435-02-05 23:59 J -18526174.70 -18526174.50 -18526174.29 0.0267 0.0137 \*  
 Venus -55430-12-21 23:59 J -18524029.72 -18524029.50 -18524029.29 0.0263 0.0013  
 Mercury -55422-04-07 23:01 J -18521365.65 -18521365.54 -18521365.44 0.0286 0.0185  
 Mercury -55422-07-05 11:45 J -18521277.15 -18521277.01 -18521276.88 0.0287 0.0076  
 Mercury -55422-10-02 00:13 J -18521188.62 -18521188.49 -18521188.36 0.0288 0.0034  
 Mercury -55422-12-29 12:42 J -18521100.09 -18521099.97 -18521099.85 0.0289 0.0143



Mercury -55421-03-27 00:57 J -18521011.52 -18521011.46 -18521011.39 0.0290 0.0252  
 Earth -55421-07-27 01:40 J -18520889.62 -18520889.43 -18520889.22 0.0291 0.0165  
 Moon -55421-07-27 03:35 J -18520889.53 -18520889.35 -18520889.16 0.0291 0.0174 \*  
 Earth -55420-08-10 04:04 J -18520510.55 -18520510.33 -18520510.11 0.0294 0.0127  
 Moon -55420-08-10 07:25 J -18520510.41 -18520510.19 -18520509.96 0.0294 0.0114 \*  
 Venus -55415-06-06 11:45 J -18518749.20 -18518749.01 -18518748.83 0.0297 0.0119  
 Mars -55410-04-22 14:37 J -18516968.06 -18516967.89 -18516967.70 0.0281 0.0217  
 Mercury -55409-11-06 15:49 J -18516403.94 -18516403.84 -18516403.72 0.0275 0.0215  
 Mercury -55408-02-03 11:59 J -18516315.16 -18516315.00 -18516314.82 0.0274 0.0089  
 Mercury -55408-05-03 08:23 J -18516226.33 -18516226.15 -18516225.97 0.0273 0.0038  
 Mercury -55408-07-31 05:01 J -18516137.44 -18516137.29 -18516137.15 0.0273 0.0164  
 Earth -55407-01-19 16:47 J -18515964.95 -18515964.80 -18515964.63 0.0271 0.0206  
 Moon -55407-01-19 20:09 J -18515964.83 -18515964.66 -18515964.49 0.0271 0.0197 \*  
 Moon -55406-01-31 23:16 J -18515587.78 -18515587.53 -18515587.27 0.0268 0.0039  
 Earth -55406-02-01 01:25 J -18515587.69 -18515587.44 -18515587.20 0.0268 0.0024 \*  
 Moon -55405-02-13 01:25 J -18515210.50 -18515210.44 -18515210.37 0.0266 0.0254  
 Earth -55405-02-13 05:01 J -18515210.37 -18515210.29 -18515210.18 0.0266 0.0245 \*  
 Venus -55400-07-03 06:57 J -18513243.43 -18513243.21 -18513243.00 0.0264 0.0041  
 Mars -55394-06-07 08:09 J -18511078.40 -18511078.16 -18511077.89 0.0280 0.0151  
 Mercury -55393-08-25 01:40 J -18510633.52 -18510633.43 -18510633.34 0.0285 0.0211  
 Mercury -55393-11-21 14:23 J -18510545.02 -18510544.90 -18510544.77 0.0286 0.0102  
 Mercury -55392-02-18 03:06 J -18510456.51 -18510456.37 -18510456.24 0.0287 0.0009  
 Mercury -55392-05-17 15:21 J -18510367.98 -18510367.86 -18510367.73 0.0288 0.0116  
 Mercury -55392-08-14 03:49 J -18510279.42 -18510279.34 -18510279.25 0.0289 0.0224  
 Moon -55391-08-04 06:28 J -18509924.47 -18509924.23 -18509923.99 0.0292 0.0020  
 Earth -55391-08-04 10:04 J -18509924.32 -18509924.08 -18509923.84 0.0292 0.0007 \*  
 Moon -55390-08-18 12:57 J -18509545.03 -18509544.96 -18509544.87 0.0295 0.0275  
 Earth -55390-08-18 14:23 J -18509544.94 -18509544.90 -18509544.84 0.0295 0.0288 \*  
 Venus -55386-05-01 22:33 J -18508192.67 -18508192.56 -18508192.44 0.0298 0.0246  
 Venus -55386-12-17 17:01 J -18507962.95 -18507962.79 -18507962.62 0.0297 0.0177

Mars -55380-06-09 21:49 J -18505961.87 -18505961.59 -18505961.31 0.0278 0.0051  
 Mercury -55379-03-26 14:37 J -18505671.95 -18505671.89 -18505671.82 0.0276 0.0256  
 Mercury -55379-06-23 10:47 J -18505583.21 -18505583.05 -18505582.90 0.0275 0.0131  
 Mercury -55379-09-20 06:57 J -18505494.39 -18505494.21 -18505494.03 0.0274 0.0006  
 Mercury -55379-12-18 03:06 J -18505405.52 -18505405.37 -18505405.20 0.0273 0.0121  
 Mercury -55378-03-16 23:45 J -18505316.58 -18505316.51 -18505316.43 0.0272 0.0247  
 Earth -55377-01-26 20:23 J -18505000.88 -18505000.65 -18505000.41 0.0269 0.0082  
 Moon -55377-01-26 21:49 J -18505000.82 -18505000.59 -18505000.36 0.0269 0.0069 \*  
 Earth -55376-02-07 01:54 J -18504623.62 -18504623.42 -18504623.20 0.0267 0.0144  
 Moon -55376-02-07 05:59 J -18504623.46 -18504623.25 -18504623.05 0.0267 0.0155 \*  
 Venus -55371-05-29 03:49 J -18502686.44 -18502686.34 -18502686.24 0.0263 0.0232  
 Venus -55370-01-13 09:35 J -18502457.30 -18502457.10 -18502456.89 0.0264 0.0080  
 Mars -55364-07-27 11:59 J -18500070.24 -18500070.00 -18500069.73 0.0284 0.0145  
 Mercury -55363-01-12 03:35 J -18499901.42 -18499901.35 -18499901.28 0.0286 0.0243  
 Mercury -55363-04-10 16:18 J -18499812.94 -18499812.82 -18499812.70 0.0286 0.0134  
 Mercury -55363-07-08 05:01 J -18499724.43 -18499724.29 -18499724.16 0.0287 0.0025  
 Mercury -55363-10-04 17:30 J -18499635.90 -18499635.77 -18499635.64 0.0288 0.0084  
 Mercury -55362-01-01 05:59 J -18499547.35 -18499547.25 -18499547.15 0.0289 0.0193  
 Earth -55362-07-29 13:40 J -18499338.14 -18499337.93 -18499337.71 0.0291 0.0135  
 Moon -55362-07-29 17:30 J -18499337.98 -18499337.77 -18499337.56 0.0291 0.0146 \*  
 Earth -55361-08-11 16:04 J -18498959.03 -18498958.83 -18498958.62 0.0295 0.0157  
 Moon -55361-08-11 17:16 J -18498958.99 -18498958.78 -18498958.55 0.0295 0.0144 \*  
 Venus -55357-11-11 05:30 J -18497406.42 -18497406.27 -18497406.11 0.0298 0.0187  
 Venus -55356-06-28 23:59 J -18497176.61 -18497176.50 -18497176.37 0.0297 0.0237  
 Mercury -55350-11-10 11:16 J -18494851.17 -18494851.03 -18494850.88 0.0275 0.0162  
 Mercury -55349-02-07 07:25 J -18494762.36 -18494762.19 -18494762.01 0.0274 0.0037  
 Mercury -55349-05-06 03:49 J -18494673.51 -18494673.34 -18494673.17 0.0273 0.0090  
 Mercury -55349-08-03 00:28 J -18494584.59 -18494584.48 -18494584.37 0.0272 0.0217  
 Moon -55348-01-20 21:06 J -18494413.80 -18494413.62 -18494413.41 0.0271 0.0173  
 Earth -55348-01-20 22:04 J -18494413.75 -18494413.58 -18494413.39 0.0271 0.0185 \*

Moon -55347-02-02 02:52 J -18494036.62 -18494036.38 -18494036.14 0.0268 0.0059  
 Earth -55347-02-02 06:28 J -18494036.47 -18494036.23 -18494035.98 0.0268 0.0045 \*  
 Earth -55346-02-14 10:18 J -18493659.07 -18493659.07 -18493659.06 0.0266 0.0266  
 Venus -55342-12-09 11:30 J -18491900.18 -18491900.02 -18491899.85 0.0264 0.0178  
 Venus -55341-07-25 17:16 J -18491670.96 -18491670.78 -18491670.59 0.0264 0.0136  
 Mercury -55334-06-01 06:42 J -18489169.26 -18489169.22 -18489169.17 0.0285 0.0266  
 Mercury -55334-08-28 19:25 J -18489080.80 -18489080.69 -18489080.57 0.0286 0.0158  
 Mercury -55334-11-25 08:09 J -18488992.30 -18488992.16 -18488992.03 0.0287 0.0049  
 Mercury -55333-02-21 20:37 J -18488903.77 -18488903.64 -18488903.51 0.0287 0.0060  
 Mercury -55333-05-20 09:06 J -18488815.23 -18488815.12 -18488815.01 0.0288 0.0169  
 Moon -55333-07-22 21:21 J -18488751.68 -18488751.61 -18488751.52 0.0289 0.0270  
 Earth -55333-07-23 00:57 J -18488751.56 -18488751.46 -18488751.35 0.0289 0.0259 \*  
 Mercury -55333-08-16 21:21 J -18488726.64 -18488726.61 -18488726.57 0.0289 0.0277  
 Moon -55332-08-05 23:30 J -18488372.75 -18488372.52 -18488372.28 0.0292 0.0013  
 Earth -55332-08-06 00:28 J -18488372.72 -18488372.48 -18488372.24 0.0292 0.0026 \*  
 Venus -55327-05-24 13:25 J -18486620.13 -18486619.94 -18486619.75 0.0298 0.0120  
 Mars -55322-09-16 14:09 J -18484679.12 -18484678.91 -18484678.70 0.0281 0.0189  
 Mercury -55320-03-29 10:47 J -18484119.16 -18484119.05 -18484118.92 0.0275 0.0198  
 Mercury -55320-06-26 06:57 J -18484030.38 -18484030.21 -18484030.04 0.0274 0.0073  
 Mercury -55320-09-23 03:06 J -18483941.54 -18483941.37 -18483941.19 0.0273 0.0053  
 Mercury -55320-12-20 23:45 J -18483852.65 -18483852.51 -18483852.38 0.0273 0.0179  
 Earth -55318-01-28 04:04 J -18483449.56 -18483449.33 -18483449.08 0.0269 0.0059  
 Moon -55318-01-28 07:54 J -18483449.42 -18483449.17 -18483448.93 0.0269 0.0043 \*  
 Earth -55317-02-09 09:35 J -18483072.29 -18483072.10 -18483071.90 0.0267 0.0167  
 Moon -55317-02-09 09:21 J -18483072.29 -18483072.11 -18483071.91 0.0267 0.0175 \*  
 Venus -55312-06-20 14:52 J -18481114.06 -18481113.88 -18481113.69 0.0263 0.0137  
 Venus -55311-02-04 20:52 J -18480884.79 -18480884.63 -18480884.46 0.0264 0.0177  
 Mars -55306-11-01 15:35 J -18478789.12 -18478788.85 -18478788.57 0.0281 0.0113  
 Mercury -55304-01-14 21:21 J -18478348.71 -18478348.61 -18478348.50 0.0286 0.0189  
 Mercury -55304-04-13 10:04 J -18478260.21 -18478260.08 -18478259.94 0.0287 0.0080

Mercury -55304-07-10 22:47 J -18478171.69 -18478171.55 -18478171.42 0.0288 0.0030

Mercury -55304-10-07 11:16 J -18478083.15 -18478083.03 -18478082.91 0.0289 0.0139

Mercury -55303-01-03 23:30 J -18477994.58 -18477994.52 -18477994.45 0.0290 0.0248

Earth -55303-07-31 04:47 J -18477786.52 -18477786.30 -18477786.06 0.0292 0.0103

Moon -55303-07-31 05:01 J -18477786.51 -18477786.29 -18477786.05 0.0292 0.0115 \*

Moon -55302-08-14 05:01 J -18477407.48 -18477407.29 -18477407.09 0.0295 0.0175

Earth -55302-08-14 07:54 J -18477407.35 -18477407.17 -18477406.98 0.0295 0.0192 \*

Venus -55298-12-04 20:52 J -18475833.83 -18475833.63 -18475833.43 0.0298 0.0058

Mars -55292-11-04 08:09 J -18473672.43 -18473672.16 -18473671.88 0.0278 0.0095

Mercury -55291-08-16 11:45 J -18473387.10 -18473387.01 -18473386.91 0.0275 0.0227

Mercury -55291-11-13 07:54 J -18473298.34 -18473298.17 -18473298.01 0.0274 0.0103

Mercury -55290-02-10 04:04 J -18473209.51 -18473209.33 -18473209.15 0.0274 0.0023

Mercury -55290-05-10 00:28 J -18473120.63 -18473120.48 -18473120.33 0.0273 0.0149

Moon -55289-01-23 03:06 J -18472862.57 -18472862.37 -18472862.15 0.0271 0.0146

Earth -55289-01-23 06:57 J -18472862.40 -18472862.21 -18472862.00 0.0271 0.0160 \*

Moon -55288-02-03 13:54 J -18472485.14 -18472484.92 -18472484.68 0.0268 0.0083

Earth -55288-02-03 14:37 J -18472485.12 -18472484.89 -18472484.64 0.0268 0.0070 \*

Venus -55283-12-31 23:30 J -18470327.73 -18470327.52 -18470327.31 0.0264 0.0079

Venus -55282-08-18 05:16 J -18470098.37 -18470098.28 -18470098.17 0.0265 0.0235

Mars -55276-12-22 15:49 J -18467780.04 -18467779.84 -18467779.64 0.0284 0.0205

Mercury -55275-06-04 00:57 J -18467616.55 -18467616.46 -18467616.36 0.0285 0.0208

Mercury -55275-08-31 13:40 J -18467528.06 -18467527.93 -18467527.80 0.0286 0.0099

Mercury -55275-11-28 02:23 J -18467439.54 -18467439.40 -18467439.27 0.0287 0.0011

Mercury -55274-02-24 14:52 J -18467351.00 -18467350.88 -18467350.76 0.0288 0.0118

Mercury -55274-05-24 03:06 J -18467262.45 -18467262.37 -18467262.28 0.0289 0.0227

Earth -55274-07-25 17:59 J -18467199.88 -18467199.75 -18467199.58 0.0289 0.0226

Moon -55274-07-25 18:13 J -18467199.87 -18467199.74 -18467199.60 0.0289 0.0235 \*

Earth -55273-08-07 18:28 J -18466820.97 -18466820.73 -18466820.49 0.0293 0.0062

Moon -55273-08-07 21:35 J -18466820.83 -18466820.60 -18466820.36 0.0293 0.0048 \*

Venus -55268-06-16 06:28 J -18465047.44 -18465047.23 -18465047.03 0.0297 0.0014

Mercury -55261-01-03 11:59 J -18462655.05 -18462655.00 -18462654.93 0.0276 0.0259

Mercury -55261-04-01 07:54 J -18462566.32 -18462566.17 -18462566.01 0.0275 0.0135

Mercury -55261-06-29 04:04 J -18462477.50 -18462477.33 -18462477.15 0.0274 0.0012

Mercury -55261-09-26 00:28 J -18462388.64 -18462388.48 -18462388.31 0.0273 0.0116

Mercury -55261-12-23 21:06 J -18462299.70 -18462299.62 -18462299.54 0.0272 0.0242

Earth -55260-01-17 05:30 J -18462275.33 -18462275.27 -18462275.19 0.0272 0.0261

Moon -55260-01-17 09:35 J -18462275.19 -18462275.10 -18462275.00 0.0272 0.0249 \*

Earth -55259-01-29 14:52 J -18461898.12 -18461897.88 -18461897.63 0.0269 0.0031

Moon -55259-01-29 16:04 J -18461898.08 -18461897.83 -18461897.57 0.0269 0.0017 \*

Moon -55258-02-10 16:04 J -18461520.98 -18461520.83 -18461520.65 0.0266 0.0200

Earth -55258-02-10 19:25 J -18461520.84 -18461520.69 -18461520.50 0.0266 0.0194 \*

Venus -55253-07-13 03:21 J -18459541.57 -18459541.36 -18459541.14 0.0264 0.0037

Mercury -55246-10-22 02:52 J -18456884.45 -18456884.38 -18456884.31 0.0286 0.0240

Mercury -55245-01-18 15:35 J -18456795.97 -18456795.85 -18456795.73 0.0287 0.0131

Mercury -55245-04-16 04:18 J -18456707.46 -18456707.32 -18456707.18 0.0287 0.0022

Mercury -55245-07-13 16:47 J -18456618.93 -18456618.80 -18456618.67 0.0288 0.0088

Mercury -55245-10-10 05:16 J -18456530.38 -18456530.28 -18456530.18 0.0289 0.0196

Moon -55244-08-01 18:42 J -18456234.96 -18456234.72 -18456234.48 0.0292 0.0081

Earth -55244-08-01 22:04 J -18456234.81 -18456234.58 -18456234.34 0.0292 0.0067 \*

Moon -55243-08-15 22:33 J -18455855.72 -18455855.56 -18455855.39 0.0295 0.0211

Earth -55243-08-16 01:40 J -18455855.57 -18455855.43 -18455855.27 0.0295 0.0228 \*

Venus -55239-12-27 13:40 J -18454261.13 -18454260.93 -18454260.73 0.0297 0.0075

Mars -55233-02-11 06:57 J -18452389.45 -18452389.21 -18452388.95 0.0280 0.0141

Mercury -55232-08-19 09:06 J -18451834.26 -18451834.12 -18451833.98 0.0275 0.0163

Mercury -55232-11-16 05:16 J -18451745.46 -18451745.28 -18451745.11 0.0274 0.0038

Mercury -55231-02-13 01:25 J -18451656.61 -18451656.44 -18451656.27 0.0273 0.0088

Mercury -55231-05-12 21:49 J -18451567.69 -18451567.59 -18451567.47 0.0272 0.0214

Moon -55230-01-24 17:16 J -18451310.99 -18451310.78 -18451310.56 0.0270 0.0117

Earth -55230-01-24 18:42 J -18451310.94 -18451310.72 -18451310.51 0.0270 0.0131 \*

Earth -55229-02-06 01:40 J -18450933.66 -18450933.43 -18450933.20 0.0268 0.0097

Moon -55229-02-06 04:33 J -18450933.53 -18450933.31 -18450933.08 0.0268 0.0110 \*  
 Venus -55223-01-23 11:59 J -18448755.21 -18448755.00 -18448754.77 0.0264 0.0023  
 Mars -55217-03-28 23:59 J -18446498.79 -18446498.50 -18446498.20 0.0281 0.0053  
 Mercury -55216-03-10 06:28 J -18446152.28 -18446152.23 -18446152.17 0.0285 0.0259  
 Mercury -55216-06-06 19:11 J -18446063.81 -18446063.70 -18446063.58 0.0286 0.0150  
 Mercury -55216-09-03 07:54 J -18445975.30 -18445975.17 -18445975.03 0.0287 0.0042  
 Mercury -55216-11-30 20:37 J -18445886.77 -18445886.64 -18445886.51 0.0288 0.0069  
 Mercury -55215-02-27 09:06 J -18445798.23 -18445798.12 -18445798.02 0.0289 0.0177  
 Mercury -55215-05-26 21:21 J -18445709.63 -18445709.61 -18445709.59 0.0289 0.0285  
 Earth -55215-07-27 12:13 J -18445648.17 -18445647.99 -18445647.80 0.0290 0.0189  
 Moon -55215-07-27 15:21 J -18445648.03 -18445647.86 -18445647.68 0.0290 0.0200 \*  
 Earth -55214-08-10 13:25 J -18445269.17 -18445268.94 -18445268.71 0.0293 0.0100  
 Moon -55214-08-10 16:18 J -18445269.05 -18445268.82 -18445268.58 0.0293 0.0085 \*  
 Venus -55210-11-22 05:45 J -18443704.33 -18443704.26 -18443704.17 0.0298 0.0271  
 Venus -55209-07-09 00:13 J -18443474.66 -18443474.49 -18443474.31 0.0297 0.0151  
 Mars -55203-04-01 02:52 J -18441382.62 -18441382.38 -18441382.12 0.0278 0.0137  
 Mercury -55202-01-06 09:49 J -18441102.21 -18441102.09 -18441101.96 0.0275 0.0191  
 Mercury -55202-04-05 05:59 J -18441013.43 -18441013.25 -18441013.08 0.0274 0.0067  
 Mercury -55202-07-03 02:09 J -18440924.59 -18440924.41 -18440924.24 0.0273 0.0059  
 Mercury -55202-09-29 22:33 J -18440835.69 -18440835.56 -18440835.43 0.0273 0.0185  
 Earth -55201-01-19 19:11 J -18440723.82 -18440723.70 -18440723.56 0.0272 0.0231  
 Moon -55201-01-19 20:37 J -18440723.79 -18440723.64 -18440723.49 0.0272 0.0218 \*  
 Moon -55200-01-31 00:42 J -18440346.72 -18440346.47 -18440346.22 0.0269 0.0014  
 Earth -55200-01-31 03:49 J -18440346.59 -18440346.34 -18440346.09 0.0269 0.0002 \*  
 Moon -55199-02-12 05:30 J -18439969.39 -18439969.27 -18439969.15 0.0266 0.0229  
 Earth -55199-02-12 07:40 J -18439969.30 -18439969.18 -18439969.03 0.0266 0.0221 \*  
 Venus -55195-12-19 10:33 J -18438198.12 -18438198.06 -18438197.97 0.0263 0.0246  
 Venus -55194-08-05 16:33 J -18437969.02 -18437968.81 -18437968.60 0.0264 0.0065  
 Mars -55187-05-19 05:16 J -18435490.41 -18435490.28 -18435490.12 0.0284 0.0248  
 Mercury -55187-10-24 21:21 J -18435331.72 -18435331.61 -18435331.51 0.0286 0.0181

Mercury -55186-01-21 10:04 J -18435243.22 -18435243.08 -18435242.95 0.0287 0.0072

Mercury -55186-04-19 22:33 J -18435154.69 -18435154.56 -18435154.42 0.0288 0.0038

Mercury -55186-07-17 11:01 J -18435066.15 -18435066.04 -18435065.92 0.0289 0.0146

Mercury -55186-10-13 23:30 J -18434977.58 -18434977.52 -18434977.46 0.0290 0.0255

Moon -55185-08-03 13:54 J -18434683.15 -18434682.92 -18434682.68 0.0292 0.0043

Earth -55185-08-03 16:33 J -18434683.05 -18434682.81 -18434682.56 0.0292 0.0030 \*

Earth -55184-08-17 20:37 J -18434303.73 -18434303.64 -18434303.53 0.0295 0.0267

Moon -55184-08-17 21:35 J -18434303.72 -18434303.60 -18434303.48 0.0295 0.0251 \*

Venus -55180-06-03 12:42 J -18432918.10 -18432917.97 -18432917.82 0.0298 0.0211

Venus -55179-01-19 07:11 J -18432688.34 -18432688.20 -18432688.05 0.0297 0.0210

Mercury -55173-05-25 10:47 J -18430370.15 -18430370.05 -18430369.95 0.0275 0.0220

Mercury -55173-08-22 06:42 J -18430281.38 -18430281.22 -18430281.05 0.0274 0.0096

Mercury -55173-11-19 02:52 J -18430192.56 -18430192.38 -18430192.20 0.0273 0.0029

Mercury -55172-02-15 23:16 J -18430103.68 -18430103.53 -18430103.38 0.0273 0.0155

Earth -55171-01-26 07:11 J -18429759.43 -18429759.20 -18429758.97 0.0270 0.0102

Moon -55171-01-26 10:04 J -18429759.30 -18429759.08 -18429758.84 0.0270 0.0087 \*

Earth -55170-02-07 13:25 J -18429382.16 -18429381.94 -18429381.72 0.0267 0.0125

Moon -55170-02-07 16:33 J -18429382.03 -18429381.81 -18429381.59 0.0267 0.0138 \*

Venus -55165-06-30 18:57 J -18427411.86 -18427411.71 -18427411.56 0.0264 0.0190

Venus -55164-02-15 00:57 J -18427182.65 -18427182.46 -18427182.26 0.0265 0.0123

Mercury -55157-03-13 00:42 J -18424599.56 -18424599.47 -18424599.37 0.0286 0.0201

Mercury -55157-06-09 13:25 J -18424511.06 -18424510.94 -18424510.81 0.0287 0.0092

Mercury -55157-09-06 02:09 J -18424422.54 -18424422.41 -18424422.27 0.0287 0.0018

Mercury -55157-12-03 14:37 J -18424334.01 -18424333.89 -18424333.77 0.0288 0.0127

Mercury -55156-03-02 03:06 J -18424245.44 -18424245.37 -18424245.29 0.0289 0.0235

Earth -55156-07-29 05:30 J -18424096.46 -18424096.27 -18424096.05 0.0291 0.0154

Moon -55156-07-29 08:37 J -18424096.34 -18424096.14 -18424095.93 0.0291 0.0162 \*

Moon -55155-08-12 06:57 J -18423717.43 -18423717.21 -18423716.98 0.0294 0.0124

Earth -55155-08-12 07:54 J -18423717.38 -18423717.17 -18423716.96 0.0294 0.0139 \*

Venus -55151-12-14 23:45 J -18422131.69 -18422131.51 -18422131.33 0.0297 0.0135

Venus -55150-08-01 17:59 J -18421901.80 -18421901.75 -18421901.69 0.0296 0.0284  
 Mars -55145-07-08 06:57 J -18420099.47 -18420099.21 -18420098.94 0.0280 0.0096  
 Mercury -55144-10-12 11:59 J -18419638.07 -18419638.00 -18419637.92 0.0275 0.0246  
 Mercury -55143-01-09 07:40 J -18419549.33 -18419549.18 -18419549.01 0.0275 0.0123  
 Mercury -55143-04-08 04:04 J -18419460.51 -18419460.33 -18419460.15 0.0274 0.0005  
 Mercury -55143-07-06 00:13 J -18419371.65 -18419371.49 -18419371.33 0.0273 0.0128  
 Mercury -55143-10-02 20:37 J -18419282.70 -18419282.64 -18419282.57 0.0272 0.0254  
 Moon -55142-01-21 06:28 J -18419172.40 -18419172.23 -18419172.04 0.0271 0.0186  
 Earth -55142-01-21 09:35 J -18419172.27 -18419172.10 -18419171.94 0.0271 0.0200 \*  
 Moon -55141-02-02 14:09 J -18418795.15 -18418794.91 -18418794.67 0.0268 0.0044  
 Earth -55141-02-02 17:01 J -18418795.03 -18418794.79 -18418794.54 0.0268 0.0030 \*  
 Earth -55140-02-13 20:37 J -18418417.72 -18418417.64 -18418417.56 0.0266 0.0249  
 Moon -55140-02-13 22:04 J -18418417.64 -18418417.58 -18418417.52 0.0266 0.0256 \*  
 Venus -55135-01-10 23:45 J -18416625.69 -18416625.51 -18416625.32 0.0263 0.0146  
 Venus -55135-08-28 05:30 J -18416396.43 -18416396.27 -18416396.09 0.0264 0.0166  
 Mars -55129-08-23 09:35 J -18414209.40 -18414209.10 -18414208.80 0.0282 0.0014  
 Mercury -55128-07-31 02:23 J -18413867.47 -18413867.40 -18413867.32 0.0286 0.0234  
 Mercury -55128-10-27 15:21 J -18413778.99 -18413778.86 -18413778.74 0.0287 0.0125  
 Mercury -55127-01-24 03:49 J -18413690.47 -18413690.34 -18413690.20 0.0288 0.0018  
 Mercury -55127-04-22 16:33 J -18413601.94 -18413601.81 -18413601.68 0.0288 0.0094  
 Mercury -55127-07-20 05:01 J -18413513.39 -18413513.29 -18413513.20 0.0289 0.0202  
 Moon -55127-07-23 06:42 J -18413510.25 -18413510.22 -18413510.19 0.0289 0.0287  
 Earth -55127-07-23 09:06 J -18413510.17 -18413510.12 -18413510.04 0.0289 0.0279  
 Earth -55126-08-06 09:06 J -18413131.36 -18413131.12 -18413130.88 0.0293 0.0007  
 Moon -55126-08-06 10:04 J -18413131.32 -18413131.08 -18413130.85 0.0293 0.0007 \*  
 Moon -55125-08-19 17:16 J -18412751.83 -18412751.78 -18412751.71 0.0296 0.0287  
 Venus -55121-06-26 05:45 J -18411345.45 -18411345.26 -18411345.06 0.0298 0.0078  
 Mars -55115-08-26 22:04 J -18409092.78 -18409092.58 -18409092.35 0.0277 0.0186  
 Mercury -55114-05-29 08:23 J -18408817.30 -18408817.15 -18408817.00 0.0274 0.0154  
 Mercury -55114-08-26 04:33 J -18408728.49 -18408728.31 -18408728.14 0.0274 0.0030



Mercury -55114-11-23 00:42 J -18408639.64 -18408639.47 -18408639.30 0.0273 0.0096  
 Mercury -55113-02-19 20:52 J -18408550.72 -18408550.63 -18408550.51 0.0272 0.0222  
 Earth -55112-01-27 19:25 J -18408207.92 -18408207.69 -18408207.45 0.0269 0.0072  
 Moon -55112-01-27 22:33 J -18408207.80 -18408207.56 -18408207.31 0.0269 0.0057 \*  
 Moon -55111-02-08 23:45 J -18407830.71 -18407830.51 -18407830.31 0.0267 0.0164  
 Earth -55111-02-09 00:57 J -18407830.65 -18407830.46 -18407830.25 0.0267 0.0154 \*  
 Venus -55106-07-24 07:11 J -18405839.40 -18405839.20 -18405838.99 0.0264 0.0092  
 Venus -55105-03-09 13:11 J -18405610.06 -18405609.95 -18405609.83 0.0265 0.0221  
 Mercury -55099-12-18 05:45 J -18403135.32 -18403135.26 -18403135.20 0.0285 0.0254  
 Mercury -55098-03-16 18:42 J -18403046.84 -18403046.72 -18403046.60 0.0286 0.0145  
 Mercury -55098-06-13 07:25 J -18402958.33 -18402958.19 -18402958.06 0.0287 0.0036  
 Mercury -55098-09-09 19:54 J -18402869.80 -18402869.67 -18402869.54 0.0288 0.0073  
 Mercury -55098-12-07 08:23 J -18402781.25 -18402781.15 -18402781.04 0.0289 0.0182  
 Moon -55097-07-30 20:23 J -18402544.87 -18402544.65 -18402544.42 0.0291 0.0128  
 Earth -55097-07-30 21:06 J -18402544.83 -18402544.62 -18402544.39 0.0291 0.0119 \*  
 Moon -55096-08-13 20:52 J -18402165.83 -18402165.63 -18402165.42 0.0294 0.0161  
 Earth -55096-08-14 00:13 J -18402165.67 -18402165.49 -18402165.29 0.0294 0.0176 \*  
 Venus -55091-01-06 16:33 J -18400559.01 -18400558.81 -18400558.60 0.0297 0.0007  
 Mercury -55085-10-15 09:35 J -18398085.23 -18398085.10 -18398084.96 0.0275 0.0179  
 Mercury -55084-01-12 05:30 J -18397996.44 -18397996.27 -18397996.09 0.0274 0.0055  
 Mercury -55084-04-11 01:54 J -18397907.60 -18397907.42 -18397907.25 0.0273 0.0070  
 Mercury -55084-07-08 22:04 J -18397818.70 -18397818.58 -18397818.45 0.0272 0.0196  
 Moon -55083-01-22 19:25 J -18397620.88 -18397620.69 -18397620.49 0.0271 0.0157  
 Earth -55083-01-22 22:33 J -18397620.74 -18397620.56 -18397620.36 0.0271 0.0170 \*  
 Earth -55082-02-04 05:16 J -18397243.52 -18397243.28 -18397243.03 0.0268 0.0059  
 Moon -55082-02-04 06:42 J -18397243.45 -18397243.22 -18397242.99 0.0268 0.0072 \*  
 Venus -55076-02-02 11:59 J -18395053.21 -18395053.00 -18395052.78 0.0263 0.0048  
 Venus -55076-09-19 17:45 J -18394823.77 -18394823.76 -18394823.75 0.0264 0.0264  
 Mars -55071-11-28 02:37 J -18392928.39 -18392928.39 -18392928.34 0.0279 0.0279  
 Mercury -55069-08-02 20:09 J -18392314.77 -18392314.66 -18392314.56 0.0286 0.0181

Mercury -55069-10-30 08:52 J -18392226.26 -18392226.13 -18392226.00 0.0287 0.0072

Mercury -55068-01-26 21:21 J -18392137.74 -18392137.61 -18392137.47 0.0288 0.0038

Mercury -55068-04-25 10:04 J -18392049.20 -18392049.08 -18392048.97 0.0289 0.0146

Mercury -55068-07-22 22:18 J -18391960.63 -18391960.57 -18391960.50 0.0290 0.0254

Earth -55068-07-24 22:18 J -18391958.69 -18391958.57 -18391958.44 0.0290 0.0247

Moon -55068-07-24 23:59 J -18391958.60 -18391958.50 -18391958.39 0.0290 0.0258 \*

Earth -55067-08-07 22:47 J -18391579.79 -18391579.55 -18391579.31 0.0293 0.0042

Moon -55067-08-08 02:23 J -18391579.64 -18391579.40 -18391579.16 0.0293 0.0028 \*

Venus -55062-07-19 21:06 J -18389772.82 -18389772.62 -18389772.42 0.0298 0.0049

Mars -55057-12-02 19:40 J -18387809.95 -18387809.68 -18387809.39 0.0280 0.0052

Mercury -55055-03-04 09:35 J -18387353.21 -18387353.10 -18387352.99 0.0275 0.0214

Mercury -55055-06-01 05:30 J -18387264.44 -18387264.27 -18387264.10 0.0274 0.0091

Mercury -55055-08-29 01:40 J -18387175.61 -18387175.43 -18387175.25 0.0273 0.0035

Mercury -55055-11-25 21:49 J -18387086.73 -18387086.59 -18387086.44 0.0272 0.0160

Moon -55054-01-17 23:59 J -18387033.53 -18387033.50 -18387033.43 0.0272 0.0266

Moon -55053-01-30 05:16 J -18386656.53 -18386656.28 -18386656.02 0.0269 0.0030

Earth -55053-01-30 06:13 J -18386656.48 -18386656.24 -18386655.99 0.0269 0.0044 \*

Moon -55052-02-10 07:11 J -18386279.36 -18386279.20 -18386279.02 0.0266 0.0190

Earth -55052-02-10 11:01 J -18386279.21 -18386279.04 -18386278.85 0.0266 0.0182 \*

Venus -55047-08-15 18:28 J -18384266.95 -18384266.73 -18384266.51 0.0264 0.0004

Mars -55040-01-18 03:21 J -18381919.66 -18381919.36 -18381919.06 0.0282 0.0032

Mercury -55040-12-20 23:01 J -18381582.63 -18381582.54 -18381582.44 0.0286 0.0205

Mercury -55039-03-19 11:45 J -18381494.13 -18381494.01 -18381493.88 0.0287 0.0096

Mercury -55039-06-16 00:28 J -18381405.61 -18381405.48 -18381405.34 0.0288 0.0014

Mercury -55039-09-12 12:57 J -18381317.08 -18381316.96 -18381316.83 0.0288 0.0123

Mercury -55039-12-10 01:25 J -18381228.51 -18381228.44 -18381228.36 0.0289 0.0231

Moon -55038-08-02 04:47 J -18380993.52 -18380993.30 -18380993.07 0.0292 0.0100

Earth -55038-08-02 08:37 J -18380993.37 -18380993.14 -18380992.90 0.0292 0.0086 \*

Moon -55037-08-15 10:18 J -18380614.25 -18380614.07 -18380613.90 0.0295 0.0195

Earth -55037-08-15 12:13 J -18380614.15 -18380613.99 -18380613.81 0.0295 0.0210 \*

Venus -55032-01-29 06:57 J -18378986.40 -18378986.21 -18378986.02 0.0297 0.0120

Mars -55026-01-21 16:18 J -18376802.97 -18376802.82 -18376802.64 0.0277 0.0228

Mercury -55026-07-22 10:33 J -18376621.13 -18376621.06 -18376620.97 0.0275 0.0240

Mercury -55026-10-19 06:28 J -18376532.38 -18376532.23 -18376532.06 0.0275 0.0117

Mercury -55025-01-16 02:37 J -18376443.57 -18376443.39 -18376443.21 0.0274 0.0009

Mercury -55025-04-13 23:01 J -18376354.70 -18376354.54 -18376354.39 0.0273 0.0133

Mercury -55025-07-11 19:11 J -18376265.74 -18376265.70 -18376265.64 0.0272 0.0259

Earth -55024-01-24 09:21 J -18376069.32 -18376069.11 -18376068.90 0.0270 0.0141

Moon -55024-01-24 09:35 J -18376069.31 -18376069.10 -18376068.89 0.0270 0.0129 \*

Earth -55023-02-05 15:35 J -18375692.09 -18375691.85 -18375691.62 0.0267 0.0087

Moon -55023-02-05 19:11 J -18375691.93 -18375691.70 -18375691.47 0.0267 0.0099 \*

Venus -55018-07-11 17:16 J -18373709.78 -18373709.78 -18373709.77 0.0263 0.0262

Venus -55017-02-25 22:47 J -18373480.77 -18373480.55 -18373480.33 0.0263 0.0046

Mercury -55010-05-10 00:13 J -18370850.56 -18370850.49 -18370850.42 0.0285 0.0242

Mercury -55010-08-06 12:57 J -18370762.08 -18370761.96 -18370761.84 0.0286 0.0133

Mercury -55010-11-03 01:40 J -18370673.56 -18370673.43 -18370673.29 0.0287 0.0025

Mercury -55009-01-30 14:09 J -18370585.03 -18370584.91 -18370584.77 0.0288 0.0086

Mercury -55009-04-28 02:52 J -18370496.48 -18370496.38 -18370496.28 0.0289 0.0193

Earth -55009-07-26 07:54 J -18370407.33 -18370407.17 -18370407.01 0.0290 0.0217

Moon -55009-07-26 11:16 J -18370407.16 -18370407.03 -18370406.87 0.0290 0.0231 \*

Earth -55008-08-09 08:52 J -18370028.36 -18370028.13 -18370027.89 0.0294 0.0073

Moon -55008-08-09 10:33 J -18370028.30 -18370028.06 -18370027.81 0.0294 0.0057 \*

Venus -55004-12-24 15:21 J -18368429.96 -18368429.86 -18368429.75 0.0298 0.0255

Venus -55003-08-11 10:04 J -18368200.24 -18368200.08 -18368199.90 0.0297 0.0167

# 55TH MILLENNIUM BCE

# **This is a list of transits visible from Saturn in the 55th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-54996-03-07 05:30 J	-18365800.40	-18365800.27	-18365800.12	0.0275	0.0157		
Mercury	-54996-06-04 01:40 J	-18365711.60	-18365711.43	-18365711.25	0.0274	0.0033		
Mercury	-54996-08-31 22:04 J	-18365622.75	-18365622.58	-18365622.41	0.0273	0.0093		
Mercury	-54996-11-28 18:28 J	-18365533.84	-18365533.73	-18365533.62	0.0272	0.0218		
Moon	-54995-01-19 05:16 J	-18365482.39	-18365482.28	-18365482.14	0.0272	0.0237		
Earth	-54995-01-19 05:16 J	-18365482.36	-18365482.28	-18365482.17	0.0272	0.0249	*	
Moon	-54994-01-31 10:47 J	-18365105.30	-18365105.05	-18365104.80	0.0269	0.0003		
Earth	-54994-01-31 14:23 J	-18365105.15	-18365104.90	-18365104.65	0.0269	0.0017	*	
Moon	-54993-02-12 17:59 J	-18364727.88	-18364727.75	-18364727.60	0.0266	0.0213		
Earth	-54993-02-12 18:42 J	-18364727.87	-18364727.72	-18364727.56	0.0266	0.0207	*	
Venus	-54988-01-20 22:33 J	-18362923.68	-18362923.56	-18362923.44	0.0263	0.0217		
Venus	-54988-09-07 03:49 J	-18362694.54	-18362694.34	-18362694.13	0.0264	0.0093		
Mars	-54982-04-24 08:23 J	-18360639.28	-18360639.15	-18360638.98	0.0280	0.0244		
Mercury	-54981-09-26 02:37 J	-18360118.43	-18360118.39	-18360118.34	0.0285	0.0269		
Mercury	-54981-12-23 15:35 J	-18360029.96	-18360029.85	-18360029.74	0.0286	0.0160		
Mercury	-54980-03-22 04:18 J	-18359941.45	-18359941.32	-18359941.18	0.0287	0.0051		
Mercury	-54980-06-18 17:01 J	-18359852.93	-18359852.79	-18359852.66	0.0288	0.0058		
Mercury	-54980-09-15 05:30 J	-18359764.38	-18359764.27	-18359764.16	0.0289	0.0167		
Mercury	-54980-12-12 17:59 J	-18359675.79	-18359675.75	-18359675.71	0.0290	0.0275		
Moon	-54979-08-03 15:06 J	-18359442.10	-18359441.87	-18359441.64	0.0292	0.0072		
Earth	-54979-08-03 16:04 J	-18359442.06	-18359441.83	-18359441.59	0.0292	0.0057	*	
Earth	-54978-08-17 19:54 J	-18359062.79	-18359062.67	-18359062.52	0.0295	0.0240		
Moon	-54978-08-17 22:04 J	-18359062.72	-18359062.58	-18359062.41	0.0295	0.0224	*	
Jupiter	-54976-10-06 01:40 J	-18358282.71	-18358282.43	-18358282.09	0.0298	0.0221		
Venus	-54974-07-06 23:59 J	-18357643.65	-18357643.50	-18357643.34	0.0298	0.0188		

Venus -54973-02-21 18:42 J -18357413.85 -18357413.72 -18357413.59 0.0297 0.0232  
 Mars -54968-04-29 05:16 J -18355520.56 -18355520.28 -18355519.99 0.0280 0.0016  
 Mercury -54967-07-25 06:42 J -18355068.35 -18355068.22 -18355068.09 0.0275 0.0184  
 Mercury -54967-10-22 02:37 J -18354979.57 -18354979.39 -18354979.22 0.0274 0.0060  
 Mercury -54966-01-18 22:47 J -18354890.73 -18354890.55 -18354890.38 0.0273 0.0065  
 Mercury -54966-04-17 18:57 J -18354801.83 -18354801.71 -18354801.57 0.0273 0.0190  
 Earth -54965-01-26 16:33 J -18354518.03 -18354517.81 -18354517.58 0.0270 0.0116  
 Moon -54965-01-26 20:09 J -18354517.88 -18354517.66 -18354517.43 0.0270 0.0101 \*  
 Earth -54964-02-06 22:33 J -18354140.78 -18354140.56 -18354140.33 0.0267 0.0112  
 Moon -54964-02-06 23:45 J -18354140.74 -18354140.51 -18354140.28 0.0267 0.0122 \*  
 Venus -54959-08-03 02:37 J -18352137.55 -18352137.39 -18352137.23 0.0263 0.0174  
 Venus -54958-03-20 07:54 J -18351908.35 -18351908.17 -18351907.98 0.0263 0.0134  
 Mars -54952-06-13 11:01 J -18349631.33 -18349631.04 -18349630.74 0.0282 0.0057  
 Mercury -54951-05-12 16:18 J -18349297.91 -18349297.82 -18349297.71 0.0285 0.0201  
 Mercury -54951-08-09 05:16 J -18349209.41 -18349209.28 -18349209.15 0.0286 0.0091  
 Mercury -54951-11-05 17:59 J -18349120.89 -18349120.75 -18349120.62 0.0287 0.0018  
 Mercury -54950-02-02 06:28 J -18349032.35 -18349032.23 -18349032.11 0.0288 0.0126  
 Mercury -54950-05-01 18:42 J -18348943.79 -18348943.72 -18348943.64 0.0289 0.0235  
 Earth -54950-07-28 12:57 J -18348856.14 -18348855.96 -18348855.77 0.0290 0.0192  
 Moon -54950-07-28 12:57 J -18348856.12 -18348855.96 -18348855.77 0.0290 0.0206 \*  
 Moon -54949-08-10 11:01 J -18348477.27 -18348477.04 -18348476.79 0.0294 0.0083  
 Earth -54949-08-10 14:09 J -18348477.13 -18348476.91 -18348476.68 0.0294 0.0100 \*  
 Venus -54944-01-16 01:25 J -18346857.61 -18346857.44 -18346857.26 0.0298 0.0147  
 Venus -54944-09-02 19:54 J -18346627.73 -18346627.67 -18346627.58 0.0297 0.0275  
 Mars -54938-06-17 07:54 J -18344514.27 -18344514.17 -18344514.06 0.0277 0.0256  
 Mercury -54938-12-12 05:01 J -18344336.39 -18344336.29 -18344336.19 0.0275 0.0229  
 Mercury -54937-03-10 00:57 J -18344247.63 -18344247.46 -18344247.30 0.0274 0.0105  
 Mercury -54937-06-06 21:06 J -18344158.80 -18344158.62 -18344158.44 0.0274 0.0021  
 Mercury -54937-09-03 17:16 J -18344069.93 -18344069.78 -18344069.62 0.0273 0.0145  
 Mercury -54937-12-01 13:40 J -18343980.93 -18343980.93 -18343980.91 0.0272 0.0271

Moon -54936-01-20 06:42 J -18343931.37 -18343931.22 -18343931.06 0.0271 0.0210  
 Earth -54936-01-20 10:18 J -18343931.19 -18343931.07 -18343930.92 0.0271 0.0226 \*  
 Moon -54935-02-01 17:30 J -18343554.01 -18343553.77 -18343553.53 0.0268 0.0020  
 Earth -54935-02-01 19:11 J -18343553.95 -18343553.70 -18343553.45 0.0268 0.0007 \*  
 Earth -54934-02-13 22:47 J -18343176.65 -18343176.55 -18343176.41 0.0266 0.0231  
 Moon -54934-02-14 02:23 J -18343176.51 -18343176.40 -18343176.28 0.0266 0.0233 \*  
 Venus -54929-02-13 06:13 J -18341351.43 -18341351.24 -18341351.05 0.0263 0.0132  
 Venus -54929-09-29 11:30 J -18341122.17 -18341122.02 -18341121.85 0.0264 0.0177  
 Mercury -54922-09-29 18:28 J -18338565.80 -18338565.73 -18338565.64 0.0285 0.0231  
 Mercury -54922-12-27 07:25 J -18338477.31 -18338477.19 -18338477.07 0.0286 0.0121  
 Mercury -54921-03-24 20:09 J -18338388.80 -18338388.66 -18338388.53 0.0287 0.0013  
 Mercury -54921-06-21 08:37 J -18338300.26 -18338300.14 -18338300.01 0.0288 0.0096  
 Mercury -54921-09-17 21:06 J -18338211.71 -18338211.62 -18338211.52 0.0289 0.0205  
 Earth -54920-08-04 18:57 J -18337890.95 -18337890.71 -18337890.46 0.0292 0.0032  
 Moon -54920-08-04 22:18 J -18337890.80 -18337890.57 -18337890.33 0.0292 0.0049 \*  
 Earth -54919-08-18 23:30 J -18337511.62 -18337511.52 -18337511.41 0.0295 0.0265  
 Moon -54919-08-19 02:52 J -18337511.50 -18337511.38 -18337511.24 0.0295 0.0248 \*  
 Venus -54915-07-29 09:06 J -18336071.31 -18336071.12 -18336070.92 0.0298 0.0084  
 Mars -54910-08-05 15:06 J -18334237.95 -18334237.87 -18334237.76 0.0283 0.0265  
 Mercury -54908-04-30 05:30 J -18333604.32 -18333604.27 -18333604.21 0.0276 0.0259  
 Mercury -54908-07-28 01:25 J -18333515.59 -18333515.44 -18333515.28 0.0275 0.0135  
 Mercury -54908-10-24 21:35 J -18333426.78 -18333426.60 -18333426.42 0.0274 0.0011  
 Mercury -54907-01-21 17:45 J -18333337.92 -18333337.76 -18333337.59 0.0273 0.0115  
 Mercury -54907-04-20 14:09 J -18333248.99 -18333248.91 -18333248.82 0.0272 0.0241  
 Earth -54906-01-27 20:37 J -18332966.86 -18332966.64 -18332966.40 0.0270 0.0093  
 Moon -54906-01-27 22:33 J -18332966.79 -18332966.56 -18332966.30 0.0270 0.0078 \*  
 Moon -54905-02-08 23:30 J -18332589.73 -18332589.52 -18332589.30 0.0267 0.0143  
 Earth -54905-02-09 02:23 J -18332589.60 -18332589.40 -18332589.18 0.0267 0.0135 \*  
 Venus -54900-08-25 10:04 J -18330565.28 -18330565.08 -18330564.87 0.0263 0.0091  
 Venus -54899-04-11 15:06 J -18330335.98 -18330335.87 -18330335.73 0.0263 0.0218

Mars -54894-09-17 08:52 J -18328351.31 -18328351.13 -18328350.94 0.0279 0.0220  
 Mercury -54892-02-15 19:25 J -18327833.73 -18327833.69 -18327833.65 0.0285 0.0271  
 Mercury -54892-05-15 08:09 J -18327745.27 -18327745.16 -18327745.04 0.0285 0.0163  
 Mercury -54892-08-11 20:52 J -18327656.76 -18327656.63 -18327656.49 0.0286 0.0055  
 Mercury -54892-11-08 09:35 J -18327568.24 -18327568.10 -18327567.97 0.0287 0.0054  
 Mercury -54891-02-04 22:04 J -18327479.69 -18327479.58 -18327479.47 0.0288 0.0162  
 Mercury -54891-05-04 10:18 J -18327391.11 -18327391.07 -18327391.02 0.0289 0.0270  
 Moon -54891-07-29 11:16 J -18327305.21 -18327305.03 -18327304.84 0.0290 0.0186  
 Earth -54891-07-29 14:37 J -18327305.07 -18327304.89 -18327304.68 0.0290 0.0170 \*  
 Moon -54890-08-12 13:11 J -18326926.17 -18326925.95 -18326925.72 0.0294 0.0107  
 Earth -54890-08-12 16:04 J -18326926.05 -18326925.83 -18326925.61 0.0294 0.0123 \*  
 Venus -54885-02-08 09:21 J -18325285.31 -18325285.11 -18325284.91 0.0298 0.0047  
 Mars -54880-09-22 09:06 J -18323232.40 -18323232.12 -18323231.83 0.0280 0.0005  
 Mercury -54879-12-14 23:01 J -18322783.67 -18322783.54 -18322783.41 0.0275 0.0184  
 Mercury -54878-03-13 18:57 J -18322694.88 -18322694.71 -18322694.53 0.0274 0.0060  
 Mercury -54878-06-10 15:21 J -18322606.04 -18322605.86 -18322605.69 0.0273 0.0066  
 Mercury -54878-09-07 11:30 J -18322517.14 -18322517.02 -18322516.88 0.0273 0.0192  
 Moon -54877-01-22 10:33 J -18322380.22 -18322380.06 -18322379.88 0.0271 0.0190  
 Earth -54877-01-22 12:13 J -18322380.15 -18322379.99 -18322379.83 0.0271 0.0205 \*  
 Earth -54876-02-02 20:37 J -18322002.88 -18322002.64 -18322002.39 0.0268 0.0028  
 Moon -54876-02-02 23:30 J -18322002.76 -18322002.52 -18322002.28 0.0268 0.0041 \*  
 Earth -54875-02-15 00:42 J -18321625.55 -18321625.47 -18321625.39 0.0266 0.0251  
 Moon -54875-02-15 03:21 J -18321625.44 -18321625.36 -18321625.28 0.0266 0.0252 \*  
 Venus -54870-03-07 12:42 J -18319779.18 -18319778.97 -18319778.75 0.0263 0.0052  
 Venus -54870-10-22 17:59 J -18319549.79 -18319549.75 -18319549.70 0.0264 0.0257  
 Mars -54864-11-06 18:13 J -18317343.03 -18317342.74 -18317342.45 0.0282 0.0077  
 Mercury -54863-10-02 10:04 J -18317013.18 -18317013.08 -18317012.99 0.0285 0.0196  
 Mercury -54863-12-29 22:47 J -18316924.68 -18316924.55 -18316924.42 0.0286 0.0088  
 Mercury -54862-03-28 11:16 J -18316836.16 -18316836.03 -18316835.89 0.0287 0.0022  
 Mercury -54862-06-24 23:45 J -18316747.62 -18316747.51 -18316747.38 0.0288 0.0130

Mercury -54862-09-21 12:13 J -18316659.06 -18316658.99 -18316658.91 0.0289 0.0238

Earth -54861-08-05 18:28 J -18316339.98 -18316339.73 -18316339.49 0.0292 0.0011

Moon -54861-08-05 20:52 J -18316339.88 -18316339.63 -18316339.38 0.0292 0.0027 \*

Moon -54860-08-19 21:49 J -18315960.67 -18315960.59 -18315960.48 0.0295 0.0272

Earth -54860-08-19 22:47 J -18315960.59 -18315960.55 -18315960.49 0.0295 0.0287 \*

Venus -54856-08-20 15:35 J -18314499.06 -18314498.85 -18314498.65 0.0298 0.0011

Mercury -54849-05-02 23:01 J -18312051.63 -18312051.54 -18312051.42 0.0276 0.0217

Mercury -54849-07-30 19:11 J -18311962.86 -18311962.70 -18311962.53 0.0275 0.0092

Mercury -54849-10-27 15:21 J -18311874.03 -18311873.86 -18311873.68 0.0274 0.0034

Mercury -54848-01-24 11:45 J -18311785.15 -18311785.01 -18311784.86 0.0273 0.0159

Moon -54847-01-28 18:13 J -18311415.98 -18311415.74 -18311415.48 0.0270 0.0059

Earth -54847-01-28 21:21 J -18311415.85 -18311415.61 -18311415.37 0.0270 0.0073 \*

Moon -54846-02-09 23:59 J -18311038.68 -18311038.50 -18311038.30 0.0267 0.0163

Earth -54846-02-10 03:06 J -18311038.56 -18311038.37 -18311038.16 0.0267 0.0155 \*

Venus -54841-09-16 16:18 J -18308993.04 -18308992.82 -18308992.60 0.0263 0.0011

Mercury -54833-02-19 10:33 J -18306281.13 -18306281.06 -18306280.98 0.0284 0.0238

Mercury -54833-05-17 23:16 J -18306192.65 -18306192.53 -18306192.40 0.0285 0.0130

Mercury -54833-08-14 11:59 J -18306104.13 -18306104.00 -18306103.86 0.0286 0.0022

Mercury -54833-11-11 00:28 J -18306015.60 -18306015.48 -18306015.35 0.0287 0.0087

Mercury -54832-02-07 12:57 J -18305927.05 -18305926.96 -18305926.86 0.0288 0.0194

Moon -54832-07-30 11:30 J -18305754.21 -18305754.02 -18305753.82 0.0290 0.0166

Earth -54832-07-30 13:40 J -18305754.14 -18305753.93 -18305753.72 0.0290 0.0150 \*

Earth -54831-08-13 14:37 J -18305375.10 -18305374.89 -18305374.68 0.0294 0.0143

Moon -54831-08-13 16:18 J -18305375.02 -18305374.82 -18305374.60 0.0294 0.0130 \*

Venus -54826-03-02 14:52 J -18303713.08 -18303712.88 -18303712.67 0.0298 0.0046

Mars -54822-12-29 08:23 J -18301950.26 -18301950.15 -18301950.02 0.0283 0.0255

Mercury -54820-09-19 20:23 J -18301319.68 -18301319.65 -18301319.61 0.0276 0.0268

Mercury -54820-12-17 16:18 J -18301230.97 -18301230.82 -18301230.67 0.0275 0.0144

Mercury -54819-03-16 12:28 J -18301142.16 -18301141.98 -18301141.80 0.0274 0.0019

Mercury -54819-06-13 08:37 J -18301053.30 -18301053.14 -18301052.97 0.0273 0.0107



Mercury -54819-09-10 05:16 J -18300964.37 -18300964.28 -18300964.19 0.0273 0.0233

Earth -54818-01-23 11:01 J -18300829.21 -18300829.04 -18300828.85 0.0271 0.0187

Moon -54818-01-23 14:09 J -18300829.09 -18300828.91 -18300828.72 0.0271 0.0172 \*

Earth -54817-02-04 19:54 J -18300451.92 -18300451.67 -18300451.43 0.0268 0.0047

Moon -54817-02-04 23:01 J -18300451.79 -18300451.54 -18300451.29 0.0268 0.0058 \*

Venus -54811-03-29 17:45 J -18298206.97 -18298206.76 -18298206.54 0.0263 0.0025

Mars -54805-02-10 07:11 J -18296063.39 -18296063.20 -18296062.98 0.0279 0.0207

Mercury -54804-07-08 11:59 J -18295549.03 -18295549.00 -18295548.96 0.0285 0.0273

Mercury -54804-10-05 00:57 J -18295460.57 -18295460.46 -18295460.35 0.0285 0.0165

Mercury -54803-01-01 13:40 J -18295372.07 -18295371.93 -18295371.80 0.0286 0.0056

Mercury -54803-03-31 02:09 J -18295283.54 -18295283.41 -18295283.27 0.0287 0.0052

Mercury -54803-06-27 14:37 J -18295195.00 -18295194.89 -18295194.77 0.0288 0.0160

Earth -54803-07-24 16:33 J -18295167.87 -18295167.81 -18295167.74 0.0289 0.0278

Mercury -54803-09-24 03:06 J -18295106.42 -18295106.37 -18295106.32 0.0289 0.0267

Moon -54802-08-07 13:25 J -18294789.19 -18294788.94 -18294788.69 0.0292 0.0006

Earth -54802-08-07 15:35 J -18294789.09 -18294788.85 -18294788.61 0.0292 0.0008 \*

Moon -54801-08-20 16:04 J -18294409.83 -18294409.83 -18294409.80 0.0295 0.0295

Venus -54797-09-11 20:23 J -18292926.84 -18292926.65 -18292926.46 0.0298 0.0100

Mars -54791-02-15 16:18 J -18290944.10 -18290943.82 -18290943.53 0.0280 0.0027

Mercury -54790-05-06 16:04 J -18290498.95 -18290498.83 -18290498.69 0.0276 0.0179

Mercury -54790-08-03 12:13 J -18290410.16 -18290409.99 -18290409.81 0.0275 0.0054

Mercury -54790-10-31 08:37 J -18290321.32 -18290321.14 -18290320.97 0.0274 0.0072

Mercury -54789-01-28 04:47 J -18290232.41 -18290232.30 -18290232.17 0.0273 0.0198

Moon -54788-01-29 16:33 J -18289865.04 -18289864.81 -18289864.57 0.0270 0.0044

Earth -54788-01-29 19:25 J -18289864.93 -18289864.69 -18289864.44 0.0270 0.0056 \*

Earth -54787-02-11 01:25 J -18289487.62 -18289487.44 -18289487.24 0.0267 0.0173

Moon -54787-02-11 02:37 J -18289487.55 -18289487.39 -18289487.20 0.0267 0.0178 \*

Venus -54782-02-22 16:18 J -18287649.89 -18287649.82 -18287649.72 0.0262 0.0240

Venus -54782-10-09 21:35 J -18287420.81 -18287420.60 -18287420.39 0.0263 0.0066

Mars -54775-04-01 08:23 J -18285055.42 -18285055.15 -18285054.86 0.0281 0.0095

Mercury -54774-02-22 01:40 J -18284728.52 -18284728.43 -18284728.33 0.0284 0.0206

Mercury -54774-05-21 14:23 J -18284640.03 -18284639.90 -18284639.77 0.0285 0.0098

Mercury -54774-08-18 03:06 J -18284551.51 -18284551.37 -18284551.24 0.0286 0.0011

Mercury -54774-11-14 15:35 J -18284462.98 -18284462.85 -18284462.73 0.0287 0.0117

Mercury -54773-02-11 03:49 J -18284374.42 -18284374.34 -18284374.25 0.0288 0.0225

Earth -54773-07-31 11:01 J -18284203.25 -18284203.04 -18284202.81 0.0290 0.0132

Moon -54773-07-31 13:25 J -18284203.14 -18284202.94 -18284202.73 0.0290 0.0147 \*

Earth -54772-08-14 11:45 J -18283824.20 -18283824.01 -18283823.80 0.0294 0.0163

Moon -54772-08-14 15:21 J -18283824.06 -18283823.86 -18283823.64 0.0294 0.0150 \*

Venus -54768-08-07 00:13 J -18282370.53 -18282370.49 -18282370.43 0.0299 0.0288

Venus -54767-03-24 19:11 J -18282140.88 -18282140.70 -18282140.51 0.0298 0.0133

Mercury -54761-09-22 12:42 J -18279767.05 -18279766.97 -18279766.86 0.0276 0.0234

Mercury -54761-12-20 08:52 J -18279678.29 -18279678.13 -18279677.96 0.0275 0.0108

Mercury -54760-03-19 05:16 J -18279589.46 -18279589.28 -18279589.11 0.0274 0.0018

Mercury -54760-06-16 01:25 J -18279500.59 -18279500.44 -18279500.28 0.0274 0.0144

Mercury -54760-09-12 22:04 J -18279411.60 -18279411.58 -18279411.55 0.0273 0.0270

Earth -54759-01-24 07:40 J -18279278.36 -18279278.18 -18279277.98 0.0271 0.0172

Moon -54759-01-24 10:47 J -18279278.26 -18279278.05 -18279277.85 0.0271 0.0157 \*

Moon -54758-02-05 15:06 J -18278901.12 -18278900.87 -18278900.62 0.0268 0.0069

Earth -54758-02-05 17:01 J -18278901.03 -18278900.79 -18278900.55 0.0268 0.0063 \*

Venus -54753-09-03 17:16 J -18276863.91 -18276863.78 -18276863.65 0.0262 0.0207

Venus -54752-04-20 22:18 J -18276634.77 -18276634.57 -18276634.37 0.0263 0.0099

Mercury -54745-07-11 02:52 J -18273996.45 -18273996.38 -18273996.31 0.0284 0.0243

Mercury -54745-10-07 15:35 J -18273907.97 -18273907.85 -18273907.73 0.0285 0.0135

Mercury -54744-01-04 04:18 J -18273819.46 -18273819.32 -18273819.18 0.0286 0.0027

Mercury -54744-04-02 16:47 J -18273730.93 -18273730.80 -18273730.67 0.0287 0.0081

Mercury -54744-06-30 05:16 J -18273642.38 -18273642.28 -18273642.18 0.0288 0.0188

Moon -54744-07-25 10:04 J -18273617.14 -18273617.08 -18273617.01 0.0289 0.0277

Earth -54744-07-25 12:42 J -18273617.06 -18273616.97 -18273616.86 0.0289 0.0262 \*

Moon -54743-08-08 08:09 J -18273238.40 -18273238.16 -18273237.92 0.0292 0.0013

Earth -54743-08-08 11:16 J -18273238.27 -18273238.03 -18273237.78 0.0292 0.0026 \*  
 Venus -54738-02-17 05:01 J -18271584.41 -18271584.29 -18271584.16 0.0298 0.0236  
 Venus -54738-10-04 23:59 J -18271354.65 -18271354.50 -18271354.34 0.0297 0.0185  
 Mars -54733-05-23 10:04 J -18269662.23 -18269662.08 -18269661.92 0.0283 0.0237  
 Mercury -54731-02-09 12:57 J -18269035.00 -18269034.96 -18269034.92 0.0277 0.0268  
 Mercury -54731-05-09 08:37 J -18268946.28 -18268946.14 -18268945.98 0.0276 0.0144  
 Mercury -54731-08-06 05:01 J -18268857.47 -18268857.29 -18268857.12 0.0275 0.0019  
 Mercury -54731-11-03 01:11 J -18268768.61 -18268768.45 -18268768.28 0.0274 0.0108  
 Moon -54730-01-19 01:54 J -18268691.47 -18268691.42 -18268691.36 0.0273 0.0264  
 Mercury -54730-01-30 21:49 J -18268679.68 -18268679.59 -18268679.50 0.0273 0.0235  
 Earth -54729-01-31 16:18 J -18268314.06 -18268313.82 -18268313.57 0.0270 0.0041  
 Moon -54729-01-31 18:13 J -18268313.98 -18268313.74 -18268313.50 0.0270 0.0032 \*  
 Earth -54728-02-11 22:33 J -18267936.72 -18267936.56 -18267936.38 0.0267 0.0189  
 Moon -54728-02-12 02:23 J -18267936.57 -18267936.40 -18267936.21 0.0267 0.0189 \*  
 Venus -54723-03-16 21:21 J -18266077.78 -18266077.61 -18266077.44 0.0262 0.0163  
 Venus -54723-11-01 02:23 J -18265848.58 -18265848.40 -18265848.22 0.0263 0.0141  
 Mars -54717-07-04 23:59 J -18263775.73 -18263775.50 -18263775.28 0.0278 0.0184  
 Mercury -54716-11-28 03:49 J -18263264.35 -18263264.34 -18263264.32 0.0283 0.0282  
 Mercury -54715-02-24 16:47 J -18263175.91 -18263175.80 -18263175.69 0.0284 0.0174  
 Mercury -54715-05-24 05:16 J -18263087.41 -18263087.28 -18263087.14 0.0285 0.0068  
 Mercury -54715-08-20 17:59 J -18262998.89 -18262998.75 -18262998.62 0.0286 0.0040  
 Mercury -54715-11-17 06:28 J -18262910.35 -18262910.23 -18262910.12 0.0287 0.0147  
 Mercury -54714-02-13 18:42 J -18262821.78 -18262821.72 -18262821.66 0.0288 0.0254  
 Earth -54714-08-02 08:23 J -18262652.37 -18262652.15 -18262651.92 0.0290 0.0115  
 Moon -54714-08-02 11:59 J -18262652.22 -18262652.00 -18262651.78 0.0290 0.0130 \*  
 Moon -54713-08-15 09:06 J -18262273.33 -18262273.12 -18262272.92 0.0293 0.0171  
 Earth -54713-08-15 08:52 J -18262273.31 -18262273.13 -18262272.93 0.0293 0.0180 \*  
 Venus -54709-08-29 04:18 J -18260798.46 -18260798.32 -18260798.16 0.0299 0.0201  
 Venus -54708-04-15 23:16 J -18260568.67 -18260568.53 -18260568.39 0.0298 0.0219  
 Mars -54703-07-10 23:30 J -18258656.81 -18258656.52 -18258656.24 0.0281 0.0029

Mercury -54702-09-26 05:16 J -18258214.39 -18258214.28 -18258214.15 0.0276 0.0199  
 Mercury -54702-12-24 01:25 J -18258125.61 -18258125.44 -18258125.27 0.0275 0.0073  
 Mercury -54701-03-21 21:35 J -18258036.77 -18258036.60 -18258036.42 0.0274 0.0054  
 Mercury -54701-06-18 17:59 J -18257947.88 -18257947.75 -18257947.60 0.0274 0.0180  
 Moon -54700-01-25 01:54 J -18257727.62 -18257727.42 -18257727.19 0.0272 0.0146  
 Earth -54700-01-25 03:49 J -18257727.53 -18257727.34 -18257727.13 0.0272 0.0156 \*  
 Moon -54699-02-06 09:49 J -18257350.32 -18257350.09 -18257349.86 0.0268 0.0080  
 Earth -54699-02-06 13:11 J -18257350.18 -18257349.95 -18257349.70 0.0268 0.0080 \*  
 Venus -54694-09-26 21:49 J -18255291.78 -18255291.59 -18255291.40 0.0263 0.0132  
 Venus -54693-05-13 02:37 J -18255062.54 -18255062.39 -18255062.21 0.0263 0.0174  
 Mars -54687-08-25 01:54 J -18252767.70 -18252767.42 -18252767.14 0.0281 0.0106  
 Mercury -54686-07-14 17:59 J -18252443.84 -18252443.75 -18252443.66 0.0284 0.0211  
 Mercury -54686-10-11 06:42 J -18252355.35 -18252355.22 -18252355.09 0.0285 0.0104  
 Mercury -54685-01-07 19:11 J -18252266.83 -18252266.70 -18252266.56 0.0286 0.0009  
 Mercury -54685-04-05 07:40 J -18252178.30 -18252178.18 -18252178.05 0.0287 0.0112  
 Mercury -54685-07-02 20:09 J -18252089.74 -18252089.66 -18252089.57 0.0288 0.0218  
 Moon -54685-07-26 07:25 J -18252066.29 -18252066.19 -18252066.09 0.0288 0.0261  
 Earth -54685-07-26 10:33 J -18252066.18 -18252066.06 -18252065.93 0.0288 0.0244 \*  
 Earth -54684-08-09 08:37 J -18251687.38 -18251687.14 -18251686.90 0.0292 0.0044  
 Moon -54684-08-09 08:52 J -18251687.36 -18251687.13 -18251686.90 0.0292 0.0033 \*  
 Venus -54679-03-11 09:06 J -18250012.29 -18250012.12 -18250011.94 0.0298 0.0149  
 Venus -54679-10-27 03:49 J -18249782.42 -18249782.34 -18249782.25 0.0297 0.0269  
 Mercury -54672-02-12 04:47 J -18247482.38 -18247482.30 -18247482.20 0.0277 0.0236  
 Mercury -54672-05-12 01:11 J -18247393.62 -18247393.45 -18247393.29 0.0276 0.0110  
 Mercury -54672-08-08 21:21 J -18247304.79 -18247304.61 -18247304.43 0.0275 0.0016  
 Mercury -54672-11-05 17:45 J -18247215.91 -18247215.76 -18247215.61 0.0274 0.0143  
 Earth -54671-01-20 00:28 J -18247140.54 -18247140.48 -18247140.42 0.0273 0.0265  
 Moon -54671-01-20 01:40 J -18247140.52 -18247140.43 -18247140.34 0.0273 0.0252 \*  
 Mercury -54671-02-02 14:23 J -18247126.92 -18247126.90 -18247126.87 0.0273 0.0269  
 Earth -54670-02-01 12:13 J -18246763.23 -18246762.99 -18246762.74 0.0270 0.0027

Moon -54670-02-01 15:49 J -18246763.09 -18246762.84 -18246762.59 0.0270 0.0020 \*  
 Moon -54669-02-13 18:42 J -18246385.88 -18246385.72 -18246385.53 0.0267 0.0199  
 Earth -54669-02-13 19:11 J -18246385.85 -18246385.70 -18246385.53 0.0267 0.0205 \*  
 Venus -54664-04-08 02:09 J -18244505.61 -18244505.41 -18244505.19 0.0263 0.0088  
 Venus -54664-11-23 07:11 J -18244276.31 -18244276.20 -18244276.07 0.0263 0.0218  
 Mercury -54657-11-30 19:11 J -18241711.76 -18241711.70 -18241711.63 0.0283 0.0248  
 Mercury -54656-02-27 07:54 J -18241623.29 -18241623.17 -18241623.05 0.0284 0.0141  
 Mercury -54656-05-26 20:37 J -18241534.78 -18241534.64 -18241534.51 0.0285 0.0035  
 Mercury -54656-08-23 09:06 J -18241446.25 -18241446.12 -18241445.99 0.0286 0.0072  
 Mercury -54656-11-19 21:21 J -18241357.71 -18241357.61 -18241357.50 0.0287 0.0179  
 Mercury -54655-02-16 09:35 J -18241269.11 -18241269.10 -18241269.08 0.0288 0.0285  
 Moon -54655-08-03 06:13 J -18241101.47 -18241101.24 -18241101.00 0.0290 0.0109  
 Earth -54655-08-03 06:57 J -18241101.43 -18241101.21 -18241100.97 0.0290 0.0097 \*  
 Moon -54654-08-17 03:35 J -18240722.52 -18240722.35 -18240722.15 0.0293 0.0192  
 Earth -54654-08-17 07:11 J -18240722.37 -18240722.20 -18240722.02 0.0293 0.0199 \*  
 Venus -54650-09-21 08:52 J -18239226.31 -18239226.13 -18239225.93 0.0298 0.0112  
 Mars -54645-10-15 17:01 J -18237374.92 -18237374.79 -18237374.62 0.0284 0.0237  
 Mercury -54643-09-28 21:49 J -18236661.73 -18236661.59 -18236661.45 0.0276 0.0164  
 Mercury -54643-12-26 17:59 J -18236572.92 -18236572.75 -18236572.57 0.0275 0.0038  
 Mercury -54642-03-25 14:23 J -18236484.07 -18236483.90 -18236483.73 0.0275 0.0088  
 Mercury -54642-06-22 10:47 J -18236395.15 -18236395.05 -18236394.93 0.0274 0.0215  
 Moon -54641-01-26 20:52 J -18236176.84 -18236176.63 -18236176.41 0.0272 0.0131  
 Earth -54641-01-27 00:28 J -18236176.69 -18236176.48 -18236176.27 0.0272 0.0141 \*  
 Earth -54640-02-07 10:04 J -18235799.31 -18235799.08 -18235798.85 0.0269 0.0095  
 Moon -54640-02-07 10:18 J -18235799.28 -18235799.07 -18235798.83 0.0269 0.0093 \*  
 Venus -54635-10-19 02:52 J -18233719.60 -18233719.38 -18233719.17 0.0263 0.0056  
 Venus -54634-06-05 07:54 J -18233490.23 -18233490.17 -18233490.10 0.0263 0.0250  
 Mars -54629-11-27 20:09 J -18231487.89 -18231487.66 -18231487.41 0.0278 0.0171  
 Mercury -54627-07-17 09:21 J -18230891.22 -18230891.11 -18230891.01 0.0284 0.0178  
 Mercury -54627-10-13 21:49 J -18230802.72 -18230802.59 -18230802.45 0.0285 0.0071

Mercury -54626-01-10 10:33 J -18230714.20 -18230714.06 -18230713.93 0.0286 0.0037  
 Mercury -54626-04-08 22:47 J -18230625.66 -18230625.55 -18230625.43 0.0287 0.0144  
 Mercury -54626-07-06 11:01 J -18230537.09 -18230537.04 -18230536.97 0.0288 0.0251  
 Earth -54626-07-28 09:21 J -18230515.25 -18230515.11 -18230514.95 0.0288 0.0226  
 Moon -54626-07-28 11:01 J -18230515.17 -18230515.04 -18230514.91 0.0288 0.0240 \*  
 Earth -54625-08-10 07:11 J -18230136.43 -18230136.20 -18230135.96 0.0292 0.0063  
 Moon -54625-08-10 10:47 J -18230136.28 -18230136.05 -18230135.81 0.0292 0.0053 \*  
 Venus -54620-04-02 14:09 J -18228440.11 -18228439.91 -18228439.71 0.0298 0.0059  
 Mars -54615-12-04 00:28 J -18226368.76 -18226368.48 -18226368.20 0.0281 0.0050  
 Mercury -54613-02-15 21:21 J -18225929.72 -18225929.61 -18225929.48 0.0277 0.0201  
 Mercury -54613-05-14 17:45 J -18225840.93 -18225840.76 -18225840.59 0.0276 0.0075  
 Mercury -54613-08-11 13:54 J -18225752.09 -18225751.92 -18225751.74 0.0275 0.0052  
 Mercury -54613-11-08 10:18 J -18225663.20 -18225663.07 -18225662.92 0.0274 0.0180  
 Earth -54612-01-20 20:37 J -18225589.72 -18225589.64 -18225589.53 0.0273 0.0251  
 Moon -54612-01-21 00:28 J -18225589.59 -18225589.48 -18225589.35 0.0273 0.0236 \*  
 Moon -54611-02-02 09:06 J -18225212.37 -18225212.12 -18225211.86 0.0270 0.0008  
 Earth -54611-02-02 09:21 J -18225212.36 -18225212.11 -18225211.87 0.0270 0.0011 \*  
 Moon -54610-02-14 12:42 J -18224835.12 -18224834.97 -18224834.81 0.0268 0.0210  
 Earth -54610-02-14 16:33 J -18224834.94 -18224834.81 -18224834.67 0.0268 0.0221 \*  
 Venus -54605-04-30 07:54 J -18222933.38 -18222933.17 -18222932.95 0.0263 0.0011  
 Mars -54598-01-18 06:42 J -18220479.48 -18220479.22 -18220478.96 0.0280 0.0137  
 Mercury -54598-12-04 11:01 J -18220159.13 -18220159.04 -18220158.95 0.0283 0.0211  
 Mercury -54597-03-01 23:45 J -18220070.64 -18220070.51 -18220070.38 0.0284 0.0104  
 Mercury -54597-05-29 12:13 J -18219982.12 -18219981.99 -18219981.85 0.0285 0.0004  
 Mercury -54597-08-26 00:42 J -18219893.59 -18219893.47 -18219893.34 0.0286 0.0108  
 Mercury -54597-11-22 12:57 J -18219805.04 -18219804.96 -18219804.87 0.0287 0.0215  
 Moon -54596-08-04 05:16 J -18219550.51 -18219550.28 -18219550.04 0.0290 0.0086  
 Earth -54596-08-04 09:06 J -18219550.35 -18219550.12 -18219549.88 0.0290 0.0075 \*  
 Moon -54595-08-18 06:42 J -18219171.36 -18219171.22 -18219171.05 0.0293 0.0217  
 Earth -54595-08-18 08:52 J -18219171.28 -18219171.13 -18219170.97 0.0293 0.0220 \*

Venus -54591-10-13 15:21 J -18217654.06 -18217653.86 -18217653.65 0.0298 0.0017  
 Mercury -54584-07-04 18:42 J -18215197.79 -18215197.72 -18215197.64 0.0277 0.0251  
 Mercury -54584-10-01 14:37 J -18215109.04 -18215108.89 -18215108.73 0.0276 0.0127  
 Mercury -54584-12-29 11:01 J -18215020.22 -18215020.04 -18215019.86 0.0275 0.0001  
 Mercury -54583-03-28 07:25 J -18214931.35 -18214931.19 -18214931.03 0.0275 0.0127  
 Mercury -54583-06-25 03:49 J -18214842.39 -18214842.34 -18214842.26 0.0274 0.0254  
 Earth -54582-01-27 22:04 J -18214625.80 -18214625.58 -18214625.36 0.0272 0.0125  
 Moon -54582-01-27 21:49 J -18214625.80 -18214625.59 -18214625.37 0.0272 0.0119 \*  
 Earth -54581-02-09 07:40 J -18214248.40 -18214248.18 -18214247.95 0.0269 0.0112  
 Moon -54581-02-09 11:30 J -18214248.25 -18214248.02 -18214247.79 0.0269 0.0105 \*  
 Venus -54576-11-10 08:52 J -18212147.35 -18212147.13 -18212146.91 0.0263 0.0024  
 Mercury -54568-04-22 12:13 J -18209427.05 -18209426.99 -18209426.92 0.0284 0.0247  
 Mercury -54568-07-20 00:57 J -18209338.57 -18209338.46 -18209338.33 0.0285 0.0141  
 Mercury -54568-10-16 13:40 J -18209250.06 -18209249.93 -18209249.79 0.0285 0.0033  
 Mercury -54567-01-13 02:09 J -18209161.54 -18209161.41 -18209161.28 0.0286 0.0073  
 Mercury -54567-04-11 14:37 J -18209073.00 -18209072.89 -18209072.79 0.0287 0.0180  
 Mercury -54567-07-09 02:52 J -18208984.39 -18208984.38 -18208984.37 0.0288 0.0286  
 Earth -54567-07-29 11:30 J -18208964.18 -18208964.02 -18208963.84 0.0288 0.0205  
 Moon -54567-07-29 15:21 J -18208964.02 -18208963.86 -18208963.69 0.0288 0.0216 \*  
 Earth -54566-08-12 09:06 J -18208585.35 -18208585.12 -18208584.88 0.0292 0.0085  
 Moon -54566-08-12 10:33 J -18208585.29 -18208585.06 -18208584.81 0.0292 0.0079 \*  
 Venus -54561-04-24 20:23 J -18206867.85 -18206867.65 -18206867.45 0.0298 0.0036  
 Mars -54556-03-10 21:21 J -18205086.78 -18205086.61 -18205086.42 0.0284 0.0214  
 Mercury -54554-02-18 14:37 J -18204377.03 -18204376.89 -18204376.75 0.0277 0.0162  
 Mercury -54554-05-18 10:47 J -18204288.22 -18204288.05 -18204287.87 0.0276 0.0036  
 Mercury -54554-08-15 07:11 J -18204199.37 -18204199.20 -18204199.03 0.0275 0.0091  
 Mercury -54554-11-12 03:49 J -18204110.44 -18204110.34 -18204110.23 0.0274 0.0218  
 Moon -54553-01-22 19:11 J -18204038.84 -18204038.70 -18204038.54 0.0273 0.0223  
 Earth -54553-01-22 18:57 J -18204038.82 -18204038.71 -18204038.57 0.0273 0.0235 \*  
 Moon -54552-02-03 04:18 J -18203661.57 -18203661.32 -18203661.07 0.0270 0.0006

Earth -54552-02-03 07:54 J -18203661.42 -18203661.17 -18203660.92 0.0270 0.0007 \*  
 Moon -54551-02-15 14:09 J -18203284.02 -18203283.91 -18203283.77 0.0268 0.0227  
 Earth -54551-02-15 15:21 J -18203283.96 -18203283.86 -18203283.74 0.0268 0.0238 \*  
 Venus -54547-10-06 09:35 J -18201590.20 -18201590.10 -18201590.00 0.0263 0.0231  
 Venus -54546-05-23 14:52 J -18201361.09 -18201360.88 -18201360.67 0.0263 0.0073  
 Mars -54540-04-23 12:42 J -18199199.22 -18199198.97 -18199198.69 0.0277 0.0132  
 Mercury -54539-09-09 14:37 J -18198694.92 -18198694.89 -18198694.86 0.0283 0.0276  
 Mercury -54539-12-07 03:21 J -18198606.47 -18198606.36 -18198606.25 0.0283 0.0170  
 Mercury -54538-03-05 15:49 J -18198517.97 -18198517.84 -18198517.70 0.0284 0.0064  
 Mercury -54538-06-02 04:33 J -18198429.45 -18198429.31 -18198429.18 0.0285 0.0043  
 Mercury -54538-08-29 16:47 J -18198340.91 -18198340.80 -18198340.68 0.0286 0.0148  
 Mercury -54538-11-26 05:01 J -18198252.35 -18198252.29 -18198252.23 0.0287 0.0254  
 Moon -54537-08-05 13:25 J -18197999.17 -18197998.94 -18197998.71 0.0290 0.0058  
 Earth -54537-08-05 14:09 J -18197999.15 -18197998.91 -18197998.67 0.0290 0.0051 \*  
 Earth -54536-08-19 13:25 J -18197620.07 -18197619.94 -18197619.80 0.0293 0.0244  
 Moon -54536-08-19 16:04 J -18197619.96 -18197619.83 -18197619.70 0.0293 0.0243 \*  
 Venus -54532-11-04 23:30 J -18196081.71 -18196081.52 -18196081.32 0.0298 0.0086  
 Mars -54526-04-28 19:25 J -18194080.96 -18194080.69 -18194080.41 0.0282 0.0059  
 Mercury -54525-07-07 12:13 J -18193645.09 -18193644.99 -18193644.87 0.0277 0.0210  
 Mercury -54525-10-04 08:23 J -18193556.31 -18193556.15 -18193555.98 0.0276 0.0084  
 Mercury -54524-01-01 04:47 J -18193467.48 -18193467.30 -18193467.12 0.0275 0.0042  
 Mercury -54524-03-31 01:11 J -18193378.59 -18193378.45 -18193378.31 0.0274 0.0169  
 Earth -54523-01-28 22:04 J -18193074.80 -18193074.58 -18193074.35 0.0272 0.0107  
 Moon -54523-01-29 01:40 J -18193074.65 -18193074.43 -18193074.20 0.0272 0.0102 \*  
 Earth -54522-02-10 07:54 J -18192697.38 -18192697.17 -18192696.95 0.0269 0.0130  
 Moon -54522-02-10 09:21 J -18192697.33 -18192697.11 -18192696.87 0.0269 0.0123 \*  
 Venus -54517-04-17 10:33 J -18190804.20 -18190804.06 -18190803.91 0.0263 0.0198  
 Venus -54517-12-02 16:04 J -18190575.03 -18190574.83 -18190574.63 0.0263 0.0107  
 Mars -54510-06-13 16:47 J -18188191.04 -18188190.80 -18188190.55 0.0281 0.0162  
 Mercury -54509-04-25 04:47 J -18187874.39 -18187874.30 -18187874.20 0.0284 0.0204



Mercury -54509-07-22 17:30 J -18187785.90 -18187785.77 -18187785.64 0.0285 0.0097

Mercury -54509-10-19 05:59 J -18187697.38 -18187697.25 -18187697.11 0.0286 0.0014

Mercury -54508-01-15 18:28 J -18187608.85 -18187608.73 -18187608.60 0.0287 0.0116

Mercury -54508-04-14 06:57 J -18187520.30 -18187520.21 -18187520.13 0.0287 0.0221

Earth -54508-07-30 17:59 J -18187412.93 -18187412.75 -18187412.55 0.0289 0.0180

Moon -54508-07-30 18:13 J -18187412.93 -18187412.74 -18187412.54 0.0289 0.0187 \*

Moon -54507-08-13 12:13 J -18187034.21 -18187033.99 -18187033.75 0.0292 0.0110

Earth -54507-08-13 15:35 J -18187034.07 -18187033.85 -18187033.62 0.0292 0.0111 \*

Venus -54503-09-30 10:33 J -18185525.12 -18185525.06 -18185524.97 0.0298 0.0276

Venus -54502-05-18 05:30 J -18185295.45 -18185295.27 -18185295.09 0.0297 0.0140

Mercury -54496-11-24 12:28 J -18182913.06 -18182912.98 -18182912.89 0.0277 0.0244

Mercury -54495-02-21 08:37 J -18182824.30 -18182824.14 -18182823.98 0.0276 0.0119

Mercury -54495-05-21 04:47 J -18182735.48 -18182735.30 -18182735.12 0.0276 0.0009

Mercury -54495-08-18 01:25 J -18182646.60 -18182646.44 -18182646.29 0.0275 0.0135

Mercury -54495-11-14 22:04 J -18182557.63 -18182557.58 -18182557.53 0.0274 0.0262

Moon -54494-01-23 16:18 J -18182487.97 -18182487.82 -18182487.66 0.0273 0.0209

Earth -54494-01-23 19:54 J -18182487.81 -18182487.67 -18182487.51 0.0273 0.0217 \*

Moon -54493-02-05 06:57 J -18182110.45 -18182110.21 -18182109.97 0.0270 0.0023

Earth -54493-02-05 08:52 J -18182110.38 -18182110.13 -18182109.89 0.0270 0.0025 \*

Earth -54492-02-16 16:33 J -18181732.88 -18181732.81 -18181732.74 0.0268 0.0256

Moon -54492-02-16 19:11 J -18181732.78 -18181732.70 -18181732.59 0.0268 0.0244 \*

Venus -54488-10-28 17:16 J -18180017.95 -18180017.78 -18180017.59 0.0263 0.0147

Venus -54487-06-14 22:47 J -18179788.71 -18179788.55 -18179788.36 0.0264 0.0160

Mercury -54480-09-12 07:40 J -18177142.26 -18177142.18 -18177142.10 0.0283 0.0229

Mercury -54480-12-09 20:09 J -18177053.78 -18177053.66 -18177053.53 0.0284 0.0124

Mercury -54479-03-08 08:52 J -18176965.27 -18176965.13 -18176964.99 0.0285 0.0018

Mercury -54479-06-04 21:21 J -18176876.74 -18176876.61 -18176876.48 0.0286 0.0088

Mercury -54479-09-01 09:35 J -18176788.20 -18176788.10 -18176788.00 0.0286 0.0194

Earth -54478-08-07 23:01 J -18176447.78 -18176447.54 -18176447.29 0.0290 0.0024

Moon -54478-08-08 02:23 J -18176447.63 -18176447.40 -18176447.16 0.0290 0.0027 \*

Earth -54477-08-20 22:33 J -18176068.64 -18176068.56 -18176068.46 0.0293 0.0272  
 Moon -54477-08-21 02:09 J -18176068.49 -18176068.41 -18176068.32 0.0293 0.0273 \*  
 Venus -54473-04-11 16:04 J -18174738.96 -18174738.83 -18174738.69 0.0298 0.0219  
 Venus -54473-11-27 10:18 J -18174509.22 -18174509.07 -18174508.91 0.0297 0.0195  
 Mars -54468-08-04 04:18 J -18172798.52 -18172798.32 -18172798.12 0.0284 0.0198  
 Mercury -54466-07-11 06:57 J -18172092.35 -18172092.21 -18172092.07 0.0277 0.0162  
 Mercury -54466-10-08 03:06 J -18172003.55 -18172003.37 -18172003.19 0.0276 0.0036  
 Mercury -54465-01-04 23:30 J -18171914.69 -18171914.52 -18171914.35 0.0275 0.0090  
 Mercury -54465-04-02 19:54 J -18171825.77 -18171825.67 -18171825.56 0.0274 0.0218  
 Earth -54464-01-30 00:57 J -18171523.69 -18171523.46 -18171523.22 0.0272 0.0086  
 Moon -54464-01-30 02:52 J -18171523.62 -18171523.38 -18171523.13 0.0272 0.0085 \*  
 Moon -54463-02-11 07:54 J -18171146.37 -18171146.17 -18171145.94 0.0269 0.0140  
 Earth -54463-02-11 11:01 J -18171146.24 -18171146.04 -18171145.83 0.0269 0.0150 \*  
 Venus -54458-05-10 19:25 J -18169231.89 -18169231.69 -18169231.49 0.0263 0.0111  
 Venus -54458-12-26 01:11 J -18169002.60 -18169002.45 -18169002.30 0.0264 0.0195  
 Mars -54452-09-17 07:11 J -18166910.48 -18166910.20 -18166909.91 0.0278 0.0103  
 Mercury -54450-01-30 09:21 J -18166410.16 -18166410.11 -18166410.06 0.0283 0.0262  
 Mercury -54450-04-28 22:04 J -18166321.70 -18166321.58 -18166321.47 0.0284 0.0156  
 Mercury -54450-07-26 10:33 J -18166233.19 -18166233.06 -18166232.92 0.0285 0.0050  
 Mercury -54450-10-22 23:01 J -18166144.67 -18166144.54 -18166144.40 0.0286 0.0056  
 Mercury -54449-01-19 11:30 J -18166056.13 -18166056.02 -18166055.91 0.0287 0.0162  
 Mercury -54449-04-16 23:45 J -18165967.55 -18165967.51 -18165967.46 0.0288 0.0268  
 Moon -54449-08-01 00:42 J -18165861.67 -18165861.47 -18165861.26 0.0289 0.0157  
 Earth -54449-08-01 04:04 J -18165861.53 -18165861.33 -18165861.12 0.0289 0.0152 \*  
 Moon -54448-08-14 22:33 J -18165482.76 -18165482.56 -18165482.34 0.0292 0.0143  
 Earth -54448-08-15 01:25 J -18165482.65 -18165482.44 -18165482.22 0.0292 0.0141 \*  
 Venus -54444-10-22 22:18 J -18163952.73 -18163952.57 -18163952.39 0.0298 0.0163  
 Venus -54443-06-09 16:47 J -18163722.90 -18163722.80 -18163722.69 0.0297 0.0251  
 Mars -54438-09-22 15:49 J -18161792.11 -18161791.84 -18161791.57 0.0281 0.0095  
 Mercury -54437-11-27 07:25 J -18161360.31 -18161360.19 -18161360.07 0.0277 0.0194

Mercury -54436-02-24 03:35 J -18161271.52 -18161271.35 -18161271.18 0.0276 0.0069

Mercury -54436-05-23 23:45 J -18161182.68 -18161182.51 -18161182.33 0.0275 0.0058

Mercury -54436-08-20 20:09 J -18161093.78 -18161093.66 -18161093.52 0.0274 0.0186

Moon -54435-01-24 22:33 J -18160936.72 -18160936.56 -18160936.38 0.0273 0.0191

Earth -54435-01-25 00:13 J -18160936.66 -18160936.49 -18160936.31 0.0273 0.0195 \*

Earth -54434-02-06 12:42 J -18160559.22 -18160558.97 -18160558.73 0.0270 0.0047

Moon -54434-02-06 15:06 J -18160559.10 -18160558.87 -18160558.63 0.0270 0.0042 \*

Moon -54433-02-18 23:16 J -18160181.56 -18160181.53 -18160181.48 0.0268 0.0264

Venus -54429-11-20 02:52 J -18158445.59 -18158445.38 -18158445.16 0.0264 0.0057

Venus -54428-07-07 08:37 J -18158216.20 -18158216.14 -18158216.07 0.0264 0.0249

Mars -54422-11-08 07:25 J -18155901.37 -18155901.19 -18155900.98 0.0280 0.0215

Mercury -54421-09-15 01:11 J -18155589.56 -18155589.45 -18155589.34 0.0283 0.0179

Mercury -54421-12-12 13:40 J -18155501.06 -18155500.93 -18155500.79 0.0284 0.0073

Mercury -54420-03-11 02:23 J -18155412.54 -18155412.40 -18155412.27 0.0285 0.0035

Mercury -54420-06-07 14:37 J -18155324.01 -18155323.89 -18155323.77 0.0286 0.0139

Earth -54420-07-26 17:16 J -18155274.83 -18155274.78 -18155274.70 0.0286 0.0275

Moon -54420-07-26 20:37 J -18155274.65 -18155274.64 -18155274.62 0.0286 0.0286

Mercury -54420-09-04 02:52 J -18155235.44 -18155235.38 -18155235.31 0.0287 0.0244

Earth -54419-08-09 12:13 J -18154896.24 -18154895.99 -18154895.75 0.0290 0.0010

Moon -54419-08-09 14:52 J -18154896.13 -18154895.88 -18154895.63 0.0290 0.0006 \*

Venus -54414-05-05 05:59 J -18153166.44 -18153166.25 -18153166.05 0.0297 0.0098

Mercury -54407-04-16 06:28 J -18150628.31 -18150628.23 -18150628.13 0.0277 0.0233

Mercury -54407-07-14 02:37 J -18150539.55 -18150539.39 -18150539.22 0.0276 0.0107

Mercury -54407-10-10 22:47 J -18150450.72 -18150450.55 -18150450.37 0.0276 0.0020

Mercury -54406-01-07 19:11 J -18150361.85 -18150361.70 -18150361.54 0.0275 0.0146

Mercury -54406-04-06 16:04 J -18150272.85 -18150272.83 -18150272.82 0.0274 0.0272

Moon -54405-02-01 04:33 J -18149972.55 -18149972.31 -18149972.06 0.0271 0.0066

Earth -54405-02-01 07:25 J -18149972.42 -18149972.19 -18149971.94 0.0271 0.0063 \*

Moon -54404-02-12 13:40 J -18149595.11 -18149594.93 -18149594.73 0.0269 0.0162

Earth -54404-02-12 17:01 J -18149594.97 -18149594.79 -18149594.60 0.0269 0.0173 \*

Venus -54399-06-02 05:45 J -18147659.48 -18147659.26 -18147659.04 0.0263 0.0019  
 Mercury -54391-02-02 02:52 J -18144857.47 -18144857.38 -18144857.28 0.0284 0.0211  
 Mercury -54391-05-01 15:35 J -18144768.98 -18144768.85 -18144768.72 0.0285 0.0104  
 Mercury -54391-07-29 04:04 J -18144680.46 -18144680.33 -18144680.19 0.0285 0.0010  
 Mercury -54391-10-25 16:33 J -18144591.93 -18144591.81 -18144591.68 0.0286 0.0108  
 Mercury -54390-01-22 05:01 J -18144503.38 -18144503.29 -18144503.20 0.0287 0.0214  
 Moon -54390-08-03 15:06 J -18144310.08 -18144309.87 -18144309.66 0.0289 0.0126  
 Earth -54390-08-03 17:45 J -18144309.98 -18144309.76 -18144309.54 0.0289 0.0120 \*  
 Earth -54389-08-16 15:21 J -18143931.05 -18143930.86 -18143930.66 0.0292 0.0174  
 Moon -54389-08-16 16:33 J -18143930.99 -18143930.81 -18143930.62 0.0292 0.0177 \*  
 Venus -54385-11-14 12:42 J -18142380.17 -18142379.97 -18142379.77 0.0298 0.0041  
 Mars -54380-12-29 09:35 J -18140509.33 -18140509.10 -18140508.87 0.0283 0.0157  
 Mercury -54378-09-03 07:11 J -18139896.24 -18139896.20 -18139896.14 0.0277 0.0264  
 Mercury -54378-12-01 03:21 J -18139807.51 -18139807.36 -18139807.21 0.0277 0.0139  
 Mercury -54377-02-27 23:30 J -18139718.70 -18139718.52 -18139718.34 0.0276 0.0013  
 Mercury -54377-05-26 19:54 J -18139629.83 -18139629.67 -18139629.51 0.0275 0.0114  
 Mercury -54377-08-23 16:18 J -18139540.89 -18139540.82 -18139540.73 0.0274 0.0241  
 Earth -54376-01-26 07:25 J -18139385.38 -18139385.19 -18139384.99 0.0273 0.0170  
 Moon -54376-01-26 10:18 J -18139385.26 -18139385.07 -18139384.88 0.0273 0.0169 \*  
 Earth -54375-02-07 19:40 J -18139007.92 -18139007.68 -18139007.44 0.0270 0.0071  
 Moon -54375-02-07 23:01 J -18139007.78 -18139007.54 -18139007.29 0.0270 0.0063 \*  
 Venus -54370-12-13 13:54 J -18136873.14 -18136872.92 -18136872.70 0.0264 0.0037  
 Mars -54363-02-12 07:25 J -18134620.49 -18134620.19 -18134619.89 0.0278 0.0046  
 Mercury -54362-06-22 06:28 J -18134125.31 -18134125.23 -18134125.15 0.0283 0.0230  
 Mercury -54362-09-18 18:57 J -18134036.83 -18134036.71 -18134036.58 0.0284 0.0125  
 Mercury -54362-12-16 07:40 J -18133948.32 -18133948.18 -18133948.04 0.0285 0.0018  
 Mercury -54361-03-13 20:09 J -18133859.79 -18133859.66 -18133859.53 0.0286 0.0087  
 Mercury -54361-06-10 08:23 J -18133771.24 -18133771.15 -18133771.05 0.0286 0.0193  
 Earth -54361-07-28 08:52 J -18133723.26 -18133723.13 -18133723.00 0.0287 0.0241  
 Moon -54361-07-28 11:45 J -18133723.12 -18133723.01 -18133722.89 0.0287 0.0252 \*

Moon -54360-08-11 02:52 J -18133344.63 -18133344.38 -18133344.13 0.0290 0.0043  
 Earth -54360-08-11 03:49 J -18133344.58 -18133344.34 -18133344.09 0.0290 0.0045 \*  
 Venus -54355-05-27 21:49 J -18131593.79 -18131593.59 -18131593.39 0.0297 0.0029  
 Mars -54349-02-16 20:37 J -18129502.89 -18129502.64 -18129502.38 0.0281 0.0127  
 Mercury -54348-04-19 03:21 J -18129075.50 -18129075.36 -18129075.22 0.0277 0.0172  
 Mercury -54348-07-16 23:16 J -18128986.70 -18128986.53 -18128986.35 0.0276 0.0047  
 Mercury -54348-10-13 19:40 J -18128897.85 -18128897.68 -18128897.51 0.0275 0.0080  
 Mercury -54347-01-10 16:04 J -18128808.94 -18128808.83 -18128808.71 0.0274 0.0206  
 Moon -54347-01-21 00:42 J -18128798.49 -18128798.47 -18128798.42 0.0274 0.0272  
 Moon -54346-02-02 13:54 J -18128421.15 -18128420.92 -18128420.67 0.0271 0.0042  
 Earth -54346-02-02 17:01 J -18128421.03 -18128420.79 -18128420.54 0.0271 0.0036 \*  
 Earth -54345-02-15 01:40 J -18128043.58 -18128043.43 -18128043.25 0.0268 0.0200  
 Moon -54345-02-15 02:52 J -18128043.55 -18128043.38 -18128043.21 0.0268 0.0186 \*  
 Venus -54341-11-07 11:16 J -18126316.13 -18126316.03 -18126315.92 0.0263 0.0228  
 Venus -54340-06-24 17:16 J -18126086.99 -18126086.78 -18126086.57 0.0264 0.0077  
 Mars -54333-04-03 15:49 J -18123611.95 -18123611.84 -18123611.70 0.0281 0.0255  
 Mercury -54333-11-08 08:09 J -18123393.20 -18123393.16 -18123393.11 0.0283 0.0262  
 Mercury -54332-02-04 20:52 J -18123304.74 -18123304.63 -18123304.51 0.0284 0.0156  
 Mercury -54332-05-04 09:35 J -18123216.23 -18123216.10 -18123215.96 0.0285 0.0050  
 Mercury -54332-07-31 22:04 J -18123127.71 -18123127.58 -18123127.45 0.0286 0.0057  
 Mercury -54332-10-28 10:33 J -18123039.17 -18123039.06 -18123038.95 0.0287 0.0162  
 Mercury -54331-01-24 22:47 J -18122950.59 -18122950.55 -18122950.50 0.0288 0.0268  
 Earth -54331-08-05 09:21 J -18122758.34 -18122758.11 -18122757.87 0.0290 0.0085  
 Moon -54331-08-05 10:33 J -18122758.28 -18122758.06 -18122757.84 0.0290 0.0091 \*  
 Earth -54330-08-19 07:40 J -18122379.33 -18122379.18 -18122379.00 0.0293 0.0210  
 Moon -54330-08-19 11:30 J -18122379.18 -18122379.02 -18122378.85 0.0293 0.0213 \*  
 Venus -54326-12-08 04:47 J -18120807.49 -18120807.30 -18120807.10 0.0297 0.0088  
 Mercury -54319-09-06 04:04 J -18118343.45 -18118343.33 -18118343.21 0.0277 0.0202  
 Mercury -54319-12-03 23:59 J -18118254.66 -18118254.50 -18118254.32 0.0276 0.0077  
 Mercury -54318-03-02 20:23 J -18118165.82 -18118165.65 -18118165.47 0.0275 0.0049

Mercury -54318-05-30 16:47 J -18118076.93 -18118076.80 -18118076.66 0.0274 0.0176  
 Earth -54317-01-28 17:45 J -18117833.96 -18117833.76 -18117833.54 0.0272 0.0142  
 Moon -54317-01-28 21:06 J -18117833.83 -18117833.62 -18117833.40 0.0272 0.0141 \*  
 Moon -54316-02-09 04:18 J -18117456.56 -18117456.32 -18117456.07 0.0269 0.0087  
 Earth -54316-02-09 05:16 J -18117456.50 -18117456.28 -18117456.04 0.0269 0.0098 \*  
 Venus -54311-05-20 19:40 J -18115529.84 -18115529.68 -18115529.51 0.0264 0.0173  
 Venus -54310-01-05 01:40 J -18115300.61 -18115300.43 -18115300.24 0.0264 0.0133  
 Mercury -54303-03-28 11:45 J -18112661.02 -18112661.01 -18112660.99 0.0283 0.0280  
 Mercury -54303-06-25 00:42 J -18112572.58 -18112572.47 -18112572.36 0.0284 0.0174  
 Mercury -54303-09-21 13:11 J -18112484.08 -18112483.95 -18112483.81 0.0284 0.0068  
 Mercury -54303-12-19 01:54 J -18112395.56 -18112395.42 -18112395.29 0.0285 0.0039  
 Mercury -54302-03-17 14:09 J -18112307.02 -18112306.91 -18112306.79 0.0286 0.0144  
 Mercury -54302-06-14 02:23 J -18112218.46 -18112218.40 -18112218.33 0.0287 0.0250  
 Moon -54302-07-31 00:28 J -18112171.64 -18112171.48 -18112171.31 0.0287 0.0215  
 Earth -54302-07-31 01:40 J -18112171.59 -18112171.43 -18112171.25 0.0287 0.0207 \*  
 Moon -54301-08-12 18:13 J -18111792.97 -18111792.74 -18111792.50 0.0291 0.0080  
 Earth -54301-08-12 21:49 J -18111792.82 -18111792.59 -18111792.36 0.0291 0.0082 \*  
 Venus -54297-11-01 21:06 J -18110250.72 -18110250.62 -18110250.51 0.0297 0.0251  
 Venus -54296-06-19 15:21 J -18110021.03 -18110020.86 -18110020.69 0.0297 0.0160  
 Mars -54291-05-26 00:57 J -18108219.71 -18108219.46 -18108219.20 0.0283 0.0118  
 Mercury -54289-01-24 04:33 J -18107611.39 -18107611.31 -18107611.20 0.0277 0.0232  
 Mercury -54289-04-22 00:42 J -18107522.63 -18107522.47 -18107522.31 0.0276 0.0106  
 Mercury -54289-07-19 20:52 J -18107433.81 -18107433.63 -18107433.45 0.0276 0.0019  
 Mercury -54289-10-16 17:16 J -18107344.93 -18107344.78 -18107344.63 0.0275 0.0145  
 Mercury -54288-01-13 13:40 J -18107255.94 -18107255.93 -18107255.90 0.0274 0.0272  
 Moon -54288-01-22 12:42 J -18107247.08 -18107246.97 -18107246.85 0.0274 0.0240  
 Earth -54288-01-22 16:04 J -18107246.92 -18107246.83 -18107246.71 0.0274 0.0247 \*  
 Earth -54287-02-04 05:01 J -18106869.53 -18106869.29 -18106869.04 0.0271 0.0007  
 Moon -54287-02-04 05:59 J -18106869.49 -18106869.25 -18106869.02 0.0271 0.0013 \*  
 Earth -54286-02-16 13:11 J -18106492.08 -18106491.95 -18106491.82 0.0268 0.0228

Moon -54286-02-16 17:01 J -18106491.94 -18106491.79 -18106491.64 0.0268 0.0212 \*  
 Venus -54282-11-30 23:59 J -18104743.69 -18104743.50 -18104743.31 0.0263 0.0131  
 Venus -54281-07-17 05:45 J -18104514.42 -18104514.26 -18104514.09 0.0264 0.0174  
 Mars -54275-07-09 16:47 J -18102331.11 -18102330.80 -18102330.50 0.0279 0.0006  
 Mercury -54274-11-12 02:23 J -18101840.49 -18101840.40 -18101840.30 0.0284 0.0206  
 Mercury -54273-02-08 15:06 J -18101752.00 -18101751.87 -18101751.74 0.0285 0.0099  
 Mercury -54273-05-07 03:35 J -18101663.48 -18101663.35 -18101663.21 0.0286 0.0012  
 Mercury -54273-08-03 16:04 J -18101574.95 -18101574.83 -18101574.70 0.0286 0.0113  
 Mercury -54273-10-31 04:33 J -18101486.40 -18101486.31 -18101486.22 0.0287 0.0218  
 Earth -54272-08-07 02:23 J -18101206.64 -18101206.40 -18101206.16 0.0290 0.0048  
 Moon -54272-08-07 06:13 J -18101206.48 -18101206.24 -18101206.00 0.0290 0.0054 \*  
 Earth -54271-08-21 01:40 J -18100827.55 -18100827.43 -18100827.30 0.0293 0.0247  
 Moon -54271-08-21 03:49 J -18100827.47 -18100827.34 -18100827.21 0.0293 0.0248 \*  
 Venus -54267-05-15 03:21 J -18099464.50 -18099464.36 -18099464.20 0.0298 0.0194  
 Venus -54267-12-30 21:35 J -18099234.73 -18099234.60 -18099234.46 0.0297 0.0218  
 Mars -54261-07-13 14:23 J -18097213.12 -18097212.90 -18097212.68 0.0280 0.0177  
 Mercury -54260-06-12 05:30 J -18096879.32 -18096879.27 -18096879.21 0.0277 0.0261  
 Mercury -54260-09-09 01:25 J -18096790.59 -18096790.44 -18096790.28 0.0276 0.0137  
 Mercury -54260-12-06 21:35 J -18096701.78 -18096701.60 -18096701.42 0.0275 0.0012  
 Mercury -54259-03-05 17:59 J -18096612.91 -18096612.75 -18096612.59 0.0275 0.0115  
 Mercury -54259-06-02 14:23 J -18096523.98 -18096523.90 -18096523.81 0.0274 0.0241  
 Moon -54258-01-30 05:59 J -18096282.48 -18096282.25 -18096282.01 0.0272 0.0112  
 Earth -54258-01-30 05:59 J -18096282.47 -18096282.25 -18096282.02 0.0272 0.0112 \*  
 Moon -54257-02-11 12:57 J -18095905.18 -18095904.96 -18095904.73 0.0269 0.0114  
 Earth -54257-02-11 16:33 J -18095905.02 -18095904.81 -18095904.58 0.0269 0.0127 \*  
 Venus -54252-06-12 07:54 J -18093957.38 -18093957.17 -18093956.96 0.0264 0.0076  
 Venus -54251-01-27 13:54 J -18093728.02 -18093727.92 -18093727.80 0.0264 0.0231  
 Mercury -54244-03-31 05:59 J -18091108.33 -18091108.25 -18091108.17 0.0283 0.0224  
 Mercury -54244-06-27 18:42 J -18091019.84 -18091019.72 -18091019.59 0.0284 0.0118  
 Mercury -54244-09-24 07:25 J -18090931.33 -18090931.19 -18090931.06 0.0285 0.0014

Mercury -54244-12-21 19:54 J -18090842.80 -18090842.67 -18090842.54 0.0286 0.0094  
 Mercury -54243-03-20 08:09 J -18090754.25 -18090754.16 -18090754.06 0.0287 0.0200  
 Moon -54243-08-01 14:37 J -18090620.08 -18090619.89 -18090619.70 0.0288 0.0178  
 Earth -54243-08-01 18:13 J -18090619.93 -18090619.74 -18090619.54 0.0288 0.0171 \*  
 Moon -54242-08-15 13:11 J -18090241.16 -18090240.95 -18090240.73 0.0291 0.0120  
 Earth -54242-08-15 15:21 J -18090241.08 -18090240.86 -18090240.64 0.0291 0.0120 \*  
 Venus -54238-11-25 14:52 J -18088678.06 -18088677.88 -18088677.69 0.0297 0.0118  
 Venus -54237-07-12 08:52 J -18088448.15 -18088448.13 -18088448.09 0.0297 0.0292  
 Mercury -54230-01-27 02:37 J -18086058.53 -18086058.39 -18086058.24 0.0277 0.0163  
 Mercury -54230-04-25 22:47 J -18085969.73 -18085969.55 -18085969.38 0.0276 0.0038  
 Mercury -54230-07-23 18:57 J -18085880.88 -18085880.71 -18085880.54 0.0275 0.0088  
 Mercury -54230-10-20 15:21 J -18085791.97 -18085791.86 -18085791.74 0.0274 0.0214  
 Moon -54229-01-25 06:28 J -18085695.38 -18085695.23 -18085695.08 0.0273 0.0210  
 Earth -54229-01-25 06:28 J -18085695.37 -18085695.23 -18085695.07 0.0273 0.0215 \*  
 Earth -54228-02-05 18:42 J -18085317.97 -18085317.72 -18085317.48 0.0270 0.0026  
 Moon -54228-02-05 22:04 J -18085317.82 -18085317.58 -18085317.33 0.0270 0.0019 \*  
 Earth -54227-02-18 01:54 J -18084940.48 -18084940.42 -18084940.35 0.0268 0.0257  
 Moon -54227-02-18 02:52 J -18084940.47 -18084940.38 -18084940.26 0.0268 0.0242 \*  
 Venus -54223-12-23 12:42 J -18083171.19 -18083170.97 -18083170.75 0.0263 0.0033  
 Mars -54217-10-13 09:49 J -18081050.15 -18081050.09 -18081050.01 0.0276 0.0269  
 Mercury -54215-08-18 07:40 J -18080376.23 -18080376.18 -18080376.12 0.0283 0.0257  
 Mercury -54215-11-14 20:23 J -18080287.76 -18080287.65 -18080287.53 0.0284 0.0151  
 Mercury -54214-02-11 09:06 J -18080199.25 -18080199.12 -18080198.98 0.0285 0.0044  
 Mercury -54214-05-10 21:35 J -18080110.73 -18080110.60 -18080110.46 0.0286 0.0062  
 Mercury -54214-08-07 10:04 J -18080022.19 -18080022.08 -18080021.97 0.0287 0.0168  
 Mercury -54214-11-03 22:18 J -18079933.60 -18079933.57 -18079933.52 0.0288 0.0273  
 Earth -54213-08-08 18:42 J -18079654.96 -18079654.72 -18079654.47 0.0290 0.0012  
 Moon -54213-08-08 20:09 J -18079654.91 -18079654.66 -18079654.40 0.0290 0.0015 \*  
 Moon -54212-08-22 16:33 J -18079275.84 -18079275.81 -18079275.75 0.0294 0.0289  
 Earth -54212-08-22 18:42 J -18079275.77 -18079275.72 -18079275.65 0.0294 0.0285 \*



Venus -54208-06-06 20:37 J -18077891.83 -18077891.64 -18077891.43 0.0298 0.0063  
 Mars -54203-10-20 19:25 J -18075929.96 -18075929.69 -18075929.41 0.0283 0.0068  
 Mercury -54201-06-15 03:06 J -18075326.49 -18075326.37 -18075326.24 0.0277 0.0195  
 Mercury -54201-09-11 23:01 J -18075237.71 -18075237.54 -18075237.36 0.0276 0.0070  
 Mercury -54201-12-09 19:11 J -18075148.87 -18075148.70 -18075148.52 0.0275 0.0056  
 Mercury -54200-03-08 15:49 J -18075059.98 -18075059.84 -18075059.71 0.0274 0.0182  
 Moon -54199-01-31 15:21 J -18074731.09 -18074730.86 -18074730.61 0.0271 0.0083  
 Earth -54199-01-31 18:57 J -18074730.94 -18074730.71 -18074730.47 0.0271 0.0080 \*  
 Moon -54198-02-13 03:06 J -18074353.57 -18074353.37 -18074353.16 0.0269 0.0145  
 Earth -54198-02-13 04:47 J -18074353.50 -18074353.30 -18074353.10 0.0269 0.0157 \*  
 Venus -54193-07-04 20:23 J -18072384.87 -18072384.65 -18072384.43 0.0264 0.0021  
 Mars -54187-12-04 19:54 J -18070040.97 -18070040.67 -18070040.37 0.0279 0.0048  
 Mercury -54185-01-05 11:01 J -18069644.06 -18069644.04 -18069644.01 0.0283 0.0276  
 Mercury -54185-04-02 23:59 J -18069555.61 -18069555.50 -18069555.39 0.0284 0.0170  
 Mercury -54185-06-30 12:42 J -18069467.11 -18069466.97 -18069466.84 0.0285 0.0064  
 Mercury -54185-09-27 01:11 J -18069378.58 -18069378.45 -18069378.31 0.0286 0.0043  
 Mercury -54185-12-24 13:40 J -18069290.04 -18069289.93 -18069289.81 0.0287 0.0149  
 Mercury -54184-03-23 01:54 J -18069201.47 -18069201.42 -18069201.35 0.0287 0.0254  
 Moon -54184-08-03 08:37 J -18069068.34 -18069068.14 -18069067.93 0.0289 0.0140  
 Earth -54184-08-03 09:49 J -18069068.31 -18069068.09 -18069067.88 0.0289 0.0135 \*  
 Earth -54183-08-17 07:54 J -18068689.38 -18068689.17 -18068688.97 0.0292 0.0158  
 Moon -54183-08-17 10:04 J -18068689.27 -18068689.08 -18068688.88 0.0292 0.0160 \*  
 Venus -54179-12-18 07:54 J -18067105.38 -18067105.17 -18067104.97 0.0297 0.0012  
 Mars -54173-12-08 13:54 J -18064923.08 -18064922.92 -18064922.74 0.0280 0.0223  
 Mercury -54172-11-02 04:33 J -18064594.41 -18064594.31 -18064594.20 0.0277 0.0219  
 Mercury -54171-01-30 00:28 J -18064505.64 -18064505.48 -18064505.31 0.0276 0.0095  
 Mercury -54171-04-28 20:37 J -18064416.82 -18064416.64 -18064416.46 0.0275 0.0030  
 Mercury -54171-07-26 16:47 J -18064327.94 -18064327.80 -18064327.65 0.0275 0.0157  
 Earth -54170-01-26 20:23 J -18064143.82 -18064143.65 -18064143.46 0.0273 0.0183  
 Moon -54170-01-26 23:59 J -18064143.68 -18064143.50 -18064143.31 0.0273 0.0179 \*

Earth -54169-02-08 07:40 J -18063766.42 -18063766.18 -18063765.93 0.0270 0.0058  
 Moon -54169-02-08 10:04 J -18063766.33 -18063766.08 -18063765.83 0.0270 0.0051 \*  
 Venus -54164-05-30 19:11 J -18061827.78 -18061827.70 -18061827.60 0.0263 0.0239  
 Venus -54163-01-15 01:11 J -18061598.66 -18061598.45 -18061598.23 0.0263 0.0064  
 Mercury -54156-08-21 01:25 J -18058823.54 -18058823.44 -18058823.35 0.0284 0.0205  
 Mercury -54156-11-17 14:09 J -18058735.04 -18058734.91 -18058734.78 0.0285 0.0099  
 Mercury -54155-02-14 02:37 J -18058646.52 -18058646.39 -18058646.25 0.0286 0.0010  
 Mercury -54155-05-13 15:06 J -18058557.99 -18058557.87 -18058557.74 0.0286 0.0114  
 Earth -54155-07-28 13:25 J -18058482.04 -18058481.94 -18058481.85 0.0287 0.0264  
 Moon -54155-07-28 13:54 J -18058481.99 -18058481.92 -18058481.82 0.0287 0.0270 \*  
 Mercury -54155-08-10 03:35 J -18058469.43 -18058469.35 -18058469.26 0.0287 0.0219  
 Moon -54154-08-11 05:45 J -18058103.51 -18058103.26 -18058103.02 0.0291 0.0025  
 Earth -54154-08-11 08:37 J -18058103.38 -18058103.14 -18058102.89 0.0291 0.0023 \*  
 Venus -54149-06-29 12:42 J -18056319.17 -18056318.97 -18056318.77 0.0298 0.0064  
 Mercury -54142-03-22 04:33 J -18053862.37 -18053862.31 -18053862.24 0.0277 0.0253  
 Mercury -54142-06-19 00:28 J -18053773.63 -18053773.48 -18053773.32 0.0276 0.0130  
 Mercury -54142-09-15 20:37 J -18053684.82 -18053684.64 -18053684.46 0.0275 0.0005  
 Mercury -54142-12-13 16:47 J -18053595.96 -18053595.80 -18053595.63 0.0275 0.0122  
 Mercury -54141-03-11 13:11 J -18053507.01 -18053506.95 -18053506.86 0.0274 0.0248  
 Moon -54140-02-02 04:47 J -18053179.53 -18053179.30 -18053179.06 0.0271 0.0053  
 Earth -54140-02-02 07:11 J -18053179.44 -18053179.20 -18053178.95 0.0271 0.0049 \*  
 Earth -54139-02-14 16:04 J -18052802.01 -18052801.83 -18052801.65 0.0268 0.0187  
 Moon -54139-02-14 18:13 J -18052801.91 -18052801.74 -18052801.55 0.0268 0.0175 \*  
 Venus -54135-12-11 01:54 J -18051041.56 -18051041.42 -18051041.26 0.0264 0.0190  
 Venus -54134-07-28 07:54 J -18050812.36 -18050812.17 -18050811.97 0.0264 0.0115  
 Mars -54128-03-10 05:01 J -18048760.45 -18048760.29 -18048760.09 0.0277 0.0225  
 Mercury -54126-01-08 04:18 J -18048091.39 -18048091.32 -18048091.23 0.0284 0.0227  
 Mercury -54126-04-06 17:16 J -18048002.90 -18048002.78 -18048002.65 0.0284 0.0120  
 Mercury -54126-07-04 05:59 J -18047914.39 -18047914.25 -18047914.11 0.0285 0.0014  
 Mercury -54126-09-30 18:28 J -18047825.86 -18047825.73 -18047825.60 0.0286 0.0093

Mercury -54126-12-28 06:57 J -18047737.31 -18047737.21 -18047737.12 0.0287 0.0198  
 Earth -54125-08-04 21:35 J -18047516.82 -18047516.60 -18047516.36 0.0289 0.0103  
 Moon -54125-08-05 00:42 J -18047516.69 -18047516.47 -18047516.25 0.0289 0.0104 \*  
 Earth -54124-08-18 20:37 J -18047137.81 -18047137.64 -18047137.45 0.0292 0.0193  
 Moon -54124-08-19 00:13 J -18047137.66 -18047137.49 -18047137.30 0.0292 0.0197 \*  
 Jupiter -54122-08-16 04:47 J -18046410.60 -18046410.30 -18046409.95 0.0297 0.0205  
 Venus -54120-05-25 04:47 J -18045762.37 -18045762.30 -18045762.22 0.0297 0.0276  
 Venus -54119-01-09 23:01 J -18045532.71 -18045532.54 -18045532.35 0.0297 0.0135  
 Mars -54114-03-17 16:33 J -18043640.09 -18043639.81 -18043639.53 0.0283 0.0022  
 Mercury -54113-11-05 01:40 J -18043041.56 -18043041.43 -18043041.27 0.0277 0.0155  
 Mercury -54112-02-01 21:49 J -18042952.76 -18042952.59 -18042952.41 0.0276 0.0030  
 Mercury -54112-05-01 18:13 J -18042863.91 -18042863.74 -18042863.58 0.0275 0.0096  
 Mercury -54112-07-29 14:23 J -18042774.99 -18042774.90 -18042774.79 0.0274 0.0222  
 Earth -54111-01-28 09:06 J -18042592.32 -18042592.12 -18042591.91 0.0273 0.0152  
 Moon -54111-01-28 11:30 J -18042592.22 -18042592.02 -18042591.80 0.0273 0.0151 \*  
 Moon -54110-02-09 17:30 J -18042215.01 -18042214.77 -18042214.52 0.0270 0.0078  
 Earth -54110-02-09 19:25 J -18042214.91 -18042214.69 -18042214.45 0.0270 0.0089 \*  
 Venus -54105-06-22 07:11 J -18040255.38 -18040255.20 -18040255.02 0.0263 0.0145  
 Venus -54104-02-06 12:57 J -18040026.14 -18040025.96 -18040025.78 0.0263 0.0157  
 Mars -54098-04-30 17:01 J -18037752.08 -18037751.79 -18037751.49 0.0279 0.0082  
 Mercury -54097-05-27 05:45 J -18037359.30 -18037359.26 -18037359.20 0.0283 0.0262  
 Mercury -54097-08-23 18:28 J -18037270.84 -18037270.73 -18037270.61 0.0284 0.0156  
 Mercury -54097-11-20 07:11 J -18037182.33 -18037182.20 -18037182.06 0.0285 0.0051  
 Mercury -54096-02-16 19:54 J -18037093.81 -18037093.67 -18037093.54 0.0286 0.0057  
 Mercury -54096-05-16 08:09 J -18037005.26 -18037005.16 -18037005.04 0.0287 0.0163  
 Moon -54096-07-29 20:52 J -18036930.75 -18036930.63 -18036930.48 0.0287 0.0239  
 Earth -54096-07-29 23:59 J -18036930.63 -18036930.50 -18036930.35 0.0287 0.0233 \*  
 Mercury -54096-08-12 20:37 J -18036916.68 -18036916.64 -18036916.59 0.0288 0.0267  
 Moon -54095-08-12 17:01 J -18036552.02 -18036551.79 -18036551.55 0.0291 0.0060  
 Earth -54095-08-12 20:09 J -18036551.90 -18036551.66 -18036551.42 0.0291 0.0056 \*

Venus -54091-12-05 07:54 J -18034976.29 -18034976.17 -18034976.03 0.0298 0.0229  
 Venus -54090-07-23 02:37 J -18034746.55 -18034746.39 -18034746.23 0.0298 0.0182  
 Mars -54084-05-04 20:37 J -18032633.73 -18032633.64 -18032633.54 0.0280 0.0264  
 Mercury -54083-03-25 00:57 J -18032309.57 -18032309.46 -18032309.32 0.0277 0.0194  
 Mercury -54083-06-21 21:06 J -18032220.79 -18032220.62 -18032220.45 0.0276 0.0069  
 Mercury -54083-09-18 17:16 J -18032131.95 -18032131.78 -18032131.60 0.0275 0.0057  
 Mercury -54083-12-16 13:40 J -18032043.06 -18032042.93 -18032042.79 0.0274 0.0183  
 Moon -54082-01-23 01:40 J -18032005.50 -18032005.43 -18032005.36 0.0274 0.0260  
 Earth -54082-01-23 03:49 J -18032005.40 -18032005.34 -18032005.27 0.0274 0.0263 \*  
 Earth -54081-02-04 17:01 J -18031628.03 -18031627.79 -18031627.54 0.0271 0.0020  
 Moon -54081-02-04 19:11 J -18031627.94 -18031627.70 -18031627.46 0.0271 0.0027 \*  
 Earth -54080-02-16 01:11 J -18031250.58 -18031250.45 -18031250.29 0.0268 0.0215  
 Moon -54080-02-16 04:47 J -18031250.45 -18031250.30 -18031250.12 0.0268 0.0201 \*  
 Venus -54075-01-02 12:42 J -18029469.17 -18029468.97 -18029468.76 0.0263 0.0099  
 Venus -54075-08-19 18:28 J -18029239.86 -18029239.73 -18029239.59 0.0264 0.0205  
 Mercury -54067-01-10 21:21 J -18026538.72 -18026538.61 -18026538.50 0.0284 0.0181  
 Mercury -54067-04-09 10:04 J -18026450.21 -18026450.08 -18026449.95 0.0285 0.0075  
 Mercury -54067-07-06 22:33 J -18026361.69 -18026361.56 -18026361.42 0.0286 0.0033  
 Mercury -54067-10-03 11:01 J -18026273.15 -18026273.04 -18026272.92 0.0287 0.0138  
 Mercury -54067-12-30 23:30 J -18026184.59 -18026184.52 -18026184.45 0.0287 0.0243  
 Earth -54066-08-07 05:59 J -18025965.48 -18025965.25 -18025965.01 0.0289 0.0072  
 Moon -54066-08-07 09:06 J -18025965.35 -18025965.12 -18025964.88 0.0289 0.0075 \*  
 Moon -54065-08-20 05:01 J -18025586.43 -18025586.29 -18025586.13 0.0293 0.0231  
 Earth -54065-08-20 05:16 J -18025586.42 -18025586.28 -18025586.11 0.0293 0.0225 \*  
 Venus -54061-06-16 17:30 J -18024189.94 -18024189.77 -18024189.60 0.0298 0.0162  
 Venus -54060-02-01 11:30 J -18023960.12 -18023960.02 -18023959.89 0.0297 0.0248  
 Mars -54056-06-23 16:18 J -18022356.88 -18022356.82 -18022356.72 0.0285 0.0273  
 Mercury -54054-08-12 02:23 J -18021577.50 -18021577.40 -18021577.29 0.0277 0.0219  
 Mercury -54054-11-08 22:18 J -18021488.73 -18021488.57 -18021488.40 0.0276 0.0095  
 Mercury -54053-02-05 18:28 J -18021399.91 -18021399.73 -18021399.55 0.0276 0.0031

Mercury -54053-05-04 14:37 J -18021311.03 -18021310.89 -18021310.73 0.0275 0.0157  
 Moon -54052-01-29 16:33 J -18021041.03 -18021040.81 -18021040.57 0.0272 0.0127  
 Earth -54052-01-29 18:42 J -18021040.93 -18021040.72 -18021040.49 0.0272 0.0124 \*  
 Moon -54051-02-11 01:11 J -18020663.67 -18020663.45 -18020663.22 0.0269 0.0104  
 Earth -54051-02-11 05:01 J -18020663.51 -18020663.29 -18020663.07 0.0269 0.0116 \*  
 Venus -54046-07-15 17:45 J -18018682.98 -18018682.76 -18018682.55 0.0263 0.0055  
 Venus -54045-02-29 23:16 J -18018453.60 -18018453.53 -18018453.45 0.0263 0.0247  
 Mars -54040-08-03 19:25 J -18016471.90 -18016471.69 -18016471.46 0.0276 0.0192  
 Mercury -54038-05-30 22:33 J -18015806.65 -18015806.56 -18015806.48 0.0283 0.0218  
 Mercury -54038-08-27 11:16 J -18015718.16 -18015718.03 -18015717.91 0.0284 0.0113  
 Mercury -54038-11-23 23:45 J -18015629.64 -18015629.51 -18015629.37 0.0285 0.0008  
 Mercury -54037-02-20 12:13 J -18015541.11 -18015540.99 -18015540.86 0.0286 0.0100  
 Mercury -54037-05-19 00:42 J -18015452.56 -18015452.47 -18015452.38 0.0287 0.0205  
 Moon -54037-07-31 03:35 J -18015379.50 -18015379.35 -18015379.18 0.0288 0.0212  
 Earth -54037-07-31 06:42 J -18015379.38 -18015379.22 -18015379.05 0.0288 0.0206 \*  
 Earth -54036-08-14 02:52 J -18015000.60 -18015000.38 -18015000.14 0.0291 0.0086  
 Moon -54036-08-14 03:49 J -18015000.56 -18015000.34 -18015000.12 0.0291 0.0090 \*  
 Venus -54032-12-27 19:25 J -18013403.88 -18013403.69 -18013403.50 0.0298 0.0119  
 Venus -54031-08-14 13:54 J -18013173.96 -18013173.92 -18013173.88 0.0298 0.0291  
 Mars -54026-08-11 12:42 J -18011351.25 -18011350.97 -18011350.69 0.0283 0.0010  
 Mercury -54025-12-29 00:57 J -18010845.51 -18010845.46 -18010845.40 0.0277 0.0263  
 Mercury -54024-03-27 20:52 J -18010756.78 -18010756.63 -18010756.48 0.0277 0.0139  
 Mercury -54024-06-24 17:01 J -18010667.97 -18010667.79 -18010667.61 0.0276 0.0014  
 Mercury -54024-09-21 13:11 J -18010579.11 -18010578.95 -18010578.78 0.0275 0.0112  
 Mercury -54024-12-19 09:49 J -18010490.18 -18010490.09 -18010490.01 0.0274 0.0238  
 Earth -54023-01-24 10:47 J -18010454.15 -18010454.05 -18010453.91 0.0274 0.0238  
 Moon -54023-01-24 12:57 J -18010454.07 -18010453.96 -18010453.83 0.0274 0.0237 \*  
 Earth -54022-02-05 23:59 J -18010076.74 -18010076.50 -18010076.25 0.0270 0.0008  
 Moon -54022-02-06 03:49 J -18010076.59 -18010076.34 -18010076.09 0.0270 0.0005 \*  
 Moon -54021-02-18 07:40 J -18009699.30 -18009699.18 -18009699.03 0.0268 0.0226

Earth -54021-02-18 07:54 J -18009699.26 -18009699.17 -18009699.05 0.0268 0.0241 \*  
 Venus -54016-01-24 22:04 J -18007896.80 -18007896.58 -18007896.36 0.0263 0.0014  
 Mars -54010-09-24 16:18 J -18005463.09 -18005462.82 -18005462.54 0.0279 0.0114  
 Mercury -54009-10-17 00:42 J -18005074.53 -18005074.47 -18005074.40 0.0283 0.0246  
 Mercury -54008-01-13 13:25 J -18004986.05 -18004985.94 -18004985.81 0.0284 0.0141  
 Mercury -54008-04-12 02:09 J -18004897.54 -18004897.41 -18004897.27 0.0285 0.0035  
 Mercury -54008-07-09 14:37 J -18004809.02 -18004808.89 -18004808.75 0.0286 0.0073  
 Mercury -54008-10-06 03:06 J -18004720.47 -18004720.37 -18004720.26 0.0287 0.0178  
 Mercury -54007-01-02 15:35 J -18004631.87 -18004631.85 -18004631.83 0.0288 0.0283  
 Moon -54007-08-08 10:33 J -18004414.31 -18004414.06 -18004413.81 0.0290 0.0045  
 Earth -54007-08-08 11:16 J -18004414.27 -18004414.03 -18004413.79 0.0290 0.0045 \*  
 Moon -54006-08-22 07:25 J -18004035.29 -18004035.19 -18004035.08 0.0293 0.0262  
 Earth -54006-08-22 11:01 J -18004035.16 -18004035.04 -18004034.92 0.0293 0.0252 \*  
 Venus -54002-07-10 03:49 J -18002617.54 -18002617.34 -18002617.14 0.0298 0.0056

# 54TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 54th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-53995-08-14 21:49 J	-18000024.73	-18000024.59	-18000024.45	0.0277	0.0167		
Mercury	-53995-11-11 17:45 J	-17999935.93	-17999935.76	-17999935.58	0.0276	0.0042		
Mercury	-53994-02-08 13:54 J	-17999847.08	-17999846.92	-17999846.74	0.0275	0.0084		
Mercury	-53994-05-08 10:33 J	-17999758.18	-17999758.06	-17999757.95	0.0275	0.0210		
Moon	-53993-01-31 21:21 J	-17999489.82	-17999489.61	-17999489.37	0.0272	0.0105		

Earth -53993-02-01 00:57 J -17999489.69 -17999489.46 -17999489.23 0.0272 0.0098 \*  
 Earth -53992-02-12 10:47 J -17999112.26 -17999112.05 -17999111.84 0.0269 0.0141  
 Moon -53992-02-12 11:01 J -17999112.25 -17999112.04 -17999111.83 0.0269 0.0128 \*  
 Venus -53987-08-07 02:37 J -17997110.61 -17997110.39 -17997110.17 0.0263 0.0030  
 Mercury -53979-06-02 14:23 J -17994254.00 -17994253.90 -17994253.79 0.0283 0.0179  
 Mercury -53979-08-30 03:06 J -17994165.50 -17994165.37 -17994165.23 0.0284 0.0074  
 Mercury -53979-11-26 15:49 J -17994076.98 -17994076.84 -17994076.71 0.0285 0.0033  
 Mercury -53978-02-23 04:04 J -17993988.44 -17993988.33 -17993988.21 0.0286 0.0138  
 Mercury -53978-05-22 16:33 J -17993899.88 -17993899.81 -17993899.74 0.0287 0.0242  
 Earth -53978-08-02 09:49 J -17993828.26 -17993828.09 -17993827.89 0.0288 0.0183  
 Moon -53978-08-02 11:01 J -17993828.21 -17993828.04 -17993827.85 0.0288 0.0185 \*  
 Earth -53977-08-15 06:13 J -17993449.46 -17993449.24 -17993449.01 0.0291 0.0110  
 Moon -53977-08-15 09:49 J -17993449.31 -17993449.09 -17993448.86 0.0291 0.0117 \*  
 Venus -53972-01-19 04:04 J -17991831.54 -17991831.33 -17991831.13 0.0298 0.0019  
 Mars -53968-11-17 00:13 J -17990068.61 -17990068.49 -17990068.36 0.0286 0.0253  
 Mercury -53965-01-01 19:25 J -17989292.79 -17989292.69 -17989292.57 0.0277 0.0216  
 Mercury -53965-03-30 15:35 J -17989204.02 -17989203.85 -17989203.69 0.0277 0.0091  
 Mercury -53965-06-27 11:45 J -17989115.19 -17989115.01 -17989114.83 0.0276 0.0035  
 Mercury -53965-09-24 07:54 J -17989026.31 -17989026.17 -17989026.02 0.0275 0.0162  
 Earth -53964-01-25 14:52 J -17988903.03 -17988902.88 -17988902.73 0.0274 0.0215  
 Moon -53964-01-25 18:13 J -17988902.89 -17988902.74 -17988902.58 0.0274 0.0214 \*  
 Moon -53963-02-07 03:21 J -17988525.62 -17988525.36 -17988525.11 0.0270 0.0018  
 Earth -53963-02-07 03:35 J -17988525.59 -17988525.35 -17988525.10 0.0270 0.0031 \*  
 Moon -53962-02-19 07:40 J -17988148.26 -17988148.18 -17988148.07 0.0268 0.0248  
 Earth -53962-02-19 11:30 J -17988148.05 -17988148.02 -17988147.96 0.0268 0.0264  
 Venus -53958-07-02 23:45 J -17986553.60 -17986553.51 -17986553.40 0.0263 0.0232  
 Venus -53957-02-17 05:30 J -17986324.48 -17986324.27 -17986324.06 0.0263 0.0069  
 Mars -53952-12-28 08:23 J -17984183.39 -17984183.15 -17984182.90 0.0277 0.0167  
 Mercury -53950-10-20 16:18 J -17983521.91 -17983521.82 -17983521.72 0.0283 0.0210  
 Mercury -53949-01-17 05:16 J -17983433.41 -17983433.28 -17983433.16 0.0284 0.0105

Mercury -53949-04-14 17:45 J -17983344.90 -17983344.76 -17983344.62 0.0285 0.0002  
 Mercury -53949-07-12 06:13 J -17983256.36 -17983256.24 -17983256.11 0.0286 0.0107  
 Mercury -53949-10-08 18:42 J -17983167.81 -17983167.72 -17983167.63 0.0287 0.0212  
 Moon -53948-08-09 08:23 J -17982863.39 -17982863.15 -17982862.90 0.0290 0.0020  
 Earth -53948-08-09 12:13 J -17982863.23 -17982862.99 -17982862.75 0.0290 0.0022 \*  
 Moon -53947-08-23 10:04 J -17982484.12 -17982484.08 -17982484.03 0.0293 0.0286  
 Earth -53947-08-23 11:45 J -17982484.08 -17982484.01 -17982483.92 0.0293 0.0276 \*  
 Venus -53943-08-01 11:16 J -17981045.23 -17981045.03 -17981044.83 0.0298 0.0040  
 Mars -53937-01-05 09:21 J -17979062.39 -17979062.11 -17979061.83 0.0283 0.0042  
 Mercury -53936-05-20 20:09 J -17978560.74 -17978560.66 -17978560.58 0.0278 0.0246  
 Mercury -53936-08-17 15:49 J -17978471.99 -17978471.84 -17978471.67 0.0277 0.0122  
 Mercury -53936-11-14 12:13 J -17978383.17 -17978382.99 -17978382.81 0.0276 0.0005  
 Mercury -53935-02-11 08:23 J -17978294.30 -17978294.15 -17978293.99 0.0275 0.0130  
 Mercury -53935-05-11 05:01 J -17978205.35 -17978205.29 -17978205.23 0.0274 0.0257  
 Earth -53934-02-02 03:21 J -17977938.59 -17977938.36 -17977938.12 0.0272 0.0077  
 Moon -53934-02-02 03:21 J -17977938.58 -17977938.36 -17977938.13 0.0272 0.0083 \*  
 Earth -53933-02-14 13:25 J -17977561.13 -17977560.94 -17977560.74 0.0269 0.0163  
 Moon -53933-02-14 17:01 J -17977560.99 -17977560.79 -17977560.58 0.0269 0.0148 \*  
 Venus -53928-01-12 04:33 J -17975767.46 -17975767.31 -17975767.15 0.0263 0.0189  
 Venus -53928-08-29 09:49 J -17975538.29 -17975538.09 -17975537.89 0.0263 0.0111  
 Mars -53921-02-17 15:21 J -17973175.11 -17973174.86 -17973174.59 0.0278 0.0139  
 Mercury -53920-03-08 17:16 J -17972789.84 -17972789.78 -17972789.71 0.0282 0.0249  
 Mercury -53920-06-05 05:59 J -17972701.36 -17972701.25 -17972701.13 0.0283 0.0144  
 Mercury -53920-09-01 18:42 J -17972612.86 -17972612.72 -17972612.58 0.0284 0.0039  
 Mercury -53920-11-29 07:11 J -17972524.33 -17972524.20 -17972524.07 0.0285 0.0067  
 Mercury -53919-02-25 19:40 J -17972435.79 -17972435.68 -17972435.57 0.0286 0.0171  
 Mercury -53919-05-25 07:54 J -17972347.20 -17972347.17 -17972347.13 0.0287 0.0276  
 Earth -53919-08-03 10:33 J -17972277.25 -17972277.06 -17972276.84 0.0288 0.0162  
 Moon -53919-08-03 14:37 J -17972277.09 -17972276.89 -17972276.68 0.0288 0.0159 \*  
 Earth -53918-08-17 06:57 J -17971898.42 -17971898.21 -17971897.99 0.0291 0.0132



Moon -53918-08-17 08:23 J -17971898.36 -17971898.15 -17971897.92 0.0291 0.0141 \*  
 Venus -53913-02-11 10:47 J -17970259.24 -17970259.05 -17970258.85 0.0298 0.0075  
 Mercury -53906-01-04 13:11 J -17967740.08 -17967739.95 -17967739.81 0.0277 0.0173  
 Mercury -53906-04-03 09:21 J -17967651.29 -17967651.11 -17967650.94 0.0276 0.0049  
 Mercury -53906-07-01 05:30 J -17967562.44 -17967562.27 -17967562.10 0.0276 0.0078  
 Mercury -53906-09-28 01:54 J -17967473.53 -17967473.42 -17967473.30 0.0275 0.0205  
 Earth -53905-01-27 15:06 J -17967352.03 -17967351.87 -17967351.69 0.0274 0.0195  
 Moon -53905-01-27 15:06 J -17967352.03 -17967351.87 -17967351.68 0.0274 0.0198 \*  
 Moon -53904-02-08 00:28 J -17966974.72 -17966974.48 -17966974.23 0.0270 0.0037  
 Earth -53904-02-08 04:04 J -17966974.57 -17966974.33 -17966974.08 0.0270 0.0051 \*  
 Venus -53899-07-25 05:59 J -17964981.42 -17964981.25 -17964981.06 0.0263 0.0155  
 Venus -53898-03-11 11:30 J -17964752.20 -17964752.02 -17964751.83 0.0263 0.0146  
 Mercury -53891-07-26 18:57 J -17962057.71 -17962057.71 -17962057.71 0.0282 0.0282  
 Mercury -53891-10-23 07:40 J -17961969.29 -17961969.18 -17961969.07 0.0283 0.0177  
 Mercury -53890-01-19 20:23 J -17961880.78 -17961880.65 -17961880.52 0.0284 0.0072  
 Mercury -53890-04-18 08:52 J -17961792.26 -17961792.13 -17961791.99 0.0285 0.0034  
 Mercury -53890-07-15 21:21 J -17961703.73 -17961703.61 -17961703.49 0.0286 0.0139  
 Moon -53890-07-28 13:11 J -17961690.95 -17961690.95 -17961690.94 0.0286 0.0286  
 Mercury -53890-10-12 09:49 J -17961615.16 -17961615.09 -17961615.02 0.0287 0.0243  
 Moon -53889-08-10 09:35 J -17961312.34 -17961312.10 -17961311.86 0.0290 0.0005  
 Earth -53889-08-10 10:33 J -17961312.30 -17961312.06 -17961311.81 0.0290 0.0006 \*  
 Venus -53884-01-05 21:49 J -17959702.65 -17959702.59 -17959702.52 0.0298 0.0281  
 Venus -53884-08-23 16:33 J -17959472.99 -17959472.81 -17959472.62 0.0297 0.0128  
 Mars -53879-04-12 10:33 J -17957780.21 -17957780.06 -17957779.88 0.0286 0.0228  
 Mercury -53877-05-23 13:11 J -17957008.06 -17957007.95 -17957007.83 0.0278 0.0208  
 Mercury -53877-08-20 09:21 J -17956919.28 -17956919.11 -17956918.94 0.0277 0.0082  
 Mercury -53877-11-17 05:30 J -17956830.44 -17956830.27 -17956830.09 0.0276 0.0044  
 Mercury -53876-02-14 01:54 J -17956741.56 -17956741.42 -17956741.28 0.0275 0.0171  
 Earth -53875-02-03 02:37 J -17956387.63 -17956387.39 -17956387.15 0.0272 0.0058  
 Moon -53875-02-03 05:59 J -17956387.48 -17956387.25 -17956387.01 0.0272 0.0067 \*

Earth -53874-02-15 12:57 J -17956010.14 -17956009.96 -17956009.77 0.0269 0.0182  
 Moon -53874-02-15 14:23 J -17956010.10 -17956009.90 -17956009.70 0.0269 0.0167 \*  
 Venus -53869-02-04 10:47 J -17954195.25 -17954195.05 -17954194.85 0.0263 0.0111  
 Venus -53869-09-20 15:49 J -17953965.99 -17953965.84 -17953965.68 0.0263 0.0188  
 Mars -53863-05-23 05:30 J -17951895.53 -17951895.27 -17951894.99 0.0275 0.0141  
 Mercury -53861-03-11 08:37 J -17951237.23 -17951237.14 -17951237.05 0.0282 0.0216  
 Mercury -53861-06-07 21:21 J -17951148.74 -17951148.61 -17951148.48 0.0283 0.0112  
 Mercury -53861-09-04 09:49 J -17951060.22 -17951060.09 -17951059.95 0.0284 0.0008  
 Mercury -53861-12-01 22:18 J -17950971.70 -17950971.57 -17950971.44 0.0285 0.0098  
 Mercury -53860-02-28 10:33 J -17950883.15 -17950883.06 -17950882.96 0.0286 0.0202  
 Moon -53860-08-04 09:35 J -17950726.32 -17950726.10 -17950725.87 0.0287 0.0134  
 Earth -53860-08-04 09:21 J -17950726.31 -17950726.11 -17950725.89 0.0287 0.0142 \*  
 Moon -53859-08-18 02:23 J -17950347.61 -17950347.40 -17950347.20 0.0291 0.0164  
 Earth -53859-08-18 05:01 J -17950347.48 -17950347.29 -17950347.07 0.0291 0.0152 \*  
 Venus -53855-07-18 21:06 J -17948916.73 -17948916.62 -17948916.50 0.0298 0.0247  
 Venus -53854-03-05 15:35 J -17948687.01 -17948686.85 -17948686.67 0.0298 0.0162  
 Mars -53849-05-29 21:35 J -17946774.87 -17946774.60 -17946774.32 0.0284 0.0048  
 Mercury -53848-10-10 10:04 J -17946276.13 -17946276.08 -17946276.02 0.0278 0.0261  
 Mercury -53847-01-07 05:59 J -17946187.40 -17946187.25 -17946187.10 0.0277 0.0137  
 Mercury -53847-04-06 02:09 J -17946098.59 -17946098.41 -17946098.23 0.0277 0.0011  
 Mercury -53847-07-03 22:33 J -17946009.72 -17946009.56 -17946009.40 0.0276 0.0116  
 Mercury -53847-09-30 18:57 J -17945920.78 -17945920.71 -17945920.62 0.0275 0.0243  
 Moon -53846-01-28 09:06 J -17945801.29 -17945801.12 -17945800.93 0.0274 0.0186  
 Earth -53846-01-28 12:57 J -17945801.15 -17945800.96 -17945800.77 0.0274 0.0179 \*  
 Moon -53845-02-10 00:42 J -17945423.70 -17945423.47 -17945423.24 0.0270 0.0054  
 Earth -53845-02-10 02:09 J -17945423.65 -17945423.41 -17945423.17 0.0270 0.0067 \*  
 Venus -53840-08-16 11:16 J -17943409.24 -17943409.03 -17943408.82 0.0263 0.0080  
 Venus -53839-04-02 16:33 J -17943179.92 -17943179.81 -17943179.69 0.0263 0.0220  
 Mars -53833-07-12 12:57 J -17940887.21 -17940886.96 -17940886.70 0.0278 0.0154  
 Mercury -53832-07-29 09:49 J -17940505.14 -17940505.09 -17940505.02 0.0282 0.0252

Mercury -53832-10-25 22:47 J -17940416.67 -17940416.55 -17940416.44 0.0283 0.0147  
 Mercury -53831-01-22 11:16 J -17940328.16 -17940328.03 -17940327.89 0.0284 0.0042  
 Mercury -53831-04-20 23:45 J -17940239.64 -17940239.51 -17940239.37 0.0285 0.0064  
 Mercury -53831-07-18 12:13 J -17940151.10 -17940150.99 -17940150.88 0.0286 0.0168  
 Earth -53831-07-29 14:09 J -17940139.98 -17940139.91 -17940139.83 0.0286 0.0271  
 Moon -53831-07-29 14:37 J -17940139.97 -17940139.89 -17940139.80 0.0286 0.0265 \*  
 Mercury -53831-10-15 00:28 J -17940062.52 -17940062.48 -17940062.44 0.0287 0.0272  
 Earth -53830-08-12 07:40 J -17939761.42 -17939761.18 -17939760.94 0.0290 0.0016  
 Moon -53830-08-12 11:01 J -17939761.28 -17939761.04 -17939760.80 0.0290 0.0029 \*  
 Venus -53825-01-29 02:23 J -17938130.55 -17938130.40 -17938130.24 0.0298 0.0195  
 Venus -53825-09-14 20:52 J -17937900.76 -17937900.63 -17937900.48 0.0297 0.0214  
 Mercury -53818-05-27 05:59 J -17935455.39 -17935455.25 -17935455.12 0.0278 0.0172  
 Mercury -53818-08-24 01:54 J -17935366.59 -17935366.42 -17935366.24 0.0277 0.0047  
 Mercury -53818-11-20 22:18 J -17935277.74 -17935277.57 -17935277.40 0.0276 0.0080  
 Mercury -53817-02-17 18:42 J -17935188.83 -17935188.72 -17935188.60 0.0275 0.0207  
 Earth -53816-02-03 23:45 J -17934836.75 -17934836.51 -17934836.27 0.0272 0.0042  
 Moon -53816-02-04 01:40 J -17934836.67 -17934836.43 -17934836.17 0.0272 0.0053 \*  
 Moon -53815-02-16 07:11 J -17934459.37 -17934459.20 -17934459.01 0.0269 0.0185  
 Earth -53815-02-16 10:04 J -17934459.23 -17934459.08 -17934458.90 0.0269 0.0200 \*  
 Venus -53810-02-26 15:49 J -17932623.06 -17932622.84 -17932622.62 0.0263 0.0036  
 Venus -53810-10-13 20:52 J -17932393.63 -17932393.63 -17932393.61 0.0263 0.0263  
 Mercury -53802-03-14 23:45 J -17929684.61 -17929684.51 -17929684.40 0.0282 0.0185  
 Mercury -53802-06-11 12:28 J -17929596.11 -17929595.98 -17929595.85 0.0283 0.0080  
 Mercury -53802-09-08 00:57 J -17929507.60 -17929507.46 -17929507.32 0.0284 0.0025  
 Mercury -53802-12-05 13:25 J -17929419.06 -17929418.94 -17929418.82 0.0285 0.0129  
 Mercury -53801-03-03 01:25 J -17929330.51 -17929330.44 -17929330.35 0.0286 0.0233  
 Moon -53801-08-05 04:04 J -17929175.55 -17929175.33 -17929175.10 0.0287 0.0111  
 Earth -53801-08-05 07:40 J -17929175.39 -17929175.18 -17929174.95 0.0287 0.0124 \*  
 Moon -53800-08-19 00:28 J -17928796.66 -17928796.48 -17928796.29 0.0291 0.0186  
 Earth -53800-08-19 03:21 J -17928796.56 -17928796.36 -17928796.16 0.0291 0.0170 \*

Venus -53796-08-10 01:25 J -17927344.60 -17927344.44 -17927344.26 0.0298 0.0161  
 Venus -53795-03-27 19:54 J -17927114.78 -17927114.67 -17927114.55 0.0298 0.0247  
 Mars -53791-09-04 18:28 J -17925492.88 -17925492.73 -17925492.55 0.0286 0.0229  
 Mercury -53789-10-13 02:09 J -17924723.50 -17924723.41 -17924723.30 0.0278 0.0229  
 Mercury -53788-01-09 22:18 J -17924634.73 -17924634.57 -17924634.40 0.0277 0.0103  
 Mercury -53788-04-08 18:42 J -17924545.90 -17924545.72 -17924545.55 0.0277 0.0024  
 Mercury -53788-07-06 15:06 J -17924457.02 -17924456.87 -17924456.72 0.0276 0.0151  
 Moon -53787-01-29 06:57 J -17924250.38 -17924250.21 -17924250.01 0.0274 0.0175  
 Earth -53787-01-29 08:37 J -17924250.33 -17924250.14 -17924249.93 0.0274 0.0164 \*  
 Earth -53786-02-10 22:18 J -17923872.80 -17923872.57 -17923872.33 0.0270 0.0083  
 Moon -53786-02-11 01:11 J -17923872.68 -17923872.45 -17923872.22 0.0270 0.0069 \*  
 Jupiter -53784-11-14 06:57 J -17922865.66 -17922865.21 -17922864.75 0.0264 0.0083  
 Venus -53781-09-07 15:49 J -17921837.06 -17921836.84 -17921836.62 0.0263 0.0006  
 Mars -53775-10-16 00:42 J -17919607.75 -17919607.47 -17919607.20 0.0276 0.0127  
 Mercury -53773-08-01 00:57 J -17918952.54 -17918952.46 -17918952.37 0.0282 0.0221  
 Mercury -53773-10-28 13:40 J -17918864.05 -17918863.93 -17918863.80 0.0283 0.0116  
 Mercury -53772-01-25 02:09 J -17918775.54 -17918775.41 -17918775.27 0.0284 0.0015  
 Mercury -53772-04-23 14:37 J -17918687.01 -17918686.89 -17918686.76 0.0285 0.0094  
 Mercury -53772-07-21 03:06 J -17918598.47 -17918598.37 -17918598.27 0.0286 0.0197  
 Earth -53772-07-30 11:45 J -17918589.12 -17918589.01 -17918588.90 0.0286 0.0253  
 Moon -53772-07-30 15:06 J -17918588.99 -17918588.87 -17918588.74 0.0286 0.0244 \*  
 Earth -53771-08-13 04:47 J -17918210.55 -17918210.30 -17918210.06 0.0290 0.0034  
 Moon -53771-08-13 06:57 J -17918210.46 -17918210.21 -17918209.97 0.0290 0.0049 \*  
 Venus -53766-02-20 06:13 J -17916558.43 -17916558.24 -17916558.05 0.0298 0.0111  
 Venus -53766-10-08 00:28 J -17916328.48 -17916328.48 -17916328.46 0.0297 0.0297  
 Mars -53761-10-22 22:33 J -17914486.84 -17914486.56 -17914486.29 0.0284 0.0068  
 Mercury -53759-03-02 01:54 J -17913991.46 -17913991.42 -17913991.36 0.0279 0.0265  
 Mercury -53759-05-29 22:04 J -17913902.73 -17913902.58 -17913902.43 0.0278 0.0140  
 Mercury -53759-08-26 18:13 J -17913813.91 -17913813.74 -17913813.56 0.0277 0.0014  
 Mercury -53759-11-23 14:37 J -17913725.05 -17913724.89 -17913724.72 0.0276 0.0114

Mercury -53758-02-20 11:16 J -17913636.11 -17913636.03 -17913635.94 0.0275 0.0241  
 Moon -53757-02-05 16:47 J -17913286.04 -17913285.80 -17913285.54 0.0272 0.0042  
 Earth -53757-02-05 19:40 J -17913285.92 -17913285.68 -17913285.43 0.0272 0.0027 \*  
 Moon -53756-02-17 03:49 J -17912908.49 -17912908.34 -17912908.17 0.0269 0.0202  
 Earth -53756-02-17 06:28 J -17912908.36 -17912908.23 -17912908.07 0.0269 0.0215 \*  
 Venus -53752-08-03 14:52 J -17911279.90 -17911279.88 -17911279.84 0.0263 0.0260  
 Venus -53751-03-20 20:23 J -17911050.86 -17911050.65 -17911050.43 0.0263 0.0039  
 Mars -53745-12-05 10:47 J -17908599.27 -17908599.05 -17908598.80 0.0277 0.0181  
 Mercury -53744-12-19 02:23 J -17908220.45 -17908220.40 -17908220.34 0.0281 0.0256  
 Mercury -53743-03-17 15:06 J -17908131.99 -17908131.87 -17908131.75 0.0282 0.0152  
 Mercury -53743-06-14 03:35 J -17908043.48 -17908043.35 -17908043.21 0.0283 0.0049  
 Mercury -53743-09-10 16:04 J -17907954.96 -17907954.83 -17907954.69 0.0284 0.0056  
 Mercury -53743-12-08 04:18 J -17907866.43 -17907866.32 -17907866.20 0.0285 0.0160  
 Mercury -53742-03-06 16:33 J -17907777.85 -17907777.81 -17907777.75 0.0286 0.0263  
 Moon -53742-08-07 04:47 J -17907624.52 -17907624.30 -17907624.08 0.0287 0.0093  
 Earth -53742-08-07 06:13 J -17907624.46 -17907624.24 -17907624.01 0.0287 0.0106 \*  
 Earth -53741-08-20 01:25 J -17907245.62 -17907245.44 -17907245.25 0.0291 0.0189  
 Moon -53741-08-20 03:35 J -17907245.51 -17907245.35 -17907245.18 0.0291 0.0206 \*  
 Venus -53737-09-01 06:13 J -17905772.43 -17905772.24 -17905772.04 0.0298 0.0073  
 Mercury -53730-10-16 18:42 J -17903170.84 -17903170.72 -17903170.59 0.0278 0.0194  
 Mercury -53729-01-13 14:52 J -17903082.05 -17903081.88 -17903081.71 0.0277 0.0068  
 Mercury -53729-04-11 11:01 J -17902993.21 -17902993.04 -17902992.86 0.0277 0.0059  
 Mercury -53729-07-09 07:40 J -17902904.31 -17902904.18 -17902904.05 0.0276 0.0186  
 Earth -53728-01-30 04:33 J -17902699.50 -17902699.31 -17902699.09 0.0274 0.0149  
 Moon -53728-01-30 07:54 J -17902699.36 -17902699.17 -17902698.97 0.0274 0.0163 \*  
 Earth -53727-02-11 18:42 J -17902321.95 -17902321.72 -17902321.49 0.0271 0.0099  
 Moon -53727-02-11 21:49 J -17902321.83 -17902321.59 -17902321.35 0.0271 0.0084 \*  
 Venus -53722-02-13 14:52 J -17900493.98 -17900493.88 -17900493.77 0.0263 0.0231  
 Venus -53722-09-30 20:23 J -17900264.86 -17900264.65 -17900264.43 0.0263 0.0068  
 Mercury -53714-08-04 16:18 J -17897399.92 -17897399.82 -17897399.72 0.0282 0.0188

Mercury -53714-11-01 05:01 J -17897311.43 -17897311.29 -17897311.16 0.0283 0.0084

Mercury -53713-01-28 17:30 J -17897222.91 -17897222.77 -17897222.64 0.0284 0.0021

Mercury -53713-04-26 05:45 J -17897134.38 -17897134.26 -17897134.13 0.0285 0.0125

Mercury -53713-07-23 17:59 J -17897045.82 -17897045.75 -17897045.66 0.0286 0.0228

Earth -53713-07-31 10:33 J -17897038.19 -17897038.06 -17897037.92 0.0286 0.0235

Moon -53713-07-31 11:45 J -17897038.15 -17897038.01 -17897037.84 0.0286 0.0225 \*

Moon -53712-08-14 00:42 J -17896659.71 -17896659.47 -17896659.23 0.0290 0.0069

Earth -53712-08-14 03:21 J -17896659.60 -17896659.36 -17896659.12 0.0290 0.0053 \*

Venus -53707-03-14 11:01 J -17894986.25 -17894986.04 -17894985.84 0.0298 0.0024

Mars -53702-01-28 18:42 J -17893204.91 -17893204.72 -17893204.53 0.0286 0.0209

Mercury -53700-03-04 18:13 J -17892438.83 -17892438.74 -17892438.64 0.0279 0.0232

Mercury -53700-06-01 14:23 J -17892350.06 -17892349.90 -17892349.73 0.0278 0.0106

Mercury -53700-08-29 10:47 J -17892261.23 -17892261.05 -17892260.88 0.0277 0.0021

Mercury -53700-11-26 07:11 J -17892172.35 -17892172.20 -17892172.05 0.0276 0.0148

Earth -53699-01-24 22:47 J -17892112.60 -17892112.55 -17892112.47 0.0276 0.0265

Moon -53698-02-06 12:57 J -17891735.20 -17891734.96 -17891734.72 0.0272 0.0028

Earth -53698-02-06 15:49 J -17891735.09 -17891734.84 -17891734.59 0.0272 0.0012 \*

Earth -53697-02-19 03:06 J -17891357.49 -17891357.37 -17891357.23 0.0269 0.0230

Moon -53697-02-19 04:33 J -17891357.44 -17891357.31 -17891357.17 0.0269 0.0220 \*

Venus -53693-08-25 20:09 J -17889707.81 -17889707.66 -17889707.50 0.0263 0.0185

Venus -53692-04-12 01:40 J -17889478.62 -17889478.43 -17889478.23 0.0263 0.0114

Mars -53686-03-11 06:42 J -17887319.51 -17887319.22 -17887318.93 0.0275 0.0095

Mercury -53685-12-21 17:59 J -17886667.83 -17886667.75 -17886667.66 0.0281 0.0221

Mercury -53684-03-20 06:42 J -17886579.34 -17886579.22 -17886579.09 0.0282 0.0117

Mercury -53684-06-16 19:11 J -17886490.84 -17886490.70 -17886490.56 0.0283 0.0014

Mercury -53684-09-13 07:40 J -17886402.31 -17886402.18 -17886402.05 0.0284 0.0090

Mercury -53684-12-10 19:54 J -17886313.77 -17886313.67 -17886313.57 0.0285 0.0193

Earth -53683-08-08 06:57 J -17886073.44 -17886073.21 -17886072.97 0.0287 0.0086

Moon -53683-08-08 09:35 J -17886073.32 -17886073.10 -17886072.86 0.0287 0.0071 \*

Earth -53682-08-22 01:54 J -17885694.58 -17885694.42 -17885694.25 0.0291 0.0210

Moon -53682-08-22 05:30 J -17885694.42 -17885694.27 -17885694.12 0.0291 0.0226 \*  
 Venus -53678-09-24 11:59 J -17884200.20 -17884200.00 -17884199.79 0.0297 0.0018  
 Mars -53672-03-17 08:23 J -17882199.42 -17882199.15 -17882198.88 0.0284 0.0069  
 Mercury -53671-10-19 11:16 J -17881618.17 -17881618.03 -17881617.88 0.0278 0.0159  
 Mercury -53670-01-16 07:25 J -17881529.36 -17881529.19 -17881529.01 0.0277 0.0033  
 Mercury -53670-04-15 03:49 J -17881440.50 -17881440.34 -17881440.17 0.0277 0.0095  
 Mercury -53670-07-13 00:13 J -17881351.58 -17881351.49 -17881351.37 0.0276 0.0223  
 Earth -53669-02-01 01:40 J -17881148.64 -17881148.43 -17881148.21 0.0274 0.0133  
 Moon -53669-02-01 04:18 J -17881148.53 -17881148.32 -17881148.10 0.0274 0.0148 \*  
 Moon -53668-02-12 14:09 J -17880771.15 -17880770.91 -17880770.67 0.0271 0.0101  
 Earth -53668-02-12 15:49 J -17880771.06 -17880770.84 -17880770.62 0.0271 0.0115 \*  
 Venus -53663-03-07 19:54 J -17878921.84 -17878921.67 -17878921.48 0.0263 0.0155  
 Venus -53663-10-23 01:40 J -17878692.61 -17878692.43 -17878692.24 0.0263 0.0144  
 Mars -53656-04-30 10:04 J -17876311.28 -17876311.08 -17876310.85 0.0278 0.0198  
 Mercury -53655-05-10 19:11 J -17875935.75 -17875935.70 -17875935.64 0.0282 0.0257  
 Mercury -53655-08-07 07:54 J -17875847.28 -17875847.17 -17875847.05 0.0282 0.0153  
 Mercury -53655-11-03 20:23 J -17875758.78 -17875758.65 -17875758.51 0.0283 0.0050  
 Mercury -53654-01-31 08:52 J -17875670.26 -17875670.13 -17875669.99 0.0284 0.0055  
 Mercury -53654-04-29 21:21 J -17875581.72 -17875581.61 -17875581.50 0.0285 0.0158  
 Mercury -53654-07-27 09:35 J -17875493.15 -17875493.10 -17875493.05 0.0286 0.0261  
 Moon -53654-08-02 08:37 J -17875487.31 -17875487.14 -17875486.96 0.0286 0.0202  
 Earth -53654-08-02 11:16 J -17875487.18 -17875487.03 -17875486.86 0.0286 0.0215 \*  
 Moon -53653-08-15 00:57 J -17875108.68 -17875108.46 -17875108.23 0.0290 0.0090  
 Earth -53653-08-15 04:04 J -17875108.57 -17875108.33 -17875108.10 0.0290 0.0074 \*  
 Venus -53648-04-05 17:01 J -17873413.99 -17873413.79 -17873413.59 0.0297 0.0068  
 Mercury -53641-03-07 11:16 J -17870886.15 -17870886.03 -17870885.91 0.0279 0.0195  
 Mercury -53641-06-04 07:25 J -17870797.36 -17870797.19 -17870797.02 0.0278 0.0069  
 Mercury -53641-09-01 03:35 J -17870708.52 -17870708.35 -17870708.17 0.0277 0.0059  
 Mercury -53641-11-29 00:13 J -17870619.62 -17870619.49 -17870619.36 0.0276 0.0186  
 Moon -53640-01-25 18:13 J -17870561.81 -17870561.74 -17870561.67 0.0276 0.0262

Earth -53640-01-25 20:52 J -17870561.74 -17870561.63 -17870561.53 0.0276 0.0248 \*  
 Earth -53639-02-07 13:40 J -17870184.18 -17870183.93 -17870183.69 0.0272 0.0006  
 Moon -53639-02-07 15:21 J -17870184.10 -17870183.86 -17870183.62 0.0272 0.0011 \*  
 Earth -53638-02-20 00:57 J -17869806.54 -17869806.46 -17869806.35 0.0269 0.0247  
 Moon -53638-02-20 04:47 J -17869806.40 -17869806.30 -17869806.17 0.0269 0.0237 \*  
 Venus -53634-09-18 02:09 J -17868135.61 -17868135.41 -17868135.21 0.0263 0.0107  
 Venus -53633-05-04 07:25 J -17867906.32 -17867906.19 -17867906.03 0.0264 0.0193  
 Mercury -53626-12-25 10:04 J -17865115.18 -17865115.08 -17865114.97 0.0281 0.0182  
 Mercury -53625-03-22 22:47 J -17865026.68 -17865026.55 -17865026.42 0.0282 0.0079  
 Mercury -53625-06-19 11:16 J -17864938.17 -17864938.03 -17864937.90 0.0283 0.0025  
 Mercury -53625-09-15 23:30 J -17864849.64 -17864849.52 -17864849.40 0.0284 0.0128  
 Mercury -53625-12-13 11:45 J -17864761.08 -17864761.01 -17864760.93 0.0285 0.0231  
 Earth -53624-08-09 10:47 J -17864522.28 -17864522.05 -17864521.81 0.0287 0.0062  
 Moon -53624-08-09 14:09 J -17864522.16 -17864521.91 -17864521.67 0.0287 0.0047 \*  
 Moon -53623-08-23 05:01 J -17864143.41 -17864143.29 -17864143.15 0.0291 0.0247  
 Earth -53623-08-23 05:30 J -17864143.40 -17864143.27 -17864143.12 0.0291 0.0234 \*  
 Venus -53619-03-01 01:54 J -17862857.46 -17862857.42 -17862857.37 0.0297 0.0287  
 Venus -53619-10-16 19:54 J -17862627.86 -17862627.67 -17862627.48 0.0297 0.0116  
 Mars -53614-06-23 13:25 J -17860917.12 -17860916.94 -17860916.74 0.0287 0.0205  
 Mercury -53612-07-25 08:52 J -17860154.21 -17860154.13 -17860154.05 0.0279 0.0243  
 Mercury -53612-10-22 04:47 J -17860065.46 -17860065.30 -17860065.14 0.0278 0.0118  
 Mercury -53611-01-19 00:57 J -17859976.63 -17859976.46 -17859976.28 0.0277 0.0009  
 Mercury -53611-04-17 21:21 J -17859887.76 -17859887.61 -17859887.45 0.0276 0.0136  
 Mercury -53611-07-15 17:59 J -17859798.79 -17859798.75 -17859798.69 0.0276 0.0264  
 Moon -53610-02-01 22:47 J -17859597.77 -17859597.55 -17859597.32 0.0274 0.0129  
 Earth -53610-02-02 00:57 J -17859597.68 -17859597.46 -17859597.23 0.0274 0.0115 \*  
 Moon -53609-02-14 11:16 J -17859220.24 -17859220.03 -17859219.80 0.0271 0.0122  
 Earth -53609-02-14 15:06 J -17859220.08 -17859219.87 -17859219.65 0.0271 0.0133 \*  
 Venus -53604-03-30 02:37 J -17857349.60 -17857349.39 -17857349.18 0.0263 0.0075  
 Venus -53604-11-14 08:23 J -17857120.26 -17857120.15 -17857120.03 0.0263 0.0224



Mars -53598-08-04 11:30 J -17855031.32 -17855031.02 -17855030.72 0.0275 0.0075  
 Mercury -53596-05-13 11:30 J -17854383.10 -17854383.02 -17854382.93 0.0282 0.0217  
 Mercury -53596-08-10 00:13 J -17854294.62 -17854294.49 -17854294.36 0.0283 0.0113  
 Mercury -53596-11-06 12:42 J -17854206.11 -17854205.97 -17854205.83 0.0283 0.0009  
 Mercury -53595-02-03 01:11 J -17854117.58 -17854117.45 -17854117.32 0.0284 0.0094  
 Mercury -53595-05-02 13:25 J -17854029.04 -17854028.94 -17854028.84 0.0285 0.0197  
 Moon -53595-08-03 12:57 J -17853936.14 -17853935.96 -17853935.77 0.0286 0.0178  
 Earth -53595-08-03 16:04 J -17853936.00 -17853935.83 -17853935.64 0.0286 0.0192 \*  
 Earth -53594-08-17 08:37 J -17853557.36 -17853557.14 -17853556.91 0.0290 0.0099  
 Moon -53594-08-17 09:21 J -17853557.32 -17853557.11 -17853556.89 0.0290 0.0113 \*  
 Venus -53590-09-11 06:42 J -17852071.33 -17852071.22 -17852071.09 0.0297 0.0237  
 Venus -53589-04-28 01:11 J -17851841.62 -17851841.45 -17851841.28 0.0297 0.0167  
 Mars -53584-08-10 18:42 J -17849910.98 -17849910.72 -17849910.46 0.0284 0.0096  
 Mercury -53583-12-12 08:52 J -17849422.14 -17849422.13 -17849422.12 0.0279 0.0278  
 Mercury -53582-03-11 04:47 J -17849333.44 -17849333.30 -17849333.15 0.0278 0.0153  
 Mercury -53582-06-08 00:57 J -17849244.63 -17849244.46 -17849244.28 0.0278 0.0027  
 Mercury -53582-09-04 21:21 J -17849155.77 -17849155.61 -17849155.44 0.0277 0.0101  
 Mercury -53582-12-02 17:59 J -17849066.85 -17849066.75 -17849066.65 0.0276 0.0228  
 Earth -53581-01-27 20:23 J -17849010.77 -17849010.65 -17849010.51 0.0275 0.0230  
 Moon -53581-01-27 22:04 J -17849010.68 -17849010.58 -17849010.46 0.0275 0.0244 \*  
 Earth -53580-02-08 13:25 J -17848633.18 -17848632.94 -17848632.69 0.0272 0.0023  
 Moon -53580-02-08 17:01 J -17848633.04 -17848632.79 -17848632.54 0.0272 0.0011 \*  
 Moon -53579-02-21 01:25 J -17848255.50 -17848255.44 -17848255.36 0.0269 0.0259  
 Earth -53579-02-21 01:25 J -17848255.48 -17848255.44 -17848255.39 0.0269 0.0265 \*  
 Venus -53575-10-10 09:21 J -17846563.33 -17846563.11 -17846562.89 0.0264 0.0025  
 Mars -53568-09-24 10:47 J -17844022.19 -17844022.05 -17844021.89 0.0277 0.0241  
 Mercury -53567-09-30 14:09 J -17843650.98 -17843650.91 -17843650.84 0.0281 0.0243  
 Mercury -53567-12-28 02:52 J -17843562.50 -17843562.38 -17843562.26 0.0282 0.0139  
 Mercury -53566-03-26 15:21 J -17843474.00 -17843473.86 -17843473.72 0.0282 0.0036  
 Mercury -53566-06-23 03:49 J -17843385.48 -17843385.34 -17843385.21 0.0283 0.0068

Mercury -53566-09-19 16:04 J -17843296.94 -17843296.83 -17843296.72 0.0284 0.0170  
 Mercury -53566-12-17 04:04 J -17843208.36 -17843208.33 -17843208.29 0.0285 0.0272  
 Moon -53565-08-10 17:16 J -17842971.03 -17842970.78 -17842970.52 0.0287 0.0021  
 Earth -53565-08-10 17:59 J -17842970.99 -17842970.75 -17842970.51 0.0287 0.0035 \*  
 Moon -53564-08-24 09:06 J -17842592.19 -17842592.12 -17842592.03 0.0291 0.0273  
 Earth -53564-08-24 12:42 J -17842592.07 -17842591.97 -17842591.86 0.0291 0.0260 \*  
 Venus -53560-03-23 11:59 J -17841285.15 -17841285.00 -17841284.83 0.0297 0.0182  
 Venus -53560-11-08 05:59 J -17841055.39 -17841055.25 -17841055.11 0.0297 0.0220  
 Mercury -53553-07-28 03:06 J -17838601.49 -17838601.37 -17838601.25 0.0279 0.0197  
 Mercury -53553-10-24 23:16 J -17838512.70 -17838512.53 -17838512.36 0.0278 0.0071  
 Mercury -53552-01-21 19:25 J -17838423.86 -17838423.69 -17838423.51 0.0277 0.0056  
 Mercury -53552-04-20 15:49 J -17838334.96 -17838334.84 -17838334.70 0.0276 0.0183  
 Moon -53551-02-03 00:13 J -17838046.71 -17838046.49 -17838046.27 0.0274 0.0108  
 Earth -53551-02-03 03:35 J -17838046.58 -17838046.35 -17838046.12 0.0274 0.0093 \*  
 Earth -53550-02-15 17:30 J -17837668.97 -17837668.77 -17837668.57 0.0271 0.0154  
 Moon -53550-02-15 17:45 J -17837668.96 -17837668.76 -17837668.56 0.0271 0.0147 \*  
 Venus -53545-04-21 10:47 J -17835777.27 -17835777.05 -17835776.83 0.0263 0.0009  
 Mercury -53537-02-17 15:35 J -17832918.87 -17832918.85 -17832918.82 0.0281 0.0276  
 Mercury -53537-05-16 04:18 J -17832830.43 -17832830.32 -17832830.21 0.0282 0.0173  
 Mercury -53537-08-12 17:01 J -17832741.93 -17832741.79 -17832741.66 0.0283 0.0069  
 Mercury -53537-11-09 05:30 J -17832653.41 -17832653.27 -17832653.14 0.0284 0.0035  
 Mercury -53536-02-05 17:45 J -17832564.88 -17832564.76 -17832564.64 0.0285 0.0138  
 Mercury -53536-05-05 05:59 J -17832476.32 -17832476.25 -17832476.18 0.0286 0.0241  
 Earth -53536-08-04 23:59 J -17832384.69 -17832384.50 -17832384.29 0.0286 0.0165  
 Moon -53536-08-05 01:11 J -17832384.65 -17832384.45 -17832384.25 0.0286 0.0149 \*  
 Earth -53535-08-18 16:47 J -17832006.01 -17832005.80 -17832005.58 0.0290 0.0127  
 Moon -53535-08-18 20:23 J -17832005.86 -17832005.65 -17832005.44 0.0290 0.0143 \*  
 Venus -53531-10-03 17:45 J -17830498.94 -17830498.76 -17830498.57 0.0297 0.0128  
 Venus -53530-05-21 11:45 J -17830269.08 -17830269.01 -17830268.93 0.0297 0.0274  
 Mars -53526-11-17 07:40 J -17828628.39 -17828628.18 -17828627.95 0.0286 0.0172

Mercury -53524-12-15 03:21 J -17827869.45 -17827869.36 -17827869.26 0.0279 0.0231  
 Mercury -53523-03-13 23:30 J -17827780.69 -17827780.52 -17827780.36 0.0278 0.0105  
 Mercury -53523-06-10 19:40 J -17827691.86 -17827691.68 -17827691.50 0.0277 0.0022  
 Mercury -53523-09-07 16:04 J -17827602.97 -17827602.83 -17827602.67 0.0276 0.0149  
 Earth -53522-01-28 23:59 J -17827459.66 -17827459.50 -17827459.34 0.0275 0.0207  
 Moon -53522-01-29 03:21 J -17827459.49 -17827459.36 -17827459.20 0.0275 0.0222 \*  
 Moon -53521-02-10 16:33 J -17827082.06 -17827081.81 -17827081.55 0.0272 0.0035  
 Earth -53521-02-10 16:47 J -17827082.05 -17827081.80 -17827081.56 0.0272 0.0045 \*  
 Venus -53516-03-17 11:59 J -17825220.09 -17825220.00 -17825219.90 0.0264 0.0238  
 Venus -53516-11-01 17:59 J -17824990.96 -17824990.75 -17824990.53 0.0264 0.0062  
 Mars -53510-12-29 23:01 J -17822741.85 -17822741.54 -17822741.23 0.0275 0.0027  
 Mercury -53508-10-03 07:25 J -17822098.29 -17822098.19 -17822098.09 0.0281 0.0194  
 Mercury -53508-12-30 20:09 J -17822009.79 -17822009.66 -17822009.53 0.0282 0.0091  
 Mercury -53507-03-29 08:37 J -17821921.28 -17821921.14 -17821921.01 0.0283 0.0013  
 Mercury -53507-06-25 20:52 J -17821832.75 -17821832.63 -17821832.50 0.0284 0.0115  
 Moon -53507-07-30 14:09 J -17821797.97 -17821797.91 -17821797.82 0.0284 0.0270  
 Mercury -53507-09-22 09:06 J -17821744.20 -17821744.12 -17821744.03 0.0285 0.0218  
 Moon -53506-08-13 01:40 J -17821419.67 -17821419.43 -17821419.18 0.0288 0.0014  
 Earth -53506-08-13 05:30 J -17821419.51 -17821419.27 -17821419.03 0.0288 0.0004 \*  
 Venus -53501-04-15 00:57 J -17819712.65 -17819712.46 -17819712.26 0.0297 0.0067  
 Mars -53495-01-04 10:18 J -17817622.32 -17817622.07 -17817621.81 0.0284 0.0117  
 Mercury -53494-05-04 02:23 J -17817137.43 -17817137.40 -17817137.35 0.0279 0.0270  
 Mercury -53494-07-31 22:18 J -17817048.71 -17817048.57 -17817048.41 0.0279 0.0145  
 Mercury -53494-10-28 18:42 J -17816959.90 -17816959.72 -17816959.55 0.0278 0.0020  
 Mercury -53493-01-25 14:52 J -17816871.04 -17816870.88 -17816870.71 0.0277 0.0109  
 Mercury -53493-04-23 11:30 J -17816782.11 -17816782.02 -17816781.93 0.0276 0.0236  
 Earth -53492-02-04 09:06 J -17816495.36 -17816495.12 -17816494.88 0.0274 0.0069  
 Moon -53492-02-04 08:52 J -17816495.35 -17816495.13 -17816494.90 0.0274 0.0082 \*  
 Earth -53491-02-16 22:33 J -17816117.74 -17816117.56 -17816117.37 0.0271 0.0178  
 Moon -53491-02-17 02:23 J -17816117.58 -17816117.40 -17816117.21 0.0271 0.0174 \*

Venus -53487-09-27 14:09 J -17814434.04 -17814433.91 -17814433.76 0.0264 0.0203  
 Venus -53486-05-14 20:23 J -17814204.85 -17814204.65 -17814204.44 0.0264 0.0097  
 Mars -53479-02-18 08:37 J -17811733.17 -17811733.14 -17811733.07 0.0278 0.0274  
 Mercury -53478-02-20 09:06 J -17811366.20 -17811366.12 -17811366.04 0.0281 0.0227  
 Mercury -53478-05-19 21:35 J -17811277.72 -17811277.60 -17811277.47 0.0282 0.0125  
 Mercury -53478-08-16 10:18 J -17811189.21 -17811189.07 -17811188.93 0.0283 0.0020  
 Mercury -53478-11-12 22:47 J -17811100.68 -17811100.55 -17811100.42 0.0284 0.0083  
 Mercury -53477-02-09 11:01 J -17811012.14 -17811012.04 -17811011.94 0.0285 0.0186  
 Earth -53477-08-06 11:45 J -17810833.23 -17810833.01 -17810832.80 0.0287 0.0133  
 Moon -53477-08-06 15:35 J -17810833.07 -17810832.85 -17810832.63 0.0287 0.0116 \*  
 Earth -53476-08-20 04:33 J -17810454.51 -17810454.31 -17810454.10 0.0290 0.0159  
 Moon -53476-08-20 06:28 J -17810454.42 -17810454.23 -17810454.02 0.0290 0.0175 \*  
 Venus -53472-10-26 06:57 J -17808926.42 -17808926.21 -17808926.01 0.0297 0.0013  
 Mercury -53465-12-17 22:47 J -17806316.67 -17806316.55 -17806316.41 0.0279 0.0177  
 Mercury -53464-03-16 19:11 J -17806227.88 -17806227.70 -17806227.53 0.0278 0.0051  
 Mercury -53464-06-13 15:21 J -17806139.03 -17806138.86 -17806138.69 0.0277 0.0076  
 Mercury -53464-09-10 11:45 J -17806050.12 -17806050.01 -17806049.88 0.0276 0.0204  
 Earth -53463-01-30 06:42 J -17805908.39 -17805908.22 -17805908.02 0.0275 0.0182  
 Moon -53463-01-30 07:25 J -17805908.36 -17805908.19 -17805908.00 0.0275 0.0196 \*  
 Moon -53462-02-11 19:40 J -17805530.92 -17805530.68 -17805530.43 0.0272 0.0062  
 Earth -53462-02-11 23:16 J -17805530.77 -17805530.53 -17805530.29 0.0272 0.0070 \*  
 Venus -53457-04-08 22:18 J -17803647.75 -17803647.57 -17803647.39 0.0264 0.0149  
 Venus -53457-11-24 04:33 J -17803418.49 -17803418.31 -17803418.13 0.0264 0.0152  
 Mercury -53449-07-09 12:28 J -17800634.04 -17800633.98 -17800633.91 0.0281 0.0247  
 Mercury -53449-10-06 01:11 J -17800545.57 -17800545.45 -17800545.33 0.0282 0.0143  
 Mercury -53448-01-02 13:40 J -17800457.06 -17800456.93 -17800456.79 0.0283 0.0040  
 Mercury -53448-04-01 02:09 J -17800368.54 -17800368.41 -17800368.27 0.0283 0.0063  
 Mercury -53448-06-28 14:23 J -17800280.00 -17800279.90 -17800279.78 0.0284 0.0166  
 Moon -53448-08-01 01:25 J -17800246.57 -17800246.44 -17800246.31 0.0285 0.0238  
 Earth -53448-08-01 04:47 J -17800246.39 -17800246.30 -17800246.18 0.0285 0.0255 \*

Mercury -53448-09-25 02:37 J -17800191.43 -17800191.39 -17800191.34 0.0285 0.0268  
 Moon -53447-08-14 17:30 J -17799868.00 -17799867.77 -17799867.53 0.0288 0.0048  
 Earth -53447-08-14 19:25 J -17799867.93 -17799867.69 -17799867.45 0.0288 0.0031 \*  
 Venus -53442-05-08 16:04 J -17798140.03 -17798139.83 -17798139.63 0.0297 0.0054  
 Mars -53437-04-12 10:47 J -17796339.28 -17796339.05 -17796338.80 0.0286 0.0142  
 Mercury -53435-05-06 23:01 J -17795584.66 -17795584.54 -17795584.43 0.0279 0.0210  
 Mercury -53435-08-03 18:57 J -17795495.88 -17795495.71 -17795495.54 0.0278 0.0085  
 Mercury -53435-10-31 15:06 J -17795407.05 -17795406.87 -17795406.69 0.0277 0.0041  
 Mercury -53434-01-28 11:30 J -17795318.16 -17795318.02 -17795317.88 0.0276 0.0168  
 Earth -53433-02-06 18:13 J -17794943.98 -17794943.74 -17794943.49 0.0273 0.0041  
 Moon -53433-02-06 21:35 J -17794943.84 -17794943.60 -17794943.36 0.0273 0.0054 \*  
 Earth -53432-02-18 07:11 J -17794566.35 -17794566.20 -17794566.03 0.0270 0.0205  
 Moon -53432-02-18 08:52 J -17794566.28 -17794566.13 -17794565.95 0.0270 0.0202 \*  
 Venus -53428-10-20 01:11 J -17792861.64 -17792861.45 -17792861.24 0.0264 0.0111  
 Venus -53427-06-06 07:40 J -17792632.33 -17792632.18 -17792632.03 0.0264 0.0189  
 Mars -53421-05-25 02:09 J -17790452.72 -17790452.41 -17790452.10 0.0276 0.0009  
 Mercury -53420-11-26 14:09 J -17789901.92 -17789901.91 -17789901.89 0.0281 0.0278  
 Mercury -53419-02-23 02:52 J -17789813.48 -17789813.38 -17789813.27 0.0282 0.0175  
 Mercury -53419-05-22 15:35 J -17789724.98 -17789724.85 -17789724.72 0.0283 0.0071  
 Mercury -53419-08-19 04:04 J -17789636.47 -17789636.33 -17789636.19 0.0284 0.0032  
 Mercury -53419-11-15 16:18 J -17789547.93 -17789547.82 -17789547.70 0.0285 0.0136  
 Mercury -53418-02-12 04:33 J -17789459.38 -17789459.31 -17789459.23 0.0285 0.0238  
 Earth -53418-08-09 02:09 J -17789281.63 -17789281.41 -17789281.17 0.0287 0.0099  
 Moon -53418-08-09 03:35 J -17789281.59 -17789281.35 -17789281.11 0.0287 0.0082 \*  
 Moon -53417-08-21 17:30 J -17788902.94 -17788902.77 -17788902.60 0.0290 0.0209  
 Earth -53417-08-21 19:40 J -17788902.85 -17788902.68 -17788902.49 0.0290 0.0196 \*  
 Venus -53413-04-02 04:33 J -17787583.35 -17787583.31 -17787583.27 0.0297 0.0290  
 Venus -53413-11-17 22:18 J -17787353.76 -17787353.57 -17787353.38 0.0297 0.0110  
 Mars -53407-05-31 20:23 J -17785332.87 -17785332.65 -17785332.41 0.0284 0.0162  
 Mercury -53406-09-23 23:30 J -17784852.60 -17784852.52 -17784852.43 0.0279 0.0241

Mercury -53406-12-21 19:25 J -17784763.85 -17784763.69 -17784763.53 0.0278 0.0117

Mercury -53405-03-19 15:35 J -17784675.02 -17784674.85 -17784674.67 0.0277 0.0012

Mercury -53405-06-16 11:59 J -17784586.15 -17784586.00 -17784585.84 0.0276 0.0137

Mercury -53405-09-13 08:37 J -17784497.18 -17784497.14 -17784497.08 0.0276 0.0264

Moon -53404-01-31 12:57 J -17784357.14 -17784356.96 -17784356.75 0.0274 0.0169

Earth -53404-01-31 16:33 J -17784357.01 -17784356.81 -17784356.60 0.0274 0.0153 \*

Moon -53403-02-13 05:59 J -17783979.47 -17783979.25 -17783979.02 0.0272 0.0090

Earth -53403-02-13 08:23 J -17783979.38 -17783979.15 -17783978.92 0.0272 0.0098 \*

Venus -53398-05-02 09:35 J -17782075.31 -17782075.10 -17782074.88 0.0264 0.0056

Venus -53398-12-17 15:49 J -17781845.91 -17781845.84 -17781845.75 0.0264 0.0245

Mercury -53390-07-13 06:28 J -17779081.33 -17779081.23 -17779081.13 0.0281 0.0193

Mercury -53390-10-09 19:11 J -17778992.83 -17778992.70 -17778992.57 0.0282 0.0089

Mercury -53389-01-06 07:40 J -17778904.32 -17778904.18 -17778904.04 0.0283 0.0015

Mercury -53389-04-03 20:09 J -17778815.78 -17778815.66 -17778815.54 0.0284 0.0117

Mercury -53389-07-01 08:23 J -17778727.23 -17778727.15 -17778727.06 0.0285 0.0220

Moon -53389-08-02 19:11 J -17778694.85 -17778694.70 -17778694.53 0.0285 0.0206

Earth -53389-08-02 20:37 J -17778694.80 -17778694.64 -17778694.49 0.0285 0.0219 \*

Earth -53388-08-16 11:30 J -17778316.26 -17778316.02 -17778315.78 0.0288 0.0068

Moon -53388-08-16 14:09 J -17778316.14 -17778315.91 -17778315.69 0.0288 0.0084 \*

Venus -53384-10-13 14:52 J -17776797.01 -17776796.88 -17776796.74 0.0296 0.0220

Venus -53383-05-31 08:23 J -17776567.31 -17776567.15 -17776566.99 0.0296 0.0179

Mercury -53376-02-09 23:59 J -17774120.53 -17774120.50 -17774120.45 0.0279 0.0271

Mercury -53376-05-09 19:54 J -17774031.81 -17774031.67 -17774031.52 0.0278 0.0147

Mercury -53376-08-06 16:04 J -17773943.00 -17773942.83 -17773942.65 0.0278 0.0021

Mercury -53376-11-03 12:28 J -17773854.15 -17773853.98 -17773853.82 0.0277 0.0106

Earth -53375-01-26 12:28 J -17773770.04 -17773769.98 -17773769.90 0.0276 0.0263

Mercury -53375-01-31 08:52 J -17773765.22 -17773765.13 -17773765.03 0.0276 0.0233

Earth -53374-02-08 05:59 J -17773392.50 -17773392.25 -17773392.00 0.0273 0.0010

Moon -53374-02-08 08:37 J -17773392.39 -17773392.14 -17773391.88 0.0273 0.0024 \*

Moon -53373-02-20 15:49 J -17773014.95 -17773014.84 -17773014.70 0.0270 0.0233

Earth -53373-02-20 18:13 J -17773014.85 -17773014.74 -17773014.61 0.0270 0.0234 \*  
 Venus -53369-11-11 13:40 J -17771289.15 -17771288.93 -17771288.71 0.0264 0.0016  
 Mars -53363-08-29 15:06 J -17769171.96 -17769171.87 -17769171.74 0.0274 0.0256  
 Mercury -53361-11-29 08:09 J -17768349.23 -17768349.16 -17768349.07 0.0282 0.0225  
 Mercury -53360-02-25 20:52 J -17768260.75 -17768260.63 -17768260.50 0.0282 0.0121  
 Mercury -53360-05-25 09:35 J -17768172.24 -17768172.10 -17768171.96 0.0283 0.0018  
 Mercury -53360-08-21 22:04 J -17768083.71 -17768083.58 -17768083.45 0.0284 0.0086  
 Mercury -53360-11-18 10:18 J -17767995.17 -17767995.07 -17767994.97 0.0285 0.0189  
 Moon -53359-08-10 15:06 J -17767730.12 -17767729.87 -17767729.63 0.0287 0.0048  
 Earth -53359-08-10 17:59 J -17767729.99 -17767729.75 -17767729.51 0.0287 0.0063 \*  
 Moon -53358-08-24 08:37 J -17767351.26 -17767351.14 -17767351.01 0.0291 0.0246  
 Earth -53358-08-24 11:59 J -17767351.13 -17767351.00 -17767350.84 0.0291 0.0233 \*  
 Venus -53354-04-25 20:52 J -17766010.79 -17766010.63 -17766010.46 0.0297 0.0165  
 Venus -53354-12-11 14:23 J -17765781.01 -17765780.90 -17765780.76 0.0297 0.0235  
 Mars -53349-09-07 02:23 J -17764049.66 -17764049.40 -17764049.14 0.0286 0.0094  
 Mercury -53347-09-26 20:37 J -17763299.77 -17763299.64 -17763299.50 0.0278 0.0178  
 Mercury -53347-12-24 16:47 J -17763210.98 -17763210.80 -17763210.63 0.0278 0.0053  
 Mercury -53346-03-23 12:57 J -17763122.13 -17763121.96 -17763121.79 0.0277 0.0074  
 Mercury -53346-06-20 09:21 J -17763033.22 -17763033.11 -17763032.98 0.0276 0.0201  
 Moon -53345-02-03 02:09 J -17762805.62 -17762805.41 -17762805.20 0.0274 0.0136  
 Earth -53345-02-03 04:33 J -17762805.53 -17762805.31 -17762805.09 0.0274 0.0121 \*  
 Earth -53344-02-14 19:25 J -17762427.91 -17762427.69 -17762427.47 0.0271 0.0128  
 Moon -53344-02-14 21:06 J -17762427.83 -17762427.62 -17762427.40 0.0271 0.0121 \*  
 Venus -53340-10-07 15:06 J -17760731.88 -17760731.87 -17760731.83 0.0264 0.0262  
 Venus -53339-05-24 21:49 J -17760502.81 -17760502.59 -17760502.37 0.0264 0.0038  
 Mars -53333-10-20 07:25 J -17758162.48 -17758162.19 -17758161.88 0.0276 0.0065  
 Mercury -53331-04-18 11:59 J -17757617.07 -17757617.00 -17757616.93 0.0281 0.0242  
 Mercury -53331-07-16 00:42 J -17757528.59 -17757528.47 -17757528.35 0.0282 0.0138  
 Mercury -53331-10-12 13:11 J -17757440.08 -17757439.95 -17757439.81 0.0283 0.0035  
 Mercury -53330-01-09 01:40 J -17757351.56 -17757351.43 -17757351.29 0.0284 0.0069

Mercury -53330-04-07 14:09 J -17757263.02 -17757262.91 -17757262.80 0.0285 0.0172

Mercury -53330-07-05 02:23 J -17757174.43 -17757174.40 -17757174.37 0.0285 0.0274

Earth -53330-08-05 12:28 J -17757143.16 -17757142.98 -17757142.79 0.0286 0.0184

Moon -53330-08-05 14:52 J -17757143.07 -17757142.88 -17757142.68 0.0286 0.0169 \*

Earth -53329-08-18 04:18 J -17756764.54 -17756764.32 -17756764.09 0.0289 0.0107

Moon -53329-08-18 07:40 J -17756764.39 -17756764.18 -17756763.95 0.0289 0.0122 \*

Venus -53325-11-05 08:23 J -17755224.34 -17755224.15 -17755223.96 0.0296 0.0092

Mars -53319-10-26 16:18 J -17753043.01 -17753042.82 -17753042.63 0.0283 0.0207

Mercury -53317-02-13 21:49 J -17752567.71 -17752567.59 -17752567.47 0.0279 0.0204

Mercury -53317-05-12 17:45 J -17752478.93 -17752478.76 -17752478.59 0.0278 0.0079

Mercury -53317-08-09 13:54 J -17752390.09 -17752389.92 -17752389.74 0.0277 0.0047

Mercury -53317-11-06 10:18 J -17752301.21 -17752301.07 -17752300.93 0.0276 0.0173

Earth -53316-01-28 02:37 J -17752218.51 -17752218.39 -17752218.25 0.0276 0.0230

Moon -53316-01-28 05:01 J -17752218.39 -17752218.29 -17752218.16 0.0276 0.0245 \*

Moon -53315-02-09 17:30 J -17751841.03 -17751840.77 -17751840.52 0.0272 0.0012

Earth -53315-02-09 19:11 J -17751840.94 -17751840.70 -17751840.45 0.0272 0.0023 \*

Moon -53314-02-22 02:52 J -17751463.41 -17751463.38 -17751463.31 0.0270 0.0264

Earth -53314-02-22 06:28 J -17751463.26 -17751463.23 -17751463.17 0.0270 0.0265

Venus -53310-04-19 19:54 J -17749945.78 -17749945.67 -17749945.54 0.0264 0.0219

Venus -53310-12-05 02:23 J -17749716.61 -17749716.40 -17749716.19 0.0264 0.0080

Mercury -53302-09-05 13:25 J -17746884.96 -17746884.94 -17746884.90 0.0281 0.0275

Mercury -53302-12-03 02:23 J -17746796.51 -17746796.40 -17746796.29 0.0282 0.0170

Mercury -53301-02-29 15:06 J -17746708.01 -17746707.87 -17746707.74 0.0283 0.0067

Mercury -53301-05-28 03:35 J -17746619.49 -17746619.35 -17746619.22 0.0284 0.0037

Mercury -53301-08-24 15:49 J -17746530.95 -17746530.84 -17746530.72 0.0285 0.0140

Mercury -53301-11-21 04:04 J -17746442.39 -17746442.33 -17746442.25 0.0285 0.0243

Moon -53300-08-12 06:42 J -17746178.46 -17746178.22 -17746177.98 0.0288 0.0011

Earth -53300-08-12 09:49 J -17746178.33 -17746178.09 -17746177.85 0.0288 0.0026 \*

Earth -53299-08-26 04:47 J -17745799.38 -17745799.30 -17745799.21 0.0291 0.0270

Moon -53299-08-26 04:47 J -17745799.34 -17745799.30 -17745799.24 0.0291 0.0283 \*



Venus -53295-05-18 13:40 J -17744438.13 -17744437.93 -17744437.73 0.0297 0.0039  
 Mercury -53288-07-02 22:04 J -17741835.66 -17741835.58 -17741835.49 0.0279 0.0237  
 Mercury -53288-09-29 17:59 J -17741746.91 -17741746.75 -17741746.59 0.0278 0.0113  
 Mercury -53288-12-27 14:09 J -17741658.09 -17741657.91 -17741657.73 0.0277 0.0013  
 Mercury -53287-03-26 10:33 J -17741569.21 -17741569.06 -17741568.91 0.0276 0.0140  
 Mercury -53287-06-23 06:57 J -17741480.24 -17741480.21 -17741480.16 0.0276 0.0267  
 Earth -53286-02-04 17:01 J -17741254.01 -17741253.79 -17741253.55 0.0274 0.0090  
 Moon -53286-02-04 19:11 J -17741253.92 -17741253.70 -17741253.48 0.0274 0.0102 \*  
 Earth -53285-02-17 06:57 J -17740876.39 -17740876.21 -17740875.99 0.0271 0.0160  
 Moon -53285-02-17 11:01 J -17740876.24 -17740876.04 -17740875.83 0.0271 0.0153 \*  
 Venus -53281-10-30 03:35 J -17739159.51 -17739159.35 -17739159.17 0.0264 0.0167  
 Venus -53280-06-16 10:18 J -17738930.26 -17738930.07 -17738929.88 0.0264 0.0133  
 Mars -53274-01-24 18:28 J -17736881.93 -17736881.73 -17736881.52 0.0274 0.0205  
 Mercury -53272-04-21 05:45 J -17736064.36 -17736064.26 -17736064.15 0.0282 0.0189  
 Mercury -53272-07-18 18:28 J -17735975.86 -17735975.73 -17735975.59 0.0283 0.0085  
 Mercury -53272-10-15 07:11 J -17735887.34 -17735887.20 -17735887.07 0.0284 0.0020  
 Mercury -53271-01-11 19:25 J -17735798.81 -17735798.69 -17735798.56 0.0284 0.0122  
 Mercury -53271-04-10 07:54 J -17735710.25 -17735710.17 -17735710.09 0.0285 0.0224  
 Earth -53271-08-07 03:06 J -17735591.57 -17735591.37 -17735591.16 0.0286 0.0149  
 Moon -53271-08-07 06:42 J -17735591.44 -17735591.22 -17735591.00 0.0286 0.0133 \*  
 Earth -53270-08-20 20:09 J -17735212.87 -17735212.66 -17735212.45 0.0289 0.0145  
 Moon -53270-08-20 20:09 J -17735212.87 -17735212.66 -17735212.45 0.0289 0.0157 \*  
 Jupiter -53268-06-25 03:49 J -17734538.65 -17734538.34 -17734537.99 0.0294 0.0197  
 Venus -53266-11-29 00:57 J -17733651.66 -17733651.46 -17733651.25 0.0296 0.0034  
 Mars -53260-02-02 01:11 J -17731759.72 -17731759.45 -17731759.18 0.0285 0.0045  
 Mercury -53259-11-19 23:45 J -17731103.57 -17731103.51 -17731103.45 0.0279 0.0261  
 Mercury -53258-02-16 19:25 J -17731014.84 -17731014.69 -17731014.54 0.0278 0.0137  
 Mercury -53258-05-16 15:35 J -17730926.03 -17730925.85 -17730925.68 0.0278 0.0013  
 Mercury -53258-08-13 11:45 J -17730837.17 -17730837.01 -17730836.85 0.0277 0.0114  
 Mercury -53258-11-10 08:09 J -17730748.24 -17730748.16 -17730748.07 0.0276 0.0241

Moon -53257-01-30 15:06 J -17730667.02 -17730666.87 -17730666.70 0.0275 0.0210  
 Earth -53257-01-30 16:47 J -17730666.96 -17730666.80 -17730666.62 0.0275 0.0197 \*  
 Moon -53256-02-11 05:01 J -17730289.53 -17730289.29 -17730289.05 0.0272 0.0046  
 Earth -53256-02-11 08:37 J -17730289.38 -17730289.14 -17730288.89 0.0272 0.0055 \*  
 Venus -53251-05-12 08:37 J -17728373.32 -17728373.14 -17728372.94 0.0264 0.0124  
 Venus -53251-12-27 14:52 J -17728144.03 -17728143.88 -17728143.71 0.0264 0.0175  
 Mars -53244-03-16 12:28 J -17725873.25 -17725872.98 -17725872.68 0.0276 0.0106  
 Mercury -53243-09-08 07:25 J -17725332.27 -17725332.19 -17725332.11 0.0282 0.0222  
 Mercury -53243-12-05 20:09 J -17725243.79 -17725243.66 -17725243.54 0.0282 0.0119  
 Mercury -53242-03-04 08:37 J -17725155.27 -17725155.14 -17725155.00 0.0283 0.0016  
 Mercury -53242-05-31 21:06 J -17725066.75 -17725066.62 -17725066.49 0.0284 0.0088  
 Moon -53242-08-01 06:13 J -17725005.33 -17725005.24 -17725005.14 0.0285 0.0261  
 Earth -53242-08-01 09:21 J -17725005.15 -17725005.11 -17725005.04 0.0285 0.0277 \*  
 Mercury -53242-08-28 09:35 J -17724978.20 -17724978.10 -17724978.00 0.0285 0.0191  
 Earth -53241-08-13 23:59 J -17724626.75 -17724626.50 -17724626.26 0.0288 0.0010  
 Moon -53241-08-13 23:59 J -17724626.74 -17724626.50 -17724626.27 0.0288 0.0024 \*  
 Venus -53236-06-10 05:45 J -17722865.46 -17722865.26 -17722865.07 0.0297 0.0084  
 Mars -53230-03-23 05:16 J -17720753.39 -17720753.28 -17720753.15 0.0283 0.0253  
 Mercury -53229-07-05 19:25 J -17720282.83 -17720282.69 -17720282.55 0.0278 0.0173  
 Mercury -53229-10-02 15:21 J -17720194.03 -17720193.86 -17720193.68 0.0278 0.0048  
 Mercury -53229-12-30 11:30 J -17720105.18 -17720105.02 -17720104.84 0.0277 0.0079  
 Mercury -53228-03-29 07:54 J -17720016.28 -17720016.17 -17720016.04 0.0276 0.0205  
 Earth -53227-02-06 05:45 J -17719702.50 -17719702.26 -17719702.02 0.0273 0.0057  
 Moon -53227-02-06 09:21 J -17719702.35 -17719702.11 -17719701.87 0.0273 0.0069 \*  
 Earth -53226-02-18 18:42 J -17719324.88 -17719324.72 -17719324.53 0.0270 0.0190  
 Moon -53226-02-18 19:11 J -17719324.88 -17719324.70 -17719324.51 0.0270 0.0187 \*  
 Venus -53222-11-22 15:35 J -17717587.06 -17717586.85 -17717586.64 0.0264 0.0075  
 Venus -53221-07-08 21:49 J -17717357.70 -17717357.59 -17717357.47 0.0264 0.0224  
 Mercury -53213-01-26 10:33 J -17714600.12 -17714600.06 -17714599.99 0.0281 0.0243  
 Mercury -53213-04-23 23:16 J -17714511.64 -17714511.53 -17714511.40 0.0282 0.0139

Mercury -53213-07-21 11:59 J -17714423.13 -17714423.00 -17714422.86 0.0283 0.0035  
 Mercury -53213-10-18 00:28 J -17714334.61 -17714334.48 -17714334.34 0.0284 0.0069  
 Mercury -53212-01-14 12:57 J -17714246.07 -17714245.96 -17714245.85 0.0285 0.0171  
 Mercury -53212-04-13 01:11 J -17714157.48 -17714157.45 -17714157.41 0.0286 0.0274  
 Moon -53212-08-08 15:49 J -17714040.08 -17714039.84 -17714039.60 0.0287 0.0099  
 Earth -53212-08-08 15:35 J -17714040.06 -17714039.85 -17714039.62 0.0287 0.0115 \*  
 Moon -53211-08-22 06:28 J -17713661.41 -17713661.23 -17713661.05 0.0290 0.0193  
 Earth -53211-08-22 09:49 J -17713661.28 -17713661.09 -17713660.90 0.0290 0.0180 \*  
 Venus -53207-05-05 22:33 J -17712308.66 -17712308.56 -17712308.43 0.0296 0.0244  
 Venus -53207-12-21 16:18 J -17712078.99 -17712078.82 -17712078.64 0.0296 0.0154  
 Mercury -53200-11-22 20:52 J -17709550.75 -17709550.63 -17709550.51 0.0279 0.0198  
 Mercury -53199-02-19 16:47 J -17709461.97 -17709461.80 -17709461.63 0.0278 0.0073  
 Mercury -53199-05-19 12:57 J -17709373.13 -17709372.96 -17709372.79 0.0277 0.0053  
 Mercury -53199-08-16 09:21 J -17709284.24 -17709284.11 -17709283.98 0.0276 0.0179  
 Moon -53198-02-01 02:09 J -17709115.59 -17709115.41 -17709115.22 0.0275 0.0180  
 Earth -53198-02-01 05:59 J -17709115.45 -17709115.25 -17709115.06 0.0275 0.0165 \*  
 Moon -53197-02-13 20:37 J -17708737.87 -17708737.64 -17708737.41 0.0272 0.0080  
 Earth -53197-02-13 20:52 J -17708737.86 -17708737.63 -17708737.39 0.0272 0.0086 \*  
 Venus -53192-06-03 20:52 J -17706800.84 -17706800.63 -17706800.41 0.0264 0.0031  
 Mars -53186-06-20 18:42 J -17704592.97 -17704592.72 -17704592.47 0.0274 0.0164  
 Mercury -53184-06-14 11:59 J -17703868.02 -17703868.00 -17703867.98 0.0281 0.0277  
 Mercury -53184-09-11 00:42 J -17703779.57 -17703779.47 -17703779.36 0.0282 0.0174  
 Mercury -53184-12-08 13:25 J -17703691.07 -17703690.94 -17703690.81 0.0283 0.0070  
 Mercury -53183-03-07 01:54 J -17703602.55 -17703602.42 -17703602.28 0.0284 0.0033  
 Mercury -53183-06-03 14:23 J -17703514.02 -17703513.90 -17703513.78 0.0284 0.0136  
 Earth -53183-08-02 20:23 J -17703453.76 -17703453.65 -17703453.52 0.0285 0.0246  
 Moon -53183-08-02 21:21 J -17703453.75 -17703453.61 -17703453.47 0.0285 0.0230 \*  
 Mercury -53183-08-31 02:37 J -17703425.46 -17703425.39 -17703425.31 0.0285 0.0239  
 Earth -53182-08-16 11:16 J -17703075.27 -17703075.03 -17703074.79 0.0289 0.0043  
 Moon -53182-08-16 14:37 J -17703075.12 -17703074.89 -17703074.65 0.0289 0.0059 \*

Venus -53178-11-16 01:54 J -17701522.56 -17701522.42 -17701522.26 0.0297 0.0198  
 Venus -53177-07-02 19:54 J -17701292.82 -17701292.67 -17701292.52 0.0297 0.0200  
 Mars -53172-06-29 07:54 J -17699470.45 -17699470.17 -17699469.90 0.0285 0.0006  
 Mercury -53170-04-11 20:09 J -17698818.75 -17698818.66 -17698818.57 0.0279 0.0237  
 Mercury -53170-07-09 16:04 J -17698729.99 -17698729.83 -17698729.67 0.0278 0.0112  
 Mercury -53170-10-06 12:13 J -17698641.17 -17698640.99 -17698640.81 0.0277 0.0014  
 Mercury -53169-01-03 08:37 J -17698552.30 -17698552.14 -17698551.99 0.0276 0.0140  
 Mercury -53169-04-01 05:01 J -17698463.33 -17698463.29 -17698463.24 0.0276 0.0267  
 Earth -53168-02-07 16:18 J -17698151.07 -17698150.82 -17698150.57 0.0273 0.0027  
 Moon -53168-02-07 17:01 J -17698151.05 -17698150.79 -17698150.54 0.0273 0.0037 \*  
 Moon -53167-02-20 01:11 J -17697773.59 -17697773.45 -17697773.30 0.0270 0.0220  
 Earth -53167-02-20 04:47 J -17697773.44 -17697773.30 -17697773.15 0.0270 0.0219 \*  
 Venus -53163-12-15 02:37 J -17696014.61 -17696014.39 -17696014.17 0.0264 0.0016  
 Mars -53156-08-11 00:57 J -17693583.71 -17693583.46 -17693583.19 0.0277 0.0149  
 Mercury -53154-01-29 03:35 J -17693047.45 -17693047.35 -17693047.25 0.0282 0.0197  
 Mercury -53154-04-27 16:18 J -17692958.95 -17692958.82 -17692958.69 0.0283 0.0093  
 Mercury -53154-07-25 05:01 J -17692870.43 -17692870.29 -17692870.16 0.0284 0.0014  
 Mercury -53154-10-21 17:16 J -17692781.90 -17692781.78 -17692781.65 0.0284 0.0114  
 Mercury -53153-01-18 05:45 J -17692693.35 -17692693.26 -17692693.17 0.0285 0.0216  
 Moon -53153-08-09 21:06 J -17692488.86 -17692488.62 -17692488.38 0.0287 0.0067  
 Earth -53153-08-10 00:42 J -17692488.70 -17692488.47 -17692488.23 0.0287 0.0084 \*  
 Moon -53152-08-23 16:33 J -17692109.95 -17692109.81 -17692109.65 0.0290 0.0227  
 Earth -53152-08-23 19:25 J -17692109.85 -17692109.69 -17692109.52 0.0290 0.0213 \*  
 Venus -53148-05-28 11:59 J -17690736.18 -17690736.00 -17690735.81 0.0297 0.0131  
 Venus -53147-01-13 05:45 J -17690506.34 -17690506.26 -17690506.17 0.0297 0.0266  
 Mercury -53141-08-28 21:35 J -17688086.65 -17688086.60 -17688086.53 0.0279 0.0262  
 Mercury -53141-11-25 17:30 J -17687997.92 -17687997.77 -17687997.62 0.0278 0.0137  
 Mercury -53140-02-22 13:40 J -17687909.11 -17687908.93 -17687908.76 0.0278 0.0014  
 Mercury -53140-05-22 09:49 J -17687820.25 -17687820.09 -17687819.93 0.0277 0.0114  
 Mercury -53140-08-19 06:13 J -17687731.32 -17687731.24 -17687731.15 0.0276 0.0241

Moon -53139-02-02 15:21 J -17687564.06 -17687563.86 -17687563.66 0.0274 0.0150  
 Earth -53139-02-02 16:33 J -17687564.02 -17687563.81 -17687563.59 0.0274 0.0136 \*  
 Earth -53138-02-15 06:57 J -17687186.43 -17687186.21 -17687185.98 0.0271 0.0116  
 Moon -53138-02-15 10:18 J -17687186.29 -17687186.07 -17687185.85 0.0271 0.0111 \*  
 Venus -53134-11-10 01:40 J -17685457.52 -17685457.43 -17685457.33 0.0264 0.0238  
 Venus -53133-06-26 07:40 J -17685228.39 -17685228.18 -17685227.96 0.0264 0.0059  
 Mercury -53125-06-17 04:47 J -17682315.37 -17682315.30 -17682315.22 0.0281 0.0233  
 Mercury -53125-09-13 17:30 J -17682226.89 -17682226.77 -17682226.64 0.0282 0.0130  
 Mercury -53125-12-11 06:13 J -17682138.38 -17682138.24 -17682138.10 0.0283 0.0027  
 Mercury -53124-03-09 18:42 J -17682049.85 -17682049.72 -17682049.59 0.0284 0.0077  
 Mercury -53124-06-06 06:57 J -17681961.31 -17681961.21 -17681961.10 0.0285 0.0180  
 Earth -53124-08-04 04:18 J -17681902.47 -17681902.32 -17681902.15 0.0285 0.0218  
 Moon -53124-08-04 08:09 J -17681902.32 -17681902.16 -17681901.98 0.0285 0.0201 \*  
 Mercury -53124-09-02 19:11 J -17681872.71 -17681872.70 -17681872.68 0.0286 0.0282  
 Earth -53123-08-17 19:40 J -17681523.91 -17681523.68 -17681523.44 0.0289 0.0073  
 Moon -53123-08-17 22:04 J -17681523.81 -17681523.58 -17681523.34 0.0289 0.0087 \*  
 Venus -53119-12-08 14:09 J -17679950.10 -17679949.91 -17679949.71 0.0297 0.0088  
 Mars -53114-10-06 07:40 J -17678187.26 -17678187.18 -17678187.07 0.0288 0.0270  
 Mercury -53111-04-14 16:04 J -17677265.96 -17677265.83 -17677265.70 0.0279 0.0181  
 Mercury -53111-07-12 11:59 J -17677177.17 -17677177.00 -17677176.83 0.0278 0.0056  
 Mercury -53111-10-09 08:09 J -17677088.33 -17677088.16 -17677087.98 0.0277 0.0070  
 Mercury -53110-01-06 04:33 J -17676999.43 -17676999.31 -17676999.18 0.0276 0.0197  
 Earth -53110-01-28 06:42 J -17676977.31 -17676977.22 -17676977.13 0.0276 0.0255  
 Moon -53110-01-28 07:40 J -17676977.22 -17676977.18 -17676977.12 0.0276 0.0270 \*  
 Moon -53109-02-09 21:06 J -17676599.87 -17676599.62 -17676599.36 0.0273 0.0010  
 Earth -53109-02-10 00:13 J -17676599.73 -17676599.49 -17676599.24 0.0273 0.0004 \*  
 Moon -53108-02-21 10:18 J -17676222.15 -17676222.07 -17676221.97 0.0270 0.0249  
 Earth -53108-02-21 12:28 J -17676222.07 -17676221.98 -17676221.87 0.0270 0.0246 \*  
 Venus -53104-05-22 05:45 J -17674671.39 -17674671.26 -17674671.10 0.0264 0.0197  
 Venus -53103-01-06 12:13 J -17674442.19 -17674441.99 -17674441.79 0.0264 0.0101

Mars -53098-11-14 20:52 J -17672303.90 -17672303.63 -17672303.35 0.0275 0.0130  
 Mercury -53096-11-04 07:11 J -17671583.25 -17671583.20 -17671583.14 0.0281 0.0259  
 Mercury -53095-01-31 19:54 J -17671494.78 -17671494.67 -17671494.55 0.0282 0.0156  
 Mercury -53095-04-30 08:37 J -17671406.27 -17671406.14 -17671406.00 0.0283 0.0053  
 Mercury -53095-07-27 21:06 J -17671317.75 -17671317.62 -17671317.48 0.0284 0.0052  
 Mercury -53095-10-24 09:35 J -17671229.21 -17671229.10 -17671228.98 0.0285 0.0154  
 Mercury -53094-01-20 21:49 J -17671140.64 -17671140.59 -17671140.53 0.0285 0.0257  
 Moon -53094-08-12 04:47 J -17670937.53 -17670937.30 -17670937.06 0.0287 0.0042  
 Earth -53094-08-12 06:42 J -17670937.46 -17670937.22 -17670936.98 0.0287 0.0057 \*  
 Earth -53093-08-25 01:11 J -17670558.57 -17670558.45 -17670558.30 0.0291 0.0242  
 Moon -53093-08-25 02:52 J -17670558.48 -17670558.38 -17670558.26 0.0291 0.0254 \*  
 Venus -53089-06-19 23:01 J -17669163.75 -17669163.54 -17669163.34 0.0297 0.0026  
 Mars -53084-11-23 17:59 J -17667181.03 -17667180.75 -17667180.48 0.0285 0.0038  
 Mercury -53082-09-01 17:16 J -17666533.89 -17666533.78 -17666533.66 0.0279 0.0208  
 Mercury -53082-11-29 13:11 J -17666445.12 -17666444.95 -17666444.78 0.0278 0.0083  
 Mercury -53081-02-26 09:21 J -17666356.29 -17666356.11 -17666355.94 0.0277 0.0043  
 Mercury -53081-05-25 05:30 J -17666267.40 -17666267.27 -17666267.12 0.0277 0.0170  
 Earth -53080-02-03 23:45 J -17666012.73 -17666012.51 -17666012.27 0.0274 0.0109  
 Moon -53080-02-04 02:52 J -17666012.59 -17666012.38 -17666012.16 0.0274 0.0123 \*  
 Earth -53079-02-16 14:09 J -17665635.12 -17665634.91 -17665634.70 0.0271 0.0142  
 Moon -53079-02-16 16:47 J -17665635.01 -17665634.80 -17665634.57 0.0271 0.0137 \*  
 Venus -53075-12-02 11:16 J -17663885.20 -17663885.03 -17663884.84 0.0263 0.0152  
 Venus -53074-07-19 17:16 J -17663655.96 -17663655.78 -17663655.60 0.0263 0.0144  
 Mars -53067-01-04 10:04 J -17661295.30 -17661295.08 -17661294.84 0.0276 0.0181  
 Mercury -53066-06-20 21:06 J -17660762.72 -17660762.62 -17660762.52 0.0281 0.0193  
 Mercury -53066-09-17 09:49 J -17660674.22 -17660674.09 -17660673.96 0.0282 0.0090  
 Mercury -53066-12-14 22:18 J -17660585.71 -17660585.57 -17660585.43 0.0283 0.0013  
 Mercury -53065-03-12 10:47 J -17660497.18 -17660497.05 -17660496.93 0.0284 0.0115  
 Mercury -53065-06-08 23:01 J -17660408.62 -17660408.54 -17660408.45 0.0285 0.0218  
 Earth -53065-08-05 08:37 J -17660351.31 -17660351.14 -17660350.96 0.0285 0.0193

Moon -53065-08-05 09:49 J -17660351.28 -17660351.09 -17660350.89 0.0285 0.0178 \*  
 Moon -53064-08-18 21:35 J -17659972.83 -17659972.60 -17659972.36 0.0289 0.0110  
 Earth -53064-08-19 00:13 J -17659972.72 -17659972.49 -17659972.26 0.0289 0.0099 \*  
 Venus -53060-12-30 23:45 J -17658377.72 -17658377.51 -17658377.31 0.0297 0.0013  
 Mercury -53052-01-18 15:06 J -17655801.93 -17655801.87 -17655801.80 0.0279 0.0255  
 Mercury -53052-04-17 11:01 J -17655713.19 -17655713.04 -17655712.88 0.0279 0.0131  
 Mercury -53052-07-15 07:11 J -17655624.38 -17655624.20 -17655624.02 0.0278 0.0005  
 Mercury -53052-10-12 03:21 J -17655535.51 -17655535.36 -17655535.19 0.0277 0.0122  
 Mercury -53051-01-08 23:59 J -17655446.57 -17655446.50 -17655446.42 0.0276 0.0248  
 Moon -53051-01-29 08:37 J -17655426.24 -17655426.14 -17655426.02 0.0276 0.0246  
 Earth -53051-01-29 11:59 J -17655426.12 -17655426.00 -17655425.86 0.0276 0.0231 \*  
 Moon -53050-02-11 02:37 J -17655048.63 -17655048.39 -17655048.15 0.0272 0.0017  
 Earth -53050-02-11 05:30 J -17655048.51 -17655048.27 -17655048.02 0.0272 0.0026 \*  
 Venus -53045-06-13 14:23 J -17653099.10 -17653098.90 -17653098.70 0.0264 0.0114  
 Venus -53044-01-28 20:23 J -17652869.80 -17652869.65 -17652869.49 0.0264 0.0182  
 Mercury -53037-11-06 23:01 J -17650030.62 -17650030.54 -17650030.45 0.0281 0.0223  
 Mercury -53036-02-03 11:59 J -17649942.13 -17649942.00 -17649941.88 0.0282 0.0119  
 Mercury -53036-05-03 00:28 J -17649853.62 -17649853.48 -17649853.34 0.0283 0.0016  
 Mercury -53036-07-30 12:57 J -17649765.09 -17649764.96 -17649764.83 0.0284 0.0087  
 Mercury -53036-10-27 01:11 J -17649676.54 -17649676.45 -17649676.34 0.0285 0.0190  
 Earth -53035-08-13 08:52 J -17649386.37 -17649386.13 -17649385.88 0.0288 0.0033  
 Moon -53035-08-13 11:45 J -17649386.25 -17649386.01 -17649385.77 0.0288 0.0020 \*  
 Earth -53034-08-27 04:04 J -17649007.43 -17649007.33 -17649007.24 0.0291 0.0266  
 Moon -53034-08-27 07:40 J -17649007.25 -17649007.18 -17649007.10 0.0291 0.0275 \*  
 Venus -53030-07-13 07:25 J -17647591.38 -17647591.19 -17647590.98 0.0297 0.0072  
 Mars -53025-03-01 07:54 J -17645898.32 -17645898.17 -17645898.00 0.0288 0.0233  
 Mercury -53023-09-04 11:45 J -17644981.15 -17644981.01 -17644980.86 0.0279 0.0161  
 Mercury -53023-12-02 07:54 J -17644892.35 -17644892.17 -17644892.00 0.0278 0.0035  
 Mercury -53022-03-01 04:04 J -17644803.49 -17644803.33 -17644803.16 0.0277 0.0091  
 Mercury -53022-05-29 00:28 J -17644714.58 -17644714.48 -17644714.36 0.0276 0.0219

Earth	-53021-02-06 04:04 J	-17644461.56	-17644461.33	-17644461.09	0.0274	0.0086
Moon	-53021-02-06 06:57 J	-17644461.44	-17644461.21	-17644460.97	0.0274	0.0099 *
Moon	-53020-02-17 16:47 J	-17644084.00	-17644083.80	-17644083.59	0.0271	0.0164
Earth	-53020-02-17 18:13 J	-17644083.93	-17644083.74	-17644083.54	0.0271	0.0166 *
Venus	-53016-12-24 19:40 J	-17642312.89	-17642312.68	-17642312.47	0.0263	0.0070
Venus	-53015-08-11 01:25 J	-17642083.55	-17642083.44	-17642083.32	0.0263	0.0225
Mars	-53009-04-09 02:23 J	-17640015.69	-17640015.40	-17640015.10	0.0273	0.0098
Mercury	-53007-03-27 00:13 J	-17639298.54	-17639298.49	-17639298.44	0.0280	0.0259
Mercury	-53007-06-23 12:57 J	-17639210.07	-17639209.96	-17639209.84	0.0281	0.0157
Mercury	-53007-09-20 01:40 J	-17639121.57	-17639121.43	-17639121.30	0.0282	0.0054
Mercury	-53007-12-17 14:09 J	-17639033.05	-17639032.91	-17639032.78	0.0283	0.0049
Mercury	-53006-03-16 02:23 J	-17638944.51	-17638944.40	-17638944.28	0.0284	0.0151
Mercury	-53006-06-12 14:37 J	-17638855.95	-17638855.89	-17638855.83	0.0285	0.0253
Moon	-53006-08-07 07:54 J	-17638800.37	-17638800.17	-17638799.96	0.0285	0.0158
Earth	-53006-08-07 10:47 J	-17638800.24	-17638800.05	-17638799.85	0.0285	0.0171 *
Moon	-53005-08-19 23:01 J	-17638421.75	-17638421.54	-17638421.32	0.0289	0.0131
Earth	-53005-08-20 02:09 J	-17638421.62	-17638421.41	-17638421.18	0.0289	0.0123 *
Venus	-53001-06-06 13:11 J	-17637034.98	-17637034.95	-17637034.90	0.0297	0.0290

# 53RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 53rd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
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Venus -53000-01-22 07:11 J -17636805.39 -17636805.20 -17636805.00 0.0297 0.0107  
 Mars -52995-04-18 18:13 J -17634893.01 -17634892.74 -17634892.46 0.0286 0.0053  
 Mercury -52993-01-22 09:06 J -17634249.23 -17634249.12 -17634249.00 0.0279 0.0212  
 Mercury -52993-04-20 05:01 J -17634160.45 -17634160.29 -17634160.12 0.0279 0.0087  
 Mercury -52993-07-18 01:11 J -17634071.62 -17634071.45 -17634071.27 0.0278 0.0040  
 Mercury -52993-10-14 21:35 J -17633982.74 -17633982.60 -17633982.45 0.0277 0.0167  
 Moon -52992-01-30 11:16 J -17633875.15 -17633875.03 -17633874.88 0.0276 0.0224  
 Earth -52992-01-30 13:54 J -17633875.07 -17633874.92 -17633874.75 0.0276 0.0210 \*  
 Earth -52991-02-12 07:25 J -17633497.43 -17633497.19 -17633496.95 0.0272 0.0047  
 Moon -52991-02-12 08:52 J -17633497.36 -17633497.13 -17633496.89 0.0272 0.0043 \*  
 Venus -52986-07-06 21:21 J -17631526.83 -17631526.61 -17631526.39 0.0264 0.0036  
 Venus -52985-02-21 03:06 J -17631297.39 -17631297.37 -17631297.32 0.0264 0.0260  
 Mars -52979-05-30 17:16 J -17629006.97 -17629006.78 -17629006.56 0.0276 0.0204  
 Mercury -52978-11-10 14:37 J -17628477.99 -17628477.89 -17628477.79 0.0281 0.0189  
 Mercury -52977-02-07 03:21 J -17628389.49 -17628389.36 -17628389.23 0.0282 0.0086  
 Mercury -52977-05-05 15:49 J -17628300.98 -17628300.84 -17628300.70 0.0283 0.0017  
 Moon -52977-07-31 22:04 J -17628213.60 -17628213.58 -17628213.55 0.0284 0.0282  
 Mercury -52977-08-02 04:04 J -17628212.45 -17628212.33 -17628212.20 0.0284 0.0120  
 Mercury -52977-10-29 16:33 J -17628123.89 -17628123.81 -17628123.73 0.0285 0.0222  
 Earth -52976-08-14 08:23 J -17627835.39 -17627835.15 -17627834.91 0.0288 0.0011  
 Moon -52976-08-14 11:30 J -17627835.27 -17627835.02 -17627834.78 0.0288 0.0004 \*  
 Moon -52975-08-28 02:52 J -17627456.39 -17627456.38 -17627456.36 0.0291 0.0290  
 Earth -52975-08-28 03:06 J -17627456.39 -17627456.37 -17627456.33 0.0291 0.0288 \*  
 Venus -52972-12-17 19:25 J -17626248.80 -17626248.69 -17626248.56 0.0297 0.0236  
 Venus -52971-08-04 13:40 J -17626019.09 -17626018.93 -17626018.75 0.0297 0.0161  
 Mercury -52964-06-10 09:35 J -17623517.18 -17623517.10 -17623517.01 0.0280 0.0244  
 Mercury -52964-09-07 05:30 J -17623428.42 -17623428.27 -17623428.11 0.0279 0.0119  
 Mercury -52964-12-05 01:40 J -17623339.60 -17623339.43 -17623339.25 0.0278 0.0009  
 Mercury -52963-03-03 22:04 J -17623250.73 -17623250.58 -17623250.42 0.0277 0.0135  
 Mercury -52963-05-31 18:28 J -17623161.77 -17623161.73 -17623161.67 0.0276 0.0262

Moon -52962-02-07 03:21 J -17622910.60 -17622910.36 -17622910.11 0.0274 0.0073  
 Earth -52962-02-07 05:16 J -17622910.52 -17622910.28 -17622910.04 0.0274 0.0065 \*  
 Moon -52961-02-19 16:04 J -17622533.00 -17622532.83 -17622532.65 0.0271 0.0187  
 Earth -52961-02-19 19:54 J -17622532.85 -17622532.67 -17622532.49 0.0271 0.0187 \*  
 Venus -52956-01-16 02:37 J -17620740.61 -17620740.39 -17620740.17 0.0263 0.0010  
 Mercury -52948-03-29 15:49 J -17617745.92 -17617745.84 -17617745.76 0.0280 0.0226  
 Mercury -52948-06-26 04:18 J -17617657.44 -17617657.32 -17617657.19 0.0281 0.0124  
 Mercury -52948-09-22 17:01 J -17617568.93 -17617568.79 -17617568.65 0.0282 0.0021  
 Mercury -52948-12-20 05:16 J -17617480.41 -17617480.28 -17617480.14 0.0283 0.0082  
 Mercury -52947-03-18 17:45 J -17617391.86 -17617391.76 -17617391.66 0.0284 0.0183  
 Mercury -52947-06-15 05:59 J -17617303.26 -17617303.25 -17617303.25 0.0285 0.0284  
 Moon -52947-08-08 07:54 J -17617249.38 -17617249.17 -17617248.96 0.0285 0.0139  
 Earth -52947-08-08 10:33 J -17617249.26 -17617249.06 -17617248.85 0.0285 0.0151 \*  
 Earth -52946-08-22 01:40 J -17616870.63 -17616870.43 -17616870.21 0.0289 0.0144  
 Moon -52946-08-22 02:37 J -17616870.58 -17616870.39 -17616870.18 0.0289 0.0148 \*  
 Venus -52942-06-29 19:25 J -17615462.84 -17615462.69 -17615462.54 0.0297 0.0200  
 Venus -52941-02-14 13:11 J -17615233.10 -17615232.95 -17615232.79 0.0297 0.0195  
 Mars -52937-07-25 00:42 J -17613610.63 -17613610.47 -17613610.29 0.0288 0.0228  
 Mercury -52934-01-25 02:23 J -17612696.53 -17612696.40 -17612696.26 0.0279 0.0172  
 Mercury -52934-04-23 22:33 J -17612607.74 -17612607.56 -17612607.39 0.0279 0.0047  
 Mercury -52934-07-21 18:42 J -17612518.89 -17612518.72 -17612518.55 0.0278 0.0080  
 Mercury -52934-10-18 15:06 J -17612429.98 -17612429.87 -17612429.75 0.0277 0.0208  
 Earth -52933-02-01 13:25 J -17612324.11 -17612323.94 -17612323.76 0.0276 0.0191  
 Moon -52933-02-01 15:21 J -17612324.01 -17612323.86 -17612323.69 0.0276 0.0201 \*  
 Earth -52932-02-13 06:57 J -17611946.45 -17611946.21 -17611945.97 0.0272 0.0067  
 Moon -52932-02-13 10:33 J -17611946.29 -17611946.06 -17611945.81 0.0272 0.0066 \*  
 Venus -52928-12-11 21:06 J -17610183.67 -17610183.62 -17610183.56 0.0264 0.0254  
 Venus -52927-07-29 03:21 J -17609954.58 -17609954.36 -17609954.14 0.0263 0.0040  
 Mars -52921-09-02 03:06 J -17607727.67 -17607727.37 -17607727.06 0.0274 0.0079  
 Mercury -52919-08-16 17:01 J -17607013.83 -17607013.79 -17607013.73 0.0280 0.0260

Mercury -52919-11-13 05:59 J -17606925.37 -17606925.25 -17606925.14 0.0281 0.0157

Mercury -52918-02-09 18:28 J -17606836.86 -17606836.73 -17606836.59 0.0282 0.0054

Mercury -52918-05-09 06:57 J -17606748.34 -17606748.21 -17606748.07 0.0283 0.0048

Earth -52918-08-02 17:59 J -17606662.79 -17606662.75 -17606662.70 0.0284 0.0278

Moon -52918-08-02 20:52 J -17606662.71 -17606662.63 -17606662.52 0.0284 0.0263 \*

Mercury -52918-08-05 19:11 J -17606659.81 -17606659.70 -17606659.58 0.0284 0.0151

Mercury -52918-11-02 07:40 J -17606571.24 -17606571.18 -17606571.12 0.0285 0.0252

Moon -52917-08-15 05:45 J -17606284.51 -17606284.26 -17606284.01 0.0288 0.0015

Earth -52917-08-15 06:57 J -17606284.45 -17606284.21 -17606283.97 0.0288 0.0009 \*

Venus -52912-01-09 00:42 J -17604676.64 -17604676.47 -17604676.29 0.0297 0.0149

Venus -52912-08-26 18:57 J -17604446.82 -17604446.71 -17604446.60 0.0297 0.0246

Mars -52907-09-12 03:06 J -17602604.63 -17602604.37 -17602604.10 0.0286 0.0080

Mercury -52905-06-13 02:23 J -17601964.51 -17601964.40 -17601964.28 0.0280 0.0207

Mercury -52905-09-09 22:33 J -17601875.73 -17601875.56 -17601875.39 0.0279 0.0081

Mercury -52905-12-07 18:42 J -17601786.89 -17601786.72 -17601786.54 0.0278 0.0046

Mercury -52904-03-06 15:06 J -17601698.00 -17601697.87 -17601697.72 0.0277 0.0173

Moon -52903-02-07 23:59 J -17601359.73 -17601359.50 -17601359.25 0.0274 0.0052

Earth -52903-02-08 03:35 J -17601359.59 -17601359.35 -17601359.10 0.0274 0.0048 \*

Earth -52902-02-20 18:13 J -17600981.89 -17600981.74 -17600981.57 0.0271 0.0205

Moon -52902-02-20 17:59 J -17600981.88 -17600981.75 -17600981.59 0.0271 0.0211 \*

Venus -52898-06-24 02:37 J -17599397.52 -17599397.39 -17599397.25 0.0264 0.0209

Venus -52897-02-08 08:37 J -17599168.35 -17599168.14 -17599167.93 0.0264 0.0085

Mars -52891-10-23 17:01 J -17596718.94 -17596718.79 -17596718.61 0.0275 0.0232

Mercury -52889-04-01 07:11 J -17596193.30 -17596193.20 -17596193.10 0.0280 0.0193

Mercury -52889-06-28 19:40 J -17596104.81 -17596104.68 -17596104.55 0.0281 0.0091

Mercury -52889-09-25 08:09 J -17596016.29 -17596016.16 -17596016.02 0.0282 0.0014

Mercury -52889-12-22 20:37 J -17595927.77 -17595927.64 -17595927.52 0.0283 0.0112

Mercury -52888-03-21 08:52 J -17595839.22 -17595839.13 -17595839.04 0.0284 0.0213

Earth -52888-08-09 09:35 J -17595698.31 -17595698.10 -17595697.88 0.0285 0.0131

Moon -52888-08-09 10:47 J -17595698.26 -17595698.05 -17595697.83 0.0285 0.0122 \*

Earth -52887-08-22 23:59 J -17595319.69 -17595319.50 -17595319.29 0.0289 0.0164  
 Moon -52887-08-23 03:49 J -17595319.54 -17595319.34 -17595319.14 0.0289 0.0164 \*  
 Venus -52883-07-22 00:13 J -17593890.68 -17593890.49 -17593890.30 0.0297 0.0115  
 Venus -52882-03-08 17:45 J -17593660.81 -17593660.76 -17593660.68 0.0297 0.0280  
 Mercury -52876-10-30 23:16 J -17591232.59 -17591232.53 -17591232.47 0.0280 0.0261  
 Mercury -52875-01-27 19:11 J -17591143.85 -17591143.70 -17591143.55 0.0279 0.0136  
 Mercury -52875-04-26 15:21 J -17591055.04 -17591054.86 -17591054.69 0.0279 0.0011  
 Mercury -52875-07-24 11:30 J -17590966.17 -17590966.02 -17590965.85 0.0278 0.0118  
 Mercury -52875-10-21 08:09 J -17590877.24 -17590877.16 -17590877.07 0.0277 0.0245  
 Earth -52874-02-02 10:33 J -17590773.24 -17590773.06 -17590772.85 0.0276 0.0175  
 Moon -52874-02-02 14:09 J -17590773.09 -17590772.91 -17590772.72 0.0276 0.0182 \*  
 Moon -52873-02-15 04:18 J -17590395.56 -17590395.32 -17590395.07 0.0273 0.0088  
 Earth -52873-02-15 04:47 J -17590395.53 -17590395.30 -17590395.06 0.0273 0.0084 \*  
 Venus -52868-01-03 02:37 J -17588611.55 -17588611.39 -17588611.23 0.0264 0.0180  
 Venus -52868-08-20 08:37 J -17588382.33 -17588382.14 -17588381.94 0.0263 0.0115  
 Mercury -52860-08-19 08:23 J -17585461.23 -17585461.15 -17585461.07 0.0280 0.0228  
 Mercury -52860-11-15 21:06 J -17585372.74 -17585372.62 -17585372.50 0.0281 0.0126  
 Mercury -52859-02-12 09:35 J -17585284.24 -17585284.10 -17585283.96 0.0282 0.0024  
 Mercury -52859-05-11 22:04 J -17585195.71 -17585195.58 -17585195.45 0.0283 0.0078  
 Moon -52859-08-03 14:09 J -17585112.01 -17585111.91 -17585111.77 0.0284 0.0248  
 Earth -52859-08-03 16:04 J -17585111.92 -17585111.83 -17585111.73 0.0284 0.0260 \*  
 Mercury -52859-08-08 10:18 J -17585107.17 -17585107.07 -17585106.96 0.0284 0.0180  
 Mercury -52859-11-04 22:33 J -17585018.58 -17585018.56 -17585018.54 0.0285 0.0281  
 Moon -52858-08-17 00:57 J -17584733.70 -17584733.46 -17584733.22 0.0287 0.0032  
 Earth -52858-08-17 04:33 J -17584733.55 -17584733.31 -17584733.07 0.0287 0.0027 \*  
 Venus -52853-02-01 05:01 J -17583104.49 -17583104.29 -17583104.09 0.0297 0.0066  
 Mars -52849-12-18 03:21 J -17581322.53 -17581322.36 -17581322.15 0.0288 0.0207  
 Mercury -52846-06-16 18:57 J -17580411.84 -17580411.71 -17580411.57 0.0280 0.0173  
 Mercury -52846-09-13 15:06 J -17580323.04 -17580322.87 -17580322.70 0.0279 0.0046  
 Mercury -52846-12-11 11:30 J -17580234.19 -17580234.02 -17580233.85 0.0278 0.0081

Mercury -52845-03-09 07:54 J -17580145.28 -17580145.17 -17580145.05 0.0277 0.0209  
 Earth -52844-02-09 00:28 J -17579808.72 -17579808.48 -17579808.23 0.0274 0.0032  
 Moon -52844-02-09 00:57 J -17579808.70 -17579808.46 -17579808.22 0.0274 0.0032 \*  
 Earth -52843-02-21 15:49 J -17579430.98 -17579430.84 -17579430.70 0.0271 0.0222  
 Moon -52843-02-21 19:11 J -17579430.81 -17579430.70 -17579430.56 0.0271 0.0233 \*  
 Venus -52839-07-16 07:54 J -17577825.35 -17577825.17 -17577824.98 0.0264 0.0134  
 Venus -52838-03-02 13:54 J -17577596.09 -17577595.92 -17577595.74 0.0264 0.0160  
 Mars -52832-01-26 06:13 J -17575439.54 -17575439.24 -17575438.93 0.0273 0.0048  
 Mercury -52830-01-06 09:49 J -17574729.13 -17574729.09 -17574729.04 0.0279 0.0262  
 Mercury -52830-04-04 22:33 J -17574640.67 -17574640.56 -17574640.44 0.0280 0.0160  
 Mercury -52830-07-02 11:01 J -17574552.17 -17574552.04 -17574551.90 0.0281 0.0059  
 Mercury -52830-09-28 23:30 J -17574463.65 -17574463.52 -17574463.38 0.0282 0.0044  
 Mercury -52830-12-26 11:45 J -17574375.12 -17574375.01 -17574374.89 0.0283 0.0145  
 Mercury -52829-03-23 23:59 J -17574286.56 -17574286.50 -17574286.43 0.0284 0.0245  
 Earth -52829-08-10 09:06 J -17574147.34 -17574147.12 -17574146.89 0.0285 0.0111  
 Moon -52829-08-10 12:57 J -17574147.19 -17574146.96 -17574146.73 0.0285 0.0102 \*  
 Earth -52828-08-23 23:30 J -17573768.70 -17573768.52 -17573768.32 0.0289 0.0184  
 Moon -52828-08-24 00:28 J -17573768.67 -17573768.48 -17573768.27 0.0289 0.0182 \*  
 Venus -52824-08-13 05:30 J -17572318.48 -17572318.27 -17572318.07 0.0297 0.0029  
 Mars -52818-02-04 11:45 J -17570317.27 -17570317.01 -17570316.74 0.0287 0.0079  
 Mercury -52817-11-02 15:35 J -17569679.94 -17569679.85 -17569679.74 0.0280 0.0227  
 Mercury -52816-01-30 11:45 J -17569591.18 -17569591.01 -17569590.85 0.0279 0.0101  
 Mercury -52816-04-29 07:54 J -17569502.35 -17569502.17 -17569502.00 0.0279 0.0025  
 Mercury -52816-07-27 04:18 J -17569413.47 -17569413.32 -17569413.17 0.0278 0.0153  
 Moon -52815-02-03 06:57 J -17569222.41 -17569222.21 -17569221.99 0.0276 0.0162  
 Earth -52815-02-03 07:25 J -17569222.39 -17569222.19 -17569221.98 0.0276 0.0158 \*  
 Moon -52814-02-15 21:35 J -17568844.81 -17568844.60 -17568844.36 0.0273 0.0111  
 Earth -52814-02-16 01:40 J -17568844.66 -17568844.43 -17568844.20 0.0273 0.0101 \*  
 Venus -52809-01-26 07:40 J -17567039.38 -17567039.18 -17567038.98 0.0264 0.0106  
 Venus -52809-09-11 13:40 J -17566810.07 -17566809.93 -17566809.77 0.0264 0.0188

Mars -52802-03-18 13:54 J -17564431.05 -17564430.92 -17564430.78 0.0275 0.0249  
 Mercury -52801-08-21 23:45 J -17563908.61 -17563908.51 -17563908.41 0.0280 0.0196  
 Mercury -52801-11-18 12:13 J -17563820.11 -17563819.99 -17563819.85 0.0281 0.0095  
 Mercury -52800-02-15 00:57 J -17563731.60 -17563731.46 -17563731.33 0.0282 0.0011  
 Mercury -52800-05-14 13:11 J -17563643.07 -17563642.95 -17563642.82 0.0283 0.0110  
 Moon -52800-08-04 11:30 J -17563561.15 -17563561.02 -17563560.88 0.0284 0.0233  
 Earth -52800-08-04 15:06 J -17563560.99 -17563560.87 -17563560.73 0.0284 0.0242 \*  
 Mercury -52800-08-11 01:25 J -17563554.53 -17563554.44 -17563554.35 0.0284 0.0211  
 Moon -52799-08-18 02:23 J -17563182.63 -17563182.40 -17563182.17 0.0287 0.0048  
 Earth -52799-08-18 03:06 J -17563182.61 -17563182.37 -17563182.13 0.0287 0.0047 \*  
 Venus -52794-02-23 09:35 J -17561532.30 -17561532.10 -17561531.89 0.0297 0.0019  
 Mercury -52787-03-22 15:21 J -17558947.91 -17558947.86 -17558947.80 0.0281 0.0264  
 Mercury -52787-06-19 11:16 J -17558859.18 -17558859.03 -17558858.87 0.0280 0.0139  
 Mercury -52787-09-16 07:25 J -17558770.36 -17558770.19 -17558770.01 0.0279 0.0014  
 Mercury -52787-12-14 03:49 J -17558681.50 -17558681.34 -17558681.17 0.0278 0.0116  
 Mercury -52786-03-13 00:42 J -17558592.56 -17558592.47 -17558592.39 0.0277 0.0244  
 Earth -52785-02-10 21:06 J -17558257.87 -17558257.62 -17558257.38 0.0274 0.0016  
 Moon -52785-02-11 00:28 J -17558257.72 -17558257.48 -17558257.23 0.0274 0.0013 \*  
 Earth -52784-02-22 12:42 J -17557880.09 -17557879.97 -17557879.85 0.0271 0.0238  
 Moon -52784-02-22 14:09 J -17557880.01 -17557879.91 -17557879.81 0.0271 0.0250 \*  
 Venus -52780-08-07 13:25 J -17556253.16 -17556252.94 -17556252.73 0.0264 0.0059  
 Venus -52779-03-24 19:11 J -17556023.78 -17556023.70 -17556023.59 0.0264 0.0235  
 Mercury -52771-01-09 01:25 J -17553176.51 -17553176.44 -17553176.35 0.0279 0.0227  
 Mercury -52771-04-07 14:09 J -17553088.03 -17553087.91 -17553087.78 0.0280 0.0126  
 Mercury -52771-07-05 02:37 J -17552999.52 -17552999.39 -17552999.25 0.0281 0.0026  
 Mercury -52771-10-01 15:06 J -17552911.00 -17552910.87 -17552910.74 0.0282 0.0077  
 Mercury -52771-12-29 03:21 J -17552822.47 -17552822.36 -17552822.26 0.0283 0.0177  
 Mercury -52770-03-27 15:21 J -17552733.88 -17552733.86 -17552733.83 0.0284 0.0277  
 Earth -52770-08-12 09:35 J -17552596.32 -17552596.10 -17552595.86 0.0285 0.0091  
 Moon -52770-08-12 10:04 J -17552596.32 -17552596.08 -17552595.83 0.0285 0.0087 \*

Moon -52769-08-24 20:37 J -17552217.81 -17552217.64 -17552217.45 0.0288 0.0199  
 Earth -52769-08-24 23:45 J -17552217.67 -17552217.51 -17552217.33 0.0288 0.0205 \*  
 Venus -52765-09-04 11:01 J -17550746.24 -17550746.04 -17550745.84 0.0297 0.0060  
 Mars -52760-05-12 14:23 J -17549035.09 -17549034.90 -17549034.71 0.0289 0.0208  
 Mercury -52758-11-06 08:23 J -17548127.28 -17548127.15 -17548127.03 0.0280 0.0192  
 Mercury -52757-02-03 04:18 J -17548038.49 -17548038.32 -17548038.15 0.0279 0.0066  
 Mercury -52757-05-02 00:42 J -17547949.65 -17547949.47 -17547949.30 0.0279 0.0062  
 Mercury -52757-07-29 21:06 J -17547860.75 -17547860.62 -17547860.49 0.0278 0.0189  
 Moon -52756-02-04 00:42 J -17547671.67 -17547671.47 -17547671.25 0.0276 0.0143  
 Earth -52756-02-04 04:18 J -17547671.52 -17547671.32 -17547671.10 0.0276 0.0142 \*  
 Moon -52755-02-16 21:35 J -17547293.80 -17547293.60 -17547293.38 0.0273 0.0129  
 Earth -52755-02-16 22:47 J -17547293.77 -17547293.55 -17547293.32 0.0273 0.0118 \*  
 Venus -52750-02-17 12:57 J -17545467.18 -17545466.96 -17545466.74 0.0264 0.0032  
 Venus -52750-10-04 19:11 J -17545237.72 -17545237.70 -17545237.67 0.0264 0.0262  
 Mars -52744-06-21 03:21 J -17543151.67 -17543151.36 -17543151.05 0.0273 0.0031  
 Mercury -52742-05-29 02:37 J -17542444.43 -17542444.39 -17542444.34 0.0280 0.0263  
 Mercury -52742-08-25 15:21 J -17542355.97 -17542355.86 -17542355.74 0.0280 0.0161  
 Mercury -52742-11-22 04:04 J -17542267.47 -17542267.33 -17542267.20 0.0281 0.0060  
 Mercury -52741-02-18 16:18 J -17542178.95 -17542178.82 -17542178.68 0.0282 0.0043  
 Mercury -52741-05-17 04:47 J -17542090.42 -17542090.30 -17542090.18 0.0283 0.0143  
 Earth -52741-08-05 16:04 J -17542009.97 -17542009.83 -17542009.67 0.0284 0.0221  
 Moon -52741-08-05 16:18 J -17542009.96 -17542009.82 -17542009.66 0.0284 0.0217 \*  
 Mercury -52741-08-13 16:47 J -17542001.86 -17542001.80 -17542001.73 0.0284 0.0244  
 Earth -52740-08-19 03:49 J -17541631.57 -17541631.34 -17541631.10 0.0287 0.0069  
 Moon -52740-08-19 07:11 J -17541631.43 -17541631.20 -17541630.96 0.0287 0.0066 \*  
 Venus -52736-07-30 22:04 J -17540189.64 -17540189.58 -17540189.52 0.0296 0.0283  
 Venus -52735-03-17 15:21 J -17539960.04 -17539959.86 -17539959.66 0.0297 0.0109  
 Mars -52730-06-30 14:23 J -17538029.15 -17538028.90 -17538028.64 0.0286 0.0101  
 Mercury -52728-03-25 07:54 J -17537395.26 -17537395.17 -17537395.07 0.0281 0.0229  
 Mercury -52728-06-22 04:04 J -17537306.49 -17537306.33 -17537306.17 0.0280 0.0103

Mercury -52728-09-19 00:13 J -17537217.66 -17537217.49 -17537217.31 0.0279 0.0025  
 Mercury -52728-12-16 20:37 J -17537128.78 -17537128.64 -17537128.48 0.0278 0.0153  
 Earth -52727-01-29 21:06 J -17537084.70 -17537084.62 -17537084.55 0.0278 0.0263  
 Moon -52727-01-30 00:28 J -17537084.52 -17537084.48 -17537084.41 0.0278 0.0270  
 Earth -52726-02-11 18:13 J -17536706.98 -17536706.74 -17536706.49 0.0274 0.0006  
 Moon -52726-02-11 19:54 J -17536706.92 -17536706.67 -17536706.41 0.0274 0.0007 \*  
 Moon -52725-02-24 06:42 J -17536329.23 -17536329.22 -17536329.18 0.0271 0.0270  
 Earth -52725-02-24 10:18 J -17536329.15 -17536329.07 -17536328.99 0.0271 0.0255  
 Venus -52721-08-29 19:11 J -17534680.92 -17534680.70 -17534680.48 0.0264 0.0017  
 Mercury -52712-01-11 17:45 J -17531623.86 -17531623.76 -17531623.66 0.0279 0.0189  
 Mercury -52712-04-10 06:13 J -17531535.37 -17531535.24 -17531535.11 0.0280 0.0088  
 Mercury -52712-07-07 18:42 J -17531446.86 -17531446.72 -17531446.58 0.0281 0.0013  
 Mercury -52712-10-04 06:57 J -17531358.33 -17531358.21 -17531358.08 0.0282 0.0113  
 Mercury -52712-12-31 19:11 J -17531269.79 -17531269.70 -17531269.61 0.0283 0.0213  
 Moon -52711-08-13 09:21 J -17531045.35 -17531045.11 -17531044.87 0.0285 0.0069  
 Earth -52711-08-13 13:11 J -17531045.19 -17531044.95 -17531044.72 0.0285 0.0067 \*  
 Moon -52710-08-27 00:13 J -17530666.64 -17530666.49 -17530666.34 0.0288 0.0221  
 Earth -52710-08-27 03:06 J -17530666.52 -17530666.37 -17530666.22 0.0288 0.0228 \*  
 Venus -52706-02-10 00:57 J -17529403.58 -17529403.46 -17529403.33 0.0296 0.0236  
 Venus -52706-09-27 18:13 J -17529173.91 -17529173.74 -17529173.57 0.0296 0.0153  
 Mercury -52699-08-12 05:30 J -17526663.29 -17526663.27 -17526663.25 0.0281 0.0278  
 Mercury -52699-11-09 01:25 J -17526574.59 -17526574.44 -17526574.30 0.0280 0.0153  
 Mercury -52698-02-05 21:21 J -17526485.78 -17526485.61 -17526485.43 0.0279 0.0028  
 Mercury -52698-05-05 17:45 J -17526396.92 -17526396.76 -17526396.59 0.0279 0.0101  
 Mercury -52698-08-02 14:23 J -17526308.00 -17526307.90 -17526307.80 0.0278 0.0229  
 Moon -52697-02-06 01:25 J -17526120.65 -17526120.44 -17526120.23 0.0276 0.0122  
 Earth -52697-02-06 02:52 J -17526120.60 -17526120.38 -17526120.16 0.0276 0.0124 \*  
 Earth -52696-02-17 21:06 J -17525742.83 -17525742.62 -17525742.40 0.0273 0.0136  
 Moon -52696-02-17 23:59 J -17525742.69 -17525742.50 -17525742.29 0.0273 0.0149 \*  
 Venus -52692-07-25 12:28 J -17524124.05 -17524123.98 -17524123.90 0.0264 0.0249



Venus -52691-03-11 19:11 J -17523894.91 -17523894.70 -17523894.48 0.0264 0.0046  
 Mercury -52683-05-31 18:42 J -17520891.79 -17520891.72 -17520891.63 0.0280 0.0225  
 Mercury -52683-08-28 07:25 J -17520803.31 -17520803.19 -17520803.06 0.0281 0.0123  
 Mercury -52683-11-24 19:54 J -17520714.80 -17520714.67 -17520714.53 0.0281 0.0024  
 Mercury -52682-02-21 08:23 J -17520626.28 -17520626.15 -17520626.02 0.0282 0.0079  
 Mercury -52682-05-20 20:37 J -17520537.74 -17520537.64 -17520537.53 0.0283 0.0180  
 Earth -52682-08-07 19:25 J -17520458.85 -17520458.69 -17520458.50 0.0284 0.0198  
 Moon -52682-08-07 23:16 J -17520458.70 -17520458.53 -17520458.35 0.0284 0.0197 \*  
 Mercury -52682-08-17 08:37 J -17520449.15 -17520449.14 -17520449.11 0.0284 0.0280  
 Earth -52681-08-20 07:11 J -17520080.42 -17520080.20 -17520079.96 0.0287 0.0093  
 Moon -52681-08-20 09:49 J -17520080.33 -17520080.09 -17520079.85 0.0287 0.0086 \*  
 Venus -52677-08-22 05:30 J -17518617.43 -17518617.27 -17518617.11 0.0296 0.0188  
 Venus -52676-04-08 22:47 J -17518387.69 -17518387.55 -17518387.39 0.0296 0.0202  
 Mars -52672-10-05 21:21 J -17516746.81 -17516746.61 -17516746.40 0.0288 0.0184  
 Mercury -52669-03-28 01:11 J -17515842.57 -17515842.45 -17515842.32 0.0280 0.0190  
 Mercury -52669-06-24 21:21 J -17515753.78 -17515753.61 -17515753.44 0.0280 0.0063  
 Mercury -52669-09-21 17:30 J -17515664.94 -17515664.77 -17515664.59 0.0279 0.0065  
 Mercury -52669-12-19 14:09 J -17515576.03 -17515575.91 -17515575.78 0.0278 0.0192  
 Earth -52668-01-30 19:54 J -17515533.78 -17515533.67 -17515533.55 0.0278 0.0245  
 Moon -52668-01-30 21:06 J -17515533.72 -17515533.62 -17515533.49 0.0278 0.0246 \*  
 Moon -52667-02-12 14:37 J -17515156.14 -17515155.89 -17515155.64 0.0274 0.0029  
 Earth -52667-02-12 17:16 J -17515156.02 -17515155.78 -17515155.53 0.0274 0.0021 \*  
 Venus -52662-02-04 18:57 J -17513337.85 -17513337.71 -17513337.56 0.0265 0.0200  
 Venus -52662-09-22 01:40 J -17513108.63 -17513108.43 -17513108.22 0.0265 0.0095  
 Mars -52656-11-15 02:09 J -17510862.73 -17510862.41 -17510862.10 0.0273 0.0009  
 Mercury -52654-10-18 21:35 J -17510159.66 -17510159.60 -17510159.54 0.0279 0.0249  
 Mercury -52653-01-15 10:04 J -17510071.19 -17510071.08 -17510070.96 0.0280 0.0149  
 Mercury -52653-04-12 22:47 J -17509982.69 -17509982.55 -17509982.42 0.0280 0.0048  
 Mercury -52653-07-10 11:01 J -17509894.17 -17509894.04 -17509893.90 0.0281 0.0053  
 Mercury -52653-10-06 23:16 J -17509805.64 -17509805.53 -17509805.41 0.0282 0.0154

Mercury -52652-01-03 11:30 J -17509717.08 -17509717.02 -17509716.96 0.0283 0.0253  
 Moon -52652-08-14 17:16 J -17509494.01 -17509493.78 -17509493.54 0.0285 0.0045  
 Earth -52652-08-14 19:11 J -17509493.94 -17509493.70 -17509493.46 0.0285 0.0040 \*  
 Earth -52651-08-28 09:06 J -17509115.23 -17509115.12 -17509115.01 0.0288 0.0255  
 Moon -52651-08-28 10:33 J -17509115.17 -17509115.06 -17509114.93 0.0288 0.0245 \*  
 Venus -52647-03-04 10:47 J -17507831.23 -17507831.05 -17507830.87 0.0296 0.0135  
 Venus -52647-10-20 03:35 J -17507601.45 -17507601.35 -17507601.24 0.0296 0.0253  
 Mars -52642-11-23 15:06 J -17505741.13 -17505740.87 -17505740.62 0.0287 0.0110  
 Mercury -52640-08-14 23:16 J -17505110.62 -17505110.53 -17505110.43 0.0281 0.0235  
 Mercury -52640-11-11 19:25 J -17505021.85 -17505021.69 -17505021.53 0.0280 0.0109  
 Mercury -52639-02-08 15:35 J -17504933.03 -17504932.85 -17504932.68 0.0279 0.0018  
 Mercury -52639-05-08 11:59 J -17504844.15 -17504844.00 -17504843.85 0.0278 0.0145  
 Mercury -52639-08-05 08:23 J -17504755.17 -17504755.15 -17504755.11 0.0277 0.0274  
 Earth -52638-02-07 04:04 J -17504569.55 -17504569.33 -17504569.09 0.0276 0.0103  
 Moon -52638-02-07 07:11 J -17504569.42 -17504569.20 -17504568.97 0.0276 0.0097 \*  
 Earth -52637-02-19 22:18 J -17504191.76 -17504191.57 -17504191.36 0.0273 0.0157  
 Moon -52637-02-20 01:25 J -17504191.64 -17504191.44 -17504191.24 0.0273 0.0169 \*  
 Venus -52633-08-16 19:40 J -17502551.84 -17502551.68 -17502551.50 0.0264 0.0169  
 Venus -52632-04-03 02:23 J -17502322.59 -17502322.40 -17502322.20 0.0264 0.0126  
 Mercury -52624-06-03 11:30 J -17499339.12 -17499339.02 -17499338.91 0.0280 0.0182  
 Mercury -52624-08-30 23:59 J -17499250.63 -17499250.50 -17499250.36 0.0281 0.0082  
 Mercury -52624-11-27 12:42 J -17499162.11 -17499161.97 -17499161.84 0.0282 0.0022  
 Mercury -52623-02-24 00:57 J -17499073.58 -17499073.46 -17499073.34 0.0283 0.0121  
 Mercury -52623-05-23 12:57 J -17498985.04 -17498984.96 -17498984.87 0.0283 0.0221  
 Earth -52623-08-09 02:23 J -17498907.59 -17498907.40 -17498907.20 0.0284 0.0171  
 Moon -52623-08-09 04:18 J -17498907.52 -17498907.32 -17498907.12 0.0284 0.0171 \*  
 Moon -52622-08-22 11:59 J -17498529.23 -17498529.00 -17498528.76 0.0288 0.0109  
 Earth -52622-08-22 14:23 J -17498529.12 -17498528.90 -17498528.67 0.0288 0.0120 \*  
 Venus -52618-09-14 15:35 J -17497045.05 -17497044.85 -17497044.66 0.0296 0.0085  
 Mercury -52610-01-01 23:16 J -17494378.57 -17494378.53 -17494378.48 0.0281 0.0270

Mercury -52610-03-31 19:11 J -17494289.84 -17494289.70 -17494289.55 0.0280 0.0145  
 Mercury -52610-06-28 15:35 J -17494201.03 -17494200.85 -17494200.68 0.0279 0.0020  
 Mercury -52610-09-25 11:45 J -17494112.17 -17494112.01 -17494111.84 0.0278 0.0110  
 Mercury -52610-12-23 08:23 J -17494023.23 -17494023.15 -17494023.05 0.0278 0.0238  
 Moon -52609-02-01 18:28 J -17493982.87 -17493982.73 -17493982.57 0.0277 0.0218  
 Earth -52609-02-01 22:04 J -17493982.73 -17493982.58 -17493982.44 0.0277 0.0223 \*  
 Moon -52608-02-13 15:49 J -17493605.07 -17493604.84 -17493604.60 0.0274 0.0053  
 Earth -52608-02-13 18:57 J -17493604.95 -17493604.71 -17493604.46 0.0274 0.0042 \*  
 Venus -52603-02-27 02:52 J -17491765.57 -17491765.38 -17491765.18 0.0265 0.0118  
 Venus -52603-10-14 09:35 J -17491536.25 -17491536.10 -17491535.93 0.0265 0.0178  
 Mars -52597-02-19 00:13 J -17489582.52 -17489582.49 -17489582.41 0.0271 0.0268  
 Mercury -52595-10-21 14:37 J -17488606.98 -17488606.89 -17488606.80 0.0279 0.0204  
 Mercury -52594-01-18 03:06 J -17488518.49 -17488518.37 -17488518.24 0.0280 0.0104  
 Mercury -52594-04-16 15:35 J -17488429.99 -17488429.85 -17488429.71 0.0281 0.0006  
 Mercury -52594-07-14 04:04 J -17488341.46 -17488341.33 -17488341.20 0.0282 0.0098  
 Mercury -52594-10-10 16:18 J -17488252.92 -17488252.82 -17488252.73 0.0282 0.0198  
 Earth -52593-08-16 04:33 J -17487942.55 -17487942.31 -17487942.07 0.0285 0.0010  
 Moon -52593-08-16 06:57 J -17487942.45 -17487942.21 -17487941.97 0.0285 0.0017 \*  
 Earth -52592-08-29 18:42 J -17487563.75 -17487563.72 -17487563.69 0.0289 0.0285  
 Moon -52592-08-29 22:18 J -17487563.64 -17487563.57 -17487563.48 0.0289 0.0272  
 Venus -52588-03-26 22:18 J -17486258.77 -17486258.57 -17486258.36 0.0296 0.0028  
 Mars -52583-03-01 08:23 J -17484458.36 -17484458.15 -17484457.92 0.0289 0.0167  
 Mercury -52581-08-17 17:59 J -17483557.87 -17483557.75 -17483557.61 0.0280 0.0186  
 Mercury -52581-11-14 14:09 J -17483469.08 -17483468.91 -17483468.74 0.0280 0.0060  
 Mercury -52580-02-11 10:33 J -17483380.23 -17483380.06 -17483379.89 0.0279 0.0068  
 Mercury -52580-05-11 06:57 J -17483291.33 -17483291.21 -17483291.08 0.0278 0.0196  
 Earth -52579-02-08 08:52 J -17483018.37 -17483018.13 -17483017.89 0.0276 0.0078  
 Moon -52579-02-08 11:45 J -17483018.25 -17483018.01 -17483017.76 0.0276 0.0069 \*  
 Moon -52578-02-21 01:25 J -17482640.62 -17482640.44 -17482640.26 0.0273 0.0194  
 Earth -52578-02-21 02:23 J -17482640.57 -17482640.40 -17482640.20 0.0273 0.0181 \*

Venus -52574-09-09 04:33 J -17480979.52 -17480979.31 -17480979.10 0.0265 0.0085  
 Venus -52573-04-25 11:01 J -17480750.16 -17480750.04 -17480749.89 0.0264 0.0211  
 Mars -52567-04-10 16:33 J -17478574.12 -17478573.81 -17478573.50 0.0273 0.0037  
 Mercury -52565-03-09 16:04 J -17477874.90 -17477874.83 -17477874.76 0.0280 0.0238  
 Mercury -52565-06-06 04:33 J -17477786.43 -17477786.31 -17477786.18 0.0280 0.0137  
 Mercury -52565-09-02 17:16 J -17477697.92 -17477697.78 -17477697.65 0.0281 0.0036  
 Mercury -52565-11-30 05:30 J -17477609.40 -17477609.27 -17477609.13 0.0282 0.0066  
 Mercury -52564-02-26 17:45 J -17477520.86 -17477520.76 -17477520.64 0.0283 0.0166  
 Mercury -52564-05-26 05:59 J -17477432.29 -17477432.25 -17477432.20 0.0284 0.0266  
 Moon -52564-08-10 09:49 J -17477356.30 -17477356.09 -17477355.87 0.0284 0.0145  
 Earth -52564-08-10 11:59 J -17477356.20 -17477356.00 -17477355.78 0.0284 0.0142 \*  
 Moon -52563-08-23 20:52 J -17476977.83 -17476977.63 -17476977.41 0.0288 0.0139  
 Earth -52563-08-24 00:28 J -17476977.68 -17476977.48 -17476977.27 0.0288 0.0151 \*  
 Venus -52559-10-07 03:49 J -17475472.55 -17475472.34 -17475472.14 0.0296 0.0025  
 Mars -52553-04-18 12:57 J -17473452.18 -17473451.96 -17473451.71 0.0286 0.0147  
 Mercury -52551-01-04 18:28 J -17472825.83 -17472825.73 -17472825.62 0.0280 0.0218  
 Mercury -52551-04-03 14:37 J -17472737.06 -17472736.89 -17472736.73 0.0280 0.0093  
 Mercury -52551-07-01 10:47 J -17472648.23 -17472648.05 -17472647.88 0.0279 0.0034  
 Mercury -52551-09-28 07:11 J -17472559.34 -17472559.20 -17472559.05 0.0278 0.0162  
 Moon -52550-02-03 00:57 J -17472431.62 -17472431.46 -17472431.27 0.0277 0.0191  
 Earth -52550-02-03 03:35 J -17472431.51 -17472431.35 -17472431.16 0.0277 0.0197 \*  
 Earth -52549-02-16 00:13 J -17472053.72 -17472053.49 -17472053.24 0.0274 0.0067  
 Moon -52549-02-16 01:40 J -17472053.66 -17472053.43 -17472053.20 0.0274 0.0081 \*  
 Venus -52544-03-21 12:13 J -17470193.21 -17470192.99 -17470192.77 0.0265 0.0032  
 Venus -52544-11-05 18:57 J -17469963.72 -17469963.71 -17469963.68 0.0265 0.0263  
 Mercury -52536-07-27 19:25 J -17467142.74 -17467142.69 -17467142.64 0.0279 0.0257  
 Mercury -52536-10-24 08:09 J -17467054.28 -17467054.16 -17467054.05 0.0280 0.0156  
 Mercury -52535-01-20 20:37 J -17466965.78 -17466965.64 -17466965.50 0.0281 0.0055  
 Mercury -52535-04-19 09:06 J -17466877.26 -17466877.12 -17466876.99 0.0281 0.0046  
 Mercury -52535-07-16 21:21 J -17466788.73 -17466788.61 -17466788.49 0.0282 0.0146

Earth -52535-08-05 07:11 J -17466769.28 -17466769.20 -17466769.10 0.0282 0.0262  
 Moon -52535-08-05 09:06 J -17466769.20 -17466769.12 -17466769.01 0.0282 0.0260 \*  
 Mercury -52535-10-13 09:21 J -17466700.17 -17466700.11 -17466700.04 0.0283 0.0246  
 Earth -52534-08-18 17:01 J -17466391.03 -17466390.79 -17466390.55 0.0286 0.0023  
 Moon -52534-08-18 20:23 J -17466390.89 -17466390.65 -17466390.40 0.0286 0.0017 \*  
 Venus -52529-04-18 12:28 J -17464686.17 -17464685.98 -17464685.78 0.0296 0.0088  
 Mercury -52522-05-24 18:13 J -17462093.81 -17462093.74 -17462093.66 0.0281 0.0253  
 Mercury -52522-08-21 14:09 J -17462005.06 -17462004.91 -17462004.75 0.0280 0.0129  
 Mercury -52522-11-18 10:18 J -17461916.25 -17461916.07 -17461915.90 0.0279 0.0003  
 Mercury -52521-02-15 06:42 J -17461827.38 -17461827.22 -17461827.06 0.0278 0.0125  
 Mercury -52521-05-14 03:06 J -17461738.44 -17461738.37 -17461738.29 0.0278 0.0253  
 Moon -52520-02-09 15:06 J -17461467.12 -17461466.87 -17461466.62 0.0275 0.0038  
 Earth -52520-02-09 16:47 J -17461467.04 -17461466.80 -17461466.55 0.0275 0.0050 \*  
 Moon -52519-02-22 06:13 J -17461089.37 -17461089.24 -17461089.09 0.0272 0.0223  
 Earth -52519-02-22 10:04 J -17461089.23 -17461089.08 -17461088.92 0.0272 0.0207 \*  
 Venus -52515-10-01 14:52 J -17459407.09 -17459406.88 -17459406.66 0.0265 0.0007  
 Mars -52509-07-14 20:52 J -17457293.79 -17457293.63 -17457293.47 0.0272 0.0234  
 Mercury -52506-03-13 09:35 J -17456322.20 -17456322.10 -17456321.99 0.0280 0.0188  
 Mercury -52506-06-09 22:18 J -17456233.70 -17456233.57 -17456233.44 0.0281 0.0087  
 Mercury -52506-09-06 10:47 J -17456145.19 -17456145.05 -17456144.91 0.0282 0.0014  
 Mercury -52506-12-03 23:01 J -17456056.66 -17456056.54 -17456056.41 0.0282 0.0115  
 Mercury -52505-03-01 11:16 J -17455968.11 -17455968.03 -17455967.94 0.0283 0.0215  
 Moon -52505-08-11 21:35 J -17455804.82 -17455804.60 -17455804.37 0.0285 0.0111  
 Earth -52505-08-12 00:57 J -17455804.68 -17455804.46 -17455804.23 0.0285 0.0108 \*  
 Earth -52504-08-25 13:40 J -17455426.11 -17455425.93 -17455425.74 0.0288 0.0186  
 Moon -52504-08-25 13:40 J -17455426.11 -17455425.93 -17455425.74 0.0288 0.0175 \*  
 Venus -52500-03-14 01:11 J -17454129.56 -17454129.45 -17454129.33 0.0296 0.0246  
 Venus -52500-10-29 17:59 J -17453899.93 -17453899.75 -17453899.57 0.0296 0.0140  
 Mars -52495-07-26 15:49 J -17452169.08 -17452168.84 -17452168.59 0.0288 0.0125  
 Mercury -52492-01-07 14:37 J -17451273.03 -17451272.89 -17451272.75 0.0280 0.0161

Mercury -52492-04-06 10:47 J -17451184.23 -17451184.05 -17451183.88 0.0279 0.0035  
 Mercury -52492-07-04 06:57 J -17451095.37 -17451095.21 -17451095.04 0.0278 0.0092  
 Mercury -52492-10-01 03:35 J -17451006.46 -17451006.35 -17451006.24 0.0278 0.0220  
 Earth -52491-02-04 12:28 J -17450880.17 -17450879.98 -17450879.78 0.0277 0.0168  
 Moon -52491-02-04 14:09 J -17450880.10 -17450879.91 -17450879.72 0.0277 0.0160 \*  
 Earth -52490-02-17 08:23 J -17450502.37 -17450502.15 -17450501.91 0.0274 0.0095  
 Moon -52490-02-17 12:13 J -17450502.21 -17450501.99 -17450501.75 0.0274 0.0111 \*  
 Venus -52486-08-27 15:35 J -17448849.93 -17448849.85 -17448849.75 0.0265 0.0240  
 Venus -52485-04-12 22:47 J -17448620.76 -17448620.55 -17448620.33 0.0265 0.0057  
 Mars -52479-09-05 14:52 J -17446284.17 -17446283.88 -17446283.57 0.0274 0.0089  
 Mercury -52477-07-30 13:11 J -17445590.04 -17445589.95 -17445589.86 0.0280 0.0206  
 Mercury -52477-10-27 01:40 J -17445501.55 -17445501.43 -17445501.29 0.0280 0.0106  
 Mercury -52476-01-23 14:23 J -17445413.04 -17445412.90 -17445412.76 0.0281 0.0007  
 Mercury -52476-04-22 02:37 J -17445324.52 -17445324.39 -17445324.26 0.0282 0.0097  
 Mercury -52476-07-19 14:52 J -17445235.97 -17445235.88 -17445235.78 0.0283 0.0197  
 Earth -52476-08-06 20:37 J -17445217.77 -17445217.64 -17445217.49 0.0283 0.0228  
 Moon -52476-08-07 00:13 J -17445217.62 -17445217.49 -17445217.33 0.0283 0.0226 \*  
 Earth -52475-08-20 07:11 J -17444839.43 -17444839.20 -17444838.95 0.0286 0.0060  
 Moon -52475-08-20 07:54 J -17444839.42 -17444839.17 -17444838.92 0.0286 0.0053 \*  
 Venus -52471-09-24 11:30 J -17443343.18 -17443343.02 -17443342.86 0.0295 0.0177  
 Venus -52470-05-12 04:18 J -17443113.47 -17443113.32 -17443113.18 0.0296 0.0207  
 Mars -52465-09-12 23:01 J -17441162.75 -17441162.54 -17441162.32 0.0286 0.0183  
 Mercury -52463-05-27 15:21 J -17440540.99 -17440540.86 -17440540.74 0.0280 0.0191  
 Mercury -52463-08-24 11:16 J -17440452.20 -17440452.03 -17440451.86 0.0280 0.0066  
 Mercury -52463-11-21 07:25 J -17440363.36 -17440363.19 -17440363.02 0.0279 0.0061  
 Mercury -52462-02-18 03:49 J -17440274.47 -17440274.34 -17440274.21 0.0278 0.0188  
 Moon -52461-02-12 00:42 J -17439915.72 -17439915.47 -17439915.23 0.0275 0.0005  
 Earth -52461-02-12 04:18 J -17439915.57 -17439915.32 -17439915.07 0.0275 0.0018 \*  
 Moon -52460-02-23 19:54 J -17439537.75 -17439537.67 -17439537.58 0.0272 0.0253  
 Earth -52460-02-23 20:52 J -17439537.75 -17439537.63 -17439537.51 0.0272 0.0237 \*

Venus -52456-03-08 19:25 J -17438063.82 -17438063.69 -17438063.54 0.0265 0.0200  
 Venus -52456-10-24 02:37 J -17437834.59 -17437834.39 -17437834.18 0.0265 0.0095  
 Mercury -52448-12-17 14:52 J -17434857.95 -17434857.88 -17434857.81 0.0280 0.0238  
 Mercury -52447-03-16 03:35 J -17434769.47 -17434769.35 -17434769.23 0.0280 0.0137  
 Mercury -52447-06-12 16:04 J -17434680.97 -17434680.83 -17434680.69 0.0281 0.0036  
 Mercury -52447-09-09 04:33 J -17434592.44 -17434592.31 -17434592.18 0.0282 0.0066  
 Mercury -52447-12-06 16:47 J -17434503.91 -17434503.80 -17434503.69 0.0283 0.0166  
 Mercury -52446-03-05 05:01 J -17434415.33 -17434415.29 -17434415.25 0.0284 0.0266  
 Moon -52446-08-14 15:06 J -17434253.10 -17434252.87 -17434252.64 0.0285 0.0077  
 Earth -52446-08-14 15:21 J -17434253.09 -17434252.86 -17434252.62 0.0285 0.0072 \*  
 Earth -52445-08-27 04:33 J -17433874.45 -17433874.31 -17433874.14 0.0288 0.0224  
 Moon -52445-08-27 07:40 J -17433874.33 -17433874.18 -17433874.01 0.0288 0.0212 \*  
 Venus -52441-04-05 17:01 J -17432556.97 -17432556.79 -17432556.60 0.0296 0.0126  
 Venus -52441-11-21 10:04 J -17432327.18 -17432327.08 -17432326.98 0.0296 0.0259  
 Mercury -52434-10-14 15:49 J -17429808.94 -17429808.84 -17429808.74 0.0280 0.0223  
 Mercury -52433-01-11 11:30 J -17429720.18 -17429720.02 -17429719.85 0.0280 0.0098  
 Mercury -52433-04-09 07:40 J -17429631.35 -17429631.18 -17429631.00 0.0279 0.0029  
 Mercury -52433-07-07 04:04 J -17429542.47 -17429542.33 -17429542.18 0.0278 0.0155  
 Earth -52432-02-06 00:13 J -17429328.70 -17429328.49 -17429328.27 0.0276 0.0135  
 Moon -52432-02-06 03:35 J -17429328.56 -17429328.35 -17429328.12 0.0276 0.0128 \*  
 Earth -52431-02-18 19:25 J -17428950.91 -17428950.69 -17428950.47 0.0273 0.0127  
 Moon -52431-02-18 19:54 J -17428950.88 -17428950.67 -17428950.44 0.0273 0.0141 \*  
 Venus -52427-09-19 03:21 J -17427277.53 -17427277.36 -17427277.16 0.0265 0.0149  
 Venus -52426-05-06 10:47 J -17427048.23 -17427048.05 -17427047.86 0.0265 0.0148  
 Mars -52421-12-09 22:04 J -17425003.79 -17425003.58 -17425003.33 0.0272 0.0185  
 Mercury -52418-05-06 18:28 J -17424125.78 -17424125.73 -17424125.67 0.0279 0.0255  
 Mercury -52418-08-03 07:11 J -17424037.31 -17424037.20 -17424037.08 0.0280 0.0154  
 Mercury -52418-10-30 19:54 J -17423948.81 -17423948.67 -17423948.54 0.0281 0.0053  
 Mercury -52417-01-27 08:09 J -17423860.29 -17423860.16 -17423860.02 0.0282 0.0050  
 Mercury -52417-04-24 20:37 J -17423771.76 -17423771.64 -17423771.53 0.0283 0.0149

Mercury -52417-07-22 08:37 J -17423683.19 -17423683.14 -17423683.07 0.0283 0.0250  
 Earth -52417-08-08 11:45 J -17423666.18 -17423666.01 -17423665.83 0.0283 0.0193  
 Moon -52417-08-08 11:45 J -17423666.18 -17423666.01 -17423665.81 0.0283 0.0194 \*  
 Moon -52416-08-21 20:09 J -17423287.90 -17423287.66 -17423287.43 0.0287 0.0089  
 Earth -52416-08-21 23:16 J -17423287.76 -17423287.53 -17423287.30 0.0287 0.0098 \*  
 Jupiter -52414-05-11 04:47 J -17422660.72 -17422660.30 -17422659.85 0.0291 0.0064  
 Venus -52412-10-17 04:18 J -17421770.52 -17421770.32 -17421770.12 0.0295 0.0056  
 Mars -52407-12-21 10:47 J -17419879.31 -17419879.05 -17419878.78 0.0288 0.0079  
 Mercury -52404-03-02 16:47 J -17419076.87 -17419076.80 -17419076.72 0.0281 0.0249  
 Mercury -52404-05-30 12:42 J -17418988.12 -17418987.97 -17418987.81 0.0280 0.0125  
 Mercury -52404-08-27 08:52 J -17418899.31 -17418899.13 -17418898.96 0.0279 0.0006  
 Mercury -52404-11-24 05:01 J -17418810.44 -17418810.29 -17418810.13 0.0278 0.0128  
 Moon -52403-01-31 17:01 J -17418741.89 -17418741.79 -17418741.67 0.0278 0.0246  
 Earth -52403-01-31 20:37 J -17418741.73 -17418741.64 -17418741.52 0.0278 0.0250 \*  
 Mercury -52403-02-21 01:40 J -17418721.50 -17418721.43 -17418721.36 0.0278 0.0255  
 Moon -52402-02-13 16:33 J -17418364.04 -17418363.81 -17418363.57 0.0275 0.0028  
 Earth -52402-02-13 17:30 J -17418364.01 -17418363.77 -17418363.52 0.0275 0.0016 \*  
 Earth -52401-02-26 08:52 J -17417986.14 -17417986.13 -17417986.08 0.0272 0.0270  
 Venus -52397-03-31 08:23 J -17416491.34 -17416491.15 -17416490.94 0.0265 0.0106  
 Venus -52397-11-15 15:21 J -17416262.01 -17416261.86 -17416261.70 0.0265 0.0189  
 Mars -52390-01-30 20:37 J -17413994.91 -17413994.64 -17413994.36 0.0274 0.0130  
 Mercury -52389-12-20 08:37 J -17413305.24 -17413305.14 -17413305.03 0.0280 0.0186  
 Mercury -52388-03-18 21:21 J -17413216.74 -17413216.61 -17413216.47 0.0281 0.0085  
 Mercury -52388-06-15 10:04 J -17413128.22 -17413128.08 -17413127.95 0.0282 0.0019  
 Mercury -52388-09-11 22:18 J -17413039.69 -17413039.57 -17413039.45 0.0282 0.0117  
 Mercury -52388-12-09 10:33 J -17412951.14 -17412951.06 -17412950.97 0.0283 0.0217  
 Earth -52387-08-16 05:59 J -17412701.49 -17412701.25 -17412701.01 0.0286 0.0036  
 Moon -52387-08-16 09:35 J -17412701.34 -17412701.10 -17412700.87 0.0286 0.0043 \*  
 Earth -52386-08-29 20:09 J -17412322.75 -17412322.66 -17412322.55 0.0289 0.0261  
 Moon -52386-08-29 23:01 J -17412322.65 -17412322.54 -17412322.40 0.0289 0.0249 \*



Venus -52382-04-29 09:21 J -17410984.32 -17410984.11 -17410983.91 0.0296 0.0005  
 Mars -52376-02-07 13:40 J -17408873.08 -17408872.93 -17408872.76 0.0286 0.0232  
 Mercury -52375-10-17 12:57 J -17408256.10 -17408255.96 -17408255.81 0.0280 0.0158  
 Mercury -52374-01-14 09:06 J -17408167.29 -17408167.12 -17408166.95 0.0279 0.0032  
 Mercury -52374-04-13 05:16 J -17408078.44 -17408078.28 -17408078.11 0.0278 0.0094  
 Mercury -52374-07-11 01:40 J -17407989.53 -17407989.43 -17407989.32 0.0278 0.0222  
 Earth -52373-02-08 13:25 J -17407777.16 -17407776.94 -17407776.70 0.0276 0.0102  
 Moon -52373-02-08 15:21 J -17407777.10 -17407776.86 -17407776.62 0.0276 0.0093 \*  
 Moon -52372-02-20 04:47 J -17407399.49 -17407399.30 -17407399.10 0.0273 0.0174  
 Earth -52372-02-20 07:54 J -17407399.36 -17407399.17 -17407398.96 0.0273 0.0160 \*  
 Venus -52368-10-11 16:18 J -17405705.04 -17405704.82 -17405704.61 0.0265 0.0055  
 Venus -52367-05-28 23:16 J -17405475.61 -17405475.53 -17405475.43 0.0265 0.0240  
 Mercury -52359-05-09 12:28 J -17402573.08 -17402572.98 -17402572.89 0.0280 0.0203  
 Mercury -52359-08-06 00:57 J -17402484.58 -17402484.46 -17402484.33 0.0281 0.0102  
 Mercury -52359-11-02 13:40 J -17402396.07 -17402395.93 -17402395.79 0.0282 0.0006  
 Mercury -52358-01-30 01:54 J -17402307.54 -17402307.42 -17402307.29 0.0282 0.0101  
 Mercury -52358-04-28 14:23 J -17402219.00 -17402218.90 -17402218.81 0.0283 0.0201  
 Moon -52358-08-10 22:18 J -17402114.76 -17402114.57 -17402114.36 0.0284 0.0162  
 Earth -52358-08-11 01:54 J -17402114.61 -17402114.42 -17402114.21 0.0284 0.0157 \*  
 Moon -52357-08-23 11:30 J -17401736.24 -17401736.02 -17401735.81 0.0287 0.0126  
 Earth -52357-08-23 14:09 J -17401736.11 -17401735.91 -17401735.69 0.0287 0.0136 \*  
 Venus -52353-11-08 21:06 J -17400197.82 -17400197.62 -17400197.42 0.0295 0.0066  
 Mercury -52345-03-05 14:37 J -17397524.02 -17397523.89 -17397523.76 0.0280 0.0182  
 Mercury -52345-06-02 10:33 J -17397435.23 -17397435.06 -17397434.89 0.0279 0.0057  
 Mercury -52345-08-30 06:42 J -17397346.39 -17397346.22 -17397346.05 0.0279 0.0069  
 Mercury -52345-11-27 03:06 J -17397257.49 -17397257.37 -17397257.24 0.0278 0.0196  
 Moon -52344-02-02 10:18 J -17397190.22 -17397190.07 -17397189.91 0.0277 0.0210  
 Earth -52344-02-02 11:45 J -17397190.15 -17397190.01 -17397189.84 0.0277 0.0214 \*  
 Earth -52343-02-15 07:54 J -17396812.41 -17396812.17 -17396811.93 0.0274 0.0050  
 Moon -52343-02-15 10:33 J -17396812.29 -17396812.06 -17396811.82 0.0274 0.0063 \*

Venus -52338-04-23 21:35 J -17394918.82 -17394918.60 -17394918.38 0.0265 0.0012  
 Mars -52332-05-06 03:35 J -17392714.61 -17392714.35 -17392714.07 0.0272 0.0140  
 Mercury -52330-09-26 13:54 J -17391840.99 -17391840.92 -17391840.84 0.0280 0.0236  
 Mercury -52330-12-24 02:37 J -17391752.51 -17391752.39 -17391752.26 0.0280 0.0134  
 Mercury -52329-03-21 15:21 J -17391664.00 -17391663.86 -17391663.72 0.0281 0.0033  
 Mercury -52329-06-18 03:49 J -17391575.48 -17391575.34 -17391575.21 0.0282 0.0068  
 Mercury -52329-09-14 16:04 J -17391486.94 -17391486.83 -17391486.72 0.0283 0.0168  
 Mercury -52329-12-12 04:18 J -17391398.36 -17391398.32 -17391398.28 0.0284 0.0268  
 Earth -52328-08-17 20:37 J -17391149.89 -17391149.64 -17391149.40 0.0286 0.0005  
 Moon -52328-08-17 23:01 J -17391149.79 -17391149.54 -17391149.29 0.0286 0.0008 \*  
 Moon -52327-08-31 10:04 J -17390771.10 -17390771.08 -17390771.02 0.0289 0.0285  
 Venus -52324-10-04 08:37 J -17389641.22 -17389641.14 -17389641.05 0.0296 0.0269  
 Venus -52323-05-22 01:25 J -17389411.63 -17389411.44 -17389411.25 0.0296 0.0115  
 Mars -52318-05-18 00:13 J -17387589.76 -17387589.49 -17387589.22 0.0288 0.0032  
 Mercury -52316-07-23 14:37 J -17386792.00 -17386791.89 -17386791.78 0.0280 0.0218  
 Mercury -52316-10-20 10:18 J -17386703.23 -17386703.07 -17386702.90 0.0280 0.0093  
 Mercury -52315-01-17 06:28 J -17386614.40 -17386614.23 -17386614.05 0.0279 0.0034  
 Mercury -52315-04-16 02:52 J -17386525.52 -17386525.38 -17386525.23 0.0278 0.0160  
 Moon -52314-02-10 00:28 J -17386225.73 -17386225.48 -17386225.24 0.0275 0.0057  
 Earth -52314-02-10 03:06 J -17386225.61 -17386225.37 -17386225.13 0.0275 0.0068 \*  
 Moon -52313-02-22 17:45 J -17385847.92 -17385847.76 -17385847.60 0.0272 0.0207  
 Earth -52313-02-22 20:23 J -17385847.81 -17385847.65 -17385847.46 0.0272 0.0192 \*  
 Venus -52309-03-18 21:21 J -17384361.65 -17384361.61 -17384361.55 0.0265 0.0258  
 Venus -52309-11-03 04:47 J -17384132.52 -17384132.30 -17384132.08 0.0265 0.0037  
 Mars -52302-06-27 19:54 J -17381704.89 -17381704.67 -17381704.43 0.0275 0.0182  
 Mercury -52300-02-12 17:16 J -17381108.83 -17381108.78 -17381108.72 0.0280 0.0255  
 Mercury -52300-05-12 05:59 J -17381020.36 -17381020.25 -17381020.13 0.0280 0.0154  
 Mercury -52300-08-08 18:42 J -17380931.86 -17380931.72 -17380931.59 0.0281 0.0052  
 Mercury -52300-11-05 07:11 J -17380843.34 -17380843.20 -17380843.07 0.0282 0.0049  
 Mercury -52299-02-01 19:25 J -17380754.80 -17380754.69 -17380754.57 0.0283 0.0150

Mercury -52299-05-01 07:40 J -17380666.24 -17380666.18 -17380666.11 0.0284 0.0250  
 Moon -52299-08-12 12:28 J -17380563.19 -17380562.98 -17380562.77 0.0284 0.0129  
 Earth -52299-08-12 14:37 J -17380563.10 -17380562.89 -17380562.67 0.0284 0.0123 \*  
 Earth -52298-08-26 03:35 J -17380184.54 -17380184.35 -17380184.15 0.0288 0.0172  
 Moon -52298-08-26 05:01 J -17380184.48 -17380184.29 -17380184.09 0.0288 0.0160 \*  
 Venus -52294-04-16 19:40 J -17378854.83 -17378854.68 -17378854.53 0.0295 0.0200  
 Venus -52294-12-02 12:28 J -17378625.14 -17378624.98 -17378624.82 0.0296 0.0183  
 Mars -52288-07-05 13:25 J -17376582.95 -17376582.94 -17376582.90 0.0285 0.0285  
 Mercury -52287-12-10 16:18 J -17376059.90 -17376059.82 -17376059.73 0.0281 0.0241  
 Mercury -52286-03-09 11:59 J -17375971.15 -17375971.00 -17375970.84 0.0280 0.0117  
 Mercury -52286-06-06 08:09 J -17375882.34 -17375882.16 -17375881.98 0.0279 0.0009  
 Mercury -52286-09-03 04:18 J -17375793.47 -17375793.32 -17375793.16 0.0278 0.0136  
 Mercury -52286-12-01 00:57 J -17375704.51 -17375704.46 -17375704.40 0.0278 0.0263  
 Earth -52285-02-05 02:09 J -17375638.60 -17375638.41 -17375638.23 0.0277 0.0180  
 Moon -52285-02-05 04:33 J -17375638.49 -17375638.31 -17375638.11 0.0277 0.0173 \*  
 Earth -52284-02-16 21:21 J -17375260.84 -17375260.61 -17375260.37 0.0274 0.0084  
 Moon -52284-02-17 00:57 J -17375260.69 -17375260.46 -17375260.22 0.0274 0.0097 \*  
 Venus -52280-09-29 03:35 J -17373575.47 -17373575.35 -17373575.21 0.0265 0.0212  
 Venus -52279-05-16 10:33 J -17373346.27 -17373346.06 -17373345.85 0.0265 0.0081  
 Mercury -52271-09-29 07:25 J -17370288.29 -17370288.19 -17370288.08 0.0280 0.0187  
 Mercury -52271-12-26 20:09 J -17370199.79 -17370199.66 -17370199.53 0.0281 0.0086  
 Mercury -52270-03-25 08:37 J -17370111.28 -17370111.14 -17370111.00 0.0281 0.0016  
 Mercury -52270-06-21 21:06 J -17370022.75 -17370022.62 -17370022.50 0.0282 0.0116  
 Earth -52270-08-06 22:04 J -17369976.67 -17369976.58 -17369976.46 0.0283 0.0254  
 Moon -52270-08-07 00:42 J -17369976.58 -17369976.47 -17369976.36 0.0283 0.0253 \*  
 Mercury -52270-09-18 09:21 J -17369934.20 -17369934.11 -17369934.02 0.0283 0.0216  
 Moon -52269-08-19 06:28 J -17369598.48 -17369598.23 -17369597.98 0.0286 0.0023  
 Earth -52269-08-19 08:23 J -17369598.39 -17369598.15 -17369597.91 0.0286 0.0035 \*  
 Venus -52265-10-26 23:01 J -17368068.71 -17368068.54 -17368068.36 0.0296 0.0155  
 Venus -52264-06-13 15:49 J -17367838.96 -17367838.84 -17367838.70 0.0296 0.0229

Mercury -52257-04-28 15:35 J -17365327.85 -17365327.85 -17365327.83 0.0281 0.0280  
 Mercury -52257-07-26 11:16 J -17365239.16 -17365239.03 -17365238.88 0.0280 0.0156  
 Mercury -52257-10-23 07:25 J -17365150.36 -17365150.19 -17365150.02 0.0279 0.0030  
 Mercury -52256-01-20 03:35 J -17365061.51 -17365061.35 -17365061.18 0.0278 0.0097  
 Mercury -52256-04-18 23:59 J -17364972.59 -17364972.50 -17364972.39 0.0278 0.0224  
 Moon -52255-02-11 11:45 J -17364674.25 -17364674.01 -17364673.77 0.0275 0.0023  
 Earth -52255-02-11 15:06 J -17364674.12 -17364673.87 -17364673.63 0.0275 0.0035 \*  
 Earth -52254-02-24 07:54 J -17364296.31 -17364296.17 -17364296.03 0.0272 0.0223  
 Moon -52254-02-24 08:23 J -17364296.25 -17364296.15 -17364296.02 0.0272 0.0238 \*  
 Venus -52250-04-11 09:21 J -17362789.28 -17362789.11 -17362788.94 0.0265 0.0167  
 Venus -52250-11-26 16:18 J -17362560.01 -17362559.82 -17362559.62 0.0265 0.0127  
 Mars -52244-09-30 19:54 J -17360424.96 -17360424.67 -17360424.36 0.0273 0.0095  
 Mercury -52241-02-16 10:33 J -17359556.15 -17359556.06 -17359555.97 0.0280 0.0208  
 Mercury -52241-05-14 23:16 J -17359467.66 -17359467.53 -17359467.40 0.0281 0.0107  
 Mercury -52241-08-11 11:45 J -17359379.15 -17359379.01 -17359378.87 0.0282 0.0007  
 Mercury -52241-11-08 00:13 J -17359290.62 -17359290.49 -17359290.36 0.0282 0.0095  
 Mercury -52240-02-04 12:28 J -17359202.07 -17359201.98 -17359201.88 0.0283 0.0196  
 Earth -52240-08-14 00:42 J -17359011.69 -17359011.47 -17359011.23 0.0285 0.0091  
 Moon -52240-08-14 02:37 J -17359011.61 -17359011.39 -17359011.17 0.0285 0.0098 \*  
 Earth -52239-08-27 14:37 J -17358633.06 -17358632.89 -17358632.72 0.0288 0.0206  
 Moon -52239-08-27 18:13 J -17358632.91 -17358632.74 -17358632.55 0.0288 0.0192 \*  
 Venus -52235-05-09 09:35 J -17357282.29 -17357282.10 -17357281.90 0.0295 0.0089  
 Venus -52235-12-25 02:23 J -17357052.41 -17357052.40 -17357052.38 0.0296 0.0294  
 Mars -52230-10-12 20:52 J -17355299.90 -17355299.63 -17355299.36 0.0288 0.0020  
 Mercury -52228-12-13 13:11 J -17354507.08 -17354506.95 -17354506.82 0.0280 0.0180  
 Mercury -52227-03-12 09:06 J -17354418.29 -17354418.12 -17354417.95 0.0280 0.0055  
 Mercury -52227-06-09 05:16 J -17354329.45 -17354329.28 -17354329.11 0.0279 0.0072  
 Mercury -52227-09-06 01:25 J -17354240.56 -17354240.44 -17354240.31 0.0278 0.0199  
 Earth -52226-02-06 13:54 J -17354087.12 -17354086.92 -17354086.71 0.0277 0.0149  
 Moon -52226-02-06 17:16 J -17354086.99 -17354086.78 -17354086.56 0.0277 0.0139 \*

Moon -52225-02-19 08:23 J -17353709.37 -17353709.15 -17353708.92 0.0273 0.0130  
 Earth -52225-02-19 08:52 J -17353709.35 -17353709.13 -17353708.90 0.0273 0.0115 \*  
 Venus -52221-10-21 15:35 J -17352003.04 -17352002.85 -17352002.65 0.0265 0.0121  
 Venus -52220-06-07 22:04 J -17351773.73 -17351773.58 -17351773.40 0.0264 0.0172  
 Mars -52214-11-21 17:01 J -17349415.96 -17349415.79 -17349415.59 0.0274 0.0223  
 Mercury -52212-07-05 11:45 J -17348824.07 -17348824.01 -17348823.94 0.0279 0.0243  
 Mercury -52212-10-02 00:28 J -17348735.59 -17348735.48 -17348735.35 0.0280 0.0142  
 Mercury -52212-12-29 13:11 J -17348647.09 -17348646.95 -17348646.81 0.0281 0.0041  
 Mercury -52211-03-28 01:40 J -17348558.57 -17348558.43 -17348558.30 0.0282 0.0060  
 Mercury -52211-06-24 13:54 J -17348470.03 -17348469.92 -17348469.81 0.0282 0.0160  
 Moon -52211-08-08 05:16 J -17348425.41 -17348425.28 -17348425.11 0.0283 0.0228  
 Earth -52211-08-08 07:25 J -17348425.34 -17348425.19 -17348425.04 0.0283 0.0224 \*  
 Mercury -52211-09-21 02:09 J -17348381.46 -17348381.41 -17348381.36 0.0283 0.0260  
 Moon -52210-08-21 14:09 J -17348047.14 -17348046.91 -17348046.66 0.0286 0.0054  
 Earth -52210-08-21 17:45 J -17348046.99 -17348046.76 -17348046.52 0.0286 0.0066 \*  
 Venus -52206-11-19 11:30 J -17346496.22 -17346496.02 -17346495.81 0.0296 0.0048  
 Mercury -52198-05-02 11:30 J -17343775.11 -17343775.02 -17343774.91 0.0281 0.0224  
 Mercury -52198-07-30 07:25 J -17343686.35 -17343686.19 -17343686.02 0.0280 0.0099  
 Mercury -52198-10-27 03:35 J -17343597.52 -17343597.35 -17343597.17 0.0279 0.0029  
 Mercury -52197-01-23 23:59 J -17343508.64 -17343508.50 -17343508.35 0.0278 0.0155  
 Moon -52197-01-31 23:01 J -17343500.59 -17343500.54 -17343500.47 0.0278 0.0268  
 Earth -52197-02-01 02:09 J -17343500.44 -17343500.41 -17343500.37 0.0278 0.0274  
 Earth -52196-02-13 00:13 J -17343122.73 -17343122.49 -17343122.24 0.0275 0.0007  
 Moon -52196-02-13 01:11 J -17343122.69 -17343122.45 -17343122.21 0.0275 0.0009 \*  
 Earth -52195-02-25 16:33 J -17342744.88 -17342744.81 -17342744.70 0.0272 0.0253  
 Moon -52195-02-25 20:37 J -17342744.67 -17342744.64 -17342744.60 0.0272 0.0268  
 Venus -52191-05-03 20:09 J -17341216.87 -17341216.66 -17341216.45 0.0265 0.0080  
 Venus -52191-12-19 02:52 J -17340987.50 -17340987.38 -17340987.24 0.0265 0.0213  
 Mercury -52183-11-22 14:23 J -17338091.94 -17338091.90 -17338091.86 0.0279 0.0268  
 Mercury -52182-02-19 03:06 J -17338003.48 -17338003.37 -17338003.25 0.0280 0.0166

Mercury -52182-05-18 15:49 J -17337914.98 -17337914.84 -17337914.70 0.0281 0.0065  
 Mercury -52182-08-15 04:18 J -17337826.46 -17337826.32 -17337826.18 0.0282 0.0036  
 Mercury -52182-11-11 16:47 J -17337737.92 -17337737.80 -17337737.68 0.0283 0.0136  
 Mercury -52181-02-08 05:01 J -17337649.36 -17337649.29 -17337649.22 0.0283 0.0236  
 Earth -52181-08-15 07:25 J -17337460.42 -17337460.19 -17337459.95 0.0285 0.0062  
 Moon -52181-08-15 11:01 J -17337460.28 -17337460.04 -17337459.80 0.0285 0.0069 \*  
 Earth -52180-08-28 21:21 J -17337081.73 -17337081.61 -17337081.46 0.0288 0.0237  
 Moon -52180-08-28 22:04 J -17337081.73 -17337081.58 -17337081.41 0.0288 0.0222 \*  
 Venus -52176-05-31 20:52 J -17335709.83 -17335709.63 -17335709.42 0.0296 0.0016  
 Mars -52171-01-18 22:33 J -17334016.69 -17334016.56 -17334016.42 0.0290 0.0252  
 Mercury -52169-09-18 13:11 J -17333043.02 -17333042.95 -17333042.87 0.0281 0.0249  
 Mercury -52169-12-16 09:06 J -17332954.28 -17332954.12 -17332953.97 0.0280 0.0125  
 Mercury -52168-03-15 05:01 J -17332865.46 -17332865.29 -17332865.11 0.0279 0.0002  
 Mercury -52168-06-12 01:11 J -17332776.60 -17332776.45 -17332776.29 0.0279 0.0128  
 Mercury -52168-09-08 21:35 J -17332687.65 -17332687.60 -17332687.52 0.0278 0.0256  
 Moon -52167-02-07 21:49 J -17332535.82 -17332535.59 -17332535.35 0.0276 0.0109  
 Earth -52167-02-07 22:47 J -17332535.77 -17332535.55 -17332535.32 0.0276 0.0121 \*  
 Moon -52166-02-20 13:40 J -17332158.13 -17332157.93 -17332157.73 0.0273 0.0160  
 Earth -52166-02-20 17:30 J -17332157.98 -17332157.77 -17332157.56 0.0273 0.0143 \*  
 Venus -52162-11-14 02:09 J -17330430.63 -17330430.41 -17330430.19 0.0265 0.0034  
 Venus -52161-06-30 08:37 J -17330201.18 -17330201.14 -17330201.08 0.0264 0.0256  
 Mars -52155-02-24 12:42 J -17328136.27 -17328135.97 -17328135.65 0.0272 0.0054  
 Mercury -52153-07-08 04:33 J -17327271.41 -17327271.31 -17327271.22 0.0279 0.0201  
 Mercury -52153-10-04 17:01 J -17327182.91 -17327182.79 -17327182.66 0.0280 0.0101  
 Mercury -52152-01-01 05:45 J -17327094.40 -17327094.26 -17327094.13 0.0281 0.0007  
 Mercury -52152-03-30 17:59 J -17327005.88 -17327005.75 -17327005.62 0.0282 0.0100  
 Mercury -52152-06-27 06:13 J -17326917.33 -17326917.24 -17326917.14 0.0283 0.0200  
 Moon -52152-08-09 09:21 J -17326874.26 -17326874.11 -17326873.93 0.0283 0.0204  
 Earth -52152-08-09 13:11 J -17326874.12 -17326873.95 -17326873.77 0.0283 0.0198 \*  
 Moon -52151-08-22 23:30 J -17326495.75 -17326495.52 -17326495.30 0.0287 0.0083

Earth -52151-08-22 23:59 J -17326495.73 -17326495.50 -17326495.27 0.0287 0.0094 \*  
 Venus -52147-12-11 22:04 J -17324923.78 -17324923.58 -17324923.38 0.0296 0.0053  
 Mars -52141-03-07 09:21 J -17323011.37 -17323011.11 -17323010.83 0.0288 0.0046  
 Mercury -52139-05-05 06:57 J -17322222.34 -17322222.21 -17322222.07 0.0281 0.0172  
 Mercury -52139-08-02 02:52 J -17322133.55 -17322133.38 -17322133.21 0.0280 0.0047  
 Mercury -52139-10-29 23:01 J -17322044.70 -17322044.54 -17322044.37 0.0279 0.0081  
 Mercury -52138-01-26 19:25 J -17321955.80 -17321955.69 -17321955.56 0.0278 0.0208  
 Earth -52138-02-02 08:23 J -17321949.24 -17321949.15 -17321949.03 0.0278 0.0249  
 Moon -52138-02-02 09:21 J -17321949.22 -17321949.11 -17321948.99 0.0278 0.0241 \*  
 Earth -52137-02-15 06:42 J -17321571.47 -17321571.22 -17321570.98 0.0275 0.0021  
 Moon -52137-02-15 10:18 J -17321571.31 -17321571.07 -17321570.82 0.0275 0.0037 \*  
 Jupiter -52135-04-04 01:25 J -17320792.86 -17320792.44 -17320792.00 0.0269 0.0122  
 Venus -52132-05-26 05:16 J -17319644.50 -17319644.28 -17319644.06 0.0265 0.0002  
 Mars -52125-04-16 14:09 J -17317127.00 -17317126.91 -17317126.79 0.0274 0.0258  
 Mercury -52124-11-25 06:28 J -17316539.30 -17316539.23 -17316539.14 0.0279 0.0230  
 Mercury -52123-02-21 19:25 J -17316450.82 -17316450.69 -17316450.57 0.0280 0.0128  
 Mercury -52123-05-21 07:54 J -17316362.31 -17316362.17 -17316362.03 0.0281 0.0027  
 Mercury -52123-08-17 20:23 J -17316273.78 -17316273.65 -17316273.52 0.0282 0.0073  
 Mercury -52123-11-14 08:37 J -17316185.24 -17316185.14 -17316185.03 0.0283 0.0174  
 Mercury -52122-02-10 20:52 J -17316096.66 -17316096.63 -17316096.59 0.0284 0.0273  
 Earth -52122-08-17 11:16 J -17315909.27 -17315909.03 -17315908.79 0.0285 0.0037  
 Moon -52122-08-17 11:59 J -17315909.25 -17315909.00 -17315908.75 0.0285 0.0046 \*  
 Moon -52121-08-29 22:04 J -17315530.69 -17315530.58 -17315530.44 0.0289 0.0247  
 Earth -52121-08-30 01:11 J -17315530.53 -17315530.45 -17315530.34 0.0289 0.0263 \*  
 Venus -52118-11-06 12:57 J -17314367.03 -17314366.96 -17314366.87 0.0295 0.0271  
 Venus -52117-06-23 05:59 J -17314137.44 -17314137.25 -17314137.06 0.0296 0.0111  
 Mercury -52110-09-22 07:54 J -17311490.29 -17311490.17 -17311490.05 0.0281 0.0201  
 Mercury -52110-12-20 03:49 J -17311401.51 -17311401.34 -17311401.17 0.0280 0.0076  
 Mercury -52109-03-17 23:59 J -17311312.67 -17311312.50 -17311312.33 0.0279 0.0051  
 Mercury -52109-06-14 20:23 J -17311223.78 -17311223.65 -17311223.51 0.0278 0.0178

Moon -52108-02-09 00:13 J -17310984.72 -17310984.49 -17310984.24 0.0276 0.0084  
 Earth -52108-02-09 03:49 J -17310984.56 -17310984.34 -17310984.10 0.0276 0.0097 \*  
 Moon -52107-02-21 21:06 J -17310606.78 -17310606.62 -17310606.43 0.0273 0.0184  
 Earth -52107-02-21 22:33 J -17310606.75 -17310606.56 -17310606.36 0.0273 0.0168 \*  
 Venus -52103-04-21 04:18 J -17309087.40 -17309087.32 -17309087.23 0.0265 0.0243  
 Venus -52103-12-06 11:01 J -17308858.25 -17308858.04 -17308857.82 0.0264 0.0049  
 Mercury -52094-04-14 07:54 J -17305807.21 -17305807.17 -17305807.13 0.0278 0.0265  
 Mercury -52094-07-11 20:23 J -17305718.76 -17305718.65 -17305718.53 0.0279 0.0165  
 Mercury -52094-10-08 09:06 J -17305630.25 -17305630.12 -17305629.98 0.0280 0.0064  
 Mercury -52093-01-04 21:35 J -17305541.74 -17305541.60 -17305541.46 0.0281 0.0037  
 Mercury -52093-04-02 09:49 J -17305453.20 -17305453.09 -17305452.97 0.0282 0.0137  
 Mercury -52093-06-29 22:04 J -17305364.65 -17305364.58 -17305364.50 0.0283 0.0236  
 Moon -52093-08-10 15:49 J -17305323.01 -17305322.84 -17305322.65 0.0283 0.0184  
 Earth -52093-08-10 16:04 J -17305323.01 -17305322.83 -17305322.63 0.0283 0.0175 \*  
 Earth -52092-08-24 02:52 J -17304944.60 -17304944.38 -17304944.16 0.0287 0.0119  
 Moon -52092-08-24 05:59 J -17304944.47 -17304944.25 -17304944.03 0.0287 0.0105 \*  
 Venus -52088-05-18 12:57 J -17303581.07 -17303580.96 -17303580.83 0.0296 0.0235  
 Venus -52087-01-03 05:59 J -17303351.43 -17303351.25 -17303351.07 0.0296 0.0146  
 Mars -52083-06-14 01:25 J -17301728.58 -17301728.44 -17301728.28 0.0290 0.0238  
 Mercury -52080-02-08 05:16 J -17300758.35 -17300758.28 -17300758.20 0.0281 0.0252  
 Mercury -52080-05-08 01:11 J -17300669.60 -17300669.45 -17300669.29 0.0280 0.0127  
 Mercury -52080-08-04 21:21 J -17300580.79 -17300580.61 -17300580.44 0.0280 0.0005  
 Mercury -52080-11-01 17:30 J -17300491.92 -17300491.77 -17300491.61 0.0279 0.0127  
 Mercury -52079-01-29 14:09 J -17300402.98 -17300402.91 -17300402.84 0.0278 0.0254  
 Earth -52079-02-03 11:45 J -17300398.15 -17300398.01 -17300397.87 0.0278 0.0226  
 Moon -52079-02-03 15:06 J -17300398.01 -17300397.87 -17300397.71 0.0278 0.0217 \*  
 Earth -52078-02-16 09:35 J -17300020.34 -17300020.10 -17300019.85 0.0275 0.0044  
 Moon -52078-02-16 10:33 J -17300020.30 -17300020.06 -17300019.80 0.0275 0.0059 \*  
 Venus -52074-11-01 05:45 J -17298301.38 -17298301.26 -17298301.12 0.0265 0.0210  
 Venus -52073-06-17 12:42 J -17298072.17 -17298071.97 -17298071.75 0.0264 0.0081



Mars -52067-07-20 23:30 J -17295847.83 -17295847.52 -17295847.20 0.0272 0.0027  
 Mercury -52065-11-27 22:18 J -17294986.67 -17294986.57 -17294986.47 0.0280 0.0195  
 Mercury -52064-02-24 11:01 J -17294898.17 -17294898.04 -17294897.91 0.0280 0.0094  
 Mercury -52064-05-23 23:30 J -17294809.66 -17294809.52 -17294809.38 0.0281 0.0007  
 Mercury -52064-08-20 11:45 J -17294721.13 -17294721.01 -17294720.88 0.0282 0.0107  
 Mercury -52064-11-16 23:59 J -17294632.58 -17294632.50 -17294632.40 0.0283 0.0207  
 Moon -52063-08-18 08:37 J -17294358.39 -17294358.14 -17294357.89 0.0285 0.0029  
 Earth -52063-08-18 11:59 J -17294358.24 -17294358.00 -17294357.75 0.0285 0.0015 \*  
 Moon -52062-08-31 23:16 J -17293979.60 -17293979.53 -17293979.44 0.0289 0.0271  
 Earth -52062-09-01 02:09 J -17293979.44 -17293979.41 -17293979.37 0.0289 0.0285 \*  
 Venus -52059-11-28 19:54 J -17292794.83 -17292794.67 -17292794.51 0.0295 0.0181  
 Venus -52058-07-16 12:57 J -17292565.10 -17292564.96 -17292564.80 0.0296 0.0201  
 Mars -52053-08-01 04:33 J -17290722.57 -17290722.31 -17290722.04 0.0288 0.0081  
 Mercury -52051-09-25 01:54 J -17289937.56 -17289937.42 -17289937.28 0.0281 0.0158  
 Mercury -52051-12-22 21:49 J -17289848.76 -17289848.59 -17289848.41 0.0280 0.0032  
 Mercury -52050-03-21 17:59 J -17289759.91 -17289759.75 -17289759.58 0.0279 0.0095  
 Mercury -52050-06-18 14:37 J -17289670.99 -17289670.89 -17289670.78 0.0278 0.0223  
 Moon -52049-02-11 04:33 J -17289433.54 -17289433.31 -17289433.08 0.0276 0.0062  
 Earth -52049-02-11 05:59 J -17289433.49 -17289433.25 -17289433.01 0.0276 0.0075 \*  
 Earth -52048-02-23 00:28 J -17289055.65 -17289055.48 -17289055.29 0.0273 0.0190  
 Moon -52048-02-23 03:35 J -17289055.50 -17289055.35 -17289055.18 0.0273 0.0204 \*  
 Venus -52044-05-13 11:45 J -17287515.17 -17287515.01 -17287514.83 0.0265 0.0164  
 Venus -52044-12-28 18:28 J -17287285.92 -17287285.73 -17287285.53 0.0264 0.0127  
 Mercury -52035-04-16 23:30 J -17284254.59 -17284254.52 -17284254.44 0.0278 0.0230  
 Mercury -52035-07-14 12:13 J -17284166.11 -17284165.99 -17284165.87 0.0279 0.0130  
 Mercury -52035-10-11 00:42 J -17284077.60 -17284077.47 -17284077.33 0.0280 0.0030  
 Mercury -52034-01-07 13:11 J -17283989.08 -17283988.95 -17283988.82 0.0281 0.0070  
 Mercury -52034-04-06 01:25 J -17283900.55 -17283900.44 -17283900.33 0.0282 0.0170  
 Mercury -52034-07-03 13:25 J -17283811.97 -17283811.94 -17283811.89 0.0283 0.0269  
 Earth -52034-08-12 17:16 J -17283771.99 -17283771.78 -17283771.58 0.0283 0.0153

Moon -52034-08-12 20:52 J -17283771.82 -17283771.63 -17283771.43 0.0283 0.0166 \*  
 Earth -52033-08-25 03:35 J -17283393.56 -17283393.35 -17283393.13 0.0286 0.0141  
 Moon -52033-08-25 06:13 J -17283393.46 -17283393.24 -17283393.01 0.0286 0.0126 \*  
 Venus -52029-06-09 19:40 J -17282008.86 -17282008.68 -17282008.50 0.0296 0.0146  
 Venus -52028-01-25 12:28 J -17281779.10 -17281778.98 -17281778.85 0.0296 0.0234  
 Mercury -52021-02-11 22:33 J -17279205.66 -17279205.56 -17279205.44 0.0281 0.0212  
 Mercury -52021-05-10 18:42 J -17279116.89 -17279116.72 -17279116.56 0.0280 0.0087  
 Mercury -52021-08-07 14:52 J -17279028.06 -17279027.88 -17279027.71 0.0280 0.0041  
 Mercury -52021-11-04 11:01 J -17278939.17 -17278939.04 -17278938.89 0.0279 0.0168  
 Earth -52020-02-04 11:30 J -17278847.18 -17278847.02 -17278846.85 0.0278 0.0207  
 Moon -52020-02-04 12:57 J -17278847.13 -17278846.96 -17278846.77 0.0278 0.0195 \*  
 Moon -52019-02-17 06:28 J -17278469.47 -17278469.23 -17278468.99 0.0275 0.0078  
 Earth -52019-02-17 09:35 J -17278469.34 -17278469.10 -17278468.86 0.0275 0.0064 \*  
 Venus -52015-11-23 11:59 J -17276729.17 -17276729.00 -17276728.80 0.0265 0.0135  
 Venus -52014-07-10 18:57 J -17276499.87 -17276499.71 -17276499.52 0.0264 0.0157  
 Mercury -52006-09-04 00:57 J -17273522.50 -17273522.46 -17273522.41 0.0279 0.0263  
 Mercury -52006-12-01 13:40 J -17273434.04 -17273433.93 -17273433.81 0.0280 0.0163  
 Mercury -52005-02-28 02:23 J -17273345.54 -17273345.40 -17273345.27 0.0280 0.0062  
 Mercury -52005-05-26 14:52 J -17273257.02 -17273256.88 -17273256.75 0.0281 0.0038  
 Earth -52005-08-06 02:52 J -17273185.39 -17273185.38 -17273185.36 0.0282 0.0281  
 Mercury -52005-08-23 03:06 J -17273168.49 -17273168.37 -17273168.25 0.0282 0.0138  
 Mercury -52005-11-19 15:21 J -17273079.93 -17273079.86 -17273079.79 0.0283 0.0237  
 Moon -52004-08-19 08:52 J -17272807.36 -17272807.13 -17272806.89 0.0285 0.0010  
 Earth -52004-08-19 11:01 J -17272807.28 -17272807.04 -17272806.80 0.0285 0.0006 \*

# 52ND MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 52nd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-52000-12-21 01:11 J	-17271222.64	-17271222.45	-17271222.26	0.0295	0.0097		
Venus	-51999-08-07 18:13 J	-17270992.79	-17270992.74	-17270992.68	0.0296	0.0284		
Mars	-51995-11-07 11:45 J	-17269440.18	-17269440.01	-17269439.81	0.0290	0.0210		
Mercury	-51992-06-30 23:01 J	-17268473.62	-17268473.54	-17268473.46	0.0282	0.0245		
Mercury	-51992-09-27 18:42 J	-17268384.87	-17268384.72	-17268384.56	0.0281	0.0121		
Mercury	-51992-12-25 14:52 J	-17268296.05	-17268295.88	-17268295.70	0.0280	0.0010		
Mercury	-51991-03-24 11:16 J	-17268207.18	-17268207.03	-17268206.87	0.0279	0.0134		
Mercury	-51991-06-21 07:40 J	-17268118.22	-17268118.18	-17268118.11	0.0278	0.0263		
Earth	-51990-02-12 04:47 J	-17267882.54	-17267882.30	-17267882.06	0.0276	0.0056		
Moon	-51990-02-12 07:25 J	-17267882.43	-17267882.19	-17267881.95	0.0276	0.0042	*	
Earth	-51989-02-24 23:45 J	-17267504.66	-17267504.51	-17267504.34	0.0273	0.0209		
Moon	-51989-02-25 02:23 J	-17267504.53	-17267504.40	-17267504.24	0.0273	0.0221	*	
Venus	-51985-06-04 17:59 J	-17265942.95	-17265942.75	-17265942.54	0.0265	0.0088		
Venus	-51984-01-20 00:42 J	-17265713.60	-17265713.47	-17265713.32	0.0264	0.0202		
Mars	-51979-12-14 03:49 J	-17263559.66	-17263559.34	-17263559.02	0.0271	0.0005		
Mercury	-51976-04-19 15:06 J	-17262701.97	-17262701.87	-17262701.77	0.0278	0.0197		
Mercury	-51976-07-17 03:35 J	-17262613.48	-17262613.35	-17262613.22	0.0279	0.0098		
Mercury	-51976-10-13 16:04 J	-17262524.97	-17262524.83	-17262524.69	0.0280	0.0006		
Mercury	-51975-01-10 04:33 J	-17262436.44	-17262436.31	-17262436.18	0.0281	0.0102		
Mercury	-51975-04-08 16:33 J	-17262347.90	-17262347.81	-17262347.71	0.0282	0.0201		
Earth	-51975-08-13 16:18 J	-17262221.02	-17262220.82	-17262220.59	0.0283	0.0134		
Moon	-51975-08-13 17:59 J	-17262220.96	-17262220.75	-17262220.53	0.0283	0.0148	*	
Moon	-51974-08-27 00:28 J	-17261842.69	-17261842.48	-17261842.26	0.0286	0.0144		
Earth	-51974-08-27 02:37 J	-17261842.58	-17261842.39	-17261842.18	0.0286	0.0161	*	

Venus -51970-07-03 01:11 J -17260436.65 -17260436.45 -17260436.25 0.0295 0.0061  
 Mars -51965-12-24 17:45 J -17258435.02 -17258434.76 -17258434.50 0.0288 0.0083  
 Mercury -51962-02-14 15:21 J -17257652.98 -17257652.86 -17257652.72 0.0281 0.0176  
 Mercury -51962-05-14 11:30 J -17257564.19 -17257564.02 -17257563.85 0.0280 0.0049  
 Mercury -51962-08-11 07:40 J -17257475.34 -17257475.18 -17257475.00 0.0280 0.0079  
 Mercury -51962-11-08 04:18 J -17257386.44 -17257386.32 -17257386.20 0.0279 0.0206  
 Moon -51961-02-06 06:28 J -17257296.42 -17257296.23 -17257296.02 0.0278 0.0173  
 Earth -51961-02-06 09:35 J -17257296.27 -17257296.10 -17257295.91 0.0278 0.0189 \*  
 Moon -51960-02-18 05:01 J -17256918.51 -17256918.29 -17256918.06 0.0275 0.0097  
 Earth -51960-02-18 07:54 J -17256918.41 -17256918.17 -17256917.93 0.0275 0.0083 \*  
 Venus -51956-12-15 17:45 J -17255156.97 -17255156.76 -17255156.54 0.0265 0.0061  
 Venus -51955-08-02 00:42 J -17254927.58 -17254927.47 -17254927.36 0.0264 0.0229  
 Mercury -51947-09-06 16:18 J -17251969.90 -17251969.82 -17251969.74 0.0279 0.0232  
 Mercury -51947-12-04 05:01 J -17251881.41 -17251881.29 -17251881.17 0.0279 0.0132  
 Mercury -51946-03-02 17:30 J -17251792.91 -17251792.77 -17251792.63 0.0280 0.0032  
 Mercury -51946-05-30 05:59 J -17251704.39 -17251704.25 -17251704.12 0.0281 0.0068  
 Moon -51946-08-07 23:45 J -17251634.54 -17251634.51 -17251634.45 0.0282 0.0276  
 Earth -51946-08-08 00:57 J -17251634.53 -17251634.46 -17251634.36 0.0282 0.0263 \*  
 Mercury -51946-08-26 18:13 J -17251615.85 -17251615.74 -17251615.63 0.0282 0.0167  
 Mercury -51946-11-23 06:13 J -17251527.28 -17251527.24 -17251527.19 0.0283 0.0266  
 Earth -51945-08-20 09:06 J -17251256.36 -17251256.12 -17251255.88 0.0285 0.0025  
 Moon -51945-08-20 11:45 J -17251256.25 -17251256.01 -17251255.77 0.0285 0.0009 \*  
 Venus -51940-01-12 05:45 J -17249650.46 -17249650.26 -17249650.05 0.0295 0.0014  
 Mercury -51933-07-03 15:35 J -17246920.96 -17246920.85 -17246920.74 0.0282 0.0211  
 Mercury -51933-09-30 11:16 J -17246832.19 -17246832.03 -17246831.86 0.0281 0.0086  
 Mercury -51933-12-28 07:40 J -17246743.35 -17246743.18 -17246743.01 0.0280 0.0042  
 Mercury -51932-03-27 04:04 J -17246654.47 -17246654.33 -17246654.19 0.0279 0.0170  
 Earth -51931-02-13 01:54 J -17246331.66 -17246331.42 -17246331.17 0.0276 0.0039  
 Moon -51931-02-13 05:01 J -17246331.54 -17246331.29 -17246331.04 0.0276 0.0023 \*  
 Moon -51930-02-25 19:25 J -17245953.80 -17245953.69 -17245953.54 0.0273 0.0235

Earth -51930-02-25 21:06 J -17245953.74 -17245953.62 -17245953.47 0.0273 0.0228 \*  
 Venus -51926-06-27 23:30 J -17244370.74 -17244370.52 -17244370.30 0.0265 0.0014  
 Mercury -51917-01-24 17:59 J -17241237.79 -17241237.75 -17241237.71 0.0277 0.0264  
 Mercury -51917-04-22 06:28 J -17241149.34 -17241149.23 -17241149.11 0.0278 0.0165  
 Mercury -51917-07-19 19:11 J -17241060.84 -17241060.70 -17241060.57 0.0279 0.0065  
 Mercury -51917-10-16 07:25 J -17240972.32 -17240972.19 -17240972.05 0.0280 0.0035  
 Mercury -51916-01-12 19:54 J -17240883.79 -17240883.67 -17240883.55 0.0281 0.0133  
 Mercury -51916-04-11 07:54 J -17240795.24 -17240795.17 -17240795.09 0.0282 0.0231  
 Moon -51916-08-14 12:57 J -17240670.17 -17240669.96 -17240669.73 0.0283 0.0129  
 Earth -51916-08-14 16:18 J -17240670.05 -17240669.82 -17240669.60 0.0283 0.0113 \*  
 Moon -51915-08-27 22:33 J -17240291.75 -17240291.56 -17240291.36 0.0286 0.0166  
 Earth -51915-08-28 01:54 J -17240291.60 -17240291.42 -17240291.23 0.0286 0.0182 \*  
 Venus -51911-07-25 06:13 J -17238864.44 -17238864.24 -17238864.03 0.0295 0.0023  
 Mars -51906-04-01 21:49 J -17237152.76 -17237152.59 -17237152.40 0.0290 0.0214  
 Mercury -51904-11-20 12:13 J -17236189.04 -17236188.99 -17236188.93 0.0282 0.0265  
 Mercury -51903-02-17 07:54 J -17236100.31 -17236100.17 -17236100.01 0.0281 0.0141  
 Mercury -51903-05-17 04:04 J -17236011.50 -17236011.33 -17236011.15 0.0280 0.0015  
 Mercury -51903-08-14 00:28 J -17235922.64 -17235922.48 -17235922.32 0.0280 0.0114  
 Mercury -51903-11-10 21:06 J -17235833.71 -17235833.62 -17235833.53 0.0279 0.0242  
 Moon -51902-02-07 04:04 J -17235745.52 -17235745.33 -17235745.13 0.0278 0.0156  
 Earth -51902-02-07 06:28 J -17235745.41 -17235745.23 -17235745.02 0.0278 0.0172 \*  
 Earth -51901-02-20 05:01 J -17235367.52 -17235367.29 -17235367.06 0.0275 0.0100  
 Moon -51901-02-20 06:28 J -17235367.45 -17235367.23 -17235367.01 0.0275 0.0113 \*  
 Venus -51896-01-06 23:01 J -17233584.76 -17233584.54 -17233584.32 0.0265 0.0013  
 Mars -51890-05-08 22:04 J -17231271.89 -17231271.58 -17231271.26 0.0272 0.0021  
 Mercury -51888-09-09 07:25 J -17230417.28 -17230417.19 -17230417.08 0.0279 0.0201  
 Mercury -51888-12-06 20:09 J -17230328.79 -17230328.66 -17230328.53 0.0279 0.0101  
 Mercury -51887-03-05 08:37 J -17230240.28 -17230240.14 -17230240.00 0.0280 0.0006  
 Mercury -51887-06-01 21:06 J -17230151.75 -17230151.62 -17230151.49 0.0281 0.0098  
 Earth -51887-08-08 23:30 J -17230083.63 -17230083.52 -17230083.39 0.0282 0.0244

Moon -51887-08-09 02:09 J -17230083.49 -17230083.41 -17230083.30 0.0282 0.0259 \*  
 Mercury -51887-08-29 09:06 J -17230063.21 -17230063.12 -17230063.02 0.0282 0.0197  
 Earth -51886-08-22 07:11 J -17229705.44 -17229705.20 -17229704.96 0.0285 0.0044  
 Moon -51886-08-22 10:18 J -17229705.32 -17229705.07 -17229704.83 0.0285 0.0029 \*  
 Venus -51881-02-04 10:18 J -17228078.27 -17228078.07 -17228077.87 0.0295 0.0069  
 Mars -51876-05-19 19:54 J -17226146.92 -17226146.67 -17226146.41 0.0288 0.0104  
 Mercury -51874-07-07 07:54 J -17225368.30 -17225368.17 -17225368.04 0.0282 0.0177  
 Mercury -51874-10-04 03:49 J -17225279.51 -17225279.34 -17225279.16 0.0281 0.0051  
 Mercury -51873-01-01 00:13 J -17225190.66 -17225190.49 -17225190.32 0.0280 0.0077  
 Mercury -51873-03-29 20:37 J -17225101.75 -17225101.64 -17225101.51 0.0279 0.0206  
 Moon -51872-02-13 21:06 J -17224780.88 -17224780.62 -17224780.37 0.0276 0.0008  
 Earth -51872-02-13 22:47 J -17224780.80 -17224780.55 -17224780.30 0.0276 0.0022 \*  
 Moon -51871-02-26 14:37 J -17224402.96 -17224402.89 -17224402.78 0.0273 0.0253  
 Earth -51871-02-26 18:28 J -17224402.83 -17224402.73 -17224402.61 0.0273 0.0244 \*  
 Venus -51868-12-02 21:21 J -17223027.70 -17223027.61 -17223027.49 0.0266 0.0232  
 Venus -51867-07-20 04:47 J -17222798.51 -17222798.30 -17222798.08 0.0265 0.0059  
 Mercury -51858-01-27 09:21 J -17219685.18 -17219685.11 -17219685.02 0.0278 0.0231  
 Mercury -51858-04-25 22:04 J -17219596.70 -17219596.58 -17219596.45 0.0278 0.0131  
 Mercury -51858-07-23 10:33 J -17219508.19 -17219508.06 -17219507.92 0.0279 0.0033  
 Mercury -51858-10-19 23:01 J -17219419.67 -17219419.54 -17219419.41 0.0280 0.0067  
 Mercury -51857-01-16 11:16 J -17219331.14 -17219331.03 -17219330.92 0.0281 0.0165  
 Mercury -51857-04-13 23:16 J -17219242.57 -17219242.53 -17219242.48 0.0282 0.0263  
 Moon -51857-08-15 13:40 J -17219119.15 -17219118.93 -17219118.70 0.0283 0.0108  
 Earth -51857-08-15 16:33 J -17219119.04 -17219118.81 -17219118.58 0.0283 0.0092 \*  
 Earth -51856-08-29 01:54 J -17218740.58 -17218740.42 -17218740.24 0.0286 0.0203  
 Moon -51856-08-29 02:52 J -17218740.54 -17218740.38 -17218740.20 0.0286 0.0191 \*  
 Venus -51853-12-29 19:11 J -17217521.77 -17217521.70 -17217521.60 0.0294 0.0267  
 Venus -51852-08-16 11:45 J -17217292.19 -17217292.01 -17217291.81 0.0295 0.0110  
 Mercury -51845-11-23 04:47 J -17214636.39 -17214636.30 -17214636.20 0.0282 0.0230  
 Mercury -51844-02-20 00:42 J -17214547.63 -17214547.47 -17214547.31 0.0281 0.0104

Mercury -51844-05-19 20:52 J -17214458.80 -17214458.63 -17214458.46 0.0280 0.0022  
 Mercury -51844-08-16 17:16 J -17214369.93 -17214369.78 -17214369.63 0.0280 0.0150  
 Mercury -51844-11-13 13:54 J -17214280.92 -17214280.92 -17214280.92 0.0279 0.0279  
 Earth -51843-02-08 03:49 J -17214194.54 -17214194.34 -17214194.13 0.0278 0.0154  
 Moon -51843-02-08 06:13 J -17214194.45 -17214194.24 -17214194.03 0.0278 0.0139 \*  
 Earth -51842-02-21 02:09 J -17213816.63 -17213816.41 -17213816.18 0.0275 0.0118  
 Moon -51842-02-21 05:45 J -17213816.47 -17213816.26 -17213816.03 0.0275 0.0130 \*  
 Venus -51838-06-14 20:37 J -17212241.77 -17212241.64 -17212241.50 0.0265 0.0205  
 Venus -51837-01-30 04:04 J -17212012.53 -17212012.33 -17212012.12 0.0265 0.0086  
 Mars -51832-08-11 03:49 J -17209992.40 -17209992.34 -17209992.27 0.0270 0.0264  
 Mercury -51829-06-15 10:33 J -17208953.09 -17208953.06 -17208953.02 0.0278 0.0266  
 Mercury -51829-09-11 23:16 J -17208864.64 -17208864.53 -17208864.42 0.0279 0.0167  
 Mercury -51829-12-09 11:45 J -17208776.14 -17208776.01 -17208775.87 0.0280 0.0067  
 Mercury -51828-03-08 00:13 J -17208687.63 -17208687.49 -17208687.35 0.0280 0.0032  
 Mercury -51828-06-04 12:28 J -17208599.10 -17208598.98 -17208598.86 0.0281 0.0131  
 Earth -51828-08-09 23:59 J -17208532.63 -17208532.50 -17208532.34 0.0282 0.0224  
 Moon -51828-08-10 03:21 J -17208532.49 -17208532.36 -17208532.23 0.0282 0.0237 \*  
 Mercury -51828-09-01 00:42 J -17208510.55 -17208510.47 -17208510.39 0.0282 0.0229  
 Moon -51827-08-23 06:13 J -17208154.49 -17208154.24 -17208153.99 0.0285 0.0053  
 Earth -51827-08-23 07:40 J -17208154.42 -17208154.18 -17208153.94 0.0285 0.0066 \*  
 Venus -51823-07-11 23:16 J -17206735.66 -17206735.53 -17206735.39 0.0295 0.0222  
 Venus -51822-02-26 15:49 J -17206506.01 -17206505.84 -17206505.66 0.0295 0.0154  
 Mars -51818-08-26 01:11 J -17204864.64 -17204864.45 -17204864.24 0.0290 0.0194  
 Mercury -51815-04-12 04:33 J -17203904.36 -17203904.31 -17203904.25 0.0282 0.0267  
 Mercury -51815-07-10 00:28 J -17203815.63 -17203815.48 -17203815.33 0.0281 0.0142  
 Mercury -51815-10-06 20:37 J -17203726.82 -17203726.64 -17203726.47 0.0281 0.0016  
 Mercury -51814-01-03 16:47 J -17203637.95 -17203637.80 -17203637.63 0.0280 0.0113  
 Moon -51814-02-02 15:49 J -17203607.91 -17203607.84 -17203607.76 0.0280 0.0266  
 Mercury -51814-04-02 13:25 J -17203549.02 -17203548.94 -17203548.85 0.0279 0.0242  
 Moon -51813-02-15 16:04 J -17203230.07 -17203229.83 -17203229.58 0.0276 0.0010

Earth -51813-02-15 19:54 J -17203229.92 -17203229.67 -17203229.43 0.0276 0.0005 \*  
 Moon -51812-02-27 15:35 J -17202851.90 -17202851.85 -17202851.80 0.0273 0.0267  
 Earth -51812-02-27 15:49 J -17202851.90 -17202851.84 -17202851.77 0.0273 0.0262 \*  
 Venus -51809-12-25 02:52 J -17201455.55 -17201455.38 -17201455.20 0.0266 0.0158  
 Venus -51808-08-11 10:18 J -17201226.25 -17201226.07 -17201225.87 0.0265 0.0134  
 Mars -51802-10-02 12:13 J -17198983.30 -17198982.99 -17198982.68 0.0271 0.0055  
 Mercury -51799-01-30 01:25 J -17198132.54 -17198132.44 -17198132.34 0.0278 0.0194  
 Mercury -51799-04-28 13:54 J -17198044.05 -17198043.92 -17198043.78 0.0278 0.0096  
 Mercury -51799-07-26 02:23 J -17197955.54 -17197955.40 -17197955.26 0.0279 0.0007  
 Mercury -51799-10-22 14:37 J -17197867.01 -17197866.89 -17197866.76 0.0280 0.0102  
 Mercury -51798-01-19 02:52 J -17197778.47 -17197778.38 -17197778.28 0.0281 0.0199  
 Earth -51798-08-17 18:28 J -17197567.96 -17197567.73 -17197567.49 0.0283 0.0069  
 Moon -51798-08-17 19:40 J -17197567.90 -17197567.68 -17197567.45 0.0283 0.0083 \*  
 Earth -51797-08-30 03:49 J -17197189.48 -17197189.34 -17197189.18 0.0286 0.0226  
 Moon -51797-08-30 07:25 J -17197189.33 -17197189.19 -17197189.02 0.0286 0.0216 \*  
 Venus -51793-01-22 02:23 J -17195949.57 -17195949.40 -17195949.24 0.0294 0.0177  
 Venus -51793-09-07 18:28 J -17195719.87 -17195719.73 -17195719.57 0.0295 0.0198  
 Mars -51788-10-12 11:30 J -17193859.26 -17193859.02 -17193858.76 0.0289 0.0105  
 Mercury -51786-11-26 21:49 J -17193083.71 -17193083.59 -17193083.46 0.0282 0.0192  
 Mercury -51785-02-23 17:45 J -17192994.93 -17192994.76 -17192994.59 0.0281 0.0066  
 Mercury -51785-05-22 13:54 J -17192906.09 -17192905.92 -17192905.74 0.0280 0.0062  
 Mercury -51785-08-19 10:33 J -17192817.19 -17192817.06 -17192816.93 0.0280 0.0190  
 Earth -51784-02-09 02:09 J -17192643.61 -17192643.41 -17192643.18 0.0278 0.0135  
 Moon -51784-02-09 05:30 J -17192643.48 -17192643.27 -17192643.03 0.0278 0.0121 \*  
 Moon -51783-02-22 00:28 J -17192265.69 -17192265.48 -17192265.25 0.0275 0.0144  
 Earth -51783-02-22 00:42 J -17192265.68 -17192265.47 -17192265.25 0.0275 0.0138 \*  
 Venus -51779-07-07 02:37 J -17190669.58 -17190669.39 -17190669.19 0.0266 0.0130  
 Venus -51778-02-21 10:04 J -17190440.24 -17190440.08 -17190439.89 0.0265 0.0161  
 Mercury -51770-06-19 02:23 J -17187400.47 -17187400.40 -17187400.31 0.0278 0.0230  
 Mercury -51770-09-15 15:06 J -17187311.99 -17187311.87 -17187311.74 0.0279 0.0131



Mercury -51770-12-13 03:35 J -17187223.48 -17187223.35 -17187223.21 0.0280 0.0032  
 Mercury -51769-03-10 16:04 J -17187134.97 -17187134.83 -17187134.70 0.0280 0.0068  
 Mercury -51769-06-07 04:18 J -17187046.43 -17187046.32 -17187046.21 0.0281 0.0166  
 Moon -51769-08-11 01:11 J -17186981.60 -17186981.45 -17186981.28 0.0282 0.0215  
 Earth -51769-08-11 02:37 J -17186981.56 -17186981.39 -17186981.21 0.0282 0.0200 \*  
 Mercury -51769-09-03 16:18 J -17186957.86 -17186957.82 -17186957.77 0.0282 0.0264  
 Moon -51768-08-24 06:28 J -17186603.46 -17186603.23 -17186603.00 0.0285 0.0078  
 Earth -51768-08-24 09:49 J -17186603.31 -17186603.09 -17186602.85 0.0285 0.0090 \*  
 Venus -51764-08-03 06:28 J -17185163.41 -17185163.23 -17185163.05 0.0295 0.0131  
 Venus -51763-03-20 22:47 J -17184933.66 -17184933.55 -17184933.43 0.0295 0.0243  
 Mercury -51756-04-14 21:35 J -17182351.69 -17182351.60 -17182351.50 0.0282 0.0229  
 Mercury -51756-07-12 17:30 J -17182262.93 -17182262.77 -17182262.61 0.0281 0.0103  
 Mercury -51756-10-09 13:40 J -17182174.10 -17182173.93 -17182173.75 0.0280 0.0025  
 Mercury -51755-01-06 10:04 J -17182085.22 -17182085.08 -17182084.93 0.0280 0.0153  
 Moon -51755-02-03 13:54 J -17182057.02 -17182056.92 -17182056.80 0.0279 0.0248  
 Earth -51755-02-03 17:01 J -17182056.86 -17182056.79 -17182056.69 0.0279 0.0262 \*  
 Earth -51754-02-16 18:42 J -17181678.97 -17181678.72 -17181678.48 0.0276 0.0016  
 Moon -51754-02-16 19:11 J -17181678.94 -17181678.70 -17181678.46 0.0276 0.0024 \*  
 Venus -51749-01-17 09:21 J -17179883.32 -17179883.11 -17179882.90 0.0266 0.0081  
 Venus -51749-09-02 16:47 J -17179653.93 -17179653.80 -17179653.66 0.0266 0.0210  
 Mars -51743-01-05 00:13 J -17177703.63 -17177703.49 -17177703.30 0.0270 0.0230  
 Mercury -51741-11-05 05:01 J -17176668.34 -17176668.29 -17176668.23 0.0277 0.0254  
 Mercury -51740-02-01 17:45 J -17176579.87 -17176579.76 -17176579.64 0.0278 0.0155  
 Mercury -51740-05-01 06:28 J -17176491.37 -17176491.23 -17176491.10 0.0279 0.0056  
 Mercury -51740-07-28 18:42 J -17176402.85 -17176402.72 -17176402.58 0.0279 0.0043  
 Mercury -51740-10-25 06:57 J -17176314.33 -17176314.21 -17176314.09 0.0280 0.0141  
 Mercury -51739-01-21 18:57 J -17176225.77 -17176225.71 -17176225.63 0.0281 0.0238  
 Earth -51739-08-18 23:45 J -17176016.75 -17176016.51 -17176016.27 0.0283 0.0042  
 Moon -51739-08-19 03:21 J -17176016.60 -17176016.36 -17176016.12 0.0283 0.0057 \*  
 Earth -51738-09-01 09:06 J -17175638.22 -17175638.12 -17175638.00 0.0286 0.0253

Moon -51738-09-01 10:18 J -17175638.20 -17175638.07 -17175637.94 0.0286 0.0244 \*  
 Venus -51734-02-13 11:16 J -17174377.22 -17174377.03 -17174376.83 0.0294 0.0081  
 Venus -51734-10-01 03:21 J -17174147.38 -17174147.36 -17174147.33 0.0295 0.0292  
 Mars -51729-01-19 00:42 J -17172576.67 -17172576.47 -17172576.26 0.0290 0.0187  
 Mercury -51727-09-01 19:40 J -17171619.71 -17171619.68 -17171619.64 0.0283 0.0274  
 Mercury -51727-11-29 15:21 J -17171531.00 -17171530.86 -17171530.71 0.0282 0.0150  
 Mercury -51726-02-26 11:30 J -17171442.19 -17171442.02 -17171441.84 0.0281 0.0023  
 Mercury -51726-05-26 07:54 J -17171353.33 -17171353.17 -17171353.01 0.0280 0.0105  
 Mercury -51726-08-23 04:18 J -17171264.41 -17171264.32 -17171264.22 0.0279 0.0233  
 Moon -51725-02-11 02:09 J -17171092.64 -17171092.41 -17171092.16 0.0278 0.0103  
 Earth -51725-02-11 03:06 J -17171092.59 -17171092.37 -17171092.14 0.0278 0.0113 \*  
 Moon -51724-02-22 21:35 J -17170714.80 -17170714.60 -17170714.40 0.0275 0.0160  
 Earth -51724-02-23 01:25 J -17170714.64 -17170714.44 -17170714.24 0.0275 0.0159 \*  
 Venus -51720-07-29 09:49 J -17169097.31 -17169097.09 -17169096.88 0.0266 0.0052  
 Venus -51719-03-15 17:16 J -17168867.86 -17168867.78 -17168867.68 0.0265 0.0238  
 Mars -51713-02-25 16:47 J -17166695.10 -17166694.80 -17166694.49 0.0271 0.0077  
 Mercury -51711-06-21 18:57 J -17165847.81 -17165847.71 -17165847.60 0.0278 0.0190  
 Mercury -51711-09-18 07:40 J -17165759.31 -17165759.18 -17165759.05 0.0279 0.0091  
 Mercury -51711-12-15 20:09 J -17165670.80 -17165670.66 -17165670.52 0.0280 0.0010  
 Mercury -51710-03-14 08:23 J -17165582.28 -17165582.15 -17165582.02 0.0281 0.0107  
 Mercury -51710-06-10 20:37 J -17165493.73 -17165493.64 -17165493.55 0.0281 0.0205  
 Moon -51710-08-13 04:04 J -17165430.50 -17165430.33 -17165430.14 0.0282 0.0191  
 Earth -51710-08-13 07:54 J -17165430.35 -17165430.17 -17165429.97 0.0282 0.0174 \*  
 Moon -51709-08-25 14:23 J -17165052.11 -17165051.90 -17165051.68 0.0285 0.0107  
 Earth -51709-08-25 15:21 J -17165052.08 -17165051.86 -17165051.63 0.0285 0.0117 \*  
 Venus -51705-08-25 15:21 J -17163591.06 -17163590.86 -17163590.66 0.0295 0.0035  
 Mars -51699-03-07 23:30 J -17161570.75 -17161570.52 -17161570.27 0.0288 0.0133  
 Mercury -51697-04-17 15:21 J -17160798.98 -17160798.86 -17160798.73 0.0282 0.0186  
 Mercury -51697-07-15 11:16 J -17160710.19 -17160710.03 -17160709.85 0.0281 0.0060  
 Mercury -51697-10-12 07:40 J -17160621.35 -17160621.18 -17160621.01 0.0280 0.0068

Mercury -51696-01-09 04:04 J -17160532.45 -17160532.33 -17160532.20 0.0280 0.0197

Earth -51696-02-04 18:13 J -17160505.85 -17160505.74 -17160505.60 0.0279 0.0240

Moon -51696-02-04 18:57 J -17160505.84 -17160505.71 -17160505.57 0.0279 0.0227 \*

Earth -51695-02-17 19:40 J -17160127.92 -17160127.68 -17160127.43 0.0276 0.0038

Moon -51695-02-17 23:16 J -17160127.76 -17160127.53 -17160127.28 0.0276 0.0045 \*

Venus -51690-02-08 17:01 J -17158311.01 -17158310.79 -17158310.57 0.0266 0.0003

Mercury -51682-11-08 22:04 J -17155115.67 -17155115.58 -17155115.49 0.0278 0.0211

Mercury -51681-02-05 10:33 J -17155027.18 -17155027.06 -17155026.93 0.0278 0.0113

Mercury -51681-05-03 23:01 J -17154938.67 -17154938.54 -17154938.40 0.0279 0.0017

Mercury -51681-07-31 11:30 J -17154850.15 -17154850.02 -17154849.89 0.0280 0.0085

Mercury -51681-10-27 23:30 J -17154761.62 -17154761.52 -17154761.41 0.0281 0.0183

Mercury -51680-01-24 11:45 J -17154673.02 -17154673.01 -17154673.00 0.0281 0.0279

Earth -51680-08-20 07:40 J -17154465.43 -17154465.18 -17154464.94 0.0283 0.0013

Moon -51680-08-20 08:52 J -17154465.38 -17154465.13 -17154464.88 0.0283 0.0026 \*

Moon -51679-09-02 14:09 J -17154086.96 -17154086.91 -17154086.84 0.0286 0.0277

Earth -51679-09-02 17:16 J -17154086.81 -17154086.78 -17154086.74 0.0286 0.0283

Venus -51675-03-07 22:18 J -17152804.78 -17152804.57 -17152804.37 0.0294 0.0021

Mercury -51668-09-04 14:09 J -17150067.00 -17150066.91 -17150066.80 0.0282 0.0227

Mercury -51668-12-02 10:04 J -17149978.24 -17149978.08 -17149977.92 0.0281 0.0101

Mercury -51667-03-01 06:13 J -17149889.41 -17149889.24 -17149889.07 0.0281 0.0026

Mercury -51667-05-29 02:37 J -17149800.54 -17149800.39 -17149800.24 0.0280 0.0153

Moon -51666-02-12 03:21 J -17149541.59 -17149541.36 -17149541.11 0.0278 0.0080

Earth -51666-02-12 07:11 J -17149541.44 -17149541.20 -17149540.97 0.0278 0.0088 \*

Moon -51665-02-25 03:49 J -17149163.52 -17149163.34 -17149163.16 0.0275 0.0182

Earth -51665-02-25 04:47 J -17149163.47 -17149163.30 -17149163.11 0.0275 0.0184 \*

Venus -51661-01-04 10:04 J -17147754.11 -17147754.08 -17147754.04 0.0266 0.0263

Venus -51661-08-20 18:13 J -17147524.96 -17147524.74 -17147524.52 0.0266 0.0029

Mars -51655-05-31 10:04 J -17145415.27 -17145415.08 -17145414.85 0.0270 0.0203

Mercury -51652-03-27 23:16 J -17144383.59 -17144383.53 -17144383.46 0.0278 0.0245

Mercury -51652-06-24 11:59 J -17144295.12 -17144295.00 -17144294.88 0.0279 0.0146

Mercury -51652-09-21 00:28 J -17144206.61 -17144206.48 -17144206.34 0.0279 0.0047

Mercury -51652-12-18 12:57 J -17144118.10 -17144117.96 -17144117.82 0.0280 0.0052

Mercury -51651-03-17 01:11 J -17144029.56 -17144029.45 -17144029.33 0.0281 0.0150

Mercury -51651-06-13 13:11 J -17143941.00 -17143940.95 -17143940.88 0.0282 0.0248

Moon -51651-08-14 15:49 J -17143879.03 -17143878.84 -17143878.64 0.0282 0.0160

Earth -51651-08-14 16:33 J -17143879.01 -17143878.81 -17143878.60 0.0282 0.0145 \*

Earth -51650-08-28 00:28 J -17143500.69 -17143500.48 -17143500.28 0.0286 0.0148

Moon -51650-08-28 03:06 J -17143500.57 -17143500.37 -17143500.16 0.0286 0.0138 \*

Venus -51646-09-18 02:52 J -17142018.58 -17142018.38 -17142018.18 0.0295 0.0069

Mars -51641-06-13 21:21 J -17140287.83 -17140287.61 -17140287.38 0.0290 0.0154

Mercury -51638-01-22 14:09 J -17139334.96 -17139334.91 -17139334.83 0.0282 0.0262

Mercury -51638-04-21 10:04 J -17139246.22 -17139246.08 -17139245.92 0.0281 0.0136

Mercury -51638-07-19 06:13 J -17139157.41 -17139157.24 -17139157.06 0.0281 0.0010

Mercury -51638-10-16 02:37 J -17139068.55 -17139068.39 -17139068.23 0.0280 0.0118

Mercury -51637-01-12 23:16 J -17138979.61 -17138979.53 -17138979.45 0.0279 0.0246

Earth -51637-02-06 23:01 J -17138954.69 -17138954.54 -17138954.38 0.0279 0.0213

Moon -51637-02-07 02:37 J -17138954.56 -17138954.39 -17138954.22 0.0279 0.0199 \*

Earth -51636-02-18 23:45 J -17138576.74 -17138576.51 -17138576.26 0.0276 0.0064

Moon -51636-02-19 01:11 J -17138576.69 -17138576.45 -17138576.19 0.0276 0.0068 \*

Venus -51632-07-16 17:16 J -17136967.90 -17136967.78 -17136967.64 0.0267 0.0213

Venus -51631-03-03 01:40 J -17136738.64 -17136738.43 -17136738.22 0.0266 0.0080

Mars -51625-07-22 06:13 J -17134405.52 -17134405.24 -17134404.95 0.0272 0.0123

Mercury -51623-08-15 02:37 J -17133651.43 -17133651.39 -17133651.35 0.0277 0.0264

Mercury -51623-11-11 15:21 J -17133562.97 -17133562.86 -17133562.75 0.0278 0.0165

Mercury -51622-02-08 03:49 J -17133474.47 -17133474.34 -17133474.20 0.0279 0.0067

Mercury -51622-05-07 16:18 J -17133385.96 -17133385.82 -17133385.68 0.0280 0.0033

Mercury -51622-08-04 04:33 J -17133297.43 -17133297.31 -17133297.19 0.0280 0.0131

Earth -51622-08-09 12:57 J -17133292.02 -17133291.96 -17133291.86 0.0280 0.0266

Moon -51622-08-09 13:40 J -17133291.94 -17133291.93 -17133291.90 0.0280 0.0280 \*

Mercury -51622-10-31 16:47 J -17133208.88 -17133208.80 -17133208.72 0.0281 0.0228

Moon -51621-08-21 15:21 J -17132914.11 -17132913.86 -17132913.61 0.0283 0.0008  
 Earth -51621-08-21 18:28 J -17132913.97 -17132913.73 -17132913.48 0.0283 0.0021 \*  
 Venus -51617-08-12 19:11 J -17131461.80 -17131461.70 -17131461.57 0.0293 0.0242  
 Venus -51616-03-30 11:01 J -17131232.22 -17131232.04 -17131231.85 0.0294 0.0128  
 Mars -51611-08-01 19:40 J -17129281.90 -17129281.68 -17129281.44 0.0288 0.0158  
 Mercury -51609-09-07 09:35 J -17128514.23 -17128514.10 -17128513.96 0.0282 0.0173  
 Mercury -51609-12-05 05:45 J -17128425.43 -17128425.26 -17128425.09 0.0281 0.0047  
 Mercury -51608-03-04 01:54 J -17128336.59 -17128336.42 -17128336.25 0.0280 0.0080  
 Mercury -51608-05-31 22:18 J -17128247.68 -17128247.57 -17128247.45 0.0280 0.0208  
 Moon -51607-02-13 12:13 J -17127990.22 -17127989.99 -17127989.75 0.0277 0.0052  
 Earth -51607-02-13 13:54 J -17127990.15 -17127989.92 -17127989.67 0.0277 0.0060 \*  
 Earth -51606-02-26 11:30 J -17127612.18 -17127612.02 -17127611.86 0.0274 0.0211  
 Moon -51606-02-26 14:09 J -17127612.06 -17127611.91 -17127611.74 0.0274 0.0207 \*  
 Venus -51602-01-26 20:09 J -17126181.82 -17126181.66 -17126181.50 0.0266 0.0178  
 Venus -51602-09-13 04:18 J -17125952.52 -17125952.32 -17125952.13 0.0266 0.0114  
 Mercury -51593-03-30 16:47 J -17122830.90 -17122830.80 -17122830.70 0.0278 0.0198  
 Mercury -51593-06-27 05:30 J -17122742.40 -17122742.27 -17122742.14 0.0279 0.0099  
 Mercury -51593-09-23 17:59 J -17122653.89 -17122653.75 -17122653.62 0.0280 0.0008  
 Mercury -51593-12-21 06:13 J -17122565.37 -17122565.24 -17122565.11 0.0280 0.0099  
 Mercury -51592-03-19 18:28 J -17122476.83 -17122476.73 -17122476.63 0.0281 0.0196  
 Earth -51592-08-16 03:35 J -17122327.57 -17122327.35 -17122327.13 0.0283 0.0112  
 Moon -51592-08-16 06:57 J -17122327.42 -17122327.21 -17122326.99 0.0283 0.0126 \*  
 Earth -51591-08-29 11:30 J -17121949.20 -17121949.02 -17121948.82 0.0286 0.0182  
 Moon -51591-08-29 14:37 J -17121949.07 -17121948.89 -17121948.68 0.0286 0.0173 \*  
 Venus -51587-02-23 00:13 J -17120675.64 -17120675.49 -17120675.34 0.0294 0.0193  
 Venus -51587-10-10 15:49 J -17120446.00 -17120445.84 -17120445.67 0.0295 0.0177  
 Mercury -51579-01-25 10:04 J -17117782.19 -17117782.08 -17117781.96 0.0282 0.0206  
 Mercury -51579-04-24 05:59 J -17117693.42 -17117693.25 -17117693.09 0.0281 0.0081  
 Mercury -51579-07-22 02:09 J -17117604.59 -17117604.41 -17117604.24 0.0280 0.0046  
 Mercury -51579-10-18 22:33 J -17117515.70 -17117515.56 -17117515.42 0.0280 0.0174

Earth -51578-02-08 06:57 J -17117403.39 -17117403.21 -17117403.02 0.0279 0.0184  
 Moon -51578-02-08 08:52 J -17117403.33 -17117403.13 -17117402.93 0.0279 0.0171 \*  
 Moon -51577-02-21 04:33 J -17117025.55 -17117025.31 -17117025.07 0.0276 0.0093  
 Earth -51577-02-21 06:57 J -17117025.43 -17117025.21 -17117024.97 0.0276 0.0093 \*  
 Venus -51573-08-08 03:49 J -17115395.54 -17115395.34 -17115395.15 0.0267 0.0127  
 Venus -51572-03-25 11:59 J -17115166.17 -17115166.00 -17115165.83 0.0266 0.0166  
 Mars -51567-10-26 05:16 J -17113125.53 -17113125.28 -17113125.01 0.0271 0.0157  
 Mercury -51564-08-17 20:09 J -17112098.74 -17112098.66 -17112098.56 0.0278 0.0216  
 Mercury -51564-11-14 08:52 J -17112010.25 -17112010.13 -17112010.00 0.0279 0.0117  
 Mercury -51563-02-10 21:35 J -17111921.74 -17111921.60 -17111921.46 0.0279 0.0019  
 Mercury -51563-05-10 09:49 J -17111833.22 -17111833.09 -17111832.96 0.0280 0.0081  
 Mercury -51563-08-06 22:04 J -17111744.68 -17111744.58 -17111744.47 0.0281 0.0179  
 Moon -51563-08-10 22:18 J -17111740.69 -17111740.57 -17111740.45 0.0281 0.0246  
 Earth -51563-08-11 01:25 J -17111740.57 -17111740.44 -17111740.30 0.0281 0.0232 \*  
 Mercury -51563-11-03 10:18 J -17111656.09 -17111656.07 -17111656.05 0.0282 0.0276  
 Moon -51562-08-24 04:47 J -17111362.54 -17111362.30 -17111362.07 0.0284 0.0045  
 Earth -51562-08-24 07:40 J -17111362.42 -17111362.18 -17111361.94 0.0284 0.0056 \*  
 Jupiter -51560-04-02 18:13 J -17110775.04 -17110774.74 -17110774.40 0.0289 0.0198  
 Venus -51558-09-05 10:18 J -17109889.25 -17109889.07 -17109888.88 0.0294 0.0128  
 Venus -51557-04-22 02:09 J -17109659.53 -17109659.41 -17109659.30 0.0294 0.0241  
 Mars -51553-11-08 05:16 J -17107998.53 -17107998.28 -17107998.03 0.0290 0.0118  
 Mercury -51550-06-14 10:33 J -17107050.15 -17107050.06 -17107049.97 0.0282 0.0238  
 Mercury -51550-09-11 06:13 J -17106961.40 -17106961.24 -17106961.08 0.0281 0.0113  
 Mercury -51550-12-09 02:09 J -17106872.58 -17106872.41 -17106872.23 0.0281 0.0015  
 Mercury -51549-03-06 22:33 J -17106783.71 -17106783.56 -17106783.41 0.0280 0.0140  
 Mercury -51549-06-03 19:11 J -17106694.75 -17106694.70 -17106694.66 0.0279 0.0268  
 Earth -51548-02-15 00:13 J -17106438.74 -17106438.49 -17106438.24 0.0277 0.0027  
 Moon -51548-02-15 02:37 J -17106438.63 -17106438.39 -17106438.15 0.0277 0.0021 \*  
 Earth -51547-02-27 20:52 J -17106060.74 -17106060.63 -17106060.51 0.0274 0.0241  
 Moon -51547-02-27 23:59 J -17106060.61 -17106060.50 -17106060.36 0.0274 0.0237 \*

Venus -51543-02-18 07:25 J -17104609.40 -17104609.19 -17104608.98 0.0266 0.0089  
 Venus -51543-10-05 15:21 J -17104380.00 -17104379.86 -17104379.71 0.0266 0.0202  
 Mars -51537-12-16 05:16 J -17102116.52 -17102116.28 -17102116.01 0.0272 0.0161  
 Mercury -51534-01-04 21:49 J -17101366.65 -17101366.59 -17101366.53 0.0278 0.0248  
 Mercury -51534-04-03 10:33 J -17101278.18 -17101278.06 -17101277.94 0.0279 0.0148  
 Mercury -51534-06-30 23:01 J -17101189.67 -17101189.54 -17101189.40 0.0279 0.0050  
 Mercury -51534-09-27 11:30 J -17101101.15 -17101101.02 -17101100.88 0.0280 0.0050  
 Mercury -51534-12-24 23:45 J -17101012.62 -17101012.51 -17101012.39 0.0281 0.0148  
 Mercury -51533-03-22 11:59 J -17100924.06 -17100924.00 -17100923.93 0.0282 0.0245  
 Earth -51533-08-17 16:47 J -17100776.03 -17100775.80 -17100775.56 0.0283 0.0077  
 Moon -51533-08-17 19:25 J -17100775.92 -17100775.69 -17100775.45 0.0283 0.0089 \*  
 Moon -51532-08-31 00:13 J -17100397.65 -17100397.49 -17100397.31 0.0286 0.0213  
 Earth -51532-08-31 01:40 J -17100397.59 -17100397.43 -17100397.27 0.0286 0.0218 \*  
 Venus -51528-03-17 15:06 J -17099103.06 -17099102.87 -17099102.67 0.0294 0.0080  
 Venus -51528-11-02 06:42 J -17098873.24 -17098873.22 -17098873.17 0.0295 0.0290  
 Mars -51523-12-27 04:47 J -17096992.49 -17096992.30 -17096992.11 0.0288 0.0201  
 Mercury -51521-10-31 10:33 J -17096318.09 -17096318.06 -17096318.01 0.0282 0.0271  
 Mercury -51520-01-28 06:28 J -17096229.38 -17096229.23 -17096229.08 0.0281 0.0147  
 Mercury -51520-04-27 02:23 J -17096140.57 -17096140.40 -17096140.22 0.0281 0.0021  
 Mercury -51520-07-24 22:47 J -17096051.72 -17096051.55 -17096051.39 0.0280 0.0106  
 Mercury -51520-10-21 18:57 J -17095962.79 -17095962.71 -17095962.60 0.0279 0.0235  
 Moon -51519-02-09 14:37 J -17095852.10 -17095851.89 -17095851.67 0.0278 0.0142  
 Earth -51519-02-09 17:30 J -17095851.97 -17095851.77 -17095851.56 0.0278 0.0151 \*  
 Moon -51518-02-22 13:40 J -17095474.15 -17095473.93 -17095473.71 0.0275 0.0125  
 Earth -51518-02-22 17:01 J -17095474.01 -17095473.79 -17095473.57 0.0275 0.0124 \*  
 Venus -51514-08-31 15:06 J -17093823.08 -17093822.87 -17093822.65 0.0267 0.0039  
 Venus -51513-04-16 23:01 J -17093593.59 -17093593.54 -17093593.46 0.0266 0.0253  
 Mercury -51505-05-24 01:25 J -17090634.48 -17090634.44 -17090634.40 0.0278 0.0265  
 Mercury -51505-08-20 14:09 J -17090546.02 -17090545.91 -17090545.80 0.0278 0.0165  
 Mercury -51505-11-17 02:52 J -17090457.52 -17090457.38 -17090457.25 0.0279 0.0066

Mercury -51504-02-13 15:21 J -17090369.00 -17090368.86 -17090368.73 0.0280 0.0034  
 Mercury -51504-05-13 03:35 J -17090280.47 -17090280.35 -17090280.23 0.0281 0.0131  
 Mercury -51504-08-09 15:49 J -17090191.92 -17090191.84 -17090191.76 0.0281 0.0229  
 Moon -51504-08-12 11:59 J -17090189.15 -17090189.00 -17090188.84 0.0281 0.0212  
 Earth -51504-08-12 14:52 J -17090189.05 -17090188.88 -17090188.70 0.0281 0.0197 \*  
 Earth -51503-08-25 21:49 J -17089810.82 -17089810.59 -17089810.36 0.0284 0.0093  
 Moon -51503-08-25 23:01 J -17089810.76 -17089810.54 -17089810.31 0.0284 0.0085 \*  
 Venus -51499-09-28 02:09 J -17088316.61 -17088316.41 -17088316.20 0.0294 0.0013  
 Mercury -51491-06-17 07:25 J -17085497.32 -17085497.19 -17085497.05 0.0282 0.0174  
 Mercury -51491-09-14 03:21 J -17085408.53 -17085408.36 -17085408.19 0.0281 0.0049  
 Mercury -51491-12-11 23:30 J -17085319.69 -17085319.52 -17085319.35 0.0280 0.0078  
 Earth -51490-02-04 11:30 J -17085265.06 -17085265.02 -17085264.95 0.0280 0.0272  
 Moon -51490-02-04 14:23 J -17085264.97 -17085264.90 -17085264.80 0.0280 0.0261 \*  
 Mercury -51490-03-10 19:40 J -17085230.79 -17085230.68 -17085230.55 0.0279 0.0206  
 Earth -51489-02-17 12:42 J -17084887.21 -17084886.97 -17084886.72 0.0277 0.0007  
 Moon -51489-02-17 16:18 J -17084887.07 -17084886.82 -17084886.57 0.0277 0.0013 \*  
 Moon -51488-03-01 08:09 J -17084509.20 -17084509.16 -17084509.09 0.0274 0.0267  
 Earth -51488-03-01 08:52 J -17084509.14 -17084509.13 -17084509.11 0.0274 0.0273 \*  
 Venus -51484-03-12 19:54 J -17083036.89 -17083036.67 -17083036.45 0.0266 0.0005  
 Mars -51478-03-22 07:40 J -17080836.46 -17080836.18 -17080835.88 0.0270 0.0115  
 Mercury -51475-01-07 15:35 J -17079813.94 -17079813.85 -17079813.75 0.0278 0.0198  
 Mercury -51475-04-06 04:18 J -17079725.45 -17079725.32 -17079725.19 0.0279 0.0098  
 Mercury -51475-07-03 16:47 J -17079636.93 -17079636.80 -17079636.66 0.0280 0.0009  
 Mercury -51475-09-30 05:16 J -17079548.41 -17079548.28 -17079548.15 0.0281 0.0100  
 Mercury -51475-12-27 17:30 J -17079459.87 -17079459.77 -17079459.67 0.0281 0.0197  
 Moon -51474-08-20 05:16 J -17079224.53 -17079224.28 -17079224.03 0.0283 0.0051  
 Earth -51474-08-20 06:42 J -17079224.46 -17079224.22 -17079223.98 0.0283 0.0041 \*  
 Moon -51473-09-01 12:13 J -17078846.09 -17078845.99 -17078845.87 0.0287 0.0254  
 Earth -51473-09-01 16:18 J -17078845.93 -17078845.82 -17078845.71 0.0287 0.0256 \*  
 Venus -51469-04-09 06:57 J -17077530.41 -17077530.21 -17077530.00 0.0294 0.0036



Mars -51464-04-04 16:33 J -17075709.07 -17075708.81 -17075708.54 0.0290 0.0072  
 Mercury -51462-11-04 07:40 J -17074765.29 -17074765.18 -17074765.06 0.0282 0.0208  
 Mercury -51461-02-01 03:35 J -17074676.52 -17074676.35 -17074676.19 0.0281 0.0083  
 Mercury -51461-04-29 23:45 J -17074587.69 -17074587.51 -17074587.34 0.0280 0.0043  
 Mercury -51461-07-27 19:54 J -17074498.80 -17074498.67 -17074498.53 0.0279 0.0171  
 Moon -51460-02-11 03:06 J -17074300.59 -17074300.37 -17074300.15 0.0278 0.0110  
 Earth -51460-02-11 06:13 J -17074300.46 -17074300.24 -17074300.01 0.0278 0.0117 \*  
 Earth -51459-02-24 05:01 J -17073922.49 -17073922.29 -17073922.09 0.0275 0.0157  
 Moon -51459-02-24 05:16 J -17073922.48 -17073922.28 -17073922.09 0.0275 0.0156 \*  
 Venus -51455-02-05 18:42 J -17072479.80 -17072479.72 -17072479.62 0.0267 0.0242  
 Venus -51455-09-23 03:21 J -17072250.57 -17072250.36 -17072250.14 0.0266 0.0051  
 Mars -51448-05-13 06:28 J -17069826.42 -17069826.23 -17069826.03 0.0273 0.0214  
 Mercury -51446-05-27 19:11 J -17069081.78 -17069081.70 -17069081.61 0.0278 0.0215  
 Mercury -51446-08-24 07:54 J -17068993.29 -17068993.17 -17068993.04 0.0279 0.0115  
 Mercury -51446-11-20 20:37 J -17068904.78 -17068904.64 -17068904.50 0.0280 0.0017  
 Mercury -51445-02-17 08:52 J -17068816.26 -17068816.13 -17068815.99 0.0280 0.0083  
 Mercury -51445-05-15 21:06 J -17068727.72 -17068727.62 -17068727.51 0.0281 0.0182  
 Mercury -51445-08-12 09:21 J -17068639.12 -17068639.11 -17068639.09 0.0282 0.0279  
 Earth -51445-08-14 04:33 J -17068637.51 -17068637.31 -17068637.11 0.0282 0.0162  
 Moon -51445-08-14 05:16 J -17068637.46 -17068637.28 -17068637.10 0.0282 0.0176 \*  
 Earth -51444-08-27 11:59 J -17068259.21 -17068259.00 -17068258.78 0.0285 0.0132  
 Moon -51444-08-27 15:35 J -17068259.06 -17068258.85 -17068258.62 0.0285 0.0124 \*  
 Venus -51440-03-05 02:52 J -17066973.46 -17066973.38 -17066973.28 0.0293 0.0263  
 Venus -51440-10-20 18:28 J -17066743.92 -17066743.73 -17066743.54 0.0294 0.0103  
 Mars -51434-05-24 02:37 J -17064702.51 -17064702.39 -17064702.26 0.0288 0.0253  
 Mercury -51432-03-23 09:06 J -17064033.21 -17064033.12 -17064033.02 0.0282 0.0233  
 Mercury -51432-06-20 05:01 J -17063944.45 -17063944.29 -17063944.13 0.0281 0.0109  
 Mercury -51432-09-17 00:57 J -17063855.63 -17063855.46 -17063855.28 0.0281 0.0017  
 Mercury -51432-12-14 21:21 J -17063766.76 -17063766.61 -17063766.46 0.0280 0.0144  
 Earth -51431-02-06 02:09 J -17063713.53 -17063713.41 -17063713.27 0.0279 0.0236

Moon -51431-02-06 05:45 J -17063713.41 -17063713.26 -17063713.12 0.0279 0.0225 \*  
 Mercury -51431-03-13 17:30 J -17063677.79 -17063677.77 -17063677.72 0.0279 0.0272  
 Moon -51430-02-19 02:09 J -17063335.66 -17063335.41 -17063335.15 0.0276 0.0043  
 Earth -51430-02-19 02:37 J -17063335.63 -17063335.39 -17063335.14 0.0276 0.0042 \*  
 Venus -51426-08-19 00:28 J -17061693.61 -17061693.48 -17061693.32 0.0267 0.0198  
 Venus -51425-04-04 08:37 J -17061464.34 -17061464.14 -17061463.92 0.0266 0.0094  
 Mercury -51417-10-13 20:37 J -17058349.69 -17058349.64 -17058349.57 0.0278 0.0247  
 Mercury -51416-01-10 09:35 J -17058261.22 -17058261.10 -17058260.98 0.0279 0.0147  
 Mercury -51416-04-08 22:04 J -17058172.71 -17058172.58 -17058172.44 0.0279 0.0049  
 Mercury -51416-07-06 10:33 J -17058084.19 -17058084.06 -17058083.92 0.0280 0.0052  
 Mercury -51416-10-02 23:01 J -17057995.66 -17057995.54 -17057995.43 0.0281 0.0149  
 Mercury -51416-12-30 11:01 J -17057907.10 -17057907.04 -17057906.97 0.0282 0.0247  
 Moon -51415-08-21 16:47 J -17057673.04 -17057672.80 -17057672.55 0.0284 0.0016  
 Earth -51415-08-21 20:23 J -17057672.89 -17057672.65 -17057672.40 0.0284 0.0005 \*  
 Venus -51411-09-15 06:42 J -17056187.35 -17056187.22 -17056187.08 0.0294 0.0218  
 Venus -51410-05-02 22:33 J -17055957.74 -17055957.56 -17055957.39 0.0295 0.0150  
 Mercury -51403-08-10 09:06 J -17053301.16 -17053301.12 -17053301.07 0.0282 0.0269  
 Mercury -51403-11-07 04:47 J -17053212.44 -17053212.30 -17053212.15 0.0281 0.0145  
 Mercury -51402-02-04 00:42 J -17053123.64 -17053123.47 -17053123.29 0.0281 0.0020  
 Mercury -51402-05-03 20:52 J -17053034.79 -17053034.63 -17053034.46 0.0280 0.0108  
 Mercury -51402-07-31 17:30 J -17052945.86 -17052945.77 -17052945.68 0.0279 0.0235  
 Earth -51401-02-13 19:25 J -17052748.92 -17052748.69 -17052748.45 0.0277 0.0082  
 Moon -51401-02-13 20:09 J -17052748.89 -17052748.66 -17052748.43 0.0277 0.0078 \*  
 Earth -51400-02-25 17:16 J -17052370.95 -17052370.78 -17052370.59 0.0274 0.0191  
 Moon -51400-02-25 21:21 J -17052370.79 -17052370.61 -17052370.43 0.0274 0.0187 \*  
 Venus -51396-02-28 07:25 J -17050907.36 -17050907.19 -17050907.00 0.0267 0.0151  
 Venus -51396-10-15 15:35 J -17050678.03 -17050677.85 -17050677.66 0.0266 0.0141  
 Mars -51390-08-17 06:13 J -17048546.55 -17048546.24 -17048545.93 0.0271 0.0064  
 Mercury -51387-03-02 23:59 J -17047617.53 -17047617.50 -17047617.45 0.0278 0.0266  
 Mercury -51387-05-30 12:57 J -17047529.07 -17047528.96 -17047528.85 0.0279 0.0166

Mercury -51387-08-27 01:40 J -17047440.57 -17047440.43 -17047440.30 0.0279 0.0067  
 Mercury -51387-11-23 14:09 J -17047352.05 -17047351.91 -17047351.78 0.0280 0.0033  
 Mercury -51386-02-20 02:23 J -17047263.52 -17047263.40 -17047263.28 0.0281 0.0131  
 Mercury -51386-05-19 14:37 J -17047174.96 -17047174.89 -17047174.81 0.0282 0.0229  
 Earth -51386-08-16 16:33 J -17047086.02 -17047085.81 -17047085.59 0.0282 0.0128  
 Moon -51386-08-16 20:09 J -17047085.86 -17047085.66 -17047085.44 0.0282 0.0144 \*  
 Earth -51385-08-29 00:57 J -17046707.65 -17046707.46 -17046707.25 0.0286 0.0168  
 Moon -51385-08-29 02:52 J -17046707.59 -17046707.38 -17046707.17 0.0286 0.0160 \*  
 Venus -51381-03-27 18:13 J -17045400.91 -17045400.74 -17045400.56 0.0293 0.0151  
 Venus -51381-11-12 09:49 J -17045171.22 -17045171.09 -17045170.94 0.0294 0.0217  
 Mars -51376-08-30 17:59 J -17043419.02 -17043418.75 -17043418.48 0.0289 0.0015  
 Mercury -51373-03-26 06:42 J -17042480.36 -17042480.22 -17042480.08 0.0282 0.0168  
 Mercury -51373-06-23 02:37 J -17042391.56 -17042391.39 -17042391.22 0.0281 0.0043  
 Mercury -51373-09-19 22:47 J -17042302.72 -17042302.55 -17042302.39 0.0280 0.0084  
 Mercury -51373-12-17 18:57 J -17042213.82 -17042213.71 -17042213.59 0.0279 0.0212  
 Moon -51372-02-07 16:47 J -17042161.98 -17042161.80 -17042161.60 0.0279 0.0191  
 Earth -51372-02-07 17:01 J -17042161.95 -17042161.79 -17042161.61 0.0279 0.0201 \*  
 Moon -51371-02-20 12:57 J -17041784.19 -17041783.96 -17041783.71 0.0276 0.0075  
 Earth -51371-02-20 16:47 J -17041784.03 -17041783.80 -17041783.56 0.0276 0.0077 \*  
 Venus -51367-09-10 13:54 J -17040121.11 -17040120.92 -17040120.71 0.0266 0.0105  
 Venus -51366-04-27 21:35 J -17039891.74 -17039891.60 -17039891.43 0.0266 0.0185  
 Mars -51360-10-07 08:52 J -17037537.21 -17037537.13 -17037537.02 0.0272 0.0259  
 Mercury -51358-10-17 14:23 J -17036796.99 -17036796.90 -17036796.80 0.0278 0.0198  
 Mercury -51357-01-14 03:06 J -17036708.50 -17036708.37 -17036708.24 0.0279 0.0099  
 Mercury -51357-04-11 15:35 J -17036619.98 -17036619.85 -17036619.71 0.0280 0.0008  
 Mercury -51357-07-09 04:04 J -17036531.46 -17036531.33 -17036531.20 0.0280 0.0099  
 Moon -51357-08-09 22:47 J -17036499.59 -17036499.55 -17036499.50 0.0281 0.0275  
 Earth -51357-08-10 02:52 J -17036499.47 -17036499.38 -17036499.29 0.0281 0.0259  
 Mercury -51357-10-05 16:18 J -17036442.91 -17036442.82 -17036442.72 0.0281 0.0197  
 Moon -51356-08-23 06:57 J -17036121.44 -17036121.21 -17036120.97 0.0284 0.0020

Earth -51356-08-23 08:37 J -17036121.38 -17036121.14 -17036120.90 0.0284 0.0030 \*  
 Venus -51352-10-07 21:35 J -17034614.79 -17034614.60 -17034614.41 0.0294 0.0107  
 Venus -51351-05-25 13:25 J -17034385.04 -17034384.94 -17034384.85 0.0295 0.0261  
 Mercury -51344-08-13 05:59 J -17031748.36 -17031748.25 -17031748.13 0.0282 0.0207  
 Mercury -51344-11-10 01:54 J -17031659.59 -17031659.42 -17031659.26 0.0281 0.0082  
 Mercury -51343-02-06 21:49 J -17031570.76 -17031570.59 -17031570.41 0.0280 0.0045  
 Mercury -51343-05-06 18:13 J -17031481.88 -17031481.74 -17031481.60 0.0279 0.0172  
 Earth -51342-02-15 08:09 J -17031197.40 -17031197.16 -17031196.92 0.0277 0.0048  
 Moon -51342-02-15 11:30 J -17031197.26 -17031197.02 -17031196.77 0.0277 0.0045 \*  
 Earth -51341-02-28 05:30 J -17030819.41 -17030819.27 -17030819.13 0.0274 0.0223  
 Moon -51341-02-28 07:11 J -17030819.35 -17030819.20 -17030819.04 0.0274 0.0216 \*  
 Venus -51337-03-22 19:54 J -17029334.88 -17029334.67 -17029334.46 0.0266 0.0061  
 Venus -51337-11-07 03:49 J -17029105.45 -17029105.34 -17029105.23 0.0266 0.0229  
 Mercury -51328-03-05 17:30 J -17026064.85 -17026064.77 -17026064.68 0.0278 0.0219  
 Mercury -51328-06-02 06:13 J -17025976.36 -17025976.24 -17025976.11 0.0279 0.0119  
 Mercury -51328-08-29 18:57 J -17025887.85 -17025887.71 -17025887.58 0.0280 0.0022  
 Mercury -51328-11-26 07:11 J -17025799.33 -17025799.20 -17025799.06 0.0281 0.0079  
 Mercury -51327-02-22 19:25 J -17025710.79 -17025710.69 -17025710.58 0.0281 0.0178  
 Mercury -51327-05-22 07:54 J -17025622.20 -17025622.17 -17025622.15 0.0282 0.0275  
 Earth -51327-08-18 03:06 J -17025534.59 -17025534.37 -17025534.13 0.0283 0.0096  
 Moon -51327-08-18 04:47 J -17025534.53 -17025534.30 -17025534.06 0.0283 0.0109 \*  
 Moon -51326-08-31 10:04 J -17025156.26 -17025156.08 -17025155.90 0.0286 0.0196  
 Earth -51326-08-31 12:28 J -17025156.15 -17025155.98 -17025155.81 0.0286 0.0202 \*  
 Venus -51322-04-20 08:23 J -17023828.35 -17023828.15 -17023827.95 0.0294 0.0042  
 Mars -51318-12-08 06:13 J -17022135.26 -17022135.24 -17022135.19 0.0291 0.0289  
 Mercury -51315-12-31 07:54 J -17021016.26 -17021016.17 -17021016.07 0.0282 0.0230  
 Mercury -51314-03-30 03:35 J -17020927.50 -17020927.35 -17020927.18 0.0281 0.0106  
 Mercury -51314-06-26 23:45 J -17020838.69 -17020838.51 -17020838.34 0.0281 0.0021  
 Mercury -51314-09-23 19:54 J -17020749.82 -17020749.67 -17020749.52 0.0280 0.0148  
 Mercury -51314-12-21 16:18 J -17020660.84 -17020660.82 -17020660.79 0.0279 0.0275

Moon -51313-02-10 02:52 J -17020610.59 -17020610.38 -17020610.18 0.0279 0.0158  
 Earth -51313-02-10 05:59 J -17020610.44 -17020610.25 -17020610.05 0.0279 0.0168 \*  
 Moon -51312-02-22 03:21 J -17020232.57 -17020232.36 -17020232.13 0.0276 0.0109  
 Earth -51312-02-22 05:30 J -17020232.50 -17020232.27 -17020232.05 0.0276 0.0110 \*  
 Venus -51308-10-03 02:37 J -17018548.61 -17018548.39 -17018548.17 0.0266 0.0015  
 Mars -51301-01-11 07:11 J -17016257.52 -17016257.20 -17016256.88 0.0270 0.0018  
 Mercury -51299-07-23 18:42 J -17015332.77 -17015332.72 -17015332.65 0.0277 0.0253  
 Mercury -51299-10-20 07:40 J -17015244.30 -17015244.18 -17015244.06 0.0278 0.0153  
 Mercury -51298-01-16 20:23 J -17015155.79 -17015155.65 -17015155.52 0.0279 0.0054  
 Mercury -51298-04-15 08:37 J -17015067.27 -17015067.14 -17015067.00 0.0280 0.0046  
 Mercury -51298-07-12 21:06 J -17014978.74 -17014978.62 -17014978.50 0.0281 0.0143  
 Moon -51298-08-12 10:47 J -17014948.15 -17014948.05 -17014947.92 0.0281 0.0244  
 Earth -51298-08-12 11:59 J -17014948.13 -17014948.00 -17014947.85 0.0281 0.0229 \*  
 Mercury -51298-10-09 09:21 J -17014890.18 -17014890.11 -17014890.04 0.0281 0.0240  
 Earth -51297-08-24 17:59 J -17014569.98 -17014569.75 -17014569.51 0.0284 0.0063  
 Moon -51297-08-24 20:52 J -17014569.87 -17014569.63 -17014569.40 0.0284 0.0054 \*  
 Venus -51293-10-30 10:33 J -17013042.26 -17013042.06 -17013041.86 0.0294 0.0001  
 Mars -51287-01-24 18:57 J -17011129.98 -17011129.71 -17011129.44 0.0290 0.0021  
 Mercury -51285-05-19 06:57 J -17010284.25 -17010284.21 -17010284.17 0.0282 0.0272  
 Mercury -51285-08-16 02:23 J -17010195.54 -17010195.40 -17010195.25 0.0282 0.0148  
 Mercury -51285-11-12 22:33 J -17010106.74 -17010106.56 -17010106.39 0.0281 0.0023  
 Mercury -51284-02-09 18:28 J -17010017.89 -17010017.73 -17010017.56 0.0280 0.0105  
 Mercury -51284-05-09 15:06 J -17009928.96 -17009928.87 -17009928.77 0.0279 0.0232  
 Earth -51283-02-16 19:11 J -17009645.95 -17009645.70 -17009645.45 0.0277 0.0016  
 Moon -51283-02-16 21:21 J -17009645.86 -17009645.61 -17009645.35 0.0277 0.0012 \*  
 Moon -51282-03-01 12:57 J -17009268.05 -17009267.96 -17009267.83 0.0274 0.0245  
 Earth -51282-03-01 16:04 J -17009267.91 -17009267.83 -17009267.74 0.0274 0.0255 \*  
 Venus -51279-08-28 23:01 J -17007991.56 -17007991.54 -17007991.50 0.0267 0.0264  
 Venus -51278-04-15 07:25 J -17007762.41 -17007762.19 -17007761.97 0.0266 0.0027  
 Mercury -51270-12-10 21:35 J -17004600.61 -17004600.60 -17004600.58 0.0278 0.0276

Mercury -51269-03-08 10:18 J -17004512.17 -17004512.07 -17004511.96 0.0279 0.0176

Mercury -51269-06-04 23:01 J -17004423.67 -17004423.54 -17004423.40 0.0279 0.0077

Mercury -51269-09-01 11:30 J -17004335.15 -17004335.02 -17004334.88 0.0280 0.0023

Mercury -51269-11-28 23:59 J -17004246.62 -17004246.50 -17004246.38 0.0281 0.0121

Mercury -51268-02-25 12:13 J -17004158.07 -17004157.99 -17004157.90 0.0282 0.0219

Moon -51268-08-19 07:40 J -17003983.42 -17003983.18 -17003982.94 0.0283 0.0076

Earth -51268-08-19 10:47 J -17003983.29 -17003983.05 -17003982.81 0.0283 0.0066 \*

Moon -51267-09-01 16:47 J -17003604.93 -17003604.80 -17003604.65 0.0286 0.0230

Earth -51267-09-01 20:23 J -17003604.78 -17003604.65 -17003604.51 0.0286 0.0233 \*

Venus -51263-05-12 20:23 J -17002255.85 -17002255.65 -17002255.45 0.0294 0.0061

Mercury -51255-01-03 04:04 J -16999463.46 -16999463.33 -16999463.19 0.0282 0.0173

Mercury -51255-04-01 23:59 J -16999374.67 -16999374.50 -16999374.33 0.0281 0.0047

Mercury -51255-06-29 20:09 J -16999285.83 -16999285.66 -16999285.49 0.0280 0.0080

Mercury -51255-09-26 16:33 J -16999196.93 -16999196.81 -16999196.69 0.0280 0.0207

Moon -51254-02-11 14:09 J -16999059.12 -16999058.91 -16999058.69 0.0278 0.0129

Earth -51254-02-11 16:47 J -16999059.02 -16999058.80 -16999058.59 0.0278 0.0137 \*

Earth -51253-02-24 15:35 J -16998681.06 -16998680.85 -16998680.63 0.0275 0.0141

Moon -51253-02-24 17:45 J -16998680.97 -16998680.76 -16998680.55 0.0275 0.0137 \*

Venus -51249-03-10 06:28 J -16997205.36 -16997205.23 -16997205.10 0.0267 0.0215

Venus -51249-10-25 14:09 J -16996976.11 -16996975.91 -16996975.69 0.0266 0.0074

Mercury -51240-07-26 11:45 J -16993780.10 -16993780.01 -16993779.91 0.0278 0.0209

Mercury -51240-10-23 00:28 J -16993691.61 -16993691.48 -16993691.35 0.0278 0.0111

Mercury -51239-01-19 13:11 J -16993603.09 -16993602.95 -16993602.82 0.0279 0.0015

Mercury -51239-04-18 01:25 J -16993514.57 -16993514.44 -16993514.31 0.0280 0.0087

Mercury -51239-07-15 13:40 J -16993426.03 -16993425.93 -16993425.82 0.0281 0.0184

Earth -51239-08-13 19:25 J -16993396.86 -16993396.69 -16993396.52 0.0281 0.0201

Moon -51239-08-13 22:18 J -16993396.71 -16993396.57 -16993396.40 0.0281 0.0213 \*

Mercury -51239-10-12 01:54 J -16993337.42 -16993337.42 -16993337.42 0.0281 0.0281

Earth -51238-08-27 01:40 J -16993018.66 -16993018.43 -16993018.20 0.0284 0.0092

Moon -51238-08-27 05:01 J -16993018.53 -16993018.29 -16993018.06 0.0284 0.0086 \*

Venus -51234-04-07 05:59 J -16991699.33 -16991699.25 -16991699.16 0.0294 0.0267  
 Venus -51234-11-22 21:35 J -16991469.79 -16991469.60 -16991469.40 0.0294 0.0099  
 Mars -51229-05-02 22:33 J -16989846.67 -16989846.56 -16989846.44 0.0291 0.0263  
 Mercury -51226-05-23 02:23 J -16988731.51 -16988731.40 -16988731.29 0.0282 0.0219  
 Mercury -51226-08-19 22:04 J -16988642.74 -16988642.58 -16988642.42 0.0281 0.0094  
 Mercury -51226-11-16 18:13 J -16988553.92 -16988553.74 -16988553.57 0.0281 0.0033  
 Earth -51225-02-06 00:42 J -16988472.52 -16988472.47 -16988472.39 0.0280 0.0270  
 Moon -51225-02-06 03:06 J -16988472.46 -16988472.37 -16988472.27 0.0280 0.0258 \*  
 Mercury -51225-02-13 14:23 J -16988465.04 -16988464.90 -16988464.75 0.0280 0.0160  
 Moon -51224-02-18 01:11 J -16988094.71 -16988094.45 -16988094.20 0.0277 0.0014  
 Earth -51224-02-18 03:06 J -16988094.61 -16988094.37 -16988094.12 0.0277 0.0013 \*  
 Moon -51223-03-02 20:37 J -16987716.65 -16987716.64 -16987716.63 0.0274 0.0273  
 Venus -51220-09-20 09:35 J -16986419.26 -16986419.10 -16986418.93 0.0266 0.0179  
 Venus -51219-05-07 17:45 J -16986189.96 -16986189.76 -16986189.56 0.0266 0.0110  
 Mars -51213-06-06 08:23 J -16983968.47 -16983968.15 -16983967.83 0.0271 0.0021  
 Mercury -51211-12-13 14:09 J -16983047.98 -16983047.91 -16983047.84 0.0278 0.0236  
 Mercury -51210-03-12 02:52 J -16982959.50 -16982959.38 -16982959.26 0.0279 0.0137  
 Mercury -51210-06-08 15:21 J -16982871.00 -16982870.86 -16982870.72 0.0279 0.0038  
 Mercury -51210-09-05 03:49 J -16982782.47 -16982782.34 -16982782.20 0.0280 0.0061  
 Mercury -51210-12-02 16:04 J -16982693.94 -16982693.83 -16982693.71 0.0281 0.0159  
 Mercury -51209-02-29 04:18 J -16982605.37 -16982605.32 -16982605.26 0.0282 0.0256  
 Moon -51209-08-20 12:28 J -16982432.21 -16982431.98 -16982431.74 0.0283 0.0047  
 Earth -51209-08-20 15:21 J -16982432.10 -16982431.86 -16982431.61 0.0283 0.0040 \*  
 Earth -51208-09-03 01:11 J -16982053.55 -16982053.45 -16982053.35 0.0286 0.0261  
 Moon -51208-09-03 01:40 J -16982053.52 -16982053.43 -16982053.33 0.0286 0.0262 \*  
 Venus -51205-10-17 13:54 J -16980913.05 -16980912.92 -16980912.77 0.0294 0.0211  
 Venus -51204-06-04 05:59 J -16980683.42 -16980683.25 -16980683.08 0.0294 0.0155  
 Mars -51199-06-21 03:21 J -16978840.62 -16978840.36 -16978840.09 0.0289 0.0069  
 Mercury -51197-10-09 03:35 J -16977999.42 -16977999.35 -16977999.26 0.0283 0.0246  
 Mercury -51196-01-05 23:30 J -16977910.68 -16977910.52 -16977910.36 0.0282 0.0121

Mercury -51196-04-04 19:25 J -16977821.86 -16977821.69 -16977821.51 0.0281 0.0007  
 Mercury -51196-07-02 15:49 J -16977733.00 -16977732.84 -16977732.69 0.0280 0.0133  
 Mercury -51196-09-29 12:13 J -16977644.05 -16977643.99 -16977643.93 0.0279 0.0260  
 Earth -51195-02-12 23:59 J -16977507.73 -16977507.50 -16977507.27 0.0278 0.0109  
 Moon -51195-02-13 01:54 J -16977507.64 -16977507.42 -16977507.19 0.0278 0.0104 \*  
 Earth -51194-02-25 22:47 J -16977129.74 -16977129.55 -16977129.35 0.0275 0.0168  
 Moon -51194-02-26 02:09 J -16977129.60 -16977129.41 -16977129.20 0.0275 0.0165 \*  
 Venus -51190-04-02 16:33 J -16975632.99 -16975632.81 -16975632.61 0.0266 0.0131  
 Venus -51190-11-18 00:28 J -16975403.65 -16975403.48 -16975403.30 0.0266 0.0158  
 Mercury -51181-05-01 15:21 J -16972315.88 -16972315.86 -16972315.83 0.0277 0.0269  
 Mercury -51181-07-29 04:04 J -16972227.43 -16972227.33 -16972227.21 0.0278 0.0171  
 Mercury -51181-10-25 16:47 J -16972138.93 -16972138.80 -16972138.66 0.0278 0.0072  
 Mercury -51180-01-22 05:16 J -16972050.42 -16972050.28 -16972050.14 0.0279 0.0026  
 Mercury -51180-04-20 17:30 J -16971961.89 -16971961.77 -16971961.64 0.0280 0.0124  
 Mercury -51180-07-18 05:45 J -16971873.34 -16971873.26 -16971873.17 0.0281 0.0221  
 Earth -51180-08-14 23:45 J -16971845.70 -16971845.51 -16971845.32 0.0281 0.0176  
 Moon -51180-08-15 02:23 J -16971845.58 -16971845.40 -16971845.21 0.0281 0.0186 \*  
 Moon -51179-08-28 04:33 J -16971467.53 -16971467.31 -16971467.07 0.0284 0.0117  
 Earth -51179-08-28 05:59 J -16971467.47 -16971467.25 -16971467.03 0.0284 0.0118 \*  
 Venus -51175-04-29 14:37 J -16970127.04 -16970126.89 -16970126.71 0.0294 0.0174  
 Venus -51175-12-15 06:28 J -16969897.38 -16969897.23 -16969897.07 0.0295 0.0192  
 Mercury -51167-05-25 20:52 J -16967178.76 -16967178.63 -16967178.49 0.0282 0.0171  
 Mercury -51167-08-22 17:01 J -16967089.97 -16967089.79 -16967089.62 0.0281 0.0046  
 Mercury -51167-11-19 13:11 J -16967001.12 -16967000.95 -16967000.79 0.0281 0.0082  
 Moon -51166-02-07 03:21 J -16966921.49 -16966921.36 -16966921.23 0.0280 0.0238  
 Earth -51166-02-07 05:59 J -16966921.36 -16966921.25 -16966921.13 0.0280 0.0245 \*  
 Mercury -51166-02-16 09:21 J -16966912.22 -16966912.11 -16966911.99 0.0280 0.0210  
 Moon -51165-02-20 04:33 J -16966543.55 -16966543.31 -16966543.07 0.0277 0.0037  
 Earth -51165-02-20 08:09 J -16966543.40 -16966543.16 -16966542.91 0.0277 0.0039 \*  
 Venus -51161-10-12 18:28 J -16964846.93 -16964846.73 -16964846.52 0.0266 0.0098



Venus -51160-05-30 02:23 J -16964617.55 -16964617.40 -16964617.24 0.0266 0.0190  
 Mars -51155-09-09 15:21 J -16962688.92 -16962688.86 -16962688.78 0.0269 0.0263  
 Mercury -51152-12-16 05:59 J -16961495.34 -16961495.25 -16961495.15 0.0278 0.0200  
 Mercury -51151-03-14 18:42 J -16961406.85 -16961406.72 -16961406.58 0.0279 0.0101  
 Mercury -51151-06-11 07:25 J -16961318.33 -16961318.19 -16961318.05 0.0279 0.0007  
 Mercury -51151-09-07 19:40 J -16961229.81 -16961229.68 -16961229.55 0.0280 0.0096  
 Mercury -51151-12-05 07:54 J -16961141.26 -16961141.17 -16961141.07 0.0281 0.0194  
 Earth -51150-08-22 17:59 J -16960880.99 -16960880.75 -16960880.51 0.0283 0.0015  
 Moon -51150-08-22 19:25 J -16960880.93 -16960880.69 -16960880.45 0.0283 0.0018 \*  
 Earth -51149-09-04 03:21 J -16960502.36 -16960502.36 -16960502.33 0.0287 0.0286  
 Venus -51146-11-09 21:49 J -16959340.77 -16959340.59 -16959340.40 0.0294 0.0121  
 Venus -51145-06-26 13:54 J -16959111.03 -16959110.92 -16959110.81 0.0294 0.0245  
 Mars -51141-09-26 21:06 J -16957557.78 -16957557.62 -16957557.44 0.0291 0.0224  
 Mercury -51138-10-12 21:49 J -16956446.70 -16956446.59 -16956446.46 0.0282 0.0201  
 Mercury -51137-01-09 17:45 J -16956357.92 -16956357.76 -16956357.59 0.0282 0.0075  
 Mercury -51137-04-07 13:54 J -16956269.09 -16956268.92 -16956268.75 0.0281 0.0052  
 Mercury -51137-07-05 10:18 J -16956180.20 -16956180.07 -16956179.94 0.0280 0.0179  
 Earth -51136-02-14 03:35 J -16955956.59 -16955956.35 -16955956.12 0.0278 0.0086  
 Moon -51136-02-14 07:11 J -16955956.44 -16955956.20 -16955955.96 0.0278 0.0083 \*  
 Moon -51135-02-27 02:23 J -16955578.58 -16955578.40 -16955578.20 0.0275 0.0185  
 Earth -51135-02-27 02:23 J -16955578.57 -16955578.40 -16955578.22 0.0275 0.0193 \*  
 Venus -51131-04-25 01:25 J -16954060.65 -16954060.44 -16954060.22 0.0266 0.0049  
 Venus -51131-12-10 08:52 J -16953831.22 -16953831.13 -16953831.02 0.0266 0.0237  
 Mars -51125-10-30 21:35 J -16951679.91 -16951679.60 -16951679.29 0.0270 0.0060  
 Mercury -51122-05-05 07:25 J -16950763.26 -16950763.19 -16950763.11 0.0277 0.0233  
 Mercury -51122-08-01 20:09 J -16950674.78 -16950674.66 -16950674.53 0.0277 0.0135  
 Mercury -51122-10-29 08:52 J -16950586.27 -16950586.13 -16950586.00 0.0278 0.0037  
 Mercury -51121-01-25 21:06 J -16950497.75 -16950497.62 -16950497.48 0.0279 0.0061  
 Mercury -51121-04-23 09:21 J -16950409.22 -16950409.11 -16950408.99 0.0280 0.0159  
 Mercury -51121-07-20 21:35 J -16950320.65 -16950320.60 -16950320.55 0.0281 0.0255

Moon -51121-08-16 00:13 J -16950294.68 -16950294.49 -16950294.27 0.0281 0.0160  
 Earth -51121-08-16 01:54 J -16950294.62 -16950294.42 -16950294.21 0.0281 0.0153 \*  
 Moon -51120-08-29 04:33 J -16949916.52 -16949916.31 -16949916.10 0.0284 0.0146  
 Earth -51120-08-29 08:09 J -16949916.37 -16949916.16 -16949915.95 0.0284 0.0142 \*  
 Venus -51116-05-21 21:49 J -16948554.78 -16948554.59 -16948554.39 0.0294 0.0086  
 Venus -51115-01-06 13:25 J -16948324.99 -16948324.94 -16948324.87 0.0295 0.0279  
 Mars -51111-11-14 01:54 J -16946552.68 -16946552.42 -16946552.15 0.0290 0.0078  
 Mercury -51108-02-28 18:57 J -16945714.78 -16945714.71 -16945714.63 0.0283 0.0253  
 Mercury -51108-05-28 14:52 J -16945626.03 -16945625.88 -16945625.73 0.0282 0.0128  
 Mercury -51108-08-25 10:47 J -16945537.22 -16945537.05 -16945536.88 0.0281 0.0002  
 Mercury -51108-11-22 06:57 J -16945448.36 -16945448.21 -16945448.05 0.0281 0.0126  
 Moon -51107-02-08 04:47 J -16945370.45 -16945370.30 -16945370.15 0.0280 0.0221  
 Earth -51107-02-08 07:40 J -16945370.32 -16945370.18 -16945370.02 0.0280 0.0223 \*  
 Mercury -51107-02-19 03:35 J -16945359.42 -16945359.35 -16945359.27 0.0280 0.0254  
 Earth -51106-02-21 09:49 J -16944992.32 -16944992.09 -16944991.84 0.0277 0.0061  
 Moon -51106-02-21 10:18 J -16944992.30 -16944992.07 -16944991.83 0.0277 0.0055 \*  
 Venus -51102-11-05 02:09 J -16943274.63 -16943274.41 -16943274.19 0.0266 0.0020  
 Mercury -51093-09-21 08:52 J -16940031.16 -16940031.13 -16940031.08 0.0277 0.0266  
 Mercury -51093-12-18 21:49 J -16939942.70 -16939942.59 -16939942.48 0.0278 0.0166  
 Mercury -51092-03-17 10:18 J -16939854.20 -16939854.07 -16939853.93 0.0279 0.0068  
 Mercury -51092-06-13 22:47 J -16939765.68 -16939765.55 -16939765.41 0.0279 0.0031  
 Mercury -51092-09-10 11:16 J -16939677.15 -16939677.03 -16939676.91 0.0280 0.0128  
 Mercury -51092-12-07 23:16 J -16939588.60 -16939588.53 -16939588.44 0.0281 0.0225  
 Earth -51091-08-23 17:59 J -16939329.99 -16939329.75 -16939329.51 0.0283 0.0007  
 Moon -51091-08-23 21:35 J -16939329.85 -16939329.60 -16939329.36 0.0283 0.0005 \*  
 Venus -51087-12-02 03:49 J -16937768.55 -16937768.34 -16937768.14 0.0294 0.0037  
 Mercury -51079-10-15 15:21 J -16934894.00 -16934893.86 -16934893.72 0.0282 0.0161  
 Mercury -51078-01-12 11:16 J -16934805.20 -16934805.03 -16934804.86 0.0282 0.0035  
 Mercury -51078-04-11 07:25 J -16934716.35 -16934716.19 -16934716.02 0.0281 0.0093  
 Mercury -51078-07-09 03:49 J -16934627.44 -16934627.34 -16934627.22 0.0280 0.0221

Moon -51077-02-16 03:21 J -16934405.61 -16934405.36 -16934405.11 0.0278 0.0068  
 Earth -51077-02-16 04:04 J -16934405.57 -16934405.33 -16934405.09 0.0278 0.0065 \*  
 Moon -51076-02-27 23:30 J -16934027.68 -16934027.52 -16934027.35 0.0275 0.0202  
 Earth -51076-02-28 03:21 J -16934027.51 -16934027.36 -16934027.20 0.0275 0.0214 \*  
 Venus -51073-09-30 00:28 J -16932717.52 -16932717.48 -16932717.43 0.0267 0.0261  
 Venus -51072-05-17 08:37 J -16932488.36 -16932488.14 -16932487.92 0.0266 0.0027  
 Mars -51066-02-03 03:06 J -16930400.54 -16930400.37 -16930400.19 0.0268 0.0226  
 Mercury -51063-05-07 23:16 J -16929210.62 -16929210.53 -16929210.43 0.0277 0.0199  
 Mercury -51063-08-04 11:59 J -16929122.13 -16929122.00 -16929121.87 0.0277 0.0100  
 Mercury -51063-11-01 00:28 J -16929033.62 -16929033.48 -16929033.34 0.0278 0.0003  
 Mercury -51062-01-28 12:42 J -16928945.10 -16928944.97 -16928944.84 0.0279 0.0094  
 Mercury -51062-04-27 00:57 J -16928856.56 -16928856.46 -16928856.36 0.0280 0.0191  
 Moon -51062-08-17 23:16 J -16928743.73 -16928743.53 -16928743.31 0.0281 0.0138  
 Earth -51062-08-18 03:06 J -16928743.59 -16928743.37 -16928743.16 0.0281 0.0131 \*  
 Moon -51061-08-30 08:09 J -16928365.34 -16928365.16 -16928364.96 0.0284 0.0170  
 Earth -51061-08-30 08:37 J -16928365.33 -16928365.14 -16928364.93 0.0284 0.0164 \*  
 Venus -51057-06-13 04:04 J -16926982.53 -16926982.33 -16926982.12 0.0294 0.0005  
 Mars -51052-02-19 11:59 J -16925270.16 -16925270.00 -16925269.81 0.0292 0.0223  
 Mercury -51049-03-03 11:59 J -16924162.10 -16924162.00 -16924161.88 0.0283 0.0215  
 Mercury -51049-05-31 07:54 J -16924073.33 -16924073.17 -16924073.00 0.0282 0.0090  
 Mercury -51049-08-28 04:04 J -16923984.50 -16923984.33 -16923984.16 0.0281 0.0037  
 Mercury -51049-11-25 00:13 J -16923895.62 -16923895.49 -16923895.34 0.0281 0.0166  
 Earth -51048-02-09 06:57 J -16923819.37 -16923819.21 -16923819.03 0.0280 0.0203  
 Moon -51048-02-09 08:09 J -16923819.32 -16923819.16 -16923819.00 0.0280 0.0205 \*  
 Earth -51047-02-22 09:06 J -16923441.35 -16923441.12 -16923440.88 0.0277 0.0081  
 Moon -51047-02-22 12:57 J -16923441.19 -16923440.96 -16923440.72 0.0277 0.0072 \*  
 Venus -51043-04-11 23:59 J -16921931.60 -16921931.50 -16921931.39 0.0267 0.0234  
 Venus -51043-11-27 08:23 J -16921702.37 -16921702.15 -16921701.94 0.0266 0.0054  
 Mars -51036-03-25 21:35 J -16919391.90 -16919391.60 -16919391.29 0.0270 0.0082  
 Mercury -51034-09-25 00:42 J -16918478.55 -16918478.47 -16918478.40 0.0277 0.0232

Mercury -51034-12-22 13:11 J -16918390.07 -16918389.95 -16918389.82 0.0278 0.0134  
 Mercury -51033-03-20 01:54 J -16918301.56 -16918301.42 -16918301.28 0.0279 0.0036  
 Mercury -51033-06-16 14:09 J -16918213.04 -16918212.91 -16918212.77 0.0279 0.0062  
 Earth -51033-08-11 13:25 J -16918157.01 -16918156.94 -16918156.85 0.0280 0.0262  
 Moon -51033-08-11 17:01 J -16918156.83 -16918156.79 -16918156.72 0.0280 0.0272  
 Mercury -51033-09-13 02:23 J -16918124.51 -16918124.40 -16918124.28 0.0280 0.0159  
 Mercury -51033-12-10 14:37 J -16918035.94 -16918035.89 -16918035.83 0.0281 0.0255  
 Earth -51032-08-24 17:16 J -16917779.02 -16917778.78 -16917778.54 0.0283 0.0027  
 Moon -51032-08-24 17:59 J -16917779.00 -16917778.75 -16917778.50 0.0283 0.0028 \*  
 Venus -51028-12-24 08:37 J -16916196.34 -16916196.14 -16916195.94 0.0294 0.0045  
 Mars -51022-04-09 08:52 J -16914264.38 -16914264.13 -16914263.88 0.0290 0.0105  
 Mercury -51020-07-21 12:13 J -16913430.06 -16913429.99 -16913429.91 0.0283 0.0250  
 Mercury -51020-10-18 07:54 J -16913341.32 -16913341.17 -16913341.01 0.0282 0.0126  
 Mercury -51019-01-15 04:04 J -16913252.50 -16913252.33 -16913252.16 0.0282 0.0001  
 Mercury -51019-04-14 00:28 J -16913163.64 -16913163.48 -16913163.33 0.0281 0.0129  
 Mercury -51019-07-11 20:52 J -16913074.69 -16913074.63 -16913074.56 0.0280 0.0258  
 Moon -51018-02-16 22:18 J -16912854.81 -16912854.57 -16912854.33 0.0278 0.0055  
 Earth -51018-02-17 02:09 J -16912854.66 -16912854.41 -16912854.17 0.0278 0.0046 \*  
 Moon -51017-02-29 23:59 J -16912476.63 -16912476.50 -16912476.35 0.0275 0.0220  
 Earth -51017-03-01 01:40 J -16912476.56 -16912476.43 -16912476.30 0.0275 0.0233 \*  
 Venus -51014-10-23 06:28 J -16911145.38 -16911145.23 -16911145.07 0.0267 0.0186  
 Venus -51013-06-08 14:37 J -16910916.09 -16910915.89 -16910915.68 0.0266 0.0102  
 Mercury -51004-02-11 02:09 J -16907746.44 -16907746.41 -16907746.36 0.0276 0.0263  
 Mercury -51004-05-10 14:52 J -16907657.99 -16907657.88 -16907657.76 0.0277 0.0166  
 Mercury -51004-08-07 03:35 J -16907569.49 -16907569.35 -16907569.22 0.0277 0.0068  
 Mercury -51004-11-03 15:49 J -16907480.97 -16907480.84 -16907480.70 0.0278 0.0031  
 Mercury -51003-01-31 04:18 J -16907392.45 -16907392.32 -16907392.20 0.0279 0.0126  
 Mercury -51003-04-29 16:18 J -16907303.90 -16907303.82 -16907303.73 0.0280 0.0222  
 Moon -51003-08-19 02:37 J -16907192.61 -16907192.39 -16907192.18 0.0281 0.0113  
 Earth -51003-08-19 02:52 J -16907192.59 -16907192.38 -16907192.14 0.0281 0.0111 \*

Earth -51002-09-01 08:23 J -16906814.33 -16906814.15 -16906813.96 0.0284 0.0185

Moon -51002-09-01 11:30 J -16906814.18 -16906814.02 -16906813.84 0.0284 0.0194 \*

# 51ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 51st millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-50999-11-18 17:59 J	-16905639.80	-16905639.75	-16905639.68	0.0293	0.0279		
Venus	-50998-07-06 09:21 J	-16905410.30	-16905410.11	-16905409.91	0.0294	0.0082		
Mercury	-50990-03-07 04:33 J	-16902609.43	-16902609.31	-16902609.17	0.0283	0.0180		
Mercury	-50990-06-04 00:42 J	-16902520.64	-16902520.47	-16902520.30	0.0282	0.0054		
Mercury	-50990-08-31 20:52 J	-16902431.80	-16902431.63	-16902431.46	0.0281	0.0074		
Mercury	-50990-11-28 17:16 J	-16902342.90	-16902342.78	-16902342.66	0.0281	0.0202		
Earth	-50989-02-11 04:33 J	-16902268.49	-16902268.31	-16902268.12	0.0280	0.0185		
Moon	-50989-02-11 07:54 J	-16902268.33	-16902268.17	-16902267.97	0.0280	0.0189 *		
Earth	-50988-02-23 06:57 J	-16901890.44	-16901890.21	-16901889.98	0.0277	0.0100		
Moon	-50988-02-23 07:54 J	-16901890.41	-16901890.17	-16901889.93	0.0277	0.0087 *		
Venus	-50984-05-04 05:30 J	-16900359.44	-16900359.27	-16900359.09	0.0267	0.0161		
Venus	-50984-12-19 13:40 J	-16900130.11	-16900129.93	-16900129.73	0.0266	0.0127		
Mars	-50978-06-28 21:35 J	-16898112.79	-16898112.60	-16898112.39	0.0269	0.0209		
Mercury	-50975-09-27 16:04 J	-16896925.92	-16896925.83	-16896925.73	0.0277	0.0201		
Mercury	-50975-12-25 04:47 J	-16896837.43	-16896837.30	-16896837.17	0.0278	0.0103		
Mercury	-50974-03-23 17:16 J	-16896748.92	-16896748.78	-16896748.64	0.0279	0.0007		
Mercury	-50974-06-20 05:30 J	-16896660.40	-16896660.27	-16896660.14	0.0279	0.0092		

Earth -50974-08-13 12:42 J -16896606.08 -16896605.97 -16896605.84 0.0280 0.0242  
 Moon -50974-08-13 12:42 J -16896606.07 -16896605.97 -16896605.84 0.0280 0.0246 \*  
 Mercury -50974-09-16 17:45 J -16896571.86 -16896571.76 -16896571.66 0.0280 0.0189  
 Moon -50973-08-25 12:57 J -16896228.20 -16896227.96 -16896227.71 0.0283 0.0053  
 Earth -50973-08-25 16:18 J -16896228.06 -16896227.82 -16896227.58 0.0283 0.0048 \*  
 Venus -50969-05-30 21:49 J -16894853.70 -16894853.59 -16894853.46 0.0293 0.0235  
 Venus -50968-01-15 13:25 J -16894624.12 -16894623.94 -16894623.75 0.0294 0.0126  
 Mars -50964-07-15 16:18 J -16892982.02 -16892981.82 -16892981.63 0.0291 0.0201  
 Mercury -50961-07-24 04:33 J -16891877.41 -16891877.31 -16891877.20 0.0283 0.0216  
 Mercury -50961-10-21 00:28 J -16891788.64 -16891788.48 -16891788.32 0.0282 0.0091  
 Mercury -50960-01-17 20:37 J -16891699.81 -16891699.64 -16891699.47 0.0282 0.0036  
 Mercury -50960-04-16 17:01 J -16891610.93 -16891610.79 -16891610.65 0.0281 0.0165  
 Moon -50959-02-17 22:04 J -16891303.82 -16891303.58 -16891303.35 0.0278 0.0037  
 Earth -50959-02-17 23:01 J -16891303.79 -16891303.54 -16891303.30 0.0278 0.0029 \*  
 Earth -50958-03-02 22:47 J -16890925.64 -16890925.55 -16890925.45 0.0275 0.0251  
 Moon -50958-03-03 01:54 J -16890925.54 -16890925.42 -16890925.29 0.0275 0.0236 \*  
 Venus -50955-11-14 11:30 J -16889573.21 -16889573.02 -16889572.81 0.0267 0.0115  
 Venus -50954-07-01 19:54 J -16889343.83 -16889343.67 -16889343.50 0.0266 0.0174  
 Mars -50948-08-19 07:25 J -16887103.47 -16887103.19 -16887102.89 0.0270 0.0114  
 Mercury -50945-02-14 17:59 J -16886193.82 -16886193.75 -16886193.67 0.0276 0.0229  
 Mercury -50945-05-13 06:42 J -16886105.34 -16886105.22 -16886105.10 0.0277 0.0132  
 Mercury -50945-08-09 19:11 J -16886016.84 -16886016.70 -16886016.56 0.0277 0.0034  
 Mercury -50945-11-06 07:25 J -16885928.32 -16885928.19 -16885928.05 0.0278 0.0063  
 Mercury -50944-02-02 19:40 J -16885839.79 -16885839.68 -16885839.56 0.0279 0.0159  
 Mercury -50944-05-02 07:54 J -16885751.23 -16885751.17 -16885751.12 0.0280 0.0254  
 Earth -50944-08-20 03:49 J -16885641.57 -16885641.34 -16885641.11 0.0281 0.0088  
 Moon -50944-08-20 07:25 J -16885641.42 -16885641.19 -16885640.96 0.0281 0.0087 \*  
 Earth -50943-09-02 08:52 J -16885263.29 -16885263.13 -16885262.96 0.0284 0.0207  
 Moon -50943-09-02 11:16 J -16885263.18 -16885263.03 -16885262.85 0.0284 0.0216 \*  
 Venus -50940-12-10 23:45 J -16884067.65 -16884067.51 -16884067.35 0.0293 0.0195

Venus -50939-07-28 15:06 J -16883838.03 -16883837.87 -16883837.70 0.0294 0.0164  
 Mars -50934-09-01 20:09 J -16881976.91 -16881976.66 -16881976.40 0.0290 0.0102  
 Mercury -50932-12-11 01:25 J -16881145.48 -16881145.44 -16881145.38 0.0284 0.0270  
 Mercury -50931-03-09 21:06 J -16881056.76 -16881056.62 -16881056.47 0.0283 0.0145  
 Mercury -50931-06-06 17:16 J -16880967.95 -16880967.78 -16880967.61 0.0282 0.0018  
 Mercury -50931-09-03 13:25 J -16880879.10 -16880878.94 -16880878.77 0.0281 0.0110  
 Mercury -50931-12-01 10:04 J -16880790.17 -16880790.08 -16880789.99 0.0281 0.0238  
 Earth -50930-02-12 01:40 J -16880717.62 -16880717.43 -16880717.23 0.0280 0.0167  
 Moon -50930-02-12 02:37 J -16880717.59 -16880717.39 -16880717.19 0.0280 0.0172 \*  
 Moon -50929-02-25 00:42 J -16880339.70 -16880339.47 -16880339.23 0.0277 0.0103  
 Earth -50929-02-25 04:04 J -16880339.55 -16880339.33 -16880339.10 0.0277 0.0118 \*  
 Venus -50925-05-26 10:33 J -16878787.26 -16878787.06 -16878786.84 0.0267 0.0089  
 Venus -50924-01-10 19:11 J -16878557.84 -16878557.70 -16878557.55 0.0266 0.0199  
 Mercury -50916-07-03 18:57 J -16875461.74 -16875461.71 -16875461.67 0.0276 0.0265  
 Mercury -50916-09-30 07:40 J -16875373.29 -16875373.18 -16875373.07 0.0277 0.0168  
 Mercury -50916-12-27 20:09 J -16875284.79 -16875284.66 -16875284.52 0.0278 0.0070  
 Mercury -50915-03-26 08:37 J -16875196.28 -16875196.14 -16875196.00 0.0279 0.0028  
 Mercury -50915-06-22 20:52 J -16875107.75 -16875107.63 -16875107.50 0.0279 0.0124  
 Moon -50915-08-14 09:06 J -16875055.26 -16875055.12 -16875054.96 0.0280 0.0220  
 Earth -50915-08-14 12:57 J -16875055.10 -16875054.96 -16875054.81 0.0280 0.0221 \*  
 Mercury -50915-09-19 09:06 J -16875019.20 -16875019.12 -16875019.04 0.0280 0.0220  
 Moon -50914-08-27 13:40 J -16874677.15 -16874676.93 -16874676.69 0.0283 0.0078  
 Earth -50914-08-27 16:04 J -16874677.06 -16874676.83 -16874676.59 0.0283 0.0069 \*  
 Venus -50910-06-23 03:06 J -16873281.53 -16873281.37 -16873281.19 0.0293 0.0153  
 Venus -50909-02-07 18:28 J -16873051.86 -16873051.73 -16873051.58 0.0294 0.0207  
 Mercury -50902-07-27 21:06 J -16870324.75 -16870324.62 -16870324.49 0.0283 0.0182  
 Mercury -50902-10-24 17:01 J -16870235.96 -16870235.79 -16870235.62 0.0282 0.0056  
 Mercury -50901-01-21 13:11 J -16870147.12 -16870146.95 -16870146.78 0.0282 0.0072  
 Mercury -50901-04-19 09:35 J -16870058.22 -16870058.10 -16870057.97 0.0281 0.0200  
 Earth -50900-02-18 19:40 J -16869752.93 -16869752.68 -16869752.44 0.0278 0.0011

Moon -50900-02-18 22:33 J -16869752.80 -16869752.56 -16869752.32 0.0278 0.0022 \*  
 Earth -50899-03-03 19:40 J -16869374.72 -16869374.68 -16869374.62 0.0275 0.0269  
 Moon -50899-03-03 22:33 J -16869374.66 -16869374.56 -16869374.46 0.0275 0.0253 \*  
 Venus -50896-12-06 17:01 J -16868001.01 -16868000.79 -16868000.57 0.0267 0.0041  
 Venus -50895-07-24 01:11 J -16867771.52 -16867771.45 -16867771.36 0.0267 0.0246  
 Mars -50890-11-22 10:33 J -16865824.29 -16865824.06 -16865823.81 0.0269 0.0179  
 Mercury -50886-02-17 09:49 J -16864641.18 -16864641.09 -16864640.98 0.0276 0.0195  
 Mercury -50886-05-16 22:33 J -16864552.69 -16864552.56 -16864552.43 0.0277 0.0097  
 Mercury -50886-08-13 11:01 J -16864464.18 -16864464.04 -16864463.90 0.0278 0.0006  
 Mercury -50886-11-09 23:16 J -16864375.66 -16864375.53 -16864375.40 0.0278 0.0096  
 Mercury -50885-02-06 11:16 J -16864287.12 -16864287.03 -16864286.92 0.0279 0.0192  
 Earth -50885-08-21 05:45 J -16864090.50 -16864090.26 -16864090.03 0.0281 0.0065  
 Moon -50885-08-21 07:54 J -16864090.42 -16864090.17 -16864089.93 0.0281 0.0059 \*  
 Moon -50884-09-03 08:37 J -16863712.26 -16863712.14 -16863712.00 0.0284 0.0243  
 Earth -50884-09-03 10:33 J -16863712.19 -16863712.06 -16863711.91 0.0284 0.0231 \*  
 Venus -50880-01-02 06:28 J -16862495.41 -16862495.23 -16862495.03 0.0292 0.0109  
 Venus -50880-08-19 21:49 J -16862265.69 -16862265.59 -16862265.48 0.0293 0.0249  
 Mars -50876-12-08 06:42 J -16860694.40 -16860694.22 -16860694.02 0.0292 0.0202  
 Mercury -50873-12-13 18:13 J -16859592.83 -16859592.74 -16859592.63 0.0284 0.0233  
 Mercury -50872-03-12 14:09 J -16859504.07 -16859503.91 -16859503.75 0.0283 0.0107  
 Mercury -50872-06-09 10:18 J -16859415.25 -16859415.07 -16859414.90 0.0282 0.0020  
 Mercury -50872-09-06 06:28 J -16859326.37 -16859326.23 -16859326.08 0.0281 0.0148  
 Mercury -50872-12-04 03:06 J -16859237.39 -16859237.37 -16859237.34 0.0280 0.0277  
 Moon -50871-02-12 20:37 J -16859166.84 -16859166.64 -16859166.43 0.0280 0.0157  
 Earth -50871-02-12 23:59 J -16859166.71 -16859166.50 -16859166.29 0.0280 0.0147 \*  
 Moon -50870-02-25 23:59 J -16858788.71 -16858788.50 -16858788.28 0.0277 0.0124  
 Earth -50870-02-26 02:23 J -16858788.61 -16858788.40 -16858788.19 0.0277 0.0138 \*  
 Venus -50866-06-18 16:18 J -16857215.04 -16857214.82 -16857214.60 0.0267 0.0016  
 Mars -50859-01-12 02:23 J -16854815.67 -16854815.40 -16854815.11 0.0270 0.0131  
 Mercury -50857-07-06 10:47 J -16853909.12 -16853909.05 -16853908.97 0.0277 0.0230



Mercury -50857-10-02 23:30 J -16853820.64 -16853820.52 -16853820.39 0.0277 0.0133  
 Mercury -50857-12-30 11:59 J -16853732.13 -16853732.00 -16853731.86 0.0278 0.0036  
 Mercury -50856-03-29 00:28 J -16853643.62 -16853643.48 -16853643.35 0.0279 0.0062  
 Mercury -50856-06-25 12:28 J -16853555.08 -16853554.98 -16853554.86 0.0279 0.0159  
 Moon -50856-08-15 13:11 J -16853504.11 -16853503.95 -16853503.77 0.0280 0.0195  
 Earth -50856-08-15 14:52 J -16853504.05 -16853503.88 -16853503.70 0.0280 0.0198 \*  
 Mercury -50856-09-22 00:42 J -16853466.52 -16853466.47 -16853466.41 0.0280 0.0254  
 Earth -50855-08-28 17:59 J -16853125.98 -16853125.75 -16853125.52 0.0283 0.0093  
 Moon -50855-08-28 20:09 J -16853125.87 -16853125.66 -16853125.43 0.0283 0.0106 \*  
 Venus -50851-07-15 10:04 J -16851709.28 -16851709.08 -16851708.88 0.0293 0.0066  
 Venus -50850-03-02 00:57 J -16851479.46 -16851479.46 -16851479.43 0.0294 0.0293  
 Mars -50845-01-26 01:11 J -16849688.68 -16849688.45 -16849688.20 0.0290 0.0124  
 Mercury -50843-05-02 17:59 J -16848860.79 -16848860.75 -16848860.69 0.0284 0.0270  
 Mercury -50843-07-30 13:54 J -16848772.07 -16848771.92 -16848771.78 0.0283 0.0145  
 Mercury -50843-10-27 09:49 J -16848683.26 -16848683.09 -16848682.92 0.0282 0.0019  
 Mercury -50842-01-24 05:59 J -16848594.41 -16848594.25 -16848594.08 0.0281 0.0110  
 Earth -50842-02-07 11:59 J -16848580.01 -16848580.00 -16848579.96 0.0281 0.0280  
 Mercury -50842-04-23 02:37 J -16848505.48 -16848505.39 -16848505.30 0.0281 0.0238  
 Earth -50841-02-20 17:30 J -16848202.01 -16848201.77 -16848201.52 0.0278 0.0010  
 Moon -50841-02-20 20:23 J -16848201.91 -16848201.65 -16848201.40 0.0278 0.0004 \*  
 Moon -50840-03-04 15:35 J -16847823.86 -16847823.85 -16847823.82 0.0275 0.0274  
 Venus -50837-05-13 13:25 J -16846657.98 -16846657.94 -16846657.87 0.0268 0.0258  
 Venus -50837-12-28 22:47 J -16846428.76 -16846428.55 -16846428.33 0.0267 0.0032  
 Mercury -50828-11-23 13:25 J -16843176.99 -16843176.94 -16843176.88 0.0276 0.0254  
 Mercury -50827-02-20 02:09 J -16843088.52 -16843088.41 -16843088.29 0.0276 0.0157  
 Mercury -50827-05-19 14:37 J -16843000.02 -16842999.89 -16842999.75 0.0277 0.0060  
 Mercury -50827-08-16 03:06 J -16842911.51 -16842911.37 -16842911.23 0.0278 0.0037  
 Mercury -50827-11-12 15:21 J -16842822.98 -16842822.86 -16842822.74 0.0279 0.0133  
 Mercury -50826-02-09 03:21 J -16842734.43 -16842734.36 -16842734.28 0.0279 0.0229  
 Moon -50826-08-23 06:57 J -16842539.46 -16842539.21 -16842538.96 0.0281 0.0028

Earth -50826-08-23 09:35 J -16842539.34 -16842539.10 -16842538.85 0.0281 0.0039 \*  
 Moon -50825-09-04 11:16 J -16842161.09 -16842161.03 -16842160.96 0.0284 0.0272  
 Earth -50825-09-04 14:37 J -16842160.98 -16842160.89 -16842160.77 0.0284 0.0257 \*  
 Venus -50821-01-25 14:52 J -16840923.09 -16840922.88 -16840922.68 0.0292 0.0018  
 Mercury -50814-12-17 11:45 J -16838040.13 -16838040.01 -16838039.88 0.0283 0.0192  
 Mercury -50813-03-15 07:40 J -16837951.35 -16837951.18 -16837951.01 0.0283 0.0066  
 Mercury -50813-06-12 03:49 J -16837862.51 -16837862.34 -16837862.17 0.0282 0.0061  
 Mercury -50813-09-09 00:13 J -16837773.62 -16837773.49 -16837773.36 0.0281 0.0189  
 Moon -50812-02-13 21:21 J -16837615.81 -16837615.61 -16837615.40 0.0280 0.0138  
 Earth -50812-02-13 23:45 J -16837615.72 -16837615.51 -16837615.28 0.0280 0.0125 \*  
 Earth -50811-02-27 02:09 J -16837237.61 -16837237.41 -16837237.21 0.0277 0.0160  
 Moon -50811-02-27 04:04 J -16837237.54 -16837237.33 -16837237.13 0.0277 0.0146 \*  
 Venus -50808-11-23 13:25 J -16835872.04 -16835871.94 -16835871.82 0.0268 0.0230  
 Venus -50807-07-10 22:47 J -16835642.76 -16835642.55 -16835642.34 0.0267 0.0059  
 Mars -50801-04-16 08:23 J -16833536.40 -16833536.15 -16833535.88 0.0269 0.0160  
 Mercury -50798-07-10 03:06 J -16832356.47 -16832356.37 -16832356.27 0.0277 0.0193  
 Mercury -50798-10-06 15:49 J -16832267.97 -16832267.84 -16832267.71 0.0277 0.0095  
 Mercury -50797-01-03 04:18 J -16832179.46 -16832179.32 -16832179.18 0.0278 0.0006  
 Mercury -50797-03-31 16:33 J -16832090.94 -16832090.81 -16832090.68 0.0279 0.0099  
 Mercury -50797-06-28 04:47 J -16832002.40 -16832002.30 -16832002.21 0.0280 0.0195  
 Earth -50797-08-16 18:42 J -16831952.91 -16831952.72 -16831952.52 0.0280 0.0172  
 Moon -50797-08-16 21:21 J -16831952.80 -16831952.61 -16831952.41 0.0280 0.0166 \*  
 Earth -50796-08-29 21:49 J -16831574.80 -16831574.59 -16831574.36 0.0283 0.0120  
 Moon -50796-08-30 01:25 J -16831574.65 -16831574.44 -16831574.22 0.0283 0.0134 \*  
 Venus -50792-08-06 18:28 J -16830136.93 -16830136.73 -16830136.53 0.0293 0.0025  
 Mars -50787-05-03 17:16 J -16828405.98 -16828405.78 -16828405.56 0.0291 0.0178  
 Mercury -50784-05-05 11:30 J -16827308.11 -16827308.02 -16827307.91 0.0283 0.0228  
 Mercury -50784-08-02 07:25 J -16827219.35 -16827219.19 -16827219.03 0.0283 0.0103  
 Mercury -50784-10-30 03:35 J -16827130.53 -16827130.35 -16827130.18 0.0282 0.0024  
 Mercury -50783-01-26 23:45 J -16827041.65 -16827041.51 -16827041.36 0.0281 0.0152

Earth -50783-02-08 12:57 J -16827029.05 -16827028.96 -16827028.85 0.0281 0.0257  
 Moon -50783-02-08 15:21 J -16827028.93 -16827028.86 -16827028.78 0.0281 0.0267 \*  
 Moon -50782-02-21 16:33 J -16826651.07 -16826650.81 -16826650.56 0.0278 0.0018  
 Earth -50782-02-21 18:13 J -16826650.98 -16826650.74 -16826650.49 0.0278 0.0033 \*  
 Venus -50778-06-05 20:23 J -16825085.80 -16825085.65 -16825085.48 0.0268 0.0182  
 Venus -50777-01-21 05:45 J -16824856.46 -16824856.26 -16824856.06 0.0268 0.0108  
 Mars -50771-06-08 03:35 J -16822526.59 -16822526.35 -16822526.09 0.0270 0.0169  
 Mercury -50769-11-26 05:59 J -16821624.33 -16821624.25 -16821624.15 0.0276 0.0214  
 Mercury -50768-02-22 18:42 J -16821535.84 -16821535.72 -16821535.59 0.0277 0.0116  
 Mercury -50768-05-22 07:11 J -16821447.34 -16821447.20 -16821447.06 0.0278 0.0020  
 Mercury -50768-08-18 19:40 J -16821358.82 -16821358.68 -16821358.55 0.0278 0.0077  
 Mercury -50768-11-15 07:40 J -16821270.28 -16821270.18 -16821270.07 0.0279 0.0173  
 Mercury -50767-02-11 19:54 J -16821181.71 -16821181.67 -16821181.64 0.0280 0.0268  
 Moon -50767-08-24 12:57 J -16820988.20 -16820987.96 -16820987.72 0.0281 0.0002  
 Earth -50767-08-24 16:04 J -16820988.07 -16820987.83 -16820987.58 0.0281 0.0010 \*  
 Venus -50763-07-02 10:33 J -16819580.12 -16819580.06 -16819579.99 0.0291 0.0274  
 Venus -50762-02-17 00:57 J -16819350.65 -16819350.46 -16819350.26 0.0292 0.0078  
 Mars -50757-06-20 07:54 J -16817400.40 -16817400.17 -16817399.92 0.0290 0.0137  
 Mercury -50755-09-22 10:18 J -16816576.11 -16816576.07 -16816576.02 0.0284 0.0270  
 Mercury -50755-12-20 05:59 J -16816487.39 -16816487.25 -16816487.10 0.0283 0.0146  
 Mercury -50754-03-19 01:54 J -16816398.59 -16816398.42 -16816398.25 0.0282 0.0020  
 Mercury -50754-06-15 22:04 J -16816309.74 -16816309.58 -16816309.41 0.0282 0.0108  
 Mercury -50754-09-12 18:28 J -16816220.81 -16816220.73 -16816220.63 0.0281 0.0237  
 Earth -50753-02-16 02:52 J -16816064.61 -16816064.38 -16816064.15 0.0280 0.0099  
 Moon -50753-02-16 05:01 J -16816064.50 -16816064.29 -16816064.07 0.0280 0.0115 \*  
 Earth -50752-02-28 04:47 J -16815686.48 -16815686.30 -16815686.12 0.0277 0.0185  
 Moon -50752-02-28 08:09 J -16815686.34 -16815686.16 -16815685.95 0.0277 0.0170 \*  
 Venus -50749-12-15 21:21 J -16814299.78 -16814299.61 -16814299.42 0.0268 0.0152  
 Venus -50748-08-02 06:42 J -16814070.41 -16814070.22 -16814070.03 0.0267 0.0137  
 Mercury -50739-04-15 07:11 J -16810892.25 -16810892.20 -16810892.13 0.0276 0.0248

Mercury -50739-07-12 19:54 J -16810803.78 -16810803.67 -16810803.55 0.0277 0.0151  
 Mercury -50739-10-09 08:37 J -16810715.28 -16810715.14 -16810715.01 0.0278 0.0054  
 Mercury -50738-01-05 20:52 J -16810626.77 -16810626.63 -16810626.49 0.0278 0.0044  
 Mercury -50738-04-04 09:06 J -16810538.24 -16810538.12 -16810538.00 0.0279 0.0140  
 Mercury -50738-07-01 21:21 J -16810449.68 -16810449.61 -16810449.54 0.0280 0.0235  
 Earth -50738-08-19 01:40 J -16810401.63 -16810401.43 -16810401.21 0.0280 0.0144  
 Moon -50738-08-19 05:01 J -16810401.50 -16810401.29 -16810401.07 0.0280 0.0136 \*  
 Moon -50737-08-31 04:47 J -16810023.50 -16810023.30 -16810023.09 0.0283 0.0165  
 Earth -50737-08-31 05:30 J -16810023.47 -16810023.27 -16810023.06 0.0283 0.0150 \*  
 Venus -50733-01-12 13:54 J -16808794.03 -16808793.92 -16808793.79 0.0292 0.0232  
 Venus -50733-08-29 04:47 J -16808564.48 -16808564.30 -16808564.11 0.0293 0.0122  
 Mercury -50725-05-08 05:59 J -16805755.38 -16805755.25 -16805755.12 0.0283 0.0181  
 Mercury -50725-08-05 01:54 J -16805666.59 -16805666.42 -16805666.25 0.0282 0.0056  
 Mercury -50725-11-01 22:04 J -16805577.75 -16805577.58 -16805577.41 0.0282 0.0072  
 Mercury -50724-01-29 18:28 J -16805488.85 -16805488.73 -16805488.61 0.0281 0.0200  
 Moon -50724-02-09 14:09 J -16805478.03 -16805477.91 -16805477.79 0.0281 0.0244  
 Earth -50724-02-09 16:33 J -16805477.94 -16805477.81 -16805477.66 0.0281 0.0231 \*  
 Moon -50723-02-22 17:45 J -16805100.00 -16805099.76 -16805099.52 0.0278 0.0043  
 Earth -50723-02-22 21:35 J -16805099.85 -16805099.60 -16805099.36 0.0278 0.0059 \*  
 Venus -50719-06-28 04:47 J -16803513.50 -16803513.30 -16803513.10 0.0268 0.0103  
 Venus -50718-02-12 14:09 J -16803284.07 -16803283.91 -16803283.75 0.0268 0.0187  
 Mars -50713-09-10 16:47 J -16801247.07 -16801246.80 -16801246.50 0.0269 0.0121  
 Mercury -50710-09-02 10:18 J -16800160.09 -16800160.07 -16800160.03 0.0276 0.0268  
 Mercury -50710-11-29 23:01 J -16800071.64 -16800071.54 -16800071.42 0.0277 0.0171  
 Mercury -50709-02-26 11:45 J -16799983.14 -16799983.01 -16799982.87 0.0277 0.0073  
 Mercury -50709-05-25 00:13 J -16799894.63 -16799894.49 -16799894.35 0.0278 0.0024  
 Moon -50709-08-12 20:09 J -16799814.73 -16799814.66 -16799814.58 0.0279 0.0263  
 Earth -50709-08-12 23:30 J -16799814.58 -16799814.52 -16799814.43 0.0279 0.0264 \*  
 Mercury -50709-08-21 12:28 J -16799806.10 -16799805.98 -16799805.85 0.0279 0.0120  
 Mercury -50709-11-18 00:42 J -16799717.56 -16799717.47 -16799717.39 0.0279 0.0216

Earth -50708-08-26 00:57 J -16799436.70 -16799436.46 -16799436.21 0.0282 0.0023  
 Moon -50708-08-26 01:25 J -16799436.67 -16799436.44 -16799436.20 0.0282 0.0034 \*  
 Venus -50704-07-24 22:33 J -16798007.72 -16798007.56 -16798007.39 0.0291 0.0174  
 Venus -50703-03-11 12:57 J -16797778.12 -16797777.96 -16797777.80 0.0292 0.0178  
 Mars -50699-09-27 11:30 J -16796117.23 -16796117.02 -16796116.78 0.0291 0.0154  
 Mercury -50696-09-25 05:30 J -16795023.37 -16795023.27 -16795023.16 0.0283 0.0218  
 Mercury -50696-12-23 01:25 J -16794934.61 -16794934.44 -16794934.28 0.0283 0.0093  
 Mercury -50695-03-21 21:21 J -16794845.78 -16794845.61 -16794845.44 0.0282 0.0034  
 Mercury -50695-06-18 17:30 J -16794756.91 -16794756.77 -16794756.62 0.0281 0.0162  
 Earth -50694-02-17 09:35 J -16794513.34 -16794513.10 -16794512.86 0.0279 0.0070  
 Moon -50694-02-17 12:57 J -16794513.19 -16794512.96 -16794512.71 0.0279 0.0087 \*  
 Moon -50693-03-01 11:01 J -16794135.21 -16794135.04 -16794134.85 0.0276 0.0198  
 Earth -50693-03-01 11:01 J -16794135.20 -16794135.04 -16794134.88 0.0276 0.0213 \*  
 Venus -50689-01-08 07:11 J -16792727.41 -16792727.20 -16792726.99 0.0268 0.0069  
 Venus -50689-08-24 16:04 J -16792497.94 -16792497.83 -16792497.70 0.0267 0.0219  
 Mars -50683-11-01 15:49 J -16790238.05 -16790237.84 -16790237.62 0.0270 0.0199  
 Mercury -50680-04-18 00:28 J -16789339.57 -16789339.48 -16789339.38 0.0277 0.0203  
 Mercury -50680-07-15 13:11 J -16789251.08 -16789250.95 -16789250.82 0.0277 0.0106  
 Mercury -50680-10-12 01:40 J -16789162.57 -16789162.43 -16789162.29 0.0278 0.0009  
 Mercury -50679-01-08 13:54 J -16789074.05 -16789073.92 -16789073.79 0.0279 0.0088  
 Mercury -50679-04-07 02:09 J -16788985.51 -16788985.41 -16788985.31 0.0279 0.0184  
 Mercury -50679-07-04 14:09 J -16788896.91 -16788896.91 -16788896.89 0.0280 0.0279  
 Moon -50679-08-20 10:47 J -16788850.27 -16788850.05 -16788849.80 0.0281 0.0103  
 Earth -50679-08-20 11:16 J -16788850.25 -16788850.03 -16788849.80 0.0281 0.0111 \*  
 Moon -50678-09-02 11:59 J -16788472.17 -16788472.00 -16788471.83 0.0284 0.0199  
 Earth -50678-09-02 15:21 J -16788472.04 -16788471.86 -16788471.67 0.0284 0.0184 \*  
 Venus -50674-02-04 02:23 J -16787221.57 -16787221.40 -16787221.21 0.0292 0.0130  
 Venus -50674-09-21 17:01 J -16786991.91 -16786991.79 -16786991.65 0.0293 0.0225  
 Mars -50669-11-14 07:54 J -16785111.37 -16785111.17 -16785110.94 0.0290 0.0174  
 Mercury -50666-02-12 05:30 J -16784291.33 -16784291.27 -16784291.18 0.0283 0.0253

Mercury -50666-05-12 01:25 J -16784202.59 -16784202.44 -16784202.29 0.0283 0.0128

Mercury -50666-08-08 21:21 J -16784113.78 -16784113.61 -16784113.44 0.0282 0.0002

Mercury -50666-11-05 17:30 J -16784024.92 -16784024.77 -16784024.61 0.0281 0.0126

Mercury -50665-02-02 13:54 J -16783935.98 -16783935.92 -16783935.84 0.0281 0.0255

Moon -50665-02-11 20:37 J -16783926.78 -16783926.64 -16783926.48 0.0280 0.0216

Earth -50665-02-11 23:45 J -16783926.67 -16783926.51 -16783926.32 0.0280 0.0201 \*

Earth -50664-02-24 04:04 J -16783548.56 -16783548.33 -16783548.10 0.0277 0.0089

Moon -50664-02-24 04:04 J -16783548.56 -16783548.33 -16783548.10 0.0277 0.0074 \*

Venus -50660-07-20 14:37 J -16781941.11 -16781940.89 -16781940.67 0.0268 0.0021

Mercury -50651-09-05 03:49 J -16778607.42 -16778607.34 -16778607.25 0.0276 0.0221

Mercury -50651-12-02 16:33 J -16778518.93 -16778518.81 -16778518.68 0.0277 0.0124

Mercury -50650-03-01 05:16 J -16778430.42 -16778430.28 -16778430.14 0.0278 0.0027

Mercury -50650-05-28 17:30 J -16778341.90 -16778341.77 -16778341.63 0.0278 0.0071

Earth -50650-08-15 10:47 J -16778263.18 -16778263.05 -16778262.91 0.0279 0.0231

Moon -50650-08-15 10:33 J -16778263.18 -16778263.06 -16778262.91 0.0279 0.0228 \*

Mercury -50650-08-25 05:45 J -16778253.37 -16778253.26 -16778253.15 0.0279 0.0167

Mercury -50650-11-21 17:45 J -16778164.80 -16778164.76 -16778164.71 0.0280 0.0262

Earth -50649-08-27 12:42 J -16777885.20 -16777884.97 -16777884.73 0.0282 0.0058

Moon -50649-08-27 16:04 J -16777885.06 -16777884.83 -16777884.59 0.0282 0.0071 \*

Venus -50645-08-16 12:28 J -16776435.17 -16776434.98 -16776434.77 0.0292 0.0069

Venus -50644-04-03 03:06 J -16776205.42 -16776205.37 -16776205.33 0.0293 0.0284

Mercury -50637-09-28 01:40 J -16773470.57 -16773470.43 -16773470.29 0.0283 0.0160

Mercury -50637-12-25 21:35 J -16773381.78 -16773381.60 -16773381.43 0.0282 0.0035

Mercury -50636-03-24 17:30 J -16773292.93 -16773292.77 -16773292.60 0.0282 0.0092

Mercury -50636-06-21 13:54 J -16773204.02 -16773203.92 -16773203.81 0.0281 0.0220

Moon -50635-02-18 18:57 J -16772961.96 -16772961.71 -16772961.46 0.0279 0.0052

Earth -50635-02-18 19:11 J -16772961.94 -16772961.70 -16772961.45 0.0279 0.0038 \*

Moon -50634-03-03 16:18 J -16772583.95 -16772583.82 -16772583.68 0.0276 0.0230

Earth -50634-03-03 19:54 J -16772583.77 -16772583.67 -16772583.55 0.0276 0.0244 \*

Venus -50630-01-30 18:13 J -16771154.96 -16771154.74 -16771154.52 0.0268 0.0017

Mars -50624-02-04 11:30 J -16768958.32 -16768958.02 -16768957.71 0.0269 0.0083  
 Mercury -50621-01-23 05:16 J -16767875.33 -16767875.28 -16767875.22 0.0276 0.0254  
 Mercury -50621-04-20 17:59 J -16767786.86 -16767786.75 -16767786.63 0.0277 0.0156  
 Mercury -50621-07-18 06:42 J -16767698.36 -16767698.22 -16767698.09 0.0278 0.0059  
 Mercury -50621-10-14 18:57 J -16767609.84 -16767609.71 -16767609.57 0.0278 0.0040  
 Mercury -50620-01-11 07:11 J -16767521.31 -16767521.20 -16767521.07 0.0279 0.0136  
 Mercury -50620-04-09 19:25 J -16767432.76 -16767432.69 -16767432.61 0.0280 0.0230  
 Moon -50620-08-21 19:25 J -16767298.93 -16767298.69 -16767298.45 0.0281 0.0066  
 Earth -50620-08-21 22:47 J -16767298.78 -16767298.55 -16767298.31 0.0281 0.0077 \*  
 Moon -50619-09-04 01:40 J -16766920.56 -16766920.43 -16766920.29 0.0284 0.0234  
 Earth -50619-09-04 03:35 J -16766920.50 -16766920.35 -16766920.20 0.0284 0.0219 \*  
 Venus -50615-02-26 16:33 J -16765649.01 -16765648.81 -16765648.61 0.0292 0.0024  
 Mars -50610-02-21 16:33 J -16763828.05 -16763827.81 -16763827.56 0.0291 0.0113  
 Mercury -50607-02-15 01:54 J -16762738.54 -16762738.42 -16762738.30 0.0283 0.0194  
 Mercury -50607-05-14 21:35 J -16762649.76 -16762649.60 -16762649.43 0.0282 0.0069  
 Mercury -50607-08-11 17:45 J -16762560.93 -16762560.76 -16762560.59 0.0282 0.0057  
 Mercury -50607-11-08 14:09 J -16762472.04 -16762471.91 -16762471.78 0.0281 0.0185  
 Earth -50606-02-13 10:18 J -16762375.26 -16762375.07 -16762374.87 0.0280 0.0167  
 Moon -50606-02-13 10:33 J -16762375.23 -16762375.06 -16762374.88 0.0280 0.0181 \*  
 Earth -50605-02-26 13:40 J -16761997.15 -16761996.93 -16761996.70 0.0277 0.0121  
 Moon -50605-02-26 17:30 J -16761997.00 -16761996.77 -16761996.55 0.0277 0.0107 \*  
 Venus -50602-12-26 16:04 J -16760597.94 -16760597.83 -16760597.70 0.0269 0.0225  
 Venus -50601-08-12 01:54 J -16760368.63 -16760368.42 -16760368.21 0.0268 0.0066  
 Mars -50594-03-29 13:11 J -16757948.05 -16757947.95 -16757947.81 0.0271 0.0250  
 Mercury -50592-06-11 08:52 J -16757143.15 -16757143.13 -16757143.10 0.0276 0.0271  
 Mercury -50592-09-07 21:35 J -16757054.71 -16757054.60 -16757054.49 0.0277 0.0173  
 Mercury -50592-12-05 10:18 J -16756966.21 -16756966.07 -16756965.94 0.0278 0.0075  
 Mercury -50591-03-03 22:47 J -16756877.69 -16756877.55 -16756877.41 0.0278 0.0022  
 Mercury -50591-05-31 11:01 J -16756789.16 -16756789.04 -16756788.91 0.0279 0.0119  
 Earth -50591-08-16 22:33 J -16756711.73 -16756711.56 -16756711.38 0.0280 0.0198

Moon -50591-08-17 02:09 J -16756711.58 -16756711.41 -16756711.22 0.0280 0.0191 \*  
 Mercury -50591-08-27 23:16 J -16756700.62 -16756700.53 -16756700.44 0.0280 0.0214  
 Earth -50590-08-30 01:40 J -16756333.66 -16756333.43 -16756333.20 0.0282 0.0095  
 Moon -50590-08-30 03:49 J -16756333.56 -16756333.34 -16756333.10 0.0282 0.0108 \*  
 Venus -50586-09-09 03:35 J -16754862.55 -16754862.35 -16754862.15 0.0292 0.0040  
 Mars -50580-04-10 22:04 J -16752821.76 -16752821.58 -16752821.41 0.0289 0.0219  
 Mercury -50578-07-05 02:52 J -16752006.48 -16752006.38 -16752006.27 0.0283 0.0222  
 Mercury -50578-10-01 22:33 J -16751917.72 -16751917.56 -16751917.40 0.0283 0.0098  
 Mercury -50578-12-29 18:28 J -16751828.90 -16751828.73 -16751828.55 0.0282 0.0029  
 Mercury -50577-03-27 14:37 J -16751740.03 -16751739.89 -16751739.74 0.0281 0.0156  
 Moon -50576-02-20 04:18 J -16751410.57 -16751410.32 -16751410.07 0.0279 0.0018  
 Earth -50576-02-20 07:40 J -16751410.42 -16751410.18 -16751409.93 0.0279 0.0005 \*  
 Moon -50575-03-05 05:30 J -16751032.31 -16751032.27 -16751032.20 0.0276 0.0268  
 Venus -50572-07-07 21:06 J -16749811.77 -16749811.62 -16749811.46 0.0268 0.0184  
 Venus -50571-02-22 06:28 J -16749582.42 -16749582.23 -16749582.02 0.0268 0.0106  
 Mercury -50562-01-25 23:01 J -16746322.63 -16746322.54 -16746322.44 0.0277 0.0205  
 Mercury -50562-04-24 11:45 J -16746234.13 -16746234.01 -16746233.87 0.0277 0.0107  
 Mercury -50562-07-22 00:28 J -16746145.62 -16746145.48 -16746145.34 0.0278 0.0011  
 Mercury -50562-10-18 12:42 J -16746057.10 -16746056.97 -16746056.84 0.0279 0.0088  
 Mercury -50561-01-15 00:57 J -16745968.56 -16745968.46 -16745968.35 0.0279 0.0184  
 Mercury -50561-04-12 13:11 J -16745879.96 -16745879.95 -16745879.94 0.0280 0.0278  
 Moon -50561-08-23 10:18 J -16745747.31 -16745747.07 -16745746.84 0.0281 0.0029  
 Earth -50561-08-23 12:13 J -16745747.23 -16745746.99 -16745746.75 0.0281 0.0041 \*  
 Earth -50560-09-05 17:16 J -16745368.87 -16745368.78 -16745368.67 0.0284 0.0258  
 Moon -50560-09-05 19:11 J -16745368.75 -16745368.70 -16745368.63 0.0284 0.0273 \*  
 Venus -50557-08-03 17:16 J -16744305.85 -16744305.78 -16744305.68 0.0292 0.0265  
 Venus -50556-03-21 07:54 J -16744076.37 -16744076.17 -16744075.98 0.0293 0.0086  
 Mercury -50549-11-21 03:06 J -16741274.44 -16741274.37 -16741274.30 0.0283 0.0257  
 Mercury -50548-02-17 22:33 J -16741185.71 -16741185.56 -16741185.41 0.0283 0.0133  
 Mercury -50548-05-17 18:28 J -16741096.90 -16741096.73 -16741096.55 0.0282 0.0008



Mercury -50548-08-14 14:37 J -16741008.04 -16741007.89 -16741007.73 0.0281 0.0120  
 Mercury -50548-11-11 11:01 J -16740919.11 -16740919.04 -16740918.95 0.0280 0.0248  
 Earth -50547-02-14 22:47 J -16740823.76 -16740823.55 -16740823.33 0.0280 0.0132  
 Moon -50547-02-15 01:54 J -16740823.62 -16740823.42 -16740823.20 0.0280 0.0147 \*  
 Earth -50546-02-28 01:11 J -16740445.64 -16740445.45 -16740445.23 0.0277 0.0156  
 Moon -50546-02-28 03:35 J -16740445.57 -16740445.35 -16740445.13 0.0277 0.0142 \*  
 Venus -50542-01-18 04:33 J -16739025.49 -16739025.31 -16739025.12 0.0269 0.0136  
 Venus -50542-09-04 13:54 J -16738796.09 -16738795.92 -16738795.73 0.0268 0.0154  
 Mars -50536-07-02 11:01 J -16736668.36 -16736668.04 -16736667.72 0.0270 0.0031  
 Mercury -50533-06-14 02:37 J -16735590.47 -16735590.39 -16735590.30 0.0277 0.0222  
 Mercury -50533-09-10 15:21 J -16735501.98 -16735501.86 -16735501.73 0.0277 0.0124  
 Mercury -50533-12-08 04:04 J -16735413.47 -16735413.33 -16735413.19 0.0278 0.0026  
 Mercury -50532-03-06 16:33 J -16735324.95 -16735324.81 -16735324.68 0.0279 0.0071  
 Mercury -50532-06-03 04:33 J -16735236.41 -16735236.31 -16735236.19 0.0279 0.0168  
 Earth -50532-08-18 11:16 J -16735160.22 -16735160.03 -16735159.82 0.0280 0.0163  
 Moon -50532-08-18 13:25 J -16735160.15 -16735159.94 -16735159.72 0.0280 0.0153 \*  
 Mercury -50532-08-30 16:47 J -16735147.84 -16735147.80 -16735147.75 0.0280 0.0263  
 Moon -50531-08-31 12:57 J -16734782.16 -16734781.96 -16734781.73 0.0283 0.0147  
 Earth -50531-08-31 15:06 J -16734782.08 -16734781.87 -16734781.65 0.0283 0.0132 \*  
 Venus -50527-02-14 04:33 J -16733519.45 -16733519.31 -16733519.15 0.0291 0.0200  
 Venus -50527-10-01 18:57 J -16733289.88 -16733289.71 -16733289.53 0.0292 0.0150  
 Mars -50522-07-19 15:06 J -16731538.13 -16731537.87 -16731537.61 0.0291 0.0058  
 Mercury -50519-04-10 04:33 J -16730542.32 -16730542.31 -16730542.29 0.0284 0.0282  
 Mercury -50519-07-08 00:13 J -16730453.63 -16730453.49 -16730453.35 0.0283 0.0158  
 Mercury -50519-10-04 19:54 J -16730364.84 -16730364.67 -16730364.50 0.0282 0.0033  
 Mercury -50518-01-01 16:04 J -16730275.99 -16730275.83 -16730275.67 0.0282 0.0094  
 Moon -50518-02-09 13:54 J -16730236.98 -16730236.92 -16730236.85 0.0281 0.0271  
 Earth -50518-02-09 17:01 J -16730236.87 -16730236.79 -16730236.68 0.0281 0.0257 \*  
 Mercury -50518-03-31 12:13 J -16730187.09 -16730186.99 -16730186.87 0.0281 0.0222  
 Moon -50517-02-22 19:25 J -16729858.93 -16729858.69 -16729858.45 0.0278 0.0020

Earth -50517-02-22 21:35 J -16729858.84 -16729858.60 -16729858.35 0.0278 0.0034 \*  
 Venus -50513-07-30 10:33 J -16728239.26 -16728239.06 -16728238.85 0.0268 0.0092  
 Venus -50512-03-16 19:54 J -16728009.81 -16728009.67 -16728009.52 0.0267 0.0196  
 Mercury -50504-11-01 04:04 J -16724858.37 -16724858.33 -16724858.27 0.0276 0.0254  
 Mercury -50503-01-28 17:01 J -16724769.91 -16724769.79 -16724769.67 0.0277 0.0155  
 Mercury -50503-04-27 05:45 J -16724681.40 -16724681.26 -16724681.13 0.0278 0.0058  
 Mercury -50503-07-24 17:59 J -16724592.88 -16724592.75 -16724592.61 0.0278 0.0041  
 Mercury -50503-10-21 06:28 J -16724504.35 -16724504.23 -16724504.11 0.0279 0.0136  
 Mercury -50502-01-17 18:28 J -16724415.80 -16724415.73 -16724415.65 0.0280 0.0232  
 Earth -50502-08-26 01:25 J -16724195.69 -16724195.44 -16724195.20 0.0282 0.0006  
 Moon -50502-08-26 03:49 J -16724195.58 -16724195.34 -16724195.11 0.0282 0.0011 \*  
 Venus -50498-08-27 08:23 J -16722733.32 -16722733.15 -16722732.97 0.0292 0.0157  
 Venus -50497-04-12 22:47 J -16722503.69 -16722503.55 -16722503.39 0.0293 0.0195  
 Mars -50492-09-05 08:09 J -16720532.26 -16720532.16 -16720532.04 0.0289 0.0264  
 Mercury -50490-11-24 23:59 J -16719721.62 -16719721.50 -16719721.38 0.0283 0.0194  
 Mercury -50489-02-21 19:40 J -16719632.84 -16719632.68 -16719632.51 0.0282 0.0070  
 Mercury -50489-05-20 15:49 J -16719544.01 -16719543.84 -16719543.67 0.0282 0.0057  
 Mercury -50489-08-17 11:59 J -16719455.13 -16719455.00 -16719454.86 0.0281 0.0185  
 Earth -50488-02-16 11:59 J -16719272.22 -16719272.00 -16719271.76 0.0279 0.0097  
 Moon -50488-02-16 14:52 J -16719272.11 -16719271.88 -16719271.65 0.0279 0.0111 \*  
 Moon -50487-03-01 12:13 J -16718894.18 -16718893.99 -16718893.79 0.0276 0.0179  
 Earth -50487-03-01 14:09 J -16718894.08 -16718893.91 -16718893.72 0.0276 0.0191 \*  
 Venus -50483-02-09 17:30 J -16717452.99 -16717452.77 -16717452.55 0.0268 0.0046  
 Venus -50483-09-27 02:52 J -16717223.47 -16717223.38 -16717223.29 0.0268 0.0241  
 Mercury -50474-03-21 07:25 J -16714126.20 -16714126.19 -16714126.16 0.0277 0.0272  
 Mercury -50474-06-17 20:23 J -16714037.76 -16714037.65 -16714037.54 0.0277 0.0173  
 Mercury -50474-09-14 09:06 J -16713949.25 -16713949.12 -16713948.98 0.0278 0.0075  
 Mercury -50474-12-11 21:35 J -16713860.74 -16713860.60 -16713860.46 0.0279 0.0022  
 Mercury -50473-03-09 09:49 J -16713772.21 -16713772.09 -16713771.96 0.0279 0.0120  
 Mercury -50473-06-05 22:04 J -16713683.66 -16713683.58 -16713683.49 0.0280 0.0215

Moon -50473-08-19 21:06 J -16713608.83 -16713608.62 -16713608.38 0.0281 0.0117  
 Earth -50473-08-19 23:59 J -16713608.72 -16713608.50 -16713608.29 0.0281 0.0128 \*  
 Moon -50472-09-02 00:42 J -16713230.65 -16713230.47 -16713230.29 0.0283 0.0186  
 Earth -50472-09-02 04:04 J -16713230.51 -16713230.33 -16713230.12 0.0283 0.0170 \*  
 Venus -50468-03-08 20:09 J -16711946.85 -16711946.66 -16711946.46 0.0292 0.0091  
 Venus -50468-10-24 10:18 J -16711717.15 -16711717.07 -16711716.97 0.0292 0.0260  
 Mercury -50460-04-13 01:54 J -16708989.52 -16708989.42 -16708989.31 0.0283 0.0217  
 Mercury -50460-07-10 21:35 J -16708900.76 -16708900.60 -16708900.44 0.0283 0.0093  
 Mercury -50460-10-07 17:30 J -16708811.94 -16708811.77 -16708811.60 0.0282 0.0033  
 Mercury -50459-01-04 13:40 J -16708723.07 -16708722.93 -16708722.78 0.0281 0.0160  
 Moon -50459-02-11 05:45 J -16708685.39 -16708685.26 -16708685.13 0.0281 0.0236  
 Earth -50459-02-11 08:09 J -16708685.30 -16708685.16 -16708685.00 0.0281 0.0221 \*  
 Earth -50458-02-24 11:59 J -16708307.24 -16708307.00 -16708306.76 0.0278 0.0070  
 Moon -50458-02-24 13:25 J -16708307.17 -16708306.94 -16708306.71 0.0278 0.0056 \*  
 Venus -50454-08-23 00:28 J -16706666.70 -16706666.48 -16706666.26 0.0268 0.0003  
 Mars -50448-11-26 15:49 J -16704379.16 -16704378.84 -16704378.52 0.0269 0.0019  
 Mercury -50445-11-03 22:04 J -16703305.68 -16703305.58 -16703305.49 0.0277 0.0205  
 Mercury -50444-01-31 10:47 J -16703217.18 -16703217.05 -16703216.92 0.0277 0.0107  
 Mercury -50444-04-29 23:16 J -16703128.67 -16703128.53 -16703128.39 0.0278 0.0010  
 Mercury -50444-07-27 11:30 J -16703040.15 -16703040.02 -16703039.88 0.0279 0.0088  
 Earth -50444-08-14 11:45 J -16703022.09 -16703022.01 -16703021.92 0.0279 0.0260  
 Moon -50444-08-14 13:54 J -16703022.01 -16703021.92 -16703021.82 0.0279 0.0253 \*  
 Mercury -50444-10-23 23:45 J -16702951.60 -16702951.51 -16702951.40 0.0279 0.0184  
 Mercury -50443-01-20 11:59 J -16702863.01 -16702863.00 -16702862.98 0.0280 0.0278  
 Earth -50443-08-27 13:40 J -16702644.17 -16702643.93 -16702643.69 0.0282 0.0031  
 Moon -50443-08-27 17:16 J -16702644.03 -16702643.78 -16702643.54 0.0282 0.0046 \*  
 Venus -50439-09-18 23:01 J -16701160.74 -16701160.54 -16701160.34 0.0292 0.0050  
 Mars -50434-12-13 22:18 J -16699248.84 -16699248.57 -16699248.30 0.0291 0.0016  
 Mercury -50431-08-31 01:11 J -16698257.51 -16698257.45 -16698257.38 0.0283 0.0257  
 Mercury -50431-11-27 20:52 J -16698168.78 -16698168.63 -16698168.48 0.0283 0.0133

Mercury -50430-02-24 16:47 J -16698079.98 -16698079.80 -16698079.63 0.0282 0.0008  
 Mercury -50430-05-24 12:42 J -16697991.12 -16697990.97 -16697990.81 0.0281 0.0121  
 Mercury -50430-08-21 09:21 J -16697902.19 -16697902.11 -16697902.03 0.0281 0.0248  
 Moon -50429-02-18 23:16 J -16697720.77 -16697720.53 -16697720.28 0.0279 0.0077  
 Earth -50429-02-19 00:57 J -16697720.69 -16697720.46 -16697720.21 0.0279 0.0062 \*  
 Moon -50428-03-02 23:01 J -16697342.69 -16697342.54 -16697342.38 0.0276 0.0212  
 Earth -50428-03-03 02:52 J -16697342.52 -16697342.38 -16697342.24 0.0276 0.0225 \*  
 Venus -50425-07-17 20:37 J -16696109.73 -16696109.64 -16696109.55 0.0269 0.0246  
 Venus -50424-03-04 06:13 J -16695880.45 -16695880.24 -16695880.02 0.0268 0.0043  
 Mercury -50415-03-24 01:11 J -16692573.53 -16692573.45 -16692573.37 0.0277 0.0225  
 Mercury -50415-06-20 13:54 J -16692485.05 -16692484.92 -16692484.80 0.0278 0.0127  
 Mercury -50415-09-17 02:23 J -16692396.54 -16692396.40 -16692396.26 0.0278 0.0030  
 Mercury -50415-12-14 14:52 J -16692308.01 -16692307.88 -16692307.74 0.0279 0.0068  
 Mercury -50414-03-13 03:06 J -16692219.48 -16692219.37 -16692219.25 0.0280 0.0164  
 Mercury -50414-06-09 15:21 J -16692130.90 -16692130.86 -16692130.81 0.0280 0.0260  
 Moon -50414-08-22 07:11 J -16692057.43 -16692057.20 -16692056.97 0.0281 0.0083  
 Earth -50414-08-22 10:33 J -16692057.29 -16692057.06 -16692056.83 0.0281 0.0095 \*  
 Earth -50413-09-03 15:06 J -16691679.03 -16691678.87 -16691678.69 0.0284 0.0204  
 Moon -50413-09-03 15:21 J -16691679.01 -16691678.86 -16691678.72 0.0284 0.0220 \*  
 Venus -50409-03-31 10:04 J -16690374.29 -16690374.08 -16690373.88 0.0292 0.0013  
 Mercury -50401-01-18 03:21 J -16687525.38 -16687525.36 -16687525.33 0.0284 0.0279  
 Mercury -50401-04-15 22:47 J -16687436.69 -16687436.55 -16687436.40 0.0283 0.0155  
 Mercury -50401-07-13 18:42 J -16687347.89 -16687347.72 -16687347.55 0.0282 0.0030  
 Mercury -50401-10-10 14:37 J -16687259.05 -16687258.89 -16687258.72 0.0282 0.0097  
 Mercury -50400-01-07 11:01 J -16687170.14 -16687170.04 -16687169.93 0.0281 0.0224  
 Earth -50400-02-12 21:35 J -16687133.77 -16687133.60 -16687133.41 0.0281 0.0186  
 Moon -50400-02-12 23:45 J -16687133.67 -16687133.51 -16687133.34 0.0281 0.0202 \*  
 Earth -50399-02-26 01:11 J -16686755.68 -16686755.45 -16686755.22 0.0277 0.0105  
 Moon -50399-02-26 04:47 J -16686755.53 -16686755.30 -16686755.06 0.0277 0.0089 \*  
 Venus -50395-01-28 04:04 J -16685323.46 -16685323.33 -16685323.17 0.0269 0.0198

Venus -50395-09-14 13:25 J -16685094.14 -16685093.94 -16685093.73 0.0268 0.0090  
 Mars -50389-03-01 10:04 J -16683099.14 -16683099.08 -16683098.97 0.0268 0.0260  
 Mercury -50386-08-11 02:37 J -16681841.44 -16681841.39 -16681841.34 0.0276 0.0257  
 Mercury -50386-11-07 15:21 J -16681752.97 -16681752.86 -16681752.74 0.0277 0.0159  
 Mercury -50385-02-04 04:04 J -16681664.47 -16681664.33 -16681664.19 0.0277 0.0062  
 Mercury -50385-05-02 16:33 J -16681575.95 -16681575.81 -16681575.67 0.0278 0.0035  
 Mercury -50385-07-30 04:47 J -16681487.42 -16681487.30 -16681487.17 0.0279 0.0132  
 Earth -50385-08-15 21:35 J -16681470.72 -16681470.60 -16681470.45 0.0279 0.0229  
 Moon -50385-08-16 01:11 J -16681470.59 -16681470.45 -16681470.29 0.0279 0.0222 \*  
 Mercury -50385-10-26 17:01 J -16681398.87 -16681398.79 -16681398.71 0.0280 0.0227  
 Moon -50384-08-28 23:45 J -16681092.75 -16681092.51 -16681092.26 0.0282 0.0078  
 Earth -50384-08-28 23:59 J -16681092.73 -16681092.50 -16681092.26 0.0282 0.0064 \*  
 Venus -50380-10-11 12:13 J -16679588.19 -16679587.99 -16679587.78 0.0292 0.0054  
 Mercury -50372-09-02 21:35 J -16676704.72 -16676704.60 -16676704.47 0.0283 0.0198  
 Mercury -50372-11-30 17:16 J -16676615.94 -16676615.78 -16676615.61 0.0282 0.0073  
 Mercury -50371-02-27 13:25 J -16676527.11 -16676526.94 -16676526.77 0.0282 0.0054  
 Mercury -50371-05-27 09:35 J -16676438.23 -16676438.10 -16676437.96 0.0281 0.0181  
 Moon -50370-02-20 08:52 J -16676169.37 -16676169.13 -16676168.89 0.0279 0.0044  
 Earth -50370-02-20 12:42 J -16676169.22 -16676168.97 -16676168.73 0.0279 0.0028 \*  
 Moon -50369-03-04 12:42 J -16675791.06 -16675790.97 -16675790.85 0.0276 0.0247  
 Earth -50369-03-04 13:40 J -16675791.01 -16675790.93 -16675790.84 0.0276 0.0257 \*  
 Venus -50366-08-10 08:37 J -16674537.31 -16674537.14 -16674536.96 0.0268 0.0158  
 Venus -50365-03-26 17:59 J -16674307.93 -16674307.75 -16674307.55 0.0268 0.0130  
 Mars -50359-04-23 03:49 J -16672089.65 -16672089.34 -16672089.03 0.0270 0.0066  
 Mercury -50356-03-26 18:13 J -16671020.85 -16671020.74 -16671020.63 0.0277 0.0182  
 Mercury -50356-06-23 06:57 J -16670932.35 -16670932.21 -16670932.08 0.0278 0.0084  
 Mercury -50356-09-19 19:25 J -16670843.83 -16670843.69 -16670843.55 0.0278 0.0014  
 Mercury -50356-12-17 07:54 J -16670755.30 -16670755.17 -16670755.05 0.0279 0.0110  
 Mercury -50355-03-15 20:09 J -16670666.75 -16670666.66 -16670666.57 0.0280 0.0206  
 Earth -50355-08-23 18:57 J -16670505.95 -16670505.71 -16670505.48 0.0281 0.0065

Moon -50355-08-23 18:28 J -16670505.95 -16670505.73 -16670505.49 0.0281 0.0054 \*  
 Earth -50354-09-05 23:45 J -16670127.63 -16670127.51 -16670127.36 0.0284 0.0236  
 Moon -50354-09-06 03:21 J -16670127.46 -16670127.36 -16670127.24 0.0284 0.0252 \*  
 Venus -50351-09-06 07:40 J -16669031.29 -16669031.18 -16669031.05 0.0291 0.0235  
 Venus -50350-04-23 22:18 J -16668801.76 -16668801.57 -16668801.38 0.0292 0.0113  
 Mars -50345-05-09 16:33 J -16666959.08 -16666958.81 -16666958.54 0.0290 0.0042  
 Mercury -50342-01-20 23:30 J -16665972.62 -16665972.52 -16665972.41 0.0283 0.0222  
 Mercury -50342-04-19 19:11 J -16665883.86 -16665883.70 -16665883.54 0.0283 0.0097  
 Mercury -50342-07-17 15:06 J -16665795.04 -16665794.87 -16665794.70 0.0282 0.0029  
 Mercury -50342-10-14 11:16 J -16665706.17 -16665706.03 -16665705.88 0.0281 0.0156  
 Earth -50341-02-15 08:37 J -16665582.33 -16665582.14 -16665581.92 0.0280 0.0155  
 Moon -50341-02-15 12:13 J -16665582.17 -16665581.99 -16665581.78 0.0280 0.0171 \*  
 Earth -50340-02-27 11:45 J -16665204.21 -16665204.01 -16665203.78 0.0277 0.0138  
 Moon -50340-02-27 12:42 J -16665204.19 -16665203.97 -16665203.74 0.0277 0.0123 \*  
 Venus -50336-02-19 16:47 J -16663751.00 -16663750.80 -16663750.60 0.0268 0.0109  
 Venus -50336-10-07 01:40 J -16663521.59 -16663521.43 -16663521.26 0.0267 0.0177  
 Mercury -50327-08-13 19:40 J -16660288.77 -16660288.68 -16660288.59 0.0276 0.0214  
 Mercury -50327-11-10 08:23 J -16660200.28 -16660200.15 -16660200.02 0.0277 0.0116  
 Mercury -50326-02-06 20:52 J -16660111.77 -16660111.63 -16660111.49 0.0277 0.0021  
 Mercury -50326-05-06 09:21 J -16660023.24 -16660023.11 -16660022.97 0.0278 0.0077  
 Mercury -50326-08-02 21:35 J -16659934.70 -16659934.60 -16659934.49 0.0279 0.0173  
 Moon -50326-08-18 05:59 J -16659919.43 -16659919.25 -16659919.06 0.0279 0.0190  
 Earth -50326-08-18 05:45 J -16659919.42 -16659919.26 -16659919.09 0.0279 0.0200 \*  
 Mercury -50326-10-30 09:49 J -16659846.13 -16659846.09 -16659846.05 0.0280 0.0268  
 Moon -50325-08-30 04:33 J -16659541.53 -16659541.31 -16659541.08 0.0282 0.0110  
 Earth -50325-08-30 07:54 J -16659541.39 -16659541.17 -16659540.93 0.0282 0.0095 \*  
 Venus -50321-03-18 09:21 J -16658245.26 -16658245.11 -16658244.96 0.0292 0.0198  
 Venus -50321-11-02 23:30 J -16658015.69 -16658015.52 -16658015.34 0.0293 0.0151  
 Mercury -50313-06-08 21:35 J -16655240.64 -16655240.60 -16655240.53 0.0284 0.0268  
 Mercury -50313-09-05 17:16 J -16655151.92 -16655151.78 -16655151.63 0.0283 0.0144

Mercury -50313-12-03 13:11 J -16655063.12 -16655062.95 -16655062.78 0.0282 0.0018

Mercury -50312-03-02 09:21 J -16654974.27 -16654974.11 -16654973.95 0.0282 0.0109

Mercury -50312-05-30 05:45 J -16654885.35 -16654885.26 -16654885.17 0.0281 0.0237

Earth -50311-02-21 21:35 J -16654617.85 -16654617.60 -16654617.36 0.0279 0.0004

Moon -50311-02-21 21:21 J -16654617.85 -16654617.61 -16654617.37 0.0279 0.0012 \*

Venus -50307-09-01 19:54 J -16652964.88 -16652964.67 -16652964.46 0.0268 0.0073

Venus -50306-04-19 04:47 J -16652735.42 -16652735.30 -16652735.16 0.0267 0.0213

Mars -50301-07-26 12:42 J -16650810.14 -16650809.97 -16650809.76 0.0269 0.0219

Mercury -50298-12-31 22:04 J -16649556.65 -16649556.58 -16649556.51 0.0277 0.0240

Mercury -50297-03-29 10:47 J -16649468.17 -16649468.05 -16649467.93 0.0277 0.0142

Mercury -50297-06-25 23:30 J -16649379.66 -16649379.52 -16649379.39 0.0278 0.0045

Mercury -50297-09-22 11:45 J -16649291.14 -16649291.01 -16649290.87 0.0279 0.0053

Mercury -50297-12-20 00:13 J -16649202.61 -16649202.49 -16649202.38 0.0279 0.0149

Mercury -50296-03-18 12:28 J -16649114.05 -16649113.98 -16649113.92 0.0280 0.0244

Earth -50296-08-25 00:13 J -16648954.73 -16648954.49 -16648954.25 0.0281 0.0037

Moon -50296-08-25 03:35 J -16648954.59 -16648954.35 -16648954.11 0.0281 0.0023 \*

Earth -50295-09-07 05:45 J -16648576.34 -16648576.26 -16648576.17 0.0284 0.0265

Moon -50295-09-07 07:54 J -16648576.21 -16648576.17 -16648576.12 0.0284 0.0279 \*

Venus -50292-09-28 17:45 J -16647458.93 -16647458.76 -16647458.58 0.0292 0.0142

Venus -50291-05-16 08:23 J -16647229.29 -16647229.15 -16647229.00 0.0293 0.0207

Mars -50287-08-16 20:52 J -16645675.76 -16645675.63 -16645675.48 0.0292 0.0248

Mercury -50283-01-23 18:57 J -16644419.84 -16644419.71 -16644419.57 0.0283 0.0169

Mercury -50283-04-22 14:52 J -16644331.05 -16644330.88 -16644330.71 0.0283 0.0044

Mercury -50283-07-20 10:47 J -16644242.21 -16644242.05 -16644241.88 0.0282 0.0083

Mercury -50283-10-17 06:57 J -16644153.31 -16644153.21 -16644153.08 0.0281 0.0212

Earth -50282-02-16 17:01 J -16644031.00 -16644030.79 -16644030.56 0.0280 0.0125

Moon -50282-02-16 17:30 J -16644030.99 -16644030.77 -16644030.55 0.0280 0.0139 \*

Moon -50281-02-29 16:33 J -16643653.01 -16643652.81 -16643652.59 0.0277 0.0154

Earth -50281-02-29 20:09 J -16643652.85 -16643652.66 -16643652.46 0.0277 0.0166 \*

Venus -50277-03-14 03:35 J -16642178.57 -16642178.35 -16642178.13 0.0268 0.0023

Venus -50277-10-29 12:13 J -16641949.03 -16641948.99 -16641948.93 0.0267 0.0260  
 Mars -50271-09-17 00:28 J -16639800.77 -16639800.48 -16639800.18 0.0269 0.0112  
 Mercury -50268-05-19 23:30 J -16638824.54 -16638824.52 -16638824.50 0.0275 0.0271  
 Mercury -50268-08-16 12:13 J -16638736.10 -16638735.99 -16638735.88 0.0276 0.0174  
 Mercury -50268-11-13 00:57 J -16638647.60 -16638647.46 -16638647.32 0.0277 0.0077  
 Mercury -50267-02-09 13:25 J -16638559.08 -16638558.94 -16638558.80 0.0278 0.0020  
 Mercury -50267-05-09 01:40 J -16638470.55 -16638470.43 -16638470.30 0.0278 0.0116  
 Mercury -50267-08-05 13:54 J -16638382.00 -16638381.92 -16638381.83 0.0279 0.0211  
 Moon -50267-08-19 07:40 J -16638368.38 -16638368.18 -16638367.98 0.0279 0.0160  
 Earth -50267-08-19 11:01 J -16638368.22 -16638368.04 -16638367.84 0.0279 0.0174 \*  
 Moon -50266-09-01 11:01 J -16637990.24 -16637990.04 -16637989.82 0.0282 0.0137  
 Earth -50266-09-01 13:11 J -16637990.16 -16637989.95 -16637989.72 0.0282 0.0123 \*  
 Venus -50262-04-10 18:57 J -16636672.90 -16636672.71 -16636672.52 0.0292 0.0106  
 Venus -50262-11-26 09:06 J -16636443.22 -16636443.12 -16636443.00 0.0293 0.0243  
 Mars -50257-10-03 02:23 J -16634670.66 -16634670.40 -16634670.14 0.0291 0.0062  
 Mercury -50254-06-12 16:33 J -16633687.91 -16633687.81 -16633687.70 0.0284 0.0219  
 Mercury -50254-09-09 12:13 J -16633599.15 -16633598.99 -16633598.83 0.0283 0.0094  
 Mercury -50254-12-07 08:09 J -16633510.33 -16633510.16 -16633509.98 0.0282 0.0033  
 Earth -50253-02-10 21:06 J -16633444.68 -16633444.62 -16633444.53 0.0282 0.0267  
 Moon -50253-02-10 21:06 J -16633444.63 -16633444.62 -16633444.60 0.0282 0.0281 \*  
 Mercury -50253-03-05 04:33 J -16633421.45 -16633421.31 -16633421.17 0.0281 0.0160  
 Earth -50252-02-23 03:21 J -16633066.61 -16633066.36 -16633066.11 0.0279 0.0030  
 Moon -50252-02-23 06:57 J -16633066.46 -16633066.21 -16633065.97 0.0279 0.0018 \*  
 Venus -50248-09-24 05:30 J -16631392.49 -16631392.27 -16631392.05 0.0268 0.0009  
 Mercury -50238-01-03 14:09 J -16628004.00 -16628003.91 -16628003.81 0.0277 0.0203  
 Mercury -50238-04-02 02:52 J -16627915.51 -16627915.38 -16627915.24 0.0277 0.0105  
 Mercury -50238-06-29 15:35 J -16627826.99 -16627826.85 -16627826.71 0.0278 0.0009  
 Mercury -50238-09-26 03:49 J -16627738.47 -16627738.34 -16627738.20 0.0279 0.0089  
 Mercury -50238-12-23 16:04 J -16627649.93 -16627649.83 -16627649.72 0.0279 0.0185  
 Mercury -50237-03-21 04:18 J -16627561.32 -16627561.32 -16627561.31 0.0280 0.0279



Earth -50237-08-26 03:35 J -16627403.60 -16627403.35 -16627403.11 0.0281 0.0013  
 Moon -50237-08-26 05:59 J -16627403.51 -16627403.25 -16627403.00 0.0281 0.0006 \*  
 Venus -50233-10-21 01:54 J -16625886.62 -16625886.42 -16625886.22 0.0292 0.0055  
 Mercury -50225-10-29 17:45 J -16622955.83 -16622955.76 -16622955.67 0.0284 0.0247  
 Mercury -50224-01-26 13:25 J -16622867.09 -16622866.94 -16622866.78 0.0283 0.0123  
 Mercury -50224-04-25 09:21 J -16622778.28 -16622778.11 -16622777.94 0.0282 0.0004  
 Mercury -50224-07-23 05:30 J -16622689.42 -16622689.27 -16622689.11 0.0282 0.0131  
 Mercury -50224-10-20 01:54 J -16622600.48 -16622600.42 -16622600.35 0.0281 0.0259  
 Moon -50223-02-17 18:28 J -16622479.95 -16622479.73 -16622479.50 0.0280 0.0114  
 Earth -50223-02-17 21:49 J -16622479.82 -16622479.59 -16622479.36 0.0280 0.0100 \*  
 Moon -50222-03-02 22:33 J -16622101.73 -16622101.56 -16622101.38 0.0277 0.0183  
 Earth -50222-03-03 00:42 J -16622101.64 -16622101.47 -16622101.28 0.0277 0.0192 \*  
 Venus -50219-08-20 03:35 J -16620835.46 -16620835.35 -16620835.23 0.0269 0.0228  
 Venus -50218-04-06 12:57 J -16620606.18 -16620605.96 -16620605.75 0.0268 0.0058  
 Mars -50213-12-20 07:11 J -16618521.43 -16618521.20 -16618520.94 0.0268 0.0177  
 Mercury -50209-05-22 15:35 J -16617271.91 -16617271.85 -16617271.77 0.0275 0.0235  
 Mercury -50209-08-19 04:33 J -16617183.43 -16617183.31 -16617183.19 0.0276 0.0137  
 Mercury -50209-11-15 17:01 J -16617094.93 -16617094.79 -16617094.65 0.0277 0.0041  
 Mercury -50208-02-12 05:30 J -16617006.41 -16617006.27 -16617006.14 0.0278 0.0055  
 Mercury -50208-05-11 17:45 J -16616917.88 -16616917.76 -16616917.64 0.0278 0.0151  
 Mercury -50208-08-08 05:59 J -16616829.32 -16616829.25 -16616829.19 0.0279 0.0245  
 Moon -50208-08-20 12:13 J -16616817.19 -16616816.99 -16616816.78 0.0279 0.0135  
 Earth -50208-08-20 13:54 J -16616817.11 -16616816.92 -16616816.70 0.0279 0.0150 \*  
 Earth -50207-09-02 16:04 J -16616439.03 -16616438.83 -16616438.61 0.0282 0.0147  
 Moon -50207-09-02 17:59 J -16616438.93 -16616438.75 -16616438.54 0.0282 0.0164 \*  
 Venus -50203-05-03 02:37 J -16615100.60 -16615100.39 -16615100.19 0.0292 0.0020  
 Mars -50198-01-09 21:21 J -16613387.75 -16613387.61 -16613387.45 0.0292 0.0239  
 Mercury -50195-06-15 10:33 J -16612135.18 -16612135.06 -16612134.92 0.0284 0.0175  
 Mercury -50195-09-12 06:28 J -16612046.40 -16612046.23 -16612046.06 0.0283 0.0049  
 Mercury -50195-12-10 02:37 J -16611957.56 -16611957.39 -16611957.23 0.0282 0.0078

Earth -50194-02-12 00:28 J -16611893.59 -16611893.48 -16611893.35 0.0282 0.0242  
 Moon -50194-02-12 03:49 J -16611893.42 -16611893.34 -16611893.24 0.0282 0.0258 \*  
 Mercury -50194-03-08 22:47 J -16611868.66 -16611868.55 -16611868.43 0.0281 0.0207  
 Earth -50193-02-25 06:42 J -16611515.46 -16611515.22 -16611514.98 0.0278 0.0055  
 Moon -50193-02-25 08:52 J -16611515.38 -16611515.13 -16611514.88 0.0278 0.0043 \*  
 Venus -50189-03-01 04:04 J -16610049.47 -16610049.33 -16610049.18 0.0269 0.0199  
 Venus -50189-10-16 13:25 J -16609820.14 -16609819.94 -16609819.72 0.0268 0.0087  
 Mars -50182-02-10 09:06 J -16607512.39 -16607512.12 -16607511.84 0.0270 0.0140  
 Mercury -50180-10-09 17:16 J -16606539.81 -16606539.78 -16606539.74 0.0276 0.0266  
 Mercury -50179-01-06 05:59 J -16606451.36 -16606451.25 -16606451.13 0.0277 0.0169  
 Mercury -50179-04-04 18:42 J -16606362.85 -16606362.72 -16606362.58 0.0277 0.0071  
 Mercury -50179-07-02 07:11 J -16606274.34 -16606274.20 -16606274.06 0.0278 0.0026  
 Moon -50179-08-15 05:45 J -16606230.33 -16606230.26 -16606230.18 0.0278 0.0265  
 Mercury -50179-09-28 19:25 J -16606185.81 -16606185.69 -16606185.56 0.0279 0.0122  
 Mercury -50179-12-26 07:40 J -16606097.26 -16606097.18 -16606097.09 0.0279 0.0217  
 Moon -50178-08-28 01:54 J -16605852.67 -16605852.42 -16605852.17 0.0281 0.0028  
 Earth -50178-08-28 04:33 J -16605852.56 -16605852.31 -16605852.07 0.0281 0.0012 \*  
 Venus -50174-11-13 08:23 J -16604314.35 -16604314.15 -16604313.94 0.0292 0.0029  
 Mars -50168-02-26 19:40 J -16602381.92 -16602381.68 -16602381.42 0.0291 0.0099  
 Mercury -50166-11-02 11:30 J -16601403.14 -16601403.02 -16601402.91 0.0284 0.0206  
 Mercury -50165-01-30 07:11 J -16601314.36 -16601314.20 -16601314.04 0.0283 0.0081  
 Mercury -50165-04-28 03:06 J -16601225.54 -16601225.37 -16601225.20 0.0282 0.0046  
 Mercury -50165-07-25 23:30 J -16601136.66 -16601136.52 -16601136.38 0.0282 0.0174  
 Moon -50164-02-18 21:06 J -16600928.85 -16600928.62 -16600928.39 0.0280 0.0091  
 Earth -50164-02-18 23:30 J -16600928.75 -16600928.52 -16600928.28 0.0280 0.0077 \*  
 Earth -50163-03-04 02:23 J -16600550.54 -16600550.40 -16600550.23 0.0277 0.0215  
 Moon -50163-03-04 04:33 J -16600550.45 -16600550.31 -16600550.15 0.0277 0.0210 \*  
 Venus -50160-09-11 11:16 J -16599263.20 -16599263.03 -16599262.84 0.0269 0.0151  
 Venus -50159-04-28 20:23 J -16599033.83 -16599033.65 -16599033.45 0.0268 0.0135  
 Mercury -50150-05-26 07:54 J -16595719.27 -16595719.17 -16595719.08 0.0275 0.0199

Mercury -50150-08-22 20:23 J -16595630.78 -16595630.65 -16595630.52 0.0276 0.0102  
 Mercury -50150-11-19 08:52 J -16595542.27 -16595542.13 -16595541.99 0.0277 0.0008  
 Mercury -50149-02-15 21:21 J -16595453.74 -16595453.61 -16595453.48 0.0277 0.0090  
 Mercury -50149-05-14 09:21 J -16595365.21 -16595365.11 -16595365.00 0.0278 0.0184  
 Mercury -50149-08-10 21:35 J -16595276.61 -16595276.60 -16595276.59 0.0279 0.0278  
 Earth -50149-08-21 15:49 J -16595266.05 -16595265.84 -16595265.62 0.0279 0.0126  
 Moon -50149-08-21 18:42 J -16595265.94 -16595265.72 -16595265.50 0.0279 0.0110 \*  
 Earth -50148-09-03 17:45 J -16594887.95 -16594887.76 -16594887.56 0.0282 0.0171  
 Moon -50148-09-03 21:21 J -16594887.79 -16594887.61 -16594887.42 0.0282 0.0186 \*  
 Venus -50145-10-07 19:11 J -16593757.76 -16593757.70 -16593757.65 0.0291 0.0279  
 Venus -50144-05-25 09:06 J -16593528.32 -16593528.12 -16593527.92 0.0292 0.0064  
 Mercury -50136-03-21 08:37 J -16590671.21 -16590671.14 -16590671.08 0.0284 0.0259  
 Mercury -50136-06-18 04:04 J -16590582.48 -16590582.33 -16590582.18 0.0284 0.0134  
 Mercury -50136-09-14 23:59 J -16590493.67 -16590493.50 -16590493.33 0.0283 0.0009  
 Mercury -50136-12-12 20:09 J -16590404.82 -16590404.66 -16590404.50 0.0282 0.0119  
 Earth -50135-02-13 00:57 J -16590342.61 -16590342.46 -16590342.30 0.0282 0.0221  
 Moon -50135-02-13 03:06 J -16590342.50 -16590342.37 -16590342.22 0.0282 0.0236 \*  
 Mercury -50135-03-11 16:33 J -16590315.89 -16590315.81 -16590315.73 0.0281 0.0248  
 Moon -50134-02-26 04:47 J -16589964.54 -16589964.30 -16589964.05 0.0279 0.0068  
 Earth -50134-02-26 06:57 J -16589964.44 -16589964.21 -16589963.97 0.0279 0.0077 \*  
 Venus -50130-03-24 11:16 J -16588477.23 -16588477.03 -16588476.84 0.0269 0.0124  
 Venus -50130-11-08 20:23 J -16588247.82 -16588247.65 -16588247.47 0.0268 0.0161  
 Mars -50124-05-15 08:23 J -16586233.40 -16586233.15 -16586232.87 0.0268 0.0155  
 Mercury -50121-10-12 08:52 J -16584987.20 -16584987.13 -16584987.05 0.0276 0.0233  
 Mercury -50120-01-08 21:35 J -16584898.72 -16584898.60 -16584898.47 0.0277 0.0136  
 Mercury -50120-04-07 10:18 J -16584810.21 -16584810.07 -16584809.93 0.0277 0.0039  
 Mercury -50120-07-04 22:33 J -16584721.69 -16584721.56 -16584721.42 0.0278 0.0058  
 Moon -50120-08-16 00:57 J -16584679.57 -16584679.46 -16584679.33 0.0278 0.0243  
 Earth -50120-08-16 03:49 J -16584679.42 -16584679.34 -16584679.24 0.0278 0.0258 \*  
 Mercury -50120-10-01 10:47 J -16584633.16 -16584633.05 -16584632.93 0.0279 0.0153

Mercury -50120-12-28 23:01 J -16584544.60 -16584544.54 -16584544.47 0.0279 0.0247

Moon -50119-08-29 00:42 J -16584301.70 -16584301.47 -16584301.23 0.0281 0.0049

Earth -50119-08-29 03:49 J -16584301.58 -16584301.34 -16584301.09 0.0281 0.0034 \*

Venus -50115-04-19 23:16 J -16582971.65 -16582971.53 -16582971.41 0.0291 0.0236

Venus -50115-12-05 13:40 J -16582742.12 -16582741.93 -16582741.74 0.0292 0.0108

Mars -50110-06-05 08:23 J -16581099.33 -16581099.15 -16581098.96 0.0292 0.0211

Mercury -50107-11-05 04:18 J -16579850.45 -16579850.32 -16579850.18 0.0284 0.0169

Mercury -50106-02-02 00:13 J -16579761.66 -16579761.49 -16579761.32 0.0283 0.0043

Mercury -50106-05-01 20:23 J -16579672.82 -16579672.65 -16579672.48 0.0282 0.0085

Mercury -50106-07-29 16:33 J -16579583.91 -16579583.81 -16579583.69 0.0282 0.0214

Earth -50105-02-20 22:47 J -16579377.79 -16579377.55 -16579377.30 0.0280 0.0056

Moon -50105-02-21 00:42 J -16579377.70 -16579377.47 -16579377.23 0.0280 0.0069 \*

Earth -50104-03-05 02:09 J -16578999.53 -16578999.41 -16578999.27 0.0277 0.0236

Moon -50104-03-05 05:45 J -16578999.39 -16578999.26 -16578999.12 0.0277 0.0231 \*

Venus -50101-10-03 18:13 J -16577690.95 -16577690.74 -16577690.53 0.0269 0.0076

Venus -50100-05-21 03:06 J -16577461.49 -16577461.37 -16577461.22 0.0268 0.0209

Mars -50094-07-06 21:21 J -16575223.85 -16575223.61 -16575223.36 0.0269 0.0174

Mercury -50091-03-01 10:47 J -16574255.09 -16574255.05 -16574255.01 0.0275 0.0262

Mercury -50091-05-28 23:30 J -16574166.63 -16574166.52 -16574166.40 0.0275 0.0165

Mercury -50091-08-25 12:13 J -16574078.13 -16574077.99 -16574077.86 0.0276 0.0069

Mercury -50091-11-22 00:28 J -16573989.61 -16573989.48 -16573989.34 0.0277 0.0028

Mercury -50090-02-18 12:57 J -16573901.09 -16573900.96 -16573900.84 0.0277 0.0122

Mercury -50090-05-18 00:57 J -16573812.54 -16573812.46 -16573812.37 0.0278 0.0216

Earth -50090-08-23 16:18 J -16573715.04 -16573714.82 -16573714.58 0.0279 0.0104

Moon -50090-08-23 19:25 J -16573714.92 -16573714.69 -16573714.45 0.0279 0.0088 \*

Moon -50089-09-04 17:30 J -16573336.95 -16573336.77 -16573336.60 0.0282 0.0205

Earth -50089-09-04 18:13 J -16573336.92 -16573336.74 -16573336.56 0.0282 0.0193 \*

Venus -50086-10-31 00:42 J -16572185.61 -16572185.47 -16572185.31 0.0291 0.0199

Venus -50085-06-16 14:37 J -16571956.06 -16571955.89 -16571955.70 0.0292 0.0145

Mars -50080-07-22 10:18 J -16570094.32 -16570094.07 -16570093.81 0.0291 0.0098

Mercury -50077-03-24 01:11 J -16569118.55 -16569118.45 -16569118.34 0.0284 0.0222  
 Mercury -50077-06-20 20:52 J -16569029.79 -16569029.63 -16569029.46 0.0284 0.0097  
 Mercury -50077-09-17 17:01 J -16568940.96 -16568940.79 -16568940.62 0.0283 0.0030  
 Mercury -50077-12-15 13:11 J -16568852.09 -16568851.95 -16568851.80 0.0282 0.0158  
 Moon -50076-02-13 21:06 J -16568791.78 -16568791.62 -16568791.46 0.0282 0.0214  
 Earth -50076-02-13 23:30 J -16568791.68 -16568791.52 -16568791.33 0.0282 0.0201 \*  
 Moon -50075-02-27 02:09 J -16568413.63 -16568413.41 -16568413.17 0.0279 0.0091  
 Earth -50075-02-27 05:45 J -16568413.49 -16568413.26 -16568413.03 0.0279 0.0098 \*  
 Venus -50071-04-15 17:16 J -16566905.00 -16566904.78 -16566904.57 0.0269 0.0051  
 Venus -50071-12-01 02:37 J -16566675.49 -16566675.39 -16566675.28 0.0268 0.0233  
 Mercury -50062-10-16 00:42 J -16563434.57 -16563434.47 -16563434.38 0.0276 0.0200  
 Mercury -50061-01-12 13:11 J -16563346.08 -16563345.95 -16563345.81 0.0277 0.0104  
 Mercury -50061-04-10 01:40 J -16563257.57 -16563257.43 -16563257.29 0.0277 0.0012  
 Mercury -50061-07-07 14:09 J -16563169.04 -16563168.91 -16563168.78 0.0278 0.0088  
 Moon -50061-08-17 00:57 J -16563128.59 -16563128.46 -16563128.31 0.0278 0.0223  
 Earth -50061-08-17 04:04 J -16563128.46 -16563128.33 -16563128.20 0.0278 0.0237 \*  
 Mercury -50061-10-04 02:09 J -16563080.50 -16563080.41 -16563080.30 0.0279 0.0184  
 Mercury -50061-12-31 14:23 J -16562991.91 -16562991.90 -16562991.88 0.0279 0.0277  
 Earth -50060-08-30 03:35 J -16562750.58 -16562750.35 -16562750.11 0.0281 0.0056  
 Moon -50060-08-30 04:47 J -16562750.52 -16562750.30 -16562750.06 0.0281 0.0068 \*  
 Venus -50056-05-12 04:18 J -16561399.48 -16561399.32 -16561399.14 0.0291 0.0157  
 Venus -50056-12-27 18:28 J -16561169.88 -16561169.73 -16561169.56 0.0292 0.0187  
 Mercury -50048-08-11 01:25 J -16558386.51 -16558386.44 -16558386.37 0.0284 0.0258  
 Mercury -50048-11-07 20:52 J -16558297.78 -16558297.63 -16558297.48 0.0284 0.0133  
 Mercury -50047-02-04 16:47 J -16558208.97 -16558208.80 -16558208.62 0.0283 0.0009  
 Mercury -50047-05-04 12:57 J -16558120.11 -16558119.96 -16558119.80 0.0282 0.0121  
 Mercury -50047-08-01 09:35 J -16558031.18 -16558031.10 -16558031.02 0.0282 0.0250  
 Earth -50046-02-21 20:09 J -16557826.90 -16557826.66 -16557826.41 0.0280 0.0037  
 Moon -50046-02-21 23:59 J -16557826.75 -16557826.50 -16557826.26 0.0280 0.0048 \*  
 Moon -50045-03-05 23:59 J -16557448.60 -16557448.50 -16557448.40 0.0277 0.0254

Earth -50045-03-05 23:45 J -16557448.58 -16557448.51 -16557448.40 0.0277 0.0256 \*  
 Venus -50042-10-26 23:59 J -16556118.72 -16556118.50 -16556118.28 0.0269 0.0004  
 Mars -50036-10-08 22:18 J -16553944.85 -16553944.57 -16553944.28 0.0268 0.0122  
 Mercury -50032-03-04 02:37 J -16552702.47 -16552702.39 -16552702.31 0.0275 0.0228  
 Mercury -50032-05-31 15:21 J -16552613.98 -16552613.86 -16552613.74 0.0275 0.0131  
 Mercury -50032-08-28 03:49 J -16552525.48 -16552525.34 -16552525.20 0.0276 0.0036  
 Mercury -50032-11-24 16:04 J -16552436.96 -16552436.83 -16552436.69 0.0277 0.0060  
 Mercury -50031-02-21 04:18 J -16552348.43 -16552348.32 -16552348.20 0.0277 0.0154  
 Mercury -50031-05-20 16:33 J -16552259.87 -16552259.81 -16552259.75 0.0278 0.0247  
 Moon -50031-08-24 15:49 J -16552164.08 -16552163.84 -16552163.58 0.0279 0.0068  
 Earth -50031-08-24 17:16 J -16552164.01 -16552163.78 -16552163.54 0.0279 0.0081 \*  
 Moon -50030-09-06 14:37 J -16551786.03 -16551785.89 -16551785.73 0.0282 0.0224  
 Earth -50030-09-06 18:28 J -16551785.88 -16551785.73 -16551785.57 0.0282 0.0216 \*  
 Venus -50027-11-22 06:42 J -16550613.41 -16550613.22 -16550613.04 0.0291 0.0118  
 Venus -50026-07-09 20:09 J -16550383.78 -16550383.66 -16550383.52 0.0292 0.0225  
 Mars -50022-10-28 21:21 J -16548811.78 -16548811.61 -16548811.42 0.0292 0.0215  
 Mercury -50018-03-27 17:45 J -16547565.88 -16547565.76 -16547565.62 0.0284 0.0187  
 Mercury -50018-06-24 13:40 J -16547477.09 -16547476.93 -16547476.76 0.0284 0.0061  
 Mercury -50018-09-21 09:49 J -16547388.26 -16547388.09 -16547387.92 0.0283 0.0067  
 Mercury -50018-12-19 05:59 J -16547299.37 -16547299.25 -16547299.12 0.0282 0.0195  
 Moon -50017-02-15 18:28 J -16547240.90 -16547240.73 -16547240.55 0.0282 0.0192  
 Earth -50017-02-15 21:35 J -16547240.78 -16547240.60 -16547240.40 0.0282 0.0181 \*  
 Earth -50016-02-28 03:35 J -16546862.57 -16546862.35 -16546862.12 0.0279 0.0118  
 Moon -50016-02-28 04:04 J -16546862.54 -16546862.33 -16546862.11 0.0279 0.0115 \*  
 Venus -50013-09-20 12:57 J -16545561.99 -16545561.96 -16545561.93 0.0270 0.0266  
 Venus -50012-05-07 23:01 J -16545332.76 -16545332.54 -16545332.32 0.0269 0.0021  
 Mars -50006-11-29 15:35 J -16542936.07 -16542935.85 -16542935.62 0.0269 0.0192  
 Mercury -50003-07-22 03:21 J -16541970.39 -16541970.36 -16541970.31 0.0275 0.0264  
 Mercury -50003-10-18 16:18 J -16541881.93 -16541881.82 -16541881.71 0.0276 0.0167  
 Mercury -50002-01-15 04:47 J -16541793.43 -16541793.30 -16541793.16 0.0276 0.0071

Mercury -50002-04-13 17:16 J -16541704.92 -16541704.78 -16541704.64 0.0277 0.0025

Mercury -50002-07-11 05:30 J -16541616.39 -16541616.27 -16541616.14 0.0278 0.0120

Earth -50002-08-19 03:35 J -16541577.49 -16541577.35 -16541577.18 0.0278 0.0215

Moon -50002-08-19 04:47 J -16541577.46 -16541577.30 -16541577.13 0.0278 0.0201 \*

Mercury -50002-10-07 17:30 J -16541527.85 -16541527.77 -16541527.67 0.0279 0.0215

Earth -50001-08-31 03:21 J -16541199.59 -16541199.36 -16541199.12 0.0281 0.0078

Moon -50001-08-31 06:57 J -16541199.44 -16541199.21 -16541198.97 0.0281 0.0088 \*

# 50TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 50th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-49997-06-03 09:35 J	-16539827.29	-16539827.10	-16539826.90	0.0291	0.0078		
Venus	-49996-01-18 23:45 J	-16539597.59	-16539597.51	-16539597.42	0.0292	0.0265		
Mars	-49992-12-15 15:06 J	-16537806.11	-16537805.87	-16537805.62	0.0291	0.0119		
Mercury	-49989-08-13 17:45 J	-16536833.86	-16536833.76	-16536833.65	0.0284	0.0223		
Mercury	-49989-11-10 13:25 J	-16536745.10	-16536744.94	-16536744.78	0.0284	0.0098		
Mercury	-49988-02-07 09:21 J	-16536656.28	-16536656.11	-16536655.93	0.0283	0.0030		
Mercury	-49988-05-07 05:45 J	-16536567.40	-16536567.26	-16536567.11	0.0282	0.0157		
Moon	-49987-02-22 16:33 J	-16536276.06	-16536275.81	-16536275.55	0.0280	0.0022		
Earth	-49987-02-22 17:30 J	-16536276.02	-16536275.77	-16536275.52	0.0280	0.0016 *		
Earth	-49986-03-07 21:35 J	-16535897.62	-16535897.60	-16535897.57	0.0277	0.0275		
Venus	-49983-04-02 19:25 J	-16534775.82	-16534775.69	-16534775.57	0.0270	0.0219		
Venus	-49983-11-18 05:30 J	-16534546.48	-16534546.27	-16534546.06	0.0269	0.0068		

Mercury -49973-03-06 18:28 J -16531149.82 -16531149.73 -16531149.62 0.0275 0.0193

Mercury -49973-06-03 07:11 J -16531061.33 -16531061.20 -16531061.07 0.0276 0.0097

Mercury -49973-08-30 19:40 J -16530972.82 -16530972.68 -16530972.54 0.0276 0.0002

Mercury -49973-11-27 07:54 J -16530884.30 -16530884.17 -16530884.04 0.0277 0.0094

Mercury -49972-02-23 20:09 J -16530795.76 -16530795.66 -16530795.56 0.0278 0.0187

Moon -49972-08-25 15:49 J -16530613.08 -16530612.84 -16530612.60 0.0279 0.0043

Earth -49972-08-25 19:25 J -16530612.93 -16530612.69 -16530612.45 0.0279 0.0056 \*

Moon -49971-09-07 19:40 J -16530234.79 -16530234.68 -16530234.56 0.0282 0.0246

Earth -49971-09-07 20:23 J -16530234.77 -16530234.65 -16530234.52 0.0282 0.0241 \*

Venus -49968-12-14 13:11 J -16529041.15 -16529040.95 -16529040.74 0.0291 0.0035

Mercury -49960-12-31 15:06 J -16526101.91 -16526101.87 -16526101.82 0.0285 0.0273

Mercury -49959-03-30 10:47 J -16526013.19 -16526013.05 -16526012.91 0.0284 0.0149

Mercury -49959-06-27 06:42 J -16525924.40 -16525924.22 -16525924.05 0.0283 0.0024

Mercury -49959-09-24 02:37 J -16525835.55 -16525835.39 -16525835.22 0.0283 0.0105

Mercury -49959-12-21 23:01 J -16525746.63 -16525746.54 -16525746.44 0.0282 0.0234

Earth -49958-02-16 19:40 J -16525689.87 -16525689.68 -16525689.47 0.0282 0.0160

Moon -49958-02-16 21:21 J -16525689.80 -16525689.61 -16525689.41 0.0282 0.0166 \*

Earth -49957-03-01 01:54 J -16525311.63 -16525311.42 -16525311.21 0.0279 0.0139

Moon -49957-03-01 05:30 J -16525311.47 -16525311.27 -16525311.04 0.0279 0.0140 \*

Venus -49954-10-13 18:13 J -16523989.88 -16523989.74 -16523989.58 0.0270 0.0195

Venus -49953-05-30 04:33 J -16523760.51 -16523760.31 -16523760.10 0.0269 0.0092

Mars -49947-03-03 15:49 J -16521657.13 -16521656.84 -16521656.53 0.0268 0.0106

Mercury -49944-07-24 19:25 J -16520417.77 -16520417.69 -16520417.61 0.0275 0.0229

Mercury -49944-10-21 08:09 J -16520329.28 -16520329.16 -16520329.04 0.0276 0.0133

Mercury -49943-01-17 20:37 J -16520240.78 -16520240.64 -16520240.50 0.0277 0.0037

Mercury -49943-04-16 09:06 J -16520152.26 -16520152.12 -16520151.99 0.0277 0.0059

Mercury -49943-07-13 21:21 J -16520063.73 -16520063.61 -16520063.50 0.0278 0.0153

Earth -49943-08-20 05:16 J -16520026.45 -16520026.28 -16520026.10 0.0278 0.0191

Moon -49943-08-20 09:06 J -16520026.31 -16520026.12 -16520025.93 0.0278 0.0175 \*

Mercury -49943-10-10 09:21 J -16519975.17 -16519975.11 -16519975.05 0.0279 0.0247



Earth -49942-09-02 04:47 J -16519648.52 -16519648.30 -16519648.07 0.0281 0.0102  
 Moon -49942-09-02 05:30 J -16519648.50 -16519648.27 -16519648.03 0.0281 0.0110 \*  
 Venus -49938-06-26 15:49 J -16518255.04 -16518254.84 -16518254.63 0.0291 0.0007  
 Mars -49933-03-23 02:23 J -16516523.58 -16516523.40 -16516523.19 0.0292 0.0195  
 Mercury -49930-08-17 10:18 J -16515281.19 -16515281.07 -16515280.94 0.0284 0.0187  
 Mercury -49930-11-14 06:13 J -16515192.41 -16515192.24 -16515192.07 0.0284 0.0061  
 Mercury -49929-02-11 02:23 J -16515103.57 -16515103.40 -16515103.24 0.0283 0.0066  
 Mercury -49929-05-09 22:33 J -16515014.68 -16515014.56 -16515014.43 0.0282 0.0195  
 Moon -49928-02-23 11:30 J -16514725.27 -16514725.02 -16514724.77 0.0280 0.0004  
 Earth -49928-02-23 15:21 J -16514725.11 -16514724.86 -16514724.61 0.0280 0.0005 \*  
 Venus -49924-04-25 01:11 J -16513203.64 -16513203.45 -16513203.27 0.0270 0.0148  
 Venus -49924-12-10 11:01 J -16512974.21 -16512974.04 -16512973.84 0.0269 0.0141  
 Mars -49917-04-24 10:18 J -16510647.22 -16510647.07 -16510646.88 0.0269 0.0226  
 Mercury -49915-12-11 21:49 J -16509685.63 -16509685.59 -16509685.53 0.0275 0.0253  
 Mercury -49914-03-10 10:47 J -16509597.17 -16509597.05 -16509596.93 0.0275 0.0156  
 Mercury -49914-06-06 23:16 J -16509508.66 -16509508.53 -16509508.39 0.0276 0.0061  
 Mercury -49914-09-03 11:45 J -16509420.15 -16509420.01 -16509419.87 0.0276 0.0035  
 Mercury -49914-11-30 23:59 J -16509331.62 -16509331.50 -16509331.38 0.0277 0.0129  
 Mercury -49913-02-27 11:59 J -16509243.07 -16509243.00 -16509242.91 0.0278 0.0223  
 Moon -49913-08-26 21:35 J -16509061.84 -16509061.60 -16509061.37 0.0279 0.0019  
 Earth -49913-08-26 22:33 J -16509061.80 -16509061.56 -16509061.32 0.0279 0.0030 \*  
 Earth -49912-09-08 23:30 J -16508683.58 -16508683.52 -16508683.43 0.0282 0.0268  
 Moon -49912-09-09 02:52 J -16508683.44 -16508683.38 -16508683.31 0.0282 0.0269 \*  
 Venus -49909-05-21 07:25 J -16507698.21 -16507698.19 -16507698.15 0.0289 0.0286  
 Venus -49908-01-05 20:52 J -16507468.84 -16507468.63 -16507468.43 0.0290 0.0051  
 Mars -49903-05-10 11:30 J -16505518.26 -16505518.02 -16505517.78 0.0291 0.0123  
 Mercury -49900-01-03 08:23 J -16504549.24 -16504549.15 -16504549.05 0.0285 0.0234  
 Mercury -49900-04-02 04:04 J -16504460.49 -16504460.33 -16504460.17 0.0284 0.0109  
 Mercury -49900-06-29 23:59 J -16504371.67 -16504371.50 -16504371.33 0.0283 0.0018  
 Mercury -49900-09-26 20:09 J -16504282.81 -16504282.66 -16504282.51 0.0283 0.0145

Mercury -49900-12-24 16:33 J -16504193.84 -16504193.81 -16504193.77 0.0282 0.0274  
 Earth -49899-02-17 19:40 J -16504138.89 -16504138.68 -16504138.46 0.0282 0.0137  
 Moon -49899-02-17 23:16 J -16504138.74 -16504138.53 -16504138.31 0.0282 0.0140 \*  
 Earth -49898-03-03 01:25 J -16503760.63 -16503760.44 -16503760.23 0.0279 0.0161  
 Moon -49898-03-03 02:23 J -16503760.60 -16503760.40 -16503760.19 0.0279 0.0167 \*  
 Venus -49895-11-05 00:42 J -16502417.66 -16502417.47 -16502417.27 0.0270 0.0121  
 Venus -49894-06-22 10:47 J -16502188.21 -16502188.05 -16502187.87 0.0269 0.0165  
 Mercury -49885-07-27 11:45 J -16498865.11 -16498865.01 -16498864.91 0.0275 0.0192  
 Mercury -49885-10-24 00:13 J -16498776.62 -16498776.49 -16498776.35 0.0276 0.0096  
 Mercury -49884-01-20 12:42 J -16498688.11 -16498687.97 -16498687.83 0.0277 0.0008  
 Mercury -49884-04-19 01:11 J -16498599.58 -16498599.45 -16498599.32 0.0277 0.0095  
 Mercury -49884-07-16 13:11 J -16498511.04 -16498510.95 -16498510.84 0.0278 0.0189  
 Earth -49884-08-21 08:52 J -16498475.32 -16498475.13 -16498474.93 0.0278 0.0165  
 Moon -49884-08-21 09:49 J -16498475.30 -16498475.09 -16498474.87 0.0278 0.0151 \*  
 Moon -49883-09-03 05:16 J -16498097.49 -16498097.28 -16498097.06 0.0281 0.0134  
 Earth -49883-09-03 08:23 J -16498097.36 -16498097.15 -16498096.93 0.0281 0.0129 \*  
 Venus -49880-12-01 10:33 J -16496912.17 -16496912.06 -16496911.95 0.0290 0.0246  
 Venus -49879-07-18 23:59 J -16496682.70 -16496682.50 -16496682.31 0.0291 0.0091  
 Mercury -49871-05-23 08:09 J -16493817.21 -16493817.16 -16493817.11 0.0285 0.0271  
 Mercury -49871-08-20 03:35 J -16493728.49 -16493728.35 -16493728.20 0.0284 0.0147  
 Mercury -49871-11-16 23:30 J -16493639.69 -16493639.52 -16493639.35 0.0283 0.0021  
 Moon -49870-02-12 02:52 J -16493552.38 -16493552.38 -16493552.36 0.0283 0.0282  
 Earth -49870-02-12 06:28 J -16493552.28 -16493552.23 -16493552.17 0.0283 0.0275  
 Mercury -49870-02-13 19:40 J -16493550.84 -16493550.68 -16493550.52 0.0283 0.0107  
 Mercury -49870-05-13 16:04 J -16493461.92 -16493461.83 -16493461.73 0.0282 0.0236  
 Moon -49869-02-25 14:23 J -16493174.13 -16493173.90 -16493173.66 0.0280 0.0031  
 Earth -49869-02-25 15:06 J -16493174.12 -16493173.87 -16493173.63 0.0280 0.0028 \*  
 Venus -49865-05-17 07:25 J -16491631.40 -16491631.19 -16491630.98 0.0270 0.0074  
 Venus -49864-01-01 17:45 J -16491401.89 -16491401.76 -16491401.62 0.0269 0.0213  
 Mars -49859-07-28 15:49 J -16489368.14 -16489367.84 -16489367.52 0.0269 0.0071

Mercury -49856-12-14 14:37 J -16488132.98 -16488132.89 -16488132.80 0.0275 0.0213  
 Mercury -49855-03-13 03:06 J -16488044.49 -16488044.37 -16488044.23 0.0276 0.0118  
 Mercury -49855-06-09 15:49 J -16487955.98 -16487955.84 -16487955.70 0.0276 0.0022  
 Moon -49855-08-16 05:59 J -16487888.27 -16487888.25 -16487888.21 0.0277 0.0274  
 Mercury -49855-09-06 04:04 J -16487867.46 -16487867.33 -16487867.19 0.0277 0.0074  
 Mercury -49855-12-03 16:18 J -16487778.93 -16487778.82 -16487778.71 0.0277 0.0168  
 Mercury -49854-03-02 04:18 J -16487690.36 -16487690.32 -16487690.27 0.0278 0.0261  
 Earth -49854-08-29 04:04 J -16487510.57 -16487510.33 -16487510.08 0.0279 0.0002  
 Moon -49854-08-29 07:11 J -16487510.44 -16487510.20 -16487509.96 0.0279 0.0012 \*  
 Venus -49850-06-13 17:01 J -16486125.94 -16486125.79 -16486125.64 0.0289 0.0196  
 Venus -49849-01-29 05:59 J -16485896.42 -16485896.25 -16485896.06 0.0290 0.0140  
 Mars -49845-08-16 08:52 J -16484235.32 -16484235.13 -16484234.91 0.0292 0.0182  
 Mercury -49841-01-07 02:09 J -16482996.53 -16482996.41 -16482996.28 0.0284 0.0190  
 Mercury -49841-04-04 22:04 J -16482907.75 -16482907.58 -16482907.42 0.0284 0.0065  
 Mercury -49841-07-02 17:59 J -16482818.92 -16482818.75 -16482818.58 0.0283 0.0062  
 Mercury -49841-09-29 14:09 J -16482730.03 -16482729.91 -16482729.78 0.0282 0.0190  
 Earth -49840-02-18 21:35 J -16482587.82 -16482587.60 -16482587.37 0.0281 0.0111  
 Moon -49840-02-18 22:04 J -16482587.81 -16482587.58 -16482587.34 0.0281 0.0112 \*  
 Moon -49839-03-03 23:45 J -16482209.68 -16482209.51 -16482209.33 0.0278 0.0197  
 Earth -49839-03-04 03:06 J -16482209.54 -16482209.37 -16482209.18 0.0278 0.0187 \*  
 Venus -49836-11-27 08:09 J -16480845.38 -16480845.16 -16480844.94 0.0270 0.0045  
 Venus -49835-07-14 18:28 J -16480615.83 -16480615.73 -16480615.63 0.0269 0.0240  
 Mars -49829-09-17 12:42 J -16478359.08 -16478358.97 -16478358.84 0.0269 0.0250  
 Mercury -49826-05-03 15:35 J -16477400.91 -16477400.85 -16477400.79 0.0275 0.0248  
 Mercury -49826-07-31 04:18 J -16477312.44 -16477312.32 -16477312.20 0.0276 0.0152  
 Mercury -49826-10-27 16:47 J -16477223.93 -16477223.80 -16477223.66 0.0276 0.0057  
 Mercury -49825-01-24 05:16 J -16477135.42 -16477135.28 -16477135.14 0.0277 0.0040  
 Mercury -49825-04-21 17:30 J -16477046.89 -16477046.77 -16477046.65 0.0278 0.0134  
 Mercury -49825-07-19 05:45 J -16476958.34 -16476958.26 -16476958.18 0.0278 0.0228  
 Moon -49825-08-22 11:16 J -16476924.25 -16476924.03 -16476923.80 0.0279 0.0124

Earth -49825-08-22 14:37 J -16476924.09 -16476923.89 -16476923.67 0.0279 0.0137 \*  
 Moon -49824-09-04 11:30 J -16476546.20 -16476546.02 -16476545.82 0.0281 0.0165  
 Earth -49824-09-04 14:23 J -16476546.09 -16476545.90 -16476545.69 0.0281 0.0159 \*  
 Venus -49821-12-23 19:54 J -16475339.84 -16475339.67 -16475339.49 0.0290 0.0156  
 Venus -49820-08-10 09:21 J -16475110.27 -16475110.11 -16475109.95 0.0291 0.0181  
 Mars -49815-10-04 01:40 J -16473229.65 -16473229.43 -16473229.19 0.0291 0.0151  
 Mercury -49812-05-26 02:09 J -16472264.51 -16472264.41 -16472264.31 0.0284 0.0226  
 Mercury -49812-08-22 21:49 J -16472175.75 -16472175.59 -16472175.43 0.0284 0.0102  
 Mercury -49812-11-19 17:45 J -16472086.94 -16472086.76 -16472086.59 0.0283 0.0025  
 Moon -49811-02-13 08:23 J -16472001.24 -16472001.15 -16472001.04 0.0282 0.0255  
 Earth -49811-02-13 09:06 J -16472001.23 -16472001.12 -16472001.00 0.0282 0.0249 \*  
 Mercury -49811-02-16 13:54 J -16471998.07 -16471997.92 -16471997.77 0.0282 0.0153  
 Mercury -49811-05-16 10:18 J -16471909.07 -16471909.07 -16471909.06 0.0282 0.0282  
 Earth -49810-02-26 17:16 J -16471623.02 -16471622.78 -16471622.54 0.0280 0.0054  
 Moon -49810-02-26 20:23 J -16471622.88 -16471622.65 -16471622.41 0.0280 0.0061 \*  
 Venus -49806-06-09 15:06 J -16470059.09 -16470058.87 -16470058.65 0.0270 0.0003  
 Mercury -49797-09-19 18:42 J -16466668.75 -16466668.72 -16466668.69 0.0275 0.0268  
 Mercury -49797-12-17 07:25 J -16466580.30 -16466580.19 -16466580.08 0.0275 0.0172  
 Mercury -49796-03-15 20:09 J -16466491.80 -16466491.66 -16466491.53 0.0276 0.0075  
 Mercury -49796-06-12 08:37 J -16466403.28 -16466403.14 -16466403.00 0.0277 0.0020  
 Earth -49796-08-17 13:40 J -16466337.00 -16466336.93 -16466336.83 0.0277 0.0259  
 Moon -49796-08-17 17:01 J -16466336.89 -16466336.79 -16466336.67 0.0277 0.0245 \*  
 Mercury -49796-09-08 20:52 J -16466314.76 -16466314.63 -16466314.50 0.0277 0.0115  
 Mercury -49796-12-06 08:52 J -16466226.21 -16466226.13 -16466226.03 0.0278 0.0209  
 Earth -49795-08-30 11:45 J -16465959.25 -16465959.01 -16465958.77 0.0280 0.0031  
 Moon -49795-08-30 14:37 J -16465959.13 -16465958.89 -16465958.64 0.0280 0.0041 \*  
 Venus -49791-07-06 04:18 J -16464553.51 -16464553.32 -16464553.12 0.0289 0.0101  
 Venus -49790-02-20 17:30 J -16464323.89 -16464323.77 -16464323.65 0.0291 0.0235  
 Mercury -49783-10-13 01:25 J -16461532.49 -16461532.44 -16461532.37 0.0285 0.0264  
 Mercury -49782-01-09 21:06 J -16461443.77 -16461443.62 -16461443.47 0.0284 0.0140

Mercury -49782-04-08 16:47 J -16461354.97 -16461354.80 -16461354.62 0.0283 0.0016  
 Mercury -49782-07-06 12:57 J -16461266.12 -16461265.96 -16461265.80 0.0283 0.0113  
 Mercury -49782-10-03 09:21 J -16461177.20 -16461177.11 -16461177.02 0.0282 0.0241  
 Moon -49781-02-20 23:45 J -16461036.74 -16461036.51 -16461036.26 0.0281 0.0080  
 Earth -49781-02-21 03:06 J -16461036.60 -16461036.37 -16461036.13 0.0281 0.0082 \*  
 Moon -49780-03-05 05:45 J -16460658.39 -16460658.26 -16460658.11 0.0278 0.0226  
 Earth -49780-03-05 08:09 J -16460658.31 -16460658.16 -16460658.00 0.0278 0.0215 \*  
 Venus -49777-05-04 06:13 J -16459502.31 -16459502.24 -16459502.17 0.0271 0.0254  
 Venus -49777-12-19 17:01 J -16459273.01 -16459272.79 -16459272.57 0.0270 0.0034  
 Mars -49771-12-21 22:47 J -16457079.87 -16457079.55 -16457079.22 0.0269 0.0042  
 Mercury -49767-05-06 08:37 J -16455848.23 -16455848.14 -16455848.04 0.0275 0.0205  
 Mercury -49767-08-02 21:21 J -16455759.74 -16455759.61 -16455759.48 0.0276 0.0109  
 Mercury -49767-10-30 09:49 J -16455671.23 -16455671.09 -16455670.95 0.0277 0.0014  
 Mercury -49766-01-26 22:18 J -16455582.71 -16455582.57 -16455582.44 0.0277 0.0082  
 Mercury -49766-04-25 10:33 J -16455494.17 -16455494.06 -16455493.96 0.0278 0.0176  
 Mercury -49766-07-22 22:18 J -16455405.59 -16455405.57 -16455405.53 0.0279 0.0270  
 Moon -49766-08-24 20:37 J -16455372.86 -16455372.64 -16455372.41 0.0279 0.0095  
 Earth -49766-08-24 23:01 J -16455372.76 -16455372.54 -16455372.31 0.0279 0.0105 \*  
 Earth -49765-09-05 23:16 J -16454994.70 -16454994.53 -16454994.35 0.0282 0.0192  
 Moon -49765-09-06 00:28 J -16454994.64 -16454994.48 -16454994.30 0.0282 0.0195 \*  
 Venus -49761-01-16 07:25 J -16453767.39 -16453767.19 -16453766.98 0.0290 0.0060  
 Venus -49761-09-01 20:37 J -16453537.69 -16453537.64 -16453537.57 0.0291 0.0277  
 Mars -49756-01-10 05:01 J -16451946.51 -16451946.29 -16451946.05 0.0292 0.0149  
 Mercury -49753-05-28 20:52 J -16450711.76 -16450711.63 -16450711.49 0.0284 0.0176  
 Mercury -49753-08-25 16:33 J -16450622.97 -16450622.81 -16450622.64 0.0283 0.0052  
 Mercury -49753-11-22 12:42 J -16450534.14 -16450533.97 -16450533.80 0.0283 0.0076  
 Earth -49752-02-14 14:37 J -16450450.03 -16450449.89 -16450449.72 0.0282 0.0219  
 Moon -49752-02-14 18:13 J -16450449.89 -16450449.74 -16450449.59 0.0282 0.0223 \*  
 Mercury -49752-02-19 08:52 J -16450445.24 -16450445.13 -16450445.00 0.0282 0.0204  
 Earth -49751-02-27 22:33 J -16450071.79 -16450071.56 -16450071.32 0.0279 0.0083

Moon -49751-02-28 01:11 J -16450071.68 -16450071.45 -16450071.20 0.0279 0.0089 \*  
 Venus -49748-11-14 12:57 J -16448716.09 -16448715.96 -16448715.81 0.0271 0.0208  
 Venus -49747-07-02 00:13 J -16448486.70 -16448486.49 -16448486.28 0.0270 0.0081  
 Mercury -49738-09-23 11:59 J -16445116.08 -16445116.00 -16445115.92 0.0275 0.0223  
 Mercury -49738-12-21 00:42 J -16445027.59 -16445027.47 -16445027.34 0.0276 0.0127  
 Mercury -49737-03-18 13:11 J -16444939.08 -16444938.95 -16444938.80 0.0276 0.0033  
 Mercury -49737-06-15 01:40 J -16444850.56 -16444850.43 -16444850.29 0.0277 0.0064  
 Earth -49737-08-18 23:16 J -16444785.66 -16444785.53 -16444785.39 0.0277 0.0227  
 Moon -49737-08-19 01:40 J -16444785.57 -16444785.43 -16444785.26 0.0277 0.0214 \*  
 Mercury -49737-09-11 13:54 J -16444762.03 -16444761.92 -16444761.80 0.0278 0.0159  
 Mercury -49737-12-09 01:54 J -16444673.47 -16444673.42 -16444673.36 0.0278 0.0253  
 Moon -49736-08-31 20:09 J -16444407.90 -16444407.66 -16444407.41 0.0280 0.0070  
 Earth -49736-08-31 21:49 J -16444407.83 -16444407.59 -16444407.35 0.0280 0.0065 \*  
 Venus -49732-07-28 17:16 J -16442980.99 -16442980.78 -16442980.57 0.0290 0.0002  
 Mars -49726-02-28 03:35 J -16440940.54 -16440940.35 -16440940.13 0.0290 0.0186  
 Mercury -49724-10-15 21:06 J -16439979.73 -16439979.62 -16439979.50 0.0284 0.0210  
 Mercury -49723-01-12 16:47 J -16439890.96 -16439890.80 -16439890.64 0.0284 0.0085  
 Mercury -49723-04-11 12:42 J -16439802.14 -16439801.97 -16439801.80 0.0283 0.0041  
 Mercury -49723-07-09 08:52 J -16439713.27 -16439713.13 -16439712.99 0.0282 0.0169  
 Moon -49722-02-22 08:52 J -16439485.36 -16439485.13 -16439484.89 0.0281 0.0048  
 Earth -49722-02-22 11:45 J -16439485.25 -16439485.01 -16439484.77 0.0281 0.0050 \*  
 Earth -49721-03-06 16:18 J -16439106.93 -16439106.82 -16439106.71 0.0278 0.0245  
 Moon -49721-03-06 17:45 J -16439106.84 -16439106.76 -16439106.66 0.0278 0.0258 \*  
 Venus -49718-05-27 16:47 J -16437929.97 -16437929.80 -16437929.63 0.0270 0.0171  
 Venus -49717-01-12 03:35 J -16437700.55 -16437700.35 -16437700.15 0.0269 0.0116  
 Mercury -49708-02-09 12:57 J -16434384.00 -16434383.96 -16434383.90 0.0275 0.0257  
 Mercury -49708-05-09 01:54 J -16434295.53 -16434295.42 -16434295.30 0.0276 0.0160  
 Mercury -49708-08-05 14:37 J -16434207.03 -16434206.89 -16434206.75 0.0276 0.0064  
 Mercury -49708-11-02 03:06 J -16434118.51 -16434118.37 -16434118.23 0.0277 0.0032  
 Mercury -49707-01-29 15:21 J -16434029.98 -16434029.86 -16434029.73 0.0278 0.0127

Mercury -49707-04-28 03:35 J -16433941.43 -16433941.35 -16433941.27 0.0278 0.0220

Earth -49707-08-26 09:06 J -16433821.35 -16433821.12 -16433820.88 0.0279 0.0071

Moon -49707-08-26 11:01 J -16433821.27 -16433821.04 -16433820.81 0.0279 0.0064 \*

Earth -49706-09-08 09:49 J -16433443.23 -16433443.09 -16433442.94 0.0282 0.0227

Moon -49706-09-08 13:54 J -16433443.07 -16433442.92 -16433442.78 0.0282 0.0227 \*

Venus -49702-02-07 20:37 J -16432194.84 -16432194.64 -16432194.43 0.0290 0.0040

Mercury -49694-03-04 21:06 J -16429247.69 -16429247.62 -16429247.53 0.0284 0.0245

Mercury -49694-06-01 16:47 J -16429158.95 -16429158.80 -16429158.64 0.0284 0.0120

Mercury -49694-08-29 12:42 J -16429070.14 -16429069.97 -16429069.80 0.0283 0.0007

Mercury -49694-11-26 08:37 J -16428981.29 -16428981.14 -16428980.98 0.0282 0.0133

Earth -49693-02-17 00:13 J -16428898.66 -16428898.49 -16428898.30 0.0282 0.0186

Moon -49693-02-17 03:06 J -16428898.55 -16428898.37 -16428898.18 0.0282 0.0186 \*

Mercury -49693-02-23 05:01 J -16428892.34 -16428892.29 -16428892.22 0.0282 0.0262

Moon -49692-03-01 05:59 J -16428520.48 -16428520.25 -16428520.02 0.0279 0.0124

Earth -49692-03-01 07:25 J -16428520.41 -16428520.19 -16428519.96 0.0279 0.0116 \*

Venus -49689-12-06 23:45 J -16427143.69 -16427143.51 -16427143.31 0.0271 0.0125

Venus -49688-07-24 10:47 J -16426914.22 -16426914.05 -16426913.87 0.0270 0.0163

Mars -49682-05-18 15:49 J -16424790.16 -16424789.84 -16424789.51 0.0269 0.0006

Mercury -49679-06-29 16:33 J -16423651.81 -16423651.81 -16423651.79 0.0275 0.0274

Mercury -49679-09-26 05:30 J -16423563.38 -16423563.27 -16423563.16 0.0276 0.0177

Mercury -49679-12-23 18:13 J -16423474.87 -16423474.74 -16423474.60 0.0276 0.0081

Mercury -49678-03-22 06:42 J -16423386.36 -16423386.22 -16423386.08 0.0277 0.0016

Mercury -49678-06-18 19:11 J -16423297.83 -16423297.70 -16423297.58 0.0278 0.0110

Moon -49678-08-21 08:37 J -16423234.32 -16423234.14 -16423233.94 0.0278 0.0182

Earth -49678-08-21 10:04 J -16423234.25 -16423234.08 -16423233.90 0.0278 0.0193 \*

Mercury -49678-09-15 07:25 J -16423209.29 -16423209.19 -16423209.10 0.0278 0.0204

Moon -49677-09-02 05:45 J -16422856.48 -16422856.26 -16422856.03 0.0281 0.0104

Earth -49677-09-02 09:35 J -16422856.33 -16422856.10 -16422855.87 0.0281 0.0102 \*

Venus -49673-01-03 18:28 J -16421637.84 -16421637.73 -16421637.60 0.0289 0.0232

Venus -49673-08-20 07:25 J -16421408.38 -16421408.19 -16421407.99 0.0290 0.0101

Mars -49668-06-06 19:40 J -16419656.92 -16419656.68 -16419656.42 0.0291 0.0102  
 Mercury -49665-07-21 22:18 J -16418515.61 -16418515.57 -16418515.52 0.0285 0.0273  
 Mercury -49665-10-18 17:45 J -16418426.90 -16418426.76 -16418426.62 0.0284 0.0149  
 Mercury -49664-01-15 13:25 J -16418338.11 -16418337.94 -16418337.77 0.0283 0.0024  
 Mercury -49664-04-14 09:21 J -16418249.27 -16418249.11 -16418248.95 0.0283 0.0103  
 Mercury -49664-07-12 05:45 J -16418160.36 -16418160.26 -16418160.16 0.0282 0.0230  
 Earth -49663-02-23 23:16 J -16417933.77 -16417933.53 -16417933.28 0.0280 0.0014  
 Moon -49663-02-24 00:42 J -16417933.71 -16417933.47 -16417933.23 0.0280 0.0009 \*  
 Venus -49659-06-19 04:47 J -16416357.50 -16416357.30 -16416357.08 0.0270 0.0084  
 Venus -49658-02-03 15:21 J -16416127.99 -16416127.86 -16416127.70 0.0269 0.0202  
 Mercury -49649-02-13 06:57 J -16412831.30 -16412831.21 -16412831.12 0.0275 0.0209  
 Mercury -49649-05-11 19:40 J -16412742.81 -16412742.68 -16412742.55 0.0276 0.0113  
 Mercury -49649-08-08 08:23 J -16412654.29 -16412654.15 -16412654.01 0.0277 0.0019  
 Mercury -49649-11-04 20:37 J -16412565.77 -16412565.64 -16412565.50 0.0277 0.0079  
 Mercury -49648-02-01 08:52 J -16412477.23 -16412477.13 -16412477.02 0.0278 0.0173  
 Mercury -49648-04-30 21:06 J -16412388.66 -16412388.62 -16412388.58 0.0279 0.0267  
 Earth -49648-08-27 21:06 J -16412269.86 -16412269.62 -16412269.38 0.0279 0.0035  
 Moon -49648-08-28 00:42 J -16412269.71 -16412269.47 -16412269.23 0.0279 0.0028 \*  
 Earth -49647-09-09 22:33 J -16411891.64 -16411891.56 -16411891.47 0.0282 0.0265  
 Moon -49647-09-09 22:47 J -16411891.63 -16411891.55 -16411891.44 0.0282 0.0261 \*  
 Venus -49644-07-15 22:04 J -16410851.73 -16410851.58 -16410851.42 0.0289 0.0191  
 Venus -49643-03-02 11:01 J -16410622.22 -16410622.04 -16410621.86 0.0291 0.0143  
 Mars -49638-07-25 10:47 J -16408651.20 -16408651.05 -16408650.87 0.0290 0.0228  
 Mercury -49635-03-07 17:30 J -16407694.89 -16407694.77 -16407694.64 0.0284 0.0185  
 Mercury -49635-06-04 13:11 J -16407606.11 -16407605.95 -16407605.78 0.0283 0.0061  
 Mercury -49635-09-01 09:06 J -16407517.28 -16407517.12 -16407516.95 0.0283 0.0067  
 Mercury -49635-11-29 05:30 J -16407428.39 -16407428.27 -16407428.14 0.0282 0.0194  
 Moon -49634-02-18 10:04 J -16407347.29 -16407347.08 -16407346.86 0.0281 0.0146  
 Earth -49634-02-18 11:59 J -16407347.20 -16407347.00 -16407346.78 0.0281 0.0151 \*  
 Moon -49633-03-02 14:52 J -16406969.08 -16406968.88 -16406968.68 0.0279 0.0161



Earth -49633-03-02 18:28 J -16406968.93 -16406968.73 -16406968.52 0.0279 0.0151 \*  
 Venus -49630-12-30 11:59 J -16405571.21 -16405571.00 -16405570.78 0.0270 0.0039  
 Venus -49629-08-15 22:47 J -16405341.63 -16405341.55 -16405341.46 0.0269 0.0248  
 Mercury -49620-07-02 10:18 J -16402099.14 -16402099.07 -16402098.99 0.0276 0.0227  
 Mercury -49620-09-28 23:01 J -16402010.66 -16402010.54 -16402010.41 0.0276 0.0130  
 Mercury -49620-12-26 11:45 J -16401922.15 -16401922.01 -16401921.87 0.0277 0.0034  
 Mercury -49619-03-25 00:13 J -16401833.62 -16401833.49 -16401833.35 0.0277 0.0062  
 Mercury -49619-06-21 12:28 J -16401745.09 -16401744.98 -16401744.86 0.0278 0.0157  
 Moon -49619-08-22 17:59 J -16401682.95 -16401682.75 -16401682.54 0.0278 0.0147  
 Earth -49619-08-22 21:35 J -16401682.80 -16401682.60 -16401682.39 0.0278 0.0159 \*  
 Mercury -49619-09-18 00:42 J -16401656.53 -16401656.47 -16401656.41 0.0279 0.0251  
 Moon -49618-09-04 20:52 J -16401304.83 -16401304.63 -16401304.42 0.0281 0.0140  
 Earth -49618-09-04 21:49 J -16401304.80 -16401304.59 -16401304.38 0.0281 0.0139 \*  
 Venus -49614-01-26 09:21 J -16400065.29 -16400065.11 -16400064.93 0.0289 0.0129  
 Venus -49614-09-12 22:18 J -16399835.71 -16399835.57 -16399835.42 0.0290 0.0204  
 Mercury -49606-07-25 19:25 J -16396962.80 -16396962.69 -16396962.58 0.0284 0.0209  
 Mercury -49606-10-22 14:52 J -16396874.04 -16396873.88 -16396873.72 0.0284 0.0085  
 Mercury -49605-01-19 10:47 J -16396785.22 -16396785.05 -16396784.88 0.0283 0.0041  
 Earth -49605-02-13 05:16 J -16396760.30 -16396760.28 -16396760.24 0.0283 0.0281  
 Moon -49605-02-13 07:25 J -16396760.21 -16396760.19 -16396760.17 0.0283 0.0281  
 Mercury -49605-04-17 06:42 J -16396696.35 -16396696.22 -16396696.07 0.0282 0.0168  
 Earth -49604-02-25 13:11 J -16396382.19 -16396381.95 -16396381.70 0.0280 0.0024  
 Moon -49604-02-25 17:01 J -16396382.03 -16396381.79 -16396381.54 0.0280 0.0032 \*  
 Venus -49600-07-11 18:28 J -16394784.95 -16394784.73 -16394784.51 0.0270 0.0006  
 Mars -49594-10-12 17:30 J -16392501.08 -16392500.77 -16392500.45 0.0269 0.0053  
 Mercury -49591-11-19 11:45 J -16391367.05 -16391367.01 -16391366.96 0.0275 0.0258  
 Mercury -49590-02-16 00:42 J -16391278.58 -16391278.47 -16391278.35 0.0276 0.0161  
 Mercury -49590-05-15 13:25 J -16391190.08 -16391189.94 -16391189.80 0.0276 0.0065  
 Mercury -49590-08-12 01:54 J -16391101.56 -16391101.42 -16391101.28 0.0277 0.0031  
 Moon -49590-08-17 15:35 J -16391095.88 -16391095.85 -16391095.82 0.0277 0.0274

Mercury -49590-11-08 14:09 J -16391013.03 -16391012.91 -16391012.78 0.0278 0.0126  
 Mercury -49589-02-05 02:23 J -16390924.48 -16390924.40 -16390924.31 0.0278 0.0220  
 Earth -49589-08-29 09:35 J -16390718.34 -16390718.10 -16390717.86 0.0280 0.0001  
 Moon -49589-08-29 10:33 J -16390718.31 -16390718.06 -16390717.80 0.0280 0.0008 \*  
 Venus -49585-08-07 12:42 J -16389279.16 -16389278.97 -16389278.77 0.0290 0.0088  
 Venus -49584-03-25 01:40 J -16389049.52 -16389049.43 -16389049.31 0.0291 0.0247  
 Mars -49580-11-01 04:33 J -16387367.57 -16387367.31 -16387367.05 0.0291 0.0059  
 Mercury -49577-12-11 18:57 J -16386230.78 -16386230.71 -16386230.62 0.0284 0.0247  
 Mercury -49576-03-10 14:37 J -16386142.05 -16386141.89 -16386141.74 0.0284 0.0123  
 Mercury -49576-06-07 10:18 J -16386053.24 -16386053.07 -16386052.90 0.0283 0.0003  
 Mercury -49576-09-04 06:13 J -16385964.39 -16385964.24 -16385964.08 0.0282 0.0130  
 Mercury -49576-12-02 02:52 J -16385875.45 -16385875.38 -16385875.32 0.0282 0.0258  
 Moon -49575-02-19 21:49 J -16385795.81 -16385795.59 -16385795.36 0.0281 0.0107  
 Earth -49575-02-20 01:40 J -16385795.66 -16385795.43 -16385795.20 0.0281 0.0113 \*  
 Moon -49574-03-05 06:28 J -16385417.39 -16385417.23 -16385417.06 0.0278 0.0200  
 Earth -49574-03-05 07:11 J -16385417.37 -16385417.20 -16385417.01 0.0278 0.0187 \*  
 Venus -49571-06-06 13:54 J -16384228.02 -16384227.92 -16384227.81 0.0271 0.0237  
 Venus -49570-01-22 01:11 J -16383998.67 -16383998.45 -16383998.24 0.0270 0.0050  
 Mercury -49561-07-05 04:04 J -16380546.43 -16380546.33 -16380546.22 0.0276 0.0179  
 Mercury -49561-10-01 16:47 J -16380457.93 -16380457.80 -16380457.66 0.0277 0.0082  
 Mercury -49561-12-29 05:30 J -16380369.41 -16380369.27 -16380369.13 0.0277 0.0015  
 Mercury -49560-03-27 17:45 J -16380280.88 -16380280.76 -16380280.63 0.0278 0.0110  
 Mercury -49560-06-24 05:59 J -16380192.34 -16380192.25 -16380192.15 0.0278 0.0204  
 Moon -49560-08-24 08:09 J -16380131.37 -16380131.16 -16380130.94 0.0279 0.0113  
 Earth -49560-08-24 09:21 J -16380131.32 -16380131.11 -16380130.88 0.0279 0.0124 \*  
 Earth -49559-09-06 10:18 J -16379753.26 -16379753.07 -16379752.88 0.0282 0.0176  
 Moon -49559-09-06 13:11 J -16379753.14 -16379752.95 -16379752.77 0.0282 0.0176 \*  
 Venus -49555-02-18 00:13 J -16378492.69 -16378492.49 -16378492.28 0.0290 0.0026  
 Mars -49550-12-20 12:13 J -16376361.00 -16376360.99 -16376360.97 0.0290 0.0289  
 Mercury -49547-04-30 21:06 J -16375498.67 -16375498.62 -16375498.56 0.0285 0.0269

Mercury -49547-07-28 16:33 J -16375409.95 -16375409.81 -16375409.66 0.0284 0.0146

Mercury -49547-10-25 12:13 J -16375321.16 -16375320.99 -16375320.82 0.0283 0.0021

Mercury -49546-01-22 08:09 J -16375232.32 -16375232.16 -16375232.00 0.0283 0.0106

Earth -49546-02-14 20:09 J -16375208.77 -16375208.66 -16375208.53 0.0282 0.0244

Moon -49546-02-14 23:45 J -16375208.62 -16375208.51 -16375208.38 0.0282 0.0243 \*

Mercury -49546-04-21 04:18 J -16375143.41 -16375143.32 -16375143.22 0.0282 0.0234

Earth -49545-02-28 03:49 J -16374830.58 -16374830.34 -16374830.10 0.0280 0.0061

Moon -49545-02-28 04:18 J -16374830.56 -16374830.32 -16374830.07 0.0280 0.0071 \*

Venus -49542-12-17 21:49 J -16373441.74 -16373441.59 -16373441.43 0.0271 0.0189

Venus -49541-08-03 08:23 J -16373212.35 -16373212.15 -16373211.94 0.0270 0.0097

Mars -49535-01-15 12:42 J -16371221.13 -16371220.97 -16371220.79 0.0268 0.0229

Mercury -49532-11-22 05:30 J -16369814.35 -16369814.27 -16369814.17 0.0275 0.0210

Mercury -49531-02-18 18:28 J -16369725.86 -16369725.73 -16369725.60 0.0276 0.0114

Mercury -49531-05-18 06:57 J -16369637.35 -16369637.21 -16369637.07 0.0277 0.0019

Mercury -49531-08-14 19:25 J -16369548.82 -16369548.69 -16369548.55 0.0277 0.0078

Earth -49531-08-18 22:47 J -16369544.62 -16369544.55 -16369544.45 0.0277 0.0257

Moon -49531-08-18 23:59 J -16369544.61 -16369544.50 -16369544.37 0.0277 0.0243 \*

Mercury -49531-11-11 07:40 J -16369460.28 -16369460.18 -16369460.07 0.0278 0.0172

Mercury -49530-02-07 19:54 J -16369371.71 -16369371.67 -16369371.63 0.0279 0.0266

Moon -49530-08-31 18:28 J -16369166.97 -16369166.73 -16369166.48 0.0280 0.0042

Earth -49530-08-31 21:35 J -16369166.84 -16369166.60 -16369166.36 0.0280 0.0037 \*

Venus -49526-08-31 03:06 J -16367706.58 -16367706.37 -16367706.17 0.0290 0.0015

Mercury -49518-12-15 15:49 J -16364677.96 -16364677.84 -16364677.71 0.0284 0.0185

Mercury -49517-03-13 11:30 J -16364589.18 -16364589.02 -16364588.85 0.0283 0.0060

Mercury -49517-06-10 07:25 J -16364500.35 -16364500.19 -16364500.02 0.0283 0.0067

Mercury -49517-09-07 03:35 J -16364411.47 -16364411.35 -16364411.22 0.0282 0.0194

Moon -49516-02-21 14:52 J -16364244.11 -16364243.88 -16364243.65 0.0281 0.0070

Earth -49516-02-21 15:21 J -16364244.09 -16364243.86 -16364243.62 0.0281 0.0076 \*

Earth -49515-03-06 20:23 J -16363865.78 -16363865.65 -16363865.49 0.0278 0.0224

Moon -49515-03-06 23:59 J -16363865.62 -16363865.50 -16363865.37 0.0278 0.0238 \*

Venus -49512-06-29 03:21 J -16362655.53 -16362655.36 -16362655.17 0.0270 0.0148  
 Venus -49511-02-13 14:23 J -16362426.08 -16362425.90 -16362425.71 0.0270 0.0138  
 Mars -49505-03-08 12:57 J -16360211.25 -16360210.96 -16360210.66 0.0270 0.0106  
 Mercury -49502-04-11 08:52 J -16359082.21 -16359082.13 -16359082.05 0.0276 0.0230  
 Mercury -49502-07-08 21:35 J -16358993.72 -16358993.60 -16358993.47 0.0276 0.0133  
 Mercury -49502-10-05 10:18 J -16358905.21 -16358905.07 -16358904.93 0.0277 0.0036  
 Mercury -49501-01-01 22:47 J -16358816.69 -16358816.55 -16358816.41 0.0278 0.0059  
 Mercury -49501-03-30 11:01 J -16358728.15 -16358728.04 -16358727.92 0.0278 0.0155  
 Mercury -49501-06-26 23:16 J -16358639.59 -16358639.53 -16358639.47 0.0279 0.0248  
 Earth -49501-08-25 19:54 J -16358579.89 -16358579.67 -16358579.43 0.0279 0.0091  
 Moon -49501-08-25 23:01 J -16358579.77 -16358579.54 -16358579.31 0.0279 0.0081 \*  
 Earth -49500-09-07 21:21 J -16358201.77 -16358201.61 -16358201.45 0.0282 0.0211  
 Moon -49500-09-08 00:28 J -16358201.64 -16358201.48 -16358201.31 0.0282 0.0212 \*  
 Venus -49497-07-26 00:57 J -16357149.54 -16357149.46 -16357149.36 0.0289 0.0256  
 Venus -49496-03-12 14:09 J -16356920.11 -16356919.91 -16356919.71 0.0290 0.0075  
 Mars -49491-03-29 05:16 J -16355077.55 -16355077.28 -16355077.01 0.0291 0.0007  
 Mercury -49488-05-03 18:13 J -16353945.85 -16353945.74 -16353945.63 0.0284 0.0206  
 Mercury -49488-07-31 13:40 J -16353857.09 -16353856.93 -16353856.76 0.0284 0.0082  
 Mercury -49488-10-28 09:35 J -16353768.27 -16353768.10 -16353767.93 0.0283 0.0044  
 Mercury -49487-01-25 05:30 J -16353679.40 -16353679.27 -16353679.13 0.0282 0.0171  
 Earth -49487-02-16 10:47 J -16353657.20 -16353657.05 -16353656.87 0.0282 0.0207  
 Moon -49487-02-16 12:13 J -16353657.16 -16353656.99 -16353656.82 0.0282 0.0206 \*  
 Moon -49486-03-01 14:37 J -16353279.11 -16353278.89 -16353278.65 0.0279 0.0110  
 Earth -49486-03-01 17:59 J -16353278.98 -16353278.75 -16353278.52 0.0279 0.0098 \*  
 Venus -49482-01-09 11:59 J -16351869.20 -16351869.00 -16351868.79 0.0270 0.0098  
 Venus -49482-08-26 22:18 J -16351639.72 -16351639.57 -16351639.41 0.0269 0.0186  
 Mercury -49473-08-28 10:18 J -16348350.11 -16348350.07 -16348350.02 0.0275 0.0260  
 Mercury -49473-11-24 23:16 J -16348261.64 -16348261.53 -16348261.41 0.0275 0.0163  
 Mercury -49472-02-21 11:59 J -16348173.14 -16348173.00 -16348172.86 0.0276 0.0067  
 Mercury -49472-05-21 00:28 J -16348084.62 -16348084.48 -16348084.34 0.0277 0.0028

Mercury -49472-08-17 12:42 J -16347996.09 -16347995.97 -16347995.84 0.0277 0.0124  
 Moon -49472-08-20 06:28 J -16347993.38 -16347993.23 -16347993.07 0.0277 0.0214  
 Earth -49472-08-20 09:49 J -16347993.23 -16347993.09 -16347992.94 0.0277 0.0225 \*  
 Mercury -49472-11-14 00:57 J -16347907.54 -16347907.46 -16347907.37 0.0278 0.0217  
 Moon -49471-09-02 05:16 J -16347615.50 -16347615.28 -16347615.04 0.0280 0.0075  
 Earth -49471-09-02 08:37 J -16347615.38 -16347615.14 -16347614.90 0.0280 0.0071 \*  
 Venus -49467-02-05 03:21 J -16346363.49 -16346363.36 -16346363.22 0.0289 0.0217  
 Venus -49467-09-22 16:33 J -16346134.00 -16346133.81 -16346133.62 0.0290 0.0114  
 Mercury -49459-09-20 17:01 J -16343213.87 -16343213.79 -16343213.71 0.0285 0.0248  
 Mercury -49459-12-18 12:28 J -16343125.13 -16343124.98 -16343124.82 0.0284 0.0125  
 Mercury -49458-03-17 08:23 J -16343036.33 -16343036.15 -16343035.98 0.0283 0.0007  
 Mercury -49458-06-14 04:18 J -16342947.47 -16342947.32 -16342947.16 0.0283 0.0128  
 Mercury -49458-09-11 00:42 J -16342858.54 -16342858.47 -16342858.40 0.0282 0.0256  
 Earth -49457-02-24 03:49 J -16342692.59 -16342692.34 -16342692.10 0.0281 0.0041  
 Moon -49457-02-24 06:42 J -16342692.46 -16342692.22 -16342691.98 0.0281 0.0033 \*  
 Earth -49456-03-08 08:52 J -16342314.22 -16342314.13 -16342314.04 0.0278 0.0258  
 Moon -49456-03-08 11:16 J -16342314.06 -16342314.03 -16342313.96 0.0278 0.0273 \*  
 Venus -49453-07-21 16:33 J -16341083.02 -16341082.81 -16341082.59 0.0270 0.0059  
 Venus -49452-03-08 03:06 J -16340853.48 -16340853.37 -16340853.24 0.0269 0.0225  
 Mars -49447-06-12 02:23 J -16338931.63 -16338931.40 -16338931.15 0.0269 0.0180  
 Mercury -49443-04-14 01:54 J -16337529.52 -16337529.42 -16337529.31 0.0276 0.0186  
 Mercury -49443-07-11 14:52 J -16337441.01 -16337440.88 -16337440.75 0.0277 0.0089  
 Mercury -49443-10-08 03:21 J -16337352.50 -16337352.36 -16337352.22 0.0277 0.0009  
 Mercury -49442-01-04 15:49 J -16337263.97 -16337263.84 -16337263.71 0.0278 0.0102  
 Mercury -49442-04-03 04:04 J -16337175.42 -16337175.33 -16337175.23 0.0278 0.0197  
 Earth -49442-08-28 05:01 J -16337028.53 -16337028.29 -16337028.05 0.0279 0.0058  
 Moon -49442-08-28 08:09 J -16337028.40 -16337028.16 -16337027.91 0.0279 0.0052 \*  
 Moon -49441-09-09 05:45 J -16336650.39 -16336650.26 -16336650.13 0.0282 0.0240  
 Earth -49441-09-09 06:13 J -16336650.35 -16336650.24 -16336650.11 0.0282 0.0245 \*  
 Venus -49438-08-18 13:11 J -16335577.12 -16335576.95 -16335576.78 0.0289 0.0160

Venus -49437-04-04 02:23 J -16335347.56 -16335347.40 -16335347.23 0.0290 0.0172  
 Mars -49433-07-05 17:45 J -16333793.81 -16333793.76 -16333793.68 0.0292 0.0282  
 Mercury -49429-02-07 19:11 J -16332481.74 -16332481.70 -16332481.64 0.0285 0.0271  
 Mercury -49429-05-06 14:37 J -16332393.03 -16332392.89 -16332392.74 0.0284 0.0147  
 Mercury -49429-08-03 10:18 J -16332304.24 -16332304.07 -16332303.90 0.0283 0.0022  
 Mercury -49429-10-31 06:13 J -16332215.40 -16332215.24 -16332215.07 0.0283 0.0105  
 Mercury -49428-01-28 02:23 J -16332126.49 -16332126.40 -16332126.29 0.0282 0.0233  
 Moon -49428-02-17 20:37 J -16332105.83 -16332105.64 -16332105.43 0.0282 0.0170  
 Earth -49428-02-17 23:45 J -16332105.70 -16332105.51 -16332105.32 0.0282 0.0172 \*  
 Moon -49427-03-03 03:35 J -16331727.55 -16331727.35 -16331727.14 0.0279 0.0144  
 Earth -49427-03-03 06:28 J -16331727.44 -16331727.23 -16331727.01 0.0279 0.0132 \*  
 Venus -49423-02-01 01:25 J -16330296.66 -16330296.44 -16330296.22 0.0270 0.0009  
 Mars -49417-08-02 18:13 J -16327921.98 -16327921.74 -16327921.46 0.0269 0.0159  
 Mercury -49414-09-01 03:49 J -16326797.43 -16326797.34 -16326797.26 0.0275 0.0216  
 Mercury -49414-11-28 16:33 J -16326708.94 -16326708.81 -16326708.68 0.0275 0.0120  
 Mercury -49413-02-25 05:01 J -16326620.43 -16326620.29 -16326620.15 0.0276 0.0025  
 Mercury -49413-05-23 17:30 J -16326531.90 -16326531.77 -16326531.63 0.0277 0.0071  
 Mercury -49413-08-20 05:45 J -16326443.37 -16326443.26 -16326443.15 0.0277 0.0165  
 Moon -49413-08-21 15:49 J -16326442.01 -16326441.84 -16326441.66 0.0277 0.0187  
 Earth -49413-08-21 18:28 J -16326441.90 -16326441.73 -16326441.55 0.0277 0.0194 \*  
 Mercury -49413-11-16 17:59 J -16326354.80 -16326354.75 -16326354.70 0.0278 0.0259  
 Earth -49412-09-03 17:16 J -16326064.01 -16326063.78 -16326063.55 0.0280 0.0103  
 Moon -49412-09-03 18:28 J -16326063.95 -16326063.73 -16326063.51 0.0280 0.0103 \*  
 Venus -49408-02-27 15:06 J -16324791.05 -16324790.87 -16324790.68 0.0290 0.0123  
 Venus -49408-10-15 04:18 J -16324561.46 -16324561.32 -16324561.18 0.0291 0.0209  
 Mars -49403-08-23 01:40 J -16322788.70 -16322788.43 -16322788.17 0.0291 0.0037  
 Mercury -49400-09-23 12:57 J -16321661.08 -16321660.96 -16321660.83 0.0284 0.0193  
 Mercury -49400-12-21 08:37 J -16321572.31 -16321572.14 -16321571.98 0.0284 0.0068  
 Mercury -49399-03-20 04:33 J -16321483.48 -16321483.31 -16321483.14 0.0283 0.0059  
 Mercury -49399-06-17 00:28 J -16321394.60 -16321394.48 -16321394.34 0.0282 0.0187

Earth -49398-02-25 14:09 J -16321141.16 -16321140.91 -16321140.67 0.0280 0.0008  
 Moon -49398-02-25 17:16 J -16321141.03 -16321140.78 -16321140.53 0.0280 0.0002 \*  
 Venus -49395-12-27 17:45 J -16319739.82 -16319739.76 -16319739.69 0.0271 0.0258  
 Venus -49394-08-14 04:47 J -16319510.52 -16319510.30 -16319510.08 0.0270 0.0027  
 Mercury -49384-01-18 05:59 J -16316065.31 -16316065.25 -16316065.18 0.0275 0.0241  
 Mercury -49384-04-16 18:57 J -16315976.83 -16315976.71 -16315976.59 0.0276 0.0144  
 Mercury -49384-07-14 07:40 J -16315888.32 -16315888.18 -16315888.04 0.0277 0.0048  
 Mercury -49384-10-10 20:09 J -16315799.80 -16315799.66 -16315799.52 0.0277 0.0048  
 Mercury -49383-01-07 08:23 J -16315711.26 -16315711.15 -16315711.03 0.0278 0.0143  
 Mercury -49383-04-05 20:37 J -16315622.71 -16315622.64 -16315622.56 0.0279 0.0236  
 Moon -49383-08-29 10:33 J -16315477.31 -16315477.06 -16315476.81 0.0280 0.0027  
 Earth -49383-08-29 11:59 J -16315477.24 -16315477.00 -16315476.76 0.0280 0.0029 \*  
 Moon -49382-09-11 09:35 J -16315099.16 -16315099.10 -16315099.02 0.0282 0.0268  
 Earth -49382-09-11 13:25 J -16315098.98 -16315098.94 -16315098.87 0.0282 0.0275  
 Venus -49379-09-09 23:59 J -16314004.70 -16314004.50 -16314004.30 0.0290 0.0068  
 Venus -49378-04-27 13:11 J -16313775.03 -16313774.95 -16313774.86 0.0291 0.0264  
 Mercury -49370-02-10 14:52 J -16310928.98 -16310928.88 -16310928.77 0.0285 0.0217  
 Mercury -49370-05-10 10:18 J -16310840.23 -16310840.07 -16310839.91 0.0284 0.0093  
 Mercury -49370-08-07 06:13 J -16310751.41 -16310751.24 -16310751.07 0.0283 0.0033  
 Mercury -49370-11-04 02:23 J -16310662.54 -16310662.40 -16310662.26 0.0283 0.0161  
 Moon -49369-02-20 05:59 J -16310554.46 -16310554.25 -16310554.04 0.0282 0.0137  
 Earth -49369-02-20 09:06 J -16310554.33 -16310554.12 -16310553.91 0.0282 0.0141 \*  
 Earth -49368-03-04 15:35 J -16310176.04 -16310175.85 -16310175.64 0.0279 0.0164  
 Moon -49368-03-04 16:18 J -16310175.99 -16310175.82 -16310175.62 0.0279 0.0176 \*  
 Venus -49365-07-09 02:37 J -16308953.53 -16308953.39 -16308953.25 0.0271 0.0206  
 Venus -49364-02-23 13:11 J -16308724.15 -16308723.95 -16308723.73 0.0270 0.0078  
 Mars -49359-11-06 06:13 J -16306642.51 -16306642.24 -16306641.94 0.0268 0.0129  
 Mercury -49355-06-07 07:40 J -16305333.19 -16305333.18 -16305333.15 0.0274 0.0271  
 Mercury -49355-09-03 20:37 J -16305244.75 -16305244.64 -16305244.53 0.0275 0.0175  
 Mercury -49355-12-01 09:21 J -16305156.25 -16305156.11 -16305155.97 0.0276 0.0079

Mercury -49354-02-27 21:49 J -16305067.73 -16305067.59 -16305067.45 0.0276 0.0017  
 Mercury -49354-05-27 10:18 J -16304979.20 -16304979.07 -16304978.95 0.0277 0.0111  
 Mercury -49354-08-23 22:18 J -16304890.65 -16304890.57 -16304890.47 0.0277 0.0205  
 Earth -49354-08-24 00:57 J -16304890.64 -16304890.46 -16304890.25 0.0277 0.0167 \*  
 Moon -49354-08-24 02:37 J -16304890.58 -16304890.39 -16304890.20 0.0277 0.0161 \*  
 Earth -49353-09-04 23:45 J -16304512.72 -16304512.51 -16304512.29 0.0280 0.0132  
 Moon -49353-09-05 03:35 J -16304512.57 -16304512.35 -16304512.13 0.0280 0.0128 \*  
 Venus -49349-03-22 01:11 J -16303218.65 -16303218.45 -16303218.24 0.0290 0.0033  
 Mars -49345-11-29 05:01 J -16301505.39 -16301505.29 -16301505.16 0.0292 0.0262  
 Mercury -49341-06-29 12:42 J -16300197.02 -16300196.97 -16300196.91 0.0285 0.0265  
 Mercury -49341-09-26 08:09 J -16300108.31 -16300108.16 -16300108.01 0.0284 0.0142  
 Mercury -49341-12-24 03:49 J -16300019.51 -16300019.34 -16300019.17 0.0284 0.0016  
 Mercury -49340-03-22 23:45 J -16299930.66 -16299930.51 -16299930.35 0.0283 0.0111  
 Mercury -49340-06-19 19:54 J -16299841.75 -16299841.67 -16299841.57 0.0282 0.0240  
 Moon -49339-02-26 20:23 J -16299589.90 -16299589.65 -16299589.39 0.0280 0.0032  
 Earth -49339-02-26 21:21 J -16299589.85 -16299589.61 -16299589.36 0.0280 0.0023 \*  
 Venus -49335-01-19 04:33 J -16298167.47 -16298167.31 -16298167.14 0.0271 0.0175  
 Venus -49335-09-05 15:21 J -16297938.05 -16297937.86 -16297937.66 0.0270 0.0109  
 Mars -49329-12-27 15:35 J -16295633.06 -16295632.85 -16295632.63 0.0269 0.0199  
 Mercury -49325-01-21 22:33 J -16294512.65 -16294512.56 -16294512.46 0.0275 0.0203  
 Mercury -49325-04-19 11:30 J -16294424.15 -16294424.02 -16294423.89 0.0276 0.0106  
 Mercury -49325-07-16 23:59 J -16294335.64 -16294335.50 -16294335.36 0.0277 0.0011  
 Mercury -49325-10-13 12:28 J -16294247.11 -16294246.98 -16294246.85 0.0277 0.0085  
 Mercury -49324-01-10 00:42 J -16294158.57 -16294158.47 -16294158.36 0.0278 0.0179  
 Mercury -49324-04-08 12:57 J -16294069.99 -16294069.96 -16294069.94 0.0279 0.0272  
 Moon -49324-08-30 12:28 J -16293926.22 -16293925.98 -16293925.73 0.0280 0.0005  
 Earth -49324-08-30 16:04 J -16293926.07 -16293925.83 -16293925.58 0.0280 0.0004 \*  
 Venus -49320-10-02 08:23 J -16292432.35 -16292432.15 -16292431.94 0.0290 0.0018  
 Mars -49314-01-17 06:28 J -16290499.48 -16290499.23 -16290498.97 0.0291 0.0086  
 Mercury -49311-02-13 09:35 J -16289376.23 -16289376.10 -16289375.96 0.0284 0.0169



Mercury -49311-05-13 05:16 J -16289287.45 -16289287.28 -16289287.11 0.0284 0.0044

Mercury -49311-08-10 01:11 J -16289198.61 -16289198.45 -16289198.28 0.0283 0.0083

Mercury -49311-11-06 21:21 J -16289109.72 -16289109.61 -16289109.49 0.0283 0.0211

Earth -49310-02-21 14:52 J -16289003.10 -16289002.88 -16289002.65 0.0282 0.0114

Moon -49310-02-21 16:18 J -16289003.04 -16289002.82 -16289002.60 0.0282 0.0106 \*

Earth -49309-03-05 21:49 J -16288624.76 -16288624.59 -16288624.41 0.0279 0.0192

Moon -49309-03-06 01:11 J -16288624.60 -16288624.45 -16288624.27 0.0279 0.0206 \*

Venus -49306-08-01 12:57 J -16287381.15 -16287380.96 -16287380.76 0.0271 0.0124

Venus -49305-03-17 23:30 J -16287151.69 -16287151.52 -16287151.34 0.0270 0.0159

Mercury -49296-06-10 00:13 J -16283780.56 -16283780.49 -16283780.41 0.0274 0.0233

Mercury -49296-09-06 13:11 J -16283692.07 -16283691.95 -16283691.83 0.0275 0.0136

Mercury -49296-12-04 01:40 J -16283603.57 -16283603.43 -16283603.29 0.0276 0.0042

Mercury -49295-03-02 14:09 J -16283515.05 -16283514.91 -16283514.77 0.0276 0.0054

Mercury -49295-05-30 02:23 J -16283426.51 -16283426.40 -16283426.28 0.0277 0.0148

Earth -49295-08-25 05:45 J -16283339.47 -16283339.26 -16283339.05 0.0277 0.0140

Moon -49295-08-25 09:06 J -16283339.33 -16283339.12 -16283338.90 0.0277 0.0135 \*

Mercury -49295-08-26 14:37 J -16283337.96 -16283337.89 -16283337.82 0.0277 0.0241

Earth -49294-09-07 03:49 J -16282961.53 -16282961.34 -16282961.13 0.0280 0.0160

Moon -49294-09-07 04:47 J -16282961.51 -16282961.30 -16282961.09 0.0280 0.0152 \*

Venus -49291-08-27 20:52 J -16281875.68 -16281875.63 -16281875.56 0.0288 0.0274

Venus -49290-04-14 09:35 J -16281646.30 -16281646.10 -16281645.89 0.0290 0.0054

Mercury -49282-07-03 06:57 J -16278644.31 -16278644.21 -16278644.10 0.0285 0.0220

Mercury -49282-09-30 02:37 J -16278555.55 -16278555.39 -16278555.23 0.0284 0.0096

Mercury -49282-12-27 22:18 J -16278466.74 -16278466.57 -16278466.40 0.0284 0.0031

Moon -49281-02-15 14:23 J -16278417.01 -16278416.90 -16278416.79 0.0283 0.0253

Earth -49281-02-15 16:18 J -16278416.90 -16278416.82 -16278416.72 0.0283 0.0262 \*

Mercury -49281-03-25 18:28 J -16278377.87 -16278377.73 -16278377.59 0.0283 0.0158

Moon -49280-02-27 21:49 J -16278038.82 -16278038.59 -16278038.34 0.0280 0.0062

Earth -49280-02-28 01:54 J -16278038.66 -16278038.42 -16278038.18 0.0280 0.0048 \*

Venus -49276-02-10 13:40 J -16276595.13 -16276594.93 -16276594.72 0.0270 0.0095

Venus -49276-09-28 00:13 J -16276365.64 -16276365.49 -16276365.33 0.0269 0.0187  
 Mars -49270-04-01 17:45 J -16274354.05 -16274353.76 -16274353.45 0.0268 0.0097  
 Mercury -49267-10-28 01:54 J -16273048.46 -16273048.42 -16273048.38 0.0275 0.0263  
 Mercury -49266-01-24 14:52 J -16272959.99 -16272959.88 -16272959.77 0.0275 0.0167  
 Mercury -49266-04-23 03:35 J -16272871.49 -16272871.35 -16272871.22 0.0276 0.0071  
 Mercury -49266-07-20 16:04 J -16272782.97 -16272782.83 -16272782.69 0.0277 0.0025  
 Moon -49266-08-19 17:30 J -16272752.84 -16272752.77 -16272752.68 0.0277 0.0262  
 Earth -49266-08-19 21:21 J -16272752.65 -16272752.61 -16272752.56 0.0277 0.0271  
 Mercury -49266-10-17 04:18 J -16272694.44 -16272694.32 -16272694.19 0.0277 0.0119  
 Mercury -49265-01-13 16:33 J -16272605.90 -16272605.81 -16272605.72 0.0278 0.0212  
 Moon -49265-08-31 17:30 J -16272375.00 -16272374.77 -16272374.53 0.0280 0.0020  
 Earth -49265-08-31 18:13 J -16272374.98 -16272374.74 -16272374.49 0.0280 0.0023 \*  
 Venus -49261-03-09 02:09 J -16271089.52 -16271089.41 -16271089.27 0.0289 0.0229  
 Venus -49261-10-24 15:21 J -16270860.05 -16270859.86 -16270859.66 0.0290 0.0099  
 Mars -49256-04-25 01:25 J -16269216.60 -16269216.44 -16269216.26 0.0292 0.0224  
 Mercury -49253-11-19 07:54 J -16267912.24 -16267912.17 -16267912.09 0.0285 0.0251  
 Mercury -49252-02-16 03:21 J -16267823.51 -16267823.36 -16267823.21 0.0284 0.0127  
 Mercury -49252-05-15 23:16 J -16267734.71 -16267734.53 -16267734.36 0.0284 0.0007  
 Mercury -49252-08-12 19:11 J -16267645.85 -16267645.70 -16267645.54 0.0283 0.0127  
 Mercury -49252-11-09 15:35 J -16267556.92 -16267556.85 -16267556.78 0.0282 0.0256  
 Earth -49251-02-22 17:30 J -16267452.00 -16267451.77 -16267451.53 0.0282 0.0089  
 Moon -49251-02-22 21:21 J -16267451.84 -16267451.61 -16267451.37 0.0282 0.0077 \*  
 Earth -49250-03-08 00:28 J -16267073.63 -16267073.48 -16267073.32 0.0279 0.0217  
 Moon -49250-03-08 01:54 J -16267073.56 -16267073.42 -16267073.27 0.0279 0.0231 \*  
 Venus -49247-08-23 21:35 J -16265808.81 -16265808.60 -16265808.38 0.0271 0.0046  
 Venus -49246-04-10 07:54 J -16265579.26 -16265579.17 -16265579.06 0.0270 0.0237  
 Mars -49240-05-23 10:04 J -16263344.22 -16263344.08 -16263343.92 0.0269 0.0239  
 Mercury -49237-06-12 16:33 J -16262227.91 -16262227.81 -16262227.71 0.0274 0.0196  
 Mercury -49237-09-09 05:16 J -16262139.41 -16262139.28 -16262139.15 0.0275 0.0101  
 Mercury -49237-12-06 17:45 J -16262050.90 -16262050.76 -16262050.62 0.0275 0.0008

Mercury -49236-03-05 06:13 J -16261962.37 -16261962.24 -16261962.11 0.0276 0.0088

Mercury -49236-06-01 18:28 J -16261873.84 -16261873.73 -16261873.63 0.0277 0.0182

Earth -49236-08-26 08:09 J -16261788.38 -16261788.16 -16261787.93 0.0277 0.0115

Moon -49236-08-26 09:06 J -16261788.34 -16261788.12 -16261787.88 0.0277 0.0113 \*

Mercury -49236-08-29 06:28 J -16261785.25 -16261785.23 -16261785.21 0.0277 0.0274

Moon -49235-09-08 03:06 J -16261410.56 -16261410.37 -16261410.17 0.0280 0.0173

Earth -49235-09-08 06:28 J -16261410.41 -16261410.23 -16261410.04 0.0280 0.0184 \*

Venus -49232-09-19 03:49 J -16260303.49 -16260303.34 -16260303.18 0.0288 0.0192

Venus -49231-05-06 16:33 J -16260073.99 -16260073.81 -16260073.63 0.0290 0.0134

Mars -49226-06-12 02:37 J -16258211.64 -16258211.39 -16258211.13 0.0292 0.0091

Mercury -49223-07-06 00:28 J -16257091.61 -16257091.48 -16257091.35 0.0285 0.0179

Mercury -49223-10-02 20:09 J -16257002.83 -16257002.66 -16257002.49 0.0284 0.0054

Mercury -49223-12-30 16:04 J -16256914.00 -16256913.83 -16256913.67 0.0284 0.0073

Moon -49222-02-16 14:23 J -16256866.04 -16256865.90 -16256865.76 0.0283 0.0228

Earth -49222-02-16 17:30 J -16256865.88 -16256865.77 -16256865.62 0.0283 0.0239 \*

Mercury -49222-03-29 12:13 J -16256825.11 -16256824.99 -16256824.87 0.0283 0.0201

Moon -49221-03-01 02:37 J -16256487.61 -16256487.39 -16256487.16 0.0280 0.0087

Earth -49221-03-01 03:06 J -16256487.60 -16256487.37 -16256487.13 0.0280 0.0072 \*

Venus -49217-03-04 21:21 J -16255022.83 -16255022.61 -16255022.40 0.0270 0.0020

Venus -49217-10-20 07:40 J -16254793.22 -16254793.18 -16254793.12 0.0269 0.0261

Mercury -49208-10-30 17:45 J -16251495.83 -16251495.76 -16251495.68 0.0275 0.0229

Mercury -49207-01-27 06:42 J -16251407.35 -16251407.22 -16251407.10 0.0275 0.0134

Mercury -49207-04-25 19:11 J -16251318.84 -16251318.70 -16251318.56 0.0276 0.0038

Mercury -49207-07-23 07:40 J -16251230.32 -16251230.18 -16251230.04 0.0277 0.0057

Moon -49207-08-20 21:06 J -16251201.72 -16251201.62 -16251201.50 0.0277 0.0244

Earth -49207-08-20 21:49 J -16251201.68 -16251201.59 -16251201.47 0.0277 0.0249 \*

Mercury -49207-10-19 19:54 J -16251141.78 -16251141.67 -16251141.55 0.0277 0.0151

Mercury -49206-01-16 07:54 J -16251053.23 -16251053.17 -16251053.10 0.0278 0.0244

Earth -49206-09-02 18:42 J -16250823.96 -16250823.72 -16250823.48 0.0280 0.0046

Moon -49206-09-02 21:49 J -16250823.83 -16250823.59 -16250823.36 0.0280 0.0041 \*

Venus -49202-04-01 08:09 J -16249517.33 -16249517.16 -16249516.98 0.0289 0.0150  
 Venus -49202-11-16 21:06 J -16249287.78 -16249287.62 -16249287.45 0.0290 0.0178  
 Mercury -49194-11-23 00:57 J -16246359.57 -16246359.46 -16246359.35 0.0285 0.0212  
 Mercury -49193-02-19 20:37 J -16246270.80 -16246270.64 -16246270.48 0.0284 0.0088  
 Mercury -49193-05-18 16:18 J -16246181.98 -16246181.82 -16246181.64 0.0284 0.0040  
 Mercury -49193-08-15 12:28 J -16246093.11 -16246092.98 -16246092.83 0.0283 0.0168  
 Earth -49192-02-23 17:30 J -16245901.00 -16245900.77 -16245900.52 0.0282 0.0067  
 Moon -49192-02-23 17:59 J -16245901.00 -16245900.75 -16245900.50 0.0282 0.0053 \*  
 Moon -49191-03-08 21:06 J -16245522.70 -16245522.62 -16245522.51 0.0279 0.0256  
 Earth -49191-03-09 00:28 J -16245522.59 -16245522.48 -16245522.34 0.0279 0.0240 \*  
 Venus -49188-01-28 17:30 J -16244465.84 -16244465.77 -16244465.70 0.0272 0.0256  
 Venus -49188-09-15 04:33 J -16244236.52 -16244236.31 -16244236.09 0.0271 0.0029  
 Mars -49182-08-26 10:18 J -16242065.38 -16242065.07 -16242064.75 0.0268 0.0062  
 Mercury -49178-03-19 19:40 J -16240763.72 -16240763.68 -16240763.63 0.0274 0.0257  
 Mercury -49178-06-16 08:37 J -16240675.26 -16240675.14 -16240675.03 0.0274 0.0162  
 Mercury -49178-09-12 21:06 J -16240586.75 -16240586.62 -16240586.48 0.0275 0.0067  
 Mercury -49178-12-10 09:35 J -16240498.24 -16240498.10 -16240497.96 0.0275 0.0028  
 Mercury -49177-03-07 21:49 J -16240409.71 -16240409.59 -16240409.46 0.0276 0.0122  
 Mercury -49177-06-04 10:04 J -16240321.16 -16240321.08 -16240320.99 0.0277 0.0214  
 Moon -49177-08-27 06:28 J -16240237.46 -16240237.23 -16240236.99 0.0277 0.0093  
 Earth -49177-08-27 09:35 J -16240237.32 -16240237.10 -16240236.86 0.0277 0.0092 \*  
 Moon -49176-09-09 05:16 J -16239859.44 -16239859.28 -16239859.11 0.0280 0.0198  
 Earth -49176-09-09 07:40 J -16239859.33 -16239859.18 -16239859.01 0.0280 0.0209 \*  
 Venus -49173-10-11 10:04 J -16238731.27 -16238731.08 -16238730.89 0.0288 0.0113  
 Venus -49172-05-28 22:33 J -16238501.69 -16238501.56 -16238501.42 0.0290 0.0213  
 Mars -49168-09-17 17:01 J -16236928.95 -16236928.79 -16236928.61 0.0292 0.0224  
 Mercury -49164-04-10 21:49 J -16235627.64 -16235627.59 -16235627.52 0.0286 0.0266  
 Mercury -49164-07-08 17:16 J -16235538.92 -16235538.78 -16235538.63 0.0285 0.0142  
 Mercury -49164-10-05 13:11 J -16235450.12 -16235449.95 -16235449.78 0.0284 0.0016  
 Mercury -49163-01-02 09:06 J -16235361.28 -16235361.12 -16235360.96 0.0284 0.0112

Earth -49163-02-17 16:47 J -16235314.95 -16235314.80 -16235314.64 0.0283 0.0217  
 Moon -49163-02-17 17:01 J -16235314.95 -16235314.79 -16235314.63 0.0283 0.0207 \*  
 Mercury -49163-04-01 05:30 J -16235272.36 -16235272.27 -16235272.18 0.0283 0.0240  
 Earth -49162-03-03 02:09 J -16234936.64 -16234936.41 -16234936.17 0.0280 0.0094  
 Moon -49162-03-03 05:45 J -16234936.48 -16234936.26 -16234936.03 0.0280 0.0111 \*  
 Venus -49159-08-10 16:18 J -16233679.93 -16233679.82 -16233679.71 0.0272 0.0232  
 Venus -49158-03-28 03:35 J -16233450.56 -16233450.35 -16233450.13 0.0270 0.0053  
 Mars -49152-10-16 06:42 J -16231056.30 -16231056.22 -16231056.13 0.0269 0.0259  
 Mercury -49149-11-02 09:21 J -16229943.20 -16229943.11 -16229943.00 0.0275 0.0197  
 Mercury -49148-01-29 22:18 J -16229854.70 -16229854.57 -16229854.44 0.0275 0.0101  
 Mercury -49148-04-28 10:47 J -16229766.19 -16229766.05 -16229765.91 0.0276 0.0006  
 Mercury -49148-07-25 23:01 J -16229677.67 -16229677.54 -16229677.40 0.0277 0.0089  
 Earth -49148-08-21 22:04 J -16229650.71 -16229650.58 -16229650.43 0.0277 0.0227  
 Moon -49148-08-22 01:40 J -16229650.57 -16229650.43 -16229650.29 0.0277 0.0225 \*  
 Mercury -49148-10-22 11:16 J -16229589.13 -16229589.03 -16229588.92 0.0277 0.0182  
 Mercury -49147-01-18 23:30 J -16229500.54 -16229500.52 -16229500.50 0.0278 0.0274  
 Earth -49147-09-03 18:28 J -16229272.96 -16229272.73 -16229272.49 0.0280 0.0069  
 Moon -49147-09-03 21:21 J -16229272.85 -16229272.61 -16229272.37 0.0280 0.0062 \*  
 Venus -49143-04-23 13:25 J -16227945.14 -16227944.94 -16227944.74 0.0289 0.0073  
 Venus -49143-12-09 02:09 J -16227715.50 -16227715.41 -16227715.31 0.0290 0.0253  
 Mars -49138-11-05 10:33 J -16225923.30 -16225923.06 -16225922.81 0.0291 0.0117  
 Mercury -49135-11-25 17:30 J -16224806.90 -16224806.77 -16224806.64 0.0285 0.0177  
 Mercury -49134-02-22 13:11 J -16224718.12 -16224717.95 -16224717.78 0.0284 0.0052  
 Mercury -49134-05-22 09:06 J -16224629.28 -16224629.12 -16224628.95 0.0284 0.0076  
 Mercury -49134-08-19 05:16 J -16224540.39 -16224540.28 -16224540.15 0.0283 0.0204  
 Moon -49133-02-25 11:59 J -16224350.24 -16224350.00 -16224349.75 0.0282 0.0030  
 Earth -49133-02-25 15:35 J -16224350.09 -16224349.85 -16224349.61 0.0282 0.0045 \*  
 Moon -49132-03-09 20:23 J -16223971.67 -16223971.65 -16223971.61 0.0279 0.0276  
 Earth -49132-03-09 22:47 J -16223971.63 -16223971.55 -16223971.46 0.0279 0.0260 \*  
 Venus -49129-02-20 23:16 J -16222893.69 -16222893.53 -16222893.37 0.0272 0.0185

Venus -49129-10-07 10:33 J -16222664.26 -16222664.06 -16222663.85 0.0271 0.0100  
 Mercury -49119-03-22 11:30 J -16219211.10 -16219211.02 -16219210.93 0.0274 0.0224  
 Mercury -49119-06-19 00:13 J -16219122.61 -16219122.49 -16219122.36 0.0274 0.0128  
 Mercury -49119-09-15 12:57 J -16219034.10 -16219033.96 -16219033.82 0.0275 0.0034  
 Mercury -49119-12-13 01:11 J -16218945.58 -16218945.45 -16218945.31 0.0276 0.0061  
 Mercury -49118-03-11 13:25 J -16218857.05 -16218856.94 -16218856.82 0.0276 0.0154  
 Mercury -49118-06-08 01:25 J -16218768.49 -16218768.44 -16218768.37 0.0277 0.0246  
 Moon -49118-08-29 07:54 J -16218686.40 -16218686.17 -16218685.94 0.0277 0.0073  
 Earth -49118-08-29 10:18 J -16218686.30 -16218686.07 -16218685.82 0.0277 0.0068 \*  
 Earth -49117-09-10 08:09 J -16218308.28 -16218308.16 -16218308.02 0.0280 0.0232  
 Moon -49117-09-10 09:49 J -16218308.23 -16218308.09 -16218307.94 0.0280 0.0220 \*  
 Venus -49114-11-03 16:04 J -16217159.04 -16217158.83 -16217158.63 0.0288 0.0036  
 Mercury -49105-04-13 14:52 J -16214074.98 -16214074.88 -16214074.78 0.0285 0.0229  
 Mercury -49105-07-11 10:04 J -16213986.23 -16213986.08 -16213985.91 0.0285 0.0105  
 Mercury -49105-10-08 05:59 J -16213897.42 -16213897.25 -16213897.08 0.0284 0.0022  
 Mercury -49104-01-05 02:09 J -16213808.56 -16213808.41 -16213808.26 0.0283 0.0150  
 Earth -49104-02-18 15:06 J -16213764.03 -16213763.87 -16213763.68 0.0283 0.0196  
 Moon -49104-02-18 18:42 J -16213763.90 -16213763.72 -16213763.53 0.0283 0.0182 \*  
 Mercury -49104-04-03 22:18 J -16213719.58 -16213719.57 -16213719.53 0.0283 0.0279  
 Earth -49103-03-04 00:28 J -16213385.69 -16213385.48 -16213385.24 0.0280 0.0117  
 Moon -49103-03-04 02:23 J -16213385.61 -16213385.40 -16213385.16 0.0280 0.0131 \*  
 Venus -49100-09-01 22:04 J -16212107.75 -16212107.58 -16212107.40 0.0272 0.0161  
 Venus -49099-04-19 09:21 J -16211878.30 -16211878.11 -16211877.91 0.0270 0.0123  
 Mars -49093-01-19 01:40 J -16209777.75 -16209777.43 -16209777.11 0.0268 0.0046  
 Mercury -49090-08-09 12:28 J -16208479.03 -16208478.98 -16208478.94 0.0274 0.0260  
 Mercury -49090-11-06 01:11 J -16208390.56 -16208390.45 -16208390.33 0.0275 0.0164  
 Mercury -49089-02-02 13:54 J -16208302.06 -16208301.92 -16208301.79 0.0275 0.0069  
 Mercury -49089-05-01 02:23 J -16208213.54 -16208213.40 -16208213.26 0.0276 0.0026  
 Mercury -49089-07-28 14:37 J -16208125.01 -16208124.89 -16208124.76 0.0277 0.0120  
 Earth -49089-08-22 22:04 J -16208099.74 -16208099.58 -16208099.41 0.0277 0.0204

Moon -49089-08-23 00:28 J -16208099.65 -16208099.48 -16208099.31 0.0277 0.0206 \*  
 Mercury -49089-10-25 02:52 J -16208036.47 -16208036.38 -16208036.29 0.0277 0.0212  
 Moon -49088-09-04 16:33 J -16207722.05 -16207721.81 -16207721.57 0.0280 0.0080  
 Earth -49088-09-04 18:28 J -16207721.95 -16207721.73 -16207721.49 0.0280 0.0092 \*  
 Venus -49084-05-15 18:42 J -16206372.93 -16206372.72 -16206372.52 0.0289 0.0004  
 Mars -49079-02-10 21:49 J -16204640.77 -16204640.59 -16204640.40 0.0292 0.0204  
 Mercury -49076-08-31 14:37 J -16203342.95 -16203342.89 -16203342.83 0.0285 0.0266  
 Mercury -49076-11-28 10:04 J -16203254.23 -16203254.08 -16203253.94 0.0285 0.0142  
 Mercury -49075-02-25 05:45 J -16203165.43 -16203165.26 -16203165.09 0.0284 0.0016  
 Mercury -49075-05-25 01:40 J -16203076.58 -16203076.43 -16203076.27 0.0284 0.0111  
 Mercury -49075-08-21 22:04 J -16202987.67 -16202987.58 -16202987.49 0.0283 0.0240  
 Moon -49074-02-26 10:47 J -16202799.29 -16202799.05 -16202798.81 0.0282 0.0010  
 Earth -49074-02-26 12:42 J -16202799.22 -16202798.97 -16202798.72 0.0282 0.0025 \*  
 Venus -49070-03-15 04:33 J -16201321.50 -16201321.31 -16201321.11 0.0272 0.0115  
 Venus -49070-10-30 15:49 J -16201092.00 -16201091.84 -16201091.66 0.0271 0.0170  
 Mercury -49060-03-25 03:35 J -16197658.45 -16197658.35 -16197658.25 0.0274 0.0189  
 Mercury -49060-06-21 16:18 J -16197569.96 -16197569.82 -16197569.69 0.0275 0.0094  
 Mercury -49060-09-18 04:47 J -16197481.44 -16197481.30 -16197481.16 0.0275 0.0003  
 Mercury -49060-12-15 17:01 J -16197392.92 -16197392.79 -16197392.66 0.0276 0.0094  
 Mercury -49059-03-14 05:16 J -16197304.38 -16197304.28 -16197304.18 0.0276 0.0187  
 Earth -49059-08-30 11:59 J -16197135.24 -16197135.00 -16197134.76 0.0277 0.0042  
 Moon -49059-08-30 14:09 J -16197135.14 -16197134.91 -16197134.67 0.0277 0.0052 \*  
 Jupiter -49058-08-04 20:52 J -16196795.98 -16196795.63 -16196795.24 0.0280 0.0151  
 Earth -49058-09-12 09:35 J -16196757.18 -16196757.10 -16196757.00 0.0280 0.0257  
 Moon -49058-09-12 13:25 J -16196757.06 -16196756.94 -16196756.82 0.0280 0.0243 \*  
 Venus -49055-04-10 10:18 J -16195816.12 -16195816.07 -16195816.01 0.0287 0.0276  
 Venus -49055-11-25 22:18 J -16195586.77 -16195586.57 -16195586.37 0.0288 0.0044  
 Mars -49049-03-30 01:25 J -16193635.68 -16193635.44 -16193635.19 0.0291 0.0116  
 Mercury -49046-04-17 07:25 J -16192522.31 -16192522.19 -16192522.07 0.0285 0.0192  
 Mercury -49046-07-15 02:52 J -16192433.54 -16192433.38 -16192433.21 0.0285 0.0068

Mercury -49046-10-11 22:47 J -16192344.72 -16192344.55 -16192344.38 0.0284 0.0059  
 Mercury -49045-01-08 18:57 J -16192255.83 -16192255.71 -16192255.58 0.0283 0.0188  
 Earth -49045-02-20 13:25 J -16192213.12 -16192212.94 -16192212.74 0.0283 0.0174  
 Moon -49045-02-20 15:21 J -16192213.06 -16192212.86 -16192212.64 0.0283 0.0160 \*  
 Moon -49044-03-04 20:09 J -16191834.87 -16191834.66 -16191834.44 0.0280 0.0150  
 Earth -49044-03-04 22:47 J -16191834.76 -16191834.55 -16191834.33 0.0280 0.0138 \*  
 Venus -49041-09-24 03:35 J -16190535.55 -16190535.35 -16190535.14 0.0272 0.0091  
 Venus -49040-05-11 14:52 J -16190306.02 -16190305.88 -16190305.72 0.0270 0.0193  
 Mercury -49031-08-12 04:04 J -16186926.40 -16186926.33 -16186926.24 0.0274 0.0226  
 Mercury -49031-11-08 17:01 J -16186837.92 -16186837.79 -16186837.67 0.0275 0.0130  
 Mercury -49030-02-05 05:30 J -16186749.41 -16186749.27 -16186749.13 0.0275 0.0036  
 Mercury -49030-05-04 17:59 J -16186660.89 -16186660.75 -16186660.61 0.0276 0.0058  
 Mercury -49030-08-01 06:13 J -16186572.36 -16186572.24 -16186572.12 0.0277 0.0152  
 Moon -49030-08-24 20:23 J -16186548.84 -16186548.65 -16186548.47 0.0277 0.0187  
 Earth -49030-08-24 22:47 J -16186548.73 -16186548.55 -16186548.36 0.0277 0.0180 \*  
 Mercury -49030-10-28 18:13 J -16186483.80 -16186483.74 -16186483.67 0.0277 0.0244  
 Moon -49029-09-05 15:35 J -16186171.07 -16186170.85 -16186170.62 0.0280 0.0102  
 Earth -49029-09-05 19:11 J -16186170.92 -16186170.70 -16186170.48 0.0280 0.0117 \*  
 Venus -49026-10-21 12:28 J -16185030.09 -16185029.98 -16185029.87 0.0288 0.0240  
 Venus -49025-06-07 00:28 J -16184800.68 -16184800.48 -16184800.28 0.0289 0.0081  
 Mercury -49017-09-03 07:11 J -16181790.30 -16181790.20 -16181790.10 0.0285 0.0230  
 Mercury -49017-12-01 02:37 J -16181701.54 -16181701.39 -16181701.23 0.0285 0.0105  
 Mercury -49016-02-27 22:33 J -16181612.73 -16181612.56 -16181612.39 0.0284 0.0021  
 Mercury -49016-05-27 18:28 J -16181523.87 -16181523.73 -16181523.58 0.0283 0.0149  
 Mercury -49016-08-24 14:52 J -16181434.90 -16181434.88 -16181434.84 0.0283 0.0278  
 Earth -49015-02-27 10:33 J -16181248.30 -16181248.06 -16181247.81 0.0282 0.0005  
 Moon -49015-02-27 12:57 J -16181248.20 -16181247.96 -16181247.72 0.0282 0.0013 \*  
 Venus -49011-04-06 10:18 J -16179749.28 -16179749.07 -16179748.85 0.0272 0.0045  
 Venus -49011-11-21 21:35 J -16179519.69 -16179519.60 -16179519.49 0.0271 0.0239  
 Mars -49005-06-13 18:57 J -16177489.04 -16177488.71 -16177488.39 0.0268 0.0015



Mercury -49002-12-30 06:42 J -16176194.27 -16176194.22 -16176194.16 0.0274 0.0249

Mercury -49001-03-27 19:40 J -16176105.80 -16176105.68 -16176105.56 0.0274 0.0153

Mercury -49001-06-24 08:09 J -16176017.29 -16176017.16 -16176017.02 0.0275 0.0059

Mercury -49001-09-20 20:37 J -16175928.78 -16175928.64 -16175928.50 0.0275 0.0035

Mercury -49001-12-18 08:52 J -16175840.25 -16175840.13 -16175840.00 0.0276 0.0129

# 49TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 49th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-49000-03-16 21:06 J	-16175751.70	-16175751.62	-16175751.54	0.0276	0.0221		
Earth	-49000-08-31 14:37 J	-16175584.14	-16175583.89	-16175583.65	0.0278	0.0016		
Moon	-49000-08-31 17:59 J	-16175584.00	-16175583.75	-16175583.50	0.0278	0.0028	*	
Moon	-48999-09-13 12:28 J	-16175206.05	-16175205.98	-16175205.91	0.0280	0.0268		
Venus	-48996-05-02 17:30 J	-16174243.91	-16174243.77	-16174243.61	0.0287	0.0195		
Venus	-48996-12-18 05:30 J	-16174014.45	-16174014.27	-16174014.08	0.0288	0.0125		
Mars	-48991-07-06 19:40 J	-16172352.87	-16172352.68	-16172352.48	0.0292	0.0199		
Mercury	-48987-01-21 05:01 J	-16171058.32	-16171058.29	-16171058.24	0.0286	0.0277		
Mercury	-48987-04-20 00:28 J	-16170969.62	-16170969.48	-16170969.34	0.0285	0.0153		
Mercury	-48987-07-17 20:09 J	-16170880.83	-16170880.66	-16170880.49	0.0285	0.0028		
Mercury	-48987-10-14 16:04 J	-16170791.99	-16170791.83	-16170791.67	0.0284	0.0100		
Mercury	-48986-01-11 12:13 J	-16170703.08	-16170702.99	-16170702.88	0.0283	0.0228		
Moon	-48986-02-21 10:33 J	-16170662.28	-16170662.06	-16170661.84	0.0283	0.0133		
Earth	-48986-02-21 13:11 J	-16170662.15	-16170661.95	-16170661.74	0.0283	0.0150	*	

Moon -48985-03-05 19:11 J -16170283.89 -16170283.70 -16170283.51 0.0280 0.0174  
 Earth -48985-03-05 22:18 J -16170283.77 -16170283.57 -16170283.36 0.0280 0.0162 \*  
 Venus -48982-10-17 09:49 J -16168963.31 -16168963.09 -16168962.87 0.0272 0.0020  
 Venus -48981-06-02 21:21 J -16168733.66 -16168733.61 -16168733.57 0.0270 0.0263  
 Mercury -48972-08-14 20:23 J -16165373.75 -16165373.65 -16165373.55 0.0274 0.0190  
 Mercury -48972-11-11 09:06 J -16165285.25 -16165285.12 -16165284.99 0.0275 0.0094  
 Mercury -48971-02-07 21:35 J -16165196.74 -16165196.60 -16165196.46 0.0276 0.0001  
 Mercury -48971-05-07 09:49 J -16165108.22 -16165108.09 -16165107.95 0.0276 0.0095  
 Mercury -48971-08-03 22:04 J -16165019.68 -16165019.58 -16165019.47 0.0277 0.0187  
 Moon -48971-08-25 22:18 J -16164997.75 -16164997.57 -16164997.36 0.0277 0.0163  
 Earth -48971-08-26 01:40 J -16164997.63 -16164997.43 -16164997.22 0.0277 0.0153 \*  
 Earth -48970-09-07 22:04 J -16164619.79 -16164619.58 -16164619.37 0.0280 0.0144  
 Moon -48970-09-07 22:33 J -16164619.77 -16164619.56 -16164619.35 0.0280 0.0129 \*  
 Venus -48967-11-12 19:40 J -16163457.84 -16163457.68 -16163457.50 0.0288 0.0159  
 Venus -48966-06-30 07:40 J -16163228.34 -16163228.18 -16163228.00 0.0289 0.0163  
 Mars -48961-08-23 08:52 J -16161347.35 -16161347.13 -16161346.88 0.0291 0.0137  
 Mercury -48958-09-07 00:13 J -16160237.61 -16160237.49 -16160237.37 0.0285 0.0191  
 Mercury -48958-12-04 19:40 J -16160148.84 -16160148.68 -16160148.51 0.0285 0.0066  
 Moon -48957-02-16 01:25 J -16160075.49 -16160075.44 -16160075.39 0.0284 0.0277  
 Mercury -48957-03-02 15:35 J -16160060.02 -16160059.85 -16160059.68 0.0284 0.0061  
 Mercury -48957-05-30 11:45 J -16159971.13 -16159971.01 -16159970.88 0.0283 0.0189  
 Earth -48956-02-28 09:49 J -16159697.34 -16159697.09 -16159696.85 0.0281 0.0022  
 Moon -48956-02-28 13:11 J -16159697.20 -16159696.95 -16159696.70 0.0281 0.0038 \*  
 Venus -48953-09-11 04:18 J -16158406.38 -16158406.32 -16158406.25 0.0273 0.0260  
 Venus -48952-04-28 16:33 J -16158177.03 -16158176.81 -16158176.59 0.0272 0.0026  
 Mercury -48942-01-01 23:16 J -16154641.62 -16154641.53 -16154641.44 0.0274 0.0211  
 Mercury -48942-03-31 11:59 J -16154553.13 -16154553.00 -16154552.87 0.0274 0.0116  
 Mercury -48942-06-28 00:28 J -16154464.62 -16154464.48 -16154464.34 0.0275 0.0022  
 Mercury -48942-09-24 12:57 J -16154376.10 -16154375.96 -16154375.83 0.0276 0.0072  
 Mercury -48942-12-22 01:11 J -16154287.56 -16154287.45 -16154287.34 0.0276 0.0165

Mercury -48941-03-19 13:11 J -16154199.00 -16154198.95 -16154198.90 0.0277 0.0257

Moon -48941-09-01 18:13 J -16154032.99 -16154032.74 -16154032.48 0.0278 0.0003

Earth -48941-09-01 18:42 J -16154032.96 -16154032.72 -16154032.47 0.0278 0.0015 \*

Venus -48937-05-25 02:09 J -16152671.60 -16152671.41 -16152671.22 0.0287 0.0111

Venus -48936-01-09 13:40 J -16152442.06 -16152441.93 -16152441.78 0.0288 0.0209

Mercury -48928-01-23 22:47 J -16149505.64 -16149505.55 -16149505.45 0.0286 0.0234

Mercury -48928-04-22 18:13 J -16149416.89 -16149416.74 -16149416.58 0.0285 0.0110

Mercury -48928-07-20 13:54 J -16149328.09 -16149327.92 -16149327.74 0.0284 0.0018

Mercury -48928-10-17 10:04 J -16149239.23 -16149239.08 -16149238.93 0.0284 0.0144

Mercury -48927-01-14 06:28 J -16149150.27 -16149150.23 -16149150.19 0.0283 0.0272

Moon -48927-02-22 11:59 J -16149111.22 -16149111.00 -16149110.77 0.0283 0.0107

Earth -48927-02-22 15:06 J -16149111.09 -16149110.87 -16149110.64 0.0283 0.0123 \*

Earth -48926-03-07 23:59 J -16148732.68 -16148732.50 -16148732.31 0.0280 0.0188

Moon -48926-03-08 00:28 J -16148732.64 -16148732.48 -16148732.30 0.0280 0.0199 \*

Venus -48923-03-24 05:01 J -16147620.40 -16147620.29 -16147620.17 0.0273 0.0231

Venus -48923-11-08 17:01 J -16147391.00 -16147390.79 -16147390.57 0.0271 0.0055

Mars -48917-11-06 15:49 J -16145201.17 -16145200.84 -16145200.51 0.0268 0.0007

Mercury -48913-05-20 23:59 J -16143909.56 -16143909.50 -16143909.44 0.0274 0.0247

Mercury -48913-08-17 12:42 J -16143821.08 -16143820.97 -16143820.84 0.0275 0.0152

Mercury -48913-11-14 01:25 J -16143732.58 -16143732.44 -16143732.30 0.0275 0.0057

Mercury -48912-02-10 13:54 J -16143644.06 -16143643.92 -16143643.78 0.0276 0.0038

Mercury -48912-05-10 02:09 J -16143555.53 -16143555.41 -16143555.28 0.0276 0.0132

Mercury -48912-08-06 14:23 J -16143466.98 -16143466.90 -16143466.82 0.0277 0.0224

Earth -48912-08-27 06:13 J -16143446.45 -16143446.24 -16143446.02 0.0277 0.0125

Moon -48912-08-27 06:28 J -16143446.43 -16143446.23 -16143446.02 0.0277 0.0135 \*

Earth -48911-09-09 02:37 J -16143068.57 -16143068.39 -16143068.19 0.0280 0.0174

Moon -48911-09-09 06:13 J -16143068.43 -16143068.24 -16143068.03 0.0280 0.0158 \*

Venus -48908-12-05 04:33 J -16141885.51 -16141885.31 -16141885.11 0.0288 0.0074

Venus -48907-07-22 16:18 J -16141655.91 -16141655.82 -16141655.70 0.0289 0.0248

Mars -48903-11-30 06:42 J -16140064.42 -16140064.22 -16140064.00 0.0292 0.0176

Mercury -48899-06-12 22:33 J -16138773.60 -16138773.56 -16138773.50 0.0285 0.0271

Mercury -48899-09-09 17:45 J -16138684.89 -16138684.76 -16138684.61 0.0285 0.0148

Mercury -48899-12-07 13:40 J -16138596.10 -16138595.93 -16138595.76 0.0284 0.0022

Earth -48898-02-17 00:13 J -16138524.56 -16138524.49 -16138524.40 0.0284 0.0267

Moon -48898-02-17 03:06 J -16138524.48 -16138524.37 -16138524.24 0.0284 0.0250 \*

Mercury -48898-03-06 09:35 J -16138507.26 -16138507.10 -16138506.94 0.0284 0.0105

Mercury -48898-06-03 05:45 J -16138418.35 -16138418.26 -16138418.16 0.0283 0.0234

Moon -48897-03-01 10:47 J -16138146.30 -16138146.05 -16138145.80 0.0281 0.0062

Earth -48897-03-01 11:30 J -16138146.26 -16138146.02 -16138145.77 0.0281 0.0050 \*

Venus -48894-10-04 11:30 J -16136834.17 -16136834.02 -16136833.85 0.0273 0.0187

Venus -48893-05-20 23:45 J -16136604.71 -16136604.51 -16136604.30 0.0272 0.0100

Mercury -48884-10-08 03:06 J -16133177.40 -16133177.37 -16133177.34 0.0274 0.0266

Mercury -48883-01-04 16:04 J -16133088.94 -16133088.83 -16133088.72 0.0274 0.0171

Mercury -48883-04-03 04:47 J -16133000.44 -16133000.30 -16133000.17 0.0275 0.0076

Mercury -48883-06-30 17:16 J -16132911.92 -16132911.78 -16132911.64 0.0275 0.0019

Earth -48883-08-22 06:42 J -16132859.32 -16132859.22 -16132859.11 0.0276 0.0248

Moon -48883-08-22 06:42 J -16132859.31 -16132859.22 -16132859.11 0.0276 0.0253 \*

Mercury -48883-09-27 05:30 J -16132823.40 -16132823.27 -16132823.14 0.0276 0.0112

Mercury -48883-12-24 17:45 J -16132734.85 -16132734.76 -16132734.67 0.0276 0.0205

Moon -48882-09-03 22:04 J -16132481.82 -16132481.58 -16132481.33 0.0278 0.0031

Earth -48882-09-04 01:40 J -16132481.67 -16132481.43 -16132481.19 0.0278 0.0045 \*

Venus -48878-06-17 12:42 J -16131099.18 -16131098.97 -16131098.76 0.0287 0.0022

Mars -48872-01-16 23:01 J -16129058.76 -16129058.54 -16129058.32 0.0291 0.0160

Mercury -48869-01-27 17:16 J -16127952.90 -16127952.78 -16127952.65 0.0285 0.0186

Mercury -48869-04-25 12:42 J -16127864.13 -16127863.97 -16127863.80 0.0285 0.0062

Mercury -48869-07-23 08:37 J -16127775.31 -16127775.14 -16127774.97 0.0284 0.0065

Mercury -48869-10-20 04:47 J -16127686.43 -16127686.30 -16127686.17 0.0283 0.0193

Earth -48868-02-23 19:40 J -16127559.91 -16127559.68 -16127559.45 0.0283 0.0093

Moon -48868-02-23 21:06 J -16127559.85 -16127559.62 -16127559.39 0.0283 0.0079 \*

Earth -48867-03-09 04:04 J -16127181.48 -16127181.33 -16127181.17 0.0280 0.0217

Moon -48867-03-09 07:54 J -16127181.31 -16127181.17 -16127181.03 0.0280 0.0227 \*  
 Venus -48864-04-15 13:40 J -16126048.10 -16126047.93 -16126047.75 0.0273 0.0154  
 Venus -48864-12-01 01:40 J -16125818.62 -16125818.43 -16125818.23 0.0271 0.0131  
 Mercury -48854-05-24 17:01 J -16122356.89 -16122356.79 -16122356.70 0.0274 0.0205  
 Mercury -48854-08-21 05:45 J -16122268.39 -16122268.26 -16122268.13 0.0275 0.0110  
 Mercury -48854-11-17 18:13 J -16122179.88 -16122179.74 -16122179.60 0.0275 0.0016  
 Mercury -48853-02-14 06:42 J -16122091.35 -16122091.22 -16122091.09 0.0276 0.0079  
 Mercury -48853-05-12 18:57 J -16122002.82 -16122002.71 -16122002.60 0.0277 0.0171  
 Mercury -48853-08-09 06:57 J -16121914.24 -16121914.21 -16121914.17 0.0277 0.0264  
 Earth -48853-08-28 13:11 J -16121895.17 -16121894.95 -16121894.71 0.0277 0.0093  
 Moon -48853-08-28 16:47 J -16121895.02 -16121894.80 -16121894.57 0.0277 0.0105 \*  
 Earth -48852-09-10 10:04 J -16121517.24 -16121517.08 -16121516.91 0.0280 0.0206  
 Moon -48852-09-10 11:30 J -16121517.19 -16121517.02 -16121516.83 0.0280 0.0191 \*  
 Venus -48849-12-27 15:06 J -16120313.08 -16120312.87 -16120312.67 0.0288 0.0015  
 Mercury -48840-06-15 17:01 J -16117220.89 -16117220.79 -16117220.68 0.0285 0.0223  
 Mercury -48840-09-12 12:28 J -16117132.13 -16117131.98 -16117131.82 0.0285 0.0099  
 Mercury -48840-12-10 08:23 J -16117043.32 -16117043.15 -16117042.98 0.0284 0.0028  
 Moon -48839-02-18 03:35 J -16116973.49 -16116973.35 -16116973.18 0.0284 0.0223  
 Earth -48839-02-18 05:45 J -16116973.39 -16116973.26 -16116973.12 0.0284 0.0237 \*  
 Mercury -48839-03-09 04:18 J -16116954.46 -16116954.32 -16116954.17 0.0283 0.0155  
 Moon -48838-03-03 12:28 J -16116595.20 -16116594.98 -16116594.74 0.0281 0.0090  
 Earth -48838-03-03 16:33 J -16116595.04 -16116594.81 -16116594.57 0.0281 0.0079 \*  
 Venus -48835-10-26 20:23 J -16115261.84 -16115261.65 -16115261.44 0.0273 0.0110  
 Venus -48834-06-13 08:52 J -16115032.30 -16115032.13 -16115031.97 0.0272 0.0176  
 Mars -48828-04-03 00:57 J -16112911.78 -16112911.46 -16112911.14 0.0269 0.0050  
 Mercury -48825-10-10 20:09 J -16111624.74 -16111624.66 -16111624.57 0.0274 0.0224  
 Mercury -48824-01-07 09:06 J -16111536.25 -16111536.12 -16111536.00 0.0275 0.0128  
 Mercury -48824-04-05 21:35 J -16111447.74 -16111447.60 -16111447.45 0.0275 0.0034  
 Mercury -48824-07-03 10:04 J -16111359.21 -16111359.08 -16111358.94 0.0276 0.0061  
 Moon -48824-08-23 11:01 J -16111308.18 -16111308.04 -16111307.90 0.0276 0.0225

Earth -48824-08-23 14:23 J -16111308.04 -16111307.90 -16111307.74 0.0276 0.0217 \*  
 Mercury -48824-09-29 22:18 J -16111270.68 -16111270.57 -16111270.45 0.0276 0.0155  
 Mercury -48824-12-27 10:33 J -16111182.12 -16111182.06 -16111182.00 0.0277 0.0246  
 Moon -48823-09-05 08:09 J -16110930.39 -16110930.16 -16110929.93 0.0279 0.0065  
 Earth -48823-09-05 10:04 J -16110930.31 -16110930.08 -16110929.84 0.0279 0.0079 \*  
 Venus -48820-11-22 13:11 J -16109756.05 -16109755.95 -16109755.84 0.0286 0.0245  
 Venus -48819-07-10 00:42 J -16109526.67 -16109526.47 -16109526.27 0.0288 0.0070  
 Mars -48814-04-26 09:06 J -16107775.36 -16107775.12 -16107774.89 0.0291 0.0138  
 Mercury -48811-11-02 17:16 J -16106488.84 -16106488.78 -16106488.70 0.0285 0.0256  
 Mercury -48810-01-30 12:42 J -16106400.12 -16106399.97 -16106399.82 0.0285 0.0133  
 Mercury -48810-04-29 08:23 J -16106311.32 -16106311.15 -16106310.98 0.0284 0.0010  
 Mercury -48810-07-27 04:04 J -16106222.48 -16106222.33 -16106222.17 0.0284 0.0120  
 Mercury -48810-10-24 00:28 J -16106133.56 -16106133.48 -16106133.40 0.0283 0.0247  
 Earth -48809-02-26 03:35 J -16106008.59 -16106008.35 -16106008.11 0.0282 0.0061  
 Moon -48809-02-26 07:25 J -16106008.43 -16106008.19 -16106007.95 0.0282 0.0048 \*  
 Earth -48808-03-10 11:30 J -16105630.12 -16105630.02 -16105629.90 0.0280 0.0249  
 Moon -48808-03-10 12:57 J -16105630.05 -16105629.96 -16105629.85 0.0280 0.0255 \*  
 Venus -48805-05-07 23:59 J -16104475.70 -16104475.50 -16104475.28 0.0272 0.0074  
 Venus -48805-12-23 11:45 J -16104246.13 -16104246.01 -16104245.86 0.0271 0.0211  
 Mercury -48795-02-27 21:21 J -16100892.65 -16100892.61 -16100892.56 0.0274 0.0257  
 Mercury -48795-05-27 10:04 J -16100804.19 -16100804.08 -16100803.96 0.0275 0.0162  
 Mercury -48795-08-23 23:01 J -16100715.68 -16100715.54 -16100715.41 0.0275 0.0066  
 Mercury -48795-11-20 11:30 J -16100627.16 -16100627.02 -16100626.88 0.0276 0.0028  
 Mercury -48794-02-16 23:45 J -16100538.63 -16100538.51 -16100538.38 0.0276 0.0122  
 Mercury -48794-05-16 11:59 J -16100450.08 -16100450.00 -16100449.91 0.0277 0.0215  
 Earth -48794-08-30 22:33 J -16100343.79 -16100343.56 -16100343.32 0.0278 0.0060  
 Moon -48794-08-31 00:57 J -16100343.71 -16100343.46 -16100343.22 0.0278 0.0072 \*  
 Moon -48793-09-11 17:16 J -16099965.91 -16099965.78 -16099965.62 0.0280 0.0228  
 Earth -48793-09-11 19:54 J -16099965.78 -16099965.67 -16099965.54 0.0280 0.0242 \*  
 Venus -48790-06-04 15:49 J -16098969.97 -16098969.84 -16098969.69 0.0287 0.0208

Venus -48789-01-20 03:21 J -16098740.54 -16098740.36 -16098740.16 0.0288 0.0109  
 Mars -48784-06-12 21:35 J -16096769.80 -16096769.60 -16096769.40 0.0291 0.0195  
 Mercury -48781-06-18 12:28 J -16095668.11 -16095667.98 -16095667.84 0.0285 0.0170  
 Mercury -48781-09-15 07:54 J -16095579.33 -16095579.17 -16095579.00 0.0284 0.0046  
 Mercury -48781-12-13 03:49 J -16095490.50 -16095490.34 -16095490.17 0.0284 0.0082  
 Moon -48780-02-19 10:18 J -16095422.24 -16095422.07 -16095421.88 0.0283 0.0190  
 Earth -48780-02-19 13:54 J -16095422.08 -16095421.92 -16095421.74 0.0283 0.0204 \*  
 Mercury -48780-03-11 23:59 J -16095401.61 -16095401.50 -16095401.38 0.0283 0.0210  
 Moon -48779-03-04 23:16 J -16095043.74 -16095043.53 -16095043.31 0.0281 0.0121  
 Earth -48779-03-05 00:13 J -16095043.71 -16095043.49 -16095043.26 0.0281 0.0113 \*  
 Venus -48776-11-18 06:57 J -16093689.43 -16093689.21 -16093688.99 0.0272 0.0029  
 Venus -48775-07-05 18:57 J -16093459.78 -16093459.71 -16093459.63 0.0271 0.0255  
 Mars -48770-07-07 09:06 J -16091632.23 -16091632.12 -16091631.97 0.0269 0.0246  
 Mercury -48766-10-14 13:40 J -16090072.03 -16090071.93 -16090071.82 0.0275 0.0179  
 Mercury -48765-01-11 02:23 J -16089983.53 -16089983.40 -16089983.26 0.0275 0.0083  
 Mercury -48765-04-08 15:06 J -16089895.01 -16089894.87 -16089894.73 0.0276 0.0013  
 Mercury -48765-07-06 03:21 J -16089806.49 -16089806.36 -16089806.23 0.0276 0.0106  
 Moon -48765-08-24 22:33 J -16089756.73 -16089756.56 -16089756.39 0.0277 0.0195  
 Earth -48765-08-25 00:28 J -16089756.66 -16089756.48 -16089756.29 0.0277 0.0184 \*  
 Mercury -48765-10-02 15:35 J -16089717.94 -16089717.85 -16089717.75 0.0277 0.0198  
 Earth -48764-09-06 20:37 J -16089378.86 -16089378.64 -16089378.42 0.0279 0.0114  
 Moon -48764-09-06 22:33 J -16089378.78 -16089378.56 -16089378.33 0.0279 0.0100 \*  
 Venus -48761-12-15 02:09 J -16088183.57 -16088183.41 -16088183.22 0.0287 0.0151  
 Venus -48760-08-01 13:54 J -16087954.08 -16087953.92 -16087953.75 0.0288 0.0166  
 Mercury -48752-11-05 13:25 J -16084936.06 -16084935.94 -16084935.82 0.0285 0.0199  
 Mercury -48751-02-02 08:52 J -16084847.30 -16084847.13 -16084846.97 0.0285 0.0075  
 Mercury -48751-05-02 04:33 J -16084758.48 -16084758.31 -16084758.14 0.0284 0.0051  
 Mercury -48751-07-30 00:28 J -16084669.61 -16084669.48 -16084669.34 0.0283 0.0178  
 Earth -48750-02-27 14:23 J -16084457.14 -16084456.90 -16084456.65 0.0282 0.0025  
 Moon -48750-02-27 15:21 J -16084457.12 -16084456.86 -16084456.61 0.0282 0.0015 \*

Venus -48746-05-31 11:59 J -16082903.21 -16082903.00 -16082902.78 0.0272 0.0012  
 Mars -48740-08-27 18:42 J -16080623.03 -16080622.72 -16080622.42 0.0269 0.0092  
 Mercury -48736-03-02 14:52 J -16079339.96 -16079339.88 -16079339.78 0.0274 0.0211  
 Mercury -48736-05-30 03:49 J -16079251.47 -16079251.34 -16079251.21 0.0275 0.0115  
 Mercury -48736-08-26 16:33 J -16079162.96 -16079162.81 -16079162.67 0.0275 0.0022  
 Mercury -48736-11-23 04:47 J -16079074.43 -16079074.30 -16079074.16 0.0276 0.0074  
 Mercury -48735-02-19 17:16 J -16078985.89 -16078985.78 -16078985.67 0.0277 0.0167  
 Mercury -48735-05-19 05:16 J -16078897.32 -16078897.28 -16078897.23 0.0277 0.0259  
 Moon -48735-09-01 06:57 J -16078792.45 -16078792.21 -16078791.96 0.0278 0.0040  
 Earth -48735-09-01 09:35 J -16078792.35 -16078792.10 -16078791.86 0.0278 0.0024 \*  
 Moon -48734-09-14 03:49 J -16078414.40 -16078414.34 -16078414.24 0.0281 0.0264  
 Earth -48734-09-14 07:25 J -16078414.21 -16078414.19 -16078414.16 0.0281 0.0278  
 Venus -48731-06-27 05:16 J -16077397.47 -16077397.28 -16077397.09 0.0287 0.0112  
 Venus -48730-02-11 16:47 J -16077167.94 -16077167.80 -16077167.65 0.0289 0.0205  
 Mars -48726-09-20 11:45 J -16075486.26 -16075486.01 -16075485.75 0.0291 0.0100  
 Mercury -48722-03-25 13:11 J -16074204.04 -16074203.95 -16074203.86 0.0285 0.0236  
 Mercury -48722-06-22 08:23 J -16074115.30 -16074115.15 -16074114.99 0.0285 0.0113  
 Mercury -48722-09-19 04:18 J -16074026.49 -16074026.32 -16074026.15 0.0284 0.0015  
 Mercury -48722-12-17 00:13 J -16073937.64 -16073937.49 -16073937.34 0.0283 0.0140  
 Moon -48721-02-21 23:59 J -16073870.69 -16073870.50 -16073870.30 0.0283 0.0156  
 Earth -48721-02-22 00:42 J -16073870.66 -16073870.47 -16073870.26 0.0283 0.0168 \*  
 Mercury -48721-03-14 20:23 J -16073848.69 -16073848.65 -16073848.59 0.0283 0.0269  
 Earth -48720-03-06 10:33 J -16073492.26 -16073492.06 -16073491.84 0.0280 0.0148  
 Moon -48720-03-06 13:54 J -16073492.12 -16073491.92 -16073491.72 0.0280 0.0153 \*  
 Venus -48717-04-25 05:59 J -16072346.35 -16072346.25 -16072346.12 0.0273 0.0232  
 Venus -48717-12-10 18:42 J -16072116.93 -16072116.72 -16072116.51 0.0272 0.0054  
 Mercury -48707-07-20 18:13 J -16068607.81 -16068607.74 -16068607.65 0.0275 0.0229  
 Mercury -48707-10-17 07:11 J -16068519.32 -16068519.20 -16068519.07 0.0275 0.0133  
 Mercury -48706-01-13 19:54 J -16068430.81 -16068430.67 -16068430.53 0.0276 0.0038  
 Mercury -48706-04-12 08:23 J -16068342.28 -16068342.15 -16068342.01 0.0276 0.0058



Mercury -48706-07-09 20:52 J -16068253.75 -16068253.63 -16068253.51 0.0277 0.0151  
 Earth -48706-08-27 11:16 J -16068205.23 -16068205.03 -16068204.82 0.0277 0.0149  
 Moon -48706-08-27 13:40 J -16068205.11 -16068204.93 -16068204.73 0.0277 0.0162 \*  
 Mercury -48706-10-06 09:06 J -16068165.19 -16068165.12 -16068165.06 0.0277 0.0243  
 Earth -48705-09-08 08:09 J -16067827.36 -16067827.16 -16067826.95 0.0279 0.0151  
 Moon -48705-09-08 11:45 J -16067827.22 -16067827.01 -16067826.79 0.0279 0.0135 \*  
 Venus -48701-01-07 16:33 J -16066611.01 -16066610.81 -16066610.61 0.0287 0.0053  
 Venus -48701-08-24 04:18 J -16066381.40 -16066381.32 -16066381.24 0.0288 0.0264  
 Mars -48696-11-07 16:33 J -16064479.93 -16064479.81 -16064479.67 0.0290 0.0253  
 Mercury -48693-08-11 14:52 J -16063471.94 -16063471.88 -16063471.81 0.0285 0.0261  
 Mercury -48693-11-08 10:04 J -16063383.22 -16063383.08 -16063382.93 0.0285 0.0138  
 Mercury -48692-02-05 05:45 J -16063294.43 -16063294.26 -16063294.09 0.0284 0.0014  
 Mercury -48692-05-05 01:25 J -16063205.59 -16063205.44 -16063205.28 0.0284 0.0114  
 Mercury -48692-08-01 21:49 J -16063116.68 -16063116.59 -16063116.50 0.0283 0.0241  
 Moon -48691-03-01 00:42 J -16062905.72 -16062905.47 -16062905.22 0.0282 0.0021  
 Earth -48691-03-01 03:35 J -16062905.59 -16062905.35 -16062905.10 0.0282 0.0013 \*  
 Venus -48688-11-05 12:57 J -16061560.11 -16061559.96 -16061559.79 0.0273 0.0186  
 Venus -48687-06-23 01:11 J -16061330.65 -16061330.45 -16061330.25 0.0272 0.0098  
 Mars -48682-12-01 09:21 J -16059343.32 -16059343.11 -16059342.88 0.0268 0.0197  
 Mercury -48678-12-07 19:40 J -16057875.71 -16057875.68 -16057875.63 0.0274 0.0260  
 Mercury -48677-03-05 08:52 J -16057787.25 -16057787.13 -16057787.02 0.0275 0.0164  
 Mercury -48677-06-01 21:35 J -16057698.74 -16057698.60 -16057698.47 0.0275 0.0069  
 Mercury -48677-08-29 10:04 J -16057610.22 -16057610.08 -16057609.94 0.0276 0.0026  
 Mercury -48677-11-25 22:18 J -16057521.69 -16057521.57 -16057521.44 0.0276 0.0121  
 Mercury -48676-02-22 10:33 J -16057433.14 -16057433.06 -16057432.97 0.0277 0.0213  
 Moon -48676-09-02 17:59 J -16057240.99 -16057240.75 -16057240.51 0.0278 0.0005  
 Earth -48676-09-02 21:21 J -16057240.85 -16057240.61 -16057240.36 0.0278 0.0012 \*  
 Venus -48672-07-19 19:25 J -16055824.89 -16055824.69 -16055824.48 0.0288 0.0014  
 Mercury -48663-03-28 09:35 J -16052651.23 -16052651.10 -16052650.97 0.0285 0.0176  
 Mercury -48663-06-25 05:01 J -16052562.45 -16052562.29 -16052562.12 0.0284 0.0052

Mercury -48663-09-22 00:57 J -16052473.63 -16052473.46 -16052473.29 0.0284 0.0074

Mercury -48663-12-19 21:06 J -16052384.74 -16052384.62 -16052384.50 0.0283 0.0202

Earth -48662-02-23 13:25 J -16052319.15 -16052318.94 -16052318.72 0.0283 0.0131

Moon -48662-02-23 16:18 J -16052319.04 -16052318.82 -16052318.60 0.0283 0.0118 \*

Earth -48661-03-07 22:47 J -16051940.73 -16051940.55 -16051940.36 0.0280 0.0184

Moon -48661-03-08 01:40 J -16051940.61 -16051940.43 -16051940.24 0.0280 0.0189 \*

Venus -48658-05-18 19:11 J -16050773.88 -16050773.70 -16050773.51 0.0273 0.0144

Venus -48657-01-03 07:40 J -16050544.37 -16050544.18 -16050544.00 0.0272 0.0140

Mars -48651-01-22 13:25 J -16048333.19 -16048332.94 -16048332.65 0.0269 0.0148

Mercury -48648-07-23 11:59 J -16047055.10 -16047055.00 -16047054.89 0.0275 0.0182

Mercury -48648-10-20 00:57 J -16046966.60 -16046966.46 -16046966.33 0.0276 0.0086

Mercury -48647-01-16 13:25 J -16046878.08 -16046877.94 -16046877.79 0.0276 0.0012

Mercury -48647-04-15 01:54 J -16046789.55 -16046789.42 -16046789.29 0.0277 0.0103

Mercury -48647-07-12 14:23 J -16046701.00 -16046700.90 -16046700.81 0.0277 0.0196

Earth -48647-08-28 22:18 J -16046653.79 -16046653.57 -16046653.34 0.0277 0.0115

Moon -48647-08-29 01:54 J -16046653.64 -16046653.42 -16046653.20 0.0277 0.0128 \*

Moon -48646-09-10 19:40 J -16046275.87 -16046275.68 -16046275.47 0.0280 0.0172

Earth -48646-09-10 19:54 J -16046275.84 -16046275.67 -16046275.49 0.0280 0.0188 \*

Venus -48643-06-14 18:57 J -16045267.77 -16045267.71 -16045267.63 0.0286 0.0269

Venus -48642-01-30 06:42 J -16045038.43 -16045038.22 -16045038.02 0.0288 0.0045

Mars -48637-02-15 11:30 J -16043196.29 -16043196.02 -16043195.76 0.0291 0.0034

Mercury -48634-08-15 11:45 J -16041919.12 -16041919.01 -16041918.89 0.0285 0.0199

Mercury -48634-11-12 07:11 J -16041830.36 -16041830.20 -16041830.04 0.0284 0.0075

Mercury -48633-02-09 02:52 J -16041741.55 -16041741.38 -16041741.21 0.0284 0.0051

Moon -48633-02-18 04:18 J -16041732.43 -16041732.32 -16041732.20 0.0284 0.0251

Earth -48633-02-18 07:25 J -16041732.27 -16041732.19 -16041732.11 0.0284 0.0267 \*

Mercury -48633-05-07 22:47 J -16041652.68 -16041652.55 -16041652.41 0.0283 0.0178

Moon -48632-03-02 14:37 J -16041354.12 -16041353.89 -16041353.65 0.0281 0.0061

Earth -48632-03-02 17:45 J -16041354.00 -16041353.76 -16041353.51 0.0281 0.0052 \*

Venus -48629-11-28 03:21 J -16039987.56 -16039987.36 -16039987.16 0.0273 0.0096

Venus -48628-07-15 15:06 J -16039758.02 -16039757.87 -16039757.71 0.0271 0.0186  
 Mercury -48619-12-10 13:40 J -16036323.02 -16036322.93 -16036322.84 0.0274 0.0213  
 Mercury -48618-03-09 02:23 J -16036234.52 -16036234.40 -16036234.27 0.0275 0.0117  
 Mercury -48618-06-05 15:06 J -16036146.01 -16036145.87 -16036145.73 0.0275 0.0022  
 Moon -48618-08-23 10:04 J -16036067.15 -16036067.08 -16036066.99 0.0276 0.0260  
 Earth -48618-08-23 13:25 J -16036067.03 -16036066.94 -16036066.83 0.0276 0.0250 \*  
 Mercury -48618-09-02 03:35 J -16036057.48 -16036057.35 -16036057.21 0.0276 0.0072  
 Mercury -48618-11-29 15:49 J -16035968.94 -16035968.84 -16035968.72 0.0277 0.0166  
 Mercury -48617-02-26 04:04 J -16035880.37 -16035880.33 -16035880.28 0.0277 0.0258  
 Earth -48617-09-04 08:52 J -16035689.37 -16035689.13 -16035688.88 0.0278 0.0048  
 Moon -48617-09-04 09:21 J -16035689.34 -16035689.11 -16035688.87 0.0278 0.0033 \*  
 Venus -48614-12-25 21:35 J -16034481.71 -16034481.60 -16034481.47 0.0287 0.0231  
 Venus -48613-08-11 09:21 J -16034252.30 -16034252.11 -16034251.91 0.0288 0.0084  
 Mercury -48604-01-01 11:01 J -16031187.12 -16031187.04 -16031186.94 0.0285 0.0238  
 Mercury -48604-03-31 06:28 J -16031098.38 -16031098.23 -16031098.08 0.0285 0.0115  
 Mercury -48604-06-28 02:09 J -16031009.58 -16031009.41 -16031009.24 0.0284 0.0012  
 Mercury -48604-09-24 22:04 J -16030920.73 -16030920.58 -16030920.43 0.0283 0.0138  
 Mercury -48604-12-22 18:13 J -16030831.79 -16030831.74 -16030831.68 0.0283 0.0266  
 Earth -48603-02-25 03:06 J -16030767.59 -16030767.37 -16030767.13 0.0282 0.0093  
 Moon -48603-02-25 06:28 J -16030767.46 -16030767.23 -16030766.98 0.0282 0.0080 \*  
 Moon -48602-03-10 11:16 J -16030389.18 -16030389.03 -16030388.87 0.0280 0.0224  
 Earth -48602-03-10 12:13 J -16030389.14 -16030388.99 -16030388.84 0.0280 0.0221 \*  
 Venus -48599-06-10 08:52 J -16029201.35 -16029201.13 -16029200.92 0.0272 0.0056  
 Venus -48598-01-25 20:37 J -16028971.75 -16028971.64 -16028971.51 0.0271 0.0227  
 Mars -48593-04-27 02:09 J -16027053.67 -16027053.41 -16027053.13 0.0269 0.0144  
 Mercury -48589-04-28 16:47 J -16025590.87 -16025590.80 -16025590.72 0.0275 0.0232  
 Mercury -48589-07-26 05:45 J -16025502.39 -16025502.26 -16025502.14 0.0275 0.0136  
 Mercury -48589-10-22 18:28 J -16025413.87 -16025413.73 -16025413.59 0.0276 0.0041  
 Mercury -48588-01-19 06:57 J -16025325.35 -16025325.21 -16025325.07 0.0276 0.0054  
 Mercury -48588-04-17 19:25 J -16025236.81 -16025236.69 -16025236.58 0.0277 0.0148

Mercury -48588-07-15 07:25 J -16025148.25 -16025148.19 -16025148.12 0.0278 0.0241  
 Earth -48588-08-30 08:52 J -16025102.36 -16025102.13 -16025101.89 0.0278 0.0081  
 Moon -48588-08-30 08:52 J -16025102.36 -16025102.13 -16025101.88 0.0278 0.0094 \*  
 Moon -48587-09-12 03:06 J -16024724.52 -16024724.37 -16024724.20 0.0280 0.0209  
 Earth -48587-09-12 06:57 J -16024724.35 -16024724.21 -16024724.06 0.0280 0.0224 \*  
 Venus -48584-07-07 08:37 J -16023695.30 -16023695.14 -16023694.97 0.0287 0.0173  
 Venus -48583-02-21 20:09 J -16023465.83 -16023465.66 -16023465.47 0.0288 0.0142  
 Mercury -48575-05-21 13:25 J -16020455.00 -16020454.94 -16020454.87 0.0285 0.0259  
 Mercury -48575-08-18 08:37 J -16020366.28 -16020366.14 -16020365.99 0.0285 0.0137  
 Mercury -48575-11-15 04:18 J -16020277.49 -16020277.32 -16020277.15 0.0284 0.0013  
 Mercury -48574-02-11 23:59 J -16020188.65 -16020188.50 -16020188.34 0.0284 0.0115  
 Moon -48574-02-19 18:42 J -16020180.87 -16020180.72 -16020180.56 0.0284 0.0216  
 Earth -48574-02-19 21:49 J -16020180.73 -16020180.59 -16020180.45 0.0284 0.0230 \*  
 Mercury -48574-05-11 20:09 J -16020099.74 -16020099.66 -16020099.57 0.0283 0.0243  
 Earth -48573-03-04 07:54 J -16019802.40 -16019802.17 -16019801.93 0.0281 0.0089  
 Moon -48573-03-04 08:09 J -16019802.38 -16019802.16 -16019801.93 0.0281 0.0098 \*  
 Venus -48570-12-21 17:30 J -16018414.98 -16018414.77 -16018414.55 0.0272 0.0009  
 Mars -48563-06-18 20:23 J -16016043.85 -16016043.65 -16016043.42 0.0269 0.0201  
 Mercury -48560-09-15 18:28 J -16014858.77 -16014858.73 -16014858.69 0.0274 0.0262  
 Mercury -48560-12-13 07:11 J -16014770.31 -16014770.20 -16014770.08 0.0274 0.0167  
 Mercury -48559-03-11 20:09 J -16014681.80 -16014681.66 -16014681.52 0.0275 0.0071  
 Mercury -48559-06-08 08:37 J -16014593.28 -16014593.14 -16014593.00 0.0276 0.0024  
 Moon -48559-08-24 23:59 J -16014515.63 -16014515.50 -16014515.37 0.0276 0.0227  
 Earth -48559-08-24 23:59 J -16014515.63 -16014515.50 -16014515.33 0.0276 0.0217 \*  
 Mercury -48559-09-04 21:06 J -16014504.75 -16014504.62 -16014504.49 0.0276 0.0117  
 Mercury -48559-12-02 09:21 J -16014416.20 -16014416.11 -16014416.02 0.0277 0.0210  
 Earth -48558-09-06 19:54 J -16014137.90 -16014137.67 -16014137.43 0.0279 0.0083  
 Moon -48558-09-06 23:16 J -16014137.76 -16014137.53 -16014137.29 0.0279 0.0068 \*  
 Venus -48554-01-17 10:47 J -16012909.22 -16012909.05 -16012908.86 0.0287 0.0136  
 Venus -48554-09-03 22:33 J -16012679.71 -16012679.56 -16012679.39 0.0288 0.0180

Mars -48549-07-11 14:23 J -16010907.17 -16010906.90 -16010906.64 0.0291 0.0004  
 Mercury -48545-01-05 07:25 J -16009634.31 -16009634.19 -16009634.05 0.0285 0.0179  
 Mercury -48545-04-03 03:06 J -16009545.54 -16009545.37 -16009545.21 0.0284 0.0054  
 Mercury -48545-06-30 22:47 J -16009456.71 -16009456.55 -16009456.38 0.0284 0.0072  
 Mercury -48545-09-27 18:57 J -16009367.83 -16009367.71 -16009367.59 0.0283 0.0199  
 Moon -48544-02-26 15:06 J -16009216.12 -16009215.87 -16009215.62 0.0282 0.0046  
 Earth -48544-02-26 16:04 J -16009216.07 -16009215.83 -16009215.59 0.0282 0.0056 \*  
 Moon -48543-03-11 20:52 J -16008837.71 -16008837.63 -16008837.54 0.0279 0.0260  
 Earth -48543-03-12 00:13 J -16008837.57 -16008837.49 -16008837.38 0.0279 0.0258 \*  
 Venus -48541-11-15 09:49 J -16007858.17 -16007858.09 -16007858.00 0.0273 0.0251  
 Venus -48540-07-02 22:04 J -16007628.79 -16007628.58 -16007628.36 0.0272 0.0032  
 Mercury -48530-05-02 10:04 J -16004038.18 -16004038.08 -16004037.97 0.0275 0.0188  
 Mercury -48530-07-29 23:01 J -16003949.68 -16003949.54 -16003949.41 0.0276 0.0093  
 Mercury -48530-10-26 11:30 J -16003861.16 -16003861.02 -16003860.88 0.0276 0.0006  
 Mercury -48529-01-22 23:59 J -16003772.63 -16003772.50 -16003772.37 0.0277 0.0097  
 Mercury -48529-04-20 12:13 J -16003684.08 -16003683.99 -16003683.88 0.0277 0.0191  
 Moon -48529-08-31 14:37 J -16003551.13 -16003550.89 -16003550.65 0.0278 0.0063  
 Earth -48529-08-31 17:59 J -16003550.99 -16003550.75 -16003550.51 0.0278 0.0048 \*  
 Moon -48528-09-13 14:09 J -16003173.01 -16003172.91 -16003172.79 0.0281 0.0245  
 Earth -48528-09-13 15:49 J -16003172.92 -16003172.84 -16003172.73 0.0281 0.0258 \*  
 Venus -48525-07-29 20:52 J -16002122.82 -16002122.63 -16002122.43 0.0287 0.0080  
 Venus -48524-03-16 08:52 J -16001893.25 -16001893.13 -16001893.01 0.0288 0.0235  
 Mercury -48516-05-24 10:04 J -15998902.20 -15998902.08 -15998901.96 0.0285 0.0200  
 Mercury -48516-08-21 05:16 J -15998813.44 -15998813.28 -15998813.11 0.0285 0.0077  
 Mercury -48516-11-18 01:11 J -15998724.62 -15998724.45 -15998724.29 0.0284 0.0050  
 Mercury -48515-02-14 20:52 J -15998635.75 -15998635.63 -15998635.49 0.0283 0.0178  
 Earth -48515-02-21 11:01 J -15998629.21 -15998629.04 -15998628.85 0.0283 0.0194  
 Moon -48515-02-21 12:28 J -15998629.16 -15998628.98 -15998628.80 0.0283 0.0182 \*  
 Earth -48514-03-06 20:52 J -15998250.84 -15998250.63 -15998250.40 0.0281 0.0126  
 Moon -48514-03-07 00:42 J -15998250.68 -15998250.47 -15998250.25 0.0281 0.0134 \*

Venus -48511-05-28 19:11 J -15997071.83 -15997071.70 -15997071.54 0.0273 0.0199  
 Venus -48510-01-13 07:25 J -15996842.39 -15996842.19 -15996841.98 0.0272 0.0084  
 Mars -48505-09-21 10:33 J -15994764.36 -15994764.06 -15994763.75 0.0268 0.0090  
 Mercury -48501-09-18 11:45 J -15993306.09 -15993306.01 -15993305.92 0.0274 0.0218  
 Mercury -48501-12-16 00:42 J -15993217.60 -15993217.47 -15993217.34 0.0274 0.0122  
 Mercury -48500-03-14 13:25 J -15993129.08 -15993128.94 -15993128.80 0.0275 0.0027  
 Mercury -48500-06-11 01:54 J -15993040.56 -15993040.42 -15993040.28 0.0276 0.0067  
 Earth -48500-08-26 09:06 J -15992964.29 -15992964.12 -15992963.93 0.0276 0.0186  
 Moon -48500-08-26 12:28 J -15992964.14 -15992963.98 -15992963.80 0.0276 0.0198 \*  
 Mercury -48500-09-07 14:09 J -15992952.02 -15992951.91 -15992951.79 0.0276 0.0160  
 Mercury -48500-12-05 02:23 J -15992863.45 -15992863.40 -15992863.34 0.0277 0.0252  
 Earth -48499-09-08 05:01 J -15992586.50 -15992586.29 -15992586.06 0.0279 0.0116  
 Moon -48499-09-08 07:25 J -15992586.42 -15992586.19 -15992585.95 0.0279 0.0101 \*  
 Venus -48495-02-08 23:01 J -15991336.74 -15991336.54 -15991336.33 0.0287 0.0044  
 Venus -48495-09-26 10:33 J -15991107.11 -15991107.06 -15991106.98 0.0289 0.0272  
 Mercury -48487-10-11 08:23 J -15988170.23 -15988170.15 -15988170.06 0.0285 0.0245  
 Mercury -48486-01-08 03:35 J -15988081.50 -15988081.35 -15988081.19 0.0285 0.0122  
 Mercury -48486-04-06 23:16 J -15987992.70 -15987992.53 -15987992.36 0.0284 0.0005  
 Mercury -48486-07-04 19:11 J -15987903.85 -15987903.70 -15987903.55 0.0284 0.0131  
 Mercury -48486-10-01 15:21 J -15987814.92 -15987814.86 -15987814.79 0.0283 0.0259  
 Moon -48485-02-28 23:16 J -15987664.77 -15987664.53 -15987664.28 0.0282 0.0015  
 Earth -48485-02-29 03:06 J -15987664.61 -15987664.37 -15987664.12 0.0282 0.0022 \*  
 Venus -48482-12-08 22:33 J -15986285.73 -15986285.56 -15986285.38 0.0273 0.0165  
 Venus -48481-07-25 10:33 J -15986056.25 -15986056.06 -15986055.85 0.0272 0.0118  
 Mars -48475-11-13 02:52 J -15983754.48 -15983754.38 -15983754.24 0.0269 0.0250  
 Mercury -48471-02-05 14:09 J -15982573.97 -15982573.91 -15982573.84 0.0275 0.0243  
 Mercury -48471-05-05 03:06 J -15982485.49 -15982485.37 -15982485.24 0.0275 0.0147  
 Mercury -48471-08-01 15:49 J -15982396.97 -15982396.84 -15982396.70 0.0276 0.0052  
 Mercury -48471-10-29 04:33 J -15982308.45 -15982308.31 -15982308.17 0.0276 0.0044  
 Mercury -48470-01-25 16:47 J -15982219.91 -15982219.80 -15982219.67 0.0277 0.0138

Mercury -48470-04-24 05:01 J -15982131.36 -15982131.29 -15982131.21 0.0277 0.0231  
 Moon -48470-09-02 23:01 J -15981999.78 -15981999.54 -15981999.31 0.0278 0.0032  
 Earth -48470-09-03 01:25 J -15981999.68 -15981999.44 -15981999.19 0.0278 0.0018 \*  
 Moon -48469-09-15 01:40 J -15981621.45 -15981621.43 -15981621.39 0.0281 0.0278  
 Venus -48466-08-22 07:40 J -15980550.38 -15980550.18 -15980549.97 0.0288 0.0010  
 Mars -48461-12-06 06:57 J -15978617.47 -15978617.21 -15978616.94 0.0291 0.0063  
 Mercury -48457-02-28 10:33 J -15977438.11 -15977438.06 -15977438.00 0.0286 0.0268  
 Mercury -48457-05-27 05:45 J -15977349.40 -15977349.26 -15977349.11 0.0285 0.0145  
 Mercury -48457-08-24 01:25 J -15977260.61 -15977260.44 -15977260.27 0.0284 0.0021  
 Mercury -48457-11-20 21:06 J -15977171.78 -15977171.62 -15977171.46 0.0284 0.0107  
 Mercury -48456-02-17 17:16 J -15977082.87 -15977082.78 -15977082.68 0.0283 0.0235  
 Earth -48456-02-22 21:35 J -15977077.80 -15977077.60 -15977077.39 0.0283 0.0160  
 Moon -48456-02-23 01:25 J -15977077.65 -15977077.44 -15977077.23 0.0283 0.0148 \*  
 Earth -48455-03-08 07:25 J -15976699.38 -15976699.19 -15976698.98 0.0281 0.0160  
 Moon -48455-03-08 09:06 J -15976699.31 -15976699.12 -15976698.90 0.0281 0.0164 \*  
 Venus -48452-06-20 08:09 J -15975499.35 -15975499.16 -15975498.96 0.0273 0.0112  
 Venus -48451-02-04 20:09 J -15975269.83 -15975269.66 -15975269.49 0.0272 0.0169  
 Mercury -48442-06-25 15:49 J -15971841.85 -15971841.84 -15971841.82 0.0273 0.0272  
 Mercury -48442-09-22 04:47 J -15971753.40 -15971753.30 -15971753.18 0.0274 0.0176  
 Mercury -48442-12-19 17:45 J -15971664.90 -15971664.76 -15971664.63 0.0275 0.0081  
 Mercury -48441-03-17 06:13 J -15971576.38 -15971576.24 -15971576.10 0.0275 0.0014  
 Mercury -48441-06-13 18:42 J -15971487.85 -15971487.72 -15971487.59 0.0276 0.0107  
 Earth -48441-08-27 16:33 J -15971413.01 -15971412.81 -15971412.61 0.0276 0.0156  
 Moon -48441-08-27 18:57 J -15971412.90 -15971412.71 -15971412.51 0.0276 0.0169 \*  
 Mercury -48441-09-10 06:57 J -15971399.30 -15971399.21 -15971399.12 0.0276 0.0200  
 Moon -48440-09-09 10:04 J -15971035.29 -15971035.08 -15971034.85 0.0279 0.0132  
 Earth -48440-09-09 12:13 J -15971035.19 -15971034.99 -15971034.78 0.0279 0.0146 \*  
 Venus -48437-07-16 22:04 J -15969993.65 -15969993.58 -15969993.51 0.0286 0.0266  
 Venus -48436-03-03 09:21 J -15969764.31 -15969764.11 -15969763.90 0.0288 0.0044  
 Mercury -48428-10-14 03:49 J -15966617.46 -15966617.34 -15966617.21 0.0285 0.0192

Mercury -48427-01-10 23:16 J -15966528.69 -15966528.53 -15966528.37 0.0285 0.0068

Mercury -48427-04-09 18:57 J -15966439.88 -15966439.71 -15966439.54 0.0284 0.0058

Mercury -48427-07-07 15:06 J -15966351.00 -15966350.87 -15966350.74 0.0284 0.0186

Moon -48426-03-02 11:01 J -15966113.27 -15966113.04 -15966112.80 0.0282 0.0017

Earth -48426-03-02 12:13 J -15966113.24 -15966112.99 -15966112.74 0.0282 0.0011 \*

Venus -48423-12-31 10:18 J -15964713.27 -15964713.07 -15964712.85 0.0273 0.0081

Venus -48422-08-17 22:18 J -15964483.71 -15964483.57 -15964483.42 0.0271 0.0200

Mars -48416-02-15 09:35 J -15962475.42 -15962475.10 -15962474.78 0.0269 0.0049

Mercury -48412-02-08 06:57 J -15961021.30 -15961021.21 -15961021.11 0.0275 0.0203

Mercury -48412-05-07 19:54 J -15960932.80 -15960932.67 -15960932.54 0.0275 0.0108

Mercury -48412-08-04 08:23 J -15960844.29 -15960844.15 -15960844.00 0.0276 0.0014

Mercury -48412-10-31 20:52 J -15960755.76 -15960755.63 -15960755.49 0.0276 0.0082

Mercury -48411-01-28 09:21 J -15960667.22 -15960667.11 -15960667.00 0.0277 0.0175

Mercury -48411-04-26 21:21 J -15960578.64 -15960578.61 -15960578.57 0.0277 0.0267

Earth -48411-09-04 06:28 J -15960448.48 -15960448.23 -15960447.99 0.0278 0.0012

Moon -48411-09-04 08:23 J -15960448.39 -15960448.15 -15960447.92 0.0278 0.0007 \*

Venus -48407-01-27 05:01 J -15959207.42 -15959207.29 -15959207.16 0.0287 0.0219

Venus -48407-09-13 16:47 J -15958977.99 -15958977.80 -15958977.60 0.0288 0.0093

Mars -48402-03-15 10:47 J -15957334.18 -15957334.05 -15957333.89 0.0291 0.0242

Mercury -48398-03-03 05:30 J -15955885.37 -15955885.27 -15955885.16 0.0285 0.0218

Mercury -48398-05-31 00:57 J -15955796.62 -15955796.46 -15955796.30 0.0285 0.0094

Mercury -48398-08-27 20:37 J -15955707.81 -15955707.64 -15955707.47 0.0284 0.0032

Mercury -48398-11-24 16:33 J -15955618.95 -15955618.81 -15955618.67 0.0284 0.0159

Earth -48397-02-25 05:01 J -15955526.50 -15955526.29 -15955526.06 0.0283 0.0129

Moon -48397-02-25 06:28 J -15955526.45 -15955526.23 -15955525.99 0.0283 0.0119 \*

Moon -48396-03-09 11:59 J -15955148.17 -15955148.00 -15955147.80 0.0280 0.0190

Earth -48396-03-09 15:06 J -15955148.04 -15955147.87 -15955147.68 0.0280 0.0191 \*

Venus -48393-07-12 19:25 J -15953926.91 -15953926.69 -15953926.47 0.0273 0.0029

Venus -48392-02-27 07:11 J -15953697.27 -15953697.20 -15953697.11 0.0271 0.0250

Mercury -48383-06-28 08:52 J -15950289.20 -15950289.13 -15950289.05 0.0273 0.0231



Mercury -48383-09-24 21:35 J -15950200.72 -15950200.60 -15950200.47 0.0274 0.0136  
 Mercury -48383-12-22 10:18 J -15950112.21 -15950112.07 -15950111.93 0.0275 0.0042  
 Mercury -48382-03-20 22:47 J -15950023.68 -15950023.55 -15950023.41 0.0275 0.0053  
 Mercury -48382-06-17 11:16 J -15949935.15 -15949935.03 -15949934.91 0.0276 0.0145  
 Moon -48382-08-29 19:54 J -15949861.89 -15949861.67 -15949861.46 0.0276 0.0142  
 Earth -48382-08-29 22:04 J -15949861.79 -15949861.58 -15949861.35 0.0276 0.0127 \*  
 Mercury -48382-09-13 23:16 J -15949846.59 -15949846.53 -15949846.45 0.0276 0.0238  
 Moon -48381-09-10 14:09 J -15949484.10 -15949483.91 -15949483.71 0.0279 0.0161  
 Earth -48381-09-10 17:30 J -15949483.95 -15949483.77 -15949483.57 0.0279 0.0176 \*  
 Venus -48378-08-09 07:11 J -15948421.36 -15948421.20 -15948421.04 0.0286 0.0183  
 Venus -48377-03-25 18:28 J -15948191.91 -15948191.73 -15948191.54 0.0288 0.0128  
 Mars -48372-05-01 13:11 J -15946329.21 -15946328.95 -15946328.69 0.0291 0.0079  
 Mercury -48369-07-20 03:21 J -15945153.42 -15945153.36 -15945153.30 0.0286 0.0267  
 Mercury -48369-10-16 22:33 J -15945064.71 -15945064.56 -15945064.42 0.0285 0.0144  
 Mercury -48368-01-13 17:59 J -15944975.92 -15944975.75 -15944975.58 0.0285 0.0019  
 Moon -48368-02-18 04:18 J -15944940.37 -15944940.32 -15944940.24 0.0284 0.0273  
 Earth -48368-02-18 05:30 J -15944940.27 -15944940.27 -15944940.23 0.0284 0.0284 \*  
 Mercury -48368-04-12 13:40 J -15944887.08 -15944886.93 -15944886.76 0.0284 0.0108  
 Mercury -48368-07-10 10:04 J -15944798.18 -15944798.08 -15944797.99 0.0284 0.0236  
 Earth -48367-03-03 17:45 J -15944562.00 -15944561.76 -15944561.51 0.0282 0.0041  
 Moon -48367-03-03 20:52 J -15944561.87 -15944561.63 -15944561.39 0.0282 0.0043 \*  
 Venus -48363-01-22 20:37 J -15943140.86 -15943140.64 -15943140.42 0.0272 0.0003  
 Mercury -48354-11-15 10:18 J -15939557.10 -15939557.07 -15939557.03 0.0274 0.0262  
 Mercury -48353-02-11 23:16 J -15939468.64 -15939468.53 -15939468.41 0.0275 0.0166  
 Mercury -48353-05-10 11:59 J -15939380.13 -15939380.00 -15939379.86 0.0275 0.0071  
 Mercury -48353-08-07 00:42 J -15939291.61 -15939291.47 -15939291.33 0.0276 0.0024  
 Earth -48353-08-23 14:52 J -15939274.95 -15939274.88 -15939274.80 0.0276 0.0261  
 Moon -48353-08-23 17:16 J -15939274.78 -15939274.78 -15939274.76 0.0276 0.0275  
 Mercury -48353-11-03 12:57 J -15939203.08 -15939202.96 -15939202.83 0.0276 0.0117  
 Mercury -48352-01-31 01:11 J -15939114.53 -15939114.45 -15939114.35 0.0277 0.0210

Earth -48352-09-05 09:21 J -15938897.35 -15938897.11 -15938896.87 0.0278 0.0037  
 Moon -48352-09-05 12:57 J -15938897.20 -15938896.96 -15938896.71 0.0278 0.0021 \*  
 Venus -48348-02-18 12:28 J -15937635.16 -15937634.98 -15937634.80 0.0287 0.0139  
 Venus -48348-10-05 23:59 J -15937405.66 -15937405.50 -15937405.33 0.0288 0.0173  
 Mercury -48339-03-05 23:30 J -15934332.64 -15934332.52 -15934332.38 0.0285 0.0174  
 Mercury -48339-06-02 19:11 J -15934243.87 -15934243.70 -15934243.53 0.0285 0.0048  
 Mercury -48339-08-30 14:52 J -15934155.04 -15934154.88 -15934154.71 0.0284 0.0078  
 Mercury -48339-11-27 11:01 J -15934066.15 -15934066.04 -15934065.92 0.0284 0.0206  
 Moon -48338-02-26 06:42 J -15933975.45 -15933975.22 -15933974.98 0.0283 0.0094  
 Earth -48338-02-26 09:35 J -15933975.33 -15933975.10 -15933974.87 0.0283 0.0102 \*  
 Moon -48337-03-10 16:47 J -15933596.96 -15933596.80 -15933596.65 0.0280 0.0216  
 Earth -48337-03-10 19:25 J -15933596.83 -15933596.69 -15933596.52 0.0280 0.0219 \*  
 Venus -48335-12-18 16:33 J -15932583.91 -15932583.81 -15932583.68 0.0274 0.0232  
 Venus -48334-08-05 05:16 J -15932354.50 -15932354.28 -15932354.07 0.0273 0.0050  
 Mars -48328-07-12 11:01 J -15930186.36 -15930186.04 -15930185.71 0.0268 0.0007  
 Mercury -48324-07-01 01:11 J -15928736.54 -15928736.45 -15928736.34 0.0273 0.0194  
 Mercury -48324-09-27 14:09 J -15928648.05 -15928647.91 -15928647.78 0.0274 0.0099  
 Mercury -48324-12-25 02:37 J -15928559.53 -15928559.39 -15928559.25 0.0274 0.0006  
 Mercury -48323-03-23 15:06 J -15928471.00 -15928470.87 -15928470.74 0.0275 0.0089  
 Mercury -48323-06-20 03:21 J -15928382.46 -15928382.36 -15928382.26 0.0276 0.0181  
 Moon -48323-08-30 22:33 J -15928310.78 -15928310.56 -15928310.34 0.0276 0.0116  
 Earth -48323-08-31 01:54 J -15928310.65 -15928310.42 -15928310.19 0.0276 0.0100 \*  
 Mercury -48323-09-16 15:21 J -15928293.87 -15928293.86 -15928293.83 0.0276 0.0272  
 Earth -48322-09-12 20:52 J -15927932.79 -15927932.63 -15927932.46 0.0279 0.0202  
 Moon -48322-09-12 20:52 J -15927932.79 -15927932.63 -15927932.45 0.0279 0.0191 \*  
 Venus -48319-08-31 14:23 J -15926849.08 -15926848.90 -15926848.70 0.0286 0.0104  
 Venus -48318-04-18 01:40 J -15926619.56 -15926619.43 -15926619.28 0.0288 0.0208  
 Mars -48314-08-08 10:33 J -15925046.22 -15925046.06 -15925045.90 0.0292 0.0234  
 Mercury -48310-07-23 21:06 J -15923600.72 -15923600.62 -15923600.52 0.0286 0.0224  
 Mercury -48310-10-20 16:18 J -15923511.97 -15923511.82 -15923511.66 0.0285 0.0101

Mercury -48309-01-17 11:59 J -15923423.17 -15923423.00 -15923422.83 0.0285 0.0025  
 Earth -48309-02-20 08:37 J -15923389.23 -15923389.14 -15923389.03 0.0284 0.0257  
 Moon -48309-02-20 11:30 J -15923389.12 -15923389.02 -15923388.89 0.0284 0.0247 \*  
 Mercury -48309-04-15 07:54 J -15923334.31 -15923334.17 -15923334.02 0.0284 0.0153  
 Mercury -48309-07-13 04:04 J -15923245.34 -15923245.33 -15923245.30 0.0283 0.0282  
 Earth -48308-03-04 20:52 J -15923010.87 -15923010.63 -15923010.39 0.0282 0.0068  
 Moon -48308-03-04 23:59 J -15923010.74 -15923010.50 -15923010.25 0.0282 0.0070 \*  
 Venus -48305-06-29 16:18 J -15921797.95 -15921797.82 -15921797.67 0.0274 0.0206  
 Venus -48304-02-14 05:01 J -15921568.50 -15921568.29 -15921568.08 0.0272 0.0076  
 Mercury -48295-11-18 02:37 J -15918004.47 -15918004.39 -15918004.31 0.0274 0.0226  
 Mercury -48294-02-14 15:21 J -15917915.98 -15917915.86 -15917915.73 0.0274 0.0131  
 Mercury -48294-05-14 04:04 J -15917827.47 -15917827.33 -15917827.19 0.0275 0.0036  
 Mercury -48294-08-10 16:33 J -15917738.95 -15917738.81 -15917738.67 0.0276 0.0058  
 Earth -48294-08-25 17:01 J -15917723.91 -15917723.79 -15917723.66 0.0276 0.0236  
 Moon -48294-08-25 20:09 J -15917723.75 -15917723.66 -15917723.55 0.0276 0.0251 \*  
 Mercury -48294-11-07 05:01 J -15917650.41 -15917650.29 -15917650.18 0.0276 0.0151  
 Mercury -48293-02-03 17:01 J -15917561.85 -15917561.79 -15917561.72 0.0277 0.0242  
 Moon -48293-09-06 10:33 J -15917346.31 -15917346.06 -15917345.81 0.0278 0.0049  
 Earth -48293-09-06 11:01 J -15917346.27 -15917346.04 -15917345.80 0.0278 0.0063 \*  
 Venus -48289-03-12 18:57 J -15916062.91 -15916062.71 -15916062.51 0.0287 0.0062  
 Venus -48289-10-28 06:13 J -15915833.33 -15915833.24 -15915833.13 0.0288 0.0250  
 Mars -48284-09-25 06:13 J -15914040.47 -15914040.24 -15914039.98 0.0291 0.0114  
 Mercury -48281-12-09 21:49 J -15912868.66 -15912868.59 -15912868.52 0.0286 0.0256  
 Mercury -48280-03-08 17:01 J -15912779.94 -15912779.79 -15912779.64 0.0285 0.0133  
 Mercury -48280-06-05 12:42 J -15912691.14 -15912690.97 -15912690.80 0.0285 0.0009  
 Mercury -48280-09-02 08:23 J -15912602.30 -15912602.15 -15912601.99 0.0284 0.0120  
 Mercury -48280-11-30 04:33 J -15912513.38 -15912513.31 -15912513.22 0.0284 0.0249  
 Moon -48279-02-27 07:25 J -15912424.42 -15912424.19 -15912423.96 0.0283 0.0070  
 Earth -48279-02-27 10:33 J -15912424.29 -15912424.06 -15912423.82 0.0283 0.0077 \*  
 Earth -48278-03-12 20:37 J -15912045.75 -15912045.64 -15912045.51 0.0280 0.0244

Moon -48278-03-12 21:35 J -15912045.71 -15912045.60 -15912045.47 0.0280 0.0239 \*  
 Venus -48275-01-10 00:42 J -15911011.65 -15911011.47 -15911011.29 0.0274 0.0157  
 Venus -48275-08-27 13:11 J -15910782.14 -15910781.95 -15910781.76 0.0272 0.0125  
 Mercury -48265-04-06 04:33 J -15907272.36 -15907272.31 -15907272.25 0.0273 0.0253  
 Mercury -48265-07-03 17:30 J -15907183.89 -15907183.77 -15907183.65 0.0273 0.0158  
 Mercury -48265-09-30 06:13 J -15907095.38 -15907095.24 -15907095.10 0.0274 0.0063  
 Mercury -48265-12-27 18:42 J -15907006.86 -15907006.72 -15907006.58 0.0274 0.0030  
 Mercury -48264-03-26 06:57 J -15906918.33 -15906918.21 -15906918.08 0.0275 0.0123  
 Mercury -48264-06-22 19:11 J -15906829.78 -15906829.70 -15906829.61 0.0276 0.0214  
 Earth -48264-09-01 04:04 J -15906759.56 -15906759.33 -15906759.09 0.0276 0.0075  
 Moon -48264-09-01 04:47 J -15906759.52 -15906759.30 -15906759.08 0.0276 0.0088 \*  
 Earth -48263-09-13 23:01 J -15906381.67 -15906381.54 -15906381.40 0.0279 0.0228  
 Moon -48263-09-14 02:37 J -15906381.53 -15906381.39 -15906381.23 0.0279 0.0219 \*  
 Venus -48260-09-22 21:06 J -15905276.83 -15905276.62 -15905276.42 0.0286 0.0026  
 Venus -48259-05-10 08:09 J -15905047.18 -15905047.16 -15905047.12 0.0288 0.0284  
 Mercury -48251-07-26 14:09 J -15902048.03 -15902047.91 -15902047.78 0.0286 0.0185  
 Mercury -48251-10-23 09:35 J -15901959.26 -15901959.10 -15901958.93 0.0285 0.0061  
 Mercury -48250-01-20 05:16 J -15901870.44 -15901870.28 -15901870.11 0.0285 0.0066  
 Earth -48250-02-21 09:06 J -15901838.26 -15901838.12 -15901837.98 0.0284 0.0233  
 Moon -48250-02-21 11:59 J -15901838.15 -15901838.00 -15901837.85 0.0284 0.0225 \*  
 Mercury -48250-04-19 01:11 J -15901781.56 -15901781.45 -15901781.31 0.0284 0.0195  
 Moon -48249-03-05 20:09 J -15901459.89 -15901459.66 -15901459.41 0.0282 0.0090  
 Earth -48249-03-05 21:21 J -15901459.84 -15901459.61 -15901459.37 0.0282 0.0092 \*  
 Venus -48246-07-22 23:45 J -15900225.70 -15900225.51 -15900225.32 0.0273 0.0133  
 Venus -48245-03-08 12:13 J -15899996.16 -15899995.99 -15899995.80 0.0272 0.0149  
 Mars -48240-12-05 09:35 J -15897898.42 -15897898.10 -15897897.77 0.0268 0.0018  
 Mercury -48236-11-20 18:28 J -15896451.83 -15896451.73 -15896451.63 0.0274 0.0192  
 Mercury -48235-02-17 07:11 J -15896363.33 -15896363.20 -15896363.06 0.0274 0.0098  
 Mercury -48235-05-16 19:54 J -15896274.81 -15896274.67 -15896274.53 0.0275 0.0006  
 Mercury -48235-08-13 08:09 J -15896186.29 -15896186.16 -15896186.02 0.0276 0.0090

Moon -48235-08-26 17:16 J -15896172.91 -15896172.78 -15896172.62 0.0276 0.0226  
 Earth -48235-08-26 17:59 J -15896172.91 -15896172.75 -15896172.60 0.0276 0.0212 \*  
 Mercury -48235-11-09 20:23 J -15896097.75 -15896097.65 -15896097.54 0.0276 0.0183  
 Mercury -48234-02-06 08:38 J -15896009.16 -15896009.14 -15896009.12 0.0277 0.0273  
 Moon -48234-09-08 07:40 J -15895795.41 -15895795.18 -15895794.94 0.0278 0.0077  
 Earth -48234-09-08 11:30 J -15895795.25 -15895795.02 -15895794.78 0.0278 0.0087 \*  
 Venus -48230-04-05 00:28 J -15894490.69 -15894490.48 -15894490.28 0.0287 0.0013  
 Mars -48225-01-01 20:23 J -15892757.82 -15892757.65 -15892757.45 0.0292 0.0209  
 Mercury -48222-12-13 14:23 J -15891316.00 -15891315.90 -15891315.79 0.0286 0.0220  
 Mercury -48221-03-11 09:50 J -15891227.25 -15891227.09 -15891226.93 0.0285 0.0096  
 Mercury -48221-06-08 05:30 J -15891138.44 -15891138.27 -15891138.10 0.0285 0.0031  
 Mercury -48221-09-05 01:26 J -15891049.58 -15891049.44 -15891049.29 0.0284 0.0158  
 Earth -48220-02-28 09:35 J -15890873.35 -15890873.10 -15890872.86 0.0283 0.0053  
 Moon -48220-02-28 10:33 J -15890873.29 -15890873.06 -15890872.82 0.0283 0.0052 \*  
 Earth -48219-03-13 19:40 J -15890494.74 -15890494.68 -15890494.59 0.0280 0.0267  
 Moon -48219-03-13 23:16 J -15890494.61 -15890494.53 -15890494.43 0.0280 0.0261 \*  
 Venus -48216-02-01 07:11 J -15889439.40 -15889439.20 -15889438.99 0.0274 0.0085  
 Venus -48216-09-18 19:40 J -15889209.82 -15889209.68 -15889209.52 0.0272 0.0196  
 Mercury -48206-04-09 20:38 J -15885719.72 -15885719.64 -15885719.55 0.0273 0.0218  
 Mercury -48206-07-07 09:21 J -15885631.23 -15885631.11 -15885630.98 0.0274 0.0124  
 Mercury -48206-10-03 22:04 J -15885542.72 -15885542.58 -15885542.44 0.0274 0.0029  
 Mercury -48206-12-31 10:33 J -15885454.20 -15885454.06 -15885453.92 0.0275 0.0064  
 Mercury -48205-03-28 22:47 J -15885365.66 -15885365.55 -15885365.43 0.0275 0.0156  
 Mercury -48205-06-25 11:02 J -15885277.10 -15885277.04 -15885276.98 0.0276 0.0247  
 Earth -48205-09-02 05:45 J -15885208.50 -15885208.26 -15885208.01 0.0276 0.0049  
 Moon -48205-09-02 09:21 J -15885208.35 -15885208.11 -15885207.87 0.0276 0.0062 \*  
 Earth -48204-09-15 00:42 J -15884830.56 -15884830.47 -15884830.37 0.0279 0.0254  
 Moon -48204-09-15 01:54 J -15884830.52 -15884830.42 -15884830.29 0.0279 0.0248 \*  
 Venus -48201-02-28 16:33 J -15883933.89 -15883933.81 -15883933.71 0.0285 0.0254  
 Venus -48201-10-15 03:21 J -15883704.56 -15883704.36 -15883704.16 0.0286 0.0050

Mars -48195-02-17 22:04 J -15881752.82 -15881752.58 -15881752.33 0.0291 0.0114  
 Mercury -48192-05-01 11:59 J -15880584.05 -15880584.00 -15880583.95 0.0286 0.0271  
 Mercury -48192-07-29 06:57 J -15880495.35 -15880495.21 -15880495.06 0.0286 0.0148  
 Mercury -48192-10-26 02:38 J -15880406.56 -15880406.39 -15880406.22 0.0285 0.0023  
 Mercury -48191-01-22 22:18 J -15880317.73 -15880317.57 -15880317.41 0.0285 0.0104  
 Moon -48191-02-22 05:45 J -15880287.42 -15880287.26 -15880287.08 0.0284 0.0208  
 Earth -48191-02-22 08:09 J -15880287.32 -15880287.16 -15880286.99 0.0284 0.0210 \*  
 Mercury -48191-04-21 18:28 J -15880228.82 -15880228.73 -15880228.63 0.0284 0.0233  
 Moon -48190-03-07 16:33 J -15879909.03 -15879908.81 -15879908.58 0.0282 0.0110  
 Earth -48190-03-07 20:23 J -15879908.87 -15879908.65 -15879908.42 0.0282 0.0116 \*  
 Venus -48187-08-14 05:59 J -15878653.46 -15878653.25 -15878653.04 0.0273 0.0062  
 Venus -48186-03-31 18:28 J -15878423.85 -15878423.73 -15878423.59 0.0272 0.0218  
 Mercury -48177-08-26 21:21 J -15874987.66 -15874987.61 -15874987.56 0.0273 0.0254  
 Mercury -48177-11-23 10:18 J -15874899.19 -15874899.07 -15874898.95 0.0274 0.0159  
 Mercury -48176-02-19 23:02 J -15874810.68 -15874810.54 -15874810.40 0.0274 0.0064  
 Mercury -48176-05-19 11:30 J -15874722.16 -15874722.02 -15874721.88 0.0275 0.0030  
 Mercury -48176-08-15 23:45 J -15874633.63 -15874633.51 -15874633.38 0.0275 0.0123  
 Moon -48176-08-27 14:52 J -15874622.03 -15874621.88 -15874621.70 0.0276 0.0204  
 Earth -48176-08-27 18:42 J -15874621.90 -15874621.72 -15874621.54 0.0276 0.0188 \*  
 Mercury -48176-11-12 11:59 J -15874545.08 -15874545.00 -15874544.91 0.0276 0.0214  
 Moon -48175-09-09 10:47 J -15874244.26 -15874244.05 -15874243.82 0.0278 0.0104  
 Earth -48175-09-09 11:59 J -15874244.22 -15874244.00 -15874243.77 0.0278 0.0112 \*  
 Venus -48172-09-09 18:42 J -15873147.84 -15873147.72 -15873147.58 0.0286 0.0219  
 Venus -48171-04-27 05:45 J -15872918.46 -15872918.26 -15872918.06 0.0287 0.0087  
 Mercury -48163-12-16 06:57 J -15869763.34 -15869763.21 -15869763.08 0.0286 0.0185  
 Mercury -48162-03-15 02:23 J -15869674.57 -15869674.40 -15869674.24 0.0285 0.0060  
 Mercury -48162-06-11 22:04 J -15869585.74 -15869585.58 -15869585.41 0.0285 0.0066  
 Mercury -48162-09-08 17:59 J -15869496.86 -15869496.75 -15869496.62 0.0284 0.0195  
 Earth -48161-03-01 06:57 J -15869322.45 -15869322.21 -15869321.96 0.0283 0.0031  
 Moon -48161-03-01 10:47 J -15869322.29 -15869322.05 -15869321.80 0.0283 0.0034 \*

Moon -48160-03-14 18:42 J -15868943.74 -15868943.72 -15868943.69 0.0280 0.0279  
 Venus -48157-02-24 12:57 J -15867867.18 -15867866.96 -15867866.74 0.0274 0.0016  
 Venus -48157-10-11 01:40 J -15867637.48 -15867637.43 -15867637.38 0.0273 0.0264  
 Mars -48151-05-01 03:35 J -15865609.66 -15865609.35 -15865609.02 0.0268 0.0051  
 Mercury -48147-04-12 12:42 J -15864167.07 -15864166.97 -15864166.86 0.0273 0.0183  
 Mercury -48147-07-10 01:26 J -15864078.57 -15864078.44 -15864078.30 0.0274 0.0089  
 Mercury -48147-10-06 13:54 J -15863990.06 -15863989.92 -15863989.77 0.0274 0.0010  
 Mercury -48146-01-03 02:23 J -15863901.53 -15863901.40 -15863901.27 0.0275 0.0097  
 Mercury -48146-04-01 14:38 J -15863812.99 -15863812.89 -15863812.79 0.0275 0.0189  
 Earth -48146-09-04 07:26 J -15863657.44 -15863657.19 -15863656.95 0.0276 0.0023  
 Moon -48146-09-04 09:06 J -15863657.37 -15863657.12 -15863656.87 0.0276 0.0035 \*  
 Venus -48142-03-22 23:02 J -15862361.70 -15862361.54 -15862361.38 0.0285 0.0179  
 Venus -48142-11-07 09:35 J -15862132.28 -15862132.10 -15862131.91 0.0286 0.0125  
 Mars -48137-05-26 14:52 J -15860470.07 -15860469.88 -15860469.69 0.0291 0.0207  
 Mercury -48133-05-04 04:33 J -15859031.40 -15859031.31 -15859031.21 0.0286 0.0234  
 Mercury -48133-07-31 23:45 J -15858942.66 -15858942.51 -15858942.35 0.0286 0.0111  
 Mercury -48133-10-28 19:26 J -15858853.86 -15858853.69 -15858853.52 0.0285 0.0015  
 Mercury -48132-01-25 15:06 J -15858765.01 -15858764.87 -15858764.71 0.0285 0.0143  
 Moon -48132-02-23 03:21 J -15858736.54 -15858736.36 -15858736.18 0.0284 0.0191  
 Earth -48132-02-23 06:42 J -15858736.40 -15858736.22 -15858736.03 0.0284 0.0187 \*  
 Mercury -48132-04-24 11:30 J -15858676.06 -15858676.02 -15858675.97 0.0284 0.0271  
 Moon -48131-03-08 18:14 J -15858357.95 -15858357.74 -15858357.52 0.0282 0.0130  
 Earth -48131-03-08 18:42 J -15858357.93 -15858357.72 -15858357.50 0.0282 0.0139 \*  
 Venus -48128-09-05 11:45 J -15857081.22 -15857081.01 -15857080.79 0.0273 0.0009  
 Mercury -48118-08-30 13:26 J -15853435.03 -15853434.94 -15853434.86 0.0273 0.0220  
 Mercury -48118-11-27 02:09 J -15853346.54 -15853346.41 -15853346.28 0.0274 0.0125  
 Mercury -48117-02-23 14:52 J -15853258.02 -15853257.88 -15853257.74 0.0274 0.0031  
 Mercury -48117-05-22 03:21 J -15853169.50 -15853169.36 -15853169.23 0.0275 0.0062  
 Mercury -48117-08-18 15:35 J -15853080.97 -15853080.85 -15853080.74 0.0276 0.0154  
 Moon -48117-08-28 17:45 J -15853070.93 -15853070.76 -15853070.57 0.0276 0.0178

Earth -48117-08-28 19:26 J -15853070.88 -15853070.69 -15853070.49 0.0276 0.0163 \*  
 Mercury -48117-11-15 03:35 J -15852992.40 -15852992.35 -15852992.28 0.0276 0.0246  
 Earth -48116-09-10 12:57 J -15852693.17 -15852692.96 -15852692.75 0.0278 0.0137  
 Moon -48116-09-10 15:35 J -15852693.05 -15852692.85 -15852692.63 0.0278 0.0133 \*  
 Venus -48113-10-02 00:57 J -15851575.64 -15851575.46 -15851575.28 0.0286 0.0144  
 Venus -48112-05-19 11:30 J -15851346.18 -15851346.02 -15851345.85 0.0287 0.0161  
 Mars -48107-07-14 03:21 J -15849464.59 -15849464.36 -15849464.12 0.0291 0.0134  
 Mercury -48104-09-21 04:04 J -15848299.37 -15848299.33 -15848299.27 0.0286 0.0273  
 Mercury -48104-12-18 23:30 J -15848210.66 -15848210.52 -15848210.38 0.0286 0.0149  
 Mercury -48103-03-17 18:57 J -15848121.88 -15848121.71 -15848121.54 0.0285 0.0024  
 Mercury -48103-06-14 14:52 J -15848033.04 -15848032.88 -15848032.72 0.0285 0.0103  
 Mercury -48103-09-11 10:47 J -15847944.14 -15847944.05 -15847943.94 0.0284 0.0232  
 Moon -48102-03-03 04:47 J -15847771.56 -15847771.30 -15847771.05 0.0283 0.0016  
 Earth -48102-03-03 04:47 J -15847771.55 -15847771.30 -15847771.05 0.0283 0.0008 \*  
 Venus -48099-08-01 05:02 J -15846524.40 -15846524.29 -15846524.17 0.0275 0.0232  
 Venus -48098-03-18 18:28 J -15846294.94 -15846294.73 -15846294.52 0.0274 0.0052  
 Mars -48093-08-02 23:16 J -15844330.58 -15844330.53 -15844330.45 0.0268 0.0262  
 Mercury -48088-01-16 16:04 J -15842702.90 -15842702.83 -15842702.77 0.0273 0.0242  
 Mercury -48088-04-15 04:47 J -15842614.42 -15842614.30 -15842614.18 0.0273 0.0148  
 Mercury -48088-07-12 17:30 J -15842525.91 -15842525.77 -15842525.63 0.0274 0.0054  
 Mercury -48088-10-09 05:59 J -15842437.39 -15842437.25 -15842437.11 0.0274 0.0040  
 Mercury -48087-01-05 18:14 J -15842348.86 -15842348.74 -15842348.61 0.0275 0.0132  
 Mercury -48087-04-04 06:28 J -15842260.31 -15842260.23 -15842260.15 0.0275 0.0223  
 Moon -48087-09-05 07:11 J -15842106.45 -15842106.20 -15842105.95 0.0276 0.0006  
 Earth -48087-09-05 09:50 J -15842106.33 -15842106.09 -15842105.84 0.0276 0.0005 \*  
 Venus -48083-04-14 06:14 J -15840789.43 -15840789.24 -15840789.05 0.0285 0.0101  
 Venus -48083-11-29 16:33 J -15840559.95 -15840559.81 -15840559.66 0.0286 0.0202  
 Mercury -48074-05-07 21:21 J -15837478.73 -15837478.61 -15837478.49 0.0286 0.0197  
 Mercury -48074-08-04 16:47 J -15837389.96 -15837389.80 -15837389.64 0.0286 0.0073  
 Mercury -48074-11-01 12:28 J -15837301.15 -15837300.98 -15837300.82 0.0285 0.0054



Mercury -48073-01-29 08:23 J -15837212.28 -15837212.15 -15837212.02 0.0284 0.0182

Earth -48073-02-25 05:45 J -15837185.46 -15837185.26 -15837185.05 0.0284 0.0162

Moon -48073-02-25 06:14 J -15837185.42 -15837185.24 -15837185.04 0.0284 0.0170 \*

Earth -48072-03-09 17:45 J -15836806.96 -15836806.76 -15836806.56 0.0282 0.0163

Moon -48072-03-09 21:21 J -15836806.81 -15836806.61 -15836806.40 0.0282 0.0150 \*

Venus -48069-02-11 04:18 J -15835738.45 -15835738.32 -15835738.17 0.0275 0.0207

Venus -48069-09-27 17:45 J -15835508.96 -15835508.76 -15835508.55 0.0273 0.0077

Mars -48063-09-23 18:28 J -15833322.04 -15833321.73 -15833321.41 0.0268 0.0068

Mercury -48059-09-02 05:16 J -15831882.38 -15831882.28 -15831882.17 0.0274 0.0185

Mercury -48059-11-29 18:14 J -15831793.88 -15831793.74 -15831793.61 0.0274 0.0090

Mercury -48058-02-26 06:42 J -15831705.36 -15831705.22 -15831705.07 0.0275 0.0008

Mercury -48058-05-25 19:11 J -15831616.83 -15831616.70 -15831616.57 0.0275 0.0097

Mercury -48058-08-22 07:26 J -15831528.29 -15831528.19 -15831528.09 0.0276 0.0188

Earth -48058-08-30 21:35 J -15831519.81 -15831519.60 -15831519.39 0.0276 0.0136

Moon -48058-08-31 00:14 J -15831519.68 -15831519.49 -15831519.28 0.0276 0.0150 \*

Earth -48057-09-11 14:52 J -15831142.06 -15831141.88 -15831141.67 0.0278 0.0166

Moon -48057-09-11 17:59 J -15831141.94 -15831141.75 -15831141.54 0.0278 0.0160 \*

Venus -48054-10-25 07:40 J -15830003.38 -15830003.18 -15830002.98 0.0286 0.0067

Venus -48053-06-10 18:14 J -15829773.85 -15829773.74 -15829773.62 0.0287 0.0237

Mars -48049-10-19 20:23 J -15828181.85 -15828181.65 -15828181.44 0.0291 0.0189

Mercury -48045-09-23 21:06 J -15826746.71 -15826746.62 -15826746.53 0.0286 0.0234

Mercury -48045-12-21 16:18 J -15826657.97 -15826657.82 -15826657.66 0.0285 0.0111

Mercury -48044-03-20 11:59 J -15826569.17 -15826569.00 -15826568.83 0.0285 0.0015

Mercury -48044-06-17 07:40 J -15826480.32 -15826480.18 -15826480.02 0.0284 0.0143

Mercury -48044-09-14 04:04 J -15826391.38 -15826391.33 -15826391.28 0.0284 0.0271

Moon -48043-03-03 23:45 J -15826220.76 -15826220.51 -15826220.26 0.0283 0.0004

Earth -48043-03-04 03:21 J -15826220.60 -15826220.36 -15826220.11 0.0283 0.0018 \*

Venus -48040-08-23 10:47 J -15824952.22 -15824952.05 -15824951.87 0.0275 0.0163

Venus -48039-04-10 00:14 J -15824722.68 -15824722.49 -15824722.29 0.0274 0.0121

Mercury -48029-01-20 08:09 J -15821150.25 -15821150.16 -15821150.06 0.0273 0.0206

Mercury -48029-04-17 21:06 J -15821061.75 -15821061.62 -15821061.49 0.0274 0.0111

Mercury -48029-07-15 09:35 J -15820973.24 -15820973.10 -15820972.95 0.0274 0.0019

Earth -48029-08-24 21:06 J -15820932.67 -15820932.62 -15820932.53 0.0274 0.0264

Mercury -48029-10-11 22:04 J -15820884.71 -15820884.58 -15820884.44 0.0275 0.0076

Mercury -48028-01-08 10:18 J -15820796.17 -15820796.07 -15820795.95 0.0275 0.0168

Mercury -48028-04-06 22:33 J -15820707.60 -15820707.56 -15820707.51 0.0276 0.0258

Moon -48028-09-06 10:04 J -15820555.31 -15820555.08 -15820554.84 0.0277 0.0025

Earth -48028-09-06 13:26 J -15820555.18 -15820554.94 -15820554.70 0.0277 0.0033 \*

Venus -48024-05-06 14:23 J -15819217.11 -15819216.90 -15819216.70 0.0285 0.0022

Venus -48024-12-22 00:28 J -15818987.50 -15818987.48 -15818987.43 0.0286 0.0282

Mars -48019-12-07 07:54 J -15817176.39 -15817176.17 -15817175.93 0.0291 0.0148

Mercury -48015-02-10 19:40 J -15816014.71 -15816014.68 -15816014.63 0.0286 0.0278

Mercury -48015-05-10 14:52 J -15815926.02 -15815925.88 -15815925.74 0.0286 0.0155

Mercury -48015-08-07 10:18 J -15815837.24 -15815837.07 -15815836.90 0.0285 0.0030

Mercury -48015-11-04 05:59 J -15815748.41 -15815748.25 -15815748.09 0.0285 0.0097

Mercury -48014-02-01 01:54 J -15815659.51 -15815659.42 -15815659.30 0.0284 0.0226

Earth -48014-02-26 07:11 J -15815634.41 -15815634.20 -15815633.98 0.0284 0.0135

Moon -48014-02-26 10:47 J -15815634.26 -15815634.05 -15815633.84 0.0284 0.0144 \*

Earth -48013-03-10 18:42 J -15815255.89 -15815255.72 -15815255.53 0.0282 0.0190

Moon -48013-03-10 20:38 J -15815255.83 -15815255.64 -15815255.43 0.0282 0.0175 \*

Venus -48010-03-05 11:30 J -15814166.21 -15814166.02 -15814165.83 0.0275 0.0135

Venus -48010-10-21 00:42 J -15813936.65 -15813936.47 -15813936.28 0.0273 0.0147

Mars -48005-12-26 16:18 J -15812042.95 -15812042.82 -15812042.68 0.0268 0.0243

# 48TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 48th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-48000-06-08 08:52 J	-15810418.19	-15810418.13	-15810418.06	0.0273	0.0242		
Mercury	-48000-09-04 21:50 J	-15810329.71	-15810329.59	-15810329.47	0.0274	0.0147		
Mercury	-48000-12-02 10:33 J	-15810241.20	-15810241.06	-15810240.92	0.0274	0.0053		
Mercury	-47999-02-28 23:02 J	-15810152.68	-15810152.54	-15810152.40	0.0275	0.0040		
Mercury	-47999-05-28 11:16 J	-15810064.15	-15810064.03	-15810063.90	0.0275	0.0133		
Mercury	-47999-08-24 23:30 J	-15809975.59	-15809975.52	-15809975.44	0.0276	0.0224		
Earth	-47999-09-01 01:11 J	-15809968.67	-15809968.45	-15809968.22	0.0276	0.0108		
Moon	-47999-09-01 04:18 J	-15809968.54	-15809968.32	-15809968.09	0.0276	0.0118	*	
Moon	-47998-09-13 17:59 J	-15809590.93	-15809590.75	-15809590.56	0.0278	0.0193		
Earth	-47998-09-13 19:11 J	-15809590.87	-15809590.70	-15809590.52	0.0278	0.0195	*	
Venus	-47995-11-16 16:04 J	-15808431.04	-15808430.83	-15808430.62	0.0286	0.0013		
Mercury	-47986-09-27 14:38 J	-15805194.02	-15805193.89	-15805193.77	0.0286	0.0193		
Mercury	-47986-12-25 09:50 J	-15805105.25	-15805105.09	-15805104.93	0.0285	0.0069		
Earth	-47985-02-20 14:52 J	-15805047.88	-15805047.88	-15805047.88	0.0285	0.0285		
Mercury	-47985-03-23 05:30 J	-15805016.44	-15805016.27	-15805016.10	0.0285	0.0057		
Mercury	-47985-06-20 01:26 J	-15804927.57	-15804927.44	-15804927.31	0.0284	0.0185		
Moon	-47984-03-05 02:52 J	-15804669.62	-15804669.38	-15804669.15	0.0283	0.0032		
Earth	-47984-03-05 04:18 J	-15804669.56	-15804669.32	-15804669.08	0.0283	0.0044	*	
Venus	-47981-09-14 17:45 J	-15803379.96	-15803379.76	-15803379.55	0.0275	0.0092		
Venus	-47980-05-02 06:57 J	-15803150.35	-15803150.21	-15803150.04	0.0274	0.0191		
Mars	-47974-02-17 19:11 J	-15801033.00	-15801032.70	-15801032.40	0.0269	0.0104		
Mercury	-47971-10-26 11:45 J	-15799686.04	-15799686.01	-15799685.96	0.0273	0.0262		
Mercury	-47970-01-23 00:57 J	-15799597.58	-15799597.46	-15799597.35	0.0274	0.0167		
Mercury	-47970-04-21 13:40 J	-15799509.07	-15799508.93	-15799508.79	0.0274	0.0072		
Mercury	-47970-07-19 02:09 J	-15799420.55	-15799420.41	-15799420.27	0.0274	0.0022		
Moon	-47970-08-26 23:30 J	-15799381.61	-15799381.52	-15799381.41	0.0275	0.0247		

Earth -47970-08-27 02:23 J -15799381.52 -15799381.40 -15799381.27 0.0275 0.0234 \*  
 Mercury -47970-10-15 14:38 J -15799332.02 -15799331.89 -15799331.76 0.0275 0.0114  
 Mercury -47969-01-12 02:52 J -15799243.47 -15799243.38 -15799243.29 0.0275 0.0205  
 Earth -47969-09-07 18:42 J -15799003.95 -15799003.72 -15799003.47 0.0277 0.0065  
 Moon -47969-09-07 19:54 J -15799003.90 -15799003.67 -15799003.43 0.0277 0.0060 \*  
 Venus -47966-10-12 13:40 J -15797874.03 -15797873.93 -15797873.81 0.0284 0.0238  
 Venus -47965-05-28 23:45 J -15797644.71 -15797644.51 -15797644.31 0.0285 0.0061  
 Mars -47960-03-15 11:30 J -15795893.24 -15795893.02 -15795892.80 0.0291 0.0162  
 Mercury -47956-02-13 13:54 J -15794462.01 -15794461.92 -15794461.82 0.0286 0.0232  
 Mercury -47956-05-13 09:06 J -15794373.28 -15794373.12 -15794372.97 0.0286 0.0109  
 Mercury -47956-08-10 04:33 J -15794284.48 -15794284.31 -15794284.14 0.0285 0.0017  
 Mercury -47956-11-07 00:28 J -15794195.63 -15794195.48 -15794195.33 0.0285 0.0144  
 Mercury -47955-02-03 20:38 J -15794106.68 -15794106.64 -15794106.59 0.0284 0.0272  
 Earth -47955-02-27 10:47 J -15794083.27 -15794083.05 -15794082.81 0.0284 0.0106  
 Moon -47955-02-27 12:42 J -15794083.20 -15794082.97 -15794082.74 0.0284 0.0114 \*  
 Moon -47954-03-12 19:26 J -15793704.85 -15793704.69 -15793704.51 0.0281 0.0203  
 Earth -47954-03-12 22:04 J -15793704.72 -15793704.58 -15793704.41 0.0281 0.0220 \*  
 Venus -47951-03-27 19:40 J -15792593.88 -15792593.68 -15792593.46 0.0274 0.0061  
 Venus -47951-11-12 09:06 J -15792364.25 -15792364.12 -15792364.00 0.0273 0.0221  
 Mercury -47941-06-11 01:40 J -15788865.53 -15788865.43 -15788865.34 0.0273 0.0202  
 Mercury -47941-09-07 14:23 J -15788777.03 -15788776.90 -15788776.76 0.0274 0.0108  
 Mercury -47941-12-05 03:06 J -15788688.51 -15788688.37 -15788688.23 0.0274 0.0014  
 Mercury -47940-03-03 15:35 J -15788599.99 -15788599.85 -15788599.72 0.0275 0.0079  
 Mercury -47940-05-31 03:50 J -15788511.45 -15788511.34 -15788511.23 0.0275 0.0172  
 Mercury -47940-08-27 16:04 J -15788422.87 -15788422.83 -15788422.79 0.0276 0.0262  
 Moon -47940-09-02 05:16 J -15788417.52 -15788417.28 -15788417.04 0.0276 0.0083  
 Earth -47940-09-02 06:57 J -15788417.44 -15788417.21 -15788416.97 0.0276 0.0077 \*  
 Moon -47939-09-14 21:21 J -15788039.75 -15788039.61 -15788039.47 0.0278 0.0229  
 Earth -47939-09-15 00:57 J -15788039.59 -15788039.46 -15788039.31 0.0278 0.0227 \*  
 Venus -47936-04-23 15:35 J -15787087.99 -15787087.85 -15787087.71 0.0285 0.0204

Venus -47936-12-09 01:40 J -15786858.62 -15786858.43 -15786858.23 0.0286 0.0096

Mars -47930-05-02 22:04 J -15784887.79 -15784887.58 -15784887.36 0.0291 0.0174

Mercury -47927-07-03 13:40 J -15783729.98 -15783729.93 -15783729.87 0.0286 0.0269

Mercury -47927-09-30 08:38 J -15783641.28 -15783641.14 -15783640.99 0.0286 0.0147

Mercury -47927-12-28 04:18 J -15783552.49 -15783552.32 -15783552.16 0.0285 0.0023

Moon -47926-02-21 17:30 J -15783496.85 -15783496.77 -15783496.67 0.0285 0.0263

Earth -47926-02-21 19:11 J -15783496.80 -15783496.70 -15783496.58 0.0285 0.0255 \*

Mercury -47926-03-26 23:59 J -15783463.66 -15783463.50 -15783463.34 0.0284 0.0105

Mercury -47926-06-23 20:09 J -15783374.76 -15783374.66 -15783374.57 0.0284 0.0233

Earth -47925-03-06 08:38 J -15783118.38 -15783118.14 -15783117.91 0.0282 0.0075

Moon -47925-03-06 11:02 J -15783118.27 -15783118.04 -15783117.80 0.0282 0.0061 \*

Venus -47922-10-08 02:09 J -15781807.62 -15781807.41 -15781807.19 0.0274 0.0019

Venus -47921-05-24 15:21 J -15781577.90 -15781577.86 -15781577.79 0.0273 0.0264

Mars -47916-05-22 20:09 J -15779753.86 -15779753.66 -15779753.44 0.0269 0.0203

Mercury -47912-10-29 04:47 J -15778133.38 -15778133.30 -15778133.21 0.0274 0.0221

Mercury -47911-01-25 17:45 J -15778044.89 -15778044.76 -15778044.63 0.0274 0.0126

Mercury -47911-04-24 06:28 J -15777956.37 -15777956.23 -15777956.09 0.0274 0.0032

Mercury -47911-07-21 18:57 J -15777867.85 -15777867.71 -15777867.57 0.0275 0.0062

Earth -47911-08-28 09:06 J -15777830.29 -15777830.12 -15777829.96 0.0275 0.0203

Moon -47911-08-28 10:04 J -15777830.22 -15777830.08 -15777829.93 0.0275 0.0213 \*

Mercury -47911-10-18 07:11 J -15777779.31 -15777779.20 -15777779.08 0.0275 0.0155

Mercury -47910-01-14 19:26 J -15777690.75 -15777690.69 -15777690.62 0.0276 0.0245

Earth -47910-09-10 01:54 J -15777452.64 -15777452.42 -15777452.18 0.0277 0.0098

Moon -47910-09-10 05:45 J -15777452.48 -15777452.26 -15777452.02 0.0277 0.0096 \*

Venus -47907-11-04 00:42 J -15776301.63 -15776301.47 -15776301.29 0.0284 0.0153

Venus -47906-06-21 11:02 J -15776072.22 -15776072.04 -15776071.87 0.0285 0.0148

Mercury -47897-02-17 08:52 J -15772909.26 -15772909.13 -15772909.00 0.0286 0.0181

Mercury -47897-05-16 04:04 J -15772820.49 -15772820.33 -15772820.16 0.0285 0.0057

Mercury -47897-08-12 23:45 J -15772731.67 -15772731.51 -15772731.34 0.0285 0.0069

Mercury -47897-11-09 19:40 J -15772642.80 -15772642.68 -15772642.55 0.0284 0.0196

Moon -47896-02-28 15:21 J -15772532.09 -15772531.86 -15772531.61 0.0284 0.0085  
 Earth -47896-02-28 17:59 J -15772531.98 -15772531.75 -15772531.51 0.0284 0.0072 \*  
 Moon -47895-03-14 01:40 J -15772153.55 -15772153.43 -15772153.29 0.0281 0.0237  
 Earth -47895-03-14 05:02 J -15772153.40 -15772153.29 -15772153.18 0.0281 0.0252 \*  
 Venus -47893-09-01 16:04 J -15771250.88 -15771250.83 -15771250.77 0.0276 0.0266  
 Venus -47892-04-19 05:45 J -15771021.48 -15771021.26 -15771021.04 0.0274 0.0018  
 Mars -47886-07-14 01:26 J -15768744.71 -15768744.44 -15768744.15 0.0269 0.0137  
 Mercury -47882-03-18 05:45 J -15767401.30 -15767401.26 -15767401.21 0.0273 0.0255  
 Mercury -47882-06-14 18:42 J -15767312.83 -15767312.72 -15767312.60 0.0274 0.0160  
 Mercury -47882-09-11 07:40 J -15767224.32 -15767224.18 -15767224.04 0.0274 0.0066  
 Mercury -47882-12-08 20:09 J -15767135.80 -15767135.66 -15767135.52 0.0275 0.0029  
 Mercury -47881-03-06 08:38 J -15767047.27 -15767047.14 -15767047.02 0.0275 0.0121  
 Mercury -47881-06-02 20:52 J -15766958.72 -15766958.63 -15766958.54 0.0276 0.0213  
 Moon -47881-09-03 11:30 J -15766866.25 -15766866.02 -15766865.77 0.0276 0.0048  
 Earth -47881-09-03 15:21 J -15766866.10 -15766865.86 -15766865.62 0.0276 0.0043 \*  
 Moon -47880-09-16 08:52 J -15766488.18 -15766488.13 -15766488.06 0.0279 0.0268  
 Earth -47880-09-16 09:35 J -15766488.17 -15766488.10 -15766488.01 0.0279 0.0262 \*  
 Venus -47877-05-16 02:52 J -15765515.56 -15765515.38 -15765515.19 0.0285 0.0117  
 Venus -47877-12-31 12:57 J -15765286.11 -15765285.96 -15765285.79 0.0286 0.0184  
 Mars -47872-08-09 07:26 J -15763604.42 -15763604.19 -15763603.95 0.0291 0.0131  
 Mercury -47868-07-06 08:23 J -15762177.25 -15762177.15 -15762177.03 0.0286 0.0219  
 Mercury -47868-10-03 03:50 J -15762088.50 -15762088.34 -15762088.18 0.0285 0.0095  
 Mercury -47868-12-30 23:16 J -15761999.70 -15761999.53 -15761999.36 0.0285 0.0031  
 Earth -47867-02-23 02:23 J -15761945.54 -15761945.40 -15761945.24 0.0284 0.0222  
 Moon -47867-02-23 05:02 J -15761945.41 -15761945.29 -15761945.14 0.0284 0.0233 \*  
 Mercury -47867-03-29 19:11 J -15761910.84 -15761910.70 -15761910.56 0.0284 0.0158  
 Earth -47866-03-08 15:21 J -15761567.08 -15761566.86 -15761566.62 0.0282 0.0108  
 Moon -47866-03-08 18:42 J -15761566.95 -15761566.72 -15761566.48 0.0282 0.0094 \*  
 Venus -47863-03-14 22:18 J -15760464.69 -15760464.57 -15760464.44 0.0275 0.0224  
 Venus -47863-10-30 12:14 J -15760235.20 -15760234.99 -15760234.78 0.0274 0.0060

Mercury -47853-08-04 09:06 J -15756669.12 -15756669.12 -15756669.12 0.0274 0.0273  
 Mercury -47853-10-31 22:04 J -15756580.69 -15756580.58 -15756580.47 0.0274 0.0178  
 Mercury -47852-01-28 10:47 J -15756492.18 -15756492.05 -15756491.91 0.0274 0.0084  
 Mercury -47852-04-26 23:30 J -15756403.66 -15756403.52 -15756403.37 0.0275 0.0013  
 Mercury -47852-07-24 11:59 J -15756315.13 -15756315.00 -15756314.87 0.0275 0.0104  
 Earth -47852-08-29 17:16 J -15756278.97 -15756278.78 -15756278.58 0.0275 0.0170  
 Moon -47852-08-29 20:52 J -15756278.81 -15756278.63 -15756278.44 0.0275 0.0181 \*  
 Mercury -47852-10-21 00:14 J -15756226.58 -15756226.49 -15756226.39 0.0276 0.0196  
 Earth -47851-09-11 10:47 J -15755901.25 -15755901.05 -15755900.83 0.0278 0.0133  
 Moon -47851-09-11 11:30 J -15755901.23 -15755901.02 -15755900.79 0.0278 0.0134 \*  
 Venus -47848-11-26 12:57 J -15754729.15 -15754728.96 -15754728.75 0.0285 0.0064  
 Venus -47847-07-13 23:16 J -15754499.64 -15754499.53 -15754499.41 0.0286 0.0237  
 Mars -47842-09-27 08:09 J -15752598.32 -15752598.16 -15752597.98 0.0290 0.0223  
 Mercury -47839-11-23 09:35 J -15751445.18 -15751445.10 -15751445.01 0.0286 0.0247  
 Mercury -47838-02-20 04:47 J -15751356.45 -15751356.30 -15751356.15 0.0285 0.0125  
 Mercury -47838-05-20 00:14 J -15751267.66 -15751267.49 -15751267.32 0.0285 0.0006  
 Mercury -47838-08-16 19:54 J -15751178.82 -15751178.67 -15751178.52 0.0284 0.0127  
 Mercury -47838-11-13 15:50 J -15751089.91 -15751089.84 -15751089.76 0.0284 0.0255  
 Moon -47837-03-02 00:57 J -15750980.69 -15750980.46 -15750980.22 0.0283 0.0050  
 Earth -47837-03-02 04:33 J -15750980.56 -15750980.31 -15750980.07 0.0283 0.0036 \*  
 Moon -47836-03-15 14:52 J -15750601.92 -15750601.88 -15750601.82 0.0281 0.0274  
 Venus -47834-09-25 04:04 J -15749678.48 -15749678.33 -15749678.16 0.0275 0.0182  
 Venus -47833-05-11 17:30 J -15749448.97 -15749448.77 -15749448.56 0.0274 0.0100  
 Mars -47828-10-16 10:47 J -15747465.29 -15747465.05 -15747464.78 0.0269 0.0163  
 Mercury -47823-03-20 23:16 J -15745848.62 -15745848.53 -15745848.44 0.0273 0.0211  
 Mercury -47823-06-17 12:14 J -15745760.12 -15745759.99 -15745759.86 0.0274 0.0116  
 Mercury -47823-09-14 00:57 J -15745671.60 -15745671.46 -15745671.32 0.0274 0.0022  
 Mercury -47823-12-11 13:26 J -15745583.08 -15745582.94 -15745582.80 0.0275 0.0072  
 Mercury -47822-03-10 01:40 J -15745494.54 -15745494.43 -15745494.31 0.0275 0.0165  
 Mercury -47822-06-06 13:54 J -15745405.97 -15745405.92 -15745405.87 0.0276 0.0256

Moon -47822-09-05 23:59 J -15745314.74 -15745314.50 -15745314.26 0.0277 0.0011  
 Earth -47822-09-06 00:57 J -15745314.71 -15745314.46 -15745314.22 0.0277 0.0009 \*  
 Venus -47818-06-08 15:35 J -15743943.06 -15743942.85 -15743942.65 0.0285 0.0027  
 Venus -47817-01-24 01:40 J -15743713.48 -15743713.43 -15743713.36 0.0287 0.0274  
 Mercury -47809-04-11 09:21 J -15740713.12 -15740713.11 -15740713.09 0.0286 0.0284  
 Mercury -47809-07-09 04:18 J -15740624.45 -15740624.32 -15740624.18 0.0286 0.0163  
 Mercury -47809-10-05 23:45 J -15740535.68 -15740535.51 -15740535.34 0.0285 0.0038  
 Mercury -47808-01-02 19:11 J -15740446.85 -15740446.70 -15740446.53 0.0284 0.0089  
 Earth -47808-02-24 12:42 J -15740394.14 -15740393.97 -15740393.77 0.0284 0.0185  
 Moon -47808-02-24 16:04 J -15740394.00 -15740393.83 -15740393.64 0.0284 0.0197 \*  
 Mercury -47808-04-01 15:21 J -15740357.97 -15740357.86 -15740357.75 0.0284 0.0216  
 Moon -47807-03-10 01:11 J -15740015.67 -15740015.45 -15740015.22 0.0282 0.0129  
 Earth -47807-03-10 01:26 J -15740015.64 -15740015.44 -15740015.22 0.0282 0.0145 \*  
 Venus -47804-04-06 10:18 J -15738892.26 -15738892.07 -15738891.88 0.0275 0.0141  
 Venus -47804-11-21 23:45 J -15738662.69 -15738662.51 -15738662.32 0.0274 0.0141  
 Mars -47798-12-08 16:04 J -15736455.05 -15736454.83 -15736454.59 0.0270 0.0190  
 Mercury -47794-08-08 02:38 J -15735116.47 -15735116.39 -15735116.31 0.0274 0.0228  
 Mercury -47794-11-04 15:35 J -15735027.97 -15735027.85 -15735027.72 0.0274 0.0133  
 Mercury -47793-02-01 04:18 J -15734939.46 -15734939.32 -15734939.17 0.0275 0.0039  
 Mercury -47793-04-29 17:02 J -15734850.93 -15734850.79 -15734850.65 0.0275 0.0056  
 Mercury -47793-07-27 05:16 J -15734762.39 -15734762.28 -15734762.16 0.0276 0.0149  
 Earth -47793-08-31 03:35 J -15734727.56 -15734727.35 -15734727.14 0.0276 0.0135  
 Moon -47793-08-31 05:02 J -15734727.50 -15734727.29 -15734727.07 0.0276 0.0145 \*  
 Mercury -47793-10-23 17:30 J -15734673.83 -15734673.77 -15734673.70 0.0276 0.0240  
 Moon -47792-09-12 18:42 J -15734349.91 -15734349.72 -15734349.53 0.0278 0.0173  
 Earth -47792-09-12 21:50 J -15734349.78 -15734349.59 -15734349.40 0.0278 0.0169 \*  
 Venus -47789-05-03 16:18 J -15733385.88 -15733385.82 -15733385.75 0.0284 0.0268  
 Venus -47789-12-19 02:23 J -15733156.60 -15733156.40 -15733156.19 0.0285 0.0029  
 Mars -47783-01-04 02:09 J -15731314.67 -15731314.41 -15731314.15 0.0290 0.0070  
 Mercury -47780-11-26 05:59 J -15729892.37 -15729892.25 -15729892.12 0.0286 0.0188



Mercury -47779-02-23 01:11 J -15729803.61 -15729803.45 -15729803.28 0.0285 0.0065  
 Mercury -47779-05-22 20:38 J -15729714.80 -15729714.64 -15729714.47 0.0285 0.0062  
 Mercury -47779-08-19 16:33 J -15729625.93 -15729625.81 -15729625.68 0.0284 0.0188  
 Earth -47778-03-04 17:02 J -15729429.03 -15729428.79 -15729428.54 0.0283 0.0005  
 Moon -47778-03-04 17:30 J -15729429.00 -15729428.77 -15729428.53 0.0283 0.0013 \*  
 Venus -47775-10-17 17:30 J -15728105.97 -15728105.77 -15728105.56 0.0275 0.0096  
 Venus -47774-06-04 06:28 J -15727876.38 -15727876.23 -15727876.06 0.0274 0.0185  
 Mercury -47765-12-25 03:50 J -15724384.37 -15724384.34 -15724384.29 0.0273 0.0260  
 Mercury -47764-03-23 16:47 J -15724295.91 -15724295.80 -15724295.68 0.0274 0.0165  
 Mercury -47764-06-20 05:45 J -15724207.40 -15724207.26 -15724207.12 0.0274 0.0070  
 Earth -47764-08-25 18:57 J -15724140.73 -15724140.71 -15724140.67 0.0275 0.0272  
 Mercury -47764-09-16 18:28 J -15724118.87 -15724118.73 -15724118.59 0.0275 0.0024  
 Mercury -47764-12-14 06:57 J -15724030.34 -15724030.21 -15724030.08 0.0275 0.0117  
 Mercury -47763-03-12 19:11 J -15723941.79 -15723941.70 -15723941.61 0.0276 0.0209  
 Earth -47763-09-07 11:45 J -15723763.26 -15723763.01 -15723762.77 0.0277 0.0028  
 Moon -47763-09-07 14:23 J -15723763.14 -15723762.90 -15723762.66 0.0277 0.0026 \*  
 Venus -47760-11-13 18:28 J -15722599.84 -15722599.73 -15722599.60 0.0284 0.0233  
 Venus -47759-07-01 04:47 J -15722370.50 -15722370.30 -15722370.10 0.0286 0.0065  
 Mars -47753-02-21 11:16 J -15720309.13 -15720309.03 -15720308.91 0.0290 0.0262  
 Mercury -47750-04-15 05:30 J -15719160.36 -15719160.27 -15719160.17 0.0286 0.0226  
 Mercury -47750-07-13 00:42 J -15719071.63 -15719071.47 -15719071.31 0.0285 0.0103  
 Mercury -47750-10-09 20:09 J -15718982.83 -15718982.66 -15718982.49 0.0285 0.0022  
 Mercury -47749-01-06 15:50 J -15718893.98 -15718893.84 -15718893.69 0.0284 0.0149  
 Moon -47749-02-26 23:59 J -15718842.69 -15718842.50 -15718842.28 0.0284 0.0161  
 Earth -47749-02-27 01:26 J -15718842.65 -15718842.44 -15718842.23 0.0284 0.0147 \*  
 Mercury -47749-04-04 12:14 J -15718805.03 -15718804.99 -15718804.96 0.0284 0.0277  
 Moon -47748-03-11 09:50 J -15718464.28 -15718464.09 -15718463.88 0.0282 0.0165  
 Earth -47748-03-11 13:26 J -15718464.11 -15718463.94 -15718463.74 0.0282 0.0183 \*  
 Venus -47745-04-28 23:30 J -15717319.73 -15717319.52 -15717319.31 0.0275 0.0055  
 Venus -47745-12-14 12:42 J -15717090.08 -15717089.97 -15717089.84 0.0273 0.0225

Mars -47739-03-13 03:21 J -15715175.65 -15715175.36 -15715175.05 0.0269 0.0109  
 Mercury -47735-08-10 20:23 J -15713563.76 -15713563.65 -15713563.55 0.0274 0.0183  
 Mercury -47735-11-07 09:06 J -15713475.25 -15713475.12 -15713474.98 0.0275 0.0088  
 Mercury -47734-02-03 21:50 J -15713386.73 -15713386.59 -15713386.44 0.0275 0.0009  
 Mercury -47734-05-03 10:18 J -15713298.20 -15713298.07 -15713297.93 0.0276 0.0101  
 Mercury -47734-07-30 22:47 J -15713209.65 -15713209.55 -15713209.45 0.0276 0.0193  
 Moon -47734-09-02 11:02 J -15713176.26 -15713176.04 -15713175.80 0.0276 0.0109  
 Earth -47734-09-02 13:54 J -15713176.14 -15713175.92 -15713175.69 0.0276 0.0101 \*  
 Moon -47733-09-14 05:45 J -15712798.41 -15712798.26 -15712798.10 0.0278 0.0210  
 Earth -47733-09-14 08:23 J -15712798.30 -15712798.15 -15712797.97 0.0278 0.0207 \*  
 Venus -47730-05-27 05:30 J -15711813.43 -15711813.27 -15711813.10 0.0284 0.0177  
 Venus -47729-01-11 15:50 J -15711584.02 -15711583.84 -15711583.65 0.0286 0.0121  
 Mercury -47721-09-01 07:54 J -15708428.25 -15708428.17 -15708428.09 0.0286 0.0248  
 Mercury -47721-11-29 02:52 J -15708339.53 -15708339.38 -15708339.23 0.0285 0.0126  
 Mercury -47720-02-25 22:18 J -15708250.74 -15708250.57 -15708250.40 0.0285 0.0005  
 Mercury -47720-05-25 17:45 J -15708161.91 -15708161.76 -15708161.60 0.0284 0.0126  
 Mercury -47720-08-22 13:54 J -15708072.99 -15708072.92 -15708072.84 0.0284 0.0253  
 Earth -47719-03-06 07:26 J -15707877.43 -15707877.19 -15707876.95 0.0283 0.0043  
 Moon -47719-03-06 11:16 J -15707877.27 -15707877.03 -15707876.79 0.0283 0.0027 \*  
 Venus -47716-11-09 07:54 J -15706533.39 -15706533.17 -15706532.95 0.0274 0.0007  
 Venus -47715-06-26 20:52 J -15706303.65 -15706303.63 -15706303.60 0.0273 0.0271  
 Mars -47709-05-03 20:52 J -15704165.76 -15704165.63 -15704165.48 0.0269 0.0242  
 Mercury -47706-12-28 21:50 J -15702831.68 -15702831.59 -15702831.50 0.0273 0.0213  
 Mercury -47705-03-26 10:47 J -15702743.18 -15702743.05 -15702742.92 0.0274 0.0117  
 Mercury -47705-06-22 23:30 J -15702654.66 -15702654.52 -15702654.38 0.0274 0.0023  
 Earth -47705-08-27 05:59 J -15702589.36 -15702589.25 -15702589.11 0.0275 0.0238  
 Moon -47705-08-27 08:52 J -15702589.21 -15702589.13 -15702589.01 0.0275 0.0249 \*  
 Mercury -47705-09-19 11:59 J -15702566.13 -15702566.00 -15702565.86 0.0275 0.0071  
 Mercury -47705-12-17 00:28 J -15702477.59 -15702477.48 -15702477.37 0.0275 0.0163  
 Mercury -47704-03-15 12:42 J -15702389.02 -15702388.97 -15702388.92 0.0276 0.0254

Earth -47704-09-08 23:16 J -15702211.77 -15702211.53 -15702211.29 0.0277 0.0065  
 Moon -47704-09-09 02:38 J -15702211.63 -15702211.39 -15702211.15 0.0277 0.0062 \*  
 Venus -47701-12-06 08:09 J -15701027.33 -15701027.16 -15701026.97 0.0285 0.0141  
 Venus -47700-07-23 18:42 J -15700797.89 -15700797.72 -15700797.55 0.0286 0.0158  
 Mars -47695-05-31 06:42 J -15699025.49 -15699025.22 -15699024.95 0.0291 0.0031  
 Mercury -47691-04-18 01:54 J -15697607.55 -15697607.42 -15697607.28 0.0286 0.0167  
 Mercury -47691-07-15 21:21 J -15697518.77 -15697518.61 -15697518.44 0.0285 0.0042  
 Mercury -47691-10-12 17:02 J -15697429.95 -15697429.79 -15697429.63 0.0285 0.0084  
 Mercury -47690-01-09 12:57 J -15697341.07 -15697340.96 -15697340.85 0.0284 0.0211  
 Moon -47690-02-28 11:16 J -15697291.25 -15697291.03 -15697290.80 0.0284 0.0124  
 Earth -47690-02-28 15:06 J -15697291.10 -15697290.87 -15697290.64 0.0284 0.0108 \*  
 Moon -47689-03-13 00:42 J -15696912.62 -15696912.47 -15696912.30 0.0281 0.0205  
 Earth -47689-03-13 02:38 J -15696912.53 -15696912.39 -15696912.23 0.0281 0.0221 \*  
 Venus -47687-10-04 23:30 J -15695976.60 -15695976.52 -15695976.42 0.0275 0.0250  
 Venus -47686-05-22 13:11 J -15695747.16 -15695746.95 -15695746.73 0.0274 0.0032  
 Mercury -47676-05-17 00:42 J -15692099.53 -15692099.47 -15692099.38 0.0274 0.0233  
 Mercury -47676-08-13 13:54 J -15692011.04 -15692010.92 -15692010.79 0.0275 0.0137  
 Mercury -47676-11-10 02:38 J -15691922.53 -15691922.39 -15691922.24 0.0275 0.0043  
 Mercury -47675-02-06 15:21 J -15691834.00 -15691833.86 -15691833.72 0.0275 0.0052  
 Mercury -47675-05-06 03:50 J -15691745.46 -15691745.34 -15691745.22 0.0276 0.0145  
 Mercury -47675-08-02 16:04 J -15691656.90 -15691656.83 -15691656.76 0.0276 0.0237  
 Moon -47675-09-03 21:06 J -15691624.85 -15691624.62 -15691624.39 0.0277 0.0072  
 Earth -47675-09-04 00:14 J -15691624.72 -15691624.49 -15691624.24 0.0277 0.0067 \*  
 Earth -47674-09-16 19:26 J -15691246.80 -15691246.69 -15691246.56 0.0279 0.0242  
 Moon -47674-09-16 19:54 J -15691246.76 -15691246.67 -15691246.55 0.0279 0.0248 \*  
 Venus -47671-06-18 18:42 J -15690240.92 -15690240.72 -15690240.52 0.0285 0.0086  
 Venus -47670-02-03 05:02 J -15690011.42 -15690011.29 -15690011.15 0.0286 0.0213  
 Mercury -47662-09-05 04:33 J -15686875.43 -15686875.31 -15686875.18 0.0286 0.0187  
 Mercury -47662-12-02 23:45 J -15686786.67 -15686786.51 -15686786.34 0.0285 0.0064  
 Earth -47661-02-23 08:52 J -15686704.23 -15686704.13 -15686704.01 0.0285 0.0251

Moon -47661-02-23 12:14 J -15686704.07 -15686703.99 -15686703.88 0.0285 0.0262 \*  
 Mercury -47661-02-29 19:11 J -15686697.86 -15686697.70 -15686697.53 0.0285 0.0062  
 Mercury -47661-05-28 15:06 J -15686608.99 -15686608.87 -15686608.74 0.0284 0.0189  
 Earth -47660-03-07 21:50 J -15686325.82 -15686325.59 -15686325.35 0.0282 0.0082  
 Moon -47660-03-07 23:45 J -15686325.76 -15686325.51 -15686325.26 0.0282 0.0067 \*  
 Venus -47657-04-16 09:21 J -15685190.25 -15685190.11 -15685189.96 0.0275 0.0198  
 Venus -47657-12-01 22:33 J -15684960.76 -15684960.56 -15684960.35 0.0274 0.0083  
 Mars -47651-08-07 13:26 J -15682886.26 -15682885.94 -15682885.62 0.0269 0.0052  
 Mercury -47647-10-04 02:23 J -15681367.43 -15681367.40 -15681367.35 0.0273 0.0262  
 Mercury -47647-12-31 15:35 J -15681278.96 -15681278.85 -15681278.73 0.0274 0.0166  
 Mercury -47646-03-30 04:18 J -15681190.45 -15681190.32 -15681190.17 0.0274 0.0073  
 Mercury -47646-06-26 17:02 J -15681101.93 -15681101.79 -15681101.64 0.0275 0.0024  
 Earth -47646-08-29 16:47 J -15681037.95 -15681037.80 -15681037.62 0.0275 0.0204  
 Moon -47646-08-29 19:54 J -15681037.82 -15681037.67 -15681037.50 0.0275 0.0212 \*  
 Mercury -47646-09-23 05:30 J -15681013.39 -15681013.27 -15681013.14 0.0275 0.0116  
 Mercury -47646-12-20 17:45 J -15680924.84 -15680924.76 -15680924.66 0.0276 0.0208  
 Moon -47645-09-10 09:21 J -15680660.34 -15680660.11 -15680659.87 0.0277 0.0102  
 Earth -47645-09-10 10:04 J -15680660.30 -15680660.08 -15680659.84 0.0277 0.0101 \*  
 Venus -47642-12-29 21:06 J -15679454.82 -15679454.62 -15679454.41 0.0285 0.0050  
 Venus -47641-08-15 07:40 J -15679225.27 -15679225.18 -15679225.07 0.0286 0.0249  
 Mercury -47632-01-22 03:35 J -15676143.45 -15676143.35 -15676143.25 0.0286 0.0229  
 Mercury -47632-04-20 22:33 J -15676054.71 -15676054.56 -15676054.40 0.0285 0.0106  
 Mercury -47632-07-18 17:59 J -15675965.91 -15675965.75 -15675965.58 0.0285 0.0020  
 Mercury -47632-10-15 13:54 J -15675877.07 -15675876.92 -15675876.77 0.0284 0.0146  
 Mercury -47631-01-12 09:50 J -15675788.12 -15675788.09 -15675788.04 0.0284 0.0274  
 Moon -47631-03-02 02:52 J -15675739.61 -15675739.38 -15675739.15 0.0283 0.0084  
 Earth -47631-03-02 04:18 J -15675739.55 -15675739.32 -15675739.08 0.0283 0.0070 \*  
 Earth -47630-03-15 15:35 J -15675360.94 -15675360.85 -15675360.75 0.0281 0.0258  
 Moon -47630-03-15 18:14 J -15675360.85 -15675360.74 -15675360.62 0.0281 0.0244 \*  
 Venus -47628-10-27 13:40 J -15674404.10 -15674403.93 -15674403.75 0.0275 0.0161

Venus -47627-06-14 03:06 J -15674174.56 -15674174.37 -15674174.17 0.0274 0.0118  
 Mercury -47617-05-19 18:28 J -15670546.83 -15670546.73 -15670546.62 0.0274 0.0188  
 Mercury -47617-08-16 07:26 J -15670458.33 -15670458.19 -15670458.06 0.0275 0.0093  
 Mercury -47617-11-12 20:09 J -15670369.80 -15670369.66 -15670369.52 0.0275 0.0003  
 Mercury -47616-02-09 08:38 J -15670281.27 -15670281.14 -15670281.01 0.0276 0.0096  
 Mercury -47616-05-08 20:52 J -15670192.72 -15670192.63 -15670192.52 0.0276 0.0189  
 Earth -47616-09-05 09:50 J -15670073.33 -15670073.09 -15670072.85 0.0277 0.0033  
 Moon -47616-09-05 10:47 J -15670073.28 -15670073.05 -15670072.81 0.0277 0.0035 \*  
 Earth -47615-09-18 05:02 J -15669695.30 -15669695.29 -15669695.25 0.0279 0.0277  
 Venus -47612-07-11 07:11 J -15668668.41 -15668668.20 -15668667.99 0.0285 0.0004  
 Mars -47607-10-26 06:28 J -15666735.50 -15666735.23 -15666734.97 0.0290 0.0038  
 Mercury -47603-06-11 05:59 J -15665411.32 -15665411.25 -15665411.16 0.0286 0.0250  
 Mercury -47603-09-08 01:11 J -15665322.60 -15665322.45 -15665322.30 0.0285 0.0127  
 Mercury -47603-12-05 20:23 J -15665233.81 -15665233.65 -15665233.48 0.0285 0.0007  
 Earth -47602-02-24 22:33 J -15665152.71 -15665152.56 -15665152.39 0.0284 0.0213  
 Moon -47602-02-25 00:42 J -15665152.62 -15665152.47 -15665152.31 0.0284 0.0223 \*  
 Mercury -47602-03-04 16:04 J -15665144.98 -15665144.83 -15665144.67 0.0284 0.0124  
 Mercury -47602-06-01 11:59 J -15665056.07 -15665056.00 -15665055.91 0.0284 0.0252  
 Moon -47601-03-09 08:52 J -15664774.36 -15664774.13 -15664773.89 0.0282 0.0105  
 Earth -47601-03-09 11:16 J -15664774.25 -15664774.03 -15664773.80 0.0282 0.0120 \*  
 Venus -47598-05-09 23:45 J -15663617.71 -15663617.51 -15663617.31 0.0275 0.0109  
 Venus -47598-12-25 12:42 J -15663388.13 -15663387.97 -15663387.79 0.0274 0.0170  
 Mercury -47588-10-06 20:09 J -15659814.74 -15659814.66 -15659814.57 0.0273 0.0216  
 Mercury -47587-01-03 09:06 J -15659726.24 -15659726.12 -15659725.99 0.0274 0.0121  
 Mercury -47587-04-01 22:04 J -15659637.73 -15659637.58 -15659637.44 0.0274 0.0028  
 Mercury -47587-06-29 10:33 J -15659549.20 -15659549.06 -15659548.92 0.0275 0.0067  
 Moon -47587-08-31 01:54 J -15659486.62 -15659486.42 -15659486.22 0.0275 0.0175  
 Earth -47587-08-31 02:52 J -15659486.56 -15659486.38 -15659486.18 0.0275 0.0171 \*  
 Mercury -47587-09-25 22:47 J -15659460.66 -15659460.55 -15659460.43 0.0275 0.0159  
 Mercury -47587-12-23 11:16 J -15659372.09 -15659372.03 -15659371.98 0.0276 0.0250

Moon -47586-09-12 16:18 J -15659109.02 -15659108.82 -15659108.60 0.0277 0.0140  
 Earth -47586-09-12 20:09 J -15659108.87 -15659108.66 -15659108.44 0.0277 0.0135 \*  
 Venus -47583-06-05 23:16 J -15658111.62 -15658111.53 -15658111.44 0.0284 0.0255  
 Venus -47582-01-21 09:21 J -15657882.31 -15657882.11 -15657881.90 0.0285 0.0040  
 Mercury -47573-01-25 23:30 J -15654590.65 -15654590.52 -15654590.38 0.0286 0.0172  
 Mercury -47573-04-23 18:42 J -15654501.88 -15654501.72 -15654501.55 0.0285 0.0049  
 Mercury -47573-07-21 14:23 J -15654413.06 -15654412.90 -15654412.74 0.0285 0.0078  
 Mercury -47573-10-18 10:18 J -15654324.19 -15654324.07 -15654323.95 0.0284 0.0205  
 Earth -47572-03-03 16:04 J -15654188.08 -15654187.83 -15654187.59 0.0283 0.0033  
 Moon -47572-03-03 18:14 J -15654187.97 -15654187.74 -15654187.50 0.0283 0.0048 \*  
 Moon -47571-03-17 06:28 J -15653809.24 -15653809.23 -15653809.20 0.0281 0.0280  
 Venus -47569-11-19 03:06 J -15652831.58 -15652831.37 -15652831.16 0.0275 0.0075  
 Venus -47568-07-06 16:18 J -15652601.96 -15652601.82 -15652601.67 0.0273 0.0203  
 Mars -47562-01-01 21:21 J -15650596.93 -15650596.61 -15650596.28 0.0269 0.0003  
 Mercury -47558-02-23 22:33 J -15649082.62 -15649082.56 -15649082.49 0.0274 0.0241  
 Mercury -47558-05-23 11:45 J -15648994.13 -15648994.01 -15648993.89 0.0274 0.0145  
 Mercury -47558-08-20 00:28 J -15648905.62 -15648905.48 -15648905.34 0.0275 0.0051  
 Mercury -47558-11-16 13:11 J -15648817.09 -15648816.95 -15648816.81 0.0275 0.0044  
 Mercury -47557-02-13 01:40 J -15648728.55 -15648728.43 -15648728.31 0.0276 0.0137  
 Mercury -47557-05-11 13:54 J -15648639.99 -15648639.92 -15648639.84 0.0276 0.0229  
 Earth -47557-09-06 17:45 J -15648522.01 -15648521.76 -15648521.52 0.0277 0.0005  
 Moon -47557-09-06 21:21 J -15648521.85 -15648521.61 -15648521.36 0.0277 0.0002 \*  
 Venus -47554-12-17 07:26 J -15647325.33 -15647325.19 -15647325.04 0.0284 0.0206  
 Venus -47553-08-02 17:59 J -15647095.94 -15647095.75 -15647095.55 0.0286 0.0090  
 Mars -47548-02-01 16:33 J -15645451.91 -15645451.81 -15645451.69 0.0290 0.0263  
 Mercury -47544-06-14 01:54 J -15643858.54 -15643858.42 -15643858.30 0.0286 0.0194  
 Mercury -47544-09-10 21:06 J -15643769.78 -15643769.62 -15643769.46 0.0285 0.0071  
 Mercury -47544-12-08 16:33 J -15643680.97 -15643680.81 -15643680.64 0.0285 0.0055  
 Moon -47543-02-26 07:54 J -15643601.36 -15643601.17 -15643600.99 0.0284 0.0191  
 Earth -47543-02-26 10:04 J -15643601.27 -15643601.08 -15643600.89 0.0284 0.0177 \*

Mercury -47543-03-07 12:28 J -15643592.11 -15643591.98 -15643591.85 0.0284 0.0182

Moon -47542-03-11 18:57 J -15643222.91 -15643222.71 -15643222.48 0.0282 0.0141

Earth -47542-03-11 22:33 J -15643222.76 -15643222.56 -15643222.35 0.0282 0.0156 \*

Venus -47539-06-01 12:57 J -15642045.17 -15642044.96 -15642044.74 0.0275 0.0023

Venus -47538-01-17 02:09 J -15641815.48 -15641815.41 -15641815.33 0.0274 0.0255

Mercury -47529-07-13 00:28 J -15638350.50 -15638350.48 -15638350.45 0.0273 0.0268

Mercury -47529-10-09 13:26 J -15638262.04 -15638261.94 -15638261.82 0.0273 0.0174

Mercury -47528-01-06 02:23 J -15638173.54 -15638173.40 -15638173.26 0.0274 0.0079

Mercury -47528-04-04 15:06 J -15638085.01 -15638084.87 -15638084.73 0.0274 0.0015

Mercury -47528-07-02 03:35 J -15637996.48 -15637996.35 -15637996.22 0.0275 0.0108

Moon -47528-09-01 07:26 J -15637935.40 -15637935.19 -15637934.98 0.0275 0.0143

Earth -47528-09-01 10:47 J -15637935.25 -15637935.05 -15637934.83 0.0275 0.0140 \*

Mercury -47528-09-28 15:50 J -15637907.93 -15637907.84 -15637907.74 0.0275 0.0200

Moon -47527-09-14 03:21 J -15637557.54 -15637557.36 -15637557.18 0.0277 0.0175

Earth -47527-09-14 04:18 J -15637557.51 -15637557.32 -15637557.12 0.0277 0.0167 \*

Venus -47524-06-28 10:04 J -15636539.24 -15636539.08 -15636538.91 0.0284 0.0170

Venus -47523-02-12 20:09 J -15636309.84 -15636309.66 -15636309.47 0.0285 0.0125

Mars -47518-03-21 21:06 J -15634446.88 -15634446.62 -15634446.36 0.0291 0.0064

Mercury -47515-11-01 00:14 J -15633126.58 -15633126.49 -15633126.40 0.0286 0.0241

Mercury -47514-01-28 19:11 J -15633037.85 -15633037.70 -15633037.55 0.0286 0.0118

Mercury -47514-04-27 14:38 J -15632949.06 -15632948.89 -15632948.72 0.0285 0.0008

Mercury -47514-07-25 10:18 J -15632860.22 -15632860.07 -15632859.92 0.0285 0.0133

Mercury -47514-10-22 06:14 J -15632771.30 -15632771.24 -15632771.17 0.0284 0.0262

Earth -47513-03-05 01:40 J -15632636.67 -15632636.43 -15632636.18 0.0283 0.0003

Moon -47513-03-05 05:16 J -15632636.53 -15632636.28 -15632636.03 0.0283 0.0015 \*

Venus -47510-04-27 01:26 J -15631488.47 -15631488.44 -15631488.40 0.0276 0.0271

Venus -47510-12-12 15:06 J -15631259.08 -15631258.87 -15631258.65 0.0274 0.0010

Mercury -47499-02-26 15:35 J -15627529.95 -15627529.85 -15627529.75 0.0274 0.0200

Mercury -47499-05-26 04:33 J -15627441.44 -15627441.31 -15627441.18 0.0274 0.0105

Mercury -47499-08-22 17:16 J -15627352.92 -15627352.78 -15627352.64 0.0275 0.0011

Earth -47499-08-27 07:11 J -15627348.22 -15627348.20 -15627348.17 0.0275 0.0273  
 Mercury -47499-11-19 05:45 J -15627264.39 -15627264.26 -15627264.12 0.0275 0.0083  
 Mercury -47498-02-15 18:14 J -15627175.85 -15627175.74 -15627175.63 0.0276 0.0175  
 Mercury -47498-05-15 06:28 J -15627087.26 -15627087.23 -15627087.20 0.0276 0.0266  
 Earth -47498-09-08 23:45 J -15626970.76 -15626970.51 -15626970.27 0.0277 0.0029  
 Moon -47498-09-09 00:57 J -15626970.72 -15626970.46 -15626970.21 0.0277 0.0032 \*  
 Venus -47494-01-08 17:02 J -15625752.98 -15625752.79 -15625752.60 0.0285 0.0124  
 Venus -47494-08-26 03:35 J -15625523.51 -15625523.35 -15625523.19 0.0286 0.0172  
 Mercury -47485-03-20 02:09 J -15622394.47 -15622394.41 -15622394.35 0.0286 0.0265  
 Mercury -47485-06-16 20:52 J -15622305.77 -15622305.63 -15622305.48 0.0286 0.0144  
 Mercury -47485-09-13 16:18 J -15622216.99 -15622216.82 -15622216.65 0.0285 0.0019  
 Mercury -47485-12-11 11:59 J -15622128.16 -15622128.00 -15622127.84 0.0285 0.0108  
 Moon -47484-02-27 14:38 J -15622050.08 -15622049.89 -15622049.68 0.0284 0.0161  
 Earth -47484-02-27 18:14 J -15622049.95 -15622049.74 -15622049.53 0.0284 0.0145 \*  
 Mercury -47484-03-10 07:54 J -15622039.26 -15622039.17 -15622039.07 0.0284 0.0236  
 Moon -47483-03-13 06:28 J -15621671.41 -15621671.23 -15621671.04 0.0282 0.0175  
 Earth -47483-03-13 06:42 J -15621671.39 -15621671.22 -15621671.03 0.0282 0.0189 \*  
 Venus -47481-11-06 11:02 J -15620702.16 -15620702.04 -15620701.90 0.0276 0.0219  
 Venus -47480-06-24 00:57 J -15620472.68 -15620472.46 -15620472.25 0.0275 0.0061  
 Mars -47474-05-29 05:45 J -15618307.58 -15618307.26 -15618306.94 0.0269 0.0048  
 Mercury -47470-07-16 17:30 J -15616797.84 -15616797.77 -15616797.69 0.0273 0.0227  
 Mercury -47470-10-13 06:28 J -15616709.35 -15616709.23 -15616709.10 0.0273 0.0132  
 Mercury -47469-01-09 19:26 J -15616620.84 -15616620.69 -15616620.55 0.0274 0.0039  
 Mercury -47469-04-07 07:54 J -15616532.31 -15616532.17 -15616532.03 0.0274 0.0055  
 Mercury -47469-07-04 20:09 J -15616443.77 -15616443.66 -15616443.54 0.0275 0.0147  
 Moon -47469-09-02 15:35 J -15616384.05 -15616383.85 -15616383.62 0.0275 0.0113  
 Earth -47469-09-02 17:16 J -15616384.00 -15616383.78 -15616383.55 0.0275 0.0110 \*  
 Mercury -47469-10-01 08:23 J -15616355.21 -15616355.15 -15616355.08 0.0275 0.0238  
 Earth -47468-09-15 10:04 J -15616006.24 -15616006.08 -15616005.90 0.0277 0.0197  
 Moon -47468-09-15 13:11 J -15616006.10 -15616005.95 -15616005.78 0.0277 0.0208 \*



Venus -47465-07-20 19:26 J -15614966.88 -15614966.69 -15614966.49 0.0284 0.0088  
 Venus -47464-03-07 05:16 J -15614737.41 -15614737.28 -15614737.12 0.0286 0.0207  
 Mars -47460-06-28 00:14 J -15613163.61 -15613163.49 -15613163.33 0.0291 0.0247  
 Mercury -47456-11-03 18:42 J -15611573.84 -15611573.72 -15611573.59 0.0286 0.0192  
 Mercury -47455-01-31 13:54 J -15611485.08 -15611484.92 -15611484.75 0.0286 0.0069  
 Mercury -47455-04-30 09:35 J -15611396.27 -15611396.10 -15611395.94 0.0285 0.0057  
 Mercury -47455-07-28 05:16 J -15611307.40 -15611307.28 -15611307.15 0.0285 0.0185  
 Moon -47454-03-07 08:09 J -15611085.41 -15611085.16 -15611084.90 0.0283 0.0018  
 Earth -47454-03-07 08:23 J -15611085.39 -15611085.15 -15611084.90 0.0283 0.0033 \*  
 Venus -47451-05-19 11:59 J -15609916.15 -15609916.00 -15609915.84 0.0276 0.0191  
 Venus -47450-01-04 01:54 J -15609686.62 -15609686.42 -15609686.21 0.0274 0.0088  
 Mercury -47441-12-02 18:57 J -15606065.75 -15606065.71 -15606065.66 0.0273 0.0258  
 Mercury -47440-03-01 08:09 J -15605977.27 -15605977.16 -15605977.04 0.0274 0.0163  
 Mercury -47440-05-28 20:52 J -15605888.76 -15605888.63 -15605888.49 0.0274 0.0069  
 Mercury -47440-08-25 09:35 J -15605800.24 -15605800.10 -15605799.96 0.0275 0.0026  
 Earth -47440-08-28 11:16 J -15605797.14 -15605797.03 -15605796.92 0.0275 0.0246  
 Moon -47440-08-28 12:57 J -15605797.05 -15605796.96 -15605796.86 0.0275 0.0253 \*  
 Mercury -47440-11-21 22:04 J -15605711.70 -15605711.58 -15605711.45 0.0275 0.0119  
 Mercury -47439-02-18 10:18 J -15605623.15 -15605623.07 -15605622.97 0.0276 0.0211  
 Moon -47439-09-10 00:28 J -15605419.72 -15605419.48 -15605419.23 0.0277 0.0064  
 Earth -47439-09-10 03:35 J -15605419.59 -15605419.35 -15605419.11 0.0277 0.0057 \*  
 Venus -47435-01-31 00:57 J -15604180.67 -15604180.46 -15604180.26 0.0285 0.0046  
 Venus -47435-09-17 11:16 J -15603951.12 -15603951.03 -15603950.93 0.0286 0.0250  
 Mars -47430-08-16 00:28 J -15602157.73 -15602157.48 -15602157.23 0.0291 0.0110  
 Mercury -47426-03-23 20:09 J -15600841.76 -15600841.66 -15600841.55 0.0286 0.0220  
 Mercury -47426-06-20 15:21 J -15600753.01 -15600752.86 -15600752.70 0.0286 0.0097  
 Mercury -47426-09-17 10:47 J -15600664.22 -15600664.05 -15600663.88 0.0285 0.0029  
 Mercury -47426-12-15 06:42 J -15600575.37 -15600575.22 -15600575.08 0.0285 0.0156  
 Earth -47425-02-29 23:16 J -15600498.75 -15600498.53 -15600498.30 0.0284 0.0115  
 Moon -47425-02-29 23:45 J -15600498.71 -15600498.51 -15600498.29 0.0284 0.0132 \*

Earth -47424-03-14 12:14 J -15600120.14 -15600119.99 -15600119.83 0.0282 0.0219  
 Moon -47424-03-14 15:35 J -15600120.01 -15600119.85 -15600119.67 0.0282 0.0204 \*  
 Venus -47422-11-29 21:21 J -15599129.79 -15599129.61 -15599129.42 0.0276 0.0140  
 Venus -47421-07-16 11:02 J -15598900.23 -15598900.04 -15598899.85 0.0274 0.0139  
 Mars -47416-08-31 11:30 J -15597028.08 -15597028.02 -15597027.92 0.0269 0.0260  
 Mercury -47411-07-19 10:04 J -15595245.18 -15595245.08 -15595244.97 0.0273 0.0189  
 Mercury -47411-10-15 23:02 J -15595156.67 -15595156.54 -15595156.40 0.0273 0.0094  
 Mercury -47410-01-12 11:45 J -15595068.15 -15595068.01 -15595067.87 0.0274 0.0004  
 Mercury -47410-04-11 00:14 J -15594979.62 -15594979.49 -15594979.35 0.0274 0.0092  
 Mercury -47410-07-08 12:28 J -15594891.08 -15594890.98 -15594890.87 0.0275 0.0184  
 Earth -47410-09-04 21:35 J -15594832.83 -15594832.60 -15594832.36 0.0275 0.0081  
 Moon -47410-09-05 00:28 J -15594832.71 -15594832.48 -15594832.26 0.0275 0.0081 \*  
 Mercury -47410-10-05 00:42 J -15594802.48 -15594802.47 -15594802.46 0.0275 0.0274  
 Jupiter -47409-02-03 09:21 J -15594681.37 -15594681.11 -15594680.83 0.0276 0.0216  
 Earth -47409-09-16 14:09 J -15594455.03 -15594454.91 -15594454.75 0.0277 0.0226  
 Moon -47409-09-16 17:02 J -15594454.91 -15594454.79 -15594454.65 0.0277 0.0237 \*  
 Venus -47406-08-13 03:35 J -15593394.56 -15593394.35 -15593394.14 0.0284 0.0010  
 Venus -47405-03-29 13:26 J -15593164.95 -15593164.94 -15593164.91 0.0286 0.0284  
 Mercury -47397-08-09 17:45 J -15590109.80 -15590109.76 -15590109.70 0.0287 0.0270  
 Mercury -47397-11-06 12:42 J -15590021.11 -15590020.97 -15590020.82 0.0286 0.0148  
 Mercury -47396-02-03 08:09 J -15589932.33 -15589932.16 -15589931.99 0.0286 0.0024  
 Earth -47396-02-22 21:50 J -15589912.64 -15589912.59 -15589912.52 0.0285 0.0276  
 Mercury -47396-05-03 03:35 J -15589843.50 -15589843.35 -15589843.19 0.0285 0.0103  
 Mercury -47396-07-30 23:30 J -15589754.61 -15589754.52 -15589754.41 0.0284 0.0231  
 Moon -47395-03-08 08:23 J -15589534.39 -15589534.15 -15589533.90 0.0283 0.0046  
 Earth -47395-03-08 12:14 J -15589534.23 -15589533.99 -15589533.75 0.0283 0.0062 \*  
 Venus -47392-06-10 21:06 J -15588343.81 -15588343.62 -15588343.42 0.0275 0.0115  
 Venus -47391-01-26 11:02 J -15588114.21 -15588114.04 -15588113.87 0.0274 0.0164  
 Mars -47386-10-22 11:45 J -15586019.32 -15586019.01 -15586018.69 0.0269 0.0078  
 Mercury -47382-12-06 11:30 J -15584513.11 -15584513.02 -15584512.94 0.0273 0.0221

Mercury -47381-03-04 00:14 J -15584424.61 -15584424.49 -15584424.36 0.0274 0.0127  
 Mercury -47381-05-31 13:11 J -15584336.09 -15584335.95 -15584335.81 0.0274 0.0032  
 Mercury -47381-08-28 01:40 J -15584247.57 -15584247.43 -15584247.29 0.0275 0.0061  
 Moon -47381-08-29 10:47 J -15584246.19 -15584246.05 -15584245.90 0.0275 0.0223  
 Earth -47381-08-29 13:40 J -15584246.06 -15584245.93 -15584245.77 0.0275 0.0220 \*  
 Mercury -47381-11-24 14:09 J -15584159.03 -15584158.91 -15584158.79 0.0275 0.0153  
 Mercury -47380-02-21 02:09 J -15584070.46 -15584070.41 -15584070.34 0.0276 0.0245  
 Moon -47380-09-11 02:52 J -15583868.61 -15583868.38 -15583868.15 0.0277 0.0091  
 Earth -47380-09-11 05:45 J -15583868.49 -15583868.26 -15583868.02 0.0277 0.0084 \*  
 Venus -47377-07-07 21:35 J -15582837.67 -15582837.60 -15582837.52 0.0284 0.0262  
 Venus -47376-02-22 07:40 J -15582608.39 -15582608.18 -15582607.98 0.0285 0.0029  
 Mars -47372-11-21 19:26 J -15580874.86 -15580874.69 -15580874.50 0.0291 0.0212  
 Mercury -47367-03-26 13:40 J -15579289.06 -15579288.93 -15579288.80 0.0286 0.0179  
 Mercury -47367-06-23 08:52 J -15579200.29 -15579200.13 -15579199.96 0.0286 0.0055  
 Mercury -47367-09-20 04:33 J -15579111.48 -15579111.31 -15579111.15 0.0285 0.0072  
 Mercury -47367-12-18 00:14 J -15579022.60 -15579022.49 -15579022.36 0.0285 0.0200  
 Earth -47366-03-03 01:11 J -15578947.68 -15578947.45 -15578947.21 0.0284 0.0087  
 Moon -47366-03-03 05:02 J -15578947.52 -15578947.29 -15578947.06 0.0284 0.0104 \*  
 Earth -47365-03-15 14:23 J -15578569.02 -15578568.90 -15578568.78 0.0282 0.0246  
 Moon -47365-03-15 16:33 J -15578568.95 -15578568.81 -15578568.67 0.0282 0.0232 \*  
 Venus -47363-12-22 05:45 J -15577557.47 -15577557.26 -15577557.05 0.0276 0.0065  
 Venus -47362-08-08 19:26 J -15577327.82 -15577327.69 -15577327.55 0.0274 0.0213  
 Mercury -47352-04-24 13:26 J -15573780.99 -15573780.94 -15573780.88 0.0272 0.0247  
 Mercury -47352-07-22 02:23 J -15573692.51 -15573692.40 -15573692.27 0.0273 0.0153  
 Mercury -47352-10-18 15:21 J -15573604.00 -15573603.86 -15573603.72 0.0273 0.0058  
 Mercury -47351-01-15 03:50 J -15573515.48 -15573515.34 -15573515.20 0.0274 0.0035  
 Mercury -47351-04-13 16:18 J -15573426.94 -15573426.82 -15573426.69 0.0274 0.0127  
 Mercury -47351-07-11 04:33 J -15573338.39 -15573338.31 -15573338.22 0.0275 0.0217  
 Earth -47351-09-06 00:28 J -15573281.72 -15573281.48 -15573281.24 0.0275 0.0054  
 Moon -47351-09-06 03:50 J -15573281.59 -15573281.34 -15573281.10 0.0275 0.0051 \*

Moon -47350-09-18 15:35 J -15572903.92 -15572903.85 -15572903.77 0.0277 0.0265  
 Earth -47350-09-18 16:47 J -15572903.89 -15572903.80 -15572903.69 0.0277 0.0253 \*  
 Venus -47347-01-18 00:28 J -15572051.60 -15572051.48 -15572051.35 0.0283 0.0226  
 Venus -47347-09-04 10:18 J -15571822.27 -15571822.07 -15571821.87 0.0284 0.0064  
 Mars -47341-01-08 20:38 J -15569869.87 -15569869.64 -15569869.38 0.0291 0.0116  
 Mercury -47338-08-13 11:02 J -15568557.13 -15568557.04 -15568556.93 0.0287 0.0230  
 Mercury -47338-11-10 06:14 J -15568468.39 -15568468.24 -15568468.08 0.0286 0.0106  
 Mercury -47337-02-07 01:40 J -15568379.60 -15568379.43 -15568379.26 0.0286 0.0019  
 Moon -47337-02-24 19:54 J -15568361.75 -15568361.67 -15568361.57 0.0285 0.0265  
 Earth -47337-02-24 23:30 J -15568361.63 -15568361.52 -15568361.39 0.0285 0.0249 \*  
 Mercury -47337-05-05 21:21 J -15568290.75 -15568290.61 -15568290.46 0.0285 0.0146  
 Mercury -47337-08-02 17:30 J -15568201.81 -15568201.77 -15568201.73 0.0284 0.0274  
 Moon -47336-03-09 12:42 J -15567983.19 -15567982.97 -15567982.73 0.0283 0.0076  
 Earth -47336-03-09 13:54 J -15567983.15 -15567982.92 -15567982.68 0.0283 0.0089 \*  
 Venus -47333-07-03 05:02 J -15566771.51 -15566771.29 -15566771.08 0.0275 0.0041  
 Venus -47332-02-17 18:42 J -15566541.82 -15566541.72 -15566541.60 0.0274 0.0236  
 Mars -47327-01-24 09:35 J -15564740.24 -15564740.10 -15564739.93 0.0269 0.0237  
 Mercury -47323-12-09 03:21 J -15562960.46 -15562960.36 -15562960.25 0.0273 0.0187  
 Mercury -47322-03-07 16:18 J -15562871.95 -15562871.82 -15562871.68 0.0274 0.0092  
 Mercury -47322-06-04 05:02 J -15562783.43 -15562783.29 -15562783.15 0.0274 0.0002  
 Moon -47322-08-31 11:59 J -15562695.16 -15562695.00 -15562694.82 0.0275 0.0194  
 Earth -47322-08-31 14:52 J -15562695.04 -15562694.88 -15562694.70 0.0275 0.0195 \*  
 Mercury -47322-08-31 17:30 J -15562694.90 -15562694.77 -15562694.64 0.0275 0.0094 \*  
 Mercury -47322-11-28 05:45 J -15562606.36 -15562606.26 -15562606.15 0.0275 0.0186  
 Earth -47321-09-12 06:42 J -15562317.45 -15562317.22 -15562317.00 0.0277 0.0110  
 Moon -47321-09-12 07:40 J -15562317.39 -15562317.18 -15562316.96 0.0277 0.0121 \*  
 Venus -47318-07-31 03:21 J -15561265.50 -15561265.36 -15561265.19 0.0284 0.0190  
 Venus -47317-03-16 13:26 J -15561036.13 -15561035.94 -15561035.74 0.0285 0.0102  
 Mercury -47309-12-30 11:45 J -15557825.07 -15557825.01 -15557824.95 0.0286 0.0263  
 Mercury -47308-03-29 06:42 J -15557736.37 -15557736.22 -15557736.08 0.0286 0.0140

Mercury -47308-06-26 01:54 J -15557647.59 -15557647.42 -15557647.25 0.0286 0.0016

Mercury -47308-09-22 21:35 J -15557558.75 -15557558.60 -15557558.44 0.0285 0.0111

Mercury -47308-12-20 17:30 J -15557469.85 -15557469.77 -15557469.67 0.0285 0.0240

Earth -47307-03-04 00:57 J -15557396.70 -15557396.46 -15557396.22 0.0284 0.0062

Moon -47307-03-04 01:54 J -15557396.66 -15557396.42 -15557396.17 0.0284 0.0077 \*

Moon -47306-03-17 11:02 J -15557018.12 -15557018.04 -15557017.93 0.0282 0.0262

Earth -47306-03-17 13:54 J -15557017.97 -15557017.92 -15557017.84 0.0282 0.0272 \*

Venus -47304-05-28 22:18 J -15556214.58 -15556214.57 -15556214.54 0.0277 0.0275

Venus -47303-01-13 12:42 J -15555985.18 -15555984.97 -15555984.75 0.0276 0.0008

Mars -47297-03-17 09:06 J -15553730.41 -15553730.12 -15553729.82 0.0269 0.0114

Mercury -47293-04-27 05:45 J -15552228.35 -15552228.26 -15552228.17 0.0273 0.0211

Mercury -47293-07-24 18:42 J -15552139.85 -15552139.72 -15552139.59 0.0273 0.0117

Mercury -47293-10-21 07:26 J -15552051.33 -15552051.19 -15552051.05 0.0273 0.0024

Mercury -47292-01-17 19:54 J -15551962.81 -15551962.67 -15551962.53 0.0274 0.0069

Mercury -47292-04-16 08:09 J -15551874.27 -15551874.16 -15551874.04 0.0274 0.0161

Mercury -47292-07-13 20:23 J -15551785.70 -15551785.65 -15551785.59 0.0275 0.0251

Moon -47292-09-07 01:11 J -15551730.70 -15551730.45 -15551730.19 0.0275 0.0019

Earth -47292-09-07 02:38 J -15551730.63 -15551730.39 -15551730.14 0.0275 0.0027 \*

Venus -47288-02-09 07:11 J -15550479.37 -15550479.20 -15550479.02 0.0283 0.0152

Venus -47288-09-26 16:47 J -15550249.98 -15550249.80 -15550249.62 0.0284 0.0137

Mars -47283-04-16 14:38 J -15548587.08 -15548586.89 -15548586.71 0.0291 0.0208

Mercury -47279-08-16 04:04 J -15547004.45 -15547004.33 -15547004.20 0.0286 0.0191

Mercury -47279-11-12 23:16 J -15546915.69 -15546915.53 -15546915.37 0.0286 0.0068

Mercury -47278-02-09 18:42 J -15546826.88 -15546826.72 -15546826.55 0.0285 0.0058

Moon -47278-02-25 22:33 J -15546810.69 -15546810.56 -15546810.44 0.0285 0.0239

Earth -47278-02-25 23:02 J -15546810.68 -15546810.54 -15546810.38 0.0285 0.0224 \*

Mercury -47278-05-09 14:23 J -15546738.02 -15546737.90 -15546737.76 0.0285 0.0186

Earth -47277-03-10 13:40 J -15546432.15 -15546431.93 -15546431.70 0.0283 0.0114

Moon -47277-03-10 16:47 J -15546432.02 -15546431.80 -15546431.57 0.0283 0.0104 \*

Venus -47275-12-08 21:06 J -15545428.69 -15545428.62 -15545428.52 0.0277 0.0252

Venus -47274-07-26 11:45 J -15545199.23 -15545199.01 -15545198.80 0.0275 0.0029  
 Mercury -47264-09-14 06:14 J -15541496.29 -15541496.24 -15541496.18 0.0273 0.0248  
 Mercury -47264-12-11 19:11 J -15541407.81 -15541407.70 -15541407.57 0.0273 0.0154  
 Mercury -47263-03-10 08:09 J -15541319.30 -15541319.16 -15541319.02 0.0274 0.0059  
 Mercury -47263-06-06 20:38 J -15541230.78 -15541230.64 -15541230.49 0.0274 0.0035  
 Earth -47263-09-01 15:35 J -15541144.04 -15541143.85 -15541143.65 0.0275 0.0169  
 Moon -47263-09-01 17:16 J -15541143.96 -15541143.78 -15541143.58 0.0275 0.0164 \*  
 Mercury -47263-09-03 09:06 J -15541142.24 -15541142.12 -15541141.99 0.0275 0.0126  
 Mercury -47263-11-30 21:21 J -15541053.69 -15541053.61 -15541053.52 0.0275 0.0217  
 Earth -47262-09-14 06:57 J -15540766.42 -15540766.21 -15540766.00 0.0277 0.0136  
 Moon -47262-09-14 10:47 J -15540766.26 -15540766.05 -15540765.84 0.0277 0.0149 \*  
 Venus -47259-08-22 09:06 J -15539693.31 -15539693.12 -15539692.93 0.0284 0.0119  
 Venus -47258-04-08 18:42 J -15539463.88 -15539463.72 -15539463.55 0.0285 0.0172  
 Mars -47253-06-03 03:50 J -15537581.57 -15537581.34 -15537581.10 0.0291 0.0138  
 Mercury -47249-01-03 04:04 J -15536272.42 -15536272.33 -15536272.22 0.0286 0.0227  
 Mercury -47249-03-31 23:16 J -15536183.68 -15536183.53 -15536183.37 0.0286 0.0104  
 Mercury -47249-06-28 18:42 J -15536094.89 -15536094.72 -15536094.55 0.0285 0.0021  
 Mercury -47249-09-25 14:23 J -15536006.04 -15536005.90 -15536005.75 0.0285 0.0149  
 Mercury -47249-12-23 10:33 J -15535917.09 -15535917.06 -15535917.02 0.0284 0.0277  
 Moon -47248-03-04 20:23 J -15535845.89 -15535845.65 -15535845.40 0.0284 0.0050  
 Earth -47248-03-04 23:30 J -15535845.76 -15535845.52 -15535845.27 0.0284 0.0038 \*  
 Venus -47245-06-20 04:18 J -15534642.45 -15534642.32 -15534642.17 0.0277 0.0207  
 Venus -47244-02-04 18:57 J -15534412.91 -15534412.71 -15534412.50 0.0276 0.0074  
 Mars -47239-06-20 05:30 J -15532451.47 -15532451.27 -15532451.05 0.0269 0.0204  
 Mercury -47234-02-01 08:38 J -15530764.14 -15530764.14 -15530764.13 0.0272 0.0272  
 Mercury -47234-04-30 21:50 J -15530675.70 -15530675.59 -15530675.48 0.0273 0.0177  
 Mercury -47234-07-28 10:33 J -15530587.19 -15530587.06 -15530586.92 0.0273 0.0083  
 Mercury -47234-10-24 23:16 J -15530498.67 -15530498.53 -15530498.39 0.0273 0.0011  
 Mercury -47233-01-21 11:45 J -15530410.14 -15530410.01 -15530409.88 0.0274 0.0103  
 Mercury -47233-04-18 23:59 J -15530321.60 -15530321.50 -15530321.40 0.0274 0.0194

Moon -47233-09-08 00:28 J -15530179.72 -15530179.48 -15530179.24 0.0275 0.0013  
 Earth -47233-09-08 04:04 J -15530179.57 -15530179.33 -15530179.08 0.0275 0.0005 \*  
 Venus -47229-03-03 13:26 J -15528907.13 -15528906.94 -15528906.73 0.0283 0.0080  
 Venus -47229-10-18 22:47 J -15528677.68 -15528677.55 -15528677.40 0.0284 0.0209  
 Mercury -47220-05-22 01:54 J -15525540.45 -15525540.42 -15525540.37 0.0287 0.0276  
 Mercury -47220-08-18 20:52 J -15525451.77 -15525451.63 -15525451.49 0.0286 0.0154  
 Mercury -47220-11-15 16:04 J -15525362.99 -15525362.83 -15525362.66 0.0286 0.0030  
 Mercury -47219-02-12 11:45 J -15525274.17 -15525274.01 -15525273.85 0.0285 0.0097  
 Earth -47219-02-26 22:04 J -15525259.74 -15525259.58 -15525259.39 0.0285 0.0200  
 Moon -47219-02-27 01:11 J -15525259.60 -15525259.45 -15525259.28 0.0285 0.0215 \*  
 Mercury -47219-05-12 07:40 J -15525185.28 -15525185.18 -15525185.08 0.0285 0.0225  
 Earth -47218-03-12 12:42 J -15524881.18 -15524880.97 -15524880.75 0.0283 0.0139  
 Moon -47218-03-12 15:21 J -15524881.08 -15524880.86 -15524880.63 0.0283 0.0131 \*  
 Venus -47216-12-31 03:35 J -15523856.51 -15523856.35 -15523856.19 0.0277 0.0183  
 Venus -47215-08-17 17:59 J -15523626.96 -15523626.75 -15523626.55 0.0275 0.0097  
 Mars -47209-08-09 22:47 J -15521442.82 -15521442.55 -15521442.25 0.0269 0.0131  
 Mercury -47205-09-16 22:18 J -15519943.66 -15519943.57 -15519943.48 0.0273 0.0214  
 Mercury -47205-12-14 11:16 J -15519855.16 -15519855.03 -15519854.90 0.0273 0.0119  
 Mercury -47204-03-12 23:59 J -15519766.64 -15519766.50 -15519766.36 0.0274 0.0025  
 Mercury -47204-06-09 12:28 J -15519678.11 -15519677.98 -15519677.84 0.0274 0.0068  
 Earth -47204-09-02 16:47 J -15519593.00 -15519592.80 -15519592.59 0.0275 0.0143  
 Moon -47204-09-02 20:23 J -15519592.86 -15519592.65 -15519592.43 0.0275 0.0134 \*  
 Mercury -47204-09-06 00:57 J -15519589.57 -15519589.46 -15519589.35 0.0275 0.0159  
 Mercury -47204-12-03 13:11 J -15519501.01 -15519500.95 -15519500.89 0.0275 0.0249  
 Earth -47203-09-15 08:09 J -15519215.36 -15519215.16 -15519214.96 0.0277 0.0163  
 Moon -47203-09-15 08:09 J -15519215.34 -15519215.16 -15519214.95 0.0277 0.0178 \*  
 Venus -47200-09-13 15:06 J -15518121.07 -15518120.87 -15518120.67 0.0284 0.0047  
 Venus -47199-05-01 00:28 J -15517891.58 -15517891.48 -15517891.36 0.0285 0.0243  
 Mars -47195-09-09 18:28 J -15516298.92 -15516298.73 -15516298.52 0.0291 0.0191  
 Mercury -47190-01-05 20:38 J -15514719.76 -15514719.64 -15514719.52 0.0286 0.0191

Mercury -47190-04-04 15:50 J -15514631.00 -15514630.84 -15514630.68 0.0286 0.0068

Mercury -47190-07-02 11:16 J -15514542.19 -15514542.03 -15514541.86 0.0285 0.0058

Mercury -47190-09-29 07:11 J -15514453.33 -15514453.20 -15514453.07 0.0285 0.0186

Moon -47189-03-05 18:42 J -15514294.96 -15514294.72 -15514294.48 0.0284 0.0024

Earth -47189-03-05 21:21 J -15514294.85 -15514294.61 -15514294.36 0.0284 0.0013 \*

Venus -47186-07-13 10:04 J -15513070.26 -15513070.08 -15513069.89 0.0277 0.0140

Venus -47185-02-28 00:28 J -15512840.66 -15512840.48 -15512840.28 0.0275 0.0141

Mercury -47175-02-04 00:42 J -15509211.53 -15509211.47 -15509211.39 0.0272 0.0237

Mercury -47175-05-03 13:54 J -15509123.04 -15509122.92 -15509122.80 0.0273 0.0142

Mercury -47175-07-31 02:38 J -15509034.53 -15509034.39 -15509034.25 0.0273 0.0048

Moon -47175-08-28 12:42 J -15509005.99 -15509005.97 -15509005.92 0.0273 0.0270

Earth -47175-08-28 16:18 J -15509005.83 -15509005.82 -15509005.79 0.0273 0.0272

Mercury -47175-10-27 15:21 J -15508946.00 -15508945.86 -15508945.72 0.0274 0.0045

Mercury -47174-01-24 03:35 J -15508857.47 -15508857.35 -15508857.22 0.0274 0.0137

Mercury -47174-04-22 15:50 J -15508768.91 -15508768.84 -15508768.76 0.0274 0.0227

Moon -47174-09-10 05:59 J -15508628.49 -15508628.25 -15508628.02 0.0275 0.0041

Earth -47174-09-10 05:59 J -15508628.49 -15508628.25 -15508628.00 0.0275 0.0029 \*

Venus -47170-03-26 20:23 J -15507334.86 -15507334.65 -15507334.44 0.0283 0.0007

Venus -47170-11-11 05:16 J -15507105.29 -15507105.28 -15507105.24 0.0284 0.0282

Mars -47165-10-27 02:09 J -15505293.63 -15505293.41 -15505293.17 0.0290 0.0146

Mercury -47161-05-24 18:57 J -15503987.80 -15503987.71 -15503987.62 0.0287 0.0238

Mercury -47161-08-21 13:54 J -15503899.07 -15503898.92 -15503898.77 0.0286 0.0116

Mercury -47161-11-18 09:06 J -15503810.29 -15503810.12 -15503809.95 0.0286 0.0010

Mercury -47160-02-15 04:47 J -15503721.45 -15503721.30 -15503721.15 0.0285 0.0136

Earth -47160-02-27 21:50 J -15503708.78 -15503708.59 -15503708.39 0.0285 0.0174

Moon -47160-02-28 00:14 J -15503708.67 -15503708.49 -15503708.29 0.0285 0.0187 \*

Mercury -47160-05-15 00:42 J -15503632.52 -15503632.47 -15503632.40 0.0285 0.0265

Moon -47159-03-13 10:18 J -15503330.27 -15503330.07 -15503329.85 0.0283 0.0161

Earth -47159-03-13 11:59 J -15503330.19 -15503330.00 -15503329.80 0.0283 0.0165 \*

Venus -47156-01-22 09:50 J -15502284.28 -15502284.09 -15502283.89 0.0277 0.0114



Venus -47156-09-09 00:14 J -15502054.66 -15502054.49 -15502054.31 0.0275 0.0165

Mars -47151-11-12 18:14 J -15500163.96 -15500163.74 -15500163.50 0.0269 0.0187

Mercury -47146-09-20 14:23 J -15498391.01 -15498390.90 -15498390.79 0.0273 0.0179

Mercury -47146-12-18 03:21 J -15498302.50 -15498302.36 -15498302.23 0.0273 0.0085

Mercury -47145-03-15 16:04 J -15498213.98 -15498213.83 -15498213.69 0.0274 0.0011

Mercury -47145-06-12 04:33 J -15498125.44 -15498125.31 -15498125.18 0.0274 0.0101

Earth -47145-09-03 18:28 J -15498041.95 -15498041.73 -15498041.50 0.0275 0.0115

Moon -47145-09-03 18:42 J -15498041.95 -15498041.72 -15498041.48 0.0275 0.0106 \*

Mercury -47145-09-08 16:47 J -15498036.90 -15498036.80 -15498036.70 0.0275 0.0192

Moon -47144-09-16 06:14 J -15497664.40 -15497664.24 -15497664.08 0.0277 0.0207

Earth -47144-09-16 09:50 J -15497664.26 -15497664.09 -15497663.91 0.0277 0.0191 \*

Venus -47141-02-19 12:14 J -15496778.06 -15496777.99 -15496777.90 0.0282 0.0260

Venus -47141-10-05 21:35 J -15496548.81 -15496548.60 -15496548.40 0.0284 0.0026

Mercury -47132-10-11 18:28 J -15493255.77 -15493255.73 -15493255.68 0.0287 0.0276

Mercury -47131-01-08 13:26 J -15493167.08 -15493166.94 -15493166.80 0.0286 0.0154

Mercury -47131-04-07 08:38 J -15493078.31 -15493078.14 -15493077.97 0.0286 0.0030

Mercury -47131-07-05 04:04 J -15492989.48 -15492989.33 -15492989.16 0.0285 0.0097

Mercury -47131-10-01 23:59 J -15492900.60 -15492900.50 -15492900.39 0.0285 0.0225

Earth -47130-03-07 20:09 J -15492743.90 -15492743.66 -15492743.41 0.0284 0.0013

Moon -47130-03-07 21:50 J -15492743.83 -15492743.59 -15492743.36 0.0284 0.0007 \*

Venus -47127-08-04 16:04 J -15491498.04 -15491497.83 -15491497.62 0.0277 0.0072

Venus -47126-03-22 06:42 J -15491268.36 -15491268.22 -15491268.08 0.0275 0.0207

Mars -47120-01-03 18:57 J -15489153.96 -15489153.71 -15489153.45 0.0269 0.0166

Mercury -47116-02-06 17:16 J -15487658.88 -15487658.78 -15487658.68 0.0273 0.0200

Mercury -47116-05-06 06:14 J -15487570.37 -15487570.24 -15487570.11 0.0273 0.0105

Mercury -47116-08-02 18:57 J -15487481.86 -15487481.71 -15487481.57 0.0273 0.0013

Moon -47116-08-29 18:14 J -15487454.83 -15487454.74 -15487454.61 0.0274 0.0242

Earth -47116-08-29 19:11 J -15487454.79 -15487454.70 -15487454.58 0.0274 0.0245 \*

Mercury -47116-10-30 07:26 J -15487393.33 -15487393.19 -15487393.05 0.0274 0.0081

Mercury -47115-01-26 19:40 J -15487304.78 -15487304.68 -15487304.57 0.0274 0.0172

Mercury -47115-04-25 07:54 J -15487216.21 -15487216.17 -15487216.13 0.0275 0.0262  
 Earth -47115-09-11 09:21 J -15487077.35 -15487077.11 -15487076.87 0.0275 0.0058  
 Moon -47115-09-11 12:42 J -15487077.20 -15487076.97 -15487076.74 0.0275 0.0072 \*  
 Venus -47112-08-31 19:26 J -15485991.82 -15485991.69 -15485991.56 0.0282 0.0215  
 Venus -47111-04-18 04:18 J -15485762.52 -15485762.32 -15485762.12 0.0283 0.0069  
 Mars -47106-02-03 00:14 J -15484010.70 -15484010.49 -15484010.27 0.0290 0.0172  
 Mercury -47102-05-28 11:59 J -15482435.11 -15482435.00 -15482434.88 0.0286 0.0198  
 Mercury -47102-08-25 07:11 J -15482346.36 -15482346.20 -15482346.04 0.0286 0.0075  
 Mercury -47102-11-22 02:38 J -15482257.56 -15482257.39 -15482257.23 0.0286 0.0051  
 Mercury -47101-02-18 22:18 J -15482168.70 -15482168.57 -15482168.44 0.0285 0.0178  
 Moon -47101-02-29 20:23 J -15482157.85 -15482157.65 -15482157.43 0.0285 0.0156  
 Earth -47101-02-29 22:33 J -15482157.76 -15482157.56 -15482157.34 0.0285 0.0147 \*  
 Moon -47100-03-14 08:52 J -15481779.30 -15481779.13 -15481778.94 0.0283 0.0190  
 Earth -47100-03-14 12:28 J -15481779.15 -15481778.98 -15481778.79 0.0283 0.0193 \*  
 Venus -47097-02-14 16:47 J -15480712.01 -15480711.80 -15480711.59 0.0276 0.0045  
 Venus -47097-10-01 06:57 J -15480482.31 -15480482.21 -15480482.09 0.0275 0.0233  
 Mercury -47087-06-26 17:45 J -15476926.83 -15476926.76 -15476926.69 0.0273 0.0237  
 Mercury -47087-09-23 06:42 J -15476838.34 -15476838.22 -15476838.09 0.0273 0.0142  
 Mercury -47087-12-20 19:40 J -15476749.83 -15476749.68 -15476749.54 0.0273 0.0048  
 Mercury -47086-03-19 08:09 J -15476661.30 -15476661.16 -15476661.02 0.0274 0.0045  
 Mercury -47086-06-15 20:38 J -15476572.76 -15476572.64 -15476572.52 0.0274 0.0137  
 Moon -47086-09-05 18:42 J -15476490.96 -15476490.72 -15476490.48 0.0275 0.0074  
 Earth -47086-09-05 21:50 J -15476490.82 -15476490.59 -15476490.35 0.0275 0.0086 \*  
 Mercury -47086-09-12 08:38 J -15476484.21 -15476484.14 -15476484.05 0.0275 0.0228  
 Moon -47085-09-17 11:45 J -15476113.13 -15476113.01 -15476112.89 0.0277 0.0236  
 Earth -47085-09-17 13:11 J -15476113.08 -15476112.95 -15476112.79 0.0277 0.0221 \*  
 Venus -47082-03-13 20:09 J -15475205.81 -15475205.66 -15475205.50 0.0282 0.0185  
 Venus -47082-10-29 05:16 J -15474976.47 -15474976.28 -15474976.09 0.0284 0.0101  
 Mars -47076-03-22 08:23 J -15473005.36 -15473005.15 -15473004.92 0.0290 0.0166  
 Mercury -47073-10-14 11:30 J -15471703.10 -15471703.02 -15471702.92 0.0286 0.0237

Mercury -47072-01-11 06:28 J -15471614.38 -15471614.23 -15471614.07 0.0286 0.0114  
 Mercury -47072-04-10 01:54 J -15471525.59 -15471525.42 -15471525.25 0.0286 0.0011  
 Mercury -47072-07-07 21:35 J -15471436.75 -15471436.60 -15471436.45 0.0285 0.0138  
 Mercury -47072-10-04 17:30 J -15471347.82 -15471347.77 -15471347.71 0.0285 0.0267  
 Earth -47071-03-08 20:23 J -15471192.89 -15471192.65 -15471192.40 0.0284 0.0041  
 Moon -47071-03-09 00:28 J -15471192.73 -15471192.48 -15471192.24 0.0284 0.0034 \*  
 Venus -47068-08-26 22:47 J -15469925.76 -15469925.55 -15469925.33 0.0277 0.0006  
 Venus -47067-04-13 13:26 J -15469695.95 -15469695.94 -15469695.92 0.0275 0.0274  
 Mars -47062-04-08 15:50 J -15467875.10 -15467874.84 -15467874.56 0.0270 0.0151  
 Mercury -47058-11-13 20:38 J -15466194.68 -15466194.64 -15466194.59 0.0273 0.0257  
 Mercury -47057-02-10 09:35 J -15466106.21 -15466106.10 -15466105.98 0.0273 0.0162  
 Mercury -47057-05-08 22:33 J -15466017.70 -15466017.56 -15466017.42 0.0273 0.0068  
 Mercury -47057-08-05 11:16 J -15465929.17 -15465929.03 -15465928.89 0.0274 0.0026  
 Earth -47057-08-30 23:45 J -15465903.66 -15465903.51 -15465903.36 0.0274 0.0215  
 Moon -47057-08-31 02:38 J -15465903.54 -15465903.39 -15465903.23 0.0274 0.0209 \*  
 Mercury -47057-11-01 23:45 J -15465840.64 -15465840.51 -15465840.38 0.0274 0.0118  
 Mercury -47056-01-29 11:59 J -15465752.09 -15465752.00 -15465751.91 0.0275 0.0209  
 Earth -47056-09-12 13:54 J -15465526.15 -15465525.92 -15465525.69 0.0276 0.0089  
 Moon -47056-09-12 16:18 J -15465526.05 -15465525.82 -15465525.59 0.0276 0.0103 \*  
 Venus -47053-09-23 04:04 J -15464419.50 -15464419.33 -15464419.14 0.0282 0.0138  
 Venus -47052-05-10 12:57 J -15464190.13 -15464189.96 -15464189.78 0.0283 0.0147  
 Mercury -47043-03-03 11:02 J -15460971.08 -15460971.04 -15460970.99 0.0287 0.0275  
 Mercury -47043-05-31 05:59 J -15460882.39 -15460882.25 -15460882.11 0.0286 0.0153  
 Mercury -47043-08-28 01:11 J -15460793.62 -15460793.45 -15460793.29 0.0286 0.0030  
 Mercury -47043-11-24 20:38 J -15460704.80 -15460704.64 -15460704.48 0.0285 0.0096  
 Mercury -47042-02-21 16:33 J -15460615.92 -15460615.81 -15460615.71 0.0285 0.0224  
 Moon -47042-03-02 22:33 J -15460606.78 -15460606.56 -15460606.34 0.0285 0.0123  
 Earth -47042-03-03 02:09 J -15460606.63 -15460606.41 -15460606.19 0.0285 0.0116 \*  
 Moon -47041-03-15 15:06 J -15460228.01 -15460227.87 -15460227.72 0.0283 0.0223  
 Earth -47041-03-15 15:50 J -15460227.99 -15460227.84 -15460227.69 0.0283 0.0222 \*

Venus -47039-07-22 09:50 J -15459369.17 -15459369.09 -15459368.99 0.0278 0.0253

Venus -47038-03-09 00:42 J -15459139.68 -15459139.47 -15459139.25 0.0276 0.0029

Mars -47032-05-29 15:21 J -15456866.08 -15456865.86 -15456865.63 0.0269 0.0192

Mercury -47028-06-29 10:18 J -15455374.16 -15455374.07 -15455373.97 0.0273 0.0198

Mercury -47028-09-25 23:16 J -15455285.66 -15455285.53 -15455285.39 0.0273 0.0104

Mercury -47028-12-23 12:14 J -15455197.14 -15455196.99 -15455196.85 0.0274 0.0011

Mercury -47027-03-22 00:42 J -15455108.61 -15455108.47 -15455108.34 0.0274 0.0083

Mercury -47027-06-18 12:57 J -15455020.06 -15455019.96 -15455019.85 0.0275 0.0175

Moon -47027-09-07 00:28 J -15454939.71 -15454939.48 -15454939.24 0.0275 0.0043

Earth -47027-09-07 02:52 J -15454939.61 -15454939.38 -15454939.13 0.0275 0.0055 \*

Mercury -47027-09-15 01:11 J -15454931.48 -15454931.45 -15454931.41 0.0275 0.0265

Earth -47026-09-19 18:42 J -15454561.81 -15454561.72 -15454561.62 0.0277 0.0253

Moon -47026-09-19 20:52 J -15454561.68 -15454561.63 -15454561.56 0.0277 0.0267 \*

Venus -47023-04-05 05:30 J -15453633.46 -15453633.27 -15453633.08 0.0283 0.0106

Venus -47023-11-20 14:38 J -15453404.05 -15453403.89 -15453403.73 0.0284 0.0179

Mars -47018-06-29 11:30 J -15451722.24 -15451722.02 -15451721.78 0.0290 0.0149

Mercury -47014-10-18 05:30 J -15450150.39 -15450150.27 -15450150.15 0.0286 0.0192

Mercury -47013-01-15 00:28 J -15450061.64 -15450061.48 -15450061.31 0.0286 0.0069

Earth -47013-02-25 08:23 J -15450020.22 -15450020.15 -15450020.08 0.0286 0.0272

Moon -47013-02-25 11:30 J -15450020.06 -15450020.02 -15450019.97 0.0286 0.0280

Mercury -47013-04-12 19:54 J -15449972.83 -15449972.67 -15449972.50 0.0285 0.0057

Mercury -47013-07-10 15:50 J -15449883.97 -15449883.84 -15449883.71 0.0285 0.0184

Moon -47012-03-09 23:45 J -15449641.76 -15449641.51 -15449641.26 0.0284 0.0069

Earth -47012-03-09 23:45 J -15449641.75 -15449641.51 -15449641.27 0.0284 0.0071 \*

Venus -47009-02-01 15:50 J -15448582.98 -15448582.84 -15448582.70 0.0278 0.0213

Venus -47009-09-18 06:57 J -15448353.43 -15448353.21 -15448353.00 0.0276 0.0068

# 47TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 47th millennium BCE.**

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
	TRANSIT							
	TIME							
Mercury	-46999-11-16 13:26 J	-15444642.02	-15444641.94	-15444641.85	0.0273	0.0217		
Mercury	-46998-02-13 02:38 J	-15444553.52	-15444553.39	-15444553.26	0.0273	0.0122		
Mercury	-46998-05-12 15:21 J	-15444465.00	-15444464.86	-15444464.72	0.0274	0.0028		
Mercury	-46998-08-09 04:04 J	-15444376.47	-15444376.33	-15444376.19	0.0274	0.0065		
Earth	-46998-09-02 05:30 J	-15444352.45	-15444352.27	-15444352.09	0.0274	0.0184		
Moon	-46998-09-02 08:09 J	-15444352.34	-15444352.16	-15444351.96	0.0274	0.0174	*	
Mercury	-46998-11-05 16:18 J	-15444287.93	-15444287.82	-15444287.70	0.0275	0.0157		
Mercury	-46997-02-02 04:47 J	-15444199.36	-15444199.30	-15444199.25	0.0275	0.0247		
Moon	-46997-09-13 18:42 J	-15443974.94	-15443974.72	-15443974.50	0.0276	0.0136		
Earth	-46997-09-13 20:23 J	-15443974.86	-15443974.65	-15443974.42	0.0276	0.0122	*	
Venus	-46994-10-16 14:23 J	-15442847.10	-15442846.90	-15442846.69	0.0282	0.0057		
Venus	-46993-06-01 23:16 J	-15442617.65	-15442617.53	-15442617.40	0.0283	0.0227		
Mars	-46988-08-16 07:11 J	-15440716.37	-15440716.20	-15440716.00	0.0290	0.0205		
Mercury	-46984-03-06 05:30 J	-15439418.36	-15439418.27	-15439418.16	0.0286	0.0227		
Mercury	-46984-06-03 00:28 J	-15439329.63	-15439329.48	-15439329.32	0.0286	0.0105		
Mercury	-46984-08-30 19:54 J	-15439240.84	-15439240.67	-15439240.51	0.0286	0.0021		
Mercury	-46984-11-27 15:21 J	-15439152.00	-15439151.86	-15439151.71	0.0285	0.0147		
Mercury	-46983-02-24 11:16 J	-15439063.06	-15439063.03	-15439062.98	0.0285	0.0275		
Earth	-46983-03-04 07:54 J	-15439055.40	-15439055.17	-15439054.93	0.0285	0.0083		
Moon	-46983-03-04 08:23 J	-15439055.37	-15439055.15	-15439054.92	0.0285	0.0087	*	
Earth	-46982-03-17 21:06 J	-15438676.72	-15438676.62	-15438676.51	0.0282	0.0255		
Moon	-46982-03-18 00:42 J	-15438676.56	-15438676.47	-15438676.37	0.0282	0.0259	*	

Venus -46980-08-13 19:40 J -15437796.84 -15437796.68 -15437796.51 0.0277 0.0176  
 Venus -46979-03-31 10:18 J -15437567.27 -15437567.07 -15437566.86 0.0276 0.0103  
 Mars -46974-09-01 18:42 J -15435587.00 -15435586.72 -15435586.42 0.0269 0.0119  
 Mercury -46969-04-04 14:23 J -15433909.95 -15433909.90 -15433909.85 0.0273 0.0252  
 Mercury -46969-07-02 03:21 J -15433821.47 -15433821.36 -15433821.24 0.0273 0.0157  
 Mercury -46969-09-28 16:18 J -15433732.96 -15433732.82 -15433732.68 0.0273 0.0062  
 Mercury -46969-12-26 05:02 J -15433644.43 -15433644.29 -15433644.15 0.0274 0.0031  
 Mercury -46968-03-24 17:30 J -15433555.90 -15433555.77 -15433555.64 0.0274 0.0123  
 Mercury -46968-06-21 05:45 J -15433467.34 -15433467.26 -15433467.17 0.0275 0.0215  
 Earth -46968-09-08 10:04 J -15433388.33 -15433388.08 -15433387.84 0.0275 0.0022  
 Moon -46968-09-08 11:45 J -15433388.24 -15433388.01 -15433387.77 0.0275 0.0008 \*  
 Venus -46964-04-27 16:04 J -15432061.04 -15432060.83 -15432060.63 0.0283 0.0025  
 Venus -46964-12-13 00:57 J -15431831.53 -15431831.46 -15431831.37 0.0284 0.0260  
 Mercury -46955-07-24 05:02 J -15428686.34 -15428686.29 -15428686.22 0.0286 0.0266  
 Mercury -46955-10-20 23:59 J -15428597.64 -15428597.50 -15428597.35 0.0286 0.0144  
 Mercury -46954-01-17 19:11 J -15428508.86 -15428508.70 -15428508.53 0.0286 0.0020  
 Moon -46954-02-26 13:40 J -15428469.05 -15428468.93 -15428468.79 0.0285 0.0244  
 Earth -46954-02-26 14:38 J -15428469.01 -15428468.89 -15428468.75 0.0285 0.0239 \*  
 Mercury -46954-04-16 14:52 J -15428420.04 -15428419.88 -15428419.73 0.0285 0.0107  
 Mercury -46954-07-14 10:47 J -15428331.15 -15428331.05 -15428330.96 0.0285 0.0235  
 Moon -46953-03-11 01:54 J -15428090.64 -15428090.42 -15428090.18 0.0283 0.0107  
 Earth -46953-03-11 05:45 J -15428090.48 -15428090.26 -15428090.03 0.0283 0.0104 \*  
 Venus -46950-02-24 01:26 J -15427010.62 -15427010.44 -15427010.25 0.0277 0.0137  
 Venus -46950-10-11 16:18 J -15426781.00 -15426780.82 -15426780.63 0.0276 0.0142  
 Mars -46944-10-23 21:35 J -15424576.73 -15424576.60 -15424576.44 0.0270 0.0240  
 Mercury -46940-08-22 17:16 J -15423177.78 -15423177.78 -15423177.75 0.0273 0.0272  
 Mercury -46940-11-19 06:42 J -15423089.33 -15423089.22 -15423089.11 0.0273 0.0175  
 Mercury -46939-02-15 19:40 J -15423000.82 -15423000.68 -15423000.54 0.0274 0.0080  
 Mercury -46939-05-15 08:23 J -15422912.29 -15422912.15 -15422912.01 0.0274 0.0014  
 Mercury -46939-08-11 20:52 J -15422823.76 -15422823.63 -15422823.50 0.0275 0.0106

Moon -46939-09-03 10:47 J -15422801.26 -15422801.05 -15422800.83 0.0275 0.0139  
 Earth -46939-09-03 12:57 J -15422801.16 -15422800.96 -15422800.76 0.0275 0.0152 \*  
 Mercury -46939-11-08 09:21 J -15422735.21 -15422735.11 -15422735.01 0.0275 0.0198  
 Moon -46938-09-16 00:42 J -15422423.65 -15422423.47 -15422423.27 0.0276 0.0173  
 Earth -46938-09-16 04:33 J -15422423.51 -15422423.31 -15422423.11 0.0276 0.0157 \*  
 Venus -46935-03-23 17:02 J -15421503.87 -15421503.79 -15421503.69 0.0281 0.0255  
 Venus -46935-11-08 01:54 J -15421274.62 -15421274.42 -15421274.21 0.0283 0.0028  
 Mars -46930-11-23 20:38 J -15419432.89 -15419432.64 -15419432.38 0.0289 0.0096  
 Mercury -46925-03-09 00:57 J -15417865.59 -15417865.46 -15417865.32 0.0286 0.0174  
 Mercury -46925-06-05 20:09 J -15417776.83 -15417776.66 -15417776.50 0.0286 0.0050  
 Mercury -46925-09-02 15:21 J -15417688.02 -15417687.86 -15417687.69 0.0285 0.0076  
 Mercury -46925-11-30 11:02 J -15417599.15 -15417599.04 -15417598.91 0.0285 0.0203  
 Earth -46924-03-05 17:02 J -15417504.03 -15417503.79 -15417503.54 0.0284 0.0048  
 Moon -46924-03-05 20:52 J -15417503.87 -15417503.63 -15417503.39 0.0284 0.0047 \*  
 Venus -46921-09-05 07:11 J -15416224.40 -15416224.20 -15416223.99 0.0277 0.0096  
 Venus -46920-04-22 21:21 J -15415994.76 -15415994.61 -15415994.43 0.0276 0.0182  
 Mercury -46910-04-08 07:40 J -15412357.27 -15412357.18 -15412357.08 0.0273 0.0208  
 Mercury -46910-07-05 20:38 J -15412268.76 -15412268.64 -15412268.50 0.0273 0.0114  
 Mercury -46910-10-02 09:35 J -15412180.24 -15412180.10 -15412179.96 0.0274 0.0019  
 Mercury -46910-12-29 22:04 J -15412091.71 -15412091.58 -15412091.44 0.0274 0.0075  
 Mercury -46909-03-27 10:33 J -15412003.17 -15412003.06 -15412002.94 0.0275 0.0166  
 Mercury -46909-06-23 22:47 J -15411914.59 -15411914.55 -15411914.50 0.0275 0.0257  
 Earth -46909-09-09 18:42 J -15411836.96 -15411836.72 -15411836.47 0.0275 0.0014  
 Moon -46909-09-09 22:33 J -15411836.81 -15411836.56 -15411836.31 0.0275 0.0029 \*  
 Venus -46906-10-03 18:57 J -15410717.83 -15410717.71 -15410717.58 0.0282 0.0222  
 Venus -46905-05-20 03:50 J -15410488.54 -15410488.34 -15410488.14 0.0283 0.0061  
 Mars -46899-01-10 04:04 J -15408427.47 -15408427.33 -15408427.17 0.0290 0.0238  
 Mercury -46896-07-27 00:28 J -15407133.59 -15407133.48 -15407133.37 0.0286 0.0213  
 Mercury -46896-10-23 19:26 J -15407044.85 -15407044.69 -15407044.53 0.0286 0.0090  
 Mercury -46895-01-20 14:38 J -15406956.05 -15406955.89 -15406955.72 0.0285 0.0036

Moon -46895-02-27 20:09 J -15406917.82 -15406917.66 -15406917.48 0.0285 0.0208  
 Earth -46895-02-27 23:59 J -15406917.67 -15406917.50 -15406917.33 0.0285 0.0204 \*  
 Mercury -46895-04-19 10:18 J -15406867.20 -15406867.07 -15406866.93 0.0285 0.0162  
 Moon -46894-03-13 12:42 J -15406539.17 -15406538.97 -15406538.76 0.0283 0.0145  
 Earth -46894-03-13 14:23 J -15406539.10 -15406538.90 -15406538.68 0.0283 0.0140 \*  
 Venus -46891-03-18 12:42 J -15405438.18 -15405437.97 -15405437.75 0.0277 0.0057  
 Venus -46891-11-03 03:21 J -15405208.48 -15405208.36 -15405208.22 0.0276 0.0220  
 Mars -46885-01-27 03:35 J -15403297.65 -15403297.35 -15403297.03 0.0270 0.0070  
 Mercury -46881-08-25 11:02 J -15401625.12 -15401625.04 -15401624.96 0.0273 0.0227  
 Mercury -46881-11-21 23:59 J -15401536.62 -15401536.50 -15401536.37 0.0274 0.0131  
 Mercury -46880-02-18 12:57 J -15401448.10 -15401447.96 -15401447.82 0.0274 0.0037  
 Mercury -46880-05-18 01:40 J -15401359.57 -15401359.43 -15401359.29 0.0275 0.0057  
 Mercury -46880-08-14 14:09 J -15401271.03 -15401270.91 -15401270.79 0.0275 0.0149  
 Moon -46880-09-04 18:14 J -15401249.96 -15401249.74 -15401249.51 0.0275 0.0103  
 Earth -46880-09-04 21:50 J -15401249.81 -15401249.59 -15401249.36 0.0275 0.0118 \*  
 Mercury -46880-11-11 02:23 J -15401182.46 -15401182.40 -15401182.33 0.0275 0.0240  
 Earth -46879-09-17 13:40 J -15400872.09 -15400871.93 -15400871.74 0.0277 0.0193  
 Moon -46879-09-17 13:26 J -15400872.08 -15400871.94 -15400871.78 0.0277 0.0209 \*  
 Venus -46876-04-15 05:30 J -15399931.44 -15399931.27 -15399931.11 0.0282 0.0169  
 Venus -46876-11-30 14:23 J -15399702.09 -15399701.90 -15399701.71 0.0283 0.0113  
 Mercury -46867-12-14 02:23 J -15396401.49 -15396401.40 -15396401.31 0.0286 0.0238  
 Mercury -46866-03-12 21:06 J -15396312.77 -15396312.62 -15396312.47 0.0286 0.0116  
 Mercury -46866-06-09 16:18 J -15396223.99 -15396223.82 -15396223.65 0.0285 0.0009  
 Mercury -46866-09-06 11:45 J -15396135.16 -15396135.01 -15396134.86 0.0285 0.0135  
 Mercury -46866-12-04 07:40 J -15396046.24 -15396046.18 -15396046.11 0.0284 0.0262  
 Earth -46865-03-07 05:02 J -15395952.54 -15395952.29 -15395952.04 0.0284 0.0008  
 Moon -46865-03-07 06:57 J -15395952.46 -15395952.21 -15395951.95 0.0284 0.0010 \*  
 Venus -46862-09-28 20:09 J -15394651.87 -15394651.66 -15394651.44 0.0277 0.0013  
 Venus -46861-05-15 10:33 J -15394422.12 -15394422.06 -15394422.00 0.0275 0.0263  
 Mercury -46851-01-12 11:59 J -15390893.03 -15390893.00 -15390892.95 0.0273 0.0259



Mercury -46851-04-11 01:26 J -15390804.56 -15390804.44 -15390804.33 0.0273 0.0163

Mercury -46851-07-08 14:23 J -15390716.04 -15390715.90 -15390715.76 0.0274 0.0069

Earth -46851-08-30 13:40 J -15390663.00 -15390662.93 -15390662.84 0.0274 0.0258

Moon -46851-08-30 17:02 J -15390662.88 -15390662.79 -15390662.67 0.0274 0.0247 \*

Mercury -46851-10-05 03:06 J -15390627.52 -15390627.37 -15390627.23 0.0274 0.0026

Mercury -46850-01-01 15:35 J -15390538.98 -15390538.85 -15390538.72 0.0274 0.0118

Mercury -46850-03-31 03:50 J -15390450.42 -15390450.34 -15390450.25 0.0275 0.0209

Moon -46850-09-12 04:33 J -15390285.55 -15390285.31 -15390285.06 0.0276 0.0064

Earth -46850-09-12 04:47 J -15390285.54 -15390285.30 -15390285.06 0.0276 0.0049 \*

Venus -46847-10-26 07:40 J -15389145.36 -15389145.18 -15389145.00 0.0282 0.0136

Venus -46846-06-12 16:33 J -15388915.98 -15388915.81 -15388915.63 0.0284 0.0147

Mars -46841-04-18 20:38 J -15387143.89 -15387143.64 -15387143.37 0.0290 0.0061

Mercury -46837-05-02 01:40 J -15385669.46 -15385669.43 -15385669.38 0.0286 0.0276

Mercury -46837-07-29 20:23 J -15385580.78 -15385580.65 -15385580.50 0.0286 0.0155

Mercury -46837-10-26 15:35 J -15385492.01 -15385491.85 -15385491.68 0.0286 0.0031

Mercury -46836-01-23 11:02 J -15385403.20 -15385403.04 -15385402.88 0.0285 0.0094

Moon -46836-03-01 09:35 J -15385366.28 -15385366.10 -15385365.90 0.0285 0.0170

Earth -46836-03-01 11:45 J -15385366.20 -15385366.01 -15385365.80 0.0285 0.0165 \*

Mercury -46836-04-22 06:57 J -15385314.32 -15385314.21 -15385314.11 0.0285 0.0222

Earth -46835-03-15 01:54 J -15384987.60 -15384987.42 -15384987.22 0.0283 0.0179

Moon -46835-03-15 04:18 J -15384987.49 -15384987.32 -15384987.13 0.0283 0.0186 \*

Venus -46833-08-23 10:47 J -15384095.13 -15384095.05 -15384094.96 0.0278 0.0252

Venus -46832-04-10 01:40 J -15383865.64 -15383865.43 -15383865.21 0.0276 0.0026

Mercury -46822-08-29 04:33 J -15380072.42 -15380072.31 -15380072.20 0.0274 0.0182

Mercury -46822-11-25 17:30 J -15379983.90 -15379983.77 -15379983.63 0.0274 0.0087

Mercury -46821-02-22 06:28 J -15379895.38 -15379895.23 -15379895.09 0.0275 0.0009

Mercury -46821-05-20 18:57 J -15379806.84 -15379806.71 -15379806.58 0.0275 0.0101

Mercury -46821-08-17 07:26 J -15379718.29 -15379718.19 -15379718.09 0.0275 0.0193

Moon -46821-09-06 07:11 J -15379698.42 -15379698.20 -15379697.97 0.0275 0.0070

Earth -46821-09-06 07:26 J -15379698.42 -15379698.19 -15379697.95 0.0275 0.0083 \*

Earth -46820-09-18 23:59 J -15379320.63 -15379320.50 -15379320.36 0.0277 0.0229  
 Moon -46820-09-19 03:35 J -15379320.46 -15379320.35 -15379320.24 0.0277 0.0245 \*  
 Venus -46817-05-07 18:14 J -15378358.94 -15378358.74 -15378358.54 0.0282 0.0082  
 Venus -46817-12-23 03:21 J -15378129.50 -15378129.36 -15378129.21 0.0284 0.0200  
 Mercury -46808-12-16 22:33 J -15374848.68 -15374848.56 -15374848.42 0.0286 0.0178  
 Mercury -46807-03-15 17:45 J -15374759.93 -15374759.76 -15374759.60 0.0285 0.0055  
 Mercury -46807-06-12 12:57 J -15374671.12 -15374670.96 -15374670.79 0.0285 0.0071  
 Mercury -46807-09-09 08:38 J -15374582.26 -15374582.14 -15374582.01 0.0285 0.0197  
 Moon -46806-03-09 16:47 J -15374401.05 -15374400.80 -15374400.55 0.0284 0.0034  
 Earth -46806-03-09 18:57 J -15374400.96 -15374400.71 -15374400.47 0.0284 0.0032 \*  
 Venus -46803-03-05 19:40 J -15373308.82 -15373308.68 -15373308.53 0.0278 0.0204  
 Venus -46803-10-21 10:18 J -15373079.28 -15373079.07 -15373078.86 0.0276 0.0074  
 Mars -46797-06-22 06:42 J -15371008.54 -15371008.22 -15371007.89 0.0270 0.0019  
 Mercury -46792-01-15 05:59 J -15369340.34 -15369340.25 -15369340.16 0.0273 0.0212  
 Mercury -46792-04-13 18:57 J -15369251.83 -15369251.71 -15369251.57 0.0273 0.0118  
 Mercury -46792-07-11 07:54 J -15369163.31 -15369163.17 -15369163.02 0.0274 0.0023  
 Earth -46792-09-01 00:28 J -15369111.61 -15369111.48 -15369111.33 0.0274 0.0223  
 Moon -46792-09-01 00:57 J -15369111.61 -15369111.46 -15369111.29 0.0274 0.0212 \*  
 Mercury -46792-10-07 20:38 J -15369074.78 -15369074.64 -15369074.50 0.0274 0.0071  
 Mercury -46791-01-04 09:06 J -15368986.23 -15368986.12 -15368986.01 0.0275 0.0163  
 Mercury -46791-04-02 21:21 J -15368897.66 -15368897.61 -15368897.56 0.0275 0.0253  
 Moon -46791-09-13 11:59 J -15368734.22 -15368734.00 -15368733.76 0.0276 0.0101  
 Earth -46791-09-13 15:35 J -15368734.07 -15368733.85 -15368733.61 0.0276 0.0086 \*  
 Venus -46788-11-17 20:38 J -15367572.84 -15367572.64 -15367572.43 0.0283 0.0048  
 Venus -46787-07-05 05:30 J -15367343.37 -15367343.27 -15367343.14 0.0284 0.0235  
 Mercury -46778-05-05 21:50 J -15364116.69 -15364116.59 -15364116.48 0.0286 0.0218  
 Mercury -46778-08-02 16:47 J -15364027.95 -15364027.80 -15364027.64 0.0286 0.0096  
 Mercury -46778-10-30 12:14 J -15363939.16 -15363938.99 -15363938.83 0.0285 0.0030  
 Mercury -46777-01-27 07:40 J -15363850.32 -15363850.18 -15363850.04 0.0285 0.0156  
 Earth -46777-03-03 00:42 J -15363814.68 -15363814.47 -15363814.24 0.0285 0.0125

Moon -46777-03-03 02:52 J -15363814.59 -15363814.38 -15363814.16 0.0285 0.0128 \*  
 Mercury -46777-04-25 03:35 J -15363761.35 -15363761.35 -15363761.34 0.0284 0.0284  
 Earth -46776-03-16 14:52 J -15363436.03 -15363435.88 -15363435.72 0.0283 0.0218  
 Moon -46776-03-16 18:28 J -15363435.88 -15363435.73 -15363435.58 0.0283 0.0224 \*  
 Venus -46774-09-16 00:42 J -15362522.63 -15362522.47 -15362522.29 0.0277 0.0167  
 Venus -46773-05-02 15:35 J -15362293.05 -15362292.85 -15362292.65 0.0276 0.0110  
 Mercury -46763-06-04 09:06 J -15358608.20 -15358608.12 -15358608.05 0.0274 0.0233  
 Mercury -46763-08-31 22:04 J -15358519.70 -15358519.58 -15358519.45 0.0274 0.0137  
 Mercury -46763-11-28 11:02 J -15358431.18 -15358431.04 -15358430.90 0.0274 0.0042  
 Mercury -46762-02-24 23:45 J -15358342.65 -15358342.51 -15358342.37 0.0275 0.0052  
 Mercury -46762-05-24 12:28 J -15358254.10 -15358253.98 -15358253.86 0.0275 0.0145  
 Mercury -46762-08-21 00:42 J -15358165.54 -15358165.47 -15358165.40 0.0276 0.0236  
 Earth -46762-09-08 17:16 J -15358147.02 -15358146.78 -15358146.54 0.0276 0.0048  
 Moon -46762-09-08 20:23 J -15358146.89 -15358146.65 -15358146.41 0.0276 0.0033 \*  
 Earth -46761-09-20 10:04 J -15357769.14 -15357769.08 -15357769.00 0.0278 0.0266  
 Venus -46759-10-13 21:21 J -15357015.64 -15357015.61 -15357015.56 0.0282 0.0276  
 Venus -46758-05-31 06:42 J -15356786.43 -15356786.22 -15356786.01 0.0283 0.0005  
 Mars -46753-09-13 22:33 J -15354853.83 -15354853.56 -15354853.30 0.0289 0.0012  
 Mercury -46749-09-22 00:42 J -15353384.56 -15353384.47 -15353384.38 0.0286 0.0238  
 Mercury -46749-12-19 19:26 J -15353295.84 -15353295.69 -15353295.54 0.0286 0.0116  
 Moon -46748-02-25 16:18 J -15353227.87 -15353227.82 -15353227.75 0.0285 0.0277  
 Earth -46748-02-25 18:42 J -15353227.78 -15353227.72 -15353227.64 0.0285 0.0273 \*  
 Mercury -46748-03-18 14:38 J -15353207.06 -15353206.89 -15353206.72 0.0285 0.0008  
 Mercury -46748-06-15 10:04 J -15353118.23 -15353118.08 -15353117.93 0.0285 0.0134  
 Mercury -46748-09-12 05:59 J -15353029.31 -15353029.25 -15353029.18 0.0284 0.0262  
 Moon -46747-03-11 05:59 J -15352849.49 -15352849.25 -15352849.01 0.0283 0.0075  
 Earth -46747-03-11 09:35 J -15352849.33 -15352849.10 -15352848.86 0.0283 0.0073 \*  
 Venus -46744-03-28 10:47 J -15351736.24 -15351736.05 -15351735.85 0.0277 0.0115  
 Venus -46744-11-13 01:11 J -15351506.62 -15351506.45 -15351506.27 0.0276 0.0161  
 Mercury -46734-10-22 10:33 J -15347876.09 -15347876.06 -15347876.01 0.0273 0.0262

Mercury -46733-01-18 23:45 J -15347787.62 -15347787.51 -15347787.39 0.0273 0.0166

Mercury -46733-04-16 12:42 J -15347699.10 -15347698.97 -15347698.83 0.0273 0.0072

Mercury -46733-07-14 01:40 J -15347610.58 -15347610.43 -15347610.29 0.0274 0.0023

Moon -46733-09-02 07:54 J -15347560.36 -15347560.17 -15347559.97 0.0274 0.0175

Earth -46733-09-02 11:02 J -15347560.21 -15347560.04 -15347559.86 0.0274 0.0188 \*

Mercury -46733-10-10 14:09 J -15347522.04 -15347521.91 -15347521.78 0.0274 0.0115

Mercury -46732-01-07 02:38 J -15347433.48 -15347433.39 -15347433.30 0.0275 0.0207

Moon -46732-09-15 00:14 J -15347182.69 -15347182.49 -15347182.28 0.0276 0.0136

Earth -46732-09-15 02:23 J -15347182.62 -15347182.40 -15347182.18 0.0276 0.0122 \*

Venus -46729-04-25 00:28 J -15346229.58 -15346229.48 -15346229.37 0.0282 0.0241

Venus -46729-12-10 09:35 J -15346000.31 -15346000.10 -15345999.90 0.0283 0.0039

Mercury -46719-02-08 23:30 J -15342652.54 -15342652.52 -15342652.47 0.0286 0.0280

Mercury -46719-05-08 18:28 J -15342563.87 -15342563.73 -15342563.59 0.0286 0.0158

Mercury -46719-08-05 13:26 J -15342475.10 -15342474.94 -15342474.77 0.0286 0.0035

Mercury -46719-11-02 08:52 J -15342386.29 -15342386.13 -15342385.97 0.0285 0.0091

Mercury -46718-01-30 04:33 J -15342297.42 -15342297.31 -15342297.20 0.0285 0.0218

Earth -46718-03-05 14:23 J -15342263.13 -15342262.90 -15342262.66 0.0284 0.0085

Moon -46718-03-05 18:14 J -15342262.98 -15342262.74 -15342262.50 0.0284 0.0086 \*

Earth -46717-03-18 03:50 J -15341884.42 -15341884.34 -15341884.23 0.0282 0.0258

Moon -46717-03-18 04:47 J -15341884.39 -15341884.30 -15341884.21 0.0282 0.0264 \*

Venus -46715-10-08 15:06 J -15340950.08 -15340949.87 -15340949.66 0.0277 0.0079

Venus -46714-05-26 05:30 J -15340720.42 -15340720.27 -15340720.11 0.0276 0.0195

Mars -46709-11-16 18:28 J -15338719.05 -15338718.73 -15338718.41 0.0270 0.0037

Mercury -46704-06-07 02:38 J -15337055.49 -15337055.39 -15337055.28 0.0274 0.0188

Mercury -46704-09-03 15:50 J -15336966.98 -15336966.84 -15336966.71 0.0274 0.0093

Mercury -46704-12-01 04:33 J -15336878.45 -15336878.31 -15336878.17 0.0275 0.0003

Mercury -46703-02-27 17:16 J -15336789.92 -15336789.78 -15336789.65 0.0275 0.0096

Mercury -46703-05-27 05:45 J -15336701.36 -15336701.26 -15336701.16 0.0275 0.0188

Earth -46703-09-10 02:52 J -15336595.62 -15336595.38 -15336595.13 0.0276 0.0013

Moon -46703-09-10 05:45 J -15336595.51 -15336595.26 -15336595.01 0.0276 0.0001 \*

Venus -46700-11-05 09:35 J -15335443.24 -15335443.10 -15335442.94 0.0282 0.0191  
 Venus -46699-06-22 18:57 J -15335213.90 -15335213.71 -15335213.51 0.0283 0.0090  
 Mars -46695-12-22 13:11 J -15333569.96 -15333569.95 -15333569.91 0.0289 0.0288  
 Mercury -46690-09-25 21:06 J -15331831.75 -15331831.62 -15331831.49 0.0286 0.0178  
 Mercury -46690-12-23 16:04 J -15331742.99 -15331742.83 -15331742.67 0.0286 0.0055  
 Moon -46689-02-28 05:16 J -15331676.41 -15331676.28 -15331676.14 0.0285 0.0235  
 Earth -46689-02-28 08:52 J -15331676.27 -15331676.13 -15331675.99 0.0285 0.0233 \*  
 Mercury -46689-03-21 11:16 J -15331654.19 -15331654.03 -15331653.86 0.0285 0.0070  
 Mercury -46689-06-18 06:57 J -15331565.33 -15331565.21 -15331565.08 0.0285 0.0197  
 Moon -46688-03-12 22:47 J -15331297.76 -15331297.55 -15331297.33 0.0283 0.0118  
 Earth -46688-03-12 23:30 J -15331297.75 -15331297.52 -15331297.30 0.0283 0.0114 \*  
 Venus -46685-04-20 01:40 J -15330163.64 -15330163.43 -15330163.21 0.0277 0.0027  
 Venus -46685-12-05 15:50 J -15329933.93 -15329933.84 -15329933.74 0.0276 0.0248  
 Mercury -46675-10-25 04:18 J -15326323.40 -15326323.32 -15326323.22 0.0273 0.0216  
 Mercury -46674-01-21 17:30 J -15326234.90 -15326234.77 -15326234.64 0.0273 0.0120  
 Mercury -46674-04-20 06:28 J -15326146.38 -15326146.23 -15326146.09 0.0274 0.0026  
 Mercury -46674-07-17 18:57 J -15326057.84 -15326057.71 -15326057.57 0.0274 0.0068  
 Moon -46674-09-04 18:14 J -15326008.94 -15326008.74 -15326008.53 0.0274 0.0140  
 Earth -46674-09-04 20:52 J -15326008.82 -15326008.63 -15326008.42 0.0274 0.0154 \*  
 Mercury -46674-10-14 07:26 J -15325969.30 -15325969.19 -15325969.07 0.0274 0.0159  
 Mercury -46673-01-10 19:40 J -15325880.73 -15325880.68 -15325880.61 0.0275 0.0250  
 Earth -46673-09-16 12:14 J -15325631.18 -15325630.99 -15325630.78 0.0276 0.0158  
 Moon -46673-09-16 13:54 J -15325631.10 -15325630.92 -15325630.73 0.0276 0.0171 \*  
 Venus -46670-05-18 12:28 J -15324657.15 -15324656.98 -15324656.81 0.0282 0.0156  
 Venus -46669-01-02 21:21 J -15324427.79 -15324427.61 -15324427.42 0.0283 0.0124  
 Mars -46664-02-07 19:40 J -15322564.94 -15322564.68 -15322564.41 0.0290 0.0045  
 Mercury -46660-02-11 19:54 J -15321099.77 -15321099.67 -15321099.57 0.0286 0.0222  
 Mercury -46660-05-11 14:38 J -15321011.04 -15321010.89 -15321010.73 0.0286 0.0100  
 Mercury -46660-08-08 09:50 J -15320922.25 -15320922.09 -15320921.92 0.0285 0.0025  
 Mercury -46660-11-05 05:16 J -15320833.42 -15320833.28 -15320833.13 0.0285 0.0152

Mercury -46659-02-02 01:11 J -15320744.47 -15320744.45 -15320744.41 0.0285 0.0280  
 Moon -46659-03-07 03:21 J -15320711.61 -15320711.36 -15320711.11 0.0284 0.0043  
 Earth -46659-03-07 03:21 J -15320711.60 -15320711.36 -15320711.11 0.0284 0.0046 \*  
 Venus -46656-03-15 14:09 J -15319606.95 -15319606.91 -15319606.85 0.0278 0.0270  
 Venus -46656-10-31 05:16 J -15319377.50 -15319377.28 -15319377.07 0.0277 0.0007  
 Mars -46650-02-20 08:09 J -15317439.18 -15317439.16 -15317439.10 0.0270 0.0268  
 Mercury -46645-03-13 06:42 J -15315591.28 -15315591.22 -15315591.15 0.0273 0.0241  
 Mercury -46645-06-09 19:54 J -15315502.79 -15315502.67 -15315502.54 0.0274 0.0145  
 Mercury -46645-09-06 08:52 J -15315414.27 -15315414.13 -15315413.98 0.0274 0.0050  
 Mercury -46645-12-03 21:35 J -15315325.74 -15315325.60 -15315325.45 0.0275 0.0046  
 Mercury -46644-03-02 10:18 J -15315237.19 -15315237.07 -15315236.95 0.0275 0.0137  
 Mercury -46644-05-29 22:33 J -15315148.63 -15315148.56 -15315148.48 0.0276 0.0229  
 Moon -46644-09-11 09:35 J -15315044.35 -15315044.10 -15315043.85 0.0276 0.0035  
 Earth -46644-09-11 11:02 J -15315044.29 -15315044.04 -15315043.80 0.0276 0.0020 \*  
 Venus -46641-11-27 20:38 J -15313870.83 -15313870.64 -15313870.44 0.0283 0.0108  
 Venus -46640-07-15 05:59 J -15313641.41 -15313641.25 -15313641.08 0.0284 0.0173  
 Mercury -46631-07-01 22:18 J -15310367.65 -15310367.57 -15310367.48 0.0286 0.0243  
 Mercury -46631-09-28 17:16 J -15310278.93 -15310278.78 -15310278.63 0.0286 0.0121  
 Mercury -46631-12-26 12:14 J -15310190.15 -15310189.99 -15310189.82 0.0285 0.0006  
 Earth -46630-03-01 20:52 J -15310124.80 -15310124.63 -15310124.44 0.0285 0.0195  
 Moon -46630-03-01 21:06 J -15310124.78 -15310124.62 -15310124.44 0.0285 0.0196 \*  
 Mercury -46630-03-25 07:40 J -15310101.33 -15310101.18 -15310101.02 0.0285 0.0129  
 Mercury -46630-06-22 03:35 J -15310012.42 -15310012.35 -15310012.28 0.0285 0.0257  
 Earth -46629-03-14 11:30 J -15309746.22 -15309746.02 -15309745.81 0.0283 0.0152  
 Moon -46629-03-14 15:06 J -15309746.07 -15309745.87 -15309745.67 0.0283 0.0160 \*  
 Venus -46627-09-26 01:11 J -15308820.58 -15308820.45 -15308820.31 0.0278 0.0216  
 Venus -46626-05-13 15:50 J -15308591.05 -15308590.84 -15308590.63 0.0277 0.0060  
 Mars -46620-04-13 09:21 J -15306429.41 -15306429.11 -15306428.80 0.0270 0.0093  
 Mercury -46616-07-31 08:38 J -15304859.16 -15304859.14 -15304859.10 0.0272 0.0267  
 Mercury -46616-10-27 22:04 J -15304770.69 -15304770.58 -15304770.47 0.0273 0.0171

Mercury -46615-01-24 11:02 J -15304682.18 -15304682.04 -15304681.90 0.0273 0.0076  
 Mercury -46615-04-22 23:45 J -15304593.65 -15304593.51 -15304593.37 0.0274 0.0018  
 Mercury -46615-07-20 12:28 J -15304505.11 -15304504.98 -15304504.85 0.0274 0.0110  
 Earth -46615-09-06 05:59 J -15304457.46 -15304457.25 -15304457.02 0.0274 0.0120  
 Moon -46615-09-06 07:40 J -15304457.40 -15304457.18 -15304456.96 0.0274 0.0105 \*  
 Mercury -46615-10-17 00:42 J -15304416.56 -15304416.47 -15304416.37 0.0274 0.0201  
 Earth -46614-09-18 21:06 J -15304079.78 -15304079.62 -15304079.43 0.0276 0.0192  
 Moon -46614-09-19 00:57 J -15304079.62 -15304079.46 -15304079.30 0.0276 0.0207 \*  
 Venus -46611-06-09 23:45 J -15303084.71 -15303084.51 -15303084.31 0.0282 0.0073  
 Venus -46610-01-25 08:38 J -15302855.27 -15302855.14 -15302854.99 0.0283 0.0207  
 Mars -46606-05-18 05:45 J -15301281.36 -15301281.26 -15301281.13 0.0290 0.0261  
 Mercury -46601-02-15 15:21 J -15299546.99 -15299546.86 -15299546.72 0.0286 0.0167  
 Mercury -46601-05-14 10:18 J -15299458.23 -15299458.07 -15299457.90 0.0286 0.0045  
 Mercury -46601-08-11 05:45 J -15299369.42 -15299369.26 -15299369.10 0.0285 0.0082  
 Mercury -46601-11-08 01:26 J -15299280.55 -15299280.44 -15299280.32 0.0285 0.0209  
 Moon -46600-03-08 10:33 J -15299160.31 -15299160.06 -15299159.82 0.0284 0.0005  
 Earth -46600-03-08 14:09 J -15299160.16 -15299159.91 -15299159.66 0.0284 0.0009 \*  
 Venus -46597-04-07 03:21 J -15298034.52 -15298034.36 -15298034.20 0.0278 0.0186  
 Venus -46597-11-22 17:59 J -15297804.95 -15297804.75 -15297804.54 0.0276 0.0090  
 Mercury -46586-03-16 23:59 J -15294038.60 -15294038.50 -15294038.40 0.0273 0.0198  
 Mercury -46586-06-13 13:11 J -15293950.09 -15293949.95 -15293949.82 0.0274 0.0103  
 Moon -46586-09-01 00:57 J -15293870.56 -15293870.46 -15293870.33 0.0274 0.0244  
 Earth -46586-09-01 02:38 J -15293870.45 -15293870.39 -15293870.29 0.0274 0.0258 \*  
 Mercury -46586-09-10 01:54 J -15293861.56 -15293861.42 -15293861.27 0.0274 0.0010  
 Mercury -46586-12-07 14:38 J -15293773.03 -15293772.89 -15293772.76 0.0275 0.0085  
 Mercury -46585-03-05 03:06 J -15293684.48 -15293684.37 -15293684.26 0.0275 0.0177  
 Mercury -46585-06-01 15:21 J -15293595.89 -15293595.86 -15293595.83 0.0276 0.0267  
 Moon -46585-09-12 13:54 J -15293493.15 -15293492.92 -15293492.68 0.0276 0.0068  
 Earth -46585-09-12 17:45 J -15293493.00 -15293492.76 -15293492.52 0.0276 0.0052 \*  
 Venus -46582-12-21 06:28 J -15292298.44 -15292298.23 -15292298.03 0.0283 0.0029

Venus -46581-08-06 15:35 J -15292068.93 -15292068.85 -15292068.74 0.0284 0.0252  
 Mars -46576-07-05 09:50 J -15290275.33 -15290275.09 -15290274.83 0.0289 0.0103  
 Mercury -46572-07-04 17:30 J -15288814.89 -15288814.77 -15288814.64 0.0286 0.0191  
 Mercury -46572-10-01 12:28 J -15288726.14 -15288725.98 -15288725.82 0.0286 0.0068  
 Mercury -46572-12-29 07:54 J -15288637.34 -15288637.17 -15288637.01 0.0285 0.0058  
 Earth -46571-03-03 06:28 J -15288573.43 -15288573.23 -15288573.02 0.0285 0.0160  
 Moon -46571-03-03 09:50 J -15288573.29 -15288573.09 -15288572.88 0.0285 0.0158 \*  
 Mercury -46571-03-28 03:21 J -15288548.48 -15288548.36 -15288548.23 0.0285 0.0185  
 Earth -46570-03-16 21:06 J -15288194.79 -15288194.62 -15288194.43 0.0283 0.0188  
 Moon -46570-03-16 23:30 J -15288194.68 -15288194.52 -15288194.32 0.0283 0.0197 \*  
 Venus -46568-10-18 13:40 J -15287248.11 -15287247.93 -15287247.73 0.0278 0.0133  
 Venus -46567-06-05 04:33 J -15287018.50 -15287018.31 -15287018.13 0.0276 0.0142  
 Mars -46562-07-17 23:59 J -15285149.68 -15285149.50 -15285149.30 0.0270 0.0215  
 Mercury -46557-08-03 02:09 J -15283306.49 -15283306.41 -15283306.33 0.0272 0.0224  
 Mercury -46557-10-30 15:06 J -15283217.99 -15283217.87 -15283217.74 0.0273 0.0129  
 Mercury -46556-01-27 04:04 J -15283129.47 -15283129.33 -15283129.19 0.0273 0.0035  
 Mercury -46556-04-25 16:47 J -15283040.94 -15283040.80 -15283040.66 0.0274 0.0058  
 Mercury -46556-07-23 05:16 J -15282952.40 -15282952.28 -15282952.16 0.0274 0.0150  
 Earth -46556-09-07 13:11 J -15282906.18 -15282905.95 -15282905.71 0.0274 0.0088  
 Moon -46556-09-07 17:02 J -15282906.03 -15282905.79 -15282905.55 0.0274 0.0072 \*  
 Mercury -46556-10-19 17:30 J -15282863.83 -15282863.77 -15282863.70 0.0274 0.0241  
 Earth -46555-09-20 04:04 J -15282528.46 -15282528.33 -15282528.18 0.0276 0.0225  
 Moon -46555-09-20 04:47 J -15282528.42 -15282528.30 -15282528.16 0.0276 0.0236 \*  
 Venus -46553-11-15 00:28 J -15281741.53 -15281741.48 -15281741.42 0.0281 0.0270  
 Venus -46552-07-02 09:21 J -15281512.32 -15281512.11 -15281511.90 0.0282 0.0007  
 Mercury -46543-11-21 15:50 J -15278082.93 -15278082.84 -15278082.75 0.0287 0.0238  
 Mercury -46542-02-18 10:33 J -15277994.21 -15277994.06 -15277993.91 0.0286 0.0116  
 Mercury -46542-05-18 05:30 J -15277905.43 -15277905.27 -15277905.10 0.0286 0.0010  
 Mercury -46542-08-15 00:57 J -15277816.60 -15277816.46 -15277816.31 0.0285 0.0135  
 Mercury -46542-11-11 20:38 J -15277727.69 -15277727.64 -15277727.56 0.0285 0.0263



Moon -46541-03-09 20:09 J -15277608.89 -15277608.66 -15277608.42 0.0284 0.0033  
 Earth -46541-03-09 22:04 J -15277608.82 -15277608.58 -15277608.33 0.0284 0.0026 \*  
 Venus -46538-04-30 14:52 J -15276462.08 -15276461.88 -15276461.68 0.0277 0.0105  
 Venus -46538-12-16 05:30 J -15276232.43 -15276232.27 -15276232.09 0.0276 0.0169  
 Mars -46532-09-07 03:21 J -15274140.63 -15274140.36 -15274140.07 0.0270 0.0134  
 Mercury -46528-12-21 03:35 J -15272574.40 -15272574.35 -15272574.29 0.0273 0.0254  
 Mercury -46527-03-19 16:47 J -15272485.91 -15272485.80 -15272485.68 0.0273 0.0159  
 Mercury -46527-06-16 05:45 J -15272397.40 -15272397.26 -15272397.12 0.0274 0.0064  
 Moon -46527-09-02 04:33 J -15272319.45 -15272319.31 -15272319.15 0.0274 0.0214  
 Earth -46527-09-02 08:09 J -15272319.29 -15272319.16 -15272319.02 0.0274 0.0228 \*  
 Mercury -46527-09-12 18:42 J -15272308.87 -15272308.72 -15272308.58 0.0274 0.0031  
 Mercury -46527-12-10 07:11 J -15272220.33 -15272220.20 -15272220.07 0.0275 0.0123  
 Mercury -46526-03-08 19:26 J -15272131.77 -15272131.69 -15272131.60 0.0275 0.0214  
 Moon -46526-09-14 22:18 J -15271941.78 -15271941.57 -15271941.34 0.0276 0.0097  
 Earth -46526-09-14 22:47 J -15271941.78 -15271941.55 -15271941.31 0.0276 0.0083 \*  
 Venus -46523-05-28 05:45 J -15270955.37 -15270955.26 -15270955.13 0.0282 0.0229  
 Venus -46522-01-12 14:52 J -15270726.08 -15270725.88 -15270725.67 0.0283 0.0048  
 Mars -46518-10-12 11:45 J -15268992.18 -15268992.01 -15268991.82 0.0289 0.0213  
 Mercury -46513-04-09 17:16 J -15267350.83 -15267350.78 -15267350.71 0.0287 0.0264  
 Mercury -46513-07-07 11:59 J -15267262.14 -15267262.00 -15267261.85 0.0286 0.0143  
 Mercury -46513-10-04 07:11 J -15267173.37 -15267173.20 -15267173.03 0.0286 0.0019  
 Mercury -46512-01-01 02:23 J -15267084.55 -15267084.40 -15267084.24 0.0285 0.0108  
 Earth -46512-03-04 12:42 J -15267022.19 -15267021.97 -15267021.75 0.0285 0.0127  
 Moon -46512-03-04 14:52 J -15267022.09 -15267021.88 -15267021.64 0.0285 0.0126 \*  
 Mercury -46512-03-30 22:18 J -15266995.66 -15266995.57 -15266995.47 0.0285 0.0235  
 Moon -46511-03-18 01:26 J -15266643.57 -15266643.44 -15266643.29 0.0283 0.0232  
 Earth -46511-03-18 03:21 J -15266643.50 -15266643.36 -15266643.19 0.0283 0.0221 \*  
 Venus -46509-11-10 00:42 J -15265675.68 -15265675.47 -15265675.26 0.0277 0.0054  
 Venus -46508-06-27 15:06 J -15265445.99 -15265445.87 -15265445.73 0.0276 0.0221  
 Mercury -46498-08-06 18:57 J -15261753.81 -15261753.71 -15261753.60 0.0272 0.0184

Mercury -46498-11-03 08:09 J -15261665.30 -15261665.16 -15261665.03 0.0273 0.0089  
 Mercury -46497-01-30 20:52 J -15261576.77 -15261576.63 -15261576.49 0.0273 0.0005  
 Mercury -46497-04-28 09:21 J -15261488.24 -15261488.11 -15261487.97 0.0274 0.0097  
 Mercury -46497-07-25 21:50 J -15261399.69 -15261399.59 -15261399.49 0.0274 0.0188  
 Moon -46497-09-08 18:57 J -15261354.96 -15261354.71 -15261354.45 0.0274 0.0043  
 Earth -46497-09-08 18:57 J -15261354.95 -15261354.71 -15261354.47 0.0274 0.0058 \*  
 Moon -46496-09-21 05:45 J -15260977.31 -15260977.26 -15260977.18 0.0276 0.0265  
 Earth -46496-09-21 09:21 J -15260977.19 -15260977.11 -15260977.00 0.0276 0.0256 \*  
 Venus -46494-12-08 08:52 J -15260169.27 -15260169.13 -15260168.97 0.0281 0.0194  
 Venus -46493-07-24 17:45 J -15259939.95 -15259939.76 -15259939.55 0.0282 0.0083  
 Mars -46488-11-28 14:38 J -15257987.13 -15257986.89 -15257986.64 0.0290 0.0118  
 Mercury -46484-11-24 09:50 J -15256530.21 -15256530.09 -15256529.97 0.0287 0.0192  
 Mercury -46483-02-21 04:47 J -15256441.46 -15256441.30 -15256441.14 0.0286 0.0070  
 Mercury -46483-05-20 23:59 J -15256352.66 -15256352.50 -15256352.33 0.0286 0.0056  
 Mercury -46483-08-17 19:40 J -15256263.81 -15256263.68 -15256263.55 0.0285 0.0183  
 Earth -46482-03-12 03:06 J -15256057.61 -15256057.37 -15256057.13 0.0284 0.0057  
 Moon -46482-03-12 05:16 J -15256057.51 -15256057.28 -15256057.05 0.0284 0.0066 \*  
 Venus -46479-05-23 00:42 J -15254889.68 -15254889.47 -15254889.25 0.0277 0.0029  
 Venus -46478-01-07 15:21 J -15254659.94 -15254659.86 -15254659.75 0.0276 0.0245  
 Mars -46474-12-11 08:38 J -15252861.36 -15252861.14 -15252860.89 0.0270 0.0183  
 Mercury -46469-12-23 20:09 J -15251021.74 -15251021.66 -15251021.57 0.0273 0.0216  
 Mercury -46468-03-22 09:21 J -15250933.24 -15250933.11 -15250932.98 0.0273 0.0121  
 Mercury -46468-06-18 22:18 J -15250844.72 -15250844.57 -15250844.43 0.0274 0.0028  
 Moon -46468-09-03 11:16 J -15250768.20 -15250768.03 -15250767.86 0.0274 0.0187  
 Earth -46468-09-03 11:45 J -15250768.17 -15250768.01 -15250767.84 0.0274 0.0200 \*  
 Mercury -46468-09-15 10:47 J -15250756.18 -15250756.05 -15250755.91 0.0274 0.0067  
 Mercury -46468-12-12 23:16 J -15250667.64 -15250667.53 -15250667.41 0.0275 0.0158  
 Mercury -46467-03-11 11:30 J -15250579.07 -15250579.02 -15250578.95 0.0275 0.0249  
 Earth -46467-09-16 01:54 J -15250390.64 -15250390.42 -15250390.19 0.0276 0.0111  
 Moon -46467-09-16 05:16 J -15250390.48 -15250390.28 -15250390.05 0.0276 0.0124 \*

Venus -46464-06-19 13:11 J -15249383.13 -15249382.95 -15249382.78 0.0282 0.0156  
 Venus -46463-02-03 22:04 J -15249153.77 -15249153.58 -15249153.40 0.0283 0.0121  
 Mercury -46454-04-13 11:02 J -15245798.14 -15245798.04 -15245797.94 0.0286 0.0222  
 Mercury -46454-07-11 05:45 J -15245709.41 -15245709.26 -15245709.10 0.0286 0.0100  
 Mercury -46454-10-08 00:57 J -15245620.62 -15245620.46 -15245620.29 0.0286 0.0025  
 Mercury -46453-01-04 20:23 J -15245531.79 -15245531.65 -15245531.50 0.0285 0.0152  
 Moon -46453-03-05 13:40 J -15245471.16 -15245470.93 -15245470.68 0.0285 0.0092  
 Earth -46453-03-05 15:50 J -15245471.07 -15245470.84 -15245470.61 0.0285 0.0097 \*  
 Mercury -46453-04-02 16:33 J -15245442.84 -15245442.81 -15245442.79 0.0285 0.0280  
 Moon -46452-03-19 03:35 J -15245092.43 -15245092.35 -15245092.26 0.0283 0.0263  
 Earth -46452-03-19 06:57 J -15245092.32 -15245092.21 -15245092.09 0.0283 0.0250 \*  
 Venus -46450-04-17 18:28 J -15244332.80 -15244332.73 -15244332.64 0.0279 0.0256  
 Venus -46450-12-03 09:50 J -15244103.31 -15244103.09 -15244102.87 0.0277 0.0021  
 Mars -46443-02-01 09:21 J -15241851.34 -15241851.11 -15241850.86 0.0270 0.0178  
 Mercury -46439-05-12 22:33 J -15240289.63 -15240289.56 -15240289.49 0.0272 0.0240  
 Mercury -46439-08-09 11:30 J -15240201.14 -15240201.02 -15240200.89 0.0273 0.0146  
 Mercury -46439-11-06 00:28 J -15240112.62 -15240112.48 -15240112.33 0.0273 0.0052  
 Mercury -46438-02-02 13:11 J -15240024.09 -15240023.95 -15240023.80 0.0273 0.0042  
 Mercury -46438-05-02 01:40 J -15239935.55 -15239935.43 -15239935.30 0.0274 0.0134  
 Mercury -46438-07-29 13:54 J -15239846.99 -15239846.92 -15239846.83 0.0274 0.0224  
 Moon -46438-09-10 19:26 J -15239803.94 -15239803.69 -15239803.44 0.0274 0.0015  
 Earth -46438-09-10 22:47 J -15239803.79 -15239803.55 -15239803.31 0.0274 0.0028 \*  
 Venus -46435-12-30 16:47 J -15238596.99 -15238596.80 -15238596.61 0.0281 0.0120  
 Venus -46434-08-17 01:26 J -15238367.61 -15238367.44 -15238367.26 0.0282 0.0155  
 Mars -46429-03-06 11:59 J -15236704.18 -15236704.00 -15236703.80 0.0289 0.0203  
 Mercury -46425-08-30 08:52 J -15235066.18 -15235066.13 -15235066.08 0.0287 0.0271  
 Mercury -46425-11-27 03:21 J -15234977.50 -15234977.36 -15234977.22 0.0287 0.0150  
 Mercury -46424-02-23 22:18 J -15234888.73 -15234888.57 -15234888.40 0.0286 0.0028  
 Earth -46424-02-27 13:40 J -15234885.01 -15234884.93 -15234884.83 0.0286 0.0265  
 Moon -46424-02-27 16:18 J -15234884.91 -15234884.82 -15234884.72 0.0286 0.0261 \*

Mercury -46424-05-23 17:45 J -15234799.92 -15234799.76 -15234799.60 0.0286 0.0099

Mercury -46424-08-20 13:26 J -15234711.04 -15234710.94 -15234710.83 0.0285 0.0227

Earth -46423-03-13 05:30 J -15234506.50 -15234506.27 -15234506.03 0.0284 0.0086

Moon -46423-03-13 09:06 J -15234506.35 -15234506.12 -15234505.88 0.0284 0.0096 \*

Venus -46421-10-27 17:59 J -15233546.87 -15233546.75 -15233546.63 0.0279 0.0232

Venus -46420-06-14 09:06 J -15233317.33 -15233317.12 -15233316.91 0.0277 0.0044

Mercury -46410-12-27 12:28 J -15229469.08 -15229468.98 -15229468.87 0.0273 0.0180

Mercury -46409-03-25 01:40 J -15229380.57 -15229380.43 -15229380.30 0.0273 0.0086

Mercury -46409-06-21 14:23 J -15229292.05 -15229291.90 -15229291.76 0.0274 0.0009

Earth -46409-09-04 13:54 J -15229217.11 -15229216.92 -15229216.73 0.0274 0.0172

Moon -46409-09-04 17:02 J -15229216.98 -15229216.79 -15229216.59 0.0274 0.0157 \*

Mercury -46409-09-18 02:52 J -15229203.51 -15229203.38 -15229203.25 0.0274 0.0101

Mercury -46409-12-15 15:21 J -15229114.96 -15229114.86 -15229114.76 0.0274 0.0192

Earth -46408-09-17 03:50 J -15228839.54 -15228839.34 -15228839.12 0.0276 0.0139

Moon -46408-09-17 05:45 J -15228839.46 -15228839.26 -15228839.04 0.0276 0.0149 \*

Venus -46405-07-11 19:40 J -15227810.88 -15227810.68 -15227810.48 0.0282 0.0085

Venus -46404-02-26 04:04 J -15227581.47 -15227581.33 -15227581.17 0.0283 0.0191

Mars -46399-04-24 04:33 J -15225698.53 -15225698.31 -15225698.07 0.0290 0.0148

Mercury -46395-04-16 03:50 J -15224245.46 -15224245.34 -15224245.21 0.0286 0.0184

Mercury -46395-07-13 22:47 J -15224156.71 -15224156.55 -15224156.38 0.0286 0.0061

Mercury -46395-10-10 18:14 J -15224067.91 -15224067.74 -15224067.58 0.0286 0.0065

Mercury -46394-01-07 13:54 J -15223979.05 -15223978.92 -15223978.80 0.0285 0.0193

Moon -46394-03-07 12:28 J -15223920.21 -15223919.98 -15223919.74 0.0285 0.0062

Earth -46394-03-07 16:04 J -15223920.06 -15223919.83 -15223919.59 0.0285 0.0070 \*

Earth -46393-03-20 07:26 J -15223541.23 -15223541.19 -15223541.14 0.0283 0.0277

Venus -46391-05-10 01:54 J -15222760.58 -15222760.42 -15222760.26 0.0279 0.0186

Venus -46391-12-25 17:16 J -15222530.98 -15222530.78 -15222530.57 0.0277 0.0090

Mars -46385-05-06 11:02 J -15220572.31 -15220572.04 -15220571.76 0.0270 0.0144

Mercury -46380-05-15 14:52 J -15218736.97 -15218736.88 -15218736.78 0.0272 0.0204

Mercury -46380-08-12 03:50 J -15218648.47 -15218648.34 -15218648.20 0.0273 0.0109

Mercury -46380-11-08 16:47 J -15218559.94 -15218559.80 -15218559.66 0.0273 0.0016

Mercury -46379-02-05 05:16 J -15218471.41 -15218471.28 -15218471.14 0.0273 0.0078

Mercury -46379-05-04 17:45 J -15218382.87 -15218382.76 -15218382.65 0.0274 0.0168

Mercury -46379-08-01 05:59 J -15218294.29 -15218294.25 -15218294.20 0.0274 0.0258

Moon -46379-09-11 23:16 J -15218252.77 -15218252.53 -15218252.29 0.0274 0.0014

Earth -46379-09-12 01:26 J -15218252.68 -15218252.44 -15218252.19 0.0274 0.0002 \*

Venus -46375-01-21 23:30 J -15217024.72 -15217024.52 -15217024.31 0.0281 0.0050

Venus -46375-09-08 07:54 J -15216795.28 -15216795.17 -15216795.04 0.0282 0.0225

Mercury -46366-09-03 01:40 J -15213513.52 -15213513.43 -15213513.33 0.0287 0.0233

Mercury -46366-11-30 20:23 J -15213424.80 -15213424.65 -15213424.49 0.0286 0.0111

Mercury -46365-02-27 15:35 J -15213336.02 -15213335.85 -15213335.68 0.0286 0.0014

Earth -46365-02-29 14:09 J -15213334.04 -15213333.91 -15213333.77 0.0286 0.0238

Moon -46365-02-29 17:30 J -15213333.92 -15213333.77 -15213333.62 0.0286 0.0229 \*

Mercury -46365-05-26 11:02 J -15213247.18 -15213247.04 -15213246.89 0.0286 0.0140

Mercury -46365-08-23 06:42 J -15213158.27 -15213158.22 -15213158.16 0.0285 0.0269

Moon -46364-03-14 05:59 J -15212955.47 -15212955.25 -15212955.01 0.0284 0.0126

Earth -46364-03-14 06:14 J -15212955.46 -15212955.24 -15212955.01 0.0284 0.0113 \*

Venus -46362-11-20 00:42 J -15211974.63 -15211974.47 -15211974.28 0.0278 0.0163

Venus -46361-07-06 16:04 J -15211745.02 -15211744.83 -15211744.62 0.0277 0.0113

Mars -46355-06-27 03:35 J -15209563.56 -15209563.35 -15209563.12 0.0270 0.0198

Mercury -46351-10-02 15:21 J -15208004.92 -15208004.86 -15208004.79 0.0273 0.0241

Mercury -46351-12-30 04:33 J -15207916.43 -15207916.31 -15207916.19 0.0273 0.0145

Mercury -46350-03-28 17:30 J -15207827.91 -15207827.77 -15207827.63 0.0273 0.0051

Mercury -46350-06-25 06:14 J -15207739.38 -15207739.24 -15207739.10 0.0274 0.0042

Earth -46350-09-06 14:52 J -15207666.08 -15207665.88 -15207665.66 0.0274 0.0145

Moon -46350-09-06 17:30 J -15207665.98 -15207665.77 -15207665.54 0.0274 0.0130 \*

Mercury -46350-09-21 18:42 J -15207650.84 -15207650.72 -15207650.60 0.0274 0.0134

Mercury -46350-12-19 06:57 J -15207562.28 -15207562.21 -15207562.12 0.0274 0.0225

Moon -46349-09-18 02:09 J -15207288.59 -15207288.41 -15207288.20 0.0276 0.0172

Earth -46349-09-18 04:47 J -15207288.49 -15207288.30 -15207288.10 0.0276 0.0167 \*

Venus -46346-08-04 01:26 J -15206238.64 -15206238.44 -15206238.23 0.0282 0.0018  
 Venus -46345-03-20 09:50 J -15206009.16 -15206009.09 -15206008.99 0.0283 0.0260  
 Mars -46341-07-30 20:09 J -15204415.87 -15204415.66 -15204415.45 0.0289 0.0182  
 Mercury -46336-01-20 01:54 J -15202781.47 -15202781.42 -15202781.36 0.0287 0.0268  
 Mercury -46336-04-18 20:38 J -15202692.78 -15202692.64 -15202692.50 0.0286 0.0146  
 Mercury -46336-07-16 15:35 J -15202604.01 -15202603.85 -15202603.68 0.0286 0.0023  
 Mercury -46336-10-13 11:02 J -15202515.20 -15202515.04 -15202514.88 0.0286 0.0103  
 Mercury -46335-01-10 06:42 J -15202426.31 -15202426.22 -15202426.12 0.0285 0.0231  
 Earth -46335-03-08 15:06 J -15202369.11 -15202368.87 -15202368.63 0.0285 0.0044  
 Moon -46335-03-08 15:35 J -15202369.08 -15202368.85 -15202368.61 0.0285 0.0032 \*  
 Venus -46332-06-01 08:09 J -15201188.35 -15201188.16 -15201187.96 0.0279 0.0119  
 Venus -46331-01-16 23:30 J -15200958.69 -15200958.52 -15200958.33 0.0277 0.0158  
 Mercury -46321-02-19 17:45 J -15197272.79 -15197272.76 -15197272.72 0.0272 0.0264  
 Mercury -46321-05-18 06:57 J -15197184.32 -15197184.21 -15197184.09 0.0272 0.0169  
 Mercury -46321-08-14 19:54 J -15197095.80 -15197095.67 -15197095.52 0.0273 0.0075  
 Moon -46321-08-31 12:14 J -15197079.04 -15197078.99 -15197078.92 0.0273 0.0263  
 Mercury -46321-11-11 08:52 J -15197007.28 -15197007.13 -15197006.99 0.0273 0.0020  
 Mercury -46320-02-07 21:21 J -15196918.74 -15196918.61 -15196918.48 0.0273 0.0111  
 Mercury -46320-05-07 09:35 J -15196830.19 -15196830.10 -15196830.00 0.0274 0.0202  
 Earth -46320-09-13 03:21 J -15196701.60 -15196701.36 -15196701.12 0.0274 0.0029  
 Moon -46320-09-13 05:02 J -15196701.52 -15196701.29 -15196701.05 0.0274 0.0041 \*  
 Venus -46317-06-28 22:04 J -15195681.66 -15195681.58 -15195681.48 0.0280 0.0249  
 Venus -46316-02-13 06:14 J -15195452.45 -15195452.24 -15195452.03 0.0281 0.0021  
 Mars -46311-09-17 02:09 J -15193410.62 -15193410.41 -15193410.17 0.0289 0.0156  
 Mercury -46307-09-05 18:28 J -15191960.85 -15191960.73 -15191960.61 0.0287 0.0196  
 Mercury -46307-12-03 13:11 J -15191872.11 -15191871.95 -15191871.78 0.0286 0.0073  
 Mercury -46306-03-02 08:23 J -15191783.31 -15191783.15 -15191782.98 0.0286 0.0053  
 Moon -46306-03-02 11:45 J -15191783.19 -15191783.01 -15191782.83 0.0286 0.0199 \*  
 Earth -46306-03-02 13:11 J -15191783.10 -15191782.95 -15191782.78 0.0286 0.0212 \*  
 Mercury -46306-05-30 03:50 J -15191694.46 -15191694.34 -15191694.20 0.0286 0.0180

Moon -46305-03-15 01:26 J -15191404.64 -15191404.44 -15191404.22 0.0284 0.0156  
 Earth -46305-03-15 05:16 J -15191404.48 -15191404.28 -15191404.06 0.0284 0.0140 \*  
 Venus -46303-12-12 07:11 J -15190402.40 -15190402.20 -15190401.99 0.0278 0.0095  
 Venus -46302-07-29 22:18 J -15190172.72 -15190172.57 -15190172.39 0.0277 0.0181  
 Mars -46297-09-29 00:14 J -15188284.77 -15188284.49 -15188284.20 0.0270 0.0127  
 Mercury -46292-10-05 07:26 J -15186452.28 -15186452.19 -15186452.09 0.0273 0.0206  
 Mercury -46291-01-01 20:38 J -15186363.77 -15186363.64 -15186363.51 0.0273 0.0111  
 Mercury -46291-03-31 09:21 J -15186275.25 -15186275.11 -15186274.96 0.0273 0.0018  
 Mercury -46291-06-27 22:04 J -15186186.72 -15186186.58 -15186186.44 0.0274 0.0075  
 Moon -46291-09-07 14:09 J -15186115.14 -15186114.91 -15186114.67 0.0274 0.0103  
 Earth -46291-09-07 16:18 J -15186115.04 -15186114.82 -15186114.59 0.0274 0.0117 \*  
 Mercury -46291-09-24 10:33 J -15186098.17 -15186098.06 -15186097.95 0.0274 0.0167  
 Mercury -46291-12-21 22:47 J -15186009.59 -15186009.55 -15186009.50 0.0274 0.0257  
 Moon -46290-09-20 02:23 J -15185737.55 -15185737.40 -15185737.22 0.0276 0.0200  
 Earth -46290-09-20 05:45 J -15185737.42 -15185737.26 -15185737.08 0.0276 0.0195 \*  
 Venus -46287-01-08 23:02 J -15184895.67 -15184895.54 -15184895.41 0.0280 0.0220  
 Venus -46287-08-26 07:26 J -15184666.39 -15184666.19 -15184665.99 0.0282 0.0052  
 Mercury -46277-01-23 18:14 J -15181228.83 -15181228.74 -15181228.64 0.0287 0.0233  
 Mercury -46277-04-21 13:11 J -15181140.11 -15181139.95 -15181139.80 0.0286 0.0111  
 Mercury -46277-07-19 08:09 J -15181051.33 -15181051.16 -15181050.99 0.0286 0.0014  
 Mercury -46277-10-16 03:35 J -15180962.49 -15180962.35 -15180962.20 0.0285 0.0141  
 Mercury -46276-01-12 23:16 J -15180873.57 -15180873.53 -15180873.47 0.0285 0.0269  
 Earth -46276-03-09 12:57 J -15180818.20 -15180817.96 -15180817.71 0.0285 0.0019  
 Moon -46276-03-09 17:02 J -15180818.04 -15180817.79 -15180817.55 0.0285 0.0005 \*  
 Venus -46273-06-23 13:54 J -15179616.13 -15179615.92 -15179615.71 0.0278 0.0053  
 Venus -46272-02-08 05:30 J -15179386.40 -15179386.27 -15179386.14 0.0277 0.0222  
 Mars -46267-11-20 22:47 J -15177274.69 -15177274.55 -15177274.37 0.0270 0.0234  
 Mercury -46262-02-22 10:04 J -15175720.16 -15175720.08 -15175720.00 0.0272 0.0228  
 Mercury -46262-05-21 23:02 J -15175631.66 -15175631.54 -15175631.41 0.0273 0.0134  
 Mercury -46262-08-18 11:59 J -15175543.14 -15175543.00 -15175542.85 0.0273 0.0040

Earth -46262-09-02 16:18 J -15175527.90 -15175527.82 -15175527.71 0.0273 0.0251  
 Moon -46262-09-02 18:28 J -15175527.84 -15175527.73 -15175527.60 0.0273 0.0236 \*  
 Mercury -46262-11-15 00:42 J -15175454.61 -15175454.47 -15175454.33 0.0273 0.0053  
 Mercury -46261-02-11 13:11 J -15175366.07 -15175365.95 -15175365.83 0.0274 0.0145  
 Mercury -46261-05-10 01:26 J -15175277.50 -15175277.44 -15175277.36 0.0274 0.0235  
 Earth -46261-09-14 04:47 J -15175150.53 -15175150.30 -15175150.05 0.0274 0.0059  
 Moon -46261-09-14 08:23 J -15175150.38 -15175150.15 -15175149.90 0.0274 0.0070 \*  
 Venus -46258-07-22 04:47 J -15174109.45 -15174109.30 -15174109.13 0.0280 0.0180  
 Venus -46257-03-07 12:57 J -15173880.16 -15173879.96 -15173879.76 0.0281 0.0091  
 Mars -46253-12-23 21:21 J -15172127.82 -15172127.61 -15172127.38 0.0289 0.0168  
 Mercury -46248-06-11 16:33 J -15170496.84 -15170496.81 -15170496.76 0.0287 0.0278  
 Mercury -46248-09-08 11:16 J -15170408.16 -15170408.03 -15170407.89 0.0287 0.0157  
 Mercury -46248-12-06 06:14 J -15170319.40 -15170319.24 -15170319.07 0.0286 0.0034  
 Moon -46247-03-03 09:35 J -15170232.30 -15170232.10 -15170231.91 0.0286 0.0170  
 Earth -46247-03-03 13:11 J -15170232.14 -15170231.95 -15170231.76 0.0286 0.0185 \*  
 Mercury -46247-03-05 01:26 J -15170230.59 -15170230.44 -15170230.28 0.0286 0.0092  
 Mercury -46247-06-01 21:06 J -15170141.72 -15170141.62 -15170141.51 0.0285 0.0219  
 Moon -46246-03-17 03:35 J -15169853.52 -15169853.35 -15169853.16 0.0284 0.0184  
 Earth -46246-03-17 04:47 J -15169853.49 -15169853.30 -15169853.09 0.0284 0.0167 \*  
 Venus -46243-01-03 13:40 J -15168830.14 -15168829.93 -15168829.71 0.0278 0.0028  
 Venus -46243-08-21 04:47 J -15168600.38 -15168600.30 -15168600.19 0.0277 0.0246  
 Mercury -46233-07-11 10:18 J -15164988.09 -15164988.07 -15164988.04 0.0272 0.0266  
 Mercury -46233-10-07 23:30 J -15164899.63 -15164899.52 -15164899.40 0.0273 0.0171  
 Mercury -46232-01-04 12:28 J -15164811.11 -15164810.98 -15164810.84 0.0273 0.0077  
 Mercury -46232-04-03 01:26 J -15164722.59 -15164722.44 -15164722.30 0.0273 0.0018  
 Mercury -46232-06-30 13:54 J -15164634.05 -15164633.92 -15164633.79 0.0274 0.0109  
 Moon -46232-09-08 14:23 J -15164564.13 -15164563.90 -15164563.67 0.0274 0.0077  
 Earth -46232-09-08 17:45 J -15164563.99 -15164563.76 -15164563.52 0.0274 0.0089 \*  
 Mercury -46232-09-27 02:09 J -15164545.50 -15164545.41 -15164545.31 0.0274 0.0200  
 Earth -46231-09-21 07:11 J -15164186.33 -15164186.20 -15164186.05 0.0276 0.0224



Moon -46231-09-21 07:40 J -15164186.31 -15164186.18 -15164186.04 0.0276 0.0226 \*  
 Venus -46228-01-31 05:30 J -15163323.44 -15163323.27 -15163323.09 0.0281 0.0151  
 Venus -46228-09-17 13:40 J -15163094.11 -15163093.93 -15163093.74 0.0282 0.0121  
 Mars -46222-02-10 05:59 J -15161122.45 -15161122.25 -15161122.03 0.0289 0.0173  
 Mercury -46218-01-26 10:47 J -15159676.16 -15159676.05 -15159675.93 0.0287 0.0196  
 Mercury -46218-04-25 05:45 J -15159587.42 -15159587.26 -15159587.10 0.0286 0.0073  
 Mercury -46218-07-23 00:57 J -15159498.63 -15159498.46 -15159498.30 0.0286 0.0052  
 Jupiter -46218-10-02 08:38 J -15159427.54 -15159427.14 -15159426.69 0.0285 0.0152  
 Mercury -46218-10-19 20:23 J -15159409.78 -15159409.65 -15159409.51 0.0285 0.0179  
 Earth -46217-03-10 11:45 J -15159267.26 -15159267.01 -15159266.77 0.0285 0.0009  
 Moon -46217-03-10 12:28 J -15159267.24 -15159266.98 -15159266.73 0.0285 0.0024 \*  
 Venus -46215-11-29 03:21 J -15158273.41 -15158273.36 -15158273.28 0.0280 0.0266  
 Venus -46214-07-16 19:40 J -15158043.90 -15158043.68 -15158043.47 0.0278 0.0012  
 Mars -46208-02-22 18:14 J -15155996.04 -15155995.74 -15155995.44 0.0271 0.0094  
 Mercury -46203-02-25 02:09 J -15154167.50 -15154167.41 -15154167.30 0.0272 0.0193  
 Mercury -46203-05-24 15:21 J -15154078.99 -15154078.86 -15154078.72 0.0273 0.0098  
 Mercury -46203-08-21 04:18 J -15153990.47 -15153990.32 -15153990.18 0.0273 0.0007  
 Earth -46203-09-03 18:57 J -15153976.85 -15153976.71 -15153976.56 0.0273 0.0222  
 Moon -46203-09-03 22:33 J -15153976.72 -15153976.56 -15153976.40 0.0273 0.0207 \*  
 Mercury -46203-11-17 16:47 J -15153901.93 -15153901.80 -15153901.66 0.0273 0.0089  
 Mercury -46202-02-14 05:16 J -15153813.38 -15153813.28 -15153813.17 0.0274 0.0179  
 Mercury -46202-05-13 17:30 J -15153724.79 -15153724.77 -15153724.74 0.0274 0.0269  
 Moon -46202-09-16 07:26 J -15153599.43 -15153599.19 -15153598.95 0.0275 0.0095  
 Earth -46202-09-16 07:26 J -15153599.41 -15153599.19 -15153598.95 0.0275 0.0089 \*  
 Venus -46199-08-13 12:28 J -15152537.17 -15152536.98 -15152536.79 0.0280 0.0108  
 Venus -46198-03-30 20:23 J -15152307.82 -15152307.65 -15152307.48 0.0281 0.0161  
 Mercury -46189-06-14 09:35 J -15148944.18 -15148944.10 -15148944.00 0.0287 0.0239  
 Mercury -46189-09-11 04:18 J -15148855.47 -15148855.32 -15148855.16 0.0286 0.0118  
 Mercury -46189-12-08 23:30 J -15148766.69 -15148766.52 -15148766.36 0.0286 0.0008  
 Moon -46188-03-04 13:11 J -15148681.15 -15148680.95 -15148680.74 0.0286 0.0144

Earth -46188-03-04 13:40 J -15148681.13 -15148680.93 -15148680.72 0.0286 0.0157 \*  
 Mercury -46188-03-07 18:42 J -15148677.86 -15148677.72 -15148677.57 0.0286 0.0133  
 Mercury -46188-06-04 14:38 J -15148588.96 -15148588.89 -15148588.82 0.0285 0.0261  
 Earth -46187-03-18 05:02 J -15148302.46 -15148302.29 -15148302.10 0.0284 0.0196  
 Moon -46187-03-18 08:09 J -15148302.30 -15148302.16 -15148301.99 0.0284 0.0212 \*  
 Venus -46185-06-10 04:33 J -15147487.41 -15147487.31 -15147487.19 0.0279 0.0236  
 Venus -46184-01-25 20:38 J -15147257.86 -15147257.64 -15147257.43 0.0278 0.0040  
 Mars -46178-04-15 12:42 J -15144987.07 -15144986.97 -15144986.84 0.0270 0.0252  
 Mercury -46174-07-15 02:38 J -15143435.47 -15143435.39 -15143435.31 0.0272 0.0230  
 Mercury -46174-10-11 15:50 J -15143346.97 -15143346.84 -15143346.72 0.0273 0.0135  
 Mercury -46173-01-08 04:47 J -15143258.45 -15143258.30 -15143258.16 0.0273 0.0042  
 Mercury -46173-04-05 17:30 J -15143169.91 -15143169.77 -15143169.63 0.0273 0.0052  
 Mercury -46173-07-03 05:59 J -15143081.37 -15143081.25 -15143081.13 0.0274 0.0144  
 Earth -46173-09-09 20:09 J -15143012.90 -15143012.66 -15143012.42 0.0274 0.0060  
 Moon -46173-09-09 20:38 J -15143012.86 -15143012.64 -15143012.40 0.0274 0.0053 \*  
 Mercury -46173-09-29 18:14 J -15142992.81 -15142992.74 -15142992.66 0.0274 0.0234  
 Earth -46172-09-22 09:35 J -15142635.18 -15142635.10 -15142635.00 0.0276 0.0254  
 Moon -46172-09-22 13:11 J -15142635.03 -15142634.95 -15142634.84 0.0276 0.0254 \*  
 Venus -46169-02-23 12:57 J -15141751.16 -15141750.96 -15141750.77 0.0281 0.0080  
 Venus -46169-10-09 20:38 J -15141521.78 -15141521.64 -15141521.48 0.0282 0.0191  
 Mars -46164-05-19 02:52 J -15139839.60 -15139839.38 -15139839.14 0.0289 0.0151  
 Mercury -46160-11-01 09:21 J -15138212.15 -15138212.11 -15138212.07 0.0287 0.0277  
 Mercury -46159-01-29 03:50 J -15138123.47 -15138123.34 -15138123.20 0.0286 0.0157  
 Mercury -46159-04-27 22:47 J -15138034.71 -15138034.55 -15138034.38 0.0286 0.0033  
 Mercury -46159-07-25 18:14 J -15137945.90 -15137945.74 -15137945.58 0.0286 0.0093  
 Mercury -46159-10-22 13:40 J -15137857.03 -15137856.93 -15137856.82 0.0285 0.0220  
 Moon -46158-03-12 08:38 J -15137716.38 -15137716.14 -15137715.89 0.0285 0.0052  
 Earth -46158-03-12 12:14 J -15137716.24 -15137715.99 -15137715.75 0.0285 0.0037 \*  
 Venus -46156-12-21 10:18 J -15136701.22 -15136701.07 -15136700.91 0.0279 0.0198  
 Venus -46155-08-08 02:23 J -15136471.61 -15136471.40 -15136471.20 0.0278 0.0078

Mercury -46145-12-01 05:30 J -15132703.32 -15132703.27 -15132703.21 0.0272 0.0251

Mercury -46144-02-27 18:42 J -15132614.84 -15132614.72 -15132614.60 0.0273 0.0155

Mercury -46144-05-27 07:40 J -15132526.32 -15132526.18 -15132526.04 0.0273 0.0061

Mercury -46144-08-23 20:38 J -15132437.79 -15132437.64 -15132437.50 0.0273 0.0034

Moon -46144-09-04 21:35 J -15132425.78 -15132425.60 -15132425.40 0.0273 0.0182

Earth -46144-09-04 22:18 J -15132425.74 -15132425.57 -15132425.40 0.0273 0.0193 \*

Mercury -46144-11-20 09:06 J -15132349.25 -15132349.12 -15132348.99 0.0274 0.0124

Mercury -46143-02-16 21:21 J -15132260.69 -15132260.61 -15132260.52 0.0274 0.0215

Moon -46143-09-17 07:26 J -15132048.41 -15132048.19 -15132047.97 0.0275 0.0121

Earth -46143-09-17 11:16 J -15132048.25 -15132048.03 -15132047.81 0.0275 0.0119 \*

Venus -46140-09-04 20:52 J -15130964.84 -15130964.63 -15130964.43 0.0280 0.0036

Venus -46139-04-22 04:47 J -15130735.42 -15130735.30 -15130735.19 0.0281 0.0234

Mars -46134-07-06 20:09 J -15128833.85 -15128833.66 -15128833.47 0.0289 0.0202

Mercury -46130-06-18 03:21 J -15127391.48 -15127391.36 -15127391.24 0.0287 0.0196

Mercury -46130-09-14 22:04 J -15127302.74 -15127302.58 -15127302.42 0.0286 0.0074

Mercury -46130-12-12 17:16 J -15127213.95 -15127213.78 -15127213.62 0.0286 0.0051

Earth -46129-03-05 16:18 J -15127130.03 -15127129.82 -15127129.59 0.0285 0.0127

Moon -46129-03-05 19:26 J -15127129.90 -15127129.69 -15127129.46 0.0285 0.0112 \*

Mercury -46129-03-10 12:42 J -15127125.10 -15127124.97 -15127124.84 0.0285 0.0178

Earth -46128-03-19 07:40 J -15126751.33 -15126751.18 -15126751.03 0.0284 0.0226

Moon -46128-03-19 10:04 J -15126751.20 -15126751.08 -15126750.94 0.0284 0.0240 \*

Venus -46126-07-03 12:28 J -15125915.14 -15125914.98 -15125914.80 0.0279 0.0166

Venus -46125-02-18 04:18 J -15125685.51 -15125685.32 -15125685.12 0.0278 0.0109

Mars -46120-07-18 11:45 J -15123708.31 -15123708.01 -15123707.69 0.0271 0.0071

Mercury -46115-07-17 19:11 J -15121882.80 -15121882.70 -15121882.59 0.0273 0.0192

Mercury -46115-10-14 08:23 J -15121794.29 -15121794.15 -15121794.02 0.0273 0.0097

Mercury -46114-01-10 21:06 J -15121705.76 -15121705.62 -15121705.47 0.0273 0.0009

Mercury -46114-04-09 09:50 J -15121617.22 -15121617.09 -15121616.95 0.0274 0.0089

Mercury -46114-07-06 22:18 J -15121528.67 -15121528.57 -15121528.46 0.0274 0.0181

Earth -46114-09-12 00:28 J -15121461.73 -15121461.48 -15121461.24 0.0274 0.0028

Moon -46114-09-12 04:04 J -15121461.57 -15121461.33 -15121461.08 0.0274 0.0023 \*  
 Mercury -46114-10-03 10:33 J -15121440.08 -15121440.06 -15121440.04 0.0274 0.0270  
 Venus -46111-07-31 13:26 J -15120407.97 -15120407.94 -15120407.89 0.0280 0.0274  
 Venus -46110-03-17 21:35 J -15120178.81 -15120178.60 -15120178.39 0.0281 0.0007  
 Venus -46110-11-02 05:16 J -15119949.34 -15119949.28 -15119949.20 0.0282 0.0264  
 Mercury -46101-11-04 02:38 J -15116659.47 -15116659.39 -15116659.29 0.0287 0.0236  
 Mercury -46100-01-31 21:21 J -15116570.76 -15116570.61 -15116570.45 0.0286 0.0114  
 Moon -46100-02-27 17:45 J -15116543.81 -15116543.76 -15116543.67 0.0286 0.0274  
 Mercury -46100-04-30 16:33 J -15116481.98 -15116481.81 -15116481.64 0.0286 0.0011  
 Mercury -46100-07-28 11:59 J -15116393.15 -15116393.00 -15116392.85 0.0285 0.0137  
 Mercury -46100-10-25 07:26 J -15116304.24 -15116304.19 -15116304.12 0.0285 0.0265  
 Moon -46099-03-13 11:45 J -15116165.23 -15116165.01 -15116164.77 0.0284 0.0083  
 Earth -46099-03-13 14:23 J -15116165.14 -15116164.90 -15116164.66 0.0284 0.0067 \*  
 Venus -46096-01-12 17:59 J -15115128.93 -15115128.75 -15115128.55 0.0279 0.0128  
 Venus -46096-08-30 10:04 J -15114899.26 -15114899.08 -15114898.90 0.0278 0.0147  
 Mercury -46086-12-04 22:18 J -15111150.66 -15111150.57 -15111150.48 0.0273 0.0212  
 Mercury -46085-03-02 11:30 J -15111062.15 -15111062.02 -15111061.89 0.0273 0.0117  
 Mercury -46085-05-30 00:14 J -15110973.63 -15110973.49 -15110973.34 0.0273 0.0024  
 Mercury -46085-08-26 12:57 J -15110885.09 -15110884.96 -15110884.82 0.0274 0.0071  
 Moon -46085-09-05 23:30 J -15110874.72 -15110874.52 -15110874.31 0.0274 0.0152  
 Earth -46085-09-06 03:06 J -15110874.56 -15110874.37 -15110874.17 0.0274 0.0162 \*  
 Mercury -46085-11-23 01:40 J -15110796.55 -15110796.43 -15110796.32 0.0274 0.0162  
 Mercury -46084-02-19 13:54 J -15110707.97 -15110707.92 -15110707.87 0.0274 0.0252  
 Moon -46084-09-18 15:06 J -15110497.07 -15110496.87 -15110496.67 0.0275 0.0152  
 Earth -46084-09-18 16:18 J -15110497.01 -15110496.82 -15110496.61 0.0275 0.0152 \*  
 Venus -46081-02-10 22:04 J -15109621.69 -15109621.58 -15109621.45 0.0279 0.0228  
 Venus -46081-09-27 06:14 J -15109392.45 -15109392.24 -15109392.04 0.0281 0.0040  
 Mars -46076-10-13 02:09 J -15107550.66 -15107550.41 -15107550.16 0.0288 0.0108  
 Mercury -46071-03-24 03:06 J -15105927.42 -15105927.37 -15105927.31 0.0287 0.0269  
 Mercury -46071-06-20 21:35 J -15105838.73 -15105838.60 -15105838.45 0.0286 0.0149

Mercury -46071-09-17 16:33 J -15105749.98 -15105749.81 -15105749.64 0.0286 0.0026  
 Mercury -46071-12-15 11:45 J -15105661.17 -15105661.01 -15105660.85 0.0286 0.0100  
 Earth -46070-03-07 21:50 J -15105578.81 -15105578.59 -15105578.35 0.0285 0.0093  
 Moon -46070-03-08 00:42 J -15105578.71 -15105578.47 -15105578.23 0.0285 0.0077 \*  
 Mercury -46070-03-14 07:11 J -15105572.29 -15105572.20 -15105572.09 0.0285 0.0228  
 Moon -46069-03-20 11:02 J -15105200.11 -15105200.04 -15105199.95 0.0284 0.0270  
 Earth -46069-03-20 12:42 J -15105200.05 -15105199.97 -15105199.86 0.0284 0.0260 \*  
 Venus -46067-07-25 22:18 J -15104342.77 -15104342.57 -15104342.37 0.0279 0.0092  
 Venus -46066-03-12 13:54 J -15104113.08 -15104112.92 -15104112.76 0.0278 0.0182  
 Mercury -46056-04-22 22:47 J -15100418.60 -15100418.55 -15100418.48 0.0272 0.0247  
 Mercury -46056-07-20 11:59 J -15100330.11 -15100330.00 -15100329.87 0.0273 0.0152  
 Mercury -46056-10-17 01:11 J -15100241.59 -15100241.45 -15100241.31 0.0273 0.0057  
 Mercury -46055-01-13 13:54 J -15100153.06 -15100152.92 -15100152.78 0.0273 0.0036  
 Mercury -46055-04-12 02:23 J -15100064.52 -15100064.40 -15100064.27 0.0274 0.0129  
 Mercury -46055-07-09 14:52 J -15099975.96 -15099975.88 -15099975.79 0.0274 0.0219  
 Earth -46055-09-13 06:14 J -15099910.48 -15099910.24 -15099909.99 0.0274 0.0007  
 Moon -46055-09-13 07:40 J -15099910.43 -15099910.18 -15099909.92 0.0274 0.0008 \*  
 Venus -46052-08-22 23:16 J -15098835.67 -15098835.53 -15098835.37 0.0280 0.0198  
 Venus -46051-04-09 07:11 J -15098606.39 -15098606.20 -15098605.99 0.0281 0.0070  
 Mars -46046-11-30 09:35 J -15096545.25 -15096545.10 -15096544.93 0.0289 0.0229  
 Mercury -46042-11-07 21:06 J -15095106.74 -15095106.62 -15095106.50 0.0286 0.0188  
 Mercury -46041-02-04 15:50 J -15095018.00 -15095017.84 -15095017.68 0.0286 0.0066  
 Moon -46041-03-01 00:57 J -15094992.59 -15094992.46 -15094992.33 0.0286 0.0240  
 Earth -46041-03-01 02:52 J -15094992.47 -15094992.38 -15094992.26 0.0286 0.0256 \*  
 Mercury -46041-05-03 11:02 J -15094929.20 -15094929.04 -15094928.88 0.0286 0.0059  
 Mercury -46041-07-31 06:28 J -15094840.35 -15094840.23 -15094840.10 0.0285 0.0186  
 Earth -46040-03-14 19:26 J -15094613.91 -15094613.69 -15094613.45 0.0284 0.0102  
 Moon -46040-03-14 21:06 J -15094613.83 -15094613.62 -15094613.40 0.0284 0.0115 \*  
 Venus -46037-02-05 03:35 J -15093556.56 -15093556.35 -15093556.14 0.0279 0.0055  
 Venus -46037-09-21 19:11 J -15093326.82 -15093326.70 -15093326.56 0.0278 0.0219

Mars -46032-12-12 13:40 J -15091419.25 -15091418.93 -15091418.61 0.0271 0.0025  
 Mercury -46027-09-10 01:54 J -15089686.44 -15089686.42 -15089686.39 0.0273 0.0267  
 Mercury -46027-12-07 15:21 J -15089597.97 -15089597.86 -15089597.75 0.0273 0.0171  
 Mercury -46026-03-06 04:18 J -15089509.46 -15089509.32 -15089509.18 0.0273 0.0076  
 Mercury -46026-06-02 17:16 J -15089420.92 -15089420.78 -15089420.64 0.0274 0.0018  
 Mercury -46026-08-30 05:59 J -15089332.38 -15089332.25 -15089332.12 0.0274 0.0111  
 Moon -46026-09-08 07:40 J -15089323.39 -15089323.18 -15089322.96 0.0274 0.0120  
 Earth -46026-09-08 09:35 J -15089323.31 -15089323.10 -15089322.88 0.0274 0.0129 \*  
 Mercury -46026-11-26 18:14 J -15089243.83 -15089243.74 -15089243.64 0.0274 0.0203  
 Earth -46025-09-19 23:45 J -15088945.69 -15088945.51 -15088945.33 0.0276 0.0187  
 Moon -46025-09-20 02:09 J -15088945.57 -15088945.41 -15088945.22 0.0276 0.0184 \*  
 Venus -46022-03-05 09:06 J -15088049.30 -15088049.12 -15088048.94 0.0280 0.0149  
 Venus -46022-10-20 17:02 J -15087819.98 -15087819.79 -15087819.60 0.0281 0.0118  
 Mercury -46012-03-26 22:04 J -15084374.68 -15084374.58 -15084374.47 0.0286 0.0218  
 Mercury -46012-06-23 16:47 J -15084285.96 -15084285.80 -15084285.65 0.0286 0.0097  
 Mercury -46012-09-20 11:45 J -15084197.18 -15084197.01 -15084196.84 0.0286 0.0027  
 Mercury -46012-12-18 06:57 J -15084108.34 -15084108.21 -15084108.06 0.0285 0.0154  
 Moon -46011-03-09 04:33 J -15084027.56 -15084027.31 -15084027.06 0.0285 0.0041  
 Earth -46011-03-09 06:14 J -15084027.48 -15084027.24 -15084027.00 0.0285 0.0057 \*  
 Mercury -46011-03-17 02:52 J -15084019.40 -15084019.38 -15084019.36 0.0285 0.0281  
 Venus -46008-08-17 09:21 J -15082770.32 -15082770.11 -15082769.89 0.0279 0.0015  
 Venus -46007-04-04 00:42 J -15082540.54 -15082540.47 -15082540.38 0.0278 0.0258

# 46TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 46th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-45997-04-25 16:04 J	-15078865.92	-15078865.83	-15078865.73	0.0273	0.0205		
Mercury	-45997-07-23 05:16 J	-15078777.41	-15078777.28	-15078777.14	0.0273	0.0110		
Moon	-45997-09-02 03:06 J	-15078736.43	-15078736.37	-15078736.28	0.0273	0.0260		
Mercury	-45997-10-19 18:14 J	-15078688.88	-15078688.74	-15078688.59	0.0273	0.0017		
Mercury	-45996-01-16 06:57 J	-15078600.34	-15078600.21	-15078600.07	0.0274	0.0078		
Mercury	-45996-04-14 19:26 J	-15078511.79	-15078511.69	-15078511.57	0.0274	0.0170		
Mercury	-45996-07-12 07:54 J	-15078423.21	-15078423.17	-15078423.13	0.0274	0.0260		
Moon	-45996-09-14 11:30 J	-15078359.27	-15078359.02	-15078358.77	0.0275	0.0039		
Earth	-45996-09-14 14:09 J	-15078359.15	-15078358.91	-15078358.66	0.0275	0.0039	*	
Venus	-45993-09-14 10:18 J	-15077263.25	-15077263.07	-15077262.88	0.0280	0.0119		
Venus	-45992-05-01 18:14 J	-15077033.91	-15077033.74	-15077033.56	0.0281	0.0149		
Mars	-45987-03-08 19:11 J	-15075261.95	-15075261.70	-15075261.43	0.0288	0.0078		
Mercury	-45983-08-13 21:35 J	-15073642.67	-15073642.60	-15073642.53	0.0287	0.0258		
Mercury	-45983-11-10 16:04 J	-15073553.97	-15073553.83	-15073553.68	0.0286	0.0137		
Mercury	-45982-02-07 11:02 J	-15073465.21	-15073465.04	-15073464.87	0.0286	0.0014		
Earth	-45982-03-03 11:30 J	-15073441.17	-15073441.02	-15073440.86	0.0286	0.0220		
Moon	-45982-03-03 13:40 J	-15073441.09	-15073440.93	-15073440.75	0.0286	0.0204	*	
Mercury	-45982-05-07 06:14 J	-15073376.39	-15073376.24	-15073376.08	0.0285	0.0112		
Mercury	-45982-08-04 01:40 J	-15073287.51	-15073287.43	-15073287.33	0.0285	0.0241		
Earth	-45981-03-16 03:35 J	-15073062.56	-15073062.35	-15073062.13	0.0284	0.0138		
Moon	-45981-03-16 07:11 J	-15073062.40	-15073062.20	-15073061.98	0.0284	0.0153	*	
Venus	-45979-07-12 22:47 J	-15072213.64	-15072213.55	-15072213.46	0.0280	0.0252		
Venus	-45978-02-27 14:52 J	-15071984.10	-15071983.88	-15071983.67	0.0278	0.0023		
Mercury	-45968-09-12 19:11 J	-15068133.77	-15068133.70	-15068133.61	0.0273	0.0224		
Mercury	-45968-12-10 08:38 J	-15068045.27	-15068045.14	-15068045.01	0.0273	0.0128		
Mercury	-45967-03-08 21:35 J	-15067956.74	-15067956.60	-15067956.46	0.0274	0.0033		
Mercury	-45967-06-05 10:18 J	-15067868.21	-15067868.07	-15067867.93	0.0274	0.0061		

Mercury -45967-09-01 23:02 J -15067779.66 -15067779.54 -15067779.42 0.0274 0.0153  
 Earth -45967-09-09 17:30 J -15067772.00 -15067771.77 -15067771.54 0.0274 0.0095  
 Moon -45967-09-09 19:40 J -15067771.91 -15067771.68 -15067771.45 0.0274 0.0087 \*  
 Mercury -45967-11-29 11:16 J -15067691.09 -15067691.03 -15067690.96 0.0275 0.0244  
 Earth -45966-09-22 07:40 J -15067394.31 -15067394.18 -15067394.02 0.0276 0.0223  
 Moon -45966-09-22 11:02 J -15067394.18 -15067394.04 -15067393.88 0.0276 0.0218 \*  
 Venus -45963-03-27 20:38 J -15066476.85 -15066476.64 -15066476.44 0.0280 0.0070  
 Venus -45963-11-12 04:18 J -15066247.46 -15066247.32 -15066247.16 0.0281 0.0199  
 Mercury -45954-12-31 23:16 J -15062910.54 -15062910.53 -15062910.50 0.0286 0.0283  
 Mercury -45953-03-29 17:45 J -15062821.89 -15062821.76 -15062821.62 0.0286 0.0163  
 Mercury -45953-06-26 12:28 J -15062733.14 -15062732.98 -15062732.81 0.0286 0.0041  
 Mercury -45953-09-23 07:40 J -15062644.34 -15062644.18 -15062644.02 0.0285 0.0085  
 Mercury -45953-12-21 03:21 J -15062555.48 -15062555.36 -15062555.25 0.0285 0.0211  
 Moon -45952-03-10 13:40 J -15062476.17 -15062475.93 -15062475.69 0.0285 0.0002  
 Earth -45952-03-10 17:30 J -15062476.02 -15062475.77 -15062475.53 0.0285 0.0018 \*  
 Venus -45949-01-23 06:28 J -15061427.36 -15061427.23 -15061427.08 0.0280 0.0207  
 Venus -45949-09-08 22:18 J -15061197.78 -15061197.57 -15061197.36 0.0278 0.0067  
 Mars -45943-05-08 08:09 J -15059130.48 -15059130.16 -15059129.84 0.0271 0.0020  
 Mercury -45938-01-30 20:38 J -15057401.69 -15057401.64 -15057401.60 0.0273 0.0256  
 Mercury -45938-04-29 09:50 J -15057313.21 -15057313.09 -15057312.97 0.0273 0.0160  
 Mercury -45938-07-26 22:47 J -15057224.69 -15057224.55 -15057224.41 0.0273 0.0065  
 Moon -45938-09-04 07:26 J -15057185.31 -15057185.19 -15057185.04 0.0273 0.0229  
 Earth -45938-09-04 10:04 J -15057185.19 -15057185.08 -15057184.95 0.0273 0.0239 \*  
 Mercury -45938-10-23 11:45 J -15057136.15 -15057136.01 -15057135.87 0.0273 0.0029  
 Mercury -45937-01-20 00:14 J -15057047.61 -15057047.49 -15057047.36 0.0274 0.0122  
 Mercury -45937-04-17 12:57 J -15056959.05 -15056958.96 -15056958.88 0.0274 0.0213  
 Moon -45937-09-15 20:23 J -15056807.88 -15056807.65 -15056807.42 0.0275 0.0077  
 Earth -45937-09-15 23:45 J -15056807.75 -15056807.51 -15056807.27 0.0275 0.0076 \*  
 Venus -45934-10-07 22:33 J -15055690.77 -15055690.56 -15055690.35 0.0280 0.0037  
 Venus -45933-05-24 06:14 J -15055461.34 -15055461.24 -15055461.11 0.0282 0.0231



Mercury -45924-08-16 17:02 J -15052089.90 -15052089.79 -15052089.67 0.0286 0.0203  
 Mercury -45924-11-13 11:45 J -15052001.17 -15052001.01 -15052000.85 0.0286 0.0081  
 Mercury -45923-02-10 06:57 J -15051912.38 -15051912.21 -15051912.05 0.0286 0.0044  
 Earth -45923-03-04 22:18 J -15051889.75 -15051889.57 -15051889.37 0.0286 0.0182  
 Moon -45923-03-05 01:54 J -15051889.61 -15051889.42 -15051889.21 0.0286 0.0165 \*  
 Mercury -45923-05-10 02:09 J -15051823.54 -15051823.41 -15051823.27 0.0285 0.0170  
 Earth -45922-03-18 14:23 J -15051511.09 -15051510.90 -15051510.71 0.0284 0.0176  
 Moon -45922-03-18 14:52 J -15051511.06 -15051510.88 -15051510.68 0.0284 0.0189 \*  
 Venus -45920-08-04 11:30 J -15050641.19 -15050641.02 -15050640.85 0.0279 0.0171  
 Venus -45919-03-22 03:21 J -15050411.56 -15050411.36 -15050411.16 0.0278 0.0102  
 Mercury -45909-09-15 12:57 J -15046581.07 -15046580.96 -15046580.85 0.0273 0.0179  
 Mercury -45909-12-13 02:09 J -15046492.55 -15046492.41 -15046492.27 0.0274 0.0084  
 Mercury -45908-03-11 15:06 J -15046404.02 -15046403.87 -15046403.73 0.0274 0.0013  
 Mercury -45908-06-08 03:35 J -15046315.48 -15046315.35 -15046315.21 0.0274 0.0104  
 Mercury -45908-09-04 16:18 J -15046226.92 -15046226.82 -15046226.72 0.0275 0.0196  
 Earth -45908-09-11 02:38 J -15046220.63 -15046220.39 -15046220.15 0.0275 0.0060  
 Moon -45908-09-11 06:14 J -15046220.48 -15046220.24 -15046219.99 0.0275 0.0053 \*  
 Moon -45907-09-23 17:02 J -15045842.88 -15045842.79 -15045842.68 0.0276 0.0252  
 Earth -45907-09-23 17:16 J -15045842.85 -15045842.78 -15045842.68 0.0276 0.0260 \*  
 Venus -45905-09-02 00:28 J -15045133.56 -15045133.48 -15045133.39 0.0280 0.0252  
 Venus -45904-04-19 08:38 J -15044904.34 -15044904.14 -15044903.93 0.0281 0.0013  
 Venus -45904-12-04 16:47 J -15044674.81 -15044674.80 -15044674.78 0.0282 0.0280  
 Mars -45899-08-03 17:59 J -15042972.02 -15042971.75 -15042971.48 0.0288 0.0009  
 Mercury -45894-01-03 19:26 J -15041357.79 -15041357.69 -15041357.59 0.0286 0.0225  
 Mercury -45894-04-02 14:09 J -15041269.07 -15041268.91 -15041268.76 0.0286 0.0104  
 Mercury -45894-06-30 08:52 J -15041180.29 -15041180.13 -15041179.96 0.0286 0.0021  
 Mercury -45894-09-27 04:18 J -15041091.47 -15041091.32 -15041091.18 0.0285 0.0145  
 Mercury -45894-12-24 23:45 J -15041002.55 -15041002.51 -15041002.46 0.0285 0.0273  
 Moon -45893-03-12 05:59 J -15040924.48 -15040924.25 -15040924.01 0.0285 0.0038  
 Earth -45893-03-12 06:28 J -15040924.48 -15040924.23 -15040923.99 0.0285 0.0024 \*

Venus -45890-02-14 20:38 J -15039854.83 -15039854.64 -15039854.44 0.0279 0.0122  
 Venus -45890-10-02 12:14 J -15039625.17 -15039624.99 -15039624.81 0.0278 0.0150  
 Mercury -45879-02-02 14:23 J -15035848.99 -15035848.90 -15035848.81 0.0273 0.0210  
 Mercury -45879-05-02 03:35 J -15035760.48 -15035760.35 -15035760.22 0.0273 0.0114  
 Mercury -45879-07-29 16:33 J -15035671.95 -15035671.81 -15035671.67 0.0273 0.0020  
 Moon -45879-09-05 16:47 J -15035633.96 -15035633.80 -15035633.63 0.0273 0.0196  
 Earth -45879-09-05 20:23 J -15035633.81 -15035633.65 -15035633.49 0.0273 0.0204 \*  
 Mercury -45879-10-26 05:16 J -15035583.42 -15035583.28 -15035583.14 0.0274 0.0074  
 Mercury -45878-01-22 17:45 J -15035494.87 -15035494.76 -15035494.64 0.0274 0.0166  
 Mercury -45878-04-21 06:14 J -15035406.28 -15035406.24 -15035406.19 0.0274 0.0256  
 Earth -45878-09-18 09:50 J -15035256.30 -15035256.09 -15035255.86 0.0275 0.0113  
 Moon -45878-09-18 10:18 J -15035256.28 -15035256.07 -15035255.85 0.0275 0.0112 \*  
 Venus -45875-03-15 03:06 J -15034347.50 -15034347.37 -15034347.24 0.0280 0.0220  
 Venus -45875-10-30 11:02 J -15034118.24 -15034118.04 -15034117.83 0.0281 0.0045  
 Mercury -45865-05-22 18:42 J -15030625.77 -15030625.72 -15030625.66 0.0286 0.0266  
 Mercury -45865-08-19 13:11 J -15030537.09 -15030536.95 -15030536.81 0.0286 0.0145  
 Mercury -45865-11-16 08:09 J -15030448.33 -15030448.16 -15030448.00 0.0286 0.0023  
 Mercury -45864-02-13 03:06 J -15030359.52 -15030359.37 -15030359.21 0.0285 0.0103  
 Moon -45864-03-06 11:02 J -15030338.27 -15030338.04 -15030337.81 0.0285 0.0127  
 Earth -45864-03-06 11:02 J -15030338.24 -15030338.04 -15030337.82 0.0285 0.0141 \*  
 Mercury -45864-05-12 22:47 J -15030270.65 -15030270.55 -15030270.45 0.0285 0.0230  
 Moon -45863-03-19 23:02 J -15029959.67 -15029959.54 -15029959.38 0.0284 0.0227  
 Earth -45863-03-20 02:38 J -15029959.53 -15029959.39 -15029959.22 0.0284 0.0217 \*  
 Venus -45861-08-27 01:26 J -15029068.64 -15029068.44 -15029068.23 0.0279 0.0087  
 Venus -45860-04-13 16:47 J -15028838.95 -15028838.80 -15028838.63 0.0278 0.0185  
 Mars -45855-10-02 18:42 J -15026841.03 -15026840.72 -15026840.41 0.0271 0.0076  
 Mercury -45850-06-22 17:16 J -15025116.86 -15025116.78 -15025116.70 0.0273 0.0231  
 Mercury -45850-09-19 06:28 J -15025028.35 -15025028.23 -15025028.10 0.0274 0.0135  
 Mercury -45850-12-16 19:40 J -15024939.83 -15024939.68 -15024939.54 0.0274 0.0040  
 Mercury -45849-03-14 08:23 J -15024851.29 -15024851.15 -15024851.01 0.0274 0.0055

Mercury -45849-06-10 21:06 J -15024762.74 -15024762.62 -15024762.50 0.0275 0.0147

Mercury -45849-09-07 09:35 J -15024674.17 -15024674.10 -15024674.03 0.0275 0.0238

Moon -45849-09-12 11:45 J -15024669.26 -15024669.01 -15024668.75 0.0275 0.0023

Earth -45849-09-12 12:14 J -15024669.23 -15024668.99 -15024668.75 0.0275 0.0025 \*

Venus -45846-09-25 12:42 J -15023561.13 -15023560.97 -15023560.80 0.0280 0.0170

Venus -45845-05-11 21:06 J -15023331.82 -15023331.62 -15023331.43 0.0281 0.0096

Mercury -45836-10-09 21:35 J -15019893.61 -15019893.60 -15019893.59 0.0286 0.0285

Mercury -45835-01-06 15:50 J -15019804.97 -15019804.84 -15019804.70 0.0286 0.0165

Moon -45835-03-01 04:33 J -15019751.34 -15019751.31 -15019751.26 0.0286 0.0280

Mercury -45835-04-05 10:33 J -15019716.22 -15019716.06 -15019715.89 0.0286 0.0043

Mercury -45835-07-03 05:45 J -15019627.42 -15019627.26 -15019627.10 0.0285 0.0082

Mercury -45835-09-30 01:11 J -15019538.56 -15019538.45 -15019538.34 0.0285 0.0208

Earth -45834-03-14 20:38 J -15019372.88 -15019372.64 -15019372.40 0.0284 0.0065

Moon -45834-03-14 23:59 J -15019372.73 -15019372.50 -15019372.27 0.0284 0.0078 \*

Venus -45831-03-09 11:30 J -15018282.23 -15018282.02 -15018281.80 0.0279 0.0036

Venus -45831-10-25 02:38 J -15018052.49 -15018052.39 -15018052.26 0.0278 0.0235

Mercury -45821-11-08 18:42 J -15014384.75 -15014384.72 -15014384.67 0.0273 0.0260

Mercury -45820-02-05 08:09 J -15014296.27 -15014296.16 -15014296.04 0.0273 0.0163

Mercury -45820-05-04 21:21 J -15014207.75 -15014207.61 -15014207.47 0.0273 0.0068

Mercury -45820-08-01 10:18 J -15014119.22 -15014119.07 -15014118.93 0.0273 0.0026

Earth -45820-09-07 06:28 J -15014082.41 -15014082.23 -15014082.02 0.0274 0.0169

Moon -45820-09-07 07:11 J -15014082.38 -15014082.20 -15014082.00 0.0274 0.0164 \*

Mercury -45820-10-28 22:47 J -15014030.67 -15014030.55 -15014030.42 0.0274 0.0119

Mercury -45819-01-25 11:16 J -15013942.11 -15013942.03 -15013941.93 0.0274 0.0210

Earth -45819-09-19 20:38 J -15013704.84 -15013704.64 -15013704.43 0.0275 0.0150

Moon -45819-09-20 00:14 J -15013704.68 -15013704.49 -15013704.27 0.0275 0.0146 \*

Venus -45816-04-06 15:35 J -15012775.03 -15012774.85 -15012774.66 0.0280 0.0137

Venus -45816-11-21 23:45 J -15012545.70 -15012545.51 -15012545.33 0.0281 0.0128

Mars -45811-12-28 17:45 J -15010683.03 -15010682.76 -15010682.49 0.0288 0.0029

Mercury -45806-05-26 14:52 J -15009072.99 -15009072.88 -15009072.77 0.0286 0.0208

Mercury -45806-08-23 09:35 J -15008984.26 -15008984.10 -15008983.95 0.0286 0.0086  
 Mercury -45806-11-20 04:33 J -15008895.48 -15008895.31 -15008895.15 0.0286 0.0039  
 Mercury -45805-02-16 23:45 J -15008806.64 -15008806.51 -15008806.37 0.0285 0.0164  
 Moon -45805-03-07 20:52 J -15008786.86 -15008786.63 -15008786.39 0.0285 0.0087  
 Earth -45805-03-08 00:14 J -15008786.71 -15008786.49 -15008786.25 0.0285 0.0101 \*  
 Moon -45804-03-21 13:11 J -15008408.03 -15008407.95 -15008407.87 0.0283 0.0266  
 Earth -45804-03-21 15:35 J -15008407.94 -15008407.85 -15008407.74 0.0283 0.0257 \*  
 Venus -45802-02-01 23:59 J -15007725.54 -15007725.50 -15007725.46 0.0280 0.0274  
 Venus -45802-09-19 15:50 J -15007496.06 -15007495.84 -15007495.63 0.0279 0.0005  
 Venus -45801-05-06 06:57 J -15007266.25 -15007266.21 -15007266.14 0.0277 0.0268  
 Mars -45796-01-05 11:02 J -15005561.19 -15005561.04 -15005560.88 0.0272 0.0236  
 Mercury -45791-06-25 11:02 J -15003564.15 -15003564.04 -15003563.94 0.0274 0.0186  
 Mercury -45791-09-22 00:14 J -15003475.63 -15003475.49 -15003475.36 0.0274 0.0090  
 Mercury -45791-12-19 13:11 J -15003387.10 -15003386.95 -15003386.81 0.0274 0.0007  
 Mercury -45790-03-18 01:54 J -15003298.55 -15003298.42 -15003298.29 0.0274 0.0098  
 Mercury -45790-06-14 14:23 J -15003210.00 -15003209.90 -15003209.80 0.0275 0.0190  
 Moon -45790-09-14 17:59 J -15003118.00 -15003117.75 -15003117.51 0.0275 0.0009  
 Earth -45790-09-14 21:50 J -15003117.84 -15003117.59 -15003117.35 0.0275 0.0012 \*  
 Venus -45787-10-18 00:28 J -15001988.67 -15001988.48 -15001988.28 0.0280 0.0089  
 Venus -45786-06-04 08:52 J -15001759.29 -15001759.13 -15001758.97 0.0282 0.0177  
 Mercury -45777-10-12 17:45 J -14998340.86 -14998340.76 -14998340.66 0.0286 0.0227  
 Mercury -45776-01-09 12:14 J -14998252.14 -14998251.99 -14998251.84 0.0286 0.0106  
 Earth -45776-03-02 18:28 J -14998199.83 -14998199.73 -14998199.61 0.0286 0.0253  
 Moon -45776-03-02 21:50 J -14998199.72 -14998199.59 -14998199.45 0.0286 0.0237 \*  
 Mercury -45776-04-08 07:11 J -14998163.37 -14998163.20 -14998163.04 0.0286 0.0018  
 Mercury -45776-07-06 02:23 J -14998074.54 -14998074.40 -14998074.25 0.0285 0.0144  
 Mercury -45776-10-02 22:04 J -14997985.63 -14997985.58 -14997985.53 0.0285 0.0271  
 Earth -45775-03-16 10:33 J -14997821.29 -14997821.06 -14997820.83 0.0284 0.0107  
 Moon -45775-03-16 13:11 J -14997821.18 -14997820.95 -14997820.72 0.0284 0.0119 \*  
 Venus -45773-08-14 10:47 J -14996939.17 -14996939.05 -14996938.91 0.0280 0.0221

Venus -45772-04-01 02:38 J -14996709.60 -14996709.39 -14996709.18 0.0279 0.0051  
 Mars -45766-02-27 09:35 J -14994551.38 -14994551.10 -14994550.82 0.0271 0.0132  
 Mercury -45762-11-12 12:42 J -14992832.06 -14992831.97 -14992831.88 0.0273 0.0213  
 Mercury -45761-02-09 01:54 J -14992743.55 -14992743.42 -14992743.28 0.0273 0.0118  
 Mercury -45761-05-07 15:06 J -14992655.02 -14992654.87 -14992654.73 0.0273 0.0023  
 Jupiter -45761-07-23 06:42 J -14992578.63 -14992578.22 -14992577.81 0.0273 0.0098  
 Mercury -45761-08-04 03:50 J -14992566.48 -14992566.34 -14992566.20 0.0274 0.0071  
 Earth -45761-09-08 16:47 J -14992531.01 -14992530.80 -14992530.58 0.0274 0.0132  
 Moon -45761-09-08 20:23 J -14992530.86 -14992530.65 -14992530.44 0.0274 0.0129 \*  
 Mercury -45761-10-31 16:18 J -14992477.93 -14992477.82 -14992477.70 0.0274 0.0163  
 Mercury -45760-01-28 04:47 J -14992389.35 -14992389.30 -14992389.25 0.0274 0.0253  
 Earth -45760-09-21 06:42 J -14992153.39 -14992153.22 -14992153.04 0.0275 0.0187  
 Moon -45760-09-21 08:09 J -14992153.33 -14992153.16 -14992152.95 0.0275 0.0180 \*  
 Venus -45757-04-29 03:50 J -14991202.55 -14991202.34 -14991202.14 0.0280 0.0055  
 Venus -45757-12-14 11:30 J -14990973.14 -14990973.02 -14990972.87 0.0281 0.0211  
 Mars -45752-04-06 06:57 J -14989399.28 -14989399.21 -14989399.11 0.0288 0.0274  
 Mercury -45747-03-01 16:33 J -14987608.86 -14987608.81 -14987608.75 0.0287 0.0270  
 Mercury -45747-05-29 11:02 J -14987520.18 -14987520.04 -14987519.90 0.0286 0.0149  
 Mercury -45747-08-26 05:45 J -14987431.42 -14987431.26 -14987431.09 0.0286 0.0027  
 Mercury -45747-11-23 00:57 J -14987342.62 -14987342.46 -14987342.30 0.0285 0.0098  
 Mercury -45746-02-19 20:23 J -14987253.75 -14987253.65 -14987253.55 0.0285 0.0225  
 Moon -45746-03-10 11:02 J -14987235.27 -14987235.04 -14987234.80 0.0285 0.0046  
 Earth -45746-03-10 13:40 J -14987235.17 -14987234.93 -14987234.69 0.0285 0.0059 \*  
 Venus -45743-02-24 14:09 J -14986153.07 -14986152.91 -14986152.75 0.0280 0.0189  
 Venus -45743-10-12 05:45 J -14985923.46 -14985923.26 -14985923.05 0.0278 0.0082  
 Mercury -45732-03-31 14:52 J -14982099.94 -14982099.88 -14982099.80 0.0273 0.0239  
 Mercury -45732-06-28 04:18 J -14982011.44 -14982011.32 -14982011.19 0.0274 0.0142  
 Moon -45732-09-03 12:42 J -14981944.03 -14981943.97 -14981943.89 0.0274 0.0262  
 Earth -45732-09-03 15:50 J -14981943.85 -14981943.84 -14981943.79 0.0274 0.0272  
 Mercury -45732-09-24 17:30 J -14981922.91 -14981922.77 -14981922.63 0.0274 0.0046

Mercury -45732-12-22 06:28 J -14981834.37 -14981834.23 -14981834.09 0.0274 0.0048

Mercury -45731-03-20 18:57 J -14981745.83 -14981745.71 -14981745.58 0.0275 0.0141

Mercury -45731-06-17 07:26 J -14981657.26 -14981657.19 -14981657.11 0.0275 0.0232

Moon -45731-09-16 04:33 J -14981566.54 -14981566.31 -14981566.07 0.0275 0.0043

Earth -45731-09-16 05:59 J -14981566.48 -14981566.25 -14981566.00 0.0275 0.0047 \*

Venus -45728-03-25 03:35 J -14980645.39 -14980645.35 -14980645.30 0.0280 0.0272

Venus -45728-11-09 11:45 J -14980416.22 -14980416.01 -14980415.80 0.0281 0.0009

Venus -45727-06-26 19:54 J -14980186.74 -14980186.67 -14980186.58 0.0282 0.0257

Mars -45722-05-25 15:50 J -14978393.09 -14978392.84 -14978392.58 0.0288 0.0096

Mercury -45718-10-16 13:40 J -14976788.06 -14976787.93 -14976787.80 0.0286 0.0170

Mercury -45717-01-13 08:23 J -14976699.32 -14976699.15 -14976698.99 0.0286 0.0048

Earth -45717-03-04 06:57 J -14976648.36 -14976648.21 -14976648.04 0.0286 0.0213

Moon -45717-03-04 09:50 J -14976648.26 -14976648.09 -14976647.90 0.0286 0.0196 \*

Mercury -45717-04-11 03:21 J -14976610.52 -14976610.36 -14976610.20 0.0285 0.0077

Mercury -45717-07-08 22:47 J -14976521.67 -14976521.55 -14976521.43 0.0285 0.0204

Moon -45716-03-17 21:35 J -14976269.80 -14976269.60 -14976269.38 0.0284 0.0157

Earth -45716-03-17 22:47 J -14976269.75 -14976269.55 -14976269.33 0.0284 0.0148 \*

Venus -45714-09-07 01:26 J -14975366.63 -14975366.44 -14975366.25 0.0279 0.0135

Venus -45713-04-23 16:47 J -14975136.98 -14975136.80 -14975136.61 0.0278 0.0135

Mars -45708-06-02 05:16 J -14973271.50 -14973271.28 -14973271.03 0.0271 0.0180

Mercury -45703-08-18 17:02 J -14971367.82 -14971367.79 -14971367.75 0.0272 0.0264

Mercury -45703-11-15 06:28 J -14971279.34 -14971279.23 -14971279.11 0.0273 0.0167

Mercury -45702-02-11 19:40 J -14971190.82 -14971190.68 -14971190.54 0.0273 0.0072

Mercury -45702-05-11 08:38 J -14971102.29 -14971102.14 -14971102.00 0.0273 0.0023

Mercury -45702-08-07 21:06 J -14971013.74 -14971013.62 -14971013.49 0.0274 0.0115

Earth -45702-09-11 02:09 J -14970979.63 -14970979.41 -14970979.17 0.0274 0.0097

Moon -45702-09-11 04:18 J -14970979.55 -14970979.32 -14970979.08 0.0274 0.0093 \*

Mercury -45702-11-04 09:35 J -14970925.19 -14970925.10 -14970925.00 0.0274 0.0206

Moon -45701-09-22 13:11 J -14970602.10 -14970601.95 -14970601.79 0.0275 0.0211

Earth -45701-09-22 16:04 J -14970601.97 -14970601.83 -14970601.68 0.0275 0.0223 \*

Venus -45699-10-05 06:57 J -14969859.32 -14969859.21 -14969859.10 0.0279 0.0238  
 Venus -45698-05-22 14:52 J -14969630.09 -14969629.88 -14969629.67 0.0280 0.0025  
 Mercury -45688-03-04 12:14 J -14966056.10 -14966055.99 -14966055.88 0.0286 0.0215  
 Mercury -45688-06-01 06:42 J -14965967.37 -14965967.22 -14965967.06 0.0286 0.0094  
 Mercury -45688-08-29 01:40 J -14965878.60 -14965878.43 -14965878.26 0.0286 0.0030  
 Mercury -45688-11-25 20:52 J -14965789.77 -14965789.63 -14965789.49 0.0285 0.0156  
 Mercury -45687-02-22 16:33 J -14965700.82 -14965700.81 -14965700.80 0.0285 0.0284  
 Earth -45687-03-12 00:57 J -14965683.71 -14965683.46 -14965683.22 0.0285 0.0020  
 Moon -45687-03-12 02:23 J -14965683.64 -14965683.40 -14965683.16 0.0285 0.0008 \*  
 Venus -45684-03-19 03:35 J -14964580.55 -14964580.35 -14964580.15 0.0279 0.0106  
 Venus -45684-11-03 19:11 J -14964350.87 -14964350.70 -14964350.53 0.0278 0.0164  
 Mars -45678-07-24 11:02 J -14962262.27 -14962262.04 -14962261.79 0.0271 0.0180  
 Mercury -45673-04-03 08:23 J -14960547.25 -14960547.15 -14960547.05 0.0273 0.0195  
 Mercury -45673-06-30 21:35 J -14960458.73 -14960458.60 -14960458.46 0.0274 0.0099  
 Moon -45673-09-04 20:52 J -14960392.75 -14960392.63 -14960392.50 0.0274 0.0231  
 Earth -45673-09-04 23:02 J -14960392.65 -14960392.54 -14960392.41 0.0274 0.0239 \*  
 Mercury -45673-09-27 10:33 J -14960370.20 -14960370.06 -14960369.91 0.0274 0.0007  
 Mercury -45673-12-24 23:16 J -14960281.66 -14960281.53 -14960281.39 0.0274 0.0089  
 Mercury -45672-03-23 11:59 J -14960193.11 -14960193.00 -14960192.89 0.0275 0.0181  
 Mercury -45672-06-20 00:28 J -14960104.50 -14960104.48 -14960104.46 0.0275 0.0271  
 Earth -45672-09-17 12:57 J -14960015.19 -14960014.96 -14960014.72 0.0275 0.0079  
 Moon -45672-09-17 15:21 J -14960015.09 -14960014.86 -14960014.63 0.0275 0.0074 \*  
 Venus -45669-04-16 13:11 J -14959073.09 -14959072.95 -14959072.79 0.0280 0.0196  
 Venus -45669-12-01 21:35 J -14958843.80 -14958843.60 -14958843.40 0.0281 0.0068  
 Mars -45664-08-31 22:33 J -14957109.72 -14957109.56 -14957109.37 0.0288 0.0216  
 Mercury -45659-07-22 14:38 J -14955323.98 -14955323.89 -14955323.80 0.0286 0.0237  
 Mercury -45659-10-19 09:06 J -14955235.27 -14955235.12 -14955234.97 0.0286 0.0116  
 Mercury -45658-01-16 03:50 J -14955146.50 -14955146.34 -14955146.17 0.0286 0.0011  
 Moon -45658-03-06 15:50 J -14955097.05 -14955096.84 -14955096.63 0.0286 0.0159  
 Earth -45658-03-06 17:30 J -14955096.96 -14955096.77 -14955096.57 0.0286 0.0175 \*

Mercury -45658-04-14 23:02 J -14955057.68 -14955057.54 -14955057.39 0.0285 0.0134  
 Mercury -45658-07-12 18:42 J -14954968.78 -14954968.72 -14954968.65 0.0285 0.0261  
 Moon -45657-03-19 05:45 J -14954718.43 -14954718.26 -14954718.08 0.0284 0.0197  
 Earth -45657-03-19 09:35 J -14954718.28 -14954718.10 -14954717.91 0.0284 0.0186 \*  
 Venus -45655-09-29 14:38 J -14953794.10 -14953793.89 -14953793.68 0.0279 0.0053  
 Venus -45654-05-17 05:59 J -14953564.38 -14953564.25 -14953564.11 0.0278 0.0216  
 Mercury -45644-08-21 10:33 J -14949815.14 -14949815.06 -14949814.97 0.0272 0.0220  
 Mercury -45644-11-17 23:45 J -14949726.63 -14949726.51 -14949726.37 0.0273 0.0125  
 Mercury -45643-02-14 12:57 J -14949638.11 -14949637.96 -14949637.82 0.0273 0.0030  
 Mercury -45643-05-14 01:40 J -14949549.57 -14949549.43 -14949549.29 0.0273 0.0064  
 Mercury -45643-08-10 14:09 J -14949461.02 -14949460.91 -14949460.79 0.0274 0.0156  
 Moon -45643-09-12 07:54 J -14949428.41 -14949428.17 -14949427.92 0.0274 0.0062  
 Earth -45643-09-12 10:04 J -14949428.32 -14949428.08 -14949427.84 0.0274 0.0063 \*  
 Mercury -45643-11-07 02:38 J -14949372.45 -14949372.39 -14949372.33 0.0274 0.0246  
 Moon -45642-09-24 20:38 J -14949050.74 -14949050.64 -14949050.53 0.0275 0.0246  
 Earth -45642-09-24 23:45 J -14949050.59 -14949050.51 -14949050.42 0.0275 0.0257 \*  
 Venus -45640-10-27 17:02 J -14948286.96 -14948286.79 -14948286.62 0.0279 0.0161  
 Venus -45639-06-14 00:57 J -14948057.65 -14948057.46 -14948057.26 0.0280 0.0101  
 Mars -45634-10-19 05:02 J -14946104.53 -14946104.29 -14946104.04 0.0288 0.0121  
 Mercury -45630-12-09 12:57 J -14944591.98 -14944591.96 -14944591.94 0.0287 0.0283  
 Mercury -45629-03-07 07:11 J -14944503.33 -14944503.20 -14944503.06 0.0286 0.0163  
 Mercury -45629-06-04 01:54 J -14944414.58 -14944414.42 -14944414.25 0.0286 0.0041  
 Mercury -45629-08-31 20:52 J -14944325.78 -14944325.63 -14944325.46 0.0286 0.0085  
 Mercury -45629-11-28 16:18 J -14944236.93 -14944236.82 -14944236.70 0.0285 0.0211  
 Earth -45628-03-13 09:50 J -14944132.33 -14944132.09 -14944131.84 0.0285 0.0017  
 Moon -45628-03-13 13:40 J -14944132.17 -14944131.93 -14944131.68 0.0285 0.0031 \*  
 Venus -45625-04-10 15:35 J -14943008.06 -14943007.85 -14943007.63 0.0279 0.0027  
 Venus -45625-11-26 06:57 J -14942778.30 -14942778.21 -14942778.09 0.0278 0.0243  
 Mars -45620-10-26 23:16 J -14940982.79 -14940982.53 -14940982.25 0.0271 0.0139  
 Mercury -45614-01-08 11:59 J -14939083.05 -14939083.00 -14939082.94 0.0273 0.0250



Mercury -45614-04-07 01:26 J -14938994.56 -14938994.44 -14938994.32 0.0273 0.0154  
 Mercury -45614-07-04 14:38 J -14938906.03 -14938905.89 -14938905.75 0.0274 0.0059  
 Earth -45614-09-07 05:02 J -14938841.44 -14938841.29 -14938841.12 0.0274 0.0207  
 Moon -45614-09-07 07:11 J -14938841.35 -14938841.20 -14938841.03 0.0274 0.0202 \*  
 Mercury -45614-10-01 03:21 J -14938817.50 -14938817.36 -14938817.21 0.0274 0.0036  
 Mercury -45614-12-28 16:04 J -14938728.95 -14938728.83 -14938728.70 0.0274 0.0128  
 Mercury -45613-03-26 04:33 J -14938640.39 -14938640.31 -14938640.22 0.0275 0.0219  
 Earth -45613-09-18 18:42 J -14938463.94 -14938463.72 -14938463.49 0.0275 0.0112  
 Moon -45613-09-18 22:04 J -14938463.80 -14938463.58 -14938463.35 0.0275 0.0107 \*  
 Venus -45610-05-09 22:18 J -14937500.76 -14937500.57 -14937500.38 0.0280 0.0122  
 Venus -45610-12-25 06:28 J -14937271.41 -14937271.23 -14937271.05 0.0281 0.0142  
 Mercury -45600-07-25 09:06 J -14933771.24 -14933771.12 -14933771.00 0.0286 0.0188  
 Mercury -45600-10-22 03:50 J -14933682.50 -14933682.34 -14933682.18 0.0286 0.0066  
 Mercury -45599-01-18 22:47 J -14933593.71 -14933593.55 -14933593.39 0.0286 0.0058  
 Moon -45599-03-07 20:52 J -14933545.85 -14933545.63 -14933545.41 0.0285 0.0126  
 Earth -45599-03-08 00:28 J -14933545.69 -14933545.48 -14933545.26 0.0285 0.0140 \*  
 Mercury -45599-04-17 17:59 J -14933504.87 -14933504.75 -14933504.62 0.0285 0.0185  
 Moon -45598-03-21 15:06 J -14933166.99 -14933166.87 -14933166.72 0.0284 0.0231  
 Earth -45598-03-21 16:33 J -14933166.95 -14933166.81 -14933166.65 0.0284 0.0222 \*  
 Venus -45596-03-06 10:04 J -14932451.17 -14932451.08 -14932450.97 0.0280 0.0246  
 Venus -45596-10-22 02:09 J -14932221.63 -14932221.41 -14932221.20 0.0279 0.0025  
 Mars -45590-12-19 00:42 J -14929972.62 -14929972.47 -14929972.29 0.0271 0.0232  
 Mercury -45585-08-24 03:35 J -14928262.45 -14928262.35 -14928262.23 0.0272 0.0178  
 Mercury -45585-11-20 16:47 J -14928173.94 -14928173.80 -14928173.66 0.0273 0.0083  
 Mercury -45584-02-17 05:45 J -14928085.40 -14928085.26 -14928085.11 0.0273 0.0011  
 Mercury -45584-05-16 18:28 J -14927996.86 -14927996.73 -14927996.60 0.0273 0.0103  
 Mercury -45584-08-13 06:57 J -14927908.31 -14927908.21 -14927908.11 0.0274 0.0194  
 Moon -45584-09-13 12:28 J -14927877.22 -14927876.98 -14927876.74 0.0274 0.0031  
 Earth -45584-09-13 16:04 J -14927877.07 -14927876.83 -14927876.58 0.0274 0.0030 \*  
 Venus -45581-11-19 01:54 J -14926714.61 -14926714.42 -14926714.22 0.0279 0.0088

Venus -45580-07-06 09:35 J -14926485.25 -14926485.10 -14926484.93 0.0281 0.0175  
 Mars -45575-01-25 06:14 J -14924821.43 -14924821.24 -14924821.04 0.0288 0.0197  
 Mercury -45571-12-12 07:11 J -14923039.28 -14923039.20 -14923039.10 0.0287 0.0236  
 Mercury -45570-03-11 01:40 J -14922950.58 -14922950.43 -14922950.27 0.0286 0.0115  
 Mercury -45570-06-07 20:38 J -14922861.81 -14922861.64 -14922861.48 0.0286 0.0009  
 Mercury -45570-09-04 15:50 J -14922772.99 -14922772.84 -14922772.69 0.0286 0.0135  
 Mercury -45570-12-02 11:16 J -14922684.09 -14922684.03 -14922683.96 0.0285 0.0262  
 Earth -45569-03-14 16:33 J -14922581.06 -14922580.81 -14922580.57 0.0285 0.0052  
 Moon -45569-03-14 17:02 J -14922581.04 -14922580.79 -14922580.54 0.0285 0.0061 \*  
 Venus -45567-09-16 10:33 J -14921665.19 -14921665.06 -14921664.93 0.0280 0.0221  
 Venus -45566-05-04 02:23 J -14921435.61 -14921435.40 -14921435.18 0.0279 0.0050  
 Mercury -45555-01-11 04:47 J -14917530.39 -14917530.30 -14917530.21 0.0273 0.0211  
 Mercury -45555-04-09 17:59 J -14917441.88 -14917441.75 -14917441.61 0.0273 0.0116  
 Mercury -45555-07-07 07:11 J -14917353.35 -14917353.20 -14917353.06 0.0273 0.0021  
 Earth -45555-09-08 09:21 J -14917290.29 -14917290.11 -14917289.92 0.0274 0.0176  
 Moon -45555-09-08 13:11 J -14917290.14 -14917289.95 -14917289.76 0.0274 0.0173 \*  
 Mercury -45555-10-03 19:54 J -14917264.81 -14917264.67 -14917264.53 0.0274 0.0073  
 Mercury -45555-12-31 08:38 J -14917176.26 -14917176.14 -14917176.03 0.0274 0.0165  
 Mercury -45554-03-29 20:52 J -14917087.68 -14917087.63 -14917087.58 0.0274 0.0255  
 Moon -45554-09-20 22:33 J -14916912.78 -14916912.56 -14916912.34 0.0275 0.0134  
 Earth -45554-09-20 22:33 J -14916912.76 -14916912.56 -14916912.34 0.0275 0.0143 \*  
 Venus -45551-06-01 05:59 J -14915928.46 -14915928.25 -14915928.05 0.0280 0.0051  
 Venus -45550-01-16 13:54 J -14915699.05 -14915698.92 -14915698.78 0.0281 0.0212  
 Mars -45545-03-14 04:04 J -14913815.54 -14913815.33 -14913815.09 0.0288 0.0162  
 Mercury -45541-04-30 08:38 J -14912307.20 -14912307.14 -14912307.08 0.0287 0.0264  
 Mercury -45541-07-28 03:06 J -14912218.52 -14912218.37 -14912218.23 0.0286 0.0144  
 Mercury -45541-10-24 21:50 J -14912129.76 -14912129.59 -14912129.43 0.0286 0.0021  
 Mercury -45540-01-21 16:47 J -14912040.95 -14912040.80 -14912040.64 0.0286 0.0105  
 Earth -45540-03-09 05:02 J -14911994.52 -14911994.29 -14911994.07 0.0285 0.0107  
 Moon -45540-03-09 04:47 J -14911994.52 -14911994.30 -14911994.07 0.0285 0.0097 \*

Mercury -45540-04-20 12:14 J -14911952.08 -14911951.99 -14911951.89 0.0285 0.0232

Earth -45539-03-22 20:52 J -14911615.72 -14911615.63 -14911615.51 0.0284 0.0255

Moon -45539-03-22 23:59 J -14911615.58 -14911615.50 -14911615.39 0.0284 0.0261 \*

Venus -45537-03-28 19:54 J -14910878.84 -14910878.67 -14910878.50 0.0280 0.0173

Venus -45537-11-13 11:45 J -14910649.21 -14910649.01 -14910648.81 0.0279 0.0098

Mars -45531-03-23 10:04 J -14908693.37 -14908693.08 -14908692.77 0.0271 0.0093

Mercury -45526-05-31 07:11 J -14906798.27 -14906798.20 -14906798.12 0.0272 0.0234

Mercury -45526-08-27 20:38 J -14906709.77 -14906709.64 -14906709.52 0.0272 0.0139

Mercury -45526-11-24 09:35 J -14906621.24 -14906621.10 -14906620.96 0.0273 0.0044

Mercury -45525-02-20 22:18 J -14906532.71 -14906532.57 -14906532.42 0.0273 0.0050

Mercury -45525-05-19 11:02 J -14906444.16 -14906444.04 -14906443.92 0.0273 0.0141

Mercury -45525-08-15 23:16 J -14906355.59 -14906355.53 -14906355.45 0.0274 0.0232

Earth -45525-09-14 20:52 J -14906325.87 -14906325.63 -14906325.38 0.0274 0.0002

Moon -45525-09-14 21:06 J -14906325.86 -14906325.62 -14906325.38 0.0274 0.0003 \*

Venus -45522-04-27 02:38 J -14905371.42 -14905371.39 -14905371.36 0.0278 0.0274

Venus -45522-12-12 10:04 J -14905142.28 -14905142.08 -14905141.87 0.0279 0.0017

Venus -45521-07-28 17:45 J -14904912.85 -14904912.76 -14904912.65 0.0281 0.0245

Mercury -45512-12-15 00:57 J -14901486.58 -14901486.46 -14901486.34 0.0287 0.0192

Moon -45511-03-03 02:23 J -14901408.47 -14901408.40 -14901408.30 0.0286 0.0269

Earth -45511-03-03 03:06 J -14901408.41 -14901408.37 -14901408.32 0.0286 0.0280 \*

Mercury -45511-03-13 19:26 J -14901397.84 -14901397.69 -14901397.53 0.0286 0.0071

Mercury -45511-06-10 14:23 J -14901309.06 -14901308.90 -14901308.73 0.0286 0.0054

Mercury -45511-09-07 09:35 J -14901220.22 -14901220.10 -14901219.96 0.0286 0.0181

Moon -45510-03-16 16:18 J -14901030.05 -14901029.82 -14901029.58 0.0285 0.0088

Earth -45510-03-16 19:54 J -14901029.90 -14901029.67 -14901029.43 0.0285 0.0084 \*

Venus -45508-10-08 19:26 J -14900092.87 -14900092.69 -14900092.50 0.0280 0.0148

Venus -45507-05-26 11:16 J -14899863.21 -14899863.03 -14899862.83 0.0279 0.0122

Mars -45501-05-13 04:04 J -14897684.41 -14897684.33 -14897684.23 0.0271 0.0260

Mercury -45497-10-17 07:54 J -14896066.18 -14896066.17 -14896066.15 0.0272 0.0270

Mercury -45496-01-13 21:21 J -14895977.72 -14895977.61 -14895977.50 0.0273 0.0174

Mercury -45496-04-12 10:18 J -14895889.20 -14895889.07 -14895888.92 0.0273 0.0079

Mercury -45496-07-09 23:30 J -14895800.67 -14895800.52 -14895800.38 0.0273 0.0017

Moon -45496-09-09 11:30 J -14895739.22 -14895739.02 -14895738.80 0.0274 0.0149

Earth -45496-09-09 12:14 J -14895739.19 -14895738.99 -14895738.78 0.0274 0.0147 \*

Mercury -45496-10-06 11:59 J -14895712.13 -14895712.00 -14895711.86 0.0274 0.0108

Mercury -45495-01-03 00:42 J -14895623.57 -14895623.47 -14895623.38 0.0274 0.0199

Moon -45495-09-21 21:21 J -14895361.80 -14895361.61 -14895361.40 0.0275 0.0161

Earth -45495-09-22 01:11 J -14895361.63 -14895361.45 -14895361.25 0.0275 0.0173 \*

Venus -45493-11-06 04:47 J -14894585.40 -14894585.30 -14894585.19 0.0279 0.0242

Venus -45492-06-23 12:28 J -14894356.18 -14894355.98 -14894355.77 0.0280 0.0018

Venus -45491-02-07 20:23 J -14894126.67 -14894126.65 -14894126.62 0.0281 0.0279

Mars -45487-06-20 20:52 J -14892532.84 -14892532.63 -14892532.40 0.0288 0.0168

Mercury -45482-05-04 01:40 J -14890754.52 -14890754.43 -14890754.32 0.0287 0.0224

Mercury -45482-07-31 20:23 J -14890665.81 -14890665.65 -14890665.50 0.0286 0.0103

Mercury -45482-10-28 15:06 J -14890577.03 -14890576.87 -14890576.70 0.0286 0.0022

Mercury -45481-01-25 10:18 J -14890488.21 -14890488.07 -14890487.92 0.0286 0.0148

Earth -45481-03-10 06:28 J -14890443.46 -14890443.23 -14890442.99 0.0285 0.0077

Moon -45481-03-10 10:04 J -14890443.31 -14890443.08 -14890442.84 0.0285 0.0069 \*

Mercury -45481-04-23 05:59 J -14890399.29 -14890399.25 -14890399.21 0.0285 0.0276

Venus -45478-04-21 03:50 J -14889306.53 -14889306.34 -14889306.13 0.0280 0.0103

Venus -45478-12-06 19:54 J -14889076.83 -14889076.67 -14889076.49 0.0279 0.0168

Mercury -45467-06-02 23:45 J -14885245.61 -14885245.51 -14885245.41 0.0272 0.0196

Mercury -45467-08-30 12:57 J -14885157.09 -14885156.96 -14885156.82 0.0272 0.0101

Mercury -45467-11-27 01:54 J -14885068.56 -14885068.42 -14885068.27 0.0273 0.0008

Mercury -45466-02-23 14:38 J -14884980.02 -14884979.89 -14884979.75 0.0273 0.0085

Mercury -45466-05-23 03:21 J -14884891.47 -14884891.36 -14884891.26 0.0273 0.0177

Mercury -45466-08-19 15:21 J -14884802.88 -14884802.86 -14884802.82 0.0274 0.0267

Earth -45466-09-16 23:59 J -14884774.74 -14884774.50 -14884774.25 0.0274 0.0033

Moon -45466-09-17 03:50 J -14884774.58 -14884774.34 -14884774.10 0.0274 0.0024 \*

Venus -45463-05-19 09:35 J -14883799.23 -14883799.10 -14883798.95 0.0278 0.0206

Venus -45462-01-03 17:16 J -14883569.99 -14883569.78 -14883569.58 0.0279 0.0052  
 Mars -45457-08-07 04:33 J -14881527.51 -14881527.31 -14881527.08 0.0288 0.0174  
 Mercury -45453-09-19 23:45 J -14880022.55 -14880022.51 -14880022.45 0.0287 0.0272  
 Mercury -45453-12-17 18:14 J -14879933.88 -14879933.74 -14879933.60 0.0287 0.0152  
 Moon -45452-03-04 00:57 J -14879857.58 -14879857.46 -14879857.31 0.0286 0.0242  
 Earth -45452-03-04 04:33 J -14879857.41 -14879857.31 -14879857.18 0.0286 0.0251 \*  
 Mercury -45452-03-16 12:57 J -14879845.13 -14879844.96 -14879844.80 0.0286 0.0029  
 Mercury -45452-06-13 07:54 J -14879756.33 -14879756.17 -14879756.01 0.0286 0.0096  
 Mercury -45452-09-10 03:06 J -14879667.46 -14879667.37 -14879667.25 0.0286 0.0224  
 Moon -45451-03-17 19:40 J -14879478.90 -14879478.68 -14879478.46 0.0285 0.0115  
 Earth -45451-03-17 21:35 J -14879478.82 -14879478.60 -14879478.37 0.0285 0.0114 \*  
 Venus -45449-10-31 03:06 J -14878520.57 -14878520.37 -14878520.16 0.0280 0.0079  
 Venus -45448-06-17 18:57 J -14878290.85 -14878290.71 -14878290.54 0.0279 0.0191  
 Mars -45443-08-16 05:59 J -14876405.56 -14876405.25 -14876404.94 0.0271 0.0070  
 Mercury -45438-10-21 00:14 J -14874513.56 -14874513.49 -14874513.41 0.0272 0.0233  
 Mercury -45437-01-17 13:26 J -14874425.06 -14874424.94 -14874424.81 0.0273 0.0138  
 Mercury -45437-04-15 02:38 J -14874336.53 -14874336.39 -14874336.25 0.0273 0.0043  
 Mercury -45437-07-12 15:21 J -14874248.00 -14874247.86 -14874247.71 0.0273 0.0052  
 Moon -45437-09-10 10:47 J -14874188.27 -14874188.05 -14874187.83 0.0274 0.0124  
 Earth -45437-09-10 14:38 J -14874188.11 -14874187.89 -14874187.67 0.0274 0.0117 \*  
 Mercury -45437-10-09 04:04 J -14874159.45 -14874159.33 -14874159.21 0.0274 0.0143  
 Mercury -45436-01-05 16:33 J -14874070.88 -14874070.81 -14874070.74 0.0274 0.0233  
 Moon -45436-09-23 01:40 J -14873810.60 -14873810.43 -14873810.25 0.0275 0.0189  
 Earth -45436-09-23 02:52 J -14873810.53 -14873810.38 -14873810.20 0.0275 0.0203 \*  
 Venus -45434-11-29 11:16 J -14873013.18 -14873013.03 -14873012.86 0.0279 0.0175  
 Venus -45433-07-15 18:57 J -14872783.90 -14872783.71 -14872783.51 0.0280 0.0084  
 Mercury -45423-05-06 18:28 J -14869201.85 -14869201.73 -14869201.61 0.0287 0.0186  
 Mercury -45423-08-03 12:57 J -14869113.12 -14869112.96 -14869112.79 0.0286 0.0065  
 Mercury -45423-10-31 07:54 J -14869024.33 -14869024.17 -14869024.00 0.0286 0.0061  
 Mercury -45422-01-28 03:21 J -14868935.48 -14868935.36 -14868935.23 0.0286 0.0187

Earth -45422-03-12 05:59 J -14868892.49 -14868892.25 -14868892.01 0.0285 0.0049  
 Moon -45422-03-12 07:54 J -14868892.42 -14868892.17 -14868891.92 0.0285 0.0043 \*  
 Venus -45419-05-13 10:33 J -14867734.27 -14867734.06 -14867733.84 0.0280 0.0037  
 Venus -45419-12-29 02:52 J -14867504.49 -14867504.38 -14867504.26 0.0279 0.0233  
 Mercury -45408-03-09 02:52 J -14863781.43 -14863781.38 -14863781.33 0.0272 0.0255  
 Mercury -45408-06-05 16:04 J -14863692.94 -14863692.83 -14863692.71 0.0272 0.0160  
 Mercury -45408-09-02 05:16 J -14863604.42 -14863604.28 -14863604.14 0.0273 0.0065  
 Earth -45408-09-05 14:52 J -14863600.96 -14863600.88 -14863600.78 0.0273 0.0254  
 Moon -45408-09-05 18:14 J -14863600.81 -14863600.74 -14863600.64 0.0273 0.0254 \*  
 Mercury -45408-11-29 18:14 J -14863515.89 -14863515.74 -14863515.60 0.0273 0.0029  
 Mercury -45407-02-26 06:42 J -14863427.34 -14863427.22 -14863427.09 0.0273 0.0121  
 Mercury -45407-05-25 19:11 J -14863338.78 -14863338.70 -14863338.61 0.0273 0.0211  
 Earth -45407-09-18 02:38 J -14863223.63 -14863223.39 -14863223.15 0.0274 0.0063  
 Moon -45407-09-18 04:04 J -14863223.58 -14863223.33 -14863223.08 0.0274 0.0052 \*  
 Venus -45404-06-10 16:47 J -14862226.98 -14862226.80 -14862226.62 0.0278 0.0138  
 Venus -45403-01-25 23:59 J -14861997.69 -14861997.50 -14861997.31 0.0279 0.0119  
 Mars -45399-11-13 22:04 J -14860244.80 -14860244.58 -14860244.34 0.0287 0.0152  
 Mercury -45394-09-23 16:33 J -14858469.90 -14858469.81 -14858469.71 0.0287 0.0234  
 Mercury -45394-12-21 11:02 J -14858381.19 -14858381.04 -14858380.89 0.0287 0.0113  
 Moon -45393-03-05 02:52 J -14858306.53 -14858306.38 -14858306.22 0.0286 0.0216  
 Earth -45393-03-05 04:33 J -14858306.45 -14858306.31 -14858306.15 0.0286 0.0223 \*  
 Mercury -45393-03-19 05:45 J -14858292.42 -14858292.26 -14858292.09 0.0286 0.0012  
 Mercury -45393-06-16 00:57 J -14858203.60 -14858203.46 -14858203.31 0.0286 0.0136  
 Mercury -45393-09-12 20:38 J -14858114.70 -14858114.64 -14858114.58 0.0286 0.0264  
 Earth -45392-03-18 21:35 J -14857927.81 -14857927.60 -14857927.38 0.0285 0.0143  
 Moon -45392-03-18 23:59 J -14857927.70 -14857927.50 -14857927.29 0.0285 0.0141 \*  
 Venus -45390-11-23 10:04 J -14856948.29 -14856948.08 -14856947.86 0.0280 0.0014  
 Venus -45389-07-10 02:23 J -14856718.48 -14856718.40 -14856718.32 0.0279 0.0256  
 Mercury -45379-10-23 16:33 J -14852960.91 -14852960.81 -14852960.71 0.0272 0.0198  
 Mercury -45378-01-20 05:45 J -14852872.40 -14852872.26 -14852872.13 0.0273 0.0102

Mercury -45378-04-18 18:42 J -14852783.87 -14852783.72 -14852783.58 0.0273 0.0008

Mercury -45378-07-16 07:26 J -14852695.32 -14852695.19 -14852695.05 0.0273 0.0085

Moon -45378-09-12 14:52 J -14852637.10 -14852636.88 -14852636.66 0.0273 0.0096

Earth -45378-09-12 16:04 J -14852637.06 -14852636.83 -14852636.60 0.0273 0.0088 \*

Mercury -45378-10-12 19:54 J -14852606.77 -14852606.67 -14852606.56 0.0274 0.0176

Mercury -45377-01-09 08:23 J -14852518.18 -14852518.15 -14852518.12 0.0274 0.0266

Earth -45377-09-24 04:04 J -14852259.44 -14852259.33 -14852259.19 0.0275 0.0232

Moon -45377-09-24 07:11 J -14852259.33 -14852259.20 -14852259.04 0.0275 0.0217 \*

Venus -45375-12-21 17:30 J -14851440.96 -14851440.77 -14851440.58 0.0279 0.0109

Venus -45374-08-08 00:57 J -14851211.63 -14851211.46 -14851211.28 0.0280 0.0149

Mars -45369-12-31 09:06 J -14849239.30 -14849239.12 -14849238.91 0.0288 0.0193

Mercury -45364-02-09 16:33 J -14847737.86 -14847737.81 -14847737.75 0.0287 0.0270

Mercury -45364-05-09 10:47 J -14847649.18 -14847649.05 -14847648.90 0.0286 0.0151

Mercury -45364-08-06 05:45 J -14847560.43 -14847560.26 -14847560.10 0.0286 0.0028

Mercury -45364-11-03 00:42 J -14847471.63 -14847471.47 -14847471.31 0.0286 0.0098

Mercury -45363-01-30 20:09 J -14847382.76 -14847382.66 -14847382.56 0.0286 0.0225

Moon -45363-03-13 02:09 J -14847341.66 -14847341.41 -14847341.15 0.0285 0.0021

Earth -45363-03-13 04:47 J -14847341.55 -14847341.30 -14847341.06 0.0285 0.0022 \*

Venus -45361-10-17 23:45 J -14846391.60 -14846391.51 -14846391.39 0.0281 0.0245

Venus -45360-06-04 16:33 J -14846162.02 -14846161.81 -14846161.59 0.0280 0.0028

Mars -45354-01-10 01:54 J -14844116.73 -14844116.42 -14844116.09 0.0272 0.0033

Mercury -45349-03-11 19:11 J -14842228.79 -14842228.70 -14842228.62 0.0272 0.0219

Mercury -45349-06-08 08:23 J -14842140.28 -14842140.15 -14842140.02 0.0272 0.0124

Mercury -45349-09-04 21:21 J -14842051.75 -14842051.61 -14842051.46 0.0273 0.0030

Earth -45349-09-06 17:02 J -14842049.92 -14842049.79 -14842049.65 0.0273 0.0225

Moon -45349-09-06 19:11 J -14842049.84 -14842049.70 -14842049.56 0.0273 0.0225 \*

Mercury -45349-12-02 10:18 J -14841963.21 -14841963.07 -14841962.93 0.0273 0.0063

Mercury -45348-02-28 22:47 J -14841874.66 -14841874.55 -14841874.43 0.0273 0.0155

Mercury -45348-05-28 11:16 J -14841786.09 -14841786.03 -14841785.97 0.0274 0.0245

Moon -45348-09-19 01:40 J -14841672.66 -14841672.43 -14841672.18 0.0274 0.0079

Earth -45348-09-19 04:47 J -14841672.53 -14841672.30 -14841672.06 0.0274 0.0093 \*  
 Venus -45345-07-02 23:45 J -14840654.71 -14840654.51 -14840654.31 0.0278 0.0070  
 Venus -45344-02-17 06:42 J -14840425.36 -14840425.22 -14840425.06 0.0279 0.0187  
 Mercury -45335-09-26 09:21 J -14836917.22 -14836917.11 -14836916.99 0.0287 0.0196  
 Mercury -45335-12-24 03:50 J -14836828.49 -14836828.34 -14836828.18 0.0286 0.0075  
 Earth -45334-03-07 04:18 J -14836755.49 -14836755.32 -14836755.13 0.0286 0.0195  
 Moon -45334-03-07 06:57 J -14836755.38 -14836755.21 -14836755.02 0.0286 0.0190 \*  
 Mercury -45334-03-22 22:47 J -14836739.71 -14836739.55 -14836739.38 0.0286 0.0050  
 Mercury -45334-06-19 17:59 J -14836650.88 -14836650.75 -14836650.61 0.0286 0.0176  
 Earth -45333-03-19 21:21 J -14836376.81 -14836376.61 -14836376.41 0.0285 0.0171  
 Moon -45333-03-20 00:28 J -14836376.67 -14836376.48 -14836376.27 0.0285 0.0168 \*  
 Venus -45331-04-30 00:14 J -14835605.62 -14835605.49 -14835605.35 0.0281 0.0218  
 Venus -45331-12-15 16:33 J -14835376.02 -14835375.81 -14835375.59 0.0280 0.0053  
 Mercury -45320-07-29 19:11 J -14831496.74 -14831496.70 -14831496.65 0.0272 0.0258  
 Mercury -45320-10-26 08:38 J -14831408.26 -14831408.14 -14831408.02 0.0272 0.0162  
 Mercury -45319-01-22 21:50 J -14831319.73 -14831319.59 -14831319.45 0.0273 0.0067  
 Mercury -45319-04-21 10:47 J -14831231.20 -14831231.05 -14831230.91 0.0273 0.0027  
 Mercury -45319-07-18 23:16 J -14831142.65 -14831142.53 -14831142.39 0.0273 0.0119  
 Earth -45319-09-13 17:45 J -14831086.00 -14831085.76 -14831085.52 0.0273 0.0059  
 Moon -45319-09-13 20:38 J -14831085.88 -14831085.64 -14831085.41 0.0273 0.0069 \*  
 Mercury -45319-10-15 11:59 J -14831054.09 -14831054.00 -14831053.91 0.0274 0.0210  
 Earth -45318-09-26 05:45 J -14830708.32 -14830708.26 -14830708.17 0.0275 0.0262  
 Moon -45318-09-26 08:23 J -14830708.24 -14830708.15 -14830708.02 0.0275 0.0246 \*  
 Venus -45315-01-12 23:59 J -14829868.71 -14829868.50 -14829868.29 0.0279 0.0043  
 Venus -45315-08-30 07:26 J -14829639.32 -14829639.19 -14829639.06 0.0280 0.0214  
 Mars -45310-04-09 00:57 J -14827956.70 -14827956.46 -14827956.23 0.0287 0.0137  
 Mercury -45305-02-13 09:06 J -14826185.21 -14826185.12 -14826185.03 0.0287 0.0235  
 Mercury -45305-05-12 03:21 J -14826096.50 -14826096.36 -14826096.20 0.0286 0.0114  
 Mercury -45305-08-08 22:18 J -14826007.74 -14826007.57 -14826007.41 0.0286 0.0010  
 Mercury -45305-11-05 17:16 J -14825918.92 -14825918.78 -14825918.63 0.0286 0.0136



Mercury -45304-02-02 12:57 J -14825830.02 -14825829.96 -14825829.90 0.0285 0.0263  
 Moon -45304-03-13 23:59 J -14825790.74 -14825790.50 -14825790.26 0.0285 0.0005  
 Earth -45304-03-14 03:21 J -14825790.61 -14825790.36 -14825790.12 0.0285 0.0006 \*  
 Venus -45302-11-10 05:45 J -14824819.42 -14824819.26 -14824819.09 0.0281 0.0180  
 Venus -45301-06-26 22:33 J -14824589.77 -14824589.56 -14824589.36 0.0280 0.0091  
 Mercury -45290-03-15 11:16 J -14820676.13 -14820676.03 -14820675.92 0.0272 0.0184  
 Mercury -45290-06-12 00:28 J -14820587.61 -14820587.48 -14820587.34 0.0273 0.0089  
 Mercury -45290-09-08 13:40 J -14820499.08 -14820498.93 -14820498.79 0.0273 0.0007  
 Moon -45290-09-08 16:47 J -14820498.96 -14820498.80 -14820498.62 0.0273 0.0201 \*  
 Earth -45290-09-08 19:26 J -14820498.85 -14820498.69 -14820498.52 0.0273 0.0196 \*  
 Mercury -45290-12-06 02:23 J -14820410.53 -14820410.40 -14820410.27 0.0273 0.0098  
 Mercury -45289-03-03 14:52 J -14820321.98 -14820321.88 -14820321.78 0.0273 0.0190  
 Moon -45289-09-20 04:18 J -14820121.53 -14820121.32 -14820121.09 0.0274 0.0110  
 Earth -45289-09-20 07:11 J -14820121.41 -14820121.20 -14820120.98 0.0274 0.0124 \*  
 Venus -45287-12-08 23:45 J -14819311.58 -14819311.51 -14819311.42 0.0277 0.0256  
 Venus -45286-07-26 06:57 J -14819082.41 -14819082.21 -14819082.00 0.0278 0.0007  
 Venus -45285-03-11 14:09 J -14818853.00 -14818852.91 -14818852.82 0.0280 0.0253  
 Mars -45280-05-26 15:50 J -14816951.00 -14816950.84 -14816950.65 0.0287 0.0216  
 Mercury -45276-07-02 08:09 J -14815453.20 -14815453.16 -14815453.12 0.0287 0.0277  
 Mercury -45276-09-29 02:09 J -14815364.54 -14815364.41 -14815364.26 0.0287 0.0158  
 Mercury -45276-12-26 20:52 J -14815275.79 -14815275.63 -14815275.46 0.0286 0.0036  
 Earth -45275-03-08 04:47 J -14815204.49 -14815204.30 -14815204.09 0.0286 0.0166  
 Moon -45275-03-08 08:09 J -14815204.36 -14815204.16 -14815203.95 0.0286 0.0164 \*  
 Mercury -45275-03-25 15:50 J -14815186.99 -14815186.84 -14815186.68 0.0286 0.0090  
 Mercury -45275-06-22 11:16 J -14815098.14 -14815098.03 -14815097.92 0.0286 0.0217  
 Moon -45274-03-21 20:52 J -14814825.80 -14814825.63 -14814825.43 0.0285 0.0193  
 Earth -45274-03-21 21:21 J -14814825.77 -14814825.61 -14814825.42 0.0285 0.0201 \*  
 Venus -45272-05-22 07:11 J -14814033.38 -14814033.20 -14814033.02 0.0281 0.0151  
 Venus -45271-01-06 23:30 J -14813803.71 -14813803.52 -14813803.32 0.0280 0.0119  
 Mars -45266-06-04 14:23 J -14811829.22 -14811828.90 -14811828.59 0.0272 0.0014

Mercury -45261-08-01 11:30 J -14809944.10 -14809944.02 -14809943.93 0.0272 0.0222  
 Mercury -45261-10-29 00:57 J -14809855.59 -14809855.46 -14809855.33 0.0273 0.0126  
 Mercury -45260-01-25 13:54 J -14809767.06 -14809766.92 -14809766.77 0.0273 0.0032  
 Mercury -45260-04-24 02:52 J -14809678.52 -14809678.38 -14809678.24 0.0273 0.0062  
 Mercury -45260-07-21 15:35 J -14809589.97 -14809589.85 -14809589.74 0.0273 0.0154  
 Earth -45260-09-14 20:09 J -14809534.91 -14809534.66 -14809534.42 0.0274 0.0029  
 Moon -45260-09-14 23:16 J -14809534.78 -14809534.53 -14809534.28 0.0274 0.0039 \*  
 Mercury -45260-10-18 03:50 J -14809501.40 -14809501.34 -14809501.27 0.0274 0.0244  
 Venus -45257-06-19 23:59 J -14808525.61 -14808525.50 -14808525.38 0.0278 0.0230  
 Venus -45256-02-04 07:11 J -14808296.41 -14808296.20 -14808295.99 0.0279 0.0024  
 Mercury -45246-02-16 01:54 J -14804632.54 -14804632.42 -14804632.30 0.0287 0.0197  
 Mercury -45246-05-15 20:23 J -14804543.81 -14804543.65 -14804543.49 0.0286 0.0075  
 Mercury -45246-08-12 15:06 J -14804455.03 -14804454.87 -14804454.70 0.0286 0.0050  
 Mercury -45246-11-09 10:18 J -14804366.19 -14804366.07 -14804365.93 0.0286 0.0176  
 Earth -45245-03-15 03:06 J -14804239.61 -14804239.37 -14804239.12 0.0285 0.0035  
 Moon -45245-03-15 03:50 J -14804239.57 -14804239.34 -14804239.10 0.0285 0.0030 \*  
 Venus -45243-12-02 12:14 J -14803247.19 -14803246.99 -14803246.80 0.0281 0.0115  
 Venus -45242-07-20 04:47 J -14803017.48 -14803017.30 -14803017.12 0.0280 0.0155  
 Mercury -45232-12-19 14:23 J -14799211.96 -14799211.90 -14799211.83 0.0272 0.0243  
 Mercury -45231-03-18 03:50 J -14799123.46 -14799123.34 -14799123.22 0.0273 0.0147  
 Mercury -45231-06-14 17:02 J -14799034.93 -14799034.79 -14799034.65 0.0273 0.0052  
 Moon -45231-09-09 19:11 J -14798947.88 -14798947.70 -14798947.51 0.0273 0.0175  
 Earth -45231-09-09 22:18 J -14798947.75 -14798947.57 -14798947.36 0.0273 0.0166 \*  
 Mercury -45231-09-11 05:59 J -14798946.40 -14798946.25 -14798946.11 0.0273 0.0042  
 Mercury -45231-12-08 18:28 J -14798857.85 -14798857.73 -14798857.60 0.0273 0.0135  
 Mercury -45230-03-07 07:11 J -14798769.28 -14798769.20 -14798769.12 0.0274 0.0225  
 Earth -45230-09-22 10:18 J -14798570.26 -14798570.07 -14798569.86 0.0274 0.0155  
 Moon -45230-09-22 11:30 J -14798570.22 -14798570.02 -14798569.81 0.0274 0.0142 \*  
 Venus -45228-12-31 07:40 J -14797739.32 -14797739.18 -14797739.01 0.0278 0.0188  
 Venus -45227-08-17 15:06 J -14797510.07 -14797509.87 -14797509.67 0.0279 0.0066

Mars -45222-09-02 15:21 J -14795668.11 -14795667.86 -14795667.60 0.0286 0.0101  
 Mercury -45217-07-05 01:26 J -14793900.53 -14793900.44 -14793900.35 0.0287 0.0236  
 Mercury -45217-10-01 19:40 J -14793811.83 -14793811.68 -14793811.53 0.0286 0.0116  
 Mercury -45217-12-29 14:23 J -14793723.06 -14793722.90 -14793722.73 0.0286 0.0009  
 Moon -45216-03-09 05:16 J -14793653.49 -14793653.28 -14793653.05 0.0286 0.0140  
 Earth -45216-03-09 06:57 J -14793653.42 -14793653.21 -14793652.99 0.0286 0.0135 \*  
 Mercury -45216-03-28 09:35 J -14793634.25 -14793634.10 -14793633.95 0.0286 0.0133  
 Mercury -45216-06-25 04:47 J -14793545.36 -14793545.30 -14793545.22 0.0286 0.0261  
 Moon -45215-03-22 19:26 J -14793274.83 -14793274.69 -14793274.52 0.0284 0.0221  
 Earth -45215-03-22 23:02 J -14793274.66 -14793274.54 -14793274.38 0.0284 0.0232 \*  
 Venus -45213-06-13 14:38 J -14792461.09 -14792460.89 -14792460.68 0.0281 0.0083  
 Venus -45212-01-29 06:57 J -14792231.36 -14792231.21 -14792231.04 0.0280 0.0186  
 Mercury -45202-08-05 04:04 J -14788391.43 -14788391.33 -14788391.22 0.0272 0.0184  
 Mercury -45202-11-01 17:30 J -14788302.91 -14788302.77 -14788302.64 0.0273 0.0089  
 Mercury -45201-01-29 06:28 J -14788214.38 -14788214.23 -14788214.09 0.0273 0.0007  
 Mercury -45201-04-26 19:11 J -14788125.83 -14788125.70 -14788125.57 0.0273 0.0098  
 Mercury -45201-07-24 07:40 J -14788037.28 -14788037.18 -14788037.07 0.0274 0.0190  
 Moon -45201-09-15 22:47 J -14787983.81 -14787983.55 -14787983.30 0.0274 0.0011  
 Earth -45201-09-15 23:45 J -14787983.75 -14787983.51 -14787983.26 0.0274 0.0005 \*  
 Venus -45198-07-13 08:09 J -14786953.32 -14786953.16 -14786952.99 0.0278 0.0161  
 Venus -45197-02-27 15:21 J -14786724.06 -14786723.86 -14786723.66 0.0279 0.0094  
 Mars -45192-10-19 22:33 J -14784662.71 -14784662.56 -14784662.40 0.0288 0.0236  
 Mercury -45188-11-22 00:42 J -14783168.50 -14783168.47 -14783168.42 0.0287 0.0276  
 Mercury -45187-02-18 19:11 J -14783079.84 -14783079.70 -14783079.57 0.0286 0.0156  
 Mercury -45187-05-18 13:40 J -14782991.09 -14782990.93 -14782990.76 0.0286 0.0033  
 Mercury -45187-08-15 08:38 J -14782902.29 -14782902.14 -14782901.98 0.0286 0.0092  
 Mercury -45187-11-12 04:04 J -14782813.44 -14782813.33 -14782813.22 0.0285 0.0219  
 Earth -45186-03-17 04:47 J -14782688.54 -14782688.30 -14782688.06 0.0285 0.0065  
 Moon -45186-03-17 08:38 J -14782688.38 -14782688.14 -14782687.90 0.0285 0.0057 \*  
 Venus -45184-12-24 19:40 J -14781674.89 -14781674.68 -14781674.47 0.0281 0.0048

Venus -45183-08-11 12:14 J -14781445.12 -14781444.99 -14781444.86 0.0280 0.0221

Mars -45178-10-29 08:09 J -14779540.47 -14779540.16 -14779539.84 0.0273 0.0027

Mercury -45173-12-22 06:57 J -14777659.30 -14777659.21 -14777659.11 0.0273 0.0205

Mercury -45172-03-20 20:23 J -14777570.78 -14777570.65 -14777570.52 0.0273 0.0109

Mercury -45172-06-17 09:21 J -14777482.25 -14777482.11 -14777481.96 0.0273 0.0017

Earth -45172-09-11 02:09 J -14777396.61 -14777396.41 -14777396.18 0.0273 0.0136

Moon -45172-09-11 03:35 J -14777396.55 -14777396.35 -14777396.15 0.0273 0.0147 \*

Mercury -45172-09-13 22:18 J -14777393.71 -14777393.57 -14777393.43 0.0273 0.0079

Mercury -45172-12-11 11:02 J -14777305.15 -14777305.04 -14777304.93 0.0274 0.0171

Mercury -45171-03-09 23:30 J -14777216.56 -14777216.52 -14777216.48 0.0274 0.0261

Earth -45171-09-23 14:38 J -14777019.06 -14777018.89 -14777018.70 0.0275 0.0188

Moon -45171-09-23 18:28 J -14777018.92 -14777018.73 -14777018.54 0.0275 0.0172 \*

Venus -45168-01-22 16:33 J -14776166.99 -14776166.81 -14776166.61 0.0278 0.0117

Venus -45168-09-08 23:59 J -14775937.68 -14775937.50 -14775937.32 0.0279 0.0137

Mercury -45158-07-08 19:26 J -14772347.81 -14772347.69 -14772347.57 0.0286 0.0190

Mercury -45158-10-05 13:54 J -14772259.08 -14772258.92 -14772258.76 0.0286 0.0069

Mercury -45157-01-02 08:38 J -14772170.30 -14772170.14 -14772169.97 0.0286 0.0055

Moon -45157-03-10 08:09 J -14772102.38 -14772102.16 -14772101.93 0.0286 0.0111

Earth -45157-03-10 11:59 J -14772102.23 -14772102.00 -14772101.77 0.0286 0.0102 \*

Mercury -45157-03-31 03:50 J -14772081.47 -14772081.34 -14772081.21 0.0286 0.0181

Moon -45156-03-24 02:23 J -14771723.50 -14771723.40 -14771723.29 0.0284 0.0253

Earth -45156-03-24 03:50 J -14771723.42 -14771723.34 -14771723.25 0.0284 0.0265 \*

Venus -45155-11-19 07:26 J -14771118.19 -14771118.19 -14771118.18 0.0282 0.0281

Venus -45154-07-06 23:45 J -14770888.72 -14770888.51 -14770888.29 0.0281 0.0012

Venus -45153-02-21 15:50 J -14770658.91 -14770658.84 -14770658.74 0.0279 0.0256

Mercury -45143-05-11 07:26 J -14766927.25 -14766927.19 -14766927.12 0.0272 0.0241

Mercury -45143-08-07 20:52 J -14766838.75 -14766838.63 -14766838.50 0.0273 0.0145

Mercury -45143-11-04 10:04 J -14766750.22 -14766750.08 -14766749.93 0.0273 0.0050

Mercury -45142-01-31 23:02 J -14766661.68 -14766661.54 -14766661.40 0.0273 0.0044

Mercury -45142-04-30 11:45 J -14766573.13 -14766573.01 -14766572.88 0.0273 0.0137

Mercury -45142-07-28 00:14 J -14766484.56 -14766484.49 -14766484.41 0.0274 0.0228  
 Moon -45142-09-18 01:11 J -14766432.70 -14766432.45 -14766432.21 0.0274 0.0020  
 Earth -45142-09-18 05:02 J -14766432.54 -14766432.29 -14766432.05 0.0274 0.0036 \*  
 Venus -45139-08-04 17:30 J -14765380.97 -14765380.77 -14765380.57 0.0278 0.0089  
 Venus -45138-03-22 00:28 J -14765151.64 -14765151.48 -14765151.30 0.0279 0.0166  
 Mars -45133-01-27 00:42 J -14763379.73 -14763379.47 -14763379.20 0.0287 0.0079  
 Mercury -45129-11-24 18:42 J -14761615.81 -14761615.72 -14761615.62 0.0286 0.0231  
 Mercury -45128-02-21 12:57 J -14761527.11 -14761526.96 -14761526.80 0.0286 0.0111  
 Earth -45128-03-04 15:21 J -14761515.92 -14761515.86 -14761515.77 0.0286 0.0271  
 Moon -45128-03-04 18:57 J -14761515.76 -14761515.71 -14761515.63 0.0286 0.0276  
 Mercury -45128-05-21 07:40 J -14761438.34 -14761438.18 -14761438.01 0.0286 0.0015  
 Mercury -45128-08-18 02:52 J -14761349.52 -14761349.38 -14761349.23 0.0286 0.0139  
 Mercury -45128-11-14 22:18 J -14761260.62 -14761260.57 -14761260.51 0.0285 0.0266  
 Earth -45127-03-18 08:52 J -14761137.35 -14761137.13 -14761136.89 0.0285 0.0099  
 Moon -45127-03-18 09:50 J -14761137.33 -14761137.09 -14761136.85 0.0285 0.0087 \*  
 Venus -45125-05-31 11:59 J -14760332.10 -14760332.00 -14760331.90 0.0281 0.0247  
 Venus -45124-01-16 04:33 J -14760102.52 -14760102.31 -14760102.09 0.0280 0.0023  
 Mercury -45114-09-28 10:18 J -14756195.10 -14756195.07 -14756195.02 0.0273 0.0262  
 Mercury -45114-12-25 23:59 J -14756106.62 -14756106.50 -14756106.38 0.0273 0.0165  
 Mercury -45113-03-23 13:11 J -14756018.09 -14756017.95 -14756017.81 0.0273 0.0069  
 Mercury -45113-06-20 02:23 J -14755929.55 -14755929.40 -14755929.26 0.0274 0.0027  
 Earth -45113-09-12 07:54 J -14755845.39 -14755845.17 -14755844.93 0.0274 0.0103  
 Moon -45113-09-12 11:45 J -14755845.22 -14755845.01 -14755844.78 0.0274 0.0117 \*  
 Mercury -45113-09-16 15:06 J -14755841.00 -14755840.87 -14755840.74 0.0274 0.0119  
 Mercury -45113-12-14 03:35 J -14755752.44 -14755752.35 -14755752.26 0.0274 0.0210  
 Earth -45112-09-24 20:52 J -14755467.76 -14755467.63 -14755467.48 0.0275 0.0222  
 Moon -45112-09-24 22:04 J -14755467.74 -14755467.58 -14755467.41 0.0275 0.0206 \*  
 Venus -45109-02-15 02:38 J -14754594.59 -14754594.39 -14754594.18 0.0278 0.0044  
 Venus -45109-10-01 09:50 J -14754365.22 -14754365.09 -14754364.95 0.0279 0.0211  
 Mercury -45099-04-13 19:40 J -14750883.73 -14750883.68 -14750883.60 0.0286 0.0261

Mercury -45099-07-11 13:54 J -14750795.05 -14750794.92 -14750794.77 0.0286 0.0141  
 Mercury -45099-10-08 08:38 J -14750706.30 -14750706.14 -14750705.97 0.0286 0.0019  
 Mercury -45098-01-05 03:35 J -14750617.50 -14750617.35 -14750617.20 0.0286 0.0106  
 Moon -45098-03-12 18:57 J -14750550.94 -14750550.71 -14750550.48 0.0285 0.0075  
 Earth -45098-03-12 19:26 J -14750550.93 -14750550.69 -14750550.45 0.0285 0.0065 \*  
 Mercury -45098-04-03 22:47 J -14750528.64 -14750528.55 -14750528.45 0.0285 0.0233  
 Venus -45096-12-11 17:59 J -14749545.88 -14749545.75 -14749545.59 0.0281 0.0207  
 Venus -45095-07-29 10:33 J -14749316.27 -14749316.06 -14749315.85 0.0280 0.0062  
 Mars -45089-03-23 14:23 J -14747252.21 -14747251.90 -14747251.59 0.0272 0.0060  
 Mercury -45084-05-14 00:42 J -14745374.57 -14745374.47 -14745374.37 0.0273 0.0200  
 Mercury -45084-08-10 13:54 J -14745286.05 -14745285.92 -14745285.78 0.0273 0.0104  
 Moon -45084-09-06 19:11 J -14745258.74 -14745258.70 -14745258.62 0.0273 0.0264  
 Earth -45084-09-06 22:47 J -14745258.62 -14745258.55 -14745258.44 0.0273 0.0252 \*  
 Mercury -45084-11-07 03:06 J -14745197.51 -14745197.37 -14745197.22 0.0273 0.0009  
 Mercury -45083-02-03 16:04 J -14745108.97 -14745108.83 -14745108.70 0.0273 0.0085  
 Mercury -45083-05-03 04:33 J -14745020.41 -14745020.31 -14745020.20 0.0274 0.0177  
 Mercury -45083-07-30 17:02 J -14744931.81 -14744931.79 -14744931.76 0.0274 0.0267  
 Moon -45083-09-19 10:47 J -14744881.28 -14744881.05 -14744880.81 0.0274 0.0055  
 Earth -45083-09-19 11:30 J -14744881.25 -14744881.02 -14744880.78 0.0274 0.0071 \*  
 Venus -45080-01-09 20:23 J -14744037.70 -14744037.65 -14744037.59 0.0278 0.0267  
 Venus -45080-08-27 03:50 J -14743808.55 -14743808.34 -14743808.13 0.0279 0.0015  
 Venus -45079-04-13 10:47 J -14743579.15 -14743579.05 -14743578.94 0.0280 0.0239  
 Mercury -45070-11-28 13:26 J -14740063.06 -14740062.94 -14740062.81 0.0286 0.0181  
 Mercury -45069-02-25 07:54 J -14739974.33 -14739974.17 -14739974.01 0.0286 0.0060  
 Earth -45069-03-05 23:45 J -14739964.65 -14739964.51 -14739964.37 0.0286 0.0234  
 Moon -45069-03-05 23:45 J -14739964.63 -14739964.51 -14739964.36 0.0286 0.0240 \*  
 Mercury -45069-05-24 02:38 J -14739885.55 -14739885.39 -14739885.22 0.0286 0.0065  
 Mercury -45069-08-20 21:50 J -14739796.71 -14739796.59 -14739796.46 0.0285 0.0191  
 Moon -45068-03-19 13:11 J -14739586.18 -14739585.95 -14739585.73 0.0285 0.0121  
 Earth -45068-03-19 16:33 J -14739586.02 -14739585.81 -14739585.59 0.0285 0.0136 \*

Venus -45066-06-23 22:47 J -14738759.71 -14738759.55 -14738759.38 0.0281 0.0171  
 Venus -45065-02-08 15:21 J -14738530.06 -14738529.86 -14738529.65 0.0280 0.0097  
 Mercury -45055-10-01 03:35 J -14734642.43 -14734642.35 -14734642.26 0.0273 0.0220  
 Mercury -45055-12-28 17:02 J -14734553.92 -14734553.79 -14734553.65 0.0273 0.0123  
 Mercury -45054-03-27 06:14 J -14734465.38 -14734465.24 -14734465.09 0.0274 0.0029  
 Mercury -45054-06-23 19:11 J -14734376.84 -14734376.70 -14734376.56 0.0274 0.0067  
 Earth -45054-09-14 14:52 J -14734294.12 -14734293.88 -14734293.64 0.0274 0.0069  
 Moon -45054-09-14 15:35 J -14734294.09 -14734293.85 -14734293.60 0.0274 0.0082 \*  
 Mercury -45054-09-20 07:54 J -14734288.28 -14734288.17 -14734288.05 0.0274 0.0159  
 Mercury -45054-12-17 20:23 J -14734199.70 -14734199.65 -14734199.59 0.0274 0.0250  
 Moon -45053-09-26 00:57 J -14733916.57 -14733916.46 -14733916.34 0.0275 0.0242  
 Earth -45053-09-26 04:18 J -14733916.40 -14733916.32 -14733916.23 0.0275 0.0258 \*  
 Venus -45051-07-23 05:59 J -14733251.37 -14733251.25 -14733251.11 0.0278 0.0220  
 Venus -45050-03-09 13:26 J -14733022.14 -14733021.94 -14733021.73 0.0279 0.0033  
 Mars -45045-06-22 16:18 J -14731090.09 -14731089.82 -14731089.55 0.0286 0.0015  
 Mercury -45040-04-16 15:06 J -14729330.98 -14729330.87 -14729330.75 0.0286 0.0207  
 Mercury -45040-07-14 09:35 J -14729242.26 -14729242.10 -14729241.95 0.0286 0.0086  
 Mercury -45040-10-11 04:18 J -14729153.49 -14729153.32 -14729153.16 0.0286 0.0037  
 Mercury -45039-01-07 23:16 J -14729064.67 -14729064.53 -14729064.39 0.0285 0.0162  
 Earth -45039-03-14 05:30 J -14728999.51 -14728999.27 -14728999.02 0.0285 0.0026  
 Moon -45039-03-14 08:38 J -14728999.37 -14728999.14 -14728998.89 0.0285 0.0038 \*  
 Venus -45036-01-03 06:42 J -14727973.41 -14727973.22 -14727973.03 0.0281 0.0127  
 Venus -45036-08-20 22:47 J -14727743.73 -14727743.55 -14727743.36 0.0280 0.0140  
 Mars -45031-06-27 04:47 J -14725972.38 -14725972.30 -14725972.20 0.0273 0.0261  
 Mercury -45025-02-18 04:33 J -14723910.35 -14723910.31 -14723910.25 0.0273 0.0253  
 Mercury -45025-05-16 18:14 J -14723821.86 -14723821.74 -14723821.62 0.0273 0.0155  
 Mercury -45025-08-13 07:26 J -14723733.33 -14723733.19 -14723733.05 0.0273 0.0060  
 Moon -45025-09-08 06:14 J -14723707.36 -14723707.24 -14723707.10 0.0273 0.0228  
 Earth -45025-09-08 07:26 J -14723707.33 -14723707.19 -14723707.04 0.0273 0.0217 \*  
 Mercury -45025-11-09 20:23 J -14723644.79 -14723644.65 -14723644.50 0.0273 0.0035

Mercury -45024-02-06 09:21 J -14723556.24 -14723556.11 -14723555.99 0.0273 0.0127

Mercury -45024-05-05 21:50 J -14723467.67 -14723467.59 -14723467.50 0.0274 0.0219

Earth -45024-09-20 20:09 J -14723329.88 -14723329.66 -14723329.43 0.0274 0.0107

Moon -45024-09-20 23:30 J -14723329.74 -14723329.52 -14723329.29 0.0274 0.0092 \*

Venus -45021-02-02 07:40 J -14722465.32 -14722465.18 -14722465.02 0.0278 0.0191

Venus -45021-09-18 15:21 J -14722236.07 -14722235.86 -14722235.66 0.0279 0.0062

Mercury -45011-09-03 14:23 J -14718598.97 -14718598.90 -14718598.81 0.0286 0.0248

Mercury -45011-12-01 08:38 J -14718510.28 -14718510.14 -14718509.99 0.0286 0.0128

Mercury -45010-02-28 03:21 J -14718421.53 -14718421.36 -14718421.19 0.0286 0.0005

Moon -45010-03-08 06:28 J -14718413.40 -14718413.23 -14718413.05 0.0286 0.0204

Earth -45010-03-08 09:35 J -14718413.27 -14718413.10 -14718412.91 0.0286 0.0196 \*

Mercury -45010-05-27 22:18 J -14718332.72 -14718332.57 -14718332.42 0.0286 0.0120

Mercury -45010-08-24 17:30 J -14718243.84 -14718243.77 -14718243.68 0.0285 0.0248

Moon -45009-03-20 23:45 J -14718034.70 -14718034.51 -14718034.31 0.0284 0.0161

Earth -45009-03-21 02:09 J -14718034.59 -14718034.41 -14718034.21 0.0284 0.0176 \*

Venus -45007-07-16 11:16 J -14717187.23 -14717187.03 -14717186.83 0.0281 0.0093

Venus -45006-03-03 03:35 J -14716957.51 -14716957.35 -14716957.17 0.0280 0.0174

Mars -45001-08-17 18:57 J -14714962.99 -14714962.71 -14714962.41 0.0273 0.0114

# 45TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 45th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-44996-10-03 21:06 J	-14713089.73	-14713089.62	-14713089.51	0.0273	0.0176		



Mercury -44996-12-31 10:33 J -14713001.20 -14713001.06 -14713000.92 0.0274 0.0080

Mercury -44995-03-29 23:30 J -14712912.66 -14712912.52 -14712912.37 0.0274 0.0016

Mercury -44995-06-26 12:28 J -14712824.11 -14712823.98 -14712823.85 0.0274 0.0109

Moon -44995-09-15 19:40 J -14712742.92 -14712742.68 -14712742.43 0.0274 0.0049

Earth -44995-09-15 23:02 J -14712742.79 -14712742.54 -14712742.30 0.0274 0.0033 \*

Mercury -44995-09-23 01:11 J -14712735.55 -14712735.45 -14712735.36 0.0274 0.0201

Venus -44992-08-14 17:30 J -14711678.95 -14711678.77 -14711678.59 0.0278 0.0144

Venus -44991-04-01 00:42 J -14711449.65 -14711449.47 -14711449.27 0.0279 0.0110

Mercury -44981-01-21 17:02 J -14707866.84 -14707866.79 -14707866.74 0.0286 0.0268

Mercury -44981-04-19 11:02 J -14707778.17 -14707778.04 -14707777.90 0.0286 0.0150

Mercury -44981-07-17 05:30 J -14707689.43 -14707689.27 -14707689.10 0.0286 0.0029

Mercury -44981-10-14 00:28 J -14707600.64 -14707600.48 -14707600.32 0.0285 0.0097

Mercury -44980-01-10 19:40 J -14707511.78 -14707511.68 -14707511.57 0.0285 0.0223

Earth -44980-03-15 18:14 J -14707447.98 -14707447.74 -14707447.49 0.0285 0.0017

Moon -44980-03-15 21:21 J -14707447.86 -14707447.61 -14707447.36 0.0285 0.0008 \*

Venus -44977-01-26 20:52 J -14706400.84 -14706400.63 -14706400.42 0.0281 0.0045

Venus -44977-09-12 12:42 J -14706171.09 -14706170.97 -14706170.83 0.0280 0.0221

Mercury -44966-02-20 22:33 J -14702357.65 -14702357.56 -14702357.46 0.0273 0.0207

Mercury -44966-05-20 11:59 J -14702269.14 -14702269.00 -14702268.87 0.0273 0.0110

Mercury -44966-08-17 00:57 J -14702180.60 -14702180.46 -14702180.31 0.0273 0.0017

Earth -44966-09-10 16:33 J -14702155.98 -14702155.81 -14702155.62 0.0273 0.0182

Moon -44966-09-10 19:26 J -14702155.85 -14702155.69 -14702155.52 0.0273 0.0194 \*

Mercury -44966-11-13 13:54 J -14702092.05 -14702091.92 -14702091.78 0.0273 0.0079

Mercury -44965-02-10 02:38 J -14702003.50 -14702003.39 -14702003.28 0.0274 0.0171

Mercury -44965-05-08 15:06 J -14701914.90 -14701914.87 -14701914.83 0.0274 0.0262

Earth -44965-09-22 05:45 J -14701778.46 -14701778.26 -14701778.05 0.0274 0.0145

Moon -44965-09-22 08:09 J -14701778.37 -14701778.16 -14701777.93 0.0274 0.0131 \*

Venus -44962-02-24 19:54 J -14700892.86 -14700892.67 -14700892.48 0.0278 0.0113

Venus -44962-10-12 03:06 J -14700663.54 -14700663.37 -14700663.18 0.0279 0.0140

Mars -44957-11-16 13:54 J -14698801.19 -14698800.92 -14698800.64 0.0287 0.0021

Mercury -44952-09-06 10:18 J -14697046.19 -14697046.07 -14697045.95 0.0286 0.0191  
 Mercury -44952-12-04 04:33 J -14696957.46 -14696957.31 -14696957.15 0.0286 0.0070  
 Mercury -44951-03-02 23:16 J -14696868.69 -14696868.53 -14696868.36 0.0286 0.0055  
 Moon -44951-03-09 19:11 J -14696861.89 -14696861.70 -14696861.50 0.0286 0.0164  
 Earth -44951-03-09 22:04 J -14696861.78 -14696861.58 -14696861.37 0.0286 0.0154 \*  
 Mercury -44951-05-30 18:28 J -14696779.86 -14696779.73 -14696779.60 0.0285 0.0180  
 Earth -44950-03-23 14:23 J -14696483.06 -14696482.90 -14696482.74 0.0284 0.0216  
 Moon -44950-03-23 15:21 J -14696483.01 -14696482.86 -14696482.68 0.0284 0.0204 \*  
 Venus -44949-12-21 08:23 J -14695844.17 -14695844.15 -14695844.11 0.0281 0.0278  
 Venus -44948-08-08 00:57 J -14695614.67 -14695614.46 -14695614.24 0.0280 0.0012  
 Venus -44947-03-25 17:02 J -14695384.87 -14695384.79 -14695384.69 0.0279 0.0254  
 Mars -44943-11-21 10:47 J -14693683.24 -14693683.05 -14693682.83 0.0273 0.0209  
 Mercury -44937-07-10 01:11 J -14691625.52 -14691625.45 -14691625.36 0.0273 0.0229  
 Mercury -44937-10-06 14:52 J -14691537.01 -14691536.88 -14691536.75 0.0274 0.0131  
 Mercury -44936-01-03 04:04 J -14691448.47 -14691448.33 -14691448.19 0.0274 0.0035  
 Mercury -44936-04-01 17:02 J -14691359.93 -14691359.79 -14691359.65 0.0274 0.0059  
 Mercury -44936-06-29 05:45 J -14691271.37 -14691271.26 -14691271.14 0.0274 0.0152  
 Moon -44936-09-17 05:16 J -14691191.52 -14691191.28 -14691191.04 0.0275 0.0011  
 Earth -44936-09-17 08:09 J -14691191.40 -14691191.16 -14691190.91 0.0275 0.0004 \*  
 Mercury -44936-09-25 18:28 J -14691182.79 -14691182.73 -14691182.67 0.0275 0.0244  
 Venus -44933-09-06 05:16 J -14690106.48 -14690106.28 -14690106.07 0.0279 0.0066  
 Venus -44932-04-23 12:57 J -14689877.11 -14689876.96 -14689876.81 0.0280 0.0187  
 Mercury -44922-01-24 12:57 J -14686314.06 -14686313.96 -14686313.85 0.0286 0.0211  
 Mercury -44922-04-23 07:11 J -14686225.35 -14686225.20 -14686225.04 0.0286 0.0091  
 Mercury -44922-07-21 01:54 J -14686136.58 -14686136.42 -14686136.25 0.0286 0.0033  
 Mercury -44922-10-17 20:52 J -14686047.76 -14686047.63 -14686047.48 0.0285 0.0158  
 Moon -44921-03-17 06:57 J -14685896.46 -14685896.21 -14685895.96 0.0285 0.0048  
 Earth -44921-03-17 07:54 J -14685896.41 -14685896.17 -14685895.93 0.0285 0.0060 \*  
 Venus -44919-07-03 19:11 J -14685057.82 -14685057.70 -14685057.57 0.0281 0.0227  
 Venus -44918-02-18 11:30 J -14684828.23 -14684828.02 -14684827.81 0.0280 0.0039

Mars -44912-01-12 05:16 J -14682673.52 -14682673.28 -14682673.02 0.0272 0.0168  
 Mercury -44908-11-27 02:52 J -14680893.42 -14680893.38 -14680893.33 0.0273 0.0257  
 Mercury -44907-02-23 16:33 J -14680804.93 -14680804.81 -14680804.69 0.0273 0.0160  
 Mercury -44907-05-23 05:45 J -14680716.40 -14680716.26 -14680716.12 0.0273 0.0064  
 Mercury -44907-08-19 18:42 J -14680627.86 -14680627.72 -14680627.57 0.0273 0.0031  
 Earth -44907-09-12 02:52 J -14680604.58 -14680604.38 -14680604.16 0.0273 0.0144  
 Moon -44907-09-12 06:14 J -14680604.44 -14680604.24 -14680604.03 0.0273 0.0157 \*  
 Mercury -44907-11-16 07:40 J -14680539.31 -14680539.18 -14680539.05 0.0273 0.0124  
 Mercury -44906-02-12 20:09 J -14680450.74 -14680450.66 -14680450.57 0.0274 0.0215  
 Moon -44906-09-24 14:38 J -14680227.08 -14680226.89 -14680226.68 0.0275 0.0170  
 Earth -44906-09-24 16:04 J -14680227.00 -14680226.83 -14680226.64 0.0275 0.0183 \*  
 Venus -44903-03-19 08:09 J -14679320.37 -14679320.16 -14679319.95 0.0278 0.0034  
 Venus -44903-11-03 15:21 J -14679090.98 -14679090.86 -14679090.73 0.0280 0.0218  
 Mars -44898-02-24 00:57 J -14677517.48 -14677517.46 -14677517.40 0.0286 0.0283  
 Mercury -44893-06-12 12:14 J -14675582.06 -14675581.99 -14675581.91 0.0286 0.0252  
 Mercury -44893-09-09 06:14 J -14675493.38 -14675493.24 -14675493.09 0.0286 0.0133  
 Mercury -44893-12-07 00:57 J -14675404.63 -14675404.46 -14675404.30 0.0286 0.0011  
 Mercury -44892-03-05 19:40 J -14675315.83 -14675315.68 -14675315.52 0.0286 0.0115  
 Earth -44892-03-11 11:30 J -14675310.25 -14675310.02 -14675309.80 0.0286 0.0112  
 Moon -44892-03-11 12:42 J -14675310.18 -14675309.97 -14675309.75 0.0286 0.0124 \*  
 Mercury -44892-06-02 15:06 J -14675226.96 -14675226.87 -14675226.78 0.0285 0.0241  
 Earth -44891-03-25 03:21 J -14674931.45 -14674931.36 -14674931.25 0.0284 0.0259  
 Moon -44891-03-25 07:11 J -14674931.32 -14674931.20 -14674931.07 0.0284 0.0244 \*  
 Venus -44889-01-13 23:16 J -14674271.69 -14674271.53 -14674271.38 0.0281 0.0195  
 Venus -44889-08-30 15:35 J -14674042.06 -14674041.85 -14674041.64 0.0280 0.0071  
 Mercury -44878-07-13 18:57 J -14670072.81 -14670072.71 -14670072.60 0.0274 0.0183  
 Mercury -44878-10-10 08:23 J -14669984.29 -14669984.15 -14669984.01 0.0274 0.0087  
 Mercury -44877-01-06 21:35 J -14669895.75 -14669895.60 -14669895.46 0.0274 0.0009  
 Mercury -44877-04-04 10:18 J -14669807.20 -14669807.07 -14669806.93 0.0274 0.0103  
 Mercury -44877-07-01 23:02 J -14669718.63 -14669718.54 -14669718.43 0.0275 0.0196

Earth -44877-09-18 17:16 J -14669640.02 -14669639.78 -14669639.54 0.0275 0.0040  
 Moon -44877-09-18 17:59 J -14669639.98 -14669639.75 -14669639.51 0.0275 0.0026 \*  
 Venus -44874-02-12 09:06 J -14668763.22 -14668763.12 -14668763.01 0.0278 0.0238  
 Venus -44874-09-29 17:02 J -14668534.00 -14668533.79 -14668533.59 0.0279 0.0013  
 Venus -44873-05-16 00:28 J -14668304.54 -14668304.48 -14668304.41 0.0280 0.0264  
 Mars -44868-04-13 14:52 J -14666511.13 -14666510.88 -14666510.62 0.0286 0.0093  
 Mercury -44864-10-30 15:21 J -14664849.91 -14664849.86 -14664849.81 0.0286 0.0271  
 Mercury -44863-01-27 09:06 J -14664761.25 -14664761.12 -14664760.97 0.0286 0.0152  
 Moon -44863-03-06 03:50 J -14664723.38 -14664723.34 -14664723.27 0.0286 0.0278  
 Earth -44863-03-06 05:45 J -14664723.33 -14664723.26 -14664723.17 0.0286 0.0269 \*  
 Mercury -44863-04-26 03:50 J -14664672.51 -14664672.34 -14664672.18 0.0286 0.0031  
 Mercury -44863-07-23 22:33 J -14664583.72 -14664583.56 -14664583.40 0.0285 0.0094  
 Mercury -44863-10-20 17:45 J -14664494.86 -14664494.76 -14664494.65 0.0285 0.0221  
 Moon -44862-03-19 18:14 J -14664344.97 -14664344.74 -14664344.50 0.0285 0.0089  
 Earth -44862-03-19 22:04 J -14664344.80 -14664344.58 -14664344.35 0.0285 0.0103 \*  
 Venus -44860-07-26 10:18 J -14663485.25 -14663485.07 -14663484.88 0.0281 0.0142  
 Venus -44859-03-13 02:38 J -14663255.58 -14663255.39 -14663255.20 0.0280 0.0123  
 Mars -44854-04-18 05:30 J -14661393.53 -14661393.27 -14661393.00 0.0273 0.0150  
 Mercury -44849-11-29 20:52 J -14659340.72 -14659340.63 -14659340.53 0.0273 0.0210  
 Mercury -44848-02-26 10:18 J -14659252.20 -14659252.07 -14659251.93 0.0273 0.0113  
 Mercury -44848-05-25 23:30 J -14659163.66 -14659163.52 -14659163.37 0.0273 0.0018  
 Mercury -44848-08-22 12:28 J -14659075.12 -14659074.98 -14659074.84 0.0273 0.0076  
 Moon -44848-09-13 12:28 J -14659053.20 -14659052.98 -14659052.74 0.0273 0.0122  
 Earth -44848-09-13 13:26 J -14659053.16 -14659052.94 -14659052.71 0.0273 0.0107 \*  
 Mercury -44848-11-19 01:11 J -14658986.56 -14658986.45 -14658986.34 0.0274 0.0169  
 Mercury -44847-02-15 13:40 J -14658897.97 -14658897.93 -14658897.88 0.0274 0.0259  
 Moon -44847-09-25 22:47 J -14658675.69 -14658675.55 -14658675.37 0.0275 0.0208  
 Earth -44847-09-26 02:38 J -14658675.53 -14658675.39 -14658675.24 0.0275 0.0221 \*  
 Venus -44845-08-24 12:57 J -14657977.10 -14657976.96 -14657976.82 0.0278 0.0205  
 Venus -44844-04-10 20:23 J -14657747.86 -14657747.65 -14657747.45 0.0279 0.0045

Mercury -44834-06-16 08:09 J -14654029.28 -14654029.16 -14654029.04 0.0286 0.0195

Mercury -44834-09-13 02:23 J -14653940.55 -14653940.40 -14653940.24 0.0286 0.0074

Mercury -44834-12-10 21:06 J -14653851.78 -14653851.62 -14653851.45 0.0286 0.0050

Mercury -44833-03-08 16:04 J -14653762.95 -14653762.83 -14653762.69 0.0285 0.0176

Earth -44833-03-13 00:28 J -14653758.71 -14653758.48 -14653758.24 0.0285 0.0069

Moon -44833-03-13 04:33 J -14653758.55 -14653758.31 -14653758.08 0.0285 0.0083 \*

Venus -44830-02-05 13:26 J -14652699.13 -14652698.94 -14652698.74 0.0281 0.0112

Venus -44830-09-23 05:45 J -14652469.43 -14652469.26 -14652469.08 0.0280 0.0153

Mars -44824-06-08 12:14 J -14650384.17 -14650383.99 -14650383.80 0.0273 0.0222

Mercury -44819-04-18 23:02 J -14648608.60 -14648608.54 -14648608.46 0.0273 0.0236

Mercury -44819-07-16 12:42 J -14648520.10 -14648519.97 -14648519.84 0.0274 0.0138

Earth -44819-09-08 12:28 J -14648466.06 -14648465.98 -14648465.87 0.0274 0.0251

Moon -44819-09-08 13:26 J -14648465.98 -14648465.94 -14648465.87 0.0274 0.0265 \*

Mercury -44819-10-13 01:54 J -14648431.56 -14648431.42 -14648431.27 0.0274 0.0042

Mercury -44818-01-09 15:06 J -14648343.02 -14648342.87 -14648342.73 0.0274 0.0053

Mercury -44818-04-08 03:50 J -14648254.46 -14648254.34 -14648254.22 0.0274 0.0146

Mercury -44818-07-05 16:18 J -14648165.88 -14648165.82 -14648165.74 0.0275 0.0238

Earth -44818-09-21 02:09 J -14648088.65 -14648088.41 -14648088.17 0.0275 0.0076

Moon -44818-09-21 05:45 J -14648088.49 -14648088.26 -14648088.01 0.0275 0.0061 \*

Venus -44815-03-06 20:23 J -14647190.82 -14647190.65 -14647190.48 0.0278 0.0162

Venus -44815-10-22 03:50 J -14646961.53 -14646961.34 -14646961.13 0.0279 0.0089

Mars -44810-07-21 23:30 J -14645227.69 -14645227.52 -14645227.33 0.0286 0.0216

Mercury -44805-11-02 11:02 J -14643297.15 -14643297.04 -14643296.94 0.0286 0.0214

Mercury -44804-01-30 05:16 J -14643208.44 -14643208.28 -14643208.13 0.0286 0.0094

Moon -44804-03-07 14:38 J -14643172.00 -14643171.89 -14643171.74 0.0286 0.0240

Earth -44804-03-07 18:28 J -14643171.87 -14643171.73 -14643171.58 0.0286 0.0228 \*

Mercury -44804-04-28 23:45 J -14643119.67 -14643119.51 -14643119.34 0.0286 0.0030

Mercury -44804-07-26 18:42 J -14643030.85 -14643030.72 -14643030.57 0.0285 0.0155

Mercury -44804-10-23 14:09 J -14642941.93 -14642941.91 -14642941.88 0.0285 0.0282

Moon -44803-03-21 09:35 J -14642793.31 -14642793.10 -14642792.88 0.0285 0.0131

Earth -44803-03-21 11:02 J -14642793.25 -14642793.04 -14642792.83 0.0285 0.0146 \*  
 Venus -44801-08-18 01:11 J -14641912.66 -14641912.45 -14641912.24 0.0281 0.0058  
 Venus -44800-04-04 17:16 J -14641682.92 -14641682.78 -14641682.63 0.0280 0.0206  
 Mercury -44790-09-06 01:26 J -14637876.48 -14637876.44 -14637876.40 0.0272 0.0260  
 Mercury -44790-12-03 14:52 J -14637788.00 -14637787.88 -14637787.76 0.0273 0.0163  
 Mercury -44789-03-01 04:04 J -14637699.47 -14637699.33 -14637699.18 0.0273 0.0067  
 Mercury -44789-05-28 17:16 J -14637610.93 -14637610.78 -14637610.64 0.0273 0.0028  
 Mercury -44789-08-25 05:59 J -14637522.37 -14637522.25 -14637522.12 0.0273 0.0121  
 Moon -44789-09-14 19:26 J -14637501.92 -14637501.69 -14637501.45 0.0273 0.0086  
 Earth -44789-09-14 23:16 J -14637501.76 -14637501.53 -14637501.29 0.0273 0.0070 \*  
 Mercury -44789-11-21 18:42 J -14637433.81 -14637433.72 -14637433.63 0.0274 0.0212  
 Moon -44788-09-27 10:47 J -14637124.14 -14637124.05 -14637123.94 0.0275 0.0247  
 Earth -44788-09-27 12:14 J -14637124.07 -14637123.99 -14637123.90 0.0275 0.0258 \*  
 Venus -44786-09-17 00:14 J -14636404.67 -14636404.49 -14636404.30 0.0278 0.0128  
 Venus -44785-05-03 07:40 J -14636175.37 -14636175.18 -14636174.99 0.0279 0.0121  
 Mars -44780-09-07 10:04 J -14634222.32 -14634222.08 -14634221.83 0.0287 0.0125  
 Mercury -44775-03-22 09:35 J -14632565.16 -14632565.10 -14632565.02 0.0286 0.0259  
 Mercury -44775-06-19 03:50 J -14632476.48 -14632476.34 -14632476.20 0.0286 0.0139  
 Mercury -44775-09-15 22:18 J -14632387.73 -14632387.57 -14632387.40 0.0286 0.0017  
 Mercury -44775-12-13 17:16 J -14632298.94 -14632298.78 -14632298.63 0.0286 0.0108  
 Mercury -44774-03-12 12:14 J -14632210.08 -14632209.99 -14632209.89 0.0285 0.0235  
 Earth -44774-03-15 12:28 J -14632207.22 -14632206.98 -14632206.73 0.0285 0.0028  
 Moon -44774-03-15 13:11 J -14632207.20 -14632206.95 -14632206.70 0.0285 0.0042 \*  
 Venus -44771-02-28 03:21 J -14631126.58 -14631126.36 -14631126.15 0.0281 0.0030  
 Venus -44771-10-15 19:26 J -14630896.80 -14630896.69 -14630896.56 0.0280 0.0234  
 Mars -44766-09-12 07:26 J -14629104.48 -14629104.19 -14629103.89 0.0273 0.0102  
 Mercury -44760-04-21 16:33 J -14627055.91 -14627055.81 -14627055.70 0.0273 0.0192  
 Mercury -44760-07-19 05:59 J -14626967.38 -14626967.25 -14626967.11 0.0274 0.0095  
 Earth -44760-09-09 20:23 J -14626914.79 -14626914.65 -14626914.49 0.0274 0.0216  
 Moon -44760-09-09 23:59 J -14626914.61 -14626914.50 -14626914.35 0.0274 0.0231 \*

Mercury -44760-10-15 19:11 J -14626878.84 -14626878.70 -14626878.55 0.0274 0.0008

Mercury -44759-01-12 08:09 J -14626790.29 -14626790.16 -14626790.02 0.0274 0.0095

Mercury -44759-04-10 20:52 J -14626701.73 -14626701.63 -14626701.52 0.0274 0.0188

Earth -44759-09-22 09:50 J -14626537.31 -14626537.09 -14626536.86 0.0275 0.0112

Moon -44759-09-22 11:16 J -14626537.26 -14626537.03 -14626536.79 0.0275 0.0097 \*

Venus -44756-03-29 06:42 J -14625618.41 -14625618.22 -14625618.01 0.0279 0.0088

Venus -44756-11-13 14:23 J -14625389.07 -14625388.90 -14625388.73 0.0280 0.0163

Mercury -44746-08-09 12:14 J -14621833.02 -14621832.99 -14621832.95 0.0286 0.0279

Mercury -44746-11-06 06:14 J -14621744.37 -14621744.24 -14621744.10 0.0286 0.0161

Mercury -44745-02-03 00:42 J -14621655.63 -14621655.47 -14621655.31 0.0286 0.0039

Moon -44745-03-09 04:18 J -14621620.48 -14621620.32 -14621620.14 0.0286 0.0199

Earth -44745-03-09 05:02 J -14621620.46 -14621620.29 -14621620.09 0.0286 0.0188 \*

Mercury -44745-05-01 19:26 J -14621566.84 -14621566.69 -14621566.53 0.0286 0.0086

Mercury -44745-07-29 14:38 J -14621478.00 -14621477.89 -14621477.77 0.0285 0.0212

Earth -44744-03-22 21:50 J -14621241.77 -14621241.59 -14621241.40 0.0284 0.0187

Moon -44744-03-23 00:42 J -14621241.65 -14621241.47 -14621241.27 0.0284 0.0171 \*

Venus -44742-01-23 22:18 J -14620569.67 -14620569.57 -14620569.46 0.0282 0.0243

Venus -44742-09-10 14:38 J -14620340.10 -14620339.89 -14620339.67 0.0281 0.0023

Mercury -44731-09-08 18:57 J -14616323.79 -14616323.71 -14616323.62 0.0272 0.0215

Mercury -44731-12-06 08:23 J -14616235.28 -14616235.15 -14616235.01 0.0273 0.0118

Mercury -44730-03-04 21:35 J -14616146.74 -14616146.60 -14616146.45 0.0273 0.0024

Mercury -44730-06-01 10:33 J -14616058.20 -14616058.06 -14616057.92 0.0273 0.0071

Mercury -44730-08-28 23:16 J -14615969.64 -14615969.53 -14615969.41 0.0273 0.0163

Moon -44730-09-17 06:57 J -14615950.44 -14615950.21 -14615949.97 0.0273 0.0048

Earth -44730-09-17 08:09 J -14615950.41 -14615950.16 -14615949.92 0.0273 0.0033 \*

Mercury -44730-11-25 11:59 J -14615881.05 -14615881.00 -14615880.95 0.0274 0.0254

Venus -44727-10-09 10:47 J -14614832.25 -14614832.05 -14614831.84 0.0278 0.0054

Venus -44726-05-26 17:59 J -14614602.89 -14614602.75 -14614602.60 0.0279 0.0195

Mars -44722-12-15 14:52 J -14612939.07 -14612938.88 -14612938.66 0.0286 0.0189

Mercury -44716-03-25 04:47 J -14611012.41 -14611012.30 -14611012.19 0.0286 0.0206

Mercury -44716-06-21 23:02 J -14610923.69 -14610923.54 -14610923.38 0.0286 0.0086

Mercury -44716-09-18 17:45 J -14610834.93 -14610834.76 -14610834.60 0.0286 0.0038

Mercury -44716-12-16 12:42 J -14610746.11 -14610745.97 -14610745.83 0.0286 0.0163

Moon -44715-03-16 18:57 J -14610655.96 -14610655.71 -14610655.46 0.0285 0.0005

Earth -44715-03-16 22:18 J -14610655.82 -14610655.57 -14610655.33 0.0285 0.0011 \*

Venus -44713-08-04 23:30 J -14609783.65 -14609783.52 -14609783.38 0.0282 0.0216

Venus -44712-03-22 15:50 J -14609554.05 -14609553.84 -14609553.62 0.0281 0.0049

Mercury -44701-01-26 20:23 J -14605591.71 -14605591.65 -14605591.58 0.0273 0.0245

Mercury -44701-04-24 10:04 J -14605503.21 -14605503.08 -14605502.96 0.0273 0.0148

Mercury -44701-07-21 23:16 J -14605414.67 -14605414.53 -14605414.39 0.0273 0.0052

Earth -44701-09-11 03:21 J -14605363.54 -14605363.36 -14605363.18 0.0274 0.0182

Moon -44701-09-11 04:33 J -14605363.48 -14605363.31 -14605363.13 0.0274 0.0195 \*

Mercury -44701-10-18 12:14 J -14605326.13 -14605325.99 -14605325.84 0.0274 0.0043

Mercury -44700-01-15 01:11 J -14605237.57 -14605237.45 -14605237.33 0.0274 0.0136

Mercury -44700-04-13 13:40 J -14605149.00 -14605148.93 -14605148.85 0.0274 0.0227

Moon -44700-09-23 12:57 J -14604986.17 -14604985.96 -14604985.73 0.0275 0.0134

Earth -44700-09-23 16:04 J -14604986.02 -14604985.83 -14604985.61 0.0275 0.0147 \*

Venus -44698-09-04 08:38 J -14604275.20 -14604275.14 -14604275.07 0.0278 0.0263

Venus -44697-04-20 16:04 J -14604046.04 -14604045.83 -14604045.62 0.0279 0.0016

Venus -44697-12-05 23:30 J -14603816.63 -14603816.52 -14603816.41 0.0280 0.0234

Mars -44691-02-01 19:11 J -14601932.91 -14601932.70 -14601932.48 0.0287 0.0177

Mercury -44687-08-12 06:42 J -14600280.30 -14600280.22 -14600280.12 0.0286 0.0231

Mercury -44687-11-09 00:57 J -14600191.60 -14600191.46 -14600191.30 0.0286 0.0110

Mercury -44686-02-05 19:40 J -14600102.85 -14600102.68 -14600102.52 0.0286 0.0013

Earth -44686-03-11 13:11 J -14600069.16 -14600068.95 -14600068.74 0.0286 0.0150

Moon -44686-03-11 15:50 J -14600069.03 -14600068.84 -14600068.63 0.0286 0.0163 \*

Mercury -44686-05-05 14:23 J -14600014.04 -14600013.90 -14600013.75 0.0286 0.0139

Mercury -44686-08-02 09:50 J -14599925.14 -14599925.09 -14599925.03 0.0285 0.0265

Earth -44685-03-24 05:45 J -14599690.40 -14599690.26 -14599690.10 0.0284 0.0225

Moon -44685-03-24 08:52 J -14599690.29 -14599690.13 -14599689.95 0.0284 0.0209 \*



Venus -44683-02-15 10:18 J -14598997.24 -14598997.07 -14598996.90 0.0282 0.0166  
 Venus -44683-10-03 02:38 J -14598767.59 -14598767.39 -14598767.18 0.0281 0.0099  
 Mars -44677-02-07 02:09 J -14596814.72 -14596814.41 -14596814.09 0.0273 0.0047  
 Mercury -44672-06-14 22:47 J -14594859.57 -14594859.55 -14594859.53 0.0272 0.0268  
 Mercury -44672-09-11 12:14 J -14594771.10 -14594770.99 -14594770.87 0.0272 0.0172  
 Mercury -44672-12-09 01:40 J -14594682.57 -14594682.43 -14594682.29 0.0273 0.0076  
 Mercury -44671-03-07 14:52 J -14594594.03 -14594593.88 -14594593.74 0.0273 0.0020  
 Mercury -44671-06-04 03:35 J -14594505.48 -14594505.35 -14594505.22 0.0273 0.0112  
 Mercury -44671-08-31 16:18 J -14594416.91 -14594416.82 -14594416.73 0.0273 0.0204  
 Earth -44671-09-18 14:52 J -14594399.12 -14594398.88 -14594398.63 0.0273 0.0005  
 Moon -44671-09-18 17:59 J -14594398.99 -14594398.75 -14594398.51 0.0273 0.0012 \*  
 Venus -44668-03-16 13:11 J -14593489.06 -14593488.95 -14593488.82 0.0277 0.0228  
 Venus -44668-10-31 20:23 J -14593259.86 -14593259.65 -14593259.44 0.0278 0.0018  
 Venus -44667-06-18 03:21 J -14593030.41 -14593030.36 -14593030.29 0.0279 0.0266  
 Mercury -44658-12-30 05:16 J -14589548.31 -14589548.28 -14589548.23 0.0287 0.0276  
 Mercury -44657-03-27 23:16 J -14589459.66 -14589459.53 -14589459.39 0.0286 0.0157  
 Mercury -44657-06-24 17:45 J -14589370.92 -14589370.76 -14589370.60 0.0286 0.0035  
 Mercury -44657-09-21 12:28 J -14589282.14 -14589281.98 -14589281.82 0.0286 0.0089  
 Mercury -44657-12-19 07:26 J -14589193.29 -14589193.19 -14589193.07 0.0286 0.0216  
 Moon -44656-03-18 02:52 J -14589104.61 -14589104.38 -14589104.14 0.0285 0.0035  
 Earth -44656-03-18 05:45 J -14589104.50 -14589104.26 -14589104.02 0.0285 0.0049 \*  
 Venus -44654-08-28 10:33 J -14588211.24 -14588211.06 -14588210.87 0.0282 0.0141  
 Venus -44653-04-14 03:06 J -14587981.56 -14587981.37 -14587981.17 0.0280 0.0124  
 Mercury -44642-01-29 13:26 J -14584039.03 -14584038.94 -14584038.84 0.0273 0.0204  
 Mercury -44642-04-28 02:52 J -14583950.51 -14583950.38 -14583950.24 0.0273 0.0108  
 Mercury -44642-07-25 16:04 J -14583861.98 -14583861.83 -14583861.68 0.0273 0.0013  
 Moon -44642-09-13 05:45 J -14583812.46 -14583812.26 -14583812.05 0.0274 0.0163  
 Earth -44642-09-13 08:23 J -14583812.35 -14583812.15 -14583811.93 0.0274 0.0149 \*  
 Mercury -44642-10-22 05:02 J -14583773.43 -14583773.29 -14583773.15 0.0274 0.0081  
 Mercury -44641-01-18 17:45 J -14583684.87 -14583684.76 -14583684.65 0.0274 0.0174

Mercury -44641-04-16 06:14 J -14583596.27 -14583596.24 -14583596.20 0.0274 0.0265

Moon -44641-09-24 18:28 J -14583434.91 -14583434.73 -14583434.53 0.0275 0.0170

Earth -44641-09-24 21:06 J -14583434.80 -14583434.62 -14583434.43 0.0275 0.0180 \*

Venus -44639-09-26 16:47 J -14582702.94 -14582702.80 -14582702.64 0.0278 0.0194

Venus -44638-05-14 00:14 J -14582473.69 -14582473.49 -14582473.28 0.0279 0.0054

Mars -44633-05-10 15:50 J -14580650.07 -14580649.84 -14580649.60 0.0286 0.0149

Mercury -44628-08-15 00:42 J -14578727.59 -14578727.47 -14578727.34 0.0286 0.0185

Mercury -44628-11-11 19:11 J -14578638.86 -14578638.70 -14578638.54 0.0286 0.0064

Mercury -44627-02-08 13:40 J -14578550.09 -14578549.93 -14578549.76 0.0286 0.0061

Earth -44627-03-12 17:59 J -14578517.97 -14578517.75 -14578517.52 0.0286 0.0116

Moon -44627-03-12 21:06 J -14578517.84 -14578517.62 -14578517.39 0.0286 0.0128 \*

Mercury -44627-05-08 08:38 J -14578461.25 -14578461.14 -14578461.00 0.0286 0.0187

Moon -44626-03-26 09:50 J -14578139.21 -14578139.09 -14578138.95 0.0284 0.0245

Earth -44626-03-26 10:47 J -14578139.13 -14578139.05 -14578138.94 0.0284 0.0260 \*

Venus -44624-03-09 20:09 J -14577424.86 -14577424.66 -14577424.45 0.0282 0.0094

Venus -44624-10-25 12:57 J -14577195.13 -14577194.96 -14577194.79 0.0280 0.0171

Mercury -44613-06-17 15:50 J -14573306.91 -14573306.84 -14573306.75 0.0272 0.0227

Mercury -44613-09-14 05:16 J -14573218.40 -14573218.28 -14573218.15 0.0272 0.0131

Mercury -44613-12-11 18:42 J -14573129.87 -14573129.72 -14573129.58 0.0273 0.0036

Mercury -44612-03-10 07:40 J -14573041.32 -14573041.18 -14573041.04 0.0273 0.0059

Mercury -44612-06-06 20:23 J -14572952.77 -14572952.65 -14572952.53 0.0273 0.0151

Mercury -44612-09-03 08:52 J -14572864.19 -14572864.13 -14572864.06 0.0273 0.0242

Earth -44612-09-19 20:23 J -14572847.89 -14572847.65 -14572847.40 0.0273 0.0036

Moon -44612-09-19 23:30 J -14572847.77 -14572847.52 -14572847.27 0.0273 0.0023 \*

Venus -44609-04-07 21:50 J -14571916.75 -14571916.59 -14571916.41 0.0277 0.0159

Venus -44609-11-23 04:47 J -14571687.49 -14571687.30 -14571687.10 0.0278 0.0087

Mars -44603-06-28 01:40 J -14569644.61 -14569644.43 -14569644.22 0.0287 0.0197

Mercury -44598-01-01 23:02 J -14567995.63 -14567995.54 -14567995.44 0.0287 0.0232

Mercury -44598-03-31 17:16 J -14567906.93 -14567906.78 -14567906.63 0.0286 0.0112

Mercury -44598-06-28 11:45 J -14567818.17 -14567818.01 -14567817.84 0.0286 0.0011

Mercury -44598-09-25 06:42 J -14567729.37 -14567729.22 -14567729.08 0.0286 0.0136  
 Mercury -44598-12-23 01:54 J -14567640.48 -14567640.42 -14567640.35 0.0286 0.0263  
 Earth -44597-03-19 10:04 J -14567553.31 -14567553.08 -14567552.84 0.0285 0.0083  
 Moon -44597-03-19 11:16 J -14567553.26 -14567553.03 -14567552.80 0.0285 0.0069 \*  
 Venus -44595-09-19 20:23 J -14566638.86 -14566638.65 -14566638.44 0.0281 0.0069  
 Venus -44594-05-07 12:42 J -14566409.12 -14566408.97 -14566408.81 0.0280 0.0195  
 Mars -44589-07-02 06:28 J -14564526.54 -14564526.23 -14564525.91 0.0273 0.0018  
 Mercury -44584-11-04 16:33 J -14562574.85 -14562574.81 -14562574.77 0.0273 0.0263  
 Mercury -44583-02-01 05:59 J -14562486.36 -14562486.25 -14562486.13 0.0273 0.0166  
 Mercury -44583-04-30 19:26 J -14562397.83 -14562397.69 -14562397.55 0.0273 0.0070  
 Mercury -44583-07-28 08:23 J -14562309.29 -14562309.15 -14562309.00 0.0273 0.0026  
 Moon -44583-09-14 08:38 J -14562261.34 -14562261.14 -14562260.91 0.0273 0.0133  
 Earth -44583-09-14 11:59 J -14562261.22 -14562261.00 -14562260.77 0.0273 0.0117 \*  
 Mercury -44583-10-24 21:21 J -14562220.74 -14562220.61 -14562220.48 0.0274 0.0118  
 Mercury -44582-01-21 10:04 J -14562132.17 -14562132.08 -14562131.99 0.0274 0.0210  
 Earth -44582-09-27 00:14 J -14561883.64 -14561883.49 -14561883.33 0.0275 0.0212  
 Moon -44582-09-27 01:54 J -14561883.57 -14561883.42 -14561883.26 0.0275 0.0205 \*  
 Venus -44580-10-18 23:59 J -14561130.68 -14561130.50 -14561130.30 0.0278 0.0128  
 Venus -44579-06-05 07:11 J -14560901.38 -14560901.20 -14560901.00 0.0279 0.0120  
 Mercury -44569-05-21 00:14 J -14557263.55 -14557263.49 -14557263.43 0.0286 0.0262  
 Mercury -44569-08-17 18:14 J -14557174.88 -14557174.74 -14557174.60 0.0286 0.0143  
 Mercury -44569-11-14 12:42 J -14557086.14 -14557085.97 -14557085.81 0.0286 0.0021  
 Mercury -44568-02-11 07:26 J -14556997.34 -14556997.19 -14556997.03 0.0286 0.0104  
 Moon -44568-03-13 19:26 J -14556966.93 -14556966.69 -14556966.45 0.0286 0.0098  
 Earth -44568-03-13 20:52 J -14556966.87 -14556966.63 -14556966.40 0.0286 0.0083 \*  
 Mercury -44568-05-11 02:38 J -14556908.49 -14556908.39 -14556908.29 0.0285 0.0231  
 Moon -44567-03-27 10:18 J -14556588.12 -14556588.07 -14556588.01 0.0284 0.0277  
 Venus -44565-04-01 04:47 J -14555852.51 -14555852.30 -14555852.08 0.0281 0.0025  
 Venus -44565-11-16 21:35 J -14555622.71 -14555622.60 -14555622.49 0.0280 0.0239  
 Mercury -44554-06-21 08:38 J -14551754.24 -14551754.14 -14551754.03 0.0272 0.0188

Earth -44554-09-09 12:28 J -14551674.05 -14551673.98 -14551673.89 0.0273 0.0257  
 Moon -44554-09-09 16:04 J -14551673.84 -14551673.83 -14551673.81 0.0273 0.0272  
 Mercury -44554-09-17 22:04 J -14551665.72 -14551665.58 -14551665.44 0.0273 0.0092  
 Mercury -44554-12-15 11:16 J -14551577.18 -14551577.03 -14551576.89 0.0273 0.0009  
 Mercury -44553-03-12 23:59 J -14551488.63 -14551488.50 -14551488.36 0.0273 0.0096  
 Mercury -44553-06-09 12:42 J -14551400.07 -14551399.97 -14551399.87 0.0273 0.0188  
 Moon -44553-09-20 23:16 J -14551296.78 -14551296.53 -14551296.28 0.0273 0.0057  
 Earth -44553-09-21 00:14 J -14551296.73 -14551296.49 -14551296.25 0.0273 0.0069 \*  
 Venus -44550-05-01 05:30 J -14550344.46 -14550344.27 -14550344.06 0.0277 0.0092  
 Venus -44550-12-16 12:28 J -14550115.15 -14550114.98 -14550114.80 0.0278 0.0153  
 Mars -44545-10-03 20:52 J -14548361.86 -14548361.63 -14548361.38 0.0286 0.0129  
 Mercury -44539-01-04 16:18 J -14546442.93 -14546442.82 -14546442.70 0.0287 0.0191  
 Earth -44539-03-07 19:11 J -14546380.79 -14546380.70 -14546380.60 0.0286 0.0262  
 Moon -44539-03-07 21:06 J -14546380.66 -14546380.62 -14546380.55 0.0286 0.0279 \*  
 Mercury -44539-04-03 10:33 J -14546354.21 -14546354.06 -14546353.90 0.0286 0.0070  
 Mercury -44539-07-01 05:16 J -14546265.44 -14546265.28 -14546265.12 0.0286 0.0054  
 Mercury -44539-09-28 00:14 J -14546176.62 -14546176.49 -14546176.36 0.0286 0.0180  
 Earth -44538-03-21 11:59 J -14546002.21 -14546002.00 -14546001.77 0.0285 0.0116  
 Moon -44538-03-21 15:50 J -14546002.06 -14546001.84 -14546001.60 0.0285 0.0099 \*  
 Venus -44536-02-24 11:30 J -14545296.08 -14545296.02 -14545295.93 0.0282 0.0266  
 Venus -44536-10-12 04:18 J -14545066.53 -14545066.32 -14545066.10 0.0281 0.0007  
 Venus -44535-05-29 20:52 J -14544836.70 -14544836.63 -14544836.55 0.0280 0.0262  
 Mercury -44525-11-07 08:52 J -14541022.20 -14541022.13 -14541022.04 0.0273 0.0226  
 Mercury -44524-02-03 22:33 J -14540933.69 -14540933.56 -14540933.43 0.0273 0.0129  
 Mercury -44524-05-03 11:45 J -14540845.15 -14540845.01 -14540844.86 0.0273 0.0033  
 Mercury -44524-07-31 00:42 J -14540756.61 -14540756.47 -14540756.33 0.0273 0.0061  
 Earth -44524-09-15 14:38 J -14540710.12 -14540709.89 -14540709.65 0.0273 0.0086  
 Moon -44524-09-15 15:35 J -14540710.07 -14540709.85 -14540709.63 0.0273 0.0100 \*  
 Mercury -44524-10-27 13:26 J -14540668.05 -14540667.94 -14540667.82 0.0273 0.0154  
 Mercury -44523-01-24 01:54 J -14540579.47 -14540579.42 -14540579.35 0.0274 0.0245

Earth -44523-09-28 02:38 J -14540332.49 -14540332.39 -14540332.27 0.0275 0.0243  
 Moon -44523-09-28 06:14 J -14540332.36 -14540332.24 -14540332.11 0.0275 0.0236 \*  
 Venus -44521-11-10 06:57 J -14539558.41 -14539558.21 -14539558.01 0.0278 0.0063  
 Venus -44520-06-27 13:54 J -14539329.07 -14539328.92 -14539328.76 0.0279 0.0183  
 Mars -44515-11-21 12:28 J -14537356.14 -14537355.98 -14537355.80 0.0287 0.0222  
 Mercury -44510-05-24 16:47 J -14535710.89 -14535710.80 -14535710.70 0.0286 0.0224  
 Mercury -44510-08-21 11:02 J -14535622.19 -14535622.04 -14535621.89 0.0286 0.0104  
 Mercury -44510-11-18 05:30 J -14535533.43 -14535533.27 -14535533.10 0.0286 0.0020  
 Mercury -44509-02-15 00:28 J -14535444.62 -14535444.48 -14535444.34 0.0286 0.0144  
 Moon -44509-03-14 17:16 J -14535416.02 -14535415.78 -14535415.55 0.0286 0.0070  
 Earth -44509-03-14 20:52 J -14535415.87 -14535415.63 -14535415.38 0.0286 0.0053 \*  
 Mercury -44509-05-13 19:40 J -14535355.72 -14535355.68 -14535355.63 0.0285 0.0272  
 Venus -44507-09-06 18:57 J -14534509.83 -14534509.71 -14534509.57 0.0282 0.0225  
 Venus -44506-04-24 11:59 J -14534280.21 -14534280.00 -14534279.79 0.0281 0.0040  
 Mars -44501-11-26 08:09 J -14532237.47 -14532237.16 -14532236.84 0.0273 0.0025  
 Mercury -44495-03-27 11:30 J -14530290.08 -14530290.02 -14530289.96 0.0272 0.0248  
 Mercury -44495-06-24 01:11 J -14530201.58 -14530201.45 -14530201.33 0.0272 0.0151  
 Moon -44495-09-10 14:09 J -14530123.02 -14530122.91 -14530122.79 0.0273 0.0242  
 Earth -44495-09-10 15:21 J -14530122.99 -14530122.86 -14530122.72 0.0273 0.0227 \*  
 Mercury -44495-09-20 14:23 J -14530113.04 -14530112.90 -14530112.76 0.0273 0.0055  
 Mercury -44495-12-18 03:21 J -14530024.50 -14530024.36 -14530024.21 0.0273 0.0039  
 Mercury -44494-03-16 16:04 J -14529935.95 -14529935.83 -14529935.70 0.0273 0.0132  
 Mercury -44494-06-13 04:47 J -14529847.38 -14529847.30 -14529847.22 0.0273 0.0223  
 Moon -44494-09-22 23:02 J -14529745.76 -14529745.54 -14529745.30 0.0273 0.0088  
 Earth -44494-09-23 02:38 J -14529745.61 -14529745.39 -14529745.15 0.0273 0.0101 \*  
 Venus -44492-10-06 05:45 J -14529001.30 -14529001.26 -14529001.21 0.0276 0.0269  
 Venus -44491-05-23 12:42 J -14528772.18 -14528771.97 -14528771.76 0.0277 0.0027  
 Venus -44490-01-07 19:11 J -14528542.82 -14528542.70 -14528542.57 0.0278 0.0217  
 Mercury -44481-10-10 15:21 J -14524978.91 -14524978.86 -14524978.80 0.0287 0.0270  
 Mercury -44480-01-07 09:21 J -14524890.24 -14524890.11 -14524889.97 0.0286 0.0151

Earth -44480-03-08 20:09 J -14524829.80 -14524829.66 -14524829.51 0.0286 0.0232  
 Moon -44480-03-08 23:30 J -14524829.63 -14524829.52 -14524829.38 0.0286 0.0248 \*  
 Mercury -44480-04-06 03:50 J -14524801.51 -14524801.34 -14524801.18 0.0286 0.0030  
 Mercury -44480-07-03 22:33 J -14524712.72 -14524712.56 -14524712.41 0.0286 0.0095  
 Mercury -44480-09-30 17:30 J -14524623.87 -14524623.77 -14524623.66 0.0286 0.0222  
 Earth -44479-03-22 13:11 J -14524451.15 -14524450.95 -14524450.73 0.0285 0.0146  
 Moon -44479-03-22 13:54 J -14524451.14 -14524450.92 -14524450.69 0.0285 0.0131 \*  
 Venus -44477-03-18 19:11 J -14523723.85 -14523723.70 -14523723.55 0.0282 0.0199  
 Venus -44477-11-03 11:45 J -14523494.22 -14523494.01 -14523493.80 0.0281 0.0065  
 Mercury -44466-11-11 01:11 J -14519469.55 -14519469.45 -14519469.34 0.0273 0.0189  
 Mercury -44465-02-07 14:38 J -14519381.03 -14519380.89 -14519380.75 0.0273 0.0093  
 Mercury -44465-05-06 03:50 J -14519292.48 -14519292.34 -14519292.19 0.0273 0.0003  
 Mercury -44465-08-02 16:47 J -14519203.93 -14519203.80 -14519203.66 0.0273 0.0095  
 Earth -44465-09-16 16:04 J -14519159.06 -14519158.83 -14519158.58 0.0273 0.0056  
 Moon -44465-09-16 20:09 J -14519158.90 -14519158.66 -14519158.43 0.0273 0.0070 \*  
 Mercury -44465-10-30 05:30 J -14519115.37 -14519115.27 -14519115.17 0.0273 0.0187  
 Earth -44464-09-29 03:50 J -14518781.34 -14518781.34 -14518781.30 0.0274 0.0274  
 Moon -44464-09-29 04:47 J -14518781.34 -14518781.30 -14518781.24 0.0274 0.0269 \*  
 Venus -44462-04-18 06:28 J -14518215.33 -14518215.23 -14518215.13 0.0277 0.0243  
 Venus -44462-12-03 13:11 J -14517986.16 -14517985.95 -14517985.74 0.0278 0.0005  
 Venus -44461-07-19 19:54 J -14517756.76 -14517756.67 -14517756.56 0.0279 0.0246  
 Mars -44456-02-27 01:40 J -14516073.68 -14516073.43 -14516073.17 0.0286 0.0111  
 Mercury -44451-05-27 09:21 J -14514158.23 -14514158.11 -14514157.99 0.0286 0.0188  
 Mercury -44451-08-24 03:35 J -14514069.51 -14514069.35 -14514069.19 0.0286 0.0067  
 Mercury -44451-11-20 22:18 J -14513980.73 -14513980.57 -14513980.41 0.0286 0.0057  
 Mercury -44450-02-17 17:16 J -14513891.91 -14513891.78 -14513891.65 0.0286 0.0183  
 Earth -44450-03-16 19:54 J -14513864.92 -14513864.67 -14513864.43 0.0286 0.0024  
 Moon -44450-03-16 19:54 J -14513864.90 -14513864.67 -14513864.43 0.0286 0.0039 \*  
 Venus -44448-09-29 01:11 J -14512937.62 -14512937.45 -14512937.27 0.0282 0.0162  
 Venus -44447-05-16 18:14 J -14512707.94 -14512707.74 -14512707.54 0.0281 0.0103

Mercury -44436-03-30 04:04 J -14508737.43 -14508737.33 -14508737.24 0.0272 0.0211

Mercury -44436-06-26 17:16 J -14508648.91 -14508648.78 -14508648.64 0.0273 0.0115

Moon -44436-09-11 13:54 J -14508572.06 -14508571.92 -14508571.76 0.0273 0.0212

Earth -44436-09-11 17:30 J -14508571.92 -14508571.77 -14508571.58 0.0273 0.0197 \*

Mercury -44436-09-23 06:42 J -14508560.37 -14508560.22 -14508560.08 0.0273 0.0020

Mercury -44436-12-20 19:40 J -14508471.82 -14508471.68 -14508471.54 0.0273 0.0075

Mercury -44435-03-19 08:09 J -14508383.26 -14508383.16 -14508383.04 0.0273 0.0168

Mercury -44435-06-15 20:52 J -14508294.67 -14508294.63 -14508294.58 0.0273 0.0257

Moon -44435-09-24 04:18 J -14508194.53 -14508194.32 -14508194.11 0.0274 0.0123

Earth -44435-09-24 05:16 J -14508194.49 -14508194.28 -14508194.06 0.0274 0.0132 \*

Venus -44433-10-28 12:57 J -14507429.09 -14507428.96 -14507428.82 0.0276 0.0205

Venus -44432-06-14 19:40 J -14507199.89 -14507199.68 -14507199.47 0.0277 0.0037

Mars -44426-04-16 16:47 J -14505067.93 -14505067.80 -14505067.64 0.0286 0.0243

Mercury -44422-10-14 07:54 J -14503426.25 -14503426.17 -14503426.07 0.0287 0.0233

Mercury -44421-01-11 02:09 J -14503337.56 -14503337.41 -14503337.26 0.0286 0.0113

Moon -44421-03-09 19:26 J -14503278.85 -14503278.69 -14503278.52 0.0286 0.0217

Earth -44421-03-09 20:09 J -14503278.83 -14503278.66 -14503278.48 0.0286 0.0202 \*

Mercury -44421-04-08 20:38 J -14503248.80 -14503248.64 -14503248.48 0.0286 0.0010

Mercury -44421-07-06 15:21 J -14503160.00 -14503159.86 -14503159.71 0.0286 0.0135

Mercury -44421-10-03 10:33 J -14503071.12 -14503071.06 -14503070.99 0.0286 0.0262

Moon -44420-03-23 09:35 J -14502900.30 -14502900.10 -14502899.90 0.0285 0.0163

Earth -44420-03-23 13:11 J -14502900.14 -14502899.95 -14502899.75 0.0285 0.0176 \*

Venus -44418-04-11 01:54 J -14502151.61 -14502151.42 -14502151.23 0.0282 0.0135

Venus -44418-11-26 18:28 J -14501921.92 -14501921.73 -14501921.54 0.0281 0.0129

Mars -44412-04-20 20:52 J -14499949.94 -14499949.63 -14499949.32 0.0273 0.0043

Mercury -44407-08-17 03:50 J -14498005.39 -14498005.34 -14498005.28 0.0272 0.0251

Mercury -44407-11-13 17:30 J -14497916.89 -14497916.77 -14497916.65 0.0273 0.0153

Mercury -44406-02-10 06:57 J -14497828.36 -14497828.21 -14497828.07 0.0273 0.0058

Mercury -44406-05-09 19:54 J -14497739.81 -14497739.67 -14497739.53 0.0273 0.0037

Mercury -44406-08-06 08:38 J -14497651.26 -14497651.14 -14497651.01 0.0273 0.0130

Earth -44406-09-18 17:45 J -14497608.00 -14497607.76 -14497607.51 0.0273 0.0025  
 Moon -44406-09-18 18:14 J -14497607.99 -14497607.74 -14497607.49 0.0273 0.0035 \*  
 Mercury -44406-11-02 21:21 J -14497562.69 -14497562.61 -14497562.52 0.0273 0.0221  
 Venus -44403-05-10 12:42 J -14496643.12 -14496642.97 -14496642.81 0.0277 0.0180  
 Venus -44403-12-25 19:26 J -14496413.89 -14496413.69 -14496413.48 0.0278 0.0063  
 Mercury -44392-03-02 07:54 J -14492694.22 -14492694.17 -14492694.12 0.0287 0.0270  
 Mercury -44392-05-30 01:54 J -14492605.56 -14492605.42 -14492605.28 0.0286 0.0151  
 Mercury -44392-08-26 20:09 J -14492516.82 -14492516.66 -14492516.49 0.0286 0.0030  
 Mercury -44392-11-23 14:52 J -14492428.03 -14492427.88 -14492427.72 0.0286 0.0095  
 Mercury -44391-02-20 10:04 J -14492339.18 -14492339.08 -14492338.98 0.0286 0.0222  
 Earth -44391-03-17 18:57 J -14492313.96 -14492313.71 -14492313.47 0.0286 0.0006  
 Moon -44391-03-17 22:33 J -14492313.80 -14492313.56 -14492313.31 0.0286 0.0009 \*  
 Venus -44389-10-21 07:11 J -14491365.40 -14491365.20 -14491364.99 0.0282 0.0099  
 Venus -44388-06-07 23:59 J -14491135.66 -14491135.50 -14491135.31 0.0281 0.0166  
 Mercury -44377-01-04 06:28 J -14487273.23 -14487273.23 -14487273.22 0.0272 0.0272  
 Mercury -44377-04-01 20:09 J -14487184.77 -14487184.66 -14487184.54 0.0273 0.0175  
 Mercury -44377-06-29 09:35 J -14487096.24 -14487096.10 -14487095.96 0.0273 0.0079  
 Moon -44377-09-12 18:57 J -14487020.88 -14487020.71 -14487020.52 0.0273 0.0180  
 Earth -44377-09-12 19:26 J -14487020.87 -14487020.69 -14487020.48 0.0273 0.0167 \*  
 Mercury -44377-09-25 22:47 J -14487007.70 -14487007.55 -14487007.40 0.0273 0.0016  
 Mercury -44377-12-23 11:45 J -14486919.14 -14486919.01 -14486918.88 0.0273 0.0110  
 Mercury -44376-03-22 00:14 J -14486830.58 -14486830.49 -14486830.39 0.0273 0.0202  
 Earth -44376-09-25 06:57 J -14486643.39 -14486643.21 -14486643.00 0.0274 0.0163  
 Moon -44376-09-25 10:33 J -14486643.25 -14486643.06 -14486642.86 0.0274 0.0157 \*  
 Venus -44374-11-20 19:54 J -14485856.84 -14485856.67 -14485856.48 0.0276 0.0141  
 Venus -44373-07-07 02:38 J -14485627.58 -14485627.39 -14485627.19 0.0277 0.0101  
 Mars -44368-07-23 11:16 J -14483785.29 -14483785.03 -14483784.76 0.0285 0.0080  
 Mercury -44363-10-17 00:57 J -14481873.58 -14481873.46 -14481873.34 0.0286 0.0194  
 Mercury -44362-01-13 19:11 J -14481784.86 -14481784.70 -14481784.54 0.0286 0.0073  
 Moon -44362-03-11 17:02 J -14481727.97 -14481727.79 -14481727.60 0.0286 0.0187



Earth -44362-03-11 20:52 J -14481727.83 -14481727.63 -14481727.44 0.0286 0.0172 \*  
 Mercury -44362-04-12 13:40 J -14481696.09 -14481695.93 -14481695.77 0.0286 0.0050  
 Mercury -44362-07-10 08:38 J -14481607.27 -14481607.14 -14481607.01 0.0286 0.0176  
 Moon -44361-03-24 11:45 J -14481349.18 -14481349.01 -14481348.83 0.0285 0.0198  
 Earth -44361-03-24 13:40 J -14481349.10 -14481348.93 -14481348.76 0.0285 0.0206 \*  
 Venus -44359-05-03 08:38 J -14480579.34 -14480579.14 -14480578.93 0.0282 0.0071  
 Venus -44359-12-19 01:11 J -14480349.59 -14480349.45 -14480349.28 0.0281 0.0193  
 Mercury -44348-08-19 20:23 J -14476452.74 -14476452.65 -14476452.56 0.0272 0.0214  
 Mercury -44348-11-16 09:50 J -14476364.22 -14476364.09 -14476363.96 0.0273 0.0117  
 Mercury -44347-02-12 23:02 J -14476275.68 -14476275.54 -14476275.39 0.0273 0.0022  
 Mercury -44347-05-12 11:59 J -14476187.13 -14476187.00 -14476186.86 0.0273 0.0073  
 Mercury -44347-08-09 00:42 J -14476098.58 -14476098.47 -14476098.35 0.0273 0.0165  
 Moon -44347-09-19 16:33 J -14476057.06 -14476056.81 -14476056.56 0.0273 0.0001  
 Earth -44347-09-19 20:09 J -14476056.91 -14476056.66 -14476056.41 0.0273 0.0006 \*  
 Mercury -44347-11-05 13:26 J -14476009.99 -14476009.94 -14476009.89 0.0273 0.0255  
 Venus -44344-06-01 19:54 J -14475070.86 -14475070.67 -14475070.48 0.0277 0.0116  
 Venus -44343-01-17 02:23 J -14474841.58 -14474841.40 -14474841.21 0.0278 0.0127  
 Mars -44338-09-09 19:40 J -14472779.78 -14472779.68 -14472779.55 0.0286 0.0260  
 Mercury -44333-03-05 00:28 J -14471141.57 -14471141.48 -14471141.39 0.0286 0.0233  
 Mercury -44333-06-01 18:28 J -14471052.88 -14471052.73 -14471052.58 0.0286 0.0114  
 Mercury -44333-08-29 12:57 J -14470964.12 -14470963.96 -14470963.79 0.0286 0.0009  
 Mercury -44333-11-26 07:40 J -14470875.32 -14470875.18 -14470875.03 0.0286 0.0135  
 Mercury -44332-02-23 02:52 J -14470786.44 -14470786.38 -14470786.31 0.0286 0.0262  
 Earth -44332-03-18 18:28 J -14470762.98 -14470762.73 -14470762.49 0.0285 0.0035  
 Moon -44332-03-18 19:54 J -14470762.92 -14470762.67 -14470762.42 0.0285 0.0024 \*  
 Venus -44330-11-13 13:26 J -14469793.15 -14469792.94 -14469792.72 0.0282 0.0036  
 Venus -44329-06-30 06:28 J -14469563.35 -14469563.23 -14469563.10 0.0281 0.0226  
 Mars -44324-09-14 13:11 J -14467661.25 -14467660.95 -14467660.64 0.0274 0.0082  
 Mercury -44318-01-06 23:02 J -14465720.61 -14465720.54 -14465720.46 0.0273 0.0235  
 Mercury -44318-04-05 12:42 J -14465632.10 -14465631.97 -14465631.84 0.0273 0.0138

Mercury -44318-07-03 01:54 J -14465543.56 -14465543.42 -14465543.27 0.0273 0.0042

Earth -44318-09-14 22:18 J -14465469.78 -14465469.57 -14465469.36 0.0273 0.0136

Moon -44318-09-15 01:26 J -14465469.64 -14465469.44 -14465469.24 0.0273 0.0147 \*

Mercury -44318-09-29 15:06 J -14465455.02 -14465454.87 -14465454.73 0.0273 0.0053

Mercury -44318-12-27 03:50 J -14465366.46 -14465366.34 -14465366.22 0.0273 0.0145

Mercury -44317-03-24 16:18 J -14465277.88 -14465277.82 -14465277.74 0.0274 0.0237

Earth -44317-09-26 10:04 J -14465092.25 -14465092.08 -14465091.91 0.0274 0.0194

Moon -44317-09-26 12:28 J -14465092.16 -14465091.98 -14465091.80 0.0274 0.0192 \*

Venus -44315-12-13 03:35 J -14464284.55 -14464284.35 -14464284.15 0.0277 0.0076

Venus -44314-07-30 10:04 J -14464055.24 -14464055.08 -14464054.90 0.0277 0.0166

Mercury -44304-07-23 00:14 J -14460409.53 -14460409.49 -14460409.44 0.0286 0.0271

Mercury -44304-10-19 17:59 J -14460320.88 -14460320.75 -14460320.61 0.0286 0.0153

Mercury -44303-01-16 12:28 J -14460232.14 -14460231.98 -14460231.82 0.0286 0.0031

Moon -44303-03-12 21:06 J -14460176.81 -14460176.62 -14460176.41 0.0286 0.0154

Earth -44303-03-12 22:18 J -14460176.77 -14460176.57 -14460176.35 0.0286 0.0142 \*

Mercury -44303-04-15 06:57 J -14460143.36 -14460143.21 -14460143.05 0.0286 0.0093

Mercury -44303-07-13 02:09 J -14460054.52 -14460054.41 -14460054.30 0.0286 0.0219

Earth -44302-03-26 15:06 J -14459797.99 -14459797.87 -14459797.73 0.0285 0.0238

Moon -44302-03-26 17:59 J -14459797.88 -14459797.75 -14459797.61 0.0285 0.0233 \*

Venus -44301-10-07 23:30 J -14459236.58 -14459236.52 -14459236.44 0.0283 0.0267

Venus -44300-05-25 16:18 J -14459007.03 -14459006.82 -14459006.60 0.0282 0.0005

Venus -44299-01-10 09:06 J -14458777.20 -14458777.12 -14458777.03 0.0281 0.0257

Mercury -44289-08-22 12:42 J -14454900.08 -14454899.97 -14454899.85 0.0273 0.0177

Mercury -44289-11-19 02:09 J -14454811.55 -14454811.41 -14454811.26 0.0273 0.0080

Mercury -44288-02-15 15:21 J -14454723.00 -14454722.86 -14454722.71 0.0273 0.0017

Mercury -44288-05-15 04:18 J -14454634.45 -14454634.32 -14454634.18 0.0273 0.0109

Mercury -44288-08-11 17:02 J -14454545.88 -14454545.79 -14454545.69 0.0273 0.0201

Moon -44288-09-20 21:06 J -14454505.85 -14454505.62 -14454505.38 0.0273 0.0034

Earth -44288-09-20 23:16 J -14454505.77 -14454505.53 -14454505.29 0.0273 0.0038 \*

Venus -44285-06-24 03:35 J -14453498.55 -14453498.35 -14453498.14 0.0277 0.0051

Venus -44284-02-08 10:18 J -14453269.22 -14453269.07 -14453268.92 0.0278 0.0191  
 Mars -44280-12-16 14:52 J -14451497.15 -14451496.88 -14451496.61 0.0285 0.0062  
 Mercury -44274-03-08 17:30 J -14449588.89 -14449588.77 -14449588.65 0.0286 0.0194  
 Mercury -44274-06-05 11:45 J -14449500.17 -14449500.01 -14449499.86 0.0286 0.0073  
 Mercury -44274-09-02 06:14 J -14449411.40 -14449411.24 -14449411.08 0.0286 0.0050  
 Mercury -44274-11-30 00:57 J -14449322.58 -14449322.46 -14449322.32 0.0286 0.0177  
 Moon -44273-03-19 16:47 J -14449212.05 -14449211.80 -14449211.55 0.0285 0.0058  
 Earth -44273-03-19 19:40 J -14449211.92 -14449211.68 -14449211.44 0.0285 0.0065 \*  
 Venus -44271-04-20 03:50 J -14448450.45 -14448450.34 -14448450.22 0.0283 0.0234  
 Venus -44271-12-05 20:38 J -14448220.85 -14448220.64 -14448220.42 0.0282 0.0029  
 Mars -44266-12-18 16:33 J -14446381.91 -14446381.81 -14446381.71 0.0275 0.0258  
 Mercury -44259-01-09 15:35 J -14444167.95 -14444167.85 -14444167.74 0.0273 0.0198  
 Mercury -44259-04-08 05:16 J -14444079.42 -14444079.28 -14444079.15 0.0273 0.0100  
 Mercury -44259-07-05 18:28 J -14443990.88 -14443990.73 -14443990.58 0.0273 0.0005  
 Earth -44259-09-16 01:54 J -14443918.65 -14443918.42 -14443918.19 0.0273 0.0105  
 Moon -44259-09-16 04:33 J -14443918.54 -14443918.31 -14443918.08 0.0273 0.0115 \*  
 Mercury -44259-10-02 07:26 J -14443902.32 -14443902.19 -14443902.05 0.0273 0.0089  
 Mercury -44259-12-29 20:09 J -14443813.76 -14443813.66 -14443813.55 0.0274 0.0182  
 Mercury -44258-03-28 08:38 J -14443725.14 -14443725.14 -14443725.12 0.0274 0.0273  
 Moon -44258-09-28 11:30 J -14443541.15 -14443541.02 -14443540.88 0.0274 0.0230  
 Earth -44258-09-28 13:54 J -14443541.05 -14443540.92 -14443540.78 0.0274 0.0227 \*  
 Venus -44256-05-20 05:02 J -14442941.37 -14442941.29 -14442941.19 0.0276 0.0248  
 Venus -44255-01-04 12:14 J -14442712.20 -14442711.99 -14442711.79 0.0277 0.0010  
 Venus -44255-08-21 18:42 J -14442482.83 -14442482.72 -14442482.60 0.0278 0.0233  
 Mercury -44245-07-25 17:45 J -14438856.85 -14438856.76 -14438856.66 0.0286 0.0228  
 Mercury -44245-10-22 11:45 J -14438768.15 -14438768.01 -14438767.85 0.0286 0.0109  
 Mercury -44244-01-19 06:14 J -14438679.40 -14438679.24 -14438679.07 0.0286 0.0015  
 Earth -44244-03-14 02:23 J -14438625.62 -14438625.40 -14438625.17 0.0286 0.0108  
 Moon -44244-03-14 05:02 J -14438625.50 -14438625.29 -14438625.07 0.0286 0.0120 \*  
 Mercury -44244-04-18 00:57 J -14438590.60 -14438590.46 -14438590.31 0.0286 0.0139

Mercury -44244-07-15 20:09 J -14438501.72 -14438501.66 -14438501.60 0.0285 0.0265

Earth -44243-03-27 18:42 J -14438246.78 -14438246.72 -14438246.64 0.0285 0.0272

Moon -44243-03-27 21:50 J -14438246.66 -14438246.59 -14438246.49 0.0285 0.0268 \*

Venus -44242-10-31 08:09 J -14437664.30 -14437664.16 -14437664.00 0.0283 0.0198

Venus -44241-06-17 00:57 J -14437434.67 -14437434.46 -14437434.25 0.0282 0.0064

Mars -44235-02-07 10:04 J -14435373.37 -14435373.08 -14435372.78 0.0274 0.0108

Mercury -44230-05-29 16:04 J -14433435.90 -14433435.83 -14433435.76 0.0273 0.0235

Mercury -44230-08-26 05:30 J -14433347.39 -14433347.27 -14433347.14 0.0273 0.0138

Earth -44230-09-10 15:35 J -14433331.91 -14433331.85 -14433331.77 0.0273 0.0260

Mercury -44230-11-22 18:57 J -14433258.85 -14433258.71 -14433258.56 0.0273 0.0041

Mercury -44229-02-19 08:09 J -14433170.30 -14433170.16 -14433170.02 0.0273 0.0054

Mercury -44229-05-17 20:52 J -14433081.75 -14433081.63 -14433081.51 0.0273 0.0147

Mercury -44229-08-14 09:35 J -14432993.17 -14432993.10 -14432993.03 0.0273 0.0238

Earth -44229-09-22 03:35 J -14432954.58 -14432954.35 -14432954.10 0.0274 0.0072

Moon -44229-09-22 05:59 J -14432954.48 -14432954.25 -14432954.02 0.0274 0.0070 \*

Venus -44227-11-30 05:45 J -14432155.38 -14432155.26 -14432155.14 0.0276 0.0223

Venus -44226-07-17 12:28 J -14431926.19 -14431925.98 -14431925.77 0.0277 0.0018

Venus -44225-03-02 18:57 J -14431696.78 -14431696.71 -14431696.63 0.0278 0.0258

Mercury -44216-12-12 17:02 J -14428124.83 -14428124.79 -14428124.73 0.0286 0.0269

Earth -44215-03-08 05:30 J -14428039.29 -14428039.27 -14428039.23 0.0286 0.0284

Mercury -44215-03-11 11:02 J -14428036.17 -14428036.04 -14428035.90 0.0286 0.0150

Mercury -44215-06-08 05:16 J -14427947.44 -14427947.28 -14427947.11 0.0286 0.0029

Mercury -44215-09-04 23:59 J -14427858.66 -14427858.50 -14427858.34 0.0286 0.0095

Mercury -44215-12-02 18:57 J -14427769.81 -14427769.71 -14427769.60 0.0286 0.0222

Moon -44214-03-21 19:54 J -14427660.90 -14427660.67 -14427660.44 0.0285 0.0092

Earth -44214-03-21 23:02 J -14427660.77 -14427660.54 -14427660.31 0.0285 0.0099 \*

Venus -44212-05-12 12:28 J -14426878.15 -14426877.98 -14426877.80 0.0282 0.0166

Venus -44212-12-28 05:16 J -14426648.48 -14426648.28 -14426648.07 0.0282 0.0097

Mercury -44201-10-15 18:42 J -14422703.76 -14422703.72 -14422703.66 0.0273 0.0256

Mercury -44200-01-12 08:23 J -14422615.26 -14422615.15 -14422615.02 0.0273 0.0158

Mercury -44200-04-10 22:04 J -14422526.73 -14422526.58 -14422526.44 0.0273 0.0062  
 Mercury -44200-07-08 11:16 J -14422438.18 -14422438.03 -14422437.89 0.0274 0.0035  
 Moon -44200-09-17 05:16 J -14422367.52 -14422367.28 -14422367.04 0.0274 0.0080  
 Earth -44200-09-17 06:42 J -14422367.45 -14422367.22 -14422366.98 0.0274 0.0072 \*  
 Mercury -44200-10-04 23:59 J -14422349.62 -14422349.50 -14422349.37 0.0274 0.0128  
 Mercury -44199-01-01 12:42 J -14422261.05 -14422260.97 -14422260.88 0.0274 0.0220  
 Moon -44199-09-29 15:35 J -14421989.89 -14421989.85 -14421989.78 0.0275 0.0267  
 Earth -44199-09-29 18:57 J -14421989.77 -14421989.71 -14421989.63 0.0275 0.0262  
 Venus -44197-06-11 14:23 J -14421369.05 -14421368.90 -14421368.73 0.0276 0.0179  
 Venus -44196-01-26 21:21 J -14421139.81 -14421139.61 -14421139.41 0.0277 0.0061  
 Mars -44191-05-12 21:50 J -14419207.87 -14419207.59 -14419207.32 0.0284 0.0008  
 Mercury -44186-07-29 12:14 J -14417304.11 -14417303.99 -14417303.86 0.0286 0.0180  
 Mercury -44186-10-26 06:14 J -14417215.39 -14417215.24 -14417215.07 0.0286 0.0061  
 Mercury -44185-01-23 00:42 J -14417126.62 -14417126.47 -14417126.30 0.0286 0.0064  
 Earth -44185-03-15 09:06 J -14417074.35 -14417074.12 -14417073.88 0.0286 0.0072  
 Moon -44185-03-15 12:28 J -14417074.22 -14417073.98 -14417073.74 0.0286 0.0083 \*  
 Mercury -44185-04-20 19:40 J -14417037.80 -14417037.68 -14417037.55 0.0285 0.0189  
 Venus -44183-11-22 18:28 J -14416091.92 -14416091.73 -14416091.53 0.0282 0.0126  
 Venus -44182-07-10 11:16 J -14415862.22 -14415862.03 -14415861.84 0.0282 0.0135  
 Mars -44177-05-12 22:04 J -14414093.73 -14414093.58 -14414093.39 0.0275 0.0228  
 Mercury -44171-06-01 09:06 J -14411883.22 -14411883.12 -14411883.01 0.0273 0.0193  
 Mercury -44171-08-28 22:33 J -14411794.69 -14411794.56 -14411794.42 0.0273 0.0097  
 Earth -44171-09-11 21:21 J -14411780.73 -14411780.61 -14411780.46 0.0273 0.0227  
 Moon -44171-09-11 23:02 J -14411780.64 -14411780.54 -14411780.42 0.0273 0.0239 \*  
 Mercury -44171-11-25 11:59 J -14411706.15 -14411706.00 -14411705.86 0.0273 0.0004  
 Mercury -44170-02-22 00:57 J -14411617.59 -14411617.46 -14411617.32 0.0273 0.0094  
 Mercury -44170-05-21 13:40 J -14411529.03 -14411528.93 -14411528.82 0.0273 0.0186  
 Earth -44170-09-24 09:50 J -14411403.31 -14411403.09 -14411402.86 0.0274 0.0106  
 Moon -44170-09-24 13:26 J -14411403.17 -14411402.94 -14411402.71 0.0274 0.0104 \*  
 Venus -44168-12-22 15:21 J -14410583.03 -14410582.86 -14410582.68 0.0276 0.0153

Venus -44167-08-08 22:33 J -14410353.76 -14410353.56 -14410353.37 0.0277 0.0088

Mercury -44157-12-15 11:16 J -14406572.12 -14406572.03 -14406571.92 0.0286 0.0222

Moon -44156-03-09 09:21 J -14406488.20 -14406488.11 -14406488.01 0.0286 0.0260

Earth -44156-03-09 12:14 J -14406488.10 -14406487.99 -14406487.86 0.0286 0.0248 \*

Mercury -44156-03-14 05:30 J -14406483.42 -14406483.27 -14406483.12 0.0286 0.0102

Mercury -44156-06-10 23:45 J -14406394.67 -14406394.51 -14406394.34 0.0286 0.0022

Mercury -44156-09-07 18:28 J -14406305.87 -14406305.73 -14406305.58 0.0286 0.0146

Mercury -44156-12-05 13:40 J -14406216.97 -14406216.93 -14406216.88 0.0285 0.0272

Earth -44155-03-23 05:16 J -14406109.49 -14406109.28 -14406109.06 0.0285 0.0135

Moon -44155-03-23 05:59 J -14406109.46 -14406109.25 -14406109.04 0.0285 0.0131 \*

Venus -44153-06-03 22:33 J -14405305.76 -14405305.56 -14405305.35 0.0282 0.0094

Venus -44152-01-19 15:21 J -14405076.02 -14405075.86 -14405075.68 0.0281 0.0167

Mars -44147-07-04 07:11 J -14403084.45 -14403084.20 -14403083.93 0.0274 0.0156

Mercury -44142-10-19 11:59 J -14401151.09 -14401151.00 -14401150.91 0.0273 0.0215

Mercury -44141-01-16 01:40 J -14401062.56 -14401062.43 -14401062.30 0.0274 0.0117

Mercury -44141-04-13 15:06 J -14400974.02 -14400973.87 -14400973.73 0.0274 0.0022

Mercury -44141-07-11 04:04 J -14400885.47 -14400885.33 -14400885.19 0.0274 0.0075

Moon -44141-09-18 09:21 J -14400816.35 -14400816.11 -14400815.87 0.0274 0.0045

Earth -44141-09-18 12:57 J -14400816.20 -14400815.96 -14400815.71 0.0274 0.0039 \*

Mercury -44141-10-07 17:02 J -14400796.90 -14400796.79 -14400796.68 0.0274 0.0168

Mercury -44140-01-04 05:30 J -14400708.31 -14400708.27 -14400708.22 0.0274 0.0260

Venus -44138-07-05 00:42 J -14399796.66 -14399796.47 -14399796.27 0.0277 0.0108

Venus -44137-02-19 07:40 J -14399567.36 -14399567.18 -14399567.00 0.0278 0.0132

Mercury -44127-05-04 13:26 J -14395840.02 -14395839.94 -14395839.86 0.0286 0.0247

Mercury -44127-08-01 07:11 J -14395751.34 -14395751.20 -14395751.05 0.0286 0.0129

Mercury -44127-10-29 01:26 J -14395662.60 -14395662.44 -14395662.28 0.0286 0.0007

Mercury -44126-01-25 19:54 J -14395573.81 -14395573.67 -14395573.51 0.0285 0.0117

Moon -44126-03-17 17:16 J -14395523.03 -14395522.78 -14395522.53 0.0285 0.0040

Earth -44126-03-17 18:14 J -14395522.98 -14395522.74 -14395522.50 0.0285 0.0033 \*

Mercury -44126-04-24 14:52 J -14395484.96 -14395484.88 -14395484.79 0.0285 0.0243

Venus -44124-12-15 06:28 J -14394519.44 -14394519.23 -14394519.02 0.0282 0.0050  
 Venus -44123-08-01 22:47 J -14394289.68 -14394289.55 -14394289.39 0.0281 0.0210  
 Jupiter -44112-01-01 10:47 J -14390484.45 -14390484.05 -14390483.64 0.0273 0.0109  
 Mercury -44112-03-07 12:57 J -14390419.02 -14390418.96 -14390418.90 0.0273 0.0248  
 Mercury -44112-06-04 02:38 J -14390330.51 -14390330.39 -14390330.27 0.0273 0.0150  
 Mercury -44112-08-31 16:04 J -14390241.98 -14390241.83 -14390241.69 0.0273 0.0053  
 Earth -44112-09-13 05:02 J -14390229.45 -14390229.29 -14390229.11 0.0273 0.0192  
 Moon -44112-09-13 08:52 J -14390229.29 -14390229.13 -14390228.96 0.0273 0.0201 \*  
 Mercury -44112-11-28 05:16 J -14390153.43 -14390153.28 -14390153.14 0.0273 0.0042  
 Mercury -44111-02-24 18:14 J -14390064.87 -14390064.74 -14390064.62 0.0273 0.0136  
 Mercury -44111-05-24 06:57 J -14389976.29 -14389976.21 -14389976.13 0.0274 0.0228  
 Earth -44111-09-25 17:30 J -14389851.97 -14389851.77 -14389851.55 0.0274 0.0143  
 Moon -44111-09-25 18:14 J -14389851.96 -14389851.74 -14389851.53 0.0274 0.0143 \*  
 Venus -44108-01-14 02:23 J -14389010.60 -14389010.40 -14389010.20 0.0277 0.0080  
 Venus -44108-08-31 09:06 J -14388781.28 -14388781.12 -14388780.94 0.0278 0.0160  
 Mars -44103-10-06 13:54 J -14386919.19 -14386918.92 -14386918.64 0.0285 0.0025  
 Mercury -44098-12-19 06:28 J -14385019.36 -14385019.23 -14385019.10 0.0286 0.0170  
 Earth -44097-03-10 21:35 J -14384936.77 -14384936.60 -14384936.43 0.0286 0.0209  
 Moon -44097-03-10 23:02 J -14384936.68 -14384936.54 -14384936.38 0.0286 0.0218 \*  
 Mercury -44097-03-17 00:28 J -14384930.64 -14384930.48 -14384930.32 0.0286 0.0050  
 Mercury -44097-06-13 18:57 J -14384841.87 -14384841.71 -14384841.55 0.0286 0.0074  
 Mercury -44097-09-10 13:54 J -14384753.04 -14384752.92 -14384752.80 0.0285 0.0200  
 Earth -44096-03-24 13:54 J -14384558.10 -14384557.92 -14384557.72 0.0285 0.0175  
 Moon -44096-03-24 17:45 J -14384557.95 -14384557.76 -14384557.56 0.0285 0.0172 \*  
 Venus -44095-11-09 17:45 J -14383962.79 -14383962.76 -14383962.72 0.0283 0.0278  
 Venus -44094-06-27 10:33 J -14383733.28 -14383733.06 -14383732.85 0.0282 0.0019  
 Venus -44093-02-12 03:21 J -14383503.46 -14383503.36 -14383503.25 0.0281 0.0240  
 Mars -44089-10-06 21:50 J -14381804.83 -14381804.59 -14381804.36 0.0275 0.0179  
 Mercury -44083-07-25 15:35 J -14379686.87 -14379686.85 -14379686.83 0.0274 0.0271  
 Mercury -44083-10-22 05:16 J -14379598.39 -14379598.28 -14379598.16 0.0274 0.0172

Mercury -44082-01-18 18:57 J -14379509.85 -14379509.71 -14379509.57 0.0274 0.0074  
 Mercury -44082-04-17 08:09 J -14379421.30 -14379421.16 -14379421.01 0.0274 0.0022  
 Mercury -44082-07-14 21:21 J -14379332.74 -14379332.61 -14379332.48 0.0274 0.0116  
 Moon -44082-09-20 19:54 J -14379264.91 -14379264.67 -14379264.44 0.0274 0.0007  
 Earth -44082-09-20 20:23 J -14379264.90 -14379264.65 -14379264.41 0.0274 0.0006 \*  
 Mercury -44082-10-11 09:50 J -14379244.17 -14379244.09 -14379243.99 0.0274 0.0210  
 Venus -44080-12-10 04:18 J -14378453.34 -14378453.32 -14378453.29 0.0276 0.0273  
 Venus -44079-07-27 11:45 J -14378224.22 -14378224.01 -14378223.80 0.0277 0.0035  
 Venus -44078-03-13 18:28 J -14377994.86 -14377994.73 -14377994.58 0.0278 0.0205  
 Mercury -44068-05-07 08:52 J -14374287.25 -14374287.13 -14374287.01 0.0286 0.0192  
 Mercury -44068-08-04 02:52 J -14374198.54 -14374198.38 -14374198.22 0.0286 0.0072  
 Mercury -44068-10-31 21:21 J -14374109.78 -14374109.61 -14374109.45 0.0285 0.0051  
 Mercury -44067-01-28 16:04 J -14374020.96 -14374020.83 -14374020.70 0.0285 0.0175  
 Moon -44067-03-19 02:09 J -14373971.66 -14373971.41 -14373971.17 0.0285 0.0006  
 Earth -44067-03-19 05:59 J -14373971.50 -14373971.25 -14373971.01 0.0285 0.0010 \*  
 Venus -44065-05-22 03:21 J -14373176.48 -14373176.36 -14373176.24 0.0283 0.0231  
 Venus -44064-01-06 19:54 J -14372946.88 -14372946.67 -14372946.46 0.0282 0.0028  
 Mars -44059-11-28 07:11 J -14370795.40 -14370795.20 -14370794.97 0.0274 0.0201  
 Mercury -44053-03-10 06:42 J -14368866.32 -14368866.22 -14368866.12 0.0273 0.0202  
 Mercury -44053-06-06 20:09 J -14368777.79 -14368777.66 -14368777.52 0.0273 0.0105  
 Mercury -44053-09-03 09:35 J -14368689.25 -14368689.10 -14368688.95 0.0273 0.0009  
 Earth -44053-09-14 13:54 J -14368678.11 -14368677.92 -14368677.71 0.0273 0.0156  
 Moon -44053-09-14 13:54 J -14368678.11 -14368677.92 -14368677.70 0.0273 0.0162 \*  
 Mercury -44053-11-30 22:33 J -14368600.69 -14368600.56 -14368600.42 0.0273 0.0087  
 Mercury -44052-02-27 11:30 J -14368512.13 -14368512.02 -14368511.91 0.0274 0.0179  
 Mercury -44052-05-27 00:14 J -14368423.51 -14368423.49 -14368423.47 0.0274 0.0270  
 Moon -44052-09-26 23:02 J -14368300.71 -14368300.54 -14368300.34 0.0274 0.0185  
 Earth -44052-09-27 02:52 J -14368300.56 -14368300.38 -14368300.19 0.0274 0.0180 \*  
 Venus -44050-06-22 06:42 J -14367667.30 -14367667.22 -14367667.11 0.0276 0.0244  
 Venus -44049-02-06 13:54 J -14367438.12 -14367437.92 -14367437.71 0.0277 0.0008



Venus -44049-09-22 20:38 J -14367208.74 -14367208.64 -14367208.52 0.0278 0.0234  
 Mars -44044-01-12 21:06 J -14365635.63 -14365635.62 -14365635.59 0.0284 0.0283  
 Mercury -44039-09-24 07:54 J -14363555.25 -14363555.17 -14363555.07 0.0286 0.0234  
 Mercury -44039-12-22 01:54 J -14363466.57 -14363466.42 -14363466.27 0.0286 0.0115  
 Earth -44038-03-13 08:52 J -14363385.33 -14363385.13 -14363384.93 0.0286 0.0168  
 Moon -44038-03-13 12:28 J -14363385.17 -14363384.98 -14363384.78 0.0286 0.0174 \*  
 Mercury -44038-03-20 20:09 J -14363377.82 -14363377.66 -14363377.50 0.0286 0.0007  
 Mercury -44038-06-17 14:38 J -14363289.03 -14363288.89 -14363288.74 0.0285 0.0132  
 Mercury -44038-09-14 09:50 J -14363200.16 -14363200.09 -14363200.02 0.0285 0.0258  
 Earth -44037-03-26 01:11 J -14363006.61 -14363006.45 -14363006.29 0.0285 0.0216  
 Moon -44037-03-26 02:38 J -14363006.55 -14363006.39 -14363006.22 0.0285 0.0216 \*  
 Venus -44036-12-02 06:42 J -14362390.36 -14362390.22 -14362390.06 0.0283 0.0200  
 Venus -44035-07-19 23:30 J -14362160.73 -14362160.52 -14362160.31 0.0282 0.0059  
 Mercury -44024-07-28 09:06 J -14358134.19 -14358134.12 -14358134.03 0.0274 0.0226  
 Mercury -44024-10-24 23:02 J -14358045.67 -14358045.54 -14358045.41 0.0274 0.0127  
 Mercury -44023-01-21 12:28 J -14357957.13 -14357956.98 -14357956.84 0.0274 0.0030  
 Mercury -44023-04-20 01:40 J -14357868.57 -14357868.43 -14357868.29 0.0274 0.0066  
 Mercury -44023-07-17 14:23 J -14357780.01 -14357779.90 -14357779.78 0.0274 0.0160  
 Earth -44023-09-22 04:47 J -14357713.55 -14357713.30 -14357713.06 0.0274 0.0035  
 Moon -44023-09-22 08:09 J -14357713.40 -14357713.16 -14357712.91 0.0274 0.0035 \*  
 Mercury -44023-10-14 03:06 J -14357691.42 -14357691.37 -14357691.31 0.0275 0.0252  
 Venus -44020-01-01 15:35 J -14356880.99 -14356880.85 -14356880.70 0.0277 0.0200  
 Venus -44020-08-18 23:02 J -14356651.74 -14356651.54 -14356651.33 0.0278 0.0039  
 Venus -44019-04-05 05:59 J -14356422.25 -14356422.25 -14356422.24 0.0278 0.0278  
 Mars -44014-03-03 13:40 J -14354629.18 -14354628.93 -14354628.67 0.0284 0.0096  
 Mercury -44009-02-11 10:47 J -14352823.11 -14352823.05 -14352822.97 0.0286 0.0253  
 Mercury -44009-05-10 04:47 J -14352734.44 -14352734.30 -14352734.16 0.0286 0.0135  
 Mercury -44009-08-06 23:02 J -14352645.71 -14352645.54 -14352645.38 0.0285 0.0016  
 Mercury -44009-11-03 17:30 J -14352556.92 -14352556.77 -14352556.62 0.0285 0.0110  
 Mercury -44008-01-31 12:14 J -14352468.07 -14352467.99 -14352467.89 0.0285 0.0236

Moon	-44008-03-20 17:45 J	-14352419.99	-14352419.76	-14352419.52	0.0285	0.0052
Earth	-44008-03-20 18:57 J	-14352419.95	-14352419.71	-14352419.47	0.0285	0.0054 *
Venus	-44006-06-14 17:45 J	-14351603.94	-14351603.76	-14351603.58	0.0282	0.0150
Venus	-44005-01-30 10:18 J	-14351374.26	-14351374.07	-14351373.87	0.0282	0.0109

# 44TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 44th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-44000-03-03 08:52 J	-14349515.40	-14349515.13	-14349514.84	0.0275	0.0128		
Mercury	-43995-12-15 10:47 J	-14347402.10	-14347402.05	-14347402.00	0.0273	0.0254		
Mercury	-43994-03-14 00:28 J	-14347313.60	-14347313.48	-14347313.35	0.0273	0.0156		
Mercury	-43994-06-10 13:54 J	-14347225.06	-14347224.92	-14347224.77	0.0273	0.0060		
Mercury	-43994-09-07 03:21 J	-14347136.51	-14347136.36	-14347136.22	0.0273	0.0037		
Moon	-43994-09-16 20:09 J	-14347126.88	-14347126.66	-14347126.43	0.0273	0.0120		
Earth	-43994-09-16 23:45 J	-14347126.73	-14347126.51	-14347126.29	0.0273	0.0117 *		
Mercury	-43994-12-04 16:18 J	-14347047.95	-14347047.82	-14347047.70	0.0273	0.0131		
Mercury	-43993-03-02 05:02 J	-14346959.37	-14346959.29	-14346959.21	0.0274	0.0223		
Moon	-43993-09-28 10:04 J	-14346749.20	-14346749.08	-14346748.93	0.0274	0.0227		
Earth	-43993-09-28 12:28 J	-14346749.12	-14346748.98	-14346748.83	0.0274	0.0219 *		
Venus	-43991-07-14 18:42 J	-14346094.88	-14346094.72	-14346094.55	0.0276	0.0169		
Venus	-43990-03-01 01:54 J	-14345865.62	-14345865.42	-14345865.22	0.0277	0.0069		
Mercury	-43980-09-27 03:50 J	-14342002.46	-14342002.34	-14342002.21	0.0286	0.0177		
Mercury	-43980-12-24 21:50 J	-14341913.75	-14341913.59	-14341913.43	0.0286	0.0057		

Earth -43979-03-14 22:04 J -14341833.80 -14341833.58 -14341833.36 0.0286 0.0124  
 Moon -43979-03-14 23:02 J -14341833.76 -14341833.54 -14341833.31 0.0286 0.0129 \*  
 Mercury -43979-03-23 16:18 J -14341824.98 -14341824.82 -14341824.66 0.0286 0.0067  
 Mercury -43979-06-20 11:02 J -14341736.16 -14341736.04 -14341735.91 0.0285 0.0192  
 Moon -43978-03-28 11:16 J -14341455.12 -14341455.03 -14341454.94 0.0285 0.0264  
 Earth -43978-03-28 14:09 J -14341455.00 -14341454.91 -14341454.80 0.0285 0.0260 \*  
 Venus -43977-12-24 21:06 J -14340817.81 -14340817.62 -14340817.42 0.0282 0.0119  
 Venus -43976-08-11 13:40 J -14340588.11 -14340587.93 -14340587.73 0.0281 0.0140  
 Mars -43970-04-24 12:28 J -14338506.07 -14338505.98 -14338505.84 0.0274 0.0256  
 Mercury -43965-07-31 03:06 J -14336581.48 -14336581.37 -14336581.26 0.0274 0.0180  
 Earth -43965-09-10 23:45 J -14336539.56 -14336539.51 -14336539.45 0.0274 0.0265  
 Mercury -43965-10-27 16:33 J -14336492.95 -14336492.81 -14336492.67 0.0274 0.0082  
 Mercury -43964-01-24 05:59 J -14336404.40 -14336404.25 -14336404.11 0.0274 0.0015  
 Mercury -43964-04-22 18:57 J -14336315.84 -14336315.71 -14336315.57 0.0274 0.0109  
 Mercury -43964-07-20 07:54 J -14336227.27 -14336227.17 -14336227.08 0.0274 0.0202  
 Earth -43964-09-23 13:26 J -14336162.18 -14336161.94 -14336161.70 0.0275 0.0072  
 Moon -43964-09-23 15:35 J -14336162.09 -14336161.85 -14336161.60 0.0275 0.0074 \*  
 Venus -43961-01-25 03:06 J -14335308.56 -14335308.37 -14335308.18 0.0277 0.0126  
 Venus -43961-09-10 10:33 J -14335079.25 -14335079.06 -14335078.87 0.0278 0.0113  
 Mars -43956-06-09 22:33 J -14333345.74 -14333345.56 -14333345.38 0.0284 0.0212  
 Mercury -43950-02-14 06:42 J -14331270.33 -14331270.22 -14331270.10 0.0286 0.0196  
 Earth -43950-03-09 16:33 J -14331246.81 -14331246.81 -14331246.79 0.0286 0.0285  
 Mercury -43950-05-14 00:42 J -14331181.62 -14331181.47 -14331181.31 0.0285 0.0076  
 Mercury -43950-08-10 19:11 J -14331092.86 -14331092.70 -14331092.54 0.0285 0.0047  
 Mercury -43950-11-07 13:54 J -14331004.05 -14331003.92 -14331003.79 0.0285 0.0172  
 Earth -43949-03-22 08:23 J -14330868.37 -14330868.15 -14330867.91 0.0285 0.0099  
 Moon -43949-03-22 11:16 J -14330868.25 -14330868.03 -14330867.80 0.0285 0.0099 \*  
 Venus -43947-07-07 08:38 J -14330031.34 -14330031.14 -14330030.93 0.0282 0.0068  
 Venus -43946-02-22 01:11 J -14329801.60 -14329801.45 -14329801.29 0.0281 0.0190  
 Mercury -43936-12-18 05:02 J -14325849.39 -14325849.29 -14325849.20 0.0273 0.0206

Mercury -43935-03-16 18:28 J -14325760.86 -14325760.73 -14325760.59 0.0273 0.0109

Mercury -43935-06-13 07:54 J -14325672.32 -14325672.17 -14325672.02 0.0273 0.0012

Mercury -43935-09-09 21:06 J -14325583.76 -14325583.62 -14325583.48 0.0273 0.0083

Moon -43935-09-18 07:40 J -14325575.40 -14325575.18 -14325574.95 0.0273 0.0081

Earth -43935-09-18 10:04 J -14325575.31 -14325575.08 -14325574.84 0.0273 0.0078 \*

Mercury -43935-12-07 09:50 J -14325495.19 -14325495.09 -14325494.97 0.0274 0.0176

Mercury -43934-03-05 22:33 J -14325406.58 -14325406.56 -14325406.53 0.0274 0.0267

Earth -43934-09-30 22:47 J -14325197.62 -14325197.55 -14325197.46 0.0274 0.0259

Moon -43934-10-01 00:57 J -14325197.49 -14325197.46 -14325197.40 0.0274 0.0270 \*

Venus -43932-08-06 06:57 J -14324522.41 -14324522.21 -14324522.01 0.0277 0.0094

Venus -43931-03-23 13:54 J -14324293.10 -14324292.92 -14324292.74 0.0277 0.0143

Mars -43926-07-28 11:59 J -14322340.24 -14322340.00 -14322339.76 0.0285 0.0132

Mercury -43921-07-03 05:45 J -14320538.34 -14320538.26 -14320538.16 0.0286 0.0238

Mercury -43921-09-29 23:45 J -14320449.66 -14320449.51 -14320449.36 0.0286 0.0119

Mercury -43921-12-27 17:59 J -14320360.92 -14320360.75 -14320360.59 0.0286 0.0004

Moon -43920-03-16 08:23 J -14320282.39 -14320282.15 -14320281.91 0.0285 0.0083

Earth -43920-03-16 11:16 J -14320282.27 -14320282.03 -14320281.80 0.0285 0.0080 \*

Mercury -43920-03-26 12:28 J -14320272.12 -14320271.98 -14320271.83 0.0285 0.0127

Mercury -43920-06-23 07:26 J -14320183.26 -14320183.19 -14320183.11 0.0285 0.0253

Venus -43917-01-17 11:45 J -14319245.22 -14319245.01 -14319244.80 0.0282 0.0038

Venus -43917-09-03 04:18 J -14319015.45 -14319015.32 -14319015.18 0.0281 0.0219

Mars -43912-07-28 13:26 J -14317226.23 -14317225.94 -14317225.63 0.0275 0.0076

Mercury -43906-05-07 06:42 J -14315117.28 -14315117.22 -14315117.13 0.0274 0.0234

Mercury -43906-08-03 20:38 J -14315028.77 -14315028.64 -14315028.51 0.0274 0.0135

Earth -43906-09-13 08:09 J -14314988.28 -14314988.16 -14314988.01 0.0274 0.0229

Moon -43906-09-13 11:16 J -14314988.14 -14314988.03 -14314987.90 0.0274 0.0238 \*

Mercury -43906-10-31 10:04 J -14314940.22 -14314940.08 -14314939.93 0.0274 0.0038

Mercury -43905-01-27 23:16 J -14314851.67 -14314851.53 -14314851.38 0.0274 0.0059

Mercury -43905-04-25 12:28 J -14314763.10 -14314762.98 -14314762.86 0.0274 0.0153

Mercury -43905-07-23 01:11 J -14314674.51 -14314674.45 -14314674.39 0.0275 0.0245

Moon -43905-09-24 19:54 J -14314610.89 -14314610.67 -14314610.44 0.0275 0.0115  
 Earth -43905-09-24 22:04 J -14314610.80 -14314610.58 -14314610.35 0.0275 0.0110 \*  
 Venus -43902-02-16 14:09 J -14313736.12 -14313735.91 -14313735.70 0.0277 0.0053  
 Venus -43902-10-03 21:06 J -14313506.76 -14313506.62 -14313506.45 0.0278 0.0187  
 Mercury -43892-11-20 08:52 J -14309806.19 -14309806.13 -14309806.06 0.0286 0.0256  
 Mercury -43891-02-17 02:38 J -14309717.53 -14309717.39 -14309717.24 0.0286 0.0138  
 Earth -43891-03-11 05:30 J -14309695.38 -14309695.27 -14309695.12 0.0286 0.0242  
 Moon -43891-03-11 08:09 J -14309695.26 -14309695.16 -14309695.03 0.0286 0.0252 \*  
 Mercury -43891-05-16 20:52 J -14309628.79 -14309628.63 -14309628.47 0.0285 0.0016  
 Mercury -43891-08-13 15:21 J -14309540.01 -14309539.86 -14309539.71 0.0285 0.0107  
 Mercury -43891-11-10 10:18 J -14309451.16 -14309451.07 -14309450.98 0.0285 0.0233  
 Earth -43890-03-24 21:50 J -14309316.79 -14309316.59 -14309316.37 0.0285 0.0144  
 Moon -43890-03-25 01:11 J -14309316.66 -14309316.45 -14309316.23 0.0285 0.0142 \*  
 Venus -43889-12-12 07:11 J -14308688.30 -14308688.20 -14308688.09 0.0283 0.0244  
 Venus -43888-07-29 23:45 J -14308458.73 -14308458.51 -14308458.30 0.0282 0.0014  
 Venus -43887-03-16 16:04 J -14308228.87 -14308228.83 -14308228.76 0.0281 0.0270  
 Mercury -43877-09-23 08:52 J -14304385.16 -14304385.13 -14304385.07 0.0273 0.0258  
 Mercury -43877-12-20 22:47 J -14304296.67 -14304296.55 -14304296.43 0.0273 0.0159  
 Mercury -43876-03-19 12:28 J -14304208.13 -14304207.98 -14304207.84 0.0273 0.0062  
 Mercury -43876-06-16 01:40 J -14304119.58 -14304119.43 -14304119.29 0.0273 0.0034  
 Mercury -43876-09-12 14:38 J -14304031.02 -14304030.89 -14304030.76 0.0273 0.0128  
 Earth -43876-09-19 19:54 J -14304023.92 -14304023.67 -14304023.43 0.0273 0.0039  
 Moon -43876-09-19 21:21 J -14304023.85 -14304023.61 -14304023.38 0.0273 0.0041 \*  
 Mercury -43876-12-10 03:21 J -14303942.44 -14303942.36 -14303942.27 0.0274 0.0220  
 Venus -43873-01-12 11:16 J -14303179.11 -14303179.03 -14303178.96 0.0276 0.0256  
 Venus -43873-08-28 18:28 J -14302949.94 -14302949.73 -14302949.52 0.0277 0.0021  
 Venus -43872-04-15 01:11 J -14302720.57 -14302720.45 -14302720.31 0.0278 0.0217  
 Mars -43868-11-03 19:26 J -14301056.90 -14301056.69 -14301056.47 0.0284 0.0179  
 Mercury -43862-07-07 01:40 J -14298985.56 -14298985.43 -14298985.31 0.0286 0.0181  
 Mercury -43862-10-03 19:26 J -14298896.84 -14298896.69 -14298896.53 0.0286 0.0062

Mercury -43862-12-31 13:54 J -14298808.08 -14298807.92 -14298807.76 0.0286 0.0061  
 Moon -43861-03-17 20:23 J -14298730.89 -14298730.65 -14298730.41 0.0285 0.0040  
 Earth -43861-03-17 23:30 J -14298730.76 -14298730.52 -14298730.27 0.0285 0.0036 \*  
 Mercury -43861-03-29 08:38 J -14298719.26 -14298719.14 -14298719.01 0.0285 0.0187  
 Venus -43859-06-24 09:06 J -14297902.25 -14297902.12 -14297901.98 0.0283 0.0216  
 Venus -43858-02-09 01:40 J -14297672.64 -14297672.43 -14297672.21 0.0282 0.0042  
 Mercury -43847-05-10 00:28 J -14293564.58 -14293564.48 -14293564.36 0.0274 0.0188  
 Mercury -43847-08-06 14:09 J -14293476.04 -14293475.91 -14293475.76 0.0274 0.0090  
 Moon -43847-09-14 15:35 J -14293437.02 -14293436.85 -14293436.67 0.0274 0.0197  
 Earth -43847-09-14 17:02 J -14293436.96 -14293436.79 -14293436.61 0.0274 0.0191 \*  
 Mercury -43847-11-03 03:35 J -14293387.49 -14293387.35 -14293387.20 0.0274 0.0009  
 Mercury -43846-01-30 16:47 J -14293298.93 -14293298.80 -14293298.67 0.0274 0.0102  
 Mercury -43846-04-29 05:30 J -14293210.36 -14293210.27 -14293210.16 0.0274 0.0196  
 Moon -43846-09-27 02:52 J -14293059.57 -14293059.38 -14293059.17 0.0275 0.0154  
 Earth -43846-09-27 06:14 J -14293059.44 -14293059.24 -14293059.02 0.0275 0.0148 \*  
 Venus -43844-07-24 17:30 J -14292392.90 -14292392.77 -14292392.64 0.0277 0.0218  
 Venus -43843-03-11 00:57 J -14292163.67 -14292163.46 -14292163.26 0.0278 0.0020  
 Venus -43843-10-26 07:54 J -14291934.25 -14291934.17 -14291934.09 0.0278 0.0257  
 Mars -43838-12-23 05:30 J -14290050.46 -14290050.27 -14290050.06 0.0285 0.0194  
 Mercury -43833-11-23 04:04 J -14288253.43 -14288253.33 -14288253.21 0.0286 0.0202  
 Mercury -43832-02-19 22:04 J -14288164.73 -14288164.58 -14288164.42 0.0286 0.0082  
 Earth -43832-03-12 17:02 J -14288143.97 -14288143.79 -14288143.62 0.0286 0.0199  
 Moon -43832-03-12 20:23 J -14288143.82 -14288143.65 -14288143.48 0.0286 0.0207 \*  
 Mercury -43832-05-19 16:33 J -14288075.98 -14288075.81 -14288075.65 0.0285 0.0041  
 Mercury -43832-08-16 11:02 J -14287987.17 -14287987.04 -14287986.90 0.0285 0.0165  
 Moon -43831-03-26 09:06 J -14287765.30 -14287765.12 -14287764.92 0.0285 0.0188  
 Earth -43831-03-26 09:06 J -14287765.29 -14287765.12 -14287764.92 0.0285 0.0188 \*  
 Venus -43829-01-04 21:06 J -14287115.79 -14287115.62 -14287115.45 0.0283 0.0165  
 Venus -43829-08-21 13:26 J -14286886.13 -14286885.94 -14286885.73 0.0282 0.0093  
 Mars -43824-12-23 13:26 J -14284936.25 -14284935.94 -14284935.62 0.0275 0.0015

Mercury -43818-09-27 02:52 J -14282832.47 -14282832.38 -14282832.28 0.0273 0.0211  
 Mercury -43818-12-24 16:33 J -14282743.94 -14282743.81 -14282743.67 0.0273 0.0113  
 Mercury -43817-03-22 05:59 J -14282655.39 -14282655.25 -14282655.10 0.0273 0.0017  
 Mercury -43817-06-18 19:11 J -14282566.84 -14282566.70 -14282566.56 0.0273 0.0078  
 Mercury -43817-09-15 08:09 J -14282478.27 -14282478.16 -14282478.05 0.0273 0.0172  
 Earth -43817-09-21 04:47 J -14282472.54 -14282472.30 -14282472.05 0.0273 0.0005  
 Moon -43817-09-21 08:38 J -14282472.39 -14282472.14 -14282471.89 0.0273 0.0002 \*  
 Mercury -43817-12-12 20:52 J -14282389.67 -14282389.63 -14282389.60 0.0274 0.0263  
 Venus -43814-02-03 22:04 J -14281606.73 -14281606.58 -14281606.42 0.0276 0.0185  
 Venus -43814-09-21 05:16 J -14281377.49 -14281377.28 -14281377.07 0.0277 0.0051  
 Mercury -43803-04-12 03:06 J -14277521.45 -14277521.37 -14277521.29 0.0286 0.0246  
 Mercury -43803-07-09 20:52 J -14277432.77 -14277432.63 -14277432.49 0.0286 0.0127  
 Mercury -43803-10-06 15:06 J -14277344.04 -14277343.87 -14277343.71 0.0286 0.0009  
 Mercury -43802-01-03 09:21 J -14277255.25 -14277255.11 -14277254.95 0.0286 0.0119  
 Earth -43802-03-20 10:18 J -14277179.31 -14277179.07 -14277178.82 0.0285 0.0008  
 Moon -43802-03-20 11:02 J -14277179.28 -14277179.04 -14277178.80 0.0285 0.0006 \*  
 Mercury -43802-04-02 04:18 J -14277166.40 -14277166.32 -14277166.23 0.0285 0.0244  
 Venus -43800-07-16 22:18 J -14276329.75 -14276329.57 -14276329.38 0.0283 0.0138  
 Venus -43799-03-03 15:06 J -14276100.06 -14276099.87 -14276099.67 0.0282 0.0119  
 Mercury -43788-02-13 04:18 J -14272100.38 -14272100.32 -14272100.25 0.0273 0.0242  
 Mercury -43788-05-12 17:59 J -14272011.87 -14272011.75 -14272011.62 0.0273 0.0144  
 Mercury -43788-08-09 07:40 J -14271923.33 -14271923.18 -14271923.04 0.0274 0.0046  
 Moon -43788-09-15 20:23 J -14271885.85 -14271885.65 -14271885.45 0.0274 0.0158  
 Earth -43788-09-15 23:59 J -14271885.69 -14271885.50 -14271885.29 0.0274 0.0155 \*  
 Mercury -43788-11-05 20:52 J -14271834.77 -14271834.63 -14271834.49 0.0274 0.0050  
 Mercury -43787-02-02 09:50 J -14271746.21 -14271746.09 -14271745.97 0.0274 0.0144  
 Mercury -43787-05-01 22:33 J -14271657.63 -14271657.56 -14271657.48 0.0274 0.0236  
 Moon -43787-09-28 12:28 J -14271508.14 -14271507.98 -14271507.80 0.0275 0.0192  
 Earth -43787-09-28 12:57 J -14271508.12 -14271507.96 -14271507.76 0.0275 0.0185 \*  
 Venus -43785-08-16 03:06 J -14270820.54 -14270820.37 -14270820.19 0.0277 0.0149

Venus -43784-04-02 10:18 J -14270591.26 -14270591.07 -14270590.87 0.0278 0.0088  
 Mars -43779-03-31 04:47 J -14268767.54 -14268767.30 -14268767.04 0.0284 0.0128  
 Mercury -43774-08-30 05:16 J -14266789.33 -14266789.28 -14266789.22 0.0286 0.0268  
 Mercury -43774-11-26 23:02 J -14266700.67 -14266700.54 -14266700.40 0.0286 0.0150  
 Mercury -43773-02-23 17:02 J -14266611.95 -14266611.79 -14266611.62 0.0286 0.0030  
 Moon -43773-03-14 00:57 J -14266592.67 -14266592.46 -14266592.25 0.0286 0.0162  
 Earth -43773-03-14 01:54 J -14266592.62 -14266592.42 -14266592.22 0.0286 0.0159 \*  
 Mercury -43773-05-22 11:30 J -14266523.17 -14266523.02 -14266522.86 0.0285 0.0094  
 Mercury -43773-08-19 06:14 J -14266434.34 -14266434.24 -14266434.13 0.0285 0.0220  
 Moon -43772-03-27 14:52 J -14266214.02 -14266213.88 -14266213.73 0.0285 0.0231  
 Earth -43772-03-27 18:42 J -14266213.87 -14266213.72 -14266213.58 0.0285 0.0228 \*  
 Venus -43770-01-27 09:21 J -14265543.31 -14265543.11 -14265542.90 0.0283 0.0090  
 Venus -43770-09-14 02:09 J -14265313.58 -14265313.41 -14265313.23 0.0282 0.0167  
 Mercury -43759-07-03 06:57 J -14261368.25 -14261368.21 -14261368.18 0.0273 0.0264  
 Mercury -43759-09-29 20:38 J -14261279.76 -14261279.64 -14261279.52 0.0273 0.0165  
 Mercury -43759-12-27 10:04 J -14261191.22 -14261191.08 -14261190.93 0.0273 0.0069  
 Mercury -43758-03-25 23:30 J -14261102.67 -14261102.52 -14261102.38 0.0273 0.0028  
 Mercury -43758-06-22 12:28 J -14261014.11 -14261013.98 -14261013.85 0.0273 0.0121  
 Mercury -43758-09-19 01:26 J -14260925.53 -14260925.44 -14260925.36 0.0273 0.0214  
 Earth -43758-09-23 12:57 J -14260921.20 -14260920.96 -14260920.72 0.0273 0.0037  
 Moon -43758-09-23 13:54 J -14260921.17 -14260920.92 -14260920.67 0.0273 0.0040 \*  
 Venus -43755-02-26 08:38 J -14260034.33 -14260034.14 -14260033.95 0.0276 0.0114  
 Venus -43755-10-13 15:21 J -14259805.05 -14259804.86 -14259804.67 0.0277 0.0121  
 Mars -43749-05-17 18:57 J -14257761.87 -14257761.71 -14257761.53 0.0285 0.0222  
 Mercury -43744-04-14 21:35 J -14255968.71 -14255968.60 -14255968.48 0.0286 0.0196  
 Mercury -43744-07-12 15:35 J -14255880.01 -14255879.85 -14255879.69 0.0286 0.0076  
 Mercury -43744-10-09 09:50 J -14255791.25 -14255791.09 -14255790.93 0.0286 0.0046  
 Mercury -43743-01-06 04:18 J -14255702.44 -14255702.32 -14255702.18 0.0286 0.0172  
 Earth -43743-03-21 18:42 J -14255627.96 -14255627.72 -14255627.48 0.0285 0.0046  
 Moon -43743-03-21 22:33 J -14255627.80 -14255627.56 -14255627.32 0.0285 0.0048 \*



Venus -43741-08-08 10:18 J -14254757.28 -14254757.07 -14254756.87 0.0283 0.0064

Venus -43740-03-26 02:52 J -14254527.53 -14254527.38 -14254527.22 0.0282 0.0192

Mars -43735-05-19 04:04 J -14252647.64 -14252647.33 -14252647.02 0.0274 0.0024

Mercury -43729-02-16 21:35 J -14250547.70 -14250547.60 -14250547.50 0.0273 0.0199

Mercury -43729-05-15 11:16 J -14250459.17 -14250459.03 -14250458.89 0.0273 0.0101

Mercury -43729-08-12 00:42 J -14250370.62 -14250370.47 -14250370.33 0.0274 0.0006

Moon -43729-09-17 05:45 J -14250334.47 -14250334.26 -14250334.04 0.0274 0.0119

Earth -43729-09-17 06:14 J -14250334.46 -14250334.24 -14250334.01 0.0274 0.0119 \*

Mercury -43729-11-08 13:40 J -14250282.06 -14250281.93 -14250281.79 0.0274 0.0091

Mercury -43728-02-05 02:38 J -14250193.49 -14250193.39 -14250193.28 0.0274 0.0184

Earth -43728-09-29 18:42 J -14249956.85 -14249956.72 -14249956.56 0.0274 0.0220

Moon -43728-09-29 22:04 J -14249956.70 -14249956.58 -14249956.44 0.0274 0.0230 \*

Venus -43726-09-08 11:59 J -14249248.20 -14249248.00 -14249247.80 0.0277 0.0081

Venus -43725-04-24 18:57 J -14249018.88 -14249018.71 -14249018.53 0.0278 0.0154

Mercury -43715-09-01 23:16 J -14245236.62 -14245236.53 -14245236.42 0.0286 0.0222

Mercury -43715-11-29 17:16 J -14245147.93 -14245147.78 -14245147.63 0.0286 0.0103

Mercury -43714-02-26 11:30 J -14245059.19 -14245059.02 -14245058.86 0.0286 0.0020

Moon -43714-03-16 04:04 J -14245041.55 -14245041.33 -14245041.10 0.0286 0.0121

Earth -43714-03-16 07:54 J -14245041.39 -14245041.17 -14245040.94 0.0286 0.0121 \*

Mercury -43714-05-26 05:59 J -14244970.39 -14244970.25 -14244970.11 0.0285 0.0144

Mercury -43714-08-23 00:57 J -14244881.50 -14244881.46 -14244881.40 0.0285 0.0270

Moon -43713-03-28 22:33 J -14244662.61 -14244662.56 -14244662.48 0.0285 0.0273

Earth -43713-03-29 00:42 J -14244662.55 -14244662.47 -14244662.38 0.0285 0.0266 \*

Venus -43712-07-04 03:21 J -14244200.40 -14244200.36 -14244200.30 0.0283 0.0274

Venus -43711-02-18 20:23 J -14243970.87 -14243970.65 -14243970.44 0.0283 0.0018

Venus -43711-10-06 12:57 J -14243741.06 -14243740.96 -14243740.83 0.0282 0.0239

Mercury -43700-07-06 00:14 J -14239815.58 -14239815.49 -14239815.40 0.0273 0.0221

Earth -43700-09-12 06:57 J -14239747.26 -14239747.21 -14239747.14 0.0273 0.0264

Moon -43700-09-12 07:54 J -14239747.22 -14239747.17 -14239747.13 0.0273 0.0267 \*

Mercury -43700-10-02 13:54 J -14239727.05 -14239726.92 -14239726.79 0.0273 0.0123

Mercury -43700-12-30 03:21 J -14239638.51 -14239638.36 -14239638.22 0.0273 0.0026

Mercury -43699-03-28 16:33 J -14239549.95 -14239549.81 -14239549.67 0.0273 0.0069

Mercury -43699-06-25 05:16 J -14239461.39 -14239461.28 -14239461.16 0.0273 0.0162

Mercury -43699-09-21 17:59 J -14239372.79 -14239372.75 -14239372.69 0.0273 0.0254

Moon -43699-09-24 15:35 J -14239370.08 -14239369.85 -14239369.60 0.0273 0.0081

Earth -43699-09-24 19:11 J -14239369.93 -14239369.70 -14239369.46 0.0273 0.0073 \*

Venus -43696-03-20 17:45 J -14238461.97 -14238461.76 -14238461.56 0.0276 0.0047

Venus -43696-11-04 23:59 J -14238232.64 -14238232.50 -14238232.34 0.0277 0.0187

Mars -43691-08-24 15:35 J -14236479.11 -14236478.85 -14236478.59 0.0284 0.0100

Mercury -43685-01-19 22:04 J -14234504.63 -14234504.58 -14234504.52 0.0286 0.0267

Mercury -43685-04-17 15:50 J -14234415.98 -14234415.84 -14234415.71 0.0286 0.0150

Mercury -43685-07-15 09:50 J -14234327.25 -14234327.09 -14234326.93 0.0286 0.0029

Mercury -43685-10-12 04:04 J -14234238.48 -14234238.33 -14234238.17 0.0286 0.0095

Mercury -43684-01-08 23:02 J -14234149.65 -14234149.54 -14234149.44 0.0286 0.0221

Earth -43684-03-23 00:28 J -14234076.72 -14234076.48 -14234076.25 0.0285 0.0084

Moon -43684-03-23 01:40 J -14234076.67 -14234076.43 -14234076.19 0.0285 0.0089 \*

Venus -43682-01-14 03:50 J -14233414.43 -14233414.34 -14233414.23 0.0283 0.0249

Venus -43682-08-31 20:38 J -14233184.86 -14233184.64 -14233184.43 0.0283 0.0007

Venus -43681-04-17 13:26 J -14232955.02 -14232954.94 -14232954.87 0.0282 0.0262

Mercury -43671-11-23 00:42 J -14229083.51 -14229083.47 -14229083.42 0.0273 0.0257

Mercury -43670-02-19 14:38 J -14228995.01 -14228994.89 -14228994.77 0.0273 0.0158

Mercury -43670-05-19 04:04 J -14228906.47 -14228906.33 -14228906.18 0.0273 0.0061

Mercury -43670-08-15 17:16 J -14228817.92 -14228817.78 -14228817.63 0.0273 0.0036

Earth -43670-09-19 10:47 J -14228783.27 -14228783.05 -14228782.81 0.0273 0.0085

Moon -43670-09-19 14:23 J -14228783.13 -14228782.90 -14228782.67 0.0273 0.0080 \*

Mercury -43670-11-12 06:14 J -14228729.36 -14228729.24 -14228729.10 0.0274 0.0130

Mercury -43669-02-08 19:11 J -14228640.78 -14228640.70 -14228640.61 0.0274 0.0222

Earth -43669-09-30 23:02 J -14228405.61 -14228405.54 -14228405.44 0.0274 0.0255

Moon -43669-10-01 01:54 J -14228405.48 -14228405.42 -14228405.36 0.0274 0.0266 \*

Venus -43667-02-13 12:57 J -14227905.04 -14227904.96 -14227904.87 0.0276 0.0250

Venus -43667-09-30 19:54 J -14227675.87 -14227675.67 -14227675.46 0.0277 0.0018  
 Venus -43666-05-18 02:38 J -14227446.51 -14227446.39 -14227446.25 0.0278 0.0219  
 Mars -43661-10-11 13:40 J -14225473.03 -14225472.93 -14225472.80 0.0285 0.0257  
 Mercury -43656-09-04 16:47 J -14223683.92 -14223683.80 -14223683.67 0.0286 0.0179  
 Mercury -43656-12-02 10:47 J -14223595.21 -14223595.05 -14223594.89 0.0286 0.0059  
 Mercury -43655-03-01 05:02 J -14223506.45 -14223506.29 -14223506.13 0.0286 0.0064  
 Moon -43655-03-17 10:18 J -14223490.29 -14223490.07 -14223489.84 0.0286 0.0085  
 Earth -43655-03-17 11:16 J -14223490.26 -14223490.03 -14223489.79 0.0286 0.0087 \*  
 Mercury -43655-05-28 23:45 J -14223417.63 -14223417.51 -14223417.38 0.0285 0.0189  
 Venus -43653-07-26 12:14 J -14222628.13 -14222627.99 -14222627.84 0.0283 0.0207  
 Venus -43652-03-13 05:16 J -14222398.49 -14222398.28 -14222398.07 0.0282 0.0050  
 Mars -43647-10-13 14:38 J -14220358.18 -14220357.89 -14220357.58 0.0275 0.0076  
 Mercury -43641-07-08 17:02 J -14218262.89 -14218262.79 -14218262.67 0.0273 0.0180  
 Moon -43641-09-13 08:52 J -14218196.25 -14218196.13 -14218195.99 0.0273 0.0231  
 Earth -43641-09-13 11:59 J -14218196.11 -14218196.00 -14218195.85 0.0273 0.0230 \*  
 Mercury -43641-10-05 06:42 J -14218174.36 -14218174.22 -14218174.08 0.0273 0.0082  
 Mercury -43640-01-01 20:09 J -14218085.81 -14218085.66 -14218085.51 0.0273 0.0014  
 Mercury -43640-03-31 09:06 J -14217997.25 -14217997.12 -14217996.98 0.0273 0.0108  
 Mercury -43640-06-27 22:04 J -14217908.68 -14217908.58 -14217908.48 0.0273 0.0200  
 Moon -43640-09-25 21:35 J -14217818.80 -14217818.60 -14217818.37 0.0273 0.0119  
 Earth -43640-09-25 23:59 J -14217818.72 -14217818.50 -14217818.27 0.0273 0.0108 \*  
 Venus -43638-08-26 19:11 J -14217118.82 -14217118.70 -14217118.56 0.0275 0.0214  
 Venus -43637-04-12 01:54 J -14216889.63 -14216889.42 -14216889.21 0.0276 0.0019  
 Venus -43637-11-27 08:09 J -14216660.24 -14216660.16 -14216660.06 0.0277 0.0251  
 Mercury -43626-01-22 15:21 J -14212951.95 -14212951.86 -14212951.76 0.0286 0.0226  
 Earth -43626-03-11 10:33 J -14212904.12 -14212904.06 -14212903.97 0.0286 0.0271  
 Moon -43626-03-11 11:30 J -14212904.10 -14212904.02 -14212903.94 0.0286 0.0271 \*  
 Mercury -43626-04-21 09:06 J -14212863.27 -14212863.12 -14212862.97 0.0286 0.0107  
 Mercury -43626-07-19 03:21 J -14212774.52 -14212774.36 -14212774.20 0.0286 0.0015  
 Mercury -43626-10-15 21:50 J -14212685.73 -14212685.59 -14212685.45 0.0286 0.0140

Mercury -43625-01-12 16:33 J -14212596.86 -14212596.81 -14212596.74 0.0286 0.0267  
 Moon -43625-03-23 23:59 J -14212525.71 -14212525.50 -14212525.27 0.0285 0.0129  
 Earth -43625-03-24 03:21 J -14212525.58 -14212525.36 -14212525.13 0.0285 0.0118 \*  
 Venus -43623-02-05 12:28 J -14211842.13 -14211841.98 -14211841.81 0.0283 0.0182  
 Venus -43623-09-23 05:16 J -14211612.48 -14211612.28 -14211612.07 0.0282 0.0074  
 Mercury -43612-11-25 17:30 J -14207530.86 -14207530.77 -14207530.68 0.0273 0.0217  
 Mercury -43611-02-22 07:11 J -14207442.33 -14207442.20 -14207442.06 0.0273 0.0119  
 Mercury -43611-05-21 20:38 J -14207353.79 -14207353.64 -14207353.49 0.0273 0.0023  
 Mercury -43611-08-18 09:50 J -14207265.23 -14207265.09 -14207264.95 0.0273 0.0073  
 Earth -43611-09-20 14:23 J -14207232.14 -14207231.90 -14207231.65 0.0273 0.0051  
 Moon -43611-09-20 16:47 J -14207232.05 -14207231.80 -14207231.55 0.0273 0.0045 \*  
 Mercury -43611-11-14 22:47 J -14207176.66 -14207176.55 -14207176.44 0.0273 0.0166  
 Mercury -43610-02-11 11:30 J -14207088.06 -14207088.02 -14207087.97 0.0274 0.0257  
 Venus -43608-03-07 20:23 J -14206332.80 -14206332.65 -14206332.50 0.0276 0.0187  
 Venus -43608-10-23 03:06 J -14206103.58 -14206103.37 -14206103.16 0.0277 0.0046  
 Mars -43602-01-18 01:40 J -14204190.69 -14204190.43 -14204190.16 0.0284 0.0076  
 Mercury -43597-06-10 15:50 J -14202219.89 -14202219.84 -14202219.76 0.0286 0.0259  
 Mercury -43597-09-07 09:35 J -14202131.23 -14202131.10 -14202130.95 0.0286 0.0140  
 Mercury -43597-12-05 03:50 J -14202042.50 -14202042.34 -14202042.18 0.0286 0.0019  
 Mercury -43596-03-03 22:18 J -14201953.72 -14201953.57 -14201953.42 0.0286 0.0105  
 Earth -43596-03-18 12:28 J -14201939.22 -14201938.98 -14201938.74 0.0286 0.0055  
 Moon -43596-03-18 15:21 J -14201939.09 -14201938.86 -14201938.62 0.0286 0.0049 \*  
 Mercury -43596-05-31 17:02 J -14201864.88 -14201864.79 -14201864.69 0.0285 0.0232  
 Venus -43594-08-18 19:40 J -14201055.85 -14201055.68 -14201055.49 0.0283 0.0143  
 Venus -43593-04-04 12:57 J -14200826.16 -14200825.96 -14200825.77 0.0282 0.0114  
 Mars -43588-01-16 05:02 J -14199078.36 -14199078.29 -14199078.22 0.0276 0.0267  
 Mercury -43582-04-14 20:09 J -14196798.73 -14196798.66 -14196798.59 0.0273 0.0239  
 Mercury -43582-07-12 09:50 J -14196710.21 -14196710.09 -14196709.96 0.0273 0.0141  
 Moon -43582-09-15 12:57 J -14196645.11 -14196644.96 -14196644.78 0.0273 0.0199  
 Earth -43582-09-15 15:50 J -14196645.00 -14196644.84 -14196644.66 0.0273 0.0197 \*

Mercury -43582-10-08 23:16 J -14196621.67 -14196621.53 -14196621.38 0.0273 0.0045

Mercury -43581-01-05 12:42 J -14196533.12 -14196532.97 -14196532.83 0.0273 0.0052

Mercury -43581-04-03 01:40 J -14196444.55 -14196444.43 -14196444.31 0.0273 0.0145

Mercury -43581-06-30 14:09 J -14196355.97 -14196355.91 -14196355.83 0.0273 0.0238

Earth -43581-09-27 03:35 J -14196267.56 -14196267.35 -14196267.14 0.0273 0.0141

Moon -43581-09-27 05:45 J -14196267.46 -14196267.26 -14196267.06 0.0273 0.0154 \*

Venus -43579-09-18 02:52 J -14195546.55 -14195546.38 -14195546.20 0.0275 0.0150

Venus -43578-05-05 09:35 J -14195317.30 -14195317.10 -14195316.90 0.0276 0.0081

Mars -43572-03-06 19:26 J -14193184.72 -14193184.69 -14193184.65 0.0284 0.0281

Mercury -43567-01-25 08:23 J -14191399.27 -14191399.15 -14191399.03 0.0286 0.0185

Moon -43567-03-12 09:06 J -14191353.25 -14191353.12 -14191352.97 0.0286 0.0236

Earth -43567-03-12 12:14 J -14191353.11 -14191352.99 -14191352.85 0.0286 0.0239 \*

Mercury -43567-04-24 02:09 J -14191310.56 -14191310.41 -14191310.25 0.0286 0.0066

Mercury -43567-07-21 20:23 J -14191221.80 -14191221.65 -14191221.48 0.0286 0.0058

Mercury -43567-10-18 15:06 J -14191132.99 -14191132.87 -14191132.74 0.0286 0.0182

Moon -43566-03-26 02:23 J -14190974.60 -14190974.40 -14190974.20 0.0285 0.0162

Earth -43566-03-26 04:47 J -14190974.50 -14190974.30 -14190974.08 0.0285 0.0151 \*

Venus -43564-02-27 20:09 J -14190269.85 -14190269.66 -14190269.46 0.0283 0.0118

Venus -43564-10-15 12:57 J -14190040.14 -14190039.96 -14190039.77 0.0282 0.0138

Mars -43558-03-08 07:40 J -14188070.47 -14188070.18 -14188069.89 0.0275 0.0097

Mercury -43553-11-28 09:50 J -14185978.19 -14185978.09 -14185977.97 0.0273 0.0180

Mercury -43552-02-24 23:30 J -14185889.66 -14185889.52 -14185889.37 0.0273 0.0082

Mercury -43552-05-24 12:57 J -14185801.11 -14185800.96 -14185800.81 0.0273 0.0014

Mercury -43552-08-21 02:09 J -14185712.55 -14185712.41 -14185712.28 0.0273 0.0109

Moon -43552-09-21 14:52 J -14185681.13 -14185680.88 -14185680.62 0.0273 0.0011

Earth -43552-09-21 17:02 J -14185681.03 -14185680.79 -14185680.54 0.0273 0.0019 \*

Mercury -43552-11-17 14:52 J -14185623.97 -14185623.88 -14185623.78 0.0273 0.0201

Venus -43549-03-30 03:21 J -14184760.55 -14184760.36 -14184760.17 0.0276 0.0125

Venus -43549-11-14 09:50 J -14184531.28 -14184531.09 -14184530.89 0.0277 0.0107

Mercury -43538-06-14 08:38 J -14180667.24 -14180667.14 -14180667.04 0.0286 0.0222

Mercury -43538-09-11 02:09 J -14180578.55 -14180578.41 -14180578.25 0.0286 0.0103

Mercury -43538-12-08 20:23 J -14180489.81 -14180489.65 -14180489.48 0.0286 0.0021

Mercury -43537-03-06 14:52 J -14180401.01 -14180400.88 -14180400.73 0.0286 0.0145

Earth -43537-03-19 11:45 J -14180388.25 -14180388.01 -14180387.77 0.0286 0.0025

Moon -43537-03-19 14:38 J -14180388.14 -14180387.89 -14180387.64 0.0286 0.0018 \*

Mercury -43537-06-03 09:50 J -14180312.13 -14180312.09 -14180312.03 0.0285 0.0271

Venus -43535-09-10 02:23 J -14179483.61 -14179483.40 -14179483.20 0.0283 0.0082

Venus -43534-04-27 19:11 J -14179253.86 -14179253.70 -14179253.52 0.0282 0.0175

Mercury -43523-04-17 12:42 J -14175246.07 -14175245.97 -14175245.87 0.0273 0.0201

Mercury -43523-07-15 02:23 J -14175157.54 -14175157.40 -14175157.26 0.0273 0.0103

Earth -43523-09-16 18:28 J -14175093.92 -14175093.73 -14175093.53 0.0273 0.0165

Moon -43523-09-16 20:09 J -14175093.85 -14175093.66 -14175093.47 0.0273 0.0163 \*

Mercury -43523-10-11 15:50 J -14175068.99 -14175068.84 -14175068.70 0.0273 0.0008

Mercury -43522-01-08 05:02 J -14174980.43 -14174980.29 -14174980.16 0.0273 0.0088

Mercury -43522-04-06 17:45 J -14174891.86 -14174891.76 -14174891.65 0.0273 0.0181

Mercury -43522-07-04 06:28 J -14174803.24 -14174803.23 -14174803.22 0.0273 0.0272

Earth -43522-09-29 05:59 J -14174716.42 -14174716.25 -14174716.05 0.0274 0.0175

Moon -43522-09-29 09:21 J -14174716.27 -14174716.11 -14174715.91 0.0274 0.0188 \*

Venus -43520-10-10 10:04 J -14173974.27 -14173974.08 -14173973.87 0.0275 0.0088

Venus -43519-05-27 16:18 J -14173744.99 -14173744.82 -14173744.63 0.0276 0.0144

Mars -43514-06-13 10:04 J -14171902.36 -14171902.08 -14171901.81 0.0283 0.0045

Mercury -43509-10-31 07:40 J -14169935.24 -14169935.18 -14169935.12 0.0286 0.0264

Mercury -43508-01-28 01:11 J -14169846.59 -14169846.45 -14169846.31 0.0286 0.0147

Moon -43508-03-13 10:18 J -14169802.23 -14169802.07 -14169801.90 0.0286 0.0204

Earth -43508-03-13 12:42 J -14169802.12 -14169801.97 -14169801.79 0.0286 0.0209 \*

Mercury -43508-04-26 19:11 J -14169757.86 -14169757.70 -14169757.54 0.0286 0.0026

Mercury -43508-07-24 13:26 J -14169669.09 -14169668.94 -14169668.78 0.0286 0.0098

Mercury -43508-10-21 08:09 J -14169580.26 -14169580.16 -14169580.05 0.0286 0.0223

Earth -43507-03-27 05:16 J -14169423.46 -14169423.28 -14169423.08 0.0285 0.0182

Moon -43507-03-27 06:57 J -14169423.38 -14169423.21 -14169423.04 0.0285 0.0195 \*

Venus -43505-03-22 03:06 J -14168697.58 -14168697.37 -14168697.16 0.0283 0.0055  
 Venus -43505-11-06 19:54 J -14168467.81 -14168467.67 -14168467.51 0.0282 0.0200  
 Mars -43500-06-10 18:14 J -14166790.87 -14166790.74 -14166790.61 0.0276 0.0250  
 Mercury -43494-09-04 12:28 J -14164514.04 -14164513.98 -14164513.91 0.0273 0.0242  
 Mercury -43494-12-02 02:23 J -14164425.53 -14164425.40 -14164425.28 0.0273 0.0143  
 Mercury -43493-02-28 15:50 J -14164336.98 -14164336.84 -14164336.69 0.0273 0.0046  
 Mercury -43493-05-27 05:02 J -14164248.43 -14164248.29 -14164248.14 0.0273 0.0050  
 Mercury -43493-08-23 18:14 J -14164159.86 -14164159.74 -14164159.62 0.0273 0.0144  
 Moon -43493-09-22 15:21 J -14164130.10 -14164129.86 -14164129.62 0.0273 0.0022  
 Earth -43493-09-22 18:57 J -14164129.96 -14164129.71 -14164129.47 0.0273 0.0014 \*  
 Mercury -43493-11-20 06:57 J -14164071.28 -14164071.21 -14164071.14 0.0273 0.0236  
 Venus -43490-04-22 10:04 J -14163188.28 -14163188.08 -14163187.88 0.0276 0.0064  
 Venus -43490-12-07 16:18 J -14162958.98 -14162958.82 -14162958.65 0.0277 0.0168  
 Mercury -43479-06-17 00:57 J -14159114.58 -14159114.46 -14159114.34 0.0286 0.0185  
 Mercury -43479-09-13 18:42 J -14159025.87 -14159025.72 -14159025.56 0.0286 0.0066  
 Mercury -43479-12-11 12:57 J -14158937.11 -14158936.96 -14158936.79 0.0286 0.0059  
 Mercury -43478-03-10 07:40 J -14158848.30 -14158848.18 -14158848.05 0.0286 0.0183  
 Moon -43478-03-21 09:21 J -14158837.37 -14158837.11 -14158836.86 0.0285 0.0016  
 Earth -43478-03-21 10:47 J -14158837.29 -14158837.05 -14158836.80 0.0285 0.0007 \*  
 Venus -43476-02-14 15:21 J -14158140.90 -14158140.86 -14158140.81 0.0284 0.0276  
 Venus -43476-10-02 08:23 J -14157911.36 -14157911.15 -14157910.94 0.0283 0.0021  
 Venus -43475-05-20 01:11 J -14157681.55 -14157681.45 -14157681.32 0.0282 0.0235  
 Mars -43470-08-02 00:28 J -14155781.74 -14155781.48 -14155781.20 0.0276 0.0138  
 Mercury -43464-01-21 15:06 J -14153781.90 -14153781.87 -14153781.83 0.0273 0.0264  
 Mercury -43464-04-20 05:02 J -14153693.41 -14153693.29 -14153693.17 0.0273 0.0164  
 Mercury -43464-07-17 18:42 J -14153604.86 -14153604.72 -14153604.58 0.0273 0.0067  
 Earth -43464-09-17 20:38 J -14153542.85 -14153542.64 -14153542.42 0.0273 0.0134  
 Moon -43464-09-18 00:28 J -14153542.69 -14153542.48 -14153542.26 0.0273 0.0129 \*  
 Mercury -43464-10-14 07:54 J -14153516.31 -14153516.17 -14153516.02 0.0273 0.0030  
 Mercury -43463-01-10 21:06 J -14153427.75 -14153427.62 -14153427.49 0.0273 0.0123

Mercury -43463-04-09 09:50 J -14153339.17 -14153339.09 -14153339.00 0.0273 0.0216  
 Earth -43463-09-30 08:23 J -14153165.30 -14153165.15 -14153164.98 0.0274 0.0207  
 Moon -43463-09-30 08:23 J -14153165.29 -14153165.15 -14153164.99 0.0274 0.0219 \*  
 Venus -43461-03-17 10:47 J -14152631.12 -14152631.05 -14152630.97 0.0275 0.0255  
 Venus -43461-11-01 17:30 J -14152401.98 -14152401.77 -14152401.57 0.0276 0.0027  
 Venus -43460-06-18 23:30 J -14152172.65 -14152172.52 -14152172.37 0.0276 0.0204  
 Mercury -43450-11-04 00:14 J -14148382.58 -14148382.49 -14148382.39 0.0286 0.0227  
 Mercury -43449-01-31 17:59 J -14148293.90 -14148293.75 -14148293.60 0.0286 0.0108  
 Earth -43449-03-14 13:11 J -14148251.14 -14148250.95 -14148250.75 0.0286 0.0178  
 Moon -43449-03-14 15:06 J -14148251.05 -14148250.87 -14148250.67 0.0286 0.0169 \*  
 Mercury -43449-04-29 11:59 J -14148205.16 -14148205.00 -14148204.83 0.0286 0.0014  
 Mercury -43449-07-27 06:28 J -14148116.37 -14148116.23 -14148116.08 0.0286 0.0138  
 Mercury -43449-10-24 01:26 J -14148027.50 -14148027.44 -14148027.38 0.0285 0.0264  
 Earth -43448-03-28 05:30 J -14147872.42 -14147872.27 -14147872.10 0.0285 0.0213  
 Moon -43448-03-28 09:06 J -14147872.26 -14147872.12 -14147871.96 0.0285 0.0227 \*  
 Venus -43447-08-27 17:16 J -14147354.88 -14147354.78 -14147354.67 0.0284 0.0247  
 Venus -43446-04-14 09:50 J -14147125.30 -14147125.09 -14147124.87 0.0283 0.0009  
 Venus -43446-11-30 02:38 J -14146895.46 -14146895.39 -14146895.30 0.0282 0.0262  
 Mercury -43435-09-07 04:47 J -14142961.39 -14142961.30 -14142961.19 0.0273 0.0205  
 Mercury -43435-12-04 18:42 J -14142872.86 -14142872.72 -14142872.58 0.0273 0.0106  
 Mercury -43434-03-03 08:09 J -14142784.31 -14142784.16 -14142784.01 0.0273 0.0010  
 Mercury -43434-05-30 21:21 J -14142695.75 -14142695.61 -14142695.47 0.0273 0.0086  
 Mercury -43434-08-27 10:18 J -14142607.18 -14142607.07 -14142606.96 0.0273 0.0179  
 Earth -43434-09-24 20:52 J -14142578.87 -14142578.63 -14142578.38 0.0273 0.0046  
 Moon -43434-09-24 20:52 J -14142578.86 -14142578.63 -14142578.40 0.0273 0.0057 \*  
 Mercury -43434-11-23 23:02 J -14142518.56 -14142518.54 -14142518.52 0.0273 0.0270  
 Venus -43432-09-27 10:18 J -14141845.18 -14141845.07 -14141844.96 0.0275 0.0232  
 Venus -43431-05-14 17:02 J -14141616.00 -14141615.79 -14141615.58 0.0276 0.0003  
 Venus -43431-12-29 23:16 J -14141386.64 -14141386.53 -14141386.41 0.0277 0.0228  
 Mars -43426-11-06 10:33 J -14139614.33 -14139614.06 -14139613.78 0.0284 0.0030



Mercury -43420-03-22 23:45 J -14137650.56 -14137650.51 -14137650.45 0.0286 0.0266

Mercury -43420-06-19 17:30 J -14137561.91 -14137561.77 -14137561.64 0.0286 0.0148

Mercury -43420-09-16 11:30 J -14137473.19 -14137473.02 -14137472.86 0.0286 0.0028

Mercury -43420-12-14 05:45 J -14137384.41 -14137384.26 -14137384.10 0.0286 0.0096

Mercury -43419-03-13 00:28 J -14137295.58 -14137295.48 -14137295.37 0.0285 0.0222

Moon -43419-03-22 06:28 J -14137286.47 -14137286.23 -14137285.99 0.0285 0.0049

Earth -43419-03-22 10:04 J -14137286.32 -14137286.08 -14137285.83 0.0285 0.0035 \*

Venus -43417-03-08 21:35 J -14136568.73 -14136568.60 -14136568.46 0.0284 0.0215

Venus -43417-10-24 14:38 J -14136339.11 -14136338.89 -14136338.68 0.0283 0.0040

Mars -43412-11-04 05:59 J -14134502.44 -14134502.25 -14134502.05 0.0276 0.0214

Mercury -43405-01-25 07:26 J -14132229.26 -14132229.19 -14132229.10 0.0273 0.0227

Mercury -43405-04-22 21:21 J -14132140.74 -14132140.61 -14132140.48 0.0273 0.0128

Mercury -43405-07-20 11:02 J -14132052.19 -14132052.04 -14132051.90 0.0273 0.0032

Moon -43405-09-18 22:47 J -14131991.78 -14131991.55 -14131991.30 0.0273 0.0095

Earth -43405-09-18 22:47 J -14131991.77 -14131991.55 -14131991.32 0.0273 0.0103 \*

Mercury -43405-10-17 00:14 J -14131963.63 -14131963.49 -14131963.35 0.0273 0.0065

Mercury -43404-01-13 13:11 J -14131875.07 -14131874.95 -14131874.83 0.0274 0.0159

Mercury -43404-04-12 01:54 J -14131786.47 -14131786.42 -14131786.36 0.0274 0.0251

Moon -43404-10-01 07:26 J -14131614.28 -14131614.19 -14131614.09 0.0274 0.0253

Earth -43404-10-01 10:33 J -14131614.16 -14131614.06 -14131613.92 0.0274 0.0239 \*

Venus -43402-04-09 17:59 J -14131058.89 -14131058.75 -14131058.60 0.0275 0.0194

Venus -43402-11-25 00:42 J -14130829.68 -14130829.47 -14130829.26 0.0276 0.0036

Venus -43401-07-11 06:57 J -14130600.26 -14130600.21 -14130600.15 0.0276 0.0265

Mercury -43391-11-06 17:16 J -14126829.90 -14126829.78 -14126829.65 0.0286 0.0186

Mercury -43390-02-03 11:02 J -14126741.19 -14126741.04 -14126740.88 0.0286 0.0067

Earth -43390-03-16 15:06 J -14126700.08 -14126699.87 -14126699.66 0.0286 0.0146

Moon -43390-03-16 18:42 J -14126699.94 -14126699.72 -14126699.50 0.0286 0.0133 \*

Mercury -43390-05-03 05:16 J -14126652.44 -14126652.28 -14126652.12 0.0286 0.0056

Mercury -43390-07-30 23:45 J -14126563.63 -14126563.51 -14126563.38 0.0285 0.0181

Earth -43389-03-29 07:11 J -14126321.31 -14126321.20 -14126321.07 0.0285 0.0246

Moon -43389-03-29 07:54 J -14126321.27 -14126321.17 -14126321.06 0.0285 0.0260 \*  
 Venus -43388-09-19 00:42 J -14125782.63 -14125782.47 -14125782.30 0.0284 0.0183  
 Venus -43387-05-06 17:30 J -14125552.98 -14125552.77 -14125552.56 0.0283 0.0071  
 Mars -43382-12-25 14:23 J -14123494.15 -14123493.90 -14123493.64 0.0275 0.0156  
 Mercury -43376-06-13 07:26 J -14121497.21 -14121497.19 -14121497.16 0.0273 0.0267  
 Mercury -43376-09-09 21:21 J -14121408.72 -14121408.61 -14121408.49 0.0273 0.0167  
 Moon -43376-09-13 11:16 J -14121405.10 -14121405.03 -14121404.95 0.0273 0.0258  
 Earth -43376-09-13 11:02 J -14121405.09 -14121405.04 -14121404.97 0.0273 0.0264 \*  
 Mercury -43376-12-07 11:02 J -14121320.18 -14121320.04 -14121319.90 0.0273 0.0069  
 Mercury -43375-03-06 00:28 J -14121231.63 -14121231.48 -14121231.33 0.0273 0.0027  
 Mercury -43375-06-02 13:40 J -14121143.06 -14121142.93 -14121142.80 0.0273 0.0122  
 Mercury -43375-08-30 02:23 J -14121054.48 -14121054.40 -14121054.31 0.0273 0.0214  
 Earth -43375-09-25 23:30 J -14121027.75 -14121027.52 -14121027.28 0.0273 0.0077  
 Moon -43375-09-26 03:06 J -14121027.59 -14121027.37 -14121027.14 0.0273 0.0092 \*  
 Venus -43373-10-19 17:45 J -14120272.92 -14120272.76 -14120272.59 0.0275 0.0170  
 Venus -43372-06-06 00:28 J -14120043.69 -14120043.48 -14120043.28 0.0276 0.0059  
 Mercury -43361-03-25 16:33 J -14116097.90 -14116097.81 -14116097.71 0.0286 0.0228  
 Mercury -43361-06-22 10:18 J -14116009.22 -14116009.07 -14116008.92 0.0286 0.0109  
 Mercury -43361-09-19 04:18 J -14115920.48 -14115920.32 -14115920.15 0.0286 0.0014  
 Mercury -43361-12-16 22:47 J -14115831.69 -14115831.55 -14115831.40 0.0285 0.0137  
 Mercury -43360-03-15 17:30 J -14115742.82 -14115742.77 -14115742.70 0.0285 0.0264  
 Earth -43360-03-23 10:47 J -14115735.29 -14115735.05 -14115734.81 0.0285 0.0067  
 Moon -43360-03-23 10:47 J -14115735.27 -14115735.05 -14115734.82 0.0285 0.0082 \*  
 Venus -43358-04-01 04:18 J -14114996.49 -14114996.32 -14114996.13 0.0283 0.0153  
 Venus -43358-11-16 21:21 J -14114766.81 -14114766.61 -14114766.41 0.0283 0.0102  
 Mercury -43346-01-27 23:59 J -14110676.60 -14110676.50 -14110676.38 0.0273 0.0190  
 Mercury -43346-04-26 13:54 J -14110588.06 -14110587.92 -14110587.78 0.0274 0.0091  
 Mercury -43346-07-24 03:21 J -14110499.51 -14110499.36 -14110499.21 0.0274 0.0007  
 Moon -43346-09-20 22:04 J -14110440.82 -14110440.58 -14110440.33 0.0274 0.0059  
 Earth -43346-09-21 01:54 J -14110440.65 -14110440.42 -14110440.18 0.0274 0.0072 \*

Mercury -43346-10-20 16:33 J -14110410.94 -14110410.81 -14110410.67 0.0274 0.0102  
 Mercury -43345-01-17 05:30 J -14110322.37 -14110322.27 -14110322.17 0.0274 0.0195  
 Earth -43345-10-02 13:54 J -14110062.93 -14110062.92 -14110062.87 0.0274 0.0272  
 Venus -43343-05-02 02:09 J -14109486.60 -14109486.41 -14109486.23 0.0275 0.0130  
 Venus -43343-12-17 08:38 J -14109257.33 -14109257.14 -14109256.94 0.0276 0.0099  
 Mars -43337-04-01 08:52 J -14107325.40 -14107325.13 -14107324.85 0.0283 0.0020  
 Mercury -43332-08-12 17:16 J -14105365.84 -14105365.78 -14105365.72 0.0286 0.0261  
 Mercury -43332-11-09 10:47 J -14105277.19 -14105277.05 -14105276.91 0.0286 0.0144  
 Mercury -43331-02-06 04:47 J -14105188.47 -14105188.30 -14105188.14 0.0286 0.0024  
 Moon -43331-03-17 17:30 J -14105149.00 -14105148.77 -14105148.52 0.0285 0.0098  
 Earth -43331-03-17 18:14 J -14105148.96 -14105148.74 -14105148.51 0.0285 0.0113 \*  
 Mercury -43331-05-05 22:47 J -14105099.70 -14105099.55 -14105099.39 0.0285 0.0101  
 Mercury -43331-08-02 17:30 J -14105010.86 -14105010.77 -14105010.66 0.0285 0.0226  
 Earth -43330-03-31 10:18 J -14104770.10 -14104770.07 -14104770.02 0.0285 0.0280  
 Venus -43329-10-11 08:52 J -14104210.31 -14104210.13 -14104209.93 0.0283 0.0118  
 Venus -43328-05-29 01:54 J -14103980.61 -14103980.42 -14103980.24 0.0283 0.0136  
 Mars -43323-03-30 02:38 J -14102214.60 -14102214.39 -14102214.16 0.0276 0.0191  
 Mercury -43317-06-16 00:14 J -14099944.57 -14099944.49 -14099944.41 0.0273 0.0228  
 Mercury -43317-09-12 14:09 J -14099856.04 -14099855.91 -14099855.78 0.0273 0.0129  
 Earth -43317-09-14 14:23 J -14099854.01 -14099853.90 -14099853.76 0.0273 0.0233  
 Moon -43317-09-14 18:14 J -14099853.88 -14099853.74 -14099853.60 0.0273 0.0222 \*  
 Mercury -43317-12-10 03:35 J -14099767.49 -14099767.35 -14099767.20 0.0273 0.0032  
 Mercury -43316-03-08 17:02 J -14099678.93 -14099678.79 -14099678.65 0.0273 0.0065  
 Mercury -43316-06-05 05:59 J -14099590.36 -14099590.25 -14099590.13 0.0273 0.0159  
 Mercury -43316-09-01 18:57 J -14099501.77 -14099501.71 -14099501.66 0.0273 0.0251  
 Earth -43316-09-27 03:21 J -14099476.58 -14099476.36 -14099476.13 0.0274 0.0111  
 Moon -43316-09-27 05:16 J -14099476.51 -14099476.28 -14099476.06 0.0274 0.0126 \*  
 Venus -43314-11-12 01:54 J -14098700.61 -14098700.42 -14098700.22 0.0275 0.0107  
 Venus -43313-06-28 08:38 J -14098471.33 -14098471.14 -14098470.95 0.0276 0.0123  
 Moon -43302-03-11 22:18 J -14094562.60 -14094562.57 -14094562.52 0.0286 0.0281

Mercury -43302-03-29 09:50 J -14094545.20 -14094545.09 -14094544.96 0.0286 0.0186  
 Mercury -43302-06-26 03:50 J -14094456.50 -14094456.34 -14094456.18 0.0286 0.0066  
 Mercury -43302-09-22 22:04 J -14094367.74 -14094367.58 -14094367.42 0.0286 0.0057  
 Mercury -43302-12-20 16:33 J -14094278.94 -14094278.81 -14094278.68 0.0285 0.0182  
 Earth -43301-03-24 13:54 J -14094184.15 -14094183.92 -14094183.69 0.0285 0.0101  
 Moon -43301-03-24 17:30 J -14094183.98 -14094183.77 -14094183.54 0.0285 0.0118 \*  
 Venus -43299-04-23 12:57 J -14093424.16 -14093423.96 -14093423.76 0.0283 0.0087  
 Venus -43299-12-09 05:45 J -14093194.43 -14093194.26 -14093194.08 0.0282 0.0166  
 Mars -43293-05-20 04:47 J -14091205.51 -14091205.30 -14091205.08 0.0276 0.0199  
 Mercury -43288-11-03 02:52 J -14089212.43 -14089212.38 -14089212.32 0.0274 0.0250  
 Mercury -43287-01-30 16:47 J -14089123.92 -14089123.80 -14089123.67 0.0274 0.0151  
 Mercury -43287-04-29 06:28 J -14089035.37 -14089035.23 -14089035.08 0.0274 0.0053  
 Mercury -43287-07-26 19:54 J -14088946.81 -14088946.67 -14088946.52 0.0274 0.0044  
 Moon -43287-09-22 04:04 J -14088889.57 -14088889.33 -14088889.09 0.0274 0.0025  
 Earth -43287-09-22 05:45 J -14088889.50 -14088889.26 -14088889.02 0.0274 0.0039 \*  
 Mercury -43287-10-23 09:06 J -14088858.25 -14088858.12 -14088858.00 0.0274 0.0139  
 Mercury -43286-01-19 21:50 J -14088769.66 -14088769.59 -14088769.51 0.0274 0.0232  
 Venus -43284-05-24 10:33 J -14087914.26 -14087914.06 -14087913.85 0.0276 0.0065  
 Venus -43283-01-08 17:02 J -14087684.94 -14087684.79 -14087684.61 0.0276 0.0165  
 Mercury -43273-08-15 11:16 J -14083813.13 -14083813.03 -14083812.93 0.0285 0.0215  
 Mercury -43273-11-12 04:47 J -14083724.45 -14083724.30 -14083724.14 0.0285 0.0097  
 Mercury -43272-02-08 22:47 J -14083635.71 -14083635.55 -14083635.38 0.0285 0.0026  
 Moon -43272-03-18 20:23 J -14083597.88 -14083597.65 -14083597.40 0.0285 0.0060  
 Earth -43272-03-19 00:14 J -14083597.73 -14083597.49 -14083597.25 0.0285 0.0076 \*  
 Mercury -43272-05-08 17:16 J -14083546.92 -14083546.78 -14083546.64 0.0285 0.0149  
 Mercury -43272-08-05 11:59 J -14083458.04 -14083458.00 -14083457.95 0.0285 0.0275  
 Venus -43270-11-03 18:42 J -14082637.92 -14082637.72 -14082637.50 0.0283 0.0049  
 Venus -43269-06-20 11:30 J -14082408.16 -14082408.02 -14082407.87 0.0283 0.0204  
 Mercury -43258-06-19 17:16 J -14078391.88 -14078391.78 -14078391.67 0.0273 0.0187  
 Mercury -43258-09-16 07:11 J -14078303.34 -14078303.20 -14078303.06 0.0273 0.0088

Earth -43258-09-16 19:54 J -14078302.83 -14078302.67 -14078302.49 0.0273 0.0199  
 Moon -43258-09-16 21:35 J -14078302.77 -14078302.60 -14078302.40 0.0273 0.0190 \*  
 Mercury -43258-12-13 20:38 J -14078214.79 -14078214.64 -14078214.49 0.0273 0.0009  
 Mercury -43257-03-11 09:50 J -14078126.22 -14078126.09 -14078125.96 0.0273 0.0104  
 Mercury -43257-06-07 22:47 J -14078037.65 -14078037.55 -14078037.45 0.0274 0.0198  
 Moon -43257-09-28 05:59 J -14077925.45 -14077925.25 -14077925.05 0.0274 0.0161  
 Earth -43257-09-28 08:52 J -14077925.33 -14077925.13 -14077924.92 0.0274 0.0146 \*  
 Venus -43255-04-19 04:33 J -14077357.35 -14077357.31 -14077357.26 0.0275 0.0267  
 Venus -43255-12-04 11:30 J -14077128.23 -14077128.02 -14077127.81 0.0276 0.0040  
 Venus -43254-07-21 17:59 J -14076898.90 -14076898.75 -14076898.59 0.0276 0.0189  
 Mars -43249-08-25 17:45 J -14075037.03 -14075036.76 -14075036.49 0.0283 0.0044  
 Mercury -43243-01-02 10:33 J -14073081.13 -14073081.06 -14073080.99 0.0286 0.0257  
 Earth -43243-03-13 02:52 J -14073011.48 -14073011.38 -14073011.28 0.0286 0.0258  
 Moon -43243-03-13 06:14 J -14073011.36 -14073011.24 -14073011.11 0.0286 0.0244 \*  
 Mercury -43243-04-01 04:04 J -14072992.47 -14072992.33 -14072992.19 0.0286 0.0140  
 Mercury -43243-06-28 21:50 J -14072903.75 -14072903.59 -14072903.43 0.0285 0.0019  
 Mercury -43243-09-25 16:04 J -14072814.98 -14072814.83 -14072814.67 0.0285 0.0105  
 Mercury -43243-12-23 10:47 J -14072726.14 -14072726.05 -14072725.95 0.0285 0.0230  
 Earth -43242-03-26 19:11 J -14072632.91 -14072632.70 -14072632.48 0.0285 0.0137  
 Moon -43242-03-26 20:52 J -14072632.84 -14072632.63 -14072632.42 0.0285 0.0152 \*  
 Venus -43241-09-28 05:45 J -14072081.31 -14072081.26 -14072081.19 0.0284 0.0270  
 Venus -43240-05-15 22:33 J -14071851.77 -14071851.56 -14071851.35 0.0283 0.0018  
 Venus -43240-12-31 15:21 J -14071621.97 -14071621.86 -14071621.73 0.0282 0.0234  
 Mars -43235-08-23 18:28 J -14069925.97 -14069925.73 -14069925.45 0.0277 0.0149  
 Mercury -43229-11-05 19:54 J -14067659.76 -14067659.67 -14067659.57 0.0274 0.0210  
 Mercury -43228-02-02 09:50 J -14067571.22 -14067571.09 -14067570.95 0.0274 0.0110  
 Mercury -43228-05-01 23:30 J -14067482.67 -14067482.52 -14067482.38 0.0274 0.0013  
 Mercury -43228-07-29 12:42 J -14067394.11 -14067393.97 -14067393.83 0.0274 0.0084  
 Earth -43228-09-23 11:02 J -14067338.28 -14067338.04 -14067337.79 0.0274 0.0004  
 Moon -43228-09-23 13:26 J -14067338.17 -14067337.94 -14067337.70 0.0274 0.0011 \*

Mercury -43228-10-26 01:54 J -14067305.53 -14067305.42 -14067305.31 0.0274 0.0179

Mercury -43227-01-22 14:38 J -14067216.91 -14067216.89 -14067216.87 0.0274 0.0271

Venus -43226-10-30 12:57 J -14066571.07 -14066570.96 -14066570.83 0.0276 0.0226

Venus -43225-06-15 20:09 J -14066341.87 -14066341.66 -14066341.45 0.0276 0.0003

Venus -43224-01-31 02:52 J -14066112.49 -14066112.38 -14066112.27 0.0277 0.0230

Mercury -43214-05-22 12:28 J -14062349.00 -14062348.98 -14062348.95 0.0285 0.0282

Mercury -43214-08-19 05:45 J -14062260.38 -14062260.26 -14062260.12 0.0285 0.0166

Mercury -43214-11-15 23:30 J -14062171.67 -14062171.52 -14062171.35 0.0285 0.0047

Mercury -43213-02-12 17:45 J -14062082.92 -14062082.76 -14062082.60 0.0285 0.0077

Moon -43213-03-20 07:11 J -14062046.44 -14062046.20 -14062045.97 0.0285 0.0022

Earth -43213-03-20 08:38 J -14062046.38 -14062046.14 -14062045.89 0.0285 0.0036 \*

Mercury -43213-05-11 12:14 J -14061994.10 -14061993.99 -14061993.87 0.0285 0.0202

Venus -43211-04-10 13:54 J -14061295.04 -14061294.92 -14061294.79 0.0284 0.0227

Venus -43211-11-26 06:28 J -14061065.45 -14061065.23 -14061065.02 0.0283 0.0025

Venus -43210-07-13 23:02 J -14060835.58 -14060835.54 -14060835.49 0.0282 0.0275

Mars -43205-10-13 17:59 J -14058916.90 -14058916.75 -14058916.58 0.0276 0.0236

Mercury -43199-03-25 20:38 J -14056927.70 -14056927.64 -14056927.57 0.0273 0.0244

Mercury -43199-06-22 10:47 J -14056839.18 -14056839.05 -14056838.93 0.0273 0.0144

Moon -43199-09-18 00:28 J -14056751.69 -14056751.48 -14056751.27 0.0273 0.0151

Earth -43199-09-18 02:52 J -14056751.58 -14056751.38 -14056751.18 0.0273 0.0164 \*

Mercury -43199-09-19 00:28 J -14056750.63 -14056750.48 -14056750.34 0.0273 0.0046

Mercury -43199-12-16 13:40 J -14056662.07 -14056661.93 -14056661.78 0.0273 0.0052

Mercury -43198-03-15 02:52 J -14056573.50 -14056573.38 -14056573.26 0.0274 0.0146

Mercury -43198-06-11 15:50 J -14056484.91 -14056484.84 -14056484.77 0.0274 0.0239

Moon -43198-09-30 12:28 J -14056374.13 -14056373.98 -14056373.80 0.0274 0.0198

Earth -43198-09-30 15:35 J -14056374.02 -14056373.85 -14056373.66 0.0274 0.0183 \*

Venus -43196-05-11 14:38 J -14055785.03 -14055784.89 -14055784.74 0.0275 0.0199

Venus -43196-12-26 21:35 J -14055555.81 -14055555.60 -14055555.39 0.0276 0.0029

Venus -43195-08-13 04:18 J -14055326.39 -14055326.32 -14055326.24 0.0277 0.0256

Mars -43191-12-02 16:33 J -14053753.86 -14053753.81 -14053753.71 0.0282 0.0272

Mercury -43184-01-05 05:02 J -14051528.40 -14051528.29 -14051528.18 0.0286 0.0208

Earth -43184-03-14 11:02 J -14051460.18 -14051460.04 -14051459.87 0.0285 0.0220

Moon -43184-03-14 12:57 J -14051460.13 -14051459.96 -14051459.78 0.0285 0.0205 \*

Mercury -43184-04-03 22:33 J -14051439.71 -14051439.56 -14051439.40 0.0285 0.0089

Mercury -43184-07-01 16:47 J -14051350.97 -14051350.80 -14051350.64 0.0285 0.0033

Mercury -43184-09-28 11:02 J -14051262.17 -14051262.04 -14051261.90 0.0285 0.0157

Mercury -43184-12-26 05:59 J -14051173.26 -14051173.25 -14051173.24 0.0285 0.0283

Moon -43183-03-28 00:42 J -14051081.66 -14051081.47 -14051081.28 0.0285 0.0190

Earth -43183-03-28 03:06 J -14051081.55 -14051081.37 -14051081.16 0.0285 0.0177 \*

Venus -43182-10-21 17:02 J -14050508.93 -14050508.79 -14050508.63 0.0284 0.0198

Venus -43181-06-07 09:50 J -14050279.30 -14050279.09 -14050278.88 0.0283 0.0054

Mercury -43170-08-12 23:16 J -14046195.55 -14046195.53 -14046195.49 0.0274 0.0267

Mercury -43170-11-09 13:26 J -14046107.06 -14046106.94 -14046106.82 0.0274 0.0167

Mercury -43169-02-06 03:06 J -14046018.51 -14046018.37 -14046018.22 0.0274 0.0068

Mercury -43169-05-04 16:33 J -14045929.95 -14045929.81 -14045929.66 0.0274 0.0031

Mercury -43169-08-01 05:45 J -14045841.38 -14045841.26 -14045841.13 0.0274 0.0126

Earth -43169-09-24 17:45 J -14045787.00 -14045786.76 -14045786.51 0.0274 0.0032

Moon -43169-09-24 21:06 J -14045786.86 -14045786.62 -14045786.37 0.0274 0.0046 \*

Mercury -43169-10-28 18:42 J -14045752.80 -14045752.72 -14045752.63 0.0274 0.0220

Venus -43167-11-21 23:30 J -14044998.69 -14044998.52 -14044998.34 0.0276 0.0157

Venus -43166-07-09 06:42 J -14044769.42 -14044769.22 -14044769.02 0.0276 0.0071

Mars -43160-01-20 11:45 J -14042747.26 -14042747.01 -14042746.75 0.0283 0.0112

Mercury -43155-05-25 07:26 J -14040796.28 -14040796.19 -14040796.09 0.0285 0.0229

Mercury -43155-08-22 01:11 J -14040707.60 -14040707.45 -14040707.31 0.0285 0.0112

Mercury -43155-11-18 18:57 J -14040618.87 -14040618.71 -14040618.55 0.0285 0.0010

Mercury -43154-02-15 13:11 J -14040530.09 -14040529.95 -14040529.80 0.0285 0.0133

Earth -43154-03-22 19:11 J -14040494.95 -14040494.70 -14040494.45 0.0285 0.0006

Moon -43154-03-22 21:21 J -14040494.84 -14040494.61 -14040494.37 0.0285 0.0022 \*

Mercury -43154-05-15 07:54 J -14040441.23 -14040441.17 -14040441.10 0.0285 0.0258

Venus -43152-05-03 02:52 J -14039722.56 -14039722.38 -14039722.20 0.0283 0.0152

Venus -43152-12-18 19:11 J -14039492.90 -14039492.70 -14039492.50 0.0283 0.0099  
 Mars -43146-01-17 19:54 J -14037636.96 -14037636.67 -14037636.38 0.0277 0.0104  
 Mercury -43140-03-28 14:38 J -14035374.99 -14035374.89 -14035374.79 0.0273 0.0198  
 Mercury -43140-06-25 04:18 J -14035286.46 -14035286.32 -14035286.18 0.0273 0.0099  
 Moon -43140-09-19 07:40 J -14035200.39 -14035200.18 -14035199.95 0.0273 0.0114  
 Earth -43140-09-19 11:16 J -14035200.24 -14035200.03 -14035199.81 0.0273 0.0126 \*  
 Mercury -43140-09-21 17:59 J -14035197.90 -14035197.75 -14035197.60 0.0273 0.0004  
 Mercury -43140-12-19 07:11 J -14035109.34 -14035109.20 -14035109.06 0.0274 0.0095  
 Mercury -43139-03-17 20:09 J -14035020.76 -14035020.66 -14035020.55 0.0274 0.0189  
 Earth -43139-10-02 00:14 J -14034822.63 -14034822.49 -14034822.34 0.0274 0.0221  
 Moon -43139-10-02 01:11 J -14034822.57 -14034822.45 -14034822.33 0.0274 0.0234 \*  
 Venus -43137-06-03 01:40 J -14034212.61 -14034212.43 -14034212.24 0.0275 0.0129  
 Venus -43136-01-18 08:38 J -14033983.33 -14033983.14 -14033982.94 0.0276 0.0098  
 Mercury -43126-10-12 06:42 J -14030064.26 -14030064.22 -14030064.17 0.0286 0.0271  
 Mercury -43125-01-09 00:14 J -14029975.62 -14029975.49 -14029975.36 0.0285 0.0154  
 Moon -43125-03-15 19:26 J -14029908.89 -14029908.69 -14029908.48 0.0285 0.0161  
 Earth -43125-03-15 21:50 J -14029908.77 -14029908.59 -14029908.38 0.0285 0.0178 \*  
 Mercury -43125-04-06 17:59 J -14029886.91 -14029886.75 -14029886.59 0.0285 0.0034  
 Mercury -43125-07-04 12:14 J -14029798.15 -14029797.99 -14029797.84 0.0285 0.0089  
 Mercury -43125-10-01 06:42 J -14029709.33 -14029709.22 -14029709.11 0.0285 0.0214  
 Moon -43124-03-29 10:18 J -14029530.19 -14029530.07 -14029529.92 0.0285 0.0234  
 Earth -43124-03-29 13:40 J -14029530.08 -14029529.93 -14029529.77 0.0285 0.0219 \*  
 Venus -43123-11-13 05:45 J -14028936.44 -14028936.26 -14028936.06 0.0283 0.0123  
 Venus -43122-06-30 22:33 J -14028706.75 -14028706.56 -14028706.37 0.0283 0.0128  
 Mercury -43111-08-15 17:02 J -14024642.88 -14024642.79 -14024642.70 0.0274 0.0222  
 Moon -43111-09-14 14:52 J -14024612.92 -14024612.88 -14024612.82 0.0274 0.0269  
 Mercury -43111-11-12 06:57 J -14024554.34 -14024554.21 -14024554.08 0.0274 0.0122  
 Mercury -43110-02-08 20:38 J -14024465.79 -14024465.64 -14024465.50 0.0274 0.0024  
 Mercury -43110-05-08 10:04 J -14024377.22 -14024377.08 -14024376.94 0.0274 0.0074  
 Mercury -43110-08-04 23:02 J -14024288.65 -14024288.54 -14024288.42 0.0275 0.0168



Moon -43110-09-27 01:26 J -14024235.68 -14024235.44 -14024235.19 0.0275 0.0083  
 Earth -43110-09-27 01:40 J -14024235.67 -14024235.43 -14024235.19 0.0275 0.0070 \*  
 Mercury -43110-11-01 11:59 J -14024200.04 -14024200.00 -14024199.96 0.0275 0.0261  
 Venus -43108-12-14 10:18 J -14023426.27 -14023426.07 -14023425.87 0.0276 0.0087  
 Venus -43107-07-31 17:30 J -14023196.95 -14023196.77 -14023196.59 0.0277 0.0141  
 Mars -43102-04-29 15:06 J -14021464.05 -14021463.87 -14021463.66 0.0282 0.0201  
 Mercury -43096-05-28 03:06 J -14019243.50 -14019243.37 -14019243.24 0.0285 0.0173  
 Mercury -43096-08-24 20:38 J -14019154.79 -14019154.64 -14019154.47 0.0285 0.0055  
 Mercury -43096-11-21 14:52 J -14019066.04 -14019065.88 -14019065.72 0.0285 0.0068  
 Mercury -43095-02-18 09:21 J -14018977.23 -14018977.11 -14018976.99 0.0285 0.0192  
 Earth -43095-03-24 07:40 J -14018943.42 -14018943.18 -14018942.94 0.0285 0.0051  
 Moon -43095-03-24 11:02 J -14018943.27 -14018943.04 -14018942.79 0.0285 0.0068 \*  
 Venus -43093-05-25 16:47 J -14018150.00 -14018149.80 -14018149.59 0.0283 0.0074  
 Venus -43092-01-10 09:06 J -14017920.27 -14017920.12 -14017919.94 0.0283 0.0177  
 Mercury -43081-01-02 18:28 J -14013910.78 -14013910.73 -14013910.67 0.0273 0.0251  
 Mercury -43081-03-31 08:23 J -14013822.27 -14013822.15 -14013822.02 0.0273 0.0151  
 Mercury -43081-06-27 22:18 J -14013733.72 -14013733.57 -14013733.43 0.0273 0.0052  
 Earth -43081-09-20 20:52 J -14013648.86 -14013648.63 -14013648.39 0.0274 0.0087  
 Moon -43081-09-20 20:52 J -14013648.86 -14013648.63 -14013648.40 0.0274 0.0073 \*  
 Mercury -43081-09-24 11:45 J -14013645.16 -14013645.01 -14013644.87 0.0274 0.0045  
 Mercury -43081-12-22 00:42 J -14013556.59 -14013556.47 -14013556.34 0.0274 0.0141  
 Mercury -43080-03-20 13:40 J -14013468.00 -14013467.93 -14013467.85 0.0274 0.0234  
 Earth -43080-10-03 09:35 J -14013271.16 -14013271.10 -14013271.01 0.0274 0.0262  
 Venus -43078-06-26 13:40 J -14012640.14 -14012639.93 -14012639.72 0.0276 0.0058  
 Venus -43077-02-10 20:23 J -14012410.81 -14012410.65 -14012410.48 0.0276 0.0169  
 Mars -43072-06-16 07:54 J -14010458.39 -14010458.17 -14010457.92 0.0283 0.0148  
 Mercury -43067-10-15 02:23 J -14008511.51 -14008511.40 -14008511.30 0.0285 0.0216  
 Mercury -43066-01-11 19:54 J -14008422.82 -14008422.67 -14008422.52 0.0285 0.0098  
 Moon -43066-03-18 07:11 J -14008357.42 -14008357.20 -14008356.98 0.0285 0.0116  
 Earth -43066-03-18 10:18 J -14008357.27 -14008357.07 -14008356.84 0.0285 0.0134 \*

Mercury -43066-04-10 13:40 J -14008334.09 -14008333.93 -14008333.76 0.0285 0.0024

Mercury -43066-07-08 08:09 J -14008245.30 -14008245.16 -14008245.02 0.0285 0.0147

Mercury -43066-10-05 02:52 J -14008156.43 -14008156.38 -14008156.34 0.0285 0.0273

Earth -43065-03-31 01:40 J -14007978.51 -14007978.43 -14007978.32 0.0285 0.0264

Moon -43065-03-31 01:40 J -14007978.47 -14007978.43 -14007978.37 0.0285 0.0278 \*

Venus -43064-12-05 19:40 J -14007363.89 -14007363.68 -14007363.47 0.0283 0.0045

Venus -43063-07-23 12:14 J -14007134.13 -14007133.99 -14007133.84 0.0282 0.0204

Mars -43058-06-13 21:35 J -14005347.90 -14005347.60 -14005347.29 0.0276 0.0054

Mercury -43052-08-18 10:47 J -14003090.16 -14003090.05 -14003089.94 0.0274 0.0176

Moon -43052-09-15 19:40 J -14003061.81 -14003061.68 -14003061.53 0.0274 0.0228

Earth -43052-09-15 19:54 J -14003061.78 -14003061.67 -14003061.55 0.0274 0.0242 \*

Mercury -43052-11-15 00:42 J -14003001.62 -14003001.47 -14003001.33 0.0274 0.0077

Mercury -43051-02-11 14:09 J -14002913.06 -14002912.91 -14002912.76 0.0274 0.0021

Mercury -43051-05-11 03:21 J -14002824.49 -14002824.36 -14002824.22 0.0275 0.0118

Mercury -43051-08-07 16:33 J -14002735.90 -14002735.81 -14002735.72 0.0275 0.0212

Moon -43051-09-28 06:42 J -14002684.44 -14002684.22 -14002684.00 0.0275 0.0124

Earth -43051-09-28 10:18 J -14002684.29 -14002684.07 -14002683.84 0.0275 0.0108 \*

Venus -43049-05-21 13:54 J -14002083.01 -14002082.92 -14002082.81 0.0276 0.0243

Venus -43048-01-05 21:35 J -14001853.81 -14001853.60 -14001853.39 0.0276 0.0016

Venus -43048-08-23 04:47 J -14001624.43 -14001624.30 -14001624.16 0.0277 0.0211

Mercury -43037-03-03 05:16 J -13997779.36 -13997779.28 -13997779.19 0.0285 0.0234

Moon -43037-03-12 08:52 J -13997770.16 -13997770.13 -13997770.09 0.0285 0.0282

Mercury -43037-05-30 22:47 J -13997690.70 -13997690.55 -13997690.40 0.0285 0.0116

Mercury -43037-08-27 16:33 J -13997601.97 -13997601.81 -13997601.64 0.0285 0.0010

Mercury -43037-11-24 10:47 J -13997513.19 -13997513.05 -13997512.90 0.0285 0.0128

Mercury -43036-02-21 05:30 J -13997424.34 -13997424.27 -13997424.19 0.0285 0.0253

Earth -43036-03-25 20:38 J -13997391.87 -13997391.64 -13997391.41 0.0285 0.0097

Moon -43036-03-25 20:38 J -13997391.86 -13997391.64 -13997391.40 0.0285 0.0113 \*

Venus -43035-10-31 15:06 J -13996806.97 -13996806.87 -13996806.76 0.0284 0.0244

Venus -43034-06-18 07:26 J -13996577.40 -13996577.19 -13996576.98 0.0283 0.0005

Venus -43033-02-03 00:14 J -13996347.58 -13996347.49 -13996347.40 0.0282 0.0254

Mercury -43022-01-05 12:28 J -13992358.07 -13992357.98 -13992357.87 0.0273 0.0203

Mercury -43022-04-04 02:38 J -13992269.53 -13992269.39 -13992269.25 0.0273 0.0103

Mercury -43022-07-01 16:04 J -13992180.97 -13992180.83 -13992180.68 0.0274 0.0008

Earth -43022-09-23 06:57 J -13992097.45 -13992097.21 -13992096.96 0.0274 0.0047

Moon -43022-09-23 10:47 J -13992097.29 -13992097.05 -13992096.81 0.0274 0.0030 \*

Mercury -43022-09-28 05:30 J -13992092.41 -13992092.27 -13992092.13 0.0274 0.0091

Mercury -43022-12-25 18:28 J -13992003.83 -13992003.73 -13992003.62 0.0274 0.0186

Venus -43020-12-01 18:28 J -13991296.87 -13991296.73 -13991296.60 0.0275 0.0211

Venus -43019-07-19 01:40 J -13991067.64 -13991067.43 -13991067.22 0.0276 0.0014

Venus -43018-03-05 08:23 J -13990838.25 -13990838.15 -13990838.04 0.0276 0.0240

Mars -43014-09-23 13:26 J -13989175.17 -13989174.94 -13989174.72 0.0282 0.0165

Mercury -43008-07-21 04:33 J -13987047.34 -13987047.31 -13987047.26 0.0285 0.0275

Mercury -43008-10-17 22:04 J -13986958.72 -13986958.58 -13986958.45 0.0285 0.0159

Mercury -43007-01-14 15:35 J -13986870.01 -13986869.85 -13986869.69 0.0285 0.0040

Earth -43007-03-19 23:30 J -13986805.75 -13986805.52 -13986805.29 0.0285 0.0087

Moon -43007-03-20 00:14 J -13986805.72 -13986805.49 -13986805.26 0.0285 0.0072 \*

Mercury -43007-04-13 09:50 J -13986781.25 -13986781.09 -13986780.94 0.0285 0.0083

Mercury -43007-07-11 04:04 J -13986692.43 -13986692.33 -13986692.21 0.0285 0.0208

Venus -43005-05-12 17:30 J -13986020.90 -13986020.77 -13986020.63 0.0284 0.0216

Venus -43005-12-28 10:04 J -13985791.29 -13985791.08 -13985790.87 0.0283 0.0033

Venus -43004-08-15 02:38 J -13985561.40 -13985561.39 -13985561.36 0.0282 0.0281

# 43RD MILLENNIUM BCE

This is a list of transits visible from Saturn in the 43rd millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-42993-05-24 14:38 J	-13981625.97	-13981625.89	-13981625.81	0.0274	0.0230		
Mercury	-42993-08-21 04:33 J	-13981537.44	-13981537.31	-13981537.18	0.0274	0.0130		
Moon	-42993-09-17 00:57 J	-13981510.62	-13981510.46	-13981510.27	0.0274	0.0189		
Earth	-42993-09-17 04:47 J	-13981510.45	-13981510.30	-13981510.13	0.0274	0.0203	*	
Mercury	-42993-11-17 18:14 J	-13981448.88	-13981448.74	-13981448.59	0.0274	0.0031		
Mercury	-42992-02-14 07:40 J	-13981360.32	-13981360.18	-13981360.04	0.0274	0.0067		
Mercury	-42992-05-13 20:52 J	-13981271.74	-13981271.63	-13981271.51	0.0275	0.0162		
Mercury	-42992-08-10 09:50 J	-13981183.14	-13981183.09	-13981183.04	0.0275	0.0255		
Moon	-42992-09-29 17:02 J	-13981132.98	-13981132.79	-13981132.60	0.0275	0.0163		
Earth	-42992-09-29 18:57 J	-13981132.91	-13981132.71	-13981132.50	0.0275	0.0148	*	
Venus	-42990-06-14 01:26 J	-13980510.60	-13980510.44	-13980510.28	0.0276	0.0173		
Venus	-42989-01-29 08:52 J	-13980281.34	-13980281.13	-13980280.92	0.0277	0.0054		
Mars	-42984-11-11 06:42 J	-13978168.39	-13978168.22	-13978168.04	0.0283	0.0215		
Mercury	-42978-03-07 00:57 J	-13976226.58	-13976226.46	-13976226.33	0.0285	0.0177		
Moon	-42978-03-14 17:30 J	-13976218.89	-13976218.77	-13976218.62	0.0285	0.0237		
Earth	-42978-03-14 18:14 J	-13976218.83	-13976218.74	-13976218.61	0.0285	0.0254	*	
Mercury	-42978-06-03 18:42 J	-13976137.88	-13976137.72	-13976137.57	0.0285	0.0058		
Mercury	-42978-08-31 12:42 J	-13976049.13	-13976048.97	-13976048.81	0.0285	0.0064		
Mercury	-42978-11-28 06:57 J	-13975960.33	-13975960.21	-13975960.08	0.0285	0.0189		
Moon	-42977-03-27 05:45 J	-13975840.45	-13975840.26	-13975840.04	0.0285	0.0160		
Earth	-42977-03-27 09:35 J	-13975840.30	-13975840.10	-13975839.88	0.0285	0.0144	*	
Venus	-42976-11-23 05:45 J	-13975234.43	-13975234.26	-13975234.09	0.0283	0.0165		
Venus	-42975-07-10 22:04 J	-13975004.78	-13975004.58	-13975004.38	0.0283	0.0083		
Mars	-42970-11-08 20:38 J	-13973057.94	-13973057.64	-13973057.33	0.0276	0.0010		
Mercury	-42964-10-11 16:33 J	-13970893.85	-13970893.81	-13970893.75	0.0273	0.0255		
Mercury	-42963-01-08 06:42 J	-13970805.34	-13970805.22	-13970805.09	0.0273	0.0154		

Mercury -42963-04-06 20:38 J -13970716.79 -13970716.64 -13970716.50 0.0274 0.0055

Mercury -42963-07-04 10:04 J -13970628.23 -13970628.08 -13970627.94 0.0274 0.0042

Earth -42963-09-24 17:16 J -13970546.03 -13970545.78 -13970545.54 0.0274 0.0005

Moon -42963-09-24 19:11 J -13970545.95 -13970545.70 -13970545.45 0.0274 0.0010 \*

Mercury -42963-09-30 23:16 J -13970539.66 -13970539.53 -13970539.41 0.0274 0.0138

Mercury -42963-12-28 12:14 J -13970451.06 -13970450.99 -13970450.91 0.0274 0.0231

Venus -42961-12-24 06:14 J -13969724.42 -13969724.24 -13969724.05 0.0275 0.0140

Venus -42960-08-10 13:26 J -13969495.14 -13969494.94 -13969494.74 0.0276 0.0085

Mercury -42949-07-24 00:14 J -13965494.59 -13965494.49 -13965494.39 0.0285 0.0220

Mercury -42949-10-20 17:30 J -13965405.92 -13965405.77 -13965405.62 0.0285 0.0102

Mercury -42948-01-17 11:30 J -13965317.19 -13965317.02 -13965316.86 0.0285 0.0020

Earth -42948-03-21 11:45 J -13965254.25 -13965254.01 -13965253.77 0.0285 0.0042

Moon -42948-03-21 15:35 J -13965254.10 -13965253.85 -13965253.61 0.0285 0.0026 \*

Mercury -42948-04-16 05:45 J -13965228.40 -13965228.26 -13965228.12 0.0285 0.0142

Mercury -42948-07-14 00:14 J -13965139.54 -13965139.49 -13965139.43 0.0285 0.0268

Venus -42946-06-05 07:26 J -13964448.37 -13964448.19 -13964448.00 0.0283 0.0139

Venus -42945-01-21 00:14 J -13964218.69 -13964218.49 -13964218.29 0.0283 0.0110

Mercury -42934-05-28 08:23 J -13960073.26 -13960073.15 -13960073.04 0.0274 0.0183

Mercury -42934-08-24 22:18 J -13959984.71 -13959984.57 -13959984.43 0.0274 0.0083

Moon -42934-09-19 11:45 J -13959959.20 -13959959.01 -13959958.80 0.0274 0.0150

Earth -42934-09-19 13:40 J -13959959.12 -13959958.93 -13959958.73 0.0274 0.0163 \*

Mercury -42934-11-21 11:59 J -13959896.15 -13959896.00 -13959895.86 0.0274 0.0016

Mercury -42933-02-18 01:11 J -13959807.58 -13959807.45 -13959807.31 0.0274 0.0111

Mercury -42933-05-16 14:23 J -13959719.00 -13959718.90 -13959718.81 0.0274 0.0206

Earth -42933-10-01 03:21 J -13959581.53 -13959581.36 -13959581.17 0.0275 0.0188

Moon -42933-10-01 06:14 J -13959581.40 -13959581.24 -13959581.08 0.0275 0.0202 \*

Venus -42931-07-06 12:14 J -13958938.18 -13958937.99 -13958937.79 0.0276 0.0103

Venus -42930-02-20 19:40 J -13958708.87 -13958708.68 -13958708.49 0.0277 0.0123

Mars -42925-02-18 06:14 J -13956885.49 -13956885.24 -13956884.97 0.0283 0.0106

Mercury -42920-12-11 02:52 J -13954762.46 -13954762.38 -13954762.29 0.0285 0.0239

Mercury -42919-03-09 20:23 J -13954673.80 -13954673.65 -13954673.51 0.0285 0.0121

Moon -42919-03-16 02:23 J -13954667.57 -13954667.40 -13954667.21 0.0285 0.0193

Earth -42919-03-16 06:14 J -13954667.41 -13954667.24 -13954667.08 0.0285 0.0209 \*

Mercury -42919-06-06 14:09 J -13954585.07 -13954584.91 -13954584.75 0.0285 0.0001

Mercury -42919-09-03 08:23 J -13954496.30 -13954496.15 -13954496.00 0.0285 0.0122

Mercury -42919-12-01 02:52 J -13954407.46 -13954407.38 -13954407.30 0.0285 0.0247

Moon -42918-03-29 19:11 J -13954288.86 -13954288.70 -13954288.52 0.0285 0.0204

Earth -42918-03-29 21:35 J -13954288.78 -13954288.60 -13954288.42 0.0285 0.0189 \*

Venus -42917-12-15 19:26 J -13953661.88 -13953661.69 -13953661.48 0.0283 0.0090

Venus -42916-08-02 11:59 J -13953432.17 -13953432.00 -13953431.82 0.0283 0.0160

Mercury -42905-10-14 10:47 J -13949341.14 -13949341.05 -13949340.95 0.0273 0.0206

Mercury -42904-01-11 00:42 J -13949252.61 -13949252.47 -13949252.33 0.0273 0.0106

Mercury -42904-04-09 14:23 J -13949164.05 -13949163.90 -13949163.75 0.0274 0.0009

Mercury -42904-07-07 03:35 J -13949075.48 -13949075.35 -13949075.21 0.0274 0.0089

Moon -42904-09-25 23:59 J -13948994.74 -13948994.50 -13948994.25 0.0274 0.0050

Earth -42904-09-26 02:38 J -13948994.63 -13948994.39 -13948994.14 0.0274 0.0035 \*

Mercury -42904-10-03 16:47 J -13948986.91 -13948986.80 -13948986.69 0.0274 0.0183

Venus -42901-01-16 17:45 J -13948151.97 -13948151.76 -13948151.56 0.0275 0.0071

Venus -42901-09-02 00:42 J -13947922.64 -13947922.47 -13947922.30 0.0276 0.0154

Mars -42895-04-07 01:26 J -13945879.55 -13945879.44 -13945879.30 0.0283 0.0250

Mercury -42890-04-30 01:54 J -13944030.43 -13944030.42 -13944030.39 0.0286 0.0282

Mercury -42890-07-27 19:11 J -13943941.82 -13943941.70 -13943941.56 0.0285 0.0166

Mercury -42890-10-24 12:57 J -13943853.12 -13943852.96 -13943852.80 0.0285 0.0046

Mercury -42889-01-21 06:57 J -13943764.37 -13943764.21 -13943764.05 0.0285 0.0076

Earth -42889-03-22 23:16 J -13943702.78 -13943702.53 -13943702.29 0.0285 0.0004

Moon -42889-03-23 00:57 J -13943702.71 -13943702.46 -13943702.21 0.0285 0.0018 \*

Mercury -42889-04-19 01:11 J -13943675.56 -13943675.45 -13943675.32 0.0285 0.0202

Venus -42887-06-27 21:06 J -13942875.83 -13942875.62 -13942875.41 0.0283 0.0063

Venus -42886-02-12 13:40 J -13942646.08 -13942645.93 -13942645.76 0.0283 0.0185

Mars -42881-04-03 17:59 J -13940769.05 -13940768.75 -13940768.44 0.0276 0.0053

Mercury -42875-03-03 11:59 J -13938609.07 -13938609.00 -13938608.92 0.0274 0.0238  
 Mercury -42875-05-31 02:09 J -13938520.54 -13938520.41 -13938520.28 0.0274 0.0137  
 Mercury -42875-08-27 15:50 J -13938431.99 -13938431.84 -13938431.69 0.0274 0.0038  
 Earth -42875-09-20 21:21 J -13938407.83 -13938407.61 -13938407.39 0.0274 0.0124  
 Moon -42875-09-20 23:16 J -13938407.74 -13938407.53 -13938407.30 0.0274 0.0111 \*  
 Mercury -42875-11-24 05:16 J -13938343.42 -13938343.28 -13938343.14 0.0274 0.0059  
 Mercury -42874-02-20 18:28 J -13938254.85 -13938254.73 -13938254.61 0.0274 0.0154  
 Mercury -42874-05-20 07:26 J -13938166.25 -13938166.19 -13938166.13 0.0274 0.0248  
 Earth -42874-10-03 11:02 J -13938030.17 -13938030.04 -13938029.90 0.0275 0.0227  
 Moon -42874-10-03 14:23 J -13938030.02 -13938029.90 -13938029.78 0.0275 0.0239 \*  
 Venus -42873-12-11 14:38 J -13937594.94 -13937594.89 -13937594.81 0.0276 0.0261  
 Venus -42872-07-28 22:33 J -13937365.77 -13937365.56 -13937365.35 0.0276 0.0036  
 Venus -42871-03-15 05:30 J -13937136.41 -13937136.27 -13937136.11 0.0277 0.0190  
 Mercury -42861-12-13 21:35 J -13933209.71 -13933209.60 -13933209.48 0.0285 0.0188  
 Mercury -42860-03-12 15:06 J -13933121.02 -13933120.87 -13933120.71 0.0285 0.0069  
 Moon -42860-03-17 13:26 J -13933116.13 -13933115.94 -13933115.73 0.0285 0.0152  
 Earth -42860-03-17 15:21 J -13933116.05 -13933115.86 -13933115.66 0.0285 0.0166 \*  
 Mercury -42860-06-09 09:06 J -13933032.28 -13933032.12 -13933031.96 0.0285 0.0053  
 Mercury -42860-09-06 03:35 J -13932943.48 -13932943.35 -13932943.22 0.0285 0.0177  
 Earth -42859-03-31 06:57 J -13932737.34 -13932737.21 -13932737.06 0.0285 0.0233  
 Moon -42859-03-31 09:06 J -13932737.23 -13932737.12 -13932736.99 0.0285 0.0245 \*  
 Venus -42858-05-23 15:50 J -13932318.91 -13932318.84 -13932318.76 0.0284 0.0263  
 Venus -42857-01-08 08:23 J -13932089.37 -13932089.15 -13932088.94 0.0283 0.0017  
 Venus -42857-08-25 00:57 J -13931859.58 -13931859.46 -13931859.34 0.0283 0.0232  
 Mercury -42846-07-21 14:38 J -13927876.93 -13927876.89 -13927876.84 0.0273 0.0259  
 Moon -42846-09-15 20:09 J -13927820.72 -13927820.66 -13927820.58 0.0273 0.0261  
 Mercury -42846-10-18 04:33 J -13927788.43 -13927788.31 -13927788.18 0.0273 0.0159  
 Mercury -42845-01-14 18:28 J -13927699.88 -13927699.73 -13927699.59 0.0273 0.0060  
 Mercury -42845-04-12 07:54 J -13927611.31 -13927611.17 -13927611.02 0.0273 0.0037  
 Mercury -42845-07-09 21:06 J -13927522.74 -13927522.62 -13927522.49 0.0274 0.0133

Moon -42845-09-27 07:54 J -13927443.39 -13927443.17 -13927442.94 0.0274 0.0090  
 Earth -42845-09-27 11:16 J -13927443.27 -13927443.03 -13927442.79 0.0274 0.0075 \*  
 Mercury -42845-10-06 10:04 J -13927434.15 -13927434.08 -13927433.99 0.0274 0.0226  
 Venus -42843-06-23 21:06 J -13926808.73 -13926808.62 -13926808.50 0.0275 0.0226  
 Venus -42842-02-08 04:18 J -13926579.53 -13926579.32 -13926579.11 0.0275 0.0003  
 Venus -42842-09-25 11:02 J -13926350.16 -13926350.04 -13926349.91 0.0276 0.0221  
 Mars -42837-07-13 23:16 J -13924596.79 -13924596.53 -13924596.25 0.0282 0.0071  
 Mercury -42831-05-02 20:38 J -13922477.73 -13922477.64 -13922477.54 0.0286 0.0231  
 Mercury -42831-07-30 14:09 J -13922389.06 -13922388.91 -13922388.76 0.0285 0.0114  
 Mercury -42831-10-27 07:54 J -13922300.33 -13922300.17 -13922300.01 0.0285 0.0007  
 Mercury -42830-01-24 01:54 J -13922211.56 -13922211.42 -13922211.27 0.0285 0.0131  
 Moon -42830-03-25 05:45 J -13922151.51 -13922151.26 -13922151.01 0.0285 0.0058  
 Earth -42830-03-25 08:09 J -13922151.40 -13922151.16 -13922150.91 0.0285 0.0046 \*  
 Mercury -42830-04-22 20:23 J -13922122.71 -13922122.65 -13922122.57 0.0285 0.0256  
 Venus -42829-12-02 17:02 J -13921532.90 -13921532.79 -13921532.67 0.0284 0.0237  
 Venus -42828-07-20 09:21 J -13921303.32 -13921303.11 -13921302.90 0.0283 0.0010  
 Venus -42827-03-07 02:09 J -13921073.50 -13921073.41 -13921073.32 0.0283 0.0257  
 Mercury -42816-03-06 05:16 J -13917056.38 -13917056.28 -13917056.17 0.0274 0.0194  
 Mercury -42816-06-02 19:26 J -13916967.83 -13916967.69 -13916967.55 0.0274 0.0094  
 Mercury -42816-08-30 09:06 J -13916879.27 -13916879.12 -13916878.98 0.0274 0.0009  
 Earth -42816-09-22 03:50 J -13916856.57 -13916856.34 -13916856.10 0.0274 0.0086  
 Moon -42816-09-22 07:26 J -13916856.43 -13916856.19 -13916855.95 0.0274 0.0071 \*  
 Mercury -42816-11-26 22:18 J -13916790.70 -13916790.57 -13916790.43 0.0274 0.0101  
 Mercury -42815-02-23 11:30 J -13916702.12 -13916702.02 -13916701.92 0.0274 0.0195  
 Earth -42815-10-04 17:02 J -13916478.84 -13916478.79 -13916478.71 0.0275 0.0265  
 Moon -42815-10-04 16:18 J -13916478.83 -13916478.82 -13916478.78 0.0275 0.0273 \*  
 Venus -42813-01-04 00:14 J -13916022.63 -13916022.49 -13916022.34 0.0276 0.0196  
 Venus -42813-08-20 07:40 J -13915793.39 -13915793.18 -13915792.97 0.0276 0.0029  
 Venus -42812-04-06 14:38 J -13915563.97 -13915563.89 -13915563.81 0.0277 0.0253  
 Mercury -42802-09-19 22:33 J -13911745.62 -13911745.56 -13911745.49 0.0285 0.0256



Mercury -42802-12-17 15:50 J -13911656.97 -13911656.84 -13911656.69 0.0285 0.0139

Mercury -42801-03-15 09:35 J -13911568.26 -13911568.10 -13911567.93 0.0285 0.0020

Earth -42801-03-18 22:18 J -13911564.78 -13911564.57 -13911564.34 0.0285 0.0126

Moon -42801-03-19 00:28 J -13911564.69 -13911564.48 -13911564.25 0.0285 0.0111 \*

Mercury -42801-06-12 03:50 J -13911479.49 -13911479.34 -13911479.19 0.0285 0.0104

Mercury -42801-09-08 22:18 J -13911390.67 -13911390.57 -13911390.47 0.0285 0.0229

Earth -42800-04-01 14:09 J -13911185.96 -13911185.91 -13911185.83 0.0285 0.0274

Venus -42799-06-15 03:06 J -13910746.53 -13910746.37 -13910746.22 0.0284 0.0193

Venus -42798-01-30 19:40 J -13910516.89 -13910516.68 -13910516.47 0.0283 0.0054

Mars -42793-08-29 13:26 J -13908479.22 -13908478.94 -13908478.65 0.0276 0.0113

Mercury -42787-07-24 08:09 J -13906324.25 -13906324.16 -13906324.07 0.0273 0.0214

Moon -42787-09-17 01:11 J -13906269.58 -13906269.45 -13906269.30 0.0273 0.0222

Earth -42787-09-17 05:02 J -13906269.40 -13906269.29 -13906269.16 0.0273 0.0237 \*

Mercury -42787-10-20 22:04 J -13906235.71 -13906235.58 -13906235.44 0.0273 0.0115

Mercury -42786-01-17 11:45 J -13906147.16 -13906147.01 -13906146.86 0.0273 0.0016

Mercury -42786-04-16 01:11 J -13906058.59 -13906058.45 -13906058.31 0.0273 0.0080

Mercury -42786-07-13 14:09 J -13905970.01 -13905969.91 -13905969.79 0.0274 0.0175

Earth -42786-09-29 17:59 J -13905891.97 -13905891.75 -13905891.52 0.0274 0.0114

Moon -42786-09-29 17:59 J -13905891.95 -13905891.75 -13905891.54 0.0274 0.0127 \*

Mercury -42786-10-10 03:06 J -13905881.39 -13905881.37 -13905881.34 0.0274 0.0267

Venus -42784-07-16 06:57 J -13905236.38 -13905236.21 -13905236.04 0.0275 0.0160

Venus -42783-03-02 13:54 J -13905007.12 -13905006.92 -13905006.71 0.0275 0.0063

Mercury -42772-05-05 14:52 J -13900925.00 -13900924.88 -13900924.76 0.0286 0.0184

Mercury -42772-08-02 08:23 J -13900836.31 -13900836.15 -13900836.00 0.0285 0.0065

Mercury -42772-10-30 02:09 J -13900747.57 -13900747.41 -13900747.25 0.0285 0.0057

Mercury -42771-01-26 20:23 J -13900658.77 -13900658.65 -13900658.52 0.0285 0.0181

Moon -42771-03-26 11:30 J -13900600.25 -13900600.02 -13900599.79 0.0285 0.0099

Earth -42771-03-26 14:52 J -13900600.11 -13900599.88 -13900599.65 0.0285 0.0085 \*

Venus -42770-12-26 03:35 J -13899960.51 -13899960.35 -13899960.17 0.0284 0.0168

Venus -42769-08-11 20:09 J -13899730.86 -13899730.66 -13899730.45 0.0283 0.0079

Mercury -42758-12-11 08:38 J -13895592.20 -13895592.14 -13895592.08 0.0274 0.0251

Mercury -42757-03-08 22:33 J -13895503.68 -13895503.56 -13895503.43 0.0274 0.0151

Mercury -42757-06-05 12:28 J -13895415.12 -13895414.98 -13895414.83 0.0274 0.0051

Mercury -42757-09-02 01:54 J -13895326.56 -13895326.42 -13895326.27 0.0274 0.0046

Moon -42757-09-23 09:35 J -13895305.35 -13895305.10 -13895304.84 0.0274 0.0035

Earth -42757-09-23 09:35 J -13895305.34 -13895305.10 -13895304.86 0.0274 0.0049 \*

Mercury -42757-11-29 15:06 J -13895237.99 -13895237.87 -13895237.74 0.0274 0.0142

Mercury -42756-02-26 04:04 J -13895149.39 -13895149.33 -13895149.25 0.0274 0.0235

Venus -42754-01-26 08:52 J -13894450.30 -13894450.13 -13894449.93 0.0275 0.0133

Venus -42754-09-12 16:18 J -13894221.02 -13894220.82 -13894220.62 0.0276 0.0092

Mars -42749-12-07 18:42 J -13892308.00 -13892307.72 -13892307.44 0.0283 0.0037

Mercury -42743-09-22 16:04 J -13890192.93 -13890192.83 -13890192.72 0.0285 0.0212

Mercury -42743-12-20 09:35 J -13890104.25 -13890104.10 -13890103.95 0.0285 0.0094

Mercury -42742-03-19 03:21 J -13890015.52 -13890015.36 -13890015.20 0.0285 0.0028

Earth -42742-03-21 02:23 J -13890013.63 -13890013.40 -13890013.16 0.0285 0.0089

Moon -42742-03-21 05:59 J -13890013.48 -13890013.25 -13890013.00 0.0285 0.0073 \*

Mercury -42742-06-15 21:35 J -13889926.74 -13889926.60 -13889926.46 0.0285 0.0151

Mercury -42742-09-12 16:04 J -13889837.85 -13889837.83 -13889837.78 0.0285 0.0277

Venus -42740-07-07 12:14 J -13889174.17 -13889173.99 -13889173.79 0.0284 0.0128

Venus -42739-02-22 05:02 J -13888944.48 -13888944.29 -13888944.09 0.0283 0.0120

Mars -42735-12-03 15:50 J -13887198.99 -13887198.84 -13887198.66 0.0277 0.0233

Mercury -42728-04-29 11:16 J -13884860.04 -13884860.03 -13884860.02 0.0273 0.0272

Mercury -42728-07-27 01:26 J -13884771.56 -13884771.44 -13884771.33 0.0273 0.0172

Moon -42728-09-18 10:33 J -13884718.23 -13884718.06 -13884717.88 0.0273 0.0185

Earth -42728-09-18 10:33 J -13884718.22 -13884718.06 -13884717.88 0.0273 0.0200 \*

Mercury -42728-10-23 15:06 J -13884683.01 -13884682.87 -13884682.72 0.0273 0.0073

Mercury -42727-01-20 04:47 J -13884594.45 -13884594.30 -13884594.16 0.0273 0.0025

Mercury -42727-04-18 17:59 J -13884505.88 -13884505.75 -13884505.62 0.0273 0.0121

Mercury -42727-07-16 06:57 J -13884417.29 -13884417.21 -13884417.12 0.0274 0.0214

Earth -42727-09-30 23:30 J -13884340.73 -13884340.52 -13884340.32 0.0274 0.0151

Moon -42727-10-01 02:38 J -13884340.57 -13884340.39 -13884340.19 0.0274 0.0165 \*  
 Venus -42725-08-07 15:50 J -13883664.04 -13883663.84 -13883663.64 0.0275 0.0097  
 Venus -42724-03-24 22:33 J -13883434.75 -13883434.56 -13883434.37 0.0275 0.0125  
 Mercury -42713-02-09 14:52 J -13879460.94 -13879460.88 -13879460.80 0.0286 0.0257  
 Moon -42713-03-14 00:42 J -13879427.56 -13879427.47 -13879427.37 0.0286 0.0261  
 Earth -42713-03-14 03:50 J -13879427.39 -13879427.34 -13879427.27 0.0286 0.0277 \*  
 Mercury -42713-05-08 08:23 J -13879372.29 -13879372.15 -13879372.01 0.0286 0.0139  
 Mercury -42713-08-05 02:09 J -13879283.57 -13879283.41 -13879283.25 0.0285 0.0020  
 Mercury -42713-11-01 20:09 J -13879194.81 -13879194.66 -13879194.51 0.0285 0.0103  
 Mercury -42712-01-29 14:38 J -13879105.99 -13879105.89 -13879105.79 0.0285 0.0229  
 Earth -42712-03-27 19:11 J -13879048.92 -13879048.70 -13879048.47 0.0285 0.0123  
 Moon -42712-03-27 19:26 J -13879048.90 -13879048.69 -13879048.48 0.0285 0.0135 \*  
 Venus -42710-01-17 13:11 J -13878388.14 -13878387.95 -13878387.75 0.0284 0.0102  
 Venus -42710-09-04 05:45 J -13878158.44 -13878158.26 -13878158.07 0.0283 0.0145  
 Mars -42704-01-22 14:52 J -13876191.14 -13876190.88 -13876190.61 0.0276 0.0141  
 Mercury -42699-12-14 01:26 J -13874039.53 -13874039.44 -13874039.34 0.0273 0.0210  
 Mercury -42698-03-12 15:21 J -13873950.99 -13873950.86 -13873950.72 0.0273 0.0111  
 Mercury -42698-06-09 05:16 J -13873862.43 -13873862.28 -13873862.14 0.0274 0.0013  
 Mercury -42698-09-05 18:28 J -13873773.86 -13873773.73 -13873773.59 0.0274 0.0085  
 Moon -42698-09-25 09:50 J -13873754.34 -13873754.09 -13873753.84 0.0274 0.0002  
 Earth -42698-09-25 13:26 J -13873754.18 -13873753.94 -13873753.69 0.0274 0.0014 \*  
 Mercury -42698-12-03 07:40 J -13873685.29 -13873685.18 -13873685.07 0.0274 0.0179  
 Mercury -42697-02-29 20:38 J -13873596.65 -13873596.64 -13873596.63 0.0274 0.0272  
 Venus -42695-02-17 16:47 J -13872878.00 -13872877.80 -13872877.59 0.0275 0.0071  
 Venus -42695-10-04 23:30 J -13872648.68 -13872648.52 -13872648.33 0.0276 0.0152  
 Mercury -42684-09-25 09:06 J -13868640.24 -13868640.12 -13868639.99 0.0285 0.0172  
 Mercury -42684-12-23 02:38 J -13868551.54 -13868551.39 -13868551.23 0.0285 0.0053  
 Mercury -42683-03-21 20:38 J -13868462.80 -13868462.64 -13868462.48 0.0285 0.0070  
 Moon -42683-03-22 03:50 J -13868462.59 -13868462.34 -13868462.08 0.0285 0.0042 \*  
 Earth -42683-03-22 04:33 J -13868462.55 -13868462.31 -13868462.07 0.0285 0.0054 \*

Mercury -42683-06-18 15:06 J -13868373.99 -13868373.87 -13868373.75 0.0285 0.0194  
 Venus -42681-07-29 20:23 J -13867601.86 -13867601.65 -13867601.45 0.0284 0.0065  
 Venus -42680-03-16 13:11 J -13867372.11 -13867371.95 -13867371.79 0.0283 0.0182  
 Mercury -42669-05-02 04:18 J -13863307.40 -13863307.32 -13863307.24 0.0273 0.0231  
 Mercury -42669-07-29 18:14 J -13863218.87 -13863218.74 -13863218.61 0.0273 0.0131  
 Earth -42669-09-19 14:52 J -13863167.06 -13863166.88 -13863166.67 0.0273 0.0166  
 Moon -42669-09-19 18:42 J -13863166.92 -13863166.72 -13863166.51 0.0273 0.0149 \*  
 Mercury -42669-10-26 07:54 J -13863130.31 -13863130.17 -13863130.02 0.0273 0.0033  
 Mercury -42668-01-22 21:21 J -13863041.75 -13863041.61 -13863041.46 0.0273 0.0065  
 Mercury -42668-04-21 10:33 J -13862953.17 -13862953.06 -13862952.94 0.0274 0.0159  
 Mercury -42668-07-18 23:30 J -13862864.57 -13862864.52 -13862864.46 0.0274 0.0252  
 Earth -42668-10-02 03:35 J -13862789.52 -13862789.35 -13862789.16 0.0274 0.0187  
 Moon -42668-10-02 05:59 J -13862789.42 -13862789.25 -13862789.08 0.0274 0.0198 \*  
 Venus -42666-01-13 16:47 J -13862320.87 -13862320.80 -13862320.72 0.0274 0.0256  
 Venus -42666-08-30 23:59 J -13862091.71 -13862091.50 -13862091.29 0.0275 0.0035  
 Venus -42665-04-16 06:28 J -13861862.38 -13861862.23 -13861862.07 0.0275 0.0186  
 Mars -42660-05-03 05:30 J -13860019.55 -13860019.27 -13860018.99 0.0282 0.0005  
 Mercury -42654-02-12 08:09 J -13857908.26 -13857908.16 -13857908.06 0.0286 0.0216  
 Earth -42654-03-16 05:45 J -13857876.38 -13857876.26 -13857876.13 0.0286 0.0243  
 Moon -42654-03-16 07:11 J -13857876.33 -13857876.20 -13857876.06 0.0286 0.0231 \*  
 Mercury -42654-05-12 01:26 J -13857819.59 -13857819.44 -13857819.28 0.0285 0.0098  
 Mercury -42654-08-08 19:11 J -13857730.86 -13857730.70 -13857730.53 0.0285 0.0025  
 Mercury -42654-11-05 13:26 J -13857642.08 -13857641.94 -13857641.80 0.0285 0.0147  
 Mercury -42653-02-02 07:54 J -13857553.21 -13857553.17 -13857553.12 0.0285 0.0273  
 Earth -42653-03-28 21:06 J -13857497.82 -13857497.62 -13857497.41 0.0285 0.0158  
 Moon -42653-03-29 00:57 J -13857497.65 -13857497.46 -13857497.26 0.0285 0.0168 \*  
 Venus -42652-06-24 05:02 J -13857045.30 -13857045.29 -13857045.28 0.0284 0.0284  
 Venus -42651-02-08 21:06 J -13856815.83 -13856815.62 -13856815.40 0.0284 0.0039  
 Venus -42651-09-26 13:54 J -13856586.06 -13856585.92 -13856585.77 0.0283 0.0207  
 Mars -42646-04-28 11:45 J -13854911.19 -13854911.01 -13854910.80 0.0277 0.0211

Mercury -42640-09-19 04:04 J -13852575.34 -13852575.33 -13852575.32 0.0273 0.0272

Mercury -42640-12-16 18:14 J -13852486.85 -13852486.74 -13852486.62 0.0273 0.0171

Mercury -42639-03-15 08:09 J -13852398.31 -13852398.16 -13852398.02 0.0273 0.0071

Mercury -42639-06-11 21:35 J -13852309.74 -13852309.60 -13852309.45 0.0273 0.0027

Mercury -42639-09-08 10:47 J -13852221.17 -13852221.05 -13852220.91 0.0274 0.0123

Moon -42639-09-26 14:52 J -13852203.12 -13852202.88 -13852202.64 0.0274 0.0034

Earth -42639-09-26 16:33 J -13852203.05 -13852202.81 -13852202.56 0.0274 0.0021 \*

Mercury -42639-12-05 23:59 J -13852132.58 -13852132.50 -13852132.41 0.0274 0.0216

Venus -42637-07-25 16:47 J -13851534.90 -13851534.80 -13851534.68 0.0275 0.0233

Venus -42636-03-12 00:14 J -13851305.70 -13851305.49 -13851305.28 0.0275 0.0012

Venus -42636-10-27 06:28 J -13851076.35 -13851076.23 -13851076.08 0.0276 0.0210

Mercury -42625-07-01 08:23 J -13847176.22 -13847176.15 -13847176.07 0.0285 0.0251

Mercury -42625-09-28 01:40 J -13847087.57 -13847087.43 -13847087.29 0.0285 0.0134

Mercury -42625-12-25 19:26 J -13846998.85 -13846998.69 -13846998.53 0.0285 0.0013

Moon -42624-03-23 00:57 J -13846911.70 -13846911.46 -13846911.21 0.0285 0.0013

Earth -42624-03-23 04:47 J -13846911.54 -13846911.30 -13846911.05 0.0285 0.0023 \*

Mercury -42624-03-24 13:26 J -13846910.09 -13846909.94 -13846909.79 0.0285 0.0110

Mercury -42624-06-21 07:54 J -13846821.26 -13846821.17 -13846821.07 0.0285 0.0235

Venus -42622-01-04 10:47 J -13846259.14 -13846259.05 -13846258.95 0.0284 0.0249

Venus -42622-08-22 03:21 J -13846029.57 -13846029.36 -13846029.15 0.0284 0.0004

Venus -42621-04-07 20:09 J -13845799.76 -13845799.66 -13845799.54 0.0283 0.0242

Mars -42616-06-18 14:52 J -13843902.10 -13843901.88 -13843901.65 0.0277 0.0188

Mercury -42610-05-05 20:52 J -13841754.73 -13841754.63 -13841754.52 0.0273 0.0192

Mercury -42610-08-02 10:47 J -13841666.19 -13841666.05 -13841665.91 0.0273 0.0093

Earth -42610-09-21 18:14 J -13841615.95 -13841615.74 -13841615.52 0.0273 0.0132

Moon -42610-09-21 20:09 J -13841615.89 -13841615.66 -13841615.43 0.0273 0.0117 \*

Mercury -42610-10-30 00:28 J -13841577.63 -13841577.48 -13841577.33 0.0273 0.0006

Mercury -42609-01-26 13:54 J -13841489.06 -13841488.92 -13841488.78 0.0274 0.0102

Mercury -42609-04-24 02:52 J -13841400.47 -13841400.38 -13841400.27 0.0274 0.0196

Moon -42609-10-03 04:04 J -13841238.47 -13841238.33 -13841238.19 0.0274 0.0228

Earth -42609-10-03 06:28 J -13841238.36 -13841238.23 -13841238.07 0.0274 0.0221 \*  
 Venus -42607-02-05 00:28 J -13840748.62 -13840748.48 -13840748.33 0.0274 0.0195  
 Venus -42607-09-22 07:26 J -13840519.40 -13840519.19 -13840518.98 0.0275 0.0025  
 Venus -42606-05-09 13:40 J -13840290.02 -13840289.93 -13840289.83 0.0275 0.0244  
 Mercury -42595-02-15 00:57 J -13836355.58 -13836355.46 -13836355.34 0.0285 0.0177  
 Earth -42595-03-17 06:42 J -13836325.37 -13836325.22 -13836325.05 0.0285 0.0211  
 Moon -42595-03-17 10:18 J -13836325.23 -13836325.07 -13836324.88 0.0285 0.0200 \*  
 Mercury -42595-05-14 18:28 J -13836266.89 -13836266.73 -13836266.57 0.0285 0.0058  
 Mercury -42595-08-11 12:14 J -13836178.14 -13836177.99 -13836177.83 0.0285 0.0064  
 Mercury -42595-11-08 06:28 J -13836089.35 -13836089.23 -13836089.10 0.0285 0.0189  
 Earth -42594-03-30 22:04 J -13835946.75 -13835946.58 -13835946.39 0.0285 0.0191  
 Moon -42594-03-30 23:45 J -13835946.69 -13835946.51 -13835946.32 0.0285 0.0196 \*  
 Venus -42593-07-16 11:59 J -13835473.12 -13835473.00 -13835472.86 0.0284 0.0223  
 Venus -42592-03-03 04:33 J -13835243.53 -13835243.31 -13835243.10 0.0284 0.0023  
 Venus -42592-10-18 21:06 J -13835013.68 -13835013.62 -13835013.55 0.0283 0.0268  
 Mercury -42581-09-21 20:38 J -13831022.71 -13831022.64 -13831022.56 0.0273 0.0233  
 Mercury -42581-12-19 10:47 J -13830934.18 -13830934.05 -13830933.92 0.0273 0.0133  
 Mercury -42580-03-18 00:28 J -13830845.62 -13830845.48 -13830845.33 0.0273 0.0034  
 Mercury -42580-06-14 13:54 J -13830757.06 -13830756.92 -13830756.77 0.0273 0.0064  
 Mercury -42580-09-11 03:06 J -13830668.48 -13830668.37 -13830668.25 0.0274 0.0159  
 Earth -42580-09-27 18:57 J -13830651.95 -13830651.71 -13830651.47 0.0274 0.0054  
 Moon -42580-09-27 21:50 J -13830651.82 -13830651.59 -13830651.35 0.0274 0.0064 \*  
 Mercury -42580-12-08 16:04 J -13830579.87 -13830579.83 -13830579.77 0.0274 0.0252  
 Venus -42578-08-18 00:14 J -13829962.65 -13829962.49 -13829962.32 0.0275 0.0173  
 Venus -42577-04-03 07:11 J -13829733.40 -13829733.20 -13829732.99 0.0275 0.0048  
 Venus -42577-11-18 13:40 J -13829503.98 -13829503.93 -13829503.88 0.0276 0.0267  
 Mars -42572-09-26 07:11 J -13827731.48 -13827731.20 -13827730.92 0.0282 0.0015  
 Mercury -42566-07-05 00:42 J -13825623.57 -13825623.47 -13825623.36 0.0285 0.0215  
 Mercury -42566-10-01 18:14 J -13825534.89 -13825534.74 -13825534.59 0.0285 0.0097  
 Mercury -42566-12-29 11:59 J -13825446.16 -13825446.00 -13825445.84 0.0285 0.0025

Moon -42565-03-24 03:06 J -13825360.61 -13825360.37 -13825360.13 0.0285 0.0015  
 Earth -42565-03-24 03:50 J -13825360.58 -13825360.34 -13825360.09 0.0285 0.0009 \*  
 Mercury -42565-03-27 06:14 J -13825357.38 -13825357.24 -13825357.10 0.0285 0.0148  
 Mercury -42565-06-24 00:42 J -13825268.51 -13825268.47 -13825268.43 0.0285 0.0274  
 Venus -42563-01-26 16:47 J -13824686.95 -13824686.80 -13824686.64 0.0284 0.0191  
 Venus -42563-09-13 09:35 J -13824457.31 -13824457.10 -13824456.89 0.0284 0.0055  
 Mars -42558-09-22 03:35 J -13822622.58 -13822622.35 -13822622.09 0.0278 0.0170  
 Mercury -42551-02-08 23:16 J -13820290.57 -13820290.53 -13820290.47 0.0274 0.0256  
 Mercury -42551-05-08 13:26 J -13820202.06 -13820201.94 -13820201.81 0.0274 0.0155  
 Mercury -42551-08-05 03:21 J -13820113.51 -13820113.36 -13820113.22 0.0274 0.0055  
 Moon -42551-09-22 18:14 J -13820064.98 -13820064.74 -13820064.50 0.0274 0.0087  
 Earth -42551-09-22 20:52 J -13820064.86 -13820064.63 -13820064.40 0.0274 0.0099 \*  
 Mercury -42551-11-01 16:47 J -13820024.94 -13820024.80 -13820024.65 0.0274 0.0043  
 Mercury -42550-01-29 05:59 J -13819936.37 -13819936.25 -13819936.12 0.0274 0.0139  
 Mercury -42550-04-27 19:11 J -13819847.77 -13819847.70 -13819847.62 0.0274 0.0232  
 Moon -42550-10-05 05:59 J -13819687.32 -13819687.25 -13819687.17 0.0274 0.0259  
 Earth -42550-10-05 09:21 J -13819687.20 -13819687.11 -13819687.02 0.0274 0.0254 \*  
 Venus -42548-02-27 07:54 J -13819176.35 -13819176.17 -13819175.98 0.0275 0.0135  
 Venus -42548-10-14 14:38 J -13818947.09 -13818946.89 -13818946.69 0.0275 0.0084  
 Mercury -42537-11-21 00:28 J -13814891.55 -13814891.48 -13814891.41 0.0285 0.0255  
 Mercury -42536-02-17 17:30 J -13814802.90 -13814802.77 -13814802.62 0.0285 0.0139  
 Earth -42536-03-18 07:26 J -13814774.37 -13814774.19 -13814773.99 0.0285 0.0180  
 Moon -42536-03-18 07:54 J -13814774.37 -13814774.17 -13814773.96 0.0285 0.0172 \*  
 Mercury -42536-05-17 11:16 J -13814714.19 -13814714.03 -13814713.87 0.0285 0.0018  
 Mercury -42536-08-14 05:16 J -13814625.43 -13814625.28 -13814625.13 0.0285 0.0104  
 Mercury -42536-11-10 23:45 J -13814536.61 -13814536.51 -13814536.42 0.0285 0.0229  
 Moon -42535-03-31 19:26 J -13814395.84 -13814395.69 -13814395.53 0.0285 0.0222  
 Earth -42535-03-31 23:02 J -13814395.69 -13814395.54 -13814395.39 0.0285 0.0224 \*  
 Venus -42534-08-08 19:11 J -13813900.88 -13813900.70 -13813900.53 0.0284 0.0162  
 Venus -42533-03-25 11:30 J -13813671.22 -13813671.02 -13813670.82 0.0284 0.0083

Mars -42528-11-11 04:18 J -13811614.51 -13811614.32 -13811614.10 0.0277 0.0206  
 Earth -42522-09-17 07:54 J -13809478.22 -13809478.17 -13809478.12 0.0273 0.0267  
 Moon -42522-09-17 10:04 J -13809478.16 -13809478.08 -13809477.98 0.0273 0.0253 \*  
 Mercury -42522-09-25 13:11 J -13809470.05 -13809469.95 -13809469.84 0.0273 0.0195  
 Mercury -42522-12-23 03:06 J -13809381.51 -13809381.37 -13809381.23 0.0273 0.0096  
 Mercury -42521-03-20 16:47 J -13809292.94 -13809292.80 -13809292.65 0.0273 0.0008  
 Mercury -42521-06-17 06:14 J -13809204.37 -13809204.24 -13809204.10 0.0273 0.0100  
 Mercury -42521-09-13 19:26 J -13809115.79 -13809115.69 -13809115.59 0.0274 0.0194  
 Earth -42521-09-28 21:06 J -13809100.85 -13809100.62 -13809100.38 0.0274 0.0087  
 Moon -42521-09-29 00:14 J -13809100.72 -13809100.49 -13809100.25 0.0274 0.0095 \*  
 Venus -42519-09-09 07:26 J -13808390.38 -13808390.19 -13808389.99 0.0275 0.0114  
 Venus -42518-04-26 14:09 J -13808161.10 -13808160.91 -13808160.71 0.0275 0.0106  
 Mercury -42507-07-07 17:02 J -13804070.91 -13804070.79 -13804070.66 0.0285 0.0179  
 Mercury -42507-10-04 10:33 J -13803982.21 -13803982.06 -13803981.90 0.0285 0.0060  
 Mercury -42506-01-01 04:33 J -13803893.47 -13803893.31 -13803893.15 0.0285 0.0063  
 Earth -42506-03-26 03:06 J -13803809.61 -13803809.37 -13803809.13 0.0285 0.0039  
 Moon -42506-03-26 06:14 J -13803809.47 -13803809.24 -13803809.00 0.0285 0.0042 \*  
 Mercury -42506-03-30 22:47 J -13803804.67 -13803804.55 -13803804.42 0.0285 0.0187  
 Venus -42504-02-17 23:02 J -13803114.72 -13803114.54 -13803114.35 0.0284 0.0132  
 Venus -42504-10-05 15:35 J -13802885.04 -13802884.85 -13802884.65 0.0283 0.0114  
 Mercury -42492-02-11 15:50 J -13798737.93 -13798737.84 -13798737.75 0.0274 0.0218  
 Mercury -42492-05-11 05:45 J -13798649.39 -13798649.26 -13798649.12 0.0274 0.0118  
 Mercury -42492-08-07 19:40 J -13798560.83 -13798560.68 -13798560.53 0.0274 0.0018  
 Moon -42492-09-23 19:54 J -13798513.91 -13798513.67 -13798513.43 0.0274 0.0055  
 Earth -42492-09-23 23:02 J -13798513.77 -13798513.54 -13798513.30 0.0274 0.0067 \*  
 Mercury -42492-11-04 09:06 J -13798472.26 -13798472.12 -13798471.98 0.0274 0.0079  
 Mercury -42491-01-31 22:18 J -13798383.68 -13798383.57 -13798383.45 0.0274 0.0174  
 Mercury -42491-04-30 11:16 J -13798295.05 -13798295.03 -13798295.00 0.0274 0.0267  
 Venus -42489-03-21 15:21 J -13797604.06 -13797603.86 -13797603.65 0.0275 0.0075  
 Venus -42489-11-05 22:04 J -13797374.76 -13797374.58 -13797374.40 0.0275 0.0144



Mars -42483-02-20 00:42 J -13795442.74 -13795442.47 -13795442.19 0.0281 0.0059  
 Mercury -42478-11-24 17:16 J -13793338.88 -13793338.78 -13793338.68 0.0285 0.0216  
 Mercury -42477-02-21 10:33 J -13793250.21 -13793250.06 -13793249.91 0.0285 0.0098  
 Moon -42477-03-19 05:45 J -13793223.48 -13793223.26 -13793223.05 0.0285 0.0143  
 Earth -42477-03-19 08:52 J -13793223.34 -13793223.13 -13793222.92 0.0285 0.0147 \*  
 Mercury -42477-05-20 04:18 J -13793161.48 -13793161.32 -13793161.16 0.0285 0.0023  
 Mercury -42477-08-16 22:18 J -13793072.71 -13793072.57 -13793072.43 0.0285 0.0146  
 Mercury -42477-11-13 16:47 J -13792983.84 -13792983.80 -13792983.75 0.0285 0.0272  
 Moon -42476-04-01 21:21 J -13792844.71 -13792844.61 -13792844.49 0.0285 0.0253  
 Earth -42476-04-01 23:45 J -13792844.60 -13792844.51 -13792844.39 0.0285 0.0257 \*  
 Venus -42475-08-31 02:09 J -13792328.60 -13792328.41 -13792328.21 0.0284 0.0101  
 Venus -42474-04-17 18:42 J -13792098.90 -13792098.72 -13792098.54 0.0284 0.0144  
 Mars -42469-02-14 20:09 J -13790334.90 -13790334.66 -13790334.39 0.0278 0.0153  
 Jupiter -42464-06-23 20:09 J -13788379.10 -13788378.66 -13788378.22 0.0273 0.0048  
 Mercury -42463-07-01 15:35 J -13788005.89 -13788005.85 -13788005.80 0.0273 0.0259  
 Earth -42463-09-18 10:33 J -13787927.18 -13787927.06 -13787926.93 0.0273 0.0235  
 Moon -42463-09-18 13:54 J -13787927.06 -13787926.92 -13787926.77 0.0273 0.0220 \*  
 Mercury -42463-09-28 05:45 J -13787917.38 -13787917.26 -13787917.13 0.0273 0.0157  
 Mercury -42463-12-25 19:40 J -13787828.82 -13787828.68 -13787828.53 0.0273 0.0058  
 Mercury -42462-03-24 09:21 J -13787740.26 -13787740.11 -13787739.97 0.0273 0.0040  
 Mercury -42462-06-20 22:33 J -13787651.68 -13787651.56 -13787651.43 0.0274 0.0136  
 Mercury -42462-09-17 11:45 J -13787563.09 -13787563.01 -13787562.93 0.0274 0.0230  
 Moon -42462-09-30 22:47 J -13787549.77 -13787549.55 -13787549.32 0.0274 0.0124  
 Earth -42462-09-30 23:59 J -13787549.72 -13787549.50 -13787549.28 0.0274 0.0121 \*  
 Venus -42460-02-14 07:54 J -13787047.20 -13787047.17 -13787047.15 0.0274 0.0272  
 Venus -42460-10-01 14:52 J -13786818.08 -13786817.88 -13786817.67 0.0275 0.0054  
 Venus -42459-05-18 21:35 J -13786588.76 -13786588.60 -13786588.43 0.0275 0.0166  
 Mercury -42448-04-12 16:33 J -13782606.87 -13782606.81 -13782606.74 0.0285 0.0257  
 Mercury -42448-07-10 09:50 J -13782518.23 -13782518.09 -13782517.95 0.0285 0.0141  
 Mercury -42448-10-07 03:21 J -13782429.52 -13782429.36 -13782429.20 0.0285 0.0021

Mercury -42447-01-03 21:21 J -13782340.76 -13782340.61 -13782340.46 0.0285 0.0102

Earth -42447-03-27 03:06 J -13782258.60 -13782258.37 -13782258.13 0.0285 0.0071

Moon -42447-03-27 05:30 J -13782258.51 -13782258.27 -13782258.02 0.0285 0.0071 \*

Mercury -42447-04-02 15:35 J -13782251.94 -13782251.85 -13782251.75 0.0285 0.0228

Venus -42445-03-12 05:30 J -13781542.47 -13781542.27 -13781542.06 0.0284 0.0072

Venus -42445-10-27 22:18 J -13781312.73 -13781312.57 -13781312.40 0.0283 0.0173

Mars -42439-04-06 16:18 J -13779325.96 -13779325.82 -13779325.68 0.0278 0.0246

Mercury -42433-02-15 08:23 J -13777185.26 -13777185.15 -13777185.03 0.0274 0.0180

Mercury -42433-05-13 22:18 J -13777096.71 -13777096.57 -13777096.42 0.0274 0.0080

Mercury -42433-08-10 12:14 J -13777008.14 -13777007.99 -13777007.85 0.0274 0.0020

Earth -42433-09-25 01:40 J -13776962.67 -13776962.43 -13776962.18 0.0274 0.0035

Moon -42433-09-25 02:09 J -13776962.64 -13776962.41 -13776962.17 0.0274 0.0025 \*

Mercury -42433-11-07 01:26 J -13776919.57 -13776919.44 -13776919.30 0.0274 0.0116

Mercury -42432-02-03 14:38 J -13776830.98 -13776830.89 -13776830.80 0.0274 0.0210

Venus -42431-08-27 15:50 J -13776260.94 -13776260.84 -13776260.72 0.0275 0.0233

Venus -42430-04-13 23:16 J -13776031.74 -13776031.53 -13776031.32 0.0275 0.0014

Venus -42430-11-29 05:45 J -13775802.40 -13775802.26 -13775802.12 0.0275 0.0204

Mars -42425-05-28 11:30 J -13774160.09 -13774160.02 -13774159.93 0.0280 0.0267

Mercury -42419-11-27 10:33 J -13771786.18 -13771786.06 -13771785.94 0.0285 0.0174

Mercury -42418-02-24 03:50 J -13771697.49 -13771697.34 -13771697.18 0.0285 0.0056

Moon -42418-03-21 09:06 J -13771672.33 -13771672.12 -13771671.90 0.0285 0.0109

Earth -42418-03-21 11:45 J -13771672.24 -13771672.01 -13771671.79 0.0285 0.0113 \*

Mercury -42418-05-23 21:50 J -13771608.75 -13771608.59 -13771608.44 0.0285 0.0066

Mercury -42418-08-20 15:50 J -13771519.96 -13771519.84 -13771519.71 0.0285 0.0190

Venus -42416-02-04 18:14 J -13770985.77 -13770985.74 -13770985.70 0.0284 0.0279

Venus -42416-09-22 10:18 J -13770756.28 -13770756.07 -13770755.86 0.0284 0.0037

Venus -42415-05-10 02:38 J -13770526.53 -13770526.39 -13770526.24 0.0283 0.0206

Mercury -42404-07-04 08:23 J -13766453.24 -13766453.15 -13766453.06 0.0274 0.0220

Moon -42404-09-19 13:11 J -13766376.13 -13766375.95 -13766375.76 0.0274 0.0189

Earth -42404-09-19 13:40 J -13766376.08 -13766375.93 -13766375.76 0.0274 0.0202 \*

Mercury -42404-09-30 22:33 J -13766364.70 -13766364.56 -13766364.43 0.0274 0.0119  
 Mercury -42404-12-28 12:14 J -13766276.14 -13766275.99 -13766275.84 0.0274 0.0020  
 Mercury -42403-03-27 01:40 J -13766187.56 -13766187.43 -13766187.28 0.0274 0.0079  
 Mercury -42403-06-23 15:06 J -13766098.98 -13766098.87 -13766098.76 0.0274 0.0173  
 Mercury -42403-09-20 04:04 J -13766010.36 -13766010.33 -13766010.30 0.0274 0.0267  
 Moon -42403-10-01 23:59 J -13765998.70 -13765998.50 -13765998.30 0.0274 0.0157  
 Earth -42403-10-02 03:21 J -13765998.55 -13765998.36 -13765998.15 0.0274 0.0155 \*  
 Venus -42401-03-08 15:50 J -13765474.97 -13765474.84 -13765474.70 0.0274 0.0211  
 Venus -42401-10-23 23:02 J -13765245.75 -13765245.54 -13765245.33 0.0275 0.0009  
 Venus -42400-06-10 05:30 J -13765016.38 -13765016.27 -13765016.14 0.0275 0.0226  
 Mars -42395-07-16 03:50 J -13763154.60 -13763154.34 -13763154.06 0.0281 0.0080  
 Mercury -42389-04-15 09:35 J -13761054.20 -13761054.10 -13761053.99 0.0285 0.0217  
 Mercury -42389-07-13 02:52 J -13760965.52 -13760965.38 -13760965.22 0.0285 0.0099  
 Mercury -42389-10-09 20:38 J -13760876.80 -13760876.64 -13760876.48 0.0285 0.0022  
 Mercury -42388-01-06 14:38 J -13760788.02 -13760787.89 -13760787.74 0.0285 0.0145  
 Moon -42388-03-28 03:35 J -13760707.58 -13760707.35 -13760707.11 0.0285 0.0101  
 Earth -42388-03-28 05:30 J -13760707.49 -13760707.27 -13760707.04 0.0285 0.0105 \*  
 Mercury -42388-04-05 09:06 J -13760699.16 -13760699.12 -13760699.07 0.0285 0.0271  
 Venus -42387-08-17 21:06 J -13760199.71 -13760199.62 -13760199.52 0.0284 0.0252  
 Venus -42386-04-04 13:26 J -13759970.15 -13759969.94 -13759969.73 0.0284 0.0009  
 Venus -42386-11-20 05:59 J -13759740.36 -13759740.25 -13759740.12 0.0283 0.0234  
 Mars -42381-07-10 06:42 J -13758046.49 -13758046.22 -13758045.93 0.0278 0.0116  
 Mercury -42375-11-21 11:02 J -13755721.11 -13755721.04 -13755720.97 0.0274 0.0243  
 Mercury -42374-02-18 01:11 J -13755632.58 -13755632.45 -13755632.32 0.0274 0.0142  
 Mercury -42374-05-17 15:06 J -13755544.02 -13755543.87 -13755543.73 0.0274 0.0042  
 Mercury -42374-08-14 04:33 J -13755455.45 -13755455.31 -13755455.16 0.0274 0.0057  
 Earth -42374-09-27 05:02 J -13755411.53 -13755411.29 -13755411.04 0.0274 0.0002  
 Moon -42374-09-27 08:38 J -13755411.38 -13755411.14 -13755410.89 0.0274 0.0010 \*  
 Mercury -42374-11-10 17:59 J -13755366.87 -13755366.75 -13755366.63 0.0274 0.0153  
 Mercury -42373-02-07 06:57 J -13755278.26 -13755278.21 -13755278.14 0.0274 0.0248

Venus -42372-09-19 00:28 J -13754688.65 -13754688.48 -13754688.32 0.0275 0.0170  
 Venus -42371-05-06 07:26 J -13754459.39 -13754459.19 -13754458.98 0.0275 0.0049  
 Venus -42371-12-21 14:09 J -13754229.96 -13754229.91 -13754229.85 0.0276 0.0265  
 Mercury -42360-09-02 11:02 J -13750322.11 -13750322.04 -13750321.96 0.0285 0.0246  
 Mercury -42360-11-30 04:04 J -13750233.46 -13750233.33 -13750233.18 0.0285 0.0130  
 Mercury -42359-02-26 21:50 J -13750144.75 -13750144.59 -13750144.43 0.0285 0.0011  
 Earth -42359-03-22 16:18 J -13750121.05 -13750120.82 -13750120.58 0.0285 0.0077  
 Moon -42359-03-22 17:59 J -13750120.97 -13750120.75 -13750120.52 0.0285 0.0076 \*  
 Mercury -42359-05-26 15:35 J -13750056.00 -13750055.85 -13750055.70 0.0285 0.0113  
 Mercury -42359-08-23 09:50 J -13749967.17 -13749967.09 -13749966.99 0.0285 0.0237  
 Venus -42357-02-28 03:35 J -13749413.49 -13749413.35 -13749413.22 0.0284 0.0214  
 Venus -42357-10-14 19:26 J -13749183.90 -13749183.69 -13749183.48 0.0284 0.0028  
 Venus -42356-06-01 11:45 J -13748954.06 -13748954.01 -13748953.94 0.0283 0.0271  
 Mars -42351-08-30 18:57 J -13747037.75 -13747037.71 -13747037.64 0.0277 0.0273  
 Mercury -42345-07-07 01:26 J -13744900.55 -13744900.44 -13744900.32 0.0274 0.0178  
 Moon -42345-09-20 14:52 J -13744825.08 -13744824.88 -13744824.68 0.0274 0.0157  
 Earth -42345-09-20 18:42 J -13744824.91 -13744824.72 -13744824.52 0.0274 0.0168 \*  
 Mercury -42345-10-03 15:21 J -13744812.00 -13744811.86 -13744811.71 0.0274 0.0078  
 Mercury -42345-12-31 05:16 J -13744723.43 -13744723.28 -13744723.14 0.0274 0.0022  
 Mercury -42344-03-29 18:28 J -13744634.86 -13744634.73 -13744634.59 0.0274 0.0118  
 Mercury -42344-06-26 07:40 J -13744546.26 -13744546.18 -13744546.08 0.0274 0.0213  
 Moon -42344-10-03 06:57 J -13744447.37 -13744447.21 -13744447.03 0.0274 0.0192  
 Earth -42344-10-03 08:09 J -13744447.32 -13744447.16 -13744446.97 0.0274 0.0191 \*  
 Venus -42342-04-01 00:57 J -13743902.63 -13743902.46 -13743902.28 0.0275 0.0147  
 Venus -42342-11-16 08:09 J -13743673.36 -13743673.16 -13743672.96 0.0275 0.0071  
 Mars -42337-10-21 18:28 J -13741871.87 -13741871.73 -13741871.60 0.0280 0.0245  
 Moon -42330-03-16 16:33 J -13739534.89 -13739534.81 -13739534.70 0.0285 0.0263  
 Earth -42330-03-16 18:57 J -13739534.78 -13739534.71 -13739534.61 0.0285 0.0265 \*  
 Mercury -42330-04-19 03:21 J -13739501.49 -13739501.36 -13739501.23 0.0285 0.0172  
 Mercury -42330-07-16 20:38 J -13739412.79 -13739412.64 -13739412.48 0.0285 0.0054

Mercury -42330-10-13 14:38 J -13739324.05 -13739323.89 -13739323.74 0.0285 0.0068  
 Mercury -42329-01-10 08:38 J -13739235.26 -13739235.14 -13739235.02 0.0285 0.0192  
 Moon -42329-03-29 06:28 J -13739156.44 -13739156.23 -13739156.01 0.0285 0.0136  
 Earth -42329-03-29 09:50 J -13739156.29 -13739156.09 -13739155.86 0.0285 0.0142 \*  
 Venus -42328-09-09 06:14 J -13738627.39 -13738627.24 -13738627.08 0.0284 0.0186  
 Venus -42327-04-26 22:33 J -13738397.77 -13738397.56 -13738397.35 0.0284 0.0056  
 Mercury -42316-11-24 03:50 J -13734168.44 -13734168.34 -13734168.24 0.0275 0.0203  
 Mercury -42315-02-20 17:59 J -13734079.89 -13734079.75 -13734079.61 0.0275 0.0102  
 Mercury -42315-05-20 07:54 J -13733991.32 -13733991.17 -13733991.02 0.0275 0.0006  
 Mercury -42315-08-16 21:21 J -13733902.75 -13733902.61 -13733902.47 0.0275 0.0096  
 Earth -42315-09-28 09:21 J -13733860.35 -13733860.11 -13733859.86 0.0275 0.0034  
 Moon -42315-09-28 11:02 J -13733860.29 -13733860.04 -13733859.79 0.0275 0.0039 \*  
 Mercury -42315-11-13 10:33 J -13733814.16 -13733814.06 -13733813.95 0.0275 0.0192  
 Venus -42313-10-11 09:06 J -13733116.30 -13733116.12 -13733115.92 0.0275 0.0108  
 Venus -42312-05-28 16:18 J -13732887.00 -13732886.82 -13732886.62 0.0276 0.0112  
 Mars -42307-12-10 15:35 J -13730865.08 -13730864.85 -13730864.60 0.0281 0.0141  
 Mercury -42301-09-05 05:16 J -13728769.39 -13728769.28 -13728769.16 0.0285 0.0198  
 Mercury -42301-12-02 22:33 J -13728680.71 -13728680.56 -13728680.40 0.0285 0.0080  
 Mercury -42300-03-01 16:18 J -13728591.98 -13728591.82 -13728591.66 0.0285 0.0041  
 Earth -42300-03-23 23:45 J -13728569.75 -13728569.51 -13728569.26 0.0285 0.0037  
 Moon -42300-03-24 03:35 J -13728569.59 -13728569.35 -13728569.10 0.0285 0.0039 \*  
 Mercury -42300-05-29 10:18 J -13728503.20 -13728503.07 -13728502.94 0.0285 0.0164  
 Venus -42298-03-22 14:09 J -13727841.09 -13727840.91 -13727840.72 0.0284 0.0145  
 Venus -42298-11-07 06:14 J -13727611.44 -13727611.24 -13727611.04 0.0283 0.0097  
 Mars -42293-12-03 20:09 J -13725757.94 -13725757.66 -13725757.36 0.0278 0.0082  
 Mercury -42286-04-13 04:33 J -13723436.38 -13723436.31 -13723436.24 0.0274 0.0238  
 Mercury -42286-07-10 18:42 J -13723347.85 -13723347.72 -13723347.59 0.0274 0.0136  
 Moon -42286-09-22 23:30 J -13723273.73 -13723273.52 -13723273.30 0.0274 0.0125  
 Earth -42286-09-23 00:28 J -13723273.69 -13723273.48 -13723273.26 0.0274 0.0132 \*  
 Mercury -42286-10-07 08:38 J -13723259.29 -13723259.14 -13723258.99 0.0274 0.0036

Mercury -42285-01-03 22:18 J -13723170.72 -13723170.57 -13723170.43 0.0274 0.0062  
 Mercury -42285-04-01 11:30 J -13723082.13 -13723082.02 -13723081.90 0.0274 0.0159  
 Mercury -42285-06-29 00:42 J -13722993.52 -13722993.47 -13722993.42 0.0274 0.0253  
 Earth -42285-10-04 14:38 J -13722896.03 -13722895.89 -13722895.76 0.0274 0.0227  
 Moon -42285-10-04 17:16 J -13722895.90 -13722895.78 -13722895.64 0.0274 0.0226 \*  
 Venus -42283-04-23 10:47 J -13722330.25 -13722330.05 -13722329.84 0.0275 0.0083  
 Venus -42283-12-08 17:45 J -13722100.93 -13722100.76 -13722100.57 0.0275 0.0136  
 Mercury -42271-01-23 04:18 J -13718037.39 -13718037.32 -13718037.23 0.0285 0.0241  
 Moon -42271-03-17 23:02 J -13717983.67 -13717983.54 -13717983.39 0.0285 0.0229  
 Earth -42271-03-18 02:23 J -13717983.54 -13717983.40 -13717983.24 0.0285 0.0226 \*  
 Mercury -42271-04-21 21:35 J -13717948.74 -13717948.60 -13717948.45 0.0285 0.0124  
 Mercury -42271-07-19 15:06 J -13717860.03 -13717859.87 -13717859.71 0.0285 0.0006  
 Mercury -42271-10-16 08:52 J -13717771.27 -13717771.13 -13717770.97 0.0285 0.0119  
 Mercury -42270-01-13 03:06 J -13717682.44 -13717682.37 -13717682.27 0.0285 0.0244  
 Moon -42270-03-31 16:33 J -13717604.99 -13717604.81 -13717604.62 0.0285 0.0174  
 Earth -42270-03-31 17:02 J -13717604.97 -13717604.79 -13717604.60 0.0285 0.0181 \*  
 Venus -42269-10-01 16:47 J -13717054.99 -13717054.80 -13717054.60 0.0284 0.0118  
 Venus -42268-05-19 09:06 J -13716825.31 -13716825.12 -13716824.93 0.0283 0.0124  
 Mercury -42257-08-30 06:42 J -13712704.25 -13712704.22 -13712704.17 0.0275 0.0264  
 Mercury -42257-11-26 21:06 J -13712615.74 -13712615.62 -13712615.50 0.0275 0.0161  
 Mercury -42256-02-23 11:16 J -13712527.18 -13712527.03 -13712526.89 0.0275 0.0060  
 Mercury -42256-05-23 00:57 J -13712438.61 -13712438.46 -13712438.31 0.0275 0.0040  
 Mercury -42256-08-19 14:23 J -13712350.03 -13712349.90 -13712349.77 0.0275 0.0137  
 Moon -42256-09-29 12:28 J -13712309.22 -13712308.98 -13712308.74 0.0275 0.0071  
 Earth -42256-09-29 15:35 J -13712309.09 -13712308.85 -13712308.61 0.0275 0.0071 \*  
 Mercury -42256-11-16 03:21 J -13712261.43 -13712261.36 -13712261.27 0.0275 0.0233  
 Venus -42254-03-19 11:16 J -13711773.09 -13711773.03 -13711772.95 0.0275 0.0259  
 Venus -42254-11-03 19:11 J -13711543.91 -13711543.70 -13711543.49 0.0276 0.0042  
 Venus -42253-06-20 02:23 J -13711314.56 -13711314.40 -13711314.23 0.0276 0.0176  
 Mars -42248-03-18 11:45 J -13709582.23 -13709582.01 -13709581.79 0.0280 0.0179

Mercury -42242-06-12 06:57 J -13707305.26 -13707305.21 -13707305.14 0.0284 0.0262

Mercury -42242-09-09 00:14 J -13707216.63 -13707216.49 -13707216.36 0.0284 0.0146

Mercury -42242-12-06 17:30 J -13707127.93 -13707127.77 -13707127.61 0.0284 0.0027

Mercury -42241-03-04 11:16 J -13707039.18 -13707039.03 -13707038.87 0.0284 0.0095

Earth -42241-03-25 09:35 J -13707018.35 -13707018.10 -13707017.85 0.0284 0.0006

Moon -42241-03-25 09:35 J -13707018.35 -13707018.10 -13707017.84 0.0284 0.0002 \*

Mercury -42241-06-01 05:30 J -13706950.37 -13706950.27 -13706950.16 0.0284 0.0219

Venus -42239-04-14 02:23 J -13706268.60 -13706268.40 -13706268.19 0.0284 0.0073

Venus -42239-11-29 18:28 J -13706038.90 -13706038.73 -13706038.55 0.0283 0.0168

Mercury -42227-04-15 22:04 J -13701883.68 -13701883.58 -13701883.47 0.0274 0.0193

Mercury -42227-07-13 12:14 J -13701795.13 -13701794.99 -13701794.85 0.0274 0.0091

Earth -42227-09-24 07:54 J -13701722.40 -13701722.17 -13701721.93 0.0274 0.0094

Moon -42227-09-24 11:02 J -13701722.26 -13701722.04 -13701721.81 0.0274 0.0090 \*

Mercury -42227-10-10 02:09 J -13701706.56 -13701706.41 -13701706.27 0.0274 0.0011

Mercury -42226-01-06 15:35 J -13701617.99 -13701617.85 -13701617.71 0.0274 0.0106

Mercury -42226-04-05 04:47 J -13701529.39 -13701529.30 -13701529.20 0.0274 0.0201

Earth -42226-10-06 21:50 J -13701344.64 -13701344.59 -13701344.53 0.0274 0.0267

Moon -42226-10-07 00:57 J -13701344.53 -13701344.46 -13701344.38 0.0274 0.0261 \*

Venus -42225-09-28 13:40 J -13700987.03 -13700986.93 -13700986.81 0.0275 0.0233

Venus -42224-05-15 21:21 J -13700757.82 -13700757.61 -13700757.40 0.0275 0.0016

Venus -42224-12-31 04:18 J -13700528.45 -13700528.32 -13700528.17 0.0275 0.0201

Mars -42218-05-06 06:57 J -13698576.42 -13698576.21 -13698575.98 0.0281 0.0173

Mercury -42212-01-25 23:30 J -13696484.64 -13696484.52 -13696484.41 0.0285 0.0188

Earth -42212-03-19 12:42 J -13696432.15 -13696431.97 -13696431.78 0.0285 0.0183

Moon -42212-03-19 13:11 J -13696432.12 -13696431.95 -13696431.76 0.0285 0.0188 \*

Mercury -42212-04-24 16:33 J -13696395.96 -13696395.81 -13696395.65 0.0285 0.0071

Mercury -42212-07-22 10:18 J -13696307.23 -13696307.07 -13696306.91 0.0285 0.0050

Mercury -42212-10-19 04:18 J -13696218.45 -13696218.32 -13696218.19 0.0285 0.0174

Earth -42211-04-02 02:52 J -13696053.52 -13696053.38 -13696053.22 0.0285 0.0224

Moon -42211-04-02 06:28 J -13696053.38 -13696053.23 -13696053.06 0.0285 0.0214 \*

Venus -42210-10-25 05:02 J -13695482.50 -13695482.29 -13695482.08 0.0284 0.0046  
 Venus -42209-06-10 21:21 J -13695252.76 -13695252.61 -13695252.45 0.0283 0.0195  
 Mars -42204-04-29 16:18 J -13693469.12 -13693468.82 -13693468.51 0.0278 0.0037  
 Mercury -42198-09-03 00:14 J -13691151.57 -13691151.49 -13691151.39 0.0275 0.0219  
 Moon -42198-09-19 03:50 J -13691135.44 -13691135.34 -13691135.22 0.0275 0.0246  
 Earth -42198-09-19 06:28 J -13691135.30 -13691135.23 -13691135.12 0.0275 0.0255 \*  
 Mercury -42198-11-30 14:38 J -13691063.03 -13691062.89 -13691062.76 0.0275 0.0116  
 Mercury -42197-02-27 04:33 J -13690974.46 -13690974.31 -13690974.16 0.0275 0.0016  
 Mercury -42197-05-25 18:14 J -13690885.88 -13690885.74 -13690885.60 0.0275 0.0083  
 Mercury -42197-08-22 07:26 J -13690797.30 -13690797.19 -13690797.08 0.0275 0.0180  
 Moon -42197-09-30 19:26 J -13690757.90 -13690757.69 -13690757.46 0.0275 0.0107  
 Earth -42197-09-30 22:18 J -13690757.79 -13690757.57 -13690757.34 0.0275 0.0109 \*  
 Mercury -42197-11-18 20:38 J -13690708.65 -13690708.64 -13690708.63 0.0275 0.0274  
 Venus -42195-04-10 21:35 J -13690200.74 -13690200.60 -13690200.44 0.0275 0.0194  
 Venus -42195-11-26 05:45 J -13689971.47 -13689971.26 -13689971.05 0.0276 0.0025  
 Venus -42194-07-13 12:42 J -13689742.06 -13689741.97 -13689741.86 0.0276 0.0242  
 Mercury -42183-06-15 02:09 J -13685752.51 -13685752.41 -13685752.30 0.0284 0.0208  
 Mercury -42183-09-11 19:26 J -13685663.84 -13685663.69 -13685663.54 0.0284 0.0090  
 Mercury -42183-12-09 12:57 J -13685575.12 -13685574.96 -13685574.80 0.0284 0.0030  
 Mercury -42182-03-08 06:57 J -13685486.35 -13685486.21 -13685486.07 0.0284 0.0153  
 Moon -42182-03-27 17:30 J -13685467.01 -13685466.77 -13685466.52 0.0284 0.0042  
 Earth -42182-03-27 21:06 J -13685466.86 -13685466.62 -13685466.37 0.0284 0.0052 \*  
 Mercury -42182-06-05 01:11 J -13685397.48 -13685397.45 -13685397.41 0.0284 0.0278  
 Venus -42181-09-19 00:14 J -13684925.60 -13684925.49 -13684925.37 0.0284 0.0238  
 Venus -42180-05-06 15:50 J -13684696.05 -13684695.84 -13684695.62 0.0284 0.0006  
 Venus -42180-12-22 07:54 J -13684466.27 -13684466.17 -13684466.05 0.0283 0.0240  
 Mercury -42168-01-20 01:54 J -13680419.48 -13680419.42 -13680419.36 0.0274 0.0248  
 Mercury -42168-04-18 16:04 J -13680330.95 -13680330.83 -13680330.70 0.0274 0.0145  
 Mercury -42168-07-16 05:59 J -13680242.39 -13680242.25 -13680242.10 0.0274 0.0045  
 Earth -42168-09-25 17:16 J -13680171.02 -13680170.78 -13680170.54 0.0274 0.0053



Moon -42168-09-25 20:09 J -13680170.91 -13680170.66 -13680170.41 0.0274 0.0049 \*  
 Mercury -42168-10-12 19:40 J -13680153.82 -13680153.68 -13680153.53 0.0274 0.0055  
 Mercury -42167-01-09 09:06 J -13680065.24 -13680065.12 -13680064.99 0.0274 0.0151  
 Mercury -42167-04-07 22:18 J -13679976.63 -13679976.57 -13679976.50 0.0274 0.0246  
 Venus -42166-10-22 01:11 J -13679414.61 -13679414.45 -13679414.27 0.0275 0.0165  
 Venus -42165-06-07 08:52 J -13679185.33 -13679185.13 -13679184.92 0.0275 0.0052  
 Venus -42164-01-22 15:50 J -13678955.88 -13678955.84 -13678955.79 0.0276 0.0267  
 Mars -42160-08-12 06:57 J -13677293.45 -13677293.21 -13677292.97 0.0280 0.0144  
 Mercury -42154-11-02 01:40 J -13675020.50 -13675020.43 -13675020.36 0.0285 0.0249  
 Mercury -42153-01-29 18:28 J -13674931.86 -13674931.73 -13674931.58 0.0285 0.0134  
 Earth -42153-03-21 00:14 J -13674880.70 -13674880.49 -13674880.27 0.0285 0.0138  
 Moon -42153-03-21 03:50 J -13674880.54 -13674880.34 -13674880.13 0.0285 0.0144 \*  
 Mercury -42153-04-27 11:59 J -13674843.16 -13674843.00 -13674842.84 0.0285 0.0015  
 Mercury -42153-07-25 05:45 J -13674754.41 -13674754.26 -13674754.10 0.0285 0.0108  
 Mercury -42153-10-21 23:59 J -13674665.59 -13674665.50 -13674665.40 0.0285 0.0232  
 Earth -42152-04-03 14:23 J -13674501.97 -13674501.90 -13674501.82 0.0284 0.0270  
 Moon -42152-04-03 16:33 J -13674501.90 -13674501.81 -13674501.69 0.0284 0.0257 \*  
 Venus -42151-04-01 02:38 J -13674139.53 -13674139.39 -13674139.25 0.0284 0.0211  
 Venus -42151-11-16 18:28 J -13673909.94 -13673909.73 -13673909.52 0.0284 0.0028  
 Venus -42150-07-04 10:33 J -13673680.11 -13673680.06 -13673679.98 0.0283 0.0267  
 Mercury -42139-09-05 18:14 J -13669598.86 -13669598.74 -13669598.63 0.0275 0.0172  
 Moon -42139-09-20 11:30 J -13669584.17 -13669584.02 -13669583.85 0.0275 0.0207  
 Earth -42139-09-20 14:38 J -13669584.03 -13669583.89 -13669583.73 0.0275 0.0216 \*  
 Mercury -42139-12-03 08:09 J -13669510.30 -13669510.16 -13669510.01 0.0275 0.0071  
 Mercury -42138-03-01 22:04 J -13669421.73 -13669421.58 -13669421.43 0.0275 0.0029  
 Mercury -42138-05-29 11:30 J -13669333.15 -13669333.02 -13669332.89 0.0275 0.0127  
 Mercury -42138-08-26 00:42 J -13669244.55 -13669244.47 -13669244.38 0.0275 0.0223  
 Earth -42138-10-03 06:14 J -13669206.44 -13669206.24 -13669206.03 0.0275 0.0149  
 Moon -42138-10-03 07:40 J -13669206.38 -13669206.18 -13669205.98 0.0275 0.0145 \*  
 Venus -42136-05-03 08:38 J -13668628.32 -13668628.14 -13668627.95 0.0276 0.0126

Venus -42136-12-18 16:33 J -13668399.01 -13668398.81 -13668398.61 0.0276 0.0091  
 Mars -42130-10-01 05:45 J -13666286.39 -13666286.26 -13666286.11 0.0281 0.0242  
 Mercury -42124-03-21 04:47 J -13664288.35 -13664288.30 -13664288.24 0.0284 0.0266  
 Mercury -42124-06-17 21:50 J -13664199.72 -13664199.59 -13664199.46 0.0284 0.0151  
 Mercury -42124-09-14 15:06 J -13664111.03 -13664110.87 -13664110.71 0.0284 0.0032  
 Mercury -42124-12-12 08:52 J -13664022.28 -13664022.13 -13664021.98 0.0284 0.0089  
 Mercury -42123-03-11 02:52 J -13663933.48 -13663933.38 -13663933.27 0.0284 0.0213  
 Moon -42123-03-29 07:40 J -13663915.40 -13663915.18 -13663914.95 0.0284 0.0091  
 Earth -42123-03-29 10:04 J -13663915.31 -13663915.08 -13663914.85 0.0284 0.0099 \*  
 Venus -42122-10-12 14:38 J -13663353.06 -13663352.89 -13663352.72 0.0284 0.0163  
 Venus -42121-05-29 06:14 J -13663123.44 -13663123.24 -13663123.03 0.0283 0.0076  
 Mars -42116-09-24 10:33 J -13661179.37 -13661179.06 -13661178.76 0.0278 0.0022  
 Mercury -42109-01-23 19:54 J -13658866.77 -13658866.67 -13658866.56 0.0274 0.0199  
 Mercury -42109-04-21 10:04 J -13658778.22 -13658778.08 -13658777.94 0.0274 0.0097  
 Mercury -42109-07-18 23:59 J -13658689.65 -13658689.50 -13658689.35 0.0274 0.0003  
 Moon -42109-09-27 02:09 J -13658619.67 -13658619.41 -13658619.15 0.0274 0.0010  
 Earth -42109-09-27 03:06 J -13658619.62 -13658619.37 -13658619.13 0.0274 0.0012 \*  
 Mercury -42109-10-15 13:40 J -13658601.07 -13658600.93 -13658600.80 0.0274 0.0101  
 Mercury -42108-01-12 02:52 J -13658512.48 -13658512.38 -13658512.28 0.0274 0.0197  
 Venus -42107-11-13 13:11 J -13657842.15 -13657841.95 -13657841.75 0.0275 0.0096  
 Venus -42106-06-30 20:38 J -13657612.83 -13657612.64 -13657612.45 0.0275 0.0120  
 Mercury -42095-11-04 21:06 J -13653467.73 -13653467.62 -13653467.50 0.0285 0.0193  
 Mercury -42094-02-01 14:23 J -13653379.06 -13653378.90 -13653378.75 0.0285 0.0076  
 Earth -42094-03-23 13:11 J -13653329.18 -13653328.95 -13653328.72 0.0285 0.0091  
 Moon -42094-03-23 15:21 J -13653329.09 -13653328.86 -13653328.62 0.0285 0.0095 \*  
 Mercury -42094-05-01 07:54 J -13653290.33 -13653290.17 -13653290.01 0.0285 0.0045  
 Mercury -42094-07-29 01:40 J -13653201.56 -13653201.43 -13653201.29 0.0285 0.0168  
 Venus -42092-04-23 16:33 J -13652566.99 -13652566.81 -13652566.62 0.0284 0.0137  
 Venus -42092-12-09 08:23 J -13652337.34 -13652337.15 -13652336.95 0.0283 0.0103  
 Mercury -42080-06-11 21:35 J -13648134.67 -13648134.60 -13648134.51 0.0275 0.0228

Mercury -42080-09-08 11:59 J -13648046.13 -13648046.00 -13648045.86 0.0275 0.0125

Earth -42080-09-21 23:30 J -13648032.69 -13648032.52 -13648032.32 0.0275 0.0175

Moon -42080-09-22 00:14 J -13648032.67 -13648032.49 -13648032.30 0.0275 0.0168 \*

Mercury -42080-12-06 01:54 J -13647957.56 -13647957.42 -13647957.27 0.0275 0.0025

Mercury -42079-03-04 15:35 J -13647868.99 -13647868.85 -13647868.70 0.0275 0.0076

Mercury -42079-06-01 05:02 J -13647780.40 -13647780.29 -13647780.17 0.0275 0.0172

Mercury -42079-08-28 18:14 J -13647691.77 -13647691.74 -13647691.70 0.0275 0.0267

Earth -42079-10-04 15:06 J -13647655.04 -13647654.87 -13647654.69 0.0275 0.0190

Moon -42079-10-04 18:28 J -13647654.90 -13647654.73 -13647654.54 0.0275 0.0186 \*

Venus -42078-10-09 11:45 J -13647285.01 -13647285.01 -13647285.00 0.0275 0.0275

Venus -42077-05-25 19:54 J -13647055.87 -13647055.67 -13647055.46 0.0276 0.0059

Venus -42076-01-10 03:35 J -13646826.52 -13646826.35 -13646826.17 0.0276 0.0158

Mars -42071-01-07 03:35 J -13645003.62 -13645003.35 -13645003.07 0.0281 0.0079

Moon -42065-03-17 06:28 J -13642742.32 -13642742.23 -13642742.13 0.0284 0.0261

Earth -42065-03-17 09:06 J -13642742.22 -13642742.12 -13642742.02 0.0284 0.0260 \*

Mercury -42065-03-24 00:14 J -13642735.59 -13642735.49 -13642735.39 0.0284 0.0211

Mercury -42065-06-20 17:16 J -13642646.93 -13642646.78 -13642646.63 0.0284 0.0094

Mercury -42065-09-17 10:47 J -13642558.21 -13642558.05 -13642557.89 0.0284 0.0026

Mercury -42065-12-15 04:33 J -13642469.44 -13642469.31 -13642469.16 0.0284 0.0149

Mercury -42064-03-13 23:02 J -13642380.58 -13642380.54 -13642380.50 0.0284 0.0274

Earth -42064-03-30 22:33 J -13642363.77 -13642363.56 -13642363.35 0.0284 0.0148

Moon -42064-03-31 00:14 J -13642363.70 -13642363.49 -13642363.28 0.0284 0.0138 \*

Venus -42063-11-04 04:47 J -13641780.50 -13641780.30 -13641780.10 0.0284 0.0088

Venus -42062-06-21 20:38 J -13641550.81 -13641550.64 -13641550.46 0.0283 0.0151

Mercury -42051-10-29 23:59 J -13637402.56 -13637402.50 -13637402.44 0.0274 0.0252

Mercury -42050-01-26 14:09 J -13637314.03 -13637313.91 -13637313.78 0.0274 0.0149

Mercury -42050-04-25 04:18 J -13637225.47 -13637225.32 -13637225.17 0.0274 0.0048

Mercury -42050-07-22 17:59 J -13637136.89 -13637136.75 -13637136.60 0.0274 0.0051

Moon -42050-09-29 09:35 J -13637068.34 -13637068.10 -13637067.85 0.0274 0.0033

Earth -42050-09-29 13:11 J -13637068.19 -13637067.95 -13637067.70 0.0274 0.0032 \*

Mercury -42050-10-19 07:26 J -13637048.31 -13637048.19 -13637048.07 0.0274 0.0148  
 Mercury -42049-01-15 20:38 J -13636959.70 -13636959.64 -13636959.57 0.0274 0.0243  
 Venus -42048-04-20 17:16 J -13636498.87 -13636498.78 -13636498.68 0.0275 0.0243  
 Venus -42048-12-06 01:11 J -13636269.66 -13636269.45 -13636269.24 0.0275 0.0028  
 Venus -42047-07-23 08:23 J -13636040.30 -13636040.15 -13636039.99 0.0275 0.0187  
 Mars -42041-02-25 02:52 J -13633997.39 -13633997.38 -13633997.36 0.0281 0.0281  
 Mercury -42036-08-10 23:30 J -13632003.58 -13632003.52 -13632003.44 0.0285 0.0252  
 Mercury -42036-11-07 16:33 J -13631914.95 -13631914.81 -13631914.67 0.0285 0.0137  
 Mercury -42035-02-04 09:50 J -13631826.25 -13631826.09 -13631825.93 0.0285 0.0019  
 Moon -42035-03-24 23:59 J -13631777.75 -13631777.50 -13631777.25 0.0285 0.0051  
 Earth -42035-03-25 01:54 J -13631777.66 -13631777.42 -13631777.18 0.0285 0.0043 \*  
 Mercury -42035-05-04 03:35 J -13631737.50 -13631737.35 -13631737.20 0.0285 0.0104  
 Mercury -42035-07-31 21:35 J -13631648.69 -13631648.60 -13631648.50 0.0285 0.0229  
 Venus -42033-05-16 06:57 J -13630994.42 -13630994.21 -13630994.01 0.0284 0.0062  
 Venus -42033-12-31 22:47 J -13630764.71 -13630764.55 -13630764.38 0.0283 0.0177  
 Mars -42027-02-18 11:30 J -13628890.31 -13628890.02 -13628889.72 0.0278 0.0071  
 Mercury -42021-06-14 15:50 J -13626581.96 -13626581.84 -13626581.73 0.0275 0.0179  
 Mercury -42021-09-11 05:45 J -13626493.40 -13626493.26 -13626493.11 0.0275 0.0078  
 Earth -42021-09-23 08:38 J -13626481.35 -13626481.14 -13626480.92 0.0275 0.0133  
 Moon -42021-09-23 12:14 J -13626481.19 -13626480.99 -13626480.76 0.0275 0.0128 \*  
 Mercury -42021-12-08 19:40 J -13626404.82 -13626404.68 -13626404.53 0.0275 0.0023  
 Mercury -42020-03-07 09:21 J -13626316.24 -13626316.11 -13626315.98 0.0275 0.0121  
 Mercury -42020-06-03 22:33 J -13626227.64 -13626227.56 -13626227.47 0.0275 0.0217  
 Earth -42020-10-05 23:45 J -13626103.64 -13626103.51 -13626103.38 0.0275 0.0231  
 Moon -42020-10-06 00:57 J -13626103.59 -13626103.46 -13626103.31 0.0275 0.0226 \*  
 Venus -42019-10-31 23:02 J -13625712.68 -13625712.54 -13625712.41 0.0275 0.0209  
 Venus -42018-06-18 06:57 J -13625483.42 -13625483.21 -13625483.00 0.0276 0.0008  
 Venus -42017-02-02 14:23 J -13625254.02 -13625253.90 -13625253.77 0.0276 0.0223  
 Mercury -42007-12-29 02:38 J -13621271.44 -13621271.39 -13621271.35 0.0284 0.0271  
 Earth -42006-03-19 20:38 J -13621190.79 -13621190.64 -13621190.47 0.0284 0.0214

Moon -42006-03-19 22:33 J -13621190.70 -13621190.56 -13621190.40 0.0284 0.0217 \*  
 Mercury -42006-03-27 19:26 J -13621182.82 -13621182.69 -13621182.56 0.0284 0.0155  
 Mercury -42006-06-24 12:42 J -13621094.13 -13621093.97 -13621093.81 0.0284 0.0037  
 Mercury -42006-09-21 06:28 J -13621005.39 -13621005.23 -13621005.08 0.0284 0.0084  
 Mercury -42006-12-19 00:28 J -13620916.59 -13620916.48 -13620916.37 0.0284 0.0208  
 Earth -42005-04-01 10:18 J -13620812.24 -13620812.07 -13620811.88 0.0284 0.0195  
 Moon -42005-04-01 14:09 J -13620812.09 -13620811.91 -13620811.72 0.0284 0.0185 \*  
 Venus -42004-04-11 03:06 J -13620437.46 -13620437.37 -13620437.27 0.0284 0.0251  
 Venus -42004-11-26 18:42 J -13620207.93 -13620207.72 -13620207.51 0.0284 0.0014  
 Venus -42003-07-14 10:47 J -13619978.17 -13619978.05 -13619977.92 0.0283 0.0224

# 42ND MILLENNIUM BCE

This is a list of transits visible from Saturn in the 42nd millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-41992-11-01 18:14 J	-13615849.84	-13615849.74	-13615849.64	0.0274	0.0201		
Mercury	-41991-01-29 08:23 J	-13615761.29	-13615761.15	-13615761.01	0.0274	0.0100		
Mercury	-41991-04-27 22:18 J	-13615672.72	-13615672.57	-13615672.42	0.0274	0.0001		
Mercury	-41991-07-25 11:45 J	-13615584.14	-13615584.01	-13615583.87	0.0274	0.0099		
Moon	-41991-09-30 21:35 J	-13615516.83	-13615516.60	-13615516.37	0.0274	0.0074		
Earth	-41991-09-30 23:16 J	-13615516.76	-13615516.53	-13615516.29	0.0274	0.0075	*	
Mercury	-41991-10-22 01:11 J	-13615495.55	-13615495.45	-13615495.35	0.0274	0.0195		
Venus	-41989-05-13 05:16 J	-13614926.44	-13614926.28	-13614926.11	0.0275	0.0175		

Venus -41989-12-28 12:57 J -13614697.17 -13614696.96 -13614696.75 0.0275 0.0040  
 Venus -41988-08-14 19:54 J -13614467.74 -13614467.67 -13614467.58 0.0275 0.0254  
 Mars -41983-06-03 00:42 J -13612714.74 -13612714.47 -13612714.18 0.0280 0.0040  
 Mercury -41977-08-13 18:42 J -13610450.83 -13610450.72 -13610450.61 0.0285 0.0198  
 Mercury -41977-11-10 11:45 J -13610362.16 -13610362.01 -13610361.85 0.0285 0.0081  
 Mercury -41976-02-07 05:16 J -13610273.44 -13610273.28 -13610273.12 0.0285 0.0040  
 Moon -41976-03-26 09:35 J -13610226.34 -13610226.10 -13610225.85 0.0285 0.0007  
 Earth -41976-03-26 13:26 J -13610226.19 -13610225.94 -13610225.70 0.0285 0.0004 \*  
 Mercury -41976-05-06 23:02 J -13610184.66 -13610184.54 -13610184.40 0.0285 0.0163  
 Venus -41975-10-22 04:47 J -13609651.42 -13609651.30 -13609651.17 0.0284 0.0225  
 Venus -41974-06-08 20:23 J -13609421.86 -13609421.65 -13609421.44 0.0284 0.0012  
 Venus -41973-01-24 12:28 J -13609192.07 -13609191.98 -13609191.87 0.0283 0.0249  
 Mars -41969-05-25 07:40 J -13607609.23 -13607609.18 -13607609.10 0.0279 0.0272  
 Mercury -41962-03-21 19:11 J -13605117.77 -13605117.70 -13605117.62 0.0275 0.0234  
 Mercury -41962-06-18 09:35 J -13605029.23 -13605029.10 -13605028.97 0.0275 0.0132  
 Mercury -41962-09-14 23:30 J -13604940.66 -13604940.52 -13604940.37 0.0275 0.0032  
 Earth -41962-09-25 17:16 J -13604930.00 -13604929.78 -13604929.54 0.0275 0.0092  
 Moon -41962-09-25 18:42 J -13604929.95 -13604929.72 -13604929.47 0.0275 0.0090 \*  
 Mercury -41962-12-12 13:26 J -13604852.09 -13604851.94 -13604851.80 0.0275 0.0069  
 Mercury -41961-03-10 02:52 J -13604763.50 -13604763.38 -13604763.27 0.0275 0.0166  
 Mercury -41961-06-06 15:50 J -13604674.87 -13604674.84 -13604674.79 0.0275 0.0261  
 Moon -41961-10-07 05:16 J -13604552.34 -13604552.28 -13604552.21 0.0275 0.0263  
 Earth -41961-10-07 07:54 J -13604552.18 -13604552.17 -13604552.13 0.0275 0.0273  
 Venus -41960-11-23 09:35 J -13604140.27 -13604140.10 -13604139.91 0.0275 0.0144  
 Venus -41959-07-10 17:45 J -13603910.97 -13603910.76 -13603910.56 0.0276 0.0073  
 Mercury -41948-12-31 21:06 J -13599718.71 -13599718.62 -13599718.51 0.0284 0.0219  
 Earth -41947-03-21 06:28 J -13599639.42 -13599639.23 -13599639.03 0.0284 0.0169  
 Moon -41947-03-21 10:18 J -13599639.26 -13599639.07 -13599638.87 0.0284 0.0175 \*  
 Mercury -41947-03-30 14:23 J -13599630.05 -13599629.90 -13599629.75 0.0284 0.0103  
 Mercury -41947-06-27 07:40 J -13599541.34 -13599541.18 -13599541.02 0.0284 0.0018

Mercury -41947-09-24 01:26 J -13599452.57 -13599452.44 -13599452.29 0.0284 0.0140  
 Mercury -41947-12-21 19:54 J -13599363.73 -13599363.67 -13599363.62 0.0284 0.0265  
 Earth -41946-04-03 20:38 J -13599260.76 -13599260.64 -13599260.50 0.0284 0.0241  
 Moon -41946-04-03 21:35 J -13599260.74 -13599260.60 -13599260.44 0.0284 0.0229 \*  
 Venus -41945-05-03 15:50 J -13598865.00 -13598864.84 -13598864.67 0.0284 0.0181  
 Venus -41945-12-19 07:40 J -13598635.39 -13598635.18 -13598634.97 0.0284 0.0057  
 Mars -41939-07-16 12:57 J -13596600.21 -13596599.96 -13596599.68 0.0278 0.0138  
 Mercury -41933-08-07 21:50 J -13594385.64 -13594385.59 -13594385.53 0.0274 0.0256  
 Moon -41933-09-19 16:33 J -13594342.91 -13594342.81 -13594342.69 0.0274 0.0242  
 Earth -41933-09-19 17:45 J -13594342.85 -13594342.76 -13594342.64 0.0274 0.0247 \*  
 Mercury -41933-11-04 12:14 J -13594297.11 -13594296.99 -13594296.86 0.0274 0.0153  
 Mercury -41932-02-01 02:23 J -13594208.55 -13594208.40 -13594208.26 0.0274 0.0052  
 Mercury -41932-04-30 16:04 J -13594119.98 -13594119.83 -13594119.68 0.0274 0.0048  
 Mercury -41932-07-28 05:30 J -13594031.39 -13594031.27 -13594031.14 0.0274 0.0145  
 Earth -41932-10-02 08:23 J -13593965.37 -13593965.15 -13593964.92 0.0274 0.0117  
 Moon -41932-10-02 11:16 J -13593965.25 -13593965.03 -13593964.81 0.0274 0.0113 \*  
 Mercury -41932-10-24 18:42 J -13593942.78 -13593942.72 -13593942.65 0.0274 0.0240  
 Venus -41930-06-05 16:33 J -13593354.00 -13593353.81 -13593353.61 0.0275 0.0109  
 Venus -41929-01-20 23:59 J -13593124.69 -13593124.50 -13593124.30 0.0275 0.0105  
 Mercury -41918-05-20 20:38 J -13588986.70 -13588986.64 -13588986.58 0.0285 0.0261  
 Mercury -41918-08-17 13:26 J -13588898.07 -13588897.94 -13588897.80 0.0285 0.0146  
 Mercury -41918-11-14 06:42 J -13588809.38 -13588809.22 -13588809.06 0.0285 0.0027  
 Mercury -41917-02-11 00:28 J -13588720.63 -13588720.48 -13588720.33 0.0285 0.0094  
 Moon -41917-03-27 22:33 J -13588674.79 -13588674.56 -13588674.32 0.0285 0.0038  
 Earth -41917-03-27 23:02 J -13588674.78 -13588674.54 -13588674.30 0.0285 0.0049 \*  
 Mercury -41917-05-09 18:14 J -13588631.83 -13588631.74 -13588631.63 0.0285 0.0219  
 Venus -41916-11-13 17:16 J -13588078.96 -13588078.78 -13588078.60 0.0284 0.0154  
 Venus -41915-07-01 08:52 J -13587849.33 -13587849.13 -13587848.92 0.0284 0.0082  
 Mercury -41903-03-24 12:57 J -13583565.06 -13583564.96 -13583564.85 0.0274 0.0188  
 Mercury -41903-06-21 03:06 J -13583476.51 -13583476.37 -13583476.22 0.0274 0.0086

Mercury -41903-09-17 17:02 J -13583387.94 -13583387.79 -13583387.64 0.0274 0.0016

Moon -41903-09-26 21:50 J -13583378.83 -13583378.59 -13583378.34 0.0274 0.0054

Earth -41903-09-27 00:57 J -13583378.70 -13583378.46 -13583378.22 0.0274 0.0050 \*

Mercury -41903-12-15 06:42 J -13583299.35 -13583299.22 -13583299.09 0.0275 0.0113

Mercury -41902-03-13 20:09 J -13583210.76 -13583210.66 -13583210.57 0.0275 0.0209

Venus -41901-12-15 19:54 J -13582567.87 -13582567.67 -13582567.47 0.0275 0.0079

Venus -41900-08-02 03:35 J -13582338.53 -13582338.35 -13582338.16 0.0276 0.0136

Mars -41895-10-28 05:16 J -13580425.57 -13580425.28 -13580425.00 0.0281 0.0006

Mercury -41888-01-03 15:21 J -13578165.98 -13578165.86 -13578165.73 0.0285 0.0170

Moon -41888-03-22 14:09 J -13578088.13 -13578087.91 -13578087.68 0.0285 0.0136

Earth -41888-03-22 14:09 J -13578088.12 -13578087.91 -13578087.69 0.0285 0.0127 \*

Mercury -41888-04-02 08:38 J -13578077.29 -13578077.14 -13578076.98 0.0284 0.0052

Mercury -41888-06-30 02:09 J -13577988.56 -13577988.41 -13577988.25 0.0284 0.0070

Mercury -41888-09-26 20:09 J -13577899.77 -13577899.66 -13577899.53 0.0284 0.0193

Moon -41887-04-05 01:11 J -13577709.52 -13577709.45 -13577709.36 0.0284 0.0268

Earth -41887-04-05 04:33 J -13577709.32 -13577709.31 -13577709.29 0.0284 0.0284

Venus -41886-05-27 03:06 J -13577292.56 -13577292.37 -13577292.17 0.0284 0.0113

Venus -41885-01-11 19:11 J -13577062.89 -13577062.70 -13577062.51 0.0284 0.0124

Mars -41881-10-20 03:50 J -13575319.53 -13575319.34 -13575319.14 0.0279 0.0210

Mercury -41874-08-11 15:50 J -13572832.94 -13572832.84 -13572832.74 0.0274 0.0208

Earth -41874-09-22 02:09 J -13572791.56 -13572791.41 -13572791.24 0.0274 0.0206

Moon -41874-09-22 04:47 J -13572791.45 -13572791.30 -13572791.13 0.0274 0.0204 \*

Mercury -41874-11-08 05:59 J -13572744.39 -13572744.25 -13572744.11 0.0274 0.0106

Mercury -41873-02-04 19:54 J -13572655.82 -13572655.67 -13572655.52 0.0274 0.0007

Mercury -41873-05-03 09:35 J -13572567.24 -13572567.10 -13572566.96 0.0274 0.0093

Mercury -41873-07-30 22:47 J -13572478.65 -13572478.55 -13572478.44 0.0274 0.0189

Earth -41873-10-03 16:33 J -13572414.01 -13572413.81 -13572413.61 0.0274 0.0158

Moon -41873-10-03 19:26 J -13572413.89 -13572413.69 -13572413.47 0.0274 0.0151 \*

Venus -41872-11-10 19:11 J -13572010.77 -13572010.70 -13572010.63 0.0274 0.0258

Venus -41871-06-28 03:06 J -13571781.58 -13571781.37 -13571781.16 0.0275 0.0045



Venus -41870-02-12 10:18 J -13571552.24 -13571552.07 -13571551.90 0.0275 0.0168  
 Mercury -41859-05-23 14:38 J -13567433.99 -13567433.89 -13567433.78 0.0285 0.0213  
 Mercury -41859-08-20 07:40 J -13567345.33 -13567345.18 -13567345.03 0.0285 0.0097  
 Mercury -41859-11-17 01:11 J -13567256.61 -13567256.45 -13567256.29 0.0285 0.0024  
 Mercury -41858-02-13 18:57 J -13567167.85 -13567167.71 -13567167.57 0.0285 0.0146  
 Earth -41858-03-30 06:14 J -13567123.47 -13567123.24 -13567123.01 0.0285 0.0091  
 Moon -41858-03-30 09:50 J -13567123.32 -13567123.09 -13567122.85 0.0285 0.0077 \*  
 Mercury -41858-05-13 13:11 J -13567079.00 -13567078.95 -13567078.90 0.0285 0.0271  
 Venus -41857-12-06 04:18 J -13566506.52 -13566506.32 -13566506.12 0.0284 0.0087  
 Venus -41856-07-23 20:09 J -13566276.84 -13566276.66 -13566276.48 0.0284 0.0150  
 Mars -41851-12-09 22:47 J -13564311.78 -13564311.55 -13564311.30 0.0278 0.0173  
 Mercury -41845-12-28 16:04 J -13562100.89 -13562100.83 -13562100.76 0.0274 0.0245  
 Mercury -41844-03-27 06:28 J -13562012.36 -13562012.23 -13562012.10 0.0274 0.0142  
 Mercury -41844-06-23 20:38 J -13561923.79 -13561923.64 -13561923.49 0.0274 0.0042  
 Mercury -41844-09-20 10:18 J -13561835.21 -13561835.07 -13561834.92 0.0274 0.0058  
 Moon -41844-09-28 04:33 J -13561827.55 -13561827.31 -13561827.07 0.0274 0.0016  
 Earth -41844-09-28 07:26 J -13561827.43 -13561827.19 -13561826.94 0.0274 0.0011 \*  
 Mercury -41844-12-17 23:45 J -13561746.63 -13561746.51 -13561746.39 0.0274 0.0155  
 Mercury -41843-03-16 12:57 J -13561658.01 -13561657.96 -13561657.90 0.0274 0.0250  
 Venus -41842-05-23 21:06 J -13561224.73 -13561224.62 -13561224.50 0.0275 0.0231  
 Venus -41841-01-08 05:16 J -13560995.49 -13560995.28 -13560995.07 0.0275 0.0017  
 Venus -41841-08-24 12:42 J -13560766.12 -13560765.97 -13560765.82 0.0276 0.0196  
 Mercury -41830-10-10 16:04 J -13556701.90 -13556701.83 -13556701.74 0.0285 0.0241  
 Mercury -41829-01-07 09:06 J -13556613.26 -13556613.12 -13556612.97 0.0285 0.0125  
 Moon -41829-03-23 15:35 J -13556537.08 -13556536.85 -13556536.62 0.0285 0.0100  
 Earth -41829-03-23 19:11 J -13556536.93 -13556536.70 -13556536.46 0.0285 0.0087 \*  
 Mercury -41829-04-05 02:38 J -13556524.55 -13556524.39 -13556524.23 0.0285 0.0008  
 Mercury -41829-07-02 20:09 J -13556435.80 -13556435.66 -13556435.51 0.0285 0.0117  
 Mercury -41829-09-29 14:23 J -13556346.98 -13556346.90 -13556346.81 0.0285 0.0241  
 Venus -41828-10-31 21:06 J -13555949.62 -13555949.62 -13555949.59 0.0284 0.0284

Venus -41827-06-18 12:57 J -13555720.17 -13555719.96 -13555719.75 0.0284 0.0048

Venus -41826-02-03 05:16 J -13555490.44 -13555490.28 -13555490.12 0.0284 0.0189

Mercury -41815-05-17 18:57 J -13551368.74 -13551368.71 -13551368.68 0.0274 0.0266

Mercury -41815-08-14 09:21 J -13551280.23 -13551280.11 -13551279.99 0.0274 0.0163

Earth -41815-09-23 08:52 J -13551240.33 -13551240.13 -13551239.94 0.0274 0.0167

Moon -41815-09-23 11:45 J -13551240.19 -13551240.01 -13551239.79 0.0274 0.0164 \*

Mercury -41815-11-10 23:16 J -13551191.67 -13551191.53 -13551191.38 0.0274 0.0062

Mercury -41814-02-07 13:11 J -13551103.10 -13551102.95 -13551102.80 0.0274 0.0038

Mercury -41814-05-07 02:38 J -13551014.51 -13551014.39 -13551014.26 0.0274 0.0135

Mercury -41814-08-03 15:50 J -13550925.91 -13550925.84 -13550925.76 0.0274 0.0231

Moon -41814-10-05 21:21 J -13550862.78 -13550862.61 -13550862.42 0.0274 0.0187

Earth -41814-10-05 22:33 J -13550862.72 -13550862.56 -13550862.38 0.0274 0.0198 \*

Venus -41813-12-03 04:47 J -13550438.44 -13550438.30 -13550438.15 0.0274 0.0195

Venus -41812-07-20 12:42 J -13550209.18 -13550208.97 -13550208.76 0.0275 0.0018

Venus -41811-03-06 19:26 J -13549979.80 -13549979.69 -13549979.57 0.0275 0.0229

Mars -41806-03-23 20:09 J -13548136.93 -13548136.66 -13548136.37 0.0280 0.0045

Mercury -41800-02-26 15:35 J -13545969.86 -13545969.85 -13545969.84 0.0285 0.0283

Earth -41800-03-17 21:50 J -13545950.62 -13545950.59 -13545950.53 0.0285 0.0280

Mercury -41800-05-26 08:23 J -13545881.28 -13545881.15 -13545881.02 0.0285 0.0168

Mercury -41800-08-23 01:26 J -13545792.59 -13545792.44 -13545792.28 0.0285 0.0051

Mercury -41800-11-19 18:57 J -13545703.86 -13545703.71 -13545703.55 0.0285 0.0071

Mercury -41799-02-16 12:57 J -13545615.07 -13545614.96 -13545614.84 0.0285 0.0194

Earth -41799-03-31 11:30 J -13545572.24 -13545572.02 -13545571.80 0.0285 0.0131

Moon -41799-03-31 13:26 J -13545572.16 -13545571.94 -13545571.70 0.0285 0.0116 \*

Venus -41798-05-13 22:33 J -13545163.64 -13545163.56 -13545163.47 0.0284 0.0258

Venus -41798-12-29 14:09 J -13544934.12 -13544933.91 -13544933.70 0.0284 0.0023

Venus -41797-08-15 05:59 J -13544704.38 -13544704.25 -13544704.11 0.0284 0.0214

Mars -41792-03-15 07:40 J -13543031.41 -13543031.18 -13543030.95 0.0279 0.0182

Mercury -41785-01-01 09:21 J -13540548.21 -13540548.11 -13540548.01 0.0274 0.0202

Mercury -41785-03-29 23:30 J -13540459.66 -13540459.52 -13540459.38 0.0274 0.0100

Mercury -41785-06-26 13:26 J -13540371.08 -13540370.94 -13540370.79 0.0274 0.0008

Mercury -41785-09-23 03:06 J -13540282.50 -13540282.37 -13540282.23 0.0274 0.0099

Earth -41785-09-29 12:14 J -13540276.23 -13540275.99 -13540275.74 0.0274 0.0028

Moon -41785-09-29 13:26 J -13540276.18 -13540275.94 -13540275.70 0.0274 0.0021 \*

Mercury -41785-12-20 16:33 J -13540193.91 -13540193.81 -13540193.71 0.0274 0.0195

Venus -41783-06-15 05:59 J -13539652.41 -13539652.25 -13539652.08 0.0275 0.0171

Venus -41782-01-30 13:40 J -13539423.14 -13539422.93 -13539422.72 0.0275 0.0043

Venus -41782-09-16 20:38 J -13539193.70 -13539193.64 -13539193.55 0.0276 0.0255

Mercury -41771-10-13 09:06 J -13535149.22 -13535149.12 -13535149.00 0.0285 0.0200

Mercury -41770-01-10 02:23 J -13535060.55 -13535060.40 -13535060.25 0.0285 0.0082

Moon -41770-03-25 19:40 J -13534985.91 -13534985.68 -13534985.44 0.0285 0.0064

Earth -41770-03-25 21:35 J -13534985.84 -13534985.60 -13534985.35 0.0285 0.0051 \*

Mercury -41770-04-08 19:40 J -13534971.83 -13534971.68 -13534971.52 0.0285 0.0039

Mercury -41770-07-06 13:26 J -13534883.06 -13534882.94 -13534882.80 0.0285 0.0162

Venus -41769-11-23 05:30 J -13534377.40 -13534377.27 -13534377.14 0.0284 0.0222

Venus -41768-07-10 21:06 J -13534147.83 -13534147.62 -13534147.41 0.0284 0.0013

Venus -41767-02-25 13:40 J -13533918.03 -13533917.93 -13533917.83 0.0284 0.0249

Mars -41762-05-06 06:28 J -13532022.40 -13532022.23 -13532022.05 0.0279 0.0228

Mercury -41756-05-20 11:59 J -13529816.08 -13529816.00 -13529815.91 0.0274 0.0224

Mercury -41756-08-17 02:23 J -13529727.53 -13529727.40 -13529727.26 0.0274 0.0121

Moon -41756-09-24 13:40 J -13529689.16 -13529688.93 -13529688.71 0.0274 0.0129

Earth -41756-09-24 13:54 J -13529689.13 -13529688.92 -13529688.70 0.0274 0.0130 \*

Mercury -41756-11-13 16:18 J -13529638.96 -13529638.82 -13529638.67 0.0274 0.0021

Mercury -41755-02-10 05:59 J -13529550.39 -13529550.25 -13529550.10 0.0274 0.0079

Mercury -41755-05-09 19:26 J -13529461.80 -13529461.69 -13529461.57 0.0274 0.0176

Mercury -41755-08-06 08:38 J -13529373.16 -13529373.14 -13529373.11 0.0274 0.0270

Moon -41755-10-07 00:14 J -13529311.63 -13529311.49 -13529311.35 0.0274 0.0223

Earth -41755-10-07 03:35 J -13529311.46 -13529311.35 -13529311.21 0.0274 0.0236 \*

Venus -41754-12-26 13:40 J -13528866.11 -13528865.93 -13528865.74 0.0274 0.0135

Venus -41753-08-11 21:21 J -13528636.81 -13528636.61 -13528636.41 0.0275 0.0077

Mercury -41741-03-01 08:38 J -13524417.22 -13524417.14 -13524417.06 0.0285 0.0242  
 Earth -41741-03-19 00:57 J -13524399.58 -13524399.46 -13524399.33 0.0285 0.0244  
 Moon -41741-03-19 02:52 J -13524399.49 -13524399.38 -13524399.26 0.0285 0.0253 \*  
 Mercury -41741-05-29 01:26 J -13524328.58 -13524328.44 -13524328.29 0.0285 0.0126  
 Mercury -41741-08-25 18:42 J -13524239.88 -13524239.72 -13524239.55 0.0285 0.0010  
 Mercury -41741-11-22 12:28 J -13524151.13 -13524150.98 -13524150.83 0.0285 0.0115  
 Mercury -41740-02-19 06:28 J -13524062.31 -13524062.23 -13524062.14 0.0285 0.0240  
 Moon -41740-04-01 12:14 J -13524021.20 -13524020.99 -13524020.78 0.0285 0.0152  
 Earth -41740-04-01 14:23 J -13524021.09 -13524020.90 -13524020.69 0.0285 0.0168 \*  
 Venus -41739-06-05 06:42 J -13523591.36 -13523591.22 -13523591.06 0.0284 0.0196  
 Venus -41738-01-20 22:33 J -13523361.77 -13523361.56 -13523361.35 0.0284 0.0039  
 Venus -41738-09-07 14:38 J -13523131.93 -13523131.89 -13523131.83 0.0284 0.0274  
 Mercury -41727-10-07 11:45 J -13519084.04 -13519084.01 -13519083.97 0.0274 0.0265  
 Mercury -41726-01-04 02:09 J -13518995.53 -13518995.41 -13518995.29 0.0274 0.0162  
 Mercury -41726-04-02 16:18 J -13518906.96 -13518906.82 -13518906.67 0.0274 0.0060  
 Mercury -41726-06-30 06:14 J -13518818.39 -13518818.24 -13518818.09 0.0274 0.0040  
 Mercury -41726-09-26 19:40 J -13518729.80 -13518729.68 -13518729.55 0.0274 0.0138  
 Earth -41726-10-01 15:50 J -13518725.08 -13518724.84 -13518724.60 0.0274 0.0064  
 Moon -41726-10-01 19:26 J -13518724.93 -13518724.69 -13518724.45 0.0274 0.0056 \*  
 Mercury -41726-12-24 08:52 J -13518641.20 -13518641.13 -13518641.05 0.0274 0.0233  
 Venus -41724-07-07 13:40 J -13518080.11 -13518079.93 -13518079.73 0.0275 0.0113  
 Venus -41723-02-21 21:21 J -13517850.80 -13517850.61 -13517850.41 0.0275 0.0100  
 Mars -41718-08-17 02:09 J -13515848.68 -13515848.41 -13515848.13 0.0280 0.0068  
 Mercury -41712-07-19 09:06 J -13513685.15 -13513685.12 -13513685.08 0.0285 0.0276  
 Mercury -41712-10-16 01:54 J -13513596.55 -13513596.42 -13513596.29 0.0285 0.0161  
 Mercury -41711-01-12 19:11 J -13513507.86 -13513507.70 -13513507.54 0.0285 0.0042  
 Earth -41711-03-26 22:33 J -13513434.80 -13513434.56 -13513434.31 0.0285 0.0018  
 Moon -41711-03-27 00:42 J -13513434.70 -13513434.47 -13513434.23 0.0285 0.0031 \*  
 Mercury -41711-04-11 12:42 J -13513419.12 -13513418.97 -13513418.81 0.0285 0.0079  
 Mercury -41711-07-09 06:42 J -13513330.33 -13513330.22 -13513330.11 0.0285 0.0203

Venus -41710-12-16 12:42 J -13512805.14 -13512804.97 -13512804.80 0.0284 0.0164  
 Venus -41709-08-02 04:18 J -13512575.52 -13512575.32 -13512575.11 0.0284 0.0072  
 Mars -41704-08-09 05:59 J -13510742.50 -13510742.25 -13510741.98 0.0279 0.0136  
 Mercury -41697-05-23 04:47 J -13508263.40 -13508263.30 -13508263.18 0.0274 0.0184  
 Mercury -41697-08-19 19:11 J -13508174.84 -13508174.70 -13508174.56 0.0274 0.0081  
 Moon -41697-09-25 13:40 J -13508138.16 -13508137.93 -13508137.70 0.0274 0.0098  
 Earth -41697-09-25 17:30 J -13508138.00 -13508137.77 -13508137.54 0.0274 0.0095 \*  
 Mercury -41697-11-16 09:06 J -13508086.27 -13508086.12 -13508085.97 0.0274 0.0020  
 Mercury -41696-02-12 22:33 J -13507997.69 -13507997.56 -13507997.42 0.0274 0.0118  
 Mercury -41696-05-12 11:59 J -13507909.09 -13507909.00 -13507908.91 0.0274 0.0213  
 Moon -41696-10-08 05:59 J -13507760.31 -13507760.25 -13507760.17 0.0274 0.0261  
 Earth -41696-10-08 07:11 J -13507760.22 -13507760.20 -13507760.16 0.0274 0.0271 \*  
 Venus -41694-01-17 21:35 J -13507293.80 -13507293.60 -13507293.39 0.0274 0.0076  
 Venus -41694-09-04 05:02 J -13507064.47 -13507064.29 -13507064.10 0.0275 0.0135  
 Mercury -41682-03-05 01:26 J -13502864.55 -13502864.44 -13502864.33 0.0285 0.0202  
 Moon -41682-03-20 23:30 J -13502848.66 -13502848.52 -13502848.35 0.0285 0.0224  
 Earth -41682-03-21 02:23 J -13502848.56 -13502848.40 -13502848.24 0.0285 0.0210 \*  
 Mercury -41682-06-01 18:28 J -13502775.88 -13502775.73 -13502775.58 0.0285 0.0085  
 Mercury -41682-08-29 11:45 J -13502687.17 -13502687.01 -13502686.85 0.0285 0.0035  
 Mercury -41682-11-26 05:30 J -13502598.40 -13502598.27 -13502598.13 0.0285 0.0158  
 Mercury -41681-02-22 23:45 J -13502509.52 -13502509.51 -13502509.49 0.0285 0.0283  
 Moon -41681-04-02 12:28 J -13502470.15 -13502469.98 -13502469.79 0.0285 0.0188  
 Earth -41681-04-02 15:50 J -13502470.00 -13502469.84 -13502469.66 0.0285 0.0203 \*  
 Venus -41680-06-27 14:09 J -13502019.09 -13502018.91 -13502018.72 0.0284 0.0137  
 Venus -41679-02-12 05:59 J -13501789.45 -13501789.25 -13501789.05 0.0284 0.0098  
 Mars -41674-09-28 23:02 J -13499734.67 -13499734.54 -13499734.40 0.0278 0.0247  
 Earth -41668-09-20 03:35 J -13497551.38 -13497551.35 -13497551.29 0.0274 0.0269  
 Moon -41668-09-20 07:40 J -13497551.21 -13497551.18 -13497551.13 0.0274 0.0269  
 Mercury -41668-10-10 04:33 J -13497531.39 -13497531.31 -13497531.22 0.0274 0.0225  
 Mercury -41667-01-06 18:57 J -13497442.85 -13497442.71 -13497442.58 0.0274 0.0122

Mercury -41667-04-05 08:52 J -13497354.28 -13497354.13 -13497353.98 0.0274 0.0022

Mercury -41667-07-02 22:47 J -13497265.70 -13497265.55 -13497265.41 0.0274 0.0078

Mercury -41667-09-29 11:59 J -13497177.10 -13497177.00 -13497176.88 0.0274 0.0175

Earth -41667-10-02 18:57 J -13497173.94 -13497173.71 -13497173.48 0.0274 0.0099

Moon -41667-10-02 20:09 J -13497173.90 -13497173.66 -13497173.42 0.0274 0.0090 \*

Mercury -41667-12-27 01:11 J -13497088.46 -13497088.45 -13497088.42 0.0274 0.0270

Venus -41666-12-13 13:26 J -13496736.99 -13496736.94 -13496736.89 0.0274 0.0266

Venus -41665-07-29 21:35 J -13496507.81 -13496507.60 -13496507.39 0.0275 0.0055

Venus -41664-03-16 04:47 J -13496278.47 -13496278.30 -13496278.13 0.0275 0.0156

Mars -41660-11-22 00:14 J -13494566.54 -13494566.49 -13494566.43 0.0279 0.0273

Mercury -41653-07-22 01:26 J -13492132.52 -13492132.44 -13492132.36 0.0285 0.0240

Mercury -41653-10-18 18:14 J -13492043.88 -13492043.74 -13492043.59 0.0285 0.0124

Mercury -41652-01-15 11:30 J -13491955.18 -13491955.02 -13491954.86 0.0285 0.0008

Earth -41652-03-27 22:04 J -13491883.83 -13491883.58 -13491883.34 0.0285 0.0015

Moon -41652-03-28 01:26 J -13491883.69 -13491883.44 -13491883.19 0.0285 0.0004 \*

Mercury -41652-04-14 05:16 J -13491866.43 -13491866.28 -13491866.13 0.0285 0.0118

Mercury -41652-07-11 23:16 J -13491777.61 -13491777.53 -13491777.44 0.0285 0.0243

Venus -41650-01-07 18:57 J -13491232.91 -13491232.71 -13491232.52 0.0284 0.0106

Venus -41650-08-25 10:47 J -13491003.23 -13491003.05 -13491002.86 0.0284 0.0129

Mercury -41638-02-27 07:11 J -13486799.26 -13486799.20 -13486799.14 0.0274 0.0248

Mercury -41638-05-26 21:35 J -13486710.73 -13486710.60 -13486710.47 0.0274 0.0144

Mercury -41638-08-23 11:45 J -13486622.16 -13486622.01 -13486621.87 0.0274 0.0043

Moon -41638-09-27 18:28 J -13486586.96 -13486586.73 -13486586.49 0.0274 0.0068

Earth -41638-09-27 19:54 J -13486586.91 -13486586.67 -13486586.43 0.0274 0.0061 \*

Mercury -41638-11-20 01:26 J -13486533.58 -13486533.44 -13486533.29 0.0274 0.0057

Mercury -41637-02-16 14:52 J -13486445.00 -13486444.88 -13486444.75 0.0274 0.0155

Mercury -41637-05-15 04:18 J -13486356.38 -13486356.32 -13486356.26 0.0274 0.0250

Venus -41636-06-24 21:21 J -13485950.73 -13485950.61 -13485950.49 0.0274 0.0229

Venus -41635-02-09 05:16 J -13485721.50 -13485721.28 -13485721.07 0.0275 0.0019

Venus -41635-09-26 12:14 J -13485492.13 -13485491.99 -13485491.83 0.0275 0.0192

Mars -41629-01-10 17:30 J -13483560.03 -13483559.77 -13483559.51 0.0279 0.0111  
 Mercury -41624-12-09 01:26 J -13481400.47 -13481400.44 -13481400.41 0.0284 0.0278  
 Mercury -41623-03-07 17:59 J -13481311.87 -13481311.75 -13481311.61 0.0284 0.0164  
 Moon -41623-03-22 00:14 J -13481297.67 -13481297.49 -13481297.32 0.0284 0.0193  
 Earth -41623-03-22 03:06 J -13481297.55 -13481297.37 -13481297.16 0.0284 0.0178 \*  
 Mercury -41623-06-04 11:16 J -13481223.19 -13481223.03 -13481222.87 0.0285 0.0045  
 Mercury -41623-09-01 04:47 J -13481134.46 -13481134.30 -13481134.14 0.0285 0.0076  
 Mercury -41623-11-28 22:33 J -13481045.67 -13481045.56 -13481045.44 0.0285 0.0199  
 Earth -41622-04-04 16:47 J -13480918.93 -13480918.80 -13480918.66 0.0285 0.0237  
 Moon -41622-04-04 17:16 J -13480918.92 -13480918.78 -13480918.63 0.0285 0.0223 \*  
 Venus -41621-07-19 21:21 J -13480446.82 -13480446.61 -13480446.41 0.0284 0.0078  
 Venus -41620-03-06 12:57 J -13480217.13 -13480216.96 -13480216.77 0.0284 0.0157  
 Mars -41615-01-01 22:04 J -13478454.84 -13478454.58 -13478454.30 0.0279 0.0120  
 Earth -41609-09-21 05:59 J -13476000.36 -13476000.25 -13476000.12 0.0274 0.0236  
 Moon -41609-09-21 06:42 J -13476000.32 -13476000.22 -13476000.08 0.0274 0.0240 \*  
 Mercury -41609-10-12 21:06 J -13475978.73 -13475978.62 -13475978.51 0.0274 0.0186  
 Mercury -41608-01-09 11:30 J -13475890.17 -13475890.02 -13475889.88 0.0274 0.0084  
 Mercury -41608-04-08 01:26 J -13475801.59 -13475801.44 -13475801.29 0.0274 0.0017  
 Mercury -41608-07-05 14:52 J -13475713.01 -13475712.88 -13475712.74 0.0274 0.0115  
 Mercury -41608-10-02 04:18 J -13475624.41 -13475624.32 -13475624.22 0.0274 0.0211  
 Moon -41608-10-03 17:59 J -13475622.97 -13475622.75 -13475622.52 0.0274 0.0120  
 Earth -41608-10-03 21:06 J -13475622.83 -13475622.62 -13475622.40 0.0274 0.0133 \*  
 Venus -41606-01-04 20:38 J -13475164.77 -13475164.64 -13475164.50 0.0274 0.0208  
 Venus -41606-08-22 04:47 J -13474935.51 -13474935.30 -13474935.09 0.0275 0.0003  
 Venus -41605-04-07 11:45 J -13474706.14 -13474706.01 -13474705.87 0.0275 0.0212  
 Mercury -41594-07-25 17:45 J -13470579.87 -13470579.76 -13470579.65 0.0285 0.0204  
 Mercury -41594-10-22 10:33 J -13470491.20 -13470491.06 -13470490.90 0.0285 0.0088  
 Mercury -41593-01-19 04:04 J -13470402.49 -13470402.33 -13470402.17 0.0285 0.0033  
 Moon -41593-03-28 20:38 J -13470332.89 -13470332.64 -13470332.38 0.0285 0.0031  
 Earth -41593-03-28 21:21 J -13470332.85 -13470332.61 -13470332.37 0.0285 0.0047 \*

Mercury -41593-04-16 21:50 J -13470313.72 -13470313.59 -13470313.45 0.0285 0.0156

Mercury -41593-07-14 16:04 J -13470224.85 -13470224.83 -13470224.81 0.0285 0.0282

Venus -41592-06-14 09:35 J -13469890.13 -13469890.10 -13469890.08 0.0284 0.0282

Venus -41591-01-30 00:57 J -13469660.67 -13469660.46 -13469660.25 0.0284 0.0050

Venus -41591-09-16 17:02 J -13469430.95 -13469430.79 -13469430.63 0.0284 0.0185

Mercury -41579-03-01 23:45 J -13465246.61 -13465246.51 -13465246.41 0.0275 0.0210

Mercury -41579-05-29 14:09 J -13465158.05 -13465157.91 -13465157.77 0.0275 0.0107

Mercury -41579-08-26 04:04 J -13465069.48 -13465069.33 -13465069.18 0.0275 0.0006

Earth -41579-09-28 22:04 J -13465035.82 -13465035.58 -13465035.33 0.0275 0.0028

Moon -41579-09-29 01:26 J -13465035.68 -13465035.44 -13465035.20 0.0275 0.0038 \*

Mercury -41579-11-22 17:45 J -13464980.90 -13464980.76 -13464980.62 0.0275 0.0094

Mercury -41578-02-19 07:11 J -13464892.30 -13464892.20 -13464892.09 0.0274 0.0191

Venus -41577-07-17 04:47 J -13464378.46 -13464378.30 -13464378.13 0.0275 0.0171

Venus -41576-03-03 12:42 J -13464149.18 -13464148.97 -13464148.76 0.0275 0.0040

Venus -41576-10-18 19:40 J -13463919.77 -13463919.68 -13463919.59 0.0275 0.0248

Mars -41571-04-17 20:38 J -13462277.81 -13462277.64 -13462277.47 0.0278 0.0223

Mercury -41565-12-11 18:14 J -13459847.83 -13459847.74 -13459847.66 0.0284 0.0240

Mercury -41564-03-10 10:47 J -13459759.19 -13459759.05 -13459758.90 0.0284 0.0124

Earth -41564-03-23 04:18 J -13459746.52 -13459746.32 -13459746.10 0.0284 0.0144

Moon -41564-03-23 05:45 J -13459746.46 -13459746.26 -13459746.07 0.0284 0.0161 \*

Mercury -41564-06-07 04:04 J -13459670.49 -13459670.33 -13459670.17 0.0284 0.0007

Mercury -41564-09-03 21:50 J -13459581.74 -13459581.59 -13459581.45 0.0284 0.0117

Mercury -41564-12-01 15:35 J -13459492.93 -13459492.85 -13459492.76 0.0284 0.0241

Earth -41563-04-05 17:30 J -13459367.83 -13459367.77 -13459367.68 0.0284 0.0271

Moon -41563-04-05 21:21 J -13459367.71 -13459367.61 -13459367.50 0.0284 0.0255 \*

Venus -41563-12-25 13:11 J -13459104.05 -13459103.95 -13459103.85 0.0284 0.0250

Venus -41562-08-12 04:18 J -13458874.53 -13458874.32 -13458874.11 0.0284 0.0019

Venus -41561-03-28 20:09 J -13458644.79 -13458644.66 -13458644.52 0.0284 0.0215

Mercury -41550-07-19 23:16 J -13454514.59 -13454514.53 -13454514.47 0.0274 0.0251

Moon -41550-09-23 05:02 J -13454449.44 -13454449.29 -13454449.12 0.0274 0.0213



Earth -41550-09-23 08:23 J -13454449.30 -13454449.15 -13454448.98 0.0274 0.0203 \*  
 Mercury -41550-10-16 13:40 J -13454426.05 -13454425.93 -13454425.80 0.0274 0.0148  
 Mercury -41549-01-13 03:50 J -13454337.48 -13454337.34 -13454337.19 0.0274 0.0046  
 Mercury -41549-04-10 17:45 J -13454248.90 -13454248.76 -13454248.61 0.0274 0.0054  
 Mercury -41549-07-08 07:11 J -13454160.32 -13454160.20 -13454160.07 0.0274 0.0152  
 Moon -41549-10-04 20:52 J -13454071.83 -13454071.63 -13454071.43 0.0274 0.0152  
 Earth -41549-10-04 23:30 J -13454071.71 -13454071.52 -13454071.32 0.0274 0.0167 \*  
 Mercury -41549-10-04 20:38 J -13454071.70 -13454071.64 -13454071.58 0.0274 0.0247 \*  
 Venus -41547-01-27 04:18 J -13453592.50 -13453592.32 -13453592.14 0.0274 0.0151  
 Venus -41547-09-13 11:59 J -13453363.20 -13453363.00 -13453362.79 0.0275 0.0060  
 Venus -41546-04-30 18:42 J -13453133.75 -13453133.72 -13453133.66 0.0275 0.0268  
 Mars -41541-06-04 16:18 J -13451272.07 -13451271.82 -13451271.56 0.0280 0.0128  
 Mercury -41535-04-30 17:30 J -13449115.79 -13449115.77 -13449115.75 0.0284 0.0281  
 Mercury -41535-07-28 10:04 J -13449027.20 -13449027.08 -13449026.95 0.0284 0.0167  
 Mercury -41535-10-25 03:21 J -13448938.52 -13448938.36 -13448938.20 0.0284 0.0048  
 Mercury -41534-01-21 20:52 J -13448849.79 -13448849.63 -13448849.48 0.0284 0.0073  
 Moon -41534-03-30 17:30 J -13448782.00 -13448781.77 -13448781.53 0.0284 0.0063  
 Earth -41534-03-30 21:21 J -13448781.84 -13448781.61 -13448781.37 0.0284 0.0079 \*  
 Mercury -41534-04-20 14:38 J -13448761.00 -13448760.89 -13448760.77 0.0284 0.0196  
 Venus -41533-07-06 15:50 J -13448317.96 -13448317.84 -13448317.71 0.0284 0.0224  
 Venus -41532-02-21 07:26 J -13448088.40 -13448088.19 -13448087.97 0.0284 0.0010  
 Venus -41532-10-08 23:30 J -13447858.62 -13447858.52 -13447858.40 0.0284 0.0242  
 Mars -41527-05-28 06:57 J -13446166.49 -13446166.21 -13446165.92 0.0280 0.0083  
 Mercury -41520-03-04 16:18 J -13443693.94 -13443693.82 -13443693.70 0.0275 0.0172  
 Mercury -41520-06-01 06:28 J -13443605.37 -13443605.23 -13443605.08 0.0275 0.0069  
 Mercury -41520-08-28 20:23 J -13443516.80 -13443516.65 -13443516.50 0.0275 0.0032  
 Earth -41520-09-30 00:14 J -13443484.73 -13443484.49 -13443484.24 0.0275 0.0007  
 Moon -41520-09-30 03:06 J -13443484.63 -13443484.37 -13443484.12 0.0275 0.0008 \*  
 Mercury -41520-11-25 10:04 J -13443428.21 -13443428.08 -13443427.95 0.0275 0.0131  
 Mercury -41519-02-21 23:30 J -13443339.60 -13443339.52 -13443339.44 0.0275 0.0227

Venus -41518-08-09 12:28 J -13442806.17 -13442805.98 -13442805.78 0.0275 0.0112  
 Venus -41517-03-25 20:09 J -13442576.86 -13442576.66 -13442576.46 0.0275 0.0097  
 Mercury -41506-12-15 11:02 J -13438295.15 -13438295.04 -13438294.93 0.0284 0.0199  
 Mercury -41505-03-13 04:04 J -13438206.48 -13438206.33 -13438206.18 0.0284 0.0083  
 Earth -41505-03-24 06:42 J -13438195.44 -13438195.22 -13438194.99 0.0284 0.0110  
 Moon -41505-03-24 10:18 J -13438195.28 -13438195.07 -13438194.84 0.0284 0.0127 \*  
 Mercury -41505-06-09 21:21 J -13438117.77 -13438117.61 -13438117.45 0.0284 0.0037  
 Mercury -41505-09-06 15:06 J -13438029.01 -13438028.87 -13438028.74 0.0284 0.0160  
 Venus -41503-01-16 20:38 J -13437531.79 -13437531.64 -13437531.48 0.0284 0.0191  
 Venus -41503-09-03 11:59 J -13437302.21 -13437302.00 -13437301.79 0.0284 0.0042  
 Venus -41502-04-21 03:50 J -13437072.38 -13437072.34 -13437072.28 0.0284 0.0274  
 Mercury -41491-07-22 16:04 J -13432961.92 -13432961.83 -13432961.73 0.0274 0.0212  
 Moon -41491-09-24 09:06 J -13432898.29 -13432898.12 -13432897.93 0.0274 0.0180  
 Earth -41491-09-24 11:30 J -13432898.20 -13432898.02 -13432897.82 0.0274 0.0170 \*  
 Mercury -41491-10-19 06:28 J -13432873.37 -13432873.23 -13432873.09 0.0274 0.0108  
 Mercury -41490-01-15 20:38 J -13432784.79 -13432784.64 -13432784.49 0.0274 0.0010  
 Mercury -41490-04-14 10:18 J -13432696.21 -13432696.07 -13432695.93 0.0274 0.0092  
 Mercury -41490-07-11 23:45 J -13432607.61 -13432607.51 -13432607.40 0.0274 0.0189  
 Earth -41490-10-07 02:38 J -13432520.55 -13432520.39 -13432520.22 0.0274 0.0202  
 Moon -41490-10-07 04:33 J -13432520.47 -13432520.31 -13432520.13 0.0274 0.0188 \*  
 Venus -41488-02-18 12:28 J -13432020.18 -13432019.98 -13432019.78 0.0274 0.0092  
 Venus -41488-10-05 19:54 J -13431790.85 -13431790.67 -13431790.47 0.0275 0.0118  
 Mars -41483-09-10 20:52 J -13429989.82 -13429989.63 -13429989.43 0.0279 0.0205  
 Mercury -41476-05-03 10:18 J -13427563.15 -13427563.07 -13427562.99 0.0284 0.0242  
 Mercury -41476-07-31 03:06 J -13427474.51 -13427474.37 -13427474.23 0.0284 0.0127  
 Mercury -41476-10-27 20:09 J -13427385.82 -13427385.66 -13427385.50 0.0284 0.0011  
 Mercury -41475-01-24 13:40 J -13427297.07 -13427296.93 -13427296.78 0.0284 0.0115  
 Moon -41475-03-31 21:50 J -13427230.81 -13427230.59 -13427230.36 0.0284 0.0100  
 Earth -41475-03-31 22:47 J -13427230.78 -13427230.55 -13427230.33 0.0284 0.0113 \*  
 Mercury -41475-04-23 07:40 J -13427208.26 -13427208.18 -13427208.09 0.0284 0.0239

Venus -41474-07-29 22:47 J -13426745.71 -13426745.55 -13426745.37 0.0284 0.0165

Venus -41473-03-15 14:38 J -13426516.10 -13426515.89 -13426515.68 0.0284 0.0067

Mercury -41462-12-09 18:28 J -13422229.80 -13422229.73 -13422229.65 0.0275 0.0237

Mercury -41461-03-07 08:52 J -13422141.26 -13422141.13 -13422141.00 0.0275 0.0133

Mercury -41461-06-03 23:02 J -13422052.69 -13422052.54 -13422052.39 0.0275 0.0031

Mercury -41461-08-31 12:57 J -13421964.10 -13421963.96 -13421963.82 0.0275 0.0070

Moon -41461-10-01 01:26 J -13421933.69 -13421933.44 -13421933.19 0.0275 0.0026

Earth -41461-10-01 03:21 J -13421933.60 -13421933.36 -13421933.12 0.0275 0.0040 \*

Mercury -41461-11-28 02:38 J -13421875.51 -13421875.39 -13421875.28 0.0275 0.0168

Mercury -41460-02-24 15:50 J -13421786.87 -13421786.84 -13421786.80 0.0275 0.0264

Venus -41459-01-14 11:59 J -13421463.06 -13421463.00 -13421462.94 0.0275 0.0262

Venus -41459-08-31 20:38 J -13421233.85 -13421233.64 -13421233.43 0.0275 0.0053

Venus -41458-04-18 04:04 J -13421004.50 -13421004.33 -13421004.15 0.0275 0.0156

Mars -41453-10-29 20:38 J -13418982.85 -13418982.64 -13418982.42 0.0279 0.0184

Mercury -41447-09-20 11:45 J -13416831.05 -13416831.01 -13416830.96 0.0284 0.0271

Mercury -41447-12-18 04:33 J -13416742.44 -13416742.31 -13416742.18 0.0284 0.0156

Mercury -41446-03-16 21:35 J -13416653.76 -13416653.60 -13416653.44 0.0284 0.0038

Earth -41446-03-26 10:47 J -13416644.28 -13416644.05 -13416643.81 0.0284 0.0073

Moon -41446-03-26 11:16 J -13416644.27 -13416644.03 -13416643.78 0.0284 0.0087 \*

Mercury -41446-06-13 14:52 J -13416565.03 -13416564.88 -13416564.72 0.0284 0.0082

Mercury -41446-09-10 08:38 J -13416476.25 -13416476.14 -13416476.02 0.0284 0.0206

Venus -41444-02-08 05:30 J -13415959.46 -13415959.27 -13415959.08 0.0284 0.0128

Venus -41444-09-25 20:52 J -13415729.83 -13415729.63 -13415729.43 0.0284 0.0103

Mars -41439-10-21 10:33 J -13413878.35 -13413878.06 -13413877.76 0.0280 0.0058

Mercury -41432-07-25 09:06 J -13411409.24 -13411409.12 -13411409.00 0.0274 0.0171

Earth -41432-09-25 15:35 J -13411347.05 -13411346.85 -13411346.62 0.0274 0.0135

Moon -41432-09-25 17:16 J -13411346.97 -13411346.78 -13411346.57 0.0274 0.0145 \*

Mercury -41432-10-21 23:16 J -13411320.67 -13411320.53 -13411320.38 0.0274 0.0068

Mercury -41431-01-18 13:26 J -13411232.09 -13411231.94 -13411231.80 0.0274 0.0033

Mercury -41431-04-17 03:06 J -13411143.50 -13411143.37 -13411143.24 0.0274 0.0132

Mercury -41431-07-14 16:18 J -13411054.89 -13411054.82 -13411054.73 0.0274 0.0228  
 Earth -41431-10-08 06:42 J -13410969.33 -13410969.22 -13410969.09 0.0274 0.0239  
 Moon -41431-10-08 10:33 J -13410969.20 -13410969.06 -13410968.92 0.0274 0.0223 \*  
 Venus -41430-07-27 12:28 J -13410677.07 -13410676.98 -13410676.87 0.0274 0.0241  
 Venus -41429-03-12 21:06 J -13410447.83 -13410447.62 -13410447.41 0.0275 0.0031  
 Venus -41429-10-28 04:18 J -13410218.47 -13410218.32 -13410218.15 0.0275 0.0177  
 Earth -41417-03-19 13:26 J -13406058.00 -13406057.94 -13406057.84 0.0284 0.0268  
 Moon -41417-03-19 13:26 J -13406057.96 -13406057.94 -13406057.90 0.0284 0.0281 \*  
 Mercury -41417-05-06 03:35 J -13406010.46 -13406010.35 -13406010.24 0.0284 0.0200  
 Mercury -41417-08-02 20:23 J -13405921.80 -13405921.65 -13405921.49 0.0284 0.0084  
 Mercury -41417-10-30 13:40 J -13405833.08 -13405832.93 -13405832.77 0.0284 0.0038  
 Mercury -41416-01-27 07:26 J -13405744.32 -13405744.19 -13405744.05 0.0284 0.0159  
 Earth -41416-04-02 02:23 J -13405679.60 -13405679.40 -13405679.19 0.0284 0.0149  
 Moon -41416-04-02 05:45 J -13405679.46 -13405679.26 -13405679.04 0.0284 0.0139 \*  
 Venus -41415-08-21 07:26 J -13405173.38 -13405173.19 -13405172.99 0.0284 0.0103  
 Venus -41414-04-07 23:02 J -13404943.72 -13404943.54 -13404943.35 0.0284 0.0129  
 Mercury -41403-12-12 11:16 J -13400677.13 -13400677.03 -13400676.92 0.0275 0.0197  
 Mercury -41402-03-11 01:40 J -13400588.57 -13400588.43 -13400588.28 0.0275 0.0093  
 Mercury -41402-06-07 15:50 J -13400499.99 -13400499.84 -13400499.69 0.0275 0.0009  
 Mercury -41402-09-04 05:30 J -13400411.40 -13400411.27 -13400411.13 0.0275 0.0110  
 Moon -41402-10-03 03:50 J -13400382.58 -13400382.34 -13400382.10 0.0275 0.0060  
 Earth -41402-10-03 07:11 J -13400382.43 -13400382.20 -13400381.96 0.0275 0.0075 \*  
 Mercury -41402-12-01 19:11 J -13400322.80 -13400322.70 -13400322.61 0.0275 0.0207  
 Venus -41400-02-05 20:38 J -13399890.77 -13399890.64 -13399890.49 0.0275 0.0202  
 Venus -41400-09-23 05:16 J -13399661.49 -13399661.28 -13399661.07 0.0275 0.0008  
 Venus -41399-05-10 12:57 J -13399432.09 -13399431.96 -13399431.83 0.0275 0.0216  
 Mars -41394-02-05 06:28 J -13397700.46 -13397700.23 -13397699.97 0.0279 0.0145  
 Mercury -41388-09-23 05:30 J -13395278.35 -13395278.27 -13395278.17 0.0284 0.0225  
 Mercury -41388-12-20 22:33 J -13395189.71 -13395189.56 -13395189.42 0.0284 0.0109  
 Mercury -41387-03-19 15:35 J -13395101.01 -13395100.85 -13395100.69 0.0284 0.0010

Moon -41387-03-27 13:40 J -13395093.17 -13395092.93 -13395092.68 0.0284 0.0046  
 Earth -41387-03-27 17:02 J -13395093.03 -13395092.79 -13395092.54 0.0284 0.0034 \*  
 Mercury -41387-06-16 09:06 J -13395012.26 -13395012.12 -13395011.98 0.0284 0.0131  
 Mercury -41387-09-13 03:06 J -13394923.44 -13394923.37 -13394923.30 0.0284 0.0255  
 Venus -41385-03-02 15:21 J -13394387.06 -13394386.86 -13394386.65 0.0284 0.0063  
 Venus -41385-10-18 06:42 J -13394157.38 -13394157.22 -13394157.04 0.0284 0.0168  
 Mercury -41373-04-30 11:45 J -13389945.08 -13389945.01 -13389944.93 0.0275 0.0232  
 Mercury -41373-07-28 02:23 J -13389856.53 -13389856.40 -13389856.27 0.0275 0.0128  
 Earth -41373-09-26 21:21 J -13389795.83 -13389795.61 -13389795.37 0.0275 0.0098  
 Moon -41373-09-27 00:57 J -13389795.68 -13389795.46 -13389795.22 0.0275 0.0110 \*  
 Mercury -41373-10-24 16:33 J -13389767.96 -13389767.81 -13389767.66 0.0275 0.0026  
 Mercury -41372-01-21 06:28 J -13389679.38 -13389679.23 -13389679.09 0.0274 0.0075  
 Mercury -41372-04-19 19:54 J -13389590.78 -13389590.67 -13389590.55 0.0274 0.0173  
 Mercury -41372-07-17 09:21 J -13389502.14 -13389502.11 -13389502.08 0.0274 0.0268  
 Moon -41372-10-09 12:57 J -13389418.04 -13389417.96 -13389417.89 0.0274 0.0262  
 Venus -41371-08-18 22:33 J -13389104.72 -13389104.56 -13389104.40 0.0275 0.0178  
 Venus -41370-04-05 06:42 J -13388875.43 -13388875.22 -13388875.01 0.0275 0.0031  
 Venus -41370-11-20 14:09 J -13388646.02 -13388645.91 -13388645.81 0.0275 0.0237  
 Mars -41364-03-25 04:33 J -13386694.48 -13386694.31 -13386694.11 0.0279 0.0211  
 Mercury -41358-02-10 04:47 J -13384546.34 -13384546.30 -13384546.24 0.0284 0.0268  
 Earth -41358-03-21 19:54 J -13384506.80 -13384506.67 -13384506.51 0.0284 0.0228  
 Moon -41358-03-21 23:02 J -13384506.65 -13384506.54 -13384506.40 0.0284 0.0243 \*  
 Mercury -41358-05-09 21:35 J -13384457.73 -13384457.60 -13384457.47 0.0284 0.0153  
 Mercury -41358-08-06 14:38 J -13384369.05 -13384368.89 -13384368.73 0.0284 0.0036  
 Mercury -41358-11-03 07:54 J -13384280.32 -13384280.17 -13384280.01 0.0284 0.0085  
 Mercury -41357-01-31 01:40 J -13384191.54 -13384191.43 -13384191.32 0.0284 0.0209  
 Earth -41357-04-03 08:23 J -13384128.32 -13384128.15 -13384127.95 0.0284 0.0189  
 Moon -41357-04-03 11:16 J -13384128.22 -13384128.03 -13384127.83 0.0284 0.0180 \*  
 Venus -41356-01-26 02:23 J -13383830.46 -13383830.40 -13383830.32 0.0284 0.0267  
 Venus -41356-09-12 17:30 J -13383600.98 -13383600.77 -13383600.56 0.0284 0.0038

Venus -41355-04-30 09:06 J -13383371.27 -13383371.12 -13383370.96 0.0284 0.0193  
 Mars -41350-03-16 23:16 J -13381589.83 -13381589.53 -13381589.23 0.0280 0.0019  
 Mercury -41344-09-17 13:54 J -13379212.97 -13379212.92 -13379212.87 0.0276 0.0260  
 Moon -41344-09-21 15:21 J -13379208.86 -13379208.86 -13379208.85 0.0276 0.0276  
 Earth -41344-09-21 19:11 J -13379208.76 -13379208.70 -13379208.63 0.0276 0.0265  
 Mercury -41344-12-15 04:33 J -13379124.43 -13379124.31 -13379124.19 0.0275 0.0154  
 Mercury -41343-03-13 18:42 J -13379035.86 -13379035.72 -13379035.57 0.0275 0.0052  
 Mercury -41343-06-10 08:52 J -13378947.28 -13378947.13 -13378946.98 0.0275 0.0051  
 Mercury -41343-09-06 22:33 J -13378858.68 -13378858.56 -13378858.44 0.0275 0.0150  
 Moon -41343-10-04 11:45 J -13378831.23 -13378831.01 -13378830.79 0.0275 0.0099  
 Earth -41343-10-04 12:28 J -13378831.20 -13378830.98 -13378830.76 0.0275 0.0112 \*  
 Mercury -41343-12-04 11:59 J -13378770.06 -13378770.00 -13378769.94 0.0275 0.0247  
 Venus -41341-02-29 06:14 J -13378318.42 -13378318.24 -13378318.05 0.0275 0.0140  
 Venus -41341-10-15 14:38 J -13378089.09 -13378088.89 -13378088.68 0.0276 0.0070  
 Mercury -41329-09-26 00:14 J -13373725.62 -13373725.49 -13373725.37 0.0284 0.0175  
 Mercury -41329-12-23 17:02 J -13373636.95 -13373636.79 -13373636.63 0.0284 0.0058  
 Mercury -41328-03-22 10:18 J -13373548.23 -13373548.07 -13373547.91 0.0284 0.0062  
 Moon -41328-03-28 23:02 J -13373541.78 -13373541.54 -13373541.30 0.0284 0.0004  
 Earth -41328-03-29 01:40 J -13373541.67 -13373541.43 -13373541.18 0.0284 0.0010 \*  
 Mercury -41328-06-19 03:50 J -13373459.46 -13373459.34 -13373459.21 0.0284 0.0185  
 Venus -41327-08-08 11:59 J -13373044.12 -13373044.00 -13373043.86 0.0284 0.0224  
 Venus -41326-03-26 02:52 J -13372814.59 -13372814.38 -13372814.17 0.0284 0.0006  
 Venus -41326-11-10 18:14 J -13372584.85 -13372584.74 -13372584.61 0.0284 0.0235  
 Mercury -41314-05-04 05:30 J -13368392.38 -13368392.27 -13368392.16 0.0275 0.0187  
 Mercury -41314-07-31 19:54 J -13368303.82 -13368303.67 -13368303.53 0.0275 0.0083  
 Earth -41314-09-29 04:18 J -13368244.55 -13368244.32 -13368244.07 0.0275 0.0059  
 Moon -41314-09-29 05:16 J -13368244.52 -13368244.28 -13368244.03 0.0275 0.0072 \*  
 Mercury -41314-10-28 09:50 J -13368215.23 -13368215.09 -13368214.94 0.0275 0.0020  
 Mercury -41313-01-24 23:45 J -13368126.64 -13368126.51 -13368126.38 0.0275 0.0118  
 Mercury -41313-04-22 13:11 J -13368038.04 -13368037.95 -13368037.86 0.0275 0.0216

Venus -41312-09-10 08:52 J -13367532.32 -13367532.13 -13367531.93 0.0275 0.0114

Venus -41311-04-27 17:02 J -13367302.98 -13367302.79 -13367302.59 0.0275 0.0094

Mars -41306-07-01 19:54 J -13365411.92 -13365411.67 -13365411.40 0.0279 0.0114

Mercury -41299-02-12 23:16 J -13362993.62 -13362993.53 -13362993.43 0.0284 0.0218

Earth -41299-03-23 05:02 J -13362955.47 -13362955.29 -13362955.10 0.0284 0.0185

Moon -41299-03-23 07:40 J -13362955.35 -13362955.18 -13362954.99 0.0284 0.0200 \*

Mercury -41299-05-12 16:04 J -13362904.97 -13362904.83 -13362904.68 0.0284 0.0102

Mercury -41299-08-09 09:21 J -13362816.27 -13362816.11 -13362815.95 0.0284 0.0018

Mercury -41299-11-06 02:38 J -13362727.52 -13362727.39 -13362727.24 0.0284 0.0139

Mercury -41298-02-02 20:38 J -13362638.70 -13362638.64 -13362638.58 0.0284 0.0263

Moon -41298-04-05 15:50 J -13362576.99 -13362576.84 -13362576.68 0.0284 0.0225

Earth -41298-04-05 17:16 J -13362576.91 -13362576.78 -13362576.63 0.0284 0.0232 \*

Venus -41297-02-18 13:54 J -13362258.06 -13362257.92 -13362257.77 0.0284 0.0199

Venus -41297-10-05 05:02 J -13362028.50 -13362028.29 -13362028.08 0.0284 0.0030

Venus -41296-05-22 20:38 J -13361798.72 -13361798.64 -13361798.55 0.0283 0.0259

Mercury -41285-09-20 07:26 J -13357660.28 -13357660.19 -13357660.09 0.0276 0.0215

Moon -41285-09-23 01:11 J -13357657.57 -13357657.45 -13357657.34 0.0276 0.0240

Earth -41285-09-23 01:40 J -13357657.56 -13357657.43 -13357657.29 0.0276 0.0227 \*

Mercury -41285-12-17 22:04 J -13357571.72 -13357571.58 -13357571.44 0.0276 0.0110

Mercury -41284-03-16 12:14 J -13357483.14 -13357482.99 -13357482.84 0.0276 0.0007

Mercury -41284-06-13 02:09 J -13357394.55 -13357394.41 -13357394.27 0.0276 0.0094

Mercury -41284-09-09 15:35 J -13357305.95 -13357305.85 -13357305.74 0.0276 0.0193

Earth -41284-10-05 18:57 J -13357279.91 -13357279.71 -13357279.50 0.0276 0.0152

Moon -41284-10-05 22:04 J -13357279.78 -13357279.58 -13357279.37 0.0276 0.0137 \*

Venus -41282-03-23 16:33 J -13356746.01 -13356745.81 -13356745.60 0.0276 0.0076

Venus -41282-11-08 00:57 J -13356516.64 -13356516.46 -13356516.27 0.0276 0.0133

Mars -41276-08-19 23:59 J -13354404.52 -13354404.50 -13354404.46 0.0279 0.0278

Mercury -41270-07-03 02:23 J -13352261.48 -13352261.40 -13352261.32 0.0283 0.0236

Mercury -41270-09-29 18:57 J -13352172.85 -13352172.71 -13352172.56 0.0284 0.0122

Mercury -41270-12-27 11:59 J -13352084.16 -13352084.00 -13352083.84 0.0284 0.0005

Mercury -41269-03-25 05:30 J -13351995.42 -13351995.27 -13351995.12 0.0284 0.0118

Earth -41269-03-30 12:14 J -13351990.23 -13351989.99 -13351989.75 0.0284 0.0055

Moon -41269-03-30 13:11 J -13351990.18 -13351989.95 -13351989.71 0.0284 0.0045 \*

Mercury -41269-06-21 23:16 J -13351906.61 -13351906.53 -13351906.44 0.0284 0.0241

Venus -41268-08-31 00:42 J -13351471.64 -13351471.47 -13351471.29 0.0284 0.0154

Venus -41267-04-17 15:35 J -13351242.05 -13351241.85 -13351241.64 0.0284 0.0074

Mars -41262-08-11 07:11 J -13349300.50 -13349300.20 -13349299.90 0.0280 0.0030

Mercury -41255-02-07 08:52 J -13346928.20 -13346928.13 -13346928.06 0.0275 0.0244

Mercury -41255-05-06 23:16 J -13346839.65 -13346839.53 -13346839.39 0.0275 0.0140

Mercury -41255-08-03 13:40 J -13346751.08 -13346750.93 -13346750.78 0.0275 0.0036

Moon -41255-09-30 09:35 J -13346693.34 -13346693.10 -13346692.85 0.0275 0.0033

Earth -41255-09-30 13:11 J -13346693.20 -13346692.95 -13346692.71 0.0275 0.0017 \*

Mercury -41255-10-31 03:35 J -13346662.49 -13346662.35 -13346662.20 0.0275 0.0065

Mercury -41254-01-27 17:16 J -13346573.89 -13346573.78 -13346573.66 0.0275 0.0164

Mercury -41254-04-26 06:42 J -13346485.26 -13346485.22 -13346485.17 0.0275 0.0260

Venus -41253-02-16 11:16 J -13346189.09 -13346189.03 -13346188.95 0.0275 0.0257

Venus -41253-10-02 20:23 J -13345959.86 -13345959.65 -13345959.44 0.0275 0.0049

Venus -41252-05-20 04:18 J -13345730.49 -13345730.32 -13345730.15 0.0275 0.0158

Mercury -41241-11-19 01:54 J -13341529.45 -13341529.42 -13341529.39 0.0284 0.0278

Mercury -41240-02-15 18:28 J -13341440.86 -13341440.73 -13341440.61 0.0284 0.0164

Moon -41240-03-24 14:23 J -13341404.11 -13341403.90 -13341403.69 0.0284 0.0152

Earth -41240-03-24 16:04 J -13341404.04 -13341403.83 -13341403.61 0.0284 0.0140 \*

Mercury -41240-05-15 11:16 J -13341352.19 -13341352.03 -13341351.87 0.0284 0.0047

Mercury -41240-08-12 04:33 J -13341263.47 -13341263.31 -13341263.16 0.0284 0.0073

Mercury -41240-11-08 22:04 J -13341174.69 -13341174.58 -13341174.46 0.0284 0.0196

Moon -41239-04-07 00:42 J -13341025.53 -13341025.47 -13341025.39 0.0284 0.0271

Earth -41239-04-07 04:04 J -13341025.36 -13341025.33 -13341025.26 0.0284 0.0278

Venus -41238-03-13 02:38 J -13340685.57 -13340685.39 -13340685.20 0.0284 0.0129

Venus -41238-10-28 17:45 J -13340455.96 -13340455.76 -13340455.56 0.0284 0.0100

Mercury -41226-06-27 10:33 J -13336196.07 -13336196.06 -13336196.05 0.0276 0.0274



Mercury -41226-09-24 01:11 J -13336107.57 -13336107.45 -13336107.33 0.0276 0.0168

Earth -41226-09-25 09:06 J -13336106.30 -13336106.12 -13336105.94 0.0276 0.0187

Moon -41226-09-25 12:28 J -13336106.13 -13336105.98 -13336105.81 0.0276 0.0202 \*

Mercury -41226-12-21 15:35 J -13336019.00 -13336018.85 -13336018.70 0.0276 0.0064

Mercury -41225-03-19 05:45 J -13335930.41 -13335930.26 -13335930.11 0.0276 0.0038

Mercury -41225-06-15 19:26 J -13335841.81 -13335841.69 -13335841.56 0.0276 0.0138

Mercury -41225-09-12 09:06 J -13335753.20 -13335753.12 -13335753.05 0.0276 0.0236

Earth -41225-10-07 02:23 J -13335728.57 -13335728.40 -13335728.22 0.0276 0.0193

Moon -41225-10-07 05:16 J -13335728.47 -13335728.28 -13335728.08 0.0276 0.0177 \*

Venus -41224-08-28 18:14 J -13335402.86 -13335402.74 -13335402.61 0.0276 0.0221

Venus -41223-04-15 03:21 J -13335173.57 -13335173.36 -13335173.14 0.0276 0.0013

Venus -41223-11-30 11:30 J -13334944.16 -13334944.02 -13334943.87 0.0276 0.0196

Mars -41218-11-26 16:18 J -13333122.10 -13333121.82 -13333121.53 0.0279 0.0049

Mercury -41211-07-05 21:21 J -13330708.72 -13330708.61 -13330708.48 0.0283 0.0182

Mercury -41211-10-02 14:23 J -13330620.06 -13330619.90 -13330619.75 0.0283 0.0065

Mercury -41211-12-30 07:26 J -13330531.34 -13330531.19 -13330531.03 0.0284 0.0055

Mercury -41210-03-29 01:11 J -13330442.58 -13330442.45 -13330442.33 0.0284 0.0177

Earth -41210-04-02 00:14 J -13330438.71 -13330438.49 -13330438.26 0.0284 0.0104

Moon -41210-04-02 04:04 J -13330438.56 -13330438.33 -13330438.09 0.0284 0.0092 \*

Venus -41209-09-22 14:23 J -13329899.10 -13329898.90 -13329898.69 0.0284 0.0083

Venus -41208-05-10 05:30 J -13329669.45 -13329669.27 -13329669.09 0.0283 0.0145

Mercury -41196-02-10 02:52 J -13325375.48 -13325375.38 -13325375.27 0.0275 0.0195

Mercury -41196-05-09 17:30 J -13325286.91 -13325286.77 -13325286.63 0.0275 0.0090

Mercury -41196-08-06 07:40 J -13325198.33 -13325198.18 -13325198.03 0.0275 0.0013

Moon -41196-10-01 20:23 J -13325141.89 -13325141.65 -13325141.42 0.0275 0.0012

Earth -41196-10-01 22:47 J -13325141.80 -13325141.55 -13325141.31 0.0275 0.0027 \*

Mercury -41196-11-02 21:21 J -13325109.74 -13325109.61 -13325109.47 0.0275 0.0112

Mercury -41195-01-30 11:02 J -13325021.13 -13325021.04 -13325020.95 0.0275 0.0210

Venus -41194-03-10 23:30 J -13324616.67 -13324616.52 -13324616.37 0.0275 0.0191

Venus -41194-10-26 08:09 J -13324387.37 -13324387.16 -13324386.95 0.0275 0.0016

Venus -41193-06-11 15:50 J -13324157.96 -13324157.84 -13324157.71 0.0275 0.0223  
 Mercury -41182-11-22 20:52 J -13319976.72 -13319976.63 -13319976.53 0.0284 0.0223  
 Mercury -41181-02-19 13:40 J -13319888.08 -13319887.93 -13319887.79 0.0284 0.0108  
 Moon -41181-03-26 00:28 J -13319852.70 -13319852.48 -13319852.25 0.0284 0.0103  
 Earth -41181-03-26 04:18 J -13319852.55 -13319852.32 -13319852.09 0.0284 0.0092 \*  
 Mercury -41181-05-18 06:42 J -13319799.38 -13319799.22 -13319799.06 0.0284 0.0011  
 Mercury -41181-08-14 23:59 J -13319710.64 -13319710.50 -13319710.35 0.0284 0.0132  
 Mercury -41181-11-11 17:59 J -13319621.82 -13319621.75 -13319621.68 0.0284 0.0255  
 Venus -41180-08-18 01:40 J -13319342.43 -13319342.43 -13319342.40 0.0284 0.0283  
 Venus -41179-04-04 16:04 J -13319113.03 -13319112.83 -13319112.62 0.0284 0.0058  
 Venus -41179-11-20 07:11 J -13318883.36 -13318883.20 -13318883.02 0.0284 0.0171  
 Mars -41173-01-05 05:02 J -13317011.57 -13317011.29 -13317010.99 0.0280 0.0077  
 Mercury -41167-06-30 04:33 J -13314643.40 -13314643.31 -13314643.22 0.0276 0.0225  
 Earth -41167-09-26 17:59 J -13314554.96 -13314554.75 -13314554.54 0.0276 0.0144  
 Moon -41167-09-26 20:23 J -13314554.85 -13314554.65 -13314554.44 0.0276 0.0158 \*  
 Mercury -41167-09-26 19:11 J -13314554.84 -13314554.70 -13314554.57 0.0276 0.0120 \*  
 Mercury -41167-12-24 09:21 J -13314466.26 -13314466.11 -13314465.96 0.0276 0.0017  
 Mercury -41166-03-22 23:16 J -13314377.67 -13314377.53 -13314377.38 0.0276 0.0086  
 Mercury -41166-06-19 12:57 J -13314289.06 -13314288.96 -13314288.85 0.0276 0.0184  
 Moon -41166-10-09 09:06 J -13314177.26 -13314177.12 -13314176.96 0.0276 0.0221  
 Earth -41166-10-09 11:02 J -13314177.16 -13314177.04 -13314176.91 0.0276 0.0236 \*  
 Venus -41165-09-20 05:30 J -13313830.43 -13313830.27 -13313830.08 0.0276 0.0157  
 Venus -41164-05-07 14:38 J -13313601.10 -13313600.89 -13313600.68 0.0276 0.0052  
 Venus -41164-12-22 22:33 J -13313371.62 -13313371.56 -13313371.48 0.0276 0.0259  
 Earth -41152-03-21 00:57 J -13309265.53 -13309265.46 -13309265.36 0.0283 0.0264  
 Moon -41152-03-21 04:47 J -13309265.34 -13309265.30 -13309265.24 0.0283 0.0277  
 Mercury -41152-04-11 00:14 J -13309244.57 -13309244.49 -13309244.41 0.0283 0.0240  
 Mercury -41152-07-08 16:47 J -13309155.94 -13309155.80 -13309155.66 0.0283 0.0125  
 Mercury -41152-10-05 09:50 J -13309067.25 -13309067.09 -13309066.93 0.0284 0.0008  
 Mercury -41151-01-02 03:06 J -13308978.52 -13308978.37 -13308978.22 0.0284 0.0114

Mercury -41151-03-31 20:52 J -13308889.71 -13308889.63 -13308889.54 0.0284 0.0237  
 Earth -41151-04-03 12:42 J -13308887.17 -13308886.97 -13308886.76 0.0284 0.0153  
 Moon -41151-04-03 13:40 J -13308887.14 -13308886.93 -13308886.70 0.0284 0.0145 \*  
 Venus -41150-02-28 13:54 J -13308556.03 -13308555.92 -13308555.80 0.0284 0.0237  
 Venus -41150-10-16 04:18 J -13308326.53 -13308326.32 -13308326.11 0.0284 0.0012  
 Venus -41149-06-01 19:40 J -13308096.82 -13308096.68 -13308096.54 0.0283 0.0216  
 Mercury -41138-11-17 06:42 J -13303911.28 -13303911.22 -13303911.16 0.0275 0.0250  
 Mercury -41137-02-13 21:21 J -13303822.74 -13303822.61 -13303822.48 0.0275 0.0144  
 Mercury -41137-05-12 11:30 J -13303734.16 -13303734.02 -13303733.87 0.0275 0.0041  
 Mercury -41137-08-09 01:40 J -13303645.58 -13303645.43 -13303645.29 0.0275 0.0061  
 Earth -41137-10-03 08:38 J -13303590.37 -13303590.14 -13303589.90 0.0275 0.0071  
 Moon -41137-10-03 10:47 J -13303590.29 -13303590.05 -13303589.82 0.0275 0.0057 \*  
 Mercury -41137-11-05 15:21 J -13303556.98 -13303556.86 -13303556.74 0.0275 0.0160  
 Mercury -41136-02-02 04:47 J -13303468.35 -13303468.30 -13303468.25 0.0275 0.0257  
 Venus -41135-04-02 11:30 J -13303044.20 -13303044.02 -13303043.82 0.0275 0.0126  
 Venus -41135-11-17 19:54 J -13302814.86 -13302814.67 -13302814.46 0.0275 0.0082  
 Mars -41129-04-21 14:38 J -13300833.17 -13300832.89 -13300832.60 0.0279 0.0007  
 Mercury -41123-08-28 23:45 J -13298512.52 -13298512.51 -13298512.48 0.0284 0.0281  
 Mercury -41123-11-25 16:18 J -13298423.95 -13298423.82 -13298423.69 0.0284 0.0167  
 Mercury -41122-02-22 09:06 J -13298335.27 -13298335.12 -13298334.96 0.0284 0.0050  
 Moon -41122-03-28 16:47 J -13298301.03 -13298300.80 -13298300.56 0.0284 0.0051  
 Earth -41122-03-28 17:16 J -13298301.02 -13298300.78 -13298300.54 0.0284 0.0042 \*  
 Mercury -41122-05-22 02:23 J -13298246.56 -13298246.40 -13298246.25 0.0284 0.0070  
 Mercury -41122-08-18 19:54 J -13298157.79 -13298157.67 -13298157.55 0.0284 0.0192  
 Venus -41121-09-09 16:04 J -13297769.97 -13297769.83 -13297769.69 0.0284 0.0211  
 Venus -41120-04-27 06:28 J -13297540.45 -13297540.23 -13297540.02 0.0284 0.0015  
 Venus -41120-12-12 21:21 J -13297310.71 -13297310.61 -13297310.49 0.0283 0.0242  
 Mars -41115-04-11 09:35 J -13295730.14 -13295730.10 -13295730.01 0.0280 0.0274  
 Mercury -41108-07-02 22:33 J -13293090.67 -13293090.56 -13293090.44 0.0276 0.0176  
 Moon -41108-09-28 00:57 J -13293003.68 -13293003.46 -13293003.22 0.0276 0.0115

Earth -41108-09-28 02:52 J -13293003.60 -13293003.38 -13293003.15 0.0276 0.0100 \*  
 Mercury -41108-09-29 12:57 J -13293002.10 -13293001.96 -13293001.81 0.0276 0.0072  
 Mercury -41108-12-27 03:06 J -13292913.51 -13292913.37 -13292913.22 0.0276 0.0033  
 Mercury -41107-03-25 17:02 J -13292824.92 -13292824.79 -13292824.66 0.0276 0.0132  
 Mercury -41107-06-22 06:42 J -13292736.30 -13292736.22 -13292736.14 0.0276 0.0230  
 Moon -41107-10-10 15:50 J -13292625.88 -13292625.84 -13292625.77 0.0276 0.0267  
 Venus -41106-10-13 17:02 J -13292257.99 -13292257.79 -13292257.59 0.0276 0.0092  
 Venus -41105-05-30 01:40 J -13292028.62 -13292028.43 -13292028.23 0.0276 0.0116  
 Earth -41093-03-22 12:57 J -13287714.11 -13287713.96 -13287713.79 0.0283 0.0215  
 Moon -41093-03-22 13:26 J -13287714.08 -13287713.94 -13287713.77 0.0283 0.0227 \*  
 Mercury -41093-04-13 19:11 J -13287691.81 -13287691.70 -13287691.58 0.0283 0.0185  
 Mercury -41093-07-11 11:59 J -13287603.15 -13287603.00 -13287602.84 0.0283 0.0069  
 Mercury -41093-10-08 05:16 J -13287514.44 -13287514.28 -13287514.13 0.0284 0.0051  
 Mercury -41092-01-04 22:33 J -13287425.68 -13287425.56 -13287425.42 0.0284 0.0173  
 Moon -41092-04-04 21:21 J -13287335.78 -13287335.61 -13287335.43 0.0284 0.0198  
 Earth -41092-04-05 00:28 J -13287335.64 -13287335.48 -13287335.30 0.0284 0.0203 \*  
 Venus -41091-03-23 03:21 J -13286983.52 -13286983.36 -13286983.19 0.0284 0.0167  
 Venus -41091-11-07 17:59 J -13286753.95 -13286753.75 -13286753.54 0.0284 0.0059  
 Mars -41085-06-01 07:40 J -13284721.43 -13284721.18 -13284720.92 0.0280 0.0145  
 Earth -41079-09-23 01:54 J -13282416.48 -13282416.42 -13282416.34 0.0275 0.0263  
 Mercury -41079-11-20 00:57 J -13282358.56 -13282358.46 -13282358.35 0.0275 0.0198  
 Mercury -41078-02-16 15:35 J -13282269.99 -13282269.85 -13282269.71 0.0275 0.0093  
 Mercury -41078-05-16 05:45 J -13282181.41 -13282181.26 -13282181.11 0.0275 0.0010  
 Mercury -41078-08-12 19:40 J -13282092.82 -13282092.68 -13282092.54 0.0275 0.0110  
 Earth -41078-10-05 18:57 J -13282038.92 -13282038.71 -13282038.48 0.0275 0.0117  
 Moon -41078-10-05 22:33 J -13282038.78 -13282038.56 -13282038.33 0.0275 0.0102 \*  
 Mercury -41078-11-09 09:06 J -13282004.21 -13282004.12 -13282004.02 0.0275 0.0208  
 Venus -41077-09-07 14:52 J -13281700.93 -13281700.88 -13281700.83 0.0275 0.0266  
 Venus -41076-04-24 23:59 J -13281471.71 -13281471.50 -13281471.29 0.0275 0.0060  
 Venus -41076-12-10 08:09 J -13281242.34 -13281242.16 -13281241.98 0.0275 0.0146

Mercury -41064-08-31 18:57 J -13276959.80 -13276959.71 -13276959.62 0.0284 0.0226

Mercury -41064-11-28 11:30 J -13276871.16 -13276871.02 -13276870.87 0.0284 0.0111

Mercury -41063-02-25 04:33 J -13276782.47 -13276782.31 -13276782.15 0.0284 0.0008

Earth -41063-03-30 05:02 J -13276749.54 -13276749.29 -13276749.05 0.0284 0.0007

Moon -41063-03-30 08:23 J -13276749.40 -13276749.15 -13276748.91 0.0284 0.0005 \*

Mercury -41063-05-24 21:50 J -13276693.73 -13276693.59 -13276693.45 0.0284 0.0128

Mercury -41063-08-21 15:35 J -13276604.92 -13276604.85 -13276604.78 0.0284 0.0252

Venus -41062-10-03 05:16 J -13276197.45 -13276197.28 -13276197.09 0.0284 0.0142

Venus -41061-05-19 19:54 J -13275967.87 -13275967.67 -13275967.46 0.0284 0.0085

Mercury -41049-04-08 01:54 J -13271626.50 -13271626.42 -13271626.34 0.0275 0.0232

Mercury -41049-07-05 16:33 J -13271537.94 -13271537.81 -13271537.67 0.0275 0.0127

Moon -41049-09-29 08:23 J -13271452.39 -13271452.15 -13271451.92 0.0275 0.0072

Earth -41049-09-29 11:45 J -13271452.25 -13271452.01 -13271451.76 0.0275 0.0057 \*

Mercury -41049-10-02 06:57 J -13271449.36 -13271449.21 -13271449.06 0.0275 0.0023

Mercury -41049-12-29 20:52 J -13271360.77 -13271360.63 -13271360.48 0.0275 0.0079

Mercury -41048-03-28 10:33 J -13271272.17 -13271272.06 -13271271.94 0.0275 0.0178

Mercury -41048-06-24 23:59 J -13271183.50 -13271183.50 -13271183.49 0.0275 0.0275

Venus -41047-03-20 18:57 J -13270914.82 -13270914.71 -13270914.61 0.0275 0.0237

Venus -41047-11-05 04:04 J -13270685.54 -13270685.33 -13270685.12 0.0276 0.0029

Venus -41046-06-22 12:14 J -13270456.14 -13270455.99 -13270455.82 0.0276 0.0178

Mars -41041-09-16 01:54 J -13268543.70 -13268543.42 -13268543.13 0.0279 0.0047

Mercury -41034-01-18 21:35 J -13266227.67 -13266227.60 -13266227.52 0.0283 0.0246

Moon -41034-03-24 20:38 J -13266162.83 -13266162.64 -13266162.44 0.0284 0.0179

Earth -41034-03-24 23:45 J -13266162.70 -13266162.51 -13266162.31 0.0284 0.0168 \*

Mercury -41034-04-17 14:09 J -13266139.05 -13266138.91 -13266138.77 0.0284 0.0131

Mercury -41034-07-15 07:11 J -13266050.36 -13266050.20 -13266050.04 0.0284 0.0015

Mercury -41034-10-12 00:14 J -13265961.63 -13265961.49 -13265961.33 0.0284 0.0108

Mercury -41033-01-08 17:59 J -13265872.84 -13265872.75 -13265872.65 0.0284 0.0231

Moon -41033-04-06 08:38 J -13265784.24 -13265784.14 -13265784.02 0.0284 0.0249

Earth -41033-04-06 11:30 J -13265784.12 -13265784.02 -13265783.90 0.0284 0.0251 \*

Venus -41032-04-14 16:33 J -13265411.01 -13265410.81 -13265410.61 0.0284 0.0099

Venus -41032-11-30 07:11 J -13265181.38 -13265181.20 -13265181.00 0.0284 0.0128

Mars -41027-09-06 11:16 J -13263440.22 -13263440.03 -13263439.82 0.0280 0.0205

Mercury -41020-08-26 04:33 J -13260894.36 -13260894.31 -13260894.25 0.0275 0.0253

Earth -41020-09-24 11:59 J -13260865.14 -13260865.00 -13260864.85 0.0275 0.0219

Moon -41020-09-24 15:50 J -13260864.97 -13260864.84 -13260864.71 0.0275 0.0232 \*

Mercury -41020-11-22 19:26 J -13260805.82 -13260805.69 -13260805.57 0.0275 0.0147

Mercury -41019-02-19 09:35 J -13260717.24 -13260717.10 -13260716.95 0.0275 0.0044

Mercury -41019-05-18 23:45 J -13260628.66 -13260628.51 -13260628.36 0.0275 0.0058

Mercury -41019-08-15 13:26 J -13260540.06 -13260539.94 -13260539.82 0.0275 0.0157

Earth -41019-10-07 04:18 J -13260487.50 -13260487.32 -13260487.11 0.0275 0.0162

Moon -41019-10-07 05:02 J -13260487.49 -13260487.29 -13260487.06 0.0275 0.0149 \*

Mercury -41019-11-12 02:52 J -13260451.43 -13260451.38 -13260451.32 0.0275 0.0254

Venus -41018-10-01 02:38 J -13260128.53 -13260128.39 -13260128.25 0.0275 0.0202

Venus -41017-05-17 11:30 J -13259899.23 -13259899.02 -13259898.81 0.0275 0.0005

Venus -41016-01-01 19:11 J -13259669.82 -13259669.70 -13259669.55 0.0275 0.0209

Mercury -41005-09-03 13:40 J -13255407.05 -13255406.93 -13255406.81 0.0284 0.0173

Mercury -41005-12-01 06:28 J -13255318.39 -13255318.23 -13255318.08 0.0284 0.0057

Mercury -41004-02-27 23:30 J -13255229.68 -13255229.52 -13255229.36 0.0284 0.0063

Earth -41004-03-31 15:06 J -13255198.10 -13255197.87 -13255197.62 0.0284 0.0055

Moon -41004-03-31 17:59 J -13255198.00 -13255197.75 -13255197.50 0.0284 0.0048 \*

Mercury -41004-05-27 17:02 J -13255140.91 -13255140.79 -13255140.67 0.0284 0.0185

Venus -41003-10-25 17:59 J -13254624.95 -13254624.75 -13254624.54 0.0284 0.0073

Venus -41002-06-12 08:52 J -13254395.31 -13254395.13 -13254394.95 0.0284 0.0153

# 41ST MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 41st millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-40997-10-26 00:42 J	-13252432.68	-13252432.47	-13252432.23	0.0280	0.0188		
Mercury	-40990-04-11 19:54 J	-13250073.78	-13250073.67	-13250073.55	0.0275	0.0183		
Mercury	-40990-07-09 10:33 J	-13249985.21	-13249985.06	-13249984.92	0.0275	0.0078		
Moon	-40990-10-01 19:26 J	-13249900.93	-13249900.69	-13249900.45	0.0275	0.0027		
Earth	-40990-10-01 20:23 J	-13249900.90	-13249900.65	-13249900.41	0.0275	0.0013	*	
Mercury	-40990-10-06 00:42 J	-13249896.62	-13249896.47	-13249896.32	0.0275	0.0025		
Mercury	-40989-01-02 14:23 J	-13249808.02	-13249807.90	-13249807.76	0.0275	0.0126		
Mercury	-40989-03-31 04:04 J	-13249719.41	-13249719.33	-13249719.24	0.0275	0.0223		
Venus	-40988-04-12 05:45 J	-13249342.42	-13249342.26	-13249342.09	0.0275	0.0174		
Venus	-40988-11-27 14:52 J	-13249113.09	-13249112.88	-13249112.67	0.0275	0.0033		
Venus	-40987-07-14 22:47 J	-13248883.64	-13248883.55	-13248883.44	0.0276	0.0238		
Mercury	-40975-01-21 15:50 J	-13244674.95	-13244674.84	-13244674.73	0.0284	0.0196		
Moon	-40975-03-26 05:02 J	-13244611.50	-13244611.29	-13244611.08	0.0284	0.0135		
Earth	-40975-03-26 07:40 J	-13244611.39	-13244611.18	-13244610.95	0.0284	0.0124	*	
Mercury	-40975-04-20 08:23 J	-13244586.30	-13244586.15	-13244585.99	0.0284	0.0081		
Mercury	-40975-07-18 01:40 J	-13244497.59	-13244497.43	-13244497.27	0.0284	0.0039		
Mercury	-40975-10-14 18:57 J	-13244408.84	-13244408.71	-13244408.57	0.0284	0.0161		
Venus	-40974-09-20 13:40 J	-13244068.01	-13244067.93	-13244067.84	0.0284	0.0257		
Venus	-40973-05-07 04:04 J	-13243838.54	-13243838.33	-13243838.12	0.0284	0.0034		
Venus	-40973-12-22 18:57 J	-13243608.85	-13243608.71	-13243608.55	0.0284	0.0193		
Mercury	-40961-08-28 22:47 J	-13239341.65	-13239341.55	-13239341.45	0.0275	0.0203		
Earth	-40961-09-25 21:06 J	-13239313.80	-13239313.62	-13239313.42	0.0275	0.0175		
Moon	-40961-09-25 22:18 J	-13239313.75	-13239313.57	-13239313.38	0.0275	0.0189	*	
Mercury	-40961-11-25 13:11 J	-13239253.08	-13239252.95	-13239252.80	0.0275	0.0099		
Mercury	-40960-02-22 03:35 J	-13239164.50	-13239164.35	-13239164.20	0.0275	0.0005		

Mercury -40960-05-21 17:30 J -13239075.91 -13239075.77 -13239075.63 0.0275 0.0105

Mercury -40960-08-18 07:11 J -13238987.30 -13238987.20 -13238987.11 0.0275 0.0203

Moon -40960-10-08 10:04 J -13238936.25 -13238936.08 -13238935.89 0.0275 0.0192

Earth -40960-10-08 13:26 J -13238936.10 -13238935.94 -13238935.78 0.0275 0.0205 \*

Venus -40959-10-23 13:54 J -13238556.11 -13238555.92 -13238555.74 0.0275 0.0139

Venus -40958-06-09 22:18 J -13238326.77 -13238326.57 -13238326.36 0.0275 0.0066

Venus -40957-01-25 05:45 J -13238097.29 -13238097.26 -13238097.20 0.0275 0.0269

Mars -40952-02-09 22:33 J -13236254.83 -13236254.56 -13236254.29 0.0279 0.0092

Mercury -40946-06-10 15:21 J -13233942.94 -13233942.86 -13233942.77 0.0284 0.0238

Mercury -40946-09-07 07:54 J -13233854.31 -13233854.17 -13233854.02 0.0284 0.0123

Mercury -40946-12-05 00:57 J -13233765.62 -13233765.46 -13233765.30 0.0284 0.0006

Mercury -40945-03-02 18:14 J -13233676.89 -13233676.74 -13233676.60 0.0284 0.0116

Moon -40945-04-01 22:18 J -13233646.80 -13233646.57 -13233646.33 0.0284 0.0096

Earth -40945-04-01 23:30 J -13233646.74 -13233646.52 -13233646.28 0.0284 0.0100 \*

Mercury -40945-05-30 11:59 J -13233588.09 -13233588.00 -13233587.92 0.0284 0.0239

Venus -40944-04-01 15:21 J -13233281.97 -13233281.86 -13233281.73 0.0284 0.0231

Venus -40944-11-17 05:30 J -13233052.48 -13233052.27 -13233052.05 0.0284 0.0010

Venus -40943-07-04 20:38 J -13232822.77 -13232822.64 -13232822.50 0.0284 0.0218

Mars -40938-01-31 00:28 J -13231151.71 -13231151.48 -13231151.23 0.0280 0.0168

Mercury -40931-01-15 23:02 J -13228609.61 -13228609.54 -13228609.47 0.0275 0.0241

Mercury -40931-04-14 13:40 J -13228521.06 -13228520.93 -13228520.80 0.0275 0.0136

Mercury -40931-07-12 04:04 J -13228432.48 -13228432.33 -13228432.18 0.0275 0.0032

Earth -40931-10-03 03:21 J -13228349.60 -13228349.36 -13228349.12 0.0275 0.0030

Moon -40931-10-03 06:28 J -13228349.47 -13228349.23 -13228348.99 0.0275 0.0015 \*

Mercury -40931-10-08 17:59 J -13228343.89 -13228343.75 -13228343.60 0.0275 0.0070

Mercury -40930-01-05 07:40 J -13228255.29 -13228255.18 -13228255.06 0.0275 0.0169

Mercury -40930-04-03 21:21 J -13228166.64 -13228166.61 -13228166.58 0.0275 0.0266

Venus -40929-05-04 16:04 J -13227770.03 -13227769.83 -13227769.64 0.0275 0.0113

Venus -40929-12-20 00:28 J -13227540.67 -13227540.48 -13227540.27 0.0275 0.0093

Mercury -40917-10-27 17:02 J -13223210.84 -13223210.79 -13223210.73 0.0284 0.0264



Mercury -40916-01-24 09:35 J -13223122.23 -13223122.10 -13223121.97 0.0284 0.0150  
 Earth -40916-03-27 13:40 J -13223060.17 -13223059.93 -13223059.70 0.0284 0.0082  
 Moon -40916-03-27 14:52 J -13223060.11 -13223059.88 -13223059.66 0.0284 0.0091 \*  
 Mercury -40916-04-23 02:23 J -13223033.56 -13223033.40 -13223033.24 0.0284 0.0033  
 Mercury -40916-07-20 19:40 J -13222944.83 -13222944.68 -13222944.53 0.0284 0.0088  
 Mercury -40916-10-17 13:11 J -13222856.05 -13222855.95 -13222855.84 0.0284 0.0211  
 Venus -40915-10-12 23:30 J -13222495.67 -13222495.52 -13222495.36 0.0284 0.0195  
 Venus -40914-05-30 14:09 J -13222266.12 -13222265.91 -13222265.70 0.0284 0.0029  
 Venus -40913-01-15 05:30 J -13222036.35 -13222036.27 -13222036.17 0.0284 0.0255  
 Mars -40908-03-22 18:14 J -13220142.85 -13220142.74 -13220142.60 0.0280 0.0253  
 Mercury -40902-06-05 01:40 J -13217877.46 -13217877.43 -13217877.38 0.0275 0.0262  
 Mercury -40902-09-01 16:33 J -13217788.93 -13217788.81 -13217788.68 0.0275 0.0156  
 Moon -40902-09-28 01:26 J -13217762.64 -13217762.44 -13217762.22 0.0275 0.0149  
 Earth -40902-09-28 04:47 J -13217762.51 -13217762.30 -13217762.08 0.0275 0.0133 \*  
 Mercury -40902-11-29 06:57 J -13217700.36 -13217700.21 -13217700.06 0.0275 0.0052  
 Mercury -40901-02-25 21:06 J -13217611.77 -13217611.62 -13217611.47 0.0275 0.0050  
 Mercury -40901-05-24 10:47 J -13217523.17 -13217523.05 -13217522.92 0.0275 0.0150  
 Mercury -40901-08-21 00:14 J -13217434.54 -13217434.49 -13217434.42 0.0275 0.0247  
 Moon -40901-10-09 17:45 J -13217384.88 -13217384.76 -13217384.63 0.0275 0.0235  
 Earth -40901-10-09 20:23 J -13217384.74 -13217384.65 -13217384.53 0.0275 0.0248 \*  
 Venus -40900-11-15 00:14 J -13216983.69 -13216983.49 -13216983.28 0.0275 0.0078  
 Venus -40899-07-02 08:38 J -13216754.33 -13216754.14 -13216753.95 0.0275 0.0126  
 Mars -40894-05-19 00:14 J -13214972.62 -13214972.49 -13214972.35 0.0278 0.0245  
 Earth -40887-03-21 18:14 J -13212473.77 -13212473.74 -13212473.68 0.0284 0.0278  
 Mercury -40887-06-13 09:06 J -13212390.23 -13212390.12 -13212390.00 0.0284 0.0192  
 Mercury -40887-09-10 01:40 J -13212301.58 -13212301.43 -13212301.27 0.0284 0.0076  
 Mercury -40887-12-07 18:42 J -13212212.87 -13212212.72 -13212212.56 0.0284 0.0044  
 Mercury -40886-03-06 12:14 J -13212124.12 -13212123.99 -13212123.86 0.0284 0.0165  
 Moon -40886-04-04 01:40 J -13212095.64 -13212095.43 -13212095.21 0.0284 0.0139  
 Earth -40886-04-04 05:16 J -13212095.48 -13212095.28 -13212095.06 0.0284 0.0142 \*

Venus -40885-04-24 01:11 J -13211709.61 -13211709.45 -13211709.28 0.0284 0.0169  
 Venus -40885-12-09 15:35 J -13211480.05 -13211479.85 -13211479.64 0.0284 0.0055  
 Venus -40884-07-27 06:42 J -13211250.24 -13211250.22 -13211250.17 0.0284 0.0280  
 Mercury -40872-01-18 16:18 J -13207056.92 -13207056.82 -13207056.70 0.0275 0.0196  
 Mercury -40872-04-17 06:57 J -13206968.35 -13206968.21 -13206968.06 0.0275 0.0091  
 Mercury -40872-07-14 21:21 J -13206879.76 -13206879.61 -13206879.46 0.0275 0.0012  
 Earth -40872-10-04 09:21 J -13206798.35 -13206798.11 -13206797.87 0.0275 0.0070  
 Moon -40872-10-04 11:59 J -13206798.24 -13206798.00 -13206797.75 0.0275 0.0056 \*  
 Mercury -40872-10-11 11:16 J -13206791.17 -13206791.03 -13206790.90 0.0275 0.0113  
 Mercury -40871-01-08 00:57 J -13206702.55 -13206702.46 -13206702.37 0.0275 0.0211  
 Venus -40871-10-10 16:04 J -13206426.89 -13206426.83 -13206426.76 0.0275 0.0259  
 Venus -40870-05-28 01:26 J -13206197.65 -13206197.44 -13206197.23 0.0275 0.0054  
 Venus -40869-01-12 09:35 J -13205968.27 -13205968.10 -13205967.92 0.0275 0.0150  
 Mars -40864-07-06 11:30 J -13203966.26 -13203966.02 -13203965.75 0.0279 0.0125  
 Mercury -40858-10-31 10:04 J -13201658.17 -13201658.08 -13201657.98 0.0284 0.0223  
 Mercury -40857-01-28 02:52 J -13201569.53 -13201569.38 -13201569.24 0.0284 0.0107  
 Earth -40857-03-28 16:47 J -13201509.04 -13201508.80 -13201508.56 0.0284 0.0044  
 Moon -40857-03-28 20:38 J -13201508.88 -13201508.64 -13201508.39 0.0284 0.0050 \*  
 Mercury -40857-04-25 19:40 J -13201480.84 -13201480.68 -13201480.52 0.0284 0.0014  
 Mercury -40857-07-23 13:11 J -13201392.09 -13201391.95 -13201391.81 0.0284 0.0133  
 Mercury -40857-10-20 06:57 J -13201303.28 -13201303.21 -13201303.15 0.0284 0.0257  
 Venus -40856-11-04 08:09 J -13200923.34 -13200923.16 -13200922.97 0.0284 0.0135  
 Venus -40855-06-21 22:47 J -13200693.75 -13200693.55 -13200693.34 0.0284 0.0089  
 Mars -40850-06-27 09:35 J -13198862.37 -13198862.10 -13198861.83 0.0281 0.0111  
 Mercury -40843-06-07 19:26 J -13196324.78 -13196324.69 -13196324.60 0.0275 0.0217  
 Mercury -40843-09-04 10:04 J -13196236.22 -13196236.08 -13196235.95 0.0275 0.0112  
 Moon -40843-09-29 08:09 J -13196211.37 -13196211.16 -13196210.93 0.0275 0.0109  
 Earth -40843-09-29 10:47 J -13196211.28 -13196211.05 -13196210.81 0.0275 0.0093 \*  
 Mercury -40843-12-02 00:14 J -13196147.64 -13196147.49 -13196147.34 0.0275 0.0008  
 Mercury -40842-02-28 14:09 J -13196059.05 -13196058.91 -13196058.77 0.0275 0.0093

Mercury -40842-05-28 03:50 J -13195970.44 -13195970.34 -13195970.23 0.0275 0.0192  
 Venus -40841-04-22 00:28 J -13195640.59 -13195640.48 -13195640.34 0.0275 0.0223  
 Venus -40841-12-07 09:35 J -13195411.31 -13195411.10 -13195410.88 0.0275 0.0019  
 Venus -40840-07-24 17:45 J -13195181.91 -13195181.76 -13195181.60 0.0275 0.0184  
 Mercury -40828-03-19 09:50 J -13190926.14 -13190926.09 -13190926.03 0.0284 0.0263  
 Moon -40828-03-22 18:14 J -13190922.85 -13190922.74 -13190922.61 0.0284 0.0247  
 Earth -40828-03-22 21:50 J -13190922.70 -13190922.59 -13190922.45 0.0284 0.0241 \*  
 Mercury -40828-06-16 02:23 J -13190837.53 -13190837.40 -13190837.27 0.0284 0.0149  
 Mercury -40828-09-12 19:11 J -13190748.86 -13190748.70 -13190748.54 0.0284 0.0032  
 Mercury -40828-12-10 12:14 J -13190660.14 -13190659.99 -13190659.83 0.0284 0.0089  
 Mercury -40827-03-09 05:45 J -13190571.36 -13190571.26 -13190571.15 0.0284 0.0212  
 Moon -40827-04-05 08:09 J -13190544.33 -13190544.16 -13190543.97 0.0284 0.0182  
 Earth -40827-04-05 09:06 J -13190544.30 -13190544.12 -13190543.92 0.0284 0.0181 \*  
 Venus -40826-05-17 09:50 J -13190137.28 -13190137.09 -13190136.89 0.0284 0.0109  
 Venus -40825-01-02 00:28 J -13189907.67 -13189907.48 -13189907.28 0.0284 0.0115  
 Mars -40820-08-15 19:26 J -13187854.70 -13187854.69 -13187854.65 0.0280 0.0279  
 Jupiter -40816-12-08 05:30 J -13186279.72 -13186279.27 -13186278.81 0.0276 0.0016  
 Earth -40814-09-23 20:38 J -13185624.64 -13185624.64 -13185624.60 0.0275 0.0274  
 Mercury -40814-10-25 18:57 J -13185592.76 -13185592.71 -13185592.66 0.0275 0.0258  
 Mercury -40813-01-22 09:35 J -13185504.22 -13185504.10 -13185503.97 0.0275 0.0153  
 Mercury -40813-04-20 00:14 J -13185415.64 -13185415.49 -13185415.34 0.0275 0.0049  
 Mercury -40813-07-17 14:09 J -13185327.05 -13185326.91 -13185326.76 0.0275 0.0055  
 Moon -40813-10-05 11:45 J -13185247.24 -13185247.01 -13185246.76 0.0275 0.0098  
 Earth -40813-10-05 14:09 J -13185247.14 -13185246.91 -13185246.69 0.0275 0.0109 \*  
 Mercury -40813-10-14 04:04 J -13185238.45 -13185238.33 -13185238.21 0.0275 0.0154  
 Mercury -40812-01-10 17:45 J -13185149.82 -13185149.76 -13185149.71 0.0275 0.0251  
 Venus -40812-11-02 00:57 J -13184854.60 -13184854.46 -13184854.31 0.0275 0.0201  
 Venus -40811-06-19 10:04 J -13184625.29 -13184625.08 -13184624.87 0.0275 0.0003  
 Venus -40810-02-03 17:59 J -13184395.88 -13184395.75 -13184395.60 0.0275 0.0206  
 Mars -40806-10-12 06:42 J -13182684.37 -13182684.22 -13182684.02 0.0278 0.0222

Mercury -40799-11-03 02:52 J -13180105.50 -13180105.38 -13180105.26 0.0284 0.0183

Mercury -40798-01-30 19:40 J -13180016.84 -13180016.68 -13180016.53 0.0284 0.0067

Earth -40798-03-30 17:59 J -13179957.99 -13179957.75 -13179957.50 0.0284 0.0009

Moon -40798-03-30 18:14 J -13179957.99 -13179957.74 -13179957.48 0.0284 0.0010 \*

Mercury -40798-04-29 12:42 J -13179928.13 -13179927.97 -13179927.82 0.0284 0.0053

Mercury -40798-07-27 05:59 J -13179839.37 -13179839.25 -13179839.12 0.0284 0.0176

Venus -40797-11-26 15:21 J -13179351.06 -13179350.86 -13179350.66 0.0284 0.0078

Venus -40796-07-14 06:14 J -13179121.42 -13179121.24 -13179121.06 0.0284 0.0146

Mercury -40784-06-10 12:28 J -13174772.09 -13174771.98 -13174771.86 0.0275 0.0174

Mercury -40784-09-07 02:52 J -13174683.52 -13174683.38 -13174683.23 0.0275 0.0070

Earth -40784-09-30 15:21 J -13174660.10 -13174659.86 -13174659.62 0.0275 0.0055

Moon -40784-09-30 17:02 J -13174660.02 -13174659.79 -13174659.56 0.0275 0.0069 \*

Mercury -40784-12-04 17:16 J -13174594.93 -13174594.78 -13174594.63 0.0275 0.0034

Mercury -40783-03-03 06:57 J -13174506.33 -13174506.21 -13174506.08 0.0275 0.0134

Mercury -40783-05-30 20:38 J -13174417.72 -13174417.64 -13174417.56 0.0275 0.0232

Venus -40782-05-15 09:35 J -13174068.27 -13174068.10 -13174067.93 0.0275 0.0164

Venus -40782-12-30 18:14 J -13173838.95 -13173838.74 -13173838.53 0.0275 0.0040

Venus -40781-08-16 02:23 J -13173609.50 -13173609.40 -13173609.30 0.0275 0.0240

Mars -40776-11-30 05:45 J -13171677.48 -13171677.26 -13171677.02 0.0278 0.0170

Mercury -40769-03-22 02:38 J -13169373.48 -13169373.39 -13169373.29 0.0284 0.0223

Earth -40769-03-23 23:30 J -13169371.67 -13169371.52 -13169371.34 0.0284 0.0206

Moon -40769-03-23 23:59 J -13169371.65 -13169371.50 -13169371.34 0.0284 0.0208 \*

Mercury -40769-06-18 19:11 J -13169284.84 -13169284.70 -13169284.55 0.0284 0.0108

Mercury -40769-09-15 12:14 J -13169196.15 -13169195.99 -13169195.83 0.0284 0.0011

Mercury -40769-12-13 05:16 J -13169107.41 -13169107.28 -13169107.13 0.0284 0.0132

Mercury -40768-03-11 23:02 J -13169018.60 -13169018.54 -13169018.47 0.0284 0.0255

Earth -40768-04-06 11:02 J -13168993.19 -13168993.04 -13168992.88 0.0284 0.0217

Moon -40768-04-06 14:38 J -13168993.03 -13168992.89 -13168992.74 0.0284 0.0223 \*

Venus -40768-10-22 03:21 J -13168794.41 -13168794.36 -13168794.29 0.0284 0.0272

Venus -40767-06-08 17:16 J -13168564.98 -13168564.78 -13168564.57 0.0284 0.0052

Venus -40766-01-24 08:09 J -13168335.32 -13168335.16 -13168334.98 0.0284 0.0173  
 Mars -40762-11-20 06:14 J -13166574.51 -13166574.24 -13166573.95 0.0281 0.0092  
 Moon -40755-09-24 23:02 J -13164073.63 -13164073.54 -13164073.43 0.0275 0.0251  
 Earth -40755-09-25 00:57 J -13164073.58 -13164073.46 -13164073.34 0.0275 0.0237 \*  
 Mercury -40755-10-28 11:45 J -13164040.09 -13164040.01 -13164039.91 0.0275 0.0217  
 Mercury -40754-01-25 02:38 J -13163951.53 -13163951.39 -13163951.25 0.0275 0.0111  
 Mercury -40754-04-23 17:02 J -13163862.94 -13163862.79 -13163862.64 0.0275 0.0010  
 Mercury -40754-07-21 06:57 J -13163774.35 -13163774.21 -13163774.07 0.0275 0.0094  
 Moon -40754-10-07 14:23 J -13163696.11 -13163695.90 -13163695.69 0.0275 0.0138  
 Earth -40754-10-07 17:30 J -13163695.97 -13163695.77 -13163695.55 0.0275 0.0147 \*  
 Mercury -40754-10-17 20:38 J -13163685.74 -13163685.64 -13163685.53 0.0275 0.0193  
 Venus -40753-11-24 09:21 J -13163282.29 -13163282.11 -13163281.93 0.0275 0.0144  
 Venus -40752-07-11 17:59 J -13163052.95 -13163052.75 -13163052.54 0.0275 0.0060  
 Venus -40751-02-26 01:54 J -13162823.48 -13162823.42 -13162823.35 0.0275 0.0260  
 Mercury -40740-08-09 02:38 J -13158641.44 -13158641.39 -13158641.32 0.0284 0.0261  
 Mercury -40740-11-05 19:11 J -13158552.83 -13158552.70 -13158552.56 0.0284 0.0146  
 Mercury -40739-02-02 11:59 J -13158464.15 -13158464.00 -13158463.84 0.0284 0.0029  
 Moon -40739-03-31 14:09 J -13158407.15 -13158406.91 -13158406.66 0.0284 0.0031  
 Earth -40739-03-31 17:59 J -13158406.99 -13158406.75 -13158406.51 0.0284 0.0025 \*  
 Mercury -40739-05-02 05:16 J -13158375.43 -13158375.28 -13158375.13 0.0284 0.0092  
 Mercury -40739-07-29 22:47 J -13158286.65 -13158286.55 -13158286.44 0.0284 0.0215  
 Venus -40738-05-04 07:26 J -13158008.29 -13158008.19 -13158008.08 0.0284 0.0244  
 Venus -40738-12-19 21:50 J -13157778.80 -13157778.59 -13157778.38 0.0284 0.0023  
 Venus -40737-08-05 12:42 J -13157549.11 -13157548.97 -13157548.81 0.0284 0.0201  
 Mercury -40725-03-16 14:23 J -13153307.97 -13153307.90 -13153307.82 0.0275 0.0240  
 Mercury -40725-06-13 05:16 J -13153219.41 -13153219.28 -13153219.15 0.0275 0.0134  
 Mercury -40725-09-09 19:40 J -13153130.83 -13153130.68 -13153130.53 0.0275 0.0030  
 Earth -40725-10-01 18:14 J -13153108.98 -13153108.74 -13153108.49 0.0275 0.0020  
 Moon -40725-10-01 21:50 J -13153108.83 -13153108.59 -13153108.34 0.0275 0.0033 \*  
 Mercury -40725-12-07 09:50 J -13153042.24 -13153042.09 -13153041.95 0.0275 0.0073

Mercury -40724-03-05 23:30 J -13152953.63 -13152953.52 -13152953.40 0.0275 0.0172

Mercury -40724-06-02 13:11 J -13152864.98 -13152864.95 -13152864.93 0.0275 0.0270

Venus -40723-06-06 17:30 J -13152495.96 -13152495.77 -13152495.57 0.0275 0.0107

Venus -40722-01-22 02:09 J -13152266.61 -13152266.41 -13152266.21 0.0275 0.0096

Mars -40717-03-07 03:21 J -13150395.58 -13150395.36 -13150395.12 0.0277 0.0170

Mercury -40710-03-25 19:26 J -13147820.81 -13147820.69 -13147820.57 0.0283 0.0184

Earth -40710-03-26 00:57 J -13147820.65 -13147820.46 -13147820.26 0.0283 0.0171 \*

Moon -40710-03-26 04:33 J -13147820.50 -13147820.31 -13147820.12 0.0283 0.0170 \*

Mercury -40710-06-22 11:59 J -13147732.15 -13147732.00 -13147731.84 0.0284 0.0068

Mercury -40710-09-19 05:02 J -13147643.45 -13147643.29 -13147643.13 0.0284 0.0051

Mercury -40710-12-16 22:18 J -13147554.69 -13147554.57 -13147554.44 0.0284 0.0173

Earth -40709-04-07 12:28 J -13147442.09 -13147441.98 -13147441.87 0.0284 0.0252

Moon -40709-04-07 14:23 J -13147441.98 -13147441.90 -13147441.79 0.0284 0.0261 \*

Venus -40709-11-13 10:18 J -13147222.20 -13147222.07 -13147221.93 0.0284 0.0215

Venus -40708-07-01 00:14 J -13146992.70 -13146992.49 -13146992.27 0.0284 0.0009

Venus -40707-02-15 15:21 J -13146762.98 -13146762.86 -13146762.73 0.0284 0.0229

Moon -40696-09-25 23:59 J -13142522.64 -13142522.50 -13142522.34 0.0275 0.0218

Earth -40696-09-26 03:50 J -13142522.51 -13142522.34 -13142522.17 0.0275 0.0202 \*

Mercury -40696-10-31 04:47 J -13142487.42 -13142487.30 -13142487.18 0.0275 0.0176

Mercury -40695-01-27 19:11 J -13142398.84 -13142398.70 -13142398.55 0.0275 0.0072

Mercury -40695-04-26 09:35 J -13142310.25 -13142310.10 -13142309.95 0.0275 0.0032

Mercury -40695-07-23 23:30 J -13142221.65 -13142221.52 -13142221.39 0.0275 0.0132

Earth -40695-10-08 20:23 J -13142144.82 -13142144.65 -13142144.46 0.0275 0.0183

Moon -40695-10-08 20:38 J -13142144.81 -13142144.64 -13142144.45 0.0275 0.0177 \*

Mercury -40695-10-20 12:57 J -13142133.03 -13142132.96 -13142132.87 0.0275 0.0231

Venus -40694-12-17 17:02 J -13141709.98 -13141709.79 -13141709.58 0.0275 0.0088

Venus -40693-08-03 01:40 J -13141480.62 -13141480.43 -13141480.23 0.0275 0.0115

Mars -40687-04-25 05:45 J -13139389.46 -13139389.26 -13139389.04 0.0278 0.0189

Mercury -40681-08-11 18:57 J -13137088.80 -13137088.71 -13137088.61 0.0284 0.0225

Mercury -40681-11-08 11:30 J -13137000.16 -13137000.02 -13136999.87 0.0284 0.0109

Mercury -40680-02-05 04:18 J -13136911.47 -13136911.32 -13136911.16 0.0284 0.0012

Moon -40680-04-01 15:21 J -13136856.08 -13136855.86 -13136855.62 0.0284 0.0065

Earth -40680-04-01 17:16 J -13136856.02 -13136855.78 -13136855.54 0.0284 0.0057 \*

Mercury -40680-05-04 21:35 J -13136822.74 -13136822.60 -13136822.45 0.0284 0.0131

Mercury -40680-08-01 15:06 J -13136733.93 -13136733.87 -13136733.79 0.0284 0.0255

Venus -40679-05-26 13:11 J -13136436.10 -13136435.95 -13136435.79 0.0284 0.0190

Venus -40678-01-11 03:50 J -13136206.55 -13136206.34 -13136206.13 0.0284 0.0032

Venus -40678-08-28 18:57 J -13135976.79 -13135976.71 -13135976.61 0.0284 0.0255

Mars -40673-04-14 17:45 J -13134286.05 -13134285.76 -13134285.47 0.0281 0.0054

Mercury -40666-03-20 07:11 J -13131755.30 -13131755.20 -13131755.09 0.0276 0.0201

Mercury -40666-06-16 21:50 J -13131666.73 -13131666.59 -13131666.44 0.0276 0.0095

Mercury -40666-09-13 12:14 J -13131578.14 -13131577.99 -13131577.84 0.0275 0.0009

Earth -40666-10-03 20:52 J -13131557.87 -13131557.63 -13131557.38 0.0275 0.0015

Moon -40666-10-03 21:21 J -13131557.86 -13131557.61 -13131557.35 0.0275 0.0005 \*

Mercury -40666-12-11 02:09 J -13131489.54 -13131489.41 -13131489.27 0.0275 0.0111

Mercury -40665-03-08 15:50 J -13131400.93 -13131400.84 -13131400.74 0.0275 0.0210

Venus -40665-11-11 15:50 J -13131152.91 -13131152.84 -13131152.75 0.0275 0.0253

Venus -40664-06-29 01:26 J -13130923.65 -13130923.44 -13130923.23 0.0275 0.0050

Venus -40663-02-13 09:50 J -13130694.26 -13130694.09 -13130693.91 0.0275 0.0151

Mercury -40652-12-29 19:40 J -13126356.73 -13126356.68 -13126356.61 0.0283 0.0259

Earth -40651-03-27 01:54 J -13126269.63 -13126269.42 -13126269.20 0.0283 0.0137

Moon -40651-03-27 04:04 J -13126269.56 -13126269.33 -13126269.11 0.0283 0.0135 \*

Mercury -40651-03-28 11:59 J -13126268.13 -13126268.00 -13126267.86 0.0283 0.0145

Mercury -40651-06-25 04:47 J -13126179.46 -13126179.30 -13126179.14 0.0283 0.0028

Mercury -40651-09-21 21:50 J -13126090.74 -13126090.59 -13126090.44 0.0284 0.0092

Mercury -40651-12-19 15:21 J -13126001.96 -13126001.86 -13126001.75 0.0284 0.0215

Venus -40650-12-06 17:02 J -13125649.96 -13125649.79 -13125649.61 0.0284 0.0159

Venus -40649-07-23 07:11 J -13125420.40 -13125420.20 -13125419.99 0.0284 0.0062

Venus -40648-03-09 22:33 J -13125190.56 -13125190.56 -13125190.56 0.0284 0.0284

Mercury -40637-08-06 06:42 J -13121023.29 -13121023.22 -13121023.15 0.0275 0.0244

Moon -40637-09-27 05:30 J -13120971.44 -13120971.27 -13120971.08 0.0275 0.0182  
 Earth -40637-09-27 05:59 J -13120971.44 -13120971.25 -13120971.05 0.0275 0.0168 \*  
 Mercury -40637-11-02 21:21 J -13120934.74 -13120934.61 -13120934.47 0.0275 0.0137  
 Mercury -40636-01-30 11:59 J -13120846.15 -13120846.00 -13120845.85 0.0275 0.0033  
 Mercury -40636-04-29 01:54 J -13120757.56 -13120757.42 -13120757.27 0.0275 0.0070  
 Mercury -40636-07-26 15:50 J -13120668.95 -13120668.84 -13120668.72 0.0275 0.0170  
 Earth -40636-10-09 22:47 J -13120593.69 -13120593.55 -13120593.39 0.0275 0.0218  
 Moon -40636-10-10 02:09 J -13120593.55 -13120593.41 -13120593.25 0.0275 0.0214 \*  
 Mercury -40636-10-23 05:30 J -13120580.30 -13120580.27 -13120580.24 0.0275 0.0267  
 Venus -40635-05-24 15:21 J -13120366.96 -13120366.86 -13120366.74 0.0275 0.0234  
 Venus -40634-01-09 00:42 J -13120137.68 -13120137.47 -13120137.25 0.0275 0.0032  
 Venus -40634-08-26 09:06 J -13119908.28 -13119908.12 -13119907.94 0.0275 0.0170  
 Mars -40629-07-31 01:40 J -13118107.66 -13118107.43 -13118107.18 0.0278 0.0154  
 Mercury -40622-08-15 11:30 J -13115536.14 -13115536.02 -13115535.91 0.0283 0.0188  
 Mercury -40622-11-12 04:04 J -13115447.48 -13115447.33 -13115447.18 0.0284 0.0071  
 Mercury -40621-02-08 20:52 J -13115358.78 -13115358.63 -13115358.47 0.0284 0.0049  
 Earth -40621-04-02 17:02 J -13115305.02 -13115304.79 -13115304.55 0.0284 0.0090  
 Moon -40621-04-02 19:26 J -13115304.90 -13115304.69 -13115304.46 0.0284 0.0101 \*  
 Mercury -40621-05-07 14:23 J -13115270.03 -13115269.90 -13115269.77 0.0284 0.0170  
 Venus -40620-06-17 19:26 J -13114863.88 -13114863.69 -13114863.51 0.0284 0.0134  
 Venus -40619-02-02 10:04 J -13114634.28 -13114634.08 -13114633.88 0.0284 0.0087  
 Mercury -40608-12-24 08:52 J -13110291.16 -13110291.13 -13110291.10 0.0276 0.0270  
 Mercury -40607-03-22 23:45 J -13110202.63 -13110202.51 -13110202.38 0.0276 0.0162  
 Mercury -40607-06-19 14:23 J -13110114.05 -13110113.90 -13110113.75 0.0276 0.0057  
 Mercury -40607-09-16 04:33 J -13110025.45 -13110025.31 -13110025.16 0.0276 0.0047  
 Moon -40607-10-04 19:26 J -13110006.94 -13110006.69 -13110006.44 0.0276 0.0039  
 Earth -40607-10-04 22:47 J -13110006.79 -13110006.55 -13110006.31 0.0276 0.0049 \*  
 Mercury -40607-12-13 18:28 J -13109936.85 -13109936.73 -13109936.60 0.0276 0.0148  
 Mercury -40606-03-12 08:09 J -13109848.22 -13109848.16 -13109848.09 0.0275 0.0246  
 Venus -40606-12-04 23:45 J -13109580.66 -13109580.51 -13109580.36 0.0275 0.0196



Venus -40605-07-21 09:06 J -13109351.33 -13109351.12 -13109350.91 0.0275 0.0006  
 Venus -40604-03-07 17:16 J -13109121.91 -13109121.78 -13109121.63 0.0275 0.0206  
 Mars -40599-09-19 06:14 J -13107100.37 -13107100.24 -13107100.09 0.0278 0.0242  
 Mercury -40592-01-01 12:28 J -13104804.07 -13104803.98 -13104803.88 0.0283 0.0219  
 Moon -40592-03-28 01:11 J -13104718.67 -13104718.45 -13104718.20 0.0283 0.0097  
 Earth -40592-03-28 03:50 J -13104718.56 -13104718.34 -13104718.11 0.0283 0.0102 \*  
 Mercury -40592-03-31 04:47 J -13104715.44 -13104715.30 -13104715.15 0.0283 0.0105  
 Mercury -40592-06-27 21:50 J -13104626.75 -13104626.59 -13104626.43 0.0283 0.0015  
 Mercury -40592-09-24 14:52 J -13104538.02 -13104537.88 -13104537.74 0.0283 0.0134  
 Mercury -40592-12-22 08:23 J -13104449.21 -13104449.15 -13104449.08 0.0283 0.0258  
 Venus -40591-12-29 00:14 J -13104077.68 -13104077.49 -13104077.29 0.0284 0.0101  
 Venus -40590-08-15 14:38 J -13103848.08 -13103847.89 -13103847.70 0.0284 0.0119  
 Mars -40585-09-07 15:21 J -13101998.15 -13101997.86 -13101997.56 0.0281 0.0036  
 Mercury -40578-08-09 23:30 J -13099470.62 -13099470.52 -13099470.42 0.0275 0.0203  
 Earth -40578-09-29 08:52 J -13099420.34 -13099420.13 -13099419.91 0.0275 0.0133  
 Moon -40578-09-29 12:28 J -13099420.18 -13099419.98 -13099419.77 0.0275 0.0146 \*  
 Mercury -40578-11-06 14:09 J -13099382.05 -13099381.91 -13099381.77 0.0275 0.0097  
 Mercury -40577-02-03 04:33 J -13099293.46 -13099293.31 -13099293.16 0.0275 0.0007  
 Mercury -40577-05-01 18:28 J -13099204.86 -13099204.73 -13099204.59 0.0275 0.0109  
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 Earth -40577-10-11 01:40 J -13099042.50 -13099042.43 -13099042.32 0.0275 0.0254  
 Moon -40577-10-11 04:04 J -13099042.42 -13099042.33 -13099042.22 0.0275 0.0250 \*  
 Venus -40576-06-15 23:30 J -13098794.68 -13098794.52 -13098794.35 0.0275 0.0177  
 Venus -40575-01-31 08:52 J -13098565.34 -13098565.13 -13098564.92 0.0275 0.0025  
 Venus -40575-09-17 17:02 J -13098335.90 -13098335.79 -13098335.66 0.0275 0.0225  
 Mercury -40563-05-21 11:45 J -13094072.06 -13094072.01 -13094071.95 0.0283 0.0263  
 Mercury -40563-08-18 04:04 J -13093983.46 -13093983.33 -13093983.20 0.0283 0.0149  
 Mercury -40563-11-14 20:52 J -13093894.79 -13093894.63 -13093894.48 0.0283 0.0032  
 Mercury -40562-02-11 13:54 J -13093806.08 -13093805.92 -13093805.77 0.0284 0.0089  
 Earth -40562-04-04 17:45 J -13093753.97 -13093753.76 -13093753.53 0.0284 0.0125

Moon -40562-04-04 21:06 J -13093753.83 -13093753.62 -13093753.39 0.0284 0.0135 \*  
 Mercury -40562-05-11 07:11 J -13093717.30 -13093717.20 -13093717.09 0.0284 0.0211  
 Venus -40561-07-10 01:54 J -13093291.62 -13093291.42 -13093291.21 0.0284 0.0078  
 Venus -40560-02-24 16:47 J -13093061.98 -13093061.80 -13093061.62 0.0284 0.0143  
 Mercury -40549-12-27 01:26 J -13088738.51 -13088738.44 -13088738.35 0.0276 0.0231  
 Mercury -40548-03-25 16:18 J -13088649.95 -13088649.82 -13088649.68 0.0276 0.0124  
 Mercury -40548-06-22 06:57 J -13088561.36 -13088561.21 -13088561.06 0.0276 0.0019  
 Mercury -40548-09-18 20:52 J -13088472.77 -13088472.63 -13088472.48 0.0276 0.0085  
 Moon -40548-10-05 22:33 J -13088455.78 -13088455.56 -13088455.33 0.0276 0.0077  
 Earth -40548-10-06 00:57 J -13088455.69 -13088455.46 -13088455.23 0.0276 0.0084 \*  
 Mercury -40548-12-16 10:47 J -13088384.15 -13088384.05 -13088383.94 0.0276 0.0185  
 Venus -40547-12-27 07:26 J -13088008.37 -13088008.19 -13088008.01 0.0275 0.0140  
 Venus -40546-08-13 16:47 J -13087779.01 -13087778.80 -13087778.59 0.0275 0.0062  
 Venus -40545-03-30 00:57 J -13087549.52 -13087549.46 -13087549.39 0.0275 0.0261  
 Mars -40541-12-25 06:14 J -13085818.51 -13085818.24 -13085817.97 0.0277 0.0097  
 Mercury -40533-01-05 05:45 J -13083251.38 -13083251.26 -13083251.14 0.0283 0.0177  
 Moon -40533-03-29 04:18 J -13083167.56 -13083167.32 -13083167.08 0.0283 0.0057  
 Earth -40533-03-29 07:40 J -13083167.42 -13083167.18 -13083166.94 0.0283 0.0065 \*  
 Mercury -40533-04-02 22:18 J -13083162.73 -13083162.57 -13083162.42 0.0283 0.0061  
 Mercury -40533-06-30 15:06 J -13083074.02 -13083073.87 -13083073.71 0.0283 0.0058  
 Mercury -40533-09-27 08:23 J -13082985.27 -13082985.15 -13082985.02 0.0283 0.0179  
 Venus -40532-06-04 19:11 J -13082734.78 -13082734.70 -13082734.62 0.0283 0.0259  
 Venus -40531-01-20 08:38 J -13082505.35 -13082505.14 -13082504.93 0.0284 0.0042  
 Venus -40531-09-06 23:02 J -13082275.70 -13082275.54 -13082275.37 0.0284 0.0178  
 Mercury -40519-05-16 01:26 J -13078006.46 -13078006.44 -13078006.41 0.0276 0.0270  
 Mercury -40519-08-12 16:18 J -13077917.94 -13077917.82 -13077917.69 0.0275 0.0163  
 Earth -40519-09-30 12:28 J -13077869.21 -13077868.98 -13077868.75 0.0275 0.0098  
 Moon -40519-09-30 14:09 J -13077869.13 -13077868.91 -13077868.67 0.0275 0.0107 \*  
 Mercury -40519-11-09 06:57 J -13077829.36 -13077829.21 -13077829.06 0.0275 0.0057  
 Mercury -40518-02-05 21:21 J -13077740.76 -13077740.61 -13077740.47 0.0275 0.0047

Mercury -40518-05-05 11:02 J -13077652.16 -13077652.04 -13077651.91 0.0275 0.0149  
 Mercury -40518-08-02 00:57 J -13077563.52 -13077563.46 -13077563.40 0.0275 0.0246  
 Venus -40517-07-08 08:09 J -13077222.35 -13077222.16 -13077221.97 0.0275 0.0119  
 Venus -40516-02-22 17:16 J -13076992.98 -13076992.78 -13076992.58 0.0275 0.0082  
 Mars -40510-02-12 08:23 J -13074812.23 -13074812.15 -13074812.06 0.0278 0.0263  
 Earth -40504-03-23 10:33 J -13072581.13 -13072581.06 -13072580.96 0.0283 0.0264  
 Moon -40504-03-23 13:54 J -13072581.02 -13072580.92 -13072580.81 0.0283 0.0256 \*  
 Mercury -40504-05-24 04:47 J -13072519.39 -13072519.30 -13072519.20 0.0283 0.0221  
 Mercury -40504-08-20 21:21 J -13072430.76 -13072430.61 -13072430.47 0.0283 0.0107  
 Mercury -40504-11-17 13:54 J -13072342.07 -13072341.92 -13072341.76 0.0283 0.0013  
 Mercury -40503-02-14 07:11 J -13072253.34 -13072253.20 -13072253.06 0.0283 0.0132  
 Moon -40503-04-05 20:09 J -13072202.85 -13072202.66 -13072202.45 0.0283 0.0173  
 Earth -40503-04-05 20:52 J -13072202.83 -13072202.63 -13072202.42 0.0283 0.0161 \*  
 Mercury -40503-05-14 00:42 J -13072164.54 -13072164.47 -13072164.40 0.0283 0.0256  
 Venus -40503-12-15 19:54 J -13071948.77 -13071948.67 -13071948.54 0.0284 0.0237  
 Venus -40502-08-02 09:50 J -13071719.30 -13071719.09 -13071718.88 0.0284 0.0020  
 Venus -40501-03-19 00:28 J -13071489.62 -13071489.48 -13071489.32 0.0284 0.0201  
 Mars -40496-01-31 22:18 J -13069709.86 -13069709.57 -13069709.27 0.0281 0.0004  
 Earth -40490-09-25 08:52 J -13067282.16 -13067282.13 -13067282.09 0.0276 0.0273  
 Mercury -40490-12-30 18:28 J -13067185.84 -13067185.73 -13067185.62 0.0276 0.0190  
 Mercury -40489-03-28 09:06 J -13067097.26 -13067097.12 -13067096.97 0.0276 0.0083  
 Mercury -40489-06-24 23:30 J -13067008.67 -13067008.52 -13067008.37 0.0276 0.0022  
 Mercury -40489-09-21 13:40 J -13066920.06 -13066919.93 -13066919.80 0.0276 0.0124  
 Earth -40489-10-07 04:04 J -13066904.54 -13066904.33 -13066904.10 0.0276 0.0120  
 Moon -40489-10-07 06:42 J -13066904.44 -13066904.22 -13066904.00 0.0276 0.0117 \*  
 Mercury -40489-12-19 03:21 J -13066831.44 -13066831.36 -13066831.27 0.0276 0.0224  
 Venus -40487-01-18 15:50 J -13066436.04 -13066435.84 -13066435.63 0.0276 0.0082  
 Venus -40487-09-05 01:11 J -13066206.64 -13066206.45 -13066206.26 0.0276 0.0120  
 Mercury -40475-10-11 06:57 J -13061787.28 -13061787.21 -13061787.13 0.0283 0.0245  
 Mercury -40474-01-07 23:16 J -13061698.66 -13061698.53 -13061698.39 0.0283 0.0132

Earth -40474-03-31 12:42 J -13061616.21 -13061615.97 -13061615.72 0.0283 0.0025  
 Moon -40474-03-31 13:26 J -13061616.17 -13061615.94 -13061615.70 0.0283 0.0015 \*  
 Mercury -40474-04-06 16:04 J -13061609.99 -13061609.83 -13061609.68 0.0283 0.0016  
 Mercury -40474-07-04 08:52 J -13061521.27 -13061521.13 -13061520.98 0.0283 0.0105  
 Mercury -40474-10-01 02:23 J -13061432.49 -13061432.40 -13061432.30 0.0283 0.0227  
 Venus -40473-06-27 04:04 J -13061162.47 -13061162.33 -13061162.17 0.0283 0.0198  
 Venus -40472-02-11 17:59 J -13060932.96 -13060932.75 -13060932.54 0.0283 0.0019  
 Venus -40472-09-29 08:23 J -13060703.26 -13060703.15 -13060703.03 0.0283 0.0238  
 Mercury -40460-05-18 18:42 J -13056453.80 -13056453.72 -13056453.63 0.0276 0.0227  
 Mercury -40460-08-15 09:35 J -13056365.24 -13056365.10 -13056364.96 0.0276 0.0120  
 Moon -40460-10-01 14:09 J -13056318.15 -13056317.91 -13056317.66 0.0276 0.0065  
 Earth -40460-10-01 17:02 J -13056318.02 -13056317.79 -13056317.54 0.0276 0.0061 \*  
 Mercury -40460-11-11 23:59 J -13056276.65 -13056276.50 -13056276.35 0.0275 0.0015  
 Mercury -40459-02-08 14:09 J -13056188.05 -13056187.91 -13056187.77 0.0275 0.0088  
 Mercury -40459-05-08 04:04 J -13056099.43 -13056099.33 -13056099.22 0.0275 0.0188  
 Venus -40459-12-14 07:11 J -13055879.26 -13055879.20 -13055879.13 0.0275 0.0261  
 Venus -40458-07-31 17:16 J -13055649.98 -13055649.78 -13055649.57 0.0275 0.0060  
 Venus -40457-03-17 02:23 J -13055420.58 -13055420.40 -13055420.22 0.0275 0.0140  
 Mars -40452-05-20 12:28 J -13053530.26 -13053529.98 -13053529.70 0.0277 0.0073  
 Moon -40445-03-24 14:52 J -13051030.03 -13051029.88 -13051029.70 0.0283 0.0213  
 Earth -40445-03-24 16:47 J -13051029.94 -13051029.80 -13051029.65 0.0283 0.0224 \*  
 Mercury -40445-05-26 22:33 J -13050966.68 -13050966.56 -13050966.44 0.0283 0.0176  
 Mercury -40445-08-23 15:06 J -13050878.03 -13050877.87 -13050877.72 0.0283 0.0060  
 Mercury -40445-11-20 07:54 J -13050789.33 -13050789.17 -13050789.02 0.0283 0.0059  
 Mercury -40444-02-17 01:11 J -13050700.57 -13050700.45 -13050700.33 0.0283 0.0181  
 Moon -40444-04-06 22:47 J -13050651.70 -13050651.55 -13050651.39 0.0283 0.0216  
 Earth -40444-04-07 02:23 J -13050651.56 -13050651.40 -13050651.21 0.0283 0.0201 \*  
 Venus -40443-01-07 05:45 J -13050376.43 -13050376.26 -13050376.10 0.0283 0.0175  
 Venus -40443-08-24 19:26 J -13050146.90 -13050146.69 -13050146.48 0.0284 0.0042  
 Venus -40442-04-11 10:18 J -13049917.15 -13049917.07 -13049916.99 0.0284 0.0261

Earth -40431-09-26 12:42 J -13045731.09 -13045730.97 -13045730.84 0.0277 0.0237  
 Moon -40431-09-26 15:06 J -13045730.97 -13045730.87 -13045730.76 0.0277 0.0246 \*  
 Mercury -40431-10-05 20:23 J -13045721.70 -13045721.65 -13045721.59 0.0277 0.0257  
 Mercury -40430-01-02 11:16 J -13045633.15 -13045633.03 -13045632.89 0.0276 0.0149  
 Mercury -40430-04-01 02:09 J -13045544.56 -13045544.41 -13045544.26 0.0276 0.0042  
 Mercury -40430-06-28 16:18 J -13045455.96 -13045455.82 -13045455.67 0.0276 0.0063  
 Mercury -40430-09-25 06:28 J -13045367.35 -13045367.23 -13045367.11 0.0276 0.0164  
 Earth -40430-10-09 08:09 J -13045353.35 -13045353.16 -13045352.95 0.0276 0.0157  
 Moon -40430-10-09 11:30 J -13045353.21 -13045353.02 -13045352.81 0.0276 0.0158 \*  
 Mercury -40430-12-22 20:09 J -13045278.70 -13045278.66 -13045278.62 0.0276 0.0263  
 Venus -40429-06-25 14:23 J -13045093.01 -13045092.90 -13045092.77 0.0276 0.0226  
 Venus -40428-02-10 00:57 J -13044863.68 -13044863.46 -13044863.25 0.0276 0.0024  
 Venus -40428-09-27 09:50 J -13044634.24 -13044634.09 -13044633.92 0.0276 0.0178  
 Mercury -40416-10-14 00:57 J -13040234.56 -13040234.46 -13040234.34 0.0283 0.0198  
 Mercury -40415-01-10 17:30 J -13040145.92 -13040145.77 -13040145.62 0.0283 0.0082  
 Earth -40415-04-01 20:09 J -13040064.90 -13040064.66 -13040064.41 0.0283 0.0018  
 Moon -40415-04-01 23:59 J -13040064.74 -13040064.50 -13040064.25 0.0283 0.0033 \*  
 Mercury -40415-04-09 10:18 J -13040057.23 -13040057.07 -13040056.91 0.0283 0.0036  
 Mercury -40415-07-07 03:21 J -13039968.49 -13039968.36 -13039968.22 0.0283 0.0156  
 Mercury -40415-10-03 20:52 J -13039879.65 -13039879.63 -13039879.60 0.0283 0.0280  
 Venus -40414-07-20 14:38 J -13039590.06 -13039589.89 -13039589.69 0.0283 0.0136  
 Venus -40413-03-06 04:33 J -13039360.51 -13039360.31 -13039360.10 0.0283 0.0082  
 Mars -40408-06-27 19:54 J -13037420.96 -13037420.67 -13037420.37 0.0281 0.0036  
 Mercury -40401-05-21 12:14 J -13034901.10 -13034900.99 -13034900.87 0.0276 0.0182  
 Mercury -40401-08-18 03:06 J -13034812.52 -13034812.37 -13034812.23 0.0276 0.0075  
 Moon -40401-10-02 20:23 J -13034766.89 -13034766.65 -13034766.40 0.0276 0.0023  
 Earth -40401-10-02 23:30 J -13034766.76 -13034766.52 -13034766.27 0.0276 0.0021 \*  
 Mercury -40401-11-14 17:30 J -13034723.92 -13034723.77 -13034723.62 0.0276 0.0030  
 Mercury -40400-02-11 07:26 J -13034635.32 -13034635.19 -13034635.06 0.0275 0.0132  
 Mercury -40400-05-10 21:06 J -13034546.69 -13034546.62 -13034546.53 0.0275 0.0232

Venus -40399-01-05 17:30 J -13034306.91 -13034306.77 -13034306.62 0.0275 0.0200  
 Venus -40399-08-23 03:35 J -13034077.56 -13034077.35 -13034077.13 0.0275 0.0004  
 Venus -40398-04-09 12:14 J -13033848.12 -13033847.99 -13033847.83 0.0275 0.0200  
 Mercury -40386-03-03 00:28 J -13029502.56 -13029502.48 -13029502.40 0.0283 0.0240  
 Moon -40386-03-26 20:52 J -13029478.82 -13029478.63 -13029478.43 0.0283 0.0168  
 Earth -40386-03-27 00:28 J -13029478.66 -13029478.48 -13029478.28 0.0283 0.0182 \*  
 Mercury -40386-05-30 16:33 J -13029413.94 -13029413.81 -13029413.66 0.0283 0.0127  
 Mercury -40386-08-27 09:21 J -13029325.27 -13029325.11 -13029324.95 0.0283 0.0010  
 Mercury -40386-11-24 02:23 J -13029236.55 -13029236.40 -13029236.26 0.0283 0.0110  
 Mercury -40385-02-20 19:40 J -13029147.77 -13029147.68 -13029147.59 0.0283 0.0233  
 Moon -40385-04-08 09:06 J -13029100.21 -13029100.12 -13029100.03 0.0283 0.0261  
 Earth -40385-04-08 10:04 J -13029100.19 -13029100.08 -13029099.94 0.0283 0.0245 \*  
 Venus -40384-01-29 16:18 J -13028804.01 -13028803.82 -13028803.63 0.0283 0.0111  
 Venus -40384-09-16 06:14 J -13028574.44 -13028574.24 -13028574.04 0.0283 0.0106  
 Earth -40372-09-27 18:14 J -13024179.90 -13024179.74 -13024179.55 0.0277 0.0198  
 Moon -40372-09-27 21:50 J -13024179.75 -13024179.59 -13024179.42 0.0277 0.0206 \*  
 Mercury -40372-10-08 13:54 J -13024169.01 -13024168.92 -13024168.82 0.0277 0.0212  
 Mercury -40371-01-05 04:47 J -13024080.44 -13024080.30 -13024080.16 0.0277 0.0104  
 Mercury -40371-04-03 19:26 J -13023991.84 -13023991.69 -13023991.54 0.0276 0.0005  
 Mercury -40371-07-01 09:35 J -13023903.24 -13023903.10 -13023902.96 0.0276 0.0106  
 Mercury -40371-09-27 23:30 J -13023814.62 -13023814.52 -13023814.42 0.0276 0.0206  
 Moon -40371-10-10 13:11 J -13023802.12 -13023801.95 -13023801.77 0.0276 0.0201  
 Earth -40371-10-10 13:54 J -13023802.08 -13023801.92 -13023801.74 0.0276 0.0198 \*  
 Venus -40370-07-19 00:42 J -13023520.64 -13023520.47 -13023520.30 0.0276 0.0165  
 Venus -40369-03-04 10:47 J -13023291.26 -13023291.05 -13023290.84 0.0276 0.0037  
 Venus -40369-10-19 19:40 J -13023061.78 -13023061.68 -13023061.57 0.0276 0.0236  
 Mars -40364-10-15 04:47 J -13021240.59 -13021240.30 -13021240.01 0.0278 0.0011  
 Mercury -40357-07-20 03:21 J -13018770.41 -13018770.36 -13018770.29 0.0282 0.0259  
 Mercury -40357-10-16 19:40 J -13018681.81 -13018681.68 -13018681.55 0.0282 0.0146  
 Mercury -40356-01-13 12:14 J -13018593.15 -13018592.99 -13018592.83 0.0283 0.0029

Earth -40356-04-03 05:59 J -13018513.49 -13018513.25 -13018513.01 0.0283 0.0064  
 Moon -40356-04-03 06:57 J -13018513.45 -13018513.21 -13018512.96 0.0283 0.0079 \*  
 Mercury -40356-04-12 05:02 J -13018504.44 -13018504.29 -13018504.14 0.0283 0.0090  
 Mercury -40356-07-09 22:18 J -13018415.67 -13018415.57 -13018415.46 0.0283 0.0212  
 Venus -40356-12-25 13:54 J -13018246.92 -13018246.92 -13018246.90 0.0283 0.0282  
 Venus -40355-08-12 02:52 J -13018017.58 -13018017.38 -13018017.17 0.0283 0.0069  
 Venus -40354-03-29 16:47 J -13017787.98 -13017787.80 -13017787.62 0.0283 0.0148  
 Mercury -40342-02-25 15:06 J -13013436.94 -13013436.87 -13013436.79 0.0276 0.0242  
 Mercury -40342-05-25 05:59 J -13013348.38 -13013348.25 -13013348.11 0.0276 0.0134  
 Mercury -40342-08-21 20:38 J -13013259.79 -13013259.64 -13013259.48 0.0276 0.0029  
 Earth -40342-10-05 07:26 J -13013215.44 -13013215.19 -13013214.95 0.0276 0.0023  
 Moon -40342-10-05 07:54 J -13013215.41 -13013215.17 -13013214.94 0.0276 0.0022 \*  
 Mercury -40342-11-18 11:02 J -13013171.18 -13013171.04 -13013170.90 0.0276 0.0076  
 Mercury -40341-02-15 00:57 J -13013082.57 -13013082.46 -13013082.35 0.0276 0.0177  
 Venus -40340-01-28 04:47 J -13012734.48 -13012734.30 -13012734.11 0.0275 0.0138  
 Venus -40340-09-14 14:38 J -13012505.10 -13012504.89 -13012504.68 0.0275 0.0062  
 Venus -40339-05-01 23:02 J -13012275.59 -13012275.54 -13012275.46 0.0275 0.0260  
 Mercury -40327-03-05 18:57 J -13007949.82 -13007949.71 -13007949.59 0.0283 0.0189  
 Moon -40327-03-28 09:50 J -13007927.30 -13007927.09 -13007926.88 0.0283 0.0123  
 Earth -40327-03-28 10:18 J -13007927.27 -13007927.07 -13007926.84 0.0283 0.0136 \*  
 Mercury -40327-06-02 11:30 J -13007861.17 -13007861.02 -13007860.87 0.0283 0.0073  
 Mercury -40327-08-30 04:04 J -13007772.48 -13007772.33 -13007772.17 0.0283 0.0046  
 Mercury -40327-11-26 21:21 J -13007683.74 -13007683.61 -13007683.48 0.0283 0.0166  
 Venus -40326-07-07 15:06 J -13007460.94 -13007460.87 -13007460.78 0.0283 0.0259  
 Venus -40325-02-22 04:18 J -13007231.52 -13007231.32 -13007231.11 0.0283 0.0046  
 Venus -40325-10-08 18:14 J -13007001.90 -13007001.74 -13007001.56 0.0283 0.0171  
 Mars -40320-11-21 12:42 J -13005132.25 -13005131.97 -13005131.68 0.0281 0.0078  
 Mercury -40313-07-14 16:33 J -13002704.82 -13002704.81 -13002704.78 0.0277 0.0273  
 Moon -40313-09-29 01:26 J -13002628.63 -13002628.44 -13002628.22 0.0277 0.0162  
 Earth -40313-09-29 01:40 J -13002628.62 -13002628.43 -13002628.22 0.0277 0.0156 \*

Mercury -40313-10-11 07:40 J -13002616.30 -13002616.18 -13002616.05 0.0277 0.0164  
 Mercury -40312-01-07 22:33 J -13002527.71 -13002527.56 -13002527.41 0.0277 0.0057  
 Mercury -40312-04-06 12:57 J -13002439.11 -13002438.96 -13002438.81 0.0277 0.0048  
 Mercury -40312-07-04 03:06 J -13002350.50 -13002350.37 -13002350.25 0.0276 0.0151  
 Mercury -40312-09-30 16:47 J -13002261.86 -13002261.80 -13002261.74 0.0276 0.0251  
 Moon -40312-10-11 17:45 J -13002250.86 -13002250.76 -13002250.64 0.0276 0.0247  
 Earth -40312-10-11 21:21 J -13002250.72 -13002250.61 -13002250.48 0.0276 0.0240 \*  
 Venus -40311-08-10 11:30 J -13001948.22 -13001948.02 -13001947.82 0.0276 0.0104  
 Venus -40310-03-27 21:21 J -13001718.80 -13001718.61 -13001718.41 0.0276 0.0098  
 Jupiter -40300-05-14 16:18 J -12998018.24 -12998017.82 -12998017.39 0.0281 0.0115  
 Mercury -40298-07-23 22:18 J -12997217.68 -12997217.57 -12997217.47 0.0282 0.0205  
 Mercury -40298-10-20 14:38 J -12997129.04 -12997128.89 -12997128.74 0.0282 0.0091  
 Mercury -40297-01-17 07:11 J -12997040.36 -12997040.20 -12997040.04 0.0283 0.0027  
 Moon -40297-04-04 13:54 J -12996962.14 -12996961.92 -12996961.69 0.0283 0.0128  
 Earth -40297-04-04 17:02 J -12996962.02 -12996961.79 -12996961.57 0.0283 0.0113 \*  
 Mercury -40297-04-15 00:14 J -12996951.62 -12996951.49 -12996951.35 0.0283 0.0147  
 Mercury -40297-07-12 17:45 J -12996862.80 -12996862.76 -12996862.71 0.0283 0.0270  
 Venus -40296-01-17 02:38 J -12996674.52 -12996674.39 -12996674.25 0.0283 0.0216  
 Venus -40296-09-03 15:50 J -12996445.05 -12996444.84 -12996444.63 0.0283 0.0003  
 Venus -40295-04-21 05:30 J -12996215.39 -12996215.27 -12996215.12 0.0283 0.0215  
 Mercury -40283-02-28 09:21 J -12991884.21 -12991884.11 -12991883.99 0.0276 0.0191  
 Mercury -40283-05-28 00:14 J -12991795.63 -12991795.49 -12991795.34 0.0276 0.0084  
 Mercury -40283-08-24 14:38 J -12991707.03 -12991706.89 -12991706.73 0.0276 0.0023  
 Earth -40283-10-06 16:33 J -12991664.04 -12991663.81 -12991663.57 0.0276 0.0068  
 Moon -40283-10-06 20:09 J -12991663.90 -12991663.66 -12991663.42 0.0276 0.0067 \*  
 Mercury -40283-11-21 04:47 J -12991618.43 -12991618.30 -12991618.16 0.0276 0.0124  
 Mercury -40282-02-17 18:42 J -12991529.80 -12991529.72 -12991529.63 0.0276 0.0224  
 Venus -40282-07-06 06:14 J -12991391.24 -12991391.24 -12991391.24 0.0275 0.0275  
 Venus -40281-02-20 16:47 J -12991162.00 -12991161.80 -12991161.59 0.0275 0.0075  
 Venus -40281-10-07 02:23 J -12990932.59 -12990932.40 -12990932.21 0.0275 0.0125



Mars -40275-03-10 23:45 J -12988951.79 -12988951.51 -12988951.21 0.0277 0.0031  
 Mercury -40269-12-09 21:50 J -12986485.66 -12986485.59 -12986485.51 0.0283 0.0247  
 Mercury -40268-03-08 13:54 J -12986397.05 -12986396.92 -12986396.78 0.0283 0.0134  
 Earth -40268-03-29 22:04 J -12986375.81 -12986375.58 -12986375.35 0.0283 0.0087  
 Moon -40268-03-30 00:57 J -12986375.69 -12986375.46 -12986375.23 0.0283 0.0073 \*  
 Mercury -40268-06-05 06:28 J -12986308.38 -12986308.23 -12986308.07 0.0283 0.0019  
 Mercury -40268-09-01 23:30 J -12986219.67 -12986219.52 -12986219.37 0.0283 0.0102  
 Mercury -40268-11-29 16:47 J -12986130.90 -12986130.80 -12986130.70 0.0283 0.0225  
 Venus -40267-07-30 04:04 J -12985888.47 -12985888.33 -12985888.17 0.0283 0.0193  
 Venus -40266-03-16 17:30 J -12985658.98 -12985658.77 -12985658.56 0.0283 0.0022  
 Venus -40266-11-01 07:26 J -12985429.29 -12985429.19 -12985429.07 0.0283 0.0238  
 Mars -40261-02-26 23:59 J -12983850.51 -12983850.50 -12983850.46 0.0282 0.0280  
 Mercury -40254-07-18 10:33 J -12981152.14 -12981152.06 -12981151.96 0.0277 0.0224  
 Moon -40254-10-01 06:42 J -12981077.44 -12981077.22 -12981076.99 0.0277 0.0116  
 Earth -40254-10-01 10:18 J -12981077.29 -12981077.07 -12981076.84 0.0277 0.0112 \*  
 Mercury -40254-10-15 01:40 J -12981063.57 -12981063.43 -12981063.29 0.0277 0.0115  
 Mercury -40253-01-11 16:18 J -12980974.97 -12980974.82 -12980974.67 0.0277 0.0009  
 Mercury -40253-04-09 06:42 J -12980886.36 -12980886.22 -12980886.08 0.0276 0.0096  
 Mercury -40253-07-06 20:23 J -12980797.74 -12980797.65 -12980797.54 0.0276 0.0198  
 Venus -40252-01-15 11:59 J -12980605.10 -12980605.00 -12980604.90 0.0276 0.0244  
 Venus -40252-09-01 22:47 J -12980375.76 -12980375.55 -12980375.34 0.0276 0.0042  
 Venus -40251-04-19 08:23 J -12980146.32 -12980146.15 -12980145.97 0.0276 0.0159  
 Moon -40239-03-24 17:16 J -12975788.88 -12975788.78 -12975788.65 0.0282 0.0250  
 Earth -40239-03-24 20:09 J -12975788.74 -12975788.66 -12975788.56 0.0282 0.0261 \*  
 Mercury -40239-04-29 01:11 J -12975753.50 -12975753.45 -12975753.40 0.0282 0.0263  
 Mercury -40239-07-26 17:16 J -12975664.91 -12975664.78 -12975664.65 0.0282 0.0150  
 Mercury -40239-10-23 09:50 J -12975576.25 -12975576.09 -12975575.94 0.0282 0.0035  
 Mercury -40238-01-20 02:38 J -12975487.54 -12975487.39 -12975487.24 0.0283 0.0085  
 Moon -40238-04-07 01:40 J -12975410.60 -12975410.43 -12975410.23 0.0283 0.0179  
 Earth -40238-04-07 04:47 J -12975410.49 -12975410.30 -12975410.09 0.0283 0.0164 \*

Mercury -40238-04-18 19:54 J -12975398.78 -12975398.67 -12975398.56 0.0283 0.0206

Venus -40237-02-09 16:04 J -12975102.01 -12975101.83 -12975101.65 0.0283 0.0149

Venus -40237-09-26 05:16 J -12974872.48 -12974872.28 -12974872.07 0.0283 0.0065

Venus -40236-05-13 19:26 J -12974642.71 -12974642.69 -12974642.65 0.0283 0.0281

Mars -40231-04-18 11:16 J -12972842.27 -12972842.03 -12972841.77 0.0281 0.0143

Mercury -40225-12-04 12:42 J -12970420.03 -12970419.97 -12970419.90 0.0276 0.0248

Mercury -40224-03-03 03:50 J -12970331.47 -12970331.34 -12970331.21 0.0276 0.0139

Mercury -40224-05-30 18:28 J -12970242.88 -12970242.73 -12970242.58 0.0276 0.0033

Mercury -40224-08-27 08:52 J -12970154.27 -12970154.13 -12970153.98 0.0276 0.0071

Earth -40224-10-08 02:52 J -12970112.60 -12970112.38 -12970112.15 0.0276 0.0114

Moon -40224-10-08 05:02 J -12970112.52 -12970112.29 -12970112.05 0.0276 0.0115 \*

Mercury -40224-11-23 22:47 J -12970065.66 -12970065.55 -12970065.43 0.0276 0.0173

Mercury -40223-02-20 12:28 J -12969976.99 -12969976.98 -12969976.95 0.0276 0.0273

Venus -40223-07-28 18:42 J -12969818.85 -12969818.72 -12969818.58 0.0276 0.0212

Venus -40222-03-15 05:16 J -12969589.50 -12969589.28 -12969589.07 0.0275 0.0012

Venus -40222-10-30 14:09 J -12969360.05 -12969359.91 -12969359.74 0.0275 0.0188

Mercury -40210-12-13 16:47 J -12964932.90 -12964932.80 -12964932.68 0.0283 0.0192

Mercury -40209-03-11 09:21 J -12964844.26 -12964844.11 -12964843.96 0.0283 0.0077

Earth -40209-03-31 10:18 J -12964824.31 -12964824.07 -12964823.82 0.0283 0.0036

Moon -40209-03-31 13:40 J -12964824.18 -12964823.93 -12964823.68 0.0283 0.0022 \*

Mercury -40209-06-08 01:54 J -12964755.58 -12964755.42 -12964755.26 0.0283 0.0041

Mercury -40209-09-04 18:57 J -12964666.84 -12964666.71 -12964666.58 0.0283 0.0162

Venus -40208-08-21 17:45 J -12964315.95 -12964315.76 -12964315.57 0.0283 0.0124

Venus -40207-04-08 06:57 J -12964086.40 -12964086.21 -12964086.00 0.0283 0.0090

Mercury -40195-07-21 05:02 J -12959599.41 -12959599.29 -12959599.17 0.0277 0.0172

Moon -40195-10-02 17:45 J -12959525.99 -12959525.76 -12959525.53 0.0277 0.0067

Earth -40195-10-02 19:40 J -12959525.92 -12959525.68 -12959525.44 0.0277 0.0066 \*

Mercury -40195-10-17 19:54 J -12959510.82 -12959510.67 -12959510.53 0.0276 0.0065

Mercury -40194-01-14 10:18 J -12959422.22 -12959422.07 -12959421.92 0.0276 0.0041

Mercury -40194-04-13 00:28 J -12959333.61 -12959333.48 -12959333.35 0.0276 0.0144

Mercury -40194-07-10 14:09 J -12959244.97 -12959244.91 -12959244.84 0.0276 0.0244

Venus -40193-02-07 23:45 J -12959032.66 -12959032.51 -12959032.34 0.0276 0.0181

Venus -40193-09-24 10:33 J -12958803.28 -12958803.06 -12958802.85 0.0276 0.0020

Venus -40192-05-11 19:54 J -12958573.80 -12958573.67 -12958573.54 0.0276 0.0219

Mars -40187-08-05 15:21 J -12956662.13 -12956661.86 -12956661.57 0.0278 0.0089

Moon -40180-03-26 04:04 J -12954237.49 -12954237.33 -12954237.15 0.0282 0.0200

Earth -40180-03-26 07:26 J -12954237.34 -12954237.19 -12954237.02 0.0282 0.0212 \*

Mercury -40180-05-01 19:54 J -12954200.77 -12954200.67 -12954200.56 0.0282 0.0209

Mercury -40180-07-29 12:14 J -12954112.13 -12954111.99 -12954111.84 0.0282 0.0095

Mercury -40180-10-26 04:47 J -12954023.45 -12954023.30 -12954023.14 0.0283 0.0024

Mercury -40179-01-22 21:50 J -12953934.72 -12953934.59 -12953934.45 0.0283 0.0143

Earth -40179-04-08 16:33 J -12953858.96 -12953858.81 -12953858.65 0.0283 0.0214

Moon -40179-04-08 16:47 J -12953858.93 -12953858.80 -12953858.65 0.0283 0.0229 \*

Mercury -40179-04-21 15:06 J -12953845.91 -12953845.87 -12953845.81 0.0283 0.0266

Venus -40178-03-04 05:02 J -12953529.48 -12953529.29 -12953529.08 0.0283 0.0083

Venus -40178-10-19 18:42 J -12953299.90 -12953299.72 -12953299.53 0.0283 0.0132

Mars -40173-07-24 01:11 J -12951560.63 -12951560.45 -12951560.24 0.0282 0.0212

Earth -40166-09-27 18:14 J -12948938.86 -12948938.74 -12948938.61 0.0276 0.0235

Moon -40166-09-27 20:09 J -12948938.78 -12948938.66 -12948938.54 0.0276 0.0240 \*

Mercury -40166-12-08 07:26 J -12948867.29 -12948867.19 -12948867.08 0.0276 0.0194

Mercury -40165-03-05 22:18 J -12948778.71 -12948778.57 -12948778.42 0.0276 0.0087

Mercury -40165-06-02 12:57 J -12948690.11 -12948689.96 -12948689.81 0.0276 0.0020

Mercury -40165-08-30 03:06 J -12948601.51 -12948601.37 -12948601.24 0.0276 0.0122

Moon -40165-10-09 11:16 J -12948561.23 -12948561.03 -12948560.83 0.0276 0.0166

Earth -40165-10-09 13:26 J -12948561.13 -12948560.94 -12948560.73 0.0276 0.0162 \*

Mercury -40165-11-26 16:47 J -12948512.88 -12948512.80 -12948512.71 0.0276 0.0223

Venus -40164-08-20 07:40 J -12948246.36 -12948246.18 -12948246.00 0.0275 0.0148

Venus -40163-04-06 17:45 J -12948016.97 -12948016.76 -12948016.55 0.0275 0.0051

Venus -40163-11-22 02:23 J -12947787.47 -12947787.40 -12947787.30 0.0275 0.0249

Mercury -40151-09-18 19:54 J -12943468.74 -12943468.67 -12943468.60 0.0283 0.0249

Mercury -40151-12-16 11:59 J -12943380.13 -12943380.00 -12943379.86 0.0283 0.0136

Mercury -40150-03-15 04:33 J -12943291.47 -12943291.31 -12943291.15 0.0283 0.0020

Moon -40150-04-02 21:35 J -12943272.85 -12943272.60 -12943272.34 0.0283 0.0030

Earth -40150-04-02 22:18 J -12943272.81 -12943272.57 -12943272.32 0.0283 0.0016 \*

Mercury -40150-06-11 21:21 J -12943202.76 -12943202.61 -12943202.46 0.0283 0.0100

Mercury -40150-09-08 14:23 J -12943113.99 -12943113.90 -12943113.79 0.0283 0.0222

Venus -40149-01-27 18:28 J -12942972.78 -12942972.73 -12942972.65 0.0283 0.0269

Venus -40149-09-13 07:11 J -12942743.40 -12942743.20 -12942742.99 0.0283 0.0057

Venus -40148-04-30 20:38 J -12942513.81 -12942513.64 -12942513.46 0.0283 0.0157

Mars -40143-09-12 08:09 J -12940553.38 -12940553.16 -12940552.94 0.0281 0.0188

Mercury -40136-04-26 08:09 J -12938135.24 -12938135.16 -12938135.07 0.0277 0.0230

Mercury -40136-07-23 23:02 J -12938046.67 -12938046.54 -12938046.40 0.0276 0.0122

Earth -40136-10-04 05:02 J -12937974.54 -12937974.29 -12937974.05 0.0276 0.0019

Moon -40136-10-04 07:40 J -12937974.42 -12937974.18 -12937973.94 0.0276 0.0016 \*

Mercury -40136-10-20 13:54 J -12937958.07 -12937957.92 -12937957.77 0.0276 0.0015

Mercury -40135-01-17 04:04 J -12937869.47 -12937869.33 -12937869.18 0.0276 0.0090

Mercury -40135-04-15 18:14 J -12937780.84 -12937780.74 -12937780.63 0.0276 0.0191

Venus -40134-03-02 11:45 J -12937460.20 -12937460.01 -12937459.81 0.0276 0.0119

Venus -40134-10-17 22:04 J -12937230.79 -12937230.58 -12937230.38 0.0276 0.0081

Mars -40129-11-10 13:40 J -12935380.03 -12935379.93 -12935379.81 0.0278 0.0257

Mercury -40121-02-05 22:33 J -12932736.59 -12932736.56 -12932736.50 0.0282 0.0269

Earth -40121-03-27 17:59 J -12932685.94 -12932685.75 -12932685.54 0.0282 0.0164

Moon -40121-03-27 19:11 J -12932685.90 -12932685.70 -12932685.50 0.0282 0.0150 \*

Mercury -40121-05-04 14:52 J -12932648.01 -12932647.88 -12932647.75 0.0282 0.0155

Mercury -40121-08-01 07:11 J -12932559.36 -12932559.20 -12932559.04 0.0283 0.0040

Mercury -40121-10-28 23:59 J -12932470.65 -12932470.50 -12932470.35 0.0283 0.0079

Mercury -40120-01-25 17:02 J -12932381.90 -12932381.79 -12932381.67 0.0283 0.0201

Earth -40120-04-10 03:21 J -12932307.44 -12932307.36 -12932307.27 0.0283 0.0264

Moon -40120-04-10 06:57 J -12932307.23 -12932307.21 -12932307.18 0.0283 0.0281

Venus -40120-08-09 05:02 J -12932186.40 -12932186.29 -12932186.16 0.0283 0.0229

Venus -40119-03-26 17:59 J -12931956.96 -12931956.75 -12931956.54 0.0283 0.0017  
 Venus -40119-11-11 07:40 J -12931727.32 -12931727.18 -12931727.02 0.0283 0.0197  
 Mercury -40107-09-13 11:02 J -12927403.10 -12927403.04 -12927402.98 0.0276 0.0250  
 Moon -40107-09-29 02:09 J -12927387.58 -12927387.41 -12927387.21 0.0276 0.0189  
 Earth -40107-09-29 04:47 J -12927387.47 -12927387.30 -12927387.11 0.0276 0.0189 \*  
 Mercury -40107-12-11 01:54 J -12927314.55 -12927314.42 -12927314.28 0.0276 0.0142  
 Mercury -40106-03-09 16:47 J -12927225.95 -12927225.80 -12927225.65 0.0276 0.0036  
 Mercury -40106-06-06 06:57 J -12927137.35 -12927137.21 -12927137.06 0.0276 0.0070  
 Mercury -40106-09-02 21:06 J -12927048.73 -12927048.62 -12927048.50 0.0276 0.0171  
 Moon -40106-10-11 20:23 J -12927009.79 -12927009.65 -12927009.50 0.0276 0.0217  
 Earth -40106-10-11 23:45 J -12927009.66 -12927009.51 -12927009.34 0.0276 0.0209 \*  
 Mercury -40106-11-30 10:47 J -12926960.07 -12926960.05 -12926960.02 0.0276 0.0271  
 Venus -40105-09-11 20:09 J -12926673.86 -12926673.66 -12926673.45 0.0275 0.0085  
 Venus -40104-04-29 05:59 J -12926444.45 -12926444.25 -12926444.06 0.0275 0.0114  
 Mars -40099-12-30 16:33 J -12924373.05 -12924372.81 -12924372.55 0.0277 0.0139  
 Mercury -40092-09-21 14:38 J -12921916.00 -12921915.89 -12921915.78 0.0283 0.0196  
 Mercury -40092-12-19 06:42 J -12921827.37 -12921827.22 -12921827.07 0.0283 0.0082  
 Mercury -40091-03-17 23:30 J -12921738.68 -12921738.52 -12921738.37 0.0283 0.0037  
 Moon -40091-04-04 05:02 J -12921721.52 -12921721.29 -12921721.05 0.0283 0.0081  
 Earth -40091-04-04 09:06 J -12921721.36 -12921721.12 -12921720.88 0.0283 0.0064 \*  
 Mercury -40091-06-14 16:18 J -12921649.95 -12921649.82 -12921649.68 0.0283 0.0157  
 Mercury -40091-09-11 09:50 J -12921561.11 -12921561.09 -12921561.07 0.0283 0.0280  
 Venus -40090-02-19 07:11 J -12921400.35 -12921400.20 -12921400.06 0.0283 0.0204  
 Venus -40090-10-06 19:54 J -12921170.88 -12921170.67 -12921170.46 0.0283 0.0008  
 Venus -40089-05-23 09:35 J -12920941.22 -12920941.10 -12920940.96 0.0283 0.0222  
 Mars -40085-12-17 19:40 J -12919271.90 -12919271.68 -12919271.44 0.0282 0.0171  
 Mercury -40077-04-29 02:23 J -12916582.51 -12916582.40 -12916582.28 0.0276 0.0178  
 Mercury -40077-07-26 17:16 J -12916493.92 -12916493.78 -12916493.63 0.0276 0.0071  
 Earth -40077-10-05 14:09 J -12916423.15 -12916422.91 -12916422.66 0.0276 0.0028  
 Moon -40077-10-05 17:30 J -12916423.02 -12916422.77 -12916422.52 0.0276 0.0033 \*

Mercury -40077-10-23 07:54 J -12916405.32 -12916405.17 -12916405.02 0.0276 0.0035  
 Mercury -40076-01-19 22:04 J -12916316.71 -12916316.58 -12916316.45 0.0276 0.0138  
 Mercury -40076-04-18 11:45 J -12916228.07 -12916228.01 -12916227.93 0.0276 0.0239  
 Venus -40076-08-07 12:28 J -12916117.05 -12916116.98 -12916116.90 0.0276 0.0258  
 Venus -40075-03-24 23:16 J -12915887.73 -12915887.53 -12915887.32 0.0276 0.0059  
 Venus -40075-11-09 09:06 J -12915658.30 -12915658.12 -12915657.93 0.0276 0.0141  
 Mercury -40062-02-08 16:47 J -12911183.89 -12911183.80 -12911183.69 0.0282 0.0219  
 Earth -40062-03-30 02:52 J -12911134.60 -12911134.38 -12911134.15 0.0283 0.0117  
 Moon -40062-03-30 06:42 J -12911134.45 -12911134.22 -12911133.99 0.0283 0.0101 \*  
 Mercury -40062-05-08 09:06 J -12911095.26 -12911095.12 -12911094.97 0.0283 0.0104  
 Mercury -40062-08-05 01:40 J -12911006.59 -12911006.43 -12911006.27 0.0283 0.0014  
 Mercury -40062-11-01 18:28 J -12910917.86 -12910917.73 -12910917.58 0.0283 0.0134  
 Mercury -40061-01-29 11:59 J -12910829.06 -12910829.00 -12910828.93 0.0283 0.0256  
 Venus -40061-08-31 16:47 J -12910613.97 -12910613.80 -12910613.63 0.0283 0.0166  
 Venus -40060-04-18 05:45 J -12910384.47 -12910384.26 -12910384.05 0.0283 0.0046  
 Venus -40060-12-03 19:54 J -12910154.75 -12910154.67 -12910154.59 0.0283 0.0260  
 Mars -40054-02-07 07:40 J -12908263.28 -12908263.18 -12908263.06 0.0281 0.0260  
 Mercury -40048-09-16 05:16 J -12905850.38 -12905850.28 -12905850.17 0.0276 0.0199  
 Moon -40048-09-30 11:16 J -12905836.23 -12905836.03 -12905835.82 0.0276 0.0143  
 Earth -40048-09-30 14:23 J -12905836.10 -12905835.90 -12905835.68 0.0276 0.0143 \*  
 Mercury -40048-12-13 20:09 J -12905761.80 -12905761.66 -12905761.51 0.0276 0.0091  
 Mercury -40047-03-12 10:47 J -12905673.20 -12905673.05 -12905672.90 0.0276 0.0015  
 Mercury -40047-06-09 00:57 J -12905584.59 -12905584.46 -12905584.32 0.0276 0.0118  
 Mercury -40047-09-05 14:52 J -12905495.97 -12905495.88 -12905495.79 0.0276 0.0219  
 Earth -40047-10-13 08:52 J -12905458.21 -12905458.13 -12905458.03 0.0276 0.0255  
 Moon -40047-10-13 09:21 J -12905458.16 -12905458.11 -12905458.04 0.0276 0.0266 \*  
 Venus -40046-02-17 21:06 J -12905330.73 -12905330.62 -12905330.48 0.0276 0.0223  
 Venus -40046-10-05 07:54 J -12905101.38 -12905101.17 -12905100.96 0.0275 0.0023  
 Venus -40045-05-21 17:16 J -12904871.94 -12904871.78 -12904871.61 0.0275 0.0173  
 Mars -40040-04-06 15:35 J -12903091.04 -12903090.85 -12903090.64 0.0277 0.0202

Mercury -40033-06-27 16:47 J -12900451.85 -12900451.80 -12900451.73 0.0283 0.0258  
 Mercury -40033-09-24 08:52 J -12900363.26 -12900363.13 -12900362.99 0.0283 0.0145  
 Mercury -40033-12-22 01:26 J -12900274.60 -12900274.44 -12900274.29 0.0283 0.0029  
 Mercury -40032-03-20 17:59 J -12900185.89 -12900185.75 -12900185.59 0.0283 0.0091  
 Moon -40032-04-05 16:47 J -12900170.00 -12900169.80 -12900169.58 0.0283 0.0128  
 Earth -40032-04-05 17:59 J -12900169.97 -12900169.75 -12900169.52 0.0283 0.0112 \*  
 Mercury -40032-06-17 11:16 J -12900097.13 -12900097.03 -12900096.92 0.0283 0.0212  
 Venus -40031-03-13 18:42 J -12899827.90 -12899827.72 -12899827.54 0.0283 0.0141  
 Venus -40031-10-29 07:40 J -12899598.38 -12899598.18 -12899597.97 0.0283 0.0072  
 Mercury -40018-02-03 05:16 J -12895118.35 -12895118.28 -12895118.20 0.0276 0.0238  
 Mercury -40018-05-02 20:23 J -12895029.78 -12895029.65 -12895029.51 0.0276 0.0129  
 Mercury -40018-07-30 11:02 J -12894941.19 -12894941.04 -12894940.88 0.0276 0.0023  
 Moon -40018-10-07 21:35 J -12894871.84 -12894871.60 -12894871.35 0.0276 0.0079  
 Earth -40018-10-07 22:18 J -12894871.81 -12894871.57 -12894871.34 0.0276 0.0072 \*  
 Mercury -40018-10-27 01:26 J -12894852.58 -12894852.44 -12894852.29 0.0276 0.0082  
 Mercury -40017-01-23 15:35 J -12894763.96 -12894763.85 -12894763.74 0.0276 0.0184  
 Venus -40017-08-29 23:30 J -12894544.66 -12894544.52 -12894544.37 0.0276 0.0198  
 Venus -40016-04-16 10:18 J -12894315.29 -12894315.07 -12894314.86 0.0276 0.0006  
 Venus -40016-12-01 19:26 J -12894085.82 -12894085.69 -12894085.53 0.0276 0.0199  
 Mars -40010-05-26 14:38 J -12892084.10 -12892083.89 -12892083.66 0.0278 0.0181  
 Mercury -40003-02-11 10:33 J -12889631.18 -12889631.06 -12889630.93 0.0283 0.0172  
 Earth -40003-03-31 09:21 J -12889583.34 -12889583.11 -12889582.87 0.0283 0.0073  
 Moon -40003-03-31 10:33 J -12889583.31 -12889583.06 -12889582.81 0.0283 0.0058 \*  
 Mercury -40003-05-11 03:06 J -12889542.53 -12889542.37 -12889542.22 0.0283 0.0056  
 Mercury -40003-08-07 19:40 J -12889453.83 -12889453.68 -12889453.52 0.0283 0.0063  
 Mercury -40003-11-04 12:42 J -12889365.08 -12889364.97 -12889364.84 0.0283 0.0185  
 Venus -40002-09-24 02:52 J -12889041.57 -12889041.38 -12889041.19 0.0283 0.0106  
 Venus -40001-05-10 16:04 J -12888812.02 -12888811.83 -12888811.63 0.0283 0.0106

# 40TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 40th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-39996-05-14 12:57 J	-12886982.22	-12886981.96	-12886981.68	0.0282	0.0105		
Mercury	-39989-06-22 08:09 J	-12884386.20	-12884386.16	-12884386.10	0.0276	0.0258		
Mercury	-39989-09-18 23:16 J	-12884297.65	-12884297.53	-12884297.40	0.0276	0.0149		
Earth	-39989-10-01 23:16 J	-12884284.76	-12884284.53	-12884284.30	0.0276	0.0097		
Moon	-39989-10-01 23:02 J	-12884284.76	-12884284.54	-12884284.31	0.0276	0.0097	*	
Mercury	-39989-12-16 14:09 J	-12884209.06	-12884208.91	-12884208.76	0.0276	0.0042		
Mercury	-39988-03-15 04:33 J	-12884120.46	-12884120.31	-12884120.16	0.0276	0.0063		
Mercury	-39988-06-11 18:28 J	-12884031.84	-12884031.73	-12884031.60	0.0276	0.0166		
Mercury	-39988-09-08 08:23 J	-12883943.18	-12883943.15	-12883943.11	0.0276	0.0265		
Venus	-39987-03-12 08:38 J	-12883758.30	-12883758.14	-12883757.96	0.0275	0.0162		
Venus	-39987-10-27 18:57 J	-12883528.92	-12883528.71	-12883528.50	0.0275	0.0036		
Venus	-39986-06-14 04:04 J	-12883299.44	-12883299.33	-12883299.21	0.0275	0.0231		
Moon	-39974-03-25 15:21 J	-12878996.94	-12878996.86	-12878996.76	0.0282	0.0259		
Earth	-39974-03-25 16:18 J	-12878996.87	-12878996.82	-12878996.74	0.0282	0.0272	*	
Mercury	-39974-07-01 10:33 J	-12878899.16	-12878899.06	-12878898.95	0.0283	0.0211		
Mercury	-39974-09-28 02:52 J	-12878810.53	-12878810.38	-12878810.23	0.0283	0.0097		
Mercury	-39974-12-25 19:26 J	-12878721.85	-12878721.69	-12878721.53	0.0283	0.0021		
Mercury	-39973-03-23 12:14 J	-12878633.13	-12878632.99	-12878632.85	0.0283	0.0141		
Earth	-39973-04-07 00:28 J	-12878618.67	-12878618.48	-12878618.26	0.0283	0.0157		
Moon	-39973-04-07 03:35 J	-12878618.53	-12878618.35	-12878618.15	0.0283	0.0172	*	



Mercury -39973-06-20 05:30 J -12878544.32 -12878544.27 -12878544.21 0.0283 0.0264  
 Venus -39972-04-05 04:47 J -12878255.50 -12878255.30 -12878255.09 0.0283 0.0080  
 Venus -39972-11-20 17:59 J -12878025.93 -12878025.75 -12878025.56 0.0283 0.0133  
 Mercury -39959-02-05 23:02 J -12873565.64 -12873565.54 -12873565.42 0.0276 0.0190  
 Mercury -39959-05-05 14:09 J -12873477.06 -12873476.91 -12873476.77 0.0276 0.0082  
 Mercury -39959-08-02 04:33 J -12873388.46 -12873388.31 -12873388.16 0.0276 0.0025  
 Moon -39959-10-09 01:26 J -12873320.66 -12873320.44 -12873320.22 0.0276 0.0124  
 Earth -39959-10-09 04:47 J -12873320.52 -12873320.30 -12873320.07 0.0276 0.0116 \*  
 Mercury -39959-10-29 18:42 J -12873299.85 -12873299.72 -12873299.58 0.0276 0.0128  
 Mercury -39958-01-26 08:52 J -12873211.21 -12873211.13 -12873211.05 0.0276 0.0228  
 Venus -39958-09-22 09:50 J -12872972.27 -12872972.09 -12872971.90 0.0276 0.0139  
 Venus -39957-05-08 20:09 J -12872742.87 -12872742.66 -12872742.46 0.0276 0.0059  
 Venus -39957-12-24 05:16 J -12872513.36 -12872513.28 -12872513.20 0.0276 0.0254  
 Mars -39952-08-31 05:30 J -12870802.49 -12870802.27 -12870802.02 0.0277 0.0170  
 Mercury -39945-11-17 11:45 J -12868167.08 -12868167.01 -12868166.92 0.0283 0.0241  
 Mercury -39944-02-14 04:04 J -12868078.47 -12868078.33 -12868078.19 0.0283 0.0127  
 Moon -39944-04-01 10:47 J -12868032.30 -12868032.05 -12868031.80 0.0283 0.0018  
 Earth -39944-04-01 13:40 J -12868032.17 -12868031.93 -12868031.68 0.0283 0.0032 \*  
 Mercury -39944-05-13 20:23 J -12867989.80 -12867989.65 -12867989.49 0.0283 0.0013  
 Mercury -39944-08-10 13:26 J -12867901.09 -12867900.94 -12867900.80 0.0283 0.0110  
 Mercury -39944-11-07 06:28 J -12867812.31 -12867812.23 -12867812.13 0.0283 0.0233  
 Venus -39943-02-28 23:16 J -12867698.61 -12867698.53 -12867698.45 0.0283 0.0257  
 Venus -39943-10-16 11:45 J -12867469.21 -12867469.01 -12867468.80 0.0283 0.0049  
 Venus -39942-06-03 01:11 J -12867239.61 -12867239.45 -12867239.27 0.0283 0.0165  
 Mercury -39930-06-26 01:54 J -12862833.51 -12862833.42 -12862833.32 0.0276 0.0211  
 Mercury -39930-09-22 17:02 J -12862744.93 -12862744.79 -12862744.65 0.0276 0.0102  
 Earth -39930-10-04 05:45 J -12862733.50 -12862733.26 -12862733.02 0.0276 0.0055  
 Moon -39930-10-04 09:06 J -12862733.35 -12862733.12 -12862732.88 0.0276 0.0054 \*  
 Mercury -39930-12-20 07:40 J -12862656.33 -12862656.18 -12862656.03 0.0276 0.0007  
 Mercury -39929-03-17 21:50 J -12862567.73 -12862567.59 -12862567.45 0.0276 0.0108

Mercury -39929-06-14 11:59 J -12862479.10 -12862479.00 -12862478.91 0.0276 0.0209  
 Venus -39928-04-03 18:57 J -12862185.91 -12862185.71 -12862185.51 0.0275 0.0103  
 Venus -39928-11-19 04:47 J -12861956.50 -12861956.30 -12861956.10 0.0275 0.0094  
 Mars -39922-10-20 12:42 J -12859795.12 -12859794.97 -12859794.80 0.0277 0.0232  
 Earth -39915-03-26 20:52 J -12857445.76 -12857445.63 -12857445.49 0.0282 0.0231  
 Moon -39915-03-26 23:45 J -12857445.66 -12857445.51 -12857445.36 0.0282 0.0217 \*  
 Mercury -39915-04-06 11:59 J -12857435.02 -12857435.00 -12857434.98 0.0282 0.0279  
 Mercury -39915-07-04 04:04 J -12857346.46 -12857346.33 -12857346.21 0.0283 0.0167  
 Mercury -39915-09-30 20:09 J -12857257.81 -12857257.66 -12857257.50 0.0283 0.0052  
 Mercury -39915-12-28 12:57 J -12857169.12 -12857168.96 -12857168.81 0.0283 0.0067  
 Mercury -39914-03-27 05:45 J -12857080.37 -12857080.26 -12857080.13 0.0283 0.0189  
 Earth -39914-04-09 05:02 J -12857067.46 -12857067.29 -12857067.11 0.0283 0.0198  
 Moon -39914-04-09 08:09 J -12857067.33 -12857067.16 -12857067.00 0.0283 0.0211 \*  
 Venus -39914-09-11 01:26 J -12856912.56 -12856912.44 -12856912.32 0.0283 0.0231  
 Venus -39913-04-27 13:54 J -12856683.13 -12856682.92 -12856682.71 0.0283 0.0022  
 Venus -39913-12-13 03:21 J -12856453.52 -12856453.36 -12856453.20 0.0283 0.0190  
 Mars -39908-10-07 16:47 J -12854694.08 -12854693.80 -12854693.51 0.0282 0.0079  
 Moon -39901-09-27 10:47 J -12852147.15 -12852147.05 -12852146.92 0.0276 0.0243  
 Earth -39901-09-27 14:52 J -12852146.99 -12852146.88 -12852146.76 0.0276 0.0243 \*  
 Mercury -39901-11-12 01:26 J -12852101.49 -12852101.44 -12852101.38 0.0276 0.0253  
 Mercury -39900-02-08 16:33 J -12852012.94 -12852012.81 -12852012.68 0.0276 0.0144  
 Mercury -39900-05-08 07:26 J -12851924.34 -12851924.19 -12851924.04 0.0276 0.0037  
 Mercury -39900-08-04 21:50 J -12851835.74 -12851835.59 -12851835.44 0.0276 0.0068  
 Moon -39900-10-10 08:23 J -12851769.33 -12851769.15 -12851768.96 0.0276 0.0166  
 Earth -39900-10-10 10:33 J -12851769.26 -12851769.06 -12851768.86 0.0276 0.0157 \*  
 Mercury -39900-11-01 11:45 J -12851747.12 -12851747.01 -12851746.89 0.0276 0.0171  
 Mercury -39899-01-29 01:40 J -12851658.45 -12851658.43 -12851658.40 0.0276 0.0270  
 Venus -39899-10-14 19:26 J -12851399.89 -12851399.69 -12851399.49 0.0275 0.0082  
 Venus -39898-06-01 05:16 J -12851170.47 -12851170.28 -12851170.08 0.0275 0.0114  
 Mercury -39886-11-21 04:33 J -12846614.41 -12846614.31 -12846614.20 0.0283 0.0201

Mercury -39885-02-17 20:52 J -12846525.78 -12846525.63 -12846525.48 0.0283 0.0086  
 Moon -39885-04-02 12:28 J -12846481.22 -12846480.98 -12846480.74 0.0283 0.0020  
 Earth -39885-04-02 15:21 J -12846481.10 -12846480.86 -12846480.61 0.0283 0.0006 \*  
 Mercury -39885-05-16 13:26 J -12846437.10 -12846436.94 -12846436.78 0.0283 0.0032  
 Mercury -39885-08-13 06:28 J -12846348.37 -12846348.23 -12846348.10 0.0283 0.0153  
 Mercury -39885-11-09 23:45 J -12846259.54 -12846259.51 -12846259.48 0.0283 0.0276  
 Venus -39884-03-23 06:14 J -12846126.37 -12846126.24 -12846126.09 0.0283 0.0203  
 Venus -39884-11-07 19:11 J -12845896.91 -12845896.70 -12845896.49 0.0283 0.0008  
 Venus -39883-06-25 09:06 J -12845667.25 -12845667.12 -12845666.99 0.0283 0.0219  
 Mercury -39871-04-01 04:04 J -12841369.33 -12841369.33 -12841369.32 0.0276 0.0276  
 Mercury -39871-06-28 19:11 J -12841280.81 -12841280.70 -12841280.57 0.0276 0.0167  
 Mercury -39871-09-25 10:04 J -12841192.22 -12841192.08 -12841191.93 0.0276 0.0059  
 Earth -39871-10-05 10:47 J -12841182.29 -12841182.05 -12841181.80 0.0276 0.0015  
 Moon -39871-10-05 13:11 J -12841182.20 -12841181.95 -12841181.70 0.0276 0.0010 \*  
 Mercury -39871-12-23 00:42 J -12841103.62 -12841103.47 -12841103.32 0.0276 0.0047  
 Mercury -39870-03-21 14:52 J -12841015.00 -12841014.88 -12841014.75 0.0276 0.0150  
 Mercury -39870-06-18 04:33 J -12840926.36 -12840926.31 -12840926.24 0.0276 0.0251  
 Venus -39870-09-09 17:16 J -12840842.87 -12840842.78 -12840842.67 0.0276 0.0243  
 Venus -39869-04-26 04:18 J -12840613.53 -12840613.32 -12840613.11 0.0275 0.0046  
 Venus -39869-12-11 13:54 J -12840384.10 -12840383.92 -12840383.74 0.0275 0.0149  
 Mars -39863-01-25 03:35 J -12838513.60 -12838513.35 -12838513.07 0.0276 0.0116  
 Earth -39856-03-27 23:30 J -12835894.69 -12835894.52 -12835894.34 0.0282 0.0194  
 Moon -39856-03-28 02:23 J -12835894.58 -12835894.40 -12835894.19 0.0282 0.0179 \*  
 Mercury -39856-04-09 04:47 J -12835882.37 -12835882.30 -12835882.21 0.0282 0.0238  
 Mercury -39856-07-06 20:52 J -12835793.76 -12835793.63 -12835793.49 0.0283 0.0125  
 Mercury -39856-10-03 13:26 J -12835705.10 -12835704.94 -12835704.79 0.0283 0.0009  
 Mercury -39856-12-31 05:59 J -12835616.39 -12835616.25 -12835616.10 0.0283 0.0112  
 Mercury -39855-03-29 23:02 J -12835527.62 -12835527.54 -12835527.44 0.0283 0.0234  
 Moon -39855-04-10 06:42 J -12835516.33 -12835516.22 -12835516.09 0.0283 0.0247  
 Earth -39855-04-10 07:54 J -12835516.29 -12835516.17 -12835516.03 0.0283 0.0237 \*

Venus -39855-10-03 08:52 J -12835340.28 -12835340.13 -12835339.95 0.0283 0.0176  
 Venus -39854-05-20 21:50 J -12835110.80 -12835110.59 -12835110.38 0.0283 0.0034  
 Venus -39853-01-05 11:30 J -12834881.12 -12834881.02 -12834880.91 0.0284 0.0245  
 Moon -39842-09-29 17:30 J -12830595.93 -12830595.77 -12830595.60 0.0276 0.0202  
 Earth -39842-09-29 18:57 J -12830595.86 -12830595.71 -12830595.53 0.0276 0.0206 \*  
 Mercury -39842-11-15 18:42 J -12830548.82 -12830548.72 -12830548.62 0.0276 0.0210  
 Mercury -39841-02-12 09:35 J -12830460.24 -12830460.10 -12830459.95 0.0276 0.0102  
 Mercury -39841-05-11 00:28 J -12830371.64 -12830371.48 -12830371.33 0.0276 0.0010  
 Mercury -39841-08-07 14:38 J -12830283.02 -12830282.89 -12830282.75 0.0276 0.0109  
 Earth -39841-10-11 14:23 J -12830218.07 -12830217.90 -12830217.73 0.0276 0.0196  
 Moon -39841-10-11 16:33 J -12830217.95 -12830217.81 -12830217.64 0.0276 0.0209 \*  
 Mercury -39841-11-04 04:47 J -12830194.40 -12830194.30 -12830194.21 0.0276 0.0211  
 Venus -39840-03-21 17:16 J -12830056.90 -12830056.78 -12830056.65 0.0275 0.0224  
 Venus -39840-11-06 04:04 J -12829827.54 -12829827.33 -12829827.12 0.0275 0.0027  
 Venus -39839-06-23 13:40 J -12829598.10 -12829597.93 -12829597.76 0.0275 0.0168  
 Mars -39833-03-14 15:21 J -12827506.97 -12827506.86 -12827506.75 0.0277 0.0256  
 Mercury -39827-08-27 05:02 J -12825150.32 -12825150.29 -12825150.26 0.0282 0.0276  
 Mercury -39827-11-23 21:06 J -12825061.75 -12825061.62 -12825061.50 0.0283 0.0163  
 Mercury -39826-02-20 13:11 J -12824973.10 -12824972.95 -12824972.79 0.0283 0.0048  
 Earth -39826-04-04 15:35 J -12824930.09 -12824929.85 -12824929.61 0.0283 0.0040  
 Moon -39826-04-04 16:47 J -12824930.03 -12824929.80 -12824929.57 0.0283 0.0054 \*  
 Mercury -39826-05-20 05:59 J -12824884.40 -12824884.25 -12824884.10 0.0283 0.0072  
 Mercury -39826-08-16 23:02 J -12824795.65 -12824795.54 -12824795.42 0.0283 0.0194  
 Venus -39825-04-14 12:28 J -12824554.14 -12824553.98 -12824553.79 0.0283 0.0151  
 Venus -39825-11-30 01:40 J -12824324.63 -12824324.43 -12824324.22 0.0283 0.0060  
 Venus -39824-07-17 15:35 J -12824094.90 -12824094.85 -12824094.78 0.0283 0.0272  
 Mars -39819-03-03 11:02 J -12822405.33 -12822405.04 -12822404.75 0.0282 0.0033  
 Mercury -39812-04-03 21:06 J -12819816.69 -12819816.62 -12819816.53 0.0277 0.0234  
 Mercury -39812-07-01 12:14 J -12819728.12 -12819727.99 -12819727.85 0.0276 0.0124  
 Mercury -39812-09-28 03:06 J -12819639.52 -12819639.37 -12819639.22 0.0276 0.0017

Moon -39812-10-06 11:59 J -12819631.25 -12819631.00 -12819630.75 0.0276 0.0033  
 Earth -39812-10-06 14:38 J -12819631.14 -12819630.89 -12819630.65 0.0276 0.0023 \*  
 Mercury -39812-12-25 17:30 J -12819550.91 -12819550.77 -12819550.63 0.0276 0.0088  
 Mercury -39811-03-24 07:40 J -12819462.29 -12819462.18 -12819462.08 0.0276 0.0190  
 Venus -39811-10-02 02:09 J -12819270.56 -12819270.41 -12819270.25 0.0276 0.0186  
 Venus -39810-05-19 12:42 J -12819041.18 -12819040.97 -12819040.75 0.0276 0.0011  
 Venus -39809-01-03 22:18 J -12818811.71 -12818811.57 -12818811.43 0.0275 0.0204  
 Moon -39797-03-28 23:16 J -12814343.74 -12814343.53 -12814343.31 0.0282 0.0143  
 Earth -39797-03-29 00:42 J -12814343.66 -12814343.47 -12814343.26 0.0282 0.0159 \*  
 Mercury -39797-04-11 21:21 J -12814329.71 -12814329.61 -12814329.49 0.0282 0.0200  
 Mercury -39797-07-09 13:40 J -12814241.08 -12814240.93 -12814240.78 0.0282 0.0085  
 Mercury -39797-10-06 06:14 J -12814152.40 -12814152.24 -12814152.09 0.0283 0.0033  
 Mercury -39796-01-02 23:02 J -12814063.67 -12814063.54 -12814063.41 0.0283 0.0153  
 Mercury -39796-04-01 16:18 J -12813974.85 -12813974.82 -12813974.79 0.0283 0.0276  
 Earth -39796-04-11 09:21 J -12813965.16 -12813965.11 -12813965.04 0.0283 0.0273  
 Venus -39796-10-25 15:50 J -12813768.03 -12813767.84 -12813767.65 0.0283 0.0121  
 Venus -39795-06-12 04:33 J -12813538.50 -12813538.31 -12813538.10 0.0283 0.0089  
 Earth -39783-09-30 22:33 J -12809044.75 -12809044.56 -12809044.36 0.0276 0.0168  
 Moon -39783-10-01 01:26 J -12809044.63 -12809044.44 -12809044.24 0.0276 0.0160 \*  
 Mercury -39783-11-18 11:30 J -12808996.13 -12808996.02 -12808995.89 0.0276 0.0169  
 Mercury -39782-02-15 02:38 J -12808907.54 -12808907.39 -12808907.24 0.0276 0.0060  
 Mercury -39782-05-14 17:02 J -12808818.93 -12808818.79 -12808818.64 0.0276 0.0047  
 Mercury -39782-08-11 07:11 J -12808730.32 -12808730.20 -12808730.07 0.0276 0.0150  
 Earth -39782-10-13 17:45 J -12808666.89 -12808666.76 -12808666.63 0.0276 0.0234  
 Moon -39782-10-13 21:06 J -12808666.72 -12808666.62 -12808666.51 0.0276 0.0248 \*  
 Mercury -39782-11-07 21:21 J -12808641.67 -12808641.61 -12808641.55 0.0276 0.0250  
 Venus -39781-04-13 01:40 J -12808484.59 -12808484.43 -12808484.26 0.0275 0.0168  
 Venus -39781-11-28 12:14 J -12808255.20 -12808254.99 -12808254.78 0.0275 0.0028  
 Venus -39780-07-15 21:35 J -12808025.72 -12808025.60 -12808025.47 0.0275 0.0221  
 Mars -39775-06-20 02:38 J -12806225.66 -12806225.39 -12806225.11 0.0277 0.0096

Mercury -39768-08-29 21:21 J -12803597.69 -12803597.61 -12803597.53 0.0282 0.0240  
 Mercury -39768-11-26 13:11 J -12803509.08 -12803508.95 -12803508.81 0.0283 0.0126  
 Mercury -39767-02-23 05:45 J -12803420.42 -12803420.26 -12803420.11 0.0283 0.0011  
 Earth -39767-04-05 15:06 J -12803379.10 -12803378.87 -12803378.63 0.0283 0.0073  
 Moon -39767-04-05 18:57 J -12803378.94 -12803378.71 -12803378.47 0.0283 0.0088 \*  
 Mercury -39767-05-22 22:18 J -12803331.71 -12803331.57 -12803331.42 0.0283 0.0111  
 Mercury -39767-08-19 15:35 J -12803242.94 -12803242.85 -12803242.76 0.0283 0.0233  
 Venus -39766-05-07 18:28 J -12802981.92 -12802981.73 -12802981.53 0.0283 0.0097  
 Venus -39766-12-23 07:40 J -12802752.37 -12802752.18 -12802751.98 0.0283 0.0113  
 Mercury -39753-04-06 14:09 J -12798264.02 -12798263.91 -12798263.80 0.0277 0.0193  
 Mercury -39753-07-04 05:02 J -12798175.43 -12798175.29 -12798175.14 0.0277 0.0084  
 Mercury -39753-09-30 19:40 J -12798086.83 -12798086.68 -12798086.53 0.0276 0.0023  
 Moon -39753-10-07 13:54 J -12798080.16 -12798079.92 -12798079.69 0.0276 0.0072  
 Earth -39753-10-07 17:02 J -12798080.03 -12798079.79 -12798079.55 0.0276 0.0059 \*  
 Mercury -39753-12-28 09:50 J -12797998.21 -12797998.09 -12797997.95 0.0276 0.0128  
 Mercury -39752-03-26 23:59 J -12797909.58 -12797909.50 -12797909.42 0.0276 0.0229  
 Venus -39752-10-24 10:04 J -12797698.26 -12797698.08 -12797697.89 0.0276 0.0131  
 Venus -39751-06-10 20:23 J -12797468.85 -12797468.65 -12797468.44 0.0276 0.0065  
 Venus -39750-01-26 05:45 J -12797239.33 -12797239.26 -12797239.18 0.0275 0.0257  
 Mercury -39738-01-16 22:18 J -12792865.61 -12792865.57 -12792865.53 0.0282 0.0272  
 Moon -39738-03-30 22:04 J -12792792.80 -12792792.58 -12792792.35 0.0282 0.0110  
 Earth -39738-03-31 01:54 J -12792792.64 -12792792.42 -12792792.20 0.0282 0.0124 \*  
 Mercury -39738-04-15 14:09 J -12792777.04 -12792776.91 -12792776.78 0.0282 0.0160  
 Mercury -39738-07-13 06:14 J -12792688.39 -12792688.24 -12792688.08 0.0282 0.0045  
 Mercury -39738-10-09 22:47 J -12792599.70 -12792599.55 -12792599.39 0.0282 0.0074  
 Mercury -39737-01-06 15:50 J -12792510.95 -12792510.84 -12792510.72 0.0283 0.0194  
 Venus -39737-04-01 10:33 J -12792425.11 -12792425.06 -12792425.00 0.0283 0.0272  
 Venus -39737-11-16 22:18 J -12792195.77 -12792195.57 -12792195.36 0.0283 0.0067  
 Venus -39736-07-04 11:16 J -12791966.20 -12791966.03 -12791965.84 0.0283 0.0142  
 Mars -39731-07-27 08:09 J -12790117.45 -12790117.16 -12790116.86 0.0282 0.0017

Mercury -39724-08-24 13:26 J -12787532.02 -12787531.94 -12787531.86 0.0276 0.0237

Earth -39724-10-02 01:11 J -12787493.66 -12787493.45 -12787493.22 0.0276 0.0132

Moon -39724-10-02 04:18 J -12787493.54 -12787493.32 -12787493.09 0.0276 0.0123 \*

Mercury -39724-11-21 04:33 J -12787443.45 -12787443.31 -12787443.18 0.0276 0.0127

Mercury -39723-02-17 19:11 J -12787354.85 -12787354.70 -12787354.54 0.0276 0.0021

Mercury -39723-05-17 09:50 J -12787266.24 -12787266.09 -12787265.95 0.0276 0.0086

Mercury -39723-08-13 23:45 J -12787177.61 -12787177.51 -12787177.40 0.0276 0.0189

Earth -39723-10-14 20:38 J -12787115.68 -12787115.64 -12787115.59 0.0276 0.0271

Venus -39722-05-06 09:50 J -12786912.28 -12786912.09 -12786911.89 0.0275 0.0113

Venus -39722-12-21 20:09 J -12786682.86 -12786682.66 -12786682.46 0.0275 0.0082

Venus -39721-08-07 05:16 J -12786453.28 -12786453.28 -12786453.25 0.0275 0.0274

Mercury -39709-09-01 13:26 J -12782045.04 -12782044.94 -12782044.83 0.0282 0.0203

Mercury -39709-11-29 05:30 J -12781956.42 -12781956.27 -12781956.12 0.0282 0.0089

Mercury -39708-02-25 22:04 J -12781867.74 -12781867.58 -12781867.42 0.0283 0.0029

Earth -39708-04-06 14:38 J -12781828.11 -12781827.89 -12781827.66 0.0283 0.0107

Moon -39708-04-06 15:06 J -12781828.10 -12781827.87 -12781827.64 0.0283 0.0116 \*

Mercury -39708-05-25 14:52 J -12781779.01 -12781778.88 -12781778.74 0.0283 0.0149

Mercury -39708-08-22 08:09 J -12781690.20 -12781690.16 -12781690.12 0.0283 0.0272

Venus -39708-10-12 11:45 J -12781639.10 -12781639.01 -12781638.91 0.0283 0.0251

Venus -39707-05-30 00:14 J -12781409.70 -12781409.49 -12781409.28 0.0283 0.0045

Venus -39706-01-14 13:26 J -12781180.10 -12781179.94 -12781179.76 0.0283 0.0165

Mercury -39694-01-11 15:21 J -12776799.90 -12776799.86 -12776799.81 0.0277 0.0264

Mercury -39694-04-10 06:42 J -12776711.35 -12776711.22 -12776711.09 0.0277 0.0153

Mercury -39694-07-07 21:35 J -12776622.75 -12776622.60 -12776622.45 0.0277 0.0045

Mercury -39694-10-04 12:14 J -12776534.14 -12776533.99 -12776533.84 0.0277 0.0062

Earth -39694-10-09 19:11 J -12776528.93 -12776528.70 -12776528.47 0.0277 0.0095

Moon -39694-10-09 19:54 J -12776528.88 -12776528.67 -12776528.44 0.0277 0.0109 \*

Mercury -39693-01-01 02:23 J -12776445.52 -12776445.40 -12776445.28 0.0276 0.0165

Mercury -39693-03-29 16:18 J -12776356.85 -12776356.82 -12776356.78 0.0276 0.0266

Venus -39693-03-31 06:28 J -12776355.26 -12776355.23 -12776355.19 0.0276 0.0273

Venus -39693-11-15 17:59 J -12776125.95 -12776125.75 -12776125.54 0.0276 0.0076  
 Venus -39692-07-03 04:18 J -12775896.51 -12775896.32 -12775896.13 0.0276 0.0119  
 Mars -39687-11-14 03:21 J -12773936.64 -12773936.36 -12773936.06 0.0276 0.0042  
 Mercury -39679-01-19 14:52 J -12771312.97 -12771312.88 -12771312.80 0.0282 0.0234  
 Earth -39679-04-01 03:06 J -12771241.60 -12771241.37 -12771241.13 0.0282 0.0089  
 Moon -39679-04-01 03:21 J -12771241.59 -12771241.36 -12771241.13 0.0282 0.0078 \*  
 Mercury -39679-04-18 06:42 J -12771224.36 -12771224.22 -12771224.08 0.0282 0.0121  
 Mercury -39679-07-15 23:02 J -12771135.70 -12771135.54 -12771135.38 0.0282 0.0005  
 Mercury -39679-10-12 15:50 J -12771046.99 -12771046.84 -12771046.70 0.0282 0.0115  
 Mercury -39678-01-09 08:38 J -12770958.22 -12770958.14 -12770958.05 0.0282 0.0237  
 Venus -39678-04-24 17:02 J -12770852.91 -12770852.79 -12770852.65 0.0283 0.0219  
 Venus -39678-12-10 05:16 J -12770623.49 -12770623.28 -12770623.07 0.0283 0.0013  
 Venus -39677-07-26 18:14 J -12770393.88 -12770393.74 -12770393.58 0.0283 0.0196  
 Mercury -39665-08-27 06:14 J -12765979.34 -12765979.24 -12765979.13 0.0276 0.0196  
 Moon -39665-10-03 03:21 J -12765942.61 -12765942.36 -12765942.12 0.0276 0.0085  
 Earth -39665-10-03 04:18 J -12765942.55 -12765942.32 -12765942.09 0.0276 0.0096 \*  
 Mercury -39665-11-23 21:21 J -12765890.76 -12765890.61 -12765890.47 0.0276 0.0086  
 Mercury -39664-02-20 11:59 J -12765802.15 -12765802.00 -12765801.85 0.0276 0.0021  
 Mercury -39664-05-20 02:23 J -12765713.53 -12765713.40 -12765713.27 0.0276 0.0125  
 Mercury -39664-08-16 16:18 J -12765624.90 -12765624.82 -12765624.73 0.0276 0.0227  
 Venus -39664-10-11 06:28 J -12765569.30 -12765569.23 -12765569.14 0.0276 0.0253  
 Venus -39663-05-28 17:59 J -12765339.96 -12765339.75 -12765339.54 0.0275 0.0058  
 Venus -39662-01-13 04:04 J -12765110.51 -12765110.33 -12765110.14 0.0275 0.0136  
 Moon -39650-03-26 07:11 J -12760655.22 -12760655.20 -12760655.16 0.0282 0.0279  
 Mercury -39650-06-08 14:09 J -12760580.93 -12760580.91 -12760580.89 0.0282 0.0277  
 Mercury -39650-09-05 05:59 J -12760492.38 -12760492.25 -12760492.13 0.0282 0.0165  
 Mercury -39650-12-02 22:04 J -12760403.73 -12760403.58 -12760403.42 0.0282 0.0050  
 Mercury -39649-02-29 14:38 J -12760315.04 -12760314.89 -12760314.73 0.0282 0.0068  
 Moon -39649-04-07 11:30 J -12760277.23 -12760277.02 -12760276.81 0.0283 0.0145  
 Earth -39649-04-07 15:21 J -12760277.07 -12760276.86 -12760276.65 0.0283 0.0141 \*



Mercury -39649-05-28 07:26 J -12760226.30 -12760226.19 -12760226.06 0.0283 0.0190  
 Venus -39649-11-03 17:59 J -12760066.89 -12760066.75 -12760066.60 0.0283 0.0197  
 Venus -39648-06-21 06:28 J -12759837.44 -12759837.23 -12759837.02 0.0283 0.0009  
 Venus -39647-02-05 20:09 J -12759607.79 -12759607.66 -12759607.53 0.0283 0.0218  
 Mars -39643-12-20 11:59 J -12757829.30 -12757829.00 -12757828.71 0.0282 0.0014  
 Moon -39636-09-27 23:45 J -12755355.54 -12755355.51 -12755355.46 0.0278 0.0273  
 Mercury -39635-01-14 08:09 J -12755247.25 -12755247.16 -12755247.07 0.0277 0.0225  
 Mercury -39635-04-12 23:16 J -12755158.67 -12755158.53 -12755158.39 0.0277 0.0114  
 Mercury -39635-07-10 14:09 J -12755070.06 -12755069.91 -12755069.76 0.0277 0.0006  
 Mercury -39635-10-07 04:33 J -12754981.44 -12754981.31 -12754981.17 0.0277 0.0100  
 Earth -39635-10-10 20:52 J -12754977.83 -12754977.63 -12754977.40 0.0277 0.0131  
 Moon -39635-10-11 00:42 J -12754977.68 -12754977.47 -12754977.26 0.0277 0.0145 \*  
 Mercury -39634-01-03 18:42 J -12754892.81 -12754892.72 -12754892.62 0.0277 0.0203  
 Venus -39634-04-23 14:23 J -12754783.03 -12754782.90 -12754782.77 0.0277 0.0218  
 Venus -39634-12-09 01:54 J -12754553.64 -12754553.42 -12754553.21 0.0276 0.0022  
 Venus -39633-07-25 11:59 J -12754324.16 -12754324.00 -12754323.83 0.0276 0.0173  
 Mercury -39620-01-22 07:40 J -12749760.29 -12749760.18 -12749760.07 0.0282 0.0193  
 Earth -39620-04-02 05:59 J -12749690.49 -12749690.25 -12749690.01 0.0282 0.0052  
 Moon -39620-04-02 09:35 J -12749690.34 -12749690.10 -12749689.86 0.0282 0.0043 \*  
 Mercury -39620-04-20 23:45 J -12749671.66 -12749671.51 -12749671.36 0.0282 0.0079  
 Mercury -39620-07-18 16:04 J -12749582.98 -12749582.83 -12749582.67 0.0282 0.0038  
 Mercury -39620-10-15 08:52 J -12749494.26 -12749494.13 -12749494.00 0.0282 0.0158  
 Mercury -39619-01-12 02:09 J -12749405.42 -12749405.41 -12749405.40 0.0282 0.0281  
 Venus -39619-05-17 00:42 J -12749280.64 -12749280.47 -12749280.30 0.0283 0.0163  
 Venus -39618-01-01 12:57 J -12749051.17 -12749050.96 -12749050.75 0.0283 0.0043  
 Venus -39618-08-19 02:09 J -12748821.50 -12748821.41 -12748821.31 0.0283 0.0250  
 Mercury -39606-06-03 07:54 J -12744515.21 -12744515.17 -12744515.13 0.0277 0.0265  
 Mercury -39606-08-30 23:16 J -12744426.66 -12744426.53 -12744426.40 0.0277 0.0154  
 Moon -39606-10-05 04:04 J -12744391.57 -12744391.33 -12744391.09 0.0276 0.0046  
 Earth -39606-10-05 07:40 J -12744391.42 -12744391.18 -12744390.94 0.0276 0.0059 \*

Mercury -39606-11-27 14:09 J -12744338.06 -12744337.91 -12744337.76 0.0276 0.0045

Mercury -39605-02-24 04:47 J -12744249.45 -12744249.30 -12744249.15 0.0276 0.0061

Mercury -39605-05-22 18:57 J -12744160.82 -12744160.71 -12744160.59 0.0276 0.0165

Mercury -39605-08-19 09:06 J -12744072.16 -12744072.12 -12744072.09 0.0276 0.0266

Venus -39605-11-02 15:21 J -12743997.01 -12743996.86 -12743996.71 0.0276 0.0197

Venus -39604-06-20 02:38 J -12743767.61 -12743767.39 -12743767.18 0.0276 0.0006

Venus -39603-02-04 12:28 J -12743538.13 -12743537.98 -12743537.82 0.0275 0.0191

Mars -39598-04-09 03:50 J -12741648.63 -12741648.34 -12741648.04 0.0276 0.0021

Moon -39591-03-27 06:42 J -12739104.33 -12739104.22 -12739104.10 0.0282 0.0245

Earth -39591-03-27 10:18 J -12739104.17 -12739104.07 -12739103.97 0.0282 0.0255 \*

Mercury -39591-06-11 06:42 J -12739028.29 -12739028.22 -12739028.13 0.0282 0.0238

Mercury -39591-09-07 22:47 J -12738939.69 -12738939.55 -12738939.41 0.0282 0.0125

Mercury -39591-12-05 15:06 J -12738851.03 -12738850.87 -12738850.72 0.0282 0.0009

Mercury -39590-03-04 07:40 J -12738762.33 -12738762.18 -12738762.03 0.0282 0.0111

Moon -39590-04-09 15:21 J -12738726.03 -12738725.86 -12738725.66 0.0282 0.0180

Earth -39590-04-09 17:16 J -12738725.96 -12738725.78 -12738725.58 0.0282 0.0177 \*

Mercury -39590-06-01 00:42 J -12738673.56 -12738673.47 -12738673.38 0.0283 0.0233

Venus -39590-11-27 01:11 J -12738494.63 -12738494.45 -12738494.27 0.0283 0.0142

Venus -39589-07-13 13:40 J -12738265.13 -12738264.93 -12738264.73 0.0283 0.0064

Venus -39588-02-28 03:21 J -12738035.41 -12738035.36 -12738035.30 0.0283 0.0272

Earth -39577-09-29 01:40 J -12733804.53 -12733804.43 -12733804.30 0.0278 0.0244

Moon -39577-09-29 05:30 J -12733804.39 -12733804.27 -12733804.13 0.0278 0.0234 \*

Mercury -39576-01-17 00:57 J -12733694.57 -12733694.46 -12733694.34 0.0277 0.0184

Mercury -39576-04-15 16:04 J -12733605.98 -12733605.83 -12733605.68 0.0277 0.0073

Mercury -39576-07-13 06:42 J -12733517.36 -12733517.22 -12733517.06 0.0277 0.0036

Mercury -39576-10-09 21:06 J -12733428.74 -12733428.62 -12733428.49 0.0277 0.0140

Earth -39576-10-11 23:59 J -12733426.69 -12733426.50 -12733426.30 0.0277 0.0167

Moon -39576-10-12 00:57 J -12733426.64 -12733426.46 -12733426.25 0.0277 0.0181 \*

Mercury -39575-01-06 11:16 J -12733340.10 -12733340.03 -12733339.96 0.0277 0.0242

Venus -39575-05-15 22:33 J -12733210.73 -12733210.56 -12733210.38 0.0277 0.0162

Venus -39575-12-31 10:04 J -12732981.29 -12732981.08 -12732980.87 0.0276 0.0034  
 Venus -39574-08-17 20:09 J -12732751.77 -12732751.66 -12732751.53 0.0276 0.0227  
 Mercury -39562-10-29 09:21 J -12728296.17 -12728296.11 -12728296.06 0.0281 0.0261  
 Mercury -39561-01-26 00:57 J -12728207.59 -12728207.46 -12728207.33 0.0282 0.0149  
 Earth -39561-04-03 10:33 J -12728139.31 -12728139.06 -12728138.82 0.0282 0.0012  
 Moon -39561-04-03 12:28 J -12728139.23 -12728138.98 -12728138.73 0.0282 0.0005 \*  
 Mercury -39561-04-23 17:02 J -12728118.94 -12728118.79 -12728118.63 0.0282 0.0035  
 Mercury -39561-07-21 09:35 J -12728030.25 -12728030.10 -12728029.95 0.0282 0.0084  
 Mercury -39561-10-18 02:23 J -12727941.50 -12727941.40 -12727941.28 0.0282 0.0205  
 Venus -39560-06-08 09:06 J -12727708.31 -12727708.12 -12727707.92 0.0282 0.0105  
 Venus -39559-01-23 21:35 J -12727478.79 -12727478.60 -12727478.40 0.0283 0.0100  
 Mars -39554-05-15 23:02 J -12725540.82 -12725540.54 -12725540.24 0.0283 0.0042  
 Mercury -39547-06-06 00:57 J -12722962.54 -12722962.46 -12722962.36 0.0277 0.0222  
 Mercury -39547-09-02 16:18 J -12722873.96 -12722873.82 -12722873.68 0.0277 0.0111  
 Moon -39547-10-06 10:18 J -12722840.30 -12722840.07 -12722839.83 0.0277 0.0008  
 Earth -39547-10-06 11:45 J -12722840.26 -12722840.01 -12722839.77 0.0277 0.0020 \*  
 Mercury -39547-11-30 07:11 J -12722785.35 -12722785.20 -12722785.05 0.0277 0.0003  
 Mercury -39546-02-26 21:35 J -12722696.73 -12722696.60 -12722696.46 0.0276 0.0103  
 Mercury -39546-05-26 11:45 J -12722608.10 -12722608.01 -12722607.91 0.0276 0.0206  
 Venus -39546-11-26 00:28 J -12722424.66 -12722424.48 -12722424.29 0.0276 0.0140  
 Venus -39545-07-12 11:30 J -12722195.22 -12722195.02 -12722194.81 0.0276 0.0055  
 Venus -39544-02-26 21:35 J -12721965.69 -12721965.60 -12721965.51 0.0275 0.0246  
 Moon -39532-03-28 13:26 J -12717553.10 -12717552.94 -12717552.78 0.0282 0.0207  
 Earth -39532-03-28 15:06 J -12717553.02 -12717552.87 -12717552.71 0.0282 0.0216 \*  
 Mercury -39532-06-14 00:14 J -12717475.60 -12717475.49 -12717475.38 0.0282 0.0194  
 Mercury -39532-09-10 16:18 J -12717386.97 -12717386.82 -12717386.67 0.0282 0.0080  
 Mercury -39532-12-08 08:38 J -12717298.30 -12717298.14 -12717297.99 0.0282 0.0038  
 Mercury -39531-03-07 01:26 J -12717209.58 -12717209.44 -12717209.31 0.0282 0.0158  
 Earth -39531-04-10 21:50 J -12717174.74 -12717174.59 -12717174.43 0.0282 0.0218  
 Moon -39531-04-11 00:28 J -12717174.63 -12717174.48 -12717174.32 0.0282 0.0216 \*

Mercury -39531-06-03 18:14 J -12717120.75 -12717120.74 -12717120.71 0.0282 0.0281  
 Venus -39531-12-19 09:50 J -12716922.29 -12716922.09 -12716921.89 0.0283 0.0084  
 Venus -39530-08-05 22:18 J -12716692.76 -12716692.57 -12716692.38 0.0283 0.0122  
 Earth -39518-10-01 05:16 J -12712253.44 -12712253.28 -12712253.11 0.0278 0.0206  
 Moon -39518-10-01 06:28 J -12712253.40 -12712253.23 -12712253.04 0.0278 0.0193 \*  
 Mercury -39518-10-24 02:38 J -12712230.45 -12712230.39 -12712230.33 0.0278 0.0253  
 Mercury -39517-01-20 17:59 J -12712141.88 -12712141.75 -12712141.62 0.0278 0.0141  
 Mercury -39517-04-18 09:06 J -12712053.28 -12712053.12 -12712052.97 0.0277 0.0032  
 Mercury -39517-07-15 23:30 J -12711964.66 -12711964.52 -12711964.37 0.0277 0.0076  
 Mercury -39517-10-12 13:54 J -12711876.03 -12711875.92 -12711875.80 0.0277 0.0180  
 Moon -39517-10-13 00:42 J -12711875.61 -12711875.47 -12711875.31 0.0277 0.0221  
 Earth -39517-10-13 03:21 J -12711875.51 -12711875.36 -12711875.18 0.0277 0.0207 \*  
 Venus -39516-06-07 07:26 J -12711638.38 -12711638.19 -12711637.99 0.0277 0.0106  
 Venus -39515-01-22 18:42 J -12711408.92 -12711408.72 -12711408.51 0.0277 0.0090  
 Mars -39510-09-03 14:52 J -12709359.16 -12709358.88 -12709358.58 0.0276 0.0039  
 Mercury -39503-11-01 02:52 J -12706743.48 -12706743.38 -12706743.28 0.0281 0.0215  
 Mercury -39502-01-28 18:42 J -12706654.86 -12706654.72 -12706654.57 0.0281 0.0102  
 Moon -39502-04-05 14:38 J -12706588.14 -12706587.89 -12706587.64 0.0282 0.0035  
 Earth -39502-04-05 16:47 J -12706588.04 -12706587.80 -12706587.55 0.0282 0.0032 \*  
 Mercury -39502-04-27 11:02 J -12706566.20 -12706566.04 -12706565.88 0.0282 0.0014  
 Mercury -39502-07-25 03:35 J -12706477.49 -12706477.35 -12706477.21 0.0282 0.0134  
 Mercury -39502-10-21 20:38 J -12706388.70 -12706388.64 -12706388.57 0.0282 0.0255  
 Venus -39502-11-14 07:26 J -12706365.28 -12706365.19 -12706365.08 0.0282 0.0248  
 Venus -39501-06-30 18:57 J -12706135.92 -12706135.71 -12706135.50 0.0282 0.0046  
 Venus -39500-02-15 07:26 J -12705906.36 -12705906.19 -12705906.01 0.0283 0.0159  
 Mercury -39488-06-08 18:28 J -12701409.84 -12701409.73 -12701409.60 0.0277 0.0177  
 Mercury -39488-09-05 09:50 J -12701321.24 -12701321.09 -12701320.94 0.0277 0.0066  
 Earth -39488-10-07 17:30 J -12701289.01 -12701288.77 -12701288.52 0.0277 0.0021  
 Moon -39488-10-07 20:38 J -12701288.88 -12701288.64 -12701288.40 0.0277 0.0037 \*  
 Mercury -39488-12-03 00:28 J -12701232.63 -12701232.48 -12701232.33 0.0277 0.0042

Mercury -39487-03-01 14:52 J -12701144.00 -12701143.88 -12701143.75 0.0277 0.0147  
 Mercury -39487-05-29 05:02 J -12701055.35 -12701055.29 -12701055.23 0.0276 0.0249  
 Venus -39487-12-18 10:33 J -12700852.26 -12700852.06 -12700851.85 0.0276 0.0082  
 Venus -39486-08-04 21:50 J -12700622.79 -12700622.59 -12700622.40 0.0276 0.0112  
 Mercury -39473-03-20 02:23 J -12696011.46 -12696011.40 -12696011.34 0.0282 0.0257  
 Earth -39473-03-29 22:04 J -12696001.76 -12696001.58 -12696001.38 0.0282 0.0173  
 Moon -39473-03-30 00:28 J -12696001.66 -12696001.48 -12696001.28 0.0282 0.0165 \*  
 Mercury -39473-06-16 17:59 J -12695922.88 -12695922.75 -12695922.61 0.0282 0.0146  
 Mercury -39473-09-13 10:18 J -12695834.23 -12695834.07 -12695833.92 0.0282 0.0031  
 Mercury -39473-12-11 02:38 J -12695745.54 -12695745.39 -12695745.24 0.0282 0.0088  
 Mercury -39472-03-09 19:26 J -12695656.79 -12695656.69 -12695656.58 0.0282 0.0209  
 Earth -39472-04-12 04:47 J -12695623.38 -12695623.30 -12695623.20 0.0282 0.0261  
 Moon -39472-04-12 07:54 J -12695623.25 -12695623.17 -12695623.06 0.0282 0.0259 \*  
 Venus -39472-05-26 08:09 J -12695579.27 -12695579.16 -12695579.02 0.0282 0.0227  
 Venus -39471-01-10 19:54 J -12695349.88 -12695349.67 -12695349.46 0.0283 0.0024  
 Venus -39471-08-28 08:38 J -12695120.30 -12695120.14 -12695119.98 0.0283 0.0181  
 Mars -39466-10-09 08:09 J -12693252.44 -12693252.16 -12693251.88 0.0282 0.0075  
 Moon -39459-10-02 06:42 J -12690702.42 -12690702.22 -12690702.00 0.0278 0.0151  
 Earth -39459-10-02 10:18 J -12690702.27 -12690702.07 -12690701.87 0.0278 0.0166 \*  
 Mercury -39459-10-26 19:54 J -12690677.77 -12690677.67 -12690677.56 0.0278 0.0208  
 Mercury -39458-01-23 11:16 J -12690589.17 -12690589.03 -12690588.89 0.0278 0.0097  
 Mercury -39458-04-22 02:09 J -12690500.56 -12690500.41 -12690500.26 0.0278 0.0012  
 Mercury -39458-07-19 16:47 J -12690411.94 -12690411.80 -12690411.67 0.0277 0.0119  
 Moon -39458-10-15 05:16 J -12690324.34 -12690324.28 -12690324.19 0.0277 0.0262  
 Earth -39458-10-15 08:23 J -12690324.25 -12690324.15 -12690324.03 0.0277 0.0247 \*  
 Mercury -39458-10-16 06:57 J -12690323.30 -12690323.21 -12690323.12 0.0277 0.0222  
 Venus -39458-11-13 04:33 J -12690295.40 -12690295.31 -12690295.20 0.0277 0.0245  
 Venus -39457-06-29 17:02 J -12690066.00 -12690065.79 -12690065.57 0.0277 0.0049  
 Venus -39456-02-14 04:18 J -12689836.50 -12689836.32 -12689836.14 0.0277 0.0146  
 Mercury -39444-08-07 05:30 J -12685279.30 -12685279.27 -12685279.24 0.0281 0.0275

Mercury -39444-11-03 21:06 J -12685190.74 -12685190.62 -12685190.49 0.0281 0.0164  
 Mercury -39443-01-31 13:11 J -12685102.10 -12685101.95 -12685101.80 0.0281 0.0050  
 Moon -39443-04-06 22:04 J -12685036.81 -12685036.58 -12685036.34 0.0282 0.0082  
 Earth -39443-04-07 01:40 J -12685036.66 -12685036.43 -12685036.19 0.0282 0.0078 \*  
 Mercury -39443-04-30 05:30 J -12685013.42 -12685013.27 -12685013.11 0.0282 0.0068  
 Mercury -39443-07-27 22:18 J -12684924.69 -12684924.57 -12684924.45 0.0282 0.0188  
 Venus -39443-12-06 18:42 J -12684792.87 -12684792.72 -12684792.56 0.0282 0.0187  
 Venus -39442-07-24 06:14 J -12684563.45 -12684563.24 -12684563.03 0.0282 0.0015  
 Venus -39441-03-09 18:57 J -12684333.84 -12684333.71 -12684333.58 0.0283 0.0220  
 Mercury -39429-03-14 21:06 J -12679945.69 -12679945.62 -12679945.54 0.0277 0.0240  
 Mercury -39429-06-11 12:28 J -12679857.12 -12679856.98 -12679856.84 0.0277 0.0128  
 Mercury -39429-09-08 03:21 J -12679768.51 -12679768.36 -12679768.21 0.0277 0.0019  
 Earth -39429-10-09 00:42 J -12679737.71 -12679737.47 -12679737.23 0.0277 0.0064  
 Moon -39429-10-09 03:35 J -12679737.59 -12679737.35 -12679737.11 0.0277 0.0081 \*  
 Mercury -39429-12-05 17:59 J -12679679.89 -12679679.75 -12679679.60 0.0277 0.0088  
 Mercury -39428-03-04 08:09 J -12679591.26 -12679591.16 -12679591.05 0.0277 0.0193  
 Venus -39428-05-25 09:21 J -12679509.24 -12679509.11 -12679508.97 0.0276 0.0218  
 Venus -39427-01-09 21:35 J -12679279.82 -12679279.60 -12679279.39 0.0276 0.0023  
 Venus -39427-08-27 08:23 J -12679050.31 -12679050.15 -12679049.98 0.0276 0.0170  
 Mars -39421-01-28 04:18 J -12677070.60 -12677070.32 -12677070.03 0.0276 0.0074  
 Mercury -39414-03-23 20:38 J -12674458.74 -12674458.64 -12674458.53 0.0281 0.0207  
 Earth -39414-04-01 07:26 J -12674450.40 -12674450.19 -12674449.97 0.0281 0.0125  
 Moon -39414-04-01 11:02 J -12674450.26 -12674450.04 -12674449.81 0.0281 0.0119 \*  
 Mercury -39414-06-20 12:28 J -12674370.12 -12674369.98 -12674369.83 0.0282 0.0094  
 Mercury -39414-09-17 04:47 J -12674281.46 -12674281.30 -12674281.14 0.0282 0.0023  
 Mercury -39414-12-14 21:21 J -12674192.75 -12674192.61 -12674192.47 0.0282 0.0142  
 Mercury -39413-03-12 14:23 J -12674103.95 -12674103.90 -12674103.85 0.0282 0.0263  
 Venus -39413-06-17 19:40 J -12674006.85 -12674006.68 -12674006.51 0.0282 0.0164  
 Venus -39412-02-02 07:26 J -12673777.40 -12673777.19 -12673776.98 0.0283 0.0038  
 Venus -39412-09-19 20:09 J -12673547.77 -12673547.66 -12673547.55 0.0283 0.0242

Mercury -39400-08-01 22:04 J -12669213.60 -12669213.58 -12669213.54 0.0278 0.0273  
 Moon -39400-10-03 14:38 J -12669151.11 -12669150.89 -12669150.67 0.0278 0.0107  
 Earth -39400-10-03 17:02 J -12669151.01 -12669150.79 -12669150.56 0.0278 0.0123 \*  
 Mercury -39400-10-29 13:40 J -12669125.05 -12669124.93 -12669124.80 0.0278 0.0160  
 Mercury -39399-01-26 04:47 J -12669036.45 -12669036.30 -12669036.15 0.0278 0.0050  
 Mercury -39399-04-24 19:40 J -12668947.83 -12668947.68 -12668947.53 0.0278 0.0059  
 Mercury -39399-07-22 10:04 J -12668859.20 -12668859.08 -12668858.96 0.0277 0.0164  
 Mercury -39399-10-18 23:59 J -12668770.52 -12668770.50 -12668770.45 0.0277 0.0268  
 Venus -39399-12-05 15:21 J -12668723.01 -12668722.86 -12668722.69 0.0277 0.0186  
 Venus -39398-07-23 03:50 J -12668493.55 -12668493.34 -12668493.13 0.0277 0.0010  
 Venus -39397-03-08 14:38 J -12668264.02 -12668263.89 -12668263.74 0.0277 0.0204  
 Mercury -39385-08-09 23:59 J -12663726.59 -12663726.50 -12663726.41 0.0281 0.0223  
 Mercury -39385-11-06 15:35 J -12663637.99 -12663637.85 -12663637.70 0.0281 0.0111  
 Mercury -39384-02-03 07:54 J -12663549.33 -12663549.17 -12663549.01 0.0281 0.0005  
 Earth -39384-04-08 11:59 J -12663485.22 -12663485.00 -12663484.78 0.0282 0.0128  
 Moon -39384-04-08 11:45 J -12663485.21 -12663485.01 -12663484.79 0.0282 0.0129 \*  
 Mercury -39384-05-03 00:28 J -12663460.62 -12663460.48 -12663460.34 0.0282 0.0123  
 Mercury -39384-07-30 17:16 J -12663371.85 -12663371.78 -12663371.70 0.0282 0.0245  
 Venus -39384-12-29 06:42 J -12663220.40 -12663220.22 -12663220.03 0.0282 0.0125  
 Venus -39383-08-15 18:28 J -12662990.93 -12662990.73 -12662990.52 0.0282 0.0078  
 Venus -39382-04-02 07:26 J -12662761.20 -12662761.19 -12662761.18 0.0283 0.0282  
 Mars -39377-03-04 22:04 J -12660962.82 -12660962.58 -12660962.31 0.0282 0.0133  
 Mercury -39370-03-18 15:21 J -12658392.97 -12658392.86 -12658392.75 0.0277 0.0188  
 Mercury -39370-06-15 06:28 J -12658304.37 -12658304.23 -12658304.08 0.0277 0.0078  
 Mercury -39370-09-11 21:21 J -12658215.76 -12658215.61 -12658215.46 0.0277 0.0031  
 Moon -39370-10-11 07:26 J -12658186.41 -12658186.19 -12658185.95 0.0277 0.0125  
 Earth -39370-10-11 09:21 J -12658186.33 -12658186.11 -12658185.88 0.0277 0.0110 \*  
 Mercury -39370-12-09 11:45 J -12658127.13 -12658127.01 -12658126.87 0.0277 0.0137  
 Mercury -39369-03-07 01:54 J -12658038.49 -12658038.42 -12658038.34 0.0277 0.0240  
 Venus -39369-06-16 21:06 J -12657936.79 -12657936.62 -12657936.43 0.0277 0.0158

Venus -39368-02-01 09:06 J -12657707.33 -12657707.12 -12657706.91 0.0276 0.0037  
 Venus -39368-09-18 19:40 J -12657477.79 -12657477.68 -12657477.55 0.0276 0.0229  
 Mars -39363-05-04 21:50 J -12655788.59 -12655788.59 -12655788.57 0.0276 0.0276  
 Mercury -39356-12-27 23:45 J -12652994.56 -12652994.51 -12652994.46 0.0281 0.0264  
 Mercury -39355-03-26 15:21 J -12652905.98 -12652905.86 -12652905.73 0.0282 0.0153  
 Moon -39355-04-02 18:14 J -12652898.99 -12652898.74 -12652898.50 0.0282 0.0073  
 Earth -39355-04-02 18:42 J -12652898.95 -12652898.72 -12652898.48 0.0282 0.0075 \*  
 Mercury -39355-06-23 07:26 J -12652817.34 -12652817.19 -12652817.03 0.0282 0.0038  
 Mercury -39355-09-19 23:45 J -12652728.66 -12652728.51 -12652728.36 0.0282 0.0080  
 Mercury -39355-12-17 16:33 J -12652639.92 -12652639.81 -12652639.70 0.0282 0.0200  
 Venus -39354-07-11 08:09 J -12652434.35 -12652434.16 -12652433.96 0.0282 0.0101  
 Venus -39353-02-25 20:09 J -12652204.85 -12652204.66 -12652204.46 0.0283 0.0102  
 Mercury -39341-08-04 16:18 J -12647660.91 -12647660.82 -12647660.72 0.0278 0.0222  
 Earth -39341-10-05 00:57 J -12647599.70 -12647599.46 -12647599.22 0.0278 0.0077  
 Moon -39341-10-05 02:23 J -12647599.63 -12647599.40 -12647599.16 0.0278 0.0063 \*  
 Mercury -39341-11-01 07:40 J -12647572.32 -12647572.18 -12647572.04 0.0278 0.0110  
 Mercury -39340-01-28 22:47 J -12647483.71 -12647483.55 -12647483.40 0.0278 0.0007  
 Mercury -39340-04-27 13:11 J -12647395.08 -12647394.95 -12647394.81 0.0278 0.0107  
 Mercury -39340-07-25 03:35 J -12647306.44 -12647306.35 -12647306.25 0.0277 0.0211  
 Venus -39340-12-28 02:38 J -12647150.57 -12647150.39 -12647150.19 0.0277 0.0127  
 Venus -39339-08-14 14:52 J -12646921.08 -12646920.88 -12646920.67 0.0277 0.0069  
 Venus -39338-04-01 01:26 J -12646691.49 -12646691.44 -12646691.36 0.0277 0.0261  
 Mars -39333-06-23 19:26 J -12644780.94 -12644780.69 -12644780.42 0.0277 0.0134  
 Earth -39326-03-28 17:59 J -12642311.85 -12642311.75 -12642311.64 0.0281 0.0252  
 Moon -39326-03-28 18:42 J -12642311.83 -12642311.72 -12642311.61 0.0281 0.0247 \*  
 Mercury -39326-05-17 03:06 J -12642262.38 -12642262.37 -12642262.36 0.0281 0.0280  
 Mercury -39326-08-13 18:42 J -12642173.84 -12642173.72 -12642173.60 0.0281 0.0169  
 Mercury -39326-11-10 10:33 J -12642085.21 -12642085.06 -12642084.90 0.0281 0.0056  
 Mercury -39325-02-07 02:52 J -12641996.53 -12641996.38 -12641996.22 0.0281 0.0062  
 Earth -39325-04-09 23:16 J -12641933.71 -12641933.53 -12641933.34 0.0282 0.0179



Moon -39325-04-10 02:52 J -12641933.56 -12641933.38 -12641933.18 0.0282 0.0178 \*  
 Mercury -39325-05-05 19:40 J -12641907.80 -12641907.68 -12641907.56 0.0282 0.0182  
 Venus -39325-06-05 08:38 J -12641877.22 -12641877.14 -12641877.06 0.0282 0.0260  
 Venus -39324-01-20 19:40 J -12641647.89 -12641647.68 -12641647.48 0.0282 0.0061  
 Venus -39324-09-07 07:26 J -12641418.36 -12641418.19 -12641418.00 0.0282 0.0141  
 Mars -39319-06-10 18:42 J -12639680.87 -12639680.72 -12639680.54 0.0283 0.0230  
 Moon -39312-09-29 19:26 J -12637012.80 -12637012.69 -12637012.56 0.0278 0.0243  
 Earth -39312-09-29 20:38 J -12637012.72 -12637012.64 -12637012.54 0.0278 0.0257 \*  
 Mercury -39312-12-22 18:14 J -12636928.80 -12636928.74 -12636928.66 0.0277 0.0248  
 Mercury -39311-03-21 09:50 J -12636840.22 -12636840.09 -12636839.95 0.0277 0.0135  
 Mercury -39311-06-18 00:57 J -12636751.61 -12636751.46 -12636751.31 0.0277 0.0025  
 Mercury -39311-09-14 15:35 J -12636662.99 -12636662.85 -12636662.71 0.0277 0.0082  
 Moon -39311-10-12 15:50 J -12636635.03 -12636634.84 -12636634.65 0.0277 0.0173  
 Earth -39311-10-12 19:26 J -12636634.88 -12636634.69 -12636634.48 0.0277 0.0159 \*  
 Mercury -39311-12-12 05:59 J -12636574.36 -12636574.25 -12636574.14 0.0277 0.0187  
 Venus -39310-07-10 10:04 J -12636364.28 -12636364.08 -12636363.87 0.0277 0.0096  
 Venus -39309-02-24 21:35 J -12636134.79 -12636134.60 -12636134.40 0.0276 0.0098  
 Mercury -39297-12-30 18:42 J -12631441.82 -12631441.72 -12631441.62 0.0281 0.0209  
 Mercury -39296-03-29 10:18 J -12631353.21 -12631353.07 -12631352.92 0.0282 0.0097  
 Moon -39296-04-04 02:52 J -12631347.63 -12631347.38 -12631347.14 0.0282 0.0026  
 Earth -39296-04-04 06:42 J -12631347.47 -12631347.22 -12631346.98 0.0282 0.0024 \*  
 Mercury -39296-06-26 02:38 J -12631264.55 -12631264.39 -12631264.24 0.0282 0.0020  
 Mercury -39296-09-22 18:57 J -12631175.84 -12631175.71 -12631175.57 0.0282 0.0139  
 Venus -39296-12-16 10:33 J -12631091.17 -12631091.06 -12631090.95 0.0282 0.0236  
 Mercury -39296-12-20 11:59 J -12631087.06 -12631087.00 -12631086.94 0.0282 0.0260  
 Venus -39295-08-02 21:21 J -12630861.82 -12630861.61 -12630861.40 0.0282 0.0037  
 Venus -39294-03-20 09:21 J -12630632.28 -12630632.11 -12630631.94 0.0283 0.0165  
 Mars -39289-07-29 18:14 J -12628673.95 -12628673.74 -12628673.50 0.0282 0.0177  
 Mercury -39282-08-08 10:33 J -12626108.18 -12626108.06 -12626107.93 0.0278 0.0170  
 Earth -39282-10-07 10:04 J -12626048.32 -12626048.08 -12626047.83 0.0278 0.0030

Moon -39282-10-07 13:40 J -12626048.17 -12626047.93 -12626047.68 0.0278 0.0014 \*  
 Mercury -39282-11-05 01:54 J -12626019.57 -12626019.42 -12626019.27 0.0278 0.0059  
 Mercury -39281-02-01 16:33 J -12625930.95 -12625930.81 -12625930.65 0.0277 0.0051  
 Mercury -39281-04-30 07:11 J -12625842.32 -12625842.20 -12625842.07 0.0277 0.0156  
 Venus -39281-06-04 01:40 J -12625807.48 -12625807.43 -12625807.35 0.0277 0.0263  
 Mercury -39281-07-27 21:21 J -12625753.66 -12625753.61 -12625753.56 0.0277 0.0259  
 Venus -39280-01-19 14:38 J -12625578.09 -12625577.89 -12625577.68 0.0277 0.0067  
 Venus -39280-09-06 02:23 J -12625348.58 -12625348.40 -12625348.20 0.0277 0.0128  
 Mars -39275-09-29 10:33 J -12623499.23 -12623499.06 -12623498.87 0.0277 0.0221  
 Earth -39267-03-30 05:16 J -12620760.45 -12620760.28 -12620760.11 0.0281 0.0201  
 Moon -39267-03-30 08:38 J -12620760.30 -12620760.14 -12620759.96 0.0281 0.0197 \*  
 Mercury -39267-05-19 21:50 J -12620709.68 -12620709.59 -12620709.50 0.0281 0.0226  
 Mercury -39267-08-16 13:26 J -12620621.08 -12620620.94 -12620620.79 0.0281 0.0114  
 Mercury -39267-11-13 05:45 J -12620532.42 -12620532.26 -12620532.11 0.0281 0.0006  
 Mercury -39266-02-09 22:04 J -12620443.72 -12620443.58 -12620443.43 0.0282 0.0120  
 Earth -39266-04-12 11:16 J -12620382.17 -12620382.03 -12620381.89 0.0282 0.0232  
 Moon -39266-04-12 13:11 J -12620382.09 -12620381.95 -12620381.79 0.0282 0.0227 \*  
 Mercury -39266-05-09 14:52 J -12620354.95 -12620354.88 -12620354.79 0.0282 0.0241  
 Venus -39266-06-28 21:21 J -12620304.75 -12620304.61 -12620304.46 0.0282 0.0198  
 Venus -39265-02-13 08:38 J -12620075.35 -12620075.14 -12620074.93 0.0282 0.0006  
 Venus -39265-09-29 20:52 J -12619845.77 -12619845.63 -12619845.48 0.0282 0.0205  
 Moon -39253-10-01 04:18 J -12615461.50 -12615461.32 -12615461.15 0.0278 0.0192  
 Earth -39253-10-01 07:54 J -12615461.33 -12615461.17 -12615461.01 0.0278 0.0207 \*  
 Mercury -39253-12-25 13:11 J -12615376.06 -12615375.95 -12615375.84 0.0277 0.0192  
 Mercury -39252-03-24 04:18 J -12615287.46 -12615287.32 -12615287.17 0.0277 0.0082  
 Mercury -39252-06-20 19:11 J -12615198.85 -12615198.70 -12615198.54 0.0277 0.0029  
 Mercury -39252-09-17 09:50 J -12615110.22 -12615110.09 -12615109.96 0.0277 0.0134  
 Moon -39252-10-14 05:02 J -12615083.42 -12615083.29 -12615083.14 0.0277 0.0221  
 Earth -39252-10-14 05:59 J -12615083.41 -12615083.25 -12615083.08 0.0277 0.0208 \*  
 Mercury -39252-12-14 23:59 J -12615021.57 -12615021.50 -12615021.42 0.0277 0.0237

Venus -39252-12-15 10:33 J -12615021.18 -12615021.06 -12615020.94 0.0277 0.0228  
 Venus -39251-08-01 23:02 J -12614791.75 -12614791.54 -12614791.33 0.0276 0.0034  
 Venus -39250-03-19 10:04 J -12614562.25 -12614562.08 -12614561.90 0.0276 0.0158  
 Mars -39245-11-17 21:06 J -12612491.83 -12612491.62 -12612491.39 0.0276 0.0186  
 Mercury -39238-10-06 21:50 J -12609977.63 -12609977.59 -12609977.54 0.0281 0.0265  
 Mercury -39237-01-03 13:26 J -12609889.06 -12609888.94 -12609888.81 0.0281 0.0154  
 Mercury -39237-04-01 05:30 J -12609800.43 -12609800.27 -12609800.12 0.0282 0.0040  
 Moon -39237-04-05 16:47 J -12609796.03 -12609795.80 -12609795.56 0.0282 0.0028  
 Earth -39237-04-05 18:28 J -12609795.97 -12609795.73 -12609795.48 0.0282 0.0030 \*  
 Mercury -39237-06-28 21:50 J -12609711.74 -12609711.59 -12609711.44 0.0282 0.0078  
 Mercury -39237-09-25 14:23 J -12609623.01 -12609622.90 -12609622.78 0.0282 0.0198  
 Venus -39236-01-07 23:30 J -12609518.68 -12609518.52 -12609518.35 0.0282 0.0173  
 Venus -39236-08-25 10:47 J -12609289.26 -12609289.05 -12609288.84 0.0282 0.0027  
 Venus -39235-04-11 22:47 J -12609059.67 -12609059.55 -12609059.42 0.0283 0.0229  
 Mars -39231-11-04 15:50 J -12607392.05 -12607391.84 -12607391.62 0.0282 0.0187  
 Mercury -39223-05-14 13:40 J -12604644.01 -12604643.93 -12604643.84 0.0278 0.0229  
 Mercury -39223-08-11 05:02 J -12604555.43 -12604555.29 -12604555.15 0.0278 0.0117  
 Earth -39223-10-08 20:09 J -12604496.91 -12604496.66 -12604496.42 0.0277 0.0020  
 Moon -39223-10-08 21:21 J -12604496.86 -12604496.61 -12604496.36 0.0277 0.0034 \*  
 Mercury -39223-11-07 20:09 J -12604466.81 -12604466.66 -12604466.51 0.0277 0.0007  
 Mercury -39222-02-04 10:47 J -12604378.19 -12604378.05 -12604377.91 0.0277 0.0101  
 Mercury -39222-05-04 01:11 J -12604289.55 -12604289.45 -12604289.35 0.0277 0.0205  
 Venus -39222-06-27 14:38 J -12604235.04 -12604234.89 -12604234.74 0.0277 0.0201  
 Venus -39221-02-12 03:06 J -12604005.58 -12604005.37 -12604005.15 0.0277 0.0007  
 Venus -39221-09-28 14:38 J -12603776.05 -12603775.89 -12603775.74 0.0277 0.0186  
 Earth -39208-03-31 15:35 J -12599209.05 -12599208.85 -12599208.64 0.0281 0.0152  
 Moon -39208-03-31 17:30 J -12599208.97 -12599208.77 -12599208.54 0.0281 0.0148 \*  
 Mercury -39208-05-22 16:18 J -12599156.94 -12599156.82 -12599156.70 0.0281 0.0173  
 Mercury -39208-08-19 08:23 J -12599068.31 -12599068.15 -12599068.00 0.0281 0.0060  
 Mercury -39208-11-16 00:28 J -12598979.63 -12598979.48 -12598979.32 0.0282 0.0058

Mercury -39207-02-12 17:02 J -12598890.91 -12598890.79 -12598890.66 0.0282 0.0178  
 Moon -39207-04-13 19:11 J -12598830.73 -12598830.70 -12598830.63 0.0282 0.0275  
 Venus -39207-07-21 09:50 J -12598732.28 -12598732.09 -12598731.91 0.0282 0.0136  
 Venus -39206-03-07 21:21 J -12598502.82 -12598502.61 -12598502.41 0.0282 0.0064  
 Venus -39206-10-23 09:50 J -12598273.16 -12598273.09 -12598273.02 0.0282 0.0266  
 Mars -39201-12-24 20:52 J -12596383.76 -12596383.63 -12596383.50 0.0282 0.0253  
 Mercury -39194-10-01 16:33 J -12593911.88 -12593911.81 -12593911.75 0.0277 0.0250  
 Moon -39194-10-03 17:45 J -12593909.96 -12593909.76 -12593909.55 0.0277 0.0142  
 Earth -39194-10-03 19:26 J -12593909.90 -12593909.69 -12593909.49 0.0277 0.0157 \*  
 Mercury -39194-12-29 07:54 J -12593823.30 -12593823.17 -12593823.04 0.0277 0.0137  
 Mercury -39193-03-26 23:02 J -12593734.69 -12593734.54 -12593734.39 0.0277 0.0027  
 Mercury -39193-06-23 13:40 J -12593646.07 -12593645.93 -12593645.78 0.0277 0.0080  
 Mercury -39193-09-20 04:04 J -12593557.44 -12593557.33 -12593557.22 0.0277 0.0185  
 Earth -39193-10-15 16:47 J -12593531.88 -12593531.80 -12593531.70 0.0277 0.0258  
 Moon -39193-10-15 19:40 J -12593531.72 -12593531.68 -12593531.63 0.0277 0.0271 \*  
 Venus -39192-01-06 23:45 J -12593448.67 -12593448.51 -12593448.33 0.0277 0.0166  
 Venus -39192-08-24 11:59 J -12593219.21 -12593219.00 -12593218.78 0.0276 0.0027  
 Venus -39191-04-10 22:47 J -12592989.67 -12592989.55 -12592989.41 0.0276 0.0217  
 Mars -39186-02-23 14:38 J -12591210.11 -12591209.89 -12591209.63 0.0276 0.0163  
 Mercury -39179-10-09 16:18 J -12588424.91 -12588424.82 -12588424.71 0.0281 0.0213  
 Mercury -39178-01-06 08:09 J -12588336.30 -12588336.16 -12588336.01 0.0282 0.0100  
 Mercury -39178-04-05 00:28 J -12588247.64 -12588247.48 -12588247.33 0.0282 0.0018  
 Earth -39178-04-08 05:30 J -12588244.50 -12588244.27 -12588244.03 0.0282 0.0081  
 Moon -39178-04-08 07:40 J -12588244.40 -12588244.18 -12588243.95 0.0282 0.0077 \*  
 Mercury -39178-07-02 16:47 J -12588158.94 -12588158.80 -12588158.66 0.0282 0.0136  
 Mercury -39178-09-29 09:35 J -12588070.16 -12588070.10 -12588070.03 0.0282 0.0257  
 Venus -39177-01-31 11:59 J -12587946.19 -12587946.00 -12587945.80 0.0282 0.0111  
 Venus -39177-09-16 23:30 J -12587716.72 -12587716.52 -12587716.32 0.0282 0.0090  
 Mercury -39164-05-17 08:09 J -12583091.28 -12583091.16 -12583091.04 0.0277 0.0175  
 Mercury -39164-08-13 23:30 J -12583002.67 -12583002.52 -12583002.37 0.0277 0.0064

Moon -39164-10-10 02:52 J -12582945.62 -12582945.38 -12582945.14 0.0277 0.0084  
 Earth -39164-10-10 05:45 J -12582945.49 -12582945.26 -12582945.02 0.0277 0.0069 \*  
 Mercury -39164-11-10 14:23 J -12582914.05 -12582913.90 -12582913.75 0.0277 0.0045  
 Mercury -39163-02-07 04:47 J -12582825.42 -12582825.30 -12582825.17 0.0277 0.0151  
 Mercury -39163-05-06 19:11 J -12582736.76 -12582736.70 -12582736.65 0.0277 0.0254  
 Venus -39163-07-20 03:06 J -12582662.55 -12582662.37 -12582662.19 0.0277 0.0141  
 Venus -39162-03-06 15:06 J -12582433.07 -12582432.87 -12582432.65 0.0277 0.0053  
 Venus -39162-10-22 01:54 J -12582203.51 -12582203.42 -12582203.31 0.0276 0.0244  
 Mars -39156-04-14 01:40 J -12580202.56 -12580202.43 -12580202.26 0.0277 0.0236  
 Mercury -39149-02-26 18:57 J -12577692.79 -12577692.71 -12577692.62 0.0281 0.0234  
 Moon -39149-04-01 22:33 J -12577657.79 -12577657.56 -12577657.32 0.0281 0.0102  
 Earth -39149-04-02 00:42 J -12577657.69 -12577657.47 -12577657.24 0.0281 0.0103 \*  
 Mercury -39149-05-25 10:47 J -12577604.19 -12577604.05 -12577603.91 0.0281 0.0122  
 Mercury -39149-08-22 02:38 J -12577515.54 -12577515.39 -12577515.23 0.0282 0.0011  
 Mercury -39149-11-18 19:11 J -12577426.85 -12577426.70 -12577426.56 0.0282 0.0112  
 Venus -39149-12-26 10:33 J -12577389.10 -12577389.06 -12577389.00 0.0282 0.0273  
 Mercury -39148-02-15 11:45 J -12577338.09 -12577338.01 -12577337.91 0.0282 0.0234  
 Venus -39148-08-12 21:21 J -12577159.81 -12577159.61 -12577159.41 0.0282 0.0076  
 Venus -39147-03-30 08:52 J -12576930.31 -12576930.13 -12576929.93 0.0282 0.0126  
 Mars -39142-04-01 16:04 J -12575102.09 -12575101.83 -12575101.56 0.0283 0.0113  
 Mercury -39135-10-04 11:02 J -12572359.14 -12572359.04 -12572358.92 0.0277 0.0195  
 Earth -39135-10-05 05:59 J -12572358.48 -12572358.25 -12572358.03 0.0277 0.0108  
 Moon -39135-10-05 08:52 J -12572358.35 -12572358.13 -12572357.90 0.0277 0.0092 \*  
 Mercury -39134-01-01 02:23 J -12572270.54 -12572270.40 -12572270.25 0.0277 0.0084  
 Mercury -39134-03-30 17:16 J -12572181.93 -12572181.78 -12572181.63 0.0277 0.0026  
 Mercury -39134-06-27 07:54 J -12572093.30 -12572093.17 -12572093.04 0.0277 0.0132  
 Mercury -39134-09-23 22:04 J -12572004.65 -12572004.58 -12572004.50 0.0277 0.0236  
 Venus -39133-01-30 12:42 J -12571876.16 -12571875.97 -12571875.77 0.0277 0.0105  
 Venus -39133-09-16 00:28 J -12571646.68 -12571646.48 -12571646.27 0.0276 0.0087  
 Venus -39132-05-03 11:02 J -12571417.05 -12571417.04 -12571417.02 0.0276 0.0275

Mercury -39120-07-15 19:11 J -12566960.73 -12566960.70 -12566960.66 0.0281 0.0272  
 Mercury -39120-10-12 10:47 J -12566872.17 -12566872.05 -12566871.92 0.0281 0.0161  
 Mercury -39119-01-09 02:38 J -12566783.54 -12566783.39 -12566783.23 0.0282 0.0047  
 Mercury -39119-04-07 18:57 J -12566694.86 -12566694.71 -12566694.56 0.0282 0.0071  
 Earth -39119-04-09 14:38 J -12566693.09 -12566692.89 -12566692.66 0.0282 0.0131  
 Moon -39119-04-09 18:14 J -12566692.95 -12566692.74 -12566692.51 0.0282 0.0127 \*  
 Mercury -39119-07-05 11:30 J -12566606.13 -12566606.02 -12566605.90 0.0282 0.0191  
 Venus -39119-07-08 12:42 J -12566603.05 -12566602.97 -12566602.86 0.0282 0.0248  
 Venus -39118-02-22 23:45 J -12566373.72 -12566373.51 -12566373.31 0.0282 0.0050  
 Venus -39118-10-10 11:30 J -12566144.20 -12566144.02 -12566143.85 0.0283 0.0150  
 Mercury -39105-02-21 11:02 J -12561627.12 -12561627.04 -12561626.96 0.0277 0.0235  
 Mercury -39105-05-20 02:23 J -12561538.53 -12561538.40 -12561538.26 0.0277 0.0123  
 Mercury -39105-08-16 17:30 J -12561449.92 -12561449.77 -12561449.61 0.0277 0.0014  
 Moon -39105-10-11 11:45 J -12561394.21 -12561394.01 -12561393.79 0.0277 0.0132  
 Earth -39105-10-11 15:06 J -12561394.09 -12561393.87 -12561393.65 0.0277 0.0117 \*  
 Mercury -39105-11-13 08:23 J -12561361.29 -12561361.15 -12561361.01 0.0277 0.0095  
 Venus -39105-12-25 01:54 J -12561319.43 -12561319.42 -12561319.39 0.0277 0.0275  
 Mercury -39104-02-09 22:47 J -12561272.65 -12561272.55 -12561272.45 0.0277 0.0200  
 Venus -39104-08-11 15:06 J -12561090.07 -12561089.87 -12561089.66 0.0277 0.0082  
 Venus -39103-03-29 02:52 J -12560860.57 -12560860.38 -12560860.18 0.0276 0.0110  
 Mars -39098-07-20 13:26 J -12558921.20 -12558920.94 -12558920.67 0.0277 0.0120  
 Mercury -39090-03-01 12:42 J -12556140.08 -12556139.97 -12556139.86 0.0281 0.0187  
 Moon -39090-04-04 04:04 J -12556106.57 -12556106.33 -12556106.09 0.0281 0.0058  
 Earth -39090-04-04 07:40 J -12556106.42 -12556106.18 -12556105.94 0.0281 0.0058 \*  
 Mercury -39090-05-29 04:33 J -12556051.46 -12556051.31 -12556051.16 0.0282 0.0073  
 Mercury -39090-08-25 20:52 J -12555962.79 -12555962.63 -12555962.48 0.0282 0.0045  
 Mercury -39090-11-22 13:26 J -12555874.07 -12555873.94 -12555873.82 0.0282 0.0164  
 Venus -39089-01-18 20:38 J -12555816.76 -12555816.64 -12555816.50 0.0282 0.0216  
 Venus -39089-09-04 07:40 J -12555587.38 -12555587.18 -12555586.97 0.0282 0.0019  
 Venus -39088-04-21 19:54 J -12555357.83 -12555357.67 -12555357.51 0.0282 0.0183

Mercury -39076-07-10 13:54 J -12550894.97 -12550894.92 -12550894.85 0.0278 0.0256

Earth -39076-10-06 15:35 J -12550807.09 -12550806.85 -12550806.61 0.0277 0.0060

Moon -39076-10-06 18:28 J -12550806.97 -12550806.73 -12550806.48 0.0277 0.0044 \*

Mercury -39076-10-07 05:30 J -12550806.40 -12550806.27 -12550806.14 0.0277 0.0143

Mercury -39075-01-03 20:38 J -12550717.79 -12550717.64 -12550717.49 0.0277 0.0032

Mercury -39075-04-02 11:30 J -12550629.17 -12550629.02 -12550628.88 0.0277 0.0076

Mercury -39075-06-30 01:54 J -12550540.53 -12550540.42 -12550540.31 0.0277 0.0181

Venus -39075-07-07 12:28 J -12550533.09 -12550532.98 -12550532.87 0.0277 0.0237

Venus -39074-02-22 00:57 J -12550303.67 -12550303.46 -12550303.25 0.0276 0.0045

Venus -39074-10-09 12:14 J -12550074.17 -12550073.99 -12550073.81 0.0276 0.0145

Earth -39061-03-28 17:02 J -12545519.88 -12545519.79 -12545519.69 0.0281 0.0258

Moon -39061-03-28 20:38 J -12545519.73 -12545519.64 -12545519.53 0.0281 0.0256 \*

Mercury -39061-07-18 12:57 J -12545408.05 -12545407.96 -12545407.86 0.0281 0.0224

Mercury -39061-10-15 04:47 J -12545319.44 -12545319.30 -12545319.16 0.0281 0.0112

Mercury -39060-01-11 20:38 J -12545230.79 -12545230.64 -12545230.48 0.0282 0.0009

Mercury -39060-04-10 13:11 J -12545142.09 -12545141.95 -12545141.81 0.0282 0.0123

Moon -39060-04-10 22:18 J -12545141.77 -12545141.57 -12545141.36 0.0282 0.0170

Earth -39060-04-10 22:04 J -12545141.76 -12545141.58 -12545141.38 0.0282 0.0177 \*

Mercury -39060-07-08 05:45 J -12545053.33 -12545053.26 -12545053.17 0.0282 0.0244

Venus -39060-07-30 23:02 J -12545030.68 -12545030.54 -12545030.38 0.0282 0.0190

Venus -39059-03-17 10:04 J -12544801.29 -12544801.08 -12544800.87 0.0282 0.0009

Venus -39059-11-01 21:50 J -12544571.72 -12544571.59 -12544571.44 0.0283 0.0209

Mars -39054-08-26 04:18 J -12542813.59 -12542813.32 -12542813.04 0.0283 0.0079

Moon -39047-09-30 21:21 J -12540220.72 -12540220.61 -12540220.49 0.0277 0.0241

Earth -39047-09-30 23:45 J -12540220.59 -12540220.51 -12540220.40 0.0277 0.0256 \*

Mercury -39046-02-24 05:16 J -12540074.40 -12540074.28 -12540074.17 0.0277 0.0184

Mercury -39046-05-23 20:23 J -12539985.79 -12539985.65 -12539985.50 0.0277 0.0073

Mercury -39046-08-20 11:30 J -12539897.17 -12539897.02 -12539896.87 0.0277 0.0037

Earth -39046-10-13 23:02 J -12539842.74 -12539842.54 -12539842.35 0.0277 0.0163

Moon -39046-10-14 00:14 J -12539842.67 -12539842.49 -12539842.30 0.0277 0.0176 \*

Mercury -39046-11-17 01:54 J -12539808.54 -12539808.42 -12539808.29 0.0277 0.0143

Venus -39045-01-17 13:26 J -12539747.06 -12539746.94 -12539746.80 0.0277 0.0217

Mercury -39045-02-13 16:04 J -12539719.89 -12539719.83 -12539719.76 0.0277 0.0247

Venus -39045-09-03 02:23 J -12539517.62 -12539517.40 -12539517.19 0.0276 0.0024

Venus -39044-04-20 13:40 J -12539288.10 -12539287.93 -12539287.76 0.0276 0.0166

Mercury -39032-12-05 14:09 J -12534675.96 -12534675.91 -12534675.83 0.0281 0.0255

Mercury -39031-03-04 05:59 J -12534587.38 -12534587.25 -12534587.12 0.0281 0.0142

Earth -39031-04-05 12:14 J -12534555.23 -12534554.99 -12534554.74 0.0282 0.0016

Moon -39031-04-05 12:28 J -12534555.22 -12534554.98 -12534554.74 0.0282 0.0020 \*

Mercury -39031-05-31 22:04 J -12534498.74 -12534498.58 -12534498.43 0.0282 0.0027

Mercury -39031-08-28 14:23 J -12534410.05 -12534409.90 -12534409.75 0.0282 0.0092

Mercury -39031-11-25 06:57 J -12534321.31 -12534321.21 -12534321.10 0.0282 0.0213

Venus -39030-02-10 05:30 J -12534244.44 -12534244.27 -12534244.10 0.0282 0.0160

Venus -39030-09-27 16:47 J -12534015.01 -12534014.80 -12534014.59 0.0282 0.0038

Venus -39029-05-14 05:02 J -12533785.40 -12533785.29 -12533785.17 0.0283 0.0238

Mercury -39017-07-13 08:09 J -12529342.26 -12529342.16 -12529342.06 0.0278 0.0205

Moon -39017-10-07 22:04 J -12529255.84 -12529255.58 -12529255.33 0.0277 0.0002

Earth -39017-10-07 23:16 J -12529255.77 -12529255.53 -12529255.28 0.0277 0.0016 \*

Mercury -39017-10-09 23:30 J -12529253.67 -12529253.52 -12529253.38 0.0277 0.0093

Mercury -39016-01-06 14:23 J -12529165.05 -12529164.90 -12529164.74 0.0277 0.0018

Mercury -39016-04-05 05:02 J -12529076.42 -12529076.29 -12529076.15 0.0277 0.0124

Mercury -39016-07-02 19:26 J -12528987.77 -12528987.69 -12528987.61 0.0277 0.0228

Venus -39016-07-29 23:45 J -12528960.67 -12528960.51 -12528960.34 0.0277 0.0179

Venus -39015-03-16 11:59 J -12528731.21 -12528731.00 -12528730.78 0.0276 0.0014

Venus -39015-10-31 22:47 J -12528501.68 -12528501.55 -12528501.39 0.0276 0.0202

Mars -39010-12-14 17:16 J -12526632.07 -12526631.78 -12526631.48 0.0276 0.0059

Moon -39002-03-30 21:06 J -12523968.77 -12523968.62 -12523968.45 0.0281 0.0219

Earth -39002-03-30 21:50 J -12523968.73 -12523968.59 -12523968.43 0.0281 0.0217 \*

Mercury -39002-07-22 06:14 J -12523855.35 -12523855.24 -12523855.12 0.0281 0.0180

Mercury -39002-10-18 22:04 J -12523766.73 -12523766.58 -12523766.43 0.0281 0.0066



Mercury -39001-01-15 14:23 J -12523678.06 -12523677.90 -12523677.75 0.0282 0.0051

Moon -39001-04-11 23:30 J -12523590.68 -12523590.52 -12523590.35 0.0282 0.0209

Earth -39001-04-12 03:06 J -12523590.51 -12523590.37 -12523590.21 0.0282 0.0220 \*

Mercury -39001-04-13 06:42 J -12523589.34 -12523589.22 -12523589.09 0.0282 0.0171

Venus -39001-08-22 08:09 J -12523458.34 -12523458.16 -12523457.98 0.0282 0.0134

# 39TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 39th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-39000-04-08 19:11 J	-12523228.90	-12523228.70	-12523228.50	0.0282	0.0064		
Venus	-39000-11-24 07:11 J	-12522999.26	-12522999.20	-12522999.12	0.0283	0.0264		
Earth	-38988-10-02 06:57 J	-12518669.36	-12518669.21	-12518669.04	0.0277	0.0212		
Moon	-38988-10-02 08:09 J	-12518669.31	-12518669.16	-12518668.98	0.0277	0.0199	*	
Mercury	-38988-11-30 07:26 J	-12518610.25	-12518610.19	-12518610.12	0.0277	0.0249		
Mercury	-38987-02-26 23:02 J	-12518521.67	-12518521.54	-12518521.41	0.0277	0.0136		
Mercury	-38987-05-26 14:09 J	-12518433.06	-12518432.91	-12518432.76	0.0277	0.0025		
Mercury	-38987-08-23 05:02 J	-12518344.44	-12518344.29	-12518344.15	0.0277	0.0083		
Earth	-38987-10-15 05:16 J	-12518291.43	-12518291.28	-12518291.11	0.0277	0.0208		
Moon	-38987-10-15 09:06 J	-12518291.26	-12518291.12	-12518290.96	0.0277	0.0218	*	
Mercury	-38987-11-19 19:11 J	-12518255.80	-12518255.70	-12518255.58	0.0277	0.0189		
Venus	-38986-02-09 00:14 J	-12518174.66	-12518174.49	-12518174.31	0.0277	0.0159		
Venus	-38986-09-26 12:42 J	-12517945.18	-12517944.97	-12517944.76	0.0276	0.0032		
Venus	-38985-05-12 23:30 J	-12517715.64	-12517715.52	-12517715.38	0.0276	0.0221		

Mercury -38973-12-08 07:11 J -12513123.30 -12513123.20 -12513123.10 0.0281 0.0213

Mercury -38972-03-06 22:47 J -12513034.69 -12513034.55 -12513034.40 0.0282 0.0100

Earth -38972-04-06 14:38 J -12513004.13 -12513003.89 -12513003.64 0.0282 0.0024

Moon -38972-04-06 18:28 J -12513003.97 -12513003.73 -12513003.48 0.0282 0.0015 \*

Mercury -38972-06-03 14:52 J -12512946.03 -12512945.88 -12512945.72 0.0282 0.0017

Mercury -38972-08-31 07:26 J -12512857.33 -12512857.19 -12512857.05 0.0282 0.0136

Mercury -38972-11-27 23:59 J -12512768.55 -12512768.50 -12512768.43 0.0282 0.0258

Venus -38971-03-04 12:57 J -12512672.15 -12512671.96 -12512671.76 0.0282 0.0107

Venus -38971-10-20 00:28 J -12512442.68 -12512442.48 -12512442.28 0.0282 0.0091

Mars -38965-01-20 07:26 J -12510524.47 -12510524.19 -12510523.90 0.0283 0.0025

Mercury -38958-04-19 10:04 J -12507878.10 -12507878.08 -12507878.05 0.0278 0.0272

Mercury -38958-07-17 01:40 J -12507789.55 -12507789.43 -12507789.30 0.0278 0.0158

Moon -38958-10-10 01:40 J -12507704.67 -12507704.43 -12507704.19 0.0277 0.0041

Earth -38958-10-10 05:16 J -12507704.53 -12507704.28 -12507704.04 0.0277 0.0028 \*

Mercury -38958-10-13 17:02 J -12507700.94 -12507700.79 -12507700.64 0.0277 0.0047

Mercury -38957-01-10 07:40 J -12507612.32 -12507612.18 -12507612.03 0.0277 0.0063

Mercury -38957-04-07 22:18 J -12507523.69 -12507523.57 -12507523.45 0.0277 0.0168

Mercury -38957-07-05 12:28 J -12507435.00 -12507434.98 -12507434.95 0.0277 0.0271

Venus -38957-08-21 10:04 J -12507388.27 -12507388.08 -12507387.89 0.0277 0.0122

Venus -38956-04-07 22:04 J -12507158.79 -12507158.58 -12507158.38 0.0276 0.0069

Venus -38956-11-23 08:38 J -12506929.21 -12506929.14 -12506929.06 0.0276 0.0255

Moon -38943-03-31 21:35 J -12502417.77 -12502417.60 -12502417.41 0.0281 0.0185

Earth -38943-04-01 01:26 J -12502417.63 -12502417.44 -12502417.25 0.0281 0.0177 \*

Mercury -38943-04-27 07:40 J -12502391.24 -12502391.18 -12502391.10 0.0281 0.0249

Mercury -38943-07-24 23:16 J -12502302.66 -12502302.53 -12502302.39 0.0281 0.0137

Mercury -38943-10-21 15:21 J -12502214.02 -12502213.86 -12502213.71 0.0281 0.0023

Mercury -38942-01-18 07:26 J -12502125.33 -12502125.19 -12502125.04 0.0282 0.0096

Venus -38942-01-28 05:45 J -12502115.30 -12502115.26 -12502115.21 0.0282 0.0274

Moon -38942-04-14 04:47 J -12502039.41 -12502039.30 -12502039.19 0.0282 0.0248

Earth -38942-04-14 06:28 J -12502039.31 -12502039.23 -12502039.13 0.0282 0.0261 \*

Mercury -38942-04-16 23:59 J -12502036.59 -12502036.50 -12502036.39 0.0282 0.0217  
 Venus -38942-09-14 16:04 J -12501886.03 -12501885.83 -12501885.63 0.0282 0.0080  
 Venus -38941-05-01 03:21 J -12501656.55 -12501656.36 -12501656.17 0.0282 0.0118  
 Earth -38929-10-03 11:59 J -12497118.18 -12497118.00 -12497117.79 0.0277 0.0171  
 Moon -38929-10-03 15:35 J -12497118.04 -12497117.85 -12497117.63 0.0277 0.0156 \*  
 Mercury -38929-12-03 00:57 J -12497057.56 -12497057.46 -12497057.35 0.0277 0.0203  
 Mercury -38928-03-01 16:18 J -12496968.96 -12496968.82 -12496968.67 0.0277 0.0090  
 Mercury -38928-05-29 07:26 J -12496880.34 -12496880.19 -12496880.04 0.0277 0.0020  
 Mercury -38928-08-25 22:04 J -12496791.71 -12496791.58 -12496791.45 0.0277 0.0127  
 Earth -38928-10-16 10:04 J -12496740.17 -12496740.08 -12496739.96 0.0277 0.0250  
 Moon -38928-10-16 10:47 J -12496740.13 -12496740.05 -12496739.94 0.0277 0.0256 \*  
 Mercury -38928-11-22 12:28 J -12496703.06 -12496702.98 -12496702.90 0.0277 0.0231  
 Venus -38927-03-03 10:04 J -12496602.28 -12496602.08 -12496601.88 0.0276 0.0103  
 Venus -38927-10-18 21:50 J -12496372.79 -12496372.59 -12496372.38 0.0276 0.0087  
 Venus -38926-06-05 08:38 J -12496143.16 -12496143.14 -12496143.11 0.0276 0.0273  
 Mars -38921-05-08 21:50 J -12494343.89 -12494343.59 -12494343.29 0.0276 0.0033  
 Mercury -38914-12-11 23:30 J -12491570.64 -12491570.52 -12491570.40 0.0281 0.0175  
 Mercury -38913-03-09 15:21 J -12491482.01 -12491481.86 -12491481.71 0.0282 0.0061  
 Earth -38913-04-07 15:21 J -12491453.10 -12491452.86 -12491452.62 0.0282 0.0060  
 Moon -38913-04-07 16:47 J -12491453.05 -12491452.80 -12491452.55 0.0282 0.0049 \*  
 Mercury -38913-06-06 07:26 J -12491393.34 -12491393.19 -12491393.03 0.0282 0.0057  
 Venus -38913-08-09 08:23 J -12491329.23 -12491329.15 -12491329.04 0.0282 0.0251  
 Mercury -38913-09-02 23:59 J -12491304.62 -12491304.50 -12491304.37 0.0282 0.0177  
 Venus -38912-03-26 19:11 J -12491099.90 -12491099.70 -12491099.49 0.0282 0.0056  
 Venus -38912-11-11 06:57 J -12490870.39 -12490870.21 -12490870.03 0.0282 0.0143  
 Mercury -38899-04-22 03:35 J -12486325.44 -12486325.35 -12486325.26 0.0278 0.0227  
 Mercury -38899-07-19 18:57 J -12486236.85 -12486236.71 -12486236.57 0.0278 0.0114  
 Moon -38899-10-11 08:23 J -12486153.38 -12486153.15 -12486152.92 0.0278 0.0080  
 Earth -38899-10-11 09:35 J -12486153.34 -12486153.10 -12486152.86 0.0278 0.0069 \*  
 Mercury -38899-10-16 10:04 J -12486148.23 -12486148.08 -12486147.93 0.0278 0.0003

Mercury -38898-01-13 00:42 J -12486059.60 -12486059.47 -12486059.33 0.0277 0.0105  
 Venus -38898-01-27 05:59 J -12486045.32 -12486045.25 -12486045.16 0.0277 0.0258  
 Mercury -38898-04-11 15:06 J -12485970.96 -12485970.87 -12485970.77 0.0277 0.0211  
 Venus -38898-09-13 19:11 J -12485815.90 -12485815.70 -12485815.49 0.0277 0.0067  
 Venus -38897-04-30 06:57 J -12485586.39 -12485586.21 -12485586.01 0.0276 0.0123  
 Moon -38884-04-02 01:54 J -12480866.62 -12480866.42 -12480866.22 0.0281 0.0148  
 Earth -38884-04-02 02:52 J -12480866.58 -12480866.38 -12480866.16 0.0281 0.0141 \*  
 Mercury -38884-04-30 00:28 J -12480838.58 -12480838.48 -12480838.38 0.0281 0.0209  
 Mercury -38884-07-27 16:04 J -12480749.98 -12480749.83 -12480749.68 0.0281 0.0096  
 Mercury -38884-10-24 08:09 J -12480661.32 -12480661.16 -12480661.01 0.0281 0.0021  
 Mercury -38883-01-21 00:28 J -12480572.62 -12480572.48 -12480572.34 0.0282 0.0138  
 Venus -38883-02-19 12:28 J -12480543.10 -12480542.98 -12480542.85 0.0282 0.0222  
 Mercury -38883-04-19 17:02 J -12480483.84 -12480483.79 -12480483.72 0.0282 0.0260  
 Venus -38883-10-06 23:02 J -12480313.75 -12480313.54 -12480313.33 0.0282 0.0028  
 Venus -38882-05-24 10:33 J -12480084.23 -12480084.06 -12480083.90 0.0282 0.0170  
 Mars -38877-06-14 08:38 J -12478236.43 -12478236.14 -12478235.86 0.0283 0.0007  
 Mercury -38870-09-09 02:38 J -12475593.42 -12475593.39 -12475593.37 0.0277 0.0273  
 Earth -38870-10-05 15:50 J -12475567.05 -12475566.84 -12475566.61 0.0277 0.0132  
 Moon -38870-10-05 17:16 J -12475567.01 -12475566.78 -12475566.55 0.0277 0.0117 \*  
 Mercury -38870-12-06 17:59 J -12475504.87 -12475504.75 -12475504.62 0.0277 0.0159  
 Mercury -38869-03-04 09:21 J -12475416.26 -12475416.11 -12475415.96 0.0277 0.0047  
 Mercury -38869-06-01 00:14 J -12475327.64 -12475327.49 -12475327.34 0.0277 0.0062  
 Venus -38869-08-08 05:45 J -12475259.36 -12475259.26 -12475259.15 0.0277 0.0240  
 Mercury -38869-08-28 14:52 J -12475239.00 -12475238.88 -12475238.76 0.0277 0.0168  
 Mercury -38869-11-25 05:02 J -12475150.31 -12475150.29 -12475150.26 0.0277 0.0271  
 Venus -38868-03-25 18:42 J -12475029.93 -12475029.72 -12475029.50 0.0276 0.0050  
 Venus -38868-11-10 06:28 J -12474800.41 -12474800.23 -12474800.04 0.0276 0.0139  
 Mercury -38855-09-17 00:14 J -12470106.55 -12470106.49 -12470106.42 0.0281 0.0249  
 Mercury -38855-12-14 15:50 J -12470017.97 -12470017.84 -12470017.71 0.0281 0.0137  
 Mercury -38854-03-13 07:40 J -12469929.33 -12469929.18 -12469929.02 0.0281 0.0023

Moon -38854-04-09 12:14 J -12469902.23 -12469901.99 -12469901.75 0.0282 0.0081  
 Earth -38854-04-09 15:21 J -12469902.09 -12469901.86 -12469901.63 0.0282 0.0095 \*  
 Mercury -38854-06-09 23:59 J -12469840.65 -12469840.50 -12469840.35 0.0282 0.0096  
 Venus -38854-09-01 14:23 J -12469757.04 -12469756.90 -12469756.75 0.0282 0.0200  
 Mercury -38854-09-06 16:33 J -12469751.91 -12469751.81 -12469751.71 0.0282 0.0217  
 Venus -38853-04-18 01:11 J -12469527.66 -12469527.45 -12469527.24 0.0282 0.0005  
 Venus -38853-12-03 12:57 J -12469298.11 -12469297.96 -12469297.80 0.0282 0.0193  
 Mercury -38840-04-24 20:23 J -12464772.76 -12464772.65 -12464772.54 0.0278 0.0185  
 Mercury -38840-07-22 11:45 J -12464684.16 -12464684.01 -12464683.86 0.0278 0.0073  
 Earth -38840-10-12 11:45 J -12464602.23 -12464602.01 -12464601.77 0.0278 0.0107  
 Moon -38840-10-12 14:38 J -12464602.10 -12464601.89 -12464601.66 0.0278 0.0118 \*  
 Mercury -38840-10-19 02:38 J -12464595.54 -12464595.39 -12464595.23 0.0278 0.0039  
 Mercury -38839-01-15 17:16 J -12464506.90 -12464506.78 -12464506.64 0.0277 0.0146  
 Venus -38839-02-18 14:23 J -12464473.04 -12464472.90 -12464472.75 0.0277 0.0204  
 Mercury -38839-04-14 07:40 J -12464418.24 -12464418.18 -12464418.11 0.0277 0.0250  
 Venus -38839-10-06 03:35 J -12464243.57 -12464243.35 -12464243.14 0.0277 0.0014  
 Venus -38838-05-23 14:52 J -12464014.03 -12464013.88 -12464013.70 0.0277 0.0176  
 Mars -38833-10-02 23:02 J -12462054.83 -12462054.54 -12462054.24 0.0275 0.0023  
 Earth -38825-04-03 03:50 J -12459315.56 -12459315.34 -12459315.10 0.0281 0.0105  
 Moon -38825-04-03 06:42 J -12459315.43 -12459315.22 -12459315.00 0.0281 0.0114 \*  
 Mercury -38825-05-02 16:47 J -12459285.92 -12459285.80 -12459285.67 0.0281 0.0170  
 Mercury -38825-07-30 08:38 J -12459197.29 -12459197.14 -12459196.99 0.0281 0.0057  
 Mercury -38825-10-27 00:42 J -12459108.62 -12459108.47 -12459108.32 0.0281 0.0060  
 Mercury -38824-01-23 17:02 J -12459019.91 -12459019.79 -12459019.66 0.0281 0.0180  
 Venus -38824-03-13 18:42 J -12458970.88 -12458970.72 -12458970.55 0.0282 0.0171  
 Venus -38824-10-29 05:16 J -12458741.49 -12458741.28 -12458741.07 0.0282 0.0024  
 Venus -38823-06-15 17:02 J -12458511.92 -12458511.79 -12458511.66 0.0282 0.0221  
 Mercury -38811-09-11 19:40 J -12454040.77 -12454040.68 -12454040.60 0.0278 0.0230  
 Moon -38811-10-06 15:50 J -12454016.07 -12454015.84 -12454015.59 0.0278 0.0081  
 Earth -38811-10-06 19:26 J -12454015.93 -12454015.69 -12454015.46 0.0278 0.0093 \*

Mercury -38811-12-09 11:02 J -12453952.18 -12453952.04 -12453951.90 0.0277 0.0117  
 Mercury -38810-03-08 02:09 J -12453863.56 -12453863.41 -12453863.25 0.0277 0.0011  
 Mercury -38810-06-04 17:02 J -12453774.93 -12453774.79 -12453774.65 0.0277 0.0103  
 Venus -38810-08-31 14:23 J -12453687.05 -12453686.90 -12453686.73 0.0277 0.0186  
 Mercury -38810-09-01 07:26 J -12453686.28 -12453686.19 -12453686.09 0.0277 0.0209  
 Venus -38809-04-17 03:21 J -12453457.58 -12453457.36 -12453457.15 0.0276 0.0006  
 Venus -38809-12-02 14:38 J -12453228.04 -12453227.89 -12453227.73 0.0276 0.0192  
 Mercury -38796-09-19 16:18 J -12448553.91 -12448553.82 -12448553.72 0.0281 0.0213  
 Mercury -38796-12-17 07:54 J -12448465.31 -12448465.17 -12448465.02 0.0281 0.0101  
 Mercury -38795-03-15 23:59 J -12448376.66 -12448376.50 -12448376.34 0.0281 0.0016  
 Moon -38795-04-10 11:59 J -12448351.21 -12448351.00 -12448350.78 0.0281 0.0115  
 Earth -38795-04-10 14:38 J -12448351.10 -12448350.89 -12448350.66 0.0281 0.0130 \*  
 Mercury -38795-06-12 16:18 J -12448287.96 -12448287.82 -12448287.68 0.0282 0.0135  
 Mercury -38795-09-09 09:06 J -12448199.18 -12448199.12 -12448199.06 0.0282 0.0256  
 Venus -38795-09-23 19:54 J -12448184.84 -12448184.67 -12448184.49 0.0282 0.0150  
 Venus -38794-05-11 06:42 J -12447955.42 -12447955.22 -12447955.01 0.0282 0.0045  
 Venus -38794-12-26 18:42 J -12447725.82 -12447725.72 -12447725.61 0.0283 0.0242  
 Mars -38789-11-07 13:54 J -12445948.20 -12445947.92 -12445947.63 0.0283 0.0026  
 Moon -38782-10-01 16:33 J -12443428.86 -12443428.81 -12443428.74 0.0279 0.0270  
 Mercury -38781-01-29 21:21 J -12443308.66 -12443308.61 -12443308.55 0.0278 0.0260  
 Mercury -38781-04-27 12:57 J -12443220.09 -12443219.96 -12443219.82 0.0278 0.0145  
 Mercury -38781-07-25 04:18 J -12443131.47 -12443131.32 -12443131.17 0.0278 0.0033  
 Earth -38781-10-13 13:26 J -12443051.14 -12443050.94 -12443050.72 0.0278 0.0144  
 Moon -38781-10-13 16:47 J -12443051.01 -12443050.80 -12443050.59 0.0278 0.0152 \*  
 Mercury -38781-10-21 19:11 J -12443042.84 -12443042.70 -12443042.55 0.0278 0.0077  
 Mercury -38780-01-18 09:50 J -12442954.20 -12442954.09 -12442953.98 0.0278 0.0184  
 Venus -38780-03-12 22:18 J -12442900.75 -12442900.57 -12442900.39 0.0278 0.0151  
 Venus -38780-10-28 11:02 J -12442671.25 -12442671.04 -12442670.82 0.0277 0.0040  
 Venus -38779-06-14 22:33 J -12442441.67 -12442441.56 -12442441.43 0.0277 0.0227  
 Mercury -38766-02-06 17:45 J -12437821.82 -12437821.76 -12437821.67 0.0280 0.0243

Earth -38766-04-05 05:16 J -12437764.51 -12437764.28 -12437764.04 0.0281 0.0068  
 Moon -38766-04-05 08:23 J -12437764.38 -12437764.15 -12437763.90 0.0281 0.0079 \*  
 Mercury -38766-05-06 09:21 J -12437733.24 -12437733.11 -12437732.97 0.0281 0.0131  
 Mercury -38766-08-03 01:11 J -12437644.60 -12437644.45 -12437644.29 0.0281 0.0017  
 Mercury -38766-10-30 17:16 J -12437555.92 -12437555.78 -12437555.63 0.0281 0.0102  
 Mercury -38765-01-27 09:50 J -12437467.18 -12437467.09 -12437466.99 0.0281 0.0222  
 Venus -38765-04-05 01:26 J -12437398.63 -12437398.44 -12437398.25 0.0281 0.0119  
 Venus -38765-11-20 11:59 J -12437169.20 -12437169.00 -12437168.80 0.0282 0.0076  
 Venus -38764-07-07 23:45 J -12436939.56 -12436939.51 -12436939.45 0.0282 0.0272  
 Mercury -38752-09-14 12:14 J -12432488.09 -12432487.99 -12432487.87 0.0278 0.0189  
 Moon -38752-10-07 18:57 J -12432464.94 -12432464.71 -12432464.47 0.0278 0.0046  
 Earth -38752-10-07 21:35 J -12432464.84 -12432464.60 -12432464.36 0.0278 0.0056 \*  
 Mercury -38752-12-12 03:50 J -12432399.49 -12432399.34 -12432399.19 0.0277 0.0076  
 Mercury -38751-03-10 18:57 J -12432310.86 -12432310.71 -12432310.56 0.0277 0.0035  
 Mercury -38751-06-07 09:35 J -12432222.23 -12432222.10 -12432221.97 0.0277 0.0143  
 Mercury -38751-09-03 23:45 J -12432133.56 -12432133.51 -12432133.43 0.0277 0.0248  
 Venus -38751-09-22 22:33 J -12432114.74 -12432114.56 -12432114.37 0.0277 0.0132  
 Venus -38750-05-10 11:16 J -12431885.24 -12431885.03 -12431884.82 0.0276 0.0057  
 Venus -38750-12-25 22:33 J -12431655.65 -12431655.56 -12431655.46 0.0276 0.0243  
 Mars -38744-02-25 19:26 J -12429766.98 -12429766.69 -12429766.39 0.0276 0.0040  
 Earth -38737-03-29 11:02 J -12427178.08 -12427178.04 -12427177.98 0.0281 0.0275  
 Mercury -38737-09-22 08:38 J -12427001.25 -12427001.14 -12427001.02 0.0281 0.0176  
 Mercury -38737-12-20 00:28 J -12426912.63 -12426912.48 -12426912.33 0.0281 0.0062  
 Mercury -38736-03-18 16:18 J -12426823.97 -12426823.82 -12426823.66 0.0281 0.0056  
 Earth -38736-04-11 14:52 J -12426800.07 -12426799.88 -12426799.67 0.0281 0.0164  
 Moon -38736-04-11 16:04 J -12426800.02 -12426799.83 -12426799.62 0.0281 0.0151 \*  
 Mercury -38736-06-15 08:52 J -12426735.25 -12426735.13 -12426735.01 0.0281 0.0174  
 Venus -38736-10-16 01:40 J -12426612.62 -12426612.43 -12426612.23 0.0282 0.0099  
 Venus -38735-06-02 12:28 J -12426383.17 -12426382.98 -12426382.78 0.0282 0.0096  
 Earth -38723-10-02 14:52 J -12421877.99 -12421877.88 -12421877.77 0.0279 0.0248

Moon -38723-10-02 17:02 J -12421877.91 -12421877.79 -12421877.65 0.0279 0.0236 \*  
 Mercury -38722-02-01 14:09 J -12421756.00 -12421755.91 -12421755.82 0.0279 0.0219  
 Mercury -38722-05-01 05:45 J -12421667.41 -12421667.26 -12421667.12 0.0278 0.0105  
 Mercury -38722-07-28 20:52 J -12421578.78 -12421578.63 -12421578.48 0.0278 0.0007  
 Moon -38722-10-15 13:40 J -12421500.11 -12421499.93 -12421499.73 0.0278 0.0184  
 Earth -38722-10-15 15:35 J -12421500.03 -12421499.85 -12421499.66 0.0278 0.0180 \*  
 Mercury -38722-10-25 11:45 J -12421490.15 -12421490.01 -12421489.87 0.0278 0.0116  
 Mercury -38721-01-22 02:09 J -12421401.49 -12421401.41 -12421401.32 0.0278 0.0223  
 Venus -38721-04-04 06:14 J -12421328.44 -12421328.24 -12421328.04 0.0278 0.0098  
 Venus -38721-11-19 18:57 J -12421098.91 -12421098.71 -12421098.51 0.0277 0.0092  
 Mercury -38707-02-09 10:33 J -12416269.16 -12416269.06 -12416268.95 0.0280 0.0203  
 Moon -38707-04-06 06:14 J -12416213.49 -12416213.24 -12416212.99 0.0280 0.0044  
 Earth -38707-04-06 07:26 J -12416213.44 -12416213.19 -12416212.95 0.0280 0.0030 \*  
 Mercury -38707-05-09 02:09 J -12416180.55 -12416180.41 -12416180.26 0.0281 0.0090  
 Mercury -38707-08-05 17:59 J -12416091.90 -12416091.75 -12416091.59 0.0281 0.0026  
 Venus -38707-09-10 22:33 J -12416055.63 -12416055.56 -12416055.47 0.0281 0.0257  
 Mercury -38707-11-02 10:18 J -12416003.20 -12416003.07 -12416002.93 0.0281 0.0144  
 Mercury -38706-01-30 02:52 J -12415914.42 -12415914.38 -12415914.32 0.0281 0.0265  
 Venus -38706-04-28 08:23 J -12415826.36 -12415826.15 -12415825.95 0.0281 0.0067  
 Venus -38706-12-13 18:57 J -12415596.89 -12415596.71 -12415596.52 0.0282 0.0128  
 Mars -38700-04-02 19:26 J -12413659.97 -12413659.69 -12413659.41 0.0283 0.0047  
 Mercury -38693-06-20 13:40 J -12411023.98 -12411023.93 -12411023.88 0.0278 0.0261  
 Mercury -38693-09-17 05:16 J -12410935.41 -12410935.28 -12410935.14 0.0278 0.0146  
 Earth -38693-10-09 00:14 J -12410913.73 -12410913.49 -12410913.24 0.0278 0.0018  
 Moon -38693-10-09 02:23 J -12410913.64 -12410913.40 -12410913.16 0.0278 0.0012 \*  
 Mercury -38693-12-14 20:38 J -12410846.79 -12410846.64 -12410846.48 0.0278 0.0034  
 Venus -38692-02-27 17:16 J -12410771.82 -12410771.78 -12410771.72 0.0277 0.0269  
 Mercury -38692-03-13 11:30 J -12410758.16 -12410758.02 -12410757.87 0.0277 0.0077  
 Mercury -38692-06-10 02:09 J -12410669.52 -12410669.41 -12410669.29 0.0277 0.0183  
 Venus -38692-10-15 06:57 J -12410542.41 -12410542.21 -12410542.00 0.0277 0.0079



Venus -38691-06-01 19:26 J -12410312.88 -12410312.69 -12410312.49 0.0276 0.0110  
 Earth -38678-03-31 12:42 J -12405627.09 -12405626.97 -12405626.83 0.0280 0.0238  
 Moon -38678-03-31 14:23 J -12405626.99 -12405626.90 -12405626.79 0.0280 0.0253 \*  
 Mercury -38678-06-29 10:04 J -12405537.15 -12405537.08 -12405537.01 0.0281 0.0247  
 Mercury -38678-09-26 01:11 J -12405448.58 -12405448.45 -12405448.31 0.0281 0.0136  
 Mercury -38678-12-23 17:02 J -12405359.94 -12405359.79 -12405359.63 0.0281 0.0022  
 Mercury -38677-03-21 09:21 J -12405271.26 -12405271.11 -12405270.97 0.0281 0.0097  
 Venus -38677-03-22 22:33 J -12405269.67 -12405269.56 -12405269.45 0.0281 0.0237  
 Earth -38677-04-12 16:33 J -12405248.97 -12405248.81 -12405248.63 0.0281 0.0201  
 Moon -38677-04-12 20:09 J -12405248.83 -12405248.66 -12405248.47 0.0281 0.0186 \*  
 Mercury -38677-06-18 01:40 J -12405182.53 -12405182.43 -12405182.33 0.0281 0.0217  
 Venus -38677-11-07 08:23 J -12405040.36 -12405040.15 -12405039.94 0.0282 0.0047  
 Venus -38676-06-24 19:11 J -12404810.87 -12404810.70 -12404810.51 0.0282 0.0148  
 Moon -38664-10-03 14:09 J -12400327.08 -12400326.91 -12400326.73 0.0279 0.0204  
 Earth -38664-10-03 16:18 J -12400326.97 -12400326.82 -12400326.65 0.0279 0.0212 \*  
 Mercury -38663-02-04 06:57 J -12400203.33 -12400203.21 -12400203.09 0.0279 0.0178  
 Mercury -38663-05-03 22:18 J -12400114.72 -12400114.57 -12400114.42 0.0279 0.0064  
 Mercury -38663-07-31 13:26 J -12400026.09 -12400025.94 -12400025.79 0.0278 0.0047  
 Venus -38663-09-09 23:59 J -12399985.60 -12399985.50 -12399985.38 0.0278 0.0236  
 Moon -38663-10-16 13:40 J -12399949.07 -12399948.93 -12399948.77 0.0278 0.0217  
 Earth -38663-10-16 17:16 J -12399948.92 -12399948.78 -12399948.62 0.0278 0.0218 \*  
 Mercury -38663-10-28 04:18 J -12399937.45 -12399937.32 -12399937.20 0.0278 0.0156  
 Mercury -38662-01-24 18:28 J -12399848.77 -12399848.73 -12399848.67 0.0278 0.0261  
 Venus -38662-04-27 14:09 J -12399756.12 -12399755.91 -12399755.70 0.0278 0.0045  
 Venus -38662-12-13 02:38 J -12399526.57 -12399526.39 -12399526.20 0.0277 0.0144  
 Mars -38656-07-23 00:42 J -12397477.75 -12397477.47 -12397477.18 0.0276 0.0095  
 Mercury -38649-11-15 12:14 J -12394805.02 -12394804.99 -12394804.95 0.0280 0.0270  
 Mercury -38648-02-12 03:35 J -12394716.47 -12394716.35 -12394716.22 0.0280 0.0160  
 Moon -38648-04-07 07:11 J -12394662.45 -12394662.20 -12394661.96 0.0280 0.0008  
 Earth -38648-04-07 11:02 J -12394662.29 -12394662.04 -12394661.80 0.0280 0.0011 \*

Mercury -38648-05-11 19:11 J -12394627.85 -12394627.70 -12394627.54 0.0280 0.0047

Mercury -38648-08-08 11:16 J -12394539.18 -12394539.03 -12394538.88 0.0281 0.0070

Venus -38648-10-03 06:28 J -12394483.37 -12394483.23 -12394483.09 0.0281 0.0203

Mercury -38648-11-05 03:35 J -12394450.46 -12394450.35 -12394450.23 0.0281 0.0189

Venus -38647-05-20 16:04 J -12394254.04 -12394253.83 -12394253.62 0.0281 0.0013

Venus -38646-01-05 02:52 J -12394024.53 -12394024.38 -12394024.21 0.0282 0.0181

Mercury -38634-06-24 06:42 J -12389471.31 -12389471.22 -12389471.12 0.0278 0.0218

Mercury -38634-09-20 22:33 J -12389382.71 -12389382.56 -12389382.42 0.0278 0.0103

Earth -38634-10-11 03:50 J -12389362.58 -12389362.34 -12389362.09 0.0278 0.0023

Moon -38634-10-11 07:26 J -12389362.44 -12389362.19 -12389361.94 0.0278 0.0025 \*

Mercury -38634-12-18 13:40 J -12389294.08 -12389293.93 -12389293.78 0.0278 0.0009

Mercury -38633-03-16 04:33 J -12389205.45 -12389205.31 -12389205.17 0.0278 0.0118

Venus -38633-03-22 02:38 J -12389199.53 -12389199.39 -12389199.26 0.0278 0.0214

Mercury -38633-06-12 18:57 J -12389116.79 -12389116.71 -12389116.62 0.0277 0.0225

Venus -38633-11-06 16:04 J -12388970.04 -12388969.83 -12388969.61 0.0277 0.0024

Venus -38632-06-24 04:18 J -12388740.48 -12388740.32 -12388740.14 0.0277 0.0164

Earth -38619-04-01 16:33 J -12384075.98 -12384075.81 -12384075.64 0.0280 0.0198

Moon -38619-04-01 19:54 J -12384075.81 -12384075.67 -12384075.50 0.0280 0.0214 \*

Mercury -38619-07-02 02:52 J -12383984.48 -12383984.38 -12383984.27 0.0280 0.0205

Mercury -38619-09-28 18:28 J -12383895.88 -12383895.73 -12383895.59 0.0281 0.0093

Mercury -38619-12-26 10:18 J -12383807.23 -12383807.07 -12383806.92 0.0281 0.0023

Mercury -38618-03-25 02:23 J -12383718.53 -12383718.40 -12383718.26 0.0281 0.0141

Earth -38618-04-14 19:40 J -12383697.79 -12383697.68 -12383697.54 0.0281 0.0242

Moon -38618-04-14 20:38 J -12383697.78 -12383697.64 -12383697.48 0.0281 0.0225 \*

Venus -38618-04-15 06:14 J -12383697.39 -12383697.24 -12383697.08 0.0281 0.0184

Mercury -38618-06-21 18:57 J -12383629.76 -12383629.71 -12383629.65 0.0281 0.0262

Venus -38618-11-30 16:04 J -12383468.04 -12383467.83 -12383467.62 0.0282 0.0008

Venus -38617-07-17 02:52 J -12383238.51 -12383238.38 -12383238.22 0.0282 0.0201

Mars -38612-08-26 22:18 J -12381371.84 -12381371.57 -12381371.28 0.0283 0.0074

Moon -38605-10-04 15:50 J -12378776.03 -12378775.84 -12378775.64 0.0279 0.0167

Earth -38605-10-04 19:11 J -12378775.88 -12378775.70 -12378775.50 0.0279 0.0174 \*  
 Mercury -38605-11-10 07:54 J -12378739.23 -12378739.17 -12378739.10 0.0279 0.0251  
 Mercury -38604-02-06 23:45 J -12378650.64 -12378650.51 -12378650.37 0.0279 0.0135  
 Mercury -38604-05-06 15:06 J -12378562.02 -12378561.87 -12378561.71 0.0279 0.0023  
 Mercury -38604-08-03 06:14 J -12378473.38 -12378473.24 -12378473.10 0.0278 0.0089  
 Venus -38604-10-02 08:38 J -12378413.29 -12378413.14 -12378412.97 0.0278 0.0183  
 Earth -38604-10-17 20:23 J -12378397.73 -12378397.65 -12378397.55 0.0278 0.0257  
 Moon -38604-10-17 20:23 J -12378397.73 -12378397.65 -12378397.54 0.0278 0.0254 \*  
 Mercury -38604-10-30 20:52 J -12378384.73 -12378384.63 -12378384.52 0.0278 0.0196  
 Venus -38603-05-19 22:47 J -12378183.77 -12378183.55 -12378183.34 0.0278 0.0010  
 Venus -38602-01-04 11:16 J -12377954.18 -12377954.03 -12377953.88 0.0277 0.0197  
 Mercury -38590-11-19 05:30 J -12373252.35 -12373252.27 -12373252.17 0.0280 0.0226  
 Mercury -38589-02-15 21:06 J -12373163.76 -12373163.62 -12373163.48 0.0280 0.0114  
 Moon -38589-04-08 15:50 J -12373111.08 -12373110.84 -12373110.61 0.0280 0.0037  
 Earth -38589-04-08 16:18 J -12373111.06 -12373110.82 -12373110.58 0.0280 0.0053 \*  
 Mercury -38589-05-14 12:42 J -12373075.12 -12373074.97 -12373074.81 0.0280 0.0007  
 Mercury -38589-08-11 05:02 J -12372986.44 -12372986.29 -12372986.15 0.0281 0.0118  
 Venus -38589-10-25 15:06 J -12372911.04 -12372910.87 -12372910.69 0.0281 0.0148  
 Mercury -38589-11-07 21:21 J -12372897.69 -12372897.61 -12372897.52 0.0281 0.0238  
 Venus -38588-06-12 00:57 J -12372681.66 -12372681.46 -12372681.25 0.0281 0.0043  
 Venus -38587-01-27 11:59 J -12372452.10 -12372452.00 -12372451.88 0.0282 0.0236  
 Mercury -38575-06-27 00:14 J -12367918.61 -12367918.49 -12367918.36 0.0278 0.0171  
 Mercury -38575-09-23 15:50 J -12367829.99 -12367829.84 -12367829.69 0.0278 0.0058  
 Moon -38575-10-12 08:52 J -12367811.38 -12367811.13 -12367810.88 0.0278 0.0064  
 Earth -38575-10-12 08:52 J -12367811.36 -12367811.13 -12367810.88 0.0278 0.0064 \*  
 Mercury -38575-12-21 06:57 J -12367741.36 -12367741.21 -12367741.06 0.0278 0.0054  
 Mercury -38574-03-19 21:35 J -12367652.72 -12367652.60 -12367652.47 0.0278 0.0162  
 Venus -38574-04-14 12:14 J -12367627.16 -12367626.99 -12367626.81 0.0278 0.0158  
 Mercury -38574-06-16 11:59 J -12367564.03 -12367564.00 -12367563.96 0.0277 0.0268  
 Venus -38574-11-30 01:54 J -12367397.63 -12367397.42 -12367397.21 0.0277 0.0031

Venus -38573-07-16 13:54 J -12367168.04 -12367167.92 -12367167.78 0.0277 0.0218  
 Mars -38568-12-16 06:42 J -12365189.49 -12365189.22 -12365188.95 0.0275 0.0124  
 Earth -38560-04-02 22:33 J -12362524.76 -12362524.56 -12362524.35 0.0280 0.0155  
 Moon -38560-04-02 22:18 J -12362524.76 -12362524.57 -12362524.35 0.0280 0.0170 \*  
 Mercury -38560-04-07 05:16 J -12362520.32 -12362520.28 -12362520.24 0.0280 0.0269  
 Mercury -38560-07-04 20:23 J -12362431.77 -12362431.65 -12362431.52 0.0280 0.0159  
 Mercury -38560-10-01 11:59 J -12362343.15 -12362343.00 -12362342.84 0.0281 0.0046  
 Mercury -38560-12-29 04:04 J -12362254.48 -12362254.33 -12362254.18 0.0281 0.0071  
 Mercury -38559-03-27 20:23 J -12362165.77 -12362165.65 -12362165.54 0.0281 0.0190  
 Moon -38559-04-15 22:04 J -12362146.63 -12362146.58 -12362146.50 0.0281 0.0269  
 Venus -38559-05-07 15:21 J -12362125.04 -12362124.86 -12362124.67 0.0281 0.0128  
 Venus -38559-12-23 01:26 J -12361895.64 -12361895.44 -12361895.24 0.0282 0.0063  
 Venus -38558-08-09 12:14 J -12361666.06 -12361665.99 -12361665.89 0.0282 0.0256  
 Earth -38546-10-06 23:30 J -12357224.73 -12357224.52 -12357224.30 0.0279 0.0132  
 Moon -38546-10-06 23:30 J -12357224.73 -12357224.52 -12357224.31 0.0279 0.0128 \*  
 Mercury -38546-11-14 01:26 J -12357186.55 -12357186.44 -12357186.34 0.0279 0.0206  
 Mercury -38545-02-10 17:02 J -12357097.94 -12357097.79 -12357097.64 0.0279 0.0090  
 Mercury -38545-05-09 08:23 J -12357009.31 -12357009.15 -12357009.00 0.0279 0.0023  
 Mercury -38545-08-05 23:16 J -12356920.66 -12356920.53 -12356920.40 0.0279 0.0132  
 Venus -38545-10-24 18:14 J -12356840.93 -12356840.74 -12356840.55 0.0278 0.0127  
 Mercury -38545-11-02 13:40 J -12356832.00 -12356831.93 -12356831.85 0.0278 0.0239  
 Venus -38544-06-11 07:54 J -12356611.37 -12356611.17 -12356610.96 0.0278 0.0064  
 Venus -38543-01-26 20:38 J -12356381.73 -12356381.64 -12356381.55 0.0278 0.0250  
 Mercury -38531-11-21 23:30 J -12351699.64 -12351699.52 -12351699.40 0.0280 0.0177  
 Mercury -38530-02-18 14:52 J -12351611.03 -12351610.88 -12351610.73 0.0280 0.0065  
 Venus -38530-04-02 16:04 J -12351567.84 -12351567.83 -12351567.79 0.0280 0.0278  
 Earth -38530-04-10 23:30 J -12351559.75 -12351559.52 -12351559.29 0.0280 0.0099  
 Moon -38530-04-11 02:52 J -12351559.60 -12351559.38 -12351559.14 0.0280 0.0084 \*  
 Mercury -38530-05-18 06:42 J -12351522.37 -12351522.22 -12351522.06 0.0280 0.0052  
 Mercury -38530-08-14 23:02 J -12351433.66 -12351433.54 -12351433.41 0.0280 0.0169

Venus -38530-11-18 01:11 J -12351338.65 -12351338.45 -12351338.25 0.0281 0.0092  
 Venus -38529-07-04 11:02 J -12351109.23 -12351109.04 -12351108.84 0.0281 0.0100  
 Mars -38523-01-21 01:40 J -12349082.68 -12349082.43 -12349082.16 0.0283 0.0120  
 Mercury -38516-04-02 02:23 J -12346454.48 -12346454.40 -12346454.32 0.0279 0.0238  
 Mercury -38516-06-29 17:59 J -12346365.88 -12346365.75 -12346365.61 0.0278 0.0123  
 Mercury -38516-09-26 09:35 J -12346277.26 -12346277.10 -12346276.95 0.0278 0.0013  
 Moon -38516-10-13 12:14 J -12346260.21 -12346259.99 -12346259.75 0.0278 0.0107  
 Earth -38516-10-13 15:35 J -12346260.06 -12346259.85 -12346259.61 0.0278 0.0109 \*  
 Mercury -38516-12-24 00:28 J -12346188.62 -12346188.48 -12346188.34 0.0278 0.0101  
 Mercury -38515-03-22 15:06 J -12346099.97 -12346099.87 -12346099.77 0.0278 0.0208  
 Venus -38515-05-06 23:16 J -12346054.73 -12346054.53 -12346054.33 0.0278 0.0101  
 Venus -38515-12-22 12:28 J -12345825.18 -12345824.98 -12345824.77 0.0277 0.0088  
 Venus -38514-08-09 00:42 J -12345595.50 -12345595.47 -12345595.43 0.0277 0.0273  
 Mars -38509-03-22 13:11 J -12343908.10 -12343907.95 -12343907.80 0.0275 0.0240  
 Moon -38501-04-04 03:06 J -12340973.58 -12340973.37 -12340973.14 0.0280 0.0125  
 Earth -38501-04-04 06:42 J -12340973.44 -12340973.22 -12340972.99 0.0280 0.0109 \*  
 Mercury -38501-04-09 23:02 J -12340967.63 -12340967.54 -12340967.44 0.0280 0.0220  
 Mercury -38501-07-07 14:23 J -12340879.04 -12340878.90 -12340878.75 0.0280 0.0109  
 Mercury -38501-10-04 06:14 J -12340790.40 -12340790.24 -12340790.08 0.0281 0.0006  
 Venus -38501-10-12 17:02 J -12340781.87 -12340781.79 -12340781.71 0.0281 0.0257  
 Mercury -38501-12-31 22:18 J -12340701.71 -12340701.57 -12340701.43 0.0281 0.0124  
 Mercury -38500-03-30 14:38 J -12340612.96 -12340612.89 -12340612.81 0.0281 0.0244  
 Venus -38500-05-30 01:54 J -12340552.62 -12340552.42 -12340552.22 0.0281 0.0070  
 Venus -38499-01-14 11:59 J -12340323.18 -12340323.00 -12340322.81 0.0282 0.0121  
 Mercury -38487-08-20 03:06 J -12335722.39 -12335722.37 -12335722.34 0.0279 0.0274  
 Earth -38487-10-08 05:45 J -12335673.49 -12335673.26 -12335673.03 0.0279 0.0088  
 Moon -38487-10-08 09:06 J -12335673.35 -12335673.12 -12335672.89 0.0279 0.0084 \*  
 Mercury -38487-11-16 18:57 J -12335633.83 -12335633.71 -12335633.58 0.0279 0.0157  
 Mercury -38486-02-13 10:33 J -12335545.21 -12335545.06 -12335544.90 0.0279 0.0043  
 Venus -38486-04-01 13:40 J -12335497.98 -12335497.93 -12335497.84 0.0279 0.0263

Mercury -38486-05-13 01:40 J -12335456.57 -12335456.43 -12335456.28 0.0279 0.0070

Mercury -38486-08-09 16:33 J -12335367.92 -12335367.81 -12335367.69 0.0279 0.0178

Venus -38486-11-17 04:47 J -12335268.51 -12335268.30 -12335268.09 0.0278 0.0071

Venus -38485-07-03 18:14 J -12335038.92 -12335038.74 -12335038.54 0.0278 0.0119

Mars -38479-05-12 18:57 J -12332899.92 -12332899.71 -12332899.47 0.0276 0.0182

Mercury -38472-08-28 02:23 J -12330235.48 -12330235.40 -12330235.32 0.0280 0.0236

Mercury -38472-11-24 17:45 J -12330146.90 -12330146.76 -12330146.62 0.0280 0.0126

Mercury -38471-02-21 09:21 J -12330058.27 -12330058.11 -12330057.95 0.0280 0.0012

Earth -38471-04-12 08:38 J -12330008.34 -12330008.14 -12330007.92 0.0280 0.0149

Moon -38471-04-12 11:02 J -12330008.25 -12330008.04 -12330007.81 0.0280 0.0134 \*

Venus -38471-04-25 03:21 J -12329995.48 -12329995.36 -12329995.23 0.0280 0.0221

Mercury -38471-05-21 01:26 J -12329969.59 -12329969.44 -12329969.30 0.0280 0.0105

Mercury -38471-08-17 17:45 J -12329880.85 -12329880.76 -12329880.67 0.0280 0.0225

Venus -38471-12-10 12:28 J -12329766.19 -12329765.98 -12329765.77 0.0281 0.0033

Venus -38470-07-27 22:47 J -12329536.72 -12329536.55 -12329536.38 0.0281 0.0157

Mars -38465-04-28 02:38 J -12327800.50 -12327800.39 -12327800.25 0.0283 0.0253

Moon -38458-10-02 17:59 J -12325086.80 -12325086.75 -12325086.70 0.0279 0.0272

Earth -38458-10-02 21:50 J -12325086.60 -12325086.59 -12325086.58 0.0279 0.0278

Mercury -38457-04-04 20:23 J -12324901.76 -12324901.65 -12324901.53 0.0279 0.0187

Mercury -38457-07-02 12:14 J -12324813.14 -12324812.99 -12324812.84 0.0278 0.0072

Mercury -38457-09-29 03:21 J -12324724.51 -12324724.36 -12324724.21 0.0278 0.0041

Venus -38457-10-11 20:23 J -12324711.76 -12324711.65 -12324711.52 0.0278 0.0233

Moon -38457-10-14 21:21 J -12324708.80 -12324708.61 -12324708.40 0.0278 0.0154

Earth -38457-10-14 23:45 J -12324708.70 -12324708.51 -12324708.30 0.0278 0.0157 \*

Mercury -38457-12-26 18:14 J -12324635.86 -12324635.74 -12324635.61 0.0278 0.0150

Mercury -38456-03-25 08:52 J -12324547.19 -12324547.13 -12324547.08 0.0278 0.0256

Venus -38456-05-29 11:02 J -12324482.25 -12324482.04 -12324481.83 0.0278 0.0043

Venus -38455-01-13 23:59 J -12324252.67 -12324252.50 -12324252.31 0.0277 0.0145

Mercury -38442-01-15 02:09 J -12319503.42 -12319503.41 -12319503.38 0.0280 0.0277

Moon -38442-04-06 14:38 J -12319422.12 -12319421.89 -12319421.66 0.0280 0.0073

Earth -38442-04-06 17:02 J -12319422.03 -12319421.79 -12319421.55 0.0280 0.0058 \*  
 Mercury -38442-04-13 17:30 J -12319414.89 -12319414.77 -12319414.64 0.0280 0.0167  
 Mercury -38442-07-11 09:06 J -12319326.27 -12319326.12 -12319325.97 0.0280 0.0054  
 Mercury -38442-10-08 00:57 J -12319237.61 -12319237.46 -12319237.31 0.0281 0.0062  
 Venus -38442-11-05 04:33 J -12319209.45 -12319209.31 -12319209.16 0.0281 0.0198  
 Mercury -38441-01-04 17:02 J -12319148.91 -12319148.79 -12319148.66 0.0281 0.0180  
 Venus -38441-06-21 13:40 J -12318980.14 -12318979.93 -12318979.72 0.0281 0.0011  
 Venus -38440-02-05 23:59 J -12318750.65 -12318750.50 -12318750.33 0.0282 0.0180  
 Mars -38435-06-16 17:02 J -12316794.03 -12316793.79 -12316793.55 0.0283 0.0157  
 Mercury -38428-08-22 21:21 J -12314169.70 -12314169.61 -12314169.52 0.0279 0.0222  
 Earth -38428-10-09 13:26 J -12314122.18 -12314121.94 -12314121.69 0.0279 0.0040  
 Moon -38428-10-09 15:50 J -12314122.09 -12314121.84 -12314121.59 0.0279 0.0039 \*  
 Mercury -38428-11-19 13:11 J -12314081.10 -12314080.95 -12314080.81 0.0279 0.0106  
 Mercury -38427-02-16 04:33 J -12313992.47 -12313992.31 -12313992.16 0.0279 0.0008  
 Venus -38427-04-24 01:40 J -12313925.57 -12313925.43 -12313925.28 0.0279 0.0205  
 Mercury -38427-05-15 19:26 J -12313903.82 -12313903.69 -12313903.55 0.0279 0.0118  
 Mercury -38427-08-12 10:04 J -12313815.16 -12313815.08 -12313814.99 0.0279 0.0226  
 Venus -38427-12-09 16:18 J -12313696.04 -12313695.82 -12313695.61 0.0278 0.0014  
 Venus -38426-07-27 05:30 J -12313466.43 -12313466.27 -12313466.10 0.0278 0.0175  
 Mars -38421-08-17 01:26 J -12311618.66 -12311618.44 -12311618.21 0.0276 0.0184  
 Earth -38413-03-31 17:16 J -12308834.90 -12308834.78 -12308834.65 0.0279 0.0238  
 Moon -38413-03-31 20:09 J -12308834.75 -12308834.66 -12308834.54 0.0279 0.0252 \*  
 Mercury -38413-08-30 20:52 J -12308682.74 -12308682.63 -12308682.52 0.0280 0.0184  
 Mercury -38413-11-27 12:14 J -12308594.14 -12308593.99 -12308593.84 0.0280 0.0071  
 Mercury -38412-02-24 04:04 J -12308505.48 -12308505.33 -12308505.18 0.0280 0.0044  
 Moon -38412-04-13 17:30 J -12308456.94 -12308456.77 -12308456.57 0.0280 0.0188  
 Earth -38412-04-13 19:11 J -12308456.86 -12308456.70 -12308456.52 0.0280 0.0201 \*  
 Venus -38412-05-17 15:06 J -12308423.03 -12308422.87 -12308422.69 0.0280 0.0162  
 Mercury -38412-05-23 20:09 J -12308416.78 -12308416.66 -12308416.53 0.0280 0.0162  
 Venus -38411-01-02 00:42 J -12308193.68 -12308193.47 -12308193.26 0.0281 0.0026

Venus -38411-08-19 11:02 J -12307964.17 -12307964.04 -12307963.90 0.0281 0.0217  
 Moon -38399-10-04 05:59 J -12303535.38 -12303535.25 -12303535.10 0.0279 0.0226  
 Earth -38399-10-04 08:09 J -12303535.30 -12303535.16 -12303535.02 0.0279 0.0228 \*  
 Mercury -38398-01-09 23:16 J -12303437.59 -12303437.53 -12303437.46 0.0279 0.0248  
 Mercury -38398-04-08 15:06 J -12303349.00 -12303348.87 -12303348.73 0.0279 0.0132  
 Mercury -38398-07-06 06:42 J -12303260.38 -12303260.22 -12303260.07 0.0278 0.0019  
 Mercury -38398-10-02 21:35 J -12303171.74 -12303171.60 -12303171.45 0.0278 0.0094  
 Earth -38398-10-17 09:50 J -12303157.25 -12303157.09 -12303156.92 0.0278 0.0206  
 Moon -38398-10-17 11:45 J -12303157.17 -12303157.01 -12303156.84 0.0278 0.0201 \*  
 Venus -38398-11-04 09:35 J -12303139.26 -12303139.10 -12303138.93 0.0278 0.0173  
 Mercury -38398-12-30 12:28 J -12303083.08 -12303082.98 -12303082.88 0.0278 0.0201  
 Venus -38397-06-20 23:45 J -12302909.72 -12302909.51 -12302909.29 0.0278 0.0017  
 Venus -38396-02-05 12:42 J -12302680.11 -12302679.97 -12302679.82 0.0277 0.0202  
 Mars -38391-10-06 18:28 J -12300610.87 -12300610.73 -12300610.55 0.0276 0.0232  
 Mercury -38383-01-17 20:52 J -12297950.71 -12297950.63 -12297950.53 0.0280 0.0223  
 Earth -38383-04-08 04:18 J -12297870.56 -12297870.32 -12297870.07 0.0280 0.0006  
 Moon -38383-04-08 05:45 J -12297870.49 -12297870.26 -12297870.02 0.0280 0.0020 \*  
 Mercury -38383-04-16 12:14 J -12297862.13 -12297861.99 -12297861.85 0.0280 0.0112  
 Mercury -38383-07-14 03:50 J -12297773.49 -12297773.34 -12297773.18 0.0280 0.0009  
 Mercury -38383-10-10 19:54 J -12297684.81 -12297684.67 -12297684.53 0.0281 0.0120  
 Venus -38383-11-27 17:02 J -12297636.97 -12297636.79 -12297636.61 0.0281 0.0139  
 Mercury -38382-01-07 12:14 J -12297596.07 -12297595.99 -12297595.90 0.0281 0.0240  
 Venus -38382-07-15 02:23 J -12297407.61 -12297407.40 -12297407.19 0.0281 0.0050  
 Venus -38381-02-29 12:57 J -12297178.06 -12297177.96 -12297177.85 0.0282 0.0240  
 Mars -38377-09-21 21:21 J -12295511.78 -12295511.61 -12295511.41 0.0283 0.0213  
 Mercury -38369-08-25 15:35 J -12292616.97 -12292616.85 -12292616.72 0.0279 0.0169  
 Moon -38369-10-10 20:09 J -12292570.91 -12292570.66 -12292570.41 0.0279 0.0006  
 Earth -38369-10-10 22:33 J -12292570.81 -12292570.56 -12292570.31 0.0279 0.0010 \*  
 Mercury -38369-11-22 07:26 J -12292528.35 -12292528.19 -12292528.04 0.0279 0.0054  
 Mercury -38368-02-18 22:33 J -12292439.71 -12292439.56 -12292439.41 0.0279 0.0059



Venus -38368-05-16 13:54 J -12292353.10 -12292352.92 -12292352.73 0.0279 0.0147  
 Mercury -38368-05-18 13:26 J -12292351.06 -12292350.94 -12292350.82 0.0279 0.0168  
 Mercury -38368-08-15 04:04 J -12292262.35 -12292262.33 -12292262.31 0.0278 0.0275  
 Venus -38367-01-01 04:18 J -12292123.53 -12292123.32 -12292123.11 0.0278 0.0044  
 Venus -38367-08-18 17:30 J -12291893.89 -12291893.77 -12291893.65 0.0278 0.0230  
 Moon -38354-04-03 03:06 J -12287283.54 -12287283.37 -12287283.19 0.0280 0.0201  
 Earth -38354-04-03 04:18 J -12287283.49 -12287283.32 -12287283.13 0.0280 0.0186 \*  
 Mercury -38354-06-07 00:14 J -12287218.56 -12287218.49 -12287218.41 0.0280 0.0239  
 Mercury -38354-09-03 15:21 J -12287129.99 -12287129.86 -12287129.72 0.0280 0.0129  
 Mercury -38354-12-01 07:11 J -12287041.36 -12287041.20 -12287041.05 0.0280 0.0017  
 Mercury -38353-02-27 23:02 J -12286952.68 -12286952.54 -12286952.39 0.0280 0.0102  
 Moon -38353-04-15 03:06 J -12286905.48 -12286905.37 -12286905.23 0.0280 0.0240  
 Earth -38353-04-15 06:42 J -12286905.31 -12286905.22 -12286905.11 0.0280 0.0254 \*  
 Mercury -38353-05-26 15:21 J -12286863.95 -12286863.86 -12286863.76 0.0280 0.0221  
 Venus -38353-06-09 03:35 J -12286850.54 -12286850.35 -12286850.15 0.0280 0.0103  
 Venus -38352-01-24 13:26 J -12286621.14 -12286620.94 -12286620.74 0.0281 0.0086  
 Venus -38352-09-10 23:59 J -12286391.53 -12286391.50 -12286391.45 0.0281 0.0276  
 Mars -38347-11-11 16:04 J -12284503.99 -12284503.83 -12284503.66 0.0283 0.0230  
 Earth -38340-10-05 18:57 J -12281983.89 -12281983.71 -12281983.51 0.0279 0.0177  
 Moon -38340-10-05 21:21 J -12281983.78 -12281983.61 -12281983.41 0.0279 0.0177 \*  
 Mercury -38339-01-12 18:14 J -12281884.85 -12281884.74 -12281884.63 0.0279 0.0191  
 Mercury -38339-04-11 09:50 J -12281796.24 -12281796.09 -12281795.94 0.0279 0.0076  
 Mercury -38339-07-09 01:11 J -12281707.60 -12281707.45 -12281707.30 0.0278 0.0037  
 Mercury -38339-10-05 16:04 J -12281618.96 -12281618.83 -12281618.70 0.0278 0.0146  
 Earth -38339-10-18 20:38 J -12281605.73 -12281605.64 -12281605.55 0.0278 0.0258  
 Moon -38339-10-19 00:14 J -12281605.59 -12281605.49 -12281605.37 0.0278 0.0250 \*  
 Venus -38339-11-26 23:02 J -12281566.73 -12281566.54 -12281566.34 0.0278 0.0113  
 Mercury -38338-01-02 06:42 J -12281530.28 -12281530.22 -12281530.16 0.0278 0.0253  
 Venus -38338-07-14 12:57 J -12281337.16 -12281336.96 -12281336.75 0.0278 0.0076  
 Venus -38337-02-29 01:26 J -12281107.50 -12281107.44 -12281107.36 0.0277 0.0260

Mars -38332-01-11 05:45 J -12279329.53 -12279329.26 -12279328.99 0.0275 0.0126  
 Mercury -38325-10-24 00:42 J -12276486.49 -12276486.47 -12276486.46 0.0280 0.0277  
 Mercury -38324-01-20 15:35 J -12276397.97 -12276397.85 -12276397.72 0.0280 0.0168  
 Earth -38324-04-09 16:04 J -12276319.07 -12276318.83 -12276318.59 0.0280 0.0049  
 Moon -38324-04-09 19:54 J -12276318.92 -12276318.67 -12276318.43 0.0280 0.0033 \*  
 Mercury -38324-04-19 07:11 J -12276309.35 -12276309.20 -12276309.05 0.0280 0.0055  
 Venus -38324-05-04 21:06 J -12276293.68 -12276293.62 -12276293.54 0.0280 0.0264  
 Mercury -38324-07-16 23:02 J -12276220.70 -12276220.54 -12276220.39 0.0280 0.0061  
 Mercury -38324-10-13 15:06 J -12276131.99 -12276131.87 -12276131.75 0.0281 0.0179  
 Venus -38324-12-20 05:45 J -12276064.46 -12276064.26 -12276064.06 0.0281 0.0079  
 Venus -38323-08-06 15:06 J -12275835.05 -12275834.87 -12275834.67 0.0281 0.0111  
 Jupiter -38313-03-05 15:06 J -12272336.27 -12272335.87 -12272335.45 0.0281 0.0140  
 Mercury -38310-06-01 18:28 J -12271152.81 -12271152.73 -12271152.64 0.0279 0.0229  
 Mercury -38310-08-29 10:18 J -12271064.21 -12271064.07 -12271063.93 0.0279 0.0113  
 Moon -38310-10-13 05:30 J -12271019.51 -12271019.27 -12271019.03 0.0279 0.0054  
 Earth -38310-10-13 08:52 J -12271019.37 -12271019.13 -12271018.89 0.0279 0.0061 \*  
 Venus -38310-10-22 11:30 J -12271010.02 -12271010.02 -12271009.99 0.0279 0.0278  
 Mercury -38310-11-26 01:40 J -12270975.58 -12270975.43 -12270975.27 0.0279 0.0008  
 Mercury -38309-02-22 16:47 J -12270886.94 -12270886.80 -12270886.66 0.0279 0.0112  
 Mercury -38309-05-21 07:26 J -12270798.27 -12270798.19 -12270798.09 0.0278 0.0220  
 Venus -38309-06-08 03:06 J -12270780.58 -12270780.37 -12270780.17 0.0278 0.0087  
 Venus -38308-01-23 17:02 J -12270550.99 -12270550.79 -12270550.59 0.0278 0.0101  
 Moon -38295-04-04 11:02 J -12265732.23 -12265732.04 -12265731.83 0.0280 0.0151  
 Earth -38295-04-04 14:52 J -12265732.09 -12265731.88 -12265731.66 0.0280 0.0134 \*  
 Mercury -38295-06-09 18:42 J -12265665.83 -12265665.72 -12265665.61 0.0280 0.0186  
 Mercury -38295-09-06 10:04 J -12265577.23 -12265577.08 -12265576.93 0.0280 0.0074  
 Venus -38295-11-15 06:57 J -12265507.32 -12265507.21 -12265507.09 0.0280 0.0229  
 Mercury -38295-12-04 01:54 J -12265488.58 -12265488.42 -12265488.27 0.0280 0.0042  
 Mercury -38294-03-02 17:59 J -12265399.88 -12265399.75 -12265399.62 0.0280 0.0160  
 Mercury -38294-05-30 10:33 J -12265311.06 -12265311.06 -12265311.06 0.0281 0.0280

Venus -38294-07-02 15:50 J -12265278.05 -12265277.84 -12265277.63 0.0281 0.0044  
 Venus -38293-02-17 01:40 J -12265048.60 -12265048.43 -12265048.24 0.0281 0.0145  
 Mars -38288-02-16 23:45 J -12263221.76 -12263221.51 -12263221.26 0.0283 0.0137  
 Earth -38281-10-07 06:42 J -12260432.44 -12260432.22 -12260432.00 0.0279 0.0124  
 Moon -38281-10-07 10:18 J -12260432.30 -12260432.07 -12260431.85 0.0279 0.0124 \*  
 Mercury -38281-10-18 21:06 J -12260420.68 -12260420.62 -12260420.55 0.0279 0.0251  
 Mercury -38280-01-15 12:57 J -12260332.09 -12260331.96 -12260331.82 0.0279 0.0135  
 Mercury -38280-04-14 04:33 J -12260243.46 -12260243.31 -12260243.16 0.0279 0.0020  
 Venus -38280-05-03 21:50 J -12260223.68 -12260223.59 -12260223.47 0.0278 0.0241  
 Mercury -38280-07-11 19:40 J -12260154.82 -12260154.68 -12260154.54 0.0278 0.0091  
 Mercury -38280-10-08 10:33 J -12260066.17 -12260066.06 -12260065.96 0.0278 0.0200  
 Venus -38280-12-19 12:42 J -12259994.18 -12259993.97 -12259993.76 0.0278 0.0053  
 Venus -38279-08-06 02:09 J -12259764.59 -12259764.41 -12259764.21 0.0278 0.0135  
 Mercury -38266-10-27 19:11 J -12254933.79 -12254933.70 -12254933.61 0.0280 0.0223  
 Mercury -38265-01-24 10:33 J -12254845.20 -12254845.06 -12254844.92 0.0280 0.0112  
 Earth -38265-04-11 03:35 J -12254767.57 -12254767.35 -12254767.12 0.0280 0.0103  
 Moon -38265-04-11 04:33 J -12254767.55 -12254767.31 -12254767.07 0.0280 0.0088 \*  
 Mercury -38265-04-22 02:09 J -12254756.57 -12254756.41 -12254756.26 0.0280 0.0007  
 Venus -38265-05-27 09:35 J -12254721.24 -12254721.10 -12254720.96 0.0280 0.0205  
 Mercury -38265-07-19 17:59 J -12254667.89 -12254667.75 -12254667.61 0.0281 0.0119  
 Mercury -38265-10-16 10:18 J -12254579.15 -12254579.07 -12254578.99 0.0281 0.0239  
 Venus -38264-01-11 18:28 J -12254491.94 -12254491.73 -12254491.52 0.0281 0.0019  
 Venus -38264-08-29 04:18 J -12254262.48 -12254262.32 -12254262.15 0.0281 0.0170  
 Mars -38258-04-07 13:26 J -12252214.99 -12252214.94 -12252214.86 0.0283 0.0274  
 Mercury -38251-06-04 13:11 J -12249600.07 -12249599.95 -12249599.83 0.0279 0.0174  
 Mercury -38251-09-01 04:47 J -12249511.45 -12249511.30 -12249511.15 0.0279 0.0058  
 Earth -38251-10-14 18:57 J -12249467.93 -12249467.71 -12249467.48 0.0279 0.0113  
 Moon -38251-10-14 19:11 J -12249467.92 -12249467.70 -12249467.48 0.0279 0.0105 \*  
 Venus -38251-11-14 00:42 J -12249437.59 -12249437.47 -12249437.32 0.0279 0.0219  
 Mercury -38251-11-28 20:09 J -12249422.81 -12249422.66 -12249422.51 0.0278 0.0054

Mercury -38250-02-25 11:02 J -12249334.16 -12249334.04 -12249333.92 0.0278 0.0164

Mercury -38250-05-25 01:26 J -12249245.46 -12249245.44 -12249245.40 0.0278 0.0271

Venus -38250-07-01 15:50 J -12249208.05 -12249207.84 -12249207.62 0.0278 0.0029

Venus -38249-02-16 05:16 J -12248978.44 -12248978.28 -12248978.09 0.0278 0.0159

Mars -38244-06-07 10:18 J -12247040.35 -12247040.07 -12247039.77 0.0276 0.0075

Mercury -38236-03-15 21:35 J -12244201.66 -12244201.60 -12244201.52 0.0280 0.0245

Moon -38236-04-05 23:45 J -12244180.73 -12244180.51 -12244180.29 0.0280 0.0099

Earth -38236-04-06 00:14 J -12244180.72 -12244180.49 -12244180.25 0.0280 0.0084 \*

Mercury -38236-06-12 12:57 J -12244113.09 -12244112.96 -12244112.83 0.0280 0.0134

Mercury -38236-09-09 04:33 J -12244024.47 -12244024.31 -12244024.16 0.0280 0.0020

Mercury -38236-12-06 20:23 J -12243935.79 -12243935.65 -12243935.50 0.0280 0.0097

Venus -38236-12-07 18:14 J -12243934.90 -12243934.74 -12243934.57 0.0280 0.0172

Mercury -38235-03-05 12:42 J -12243847.07 -12243846.97 -12243846.87 0.0281 0.0216

Venus -38235-07-25 03:21 J -12243705.57 -12243705.36 -12243705.15 0.0281 0.0015

Venus -38234-03-11 13:40 J -12243476.07 -12243475.93 -12243475.78 0.0281 0.0202

Earth -38222-10-09 18:14 J -12238880.97 -12238880.74 -12238880.50 0.0279 0.0072

Moon -38222-10-09 18:42 J -12238880.97 -12238880.72 -12238880.47 0.0279 0.0073 \*

Mercury -38222-10-22 16:18 J -12238867.94 -12238867.82 -12238867.71 0.0279 0.0193

Mercury -38221-01-19 07:54 J -12238779.32 -12238779.17 -12238779.02 0.0279 0.0078

Mercury -38221-04-16 23:16 J -12238690.68 -12238690.53 -12238690.38 0.0278 0.0035

Venus -38221-05-26 11:59 J -12238651.16 -12238651.00 -12238650.84 0.0278 0.0180

Mercury -38221-07-14 14:09 J -12238602.04 -12238601.91 -12238601.78 0.0278 0.0145

Mercury -38221-10-11 04:47 J -12238513.36 -12238513.30 -12238513.24 0.0278 0.0252

Venus -38220-01-11 02:23 J -12238421.62 -12238421.40 -12238421.19 0.0278 0.0008

Venus -38220-08-28 15:35 J -12238192.00 -12238191.85 -12238191.70 0.0277 0.0192

Mercury -38207-10-30 13:26 J -12233381.06 -12233380.94 -12233380.82 0.0280 0.0171

Mercury -38206-01-27 04:47 J -12233292.45 -12233292.30 -12233292.15 0.0280 0.0059

Moon -38206-04-13 10:04 J -12233216.29 -12233216.08 -12233215.86 0.0280 0.0142

Earth -38206-04-13 13:40 J -12233216.13 -12233215.93 -12233215.72 0.0280 0.0155 \*

Mercury -38206-04-25 20:38 J -12233203.79 -12233203.64 -12233203.49 0.0280 0.0057

Venus -38206-06-19 20:52 J -12233148.80 -12233148.63 -12233148.45 0.0281 0.0148

Mercury -38206-07-23 12:42 J -12233115.09 -12233114.97 -12233114.85 0.0281 0.0175

Venus -38205-02-04 06:14 J -12232919.45 -12232919.24 -12232919.03 0.0281 0.0039

Venus -38205-09-20 16:18 J -12232689.93 -12232689.82 -12232689.69 0.0281 0.0228

Mars -38200-07-13 18:42 J -12230932.98 -12230932.72 -12230932.44 0.0283 0.0096

Moon -38193-10-03 01:54 J -12228294.46 -12228294.42 -12228294.37 0.0279 0.0273

Earth -38193-10-03 02:09 J -12228294.45 -12228294.41 -12228294.37 0.0279 0.0274 \*

Mercury -38192-03-10 15:50 J -12228135.92 -12228135.84 -12228135.75 0.0279 0.0235

Mercury -38192-06-07 07:40 J -12228047.32 -12228047.18 -12228047.03 0.0279 0.0119

Mercury -38192-09-03 23:16 J -12227958.68 -12227958.53 -12227958.38 0.0278 0.0005

Earth -38192-10-16 04:47 J -12227916.50 -12227916.30 -12227916.10 0.0278 0.0164

Moon -38192-10-16 08:09 J -12227916.36 -12227916.16 -12227915.96 0.0278 0.0155 \*

Mercury -38192-12-01 14:23 J -12227870.04 -12227869.90 -12227869.76 0.0278 0.0107

Venus -38192-12-06 13:54 J -12227865.09 -12227864.92 -12227864.74 0.0278 0.0159

Mercury -38191-02-28 05:02 J -12227781.38 -12227781.29 -12227781.19 0.0278 0.0215

Venus -38191-07-24 04:33 J -12227635.52 -12227635.31 -12227635.09 0.0278 0.0029

Venus -38190-03-10 17:30 J -12227405.89 -12227405.77 -12227405.62 0.0277 0.0215

Mercury -38177-03-18 15:35 J -12222648.96 -12222648.85 -12222648.74 0.0280 0.0196

Earth -38177-04-07 07:54 J -12222629.41 -12222629.17 -12222628.93 0.0280 0.0036

Moon -38177-04-07 11:02 J -12222629.27 -12222629.04 -12222628.80 0.0280 0.0050 \*

Mercury -38177-06-15 06:57 J -12222560.36 -12222560.21 -12222560.07 0.0280 0.0084

Mercury -38177-09-11 22:33 J -12222471.71 -12222471.56 -12222471.40 0.0280 0.0032

Mercury -38177-12-09 14:38 J -12222383.02 -12222382.89 -12222382.76 0.0281 0.0150

Venus -38177-12-30 04:47 J -12222362.49 -12222362.30 -12222362.11 0.0281 0.0117

Mercury -38176-03-08 06:57 J -12222294.24 -12222294.21 -12222294.16 0.0281 0.0271

Venus -38176-08-16 14:09 J -12222133.11 -12222132.91 -12222132.71 0.0281 0.0070

Venus -38175-04-03 00:28 J -12221903.55 -12221903.48 -12221903.39 0.0281 0.0259

Mercury -38163-07-28 18:57 J -12217403.77 -12217403.71 -12217403.65 0.0279 0.0255

Moon -38163-10-11 01:11 J -12217329.69 -12217329.45 -12217329.20 0.0279 0.0025

Earth -38163-10-11 04:33 J -12217329.56 -12217329.31 -12217329.06 0.0279 0.0021 \*

Mercury -38163-10-25 10:47 J -12217315.18 -12217315.05 -12217314.91 0.0279 0.0138

Mercury -38162-01-22 02:23 J -12217226.56 -12217226.40 -12217226.25 0.0279 0.0024

Mercury -38162-04-20 17:30 J -12217137.91 -12217137.77 -12217137.62 0.0278 0.0088

Venus -38162-06-19 00:57 J -12217078.65 -12217078.46 -12217078.26 0.0278 0.0121

Mercury -38162-07-18 08:09 J -12217049.26 -12217049.16 -12217049.05 0.0278 0.0197

Venus -38161-02-03 15:06 J -12216849.08 -12216848.87 -12216848.66 0.0278 0.0066

Venus -38161-09-20 03:50 J -12216619.43 -12216619.34 -12216619.24 0.0277 0.0249

Mars -38156-11-01 18:42 J -12214751.02 -12214750.72 -12214750.42 0.0275 0.0009

Moon -38148-04-01 16:47 J -12212042.90 -12212042.80 -12212042.69 0.0280 0.0253

Earth -38148-04-01 20:09 J -12212042.79 -12212042.66 -12212042.54 0.0280 0.0238 \*

Mercury -38148-08-05 16:18 J -12211916.91 -12211916.82 -12211916.74 0.0280 0.0232

Mercury -38148-11-02 07:26 J -12211828.33 -12211828.19 -12211828.05 0.0280 0.0121

Venus -38148-11-24 23:16 J -12211805.57 -12211805.53 -12211805.49 0.0280 0.0274

Mercury -38147-01-29 23:02 J -12211739.70 -12211739.54 -12211739.39 0.0280 0.0011

Moon -38147-04-14 19:11 J -12211664.86 -12211664.70 -12211664.52 0.0280 0.0194

Earth -38147-04-14 21:35 J -12211664.76 -12211664.60 -12211664.43 0.0280 0.0203 \*

Mercury -38147-04-28 14:52 J -12211651.03 -12211650.88 -12211650.74 0.0280 0.0110

Venus -38147-07-12 07:26 J -12211576.39 -12211576.19 -12211575.99 0.0281 0.0091

Mercury -38147-07-26 06:57 J -12211562.29 -12211562.21 -12211562.11 0.0281 0.0230

Venus -38146-02-26 16:47 J -12211346.99 -12211346.80 -12211346.60 0.0281 0.0095

Earth -38134-10-05 11:45 J -12206743.15 -12206743.01 -12206742.86 0.0279 0.0225

Moon -38134-10-05 15:21 J -12206743.00 -12206742.86 -12206742.72 0.0279 0.0225 \*

Mercury -38133-03-13 10:18 J -12206583.18 -12206583.07 -12206582.95 0.0279 0.0181

Mercury -38133-06-10 02:09 J -12206494.56 -12206494.41 -12206494.26 0.0278 0.0065

Mercury -38133-09-06 17:16 J -12206405.92 -12206405.78 -12206405.62 0.0278 0.0049

Earth -38133-10-17 13:40 J -12206365.07 -12206364.93 -12206364.76 0.0278 0.0214

Moon -38133-10-17 16:18 J -12206364.99 -12206364.82 -12206364.65 0.0278 0.0204 \*

Mercury -38133-12-04 08:23 J -12206317.27 -12206317.15 -12206317.03 0.0278 0.0158

Venus -38133-12-29 02:23 J -12206292.59 -12206292.40 -12206292.19 0.0278 0.0101

Mercury -38132-03-02 22:47 J -12206228.58 -12206228.55 -12206228.50 0.0278 0.0265

Venus -38132-08-15 16:47 J -12206063.01 -12206062.80 -12206062.60 0.0278 0.0086  
 Venus -38131-04-02 05:30 J -12205833.32 -12205833.27 -12205833.22 0.0277 0.0268  
 Mercury -38119-12-23 17:45 J -12201184.81 -12201184.76 -12201184.71 0.0280 0.0261  
 Mercury -38118-03-22 08:52 J -12201096.26 -12201096.13 -12201096.00 0.0280 0.0151  
 Earth -38118-04-09 13:11 J -12201078.20 -12201077.95 -12201077.71 0.0280 0.0009  
 Moon -38118-04-09 15:50 J -12201078.09 -12201077.84 -12201077.59 0.0280 0.0005 \*  
 Venus -38118-06-07 04:33 J -12201019.39 -12201019.31 -12201019.20 0.0280 0.0247  
 Mercury -38118-06-19 00:14 J -12201007.64 -12201007.49 -12201007.33 0.0280 0.0038  
 Mercury -38118-09-15 16:04 J -12200918.98 -12200918.83 -12200918.68 0.0281 0.0080  
 Mercury -38118-12-13 08:23 J -12200830.26 -12200830.15 -12200830.04 0.0281 0.0199  
 Venus -38117-01-22 13:40 J -12200790.13 -12200789.93 -12200789.73 0.0281 0.0064  
 Venus -38117-09-07 23:16 J -12200560.71 -12200560.53 -12200560.34 0.0281 0.0124  
 Mars -38112-12-08 07:26 J -12198643.47 -12198643.19 -12198642.91 0.0283 0.0030  
 Mercury -38104-07-31 13:11 J -12195851.05 -12195850.95 -12195850.84 0.0279 0.0202  
 Moon -38104-10-12 10:33 J -12195778.29 -12195778.06 -12195777.82 0.0279 0.0023  
 Earth -38104-10-12 13:26 J -12195778.19 -12195777.94 -12195777.70 0.0279 0.0028 \*  
 Mercury -38104-10-28 05:02 J -12195762.44 -12195762.29 -12195762.14 0.0279 0.0086  
 Venus -38104-11-23 21:50 J -12195735.67 -12195735.59 -12195735.48 0.0279 0.0251  
 Mercury -38103-01-24 20:23 J -12195673.80 -12195673.65 -12195673.49 0.0279 0.0028  
 Mercury -38103-04-23 11:30 J -12195585.15 -12195585.02 -12195584.89 0.0278 0.0138  
 Venus -38103-07-11 13:11 J -12195506.16 -12195505.95 -12195505.74 0.0278 0.0063  
 Mercury -38103-07-21 01:54 J -12195496.48 -12195496.42 -12195496.34 0.0278 0.0247  
 Venus -38102-02-26 02:52 J -12195276.57 -12195276.38 -12195276.19 0.0278 0.0122  
 Moon -38089-04-02 22:47 J -12190491.70 -12190491.55 -12190491.39 0.0280 0.0210  
 Earth -38089-04-03 01:26 J -12190491.60 -12190491.44 -12190491.25 0.0280 0.0195 \*  
 Mercury -38089-08-08 09:35 J -12190364.21 -12190364.10 -12190363.99 0.0280 0.0186  
 Mercury -38089-11-05 00:57 J -12190275.61 -12190275.46 -12190275.31 0.0280 0.0074  
 Venus -38089-12-17 08:09 J -12190233.28 -12190233.16 -12190233.03 0.0280 0.0221  
 Mercury -38088-02-01 16:33 J -12190186.96 -12190186.81 -12190186.66 0.0280 0.0041  
 Earth -38088-04-16 03:35 J -12190113.46 -12190113.35 -12190113.24 0.0281 0.0249

Moon -38088-04-16 05:16 J -12190113.39 -12190113.28 -12190113.16 0.0281 0.0242 \*  
 Mercury -38088-05-01 08:38 J -12190098.27 -12190098.14 -12190098.01 0.0281 0.0159  
 Mercury -38088-07-29 00:57 J -12190009.46 -12190009.46 -12190009.45 0.0281 0.0280  
 Venus -38088-08-03 16:47 J -12190004.01 -12190003.80 -12190003.60 0.0281 0.0038  
 Venus -38087-03-21 02:09 J -12189774.58 -12189774.41 -12189774.22 0.0281 0.0150  
 Earth -38075-10-06 19:40 J -12185191.86 -12185191.68 -12185191.48 0.0279 0.0178  
 Moon -38075-10-06 21:50 J -12185191.77 -12185191.59 -12185191.38 0.0279 0.0182 \*  
 Mercury -38075-12-18 12:28 J -12185119.05 -12185118.98 -12185118.90 0.0279 0.0247  
 Mercury -38074-03-17 04:33 J -12185030.45 -12185030.31 -12185030.17 0.0278 0.0130  
 Venus -38074-06-05 22:47 J -12184949.66 -12184949.55 -12184949.42 0.0278 0.0231  
 Mercury -38074-06-13 19:54 J -12184941.82 -12184941.67 -12184941.51 0.0278 0.0017  
 Mercury -38074-09-10 11:02 J -12184853.18 -12184853.04 -12184852.89 0.0278 0.0097  
 Moon -38074-10-19 19:40 J -12184813.79 -12184813.68 -12184813.57 0.0278 0.0247  
 Earth -38074-10-19 21:06 J -12184813.69 -12184813.62 -12184813.52 0.0278 0.0260 \*  
 Mercury -38074-12-08 01:54 J -12184764.51 -12184764.42 -12184764.31 0.0278 0.0206  
 Venus -38073-01-21 13:54 J -12184720.13 -12184719.92 -12184719.71 0.0278 0.0044  
 Venus -38073-09-07 03:50 J -12184490.53 -12184490.34 -12184490.16 0.0277 0.0141  
 Mars -38067-03-28 05:16 J -12182462.58 -12182462.28 -12182461.98 0.0276 0.0026  
 Mercury -38060-12-26 10:18 J -12179632.15 -12179632.07 -12179631.97 0.0280 0.0220  
 Mercury -38059-03-25 01:40 J -12179543.57 -12179543.43 -12179543.29 0.0280 0.0108  
 Moon -38059-04-10 14:52 J -12179527.13 -12179526.88 -12179526.63 0.0280 0.0038  
 Earth -38059-04-10 16:18 J -12179527.06 -12179526.82 -12179526.58 0.0280 0.0049 \*  
 Mercury -38059-06-21 17:16 J -12179454.93 -12179454.78 -12179454.62 0.0280 0.0008  
 Venus -38059-06-29 12:14 J -12179447.14 -12179446.99 -12179446.84 0.0280 0.0196  
 Mercury -38059-09-18 09:06 J -12179366.25 -12179366.12 -12179365.97 0.0281 0.0125  
 Mercury -38059-12-16 01:26 J -12179277.51 -12179277.44 -12179277.36 0.0281 0.0245  
 Venus -38058-02-13 21:21 J -12179217.82 -12179217.61 -12179217.40 0.0281 0.0013  
 Venus -38058-10-01 07:11 J -12178988.36 -12178988.20 -12178988.03 0.0281 0.0175  
 Mercury -38045-05-06 15:06 J -12174386.90 -12174386.87 -12174386.83 0.0279 0.0270  
 Mercury -38045-08-03 07:11 J -12174298.33 -12174298.20 -12174298.07 0.0279 0.0152



Earth -38045-10-13 20:09 J -12174226.89 -12174226.66 -12174226.42 0.0279 0.0073  
 Moon -38045-10-13 22:04 J -12174226.81 -12174226.58 -12174226.35 0.0279 0.0065 \*  
 Mercury -38045-10-30 22:47 J -12174209.70 -12174209.55 -12174209.39 0.0279 0.0038  
 Venus -38045-12-16 09:21 J -12174163.26 -12174163.11 -12174162.95 0.0279 0.0194  
 Mercury -38044-01-27 14:09 J -12174121.06 -12174120.91 -12174120.76 0.0279 0.0076  
 Mercury -38044-04-26 05:02 J -12174032.40 -12174032.29 -12174032.18 0.0278 0.0185  
 Venus -38044-08-03 00:14 J -12173933.70 -12173933.49 -12173933.27 0.0278 0.0007  
 Venus -38043-03-20 13:40 J -12173704.09 -12173703.93 -12173703.76 0.0278 0.0177  
 Earth -38030-04-05 05:16 J -12168940.48 -12168940.28 -12168940.07 0.0280 0.0154  
 Moon -38030-04-05 06:42 J -12168940.40 -12168940.22 -12168940.03 0.0280 0.0168 \*  
 Mercury -38030-05-15 11:30 J -12168900.08 -12168900.02 -12168899.96 0.0280 0.0254  
 Mercury -38030-08-12 02:23 J -12168811.52 -12168811.40 -12168811.26 0.0280 0.0144  
 Mercury -38030-11-08 17:59 J -12168722.90 -12168722.75 -12168722.60 0.0280 0.0030  
 Venus -38029-01-09 15:50 J -12168661.00 -12168660.84 -12168660.67 0.0280 0.0169  
 Mercury -38029-02-05 09:50 J -12168634.24 -12168634.09 -12168633.95 0.0280 0.0087  
 Mercury -38029-05-04 01:54 J -12168545.53 -12168545.42 -12168545.31 0.0281 0.0205  
 Venus -38029-08-26 00:42 J -12168431.68 -12168431.47 -12168431.26 0.0281 0.0015  
 Venus -38028-04-12 10:18 J -12168202.21 -12168202.07 -12168201.92 0.0281 0.0201  
 Mars -38023-05-03 14:38 J -12166355.17 -12166354.89 -12166354.60 0.0283 0.0005  
 Moon -38016-10-07 23:45 J -12163640.72 -12163640.51 -12163640.29 0.0279 0.0142  
 Earth -38016-10-08 02:09 J -12163640.62 -12163640.41 -12163640.19 0.0279 0.0134 \*  
 Mercury -38016-12-21 06:14 J -12163566.34 -12163566.24 -12163566.12 0.0279 0.0198  
 Mercury -38015-03-19 22:04 J -12163477.72 -12163477.58 -12163477.43 0.0278 0.0082  
 Mercury -38015-06-16 13:40 J -12163389.08 -12163388.93 -12163388.78 0.0278 0.0033  
 Venus -38015-06-28 09:50 J -12163377.25 -12163377.09 -12163376.92 0.0278 0.0175  
 Mercury -38015-09-13 04:33 J -12163300.43 -12163300.31 -12163300.18 0.0278 0.0143  
 Mercury -38015-12-10 19:11 J -12163211.75 -12163211.70 -12163211.63 0.0278 0.0251  
 Venus -38014-02-13 00:28 J -12163147.69 -12163147.48 -12163147.26 0.0278 0.0011  
 Venus -38014-09-30 13:54 J -12162918.07 -12162917.92 -12162917.77 0.0277 0.0194  
 Mercury -38001-12-29 02:52 J -12158079.49 -12158079.38 -12158079.26 0.0280 0.0181

# 38TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 38th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-38000-03-27 18:14 J	-12157990.89	-12157990.74	-12157990.59	0.0280	0.0068		
Moon	-38000-04-11 13:54 J	-12157976.15	-12157975.92	-12157975.69	0.0280	0.0076		
Earth	-38000-04-11 17:30 J	-12157976.00	-12157975.77	-12157975.53	0.0280	0.0087	*	
Mercury	-38000-06-24 09:50 J	-12157902.24	-12157902.09	-12157901.93	0.0280	0.0048		
Venus	-38000-07-21 18:28 J	-12157874.90	-12157874.73	-12157874.55	0.0281	0.0147		
Mercury	-38000-09-21 01:54 J	-12157813.54	-12157813.42	-12157813.29	0.0281	0.0166		
Venus	-37999-03-08 03:35 J	-12157645.55	-12157645.35	-12157645.14	0.0281	0.0038		
Venus	-37999-10-23 13:54 J	-12157416.04	-12157415.92	-12157415.79	0.0281	0.0224		
Mercury	-37986-05-10 08:52 J	-12152834.22	-12152834.13	-12152834.04	0.0279	0.0223		
Mercury	-37986-08-07 00:42 J	-12152745.61	-12152745.47	-12152745.33	0.0279	0.0105		
Earth	-37986-10-16 01:11 J	-12152675.67	-12152675.45	-12152675.22	0.0279	0.0116		
Moon	-37986-10-16 05:02 J	-12152675.52	-12152675.29	-12152675.06	0.0279	0.0104	*	
Mercury	-37986-11-03 16:18 J	-12152656.98	-12152656.82	-12152656.67	0.0279	0.0011		
Venus	-37985-01-08 19:26 J	-12152590.87	-12152590.69	-12152590.50	0.0279	0.0139		
Mercury	-37985-01-31 07:26 J	-12152568.33	-12152568.19	-12152568.06	0.0279	0.0121		
Mercury	-37985-04-28 22:04 J	-12152479.66	-12152479.58	-12152479.49	0.0278	0.0230		
Venus	-37985-08-25 10:04 J	-12152361.29	-12152361.08	-12152360.87	0.0278	0.0047		
Venus	-37984-04-11 23:16 J	-12152131.64	-12152131.53	-12152131.41	0.0278	0.0229		
Mars	-37979-08-22 09:06 J	-12150173.40	-12150173.12	-12150172.82	0.0275	0.0086		

Earth -37971-04-06 07:11 J -12147389.41 -12147389.20 -12147388.97 0.0279 0.0116  
 Moon -37971-04-06 11:02 J -12147389.25 -12147389.04 -12147388.81 0.0279 0.0129 \*  
 Mercury -37971-05-18 04:04 J -12147347.43 -12147347.33 -12147347.23 0.0280 0.0214  
 Mercury -37971-08-14 19:11 J -12147258.84 -12147258.70 -12147258.56 0.0280 0.0102  
 Mercury -37971-11-11 10:47 J -12147170.21 -12147170.05 -12147169.90 0.0280 0.0012  
 Venus -37970-01-31 22:47 J -12147088.74 -12147088.55 -12147088.36 0.0280 0.0119  
 Mercury -37970-02-08 02:38 J -12147081.53 -12147081.39 -12147081.25 0.0280 0.0129  
 Mercury -37970-05-07 18:42 J -12146992.78 -12146992.72 -12146992.64 0.0280 0.0250  
 Venus -37970-09-18 07:40 J -12146859.38 -12146859.18 -12146858.98 0.0281 0.0065  
 Venus -37969-05-04 17:30 J -12146629.86 -12146629.77 -12146629.67 0.0281 0.0250  
 Mercury -37957-09-26 07:40 J -12142102.21 -12142102.18 -12142102.14 0.0279 0.0269  
 Moon -37957-10-09 03:35 J -12142089.57 -12142089.35 -12142089.12 0.0279 0.0103  
 Earth -37957-10-09 06:57 J -12142089.44 -12142089.21 -12142088.98 0.0279 0.0092 \*  
 Mercury -37957-12-23 23:45 J -12142013.64 -12142013.51 -12142013.37 0.0279 0.0151  
 Mercury -37956-03-22 15:35 J -12141925.01 -12141924.85 -12141924.70 0.0278 0.0036  
 Mercury -37956-06-19 06:42 J -12141836.36 -12141836.22 -12141836.07 0.0278 0.0078  
 Venus -37956-07-20 19:26 J -12141804.87 -12141804.69 -12141804.49 0.0278 0.0121  
 Mercury -37956-09-15 21:35 J -12141747.70 -12141747.60 -12141747.48 0.0278 0.0187  
 Venus -37955-03-07 10:04 J -12141575.29 -12141575.08 -12141574.87 0.0278 0.0064  
 Venus -37955-10-22 23:16 J -12141345.63 -12141345.53 -12141345.44 0.0277 0.0246  
 Mercury -37942-10-05 04:04 J -12136615.39 -12136615.33 -12136615.27 0.0280 0.0254  
 Venus -37942-12-27 16:04 J -12136531.85 -12136531.83 -12136531.80 0.0280 0.0277  
 Mercury -37941-01-01 18:57 J -12136526.83 -12136526.71 -12136526.57 0.0280 0.0144  
 Mercury -37941-03-30 10:33 J -12136438.22 -12136438.06 -12136437.91 0.0280 0.0030  
 Moon -37941-04-12 17:16 J -12136425.00 -12136424.78 -12136424.57 0.0280 0.0117  
 Earth -37941-04-12 17:30 J -12136424.99 -12136424.77 -12136424.55 0.0280 0.0123 \*  
 Mercury -37941-06-27 02:09 J -12136349.55 -12136349.41 -12136349.26 0.0280 0.0087  
 Venus -37941-08-13 00:14 J -12136302.68 -12136302.49 -12136302.29 0.0280 0.0098  
 Mercury -37941-09-23 18:14 J -12136260.84 -12136260.74 -12136260.63 0.0281 0.0207  
 Venus -37940-03-30 09:21 J -12136073.31 -12136073.11 -12136072.91 0.0281 0.0086

Venus -37940-11-14 19:40 J -12135843.72 -12135843.68 -12135843.62 0.0281 0.0271  
 Mars -37935-09-27 01:11 J -12134066.73 -12134066.45 -12134066.16 0.0284 0.0034  
 Mercury -37927-05-13 01:54 J -12131281.54 -12131281.42 -12131281.30 0.0279 0.0178  
 Venus -37927-06-15 12:42 J -12131248.01 -12131247.97 -12131247.92 0.0279 0.0272  
 Mercury -37927-08-09 17:45 J -12131192.91 -12131192.76 -12131192.61 0.0279 0.0062  
 Moon -37927-10-17 04:18 J -12131124.53 -12131124.32 -12131124.09 0.0279 0.0143  
 Earth -37927-10-17 04:47 J -12131124.50 -12131124.30 -12131124.10 0.0279 0.0156 \*  
 Mercury -37927-11-06 09:06 J -12131104.27 -12131104.12 -12131103.97 0.0279 0.0053  
 Venus -37926-01-31 04:33 J -12131018.52 -12131018.31 -12131018.11 0.0279 0.0085  
 Mercury -37926-02-03 00:14 J -12131015.61 -12131015.49 -12131015.37 0.0279 0.0163  
 Mercury -37926-05-02 14:52 J -12130926.91 -12130926.88 -12130926.85 0.0279 0.0271  
 Venus -37926-09-17 18:57 J -12130788.91 -12130788.71 -12130788.51 0.0278 0.0100  
 Moon -37912-04-07 08:23 J -12125838.39 -12125838.15 -12125837.91 0.0279 0.0087  
 Earth -37912-04-07 08:23 J -12125838.38 -12125838.15 -12125837.91 0.0279 0.0079 \*  
 Mercury -37912-05-20 20:23 J -12125794.77 -12125794.65 -12125794.53 0.0279 0.0175  
 Venus -37912-07-08 20:52 J -12125745.71 -12125745.63 -12125745.53 0.0280 0.0249  
 Mercury -37912-08-17 11:45 J -12125706.16 -12125706.01 -12125705.86 0.0280 0.0063  
 Mercury -37912-11-14 03:21 J -12125617.51 -12125617.36 -12125617.21 0.0280 0.0053  
 Mercury -37911-02-10 19:11 J -12125528.82 -12125528.70 -12125528.57 0.0280 0.0171  
 Venus -37911-02-23 05:02 J -12125516.49 -12125516.29 -12125516.09 0.0280 0.0069  
 Venus -37911-10-10 13:54 J -12125287.11 -12125286.92 -12125286.73 0.0281 0.0114  
 Mercury -37898-09-30 00:57 J -12120549.55 -12120549.46 -12120549.36 0.0279 0.0224  
 Earth -37898-10-11 10:33 J -12120538.30 -12120538.06 -12120537.82 0.0279 0.0051  
 Moon -37898-10-11 11:02 J -12120538.27 -12120538.04 -12120537.81 0.0279 0.0063 \*  
 Venus -37898-12-26 12:57 J -12120462.04 -12120461.96 -12120461.86 0.0279 0.0254  
 Mercury -37898-12-27 17:02 J -12120460.93 -12120460.79 -12120460.65 0.0279 0.0107  
 Mercury -37897-03-25 08:38 J -12120372.30 -12120372.14 -12120371.99 0.0278 0.0009  
 Mercury -37897-06-21 23:45 J -12120283.65 -12120283.51 -12120283.37 0.0278 0.0120  
 Venus -37897-08-12 04:47 J -12120232.51 -12120232.30 -12120232.09 0.0278 0.0068  
 Mercury -37897-09-18 14:38 J -12120194.97 -12120194.89 -12120194.81 0.0278 0.0229

Venus -37896-03-29 18:57 J -12120002.90 -12120002.71 -12120002.51 0.0278 0.0116  
 Mars -37890-01-15 05:59 J -12117885.52 -12117885.25 -12117884.97 0.0275 0.0106  
 Mercury -37883-10-07 20:09 J -12115062.75 -12115062.66 -12115062.57 0.0280 0.0218  
 Mercury -37882-01-04 11:16 J -12114974.17 -12114974.03 -12114973.89 0.0280 0.0106  
 Venus -37882-01-18 21:21 J -12114959.72 -12114959.61 -12114959.48 0.0280 0.0230  
 Mercury -37882-04-03 02:38 J -12114885.54 -12114885.39 -12114885.23 0.0280 0.0010  
 Earth -37882-04-14 16:47 J -12114873.99 -12114873.80 -12114873.59 0.0280 0.0158  
 Moon -37882-04-14 20:38 J -12114873.84 -12114873.64 -12114873.43 0.0280 0.0155 \*  
 Mercury -37882-06-30 18:28 J -12114796.87 -12114796.73 -12114796.59 0.0280 0.0126  
 Venus -37882-09-05 05:30 J -12114730.47 -12114730.27 -12114730.06 0.0280 0.0050  
 Mercury -37882-09-27 10:47 J -12114708.12 -12114708.05 -12114707.98 0.0281 0.0246  
 Venus -37881-04-21 14:52 J -12114501.06 -12114500.88 -12114500.70 0.0281 0.0134  
 Earth -37869-10-05 02:38 J -12109951.49 -12109951.39 -12109951.28 0.0280 0.0252  
 Moon -37869-10-05 02:38 J -12109951.48 -12109951.39 -12109951.29 0.0280 0.0258 \*  
 Mercury -37868-02-16 02:38 J -12109817.45 -12109817.39 -12109817.32 0.0280 0.0255  
 Mercury -37868-05-15 18:42 J -12109728.85 -12109728.72 -12109728.58 0.0280 0.0137  
 Venus -37868-07-07 20:38 J -12109675.75 -12109675.64 -12109675.49 0.0279 0.0221  
 Mercury -37868-08-12 10:33 J -12109640.22 -12109640.06 -12109639.91 0.0279 0.0021  
 Moon -37868-10-18 03:06 J -12109573.56 -12109573.37 -12109573.18 0.0279 0.0180  
 Earth -37868-10-18 06:28 J -12109573.39 -12109573.23 -12109573.04 0.0279 0.0196 \*  
 Mercury -37868-11-09 01:54 J -12109551.57 -12109551.42 -12109551.28 0.0279 0.0093  
 Mercury -37867-02-05 16:33 J -12109462.90 -12109462.81 -12109462.70 0.0279 0.0204  
 Venus -37867-02-22 12:42 J -12109446.18 -12109445.97 -12109445.76 0.0279 0.0033  
 Venus -37867-10-10 02:52 J -12109216.55 -12109216.38 -12109216.19 0.0278 0.0151  
 Mercury -37853-02-24 21:50 J -12104330.66 -12104330.59 -12104330.52 0.0279 0.0246  
 Moon -37853-04-08 05:45 J -12104287.50 -12104287.26 -12104287.01 0.0279 0.0045  
 Earth -37853-04-08 09:35 J -12104287.34 -12104287.10 -12104286.85 0.0279 0.0041 \*  
 Mercury -37853-05-23 12:57 J -12104242.10 -12104241.96 -12104241.83 0.0279 0.0136  
 Venus -37853-07-31 03:06 J -12104173.51 -12104173.37 -12104173.22 0.0279 0.0200  
 Mercury -37853-08-20 04:18 J -12104153.48 -12104153.32 -12104153.17 0.0280 0.0024

Mercury -37853-11-16 19:54 J -12104064.82 -12104064.67 -12104064.52 0.0280 0.0094

Mercury -37852-02-13 11:59 J -12103976.10 -12103976.00 -12103975.90 0.0280 0.0212

Venus -37852-03-17 11:02 J -12103944.24 -12103944.04 -12103943.83 0.0280 0.0021

Venus -37852-11-01 20:09 J -12103714.83 -12103714.66 -12103714.49 0.0281 0.0163

Mars -37846-02-20 03:50 J -12101778.62 -12101778.34 -12101778.06 0.0284 0.0051

Mercury -37839-10-02 17:59 J -12098996.86 -12098996.75 -12098996.63 0.0279 0.0181

Earth -37839-10-12 13:11 J -12098987.19 -12098986.95 -12098986.70 0.0279 0.0013

Moon -37839-10-12 16:47 J -12098987.05 -12098986.80 -12098986.56 0.0279 0.0025 \*

Mercury -37839-12-30 09:50 J -12098908.24 -12098908.09 -12098907.94 0.0279 0.0064

Venus -37838-01-17 21:50 J -12098889.74 -12098889.59 -12098889.44 0.0279 0.0201

Mercury -37838-03-29 01:26 J -12098819.59 -12098819.44 -12098819.29 0.0279 0.0050

Mercury -37838-06-25 16:33 J -12098730.94 -12098730.81 -12098730.69 0.0278 0.0162

Venus -37838-09-04 13:26 J -12098660.16 -12098659.94 -12098659.73 0.0278 0.0016

Mercury -37838-09-22 06:57 J -12098642.23 -12098642.21 -12098642.17 0.0278 0.0270

Venus -37837-04-21 03:21 J -12098430.53 -12098430.36 -12098430.19 0.0278 0.0168

Earth -37824-04-02 16:33 J -12093700.91 -12093700.81 -12093700.70 0.0279 0.0251

Moon -37824-04-02 20:23 J -12093700.74 -12093700.65 -12093700.57 0.0279 0.0259 \*

Mercury -37824-10-10 12:14 J -12093510.10 -12093509.99 -12093509.87 0.0280 0.0181

Mercury -37823-01-07 03:21 J -12093421.50 -12093421.36 -12093421.21 0.0280 0.0069

Venus -37823-02-10 02:52 J -12093387.53 -12093387.38 -12093387.22 0.0280 0.0182

Mercury -37823-04-05 18:57 J -12093332.86 -12093332.71 -12093332.56 0.0280 0.0047

Earth -37823-04-15 16:47 J -12093322.97 -12093322.80 -12093322.62 0.0280 0.0193

Moon -37823-04-15 18:14 J -12093322.91 -12093322.74 -12093322.55 0.0280 0.0195 \*

Mercury -37823-07-03 10:47 J -12093244.17 -12093244.05 -12093243.92 0.0280 0.0165

Venus -37823-09-27 11:02 J -12093158.25 -12093158.04 -12093157.83 0.0280 0.0003

Venus -37822-05-14 20:23 J -12092928.81 -12092928.65 -12092928.49 0.0281 0.0181

Moon -37810-10-07 00:28 J -12088400.61 -12088400.48 -12088400.32 0.0280 0.0226

Earth -37810-10-07 04:18 J -12088400.47 -12088400.32 -12088400.16 0.0280 0.0215 \*

Mercury -37809-02-19 19:26 J -12088264.79 -12088264.69 -12088264.59 0.0280 0.0213

Mercury -37809-05-18 11:30 J -12088176.17 -12088176.02 -12088175.87 0.0280 0.0095

Venus -37809-07-30 05:02 J -12088103.46 -12088103.29 -12088103.12 0.0280 0.0169  
 Mercury -37809-08-15 03:06 J -12088087.52 -12088087.37 -12088087.22 0.0280 0.0021  
 Moon -37809-10-19 06:28 J -12088022.36 -12088022.23 -12088022.07 0.0279 0.0220  
 Earth -37809-10-19 08:23 J -12088022.28 -12088022.15 -12088022.01 0.0279 0.0234 \*  
 Mercury -37809-11-11 18:14 J -12087998.87 -12087998.74 -12087998.60 0.0279 0.0134  
 Mercury -37808-02-08 09:06 J -12087910.19 -12087910.12 -12087910.04 0.0279 0.0243  
 Venus -37808-03-16 20:38 J -12087873.85 -12087873.64 -12087873.42 0.0279 0.0018  
 Venus -37808-11-01 10:33 J -12087644.19 -12087644.06 -12087643.90 0.0278 0.0202  
 Mars -37802-06-11 08:52 J -12085596.36 -12085596.13 -12085595.87 0.0275 0.0160  
 Mercury -37794-02-27 14:23 J -12082778.00 -12082777.90 -12082777.80 0.0279 0.0206  
 Moon -37794-04-10 09:50 J -12082736.33 -12082736.09 -12082735.85 0.0279 0.0004  
 Earth -37794-04-10 11:16 J -12082736.28 -12082736.03 -12082735.79 0.0279 0.0003 \*  
 Mercury -37794-05-27 05:30 J -12082689.42 -12082689.27 -12082689.13 0.0279 0.0095  
 Venus -37794-08-23 09:35 J -12082601.27 -12082601.10 -12082600.92 0.0279 0.0151  
 Mercury -37794-08-23 20:52 J -12082600.79 -12082600.63 -12082600.48 0.0279 0.0019  
 Mercury -37794-11-20 12:28 J -12082512.11 -12082511.98 -12082511.84 0.0280 0.0136  
 Mercury -37793-02-17 04:47 J -12082423.36 -12082423.30 -12082423.24 0.0280 0.0255  
 Venus -37793-04-08 17:30 J -12082371.97 -12082371.77 -12082371.56 0.0280 0.0030  
 Venus -37793-11-24 02:38 J -12082142.52 -12082142.39 -12082142.25 0.0281 0.0211  
 Mercury -37780-07-08 18:42 J -12077532.77 -12077532.72 -12077532.66 0.0279 0.0258  
 Mercury -37780-10-05 11:02 J -12077444.18 -12077444.04 -12077443.91 0.0279 0.0138  
 Earth -37780-10-13 15:21 J -12077436.10 -12077435.86 -12077435.61 0.0279 0.0028  
 Moon -37780-10-13 17:30 J -12077436.03 -12077435.77 -12077435.52 0.0279 0.0014 \*  
 Mercury -37779-01-02 02:38 J -12077355.54 -12077355.39 -12077355.23 0.0279 0.0023  
 Venus -37779-02-09 06:14 J -12077317.42 -12077317.24 -12077317.06 0.0279 0.0149  
 Mercury -37779-03-31 17:59 J -12077266.89 -12077266.75 -12077266.60 0.0279 0.0092  
 Mercury -37779-06-28 09:06 J -12077178.22 -12077178.12 -12077178.02 0.0279 0.0202  
 Venus -37779-09-26 21:35 J -12077087.81 -12077087.60 -12077087.38 0.0278 0.0037  
 Venus -37778-05-14 11:30 J -12076858.14 -12076858.02 -12076857.88 0.0278 0.0218  
 Earth -37765-04-03 18:14 J -12072149.89 -12072149.74 -12072149.58 0.0279 0.0214

Moon -37765-04-03 19:40 J -12072149.83 -12072149.68 -12072149.52 0.0279 0.0219 \*  
 Mercury -37765-07-16 13:40 J -12072045.99 -12072045.93 -12072045.86 0.0279 0.0251  
 Mercury -37765-10-13 04:33 J -12071957.43 -12071957.31 -12071957.17 0.0279 0.0142  
 Mercury -37764-01-09 19:54 J -12071868.82 -12071868.67 -12071868.51 0.0280 0.0029  
 Venus -37764-03-04 09:06 J -12071815.30 -12071815.12 -12071814.93 0.0280 0.0132  
 Mercury -37764-04-08 11:30 J -12071780.16 -12071780.02 -12071779.87 0.0280 0.0088  
 Moon -37764-04-16 15:06 J -12071771.99 -12071771.87 -12071771.73 0.0280 0.0238  
 Earth -37764-04-16 18:14 J -12071771.87 -12071771.74 -12071771.60 0.0280 0.0231 \*  
 Mercury -37764-07-06 03:35 J -12071691.45 -12071691.35 -12071691.24 0.0280 0.0207  
 Venus -37764-10-19 17:16 J -12071585.98 -12071585.78 -12071585.57 0.0280 0.0048  
 Venus -37763-06-06 02:38 J -12071356.50 -12071356.39 -12071356.27 0.0281 0.0230  
 Mars -37758-07-16 03:35 J -12069490.62 -12069490.35 -12069490.07 0.0284 0.0073  
 Moon -37751-10-08 03:35 J -12066849.52 -12066849.35 -12066849.17 0.0280 0.0191  
 Earth -37751-10-08 05:16 J -12066849.46 -12066849.28 -12066849.08 0.0280 0.0178 \*  
 Mercury -37750-02-22 12:14 J -12066712.11 -12066711.99 -12066711.87 0.0280 0.0172  
 Mercury -37750-05-22 04:04 J -12066623.48 -12066623.33 -12066623.18 0.0280 0.0054  
 Mercury -37750-08-18 19:40 J -12066534.83 -12066534.68 -12066534.53 0.0280 0.0061  
 Venus -37750-08-22 12:42 J -12066531.16 -12066530.97 -12066530.77 0.0280 0.0118  
 Earth -37750-10-21 09:50 J -12066471.14 -12066471.09 -12066471.04 0.0280 0.0272  
 Moon -37750-10-21 12:14 J -12066471.08 -12066470.99 -12066470.90 0.0280 0.0258 \*  
 Mercury -37750-11-15 10:47 J -12066446.17 -12066446.05 -12066445.93 0.0279 0.0173  
 Venus -37749-04-08 04:33 J -12066301.52 -12066301.31 -12066301.11 0.0279 0.0069  
 Venus -37749-11-23 18:28 J -12066071.81 -12066071.73 -12066071.63 0.0279 0.0250  
 Mars -37744-09-14 21:35 J -12064315.76 -12064315.60 -12064315.41 0.0275 0.0226  
 Mercury -37736-12-03 16:04 J -12061313.85 -12061313.83 -12061313.80 0.0279 0.0274  
 Venus -37735-01-28 09:35 J -12061258.12 -12061258.10 -12061258.06 0.0279 0.0276  
 Mercury -37735-03-02 06:57 J -12061225.33 -12061225.21 -12061225.08 0.0279 0.0165  
 Earth -37735-04-11 13:54 J -12061185.16 -12061184.92 -12061184.68 0.0279 0.0037  
 Moon -37735-04-11 16:33 J -12061185.05 -12061184.81 -12061184.57 0.0279 0.0039 \*  
 Mercury -37735-05-29 22:18 J -12061136.72 -12061136.57 -12061136.42 0.0279 0.0053



Mercury -37735-08-26 13:40 J -12061048.08 -12061047.93 -12061047.77 0.0279 0.0062  
 Venus -37735-09-14 16:47 J -12061029.00 -12061028.80 -12061028.61 0.0279 0.0101  
 Mercury -37735-11-23 05:30 J -12060959.38 -12060959.27 -12060959.15 0.0279 0.0180  
 Venus -37734-05-02 00:42 J -12060799.67 -12060799.47 -12060799.26 0.0280 0.0079  
 Venus -37734-12-17 09:50 J -12060570.15 -12060570.09 -12060570.00 0.0281 0.0261  
 Mercury -37721-07-11 11:59 J -12055980.10 -12055980.00 -12055979.90 0.0280 0.0213  
 Mercury -37721-10-08 04:04 J -12055891.48 -12055891.33 -12055891.18 0.0279 0.0094  
 Moon -37721-10-14 16:04 J -12055885.07 -12055884.83 -12055884.58 0.0279 0.0052  
 Earth -37721-10-14 18:57 J -12055884.95 -12055884.71 -12055884.47 0.0279 0.0068 \*  
 Mercury -37720-01-04 19:40 J -12055802.83 -12055802.68 -12055802.52 0.0279 0.0023  
 Venus -37720-03-03 15:21 J -12055745.06 -12055744.86 -12055744.65 0.0279 0.0096  
 Mercury -37720-04-03 11:02 J -12055714.17 -12055714.04 -12055713.91 0.0279 0.0135  
 Mercury -37720-07-01 01:54 J -12055625.49 -12055625.42 -12055625.35 0.0279 0.0245  
 Venus -37720-10-19 06:42 J -12055515.43 -12055515.22 -12055515.02 0.0278 0.0088  
 Venus -37719-06-05 20:23 J -12055285.69 -12055285.65 -12055285.59 0.0278 0.0269  
 Mars -37714-11-04 08:38 J -12053308.36 -12053308.14 -12053307.91 0.0275 0.0184  
 Moon -37706-04-05 18:28 J -12050598.92 -12050598.73 -12050598.53 0.0279 0.0176  
 Earth -37706-04-05 21:06 J -12050598.80 -12050598.62 -12050598.42 0.0279 0.0174 \*  
 Mercury -37706-07-20 06:28 J -12050493.32 -12050493.23 -12050493.13 0.0279 0.0209  
 Venus -37706-08-10 09:21 J -12050472.19 -12050472.11 -12050472.03 0.0279 0.0257  
 Mercury -37706-10-16 21:35 J -12050404.74 -12050404.60 -12050404.46 0.0279 0.0099  
 Mercury -37705-01-13 12:57 J -12050316.12 -12050315.96 -12050315.81 0.0279 0.0015  
 Venus -37705-03-26 16:18 J -12050243.02 -12050242.82 -12050242.62 0.0280 0.0082  
 Mercury -37705-04-11 04:33 J -12050227.44 -12050227.31 -12050227.17 0.0280 0.0132  
 Earth -37705-04-17 21:06 J -12050220.67 -12050220.62 -12050220.56 0.0280 0.0271  
 Mercury -37705-07-08 20:38 J -12050138.70 -12050138.64 -12050138.57 0.0280 0.0252  
 Venus -37705-11-11 00:28 J -12050013.67 -12050013.48 -12050013.28 0.0280 0.0098  
 Venus -37704-06-28 10:04 J -12049784.10 -12049784.08 -12049784.06 0.0281 0.0279  
 Earth -37692-10-09 07:26 J -12045298.41 -12045298.19 -12045297.98 0.0281 0.0138  
 Moon -37692-10-09 10:18 J -12045298.27 -12045298.07 -12045297.87 0.0281 0.0154 \*

Mercury -37692-11-28 12:42 J -12045248.03 -12045247.97 -12045247.89 0.0280 0.0249

Venus -37691-01-27 04:18 J -12045188.41 -12045188.32 -12045188.23 0.0280 0.0254

Mercury -37691-02-25 05:02 J -12045159.43 -12045159.29 -12045159.15 0.0280 0.0129

Mercury -37691-05-24 20:52 J -12045070.79 -12045070.63 -12045070.48 0.0280 0.0012

Mercury -37691-08-21 12:14 J -12044982.13 -12044981.99 -12044981.85 0.0280 0.0103

Venus -37691-09-13 21:06 J -12044958.83 -12044958.62 -12044958.41 0.0280 0.0066

Mercury -37691-11-18 03:06 J -12044893.45 -12044893.37 -12044893.26 0.0280 0.0215

Venus -37690-05-01 12:28 J -12044729.17 -12044728.98 -12044728.78 0.0279 0.0120

Mercury -37677-12-06 09:21 J -12039761.19 -12039761.11 -12039761.02 0.0278 0.0229

Venus -37676-02-19 17:45 J -12039685.87 -12039685.76 -12039685.63 0.0279 0.0225

Mercury -37676-03-05 00:14 J -12039672.62 -12039672.49 -12039672.35 0.0279 0.0120

Earth -37676-04-12 18:42 J -12039633.96 -12039633.72 -12039633.49 0.0279 0.0081

Moon -37676-04-12 21:50 J -12039633.82 -12039633.59 -12039633.35 0.0279 0.0083 \*

Mercury -37676-06-01 15:35 J -12039584.01 -12039583.85 -12039583.70 0.0279 0.0007

Mercury -37676-08-29 07:11 J -12039495.34 -12039495.20 -12039495.06 0.0279 0.0109

Venus -37676-10-07 00:57 J -12039456.66 -12039456.46 -12039456.25 0.0279 0.0049

Mercury -37676-11-25 23:02 J -12039406.62 -12039406.54 -12039406.45 0.0279 0.0228

Venus -37675-05-24 09:06 J -12039227.30 -12039227.12 -12039226.93 0.0280 0.0131

Mars -37670-12-09 20:23 J -12037201.91 -12037201.65 -12037201.38 0.0284 0.0108

Mercury -37662-07-15 05:16 J -12034427.40 -12034427.28 -12034427.15 0.0280 0.0167

Venus -37662-08-09 08:23 J -12034402.27 -12034402.15 -12034402.03 0.0280 0.0229

Mercury -37662-10-11 21:21 J -12034338.76 -12034338.61 -12034338.46 0.0280 0.0049

Moon -37662-10-16 19:40 J -12034333.90 -12034333.68 -12034333.45 0.0280 0.0094

Earth -37662-10-16 22:47 J -12034333.77 -12034333.55 -12034333.32 0.0280 0.0111 \*

Mercury -37661-01-08 12:42 J -12034250.11 -12034249.97 -12034249.82 0.0279 0.0067

Venus -37661-03-26 00:57 J -12034172.68 -12034172.46 -12034172.25 0.0279 0.0043

Mercury -37661-04-06 03:50 J -12034161.45 -12034161.34 -12034161.22 0.0279 0.0179

Venus -37661-11-10 15:50 J -12033943.02 -12033942.84 -12033942.65 0.0278 0.0141

Mars -37655-02-08 01:11 J -12032027.65 -12032027.45 -12032027.22 0.0275 0.0197

Moon -37647-04-06 23:02 J -12029047.74 -12029047.54 -12029047.32 0.0279 0.0132

Earth -37647-04-07 02:23 J -12029047.61 -12029047.40 -12029047.18 0.0279 0.0130 \*  
 Mercury -37647-04-25 08:52 J -12029029.15 -12029029.13 -12029029.09 0.0279 0.0273  
 Mercury -37647-07-22 23:45 J -12028940.63 -12028940.51 -12028940.39 0.0279 0.0164  
 Venus -37647-09-01 17:30 J -12028899.90 -12028899.77 -12028899.62 0.0279 0.0206  
 Mercury -37647-10-19 14:52 J -12028852.03 -12028851.88 -12028851.73 0.0279 0.0052  
 Mercury -37646-01-16 06:28 J -12028763.39 -12028763.23 -12028763.08 0.0279 0.0063  
 Mercury -37646-04-14 22:18 J -12028674.69 -12028674.57 -12028674.46 0.0280 0.0180  
 Venus -37646-04-19 00:42 J -12028670.67 -12028670.47 -12028670.26 0.0280 0.0031  
 Venus -37646-12-04 08:52 J -12028441.30 -12028441.13 -12028440.94 0.0280 0.0150  
 Earth -37633-10-10 10:47 J -12023747.27 -12023747.05 -12023746.81 0.0281 0.0096  
 Moon -37633-10-10 13:54 J -12023747.15 -12023746.92 -12023746.69 0.0281 0.0111 \*  
 Mercury -37633-12-01 05:59 J -12023695.35 -12023695.25 -12023695.14 0.0281 0.0203  
 Venus -37632-02-18 13:40 J -12023616.07 -12023615.93 -12023615.78 0.0280 0.0201  
 Mercury -37632-02-27 22:04 J -12023606.72 -12023606.58 -12023606.43 0.0280 0.0084  
 Mercury -37632-05-27 13:54 J -12023518.07 -12023517.92 -12023517.77 0.0280 0.0033  
 Mercury -37632-08-24 05:16 J -12023429.41 -12023429.28 -12023429.15 0.0280 0.0147  
 Venus -37632-10-06 06:28 J -12023386.45 -12023386.23 -12023386.01 0.0280 0.0014  
 Mercury -37632-11-20 20:09 J -12023340.71 -12023340.66 -12023340.60 0.0280 0.0257  
 Venus -37631-05-23 21:50 J -12023156.76 -12023156.59 -12023156.42 0.0279 0.0171  
 Mars -37625-03-30 15:21 J -12021019.00 -12021018.86 -12021018.70 0.0275 0.0238  
 Mercury -37618-12-10 02:52 J -12018208.49 -12018208.38 -12018208.27 0.0278 0.0183  
 Mercury -37617-03-07 17:45 J -12018119.90 -12018119.76 -12018119.61 0.0279 0.0072  
 Venus -37617-03-14 02:52 J -12018113.54 -12018113.38 -12018113.21 0.0279 0.0173  
 Moon -37617-04-14 00:42 J -12018082.70 -12018082.47 -12018082.25 0.0279 0.0132  
 Earth -37617-04-14 00:57 J -12018082.67 -12018082.46 -12018082.23 0.0279 0.0128 \*  
 Mercury -37617-06-04 09:06 J -12018031.27 -12018031.12 -12018030.96 0.0279 0.0043  
 Mercury -37617-09-01 00:57 J -12017942.59 -12017942.46 -12017942.33 0.0279 0.0159  
 Venus -37617-10-29 10:18 J -12017884.28 -12017884.07 -12017883.86 0.0279 0.0005  
 Mercury -37617-11-28 17:02 J -12017853.79 -12017853.79 -12017853.78 0.0279 0.0279  
 Venus -37616-06-15 18:42 J -12017654.88 -12017654.72 -12017654.56 0.0280 0.0183

Mars -37611-03-17 01:11 J -12015919.52 -12015919.45 -12015919.38 0.0283 0.0274  
 Mercury -37603-04-20 06:57 J -12012963.29 -12012963.21 -12012963.13 0.0280 0.0238  
 Mercury -37603-07-17 23:02 J -12012874.68 -12012874.54 -12012874.40 0.0280 0.0118  
 Venus -37603-08-31 18:57 J -12012829.87 -12012829.71 -12012829.53 0.0280 0.0175  
 Mercury -37603-10-14 14:52 J -12012786.03 -12012785.88 -12012785.72 0.0280 0.0002  
 Earth -37603-10-18 04:47 J -12012782.50 -12012782.30 -12012782.09 0.0280 0.0156  
 Moon -37603-10-18 05:59 J -12012782.45 -12012782.25 -12012782.04 0.0280 0.0141 \*  
 Mercury -37602-01-11 06:14 J -12012697.38 -12012697.24 -12012697.10 0.0279 0.0114  
 Mercury -37602-04-09 21:21 J -12012608.70 -12012608.61 -12012608.52 0.0279 0.0225  
 Venus -37602-04-18 11:30 J -12012600.24 -12012600.02 -12012599.81 0.0279 0.0013  
 Venus -37602-12-04 02:09 J -12012370.56 -12012370.41 -12012370.25 0.0279 0.0194  
 Earth -37588-04-08 09:50 J -12007496.32 -12007496.09 -12007495.85 0.0279 0.0083  
 Moon -37588-04-08 10:47 J -12007496.27 -12007496.05 -12007495.82 0.0279 0.0080 \*  
 Mercury -37588-04-28 02:38 J -12007476.47 -12007476.39 -12007476.30 0.0279 0.0225  
 Mercury -37588-07-25 17:30 J -12007387.91 -12007387.77 -12007387.63 0.0279 0.0115  
 Venus -37588-09-24 03:35 J -12007327.52 -12007327.35 -12007327.18 0.0279 0.0152  
 Mercury -37588-10-22 08:52 J -12007299.29 -12007299.13 -12007298.98 0.0279 0.0004  
 Mercury -37587-01-19 00:14 J -12007210.62 -12007210.49 -12007210.34 0.0279 0.0115  
 Mercury -37587-04-17 16:18 J -12007121.90 -12007121.82 -12007121.73 0.0280 0.0233  
 Venus -37587-05-11 10:47 J -12007098.26 -12007098.05 -12007097.84 0.0280 0.0024  
 Venus -37587-12-26 19:11 J -12006868.84 -12006868.70 -12006868.55 0.0280 0.0204  
 Mars -37581-05-04 05:02 J -12004913.53 -12004913.29 -12004913.03 0.0283 0.0138  
 Mercury -37574-09-07 07:26 J -12002231.22 -12002231.19 -12002231.17 0.0281 0.0276  
 Moon -37574-10-12 14:38 J -12002196.14 -12002195.89 -12002195.64 0.0281 0.0065  
 Earth -37574-10-12 16:04 J -12002196.07 -12002195.83 -12002195.58 0.0281 0.0051 \*  
 Mercury -37574-12-04 23:45 J -12002142.64 -12002142.51 -12002142.38 0.0280 0.0155  
 Mercury -37573-03-02 15:35 J -12002054.00 -12002053.85 -12002053.69 0.0280 0.0036  
 Venus -37573-03-12 23:59 J -12002043.68 -12002043.50 -12002043.31 0.0280 0.0147  
 Mercury -37573-05-30 07:11 J -12001965.34 -12001965.20 -12001965.05 0.0280 0.0080  
 Mercury -37573-08-26 22:18 J -12001876.67 -12001876.57 -12001876.45 0.0280 0.0193

Venus -37573-10-28 16:33 J -12001814.03 -12001813.81 -12001813.60 0.0280 0.0039  
 Venus -37572-06-15 07:26 J -12001584.31 -12001584.19 -12001584.05 0.0279 0.0222  
 Mars -37567-07-05 08:38 J -11999738.39 -11999738.14 -11999737.87 0.0276 0.0144  
 Moon -37559-04-03 10:18 J -11996909.14 -11996909.07 -11996908.99 0.0278 0.0264  
 Earth -37559-04-03 11:16 J -11996909.09 -11996909.03 -11996908.95 0.0278 0.0264 \*  
 Mercury -37559-09-15 05:59 J -11996744.32 -11996744.25 -11996744.18 0.0278 0.0242  
 Mercury -37559-12-12 20:38 J -11996655.77 -11996655.64 -11996655.50 0.0278 0.0133  
 Mercury -37558-03-11 11:59 J -11996567.16 -11996567.00 -11996566.85 0.0279 0.0021  
 Venus -37558-04-06 13:11 J -11996541.13 -11996540.95 -11996540.76 0.0279 0.0119  
 Moon -37558-04-16 05:45 J -11996531.44 -11996531.26 -11996531.08 0.0279 0.0185  
 Earth -37558-04-16 09:35 J -11996531.29 -11996531.10 -11996530.91 0.0279 0.0177 \*  
 Mercury -37558-06-08 03:21 J -11996478.50 -11996478.36 -11996478.21 0.0279 0.0095  
 Mercury -37558-09-04 19:11 J -11996389.80 -11996389.70 -11996389.60 0.0279 0.0213  
 Venus -37558-11-21 20:38 J -11996311.84 -11996311.64 -11996311.43 0.0279 0.0058  
 Venus -37557-07-08 05:02 J -11996082.39 -11996082.29 -11996082.17 0.0280 0.0237  
 Earth -37545-10-06 06:42 J -11991609.32 -11991609.22 -11991609.10 0.0281 0.0251  
 Moon -37545-10-06 08:09 J -11991609.23 -11991609.16 -11991609.08 0.0281 0.0265 \*  
 Mercury -37544-04-23 00:57 J -11991410.57 -11991410.46 -11991410.33 0.0280 0.0185  
 Mercury -37544-07-20 17:16 J -11991321.93 -11991321.78 -11991321.63 0.0280 0.0066  
 Venus -37544-09-23 07:11 J -11991257.40 -11991257.20 -11991257.01 0.0280 0.0118  
 Mercury -37544-10-17 08:52 J -11991233.28 -11991233.13 -11991232.98 0.0280 0.0051  
 Earth -37544-10-19 12:28 J -11991231.14 -11991230.98 -11991230.81 0.0280 0.0205  
 Moon -37544-10-19 16:18 J -11991230.99 -11991230.82 -11991230.64 0.0280 0.0191 \*  
 Mercury -37543-01-14 00:14 J -11991144.62 -11991144.49 -11991144.37 0.0279 0.0164  
 Mercury -37543-04-12 14:52 J -11991055.90 -11991055.88 -11991055.85 0.0279 0.0274  
 Venus -37543-05-10 23:02 J -11991027.75 -11991027.54 -11991027.33 0.0279 0.0067  
 Venus -37543-12-26 13:40 J -11990798.02 -11990797.93 -11990797.83 0.0279 0.0248  
 Venus -37529-03-01 07:40 J -11985984.21 -11985984.18 -11985984.12 0.0279 0.0271  
 Earth -37529-04-09 19:11 J -11985944.95 -11985944.70 -11985944.46 0.0279 0.0032  
 Moon -37529-04-09 23:02 J -11985944.78 -11985944.54 -11985944.30 0.0279 0.0026 \*

Mercury -37529-04-30 20:38 J -11985923.75 -11985923.64 -11985923.52 0.0279 0.0174

Mercury -37529-07-28 11:45 J -11985835.16 -11985835.01 -11985834.86 0.0279 0.0062

Venus -37529-10-16 14:23 J -11985755.10 -11985754.90 -11985754.71 0.0279 0.0097

Mercury -37529-10-25 03:06 J -11985746.52 -11985746.37 -11985746.22 0.0279 0.0052

Mercury -37528-01-21 18:42 J -11985657.84 -11985657.72 -11985657.59 0.0279 0.0169

Venus -37528-06-02 21:50 J -11985525.79 -11985525.59 -11985525.39 0.0280 0.0080

Venus -37527-01-18 06:14 J -11985296.31 -11985296.24 -11985296.15 0.0280 0.0259

Mars -37523-08-10 13:54 J -11983631.05 -11983630.92 -11983630.76 0.0283 0.0241

Venus -37515-08-18 17:59 J -11980700.76 -11980700.75 -11980700.72 0.0281 0.0279

Mercury -37515-09-10 01:26 J -11980678.53 -11980678.44 -11980678.34 0.0281 0.0223

Moon -37515-10-13 20:09 J -11980644.91 -11980644.66 -11980644.42 0.0280 0.0017

Earth -37515-10-13 23:45 J -11980644.76 -11980644.51 -11980644.27 0.0280 0.0004 \*

Mercury -37515-12-07 17:45 J -11980589.91 -11980589.76 -11980589.62 0.0280 0.0103

Mercury -37514-03-06 09:35 J -11980501.26 -11980501.10 -11980500.95 0.0280 0.0015

Venus -37514-04-05 11:30 J -11980471.22 -11980471.02 -11980470.81 0.0280 0.0092

Mercury -37514-06-03 00:57 J -11980412.59 -11980412.46 -11980412.32 0.0280 0.0130

Mercury -37514-08-30 16:04 J -11980323.90 -11980323.83 -11980323.75 0.0280 0.0241

Venus -37514-11-21 03:50 J -11980241.54 -11980241.34 -11980241.14 0.0280 0.0093

Venus -37513-07-07 18:42 J -11980011.75 -11980011.72 -11980011.68 0.0279 0.0275

Moon -37500-04-04 17:02 J -11975357.94 -11975357.79 -11975357.63 0.0278 0.0211

Earth -37500-04-04 20:38 J -11975357.78 -11975357.64 -11975357.47 0.0278 0.0214 \*

Venus -37500-09-11 17:45 J -11975197.86 -11975197.76 -11975197.64 0.0278 0.0237

Mercury -37500-09-17 23:59 J -11975191.60 -11975191.50 -11975191.39 0.0278 0.0190

Mercury -37500-12-15 15:06 J -11975103.02 -11975102.87 -11975102.73 0.0279 0.0079

Mercury -37499-03-14 06:14 J -11975014.39 -11975014.24 -11975014.08 0.0279 0.0035

Moon -37499-04-17 17:45 J -11974979.88 -11974979.76 -11974979.64 0.0279 0.0240

Earth -37499-04-17 18:57 J -11974979.83 -11974979.71 -11974979.56 0.0279 0.0230 \*

Venus -37499-04-29 00:28 J -11974968.68 -11974968.48 -11974968.27 0.0279 0.0064

Mercury -37499-06-10 21:50 J -11974925.71 -11974925.59 -11974925.45 0.0279 0.0151

Mercury -37499-09-07 13:54 J -11974836.95 -11974836.92 -11974836.88 0.0279 0.0270

Venus -37499-12-14 08:09 J -11974739.35 -11974739.16 -11974738.97 0.0279 0.0114  
 Mars -37493-09-28 20:52 J -11972623.81 -11972623.63 -11972623.42 0.0283 0.0204  
 Earth -37486-10-08 16:33 J -11970057.98 -11970057.81 -11970057.63 0.0281 0.0199  
 Moon -37486-10-08 20:23 J -11970057.81 -11970057.65 -11970057.50 0.0281 0.0214 \*  
 Mercury -37485-01-28 03:21 J -11969946.43 -11969946.36 -11969946.29 0.0280 0.0250  
 Venus -37485-02-29 02:52 J -11969914.47 -11969914.38 -11969914.27 0.0280 0.0246  
 Mercury -37485-04-25 19:40 J -11969857.82 -11969857.68 -11969857.54 0.0280 0.0129  
 Mercury -37485-07-23 11:30 J -11969769.17 -11969769.02 -11969768.86 0.0280 0.0013  
 Venus -37485-10-15 19:54 J -11969684.88 -11969684.67 -11969684.46 0.0280 0.0061  
 Mercury -37485-10-20 03:06 J -11969680.51 -11969680.37 -11969680.23 0.0280 0.0104  
 Earth -37485-10-20 21:50 J -11969679.67 -11969679.59 -11969679.48 0.0280 0.0256  
 Moon -37485-10-20 23:16 J -11969679.66 -11969679.53 -11969679.41 0.0280 0.0243 \*  
 Mercury -37484-01-16 18:14 J -11969591.83 -11969591.74 -11969591.64 0.0279 0.0216  
 Venus -37484-06-02 11:30 J -11969455.20 -11969455.02 -11969454.82 0.0279 0.0123  
 Mars -37479-11-29 07:11 J -11967449.48 -11967449.20 -11967448.90 0.0275 0.0090  
 Mercury -37470-02-05 00:28 J -11964459.57 -11964459.48 -11964459.40 0.0279 0.0229  
 Venus -37470-03-24 19:26 J -11964411.82 -11964411.69 -11964411.55 0.0279 0.0215  
 Earth -37470-04-12 05:45 J -11964393.50 -11964393.26 -11964393.01 0.0279 0.0022  
 Moon -37470-04-12 06:57 J -11964393.46 -11964393.21 -11964392.96 0.0279 0.0030 \*  
 Mercury -37470-05-04 15:06 J -11964371.00 -11964370.87 -11964370.73 0.0279 0.0119  
 Mercury -37470-08-01 06:28 J -11964282.39 -11964282.23 -11964282.08 0.0279 0.0010  
 Mercury -37470-10-28 21:50 J -11964193.73 -11964193.59 -11964193.45 0.0279 0.0109  
 Venus -37470-11-09 02:09 J -11964182.62 -11964182.41 -11964182.21 0.0279 0.0041  
 Mercury -37469-01-25 13:40 J -11964105.02 -11964104.93 -11964104.84 0.0279 0.0227  
 Venus -37469-06-25 09:50 J -11963953.27 -11963953.09 -11963952.91 0.0280 0.0136  
 Venus -37456-09-10 06:57 J -11959128.34 -11959128.21 -11959128.08 0.0280 0.0222  
 Mercury -37456-09-12 19:54 J -11959125.79 -11959125.67 -11959125.54 0.0280 0.0168  
 Moon -37456-10-15 07:26 J -11959093.42 -11959093.19 -11959092.95 0.0280 0.0037  
 Earth -37456-10-15 08:38 J -11959093.38 -11959093.14 -11959092.90 0.0280 0.0050 \*  
 Mercury -37456-12-10 11:59 J -11959037.15 -11959037.00 -11959036.84 0.0280 0.0049

Mercury -37455-03-09 03:50 J -11958948.49 -11958948.34 -11958948.19 0.0280 0.0068

Venus -37455-04-28 00:14 J -11958898.71 -11958898.49 -11958898.28 0.0280 0.0036

Mercury -37455-06-05 18:57 J -11958859.82 -11958859.71 -11958859.59 0.0280 0.0181

Venus -37455-12-13 16:04 J -11958669.01 -11958668.83 -11958668.65 0.0279 0.0149

Moon -37441-04-06 05:30 J -11953806.46 -11953806.27 -11953806.07 0.0278 0.0160

Earth -37441-04-06 06:57 J -11953806.40 -11953806.21 -11953806.01 0.0278 0.0162 \*

Mercury -37441-06-24 03:35 J -11953727.41 -11953727.35 -11953727.28 0.0278 0.0246

Mercury -37441-09-20 18:28 J -11953638.86 -11953638.73 -11953638.60 0.0278 0.0136

Venus -37441-10-04 05:02 J -11953625.43 -11953625.29 -11953625.12 0.0279 0.0183

Mercury -37441-12-18 09:35 J -11953550.26 -11953550.10 -11953549.95 0.0279 0.0025

Mercury -37440-03-17 00:57 J -11953461.61 -11953461.46 -11953461.31 0.0279 0.0091

Venus -37440-05-21 12:14 J -11953396.20 -11953395.99 -11953395.78 0.0279 0.0008

Mercury -37440-06-13 16:33 J -11953372.90 -11953372.81 -11953372.70 0.0279 0.0209

Venus -37439-01-05 20:09 J -11953166.82 -11953166.66 -11953166.49 0.0280 0.0169

Mars -37434-01-05 12:14 J -11951341.20 -11951340.99 -11951340.75 0.0283 0.0168

Earth -37427-10-10 04:04 J -11948506.54 -11948506.33 -11948506.12 0.0281 0.0145

Moon -37427-10-10 05:45 J -11948506.47 -11948506.26 -11948506.05 0.0281 0.0160 \*

Mercury -37426-01-30 22:18 J -11948393.68 -11948393.57 -11948393.45 0.0280 0.0192

Venus -37426-03-23 17:02 J -11948341.94 -11948341.79 -11948341.62 0.0280 0.0187

Mercury -37426-04-29 14:38 J -11948305.04 -11948304.89 -11948304.74 0.0280 0.0072

Mercury -37426-07-27 06:14 J -11948216.39 -11948216.24 -11948216.09 0.0280 0.0045

Mercury -37426-10-23 21:35 J -11948127.72 -11948127.60 -11948127.47 0.0280 0.0159

Venus -37426-11-08 09:50 J -11948112.31 -11948112.09 -11948111.88 0.0280 0.0003

Mercury -37425-01-20 12:28 J -11948039.01 -11948038.98 -11948038.94 0.0279 0.0270

Venus -37425-06-25 01:11 J -11947882.61 -11947882.45 -11947882.29 0.0279 0.0180

Mercury -37411-02-07 18:42 J -11942906.83 -11942906.72 -11942906.59 0.0279 0.0175

Moon -37411-04-13 13:54 J -11942842.15 -11942841.92 -11942841.67 0.0279 0.0087

Earth -37411-04-13 17:02 J -11942842.02 -11942841.79 -11942841.55 0.0279 0.0076 \*

Venus -37411-04-16 07:26 J -11942839.36 -11942839.19 -11942839.02 0.0279 0.0159

Mercury -37411-05-07 09:50 J -11942818.24 -11942818.09 -11942817.94 0.0279 0.0063



Mercury -37411-08-04 01:11 J -11942729.60 -11942729.45 -11942729.30 0.0279 0.0051  
 Mercury -37411-10-31 16:47 J -11942640.92 -11942640.80 -11942640.67 0.0279 0.0168  
 Venus -37411-12-01 14:23 J -11942610.11 -11942609.90 -11942609.69 0.0279 0.0016  
 Venus -37410-07-18 22:04 J -11942380.72 -11942380.58 -11942380.42 0.0280 0.0193  
 Mars -37404-02-22 17:45 J -11940334.88 -11940334.76 -11940334.60 0.0283 0.0246  
 Mercury -37397-06-18 22:18 J -11937661.65 -11937661.57 -11937661.48 0.0280 0.0232  
 Mercury -37397-09-15 14:38 J -11937573.03 -11937572.89 -11937572.74 0.0280 0.0111  
 Venus -37397-10-02 20:38 J -11937555.81 -11937555.64 -11937555.46 0.0280 0.0163  
 Earth -37397-10-16 18:57 J -11937541.93 -11937541.71 -11937541.48 0.0280 0.0104  
 Moon -37397-10-16 21:35 J -11937541.82 -11937541.60 -11937541.37 0.0280 0.0090 \*  
 Mercury -37397-12-13 06:42 J -11937484.38 -11937484.22 -11937484.07 0.0280 0.0009  
 Mercury -37396-03-11 22:04 J -11937395.71 -11937395.58 -11937395.44 0.0280 0.0123  
 Venus -37396-05-20 13:26 J -11937326.15 -11937325.94 -11937325.72 0.0280 0.0022  
 Mercury -37396-06-08 13:11 J -11937307.03 -11937306.95 -11937306.86 0.0280 0.0235  
 Venus -37395-01-05 04:47 J -11937096.44 -11937096.30 -11937096.15 0.0279 0.0204  
 Mars -37390-04-25 14:52 J -11935160.19 -11935159.88 -11935159.58 0.0276 0.0035  
 Earth -37382-04-08 17:02 J -11932255.01 -11932254.79 -11932254.56 0.0278 0.0109  
 Moon -37382-04-08 19:26 J -11932254.90 -11932254.69 -11932254.46 0.0278 0.0106 \*  
 Mercury -37382-06-27 21:50 J -11932174.69 -11932174.59 -11932174.48 0.0278 0.0193  
 Mercury -37382-09-24 12:42 J -11932086.11 -11932085.97 -11932085.82 0.0279 0.0083  
 Venus -37382-10-27 16:47 J -11932052.99 -11932052.80 -11932052.62 0.0279 0.0127  
 Mercury -37382-12-22 04:04 J -11931997.48 -11931997.33 -11931997.18 0.0279 0.0032  
 Mercury -37381-03-19 19:40 J -11931908.81 -11931908.68 -11931908.55 0.0279 0.0148  
 Venus -37381-06-12 23:59 J -11931823.71 -11931823.50 -11931823.29 0.0279 0.0048  
 Mercury -37381-06-16 11:30 J -11931820.05 -11931820.02 -11931819.97 0.0279 0.0268  
 Venus -37380-01-28 08:23 J -11931594.27 -11931594.15 -11931594.02 0.0280 0.0225  
 Moon -37368-10-11 13:11 J -11926955.18 -11926954.95 -11926954.71 0.0280 0.0106  
 Earth -37368-10-11 16:04 J -11926955.06 -11926954.83 -11926954.59 0.0280 0.0090 \*  
 Mercury -37368-11-06 00:57 J -11926929.51 -11926929.46 -11926929.38 0.0280 0.0254  
 Mercury -37367-02-02 17:30 J -11926840.91 -11926840.77 -11926840.63 0.0280 0.0132

Venus -37367-04-15 07:26 J -11926769.38 -11926769.19 -11926768.99 0.0280 0.0127  
 Mercury -37367-05-02 09:21 J -11926752.26 -11926752.11 -11926751.95 0.0280 0.0016  
 Mercury -37367-07-30 00:57 J -11926663.60 -11926663.46 -11926663.31 0.0280 0.0102  
 Mercury -37367-10-26 16:04 J -11926574.92 -11926574.83 -11926574.73 0.0280 0.0215  
 Venus -37367-11-30 23:59 J -11926539.71 -11926539.50 -11926539.29 0.0279 0.0057  
 Venus -37366-07-18 14:52 J -11926309.98 -11926309.88 -11926309.76 0.0279 0.0237  
 Venus -37353-09-21 13:11 J -11921495.97 -11921495.95 -11921495.91 0.0278 0.0274  
 Mercury -37353-11-13 22:33 J -11921442.64 -11921442.56 -11921442.47 0.0278 0.0229  
 Mercury -37352-02-10 13:26 J -11921354.08 -11921353.94 -11921353.80 0.0279 0.0119  
 Moon -37352-04-15 01:11 J -11921290.65 -11921290.45 -11921290.24 0.0279 0.0141  
 Earth -37352-04-15 04:18 J -11921290.53 -11921290.32 -11921290.10 0.0279 0.0131 \*  
 Venus -37352-05-08 19:26 J -11921266.88 -11921266.69 -11921266.50 0.0279 0.0103  
 Mercury -37352-05-10 04:33 J -11921265.46 -11921265.31 -11921265.16 0.0279 0.0007  
 Mercury -37352-08-06 19:54 J -11921176.81 -11921176.67 -11921176.52 0.0279 0.0109  
 Mercury -37352-11-03 11:45 J -11921088.10 -11921088.01 -11921087.92 0.0279 0.0227  
 Venus -37352-12-24 02:23 J -11921037.59 -11921037.40 -11921037.19 0.0279 0.0073  
 Venus -37351-08-10 10:47 J -11920808.14 -11920808.05 -11920807.95 0.0280 0.0248  
 Mars -37346-06-01 10:04 J -11919052.33 -11919052.08 -11919051.83 0.0283 0.0126  
 Mercury -37338-06-22 17:30 J -11916108.89 -11916108.77 -11916108.65 0.0280 0.0173  
 Mercury -37338-09-19 09:35 J -11916020.25 -11916020.10 -11916019.95 0.0280 0.0053  
 Earth -37338-10-19 06:14 J -11915990.45 -11915990.24 -11915990.04 0.0280 0.0158  
 Moon -37338-10-19 09:21 J -11915990.32 -11915990.11 -11915989.89 0.0280 0.0144 \*  
 Venus -37338-10-26 10:33 J -11915983.26 -11915983.06 -11915982.86 0.0280 0.0105  
 Mercury -37338-12-17 01:11 J -11915931.60 -11915931.45 -11915931.29 0.0280 0.0064  
 Mercury -37337-03-14 16:33 J -11915842.92 -11915842.81 -11915842.69 0.0280 0.0178  
 Venus -37337-06-12 02:52 J -11915753.58 -11915753.38 -11915753.17 0.0279 0.0080  
 Venus -37336-01-27 17:59 J -11915523.82 -11915523.75 -11915523.66 0.0279 0.0259  
 Mercury -37323-04-03 01:11 J -11910710.51 -11910710.45 -11910710.38 0.0278 0.0251  
 Venus -37323-04-03 21:06 J -11910709.71 -11910709.62 -11910709.52 0.0279 0.0245  
 Earth -37323-04-10 02:23 J -11910703.64 -11910703.40 -11910703.16 0.0279 0.0058

Moon -37323-04-10 05:45 J -11910703.50 -11910703.26 -11910703.01 0.0279 0.0054 \*  
 Mercury -37323-06-30 15:50 J -11910621.96 -11910621.84 -11910621.70 0.0279 0.0142  
 Mercury -37323-09-27 06:57 J -11910533.36 -11910533.21 -11910533.05 0.0279 0.0030  
 Venus -37323-11-19 03:35 J -11910480.54 -11910480.35 -11910480.14 0.0279 0.0073  
 Mercury -37323-12-24 22:18 J -11910444.71 -11910444.57 -11910444.42 0.0279 0.0087  
 Mercury -37322-03-23 14:09 J -11910356.01 -11910355.91 -11910355.80 0.0279 0.0205  
 Venus -37322-07-06 11:16 J -11910251.22 -11910251.03 -11910250.83 0.0279 0.0103  
 Venus -37321-02-20 19:54 J -11910021.67 -11910021.67 -11910021.64 0.0280 0.0279  
 Venus -37309-09-20 04:47 J -11905426.39 -11905426.30 -11905426.20 0.0280 0.0251  
 Moon -37309-10-13 01:11 J -11905403.68 -11905403.45 -11905403.21 0.0280 0.0050  
 Earth -37309-10-13 04:18 J -11905403.56 -11905403.32 -11905403.07 0.0280 0.0035 \*  
 Mercury -37309-11-08 20:23 J -11905376.76 -11905376.65 -11905376.53 0.0280 0.0193  
 Mercury -37308-02-05 12:42 J -11905288.12 -11905287.97 -11905287.82 0.0280 0.0073  
 Mercury -37308-05-05 04:18 J -11905199.47 -11905199.32 -11905199.16 0.0280 0.0045  
 Venus -37308-05-07 22:04 J -11905196.79 -11905196.58 -11905196.37 0.0280 0.0067  
 Mercury -37308-08-01 19:40 J -11905110.80 -11905110.68 -11905110.55 0.0280 0.0159  
 Mercury -37308-10-29 10:47 J -11905022.08 -11905022.05 -11905022.01 0.0279 0.0269  
 Venus -37308-12-23 13:54 J -11904967.11 -11904966.92 -11904966.72 0.0279 0.0116  
 Mars -37302-09-20 02:38 J -11902870.69 -11902870.39 -11902870.08 0.0275 0.0035  
 Moon -37294-04-04 13:11 J -11900117.02 -11900116.95 -11900116.85 0.0278 0.0259  
 Earth -37294-04-04 16:47 J -11900116.87 -11900116.80 -11900116.71 0.0278 0.0260 \*  
 Venus -37294-10-15 00:28 J -11899923.60 -11899923.48 -11899923.35 0.0279 0.0220  
 Mercury -37294-11-17 16:47 J -11899889.91 -11899889.80 -11899889.68 0.0279 0.0177  
 Mercury -37293-02-14 07:40 J -11899801.32 -11899801.18 -11899801.03 0.0279 0.0066  
 Earth -37293-04-16 14:38 J -11899739.08 -11899738.89 -11899738.71 0.0279 0.0184  
 Moon -37293-04-16 14:52 J -11899739.04 -11899738.88 -11899738.71 0.0279 0.0195 \*  
 Mercury -37293-05-12 23:02 J -11899712.69 -11899712.54 -11899712.39 0.0279 0.0049  
 Venus -37293-05-31 06:57 J -11899694.42 -11899694.21 -11899694.01 0.0279 0.0048  
 Mercury -37293-08-09 14:38 J -11899624.01 -11899623.89 -11899623.76 0.0279 0.0166  
 Venus -37292-01-15 14:23 J -11899465.08 -11899464.90 -11899464.71 0.0280 0.0127

Earth -37280-10-07 10:18 J -11894817.17 -11894817.07 -11894816.94 0.0281 0.0247  
 Moon -37280-10-07 13:11 J -11894817.03 -11894816.95 -11894816.85 0.0281 0.0262 \*  
 Mercury -37279-03-28 19:54 J -11894644.75 -11894644.67 -11894644.58 0.0280 0.0236  
 Venus -37279-04-02 07:11 J -11894640.32 -11894640.20 -11894640.08 0.0280 0.0231  
 Mercury -37279-06-25 12:14 J -11894556.13 -11894555.99 -11894555.84 0.0280 0.0115  
 Mercury -37279-09-22 04:18 J -11894467.48 -11894467.32 -11894467.17 0.0280 0.0005  
 Moon -37279-10-20 15:35 J -11894439.02 -11894438.85 -11894438.66 0.0280 0.0200  
 Earth -37279-10-20 16:47 J -11894438.96 -11894438.80 -11894438.64 0.0280 0.0212 \*  
 Venus -37279-11-18 00:14 J -11894410.70 -11894410.49 -11894410.27 0.0280 0.0047  
 Mercury -37279-12-19 19:54 J -11894378.81 -11894378.67 -11894378.54 0.0280 0.0119  
 Mercury -37278-03-18 10:47 J -11894290.12 -11894290.05 -11894289.96 0.0279 0.0232  
 Venus -37278-07-05 16:18 J -11894181.00 -11894180.82 -11894180.63 0.0279 0.0136  
 Mercury -37264-04-05 18:57 J -11889157.81 -11889157.71 -11889157.60 0.0279 0.0201  
 Moon -37264-04-11 10:04 J -11889152.34 -11889152.08 -11889151.83 0.0279 0.0005  
 Earth -37264-04-11 10:18 J -11889152.32 -11889152.07 -11889151.83 0.0279 0.0009 \*  
 Venus -37264-04-26 07:11 J -11889137.34 -11889137.20 -11889137.05 0.0279 0.0192  
 Mercury -37264-07-03 09:50 J -11889069.23 -11889069.09 -11889068.94 0.0279 0.0091  
 Mercury -37264-09-30 01:11 J -11888980.61 -11888980.45 -11888980.30 0.0279 0.0024  
 Venus -37264-12-11 14:09 J -11888908.12 -11888907.91 -11888907.71 0.0279 0.0020  
 Mercury -37264-12-27 16:33 J -11888891.94 -11888891.81 -11888891.67 0.0279 0.0140  
 Mercury -37263-03-26 08:23 J -11888803.20 -11888803.15 -11888803.08 0.0279 0.0260  
 Venus -37263-07-28 21:50 J -11888678.76 -11888678.59 -11888678.41 0.0280 0.0156  
 Mars -37258-10-27 05:30 J -11886762.54 -11886762.27 -11886761.99 0.0283 0.0051  
 Mercury -37250-08-15 22:47 J -11883912.60 -11883912.55 -11883912.48 0.0280 0.0257  
 Venus -37250-10-13 18:57 J -11883853.86 -11883853.71 -11883853.55 0.0280 0.0192  
 Earth -37250-10-15 15:35 J -11883852.10 -11883851.85 -11883851.60 0.0280 0.0020  
 Moon -37250-10-15 16:33 J -11883852.05 -11883851.81 -11883851.57 0.0280 0.0007 \*  
 Mercury -37250-11-12 15:21 J -11883823.99 -11883823.86 -11883823.72 0.0280 0.0135  
 Mercury -37249-02-09 07:26 J -11883735.35 -11883735.19 -11883735.04 0.0280 0.0016  
 Mercury -37249-05-07 23:02 J -11883646.68 -11883646.54 -11883646.40 0.0280 0.0100

Venus -37249-05-30 11:59 J -11883624.22 -11883624.00 -11883623.79 0.0280 0.0009  
 Mercury -37249-08-04 14:09 J -11883558.00 -11883557.91 -11883557.81 0.0280 0.0213  
 Venus -37248-01-15 03:35 J -11883394.52 -11883394.35 -11883394.18 0.0279 0.0172  
 Earth -37235-04-06 00:42 J -11878565.61 -11878565.47 -11878565.30 0.0278 0.0212  
 Moon -37235-04-06 01:26 J -11878565.58 -11878565.44 -11878565.27 0.0278 0.0207 \*  
 Mercury -37235-08-23 19:54 J -11878425.74 -11878425.67 -11878425.59 0.0278 0.0236  
 Venus -37235-11-06 10:33 J -11878351.22 -11878351.06 -11878350.89 0.0279 0.0167  
 Mercury -37235-11-20 10:47 J -11878337.19 -11878337.05 -11878336.92 0.0279 0.0126  
 Mercury -37234-02-17 01:54 J -11878248.58 -11878248.42 -11878248.27 0.0279 0.0015  
 Earth -37234-04-18 22:47 J -11878187.67 -11878187.55 -11878187.41 0.0279 0.0235  
 Moon -37234-04-19 02:23 J -11878187.50 -11878187.40 -11878187.28 0.0279 0.0248 \*  
 Mercury -37234-05-16 17:16 J -11878159.93 -11878159.78 -11878159.64 0.0279 0.0102  
 Venus -37234-06-23 17:16 J -11878121.99 -11878121.78 -11878121.57 0.0279 0.0006  
 Mercury -37234-08-13 08:52 J -11878071.22 -11878071.13 -11878071.03 0.0279 0.0220  
 Venus -37233-02-08 01:11 J -11877892.61 -11877892.45 -11877892.29 0.0280 0.0181  
 Moon -37221-10-08 19:54 J -11873265.83 -11873265.67 -11873265.49 0.0280 0.0207  
 Earth -37221-10-08 21:21 J -11873265.78 -11873265.61 -11873265.43 0.0280 0.0194 \*  
 Mercury -37220-03-31 14:52 J -11873092.00 -11873091.88 -11873091.76 0.0280 0.0178  
 Venus -37220-04-24 20:52 J -11873067.80 -11873067.63 -11873067.46 0.0280 0.0172  
 Mercury -37220-06-28 06:57 J -11873003.36 -11873003.21 -11873003.05 0.0280 0.0059  
 Mercury -37220-09-24 22:47 J -11872914.70 -11872914.55 -11872914.40 0.0280 0.0059  
 Moon -37220-10-21 23:02 J -11872887.63 -11872887.54 -11872887.43 0.0280 0.0256  
 Earth -37220-10-22 02:52 J -11872887.45 -11872887.38 -11872887.29 0.0280 0.0265 \*  
 Venus -37220-12-10 13:40 J -11872838.14 -11872837.93 -11872837.71 0.0279 0.0012  
 Mercury -37220-12-22 14:09 J -11872826.03 -11872825.91 -11872825.79 0.0279 0.0173  
 Venus -37219-07-28 05:30 J -11872608.43 -11872608.27 -11872608.12 0.0279 0.0191  
 Mars -37213-02-13 21:21 J -11870581.90 -11870581.61 -11870581.31 0.0276 0.0080  
 Mercury -37205-01-10 21:35 J -11867693.64 -11867693.60 -11867693.55 0.0279 0.0264  
 Mercury -37205-04-08 12:28 J -11867605.11 -11867604.98 -11867604.86 0.0279 0.0155  
 Moon -37205-04-12 12:14 J -11867601.23 -11867600.99 -11867600.74 0.0279 0.0049

Earth -37205-04-12 16:04 J -11867601.07 -11867600.83 -11867600.58 0.0279 0.0038 \*  
 Venus -37205-05-18 15:50 J -11867565.01 -11867564.84 -11867564.65 0.0279 0.0142  
 Mercury -37205-07-06 03:21 J -11867516.51 -11867516.36 -11867516.21 0.0279 0.0043  
 Mercury -37205-10-02 18:42 J -11867427.87 -11867427.72 -11867427.57 0.0279 0.0072  
 Mercury -37205-12-30 10:18 J -11867339.18 -11867339.07 -11867338.95 0.0279 0.0190  
 Venus -37204-01-02 23:16 J -11867335.74 -11867335.53 -11867335.32 0.0279 0.0032  
 Venus -37204-08-20 07:26 J -11867106.33 -11867106.19 -11867106.05 0.0280 0.0207  
 Mercury -37191-08-18 17:45 J -11862359.87 -11862359.76 -11862359.65 0.0280 0.0200  
 Earth -37191-10-17 00:57 J -11862300.69 -11862300.46 -11862300.22 0.0280 0.0071  
 Moon -37191-10-17 04:47 J -11862300.54 -11862300.30 -11862300.06 0.0280 0.0059 \*  
 Venus -37191-11-05 08:09 J -11862281.35 -11862281.16 -11862280.97 0.0280 0.0134  
 Mercury -37191-11-15 10:04 J -11862271.23 -11862271.08 -11862270.93 0.0280 0.0080  
 Mercury -37190-02-12 01:54 J -11862182.58 -11862182.42 -11862182.27 0.0280 0.0039  
 Mercury -37190-05-11 17:16 J -11862093.91 -11862093.78 -11862093.65 0.0280 0.0153  
 Venus -37190-06-23 00:42 J -11862051.68 -11862051.47 -11862051.25 0.0280 0.0048  
 Mercury -37190-08-08 08:23 J -11862005.20 -11862005.15 -11862005.11 0.0280 0.0265  
 Venus -37189-02-07 16:04 J -11861821.95 -11861821.83 -11861821.70 0.0279 0.0227  
 Earth -37176-04-07 07:26 J -11857014.38 -11857014.19 -11857013.99 0.0278 0.0165  
 Moon -37176-04-07 11:16 J -11857014.23 -11857014.03 -11857013.83 0.0278 0.0156 \*  
 Mercury -37176-08-26 13:26 J -11856873.05 -11856872.94 -11856872.83 0.0278 0.0188  
 Mercury -37176-11-23 04:18 J -11856784.47 -11856784.32 -11856784.17 0.0279 0.0077  
 Venus -37176-11-28 19:40 J -11856778.86 -11856778.68 -11856778.48 0.0279 0.0116  
 Mercury -37175-02-19 19:26 J -11856695.84 -11856695.69 -11856695.53 0.0279 0.0037  
 Mercury -37175-05-19 11:02 J -11856607.17 -11856607.04 -11856606.91 0.0279 0.0153  
 Venus -37175-07-16 02:38 J -11856549.59 -11856549.39 -11856549.18 0.0279 0.0058  
 Mercury -37175-08-16 02:52 J -11856518.41 -11856518.38 -11856518.34 0.0279 0.0272  
 Venus -37174-03-02 11:02 J -11856320.16 -11856320.04 -11856319.93 0.0280 0.0232  
 Mars -37169-03-21 20:38 J -11854473.92 -11854473.64 -11854473.36 0.0283 0.0018  
 Moon -37162-10-11 02:52 J -11851714.59 -11851714.38 -11851714.18 0.0280 0.0158  
 Earth -37162-10-11 06:14 J -11851714.45 -11851714.24 -11851714.02 0.0280 0.0144 \*

Mercury -37161-01-05 16:47 J -11851627.87 -11851627.80 -11851627.72 0.0280 0.0246

Mercury -37161-04-03 09:21 J -11851539.25 -11851539.11 -11851538.97 0.0280 0.0124

Venus -37161-05-17 09:06 J -11851495.31 -11851495.12 -11851494.91 0.0280 0.0116

Mercury -37161-07-01 01:11 J -11851450.60 -11851450.45 -11851450.29 0.0280 0.0010

Mercury -37161-09-27 16:47 J -11851361.94 -11851361.80 -11851361.65 0.0279 0.0111

Mercury -37161-12-25 08:09 J -11851273.25 -11851273.16 -11851273.07 0.0279 0.0223

Venus -37160-01-02 01:54 J -11851265.63 -11851265.42 -11851265.21 0.0279 0.0067

Venus -37160-08-19 17:02 J -11851035.88 -11851035.79 -11851035.68 0.0279 0.0245

Venus -37147-10-24 17:02 J -11846221.84 -11846221.79 -11846221.71 0.0278 0.0262

Mercury -37146-01-13 14:23 J -11846140.98 -11846140.90 -11846140.81 0.0279 0.0222

Mercury -37146-04-12 05:16 J -11846052.42 -11846052.28 -11846052.14 0.0279 0.0111

Moon -37146-04-14 18:42 J -11846049.94 -11846049.72 -11846049.50 0.0279 0.0094

Earth -37146-04-14 19:54 J -11846049.90 -11846049.67 -11846049.43 0.0279 0.0081 \*

Venus -37146-06-10 23:30 J -11845992.71 -11845992.52 -11845992.32 0.0279 0.0092

Mercury -37146-07-09 20:23 J -11845963.80 -11845963.65 -11845963.50 0.0279 0.0002

Mercury -37146-10-06 11:45 J -11845875.15 -11845875.01 -11845874.86 0.0279 0.0119

Mercury -37145-01-03 03:35 J -11845786.43 -11845786.35 -11845786.26 0.0279 0.0237

Venus -37145-01-26 07:11 J -11845763.40 -11845763.20 -11845763.00 0.0279 0.0082

Venus -37145-09-11 15:21 J -11845533.93 -11845533.86 -11845533.77 0.0280 0.0256

Venus -37132-04-12 02:23 J -11840938.47 -11840938.40 -11840938.31 0.0281 0.0261

Mercury -37132-05-24 19:26 J -11840895.72 -11840895.69 -11840895.64 0.0281 0.0269

Mercury -37132-08-21 11:59 J -11840807.13 -11840807.00 -11840806.86 0.0280 0.0147

Earth -37132-10-18 08:52 J -11840749.34 -11840749.13 -11840748.90 0.0280 0.0121

Moon -37132-10-18 10:33 J -11840749.29 -11840749.06 -11840748.82 0.0280 0.0109 \*

Mercury -37132-11-18 04:04 J -11840718.48 -11840718.33 -11840718.17 0.0280 0.0027

Venus -37132-11-27 20:09 J -11840708.86 -11840708.66 -11840708.45 0.0280 0.0078

Mercury -37131-02-14 19:40 J -11840629.82 -11840629.68 -11840629.53 0.0280 0.0090

Mercury -37131-05-14 11:02 J -11840541.14 -11840541.04 -11840540.93 0.0280 0.0203

Venus -37131-07-15 12:42 J -11840479.17 -11840478.97 -11840478.77 0.0280 0.0104

Mars -37125-07-10 06:57 J -11838292.46 -11838292.21 -11838291.94 0.0275 0.0147

Earth -37117-04-08 11:30 J -11835463.23 -11835463.02 -11835462.79 0.0278 0.0123  
 Moon -37117-04-08 12:57 J -11835463.19 -11835462.96 -11835462.73 0.0278 0.0112 \*  
 Venus -37117-05-05 21:35 J -11835435.70 -11835435.60 -11835435.48 0.0278 0.0235  
 Mercury -37117-06-01 15:50 J -11835408.90 -11835408.84 -11835408.78 0.0278 0.0253  
 Mercury -37117-08-29 06:28 J -11835320.36 -11835320.23 -11835320.10 0.0278 0.0144  
 Mercury -37117-11-25 21:21 J -11835231.76 -11835231.61 -11835231.45 0.0279 0.0033  
 Venus -37117-12-21 03:50 J -11835206.54 -11835206.34 -11835206.14 0.0279 0.0065  
 Mercury -37116-02-22 12:42 J -11835143.12 -11835142.97 -11835142.82 0.0279 0.0083  
 Mercury -37116-05-22 04:18 J -11835054.42 -11835054.32 -11835054.21 0.0279 0.0201  
 Venus -37116-08-07 10:47 J -11834977.24 -11834977.05 -11834976.85 0.0279 0.0108  
 Moon -37103-10-12 11:59 J -11830163.22 -11830163.00 -11830162.78 0.0280 0.0110  
 Earth -37103-10-12 13:26 J -11830163.17 -11830162.94 -11830162.71 0.0280 0.0096 \*  
 Venus -37103-10-23 03:21 J -11830152.47 -11830152.36 -11830152.26 0.0280 0.0243  
 Mercury -37102-01-08 11:02 J -11830075.15 -11830075.04 -11830074.93 0.0280 0.0193  
 Mercury -37102-04-07 03:21 J -11829986.51 -11829986.36 -11829986.21 0.0280 0.0073  
 Venus -37102-06-09 20:38 J -11829922.85 -11829922.64 -11829922.42 0.0280 0.0061  
 Mercury -37102-07-04 19:11 J -11829897.86 -11829897.70 -11829897.55 0.0280 0.0045  
 Mercury -37102-10-01 10:33 J -11829809.18 -11829809.06 -11829808.93 0.0279 0.0160  
 Mercury -37102-12-29 01:40 J -11829720.46 -11829720.43 -11829720.40 0.0279 0.0271  
 Venus -37101-01-25 12:57 J -11829693.15 -11829692.96 -11829692.76 0.0279 0.0120  
 Venus -37088-11-15 23:45 J -11824649.63 -11824649.51 -11824649.37 0.0278 0.0214  
 Mercury -37087-01-16 06:57 J -11824588.32 -11824588.21 -11824588.09 0.0279 0.0181  
 Mercury -37087-04-14 21:50 J -11824499.73 -11824499.59 -11824499.44 0.0279 0.0070  
 Earth -37087-04-15 22:04 J -11824498.80 -11824498.58 -11824498.36 0.0279 0.0121  
 Moon -37087-04-16 01:11 J -11824498.66 -11824498.45 -11824498.24 0.0279 0.0136 \*  
 Venus -37087-07-03 06:14 J -11824420.44 -11824420.24 -11824420.03 0.0279 0.0044  
 Mercury -37087-07-12 13:11 J -11824411.10 -11824410.95 -11824410.80 0.0279 0.0045  
 Mercury -37087-10-09 04:33 J -11824322.43 -11824322.31 -11824322.18 0.0279 0.0162  
 Venus -37086-02-17 13:54 J -11824191.10 -11824190.92 -11824190.73 0.0280 0.0130  
 Mars -37081-08-15 17:02 J -11822185.07 -11822184.79 -11822184.51 0.0284 0.0031



Venus -37073-05-04 12:57 J -11819366.10 -11819365.96 -11819365.81 0.0281 0.0207

Mercury -37073-05-27 13:11 J -11819343.04 -11819342.95 -11819342.85 0.0281 0.0220

Mercury -37073-08-24 05:30 J -11819254.41 -11819254.27 -11819254.12 0.0281 0.0099

Moon -37073-10-19 11:45 J -11819198.21 -11819198.01 -11819197.79 0.0280 0.0156

Earth -37073-10-19 14:23 J -11819198.09 -11819197.90 -11819197.69 0.0280 0.0165 \*

Mercury -37073-11-20 21:35 J -11819165.75 -11819165.60 -11819165.44 0.0280 0.0021

Venus -37073-12-20 06:42 J -11819136.44 -11819136.22 -11819136.01 0.0280 0.0024

Mercury -37072-02-17 13:11 J -11819077.08 -11819076.95 -11819076.82 0.0280 0.0137

Mercury -37072-05-17 04:18 J -11818988.38 -11818988.32 -11818988.25 0.0280 0.0249

Venus -37072-08-06 22:47 J -11818906.72 -11818906.55 -11818906.36 0.0280 0.0157

Mars -37067-10-14 14:23 J -11817012.04 -11817011.90 -11817011.76 0.0275 0.0245

Moon -37058-04-10 11:16 J -11813912.27 -11813912.03 -11813911.78 0.0278 0.0070

Earth -37058-04-10 14:23 J -11813912.13 -11813911.90 -11813911.67 0.0278 0.0082 \*

Venus -37058-05-29 04:18 J -11813863.46 -11813863.32 -11813863.16 0.0278 0.0187

Mercury -37058-06-05 08:23 J -11813856.24 -11813856.15 -11813856.05 0.0278 0.0212

Mercury -37058-09-01 23:16 J -11813767.67 -11813767.53 -11813767.39 0.0278 0.0102

Mercury -37058-11-29 14:09 J -11813679.06 -11813678.91 -11813678.75 0.0279 0.0012

Venus -37057-01-13 10:47 J -11813634.26 -11813634.05 -11813633.84 0.0279 0.0017

Mercury -37057-02-26 05:30 J -11813590.40 -11813590.27 -11813590.13 0.0279 0.0127

Mercury -37057-05-24 21:21 J -11813501.68 -11813501.61 -11813501.54 0.0279 0.0245

Venus -37057-08-29 17:59 J -11813404.92 -11813404.75 -11813404.57 0.0279 0.0156

Earth -37044-10-13 18:57 J -11808611.95 -11808611.71 -11808611.47 0.0280 0.0051

Moon -37044-10-13 21:35 J -11808611.83 -11808611.60 -11808611.36 0.0280 0.0065 \*

Mercury -37044-10-14 11:59 J -11808611.03 -11808611.00 -11808610.94 0.0280 0.0268

Venus -37044-11-14 13:40 J -11808580.08 -11808579.93 -11808579.76 0.0280 0.0189

Mercury -37043-01-11 04:47 J -11808522.44 -11808522.30 -11808522.17 0.0280 0.0144

Mercury -37043-04-09 20:52 J -11808433.79 -11808433.63 -11808433.47 0.0280 0.0024

Venus -37043-07-02 07:11 J -11808350.41 -11808350.20 -11808349.98 0.0280 0.0009

Mercury -37043-07-07 12:28 J -11808345.12 -11808344.98 -11808344.83 0.0280 0.0093

Mercury -37043-10-04 03:50 J -11808256.44 -11808256.34 -11808256.23 0.0279 0.0206

Venus -37042-02-16 23:16 J -11808120.69 -11808120.53 -11808120.36 0.0279 0.0172

Mars -37037-12-03 07:40 J -11806004.41 -11806004.18 -11806003.93 0.0275 0.0173

Mercury -37029-10-22 08:38 J -11803124.20 -11803124.14 -11803124.08 0.0278 0.0253

Venus -37029-12-08 05:16 J -11803077.44 -11803077.28 -11803077.11 0.0278 0.0168

Mercury -37028-01-18 23:02 J -11803035.66 -11803035.54 -11803035.40 0.0279 0.0144

Earth -37028-04-16 22:18 J -11802947.77 -11802947.57 -11802947.37 0.0279 0.0158

Moon -37028-04-17 00:57 J -11802947.65 -11802947.46 -11802947.26 0.0279 0.0173 \*

Mercury -37028-04-17 14:09 J -11802947.06 -11802946.91 -11802946.76 0.0279 0.0031

Mercury -37028-07-15 05:30 J -11802858.42 -11802858.27 -11802858.13 0.0279 0.0084

Venus -37028-07-25 11:59 J -11802848.21 -11802848.00 -11802847.79 0.0279 0.0004

Mercury -37028-10-11 21:06 J -11802769.73 -11802769.62 -11802769.51 0.0279 0.0202

Venus -37027-03-11 19:26 J -11802618.84 -11802618.69 -11802618.52 0.0280 0.0176

Moon -37015-10-08 07:26 J -11798025.24 -11798025.19 -11798025.12 0.0282 0.0273

Earth -37015-10-08 10:47 J -11798025.14 -11798025.05 -11798024.95 0.0282 0.0259 \*

Venus -37014-05-27 22:33 J -11797793.74 -11797793.56 -11797793.38 0.0281 0.0155

Mercury -37014-05-31 06:28 J -11797790.34 -11797790.23 -11797790.10 0.0281 0.0174

Mercury -37014-08-27 22:47 J -11797701.70 -11797701.55 -11797701.39 0.0281 0.0053

Moon -37014-10-21 14:52 J -11797647.04 -11797646.88 -11797646.70 0.0280 0.0200

Earth -37014-10-21 18:14 J -11797646.90 -11797646.74 -11797646.57 0.0280 0.0208 \*

Mercury -37014-11-24 14:38 J -11797613.03 -11797612.89 -11797612.73 0.0280 0.0067

Venus -37013-01-12 16:04 J -11797564.04 -11797563.83 -11797563.61 0.0280 0.0028

Mercury -37013-02-21 06:14 J -11797524.36 -11797524.24 -11797524.12 0.0280 0.0181

Venus -37013-08-29 08:09 J -11797334.30 -11797334.16 -11797334.01 0.0280 0.0207

# 37TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 37th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-36999-04-11 12:57 J	-11792361.20	-11792360.96	-11792360.72	0.0278	0.0031		
Earth	-36999-04-11 15:50 J	-11792361.08	-11792360.84	-11792360.60	0.0278	0.0044	*	
Mercury	-36999-06-08 00:42 J	-11792303.58	-11792303.47	-11792303.35	0.0278	0.0173		
Venus	-36999-06-20 10:33 J	-11792291.23	-11792291.06	-11792290.87	0.0278	0.0140		
Mercury	-36999-09-04 15:35 J	-11792215.00	-11792214.85	-11792214.70	0.0278	0.0062		
Mercury	-36999-12-02 06:42 J	-11792126.37	-11792126.22	-11792126.07	0.0278	0.0052		
Venus	-36998-02-04 17:02 J	-11792061.99	-11792061.79	-11792061.58	0.0279	0.0031		
Mercury	-36998-02-28 22:18 J	-11792037.69	-11792037.57	-11792037.45	0.0279	0.0169		
Venus	-36998-09-22 00:28 J	-11791832.62	-11791832.48	-11791832.33	0.0279	0.0202		
Mars	-36992-01-08 22:04 J	-11789896.85	-11789896.58	-11789896.30	0.0284	0.0051		
Earth	-36985-10-14 22:33 J	-11787060.81	-11787060.56	-11787060.31	0.0280	0.0009		
Moon	-36985-10-15 01:40 J	-11787060.68	-11787060.43	-11787060.18	0.0280	0.0020	*	
Mercury	-36985-10-17 05:30 J	-11787058.36	-11787058.27	-11787058.17	0.0280	0.0221		
Venus	-36985-12-06 23:16 J	-11787007.72	-11787007.53	-11787007.34	0.0280	0.0137		
Mercury	-36984-01-13 22:04 J	-11786969.73	-11786969.58	-11786969.44	0.0280	0.0099		
Mercury	-36984-04-12 13:54 J	-11786881.07	-11786880.92	-11786880.76	0.0280	0.0021		
Mercury	-36984-07-10 05:30 J	-11786792.40	-11786792.27	-11786792.13	0.0280	0.0137		
Venus	-36984-07-24 16:33 J	-11786778.02	-11786777.81	-11786777.59	0.0280	0.0045		
Mercury	-36984-10-06 20:52 J	-11786703.70	-11786703.63	-11786703.56	0.0279	0.0249		
Venus	-36983-03-11 08:38 J	-11786548.27	-11786548.14	-11786548.01	0.0279	0.0222		
Mars	-36978-03-09 11:02 J	-11784724.21	-11784724.04	-11784723.85	0.0275	0.0223		
Earth	-36970-04-06 00:42 J	-11781774.55	-11781774.47	-11781774.36	0.0278	0.0256		
Moon	-36970-04-06 04:04 J	-11781774.44	-11781774.33	-11781774.21	0.0278	0.0244	*	
Mercury	-36970-10-26 00:28 J	-11781571.57	-11781571.48	-11781571.38	0.0278	0.0216		
Venus	-36970-12-31 10:33 J	-11781505.24	-11781505.06	-11781504.87	0.0278	0.0121		
Mercury	-36969-01-22 15:06 J	-11781483.00	-11781482.87	-11781482.72	0.0278	0.0107		

Moon -36969-04-17 20:09 J -11781396.82 -11781396.66 -11781396.48 0.0279 0.0208  
 Earth -36969-04-17 21:50 J -11781396.76 -11781396.59 -11781396.41 0.0279 0.0194 \*  
 Mercury -36969-04-20 06:14 J -11781394.39 -11781394.24 -11781394.08 0.0279 0.0009  
 Mercury -36969-07-17 21:35 J -11781305.74 -11781305.60 -11781305.46 0.0279 0.0123  
 Venus -36969-08-16 17:16 J -11781275.99 -11781275.78 -11781275.58 0.0279 0.0049  
 Mercury -36969-10-14 13:11 J -11781217.02 -11781216.95 -11781216.87 0.0279 0.0242  
 Venus -36968-04-03 00:42 J -11781046.59 -11781046.47 -11781046.34 0.0280 0.0221  
 Moon -36956-10-09 10:18 J -11776474.20 -11776474.07 -11776473.93 0.0282 0.0231  
 Earth -36956-10-09 12:42 J -11776474.11 -11776473.97 -11776473.81 0.0282 0.0220 \*  
 Mercury -36955-03-06 06:57 J -11776326.27 -11776326.21 -11776326.14 0.0281 0.0253  
 Mercury -36955-06-02 23:30 J -11776237.65 -11776237.52 -11776237.38 0.0281 0.0130  
 Venus -36955-06-19 07:11 J -11776221.40 -11776221.20 -11776221.00 0.0281 0.0104  
 Mercury -36955-08-30 15:50 J -11776149.00 -11776148.84 -11776148.69 0.0281 0.0010  
 Earth -36955-10-22 20:23 J -11776095.75 -11776095.65 -11776095.53 0.0281 0.0249  
 Moon -36955-10-22 21:21 J -11776095.71 -11776095.61 -11776095.48 0.0281 0.0245 \*  
 Mercury -36955-11-27 07:26 J -11776060.33 -11776060.19 -11776060.04 0.0281 0.0109  
 Venus -36954-02-04 00:28 J -11775991.68 -11775991.48 -11775991.27 0.0280 0.0079  
 Mercury -36954-02-23 22:47 J -11775971.64 -11775971.55 -11775971.45 0.0280 0.0223  
 Venus -36954-09-21 16:33 J -11775761.89 -11775761.81 -11775761.72 0.0280 0.0256  
 Mars -36948-04-29 10:33 J -11773715.22 -11773715.06 -11773714.88 0.0275 0.0228  
 Venus -36941-11-25 11:02 J -11770948.11 -11770948.04 -11770947.96 0.0277 0.0259  
 Mercury -36940-03-14 02:38 J -11770839.46 -11770839.39 -11770839.32 0.0278 0.0243  
 Earth -36940-04-12 16:33 J -11770810.06 -11770809.81 -11770809.57 0.0278 0.0006  
 Moon -36940-04-12 17:30 J -11770810.00 -11770809.77 -11770809.53 0.0278 0.0010 \*  
 Mercury -36940-06-10 17:02 J -11770750.92 -11770750.79 -11770750.65 0.0278 0.0134  
 Venus -36940-07-12 16:18 J -11770719.01 -11770718.82 -11770718.62 0.0278 0.0093  
 Mercury -36940-09-07 07:54 J -11770662.32 -11770662.17 -11770662.01 0.0278 0.0023  
 Mercury -36940-12-04 23:16 J -11770573.68 -11770573.53 -11770573.39 0.0278 0.0092  
 Venus -36939-02-26 22:47 J -11770489.75 -11770489.55 -11770489.35 0.0279 0.0077  
 Mercury -36939-03-03 14:38 J -11770484.98 -11770484.89 -11770484.78 0.0279 0.0210

Venus -36939-10-14 06:14 J -11770260.33 -11770260.24 -11770260.14 0.0279 0.0248  
 Venus -36926-05-14 13:40 J -11765664.99 -11765664.93 -11765664.86 0.0281 0.0267  
 Moon -36926-10-16 23:45 J -11765509.76 -11765509.51 -11765509.26 0.0281 0.0027  
 Earth -36926-10-17 01:26 J -11765509.68 -11765509.44 -11765509.19 0.0281 0.0032 \*  
 Mercury -36926-10-20 22:47 J -11765505.67 -11765505.55 -11765505.43 0.0281 0.0176  
 Venus -36926-12-30 08:09 J -11765435.36 -11765435.16 -11765434.95 0.0280 0.0086  
 Mercury -36925-01-17 15:06 J -11765417.03 -11765416.87 -11765416.72 0.0280 0.0054  
 Mercury -36925-04-15 06:57 J -11765328.36 -11765328.21 -11765328.06 0.0280 0.0064  
 Mercury -36925-07-12 22:18 J -11765239.68 -11765239.57 -11765239.45 0.0280 0.0180  
 Venus -36925-08-16 01:26 J -11765205.64 -11765205.44 -11765205.23 0.0280 0.0095  
 Venus -36924-04-02 17:02 J -11764975.83 -11764975.79 -11764975.73 0.0279 0.0271  
 Moon -36911-04-06 23:16 J -11760223.69 -11760223.53 -11760223.35 0.0278 0.0205  
 Earth -36911-04-07 00:57 J -11760223.60 -11760223.46 -11760223.31 0.0278 0.0220 \*  
 Venus -36911-06-07 10:04 J -11760162.17 -11760162.08 -11760161.97 0.0278 0.0242  
 Mercury -36911-10-28 16:33 J -11760018.92 -11760018.81 -11760018.69 0.0278 0.0179  
 Venus -36910-01-22 15:50 J -11759933.04 -11759932.84 -11759932.64 0.0278 0.0076  
 Mercury -36910-01-25 07:26 J -11759930.34 -11759930.19 -11759930.04 0.0278 0.0068  
 Moon -36910-04-19 17:59 J -11759845.86 -11759845.75 -11759845.63 0.0279 0.0245  
 Earth -36910-04-19 21:21 J -11759845.73 -11759845.61 -11759845.46 0.0279 0.0231 \*  
 Mercury -36910-04-23 22:33 J -11759841.72 -11759841.56 -11759841.41 0.0279 0.0046  
 Mercury -36910-07-21 13:54 J -11759753.05 -11759752.92 -11759752.80 0.0279 0.0162  
 Venus -36910-09-08 22:18 J -11759703.76 -11759703.57 -11759703.37 0.0279 0.0095  
 Venus -36909-04-25 05:59 J -11759474.30 -11759474.25 -11759474.18 0.0280 0.0266  
 Mars -36904-06-03 23:16 J -11757608.80 -11757608.53 -11757608.26 0.0284 0.0074  
 Earth -36897-10-10 13:54 J -11754923.10 -11754922.92 -11754922.73 0.0282 0.0181  
 Moon -36897-10-10 15:50 J -11754923.01 -11754922.84 -11754922.66 0.0282 0.0188 \*  
 Venus -36897-11-23 20:23 J -11754878.76 -11754878.65 -11754878.53 0.0282 0.0237  
 Mercury -36896-03-08 23:45 J -11754773.61 -11754773.51 -11754773.40 0.0281 0.0211  
 Mercury -36896-06-05 16:18 J -11754684.97 -11754684.82 -11754684.67 0.0281 0.0087  
 Venus -36896-07-11 15:06 J -11754649.08 -11754648.87 -11754648.65 0.0281 0.0054

Mercury -36896-09-02 08:23 J -11754596.30 -11754596.15 -11754596.00 0.0281 0.0033  
 Mercury -36896-11-29 23:59 J -11754507.63 -11754507.50 -11754507.37 0.0281 0.0150  
 Venus -36895-02-26 08:23 J -11754419.33 -11754419.15 -11754418.95 0.0280 0.0127  
 Mercury -36895-02-26 15:06 J -11754418.91 -11754418.87 -11754418.81 0.0280 0.0264  
 Mars -36890-08-03 12:14 J -11752435.22 -11752434.99 -11752434.74 0.0275 0.0173  
 Venus -36882-12-18 17:02 J -11749375.92 -11749375.79 -11749375.66 0.0277 0.0213  
 Mercury -36881-03-16 18:42 J -11749286.82 -11749286.72 -11749286.62 0.0277 0.0204  
 Earth -36881-04-13 17:16 J -11749259.02 -11749258.78 -11749258.53 0.0277 0.0033  
 Moon -36881-04-13 21:06 J -11749258.86 -11749258.62 -11749258.38 0.0277 0.0049 \*  
 Mercury -36881-06-13 09:21 J -11749198.25 -11749198.11 -11749197.96 0.0278 0.0095  
 Venus -36881-08-03 22:18 J -11749146.78 -11749146.57 -11749146.37 0.0278 0.0047  
 Mercury -36881-09-10 00:28 J -11749109.64 -11749109.48 -11749109.33 0.0278 0.0019  
 Mercury -36881-12-07 15:35 J -11749020.98 -11749020.85 -11749020.71 0.0278 0.0134  
 Mercury -36880-03-06 07:11 J -11748932.26 -11748932.20 -11748932.13 0.0278 0.0252  
 Venus -36880-03-21 04:47 J -11748917.49 -11748917.30 -11748917.11 0.0278 0.0123  
 Venus -36867-06-05 22:18 J -11744092.70 -11744092.57 -11744092.43 0.0281 0.0217  
 Mercury -36867-07-26 23:02 J -11744041.60 -11744041.54 -11744041.47 0.0281 0.0255  
 Moon -36867-10-17 23:59 J -11743958.73 -11743958.50 -11743958.25 0.0281 0.0072  
 Earth -36867-10-18 03:50 J -11743958.58 -11743958.34 -11743958.10 0.0281 0.0072 \*  
 Mercury -36867-10-23 15:35 J -11743952.98 -11743952.85 -11743952.70 0.0281 0.0132  
 Mercury -36866-01-20 07:54 J -11743864.33 -11743864.17 -11743864.01 0.0280 0.0011  
 Venus -36866-01-21 16:47 J -11743863.01 -11743862.80 -11743862.58 0.0280 0.0035  
 Mercury -36866-04-18 23:45 J -11743775.65 -11743775.51 -11743775.37 0.0280 0.0107  
 Mercury -36866-07-16 15:06 J -11743686.96 -11743686.87 -11743686.78 0.0280 0.0222  
 Venus -36866-09-08 10:04 J -11743633.27 -11743633.08 -11743632.90 0.0280 0.0145  
 Mars -36860-09-22 06:14 J -11741427.35 -11741427.24 -11741427.09 0.0275 0.0249  
 Moon -36852-04-07 21:50 J -11738672.77 -11738672.59 -11738672.38 0.0277 0.0167  
 Earth -36852-04-08 01:40 J -11738672.60 -11738672.43 -11738672.24 0.0277 0.0182 \*  
 Venus -36852-06-29 15:50 J -11738589.98 -11738589.84 -11738589.69 0.0278 0.0196  
 Mercury -36852-08-03 18:14 J -11738554.80 -11738554.74 -11738554.67 0.0278 0.0249

Mercury -36852-10-31 08:52 J -11738466.26 -11738466.13 -11738466.00 0.0278 0.0141

Mercury -36851-01-27 23:45 J -11738377.67 -11738377.51 -11738377.36 0.0278 0.0030

Venus -36851-02-13 21:35 J -11738360.81 -11738360.60 -11738360.40 0.0278 0.0030

Earth -36851-04-20 21:50 J -11738294.65 -11738294.59 -11738294.52 0.0278 0.0268

Mercury -36851-04-26 14:52 J -11738289.03 -11738288.88 -11738288.74 0.0278 0.0086

Mercury -36851-07-24 06:14 J -11738200.34 -11738200.24 -11738200.13 0.0279 0.0203

Venus -36851-10-01 04:04 J -11738131.51 -11738131.33 -11738131.15 0.0279 0.0140

Earth -36838-10-12 15:06 J -11733372.08 -11733371.87 -11733371.66 0.0282 0.0141

Moon -36838-10-12 18:28 J -11733371.93 -11733371.73 -11733371.51 0.0282 0.0147 \*

Venus -36838-12-17 04:18 J -11733306.47 -11733306.32 -11733306.15 0.0282 0.0188

Mercury -36837-03-11 16:33 J -11733220.93 -11733220.81 -11733220.68 0.0282 0.0168

Mercury -36837-06-08 09:06 J -11733132.28 -11733132.12 -11733131.97 0.0281 0.0045

Venus -36837-08-02 23:16 J -11733076.75 -11733076.53 -11733076.32 0.0281 0.0005

Mercury -36837-09-05 00:57 J -11733043.61 -11733043.46 -11733043.31 0.0281 0.0074

Mercury -36837-12-02 16:33 J -11732954.92 -11732954.81 -11732954.70 0.0281 0.0191

Venus -36836-03-20 16:18 J -11732846.98 -11732846.82 -11732846.65 0.0281 0.0176

Mercury -36823-12-21 20:52 J -11727822.65 -11727822.63 -11727822.60 0.0277 0.0271

Venus -36822-01-09 23:16 J -11727803.69 -11727803.53 -11727803.36 0.0277 0.0166

Mercury -36822-03-20 11:16 J -11727734.15 -11727734.03 -11727733.91 0.0277 0.0164

Earth -36822-04-15 19:11 J -11727707.93 -11727707.70 -11727707.46 0.0277 0.0073

Moon -36822-04-15 19:40 J -11727707.92 -11727707.68 -11727707.44 0.0277 0.0088 \*

Mercury -36822-06-17 01:54 J -11727645.57 -11727645.42 -11727645.27 0.0278 0.0054

Venus -36822-08-27 04:47 J -11727574.51 -11727574.30 -11727574.09 0.0278 0.0000

Mercury -36822-09-13 17:02 J -11727556.94 -11727556.79 -11727556.64 0.0278 0.0060

Mercury -36822-12-11 08:23 J -11727468.27 -11727468.15 -11727468.03 0.0278 0.0176

Venus -36821-04-12 11:02 J -11727345.19 -11727345.04 -11727344.86 0.0278 0.0170

Mars -36816-10-28 08:23 J -11725320.41 -11725320.15 -11725319.89 0.0284 0.0099

Venus -36808-06-28 07:26 J -11722520.36 -11722520.19 -11722520.01 0.0281 0.0166

Mercury -36808-07-29 16:18 J -11722488.92 -11722488.82 -11722488.72 0.0281 0.0210

Moon -36808-10-19 06:28 J -11722407.45 -11722407.23 -11722407.02 0.0281 0.0116

Earth -36808-10-19 06:28 J -11722407.45 -11722407.23 -11722407.00 0.0281 0.0114 \*  
 Mercury -36808-10-26 08:52 J -11722400.28 -11722400.13 -11722399.98 0.0281 0.0087  
 Mercury -36807-01-23 00:57 J -11722311.62 -11722311.46 -11722311.31 0.0281 0.0034  
 Venus -36807-02-13 01:54 J -11722290.64 -11722290.42 -11722290.21 0.0281 0.0017  
 Mercury -36807-04-21 16:33 J -11722222.94 -11722222.81 -11722222.68 0.0280 0.0151  
 Mercury -36807-07-19 07:54 J -11722134.22 -11722134.17 -11722134.12 0.0280 0.0264  
 Venus -36807-09-30 18:42 J -11722060.87 -11722060.72 -11722060.56 0.0280 0.0195  
 Mars -36802-12-27 10:04 J -11720147.33 -11720147.08 -11720146.81 0.0275 0.0148  
 Earth -36793-04-09 04:04 J -11717121.54 -11717121.33 -11717121.12 0.0277 0.0142  
 Moon -36793-04-09 04:04 J -11717121.54 -11717121.33 -11717121.12 0.0277 0.0127 \*  
 Venus -36793-07-21 22:18 J -11717017.74 -11717017.57 -11717017.39 0.0278 0.0149  
 Mercury -36793-08-06 10:47 J -11717002.14 -11717002.05 -11717001.95 0.0278 0.0209  
 Mercury -36793-11-03 01:26 J -11716913.58 -11716913.44 -11716913.30 0.0278 0.0099  
 Mercury -36792-01-30 16:18 J -11716824.97 -11716824.82 -11716824.67 0.0278 0.0013  
 Venus -36792-03-08 04:04 J -11716788.54 -11716788.33 -11716788.12 0.0278 0.0018  
 Mercury -36792-04-29 07:26 J -11716736.32 -11716736.19 -11716736.05 0.0278 0.0129  
 Mercury -36792-07-26 23:02 J -11716647.61 -11716647.54 -11716647.46 0.0279 0.0246  
 Venus -36792-10-23 10:33 J -11716559.21 -11716559.06 -11716558.90 0.0279 0.0187  
 Earth -36779-10-13 16:33 J -11711821.04 -11711820.81 -11711820.58 0.0282 0.0101  
 Moon -36779-10-13 16:47 J -11711821.04 -11711820.80 -11711820.56 0.0282 0.0104 \*  
 Mercury -36779-12-16 16:47 J -11711756.87 -11711756.80 -11711756.73 0.0282 0.0249  
 Venus -36778-01-08 12:28 J -11711734.16 -11711733.98 -11711733.78 0.0282 0.0139  
 Mercury -36778-03-15 09:21 J -11711668.25 -11711668.11 -11711667.96 0.0282 0.0124  
 Mercury -36778-06-12 01:40 J -11711579.58 -11711579.43 -11711579.27 0.0281 0.0005  
 Venus -36778-08-26 07:26 J -11711504.41 -11711504.19 -11711503.98 0.0281 0.0045  
 Mercury -36778-09-08 17:30 J -11711490.91 -11711490.77 -11711490.63 0.0281 0.0117  
 Mercury -36778-12-06 09:06 J -11711402.20 -11711402.12 -11711402.04 0.0281 0.0232  
 Venus -36777-04-12 00:14 J -11711274.61 -11711274.49 -11711274.35 0.0281 0.0224  
 Mercury -36764-12-24 13:40 J -11706270.01 -11706269.93 -11706269.85 0.0277 0.0229  
 Venus -36763-02-01 06:42 J -11706231.41 -11706231.22 -11706231.03 0.0277 0.0118



Mercury -36763-03-23 04:04 J -11706181.46 -11706181.33 -11706181.19 0.0277 0.0121  
 Moon -36763-04-16 18:57 J -11706156.92 -11706156.71 -11706156.49 0.0277 0.0130  
 Earth -36763-04-16 22:33 J -11706156.77 -11706156.56 -11706156.33 0.0277 0.0117 \*  
 Mercury -36763-06-19 18:57 J -11706092.86 -11706092.71 -11706092.56 0.0277 0.0009  
 Mercury -36763-09-16 10:04 J -11706004.22 -11706004.08 -11706003.94 0.0278 0.0105  
 Venus -36763-09-18 12:14 J -11706002.19 -11706001.99 -11706001.78 0.0278 0.0048  
 Mercury -36763-12-14 01:26 J -11705915.53 -11705915.44 -11705915.34 0.0278 0.0222  
 Venus -36762-05-05 18:42 J -11705772.84 -11705772.72 -11705772.58 0.0278 0.0216  
 Venus -36749-07-20 17:02 J -11700947.98 -11700947.79 -11700947.59 0.0281 0.0115  
 Mercury -36749-08-01 09:35 J -11700936.23 -11700936.10 -11700935.97 0.0281 0.0163  
 Earth -36749-10-20 10:04 J -11700856.28 -11700856.08 -11700855.87 0.0281 0.0158  
 Moon -36749-10-20 13:40 J -11700856.13 -11700855.93 -11700855.74 0.0281 0.0162 \*  
 Mercury -36749-10-29 01:54 J -11700847.57 -11700847.42 -11700847.26 0.0281 0.0041  
 Mercury -36748-01-25 17:59 J -11700758.90 -11700758.75 -11700758.60 0.0281 0.0079  
 Venus -36748-03-07 11:16 J -11700718.24 -11700718.03 -11700717.82 0.0281 0.0067  
 Mercury -36748-04-24 09:35 J -11700670.21 -11700670.10 -11700669.99 0.0280 0.0196  
 Venus -36748-10-23 04:04 J -11700488.43 -11700488.33 -11700488.22 0.0280 0.0244  
 Venus -36735-12-28 01:26 J -11695674.49 -11695674.44 -11695674.36 0.0277 0.0263  
 Earth -36734-04-11 07:54 J -11695570.39 -11695570.17 -11695569.94 0.0277 0.0098  
 Moon -36734-04-11 11:30 J -11695570.25 -11695570.02 -11695569.79 0.0277 0.0083 \*  
 Mercury -36734-05-13 13:26 J -11695537.96 -11695537.94 -11695537.91 0.0277 0.0272  
 Mercury -36734-08-10 03:50 J -11695449.46 -11695449.34 -11695449.22 0.0277 0.0165  
 Venus -36734-08-14 06:14 J -11695445.43 -11695445.24 -11695445.05 0.0277 0.0100  
 Mercury -36734-11-06 18:28 J -11695360.88 -11695360.73 -11695360.58 0.0278 0.0055  
 Mercury -36733-02-03 09:21 J -11695272.26 -11695272.11 -11695271.96 0.0278 0.0059  
 Venus -36733-03-30 11:45 J -11695216.21 -11695216.01 -11695215.81 0.0278 0.0067  
 Mercury -36733-05-02 00:42 J -11695183.59 -11695183.47 -11695183.35 0.0278 0.0175  
 Venus -36733-11-14 18:14 J -11694986.84 -11694986.74 -11694986.62 0.0279 0.0235  
 Mars -36727-03-23 10:33 J -11693032.32 -11693032.06 -11693031.81 0.0284 0.0120  
 Venus -36720-06-15 02:09 J -11690391.46 -11690391.41 -11690391.35 0.0282 0.0272

Moon -36720-10-14 16:18 J -11690270.07 -11690269.82 -11690269.58 0.0282 0.0058  
 Earth -36720-10-14 19:40 J -11690269.92 -11690269.68 -11690269.44 0.0282 0.0058 \*  
 Mercury -36720-12-19 10:04 J -11690204.19 -11690204.08 -11690203.97 0.0282 0.0202  
 Venus -36719-01-30 22:04 J -11690161.79 -11690161.58 -11690161.38 0.0282 0.0088  
 Mercury -36719-03-18 02:38 J -11690115.54 -11690115.39 -11690115.24 0.0282 0.0078  
 Mercury -36719-06-14 18:42 J -11690026.87 -11690026.72 -11690026.56 0.0282 0.0043  
 Mercury -36719-09-11 10:33 J -11689938.19 -11689938.06 -11689937.93 0.0281 0.0161  
 Venus -36719-09-17 16:18 J -11689932.02 -11689931.82 -11689931.61 0.0281 0.0095  
 Mercury -36719-12-09 01:54 J -11689849.44 -11689849.42 -11689849.39 0.0281 0.0276  
 Venus -36718-05-05 09:21 J -11689702.15 -11689702.11 -11689702.05 0.0281 0.0272  
 Mars -36713-05-22 13:40 J -11687858.22 -11687857.93 -11687857.64 0.0276 0.0099  
 Moon -36705-04-05 06:57 J -11684983.26 -11684983.21 -11684983.14 0.0276 0.0267  
 Venus -36705-07-09 10:04 J -11684888.18 -11684888.08 -11684887.95 0.0276 0.0233  
 Mercury -36705-12-27 06:42 J -11684717.33 -11684717.22 -11684717.10 0.0277 0.0184  
 Venus -36704-02-23 15:06 J -11684659.07 -11684658.87 -11684658.67 0.0277 0.0069  
 Mercury -36704-03-25 21:21 J -11684628.75 -11684628.61 -11684628.46 0.0277 0.0074  
 Moon -36704-04-18 02:23 J -11684605.59 -11684605.40 -11684605.22 0.0277 0.0175  
 Earth -36704-04-18 04:18 J -11684605.52 -11684605.32 -11684605.12 0.0277 0.0163 \*  
 Mercury -36704-06-22 12:14 J -11684540.14 -11684539.99 -11684539.83 0.0277 0.0039  
 Mercury -36704-09-19 03:35 J -11684451.48 -11684451.35 -11684451.22 0.0278 0.0154  
 Venus -36704-10-10 20:38 J -11684429.83 -11684429.64 -11684429.44 0.0278 0.0098  
 Mercury -36704-12-16 18:57 J -11684362.73 -11684362.71 -11684362.67 0.0278 0.0272  
 Venus -36703-05-28 03:21 J -11684200.41 -11684200.36 -11684200.29 0.0278 0.0265  
 Earth -36691-10-09 05:30 J -11679683.33 -11679683.27 -11679683.20 0.0282 0.0271  
 Moon -36691-10-09 08:52 J -11679683.16 -11679683.13 -11679683.07 0.0282 0.0276  
 Venus -36691-12-26 08:09 J -11679605.26 -11679605.16 -11679605.05 0.0282 0.0244  
 Mercury -36690-05-08 10:33 J -11679472.14 -11679472.06 -11679471.97 0.0282 0.0238  
 Mercury -36690-08-05 03:21 J -11679383.51 -11679383.36 -11679383.22 0.0281 0.0114  
 Venus -36690-08-13 03:35 J -11679375.56 -11679375.35 -11679375.14 0.0281 0.0062  
 Earth -36690-10-22 15:06 J -11679305.03 -11679304.87 -11679304.69 0.0281 0.0205

Moon -36690-10-22 17:30 J -11679304.92 -11679304.77 -11679304.59 0.0281 0.0209 \*  
 Mercury -36690-11-01 19:26 J -11679294.84 -11679294.69 -11679294.53 0.0281 0.0012  
 Mercury -36689-01-29 11:16 J -11679206.16 -11679206.03 -11679205.89 0.0281 0.0127  
 Venus -36689-03-29 21:35 J -11679145.79 -11679145.60 -11679145.40 0.0281 0.0118  
 Mercury -36689-04-27 02:52 J -11679117.45 -11679117.38 -11679117.30 0.0281 0.0242  
 Venus -36675-01-19 10:33 J -11674102.18 -11674102.06 -11674101.92 0.0277 0.0213  
 Earth -36675-04-12 14:38 J -11674019.13 -11674018.89 -11674018.65 0.0277 0.0050  
 Moon -36675-04-12 16:47 J -11674019.05 -11674018.80 -11674018.55 0.0277 0.0036 \*  
 Mercury -36675-05-16 06:42 J -11673985.30 -11673985.22 -11673985.13 0.0277 0.0225  
 Mercury -36675-08-12 21:21 J -11673896.75 -11673896.61 -11673896.48 0.0277 0.0117  
 Venus -36675-09-05 15:21 J -11673873.06 -11673872.86 -11673872.65 0.0277 0.0050  
 Mercury -36675-11-09 11:59 J -11673808.15 -11673808.00 -11673807.85 0.0278 0.0006  
 Mercury -36674-02-06 03:06 J -11673719.51 -11673719.37 -11673719.23 0.0278 0.0109  
 Venus -36674-04-22 20:52 J -11673643.81 -11673643.63 -11673643.44 0.0278 0.0117  
 Mercury -36674-05-05 18:28 J -11673630.81 -11673630.73 -11673630.64 0.0278 0.0226  
 Mars -36669-06-28 22:18 J -11671749.66 -11671749.57 -11671749.48 0.0283 0.0268  
 Venus -36661-07-07 12:14 J -11668819.11 -11668818.99 -11668818.84 0.0282 0.0221  
 Mercury -36661-09-24 10:33 J -11668740.07 -11668740.06 -11668740.04 0.0282 0.0280  
 Moon -36661-10-15 21:50 J -11668718.83 -11668718.59 -11668718.35 0.0282 0.0010  
 Earth -36661-10-16 00:14 J -11668718.74 -11668718.49 -11668718.25 0.0282 0.0012 \*  
 Mercury -36661-12-22 03:35 J -11668651.48 -11668651.35 -11668651.22 0.0282 0.0153  
 Venus -36660-02-22 08:09 J -11668589.37 -11668589.16 -11668588.95 0.0282 0.0037  
 Mercury -36660-03-20 19:54 J -11668562.82 -11668562.67 -11668562.51 0.0282 0.0031  
 Mercury -36660-06-17 11:59 J -11668474.14 -11668474.00 -11668473.85 0.0282 0.0091  
 Mercury -36660-09-14 03:35 J -11668385.45 -11668385.35 -11668385.24 0.0281 0.0208  
 Venus -36660-10-10 02:09 J -11668359.58 -11668359.41 -11668359.21 0.0281 0.0146  
 Moon -36646-04-07 14:52 J -11663432.02 -11663431.88 -11663431.73 0.0276 0.0220  
 Earth -36646-04-07 17:30 J -11663431.90 -11663431.77 -11663431.64 0.0276 0.0234 \*  
 Venus -36646-08-01 19:40 J -11663315.83 -11663315.68 -11663315.52 0.0277 0.0182  
 Mercury -36646-10-03 10:04 J -11663253.15 -11663253.08 -11663253.01 0.0277 0.0242

Mercury -36646-12-31 00:28 J -11663164.61 -11663164.48 -11663164.35 0.0277 0.0134

Venus -36645-03-18 00:42 J -11663086.68 -11663086.47 -11663086.27 0.0277 0.0019

Mercury -36645-03-28 15:06 J -11663076.02 -11663075.87 -11663075.72 0.0277 0.0024

Earth -36645-04-19 11:45 J -11663054.17 -11663054.01 -11663053.86 0.0277 0.0213

Moon -36645-04-19 13:40 J -11663054.06 -11663053.93 -11663053.78 0.0277 0.0223 \*

Mercury -36645-06-25 06:14 J -11662987.39 -11662987.24 -11662987.10 0.0277 0.0090

Mercury -36645-09-21 21:21 J -11662898.70 -11662898.61 -11662898.50 0.0278 0.0207

Venus -36645-11-02 06:14 J -11662857.41 -11662857.24 -11662857.05 0.0278 0.0148

Mars -36639-08-17 16:33 J -11660743.01 -11660742.81 -11660742.57 0.0284 0.0175

Earth -36632-10-10 13:11 J -11658132.09 -11658131.95 -11658131.79 0.0282 0.0221

Moon -36632-10-10 15:21 J -11658132.01 -11658131.86 -11658131.70 0.0282 0.0222 \*

Venus -36631-01-17 20:09 J -11658032.81 -11658032.66 -11658032.49 0.0282 0.0190

Mercury -36631-05-11 04:47 J -11657919.42 -11657919.30 -11657919.18 0.0282 0.0185

Mercury -36631-08-07 21:21 J -11657830.76 -11657830.61 -11657830.45 0.0281 0.0061

Venus -36631-09-04 15:35 J -11657803.07 -11657802.85 -11657802.64 0.0281 0.0009

Moon -36631-10-23 20:52 J -11657753.71 -11657753.63 -11657753.53 0.0281 0.0262

Earth -36631-10-23 22:47 J -11657753.65 -11657753.55 -11657753.44 0.0281 0.0254 \*

Mercury -36631-11-04 13:26 J -11657742.09 -11657741.94 -11657741.78 0.0281 0.0061

Mercury -36630-02-01 05:16 J -11657653.40 -11657653.28 -11657653.16 0.0281 0.0178

Venus -36630-04-22 09:06 J -11657573.28 -11657573.12 -11657572.94 0.0281 0.0172

Mars -36625-10-16 05:45 J -11655569.56 -11655569.26 -11655568.96 0.0275 0.0052

Venus -36616-02-10 20:52 J -11652529.80 -11652529.63 -11652529.46 0.0277 0.0162

Moon -36616-04-13 21:06 J -11652467.87 -11652467.62 -11652467.36 0.0277 0.0014

Earth -36616-04-13 23:16 J -11652467.77 -11652467.53 -11652467.28 0.0277 0.0002 \*

Mercury -36616-05-19 00:42 J -11652432.59 -11652432.47 -11652432.35 0.0277 0.0175

Mercury -36616-08-15 15:06 J -11652344.01 -11652343.87 -11652343.72 0.0277 0.0065

Venus -36616-09-28 01:40 J -11652300.64 -11652300.43 -11652300.22 0.0278 0.0002

Mercury -36616-11-12 05:59 J -11652255.40 -11652255.25 -11652255.09 0.0278 0.0048

Mercury -36615-02-08 21:21 J -11652166.74 -11652166.61 -11652166.49 0.0278 0.0163

Venus -36615-05-15 07:26 J -11652071.35 -11652071.19 -11652071.02 0.0278 0.0168

Venus -36602-07-31 00:14 J -11647246.67 -11647246.49 -11647246.32 0.0282 0.0167  
 Mercury -36602-09-28 04:47 J -11647187.39 -11647187.30 -11647187.21 0.0282 0.0226  
 Earth -36602-10-18 06:42 J -11647167.46 -11647167.22 -11647166.98 0.0282 0.0038  
 Moon -36602-10-18 08:52 J -11647167.36 -11647167.13 -11647166.89 0.0282 0.0044 \*  
 Mercury -36602-12-25 21:35 J -11647098.75 -11647098.60 -11647098.46 0.0282 0.0101  
 Venus -36601-03-16 19:26 J -11647016.91 -11647016.69 -11647016.47 0.0282 0.0016  
 Mercury -36601-03-23 13:54 J -11647010.08 -11647009.92 -11647009.77 0.0282 0.0022  
 Mercury -36601-06-20 05:45 J -11646921.39 -11646921.26 -11646921.13 0.0281 0.0141  
 Mercury -36601-09-16 21:21 J -11646832.67 -11646832.61 -11646832.55 0.0281 0.0256  
 Venus -36601-11-01 13:11 J -11646787.09 -11646786.95 -11646786.79 0.0281 0.0196  
 Earth -36587-04-09 02:09 J -11641880.58 -11641880.41 -11641880.22 0.0276 0.0182  
 Moon -36587-04-09 03:50 J -11641880.52 -11641880.34 -11641880.15 0.0276 0.0167 \*  
 Venus -36587-08-24 06:14 J -11641743.41 -11641743.24 -11641743.05 0.0277 0.0131  
 Mercury -36587-10-06 04:04 J -11641700.44 -11641700.33 -11641700.22 0.0277 0.0191  
 Mercury -36586-01-02 18:28 J -11641611.87 -11641611.73 -11641611.58 0.0277 0.0082  
 Mercury -36586-04-01 09:21 J -11641523.26 -11641523.11 -11641522.96 0.0277 0.0030  
 Venus -36586-04-10 11:16 J -11641514.23 -11641514.03 -11641513.82 0.0277 0.0034  
 Earth -36586-04-21 20:38 J -11641502.69 -11641502.64 -11641502.56 0.0277 0.0267  
 Moon -36586-04-22 00:14 J -11641502.50 -11641502.49 -11641502.46 0.0277 0.0276  
 Mercury -36586-06-29 00:28 J -11641434.61 -11641434.48 -11641434.35 0.0277 0.0145  
 Mercury -36586-09-25 15:50 J -11641345.88 -11641345.84 -11641345.78 0.0278 0.0263  
 Venus -36586-11-25 17:30 J -11641284.92 -11641284.77 -11641284.63 0.0278 0.0199  
 Mars -36581-11-23 13:26 J -11639460.12 -11639459.94 -11639459.73 0.0283 0.0203  
 Moon -36573-10-11 19:40 J -11636580.88 -11636580.68 -11636580.47 0.0282 0.0165  
 Earth -36573-10-11 22:33 J -11636580.76 -11636580.56 -11636580.36 0.0282 0.0169 \*  
 Venus -36572-02-09 09:21 J -11636460.30 -11636460.11 -11636459.91 0.0282 0.0134  
 Mercury -36572-02-14 06:28 J -11636455.29 -11636455.23 -11636455.16 0.0282 0.0254  
 Mercury -36572-05-13 23:16 J -11636366.66 -11636366.53 -11636366.38 0.0282 0.0129  
 Mercury -36572-08-10 15:50 J -11636278.00 -11636277.84 -11636277.68 0.0281 0.0006  
 Venus -36572-09-27 04:18 J -11636230.53 -11636230.32 -11636230.11 0.0281 0.0047

Mercury -36572-11-07 07:40 J -11636189.32 -11636189.18 -11636189.03 0.0281 0.0114

Mercury -36571-02-03 23:16 J -11636100.61 -11636100.53 -11636100.44 0.0281 0.0231

Venus -36571-05-14 21:35 J -11636000.72 -11636000.60 -11636000.47 0.0281 0.0225

Venus -36558-07-20 03:35 J -11631186.38 -11631186.35 -11631186.30 0.0276 0.0270

Mercury -36557-02-23 04:33 J -11630968.39 -11630968.31 -11630968.23 0.0277 0.0229

Venus -36557-03-05 07:40 J -11630957.36 -11630957.18 -11630956.98 0.0277 0.0110

Moon -36557-04-15 05:45 J -11630916.49 -11630916.26 -11630916.02 0.0277 0.0069

Earth -36557-04-15 09:21 J -11630916.35 -11630916.11 -11630915.87 0.0277 0.0056 \*

Mercury -36557-05-21 18:57 J -11630879.85 -11630879.71 -11630879.58 0.0277 0.0121

Mercury -36557-08-18 09:35 J -11630791.25 -11630791.10 -11630790.95 0.0277 0.0010

Venus -36557-10-20 12:57 J -11630728.17 -11630727.96 -11630727.76 0.0278 0.0055

Mercury -36557-11-15 00:28 J -11630702.62 -11630702.48 -11630702.33 0.0278 0.0104

Mercury -36556-02-11 15:50 J -11630613.93 -11630613.84 -11630613.74 0.0278 0.0221

Venus -36556-06-06 18:57 J -11630498.83 -11630498.71 -11630498.58 0.0278 0.0221

Mars -36550-01-11 09:06 J -11628454.29 -11628454.12 -11628453.91 0.0283 0.0212

Venus -36543-08-22 13:11 J -11625674.15 -11625673.95 -11625673.75 0.0282 0.0111

Mercury -36543-09-30 23:16 J -11625634.65 -11625634.53 -11625634.40 0.0282 0.0169

Earth -36543-10-19 15:50 J -11625616.07 -11625615.84 -11625615.61 0.0282 0.0092

Moon -36543-10-19 19:26 J -11625615.92 -11625615.69 -11625615.46 0.0282 0.0101 \*

Mercury -36543-12-28 15:50 J -11625545.99 -11625545.84 -11625545.68 0.0282 0.0046

Mercury -36542-03-27 08:09 J -11625457.31 -11625457.16 -11625457.01 0.0282 0.0076

Venus -36542-04-09 08:09 J -11625444.37 -11625444.16 -11625443.95 0.0281 0.0071

Mercury -36542-06-23 23:45 J -11625368.61 -11625368.51 -11625368.39 0.0281 0.0194

Venus -36542-11-25 01:40 J -11625214.52 -11625214.43 -11625214.32 0.0281 0.0248

Mars -36536-03-12 12:14 J -11623280.29 -11623279.99 -11623279.68 0.0276 0.0006

Venus -36528-01-29 12:42 J -11620400.06 -11620399.97 -11620399.86 0.0276 0.0241

Earth -36528-04-10 11:45 J -11620329.22 -11620329.01 -11620328.79 0.0277 0.0129

Moon -36528-04-10 15:50 J -11620329.07 -11620328.84 -11620328.62 0.0277 0.0113 \*

Mercury -36528-07-12 07:54 J -11620236.24 -11620236.17 -11620236.11 0.0277 0.0246

Venus -36528-09-15 17:16 J -11620170.97 -11620170.78 -11620170.58 0.0277 0.0079

Mercury -36528-10-08 22:04 J -11620147.71 -11620147.58 -11620147.45 0.0277 0.0138

Mercury -36527-01-05 12:42 J -11620059.12 -11620058.97 -11620058.81 0.0277 0.0028

Mercury -36527-04-04 03:50 J -11619970.49 -11619970.34 -11619970.20 0.0277 0.0086

Venus -36527-05-02 22:33 J -11619941.75 -11619941.56 -11619941.36 0.0277 0.0086

Mercury -36527-07-01 18:57 J -11619881.81 -11619881.71 -11619881.60 0.0278 0.0203

Venus -36527-12-18 04:47 J -11619712.38 -11619712.30 -11619712.20 0.0278 0.0251

Venus -36514-07-18 04:04 J -11615117.41 -11615117.33 -11615117.24 0.0282 0.0258

Moon -36514-10-14 06:14 J -11615029.46 -11615029.24 -11615029.02 0.0282 0.0107

Earth -36514-10-14 09:21 J -11615029.33 -11615029.11 -11615028.87 0.0282 0.0113 \*

Mercury -36513-02-18 01:40 J -11614902.54 -11614902.43 -11614902.31 0.0282 0.0194

Venus -36513-03-03 23:30 J -11614887.72 -11614887.52 -11614887.30 0.0282 0.0077

Mercury -36513-05-16 18:14 J -11614813.89 -11614813.74 -11614813.58 0.0282 0.0070

Mercury -36513-08-13 10:33 J -11614725.21 -11614725.06 -11614724.91 0.0281 0.0052

Venus -36513-10-19 17:59 J -11614657.95 -11614657.75 -11614657.55 0.0281 0.0104

Mercury -36513-11-10 02:23 J -11614636.52 -11614636.40 -11614636.28 0.0281 0.0170

Venus -36512-06-06 11:02 J -11614428.05 -11614428.04 -11614428.01 0.0281 0.0279

Venus -36499-08-11 15:21 J -11609613.98 -11609613.86 -11609613.73 0.0277 0.0218

Mercury -36498-02-25 22:47 J -11609415.66 -11609415.55 -11609415.43 0.0277 0.0175

Venus -36498-03-28 19:40 J -11609384.88 -11609384.68 -11609384.47 0.0277 0.0056

Moon -36498-04-17 20:09 J -11609364.86 -11609364.66 -11609364.44 0.0277 0.0125

Earth -36498-04-17 20:52 J -11609364.86 -11609364.63 -11609364.41 0.0277 0.0113 \*

Mercury -36498-05-25 13:26 J -11609327.09 -11609326.94 -11609326.79 0.0277 0.0065

Mercury -36498-08-22 04:18 J -11609238.47 -11609238.32 -11609238.17 0.0278 0.0048

Venus -36498-11-13 00:57 J -11609155.65 -11609155.46 -11609155.27 0.0278 0.0108

Mercury -36498-11-18 19:26 J -11609149.81 -11609149.69 -11609149.57 0.0278 0.0163

Venus -36497-06-29 07:11 J -11608926.23 -11608926.20 -11608926.16 0.0278 0.0274

Mars -36492-04-19 10:18 J -11607171.29 -11607171.07 -11607170.84 0.0283 0.0162

Venus -36484-01-27 07:11 J -11604331.31 -11604331.20 -11604331.08 0.0282 0.0236

Mercury -36484-07-07 01:26 J -11604170.52 -11604170.44 -11604170.35 0.0282 0.0236

Venus -36484-09-14 02:52 J -11604101.59 -11604101.38 -11604101.16 0.0282 0.0055

Mercury -36484-10-03 18:14 J -11604081.89 -11604081.74 -11604081.60 0.0282 0.0110

Moon -36484-10-21 01:26 J -11604064.64 -11604064.44 -11604064.22 0.0282 0.0158

Earth -36484-10-21 01:54 J -11604064.62 -11604064.42 -11604064.21 0.0282 0.0148 \*

Mercury -36484-12-31 10:33 J -11603993.21 -11603993.06 -11603992.90 0.0281 0.0013

Mercury -36483-03-30 02:38 J -11603904.53 -11603904.39 -11603904.26 0.0281 0.0132

Venus -36483-05-01 21:35 J -11603871.79 -11603871.60 -11603871.41 0.0281 0.0125

Mercury -36483-06-26 18:14 J -11603815.81 -11603815.74 -11603815.67 0.0281 0.0248

Venus -36469-02-21 23:45 J -11598827.66 -11598827.51 -11598827.35 0.0277 0.0189

Earth -36469-04-11 21:50 J -11598777.82 -11598777.59 -11598777.35 0.0277 0.0076

Moon -36469-04-11 22:18 J -11598777.82 -11598777.57 -11598777.32 0.0277 0.0061 \*

Mercury -36469-07-15 01:54 J -11598683.52 -11598683.42 -11598683.31 0.0277 0.0194

Venus -36469-10-08 04:33 J -11598598.52 -11598598.31 -11598598.10 0.0277 0.0027

Mercury -36469-10-11 16:18 J -11598594.96 -11598594.82 -11598594.67 0.0277 0.0084

Mercury -36468-01-08 07:11 J -11598506.35 -11598506.20 -11598506.05 0.0277 0.0028

Mercury -36468-04-06 22:18 J -11598417.70 -11598417.57 -11598417.44 0.0278 0.0143

Venus -36468-05-25 10:18 J -11598369.25 -11598369.07 -11598368.89 0.0278 0.0138

Mercury -36468-07-04 13:40 J -11598328.98 -11598328.93 -11598328.87 0.0278 0.0261

Venus -36455-08-09 19:11 J -11593544.85 -11593544.70 -11593544.54 0.0282 0.0199

Earth -36455-10-15 21:50 J -11593477.82 -11593477.59 -11593477.34 0.0282 0.0055

Moon -36455-10-15 21:50 J -11593477.82 -11593477.59 -11593477.35 0.0282 0.0050 \*

Mercury -36455-11-24 04:04 J -11593438.39 -11593438.33 -11593438.26 0.0282 0.0258

Mercury -36454-02-20 21:06 J -11593349.76 -11593349.62 -11593349.48 0.0282 0.0132

Venus -36454-03-27 14:38 J -11593315.11 -11593314.89 -11593314.67 0.0282 0.0018

Mercury -36454-05-20 13:26 J -11593261.09 -11593260.94 -11593260.78 0.0281 0.0010

Mercury -36454-08-17 05:30 J -11593172.41 -11593172.27 -11593172.13 0.0281 0.0112

Venus -36454-11-12 08:38 J -11593085.31 -11593085.14 -11593084.96 0.0281 0.0160

Mercury -36454-11-13 21:06 J -11593083.71 -11593083.62 -11593083.53 0.0281 0.0228

Mars -36448-08-06 22:47 J -11590990.85 -11590990.55 -11590990.25 0.0275 0.0074

Moon -36440-04-06 14:09 J -11588190.97 -11588190.91 -11588190.85 0.0276 0.0266

Venus -36440-09-03 02:52 J -11588041.54 -11588041.38 -11588041.21 0.0277 0.0165



Mercury -36440-12-02 02:52 J -11587951.46 -11587951.38 -11587951.29 0.0277 0.0228

Mercury -36439-02-28 17:16 J -11587862.91 -11587862.78 -11587862.64 0.0277 0.0120

Earth -36439-04-19 07:40 J -11587813.37 -11587813.18 -11587812.98 0.0277 0.0169

Moon -36439-04-19 11:02 J -11587813.21 -11587813.04 -11587812.84 0.0277 0.0179 \*

Venus -36439-04-20 07:26 J -11587812.40 -11587812.19 -11587811.98 0.0277 0.0003

Mercury -36439-05-28 07:54 J -11587774.32 -11587774.17 -11587774.02 0.0277 0.0009

Mercury -36439-08-24 22:47 J -11587685.69 -11587685.55 -11587685.40 0.0278 0.0106

Mercury -36439-11-21 14:09 J -11587597.00 -11587596.91 -11587596.81 0.0278 0.0222

Venus -36439-12-05 12:42 J -11587583.13 -11587582.97 -11587582.79 0.0278 0.0162

Moon -36426-10-10 02:38 J -11582891.44 -11582891.39 -11582891.32 0.0282 0.0274

Earth -36426-10-10 02:38 J -11582891.42 -11582891.39 -11582891.33 0.0282 0.0276 \*

Venus -36425-02-19 22:04 J -11582758.74 -11582758.58 -11582758.41 0.0282 0.0178

Mercury -36425-07-09 20:38 J -11582617.76 -11582617.64 -11582617.51 0.0282 0.0175

Mercury -36425-10-06 13:11 J -11582529.10 -11582528.95 -11582528.79 0.0281 0.0051

Venus -36425-10-06 17:30 J -11582528.99 -11582528.77 -11582528.55 0.0281 0.0003 \*

Moon -36425-10-22 10:04 J -11582513.24 -11582513.08 -11582512.92 0.0281 0.0217

Earth -36425-10-22 13:26 J -11582513.10 -11582512.94 -11582512.76 0.0281 0.0205 \*

Mercury -36424-01-03 05:30 J -11582440.42 -11582440.27 -11582440.12 0.0281 0.0071

Mercury -36424-04-01 21:21 J -11582351.72 -11582351.61 -11582351.50 0.0281 0.0189

Venus -36424-05-24 11:30 J -11582299.18 -11582299.02 -11582298.85 0.0281 0.0181

Venus -36410-03-16 10:18 J -11577255.24 -11577255.07 -11577254.88 0.0277 0.0137

Moon -36410-04-14 03:50 J -11577226.58 -11577226.34 -11577226.09 0.0277 0.0012

Earth -36410-04-14 07:26 J -11577226.43 -11577226.19 -11577225.94 0.0277 0.0023 \*

Mercury -36410-04-21 05:45 J -11577219.32 -11577219.26 -11577219.20 0.0277 0.0249

Mercury -36410-07-18 19:54 J -11577130.80 -11577130.67 -11577130.54 0.0277 0.0141

Mercury -36410-10-15 10:33 J -11577042.21 -11577042.06 -11577041.91 0.0277 0.0030

Venus -36410-10-31 15:21 J -11577026.06 -11577025.86 -11577025.65 0.0277 0.0027

Mercury -36409-01-12 01:26 J -11576953.58 -11576953.44 -11576953.29 0.0278 0.0084

Mercury -36409-04-09 16:47 J -11576864.90 -11576864.80 -11576864.69 0.0278 0.0200

Venus -36409-06-16 21:21 J -11576796.75 -11576796.61 -11576796.45 0.0278 0.0190

Mars -36404-09-14 10:04 J -11574881.34 -11574881.08 -11574880.81 0.0283 0.0081  
 Venus -36396-09-01 10:33 J -11571972.24 -11571972.06 -11571971.87 0.0282 0.0140  
 Earth -36396-10-17 10:33 J -11571926.31 -11571926.06 -11571925.81 0.0282 0.0003  
 Moon -36396-10-17 13:40 J -11571926.17 -11571925.93 -11571925.68 0.0282 0.0011 \*  
 Mercury -36396-11-26 23:45 J -11571885.63 -11571885.51 -11571885.40 0.0282 0.0195  
 Mercury -36395-02-23 16:18 J -11571796.97 -11571796.82 -11571796.67 0.0282 0.0070  
 Venus -36395-04-19 05:30 J -11571742.48 -11571742.27 -11571742.05 0.0281 0.0040  
 Mercury -36395-05-23 08:38 J -11571708.30 -11571708.14 -11571707.99 0.0281 0.0052  
 Mercury -36395-08-20 00:28 J -11571619.60 -11571619.48 -11571619.36 0.0281 0.0170  
 Venus -36395-12-04 23:02 J -11571512.67 -11571512.54 -11571512.40 0.0281 0.0217  
 Venus -36381-02-09 09:50 J -11566698.12 -11566698.09 -11566698.05 0.0276 0.0272  
 Earth -36381-04-07 23:59 J -11566639.63 -11566639.50 -11566639.35 0.0277 0.0227  
 Moon -36381-04-08 03:21 J -11566639.51 -11566639.36 -11566639.20 0.0277 0.0213 \*  
 Venus -36381-09-25 13:54 J -11566469.11 -11566468.92 -11566468.73 0.0277 0.0113  
 Mercury -36381-12-04 21:06 J -11566398.74 -11566398.62 -11566398.50 0.0277 0.0175  
 Mercury -36380-03-03 11:30 J -11566310.16 -11566310.02 -11566309.87 0.0277 0.0066  
 Earth -36380-04-20 17:45 J -11566261.89 -11566261.76 -11566261.60 0.0277 0.0224  
 Moon -36380-04-20 20:09 J -11566261.78 -11566261.66 -11566261.51 0.0277 0.0230 \*  
 Venus -36380-05-12 18:42 J -11566239.92 -11566239.72 -11566239.51 0.0277 0.0050  
 Mercury -36380-05-31 02:23 J -11566221.55 -11566221.40 -11566221.25 0.0278 0.0047  
 Mercury -36380-08-27 17:30 J -11566132.89 -11566132.77 -11566132.65 0.0278 0.0163  
 Venus -36380-12-28 00:28 J -11566010.60 -11566010.48 -11566010.34 0.0278 0.0214  
 Moon -36367-10-11 11:30 J -11561340.16 -11561340.02 -11561339.84 0.0282 0.0215  
 Earth -36367-10-11 15:21 J -11561340.01 -11561339.86 -11561339.70 0.0282 0.0218 \*  
 Venus -36366-03-14 13:11 J -11561186.15 -11561185.95 -11561185.75 0.0282 0.0119  
 Mercury -36366-04-15 23:02 J -11561153.62 -11561153.54 -11561153.45 0.0282 0.0239  
 Mercury -36366-07-13 15:50 J -11561064.98 -11561064.84 -11561064.69 0.0281 0.0113  
 Mercury -36366-10-10 08:23 J -11560976.31 -11560976.15 -11560976.00 0.0281 0.0011  
 Moon -36366-10-24 22:47 J -11560961.59 -11560961.55 -11560961.48 0.0281 0.0273  
 Earth -36366-10-25 01:11 J -11560961.53 -11560961.45 -11560961.35 0.0281 0.0261 \*

Venus -36366-10-30 08:09 J -11560956.37 -11560956.16 -11560955.95 0.0281 0.0060  
 Mercury -36365-01-07 00:14 J -11560887.62 -11560887.49 -11560887.35 0.0281 0.0130  
 Mercury -36365-04-04 16:04 J -11560798.90 -11560798.83 -11560798.76 0.0281 0.0246  
 Venus -36365-06-16 01:40 J -11560726.54 -11560726.43 -11560726.31 0.0281 0.0236  
 Mars -36360-12-31 22:33 J -11558701.82 -11558701.56 -11558701.27 0.0276 0.0126  
 Venus -36352-08-21 15:35 J -11555911.93 -11555911.85 -11555911.74 0.0277 0.0247  
 Venus -36351-04-07 20:09 J -11555682.85 -11555682.66 -11555682.46 0.0277 0.0087  
 Moon -36351-04-15 13:11 J -11555675.19 -11555674.95 -11555674.72 0.0277 0.0038  
 Earth -36351-04-15 15:21 J -11555675.10 -11555674.86 -11555674.61 0.0277 0.0028 \*  
 Mercury -36351-04-23 23:16 J -11555666.63 -11555666.53 -11555666.42 0.0277 0.0200  
 Mercury -36351-07-21 13:40 J -11555578.07 -11555577.93 -11555577.78 0.0277 0.0091  
 Mercury -36351-10-18 04:33 J -11555489.46 -11555489.31 -11555489.16 0.0278 0.0022  
 Venus -36351-11-23 01:26 J -11555453.63 -11555453.44 -11555453.24 0.0278 0.0077  
 Mercury -36350-01-14 19:26 J -11555400.82 -11555400.69 -11555400.55 0.0278 0.0138  
 Mercury -36350-04-13 11:02 J -11555312.10 -11555312.04 -11555311.98 0.0278 0.0255  
 Venus -36350-07-10 07:54 J -11555224.27 -11555224.17 -11555224.07 0.0278 0.0241  
 Venus -36337-02-07 05:45 J -11550629.33 -11550629.26 -11550629.17 0.0283 0.0261  
 Mercury -36337-09-02 01:54 J -11550421.47 -11550421.42 -11550421.35 0.0282 0.0260  
 Venus -36337-09-24 01:40 J -11550399.64 -11550399.43 -11550399.22 0.0282 0.0081  
 Earth -36337-10-18 22:47 J -11550374.79 -11550374.55 -11550374.30 0.0282 0.0061  
 Moon -36337-10-19 01:40 J -11550374.67 -11550374.43 -11550374.18 0.0282 0.0067 \*  
 Mercury -36337-11-29 18:57 J -11550332.85 -11550332.71 -11550332.57 0.0282 0.0133  
 Mercury -36336-02-26 11:30 J -11550244.18 -11550244.02 -11550243.86 0.0282 0.0010  
 Venus -36336-05-11 20:09 J -11550169.86 -11550169.66 -11550169.45 0.0281 0.0098  
 Mercury -36336-05-26 03:35 J -11550155.49 -11550155.35 -11550155.21 0.0281 0.0111  
 Mercury -36336-08-22 19:11 J -11550066.79 -11550066.70 -11550066.61 0.0281 0.0228  
 Venus -36336-12-27 13:40 J -11549939.98 -11549939.93 -11549939.88 0.0281 0.0272  
 Venus -36322-03-03 19:40 J -11545125.79 -11545125.68 -11545125.55 0.0276 0.0222  
 Earth -36322-04-10 08:23 J -11545088.32 -11545088.15 -11545087.95 0.0277 0.0177  
 Moon -36322-04-10 11:30 J -11545088.22 -11545088.02 -11545087.82 0.0277 0.0162 \*

Mercury -36322-09-11 00:42 J -11544934.55 -11544934.47 -11544934.39 0.0277 0.0232

Venus -36322-10-18 23:59 J -11544896.70 -11544896.50 -11544896.29 0.0277 0.0062

Mercury -36322-12-08 14:52 J -11544846.01 -11544845.88 -11544845.74 0.0277 0.0124

Mercury -36321-03-06 05:30 J -11544757.42 -11544757.27 -11544757.12 0.0277 0.0014

Earth -36321-04-22 02:52 J -11544710.39 -11544710.38 -11544710.34 0.0278 0.0276

Mercury -36321-06-02 20:23 J -11544668.79 -11544668.65 -11544668.50 0.0278 0.0102

Venus -36321-06-04 05:16 J -11544667.47 -11544667.28 -11544667.09 0.0278 0.0101

Mercury -36321-08-30 11:45 J -11544580.10 -11544580.01 -11544579.91 0.0278 0.0218

Venus -36320-01-19 11:16 J -11544438.08 -11544438.03 -11544437.96 0.0278 0.0265

Mars -36315-02-08 07:26 J -11542592.47 -11542592.19 -11542591.92 0.0283 0.0041

Venus -36308-08-19 07:54 J -11539843.27 -11539843.17 -11539843.05 0.0282 0.0241

Moon -36308-10-13 00:42 J -11539788.66 -11539788.47 -11539788.27 0.0282 0.0157

Earth -36308-10-13 03:06 J -11539788.57 -11539788.37 -11539788.16 0.0282 0.0162 \*

Venus -36307-04-06 03:35 J -11539613.56 -11539613.35 -11539613.13 0.0281 0.0062

Mercury -36307-04-18 18:14 J -11539600.86 -11539600.74 -11539600.61 0.0281 0.0178

Mercury -36307-07-16 11:02 J -11539512.20 -11539512.04 -11539511.89 0.0281 0.0054

Mercury -36307-10-13 03:06 J -11539423.52 -11539423.37 -11539423.21 0.0281 0.0068

Venus -36307-11-21 22:04 J -11539383.77 -11539383.58 -11539383.38 0.0281 0.0117

Mercury -36306-01-09 18:57 J -11539334.82 -11539334.71 -11539334.59 0.0281 0.0187

Mars -36301-04-06 00:57 J -11537421.50 -11537421.46 -11537421.42 0.0276 0.0274

Venus -36293-09-13 00:28 J -11534339.62 -11534339.48 -11534339.33 0.0277 0.0198

Mercury -36292-01-28 02:23 J -11534202.44 -11534202.40 -11534202.35 0.0277 0.0261

Earth -36292-04-16 21:35 J -11534123.84 -11534123.60 -11534123.36 0.0277 0.0076

Moon -36292-04-16 23:16 J -11534123.75 -11534123.53 -11534123.30 0.0277 0.0084 \*

Mercury -36292-04-26 16:33 J -11534113.93 -11534113.81 -11534113.68 0.0277 0.0153

Venus -36292-04-30 05:16 J -11534110.49 -11534110.28 -11534110.08 0.0277 0.0037

Mercury -36292-07-24 07:11 J -11534025.35 -11534025.20 -11534025.05 0.0278 0.0042

Mercury -36292-10-20 22:04 J -11533936.73 -11533936.58 -11533936.43 0.0278 0.0072

Venus -36292-12-15 10:33 J -11533881.24 -11533881.06 -11533880.87 0.0278 0.0126

Mercury -36291-01-17 13:11 J -11533848.06 -11533847.95 -11533847.83 0.0278 0.0188

Venus -36278-03-01 20:09 J -11529056.81 -11529056.66 -11529056.51 0.0282 0.0203  
 Mercury -36278-09-05 21:06 J -11528868.72 -11528868.62 -11528868.50 0.0282 0.0200  
 Venus -36278-10-17 15:35 J -11528827.06 -11528826.85 -11528826.63 0.0282 0.0024  
 Moon -36278-10-21 07:54 J -11528823.39 -11528823.17 -11528822.94 0.0282 0.0125  
 Earth -36278-10-21 09:35 J -11528823.32 -11528823.10 -11528822.87 0.0282 0.0116 \*  
 Mercury -36278-12-03 13:54 J -11528780.07 -11528779.92 -11528779.77 0.0282 0.0075  
 Mercury -36277-03-01 06:14 J -11528691.39 -11528691.24 -11528691.08 0.0281 0.0048  
 Mercury -36277-05-28 22:04 J -11528602.70 -11528602.58 -11528602.45 0.0281 0.0167  
 Venus -36277-06-03 09:50 J -11528597.26 -11528597.09 -11528596.90 0.0281 0.0154  
 Mars -36271-05-28 13:26 J -11526412.13 -11526411.94 -11526411.71 0.0275 0.0201  
 Venus -36263-03-26 05:02 J -11523553.45 -11523553.29 -11523553.13 0.0277 0.0172  
 Moon -36263-04-11 13:54 J -11523537.14 -11523536.92 -11523536.68 0.0277 0.0116  
 Earth -36263-04-11 15:21 J -11523537.07 -11523536.86 -11523536.64 0.0277 0.0129 \*  
 Mercury -36263-09-13 17:59 J -11523381.86 -11523381.75 -11523381.63 0.0277 0.0185  
 Venus -36263-11-10 09:21 J -11523324.32 -11523324.11 -11523323.90 0.0277 0.0012  
 Mercury -36263-12-11 08:23 J -11523293.29 -11523293.15 -11523293.00 0.0277 0.0076  
 Mercury -36262-03-09 23:16 J -11523204.68 -11523204.53 -11523204.38 0.0277 0.0038  
 Mercury -36262-06-06 14:09 J -11523116.03 -11523115.91 -11523115.78 0.0278 0.0153  
 Venus -36262-06-27 14:38 J -11523095.06 -11523094.89 -11523094.71 0.0278 0.0151  
 Mercury -36262-09-03 05:30 J -11523027.29 -11523027.27 -11523027.23 0.0278 0.0271  
 Venus -36249-09-10 21:50 J -11518270.75 -11518270.59 -11518270.42 0.0282 0.0184  
 Earth -36249-10-14 13:26 J -11518237.16 -11518236.94 -11518236.71 0.0282 0.0108  
 Moon -36249-10-14 15:50 J -11518237.07 -11518236.84 -11518236.62 0.0282 0.0099 \*  
 Mercury -36248-01-22 20:09 J -11518136.73 -11518136.66 -11518136.58 0.0282 0.0247  
 Mercury -36248-04-21 13:11 J -11518048.09 -11518047.95 -11518047.81 0.0281 0.0120  
 Venus -36248-04-28 17:30 J -11518040.99 -11518040.77 -11518040.56 0.0281 0.0007  
 Mercury -36248-07-19 05:45 J -11517959.42 -11517959.26 -11517959.11 0.0281 0.0007  
 Mercury -36248-10-15 21:50 J -11517870.73 -11517870.59 -11517870.45 0.0281 0.0124  
 Venus -36248-12-14 11:30 J -11517811.18 -11517811.02 -11517810.84 0.0281 0.0172  
 Mercury -36247-01-12 13:26 J -11517782.02 -11517781.94 -11517781.86 0.0281 0.0241

Venus -36234-10-06 08:09 J -11512767.33 -11512767.16 -11512766.99 0.0277 0.0150  
 Mercury -36233-01-31 19:11 J -11512649.79 -11512649.70 -11512649.61 0.0277 0.0218  
 Earth -36233-04-18 01:40 J -11512572.65 -11512572.43 -11512572.21 0.0277 0.0120  
 Moon -36233-04-18 05:16 J -11512572.49 -11512572.28 -11512572.06 0.0277 0.0129 \*  
 Mercury -36233-04-29 09:35 J -11512561.24 -11512561.10 -11512560.96 0.0277 0.0109  
 Venus -36233-05-22 12:57 J -11512538.17 -11512537.96 -11512537.75 0.0277 0.0011  
 Mercury -36233-07-27 00:14 J -11512472.64 -11512472.49 -11512472.34 0.0278 0.0004  
 Mercury -36233-10-23 15:06 J -11512384.00 -11512383.87 -11512383.73 0.0278 0.0119  
 Venus -36232-01-06 18:42 J -11512308.88 -11512308.72 -11512308.56 0.0278 0.0173  
 Mercury -36232-01-20 06:28 J -11512295.30 -11512295.23 -11512295.14 0.0278 0.0236  
 Mars -36227-07-05 13:26 J -11510303.22 -11510302.94 -11510302.66 0.0283 0.0020  
 Venus -36219-03-24 09:06 J -11507484.30 -11507484.12 -11507483.93 0.0282 0.0147  
 Mercury -36219-06-11 22:47 J -11507404.59 -11507404.55 -11507404.50 0.0282 0.0271  
 Mercury -36219-09-08 15:50 J -11507315.97 -11507315.84 -11507315.70 0.0282 0.0143  
 Moon -36219-10-22 14:38 J -11507272.06 -11507271.89 -11507271.69 0.0282 0.0181  
 Earth -36219-10-22 18:28 J -11507271.92 -11507271.73 -11507271.52 0.0282 0.0168 \*  
 Venus -36219-11-09 04:33 J -11507254.52 -11507254.31 -11507254.09 0.0282 0.0032  
 Mercury -36219-12-06 08:23 J -11507227.31 -11507227.15 -11507226.99 0.0282 0.0019  
 Mercury -36218-03-05 00:28 J -11507138.62 -11507138.48 -11507138.33 0.0281 0.0103  
 Mercury -36218-06-01 16:18 J -11507049.91 -11507049.82 -11507049.72 0.0281 0.0220  
 Venus -36218-06-26 22:33 J -11507024.70 -11507024.56 -11507024.41 0.0281 0.0208  
 Mars -36213-08-31 15:21 J -11505132.05 -11505131.86 -11505131.63 0.0276 0.0202  
 Moon -36204-04-12 16:18 J -11501986.05 -11501985.82 -11501985.58 0.0276 0.0073  
 Earth -36204-04-12 20:09 J -11501985.89 -11501985.66 -11501985.42 0.0276 0.0084 \*  
 Venus -36204-04-17 12:42 J -11501981.15 -11501980.97 -11501980.78 0.0277 0.0125  
 Mercury -36204-06-19 20:52 J -11501917.69 -11501917.63 -11501917.56 0.0277 0.0248  
 Mercury -36204-09-16 11:02 J -11501829.16 -11501829.04 -11501828.91 0.0277 0.0140  
 Venus -36204-12-02 17:16 J -11501751.98 -11501751.78 -11501751.57 0.0277 0.0037  
 Mercury -36204-12-14 01:40 J -11501740.58 -11501740.43 -11501740.28 0.0277 0.0029  
 Mercury -36203-03-12 16:33 J -11501651.96 -11501651.81 -11501651.67 0.0277 0.0085

Mercury -36203-06-09 07:40 J -11501563.29 -11501563.18 -11501563.08 0.0278 0.0201  
 Venus -36203-07-19 22:33 J -11501522.69 -11501522.56 -11501522.40 0.0278 0.0199  
 Venus -36190-10-04 10:18 J -11496698.25 -11496698.07 -11496697.87 0.0282 0.0129  
 Earth -36190-10-16 21:35 J -11496685.83 -11496685.60 -11496685.35 0.0282 0.0058  
 Moon -36190-10-17 01:11 J -11496685.69 -11496685.45 -11496685.20 0.0282 0.0046 \*  
 Mercury -36189-01-26 14:52 J -11496584.00 -11496583.88 -11496583.77 0.0282 0.0191  
 Mercury -36189-04-24 07:26 J -11496495.34 -11496495.19 -11496495.03 0.0281 0.0066  
 Venus -36189-05-21 05:45 J -11496468.47 -11496468.26 -11496468.05 0.0281 0.0050  
 Mercury -36189-07-21 23:45 J -11496406.66 -11496406.51 -11496406.35 0.0281 0.0058  
 Mercury -36189-10-18 15:50 J -11496317.96 -11496317.84 -11496317.72 0.0281 0.0176  
 Venus -36188-01-05 23:30 J -11496238.64 -11496238.52 -11496238.38 0.0281 0.0224  
 Mars -36183-10-21 21:35 J -11494123.75 -11494123.60 -11494123.43 0.0275 0.0236  
 Venus -36175-03-13 10:47 J -11491424.11 -11491424.05 -11491423.98 0.0276 0.0261  
 Venus -36175-10-28 14:38 J -11491195.08 -11491194.89 -11491194.69 0.0277 0.0104  
 Mercury -36174-02-03 11:45 J -11491097.12 -11491097.01 -11491096.89 0.0277 0.0177  
 Earth -36174-04-20 04:18 J -11491021.52 -11491021.32 -11491021.12 0.0277 0.0162  
 Moon -36174-04-20 04:33 J -11491021.50 -11491021.31 -11491021.10 0.0277 0.0167 \*  
 Mercury -36174-05-03 02:09 J -11491008.55 -11491008.41 -11491008.26 0.0277 0.0067  
 Venus -36174-06-14 19:26 J -11490965.89 -11490965.69 -11490965.48 0.0278 0.0058  
 Mercury -36174-07-30 17:02 J -11490919.94 -11490919.79 -11490919.64 0.0278 0.0047  
 Mercury -36174-10-27 07:54 J -11490831.29 -11490831.17 -11490831.04 0.0278 0.0163  
 Venus -36173-01-30 01:26 J -11490736.56 -11490736.44 -11490736.31 0.0278 0.0219  
 Venus -36161-08-29 00:14 J -11486141.54 -11486141.49 -11486141.43 0.0283 0.0272  
 Moon -36161-10-10 10:33 J -11486099.14 -11486099.06 -11486098.96 0.0283 0.0263  
 Earth -36161-10-10 13:54 J -11486098.98 -11486098.92 -11486098.84 0.0283 0.0270 \*  
 Venus -36160-04-15 20:38 J -11485911.84 -11485911.64 -11485911.43 0.0282 0.0093  
 Mercury -36160-06-14 17:02 J -11485851.89 -11485851.79 -11485851.69 0.0282 0.0218  
 Mercury -36160-09-11 09:50 J -11485763.24 -11485763.09 -11485762.94 0.0282 0.0091  
 Earth -36160-10-24 01:11 J -11485720.60 -11485720.45 -11485720.29 0.0282 0.0216  
 Moon -36160-10-24 00:57 J -11485720.59 -11485720.46 -11485720.32 0.0282 0.0231 \*

Venus -36160-12-01 15:50 J -11485682.04 -11485681.84 -11485681.63 0.0282 0.0086  
 Mercury -36160-12-09 02:23 J -11485674.56 -11485674.40 -11485674.25 0.0282 0.0033  
 Mercury -36159-03-07 18:28 J -11485585.86 -11485585.73 -11485585.60 0.0282 0.0153  
 Mercury -36159-06-04 10:04 J -11485497.12 -11485497.08 -11485497.04 0.0281 0.0270  
 Venus -36159-07-19 10:04 J -11485452.16 -11485452.08 -11485452.00 0.0281 0.0260  
 Venus -36146-09-23 15:50 J -11480637.94 -11480637.84 -11480637.72 0.0276 0.0235  
 Earth -36145-04-13 23:02 J -11480434.78 -11480434.54 -11480434.30 0.0276 0.0042  
 Moon -36145-04-13 22:47 J -11480434.78 -11480434.55 -11480434.31 0.0276 0.0034 \*  
 Venus -36145-05-09 19:40 J -11480408.88 -11480408.68 -11480408.48 0.0276 0.0078  
 Mercury -36145-06-22 13:26 J -11480365.03 -11480364.94 -11480364.84 0.0277 0.0206  
 Mercury -36145-09-19 03:50 J -11480276.48 -11480276.34 -11480276.20 0.0277 0.0097  
 Mercury -36145-12-16 18:28 J -11480187.89 -11480187.73 -11480187.58 0.0277 0.0016  
 Venus -36145-12-25 00:14 J -11480179.68 -11480179.49 -11480179.29 0.0277 0.0083  
 Mercury -36144-03-15 09:21 J -11480099.25 -11480099.11 -11480098.98 0.0277 0.0129  
 Mercury -36144-06-12 00:28 J -11480010.54 -11480010.48 -11480010.41 0.0278 0.0246  
 Venus -36144-08-11 05:59 J -11479950.34 -11479950.25 -11479950.15 0.0278 0.0244  
 Mars -36139-11-28 22:33 J -11478014.83 -11478014.56 -11478014.28 0.0283 0.0046  
 Venus -36131-03-11 01:26 J -11475355.52 -11475355.44 -11475355.34 0.0283 0.0254  
 Moon -36131-10-18 04:04 J -11475134.58 -11475134.33 -11475134.07 0.0282 0.0004  
 Earth -36131-10-18 04:18 J -11475134.56 -11475134.32 -11475134.07 0.0282 0.0010 \*  
 Venus -36131-10-26 21:50 J -11475125.80 -11475125.59 -11475125.38 0.0282 0.0075  
 Mercury -36131-11-01 15:50 J -11475119.89 -11475119.84 -11475119.79 0.0282 0.0266  
 Mercury -36130-01-29 08:52 J -11475031.27 -11475031.13 -11475030.99 0.0282 0.0139  
 Mercury -36130-04-28 01:26 J -11474942.60 -11474942.44 -11474942.28 0.0281 0.0014  
 Venus -36130-06-13 16:47 J -11474896.00 -11474895.80 -11474895.59 0.0281 0.0103  
 Mercury -36130-07-25 17:30 J -11474853.91 -11474853.77 -11474853.62 0.0281 0.0108  
 Mercury -36130-10-22 09:21 J -11474765.20 -11474765.11 -11474765.02 0.0281 0.0226  
 Venus -36129-01-29 10:33 J -11474666.09 -11474666.06 -11474666.01 0.0281 0.0275  
 Mars -36124-01-24 17:59 J -11472843.98 -11472843.75 -11472843.49 0.0276 0.0172  
 Venus -36116-04-04 16:18 J -11469851.94 -11469851.82 -11469851.68 0.0276 0.0216



Moon -36116-04-08 11:30 J -11469848.13 -11469848.02 -11469847.89 0.0276 0.0243  
 Earth -36116-04-08 11:59 J -11469848.10 -11469848.00 -11469847.91 0.0276 0.0253 \*  
 Mercury -36116-11-09 13:40 J -11469632.99 -11469632.93 -11469632.86 0.0277 0.0246  
 Venus -36116-11-19 20:23 J -11469622.85 -11469622.65 -11469622.44 0.0277 0.0059  
 Mercury -36115-02-06 03:50 J -11469544.46 -11469544.34 -11469544.20 0.0277 0.0139  
 Moon -36115-04-21 01:26 J -11469470.60 -11469470.44 -11469470.26 0.0277 0.0202  
 Earth -36115-04-21 05:16 J -11469470.44 -11469470.28 -11469470.11 0.0277 0.0201 \*  
 Mercury -36115-05-05 18:28 J -11469455.88 -11469455.73 -11469455.58 0.0277 0.0027  
 Venus -36115-07-07 01:26 J -11469393.64 -11469393.44 -11469393.25 0.0277 0.0102  
 Mercury -36115-08-02 09:21 J -11469367.26 -11469367.11 -11469366.97 0.0278 0.0087  
 Mercury -36115-10-30 00:28 J -11469278.58 -11469278.48 -11469278.37 0.0278 0.0204  
 Venus -36114-02-21 07:26 J -11469164.25 -11469164.19 -11469164.12 0.0278 0.0263  
 Venus -36102-09-21 10:04 J -11464569.20 -11464569.08 -11464568.94 0.0283 0.0221  
 Earth -36102-10-12 17:59 J -11464547.89 -11464547.75 -11464547.59 0.0283 0.0226  
 Moon -36102-10-12 17:59 J -11464547.89 -11464547.75 -11464547.59 0.0283 0.0219 \*  
 Venus -36101-05-08 06:42 J -11464339.44 -11464339.22 -11464339.01 0.0283 0.0041  
 Mercury -36101-06-17 10:33 J -11464299.18 -11464299.06 -11464298.93 0.0282 0.0169  
 Mercury -36101-09-14 03:21 J -11464210.52 -11464210.36 -11464210.20 0.0282 0.0043  
 Earth -36101-10-25 05:30 J -11464169.36 -11464169.27 -11464169.18 0.0282 0.0261  
 Moon -36101-10-25 08:52 J -11464169.16 -11464169.13 -11464169.08 0.0282 0.0278  
 Mercury -36101-12-11 19:40 J -11464121.83 -11464121.68 -11464121.53 0.0282 0.0080  
 Venus -36101-12-24 01:54 J -11464109.61 -11464109.42 -11464109.23 0.0282 0.0136  
 Mercury -36100-03-10 11:30 J -11464033.12 -11464033.02 -11464032.91 0.0282 0.0199  
 Venus -36087-10-15 22:04 J -11459065.72 -11459065.58 -11459065.43 0.0276 0.0190  
 Mercury -36086-03-29 15:50 J -11458900.86 -11458900.84 -11458900.82 0.0276 0.0273  
 Earth -36086-04-16 00:57 J -11458883.70 -11458883.46 -11458883.21 0.0276 0.0001  
 Moon -36086-04-16 04:33 J -11458883.55 -11458883.31 -11458883.06 0.0276 0.0005 \*  
 Venus -36086-06-02 01:54 J -11458836.62 -11458836.42 -11458836.21 0.0276 0.0033  
 Mercury -36086-06-26 05:59 J -11458812.37 -11458812.25 -11458812.13 0.0276 0.0166  
 Mercury -36086-09-22 20:09 J -11458723.80 -11458723.66 -11458723.51 0.0277 0.0057

Mercury -36086-12-20 11:02 J -11458635.19 -11458635.04 -11458634.89 0.0277 0.0057

Venus -36085-01-17 06:28 J -11458607.40 -11458607.23 -11458607.03 0.0277 0.0128

Mercury -36085-03-18 01:54 J -11458546.54 -11458546.42 -11458546.30 0.0277 0.0172

Venus -36072-04-02 11:30 J -11453783.16 -11453783.02 -11453782.86 0.0283 0.0203

Moon -36072-10-19 05:02 J -11453583.53 -11453583.29 -11453583.04 0.0282 0.0050

Earth -36072-10-19 08:38 J -11453583.38 -11453583.14 -11453582.90 0.0282 0.0035 \*

Mercury -36072-11-04 09:21 J -11453567.21 -11453567.11 -11453567.01 0.0282 0.0217

Venus -36072-11-18 07:54 J -11453553.39 -11453553.17 -11453552.96 0.0282 0.0024

Mercury -36071-02-01 02:23 J -11453478.55 -11453478.40 -11453478.25 0.0282 0.0090

Mercury -36071-04-30 18:42 J -11453389.87 -11453389.72 -11453389.56 0.0281 0.0035

Venus -36071-07-06 02:52 J -11453323.56 -11453323.38 -11453323.20 0.0281 0.0153

Mercury -36071-07-28 10:47 J -11453301.17 -11453301.05 -11453300.92 0.0281 0.0154

Mercury -36071-10-25 02:38 J -11453212.43 -11453212.39 -11453212.36 0.0281 0.0271

Moon -36057-04-09 08:09 J -11448297.31 -11448297.16 -11448296.99 0.0276 0.0211

Earth -36057-04-09 11:59 J -11448297.15 -11448297.00 -11448296.85 0.0276 0.0216 \*

Venus -36057-04-26 21:35 J -11448279.75 -11448279.60 -11448279.43 0.0276 0.0173

Mercury -36057-11-12 05:45 J -11448080.35 -11448080.26 -11448080.16 0.0277 0.0209

Venus -36057-12-12 01:40 J -11448050.64 -11448050.43 -11448050.22 0.0277 0.0015

Mercury -36056-02-08 19:54 J -11447991.80 -11447991.67 -11447991.52 0.0277 0.0100

Moon -36056-04-22 03:06 J -11447919.48 -11447919.37 -11447919.24 0.0277 0.0235

Earth -36056-04-22 05:02 J -11447919.40 -11447919.29 -11447919.16 0.0277 0.0238 \*

Mercury -36056-05-08 10:33 J -11447903.21 -11447903.06 -11447902.91 0.0277 0.0013

Venus -36056-07-29 06:28 J -11447821.40 -11447821.23 -11447821.05 0.0277 0.0145

Mercury -36056-08-05 01:26 J -11447814.57 -11447814.44 -11447814.30 0.0277 0.0127

Mercury -36056-11-01 16:47 J -11447725.87 -11447725.80 -11447725.73 0.0278 0.0244

Mars -36050-04-24 04:04 J -11445726.59 -11445726.33 -11445726.06 0.0283 0.0073

Venus -36043-10-13 19:11 J -11442996.86 -11442996.70 -11442996.52 0.0283 0.0172

Earth -36043-10-13 20:38 J -11442996.82 -11442996.64 -11442996.45 0.0283 0.0184 \*

Moon -36043-10-13 23:59 J -11442996.68 -11442996.50 -11442996.30 0.0283 0.0173 \*

Mercury -36042-03-24 10:47 J -11442835.12 -11442835.05 -11442834.98 0.0283 0.0251

Venus -36042-05-31 15:50 J -11442767.06 -11442766.84 -11442766.63 0.0283 0.0009

Mercury -36042-06-21 03:50 J -11442746.48 -11442746.34 -11442746.20 0.0283 0.0123

Mercury -36042-09-17 20:23 J -11442657.81 -11442657.65 -11442657.49 0.0282 0.0003

Mercury -36042-12-15 12:28 J -11442569.11 -11442568.98 -11442568.83 0.0282 0.0126

Venus -36041-01-16 10:47 J -11442537.21 -11442537.05 -11442536.88 0.0282 0.0185

Mercury -36041-03-13 04:18 J -11442480.39 -11442480.32 -11442480.24 0.0282 0.0244

Mars -36036-06-20 22:04 J -11440554.85 -11440554.58 -11440554.28 0.0276 0.0117

Venus -36028-11-07 03:35 J -11437493.52 -11437493.35 -11437493.17 0.0276 0.0146

Mercury -36027-04-01 07:54 J -11437348.24 -11437348.17 -11437348.09 0.0276 0.0234

Earth -36027-04-17 01:54 J -11437332.66 -11437332.42 -11437332.18 0.0276 0.0038

Moon -36027-04-17 03:35 J -11437332.60 -11437332.35 -11437332.10 0.0276 0.0039 \*

Venus -36027-06-24 07:26 J -11437264.39 -11437264.19 -11437263.98 0.0276 0.0014

Mercury -36027-06-28 22:04 J -11437259.71 -11437259.58 -11437259.45 0.0276 0.0127

Mercury -36027-09-25 12:28 J -11437171.13 -11437170.98 -11437170.83 0.0277 0.0017

Mercury -36027-12-23 03:06 J -11437082.51 -11437082.37 -11437082.22 0.0277 0.0098

Venus -36026-02-08 12:28 J -11437035.14 -11437034.98 -11437034.82 0.0277 0.0171

Mercury -36026-03-21 18:28 J -11436993.83 -11436993.73 -11436993.64 0.0277 0.0213

Venus -36013-04-24 20:38 J -11432210.82 -11432210.64 -11432210.45 0.0283 0.0153

Moon -36013-10-20 09:06 J -11432032.34 -11432032.12 -11432031.89 0.0282 0.0093

Earth -36013-10-20 11:16 J -11432032.26 -11432032.03 -11432031.79 0.0282 0.0078 \*

Mercury -36013-11-07 02:38 J -11432014.51 -11432014.39 -11432014.26 0.0282 0.0171

Venus -36013-12-10 16:47 J -11431981.01 -11431980.80 -11431980.58 0.0282 0.0027

Mercury -36012-02-03 19:26 J -11431925.84 -11431925.69 -11431925.53 0.0282 0.0044

Mercury -36012-05-03 11:45 J -11431837.16 -11431837.01 -11431836.86 0.0282 0.0079

Venus -36012-07-28 11:45 J -11431751.15 -11431751.01 -11431750.85 0.0281 0.0201

Mercury -36012-07-31 03:50 J -11431748.45 -11431748.34 -11431748.23 0.0281 0.0198

# 36TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 36th millennium BCE.**

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
TRANSIT								
TIME								
Moon	-35998-04-11 10:33 J	-11426746.23	-11426746.06	-11426745.87	0.0276	0.0174		
Earth	-35998-04-11 11:59 J	-11426746.17	-11426746.00	-11426745.80	0.0276	0.0178	*	
Venus	-35998-05-20 03:06 J	-11426707.56	-11426707.37	-11426707.19	0.0276	0.0129		
Mercury	-35998-11-15 21:35 J	-11426527.71	-11426527.60	-11426527.47	0.0277	0.0172		
Venus	-35997-01-04 06:57 J	-11426478.42	-11426478.21	-11426478.00	0.0277	0.0029		
Mercury	-35997-02-12 11:59 J	-11426439.14	-11426439.00	-11426438.85	0.0277	0.0062		
Earth	-35997-04-23 04:47 J	-11426368.30	-11426368.30	-11426368.27	0.0277	0.0276		
Moon	-35997-04-23 07:40 J	-11426368.22	-11426368.18	-11426368.11	0.0277	0.0269		
Mercury	-35997-05-11 02:38 J	-11426350.53	-11426350.39	-11426350.23	0.0277	0.0052		
Mercury	-35997-08-07 17:45 J	-11426261.88	-11426261.76	-11426261.64	0.0277	0.0166		
Venus	-35997-08-20 11:45 J	-11426249.16	-11426249.01	-11426248.85	0.0277	0.0189		
Earth	-35984-10-14 21:21 J	-11421445.81	-11421445.61	-11421445.39	0.0283	0.0144		
Moon	-35984-10-14 23:30 J	-11421445.74	-11421445.52	-11421445.29	0.0283	0.0131	*	
Venus	-35984-11-05 03:06 J	-11421424.56	-11421424.37	-11421424.17	0.0283	0.0124		
Mercury	-35983-03-27 03:21 J	-11421282.46	-11421282.36	-11421282.24	0.0283	0.0208		
Venus	-35983-06-22 23:45 J	-11421194.73	-11421194.51	-11421194.30	0.0283	0.0056		
Mercury	-35983-06-23 20:23 J	-11421193.80	-11421193.65	-11421193.49	0.0283	0.0080		
Mercury	-35983-09-20 12:57 J	-11421105.11	-11421104.96	-11421104.80	0.0282	0.0046		
Mercury	-35983-12-18 05:02 J	-11421016.41	-11421016.29	-11421016.16	0.0282	0.0167		
Venus	-35982-02-07 18:42 J	-11420964.84	-11420964.72	-11420964.59	0.0282	0.0232		
Venus	-35969-04-14 06:14 J	-11416150.30	-11416150.24	-11416150.15	0.0275	0.0255		
Venus	-35969-11-29 09:21 J	-11415921.30	-11415921.11	-11415920.92	0.0276	0.0102		

Mercury -35968-04-03 23:59 J -11415795.60 -11415795.50 -11415795.39 0.0276 0.0196

Moon -35968-04-17 23:59 J -11415781.74 -11415781.50 -11415781.26 0.0276 0.0073

Earth -35968-04-18 02:38 J -11415781.62 -11415781.39 -11415781.15 0.0276 0.0078 \*

Mercury -35968-07-01 14:23 J -11415707.05 -11415706.90 -11415706.76 0.0276 0.0087

Venus -35968-07-16 13:11 J -11415692.15 -11415691.95 -11415691.75 0.0276 0.0055

Mercury -35968-09-28 04:47 J -11415618.45 -11415618.30 -11415618.15 0.0276 0.0024

Mercury -35968-12-25 19:40 J -11415529.81 -11415529.68 -11415529.55 0.0277 0.0138

Venus -35967-03-02 17:59 J -11415462.87 -11415462.75 -11415462.61 0.0277 0.0214

Mercury -35967-03-24 10:47 J -11415441.10 -11415441.05 -11415440.99 0.0277 0.0255

Mars -35962-09-17 09:21 J -11413438.37 -11413438.11 -11413437.84 0.0283 0.0094

Venus -35955-09-30 08:09 J -11410868.17 -11410868.16 -11410868.13 0.0283 0.0282

Venus -35954-05-18 05:30 J -11410638.47 -11410638.27 -11410638.06 0.0283 0.0103

Mercury -35954-08-14 02:38 J -11410550.46 -11410550.39 -11410550.32 0.0283 0.0254

Earth -35954-10-22 13:40 J -11410481.15 -11410480.93 -11410480.70 0.0282 0.0121

Moon -35954-10-22 15:50 J -11410481.04 -11410480.84 -11410480.63 0.0282 0.0137 \*

Mercury -35954-11-10 19:40 J -11410461.82 -11410461.68 -11410461.53 0.0282 0.0125

Venus -35953-01-03 01:40 J -11410408.64 -11410408.43 -11410408.22 0.0282 0.0075

Mercury -35953-02-07 12:28 J -11410373.14 -11410372.98 -11410372.82 0.0282 0.0001

Mercury -35953-05-06 04:47 J -11410284.44 -11410284.30 -11410284.16 0.0282 0.0123

Mercury -35953-08-02 20:23 J -11410195.72 -11410195.65 -11410195.56 0.0281 0.0243

Venus -35953-08-19 20:38 J -11410178.74 -11410178.64 -11410178.54 0.0281 0.0249

Mars -35948-11-13 16:18 J -11408267.10 -11408266.82 -11408266.52 0.0276 0.0095

Venus -35940-10-25 05:16 J -11405364.38 -11405364.28 -11405364.18 0.0275 0.0239

Earth -35939-04-12 12:42 J -11405195.18 -11405194.97 -11405194.76 0.0276 0.0139

Moon -35939-04-12 15:06 J -11405195.07 -11405194.87 -11405194.66 0.0276 0.0138 \*

Venus -35939-06-11 08:09 J -11405135.35 -11405135.16 -11405134.96 0.0276 0.0085

Mercury -35939-08-21 23:45 J -11405063.58 -11405063.51 -11405063.43 0.0276 0.0240

Mercury -35939-11-18 13:54 J -11404975.05 -11404974.92 -11404974.79 0.0276 0.0133

Venus -35938-01-26 12:14 J -11404906.19 -11404905.99 -11404905.79 0.0277 0.0073

Mercury -35938-02-15 04:18 J -11404886.47 -11404886.32 -11404886.17 0.0277 0.0022

Mercury -35938-05-14 18:57 J -11404797.85 -11404797.71 -11404797.56 0.0277 0.0091  
 Mercury -35938-08-11 09:50 J -11404709.18 -11404709.09 -11404708.98 0.0277 0.0207  
 Venus -35938-09-12 17:02 J -11404676.89 -11404676.79 -11404676.67 0.0277 0.0231  
 Venus -35925-04-11 13:11 J -11400082.03 -11400081.95 -11400081.84 0.0284 0.0256  
 Moon -35925-10-15 19:26 J -11399894.93 -11399894.69 -11399894.45 0.0284 0.0088  
 Earth -35925-10-15 22:04 J -11399894.81 -11399894.58 -11399894.35 0.0284 0.0104 \*  
 Venus -35925-11-27 10:47 J -11399852.25 -11399852.05 -11399851.83 0.0283 0.0077  
 Mercury -35924-03-29 20:09 J -11399729.79 -11399729.66 -11399729.53 0.0283 0.0164  
 Mercury -35924-06-26 13:11 J -11399641.11 -11399640.95 -11399640.80 0.0283 0.0037  
 Venus -35924-07-15 07:26 J -11399622.39 -11399622.19 -11399621.99 0.0283 0.0103  
 Mercury -35924-09-23 05:30 J -11399552.42 -11399552.27 -11399552.12 0.0283 0.0088  
 Mercury -35924-12-20 21:35 J -11399463.70 -11399463.60 -11399463.50 0.0282 0.0208  
 Venus -35923-03-02 02:23 J -11399392.43 -11399392.40 -11399392.36 0.0282 0.0277  
 Venus -35910-05-07 12:28 J -11394578.11 -11394577.98 -11394577.85 0.0275 0.0211  
 Venus -35910-12-22 15:21 J -11394349.06 -11394348.86 -11394348.65 0.0275 0.0058  
 Mercury -35909-01-09 02:38 J -11394331.44 -11394331.39 -11394331.35 0.0276 0.0262  
 Mercury -35909-04-06 16:18 J -11394242.94 -11394242.82 -11394242.69 0.0276 0.0156  
 Moon -35909-04-19 01:11 J -11394230.66 -11394230.45 -11394230.23 0.0276 0.0114  
 Earth -35909-04-19 04:18 J -11394230.54 -11394230.32 -11394230.10 0.0276 0.0119 \*  
 Mercury -35909-07-04 06:42 J -11394154.37 -11394154.22 -11394154.07 0.0276 0.0046  
 Venus -35909-08-07 19:11 J -11394119.89 -11394119.70 -11394119.50 0.0276 0.0100  
 Mercury -35909-09-30 21:21 J -11394065.76 -11394065.61 -11394065.46 0.0276 0.0066  
 Mercury -35909-12-28 12:14 J -11393977.10 -11393976.99 -11393976.87 0.0277 0.0181  
 Venus -35908-03-24 23:59 J -11393890.56 -11393890.50 -11393890.41 0.0277 0.0258  
 Venus -35896-10-22 16:47 J -11389295.91 -11389295.80 -11389295.67 0.0284 0.0234  
 Venus -35895-06-09 14:09 J -11389066.12 -11389065.91 -11389065.70 0.0283 0.0054  
 Mercury -35895-08-16 19:40 J -11388997.78 -11388997.68 -11388997.57 0.0283 0.0208  
 Earth -35895-10-23 15:35 J -11388930.04 -11388929.85 -11388929.64 0.0283 0.0164  
 Moon -35895-10-23 19:11 J -11388929.89 -11388929.70 -11388929.50 0.0283 0.0180 \*  
 Mercury -35895-11-13 12:42 J -11388909.12 -11388908.97 -11388908.82 0.0282 0.0080

Venus -35894-01-25 10:04 J -11388836.27 -11388836.08 -11388835.88 0.0282 0.0123  
 Mercury -35894-02-10 05:16 J -11388820.43 -11388820.28 -11388820.12 0.0282 0.0045  
 Mercury -35894-05-09 21:21 J -11388731.73 -11388731.61 -11388731.48 0.0282 0.0167  
 Venus -35881-11-16 11:16 J -11383792.17 -11383792.03 -11383791.88 0.0275 0.0195  
 Earth -35880-04-13 14:23 J -11383644.13 -11383643.90 -11383643.67 0.0276 0.0098  
 Moon -35880-04-13 17:45 J -11383643.99 -11383643.76 -11383643.53 0.0276 0.0097 \*  
 Venus -35880-07-03 14:09 J -11383563.11 -11383562.91 -11383562.70 0.0276 0.0041  
 Mercury -35880-08-24 16:04 J -11383510.93 -11383510.83 -11383510.73 0.0276 0.0200  
 Mercury -35880-11-21 06:14 J -11383422.38 -11383422.24 -11383422.10 0.0276 0.0092  
 Venus -35879-02-17 18:14 J -11383333.92 -11383333.74 -11383333.55 0.0277 0.0117  
 Mercury -35879-02-17 20:38 J -11383333.79 -11383333.64 -11383333.49 0.0277 0.0020 \*  
 Mercury -35879-05-17 11:30 J -11383245.16 -11383245.02 -11383244.89 0.0277 0.0133  
 Mercury -35879-08-14 02:38 J -11383156.46 -11383156.39 -11383156.33 0.0277 0.0249  
 Venus -35879-10-04 23:02 J -11383104.55 -11383104.54 -11383104.50 0.0277 0.0274  
 Mars -35873-02-10 07:40 J -11381150.44 -11381150.18 -11381149.92 0.0283 0.0109  
 Venus -35866-05-04 21:35 J -11378509.74 -11378509.60 -11378509.45 0.0284 0.0208  
 Moon -35866-10-17 20:09 J -11378343.90 -11378343.66 -11378343.42 0.0284 0.0046  
 Earth -35866-10-17 23:16 J -11378343.77 -11378343.53 -11378343.29 0.0284 0.0062 \*  
 Venus -35866-12-20 19:11 J -11378279.92 -11378279.70 -11378279.49 0.0283 0.0029  
 Mercury -35865-01-03 19:54 J -11378265.75 -11378265.67 -11378265.60 0.0283 0.0250  
 Mercury -35865-04-01 12:57 J -11378177.10 -11378176.96 -11378176.81 0.0283 0.0120  
 Mercury -35865-06-29 05:45 J -11378088.41 -11378088.26 -11378088.10 0.0283 0.0010  
 Venus -35865-08-06 15:21 J -11378050.04 -11378049.86 -11378049.67 0.0283 0.0150  
 Mercury -35865-09-25 22:04 J -11377999.71 -11377999.58 -11377999.44 0.0283 0.0131  
 Mercury -35865-12-23 14:09 J -11377910.98 -11377910.91 -11377910.84 0.0282 0.0251  
 Mars -35859-04-09 14:38 J -11375978.19 -11375977.89 -11375977.58 0.0276 0.0049  
 Venus -35851-05-29 18:57 J -11373005.87 -11373005.71 -11373005.54 0.0275 0.0167  
 Mercury -35850-01-11 18:57 J -11372778.79 -11372778.71 -11372778.62 0.0275 0.0221  
 Venus -35850-01-13 22:04 J -11372776.79 -11372776.58 -11372776.37 0.0275 0.0013  
 Mercury -35850-04-10 08:52 J -11372690.26 -11372690.13 -11372689.99 0.0276 0.0114

Earth -35850-04-21 06:28 J -11372679.41 -11372679.23 -11372679.02 0.0276 0.0163  
 Moon -35850-04-21 07:11 J -11372679.38 -11372679.20 -11372678.99 0.0276 0.0156 \*  
 Mercury -35850-07-07 23:16 J -11372601.68 -11372601.53 -11372601.38 0.0276 0.0007  
 Venus -35850-08-31 01:54 J -11372547.59 -11372547.42 -11372547.24 0.0276 0.0144  
 Mercury -35850-10-04 13:54 J -11372513.06 -11372512.92 -11372512.77 0.0276 0.0110  
 Mercury -35849-01-01 05:02 J -11372424.38 -11372424.29 -11372424.20 0.0276 0.0226  
 Moon -35837-10-11 07:40 J -11367757.24 -11367757.18 -11367757.10 0.0284 0.0272  
 Venus -35837-11-14 02:23 J -11367723.56 -11367723.40 -11367723.23 0.0284 0.0184  
 Venus -35836-07-01 23:30 J -11367493.73 -11367493.52 -11367493.30 0.0283 0.0007  
 Mercury -35836-08-19 12:57 J -11367445.09 -11367444.96 -11367444.83 0.0283 0.0161  
 Moon -35836-10-24 17:45 J -11367378.91 -11367378.76 -11367378.59 0.0283 0.0223  
 Earth -35836-10-24 18:28 J -11367378.88 -11367378.73 -11367378.55 0.0283 0.0209 \*  
 Mercury -35836-11-16 05:59 J -11367356.41 -11367356.25 -11367356.10 0.0283 0.0033  
 Mercury -35835-02-12 22:18 J -11367267.71 -11367267.57 -11367267.42 0.0282 0.0091  
 Venus -35835-02-16 19:26 J -11367263.86 -11367263.69 -11367263.51 0.0282 0.0171  
 Mercury -35835-05-12 14:23 J -11367179.00 -11367178.90 -11367178.80 0.0282 0.0212  
 Venus -35822-12-09 17:59 J -11362219.91 -11362219.75 -11362219.56 0.0275 0.0151  
 Moon -35821-04-14 17:02 J -11362093.04 -11362092.79 -11362092.54 0.0276 0.0058  
 Earth -35821-04-14 17:45 J -11362093.00 -11362092.76 -11362092.52 0.0276 0.0054 \*  
 Mercury -35821-05-30 18:57 J -11362046.75 -11362046.71 -11362046.67 0.0276 0.0264  
 Venus -35821-07-25 21:21 J -11361990.82 -11361990.61 -11361990.40 0.0276 0.0005  
 Mercury -35821-08-27 08:38 J -11361958.25 -11361958.14 -11361958.01 0.0276 0.0158  
 Mercury -35821-11-23 23:02 J -11361869.69 -11361869.54 -11361869.39 0.0276 0.0048  
 Mercury -35820-02-20 13:26 J -11361781.08 -11361780.94 -11361780.79 0.0276 0.0064  
 Venus -35820-03-12 01:26 J -11361761.61 -11361761.44 -11361761.27 0.0277 0.0162  
 Mercury -35820-05-20 04:18 J -11361692.43 -11361692.32 -11361692.20 0.0277 0.0179  
 Venus -35807-05-27 06:28 J -11356937.41 -11356937.23 -11356937.05 0.0284 0.0160  
 Earth -35807-10-19 01:11 J -11356792.70 -11356792.45 -11356792.21 0.0284 0.0019  
 Moon -35807-10-19 02:38 J -11356792.63 -11356792.39 -11356792.15 0.0284 0.0005 \*  
 Mercury -35806-01-06 12:57 J -11356713.07 -11356712.96 -11356712.85 0.0283 0.0203



Venus -35806-01-12 03:50 J -11356707.56 -11356707.34 -11356707.13 0.0283 0.0020  
 Mercury -35806-04-05 05:59 J -11356624.40 -11356624.25 -11356624.10 0.0283 0.0074  
 Mercury -35806-07-02 22:47 J -11356535.71 -11356535.55 -11356535.40 0.0283 0.0052  
 Venus -35806-08-29 23:45 J -11356477.65 -11356477.51 -11356477.34 0.0283 0.0197  
 Mercury -35806-09-29 14:52 J -11356447.00 -11356446.88 -11356446.75 0.0283 0.0175  
 Venus -35793-11-03 23:45 J -11351662.52 -11351662.51 -11351662.47 0.0275 0.0273  
 Earth -35792-04-09 20:52 J -11351505.74 -11351505.63 -11351505.51 0.0275 0.0241  
 Moon -35792-04-09 21:35 J -11351505.70 -11351505.60 -11351505.49 0.0275 0.0242 \*  
 Venus -35792-06-21 02:23 J -11351433.58 -11351433.40 -11351433.21 0.0275 0.0122  
 Mercury -35791-01-14 11:45 J -11351226.12 -11351226.01 -11351225.89 0.0275 0.0177  
 Venus -35791-02-05 05:45 J -11351204.47 -11351204.26 -11351204.05 0.0275 0.0033  
 Mercury -35791-04-13 01:54 J -11351137.56 -11351137.42 -11351137.27 0.0276 0.0068  
 Earth -35791-04-22 10:47 J -11351128.20 -11351128.05 -11351127.88 0.0276 0.0209  
 Moon -35791-04-22 14:23 J -11351128.05 -11351127.90 -11351127.72 0.0276 0.0200 \*  
 Mercury -35791-07-10 16:18 J -11351048.97 -11351048.82 -11351048.67 0.0276 0.0044  
 Venus -35791-09-22 09:35 J -11350975.24 -11350975.10 -11350974.94 0.0276 0.0190  
 Mercury -35791-10-07 07:11 J -11350960.33 -11350960.20 -11350960.07 0.0276 0.0157  
 Mercury -35790-01-03 22:18 J -11350871.59 -11350871.57 -11350871.55 0.0276 0.0273  
 Mars -35785-07-06 04:18 J -11348861.55 -11348861.32 -11348861.08 0.0283 0.0152  
 Moon -35778-10-13 07:54 J -11346206.32 -11346206.17 -11346206.01 0.0284 0.0227  
 Earth -35778-10-13 09:35 J -11346206.22 -11346206.10 -11346205.97 0.0284 0.0242 \*  
 Venus -35778-12-07 12:42 J -11346151.16 -11346150.97 -11346150.77 0.0284 0.0133  
 Mercury -35777-05-25 13:26 J -11345981.02 -11345980.94 -11345980.86 0.0283 0.0241  
 Venus -35777-07-24 09:50 J -11345921.30 -11345921.09 -11345920.87 0.0283 0.0046  
 Mercury -35777-08-22 06:28 J -11345892.37 -11345892.23 -11345892.08 0.0283 0.0111  
 Moon -35777-10-25 19:11 J -11345827.76 -11345827.70 -11345827.61 0.0283 0.0269  
 Earth -35777-10-25 23:02 J -11345827.63 -11345827.54 -11345827.42 0.0283 0.0256 \*  
 Mercury -35777-11-18 23:16 J -11345803.68 -11345803.53 -11345803.37 0.0283 0.0018  
 Mercury -35776-02-15 15:35 J -11345714.98 -11345714.85 -11345714.71 0.0282 0.0140  
 Venus -35776-03-11 05:30 J -11345691.40 -11345691.27 -11345691.13 0.0282 0.0220

Mercury -35776-05-15 07:40 J -11345626.24 -11345626.18 -11345626.12 0.0282 0.0259

Mars -35771-09-02 20:23 J -11343689.96 -11343689.65 -11343689.33 0.0276 0.0012

Venus -35763-05-16 23:59 J -11340876.57 -11340876.50 -11340876.42 0.0275 0.0255

Venus -35762-01-01 02:23 J -11340647.59 -11340647.40 -11340647.21 0.0275 0.0103

Moon -35762-04-16 19:11 J -11340541.95 -11340541.70 -11340541.46 0.0276 0.0015

Earth -35762-04-16 23:02 J -11340541.78 -11340541.54 -11340541.30 0.0276 0.0006 \*

Mercury -35762-06-03 11:45 J -11340494.09 -11340494.01 -11340493.91 0.0276 0.0219

Venus -35762-08-18 05:30 J -11340418.47 -11340418.27 -11340418.06 0.0276 0.0052

Mercury -35762-08-31 01:54 J -11340405.56 -11340405.42 -11340405.28 0.0276 0.0111

Mercury -35762-11-27 16:18 J -11340316.97 -11340316.82 -11340316.67 0.0276 0.0006

Mercury -35761-02-24 06:42 J -11340228.35 -11340228.22 -11340228.07 0.0276 0.0113

Venus -35761-04-03 09:35 J -11340189.23 -11340189.10 -11340188.96 0.0277 0.0208

Mercury -35761-05-22 21:35 J -11340139.68 -11340139.60 -11340139.50 0.0277 0.0228

Venus -35748-06-18 16:18 J -11335365.01 -11335364.82 -11335364.61 0.0284 0.0111

Earth -35748-10-20 05:02 J -11335241.53 -11335241.29 -11335241.04 0.0284 0.0030

Moon -35748-10-20 08:52 J -11335241.38 -11335241.13 -11335240.89 0.0284 0.0043 \*

Mercury -35747-01-09 06:28 J -11335160.36 -11335160.23 -11335160.10 0.0283 0.0153

Venus -35747-02-03 13:54 J -11335135.13 -11335134.92 -11335134.71 0.0283 0.0069

Mercury -35747-04-07 23:30 J -11335071.68 -11335071.52 -11335071.37 0.0283 0.0025

Mercury -35747-07-05 16:04 J -11334982.98 -11334982.83 -11334982.69 0.0283 0.0100

Venus -35747-09-21 09:50 J -11334905.19 -11334905.09 -11334904.98 0.0283 0.0244

Mercury -35747-10-02 08:09 J -11334894.25 -11334894.16 -11334894.07 0.0283 0.0222

Venus -35734-11-27 08:09 J -11330090.27 -11330090.16 -11330090.04 0.0275 0.0227

Earth -35733-04-11 02:38 J -11329954.56 -11329954.39 -11329954.22 0.0275 0.0193

Moon -35733-04-11 06:28 J -11329954.40 -11329954.23 -11329954.06 0.0275 0.0197 \*

Venus -35733-07-13 10:47 J -11329861.24 -11329861.05 -11329860.85 0.0275 0.0075

Mercury -35733-10-20 15:06 J -11329761.94 -11329761.87 -11329761.79 0.0275 0.0236

Mercury -35732-01-17 05:02 J -11329673.42 -11329673.29 -11329673.16 0.0276 0.0129

Venus -35732-02-27 14:23 J -11329632.10 -11329631.90 -11329631.70 0.0276 0.0080

Mercury -35732-04-15 19:11 J -11329584.85 -11329584.70 -11329584.54 0.0276 0.0021

Earth -35732-04-23 17:02 J -11329576.86 -11329576.79 -11329576.70 0.0276 0.0258  
 Moon -35732-04-23 18:42 J -11329576.83 -11329576.72 -11329576.61 0.0276 0.0245 \*  
 Mercury -35732-07-13 09:50 J -11329496.23 -11329496.09 -11329495.94 0.0276 0.0093  
 Mercury -35732-10-10 00:42 J -11329407.57 -11329407.47 -11329407.37 0.0276 0.0208  
 Venus -35732-10-14 18:28 J -11329402.83 -11329402.73 -11329402.61 0.0276 0.0236  
 Mars -35727-10-13 03:21 J -11327578.51 -11327578.36 -11327578.19 0.0282 0.0232  
 Venus -35719-05-14 02:38 J -11324808.47 -11324808.39 -11324808.30 0.0284 0.0259  
 Moon -35719-10-14 12:42 J -11324655.15 -11324654.97 -11324654.77 0.0284 0.0177  
 Earth -35719-10-14 16:33 J -11324654.99 -11324654.81 -11324654.63 0.0284 0.0191 \*  
 Venus -35719-12-30 00:28 J -11324578.68 -11324578.48 -11324578.27 0.0284 0.0081  
 Mercury -35718-05-29 07:40 J -11324428.30 -11324428.18 -11324428.06 0.0283 0.0186  
 Venus -35718-08-16 21:21 J -11324348.81 -11324348.61 -11324348.40 0.0283 0.0097  
 Mercury -35718-08-26 00:42 J -11324339.63 -11324339.47 -11324339.32 0.0283 0.0058  
 Mercury -35718-11-22 17:16 J -11324250.93 -11324250.78 -11324250.63 0.0283 0.0068  
 Mercury -35717-02-19 09:21 J -11324162.22 -11324162.11 -11324161.99 0.0282 0.0191  
 Venus -35717-04-02 16:33 J -11324118.85 -11324118.81 -11324118.73 0.0282 0.0271  
 Venus -35704-06-08 08:52 J -11319304.25 -11319304.13 -11319303.99 0.0275 0.0208  
 Venus -35703-01-23 11:45 J -11319075.21 -11319075.01 -11319074.81 0.0275 0.0055  
 Mercury -35703-03-09 15:35 J -11319029.85 -11319029.85 -11319029.85 0.0275 0.0275  
 Moon -35703-04-18 05:16 J -11318990.51 -11318990.28 -11318990.04 0.0276 0.0034  
 Earth -35703-04-18 06:14 J -11318990.48 -11318990.24 -11318990.00 0.0276 0.0045 \*  
 Mercury -35703-06-06 05:16 J -11318941.39 -11318941.28 -11318941.16 0.0276 0.0170  
 Mercury -35703-09-02 19:26 J -11318852.83 -11318852.69 -11318852.54 0.0276 0.0061  
 Venus -35703-09-09 14:52 J -11318846.07 -11318845.88 -11318845.68 0.0276 0.0100  
 Mercury -35703-11-30 09:50 J -11318764.24 -11318764.09 -11318763.94 0.0276 0.0051  
 Mercury -35702-02-27 00:42 J -11318675.59 -11318675.47 -11318675.35 0.0276 0.0164  
 Venus -35702-04-26 19:11 J -11318616.78 -11318616.70 -11318616.62 0.0277 0.0255  
 Mars -35697-11-29 12:57 J -11316573.17 -11316572.96 -11316572.74 0.0283 0.0179  
 Venus -35690-11-24 05:45 J -11314022.37 -11314022.26 -11314022.14 0.0284 0.0238  
 Venus -35689-07-11 04:04 J -11313792.54 -11313792.33 -11313792.12 0.0284 0.0059

Mercury -35689-10-15 07:11 J -11313696.29 -11313696.20 -11313696.11 0.0284 0.0231  
 Earth -35689-10-21 11:16 J -11313690.27 -11313690.03 -11313689.79 0.0284 0.0080  
 Moon -35689-10-21 11:59 J -11313690.24 -11313690.00 -11313689.75 0.0284 0.0092 \*  
 Mercury -35688-01-12 00:28 J -11313607.63 -11313607.48 -11313607.33 0.0283 0.0100  
 Venus -35688-02-26 00:57 J -11313562.65 -11313562.46 -11313562.26 0.0283 0.0119  
 Mercury -35688-04-10 17:16 J -11313518.94 -11313518.78 -11313518.62 0.0283 0.0027  
 Mercury -35688-07-08 09:35 J -11313430.23 -11313430.10 -11313429.97 0.0283 0.0151  
 Mercury -35688-10-05 01:40 J -11313341.47 -11313341.43 -11313341.39 0.0283 0.0272  
 Mars -35682-01-27 21:50 J -11311400.90 -11311400.59 -11311400.28 0.0277 0.0040  
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 Earth -35674-04-13 10:04 J -11308403.28 -11308403.08 -11308402.86 0.0275 0.0142  
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 Venus -35674-08-05 20:23 J -11308288.85 -11308288.65 -11308288.44 0.0275 0.0028  
 Mercury -35674-10-24 08:38 J -11308209.25 -11308209.14 -11308209.03 0.0275 0.0187  
 Mercury -35673-01-20 22:47 J -11308120.70 -11308120.55 -11308120.41 0.0276 0.0079  
 Venus -35673-03-21 23:59 J -11308059.68 -11308059.50 -11308059.31 0.0276 0.0128  
 Mercury -35673-04-18 13:11 J -11308032.10 -11308031.95 -11308031.80 0.0276 0.0033  
 Mercury -35673-07-16 03:50 J -11307943.47 -11307943.34 -11307943.21 0.0276 0.0146  
 Mercury -35673-10-12 18:43 J -11307854.76 -11307854.72 -11307854.67 0.0276 0.0262  
 Venus -35660-06-05 15:50 J -11303235.98 -11303235.84 -11303235.68 0.0284 0.0205  
 Moon -35660-10-16 00:28 J -11303103.69 -11303103.48 -11303103.27 0.0284 0.0123  
 Earth -35660-10-16 01:26 J -11303103.65 -11303103.44 -11303103.22 0.0284 0.0137 \*  
 Venus -35659-01-21 13:40 J -11303006.15 -11303005.93 -11303005.72 0.0284 0.0027  
 Mercury -35659-03-04 08:52 J -11302964.19 -11302964.13 -11302964.07 0.0283 0.0260  
 Mercury -35659-06-01 02:09 J -11302875.55 -11302875.41 -11302875.26 0.0283 0.0129  
 Mercury -35659-08-28 19:11 J -11302786.86 -11302786.70 -11302786.55 0.0283 0.0005  
 Venus -35659-09-08 10:04 J -11302776.26 -11302776.08 -11302775.89 0.0283 0.0150  
 Mercury -35659-11-25 11:31 J -11302698.16 -11302698.02 -11302697.88 0.0283 0.0124  
 Mercury -35658-02-22 03:35 J -11302609.42 -11302609.35 -11302609.27 0.0282 0.0245  
 Venus -35645-06-30 19:11 J -11297731.87 -11297731.70 -11297731.53 0.0275 0.0159

Venus -35644-02-14 22:04 J -11297502.79 -11297502.58 -11297502.37 0.0275 0.0007  
 Mercury -35644-03-12 09:21 J -11297477.19 -11297477.11 -11297477.02 0.0276 0.0224  
 Earth -35644-04-19 15:21 J -11297439.09 -11297438.86 -11297438.63 0.0276 0.0099  
 Moon -35644-04-19 18:28 J -11297438.96 -11297438.73 -11297438.50 0.0276 0.0086 \*  
 Mercury -35644-06-08 23:16 J -11297388.66 -11297388.53 -11297388.39 0.0276 0.0117  
 Mercury -35644-09-05 13:26 J -11297300.09 -11297299.94 -11297299.78 0.0276 0.0010  
 Venus -35644-10-02 01:26 J -11297273.61 -11297273.44 -11297273.26 0.0276 0.0148  
 Mercury -35644-12-03 04:04 J -11297211.47 -11297211.33 -11297211.19 0.0276 0.0105  
 Mercury -35643-03-01 18:57 J -11297122.80 -11297122.71 -11297122.62 0.0276 0.0220  
 Mars -35638-03-08 17:45 J -11295289.94 -11295289.76 -11295289.55 0.0282 0.0199  
 Venus -35631-12-16 18:57 J -11292449.86 -11292449.71 -11292449.54 0.0284 0.0184  
 Venus -35630-08-03 17:02 J -11292220.01 -11292219.79 -11292219.57 0.0284 0.0005  
 Mercury -35630-10-19 01:40 J -11292143.55 -11292143.43 -11292143.30 0.0283 0.0173  
 Moon -35630-10-23 16:47 J -11292139.01 -11292138.80 -11292138.58 0.0283 0.0146  
 Earth -35630-10-23 19:55 J -11292138.88 -11292138.67 -11292138.45 0.0283 0.0135 \*  
 Mercury -35629-01-15 18:57 J -11292054.87 -11292054.71 -11292054.56 0.0283 0.0043  
 Venus -35629-03-20 13:40 J -11291990.10 -11291989.93 -11291989.76 0.0283 0.0171  
 Mercury -35629-04-13 11:31 J -11291966.17 -11291966.02 -11291965.87 0.0283 0.0083  
 Mercury -35629-07-11 03:35 J -11291877.45 -11291877.35 -11291877.24 0.0283 0.0206  
 Venus -35615-01-11 03:50 J -11286945.52 -11286945.34 -11286945.16 0.0275 0.0131  
 Moon -35615-04-14 16:19 J -11286852.06 -11286851.82 -11286851.59 0.0275 0.0097  
 Earth -35615-04-14 18:57 J -11286851.94 -11286851.71 -11286851.47 0.0275 0.0089 \*  
 Mercury -35615-07-30 12:43 J -11286745.04 -11286744.97 -11286744.90 0.0275 0.0242  
 Venus -35615-08-28 06:57 J -11286716.42 -11286716.21 -11286716.01 0.0275 0.0022  
 Mercury -35615-10-27 02:38 J -11286656.52 -11286656.39 -11286656.26 0.0276 0.0135  
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 Venus -35614-04-14 10:33 J -11286487.21 -11286487.06 -11286486.90 0.0276 0.0177  
 Mercury -35614-04-22 07:11 J -11286479.34 -11286479.20 -11286479.05 0.0276 0.0087  
 Mercury -35614-07-19 22:04 J -11286390.68 -11286390.58 -11286390.48 0.0276 0.0202  
 Mars -35608-04-26 08:09 J -11284283.28 -11284283.16 -11284283.03 0.0283 0.0253

Venus -35601-06-28 06:28 J -11281663.41 -11281663.23 -11281663.04 0.0284 0.0149  
 Earth -35601-10-17 11:59 J -11281552.23 -11281552.00 -11281551.76 0.0284 0.0080  
 Moon -35601-10-17 15:07 J -11281552.10 -11281551.87 -11281551.63 0.0284 0.0064 \*  
 Venus -35600-02-13 03:50 J -11281433.55 -11281433.34 -11281433.12 0.0283 0.0029  
 Mercury -35600-03-07 03:50 J -11281411.44 -11281411.34 -11281411.22 0.0283 0.0199  
 Mercury -35600-06-03 21:07 J -11281322.77 -11281322.62 -11281322.46 0.0283 0.0069  
 Mercury -35600-08-31 13:55 J -11281234.07 -11281233.92 -11281233.77 0.0283 0.0058  
 Venus -35600-09-30 23:59 J -11281203.64 -11281203.50 -11281203.35 0.0283 0.0204  
 Mercury -35600-11-28 06:14 J -11281145.36 -11281145.24 -11281145.12 0.0283 0.0181  
 Mars -35594-06-24 02:52 J -11279111.66 -11279111.38 -11279111.08 0.0276 0.0106  
 Venus -35587-12-07 04:04 J -11276388.39 -11276388.33 -11276388.26 0.0275 0.0259  
 Venus -35586-07-24 06:14 J -11276159.43 -11276159.24 -11276159.05 0.0275 0.0109  
 Venus -35585-03-09 09:07 J -11275930.32 -11275930.12 -11275929.91 0.0276 0.0044  
 Mercury -35585-03-15 03:21 J -11275924.47 -11275924.36 -11275924.24 0.0276 0.0171  
 Earth -35585-04-21 01:40 J -11275887.62 -11275887.43 -11275887.22 0.0276 0.0156  
 Moon -35585-04-21 04:33 J -11275887.51 -11275887.31 -11275887.08 0.0276 0.0143 \*  
 Mercury -35585-06-11 17:31 J -11275835.92 -11275835.77 -11275835.62 0.0276 0.0062  
 Mercury -35585-09-08 07:55 J -11275747.32 -11275747.17 -11275747.02 0.0276 0.0049  
 Venus -35585-10-24 12:57 J -11275701.10 -11275700.96 -11275700.82 0.0276 0.0198  
 Mercury -35585-12-05 22:33 J -11275658.68 -11275658.56 -11275658.44 0.0276 0.0163  
 Venus -35571-01-08 09:35 J -11270877.29 -11270877.10 -11270876.90 0.0284 0.0128  
 Mercury -35571-07-25 03:21 J -11270679.43 -11270679.36 -11270679.27 0.0283 0.0243  
 Venus -35571-08-26 07:11 J -11270647.41 -11270647.20 -11270646.99 0.0283 0.0050  
 Mercury -35571-10-21 20:52 J -11270590.78 -11270590.63 -11270590.48 0.0283 0.0112  
 Moon -35571-10-25 03:07 J -11270587.52 -11270587.37 -11270587.19 0.0283 0.0204  
 Earth -35571-10-25 06:14 J -11270587.41 -11270587.24 -11270587.05 0.0283 0.0193 \*  
 Mercury -35570-01-18 13:40 J -11270502.08 -11270501.93 -11270501.77 0.0283 0.0017  
 Venus -35570-04-13 03:21 J -11270417.48 -11270417.36 -11270417.22 0.0283 0.0224  
 Mercury -35570-04-17 06:14 J -11270413.37 -11270413.24 -11270413.11 0.0283 0.0141  
 Mercury -35570-07-14 22:19 J -11270324.62 -11270324.57 -11270324.51 0.0283 0.0262

Venus -35557-06-18 11:16 J -11265602.12 -11265602.03 -11265601.91 0.0275 0.0233  
 Venus -35556-02-02 14:09 J -11265373.10 -11265372.91 -11265372.71 0.0275 0.0082  
 Moon -35556-04-16 01:11 J -11265300.69 -11265300.45 -11265300.21 0.0275 0.0043  
 Earth -35556-04-16 04:19 J -11265300.56 -11265300.32 -11265300.07 0.0275 0.0035 \*  
 Mercury -35556-08-02 06:28 J -11265192.33 -11265192.23 -11265192.12 0.0276 0.0190  
 Venus -35556-09-19 17:31 J -11265143.97 -11265143.77 -11265143.57 0.0276 0.0072  
 Mercury -35556-10-29 20:23 J -11265103.79 -11265103.65 -11265103.50 0.0276 0.0082  
 Mercury -35555-01-26 10:47 J -11265015.20 -11265015.05 -11265014.90 0.0276 0.0030  
 Mercury -35555-04-25 01:26 J -11264926.57 -11264926.44 -11264926.31 0.0276 0.0144  
 Venus -35555-05-06 21:21 J -11264914.71 -11264914.61 -11264914.48 0.0276 0.0227  
 Mercury -35555-07-22 16:33 J -11264837.86 -11264837.81 -11264837.76 0.0276 0.0260  
 Mars -35550-08-03 15:50 J -11263000.08 -11262999.84 -11262999.58 0.0282 0.0120  
 Venus -35543-12-03 23:45 J -11260320.56 -11260320.51 -11260320.42 0.0284 0.0269  
 Venus -35542-07-21 22:04 J -11260090.78 -11260090.58 -11260090.37 0.0284 0.0091  
 Earth -35542-10-20 00:57 J -11260000.71 -11260000.46 -11260000.22 0.0284 0.0019  
 Moon -35542-10-20 04:04 J -11260000.58 -11260000.33 -11260000.08 0.0284 0.0004 \*  
 Mercury -35542-12-12 06:14 J -11259947.29 -11259947.24 -11259947.18 0.0284 0.0265  
 Venus -35541-03-07 19:11 J -11259860.90 -11259860.70 -11259860.49 0.0283 0.0086  
 Mercury -35541-03-09 23:31 J -11259858.66 -11259858.52 -11259858.38 0.0283 0.0134  
 Mercury -35541-06-06 16:33 J -11259769.97 -11259769.81 -11259769.65 0.0283 0.0005  
 Mercury -35541-09-03 09:07 J -11259681.26 -11259681.12 -11259680.98 0.0283 0.0120  
 Venus -35541-10-23 14:52 J -11259630.95 -11259630.88 -11259630.78 0.0283 0.0259  
 Mercury -35541-12-01 01:11 J -11259592.53 -11259592.45 -11259592.37 0.0283 0.0241  
 Venus -35528-12-29 15:07 J -11254816.00 -11254815.87 -11254815.73 0.0275 0.0210  
 Earth -35527-04-10 22:47 J -11254713.65 -11254713.55 -11254713.42 0.0275 0.0240  
 Moon -35527-04-11 02:38 J -11254713.50 -11254713.39 -11254713.28 0.0275 0.0242 \*  
 Venus -35527-08-15 17:31 J -11254586.97 -11254586.77 -11254586.56 0.0275 0.0059  
 Mercury -35527-12-20 07:40 J -11254460.26 -11254460.18 -11254460.09 0.0275 0.0223  
 Mercury -35526-03-18 21:50 J -11254371.73 -11254371.59 -11254371.46 0.0276 0.0116  
 Venus -35526-04-01 20:38 J -11254357.83 -11254357.64 -11254357.44 0.0276 0.0095

Moon -35526-04-23 11:59 J -11254336.18 -11254336.00 -11254335.83 0.0276 0.0199  
 Earth -35526-04-23 12:43 J -11254336.11 -11254335.97 -11254335.80 0.0276 0.0213 \*  
 Mercury -35526-06-15 11:59 J -11254283.15 -11254283.00 -11254282.85 0.0276 0.0008  
 Mercury -35526-09-12 02:23 J -11254194.54 -11254194.40 -11254194.26 0.0276 0.0107  
 Venus -35526-11-17 00:28 J -11254128.56 -11254128.48 -11254128.38 0.0276 0.0249  
 Mercury -35526-12-09 17:02 J -11254105.87 -11254105.79 -11254105.69 0.0276 0.0223  
 Venus -35513-06-15 02:38 J -11249534.48 -11249534.39 -11249534.27 0.0284 0.0248  
 Moon -35513-10-13 00:57 J -11249414.58 -11249414.46 -11249414.32 0.0284 0.0238  
 Earth -35513-10-13 03:35 J -11249414.46 -11249414.35 -11249414.23 0.0284 0.0251 \*  
 Venus -35512-01-31 00:43 J -11249304.67 -11249304.47 -11249304.25 0.0284 0.0072  
 Mercury -35512-07-27 22:47 J -11249126.67 -11249126.55 -11249126.42 0.0283 0.0179  
 Venus -35512-09-17 22:04 J -11249074.78 -11249074.58 -11249074.38 0.0283 0.0105  
 Mercury -35512-10-24 16:04 J -11249037.99 -11249037.83 -11249037.67 0.0283 0.0049  
 Earth -35512-10-26 17:45 J -11249035.86 -11249035.76 -11249035.63 0.0283 0.0252  
 Moon -35512-10-26 18:43 J -11249035.79 -11249035.72 -11249035.62 0.0283 0.0262 \*  
 Mercury -35511-01-21 08:38 J -11248949.28 -11248949.14 -11248948.98 0.0283 0.0078  
 Mercury -35511-04-20 00:57 J -11248860.56 -11248860.46 -11248860.35 0.0283 0.0201  
 Venus -35511-05-05 17:45 J -11248844.79 -11248844.76 -11248844.71 0.0283 0.0277  
 Mars -35506-11-18 05:59 J -11246822.49 -11246822.25 -11246821.99 0.0277 0.0163  
 Venus -35498-07-11 21:50 J -11244029.74 -11244029.59 -11244029.43 0.0275 0.0184  
 Venus -35497-02-26 00:57 J -11243800.67 -11243800.46 -11243800.26 0.0275 0.0033  
 Earth -35497-04-17 13:55 J -11243749.16 -11243748.92 -11243748.68 0.0276 0.0019  
 Moon -35497-04-17 14:23 J -11243749.14 -11243748.90 -11243748.67 0.0276 0.0010 \*  
 Mercury -35497-05-08 10:33 J -11243728.12 -11243728.06 -11243727.99 0.0276 0.0244  
 Mercury -35497-08-05 00:28 J -11243639.61 -11243639.48 -11243639.35 0.0276 0.0137  
 Venus -35497-10-12 04:19 J -11243571.50 -11243571.32 -11243571.13 0.0276 0.0121  
 Mercury -35497-11-01 14:38 J -11243551.04 -11243550.89 -11243550.74 0.0276 0.0027  
 Mercury -35496-01-29 05:02 J -11243462.43 -11243462.29 -11243462.14 0.0276 0.0086  
 Mercury -35496-04-27 19:55 J -11243373.77 -11243373.67 -11243373.56 0.0276 0.0200  
 Venus -35496-05-29 08:38 J -11243342.15 -11243342.14 -11243342.11 0.0276 0.0275



Venus -35484-12-26 15:50 J -11238747.98 -11238747.84 -11238747.69 0.0284 0.0210  
 Venus -35483-08-13 13:55 J -11238518.14 -11238517.92 -11238517.70 0.0284 0.0033  
 Moon -35483-10-21 12:28 J -11238449.23 -11238448.98 -11238448.73 0.0284 0.0053  
 Earth -35483-10-21 13:55 J -11238449.17 -11238448.92 -11238448.68 0.0284 0.0042 \*  
 Mercury -35483-12-15 01:55 J -11238394.53 -11238394.42 -11238394.31 0.0283 0.0200  
 Mercury -35482-03-13 19:11 J -11238305.86 -11238305.70 -11238305.55 0.0283 0.0070  
 Venus -35482-03-31 10:33 J -11238288.24 -11238288.06 -11238287.87 0.0283 0.0142  
 Mercury -35482-06-10 11:45 J -11238217.16 -11238217.01 -11238216.85 0.0283 0.0058  
 Mercury -35482-09-07 04:19 J -11238128.44 -11238128.32 -11238128.20 0.0283 0.0181  
 Venus -35468-01-21 01:55 J -11233243.58 -11233243.42 -11233243.25 0.0275 0.0160  
 Moon -35468-04-12 08:23 J -11233162.32 -11233162.15 -11233161.96 0.0275 0.0192  
 Earth -35468-04-12 09:07 J -11233162.29 -11233162.12 -11233161.93 0.0275 0.0185 \*  
 Venus -35468-09-07 04:33 J -11233014.51 -11233014.31 -11233014.10 0.0275 0.0010  
 Mercury -35468-12-23 01:55 J -11232907.54 -11232907.42 -11232907.30 0.0276 0.0170  
 Mercury -35467-03-21 15:50 J -11232818.98 -11232818.84 -11232818.69 0.0276 0.0061  
 Venus -35467-04-24 07:55 J -11232785.34 -11232785.17 -11232784.99 0.0276 0.0144  
 Moon -35467-04-24 19:55 J -11232784.76 -11232784.67 -11232784.57 0.0276 0.0254  
 Earth -35467-04-24 23:16 J -11232784.57 -11232784.53 -11232784.47 0.0276 0.0269 \*  
 Mercury -35467-06-18 06:14 J -11232730.39 -11232730.24 -11232730.09 0.0276 0.0051  
 Mercury -35467-09-14 20:52 J -11232641.75 -11232641.63 -11232641.51 0.0276 0.0165  
 Mars -35462-12-28 15:50 J -11230711.09 -11230710.84 -11230710.56 0.0282 0.0077  
 Venus -35454-07-08 18:57 J -11227961.86 -11227961.71 -11227961.54 0.0284 0.0190  
 Earth -35454-10-15 16:47 J -11227862.97 -11227862.80 -11227862.61 0.0284 0.0190  
 Moon -35454-10-15 18:28 J -11227862.90 -11227862.73 -11227862.53 0.0284 0.0179 \*  
 Venus -35453-02-23 16:47 J -11227732.02 -11227731.80 -11227731.58 0.0283 0.0013  
 Mercury -35453-05-03 00:57 J -11227662.53 -11227662.46 -11227662.37 0.0283 0.0246  
 Mercury -35453-07-30 18:28 J -11227573.87 -11227573.73 -11227573.58 0.0283 0.0114  
 Venus -35453-10-10 13:11 J -11227502.12 -11227501.95 -11227501.76 0.0283 0.0162  
 Mercury -35453-10-27 11:31 J -11227485.18 -11227485.02 -11227484.86 0.0283 0.0015  
 Mercury -35452-01-24 03:50 J -11227396.47 -11227396.34 -11227396.20 0.0283 0.0140

Mercury -35452-04-22 20:09 J -11227307.72 -11227307.66 -11227307.60 0.0282 0.0260  
 Mars -35447-02-21 00:43 J -11225542.58 -11225542.47 -11225542.32 0.0277 0.0251  
 Venus -35439-08-03 07:40 J -11222457.36 -11222457.18 -11222457.00 0.0275 0.0135  
 Venus -35438-03-20 10:47 J -11222228.26 -11222228.05 -11222227.85 0.0276 0.0017  
 Earth -35438-04-19 22:19 J -11222197.80 -11222197.57 -11222197.33 0.0276 0.0072  
 Moon -35438-04-20 02:09 J -11222197.65 -11222197.41 -11222197.17 0.0276 0.0060 \*  
 Mercury -35438-05-12 04:04 J -11222175.43 -11222175.33 -11222175.22 0.0276 0.0195  
 Mercury -35438-08-08 18:14 J -11222086.88 -11222086.74 -11222086.60 0.0276 0.0086  
 Venus -35438-11-04 14:23 J -11221999.06 -11221998.90 -11221998.73 0.0276 0.0170  
 Mercury -35438-11-05 08:38 J -11221998.29 -11221998.14 -11221997.99 0.0276 0.0026  
 Mercury -35437-02-01 23:16 J -11221909.67 -11221909.53 -11221909.40 0.0276 0.0140  
 Mercury -35437-04-30 14:09 J -11221820.97 -11221820.91 -11221820.86 0.0277 0.0256  
 Venus -35424-01-18 07:40 J -11217175.35 -11217175.18 -11217174.99 0.0284 0.0152  
 Venus -35424-09-05 05:31 J -11216945.49 -11216945.27 -11216945.06 0.0284 0.0025  
 Mercury -35424-09-20 04:04 J -11216930.38 -11216930.33 -11216930.28 0.0284 0.0267  
 Moon -35424-10-22 22:47 J -11216897.77 -11216897.55 -11216897.32 0.0284 0.0111  
 Earth -35424-10-23 02:38 J -11216897.62 -11216897.39 -11216897.16 0.0284 0.0102 \*  
 Mercury -35424-12-17 21:21 J -11216841.74 -11216841.61 -11216841.46 0.0283 0.0136  
 Mercury -35423-03-16 14:38 J -11216753.05 -11216752.89 -11216752.74 0.0283 0.0009  
 Venus -35423-04-23 01:55 J -11216715.57 -11216715.42 -11216715.27 0.0283 0.0198  
 Mercury -35423-06-13 06:57 J -11216664.34 -11216664.21 -11216664.06 0.0283 0.0120  
 Mercury -35423-09-09 23:16 J -11216575.61 -11216575.53 -11216575.45 0.0283 0.0241  
 Mars -35417-04-14 00:28 J -11214532.61 -11214532.48 -11214532.31 0.0276 0.0243  
 Venus -35410-06-29 10:04 J -11211900.14 -11211900.08 -11211900.01 0.0274 0.0259  
 Venus -35409-02-13 12:14 J -11211671.17 -11211670.99 -11211670.79 0.0275 0.0111  
 Moon -35409-04-13 14:52 J -11211611.09 -11211610.88 -11211610.67 0.0275 0.0143  
 Earth -35409-04-13 18:28 J -11211610.94 -11211610.73 -11211610.51 0.0275 0.0132 \*  
 Mercury -35409-09-28 05:45 J -11211443.33 -11211443.26 -11211443.17 0.0275 0.0225  
 Venus -35409-09-29 15:07 J -11211442.07 -11211441.87 -11211441.66 0.0275 0.0041  
 Mercury -35409-12-25 19:40 J -11211354.81 -11211354.68 -11211354.54 0.0276 0.0118

Mercury -35408-03-24 10:04 J -11211266.23 -11211266.08 -11211265.93 0.0276 0.0010  
 Venus -35408-05-16 18:28 J -11211212.86 -11211212.73 -11211212.57 0.0276 0.0194  
 Mercury -35408-06-21 00:28 J -11211177.62 -11211177.48 -11211177.34 0.0276 0.0106  
 Mercury -35408-09-17 15:07 J -11211088.95 -11211088.87 -11211088.77 0.0276 0.0222  
 Venus -35395-07-31 10:33 J -11206389.25 -11206389.06 -11206388.87 0.0284 0.0132  
 Earth -35395-10-17 05:16 J -11206311.49 -11206311.28 -11206311.06 0.0283 0.0130  
 Moon -35395-10-17 08:52 J -11206311.35 -11206311.13 -11206310.90 0.0283 0.0118 \*  
 Venus -35394-03-18 07:55 J -11206159.38 -11206159.17 -11206158.95 0.0283 0.0044  
 Mercury -35394-05-06 20:38 J -11206109.76 -11206109.64 -11206109.51 0.0283 0.0181  
 Mercury -35394-08-03 13:55 J -11206021.08 -11206020.92 -11206020.76 0.0283 0.0051  
 Mercury -35394-10-31 06:43 J -11205932.38 -11205932.22 -11205932.07 0.0283 0.0076  
 Venus -35394-11-03 04:04 J -11205929.46 -11205929.33 -11205929.19 0.0283 0.0216  
 Mercury -35393-01-27 22:47 J -11205843.65 -11205843.55 -11205843.43 0.0282 0.0199  
 Venus -35380-01-08 13:55 J -11201114.01 -11201113.92 -11201113.80 0.0275 0.0237  
 Venus -35380-08-25 16:47 J -11200885.00 -11200884.80 -11200884.61 0.0275 0.0088  
 Mercury -35379-02-15 07:40 J -11200711.23 -11200711.18 -11200711.12 0.0276 0.0253  
 Venus -35379-04-11 19:40 J -11200655.87 -11200655.68 -11200655.47 0.0276 0.0065  
 Earth -35379-04-21 05:16 J -11200646.50 -11200646.28 -11200646.06 0.0276 0.0122  
 Moon -35379-04-21 06:43 J -11200646.45 -11200646.22 -11200645.98 0.0276 0.0108 \*  
 Mercury -35379-05-14 21:35 J -11200622.72 -11200622.60 -11200622.47 0.0276 0.0146  
 Mercury -35379-08-11 11:45 J -11200534.16 -11200534.01 -11200533.86 0.0276 0.0036  
 Mercury -35379-11-08 02:09 J -11200445.56 -11200445.41 -11200445.26 0.0276 0.0076  
 Venus -35379-11-26 23:45 J -11200426.63 -11200426.51 -11200426.38 0.0276 0.0217  
 Mercury -35378-02-04 16:47 J -11200356.90 -11200356.80 -11200356.69 0.0277 0.0192  
 Mars -35373-05-24 07:26 J -11198421.46 -11198421.19 -11198420.91 0.0282 0.0006  
 Venus -35366-06-26 00:43 J -11195832.53 -11195832.47 -11195832.40 0.0285 0.0270  
 Venus -35365-02-10 23:02 J -11195602.74 -11195602.54 -11195602.33 0.0284 0.0094  
 Mercury -35365-09-22 23:31 J -11195377.63 -11195377.52 -11195377.40 0.0284 0.0203  
 Venus -35365-09-27 20:23 J -11195372.85 -11195372.65 -11195372.44 0.0284 0.0082  
 Moon -35365-10-24 13:26 J -11195346.13 -11195345.94 -11195345.75 0.0283 0.0170

Earth -35365-10-24 14:23 J -11195346.09 -11195345.90 -11195345.69 0.0283 0.0162 \*  
 Mercury -35365-12-20 16:47 J -11195288.95 -11195288.80 -11195288.64 0.0283 0.0072  
 Mercury -35364-03-19 09:35 J -11195200.25 -11195200.10 -11195199.94 0.0283 0.0056  
 Venus -35364-05-15 16:19 J -11195142.90 -11195142.82 -11195142.71 0.0283 0.0254  
 Mercury -35364-06-16 01:55 J -11195111.53 -11195111.42 -11195111.29 0.0283 0.0180  
 Mars -35359-07-18 21:21 J -11193252.85 -11193252.61 -11193252.35 0.0277 0.0170  
 Venus -35351-07-21 19:11 J -11190327.83 -11190327.70 -11190327.57 0.0274 0.0212  
 Venus -35350-03-07 21:35 J -11190098.80 -11190098.60 -11190098.40 0.0275 0.0063  
 Moon -35350-04-16 00:43 J -11190059.69 -11190059.47 -11190059.25 0.0275 0.0094  
 Earth -35350-04-16 01:55 J -11190059.65 -11190059.42 -11190059.19 0.0275 0.0082 \*  
 Mercury -35350-10-01 23:16 J -11189890.64 -11189890.53 -11189890.41 0.0275 0.0176  
 Venus -35350-10-23 00:28 J -11189869.67 -11189869.48 -11189869.28 0.0275 0.0089  
 Mercury -35350-12-29 13:26 J -11189802.09 -11189801.94 -11189801.80 0.0276 0.0067  
 Mercury -35349-03-27 03:35 J -11189713.50 -11189713.35 -11189713.20 0.0276 0.0045  
 Venus -35349-06-08 04:04 J -11189640.42 -11189640.33 -11189640.22 0.0276 0.0241  
 Mercury -35349-06-23 18:14 J -11189624.86 -11189624.74 -11189624.61 0.0276 0.0158  
 Mercury -35349-09-20 09:07 J -11189536.13 -11189536.12 -11189536.10 0.0276 0.0275  
 Venus -35336-01-05 02:52 J -11185046.47 -11185046.38 -11185046.27 0.0284 0.0251  
 Venus -35336-08-23 01:11 J -11184816.66 -11184816.45 -11184816.24 0.0284 0.0075  
 Earth -35336-10-18 16:47 J -11184760.04 -11184759.80 -11184759.56 0.0283 0.0073  
 Moon -35336-10-18 17:59 J -11184760.00 -11184759.75 -11184759.50 0.0283 0.0062 \*  
 Mercury -35335-02-09 22:19 J -11184645.63 -11184645.57 -11184645.49 0.0283 0.0251  
 Venus -35335-04-09 22:19 J -11184586.77 -11184586.57 -11184586.36 0.0283 0.0100  
 Mercury -35335-05-09 15:50 J -11184556.98 -11184556.84 -11184556.69 0.0283 0.0119  
 Mercury -35335-08-06 08:52 J -11184468.29 -11184468.13 -11184467.97 0.0283 0.0010  
 Mercury -35335-11-03 01:26 J -11184379.57 -11184379.44 -11184379.30 0.0282 0.0135  
 Venus -35335-11-25 18:14 J -11184356.79 -11184356.74 -11184356.67 0.0282 0.0270  
 Mercury -35334-01-30 17:45 J -11184290.83 -11184290.76 -11184290.70 0.0282 0.0257  
 Venus -35321-01-31 22:04 J -11179541.72 -11179541.58 -11179541.43 0.0275 0.0191  
 Venus -35321-09-17 00:43 J -11179312.67 -11179312.47 -11179312.26 0.0275 0.0041

Mercury -35320-02-18 00:43 J -11179158.56 -11179158.47 -11179158.37 0.0276 0.0208

Moon -35320-04-22 07:11 J -11179095.40 -11179095.20 -11179094.99 0.0276 0.0152

Earth -35320-04-22 10:04 J -11179095.26 -11179095.08 -11179094.87 0.0276 0.0169 \*

Venus -35320-05-04 03:50 J -11179083.52 -11179083.34 -11179083.14 0.0276 0.0111

Mercury -35320-05-17 14:38 J -11179070.03 -11179069.89 -11179069.75 0.0276 0.0100

Mercury -35320-08-14 04:47 J -11178981.45 -11178981.30 -11178981.15 0.0276 0.0013

Mercury -35320-11-10 19:26 J -11178892.83 -11178892.69 -11178892.56 0.0276 0.0125

Venus -35320-12-19 08:09 J -11178854.22 -11178854.16 -11178854.10 0.0276 0.0263

Mercury -35319-02-07 10:19 J -11178804.14 -11178804.07 -11178804.00 0.0277 0.0241

Venus -35307-07-18 14:38 J -11174260.03 -11174259.89 -11174259.75 0.0285 0.0215

Moon -35307-10-13 07:40 J -11174173.22 -11174173.18 -11174173.13 0.0284 0.0279

Venus -35306-03-05 12:43 J -11174030.18 -11174029.97 -11174029.75 0.0284 0.0039

Mercury -35306-06-30 00:43 J -11173913.49 -11173913.47 -11173913.42 0.0284 0.0277

Mercury -35306-09-26 18:28 J -11173824.87 -11173824.73 -11173824.59 0.0284 0.0144

Venus -35306-10-21 09:50 J -11173800.27 -11173800.09 -11173799.90 0.0283 0.0136

Earth -35306-10-26 23:59 J -11173794.65 -11173794.50 -11173794.33 0.0283 0.0216

Moon -35306-10-27 02:38 J -11173794.53 -11173794.39 -11173794.24 0.0283 0.0223 \*

Mercury -35306-12-24 11:31 J -11173736.17 -11173736.02 -11173735.86 0.0283 0.0016

Mercury -35305-03-22 04:19 J -11173647.46 -11173647.32 -11173647.18 0.0283 0.0113

Mercury -35305-06-18 20:23 J -11173558.73 -11173558.65 -11173558.56 0.0283 0.0236

Venus -35292-08-13 03:21 J -11168755.52 -11168755.36 -11168755.19 0.0274 0.0165

Venus -35291-03-30 05:45 J -11168526.47 -11168526.26 -11168526.05 0.0275 0.0016

Earth -35291-04-17 07:11 J -11168508.44 -11168508.20 -11168507.96 0.0275 0.0035

Moon -35291-04-17 10:04 J -11168508.32 -11168508.08 -11168507.85 0.0275 0.0048 \*

Mercury -35291-07-08 02:38 J -11168426.46 -11168426.39 -11168426.31 0.0275 0.0236

Mercury -35291-10-04 16:33 J -11168337.94 -11168337.81 -11168337.68 0.0275 0.0130

Venus -35291-11-14 08:38 J -11168297.31 -11168297.14 -11168296.95 0.0276 0.0135

Mercury -35290-01-01 06:28 J -11168249.38 -11168249.23 -11168249.08 0.0276 0.0020

Mercury -35290-03-30 20:52 J -11168160.77 -11168160.63 -11168160.48 0.0276 0.0093

Mercury -35290-06-27 11:31 J -11168072.11 -11168072.02 -11168071.91 0.0276 0.0208

Mars -35285-10-18 00:14 J -11166132.76 -11166132.49 -11166132.21 0.0283 0.0031  
 Venus -35277-01-28 16:33 J -11163473.96 -11163473.81 -11163473.65 0.0284 0.0196  
 Venus -35277-09-14 14:52 J -11163244.10 -11163243.88 -11163243.67 0.0284 0.0021  
 Moon -35277-10-19 23:31 J -11163208.78 -11163208.52 -11163208.27 0.0283 0.0010  
 Earth -35277-10-20 02:23 J -11163208.65 -11163208.40 -11163208.16 0.0283 0.0018 \*  
 Mercury -35276-02-12 17:31 J -11163092.89 -11163092.77 -11163092.65 0.0283 0.0191  
 Venus -35276-05-02 11:45 J -11163014.19 -11163014.01 -11163013.83 0.0283 0.0153  
 Mercury -35276-05-12 10:47 J -11163004.21 -11163004.05 -11163003.90 0.0283 0.0061  
 Mercury -35276-08-09 03:35 J -11162915.51 -11162915.35 -11162915.20 0.0283 0.0067  
 Mercury -35276-11-05 19:55 J -11162826.78 -11162826.67 -11162826.55 0.0282 0.0191  
 Mars -35271-12-12 06:43 J -11160964.48 -11160964.22 -11160963.93 0.0277 0.0131  
 Venus -35262-02-23 04:47 J -11157969.47 -11157969.30 -11157969.12 0.0275 0.0146  
 Moon -35262-04-11 20:52 J -11157921.72 -11157921.63 -11157921.54 0.0275 0.0255  
 Earth -35262-04-11 23:31 J -11157921.63 -11157921.52 -11157921.41 0.0275 0.0246 \*  
 Venus -35262-10-10 07:26 J -11157740.39 -11157740.19 -11157739.98 0.0275 0.0005  
 Mercury -35262-11-25 03:35 J -11157694.37 -11157694.35 -11157694.33 0.0276 0.0273  
 Mercury -35261-02-21 17:16 J -11157605.90 -11157605.78 -11157605.66 0.0276 0.0166  
 Moon -35261-04-23 10:19 J -11157544.22 -11157544.07 -11157543.89 0.0276 0.0197  
 Earth -35261-04-23 13:11 J -11157544.10 -11157543.95 -11157543.79 0.0276 0.0212 \*  
 Mercury -35261-05-20 07:11 J -11157517.34 -11157517.20 -11157517.05 0.0276 0.0058  
 Venus -35261-05-26 10:47 J -11157511.22 -11157511.05 -11157510.88 0.0276 0.0155  
 Mercury -35261-08-16 21:35 J -11157428.75 -11157428.60 -11157428.45 0.0276 0.0055  
 Mercury -35261-11-13 12:14 J -11157340.11 -11157339.99 -11157339.87 0.0276 0.0170  
 Venus -35248-08-10 02:52 J -11152687.55 -11152687.38 -11152687.19 0.0285 0.0162  
 Earth -35248-10-14 16:33 J -11152621.93 -11152621.81 -11152621.67 0.0284 0.0241  
 Moon -35248-10-14 19:40 J -11152621.82 -11152621.68 -11152621.53 0.0284 0.0228 \*  
 Venus -35247-03-28 01:11 J -11152457.67 -11152457.45 -11152457.23 0.0284 0.0015  
 Mercury -35247-07-02 19:26 J -11152360.79 -11152360.69 -11152360.58 0.0284 0.0220  
 Mercury -35247-09-29 12:57 J -11152272.11 -11152271.96 -11152271.81 0.0284 0.0088  
 Earth -35247-10-28 07:55 J -11152243.25 -11152243.17 -11152243.09 0.0284 0.0268

Moon -35247-10-28 11:02 J -11152243.08 -11152243.04 -11152242.97 0.0284 0.0276  
 Venus -35247-11-12 22:04 J -11152227.74 -11152227.58 -11152227.41 0.0283 0.0188  
 Mercury -35247-12-27 05:45 J -11152183.41 -11152183.26 -11152183.10 0.0283 0.0042  
 Mercury -35246-03-25 22:19 J -11152094.69 -11152094.57 -11152094.44 0.0283 0.0167  
 Venus -35233-01-19 08:23 J -11147412.18 -11147412.15 -11147412.09 0.0274 0.0267  
 Venus -35233-09-04 10:19 J -11147183.25 -11147183.07 -11147182.88 0.0274 0.0121  
 Earth -35232-04-18 10:33 J -11146957.30 -11146957.06 -11146956.81 0.0275 0.0009  
 Moon -35232-04-18 13:40 J -11146957.18 -11146956.93 -11146956.68 0.0275 0.0005 \*  
 Venus -35232-04-21 12:43 J -11146954.18 -11146953.97 -11146953.76 0.0275 0.0028  
 Mercury -35232-07-10 19:11 J -11146873.80 -11146873.70 -11146873.59 0.0275 0.0194  
 Mercury -35232-10-07 09:07 J -11146785.26 -11146785.12 -11146784.98 0.0275 0.0086  
 Venus -35232-12-06 15:35 J -11146724.99 -11146724.85 -11146724.68 0.0276 0.0180  
 Mercury -35231-01-03 23:16 J -11146696.68 -11146696.53 -11146696.38 0.0276 0.0025  
 Mercury -35231-04-02 13:40 J -11146608.05 -11146607.93 -11146607.79 0.0276 0.0139  
 Mercury -35231-06-30 04:33 J -11146519.36 -11146519.31 -11146519.25 0.0276 0.0254  
 Venus -35218-02-20 04:47 J -11141901.48 -11141901.30 -11141901.11 0.0284 0.0143  
 Venus -35218-10-08 02:52 J -11141671.60 -11141671.38 -11141671.17 0.0284 0.0033  
 Moon -35218-10-22 06:28 J -11141657.47 -11141657.23 -11141656.99 0.0283 0.0041  
 Earth -35218-10-22 09:35 J -11141657.35 -11141657.10 -11141656.86 0.0283 0.0033 \*  
 Mercury -35218-11-19 17:59 J -11141628.79 -11141628.75 -11141628.69 0.0283 0.0270  
 Mercury -35217-02-16 11:45 J -11141540.15 -11141540.01 -11141539.87 0.0283 0.0136  
 Mercury -35217-05-15 04:47 J -11141451.46 -11141451.30 -11141451.14 0.0283 0.0009  
 Venus -35217-05-24 23:16 J -11141441.66 -11141441.53 -11141441.37 0.0283 0.0205  
 Mercury -35217-08-11 21:35 J -11141362.74 -11141362.60 -11141362.46 0.0283 0.0120  
 Mercury -35217-11-08 13:55 J -11141274.00 -11141273.92 -11141273.85 0.0282 0.0243  
 Venus -35204-07-31 08:38 J -11136626.22 -11136626.14 -11136626.05 0.0274 0.0249  
 Venus -35203-03-17 10:33 J -11136397.25 -11136397.06 -11136396.86 0.0275 0.0103  
 Moon -35203-04-12 21:35 J -11136370.73 -11136370.60 -11136370.44 0.0275 0.0217  
 Earth -35203-04-13 00:57 J -11136370.62 -11136370.46 -11136370.30 0.0275 0.0205 \*  
 Venus -35203-11-01 13:11 J -11136168.15 -11136167.95 -11136167.74 0.0275 0.0047

Mercury -35203-11-27 19:40 J -11136141.75 -11136141.68 -11136141.60 0.0275 0.0234  
 Mercury -35202-02-24 09:35 J -11136053.23 -11136053.10 -11136052.97 0.0276 0.0127  
 Earth -35202-04-25 14:38 J -11135992.98 -11135992.89 -11135992.79 0.0276 0.0252  
 Moon -35202-04-25 16:04 J -11135992.94 -11135992.83 -11135992.71 0.0276 0.0239 \*  
 Mercury -35202-05-23 23:31 J -11135964.67 -11135964.52 -11135964.37 0.0276 0.0017  
 Venus -35202-06-18 16:33 J -11135938.95 -11135938.81 -11135938.66 0.0276 0.0198  
 Mercury -35202-08-20 13:55 J -11135876.06 -11135875.92 -11135875.78 0.0276 0.0096  
 Mercury -35202-11-17 04:33 J -11135787.40 -11135787.31 -11135787.21 0.0276 0.0212  
 Mars -35196-03-13 14:23 J -11133844.16 -11133843.90 -11133843.63 0.0282 0.0069  
 Venus -35189-09-01 13:40 J -11131115.12 -11131114.93 -11131114.72 0.0285 0.0111  
 Earth -35189-10-15 21:50 J -11131070.77 -11131070.59 -11131070.41 0.0285 0.0193  
 Moon -35189-10-16 00:43 J -11131070.66 -11131070.47 -11131070.28 0.0285 0.0182 \*  
 Venus -35188-04-19 11:45 J -11130885.22 -11130885.01 -11130884.79 0.0284 0.0066  
 Mercury -35188-07-05 13:11 J -11130808.07 -11130807.95 -11130807.81 0.0284 0.0168  
 Mercury -35188-10-02 06:43 J -11130719.38 -11130719.22 -11130719.06 0.0284 0.0036  
 Venus -35188-12-05 08:38 J -11130655.25 -11130655.14 -11130655.02 0.0284 0.0238  
 Mercury -35188-12-29 23:31 J -11130630.67 -11130630.52 -11130630.37 0.0283 0.0092  
 Mercury -35187-03-28 15:50 J -11130541.94 -11130541.84 -11130541.74 0.0283 0.0216  
 Mars -35182-05-08 16:47 J -11128675.10 -11128674.80 -11128674.49 0.0277 0.0068  
 Venus -35174-02-10 14:38 J -11125840.00 -11125839.89 -11125839.77 0.0274 0.0224  
 Venus -35174-09-27 16:19 J -11125611.01 -11125610.82 -11125610.62 0.0274 0.0078  
 Mercury -35173-04-15 21:50 J -11125409.63 -11125409.59 -11125409.54 0.0275 0.0260  
 Moon -35173-04-19 11:31 J -11125406.27 -11125406.02 -11125405.77 0.0275 0.0036  
 Earth -35173-04-19 12:28 J -11125406.22 -11125405.98 -11125405.74 0.0275 0.0050 \*  
 Venus -35173-05-13 18:43 J -11125381.92 -11125381.72 -11125381.52 0.0275 0.0072  
 Mercury -35173-07-13 11:31 J -11125321.14 -11125321.02 -11125320.89 0.0275 0.0154  
 Mercury -35173-10-10 01:26 J -11125232.58 -11125232.44 -11125232.29 0.0275 0.0045  
 Venus -35173-12-28 21:50 J -11125152.70 -11125152.59 -11125152.46 0.0275 0.0222  
 Mercury -35172-01-06 15:50 J -11125143.99 -11125143.84 -11125143.69 0.0275 0.0067  
 Mercury -35172-04-05 06:14 J -11125055.35 -11125055.24 -11125055.12 0.0276 0.0182



Venus -35160-07-27 16:33 J -11120558.87 -11120558.81 -11120558.72 0.0285 0.0267  
 Venus -35159-03-14 15:35 J -11120329.05 -11120328.85 -11120328.64 0.0284 0.0092  
 Earth -35159-10-23 14:38 J -11120106.12 -11120105.89 -11120105.65 0.0284 0.0081  
 Moon -35159-10-23 16:04 J -11120106.06 -11120105.83 -11120105.60 0.0284 0.0086 \*  
 Venus -35159-10-30 13:26 J -11120099.14 -11120098.94 -11120098.73 0.0284 0.0083  
 Mercury -35159-11-22 12:14 J -11120076.09 -11120075.99 -11120075.89 0.0284 0.0217  
 Mercury -35158-02-19 05:31 J -11119987.42 -11119987.27 -11119987.11 0.0283 0.0085  
 Mercury -35158-05-18 22:33 J -11119898.72 -11119898.56 -11119898.40 0.0283 0.0044  
 Venus -35158-06-17 10:04 J -11119869.17 -11119869.08 -11119868.98 0.0283 0.0254  
 Mercury -35158-08-15 15:07 J -11119809.99 -11119809.87 -11119809.74 0.0283 0.0170  
 Venus -35145-08-22 13:55 J -11115054.05 -11115053.92 -11115053.78 0.0274 0.0207  
 Venus -35144-04-08 15:50 J -11114825.04 -11114824.84 -11114824.64 0.0275 0.0060  
 Earth -35144-04-14 00:57 J -11114819.64 -11114819.46 -11114819.25 0.0275 0.0167  
 Moon -35144-04-14 02:09 J -11114819.58 -11114819.41 -11114819.23 0.0275 0.0181 \*  
 Venus -35144-11-23 18:14 J -11114595.93 -11114595.74 -11114595.54 0.0275 0.0089  
 Mercury -35144-11-30 11:31 J -11114589.11 -11114589.02 -11114588.91 0.0275 0.0197  
 Mercury -35143-02-27 01:26 J -11114500.58 -11114500.44 -11114500.30 0.0276 0.0088  
 Mercury -35143-05-26 15:35 J -11114412.00 -11114411.85 -11114411.70 0.0276 0.0023  
 Venus -35143-07-10 21:35 J -11114366.69 -11114366.60 -11114366.49 0.0276 0.0239  
 Mercury -35143-08-23 05:59 J -11114323.38 -11114323.25 -11114323.11 0.0276 0.0136  
 Mercury -35143-11-19 20:52 J -11114234.69 -11114234.63 -11114234.57 0.0276 0.0252  
 Venus -35130-02-07 00:14 J -11109772.61 -11109772.49 -11109772.37 0.0285 0.0238  
 Venus -35130-09-24 23:16 J -11109542.74 -11109542.53 -11109542.32 0.0285 0.0061  
 Moon -35130-10-17 22:33 J -11109519.77 -11109519.56 -11109519.33 0.0285 0.0143  
 Earth -35130-10-18 00:43 J -11109519.68 -11109519.47 -11109519.26 0.0285 0.0148 \*  
 Mercury -35129-04-10 13:11 J -11109344.02 -11109343.95 -11109343.88 0.0284 0.0253  
 Venus -35129-05-11 21:07 J -11109312.81 -11109312.62 -11109312.41 0.0284 0.0114  
 Mercury -35129-07-08 06:43 J -11109255.36 -11109255.22 -11109255.07 0.0284 0.0119  
 Mercury -35129-10-04 23:59 J -11109166.66 -11109166.50 -11109166.34 0.0284 0.0012  
 Mercury -35128-01-01 16:33 J -11109077.94 -11109077.81 -11109077.67 0.0284 0.0139

Mercury -35128-03-31 08:52 J -11108989.18 -11108989.13 -11108989.07 0.0283 0.0262  
 Venus -35115-03-04 20:09 J -11104267.81 -11104267.66 -11104267.50 0.0274 0.0182  
 Venus -35115-10-19 21:50 J -11104038.79 -11104038.59 -11104038.38 0.0274 0.0035  
 Mercury -35114-04-19 13:55 J -11103857.00 -11103856.92 -11103856.83 0.0275 0.0221  
 Moon -35114-04-21 09:35 J -11103855.33 -11103855.10 -11103854.86 0.0275 0.0075  
 Earth -35114-04-21 13:11 J -11103855.18 -11103854.95 -11103854.71 0.0275 0.0091 \*  
 Venus -35114-06-06 00:14 J -11103809.68 -11103809.49 -11103809.30 0.0275 0.0113  
 Mercury -35114-07-17 03:35 J -11103768.48 -11103768.35 -11103768.21 0.0275 0.0114  
 Mercury -35114-10-13 17:45 J -11103679.91 -11103679.76 -11103679.61 0.0275 0.0005  
 Mercury -35113-01-10 07:55 J -11103591.30 -11103591.17 -11103591.02 0.0275 0.0108  
 Venus -35113-01-21 03:35 J -11103580.41 -11103580.35 -11103580.29 0.0275 0.0262  
 Mercury -35113-04-07 22:33 J -11103502.64 -11103502.56 -11103502.46 0.0276 0.0223  
 Mars -35108-08-06 20:52 J -11101555.89 -11101555.63 -11101555.36 0.0283 0.0091  
 Venus -35101-08-19 02:09 J -11098986.54 -11098986.41 -11098986.26 0.0285 0.0218  
 Venus -35100-04-06 01:11 J -11098756.66 -11098756.45 -11098756.24 0.0284 0.0042  
 Earth -35100-10-24 17:45 J -11098554.97 -11098554.76 -11098554.53 0.0284 0.0127  
 Moon -35100-10-24 21:35 J -11098554.81 -11098554.60 -11098554.37 0.0284 0.0127 \*  
 Venus -35100-11-21 22:47 J -11098526.73 -11098526.55 -11098526.35 0.0284 0.0132  
 Mercury -35100-11-25 05:31 J -11098523.39 -11098523.27 -11098523.14 0.0284 0.0168  
 Mercury -35099-02-21 22:47 J -11098434.70 -11098434.55 -11098434.39 0.0283 0.0038  
 Mercury -35099-05-21 15:50 J -11098345.99 -11098345.84 -11098345.69 0.0283 0.0092  
 Mercury -35099-08-18 08:09 J -11098257.25 -11098257.16 -11098257.06 0.0283 0.0217  
 Mars -35094-10-01 12:43 J -11096387.28 -11096386.97 -11096386.65 0.0276 0.0043  
 Venus -35086-09-14 18:57 J -11093481.86 -11093481.71 -11093481.54 0.0274 0.0166  
 Earth -35085-04-15 01:11 J -11093268.67 -11093268.45 -11093268.24 0.0275 0.0128  
 Moon -35085-04-15 04:47 J -11093268.50 -11093268.30 -11093268.08 0.0275 0.0144 \*  
 Venus -35085-04-30 20:52 J -11093252.84 -11093252.63 -11093252.42 0.0275 0.0019  
 Mercury -35085-09-05 13:55 J -11093124.95 -11093124.92 -11093124.88 0.0275 0.0264  
 Mercury -35085-12-03 03:35 J -11093036.47 -11093036.35 -11093036.23 0.0275 0.0159  
 Venus -35085-12-15 23:16 J -11093023.71 -11093023.53 -11093023.35 0.0275 0.0130

Mercury -35084-03-01 17:31 J -11092947.92 -11092947.77 -11092947.63 0.0275 0.0050  
 Mercury -35084-05-29 07:40 J -11092859.33 -11092859.18 -11092859.03 0.0276 0.0062  
 Mercury -35084-08-25 22:04 J -11092770.69 -11092770.58 -11092770.46 0.0276 0.0176  
 Venus -35071-03-01 08:23 J -11088200.30 -11088200.15 -11088199.98 0.0285 0.0191  
 Venus -35071-10-17 07:40 J -11087970.40 -11087970.18 -11087969.96 0.0285 0.0015  
 Moon -35071-10-18 22:19 J -11087968.79 -11087968.57 -11087968.34 0.0285 0.0104  
 Earth -35071-10-19 01:55 J -11087968.65 -11087968.42 -11087968.19 0.0285 0.0106 \*  
 Mercury -35070-04-14 06:14 J -11087791.35 -11087791.24 -11087791.13 0.0284 0.0207  
 Venus -35070-06-04 05:31 J -11087740.44 -11087740.27 -11087740.08 0.0284 0.0161  
 Mercury -35070-07-11 23:45 J -11087702.67 -11087702.51 -11087702.36 0.0284 0.0073  
 Mercury -35070-10-08 16:47 J -11087613.96 -11087613.80 -11087613.65 0.0284 0.0057  
 Mercury -35069-01-05 09:21 J -11087525.23 -11087525.11 -11087524.99 0.0284 0.0183  
 Venus -35056-03-27 01:11 J -11082695.61 -11082695.45 -11082695.26 0.0274 0.0141  
 Venus -35056-11-11 03:07 J -11082466.58 -11082466.37 -11082466.16 0.0274 0.0006  
 Mercury -35055-04-22 05:59 J -11082304.36 -11082304.25 -11082304.14 0.0274 0.0183  
 Moon -35055-04-22 12:43 J -11082304.18 -11082303.97 -11082303.75 0.0274 0.0117 \*  
 Earth -35055-04-22 13:40 J -11082304.14 -11082303.93 -11082303.71 0.0274 0.0131 \*  
 Venus -35055-06-28 05:16 J -11082237.44 -11082237.28 -11082237.10 0.0275 0.0155  
 Mercury -35055-07-19 19:40 J -11082215.82 -11082215.68 -11082215.53 0.0275 0.0075  
 Mercury -35055-10-16 09:50 J -11082127.24 -11082127.09 -11082126.94 0.0275 0.0036  
 Mercury -35054-01-13 00:14 J -11082038.62 -11082038.49 -11082038.36 0.0275 0.0148  
 Mercury -35054-04-11 14:52 J -11081949.92 -11081949.88 -11081949.83 0.0275 0.0264  
 Venus -35042-09-11 11:16 J -11077414.19 -11077414.03 -11077413.85 0.0285 0.0170  
 Venus -35041-04-28 10:19 J -11077184.29 -11077184.07 -11077183.85 0.0284 0.0006  
 Mercury -35041-08-31 05:02 J -11077059.35 -11077059.29 -11077059.21 0.0284 0.0255  
 Earth -35041-10-25 20:23 J -11077003.84 -11077003.65 -11077003.45 0.0284 0.0171  
 Moon -35041-10-25 20:38 J -11077003.84 -11077003.64 -11077003.43 0.0284 0.0167 \*  
 Mercury -35041-11-27 22:47 J -11076970.69 -11076970.55 -11076970.40 0.0284 0.0120  
 Venus -35041-12-14 07:55 J -11076954.33 -11076954.17 -11076954.00 0.0284 0.0179  
 Mercury -35040-02-24 16:04 J -11076881.99 -11076881.83 -11076881.67 0.0284 0.0011

Mercury -35040-05-24 08:38 J -11076793.27 -11076793.14 -11076793.00 0.0283 0.0139

Mercury -35040-08-21 00:57 J -11076704.51 -11076704.46 -11076704.39 0.0283 0.0262

Venus -35027-02-19 23:02 J -11072138.57 -11072138.54 -11072138.49 0.0274 0.0268

Venus -35027-10-07 00:14 J -11071909.67 -11071909.49 -11071909.30 0.0274 0.0124

Earth -35026-04-17 01:11 J -11071717.67 -11071717.45 -11071717.21 0.0274 0.0089

Moon -35026-04-17 01:40 J -11071717.66 -11071717.43 -11071717.19 0.0274 0.0103 \*

Venus -35026-05-24 01:55 J -11071680.62 -11071680.42 -11071680.21 0.0274 0.0023

Mercury -35026-09-09 05:45 J -11071572.33 -11071572.26 -11071572.17 0.0275 0.0227

Mercury -35026-12-06 19:26 J -11071483.82 -11071483.69 -11071483.55 0.0275 0.0120

Venus -35025-01-08 04:19 J -11071451.48 -11071451.32 -11071451.15 0.0275 0.0171

Mercury -35025-03-04 09:21 J -11071395.26 -11071395.11 -11071394.95 0.0275 0.0014

Mercury -35025-05-31 23:45 J -11071306.65 -11071306.51 -11071306.37 0.0275 0.0101

Mercury -35025-08-28 14:09 J -11071218.00 -11071217.91 -11071217.81 0.0276 0.0216

Mars -35020-12-30 18:43 J -11069267.97 -11069267.72 -11069267.46 0.0282 0.0105

Venus -35012-03-23 16:04 J -11066628.01 -11066627.83 -11066627.64 0.0285 0.0146

Earth -35012-10-20 02:09 J -11066417.65 -11066417.41 -11066417.17 0.0285 0.0064

Moon -35012-10-20 02:09 J -11066417.64 -11066417.41 -11066417.18 0.0285 0.0064 \*

Venus -35012-11-08 15:21 J -11066398.08 -11066397.86 -11066397.65 0.0285 0.0031

Mercury -35011-04-16 22:47 J -11066238.67 -11066238.55 -11066238.41 0.0285 0.0163

Venus -35011-06-26 13:11 J -11066168.09 -11066167.95 -11066167.79 0.0284 0.0206

Mercury -35011-07-14 16:19 J -11066149.98 -11066149.82 -11066149.66 0.0284 0.0030

Mercury -35011-10-11 09:21 J -11066061.26 -11066061.11 -11066060.96 0.0284 0.0100

Mercury -35010-01-08 01:55 J -11065972.51 -11065972.42 -11065972.33 0.0284 0.0226

Mars -35005-02-25 11:16 J -11064098.35 -11064098.03 -11064097.72 0.0277 0.0005

# 35TH MILLENNIUM BCE

# **This is a list of transits visible from Saturn in the 35th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-34998-09-02 05:59 J	-11061352.33	-11061352.25	-11061352.15	0.0273	0.0242		
Venus	-34997-04-18 07:11 J	-11061123.39	-11061123.20	-11061123.01	0.0273	0.0099		
Venus	-34997-12-03 08:52 J	-11060894.34	-11060894.13	-11060893.93	0.0274	0.0048		
Mercury	-34996-01-26 08:38 J	-11060840.20	-11060840.14	-11060840.08	0.0274	0.0248		
Earth	-34996-04-23 14:38 J	-11060753.07	-11060752.89	-11060752.69	0.0274	0.0173		
Moon	-34996-04-23 17:59 J	-11060752.93	-11060752.75	-11060752.54	0.0274	0.0160	*	
Mercury	-34996-04-24 22:04 J	-11060751.70	-11060751.58	-11060751.45	0.0274	0.0143		
Venus	-34996-07-20 11:02 J	-11060665.18	-11060665.04	-11060664.89	0.0275	0.0195		
Mercury	-34996-07-22 11:59 J	-11060663.15	-11060663.00	-11060662.85	0.0275	0.0034		
Mercury	-34996-10-19 02:09 J	-11060574.56	-11060574.41	-11060574.26	0.0275	0.0077		
Mercury	-34995-01-15 16:33 J	-11060485.92	-11060485.81	-11060485.70	0.0275	0.0191		
Venus	-34983-10-03 20:09 J	-11055841.85	-11055841.66	-11055841.46	0.0285	0.0123		
Venus	-34982-05-21 18:57 J	-11055611.92	-11055611.71	-11055611.50	0.0285	0.0053		
Mercury	-34982-09-03 22:19 J	-11055506.68	-11055506.57	-11055506.46	0.0284	0.0208		
Moon	-34982-10-27 18:43 J	-11055452.88	-11055452.72	-11055452.54	0.0284	0.0207		
Earth	-34982-10-27 22:19 J	-11055452.72	-11055452.57	-11055452.41	0.0284	0.0216	*	
Mercury	-34982-12-01 15:50 J	-11055417.99	-11055417.84	-11055417.68	0.0284	0.0074		
Venus	-34981-01-06 16:33 J	-11055381.93	-11055381.81	-11055381.67	0.0284	0.0225		
Mercury	-34981-02-28 08:52 J	-11055329.28	-11055329.13	-11055328.97	0.0284	0.0057		
Mercury	-34981-05-27 01:26 J	-11055240.55	-11055240.44	-11055240.31	0.0283	0.0184		
Venus	-34968-03-14 04:47 J	-11050566.41	-11050566.30	-11050566.18	0.0273	0.0227		
Venus	-34968-10-29 05:45 J	-11050337.45	-11050337.26	-11050337.06	0.0274	0.0083		
Moon	-34967-04-17 23:02 J	-11050166.78	-11050166.54	-11050166.30	0.0274	0.0061		
Earth	-34967-04-18 02:38 J	-11050166.63	-11050166.39	-11050166.15	0.0274	0.0046	*	
Venus	-34967-06-15 07:26 J	-11050108.39	-11050108.19	-11050107.99	0.0274	0.0064		

Mercury -34967-09-11 21:50 J -11050019.69 -11050019.59 -11050019.48 0.0275 0.0188

Mercury -34967-12-09 11:45 J -11049931.15 -11049931.01 -11049930.87 0.0275 0.0080

Venus -34966-01-30 09:50 J -11049879.21 -11049879.09 -11049878.95 0.0275 0.0212

Mercury -34966-03-08 01:40 J -11049842.58 -11049842.43 -11049842.28 0.0275 0.0030

Mercury -34966-06-04 16:04 J -11049753.96 -11049753.83 -11049753.70 0.0275 0.0143

Mercury -34966-09-01 06:43 J -11049665.27 -11049665.22 -11049665.17 0.0276 0.0258

Venus -34954-08-28 23:59 J -11045285.54 -11045285.50 -11045285.43 0.0286 0.0276

Venus -34953-04-15 00:14 J -11045055.69 -11045055.49 -11045055.29 0.0286 0.0099

Earth -34953-10-21 02:52 J -11044866.62 -11044866.38 -11044866.13 0.0285 0.0021

Moon -34953-10-21 06:14 J -11044866.48 -11044866.24 -11044865.99 0.0285 0.0023 \*

Venus -34953-11-30 23:16 J -11044825.73 -11044825.53 -11044825.32 0.0285 0.0077

Mercury -34952-01-20 22:04 J -11044774.65 -11044774.58 -11044774.51 0.0285 0.0252

Mercury -34952-04-19 15:50 J -11044685.99 -11044685.84 -11044685.69 0.0285 0.0117

Mercury -34952-07-17 09:07 J -11044597.28 -11044597.12 -11044596.96 0.0285 0.0016

Venus -34952-07-18 21:21 J -11044595.70 -11044595.61 -11044595.50 0.0285 0.0250

Mercury -34952-10-14 01:55 J -11044508.55 -11044508.42 -11044508.28 0.0284 0.0144

Mercury -34951-01-10 18:28 J -11044419.78 -11044419.73 -11044419.68 0.0284 0.0269

Venus -34939-09-24 11:59 J -11039780.13 -11039780.00 -11039779.85 0.0273 0.0201

Earth -34938-04-13 05:59 J -11039579.36 -11039579.25 -11039579.12 0.0273 0.0236

Moon -34938-04-13 09:07 J -11039579.20 -11039579.12 -11039579.02 0.0273 0.0251 \*

Venus -34938-05-11 13:11 J -11039551.15 -11039550.95 -11039550.74 0.0273 0.0057

Venus -34938-12-26 14:52 J -11039322.07 -11039321.88 -11039321.68 0.0274 0.0090

Mercury -34937-01-30 00:57 J -11039287.56 -11039287.46 -11039287.37 0.0274 0.0207

Earth -34937-04-24 16:47 J -11039201.94 -11039201.80 -11039201.64 0.0274 0.0216

Moon -34937-04-24 19:11 J -11039201.86 -11039201.70 -11039201.53 0.0274 0.0205 \*

Mercury -34937-04-27 14:23 J -11039199.03 -11039198.90 -11039198.76 0.0274 0.0101

Mercury -34937-07-25 04:33 J -11039110.46 -11039110.31 -11039110.16 0.0274 0.0011

Venus -34937-08-11 17:16 J -11039092.87 -11039092.78 -11039092.67 0.0274 0.0237

Mercury -34937-10-21 18:43 J -11039021.86 -11039021.72 -11039021.58 0.0275 0.0120

Mercury -34936-01-18 09:07 J -11038933.19 -11038933.12 -11038933.04 0.0275 0.0235

Mars -34931-05-26 08:23 J -11036979.38 -11036979.15 -11036978.90 0.0282 0.0139  
 Venus -34924-03-10 05:31 J -11034499.36 -11034499.27 -11034499.16 0.0286 0.0251  
 Moon -34924-10-15 03:07 J -11034280.46 -11034280.37 -11034280.26 0.0285 0.0258  
 Earth -34924-10-15 06:43 J -11034280.31 -11034280.22 -11034280.11 0.0285 0.0258 \*  
 Venus -34924-10-26 05:16 J -11034269.49 -11034269.28 -11034269.07 0.0285 0.0075  
 Venus -34923-06-13 03:50 J -11034039.54 -11034039.34 -11034039.13 0.0285 0.0100  
 Mercury -34923-09-06 15:35 J -11033953.98 -11033953.85 -11033953.72 0.0284 0.0160  
 Moon -34923-10-28 22:33 J -11033901.67 -11033901.56 -11033901.45 0.0284 0.0254  
 Earth -34923-10-29 00:28 J -11033901.56 -11033901.48 -11033901.37 0.0284 0.0261 \*  
 Mercury -34923-12-04 08:52 J -11033865.28 -11033865.13 -11033864.97 0.0284 0.0028  
 Venus -34922-01-29 01:40 J -11033809.49 -11033809.43 -11033809.37 0.0284 0.0270  
 Mercury -34922-03-03 01:55 J -11033776.56 -11033776.42 -11033776.27 0.0284 0.0103  
 Mercury -34922-05-30 18:28 J -11033687.82 -11033687.73 -11033687.64 0.0284 0.0229  
 Mars -34917-07-20 10:33 J -11031810.37 -11031810.06 -11031809.75 0.0277 0.0035  
 Venus -34909-04-05 11:16 J -11028994.17 -11028994.03 -11028993.87 0.0273 0.0185  
 Venus -34909-11-20 12:28 J -11028765.18 -11028764.98 -11028764.77 0.0274 0.0040  
 Moon -34908-04-19 03:50 J -11028615.58 -11028615.34 -11028615.11 0.0274 0.0014  
 Earth -34908-04-19 05:45 J -11028615.51 -11028615.26 -11028615.02 0.0274 0.0002 \*  
 Mercury -34908-06-18 00:57 J -11028555.51 -11028555.46 -11028555.40 0.0274 0.0250  
 Venus -34908-07-07 14:09 J -11028536.10 -11028535.91 -11028535.72 0.0274 0.0107  
 Mercury -34908-09-14 14:23 J -11028467.02 -11028466.90 -11028466.77 0.0274 0.0145  
 Mercury -34908-12-12 04:19 J -11028378.47 -11028378.32 -11028378.17 0.0275 0.0036  
 Venus -34907-02-21 16:47 J -11028306.88 -11028306.80 -11028306.72 0.0275 0.0253  
 Mercury -34907-03-10 18:28 J -11028289.88 -11028289.73 -11028289.59 0.0275 0.0075  
 Mercury -34907-06-07 08:38 J -11028201.24 -11028201.14 -11028201.02 0.0275 0.0188  
 Venus -34895-09-20 08:38 J -11023713.26 -11023713.14 -11023713.00 0.0286 0.0230  
 Venus -34894-05-08 08:38 J -11023483.35 -11023483.14 -11023482.92 0.0286 0.0053  
 Earth -34894-10-23 04:04 J -11023315.57 -11023315.33 -11023315.08 0.0285 0.0025  
 Moon -34894-10-23 06:28 J -11023315.48 -11023315.23 -11023314.98 0.0285 0.0020 \*  
 Venus -34894-12-24 07:40 J -11023253.37 -11023253.18 -11023252.98 0.0285 0.0122

Mercury -34893-01-24 15:07 J -11023221.98 -11023221.87 -11023221.76 0.0285 0.0205  
 Mercury -34893-04-22 08:38 J -11023133.29 -11023133.14 -11023132.98 0.0285 0.0071  
 Mercury -34893-07-20 01:55 J -11023044.57 -11023044.42 -11023044.26 0.0285 0.0061  
 Mercury -34893-10-16 18:28 J -11022955.84 -11022955.73 -11022955.60 0.0284 0.0190  
 Venus -34880-10-16 18:57 J -11018207.87 -11018207.71 -11018207.53 0.0273 0.0158  
 Earth -34879-04-14 09:35 J -11018028.27 -11018028.10 -11018027.92 0.0273 0.0191  
 Moon -34879-04-14 12:14 J -11018028.15 -11018027.99 -11018027.82 0.0273 0.0205 \*  
 Venus -34879-06-02 20:09 J -11017978.86 -11017978.66 -11017978.45 0.0273 0.0015  
 Mercury -34879-11-05 04:04 J -11017823.35 -11017823.33 -11017823.30 0.0274 0.0269  
 Venus -34878-01-17 21:50 J -11017749.76 -11017749.59 -11017749.40 0.0274 0.0133  
 Mercury -34878-02-01 17:31 J -11017734.89 -11017734.77 -11017734.65 0.0274 0.0164  
 Moon -34878-04-26 17:59 J -11017650.84 -11017650.75 -11017650.66 0.0274 0.0255  
 Earth -34878-04-26 20:23 J -11017650.71 -11017650.65 -11017650.58 0.0274 0.0263 \*  
 Mercury -34878-05-01 07:11 J -11017646.34 -11017646.20 -11017646.05 0.0274 0.0057  
 Mercury -34878-07-28 21:07 J -11017557.76 -11017557.62 -11017557.47 0.0274 0.0055  
 Mercury -34878-10-25 11:31 J -11017469.14 -11017469.02 -11017468.90 0.0275 0.0167  
 Mars -34873-09-01 09:35 J -11015696.22 -11015696.10 -11015695.98 0.0281 0.0252  
 Venus -34865-04-01 15:50 J -11012926.98 -11012926.84 -11012926.68 0.0286 0.0202  
 Moon -34865-10-16 09:07 J -11012729.27 -11012729.12 -11012728.96 0.0285 0.0214  
 Earth -34865-10-16 10:47 J -11012729.20 -11012729.05 -11012728.87 0.0285 0.0211 \*  
 Venus -34865-11-17 15:35 J -11012697.07 -11012696.85 -11012696.64 0.0285 0.0027  
 Mercury -34864-06-12 15:21 J -11012489.94 -11012489.86 -11012489.77 0.0285 0.0244  
 Venus -34864-07-05 14:09 J -11012467.09 -11012466.91 -11012466.72 0.0285 0.0148  
 Mercury -34864-09-09 09:07 J -11012401.27 -11012401.12 -11012400.97 0.0285 0.0109  
 Mercury -34864-12-07 02:23 J -11012312.55 -11012312.40 -11012312.24 0.0284 0.0025  
 Mercury -34863-03-05 19:26 J -11012223.82 -11012223.69 -11012223.56 0.0284 0.0152  
 Mercury -34863-06-02 11:45 J -11012135.04 -11012135.01 -11012134.98 0.0284 0.0277  
 Venus -34850-04-28 18:57 J -11007421.88 -11007421.71 -11007421.53 0.0273 0.0141  
 Venus -34850-12-13 20:09 J -11007192.87 -11007192.66 -11007192.45 0.0274 0.0004  
 Earth -34849-04-20 10:04 J -11007064.31 -11007064.08 -11007063.83 0.0274 0.0047



Moon -34849-04-20 12:14 J -11007064.22 -11007063.99 -11007063.75 0.0274 0.0037 \*  
 Mercury -34849-06-20 17:45 J -11007002.85 -11007002.76 -11007002.66 0.0274 0.0205  
 Venus -34849-07-29 21:35 J -11006963.76 -11006963.60 -11006963.41 0.0274 0.0151  
 Mercury -34849-09-17 07:26 J -11006914.33 -11006914.19 -11006914.05 0.0274 0.0099  
 Mercury -34849-12-14 21:21 J -11006825.76 -11006825.61 -11006825.46 0.0275 0.0011  
 Mercury -34848-03-13 11:31 J -11006737.16 -11006737.02 -11006736.89 0.0275 0.0122  
 Mercury -34848-06-10 01:55 J -11006648.49 -11006648.42 -11006648.34 0.0275 0.0236  
 Mars -34843-10-19 10:47 J -11004691.28 -11004691.05 -11004690.82 0.0282 0.0157  
 Venus -34836-10-12 18:28 J -11002140.89 -11002140.73 -11002140.55 0.0286 0.0182  
 Venus -34835-05-30 18:28 J -11001910.95 -11001910.73 -11001910.52 0.0285 0.0007  
 Moon -34835-10-24 05:02 J -11001764.54 -11001764.29 -11001764.04 0.0285 0.0062  
 Earth -34835-10-24 07:11 J -11001764.43 -11001764.20 -11001763.95 0.0285 0.0072 \*  
 Venus -34834-01-15 17:16 J -11001680.95 -11001680.78 -11001680.60 0.0285 0.0169  
 Mercury -34834-01-27 08:23 J -11001669.28 -11001669.15 -11001669.01 0.0285 0.0155  
 Mercury -34834-04-26 01:55 J -11001580.58 -11001580.42 -11001580.26 0.0285 0.0022  
 Mercury -34834-07-23 18:57 J -11001491.85 -11001491.71 -11001491.56 0.0285 0.0110  
 Mercury -34834-10-20 11:45 J -11001403.09 -11001403.01 -11001402.92 0.0284 0.0236  
 Mars -34829-12-14 06:28 J -10999521.52 -10999521.23 -10999520.92 0.0278 0.0082  
 Venus -34821-03-24 02:09 J -10996864.47 -10996864.41 -10996864.34 0.0273 0.0256  
 Venus -34821-11-08 02:52 J -10996635.56 -10996635.38 -10996635.19 0.0273 0.0115  
 Moon -34820-04-15 13:26 J -10996477.14 -10996476.94 -10996476.72 0.0273 0.0156  
 Earth -34820-04-15 15:07 J -10996477.07 -10996476.87 -10996476.66 0.0273 0.0142 \*  
 Venus -34820-06-25 04:19 J -10996406.53 -10996406.32 -10996406.11 0.0274 0.0030  
 Mercury -34820-11-07 20:52 J -10996270.71 -10996270.63 -10996270.54 0.0274 0.0223  
 Mercury -34819-02-04 10:33 J -10996182.19 -10996182.06 -10996181.92 0.0274 0.0117  
 Venus -34819-02-09 06:14 J -10996177.39 -10996177.24 -10996177.07 0.0274 0.0176  
 Mercury -34819-05-04 00:28 J -10996093.63 -10996093.48 -10996093.33 0.0274 0.0009  
 Mercury -34819-07-31 14:23 J -10996005.03 -10996004.90 -10996004.75 0.0274 0.0104  
 Mercury -34819-10-28 04:47 J -10995916.38 -10995916.30 -10995916.20 0.0275 0.0217  
 Venus -34806-04-25 03:07 J -10991354.54 -10991354.37 -10991354.18 0.0286 0.0152

Earth -34806-10-18 16:47 J -10991178.00 -10991177.80 -10991177.60 0.0285 0.0159  
 Moon -34806-10-18 19:26 J -10991177.88 -10991177.69 -10991177.49 0.0285 0.0166 \*  
 Venus -34806-12-11 02:38 J -10991124.60 -10991124.39 -10991124.17 0.0285 0.0024  
 Mercury -34805-06-15 09:21 J -10990937.22 -10990937.11 -10990936.98 0.0285 0.0190  
 Venus -34805-07-28 01:11 J -10990894.60 -10990894.45 -10990894.29 0.0285 0.0197  
 Mercury -34805-09-12 03:07 J -10990848.53 -10990848.37 -10990848.21 0.0285 0.0055  
 Mercury -34805-12-09 20:09 J -10990759.81 -10990759.66 -10990759.50 0.0284 0.0076  
 Mercury -34804-03-08 12:57 J -10990671.07 -10990670.96 -10990670.85 0.0284 0.0203  
 Venus -34792-10-04 02:52 J -10986078.47 -10986078.38 -10986078.27 0.0273 0.0238  
 Venus -34791-05-21 03:35 J -10985849.54 -10985849.35 -10985849.15 0.0273 0.0096  
 Venus -34790-01-05 05:02 J -10985620.50 -10985620.29 -10985620.09 0.0274 0.0049  
 Mercury -34790-03-27 21:35 J -10985538.64 -10985538.60 -10985538.56 0.0274 0.0262  
 Earth -34790-04-22 16:47 J -10985513.03 -10985512.80 -10985512.57 0.0274 0.0098  
 Moon -34790-04-22 20:09 J -10985512.89 -10985512.66 -10985512.42 0.0274 0.0087 \*  
 Mercury -34790-06-24 11:02 J -10985450.16 -10985450.04 -10985449.92 0.0274 0.0157  
 Venus -34790-08-22 06:43 J -10985391.36 -10985391.22 -10985391.07 0.0274 0.0195  
 Mercury -34790-09-21 00:43 J -10985361.61 -10985361.47 -10985361.32 0.0274 0.0049  
 Mercury -34790-12-18 14:38 J -10985273.03 -10985272.89 -10985272.74 0.0275 0.0062  
 Mercury -34789-03-16 05:02 J -10985184.41 -10985184.29 -10985184.17 0.0275 0.0174  
 Mars -34784-01-25 17:45 J -10983407.90 -10983407.76 -10983407.58 0.0281 0.0228  
 Venus -34777-11-04 05:59 J -10980568.43 -10980568.25 -10980568.05 0.0286 0.0132  
 Venus -34776-06-22 05:45 J -10980338.47 -10980338.26 -10980338.04 0.0285 0.0044  
 Moon -34776-10-25 09:35 J -10980213.32 -10980213.10 -10980212.87 0.0285 0.0112  
 Earth -34776-10-25 13:11 J -10980213.17 -10980212.95 -10980212.73 0.0285 0.0124 \*  
 Mercury -34776-11-02 08:23 J -10980205.23 -10980205.15 -10980205.05 0.0285 0.0237  
 Mercury -34775-01-30 02:23 J -10980116.55 -10980116.40 -10980116.25 0.0285 0.0101  
 Venus -34775-02-07 04:19 J -10980108.45 -10980108.32 -10980108.17 0.0285 0.0217  
 Mercury -34775-04-28 19:55 J -10980027.83 -10980027.67 -10980027.51 0.0285 0.0032  
 Mercury -34775-07-26 12:43 J -10979939.09 -10979938.97 -10979938.84 0.0284 0.0162  
 Venus -34762-04-16 10:47 J -10975292.18 -10975292.05 -10975291.92 0.0273 0.0212

Venus -34762-12-01 11:45 J -10975063.21 -10975063.01 -10975062.81 0.0273 0.0070  
 Moon -34761-04-16 18:14 J -10974925.96 -10974925.74 -10974925.52 0.0274 0.0106  
 Earth -34761-04-16 21:50 J -10974925.82 -10974925.59 -10974925.35 0.0274 0.0091 \*  
 Venus -34761-07-17 13:11 J -10974834.15 -10974833.95 -10974833.75 0.0274 0.0075  
 Mercury -34761-11-10 14:09 J -10974718.01 -10974717.91 -10974717.79 0.0274 0.0175  
 Mercury -34760-02-07 04:04 J -10974629.48 -10974629.33 -10974629.19 0.0274 0.0067  
 Venus -34760-03-03 15:35 J -10974604.98 -10974604.85 -10974604.73 0.0274 0.0221  
 Mercury -34760-05-06 17:59 J -10974540.90 -10974540.75 -10974540.60 0.0274 0.0043  
 Mercury -34760-08-03 08:09 J -10974452.28 -10974452.16 -10974452.03 0.0275 0.0155  
 Mercury -34760-10-30 22:47 J -10974363.58 -10974363.55 -10974363.53 0.0275 0.0270  
 Mars -34754-03-15 22:33 J -10972401.72 -10972401.56 -10972401.38 0.0282 0.0221  
 Venus -34748-09-29 16:19 J -10970011.87 -10970011.82 -10970011.74 0.0286 0.0273  
 Venus -34747-05-17 16:19 J -10969782.02 -10969781.82 -10969781.61 0.0286 0.0099  
 Earth -34747-10-20 01:11 J -10969626.68 -10969626.45 -10969626.22 0.0285 0.0103  
 Moon -34747-10-20 04:33 J -10969626.54 -10969626.31 -10969626.08 0.0285 0.0113 \*  
 Venus -34746-01-02 15:35 J -10969552.06 -10969551.85 -10969551.64 0.0285 0.0076  
 Mercury -34746-03-22 10:04 J -10969473.13 -10969473.08 -10969473.02 0.0285 0.0268  
 Mercury -34746-06-19 04:04 J -10969384.47 -10969384.33 -10969384.19 0.0285 0.0131  
 Venus -34746-08-20 13:55 J -10969322.02 -10969321.92 -10969321.81 0.0285 0.0247  
 Mercury -34746-09-15 21:35 J -10969295.76 -10969295.60 -10969295.44 0.0285 0.0006  
 Mercury -34746-12-13 14:23 J -10969207.03 -10969206.90 -10969206.76 0.0284 0.0133  
 Mercury -34745-03-11 07:11 J -10969118.26 -10969118.20 -10969118.14 0.0284 0.0258  
 Mars -34740-05-10 02:38 J -10967232.65 -10967232.39 -10967232.11 0.0277 0.0139  
 Venus -34733-10-26 12:28 J -10964506.12 -10964505.98 -10964505.83 0.0273 0.0193  
 Venus -34732-06-12 13:26 J -10964277.15 -10964276.94 -10964276.74 0.0273 0.0050  
 Venus -34731-01-27 14:52 J -10964048.07 -10964047.88 -10964047.69 0.0274 0.0095  
 Mercury -34731-03-30 15:07 J -10963985.96 -10963985.87 -10963985.77 0.0274 0.0212  
 Earth -34731-04-24 01:11 J -10963961.65 -10963961.45 -10963961.24 0.0274 0.0153  
 Moon -34731-04-24 01:26 J -10963961.65 -10963961.44 -10963961.22 0.0274 0.0144 \*  
 Mercury -34731-06-27 04:47 J -10963897.44 -10963897.30 -10963897.17 0.0274 0.0105

Venus -34731-09-13 16:47 J -10963818.89 -10963818.80 -10963818.70 0.0274 0.0240  
 Mercury -34731-09-23 18:28 J -10963808.88 -10963808.73 -10963808.58 0.0274 0.0008  
 Mercury -34731-12-21 08:38 J -10963720.28 -10963720.14 -10963720.00 0.0275 0.0115  
 Mercury -34730-03-19 23:02 J -10963631.62 -10963631.54 -10963631.46 0.0275 0.0229  
 Venus -34718-04-11 18:57 J -10959225.79 -10959225.71 -10959225.60 0.0286 0.0254  
 Venus -34718-11-27 19:11 J -10958995.91 -10958995.70 -10958995.49 0.0285 0.0079  
 Venus -34717-07-14 18:28 J -10958765.93 -10958765.73 -10958765.52 0.0285 0.0096  
 Earth -34717-10-26 20:52 J -10958661.81 -10958661.63 -10958661.43 0.0285 0.0180  
 Moon -34717-10-26 21:21 J -10958661.79 -10958661.61 -10958661.40 0.0285 0.0167 \*  
 Mercury -34717-11-05 03:07 J -10958652.49 -10958652.37 -10958652.24 0.0285 0.0178  
 Mercury -34716-02-01 20:52 J -10958563.79 -10958563.63 -10958563.47 0.0285 0.0043  
 Venus -34716-03-01 16:47 J -10958535.86 -10958535.80 -10958535.72 0.0285 0.0266  
 Mercury -34716-05-01 14:09 J -10958475.06 -10958474.91 -10958474.76 0.0285 0.0089  
 Mercury -34716-07-29 06:57 J -10958386.31 -10958386.21 -10958386.11 0.0284 0.0216  
 Venus -34703-05-08 19:55 J -10953719.83 -10953719.67 -10953719.50 0.0273 0.0167  
 Venus -34703-12-23 21:07 J -10953490.82 -10953490.62 -10953490.41 0.0274 0.0024  
 Moon -34702-04-19 05:16 J -10953374.51 -10953374.28 -10953374.04 0.0274 0.0051  
 Earth -34702-04-19 05:45 J -10953374.50 -10953374.26 -10953374.01 0.0274 0.0038 \*  
 Venus -34702-08-09 22:47 J -10953261.73 -10953261.55 -10953261.36 0.0274 0.0122  
 Mercury -34702-08-17 18:14 J -10953253.81 -10953253.74 -10953253.65 0.0274 0.0230  
 Mercury -34702-11-14 07:55 J -10953165.30 -10953165.17 -10953165.04 0.0274 0.0124  
 Mercury -34701-02-10 21:35 J -10953076.75 -10953076.60 -10953076.45 0.0274 0.0016  
 Venus -34701-03-26 01:11 J -10953032.49 -10953032.45 -10953032.39 0.0274 0.0266  
 Mercury -34701-05-09 11:45 J -10952988.15 -10952988.01 -10952987.87 0.0274 0.0096  
 Mercury -34701-08-06 02:09 J -10952899.51 -10952899.41 -10952899.31 0.0275 0.0210  
 Mars -34696-06-22 11:31 J -10951118.24 -10951118.02 -10951117.78 0.0281 0.0154  
 Venus -34689-10-22 07:11 J -10948439.34 -10948439.20 -10948439.06 0.0286 0.0218  
 Venus -34688-06-09 06:57 J -10948209.43 -10948209.21 -10948209.00 0.0286 0.0044  
 Moon -34688-10-21 11:02 J -10948075.29 -10948075.04 -10948074.79 0.0285 0.0055  
 Earth -34688-10-21 11:59 J -10948075.25 -10948075.00 -10948074.76 0.0285 0.0044 \*

Venus -34687-01-25 05:45 J -10947979.45 -10947979.26 -10947979.06 0.0285 0.0130  
 Mercury -34687-03-25 05:31 J -10947920.38 -10947920.27 -10947920.16 0.0285 0.0204  
 Mercury -34687-06-21 23:16 J -10947831.69 -10947831.53 -10947831.38 0.0285 0.0069  
 Mercury -34687-09-18 16:33 J -10947742.97 -10947742.81 -10947742.66 0.0285 0.0064  
 Mercury -34687-12-16 09:07 J -10947654.23 -10947654.12 -10947654.00 0.0284 0.0192  
 Venus -34674-11-18 22:33 J -10942933.73 -10942933.56 -10942933.38 0.0273 0.0146  
 Earth -34673-04-13 01:11 J -10942787.55 -10942787.45 -10942787.34 0.0273 0.0245  
 Moon -34673-04-13 01:26 J -10942787.51 -10942787.44 -10942787.35 0.0273 0.0258 \*  
 Venus -34673-07-04 23:45 J -10942704.72 -10942704.51 -10942704.30 0.0274 0.0003  
 Mercury -34672-01-03 19:26 J -10942521.72 -10942521.69 -10942521.64 0.0274 0.0264  
 Venus -34672-02-19 01:26 J -10942475.62 -10942475.44 -10942475.26 0.0274 0.0142  
 Mercury -34672-04-02 08:52 J -10942433.24 -10942433.13 -10942433.00 0.0274 0.0159  
 Moon -34672-04-25 07:11 J -10942410.35 -10942410.20 -10942410.02 0.0274 0.0202  
 Earth -34672-04-25 10:47 J -10942410.19 -10942410.05 -10942409.88 0.0274 0.0210 \*  
 Mercury -34672-06-29 22:47 J -10942344.70 -10942344.55 -10942344.41 0.0274 0.0051  
 Mercury -34672-09-26 12:43 J -10942256.12 -10942255.97 -10942255.83 0.0275 0.0059  
 Mercury -34672-12-24 02:52 J -10942167.50 -10942167.38 -10942167.26 0.0275 0.0172  
 Mars -34666-08-09 16:19 J -10940112.91 -10940112.82 -10940112.70 0.0282 0.0260  
 Venus -34659-05-04 10:04 J -10937653.23 -10937653.08 -10937652.92 0.0286 0.0198  
 Venus -34659-12-20 09:50 J -10937423.30 -10937423.09 -10937422.87 0.0285 0.0024  
 Venus -34658-08-07 08:52 J -10937193.31 -10937193.13 -10937192.94 0.0285 0.0149  
 Mercury -34658-08-12 04:19 J -10937188.38 -10937188.32 -10937188.24 0.0285 0.0252  
 Earth -34658-10-29 07:26 J -10937110.32 -10937110.19 -10937110.05 0.0285 0.0239  
 Moon -34658-10-29 11:02 J -10937110.18 -10937110.04 -10937109.88 0.0285 0.0224 \*  
 Mercury -34658-11-08 22:33 J -10937099.71 -10937099.56 -10937099.42 0.0285 0.0115  
 Mercury -34657-02-05 15:50 J -10937011.00 -10937010.84 -10937010.68 0.0284 0.0020  
 Mercury -34657-05-04 08:52 J -10936922.26 -10936922.13 -10936921.99 0.0284 0.0149  
 Mercury -34657-08-01 01:26 J -10936833.47 -10936833.44 -10936833.40 0.0284 0.0275  
 Mars -34652-10-04 03:50 J -10934943.56 -10934943.34 -10934943.12 0.0278 0.0195  
 Venus -34645-10-14 04:33 J -10932376.36 -10932376.31 -10932376.24 0.0273 0.0262

Venus -34644-05-31 05:31 J -10932147.45 -10932147.27 -10932147.08 0.0274 0.0121  
 Venus -34643-01-15 07:11 J -10931918.40 -10931918.20 -10931917.99 0.0274 0.0024  
 Earth -34643-04-20 14:23 J -10931823.14 -10931822.90 -10931822.65 0.0274 0.0017  
 Moon -34643-04-20 17:59 J -10931822.99 -10931822.75 -10931822.51 0.0274 0.0006 \*  
 Mercury -34643-08-20 11:59 J -10931701.11 -10931701.00 -10931700.89 0.0274 0.0179  
 Venus -34643-09-01 09:07 J -10931689.28 -10931689.12 -10931688.95 0.0274 0.0168  
 Mercury -34643-11-17 01:40 J -10931612.57 -10931612.43 -10931612.28 0.0274 0.0071  
 Mercury -34642-02-13 15:35 J -10931524.00 -10931523.85 -10931523.70 0.0275 0.0039  
 Mercury -34642-05-13 05:45 J -10931435.38 -10931435.26 -10931435.13 0.0275 0.0152  
 Mercury -34642-08-09 20:23 J -10931346.68 -10931346.65 -10931346.62 0.0275 0.0267  
 Venus -34630-11-14 23:02 J -10926866.72 -10926866.54 -10926866.36 0.0286 0.0162  
 Venus -34629-07-01 22:33 J -10926636.78 -10926636.56 -10926636.34 0.0285 0.0013  
 Moon -34629-10-22 20:52 J -10926523.88 -10926523.63 -10926523.38 0.0285 0.0006  
 Earth -34629-10-23 00:28 J -10926523.73 -10926523.48 -10926523.24 0.0285 0.0019 \*  
 Mercury -34629-12-29 07:11 J -10926456.24 -10926456.20 -10926456.16 0.0285 0.0275  
 Venus -34628-02-16 21:07 J -10926406.78 -10926406.62 -10926406.45 0.0285 0.0184  
 Mercury -34628-03-28 01:11 J -10926367.59 -10926367.45 -10926367.31 0.0285 0.0138  
 Mercury -34628-06-24 18:43 J -10926278.88 -10926278.72 -10926278.56 0.0285 0.0009  
 Mercury -34628-09-21 11:45 J -10926190.15 -10926190.01 -10926189.87 0.0284 0.0127  
 Mercury -34628-12-19 04:19 J -10926101.39 -10926101.32 -10926101.25 0.0284 0.0253  
 Venus -34615-04-26 08:38 J -10921590.24 -10921590.14 -10921590.04 0.0273 0.0239  
 Venus -34615-12-11 09:21 J -10921361.30 -10921361.11 -10921360.92 0.0273 0.0098  
 Moon -34614-04-15 07:40 J -10921236.34 -10921236.18 -10921236.01 0.0274 0.0202  
 Earth -34614-04-15 11:02 J -10921236.20 -10921236.04 -10921235.85 0.0274 0.0190 \*  
 Venus -34614-07-28 10:33 J -10921132.26 -10921132.06 -10921131.86 0.0274 0.0045  
 Mercury -34613-01-07 13:26 J -10920969.03 -10920968.94 -10920968.84 0.0274 0.0211  
 Venus -34613-03-13 12:14 J -10920903.13 -10920902.99 -10920902.83 0.0274 0.0190  
 Mercury -34613-04-05 03:07 J -10920880.51 -10920880.37 -10920880.23 0.0274 0.0104  
 Moon -34613-04-26 18:57 J -10920858.76 -10920858.71 -10920858.63 0.0274 0.0263  
 Earth -34613-04-26 21:21 J -10920858.66 -10920858.61 -10920858.55 0.0274 0.0267 \*

Mercury -34613-07-02 16:47 J -10920791.95 -10920791.80 -10920791.65 0.0274 0.0007  
 Mercury -34613-09-29 06:57 J -10920703.35 -10920703.21 -10920703.07 0.0275 0.0116  
 Mercury -34613-12-26 21:07 J -10920614.69 -10920614.62 -10920614.53 0.0275 0.0231  
 Mars -34608-11-16 10:04 J -10918829.32 -10918829.08 -10918828.82 0.0281 0.0111  
 Venus -34600-05-27 01:55 J -10916080.60 -10916080.42 -10916080.22 0.0285 0.0142  
 Earth -34600-10-17 01:26 J -10915937.59 -10915937.44 -10915937.29 0.0285 0.0224  
 Moon -34600-10-17 04:47 J -10915937.43 -10915937.30 -10915937.15 0.0285 0.0233 \*  
 Venus -34599-01-12 01:26 J -10915850.65 -10915850.44 -10915850.22 0.0285 0.0032  
 Mercury -34599-08-15 00:14 J -10915635.61 -10915635.49 -10915635.37 0.0285 0.0185  
 Venus -34599-08-30 00:14 J -10915620.64 -10915620.49 -10915620.33 0.0285 0.0203  
 Mercury -34599-11-11 17:59 J -10915546.91 -10915546.75 -10915546.59 0.0284 0.0050  
 Mercury -34598-02-08 11:16 J -10915458.18 -10915458.03 -10915457.88 0.0284 0.0082  
 Mercury -34598-05-08 04:04 J -10915369.44 -10915369.33 -10915369.23 0.0284 0.0211  
 Mars -34593-01-07 11:31 J -10913664.17 -10913664.02 -10913663.84 0.0279 0.0237  
 Venus -34586-11-06 14:09 J -10910804.02 -10910803.91 -10910803.77 0.0274 0.0216  
 Venus -34585-06-22 15:35 J -10910575.05 -10910574.85 -10910574.65 0.0274 0.0073  
 Venus -34584-02-06 17:16 J -10910345.98 -10910345.78 -10910345.58 0.0274 0.0071  
 Earth -34584-04-21 23:16 J -10910271.76 -10910271.53 -10910271.29 0.0274 0.0071  
 Moon -34584-04-22 01:40 J -10910271.68 -10910271.43 -10910271.19 0.0274 0.0062 \*  
 Mercury -34584-05-26 16:19 J -10910236.89 -10910236.82 -10910236.74 0.0274 0.0233  
 Mercury -34584-08-23 05:45 J -10910148.39 -10910148.26 -10910148.13 0.0274 0.0127  
 Venus -34584-09-23 19:26 J -10910116.81 -10910116.69 -10910116.56 0.0274 0.0215  
 Mercury -34584-11-19 19:26 J -10910059.83 -10910059.69 -10910059.54 0.0275 0.0020  
 Mercury -34583-02-16 09:35 J -10909971.24 -10909971.10 -10909970.96 0.0275 0.0094  
 Mercury -34583-05-15 23:59 J -10909882.60 -10909882.50 -10909882.40 0.0275 0.0208  
 Venus -34571-04-21 15:35 J -10905523.90 -10905523.85 -10905523.79 0.0286 0.0276  
 Venus -34571-12-07 15:35 J -10905294.05 -10905293.85 -10905293.65 0.0286 0.0104  
 Venus -34570-07-25 15:07 J -10905064.08 -10905063.87 -10905063.66 0.0285 0.0070  
 Moon -34570-10-25 11:59 J -10904972.23 -10904972.00 -10904971.77 0.0285 0.0071  
 Earth -34570-10-25 13:55 J -10904972.15 -10904971.92 -10904971.68 0.0285 0.0082 \*

Mercury -34569-01-02 03:07 J -10904903.48 -10904903.37 -10904903.26 0.0285 0.0206

Venus -34569-03-11 13:11 J -10904834.05 -10904833.95 -10904833.82 0.0285 0.0240

Mercury -34569-03-30 20:52 J -10904814.78 -10904814.63 -10904814.47 0.0285 0.0071

Mercury -34569-06-27 14:09 J -10904726.06 -10904725.91 -10904725.75 0.0285 0.0063

Mercury -34569-09-24 06:57 J -10904637.32 -10904637.21 -10904637.09 0.0284 0.0192

Mars -34563-02-28 21:21 J -10902653.62 -10902653.61 -10902653.56 0.0277 0.0276

Venus -34556-05-18 18:57 J -10900017.85 -10900017.71 -10900017.56 0.0273 0.0192

Venus -34555-01-02 19:55 J -10899788.87 -10899788.67 -10899788.47 0.0273 0.0050

Moon -34555-04-16 18:28 J -10899684.93 -10899684.73 -10899684.53 0.0274 0.0147

Earth -34555-04-16 20:52 J -10899684.84 -10899684.63 -10899684.41 0.0274 0.0135 \*

Venus -34555-08-19 21:21 J -10899559.81 -10899559.61 -10899559.42 0.0274 0.0093

Mercury -34555-10-13 17:59 J -10899504.78 -10899504.75 -10899504.71 0.0274 0.0263

Mercury -34554-01-10 07:26 J -10899416.31 -10899416.19 -10899416.07 0.0274 0.0158

Venus -34554-04-05 23:02 J -10899330.63 -10899330.54 -10899330.43 0.0274 0.0237

Mercury -34554-04-08 21:07 J -10899327.77 -10899327.62 -10899327.47 0.0274 0.0050

Mercury -34554-07-06 11:02 J -10899239.19 -10899239.04 -10899238.89 0.0275 0.0061

Mercury -34554-10-03 01:11 J -10899150.56 -10899150.45 -10899150.33 0.0275 0.0174

Venus -34542-11-01 18:43 J -10894737.81 -10894737.72 -10894737.62 0.0286 0.0257

Venus -34541-06-18 18:43 J -10894507.93 -10894507.72 -10894507.51 0.0285 0.0084

Earth -34541-10-18 15:07 J -10894386.06 -10894385.87 -10894385.65 0.0285 0.0160

Moon -34541-10-18 17:02 J -10894385.98 -10894385.79 -10894385.57 0.0285 0.0170 \*

Venus -34540-02-03 17:59 J -10894277.96 -10894277.75 -10894277.54 0.0285 0.0088

Mercury -34540-05-21 02:09 J -10894171.48 -10894171.41 -10894171.33 0.0285 0.0254

Mercury -34540-08-17 20:09 J -10894082.81 -10894082.66 -10894082.51 0.0284 0.0117

Venus -34540-09-21 16:19 J -10894047.91 -10894047.82 -10894047.73 0.0284 0.0257

Mercury -34540-11-14 13:40 J -10893994.09 -10893993.93 -10893993.77 0.0284 0.0017

Mercury -34539-02-11 06:43 J -10893905.36 -10893905.22 -10893905.09 0.0284 0.0147

Mercury -34539-05-10 23:02 J -10893816.57 -10893816.54 -10893816.49 0.0284 0.0274

Venus -34527-11-28 23:59 J -10889231.66 -10889231.50 -10889231.34 0.0274 0.0169

Venus -34526-07-16 01:11 J -10889002.66 -10889002.45 -10889002.24 0.0274 0.0027



Venus -34525-03-01 02:52 J -10888773.56 -10888773.38 -10888773.19 0.0274 0.0118

Moon -34525-04-23 05:31 J -10888720.48 -10888720.27 -10888720.03 0.0274 0.0120

Earth -34525-04-23 07:40 J -10888720.39 -10888720.18 -10888719.96 0.0274 0.0124 \*

Mercury -34525-05-29 09:50 J -10888684.20 -10888684.09 -10888683.98 0.0274 0.0183

Mercury -34525-08-25 23:31 J -10888595.67 -10888595.52 -10888595.38 0.0275 0.0075

Venus -34525-10-16 05:16 J -10888544.33 -10888544.28 -10888544.21 0.0275 0.0261

Mercury -34525-11-22 13:26 J -10888507.09 -10888506.94 -10888506.80 0.0275 0.0036

Mercury -34524-02-19 03:35 J -10888418.48 -10888418.35 -10888418.23 0.0275 0.0148

Mercury -34524-05-18 17:59 J -10888329.79 -10888329.75 -10888329.71 0.0275 0.0264

Mars -34519-04-13 06:14 J -10886539.51 -10886539.24 -10886538.96 0.0281 0.0033

Venus -34512-05-14 08:09 J -10883951.30 -10883951.16 -10883951.02 0.0286 0.0219

Venus -34512-12-30 07:55 J -10883721.38 -10883721.17 -10883720.95 0.0286 0.0046

Venus -34511-08-17 06:57 J -10883491.40 -10883491.21 -10883491.01 0.0285 0.0127

Mercury -34511-10-08 05:02 J -10883439.32 -10883439.29 -10883439.25 0.0285 0.0276

Earth -34511-10-27 03:21 J -10883420.57 -10883420.36 -10883420.14 0.0285 0.0145

Moon -34511-10-27 05:16 J -10883420.49 -10883420.28 -10883420.07 0.0285 0.0133 \*

Mercury -34510-01-04 23:02 J -10883350.68 -10883350.54 -10883350.40 0.0285 0.0138

Mercury -34510-04-03 16:33 J -10883261.97 -10883261.81 -10883261.65 0.0285 0.0009

Mercury -34510-07-01 09:50 J -10883173.23 -10883173.09 -10883172.95 0.0284 0.0127

Mercury -34510-09-28 02:23 J -10883084.46 -10883084.40 -10883084.33 0.0284 0.0255

Mars -34505-06-03 10:47 J -10881374.31 -10881374.05 -10881373.78 0.0278 0.0151

Venus -34497-06-10 04:47 J -10878445.46 -10878445.30 -10878445.11 0.0273 0.0146

Venus -34496-01-25 06:14 J -10878216.45 -10878216.24 -10878216.03 0.0273 0.0004

Earth -34496-04-18 05:59 J -10878133.48 -10878133.25 -10878133.01 0.0274 0.0081

Moon -34496-04-18 07:26 J -10878133.41 -10878133.19 -10878132.96 0.0274 0.0091 \*

Venus -34496-09-11 07:26 J -10877987.36 -10877987.19 -10877987.00 0.0274 0.0141

Mercury -34496-10-16 11:45 J -10877952.10 -10877952.01 -10877951.92 0.0274 0.0211

Mercury -34495-01-13 01:11 J -10877863.58 -10877863.45 -10877863.31 0.0274 0.0105

Mercury -34495-04-11 15:07 J -10877775.02 -10877774.87 -10877774.72 0.0274 0.0006

Mercury -34495-07-09 05:02 J -10877686.42 -10877686.29 -10877686.15 0.0275 0.0116

Mercury -34495-10-05 19:26 J -10877597.77 -10877597.69 -10877597.61 0.0275 0.0230  
 Venus -34483-11-24 11:02 J -10873165.19 -10873165.04 -10873164.88 0.0286 0.0200  
 Venus -34482-07-12 11:02 J -10872935.25 -10872935.04 -10872934.82 0.0285 0.0027  
 Moon -34482-10-21 02:23 J -10872834.63 -10872834.40 -10872834.17 0.0285 0.0109  
 Earth -34482-10-21 05:02 J -10872834.53 -10872834.29 -10872834.06 0.0285 0.0096 \*  
 Venus -34481-02-27 10:04 J -10872705.26 -10872705.08 -10872704.89 0.0285 0.0145  
 Mercury -34481-05-23 22:04 J -10872618.70 -10872618.58 -10872618.45 0.0285 0.0185  
 Mercury -34481-08-20 15:50 J -10872529.99 -10872529.84 -10872529.68 0.0284 0.0050  
 Mercury -34481-11-17 09:07 J -10872441.27 -10872441.12 -10872440.96 0.0284 0.0083  
 Mercury -34480-02-14 01:55 J -10872352.52 -10872352.42 -10872352.31 0.0284 0.0211  
 Venus -34468-05-06 07:55 J -10867888.22 -10867888.17 -10867888.11 0.0274 0.0263  
 Venus -34468-12-21 08:52 J -10867659.31 -10867659.13 -10867658.94 0.0274 0.0123  
 Venus -34467-08-07 10:19 J -10867430.28 -10867430.07 -10867429.87 0.0274 0.0020  
 Mercury -34466-03-05 13:40 J -10867219.99 -10867219.93 -10867219.86 0.0274 0.0241  
 Venus -34466-03-24 11:59 J -10867201.16 -10867201.00 -10867200.83 0.0274 0.0163  
 Moon -34466-04-25 11:16 J -10867169.21 -10867169.03 -10867168.83 0.0274 0.0171  
 Earth -34466-04-25 14:52 J -10867169.06 -10867168.88 -10867168.69 0.0274 0.0175 \*  
 Mercury -34466-06-02 03:07 J -10867131.49 -10867131.37 -10867131.24 0.0275 0.0134  
 Mercury -34466-08-29 16:47 J -10867042.94 -10867042.80 -10867042.65 0.0275 0.0026  
 Mercury -34466-11-26 06:57 J -10866954.35 -10866954.21 -10866954.07 0.0275 0.0087  
 Mercury -34465-02-22 21:07 J -10866865.72 -10866865.62 -10866865.51 0.0275 0.0201  
 Venus -34453-06-06 00:14 J -10862378.67 -10862378.49 -10862378.31 0.0286 0.0162  
 Venus -34452-01-21 23:59 J -10862148.72 -10862148.50 -10862148.29 0.0286 0.0011  
 Venus -34452-09-08 22:47 J -10861918.71 -10861918.55 -10861918.38 0.0285 0.0182  
 Mercury -34452-10-11 00:57 J -10861886.57 -10861886.46 -10861886.35 0.0285 0.0208  
 Earth -34452-10-28 16:04 J -10861868.98 -10861868.83 -10861868.65 0.0285 0.0209  
 Moon -34452-10-28 19:55 J -10861868.84 -10861868.67 -10861868.47 0.0285 0.0194 \*  
 Mercury -34451-01-07 18:43 J -10861797.87 -10861797.72 -10861797.56 0.0285 0.0072  
 Mercury -34451-04-06 12:14 J -10861709.15 -10861708.99 -10861708.84 0.0285 0.0062  
 Mercury -34451-07-04 05:02 J -10861620.40 -10861620.29 -10861620.17 0.0284 0.0191

Venus -34439-11-16 13:26 J -10857102.03 -10857101.94 -10857101.83 0.0273 0.0238  
 Venus -34438-07-03 14:09 J -10856873.10 -10856872.91 -10856872.71 0.0273 0.0099  
 Venus -34437-02-17 15:35 J -10856644.06 -10856643.85 -10856643.65 0.0273 0.0044  
 Earth -34437-04-19 13:55 J -10856582.17 -10856581.92 -10856581.68 0.0274 0.0029  
 Moon -34437-04-19 17:31 J -10856582.01 -10856581.77 -10856581.53 0.0274 0.0040 \*  
 Mercury -34437-07-22 15:50 J -10856487.86 -10856487.84 -10856487.81 0.0274 0.0267  
 Venus -34437-10-03 17:02 J -10856414.93 -10856414.79 -10856414.63 0.0274 0.0186  
 Mercury -34437-10-19 05:16 J -10856399.40 -10856399.28 -10856399.16 0.0274 0.0162  
 Mercury -34436-01-15 18:57 J -10856310.86 -10856310.71 -10856310.57 0.0274 0.0055  
 Mercury -34436-04-14 08:38 J -10856222.28 -10856222.14 -10856221.99 0.0274 0.0057  
 Mercury -34436-07-11 22:47 J -10856133.66 -10856133.55 -10856133.43 0.0275 0.0170  
 Mars -34431-09-07 04:47 J -10854250.58 -10854250.30 -10854250.03 0.0281 0.0011  
 Venus -34424-12-17 02:38 J -10851592.57 -10851592.39 -10851592.20 0.0286 0.0143  
 Venus -34423-08-04 02:23 J -10851362.61 -10851362.40 -10851362.18 0.0285 0.0030  
 Moon -34423-10-22 13:40 J -10851283.17 -10851282.93 -10851282.69 0.0285 0.0050  
 Earth -34423-10-22 17:02 J -10851283.03 -10851282.79 -10851282.54 0.0285 0.0036 \*  
 Mercury -34422-02-27 23:45 J -10851154.57 -10851154.51 -10851154.44 0.0285 0.0257  
 Venus -34422-03-22 01:26 J -10851132.60 -10851132.44 -10851132.29 0.0285 0.0199  
 Mercury -34422-05-27 17:45 J -10851065.90 -10851065.76 -10851065.61 0.0284 0.0120  
 Mercury -34422-08-24 11:16 J -10850977.19 -10850977.03 -10850976.87 0.0284 0.0015  
 Mercury -34422-11-21 04:19 J -10850888.45 -10850888.32 -10850888.18 0.0284 0.0145  
 Mercury -34421-02-17 21:07 J -10850799.66 -10850799.62 -10850799.58 0.0284 0.0272  
 Mars -34417-10-28 04:19 J -10849085.61 -10849085.32 -10849085.02 0.0278 0.0101  
 Venus -34409-05-28 16:04 J -10846315.95 -10846315.83 -10846315.70 0.0273 0.0218  
 Venus -34408-01-12 17:02 J -10846086.98 -10846086.79 -10846086.59 0.0274 0.0078  
 Moon -34408-04-14 06:14 J -10845995.33 -10845995.24 -10845995.14 0.0274 0.0250  
 Earth -34408-04-14 09:50 J -10845995.20 -10845995.09 -10845994.96 0.0274 0.0237 \*  
 Venus -34408-08-29 18:28 J -10845857.93 -10845857.73 -10845857.53 0.0274 0.0065  
 Mercury -34407-03-08 06:43 J -10845667.32 -10845667.22 -10845667.12 0.0274 0.0194  
 Venus -34407-04-15 20:09 J -10845628.78 -10845628.66 -10845628.51 0.0274 0.0208

Moon -34407-04-26 19:40 J -10845617.80 -10845617.68 -10845617.53 0.0274 0.0222  
 Earth -34407-04-26 20:38 J -10845617.78 -10845617.64 -10845617.50 0.0274 0.0224 \*  
 Mercury -34407-06-04 20:09 J -10845578.80 -10845578.66 -10845578.52 0.0275 0.0087  
 Mercury -34407-09-01 10:04 J -10845490.23 -10845490.08 -10845489.93 0.0275 0.0023  
 Mercury -34407-11-29 00:14 J -10845401.62 -10845401.49 -10845401.36 0.0275 0.0136  
 Mercury -34406-02-25 14:23 J -10845312.95 -10845312.90 -10845312.83 0.0275 0.0251  
 Venus -34395-11-11 14:09 J -10841035.95 -10841035.91 -10841035.86 0.0286 0.0280  
 Venus -34394-06-29 14:52 J -10840806.09 -10840805.88 -10840805.68 0.0286 0.0108  
 Earth -34394-10-17 07:55 J -10840696.26 -10840696.17 -10840696.07 0.0286 0.0263  
 Moon -34394-10-17 11:02 J -10840696.10 -10840696.04 -10840695.96 0.0286 0.0275 \*  
 Venus -34393-02-14 14:23 J -10840576.11 -10840575.90 -10840575.68 0.0286 0.0066  
 Mercury -34393-07-17 02:09 J -10840422.42 -10840422.41 -10840422.39 0.0285 0.0283  
 Venus -34393-10-01 13:11 J -10840346.06 -10840345.95 -10840345.82 0.0285 0.0235  
 Mercury -34393-10-13 20:23 J -10840333.79 -10840333.65 -10840333.51 0.0285 0.0144  
 Moon -34393-10-30 03:07 J -10840317.47 -10840317.37 -10840317.23 0.0285 0.0251  
 Earth -34393-10-30 02:52 J -10840317.45 -10840317.38 -10840317.28 0.0285 0.0268 \*  
 Mercury -34392-01-10 13:55 J -10840245.08 -10840244.92 -10840244.76 0.0285 0.0011  
 Mercury -34392-04-09 07:11 J -10840156.34 -10840156.20 -10840156.06 0.0285 0.0123  
 Mercury -34392-07-06 23:59 J -10840067.57 -10840067.50 -10840067.43 0.0284 0.0251  
 Venus -34380-12-08 21:50 J -10835529.73 -10835529.59 -10835529.44 0.0273 0.0194  
 Venus -34379-07-25 22:33 J -10835300.76 -10835300.56 -10835300.35 0.0273 0.0054  
 Venus -34378-03-11 23:45 J -10835071.70 -10835071.51 -10835071.31 0.0273 0.0088  
 Earth -34378-04-21 19:40 J -10835030.92 -10835030.68 -10835030.43 0.0274 0.0021  
 Moon -34378-04-21 20:38 J -10835030.89 -10835030.64 -10835030.39 0.0274 0.0012 \*  
 Mercury -34378-07-26 08:52 J -10834935.21 -10834935.13 -10834935.04 0.0274 0.0221  
 Mercury -34378-10-22 22:19 J -10834846.70 -10834846.57 -10834846.43 0.0274 0.0115  
 Venus -34378-10-27 01:26 J -10834842.54 -10834842.44 -10834842.32 0.0274 0.0230  
 Mercury -34377-01-19 11:59 J -10834758.15 -10834758.00 -10834757.85 0.0274 0.0006  
 Mercury -34377-04-17 01:55 J -10834669.56 -10834669.42 -10834669.28 0.0274 0.0106  
 Mercury -34377-07-14 16:19 J -10834580.91 -10834580.82 -10834580.73 0.0275 0.0220

Venus -34365-05-23 16:47 J -10830249.87 -10830249.80 -10830249.70 0.0286 0.0260  
 Venus -34364-01-08 17:16 J -10830019.98 -10830019.78 -10830019.57 0.0286 0.0088  
 Venus -34364-08-26 17:02 J -10829790.00 -10829789.79 -10829789.58 0.0285 0.0084  
 Earth -34364-10-24 04:04 J -10829731.58 -10829731.33 -10829731.09 0.0285 0.0024  
 Moon -34364-10-24 04:33 J -10829731.55 -10829731.31 -10829731.07 0.0285 0.0009 \*  
 Mercury -34363-03-02 19:11 J -10829601.82 -10829601.70 -10829601.58 0.0285 0.0193  
 Venus -34363-04-13 15:35 J -10829559.94 -10829559.85 -10829559.75 0.0285 0.0252  
 Mercury -34363-05-30 12:57 J -10829513.11 -10829512.96 -10829512.80 0.0284 0.0057  
 Mercury -34363-08-27 06:28 J -10829424.39 -10829424.23 -10829424.08 0.0284 0.0076  
 Mercury -34363-11-23 23:16 J -10829335.64 -10829335.53 -10829335.42 0.0284 0.0205  
 Venus -34350-06-20 23:16 J -10824743.68 -10824743.53 -10824743.37 0.0273 0.0175  
 Venus -34349-02-05 00:14 J -10824514.69 -10824514.49 -10824514.28 0.0274 0.0035  
 Moon -34349-04-15 13:11 J -10824444.10 -10824443.95 -10824443.79 0.0274 0.0203  
 Earth -34349-04-15 13:40 J -10824444.10 -10824443.93 -10824443.75 0.0274 0.0192 \*  
 Venus -34349-09-21 01:26 J -10824285.62 -10824285.44 -10824285.24 0.0274 0.0108  
 Mercury -34349-12-12 10:04 J -10824203.13 -10824203.08 -10824203.03 0.0274 0.0257  
 Mercury -34348-03-10 23:16 J -10824114.65 -10824114.53 -10824114.40 0.0274 0.0151  
 Earth -34348-04-27 23:59 J -10824066.53 -10824066.50 -10824066.45 0.0274 0.0269  
 Moon -34348-04-28 03:21 J -10824066.40 -10824066.36 -10824066.31 0.0274 0.0269  
 Venus -34348-05-08 03:21 J -10824056.43 -10824056.36 -10824056.26 0.0274 0.0250  
 Mercury -34348-06-07 12:57 J -10824026.11 -10824025.96 -10824025.81 0.0275 0.0042  
 Mercury -34348-09-04 02:52 J -10823937.53 -10823937.38 -10823937.24 0.0275 0.0069  
 Mercury -34348-12-01 17:02 J -10823848.90 -10823848.79 -10823848.68 0.0275 0.0182  
 Mars -34342-02-01 04:47 J -10821961.57 -10821961.30 -10821961.04 0.0281 0.0061  
 Venus -34336-12-04 03:07 J -10819463.50 -10819463.37 -10819463.23 0.0286 0.0227  
 Venus -34335-07-22 03:35 J -10819233.56 -10819233.35 -10819233.13 0.0286 0.0055  
 Moon -34335-10-18 15:35 J -10819145.01 -10819144.85 -10819144.68 0.0286 0.0220  
 Earth -34335-10-18 16:04 J -10819144.99 -10819144.83 -10819144.65 0.0286 0.0209 \*  
 Venus -34334-03-09 03:21 J -10819003.55 -10819003.36 -10819003.16 0.0286 0.0118  
 Mercury -34334-07-20 20:52 J -10818869.72 -10818869.63 -10818869.52 0.0285 0.0224

Mercury -34334-10-17 14:52 J -10818781.03 -10818780.88 -10818780.72 0.0285 0.0086

Mercury -34333-01-14 08:23 J -10818692.30 -10818692.15 -10818691.99 0.0285 0.0050

Mercury -34333-04-12 01:26 J -10818603.55 -10818603.44 -10818603.31 0.0285 0.0180

Mars -34328-03-24 22:19 J -10816795.88 -10816795.57 -10816795.25 0.0278 0.0027

Venus -34321-12-31 05:31 J -10813957.44 -10813957.27 -10813957.10 0.0273 0.0150

Venus -34320-08-17 05:59 J -10813728.45 -10813728.25 -10813728.04 0.0273 0.0012

Venus -34319-04-03 07:11 J -10813499.38 -10813499.20 -10813499.02 0.0273 0.0131

Moon -34319-04-22 20:38 J -10813479.88 -10813479.64 -10813479.40 0.0273 0.0063

Earth -34319-04-23 00:14 J -10813479.73 -10813479.49 -10813479.25 0.0273 0.0067 \*

Mercury -34319-07-29 01:40 J -10813382.54 -10813382.43 -10813382.32 0.0274 0.0177

Mercury -34319-10-25 15:07 J -10813294.01 -10813293.87 -10813293.73 0.0274 0.0069

Venus -34319-11-18 08:52 J -10813270.14 -10813270.13 -10813270.10 0.0274 0.0272

Mercury -34318-01-22 04:47 J -10813205.44 -10813205.30 -10813205.15 0.0274 0.0041

Mercury -34318-04-20 18:57 J -10813116.83 -10813116.71 -10813116.58 0.0274 0.0153

Mercury -34318-07-18 09:21 J -10813028.14 -10813028.11 -10813028.08 0.0275 0.0268

Venus -34306-06-16 05:31 J -10808677.41 -10808677.27 -10808677.11 0.0286 0.0208

Venus -34305-02-01 05:59 J -10808447.46 -10808447.25 -10808447.03 0.0286 0.0036

Venus -34305-09-18 05:31 J -10808217.46 -10808217.27 -10808217.07 0.0285 0.0135

Earth -34305-10-25 11:45 J -10808180.24 -10808180.01 -10808179.77 0.0285 0.0078

Moon -34305-10-25 15:21 J -10808180.09 -10808179.86 -10808179.62 0.0285 0.0062 \*

Mercury -34305-12-06 19:26 J -10808137.72 -10808137.69 -10808137.64 0.0285 0.0274

Mercury -34304-03-05 13:40 J -10808049.07 -10808048.93 -10808048.78 0.0285 0.0135

Mercury -34304-06-02 07:26 J -10807960.35 -10807960.19 -10807960.03 0.0285 0.0002

Mercury -34304-08-30 00:43 J -10807871.61 -10807871.47 -10807871.33 0.0284 0.0132

Mercury -34304-11-26 17:31 J -10807782.83 -10807782.77 -10807782.71 0.0284 0.0260

Venus -34292-11-26 05:16 J -10803400.31 -10803400.28 -10803400.25 0.0273 0.0270

Venus -34291-07-13 05:31 J -10803171.45 -10803171.27 -10803171.09 0.0273 0.0133

Venus -34290-02-27 06:28 J -10802942.44 -10802942.23 -10802942.02 0.0274 0.0008

Earth -34290-04-17 16:04 J -10802893.03 -10802892.83 -10802892.62 0.0274 0.0149

Moon -34290-04-17 19:26 J -10802892.88 -10802892.69 -10802892.49 0.0274 0.0156 \*

Venus -34290-10-14 07:40 J -10802713.35 -10802713.18 -10802713.00 0.0274 0.0149  
 Mercury -34290-12-16 02:09 J -10802650.49 -10802650.41 -10802650.32 0.0274 0.0216  
 Mercury -34289-03-13 15:35 J -10802561.98 -10802561.85 -10802561.71 0.0274 0.0110  
 Mercury -34289-06-10 05:16 J -10802473.43 -10802473.28 -10802473.13 0.0274 0.0005  
 Mercury -34289-09-06 19:11 J -10802384.83 -10802384.70 -10802384.56 0.0275 0.0112  
 Mercury -34289-12-04 09:35 J -10802296.19 -10802296.10 -10802296.02 0.0275 0.0226  
 Venus -34277-12-26 14:38 J -10797891.06 -10797890.89 -10797890.72 0.0287 0.0177  
 Venus -34276-08-13 15:21 J -10797661.08 -10797660.86 -10797660.65 0.0286 0.0007  
 Moon -34276-10-19 18:57 J -10797593.91 -10797593.71 -10797593.51 0.0286 0.0172  
 Earth -34276-10-19 22:04 J -10797593.77 -10797593.58 -10797593.36 0.0286 0.0158 \*  
 Venus -34275-03-31 14:38 J -10797431.05 -10797430.89 -10797430.70 0.0286 0.0168  
 Mercury -34275-07-23 15:21 J -10797316.99 -10797316.86 -10797316.73 0.0286 0.0167  
 Mercury -34275-10-20 09:07 J -10797228.28 -10797228.12 -10797227.96 0.0285 0.0030  
 Mercury -34274-01-17 02:23 J -10797139.54 -10797139.40 -10797139.25 0.0285 0.0103  
 Mercury -34274-04-15 19:26 J -10797050.78 -10797050.69 -10797050.60 0.0285 0.0232  
 Venus -34262-06-08 11:31 J -10792614.11 -10792614.02 -10792613.93 0.0272 0.0245  
 Venus -34261-01-23 11:45 J -10792385.20 -10792385.01 -10792384.82 0.0272 0.0108  
 Venus -34261-09-08 12:28 J -10792156.19 -10792155.98 -10792155.78 0.0273 0.0032  
 Moon -34260-04-24 00:14 J -10791928.70 -10791928.49 -10791928.27 0.0273 0.0111  
 Earth -34260-04-24 02:23 J -10791928.62 -10791928.40 -10791928.17 0.0273 0.0111 \*  
 Venus -34260-04-25 13:26 J -10791927.10 -10791926.94 -10791926.78 0.0273 0.0172  
 Mercury -34260-05-04 04:33 J -10791918.37 -10791918.31 -10791918.24 0.0273 0.0241  
 Mercury -34260-07-31 17:59 J -10791829.88 -10791829.75 -10791829.62 0.0274 0.0135  
 Mercury -34260-10-28 07:26 J -10791741.33 -10791741.19 -10791741.04 0.0274 0.0028  
 Mercury -34259-01-24 21:21 J -10791652.75 -10791652.61 -10791652.47 0.0274 0.0084  
 Mercury -34259-04-23 11:31 J -10791564.12 -10791564.02 -10791563.91 0.0274 0.0197  
 Mars -34254-06-27 15:50 J -10789673.09 -10789672.84 -10789672.57 0.0281 0.0090  
 Venus -34247-07-08 17:02 J -10787104.97 -10787104.79 -10787104.61 0.0286 0.0158  
 Venus -34246-02-23 17:16 J -10786874.99 -10786874.78 -10786874.56 0.0286 0.0015  
 Venus -34246-10-11 16:47 J -10786644.96 -10786644.80 -10786644.63 0.0285 0.0185

Earth -34246-10-27 17:31 J -10786628.99 -10786628.77 -10786628.55 0.0285 0.0129  
 Moon -34246-10-27 19:26 J -10786628.92 -10786628.69 -10786628.45 0.0285 0.0114 \*  
 Mercury -34246-12-10 13:40 J -10786585.02 -10786584.93 -10786584.82 0.0285 0.0219  
 Mercury -34245-03-08 07:55 J -10786496.33 -10786496.17 -10786496.02 0.0285 0.0081  
 Mercury -34245-06-05 01:26 J -10786407.60 -10786407.44 -10786407.29 0.0285 0.0054  
 Mercury -34245-09-01 18:28 J -10786318.85 -10786318.73 -10786318.61 0.0284 0.0184  
 Mars -34240-08-17 22:47 J -10784507.86 -10784507.55 -10784507.23 0.0277 0.0005  
 Venus -34233-12-18 10:47 J -10781828.15 -10781828.05 -10781827.93 0.0273 0.0230  
 Venus -34232-08-04 11:02 J -10781599.23 -10781599.04 -10781598.84 0.0273 0.0092  
 Venus -34231-03-21 11:45 J -10781370.21 -10781370.01 -10781369.80 0.0273 0.0049  
 Earth -34231-04-18 17:16 J -10781342.01 -10781341.78 -10781341.56 0.0273 0.0108  
 Moon -34231-04-18 19:11 J -10781341.92 -10781341.70 -10781341.46 0.0273 0.0112 \*  
 Venus -34231-11-05 12:57 J -10781141.10 -10781140.96 -10781140.80 0.0274 0.0190  
 Mercury -34231-12-18 18:14 J -10781097.85 -10781097.74 -10781097.63 0.0274 0.0177  
 Mercury -34230-03-17 07:40 J -10781009.32 -10781009.18 -10781009.03 0.0274 0.0070  
 Mercury -34230-06-13 21:21 J -10780920.75 -10780920.61 -10780920.46 0.0274 0.0041  
 Mercury -34230-09-10 11:31 J -10780832.14 -10780832.02 -10780831.90 0.0275 0.0153  
 Mercury -34230-12-08 01:40 J -10780743.45 -10780743.43 -10780743.39 0.0275 0.0268  
 Venus -34217-01-19 00:14 J -10776318.68 -10776318.49 -10776318.30 0.0287 0.0130  
 Venus -34217-09-05 00:43 J -10776088.68 -10776088.47 -10776088.25 0.0286 0.0044  
 Moon -34217-10-20 23:16 J -10776042.73 -10776042.53 -10776042.30 0.0286 0.0126  
 Earth -34217-10-21 01:26 J -10776042.67 -10776042.44 -10776042.21 0.0286 0.0111 \*  
 Venus -34216-04-23 00:28 J -10775858.62 -10775858.48 -10775858.33 0.0286 0.0214  
 Mercury -34216-04-28 14:23 J -10775852.96 -10775852.90 -10775852.82 0.0286 0.0257  
 Mercury -34216-07-26 08:52 J -10775764.28 -10775764.13 -10775763.99 0.0286 0.0117  
 Mercury -34216-10-23 02:38 J -10775675.55 -10775675.39 -10775675.23 0.0285 0.0021  
 Mercury -34215-01-19 19:40 J -10775586.81 -10775586.68 -10775586.54 0.0285 0.0152  
 Mercury -34215-04-18 12:28 J -10775498.00 -10775497.98 -10775497.95 0.0285 0.0281  
 Venus -34203-06-30 17:02 J -10771041.92 -10771041.79 -10771041.65 0.0272 0.0205  
 Venus -34202-02-14 17:31 J -10770812.97 -10770812.77 -10770812.57 0.0272 0.0068



Venus -34202-10-01 17:59 J -10770583.95 -10770583.75 -10770583.55 0.0273 0.0072  
 Earth -34201-04-25 03:07 J -10770377.56 -10770377.37 -10770377.15 0.0273 0.0154  
 Moon -34201-04-25 05:31 J -10770377.45 -10770377.27 -10770377.06 0.0273 0.0157 \*  
 Mercury -34201-05-06 20:38 J -10770365.73 -10770365.64 -10770365.54 0.0273 0.0201  
 Venus -34201-05-17 18:43 J -10770354.84 -10770354.72 -10770354.58 0.0273 0.0212  
 Mercury -34201-08-03 10:04 J -10770277.22 -10770277.08 -10770276.94 0.0273 0.0095  
 Mercury -34201-10-30 23:45 J -10770188.66 -10770188.51 -10770188.36 0.0274 0.0014  
 Mercury -34200-01-27 13:26 J -10770100.06 -10770099.94 -10770099.80 0.0274 0.0126  
 Mercury -34200-04-26 03:50 J -10770011.41 -10770011.34 -10770011.27 0.0274 0.0239  
 Venus -34189-12-13 02:09 J -10765762.45 -10765762.41 -10765762.36 0.0287 0.0281  
 Venus -34188-07-31 03:07 J -10765532.57 -10765532.37 -10765532.17 0.0286 0.0110  
 Venus -34187-03-18 03:21 J -10765302.57 -10765302.36 -10765302.15 0.0286 0.0063  
 Moon -34187-10-28 18:57 J -10765077.91 -10765077.71 -10765077.49 0.0285 0.0161  
 Earth -34187-10-28 21:35 J -10765077.79 -10765077.60 -10765077.41 0.0285 0.0177 \*  
 Venus -34187-11-03 02:38 J -10765072.51 -10765072.39 -10765072.26 0.0285 0.0232  
 Mercury -34187-12-13 07:26 J -10765032.32 -10765032.19 -10765032.05 0.0285 0.0167  
 Mercury -34186-03-12 01:26 J -10764943.60 -10764943.44 -10764943.28 0.0285 0.0030  
 Mercury -34186-06-08 18:43 J -10764854.86 -10764854.72 -10764854.57 0.0285 0.0104  
 Mercury -34186-09-05 11:45 J -10764766.09 -10764766.01 -10764765.92 0.0284 0.0234  
 Venus -34173-01-10 16:04 J -10760255.97 -10760255.83 -10760255.68 0.0273 0.0190  
 Venus -34173-08-26 16:19 J -10760027.02 -10760026.82 -10760026.62 0.0273 0.0052  
 Venus -34172-04-12 16:47 J -10759798.00 -10759797.80 -10759797.60 0.0273 0.0088  
 Moon -34172-04-19 15:07 J -10759791.11 -10759790.87 -10759790.63 0.0273 0.0067  
 Earth -34172-04-19 17:16 J -10759791.01 -10759790.78 -10759790.54 0.0273 0.0067 \*  
 Mercury -34172-09-23 20:52 J -10759633.69 -10759633.63 -10759633.56 0.0274 0.0244  
 Venus -34172-11-27 17:59 J -10759568.86 -10759568.75 -10759568.64 0.0274 0.0228  
 Mercury -34172-12-21 10:04 J -10759545.20 -10759545.08 -10759544.95 0.0274 0.0139  
 Mercury -34171-03-19 23:31 J -10759456.66 -10759456.52 -10759456.37 0.0274 0.0032  
 Mercury -34171-06-16 13:26 J -10759368.08 -10759367.94 -10759367.80 0.0274 0.0080  
 Mercury -34171-09-13 03:35 J -10759279.46 -10759279.35 -10759279.25 0.0274 0.0193

Mars -34166-11-20 17:02 J -10757385.04 -10757384.79 -10757384.53 0.0281 0.0108  
 Venus -34159-06-25 07:26 J -10754976.28 -10754976.19 -10754976.09 0.0287 0.0257  
 Venus -34158-02-10 08:38 J -10754746.34 -10754746.14 -10754745.92 0.0287 0.0085  
 Venus -34158-09-28 09:21 J -10754516.31 -10754516.11 -10754515.90 0.0286 0.0089  
 Earth -34158-10-23 02:52 J -10754491.62 -10754491.38 -10754491.14 0.0286 0.0066  
 Moon -34158-10-23 05:16 J -10754491.51 -10754491.28 -10754491.05 0.0286 0.0082 \*  
 Mercury -34157-05-01 07:40 J -10754300.29 -10754300.18 -10754300.06 0.0286 0.0208  
 Venus -34157-05-15 09:07 J -10754286.21 -10754286.12 -10754286.03 0.0286 0.0258  
 Mercury -34157-07-29 01:55 J -10754211.58 -10754211.42 -10754211.27 0.0286 0.0069  
 Mercury -34157-10-25 19:26 J -10754122.84 -10754122.69 -10754122.53 0.0286 0.0066  
 Mercury -34156-01-22 12:28 J -10754034.09 -10754033.98 -10754033.86 0.0285 0.0198  
 Mars -34151-01-11 22:47 J -10752218.85 -10752218.55 -10752218.23 0.0278 0.0056  
 Venus -34144-07-22 22:19 J -10749469.73 -10749469.57 -10749469.40 0.0272 0.0166  
 Venus -34143-03-08 22:33 J -10749240.76 -10749240.56 -10749240.35 0.0272 0.0028  
 Earth -34143-04-14 20:09 J -10749203.71 -10749203.66 -10749203.58 0.0272 0.0262  
 Moon -34143-04-14 21:35 J -10749203.61 -10749203.60 -10749203.56 0.0272 0.0270 \*  
 Venus -34143-10-23 23:02 J -10749011.73 -10749011.54 -10749011.35 0.0273 0.0111  
 Mercury -34142-02-10 23:31 J -10748901.54 -10748901.52 -10748901.49 0.0273 0.0266  
 Earth -34142-04-27 03:50 J -10748826.51 -10748826.34 -10748826.16 0.0273 0.0194  
 Moon -34142-04-27 07:11 J -10748826.36 -10748826.20 -10748826.03 0.0273 0.0199 \*  
 Mercury -34142-05-10 12:43 J -10748813.09 -10748812.97 -10748812.85 0.0273 0.0162  
 Venus -34142-06-09 23:59 J -10748782.57 -10748782.50 -10748782.41 0.0273 0.0250  
 Mercury -34142-08-07 02:09 J -10748724.56 -10748724.41 -10748724.27 0.0273 0.0055  
 Mercury -34142-11-03 15:50 J -10748635.99 -10748635.84 -10748635.70 0.0273 0.0054  
 Mercury -34141-01-31 05:45 J -10748547.38 -10748547.26 -10748547.14 0.0274 0.0166  
 Venus -34129-01-05 11:02 J -10744190.15 -10744190.04 -10744189.91 0.0287 0.0235  
 Venus -34129-08-22 11:59 J -10743960.21 -10743960.00 -10743959.78 0.0286 0.0064  
 Venus -34128-04-09 12:14 J -10743730.18 -10743729.99 -10743729.78 0.0286 0.0109  
 Mercury -34128-09-18 06:28 J -10743568.29 -10743568.23 -10743568.16 0.0286 0.0258  
 Moon -34128-10-29 20:09 J -10743526.82 -10743526.66 -10743526.49 0.0286 0.0207

Earth -34128-10-29 23:31 J -10743526.67 -10743526.52 -10743526.36 0.0286 0.0223 \*  
 Venus -34128-11-25 11:31 J -10743500.06 -10743500.02 -10743499.96 0.0285 0.0277  
 Mercury -34128-12-16 00:43 J -10743479.61 -10743479.47 -10743479.32 0.0285 0.0119  
 Mercury -34127-03-14 18:28 J -10743390.89 -10743390.73 -10743390.57 0.0285 0.0019  
 Mercury -34127-06-11 11:45 J -10743302.14 -10743302.01 -10743301.87 0.0285 0.0151  
 Mercury -34127-09-08 04:47 J -10743213.33 -10743213.30 -10743213.28 0.0285 0.0280  
 Venus -34114-02-01 21:07 J -10738683.79 -10738683.62 -10738683.45 0.0272 0.0151  
 Venus -34114-09-18 21:07 J -10738454.82 -10738454.62 -10738454.41 0.0273 0.0013  
 Moon -34113-04-20 13:40 J -10738240.16 -10738239.93 -10738239.68 0.0273 0.0027  
 Earth -34113-04-20 17:16 J -10738240.03 -10738239.78 -10738239.54 0.0273 0.0027 \*  
 Venus -34113-05-04 21:35 J -10738225.78 -10738225.60 -10738225.41 0.0273 0.0127  
 Mercury -34113-09-26 12:43 J -10738081.06 -10738080.97 -10738080.88 0.0273 0.0207  
 Venus -34113-12-19 22:47 J -10737996.60 -10737996.55 -10737996.51 0.0274 0.0266  
 Mercury -34113-12-24 01:55 J -10737992.55 -10737992.42 -10737992.28 0.0274 0.0101  
 Mercury -34112-03-22 15:35 J -10737904.00 -10737903.85 -10737903.70 0.0274 0.0010  
 Mercury -34112-06-19 05:16 J -10737815.41 -10737815.28 -10737815.14 0.0274 0.0119  
 Mercury -34112-09-15 19:26 J -10737726.76 -10737726.69 -10737726.61 0.0274 0.0233  
 Venus -34100-07-17 15:07 J -10733404.00 -10733403.87 -10733403.71 0.0287 0.0213  
 Venus -34099-03-04 16:33 J -10733174.02 -10733173.81 -10733173.59 0.0287 0.0040  
 Venus -34099-10-20 17:16 J -10732943.97 -10732943.78 -10732943.59 0.0287 0.0133  
 Earth -34099-10-24 02:52 J -10732940.62 -10732940.38 -10732940.13 0.0287 0.0022  
 Moon -34099-10-24 06:14 J -10732940.49 -10732940.24 -10732939.99 0.0287 0.0039 \*  
 Mercury -34098-05-05 00:43 J -10732747.61 -10732747.47 -10732747.34 0.0286 0.0162  
 Mercury -34098-08-01 18:43 J -10732658.88 -10732658.72 -10732658.56 0.0286 0.0024  
 Mercury -34098-10-29 11:59 J -10732570.14 -10732570.00 -10732569.85 0.0286 0.0112  
 Mercury -34097-01-26 05:02 J -10732481.36 -10732481.29 -10732481.20 0.0285 0.0243  
 Venus -34086-12-29 03:50 J -10728126.39 -10728126.34 -10728126.28 0.0272 0.0262  
 Venus -34085-08-14 03:35 J -10727897.53 -10727897.35 -10727897.16 0.0272 0.0127  
 Venus -34084-03-31 03:35 J -10727668.55 -10727668.35 -10727668.14 0.0272 0.0013  
 Earth -34084-04-15 20:38 J -10727652.77 -10727652.64 -10727652.48 0.0272 0.0221

Moon -34084-04-16 00:28 J -10727652.61 -10727652.48 -10727652.34 0.0272 0.0226 \*  
 Venus -34084-11-15 03:50 J -10727439.50 -10727439.34 -10727439.16 0.0272 0.0151  
 Mercury -34083-02-13 15:21 J -10727348.93 -10727348.86 -10727348.78 0.0273 0.0228  
 Moon -34083-04-28 03:50 J -10727275.44 -10727275.34 -10727275.22 0.0273 0.0243  
 Earth -34083-04-28 04:04 J -10727275.44 -10727275.33 -10727275.19 0.0273 0.0236 \*  
 Mercury -34083-05-13 04:33 J -10727260.44 -10727260.31 -10727260.18 0.0273 0.0123  
 Mercury -34083-08-09 17:59 J -10727171.90 -10727171.75 -10727171.60 0.0273 0.0017  
 Mercury -34083-11-06 07:40 J -10727083.31 -10727083.18 -10727083.03 0.0273 0.0096  
 Mercury -34082-02-02 21:50 J -10726994.68 -10726994.59 -10726994.49 0.0274 0.0207  
 Mars -34077-04-15 01:55 J -10725096.65 -10725096.42 -10725096.17 0.0281 0.0135  
 Venus -34070-01-27 19:55 J -10722617.83 -10722617.67 -10722617.50 0.0287 0.0189  
 Venus -34070-09-14 20:52 J -10722387.84 -10722387.63 -10722387.41 0.0287 0.0017  
 Earth -34070-10-18 03:35 J -10722354.41 -10722354.35 -10722354.26 0.0287 0.0272  
 Venus -34069-05-01 21:07 J -10722157.80 -10722157.62 -10722157.44 0.0286 0.0154  
 Mercury -34069-09-20 23:45 J -10722015.62 -10722015.51 -10722015.40 0.0286 0.0210  
 Earth -34069-10-31 01:11 J -10721975.52 -10721975.45 -10721975.36 0.0286 0.0269  
 Moon -34069-10-31 01:55 J -10721975.52 -10721975.42 -10721975.31 0.0286 0.0255 \*  
 Mercury -34069-12-18 17:59 J -10721926.91 -10721926.75 -10721926.60 0.0286 0.0070  
 Mercury -34068-03-17 11:31 J -10721838.17 -10721838.02 -10721837.86 0.0285 0.0066  
 Mercury -34068-06-14 04:47 J -10721749.41 -10721749.30 -10721749.19 0.0285 0.0198  
 Mars -34063-06-06 17:02 J -10719931.08 -10719930.79 -10719930.48 0.0278 0.0082  
 Venus -34056-07-10 02:23 J -10717340.48 -10717340.40 -10717340.31 0.0272 0.0247  
 Venus -34055-02-24 02:09 J -10717111.59 -10717111.41 -10717111.22 0.0272 0.0112  
 Venus -34055-10-11 02:09 J -10716882.61 -10716882.41 -10716882.20 0.0273 0.0028  
 Earth -34054-04-22 17:31 J -10716689.01 -10716688.77 -10716688.52 0.0273 0.0016  
 Moon -34054-04-22 17:45 J -10716688.99 -10716688.76 -10716688.52 0.0273 0.0019 \*  
 Venus -34054-05-28 02:38 J -10716653.55 -10716653.39 -10716653.22 0.0273 0.0166  
 Mercury -34054-07-03 15:21 J -10716616.86 -10716616.86 -10716616.84 0.0273 0.0272  
 Mercury -34054-09-30 04:33 J -10716528.42 -10716528.31 -10716528.19 0.0273 0.0168  
 Mercury -34054-12-27 17:59 J -10716439.90 -10716439.75 -10716439.61 0.0273 0.0061

Mercury -34053-03-25 07:26 J -10716351.33 -10716351.19 -10716351.04 0.0274 0.0049

Mercury -34053-06-21 21:21 J -10716262.73 -10716262.61 -10716262.48 0.0274 0.0160

Mercury -34053-09-18 11:45 J -10716174.01 -10716174.01 -10716174.01 0.0274 0.0274

Venus -34041-08-08 23:02 J -10711831.71 -10711831.54 -10711831.36 0.0287 0.0169

Venus -34040-03-27 00:28 J -10711601.70 -10711601.48 -10711601.27 0.0287 0.0007

Moon -34040-10-25 01:26 J -10711389.69 -10711389.44 -10711389.18 0.0287 0.0007

Earth -34040-10-25 03:07 J -10711389.62 -10711389.37 -10711389.13 0.0287 0.0022 \*

Venus -34040-11-12 00:57 J -10711371.63 -10711371.46 -10711371.29 0.0287 0.0176

Mercury -34039-02-07 23:02 J -10711283.61 -10711283.54 -10711283.47 0.0286 0.0258

Mercury -34039-05-07 17:31 J -10711194.92 -10711194.77 -10711194.63 0.0286 0.0117

Mercury -34039-08-04 11:16 J -10711106.19 -10711106.03 -10711105.87 0.0286 0.0021

Mercury -34039-11-01 04:33 J -10711017.44 -10711017.31 -10711017.17 0.0286 0.0156

Venus -34026-01-20 09:21 J -10706554.22 -10706554.11 -10706553.99 0.0272 0.0223

Venus -34026-09-06 09:07 J -10706325.31 -10706325.12 -10706324.92 0.0272 0.0087

Moon -34025-04-16 21:50 J -10706101.77 -10706101.59 -10706101.39 0.0272 0.0178

Earth -34025-04-16 22:04 J -10706101.76 -10706101.58 -10706101.39 0.0272 0.0177 \*

Venus -34025-04-22 09:07 J -10706096.32 -10706096.12 -10706095.91 0.0272 0.0051

Venus -34025-12-07 09:35 J -10705867.25 -10705867.10 -10705866.95 0.0272 0.0189

Mercury -34024-02-16 07:26 J -10705796.29 -10705796.19 -10705796.08 0.0273 0.0188

Mercury -34024-05-15 20:38 J -10705707.78 -10705707.64 -10705707.50 0.0273 0.0083

Mercury -34024-08-12 10:19 J -10705619.22 -10705619.07 -10705618.92 0.0273 0.0026

Mercury -34024-11-08 23:59 J -10705530.62 -10705530.50 -10705530.37 0.0273 0.0137

Mercury -34023-02-05 14:09 J -10705441.96 -10705441.91 -10705441.85 0.0273 0.0250

Mars -34019-07-23 05:02 J -10703813.38 -10703813.29 -10703813.18 0.0280 0.0259

Venus -34011-02-19 04:47 J -10701045.48 -10701045.30 -10701045.11 0.0287 0.0143

Venus -34011-10-07 05:45 J -10700815.48 -10700815.26 -10700815.04 0.0287 0.0029

Earth -34011-10-19 05:31 J -10700803.42 -10700803.27 -10700803.12 0.0287 0.0226

Moon -34011-10-19 07:26 J -10700803.31 -10700803.19 -10700803.06 0.0287 0.0241 \*

Venus -34010-05-25 05:45 J -10700585.41 -10700585.26 -10700585.10 0.0286 0.0199

Mercury -34010-09-24 17:02 J -10700462.92 -10700462.79 -10700462.66 0.0286 0.0161

Mercury -34010-12-22 11:02 J -10700374.20 -10700374.04 -10700373.88 0.0286 0.0022

Mercury -34009-03-20 04:33 J -10700285.46 -10700285.31 -10700285.16 0.0286 0.0113

Mercury -34009-06-16 21:35 J -10700196.68 -10700196.60 -10700196.52 0.0285 0.0244

# 34TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 34th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-33997-08-01 08:23 J	-10695768.27	-10695768.15	-10695768.01	0.0272	0.0208		
Venus	-33996-03-18 08:09 J	-10695539.36	-10695539.16	-10695538.96	0.0272	0.0071		
Venus	-33996-11-02 08:09 J	-10695310.36	-10695310.16	-10695309.96	0.0272	0.0067		
Earth	-33995-04-23 19:26 J	-10695137.93	-10695137.69	-10695137.45	0.0273	0.0060		
Moon	-33995-04-23 23:16 J	-10695137.77	-10695137.53	-10695137.30	0.0273	0.0067	*	
Venus	-33995-06-19 08:23 J	-10695081.28	-10695081.15	-10695081.01	0.0273	0.0205		
Mercury	-33995-07-06 07:40 J	-10695064.25	-10695064.18	-10695064.10	0.0273	0.0231		
Mercury	-33995-10-02 20:52 J	-10694975.76	-10694975.63	-10694975.50	0.0273	0.0126		
Mercury	-33995-12-30 10:19 J	-10694887.22	-10694887.07	-10694886.93	0.0273	0.0021		
Mercury	-33994-03-28 23:45 J	-10694798.65	-10694798.51	-10694798.36	0.0273	0.0092		
Mercury	-33994-06-25 13:40 J	-10694710.02	-10694709.93	-10694709.82	0.0274	0.0204		
Mars	-33989-09-07 21:35 J	-10692808.82	-10692808.60	-10692808.35	0.0281	0.0145		
Venus	-33982-09-01 07:26 J	-10690259.38	-10690259.19	-10690258.99	0.0287	0.0124		
Venus	-33981-04-18 08:38 J	-10690029.35	-10690029.14	-10690028.92	0.0287	0.0049		
Moon	-33981-10-26 00:14 J	-10689838.73	-10689838.49	-10689838.25	0.0287	0.0054		
Earth	-33981-10-26 04:04 J	-10689838.57	-10689838.33	-10689838.09	0.0287	0.0067	*	

Venus -33981-12-04 09:07 J -10689799.25 -10689799.12 -10689798.98 0.0287 0.0220  
 Mercury -33980-02-10 16:04 J -10689730.94 -10689730.83 -10689730.72 0.0286 0.0210  
 Mercury -33980-05-10 10:19 J -10689642.23 -10689642.07 -10689641.91 0.0286 0.0069  
 Mercury -33980-08-07 04:04 J -10689553.48 -10689553.33 -10689553.17 0.0286 0.0068  
 Mercury -33980-11-03 21:21 J -10689464.72 -10689464.61 -10689464.50 0.0286 0.0201  
 Mars -33975-10-31 08:23 J -10687642.43 -10687642.15 -10687641.87 0.0279 0.0125  
 Venus -33967-02-11 15:07 J -10684982.01 -10684981.87 -10684981.70 0.0272 0.0184  
 Venus -33967-09-28 15:21 J -10684753.07 -10684752.86 -10684752.66 0.0272 0.0047  
 Moon -33966-04-18 20:38 J -10684550.85 -10684550.64 -10684550.42 0.0272 0.0128  
 Earth -33966-04-19 00:28 J -10684550.69 -10684550.48 -10684550.27 0.0272 0.0132 \*  
 Venus -33966-05-15 15:21 J -10684524.06 -10684523.86 -10684523.67 0.0272 0.0091  
 Mercury -33966-11-23 10:33 J -10684332.11 -10684332.06 -10684332.00 0.0272 0.0251  
 Venus -33966-12-30 15:35 J -10684294.95 -10684294.85 -10684294.73 0.0272 0.0229  
 Mercury -33965-02-19 23:45 J -10684243.63 -10684243.51 -10684243.39 0.0273 0.0146  
 Mercury -33965-05-18 13:11 J -10684155.10 -10684154.95 -10684154.81 0.0273 0.0040  
 Mercury -33965-08-15 02:38 J -10684066.53 -10684066.39 -10684066.24 0.0273 0.0070  
 Mercury -33965-11-11 16:33 J -10683977.92 -10683977.81 -10683977.69 0.0273 0.0182  
 Venus -33953-07-26 13:26 J -10679703.01 -10679702.94 -10679702.86 0.0287 0.0267  
 Venus -33952-03-13 14:52 J -10679473.09 -10679472.88 -10679472.68 0.0287 0.0096  
 Earth -33952-10-20 08:38 J -10679252.32 -10679252.14 -10679251.93 0.0287 0.0178  
 Moon -33952-10-20 12:14 J -10679252.16 -10679251.99 -10679251.80 0.0287 0.0192 \*  
 Venus -33952-10-29 15:35 J -10679243.06 -10679242.85 -10679242.64 0.0287 0.0076  
 Venus -33951-06-16 15:35 J -10679012.95 -10679012.85 -10679012.73 0.0286 0.0245  
 Mercury -33951-06-30 16:19 J -10678998.90 -10678998.82 -10678998.75 0.0286 0.0251  
 Mercury -33951-09-27 10:33 J -10678910.21 -10678910.06 -10678909.91 0.0286 0.0109  
 Mercury -33951-12-25 04:19 J -10678821.47 -10678821.32 -10678821.16 0.0286 0.0030  
 Mercury -33950-03-23 21:50 J -10678732.72 -10678732.59 -10678732.46 0.0286 0.0163  
 Venus -33938-08-24 15:21 J -10674196.02 -10674195.86 -10674195.69 0.0272 0.0167  
 Venus -33937-04-09 14:52 J -10673967.08 -10673966.88 -10673966.67 0.0272 0.0031  
 Venus -33937-11-24 14:52 J -10673738.07 -10673737.88 -10673737.69 0.0272 0.0108

Earth -33936-04-24 22:47 J -10673586.76 -10673586.55 -10673586.31 0.0273 0.0108  
 Moon -33936-04-25 00:28 J -10673586.70 -10673586.48 -10673586.25 0.0273 0.0118 \*  
 Mercury -33936-07-09 00:14 J -10673511.60 -10673511.49 -10673511.39 0.0273 0.0188  
 Venus -33936-07-11 15:07 J -10673508.94 -10673508.87 -10673508.77 0.0273 0.0245  
 Mercury -33936-10-05 13:26 J -10673423.08 -10673422.94 -10673422.80 0.0273 0.0082  
 Mercury -33935-01-02 02:52 J -10673334.53 -10673334.38 -10673334.23 0.0273 0.0026  
 Mercury -33935-03-31 16:33 J -10673245.94 -10673245.81 -10673245.68 0.0273 0.0137  
 Mercury -33935-06-28 06:43 J -10673157.28 -10673157.22 -10673157.16 0.0274 0.0250  
 Mars -33931-12-16 05:31 J -10671525.39 -10671525.27 -10671525.13 0.0280 0.0245  
 Venus -33923-02-05 15:21 J -10668916.96 -10668916.86 -10668916.75 0.0287 0.0249  
 Venus -33923-09-23 16:47 J -10668687.01 -10668686.80 -10668686.59 0.0287 0.0078  
 Venus -33922-05-11 17:45 J -10668456.96 -10668456.76 -10668456.55 0.0287 0.0095  
 Moon -33922-10-28 05:59 J -10668287.47 -10668287.25 -10668287.03 0.0287 0.0106  
 Earth -33922-10-28 05:59 J -10668287.46 -10668287.25 -10668287.01 0.0287 0.0116 \*  
 Venus -33922-12-27 18:14 J -10668226.81 -10668226.74 -10668226.65 0.0287 0.0264  
 Mercury -33921-02-14 09:21 J -10668178.24 -10668178.11 -10668177.97 0.0286 0.0159  
 Mercury -33921-05-13 03:35 J -10668089.51 -10668089.35 -10668089.19 0.0286 0.0020  
 Mercury -33921-08-09 21:07 J -10668000.76 -10668000.62 -10668000.47 0.0286 0.0117  
 Mercury -33921-11-06 14:23 J -10667911.97 -10667911.90 -10667911.82 0.0286 0.0249  
 Venus -33908-03-05 22:33 J -10663409.74 -10663409.56 -10663409.39 0.0272 0.0142  
 Venus -33908-10-20 22:19 J -10663180.78 -10663180.57 -10663180.36 0.0272 0.0006  
 Moon -33907-04-20 03:07 J -10662999.60 -10662999.37 -10662999.14 0.0272 0.0078  
 Earth -33907-04-20 04:33 J -10662999.54 -10662999.31 -10662999.08 0.0272 0.0084 \*  
 Venus -33907-06-06 22:33 J -10662951.74 -10662951.56 -10662951.38 0.0272 0.0132  
 Mercury -33907-11-26 03:21 J -10662779.45 -10662779.36 -10662779.27 0.0272 0.0206  
 Venus -33906-01-21 23:02 J -10662722.56 -10662722.54 -10662722.49 0.0273 0.0269  
 Mercury -33906-02-22 16:33 J -10662690.95 -10662690.81 -10662690.68 0.0273 0.0101  
 Mercury -33906-05-22 05:59 J -10662602.40 -10662602.25 -10662602.10 0.0273 0.0008  
 Mercury -33906-08-18 19:40 J -10662513.82 -10662513.68 -10662513.55 0.0273 0.0117  
 Mercury -33906-11-15 09:35 J -10662425.18 -10662425.10 -10662425.02 0.0273 0.0230



Mars -33900-02-01 23:16 J -10660519.71 -10660519.53 -10660519.32 0.0281 0.0197  
 Venus -33894-08-19 00:28 J -10658130.61 -10658130.48 -10658130.33 0.0287 0.0219  
 Venus -33893-04-05 01:40 J -10657900.64 -10657900.43 -10657900.21 0.0287 0.0048  
 Earth -33893-10-21 14:09 J -10657701.13 -10657700.91 -10657700.69 0.0287 0.0126  
 Moon -33893-10-21 14:23 J -10657701.12 -10657700.90 -10657700.67 0.0287 0.0137 \*  
 Venus -33893-11-21 02:23 J -10657670.59 -10657670.40 -10657670.20 0.0287 0.0124  
 Mercury -33892-07-03 10:19 J -10657446.19 -10657446.07 -10657445.95 0.0286 0.0195  
 Mercury -33892-09-30 04:33 J -10657357.47 -10657357.31 -10657357.16 0.0286 0.0055  
 Mercury -33892-12-27 22:04 J -10657268.73 -10657268.58 -10657268.42 0.0286 0.0082  
 Mercury -33891-03-26 15:21 J -10657179.96 -10657179.86 -10657179.75 0.0286 0.0215  
 Mars -33886-03-26 18:28 J -10655353.97 -10655353.73 -10655353.47 0.0278 0.0172  
 Venus -33879-01-29 23:45 J -10652852.57 -10652852.51 -10652852.45 0.0272 0.0259  
 Venus -33879-09-15 23:16 J -10652623.71 -10652623.53 -10652623.34 0.0272 0.0125  
 Venus -33878-05-02 23:02 J -10652394.75 -10652394.54 -10652394.34 0.0272 0.0012  
 Venus -33878-12-17 22:47 J -10652165.71 -10652165.55 -10652165.37 0.0272 0.0150  
 Mercury -33877-04-14 04:04 J -10652047.39 -10652047.33 -10652047.27 0.0273 0.0245  
 Moon -33877-04-26 01:11 J -10652035.63 -10652035.45 -10652035.25 0.0273 0.0172  
 Earth -33877-04-26 04:33 J -10652035.51 -10652035.31 -10652035.11 0.0273 0.0158 \*  
 Mercury -33877-07-11 17:02 J -10651958.91 -10651958.79 -10651958.66 0.0273 0.0141  
 Mercury -33877-10-08 06:28 J -10651870.38 -10651870.23 -10651870.09 0.0273 0.0034  
 Mercury -33876-01-04 19:55 J -10651781.81 -10651781.67 -10651781.52 0.0273 0.0076  
 Mercury -33876-04-03 09:50 J -10651693.20 -10651693.09 -10651692.98 0.0273 0.0187  
 Venus -33864-02-28 02:38 J -10647344.53 -10647344.39 -10647344.23 0.0287 0.0201  
 Venus -33864-10-16 04:04 J -10647114.54 -10647114.33 -10647114.11 0.0287 0.0030  
 Venus -33863-06-03 05:02 J -10646884.48 -10646884.29 -10646884.10 0.0287 0.0142  
 Earth -33863-10-29 11:31 J -10646736.22 -10646736.02 -10646735.82 0.0287 0.0168  
 Moon -33863-10-29 14:38 J -10646736.09 -10646735.89 -10646735.69 0.0287 0.0161 \*  
 Mercury -33863-11-20 08:52 J -10646714.21 -10646714.13 -10646714.04 0.0287 0.0246  
 Mercury -33862-02-17 03:21 J -10646625.51 -10646625.36 -10646625.21 0.0286 0.0104  
 Mercury -33862-05-16 21:21 J -10646536.77 -10646536.61 -10646536.45 0.0286 0.0035

Mercury -33862-08-13 14:52 J -10646448.01 -10646447.88 -10646447.75 0.0286 0.0169  
 Venus -33850-08-12 06:28 J -10642066.32 -10642066.23 -10642066.12 0.0272 0.0235  
 Venus -33849-03-28 06:14 J -10641837.42 -10641837.24 -10641837.04 0.0272 0.0100  
 Venus -33849-11-12 06:14 J -10641608.44 -10641608.24 -10641608.03 0.0272 0.0037  
 Earth -33848-04-21 10:19 J -10641448.31 -10641448.07 -10641447.82 0.0272 0.0033  
 Moon -33848-04-21 12:57 J -10641448.19 -10641447.96 -10641447.72 0.0272 0.0025 \*  
 Venus -33848-06-29 06:43 J -10641379.38 -10641379.22 -10641379.06 0.0272 0.0174  
 Mercury -33848-09-01 07:11 J -10641315.23 -10641315.20 -10641315.16 0.0272 0.0263  
 Mercury -33848-11-28 20:23 J -10641226.77 -10641226.65 -10641226.53 0.0273 0.0159  
 Mercury -33847-02-25 09:35 J -10641138.24 -10641138.10 -10641137.95 0.0273 0.0052  
 Mercury -33847-05-24 23:16 J -10641049.68 -10641049.53 -10641049.39 0.0273 0.0057  
 Mercury -33847-08-21 12:57 J -10640961.08 -10640960.96 -10640960.84 0.0273 0.0168  
 Mars -33842-05-12 14:38 J -10639236.09 -10639235.89 -10639235.68 0.0280 0.0182  
 Venus -33835-09-10 13:11 J -10636558.12 -10636557.95 -10636557.77 0.0287 0.0168  
 Venus -33834-04-28 14:23 J -10636328.12 -10636327.90 -10636327.69 0.0287 0.0006  
 Moon -33834-10-23 17:59 J -10636149.98 -10636149.75 -10636149.50 0.0287 0.0082  
 Earth -33834-10-23 21:35 J -10636149.84 -10636149.60 -10636149.36 0.0287 0.0070 \*  
 Venus -33834-12-14 14:52 J -10636098.05 -10636097.88 -10636097.71 0.0287 0.0173  
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 Mercury -33833-07-06 04:47 J -10635893.44 -10635893.30 -10635893.16 0.0286 0.0136  
 Mercury -33833-10-02 22:47 J -10635804.71 -10635804.55 -10635804.39 0.0286 0.0004  
 Mercury -33833-12-30 16:19 J -10635715.95 -10635715.82 -10635715.68 0.0286 0.0139  
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 Venus -33820-02-21 08:38 J -10631280.26 -10631280.14 -10631280.01 0.0272 0.0216  
 Venus -33820-10-08 08:23 J -10631051.35 -10631051.15 -10631050.95 0.0272 0.0081  
 Moon -33819-04-16 03:35 J -10630861.45 -10630861.35 -10630861.22 0.0272 0.0239  
 Earth -33819-04-16 06:14 J -10630861.34 -10630861.24 -10630861.13 0.0272 0.0243 \*  
 Venus -33819-05-25 08:09 J -10630822.36 -10630822.16 -10630821.96 0.0272 0.0056  
 Venus -33818-01-09 08:23 J -10630593.29 -10630593.15 -10630593.00 0.0272 0.0193  
 Mercury -33818-04-17 21:21 J -10630494.71 -10630494.61 -10630494.51 0.0273 0.0195

Moon -33818-04-28 09:21 J -10630484.23 -10630484.11 -10630483.97 0.0273 0.0228  
 Earth -33818-04-28 12:14 J -10630484.13 -10630483.99 -10630483.83 0.0273 0.0213 \*  
 Mercury -33818-07-15 10:33 J -10630406.20 -10630406.06 -10630405.92 0.0273 0.0090  
 Mercury -33818-10-11 23:59 J -10630317.65 -10630317.50 -10630317.35 0.0273 0.0019  
 Mercury -33817-01-08 13:40 J -10630229.06 -10630228.93 -10630228.80 0.0273 0.0129  
 Mercury -33817-04-06 03:35 J -10630140.42 -10630140.35 -10630140.28 0.0273 0.0242  
 Mars -33812-06-28 10:19 J -10628231.21 -10628231.07 -10628230.89 0.0281 0.0227  
 Venus -33805-03-22 15:35 J -10625772.03 -10625771.85 -10625771.66 0.0287 0.0150  
 Venus -33805-11-07 16:47 J -10625542.01 -10625541.80 -10625541.58 0.0287 0.0022  
 Venus -33804-06-25 17:45 J -10625311.92 -10625311.76 -10625311.60 0.0287 0.0191  
 Earth -33804-10-30 18:43 J -10625184.87 -10625184.72 -10625184.56 0.0286 0.0224  
 Moon -33804-10-30 21:21 J -10625184.77 -10625184.61 -10625184.44 0.0286 0.0217 \*  
 Mercury -33804-11-23 03:35 J -10625161.47 -10625161.35 -10625161.23 0.0286 0.0186  
 Mercury -33803-02-19 21:50 J -10625072.75 -10625072.59 -10625072.43 0.0286 0.0045  
 Mercury -33803-05-19 15:35 J -10624984.00 -10624983.85 -10624983.70 0.0286 0.0092  
 Mercury -33803-08-16 08:52 J -10624895.22 -10624895.13 -10624895.03 0.0286 0.0226  
 Mars -33798-08-20 14:38 J -10623065.08 -10623064.89 -10623064.71 0.0279 0.0225  
 Venus -33791-09-03 15:07 J -10620494.00 -10620493.87 -10620493.71 0.0272 0.0193  
 Venus -33790-04-20 15:21 J -10620265.07 -10620264.86 -10620264.66 0.0272 0.0057  
 Venus -33790-12-05 15:21 J -10620036.06 -10620035.86 -10620035.66 0.0272 0.0080  
 Earth -33789-04-22 17:45 J -10619897.01 -10619896.76 -10619896.52 0.0272 0.0020  
 Moon -33789-04-22 20:52 J -10619896.87 -10619896.63 -10619896.38 0.0272 0.0029 \*  
 Venus -33789-07-21 15:50 J -10619806.96 -10619806.84 -10619806.71 0.0273 0.0217  
 Mercury -33789-09-04 00:28 J -10619762.56 -10619762.48 -10619762.39 0.0273 0.0214  
 Mercury -33789-12-01 13:40 J -10619674.06 -10619673.93 -10619673.79 0.0273 0.0109  
 Mercury -33788-02-28 03:07 J -10619585.52 -10619585.37 -10619585.22 0.0273 0.0003  
 Mercury -33788-05-27 16:47 J -10619496.94 -10619496.80 -10619496.67 0.0273 0.0109  
 Mercury -33788-08-24 06:28 J -10619408.31 -10619408.23 -10619408.13 0.0273 0.0223  
 Venus -33776-02-15 02:23 J -10615215.42 -10615215.40 -10615215.36 0.0287 0.0285  
 Venus -33776-10-03 03:50 J -10614985.54 -10614985.34 -10614985.14 0.0287 0.0115

Venus -33775-05-21 04:47 J -10614755.51 -10614755.30 -10614755.09 0.0287 0.0056  
 Moon -33775-10-25 05:16 J -10614598.51 -10614598.28 -10614598.04 0.0287 0.0021  
 Earth -33775-10-25 08:09 J -10614598.41 -10614598.16 -10614597.92 0.0287 0.0010 \*  
 Venus -33774-01-06 05:02 J -10614525.41 -10614525.29 -10614525.15 0.0287 0.0225  
 Mercury -33774-04-12 05:45 J -10614429.37 -10614429.26 -10614429.15 0.0287 0.0214  
 Mercury -33774-07-09 23:59 J -10614340.66 -10614340.50 -10614340.34 0.0286 0.0072  
 Mercury -33774-10-06 17:45 J -10614251.91 -10614251.76 -10614251.60 0.0286 0.0066  
 Mercury -33773-01-03 11:16 J -10614163.14 -10614163.03 -10614162.92 0.0286 0.0200  
 Venus -33761-03-15 18:28 J -10609707.89 -10609707.73 -10609707.57 0.0272 0.0171  
 Venus -33761-10-30 18:14 J -10609478.95 -10609478.74 -10609478.54 0.0272 0.0036  
 Moon -33760-04-17 11:31 J -10609310.19 -10609310.02 -10609309.83 0.0272 0.0184  
 Earth -33760-04-17 15:07 J -10609310.04 -10609309.87 -10609309.69 0.0272 0.0188 \*  
 Venus -33760-06-16 17:59 J -10609249.94 -10609249.75 -10609249.55 0.0272 0.0101  
 Mercury -33759-01-22 01:55 J -10609030.47 -10609030.42 -10609030.36 0.0273 0.0247  
 Venus -33759-01-31 18:28 J -10609020.83 -10609020.73 -10609020.62 0.0273 0.0237  
 Mercury -33759-04-20 15:07 J -10608942.00 -10608941.87 -10608941.75 0.0273 0.0143  
 Earth -33759-04-29 21:21 J -10608932.63 -10608932.61 -10608932.57 0.0273 0.0270  
 Mercury -33759-07-18 04:19 J -10608853.47 -10608853.32 -10608853.17 0.0273 0.0036  
 Mercury -33759-10-14 17:45 J -10608764.90 -10608764.76 -10608764.61 0.0273 0.0074  
 Mercury -33758-01-11 07:40 J -10608676.29 -10608676.18 -10608676.07 0.0273 0.0185  
 Mars -33754-10-06 08:09 J -10606947.38 -10606947.16 -10606946.92 0.0280 0.0145  
 Venus -33747-08-28 05:02 J -10604429.36 -10604429.29 -10604429.20 0.0287 0.0266  
 Venus -33746-04-15 06:14 J -10604199.44 -10604199.24 -10604199.03 0.0287 0.0097  
 Earth -33746-10-19 05:59 J -10604012.34 -10604012.25 -10604012.15 0.0287 0.0262  
 Moon -33746-10-19 07:55 J -10604012.23 -10604012.17 -10604012.08 0.0287 0.0273 \*  
 Venus -33746-12-01 07:26 J -10603969.40 -10603969.19 -10603968.98 0.0287 0.0074  
 Venus -33745-07-18 07:40 J -10603739.28 -10603739.18 -10603739.05 0.0286 0.0242  
 Mercury -33745-08-29 04:19 J -10603697.38 -10603697.32 -10603697.26 0.0286 0.0264  
 Moon -33745-11-01 03:21 J -10603633.41 -10603633.36 -10603633.31 0.0286 0.0279  
 Earth -33745-11-01 04:33 J -10603633.31 -10603633.31 -10603633.27 0.0286 0.0285 \*

Mercury -33745-11-25 22:47 J -10603608.70 -10603608.55 -10603608.40 0.0286 0.0122

Mercury -33744-02-22 16:47 J -10603519.96 -10603519.80 -10603519.64 0.0286 0.0018

Mercury -33744-05-22 10:33 J -10603431.20 -10603431.06 -10603430.93 0.0286 0.0153

Mercury -33744-08-19 03:35 J -10603342.35 -10603342.35 -10603342.34 0.0286 0.0285

Mars -33740-11-22 08:23 J -10601786.32 -10601786.15 -10601785.96 0.0280 0.0230

Venus -33732-09-26 00:43 J -10598921.64 -10598921.47 -10598921.29 0.0272 0.0147

Venus -33731-05-13 00:57 J -10598692.67 -10598692.46 -10598692.26 0.0272 0.0013

Venus -33731-12-28 00:57 J -10598463.64 -10598463.46 -10598463.27 0.0273 0.0126

Moon -33730-04-25 01:55 J -10598345.66 -10598345.42 -10598345.18 0.0273 0.0085

Earth -33730-04-25 02:09 J -10598345.64 -10598345.41 -10598345.17 0.0273 0.0076 \*

Mercury -33730-06-11 05:02 J -10598298.31 -10598298.29 -10598298.26 0.0273 0.0267

Venus -33730-08-14 01:40 J -10598234.48 -10598234.43 -10598234.36 0.0273 0.0261

Mercury -33730-09-07 17:59 J -10598209.86 -10598209.75 -10598209.63 0.0273 0.0163

Mercury -33730-12-05 07:26 J -10598121.34 -10598121.19 -10598121.05 0.0273 0.0056

Mercury -33729-03-02 20:52 J -10598032.78 -10598032.63 -10598032.48 0.0273 0.0053

Mercury -33729-05-30 10:33 J -10597944.17 -10597944.06 -10597943.94 0.0273 0.0165

Venus -33717-03-09 17:59 J -10593642.87 -10593642.75 -10593642.61 0.0287 0.0230

Venus -33717-10-25 19:26 J -10593412.90 -10593412.69 -10593412.48 0.0287 0.0060

Venus -33716-06-12 20:09 J -10593182.86 -10593182.66 -10593182.45 0.0287 0.0110

Earth -33716-10-26 19:55 J -10593046.90 -10593046.67 -10593046.42 0.0287 0.0055

Moon -33716-10-26 21:50 J -10593046.83 -10593046.59 -10593046.35 0.0287 0.0046 \*

Venus -33715-01-28 20:23 J -10592952.70 -10592952.65 -10592952.59 0.0287 0.0277

Mercury -33715-04-15 01:11 J -10592876.58 -10592876.45 -10592876.30 0.0286 0.0147

Mercury -33715-07-12 19:26 J -10592787.85 -10592787.69 -10592787.53 0.0286 0.0008

Mercury -33715-10-09 13:11 J -10592699.09 -10592698.95 -10592698.81 0.0286 0.0130

Mercury -33714-01-06 06:14 J -10592610.29 -10592610.24 -10592610.17 0.0286 0.0263

Venus -33703-08-22 05:02 J -10588364.34 -10588364.29 -10588364.22 0.0272 0.0259

Venus -33702-04-08 04:33 J -10588135.48 -10588135.31 -10588135.12 0.0272 0.0126

Venus -33702-11-23 04:33 J -10587906.52 -10587906.31 -10587906.10 0.0272 0.0010

Earth -33701-04-19 00:57 J -10587758.67 -10587758.46 -10587758.24 0.0272 0.0132

Moon -33701-04-19 00:57 J -10587758.66 -10587758.46 -10587758.24 0.0272 0.0125 \*  
 Venus -33701-07-09 04:33 J -10587677.48 -10587677.31 -10587677.13 0.0272 0.0146  
 Mercury -33700-01-24 19:40 J -10587477.77 -10587477.68 -10587477.57 0.0273 0.0194  
 Mercury -33700-04-23 08:52 J -10587389.27 -10587389.13 -10587388.99 0.0273 0.0089  
 Mercury -33700-07-20 22:19 J -10587300.72 -10587300.57 -10587300.42 0.0273 0.0020  
 Mercury -33700-10-17 11:59 J -10587212.13 -10587212.00 -10587211.87 0.0273 0.0131  
 Mercury -33699-01-14 01:55 J -10587123.48 -10587123.42 -10587123.35 0.0273 0.0243  
 Venus -33688-09-19 21:35 J -10582856.75 -10582856.60 -10582856.45 0.0287 0.0210  
 Venus -33687-05-07 22:33 J -10582626.77 -10582626.56 -10582626.34 0.0287 0.0042  
 Moon -33687-10-20 16:33 J -10582460.97 -10582460.81 -10582460.62 0.0287 0.0205  
 Earth -33687-10-20 19:26 J -10582460.87 -10582460.69 -10582460.51 0.0287 0.0197 \*  
 Venus -33687-12-23 23:31 J -10582396.71 -10582396.52 -10582396.33 0.0287 0.0129  
 Mercury -33686-09-02 00:14 J -10582144.61 -10582144.49 -10582144.37 0.0286 0.0195  
 Mercury -33686-11-29 18:28 J -10582055.88 -10582055.73 -10582055.57 0.0286 0.0054  
 Mercury -33685-02-26 12:28 J -10581967.13 -10581966.98 -10581966.83 0.0286 0.0084  
 Mercury -33685-05-25 05:45 J -10581878.36 -10581878.26 -10581878.15 0.0286 0.0218  
 Venus -33673-03-03 10:19 J -10577578.16 -10577578.07 -10577577.96 0.0273 0.0236  
 Venus -33673-10-18 10:19 J -10577349.26 -10577349.07 -10577348.87 0.0272 0.0102  
 Venus -33672-06-04 10:33 J -10577120.26 -10577120.06 -10577119.85 0.0273 0.0034  
 Venus -33671-01-19 10:47 J -10576891.20 -10576891.05 -10576890.87 0.0273 0.0171  
 Moon -33671-04-26 07:11 J -10576794.39 -10576794.20 -10576793.98 0.0273 0.0144  
 Earth -33671-04-26 11:02 J -10576794.25 -10576794.04 -10576793.82 0.0273 0.0131 \*  
 Mercury -33671-06-13 22:33 J -10576745.64 -10576745.56 -10576745.47 0.0273 0.0217  
 Mercury -33671-09-10 11:45 J -10576657.14 -10576657.01 -10576656.88 0.0273 0.0111  
 Mercury -33671-12-08 01:11 J -10576568.60 -10576568.45 -10576568.31 0.0273 0.0007  
 Mercury -33670-03-06 14:38 J -10576480.02 -10576479.89 -10576479.75 0.0273 0.0109  
 Mercury -33670-06-03 04:33 J -10576391.39 -10576391.31 -10576391.22 0.0273 0.0221  
 Mars -33665-03-02 05:59 J -10574657.52 -10574657.25 -10574656.98 0.0279 0.0063  
 Venus -33658-04-02 11:02 J -10572070.21 -10572070.04 -10572069.87 0.0287 0.0174  
 Venus -33658-11-18 12:14 J -10571840.21 -10571839.99 -10571839.78 0.0287 0.0007

Venus -33657-07-05 12:43 J -10571610.14 -10571609.97 -10571609.79 0.0287 0.0166  
 Earth -33657-10-28 09:35 J -10571495.32 -10571495.10 -10571494.87 0.0287 0.0121  
 Moon -33657-10-28 13:26 J -10571495.16 -10571494.94 -10571494.70 0.0287 0.0115 \*  
 Mercury -33656-01-19 03:07 J -10571412.48 -10571412.37 -10571412.27 0.0287 0.0218  
 Mercury -33656-04-17 21:21 J -10571323.76 -10571323.61 -10571323.45 0.0286 0.0076  
 Mercury -33656-07-15 15:21 J -10571235.02 -10571234.86 -10571234.70 0.0286 0.0063  
 Mercury -33656-10-12 08:38 J -10571146.25 -10571146.14 -10571146.02 0.0286 0.0197  
 Mars -33651-04-19 04:47 J -10569496.56 -10569496.30 -10569496.02 0.0280 0.0146  
 Venus -33644-09-13 15:35 J -10566791.98 -10566791.85 -10566791.72 0.0272 0.0213  
 Venus -33643-04-30 15:21 J -10566563.06 -10566562.86 -10566562.66 0.0272 0.0079  
 Venus -33643-12-15 15:21 J -10566334.07 -10566333.86 -10566333.66 0.0272 0.0057  
 Earth -33642-04-21 11:02 J -10566207.27 -10566207.04 -10566206.80 0.0272 0.0075  
 Moon -33642-04-21 14:52 J -10566207.12 -10566206.88 -10566206.65 0.0272 0.0065 \*  
 Venus -33642-08-01 15:21 J -10566105.00 -10566104.86 -10566104.71 0.0272 0.0192  
 Mercury -33642-11-01 00:43 J -10566013.53 -10566013.47 -10566013.41 0.0273 0.0245  
 Mercury -33641-01-28 13:40 J -10565925.05 -10565924.93 -10565924.80 0.0273 0.0140  
 Mercury -33641-04-26 02:52 J -10565836.52 -10565836.38 -10565836.23 0.0273 0.0033  
 Mercury -33641-07-23 16:33 J -10565747.96 -10565747.81 -10565747.67 0.0273 0.0077  
 Mercury -33641-10-20 06:14 J -10565659.34 -10565659.24 -10565659.13 0.0273 0.0189  
 Venus -33629-10-12 14:23 J -10561284.08 -10561283.90 -10561283.72 0.0287 0.0154  
 Venus -33628-05-30 15:21 J -10561054.07 -10561053.86 -10561053.64 0.0287 0.0017  
 Moon -33628-10-22 05:59 J -10560909.46 -10560909.25 -10560909.03 0.0286 0.0138  
 Earth -33628-10-22 09:35 J -10560909.32 -10560909.10 -10560908.88 0.0286 0.0131 \*  
 Venus -33627-01-15 16:04 J -10560823.99 -10560823.83 -10560823.66 0.0286 0.0184  
 Mercury -33627-06-08 01:40 J -10560680.48 -10560680.43 -10560680.36 0.0286 0.0267  
 Mercury -33627-09-04 20:23 J -10560591.79 -10560591.65 -10560591.50 0.0286 0.0124  
 Mercury -33627-12-02 14:23 J -10560503.06 -10560502.90 -10560502.73 0.0286 0.0018  
 Mercury -33626-03-01 08:09 J -10560414.29 -10560414.16 -10560414.03 0.0286 0.0152  
 Mercury -33626-05-29 01:11 J -10560325.46 -10560325.45 -10560325.43 0.0285 0.0284  
 Venus -33614-03-26 19:55 J -10556005.81 -10556005.67 -10556005.52 0.0273 0.0191

Venus -33614-11-10 19:55 J -10555776.87 -10555776.67 -10555776.46 0.0273 0.0057  
 Moon -33613-04-15 08:52 J -10555620.15 -10555620.13 -10555620.08 0.0273 0.0270  
 Venus -33613-06-26 20:09 J -10555547.85 -10555547.66 -10555547.46 0.0273 0.0079  
 Venus -33612-02-10 20:52 J -10555318.75 -10555318.63 -10555318.50 0.0273 0.0215  
 Mercury -33612-03-20 03:07 J -10555281.38 -10555281.37 -10555281.35 0.0273 0.0270  
 Moon -33612-04-27 17:31 J -10555242.92 -10555242.77 -10555242.60 0.0273 0.0200  
 Earth -33612-04-27 19:40 J -10555242.86 -10555242.68 -10555242.50 0.0273 0.0185 \*  
 Mercury -33612-06-16 16:04 J -10555192.94 -10555192.83 -10555192.71 0.0273 0.0166  
 Mercury -33612-09-13 05:16 J -10555104.42 -10555104.28 -10555104.13 0.0273 0.0059  
 Mercury -33612-12-10 18:57 J -10555015.86 -10555015.71 -10555015.57 0.0273 0.0052  
 Mercury -33611-03-09 08:23 J -10554927.26 -10554927.15 -10554927.02 0.0273 0.0164  
 Venus -33600-09-07 02:38 J -10550727.41 -10550727.39 -10550727.35 0.0287 0.0284  
 Venus -33599-04-25 04:04 J -10550497.53 -10550497.33 -10550497.13 0.0287 0.0117  
 Venus -33599-12-11 05:16 J -10550267.50 -10550267.28 -10550267.07 0.0287 0.0054  
 Venus -33598-07-29 05:45 J -10550037.39 -10550037.26 -10550037.12 0.0287 0.0221  
 Earth -33598-10-30 23:59 J -10549943.68 -10549943.50 -10549943.31 0.0287 0.0188  
 Moon -33598-10-31 00:28 J -10549943.67 -10549943.48 -10549943.28 0.0287 0.0184 \*  
 Mercury -33597-01-22 23:16 J -10549859.67 -10549859.53 -10549859.38 0.0286 0.0146  
 Mercury -33597-04-20 17:31 J -10549770.93 -10549770.77 -10549770.61 0.0286 0.0006  
 Mercury -33597-07-18 11:02 J -10549682.17 -10549682.04 -10549681.89 0.0286 0.0132  
 Mercury -33597-10-15 04:19 J -10549593.37 -10549593.32 -10549593.25 0.0286 0.0265  
 Venus -33585-10-06 01:26 J -10545219.59 -10545219.44 -10545219.27 0.0272 0.0168  
 Venus -33584-05-23 01:26 J -10544990.65 -10544990.44 -10544990.24 0.0272 0.0033  
 Venus -33583-01-07 01:26 J -10544761.63 -10544761.44 -10544761.25 0.0272 0.0102  
 Earth -33583-04-22 20:23 J -10544655.89 -10544655.65 -10544655.41 0.0272 0.0019  
 Moon -33583-04-22 22:19 J -10544655.83 -10544655.57 -10544655.32 0.0272 0.0008 \*  
 Venus -33583-08-24 01:40 J -10544532.52 -10544532.43 -10544532.32 0.0272 0.0237  
 Mercury -33583-11-03 18:14 J -10544460.84 -10544460.74 -10544460.63 0.0273 0.0193  
 Mercury -33582-01-31 07:26 J -10544372.33 -10544372.19 -10544372.05 0.0273 0.0087  
 Mercury -33582-04-29 20:52 J -10544283.78 -10544283.63 -10544283.48 0.0273 0.0022



Mercury -33582-07-27 10:19 J -10544195.19 -10544195.07 -10544194.93 0.0273 0.0133  
 Mercury -33582-10-24 00:14 J -10544106.55 -10544106.49 -10544106.42 0.0273 0.0246  
 Mars -33577-07-27 08:38 J -10542368.41 -10542368.14 -10542367.87 0.0280 0.0015  
 Venus -33570-03-20 05:59 J -10539941.31 -10539941.25 -10539941.15 0.0287 0.0265  
 Venus -33570-11-05 07:26 J -10539711.39 -10539711.19 -10539710.98 0.0287 0.0097  
 Venus -33569-06-22 08:23 J -10539481.35 -10539481.15 -10539480.93 0.0287 0.0073  
 Moon -33569-10-23 23:59 J -10539357.73 -10539357.50 -10539357.27 0.0286 0.0069  
 Earth -33569-10-23 23:59 J -10539357.73 -10539357.50 -10539357.25 0.0286 0.0064 \*  
 Venus -33568-02-07 09:07 J -10539251.24 -10539251.12 -10539251.00 0.0286 0.0239  
 Mercury -33568-06-10 22:19 J -10539127.69 -10539127.57 -10539127.45 0.0286 0.0194  
 Mercury -33568-09-07 16:33 J -10539038.97 -10539038.81 -10539038.65 0.0286 0.0053  
 Mercury -33568-12-05 10:19 J -10538950.22 -10538950.07 -10538949.91 0.0286 0.0086  
 Mercury -33567-03-04 03:50 J -10538861.44 -10538861.34 -10538861.24 0.0285 0.0219  
 Mars -33563-09-13 03:07 J -10537207.67 -10537207.37 -10537207.06 0.0280 0.0088  
 Venus -33555-04-18 05:02 J -10534433.46 -10534433.29 -10534433.12 0.0273 0.0147  
 Venus -33555-12-03 05:02 J -10534204.49 -10534204.29 -10534204.08 0.0273 0.0012  
 Moon -33554-04-17 18:14 J -10534068.87 -10534068.74 -10534068.60 0.0273 0.0219  
 Earth -33554-04-17 20:09 J -10534068.79 -10534068.66 -10534068.52 0.0273 0.0226 \*  
 Venus -33554-07-20 05:16 J -10533975.46 -10533975.28 -10533975.09 0.0273 0.0124  
 Venus -33553-03-05 06:14 J -10533746.30 -10533746.24 -10533746.18 0.0273 0.0258  
 Mercury -33553-03-22 20:23 J -10533728.73 -10533728.65 -10533728.57 0.0273 0.0222  
 Earth -33553-04-29 03:07 J -10533691.48 -10533691.37 -10533691.25 0.0273 0.0238  
 Moon -33553-04-29 05:59 J -10533691.33 -10533691.25 -10533691.17 0.0273 0.0254 \*  
 Mercury -33553-06-19 09:21 J -10533640.24 -10533640.11 -10533639.97 0.0273 0.0116  
 Mercury -33553-09-15 22:47 J -10533551.70 -10533551.55 -10533551.40 0.0273 0.0007  
 Mercury -33553-12-13 12:28 J -10533463.12 -10533462.98 -10533462.85 0.0273 0.0104  
 Mercury -33552-03-12 02:09 J -10533374.49 -10533374.41 -10533374.31 0.0274 0.0217  
 Venus -33541-09-29 19:11 J -10529154.82 -10529154.70 -10529154.56 0.0287 0.0229  
 Venus -33540-05-17 20:38 J -10528924.85 -10528924.64 -10528924.43 0.0287 0.0060  
 Venus -33539-01-02 21:35 J -10528694.80 -10528694.60 -10528694.40 0.0287 0.0109

Venus -33539-08-20 22:04 J -10528464.63 -10528464.58 -10528464.52 0.0287 0.0275  
 Mercury -33539-10-29 00:57 J -10528395.56 -10528395.46 -10528395.35 0.0287 0.0218  
 Moon -33539-11-01 10:19 J -10528392.18 -10528392.07 -10528391.94 0.0287 0.0253  
 Earth -33539-11-01 13:55 J -10528392.04 -10528391.92 -10528391.81 0.0287 0.0253 \*  
 Mercury -33538-01-25 19:26 J -10528306.85 -10528306.69 -10528306.53 0.0286 0.0076  
 Mercury -33538-04-24 13:26 J -10528218.10 -10528217.94 -10528217.79 0.0286 0.0063  
 Mercury -33538-07-22 06:57 J -10528129.33 -10528129.21 -10528129.10 0.0286 0.0198  
 Venus -33526-03-14 11:02 J -10523876.10 -10523876.04 -10523875.96 0.0272 0.0255  
 Venus -33526-10-29 10:47 J -10523647.23 -10523647.05 -10523646.86 0.0272 0.0123  
 Venus -33525-06-14 10:47 J -10523418.26 -10523418.05 -10523417.84 0.0272 0.0012  
 Venus -33524-01-29 11:02 J -10523189.21 -10523189.04 -10523188.87 0.0272 0.0146  
 Moon -33524-04-24 01:40 J -10523104.67 -10523104.43 -10523104.18 0.0272 0.0048  
 Earth -33524-04-24 04:19 J -10523104.56 -10523104.32 -10523104.07 0.0272 0.0035 \*  
 Mercury -33524-08-09 22:47 J -10522996.61 -10522996.55 -10522996.49 0.0272 0.0247  
 Mercury -33524-11-06 11:45 J -10522908.13 -10522908.01 -10522907.89 0.0273 0.0142  
 Mercury -33523-02-03 00:57 J -10522819.60 -10522819.46 -10522819.31 0.0273 0.0035  
 Mercury -33523-05-02 14:23 J -10522731.04 -10522730.90 -10522730.75 0.0273 0.0075  
 Mercury -33523-07-30 04:04 J -10522642.43 -10522642.33 -10522642.21 0.0273 0.0187  
 Venus -33511-04-11 22:33 J -10518368.70 -10518368.56 -10518368.41 0.0287 0.0209  
 Venus -33511-11-27 23:59 J -10518138.72 -10518138.50 -10518138.29 0.0287 0.0041  
 Venus -33510-07-16 00:57 J -10517908.66 -10517908.46 -10517908.27 0.0287 0.0128  
 Earth -33510-10-26 13:26 J -10517806.18 -10517805.94 -10517805.69 0.0286 0.0006  
 Moon -33510-10-26 16:47 J -10517806.04 -10517805.80 -10517805.56 0.0286 0.0004 \*  
 Mercury -33509-03-16 23:31 J -10517663.56 -10517663.52 -10517663.45 0.0286 0.0269  
 Mercury -33509-06-13 18:14 J -10517574.88 -10517574.74 -10517574.59 0.0286 0.0125  
 Mercury -33509-09-10 12:28 J -10517486.14 -10517485.98 -10517485.82 0.0286 0.0016  
 Mercury -33509-12-08 05:59 J -10517397.38 -10517397.25 -10517397.11 0.0286 0.0153  
 Mercury -33508-03-06 23:16 J -10517308.53 -10517308.53 -10517308.52 0.0285 0.0285  
 Venus -33497-09-23 13:11 J -10513090.04 -10513089.95 -10513089.83 0.0273 0.0237  
 Venus -33496-05-10 13:26 J -10512861.13 -10512860.94 -10512860.75 0.0272 0.0103

Venus -33496-12-25 13:26 J -10512632.15 -10512631.94 -10512631.73 0.0273 0.0032  
 Earth -33495-04-19 01:55 J -10512517.60 -10512517.42 -10512517.23 0.0273 0.0177  
 Moon -33495-04-19 04:04 J -10512517.51 -10512517.33 -10512517.14 0.0273 0.0167 \*  
 Venus -33495-08-11 13:40 J -10512403.09 -10512402.93 -10512402.76 0.0273 0.0167  
 Mercury -33494-03-26 13:11 J -10512176.05 -10512175.95 -10512175.83 0.0273 0.0175  
 Mercury -33494-06-23 02:23 J -10512087.54 -10512087.40 -10512087.25 0.0273 0.0069  
 Mercury -33494-09-19 15:50 J -10511998.98 -10511998.84 -10511998.69 0.0273 0.0042  
 Mercury -33494-12-17 05:31 J -10511910.39 -10511910.27 -10511910.14 0.0274 0.0154  
 Mercury -33493-03-14 19:26 J -10511821.71 -10511821.69 -10511821.65 0.0274 0.0268  
 Mars -33489-12-21 17:45 J -10510079.02 -10510078.76 -10510078.48 0.0280 0.0048  
 Venus -33482-10-23 10:47 J -10507582.22 -10507582.05 -10507581.88 0.0287 0.0175  
 Venus -33481-06-09 12:14 J -10507352.21 -10507351.99 -10507351.78 0.0287 0.0008  
 Moon -33481-10-19 23:16 J -10507219.64 -10507219.53 -10507219.38 0.0287 0.0246  
 Earth -33481-10-20 03:07 J -10507219.51 -10507219.37 -10507219.23 0.0287 0.0236 \*  
 Venus -33480-01-25 13:11 J -10507122.13 -10507121.95 -10507121.77 0.0287 0.0163  
 Mercury -33480-10-31 20:52 J -10506842.77 -10506842.63 -10506842.49 0.0287 0.0150  
 Mercury -33479-01-28 15:07 J -10506754.03 -10506753.87 -10506753.71 0.0286 0.0009  
 Mercury -33479-04-27 08:52 J -10506665.27 -10506665.13 -10506664.99 0.0286 0.0129  
 Mercury -33479-07-25 01:55 J -10506576.47 -10506576.42 -10506576.35 0.0286 0.0263  
 Mars -33474-02-08 05:02 J -10504917.60 -10504917.29 -10504916.97 0.0279 0.0005  
 Venus -33467-04-05 19:40 J -10502303.80 -10502303.68 -10502303.55 0.0272 0.0212  
 Venus -33467-11-20 19:26 J -10502074.89 -10502074.69 -10502074.49 0.0272 0.0079  
 Venus -33466-07-07 19:11 J -10501845.90 -10501845.70 -10501845.50 0.0272 0.0055  
 Venus -33465-02-21 19:26 J -10501616.84 -10501616.69 -10501616.54 0.0272 0.0189  
 Moon -33465-04-25 07:26 J -10501553.41 -10501553.19 -10501552.96 0.0272 0.0100  
 Earth -33465-04-25 10:47 J -10501553.28 -10501553.05 -10501552.82 0.0272 0.0085 \*  
 Mercury -33465-08-12 15:50 J -10501443.94 -10501443.84 -10501443.74 0.0272 0.0200  
 Mercury -33465-11-09 04:47 J -10501355.43 -10501355.30 -10501355.16 0.0273 0.0094  
 Mercury -33464-02-05 18:14 J -10501266.89 -10501266.74 -10501266.59 0.0273 0.0015  
 Mercury -33464-05-05 07:40 J -10501178.31 -10501178.18 -10501178.04 0.0273 0.0125

Mercury -33464-08-01 21:35 J -10501089.67 -10501089.60 -10501089.53 0.0273 0.0238

Venus -33452-05-04 13:40 J -10496796.10 -10496795.93 -10496795.74 0.0287 0.0155

Venus -33452-12-20 15:07 J -10496566.08 -10496565.87 -10496565.65 0.0287 0.0015

Venus -33451-08-07 16:04 J -10496335.99 -10496335.83 -10496335.66 0.0287 0.0181

Earth -33451-10-28 01:26 J -10496254.68 -10496254.44 -10496254.20 0.0286 0.0064

Moon -33451-10-28 04:19 J -10496254.57 -10496254.32 -10496254.07 0.0286 0.0058 \*

Mercury -33450-03-20 19:26 J -10496110.80 -10496110.69 -10496110.57 0.0286 0.0200

Mercury -33450-06-17 13:55 J -10496022.08 -10496021.92 -10496021.76 0.0286 0.0058

Mercury -33450-09-14 07:55 J -10495933.32 -10495933.17 -10495933.02 0.0286 0.0081

Mercury -33450-12-12 01:26 J -10495844.54 -10495844.44 -10495844.34 0.0286 0.0216

Venus -33438-10-16 20:52 J -10491517.77 -10491517.63 -10491517.48 0.0272 0.0194

Venus -33437-06-01 20:52 J -10491288.83 -10491288.63 -10491288.43 0.0272 0.0061

Venus -33436-01-16 20:52 J -10491059.83 -10491059.63 -10491059.43 0.0272 0.0074

Earth -33436-04-20 05:59 J -10490966.45 -10490966.25 -10490966.02 0.0273 0.0130

Moon -33436-04-20 09:35 J -10490966.32 -10490966.10 -10490965.87 0.0273 0.0119 \*

Venus -33436-09-02 20:52 J -10490830.75 -10490830.63 -10490830.49 0.0273 0.0209

Mercury -33436-12-30 17:02 J -10490711.86 -10490711.79 -10490711.72 0.0273 0.0236

Mercury -33435-03-29 05:59 J -10490623.38 -10490623.25 -10490623.12 0.0273 0.0130

Mercury -33435-06-25 19:11 J -10490534.84 -10490534.70 -10490534.55 0.0273 0.0023

Mercury -33435-09-22 08:38 J -10490446.28 -10490446.14 -10490445.99 0.0273 0.0089

Mercury -33435-12-19 22:33 J -10490357.66 -10490357.56 -10490357.46 0.0274 0.0201

Venus -33423-11-15 00:14 J -10486009.68 -10486009.49 -10486009.29 0.0287 0.0123

Venus -33422-07-03 01:55 J -10485779.63 -10485779.42 -10485779.21 0.0287 0.0047

Moon -33422-10-22 09:50 J -10485668.27 -10485668.09 -10485667.91 0.0287 0.0185

Earth -33422-10-22 12:14 J -10485668.17 -10485667.99 -10485667.79 0.0287 0.0177 \*

Venus -33421-02-18 02:52 J -10485549.52 -10485549.38 -10485549.23 0.0287 0.0215

Mercury -33421-08-06 21:21 J -10485378.70 -10485378.61 -10485378.51 0.0287 0.0230

Mercury -33421-11-03 15:50 J -10485289.99 -10485289.84 -10485289.68 0.0287 0.0087

Mercury -33420-01-31 10:04 J -10485201.24 -10485201.08 -10485200.92 0.0286 0.0054

Mercury -33420-04-30 03:35 J -10485112.47 -10485112.35 -10485112.23 0.0286 0.0190

Venus -33408-04-28 03:21 J -10480731.51 -10480731.36 -10480731.19 0.0271 0.0170  
 Venus -33408-12-13 02:52 J -10480502.58 -10480502.38 -10480502.17 0.0272 0.0038  
 Venus -33407-07-30 02:38 J -10480273.58 -10480273.39 -10480273.19 0.0272 0.0097  
 Venus -33406-03-16 02:38 J -10480044.49 -10480044.39 -10480044.27 0.0272 0.0230  
 Earth -33406-04-27 15:21 J -10480002.08 -10480001.86 -10480001.65 0.0272 0.0134  
 Moon -33406-04-27 15:35 J -10480002.04 -10480001.85 -10480001.65 0.0272 0.0147 \*  
 Mercury -33406-05-19 19:26 J -10479979.72 -10479979.69 -10479979.64 0.0272 0.0260  
 Mercury -33406-08-16 08:23 J -10479891.26 -10479891.15 -10479891.03 0.0272 0.0155  
 Mercury -33406-11-12 21:35 J -10479802.74 -10479802.60 -10479802.45 0.0272 0.0048  
 Mercury -33405-02-09 11:02 J -10479714.19 -10479714.04 -10479713.90 0.0273 0.0061  
 Mercury -33405-05-08 00:43 J -10479625.59 -10479625.47 -10479625.36 0.0273 0.0173  
 Mars -33400-05-17 11:16 J -10477790.28 -10477790.03 -10477789.76 0.0280 0.0085  
 Venus -33394-10-10 02:09 J -10475453.48 -10475453.41 -10475453.34 0.0287 0.0269  
 Venus -33393-05-27 03:35 J -10475223.55 -10475223.35 -10475223.15 0.0287 0.0103  
 Venus -33392-01-12 05:02 J -10474993.51 -10474993.29 -10474993.08 0.0287 0.0066  
 Venus -33392-08-30 05:45 J -10474763.38 -10474763.26 -10474763.13 0.0287 0.0233  
 Moon -33392-10-29 09:21 J -10474703.34 -10474703.11 -10474702.88 0.0287 0.0121  
 Earth -33392-10-29 10:47 J -10474703.27 -10474703.05 -10474702.82 0.0287 0.0122 \*  
 Mercury -33392-12-24 19:55 J -10474646.69 -10474646.67 -10474646.64 0.0286 0.0282  
 Mercury -33391-03-23 14:38 J -10474558.03 -10474557.89 -10474557.74 0.0286 0.0137  
 Mercury -33391-06-20 08:52 J -10474469.29 -10474469.13 -10474468.97 0.0286 0.0006  
 Mercury -33391-09-17 02:38 J -10474380.52 -10474380.39 -10474380.25 0.0286 0.0142  
 Mercury -33391-12-14 19:55 J -10474291.70 -10474291.67 -10474291.62 0.0286 0.0276  
 Mars -33386-07-04 14:23 J -10472629.21 -10472628.90 -10472628.58 0.0279 0.0039  
 Venus -33379-11-08 03:21 J -10469945.52 -10469945.36 -10469945.18 0.0272 0.0153  
 Venus -33378-06-25 03:07 J -10469716.57 -10469716.37 -10469716.16 0.0272 0.0020  
 Venus -33377-02-09 03:07 J -10469487.55 -10469487.37 -10469487.18 0.0272 0.0115  
 Moon -33377-04-21 08:38 J -10469415.38 -10469415.14 -10469414.89 0.0272 0.0072  
 Earth -33377-04-21 08:52 J -10469415.36 -10469415.13 -10469414.90 0.0272 0.0085 \*  
 Venus -33377-09-25 03:21 J -10469258.44 -10469258.36 -10469258.27 0.0273 0.0248

Mercury -33376-01-02 09:21 J -10469159.21 -10469159.11 -10469159.01 0.0273 0.0194

Mercury -33376-03-31 22:19 J -10469070.71 -10469070.57 -10469070.43 0.0273 0.0088

Mercury -33376-06-28 11:31 J -10468982.16 -10468982.02 -10468981.87 0.0273 0.0022

Mercury -33376-09-25 01:11 J -10468893.58 -10468893.45 -10468893.32 0.0273 0.0132

Mercury -33376-12-22 14:52 J -10468804.94 -10468804.88 -10468804.81 0.0273 0.0246

Venus -33364-04-21 10:19 J -10464667.18 -10464667.07 -10464666.94 0.0288 0.0242

Venus -33364-12-07 12:14 J -10464437.19 -10464436.99 -10464436.77 0.0288 0.0074

Venus -33363-07-25 14:09 J -10464207.11 -10464206.91 -10464206.71 0.0288 0.0096

Earth -33363-10-23 19:11 J -10464116.92 -10464116.70 -10464116.47 0.0287 0.0122

Moon -33363-10-23 21:07 J -10464116.82 -10464116.62 -10464116.39 0.0287 0.0126 \*

Venus -33362-03-12 15:07 J -10463976.95 -10463976.87 -10463976.78 0.0287 0.0263

Mercury -33362-08-10 15:50 J -10463825.96 -10463825.84 -10463825.70 0.0287 0.0171

Mercury -33362-11-07 10:19 J -10463737.23 -10463737.07 -10463736.90 0.0287 0.0029

Mercury -33361-02-04 04:19 J -10463648.47 -10463648.32 -10463648.17 0.0287 0.0111

Mercury -33361-05-02 21:50 J -10463559.67 -10463559.59 -10463559.51 0.0286 0.0246

Venus -33350-10-04 10:47 J -10459388.11 -10459388.05 -10459388.00 0.0271 0.0260

Venus -33349-05-20 10:04 J -10459159.26 -10459159.08 -10459158.90 0.0271 0.0129

Venus -33348-01-04 09:35 J -10458930.31 -10458930.10 -10458929.89 0.0271 0.0004

Venus -33348-08-21 09:07 J -10458701.29 -10458701.12 -10458700.94 0.0272 0.0137

Venus -33347-04-07 09:07 J -10458472.14 -10458472.12 -10458472.09 0.0272 0.0269

Earth -33347-04-28 17:59 J -10458450.93 -10458450.75 -10458450.57 0.0272 0.0179

Moon -33347-04-28 21:21 J -10458450.77 -10458450.61 -10458450.43 0.0272 0.0195 \*

Mercury -33347-05-22 11:59 J -10458427.09 -10458427.00 -10458426.92 0.0272 0.0217

Mercury -33347-08-19 00:43 J -10458338.60 -10458338.47 -10458338.33 0.0272 0.0113

Mercury -33347-11-15 13:55 J -10458250.06 -10458249.92 -10458249.77 0.0272 0.0010

Mercury -33346-02-12 03:21 J -10458161.49 -10458161.36 -10458161.22 0.0273 0.0106

Mercury -33346-05-11 17:16 J -10458072.87 -10458072.78 -10458072.69 0.0273 0.0218

Venus -33335-11-01 13:26 J -10453881.07 -10453880.94 -10453880.79 0.0287 0.0222

Venus -33334-06-19 15:21 J -10453651.07 -10453650.86 -10453650.65 0.0287 0.0053

Venus -33333-02-04 16:47 J -10453421.00 -10453420.80 -10453420.60 0.0287 0.0115

Venus -33333-09-21 17:31 J -10453190.80 -10453190.77 -10453190.72 0.0287 0.0281  
 Moon -33333-10-30 13:40 J -10453152.12 -10453151.93 -10453151.74 0.0287 0.0179  
 Earth -33333-10-30 17:16 J -10453151.97 -10453151.78 -10453151.58 0.0287 0.0176 \*  
 Mercury -33333-12-27 14:23 J -10453094.00 -10453093.90 -10453093.79 0.0287 0.0223  
 Mercury -33332-03-26 09:07 J -10453005.28 -10453005.12 -10453004.96 0.0286 0.0079  
 Mercury -33332-06-23 03:07 J -10452916.52 -10452916.37 -10452916.21 0.0286 0.0061  
 Mercury -33332-09-19 20:38 J -10452827.75 -10452827.64 -10452827.52 0.0286 0.0198  
 Venus -33320-04-15 10:04 J -10448602.16 -10448602.08 -10448601.98 0.0272 0.0245  
 Venus -33320-11-30 09:35 J -10448373.29 -10448373.10 -10448372.91 0.0272 0.0113  
 Venus -33319-07-17 09:07 J -10448144.33 -10448144.12 -10448143.92 0.0272 0.0020  
 Venus -33318-03-03 08:38 J -10447915.30 -10447915.14 -10447914.96 0.0272 0.0154  
 Moon -33318-04-23 06:43 J -10447864.46 -10447864.22 -10447863.98 0.0272 0.0026  
 Earth -33318-04-23 10:19 J -10447864.30 -10447864.07 -10447863.82 0.0272 0.0042 \*  
 Mercury -33318-10-09 12:28 J -10447695.02 -10447694.98 -10447694.94 0.0272 0.0258  
 Mercury -33317-01-06 01:26 J -10447606.56 -10447606.44 -10447606.32 0.0273 0.0154  
 Mercury -33317-04-03 14:23 J -10447518.04 -10447517.90 -10447517.75 0.0273 0.0047  
 Mercury -33317-07-01 03:50 J -10447429.49 -10447429.34 -10447429.20 0.0273 0.0062  
 Mercury -33317-09-27 17:16 J -10447340.89 -10447340.78 -10447340.66 0.0273 0.0174  
 Mars -33312-10-10 19:40 J -10445501.93 -10445501.68 -10445501.43 0.0280 0.0111  
 Venus -33305-05-13 20:23 J -10443094.80 -10443094.65 -10443094.49 0.0288 0.0196  
 Venus -33305-12-29 22:33 J -10442864.78 -10442864.56 -10442864.35 0.0288 0.0027  
 Venus -33304-08-17 00:28 J -10442634.67 -10442634.48 -10442634.29 0.0288 0.0143  
 Earth -33304-10-24 23:16 J -10442565.77 -10442565.53 -10442565.29 0.0288 0.0072  
 Moon -33304-10-25 02:52 J -10442565.62 -10442565.38 -10442565.14 0.0288 0.0071 \*  
 Mercury -33303-05-16 14:52 J -10442361.94 -10442361.88 -10442361.81 0.0287 0.0263  
 Mercury -33303-08-13 09:50 J -10442273.24 -10442273.09 -10442272.94 0.0287 0.0117  
 Mercury -33303-11-10 04:04 J -10442184.49 -10442184.33 -10442184.17 0.0287 0.0026  
 Mercury -33302-02-06 21:50 J -10442095.71 -10442095.59 -10442095.45 0.0287 0.0164  
 Mars -33298-11-28 23:16 J -10440339.82 -10440339.53 -10440339.23 0.0279 0.0102  
 Venus -33291-10-26 16:19 J -10437815.92 -10437815.82 -10437815.69 0.0271 0.0222

Venus -33290-06-12 15:50 J -10437587.03 -10437586.84 -10437586.64 0.0271 0.0090  
 Venus -33289-01-27 15:21 J -10437358.06 -10437357.86 -10437357.65 0.0271 0.0043  
 Earth -33289-04-17 14:23 J -10437277.01 -10437276.90 -10437276.78 0.0271 0.0237  
 Moon -33289-04-17 17:59 J -10437276.87 -10437276.75 -10437276.60 0.0271 0.0224 \*  
 Venus -33289-09-12 14:38 J -10437129.03 -10437128.89 -10437128.72 0.0271 0.0176  
 Earth -33288-04-29 19:11 J -10436899.83 -10436899.70 -10436899.56 0.0272 0.0223  
 Moon -33288-04-29 20:52 J -10436899.74 -10436899.63 -10436899.50 0.0272 0.0237 \*  
 Mercury -33288-05-25 03:50 J -10436874.44 -10436874.34 -10436874.23 0.0272 0.0177  
 Mercury -33288-08-21 16:47 J -10436785.94 -10436785.80 -10436785.65 0.0272 0.0072  
 Mercury -33288-11-18 06:14 J -10436697.39 -10436697.24 -10436697.10 0.0272 0.0037  
 Mercury -33287-02-14 19:40 J -10436608.80 -10436608.68 -10436608.55 0.0272 0.0148  
 Mercury -33287-05-14 09:21 J -10436520.14 -10436520.11 -10436520.06 0.0273 0.0261  
 Venus -33276-11-24 00:14 J -10432308.66 -10432308.49 -10432308.32 0.0288 0.0174  
 Venus -33275-07-12 01:55 J -10432078.63 -10432078.42 -10432078.20 0.0288 0.0009  
 Venus -33274-02-27 03:35 J -10431848.53 -10431848.35 -10431848.17 0.0287 0.0163  
 Earth -33274-11-01 21:50 J -10431600.73 -10431600.59 -10431600.43 0.0287 0.0228  
 Moon -33274-11-01 21:50 J -10431600.72 -10431600.59 -10431600.45 0.0287 0.0235 \*  
 Mercury -33274-12-31 08:23 J -10431541.28 -10431541.15 -10431541.01 0.0287 0.0168  
 Mercury -33273-03-29 02:52 J -10431452.54 -10431452.38 -10431452.21 0.0287 0.0025  
 Mercury -33273-06-25 20:52 J -10431363.77 -10431363.63 -10431363.48 0.0286 0.0115  
 Mercury -33273-09-22 14:23 J -10431274.97 -10431274.90 -10431274.82 0.0286 0.0250  
 Venus -33261-05-07 15:21 J -10427029.98 -10427029.86 -10427029.71 0.0272 0.0207  
 Venus -33261-12-22 14:52 J -10426801.07 -10426800.88 -10426800.68 0.0272 0.0074  
 Venus -33260-08-08 14:09 J -10426572.11 -10426571.91 -10426571.70 0.0272 0.0059  
 Venus -33259-03-25 13:55 J -10426343.07 -10426342.92 -10426342.78 0.0272 0.0191  
 Moon -33259-04-24 09:35 J -10426313.34 -10426313.10 -10426312.86 0.0272 0.0017  
 Earth -33259-04-24 10:47 J -10426313.29 -10426313.05 -10426312.80 0.0272 0.0006 \*  
 Mercury -33259-10-12 04:19 J -10426142.40 -10426142.32 -10426142.24 0.0272 0.0220  
 Mercury -33258-01-08 17:02 J -10426053.92 -10426053.79 -10426053.65 0.0272 0.0115  
 Mercury -33258-04-07 06:14 J -10425965.38 -10425965.24 -10425965.09 0.0273 0.0010



Mercury -33258-07-04 19:40 J -10425876.81 -10425876.68 -10425876.54 0.0273 0.0103  
 Mercury -33258-10-01 09:21 J -10425788.20 -10425788.11 -10425788.02 0.0273 0.0215  
 Venus -33246-06-06 04:47 J -10421522.48 -10421522.30 -10421522.11 0.0288 0.0152  
 Venus -33245-01-22 07:11 J -10421292.42 -10421292.20 -10421291.98 0.0288 0.0018  
 Venus -33245-09-08 09:07 J -10421062.28 -10421062.12 -10421061.95 0.0288 0.0187  
 Moon -33245-10-26 00:28 J -10421014.74 -10421014.48 -10421014.23 0.0288 0.0020  
 Earth -33245-10-26 00:57 J -10421014.71 -10421014.46 -10421014.22 0.0288 0.0025 \*  
 Mercury -33244-05-19 08:23 J -10420809.26 -10420809.15 -10420809.04 0.0287 0.0212  
 Mercury -33244-08-16 03:07 J -10420720.53 -10420720.37 -10420720.21 0.0287 0.0067  
 Mercury -33244-11-12 21:07 J -10420631.77 -10420631.62 -10420631.46 0.0287 0.0075  
 Mercury -33243-02-09 14:52 J -10420542.98 -10420542.88 -10420542.77 0.0287 0.0212  
 Venus -33232-11-17 22:19 J -10416243.72 -10416243.57 -10416243.42 0.0271 0.0183  
 Venus -33231-07-04 21:21 J -10416014.81 -10416014.61 -10416014.41 0.0271 0.0051  
 Venus -33230-02-18 20:38 J -10415785.83 -10415785.64 -10415785.44 0.0271 0.0081  
 Earth -33230-04-19 15:21 J -10415726.02 -10415725.86 -10415725.68 0.0271 0.0195  
 Moon -33230-04-19 17:02 J -10415725.98 -10415725.79 -10415725.60 0.0271 0.0180 \*  
 Venus -33230-10-05 20:09 J -10415556.78 -10415556.66 -10415556.53 0.0271 0.0212  
 Mercury -33229-02-29 06:57 J -10415410.27 -10415410.21 -10415410.14 0.0271 0.0241  
 Earth -33229-04-30 19:55 J -10415348.71 -10415348.67 -10415348.61 0.0272 0.0266  
 Mercury -33229-05-27 19:55 J -10415321.80 -10415321.67 -10415321.55 0.0272 0.0137  
 Mercury -33229-08-24 08:52 J -10415233.27 -10415233.13 -10415232.98 0.0272 0.0031  
 Mercury -33229-11-20 22:19 J -10415144.72 -10415144.57 -10415144.43 0.0272 0.0078  
 Mercury -33228-02-17 11:45 J -10415056.11 -10415056.01 -10415055.90 0.0272 0.0189  
 Mars -33223-03-06 05:02 J -10413213.52 -10413213.29 -10413213.04 0.0280 0.0139  
 Venus -33217-12-16 09:07 J -10410736.31 -10410736.12 -10410735.92 0.0288 0.0129  
 Venus -33216-08-03 11:16 J -10410506.25 -10410506.03 -10410505.82 0.0288 0.0040  
 Earth -33216-10-19 23:02 J -10410428.56 -10410428.54 -10410428.50 0.0288 0.0285  
 Moon -33216-10-19 23:45 J -10410428.54 -10410428.51 -10410428.46 0.0288 0.0283 \*  
 Venus -33215-03-21 12:28 J -10410276.12 -10410275.98 -10410275.82 0.0288 0.0208  
 Mercury -33215-10-06 06:57 J -10410077.27 -10410077.21 -10410077.14 0.0287 0.0263

Earth -33215-11-03 00:14 J -10410049.55 -10410049.49 -10410049.42 0.0287 0.0276  
 Moon -33215-11-03 03:50 J -10410049.34 -10410049.34 -10410049.32 0.0287 0.0287  
 Mercury -33214-01-03 01:55 J -10409988.57 -10409988.42 -10409988.27 0.0287 0.0117  
 Mercury -33214-04-01 20:09 J -10409899.82 -10409899.66 -10409899.49 0.0287 0.0027  
 Mercury -33214-06-29 13:55 J -10409811.04 -10409810.92 -10409810.78 0.0287 0.0165  
 Mars -33209-04-22 19:55 J -10408051.95 -10408051.67 -10408051.39 0.0279 0.0129  
 Venus -33202-05-30 20:52 J -10405457.79 -10405457.63 -10405457.46 0.0271 0.0168  
 Venus -33201-01-14 20:09 J -10405228.86 -10405228.66 -10405228.45 0.0271 0.0036  
 Venus -33201-08-30 19:11 J -10404999.89 -10404999.70 -10404999.50 0.0271 0.0096  
 Venus -33200-04-16 18:28 J -10404770.83 -10404770.73 -10404770.61 0.0272 0.0228  
 Earth -33200-04-25 11:02 J -10404762.28 -10404762.04 -10404761.80 0.0272 0.0044  
 Moon -33200-04-25 14:09 J -10404762.14 -10404761.91 -10404761.67 0.0272 0.0059 \*  
 Mercury -33200-10-14 20:09 J -10404589.77 -10404589.66 -10404589.56 0.0272 0.0181  
 Mercury -33199-01-11 08:52 J -10404501.27 -10404501.13 -10404500.99 0.0272 0.0076  
 Mercury -33199-04-09 22:04 J -10404412.72 -10404412.58 -10404412.43 0.0272 0.0033  
 Mercury -33199-07-07 11:45 J -10404324.14 -10404324.01 -10404323.89 0.0273 0.0143  
 Mercury -33199-10-04 01:11 J -10404235.49 -10404235.45 -10404235.39 0.0273 0.0256  
 Venus -33188-11-10 10:19 J -10400180.11 -10400180.07 -10400179.99 0.0288 0.0276  
 Venus -33187-06-28 12:57 J -10399950.16 -10399949.96 -10399949.75 0.0288 0.0108  
 Venus -33186-02-13 15:21 J -10399720.07 -10399719.86 -10399719.65 0.0288 0.0061  
 Venus -33186-10-01 17:02 J -10399489.91 -10399489.79 -10399489.65 0.0288 0.0230  
 Moon -33186-10-27 21:50 J -10399463.84 -10399463.59 -10399463.34 0.0288 0.0030  
 Earth -33186-10-28 01:26 J -10399463.69 -10399463.44 -10399463.20 0.0288 0.0021 \*  
 Mercury -33185-05-22 01:26 J -10399256.57 -10399256.44 -10399256.31 0.0288 0.0163  
 Mercury -33185-08-18 19:55 J -10399167.83 -10399167.67 -10399167.50 0.0287 0.0020  
 Mercury -33185-11-15 13:55 J -10399079.06 -10399078.92 -10399078.77 0.0287 0.0123  
 Mercury -33184-02-12 07:40 J -10398990.24 -10398990.18 -10398990.11 0.0287 0.0259  
 Venus -33173-12-10 03:21 J -10394671.53 -10394671.36 -10394671.18 0.0271 0.0145  
 Venus -33172-07-27 02:38 J -10394442.60 -10394442.39 -10394442.19 0.0271 0.0014  
 Venus -33171-03-13 01:40 J -10394213.61 -10394213.43 -10394213.24 0.0271 0.0118

Moon -33171-04-20 13:26 J -10394175.16 -10394174.94 -10394174.73 0.0271 0.0136  
 Earth -33171-04-20 16:04 J -10394175.02 -10394174.83 -10394174.62 0.0271 0.0151 \*  
 Venus -33171-10-28 00:57 J -10393984.53 -10393984.46 -10393984.37 0.0271 0.0249  
 Mercury -33170-03-03 22:47 J -10393857.64 -10393857.55 -10393857.45 0.0271 0.0203  
 Mercury -33170-05-31 11:45 J -10393769.15 -10393769.01 -10393768.87 0.0272 0.0098  
 Mercury -33170-08-28 00:57 J -10393680.61 -10393680.46 -10393680.32 0.0272 0.0012  
 Mercury -33170-11-24 14:09 J -10393592.04 -10393591.91 -10393591.77 0.0272 0.0119  
 Mercury -33169-02-21 03:50 J -10393503.41 -10393503.34 -10393503.26 0.0272 0.0231  
 Mars -33165-06-12 13:55 J -10391930.03 -10391929.92 -10391929.81 0.0278 0.0254  
 Venus -33158-05-23 15:35 J -10389393.94 -10389393.85 -10389393.74 0.0288 0.0252  
 Venus -33157-01-08 17:45 J -10389163.97 -10389163.76 -10389163.55 0.0288 0.0085  
 Venus -33157-08-25 19:40 J -10388933.88 -10388933.68 -10388933.47 0.0288 0.0084  
 Earth -33157-10-21 00:14 J -10388877.62 -10388877.49 -10388877.35 0.0288 0.0239  
 Moon -33157-10-21 03:50 J -10388877.47 -10388877.34 -10388877.19 0.0288 0.0235 \*  
 Venus -33156-04-12 21:07 J -10388703.71 -10388703.62 -10388703.50 0.0288 0.0251  
 Mercury -33156-10-09 00:14 J -10388524.59 -10388524.49 -10388524.38 0.0287 0.0213  
 Mercury -33155-01-05 18:57 J -10388435.87 -10388435.71 -10388435.55 0.0287 0.0068  
 Mercury -33155-04-04 13:11 J -10388347.10 -10388346.95 -10388346.79 0.0287 0.0074  
 Mercury -33155-07-02 06:57 J -10388258.31 -10388258.21 -10388258.10 0.0287 0.0212  
 Venus -33144-11-05 03:21 J -10384114.42 -10384114.36 -10384114.31 0.0271 0.0260  
 Venus -33143-06-22 02:09 J -10383885.58 -10383885.41 -10383885.22 0.0271 0.0130  
 Venus -33142-02-06 01:26 J -10383656.64 -10383656.44 -10383656.23 0.0271 0.0003  
 Venus -33142-09-23 00:28 J -10383427.66 -10383427.48 -10383427.30 0.0271 0.0134  
 Earth -33141-04-26 11:31 J -10383211.24 -10383211.02 -10383210.78 0.0272 0.0088  
 Moon -33141-04-26 14:09 J -10383211.14 -10383210.91 -10383210.67 0.0272 0.0101 \*  
 Venus -33141-05-08 23:45 J -10383198.55 -10383198.51 -10383198.46 0.0272 0.0264  
 Mercury -33141-07-20 23:02 J -10383125.59 -10383125.54 -10383125.47 0.0272 0.0246  
 Mercury -33141-10-17 11:59 J -10383037.12 -10383037.00 -10383036.88 0.0272 0.0142  
 Mercury -33140-01-14 00:57 J -10382948.61 -10382948.46 -10382948.31 0.0272 0.0035  
 Mercury -33140-04-12 14:09 J -10382860.05 -10382859.91 -10382859.77 0.0272 0.0073

Mercury -33140-07-10 03:35 J -10382771.45 -10382771.35 -10382771.24 0.0272 0.0185  
 Mars -33135-07-30 00:28 J -10380925.70 -10380925.48 -10380925.24 0.0280 0.0148  
 Venus -33129-12-02 17:45 J -10378607.87 -10378607.76 -10378607.62 0.0288 0.0234  
 Venus -33128-07-20 20:23 J -10378377.86 -10378377.65 -10378377.43 0.0288 0.0066  
 Venus -33127-03-07 22:47 J -10378147.75 -10378147.55 -10378147.34 0.0288 0.0104  
 Venus -33127-10-24 00:43 J -10377917.54 -10377917.47 -10377917.39 0.0288 0.0270  
 Moon -33127-10-28 23:02 J -10377912.77 -10377912.54 -10377912.31 0.0288 0.0075  
 Earth -33127-10-29 00:43 J -10377912.71 -10377912.47 -10377912.23 0.0288 0.0066 \*  
 Mercury -33126-02-25 23:16 J -10377792.60 -10377792.53 -10377792.47 0.0288 0.0264  
 Mercury -33126-05-25 18:14 J -10377703.89 -10377703.74 -10377703.59 0.0288 0.0117  
 Mercury -33126-08-22 12:28 J -10377615.14 -10377614.98 -10377614.81 0.0288 0.0029  
 Mercury -33126-11-19 06:28 J -10377526.35 -10377526.23 -10377526.09 0.0287 0.0167  
 Mars -33121-09-16 09:50 J -10375763.33 -10375763.09 -10375762.83 0.0280 0.0174  
 Venus -33114-05-18 09:21 J -10373328.19 -10373328.11 -10373328.00 0.0271 0.0238  
 Venus -33113-01-02 08:52 J -10373099.32 -10373099.13 -10373098.94 0.0271 0.0107  
 Venus -33113-08-18 07:55 J -10372870.38 -10372870.17 -10372869.96 0.0271 0.0024  
 Venus -33112-04-04 06:43 J -10372641.38 -10372641.22 -10372641.04 0.0271 0.0156  
 Moon -33112-04-21 14:23 J -10372624.12 -10372623.90 -10372623.67 0.0271 0.0093  
 Earth -33112-04-21 17:16 J -10372624.00 -10372623.78 -10372623.56 0.0271 0.0107 \*  
 Mercury -33112-12-08 02:09 J -10372393.43 -10372393.41 -10372393.38 0.0271 0.0266  
 Mercury -33111-03-06 14:52 J -10372305.00 -10372304.88 -10372304.77 0.0271 0.0162  
 Mercury -33111-06-03 03:50 J -10372216.49 -10372216.34 -10372216.20 0.0271 0.0057  
 Mercury -33111-08-30 16:47 J -10372127.94 -10372127.80 -10372127.65 0.0272 0.0052  
 Mercury -33111-11-27 06:14 J -10372039.35 -10372039.24 -10372039.11 0.0272 0.0162  
 Venus -33099-06-15 00:28 J -10367821.62 -10367821.48 -10367821.33 0.0288 0.0208  
 Venus -33098-01-31 02:38 J -10367591.60 -10367591.39 -10367591.17 0.0288 0.0040  
 Venus -33098-09-18 04:33 J -10367361.50 -10367361.31 -10367361.11 0.0288 0.0129  
 Earth -33098-10-23 01:40 J -10367326.60 -10367326.43 -10367326.23 0.0288 0.0192  
 Moon -33098-10-23 03:35 J -10367326.55 -10367326.35 -10367326.16 0.0288 0.0184 \*  
 Mercury -33097-10-11 17:45 J -10366971.90 -10366971.76 -10366971.63 0.0288 0.0163

Mercury -33096-01-08 12:14 J -10366883.15 -10366882.99 -10366882.83 0.0287 0.0018

Mercury -33096-04-07 06:14 J -10366794.38 -10366794.24 -10366794.09 0.0287 0.0123

Mercury -33096-07-04 23:59 J -10366705.56 -10366705.50 -10366705.43 0.0287 0.0260

Venus -33085-11-27 08:52 J -10362542.24 -10362542.13 -10362542.00 0.0271 0.0222

Venus -33084-07-14 07:55 J -10362313.36 -10362313.17 -10362312.97 0.0271 0.0092

Venus -33083-02-28 06:57 J -10362084.41 -10362084.21 -10362084.00 0.0271 0.0040

Venus -33083-10-15 05:45 J -10361855.41 -10361855.26 -10361855.09 0.0271 0.0172

Moon -33082-04-28 11:02 J -10361660.25 -10361660.04 -10361659.82 0.0271 0.0142

Earth -33082-04-28 12:57 J -10361660.17 -10361659.96 -10361659.74 0.0271 0.0133 \*

Mercury -33082-07-24 15:07 J -10361572.96 -10361572.87 -10361572.77 0.0272 0.0205

Mercury -33082-10-21 03:50 J -10361484.47 -10361484.34 -10361484.20 0.0272 0.0101

Mercury -33081-01-17 17:02 J -10361395.94 -10361395.79 -10361395.64 0.0272 0.0007

Mercury -33081-04-15 06:14 J -10361307.37 -10361307.24 -10361307.10 0.0272 0.0116

Mercury -33081-07-12 19:55 J -10361218.75 -10361218.67 -10361218.59 0.0272 0.0227

Mars -33077-11-05 10:04 J -10359642.20 -10359642.08 -10359641.94 0.0278 0.0245

Venus -33070-12-26 01:55 J -10357035.57 -10357035.42 -10357035.25 0.0288 0.0191

Venus -33069-08-12 04:33 J -10356805.52 -10356805.31 -10356805.09 0.0288 0.0023

Venus -33068-03-30 06:43 J -10356575.40 -10356575.22 -10356575.03 0.0288 0.0147

Earth -33068-10-30 00:43 J -10356361.69 -10356361.47 -10356361.23 0.0288 0.0112

Moon -33068-10-30 03:21 J -10356361.57 -10356361.36 -10356361.14 0.0288 0.0124 \*

Mercury -33067-02-28 16:04 J -10356239.93 -10356239.83 -10356239.72 0.0288 0.0216

Mercury -33067-05-28 11:02 J -10356151.20 -10356151.04 -10356150.88 0.0288 0.0069

Mercury -33067-08-25 05:16 J -10356062.43 -10356062.28 -10356062.12 0.0288 0.0074

Mercury -33067-11-21 23:02 J -10355973.64 -10355973.54 -10355973.42 0.0287 0.0214

Venus -33055-06-09 15:07 J -10351756.00 -10351755.87 -10351755.72 0.0271 0.0199

Venus -33054-01-24 14:38 J -10351527.09 -10351526.89 -10351526.69 0.0271 0.0069

Venus -33054-09-10 13:40 J -10351298.13 -10351297.93 -10351297.73 0.0271 0.0062

Earth -33053-04-22 18:57 J -10351072.95 -10351072.71 -10351072.47 0.0271 0.0062

Moon -33053-04-22 19:55 J -10351072.90 -10351072.67 -10351072.43 0.0271 0.0049 \*

Venus -33053-04-26 12:43 J -10351069.11 -10351068.97 -10351068.82 0.0271 0.0193

Mercury -33053-12-10 18:14 J -10350840.82 -10350840.74 -10350840.66 0.0271 0.0225

Mercury -33052-03-09 06:57 J -10350752.34 -10350752.21 -10350752.08 0.0271 0.0121

Mercury -33052-06-05 19:55 J -10350663.81 -10350663.67 -10350663.52 0.0271 0.0015

Mercury -33052-09-02 09:07 J -10350575.25 -10350575.12 -10350574.98 0.0272 0.0095

Mercury -33052-11-29 22:47 J -10350486.65 -10350486.55 -10350486.45 0.0272 0.0206

Mars -33047-12-23 19:11 J -10348636.89 -10348636.70 -10348636.49 0.0279 0.0190

Venus -33040-07-07 09:50 J -10346249.27 -10346249.09 -10346248.91 0.0288 0.0163

Venus -33039-02-22 11:59 J -10346019.22 -10346019.00 -10346018.78 0.0288 0.0005

Venus -33039-10-10 13:40 J -10345789.09 -10345788.93 -10345788.75 0.0288 0.0173

Moon -33039-10-24 01:11 J -10345775.68 -10345775.45 -10345775.23 0.0288 0.0131

Earth -33039-10-24 04:19 J -10345775.53 -10345775.32 -10345775.11 0.0288 0.0143 \*

Mercury -33038-07-18 16:04 J -10345507.90 -10345507.83 -10345507.76 0.0288 0.0259

Mercury -33038-10-15 11:02 J -10345419.19 -10345419.04 -10345418.89 0.0288 0.0112

Mercury -33037-01-12 05:31 J -10345330.43 -10345330.27 -10345330.11 0.0287 0.0032

Mercury -33037-04-09 23:31 J -10345241.65 -10345241.52 -10345241.39 0.0287 0.0172

Mars -33032-02-09 10:33 J -10343475.27 -10343475.06 -10343474.85 0.0280 0.0209

Venus -33026-12-20 15:21 J -10340970.00 -10340969.86 -10340969.70 0.0271 0.0183

Venus -33025-08-05 14:23 J -10340741.10 -10340740.90 -10340740.69 0.0271 0.0053

Venus -33024-03-22 13:11 J -10340512.14 -10340511.95 -10340511.75 0.0271 0.0079

Moon -33024-04-17 11:59 J -10340486.05 -10340486.00 -10340485.93 0.0271 0.0262

Venus -33024-11-06 11:59 J -10340283.11 -10340283.00 -10340282.85 0.0271 0.0210

Moon -33023-04-29 12:14 J -10340109.15 -10340108.99 -10340108.81 0.0271 0.0190

Earth -33023-04-29 15:50 J -10340109.02 -10340108.84 -10340108.66 0.0271 0.0180 \*

Mercury -33023-04-29 18:43 J -10340108.74 -10340108.72 -10340108.69 0.0271 0.0265 \*

Mercury -33023-07-27 07:26 J -10340020.30 -10340020.19 -10340020.07 0.0271 0.0162

Mercury -33023-10-23 20:23 J -10339931.79 -10339931.65 -10339931.51 0.0272 0.0057

Mercury -33022-01-20 09:35 J -10339843.25 -10339843.10 -10339842.96 0.0272 0.0052

Mercury -33022-04-18 22:47 J -10339754.67 -10339754.55 -10339754.43 0.0272 0.0161

Venus -33010-01-17 11:16 J -10335463.21 -10335463.03 -10335462.84 0.0288 0.0146

Venus -33010-09-04 13:40 J -10335233.14 -10335232.93 -10335232.71 0.0288 0.0022

Venus -33009-04-21 15:50 J -10335003.00 -10335002.84 -10335002.67 0.0288 0.0190

Earth -33009-10-31 02:38 J -10334810.59 -10334810.39 -10334810.18 0.0288 0.0161

Moon -33009-10-31 06:14 J -10334810.44 -10334810.24 -10334810.04 0.0288 0.0174 \*

Mercury -33008-03-03 09:21 J -10334687.24 -10334687.11 -10334686.97 0.0288 0.0165

Mercury -33008-05-31 04:19 J -10334598.49 -10334598.32 -10334598.16 0.0288 0.0020

Mercury -33008-08-27 22:19 J -10334509.71 -10334509.57 -10334509.42 0.0288 0.0124

Mercury -33008-11-24 16:04 J -10334420.89 -10334420.83 -10334420.76 0.0287 0.0262

# 33RD MILLENNIUM BCE

This is a list of transits visible from Saturn in the 33rd millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-32996-07-01 21:35 J	-10330183.76	-10330183.60	-10330183.43	0.0271	0.0160		
Venus	-32995-02-15 20:52 J	-10329954.83	-10329954.63	-10329954.42	0.0271	0.0030		
Venus	-32995-10-02 20:09 J	-10329725.85	-10329725.66	-10329725.47	0.0271	0.0101		
Earth	-32994-04-24 21:50 J	-10329521.83	-10329521.59	-10329521.34	0.0271	0.0015		
Moon	-32994-04-25 01:40 J	-10329521.68	-10329521.43	-10329521.19	0.0271	0.0001	*	
Venus	-32994-05-19 19:11 J	-10329496.80	-10329496.70	-10329496.59	0.0271	0.0231		
Mercury	-32994-12-14 10:33 J	-10329288.16	-10329288.06	-10329287.95	0.0271	0.0182		
Mercury	-32993-03-11 23:31 J	-10329199.66	-10329199.52	-10329199.38	0.0271	0.0077		
Mercury	-32993-06-08 12:28 J	-10329111.12	-10329110.98	-10329110.83	0.0271	0.0031		
Mercury	-32993-09-05 01:55 J	-10329022.55	-10329022.42	-10329022.30	0.0272	0.0141		
Mercury	-32993-12-02 15:21 J	-10328933.91	-10328933.86	-10328933.80	0.0272	0.0253		

Mars -32988-04-01 11:02 J -10327353.23 -10327353.04 -10327352.83 0.0278 0.0192  
 Venus -32982-12-12 18:28 J -10324906.77 -10324906.73 -10324906.68 0.0288 0.0281  
 Venus -32981-07-29 20:38 J -10324676.84 -10324676.64 -10324676.44 0.0288 0.0116  
 Venus -32980-03-16 22:33 J -10324446.77 -10324446.56 -10324446.34 0.0288 0.0052  
 Moon -32980-10-25 05:45 J -10324224.48 -10324224.26 -10324224.02 0.0288 0.0078  
 Earth -32980-10-25 08:38 J -10324224.37 -10324224.14 -10324223.90 0.0288 0.0091 \*  
 Venus -32980-11-02 00:28 J -10324216.62 -10324216.48 -10324216.34 0.0288 0.0219  
 Mercury -32979-07-21 10:04 J -10323955.20 -10323955.08 -10323954.96 0.0288 0.0203  
 Mercury -32979-10-18 04:47 J -10323866.46 -10323866.30 -10323866.14 0.0288 0.0057  
 Mercury -32978-01-14 23:16 J -10323777.69 -10323777.53 -10323777.38 0.0287 0.0087  
 Mercury -32978-04-13 17:02 J -10323688.89 -10323688.79 -10323688.69 0.0287 0.0225  
 Mars -32974-05-14 12:57 J -10322197.02 -10322196.96 -10322196.87 0.0281 0.0272  
 Venus -32966-01-11 22:33 J -10319397.73 -10319397.56 -10319397.38 0.0271 0.0143  
 Venus -32966-08-28 21:35 J -10319168.80 -10319168.60 -10319168.39 0.0271 0.0014  
 Venus -32965-04-13 20:38 J -10318939.83 -10318939.64 -10318939.46 0.0271 0.0118  
 Moon -32965-04-18 13:40 J -10318935.07 -10318934.93 -10318934.78 0.0271 0.0213  
 Earth -32965-04-18 17:16 J -10318934.89 -10318934.78 -10318934.64 0.0271 0.0229 \*  
 Venus -32965-11-28 19:40 J -10318710.76 -10318710.68 -10318710.60 0.0271 0.0247  
 Moon -32964-04-30 19:40 J -10318557.77 -10318557.68 -10318557.56 0.0271 0.0239  
 Earth -32964-04-30 20:09 J -10318557.77 -10318557.66 -10318557.52 0.0271 0.0231 \*  
 Mercury -32964-05-02 11:16 J -10318556.10 -10318556.03 -10318555.94 0.0271 0.0221  
 Mercury -32964-07-29 23:59 J -10318467.62 -10318467.50 -10318467.36 0.0271 0.0117  
 Mercury -32964-10-26 13:11 J -10318379.10 -10318378.95 -10318378.81 0.0272 0.0010  
 Mercury -32963-01-23 02:23 J -10318290.54 -10318290.40 -10318290.26 0.0272 0.0099  
 Mercury -32963-04-21 15:50 J -10318201.93 -10318201.84 -10318201.75 0.0272 0.0210  
 Mars -32958-05-18 23:31 J -10316348.70 -10316348.52 -10316348.34 0.0279 0.0210  
 Venus -32952-06-23 19:55 J -10314120.74 -10314120.67 -10314120.57 0.0288 0.0265  
 Venus -32951-02-08 22:19 J -10313890.78 -10313890.57 -10313890.37 0.0288 0.0099  
 Venus -32951-09-27 00:28 J -10313660.69 -10313660.48 -10313660.27 0.0288 0.0069  
 Venus -32950-05-15 02:23 J -10313430.52 -10313430.40 -10313430.27 0.0288 0.0235



Moon -32950-11-02 05:16 J -10313259.42 -10313259.28 -10313259.11 0.0288 0.0229  
 Earth -32950-11-02 06:43 J -10313259.38 -10313259.22 -10313259.05 0.0288 0.0213 \*  
 Mercury -32950-12-08 08:09 J -10313223.23 -10313223.16 -10313223.08 0.0288 0.0258  
 Mercury -32949-03-06 03:21 J -10313134.51 -10313134.36 -10313134.21 0.0288 0.0110  
 Mercury -32949-06-02 21:50 J -10313045.75 -10313045.59 -10313045.43 0.0288 0.0035  
 Mercury -32949-08-30 15:50 J -10312956.96 -10312956.84 -10312956.71 0.0287 0.0176  
 Mars -32944-07-05 21:35 J -10311186.71 -10311186.60 -10311186.45 0.0281 0.0255  
 Venus -32938-12-08 05:31 J -10308840.35 -10308840.27 -10308840.19 0.0272 0.0249  
 Venus -32937-07-24 04:47 J -10308611.48 -10308611.30 -10308611.11 0.0271 0.0120  
 Venus -32936-03-10 04:04 J -10308382.53 -10308382.33 -10308382.12 0.0271 0.0011  
 Venus -32936-10-25 03:07 J -10308153.54 -10308153.37 -10308153.19 0.0271 0.0142  
 Earth -32935-04-26 02:23 J -10307970.64 -10307970.40 -10307970.15 0.0271 0.0036  
 Moon -32935-04-26 03:21 J -10307970.60 -10307970.36 -10307970.11 0.0271 0.0048 \*  
 Venus -32935-06-11 02:38 J -10307924.40 -10307924.39 -10307924.37 0.0271 0.0270  
 Mercury -32935-09-19 14:38 J -10307823.96 -10307823.89 -10307823.83 0.0271 0.0240  
 Mercury -32935-12-17 03:07 J -10307735.49 -10307735.37 -10307735.24 0.0271 0.0136  
 Mercury -32934-03-15 16:04 J -10307646.97 -10307646.83 -10307646.68 0.0271 0.0031  
 Mercury -32934-06-12 05:16 J -10307558.42 -10307558.28 -10307558.13 0.0272 0.0079  
 Mercury -32934-09-08 18:43 J -10307469.82 -10307469.72 -10307469.61 0.0272 0.0190  
 Venus -32922-01-04 06:43 J -10303334.35 -10303334.22 -10303334.09 0.0288 0.0233  
 Venus -32922-08-22 08:38 J -10303104.35 -10303104.14 -10303103.92 0.0288 0.0068  
 Venus -32921-04-08 10:47 J -10302874.25 -10302874.05 -10302873.85 0.0288 0.0100  
 Earth -32921-10-26 15:21 J -10302673.10 -10302672.86 -10302672.61 0.0288 0.0035  
 Moon -32921-10-26 17:02 J -10302673.02 -10302672.79 -10302672.55 0.0288 0.0020 \*  
 Venus -32921-11-24 12:43 J -10302644.05 -10302643.97 -10302643.89 0.0288 0.0266  
 Mercury -32920-07-24 04:33 J -10302402.45 -10302402.31 -10302402.17 0.0288 0.0143  
 Mercury -32920-10-20 23:16 J -10302313.69 -10302313.53 -10302313.37 0.0288 0.0004  
 Mercury -32919-01-17 17:16 J -10302224.91 -10302224.78 -10302224.64 0.0288 0.0144  
 Mercury -32919-04-16 11:02 J -10302136.06 -10302136.04 -10302136.01 0.0287 0.0282  
 Venus -32908-06-19 07:40 J -10298054.28 -10298054.18 -10298054.07 0.0271 0.0231

Venus -32907-02-03 06:57 J -10297825.40 -10297825.21 -10297825.01 0.0271 0.0101  
 Venus -32907-09-20 05:59 J -10297596.46 -10297596.25 -10297596.04 0.0271 0.0029  
 Moon -32906-04-20 23:02 J -10297383.73 -10297383.54 -10297383.36 0.0271 0.0163  
 Earth -32906-04-20 23:16 J -10297383.70 -10297383.53 -10297383.33 0.0271 0.0177 \*  
 Venus -32906-05-07 04:47 J -10297367.46 -10297367.30 -10297367.13 0.0271 0.0159  
 Mercury -32905-05-05 04:19 J -10297003.43 -10297003.32 -10297003.20 0.0271 0.0172  
 Mercury -32905-08-01 17:16 J -10296914.92 -10296914.78 -10296914.64 0.0271 0.0067  
 Mercury -32905-10-29 06:14 J -10296826.38 -10296826.24 -10296826.09 0.0272 0.0041  
 Mercury -32904-01-25 19:26 J -10296737.81 -10296737.69 -10296737.56 0.0272 0.0151  
 Mercury -32904-04-24 09:07 J -10296649.15 -10296649.12 -10296649.08 0.0272 0.0263  
 Mars -32900-08-25 20:52 J -10295064.84 -10295064.63 -10295064.40 0.0278 0.0165  
 Venus -32893-07-16 08:52 J -10292548.27 -10292548.13 -10292547.98 0.0288 0.0216  
 Venus -32892-03-03 11:02 J -10292318.25 -10292318.04 -10292317.82 0.0288 0.0050  
 Venus -32892-10-19 12:57 J -10292088.15 -10292087.96 -10292087.75 0.0288 0.0118  
 Moon -32892-10-20 08:23 J -10292087.18 -10292087.15 -10292087.10 0.0288 0.0283  
 Venus -32891-06-06 14:52 J -10291857.91 -10291857.88 -10291857.83 0.0288 0.0282  
 Moon -32891-11-03 10:04 J -10291708.08 -10291708.08 -10291708.07 0.0288 0.0288  
 Earth -32891-11-03 13:40 J -10291707.99 -10291707.93 -10291707.83 0.0288 0.0271  
 Mercury -32891-12-11 02:52 J -10291670.49 -10291670.38 -10291670.25 0.0288 0.0196  
 Mercury -32890-03-09 21:50 J -10291581.75 -10291581.59 -10291581.43 0.0288 0.0049  
 Mercury -32890-06-06 16:04 J -10291492.98 -10291492.83 -10291492.67 0.0287 0.0095  
 Mercury -32890-09-03 10:04 J -10291404.17 -10291404.08 -10291403.99 0.0287 0.0233  
 Mars -32886-10-08 01:26 J -10289908.62 -10289908.44 -10289908.24 0.0282 0.0226  
 Venus -32879-12-30 13:26 J -10287268.07 -10287267.94 -10287267.80 0.0272 0.0208  
 Venus -32878-08-16 12:57 J -10287039.16 -10287038.96 -10287038.76 0.0271 0.0078  
 Venus -32877-04-01 12:14 J -10286810.20 -10286809.99 -10286809.79 0.0271 0.0053  
 Venus -32877-11-16 11:16 J -10286581.18 -10286581.03 -10286580.87 0.0271 0.0182  
 Moon -32876-04-27 05:02 J -10286419.52 -10286419.29 -10286419.05 0.0271 0.0098  
 Earth -32876-04-27 08:38 J -10286419.37 -10286419.14 -10286418.91 0.0271 0.0088 \*  
 Mercury -32876-09-22 07:26 J -10286271.29 -10286271.19 -10286271.09 0.0271 0.0192

Mercury -32876-12-19 20:09 J -10286182.79 -10286182.66 -10286182.52 0.0271 0.0088

Mercury -32875-03-18 09:21 J -10286094.26 -10286094.11 -10286093.96 0.0272 0.0020

Mercury -32875-06-14 22:33 J -10286005.69 -10286005.56 -10286005.43 0.0272 0.0130

Mercury -32875-09-11 12:14 J -10285917.06 -10285916.99 -10285916.93 0.0272 0.0242

Venus -32863-01-26 20:38 J -10281761.80 -10281761.64 -10281761.46 0.0288 0.0182

Venus -32863-09-13 22:47 J -10281531.77 -10281531.55 -10281531.33 0.0288 0.0016

Venus -32862-05-02 00:43 J -10281301.65 -10281301.47 -10281301.28 0.0288 0.0151

Earth -32862-10-29 00:57 J -10281121.71 -10281121.46 -10281121.22 0.0288 0.0027

Moon -32862-10-29 04:33 J -10281121.55 -10281121.31 -10281121.06 0.0288 0.0043 \*

Mercury -32861-04-29 04:47 J -10280938.40 -10280938.30 -10280938.20 0.0288 0.0226

Mercury -32861-07-26 23:45 J -10280849.67 -10280849.51 -10280849.35 0.0288 0.0079

Mercury -32861-10-23 18:14 J -10280760.90 -10280760.74 -10280760.58 0.0288 0.0066

Mercury -32860-01-20 11:59 J -10280672.10 -10280672.00 -10280671.88 0.0287 0.0206

Jupiter -32852-01-23 10:47 J -10277747.47 -10277747.05 -10277746.62 0.0275 0.0068

Venus -32849-07-11 16:33 J -10276481.95 -10276481.81 -10276481.65 0.0271 0.0189

Venus -32848-02-25 16:04 J -10276253.03 -10276252.83 -10276252.63 0.0271 0.0059

Venus -32848-10-12 15:07 J -10276024.07 -10276023.87 -10276023.67 0.0271 0.0072

Earth -32847-04-22 07:11 J -10275832.41 -10275832.20 -10275831.98 0.0271 0.0122

Moon -32847-04-22 10:33 J -10275832.28 -10275832.06 -10275831.84 0.0271 0.0110 \*

Venus -32847-05-29 13:55 J -10275795.05 -10275794.92 -10275794.77 0.0271 0.0201

Mercury -32846-02-09 09:07 J -10275539.20 -10275539.12 -10275539.04 0.0271 0.0225

Mercury -32846-05-08 21:50 J -10275450.72 -10275450.59 -10275450.46 0.0271 0.0121

Mercury -32846-08-05 10:47 J -10275362.20 -10275362.05 -10275361.91 0.0271 0.0016

Mercury -32846-11-01 23:45 J -10275273.64 -10275273.51 -10275273.37 0.0272 0.0095

Mercury -32845-01-29 13:11 J -10275185.04 -10275184.95 -10275184.85 0.0272 0.0205

Venus -32834-08-08 23:02 J -10270975.71 -10270975.54 -10270975.35 0.0288 0.0165

Venus -32833-03-26 01:26 J -10270745.66 -10270745.44 -10270745.23 0.0288 0.0005

Moon -32833-10-21 17:59 J -10270535.91 -10270535.75 -10270535.60 0.0288 0.0222

Earth -32833-10-21 21:07 J -10270535.75 -10270535.62 -10270535.47 0.0288 0.0237 \*

Venus -32833-11-11 03:21 J -10270515.54 -10270515.36 -10270515.19 0.0288 0.0168

Mercury -32832-09-16 02:52 J -10270206.40 -10270206.38 -10270206.33 0.0288 0.0280  
 Mercury -32832-12-13 22:19 J -10270117.72 -10270117.57 -10270117.43 0.0288 0.0131  
 Mercury -32831-03-12 16:47 J -10270028.96 -10270028.80 -10270028.63 0.0287 0.0017  
 Mercury -32831-06-09 11:02 J -10269940.17 -10269940.04 -10269939.90 0.0287 0.0157  
 Venus -32819-01-21 22:19 J -10265695.73 -10265695.57 -10265695.40 0.0272 0.0165  
 Venus -32819-09-07 21:50 J -10265466.80 -10265466.59 -10265466.39 0.0272 0.0035  
 Venus -32818-04-24 21:07 J -10265237.82 -10265237.62 -10265237.43 0.0271 0.0095  
 Venus -32818-12-09 20:23 J -10265008.76 -10265008.65 -10265008.53 0.0271 0.0224  
 Moon -32817-04-28 13:40 J -10264868.13 -10264867.93 -10264867.73 0.0271 0.0150  
 Earth -32817-04-28 16:04 J -10264868.04 -10264867.83 -10264867.62 0.0271 0.0143 \*  
 Mercury -32817-06-28 11:59 J -10264807.05 -10264807.00 -10264806.94 0.0271 0.0247  
 Mercury -32817-09-25 00:43 J -10264718.59 -10264718.47 -10264718.35 0.0272 0.0142  
 Mercury -32817-12-22 13:40 J -10264630.08 -10264629.93 -10264629.79 0.0272 0.0036  
 Mercury -32816-03-21 02:52 J -10264541.53 -10264541.38 -10264541.24 0.0272 0.0073  
 Mercury -32816-06-17 16:04 J -10264452.93 -10264452.83 -10264452.72 0.0272 0.0184  
 Mars -32811-01-20 13:55 J -10262775.17 -10262774.92 -10262774.66 0.0278 0.0089  
 Venus -32804-02-18 12:14 J -10260189.18 -10260188.99 -10260188.79 0.0288 0.0129  
 Venus -32804-10-06 14:23 J -10259959.12 -10259958.90 -10259958.68 0.0288 0.0038  
 Venus -32803-05-24 16:04 J -10259728.97 -10259728.83 -10259728.67 0.0288 0.0204  
 Earth -32803-10-30 12:57 J -10259570.19 -10259569.96 -10259569.72 0.0288 0.0092  
 Moon -32803-10-30 13:55 J -10259570.16 -10259569.92 -10259569.69 0.0288 0.0107 \*  
 Mercury -32802-05-03 00:43 J -10259385.61 -10259385.47 -10259385.33 0.0288 0.0156  
 Mercury -32802-07-30 19:26 J -10259296.85 -10259296.69 -10259296.53 0.0288 0.0010  
 Mercury -32802-10-27 13:40 J -10259208.07 -10259207.93 -10259207.79 0.0288 0.0133  
 Mercury -32801-01-24 07:11 J -10259119.24 -10259119.20 -10259119.14 0.0287 0.0272  
 Mars -32797-03-03 14:38 J -10257619.16 -10257618.89 -10257618.62 0.0281 0.0149  
 Venus -32790-08-04 02:38 J -10254909.57 -10254909.39 -10254909.22 0.0271 0.0144  
 Venus -32789-03-20 01:40 J -10254680.63 -10254680.43 -10254680.22 0.0271 0.0015  
 Venus -32789-11-04 00:43 J -10254451.65 -10254451.47 -10254451.28 0.0271 0.0115  
 Earth -32788-04-23 16:19 J -10254281.06 -10254280.82 -10254280.58 0.0271 0.0065

Moon -32788-04-23 18:57 J -10254280.96 -10254280.71 -10254280.47 0.0271 0.0054 \*  
 Venus -32788-06-20 23:59 J -10254222.59 -10254222.50 -10254222.41 0.0271 0.0243  
 Mercury -32787-02-12 02:38 J -10253986.50 -10253986.39 -10253986.28 0.0271 0.0173  
 Mercury -32787-05-11 15:21 J -10253898.00 -10253897.86 -10253897.72 0.0271 0.0067  
 Mercury -32787-08-08 04:19 J -10253809.46 -10253809.32 -10253809.17 0.0272 0.0041  
 Mercury -32787-11-04 17:31 J -10253720.88 -10253720.77 -10253720.64 0.0272 0.0151  
 Mercury -32786-02-01 07:11 J -10253632.23 -10253632.20 -10253632.16 0.0272 0.0263  
 Venus -32775-01-13 13:26 J -10249632.99 -10249632.94 -10249632.86 0.0287 0.0274  
 Venus -32775-08-31 15:35 J -10249403.05 -10249402.85 -10249402.65 0.0288 0.0110  
 Venus -32774-04-18 17:31 J -10249172.98 -10249172.77 -10249172.56 0.0288 0.0056  
 Moon -32774-10-24 09:50 J -10248984.28 -10248984.09 -10248983.89 0.0288 0.0157  
 Earth -32774-10-24 10:19 J -10248984.26 -10248984.07 -10248983.87 0.0288 0.0170 \*  
 Venus -32774-12-04 19:26 J -10248942.83 -10248942.69 -10248942.55 0.0288 0.0221  
 Mercury -32773-09-18 23:16 J -10248653.64 -10248653.53 -10248653.42 0.0288 0.0208  
 Mercury -32773-12-16 18:14 J -10248564.90 -10248564.74 -10248564.58 0.0287 0.0060  
 Mercury -32772-03-15 12:28 J -10248476.13 -10248475.98 -10248475.82 0.0287 0.0084  
 Mercury -32772-06-12 06:43 J -10248387.32 -10248387.22 -10248387.13 0.0287 0.0224  
 Venus -32761-06-29 07:40 J -10244352.25 -10244352.18 -10244352.10 0.0272 0.0251  
 Venus -32760-02-13 07:40 J -10244123.36 -10244123.18 -10244123.00 0.0272 0.0122  
 Venus -32760-09-30 07:11 J -10243894.41 -10243894.20 -10243894.00 0.0272 0.0010  
 Moon -32759-04-18 17:16 J -10243693.85 -10243693.78 -10243693.69 0.0272 0.0254  
 Earth -32759-04-18 20:23 J -10243693.68 -10243693.65 -10243693.61 0.0272 0.0268  
 Venus -32759-05-17 06:28 J -10243665.41 -10243665.23 -10243665.05 0.0272 0.0138  
 Venus -32758-01-01 05:59 J -10243436.29 -10243436.25 -10243436.21 0.0272 0.0266  
 Earth -32758-04-30 23:59 J -10243316.65 -10243316.50 -10243316.32 0.0272 0.0199  
 Moon -32758-05-01 01:55 J -10243316.57 -10243316.42 -10243316.25 0.0272 0.0203 \*  
 Mercury -32758-07-02 05:16 J -10243254.37 -10243254.28 -10243254.18 0.0272 0.0196  
 Mercury -32758-09-28 18:14 J -10243165.88 -10243165.74 -10243165.61 0.0272 0.0091  
 Mercury -32758-12-26 07:11 J -10243077.35 -10243077.20 -10243077.05 0.0272 0.0017  
 Mercury -32757-03-23 20:23 J -10242988.78 -10242988.65 -10242988.52 0.0272 0.0127

Mercury -32757-06-20 09:50 J -10242900.15 -10242900.09 -10242900.01 0.0272 0.0240  
 Venus -32746-07-27 03:07 J -10238846.49 -10238846.37 -10238846.25 0.0288 0.0238  
 Venus -32745-03-13 04:47 J -10238616.50 -10238616.30 -10238616.08 0.0288 0.0074  
 Venus -32745-10-29 06:57 J -10238386.42 -10238386.21 -10238386.01 0.0288 0.0093  
 Venus -32744-06-16 08:38 J -10238156.23 -10238156.14 -10238156.04 0.0288 0.0257  
 Moon -32744-10-31 23:31 J -10238018.71 -10238018.52 -10238018.31 0.0288 0.0175  
 Earth -32744-11-01 02:23 J -10238018.59 -10238018.40 -10238018.18 0.0288 0.0161 \*  
 Mercury -32743-02-06 01:55 J -10237921.52 -10237921.42 -10237921.33 0.0288 0.0232  
 Mercury -32743-05-05 20:52 J -10237832.79 -10237832.63 -10237832.47 0.0288 0.0084  
 Mercury -32743-08-02 15:21 J -10237744.02 -10237743.86 -10237743.70 0.0288 0.0061  
 Mercury -32743-10-30 09:21 J -10237655.22 -10237655.11 -10237654.99 0.0288 0.0202  
 Venus -32731-01-09 13:11 J -10233566.04 -10233565.95 -10233565.83 0.0271 0.0229  
 Venus -32731-08-26 12:57 J -10233337.15 -10233336.96 -10233336.77 0.0271 0.0100  
 Venus -32730-04-12 11:59 J -10233108.20 -10233108.00 -10233107.79 0.0271 0.0030  
 Venus -32730-11-27 11:02 J -10232879.20 -10232879.04 -10232878.87 0.0271 0.0159  
 Moon -32729-04-25 00:43 J -10232729.72 -10232729.47 -10232729.22 0.0271 0.0002  
 Earth -32729-04-25 02:09 J -10232729.65 -10232729.41 -10232729.17 0.0271 0.0008 \*  
 Mercury -32729-11-18 07:40 J -10232522.26 -10232522.18 -10232522.10 0.0271 0.0223  
 Mercury -32728-02-14 20:09 J -10232433.78 -10232433.66 -10232433.52 0.0271 0.0120  
 Mercury -32728-05-14 09:07 J -10232345.26 -10232345.12 -10232344.97 0.0272 0.0015  
 Mercury -32728-08-10 22:19 J -10232256.71 -10232256.57 -10232256.43 0.0272 0.0097  
 Mercury -32728-11-07 11:45 J -10232168.10 -10232168.01 -10232167.91 0.0272 0.0208  
 Mars -32723-06-16 15:50 J -10230486.11 -10230485.84 -10230485.57 0.0278 0.0042  
 Venus -32716-02-05 06:28 J -10228060.36 -10228060.23 -10228060.08 0.0287 0.0219  
 Venus -32716-09-23 08:23 J -10227830.36 -10227830.15 -10227829.93 0.0288 0.0055  
 Venus -32715-05-11 10:19 J -10227600.26 -10227600.07 -10227599.86 0.0288 0.0112  
 Earth -32715-10-26 00:43 J -10227432.70 -10227432.47 -10227432.24 0.0288 0.0101  
 Moon -32715-10-26 03:50 J -10227432.57 -10227432.34 -10227432.10 0.0288 0.0085 \*  
 Venus -32715-12-27 12:14 J -10227370.05 -10227369.99 -10227369.92 0.0288 0.0275  
 Mercury -32714-06-26 00:28 J -10227189.50 -10227189.48 -10227189.45 0.0288 0.0283

Mercury -32714-09-22 19:40 J -10227100.82 -10227100.68 -10227100.53 0.0287 0.0134

Mercury -32714-12-20 14:23 J -10227012.06 -10227011.90 -10227011.74 0.0287 0.0012

Mercury -32713-03-18 08:38 J -10226923.28 -10226923.14 -10226923.01 0.0287 0.0154

Mars -32709-07-28 13:11 J -10225330.24 -10225329.95 -10225329.64 0.0282 0.0089

Venus -32702-07-22 17:16 J -10222779.90 -10222779.78 -10222779.64 0.0272 0.0208

Venus -32701-03-07 17:02 J -10222550.98 -10222550.79 -10222550.59 0.0272 0.0078

Venus -32701-10-22 16:33 J -10222322.01 -10222321.81 -10222321.61 0.0272 0.0052

Earth -32700-04-20 04:33 J -10222142.45 -10222142.31 -10222142.16 0.0272 0.0214

Moon -32700-04-20 05:16 J -10222142.43 -10222142.28 -10222142.12 0.0272 0.0201 \*

Venus -32700-06-08 15:50 J -10222092.99 -10222092.84 -10222092.68 0.0272 0.0181

Mercury -32699-04-07 10:04 J -10221790.13 -10221790.08 -10221790.02 0.0272 0.0249

Earth -32699-05-02 08:38 J -10221765.22 -10221765.14 -10221765.06 0.0272 0.0254

Moon -32699-05-02 11:45 J -10221765.07 -10221765.01 -10221764.92 0.0272 0.0258 \*

Mercury -32699-07-04 22:47 J -10221701.67 -10221701.55 -10221701.43 0.0272 0.0145

Mercury -32699-10-01 11:45 J -10221613.16 -10221613.01 -10221612.87 0.0272 0.0039

Mercury -32699-12-29 00:43 J -10221524.61 -10221524.47 -10221524.32 0.0272 0.0071

Mercury -32698-03-27 14:09 J -10221436.02 -10221435.91 -10221435.80 0.0272 0.0182

Venus -32687-08-18 20:23 J -10217273.82 -10217273.65 -10217273.48 0.0288 0.0183

Venus -32686-04-05 22:19 J -10217043.79 -10217043.57 -10217043.35 0.0288 0.0018

Venus -32686-11-22 00:14 J -10216813.67 -10216813.49 -10216813.30 0.0288 0.0148

Moon -32685-11-02 14:09 J -10216467.02 -10216466.91 -10216466.78 0.0288 0.0246

Earth -32685-11-02 17:31 J -10216466.91 -10216466.77 -10216466.62 0.0288 0.0230 \*

Mercury -32684-02-08 22:19 J -10216368.70 -10216368.57 -10216368.42 0.0288 0.0157

Mercury -32684-05-08 17:16 J -10216279.94 -10216279.78 -10216279.62 0.0288 0.0010

Mercury -32684-08-05 11:31 J -10216191.16 -10216191.02 -10216190.87 0.0288 0.0133

Mercury -32684-11-02 05:16 J -10216102.32 -10216102.28 -10216102.22 0.0287 0.0272

Venus -32672-01-31 23:45 J -10211993.66 -10211993.51 -10211993.36 0.0271 0.0184

Venus -32672-09-17 23:02 J -10211764.74 -10211764.54 -10211764.33 0.0271 0.0055

Venus -32671-05-04 22:19 J -10211535.77 -10211535.57 -10211535.37 0.0271 0.0074

Venus -32671-12-19 21:21 J -10211306.74 -10211306.61 -10211306.47 0.0271 0.0203

Moon -32670-04-27 07:55 J -10211178.41 -10211178.17 -10211177.93 0.0271 0.0059  
 Earth -32670-04-27 11:31 J -10211178.26 -10211178.02 -10211177.78 0.0271 0.0050 \*  
 Mercury -32670-11-22 01:11 J -10210969.56 -10210969.45 -10210969.34 0.0271 0.0171  
 Mercury -32669-02-18 13:55 J -10210881.06 -10210880.92 -10210880.77 0.0271 0.0065  
 Mercury -32669-05-17 03:07 J -10210792.52 -10210792.37 -10210792.23 0.0272 0.0044  
 Mercury -32669-08-13 16:04 J -10210703.94 -10210703.83 -10210703.70 0.0272 0.0154  
 Mercury -32669-11-10 05:45 J -10210615.28 -10210615.26 -10210615.23 0.0272 0.0266  
 Venus -32657-02-28 23:45 J -10206487.68 -10206487.51 -10206487.32 0.0288 0.0164  
 Venus -32657-10-16 01:55 J -10206257.64 -10206257.42 -10206257.21 0.0288 0.0004  
 Venus -32656-06-03 03:35 J -10206027.52 -10206027.35 -10206027.17 0.0288 0.0167  
 Earth -32656-10-27 15:35 J -10205881.09 -10205880.85 -10205880.60 0.0288 0.0032  
 Moon -32656-10-27 18:43 J -10205880.97 -10205880.72 -10205880.47 0.0288 0.0015 \*  
 Mercury -32655-06-28 21:07 J -10205636.73 -10205636.62 -10205636.50 0.0287 0.0208  
 Mercury -32655-09-25 16:04 J -10205547.99 -10205547.83 -10205547.67 0.0287 0.0060  
 Mercury -32655-12-23 10:33 J -10205459.21 -10205459.06 -10205458.90 0.0287 0.0085  
 Mercury -32654-03-22 04:33 J -10205370.40 -10205370.31 -10205370.21 0.0287 0.0225  
 Venus -32643-08-14 03:07 J -10201207.53 -10201207.37 -10201207.21 0.0272 0.0163  
 Venus -32642-03-31 02:38 J -10200978.60 -10200978.39 -10200978.19 0.0272 0.0034  
 Venus -32642-11-15 01:55 J -10200749.61 -10200749.42 -10200749.23 0.0272 0.0096  
 Earth -32641-04-21 12:28 J -10200591.17 -10200590.98 -10200590.78 0.0272 0.0160  
 Moon -32641-04-21 16:19 J -10200591.02 -10200590.82 -10200590.61 0.0272 0.0146 \*  
 Venus -32641-07-01 01:26 J -10200520.56 -10200520.44 -10200520.33 0.0272 0.0224  
 Mercury -32640-04-10 03:21 J -10200237.45 -10200237.36 -10200237.26 0.0272 0.0199  
 Mercury -32640-07-07 16:04 J -10200148.96 -10200148.83 -10200148.69 0.0272 0.0094  
 Mercury -32640-10-04 05:02 J -10200060.43 -10200060.29 -10200060.14 0.0272 0.0016  
 Mercury -32640-12-31 18:14 J -10199971.87 -10199971.74 -10199971.60 0.0272 0.0125  
 Mercury -32639-03-30 07:55 J -10199883.24 -10199883.17 -10199883.10 0.0272 0.0237  
 Mars -32635-11-11 07:26 J -10198196.46 -10198196.19 -10198195.91 0.0278 0.0031  
 Venus -32628-09-10 12:57 J -10195701.15 -10195700.96 -10195700.76 0.0288 0.0128  
 Venus -32627-04-28 15:07 J -10195471.09 -10195470.87 -10195470.65 0.0288 0.0037



Moon -32627-10-22 02:09 J -10195294.50 -10195294.41 -10195294.29 0.0288 0.0260  
 Earth -32627-10-22 04:47 J -10195294.36 -10195294.30 -10195294.22 0.0288 0.0275 \*  
 Venus -32627-12-14 17:02 J -10195240.94 -10195240.79 -10195240.63 0.0288 0.0203  
 Mercury -32626-11-15 23:45 J -10194904.60 -10194904.51 -10194904.41 0.0288 0.0232  
 Mercury -32625-02-12 18:57 J -10194815.87 -10194815.71 -10194815.56 0.0288 0.0083  
 Mercury -32625-05-11 13:26 J -10194727.10 -10194726.94 -10194726.78 0.0288 0.0062  
 Mercury -32625-08-08 07:26 J -10194638.30 -10194638.19 -10194638.07 0.0288 0.0204  
 Mars -32621-12-23 19:40 J -10193040.00 -10193039.68 -10193039.36 0.0281 0.0004  
 Venus -32614-07-10 09:35 J -10190650.12 -10190650.10 -10190650.05 0.0272 0.0268  
 Venus -32613-02-24 09:35 J -10190421.28 -10190421.10 -10190420.92 0.0271 0.0140  
 Venus -32613-10-10 08:52 J -10190192.34 -10190192.13 -10190191.92 0.0271 0.0011  
 Venus -32612-05-27 07:55 J -10189963.35 -10189963.17 -10189962.98 0.0271 0.0118  
 Venus -32611-01-11 06:57 J -10189734.28 -10189734.21 -10189734.11 0.0271 0.0245  
 Moon -32611-04-28 18:43 J -10189626.93 -10189626.72 -10189626.50 0.0271 0.0113  
 Earth -32611-04-28 20:09 J -10189626.89 -10189626.66 -10189626.44 0.0271 0.0105 \*  
 Mercury -32611-08-28 05:59 J -10189505.33 -10189505.25 -10189505.17 0.0271 0.0223  
 Mercury -32611-11-24 18:43 J -10189416.85 -10189416.72 -10189416.59 0.0271 0.0119  
 Mercury -32610-02-21 07:26 J -10189328.33 -10189328.19 -10189328.04 0.0271 0.0015  
 Mercury -32610-05-20 20:38 J -10189239.78 -10189239.64 -10189239.50 0.0272 0.0097  
 Mercury -32610-08-17 09:50 J -10189151.17 -10189151.09 -10189150.99 0.0272 0.0209  
 Venus -32599-08-05 15:21 J -10185144.93 -10185144.86 -10185144.79 0.0287 0.0270  
 Venus -32598-03-23 17:02 J -10184914.99 -10184914.79 -10184914.59 0.0288 0.0108  
 Venus -32598-11-08 18:57 J -10184684.92 -10184684.71 -10184684.49 0.0288 0.0057  
 Venus -32597-06-25 21:07 J -10184454.76 -10184454.62 -10184454.49 0.0288 0.0221  
 Moon -32597-10-29 05:02 J -10184329.54 -10184329.29 -10184329.04 0.0288 0.0054  
 Earth -32597-10-29 06:28 J -10184329.47 -10184329.23 -10184328.98 0.0288 0.0038 \*  
 Mercury -32596-04-03 22:19 J -10184172.59 -10184172.57 -10184172.53 0.0288 0.0283  
 Mercury -32596-07-01 17:45 J -10184083.91 -10184083.76 -10184083.61 0.0287 0.0132  
 Mercury -32596-09-28 12:28 J -10183995.14 -10183994.98 -10183994.82 0.0287 0.0014  
 Mercury -32596-12-26 06:43 J -10183906.35 -10183906.22 -10183906.08 0.0287 0.0157

Venus -32584-01-19 12:14 J -10179864.07 -10179863.99 -10179863.90 0.0272 0.0249  
 Venus -32584-09-05 11:59 J -10179635.19 -10179635.00 -10179634.82 0.0272 0.0120  
 Venus -32583-04-22 11:16 J -10179406.24 -10179406.03 -10179405.82 0.0272 0.0009  
 Venus -32583-12-07 10:19 J -10179177.24 -10179177.07 -10179176.88 0.0272 0.0139  
 Earth -32582-04-23 19:11 J -10179039.92 -10179039.70 -10179039.47 0.0272 0.0108  
 Moon -32582-04-23 20:23 J -10179039.88 -10179039.65 -10179039.41 0.0272 0.0097 \*  
 Venus -32582-07-24 09:35 J -10178948.12 -10178948.10 -10178948.04 0.0272 0.0266  
 Mercury -32581-01-15 07:55 J -10178773.22 -10178773.17 -10178773.12 0.0272 0.0255  
 Mercury -32581-04-12 20:23 J -10178684.77 -10178684.65 -10178684.53 0.0272 0.0151  
 Mercury -32581-07-10 09:21 J -10178596.26 -10178596.11 -10178595.97 0.0272 0.0045  
 Mercury -32581-10-06 22:19 J -10178507.71 -10178507.57 -10178507.43 0.0272 0.0065  
 Mercury -32580-01-03 11:31 J -10178419.13 -10178419.02 -10178418.90 0.0272 0.0176  
 Venus -32569-02-16 02:52 J -10174358.49 -10174358.38 -10174358.25 0.0288 0.0238  
 Venus -32569-10-03 04:47 J -10174128.50 -10174128.30 -10174128.08 0.0288 0.0075  
 Venus -32568-05-21 06:57 J -10173898.41 -10173898.21 -10173898.00 0.0288 0.0092  
 Earth -32568-10-23 17:45 J -10173742.92 -10173742.76 -10173742.58 0.0288 0.0209  
 Moon -32568-10-23 19:40 J -10173742.85 -10173742.68 -10173742.50 0.0288 0.0193 \*  
 Venus -32567-01-06 09:07 J -10173668.21 -10173668.12 -10173668.02 0.0288 0.0255  
 Mercury -32567-11-18 19:55 J -10173351.80 -10173351.67 -10173351.53 0.0288 0.0160  
 Mercury -32566-02-15 14:52 J -10173263.04 -10173262.88 -10173262.72 0.0288 0.0012  
 Mercury -32566-05-15 09:07 J -10173174.26 -10173174.12 -10173173.97 0.0288 0.0132  
 Mercury -32566-08-12 03:07 J -10173085.42 -10173085.37 -10173085.32 0.0288 0.0271  
 Venus -32555-08-01 19:11 J -10169077.81 -10169077.70 -10169077.58 0.0271 0.0224  
 Venus -32554-03-18 18:43 J -10168848.91 -10168848.72 -10168848.53 0.0271 0.0096  
 Venus -32554-11-02 17:45 J -10168619.96 -10168619.76 -10168619.55 0.0271 0.0032  
 Venus -32553-06-18 16:47 J -10168390.96 -10168390.80 -10168390.63 0.0271 0.0160  
 Earth -32552-04-30 03:07 J -10168075.56 -10168075.37 -10168075.17 0.0271 0.0159  
 Moon -32552-04-30 06:14 J -10168075.42 -10168075.24 -10168075.05 0.0271 0.0165 \*  
 Mercury -32552-08-30 23:02 J -10167952.64 -10167952.54 -10167952.42 0.0271 0.0175  
 Mercury -32552-11-27 11:45 J -10167864.14 -10167864.01 -10167863.86 0.0271 0.0070

Mercury -32551-02-24 00:57 J -10167775.61 -10167775.46 -10167775.32 0.0271 0.0040  
 Mercury -32551-05-23 14:09 J -10167687.04 -10167686.91 -10167686.79 0.0272 0.0150  
 Mercury -32551-08-20 03:35 J -10167598.39 -10167598.35 -10167598.31 0.0272 0.0262  
 Mars -32546-04-07 08:09 J -10165907.42 -10165907.16 -10165906.90 0.0278 0.0077  
 Venus -32540-08-28 06:43 J -10163572.35 -10163572.22 -10163572.07 0.0288 0.0218  
 Venus -32539-04-15 08:38 J -10163342.35 -10163342.14 -10163341.92 0.0288 0.0054  
 Venus -32539-12-01 10:33 J -10163112.25 -10163112.06 -10163111.85 0.0288 0.0111  
 Venus -32538-07-19 12:28 J -10162882.03 -10162881.98 -10162881.90 0.0288 0.0274  
 Moon -32538-10-31 15:07 J -10162778.09 -10162777.87 -10162777.64 0.0288 0.0120  
 Earth -32538-10-31 18:57 J -10162777.94 -10162777.71 -10162777.48 0.0288 0.0104 \*  
 Mercury -32537-04-06 18:43 J -10162619.83 -10162619.72 -10162619.61 0.0288 0.0211  
 Mercury -32537-07-04 13:40 J -10162531.09 -10162530.93 -10162530.77 0.0287 0.0062  
 Mercury -32537-10-01 08:09 J -10162442.31 -10162442.16 -10162442.00 0.0287 0.0083  
 Mercury -32537-12-29 02:09 J -10162353.50 -10162353.41 -10162353.30 0.0287 0.0224  
 Mars -32532-05-19 12:43 J -10160751.27 -10160750.97 -10160750.65 0.0281 0.0057  
 Venus -32525-02-11 20:23 J -10158291.77 -10158291.65 -10158291.51 0.0272 0.0207  
 Venus -32525-09-27 19:55 J -10158062.86 -10158062.67 -10158062.47 0.0272 0.0079  
 Venus -32524-05-14 19:11 J -10157833.90 -10157833.70 -10157833.49 0.0271 0.0051  
 Venus -32524-12-29 18:14 J -10157604.88 -10157604.74 -10157604.58 0.0271 0.0179  
 Moon -32523-04-24 21:21 J -10157488.86 -10157488.61 -10157488.37 0.0271 0.0051  
 Earth -32523-04-25 00:28 J -10157488.71 -10157488.48 -10157488.24 0.0271 0.0058 \*  
 Mercury -32522-01-18 00:28 J -10157220.56 -10157220.48 -10157220.39 0.0272 0.0210  
 Mercury -32522-04-16 13:11 J -10157132.08 -10157131.95 -10157131.81 0.0272 0.0104  
 Mercury -32522-07-14 02:09 J -10157043.56 -10157043.41 -10157043.27 0.0272 0.0005  
 Mercury -32522-10-10 15:07 J -10156955.00 -10156954.87 -10156954.73 0.0272 0.0113  
 Mercury -32521-01-07 04:33 J -10156866.39 -10156866.31 -10156866.22 0.0272 0.0225  
 Venus -32510-03-10 17:02 J -10152785.95 -10152785.79 -10152785.62 0.0288 0.0188  
 Venus -32510-10-26 19:26 J -10152555.91 -10152555.69 -10152555.48 0.0288 0.0023  
 Venus -32509-06-12 21:35 J -10152325.78 -10152325.60 -10152325.41 0.0288 0.0143  
 Earth -32509-10-25 04:33 J -10152191.51 -10152191.31 -10152191.09 0.0288 0.0146

Moon -32509-10-25 08:09 J -10152191.37 -10152191.16 -10152190.93 0.0288 0.0129 \*  
 Mercury -32508-08-24 20:23 J -10151887.74 -10151887.65 -10151887.56 0.0288 0.0241  
 Mercury -32508-11-21 15:35 J -10151799.01 -10151798.85 -10151798.69 0.0288 0.0091  
 Mercury -32507-02-18 10:19 J -10151710.23 -10151710.07 -10151709.91 0.0288 0.0055  
 Mercury -32507-05-18 04:19 J -10151621.43 -10151621.32 -10151621.19 0.0288 0.0198  
 Venus -32496-08-24 03:21 J -10147505.50 -10147505.36 -10147505.20 0.0271 0.0183  
 Venus -32495-04-10 02:52 J -10147276.59 -10147276.38 -10147276.18 0.0271 0.0055  
 Venus -32495-11-25 01:40 J -10147047.63 -10147047.43 -10147047.23 0.0271 0.0073  
 Earth -32494-04-20 05:59 J -10146901.32 -10146901.25 -10146901.16 0.0271 0.0256  
 Moon -32494-04-20 08:52 J -10146901.22 -10146901.13 -10146901.03 0.0271 0.0245 \*  
 Venus -32494-07-12 00:43 J -10146818.61 -10146818.47 -10146818.33 0.0271 0.0200  
 Earth -32493-05-01 08:09 J -10146524.30 -10146524.16 -10146523.99 0.0271 0.0210  
 Moon -32493-05-01 11:16 J -10146524.18 -10146524.03 -10146523.87 0.0271 0.0211 \*  
 Mercury -32493-06-06 03:21 J -10146488.43 -10146488.36 -10146488.29 0.0271 0.0232  
 Mercury -32493-09-02 15:50 J -10146399.96 -10146399.84 -10146399.71 0.0271 0.0128  
 Mercury -32493-11-30 04:47 J -10146311.45 -10146311.30 -10146311.16 0.0271 0.0022  
 Mercury -32492-02-26 17:45 J -10146222.90 -10146222.76 -10146222.62 0.0271 0.0088  
 Mercury -32492-05-26 06:57 J -10146134.30 -10146134.21 -10146134.10 0.0272 0.0199  
 Venus -32481-09-19 20:52 J -10141999.79 -10141999.63 -10141999.44 0.0288 0.0167  
 Venus -32480-05-07 23:02 J -10141769.76 -10141769.54 -10141769.32 0.0288 0.0004  
 Venus -32480-12-24 01:11 J -10141539.63 -10141539.45 -10141539.27 0.0288 0.0162  
 Moon -32479-11-02 04:19 J -10141226.49 -10141226.32 -10141226.12 0.0288 0.0181  
 Earth -32479-11-02 05:16 J -10141226.47 -10141226.28 -10141226.07 0.0288 0.0166 \*  
 Mercury -32478-04-10 14:09 J -10141067.05 -10141066.91 -10141066.76 0.0288 0.0143  
 Mercury -32478-07-08 09:07 J -10140978.29 -10140978.12 -10140977.96 0.0288 0.0005  
 Mercury -32478-10-05 03:21 J -10140889.49 -10140889.36 -10140889.22 0.0287 0.0148  
 Venus -32466-03-06 03:35 J -10136719.50 -10136719.35 -10136719.18 0.0272 0.0167  
 Venus -32466-10-21 03:07 J -10136490.57 -10136490.37 -10136490.17 0.0271 0.0038  
 Venus -32465-06-06 02:09 J -10136261.60 -10136261.41 -10136261.21 0.0271 0.0091  
 Venus -32464-01-21 01:11 J -10136032.56 -10136032.45 -10136032.32 0.0271 0.0218

Moon -32464-04-26 01:26 J -10135937.67 -10135937.44 -10135937.20 0.0271 0.0006  
 Earth -32464-04-26 04:04 J -10135937.57 -10135937.33 -10135937.09 0.0271 0.0010 \*  
 Mercury -32464-10-24 04:19 J -10135756.33 -10135756.32 -10135756.30 0.0271 0.0270  
 Mercury -32463-01-20 16:47 J -10135667.91 -10135667.80 -10135667.68 0.0272 0.0166  
 Mercury -32463-04-19 05:31 J -10135579.41 -10135579.27 -10135579.12 0.0272 0.0061  
 Mercury -32463-07-16 18:28 J -10135490.87 -10135490.73 -10135490.58 0.0272 0.0049  
 Mercury -32463-10-13 07:40 J -10135402.29 -10135402.18 -10135402.05 0.0272 0.0159  
 Mercury -32462-01-09 21:21 J -10135313.62 -10135313.61 -10135313.61 0.0272 0.0271  
 Mars -32458-09-01 02:09 J -10133618.65 -10133618.41 -10133618.16 0.0278 0.0118  
 Venus -32451-04-02 05:16 J -10131213.46 -10131213.28 -10131213.09 0.0288 0.0140  
 Venus -32451-11-18 07:40 J -10130983.39 -10130983.18 -10130982.96 0.0288 0.0026  
 Venus -32450-07-06 10:04 J -10130753.23 -10130753.08 -10130752.90 0.0289 0.0192  
 Earth -32450-10-27 11:59 J -10130640.22 -10130640.00 -10130639.75 0.0289 0.0088  
 Moon -32450-10-27 12:57 J -10130640.20 -10130639.96 -10130639.70 0.0289 0.0073 \*  
 Mercury -32449-08-27 15:21 J -10130334.99 -10130334.86 -10130334.73 0.0288 0.0178  
 Mercury -32449-11-24 10:19 J -10130246.23 -10130246.07 -10130245.90 0.0288 0.0030  
 Mercury -32448-02-21 04:47 J -10130157.44 -10130157.30 -10130157.15 0.0288 0.0116  
 Mercury -32448-05-20 23:02 J -10130068.61 -10130068.54 -10130068.47 0.0288 0.0257  
 Mars -32444-10-14 06:14 J -10128461.51 -10128461.24 -10128460.95 0.0281 0.0132  
 Venus -32437-01-30 11:16 J -10126162.05 -10126162.03 -10126162.01 0.0271 0.0270  
 Venus -32437-09-15 10:47 J -10125933.23 -10125933.05 -10125932.88 0.0271 0.0143  
 Venus -32436-05-02 09:50 J -10125704.30 -10125704.09 -10125703.89 0.0271 0.0016  
 Venus -32436-12-17 08:23 J -10125475.33 -10125475.15 -10125474.95 0.0270 0.0113  
 Earth -32435-04-21 09:35 J -10125350.25 -10125350.10 -10125349.94 0.0270 0.0208  
 Moon -32435-04-21 12:28 J -10125350.14 -10125349.98 -10125349.80 0.0270 0.0197 \*  
 Venus -32435-08-03 07:11 J -10125246.28 -10125246.20 -10125246.09 0.0270 0.0239  
 Moon -32434-05-03 09:50 J -10124973.17 -10124973.09 -10124973.00 0.0271 0.0253  
 Earth -32434-05-03 11:31 J -10124973.08 -10124973.02 -10124972.93 0.0271 0.0258 \*  
 Mercury -32434-06-09 19:40 J -10124935.78 -10124935.68 -10124935.58 0.0271 0.0189  
 Mercury -32434-09-06 08:23 J -10124847.29 -10124847.15 -10124847.02 0.0271 0.0084

Mercury -32434-12-03 21:07 J -10124758.76 -10124758.62 -10124758.47 0.0271 0.0024

Mercury -32433-03-01 10:19 J -10124670.20 -10124670.07 -10124669.94 0.0271 0.0133

Mercury -32433-05-28 23:45 J -10124581.57 -10124581.51 -10124581.45 0.0271 0.0245

Venus -32422-02-25 07:26 J -10120657.22 -10120657.19 -10120657.13 0.0288 0.0280

Venus -32422-10-13 09:21 J -10120427.30 -10120427.11 -10120426.91 0.0288 0.0118

Venus -32421-05-30 11:31 J -10120197.23 -10120197.02 -10120196.80 0.0288 0.0047

Venus -32420-01-15 13:55 J -10119967.07 -10119966.92 -10119966.77 0.0288 0.0211

Earth -32420-11-03 13:11 J -10119675.10 -10119674.95 -10119674.79 0.0288 0.0224

Moon -32420-11-03 16:04 J -10119674.96 -10119674.83 -10119674.69 0.0288 0.0238 \*

Mercury -32419-01-14 13:55 J -10119603.02 -10119602.92 -10119602.82 0.0288 0.0231

Mercury -32419-04-13 08:52 J -10119514.28 -10119514.13 -10119513.97 0.0288 0.0082

Mercury -32419-07-11 03:35 J -10119425.50 -10119425.35 -10119425.19 0.0288 0.0066

Mercury -32419-10-07 22:04 J -10119336.69 -10119336.58 -10119336.47 0.0287 0.0208

Venus -32408-08-11 10:47 J -10115376.11 -10115376.05 -10115375.97 0.0272 0.0255

Venus -32407-03-28 10:19 J -10115147.25 -10115147.07 -10115146.89 0.0271 0.0127

Venus -32407-11-12 09:21 J -10114918.32 -10114918.11 -10114917.91 0.0271 0.0004

Venus -32406-06-29 07:55 J -10114689.34 -10114689.17 -10114688.98 0.0271 0.0129

Venus -32405-02-13 06:57 J -10114460.27 -10114460.21 -10114460.13 0.0271 0.0255

Earth -32405-04-27 05:45 J -10114386.50 -10114386.26 -10114386.02 0.0271 0.0036

Moon -32405-04-27 07:26 J -10114386.43 -10114386.19 -10114385.96 0.0271 0.0037 \*

Mercury -32405-10-26 20:23 J -10114203.72 -10114203.65 -10114203.57 0.0271 0.0229

Mercury -32404-01-23 08:52 J -10114115.25 -10114115.13 -10114115.00 0.0271 0.0125

Mercury -32404-04-21 21:50 J -10114026.74 -10114026.59 -10114026.45 0.0271 0.0019

Mercury -32404-07-19 10:47 J -10113938.19 -10113938.05 -10113937.91 0.0272 0.0091

Mercury -32404-10-15 23:59 J -10113849.60 -10113849.50 -10113849.40 0.0272 0.0202

Mars -32400-12-08 16:19 J -10112334.85 -10112334.82 -10112334.75 0.0277 0.0273

Jupiter -32396-10-09 07:40 J -10110934.68 -10110934.18 -10110933.68 0.0284 0.0015

Venus -32393-09-06 13:40 J -10109871.02 -10109870.93 -10109870.83 0.0288 0.0256

Venus -32392-04-24 16:04 J -10109641.04 -10109640.83 -10109640.63 0.0288 0.0094

Venus -32392-12-10 18:28 J -10109410.93 -10109410.73 -10109410.51 0.0289 0.0073

Venus -32391-07-28 21:21 J -10109180.73 -10109180.61 -10109180.48 0.0289 0.0237  
 Moon -32391-10-28 14:09 J -10109089.16 -10109088.91 -10109088.66 0.0289 0.0018  
 Earth -32391-10-28 17:16 J -10109089.03 -10109088.78 -10109088.54 0.0289 0.0033 \*  
 Mercury -32390-06-03 13:55 J -10108870.96 -10108870.92 -10108870.86 0.0289 0.0273  
 Mercury -32390-08-31 09:35 J -10108782.25 -10108782.10 -10108781.95 0.0288 0.0121  
 Mercury -32390-11-28 04:33 J -10108693.48 -10108693.31 -10108693.15 0.0288 0.0029  
 Mercury -32389-02-24 22:47 J -10108604.68 -10108604.55 -10108604.42 0.0288 0.0172  
 Venus -32378-02-21 17:31 J -10104589.87 -10104589.77 -10104589.66 0.0271 0.0231  
 Venus -32378-10-08 16:47 J -10104360.99 -10104360.80 -10104360.61 0.0271 0.0105  
 Venus -32377-05-24 15:35 J -10104132.05 -10104131.85 -10104131.64 0.0270 0.0024  
 Venus -32376-01-08 14:23 J -10103903.07 -10103902.90 -10103902.72 0.0270 0.0150  
 Moon -32376-04-22 10:19 J -10103799.27 -10103799.07 -10103798.85 0.0270 0.0154  
 Earth -32376-04-22 11:16 J -10103799.22 -10103799.03 -10103798.83 0.0270 0.0162 \*  
 Mercury -32375-03-15 23:16 J -10103471.58 -10103471.53 -10103471.48 0.0271 0.0251  
 Mercury -32375-06-12 11:45 J -10103383.13 -10103383.01 -10103382.89 0.0271 0.0147  
 Mercury -32375-09-09 00:28 J -10103294.63 -10103294.48 -10103294.34 0.0271 0.0042  
 Mercury -32375-12-06 13:11 J -10103206.09 -10103205.95 -10103205.80 0.0271 0.0067  
 Mercury -32374-03-05 02:23 J -10103117.51 -10103117.40 -10103117.28 0.0271 0.0177  
 Mars -32369-01-25 15:21 J -10101330.09 -10101329.86 -10101329.63 0.0278 0.0150  
 Venus -32363-03-19 18:14 J -10099084.87 -10099084.74 -10099084.62 0.0288 0.0234  
 Venus -32363-11-04 19:55 J -10098854.87 -10098854.67 -10098854.45 0.0288 0.0073  
 Venus -32362-06-22 22:19 J -10098624.77 -10098624.57 -10098624.36 0.0289 0.0094  
 Moon -32362-10-22 17:16 J -10098502.80 -10098502.78 -10098502.73 0.0289 0.0286  
 Venus -32361-02-08 00:43 J -10098394.56 -10098394.47 -10098394.36 0.0289 0.0257  
 Earth -32361-11-04 17:59 J -10098123.80 -10098123.75 -10098123.68 0.0288 0.0279  
 Mercury -32360-01-17 07:55 J -10098050.30 -10098050.17 -10098050.03 0.0288 0.0174  
 Mercury -32360-04-16 03:07 J -10097961.53 -10097961.37 -10097961.21 0.0288 0.0024  
 Mercury -32360-07-13 21:35 J -10097872.74 -10097872.60 -10097872.45 0.0288 0.0122  
 Mercury -32360-10-10 15:35 J -10097783.90 -10097783.85 -10097783.78 0.0288 0.0263  
 Mars -32355-03-09 06:57 J -10096173.45 -10096173.21 -10096172.94 0.0281 0.0166

Venus -32349-09-02 16:33 J -10093803.92 -10093803.81 -10093803.68 0.0271 0.0217  
 Venus -32348-04-19 15:50 J -10093575.03 -10093574.84 -10093574.64 0.0271 0.0090  
 Venus -32348-12-04 14:38 J -10093346.09 -10093345.89 -10093345.68 0.0271 0.0038  
 Venus -32347-07-21 13:26 J -10093117.11 -10093116.94 -10093116.78 0.0271 0.0165  
 Earth -32346-04-29 06:14 J -10092835.47 -10092835.24 -10092835.00 0.0271 0.0080  
 Moon -32346-04-29 09:50 J -10092835.32 -10092835.09 -10092834.85 0.0271 0.0080 \*  
 Mercury -32346-10-30 12:14 J -10092651.09 -10092650.99 -10092650.89 0.0271 0.0190  
 Mercury -32345-01-27 00:43 J -10092562.60 -10092562.47 -10092562.33 0.0271 0.0085  
 Mercury -32345-04-24 13:40 J -10092474.08 -10092473.93 -10092473.79 0.0271 0.0023  
 Mercury -32345-07-22 02:38 J -10092385.52 -10092385.39 -10092385.26 0.0271 0.0132  
 Mercury -32345-10-18 15:50 J -10092296.90 -10092296.84 -10092296.77 0.0272 0.0244  
 Venus -32334-09-29 22:19 J -10088298.71 -10088298.57 -10088298.42 0.0288 0.0214  
 Venus -32333-05-17 00:43 J -10088068.68 -10088068.47 -10088068.25 0.0289 0.0051  
 Venus -32332-01-02 03:35 J -10087838.55 -10087838.35 -10087838.15 0.0289 0.0116  
 Venus -32332-08-20 06:28 J -10087608.28 -10087608.23 -10087608.17 0.0289 0.0279  
 Moon -32332-10-29 16:33 J -10087538.05 -10087537.81 -10087537.57 0.0289 0.0032  
 Earth -32332-10-29 19:11 J -10087537.94 -10087537.70 -10087537.45 0.0289 0.0018 \*  
 Mercury -32331-06-06 07:40 J -10087318.28 -10087318.18 -10087318.07 0.0289 0.0219  
 Mercury -32331-09-03 03:07 J -10087229.53 -10087229.37 -10087229.21 0.0289 0.0068  
 Mercury -32331-11-30 21:50 J -10087140.75 -10087140.59 -10087140.43 0.0288 0.0080  
 Mercury -32330-02-27 16:04 J -10087051.93 -10087051.83 -10087051.73 0.0288 0.0223  
 Venus -32319-03-15 23:02 J -10083017.68 -10083017.54 -10083017.39 0.0271 0.0194  
 Venus -32319-10-30 22:04 J -10082788.77 -10082788.58 -10082788.37 0.0271 0.0068  
 Venus -32318-06-16 20:52 J -10082559.83 -10082559.63 -10082559.42 0.0270 0.0060  
 Venus -32317-01-31 19:26 J -10082330.83 -10082330.69 -10082330.53 0.0270 0.0186  
 Moon -32317-04-23 08:38 J -10082248.36 -10082248.14 -10082247.92 0.0270 0.0112  
 Earth -32317-04-23 12:14 J -10082248.21 -10082247.99 -10082247.77 0.0270 0.0118 \*  
 Mercury -32316-03-18 15:07 J -10081918.96 -10081918.87 -10081918.78 0.0270 0.0212  
 Mercury -32316-06-15 03:35 J -10081830.48 -10081830.35 -10081830.22 0.0270 0.0108  
 Mercury -32316-09-11 16:19 J -10081741.97 -10081741.82 -10081741.68 0.0271 0.0003



Mercury -32316-12-09 05:16 J -10081653.42 -10081653.28 -10081653.15 0.0271 0.0107

Mercury -32315-03-07 18:28 J -10081564.82 -10081564.73 -10081564.64 0.0271 0.0218

Mars -32311-05-04 04:47 J -10080046.42 -10080046.30 -10080046.16 0.0277 0.0240

Venus -32304-04-11 03:07 J -10077512.52 -10077512.37 -10077512.20 0.0288 0.0191

Venus -32304-11-27 05:31 J -10077282.49 -10077282.27 -10077282.05 0.0289 0.0027

Venus -32303-07-15 08:09 J -10077052.35 -10077052.16 -10077051.97 0.0289 0.0138

Earth -32303-10-23 16:47 J -10076951.92 -10076951.80 -10076951.68 0.0289 0.0252

Moon -32303-10-23 18:57 J -10076951.85 -10076951.71 -10076951.56 0.0289 0.0236 \*

Mercury -32302-10-24 06:14 J -10076586.29 -10076586.24 -10076586.18 0.0288 0.0272

Mercury -32301-01-21 01:40 J -10076497.58 -10076497.43 -10076497.28 0.0288 0.0120

Mercury -32301-04-18 20:38 J -10076408.80 -10076408.64 -10076408.47 0.0288 0.0030

Mercury -32301-07-16 15:07 J -10076319.99 -10076319.87 -10076319.74 0.0288 0.0174

Venus -32290-09-25 22:04 J -10072231.73 -10072231.58 -10072231.43 0.0271 0.0180

Venus -32289-05-11 20:52 J -10072002.83 -10072002.63 -10072002.42 0.0271 0.0053

Venus -32289-12-26 19:40 J -10071773.88 -10071773.68 -10071773.48 0.0271 0.0074

Venus -32288-08-12 17:59 J -10071544.88 -10071544.75 -10071544.60 0.0270 0.0200

Earth -32287-04-30 06:14 J -10071284.45 -10071284.24 -10071284.02 0.0271 0.0123

Moon -32287-04-30 06:43 J -10071284.44 -10071284.22 -10071283.99 0.0271 0.0121 \*

Mercury -32287-08-05 15:21 J -10071186.90 -10071186.86 -10071186.81 0.0271 0.0255

Mercury -32287-11-02 03:50 J -10071098.46 -10071098.34 -10071098.22 0.0271 0.0151

Mercury -32286-01-29 16:33 J -10071009.96 -10071009.81 -10071009.67 0.0271 0.0046

Mercury -32286-04-28 05:16 J -10070921.42 -10070921.28 -10070921.13 0.0271 0.0062

Mercury -32286-07-25 18:14 J -10070832.84 -10070832.74 -10070832.62 0.0271 0.0173

Mars -32281-06-19 12:14 J -10069042.20 -10069041.99 -10069041.76 0.0278 0.0161

Venus -32275-10-22 06:14 J -10066726.41 -10066726.24 -10066726.07 0.0288 0.0173

Venus -32274-06-09 08:52 J -10066496.35 -10066496.13 -10066495.91 0.0289 0.0009

Venus -32273-01-25 11:45 J -10066266.19 -10066266.01 -10066265.83 0.0289 0.0157

Earth -32273-10-30 19:40 J -10065986.92 -10065986.68 -10065986.44 0.0289 0.0064

Moon -32273-10-30 21:35 J -10065986.83 -10065986.60 -10065986.37 0.0289 0.0077 \*

Mercury -32272-06-09 00:43 J -10065765.60 -10065765.47 -10065765.33 0.0289 0.0169

Mercury -32272-09-05 19:55 J -10065676.83 -10065676.67 -10065676.50 0.0289 0.0020  
 Mercury -32272-12-03 14:38 J -10065588.03 -10065587.89 -10065587.74 0.0289 0.0129  
 Mercury -32271-03-02 08:52 J -10065499.18 -10065499.13 -10065499.07 0.0288 0.0271  
 Mars -32267-08-03 00:28 J -10063884.67 -10063884.48 -10063884.27 0.0282 0.0215  
 Venus -32260-04-07 04:04 J -10061445.49 -10061445.33 -10061445.15 0.0271 0.0158  
 Venus -32260-11-22 03:07 J -10061216.57 -10061216.37 -10061216.16 0.0270 0.0031  
 Venus -32259-07-09 01:40 J -10060987.62 -10060987.43 -10060987.23 0.0270 0.0096  
 Venus -32258-02-23 00:14 J -10060758.60 -10060758.49 -10060758.36 0.0270 0.0221  
 Moon -32258-04-25 11:31 J -10060697.25 -10060697.02 -10060696.79 0.0270 0.0072  
 Earth -32258-04-25 12:28 J -10060697.22 -10060696.98 -10060696.75 0.0270 0.0074 \*  
 Mercury -32257-03-21 06:43 J -10060366.33 -10060366.22 -10060366.11 0.0270 0.0173  
 Mercury -32257-06-17 19:11 J -10060277.84 -10060277.70 -10060277.56 0.0270 0.0069  
 Mercury -32257-09-14 08:09 J -10060189.31 -10060189.16 -10060189.02 0.0270 0.0039  
 Mercury -32257-12-11 21:07 J -10060100.74 -10060100.62 -10060100.50 0.0271 0.0148  
 Mercury -32256-03-10 10:19 J -10060012.11 -10060012.07 -10060012.03 0.0271 0.0259  
 Venus -32245-05-03 11:31 J -10055940.20 -10055940.02 -10055939.83 0.0288 0.0148  
 Venus -32245-12-19 13:55 J -10055710.14 -10055709.92 -10055709.70 0.0289 0.0016  
 Venus -32244-08-06 16:33 J -10055479.97 -10055479.81 -10055479.63 0.0289 0.0181  
 Moon -32244-10-24 14:52 J -10055401.05 -10055400.88 -10055400.68 0.0289 0.0193  
 Earth -32244-10-24 17:45 J -10055400.92 -10055400.76 -10055400.58 0.0289 0.0205 \*  
 Mercury -32243-10-26 23:45 J -10055033.62 -10055033.51 -10055033.41 0.0289 0.0220  
 Mercury -32242-01-23 18:57 J -10054944.87 -10054944.71 -10054944.55 0.0289 0.0069  
 Mercury -32242-04-22 13:55 J -10054856.08 -10054855.92 -10054855.77 0.0288 0.0080  
 Mercury -32242-07-20 08:09 J -10054767.26 -10054767.16 -10054767.06 0.0288 0.0223  
 Venus -32231-03-03 03:50 J -10050888.35 -10050888.34 -10050888.30 0.0271 0.0270  
 Venus -32231-10-18 03:21 J -10050659.53 -10050659.36 -10050659.18 0.0271 0.0143  
 Venus -32230-06-04 02:09 J -10050430.62 -10050430.41 -10050430.20 0.0270 0.0016  
 Venus -32229-01-19 00:43 J -10050201.66 -10050201.47 -10050201.28 0.0270 0.0110  
 Venus -32229-09-03 22:47 J -10049972.64 -10049972.55 -10049972.44 0.0270 0.0236  
 Moon -32228-05-01 02:52 J -10049733.57 -10049733.38 -10049733.17 0.0270 0.0160

Earth -32228-05-01 06:28 J -10049733.42 -10049733.23 -10049733.04 0.0270 0.0167 \*  
 Mercury -32228-08-08 07:11 J -10049634.29 -10049634.20 -10049634.12 0.0270 0.0216  
 Mercury -32228-11-04 19:26 J -10049545.81 -10049545.69 -10049545.55 0.0271 0.0113  
 Mercury -32227-02-01 08:09 J -10049457.30 -10049457.16 -10049457.01 0.0271 0.0009  
 Mercury -32227-04-30 21:07 J -10049368.75 -10049368.62 -10049368.48 0.0271 0.0102  
 Mercury -32227-07-28 10:04 J -10049280.16 -10049280.08 -10049279.98 0.0271 0.0213  
 Mars -32223-09-26 22:33 J -10047758.69 -10047758.56 -10047758.40 0.0277 0.0234  
 Venus -32216-11-13 13:26 J -10045154.13 -10045153.94 -10045153.74 0.0288 0.0132  
 Venus -32215-07-01 16:19 J -10044924.04 -10044923.82 -10044923.60 0.0289 0.0033  
 Venus -32214-02-16 19:26 J -10044693.85 -10044693.69 -10044693.53 0.0289 0.0198  
 Earth -32214-11-01 18:57 J -10044435.93 -10044435.71 -10044435.47 0.0289 0.0112  
 Moon -32214-11-01 22:47 J -10044435.77 -10044435.55 -10044435.32 0.0289 0.0121 \*  
 Mercury -32213-03-14 22:04 J -10044301.63 -10044301.58 -10044301.53 0.0289 0.0274  
 Mercury -32213-06-11 17:45 J -10044212.91 -10044212.76 -10044212.61 0.0289 0.0120  
 Mercury -32213-09-08 12:43 J -10044124.13 -10044123.97 -10044123.80 0.0289 0.0030  
 Mercury -32213-12-06 07:26 J -10044035.32 -10044035.19 -10044035.06 0.0289 0.0176  
 Venus -32202-09-13 10:04 J -10040102.16 -10040102.08 -10040101.99 0.0271 0.0247  
 Venus -32201-04-29 09:21 J -10039873.29 -10039873.11 -10039872.92 0.0271 0.0121  
 Venus -32201-12-14 08:09 J -10039644.37 -10039644.16 -10039643.95 0.0270 0.0005  
 Venus -32200-07-31 06:43 J -10039415.40 -10039415.22 -10039415.04 0.0270 0.0131  
 Venus -32199-03-17 05:16 J -10039186.34 -10039186.28 -10039186.22 0.0270 0.0255  
 Earth -32199-04-26 12:43 J -10039146.22 -10039145.97 -10039145.73 0.0270 0.0030  
 Moon -32199-04-26 16:04 J -10039146.07 -10039145.83 -10039145.59 0.0270 0.0032 \*  
 Mercury -32199-12-26 10:04 J -10038902.14 -10038902.08 -10038902.01 0.0270 0.0237  
 Mercury -32198-03-24 22:33 J -10038813.69 -10038813.56 -10038813.44 0.0270 0.0134  
 Mercury -32198-06-21 11:02 J -10038725.18 -10038725.04 -10038724.89 0.0270 0.0028  
 Mercury -32198-09-17 23:59 J -10038636.64 -10038636.50 -10038636.36 0.0270 0.0080  
 Mercury -32198-12-15 12:57 J -10038548.06 -10038547.96 -10038547.85 0.0270 0.0189  
 Mars -32193-11-13 00:28 J -10036753.66 -10036753.48 -10036753.27 0.0278 0.0197  
 Venus -32187-10-08 17:45 J -10034597.82 -10034597.76 -10034597.67 0.0288 0.0268

Venus -32186-05-26 19:55 J -10034367.87 -10034367.67 -10034367.46 0.0289 0.0106  
 Venus -32185-01-11 22:33 J -10034137.77 -10034137.56 -10034137.35 0.0289 0.0059  
 Venus -32185-08-29 01:11 J -10033907.58 -10033907.45 -10033907.30 0.0289 0.0223  
 Moon -32185-10-25 15:50 J -10033850.04 -10033849.84 -10033849.62 0.0289 0.0148  
 Earth -32185-10-25 18:57 J -10033849.91 -10033849.71 -10033849.49 0.0289 0.0157 \*  
 Mercury -32184-10-29 16:47 J -10033480.92 -10033480.80 -10033480.66 0.0289 0.0169  
 Mercury -32183-01-26 12:14 J -10033392.15 -10033391.99 -10033391.83 0.0289 0.0018  
 Mercury -32183-04-25 06:57 J -10033303.36 -10033303.21 -10033303.07 0.0289 0.0130  
 Mercury -32183-07-23 01:11 J -10033214.50 -10033214.45 -10033214.40 0.0288 0.0272  
 Mars -32179-12-26 20:09 J -10031596.80 -10031596.66 -10031596.49 0.0281 0.0245  
 Venus -32172-03-25 09:50 J -10029316.19 -10029316.09 -10029315.99 0.0271 0.0232  
 Venus -32172-11-09 08:38 J -10029087.32 -10029087.14 -10029086.94 0.0271 0.0107  
 Venus -32171-06-26 07:26 J -10028858.39 -10028858.19 -10028857.98 0.0270 0.0020  
 Venus -32170-02-10 05:59 J -10028629.42 -10028629.25 -10028629.07 0.0270 0.0146  
 Moon -32170-04-21 03:21 J -10028559.44 -10028559.36 -10028559.26 0.0270 0.0250  
 Earth -32170-04-21 06:57 J -10028559.29 -10028559.21 -10028559.12 0.0270 0.0250 \*  
 Venus -32170-09-27 04:04 J -10028400.33 -10028400.33 -10028400.31 0.0270 0.0270  
 Moon -32169-05-02 05:02 J -10028182.44 -10028182.29 -10028182.13 0.0270 0.0203  
 Earth -32169-05-02 07:11 J -10028182.35 -10028182.20 -10028182.05 0.0270 0.0213 \*  
 Mercury -32169-08-10 23:02 J -10028081.65 -10028081.54 -10028081.43 0.0270 0.0176  
 Mercury -32169-11-07 11:31 J -10027993.16 -10027993.02 -10027992.88 0.0270 0.0071  
 Mercury -32168-02-04 00:14 J -10027904.64 -10027904.49 -10027904.35 0.0271 0.0036  
 Mercury -32168-05-03 12:57 J -10027816.08 -10027815.96 -10027815.83 0.0271 0.0145  
 Mercury -32168-07-31 02:23 J -10027727.45 -10027727.40 -10027727.35 0.0271 0.0255  
 Venus -32157-04-19 18:57 J -10023811.82 -10023811.71 -10023811.61 0.0288 0.0251  
 Venus -32157-12-05 20:52 J -10023581.83 -10023581.63 -10023581.42 0.0288 0.0090  
 Venus -32156-07-23 23:59 J -10023351.71 -10023351.50 -10023351.29 0.0289 0.0075  
 Venus -32155-03-11 02:52 J -10023121.49 -10023121.38 -10023121.25 0.0289 0.0239  
 Moon -32155-11-02 17:59 J -10022884.96 -10022884.75 -10022884.53 0.0289 0.0161  
 Earth -32155-11-02 18:43 J -10022884.92 -10022884.72 -10022884.51 0.0289 0.0157 \*

Mercury -32154-03-18 14:52 J -10022748.97 -10022748.88 -10022748.77 0.0289 0.0226

Mercury -32154-06-15 10:33 J -10022660.22 -10022660.06 -10022659.90 0.0289 0.0072

Mercury -32154-09-12 05:31 J -10022571.43 -10022571.27 -10022571.11 0.0289 0.0077

Mercury -32154-12-09 23:59 J -10022482.60 -10022482.50 -10022482.40 0.0289 0.0222

Venus -32143-10-05 15:35 J -10018529.97 -10018529.85 -10018529.71 0.0271 0.0211

Venus -32142-05-22 14:52 J -10018301.08 -10018300.88 -10018300.68 0.0271 0.0084

Venus -32141-01-06 13:40 J -10018072.13 -10018071.93 -10018071.72 0.0270 0.0042

Venus -32141-08-22 12:14 J -10017843.15 -10017842.99 -10017842.83 0.0270 0.0167

Earth -32140-04-27 13:55 J -10017595.16 -10017594.92 -10017594.67 0.0270 0.0016

Moon -32140-04-27 16:04 J -10017595.08 -10017594.83 -10017594.57 0.0270 0.0012 \*

Mercury -32140-12-29 01:55 J -10017349.51 -10017349.42 -10017349.32 0.0270 0.0196

Mercury -32139-03-27 14:23 J -10017261.03 -10017260.90 -10017260.76 0.0270 0.0092

Mercury -32139-06-24 03:07 J -10017172.51 -10017172.37 -10017172.22 0.0270 0.0014

Mercury -32139-09-20 16:04 J -10017083.96 -10017083.83 -10017083.70 0.0270 0.0122

Mercury -32139-12-18 05:16 J -10016995.36 -10016995.28 -10016995.21 0.0270 0.0233

Mars -32134-02-20 16:33 J -10015470.00 -10015469.81 -10015469.61 0.0276 0.0189

Venus -32128-10-31 02:23 J -10013025.53 -10013025.40 -10013025.26 0.0288 0.0225

Venus -32127-06-18 04:33 J -10012795.51 -10012795.31 -10012795.09 0.0289 0.0063

Venus -32126-02-03 07:26 J -10012565.39 -10012565.19 -10012564.99 0.0289 0.0102

Venus -32126-09-21 10:04 J -10012335.15 -10012335.08 -10012334.99 0.0289 0.0266

Earth -32126-10-27 20:38 J -10012298.86 -10012298.64 -10012298.41 0.0289 0.0108

Moon -32126-10-27 21:35 J -10012298.82 -10012298.60 -10012298.37 0.0289 0.0102 \*

Mercury -32125-08-04 14:38 J -10012016.94 -10012016.89 -10012016.82 0.0289 0.0270

Mercury -32125-11-01 10:19 J -10011928.22 -10011928.07 -10011927.91 0.0289 0.0116

Mercury -32124-01-29 05:31 J -10011839.43 -10011839.27 -10011839.11 0.0289 0.0034

Mercury -32124-04-27 23:59 J -10011750.62 -10011750.50 -10011750.37 0.0289 0.0180

Mars -32120-03-29 11:45 J -10010319.12 -10010319.01 -10010318.87 0.0283 0.0259

Venus -32113-04-16 15:50 J -10007743.97 -10007743.84 -10007743.69 0.0271 0.0195

Venus -32113-12-01 14:52 J -10007515.07 -10007514.88 -10007514.67 0.0270 0.0069

Venus -32112-07-18 13:26 J -10007286.14 -10007285.94 -10007285.73 0.0270 0.0058

Venus -32111-03-04 11:45 J -10007057.15 -10007057.01 -10007056.85 0.0270 0.0183  
 Moon -32111-04-22 07:11 J -10007008.35 -10007008.20 -10007008.04 0.0270 0.0205  
 Earth -32111-04-22 09:07 J -10007008.27 -10007008.12 -10007007.95 0.0270 0.0203 \*  
 Earth -32110-05-04 09:07 J -10006631.17 -10006631.12 -10006631.05 0.0270 0.0261  
 Moon -32110-05-04 11:45 J -10006631.09 -10006631.01 -10006630.91 0.0270 0.0248 \*  
 Mercury -32110-05-18 02:38 J -10006617.45 -10006617.39 -10006617.32 0.0270 0.0237  
 Mercury -32110-08-14 15:07 J -10006529.00 -10006528.87 -10006528.75 0.0270 0.0133  
 Mercury -32110-11-11 03:35 J -10006440.49 -10006440.35 -10006440.20 0.0270 0.0028  
 Mercury -32109-02-07 16:33 J -10006351.95 -10006351.81 -10006351.67 0.0270 0.0080  
 Mercury -32109-05-06 05:31 J -10006263.38 -10006263.27 -10006263.17 0.0271 0.0189  
 Mars -32104-04-07 22:19 J -10004465.75 -10004465.57 -10004465.39 0.0277 0.0208  
 Venus -32098-05-13 03:35 J -10002239.49 -10002239.35 -10002239.20 0.0288 0.0209  
 Venus -32098-12-29 05:59 J -10002009.47 -10002009.25 -10002009.04 0.0289 0.0047  
 Venus -32097-08-15 08:52 J -10001779.33 -10001779.13 -10001778.93 0.0289 0.0118  
 Venus -32096-04-02 11:59 J -10001549.05 -10001549.00 -10001548.95 0.0289 0.0280  
 Moon -32096-11-03 16:19 J -10001333.98 -10001333.82 -10001333.64 0.0289 0.0206  
 Earth -32096-11-03 19:55 J -10001333.83 -10001333.67 -10001333.48 0.0289 0.0208 \*  
 Mercury -32095-03-21 08:23 J -10001196.28 -10001196.15 -10001196.02 0.0289 0.0173  
 Mercury -32095-06-18 03:50 J -10001107.51 -10001107.34 -10001107.18 0.0289 0.0022  
 Mercury -32095-09-14 22:33 J -10001018.70 -10001018.56 -10001018.41 0.0289 0.0128  
 Mercury -32095-12-12 16:47 J -10000929.84 -10000929.80 -10000929.74 0.0289 0.0272  
 Venus -32084-10-27 21:50 J -9996957.75 -9996957.59 -9996957.44 0.0271 0.0173  
 Venus -32083-06-13 20:52 J -9996728.83 -9996728.63 -9996728.43 0.0271 0.0046  
 Venus -32082-01-28 19:40 J -9996499.88 -9996499.68 -9996499.48 0.0270 0.0080  
 Venus -32082-09-14 17:59 J -9996270.87 -9996270.75 -9996270.61 0.0270 0.0204  
 Moon -32081-04-28 13:55 J -9996044.17 -9996043.92 -9996043.67 0.0270 0.0054  
 Earth -32081-04-28 16:19 J -9996044.05 -9996043.82 -9996043.58 0.0270 0.0064 \*  
 Mercury -32081-10-04 05:59 J -9995885.29 -9995885.25 -9995885.21 0.0270 0.0256  
 Mercury -32081-12-31 17:59 J -9995796.86 -9995796.75 -9995796.62 0.0270 0.0154  
 Mercury -32080-03-30 06:43 J -9995708.36 -9995708.22 -9995708.08 0.0270 0.0049

Mercury	-32080-06-26 19:26 J	-9995619.83	-9995619.69	-9995619.55	0.0270	0.0059
Mercury	-32080-09-23 08:23 J	-9995531.26	-9995531.15	-9995531.03	0.0270	0.0168
Venus	-32069-11-22 12:14 J	-9991453.15	-9991452.99	-9991452.81	0.0288	0.0181
Venus	-32068-07-10 14:38 J	-9991223.10	-9991222.89	-9991222.67	0.0289	0.0019
Venus	-32067-02-25 17:16 J	-9990992.96	-9990992.78	-9990992.58	0.0289	0.0147
Earth	-32067-10-28 23:59 J	-9990747.74	-9990747.50	-9990747.26	0.0289	0.0055
Moon	-32067-10-29 03:35 J	-9990747.59	-9990747.35	-9990747.11	0.0289	0.0051 *
Mercury	-32066-08-08 08:38 J	-9990464.25	-9990464.14	-9990464.03	0.0289	0.0214
Mercury	-32066-11-05 04:04 J	-9990375.49	-9990375.33	-9990375.17	0.0289	0.0061
Mercury	-32065-02-01 23:02 J	-9990286.69	-9990286.54	-9990286.38	0.0289	0.0088
Mercury	-32065-04-30 17:31 J	-9990197.86	-9990197.77	-9990197.68	0.0289	0.0233
Venus	-32054-05-09 23:02 J	-9986171.70	-9986171.54	-9986171.37	0.0271	0.0156
Venus	-32054-12-24 22:04 J	-9985942.78	-9985942.58	-9985942.37	0.0270	0.0030
Venus	-32053-08-09 20:38 J	-9985713.83	-9985713.64	-9985713.45	0.0270	0.0096
Venus	-32052-03-26 18:57 J	-9985484.83	-9985484.71	-9985484.59	0.0270	0.0220
Earth	-32052-04-23 13:11 J	-9985457.14	-9985456.95	-9985456.74	0.0270	0.0153
Moon	-32052-04-23 15:07 J	-9985457.05	-9985456.87	-9985456.67	0.0270	0.0157 *
Mercury	-32051-05-20 19:11 J	-9985064.80	-9985064.70	-9985064.60	0.0270	0.0191
Mercury	-32051-08-17 07:40 J	-9984976.32	-9984976.18	-9984976.05	0.0270	0.0087
Mercury	-32051-11-13 20:09 J	-9984887.80	-9984887.66	-9984887.51	0.0270	0.0020
Mercury	-32050-02-10 09:07 J	-9984799.25	-9984799.12	-9984798.99	0.0270	0.0127
Mercury	-32050-05-09 22:04 J	-9984710.64	-9984710.58	-9984710.50	0.0271	0.0238
Mars	-32046-07-16 19:40 J	-9983181.89	-9983181.68	-9983181.46	0.0276	0.0170
Venus	-32039-06-04 13:40 J	-9980667.11	-9980666.93	-9980666.75	0.0288	0.0164
Venus	-32038-01-20 16:04 J	-9980437.05	-9980436.83	-9980436.61	0.0289	0.0002
Venus	-32038-09-07 18:57 J	-9980206.89	-9980206.71	-9980206.53	0.0289	0.0162
Moon	-32037-11-04 21:35 J	-9979782.69	-9979782.60	-9979782.48	0.0289	0.0259
Earth	-32037-11-04 23:16 J	-9979782.63	-9979782.53	-9979782.42	0.0289	0.0259 *
Mercury	-32037-12-25 06:28 J	-9979732.28	-9979732.23	-9979732.18	0.0289	0.0272
Mercury	-32036-03-24 02:09 J	-9979643.56	-9979643.41	-9979643.26	0.0289	0.0118

Mercury -32036-06-20 21:21 J -9979554.77 -9979554.61 -9979554.45 0.0289 0.0033

Mercury -32036-09-17 15:50 J -9979465.96 -9979465.84 -9979465.71 0.0289 0.0181

Mars -32032-08-22 16:19 J -9978031.01 -9978030.82 -9978030.61 0.0284 0.0220

Venus -32025-04-04 05:02 J -9975614.35 -9975614.29 -9975614.23 0.0272 0.0259

Venus -32025-11-19 04:33 J -9975385.48 -9975385.31 -9975385.13 0.0271 0.0134

Venus -32024-07-06 03:50 J -9975156.55 -9975156.34 -9975156.14 0.0271 0.0008

Venus -32023-02-20 02:38 J -9974927.57 -9974927.39 -9974927.20 0.0270 0.0118

Venus -32023-10-07 01:11 J -9974698.54 -9974698.45 -9974698.36 0.0270 0.0241

Moon -32022-04-30 17:02 J -9974493.01 -9974492.79 -9974492.56 0.0270 0.0103

Earth -32022-04-30 20:09 J -9974492.87 -9974492.66 -9974492.43 0.0270 0.0114 \*

Mercury -32022-10-07 22:19 J -9974332.66 -9974332.57 -9974332.48 0.0270 0.0212

Mercury -32021-01-04 10:33 J -9974244.19 -9974244.06 -9974243.92 0.0270 0.0109

Mercury -32021-04-01 23:16 J -9974155.68 -9974155.53 -9974155.38 0.0270 0.0002

Mercury -32021-06-29 11:59 J -9974067.13 -9974067.00 -9974066.86 0.0270 0.0107

Mercury -32021-09-26 01:11 J -9973978.54 -9973978.45 -9973978.36 0.0270 0.0216

Mars -32016-09-02 01:40 J -9972176.48 -9972176.43 -9972176.35 0.0277 0.0268

Venus -32010-12-15 23:59 J -9969880.68 -9969880.50 -9969880.30 0.0288 0.0134

Venus -32009-08-02 02:38 J -9969650.61 -9969650.39 -9969650.17 0.0289 0.0030

Venus -32008-03-20 05:16 J -9969420.43 -9969420.28 -9969420.11 0.0289 0.0194

Earth -32008-10-30 06:14 J -9969196.49 -9969196.24 -9969195.99 0.0289 0.0002

Moon -32008-10-30 07:55 J -9969196.43 -9969196.17 -9969195.92 0.0289 0.0006 \*

Mercury -32007-08-11 03:07 J -9968911.50 -9968911.37 -9968911.22 0.0289 0.0153

Mercury -32007-11-07 22:33 J -9968822.73 -9968822.56 -9968822.40 0.0289 0.0003

Mercury -32006-02-04 17:16 J -9968733.92 -9968733.78 -9968733.64 0.0289 0.0147

## 32ND MILLENNIUM BCE



**This is a list of transits visible from Saturn in the 32nd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-31996-10-15 07:11 J		-9964828.28	-9964828.20	-9964828.09	0.0271	0.0242	
Venus	-31995-06-01 06:57 J		-9964599.39	-9964599.21	-9964599.02	0.0271	0.0116	
Venus	-31994-01-16 05:59 J		-9964370.45	-9964370.25	-9964370.04	0.0270	0.0011	
Venus	-31994-09-02 04:19 J		-9964141.49	-9964141.32	-9964141.13	0.0270	0.0136	
Venus	-31993-04-18 02:52 J		-9963912.44	-9963912.38	-9963912.32	0.0270	0.0258	
Earth	-31993-04-24 18:57 J		-9963905.93	-9963905.71	-9963905.48	0.0270	0.0100	
Moon	-31993-04-24 22:33 J		-9963905.78	-9963905.56	-9963905.33	0.0270	0.0104	*
Mercury	-31992-02-23 23:45 J		-9963600.56	-9963600.51	-9963600.45	0.0270	0.0246	
Mercury	-31992-05-23 11:59 J		-9963512.12	-9963512.00	-9963511.88	0.0270	0.0143	
Mercury	-31992-08-20 00:28 J		-9963423.62	-9963423.48	-9963423.33	0.0270	0.0039	
Mercury	-31992-11-16 13:11 J		-9963335.09	-9963334.95	-9963334.81	0.0270	0.0069	
Mercury	-31991-02-13 02:09 J		-9963246.52	-9963246.41	-9963246.30	0.0270	0.0178	
Venus	-31981-11-08 23:59 J		-9959324.55	-9959324.50	-9959324.43	0.0287	0.0276	
Venus	-31980-06-27 01:55 J		-9959094.62	-9959094.42	-9959094.22	0.0288	0.0117	
Venus	-31979-02-12 04:19 J		-9958864.53	-9958864.32	-9958864.10	0.0289	0.0046	
Venus	-31979-09-30 07:11 J		-9958634.35	-9958634.20	-9958634.05	0.0289	0.0209	
Moon	-31979-10-23 22:33 J		-9958610.64	-9958610.56	-9958610.47	0.0289	0.0270	
Earth	-31979-10-23 23:31 J		-9958610.60	-9958610.52	-9958610.44	0.0289	0.0273	*
Mercury	-31978-12-29 00:57 J		-9958179.57	-9958179.46	-9958179.34	0.0289	0.0211	
Mercury	-31977-03-26 20:38 J		-9958090.80	-9958090.64	-9958090.48	0.0289	0.0057	
Mercury	-31977-06-23 15:35 J		-9958002.00	-9958001.85	-9958001.70	0.0289	0.0092	
Mercury	-31977-09-20 10:04 J		-9957913.17	-9957913.08	-9957912.99	0.0289	0.0238	
Venus	-31966-04-27 12:43 J		-9954042.09	-9954041.97	-9954041.85	0.0272	0.0219	
Venus	-31966-12-12 12:28 J		-9953813.17	-9953812.98	-9953812.79	0.0271	0.0093	

Venus	-31965-07-28 11:31 J	-9953584.22	-9953584.02	-9953583.81	0.0271	0.0033
Venus	-31964-03-14 10:19 J	-9953355.23	-9953355.07	-9953354.90	0.0271	0.0158
Earth	-31963-05-02 01:40 J	-9952941.61	-9952941.43	-9952941.22	0.0270	0.0168
Moon	-31963-05-02 01:55 J	-9952941.60	-9952941.42	-9952941.22	0.0270	0.0157 *
Mercury	-31963-07-14 02:52 J	-9952868.40	-9952868.38	-9952868.36	0.0270	0.0267
Mercury	-31963-10-10 15:07 J	-9952779.98	-9952779.87	-9952779.76	0.0270	0.0164
Mercury	-31962-01-07 03:35 J	-9952691.49	-9952691.35	-9952691.21	0.0270	0.0059
Mercury	-31962-04-05 16:19 J	-9952602.97	-9952602.82	-9952602.68	0.0270	0.0048
Mercury	-31962-07-03 05:02 J	-9952514.40	-9952514.29	-9952514.16	0.0270	0.0158
Mercury	-31962-09-29 18:14 J	-9952425.75	-9952425.74	-9952425.72	0.0271	0.0269
Mars	-31958-12-11 06:28 J	-9950892.48	-9950892.23	-9950891.97	0.0276	0.0101
Venus	-31951-05-22 11:31 J	-9948538.12	-9948538.02	-9948537.89	0.0288	0.0244
Venus	-31950-01-07 13:40 J	-9948308.14	-9948307.93	-9948307.73	0.0288	0.0084
Venus	-31950-08-25 15:50 J	-9948078.04	-9948077.84	-9948077.62	0.0289	0.0080
Venus	-31949-04-11 18:28 J	-9947847.83	-9947847.73	-9947847.60	0.0289	0.0242
Moon	-31949-10-31 11:59 J	-9947645.24	-9947645.00	-9947644.75	0.0289	0.0064
Earth	-31949-10-31 14:52 J	-9947645.12	-9947644.88	-9947644.64	0.0289	0.0063 *
Mercury	-31948-05-17 02:38 J	-9947447.48	-9947447.39	-9947447.30	0.0289	0.0242
Mercury	-31948-08-13 22:19 J	-9947358.73	-9947358.57	-9947358.41	0.0289	0.0088
Mercury	-31948-11-10 17:16 J	-9947269.94	-9947269.78	-9947269.62	0.0289	0.0063
Mercury	-31947-02-07 11:59 J	-9947181.11	-9947181.00	-9947180.89	0.0289	0.0209
Mars	-31943-01-16 17:02 J	-9945742.05	-9945741.79	-9945741.52	0.0284	0.0156
Venus	-31937-11-06 16:19 J	-9943255.95	-9943255.82	-9943255.68	0.0271	0.0200
Venus	-31936-06-23 15:50 J	-9943027.04	-9943026.84	-9943026.64	0.0271	0.0074
Venus	-31935-02-07 14:52 J	-9942798.08	-9942797.88	-9942797.68	0.0270	0.0052
Venus	-31935-09-24 13:26 J	-9942569.10	-9942568.94	-9942568.78	0.0270	0.0176
Earth	-31934-04-27 02:09 J	-9942354.65	-9942354.41	-9942354.16	0.0270	0.0045
Moon	-31934-04-27 02:38 J	-9942354.63	-9942354.39	-9942354.14	0.0270	0.0052 *
Mercury	-31933-02-27 16:47 J	-9942047.89	-9942047.80	-9942047.70	0.0270	0.0197
Mercury	-31933-05-26 05:02 J	-9941959.42	-9941959.29	-9941959.15	0.0270	0.0094

Mercury	-31933-08-22 17:45 J	-9941870.90	-9941870.76	-9941870.61	0.0270	0.0014
Mercury	-31933-11-19 06:28 J	-9941782.35	-9941782.23	-9941782.09	0.0270	0.0122
Mercury	-31932-02-15 19:40 J	-9941693.75	-9941693.68	-9941693.61	0.0270	0.0232
Venus	-31922-12-02 14:09 J	-9937752.04	-9937751.91	-9937751.77	0.0288	0.0226
Venus	-31921-07-19 16:04 J	-9937522.04	-9937521.83	-9937521.61	0.0288	0.0066
Venus	-31920-03-06 18:43 J	-9937291.93	-9937291.72	-9937291.52	0.0289	0.0097
Venus	-31920-10-22 21:21 J	-9937061.70	-9937061.61	-9937061.51	0.0289	0.0258
Earth	-31920-10-25 09:21 J	-9937059.27	-9937059.11	-9937058.93	0.0289	0.0210
Moon	-31920-10-25 12:43 J	-9937059.13	-9937058.97	-9937058.80	0.0289	0.0209 *
Mercury	-31919-12-31 20:23 J	-9936626.79	-9936626.65	-9936626.50	0.0289	0.0143
Mercury	-31918-03-30 15:50 J	-9936538.00	-9936537.84	-9936537.68	0.0289	0.0009
Mercury	-31918-06-27 10:33 J	-9936449.19	-9936449.06	-9936448.92	0.0289	0.0158
Venus	-31907-05-19 21:07 J	-9932469.76	-9932469.62	-9932469.45	0.0272	0.0178
Venus	-31906-01-03 21:07 J	-9932240.82	-9932240.62	-9932240.42	0.0271	0.0051
Venus	-31906-08-20 20:09 J	-9932011.86	-9932011.66	-9932011.46	0.0271	0.0075
Venus	-31905-04-05 18:43 J	-9931782.85	-9931782.72	-9931782.57	0.0271	0.0199
Moon	-31905-04-21 07:26 J	-9931767.27	-9931767.19	-9931767.10	0.0271	0.0252
Earth	-31905-04-21 07:55 J	-9931767.25	-9931767.17	-9931767.07	0.0271	0.0249 *
Earth	-31904-05-03 08:52 J	-9931390.26	-9931390.13	-9931389.99	0.0270	0.0221
Moon	-31904-05-03 12:14 J	-9931390.14	-9931389.99	-9931389.83	0.0270	0.0210 *
Mercury	-31904-07-16 19:40 J	-9931315.76	-9931315.68	-9931315.59	0.0270	0.0219
Mercury	-31904-10-13 08:09 J	-9931227.29	-9931227.16	-9931227.03	0.0270	0.0115
Mercury	-31903-01-09 20:38 J	-9931138.78	-9931138.64	-9931138.49	0.0270	0.0011
Mercury	-31903-04-08 09:35 J	-9931050.24	-9931050.10	-9931049.97	0.0271	0.0100
Mercury	-31903-07-05 22:33 J	-9930961.65	-9930961.56	-9930961.47	0.0271	0.0210
Venus	-31892-06-14 03:07 J	-9926965.53	-9926965.37	-9926965.21	0.0288	0.0192
Venus	-31891-01-30 05:02 J	-9926735.51	-9926735.29	-9926735.08	0.0289	0.0031
Venus	-31891-09-17 07:11 J	-9926505.38	-9926505.20	-9926505.00	0.0289	0.0132
Moon	-31890-11-02 23:02 J	-9926093.75	-9926093.54	-9926093.32	0.0289	0.0129
Earth	-31890-11-03 02:23 J	-9926093.61	-9926093.40	-9926093.17	0.0289	0.0130 *

Mercury	-31889-05-19 22:33 J	-9925894.69	-9925894.56	-9925894.42	0.0289	0.0171
Mercury	-31889-08-16 17:59 J	-9925805.91	-9925805.75	-9925805.58	0.0289	0.0018
Mercury	-31889-11-13 12:57 J	-9925717.11	-9925716.96	-9925716.82	0.0289	0.0131
Mercury	-31888-02-10 07:11 J	-9925628.24	-9925628.20	-9925628.15	0.0289	0.0276
Venus	-31878-11-30 01:55 J	-9921683.58	-9921683.42	-9921683.25	0.0271	0.0157
Venus	-31877-07-16 01:26 J	-9921454.65	-9921454.44	-9921454.24	0.0271	0.0032
Venus	-31876-03-02 00:14 J	-9921225.68	-9921225.49	-9921225.29	0.0270	0.0094
Venus	-31876-10-16 22:47 J	-9920996.66	-9920996.55	-9920996.42	0.0270	0.0218
Moon	-31875-04-28 07:26 J	-9920803.44	-9920803.19	-9920802.95	0.0270	0.0005
Earth	-31875-04-28 10:47 J	-9920803.29	-9920803.05	-9920802.80	0.0270	0.0013 *
Mercury	-31875-12-03 21:50 J	-9920583.64	-9920583.59	-9920583.53	0.0270	0.0248
Mercury	-31874-03-02 10:04 J	-9920495.20	-9920495.08	-9920494.95	0.0270	0.0145
Mercury	-31874-05-29 22:33 J	-9920406.70	-9920406.56	-9920406.41	0.0270	0.0040
Mercury	-31874-08-26 11:16 J	-9920318.17	-9920318.03	-9920317.88	0.0270	0.0069
Mercury	-31874-11-23 00:14 J	-9920229.60	-9920229.49	-9920229.38	0.0270	0.0178
Mars	-31869-05-06 04:33 J	-9918603.57	-9918603.31	-9918603.04	0.0276	0.0058
Venus	-31863-12-25 05:59 J	-9916179.42	-9916179.25	-9916179.08	0.0288	0.0174
Venus	-31862-08-12 07:55 J	-9915949.38	-9915949.17	-9915948.95	0.0288	0.0014
Venus	-31861-03-29 10:33 J	-9915719.25	-9915719.06	-9915718.88	0.0289	0.0149
Earth	-31861-10-26 22:04 J	-9915507.79	-9915507.58	-9915507.36	0.0289	0.0143
Moon	-31861-10-27 00:57 J	-9915507.68	-9915507.46	-9915507.24	0.0289	0.0144 *
Mercury	-31860-10-06 20:52 J	-9915162.73	-9915162.63	-9915162.52	0.0289	0.0225
Mercury	-31859-01-03 16:33 J	-9915073.97	-9915073.81	-9915073.65	0.0289	0.0071
Mercury	-31859-04-02 11:31 J	-9914985.17	-9914985.02	-9914984.86	0.0289	0.0080
Mercury	-31859-06-30 05:59 J	-9914896.34	-9914896.25	-9914896.14	0.0289	0.0226
Mars	-31855-06-12 09:21 J	-9913453.41	-9913453.11	-9913452.81	0.0284	0.0100
Venus	-31849-10-25 06:14 J	-9911126.29	-9911126.24	-9911126.18	0.0273	0.0261
Venus	-31848-06-11 06:28 J	-9910897.41	-9910897.23	-9910897.05	0.0272	0.0135
Venus	-31847-01-26 06:14 J	-9910668.45	-9910668.24	-9910668.04	0.0271	0.0009
Venus	-31847-09-12 05:02 J	-9910439.47	-9910439.29	-9910439.09	0.0271	0.0117

Earth	-31846-04-23 15:21 J	-9910216.02	-9910215.86	-9910215.68	0.0271	0.0195
Moon	-31846-04-23 18:43 J	-9910215.87	-9910215.72	-9910215.55	0.0271	0.0201 *
Venus	-31846-04-29 03:50 J	-9910210.42	-9910210.34	-9910210.24	0.0271	0.0240
Moon	-31845-05-04 18:57 J	-9909838.75	-9909838.71	-9909838.64	0.0271	0.0264
Mercury	-31845-07-19 12:57 J	-9909763.07	-9909762.96	-9909762.85	0.0271	0.0169
Mercury	-31845-10-16 01:26 J	-9909674.58	-9909674.44	-9909674.30	0.0271	0.0063
Mercury	-31844-01-12 14:09 J	-9909586.06	-9909585.91	-9909585.77	0.0271	0.0044
Mercury	-31844-04-11 03:07 J	-9909497.49	-9909497.37	-9909497.25	0.0271	0.0154
Mercury	-31844-07-08 16:04 J	-9909408.85	-9909408.83	-9909408.80	0.0271	0.0266
Venus	-31833-07-06 19:26 J	-9905392.88	-9905392.69	-9905392.50	0.0288	0.0139
Venus	-31832-02-21 21:35 J	-9905162.82	-9905162.60	-9905162.38	0.0289	0.0023
Venus	-31832-10-09 23:59 J	-9904932.66	-9904932.50	-9904932.33	0.0289	0.0185
Earth	-31831-11-04 16:04 J	-9904542.00	-9904541.83	-9904541.64	0.0289	0.0201
Moon	-31831-11-04 16:47 J	-9904541.96	-9904541.80	-9904541.62	0.0289	0.0197 *
Mercury	-31830-02-23 23:16 J	-9904430.60	-9904430.53	-9904430.44	0.0289	0.0251
Mercury	-31830-05-23 18:57 J	-9904341.86	-9904341.71	-9904341.55	0.0289	0.0096
Mercury	-31830-08-20 14:09 J	-9904253.07	-9904252.91	-9904252.75	0.0289	0.0056
Mercury	-31830-11-17 08:52 J	-9904164.24	-9904164.13	-9904164.01	0.0289	0.0203
Venus	-31819-05-07 11:59 J	-9900340.09	-9900340.00	-9900339.89	0.0272	0.0239
Venus	-31819-12-22 12:14 J	-9900111.18	-9900110.99	-9900110.80	0.0271	0.0113
Venus	-31818-08-08 11:31 J	-9899882.23	-9899882.02	-9899881.82	0.0271	0.0013
Venus	-31817-03-24 10:04 J	-9899653.25	-9899653.08	-9899652.89	0.0270	0.0137
Venus	-31817-11-08 08:38 J	-9899424.18	-9899424.14	-9899424.07	0.0270	0.0259
Moon	-31816-04-29 17:45 J	-9899251.99	-9899251.76	-9899251.52	0.0270	0.0059
Earth	-31816-04-29 20:09 J	-9899251.90	-9899251.66	-9899251.42	0.0270	0.0070 *
Mercury	-31816-12-06 15:21 J	-9899030.96	-9899030.86	-9899030.76	0.0270	0.0195
Mercury	-31815-03-05 03:35 J	-9898942.48	-9898942.35	-9898942.21	0.0270	0.0092
Mercury	-31815-06-01 16:19 J	-9898853.96	-9898853.82	-9898853.67	0.0270	0.0016
Mercury	-31815-08-29 05:02 J	-9898765.42	-9898765.29	-9898765.16	0.0270	0.0125
Mercury	-31815-11-25 18:14 J	-9898676.81	-9898676.74	-9898676.67	0.0271	0.0235

Venus	-31804-05-31 21:50 J	-9894836.64	-9894836.59	-9894836.53	0.0287	0.0276
Venus	-31803-01-16 23:02 J	-9894606.73	-9894606.54	-9894606.34	0.0288	0.0120
Venus	-31803-09-04 01:11 J	-9894376.66	-9894376.45	-9894376.23	0.0288	0.0042
Venus	-31802-04-22 03:50 J	-9894146.49	-9894146.34	-9894146.19	0.0289	0.0203
Moon	-31802-10-29 11:31 J	-9893956.26	-9893956.02	-9893955.77	0.0289	0.0076
Earth	-31802-10-29 13:11 J	-9893956.19	-9893955.95	-9893955.71	0.0289	0.0071 *
Mercury	-31801-10-09 17:31 J	-9893609.91	-9893609.77	-9893609.62	0.0289	0.0148
Mercury	-31800-01-06 12:57 J	-9893521.12	-9893520.96	-9893520.79	0.0289	0.0007
Mercury	-31800-04-05 07:55 J	-9893432.31	-9893432.17	-9893432.03	0.0289	0.0153
Venus	-31790-11-17 15:35 J	-9889553.96	-9889553.85	-9889553.72	0.0273	0.0219
Venus	-31789-07-03 15:50 J	-9889325.03	-9889324.84	-9889324.65	0.0272	0.0093
Venus	-31788-02-17 15:21 J	-9889096.06	-9889095.86	-9889095.65	0.0271	0.0034
Venus	-31788-10-04 14:23 J	-9888867.06	-9888866.90	-9888866.73	0.0271	0.0159
Earth	-31787-04-24 23:02 J	-9888664.74	-9888664.54	-9888664.32	0.0271	0.0140
Moon	-31787-04-25 01:26 J	-9888664.64	-9888664.44	-9888664.22	0.0271	0.0147 *
Mercury	-31786-04-25 17:59 J	-9888298.83	-9888298.75	-9888298.67	0.0271	0.0222
Mercury	-31786-07-23 06:14 J	-9888210.37	-9888210.24	-9888210.11	0.0271	0.0118
Mercury	-31786-10-19 18:43 J	-9888121.86	-9888121.72	-9888121.57	0.0271	0.0012
Mercury	-31785-01-16 07:40 J	-9888033.32	-9888033.18	-9888033.05	0.0271	0.0098
Mercury	-31785-04-13 20:23 J	-9887944.73	-9887944.65	-9887944.55	0.0271	0.0209
Mars	-31781-09-30 22:19 J	-9886313.84	-9886313.57	-9886313.30	0.0276	0.0019
Venus	-31775-12-12 11:16 J	-9884050.15	-9884050.03	-9884049.92	0.0287	0.0243
Venus	-31774-07-30 12:43 J	-9883820.17	-9883819.97	-9883819.76	0.0288	0.0085
Venus	-31773-03-16 14:52 J	-9883590.08	-9883589.88	-9883589.67	0.0289	0.0077
Venus	-31773-11-01 17:31 J	-9883359.89	-9883359.77	-9883359.65	0.0289	0.0238
Earth	-31772-11-06 07:11 J	-9882990.27	-9882990.20	-9882990.11	0.0289	0.0272
Moon	-31772-11-06 11:02 J	-9882990.13	-9882990.04	-9882989.94	0.0289	0.0266 *
Mercury	-31771-02-26 20:09 J	-9882877.79	-9882877.66	-9882877.52	0.0289	0.0172
Mercury	-31771-05-26 15:35 J	-9882789.01	-9882788.85	-9882788.68	0.0289	0.0021
Mercury	-31771-08-23 10:33 J	-9882700.20	-9882700.06	-9882699.91	0.0289	0.0131

Mercury	-31771-11-20 05:02 J	-9882611.33	-9882611.29	-9882611.24	0.0289	0.0276
Mars	-31767-11-07 14:09 J	-9881163.23	-9881162.91	-9881162.60	0.0283	0.0009
Venus	-31760-05-29 22:19 J	-9878767.70	-9878767.57	-9878767.42	0.0272	0.0196
Venus	-31759-01-13 22:19 J	-9878538.77	-9878538.57	-9878538.37	0.0271	0.0070
Venus	-31759-08-30 21:35 J	-9878309.81	-9878309.60	-9878309.40	0.0271	0.0056
Venus	-31758-04-16 20:09 J	-9878080.81	-9878080.66	-9878080.50	0.0270	0.0179
Earth	-31757-05-01 05:02 J	-9877700.49	-9877700.29	-9877700.07	0.0270	0.0129
Moon	-31757-05-01 07:26 J	-9877700.40	-9877700.19	-9877699.97	0.0270	0.0115 *
Mercury	-31757-09-11 20:23 J	-9877566.70	-9877566.65	-9877566.59	0.0270	0.0246
Mercury	-31757-12-09 08:52 J	-9877478.25	-9877478.13	-9877478.01	0.0270	0.0143
Mercury	-31756-03-07 21:21 J	-9877389.76	-9877389.61	-9877389.47	0.0270	0.0037
Mercury	-31756-06-04 09:50 J	-9877301.23	-9877301.09	-9877300.94	0.0270	0.0071
Mercury	-31756-08-31 22:47 J	-9877212.65	-9877212.55	-9877212.44	0.0270	0.0181
Venus	-31745-06-23 15:21 J	-9873264.00	-9873263.86	-9873263.73	0.0287	0.0223
Venus	-31744-02-08 16:47 J	-9873034.01	-9873033.80	-9873033.59	0.0288	0.0065
Venus	-31744-09-26 18:57 J	-9872803.91	-9872803.71	-9872803.51	0.0288	0.0097
Venus	-31743-05-14 21:21 J	-9872573.70	-9872573.61	-9872573.51	0.0289	0.0257
Moon	-31743-10-31 01:11 J	-9872404.70	-9872404.45	-9872404.21	0.0289	0.0007
Earth	-31743-10-31 04:47 J	-9872404.55	-9872404.30	-9872404.06	0.0289	0.0003 *
Mercury	-31742-07-16 18:43 J	-9872145.81	-9872145.72	-9872145.61	0.0289	0.0224
Mercury	-31742-10-13 14:23 J	-9872057.06	-9872056.90	-9872056.73	0.0289	0.0070
Mercury	-31741-01-10 09:35 J	-9871968.26	-9871968.10	-9871967.94	0.0289	0.0081
Mercury	-31741-04-08 04:04 J	-9871879.42	-9871879.33	-9871879.22	0.0288	0.0228
Venus	-31731-12-10 01:40 J	-9867981.59	-9867981.43	-9867981.28	0.0272	0.0176
Venus	-31730-07-27 01:26 J	-9867752.64	-9867752.44	-9867752.24	0.0272	0.0049
Venus	-31729-03-12 00:43 J	-9867523.66	-9867523.47	-9867523.27	0.0271	0.0077
Venus	-31729-10-26 23:45 J	-9867294.65	-9867294.51	-9867294.37	0.0271	0.0200
Moon	-31728-04-26 05:16 J	-9867113.52	-9867113.28	-9867113.04	0.0271	0.0094
Earth	-31728-04-26 06:57 J	-9867113.43	-9867113.21	-9867112.97	0.0271	0.0085 *
Mercury	-31727-04-28 11:02 J	-9866746.15	-9866746.04	-9866745.93	0.0271	0.0172

Mercury	-31727-07-25 23:31 J	-9866657.66	-9866657.52	-9866657.38	0.0271	0.0066
Mercury	-31727-10-22 11:59 J	-9866569.14	-9866569.00	-9866568.85	0.0271	0.0042
Mercury	-31726-01-19 00:57 J	-9866480.58	-9866480.46	-9866480.34	0.0271	0.0151
Mercury	-31726-04-17 14:09 J	-9866391.94	-9866391.91	-9866391.88	0.0271	0.0263
Venus	-31715-01-04 03:50 J	-9862477.49	-9862477.34	-9862477.17	0.0288	0.0191
Venus	-31715-08-22 05:59 J	-9862247.47	-9862247.25	-9862247.04	0.0288	0.0031
Venus	-31714-04-09 08:09 J	-9862017.35	-9862017.16	-9862016.96	0.0289	0.0132
Earth	-31714-10-25 16:33 J	-9861817.92	-9861817.81	-9861817.68	0.0289	0.0250
Moon	-31714-10-25 20:09 J	-9861817.77	-9861817.66	-9861817.53	0.0289	0.0248 *
Mercury	-31713-12-02 21:35 J	-9861413.69	-9861413.60	-9861413.52	0.0289	0.0249
Mercury	-31712-03-01 17:02 J	-9861324.94	-9861324.79	-9861324.63	0.0289	0.0094
Mercury	-31712-05-29 12:14 J	-9861236.15	-9861235.99	-9861235.82	0.0289	0.0059
Mercury	-31712-08-26 06:57 J	-9861147.32	-9861147.21	-9861147.09	0.0289	0.0206
Venus	-31701-06-21 08:23 J	-9857195.31	-9857195.15	-9857194.97	0.0271	0.0152
Venus	-31700-02-05 08:23 J	-9856966.36	-9856966.15	-9856965.95	0.0271	0.0027
Venus	-31700-09-22 07:11 J	-9856737.39	-9856737.20	-9856737.00	0.0270	0.0098
Venus	-31699-05-09 05:59 J	-9856508.37	-9856508.25	-9856508.13	0.0270	0.0220
Earth	-31698-05-03 13:26 J	-9856149.10	-9856148.94	-9856148.75	0.0270	0.0185
Moon	-31698-05-03 17:02 J	-9856148.97	-9856148.79	-9856148.59	0.0270	0.0171 *
Mercury	-31698-09-15 13:40 J	-9856014.02	-9856013.93	-9856013.82	0.0270	0.0195
Mercury	-31698-12-13 02:09 J	-9855925.54	-9855925.41	-9855925.27	0.0270	0.0090
Mercury	-31697-03-10 14:38 J	-9855837.03	-9855836.89	-9855836.74	0.0270	0.0018
Mercury	-31697-06-07 03:35 J	-9855748.48	-9855748.35	-9855748.22	0.0270	0.0125
Mercury	-31697-09-03 16:19 J	-9855659.88	-9855659.82	-9855659.74	0.0270	0.0237
Mars	-31692-02-25 02:23 J	-9854024.66	-9854024.40	-9854024.13	0.0276	0.0070
Venus	-31686-07-17 08:23 J	-9851691.32	-9851691.15	-9851690.97	0.0288	0.0170
Venus	-31685-03-03 10:19 J	-9851461.29	-9851461.07	-9851460.85	0.0288	0.0010
Venus	-31685-10-19 12:28 J	-9851231.16	-9851230.98	-9851230.79	0.0289	0.0151
Moon	-31684-11-01 18:43 J	-9850852.95	-9850852.72	-9850852.49	0.0289	0.0071
Earth	-31684-11-01 20:09 J	-9850852.89	-9850852.66	-9850852.42	0.0289	0.0075 *



Mercury	-31683-07-19 15:50 J	-9850592.98	-9850592.84	-9850592.69	0.0289	0.0145
Mercury	-31683-10-16 11:16 J	-9850504.20	-9850504.03	-9850503.87	0.0289	0.0008
Mercury	-31682-01-13 05:59 J	-9850415.38	-9850415.25	-9850415.11	0.0289	0.0157
Mars	-31678-04-03 13:11 J	-9848874.25	-9848873.95	-9848873.63	0.0283	0.0054
Venus	-31672-05-17 10:19 J	-9846638.12	-9846638.07	-9846638.00	0.0273	0.0259
Venus	-31671-01-01 10:47 J	-9846409.22	-9846409.05	-9846408.86	0.0272	0.0133
Venus	-31671-08-18 10:33 J	-9846180.27	-9846180.06	-9846179.85	0.0271	0.0007
Venus	-31670-04-04 09:35 J	-9845951.28	-9845951.10	-9845950.91	0.0271	0.0118
Venus	-31670-11-19 08:23 J	-9845722.24	-9845722.15	-9845722.05	0.0271	0.0241
Moon	-31669-04-27 10:47 J	-9845562.29	-9845562.05	-9845561.81	0.0271	0.0041
Earth	-31669-04-27 14:09 J	-9845562.15	-9845561.91	-9845561.67	0.0271	0.0030 *
Mercury	-31668-02-01 15:50 J	-9845281.92	-9845281.84	-9845281.77	0.0271	0.0227
Mercury	-31668-05-01 04:04 J	-9845193.46	-9845193.33	-9845193.20	0.0271	0.0122
Mercury	-31668-07-28 16:33 J	-9845104.95	-9845104.81	-9845104.67	0.0271	0.0016
Mercury	-31668-10-25 05:16 J	-9845016.42	-9845016.28	-9845016.14	0.0271	0.0093
Mercury	-31667-01-21 18:14 J	-9844927.83	-9844927.74	-9844927.64	0.0271	0.0204
Venus	-31656-01-26 19:55 J	-9840904.85	-9840904.67	-9840904.47	0.0288	0.0139
Venus	-31656-09-13 22:04 J	-9840674.79	-9840674.58	-9840674.36	0.0289	0.0023
Venus	-31655-05-02 00:43 J	-9840444.64	-9840444.47	-9840444.30	0.0289	0.0184
Earth	-31655-10-27 06:28 J	-9840266.42	-9840266.23	-9840266.04	0.0289	0.0179
Moon	-31655-10-27 08:09 J	-9840266.36	-9840266.16	-9840265.95	0.0289	0.0178 *
Mercury	-31654-12-06 17:59 J	-9839860.88	-9839860.75	-9839860.61	0.0289	0.0172
Mercury	-31653-03-04 13:26 J	-9839772.10	-9839771.94	-9839771.77	0.0289	0.0020
Mercury	-31653-06-01 08:23 J	-9839683.29	-9839683.15	-9839683.00	0.0289	0.0133
Mercury	-31653-08-29 03:07 J	-9839594.41	-9839594.37	-9839594.33	0.0289	0.0278
Venus	-31643-11-27 17:59 J	-9835851.84	-9835851.75	-9835851.64	0.0272	0.0235
Venus	-31642-07-14 18:14 J	-9835622.93	-9835622.74	-9835622.55	0.0271	0.0110
Venus	-31641-02-28 17:45 J	-9835393.97	-9835393.76	-9835393.56	0.0271	0.0016
Venus	-31641-10-14 16:33 J	-9835164.99	-9835164.81	-9835164.63	0.0270	0.0139
Earth	-31640-04-22 20:52 J	-9834974.75	-9834974.63	-9834974.50	0.0270	0.0230

Moon	-31640-04-23 00:14 J	-9834974.59	-9834974.49	-9834974.36	0.0270	0.0234 *
Venus	-31640-05-31 14:52 J	-9834935.92	-9834935.88	-9834935.82	0.0270	0.0261
Moon	-31639-05-04 21:07 J	-9834597.74	-9834597.62	-9834597.47	0.0270	0.0227
Earth	-31639-05-04 21:21 J	-9834597.72	-9834597.61	-9834597.51	0.0270	0.0240 *
Mercury	-31639-06-21 18:43 J	-9834549.77	-9834549.72	-9834549.66	0.0270	0.0248
Mercury	-31639-09-18 06:57 J	-9834461.33	-9834461.21	-9834461.09	0.0270	0.0145
Mercury	-31639-12-15 19:26 J	-9834372.84	-9834372.69	-9834372.55	0.0270	0.0040
Mercury	-31638-03-14 07:55 J	-9834284.31	-9834284.17	-9834284.03	0.0270	0.0069
Mercury	-31638-06-10 20:52 J	-9834195.74	-9834195.63	-9834195.52	0.0270	0.0178
Venus	-31628-12-21 23:16 J	-9830348.58	-9830348.53	-9830348.46	0.0287	0.0273
Venus	-31627-08-09 00:43 J	-9830118.67	-9830118.47	-9830118.27	0.0288	0.0117
Venus	-31626-03-27 02:38 J	-9829888.61	-9829888.39	-9829888.18	0.0288	0.0043
Venus	-31626-11-12 05:02 J	-9829658.44	-9829658.29	-9829658.13	0.0289	0.0204
Earth	-31625-11-03 10:04 J	-9829301.29	-9829301.08	-9829300.86	0.0289	0.0145
Moon	-31625-11-03 12:14 J	-9829301.19	-9829300.99	-9829300.77	0.0289	0.0140 *
Mercury	-31624-04-24 16:33 J	-9829128.91	-9829128.81	-9829128.70	0.0289	0.0224
Mercury	-31624-07-22 12:14 J	-9829040.15	-9829039.99	-9829039.82	0.0289	0.0070
Mercury	-31624-10-19 07:26 J	-9828951.34	-9828951.19	-9828951.03	0.0289	0.0083
Mercury	-31623-01-16 02:09 J	-9828862.50	-9828862.41	-9828862.31	0.0289	0.0230
Venus	-31613-06-08 19:26 J	-9825065.81	-9825065.69	-9825065.56	0.0272	0.0217
Venus	-31612-01-23 19:40 J	-9824836.87	-9824836.68	-9824836.48	0.0272	0.0092
Venus	-31612-09-09 18:57 J	-9824607.91	-9824607.71	-9824607.50	0.0271	0.0034
Venus	-31611-04-26 17:45 J	-9824378.92	-9824378.76	-9824378.59	0.0271	0.0158
Moon	-31610-04-29 19:11 J	-9824010.94	-9824010.70	-9824010.47	0.0271	0.0012
Earth	-31610-04-29 19:40 J	-9824010.92	-9824010.68	-9824010.43	0.0271	0.0023 *
Mercury	-31609-02-05 08:23 J	-9823729.25	-9823729.15	-9823729.04	0.0271	0.0180
Mercury	-31609-05-03 20:52 J	-9823640.77	-9823640.63	-9823640.50	0.0271	0.0075
Mercury	-31609-07-31 09:21 J	-9823552.25	-9823552.11	-9823551.97	0.0271	0.0033
Mercury	-31609-10-27 22:04 J	-9823463.70	-9823463.58	-9823463.45	0.0271	0.0142
Mercury	-31608-01-24 11:02 J	-9823375.08	-9823375.04	-9823374.98	0.0271	0.0254

Mars	-31604-07-22 05:45 J	-9821735.50	-9821735.26	-9821735.02	0.0276	0.0123
Venus	-31598-07-04 09:21 J	-9819562.22	-9819562.11	-9819562.00	0.0287	0.0246
Venus	-31597-02-19 10:47 J	-9819332.25	-9819332.05	-9819331.84	0.0288	0.0088
Venus	-31597-10-06 13:11 J	-9819102.16	-9819101.95	-9819101.74	0.0289	0.0073
Venus	-31596-05-24 16:04 J	-9818871.95	-9818871.83	-9818871.70	0.0289	0.0235
Moon	-31596-10-28 15:35 J	-9818715.07	-9818714.85	-9818714.61	0.0289	0.0115
Earth	-31596-10-28 18:14 J	-9818714.96	-9818714.74	-9818714.50	0.0289	0.0113 *
Mercury	-31595-09-11 18:14 J	-9818396.81	-9818396.74	-9818396.66	0.0289	0.0256
Mercury	-31595-12-09 14:09 J	-9818308.07	-9818307.91	-9818307.75	0.0289	0.0099
Mercury	-31594-03-08 09:21 J	-9818219.27	-9818219.11	-9818218.94	0.0289	0.0054
Mercury	-31594-06-05 04:19 J	-9818130.43	-9818130.32	-9818130.20	0.0289	0.0202
Mars	-31590-08-29 17:59 J	-9816584.01	-9816583.75	-9816583.46	0.0283	0.0144
Venus	-31584-12-20 03:07 J	-9814279.51	-9814279.37	-9814279.22	0.0272	0.0194
Venus	-31583-08-06 02:52 J	-9814050.58	-9814050.38	-9814050.18	0.0271	0.0069
Venus	-31582-03-23 02:09 J	-9813821.62	-9813821.41	-9813821.21	0.0270	0.0056
Venus	-31582-11-07 00:43 J	-9813592.62	-9813592.47	-9813592.32	0.0270	0.0179
Earth	-31581-04-24 02:38 J	-9813423.56	-9813423.39	-9813423.20	0.0270	0.0178
Moon	-31581-04-24 03:50 J	-9813423.51	-9813423.34	-9813423.15	0.0270	0.0184 *
Mercury	-31580-06-24 11:31 J	-9812997.12	-9812997.02	-9812996.93	0.0270	0.0201
Mercury	-31580-09-20 23:45 J	-9812908.65	-9812908.51	-9812908.38	0.0270	0.0097
Mercury	-31580-12-18 12:14 J	-9812820.14	-9812819.99	-9812819.85	0.0270	0.0010
Mercury	-31579-03-17 00:57 J	-9812731.59	-9812731.46	-9812731.33	0.0270	0.0118
Mercury	-31579-06-13 13:55 J	-9812643.00	-9812642.92	-9812642.84	0.0270	0.0229
Venus	-31568-01-13 13:40 J	-9808776.06	-9808775.93	-9808775.79	0.0287	0.0224
Venus	-31568-08-31 15:07 J	-9808546.08	-9808545.87	-9808545.66	0.0288	0.0067
Venus	-31567-04-18 17:16 J	-9808315.98	-9808315.78	-9808315.57	0.0289	0.0094
Venus	-31567-12-04 19:55 J	-9808085.76	-9808085.67	-9808085.56	0.0289	0.0254
Earth	-31566-11-05 21:21 J	-9807749.77	-9807749.61	-9807749.44	0.0289	0.0211
Moon	-31566-11-06 00:57 J	-9807749.63	-9807749.46	-9807749.28	0.0289	0.0205 *
Mercury	-31565-04-27 12:43 J	-9807576.11	-9807575.97	-9807575.83	0.0289	0.0152

Mercury	-31565-07-25 08:09 J	-9807487.33	-9807487.16	-9807486.99	0.0289	0.0001
Mercury	-31565-10-22 03:07 J	-9807398.51	-9807398.37	-9807398.23	0.0289	0.0152
Venus	-31554-07-02 03:50 J	-9803493.49	-9803493.34	-9803493.18	0.0272	0.0177
Venus	-31553-02-16 03:50 J	-9803264.55	-9803264.34	-9803264.14	0.0271	0.0052
Venus	-31553-10-02 02:38 J	-9803035.58	-9803035.39	-9803035.18	0.0271	0.0074
Venus	-31552-05-19 01:26 J	-9802806.58	-9802806.44	-9802806.30	0.0271	0.0196
Earth	-31551-04-30 23:59 J	-9802459.73	-9802459.50	-9802459.26	0.0270	0.0073
Moon	-31551-05-01 03:21 J	-9802459.59	-9802459.36	-9802459.13	0.0270	0.0060 *
Mercury	-31551-11-11 12:43 J	-9802265.03	-9802264.97	-9802264.90	0.0270	0.0238
Mercury	-31550-02-08 00:57 J	-9802176.58	-9802176.46	-9802176.34	0.0270	0.0135
Mercury	-31550-05-07 13:26 J	-9802088.09	-9802087.94	-9802087.80	0.0270	0.0030
Mercury	-31550-08-04 01:55 J	-9801999.56	-9801999.42	-9801999.28	0.0271	0.0080
Mercury	-31550-10-31 14:52 J	-9801910.98	-9801910.88	-9801910.78	0.0271	0.0190
Mars	-31546-10-30 05:16 J	-9800451.37	-9800451.28	-9800451.18	0.0275	0.0257
Venus	-31539-07-26 21:35 J	-9797989.75	-9797989.60	-9797989.44	0.0288	0.0200
Venus	-31538-03-13 23:31 J	-9797759.74	-9797759.52	-9797759.31	0.0289	0.0041
Venus	-31538-10-30 02:09 J	-9797529.61	-9797529.41	-9797529.21	0.0289	0.0121
Venus	-31537-06-16 05:02 J	-9797299.33	-9797299.29	-9797299.23	0.0289	0.0282
Moon	-31537-10-29 23:45 J	-9797163.75	-9797163.51	-9797163.27	0.0290	0.0057
Earth	-31537-10-30 03:07 J	-9797163.62	-9797163.37	-9797163.13	0.0290	0.0050 *
Mercury	-31536-09-14 13:26 J	-9796844.06	-9796843.94	-9796843.80	0.0290	0.0189
Mercury	-31536-12-12 09:21 J	-9796755.28	-9796755.11	-9796754.95	0.0290	0.0033
Mercury	-31535-03-11 04:33 J	-9796666.46	-9796666.31	-9796666.16	0.0289	0.0119
Mercury	-31535-06-07 23:02 J	-9796577.59	-9796577.54	-9796577.47	0.0289	0.0267
Venus	-31524-01-11 11:16 J	-9792707.20	-9792707.03	-9792706.86	0.0271	0.0154
Venus	-31524-08-28 10:47 J	-9792478.26	-9792478.05	-9792477.84	0.0271	0.0029
Venus	-31523-04-14 09:35 J	-9792249.29	-9792249.10	-9792248.91	0.0270	0.0095
Venus	-31523-11-29 07:55 J	-9792020.28	-9792020.17	-9792020.04	0.0270	0.0217
Moon	-31522-04-26 04:04 J	-9791872.55	-9791872.33	-9791872.12	0.0270	0.0138
Earth	-31522-04-26 07:11 J	-9791872.41	-9791872.20	-9791871.98	0.0270	0.0127 *

Mercury	-31521-03-30 15:50 J	-9791532.88	-9791532.84	-9791532.81	0.0270	0.0259
Mercury	-31521-06-27 03:50 J	-9791444.45	-9791444.34	-9791444.22	0.0270	0.0156
Mercury	-31521-09-23 16:04 J	-9791355.97	-9791355.83	-9791355.68	0.0270	0.0052
Mercury	-31521-12-21 04:47 J	-9791267.44	-9791267.30	-9791267.16	0.0270	0.0056
Mercury	-31520-03-19 17:31 J	-9791178.88	-9791178.77	-9791178.65	0.0270	0.0165
Mars	-31516-12-16 00:43 J	-9789446.68	-9789446.47	-9789446.24	0.0276	0.0163
Venus	-31509-02-06 02:38 J	-9787203.56	-9787203.39	-9787203.22	0.0288	0.0177
Venus	-31509-09-23 04:19 J	-9786973.54	-9786973.32	-9786973.10	0.0289	0.0018
Venus	-31508-05-11 06:28 J	-9786743.41	-9786743.23	-9786743.03	0.0289	0.0143
Moon	-31507-11-07 05:59 J	-9786198.34	-9786198.25	-9786198.14	0.0289	0.0263
Earth	-31507-11-07 06:14 J	-9786198.30	-9786198.24	-9786198.15	0.0289	0.0275 *
Mercury	-31506-02-01 11:59 J	-9786112.08	-9786112.00	-9786111.90	0.0289	0.0242
Mercury	-31506-05-01 07:55 J	-9786023.33	-9786023.17	-9786023.01	0.0289	0.0086
Mercury	-31506-07-29 03:21 J	-9785934.52	-9785934.36	-9785934.20	0.0289	0.0068
Mercury	-31506-10-25 22:04 J	-9785845.68	-9785845.58	-9785845.47	0.0289	0.0216
Mars	-31501-01-23 05:16 J	-9784295.51	-9784295.28	-9784295.04	0.0283	0.0190
Venus	-31496-12-07 10:47 J	-9782150.09	-9782150.05	-9782149.98	0.0272	0.0263
Venus	-31495-07-24 11:02 J	-9781921.21	-9781921.04	-9781920.85	0.0272	0.0139
Venus	-31494-03-10 10:33 J	-9781692.26	-9781692.06	-9781691.85	0.0271	0.0014
Venus	-31494-10-25 09:21 J	-9781463.29	-9781463.11	-9781462.92	0.0271	0.0111
Venus	-31493-06-10 07:40 J	-9781234.27	-9781234.18	-9781234.06	0.0270	0.0234
Earth	-31492-05-02 02:38 J	-9780908.60	-9780908.39	-9780908.17	0.0270	0.0122
Moon	-31492-05-02 05:16 J	-9780908.51	-9780908.28	-9780908.05	0.0270	0.0107 *
Mercury	-31492-11-14 04:47 J	-9780712.39	-9780712.30	-9780712.20	0.0270	0.0196
Mercury	-31491-02-10 17:02 J	-9780623.92	-9780623.79	-9780623.65	0.0270	0.0091
Mercury	-31491-05-10 05:31 J	-9780535.41	-9780535.27	-9780535.12	0.0270	0.0015
Mercury	-31491-08-06 18:14 J	-9780446.87	-9780446.74	-9780446.61	0.0270	0.0124
Mercury	-31491-11-03 07:11 J	-9780358.27	-9780358.20	-9780358.13	0.0271	0.0235
Venus	-31480-08-18 08:09 J	-9776417.34	-9776417.16	-9776416.97	0.0288	0.0156
Venus	-31479-04-05 10:19 J	-9776187.29	-9776187.07	-9776186.85	0.0289	0.0005

Venus	-31479-11-21 13:11 J	-9775957.12	-9775956.95	-9775956.77	0.0289	0.0166
Earth	-31478-11-01 08:23 J	-9775612.40	-9775612.15	-9775611.90	0.0290	0.0008
Moon	-31478-11-01 09:35 J	-9775612.34	-9775612.10	-9775611.86	0.0290	0.0004 *
Mercury	-31477-06-20 12:14 J	-9775380.02	-9775379.99	-9775379.97	0.0290	0.0285
Mercury	-31477-09-17 08:09 J	-9775291.31	-9775291.16	-9775291.01	0.0290	0.0127
Mercury	-31477-12-15 03:35 J	-9775202.51	-9775202.35	-9775202.18	0.0290	0.0029
Mercury	-31476-03-13 22:33 J	-9775113.68	-9775113.56	-9775113.42	0.0290	0.0179
Venus	-31466-06-19 17:59 J	-9771363.84	-9771363.75	-9771363.65	0.0272	0.0240
Venus	-31465-02-03 18:14 J	-9771134.92	-9771134.74	-9771134.55	0.0271	0.0115
Venus	-31465-09-19 17:31 J	-9770905.98	-9770905.77	-9770905.56	0.0270	0.0009
Venus	-31464-05-06 16:04 J	-9770677.00	-9770676.83	-9770676.65	0.0270	0.0132
Venus	-31464-12-21 14:23 J	-9770447.96	-9770447.90	-9770447.83	0.0270	0.0253
Moon	-31463-04-27 07:40 J	-9770321.40	-9770321.18	-9770320.95	0.0269	0.0091
Earth	-31463-04-27 10:04 J	-9770321.31	-9770321.08	-9770320.84	0.0269	0.0078 *
Mercury	-31462-04-03 07:40 J	-9769980.25	-9769980.18	-9769980.09	0.0269	0.0217
Mercury	-31462-06-30 19:55 J	-9769891.80	-9769891.67	-9769891.54	0.0269	0.0113
Mercury	-31462-09-27 08:23 J	-9769803.30	-9769803.15	-9769803.01	0.0270	0.0007
Mercury	-31462-12-24 20:52 J	-9769714.76	-9769714.63	-9769714.49	0.0270	0.0101
Mercury	-31461-03-22 09:35 J	-9769626.18	-9769626.10	-9769626.00	0.0270	0.0211
Mars	-31457-03-24 22:33 J	-9768162.71	-9768162.56	-9768162.38	0.0275	0.0219
Venus	-31450-02-28 13:11 J	-9765631.14	-9765630.95	-9765630.76	0.0288	0.0133
Venus	-31450-10-16 15:07 J	-9765401.08	-9765400.87	-9765400.65	0.0289	0.0027
Venus	-31449-06-02 17:45 J	-9765170.92	-9765170.76	-9765170.59	0.0289	0.0188
Moon	-31449-10-25 02:52 J	-9765026.43	-9765026.38	-9765026.30	0.0289	0.0279
Earth	-31449-10-25 04:33 J	-9765026.38	-9765026.31	-9765026.21	0.0289	0.0271 *
Mercury	-31447-02-04 06:43 J	-9764559.35	-9764559.22	-9764559.09	0.0289	0.0181
Mercury	-31447-05-04 02:23 J	-9764470.57	-9764470.40	-9764470.24	0.0289	0.0025
Mercury	-31447-07-31 21:35 J	-9764381.75	-9764381.60	-9764381.45	0.0289	0.0127
Mercury	-31447-10-28 16:19 J	-9764292.87	-9764292.82	-9764292.77	0.0289	0.0274
Venus	-31437-12-29 17:59 J	-9760577.86	-9760577.75	-9760577.64	0.0272	0.0225

Venus	-31436-08-15 17:45 J	-9760348.95	-9760348.76	-9760348.57	0.0271	0.0100
Venus	-31435-04-01 16:47 J	-9760120.00	-9760119.80	-9760119.59	0.0271	0.0024
Venus	-31435-11-16 15:21 J	-9759891.03	-9759890.86	-9759890.69	0.0270	0.0147
Venus	-31434-07-03 13:26 J	-9759661.95	-9759661.94	-9759661.91	0.0270	0.0268
Moon	-31433-05-03 01:40 J	-9759357.63	-9759357.43	-9759357.22	0.0270	0.0152
Earth	-31433-05-03 04:04 J	-9759357.52	-9759357.33	-9759357.14	0.0270	0.0168 *
Mercury	-31433-08-20 08:23 J	-9759248.18	-9759248.15	-9759248.10	0.0270	0.0258
Mercury	-31433-11-16 20:38 J	-9759159.75	-9759159.64	-9759159.52	0.0270	0.0155
Mercury	-31432-02-13 08:52 J	-9759071.27	-9759071.13	-9759070.98	0.0270	0.0050
Mercury	-31432-05-12 21:21 J	-9758982.75	-9758982.61	-9758982.46	0.0270	0.0058
Mercury	-31432-08-09 10:19 J	-9758894.19	-9758894.07	-9758893.96	0.0270	0.0167
Mars	-31427-05-11 04:47 J	-9757158.49	-9757158.30	-9757158.08	0.0276	0.0183
Venus	-31421-01-23 15:50 J	-9755074.90	-9755074.84	-9755074.76	0.0287	0.0269
Venus	-31421-09-09 17:16 J	-9754844.97	-9754844.78	-9754844.57	0.0288	0.0113
Venus	-31420-04-27 19:40 J	-9754614.89	-9754614.68	-9754614.46	0.0289	0.0048
Venus	-31420-12-13 22:47 J	-9754384.69	-9754384.55	-9754384.40	0.0290	0.0209
Earth	-31419-11-02 11:16 J	-9754061.27	-9754061.03	-9754060.78	0.0290	0.0061
Moon	-31419-11-02 15:07 J	-9754061.11	-9754060.87	-9754060.63	0.0290	0.0049 *
Mercury	-31418-06-24 05:59 J	-9753827.35	-9753827.25	-9753827.14	0.0290	0.0228
Mercury	-31418-09-21 01:55 J	-9753738.58	-9753738.42	-9753738.25	0.0290	0.0071
Mercury	-31418-12-18 21:21 J	-9753649.76	-9753649.61	-9753649.45	0.0290	0.0084
Mercury	-31417-03-16 16:19 J	-9753560.91	-9753560.82	-9753560.72	0.0290	0.0233
Mars	-31413-06-18 07:40 J	-9752006.32	-9752006.18	-9752006.03	0.0284	0.0251
Venus	-31407-07-12 00:28 J	-9749791.62	-9749791.48	-9749791.34	0.0272	0.0203
Venus	-31406-02-26 00:14 J	-9749562.69	-9749562.49	-9749562.29	0.0271	0.0078
Venus	-31406-10-12 23:16 J	-9749333.73	-9749333.53	-9749333.33	0.0270	0.0046
Venus	-31405-05-28 21:35 J	-9749104.75	-9749104.60	-9749104.43	0.0270	0.0168
Earth	-31404-04-28 11:16 J	-9748770.27	-9748770.03	-9748769.79	0.0269	0.0031
Moon	-31404-04-28 13:11 J	-9748770.18	-9748769.95	-9748769.71	0.0269	0.0046 *
Mercury	-31403-04-05 23:31 J	-9748427.62	-9748427.52	-9748427.41	0.0269	0.0176

Mercury	-31403-07-03 11:45 J	-9748339.14	-9748339.01	-9748338.87	0.0269	0.0072
Mercury	-31403-09-30 00:14 J	-9748250.63	-9748250.49	-9748250.34	0.0269	0.0035
Mercury	-31403-12-27 12:57 J	-9748162.08	-9748161.96	-9748161.84	0.0269	0.0143
Mercury	-31402-03-26 01:40 J	-9748073.47	-9748073.43	-9748073.37	0.0270	0.0254
Venus	-31392-08-04 21:07 J	-9744288.72	-9744288.62	-9744288.50	0.0288	0.0247
Venus	-31391-03-22 22:19 J	-9744058.77	-9744058.57	-9744058.35	0.0288	0.0091
Venus	-31391-11-08 00:43 J	-9743828.68	-9743828.47	-9743828.26	0.0289	0.0071
Venus	-31390-06-26 03:21 J	-9743598.48	-9743598.36	-9743598.22	0.0289	0.0232
Moon	-31390-10-27 04:19 J	-9743475.46	-9743475.32	-9743475.16	0.0290	0.0229
Earth	-31390-10-27 07:55 J	-9743475.33	-9743475.17	-9743475.00	0.0290	0.0218 *
Mercury	-31389-11-10 04:19 J	-9743095.34	-9743095.32	-9743095.28	0.0290	0.0283
Mercury	-31388-02-07 00:28 J	-9743006.63	-9743006.48	-9743006.33	0.0290	0.0124
Mercury	-31388-05-06 20:09 J	-9742917.83	-9742917.66	-9742917.50	0.0290	0.0031
Mercury	-31388-08-03 15:07 J	-9742828.99	-9742828.87	-9742828.74	0.0289	0.0182
Venus	-31377-01-21 23:45 J	-9739005.65	-9739005.51	-9739005.35	0.0272	0.0189
Venus	-31377-09-06 23:31 J	-9738776.72	-9738776.52	-9738776.32	0.0271	0.0064
Venus	-31376-04-23 22:19 J	-9738547.77	-9738547.57	-9738547.37	0.0270	0.0060
Venus	-31376-12-08 20:38 J	-9738318.79	-9738318.64	-9738318.49	0.0270	0.0182
Moon	-31375-04-23 04:33 J	-9738183.34	-9738183.31	-9738183.27	0.0270	0.0266
Earth	-31375-04-23 05:59 J	-9738183.31	-9738183.25	-9738183.16	0.0270	0.0256 *
Moon	-31374-05-05 01:11 J	-9737806.60	-9737806.45	-9737806.28	0.0270	0.0200
Earth	-31374-05-05 04:33 J	-9737806.45	-9737806.31	-9737806.15	0.0270	0.0214 *
Mercury	-31374-08-24 00:14 J	-9737695.57	-9737695.49	-9737695.40	0.0270	0.0218
Mercury	-31374-11-20 12:28 J	-9737607.11	-9737606.98	-9737606.85	0.0270	0.0115
Mercury	-31373-02-17 00:43 J	-9737518.61	-9737518.47	-9737518.32	0.0270	0.0010
Mercury	-31373-05-15 13:11 J	-9737430.08	-9737429.95	-9737429.81	0.0270	0.0099
Mercury	-31373-08-12 02:09 J	-9737341.50	-9737341.41	-9737341.32	0.0270	0.0208
Mars	-31369-08-17 20:52 J	-9735874.80	-9735874.63	-9735874.44	0.0275	0.0207
Venus	-31362-02-14 23:31 J	-9733502.65	-9733502.52	-9733502.39	0.0287	0.0230
Venus	-31362-10-03 00:57 J	-9733272.66	-9733272.46	-9733272.24	0.0288	0.0073



Venus	-31361-05-20 03:35 J	-9733042.56	-9733042.35	-9733042.14	0.0289	0.0089
Venus	-31360-01-05 06:43 J	-9732812.32	-9732812.22	-9732812.10	0.0290	0.0250
Earth	-31360-11-03 11:31 J	-9732510.24	-9732510.02	-9732509.79	0.0290	0.0110
Moon	-31360-11-03 12:28 J	-9732510.22	-9732509.98	-9732509.74	0.0290	0.0097 *
Mercury	-31359-06-26 23:16 J	-9732274.66	-9732274.53	-9732274.40	0.0290	0.0176
Mercury	-31359-09-23 19:11 J	-9732185.87	-9732185.70	-9732185.54	0.0290	0.0021
Mercury	-31359-12-21 14:23 J	-9732097.04	-9732096.90	-9732096.75	0.0290	0.0134
Mercury	-31358-03-20 09:07 J	-9732008.15	-9732008.12	-9732008.08	0.0290	0.0283
Mars	-31355-09-19 14:38 J	-9730728.96	-9730728.89	-9730728.81	0.0285	0.0276
Venus	-31348-08-03 05:59 J	-9728219.41	-9728219.25	-9728219.09	0.0271	0.0166
Venus	-31347-03-20 05:31 J	-9727990.47	-9727990.27	-9727990.07	0.0271	0.0042
Venus	-31347-11-04 04:19 J	-9727761.52	-9727761.32	-9727761.12	0.0270	0.0081
Venus	-31346-06-21 02:23 J	-9727532.52	-9727532.40	-9727532.25	0.0270	0.0203
Earth	-31345-04-29 11:31 J	-9727219.26	-9727219.02	-9727218.77	0.0269	0.0014
Moon	-31345-04-29 14:52 J	-9727219.12	-9727218.88	-9727218.63	0.0269	0.0004 *
Mercury	-31344-01-10 03:07 J	-9726963.42	-9726963.37	-9726963.30	0.0269	0.0239
Mercury	-31344-04-08 15:21 J	-9726874.98	-9726874.86	-9726874.74	0.0269	0.0136
Mercury	-31344-07-06 03:35 J	-9726786.49	-9726786.35	-9726786.21	0.0269	0.0031
Mercury	-31344-10-02 16:04 J	-9726697.97	-9726697.83	-9726697.69	0.0269	0.0075
Mercury	-31344-12-30 04:47 J	-9726609.41	-9726609.30	-9726609.19	0.0269	0.0184
Mars	-31339-10-04 17:16 J	-9724869.94	-9724869.78	-9724869.61	0.0276	0.0218
Venus	-31333-08-27 05:16 J	-9722716.43	-9722716.28	-9722716.13	0.0288	0.0206
Venus	-31332-04-14 06:43 J	-9722486.43	-9722486.22	-9722486.00	0.0289	0.0048
Venus	-31332-11-30 09:07 J	-9722256.31	-9722256.12	-9722255.91	0.0289	0.0113
Venus	-31331-07-18 12:14 J	-9722026.05	-9722025.99	-9722025.91	0.0290	0.0273
Moon	-31331-10-28 08:23 J	-9721924.32	-9721924.15	-9721923.95	0.0290	0.0180
Earth	-31331-10-28 09:07 J	-9721924.31	-9721924.12	-9721923.91	0.0290	0.0168 *
Mercury	-31330-11-13 21:50 J	-9721542.68	-9721542.59	-9721542.48	0.0290	0.0229
Mercury	-31329-02-10 17:59 J	-9721453.91	-9721453.75	-9721453.59	0.0290	0.0071
Mercury	-31329-05-09 13:26 J	-9721365.10	-9721364.94	-9721364.78	0.0290	0.0084

Mercury -31329-08-06 08:23 J -9721276.24 -9721276.15 -9721276.05 0.0290 0.0234  
 Mars -31325-11-11 02:38 J -9719718.42 -9719718.39 -9719718.34 0.0283 0.0281  
 Venus -31318-02-13 05:16 J -9717433.44 -9717433.28 -9717433.10 0.0271 0.0153  
 Venus -31318-09-30 04:47 J -9717204.51 -9717204.30 -9717204.09 0.0271 0.0028  
 Venus -31317-05-16 03:21 J -9716975.55 -9716975.36 -9716975.16 0.0270 0.0095  
 Venus -31317-12-31 01:26 J -9716746.55 -9716746.44 -9716746.31 0.0270 0.0217  
 Moon -31316-04-24 02:38 J -9716632.50 -9716632.39 -9716632.24 0.0270 0.0224  
 Earth -31316-04-24 06:14 J -9716632.38 -9716632.24 -9716632.07 0.0270 0.0211 \*  
 Earth -31315-05-06 04:33 J -9716255.37 -9716255.31 -9716255.24 0.0269 0.0259  
 Moon -31315-05-06 05:16 J -9716255.36 -9716255.28 -9716255.18 0.0269 0.0248 \*  
 Mercury -31315-08-26 15:50 J -9716142.94 -9716142.84 -9716142.73 0.0269 0.0179  
 Mercury -31315-11-23 04:04 J -9716054.47 -9716054.33 -9716054.19 0.0269 0.0075  
 Mercury -31314-02-19 16:19 J -9715965.96 -9715965.82 -9715965.67 0.0270 0.0032  
 Mercury -31314-05-19 05:02 J -9715877.41 -9715877.29 -9715877.17 0.0270 0.0139  
 Mercury -31314-08-15 17:45 J -9715788.81 -9715788.76 -9715788.70 0.0270 0.0249  
 Venus -31303-03-09 06:43 J -9711930.38 -9711930.22 -9711930.06 0.0288 0.0190  
 Venus -31303-10-25 08:23 J -9711700.36 -9711700.15 -9711699.93 0.0289 0.0032  
 Venus -31302-06-12 11:02 J -9711470.23 -9711470.04 -9711469.84 0.0289 0.0129  
 Venus -31301-01-28 14:23 J -9711239.91 -9711239.90 -9711239.88 0.0290 0.0289  
 Moon -31301-11-04 07:55 J -9710959.38 -9710959.17 -9710958.95 0.0290 0.0142  
 Earth -31301-11-04 11:16 J -9710959.24 -9710959.03 -9710958.83 0.0290 0.0157 \*  
 Mercury -31300-04-01 19:55 J -9710810.69 -9710810.67 -9710810.64 0.0290 0.0286  
 Mercury -31300-06-29 16:19 J -9710721.97 -9710721.82 -9710721.67 0.0290 0.0126  
 Mercury -31300-09-26 11:59 J -9710633.17 -9710633.00 -9710632.84 0.0290 0.0030  
 Mercury -31300-12-24 07:11 J -9710544.33 -9710544.20 -9710544.08 0.0290 0.0182  
 Venus -31289-01-09 10:33 J -9706876.12 -9706876.06 -9706875.98 0.0272 0.0255  
 Venus -31289-08-25 11:02 J -9706647.22 -9706647.04 -9706646.86 0.0271 0.0131  
 Venus -31288-04-11 10:19 J -9706418.28 -9706418.07 -9706417.86 0.0271 0.0007  
 Venus -31288-11-26 08:52 J -9706189.31 -9706189.13 -9706188.94 0.0270 0.0116  
 Venus -31287-07-13 07:11 J -9705960.29 -9705960.20 -9705960.10 0.0270 0.0236

Moon	-31286-05-01 11:16 J	-9705668.27	-9705668.03	-9705667.77	0.0269	0.0045
Earth	-31286-05-01 11:31 J	-9705668.26	-9705668.02	-9705667.79	0.0269	0.0059 *
Mercury	-31285-01-13 18:43 J	-9705410.81	-9705410.72	-9705410.62	0.0269	0.0201
Mercury	-31285-04-11 06:57 J	-9705322.34	-9705322.21	-9705322.08	0.0269	0.0097
Mercury	-31285-07-08 19:11 J	-9705233.84	-9705233.70	-9705233.55	0.0269	0.0010
Mercury	-31285-10-05 07:55 J	-9705145.30	-9705145.17	-9705145.04	0.0269	0.0116
Mercury	-31284-01-01 20:38 J	-9705056.72	-9705056.64	-9705056.56	0.0269	0.0226
Mars	-31280-01-11 11:31 J	-9703586.23	-9703586.02	-9703585.80	0.0274	0.0167
Venus	-31274-09-19 12:57 J	-9701144.13	-9701143.96	-9701143.77	0.0288	0.0165
Venus	-31273-05-06 14:52 J	-9700914.10	-9700913.88	-9700913.67	0.0289	0.0008
Venus	-31273-12-22 17:16 J	-9700683.96	-9700683.78	-9700683.59	0.0289	0.0154
Earth	-31272-10-29 09:35 J	-9700373.32	-9700373.10	-9700372.87	0.0290	0.0120
Moon	-31272-10-29 12:43 J	-9700373.17	-9700372.97	-9700372.74	0.0290	0.0134 *
Mercury	-31271-11-16 15:07 J	-9699989.99	-9699989.87	-9699989.73	0.0290	0.0177
Mercury	-31270-02-13 11:02 J	-9699901.20	-9699901.04	-9699900.87	0.0290	0.0021
Mercury	-31270-05-13 06:28 J	-9699812.37	-9699812.23	-9699812.08	0.0290	0.0134
Mercury	-31270-08-10 01:26 J	-9699723.47	-9699723.44	-9699723.41	0.0290	0.0283
Mars	-31266-02-12 09:07 J	-9698441.26	-9698441.12	-9698440.95	0.0285	0.0247
Venus	-31260-07-21 10:33 J	-9696090.15	-9696090.06	-9696089.96	0.0272	0.0240
Venus	-31259-03-07 10:47 J	-9695861.24	-9695861.05	-9695860.86	0.0271	0.0116
Venus	-31259-10-22 09:50 J	-9695632.29	-9695632.09	-9695631.88	0.0270	0.0009
Venus	-31258-06-08 08:23 J	-9695403.33	-9695403.15	-9695402.97	0.0270	0.0130
Venus	-31257-01-23 06:43 J	-9695174.30	-9695174.22	-9695174.15	0.0269	0.0250
Earth	-31257-04-25 06:28 J	-9695081.41	-9695081.23	-9695081.02	0.0269	0.0166
Moon	-31257-04-25 06:14 J	-9695081.40	-9695081.24	-9695081.05	0.0269	0.0179 *
Mercury	-31256-06-01 19:26 J	-9694678.74	-9694678.69	-9694678.62	0.0269	0.0242
Mercury	-31256-08-29 07:26 J	-9694590.31	-9694590.19	-9694590.06	0.0269	0.0140
Mercury	-31256-11-25 19:40 J	-9694501.82	-9694501.68	-9694501.53	0.0269	0.0035
Mercury	-31255-02-22 08:09 J	-9694413.30	-9694413.16	-9694413.02	0.0269	0.0072
Mercury	-31255-05-21 20:52 J	-9694324.74	-9694324.63	-9694324.52	0.0269	0.0181

Mars	-31250-02-27 12:14 J	-9692582.14	-9692581.99	-9692581.83	0.0276	0.0226
Venus	-31244-03-31 13:26 J	-9690358.11	-9690357.94	-9690357.74	0.0288	0.0151
Venus	-31244-11-16 15:35 J	-9690128.07	-9690127.85	-9690127.63	0.0289	0.0009
Venus	-31243-07-04 18:28 J	-9689897.90	-9689897.73	-9689897.55	0.0289	0.0169
Moon	-31242-11-06 07:40 J	-9689408.36	-9689408.18	-9689408.00	0.0290	0.0190
Earth	-31242-11-06 10:19 J	-9689408.24	-9689408.07	-9689407.89	0.0290	0.0205 *
Mercury	-31241-04-04 12:57 J	-9689258.05	-9689257.96	-9689257.86	0.0290	0.0236
Mercury	-31241-07-02 09:07 J	-9689169.28	-9689169.12	-9689168.96	0.0290	0.0077
Mercury	-31241-09-29 04:33 J	-9689080.46	-9689080.31	-9689080.15	0.0290	0.0079
Mercury	-31241-12-26 23:31 J	-9688991.61	-9688991.52	-9688991.41	0.0290	0.0231
Venus	-31230-01-31 15:50 J	-9685303.95	-9685303.84	-9685303.71	0.0272	0.0220
Venus	-31230-09-17 16:04 J	-9685075.02	-9685074.83	-9685074.63	0.0271	0.0095
Venus	-31229-05-03 15:21 J	-9684846.06	-9684845.86	-9684845.65	0.0271	0.0029
Venus	-31229-12-18 13:55 J	-9684617.09	-9684616.92	-9684616.75	0.0270	0.0151
Venus	-31228-08-04 12:14 J	-9684387.99	-9684387.99	-9684387.99	0.0269	0.0269
Moon	-31227-05-02 08:09 J	-9684117.38	-9684117.16	-9684116.92	0.0269	0.0089
Earth	-31227-05-02 11:31 J	-9684117.23	-9684117.02	-9684116.78	0.0269	0.0105 *
Mercury	-31227-10-19 22:33 J	-9683946.58	-9683946.56	-9683946.53	0.0269	0.0263
Mercury	-31226-01-16 10:33 J	-9683858.17	-9683858.06	-9683857.95	0.0269	0.0161
Mercury	-31226-04-14 22:47 J	-9683769.70	-9683769.55	-9683769.41	0.0269	0.0057
Mercury	-31226-07-12 11:02 J	-9683681.18	-9683681.04	-9683680.90	0.0269	0.0050
Mercury	-31226-10-08 23:31 J	-9683592.63	-9683592.52	-9683592.40	0.0269	0.0158
Mercury	-31225-01-05 12:14 J	-9683503.99	-9683503.99	-9683503.97	0.0269	0.0269
Venus	-31215-02-23 20:38 J	-9679801.69	-9679801.64	-9679801.59	0.0287	0.0278
Venus	-31215-10-11 21:21 J	-9679571.81	-9679571.61	-9679571.42	0.0288	0.0124
Venus	-31214-05-29 23:02 J	-9679341.75	-9679341.54	-9679341.32	0.0289	0.0036
Venus	-31213-01-15 01:55 J	-9679111.58	-9679111.42	-9679111.26	0.0290	0.0196
Earth	-31213-10-30 10:47 J	-9678822.29	-9678822.05	-9678821.81	0.0290	0.0070
Moon	-31213-10-30 13:26 J	-9678822.18	-9678821.94	-9678821.70	0.0290	0.0085 *
Mercury	-31212-08-22 12:28 J	-9678526.01	-9678525.98	-9678525.94	0.0290	0.0284

Mercury	-31212-11-19 08:38 J	-9678437.29	-9678437.14	-9678436.99	0.0290	0.0124
Mercury	-31211-02-16 04:19 J	-9678348.48	-9678348.32	-9678348.15	0.0290	0.0034
Mercury	-31211-05-15 23:31 J	-9678259.64	-9678259.52	-9678259.39	0.0290	0.0186
Jupiter	-31204-07-18 23:16 J	-9675638.97	-9675638.53	-9675638.10	0.0277	0.0002
Venus	-31201-08-12 16:19 J	-9674517.95	-9674517.82	-9674517.68	0.0272	0.0204
Venus	-31200-03-29 16:19 J	-9674289.02	-9674288.82	-9674288.62	0.0271	0.0080
Venus	-31200-11-13 15:21 J	-9674060.06	-9674059.86	-9674059.66	0.0270	0.0044
Venus	-31199-06-30 13:40 J	-9673831.09	-9673830.93	-9673830.76	0.0270	0.0165
Earth	-31198-04-27 07:40 J	-9673530.39	-9673530.18	-9673529.95	0.0269	0.0119
Moon	-31198-04-27 11:16 J	-9673530.23	-9673530.03	-9673529.81	0.0269	0.0134 *
Mercury	-31197-06-04 11:16 J	-9673126.12	-9673126.03	-9673125.93	0.0269	0.0201
Mercury	-31197-08-31 23:16 J	-9673037.66	-9673037.53	-9673037.39	0.0269	0.0099
Mercury	-31197-11-28 11:45 J	-9672949.16	-9672949.01	-9672948.87	0.0269	0.0010
Mercury	-31196-02-24 23:59 J	-9672860.62	-9672860.50	-9672860.36	0.0269	0.0115
Mercury	-31196-05-24 12:43 J	-9672772.04	-9672771.97	-9672771.88	0.0269	0.0224
Mars	-31192-06-06 08:38 J	-9671298.36	-9671298.14	-9671297.91	0.0274	0.0156
Venus	-31186-09-05 20:52 J	-9669015.71	-9669015.63	-9669015.54	0.0287	0.0263
Venus	-31185-04-22 21:35 J	-9668785.79	-9668785.60	-9668785.39	0.0288	0.0109
Venus	-31185-12-08 23:45 J	-9668555.72	-9668555.51	-9668555.29	0.0289	0.0050
Venus	-31184-07-27 02:38 J	-9668325.53	-9668325.39	-9668325.23	0.0289	0.0211
Earth	-31183-11-07 10:33 J	-9667857.18	-9667857.06	-9667856.94	0.0290	0.0253
Moon	-31183-11-07 11:59 J	-9667857.12	-9667857.00	-9667856.85	0.0290	0.0238 *
Mercury	-31182-04-08 05:59 J	-9667705.37	-9667705.25	-9667705.11	0.0290	0.0185
Mercury	-31182-07-06 02:09 J	-9667616.58	-9667616.41	-9667616.25	0.0290	0.0027
Mercury	-31182-10-02 21:35 J	-9667527.75	-9667527.60	-9667527.45	0.0290	0.0128
Mercury	-31182-12-30 16:19 J	-9667438.85	-9667438.82	-9667438.77	0.0290	0.0279
Mars	-31178-07-08 06:57 J	-9666153.40	-9666153.21	-9666152.99	0.0286	0.0215
Venus	-31171-02-22 21:21 J	-9663731.76	-9663731.61	-9663731.45	0.0272	0.0183
Venus	-31171-10-09 21:21 J	-9663502.81	-9663502.61	-9663502.40	0.0271	0.0059
Venus	-31170-05-26 20:38 J	-9663273.84	-9663273.64	-9663273.44	0.0271	0.0065

Venus	-31169-01-10 19:11 J	-9663044.84	-9663044.70	-9663044.55	0.0270	0.0186
Moon	-31168-05-03 10:47 J	-9662566.24	-9662566.05	-9662565.84	0.0269	0.0137
Earth	-31168-05-03 12:43 J	-9662566.16	-9662565.97	-9662565.76	0.0269	0.0151 *
Mercury	-31168-10-22 14:09 J	-9662393.98	-9662393.91	-9662393.82	0.0269	0.0224
Mercury	-31167-01-19 02:23 J	-9662305.53	-9662305.40	-9662305.27	0.0269	0.0120
Mercury	-31167-04-17 14:38 J	-9662217.04	-9662216.89	-9662216.75	0.0269	0.0015
Mercury	-31167-07-15 03:07 J	-9662128.51	-9662128.37	-9662128.24	0.0269	0.0092
Mercury	-31167-10-11 15:35 J	-9662039.94	-9662039.85	-9662039.75	0.0269	0.0201
Mars	-31162-07-24 07:26 J	-9660293.19	-9660293.19	-9660293.16	0.0275	0.0275
Venus	-31156-03-18 05:02 J	-9658229.40	-9658229.29	-9658229.16	0.0287	0.0237
Venus	-31156-11-03 06:14 J	-9657999.45	-9657999.24	-9657999.03	0.0288	0.0081
Venus	-31155-06-21 08:09 J	-9657769.36	-9657769.16	-9657768.94	0.0289	0.0080
Venus	-31154-02-06 11:16 J	-9657539.15	-9657539.03	-9657538.91	0.0290	0.0238
Moon	-31154-11-01 10:33 J	-9657271.31	-9657271.06	-9657270.80	0.0290	0.0036
Earth	-31154-11-01 13:11 J	-9657271.20	-9657270.95	-9657270.71	0.0290	0.0018 *
Mercury	-31153-08-25 05:59 J	-9656973.34	-9656973.25	-9656973.14	0.0290	0.0229
Mercury	-31153-11-22 02:23 J	-9656884.56	-9656884.40	-9656884.24	0.0290	0.0069
Mercury	-31152-02-18 21:50 J	-9656795.74	-9656795.59	-9656795.43	0.0290	0.0087
Mercury	-31152-05-18 17:02 J	-9656706.88	-9656706.79	-9656706.70	0.0290	0.0239
Venus	-31142-09-04 23:02 J	-9652945.70	-9652945.54	-9652945.38	0.0272	0.0166
Venus	-31141-04-20 22:33 J	-9652716.76	-9652716.56	-9652716.35	0.0271	0.0043
Venus	-31141-12-05 21:35 J	-9652487.80	-9652487.60	-9652487.40	0.0270	0.0081
Venus	-31140-07-22 19:40 J	-9652258.80	-9652258.68	-9652258.53	0.0270	0.0202
Earth	-31139-04-28 10:33 J	-9651979.29	-9651979.06	-9651978.82	0.0269	0.0069
Moon	-31139-04-28 12:28 J	-9651979.22	-9651978.98	-9651978.74	0.0269	0.0084 *
Mercury	-31138-03-11 15:35 J	-9651661.88	-9651661.85	-9651661.82	0.0269	0.0260
Mercury	-31138-06-08 03:21 J	-9651573.47	-9651573.36	-9651573.24	0.0269	0.0158
Mercury	-31138-09-04 15:35 J	-9651484.99	-9651484.85	-9651484.71	0.0269	0.0054
Mercury	-31138-12-02 03:50 J	-9651396.48	-9651396.34	-9651396.20	0.0269	0.0053
Mercury	-31137-02-28 16:33 J	-9651307.93	-9651307.81	-9651307.70	0.0269	0.0160

Venus	-31127-09-28 05:59 J	-9647443.38	-9647443.25	-9647443.11	0.0287	0.0221
Venus	-31126-05-16 06:57 J	-9647213.41	-9647213.21	-9647212.99	0.0288	0.0067
Venus	-31125-01-01 09:21 J	-9646983.31	-9646983.11	-9646982.90	0.0289	0.0093
Venus	-31125-08-18 12:28 J	-9646753.08	-9646752.98	-9646752.87	0.0289	0.0253
Moon	-31124-11-08 16:47 J	-9646305.81	-9646305.80	-9646305.78	0.0290	0.0289
Mercury	-31123-01-12 03:35 J	-9646241.36	-9646241.35	-9646241.34	0.0290	0.0290
Mercury	-31123-04-10 23:45 J	-9646152.65	-9646152.51	-9646152.35	0.0290	0.0129
Mercury	-31123-07-08 19:40 J	-9646063.85	-9646063.68	-9646063.51	0.0290	0.0029
Mercury	-31123-10-05 14:52 J	-9645975.00	-9645974.88	-9645974.75	0.0290	0.0182
Venus	-31113-07-31 02:38 J	-9642388.41	-9642388.39	-9642388.35	0.0273	0.0269
Venus	-31112-03-17 03:35 J	-9642159.52	-9642159.35	-9642159.17	0.0272	0.0145
Venus	-31112-11-01 03:35 J	-9641930.56	-9641930.35	-9641930.14	0.0271	0.0020
Venus	-31111-06-18 02:38 J	-9641701.58	-9641701.39	-9641701.20	0.0271	0.0102
Venus	-31110-02-02 01:26 J	-9641472.56	-9641472.44	-9641472.33	0.0270	0.0222
Earth	-31109-05-04 14:52 J	-9641015.03	-9641014.88	-9641014.70	0.0269	0.0200
Moon	-31109-05-04 17:45 J	-9641014.92	-9641014.76	-9641014.58	0.0269	0.0187 *
Mercury	-31109-10-25 06:28 J	-9640841.34	-9640841.23	-9640841.13	0.0269	0.0181
Mercury	-31108-01-21 18:28 J	-9640752.87	-9640752.73	-9640752.59	0.0269	0.0076
Mercury	-31108-04-20 06:43 J	-9640664.36	-9640664.22	-9640664.07	0.0269	0.0031
Mercury	-31108-07-17 19:11 J	-9640575.82	-9640575.70	-9640575.57	0.0269	0.0138
Mercury	-31108-10-14 08:09 J	-9640487.22	-9640487.16	-9640487.11	0.0269	0.0248
Mars	-31104-10-31 09:35 J	-9639009.35	-9639009.10	-9639008.83	0.0274	0.0099
Venus	-31097-04-09 15:50 J	-9636657.00	-9636656.84	-9636656.67	0.0288	0.0192
Venus	-31097-11-25 17:02 J	-9636427.00	-9636426.79	-9636426.57	0.0288	0.0035
Venus	-31096-07-13 19:26 J	-9636196.89	-9636196.69	-9636196.49	0.0289	0.0124
Venus	-31095-02-28 22:19 J	-9635966.61	-9635966.57	-9635966.52	0.0290	0.0283
Moon	-31095-11-02 14:38 J	-9635720.13	-9635719.89	-9635719.65	0.0290	0.0022
Earth	-31095-11-02 17:59 J	-9635719.99	-9635719.75	-9635719.50	0.0290	0.0039 *
Mercury	-31094-08-29 00:28 J	-9635420.61	-9635420.48	-9635420.34	0.0290	0.0168
Mercury	-31094-11-25 20:38 J	-9635331.81	-9635331.64	-9635331.48	0.0290	0.0011

Mercury	-31093-02-22 15:50 J	-9635242.98	-9635242.84	-9635242.69	0.0290	0.0146
Mars	-31090-12-01 18:57 J	-9633864.96	-9633864.71	-9633864.44	0.0286	0.0166
Venus	-31083-02-10 05:31 J	-9631602.34	-9631602.27	-9631602.18	0.0272	0.0251
Venus	-31083-09-27 05:59 J	-9631373.42	-9631373.25	-9631373.06	0.0271	0.0128
Venus	-31082-05-14 05:59 J	-9631144.46	-9631144.25	-9631144.05	0.0271	0.0006
Venus	-31082-12-29 04:47 J	-9630915.48	-9630915.30	-9630915.11	0.0270	0.0119
Venus	-31081-08-14 02:52 J	-9630686.46	-9630686.38	-9630686.27	0.0270	0.0239
Moon	-31080-04-29 11:59 J	-9630428.25	-9630428.00	-9630427.75	0.0269	0.0031
Earth	-31080-04-29 14:52 J	-9630428.12	-9630427.88	-9630427.64	0.0269	0.0018 *
Mercury	-31079-03-14 07:55 J	-9630109.25	-9630109.17	-9630109.08	0.0269	0.0215
Mercury	-31079-06-10 19:55 J	-9630020.80	-9630020.67	-9630020.54	0.0269	0.0112
Mercury	-31079-09-07 08:09 J	-9629932.31	-9629932.16	-9629932.02	0.0269	0.0007
Mercury	-31079-12-04 20:38 J	-9629843.78	-9629843.64	-9629843.51	0.0269	0.0101
Mercury	-31078-03-03 09:07 J	-9629755.21	-9629755.12	-9629755.03	0.0269	0.0209
Venus	-31068-10-20 16:47 J	-9625870.96	-9625870.80	-9625870.62	0.0287	0.0177
Venus	-31067-06-07 18:14 J	-9625640.96	-9625640.74	-9625640.52	0.0288	0.0020
Venus	-31066-01-23 20:38 J	-9625410.83	-9625410.64	-9625410.45	0.0289	0.0139
Earth	-31066-10-27 09:07 J	-9625134.23	-9625134.12	-9625133.98	0.0290	0.0248
Moon	-31066-10-27 11:59 J	-9625134.09	-9625134.00	-9625133.88	0.0290	0.0263 *
Mercury	-31064-01-14 22:04 J	-9624688.68	-9624688.58	-9624688.48	0.0290	0.0228
Mercury	-31064-04-13 18:14 J	-9624599.90	-9624599.74	-9624599.58	0.0290	0.0069
Mercury	-31064-07-11 13:40 J	-9624511.08	-9624510.93	-9624510.77	0.0290	0.0088
Mercury	-31064-10-08 08:52 J	-9624422.21	-9624422.13	-9624422.03	0.0290	0.0240
Venus	-31054-08-23 10:04 J	-9620816.18	-9620816.08	-9620815.96	0.0273	0.0230
Venus	-31053-04-08 11:02 J	-9620587.23	-9620587.04	-9620586.85	0.0272	0.0105
Venus	-31053-11-23 10:47 J	-9620358.26	-9620358.05	-9620357.84	0.0271	0.0019
Venus	-31052-07-10 09:50 J	-9620129.26	-9620129.09	-9620128.91	0.0271	0.0141
Venus	-31051-02-24 08:09 J	-9619900.20	-9619900.16	-9619900.09	0.0270	0.0260
Earth	-31051-04-24 20:52 J	-9619840.75	-9619840.63	-9619840.49	0.0270	0.0224
Moon	-31051-04-24 23:02 J	-9619840.63	-9619840.54	-9619840.42	0.0270	0.0239 *



Earth	-31050-05-06 19:26 J	-9619463.77	-9619463.69	-9619463.59	0.0269	0.0251
Moon	-31050-05-06 22:33 J	-9619463.66	-9619463.56	-9619463.44	0.0269	0.0241 *
Mercury	-31050-08-01 11:02 J	-9619377.11	-9619377.04	-9619376.98	0.0269	0.0238
Mercury	-31050-10-28 22:47 J	-9619288.67	-9619288.55	-9619288.42	0.0269	0.0135
Mercury	-31049-01-25 11:02 J	-9619200.18	-9619200.04	-9619199.90	0.0269	0.0030
Mercury	-31049-04-22 23:31 J	-9619111.66	-9619111.52	-9619111.38	0.0269	0.0078
Mercury	-31049-07-20 11:59 J	-9619023.10	-9619023.00	-9619022.89	0.0269	0.0187
Venus	-31038-05-03 04:04 J	-9615084.51	-9615084.33	-9615084.14	0.0288	0.0145
Venus	-31038-12-19 05:31 J	-9614854.49	-9614854.27	-9614854.05	0.0289	0.0012
Venus	-31037-08-05 07:55 J	-9614624.34	-9614624.17	-9614623.99	0.0289	0.0172
Earth	-31036-11-04 01:40 J	-9614168.66	-9614168.43	-9614168.20	0.0290	0.0100
Moon	-31036-11-04 02:23 J	-9614168.63	-9614168.40	-9614168.18	0.0290	0.0086 *
Mercury	-31035-06-03 23:16 J	-9613956.59	-9613956.53	-9613956.45	0.0290	0.0263
Mercury	-31035-08-31 19:40 J	-9613867.84	-9613867.68	-9613867.52	0.0290	0.0102
Mercury	-31035-11-28 15:21 J	-9613779.02	-9613778.86	-9613778.70	0.0290	0.0055
Mercury	-31034-02-25 10:33 J	-9613690.17	-9613690.06	-9613689.94	0.0290	0.0209
Venus	-31024-03-04 13:55 J	-9610030.04	-9610029.92	-9610029.78	0.0272	0.0211
Venus	-31024-10-19 14:38 J	-9609801.09	-9609800.89	-9609800.69	0.0271	0.0086
Venus	-31023-06-05 14:09 J	-9609572.11	-9609571.91	-9609571.70	0.0271	0.0037
Venus	-31022-01-20 13:11 J	-9609343.12	-9609342.95	-9609342.79	0.0270	0.0158
Moon	-31021-04-30 17:59 J	-9608876.99	-9608876.75	-9608876.51	0.0269	0.0025
Earth	-31021-04-30 20:52 J	-9608876.86	-9608876.63	-9608876.38	0.0269	0.0038 *
Mercury	-31021-12-18 12:43 J	-9608644.97	-9608644.97	-9608644.96	0.0269	0.0269
Mercury	-31020-03-17 00:43 J	-9608556.58	-9608556.47	-9608556.36	0.0269	0.0167
Mercury	-31020-06-13 12:43 J	-9608468.11	-9608467.97	-9608467.83	0.0269	0.0063
Mercury	-31020-09-10 00:57 J	-9608379.60	-9608379.46	-9608379.31	0.0269	0.0045
Mercury	-31020-12-07 13:26 J	-9608291.05	-9608290.94	-9608290.81	0.0269	0.0152
Mercury	-31019-03-06 02:09 J	-9608202.43	-9608202.41	-9608202.37	0.0269	0.0262
Mars	-31015-03-26 23:45 J	-9606720.77	-9606720.51	-9606720.24	0.0274	0.0065
Venus	-31009-03-27 05:59 J	-9604528.29	-9604528.25	-9604528.20	0.0286	0.0280

Venus	-31009-11-12 05:59 J	-9604298.43	-9604298.25	-9604298.05	0.0287	0.0129
Venus	-31008-06-30 07:55 J	-9604068.39	-9604068.17	-9604067.96	0.0288	0.0029
Venus	-31007-02-15 10:19 J	-9603838.23	-9603838.07	-9603837.90	0.0289	0.0187
Moon	-31007-10-28 17:02 J	-9603582.96	-9603582.79	-9603582.59	0.0290	0.0198
Earth	-31007-10-28 18:43 J	-9603582.91	-9603582.72	-9603582.53	0.0290	0.0184 *
Mercury	-31005-01-18 17:16 J	-9603135.91	-9603135.78	-9603135.63	0.0290	0.0160
Mercury	-31005-04-16 13:26 J	-9603047.11	-9603046.94	-9603046.77	0.0290	0.0002
Mercury	-31005-07-14 08:52 J	-9602958.27	-9602958.13	-9602957.99	0.0290	0.0153
Mars	-31001-04-26 02:38 J	-9601576.68	-9601576.39	-9601576.10	0.0286	0.0119

# 31ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 31st millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-30995-09-14 18:28 J	-9599243.88	-9599243.73	-9599243.58	0.0273	0.0190		
Venus	-30994-05-01 19:11 J	-9599014.90	-9599014.70	-9599014.50	0.0272	0.0065		
Venus	-30994-12-16 18:43 J	-9598785.91	-9598785.72	-9598785.51	0.0271	0.0060		
Venus	-30993-08-01 17:59 J	-9598556.91	-9598556.75	-9598556.60	0.0271	0.0180		
Earth	-30992-04-26 02:52 J	-9598289.57	-9598289.38	-9598289.19	0.0270	0.0171		
Moon	-30992-04-26 05:59 J	-9598289.42	-9598289.25	-9598289.06	0.0270	0.0186 *		
Mercury	-30991-08-04 03:35 J	-9597824.45	-9597824.35	-9597824.25	0.0269	0.0190		
Mercury	-30991-10-31 15:35 J	-9597735.98	-9597735.85	-9597735.71	0.0269	0.0086		
Mercury	-30990-01-28 04:04 J	-9597647.48	-9597647.33	-9597647.19	0.0269	0.0022		
Mercury	-30990-04-26 16:19 J	-9597558.94	-9597558.82	-9597558.69	0.0269	0.0129		

Mercury	-30990-07-24 05:16 J	-9597470.35	-9597470.28	-9597470.22	0.0269	0.0239
Venus	-30980-10-07 17:45 J	-9593741.85	-9593741.76	-9593741.64	0.0287	0.0249
Venus	-30979-05-25 18:14 J	-9593511.94	-9593511.74	-9593511.53	0.0288	0.0096
Venus	-30978-01-10 19:55 J	-9593281.88	-9593281.67	-9593281.46	0.0289	0.0062
Venus	-30978-08-28 22:33 J	-9593051.70	-9593051.56	-9593051.42	0.0289	0.0221
Earth	-30977-11-05 11:45 J	-9592617.20	-9592617.01	-9592616.79	0.0290	0.0167
Moon	-30977-11-05 15:35 J	-9592617.05	-9592616.85	-9592616.64	0.0290	0.0152 *
Mercury	-30976-06-06 19:11 J	-9592403.82	-9592403.70	-9592403.57	0.0290	0.0191
Mercury	-30976-09-03 15:21 J	-9592315.03	-9592314.86	-9592314.70	0.0290	0.0032
Mercury	-30976-12-01 10:47 J	-9592226.20	-9592226.05	-9592225.90	0.0290	0.0125
Mercury	-30975-02-28 05:45 J	-9592137.30	-9592137.26	-9592137.21	0.0290	0.0276
Venus	-30965-03-26 23:31 J	-9588457.67	-9588457.52	-9588457.35	0.0272	0.0169
Venus	-30965-11-10 23:59 J	-9588228.70	-9588228.50	-9588228.30	0.0271	0.0044
Venus	-30964-06-27 23:31 J	-9587999.72	-9587999.52	-9587999.32	0.0271	0.0078
Venus	-30963-02-11 22:19 J	-9587770.70	-9587770.57	-9587770.43	0.0270	0.0199
Earth	-30962-05-03 04:47 J	-9587325.52	-9587325.30	-9587325.07	0.0269	0.0094
Moon	-30962-05-03 05:31 J	-9587325.49	-9587325.27	-9587325.04	0.0269	0.0085 *
Mercury	-30962-12-22 05:59 J	-9587092.33	-9587092.25	-9587092.17	0.0269	0.0218
Mercury	-30961-03-19 17:45 J	-9587003.88	-9587003.76	-9587003.63	0.0269	0.0115
Mercury	-30961-06-16 05:59 J	-9586915.39	-9586915.25	-9586915.10	0.0269	0.0011
Mercury	-30961-09-12 18:28 J	-9586826.86	-9586826.73	-9586826.60	0.0269	0.0098
Mercury	-30961-12-10 06:57 J	-9586738.30	-9586738.21	-9586738.11	0.0269	0.0207
Venus	-30950-04-19 20:38 J	-9582955.76	-9582955.64	-9582955.51	0.0287	0.0230
Venus	-30950-12-05 21:07 J	-9582725.82	-9582725.62	-9582725.41	0.0288	0.0078
Venus	-30949-07-22 23:02 J	-9582495.75	-9582495.54	-9582495.33	0.0288	0.0080
Venus	-30948-03-10 01:40 J	-9582265.55	-9582265.43	-9582265.31	0.0289	0.0238
Moon	-30948-10-30 02:52 J	-9582031.60	-9582031.38	-9582031.16	0.0290	0.0131
Earth	-30948-10-30 06:28 J	-9582031.46	-9582031.23	-9582031.00	0.0290	0.0116 *
Mercury	-30947-10-24 17:16 J	-9581671.87	-9581671.78	-9581671.69	0.0290	0.0247
Mercury	-30946-01-21 13:26 J	-9581583.10	-9581582.94	-9581582.78	0.0290	0.0087

Mercury	-30946-04-20 09:07 J	-9581494.28	-9581494.12	-9581493.95	0.0290	0.0071
Mercury	-30946-07-18 04:33 J	-9581405.42	-9581405.31	-9581405.21	0.0290	0.0223
Venus	-30936-02-20 02:09 J	-9577900.43	-9577900.41	-9577900.39	0.0274	0.0272
Venus	-30936-10-07 03:35 J	-9577671.52	-9577671.35	-9577671.17	0.0273	0.0148
Venus	-30935-05-24 04:19 J	-9577442.53	-9577442.32	-9577442.12	0.0272	0.0023
Venus	-30934-01-08 03:50 J	-9577213.53	-9577213.34	-9577213.14	0.0271	0.0101
Venus	-30934-08-25 02:38 J	-9576984.50	-9576984.39	-9576984.26	0.0271	0.0221
Earth	-30933-04-27 10:04 J	-9576738.30	-9576738.08	-9576737.86	0.0270	0.0116
Moon	-30933-04-27 10:04 J	-9576738.29	-9576738.08	-9576737.85	0.0270	0.0129 *
Mercury	-30932-05-10 08:38 J	-9576360.19	-9576360.14	-9576360.08	0.0270	0.0243
Mercury	-30932-08-06 20:38 J	-9576271.76	-9576271.64	-9576271.52	0.0270	0.0140
Mercury	-30932-11-03 08:52 J	-9576183.27	-9576183.13	-9576182.99	0.0270	0.0034
Mercury	-30931-01-30 21:07 J	-9576094.76	-9576094.62	-9576094.48	0.0270	0.0073
Mercury	-30931-04-29 09:35 J	-9576006.20	-9576006.10	-9576005.99	0.0270	0.0183
Mars	-30927-08-21 15:21 J	-9574431.13	-9574430.86	-9574430.58	0.0274	0.0011
Venus	-30921-10-30 09:35 J	-9572169.25	-9572169.10	-9572168.94	0.0287	0.0198
Venus	-30920-06-17 10:33 J	-9571939.27	-9571939.06	-9571938.85	0.0288	0.0043
Venus	-30919-02-02 12:14 J	-9571709.18	-9571708.99	-9571708.78	0.0289	0.0115
Venus	-30919-09-20 14:52 J	-9571478.94	-9571478.88	-9571478.80	0.0290	0.0273
Earth	-30918-11-08 01:40 J	-9571065.56	-9571065.43	-9571065.28	0.0290	0.0238
Moon	-30918-11-08 03:50 J	-9571065.49	-9571065.34	-9571065.17	0.0290	0.0225 *
Mercury	-30917-03-12 19:26 J	-9570939.74	-9570939.69	-9570939.63	0.0290	0.0274
Mercury	-30917-06-09 15:50 J	-9570850.99	-9570850.84	-9570850.68	0.0290	0.0113
Mercury	-30917-09-06 11:45 J	-9570762.18	-9570762.01	-9570761.85	0.0290	0.0045
Mercury	-30917-12-04 06:57 J	-9570673.33	-9570673.21	-9570673.09	0.0290	0.0199
Mars	-30913-09-21 00:14 J	-9569286.80	-9569286.49	-9569286.18	0.0286	0.0033
Venus	-30907-09-02 08:23 J	-9567114.21	-9567114.15	-9567114.05	0.0273	0.0250
Venus	-30906-04-19 09:50 J	-9566885.27	-9566885.09	-9566884.90	0.0272	0.0126
Venus	-30906-12-04 10:04 J	-9566656.29	-9566656.08	-9566655.87	0.0271	0.0002
Venus	-30905-07-20 09:21 J	-9566427.29	-9566427.11	-9566426.92	0.0270	0.0120

Venus	-30904-03-06 08:09 J	-9566198.25	-9566198.16	-9566198.06	0.0270	0.0239
Earth	-30903-05-04 13:40 J	-9565774.12	-9565773.93	-9565773.72	0.0269	0.0153
Moon	-30903-05-04 17:02 J	-9565773.98	-9565773.79	-9565773.58	0.0269	0.0143 *
Mercury	-30903-09-27 11:16 J	-9565628.03	-9565628.03	-9565628.02	0.0269	0.0268
Mercury	-30903-12-24 23:16 J	-9565539.64	-9565539.53	-9565539.42	0.0269	0.0166
Mercury	-30902-03-23 11:16 J	-9565451.17	-9565451.03	-9565450.89	0.0269	0.0061
Mercury	-30902-06-19 23:31 J	-9565362.66	-9565362.52	-9565362.37	0.0269	0.0046
Mercury	-30902-09-16 11:59 J	-9565274.11	-9565274.00	-9565273.88	0.0269	0.0154
Mercury	-30902-12-14 00:43 J	-9565185.49	-9565185.47	-9565185.44	0.0269	0.0264
Venus	-30891-05-12 13:11 J	-9561383.11	-9561382.95	-9561382.78	0.0287	0.0179
Venus	-30891-12-28 13:55 J	-9561153.14	-9561152.92	-9561152.70	0.0288	0.0025
Venus	-30890-08-15 15:50 J	-9560923.03	-9560922.84	-9560922.64	0.0289	0.0133
Venus	-30889-04-01 18:43 J	-9560692.72	-9560692.72	-9560692.72	0.0289	0.0289
Moon	-30889-10-31 18:57 J	-9560479.94	-9560479.71	-9560479.47	0.0290	0.0059
Earth	-30889-10-31 20:52 J	-9560479.87	-9560479.63	-9560479.39	0.0290	0.0044 *
Mercury	-30888-10-27 13:55 J	-9560119.05	-9560118.92	-9560118.77	0.0290	0.0168
Mercury	-30887-01-24 10:04 J	-9560030.25	-9560030.08	-9560029.91	0.0290	0.0009
Mercury	-30887-04-23 05:31 J	-9559941.41	-9559941.27	-9559941.12	0.0290	0.0147
Venus	-30877-03-14 11:59 J	-9556328.10	-9556328.00	-9556327.88	0.0274	0.0230
Venus	-30877-10-29 13:26 J	-9556099.13	-9556098.94	-9556098.75	0.0273	0.0105
Venus	-30876-06-15 13:55 J	-9555870.13	-9555869.92	-9555869.72	0.0272	0.0020
Venus	-30875-01-30 13:26 J	-9555641.11	-9555640.94	-9555640.76	0.0271	0.0142
Venus	-30875-09-16 12:14 J	-9555412.03	-9555411.99	-9555411.93	0.0271	0.0261
Moon	-30874-04-29 14:38 J	-9555187.12	-9555186.89	-9555186.65	0.0270	0.0074
Earth	-30874-04-29 18:14 J	-9555186.97	-9555186.74	-9555186.50	0.0270	0.0059 *
Mercury	-30873-05-13 01:40 J	-9554807.52	-9554807.43	-9554807.32	0.0270	0.0193
Mercury	-30873-08-09 13:55 J	-9554719.06	-9554718.92	-9554718.79	0.0270	0.0088
Mercury	-30873-11-06 02:09 J	-9554630.55	-9554630.41	-9554630.27	0.0270	0.0019
Mercury	-30872-02-02 14:38 J	-9554542.02	-9554541.89	-9554541.76	0.0270	0.0128
Mercury	-30872-05-02 03:21 J	-9554453.43	-9554453.36	-9554453.30	0.0270	0.0238

Venus	-30862-11-23 02:09 J	-9550596.59	-9550596.41	-9550596.22	0.0287	0.0146
Venus	-30861-07-10 03:21 J	-9550366.57	-9550366.36	-9550366.14	0.0288	0.0010
Venus	-30860-02-25 05:31 J	-9550136.45	-9550136.27	-9550136.09	0.0289	0.0167
Mercury	-30858-03-16 16:33 J	-9549386.93	-9549386.81	-9549386.68	0.0290	0.0194
Mercury	-30858-06-13 12:43 J	-9549298.14	-9549297.97	-9549297.81	0.0290	0.0034
Mercury	-30858-09-10 08:09 J	-9549209.30	-9549209.16	-9549209.01	0.0290	0.0123
Mercury	-30858-12-08 03:21 J	-9549120.41	-9549120.36	-9549120.31	0.0290	0.0275
Venus	-30848-09-24 19:26 J	-9545541.82	-9545541.69	-9545541.55	0.0273	0.0207
Venus	-30847-05-11 20:38 J	-9545312.84	-9545312.64	-9545312.44	0.0272	0.0082
Venus	-30847-12-26 20:38 J	-9545083.85	-9545083.64	-9545083.44	0.0271	0.0041
Venus	-30846-08-12 19:40 J	-9544854.84	-9544854.68	-9544854.51	0.0270	0.0162
Earth	-30845-04-24 00:28 J	-9544599.51	-9544599.48	-9544599.41	0.0270	0.0264
Earth	-30844-05-05 23:02 J	-9544222.67	-9544222.54	-9544222.38	0.0269	0.0214
Moon	-30844-05-06 01:11 J	-9544222.60	-9544222.45	-9544222.27	0.0269	0.0203 *
Mercury	-30844-09-30 04:47 J	-9544075.39	-9544075.30	-9544075.22	0.0269	0.0215
Mercury	-30844-12-27 16:33 J	-9543986.93	-9543986.81	-9543986.68	0.0269	0.0112
Mercury	-30843-03-26 04:47 J	-9543898.44	-9543898.30	-9543898.16	0.0269	0.0006
Mercury	-30843-06-22 17:16 J	-9543809.92	-9543809.78	-9543809.65	0.0269	0.0102
Mercury	-30843-09-19 05:45 J	-9543721.35	-9543721.26	-9543721.17	0.0269	0.0211
Mars	-30838-01-15 20:52 J	-9542141.89	-9542141.63	-9542141.36	0.0274	0.0064
Venus	-30833-10-17 06:57 J	-9540040.25	-9540040.21	-9540040.15	0.0286	0.0276
Venus	-30832-06-04 06:43 J	-9539810.41	-9539810.22	-9539810.02	0.0287	0.0126
Venus	-30831-01-20 07:55 J	-9539580.39	-9539580.17	-9539579.96	0.0288	0.0030
Venus	-30831-09-07 09:50 J	-9539350.25	-9539350.09	-9539349.92	0.0289	0.0187
Earth	-30830-11-03 13:11 J	-9538928.19	-9538927.95	-9538927.70	0.0290	0.0033
Moon	-30830-11-03 15:35 J	-9538928.09	-9538927.85	-9538927.61	0.0290	0.0018 *
Mercury	-30829-08-02 15:07 J	-9538654.96	-9538654.87	-9538654.78	0.0290	0.0246
Mercury	-30829-10-30 11:16 J	-9538566.19	-9538566.03	-9538565.87	0.0290	0.0086
Mercury	-30828-01-27 07:11 J	-9538477.36	-9538477.20	-9538477.04	0.0290	0.0072
Mercury	-30828-04-26 02:23 J	-9538388.50	-9538388.40	-9538388.30	0.0290	0.0225

Mars	-30824-02-14 23:45 J	-9536997.83	-9536997.51	-9536997.20	0.0285	0.0031
Venus	-30818-04-06 22:19 J	-9534755.71	-9534755.57	-9534755.41	0.0273	0.0188
Venus	-30818-11-21 23:31 J	-9534526.72	-9534526.52	-9534526.32	0.0272	0.0062
Venus	-30817-07-07 23:45 J	-9534297.71	-9534297.51	-9534297.31	0.0272	0.0062
Venus	-30816-02-21 23:02 J	-9534068.68	-9534068.54	-9534068.38	0.0271	0.0183
Moon	-30815-05-01 00:14 J	-9533635.73	-9533635.49	-9533635.25	0.0270	0.0015
Earth	-30815-05-01 02:23 J	-9533635.64	-9533635.40	-9533635.16	0.0270	0.0002 *
Mercury	-30814-02-17 06:57 J	-9533343.26	-9533343.21	-9533343.15	0.0270	0.0245
Mercury	-30814-05-16 18:57 J	-9533254.83	-9533254.71	-9533254.59	0.0270	0.0141
Mercury	-30814-08-13 07:11 J	-9533166.34	-9533166.20	-9533166.06	0.0270	0.0035
Mercury	-30814-11-09 19:26 J	-9533077.83	-9533077.69	-9533077.55	0.0270	0.0073
Mercury	-30813-02-06 07:55 J	-9532989.27	-9532989.17	-9532989.06	0.0270	0.0183
Venus	-30803-04-29 19:11 J	-9529253.80	-9529253.70	-9529253.58	0.0286	0.0246
Venus	-30803-12-15 19:11 J	-9529023.90	-9529023.70	-9529023.49	0.0287	0.0094
Venus	-30802-08-02 20:52 J	-9528793.84	-9528793.63	-9528793.42	0.0288	0.0063
Venus	-30801-03-19 23:02 J	-9528563.67	-9528563.54	-9528563.39	0.0289	0.0220
Moon	-30801-10-27 20:38 J	-9528341.76	-9528341.64	-9528341.49	0.0290	0.0242
Earth	-30801-10-27 23:31 J	-9528341.65	-9528341.52	-9528341.35	0.0290	0.0227 *
Mercury	-30800-12-20 17:16 J	-9527922.83	-9527922.78	-9527922.72	0.0290	0.0273
Mercury	-30799-03-19 13:40 J	-9527834.08	-9527833.93	-9527833.77	0.0290	0.0112
Mercury	-30799-06-16 09:35 J	-9527745.26	-9527745.10	-9527744.93	0.0290	0.0047
Mercury	-30799-09-13 05:02 J	-9527656.41	-9527656.29	-9527656.17	0.0290	0.0201
Venus	-30789-10-17 06:14 J	-9523969.40	-9523969.24	-9523969.07	0.0273	0.0163
Venus	-30788-06-03 06:57 J	-9523740.41	-9523740.21	-9523740.00	0.0272	0.0039
Venus	-30787-01-18 06:57 J	-9523511.41	-9523511.21	-9523511.01	0.0271	0.0084
Venus	-30787-09-04 05:59 J	-9523282.39	-9523282.25	-9523282.12	0.0270	0.0204
Earth	-30786-04-26 09:50 J	-9523048.24	-9523048.09	-9523047.93	0.0270	0.0205
Moon	-30786-04-26 11:59 J	-9523048.13	-9523048.00	-9523047.84	0.0270	0.0220 *
Moon	-30785-05-07 05:59 J	-9522671.28	-9522671.25	-9522671.19	0.0269	0.0265
Mercury	-30785-07-06 10:04 J	-9522611.10	-9522611.08	-9522611.06	0.0269	0.0265

Mercury	-30785-10-02 22:04 J	-9522522.69	-9522522.58	-9522522.47	0.0269	0.0163
Mercury	-30785-12-30 10:04 J	-9522434.22	-9522434.08	-9522433.94	0.0269	0.0058
Mercury	-30784-03-28 22:19 J	-9522345.71	-9522345.57	-9522345.43	0.0269	0.0049
Mercury	-30784-06-25 10:47 J	-9522257.17	-9522257.05	-9522256.93	0.0269	0.0158
Mercury	-30784-09-21 23:31 J	-9522168.53	-9522168.52	-9522168.51	0.0269	0.0268
Venus	-30774-11-10 00:14 J	-9518467.62	-9518467.49	-9518467.36	0.0286	0.0224
Venus	-30773-06-27 00:14 J	-9518237.70	-9518237.49	-9518237.28	0.0287	0.0073
Venus	-30772-02-12 01:26 J	-9518007.64	-9518007.44	-9518007.23	0.0288	0.0084
Venus	-30772-09-30 03:50 J	-9517777.46	-9517777.34	-9517777.22	0.0289	0.0240
Earth	-30771-11-05 05:16 J	-9517376.51	-9517376.28	-9517376.05	0.0290	0.0109
Moon	-30771-11-05 08:52 J	-9517376.36	-9517376.13	-9517375.89	0.0290	0.0095 *
Mercury	-30770-08-06 12:14 J	-9517102.12	-9517101.99	-9517101.84	0.0290	0.0164
Mercury	-30770-11-03 08:23 J	-9517013.32	-9517013.15	-9517012.98	0.0290	0.0005
Mercury	-30769-01-31 03:50 J	-9516924.47	-9516924.34	-9516924.19	0.0290	0.0152
Venus	-30760-09-12 06:57 J	-9513412.24	-9513412.21	-9513412.18	0.0274	0.0269
Venus	-30759-04-29 08:38 J	-9513183.31	-9513183.14	-9513182.96	0.0273	0.0145
Venus	-30759-12-14 09:21 J	-9512954.31	-9512954.11	-9512953.90	0.0272	0.0021
Venus	-30758-07-31 09:07 J	-9512725.30	-9512725.12	-9512724.92	0.0271	0.0104
Venus	-30757-03-16 08:09 J	-9512496.26	-9512496.16	-9512496.03	0.0271	0.0224
Earth	-30756-05-02 09:50 J	-9512084.32	-9512084.09	-9512083.85	0.0270	0.0055
Moon	-30756-05-02 12:14 J	-9512084.22	-9512083.99	-9512083.75	0.0270	0.0045 *
Mercury	-30755-02-19 23:59 J	-9511790.59	-9511790.50	-9511790.40	0.0270	0.0194
Mercury	-30755-05-19 11:59 J	-9511702.13	-9511702.00	-9511701.86	0.0270	0.0090
Mercury	-30755-08-16 00:14 J	-9511613.63	-9511613.49	-9511613.35	0.0270	0.0017
Mercury	-30755-11-12 12:43 J	-9511525.10	-9511524.97	-9511524.84	0.0270	0.0126
Mercury	-30754-02-09 01:26 J	-9511436.51	-9511436.44	-9511436.37	0.0270	0.0236
Mars	-30750-06-12 08:52 J	-9509852.36	-9509852.13	-9509851.87	0.0274	0.0129
Venus	-30744-05-22 11:16 J	-9507681.18	-9507681.03	-9507680.87	0.0287	0.0196
Venus	-30743-01-07 11:45 J	-9507451.22	-9507451.01	-9507450.79	0.0288	0.0043
Venus	-30743-08-25 13:40 J	-9507221.13	-9507220.93	-9507220.73	0.0289	0.0115



Venus	-30742-04-12 16:04 J	-9506990.89	-9506990.83	-9506990.75	0.0289	0.0272
Moon	-30742-10-30 11:31 J	-9506790.21	-9506790.02	-9506789.81	0.0290	0.0167
Earth	-30742-10-30 14:52 J	-9506790.09	-9506789.88	-9506789.67	0.0290	0.0152 *
Mercury	-30741-12-23 14:23 J	-9506370.02	-9506369.90	-9506369.77	0.0290	0.0192
Mercury	-30740-03-22 10:47 J	-9506281.22	-9506281.05	-9506280.89	0.0290	0.0031
Mercury	-30740-06-19 06:14 J	-9506192.38	-9506192.24	-9506192.09	0.0290	0.0127
Mercury	-30740-09-16 01:40 J	-9506103.48	-9506103.43	-9506103.39	0.0290	0.0279
Mars	-30736-07-13 10:04 J	-9504707.34	-9504707.08	-9504706.78	0.0286	0.0131
Venus	-30730-03-25 15:07 J	-9502625.95	-9502625.87	-9502625.77	0.0273	0.0245
Venus	-30730-11-09 16:33 J	-9502396.99	-9502396.81	-9502396.62	0.0272	0.0121
Venus	-30729-06-25 17:02 J	-9502167.99	-9502167.79	-9502167.58	0.0271	0.0006
Venus	-30728-02-09 16:47 J	-9501938.98	-9501938.80	-9501938.62	0.0271	0.0125
Venus	-30728-09-26 15:35 J	-9501709.93	-9501709.85	-9501709.76	0.0270	0.0243
Moon	-30727-04-27 15:50 J	-9501497.04	-9501496.84	-9501496.63	0.0269	0.0160
Earth	-30727-04-27 17:59 J	-9501496.95	-9501496.75	-9501496.54	0.0269	0.0147 *
Mercury	-30726-07-10 03:07 J	-9501058.45	-9501058.37	-9501058.28	0.0269	0.0215
Mercury	-30726-10-06 15:07 J	-9500970.00	-9500969.87	-9500969.74	0.0269	0.0111
Mercury	-30725-01-03 03:21 J	-9500881.51	-9500881.36	-9500881.22	0.0269	0.0009
Mercury	-30725-03-31 15:35 J	-9500792.98	-9500792.85	-9500792.72	0.0269	0.0103
Mercury	-30725-06-28 04:04 J	-9500704.41	-9500704.33	-9500704.24	0.0269	0.0212
Venus	-30715-12-02 16:33 J	-9496894.98	-9496894.81	-9496894.63	0.0287	0.0174
Venus	-30714-07-20 17:16 J	-9496665.00	-9496664.78	-9496664.57	0.0288	0.0021
Venus	-30713-03-06 18:43 J	-9496434.91	-9496434.72	-9496434.53	0.0289	0.0136
Moon	-30712-11-06 20:09 J	-9495824.86	-9495824.66	-9495824.45	0.0290	0.0172
Earth	-30712-11-06 20:23 J	-9495824.83	-9495824.65	-9495824.45	0.0290	0.0184 *
Mercury	-30711-05-12 13:11 J	-9495638.04	-9495637.95	-9495637.86	0.0290	0.0244
Mercury	-30711-08-09 09:21 J	-9495549.27	-9495549.11	-9495548.95	0.0290	0.0083
Mercury	-30711-11-06 05:16 J	-9495460.44	-9495460.28	-9495460.12	0.0290	0.0075
Mercury	-30710-02-03 00:28 J	-9495371.57	-9495371.48	-9495371.38	0.0290	0.0229
Venus	-30701-10-04 16:47 J	-9491839.91	-9491839.80	-9491839.69	0.0274	0.0228

Venus	-30700-05-21 18:14 J	-9491610.93	-9491610.74	-9491610.55	0.0273	0.0103
Venus	-30699-01-05 18:43 J	-9491381.93	-9491381.72	-9491381.51	0.0272	0.0021
Venus	-30699-08-22 18:14 J	-9491152.91	-9491152.74	-9491152.56	0.0271	0.0143
Venus	-30698-04-08 17:02 J	-9490923.83	-9490923.79	-9490923.74	0.0271	0.0262
Earth	-30697-05-03 16:19 J	-9490533.04	-9490532.82	-9490532.60	0.0270	0.0110
Moon	-30697-05-03 19:40 J	-9490532.91	-9490532.68	-9490532.45	0.0270	0.0102 *
Mercury	-30697-11-26 04:47 J	-9490326.34	-9490326.30	-9490326.24	0.0270	0.0250
Mercury	-30696-02-22 16:47 J	-9490237.92	-9490237.80	-9490237.68	0.0270	0.0146
Mercury	-30696-05-22 04:47 J	-9490149.44	-9490149.30	-9490149.15	0.0270	0.0041
Mercury	-30696-08-18 17:02 J	-9490060.92	-9490060.79	-9490060.64	0.0270	0.0068
Mercury	-30696-11-15 05:45 J	-9489972.37	-9489972.26	-9489972.15	0.0270	0.0177
Mars	-30692-09-19 17:16 J	-9488567.90	-9488567.78	-9488567.64	0.0273	0.0241
Venus	-30685-06-14 01:55 J	-9486108.59	-9486108.42	-9486108.22	0.0287	0.0148
Venus	-30684-01-30 03:07 J	-9485878.59	-9485878.37	-9485878.15	0.0288	0.0007
Venus	-30684-09-17 05:02 J	-9485648.46	-9485648.29	-9485648.11	0.0289	0.0165
Earth	-30683-11-01 03:35 J	-9485238.58	-9485238.35	-9485238.11	0.0290	0.0081
Moon	-30683-11-01 04:19 J	-9485238.55	-9485238.32	-9485238.09	0.0290	0.0093 *
Mercury	-30682-09-29 14:38 J	-9484905.94	-9484905.89	-9484905.84	0.0290	0.0277
Mercury	-30682-12-27 11:02 J	-9484817.19	-9484817.04	-9484816.88	0.0291	0.0114
Mercury	-30681-03-25 06:57 J	-9484728.37	-9484728.21	-9484728.04	0.0291	0.0045
Mercury	-30681-06-22 02:23 J	-9484639.51	-9484639.40	-9484639.28	0.0290	0.0201
Venus	-30671-04-17 00:57 J	-9481053.59	-9481053.46	-9481053.32	0.0273	0.0204
Venus	-30671-12-02 02:09 J	-9480824.61	-9480824.41	-9480824.21	0.0272	0.0080
Venus	-30670-07-19 02:09 J	-9480595.61	-9480595.41	-9480595.20	0.0271	0.0044
Venus	-30669-03-04 01:26 J	-9480366.60	-9480366.44	-9480366.27	0.0270	0.0165
Moon	-30668-04-28 21:07 J	-9479945.83	-9479945.62	-9479945.39	0.0269	0.0105
Earth	-30668-04-29 00:43 J	-9479945.70	-9479945.47	-9479945.24	0.0269	0.0092 *
Mercury	-30667-04-15 08:09 J	-9479594.16	-9479594.16	-9479594.16	0.0269	0.0269
Mercury	-30667-07-12 19:55 J	-9479505.78	-9479505.67	-9479505.56	0.0269	0.0166
Mercury	-30667-10-09 07:55 J	-9479417.31	-9479417.17	-9479417.03	0.0269	0.0062

Mercury	-30666-01-05 20:09 J	-9479328.80	-9479328.66	-9479328.52	0.0269	0.0045
Mercury	-30666-04-04 08:23 J	-9479240.26	-9479240.15	-9479240.02	0.0269	0.0154
Mercury	-30666-07-01 21:07 J	-9479151.64	-9479151.62	-9479151.59	0.0269	0.0264
Mars	-30662-11-06 10:33 J	-9477563.25	-9477563.06	-9477562.84	0.0274	0.0179
Venus	-30656-05-09 08:09 J	-9475552.22	-9475552.16	-9475552.10	0.0286	0.0274
Venus	-30656-12-25 07:26 J	-9475322.38	-9475322.19	-9475321.99	0.0287	0.0125
Venus	-30655-08-12 08:23 J	-9475092.37	-9475092.15	-9475091.94	0.0288	0.0030
Venus	-30654-03-30 10:04 J	-9474862.24	-9474862.08	-9474861.91	0.0289	0.0187
Moon	-30653-11-08 05:45 J	-9474273.38	-9474273.26	-9474273.12	0.0290	0.0246
Earth	-30653-11-08 09:35 J	-9474273.22	-9474273.10	-9474272.99	0.0290	0.0255 *
Mercury	-30652-05-15 09:35 J	-9474085.23	-9474085.10	-9474084.96	0.0290	0.0167
Mercury	-30652-08-12 05:45 J	-9473996.43	-9473996.26	-9473996.09	0.0290	0.0007
Mercury	-30652-11-09 01:11 J	-9473907.58	-9473907.45	-9473907.30	0.0290	0.0151
Mars	-30648-12-07 05:59 J	-9472418.47	-9472418.25	-9472418.00	0.0285	0.0188
Venus	-30642-10-28 01:40 J	-9470267.56	-9470267.43	-9470267.27	0.0273	0.0188
Venus	-30641-06-13 03:07 J	-9470038.57	-9470038.37	-9470038.17	0.0272	0.0063
Venus	-30640-01-28 03:21 J	-9469809.57	-9469809.36	-9469809.16	0.0271	0.0061
Venus	-30640-09-14 02:09 J	-9469580.55	-9469580.41	-9469580.24	0.0271	0.0182
Moon	-30638-05-05 20:38 J	-9468981.84	-9468981.64	-9468981.43	0.0270	0.0158
Earth	-30638-05-05 21:21 J	-9468981.80	-9468981.61	-9468981.42	0.0270	0.0163 *
Mercury	-30638-11-29 21:21 J	-9468773.70	-9468773.61	-9468773.52	0.0270	0.0203
Mercury	-30637-02-26 09:21 J	-9468685.24	-9468685.11	-9468684.98	0.0269	0.0099
Mercury	-30637-05-24 21:21 J	-9468596.75	-9468596.61	-9468596.46	0.0270	0.0010
Mercury	-30637-08-21 09:50 J	-9468508.22	-9468508.09	-9468507.96	0.0270	0.0116
Mercury	-30637-11-17 22:19 J	-9468419.64	-9468419.57	-9468419.49	0.0270	0.0225
Venus	-30627-11-19 15:07 J	-9464765.96	-9464765.87	-9464765.76	0.0286	0.0252
Venus	-30626-07-07 15:21 J	-9464536.06	-9464535.86	-9464535.66	0.0287	0.0101
Venus	-30625-02-22 16:33 J	-9464306.02	-9464305.81	-9464305.59	0.0288	0.0055
Venus	-30625-10-09 18:57 J	-9464075.85	-9464075.71	-9464075.56	0.0289	0.0212
Earth	-30624-11-02 13:55 J	-9463687.17	-9463686.92	-9463686.67	0.0290	0.0014

Moon	-30624-11-02 17:16 J	-9463687.02	-9463686.78	-9463686.53	0.0290	0.0026 *
Mercury	-30623-10-02 10:33 J	-9463353.18	-9463353.06	-9463352.94	0.0291	0.0204
Mercury	-30623-12-30 06:43 J	-9463264.38	-9463264.22	-9463264.05	0.0291	0.0043
Mercury	-30622-03-29 02:38 J	-9463175.54	-9463175.39	-9463175.24	0.0291	0.0116
Mercury	-30622-06-25 21:50 J	-9463086.64	-9463086.59	-9463086.53	0.0291	0.0270
Venus	-30612-05-09 09:35 J	-9459481.26	-9459481.10	-9459480.93	0.0273	0.0164
Venus	-30612-12-24 10:33 J	-9459252.27	-9459252.06	-9459251.86	0.0272	0.0040
Venus	-30611-08-10 10:19 J	-9459023.27	-9459023.07	-9459022.87	0.0271	0.0082
Venus	-30610-03-27 09:07 J	-9458794.25	-9458794.12	-9458793.97	0.0270	0.0202
Moon	-30609-04-30 05:02 J	-9458394.52	-9458394.29	-9458394.05	0.0269	0.0050
Earth	-30609-04-30 05:16 J	-9458394.51	-9458394.28	-9458394.03	0.0269	0.0039 *
Mercury	-30608-04-18 00:28 J	-9458041.55	-9458041.48	-9458041.40	0.0269	0.0223
Mercury	-30608-07-15 12:28 J	-9457953.11	-9457952.98	-9457952.86	0.0269	0.0120
Mercury	-30608-10-12 00:28 J	-9457864.62	-9457864.48	-9457864.34	0.0269	0.0015
Mercury	-30607-01-08 12:43 J	-9457776.11	-9457775.97	-9457775.83	0.0269	0.0093
Mercury	-30607-04-07 01:11 J	-9457687.54	-9457687.45	-9457687.36	0.0269	0.0202
Mars	-30603-02-13 16:04 J	-9456279.01	-9456278.83	-9456278.62	0.0273	0.0195
Venus	-30597-05-31 20:52 J	-9453979.75	-9453979.63	-9453979.50	0.0286	0.0229
Venus	-30596-01-16 20:38 J	-9453749.85	-9453749.64	-9453749.43	0.0288	0.0078
Venus	-30596-09-03 21:50 J	-9453519.80	-9453519.59	-9453519.38	0.0288	0.0078
Venus	-30595-04-21 23:59 J	-9453289.62	-9453289.50	-9453289.37	0.0289	0.0234
Mercury	-30593-02-19 08:52 J	-9452621.20	-9452621.13	-9452621.05	0.0290	0.0258
Mercury	-30593-05-18 05:16 J	-9452532.43	-9452532.28	-9452532.12	0.0290	0.0096
Mercury	-30593-08-15 01:11 J	-9452443.61	-9452443.45	-9452443.28	0.0290	0.0065
Mercury	-30593-11-11 20:52 J	-9452354.74	-9452354.63	-9452354.53	0.0290	0.0219
Venus	-30583-04-04 08:09 J	-9448924.16	-9448924.16	-9448924.14	0.0274	0.0273
Venus	-30583-11-19 10:04 J	-9448695.25	-9448695.08	-9448694.90	0.0273	0.0149
Venus	-30582-07-06 10:47 J	-9448466.26	-9448466.05	-9448465.84	0.0272	0.0025
Venus	-30581-02-20 10:33 J	-9448237.25	-9448237.06	-9448236.86	0.0271	0.0098
Venus	-30581-10-06 09:21 J	-9448008.22	-9448008.11	-9448007.98	0.0270	0.0218

Earth	-30580-04-25 02:23 J	-9447807.44	-9447807.40	-9447807.34	0.0270	0.0264
Moon	-30579-05-06 20:38 J	-9447430.78	-9447430.64	-9447430.47	0.0269	0.0212
Earth	-30579-05-07 00:14 J	-9447430.63	-9447430.49	-9447430.33	0.0269	0.0214 *
Mercury	-30579-09-05 01:40 J	-9447309.46	-9447309.43	-9447309.40	0.0269	0.0262
Mercury	-30579-12-02 13:26 J	-9447221.05	-9447220.94	-9447220.82	0.0269	0.0159
Mercury	-30578-03-01 01:26 J	-9447132.58	-9447132.44	-9447132.30	0.0269	0.0054
Mercury	-30578-05-28 13:40 J	-9447044.07	-9447043.93	-9447043.79	0.0269	0.0052
Mercury	-30578-08-25 01:55 J	-9446955.53	-9446955.42	-9446955.30	0.0269	0.0161
Mars	-30573-03-31 22:47 J	-9445274.71	-9445274.55	-9445274.36	0.0274	0.0210
Venus	-30568-12-12 01:55 J	-9443193.56	-9443193.42	-9443193.27	0.0286	0.0210
Venus	-30567-07-30 02:09 J	-9442963.61	-9442963.41	-9442963.19	0.0288	0.0058
Venus	-30566-03-17 03:50 J	-9442733.54	-9442733.34	-9442733.13	0.0289	0.0100
Venus	-30566-11-02 06:28 J	-9442503.32	-9442503.23	-9442503.12	0.0290	0.0257
Earth	-30565-11-03 20:23 J	-9442135.89	-9442135.65	-9442135.41	0.0290	0.0047
Moon	-30565-11-03 22:33 J	-9442135.81	-9442135.56	-9442135.30	0.0290	0.0036 *
Mercury	-30564-10-05 05:31 J	-9441800.42	-9441800.27	-9441800.12	0.0291	0.0138
Mercury	-30563-01-02 01:40 J	-9441711.60	-9441711.43	-9441711.27	0.0291	0.0023
Mercury	-30563-03-31 21:21 J	-9441622.74	-9441622.61	-9441622.48	0.0291	0.0180
Mars	-30559-05-03 20:09 J	-9440128.76	-9440128.66	-9440128.53	0.0286	0.0265
Venus	-30554-10-15 15:50 J	-9438137.92	-9438137.84	-9438137.75	0.0273	0.0249
Venus	-30553-05-31 17:31 J	-9437908.96	-9437908.77	-9437908.59	0.0272	0.0126
Venus	-30552-01-15 17:59 J	-9437679.96	-9437679.75	-9437679.54	0.0271	0.0002
Venus	-30552-09-01 17:31 J	-9437450.96	-9437450.77	-9437450.59	0.0270	0.0119
Venus	-30551-04-18 15:50 J	-9437221.92	-9437221.84	-9437221.73	0.0270	0.0238
Earth	-30550-05-02 08:38 J	-9436843.38	-9436843.14	-9436842.90	0.0269	0.0012
Moon	-30550-05-02 11:59 J	-9436843.24	-9436843.00	-9436842.76	0.0269	0.0004 *
Mercury	-30549-04-20 16:33 J	-9436488.91	-9436488.81	-9436488.70	0.0269	0.0180
Mercury	-30549-07-18 04:33 J	-9436400.45	-9436400.31	-9436400.18	0.0269	0.0076
Mercury	-30549-10-14 16:33 J	-9436311.95	-9436311.81	-9436311.66	0.0269	0.0031
Mercury	-30548-01-11 04:47 J	-9436223.42	-9436223.30	-9436223.17	0.0269	0.0139

Mercury	-30548-04-09 17:16 J	-9436134.82	-9436134.78	-9436134.72	0.0269	0.0248
Venus	-30538-06-24 07:26 J	-9432407.34	-9432407.19	-9432407.02	0.0287	0.0187
Venus	-30537-02-09 07:55 J	-9432177.39	-9432177.17	-9432176.96	0.0288	0.0034
Venus	-30537-09-26 09:21 J	-9431947.31	-9431947.11	-9431946.91	0.0289	0.0123
Venus	-30536-05-14 11:45 J	-9431717.06	-9431717.01	-9431716.95	0.0290	0.0279
Moon	-30536-10-28 15:21 J	-9431549.98	-9431549.86	-9431549.74	0.0290	0.0250
Earth	-30536-10-28 17:02 J	-9431549.93	-9431549.79	-9431549.65	0.0290	0.0237 *
Mercury	-30534-02-22 03:50 J	-9431068.46	-9431068.34	-9431068.21	0.0291	0.0193
Mercury	-30534-05-22 00:14 J	-9430979.65	-9430979.49	-9430979.32	0.0291	0.0031
Mercury	-30534-08-18 20:09 J	-9430890.81	-9430890.66	-9430890.51	0.0290	0.0128
Mercury	-30534-11-15 15:21 J	-9430801.89	-9430801.86	-9430801.82	0.0290	0.0282
Venus	-30524-04-26 15:50 J	-9427351.94	-9427351.84	-9427351.73	0.0273	0.0235
Venus	-30524-12-11 17:16 J	-9427122.96	-9427122.78	-9427122.59	0.0272	0.0111
Venus	-30523-07-28 17:45 J	-9426893.97	-9426893.76	-9426893.56	0.0271	0.0013
Venus	-30522-03-14 16:47 J	-9426664.97	-9426664.80	-9426664.61	0.0271	0.0135
Venus	-30522-10-29 15:35 J	-9426435.92	-9426435.85	-9426435.78	0.0270	0.0252
Moon	-30521-04-26 01:11 J	-9426256.57	-9426256.45	-9426256.31	0.0270	0.0228
Earth	-30521-04-26 04:47 J	-9426256.44	-9426256.30	-9426256.15	0.0270	0.0215 *
Moon	-30520-05-08 00:14 J	-9425879.53	-9425879.49	-9425879.43	0.0269	0.0261
Earth	-30520-05-08 01:55 J	-9425879.46	-9425879.42	-9425879.36	0.0269	0.0262 *
Mercury	-30520-09-07 17:31 J	-9425756.85	-9425756.77	-9425756.69	0.0269	0.0221
Mercury	-30520-12-05 05:16 J	-9425668.40	-9425668.28	-9425668.15	0.0269	0.0117
Mercury	-30519-03-03 17:16 J	-9425579.92	-9425579.78	-9425579.63	0.0269	0.0014
Mercury	-30519-05-31 05:31 J	-9425491.40	-9425491.27	-9425491.13	0.0269	0.0096
Mercury	-30519-08-27 17:59 J	-9425402.84	-9425402.75	-9425402.65	0.0269	0.0205
Mars	-30515-07-09 20:09 J	-9423990.86	-9423990.66	-9423990.44	0.0273	0.0175
Venus	-30508-01-03 11:02 J	-9421621.21	-9421621.04	-9421620.86	0.0287	0.0169
Venus	-30508-08-21 11:45 J	-9421391.22	-9421391.01	-9421390.79	0.0288	0.0015
Venus	-30507-04-08 13:40 J	-9421161.12	-9421160.93	-9421160.74	0.0289	0.0142
Moon	-30506-11-05 21:50 J	-9420584.83	-9420584.59	-9420584.35	0.0291	0.0095

Earth	-30506-11-05 23:59 J	-9420584.72	-9420584.50	-9420584.26	0.0291	0.0104 *
Mercury	-30505-07-11 03:07 J	-9420336.46	-9420336.37	-9420336.28	0.0291	0.0242
Mercury	-30505-10-07 23:31 J	-9420247.68	-9420247.52	-9420247.35	0.0291	0.0078
Mercury	-30504-01-04 19:40 J	-9420158.84	-9420158.68	-9420158.52	0.0291	0.0082
Mercury	-30504-04-03 15:07 J	-9420069.96	-9420069.87	-9420069.77	0.0291	0.0238
Mars	-30501-08-04 05:45 J	-9418851.34	-9418851.26	-9418851.15	0.0287	0.0273
Venus	-30495-11-06 22:33 J	-9416565.68	-9416565.56	-9416565.42	0.0273	0.0213
Venus	-30494-06-23 23:59 J	-9416336.70	-9416336.50	-9416336.30	0.0272	0.0088
Venus	-30493-02-08 00:14 J	-9416107.69	-9416107.49	-9416107.28	0.0271	0.0035
Venus	-30493-09-23 23:16 J	-9415878.69	-9415878.53	-9415878.35	0.0270	0.0155
Earth	-30491-05-03 10:04 J	-9415292.32	-9415292.08	-9415291.84	0.0269	0.0060
Moon	-30491-05-03 12:28 J	-9415292.23	-9415291.98	-9415291.74	0.0269	0.0052 *
Mercury	-30490-01-25 20:38 J	-9415024.70	-9415024.64	-9415024.58	0.0268	0.0241
Mercury	-30490-04-24 08:23 J	-9414936.27	-9414936.15	-9414936.03	0.0268	0.0138
Mercury	-30490-07-21 20:23 J	-9414847.79	-9414847.65	-9414847.51	0.0268	0.0034
Mercury	-30490-10-18 08:23 J	-9414759.28	-9414759.15	-9414759.01	0.0268	0.0074
Mercury	-30489-01-14 20:52 J	-9414670.73	-9414670.63	-9414670.52	0.0268	0.0181
Mars	-30485-08-25 13:11 J	-9412986.04	-9412985.95	-9412985.82	0.0274	0.0248
Venus	-30479-07-16 16:33 J	-9410834.99	-9410834.81	-9410834.62	0.0287	0.0146
Venus	-30478-03-03 17:16 J	-9410605.00	-9410604.78	-9410604.57	0.0288	0.0010
Venus	-30478-10-19 18:57 J	-9410374.89	-9410374.71	-9410374.53	0.0289	0.0165
Earth	-30477-10-29 20:09 J	-9409998.84	-9409998.66	-9409998.46	0.0290	0.0183
Moon	-30477-10-29 23:02 J	-9409998.71	-9409998.54	-9409998.35	0.0290	0.0194 *
Mercury	-30475-02-24 22:04 J	-9409515.73	-9409515.58	-9409515.43	0.0291	0.0133
Mercury	-30475-05-24 18:14 J	-9409426.90	-9409426.74	-9409426.57	0.0291	0.0029
Mercury	-30475-08-21 13:55 J	-9409338.04	-9409337.92	-9409337.79	0.0291	0.0186
Venus	-30465-05-18 22:33 J	-9405779.69	-9405779.56	-9405779.41	0.0273	0.0198
Venus	-30464-01-02 23:59 J	-9405550.70	-9405550.50	-9405550.30	0.0272	0.0074
Venus	-30464-08-19 23:45 J	-9405321.71	-9405321.51	-9405321.30	0.0271	0.0049
Venus	-30463-04-05 22:47 J	-9405092.71	-9405092.55	-9405092.39	0.0270	0.0169

Moon	-30462-04-28 04:04 J	-9404705.50	-9404705.33	-9404705.15	0.0269	0.0177
Earth	-30462-04-28 06:14 J	-9404705.43	-9404705.24	-9404705.05	0.0269	0.0166 *
Mercury	-30461-09-10 09:07 J	-9404204.22	-9404204.12	-9404204.01	0.0269	0.0180
Mercury	-30461-12-07 21:07 J	-9404115.76	-9404115.62	-9404115.49	0.0269	0.0076
Mercury	-30460-03-06 09:07 J	-9404027.26	-9404027.12	-9404026.98	0.0269	0.0030
Mercury	-30460-06-02 21:21 J	-9403938.73	-9403938.61	-9403938.48	0.0269	0.0138
Mercury	-30460-08-30 09:50 J	-9403850.14	-9403850.09	-9403850.03	0.0269	0.0247
Venus	-30450-06-10 19:11 J	-9400278.73	-9400278.70	-9400278.64	0.0286	0.0278
Venus	-30449-01-26 18:43 J	-9400048.91	-9400048.72	-9400048.52	0.0287	0.0129
Venus	-30449-09-12 19:40 J	-9399818.90	-9399818.68	-9399818.47	0.0288	0.0025
Venus	-30448-04-30 21:35 J	-9399588.76	-9399588.60	-9399588.42	0.0289	0.0182
Moon	-30447-11-06 21:21 J	-9399033.81	-9399033.61	-9399033.39	0.0291	0.0150
Earth	-30447-11-07 00:43 J	-9399033.66	-9399033.47	-9399033.25	0.0291	0.0156 *
Mercury	-30446-07-14 20:38 J	-9398783.77	-9398783.64	-9398783.51	0.0291	0.0187
Mercury	-30446-10-11 17:02 J	-9398694.96	-9398694.79	-9398694.62	0.0291	0.0024
Mercury	-30445-01-08 12:57 J	-9398606.11	-9398605.96	-9398605.81	0.0291	0.0136
Mercury	-30445-04-06 08:23 J	-9398517.15	-9398517.15	-9398517.15	0.0291	0.0291
Venus	-30436-11-29 04:47 J	-9394993.45	-9394993.30	-9394993.14	0.0273	0.0176
Venus	-30435-07-16 05:45 J	-9394764.46	-9394764.26	-9394764.05	0.0272	0.0053
Venus	-30434-03-02 05:45 J	-9394535.46	-9394535.26	-9394535.05	0.0271	0.0070
Venus	-30434-10-17 04:47 J	-9394306.44	-9394306.30	-9394306.15	0.0270	0.0189
Moon	-30432-05-04 07:55 J	-9393741.40	-9393741.17	-9393740.94	0.0269	0.0104
Earth	-30432-05-04 10:33 J	-9393741.28	-9393741.06	-9393740.84	0.0269	0.0107 *
Mercury	-30431-01-28 12:14 J	-9393472.08	-9393471.99	-9393471.90	0.0268	0.0201
Mercury	-30431-04-26 23:59 J	-9393383.63	-9393383.50	-9393383.37	0.0268	0.0098
Mercury	-30431-07-24 11:59 J	-9393295.14	-9393295.00	-9393294.85	0.0268	0.0008
Mercury	-30431-10-21 00:14 J	-9393206.62	-9393206.49	-9393206.36	0.0268	0.0114
Mercury	-30430-01-17 12:28 J	-9393118.05	-9393117.98	-9393117.89	0.0268	0.0224
Mars	-30427-12-03 10:19 J	-9391702.30	-9391702.07	-9391701.82	0.0272	0.0135
Venus	-30421-12-21 01:11 J	-9389492.54	-9389492.45	-9389492.35	0.0286	0.0255



Venus	-30420-08-08 00:43 J	-9389262.67	-9389262.47	-9389262.27	0.0287	0.0105
Venus	-30419-03-26 01:40 J	-9389032.65	-9389032.43	-9389032.22	0.0289	0.0050
Venus	-30419-11-11 03:21 J	-9388802.50	-9388802.36	-9388802.19	0.0289	0.0207
Earth	-30418-10-31 22:04 J	-9388447.80	-9388447.58	-9388447.36	0.0290	0.0131
Moon	-30418-11-01 01:11 J	-9388447.67	-9388447.45	-9388447.23	0.0290	0.0137 *
Mercury	-30417-11-30 19:11 J	-9388051.79	-9388051.70	-9388051.60	0.0291	0.0241
Mercury	-30416-02-27 15:50 J	-9387963.00	-9387962.84	-9387962.68	0.0291	0.0076
Mercury	-30416-05-27 11:59 J	-9387874.16	-9387874.00	-9387873.84	0.0291	0.0084
Mercury	-30416-08-24 07:26 J	-9387785.28	-9387785.19	-9387785.10	0.0291	0.0241
Mars	-30413-12-28 03:50 J	-9386563.50	-9386563.34	-9386563.16	0.0287	0.0239
Venus	-30406-06-11 04:47 J	-9384207.46	-9384207.30	-9384207.13	0.0273	0.0161
Venus	-30405-01-26 05:45 J	-9383978.47	-9383978.26	-9383978.05	0.0271	0.0038
Venus	-30405-09-11 05:31 J	-9383749.47	-9383749.27	-9383749.08	0.0271	0.0084
Venus	-30404-04-28 04:04 J	-9383520.46	-9383520.33	-9383520.19	0.0270	0.0203
Earth	-30403-04-29 06:28 J	-9383154.44	-9383154.23	-9383154.00	0.0269	0.0120
Moon	-30403-04-29 09:07 J	-9383154.32	-9383154.12	-9383153.90	0.0269	0.0126 *
Mercury	-30402-06-17 12:57 J	-9382740.01	-9382739.96	-9382739.90	0.0269	0.0243
Mercury	-30402-09-14 00:43 J	-9382651.59	-9382651.47	-9382651.35	0.0268	0.0140
Mercury	-30402-12-11 12:43 J	-9382563.11	-9382562.97	-9382562.83	0.0268	0.0036
Mercury	-30401-03-09 00:43 J	-9382474.60	-9382474.47	-9382474.33	0.0268	0.0071
Mercury	-30401-06-05 13:11 J	-9382386.06	-9382385.95	-9382385.85	0.0269	0.0179
Mars	-30396-01-18 09:21 J	-9380698.20	-9380698.11	-9380698.02	0.0274	0.0257
Venus	-30391-07-03 01:40 J	-9378706.53	-9378706.43	-9378706.30	0.0286	0.0241
Venus	-30390-02-18 01:40 J	-9378476.64	-9378476.43	-9378476.23	0.0287	0.0091
Venus	-30390-10-06 02:38 J	-9378246.60	-9378246.39	-9378246.18	0.0288	0.0064
Venus	-30389-05-23 04:47 J	-9378016.43	-9378016.30	-9378016.15	0.0289	0.0221
Earth	-30388-11-07 23:59 J	-9377482.67	-9377482.50	-9377482.32	0.0291	0.0204
Moon	-30388-11-08 00:57 J	-9377482.62	-9377482.46	-9377482.28	0.0291	0.0204 *
Mercury	-30387-07-17 13:26 J	-9377231.08	-9377230.94	-9377230.78	0.0291	0.0136
Mercury	-30387-10-14 09:50 J	-9377142.25	-9377142.09	-9377141.92	0.0291	0.0028

Mercury	-30386-01-11 05:45 J	-9377053.39	-9377053.26	-9377053.13	0.0291	0.0186
Venus	-30377-05-06 08:23 J	-9373650.20	-9373650.15	-9373650.09	0.0274	0.0264
Venus	-30377-12-21 10:33 J	-9373421.24	-9373421.06	-9373420.88	0.0273	0.0140
Venus	-30376-08-07 11:16 J	-9373192.23	-9373192.03	-9373191.82	0.0272	0.0017
Venus	-30375-03-24 10:47 J	-9372963.23	-9372963.05	-9372962.85	0.0271	0.0106
Venus	-30375-11-08 09:50 J	-9372734.20	-9372734.09	-9372733.97	0.0270	0.0223
Moon	-30373-05-05 07:26 J	-9372190.38	-9372190.19	-9372189.99	0.0269	0.0155
Earth	-30373-05-05 10:33 J	-9372190.25	-9372190.06	-9372189.85	0.0269	0.0154 *
Mercury	-30373-11-03 16:04 J	-9372007.85	-9372007.83	-9372007.81	0.0268	0.0264
Mercury	-30372-01-31 03:50 J	-9371919.45	-9371919.34	-9371919.23	0.0268	0.0162
Mercury	-30372-04-29 15:35 J	-9371830.99	-9371830.85	-9371830.71	0.0268	0.0058
Mercury	-30372-07-27 03:35 J	-9371742.49	-9371742.35	-9371742.20	0.0268	0.0049
Mercury	-30372-10-23 15:50 J	-9371653.95	-9371653.84	-9371653.72	0.0268	0.0156
Mercury	-30371-01-20 04:19 J	-9371565.33	-9371565.32	-9371565.29	0.0268	0.0265
Venus	-30361-01-13 08:09 J	-9367920.29	-9367920.16	-9367920.01	0.0286	0.0217
Venus	-30361-08-30 07:55 J	-9367690.38	-9367690.17	-9367689.96	0.0288	0.0066
Venus	-30360-04-17 08:52 J	-9367460.33	-9367460.13	-9367459.92	0.0289	0.0090
Venus	-30360-12-03 11:16 J	-9367230.14	-9367230.03	-9367229.91	0.0290	0.0246
Moon	-30359-11-01 20:09 J	-9366896.90	-9366896.66	-9366896.41	0.0291	0.0082
Earth	-30359-11-01 22:04 J	-9366896.81	-9366896.58	-9366896.34	0.0291	0.0082 *
Mercury	-30358-12-04 12:28 J	-9366499.10	-9366498.98	-9366498.84	0.0291	0.0188
Mercury	-30357-03-02 09:07 J	-9366410.29	-9366410.12	-9366409.96	0.0291	0.0024
Mercury	-30357-05-30 05:02 J	-9366321.44	-9366321.29	-9366321.14	0.0291	0.0136
Venus	-30348-11-16 08:52 J	-9362864.21	-9362864.13	-9362864.04	0.0273	0.0249
Venus	-30347-07-03 10:33 J	-9362635.24	-9362635.06	-9362634.87	0.0272	0.0125
Venus	-30346-02-17 11:31 J	-9362406.23	-9362406.02	-9362405.82	0.0271	0.0006
Venus	-30346-10-04 10:47 J	-9362177.23	-9362177.05	-9362176.86	0.0270	0.0119
Venus	-30345-05-20 09:21 J	-9361948.20	-9361948.11	-9361948.01	0.0270	0.0236
Earth	-30344-04-30 07:11 J	-9361603.43	-9361603.20	-9361602.96	0.0269	0.0073
Moon	-30344-04-30 10:19 J	-9361603.30	-9361603.07	-9361602.83	0.0269	0.0076 *

Mercury	-30343-06-20 04:33 J	-9361187.39	-9361187.31	-9361187.21	0.0268	0.0203
Mercury	-30343-09-16 16:33 J	-9361098.95	-9361098.81	-9361098.68	0.0268	0.0100
Mercury	-30343-12-14 04:19 J	-9361010.46	-9361010.32	-9361010.17	0.0268	0.0008
Mercury	-30342-03-12 16:33 J	-9360921.94	-9360921.81	-9360921.68	0.0268	0.0112
Mercury	-30342-06-09 04:47 J	-9360833.38	-9360833.30	-9360833.21	0.0268	0.0221
Mars	-30338-04-28 05:45 J	-9359414.50	-9359414.26	-9359414.01	0.0272	0.0126
Venus	-30332-07-25 08:38 J	-9357134.29	-9357134.14	-9357133.99	0.0286	0.0202
Venus	-30331-03-12 08:38 J	-9356904.36	-9356904.14	-9356903.93	0.0287	0.0052
Venus	-30331-10-28 09:50 J	-9356674.29	-9356674.09	-9356673.89	0.0289	0.0104
Venus	-30330-06-15 12:28 J	-9356444.07	-9356443.98	-9356443.89	0.0290	0.0260
Earth	-30329-11-08 23:31 J	-9355931.64	-9355931.52	-9355931.40	0.0291	0.0252
Moon	-30329-11-09 03:07 J	-9355931.47	-9355931.37	-9355931.24	0.0291	0.0257 *
Mercury	-30328-04-22 09:50 J	-9355767.17	-9355767.09	-9355767.00	0.0291	0.0250
Mercury	-30328-07-20 06:28 J	-9355678.39	-9355678.23	-9355678.06	0.0291	0.0085
Mercury	-30328-10-17 02:52 J	-9355589.54	-9355589.38	-9355589.22	0.0291	0.0078
Mercury	-30327-01-13 22:19 J	-9355500.66	-9355500.57	-9355500.47	0.0291	0.0236
Mars	-30324-05-23 01:11 J	-9354275.65	-9354275.45	-9354275.21	0.0288	0.0207
Venus	-30318-05-29 13:55 J	-9352078.03	-9352077.92	-9352077.80	0.0274	0.0228
Venus	-30317-01-13 15:50 J	-9351849.03	-9351848.84	-9351848.64	0.0273	0.0104
Venus	-30317-08-29 16:33 J	-9351620.02	-9351619.81	-9351619.60	0.0272	0.0019
Venus	-30316-04-15 16:04 J	-9351391.01	-9351390.83	-9351390.65	0.0271	0.0140
Venus	-30316-11-30 14:23 J	-9351161.95	-9351161.90	-9351161.83	0.0270	0.0257
Earth	-30314-05-07 10:33 J	-9350639.21	-9350639.06	-9350638.88	0.0268	0.0200
Moon	-30314-05-07 12:14 J	-9350639.14	-9350638.99	-9350638.84	0.0268	0.0205 *
Mercury	-30314-11-07 07:40 J	-9350455.25	-9350455.18	-9350455.10	0.0268	0.0225
Mercury	-30313-02-03 19:26 J	-9350366.82	-9350366.69	-9350366.57	0.0268	0.0122
Mercury	-30313-05-02 07:11 J	-9350278.34	-9350278.20	-9350278.05	0.0268	0.0019
Mercury	-30313-07-29 19:26 J	-9350189.83	-9350189.69	-9350189.56	0.0268	0.0090
Mercury	-30313-10-26 07:40 J	-9350101.27	-9350101.18	-9350101.08	0.0268	0.0198
Venus	-30302-02-04 15:50 J	-9346348.01	-9346347.84	-9346347.67	0.0287	0.0177

Venus	-30302-09-22 15:35 J	-9346118.06	-9346117.85	-9346117.63	0.0288	0.0025
Venus	-30301-05-09 16:47 J	-9345887.99	-9345887.80	-9345887.60	0.0289	0.0130
Venus	-30301-12-25 19:11 J	-9345657.72	-9345657.70	-9345657.66	0.0290	0.0286
Moon	-30300-11-02 18:57 J	-9345345.95	-9345345.71	-9345345.46	0.0291	0.0028
Earth	-30300-11-02 22:33 J	-9345345.81	-9345345.56	-9345345.31	0.0291	0.0032 *
Mercury	-30299-12-07 05:45 J	-9344946.40	-9344946.26	-9344946.10	0.0291	0.0134
Mercury	-30298-03-06 02:09 J	-9344857.57	-9344857.41	-9344857.24	0.0291	0.0029
Mercury	-30298-06-02 22:04 J	-9344768.70	-9344768.58	-9344768.45	0.0291	0.0188
Venus	-30289-12-08 14:52 J	-9341292.00	-9341291.88	-9341291.74	0.0273	0.0212
Venus	-30288-07-25 16:33 J	-9341063.00	-9341062.81	-9341062.61	0.0272	0.0089
Venus	-30287-03-11 17:02 J	-9340834.00	-9340833.79	-9340833.58	0.0271	0.0034
Venus	-30287-10-26 16:19 J	-9340604.99	-9340604.82	-9340604.65	0.0270	0.0154
Moon	-30285-05-01 07:26 J	-9340052.44	-9340052.19	-9340051.93	0.0269	0.0025
Earth	-30285-05-01 08:38 J	-9340052.39	-9340052.14	-9340051.90	0.0269	0.0025 *
Mercury	-30284-03-26 08:38 J	-9339723.16	-9339723.14	-9339723.11	0.0268	0.0264
Mercury	-30284-06-22 20:23 J	-9339634.76	-9339634.65	-9339634.54	0.0268	0.0161
Mercury	-30284-09-19 08:09 J	-9339546.30	-9339546.16	-9339546.02	0.0268	0.0058
Mercury	-30284-12-16 20:09 J	-9339457.80	-9339457.66	-9339457.51	0.0268	0.0049
Mercury	-30283-03-15 08:23 J	-9339369.26	-9339369.15	-9339369.03	0.0268	0.0156
Mercury	-30283-06-11 20:52 J	-9339280.65	-9339280.63	-9339280.61	0.0268	0.0265
Venus	-30273-08-16 15:35 J	-9335562.02	-9335561.85	-9335561.66	0.0286	0.0164
Venus	-30272-04-03 15:50 J	-9335332.06	-9335331.84	-9335331.62	0.0288	0.0011
Venus	-30272-11-19 17:16 J	-9335101.96	-9335101.78	-9335101.59	0.0289	0.0144
Mercury	-30269-04-25 02:52 J	-9334214.50	-9334214.38	-9334214.25	0.0291	0.0198
Mercury	-30269-07-22 23:31 J	-9334125.69	-9334125.52	-9334125.35	0.0291	0.0034
Mercury	-30269-10-19 19:40 J	-9334036.83	-9334036.68	-9334036.53	0.0291	0.0128
Mercury	-30268-01-16 15:07 J	-9333947.90	-9333947.87	-9333947.83	0.0291	0.0285
Venus	-30259-06-20 19:40 J	-9330505.83	-9330505.68	-9330505.53	0.0274	0.0191
Venus	-30258-02-04 21:21 J	-9330276.80	-9330276.61	-9330276.40	0.0273	0.0068
Venus	-30258-09-21 21:50 J	-9330047.79	-9330047.59	-9330047.38	0.0272	0.0056

Venus	-30257-05-07 21:21 J	-9329818.77	-9329818.61	-9329818.45	0.0271	0.0175
Earth	-30256-04-26 15:07 J	-9329464.98	-9329464.87	-9329464.74	0.0269	0.0233
Moon	-30256-04-26 15:07 J	-9329464.96	-9329464.87	-9329464.75	0.0269	0.0241 *
Earth	-30255-05-08 11:31 J	-9329088.10	-9329088.02	-9329087.91	0.0269	0.0247
Moon	-30255-05-08 15:21 J	-9329087.93	-9329087.86	-9329087.78	0.0269	0.0255 *
Mercury	-30255-11-09 23:16 J	-9328902.63	-9328902.53	-9328902.42	0.0268	0.0184
Mercury	-30254-02-06 11:02 J	-9328814.17	-9328814.04	-9328813.90	0.0268	0.0081
Mercury	-30254-05-05 23:02 J	-9328725.68	-9328725.54	-9328725.39	0.0268	0.0026
Mercury	-30254-08-02 11:16 J	-9328637.15	-9328637.03	-9328636.90	0.0268	0.0132
Mercury	-30254-10-29 23:45 J	-9328548.57	-9328548.51	-9328548.45	0.0268	0.0241
Mars	-30250-09-22 00:43 J	-9327125.73	-9327125.47	-9327125.20	0.0272	0.0075
Venus	-30244-07-12 01:26 J	-9325005.45	-9325005.44	-9325005.40	0.0285	0.0283
Venus	-30243-02-27 00:14 J	-9324775.68	-9324775.49	-9324775.30	0.0287	0.0136
Venus	-30243-10-15 00:14 J	-9324545.71	-9324545.49	-9324545.27	0.0288	0.0017
Venus	-30242-06-02 01:40 J	-9324315.60	-9324315.43	-9324315.25	0.0289	0.0172
Earth	-30241-11-04 00:28 J	-9323794.73	-9323794.48	-9323794.23	0.0291	0.0021
Moon	-30241-11-04 00:14 J	-9323794.72	-9323794.49	-9323794.25	0.0291	0.0026 *
Mercury	-30240-09-12 02:52 J	-9323482.47	-9323482.38	-9323482.29	0.0291	0.0243
Mercury	-30240-12-09 23:31 J	-9323393.68	-9323393.52	-9323393.35	0.0291	0.0078
Mercury	-30239-03-08 19:40 J	-9323304.84	-9323304.68	-9323304.52	0.0292	0.0085
Mercury	-30239-06-05 15:21 J	-9323215.94	-9323215.86	-9323215.76	0.0291	0.0243
Mars	-30236-10-16 02:23 J	-9321987.64	-9321987.40	-9321987.13	0.0288	0.0170
Venus	-30230-12-31 21:35 J	-9319719.76	-9319719.60	-9319719.44	0.0273	0.0175
Venus	-30229-08-16 23:02 J	-9319490.74	-9319490.54	-9319490.34	0.0272	0.0051
Venus	-30228-04-02 23:16 J	-9319261.73	-9319261.53	-9319261.33	0.0271	0.0071
Venus	-30228-11-17 22:04 J	-9319032.71	-9319032.58	-9319032.42	0.0270	0.0191
Moon	-30226-05-03 07:11 J	-9318501.44	-9318501.20	-9318500.96	0.0269	0.0027
Earth	-30226-05-03 10:47 J	-9318501.30	-9318501.05	-9318500.81	0.0269	0.0025 *
Mercury	-30225-03-29 00:43 J	-9318170.55	-9318170.47	-9318170.39	0.0268	0.0221
Mercury	-30225-06-25 12:28 J	-9318082.11	-9318081.98	-9318081.86	0.0268	0.0118

Mercury	-30225-09-22 00:14 J	-9317993.63	-9317993.49	-9317993.34	0.0268	0.0014
Mercury	-30225-12-19 12:14 J	-9317905.12	-9317904.99	-9317904.85	0.0268	0.0093
Mercury	-30224-03-18 00:28 J	-9317816.57	-9317816.48	-9317816.38	0.0268	0.0201
Venus	-30214-01-22 01:40 J	-9314219.49	-9314219.43	-9314219.35	0.0285	0.0268
Venus	-30214-09-09 00:14 J	-9313989.68	-9313989.49	-9313989.29	0.0287	0.0122
Venus	-30213-04-26 00:43 J	-9313759.69	-9313759.47	-9313759.26	0.0288	0.0031
Venus	-30213-12-12 02:09 J	-9313529.57	-9313529.41	-9313529.24	0.0289	0.0186
Moon	-30212-10-28 13:11 J	-9313209.03	-9313208.95	-9313208.85	0.0290	0.0270
Earth	-30212-10-28 13:26 J	-9313209.00	-9313208.94	-9313208.85	0.0290	0.0275 *
Mercury	-30210-04-28 20:38 J	-9312661.79	-9312661.64	-9312661.49	0.0291	0.0142
Mercury	-30210-07-26 17:02 J	-9312572.96	-9312572.79	-9312572.62	0.0291	0.0021
Mercury	-30210-10-23 12:57 J	-9312484.09	-9312483.96	-9312483.83	0.0291	0.0181
Venus	-30200-07-13 01:40 J	-9308933.60	-9308933.43	-9308933.26	0.0274	0.0154
Venus	-30199-02-27 03:21 J	-9308704.56	-9308704.36	-9308704.15	0.0273	0.0030
Venus	-30199-10-14 03:35 J	-9308475.54	-9308475.35	-9308475.15	0.0272	0.0093
Venus	-30198-05-31 03:07 J	-9308246.50	-9308246.37	-9308246.24	0.0271	0.0211
Earth	-30197-04-27 16:47 J	-9307913.97	-9307913.80	-9307913.61	0.0269	0.0186
Moon	-30197-04-27 20:23 J	-9307913.81	-9307913.65	-9307913.47	0.0269	0.0191 *
Mercury	-30196-08-16 03:35 J	-9307438.40	-9307438.35	-9307438.29	0.0268	0.0245
Mercury	-30196-11-12 15:21 J	-9307349.98	-9307349.86	-9307349.74	0.0268	0.0142
Mercury	-30195-02-09 03:07 J	-9307261.51	-9307261.37	-9307261.23	0.0268	0.0037
Mercury	-30195-05-08 15:07 J	-9307173.00	-9307172.87	-9307172.73	0.0268	0.0070
Mercury	-30195-08-05 03:21 J	-9307084.46	-9307084.36	-9307084.25	0.0268	0.0178
Venus	-30185-08-03 11:02 J	-9303433.15	-9303433.04	-9303432.92	0.0285	0.0241
Venus	-30184-03-21 09:50 J	-9303203.29	-9303203.09	-9303202.88	0.0287	0.0093
Venus	-30184-11-06 10:04 J	-9302973.29	-9302973.08	-9302972.86	0.0288	0.0060
Venus	-30183-06-24 11:45 J	-9302743.15	-9302743.01	-9302742.86	0.0289	0.0215
Earth	-30182-11-06 04:04 J	-9302243.57	-9302243.33	-9302243.09	0.0291	0.0076
Moon	-30182-11-06 07:26 J	-9302243.42	-9302243.19	-9302242.96	0.0291	0.0084 *
Mercury	-30181-09-14 20:52 J	-9301929.75	-9301929.63	-9301929.49	0.0291	0.0184

Mercury	-30181-12-12 17:31 J	-9301840.94	-9301840.77	-9301840.60	0.0292	0.0019
Mercury	-30180-03-11 13:40 J	-9301752.08	-9301751.93	-9301751.79	0.0292	0.0142
Venus	-30171-06-08 01:40 J	-9298376.48	-9298376.43	-9298376.36	0.0274	0.0261
Venus	-30170-01-23 04:33 J	-9298147.48	-9298147.31	-9298147.12	0.0273	0.0136
Venus	-30170-09-09 05:59 J	-9297918.46	-9297918.25	-9297918.04	0.0272	0.0013
Venus	-30169-04-25 05:59 J	-9297689.44	-9297689.25	-9297689.06	0.0271	0.0108
Venus	-30169-12-10 05:02 J	-9297460.40	-9297460.29	-9297460.17	0.0270	0.0226
Moon	-30167-05-04 12:57 J	-9296950.19	-9296949.96	-9296949.74	0.0269	0.0080
Earth	-30167-05-04 14:09 J	-9296950.14	-9296949.91	-9296949.67	0.0269	0.0076 *
Mercury	-30166-04-01 16:47 J	-9296617.90	-9296617.80	-9296617.69	0.0268	0.0177
Mercury	-30166-06-29 04:33 J	-9296529.44	-9296529.31	-9296529.17	0.0268	0.0073
Mercury	-30166-09-25 16:33 J	-9296440.95	-9296440.81	-9296440.66	0.0268	0.0034
Mercury	-30166-12-23 04:47 J	-9296352.42	-9296352.30	-9296352.18	0.0268	0.0140
Mercury	-30165-03-20 17:02 J	-9296263.84	-9296263.79	-9296263.74	0.0268	0.0249
Mars	-30161-02-15 07:11 J	-9294837.46	-9294837.20	-9294836.92	0.0272	0.0050
Venus	-30155-02-13 11:45 J	-9292647.13	-9292647.01	-9292646.87	0.0285	0.0226
Venus	-30155-10-01 10:47 J	-9292417.26	-9292417.05	-9292416.84	0.0287	0.0078
Venus	-30154-05-19 11:16 J	-9292187.24	-9292187.03	-9292186.83	0.0288	0.0075
Venus	-30153-01-04 12:43 J	-9291957.08	-9291956.97	-9291956.83	0.0289	0.0230
Moon	-30153-10-29 14:52 J	-9291658.05	-9291657.88	-9291657.71	0.0290	0.0212
Earth	-30153-10-29 18:28 J	-9291657.89	-9291657.73	-9291657.56	0.0290	0.0218 *
Mercury	-30151-02-01 17:59 J	-9291197.83	-9291197.75	-9291197.65	0.0291	0.0247
Mercury	-30151-05-01 14:52 J	-9291109.04	-9291108.88	-9291108.72	0.0291	0.0081
Mercury	-30151-07-29 11:02 J	-9291020.19	-9291020.04	-9291019.87	0.0291	0.0082
Mercury	-30151-10-26 06:57 J	-9290931.30	-9290931.21	-9290931.12	0.0291	0.0240
Mars	-30147-03-10 22:33 J	-9289699.82	-9289699.56	-9289699.27	0.0288	0.0137
Venus	-30142-12-19 05:45 J	-9287590.35	-9287590.26	-9287590.15	0.0275	0.0240
Venus	-30141-08-04 08:38 J	-9287361.32	-9287361.14	-9287360.95	0.0274	0.0115
Venus	-30140-03-21 10:04 J	-9287132.28	-9287132.08	-9287131.87	0.0273	0.0010
Venus	-30140-11-05 10:19 J	-9286903.25	-9286903.07	-9286902.88	0.0272	0.0130

Venus	-30139-06-22 09:21 J	-9286674.17	-9286674.11	-9286674.01	0.0271	0.0248
Earth	-30138-04-29 20:09 J	-9286362.86	-9286362.66	-9286362.45	0.0270	0.0136
Moon	-30138-04-29 22:04 J	-9286362.80	-9286362.58	-9286362.36	0.0270	0.0137 *
Mercury	-30137-08-18 19:40 J	-9285885.77	-9285885.68	-9285885.58	0.0269	0.0201
Mercury	-30137-11-15 07:26 J	-9285797.32	-9285797.19	-9285797.05	0.0268	0.0097
Mercury	-30136-02-11 19:26 J	-9285708.83	-9285708.69	-9285708.55	0.0268	0.0009
Mercury	-30136-05-11 07:40 J	-9285620.31	-9285620.18	-9285620.05	0.0268	0.0116
Mercury	-30136-08-07 19:55 J	-9285531.75	-9285531.67	-9285531.59	0.0268	0.0225
Venus	-30126-08-26 22:33 J	-9281860.71	-9281860.56	-9281860.40	0.0286	0.0196
Venus	-30125-04-12 21:35 J	-9281630.82	-9281630.60	-9281630.39	0.0287	0.0047
Venus	-30125-11-28 22:04 J	-9281400.78	-9281400.58	-9281400.38	0.0288	0.0106
Venus	-30124-07-17 00:14 J	-9281170.58	-9281170.49	-9281170.40	0.0289	0.0261
Earth	-30123-11-07 11:02 J	-9280692.26	-9280692.04	-9280691.82	0.0291	0.0138
Moon	-30123-11-07 13:26 J	-9280692.15	-9280691.94	-9280691.71	0.0291	0.0146 *
Mercury	-30122-06-21 18:57 J	-9280465.73	-9280465.71	-9280465.67	0.0291	0.0285
Mercury	-30122-09-18 16:04 J	-9280376.99	-9280376.83	-9280376.68	0.0291	0.0117
Mercury	-30122-12-16 12:28 J	-9280288.15	-9280287.98	-9280287.82	0.0292	0.0047
Mercury	-30121-03-14 08:09 J	-9280199.27	-9280199.16	-9280199.04	0.0292	0.0207
Venus	-30112-06-30 09:50 J	-9276804.20	-9276804.09	-9276803.96	0.0274	0.0221
Venus	-30111-02-14 12:28 J	-9276575.17	-9276574.98	-9276574.78	0.0273	0.0097
Venus	-30111-10-01 13:40 J	-9276346.13	-9276345.93	-9276345.72	0.0272	0.0027
Venus	-30110-05-18 13:40 J	-9276117.10	-9276116.93	-9276116.75	0.0271	0.0147
Venus	-30109-01-02 12:43 J	-9275888.01	-9275887.97	-9275887.92	0.0270	0.0263
Earth	-30108-05-05 19:11 J	-9275398.91	-9275398.70	-9275398.48	0.0269	0.0130
Moon	-30108-05-05 22:04 J	-9275398.78	-9275398.58	-9275398.37	0.0269	0.0137 *
Mercury	-30107-01-05 21:50 J	-9275153.66	-9275153.59	-9275153.52	0.0268	0.0232
Mercury	-30107-04-04 09:21 J	-9275065.23	-9275065.11	-9275064.98	0.0268	0.0129
Mercury	-30107-07-01 21:21 J	-9274976.75	-9274976.61	-9274976.47	0.0268	0.0024
Mercury	-30107-09-28 09:21 J	-9274888.25	-9274888.11	-9274887.97	0.0268	0.0083
Mercury	-30107-12-25 21:21 J	-9274799.70	-9274799.61	-9274799.50	0.0268	0.0191



Venus	-30096-03-07 23:59 J	-9271074.66	-9271074.50	-9271074.33	0.0286	0.0180
Venus	-30096-10-23 23:16 J	-9270844.75	-9270844.53	-9270844.32	0.0287	0.0031
Venus	-30095-06-10 23:45 J	-9270614.70	-9270614.51	-9270614.31	0.0288	0.0122
Venus	-30094-01-27 01:40 J	-9270384.48	-9270384.43	-9270384.36	0.0289	0.0276
Moon	-30094-11-01 00:43 J	-9270106.67	-9270106.47	-9270106.26	0.0290	0.0147
Earth	-30094-11-01 02:23 J	-9270106.60	-9270106.40	-9270106.18	0.0290	0.0156 *
Mercury	-30092-02-04 13:26 J	-9269645.07	-9269644.94	-9269644.80	0.0291	0.0179
Mercury	-30092-05-04 10:04 J	-9269556.25	-9269556.08	-9269555.91	0.0291	0.0014
Mercury	-30092-08-01 05:59 J	-9269467.39	-9269467.25	-9269467.10	0.0291	0.0147
Venus	-30082-01-10 13:40 J	-9266018.06	-9266017.93	-9266017.78	0.0275	0.0201
Venus	-30082-08-27 16:33 J	-9265789.01	-9265788.81	-9265788.61	0.0274	0.0076
Venus	-30081-04-12 17:45 J	-9265559.96	-9265559.76	-9265559.56	0.0273	0.0048
Venus	-30081-11-27 17:45 J	-9265330.91	-9265330.76	-9265330.59	0.0271	0.0169
Moon	-30079-04-30 21:50 J	-9264811.82	-9264811.59	-9264811.35	0.0270	0.0080
Earth	-30079-05-01 00:57 J	-9264811.69	-9264811.46	-9264811.23	0.0270	0.0084 *
Mercury	-30078-05-26 00:43 J	-9264421.51	-9264421.47	-9264421.43	0.0269	0.0257
Mercury	-30078-08-22 12:14 J	-9264333.10	-9264332.99	-9264332.87	0.0269	0.0154
Mercury	-30078-11-18 23:59 J	-9264244.64	-9264244.50	-9264244.36	0.0269	0.0050
Mercury	-30077-02-15 11:59 J	-9264156.13	-9264156.00	-9264155.86	0.0269	0.0058
Mercury	-30077-05-14 00:14 J	-9264067.60	-9264067.49	-9264067.37	0.0268	0.0166
Mars	-30073-07-11 17:02 J	-9262548.06	-9262547.79	-9262547.52	0.0272	0.0018
Venus	-30067-09-18 11:31 J	-9260288.20	-9260288.02	-9260287.83	0.0286	0.0150
Venus	-30066-05-06 10:47 J	-9260058.26	-9260058.05	-9260057.83	0.0287	0.0006
Venus	-30066-12-22 11:31 J	-9259828.19	-9259828.02	-9259827.83	0.0288	0.0155
Moon	-30064-11-08 18:43 J	-9259140.88	-9259140.72	-9259140.54	0.0291	0.0215
Earth	-30064-11-08 20:38 J	-9259140.81	-9259140.64	-9259140.46	0.0291	0.0204 *
Mercury	-30063-06-24 14:52 J	-9258912.99	-9258912.88	-9258912.76	0.0291	0.0212
Mercury	-30063-09-21 11:45 J	-9258824.18	-9258824.01	-9258823.85	0.0291	0.0046
Mercury	-30063-12-19 07:55 J	-9258735.32	-9258735.17	-9258735.02	0.0292	0.0117
Mercury	-30062-03-18 03:35 J	-9258646.40	-9258646.35	-9258646.30	0.0292	0.0275

Mars	-30059-08-05 05:59 J	-9257410.55	-9257410.25	-9257409.94	0.0288	0.0066
Venus	-30053-07-22 19:11 J	-9255231.85	-9255231.70	-9255231.53	0.0274	0.0180
Venus	-30052-03-08 21:35 J	-9255002.80	-9255002.60	-9255002.39	0.0273	0.0055
Venus	-30052-10-23 22:33 J	-9254773.76	-9254773.56	-9254773.36	0.0272	0.0067
Venus	-30051-06-09 22:19 J	-9254544.71	-9254544.57	-9254544.41	0.0271	0.0187
Earth	-30049-05-07 01:55 J	-9253847.59	-9253847.42	-9253847.24	0.0269	0.0186
Moon	-30049-05-07 05:02 J	-9253847.45	-9253847.29	-9253847.11	0.0269	0.0196 *
Mercury	-30048-01-08 14:38 J	-9253600.99	-9253600.89	-9253600.79	0.0268	0.0182
Mercury	-30048-04-07 02:23 J	-9253512.54	-9253512.40	-9253512.27	0.0268	0.0078
Mercury	-30048-07-04 14:09 J	-9253424.05	-9253423.91	-9253423.76	0.0268	0.0029
Mercury	-30048-10-01 02:23 J	-9253335.52	-9253335.40	-9253335.28	0.0268	0.0135
Mercury	-30048-12-28 14:38 J	-9253246.94	-9253246.89	-9253246.83	0.0268	0.0244
Venus	-30038-08-13 16:33 J	-9249731.85	-9249731.81	-9249731.75	0.0284	0.0276
Venus	-30037-03-30 14:09 J	-9249502.10	-9249501.91	-9249501.71	0.0286	0.0132
Venus	-30037-11-15 13:40 J	-9249272.15	-9249271.93	-9249271.71	0.0287	0.0018
Venus	-30036-07-03 14:23 J	-9249042.06	-9249041.90	-9249041.71	0.0288	0.0173
Earth	-30035-11-02 13:55 J	-9248555.15	-9248554.92	-9248554.68	0.0290	0.0087
Moon	-30035-11-02 16:33 J	-9248555.04	-9248554.81	-9248554.57	0.0290	0.0075 *
Mercury	-30034-11-11 12:28 J	-9248181.03	-9248180.98	-9248180.91	0.0291	0.0271
Mercury	-30033-02-08 09:35 J	-9248092.26	-9248092.10	-9248091.94	0.0291	0.0104
Mercury	-30033-05-07 05:59 J	-9248003.42	-9248003.25	-9248003.09	0.0291	0.0060
Mercury	-30033-08-04 01:40 J	-9247914.53	-9247914.43	-9247914.31	0.0291	0.0220
Venus	-30023-02-01 22:47 J	-9244445.72	-9244445.55	-9244445.38	0.0275	0.0160
Venus	-30023-09-19 01:11 J	-9244216.65	-9244216.45	-9244216.24	0.0274	0.0035
Venus	-30022-05-06 02:09 J	-9243987.60	-9243987.41	-9243987.21	0.0272	0.0089
Venus	-30022-12-21 02:09 J	-9243758.53	-9243758.41	-9243758.27	0.0271	0.0208
Moon	-30020-05-02 04:04 J	-9243260.57	-9243260.33	-9243260.09	0.0270	0.0023
Earth	-30020-05-02 06:57 J	-9243260.45	-9243260.21	-9243259.96	0.0270	0.0029 *
Mercury	-30019-05-28 17:16 J	-9242868.86	-9242868.78	-9242868.69	0.0269	0.0209
Mercury	-30019-08-25 05:02 J	-9242780.42	-9242780.29	-9242780.16	0.0269	0.0105

Mercury	-30019-11-21 17:02 J	-9242691.94	-9242691.79	-9242691.65	0.0269	0.0007
Mercury	-30018-02-18 05:02 J	-9242603.42	-9242603.29	-9242603.16	0.0269	0.0109
Mercury	-30018-05-17 17:16 J	-9242514.86	-9242514.78	-9242514.69	0.0269	0.0218
Venus	-30008-02-23 04:47 J	-9238945.41	-9238945.30	-9238945.19	0.0285	0.0246
Venus	-30008-10-11 02:38 J	-9238715.59	-9238715.39	-9238715.19	0.0286	0.0101
Venus	-30007-05-29 02:09 J	-9238485.62	-9238485.41	-9238485.19	0.0287	0.0051
Venus	-30006-01-14 03:21 J	-9238255.51	-9238255.36	-9238255.20	0.0289	0.0204
Moon	-30005-11-10 05:59 J	-9237589.26	-9237589.25	-9237589.24	0.0291	0.0290
Earth	-30005-11-10 09:35 J	-9237589.17	-9237589.10	-9237589.02	0.0291	0.0276
Mercury	-30004-06-27 11:31 J	-9237360.17	-9237360.02	-9237359.86	0.0291	0.0133
Mercury	-30004-09-24 08:09 J	-9237271.33	-9237271.16	-9237271.00	0.0291	0.0032
Mercury	-30004-12-22 03:50 J	-9237182.45	-9237182.34	-9237182.21	0.0291	0.0193

# 30TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 30th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-29995-12-29 01:55 J	-9233888.48	-9233888.42	-9233888.36	0.0275	0.0262		
Venus	-29994-08-15 05:16 J	-9233659.45	-9233659.28	-9233659.09	0.0274	0.0138		
Venus	-29993-03-31 07:26 J	-9233430.40	-9233430.19	-9233429.98	0.0273	0.0013		
Venus	-29993-11-15 08:09 J	-9233201.35	-9233201.16	-9233200.97	0.0271	0.0108		
Venus	-29992-07-02 07:40 J	-9232972.28	-9232972.18	-9232972.06	0.0271	0.0226		
Earth	-29991-04-27 12:43 J	-9232673.08	-9232672.97	-9232672.86	0.0270	0.0239		
Moon	-29991-04-27 15:35 J	-9232672.95	-9232672.85	-9232672.72	0.0270	0.0240	*	

Moon	-29990-05-09 08:09 J	-9232296.22	-9232296.16	-9232296.07	0.0269	0.0257
Earth	-29990-05-09 09:50 J	-9232296.18	-9232296.09	-9232295.98	0.0269	0.0245 *
Mercury	-29990-10-15 19:55 J	-9232136.73	-9232136.67	-9232136.60	0.0268	0.0234
Mercury	-29989-01-12 07:40 J	-9232048.30	-9232048.18	-9232048.06	0.0268	0.0130
Mercury	-29989-04-09 19:26 J	-9231959.83	-9231959.69	-9231959.55	0.0268	0.0026
Mercury	-29989-07-07 07:26 J	-9231871.32	-9231871.19	-9231871.05	0.0268	0.0082
Mercury	-29989-10-03 19:40 J	-9231782.78	-9231782.68	-9231782.58	0.0268	0.0190
Mars	-29985-12-05 17:02 J	-9230259.05	-9230258.79	-9230258.51	0.0272	0.0067
Venus	-29979-09-05 07:55 J	-9228159.29	-9228159.17	-9228159.03	0.0285	0.0228
Venus	-29978-04-23 05:59 J	-9227929.46	-9227929.25	-9227929.04	0.0286	0.0081
Venus	-29978-12-09 05:45 J	-9227699.47	-9227699.26	-9227699.05	0.0287	0.0070
Venus	-29977-07-26 06:57 J	-9227469.34	-9227469.21	-9227469.07	0.0288	0.0223
Earth	-29976-11-04 03:50 J	-9227003.59	-9227003.34	-9227003.09	0.0290	0.0014
Moon	-29976-11-04 07:11 J	-9227003.45	-9227003.20	-9227002.95	0.0290	0.0002 *
Mercury	-29975-11-14 09:35 J	-9226628.22	-9226628.10	-9226627.97	0.0291	0.0190
Mercury	-29974-02-11 06:14 J	-9226539.41	-9226539.24	-9226539.07	0.0291	0.0025
Mercury	-29974-05-11 02:23 J	-9226450.54	-9226450.40	-9226450.25	0.0291	0.0138
Mars	-29971-12-29 22:47 J	-9225121.87	-9225121.55	-9225121.24	0.0288	0.0010
Venus	-29965-07-10 05:02 J	-9223102.38	-9223102.29	-9223102.19	0.0276	0.0244
Venus	-29964-02-24 08:38 J	-9222873.32	-9222873.14	-9222872.95	0.0274	0.0118
Venus	-29964-10-11 10:47 J	-9222644.25	-9222644.05	-9222643.84	0.0273	0.0009
Venus	-29963-05-28 11:45 J	-9222415.19	-9222415.01	-9222414.83	0.0272	0.0129
Venus	-29962-01-12 11:31 J	-9222186.10	-9222186.02	-9222185.93	0.0271	0.0247
Earth	-29961-05-03 14:23 J	-9221709.14	-9221708.90	-9221708.65	0.0270	0.0029
Moon	-29961-05-03 15:35 J	-9221709.08	-9221708.85	-9221708.61	0.0270	0.0037 *
Mercury	-29960-03-03 22:33 J	-9221404.59	-9221404.56	-9221404.53	0.0269	0.0262
Mercury	-29960-05-31 10:19 J	-9221316.19	-9221316.07	-9221315.96	0.0269	0.0158
Mercury	-29960-08-27 22:04 J	-9221227.72	-9221227.58	-9221227.44	0.0269	0.0053
Mercury	-29960-11-24 10:04 J	-9221139.22	-9221139.08	-9221138.94	0.0269	0.0054
Mercury	-29959-02-20 22:04 J	-9221050.69	-9221050.58	-9221050.46	0.0269	0.0163

Venus	-29949-03-17 20:09 J	-9217372.81	-9217372.66	-9217372.50	0.0285	0.0198
Venus	-29949-11-02 18:43 J	-9217142.93	-9217142.72	-9217142.51	0.0286	0.0050
Venus	-29948-06-20 18:43 J	-9216912.92	-9216912.72	-9216912.51	0.0288	0.0102
Venus	-29947-02-05 20:23 J	-9216682.75	-9216682.65	-9216682.55	0.0289	0.0255
Moon	-29947-10-29 11:02 J	-9216417.12	-9216417.04	-9216416.94	0.0290	0.0268
Earth	-29947-10-29 14:09 J	-9216416.97	-9216416.91	-9216416.84	0.0290	0.0278 *
Mercury	-29945-04-02 11:59 J	-9215896.11	-9215896.00	-9215895.89	0.0291	0.0217
Mercury	-29945-06-30 08:38 J	-9215807.30	-9215807.14	-9215806.97	0.0291	0.0051
Mercury	-29945-09-27 05:02 J	-9215718.45	-9215718.29	-9215718.14	0.0291	0.0113
Mercury	-29945-12-25 00:28 J	-9215629.53	-9215629.48	-9215629.41	0.0291	0.0272
Venus	-29935-01-20 12:57 J	-9212316.07	-9212315.96	-9212315.83	0.0275	0.0220
Venus	-29935-09-06 16:19 J	-9212087.02	-9212086.82	-9212086.63	0.0274	0.0095
Venus	-29934-04-23 17:59 J	-9211857.96	-9211857.75	-9211857.55	0.0272	0.0029
Venus	-29934-12-08 18:28 J	-9211628.90	-9211628.73	-9211628.56	0.0271	0.0150
Venus	-29933-07-24 17:45 J	-9211399.79	-9211399.76	-9211399.72	0.0270	0.0266
Moon	-29932-04-28 21:07 J	-9211121.80	-9211121.62	-9211121.43	0.0269	0.0178
Earth	-29932-04-28 21:35 J	-9211121.78	-9211121.60	-9211121.42	0.0269	0.0179 *
Mercury	-29931-10-18 13:11 J	-9210584.05	-9210583.95	-9210583.85	0.0268	0.0181
Mercury	-29930-01-15 00:57 J	-9210495.60	-9210495.46	-9210495.33	0.0268	0.0077
Mercury	-29930-04-13 12:43 J	-9210407.11	-9210406.97	-9210406.82	0.0268	0.0030
Mercury	-29930-07-11 00:57 J	-9210318.58	-9210318.46	-9210318.34	0.0268	0.0137
Mercury	-29930-10-07 13:11 J	-9210230.00	-9210229.95	-9210229.89	0.0268	0.0246
Venus	-29920-09-28 00:43 J	-9206586.63	-9206586.47	-9206586.29	0.0285	0.0178
Venus	-29919-05-15 23:16 J	-9206356.75	-9206356.53	-9206356.32	0.0286	0.0030
Venus	-29919-12-31 23:02 J	-9206126.73	-9206126.54	-9206126.33	0.0288	0.0123
Venus	-29918-08-19 00:43 J	-9205896.52	-9205896.47	-9205896.40	0.0289	0.0275
Moon	-29917-11-05 19:40 J	-9205451.92	-9205451.68	-9205451.43	0.0290	0.0078
Earth	-29917-11-05 20:23 J	-9205451.90	-9205451.65	-9205451.41	0.0290	0.0065 *
Mercury	-29916-08-20 10:04 J	-9205164.13	-9205164.08	-9205164.01	0.0291	0.0272
Mercury	-29916-11-17 06:57 J	-9205075.36	-9205075.21	-9205075.04	0.0291	0.0105

Mercury	-29915-02-14 03:35 J	-9204986.52	-9204986.35	-9204986.19	0.0291	0.0060
Mercury	-29915-05-13 23:31 J	-9204897.63	-9204897.52	-9204897.41	0.0291	0.0219
Venus	-29906-08-02 16:04 J	-9201529.97	-9201529.83	-9201529.69	0.0275	0.0201
Venus	-29905-03-18 19:11 J	-9201300.90	-9201300.70	-9201300.50	0.0274	0.0075
Venus	-29905-11-02 20:52 J	-9201071.83	-9201071.63	-9201071.42	0.0273	0.0049
Venus	-29904-06-19 21:21 J	-9200842.76	-9200842.61	-9200842.44	0.0272	0.0170
Earth	-29902-05-05 22:19 J	-9200157.80	-9200157.57	-9200157.34	0.0270	0.0087
Moon	-29902-05-06 01:40 J	-9200157.65	-9200157.43	-9200157.19	0.0270	0.0097 *
Mercury	-29901-03-06 15:21 J	-9199851.94	-9199851.86	-9199851.76	0.0269	0.0212
Mercury	-29901-06-03 03:07 J	-9199763.49	-9199763.37	-9199763.23	0.0269	0.0107
Mercury	-29901-08-30 15:07 J	-9199675.01	-9199674.87	-9199674.73	0.0269	0.0004
Mercury	-29901-11-27 03:07 J	-9199586.50	-9199586.37	-9199586.23	0.0269	0.0108
Mercury	-29900-02-23 15:35 J	-9199497.94	-9199497.85	-9199497.77	0.0269	0.0217
Mars	-29896-05-02 07:55 J	-9197969.40	-9197969.17	-9197968.92	0.0272	0.0135
Venus	-29890-04-10 12:14 J	-9195800.17	-9195799.99	-9195799.80	0.0285	0.0149
Venus	-29890-11-26 11:16 J	-9195570.25	-9195570.03	-9195569.82	0.0287	0.0006
Venus	-29889-07-13 11:45 J	-9195340.19	-9195340.01	-9195339.82	0.0288	0.0154
Earth	-29888-10-31 05:45 J	-9194865.44	-9194865.26	-9194865.08	0.0290	0.0201
Moon	-29888-10-31 05:59 J	-9194865.42	-9194865.25	-9194865.07	0.0290	0.0192 *
Mercury	-29886-04-06 09:21 J	-9194343.26	-9194343.11	-9194342.96	0.0291	0.0132
Mercury	-29886-07-04 05:45 J	-9194254.42	-9194254.26	-9194254.09	0.0291	0.0034
Mercury	-29886-10-01 01:40 J	-9194165.54	-9194165.43	-9194165.30	0.0291	0.0195
Mars	-29882-05-27 09:21 J	-9192831.40	-9192831.11	-9192830.80	0.0288	0.0093
Venus	-29876-02-12 00:28 J	-9190743.63	-9190743.48	-9190743.31	0.0275	0.0177
Venus	-29876-09-29 03:21 J	-9190514.56	-9190514.36	-9190514.15	0.0273	0.0052
Venus	-29875-05-16 04:47 J	-9190285.50	-9190285.30	-9190285.10	0.0272	0.0071
Venus	-29875-12-31 04:47 J	-9190056.43	-9190056.30	-9190056.14	0.0271	0.0191
Moon	-29873-04-30 03:21 J	-9189570.57	-9189570.36	-9189570.13	0.0269	0.0116
Earth	-29873-04-30 06:57 J	-9189570.42	-9189570.21	-9189569.99	0.0269	0.0119 *
Mercury	-29872-07-24 18:43 J	-9189119.78	-9189119.72	-9189119.65	0.0268	0.0231

Mercury	-29872-10-21 06:28 J	-9189031.36	-9189031.23	-9189031.11	0.0268	0.0128
Mercury	-29871-01-17 18:14 J	-9188942.88	-9188942.74	-9188942.60	0.0268	0.0022
Mercury	-29871-04-16 06:14 J	-9188854.38	-9188854.24	-9188854.11	0.0268	0.0085
Mercury	-29871-07-13 18:28 J	-9188765.83	-9188765.73	-9188765.63	0.0268	0.0193
Venus	-29861-03-04 20:23 J	-9185243.70	-9185243.65	-9185243.58	0.0284	0.0270
Venus	-29861-10-20 17:31 J	-9185013.96	-9185013.77	-9185013.57	0.0286	0.0127
Venus	-29860-06-07 16:33 J	-9184784.03	-9184783.81	-9184783.60	0.0287	0.0023
Venus	-29859-01-23 16:47 J	-9184553.96	-9184553.80	-9184553.62	0.0288	0.0175
Moon	-29858-11-08 09:21 J	-9183900.32	-9183900.11	-9183899.90	0.0290	0.0158
Earth	-29858-11-08 12:43 J	-9183900.18	-9183899.97	-9183899.75	0.0290	0.0144 *
Mercury	-29857-08-23 07:55 J	-9183611.30	-9183611.17	-9183611.04	0.0291	0.0185
Mercury	-29857-11-20 04:33 J	-9183522.48	-9183522.31	-9183522.14	0.0291	0.0019
Mercury	-29856-02-17 00:43 J	-9183433.61	-9183433.47	-9183433.32	0.0291	0.0143
Venus	-29847-08-25 03:07 J	-9179957.53	-9179957.37	-9179957.20	0.0275	0.0158
Venus	-29846-04-11 05:45 J	-9179728.46	-9179728.26	-9179728.05	0.0274	0.0033
Venus	-29846-11-26 07:11 J	-9179499.39	-9179499.20	-9179499.00	0.0273	0.0091
Venus	-29845-07-12 07:26 J	-9179270.32	-9179270.19	-9179270.06	0.0272	0.0210
Earth	-29843-05-07 06:14 J	-9178606.44	-9178606.24	-9178606.04	0.0270	0.0146
Moon	-29843-05-07 07:26 J	-9178606.38	-9178606.19	-9178605.97	0.0270	0.0155 *
Mercury	-29843-12-11 20:52 J	-9178387.65	-9178387.63	-9178387.60	0.0269	0.0263
Mercury	-29842-03-10 08:23 J	-9178299.26	-9178299.15	-9178299.03	0.0269	0.0160
Mercury	-29842-06-06 20:23 J	-9178210.79	-9178210.65	-9178210.51	0.0269	0.0055
Mercury	-29842-09-03 08:09 J	-9178122.30	-9178122.16	-9178122.02	0.0269	0.0053
Mercury	-29842-11-30 20:23 J	-9178033.76	-9178033.65	-9178033.53	0.0269	0.0161
Mars	-29838-08-10 21:50 J	-9176684.74	-9176684.59	-9176684.44	0.0271	0.0227
Venus	-29832-09-15 06:43 J	-9174457.32	-9174457.22	-9174457.10	0.0284	0.0244
Venus	-29831-05-03 04:33 J	-9174227.52	-9174227.31	-9174227.11	0.0286	0.0099
Venus	-29831-12-19 03:50 J	-9173997.55	-9173997.34	-9173997.13	0.0287	0.0051
Venus	-29830-08-06 04:47 J	-9173767.44	-9173767.30	-9173767.14	0.0288	0.0205
Earth	-29829-11-01 21:21 J	-9173313.83	-9173313.61	-9173313.38	0.0290	0.0124

Moon	-29829-11-02 00:57 J	-9173313.69	-9173313.46	-9173313.24	0.0290	0.0112 *
Mercury	-29827-01-10 09:50 J	-9172879.20	-9172879.09	-9172878.97	0.0291	0.0214
Mercury	-29827-04-09 06:43 J	-9172790.39	-9172790.22	-9172790.05	0.0291	0.0047
Mercury	-29827-07-07 03:07 J	-9172701.53	-9172701.37	-9172701.22	0.0291	0.0117
Mercury	-29827-10-03 22:47 J	-9172612.60	-9172612.55	-9172612.50	0.0292	0.0276
Venus	-29818-07-21 08:09 J	-9169400.23	-9169400.16	-9169400.10	0.0276	0.0259
Venus	-29817-03-06 11:45 J	-9169171.19	-9169171.01	-9169170.82	0.0274	0.0134
Venus	-29817-10-21 14:09 J	-9168942.12	-9168941.91	-9168941.70	0.0273	0.0009
Venus	-29816-06-07 15:07 J	-9168713.05	-9168712.87	-9168712.68	0.0272	0.0113
Venus	-29815-01-22 15:07 J	-9168483.97	-9168483.87	-9168483.76	0.0271	0.0231
Moon	-29814-05-02 13:26 J	-9168019.17	-9168018.94	-9168018.70	0.0269	0.0054
Earth	-29814-05-02 15:35 J	-9168019.09	-9168018.85	-9168018.61	0.0269	0.0058 *
Mercury	-29813-07-27 11:45 J	-9167567.11	-9167567.01	-9167566.90	0.0268	0.0179
Mercury	-29813-10-23 23:31 J	-9167478.65	-9167478.52	-9167478.38	0.0268	0.0075
Mercury	-29812-01-20 11:31 J	-9167390.17	-9167390.02	-9167389.88	0.0268	0.0032
Mercury	-29812-04-18 23:31 J	-9167301.64	-9167301.52	-9167301.40	0.0268	0.0139
Mercury	-29812-07-16 11:45 J	-9167213.06	-9167213.01	-9167212.96	0.0268	0.0249
Mars	-29808-09-26 14:09 J	-9165680.09	-9165679.91	-9165679.70	0.0272	0.0193
Venus	-29802-03-28 12:14 J	-9163671.11	-9163670.99	-9163670.85	0.0285	0.0223
Venus	-29802-11-13 09:50 J	-9163441.29	-9163441.09	-9163440.88	0.0286	0.0077
Venus	-29801-06-30 09:21 J	-9163211.32	-9163211.11	-9163210.90	0.0287	0.0074
Venus	-29800-02-15 10:04 J	-9162981.21	-9162981.08	-9162980.94	0.0288	0.0226
Moon	-29799-11-10 01:55 J	-9162348.55	-9162348.42	-9162348.27	0.0291	0.0235
Earth	-29799-11-10 04:33 J	-9162348.46	-9162348.31	-9162348.15	0.0291	0.0222 *
Mercury	-29798-05-30 08:23 J	-9162147.21	-9162147.15	-9162147.09	0.0291	0.0268
Mercury	-29798-08-27 05:16 J	-9162058.44	-9162058.28	-9162058.12	0.0291	0.0100
Mercury	-29798-11-24 01:40 J	-9161969.59	-9161969.43	-9161969.26	0.0291	0.0065
Mercury	-29797-02-20 21:35 J	-9161880.70	-9161880.60	-9161880.49	0.0291	0.0225
Mars	-29794-10-21 12:57 J	-9160542.22	-9160541.96	-9160541.70	0.0287	0.0161
Venus	-29788-01-30 10:19 J	-9158614.17	-9158614.07	-9158613.97	0.0276	0.0242



Venus	-29788-09-16 13:55 J	-9158385.10	-9158384.92	-9158384.73	0.0274	0.0116
Venus	-29787-05-03 16:19 J	-9158156.03	-9158155.82	-9158155.61	0.0273	0.0009
Venus	-29787-12-18 17:02 J	-9157926.96	-9157926.79	-9157926.60	0.0272	0.0132
Venus	-29786-08-04 17:02 J	-9157697.86	-9157697.79	-9157697.70	0.0271	0.0249
Moon	-29784-05-08 11:02 J	-9157055.19	-9157055.04	-9157054.90	0.0269	0.0216
Earth	-29784-05-08 13:26 J	-9157055.09	-9157054.94	-9157054.77	0.0269	0.0204 *
Mercury	-29784-12-14 13:40 J	-9156835.01	-9156834.93	-9156834.84	0.0269	0.0213
Mercury	-29783-03-13 01:26 J	-9156746.57	-9156746.44	-9156746.31	0.0269	0.0108
Mercury	-29783-06-09 13:11 J	-9156658.09	-9156657.95	-9156657.80	0.0269	0.0006
Mercury	-29783-09-06 01:11 J	-9156569.58	-9156569.45	-9156569.31	0.0269	0.0106
Mercury	-29783-12-03 13:26 J	-9156481.02	-9156480.94	-9156480.85	0.0269	0.0215
Venus	-29773-10-07 21:21 J	-9152884.77	-9152884.61	-9152884.46	0.0285	0.0198
Venus	-29772-05-25 19:26 J	-9152654.91	-9152654.69	-9152654.48	0.0286	0.0052
Venus	-29771-01-10 18:57 J	-9152424.90	-9152424.71	-9152424.50	0.0288	0.0101
Venus	-29771-08-28 20:38 J	-9152194.74	-9152194.64	-9152194.54	0.0289	0.0253
Earth	-29770-11-04 11:02 J	-9151762.28	-9151762.04	-9151761.79	0.0290	0.0049
Moon	-29770-11-04 13:40 J	-9151762.18	-9151761.93	-9151761.68	0.0290	0.0037 *
Mercury	-29768-01-13 06:43 J	-9151326.37	-9151326.22	-9151326.06	0.0291	0.0132
Mercury	-29768-04-12 03:21 J	-9151237.52	-9151237.36	-9151237.19	0.0292	0.0035
Mercury	-29768-07-09 23:31 J	-9151148.64	-9151148.52	-9151148.39	0.0292	0.0196
Venus	-29759-08-12 18:57 J	-9147827.82	-9147827.71	-9147827.57	0.0275	0.0218
Venus	-29758-03-29 22:33 J	-9147598.76	-9147598.56	-9147598.36	0.0274	0.0091
Venus	-29758-11-14 00:28 J	-9147369.69	-9147369.48	-9147369.27	0.0273	0.0032
Venus	-29757-06-30 01:11 J	-9147140.62	-9147140.45	-9147140.28	0.0271	0.0153
Venus	-29756-02-14 00:43 J	-9146911.48	-9146911.47	-9146911.44	0.0270	0.0269
Earth	-29755-05-03 23:02 J	-9146467.78	-9146467.54	-9146467.30	0.0269	0.0001
Moon	-29755-05-04 01:26 J	-9146467.67	-9146467.44	-9146467.20	0.0269	0.0009 *
Mercury	-29754-05-03 17:02 J	-9146102.85	-9146102.79	-9146102.72	0.0268	0.0232
Mercury	-29754-07-31 04:47 J	-9146014.43	-9146014.30	-9146014.18	0.0268	0.0128
Mercury	-29754-10-27 16:33 J	-9145925.95	-9145925.81	-9145925.67	0.0268	0.0024

Mercury	-29753-01-24 04:19 J	-9145837.45	-9145837.32	-9145837.18	0.0268	0.0084
Mercury	-29753-04-21 16:33 J	-9145748.91	-9145748.81	-9145748.71	0.0268	0.0193
Mars	-29749-01-05 03:21 J	-9144395.56	-9144395.36	-9144395.13	0.0271	0.0171
Venus	-29743-04-20 03:07 J	-9142098.53	-9142098.37	-9142098.19	0.0285	0.0176
Venus	-29743-12-06 01:11 J	-9141868.66	-9141868.45	-9141868.23	0.0286	0.0028
Venus	-29742-07-24 01:11 J	-9141638.64	-9141638.45	-9141638.25	0.0288	0.0124
Venus	-29741-03-10 02:23 J	-9141408.45	-9141408.40	-9141408.33	0.0289	0.0276
Mercury	-29739-06-02 05:31 J	-9140594.40	-9140594.27	-9140594.14	0.0291	0.0185
Mercury	-29739-08-30 02:09 J	-9140505.57	-9140505.41	-9140505.24	0.0291	0.0020
Mercury	-29739-11-26 22:33 J	-9140416.70	-9140416.56	-9140416.42	0.0291	0.0145
Venus	-29729-02-22 20:52 J	-9137041.77	-9137041.63	-9137041.49	0.0275	0.0200
Venus	-29729-10-08 23:59 J	-9136812.70	-9136812.50	-9136812.30	0.0274	0.0075
Venus	-29728-05-26 01:55 J	-9136583.63	-9136583.42	-9136583.22	0.0273	0.0049
Venus	-29727-01-10 02:23 J	-9136354.55	-9136354.40	-9136354.23	0.0272	0.0170
Moon	-29726-04-28 19:40 J	-9135880.81	-9135880.68	-9135880.53	0.0270	0.0220
Earth	-29726-04-28 22:19 J	-9135880.69	-9135880.57	-9135880.43	0.0270	0.0226 *
Earth	-29725-05-09 19:40 J	-9135503.74	-9135503.68	-9135503.62	0.0269	0.0260
Mercury	-29725-09-19 18:43 J	-9135370.73	-9135370.72	-9135370.71	0.0269	0.0267
Mercury	-29725-12-17 06:14 J	-9135282.35	-9135282.24	-9135282.13	0.0269	0.0164
Mercury	-29724-03-15 17:59 J	-9135193.89	-9135193.75	-9135193.61	0.0269	0.0059
Mercury	-29724-06-12 05:59 J	-9135105.39	-9135105.25	-9135105.11	0.0269	0.0048
Mercury	-29724-09-08 17:59 J	-9135016.87	-9135016.75	-9135016.63	0.0269	0.0156
Mercury	-29724-12-06 06:14 J	-9134928.25	-9134928.24	-9134928.22	0.0269	0.0266
Mars	-29719-02-20 13:11 J	-9133391.07	-9133390.95	-9133390.81	0.0272	0.0237
Venus	-29714-10-31 10:19 J	-9131312.25	-9131312.07	-9131311.89	0.0285	0.0154
Venus	-29713-06-17 08:52 J	-9131082.35	-9131082.13	-9131081.91	0.0287	0.0005
Venus	-29712-02-02 09:07 J	-9130852.30	-9130852.12	-9130851.93	0.0288	0.0147
Moon	-29711-11-05 19:55 J	-9130210.92	-9130210.67	-9130210.42	0.0291	0.0037
Earth	-29711-11-05 22:04 J	-9130210.82	-9130210.58	-9130210.33	0.0291	0.0022 *
Mercury	-29710-10-20 05:59 J	-9129862.35	-9129862.25	-9129862.14	0.0291	0.0224

Mercury	-29709-01-17 03:07 J	-9129773.54	-9129773.37	-9129773.21	0.0292	0.0056
Mercury	-29709-04-14 23:31 J	-9129684.68	-9129684.52	-9129684.37	0.0292	0.0109
Mercury	-29709-07-12 19:11 J	-9129595.75	-9129595.70	-9129595.63	0.0292	0.0270
Mars	-29705-03-17 15:35 J	-9128251.98	-9128251.85	-9128251.69	0.0288	0.0255
Venus	-29700-09-04 05:16 J	-9126255.44	-9126255.28	-9126255.12	0.0275	0.0176
Venus	-29699-04-21 08:09 J	-9126026.36	-9126026.16	-9126025.96	0.0273	0.0051
Venus	-29699-12-06 09:35 J	-9125797.30	-9125797.10	-9125796.90	0.0272	0.0072
Venus	-29698-07-23 09:50 J	-9125568.23	-9125568.09	-9125567.94	0.0271	0.0191
Earth	-29696-05-05 04:47 J	-9124916.53	-9124916.30	-9124916.05	0.0269	0.0058
Moon	-29696-05-05 08:23 J	-9124916.39	-9124916.15	-9124915.91	0.0269	0.0068 *
Mercury	-29695-05-06 09:35 J	-9124550.20	-9124550.10	-9124550.00	0.0268	0.0183
Mercury	-29695-08-02 21:21 J	-9124461.75	-9124461.61	-9124461.48	0.0268	0.0079
Mercury	-29695-10-30 09:07 J	-9124373.26	-9124373.12	-9124372.98	0.0268	0.0027
Mercury	-29694-01-26 21:07 J	-9124284.74	-9124284.62	-9124284.49	0.0268	0.0134
Mercury	-29694-04-25 09:21 J	-9124196.17	-9124196.11	-9124196.05	0.0268	0.0243
Venus	-29685-09-24 19:26 J	-9120755.74	-9120755.69	-9120755.63	0.0284	0.0273
Venus	-29684-05-12 16:04 J	-9120526.02	-9120525.83	-9120525.63	0.0285	0.0131
Venus	-29684-12-28 14:38 J	-9120296.10	-9120295.89	-9120295.67	0.0287	0.0019
Venus	-29683-08-15 15:07 J	-9120066.05	-9120065.87	-9120065.70	0.0288	0.0170
Earth	-29682-10-30 18:43 J	-9119624.80	-9119624.72	-9119624.61	0.0290	0.0268
Moon	-29682-10-30 21:50 J	-9119624.70	-9119624.59	-9119624.47	0.0290	0.0253 *
Mercury	-29680-03-08 04:33 J	-9119130.35	-9119130.31	-9119130.26	0.0291	0.0279
Mercury	-29680-06-05 01:40 J	-9119041.59	-9119041.43	-9119041.27	0.0291	0.0109
Mercury	-29680-09-01 22:19 J	-9118952.74	-9118952.57	-9118952.41	0.0291	0.0056
Mercury	-29680-11-29 18:14 J	-9118863.84	-9118863.74	-9118863.63	0.0291	0.0218
Venus	-29670-03-17 06:14 J	-9115469.40	-9115469.24	-9115469.07	0.0275	0.0160
Venus	-29670-11-01 09:07 J	-9115240.33	-9115240.12	-9115239.92	0.0273	0.0035
Venus	-29669-06-17 10:19 J	-9115011.26	-9115011.07	-9115010.87	0.0272	0.0088
Venus	-29668-02-01 10:33 J	-9114782.18	-9114782.06	-9114781.92	0.0271	0.0207
Moon	-29667-04-30 00:14 J	-9114329.68	-9114329.49	-9114329.30	0.0270	0.0164

Earth	-29667-04-30 03:21 J	-9114329.54	-9114329.36	-9114329.17	0.0270	0.0171	*
Mercury	-29666-09-23 11:02 J	-9113818.12	-9113818.04	-9113817.96	0.0269	0.0221	
Mercury	-29666-12-20 22:33 J	-9113729.68	-9113729.56	-9113729.43	0.0269	0.0118	
Mercury	-29665-03-18 10:19 J	-9113641.21	-9113641.07	-9113640.93	0.0268	0.0013	
Mercury	-29665-06-14 22:19 J	-9113552.70	-9113552.57	-9113552.44	0.0268	0.0095	
Mercury	-29665-09-11 10:19 J	-9113464.16	-9113464.07	-9113463.97	0.0268	0.0204	
Mars	-29661-05-30 17:59 J	-9112106.98	-9112106.75	-9112106.50	0.0271	0.0138	
Venus	-29655-04-07 00:14 J	-9109969.58	-9109969.49	-9109969.39	0.0284	0.0254	
Venus	-29655-11-22 21:21 J	-9109739.81	-9109739.61	-9109739.41	0.0286	0.0111	
Venus	-29654-07-10 20:38 J	-9109509.86	-9109509.64	-9109509.43	0.0287	0.0039	
Venus	-29653-02-25 21:07 J	-9109279.77	-9109279.62	-9109279.45	0.0288	0.0192	
Moon	-29652-11-07 02:38 J	-9108659.62	-9108659.39	-9108659.17	0.0291	0.0104	
Earth	-29652-11-07 05:59 J	-9108659.48	-9108659.25	-9108659.01	0.0291	0.0088	*
Mercury	-29651-10-23 01:40 J	-9108309.58	-9108309.43	-9108309.29	0.0292	0.0153	
Mercury	-29650-01-19 22:19 J	-9108220.74	-9108220.57	-9108220.40	0.0292	0.0016	
Mercury	-29650-04-18 18:43 J	-9108131.85	-9108131.72	-9108131.59	0.0292	0.0178	
Mars	-29647-06-19 08:09 J	-9106974.16	-9106974.16	-9106974.14	0.0289	0.0289	
Venus	-29641-02-10 10:04 J	-9104912.14	-9104912.08	-9104912.01	0.0276	0.0262	
Venus	-29641-09-26 14:09 J	-9104683.09	-9104682.91	-9104682.73	0.0274	0.0136	
Venus	-29640-05-13 16:33 J	-9104454.01	-9104453.81	-9104453.60	0.0273	0.0013	
Venus	-29640-12-28 17:45 J	-9104224.95	-9104224.76	-9104224.57	0.0272	0.0110	
Venus	-29639-08-14 17:31 J	-9103995.87	-9103995.77	-9103995.65	0.0271	0.0228	
Moon	-29637-05-06 07:40 J	-9103365.39	-9103365.18	-9103364.94	0.0269	0.0124	
Earth	-29637-05-06 09:07 J	-9103365.35	-9103365.12	-9103364.90	0.0269	0.0111	*
Mercury	-29636-02-09 14:09 J	-9103085.96	-9103085.91	-9103085.84	0.0268	0.0241	
Mercury	-29636-05-09 01:55 J	-9102997.54	-9102997.42	-9102997.30	0.0268	0.0138	
Mercury	-29636-08-05 13:26 J	-9102909.08	-9102908.94	-9102908.79	0.0268	0.0034	
Mercury	-29636-11-02 01:26 J	-9102820.58	-9102820.44	-9102820.30	0.0268	0.0073	
Mercury	-29635-01-29 13:26 J	-9102732.04	-9102731.94	-9102731.83	0.0268	0.0181	
Venus	-29626-10-18 05:59 J	-9099183.36	-9099183.25	-9099183.12	0.0284	0.0232	

Venus	-29625-06-04 03:21 J	-9098953.56	-9098953.36	-9098953.15	0.0286	0.0087
Venus	-29624-01-20 02:23 J	-9098723.61	-9098723.40	-9098723.19	0.0287	0.0063
Venus	-29624-09-07 02:52 J	-9098493.51	-9098493.38	-9098493.23	0.0288	0.0215
Earth	-29623-11-01 02:23 J	-9098073.56	-9098073.40	-9098073.21	0.0290	0.0205
Moon	-29623-11-01 05:45 J	-9098073.44	-9098073.26	-9098073.06	0.0290	0.0188 *
Mercury	-29621-03-10 23:59 J	-9097577.62	-9097577.50	-9097577.38	0.0291	0.0208
Mercury	-29621-06-07 20:52 J	-9097488.79	-9097488.63	-9097488.46	0.0291	0.0041
Mercury	-29621-09-04 17:31 J	-9097399.93	-9097399.77	-9097399.62	0.0292	0.0125
Mercury	-29621-12-02 13:11 J	-9097310.97	-9097310.95	-9097310.91	0.0292	0.0285
Venus	-29612-08-22 10:33 J	-9094126.14	-9094126.06	-9094125.96	0.0275	0.0247
Venus	-29611-04-08 14:23 J	-9093897.08	-9093896.90	-9093896.71	0.0274	0.0122
Venus	-29611-11-23 16:47 J	-9093668.01	-9093667.80	-9093667.59	0.0273	0.0004
Venus	-29610-07-10 17:45 J	-9093438.94	-9093438.76	-9093438.57	0.0272	0.0124
Venus	-29609-02-24 17:45 J	-9093209.85	-9093209.76	-9093209.66	0.0271	0.0242
Earth	-29608-05-01 06:14 J	-9092778.46	-9092778.24	-9092778.02	0.0269	0.0119
Moon	-29608-05-01 06:43 J	-9092778.43	-9092778.22	-9092778.00	0.0269	0.0111 *
Mercury	-29607-09-26 02:52 J	-9092265.48	-9092265.38	-9092265.27	0.0268	0.0178
Mercury	-29607-12-23 14:38 J	-9092177.03	-9092176.89	-9092176.76	0.0268	0.0074
Mercury	-29606-03-22 02:23 J	-9092088.54	-9092088.40	-9092088.26	0.0268	0.0032
Mercury	-29606-06-18 14:23 J	-9092000.02	-9091999.90	-9091999.78	0.0268	0.0140
Mercury	-29606-09-15 02:23 J	-9091911.44	-9091911.40	-9091911.34	0.0268	0.0249
Venus	-29596-04-29 09:07 J	-9088397.25	-9088397.12	-9088396.97	0.0284	0.0215
Venus	-29596-12-15 06:43 J	-9088167.43	-9088167.22	-9088167.01	0.0286	0.0070
Venus	-29595-08-02 06:14 J	-9087937.45	-9087937.24	-9087937.03	0.0287	0.0081
Venus	-29594-03-20 07:11 J	-9087707.32	-9087707.20	-9087707.07	0.0289	0.0233
Earth	-29593-11-08 10:19 J	-9087108.28	-9087108.07	-9087107.85	0.0291	0.0146
Moon	-29593-11-08 10:33 J	-9087108.25	-9087108.06	-9087107.85	0.0291	0.0163 *
Mercury	-29592-07-28 22:47 J	-9086845.62	-9086845.55	-9086845.47	0.0292	0.0260
Mercury	-29592-10-25 19:55 J	-9086756.83	-9086756.67	-9086756.50	0.0292	0.0090
Mercury	-29591-01-22 16:47 J	-9086667.97	-9086667.80	-9086667.64	0.0292	0.0077

Mercury	-29591-04-21 12:43 J	-9086579.06	-9086578.97	-9086578.87	0.0292	0.0240
Venus	-29582-03-04 17:45 J	-9083339.87	-9083339.76	-9083339.63	0.0276	0.0224
Venus	-29582-10-19 21:35 J	-9083110.80	-9083110.60	-9083110.41	0.0274	0.0099
Venus	-29581-06-04 23:45 J	-9082881.72	-9082881.51	-9082881.31	0.0273	0.0026
Venus	-29580-01-20 00:28 J	-9082652.65	-9082652.48	-9082652.30	0.0272	0.0146
Venus	-29580-09-06 00:14 J	-9082423.54	-9082423.49	-9082423.44	0.0271	0.0262
Moon	-29578-05-08 07:26 J	-9081814.37	-9081814.19	-9081814.00	0.0268	0.0176
Earth	-29578-05-08 10:47 J	-9081814.23	-9081814.05	-9081813.84	0.0268	0.0162 *
Mercury	-29577-02-13 05:59 J	-9081533.34	-9081533.25	-9081533.15	0.0268	0.0199
Mercury	-29577-05-11 17:45 J	-9081444.89	-9081444.76	-9081444.63	0.0268	0.0095
Mercury	-29577-08-08 05:31 J	-9081356.42	-9081356.27	-9081356.13	0.0268	0.0012
Mercury	-29577-11-04 17:16 J	-9081267.90	-9081267.78	-9081267.65	0.0268	0.0118
Mercury	-29576-02-01 05:31 J	-9081179.35	-9081179.27	-9081179.20	0.0268	0.0226
Mars	-29573-10-24 12:14 J	-9079818.25	-9079817.99	-9079817.73	0.0271	0.0092
Venus	-29567-11-09 14:38 J	-9077611.03	-9077610.89	-9077610.72	0.0285	0.0193
Venus	-29566-06-27 12:43 J	-9077381.19	-9077380.97	-9077380.76	0.0286	0.0046
Venus	-29565-02-12 11:59 J	-9077151.20	-9077151.00	-9077150.80	0.0288	0.0105
Venus	-29565-09-29 12:57 J	-9076921.05	-9076920.96	-9076920.86	0.0289	0.0257
Moon	-29564-11-02 05:59 J	-9076522.48	-9076522.25	-9076522.02	0.0291	0.0131
Earth	-29564-11-02 06:43 J	-9076522.42	-9076522.22	-9076521.99	0.0291	0.0147 *
Mercury	-29562-03-14 18:28 J	-9076024.87	-9076024.73	-9076024.57	0.0292	0.0145
Mercury	-29562-06-11 15:21 J	-9075936.03	-9075935.86	-9075935.69	0.0292	0.0024
Mercury	-29562-09-08 11:45 J	-9075847.14	-9075847.01	-9075846.88	0.0292	0.0187
Mars	-29559-11-12 12:28 J	-9074686.12	-9074685.98	-9074685.80	0.0289	0.0248
Jupiter	-29555-01-14 03:07 J	-9073527.81	-9073527.37	-9073526.93	0.0282	0.0013
Venus	-29553-09-13 18:14 J	-9072553.87	-9072553.74	-9072553.60	0.0275	0.0209
Venus	-29552-04-30 21:50 J	-9072324.79	-9072324.59	-9072324.39	0.0274	0.0084
Venus	-29552-12-15 23:45 J	-9072095.71	-9072095.51	-9072095.30	0.0272	0.0039
Venus	-29551-08-02 00:28 J	-9071866.65	-9071866.48	-9071866.32	0.0271	0.0160
Earth	-29549-05-02 07:55 J	-9071227.41	-9071227.17	-9071226.94	0.0269	0.0068

Moon	-29549-05-02 11:16 J	-9071227.26	-9071227.03	-9071226.79	0.0269	0.0058 *
Mercury	-29548-07-02 07:11 J	-9070801.26	-9070801.20	-9070801.14	0.0268	0.0239
Mercury	-29548-09-28 18:43 J	-9070712.84	-9070712.72	-9070712.60	0.0268	0.0136
Mercury	-29548-12-26 06:14 J	-9070624.38	-9070624.24	-9070624.10	0.0268	0.0032
Mercury	-29547-03-24 18:14 J	-9070535.88	-9070535.74	-9070535.61	0.0268	0.0075
Mercury	-29547-06-21 05:59 J	-9070447.35	-9070447.25	-9070447.14	0.0268	0.0183
Venus	-29537-05-21 16:47 J	-9066824.97	-9066824.80	-9066824.63	0.0285	0.0177
Venus	-29536-01-06 14:38 J	-9066595.10	-9066594.89	-9066594.67	0.0286	0.0031
Venus	-29536-08-24 14:23 J	-9066365.09	-9066364.90	-9066364.70	0.0288	0.0121
Venus	-29535-04-11 15:35 J	-9066134.91	-9066134.85	-9066134.77	0.0289	0.0273
Earth	-29534-11-10 11:45 J	-9065557.18	-9065557.01	-9065556.82	0.0291	0.0201
Moon	-29534-11-10 15:21 J	-9065557.01	-9065556.86	-9065556.69	0.0291	0.0218 *
Mercury	-29533-07-31 16:33 J	-9065292.92	-9065292.81	-9065292.68	0.0292	0.0202
Mercury	-29533-10-28 13:40 J	-9065204.10	-9065203.93	-9065203.76	0.0292	0.0033
Mercury	-29532-01-25 10:19 J	-9065115.22	-9065115.07	-9065114.92	0.0292	0.0134
Venus	-29523-03-27 00:14 J	-9061767.63	-9061767.49	-9061767.33	0.0275	0.0187
Venus	-29523-11-11 03:35 J	-9061538.55	-9061538.35	-9061538.14	0.0274	0.0062
Venus	-29522-06-28 05:31 J	-9061309.47	-9061309.27	-9061309.07	0.0273	0.0061
Venus	-29521-02-12 06:14 J	-9061080.39	-9061080.24	-9061080.08	0.0271	0.0180
Moon	-29519-05-09 10:19 J	-9060263.19	-9060263.07	-9060262.94	0.0268	0.0223
Earth	-29519-05-09 11:02 J	-9060263.17	-9060263.04	-9060262.87	0.0268	0.0210 *
Mercury	-29519-11-19 10:04 J	-9060069.10	-9060069.08	-9060069.04	0.0268	0.0261
Mercury	-29518-02-15 21:35 J	-9059980.71	-9059980.60	-9059980.48	0.0268	0.0158
Mercury	-29518-05-15 09:21 J	-9059892.25	-9059892.11	-9059891.97	0.0268	0.0054
Mercury	-29518-08-11 21:07 J	-9059803.76	-9059803.62	-9059803.48	0.0268	0.0052
Mercury	-29518-11-08 08:52 J	-9059715.24	-9059715.13	-9059715.01	0.0267	0.0160
Venus	-29508-12-01 22:19 J	-9056038.74	-9056038.57	-9056038.38	0.0285	0.0154
Venus	-29507-07-19 20:38 J	-9055808.86	-9055808.64	-9055808.43	0.0287	0.0007
Venus	-29506-03-06 20:09 J	-9055578.84	-9055578.66	-9055578.46	0.0288	0.0145
Moon	-29505-11-03 05:16 J	-9054971.52	-9054971.28	-9054971.04	0.0291	0.0077

Earth	-29505-11-03 08:38 J	-9054971.37	-9054971.14	-9054970.90	0.0291	0.0093 *
Mercury	-29504-12-18 15:07 J	-9054560.94	-9054560.87	-9054560.78	0.0292	0.0257
Mercury	-29503-03-17 12:28 J	-9054472.14	-9054471.98	-9054471.82	0.0292	0.0086
Mercury	-29503-06-14 09:07 J	-9054383.28	-9054383.12	-9054382.96	0.0292	0.0081
Mercury	-29503-09-11 05:16 J	-9054294.37	-9054294.28	-9054294.19	0.0292	0.0243
Venus	-29494-10-07 00:43 J	-9050981.63	-9050981.47	-9050981.31	0.0275	0.0172
Venus	-29493-05-23 03:50 J	-9050752.54	-9050752.34	-9050752.13	0.0273	0.0048
Venus	-29492-01-07 05:31 J	-9050523.47	-9050523.27	-9050523.07	0.0272	0.0075
Venus	-29492-08-24 05:45 J	-9050294.39	-9050294.26	-9050294.11	0.0271	0.0194
Earth	-29490-05-04 08:09 J	-9049676.40	-9049676.16	-9049675.91	0.0269	0.0021
Moon	-29490-05-04 09:50 J	-9049676.34	-9049676.09	-9049675.84	0.0269	0.0009 *
Mercury	-29489-07-04 22:33 J	-9049248.65	-9049248.56	-9049248.46	0.0268	0.0200
Mercury	-29489-10-01 10:04 J	-9049160.21	-9049160.08	-9049159.94	0.0268	0.0096
Mercury	-29489-12-28 21:50 J	-9049071.73	-9049071.59	-9049071.45	0.0268	0.0009
Mercury	-29488-03-27 09:50 J	-9048983.22	-9048983.09	-9048982.97	0.0268	0.0116
Mercury	-29488-06-23 21:50 J	-9048894.67	-9048894.59	-9048894.51	0.0268	0.0224
Mars	-29484-03-19 08:38 J	-9047530.39	-9047530.14	-9047529.87	0.0271	0.0081
Venus	-29479-10-27 02:38 J	-9045482.41	-9045482.39	-9045482.37	0.0283	0.0281
Venus	-29478-06-13 22:47 J	-9045252.73	-9045252.55	-9045252.35	0.0285	0.0140
Venus	-29477-01-29 21:21 J	-9045022.83	-9045022.61	-9045022.40	0.0286	0.0009
Venus	-29477-09-15 21:21 J	-9044792.79	-9044792.61	-9044792.43	0.0288	0.0159
Earth	-29475-11-11 11:02 J	-9044006.15	-9044006.04	-9044005.91	0.0291	0.0251
Moon	-29475-11-11 12:57 J	-9044006.07	-9044005.96	-9044005.86	0.0291	0.0265 *
Mercury	-29474-08-04 09:50 J	-9043740.23	-9043740.09	-9043739.94	0.0292	0.0148
Mercury	-29474-11-01 06:43 J	-9043651.39	-9043651.22	-9043651.05	0.0292	0.0022
Mercury	-29473-01-29 03:07 J	-9043562.49	-9043562.37	-9043562.24	0.0292	0.0186
Mars	-29470-04-07 15:07 J	-9042398.07	-9042397.87	-9042397.64	0.0290	0.0209
Venus	-29465-09-01 01:40 J	-9040424.43	-9040424.43	-9040424.43	0.0277	0.0277
Venus	-29464-04-18 05:59 J	-9040195.41	-9040195.25	-9040195.06	0.0275	0.0152
Venus	-29464-12-03 09:21 J	-9039966.32	-9039966.11	-9039965.90	0.0274	0.0026



Venus	-29463-07-20 10:47 J	-9039737.24	-9039737.05	-9039736.85	0.0272	0.0096
Venus	-29462-03-06 11:16 J	-9039508.15	-9039508.03	-9039507.90	0.0271	0.0214
Moon	-29461-04-28 13:11 J	-9039089.07	-9039088.95	-9039088.81	0.0269	0.0224
Earth	-29461-04-28 15:07 J	-9039088.98	-9039088.87	-9039088.74	0.0269	0.0232 *
Earth	-29460-05-10 10:47 J	-9038712.11	-9038712.05	-9038711.97	0.0268	0.0255
Mercury	-29460-11-22 01:40 J	-9038516.51	-9038516.43	-9038516.36	0.0268	0.0222
Mercury	-29459-02-18 12:57 J	-9038428.08	-9038427.96	-9038427.83	0.0268	0.0120
Mercury	-29459-05-18 00:43 J	-9038339.61	-9038339.47	-9038339.33	0.0267	0.0015
Mercury	-29459-08-14 12:28 J	-9038251.11	-9038250.98	-9038250.84	0.0267	0.0093
Mercury	-29459-11-11 00:28 J	-9038162.57	-9038162.48	-9038162.38	0.0267	0.0200
Venus	-29449-05-08 08:38 J	-9034696.22	-9034696.14	-9034696.04	0.0284	0.0258
Venus	-29449-12-24 05:02 J	-9034466.48	-9034466.29	-9034466.09	0.0285	0.0116
Venus	-29448-08-11 03:35 J	-9034236.56	-9034236.35	-9034236.13	0.0287	0.0032
Venus	-29447-03-29 03:21 J	-9034006.51	-9034006.36	-9034006.18	0.0288	0.0185
Moon	-29446-11-05 07:40 J	-9033420.42	-9033420.18	-9033419.94	0.0291	0.0027
Earth	-29446-11-05 08:52 J	-9033420.37	-9033420.13	-9033419.88	0.0291	0.0042 *
Mercury	-29445-12-21 08:38 J	-9033008.26	-9033008.14	-9033008.01	0.0292	0.0201
Mercury	-29444-03-20 05:45 J	-9032919.43	-9032919.26	-9032919.09	0.0292	0.0032
Mercury	-29444-06-17 02:23 J	-9032830.55	-9032830.40	-9032830.25	0.0292	0.0135
Venus	-29435-03-14 02:09 J	-9029638.47	-9029638.41	-9029638.34	0.0276	0.0261
Venus	-29435-10-29 06:28 J	-9029409.40	-9029409.23	-9029409.04	0.0274	0.0136
Venus	-29434-06-15 09:35 J	-9029180.31	-9029180.10	-9029179.90	0.0273	0.0013
Venus	-29433-01-30 11:02 J	-9028951.23	-9028951.04	-9028950.85	0.0272	0.0110
Venus	-29433-09-15 11:02 J	-9028722.15	-9028722.04	-9028721.93	0.0271	0.0227
Moon	-29431-05-05 05:16 J	-9028125.53	-9028125.28	-9028125.03	0.0269	0.0041
Earth	-29431-05-05 08:09 J	-9028125.40	-9028125.16	-9028124.91	0.0269	0.0026 *
Mercury	-29430-04-11 02:38 J	-9027784.41	-9027784.39	-9027784.36	0.0268	0.0262
Mercury	-29430-07-08 13:55 J	-9027696.02	-9027695.92	-9027695.80	0.0268	0.0161
Mercury	-29430-10-05 01:40 J	-9027607.57	-9027607.43	-9027607.29	0.0268	0.0056
Mercury	-29429-01-01 13:11 J	-9027519.08	-9027518.95	-9027518.80	0.0268	0.0050

Mercury	-29429-03-30 01:11 J	-9027430.56	-9027430.45	-9027430.33	0.0267	0.0157
Mercury	-29429-06-26 13:11 J	-9027341.96	-9027341.95	-9027341.93	0.0267	0.0266
Venus	-29420-11-18 08:09 J	-9023910.26	-9023910.16	-9023910.04	0.0284	0.0245
Venus	-29419-07-06 05:02 J	-9023680.49	-9023680.29	-9023680.08	0.0285	0.0103
Venus	-29418-02-21 03:35 J	-9023450.56	-9023450.35	-9023450.13	0.0287	0.0046
Venus	-29418-10-09 03:50 J	-9023220.49	-9023220.34	-9023220.18	0.0288	0.0197
Mercury	-29415-05-10 05:31 J	-9022276.33	-9022276.27	-9022276.20	0.0292	0.0268
Mercury	-29415-08-07 02:38 J	-9022187.54	-9022187.39	-9022187.22	0.0292	0.0098
Mercury	-29415-11-03 23:31 J	-9022098.68	-9022098.52	-9022098.35	0.0292	0.0072
Mercury	-29414-01-31 19:55 J	-9022009.76	-9022009.67	-9022009.57	0.0292	0.0236
Venus	-29406-09-24 06:57 J	-9018852.31	-9018852.21	-9018852.11	0.0277	0.0241
Venus	-29405-05-10 11:16 J	-9018623.21	-9018623.03	-9018622.83	0.0275	0.0115
Venus	-29405-12-25 14:23 J	-9018394.11	-9018393.90	-9018393.69	0.0274	0.0010
Venus	-29404-08-11 15:35 J	-9018165.02	-9018164.85	-9018164.66	0.0272	0.0131
Venus	-29403-03-28 15:35 J	-9017935.92	-9017935.85	-9017935.76	0.0271	0.0248
Earth	-29402-04-30 14:38 J	-9017538.06	-9017537.89	-9017537.71	0.0269	0.0187
Moon	-29402-04-30 17:31 J	-9017537.95	-9017537.77	-9017537.59	0.0269	0.0174 *
Mercury	-29401-11-24 17:02 J	-9016963.89	-9016963.79	-9016963.69	0.0268	0.0184
Mercury	-29400-02-21 04:19 J	-9016875.45	-9016875.32	-9016875.18	0.0268	0.0081
Mercury	-29400-05-20 16:04 J	-9016786.97	-9016786.83	-9016786.68	0.0267	0.0027
Mercury	-29400-08-17 04:04 J	-9016698.46	-9016698.33	-9016698.21	0.0267	0.0132
Mercury	-29400-11-13 15:50 J	-9016609.89	-9016609.84	-9016609.77	0.0267	0.0242
Mars	-29396-08-12 22:47 J	-9015241.82	-9015241.55	-9015241.27	0.0270	0.0036
Venus	-29390-05-31 14:52 J	-9013124.00	-9013123.88	-9013123.74	0.0284	0.0221
Venus	-29389-01-16 11:45 J	-9012894.22	-9012894.01	-9012893.80	0.0286	0.0078
Venus	-29389-09-02 10:19 J	-9012664.28	-9012664.07	-9012663.86	0.0287	0.0071
Venus	-29388-04-20 10:33 J	-9012434.19	-9012434.06	-9012433.92	0.0288	0.0223
Earth	-29387-11-06 08:09 J	-9011869.41	-9011869.16	-9011868.91	0.0291	0.0007
Moon	-29387-11-06 11:16 J	-9011869.28	-9011869.03	-9011868.79	0.0291	0.0024 *
Mercury	-29386-12-25 01:55 J	-9011455.56	-9011455.42	-9011455.27	0.0292	0.0148

Mercury	-29385-03-22 22:47 J	-9011366.71	-9011366.55	-9011366.38	0.0292	0.0023
Mercury	-29385-06-19 19:11 J	-9011277.82	-9011277.70	-9011277.56	0.0292	0.0187
Mars	-29382-08-31 10:33 J	-9010110.29	-9010110.06	-9010109.80	0.0290	0.0180
Venus	-29376-04-05 08:23 J	-9008066.27	-9008066.15	-9008066.03	0.0276	0.0225
Venus	-29376-11-20 12:28 J	-9007837.17	-9007836.98	-9007836.78	0.0274	0.0100
Venus	-29375-07-07 15:07 J	-9007608.07	-9007607.87	-9007607.66	0.0273	0.0025
Venus	-29374-02-21 16:19 J	-9007378.99	-9007378.82	-9007378.64	0.0272	0.0145
Venus	-29374-10-08 16:04 J	-9007149.87	-9007149.83	-9007149.77	0.0270	0.0261
Moon	-29372-05-06 05:31 J	-9006574.49	-9006574.27	-9006574.04	0.0268	0.0090
Earth	-29372-05-06 08:38 J	-9006574.38	-9006574.14	-9006573.91	0.0268	0.0074 *
Mercury	-29371-04-13 17:59 J	-9006231.82	-9006231.75	-9006231.67	0.0268	0.0223
Mercury	-29371-07-11 05:31 J	-9006143.39	-9006143.27	-9006143.14	0.0267	0.0120
Mercury	-29371-10-07 17:16 J	-9006054.92	-9006054.78	-9006054.64	0.0267	0.0017
Mercury	-29370-01-04 04:47 J	-9005966.43	-9005966.30	-9005966.16	0.0267	0.0092
Mercury	-29370-04-02 17:02 J	-9005877.89	-9005877.79	-9005877.70	0.0267	0.0199
Venus	-29361-12-10 14:23 J	-9002338.04	-9002337.90	-9002337.75	0.0284	0.0208
Venus	-29360-07-28 11:16 J	-9002108.23	-9002108.03	-9002107.81	0.0285	0.0065
Venus	-29359-03-15 10:04 J	-9001878.28	-9001878.08	-9001877.86	0.0287	0.0085
Venus	-29359-10-31 10:47 J	-9001648.17	-9001648.05	-9001647.92	0.0288	0.0235
Moon	-29358-10-30 16:47 J	-9001283.85	-9001283.80	-9001283.73	0.0290	0.0280
Mercury	-29356-05-12 22:33 J	-9000723.67	-9000723.56	-9000723.44	0.0292	0.0216
Mercury	-29356-08-09 19:40 J	-9000634.84	-9000634.68	-9000634.51	0.0292	0.0046
Mercury	-29356-11-06 16:33 J	-9000545.96	-9000545.81	-9000545.66	0.0292	0.0123
Mercury	-29355-02-03 12:28 J	-9000457.00	-9000456.98	-9000456.94	0.0292	0.0287
Venus	-29347-10-16 12:14 J	-8997280.12	-8997279.99	-8997279.84	0.0276	0.0205
Venus	-29346-06-02 16:47 J	-8997051.00	-8997050.80	-8997050.60	0.0275	0.0078
Venus	-29345-01-17 19:40 J	-8996821.89	-8996821.68	-8996821.48	0.0273	0.0046
Venus	-29345-09-02 20:38 J	-8996592.80	-8996592.64	-8996592.47	0.0272	0.0166
Earth	-29343-05-01 14:23 J	-8995987.09	-8995986.90	-8995986.68	0.0269	0.0142
Moon	-29343-05-01 17:31 J	-8995986.99	-8995986.77	-8995986.55	0.0269	0.0126 *

Mercury	-29342-08-31 21:07 J	-8995499.67	-8995499.62	-8995499.57	0.0268	0.0247
Mercury	-29342-11-28 08:23 J	-8995411.27	-8995411.15	-8995411.03	0.0268	0.0144
Mercury	-29341-02-24 19:55 J	-8995322.81	-8995322.67	-8995322.53	0.0268	0.0040
Mercury	-29341-05-23 07:40 J	-8995234.31	-8995234.18	-8995234.04	0.0267	0.0067
Mercury	-29341-08-19 19:40 J	-8995145.79	-8995145.68	-8995145.57	0.0267	0.0174
Venus	-29331-06-22 22:19 J	-8991551.73	-8991551.57	-8991551.40	0.0284	0.0182
Venus	-29330-02-07 19:11 J	-8991321.91	-8991321.70	-8991321.48	0.0286	0.0038
Venus	-29330-09-25 17:59 J	-8991091.94	-8991091.75	-8991091.55	0.0287	0.0112
Venus	-29329-05-12 18:28 J	-8990861.81	-8990861.73	-8990861.63	0.0289	0.0263
Earth	-29328-11-07 08:52 J	-8990318.37	-8990318.13	-8990317.88	0.0291	0.0059
Moon	-29328-11-07 11:45 J	-8990318.25	-8990318.01	-8990317.76	0.0291	0.0073 *
Mercury	-29327-09-29 22:04 J	-8989991.65	-8989991.58	-8989991.50	0.0292	0.0264
Mercury	-29327-12-27 19:26 J	-8989902.85	-8989902.69	-8989902.53	0.0292	0.0092
Mercury	-29326-03-26 16:19 J	-8989813.98	-8989813.82	-8989813.66	0.0292	0.0077
Mercury	-29326-06-23 12:28 J	-8989725.07	-8989724.98	-8989724.88	0.0292	0.0242
Venus	-29317-04-27 14:38 J	-8986494.04	-8986493.89	-8986493.73	0.0276	0.0188
Venus	-29317-12-12 18:43 J	-8986264.92	-8986264.72	-8986264.52	0.0274	0.0062
Venus	-29316-07-29 21:07 J	-8986035.82	-8986035.62	-8986035.42	0.0273	0.0061
Venus	-29315-03-15 21:50 J	-8985806.73	-8985806.59	-8985806.42	0.0271	0.0181
Earth	-29313-05-07 09:21 J	-8985023.32	-8985023.11	-8985022.89	0.0268	0.0122
Moon	-29313-05-07 11:16 J	-8985023.23	-8985023.03	-8985022.82	0.0268	0.0137 *
Mercury	-29312-04-16 09:50 J	-8984679.19	-8984679.09	-8984678.99	0.0268	0.0181
Mercury	-29312-07-13 21:21 J	-8984590.75	-8984590.61	-8984590.48	0.0267	0.0078
Mercury	-29312-10-10 08:52 J	-8984502.27	-8984502.13	-8984501.98	0.0267	0.0029
Mercury	-29311-01-06 20:52 J	-8984413.76	-8984413.63	-8984413.51	0.0267	0.0134
Mercury	-29311-04-05 08:52 J	-8984325.19	-8984325.13	-8984325.07	0.0267	0.0243
Mars	-29307-01-05 22:04 J	-8982953.85	-8982953.58	-8982953.30	0.0270	0.0020
Venus	-29301-01-02 21:35 J	-8980765.77	-8980765.60	-8980765.43	0.0284	0.0169
Venus	-29301-08-19 18:43 J	-8980535.93	-8980535.72	-8980535.50	0.0286	0.0025
Venus	-29300-04-06 17:45 J	-8980305.95	-8980305.76	-8980305.56	0.0287	0.0125

Venus	-29300-11-22 18:28 J	-8980075.78	-8980075.73	-8980075.66	0.0288	0.0275
Moon	-29299-10-31 19:11 J	-8979732.83	-8979732.70	-8979732.55	0.0290	0.0234
Earth	-29299-10-31 21:07 J	-8979732.75	-8979732.62	-8979732.49	0.0290	0.0246 *
Mercury	-29297-05-15 15:50 J	-8979170.98	-8979170.84	-8979170.69	0.0292	0.0161
Mercury	-29297-08-12 12:57 J	-8979082.13	-8979081.96	-8979081.79	0.0292	0.0012
Mercury	-29297-11-09 09:35 J	-8978993.23	-8978993.10	-8978992.96	0.0292	0.0176
Mars	-29293-01-23 23:16 J	-8977822.79	-8977822.53	-8977822.26	0.0290	0.0156
Venus	-29288-11-07 18:28 J	-8975707.89	-8975707.73	-8975707.56	0.0276	0.0167
Venus	-29287-06-24 22:33 J	-8975478.76	-8975478.56	-8975478.35	0.0275	0.0042
Venus	-29286-02-09 01:11 J	-8975249.64	-8975249.45	-8975249.24	0.0273	0.0083
Venus	-29286-09-26 02:23 J	-8975020.54	-8975020.40	-8975020.26	0.0272	0.0201
Moon	-29284-05-02 14:09 J	-8974436.15	-8974435.91	-8974435.67	0.0269	0.0079
Earth	-29284-05-02 15:50 J	-8974436.07	-8974435.84	-8974435.61	0.0269	0.0093 *
Mercury	-29283-09-03 12:43 J	-8973947.06	-8973946.97	-8973946.88	0.0268	0.0206
Mercury	-29283-12-01 00:14 J	-8973858.62	-8973858.49	-8973858.36	0.0268	0.0103
Mercury	-29282-02-27 11:45 J	-8973770.15	-8973770.01	-8973769.87	0.0268	0.0005
Mercury	-29282-05-26 23:31 J	-8973681.65	-8973681.52	-8973681.39	0.0267	0.0110
Mercury	-29282-08-23 11:31 J	-8973593.10	-8973593.02	-8973592.94	0.0267	0.0218
Venus	-29273-11-27 11:02 J	-8970209.05	-8970209.04	-8970209.01	0.0283	0.0281
Venus	-29272-07-15 06:28 J	-8969979.41	-8969979.23	-8969979.04	0.0284	0.0142
Venus	-29271-03-02 03:50 J	-8969749.56	-8969749.34	-8969749.12	0.0286	0.0004
Venus	-29271-10-18 02:38 J	-8969519.56	-8969519.39	-8969519.19	0.0287	0.0154
Moon	-29269-11-08 09:07 J	-8968767.34	-8968767.12	-8968766.88	0.0291	0.0123
Earth	-29269-11-08 11:31 J	-8968767.25	-8968767.02	-8968766.80	0.0291	0.0114 *
Mercury	-29268-10-02 16:04 J	-8968438.95	-8968438.83	-8968438.70	0.0292	0.0205
Mercury	-29268-12-30 13:26 J	-8968350.11	-8968349.94	-8968349.77	0.0292	0.0034
Mercury	-29267-03-29 10:04 J	-8968261.23	-8968261.08	-8968260.93	0.0293	0.0135
Venus	-29259-10-03 16:19 J	-8965150.84	-8965150.82	-8965150.80	0.0277	0.0275
Venus	-29258-05-20 21:35 J	-8964921.76	-8964921.60	-8964921.41	0.0275	0.0150
Venus	-29257-01-05 01:40 J	-8964692.64	-8964692.43	-8964692.22	0.0274	0.0024

Venus	-29257-08-21 03:50 J	-8964463.53	-8964463.34	-8964463.14	0.0273	0.0098
Venus	-29256-04-07 04:33 J	-8964234.43	-8964234.31	-8964234.18	0.0271	0.0216
Earth	-29254-05-09 11:59 J	-8963472.18	-8963472.00	-8963471.81	0.0268	0.0173
Moon	-29254-05-09 15:21 J	-8963472.02	-8963471.86	-8963471.67	0.0268	0.0188 *
Mercury	-29253-01-21 14:23 J	-8963214.95	-8963214.90	-8963214.84	0.0268	0.0240
Mercury	-29253-04-19 01:40 J	-8963126.54	-8963126.43	-8963126.30	0.0267	0.0138
Mercury	-29253-07-16 13:26 J	-8963038.08	-8963037.94	-8963037.80	0.0267	0.0033
Mercury	-29253-10-13 01:11 J	-8962949.59	-8962949.45	-8962949.32	0.0267	0.0073
Mercury	-29252-01-09 12:57 J	-8962861.06	-8962860.96	-8962860.85	0.0267	0.0181
Venus	-29243-06-09 11:16 J	-8959423.09	-8959423.03	-8959422.95	0.0283	0.0267
Venus	-29242-01-25 06:57 J	-8959193.40	-8959193.21	-8959193.02	0.0284	0.0127
Venus	-29242-09-12 04:19 J	-8958963.54	-8958963.32	-8958963.11	0.0286	0.0018
Venus	-29241-04-29 03:21 J	-8958733.53	-8958733.36	-8958733.18	0.0287	0.0168
Earth	-29240-11-02 00:43 J	-8958181.66	-8958181.47	-8958181.28	0.0290	0.0190
Moon	-29240-11-02 03:35 J	-8958181.54	-8958181.35	-8958181.16	0.0290	0.0182 *
Mercury	-29238-02-19 12:43 J	-8957707.02	-8957706.97	-8957706.90	0.0292	0.0272
Mercury	-29238-05-19 10:19 J	-8957618.23	-8957618.07	-8957617.91	0.0292	0.0099
Mercury	-29238-08-16 07:11 J	-8957529.36	-8957529.20	-8957529.04	0.0292	0.0070
Mercury	-29238-11-13 03:21 J	-8957440.45	-8957440.36	-8957440.25	0.0292	0.0236
Venus	-29229-04-14 19:40 J	-8954364.76	-8954364.68	-8954364.60	0.0278	0.0256
Venus	-29229-11-30 01:11 J	-8954135.63	-8954135.45	-8954135.26	0.0276	0.0129
Venus	-29228-07-17 05:16 J	-8953906.49	-8953906.28	-8953906.07	0.0275	0.0004
Venus	-29227-03-03 07:40 J	-8953677.36	-8953677.18	-8953676.99	0.0273	0.0120
Venus	-29227-10-18 08:38 J	-8953448.24	-8953448.14	-8953448.04	0.0272	0.0237
Moon	-29225-05-03 14:38 J	-8952885.12	-8952884.89	-8952884.64	0.0269	0.0030
Earth	-29225-05-03 18:14 J	-8952884.98	-8952884.74	-8952884.50	0.0269	0.0044 *
Mercury	-29224-06-09 17:16 J	-8952482.79	-8952482.78	-8952482.76	0.0268	0.0266
Mercury	-29224-09-06 04:33 J	-8952394.41	-8952394.31	-8952394.19	0.0268	0.0163
Mercury	-29224-12-03 16:04 J	-8952305.96	-8952305.83	-8952305.69	0.0268	0.0059
Mercury	-29223-03-02 03:50 J	-8952217.48	-8952217.34	-8952217.20	0.0268	0.0048

Mercury	-29223-05-29 15:50 J	-8952128.96	-8952128.84	-8952128.73	0.0268	0.0156
Mercury	-29223-08-26 03:50 J	-8952040.36	-8952040.34	-8952040.32	0.0267	0.0265
Mars	-29219-06-02 01:26 J	-8950664.71	-8950664.44	-8950664.16	0.0270	0.0040
Venus	-29214-12-20 20:52 J	-8948636.73	-8948636.63	-8948636.51	0.0283	0.0240
Venus	-29213-08-06 16:33 J	-8948407.01	-8948406.81	-8948406.60	0.0284	0.0100
Venus	-29212-03-24 14:09 J	-8948177.12	-8948176.91	-8948176.69	0.0286	0.0047
Venus	-29212-11-09 13:26 J	-8947947.09	-8947946.94	-8947946.78	0.0288	0.0197
Moon	-29210-11-10 12:57 J	-8947216.15	-8947215.96	-8947215.76	0.0291	0.0179
Earth	-29210-11-10 16:33 J	-8947216.00	-8947215.81	-8947215.61	0.0291	0.0173 *
Mercury	-29209-10-05 10:47 J	-8946886.20	-8946886.05	-8946885.90	0.0292	0.0140
Mercury	-29208-01-02 07:55 J	-8946797.34	-8946797.17	-8946797.00	0.0292	0.0031
Mercury	-29208-04-01 04:19 J	-8946708.44	-8946708.32	-8946708.19	0.0293	0.0197
Mars	-29205-06-18 16:19 J	-8945534.11	-8945533.82	-8945533.52	0.0290	0.0103
Venus	-29200-10-26 00:14 J	-8943578.59	-8943578.49	-8943578.37	0.0277	0.0236
Venus	-29199-06-12 05:45 J	-8943349.45	-8943349.26	-8943349.07	0.0275	0.0109
Venus	-29198-01-27 09:35 J	-8943120.31	-8943120.10	-8943119.89	0.0274	0.0015
Venus	-29198-09-13 11:31 J	-8942891.20	-8942891.02	-8942890.84	0.0272	0.0137
Venus	-29197-04-29 11:59 J	-8942662.06	-8942662.00	-8942661.92	0.0271	0.0253
Earth	-29196-04-28 20:52 J	-8942297.67	-8942297.63	-8942297.58	0.0270	0.0264
Moon	-29196-04-29 00:14 J	-8942297.56	-8942297.49	-8942297.39	0.0270	0.0251
Moon	-29195-05-10 16:33 J	-8941920.92	-8941920.81	-8941920.69	0.0268	0.0237
Earth	-29195-05-10 16:33 J	-8941920.92	-8941920.81	-8941920.67	0.0268	0.0228 *
Mercury	-29194-01-24 06:43 J	-8941662.31	-8941662.22	-8941662.12	0.0268	0.0194
Mercury	-29194-04-22 18:14 J	-8941573.87	-8941573.74	-8941573.61	0.0267	0.0090
Mercury	-29194-07-20 05:45 J	-8941485.40	-8941485.26	-8941485.11	0.0267	0.0018
Mercury	-29194-10-16 17:45 J	-8941396.89	-8941396.76	-8941396.64	0.0267	0.0123
Mercury	-29193-01-13 05:31 J	-8941308.33	-8941308.27	-8941308.19	0.0267	0.0231
Venus	-29184-07-01 22:19 J	-8937850.69	-8937850.57	-8937850.43	0.0283	0.0224
Venus	-29183-02-16 17:59 J	-8937620.95	-8937620.75	-8937620.54	0.0284	0.0083
Venus	-29183-10-04 15:35 J	-8937391.06	-8937390.85	-8937390.64	0.0286	0.0063

Venus	-29182-05-22 14:52 J	-8937161.01	-8937160.88	-8937160.72	0.0287	0.0212
Earth	-29181-11-03 07:11 J	-8936630.42	-8936630.20	-8936629.98	0.0290	0.0129
Moon	-29181-11-03 10:04 J	-8936630.30	-8936630.08	-8936629.84	0.0290	0.0122 *
Mercury	-29179-02-22 07:55 J	-8936154.29	-8936154.17	-8936154.04	0.0292	0.0204
Mercury	-29179-05-22 05:16 J	-8936065.45	-8936065.28	-8936065.11	0.0292	0.0033
Mercury	-29179-08-19 01:55 J	-8935976.57	-8935976.42	-8935976.27	0.0292	0.0135
Venus	-29170-05-08 03:35 J	-8932792.47	-8932792.35	-8932792.21	0.0278	0.0217
Venus	-29170-12-23 09:21 J	-8932563.31	-8932563.11	-8932562.91	0.0276	0.0089
Venus	-29169-08-08 13:11 J	-8932334.16	-8932333.95	-8932333.75	0.0275	0.0037
Venus	-29168-03-25 15:07 J	-8932105.03	-8932104.87	-8932104.70	0.0273	0.0158
Moon	-29166-05-05 21:50 J	-8931333.83	-8931333.59	-8931333.36	0.0269	0.0023
Earth	-29166-05-05 22:19 J	-8931333.81	-8931333.57	-8931333.32	0.0269	0.0011 *
Mercury	-29165-06-12 09:35 J	-8930930.18	-8930930.10	-8930930.02	0.0268	0.0220
Mercury	-29165-09-08 21:07 J	-8930841.75	-8930841.62	-8930841.50	0.0268	0.0116
Mercury	-29165-12-06 08:38 J	-8930753.28	-8930753.14	-8930753.00	0.0268	0.0011
Mercury	-29164-03-04 20:23 J	-8930664.78	-8930664.65	-8930664.52	0.0268	0.0097
Mercury	-29164-06-01 08:23 J	-8930576.24	-8930576.15	-8930576.06	0.0268	0.0205
Venus	-29154-01-12 08:52 J	-8927064.27	-8927064.13	-8927063.96	0.0283	0.0196
Venus	-29154-08-30 05:02 J	-8926834.50	-8926834.29	-8926834.08	0.0285	0.0054
Venus	-29153-04-16 02:52 J	-8926604.58	-8926604.38	-8926604.17	0.0286	0.0094
Venus	-29153-12-02 02:23 J	-8926374.50	-8926374.40	-8926374.27	0.0288	0.0243
Earth	-29151-11-12 01:40 J	-8925664.56	-8925664.43	-8925664.29	0.0291	0.0241
Moon	-29151-11-12 01:40 J	-8925664.55	-8925664.43	-8925664.29	0.0291	0.0245 *
Mercury	-29150-07-12 09:07 J	-8925422.21	-8925422.12	-8925422.01	0.0292	0.0239
Mercury	-29150-10-09 06:28 J	-8925333.39	-8925333.23	-8925333.06	0.0292	0.0067
Mercury	-29149-01-06 03:21 J	-8925244.51	-8925244.36	-8925244.20	0.0292	0.0103
Mercury	-29149-04-03 23:45 J	-8925155.57	-8925155.51	-8925155.44	0.0293	0.0267
Venus	-29141-11-17 09:50 J	-8922006.23	-8922006.09	-8922005.94	0.0277	0.0195
Venus	-29140-07-04 14:52 J	-8921777.08	-8921776.88	-8921776.67	0.0275	0.0069
Venus	-29139-02-18 18:28 J	-8921547.93	-8921547.73	-8921547.53	0.0274	0.0056



Venus	-29139-10-05 20:09 J	-8921318.81	-8921318.66	-8921318.50	0.0272	0.0176
Earth	-29137-04-30 02:52 J	-8920746.53	-8920746.38	-8920746.22	0.0270	0.0208
Moon	-29137-04-30 04:04 J	-8920746.49	-8920746.33	-8920746.14	0.0270	0.0194 *
Mercury	-29136-10-30 11:59 J	-8920198.05	-8920198.00	-8920197.94	0.0268	0.0247
Mercury	-29135-01-26 23:16 J	-8920109.64	-8920109.53	-8920109.41	0.0268	0.0145
Mercury	-29135-04-25 11:02 J	-8920021.18	-8920021.04	-8920020.90	0.0268	0.0040
Mercury	-29135-07-22 22:33 J	-8919932.69	-8919932.56	-8919932.42	0.0267	0.0067
Mercury	-29135-10-19 10:33 J	-8919844.17	-8919844.06	-8919843.95	0.0267	0.0175
Mars	-29131-10-26 19:26 J	-8918375.95	-8918375.69	-8918375.42	0.0270	0.0082
Venus	-29125-07-24 11:31 J	-8916278.18	-8916278.02	-8916277.85	0.0283	0.0178
Venus	-29124-03-11 07:26 J	-8916048.40	-8916048.19	-8916047.97	0.0285	0.0036
Venus	-29124-10-27 05:16 J	-8915818.47	-8915818.28	-8915818.07	0.0286	0.0111
Venus	-29123-06-14 05:02 J	-8915588.37	-8915588.29	-8915588.19	0.0288	0.0260
Moon	-29122-11-05 17:02 J	-8915079.04	-8915078.79	-8915078.54	0.0290	0.0056
Earth	-29122-11-05 17:45 J	-8915079.00	-8915078.76	-8915078.52	0.0290	0.0060 *
Mercury	-29120-02-25 04:04 J	-8914601.48	-8914601.33	-8914601.18	0.0292	0.0129
Mercury	-29120-05-25 00:57 J	-8914512.62	-8914512.46	-8914512.29	0.0292	0.0042
Mercury	-29120-08-21 21:35 J	-8914423.72	-8914423.60	-8914423.48	0.0292	0.0208
Mars	-29117-11-11 22:19 J	-8913245.88	-8913245.57	-8913245.26	0.0290	0.0059
Venus	-29111-05-30 12:57 J	-8911220.12	-8911219.96	-8911219.80	0.0277	0.0176
Venus	-29110-01-14 18:14 J	-8910990.94	-8910990.74	-8910990.53	0.0276	0.0048
Venus	-29110-08-31 21:50 J	-8910761.79	-8910761.59	-8910761.39	0.0274	0.0077
Venus	-29109-04-16 23:31 J	-8910532.65	-8910532.52	-8910532.37	0.0273	0.0197
Earth	-29107-05-07 04:04 J	-8909782.56	-8909782.33	-8909782.09	0.0270	0.0066
Moon	-29107-05-07 07:11 J	-8909782.43	-8909782.20	-8909781.97	0.0270	0.0080 *
Mercury	-29106-06-16 02:09 J	-8909377.51	-8909377.41	-8909377.30	0.0268	0.0171
Mercury	-29106-09-12 13:40 J	-8909289.07	-8909288.93	-8909288.79	0.0268	0.0066
Mercury	-29106-12-10 01:26 J	-8909200.58	-8909200.44	-8909200.30	0.0268	0.0041
Mercury	-29105-03-07 13:11 J	-8909112.07	-8909111.95	-8909111.83	0.0268	0.0148
Mercury	-29105-06-04 01:11 J	-8909023.48	-8909023.45	-8909023.41	0.0268	0.0258

Venus	-29095-02-03 23:02 J	-8905491.72	-8905491.54	-8905491.36	0.0283	0.0149
Venus	-29095-09-21 19:11 J	-8905261.91	-8905261.70	-8905261.48	0.0285	0.0007
Venus	-29094-05-09 17:31 J	-8905031.96	-8905031.77	-8905031.58	0.0287	0.0142
Mercury	-29091-07-15 05:45 J	-8903869.40	-8903869.26	-8903869.11	0.0292	0.0160
Mercury	-29091-10-12 02:52 J	-8903780.55	-8903780.38	-8903780.21	0.0292	0.0012
Mercury	-29090-01-08 23:31 J	-8903691.65	-8903691.52	-8903691.38	0.0292	0.0179
Venus	-29082-12-10 20:23 J	-8900433.83	-8900433.65	-8900433.48	0.0277	0.0153
Venus	-29081-07-27 01:11 J	-8900204.66	-8900204.45	-8900204.25	0.0275	0.0027
Venus	-29080-03-13 04:04 J	-8899975.52	-8899975.33	-8899975.13	0.0273	0.0098
Venus	-29080-10-28 05:45 J	-8899746.38	-8899746.26	-8899746.13	0.0272	0.0216
Moon	-29078-05-02 07:11 J	-8899195.40	-8899195.20	-8899194.97	0.0269	0.0134
Earth	-29078-05-02 10:33 J	-8899195.26	-8899195.06	-8899194.85	0.0269	0.0149 *
Mercury	-29077-11-02 05:02 J	-8898645.39	-8898645.29	-8898645.20	0.0268	0.0196
Mercury	-29076-01-29 16:19 J	-8898556.95	-8898556.82	-8898556.68	0.0268	0.0092
Mercury	-29076-04-28 04:04 J	-8898468.47	-8898468.33	-8898468.19	0.0268	0.0014
Mercury	-29076-07-25 15:50 J	-8898379.97	-8898379.84	-8898379.71	0.0267	0.0121
Mercury	-29076-10-22 03:50 J	-8898291.41	-8898291.34	-8898291.27	0.0267	0.0230
Venus	-29067-12-30 08:23 J	-8894935.22	-8894935.15	-8894935.09	0.0282	0.0267
Venus	-29066-08-17 02:23 J	-8894705.58	-8894705.40	-8894705.20	0.0283	0.0131
Venus	-29065-04-02 22:47 J	-8894475.76	-8894475.55	-8894475.33	0.0285	0.0014
Venus	-29065-11-18 21:07 J	-8894245.80	-8894245.62	-8894245.44	0.0287	0.0161
Moon	-29063-11-07 04:04 J	-8893527.58	-8893527.33	-8893527.08	0.0290	0.0019
Earth	-29063-11-07 07:40 J	-8893527.43	-8893527.18	-8893526.93	0.0290	0.0015 *
Mercury	-29062-12-02 03:35 J	-8893137.46	-8893137.35	-8893137.23	0.0292	0.0218
Mercury	-29061-02-29 00:57 J	-8893048.63	-8893048.46	-8893048.29	0.0292	0.0046
Mercury	-29061-05-27 21:50 J	-8892959.74	-8892959.59	-8892959.44	0.0292	0.0122
Mercury	-29061-08-24 17:59 J	-8892870.77	-8892870.75	-8892870.72	0.0292	0.0287
Venus	-29053-11-04 16:47 J	-8889876.87	-8889876.80	-8889876.73	0.0279	0.0262
Venus	-29052-06-21 23:31 J	-8889647.71	-8889647.52	-8889647.34	0.0277	0.0134
Venus	-29051-02-06 04:19 J	-8889418.52	-8889418.32	-8889418.11	0.0276	0.0008

Venus	-29051-09-23 07:26 J	-8889189.37	-8889189.19	-8889189.00	0.0274	0.0118
Venus	-29050-05-10 09:07 J	-8888960.22	-8888960.12	-8888960.01	0.0273	0.0237
Earth	-29048-05-08 11:31 J	-8888231.24	-8888231.02	-8888230.80	0.0270	0.0124
Moon	-29048-05-08 14:09 J	-8888231.11	-8888230.91	-8888230.69	0.0270	0.0138 *
Mercury	-29047-03-22 07:26 J	-8887913.26	-8887913.19	-8887913.11	0.0269	0.0225
Mercury	-29047-06-18 18:57 J	-8887824.83	-8887824.71	-8887824.58	0.0268	0.0120
Mercury	-29047-09-15 06:43 J	-8887736.37	-8887736.22	-8887736.08	0.0268	0.0017
Mercury	-29047-12-12 18:28 J	-8887647.87	-8887647.73	-8887647.60	0.0268	0.0094
Mercury	-29046-03-11 06:14 J	-8887559.33	-8887559.24	-8887559.14	0.0268	0.0202
Mars	-29042-03-23 10:19 J	-8886086.29	-8886086.07	-8886085.83	0.0270	0.0151
Venus	-29037-07-11 19:26 J	-8884148.79	-8884148.69	-8884148.57	0.0282	0.0240
Venus	-29036-02-26 14:23 J	-8883919.10	-8883918.90	-8883918.70	0.0284	0.0102
Venus	-29036-10-14 11:02 J	-8883689.25	-8883689.04	-8883688.82	0.0285	0.0043
Venus	-29035-06-01 09:35 J	-8883459.25	-8883459.10	-8883458.93	0.0287	0.0192
Earth	-29034-11-01 17:02 J	-8882940.90	-8882940.79	-8882940.67	0.0290	0.0256
Moon	-29034-11-01 20:52 J	-8882940.76	-8882940.63	-8882940.50	0.0290	0.0247 *
Mercury	-29032-04-20 05:45 J	-8882405.35	-8882405.26	-8882405.17	0.0292	0.0247
Mercury	-29032-07-18 03:07 J	-8882316.54	-8882316.37	-8882316.21	0.0292	0.0075
Mercury	-29032-10-14 23:59 J	-8882227.66	-8882227.50	-8882227.34	0.0292	0.0095
Mercury	-29031-01-11 20:09 J	-8882138.72	-8882138.66	-8882138.58	0.0292	0.0261
Mars	-29028-04-09 01:55 J	-8880955.73	-8880955.42	-8880955.10	0.0290	0.0037
Venus	-29023-05-18 00:57 J	-8879090.55	-8879090.46	-8879090.34	0.0278	0.0238
Venus	-29022-01-02 07:26 J	-8878861.38	-8878861.19	-8878861.00	0.0276	0.0110
Venus	-29022-08-19 11:59 J	-8878632.21	-8878632.00	-8878631.80	0.0275	0.0017
Venus	-29021-04-04 14:38 J	-8878403.07	-8878402.89	-8878402.71	0.0273	0.0139
Venus	-29021-11-19 15:50 J	-8878173.90	-8878173.84	-8878173.76	0.0272	0.0256
Moon	-29019-05-03 16:19 J	-8877644.04	-8877643.82	-8877643.59	0.0269	0.0073
Earth	-29019-05-03 18:57 J	-8877643.93	-8877643.71	-8877643.47	0.0269	0.0089 *
Mercury	-29018-08-09 10:33 J	-8877181.11	-8877181.06	-8877181.00	0.0268	0.0247
Mercury	-29018-11-05 22:04 J	-8877092.70	-8877092.58	-8877092.46	0.0268	0.0143

Mercury	-29017-02-02 09:35 J	-8877004.24	-8877004.10	-8877003.96	0.0268	0.0038
Mercury	-29017-04-30 21:07 J	-8876915.75	-8876915.62	-8876915.48	0.0268	0.0070
Mercury	-29017-07-28 09:07 J	-8876827.22	-8876827.12	-8876827.01	0.0267	0.0177
Venus	-29007-01-21 23:59 J	-8873362.62	-8873362.50	-8873362.35	0.0282	0.0221
Venus	-29007-09-08 18:57 J	-8873132.92	-8873132.71	-8873132.50	0.0284	0.0081
Venus	-29006-04-26 15:35 J	-8872903.06	-8872902.85	-8872902.64	0.0285	0.0064
Venus	-29006-12-12 14:09 J	-8872673.05	-8872672.91	-8872672.76	0.0287	0.0212
Moon	-29004-11-08 21:21 J	-8871975.83	-8871975.61	-8871975.38	0.0290	0.0099
Earth	-29004-11-08 23:45 J	-8871975.74	-8871975.51	-8871975.28	0.0290	0.0095 *
Mercury	-29003-12-05 01:26 J	-8871584.60	-8871584.44	-8871584.29	0.0292	0.0131
Mercury	-29002-03-03 22:19 J	-8871495.74	-8871495.57	-8871495.40	0.0292	0.0040
Mercury	-29002-05-31 18:43 J	-8871406.83	-8871406.72	-8871406.59	0.0292	0.0207

# 29TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 29th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-28994-11-28 04:19 J	-8868304.45	-8868304.32	-8868304.19	0.0278	0.0219		
Venus	-28993-07-14 10:33 J	-8868075.26	-8868075.06	-8868074.87	0.0277	0.0091		
Venus	-28992-02-28 14:52 J	-8867846.08	-8867845.88	-8867845.67	0.0275	0.0036		
Venus	-28992-10-15 17:31 J	-8867616.93	-8867616.77	-8867616.59	0.0274	0.0159		
Moon	-28989-05-09 17:31 J	-8866679.93	-8866679.77	-8866679.59	0.0269	0.0195		
Earth	-28989-05-09 19:26 J	-8866679.86	-8866679.69	-8866679.51	0.0269	0.0184 *		
Mercury	-28988-03-25 00:28 J	-8866360.58	-8866360.48	-8866360.37	0.0269	0.0173		

Mercury	-28988-06-21 11:59 J	-8866272.14	-8866272.00	-8866271.86	0.0268	0.0068
Mercury	-28988-09-17 23:31 J	-8866183.65	-8866183.52	-8866183.37	0.0268	0.0040
Mercury	-28988-12-15 11:31 J	-8866095.14	-8866095.02	-8866094.90	0.0268	0.0147
Mercury	-28987-03-13 23:31 J	-8866006.56	-8866006.52	-8866006.48	0.0268	0.0257
Mars	-28984-07-01 02:52 J	-8864801.56	-8864801.38	-8864801.20	0.0269	0.0207
Venus	-28978-08-04 11:02 J	-8862576.20	-8862576.04	-8862575.89	0.0282	0.0194
Venus	-28977-03-21 06:14 J	-8862346.45	-8862346.24	-8862346.03	0.0284	0.0053
Venus	-28977-11-06 03:35 J	-8862116.56	-8862116.35	-8862116.15	0.0286	0.0093
Venus	-28976-06-24 02:38 J	-8861886.50	-8861886.39	-8861886.27	0.0287	0.0241
Earth	-28975-11-03 09:07 J	-8861389.31	-8861389.12	-8861388.92	0.0290	0.0176
Moon	-28975-11-03 11:16 J	-8861389.24	-8861389.03	-8861388.82	0.0290	0.0169 *
Mercury	-28973-04-23 03:35 J	-8860852.50	-8860852.35	-8860852.21	0.0292	0.0158
Mercury	-28973-07-21 00:43 J	-8860763.64	-8860763.47	-8860763.30	0.0292	0.0013
Mercury	-28973-10-17 21:07 J	-8860674.74	-8860674.62	-8860674.48	0.0292	0.0182
Venus	-28964-06-09 13:26 J	-8857518.08	-8857517.94	-8857517.79	0.0278	0.0194
Venus	-28963-01-24 19:11 J	-8857288.89	-8857288.70	-8857288.49	0.0276	0.0067
Venus	-28963-09-10 23:16 J	-8857059.73	-8857059.53	-8857059.32	0.0274	0.0059
Venus	-28962-04-28 01:40 J	-8856830.58	-8856830.43	-8856830.27	0.0273	0.0180
Earth	-28960-05-05 04:19 J	-8856092.56	-8856092.32	-8856092.07	0.0269	0.0026
Moon	-28960-05-05 05:59 J	-8856092.49	-8856092.25	-8856092.02	0.0269	0.0012 *
Mercury	-28959-08-12 03:50 J	-8855628.44	-8855628.34	-8855628.25	0.0268	0.0193
Mercury	-28959-11-08 15:07 J	-8855540.00	-8855539.87	-8855539.73	0.0268	0.0089
Mercury	-28958-02-05 02:52 J	-8855451.52	-8855451.38	-8855451.24	0.0268	0.0018
Mercury	-28958-05-04 14:38 J	-8855363.02	-8855362.89	-8855362.77	0.0268	0.0125
Mercury	-28958-08-01 02:38 J	-8855274.46	-8855274.39	-8855274.33	0.0267	0.0234
Mars	-28954-08-17 18:28 J	-8853796.90	-8853796.73	-8853796.56	0.0270	0.0210
Venus	-28948-02-13 16:47 J	-8851789.97	-8851789.80	-8851789.63	0.0283	0.0172
Venus	-28948-10-01 11:59 J	-8851560.22	-8851560.00	-8851559.79	0.0284	0.0031
Venus	-28947-05-19 09:07 J	-8851330.32	-8851330.12	-8851329.92	0.0286	0.0116
Venus	-28946-01-04 08:09 J	-8851100.24	-8851100.16	-8851100.07	0.0287	0.0263

Earth	-28945-11-10 17:02 J	-8850423.98	-8850423.79	-8850423.59	0.0291	0.0178
Moon	-28945-11-10 19:11 J	-8850423.89	-8850423.70	-8850423.51	0.0291	0.0180 *
Mercury	-28944-09-10 01:55 J	-8850120.53	-8850120.42	-8850120.30	0.0291	0.0213
Mercury	-28944-12-07 23:16 J	-8850031.70	-8850031.53	-8850031.36	0.0292	0.0040
Mercury	-28943-03-06 20:09 J	-8849942.81	-8849942.66	-8849942.51	0.0292	0.0128
Mars	-28940-09-03 06:14 J	-8848666.52	-8848666.24	-8848665.94	0.0290	0.0107
Venus	-28935-12-20 16:19 J	-8846731.98	-8846731.82	-8846731.66	0.0278	0.0176
Venus	-28934-08-06 21:50 J	-8846502.79	-8846502.59	-8846502.38	0.0276	0.0048
Venus	-28933-03-23 01:40 J	-8846273.62	-8846273.43	-8846273.22	0.0275	0.0078
Venus	-28933-11-07 04:04 J	-8846044.47	-8846044.33	-8846044.18	0.0273	0.0199
Moon	-28931-04-30 04:33 J	-8845505.42	-8845505.31	-8845505.19	0.0271	0.0240
Earth	-28931-04-30 05:45 J	-8845505.33	-8845505.26	-8845505.17	0.0271	0.0254 *
Moon	-28930-05-11 23:31 J	-8845128.59	-8845128.52	-8845128.43	0.0269	0.0253
Earth	-28930-05-12 03:07 J	-8845128.45	-8845128.37	-8845128.25	0.0269	0.0245 *
Mercury	-28930-12-30 05:59 J	-8844896.32	-8844896.25	-8844896.18	0.0269	0.0225
Mercury	-28929-03-27 17:31 J	-8844807.90	-8844807.77	-8844807.65	0.0269	0.0121
Mercury	-28929-06-24 05:02 J	-8844719.43	-8844719.29	-8844719.15	0.0268	0.0015
Mercury	-28929-09-20 16:47 J	-8844630.94	-8844630.80	-8844630.67	0.0268	0.0093
Mercury	-28929-12-18 04:33 J	-8844542.40	-8844542.31	-8844542.21	0.0268	0.0202
Venus	-28919-08-27 02:23 J	-8841003.58	-8841003.40	-8841003.21	0.0283	0.0147
Venus	-28918-04-13 22:19 J	-8840773.79	-8840773.57	-8840773.36	0.0284	0.0005
Venus	-28918-11-29 19:55 J	-8840543.85	-8840543.67	-8840543.48	0.0286	0.0143
Moon	-28916-11-04 22:33 J	-8839837.79	-8839837.56	-8839837.31	0.0290	0.0093
Earth	-28916-11-05 01:11 J	-8839837.68	-8839837.45	-8839837.21	0.0290	0.0096 *
Mercury	-28914-01-28 03:35 J	-8839388.43	-8839388.35	-8839388.25	0.0292	0.0243
Mercury	-28914-04-27 01:11 J	-8839299.61	-8839299.45	-8839299.28	0.0292	0.0069
Mercury	-28914-07-24 22:04 J	-8839210.73	-8839210.58	-8839210.42	0.0292	0.0101
Mercury	-28914-10-21 18:43 J	-8839121.79	-8839121.72	-8839121.66	0.0292	0.0267
Venus	-28905-07-02 01:26 J	-8835945.60	-8835945.44	-8835945.25	0.0277	0.0151
Venus	-28904-02-16 06:57 J	-8835716.42	-8835716.21	-8835716.00	0.0275	0.0024

Venus	-28904-10-03 10:19 J	-8835487.25	-8835487.07	-8835486.87	0.0274	0.0101
Venus	-28903-05-20 12:28 J	-8835258.10	-8835257.98	-8835257.86	0.0273	0.0220
Earth	-28901-05-06 13:11 J	-8834541.19	-8834540.95	-8834540.71	0.0269	0.0037
Moon	-28901-05-06 16:47 J	-8834541.04	-8834540.80	-8834540.56	0.0269	0.0050 *
Mercury	-28900-05-18 09:21 J	-8834164.16	-8834164.11	-8834164.05	0.0268	0.0244
Mercury	-28900-08-14 20:52 J	-8834075.75	-8834075.63	-8834075.51	0.0268	0.0140
Mercury	-28900-11-11 08:23 J	-8833987.29	-8833987.15	-8833987.01	0.0268	0.0035
Mercury	-28899-02-07 19:55 J	-8833898.80	-8833898.67	-8833898.53	0.0268	0.0072
Mercury	-28899-05-07 07:40 J	-8833810.28	-8833810.18	-8833810.07	0.0267	0.0181
Mars	-28896-11-25 11:45 J	-8832512.23	-8832512.01	-8832511.77	0.0269	0.0146
Venus	-28890-07-22 14:52 J	-8830446.96	-8830446.88	-8830446.80	0.0282	0.0261
Venus	-28889-03-08 08:23 J	-8830217.34	-8830217.15	-8830216.95	0.0283	0.0125
Venus	-28889-10-24 04:19 J	-8829987.54	-8829987.32	-8829987.11	0.0285	0.0019
Venus	-28888-06-11 02:09 J	-8829757.59	-8829757.41	-8829757.24	0.0286	0.0166
Earth	-28886-11-13 09:50 J	-8828872.19	-8828872.09	-8828871.97	0.0291	0.0260
Moon	-28886-11-13 13:26 J	-8828872.03	-8828871.94	-8828871.81	0.0291	0.0260 *
Mercury	-28885-09-12 23:45 J	-8828567.66	-8828567.51	-8828567.35	0.0292	0.0123
Mercury	-28885-12-10 20:52 J	-8828478.79	-8828478.63	-8828478.46	0.0292	0.0049
Mercury	-28884-03-09 17:31 J	-8828389.88	-8828389.77	-8828389.65	0.0292	0.0215
Venus	-28876-05-27 21:07 J	-8825388.68	-8825388.62	-8825388.54	0.0279	0.0262
Venus	-28875-01-12 04:19 J	-8825159.50	-8825159.32	-8825159.13	0.0277	0.0133
Venus	-28875-08-29 09:21 J	-8824930.31	-8824930.11	-8824929.90	0.0276	0.0007
Venus	-28874-04-15 12:43 J	-8824701.15	-8824700.97	-8824700.78	0.0274	0.0119
Venus	-28874-11-30 14:38 J	-8824471.99	-8824471.89	-8824471.79	0.0273	0.0238
Moon	-28872-05-01 10:33 J	-8823954.24	-8823954.06	-8823953.88	0.0270	0.0178
Earth	-28872-05-01 13:55 J	-8823954.08	-8823953.92	-8823953.74	0.0270	0.0192 *
Mercury	-28870-01-01 22:47 J	-8823343.65	-8823343.55	-8823343.44	0.0269	0.0174
Mercury	-28870-03-31 10:19 J	-8823255.21	-8823255.07	-8823254.94	0.0268	0.0068
Mercury	-28870-06-27 21:50 J	-8823166.73	-8823166.59	-8823166.45	0.0268	0.0039
Mercury	-28870-09-24 09:35 J	-8823078.21	-8823078.10	-8823077.98	0.0268	0.0147

Mercury	-28870-12-21 21:35 J	-8822989.63	-8822989.60	-8822989.56	0.0268	0.0256
Mars	-28865-01-11 23:59 J	-8821507.53	-8821507.50	-8821507.43	0.0270	0.0267
Venus	-28860-01-31 22:47 J	-8819660.65	-8819660.55	-8819660.43	0.0282	0.0239
Venus	-28860-09-18 17:16 J	-8819430.98	-8819430.78	-8819430.58	0.0283	0.0101
Venus	-28859-05-06 13:26 J	-8819201.15	-8819200.94	-8819200.72	0.0285	0.0044
Venus	-28859-12-22 11:45 J	-8818971.17	-8818971.01	-8818970.85	0.0287	0.0191
Moon	-28857-11-06 12:57 J	-8818286.21	-8818285.96	-8818285.72	0.0290	0.0017
Earth	-28857-11-06 16:19 J	-8818286.07	-8818285.82	-8818285.57	0.0290	0.0016 *
Mercury	-28855-01-31 01:11 J	-8817835.59	-8817835.45	-8817835.30	0.0292	0.0155
Mercury	-28855-04-29 22:33 J	-8817746.73	-8817746.56	-8817746.39	0.0292	0.0017
Mercury	-28855-07-27 19:26 J	-8817657.82	-8817657.69	-8817657.56	0.0292	0.0186
Mars	-28851-01-29 18:43 J	-8816375.92	-8816375.72	-8816375.50	0.0290	0.0214
Venus	-28847-12-08 06:57 J	-8814602.31	-8814602.21	-8814602.10	0.0278	0.0236
Venus	-28846-07-25 13:26 J	-8814373.13	-8814372.94	-8814372.74	0.0277	0.0108
Venus	-28845-03-10 18:14 J	-8814143.95	-8814143.74	-8814143.53	0.0275	0.0019
Venus	-28845-10-25 21:07 J	-8813914.79	-8813914.62	-8813914.44	0.0274	0.0142
Venus	-28844-06-11 22:33 J	-8813685.61	-8813685.56	-8813685.49	0.0272	0.0259
Earth	-28842-05-08 21:07 J	-8812989.85	-8812989.62	-8812989.40	0.0269	0.0098
Moon	-28842-05-08 21:50 J	-8812989.81	-8812989.59	-8812989.35	0.0269	0.0109 *
Mercury	-28841-05-21 02:09 J	-8812611.50	-8812611.41	-8812611.31	0.0268	0.0193
Mercury	-28841-08-17 13:40 J	-8812523.06	-8812522.93	-8812522.80	0.0268	0.0088
Mercury	-28841-11-14 01:11 J	-8812434.59	-8812434.45	-8812434.31	0.0268	0.0018
Mercury	-28840-02-10 12:57 J	-8812346.08	-8812345.96	-8812345.84	0.0267	0.0126
Mercury	-28840-05-10 00:57 J	-8812257.53	-8812257.46	-8812257.40	0.0267	0.0235
Venus	-28831-08-14 04:47 J	-8808874.42	-8808874.30	-8808874.15	0.0282	0.0218
Venus	-28830-03-31 23:31 J	-8808644.73	-8808644.52	-8808644.32	0.0284	0.0078
Venus	-28830-11-16 19:40 J	-8808414.88	-8808414.68	-8808414.46	0.0285	0.0068
Venus	-28829-07-03 18:14 J	-8808184.88	-8808184.74	-8808184.59	0.0287	0.0215
Mercury	-28826-06-19 23:59 J	-8807103.62	-8807103.50	-8807103.38	0.0292	0.0209
Mercury	-28826-09-16 21:21 J	-8807014.78	-8807014.61	-8807014.44	0.0292	0.0036



Mercury	-28826-12-14 18:14 J	-8806925.89	-8806925.74	-8806925.59	0.0292	0.0134
Venus	-28817-06-19 09:07 J	-8803816.24	-8803816.12	-8803815.99	0.0278	0.0219
Venus	-28816-02-03 15:35 J	-8803587.04	-8803586.85	-8803586.65	0.0276	0.0091
Venus	-28816-09-20 20:09 J	-8803357.87	-8803357.66	-8803357.45	0.0275	0.0036
Venus	-28815-05-07 22:47 J	-8803128.71	-8803128.55	-8803128.37	0.0274	0.0159
Moon	-28813-05-02 19:26 J	-8802402.89	-8802402.69	-8802402.47	0.0270	0.0119
Earth	-28813-05-02 20:52 J	-8802402.83	-8802402.63	-8802402.41	0.0270	0.0132 *
Mercury	-28812-10-08 04:04 J	-8801879.40	-8801879.33	-8801879.26	0.0268	0.0228
Mercury	-28811-01-04 15:21 J	-8801790.98	-8801790.86	-8801790.73	0.0268	0.0124
Mercury	-28811-04-03 02:52 J	-8801702.52	-8801702.38	-8801702.24	0.0268	0.0018
Mercury	-28811-06-30 14:38 J	-8801614.02	-8801613.89	-8801613.76	0.0268	0.0090
Mercury	-28811-09-27 02:23 J	-8801525.49	-8801525.40	-8801525.30	0.0268	0.0198
Mars	-28807-04-21 10:47 J	-8800223.30	-8800223.05	-8800222.79	0.0270	0.0102
Venus	-28801-02-24 11:31 J	-8798088.17	-8798088.02	-8798087.87	0.0282	0.0196
Venus	-28801-10-11 06:14 J	-8797858.45	-8797858.24	-8797858.03	0.0284	0.0056
Venus	-28800-05-29 03:07 J	-8797628.57	-8797628.37	-8797628.16	0.0285	0.0089
Venus	-28799-01-14 01:55 J	-8797398.54	-8797398.42	-8797398.29	0.0287	0.0237
Earth	-28798-11-09 04:04 J	-8796734.57	-8796734.33	-8796734.08	0.0291	0.0059
Moon	-28798-11-09 04:04 J	-8796734.56	-8796734.33	-8796734.09	0.0291	0.0058 *
Mercury	-28797-11-06 00:28 J	-8796371.57	-8796371.48	-8796371.39	0.0292	0.0248
Mercury	-28796-02-02 22:04 J	-8796282.75	-8796282.58	-8796282.41	0.0292	0.0074
Mercury	-28796-05-02 19:11 J	-8796193.86	-8796193.70	-8796193.54	0.0292	0.0098
Mercury	-28796-07-30 15:35 J	-8796104.91	-8796104.85	-8796104.78	0.0293	0.0265
Venus	-28788-12-30 18:28 J	-8793029.87	-8793029.73	-8793029.57	0.0278	0.0194
Venus	-28787-08-17 00:28 J	-8792800.68	-8792800.48	-8792800.27	0.0276	0.0066
Venus	-28786-04-03 04:33 J	-8792571.51	-8792571.31	-8792571.10	0.0275	0.0060
Venus	-28786-11-18 06:57 J	-8792342.35	-8792342.21	-8792342.05	0.0273	0.0181
Moon	-28783-05-10 00:43 J	-8791438.66	-8791438.47	-8791438.28	0.0269	0.0167
Earth	-28783-05-10 03:35 J	-8791438.54	-8791438.35	-8791438.15	0.0269	0.0158 *
Mercury	-28782-02-25 07:26 J	-8791147.24	-8791147.19	-8791147.13	0.0268	0.0246

Mercury	-28782-05-24 18:43 J	-8791058.83	-8791058.72	-8791058.60	0.0268	0.0143
Mercury	-28782-08-21 06:14 J	-8790970.38	-8790970.24	-8790970.10	0.0267	0.0038
Mercury	-28782-11-17 17:59 J	-8790881.89	-8790881.75	-8790881.62	0.0267	0.0070
Mercury	-28781-02-14 05:45 J	-8790793.37	-8790793.26	-8790793.16	0.0267	0.0177
Venus	-28772-09-05 17:31 J	-8787301.93	-8787301.77	-8787301.59	0.0283	0.0174
Venus	-28771-04-23 12:28 J	-8787072.19	-8787071.98	-8787071.76	0.0284	0.0033
Venus	-28771-12-09 09:21 J	-8786842.30	-8786842.11	-8786841.91	0.0286	0.0113
Venus	-28770-07-27 08:38 J	-8786612.23	-8786612.14	-8786612.06	0.0287	0.0261
Moon	-28769-11-02 01:40 J	-8786148.57	-8786148.43	-8786148.27	0.0290	0.0233
Earth	-28769-11-02 01:55 J	-8786148.55	-8786148.42	-8786148.27	0.0290	0.0236 *
Mercury	-28767-06-22 20:38 J	-8785550.79	-8785550.64	-8785550.48	0.0292	0.0127
Mercury	-28767-09-19 17:59 J	-8785461.92	-8785461.75	-8785461.58	0.0292	0.0045
Mercury	-28767-12-17 14:38 J	-8785373.00	-8785372.89	-8785372.77	0.0292	0.0213
Mars	-28763-06-25 18:14 J	-8784086.81	-8784086.74	-8784086.65	0.0290	0.0280
Venus	-28758-07-12 20:23 J	-8782243.81	-8782243.65	-8782243.49	0.0277	0.0177
Venus	-28757-02-27 02:09 J	-8782014.62	-8782014.41	-8782014.21	0.0276	0.0049
Venus	-28757-10-13 05:59 J	-8781785.45	-8781785.25	-8781785.05	0.0274	0.0076
Venus	-28756-05-30 08:23 J	-8781556.29	-8781556.15	-8781556.01	0.0273	0.0196
Earth	-28754-05-05 02:38 J	-8780851.62	-8780851.39	-8780851.15	0.0270	0.0074
Moon	-28754-05-05 05:16 J	-8780851.50	-8780851.28	-8780851.04	0.0270	0.0060 *
Mercury	-28753-10-10 20:23 J	-8780326.75	-8780326.65	-8780326.55	0.0268	0.0180
Mercury	-28752-01-07 07:40 J	-8780238.31	-8780238.18	-8780238.04	0.0268	0.0076
Mercury	-28752-04-05 19:26 J	-8780149.83	-8780149.69	-8780149.55	0.0268	0.0032
Mercury	-28752-07-03 06:57 J	-8780061.33	-8780061.21	-8780061.08	0.0268	0.0139
Mercury	-28752-09-29 18:57 J	-8779972.76	-8779972.71	-8779972.66	0.0268	0.0248
Venus	-28742-03-18 22:19 J	-8776515.74	-8776515.57	-8776515.38	0.0283	0.0155
Venus	-28742-11-03 17:45 J	-8776285.97	-8776285.76	-8776285.54	0.0284	0.0014
Venus	-28741-06-20 15:07 J	-8776056.05	-8776055.87	-8776055.67	0.0286	0.0133
Venus	-28740-02-05 14:23 J	-8775825.93	-8775825.90	-8775825.85	0.0287	0.0281
Earth	-28739-11-10 13:26 J	-8775183.16	-8775182.94	-8775182.72	0.0291	0.0128

Moon	-28739-11-10 16:33 J	-8775183.02	-8775182.81	-8775182.58	0.0291	0.0127 *
Mercury	-28738-11-09 20:23 J	-8774818.78	-8774818.65	-8774818.51	0.0292	0.0172
Mercury	-28737-02-06 17:59 J	-8774729.93	-8774729.75	-8774729.58	0.0292	0.0007
Mercury	-28737-05-05 14:38 J	-8774641.02	-8774640.89	-8774640.75	0.0293	0.0172
Venus	-28728-01-22 04:47 J	-8771457.47	-8771457.30	-8771457.12	0.0277	0.0153
Venus	-28728-09-08 10:19 J	-8771228.28	-8771228.07	-8771227.87	0.0276	0.0026
Venus	-28727-04-25 13:40 J	-8770999.12	-8770998.93	-8770998.73	0.0274	0.0099
Venus	-28727-12-10 15:35 J	-8770769.96	-8770769.85	-8770769.71	0.0273	0.0219
Moon	-28725-04-29 08:52 J	-8770264.15	-8770264.13	-8770264.09	0.0270	0.0268
Moon	-28724-05-11 05:16 J	-8769887.40	-8769887.28	-8769887.14	0.0268	0.0224
Earth	-28724-05-11 08:23 J	-8769887.30	-8769887.15	-8769887.01	0.0268	0.0214 *
Mercury	-28723-02-27 23:45 J	-8769594.60	-8769594.51	-8769594.42	0.0268	0.0199
Mercury	-28723-05-27 11:02 J	-8769506.17	-8769506.04	-8769505.91	0.0267	0.0095
Mercury	-28723-08-23 22:33 J	-8769417.70	-8769417.56	-8769417.42	0.0267	0.0012
Mercury	-28723-11-20 10:19 J	-8769329.20	-8769329.07	-8769328.94	0.0267	0.0118
Mercury	-28722-02-16 22:04 J	-8769240.65	-8769240.58	-8769240.50	0.0267	0.0226
Mars	-28719-09-15 10:33 J	-8767934.34	-8767934.06	-8767933.79	0.0269	0.0047
Venus	-28713-02-11 10:47 J	-8765959.10	-8765959.05	-8765958.98	0.0281	0.0269
Venus	-28713-09-28 04:04 J	-8765729.51	-8765729.33	-8765729.13	0.0283	0.0133
Venus	-28712-05-15 23:45 J	-8765499.73	-8765499.51	-8765499.30	0.0285	0.0011
Venus	-28712-12-31 21:07 J	-8765269.80	-8765269.62	-8765269.44	0.0286	0.0157
Moon	-28710-11-04 06:28 J	-8764597.42	-8764597.23	-8764597.01	0.0290	0.0170
Earth	-28710-11-04 10:19 J	-8764597.27	-8764597.07	-8764596.86	0.0290	0.0169 *
Mercury	-28708-03-28 18:43 J	-8764086.82	-8764086.72	-8764086.60	0.0292	0.0228
Mercury	-28708-06-25 16:19 J	-8763997.98	-8763997.82	-8763997.64	0.0292	0.0054
Mercury	-28708-09-22 13:26 J	-8763909.09	-8763908.94	-8763908.78	0.0292	0.0118
Mercury	-28708-12-20 10:04 J	-8763820.11	-8763820.08	-8763820.04	0.0292	0.0284
Mars	-28705-09-26 11:59 J	-8762809.07	-8762809.00	-8762808.90	0.0291	0.0278
Venus	-28700-12-17 23:02 J	-8760900.59	-8760900.54	-8760900.47	0.0278	0.0265
Venus	-28699-08-04 06:14 J	-8760671.42	-8760671.24	-8760671.06	0.0277	0.0137

Venus	-28698-03-21 11:31 J	-8760442.23	-8760442.02	-8760441.82	0.0275	0.0011
Venus	-28698-11-05 14:52 J	-8760213.07	-8760212.88	-8760212.69	0.0274	0.0114
Venus	-28697-06-21 16:47 J	-8759983.90	-8759983.80	-8759983.69	0.0272	0.0233
Earth	-28695-05-06 06:57 J	-8759300.45	-8759300.21	-8759299.97	0.0269	0.0018
Moon	-28695-05-06 10:04 J	-8759300.33	-8759300.08	-8759299.83	0.0269	0.0005 *
Mercury	-28694-07-18 00:57 J	-8758862.51	-8758862.46	-8758862.39	0.0268	0.0238
Mercury	-28694-10-14 12:28 J	-8758774.10	-8758773.98	-8758773.86	0.0268	0.0134
Mercury	-28693-01-10 23:59 J	-8758685.64	-8758685.50	-8758685.36	0.0268	0.0030
Mercury	-28693-04-08 11:31 J	-8758597.16	-8758597.02	-8758596.89	0.0268	0.0078
Mercury	-28693-07-05 23:16 J	-8758508.63	-8758508.53	-8758508.43	0.0267	0.0186
Venus	-28684-08-23 13:26 J	-8755173.02	-8755172.94	-8755172.84	0.0281	0.0253
Venus	-28683-04-10 07:11 J	-8754943.39	-8754943.20	-8754943.00	0.0283	0.0116
Venus	-28683-11-26 03:07 J	-8754713.58	-8754713.37	-8754713.15	0.0285	0.0027
Venus	-28682-07-14 00:57 J	-8754483.62	-8754483.46	-8754483.28	0.0286	0.0174
Earth	-28680-11-11 18:43 J	-8753631.91	-8753631.72	-8753631.54	0.0291	0.0191
Moon	-28680-11-11 21:07 J	-8753631.81	-8753631.62	-8753631.42	0.0291	0.0188 *
Mercury	-28679-08-15 17:31 J	-8753354.81	-8753354.77	-8753354.72	0.0292	0.0280
Mercury	-28679-11-12 15:21 J	-8753266.02	-8753265.86	-8753265.70	0.0292	0.0104
Mercury	-28678-02-09 12:43 J	-8753177.14	-8753176.97	-8753176.81	0.0293	0.0069
Mercury	-28678-05-09 09:21 J	-8753088.20	-8753088.11	-8753088.01	0.0293	0.0238
Venus	-28670-06-30 06:43 J	-8750114.32	-8750114.22	-8750114.11	0.0279	0.0242
Venus	-28669-02-14 13:40 J	-8749885.12	-8749884.93	-8749884.74	0.0277	0.0113
Venus	-28669-09-30 18:43 J	-8749655.93	-8749655.72	-8749655.51	0.0275	0.0014
Venus	-28668-05-17 21:50 J	-8749426.76	-8749426.59	-8749426.41	0.0274	0.0137
Venus	-28667-01-01 23:31 J	-8749197.58	-8749197.52	-8749197.44	0.0272	0.0254
Moon	-28666-05-01 12:14 J	-8748713.12	-8748712.99	-8748712.83	0.0270	0.0216
Earth	-28666-05-01 15:21 J	-8748712.98	-8748712.86	-8748712.72	0.0270	0.0230 *
Earth	-28665-05-12 11:02 J	-8748336.04	-8748336.04	-8748336.01	0.0268	0.0268
Mercury	-28665-12-04 04:33 J	-8748130.35	-8748130.31	-8748130.28	0.0268	0.0258
Mercury	-28664-03-02 15:35 J	-8748041.96	-8748041.85	-8748041.73	0.0267	0.0155

Mercury	-28664-05-30 03:07 J	-8747953.51	-8747953.37	-8747953.23	0.0267	0.0050
Mercury	-28664-08-26 14:38 J	-8747865.03	-8747864.89	-8747864.75	0.0267	0.0056
Mercury	-28664-11-23 02:09 J	-8747776.51	-8747776.41	-8747776.29	0.0267	0.0164
Venus	-28654-03-05 19:26 J	-8744386.80	-8744386.69	-8744386.56	0.0282	0.0231
Venus	-28654-10-21 13:11 J	-8744157.15	-8744156.95	-8744156.74	0.0283	0.0093
Venus	-28653-06-07 09:21 J	-8743927.33	-8743927.11	-8743926.90	0.0285	0.0051
Venus	-28652-01-23 07:11 J	-8743697.35	-8743697.20	-8743697.04	0.0287	0.0198
Moon	-28651-11-05 13:55 J	-8743046.14	-8743045.92	-8743045.70	0.0291	0.0110
Earth	-28651-11-05 15:50 J	-8743046.07	-8743045.84	-8743045.60	0.0291	0.0108 *
Mercury	-28649-03-31 13:55 J	-8742534.06	-8742533.92	-8742533.77	0.0292	0.0159
Mercury	-28649-06-28 11:31 J	-8742445.20	-8742445.02	-8742444.85	0.0293	0.0016
Mercury	-28649-09-25 08:09 J	-8742356.28	-8742356.16	-8742356.02	0.0293	0.0185
Venus	-28640-01-09 07:55 J	-8739328.28	-8739328.17	-8739328.04	0.0278	0.0226
Venus	-28640-08-26 14:38 J	-8739099.08	-8739098.89	-8739098.69	0.0276	0.0098
Venus	-28639-04-12 19:26 J	-8738869.90	-8738869.69	-8738869.48	0.0275	0.0028
Venus	-28639-11-27 22:33 J	-8738640.74	-8738640.56	-8738640.39	0.0273	0.0151
Venus	-28638-07-14 23:45 J	-8738411.53	-8738411.51	-8738411.47	0.0272	0.0268
Moon	-28636-05-07 07:40 J	-8737749.43	-8737749.18	-8737748.93	0.0269	0.0044
Earth	-28636-05-07 09:21 J	-8737749.35	-8737749.11	-8737748.87	0.0269	0.0035 *
Mercury	-28635-07-20 16:47 J	-8737309.89	-8737309.80	-8737309.70	0.0268	0.0195
Mercury	-28635-10-17 04:19 J	-8737221.45	-8737221.32	-8737221.19	0.0268	0.0090
Mercury	-28634-01-13 15:50 J	-8737132.99	-8737132.84	-8737132.70	0.0267	0.0017
Mercury	-28634-04-12 03:21 J	-8737044.49	-8737044.36	-8737044.23	0.0267	0.0122
Mercury	-28634-07-09 15:07 J	-8736955.94	-8736955.87	-8736955.80	0.0267	0.0231
Mars	-28630-02-08 13:11 J	-8735646.23	-8735645.95	-8735645.67	0.0269	0.0027
Venus	-28625-09-14 20:38 J	-8733600.77	-8733600.64	-8733600.50	0.0282	0.0216
Venus	-28624-05-02 14:38 J	-8733371.09	-8733370.89	-8733370.68	0.0283	0.0078
Venus	-28624-12-18 11:02 J	-8733141.25	-8733141.04	-8733140.83	0.0285	0.0066
Venus	-28623-08-05 09:07 J	-8732911.25	-8732911.12	-8732910.96	0.0287	0.0214
Moon	-28621-11-12 18:43 J	-8732080.86	-8732080.72	-8732080.57	0.0291	0.0239

Earth	-28621-11-12 20:38 J	-8732080.76	-8732080.64	-8732080.50	0.0291	0.0247 *
Mercury	-28620-08-18 11:45 J	-8731802.12	-8731802.01	-8731801.90	0.0292	0.0219
Mercury	-28620-11-15 09:21 J	-8731713.28	-8731713.11	-8731712.94	0.0293	0.0044
Mercury	-28619-02-12 06:28 J	-8731624.38	-8731624.23	-8731624.08	0.0293	0.0128
Mars	-28616-02-20 02:52 J	-8730520.57	-8730520.38	-8730520.18	0.0292	0.0223
Venus	-28611-07-22 14:23 J	-8728542.03	-8728541.90	-8728541.75	0.0278	0.0204
Venus	-28610-03-08 21:07 J	-8728312.82	-8728312.62	-8728312.42	0.0277	0.0075
Venus	-28610-10-24 01:40 J	-8728083.63	-8728083.43	-8728083.22	0.0275	0.0052
Venus	-28609-06-09 04:33 J	-8727854.46	-8727854.31	-8727854.14	0.0274	0.0173
Earth	-28607-05-02 17:16 J	-8727161.95	-8727161.78	-8727161.59	0.0270	0.0179
Moon	-28607-05-02 18:43 J	-8727161.90	-8727161.72	-8727161.54	0.0270	0.0167 *
Mercury	-28606-12-07 20:09 J	-8726577.74	-8726577.66	-8726577.58	0.0267	0.0216
Mercury	-28605-03-05 07:26 J	-8726489.32	-8726489.19	-8726489.07	0.0267	0.0112
Mercury	-28605-06-01 18:43 J	-8726400.86	-8726400.72	-8726400.58	0.0267	0.0010
Mercury	-28605-08-29 06:14 J	-8726312.36	-8726312.24	-8726312.10	0.0267	0.0100
Mercury	-28605-11-25 17:59 J	-8726223.83	-8726223.75	-8726223.66	0.0267	0.0208
Venus	-28595-03-28 02:09 J	-8722814.55	-8722814.41	-8722814.24	0.0282	0.0194
Venus	-28595-11-12 20:38 J	-8722584.85	-8722584.64	-8722584.43	0.0284	0.0054
Venus	-28594-06-30 17:02 J	-8722354.99	-8722354.79	-8722354.59	0.0285	0.0090
Venus	-28593-02-15 15:21 J	-8722124.98	-8722124.86	-8722124.74	0.0287	0.0237
Earth	-28592-11-06 17:45 J	-8721495.00	-8721494.76	-8721494.52	0.0291	0.0052
Moon	-28592-11-06 20:23 J	-8721494.88	-8721494.65	-8721494.41	0.0291	0.0060 *
Mercury	-28590-01-05 10:04 J	-8721070.13	-8721070.08	-8721070.02	0.0292	0.0275
Mercury	-28590-04-04 07:55 J	-8720981.33	-8720981.17	-8720981.00	0.0293	0.0099
Mercury	-28590-07-02 05:16 J	-8720892.44	-8720892.28	-8720892.11	0.0293	0.0075
Mercury	-28590-09-29 01:55 J	-8720803.50	-8720803.42	-8720803.32	0.0293	0.0244
Venus	-28581-02-01 15:50 J	-8717755.99	-8717755.84	-8717755.69	0.0278	0.0188
Venus	-28581-09-17 22:04 J	-8717526.78	-8717526.58	-8717526.38	0.0276	0.0060
Venus	-28580-05-05 02:23 J	-8717297.60	-8717297.40	-8717297.20	0.0274	0.0065
Venus	-28580-12-20 05:02 J	-8717068.44	-8717068.29	-8717068.14	0.0273	0.0186

Moon	-28577-05-08 07:11 J	-8716198.43	-8716198.20	-8716197.97	0.0269	0.0091
Earth	-28577-05-08 10:47 J	-8716198.28	-8716198.05	-8716197.82	0.0269	0.0086 *
Mercury	-28576-04-25 21:21 J	-8715845.65	-8715845.61	-8715845.57	0.0268	0.0256
Mercury	-28576-07-23 08:38 J	-8715757.26	-8715757.14	-8715757.03	0.0267	0.0153
Mercury	-28576-10-19 19:55 J	-8715668.81	-8715668.67	-8715668.53	0.0267	0.0048
Mercury	-28575-01-16 07:26 J	-8715580.33	-8715580.19	-8715580.05	0.0267	0.0058
Mercury	-28575-04-14 18:57 J	-8715491.82	-8715491.71	-8715491.60	0.0267	0.0165
Venus	-28566-10-08 02:38 J	-8712028.55	-8712028.39	-8712028.22	0.0282	0.0180
Venus	-28565-05-24 21:07 J	-8711798.83	-8711798.62	-8711798.40	0.0284	0.0041
Venus	-28564-01-09 17:45 J	-8711568.96	-8711568.76	-8711568.56	0.0285	0.0104
Venus	-28564-08-27 16:19 J	-8711338.91	-8711338.82	-8711338.71	0.0287	0.0251
Moon	-28562-11-14 17:02 J	-8710529.81	-8710529.79	-8710529.74	0.0291	0.0289
Mercury	-28561-08-21 05:16 J	-8710249.42	-8710249.28	-8710249.14	0.0292	0.0163
Mercury	-28561-11-18 02:38 J	-8710160.56	-8710160.39	-8710160.21	0.0293	0.0015
Mercury	-28560-02-14 23:45 J	-8710071.64	-8710071.51	-8710071.38	0.0293	0.0184
Venus	-28552-08-13 21:21 J	-8706969.78	-8706969.61	-8706969.44	0.0278	0.0166
Venus	-28551-03-31 03:35 J	-8706740.56	-8706740.35	-8706740.15	0.0276	0.0038
Venus	-28551-11-15 07:40 J	-8706511.37	-8706511.18	-8706510.98	0.0275	0.0088
Venus	-28550-07-02 10:33 J	-8706282.20	-8706282.06	-8706281.93	0.0273	0.0208
Earth	-28548-05-03 17:45 J	-8705610.97	-8705610.76	-8705610.54	0.0269	0.0130
Moon	-28548-05-03 21:21 J	-8705610.83	-8705610.61	-8705610.39	0.0269	0.0119 *
Mercury	-28547-12-10 11:31 J	-8705025.12	-8705025.02	-8705024.91	0.0267	0.0176
Mercury	-28546-03-08 22:47 J	-8704936.68	-8704936.55	-8704936.41	0.0267	0.0072
Mercury	-28546-06-05 10:19 J	-8704848.21	-8704848.07	-8704847.93	0.0267	0.0034
Mercury	-28546-09-01 21:50 J	-8704759.71	-8704759.59	-8704759.47	0.0267	0.0141
Mercury	-28546-11-29 09:35 J	-8704671.14	-8704671.10	-8704671.05	0.0267	0.0250
Mars	-28542-07-05 04:33 J	-8703357.59	-8703357.31	-8703357.03	0.0268	0.0021
Venus	-28536-04-19 08:23 J	-8701242.31	-8701242.15	-8701241.96	0.0282	0.0158
Venus	-28536-12-05 03:07 J	-8701012.58	-8701012.37	-8701012.15	0.0284	0.0017
Venus	-28535-07-22 23:59 J	-8700782.69	-8700782.50	-8700782.31	0.0286	0.0129

Venus	-28534-03-09 22:33 J	-8700552.61	-8700552.56	-8700552.49	0.0287	0.0275
Earth	-28533-11-07 17:59 J	-8699944.00	-8699943.75	-8699943.51	0.0291	0.0004
Moon	-28533-11-07 21:07 J	-8699943.87	-8699943.62	-8699943.37	0.0291	0.0011 *
Mercury	-28531-01-08 03:35 J	-8699517.45	-8699517.35	-8699517.22	0.0293	0.0219
Mercury	-28531-04-07 01:26 J	-8699428.61	-8699428.44	-8699428.27	0.0293	0.0042
Mercury	-28531-07-04 22:33 J	-8699339.71	-8699339.56	-8699339.40	0.0293	0.0131
Mars	-28528-07-15 23:16 J	-8698232.75	-8698232.53	-8698232.28	0.0292	0.0193
Venus	-28522-02-23 22:19 J	-8696183.74	-8696183.57	-8696183.39	0.0277	0.0150
Venus	-28522-10-11 04:19 J	-8695954.53	-8695954.32	-8695954.11	0.0276	0.0023
Venus	-28521-05-27 08:23 J	-8695725.34	-8695725.15	-8695724.96	0.0274	0.0101
Venus	-28520-01-11 10:47 J	-8695496.17	-8695496.05	-8695495.93	0.0273	0.0221
Earth	-28518-05-10 11:02 J	-8694647.25	-8694647.04	-8694646.83	0.0268	0.0135
Moon	-28518-05-10 11:02 J	-8694647.24	-8694647.04	-8694646.84	0.0268	0.0137 *
Mercury	-28517-04-28 12:43 J	-8694293.05	-8694292.97	-8694292.89	0.0267	0.0215
Mercury	-28517-07-25 23:59 J	-8694204.62	-8694204.50	-8694204.37	0.0267	0.0112
Mercury	-28517-10-22 11:16 J	-8694116.17	-8694116.03	-8694115.88	0.0267	0.0011
Mercury	-28516-01-18 22:47 J	-8694027.68	-8694027.55	-8694027.41	0.0267	0.0100
Mercury	-28516-04-17 10:33 J	-8693939.15	-8693939.06	-8693938.97	0.0267	0.0207
Venus	-28507-03-14 15:21 J	-8690685.88	-8690685.86	-8690685.82	0.0280	0.0277
Venus	-28507-10-30 07:55 J	-8690456.35	-8690456.17	-8690455.98	0.0282	0.0144
Venus	-28506-06-17 02:52 J	-8690226.59	-8690226.38	-8690226.16	0.0284	0.0004
Venus	-28505-02-01 23:45 J	-8689996.69	-8689996.51	-8689996.32	0.0286	0.0142
Mercury	-28502-05-27 23:59 J	-8688785.51	-8688785.50	-8688785.46	0.0292	0.0289
Mercury	-28502-08-24 22:04 J	-8688696.74	-8688696.58	-8688696.42	0.0293	0.0111
Mercury	-28502-11-21 19:40 J	-8688607.85	-8688607.68	-8688607.52	0.0293	0.0064
Mercury	-28501-02-18 16:19 J	-8688518.91	-8688518.82	-8688518.71	0.0293	0.0235
Venus	-28493-01-19 18:43 J	-8685626.78	-8685626.72	-8685626.63	0.0280	0.0259
Venus	-28493-09-05 02:52 J	-8685397.56	-8685397.38	-8685397.19	0.0278	0.0129
Venus	-28492-04-22 08:52 J	-8685168.34	-8685168.13	-8685167.92	0.0276	0.0004
Venus	-28492-12-07 12:57 J	-8684939.14	-8684938.96	-8684938.77	0.0275	0.0123



Venus	-28491-07-24 15:35 J	-8684709.95	-8684709.85	-8684709.76	0.0273	0.0242
Earth	-28489-05-04 17:16 J	-8684060.00	-8684059.78	-8684059.54	0.0269	0.0084
Moon	-28489-05-04 18:14 J	-8684059.98	-8684059.74	-8684059.49	0.0269	0.0075 *
Mercury	-28488-09-15 15:35 J	-8683560.90	-8683560.85	-8683560.79	0.0268	0.0240
Mercury	-28488-12-13 02:52 J	-8683472.50	-8683472.38	-8683472.26	0.0267	0.0137
Mercury	-28487-03-11 14:09 J	-8683384.05	-8683383.91	-8683383.77	0.0267	0.0032
Mercury	-28487-06-08 01:40 J	-8683295.56	-8683295.43	-8683295.29	0.0267	0.0075
Mercury	-28487-09-04 13:26 J	-8683207.04	-8683206.94	-8683206.84	0.0267	0.0182
Venus	-28478-09-24 21:50 J	-8679899.67	-8679899.59	-8679899.49	0.0280	0.0255
Venus	-28477-05-11 14:23 J	-8679670.08	-8679669.90	-8679669.70	0.0282	0.0121
Venus	-28477-12-27 09:21 J	-8679440.32	-8679440.11	-8679439.89	0.0284	0.0022
Venus	-28476-08-14 06:14 J	-8679210.40	-8679210.24	-8679210.05	0.0286	0.0167
Moon	-28474-11-09 15:35 J	-8678393.10	-8678392.85	-8678392.59	0.0291	0.0036
Earth	-28474-11-09 17:16 J	-8678393.02	-8678392.78	-8678392.53	0.0291	0.0050 *
Mercury	-28472-01-10 21:07 J	-8677964.76	-8677964.62	-8677964.47	0.0293	0.0163
Mercury	-28472-04-09 18:43 J	-8677875.89	-8677875.72	-8677875.55	0.0293	0.0013
Mercury	-28472-07-07 15:50 J	-8677786.97	-8677786.84	-8677786.71	0.0293	0.0184
Venus	-28464-07-31 20:52 J	-8674840.73	-8674840.63	-8674840.52	0.0279	0.0242
Venus	-28463-03-18 04:33 J	-8674611.50	-8674611.31	-8674611.12	0.0277	0.0113
Venus	-28463-11-02 10:04 J	-8674382.28	-8674382.08	-8674381.87	0.0275	0.0016
Venus	-28462-06-19 13:55 J	-8674153.09	-8674152.92	-8674152.73	0.0274	0.0137
Venus	-28461-02-03 16:19 J	-8673923.89	-8673923.82	-8673923.75	0.0272	0.0255
Earth	-28459-05-11 11:02 J	-8673096.21	-8673096.04	-8673095.86	0.0268	0.0183
Moon	-28459-05-11 14:23 J	-8673096.07	-8673095.90	-8673095.72	0.0268	0.0182 *
Mercury	-28458-05-02 04:19 J	-8672740.43	-8672740.32	-8672740.22	0.0267	0.0176
Mercury	-28458-07-29 15:21 J	-8672651.99	-8672651.86	-8672651.72	0.0267	0.0072
Mercury	-28458-10-26 02:52 J	-8672563.52	-8672563.38	-8672563.24	0.0267	0.0034
Mercury	-28457-01-22 14:23 J	-8672475.02	-8672474.90	-8672474.78	0.0267	0.0141
Mercury	-28457-04-20 02:09 J	-8672386.46	-8672386.41	-8672386.36	0.0267	0.0249
Mars	-28454-11-28 00:14 J	-8671069.76	-8671069.49	-8671069.21	0.0268	0.0034

Venus	-28448-04-05 20:52 J	-8669113.73	-8669113.63	-8669113.52	0.0280	0.0242
Venus	-28448-11-21 13:40 J	-8668884.13	-8668883.93	-8668883.73	0.0282	0.0107
Venus	-28447-07-09 08:52 J	-8668654.34	-8668654.13	-8668653.91	0.0284	0.0035
Venus	-28446-02-24 05:59 J	-8668424.41	-8668424.25	-8668424.08	0.0286	0.0180
Earth	-28445-11-02 05:16 J	-8667807.39	-8667807.28	-8667807.17	0.0290	0.0260
Moon	-28445-11-02 07:11 J	-8667807.26	-8667807.20	-8667807.11	0.0290	0.0274 *
Mercury	-28443-05-30 17:16 J	-8667232.88	-8667232.78	-8667232.67	0.0292	0.0235
Mercury	-28443-08-27 15:07 J	-8667144.04	-8667143.87	-8667143.70	0.0293	0.0058
Mercury	-28443-11-24 12:28 J	-8667055.14	-8667054.98	-8667054.82	0.0293	0.0116
Mercury	-28442-02-21 09:21 J	-8666966.15	-8666966.11	-8666966.08	0.0293	0.0285
Mars	-28440-12-08 09:07 J	-8665945.36	-8665945.12	-8665944.86	0.0292	0.0172
Venus	-28434-02-11 00:14 J	-8664054.61	-8664054.49	-8664054.36	0.0280	0.0223
Venus	-28434-09-28 08:09 J	-8663825.35	-8663825.16	-8663824.96	0.0278	0.0092
Venus	-28433-05-14 13:55 J	-8663596.12	-8663595.92	-8663595.71	0.0276	0.0035
Venus	-28433-12-29 17:45 J	-8663366.92	-8663366.76	-8663366.58	0.0275	0.0159
Moon	-28430-05-06 13:26 J	-8662509.18	-8662508.94	-8662508.69	0.0269	0.0033
Earth	-28430-05-06 16:47 J	-8662509.04	-8662508.80	-8662508.56	0.0269	0.0038 *
Mercury	-28429-09-18 06:57 J	-8662008.30	-8662008.21	-8662008.12	0.0268	0.0202
Mercury	-28429-12-15 18:14 J	-8661919.87	-8661919.74	-8661919.61	0.0267	0.0097
Mercury	-28428-03-14 05:31 J	-8661831.41	-8661831.27	-8661831.13	0.0267	0.0011
Mercury	-28428-06-10 17:16 J	-8661742.91	-8661742.78	-8661742.66	0.0267	0.0115
Mercury	-28428-09-07 04:47 J	-8661654.37	-8661654.30	-8661654.22	0.0267	0.0223
Venus	-28419-10-17 04:04 J	-8658327.46	-8658327.33	-8658327.19	0.0281	0.0218
Venus	-28418-06-03 20:52 J	-8658097.83	-8658097.63	-8658097.42	0.0282	0.0083
Venus	-28417-01-19 16:04 J	-8657868.04	-8657867.83	-8657867.62	0.0284	0.0060
Venus	-28417-09-05 13:11 J	-8657638.09	-8657637.95	-8657637.79	0.0286	0.0206
Moon	-28415-11-10 13:11 J	-8656842.18	-8656841.95	-8656841.71	0.0291	0.0085
Earth	-28415-11-10 16:47 J	-8656842.03	-8656841.80	-8656841.56	0.0291	0.0101 *
Mercury	-28414-10-17 16:33 J	-8656500.84	-8656500.81	-8656500.77	0.0293	0.0286
Mercury	-28413-01-14 14:23 J	-8656412.06	-8656411.90	-8656411.74	0.0293	0.0108

Mercury	-28413-04-12 11:59 J	-8656323.17	-8656323.00	-8656322.84	0.0293	0.0067
Mercury	-28413-07-10 08:52 J	-8656234.23	-8656234.13	-8656234.03	0.0293	0.0238
Venus	-28405-08-23 03:07 J	-8653268.51	-8653268.37	-8653268.23	0.0279	0.0205
Venus	-28404-04-09 10:19 J	-8653039.26	-8653039.07	-8653038.86	0.0277	0.0076
Venus	-28404-11-24 15:50 J	-8652810.04	-8652809.84	-8652809.63	0.0275	0.0051
Venus	-28403-07-11 19:26 J	-8652580.85	-8652580.69	-8652580.52	0.0274	0.0173
Earth	-28401-04-30 15:35 J	-8651921.85	-8651921.85	-8651921.84	0.0270	0.0270
Moon	-28401-04-30 18:43 J	-8651921.78	-8651921.72	-8651921.65	0.0270	0.0259
Earth	-28400-05-12 11:16 J	-8651545.15	-8651545.03	-8651544.90	0.0268	0.0230
Moon	-28400-05-12 13:26 J	-8651545.06	-8651544.94	-8651544.81	0.0268	0.0228 *
Mercury	-28399-02-05 08:23 J	-8651276.20	-8651276.15	-8651276.08	0.0267	0.0238
Mercury	-28399-05-04 19:40 J	-8651187.80	-8651187.68	-8651187.56	0.0267	0.0135
Mercury	-28399-08-01 06:57 J	-8651099.35	-8651099.21	-8651099.07	0.0267	0.0030
Mercury	-28399-10-28 18:28 J	-8651010.87	-8651010.73	-8651010.60	0.0267	0.0076
Mercury	-28398-01-25 05:59 J	-8650922.35	-8650922.25	-8650922.15	0.0267	0.0183
Venus	-28389-04-28 03:07 J	-8647541.51	-8647541.37	-8647541.22	0.0281	0.0205
Venus	-28389-12-13 20:09 J	-8647311.87	-8647311.66	-8647311.45	0.0282	0.0069
Venus	-28388-07-31 15:21 J	-8647082.06	-8647081.86	-8647081.64	0.0284	0.0074
Venus	-28387-03-18 12:43 J	-8646852.10	-8646851.97	-8646851.82	0.0286	0.0218
Earth	-28386-11-04 04:47 J	-8646256.47	-8646256.30	-8646256.13	0.0290	0.0211
Moon	-28386-11-04 07:55 J	-8646256.31	-8646256.17	-8646256.00	0.0290	0.0225 *
Mercury	-28384-06-02 10:47 J	-8645680.19	-8645680.05	-8645679.92	0.0292	0.0180
Mercury	-28384-08-30 08:23 J	-8645591.32	-8645591.15	-8645590.98	0.0293	0.0004
Mercury	-28384-11-27 05:31 J	-8645502.41	-8645502.27	-8645502.13	0.0293	0.0169
Venus	-28375-03-05 06:14 J	-8642482.40	-8642482.24	-8642482.08	0.0280	0.0185
Venus	-28375-10-20 13:40 J	-8642253.13	-8642252.93	-8642252.72	0.0278	0.0056
Venus	-28374-06-06 19:26 J	-8642023.89	-8642023.69	-8642023.49	0.0276	0.0072
Venus	-28373-01-21 23:16 J	-8641794.68	-8641794.53	-8641794.38	0.0274	0.0194
Moon	-28371-05-07 14:23 J	-8640958.14	-8640957.90	-8640957.67	0.0270	0.0012
Earth	-28371-05-07 16:47 J	-8640958.04	-8640957.80	-8640957.55	0.0270	0.0009 *

Mercury	-28370-06-25 11:16 J	-8640544.04	-8640544.03	-8640544.01	0.0268	0.0265
Mercury	-28370-09-21 22:19 J	-8640455.67	-8640455.57	-8640455.46	0.0268	0.0162
Mercury	-28370-12-19 09:35 J	-8640367.23	-8640367.10	-8640366.96	0.0267	0.0057
Mercury	-28369-03-16 21:07 J	-8640278.76	-8640278.62	-8640278.48	0.0267	0.0049
Mercury	-28369-06-13 08:38 J	-8640190.25	-8640190.14	-8640190.02	0.0267	0.0157
Mercury	-28369-09-09 20:23 J	-8640101.65	-8640101.65	-8640101.64	0.0267	0.0266
Mars	-28365-04-22 19:40 J	-8638780.93	-8638780.68	-8638780.40	0.0268	0.0085
Venus	-28360-11-08 11:02 J	-8636755.19	-8636755.04	-8636754.87	0.0281	0.0180
Venus	-28359-06-26 04:33 J	-8636525.52	-8636525.31	-8636525.10	0.0283	0.0043
Venus	-28358-02-10 23:59 J	-8636295.70	-8636295.50	-8636295.30	0.0285	0.0100
Venus	-28358-09-28 21:21 J	-8636065.71	-8636065.61	-8636065.49	0.0286	0.0245
Moon	-28356-11-11 17:59 J	-8635290.96	-8635290.75	-8635290.54	0.0291	0.0140
Earth	-28356-11-11 18:14 J	-8635290.94	-8635290.74	-8635290.52	0.0291	0.0155 *
Mercury	-28355-10-20 10:19 J	-8634948.17	-8634948.07	-8634947.95	0.0293	0.0227
Mercury	-28354-01-17 08:09 J	-8634859.32	-8634859.16	-8634858.98	0.0293	0.0050
Mercury	-28354-04-16 05:31 J	-8634770.42	-8634770.27	-8634770.11	0.0293	0.0125
Mars	-28351-05-03 12:57 J	-8633657.24	-8633656.96	-8633656.69	0.0292	0.0136
Venus	-28346-09-15 09:35 J	-8631696.26	-8631696.10	-8631695.93	0.0279	0.0167
Venus	-28345-05-01 16:47 J	-8631467.00	-8631466.80	-8631466.59	0.0277	0.0038
Venus	-28345-12-16 22:04 J	-8631237.77	-8631237.58	-8631237.38	0.0275	0.0088
Venus	-28344-08-03 01:26 J	-8631008.57	-8631008.44	-8631008.30	0.0274	0.0208
Earth	-28342-05-02 16:47 J	-8630370.93	-8630370.80	-8630370.66	0.0270	0.0221
Moon	-28342-05-02 19:11 J	-8630370.84	-8630370.70	-8630370.54	0.0270	0.0213 *
Mercury	-28340-02-08 00:14 J	-8629723.58	-8629723.49	-8629723.40	0.0267	0.0196
Mercury	-28340-05-07 11:16 J	-8629635.16	-8629635.03	-8629634.89	0.0267	0.0093
Mercury	-28340-08-03 22:47 J	-8629546.69	-8629546.55	-8629546.41	0.0267	0.0014
Mercury	-28340-10-31 10:19 J	-8629458.20	-8629458.07	-8629457.95	0.0267	0.0120
Mercury	-28339-01-27 21:50 J	-8629369.66	-8629369.59	-8629369.51	0.0267	0.0228
Venus	-28330-05-21 11:02 J	-8625969.21	-8625969.04	-8625968.87	0.0281	0.0166
Venus	-28329-01-06 04:19 J	-8625739.53	-8625739.32	-8625739.11	0.0283	0.0029

Venus	-28329-08-22 23:59 J	-8625509.70	-8625509.50	-8625509.31	0.0284	0.0114
Venus	-28328-04-09 21:21 J	-8625279.69	-8625279.61	-8625279.51	0.0286	0.0259
Moon	-28327-11-05 06:43 J	-8624705.43	-8624705.22	-8624705.01	0.0290	0.0171
Earth	-28327-11-05 06:43 J	-8624705.42	-8624705.22	-8624705.01	0.0290	0.0157 *
Mercury	-28325-06-05 04:33 J	-8624127.46	-8624127.31	-8624127.15	0.0292	0.0120
Mercury	-28325-09-02 02:09 J	-8624038.58	-8624038.41	-8624038.24	0.0293	0.0056
Mercury	-28325-11-29 23:16 J	-8623949.64	-8623949.53	-8623949.43	0.0293	0.0227
Venus	-28317-08-10 02:52 J	-8621139.39	-8621139.38	-8621139.35	0.0281	0.0279
Venus	-28316-03-27 12:28 J	-8620910.16	-8620909.98	-8620909.80	0.0280	0.0147
Venus	-28316-11-11 19:40 J	-8620680.88	-8620680.68	-8620680.47	0.0278	0.0019
Venus	-28315-06-29 01:11 J	-8620451.64	-8620451.45	-8620451.26	0.0276	0.0109
Venus	-28314-02-13 04:47 J	-8620222.40	-8620222.30	-8620222.18	0.0274	0.0229
Earth	-28312-05-08 17:45 J	-8619407.00	-8619406.76	-8619406.52	0.0270	0.0057
Moon	-28312-05-08 19:40 J	-8619406.91	-8619406.68	-8619406.44	0.0270	0.0057 *
Mercury	-28311-06-28 02:52 J	-8618991.45	-8618991.38	-8618991.31	0.0268	0.0224
Mercury	-28311-09-24 14:09 J	-8618903.04	-8618902.91	-8618902.79	0.0268	0.0120
Mercury	-28311-12-22 01:26 J	-8618814.58	-8618814.44	-8618814.30	0.0267	0.0014
Mercury	-28310-03-20 12:57 J	-8618726.09	-8618725.96	-8618725.83	0.0267	0.0093
Mercury	-28310-06-17 00:28 J	-8618637.57	-8618637.48	-8618637.38	0.0267	0.0201
Venus	-28301-04-15 04:19 J	-8615412.36	-8615412.32	-8615412.26	0.0279	0.0271
Venus	-28301-11-30 19:40 J	-8615182.86	-8615182.68	-8615182.49	0.0281	0.0140
Venus	-28300-07-18 13:26 J	-8614953.16	-8614952.94	-8614952.72	0.0283	0.0002
Venus	-28299-03-05 09:07 J	-8614723.30	-8614723.12	-8614722.93	0.0285	0.0141
Venus	-28299-10-21 06:57 J	-8614493.21	-8614493.21	-8614493.20	0.0286	0.0286
Earth	-28297-11-12 22:04 J	-8613739.75	-8613739.58	-8613739.41	0.0291	0.0212
Moon	-28297-11-13 01:11 J	-8613739.62	-8613739.45	-8613739.27	0.0291	0.0197 *
Mercury	-28296-10-23 04:47 J	-8613395.43	-8613395.30	-8613395.15	0.0293	0.0163
Mercury	-28295-01-20 02:38 J	-8613306.56	-8613306.39	-8613306.22	0.0293	0.0014
Mercury	-28295-04-18 23:45 J	-8613217.64	-8613217.51	-8613217.38	0.0293	0.0187
Venus	-28287-02-20 08:09 J	-8610353.23	-8610353.16	-8610353.08	0.0281	0.0259

Venus	-28287-10-07 17:16 J	-8610123.96	-8610123.78	-8610123.59	0.0279	0.0128
Venus	-28286-05-25 00:14 J	-8609894.70	-8609894.49	-8609894.28	0.0277	0.0003
Venus	-28285-01-09 05:16 J	-8609665.46	-8609665.28	-8609665.09	0.0275	0.0126
Venus	-28285-08-25 08:23 J	-8609436.23	-8609436.15	-8609436.05	0.0273	0.0245
Moon	-28283-05-03 17:31 J	-8608819.96	-8608819.77	-8608819.57	0.0270	0.0167
Earth	-28283-05-03 19:55 J	-8608819.86	-8608819.67	-8608819.48	0.0270	0.0169 *
Mercury	-28282-11-15 05:02 J	-8608259.33	-8608259.29	-8608259.25	0.0268	0.0255
Mercury	-28281-02-11 16:04 J	-8608170.94	-8608170.83	-8608170.71	0.0267	0.0152
Mercury	-28281-05-10 03:21 J	-8608082.49	-8608082.36	-8608082.22	0.0267	0.0047
Mercury	-28281-08-06 14:52 J	-8607994.02	-8607993.88	-8607993.74	0.0267	0.0059
Mercury	-28281-11-03 02:23 J	-8607905.51	-8607905.40	-8607905.29	0.0267	0.0167
Mars	-28277-09-16 03:07 J	-8606492.62	-8606492.37	-8606492.11	0.0268	0.0114
Venus	-28272-10-26 05:16 J	-8604626.36	-8604626.28	-8604626.20	0.0279	0.0256
Venus	-28271-06-12 20:38 J	-8604396.83	-8604396.64	-8604396.44	0.0281	0.0125
Venus	-28270-01-28 14:23 J	-8604167.12	-8604166.90	-8604166.69	0.0283	0.0015
Venus	-28270-09-15 10:04 J	-8603937.26	-8603937.08	-8603936.90	0.0285	0.0157
Moon	-28268-11-06 08:23 J	-8603154.38	-8603154.15	-8603153.92	0.0290	0.0114
Earth	-28268-11-06 11:59 J	-8603154.23	-8603154.00	-8603153.76	0.0290	0.0097 *
Mercury	-28266-03-12 01:40 J	-8602663.53	-8602663.43	-8602663.32	0.0292	0.0230
Mercury	-28266-06-08 23:31 J	-8602574.69	-8602574.52	-8602574.35	0.0292	0.0053
Mercury	-28266-09-05 20:52 J	-8602485.78	-8602485.63	-8602485.47	0.0293	0.0121
Mercury	-28266-12-03 17:45 J	-8602396.77	-8602396.76	-8602396.74	0.0293	0.0291
Mars	-28263-09-26 05:02 J	-8601369.57	-8601369.29	-8601368.99	0.0292	0.0109
Venus	-28258-09-02 10:47 J	-8599567.15	-8599567.05	-8599566.94	0.0281	0.0240
Venus	-28257-04-18 19:55 J	-8599337.86	-8599337.67	-8599337.47	0.0279	0.0108
Venus	-28257-12-04 03:07 J	-8599108.58	-8599108.37	-8599108.16	0.0278	0.0021
Venus	-28256-07-21 08:09 J	-8598879.33	-8598879.16	-8598878.98	0.0276	0.0146
Venus	-28255-03-07 11:45 J	-8598650.06	-8598650.01	-8598649.96	0.0274	0.0266
Earth	-28253-05-09 20:09 J	-8597855.88	-8597855.66	-8597855.43	0.0270	0.0108
Moon	-28253-05-09 23:45 J	-8597855.74	-8597855.51	-8597855.28	0.0270	0.0104 *

Mercury	-28252-06-30 18:43 J	-8597438.82	-8597438.72	-8597438.61	0.0268	0.0180
Mercury	-28252-09-27 05:59 J	-8597350.38	-8597350.25	-8597350.11	0.0268	0.0075
Mercury	-28252-12-24 17:31 J	-8597261.91	-8597261.77	-8597261.63	0.0267	0.0031
Mercury	-28251-03-23 05:02 J	-8597173.41	-8597173.29	-8597173.17	0.0267	0.0139
Mercury	-28251-06-19 16:33 J	-8597084.85	-8597084.81	-8597084.75	0.0267	0.0248
Venus	-28242-05-08 14:38 J	-8593840.00	-8593839.89	-8593839.76	0.0279	0.0231
Venus	-28242-12-24 06:28 J	-8593610.43	-8593610.23	-8593610.03	0.0281	0.0098
Venus	-28241-08-10 00:28 J	-8593380.69	-8593380.48	-8593380.27	0.0283	0.0042
Venus	-28240-03-27 20:23 J	-8593150.81	-8593150.65	-8593150.48	0.0285	0.0185
Earth	-28238-11-15 05:31 J	-8592188.34	-8592188.27	-8592188.19	0.0291	0.0278
Moon	-28238-11-15 08:09 J	-8592188.26	-8592188.16	-8592188.04	0.0291	0.0262 *
Mercury	-28237-07-29 02:23 J	-8591931.46	-8591931.40	-8591931.33	0.0292	0.0269
Mercury	-28237-10-26 00:28 J	-8591842.65	-8591842.48	-8591842.32	0.0293	0.0091
Mercury	-28236-01-22 21:50 J	-8591753.75	-8591753.59	-8591753.42	0.0293	0.0084
Mercury	-28236-04-21 18:57 J	-8591664.79	-8591664.71	-8591664.63	0.0293	0.0256
Venus	-28228-03-14 17:02 J	-8588780.91	-8588780.79	-8588780.65	0.0280	0.0219
Venus	-28228-10-30 01:55 J	-8588551.62	-8588551.42	-8588551.22	0.0278	0.0087
Venus	-28227-06-16 08:38 J	-8588322.34	-8588322.14	-8588321.93	0.0277	0.0041
Venus	-28226-01-31 13:26 J	-8588093.10	-8588092.94	-8588092.77	0.0275	0.0165
Moon	-28224-05-04 21:07 J	-8587268.83	-8587268.62	-8587268.40	0.0270	0.0116
Earth	-28224-05-05 00:28 J	-8587268.69	-8587268.48	-8587268.26	0.0270	0.0115 *
Mercury	-28223-11-17 21:07 J	-8586706.70	-8586706.62	-8586706.53	0.0268	0.0209
Mercury	-28222-02-14 08:23 J	-8586618.27	-8586618.15	-8586618.02	0.0267	0.0104
Mercury	-28222-05-13 19:55 J	-8586529.81	-8586529.67	-8586529.53	0.0267	0.0008
Mercury	-28222-08-10 07:11 J	-8586441.32	-8586441.20	-8586441.07	0.0267	0.0109
Mercury	-28222-11-06 18:57 J	-8586352.79	-8586352.71	-8586352.63	0.0267	0.0217
Mars	-28219-12-25 15:35 J	-8585207.94	-8585207.85	-8585207.73	0.0267	0.0246
Venus	-28213-11-17 16:33 J	-8583053.94	-8583053.81	-8583053.67	0.0280	0.0215
Venus	-28212-07-05 08:23 J	-8582824.35	-8582824.15	-8582823.94	0.0281	0.0081
Venus	-28211-02-20 02:23 J	-8582594.61	-8582594.40	-8582594.19	0.0283	0.0059

Venus	-28211-10-07 22:19 J	-8582364.71	-8582364.57	-8582364.41	0.0285	0.0202
Moon	-28209-11-07 18:57 J	-8581602.95	-8581602.71	-8581602.47	0.0290	0.0047
Earth	-28209-11-07 20:52 J	-8581602.88	-8581602.63	-8581602.38	0.0290	0.0031 *
Mercury	-28207-03-14 21:35 J	-8581110.75	-8581110.60	-8581110.46	0.0292	0.0156
Mercury	-28207-06-11 19:11 J	-8581021.87	-8581021.70	-8581021.53	0.0292	0.0020
Mercury	-28207-09-08 16:19 J	-8580932.94	-8580932.82	-8580932.69	0.0293	0.0193
Venus	-28199-09-24 19:55 J	-8577994.81	-8577994.67	-8577994.51	0.0281	0.0200
Venus	-28198-05-12 04:47 J	-8577765.50	-8577765.30	-8577765.09	0.0279	0.0068
Venus	-28198-12-27 11:45 J	-8577536.21	-8577536.01	-8577535.81	0.0277	0.0061
Venus	-28197-08-12 16:33 J	-8577306.96	-8577306.81	-8577306.65	0.0276	0.0185
Moon	-28194-05-12 00:14 J	-8576304.69	-8576304.49	-8576304.28	0.0270	0.0155
Earth	-28194-05-12 00:57 J	-8576304.65	-8576304.46	-8576304.26	0.0270	0.0164 *
Mercury	-28193-04-05 23:45 J	-8575974.56	-8575974.51	-8575974.44	0.0268	0.0238
Mercury	-28193-07-03 11:02 J	-8575886.16	-8575886.04	-8575885.92	0.0268	0.0133
Mercury	-28193-09-29 22:33 J	-8575797.70	-8575797.56	-8575797.43	0.0268	0.0028
Mercury	-28193-12-27 09:50 J	-8575709.22	-8575709.09	-8575708.95	0.0268	0.0081
Mercury	-28192-03-25 21:21 J	-8575620.70	-8575620.61	-8575620.50	0.0267	0.0190
Mars	-28188-02-10 11:02 J	-8574203.23	-8574203.04	-8574202.81	0.0268	0.0176
Venus	-28183-05-31 02:38 J	-8572267.54	-8572267.39	-8572267.22	0.0280	0.0189
Venus	-28182-01-15 18:57 J	-8572037.92	-8572037.71	-8572037.50	0.0282	0.0054
Venus	-28182-09-02 13:11 J	-8571808.15	-8571807.95	-8571807.74	0.0283	0.0087
Venus	-28181-04-19 09:50 J	-8571578.22	-8571578.09	-8571577.97	0.0285	0.0231
Mercury	-28178-08-01 23:02 J	-8570378.67	-8570378.54	-8570378.41	0.0293	0.0190
Mercury	-28178-10-29 20:38 J	-8570289.81	-8570289.64	-8570289.46	0.0293	0.0014
Mercury	-28177-01-26 17:59 J	-8570200.89	-8570200.75	-8570200.61	0.0293	0.0161
Mars	-28174-02-20 18:28 J	-8569080.03	-8569079.73	-8569079.42	0.0293	0.0032
Venus	-28169-04-06 03:50 J	-8567208.50	-8567208.34	-8567208.18	0.0280	0.0176
Venus	-28169-11-21 12:14 J	-8566979.20	-8566978.99	-8566978.79	0.0278	0.0045
Venus	-28168-07-08 18:28 J	-8566749.93	-8566749.73	-8566749.53	0.0276	0.0082
Venus	-28167-02-22 23:02 J	-8566520.67	-8566520.54	-8566520.40	0.0275	0.0205



Earth	-28165-05-06 06:57 J	-8565717.44	-8565717.21	-8565716.96	0.0270	0.0056
Moon	-28165-05-06 07:11 J	-8565717.43	-8565717.20	-8565716.97	0.0270	0.0058 *
Mercury	-28164-08-24 02:38 J	-8565242.41	-8565242.39	-8565242.36	0.0268	0.0262
Mercury	-28164-11-20 13:55 J	-8565154.03	-8565153.92	-8565153.81	0.0268	0.0158
Mercury	-28163-02-17 01:11 J	-8565065.59	-8565065.45	-8565065.31	0.0267	0.0053
Mercury	-28163-05-16 12:28 J	-8564977.11	-8564976.98	-8564976.84	0.0267	0.0054
Mercury	-28163-08-12 23:59 J	-8564888.60	-8564888.50	-8564888.38	0.0267	0.0162
Venus	-28154-12-11 06:14 J	-8561481.41	-8561481.24	-8561481.07	0.0280	0.0170
Venus	-28153-07-27 22:19 J	-8561251.78	-8561251.57	-8561251.35	0.0282	0.0035
Venus	-28152-03-14 16:47 J	-8561022.00	-8561021.80	-8561021.60	0.0284	0.0106
Venus	-28152-10-30 13:11 J	-8560792.04	-8560791.95	-8560791.84	0.0285	0.0250
Earth	-28150-11-10 09:50 J	-8560051.34	-8560051.09	-8560050.85	0.0290	0.0044
Moon	-28150-11-10 12:28 J	-8560051.22	-8560050.98	-8560050.74	0.0290	0.0029 *
Mercury	-28149-12-18 20:23 J	-8559646.73	-8559646.65	-8559646.56	0.0292	0.0251
Mercury	-28148-03-17 18:28 J	-8559557.90	-8559557.73	-8559557.56	0.0292	0.0073
Mercury	-28148-06-14 15:50 J	-8559469.00	-8559468.84	-8559468.68	0.0292	0.0102
Mercury	-28148-09-11 12:43 J	-8559380.02	-8559379.97	-8559379.91	0.0293	0.0273
Venus	-28140-10-17 06:28 J	-8556422.39	-8556422.23	-8556422.05	0.0280	0.0158
Venus	-28139-06-03 15:07 J	-8556193.08	-8556192.87	-8556192.66	0.0279	0.0026
Venus	-28138-01-18 21:35 J	-8555963.79	-8555963.60	-8555963.41	0.0277	0.0102
Venus	-28138-09-05 02:09 J	-8555734.53	-8555734.41	-8555734.29	0.0275	0.0225
Moon	-28135-05-13 03:35 J	-8554753.49	-8554753.35	-8554753.19	0.0270	0.0211
Earth	-28135-05-13 07:26 J	-8554753.33	-8554753.19	-8554753.05	0.0270	0.0222 *
Mercury	-28134-04-09 16:33 J	-8554421.91	-8554421.81	-8554421.71	0.0268	0.0188
Mercury	-28134-07-07 03:50 J	-8554333.48	-8554333.34	-8554333.21	0.0268	0.0082
Mercury	-28134-10-03 15:07 J	-8554245.01	-8554244.87	-8554244.73	0.0268	0.0025
Mercury	-28134-12-31 02:38 J	-8554156.51	-8554156.39	-8554156.27	0.0268	0.0133
Mercury	-28133-03-28 14:09 J	-8554067.96	-8554067.91	-8554067.84	0.0267	0.0243
Mars	-28130-05-22 01:40 J	-8552918.62	-8552918.43	-8552918.22	0.0268	0.0184
Venus	-28125-11-05 01:40 J	-8550924.45	-8550924.43	-8550924.38	0.0278	0.0275

Venus	-28124-06-22 16:33 J	-8550694.99	-8550694.81	-8550694.63	0.0280	0.0144
Venus	-28123-02-07 09:07 J	-8550465.33	-8550465.12	-8550464.90	0.0282	0.0007
Venus	-28123-09-25 03:50 J	-8550235.52	-8550235.34	-8550235.15	0.0284	0.0134
Venus	-28122-05-13 00:57 J	-8550005.51	-8550005.46	-8550005.41	0.0286	0.0278
Moon	-28121-11-03 15:07 J	-8549464.99	-8549464.87	-8549464.74	0.0289	0.0248
Earth	-28121-11-03 18:14 J	-8549464.88	-8549464.74	-8549464.59	0.0289	0.0233 *
Mercury	-28119-05-07 22:04 J	-8548914.62	-8548914.58	-8548914.54	0.0292	0.0283
Mercury	-28119-08-04 20:09 J	-8548825.82	-8548825.66	-8548825.50	0.0293	0.0104
Mercury	-28119-11-01 17:31 J	-8548736.93	-8548736.77	-8548736.60	0.0293	0.0072
Mercury	-28118-01-29 14:52 J	-8548647.98	-8548647.88	-8548647.79	0.0293	0.0244
Venus	-28111-09-12 05:16 J	-8545865.33	-8545865.28	-8545865.20	0.0282	0.0266
Venus	-28110-04-29 15:35 J	-8545636.03	-8545635.85	-8545635.66	0.0280	0.0133
Venus	-28110-12-14 23:31 J	-8545406.73	-8545406.52	-8545406.31	0.0278	0.0004
Venus	-28109-07-31 05:31 J	-8545177.46	-8545177.27	-8545177.08	0.0276	0.0124
Venus	-28108-03-17 09:21 J	-8544948.19	-8544948.11	-8544948.01	0.0274	0.0246
Earth	-28106-05-08 15:35 J	-8544166.10	-8544165.85	-8544165.61	0.0270	0.0008
Moon	-28106-05-08 18:43 J	-8544165.96	-8544165.72	-8544165.48	0.0270	0.0005 *
Mercury	-28105-08-26 19:40 J	-8543689.76	-8543689.68	-8543689.59	0.0268	0.0209
Mercury	-28105-11-23 06:57 J	-8543601.34	-8543601.21	-8543601.09	0.0267	0.0105
Mercury	-28104-02-19 18:14 J	-8543512.88	-8543512.74	-8543512.60	0.0267	0.0003
Mercury	-28104-05-19 05:45 J	-8543424.39	-8543424.26	-8543424.13	0.0267	0.0109
Mercury	-28104-08-15 17:16 J	-8543335.86	-8543335.78	-8543335.70	0.0267	0.0218
Mars	-28100-07-07 15:50 J	-8541913.97	-8541913.84	-8541913.69	0.0268	0.0231
Venus	-28095-05-18 06:43 J	-8540138.30	-8540138.22	-8540138.13	0.0279	0.0255
Venus	-28094-01-02 20:52 J	-8539908.81	-8539908.63	-8539908.43	0.0280	0.0125
Venus	-28094-08-20 13:40 J	-8539679.14	-8539678.93	-8539678.71	0.0282	0.0014
Venus	-28093-04-06 08:38 J	-8539449.32	-8539449.14	-8539448.96	0.0284	0.0155
Earth	-28091-11-12 01:11 J	-8538499.68	-8538499.45	-8538499.23	0.0290	0.0125
Moon	-28091-11-12 04:33 J	-8538499.54	-8538499.31	-8538499.07	0.0290	0.0109 *
Mercury	-28090-12-22 18:14 J	-8538093.88	-8538093.74	-8538093.59	0.0292	0.0162

Mercury	-28089-03-20 16:04 J	-8538005.01	-8538004.83	-8538004.66	0.0292	0.0016
Mercury	-28089-06-17 13:11 J	-8537916.08	-8537915.95	-8537915.82	0.0293	0.0188
Mars	-28086-07-17 15:35 J	-8536791.16	-8536790.85	-8536790.54	0.0292	0.0031
Venus	-28081-03-24 08:38 J	-8535079.23	-8535079.14	-8535079.03	0.0282	0.0247
Venus	-28081-11-08 18:43 J	-8534849.91	-8534849.72	-8534849.53	0.0280	0.0114
Venus	-28080-06-26 02:38 J	-8534620.60	-8534620.39	-8534620.18	0.0278	0.0017
Venus	-28079-02-10 08:38 J	-8534391.32	-8534391.14	-8534390.96	0.0276	0.0144
Venus	-28079-09-27 12:28 J	-8534162.02	-8534161.98	-8534161.91	0.0275	0.0265
Moon	-28077-05-02 14:23 J	-8533579.03	-8533578.90	-8533578.75	0.0271	0.0223
Earth	-28077-05-02 17:31 J	-8533578.89	-8533578.77	-8533578.62	0.0271	0.0227 *
Mercury	-28075-01-13 22:04 J	-8532957.63	-8532957.58	-8532957.52	0.0269	0.0240
Mercury	-28075-04-12 09:21 J	-8532869.23	-8532869.11	-8532868.99	0.0268	0.0135
Mercury	-28075-07-09 20:38 J	-8532780.78	-8532780.64	-8532780.50	0.0268	0.0029
Mercury	-28075-10-06 08:09 J	-8532692.30	-8532692.16	-8532692.03	0.0268	0.0079
Mercury	-28074-01-02 19:40 J	-8532603.78	-8532603.68	-8532603.58	0.0268	0.0188
Venus	-28066-11-28 16:19 J	-8529351.93	-8529351.82	-8529351.70	0.0279	0.0231
Venus	-28065-07-15 07:26 J	-8529122.39	-8529122.19	-8529121.99	0.0281	0.0098
Venus	-28064-03-02 00:43 J	-8528892.68	-8528892.47	-8528892.26	0.0282	0.0040
Venus	-28064-10-17 20:09 J	-8528662.83	-8528662.66	-8528662.50	0.0284	0.0183
Moon	-28062-11-06 07:11 J	-8527913.40	-8527913.20	-8527913.00	0.0290	0.0167
Earth	-28062-11-06 10:04 J	-8527913.28	-8527913.08	-8527912.85	0.0290	0.0152 *
Mercury	-28060-05-10 20:09 J	-8527361.79	-8527361.66	-8527361.53	0.0292	0.0191
Mercury	-28060-08-07 17:59 J	-8527272.92	-8527272.75	-8527272.58	0.0293	0.0013
Mercury	-28060-11-04 15:21 J	-8527184.00	-8527183.86	-8527183.72	0.0293	0.0161
Venus	-28052-10-04 18:57 J	-8524292.84	-8524292.71	-8524292.59	0.0281	0.0221
Venus	-28051-05-22 04:19 J	-8524063.52	-8524063.32	-8524063.12	0.0279	0.0088
Venus	-28050-01-06 11:45 J	-8523834.21	-8523834.01	-8523833.80	0.0277	0.0042
Venus	-28050-08-23 17:02 J	-8523604.95	-8523604.79	-8523604.62	0.0276	0.0167
Earth	-28047-05-10 00:43 J	-8522614.70	-8522614.47	-8522614.23	0.0270	0.0072
Moon	-28047-05-10 03:07 J	-8522614.60	-8522614.37	-8522614.12	0.0270	0.0069 *

Mercury	-28046-06-03 01:40 J	-8522225.46	-8522225.43	-8522225.40	0.0268	0.0259
Mercury	-28046-08-30 12:43 J	-8522137.08	-8522136.97	-8522136.86	0.0268	0.0155
Mercury	-28046-11-26 23:59 J	-8522048.64	-8522048.50	-8522048.36	0.0267	0.0049
Mercury	-28045-02-23 11:16 J	-8521960.16	-8521960.03	-8521959.89	0.0267	0.0058
Mercury	-28045-05-21 22:47 J	-8521871.65	-8521871.55	-8521871.43	0.0267	0.0166
Mars	-28042-10-16 10:47 J	-8520629.28	-8520629.05	-8520628.79	0.0267	0.0123
Venus	-28036-06-09 22:04 J	-8518565.72	-8518565.58	-8518565.44	0.0279	0.0210
Venus	-28035-01-25 12:57 J	-8518336.16	-8518335.96	-8518335.75	0.0281	0.0077
Venus	-28035-09-12 06:14 J	-8518106.45	-8518106.24	-8518106.03	0.0283	0.0063
Venus	-28034-04-30 01:26 J	-8517876.58	-8517876.44	-8517876.29	0.0284	0.0205
Moon	-28032-11-13 17:59 J	-8516947.93	-8516947.75	-8516947.55	0.0291	0.0196
Earth	-28032-11-13 18:28 J	-8516947.90	-8516947.73	-8516947.56	0.0291	0.0209 *
Mercury	-28031-09-27 18:14 J	-8516629.82	-8516629.74	-8516629.64	0.0292	0.0248
Mercury	-28031-12-25 16:19 J	-8516540.98	-8516540.82	-8516540.65	0.0292	0.0070
Mercury	-28030-03-24 13:40 J	-8516452.08	-8516451.93	-8516451.76	0.0292	0.0107
Mercury	-28030-06-21 10:47 J	-8516363.10	-8516363.05	-8516363.00	0.0293	0.0277
Venus	-28022-04-16 22:04 J	-8513506.73	-8513506.58	-8513506.44	0.0281	0.0202
Venus	-28022-12-02 07:26 J	-8513277.39	-8513277.19	-8513276.99	0.0279	0.0070
Venus	-28021-07-18 14:38 J	-8513048.09	-8513047.89	-8513047.68	0.0278	0.0060
Venus	-28020-03-04 19:55 J	-8512818.81	-8512818.67	-8512818.51	0.0276	0.0186
Moon	-28018-05-04 23:59 J	-8512027.68	-8512027.50	-8512027.30	0.0271	0.0162
Earth	-28018-05-05 02:38 J	-8512027.58	-8512027.39	-8512027.19	0.0271	0.0161 *
Mercury	-28016-01-16 15:07 J	-8511404.97	-8511404.87	-8511404.77	0.0268	0.0186
Mercury	-28016-04-15 02:23 J	-8511316.53	-8511316.40	-8511316.27	0.0268	0.0081
Mercury	-28016-07-12 13:40 J	-8511228.07	-8511227.93	-8511227.79	0.0268	0.0027
Mercury	-28016-10-09 01:11 J	-8511139.57	-8511139.45	-8511139.33	0.0268	0.0135
Mercury	-28015-01-05 12:43 J	-8511051.01	-8511050.97	-8511050.90	0.0268	0.0245
Venus	-28007-12-21 06:57 J	-8507779.36	-8507779.21	-8507779.05	0.0279	0.0187
Venus	-28006-08-07 22:33 J	-8507549.77	-8507549.56	-8507549.35	0.0281	0.0052
Venus	-28005-03-24 16:19 J	-8507320.02	-8507319.82	-8507319.61	0.0283	0.0088

Venus	-28005-11-09 12:14 J	-8507090.11	-8507089.99	-8507089.86	0.0285	0.0231
Earth	-28003-11-08 02:38 J	-8506361.63	-8506361.39	-8506361.15	0.0290	0.0068
Moon	-28003-11-08 02:38 J	-8506361.62	-8506361.39	-8506361.16	0.0290	0.0083 *
Mercury	-28001-02-14 19:55 J	-8505897.71	-8505897.67	-8505897.61	0.0292	0.0279
Mercury	-28001-05-13 18:14 J	-8505808.90	-8505808.74	-8505808.58	0.0292	0.0099
Mercury	-28001-08-10 15:50 J	-8505720.01	-8505719.84	-8505719.67	0.0293	0.0078
Mercury	-28001-11-07 12:57 J	-8505631.05	-8505630.96	-8505630.87	0.0293	0.0250

# 28TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 28th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mars	-27998-12-13 05:31 J	-8504500.53	-8504500.27	-8504499.99	0.0292	0.0142		
Venus	-27993-10-27 08:23 J	-8502720.31	-8502720.15	-8502719.98	0.0281	0.0175		
Venus	-27992-06-13 17:16 J	-8502490.98	-8502490.78	-8502490.57	0.0279	0.0043		
Venus	-27991-01-29 00:14 J	-8502261.68	-8502261.49	-8502261.29	0.0277	0.0085		
Venus	-27991-09-15 05:02 J	-8502032.42	-8502032.29	-8502032.15	0.0275	0.0209		
Moon	-27988-05-11 08:23 J	-8501063.37	-8501063.15	-8501062.93	0.0269	0.0130		
Earth	-27988-05-11 10:19 J	-8501063.27	-8501063.07	-8501062.86	0.0269	0.0137 *		
Mercury	-27987-06-05 18:28 J	-8500672.81	-8500672.73	-8500672.63	0.0268	0.0205		
Mercury	-27987-09-02 05:45 J	-8500584.38	-8500584.26	-8500584.13	0.0268	0.0100		
Mercury	-27987-11-29 17:16 J	-8500495.92	-8500495.78	-8500495.64	0.0267	0.0010		
Mercury	-27986-02-26 04:33 J	-8500407.43	-8500407.31	-8500407.18	0.0267	0.0115		
Mercury	-27986-05-25 16:19 J	-8500318.90	-8500318.82	-8500318.75	0.0267	0.0223		

Venus	-27977-07-02 13:26 J	-8496993.11	-8496992.94	-8496992.76	0.0280	0.0164
Venus	-27976-02-17 05:02 J	-8496763.50	-8496763.29	-8496763.07	0.0281	0.0029
Venus	-27976-10-04 23:02 J	-8496533.74	-8496533.54	-8496533.35	0.0283	0.0112
Venus	-27975-05-22 18:43 J	-8496303.81	-8496303.72	-8496303.62	0.0285	0.0254
Moon	-27973-11-15 08:52 J	-8495396.17	-8495396.13	-8495396.06	0.0291	0.0282
Mercury	-27972-09-30 16:47 J	-8495076.94	-8495076.80	-8495076.64	0.0292	0.0152
Mercury	-27972-12-28 14:38 J	-8494988.06	-8494987.89	-8494987.72	0.0292	0.0026
Mercury	-27971-03-27 11:59 J	-8494899.13	-8494899.00	-8494898.88	0.0293	0.0199
Venus	-27963-05-09 11:31 J	-8491934.19	-8491934.02	-8491933.84	0.0280	0.0157
Venus	-27963-12-24 20:23 J	-8491704.86	-8491704.65	-8491704.44	0.0279	0.0025
Venus	-27962-08-11 03:07 J	-8491475.56	-8491475.37	-8491475.18	0.0277	0.0103
Venus	-27961-03-27 07:40 J	-8491246.29	-8491246.18	-8491246.05	0.0275	0.0227
Earth	-27959-05-06 11:31 J	-8490476.24	-8490476.02	-8490475.79	0.0271	0.0096
Moon	-27959-05-06 13:26 J	-8490476.15	-8490475.94	-8490475.72	0.0271	0.0100 *
Mercury	-27958-10-23 20:52 J	-8489940.69	-8489940.63	-8489940.57	0.0269	0.0237
Mercury	-27957-01-20 07:55 J	-8489852.29	-8489852.17	-8489852.05	0.0268	0.0133
Mercury	-27957-04-17 19:11 J	-8489763.83	-8489763.70	-8489763.56	0.0268	0.0028
Mercury	-27957-07-15 06:43 J	-8489675.35	-8489675.22	-8489675.09	0.0268	0.0081
Mercury	-27957-10-11 18:14 J	-8489586.83	-8489586.74	-8489586.64	0.0268	0.0190
Mars	-27953-03-11 18:14 J	-8488340.00	-8488339.74	-8488339.46	0.0268	0.0066
Venus	-27948-05-28 07:11 J	-8486436.22	-8486436.20	-8486436.14	0.0278	0.0272
Venus	-27947-01-12 21:21 J	-8486206.79	-8486206.61	-8486206.42	0.0280	0.0142
Venus	-27947-08-30 13:26 J	-8485977.15	-8485976.94	-8485976.72	0.0282	0.0008
Venus	-27946-04-17 07:40 J	-8485747.36	-8485747.18	-8485746.98	0.0283	0.0136
Venus	-27946-12-03 04:04 J	-8485517.36	-8485517.33	-8485517.27	0.0285	0.0279
Earth	-27944-11-09 18:28 J	-8484809.98	-8484809.73	-8484809.49	0.0290	0.0015
Moon	-27944-11-09 21:50 J	-8484809.84	-8484809.59	-8484809.35	0.0290	0.0005 *
Mercury	-27942-02-17 18:14 J	-8484344.87	-8484344.74	-8484344.61	0.0292	0.0186
Mercury	-27942-05-17 16:04 J	-8484256.00	-8484255.83	-8484255.66	0.0293	0.0007
Mercury	-27942-08-14 13:26 J	-8484167.08	-8484166.94	-8484166.80	0.0293	0.0167

Venus	-27934-04-04 11:16 J	-8481377.10	-8481377.03	-8481376.96	0.0282	0.0264
Venus	-27934-11-19 21:35 J	-8481147.78	-8481147.60	-8481147.41	0.0280	0.0131
Venus	-27933-07-06 05:59 J	-8480918.46	-8480918.25	-8480918.04	0.0278	0.0002
Venus	-27932-02-20 12:14 J	-8480689.17	-8480688.99	-8480688.80	0.0277	0.0128
Venus	-27932-10-07 16:33 J	-8480459.89	-8480459.81	-8480459.71	0.0275	0.0249
Moon	-27929-05-12 15:21 J	-8479512.01	-8479511.86	-8479511.68	0.0269	0.0192
Earth	-27929-05-12 19:11 J	-8479511.85	-8479511.70	-8479511.54	0.0269	0.0202 *
Mercury	-27928-03-12 00:28 J	-8479208.52	-8479208.48	-8479208.44	0.0268	0.0255
Mercury	-27928-06-08 11:31 J	-8479120.13	-8479120.02	-8479119.90	0.0268	0.0151
Mercury	-27928-09-04 22:47 J	-8479031.69	-8479031.55	-8479031.41	0.0267	0.0045
Mercury	-27928-12-02 10:19 J	-8478943.21	-8478943.07	-8478942.94	0.0267	0.0063
Mercury	-27927-02-28 21:50 J	-8478854.70	-8478854.59	-8478854.49	0.0267	0.0170
Venus	-27919-12-08 13:40 J	-8475650.01	-8475649.93	-8475649.83	0.0278	0.0250
Venus	-27918-07-26 04:04 J	-8475420.53	-8475420.33	-8475420.14	0.0280	0.0120
Venus	-27917-03-11 20:09 J	-8475190.87	-8475190.66	-8475190.44	0.0282	0.0018
Venus	-27917-10-27 14:38 J	-8474961.07	-8474960.89	-8474960.71	0.0284	0.0159
Earth	-27915-11-03 17:31 J	-8474223.81	-8474223.77	-8474223.70	0.0289	0.0281
Mercury	-27913-07-06 16:47 J	-8473612.89	-8473612.80	-8473612.69	0.0292	0.0239
Mercury	-27913-10-03 14:52 J	-8473524.05	-8473523.88	-8473523.71	0.0292	0.0060
Mercury	-27913-12-31 12:14 J	-8473435.14	-8473434.99	-8473434.83	0.0293	0.0116
Mercury	-27912-03-30 09:21 J	-8473346.13	-8473346.11	-8473346.08	0.0293	0.0287
Mars	-27909-05-08 13:26 J	-8472211.14	-8472210.94	-8472210.73	0.0292	0.0219
Venus	-27905-10-14 14:09 J	-8470591.00	-8470590.91	-8470590.80	0.0281	0.0247
Venus	-27904-06-01 00:28 J	-8470361.67	-8470361.48	-8470361.28	0.0280	0.0113
Venus	-27903-01-16 08:52 J	-8470132.34	-8470132.13	-8470131.93	0.0278	0.0019
Venus	-27903-09-02 14:52 J	-8469903.06	-8469902.88	-8469902.70	0.0276	0.0145
Venus	-27902-04-19 18:43 J	-8469673.76	-8469673.72	-8469673.65	0.0275	0.0266
Earth	-27900-05-07 19:40 J	-8468924.92	-8468924.68	-8468924.44	0.0270	0.0032
Moon	-27900-05-07 23:16 J	-8468924.77	-8468924.53	-8468924.29	0.0270	0.0038 *
Mercury	-27899-10-26 13:26 J	-8468388.03	-8468387.94	-8468387.84	0.0268	0.0186

Mercury	-27898-01-23 00:43 J	-8468299.60	-8468299.47	-8468299.34	0.0268	0.0080
Mercury	-27898-04-21 11:59 J	-8468211.14	-8468211.00	-8468210.86	0.0268	0.0028
Mercury	-27898-07-18 23:31 J	-8468122.64	-8468122.52	-8468122.40	0.0268	0.0135
Mercury	-27898-10-15 11:16 J	-8468034.09	-8468034.03	-8468033.98	0.0267	0.0244
Venus	-27889-06-19 19:55 J	-8464863.78	-8464863.67	-8464863.55	0.0279	0.0231
Venus	-27888-02-04 10:19 J	-8464634.26	-8464634.07	-8464633.86	0.0280	0.0099
Venus	-27888-09-22 03:07 J	-8464404.58	-8464404.37	-8464404.15	0.0282	0.0039
Venus	-27887-05-09 21:50 J	-8464174.75	-8464174.59	-8464174.42	0.0284	0.0181
Earth	-27885-11-11 07:40 J	-8463258.41	-8463258.18	-8463257.94	0.0290	0.0094
Moon	-27885-11-11 10:33 J	-8463258.30	-8463258.06	-8463257.81	0.0290	0.0078 *
Mercury	-27884-11-23 17:16 J	-8462880.82	-8462880.78	-8462880.72	0.0292	0.0278
Mercury	-27883-02-20 15:35 J	-8462792.01	-8462791.85	-8462791.69	0.0293	0.0098
Mercury	-27883-05-20 13:11 J	-8462703.11	-8462702.95	-8462702.78	0.0293	0.0079
Mercury	-27883-08-17 10:33 J	-8462614.15	-8462614.06	-8462613.98	0.0293	0.0253
Venus	-27875-04-27 00:28 J	-8459804.61	-8459804.48	-8459804.35	0.0281	0.0220
Venus	-27875-12-12 10:19 J	-8459575.27	-8459575.07	-8459574.87	0.0280	0.0087
Venus	-27874-07-29 17:59 J	-8459345.95	-8459345.75	-8459345.54	0.0278	0.0044
Venus	-27873-03-14 23:45 J	-8459116.67	-8459116.51	-8459116.35	0.0276	0.0169
Moon	-27871-05-03 01:55 J	-8458337.51	-8458337.42	-8458337.31	0.0271	0.0246
Earth	-27871-05-03 05:16 J	-8458337.37	-8458337.28	-8458337.17	0.0271	0.0246 *
Moon	-27870-05-15 02:38 J	-8457960.45	-8457960.39	-8457960.30	0.0269	0.0254
Earth	-27870-05-15 02:23 J	-8457960.42	-8457960.40	-8457960.34	0.0269	0.0265 *
Mercury	-27869-03-14 17:02 J	-8457655.87	-8457655.79	-8457655.70	0.0268	0.0204
Mercury	-27869-06-11 04:19 J	-8457567.45	-8457567.32	-8457567.19	0.0267	0.0098
Mercury	-27869-09-07 15:35 J	-8457478.99	-8457478.85	-8457478.71	0.0267	0.0008
Mercury	-27869-12-05 02:52 J	-8457390.50	-8457390.38	-8457390.25	0.0267	0.0116
Mercury	-27868-03-03 14:38 J	-8457301.96	-8457301.89	-8457301.82	0.0267	0.0224
Mars	-27865-08-06 01:40 J	-8456050.71	-8456050.43	-8456050.15	0.0267	0.0003
Venus	-27860-12-31 02:09 J	-8454077.54	-8454077.41	-8454077.26	0.0279	0.0209
Venus	-27859-08-17 17:02 J	-8453848.00	-8453847.79	-8453847.58	0.0281	0.0076



Venus	-27858-04-04 09:50 J	-8453618.30	-8453618.09	-8453617.88	0.0283	0.0063
Venus	-27858-11-20 04:33 J	-8453388.44	-8453388.31	-8453388.15	0.0284	0.0206
Moon	-27856-11-05 05:16 J	-8452672.43	-8452672.28	-8452672.12	0.0289	0.0219
Earth	-27856-11-05 06:57 J	-8452672.37	-8452672.21	-8452672.02	0.0289	0.0204 *
Mercury	-27854-07-10 14:23 J	-8452060.05	-8452059.90	-8452059.75	0.0292	0.0151
Mercury	-27854-10-07 12:14 J	-8451971.17	-8451970.99	-8451970.82	0.0293	0.0027
Mercury	-27853-01-04 09:21 J	-8451882.23	-8451882.11	-8451881.98	0.0293	0.0201
Venus	-27846-11-07 02:38 J	-8449018.52	-8449018.39	-8449018.23	0.0281	0.0203
Venus	-27845-06-23 12:28 J	-8448789.18	-8448788.98	-8448788.78	0.0279	0.0070
Venus	-27844-02-07 19:55 J	-8448559.87	-8448559.67	-8448559.46	0.0277	0.0060
Venus	-27844-09-25 01:26 J	-8448330.59	-8448330.44	-8448330.28	0.0276	0.0185
Earth	-27841-05-09 02:09 J	-8447373.65	-8447373.41	-8447373.16	0.0270	0.0030
Moon	-27841-05-09 02:23 J	-8447373.65	-8447373.40	-8447373.15	0.0270	0.0022 *
Mercury	-27840-08-01 18:43 J	-8446923.77	-8446923.72	-8446923.65	0.0268	0.0241
Mercury	-27840-10-29 05:59 J	-8446835.37	-8446835.25	-8446835.13	0.0268	0.0135
Mercury	-27839-01-25 17:16 J	-8446746.92	-8446746.78	-8446746.64	0.0268	0.0029
Mercury	-27839-04-24 04:33 J	-8446658.44	-8446658.31	-8446658.17	0.0267	0.0078
Mercury	-27839-07-21 16:04 J	-8446569.93	-8446569.83	-8446569.73	0.0267	0.0187
Venus	-27830-07-13 06:43 J	-8443291.37	-8443291.22	-8443291.06	0.0279	0.0191
Venus	-27829-02-27 21:50 J	-8443061.80	-8443061.59	-8443061.38	0.0281	0.0057
Venus	-27829-10-14 15:07 J	-8442832.08	-8442831.87	-8442831.66	0.0283	0.0082
Venus	-27828-06-01 10:19 J	-8442602.19	-8442602.07	-8442601.93	0.0284	0.0225
Moon	-27826-11-13 16:04 J	-8441707.04	-8441706.83	-8441706.61	0.0291	0.0153
Earth	-27826-11-13 17:59 J	-8441706.94	-8441706.75	-8441706.54	0.0291	0.0167 *
Mercury	-27825-11-26 13:55 J	-8441328.05	-8441327.92	-8441327.79	0.0292	0.0197
Mercury	-27824-02-23 11:59 J	-8441239.18	-8441239.00	-8441238.83	0.0293	0.0019
Mercury	-27824-05-23 09:21 J	-8441150.25	-8441150.11	-8441149.96	0.0293	0.0158
Venus	-27816-05-19 11:59 J	-8438232.16	-8438232.00	-8438231.83	0.0281	0.0177
Venus	-27815-01-03 21:21 J	-8438002.81	-8438002.61	-8438002.40	0.0279	0.0044
Venus	-27815-08-21 04:33 J	-8437773.51	-8437773.31	-8437773.11	0.0277	0.0085

Venus	-27814-04-07 09:21 J	-8437544.23	-8437544.11	-8437543.96	0.0276	0.0209
Moon	-27812-05-04 10:33 J	-8436786.23	-8436786.06	-8436785.89	0.0271	0.0187
Earth	-27812-05-04 11:31 J	-8436786.20	-8436786.02	-8436785.85	0.0271	0.0186 *
Mercury	-27811-12-19 22:19 J	-8436191.60	-8436191.57	-8436191.53	0.0268	0.0259
Mercury	-27810-03-18 09:21 J	-8436103.22	-8436103.11	-8436102.99	0.0268	0.0155
Mercury	-27810-06-14 20:38 J	-8436014.78	-8436014.64	-8436014.50	0.0267	0.0049
Mercury	-27810-09-11 07:55 J	-8435926.30	-8435926.17	-8435926.03	0.0267	0.0058
Mercury	-27810-12-08 19:26 J	-8435837.80	-8435837.69	-8435837.58	0.0267	0.0166
Venus	-27800-01-22 12:28 J	-8432505.14	-8432504.98	-8432504.80	0.0279	0.0170
Venus	-27800-09-09 03:50 J	-8432275.55	-8432275.34	-8432275.12	0.0281	0.0035
Venus	-27799-04-26 21:07 J	-8432045.81	-8432045.62	-8432045.41	0.0283	0.0106
Venus	-27799-12-12 16:47 J	-8431815.90	-8431815.80	-8431815.69	0.0285	0.0248
Earth	-27797-11-06 16:33 J	-8431121.02	-8431120.81	-8431120.58	0.0290	0.0133
Moon	-27797-11-06 19:11 J	-8431120.90	-8431120.70	-8431120.48	0.0290	0.0147 *
Mercury	-27795-04-15 12:28 J	-8430596.06	-8430595.98	-8430595.89	0.0292	0.0252
Mercury	-27795-07-13 10:33 J	-8430507.22	-8430507.06	-8430506.89	0.0293	0.0073
Mercury	-27795-10-10 08:23 J	-8430418.31	-8430418.15	-8430417.99	0.0293	0.0105
Mercury	-27794-01-07 05:16 J	-8430329.32	-8430329.28	-8430329.22	0.0293	0.0279
Venus	-27787-11-29 14:09 J	-8427446.07	-8427445.91	-8427445.73	0.0280	0.0160
Venus	-27786-07-16 23:16 J	-8427216.74	-8427216.53	-8427216.32	0.0278	0.0028
Venus	-27785-03-02 06:14 J	-8426987.43	-8426987.24	-8426987.05	0.0277	0.0100
Venus	-27785-10-17 11:02 J	-8426758.15	-8426758.04	-8426757.91	0.0275	0.0223
Moon	-27782-05-11 03:50 J	-8425822.57	-8425822.34	-8425822.10	0.0270	0.0078
Earth	-27782-05-11 07:11 J	-8425822.42	-8425822.20	-8425821.97	0.0270	0.0089 *
Mercury	-27781-08-04 11:02 J	-8425371.13	-8425371.04	-8425370.95	0.0268	0.0193
Mercury	-27781-10-31 22:04 J	-8425282.71	-8425282.58	-8425282.45	0.0268	0.0088
Mercury	-27780-01-28 09:21 J	-8425194.25	-8425194.11	-8425193.97	0.0267	0.0019
Mercury	-27780-04-26 20:52 J	-8425105.76	-8425105.63	-8425105.51	0.0267	0.0126
Mercury	-27780-07-24 08:23 J	-8425017.21	-8425017.15	-8425017.09	0.0267	0.0235
Mars	-27777-12-30 12:14 J	-8423762.27	-8423761.99	-8423761.71	0.0268	0.0030

Venus	-27771-08-04 15:21 J	-8421719.03	-8421718.86	-8421718.68	0.0279	0.0153
Venus	-27770-03-22 07:11 J	-8421489.42	-8421489.20	-8421488.99	0.0281	0.0018
Venus	-27770-11-07 00:43 J	-8421259.66	-8421259.47	-8421259.27	0.0283	0.0123
Venus	-27769-06-23 21:07 J	-8421029.70	-8421029.62	-8421029.55	0.0285	0.0265
Moon	-27767-11-14 21:07 J	-8420155.76	-8420155.62	-8420155.45	0.0291	0.0223
Earth	-27767-11-15 00:57 J	-8420155.60	-8420155.46	-8420155.31	0.0291	0.0234 *
Mercury	-27766-11-30 09:21 J	-8419775.26	-8419775.11	-8419774.95	0.0293	0.0124
Mercury	-27765-02-27 07:11 J	-8419686.37	-8419686.20	-8419686.03	0.0293	0.0055
Mercury	-27765-05-26 04:33 J	-8419597.41	-8419597.31	-8419597.20	0.0293	0.0230
Mars	-27762-01-05 02:38 J	-8418643.50	-8418643.39	-8418643.24	0.0293	0.0264
Venus	-27758-10-25 10:47 J	-8416889.09	-8416889.05	-8416888.97	0.0282	0.0270
Venus	-27757-06-10 21:50 J	-8416659.76	-8416659.59	-8416659.40	0.0281	0.0136
Venus	-27756-01-26 06:57 J	-8416430.42	-8416430.21	-8416430.00	0.0279	0.0003
Venus	-27756-09-12 13:26 J	-8416201.12	-8416200.94	-8416200.75	0.0277	0.0124
Venus	-27755-04-29 18:14 J	-8415971.83	-8415971.74	-8415971.65	0.0275	0.0245
Earth	-27753-05-05 15:21 J	-8415235.07	-8415234.86	-8415234.65	0.0270	0.0130
Moon	-27753-05-05 18:14 J	-8415234.94	-8415234.74	-8415234.53	0.0270	0.0133 *
Mercury	-27752-12-22 14:09 J	-8414638.98	-8414638.91	-8414638.82	0.0268	0.0214
Mercury	-27751-03-21 01:26 J	-8414550.57	-8414550.44	-8414550.32	0.0267	0.0109
Mercury	-27751-06-17 12:43 J	-8414462.11	-8414461.97	-8414461.83	0.0267	0.0008
Mercury	-27751-09-13 23:59 J	-8414373.63	-8414373.50	-8414373.37	0.0267	0.0104
Mercury	-27751-12-11 11:31 J	-8414285.10	-8414285.02	-8414284.94	0.0267	0.0213
Venus	-27742-06-30 07:40 J	-8411162.24	-8411162.18	-8411162.09	0.0278	0.0260
Venus	-27741-02-14 21:21 J	-8410932.79	-8410932.61	-8410932.42	0.0280	0.0130
Venus	-27741-10-01 13:11 J	-8410703.17	-8410702.95	-8410702.74	0.0282	0.0008
Venus	-27740-05-19 06:57 J	-8410473.39	-8410473.21	-8410473.03	0.0283	0.0147
Earth	-27738-11-08 22:47 J	-8409569.79	-8409569.55	-8409569.31	0.0290	0.0068
Moon	-27738-11-09 02:09 J	-8409569.65	-8409569.41	-8409569.17	0.0290	0.0080 *
Mercury	-27736-04-18 07:55 J	-8409043.30	-8409043.17	-8409043.03	0.0293	0.0180
Mercury	-27736-07-16 05:59 J	-8408954.43	-8408954.25	-8408954.08	0.0293	0.0003

Mercury	-27736-10-13 03:21 J	-8408865.49	-8408865.36	-8408865.22	0.0293	0.0176
Venus	-27728-05-06 13:11 J	-8406103.03	-8406102.95	-8406102.85	0.0282	0.0252
Venus	-27728-12-21 23:59 J	-8405873.69	-8405873.50	-8405873.31	0.0280	0.0119
Venus	-27727-08-08 08:23 J	-8405644.36	-8405644.15	-8405643.94	0.0278	0.0012
Venus	-27726-03-25 14:38 J	-8405415.07	-8405414.89	-8405414.71	0.0276	0.0139
Venus	-27726-11-09 18:57 J	-8405185.77	-8405185.71	-8405185.63	0.0275	0.0259
Moon	-27723-05-12 07:40 J	-8404271.37	-8404271.18	-8404270.96	0.0269	0.0134
Earth	-27723-05-12 10:04 J	-8404271.28	-8404271.08	-8404270.87	0.0269	0.0143 *
Mercury	-27722-05-11 15:50 J	-8403906.88	-8403906.84	-8403906.80	0.0268	0.0252
Mercury	-27722-08-08 02:38 J	-8403818.50	-8403818.39	-8403818.27	0.0267	0.0149
Mercury	-27722-11-04 13:55 J	-8403730.06	-8403729.92	-8403729.78	0.0267	0.0043
Mercury	-27721-02-01 01:11 J	-8403641.58	-8403641.45	-8403641.31	0.0267	0.0064
Mercury	-27721-04-29 12:43 J	-8403553.08	-8403552.97	-8403552.86	0.0267	0.0172
Venus	-27712-01-09 08:23 J	-8400376.24	-8400376.15	-8400376.04	0.0278	0.0246
Venus	-27712-08-26 22:19 J	-8400146.76	-8400146.57	-8400146.37	0.0280	0.0116
Venus	-27711-04-13 14:23 J	-8399917.12	-8399916.90	-8399916.69	0.0282	0.0021
Venus	-27711-11-29 08:38 J	-8399687.31	-8399687.14	-8399686.96	0.0283	0.0161
Moon	-27708-11-16 04:04 J	-8398604.36	-8398604.33	-8398604.28	0.0291	0.0286
Mercury	-27707-09-05 05:16 J	-8398311.36	-8398311.28	-8398311.17	0.0292	0.0242
Mercury	-27707-12-03 03:50 J	-8398222.51	-8398222.34	-8398222.17	0.0293	0.0060
Mercury	-27706-03-02 01:26 J	-8398133.59	-8398133.44	-8398133.28	0.0293	0.0118
Mercury	-27706-05-29 22:33 J	-8398044.56	-8398044.56	-8398044.54	0.0293	0.0292
Venus	-27699-11-16 19:55 J	-8395316.78	-8395316.67	-8395316.54	0.0282	0.0229
Venus	-27698-07-04 06:28 J	-8395087.42	-8395087.23	-8395087.03	0.0280	0.0096
Venus	-27697-02-18 15:07 J	-8394858.08	-8394857.87	-8394857.67	0.0278	0.0036
Venus	-27697-10-04 21:07 J	-8394628.78	-8394628.62	-8394628.45	0.0277	0.0162
Earth	-27694-05-07 17:31 J	-8393684.00	-8393683.77	-8393683.53	0.0270	0.0077
Moon	-27694-05-07 20:23 J	-8393683.88	-8393683.65	-8393683.41	0.0270	0.0082 *
Mercury	-27693-12-25 05:59 J	-8393086.36	-8393086.25	-8393086.15	0.0267	0.0171
Mercury	-27692-03-23 17:02 J	-8392997.92	-8392997.79	-8392997.65	0.0267	0.0066

Mercury	-27692-06-20 04:19 J	-8392909.46	-8392909.32	-8392909.18	0.0267	0.0041
Mercury	-27692-09-16 15:35 J	-8392820.96	-8392820.85	-8392820.73	0.0267	0.0149
Mercury	-27692-12-14 03:07 J	-8392732.40	-8392732.37	-8392732.33	0.0266	0.0257
Mars	-27688-05-26 06:57 J	-8391473.48	-8391473.21	-8391472.94	0.0267	0.0081
Venus	-27683-07-22 14:23 J	-8389590.02	-8389589.90	-8389589.77	0.0278	0.0224
Venus	-27682-03-09 04:19 J	-8389360.53	-8389360.32	-8389360.12	0.0280	0.0093
Venus	-27682-10-24 20:23 J	-8389130.87	-8389130.65	-8389130.44	0.0282	0.0044
Venus	-27681-06-10 14:38 J	-8388901.05	-8388900.89	-8388900.72	0.0284	0.0185
Moon	-27679-11-10 00:43 J	-8388018.72	-8388018.47	-8388018.21	0.0290	0.0020
Earth	-27679-11-10 01:26 J	-8388018.68	-8388018.44	-8388018.19	0.0290	0.0012 *
Mercury	-27677-04-21 02:23 J	-8387490.56	-8387490.40	-8387490.24	0.0293	0.0115
Mercury	-27677-07-19 00:14 J	-8387401.66	-8387401.49	-8387401.32	0.0293	0.0064
Mercury	-27677-10-15 21:35 J	-8387312.69	-8387312.60	-8387312.50	0.0293	0.0239
Mars	-27674-05-31 08:09 J	-8386355.35	-8386355.16	-8386354.96	0.0293	0.0222
Venus	-27669-05-28 21:50 J	-8384530.72	-8384530.59	-8384530.45	0.0281	0.0213
Venus	-27668-01-13 08:09 J	-8384301.36	-8384301.16	-8384300.95	0.0279	0.0080
Venus	-27668-08-30 16:19 J	-8384072.03	-8384071.82	-8384071.62	0.0278	0.0051
Venus	-27667-04-16 21:50 J	-8383842.74	-8383842.59	-8383842.42	0.0276	0.0176
Earth	-27664-05-13 11:02 J	-8382720.19	-8382720.04	-8382719.86	0.0269	0.0195
Moon	-27664-05-13 12:57 J	-8382720.12	-8382719.96	-8382719.77	0.0269	0.0183 *
Mercury	-27663-05-14 07:11 J	-8382354.28	-8382354.20	-8382354.11	0.0267	0.0211
Mercury	-27663-08-10 18:14 J	-8382265.86	-8382265.74	-8382265.61	0.0267	0.0106
Mercury	-27663-11-07 05:31 J	-8382177.41	-8382177.27	-8382177.13	0.0267	0.0001
Mercury	-27662-02-03 16:47 J	-8382088.93	-8382088.80	-8382088.67	0.0267	0.0107
Mercury	-27662-05-03 04:19 J	-8382000.40	-8382000.32	-8382000.24	0.0267	0.0215
Venus	-27653-02-01 13:55 J	-8378804.05	-8378803.92	-8378803.77	0.0278	0.0212
Venus	-27653-09-18 04:04 J	-8378574.53	-8378574.33	-8378574.12	0.0280	0.0080
Venus	-27652-05-05 20:23 J	-8378344.85	-8378344.65	-8378344.43	0.0282	0.0058
Venus	-27652-12-21 15:07 J	-8378115.02	-8378114.87	-8378114.71	0.0284	0.0199
Mercury	-27648-09-07 23:02 J	-8376758.66	-8376758.54	-8376758.39	0.0293	0.0183

Mercury	-27648-12-05 21:21 J	-8376669.78	-8376669.61	-8376669.44	0.0293	0.0003
Mercury	-27647-03-04 18:57 J	-8376580.84	-8376580.71	-8376580.57	0.0293	0.0176
Venus	-27640-12-09 03:21 J	-8373744.51	-8373744.36	-8373744.20	0.0282	0.0190
Venus	-27639-07-26 13:40 J	-8373515.14	-8373514.93	-8373514.73	0.0280	0.0057
Venus	-27638-03-12 21:35 J	-8373285.80	-8373285.60	-8373285.40	0.0278	0.0074
Venus	-27638-10-28 03:21 J	-8373056.50	-8373056.36	-8373056.21	0.0276	0.0198
Moon	-27635-05-08 16:04 J	-8372133.07	-8372132.83	-8372132.58	0.0270	0.0038
Earth	-27635-05-08 17:59 J	-8372132.98	-8372132.75	-8372132.50	0.0270	0.0028 *
Mercury	-27634-10-01 10:19 J	-8371622.13	-8371622.07	-8371622.01	0.0268	0.0235
Mercury	-27634-12-28 21:21 J	-8371533.73	-8371533.61	-8371533.49	0.0267	0.0130
Mercury	-27633-03-26 08:23 J	-8371445.29	-8371445.15	-8371445.01	0.0267	0.0025
Mercury	-27633-06-22 19:40 J	-8371356.81	-8371356.68	-8371356.54	0.0267	0.0082
Mercury	-27633-09-19 07:11 J	-8371268.30	-8371268.20	-8371268.10	0.0266	0.0190
Venus	-27624-08-13 19:26 J	-8368017.83	-8368017.69	-8368017.52	0.0278	0.0190
Venus	-27623-03-31 09:50 J	-8367788.30	-8367788.09	-8367787.88	0.0280	0.0057
Venus	-27623-11-16 02:09 J	-8367558.61	-8367558.41	-8367558.20	0.0282	0.0081
Venus	-27622-07-03 21:07 J	-8367328.75	-8367328.62	-8367328.49	0.0284	0.0222
Moon	-27620-11-10 21:50 J	-8366467.84	-8366467.59	-8366467.34	0.0291	0.0034
Earth	-27620-11-11 01:26 J	-8366467.69	-8366467.44	-8366467.20	0.0291	0.0042 *
Mercury	-27618-01-25 21:50 J	-8366026.69	-8366026.59	-8366026.49	0.0293	0.0239
Mercury	-27618-04-24 19:55 J	-8365937.84	-8365937.67	-8365937.50	0.0293	0.0058
Mercury	-27618-07-22 17:45 J	-8365848.92	-8365848.76	-8365848.60	0.0293	0.0121
Venus	-27610-06-21 05:16 J	-8362958.43	-8362958.28	-8362958.11	0.0281	0.0174
Venus	-27609-02-05 15:21 J	-8362729.06	-8362728.86	-8362728.65	0.0279	0.0041
Venus	-27609-09-21 23:02 J	-8362499.74	-8362499.54	-8362499.34	0.0277	0.0088
Venus	-27608-05-09 04:19 J	-8362270.44	-8362270.32	-8362270.18	0.0275	0.0212
Earth	-27606-05-03 15:21 J	-8361545.89	-8361545.86	-8361545.81	0.0271	0.0267
Earth	-27605-05-14 11:31 J	-8361169.10	-8361169.02	-8361168.91	0.0269	0.0245
Moon	-27605-05-14 15:21 J	-8361168.98	-8361168.86	-8361168.73	0.0269	0.0230 *
Mercury	-27604-05-16 22:47 J	-8360801.66	-8360801.55	-8360801.45	0.0267	0.0170

Mercury	-27604-08-13 09:50 J	-8360713.23	-8360713.09	-8360712.96	0.0267	0.0065
Mercury	-27604-11-09 20:52 J	-8360624.76	-8360624.63	-8360624.49	0.0267	0.0042
Mercury	-27603-02-06 08:23 J	-8360536.27	-8360536.15	-8360536.04	0.0266	0.0149
Mercury	-27603-05-05 19:40 J	-8360447.71	-8360447.68	-8360447.64	0.0266	0.0258
Mars	-27600-10-19 02:23 J	-8359185.66	-8359185.40	-8359185.14	0.0267	0.0096
Venus	-27594-02-23 18:28 J	-8357231.89	-8357231.73	-8357231.56	0.0278	0.0177
Venus	-27594-10-11 08:52 J	-8357002.34	-8357002.13	-8357001.91	0.0280	0.0045
Venus	-27593-05-28 01:26 J	-8356772.63	-8356772.44	-8356772.23	0.0282	0.0095
Venus	-27592-01-12 20:23 J	-8356542.76	-8356542.65	-8356542.52	0.0284	0.0235
Earth	-27591-11-04 14:09 J	-8355881.99	-8355881.91	-8355881.82	0.0289	0.0271
Moon	-27591-11-04 17:59 J	-8355881.80	-8355881.75	-8355881.69	0.0289	0.0280
Mercury	-27589-09-10 16:19 J	-8355205.97	-8355205.82	-8355205.66	0.0293	0.0128
Mercury	-27589-12-08 14:23 J	-8355117.07	-8355116.90	-8355116.73	0.0293	0.0052
Mercury	-27588-03-07 11:45 J	-8355028.11	-8355028.01	-8355027.90	0.0293	0.0229
Mars	-27586-10-23 22:47 J	-8354067.76	-8354067.55	-8354067.30	0.0294	0.0196
Venus	-27581-12-31 10:04 J	-8352172.26	-8352172.08	-8352171.91	0.0282	0.0152
Venus	-27580-08-17 19:55 J	-8351942.88	-8351942.67	-8351942.46	0.0280	0.0019
Venus	-27579-04-04 03:21 J	-8351713.55	-8351713.36	-8351713.16	0.0278	0.0111
Venus	-27579-11-19 09:07 J	-8351484.23	-8351484.12	-8351484.01	0.0276	0.0233
Moon	-27576-05-09 14:09 J	-8350582.15	-8350581.91	-8350581.67	0.0270	0.0008
Earth	-27576-05-09 17:45 J	-8350582.00	-8350581.76	-8350581.52	0.0270	0.0020 *
Mercury	-27575-10-04 01:26 J	-8350069.53	-8350069.44	-8350069.34	0.0267	0.0196
Mercury	-27575-12-31 12:28 J	-8349981.10	-8349980.98	-8349980.84	0.0267	0.0091
Mercury	-27574-03-29 23:45 J	-8349892.65	-8349892.51	-8349892.37	0.0267	0.0016
Mercury	-27574-06-26 11:02 J	-8349804.16	-8349804.04	-8349803.91	0.0267	0.0123
Mercury	-27574-09-22 22:33 J	-8349715.63	-8349715.56	-8349715.49	0.0266	0.0231
Venus	-27565-09-05 00:43 J	-8346445.64	-8346445.47	-8346445.29	0.0279	0.0154
Venus	-27564-04-22 15:07 J	-8346216.08	-8346215.87	-8346215.65	0.0281	0.0021
Venus	-27564-12-08 07:55 J	-8345986.36	-8345986.17	-8345985.97	0.0282	0.0118
Venus	-27563-07-26 03:07 J	-8345756.45	-8345756.37	-8345756.28	0.0284	0.0259

Moon	-27561-11-11 23:02 J	-8344916.77	-8344916.54	-8344916.31	0.0291	0.0088
Earth	-27561-11-12 00:28 J	-8344916.72	-8344916.48	-8344916.24	0.0291	0.0092 *
Mercury	-27559-01-28 15:07 J	-8344474.00	-8344473.87	-8344473.73	0.0293	0.0183
Mercury	-27559-04-27 13:11 J	-8344385.12	-8344384.95	-8344384.77	0.0293	0.0005
Mercury	-27559-07-25 10:47 J	-8344296.18	-8344296.05	-8344295.91	0.0294	0.0176
Venus	-27552-11-26 00:14 J	-8341615.55	-8341615.49	-8341615.43	0.0283	0.0270
Venus	-27551-07-13 11:59 J	-8341386.18	-8341386.00	-8341385.81	0.0281	0.0136
Venus	-27550-02-27 21:50 J	-8341156.80	-8341156.59	-8341156.38	0.0279	0.0006
Venus	-27550-10-15 05:02 J	-8340927.47	-8340927.29	-8340927.10	0.0277	0.0125
Venus	-27549-05-31 10:19 J	-8340698.16	-8340698.07	-8340697.98	0.0275	0.0247
Earth	-27547-05-04 15:21 J	-8339994.99	-8339994.86	-8339994.70	0.0270	0.0219
Moon	-27547-05-04 19:11 J	-8339994.83	-8339994.70	-8339994.57	0.0270	0.0228 *
Mercury	-27545-02-21 03:07 J	-8339337.44	-8339337.37	-8339337.31	0.0267	0.0233
Mercury	-27545-05-19 13:55 J	-8339249.03	-8339248.92	-8339248.79	0.0267	0.0130
Mercury	-27545-08-16 01:11 J	-8339160.59	-8339160.45	-8339160.31	0.0267	0.0024
Mercury	-27545-11-12 12:28 J	-8339072.12	-8339071.98	-8339071.85	0.0266	0.0083
Mercury	-27544-02-08 23:45 J	-8338983.61	-8338983.51	-8338983.41	0.0266	0.0190
Venus	-27536-07-31 10:47 J	-8335889.09	-8335889.05	-8335888.99	0.0277	0.0269
Venus	-27535-03-17 23:16 J	-8335659.71	-8335659.53	-8335659.35	0.0279	0.0142
Venus	-27535-11-02 13:55 J	-8335430.14	-8335429.92	-8335429.71	0.0280	0.0009
Venus	-27534-06-20 06:43 J	-8335200.40	-8335200.22	-8335200.02	0.0282	0.0131
Venus	-27533-02-05 01:55 J	-8334970.47	-8334970.42	-8334970.35	0.0284	0.0272
Earth	-27532-11-05 11:45 J	-8334331.16	-8334331.01	-8334330.85	0.0289	0.0225
Moon	-27532-11-05 12:28 J	-8334331.14	-8334330.98	-8334330.82	0.0289	0.0228 *
Mercury	-27530-06-17 10:47 J	-8333742.12	-8333742.05	-8333741.96	0.0293	0.0259
Mercury	-27530-09-14 09:07 J	-8333653.28	-8333653.12	-8333652.95	0.0293	0.0077
Mercury	-27530-12-12 07:11 J	-8333564.36	-8333564.20	-8333564.04	0.0293	0.0103
Mercury	-27529-03-10 04:19 J	-8333475.36	-8333475.32	-8333475.26	0.0294	0.0280
Venus	-27522-06-08 03:21 J	-8330829.45	-8330829.36	-8330829.26	0.0284	0.0251
Venus	-27521-01-23 15:35 J	-8330600.04	-8330599.85	-8330599.65	0.0282	0.0115



Venus	-27521-09-09 01:26 J	-8330370.65	-8330370.44	-8330370.23	0.0280	0.0018
Venus	-27520-04-26 08:38 J	-8330141.31	-8330141.14	-8330140.95	0.0278	0.0147
Venus	-27520-12-11 14:09 J	-8329911.95	-8329911.91	-8329911.86	0.0276	0.0268
Earth	-27517-05-10 17:02 J	-8329031.02	-8329030.79	-8329030.55	0.0270	0.0067
Moon	-27517-05-10 17:31 J	-8329030.99	-8329030.77	-8329030.53	0.0270	0.0054 *
Mercury	-27516-07-10 05:45 J	-8328605.28	-8328605.26	-8328605.23	0.0268	0.0261
Mercury	-27516-10-06 16:47 J	-8328516.91	-8328516.80	-8328516.69	0.0267	0.0156
Mercury	-27515-01-03 03:50 J	-8328428.47	-8328428.34	-8328428.20	0.0267	0.0051
Mercury	-27515-04-01 15:07 J	-8328340.01	-8328339.87	-8328339.73	0.0267	0.0056
Mercury	-27515-06-29 02:23 J	-8328251.51	-8328251.40	-8328251.29	0.0266	0.0164
Mars	-27511-03-14 18:57 J	-8326896.95	-8326896.71	-8326896.47	0.0266	0.0143
Venus	-27506-02-10 17:31 J	-8325102.86	-8325102.77	-8325102.67	0.0277	0.0246
Venus	-27506-09-28 05:45 J	-8324873.44	-8324873.26	-8324873.06	0.0279	0.0119
Venus	-27505-05-14 20:38 J	-8324643.85	-8324643.64	-8324643.42	0.0281	0.0016
Venus	-27505-12-30 13:40 J	-8324414.11	-8324413.93	-8324413.75	0.0283	0.0155
Earth	-27502-11-13 22:47 J	-8323365.76	-8323365.55	-8323365.33	0.0291	0.0142
Moon	-27502-11-14 01:55 J	-8323365.63	-8323365.42	-8323365.20	0.0291	0.0141 *
Mercury	-27500-01-31 08:23 J	-8322921.31	-8322921.15	-8322920.99	0.0293	0.0128
Mercury	-27500-04-30 06:28 J	-8322832.40	-8322832.23	-8322832.06	0.0294	0.0053
Mercury	-27500-07-28 03:50 J	-8322743.44	-8322743.34	-8322743.23	0.0294	0.0230
Mars	-27497-03-17 20:23 J	-8321779.89	-8321779.65	-8321779.39	0.0294	0.0169
Venus	-27493-12-18 06:57 J	-8320043.32	-8320043.21	-8320043.09	0.0283	0.0232
Venus	-27492-08-04 18:43 J	-8319813.92	-8319813.72	-8319813.53	0.0281	0.0097
Venus	-27491-03-22 03:50 J	-8319584.54	-8319584.34	-8319584.13	0.0279	0.0035
Venus	-27491-11-06 10:47 J	-8319355.21	-8319355.05	-8319354.87	0.0277	0.0162
Moon	-27488-05-05 15:35 J	-8318444.03	-8318443.85	-8318443.65	0.0270	0.0181
Earth	-27488-05-05 16:04 J	-8318444.02	-8318443.83	-8318443.64	0.0270	0.0170 *
Mercury	-27486-02-23 18:14 J	-8317784.82	-8317784.74	-8317784.64	0.0267	0.0194
Mercury	-27486-05-23 05:31 J	-8317696.40	-8317696.27	-8317696.14	0.0267	0.0088
Mercury	-27486-08-19 16:33 J	-8317607.95	-8317607.81	-8317607.67	0.0267	0.0018

Mercury	-27486-11-16 03:50 J	-8317519.46	-8317519.34	-8317519.21	0.0266	0.0125
Mercury	-27485-02-12 15:07 J	-8317430.93	-8317430.87	-8317430.79	0.0266	0.0234
Venus	-27477-08-22 16:33 J	-8314316.93	-8314316.81	-8314316.70	0.0277	0.0233
Venus	-27476-04-09 04:47 J	-8314087.49	-8314087.30	-8314087.10	0.0279	0.0105
Venus	-27476-11-24 19:40 J	-8313857.89	-8313857.68	-8313857.47	0.0281	0.0029
Venus	-27475-07-12 12:57 J	-8313628.13	-8313627.96	-8313627.78	0.0283	0.0168
Moon	-27473-11-06 07:11 J	-8312780.39	-8312780.20	-8312780.00	0.0289	0.0175
Earth	-27473-11-06 11:02 J	-8312780.23	-8312780.04	-8312779.84	0.0289	0.0176 *
Mercury	-27471-06-20 04:19 J	-8312189.45	-8312189.32	-8312189.19	0.0293	0.0203
Mercury	-27471-09-17 02:38 J	-8312100.57	-8312100.39	-8312100.22	0.0293	0.0022
Mercury	-27471-12-15 00:14 J	-8312011.63	-8312011.49	-8312011.34	0.0293	0.0158
Venus	-27463-06-30 09:21 J	-8309257.23	-8309257.11	-8309256.96	0.0284	0.0214
Venus	-27462-02-14 21:21 J	-8309027.80	-8309027.61	-8309027.40	0.0282	0.0078
Venus	-27462-10-02 06:57 J	-8308798.41	-8308798.21	-8308798.00	0.0280	0.0056
Venus	-27461-05-18 14:09 J	-8308569.06	-8308568.91	-8308568.75	0.0278	0.0183
Earth	-27458-05-12 16:33 J	-8307480.02	-8307479.81	-8307479.58	0.0270	0.0115
Moon	-27458-05-12 20:09 J	-8307479.87	-8307479.66	-8307479.43	0.0270	0.0100 *
Mercury	-27457-07-12 21:07 J	-8307052.69	-8307052.62	-8307052.54	0.0268	0.0221
Mercury	-27457-10-09 08:09 J	-8306964.28	-8306964.16	-8306964.04	0.0267	0.0116
Mercury	-27456-01-05 19:11 J	-8306875.83	-8306875.70	-8306875.56	0.0267	0.0013
Mercury	-27456-04-04 06:28 J	-8306787.36	-8306787.23	-8306787.10	0.0267	0.0097
Mercury	-27456-07-01 17:59 J	-8306698.84	-8306698.75	-8306698.66	0.0266	0.0206
Mars	-27453-06-21 18:14 J	-8305612.87	-8305612.74	-8305612.60	0.0266	0.0231
Venus	-27447-03-04 23:45 J	-8303530.65	-8303530.51	-8303530.38	0.0277	0.0210
Venus	-27447-10-20 12:14 J	-8303301.19	-8303300.99	-8303300.78	0.0279	0.0081
Venus	-27446-06-07 03:21 J	-8303071.57	-8303071.36	-8303071.15	0.0281	0.0054
Venus	-27445-01-22 20:38 J	-8302841.79	-8302841.64	-8302841.48	0.0283	0.0193
Earth	-27443-11-14 23:02 J	-8301814.72	-8301814.54	-8301814.35	0.0291	0.0194
Moon	-27443-11-15 01:55 J	-8301814.60	-8301814.42	-8301814.23	0.0291	0.0197 *
Mercury	-27442-11-07 03:21 J	-8301457.44	-8301457.36	-8301457.26	0.0293	0.0254

Mercury	-27441-02-04 01:55 J	-8301368.59	-8301368.42	-8301368.25	0.0293	0.0071
Mercury	-27441-05-02 23:45 J	-8301279.67	-8301279.51	-8301279.35	0.0294	0.0109
Mercury	-27441-07-30 21:07 J	-8301190.65	-8301190.62	-8301190.58	0.0294	0.0285
Venus	-27433-01-10 13:40 J	-8298471.08	-8298470.93	-8298470.77	0.0283	0.0194
Venus	-27433-08-27 01:11 J	-8298241.65	-8298241.45	-8298241.24	0.0281	0.0059
Venus	-27432-04-13 10:19 J	-8298012.27	-8298012.07	-8298011.87	0.0279	0.0073
Venus	-27432-11-28 17:16 J	-8297782.93	-8297782.78	-8297782.64	0.0277	0.0198
Moon	-27429-05-06 13:40 J	-8296893.14	-8296892.93	-8296892.71	0.0270	0.0133
Earth	-27429-05-06 17:02 J	-8296893.00	-8296892.79	-8296892.57	0.0270	0.0120 *
Mercury	-27428-11-29 23:02 J	-8296320.57	-8296320.54	-8296320.50	0.0267	0.0255
Mercury	-27427-02-26 10:04 J	-8296232.19	-8296232.08	-8296231.97	0.0267	0.0151
Mercury	-27427-05-25 21:07 J	-8296143.76	-8296143.62	-8296143.48	0.0267	0.0045
Mercury	-27427-08-22 08:23 J	-8296055.29	-8296055.15	-8296055.02	0.0267	0.0062
Mercury	-27427-11-18 19:40 J	-8295966.79	-8295966.68	-8295966.57	0.0266	0.0169
Mars	-27423-08-07 20:52 J	-8294608.85	-8294608.63	-8294608.41	0.0266	0.0166
Venus	-27418-09-14 23:16 J	-8292744.68	-8292744.53	-8292744.38	0.0277	0.0196
Venus	-27417-05-01 11:45 J	-8292515.21	-8292515.01	-8292514.80	0.0279	0.0067
Venus	-27417-12-17 02:52 J	-8292285.59	-8292285.38	-8292285.17	0.0281	0.0068
Venus	-27416-08-03 20:23 J	-8292055.79	-8292055.65	-8292055.50	0.0283	0.0207
Moon	-27414-11-08 09:50 J	-8291229.31	-8291229.09	-8291228.87	0.0289	0.0119
Earth	-27414-11-08 11:31 J	-8291229.24	-8291229.02	-8291228.79	0.0289	0.0124 *
Mercury	-27412-06-22 22:04 J	-8290636.73	-8290636.58	-8290636.43	0.0293	0.0144
Mercury	-27412-09-19 20:09 J	-8290547.83	-8290547.66	-8290547.49	0.0293	0.0037
Mercury	-27412-12-17 17:45 J	-8290458.88	-8290458.76	-8290458.64	0.0293	0.0215
Mars	-27409-08-10 02:52 J	-8289492.63	-8289492.38	-8289492.11	0.0294	0.0156
Venus	-27404-07-22 16:04 J	-8287684.99	-8287684.83	-8287684.66	0.0283	0.0175
Venus	-27403-03-09 03:50 J	-8287455.55	-8287455.34	-8287455.13	0.0281	0.0039
Venus	-27403-10-24 12:57 J	-8287226.15	-8287225.96	-8287225.76	0.0279	0.0093
Venus	-27402-06-10 20:09 J	-8286996.79	-8286996.66	-8286996.53	0.0278	0.0219
Earth	-27399-05-13 17:31 J	-8285928.95	-8285928.77	-8285928.57	0.0270	0.0164

Moon	-27399-05-13 18:43 J	-8285928.92	-8285928.72	-8285928.50	0.0270	0.0150 *
Mercury	-27398-07-16 12:43 J	-8285500.07	-8285499.97	-8285499.87	0.0268	0.0179
Mercury	-27398-10-12 23:45 J	-8285411.64	-8285411.51	-8285411.38	0.0267	0.0074
Mercury	-27397-01-09 11:02 J	-8285323.18	-8285323.04	-8285322.91	0.0267	0.0034
Mercury	-27397-04-06 22:19 J	-8285234.69	-8285234.57	-8285234.45	0.0267	0.0141
Mercury	-27397-07-04 09:35 J	-8285146.14	-8285146.10	-8285146.05	0.0267	0.0250
Venus	-27388-03-27 06:57 J	-8281958.37	-8281958.21	-8281958.03	0.0277	0.0173
Venus	-27388-11-11 20:09 J	-8281728.87	-8281728.66	-8281728.45	0.0279	0.0042
Venus	-27387-06-29 11:31 J	-8281499.22	-8281499.02	-8281498.81	0.0281	0.0094
Venus	-27386-02-14 05:16 J	-8281269.40	-8281269.28	-8281269.16	0.0283	0.0233
Moon	-27384-11-15 23:59 J	-8280263.60	-8280263.50	-8280263.38	0.0291	0.0260
Earth	-27384-11-16 01:55 J	-8280263.53	-8280263.42	-8280263.28	0.0291	0.0252 *
Mercury	-27383-11-09 22:04 J	-8279904.71	-8279904.58	-8279904.45	0.0293	0.0189
Mercury	-27382-02-06 20:09 J	-8279815.83	-8279815.66	-8279815.48	0.0293	0.0010
Mercury	-27382-05-06 17:59 J	-8279726.89	-8279726.75	-8279726.61	0.0294	0.0172
Venus	-27374-02-01 21:35 J	-8276898.77	-8276898.60	-8276898.42	0.0283	0.0154
Venus	-27374-09-19 08:38 J	-8276669.34	-8276669.14	-8276668.93	0.0281	0.0020
Venus	-27373-05-05 17:31 J	-8276439.96	-8276439.77	-8276439.58	0.0279	0.0111
Venus	-27373-12-21 00:14 J	-8276210.59	-8276210.49	-8276210.38	0.0277	0.0236
Moon	-27370-05-08 17:31 J	-8275341.99	-8275341.77	-8275341.54	0.0270	0.0082
Earth	-27370-05-08 19:40 J	-8275341.92	-8275341.68	-8275341.45	0.0270	0.0068 *
Mercury	-27369-12-02 14:52 J	-8274767.96	-8274767.88	-8274767.80	0.0267	0.0211
Mercury	-27368-03-01 01:55 J	-8274679.55	-8274679.42	-8274679.29	0.0267	0.0106
Mercury	-27368-05-28 12:57 J	-8274591.10	-8274590.96	-8274590.82	0.0267	0.0006
Mercury	-27368-08-25 00:14 J	-8274502.62	-8274502.49	-8274502.36	0.0267	0.0108
Mercury	-27368-11-21 11:31 J	-8274414.09	-8274414.02	-8274413.93	0.0266	0.0216
Mars	-27365-11-15 03:21 J	-8273324.53	-8273324.36	-8273324.17	0.0266	0.0201
Venus	-27359-10-07 07:55 J	-8271172.34	-8271172.17	-8271171.99	0.0277	0.0158
Venus	-27358-05-24 20:52 J	-8270942.84	-8270942.63	-8270942.42	0.0279	0.0027
Venus	-27357-01-09 12:14 J	-8270713.19	-8270712.99	-8270712.79	0.0281	0.0110

Venus	-27357-08-26 05:59 J	-8270483.35	-8270483.25	-8270483.15	0.0283	0.0249
Earth	-27355-11-09 16:04 J	-8269678.08	-8269677.83	-8269677.59	0.0289	0.0065
Moon	-27355-11-09 18:43 J	-8269677.95	-8269677.72	-8269677.48	0.0289	0.0056 *
Mercury	-27353-03-28 17:59 J	-8269172.81	-8269172.75	-8269172.66	0.0292	0.0262
Mercury	-27353-06-25 16:47 J	-8269083.97	-8269083.80	-8269083.64	0.0293	0.0078
Mercury	-27353-09-22 14:38 J	-8268995.05	-8268994.89	-8268994.73	0.0293	0.0102
Mercury	-27353-12-20 11:59 J	-8268906.04	-8268906.00	-8268905.94	0.0293	0.0279
Venus	-27346-12-28 09:50 J	-8266342.14	-8266342.09	-8266342.03	0.0285	0.0274
Venus	-27345-08-13 23:31 J	-8266112.70	-8266112.52	-8266112.33	0.0283	0.0136
Venus	-27344-03-31 10:47 J	-8265883.25	-8265883.05	-8265882.84	0.0281	0.0006
Venus	-27344-11-15 19:40 J	-8265653.85	-8265653.68	-8265653.49	0.0279	0.0132
Venus	-27343-07-03 02:38 J	-8265424.46	-8265424.39	-8265424.31	0.0277	0.0256
Moon	-27340-05-14 16:47 J	-8264377.96	-8264377.80	-8264377.63	0.0270	0.0201
Earth	-27340-05-14 19:40 J	-8264377.82	-8264377.68	-8264377.53	0.0270	0.0215 *
Mercury	-27339-04-21 17:31 J	-8264035.83	-8264035.77	-8264035.71	0.0268	0.0241
Mercury	-27339-07-19 04:33 J	-8263947.43	-8263947.31	-8263947.19	0.0268	0.0136
Mercury	-27339-10-15 15:35 J	-8263858.99	-8263858.85	-8263858.71	0.0268	0.0029
Mercury	-27338-01-12 02:52 J	-8263770.51	-8263770.38	-8263770.25	0.0267	0.0079
Mercury	-27338-04-10 14:09 J	-8263682.01	-8263681.91	-8263681.81	0.0267	0.0187
Mars	-27334-01-01 23:02 J	-8262319.68	-8262319.54	-8262319.37	0.0266	0.0222
Venus	-27330-09-02 05:16 J	-8260615.34	-8260615.28	-8260615.19	0.0275	0.0259
Venus	-27329-04-18 16:19 J	-8260386.00	-8260385.82	-8260385.62	0.0277	0.0134
Venus	-27329-12-04 05:59 J	-8260156.47	-8260156.25	-8260156.04	0.0279	0.0006
Venus	-27328-07-21 21:35 J	-8259926.78	-8259926.60	-8259926.41	0.0281	0.0136
Venus	-27327-03-08 15:35 J	-8259696.89	-8259696.85	-8259696.79	0.0283	0.0275
Mercury	-27324-11-12 17:16 J	-8258351.94	-8258351.78	-8258351.62	0.0293	0.0118
Mercury	-27323-02-09 15:21 J	-8258263.03	-8258262.86	-8258262.69	0.0293	0.0063
Mercury	-27323-05-09 12:57 J	-8258174.06	-8258173.96	-8258173.87	0.0294	0.0240
Mars	-27320-01-03 23:59 J	-8257203.78	-8257203.50	-8257203.20	0.0294	0.0100
Venus	-27316-07-09 16:47 J	-8255555.88	-8255555.80	-8255555.69	0.0284	0.0252

Venus	-27315-02-24 06:14 J	-8255326.43	-8255326.24	-8255326.05	0.0282	0.0114
Venus	-27315-10-11 17:02 J	-8255097.00	-8255096.79	-8255096.58	0.0280	0.0021
Venus	-27314-05-29 01:40 J	-8254867.60	-8254867.43	-8254867.25	0.0278	0.0151
Venus	-27313-01-13 07:55 J	-8254638.18	-8254638.17	-8254638.13	0.0277	0.0274
Earth	-27311-05-09 23:31 J	-8253790.76	-8253790.52	-8253790.28	0.0270	0.0013
Moon	-27311-05-10 01:55 J	-8253790.66	-8253790.42	-8253790.19	0.0270	0.0028 *
Mercury	-27310-12-06 06:57 J	-8253215.32	-8253215.21	-8253215.10	0.0267	0.0164
Mercury	-27309-03-03 17:59 J	-8253126.88	-8253126.75	-8253126.61	0.0267	0.0059
Mercury	-27309-05-31 05:16 J	-8253038.42	-8253038.28	-8253038.14	0.0267	0.0048
Mercury	-27309-08-27 16:33 J	-8252949.92	-8252949.81	-8252949.70	0.0267	0.0156
Mercury	-27309-11-24 03:50 J	-8252861.34	-8252861.34	-8252861.32	0.0266	0.0266
Venus	-27300-03-14 07:26 J	-8249829.29	-8249829.19	-8249829.09	0.0276	0.0242
Venus	-27300-10-29 18:14 J	-8249599.92	-8249599.74	-8249599.54	0.0278	0.0117
Venus	-27299-06-16 07:55 J	-8249370.39	-8249370.17	-8249369.96	0.0279	0.0016
Venus	-27298-01-31 23:31 J	-8249140.70	-8249140.52	-8249140.34	0.0281	0.0153
Earth	-27296-11-10 23:59 J	-8248126.75	-8248126.50	-8248126.25	0.0289	0.0002
Moon	-27296-11-11 03:07 J	-8248126.62	-8248126.37	-8248126.11	0.0289	0.0013 *
Mercury	-27294-04-01 14:09 J	-8247620.04	-8247619.91	-8247619.77	0.0292	0.0186
Mercury	-27294-06-29 12:28 J	-8247531.16	-8247530.98	-8247530.81	0.0293	0.0008
Mercury	-27294-09-26 10:04 J	-8247442.21	-8247442.08	-8247441.94	0.0293	0.0175
Venus	-27286-01-19 19:40 J	-8244769.80	-8244769.68	-8244769.56	0.0285	0.0233
Venus	-27286-09-06 08:52 J	-8244540.33	-8244540.13	-8244539.93	0.0283	0.0095
Venus	-27285-04-22 19:40 J	-8244310.89	-8244310.68	-8244310.47	0.0281	0.0040
Venus	-27285-12-08 04:19 J	-8244081.48	-8244081.32	-8244081.15	0.0279	0.0170
Moon	-27282-05-04 22:04 J	-8243203.61	-8243203.58	-8243203.52	0.0272	0.0267
Earth	-27282-05-05 00:57 J	-8243203.55	-8243203.46	-8243203.37	0.0272	0.0253 *
Moon	-27281-05-15 20:23 J	-8242826.71	-8242826.65	-8242826.57	0.0270	0.0258
Mercury	-27280-04-24 09:35 J	-8242483.19	-8242483.10	-8242483.01	0.0268	0.0195
Mercury	-27280-07-21 20:38 J	-8242394.77	-8242394.64	-8242394.51	0.0268	0.0088
Mercury	-27280-10-18 07:55 J	-8242306.31	-8242306.17	-8242306.04	0.0268	0.0020

Mercury	-27279-01-14 19:11 J	-8242217.83	-8242217.70	-8242217.58	0.0267	0.0127
Mercury	-27279-04-13 06:28 J	-8242129.29	-8242129.23	-8242129.16	0.0267	0.0237
Mars	-27276-04-11 08:38 J	-8241035.38	-8241035.14	-8241034.90	0.0266	0.0144
Venus	-27271-09-24 16:19 J	-8239042.94	-8239042.82	-8239042.68	0.0276	0.0219
Venus	-27270-05-12 03:50 J	-8238813.54	-8238813.34	-8238813.14	0.0278	0.0091
Venus	-27270-12-27 17:31 J	-8238583.98	-8238583.77	-8238583.55	0.0280	0.0043
Venus	-27269-08-13 09:50 J	-8238354.25	-8238354.09	-8238353.92	0.0282	0.0180
Moon	-27267-11-05 04:33 J	-8237540.37	-8237540.31	-8237540.23	0.0288	0.0275
Earth	-27267-11-05 07:40 J	-8237540.22	-8237540.18	-8237540.11	0.0288	0.0281
Mercury	-27265-08-18 15:21 J	-8236887.98	-8236887.86	-8236887.75	0.0293	0.0222
Mercury	-27265-11-15 13:26 J	-8236799.11	-8236798.94	-8236798.76	0.0293	0.0040
Mercury	-27264-02-12 11:16 J	-8236710.18	-8236710.03	-8236709.87	0.0293	0.0141
Venus	-27257-08-01 03:35 J	-8233983.49	-8233983.35	-8233983.20	0.0284	0.0209
Venus	-27256-03-18 16:19 J	-8233754.02	-8233753.82	-8233753.61	0.0282	0.0072
Venus	-27256-11-03 02:38 J	-8233524.59	-8233524.39	-8233524.18	0.0280	0.0063
Venus	-27255-06-20 10:47 J	-8233295.19	-8233295.05	-8233294.89	0.0278	0.0191
Earth	-27252-05-11 05:02 J	-8232239.53	-8232239.29	-8232239.05	0.0270	0.0046
Moon	-27252-05-11 08:23 J	-8232239.39	-8232239.15	-8232238.90	0.0270	0.0031 *
Mercury	-27251-09-11 12:28 J	-8231751.06	-8231750.98	-8231750.91	0.0268	0.0220
Mercury	-27251-12-08 23:31 J	-8231662.65	-8231662.52	-8231662.40	0.0267	0.0115
Mercury	-27250-03-07 10:33 J	-8231574.20	-8231574.06	-8231573.92	0.0267	0.0008
Mercury	-27250-06-03 21:50 J	-8231485.72	-8231485.59	-8231485.46	0.0267	0.0100
Mercury	-27250-08-31 09:07 J	-8231397.20	-8231397.12	-8231397.03	0.0267	0.0208
Venus	-27241-04-05 19:40 J	-8228256.83	-8228256.68	-8228256.53	0.0276	0.0200
Venus	-27241-11-21 06:57 J	-8228027.41	-8228027.21	-8228027.00	0.0278	0.0073
Venus	-27240-07-08 20:52 J	-8227797.83	-8227797.63	-8227797.41	0.0280	0.0062
Venus	-27239-02-23 12:57 J	-8227568.10	-8227567.96	-8227567.80	0.0282	0.0199
Moon	-27237-11-12 11:16 J	-8226575.27	-8226575.03	-8226574.78	0.0290	0.0086
Earth	-27237-11-12 11:45 J	-8226575.25	-8226575.01	-8226574.77	0.0290	0.0076 *
Mercury	-27235-01-05 12:28 J	-8226156.01	-8226155.98	-8226155.95	0.0292	0.0286

Mercury	-27235-04-04 10:47 J	-8226067.21	-8226067.05	-8226066.88	0.0292	0.0103
Mercury	-27235-07-02 08:52 J	-8225978.29	-8225978.13	-8225977.96	0.0293	0.0078
Mercury	-27235-09-29 06:28 J	-8225889.31	-8225889.23	-8225889.14	0.0293	0.0255
Mars	-27232-05-30 08:38 J	-8224915.44	-8224915.14	-8224914.84	0.0294	0.0055
Venus	-27227-02-11 06:28 J	-8223197.38	-8223197.23	-8223197.07	0.0284	0.0191
Venus	-27227-09-28 19:11 J	-8222967.91	-8222967.70	-8222967.49	0.0282	0.0053
Venus	-27226-05-16 05:45 J	-8222738.46	-8222738.26	-8222738.06	0.0280	0.0082
Venus	-27226-12-31 13:40 J	-8222509.05	-8222508.93	-8222508.78	0.0279	0.0211
Moon	-27223-05-06 03:07 J	-8221652.51	-8221652.37	-8221652.21	0.0272	0.0210
Earth	-27223-05-06 06:14 J	-8221652.39	-8221652.24	-8221652.06	0.0272	0.0194 *
Mercury	-27221-01-29 14:52 J	-8221018.92	-8221018.88	-8221018.83	0.0269	0.0251
Mercury	-27221-04-27 01:55 J	-8220930.53	-8220930.42	-8220930.30	0.0268	0.0145
Mercury	-27221-07-24 12:57 J	-8220842.09	-8220841.96	-8220841.82	0.0268	0.0039
Mercury	-27221-10-21 00:14 J	-8220753.62	-8220753.49	-8220753.35	0.0268	0.0070
Mercury	-27220-01-17 11:45 J	-8220665.12	-8220665.01	-8220664.91	0.0267	0.0179
Venus	-27212-10-17 04:33 J	-8217470.47	-8217470.31	-8217470.14	0.0276	0.0177
Venus	-27211-06-03 16:47 J	-8217241.01	-8217240.80	-8217240.59	0.0278	0.0048
Venus	-27210-01-19 06:57 J	-8217011.41	-8217011.21	-8217011.00	0.0280	0.0087
Venus	-27210-09-05 23:31 J	-8216781.64	-8216781.52	-8216781.38	0.0282	0.0225
Earth	-27208-11-06 20:09 J	-8215988.82	-8215988.66	-8215988.47	0.0289	0.0205
Moon	-27208-11-06 20:38 J	-8215988.80	-8215988.64	-8215988.46	0.0289	0.0198 *
Mercury	-27206-08-22 12:28 J	-8215335.13	-8215334.98	-8215334.82	0.0293	0.0135
Mercury	-27206-11-19 10:33 J	-8215246.23	-8215246.06	-8215245.89	0.0293	0.0046
Mercury	-27205-02-16 08:09 J	-8215157.26	-8215157.16	-8215157.05	0.0293	0.0225
Venus	-27198-08-24 15:50 J	-8212411.00	-8212410.84	-8212410.66	0.0284	0.0165
Venus	-27197-04-10 04:04 J	-8212181.54	-8212181.33	-8212181.12	0.0282	0.0028
Venus	-27197-11-25 14:09 J	-8211952.11	-8211951.91	-8211951.72	0.0280	0.0105
Venus	-27196-07-12 21:35 J	-8211722.70	-8211722.60	-8211722.48	0.0278	0.0232
Moon	-27193-05-12 11:31 J	-8210688.25	-8210688.02	-8210687.78	0.0270	0.0095
Earth	-27193-05-12 12:28 J	-8210688.19	-8210687.98	-8210687.75	0.0270	0.0109 *



Mercury	-27192-09-14 05:02 J	-8210198.39	-8210198.29	-8210198.18	0.0268	0.0168
Mercury	-27192-12-11 16:04 J	-8210109.96	-8210109.83	-8210109.69	0.0267	0.0062
Mercury	-27191-03-10 03:21 J	-8210021.50	-8210021.36	-8210021.22	0.0267	0.0046
Mercury	-27191-06-06 14:38 J	-8209933.00	-8209932.89	-8209932.78	0.0267	0.0154
Mercury	-27191-09-03 01:55 J	-8209844.43	-8209844.42	-8209844.39	0.0267	0.0264
Mars	-27188-09-05 11:59 J	-8208746.26	-8208746.00	-8208745.73	0.0266	0.0089
Venus	-27182-04-29 09:07 J	-8206684.29	-8206684.12	-8206683.94	0.0277	0.0158
Venus	-27182-12-14 21:21 J	-8206454.83	-8206454.61	-8206454.40	0.0278	0.0027
Venus	-27181-07-31 11:45 J	-8206225.21	-8206225.01	-8206224.81	0.0280	0.0108
Venus	-27180-03-18 04:19 J	-8205995.42	-8205995.32	-8205995.21	0.0282	0.0246
Moon	-27178-11-14 23:16 J	-8205023.72	-8205023.53	-8205023.31	0.0290	0.0170
Earth	-27178-11-15 03:07 J	-8205023.58	-8205023.37	-8205023.16	0.0290	0.0158 *
Mercury	-27176-01-08 10:19 J	-8204603.20	-8204603.07	-8204602.93	0.0292	0.0195
Mercury	-27176-04-07 08:38 J	-8204514.31	-8204514.14	-8204513.96	0.0292	0.0013
Mercury	-27176-07-05 06:28 J	-8204425.37	-8204425.23	-8204425.09	0.0293	0.0167
Venus	-27168-03-05 18:43 J	-8201624.89	-8201624.72	-8201624.53	0.0284	0.0147
Venus	-27168-10-21 06:57 J	-8201395.41	-8201395.21	-8201395.00	0.0282	0.0011
Venus	-27167-06-07 16:47 J	-8201165.98	-8201165.80	-8201165.61	0.0280	0.0124
Venus	-27166-01-23 00:43 J	-8200936.55	-8200936.47	-8200936.38	0.0278	0.0250
Earth	-27164-05-07 13:40 J	-8200101.14	-8200100.93	-8200100.71	0.0272	0.0131
Moon	-27164-05-07 14:38 J	-8200101.09	-8200100.89	-8200100.69	0.0272	0.0145 *
Mercury	-27162-02-01 07:26 J	-8199466.27	-8199466.19	-8199466.09	0.0269	0.0200
Mercury	-27162-04-30 18:28 J	-8199377.85	-8199377.73	-8199377.60	0.0268	0.0093
Mercury	-27162-07-28 05:45 J	-8199289.40	-8199289.26	-8199289.12	0.0268	0.0015
Mercury	-27162-10-24 17:02 J	-8199200.91	-8199200.79	-8199200.66	0.0268	0.0123
Mercury	-27161-01-21 04:19 J	-8199112.38	-8199112.32	-8199112.24	0.0267	0.0233
Venus	-27153-03-24 07:40 J	-8196127.23	-8196127.18	-8196127.09	0.0275	0.0259
Venus	-27153-11-08 18:14 J	-8195897.92	-8195897.74	-8195897.55	0.0277	0.0134
Venus	-27152-06-26 06:57 J	-8195668.42	-8195668.21	-8195667.99	0.0279	0.0005
Venus	-27151-02-10 21:50 J	-8195438.77	-8195438.59	-8195438.40	0.0280	0.0133

Venus	-27151-09-28 14:52 J	-8195208.92	-8195208.88	-8195208.81	0.0282	0.0272
Earth	-27149-11-08 11:45 J	-8194437.23	-8194437.01	-8194436.78	0.0289	0.0122
Moon	-27149-11-08 15:35 J	-8194437.07	-8194436.85	-8194436.62	0.0289	0.0113 *
Mercury	-27147-05-28 11:59 J	-8193871.11	-8193871.00	-8193870.89	0.0292	0.0226
Mercury	-27147-08-25 10:19 J	-8193782.24	-8193782.07	-8193781.89	0.0293	0.0043
Mercury	-27147-11-22 08:23 J	-8193693.30	-8193693.15	-8193693.00	0.0293	0.0137
Mars	-27144-10-25 16:19 J	-8192625.12	-8192624.82	-8192624.52	0.0294	0.0049
Venus	-27139-01-29 15:21 J	-8191067.95	-8191067.86	-8191067.77	0.0285	0.0258
Venus	-27139-09-16 05:16 J	-8190838.47	-8190838.28	-8190838.09	0.0283	0.0119
Venus	-27138-05-03 16:47 J	-8190609.01	-8190608.80	-8190608.59	0.0281	0.0017
Venus	-27138-12-19 02:09 J	-8190379.58	-8190379.41	-8190379.23	0.0279	0.0148
Venus	-27137-08-04 09:21 J	-8190150.14	-8190150.11	-8190150.07	0.0277	0.0273
Moon	-27134-05-14 17:31 J	-8189136.96	-8189136.77	-8189136.57	0.0270	0.0161
Earth	-27134-05-14 21:07 J	-8189136.80	-8189136.62	-8189136.43	0.0270	0.0174 *
Mercury	-27133-06-20 11:02 J	-8188734.12	-8188734.04	-8188733.96	0.0268	0.0219
Mercury	-27133-09-16 22:04 J	-8188645.71	-8188645.58	-8188645.46	0.0268	0.0114
Mercury	-27133-12-14 09:07 J	-8188557.26	-8188557.12	-8188556.98	0.0267	0.0007
Mercury	-27132-03-12 20:23 J	-8188468.78	-8188468.65	-8188468.52	0.0267	0.0102
Mercury	-27132-06-09 07:40 J	-8188380.26	-8188380.18	-8188380.09	0.0267	0.0211
Venus	-27124-10-04 13:26 J	-8185341.04	-8185340.94	-8185340.84	0.0275	0.0239
Venus	-27123-05-21 23:45 J	-8185111.70	-8185111.51	-8185111.31	0.0277	0.0113
Venus	-27122-01-06 12:28 J	-8184882.19	-8184881.98	-8184881.77	0.0279	0.0019
Venus	-27122-08-24 03:21 J	-8184652.53	-8184652.36	-8184652.18	0.0281	0.0156
Moon	-27119-11-16 17:31 J	-8183471.88	-8183471.77	-8183471.65	0.0290	0.0256
Earth	-27119-11-16 19:55 J	-8183471.79	-8183471.67	-8183471.53	0.0290	0.0244 *
Mercury	-27118-10-15 10:04 J	-8183139.11	-8183139.08	-8183139.03	0.0292	0.0283
Mercury	-27117-01-12 08:38 J	-8183050.30	-8183050.14	-8183049.97	0.0292	0.0099
Mercury	-27117-04-10 06:43 J	-8182961.38	-8182961.22	-8182961.05	0.0293	0.0082
Mercury	-27117-07-08 04:19 J	-8182872.39	-8182872.32	-8182872.24	0.0293	0.0259
Venus	-27110-08-11 18:43 J	-8180281.82	-8180281.72	-8180281.60	0.0285	0.0240

Venus	-27109-03-28 08:38 J	-8180052.33	-8180052.14	-8180051.94	0.0283	0.0101
Venus	-27109-11-12 20:09 J	-8179822.87	-8179822.66	-8179822.45	0.0281	0.0036
Venus	-27108-06-30 05:16 J	-8179593.44	-8179593.28	-8179593.11	0.0279	0.0167
Earth	-27105-05-08 22:33 J	-8178549.79	-8178549.56	-8178549.32	0.0272	0.0064
Moon	-27105-05-09 02:09 J	-8178549.64	-8178549.41	-8178549.18	0.0272	0.0079 *
Mercury	-27104-11-07 13:11 J	-8178001.99	-8178001.95	-8178001.90	0.0269	0.0252
Mercury	-27103-02-04 00:14 J	-8177913.60	-8177913.49	-8177913.37	0.0269	0.0146
Mercury	-27103-05-03 11:31 J	-8177825.16	-8177825.02	-8177824.88	0.0268	0.0038
Mercury	-27103-07-30 22:47 J	-8177736.69	-8177736.55	-8177736.42	0.0268	0.0070
Mercury	-27103-10-27 10:04 J	-8177648.18	-8177648.08	-8177647.98	0.0268	0.0179
Mars	-27099-01-30 20:52 J	-8176456.91	-8176456.63	-8176456.35	0.0266	0.0030
Venus	-27094-04-16 21:07 J	-8174554.74	-8174554.62	-8174554.48	0.0275	0.0218
Venus	-27094-12-02 08:09 J	-8174325.36	-8174325.16	-8174324.95	0.0277	0.0090
Venus	-27093-07-18 21:35 J	-8174095.81	-8174095.60	-8174095.39	0.0279	0.0043
Venus	-27092-03-05 12:57 J	-8173866.12	-8173865.96	-8173865.79	0.0281	0.0180
Earth	-27090-11-11 04:19 J	-8172885.56	-8172885.32	-8172885.07	0.0289	0.0038
Moon	-27090-11-11 06:43 J	-8172885.47	-8172885.22	-8172884.97	0.0289	0.0026 *
Mercury	-27088-05-31 10:19 J	-8172318.22	-8172318.07	-8172317.91	0.0292	0.0130
Mercury	-27088-08-28 08:38 J	-8172229.31	-8172229.14	-8172228.97	0.0293	0.0053
Mercury	-27088-11-25 06:14 J	-8172140.34	-8172140.24	-8172140.13	0.0293	0.0231
Venus	-27080-02-21 05:59 J	-8169495.38	-8169495.25	-8169495.10	0.0285	0.0212
Venus	-27080-10-08 19:26 J	-8169265.89	-8169265.69	-8169265.49	0.0283	0.0073
Venus	-27079-05-26 06:14 J	-8169036.44	-8169036.24	-8169036.03	0.0281	0.0063
Venus	-27078-01-10 15:07 J	-8168807.02	-8168806.87	-8168806.71	0.0279	0.0192
Moon	-27075-05-16 05:02 J	-8167585.39	-8167585.29	-8167585.15	0.0270	0.0231
Earth	-27075-05-16 06:28 J	-8167585.33	-8167585.23	-8167585.12	0.0270	0.0241 *
Mercury	-27074-06-24 04:04 J	-8167181.44	-8167181.33	-8167181.23	0.0268	0.0164
Mercury	-27074-09-20 14:52 J	-8167093.01	-8167092.88	-8167092.74	0.0268	0.0058
Mercury	-27074-12-18 02:09 J	-8167004.55	-8167004.41	-8167004.27	0.0267	0.0050
Mercury	-27073-03-15 13:26 J	-8166916.05	-8166915.94	-8166915.83	0.0267	0.0159

Venus	-27065-10-27 03:35 J	-8163768.50	-8163768.35	-8163768.20	0.0276	0.0196
Venus	-27064-06-13 14:38 J	-8163539.09	-8163538.89	-8163538.68	0.0278	0.0068
Venus	-27063-01-29 04:04 J	-8163309.54	-8163309.33	-8163309.12	0.0280	0.0066
Venus	-27063-09-15 19:40 J	-8163079.83	-8163079.68	-8163079.53	0.0281	0.0203
Mercury	-27059-10-18 09:07 J	-8161586.25	-8161586.12	-8161585.98	0.0292	0.0183
Mercury	-27058-01-15 07:26 J	-8161497.37	-8161497.19	-8161497.02	0.0292	0.0001
Mercury	-27058-04-14 05:02 J	-8161408.42	-8161408.29	-8161408.14	0.0293	0.0179
Mars	-27055-03-22 02:52 J	-8160335.65	-8160335.38	-8160335.10	0.0294	0.0130
Venus	-27051-09-03 09:50 J	-8158709.24	-8158709.09	-8158708.93	0.0284	0.0193
Venus	-27050-04-20 22:47 J	-8158479.75	-8158479.55	-8158479.34	0.0282	0.0055
Venus	-27050-12-06 09:35 J	-8158250.30	-8158250.10	-8158249.90	0.0280	0.0080
Venus	-27049-07-22 17:59 J	-8158020.87	-8158020.75	-8158020.60	0.0279	0.0210
Earth	-27046-05-11 07:40 J	-8156998.42	-8156998.18	-8156997.94	0.0271	0.0004
Moon	-27046-05-11 09:35 J	-8156998.35	-8156998.10	-8156997.85	0.0271	0.0010 *
Mercury	-27045-11-10 05:59 J	-8156449.33	-8156449.25	-8156449.15	0.0269	0.0198
Mercury	-27044-02-06 17:16 J	-8156360.91	-8156360.78	-8156360.65	0.0268	0.0091
Mercury	-27044-05-06 04:19 J	-8156272.46	-8156272.32	-8156272.18	0.0268	0.0018
Mercury	-27044-08-02 15:35 J	-8156183.97	-8156183.85	-8156183.72	0.0268	0.0126
Mercury	-27044-10-30 03:07 J	-8156095.44	-8156095.37	-8156095.31	0.0267	0.0235
Venus	-27035-05-09 10:19 J	-8152982.22	-8152982.07	-8152981.90	0.0276	0.0176
Venus	-27035-12-24 22:04 J	-8152752.79	-8152752.58	-8152752.37	0.0278	0.0046
Venus	-27034-08-11 11:59 J	-8152523.20	-8152523.00	-8152522.79	0.0280	0.0088
Venus	-27033-03-28 04:04 J	-8152293.45	-8152293.33	-8152293.20	0.0282	0.0226
Moon	-27031-11-12 17:45 J	-8151334.00	-8151333.76	-8151333.50	0.0289	0.0062
Earth	-27031-11-12 20:23 J	-8151333.89	-8151333.65	-8151333.41	0.0289	0.0048 *
Mercury	-27029-03-06 10:04 J	-8150854.19	-8150854.08	-8150853.96	0.0292	0.0218
Mercury	-27029-06-03 08:38 J	-8150765.31	-8150765.14	-8150764.97	0.0293	0.0035
Mercury	-27029-08-31 06:28 J	-8150676.37	-8150676.23	-8150676.08	0.0293	0.0146
Venus	-27021-03-15 21:07 J	-8147922.79	-8147922.62	-8147922.45	0.0284	0.0164
Venus	-27021-10-31 09:35 J	-8147693.30	-8147693.10	-8147692.89	0.0282	0.0027

Venus	-27020-06-17 19:55 J	-8147463.86	-8147463.67	-8147463.47	0.0280	0.0107
Venus	-27019-02-02 04:04 J	-8147234.43	-8147234.33	-8147234.21	0.0278	0.0235
Moon	-27017-05-05 15:07 J	-8146410.99	-8146410.87	-8146410.75	0.0272	0.0231
Earth	-27017-05-05 17:31 J	-8146410.91	-8146410.77	-8146410.62	0.0272	0.0216 *
Mercury	-27015-03-30 09:50 J	-8145717.17	-8145717.09	-8145717.01	0.0268	0.0215
Mercury	-27015-06-26 20:52 J	-8145628.75	-8145628.63	-8145628.50	0.0268	0.0108
Mercury	-27015-09-23 07:55 J	-8145540.30	-8145540.17	-8145540.03	0.0267	0.0007
Mercury	-27015-12-20 19:11 J	-8145451.83	-8145451.70	-8145451.57	0.0267	0.0107
Mercury	-27014-03-19 06:28 J	-8145363.30	-8145363.23	-8145363.14	0.0267	0.0216
Mars	-27011-06-27 08:09 J	-8144167.44	-8144167.16	-8144166.88	0.0266	0.0040
Venus	-27006-11-19 16:47 J	-8142195.97	-8142195.80	-8142195.61	0.0276	0.0154
Venus	-27005-07-06 04:47 J	-8141966.51	-8141966.30	-8141966.08	0.0278	0.0024
Venus	-27004-02-20 18:43 J	-8141736.91	-8141736.72	-8141736.52	0.0280	0.0113
Venus	-27004-10-08 11:02 J	-8141507.13	-8141507.04	-8141506.94	0.0282	0.0250
Earth	-27002-11-06 21:07 J	-8140747.73	-8140747.62	-8140747.49	0.0288	0.0249
Moon	-27002-11-06 23:45 J	-8140747.63	-8140747.51	-8140747.37	0.0288	0.0238 *

# 27TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 27th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-27000-07-24 08:52 J	-8140122.19	-8140122.13	-8140122.06	0.0292	0.0271		
Mercury	-27000-10-21 07:26 J	-8140033.35	-8140033.19	-8140033.02	0.0292	0.0087		
Mercury	-26999-01-18 05:31 J	-8139944.43	-8139944.27	-8139944.10	0.0293	0.0095		

Mercury	-26999-04-17 03:07 J	-8139855.42	-8139855.37	-8139855.30	0.0293	0.0273
Venus	-26992-02-08 10:19 J	-8137366.07	-8137366.07	-8137366.07	0.0285	0.0285
Venus	-26992-09-26 00:57 J	-8137136.64	-8137136.46	-8137136.28	0.0283	0.0146
Venus	-26991-05-13 13:11 J	-8136907.16	-8136906.95	-8136906.74	0.0282	0.0008
Venus	-26991-12-28 23:16 J	-8136677.72	-8136677.53	-8136677.34	0.0280	0.0125
Venus	-26990-08-15 06:57 J	-8136448.29	-8136448.21	-8136448.11	0.0278	0.0251
Moon	-26987-05-12 14:23 J	-8135447.14	-8135446.90	-8135446.65	0.0271	0.0057
Earth	-26987-05-12 16:47 J	-8135447.03	-8135446.80	-8135446.57	0.0271	0.0071 *
Mercury	-26986-08-17 11:59 J	-8134985.04	-8134985.00	-8134984.95	0.0269	0.0249
Mercury	-26986-11-13 23:02 J	-8134896.66	-8134896.54	-8134896.43	0.0268	0.0143
Mercury	-26985-02-10 10:04 J	-8134808.22	-8134808.08	-8134807.94	0.0268	0.0036
Mercury	-26985-05-08 21:07 J	-8134719.75	-8134719.62	-8134719.48	0.0268	0.0073
Mercury	-26985-08-05 08:38 J	-8134631.24	-8134631.14	-8134631.04	0.0267	0.0181
Venus	-26977-10-14 12:43 J	-8131639.03	-8131638.97	-8131638.89	0.0275	0.0259
Venus	-26976-05-31 23:02 J	-8131409.73	-8131409.54	-8131409.36	0.0277	0.0134
Venus	-26975-01-16 11:16 J	-8131180.25	-8131180.03	-8131179.82	0.0278	0.0003
Venus	-26975-09-03 01:40 J	-8130950.62	-8130950.43	-8130950.24	0.0280	0.0133
Venus	-26974-04-20 18:14 J	-8130720.78	-8130720.74	-8130720.67	0.0282	0.0271
Moon	-26972-11-14 07:26 J	-8129782.40	-8129782.19	-8129781.97	0.0290	0.0145
Earth	-26972-11-14 10:47 J	-8129782.26	-8129782.05	-8129781.82	0.0290	0.0132 *
Mercury	-26970-03-10 08:09 J	-8129301.32	-8129301.16	-8129301.00	0.0293	0.0125
Mercury	-26970-06-07 06:14 J	-8129212.41	-8129212.24	-8129212.06	0.0293	0.0058
Mercury	-26970-09-04 04:04 J	-8129123.43	-8129123.33	-8129123.23	0.0293	0.0237
Mars	-26967-08-17 11:45 J	-8128045.17	-8128045.01	-8128044.82	0.0294	0.0243
Venus	-26963-08-21 21:07 J	-8126579.70	-8126579.62	-8126579.52	0.0286	0.0258
Venus	-26962-04-08 11:31 J	-8126350.21	-8126350.02	-8126349.83	0.0284	0.0118
Venus	-26962-11-23 23:16 J	-8126120.74	-8126120.53	-8126120.32	0.0282	0.0020
Venus	-26961-07-10 08:52 J	-8125891.30	-8125891.13	-8125890.95	0.0280	0.0151
Venus	-26960-02-24 16:19 J	-8125661.83	-8125661.82	-8125661.79	0.0278	0.0276
Earth	-26958-05-08 02:23 J	-8124859.60	-8124859.40	-8124859.20	0.0272	0.0149

Moon	-26958-05-08 04:19 J	-8124859.50	-8124859.32	-8124859.13	0.0272	0.0165 *
Mercury	-26956-01-03 15:35 J	-8124252.85	-8124252.85	-8124252.83	0.0268	0.0267
Mercury	-26956-04-02 02:38 J	-8124164.50	-8124164.39	-8124164.28	0.0268	0.0161
Mercury	-26956-06-29 13:40 J	-8124076.06	-8124075.93	-8124075.79	0.0267	0.0054
Mercury	-26956-09-26 00:43 J	-8123987.60	-8123987.47	-8123987.33	0.0267	0.0054
Mercury	-26956-12-23 12:14 J	-8123899.10	-8123898.99	-8123898.88	0.0267	0.0162
Venus	-26947-04-26 18:57 J	-8120852.80	-8120852.71	-8120852.59	0.0275	0.0237
Venus	-26947-12-12 05:16 J	-8120623.47	-8120623.28	-8120623.08	0.0277	0.0111
Venus	-26946-07-29 17:45 J	-8120393.97	-8120393.76	-8120393.55	0.0279	0.0021
Venus	-26945-03-15 08:23 J	-8120164.33	-8120164.15	-8120163.97	0.0281	0.0157
Earth	-26943-11-08 11:16 J	-8119196.23	-8119196.03	-8119195.83	0.0289	0.0169
Moon	-26943-11-08 14:38 J	-8119196.10	-8119195.89	-8119195.68	0.0289	0.0158 *
Mercury	-26941-07-27 06:43 J	-8118569.35	-8118569.22	-8118569.07	0.0292	0.0180
Mercury	-26941-10-24 05:16 J	-8118480.46	-8118480.28	-8118480.11	0.0293	0.0005
Mercury	-26940-01-21 03:07 J	-8118391.50	-8118391.37	-8118391.24	0.0293	0.0184
Venus	-26933-03-03 00:43 J	-8115793.57	-8115793.47	-8115793.35	0.0285	0.0239
Venus	-26933-10-18 14:38 J	-8115564.08	-8115563.89	-8115563.68	0.0283	0.0100
Venus	-26932-06-05 02:23 J	-8115334.60	-8115334.40	-8115334.19	0.0281	0.0037
Venus	-26931-01-20 11:59 J	-8115105.17	-8115105.00	-8115104.83	0.0279	0.0168
Moon	-26928-05-13 21:21 J	-8113895.82	-8113895.61	-8113895.39	0.0271	0.0123
Earth	-26928-05-14 00:57 J	-8113895.67	-8113895.46	-8113895.25	0.0271	0.0137 *
Mercury	-26927-08-20 04:33 J	-8113432.40	-8113432.31	-8113432.21	0.0268	0.0196
Mercury	-26927-11-16 15:35 J	-8113343.98	-8113343.85	-8113343.72	0.0268	0.0090
Mercury	-26926-02-13 02:38 J	-8113255.52	-8113255.39	-8113255.25	0.0268	0.0020
Mercury	-26926-05-12 13:55 J	-8113167.04	-8113166.92	-8113166.80	0.0267	0.0126
Mercury	-26926-08-09 01:11 J	-8113078.51	-8113078.45	-8113078.38	0.0267	0.0236
Mars	-26923-11-21 04:04 J	-8111878.58	-8111878.33	-8111878.05	0.0266	0.0087
Venus	-26918-11-06 22:47 J	-8110066.67	-8110066.55	-8110066.42	0.0275	0.0220
Venus	-26917-06-23 09:35 J	-8109837.29	-8109837.10	-8109836.89	0.0277	0.0094
Venus	-26916-02-07 22:33 J	-8109607.77	-8109607.56	-8109607.35	0.0279	0.0039

Venus	-26916-09-25 13:26 J	-8109378.10	-8109377.94	-8109377.76	0.0281	0.0176
Earth	-26913-11-15 22:04 J	-8108230.75	-8108230.58	-8108230.41	0.0290	0.0207
Moon	-26913-11-15 21:35 J	-8108230.74	-8108230.60	-8108230.44	0.0290	0.0221 *
Mercury	-26912-12-14 06:14 J	-8107837.34	-8107837.24	-8107837.12	0.0292	0.0226
Mercury	-26911-03-13 05:02 J	-8107748.47	-8107748.29	-8107748.12	0.0293	0.0041
Mercury	-26911-06-10 02:52 J	-8107659.52	-8107659.38	-8107659.22	0.0293	0.0142
Venus	-26904-09-13 10:47 J	-8105007.18	-8105007.05	-8105006.90	0.0285	0.0212
Venus	-26903-05-01 00:43 J	-8104777.68	-8104777.47	-8104777.27	0.0283	0.0073
Venus	-26903-12-16 11:59 J	-8104548.21	-8104548.00	-8104547.80	0.0281	0.0064
Venus	-26902-08-02 20:52 J	-8104318.77	-8104318.63	-8104318.47	0.0279	0.0193
Earth	-26899-05-09 10:04 J	-8103308.31	-8103308.08	-8103307.85	0.0271	0.0084
Moon	-26899-05-09 13:40 J	-8103308.16	-8103307.93	-8103307.70	0.0271	0.0099 *
Mercury	-26897-01-07 08:09 J	-8102700.23	-8102700.16	-8102700.08	0.0268	0.0215
Mercury	-26897-04-04 19:11 J	-8102611.83	-8102611.70	-8102611.58	0.0268	0.0109
Mercury	-26897-07-02 06:14 J	-8102523.38	-8102523.24	-8102523.10	0.0267	0.0002
Mercury	-26897-09-28 17:16 J	-8102434.90	-8102434.78	-8102434.65	0.0267	0.0107
Mercury	-26897-12-26 04:33 J	-8102346.38	-8102346.31	-8102346.22	0.0267	0.0216
Venus	-26888-05-19 05:16 J	-8099280.42	-8099280.28	-8099280.13	0.0275	0.0198
Venus	-26887-01-03 16:04 J	-8099051.03	-8099050.83	-8099050.62	0.0277	0.0071
Venus	-26887-08-21 05:02 J	-8098821.50	-8098821.29	-8098821.08	0.0279	0.0063
Venus	-26886-04-07 20:23 J	-8098591.80	-8098591.65	-8098591.50	0.0281	0.0200
Moon	-26884-11-09 22:33 J	-8097644.81	-8097644.56	-8097644.31	0.0289	0.0082
Earth	-26884-11-09 22:19 J	-8097644.80	-8097644.57	-8097644.33	0.0289	0.0094 *
Mercury	-26882-05-03 05:16 J	-8097105.33	-8097105.28	-8097105.23	0.0292	0.0279
Mercury	-26882-07-31 03:50 J	-8097016.50	-8097016.34	-8097016.17	0.0293	0.0094
Mercury	-26882-10-28 02:09 J	-8096927.58	-8096927.41	-8096927.25	0.0293	0.0089
Mercury	-26881-01-24 23:45 J	-8096838.57	-8096838.51	-8096838.44	0.0293	0.0268
Venus	-26874-03-26 14:09 J	-8094221.06	-8094220.91	-8094220.75	0.0284	0.0193
Venus	-26874-11-11 03:35 J	-8093991.56	-8093991.35	-8093991.15	0.0282	0.0055
Venus	-26873-06-27 14:23 J	-8093762.09	-8093761.90	-8093761.69	0.0280	0.0080



Venus	-26872-02-11 23:16 J	-8093532.66	-8093532.53	-8093532.39	0.0278	0.0209
Earth	-26869-05-15 07:11 J	-8092344.36	-8092344.20	-8092344.04	0.0270	0.0199
Moon	-26869-05-15 07:26 J	-8092344.34	-8092344.19	-8092344.01	0.0270	0.0189 *
Mercury	-26868-05-26 10:04 J	-8091968.12	-8091968.08	-8091968.03	0.0268	0.0251
Mercury	-26868-08-22 20:52 J	-8091879.74	-8091879.63	-8091879.51	0.0268	0.0146
Mercury	-26868-11-19 07:55 J	-8091791.30	-8091791.17	-8091791.03	0.0268	0.0039
Mercury	-26867-02-15 18:57 J	-8091702.84	-8091702.71	-8091702.57	0.0267	0.0070
Mercury	-26867-05-15 06:14 J	-8091614.34	-8091614.24	-8091614.13	0.0267	0.0177
Venus	-26859-11-29 07:26 J	-8088494.34	-8088494.19	-8088494.02	0.0276	0.0183
Venus	-26858-07-16 18:57 J	-8088264.92	-8088264.71	-8088264.50	0.0277	0.0054
Venus	-26857-03-02 08:09 J	-8088035.36	-8088035.16	-8088034.95	0.0279	0.0079
Venus	-26857-10-17 23:45 J	-8087805.64	-8087805.51	-8087805.37	0.0281	0.0216
Earth	-26854-11-18 05:45 J	-8086679.32	-8086679.26	-8086679.18	0.0290	0.0277
Mercury	-26853-12-17 02:23 J	-8086284.55	-8086284.40	-8086284.25	0.0293	0.0148
Mercury	-26852-03-16 00:43 J	-8086195.64	-8086195.47	-8086195.29	0.0293	0.0036
Mercury	-26852-06-12 22:47 J	-8086106.67	-8086106.55	-8086106.44	0.0293	0.0217
Venus	-26845-10-05 22:19 J	-8083434.73	-8083434.57	-8083434.39	0.0285	0.0168
Venus	-26844-05-23 11:45 J	-8083205.22	-8083205.01	-8083204.80	0.0283	0.0029
Venus	-26843-01-07 22:33 J	-8082975.75	-8082975.56	-8082975.36	0.0281	0.0106
Venus	-26843-08-25 06:57 J	-8082746.31	-8082746.21	-8082746.09	0.0279	0.0234
Moon	-26840-05-10 15:07 J	-8081757.12	-8081756.87	-8081756.62	0.0271	0.0037
Earth	-26840-05-10 15:35 J	-8081757.09	-8081756.85	-8081756.61	0.0271	0.0024 *
Mercury	-26838-01-10 00:14 J	-8081147.59	-8081147.49	-8081147.38	0.0268	0.0167
Mercury	-26838-04-08 11:16 J	-8081059.16	-8081059.03	-8081058.89	0.0267	0.0060
Mercury	-26838-07-05 22:33 J	-8080970.70	-8080970.56	-8080970.43	0.0267	0.0048
Mercury	-26838-10-02 09:35 J	-8080882.21	-8080882.10	-8080881.98	0.0267	0.0156
Mercury	-26838-12-29 20:52 J	-8080793.63	-8080793.63	-8080793.61	0.0266	0.0265
Mars	-26834-04-17 06:57 J	-8079589.44	-8079589.21	-8079588.97	0.0266	0.0148
Venus	-26829-06-10 13:40 J	-8077708.09	-8077707.93	-8077707.75	0.0276	0.0161
Venus	-26828-01-26 00:57 J	-8077478.67	-8077478.46	-8077478.25	0.0278	0.0031

Venus	-26828-09-12 14:23 J	-8077249.10	-8077248.90	-8077248.70	0.0280	0.0103
Venus	-26827-04-30 05:59 J	-8077019.36	-8077019.25	-8077019.14	0.0282	0.0240
Moon	-26825-11-11 01:40 J	-8076093.68	-8076093.43	-8076093.18	0.0289	0.0013
Earth	-26825-11-11 05:16 J	-8076093.53	-8076093.28	-8076093.03	0.0289	0.0027 *
Mercury	-26823-05-06 00:57 J	-8075552.58	-8075552.46	-8075552.33	0.0293	0.0203
Mercury	-26823-08-02 23:31 J	-8075463.69	-8075463.52	-8075463.34	0.0293	0.0018
Mercury	-26823-10-30 21:35 J	-8075374.74	-8075374.60	-8075374.46	0.0293	0.0163
Mars	-26820-04-14 13:26 J	-8074478.04	-8074477.94	-8074477.82	0.0295	0.0274
Venus	-26815-04-18 01:26 J	-8072648.61	-8072648.44	-8072648.25	0.0284	0.0150
Venus	-26815-12-03 14:23 J	-8072419.11	-8072418.90	-8072418.69	0.0282	0.0012
Venus	-26814-07-21 00:57 J	-8072189.65	-8072189.46	-8072189.27	0.0280	0.0121
Venus	-26813-03-06 09:07 J	-8071960.21	-8071960.12	-8071960.03	0.0278	0.0248
Earth	-26811-05-05 13:11 J	-8071169.98	-8071169.95	-8071169.91	0.0272	0.0268
Earth	-26810-05-17 11:16 J	-8070793.08	-8070793.03	-8070792.95	0.0270	0.0258
Moon	-26810-05-17 15:07 J	-8070792.95	-8070792.87	-8070792.77	0.0270	0.0250 *
Mercury	-26809-05-29 02:09 J	-8070415.50	-8070415.41	-8070415.33	0.0268	0.0204
Mercury	-26809-08-25 12:57 J	-8070327.09	-8070326.96	-8070326.83	0.0267	0.0098
Mercury	-26809-11-21 23:59 J	-8070238.64	-8070238.50	-8070238.36	0.0267	0.0009
Mercury	-26808-02-18 11:02 J	-8070150.16	-8070150.04	-8070149.91	0.0267	0.0117
Mercury	-26808-05-17 22:19 J	-8070061.64	-8070061.57	-8070061.49	0.0267	0.0226
Venus	-26800-05-06 05:16 J	-8067151.31	-8067151.28	-8067151.24	0.0274	0.0269
Venus	-26800-12-21 14:38 J	-8066922.07	-8066921.89	-8066921.71	0.0276	0.0146
Venus	-26799-08-08 02:09 J	-8066692.62	-8066692.41	-8066692.20	0.0278	0.0017
Venus	-26798-03-25 15:50 J	-8066463.03	-8066462.84	-8066462.64	0.0280	0.0118
Venus	-26798-11-10 07:55 J	-8066233.25	-8066233.17	-8066233.07	0.0282	0.0255
Mercury	-26794-09-22 22:33 J	-8064820.63	-8064820.56	-8064820.48	0.0292	0.0264
Mercury	-26794-12-20 21:21 J	-8064731.78	-8064731.61	-8064731.44	0.0293	0.0078
Mercury	-26793-03-18 19:26 J	-8064642.85	-8064642.69	-8064642.52	0.0293	0.0106
Mercury	-26793-06-15 17:16 J	-8064553.81	-8064553.78	-8064553.73	0.0294	0.0285
Venus	-26786-03-13 17:31 J	-8062091.85	-8062091.77	-8062091.70	0.0286	0.0266

Venus	-26786-10-29 08:23 J	-8061862.33	-8061862.15	-8061861.95	0.0284	0.0125
Venus	-26785-06-14 21:21 J	-8061632.82	-8061632.61	-8061632.40	0.0282	0.0013
Venus	-26784-01-30 07:40 J	-8061403.35	-8061403.18	-8061403.00	0.0280	0.0146
Venus	-26784-09-16 15:50 J	-8061173.88	-8061173.84	-8061173.80	0.0278	0.0272
Moon	-26781-05-11 15:21 J	-8060206.10	-8060205.86	-8060205.62	0.0271	0.0021
Earth	-26781-05-11 18:57 J	-8060205.95	-8060205.71	-8060205.47	0.0271	0.0033 *
Mercury	-26780-10-16 05:16 J	-8059683.35	-8059683.28	-8059683.21	0.0268	0.0227
Mercury	-26779-01-12 16:04 J	-8059594.95	-8059594.83	-8059594.70	0.0267	0.0121
Mercury	-26779-04-11 03:07 J	-8059506.51	-8059506.37	-8059506.23	0.0267	0.0015
Mercury	-26779-07-08 14:09 J	-8059418.03	-8059417.91	-8059417.78	0.0267	0.0094
Mercury	-26779-10-05 01:26 J	-8059329.53	-8059329.44	-8059329.35	0.0266	0.0202
Mars	-26776-07-25 04:04 J	-8058305.46	-8058305.33	-8058305.17	0.0265	0.0226
Venus	-26771-11-16 11:02 J	-8056365.12	-8056365.04	-8056364.94	0.0274	0.0248
Venus	-26770-07-03 20:23 J	-8056135.83	-8056135.65	-8056135.45	0.0276	0.0125
Venus	-26769-02-18 08:09 J	-8055906.37	-8055906.16	-8055905.95	0.0278	0.0006
Venus	-26769-10-04 21:50 J	-8055676.77	-8055676.59	-8055676.40	0.0280	0.0141
Venus	-26768-05-22 14:09 J	-8055446.94	-8055446.91	-8055446.88	0.0282	0.0278
Moon	-26766-11-13 06:28 J	-8054542.46	-8054542.23	-8054541.99	0.0290	0.0049
Earth	-26766-11-13 08:38 J	-8054542.38	-8054542.14	-8054541.89	0.0290	0.0034 *
Mercury	-26764-05-08 19:55 J	-8053999.83	-8053999.67	-8053999.52	0.0293	0.0135
Mercury	-26764-08-05 18:14 J	-8053910.91	-8053910.74	-8053910.57	0.0293	0.0049
Mercury	-26764-11-02 16:04 J	-8053821.93	-8053821.83	-8053821.72	0.0294	0.0230
Venus	-26757-09-22 19:55 J	-8051305.76	-8051305.67	-8051305.56	0.0286	0.0249
Venus	-26756-05-10 10:47 J	-8051076.24	-8051076.05	-8051075.85	0.0284	0.0109
Venus	-26756-12-25 23:16 J	-8050846.73	-8050846.53	-8050846.32	0.0281	0.0030
Venus	-26755-08-12 09:21 J	-8050617.28	-8050617.11	-8050616.94	0.0279	0.0161
Earth	-26752-05-06 15:35 J	-8049618.99	-8049618.85	-8049618.69	0.0272	0.0214
Moon	-26752-05-06 18:57 J	-8049618.83	-8049618.71	-8049618.58	0.0272	0.0228 *
Mercury	-26750-03-05 06:57 J	-8048951.23	-8048951.21	-8048951.20	0.0268	0.0265
Mercury	-26750-06-01 17:31 J	-8048862.87	-8048862.77	-8048862.65	0.0268	0.0161

Mercury	-26750-08-29 04:33 J	-8048774.44	-8048774.31	-8048774.17	0.0267	0.0054
Mercury	-26750-11-25 15:35 J	-8048685.98	-8048685.85	-8048685.71	0.0267	0.0053
Mercury	-26749-02-22 02:52 J	-8048597.49	-8048597.38	-8048597.27	0.0267	0.0161
Mars	-26746-09-10 07:26 J	-8047301.39	-8047301.19	-8047300.96	0.0266	0.0172
Venus	-26741-05-28 10:33 J	-8045579.16	-8045579.06	-8045578.94	0.0274	0.0235
Venus	-26740-01-12 20:09 J	-8045349.85	-8045349.66	-8045349.46	0.0276	0.0111
Venus	-26740-08-30 07:55 J	-8045120.38	-8045120.17	-8045119.95	0.0278	0.0020
Venus	-26739-04-16 21:50 J	-8044890.76	-8044890.59	-8044890.40	0.0280	0.0155
Earth	-26737-11-06 00:14 J	-8043956.54	-8043956.49	-8043956.42	0.0288	0.0278
Moon	-26737-11-06 01:26 J	-8043956.54	-8043956.44	-8043956.33	0.0288	0.0261 *
Mercury	-26735-09-25 16:19 J	-8043267.94	-8043267.82	-8043267.69	0.0293	0.0204
Mercury	-26735-12-23 15:07 J	-8043179.05	-8043178.87	-8043178.69	0.0293	0.0018
Mercury	-26734-03-22 13:11 J	-8043090.09	-8043089.95	-8043089.80	0.0293	0.0165
Mars	-26732-09-07 15:21 J	-8042190.04	-8042189.86	-8042189.67	0.0295	0.0233
Venus	-26727-04-05 01:11 J	-8040519.56	-8040519.45	-8040519.31	0.0286	0.0227
Venus	-26727-11-20 16:19 J	-8040290.02	-8040289.82	-8040289.62	0.0284	0.0085
Venus	-26726-07-08 04:47 J	-8040060.50	-8040060.30	-8040060.09	0.0282	0.0053
Venus	-26725-02-22 14:52 J	-8039831.03	-8039830.88	-8039830.72	0.0280	0.0184
Moon	-26722-05-13 18:14 J	-8038654.97	-8038654.74	-8038654.51	0.0271	0.0074
Earth	-26722-05-13 19:55 J	-8038654.90	-8038654.67	-8038654.44	0.0271	0.0084 *
Mercury	-26721-10-18 20:38 J	-8038130.73	-8038130.64	-8038130.54	0.0268	0.0185
Mercury	-26720-01-15 07:40 J	-8038042.31	-8038042.18	-8038042.05	0.0267	0.0080
Mercury	-26720-04-13 18:43 J	-8037953.86	-8037953.72	-8037953.59	0.0267	0.0029
Mercury	-26720-07-11 05:45 J	-8037865.38	-8037865.26	-8037865.14	0.0267	0.0136
Mercury	-26720-10-07 17:02 J	-8037776.84	-8037776.79	-8037776.74	0.0266	0.0245
Venus	-26712-12-08 16:04 J	-8034792.96	-8034792.83	-8034792.69	0.0274	0.0214
Venus	-26711-07-26 01:55 J	-8034563.63	-8034563.42	-8034563.22	0.0276	0.0089
Venus	-26710-03-12 13:40 J	-8034334.14	-8034333.93	-8034333.72	0.0278	0.0043
Venus	-26710-10-28 03:35 J	-8034104.50	-8034104.35	-8034104.17	0.0280	0.0178
Earth	-26707-11-14 08:52 J	-8032991.36	-8032991.13	-8032990.89	0.0290	0.0088

Moon	-26707-11-14 11:45 J	-8032991.24	-8032991.01	-8032990.78	0.0290	0.0105 *
Mercury	-26705-02-12 14:52 J	-8032535.95	-8032535.88	-8032535.80	0.0293	0.0261
Mercury	-26705-05-11 13:40 J	-8032447.10	-8032446.93	-8032446.76	0.0293	0.0074
Mercury	-26705-08-08 11:59 J	-8032358.16	-8032358.00	-8032357.84	0.0294	0.0110
Mercury	-26705-11-05 09:50 J	-8032269.11	-8032269.09	-8032269.07	0.0294	0.0290
Venus	-26698-10-16 04:04 J	-8029733.46	-8029733.33	-8029733.17	0.0285	0.0209
Venus	-26697-06-01 18:43 J	-8029503.92	-8029503.72	-8029503.51	0.0283	0.0069
Venus	-26696-01-17 06:57 J	-8029274.41	-8029274.21	-8029274.00	0.0281	0.0069
Venus	-26696-09-03 16:33 J	-8029044.95	-8029044.81	-8029044.66	0.0279	0.0199
Earth	-26693-05-07 16:47 J	-8028067.99	-8028067.80	-8028067.61	0.0271	0.0162
Moon	-26693-05-07 18:43 J	-8028067.90	-8028067.72	-8028067.52	0.0271	0.0176 *
Mercury	-26691-03-07 22:04 J	-8027398.65	-8027398.58	-8027398.50	0.0268	0.0224
Mercury	-26691-06-04 09:07 J	-8027310.24	-8027310.12	-8027310.00	0.0267	0.0119
Mercury	-26691-08-31 19:55 J	-8027221.80	-8027221.67	-8027221.53	0.0267	0.0015
Mercury	-26691-11-28 06:57 J	-8027133.33	-8027133.21	-8027133.07	0.0267	0.0096
Mercury	-26690-02-24 18:14 J	-8027044.83	-8027044.74	-8027044.65	0.0266	0.0204
Mars	-26688-12-18 01:55 J	-8026017.58	-8026017.42	-8026017.23	0.0265	0.0208
Venus	-26682-06-20 14:52 J	-8024007.02	-8024006.88	-8024006.73	0.0275	0.0202
Venus	-26681-02-05 00:43 J	-8023777.67	-8023777.47	-8023777.26	0.0276	0.0076
Venus	-26681-09-21 12:43 J	-8023548.18	-8023547.97	-8023547.76	0.0278	0.0056
Venus	-26680-05-09 02:52 J	-8023318.52	-8023318.38	-8023318.21	0.0280	0.0191
Moon	-26678-11-07 19:26 J	-8022405.86	-8022405.69	-8022405.52	0.0288	0.0212
Earth	-26678-11-07 22:47 J	-8022405.69	-8022405.55	-8022405.39	0.0288	0.0229 *
Mercury	-26676-09-28 09:50 J	-8021715.24	-8021715.09	-8021714.94	0.0293	0.0147
Mercury	-26676-12-26 08:23 J	-8021626.33	-8021626.15	-8021625.98	0.0293	0.0038
Mercury	-26675-03-25 06:28 J	-8021537.35	-8021537.23	-8021537.12	0.0294	0.0220
Venus	-26668-04-27 08:09 J	-8018947.32	-8018947.16	-8018947.00	0.0286	0.0187
Venus	-26668-12-12 22:47 J	-8018717.75	-8018717.55	-8018717.34	0.0284	0.0046
Venus	-26667-07-30 10:47 J	-8018488.24	-8018488.05	-8018487.84	0.0282	0.0091
Venus	-26666-03-16 20:38 J	-8018258.76	-8018258.64	-8018258.51	0.0280	0.0221

Earth	-26663-05-14 18:57 J	-8017103.92	-8017103.71	-8017103.50	0.0271	0.0132
Moon	-26663-05-14 21:21 J	-8017103.82	-8017103.61	-8017103.40	0.0271	0.0124 *
Mercury	-26662-07-26 00:57 J	-8016666.50	-8016666.46	-8016666.41	0.0268	0.0252
Mercury	-26662-10-22 11:45 J	-8016578.12	-8016578.01	-8016577.89	0.0268	0.0146
Mercury	-26661-01-18 22:47 J	-8016489.69	-8016489.55	-8016489.41	0.0267	0.0040
Mercury	-26661-04-16 09:50 J	-8016401.22	-8016401.09	-8016400.96	0.0267	0.0068
Mercury	-26661-07-13 20:52 J	-8016312.73	-8016312.63	-8016312.52	0.0266	0.0177
Mars	-26657-02-03 22:47 J	-8015012.71	-8015012.55	-8015012.39	0.0265	0.0217
Venus	-26653-12-30 20:38 J	-8013220.80	-8013220.64	-8013220.48	0.0274	0.0180
Venus	-26652-08-17 06:28 J	-8012991.44	-8012991.23	-8012991.02	0.0276	0.0054
Venus	-26651-04-03 18:28 J	-8012761.93	-8012761.73	-8012761.52	0.0278	0.0078
Venus	-26651-11-19 09:07 J	-8012532.26	-8012532.12	-8012531.99	0.0280	0.0214
Earth	-26648-11-15 07:26 J	-8011440.40	-8011440.19	-8011439.97	0.0290	0.0138
Moon	-26648-11-15 10:47 J	-8011440.27	-8011440.05	-8011439.84	0.0290	0.0154 *
Mercury	-26646-02-15 08:09 J	-8010983.28	-8010983.16	-8010983.03	0.0293	0.0205
Mercury	-26646-05-15 06:57 J	-8010894.39	-8010894.21	-8010894.04	0.0293	0.0018
Mercury	-26646-08-12 05:02 J	-8010805.43	-8010805.29	-8010805.14	0.0294	0.0165
Mars	-26643-01-31 12:43 J	-8009902.19	-8009901.97	-8009901.75	0.0295	0.0207
Venus	-26639-11-07 11:02 J	-8008161.21	-8008161.04	-8008160.87	0.0285	0.0169
Venus	-26638-06-25 01:11 J	-8007931.65	-8007931.45	-8007931.24	0.0283	0.0030
Venus	-26637-02-09 13:11 J	-8007702.14	-8007701.95	-8007701.76	0.0281	0.0106
Venus	-26637-09-25 22:19 J	-8007472.67	-8007472.57	-8007472.45	0.0279	0.0235
Moon	-26634-05-09 13:55 J	-8006517.14	-8006516.92	-8006516.70	0.0271	0.0125
Earth	-26634-05-09 16:19 J	-8006517.04	-8006516.82	-8006516.60	0.0271	0.0113 *
Mercury	-26632-03-10 13:26 J	-8005846.04	-8005845.94	-8005845.84	0.0267	0.0185
Mercury	-26632-06-07 00:14 J	-8005757.62	-8005757.49	-8005757.36	0.0267	0.0079
Mercury	-26632-09-03 11:16 J	-8005669.17	-8005669.03	-8005668.89	0.0267	0.0028
Mercury	-26632-11-30 22:19 J	-8005580.69	-8005580.57	-8005580.45	0.0266	0.0136
Mercury	-26631-02-27 09:21 J	-8005492.15	-8005492.11	-8005492.05	0.0266	0.0245
Venus	-26623-07-12 18:57 J	-8002434.88	-8002434.71	-8002434.55	0.0275	0.0168

Venus	-26622-02-27 04:47 J	-8002205.51	-8002205.30	-8002205.09	0.0277	0.0041
Venus	-26622-10-14 17:02 J	-8001975.99	-8001975.79	-8001975.59	0.0278	0.0091
Venus	-26621-05-31 07:26 J	-8001746.30	-8001746.19	-8001746.05	0.0280	0.0226
Moon	-26619-11-08 17:31 J	-8000854.96	-8000854.77	-8000854.57	0.0288	0.0169
Earth	-26619-11-08 19:55 J	-8000854.86	-8000854.67	-8000854.48	0.0288	0.0183 *
Mercury	-26617-07-04 03:50 J	-8000251.38	-8000251.34	-8000251.29	0.0292	0.0282
Mercury	-26617-10-01 02:38 J	-8000162.55	-8000162.39	-8000162.22	0.0293	0.0095
Mercury	-26617-12-29 00:57 J	-8000073.62	-8000073.46	-8000073.29	0.0293	0.0091
Mercury	-26616-03-27 22:47 J	-7999984.60	-7999984.55	-7999984.47	0.0294	0.0272
Venus	-26609-05-19 13:55 J	-7997375.09	-7997374.92	-7997374.73	0.0286	0.0149
Venus	-26608-01-04 04:33 J	-7997145.52	-7997145.31	-7997145.10	0.0284	0.0008
Venus	-26608-08-21 16:19 J	-7996916.00	-7996915.82	-7996915.63	0.0282	0.0128
Venus	-26607-04-08 01:40 J	-7996686.50	-7996686.43	-7996686.34	0.0280	0.0256
Earth	-26604-05-15 17:31 J	-7995552.95	-7995552.77	-7995552.59	0.0271	0.0178
Moon	-26604-05-15 20:38 J	-7995552.82	-7995552.64	-7995552.44	0.0271	0.0171 *
Mercury	-26603-07-28 16:04 J	-7995113.91	-7995113.83	-7995113.75	0.0268	0.0214
Mercury	-26603-10-25 02:52 J	-7995025.50	-7995025.38	-7995025.25	0.0268	0.0108
Mercury	-26602-01-21 13:55 J	-7994937.06	-7994936.92	-7994936.78	0.0267	0.0004
Mercury	-26602-04-20 00:57 J	-7994848.59	-7994848.46	-7994848.33	0.0267	0.0107
Mercury	-26602-07-17 11:59 J	-7994760.07	-7994760.00	-7994759.91	0.0266	0.0217
Mars	-26599-05-13 15:50 J	-7993729.06	-7993728.84	-7993728.61	0.0265	0.0164
Venus	-26594-06-07 16:47 J	-7991877.84	-7991877.80	-7991877.75	0.0273	0.0267
Venus	-26593-01-23 00:43 J	-7991648.65	-7991648.47	-7991648.29	0.0275	0.0146
Venus	-26593-09-08 10:47 J	-7991419.26	-7991419.05	-7991418.84	0.0277	0.0019
Venus	-26592-04-25 23:02 J	-7991189.73	-7991189.54	-7991189.34	0.0279	0.0114
Venus	-26592-12-11 13:40 J	-7990960.01	-7990959.93	-7990959.82	0.0281	0.0250
Moon	-26589-11-16 03:35 J	-7989889.52	-7989889.35	-7989889.15	0.0290	0.0199
Earth	-26589-11-16 05:31 J	-7989889.46	-7989889.27	-7989889.08	0.0290	0.0186 *
Mercury	-26587-02-18 01:26 J	-7989430.59	-7989430.44	-7989430.29	0.0293	0.0150
Mercury	-26587-05-17 23:59 J	-7989341.67	-7989341.50	-7989341.33	0.0293	0.0036

Mercury	-26587-08-14 22:04 J	-7989252.69	-7989252.58	-7989252.46	0.0294	0.0219
Venus	-26580-04-14 00:43 J	-7986818.52	-7986818.47	-7986818.40	0.0287	0.0274
Venus	-26580-11-29 17:16 J	-7986588.96	-7986588.78	-7986588.59	0.0285	0.0131
Venus	-26579-07-17 07:26 J	-7986359.40	-7986359.19	-7986358.98	0.0283	0.0010
Venus	-26578-03-03 18:43 J	-7986129.89	-7986129.72	-7986129.53	0.0281	0.0144
Venus	-26578-10-19 03:35 J	-7985900.38	-7985900.35	-7985900.29	0.0279	0.0271
Moon	-26575-05-10 12:14 J	-7984966.21	-7984965.99	-7984965.76	0.0271	0.0076
Earth	-26575-05-10 15:35 J	-7984966.09	-7984965.85	-7984965.61	0.0271	0.0066 *
Mercury	-26574-12-15 17:45 J	-7984381.80	-7984381.76	-7984381.72	0.0268	0.0251
Mercury	-26573-03-13 04:33 J	-7984293.43	-7984293.31	-7984293.20	0.0267	0.0146
Mercury	-26573-06-09 15:21 J	-7984204.99	-7984204.86	-7984204.72	0.0267	0.0039
Mercury	-26573-09-06 02:23 J	-7984116.53	-7984116.40	-7984116.26	0.0267	0.0068
Mercury	-26573-12-03 13:40 J	-7984028.04	-7984027.93	-7984027.83	0.0266	0.0177
Mars	-26569-06-28 17:59 J	-7982724.87	-7982724.75	-7982724.61	0.0265	0.0233
Venus	-26565-12-17 15:07 J	-7981091.93	-7981091.87	-7981091.78	0.0273	0.0255
Venus	-26564-08-03 23:02 J	-7980862.71	-7980862.54	-7980862.34	0.0275	0.0134
Venus	-26563-03-21 09:21 J	-7980633.32	-7980633.11	-7980632.89	0.0277	0.0006
Venus	-26563-11-05 21:50 J	-7980403.78	-7980403.59	-7980403.40	0.0279	0.0127
Venus	-26562-06-23 12:57 J	-7980174.04	-7980173.96	-7980173.89	0.0281	0.0262
Earth	-26560-11-09 17:31 J	-7979303.99	-7979303.77	-7979303.55	0.0288	0.0136
Moon	-26560-11-09 19:26 J	-7979303.90	-7979303.69	-7979303.46	0.0288	0.0124 *
Mercury	-26558-07-07 20:52 J	-7978698.74	-7978698.63	-7978698.52	0.0292	0.0228
Mercury	-26558-10-04 19:40 J	-7978609.85	-7978609.68	-7978609.51	0.0293	0.0041
Mercury	-26557-01-01 17:59 J	-7978520.90	-7978520.75	-7978520.60	0.0293	0.0143
Mars	-26555-06-25 13:11 J	-7977615.16	-7977614.95	-7977614.72	0.0295	0.0203
Venus	-26551-10-25 02:52 J	-7976032.48	-7976032.38	-7976032.29	0.0288	0.0255
Venus	-26550-06-11 19:26 J	-7975802.88	-7975802.69	-7975802.49	0.0286	0.0112
Venus	-26549-01-27 09:35 J	-7975573.30	-7975573.10	-7975572.88	0.0284	0.0030
Venus	-26549-09-12 21:21 J	-7975343.78	-7975343.61	-7975343.44	0.0282	0.0164
Moon	-26545-05-16 14:38 J	-7974002.03	-7974001.89	-7974001.74	0.0271	0.0221



Earth -26545-05-16 15:35 J -7974001.97 -7974001.85 -7974001.70 0.0271 0.0224 \*  
 Mercury -26544-07-31 06:57 J -7973561.31 -7973561.21 -7973561.10 0.0268 0.0176  
 Mercury -26544-10-27 17:59 J -7973472.88 -7973472.75 -7973472.62 0.0268 0.0069  
 Mercury -26543-01-24 05:02 J -7973384.43 -7973384.29 -7973384.15 0.0267 0.0039  
 Mercury -26543-04-22 16:04 J -7973295.94 -7973295.83 -7973295.71 0.0267 0.0147  
 Mercury -26543-07-20 03:21 J -7973207.39 -7973207.36 -7973207.32 0.0266 0.0256  
 Venus -26535-06-29 21:21 J -7970305.71 -7970305.61 -7970305.50 0.0273 0.0234  
 Venus -26534-02-14 05:31 J -7970076.46 -7970076.27 -7970076.07 0.0275 0.0111  
 Venus -26534-10-01 15:50 J -7969847.05 -7969846.84 -7969846.63 0.0277 0.0017  
 Venus -26533-05-18 04:19 J -7969617.49 -7969617.32 -7969617.13 0.0279 0.0150  
 Moon -26530-11-18 00:14 J -7968338.61 -7968338.49 -7968338.35 0.0290 0.0247  
 Earth -26530-11-18 03:50 J -7968338.47 -7968338.34 -7968338.19 0.0290 0.0236 \*  
 Mercury -26529-11-23 19:40 J -7967966.72 -7967966.68 -7967966.63 0.0293 0.0282  
 Mercury -26528-02-20 18:43 J -7967877.89 -7967877.72 -7967877.55 0.0293 0.0094  
 Mercury -26528-05-20 17:02 J -7967788.95 -7967788.79 -7967788.62 0.0294 0.0091  
 Mercury -26528-08-17 14:52 J -7967699.93 -7967699.88 -7967699.81 0.0294 0.0273  
 Venus -26521-05-06 07:26 J -7965246.31 -7965246.19 -7965246.07 0.0287 0.0235  
 Venus -26521-12-21 23:45 J -7965016.71 -7965016.51 -7965016.31 0.0285 0.0092  
 Venus -26520-08-08 13:26 J -7964787.14 -7964786.94 -7964786.73 0.0283 0.0048  
 Venus -26519-03-26 00:43 J -7964557.63 -7964557.47 -7964557.31 0.0281 0.0181  
 Earth -26516-05-11 15:21 J -7963415.10 -7963414.86 -7963414.62 0.0271 0.0017  
 Moon -26516-05-11 16:33 J -7963415.04 -7963414.81 -7963414.58 0.0271 0.0023 \*  
 Mercury -26515-12-18 09:07 J -7962829.21 -7962829.12 -7962829.04 0.0268 0.0211  
 Mercury -26514-03-16 19:40 J -7962740.80 -7962740.68 -7962740.55 0.0267 0.0106  
 Mercury -26514-06-13 06:43 J -7962652.36 -7962652.22 -7962652.08 0.0267 0.0005  
 Mercury -26514-09-09 17:45 J -7962563.88 -7962563.76 -7962563.63 0.0266 0.0110  
 Mercury -26514-12-07 05:02 J -7962475.37 -7962475.29 -7962475.21 0.0266 0.0219  
 Mars -26511-10-06 14:52 J -7961441.11 -7961440.88 -7961440.63 0.0265 0.0145  
 Venus -26505-01-09 20:38 J -7959519.76 -7959519.64 -7959519.51 0.0273 0.0221  
 Venus -26505-08-26 04:33 J -7959290.50 -7959290.31 -7959290.11 0.0275 0.0098

Venus	-26504-04-12 14:52 J	-7959061.09	-7959060.88	-7959060.66	0.0277	0.0031
Venus	-26504-11-28 03:35 J	-7958831.52	-7958831.35	-7958831.18	0.0279	0.0164
Earth	-26501-11-10 16:33 J	-7957753.04	-7957752.81	-7957752.57	0.0288	0.0087
Moon	-26501-11-10 20:09 J	-7957752.91	-7957752.66	-7957752.42	0.0288	0.0073 *
Mercury	-26499-07-10 14:23 J	-7957146.04	-7957145.90	-7957145.76	0.0292	0.0171
Mercury	-26499-10-07 12:57 J	-7957057.13	-7957056.96	-7957056.78	0.0293	0.0016
Mercury	-26498-01-04 11:16 J	-7956968.16	-7956968.03	-7956967.90	0.0293	0.0199
Venus	-26492-11-16 09:07 J	-7954460.25	-7954460.12	-7954459.98	0.0288	0.0217
Venus	-26491-07-04 01:40 J	-7954230.63	-7954230.43	-7954230.23	0.0286	0.0073
Venus	-26490-02-18 15:35 J	-7954001.05	-7954000.85	-7954000.65	0.0284	0.0067
Venus	-26490-10-06 02:52 J	-7953771.52	-7953771.38	-7953771.23	0.0281	0.0201
Moon	-26487-05-06 14:09 J	-7952827.91	-7952827.91	-7952827.91	0.0273	0.0273
Earth	-26487-05-06 15:07 J	-7952827.91	-7952827.87	-7952827.80	0.0273	0.0266 *
Mercury	-26485-05-06 11:31 J	-7952097.08	-7952097.02	-7952096.97	0.0268	0.0243
Mercury	-26485-08-02 22:19 J	-7952008.69	-7952008.57	-7952008.45	0.0268	0.0136
Mercury	-26485-10-30 09:21 J	-7951920.25	-7951920.11	-7951919.98	0.0268	0.0030
Mercury	-26484-01-26 20:09 J	-7951831.79	-7951831.66	-7951831.52	0.0267	0.0080
Mercury	-26484-04-25 07:26 J	-7951743.29	-7951743.19	-7951743.09	0.0267	0.0188
Venus	-26476-07-22 03:07 J	-7948733.50	-7948733.37	-7948733.21	0.0273	0.0199
Venus	-26475-03-08 11:45 J	-7948504.22	-7948504.01	-7948503.81	0.0275	0.0075
Venus	-26475-10-23 22:19 J	-7948274.78	-7948274.57	-7948274.36	0.0277	0.0054
Venus	-26474-06-10 11:16 J	-7948045.18	-7948045.03	-7948044.87	0.0279	0.0188
Mercury	-26470-11-27 13:55 J	-7946414.03	-7946413.92	-7946413.80	0.0293	0.0220
Mercury	-26469-02-24 12:43 J	-7946325.15	-7946324.97	-7946324.80	0.0293	0.0033
Mercury	-26469-05-23 10:47 J	-7946236.19	-7946236.05	-7946235.89	0.0294	0.0152
Mars	-26467-11-18 19:26 J	-7945326.94	-7945326.69	-7945326.44	0.0296	0.0167
Venus	-26462-05-29 14:38 J	-7943674.03	-7943673.89	-7943673.73	0.0287	0.0196
Venus	-26461-01-14 06:57 J	-7943444.42	-7943444.21	-7943444.01	0.0285	0.0053
Venus	-26461-08-30 20:23 J	-7943214.85	-7943214.65	-7943214.45	0.0283	0.0086
Venus	-26460-04-17 07:11 J	-7942985.33	-7942985.20	-7942985.07	0.0281	0.0218

Earth	-26457-05-12 16:04 J	-7941864.07	-7941863.83	-7941863.59	0.0271	0.0033
Moon	-26457-05-12 19:40 J	-7941863.92	-7941863.68	-7941863.43	0.0271	0.0032 *
Mercury	-26456-12-21 00:28 J	-7941276.58	-7941276.48	-7941276.38	0.0268	0.0169
Mercury	-26455-03-19 11:16 J	-7941188.16	-7941188.03	-7941187.89	0.0267	0.0062
Mercury	-26455-06-15 22:19 J	-7941099.71	-7941099.57	-7941099.43	0.0267	0.0045
Mercury	-26455-09-12 09:21 J	-7941011.22	-7941011.11	-7941010.99	0.0266	0.0154
Mercury	-26455-12-09 20:38 J	-7940922.65	-7940922.64	-7940922.62	0.0266	0.0263
Venus	-26446-02-01 03:35 J	-7937947.51	-7937947.35	-7937947.20	0.0273	0.0185
Venus	-26446-09-18 11:45 J	-7937718.22	-7937718.01	-7937717.80	0.0275	0.0060
Venus	-26445-05-04 22:19 J	-7937488.78	-7937488.57	-7937488.36	0.0277	0.0069
Venus	-26445-12-20 11:02 J	-7937259.18	-7937259.04	-7937258.88	0.0279	0.0203
Moon	-26442-11-12 18:28 J	-7936201.99	-7936201.73	-7936201.47	0.0288	0.0021
Earth	-26442-11-12 18:43 J	-7936201.97	-7936201.72	-7936201.47	0.0288	0.0031 *
Mercury	-26440-07-13 08:38 J	-7935593.30	-7935593.14	-7935592.98	0.0293	0.0108
Mercury	-26440-10-10 06:57 J	-7935504.37	-7935504.21	-7935504.03	0.0293	0.0078
Mercury	-26439-01-07 05:02 J	-7935415.36	-7935415.29	-7935415.21	0.0293	0.0260
Venus	-26433-12-08 16:33 J	-7932887.97	-7932887.81	-7932887.64	0.0287	0.0178
Venus	-26432-07-26 08:52 J	-7932658.34	-7932658.13	-7932657.92	0.0285	0.0034
Venus	-26431-03-12 22:19 J	-7932428.76	-7932428.57	-7932428.37	0.0283	0.0106
Venus	-26431-10-28 09:21 J	-7932199.21	-7932199.11	-7932198.99	0.0281	0.0238
Moon	-26428-05-07 12:43 J	-7931277.10	-7931276.97	-7931276.82	0.0273	0.0221
Earth	-26428-05-07 16:19 J	-7931276.96	-7931276.82	-7931276.67	0.0273	0.0215 *
Mercury	-26426-05-10 02:52 J	-7930544.46	-7930544.38	-7930544.29	0.0269	0.0201
Mercury	-26426-08-06 13:55 J	-7930456.05	-7930455.92	-7930455.79	0.0268	0.0093
Mercury	-26426-11-03 00:57 J	-7930367.60	-7930367.46	-7930367.33	0.0268	0.0016
Mercury	-26425-01-30 11:59 J	-7930279.12	-7930279.00	-7930278.88	0.0267	0.0124
Mercury	-26425-04-27 23:16 J	-7930190.60	-7930190.53	-7930190.47	0.0267	0.0233
Mars	-26422-03-02 11:45 J	-7929152.28	-7929152.01	-7929151.75	0.0265	0.0097
Venus	-26417-08-13 10:47 J	-7927161.22	-7927161.05	-7927160.88	0.0273	0.0162
Venus	-26416-03-30 19:26 J	-7926931.90	-7926931.69	-7926931.48	0.0275	0.0037

Venus	-26416-11-15 06:14 J	-7926702.43	-7926702.24	-7926702.03	0.0277	0.0094
Venus	-26415-07-02 19:40 J	-7926472.79	-7926472.68	-7926472.55	0.0279	0.0227
Mercury	-26411-11-30 08:38 J	-7924861.29	-7924861.14	-7924860.98	0.0293	0.0152
Mercury	-26410-02-27 07:26 J	-7924772.37	-7924772.19	-7924772.02	0.0293	0.0035
Mercury	-26410-05-27 05:31 J	-7924683.38	-7924683.27	-7924683.15	0.0294	0.0218
Venus	-26403-06-20 23:45 J	-7922101.69	-7922101.51	-7922101.33	0.0287	0.0155
Venus	-26402-02-05 15:21 J	-7921872.07	-7921871.86	-7921871.65	0.0285	0.0013
Venus	-26402-09-23 04:33 J	-7921642.50	-7921642.31	-7921642.12	0.0283	0.0126
Venus	-26401-05-09 14:52 J	-7921412.95	-7921412.88	-7921412.79	0.0280	0.0257
Earth	-26398-05-14 18:57 J	-7920312.93	-7920312.71	-7920312.47	0.0271	0.0088
Moon	-26398-05-14 19:26 J	-7920312.92	-7920312.69	-7920312.45	0.0271	0.0089 *
Mercury	-26397-09-26 05:31 J	-7919812.34	-7919812.27	-7919812.20	0.0268	0.0229
Mercury	-26397-12-23 16:19 J	-7919723.94	-7919723.82	-7919723.70	0.0268	0.0123
Mercury	-26396-03-22 03:21 J	-7919635.50	-7919635.36	-7919635.23	0.0267	0.0017
Mercury	-26396-06-18 14:23 J	-7919547.03	-7919546.90	-7919546.77	0.0267	0.0093
Mercury	-26396-09-15 01:26 J	-7919458.53	-7919458.44	-7919458.35	0.0266	0.0202
Venus	-26388-07-09 05:45 J	-7916604.29	-7916604.26	-7916604.21	0.0272	0.0266
Venus	-26387-02-23 12:28 J	-7916375.16	-7916374.98	-7916374.80	0.0274	0.0146
Venus	-26387-10-10 21:07 J	-7916145.83	-7916145.62	-7916145.41	0.0275	0.0020
Venus	-26386-05-28 07:55 J	-7915916.36	-7915916.17	-7915915.97	0.0277	0.0111
Venus	-26385-01-12 21:07 J	-7915686.71	-7915686.62	-7915686.51	0.0279	0.0245
Moon	-26383-11-13 21:35 J	-7914650.85	-7914650.60	-7914650.35	0.0288	0.0042
Earth	-26383-11-14 01:11 J	-7914650.69	-7914650.45	-7914650.20	0.0288	0.0034 *
Mercury	-26381-04-18 05:16 J	-7914129.39	-7914129.28	-7914129.16	0.0292	0.0222
Mercury	-26381-07-16 04:04 J	-7914040.51	-7914040.33	-7914040.16	0.0293	0.0035
Mercury	-26381-10-13 02:23 J	-7913951.55	-7913951.40	-7913951.25	0.0293	0.0149
Mars	-26378-04-13 12:28 J	-7913039.24	-7913038.98	-7913038.71	0.0295	0.0144
Venus	-26374-05-16 07:26 J	-7911545.22	-7911545.19	-7911545.14	0.0289	0.0283
Venus	-26373-01-01 01:40 J	-7911315.61	-7911315.43	-7911315.24	0.0287	0.0137
Venus	-26373-08-17 17:31 J	-7911085.98	-7911085.77	-7911085.56	0.0285	0.0007

Venus	-26372-04-04 06:28 J	-7910856.40	-7910856.23	-7910856.04	0.0283	0.0145
Venus	-26372-11-19 17:02 J	-7910626.81	-7910626.79	-7910626.74	0.0281	0.0276
Moon	-26369-05-08 17:59 J	-7909725.93	-7909725.75	-7909725.56	0.0273	0.0165
Earth	-26369-05-08 18:57 J	-7909725.90	-7909725.71	-7909725.51	0.0273	0.0160 *
Mercury	-26367-02-13 07:55 J	-7909080.19	-7909080.17	-7909080.14	0.0269	0.0262
Mercury	-26367-05-12 18:57 J	-7908991.82	-7908991.71	-7908991.60	0.0269	0.0155
Mercury	-26367-08-09 05:45 J	-7908903.39	-7908903.26	-7908903.12	0.0268	0.0047
Mercury	-26367-11-05 16:47 J	-7908814.93	-7908814.80	-7908814.66	0.0268	0.0062
Mercury	-26366-02-02 03:50 J	-7908726.44	-7908726.34	-7908726.23	0.0267	0.0172
Venus	-26358-01-19 13:26 J	-7905818.02	-7905817.94	-7905817.84	0.0272	0.0244
Venus	-26358-09-05 20:23 J	-7905588.84	-7905588.65	-7905588.46	0.0273	0.0124
Venus	-26357-04-22 05:16 J	-7905359.49	-7905359.28	-7905359.06	0.0275	0.0007
Venus	-26357-12-07 16:33 J	-7905129.99	-7905129.81	-7905129.62	0.0277	0.0135
Venus	-26356-07-25 06:28 J	-7904900.28	-7904900.23	-7904900.17	0.0279	0.0269
Earth	-26354-11-08 08:09 J	-7904064.26	-7904064.16	-7904064.03	0.0287	0.0253
Moon	-26354-11-08 11:59 J	-7904064.11	-7904064.00	-7904063.85	0.0287	0.0243 *
Mercury	-26352-09-05 05:45 J	-7903397.33	-7903397.26	-7903397.18	0.0292	0.0262
Mercury	-26352-12-03 04:33 J	-7903308.48	-7903308.31	-7903308.13	0.0293	0.0075
Mercury	-26351-03-02 03:07 J	-7903219.53	-7903219.37	-7903219.21	0.0293	0.0110
Mercury	-26351-05-30 01:11 J	-7903130.47	-7903130.45	-7903130.44	0.0294	0.0292
Venus	-26345-11-25 16:19 J	-7900758.90	-7900758.82	-7900758.72	0.0289	0.0258
Venus	-26344-07-13 10:04 J	-7900529.27	-7900529.08	-7900528.88	0.0287	0.0112
Venus	-26343-02-28 01:26 J	-7900299.65	-7900299.44	-7900299.23	0.0285	0.0031
Venus	-26343-10-15 13:55 J	-7900070.08	-7900069.92	-7900069.75	0.0282	0.0167
Moon	-26339-05-15 20:52 J	-7898761.82	-7898761.63	-7898761.42	0.0271	0.0152
Earth	-26339-05-16 00:14 J	-7898761.69	-7898761.49	-7898761.28	0.0271	0.0147 *
Mercury	-26338-09-29 21:35 J	-7898259.69	-7898259.60	-7898259.49	0.0268	0.0181
Mercury	-26338-12-27 08:38 J	-7898171.27	-7898171.14	-7898171.01	0.0268	0.0073
Mercury	-26337-03-24 19:40 J	-7898082.82	-7898082.68	-7898082.55	0.0267	0.0035
Mercury	-26337-06-21 06:43 J	-7897994.34	-7897994.22	-7897994.10	0.0267	0.0144

Mercury	-26337-09-17 17:45 J	-7897905.79	-7897905.76	-7897905.71	0.0266	0.0254
Mars	-26334-07-27 07:26 J	-7896863.46	-7896863.19	-7896862.90	0.0265	0.0051
Venus	-26329-07-31 16:19 J	-7895031.92	-7895031.82	-7895031.69	0.0272	0.0227
Venus	-26328-03-17 23:16 J	-7894802.72	-7894802.53	-7894802.33	0.0274	0.0106
Venus	-26328-11-02 08:23 J	-7894573.36	-7894573.15	-7894572.93	0.0276	0.0022
Venus	-26327-06-19 19:55 J	-7894343.85	-7894343.67	-7894343.49	0.0278	0.0154
Moon	-26324-11-15 09:07 J	-7893099.33	-7893099.12	-7893098.89	0.0289	0.0113
Earth	-26324-11-15 11:02 J	-7893099.26	-7893099.04	-7893098.80	0.0289	0.0107 *
Mercury	-26322-04-22 01:55 J	-7892576.58	-7892576.42	-7892576.27	0.0292	0.0140
Mercury	-26322-07-20 00:28 J	-7892487.65	-7892487.48	-7892487.31	0.0293	0.0046
Mercury	-26322-10-16 22:33 J	-7892398.66	-7892398.56	-7892398.45	0.0293	0.0229
Venus	-26315-06-07 18:57 J	-7889972.82	-7889972.71	-7889972.58	0.0288	0.0240
Venus	-26314-01-23 12:57 J	-7889743.16	-7889742.96	-7889742.76	0.0287	0.0094
Venus	-26314-09-10 04:04 J	-7889513.54	-7889513.33	-7889513.12	0.0285	0.0049
Venus	-26313-04-26 16:47 J	-7889283.96	-7889283.80	-7889283.64	0.0283	0.0186
Earth	-26310-05-11 00:28 J	-7888174.71	-7888174.48	-7888174.25	0.0273	0.0099
Moon	-26310-05-11 03:21 J	-7888174.58	-7888174.36	-7888174.14	0.0273	0.0103 *
Mercury	-26308-02-16 00:14 J	-7887527.57	-7887527.49	-7887527.41	0.0269	0.0212
Mercury	-26308-05-15 11:02 J	-7887439.16	-7887439.04	-7887438.91	0.0269	0.0105
Mercury	-26308-08-11 22:04 J	-7887350.72	-7887350.58	-7887350.44	0.0268	0.0004
Mercury	-26308-11-08 09:07 J	-7887262.24	-7887262.12	-7887261.99	0.0268	0.0113
Mercury	-26307-02-04 20:23 J	-7887173.72	-7887173.65	-7887173.57	0.0267	0.0223
Venus	-26299-02-11 00:28 J	-7884245.61	-7884245.48	-7884245.33	0.0272	0.0205
Venus	-26299-09-28 07:55 J	-7884016.37	-7884016.17	-7884015.96	0.0274	0.0083
Venus	-26298-05-15 17:31 J	-7883786.98	-7883786.77	-7883786.56	0.0276	0.0046
Venus	-26298-12-31 05:16 J	-7883557.44	-7883557.28	-7883557.11	0.0278	0.0178
Earth	-26295-11-09 20:23 J	-7882512.84	-7882512.65	-7882512.45	0.0287	0.0176
Moon	-26295-11-09 21:50 J	-7882512.79	-7882512.59	-7882512.37	0.0287	0.0168 *
Mercury	-26293-09-08 03:07 J	-7881844.51	-7881844.37	-7881844.23	0.0292	0.0174
Mercury	-26293-12-06 01:55 J	-7881755.60	-7881755.42	-7881755.25	0.0293	0.0013

Mercury	-26292-03-04 23:59 J	-7881666.62	-7881666.50	-7881666.37	0.0293	0.0196
Mars	-26290-09-08 05:45 J	-7880749.55	-7880749.26	-7880748.96	0.0296	0.0059
Venus	-26286-12-19 05:31 J	-7879186.41	-7879186.27	-7879186.13	0.0288	0.0212
Venus	-26285-08-04 22:33 J	-7878956.76	-7878956.56	-7878956.35	0.0286	0.0067
Venus	-26284-03-22 12:57 J	-7878727.15	-7878726.96	-7878726.75	0.0284	0.0076
Venus	-26284-11-07 01:11 J	-7878497.58	-7878497.45	-7878497.31	0.0282	0.0210
Moon	-26280-05-17 04:47 J	-7877210.43	-7877210.30	-7877210.15	0.0271	0.0215
Earth	-26280-05-17 07:11 J	-7877210.34	-7877210.20	-7877210.04	0.0271	0.0212 *
Mercury	-26279-07-06 03:21 J	-7876795.42	-7876795.36	-7876795.29	0.0268	0.0235
Mercury	-26279-10-02 14:09 J	-7876707.02	-7876706.91	-7876706.78	0.0268	0.0128
Mercury	-26279-12-30 01:11 J	-7876618.59	-7876618.45	-7876618.31	0.0268	0.0020
Mercury	-26278-03-28 12:14 J	-7876530.12	-7876529.99	-7876529.86	0.0267	0.0089
Mercury	-26278-06-24 23:31 J	-7876441.61	-7876441.52	-7876441.43	0.0267	0.0198
Venus	-26270-08-24 04:47 J	-7873459.45	-7873459.30	-7873459.14	0.0273	0.0186
Venus	-26269-04-09 12:14 J	-7873230.19	-7873229.99	-7873229.78	0.0274	0.0063
Venus	-26269-11-24 21:50 J	-7873000.79	-7873000.59	-7873000.38	0.0276	0.0066
Venus	-26268-07-12 09:50 J	-7872771.23	-7872771.09	-7872770.94	0.0278	0.0199
Earth	-26265-11-17 01:11 J	-7871547.62	-7871547.45	-7871547.25	0.0289	0.0188
Moon	-26265-11-17 03:50 J	-7871547.51	-7871547.34	-7871547.15	0.0289	0.0192 *
Mercury	-26263-01-26 00:43 J	-7871112.57	-7871112.47	-7871112.37	0.0292	0.0237
Mercury	-26263-04-24 23:31 J	-7871023.69	-7871023.52	-7871023.34	0.0292	0.0050
Mercury	-26263-07-22 21:50 J	-7870934.74	-7870934.59	-7870934.43	0.0293	0.0135
Venus	-26256-06-30 08:23 J	-7868400.30	-7868400.15	-7868399.99	0.0288	0.0194
Venus	-26255-02-15 01:26 J	-7868170.64	-7868170.44	-7868170.23	0.0286	0.0049
Venus	-26255-10-02 16:04 J	-7867941.03	-7867940.83	-7867940.63	0.0284	0.0093
Venus	-26254-05-20 04:04 J	-7867711.44	-7867711.33	-7867711.20	0.0282	0.0228
Earth	-26251-05-12 07:40 J	-7866623.41	-7866623.18	-7866622.93	0.0273	0.0035
Moon	-26251-05-12 10:47 J	-7866623.29	-7866623.05	-7866622.80	0.0273	0.0036 *
Mercury	-26250-11-23 05:45 J	-7866063.26	-7866063.26	-7866063.24	0.0269	0.0268
Mercury	-26249-02-19 16:47 J	-7865974.91	-7865974.80	-7865974.69	0.0269	0.0160

Mercury -26249-05-18 03:50 J -7865886.48 -7865886.34 -7865886.21 0.0268 0.0052

Mercury -26249-08-14 14:52 J -7865798.02 -7865797.88 -7865797.75 0.0268 0.0058

Mercury -26249-11-11 01:55 J -7865709.53 -7865709.42 -7865709.31 0.0268 0.0168

Mars -26246-12-21 15:50 J -7864574.13 -7864573.84 -7864573.56 0.0265 0.0010

Venus -26240-03-05 12:57 J -7862673.12 -7862672.96 -7862672.79 0.0273 0.0165

Venus -26240-10-20 20:52 J -7862443.84 -7862443.63 -7862443.42 0.0274 0.0040

Venus -26239-06-07 06:57 J -7862214.41 -7862214.21 -7862214.00 0.0276 0.0090

Venus -26238-01-22 19:26 J -7861984.81 -7861984.69 -7861984.56 0.0278 0.0223

Moon -26236-11-11 08:09 J -7860961.40 -7860961.16 -7860960.91 0.0288 0.0090

Earth -26236-11-11 11:02 J -7860961.27 -7860961.04 -7860960.80 0.0288 0.0094 \*

Mercury -26234-06-15 02:09 J -7860380.47 -7860380.41 -7860380.34 0.0292 0.0269

Mercury -26234-09-12 00:57 J -7860291.62 -7860291.46 -7860291.28 0.0292 0.0082

Mercury -26234-12-09 23:31 J -7860202.68 -7860202.52 -7860202.35 0.0293 0.0104

Mercury -26233-03-07 21:35 J -7860113.63 -7860113.60 -7860113.56 0.0293 0.0287

Venus -26226-01-10 19:40 J -7857613.85 -7857613.68 -7857613.50 0.0288 0.0166

Venus -26226-08-28 12:14 J -7857384.20 -7857383.99 -7857383.78 0.0286 0.0021

Venus -26225-04-14 02:09 J -7857154.60 -7857154.41 -7857154.22 0.0284 0.0120

Venus -26225-11-29 13:40 J -7856925.01 -7856924.93 -7856924.83 0.0282 0.0253

Moon -26222-05-07 11:31 J -7856036.04 -7856036.02 -7856035.98 0.0274 0.0271

Earth -26222-05-07 14:23 J -7856035.94 -7856035.90 -7856035.82 0.0274 0.0265

Mercury -26220-07-08 20:09 J -7855242.75 -7855242.66 -7855242.55 0.0268 0.0180

Mercury -26220-10-05 07:11 J -7855154.33 -7855154.20 -7855154.07 0.0268 0.0072

Mercury -26219-01-01 18:14 J -7855065.88 -7855065.74 -7855065.61 0.0267 0.0037

Mercury -26219-03-31 05:16 J -7854977.39 -7854977.28 -7854977.16 0.0267 0.0146

Mercury -26219-06-27 16:33 J -7854888.85 -7854888.81 -7854888.77 0.0267 0.0256

Venus -26211-01-29 12:28 J -7852116.02 -7852115.98 -7852115.92 0.0271 0.0263

Venus -26211-09-15 18:28 J -7851886.91 -7851886.73 -7851886.55 0.0273 0.0144

Venus -26210-05-03 02:23 J -7851657.61 -7851657.40 -7851657.18 0.0275 0.0019

Venus -26210-12-18 12:43 J -7851428.17 -7851427.97 -7851427.78 0.0277 0.0112

Venus -26209-08-04 01:26 J -7851198.54 -7851198.44 -7851198.34 0.0279 0.0245



Earth	-26206-11-19 18:43 J	-7849995.78	-7849995.72	-7849995.64	0.0289	0.0276
Moon	-26206-11-19 22:33 J	-7849995.63	-7849995.56	-7849995.49	0.0289	0.0278
Mercury	-26204-01-28 23:31 J	-7849559.68	-7849559.52	-7849559.36	0.0292	0.0137
Mercury	-26204-04-27 22:04 J	-7849470.75	-7849470.58	-7849470.41	0.0293	0.0049
Mercury	-26204-07-25 20:09 J	-7849381.76	-7849381.66	-7849381.55	0.0293	0.0232
Mars	-26201-02-02 10:19 J	-7848460.37	-7848460.07	-7848459.77	0.0295	0.0013
Venus	-26197-07-22 23:31 J	-7846827.69	-7846827.52	-7846827.33	0.0287	0.0147
Venus	-26196-03-09 16:04 J	-7846598.04	-7846597.83	-7846597.62	0.0285	0.0004
Venus	-26196-10-25 05:45 J	-7846368.44	-7846368.26	-7846368.07	0.0283	0.0138
Venus	-26195-06-11 17:16 J	-7846138.83	-7846138.78	-7846138.72	0.0281	0.0271
Moon	-26192-05-13 15:35 J	-7845072.09	-7845071.85	-7845071.60	0.0273	0.0037
Earth	-26192-05-13 17:02 J	-7845072.03	-7845071.79	-7845071.55	0.0273	0.0035 *
Mercury	-26191-11-25 22:47 J	-7844510.63	-7844510.55	-7844510.47	0.0269	0.0212
Mercury	-26190-02-22 09:35 J	-7844422.22	-7844422.10	-7844421.97	0.0269	0.0104
Mercury	-26190-05-21 20:38 J	-7844333.78	-7844333.64	-7844333.50	0.0268	0.0006
Mercury	-26190-08-18 07:40 J	-7844245.30	-7844245.18	-7844245.05	0.0268	0.0114
Mercury	-26190-11-14 18:43 J	-7844156.79	-7844156.72	-7844156.64	0.0268	0.0225
Venus	-26182-08-11 19:26 J	-7841329.77	-7841329.69	-7841329.58	0.0272	0.0244
Venus	-26181-03-28 02:09 J	-7841100.59	-7841100.41	-7841100.21	0.0273	0.0123
Venus	-26181-11-12 10:47 J	-7840871.26	-7840871.05	-7840870.83	0.0275	0.0004
Venus	-26180-06-29 21:35 J	-7840641.78	-7840641.60	-7840641.41	0.0277	0.0135
Venus	-26179-02-14 10:33 J	-7840412.10	-7840412.06	-7840412.00	0.0279	0.0269
Moon	-26177-11-13 00:43 J	-7839409.71	-7839409.47	-7839409.22	0.0288	0.0002
Earth	-26177-11-13 04:04 J	-7839409.58	-7839409.33	-7839409.08	0.0288	0.0007 *
Mercury	-26175-06-18 00:57 J	-7838827.60	-7838827.46	-7838827.31	0.0292	0.0169
Mercury	-26175-09-14 23:45 J	-7838738.69	-7838738.51	-7838738.34	0.0293	0.0019
Mercury	-26175-12-12 21:50 J	-7838649.71	-7838649.59	-7838649.46	0.0293	0.0202
Venus	-26168-06-17 16:33 J	-7836270.88	-7836270.81	-7836270.71	0.0289	0.0265
Venus	-26167-02-02 11:02 J	-7836041.23	-7836041.04	-7836040.84	0.0287	0.0117
Venus	-26167-09-20 02:52 J	-7835811.59	-7835811.38	-7835811.17	0.0285	0.0027

Venus	-26166-05-07 16:04 J	-7835581.99	-7835581.83	-7835581.65	0.0283	0.0165
Earth	-26163-05-09 00:43 J	-7834484.64	-7834484.47	-7834484.30	0.0274	0.0194
Moon	-26163-05-09 01:55 J	-7834484.58	-7834484.42	-7834484.26	0.0274	0.0197 *
Mercury	-26161-04-14 02:23 J	-7833778.47	-7833778.40	-7833778.33	0.0269	0.0231
Mercury	-26161-07-11 13:11 J	-7833690.07	-7833689.95	-7833689.83	0.0268	0.0123
Mercury	-26161-10-08 00:14 J	-7833601.63	-7833601.49	-7833601.36	0.0268	0.0016
Mercury	-26160-01-04 11:16 J	-7833513.16	-7833513.03	-7833512.90	0.0267	0.0094
Mercury	-26160-04-02 22:19 J	-7833424.65	-7833424.57	-7833424.48	0.0267	0.0204
Mars	-26157-05-17 05:02 J	-7832284.56	-7832284.29	-7832284.02	0.0265	0.0081
Venus	-26152-02-21 01:55 J	-7830543.53	-7830543.42	-7830543.29	0.0272	0.0223
Venus	-26152-10-08 08:38 J	-7830314.34	-7830314.14	-7830313.94	0.0274	0.0101
Venus	-26151-05-25 17:16 J	-7830084.99	-7830084.78	-7830084.57	0.0275	0.0027
Venus	-26150-01-10 04:04 J	-7829855.50	-7829855.33	-7829855.15	0.0277	0.0158
Mercury	-26146-11-04 23:45 J	-7828095.63	-7828095.51	-7828095.40	0.0292	0.0223
Mercury	-26145-02-01 22:33 J	-7828006.74	-7828006.56	-7828006.39	0.0292	0.0036
Mercury	-26145-04-30 20:52 J	-7827917.78	-7827917.63	-7827917.48	0.0293	0.0149
Venus	-26139-12-28 21:21 J	-7825484.71	-7825484.61	-7825484.49	0.0288	0.0244
Venus	-26138-08-15 15:21 J	-7825255.05	-7825254.86	-7825254.66	0.0287	0.0098
Venus	-26137-04-01 06:57 J	-7825025.42	-7825025.21	-7825025.00	0.0285	0.0046
Venus	-26137-11-16 19:55 J	-7824795.82	-7824795.67	-7824795.51	0.0283	0.0183
Moon	-26133-05-14 22:47 J	-7823520.76	-7823520.55	-7823520.32	0.0272	0.0111
Earth	-26133-05-15 02:38 J	-7823520.61	-7823520.39	-7823520.16	0.0272	0.0105 *
Mercury	-26132-09-01 04:47 J	-7823046.32	-7823046.30	-7823046.28	0.0269	0.0264
Mercury	-26132-11-28 15:35 J	-7822957.96	-7822957.85	-7822957.74	0.0269	0.0156
Mercury	-26131-02-25 02:23 J	-7822869.53	-7822869.40	-7822869.26	0.0269	0.0049
Mercury	-26131-05-24 13:26 J	-7822781.07	-7822780.94	-7822780.80	0.0268	0.0062
Mercury	-26131-08-21 00:43 J	-7822692.58	-7822692.47	-7822692.37	0.0268	0.0172
Venus	-26123-09-03 08:09 J	-7819757.29	-7819757.16	-7819757.01	0.0272	0.0203
Venus	-26122-04-20 15:21 J	-7819528.06	-7819527.86	-7819527.66	0.0274	0.0080
Venus	-26122-12-06 00:28 J	-7819298.69	-7819298.48	-7819298.27	0.0276	0.0048

Venus	-26121-07-22 11:59 J	-7819069.16	-7819069.00	-7819068.83	0.0277	0.0180
Moon	-26118-11-15 20:23 J	-7817857.87	-7817857.65	-7817857.42	0.0288	0.0087
Earth	-26118-11-15 20:38 J	-7817857.87	-7817857.64	-7817857.40	0.0288	0.0082 *
Mercury	-26116-03-24 00:43 J	-7817363.55	-7817363.47	-7817363.39	0.0292	0.0257
Mercury	-26116-06-20 23:45 J	-7817274.68	-7817274.51	-7817274.34	0.0292	0.0069
Mercury	-26116-09-17 22:04 J	-7817185.74	-7817185.58	-7817185.41	0.0293	0.0117
Mars	-26113-06-29 23:02 J	-7816169.80	-7816169.54	-7816169.26	0.0296	0.0133
Venus	-26109-07-10 09:21 J	-7814698.24	-7814698.11	-7814697.96	0.0289	0.0215
Venus	-26108-02-25 03:07 J	-7814468.57	-7814468.37	-7814468.16	0.0287	0.0068
Venus	-26108-10-12 17:59 J	-7814238.94	-7814238.75	-7814238.54	0.0285	0.0076
Venus	-26107-05-30 06:28 J	-7814009.35	-7814009.23	-7814009.08	0.0283	0.0212
Earth	-26104-05-10 11:31 J	-7812933.23	-7812933.02	-7812932.80	0.0273	0.0121
Moon	-26104-05-10 15:07 J	-7812933.08	-7812932.87	-7812932.65	0.0273	0.0121 *
Mercury	-26102-04-17 19:26 J	-7812225.80	-7812225.69	-7812225.59	0.0268	0.0174
Mercury	-26102-07-15 06:14 J	-7812137.37	-7812137.24	-7812137.11	0.0268	0.0066
Mercury	-26102-10-11 17:16 J	-7812048.92	-7812048.78	-7812048.65	0.0268	0.0043
Mercury	-26101-01-08 04:19 J	-7811960.43	-7811960.32	-7811960.21	0.0267	0.0153
Mercury	-26101-04-05 15:35 J	-7811871.87	-7811871.85	-7811871.83	0.0267	0.0263
Venus	-26093-03-15 14:38 J	-7808971.03	-7808970.89	-7808970.72	0.0272	0.0182
Venus	-26093-10-30 22:04 J	-7808741.79	-7808741.58	-7808741.37	0.0274	0.0057
Venus	-26092-06-17 07:26 J	-7808512.39	-7808512.19	-7808511.98	0.0276	0.0072
Venus	-26091-02-01 19:11 J	-7808282.84	-7808282.70	-7808282.56	0.0278	0.0204
Moon	-26089-11-08 23:45 J	-7807271.68	-7807271.51	-7807271.32	0.0287	0.0207
Earth	-26089-11-08 23:59 J	-7807271.66	-7807271.50	-7807271.34	0.0287	0.0215 *
Mercury	-26087-11-07 22:33 J	-7806542.71	-7806542.56	-7806542.39	0.0292	0.0121
Mercury	-26086-02-04 21:21 J	-7806453.78	-7806453.61	-7806453.44	0.0293	0.0066
Mercury	-26086-05-04 19:26 J	-7806364.78	-7806364.69	-7806364.60	0.0293	0.0249
Venus	-26079-01-20 13:55 J	-7803912.06	-7803911.92	-7803911.75	0.0288	0.0195
Venus	-26079-09-07 07:11 J	-7803682.40	-7803682.20	-7803681.99	0.0286	0.0049
Venus	-26078-04-24 22:04 J	-7803452.78	-7803452.58	-7803452.38	0.0284	0.0093

Venus	-26078-12-10 10:19 J	-7803223.19	-7803223.07	-7803222.95	0.0282	0.0228
Moon	-26074-05-17 11:16 J	-7801969.19	-7801969.03	-7801968.84	0.0272	0.0184
Earth	-26074-05-17 11:59 J	-7801969.17	-7801969.00	-7801968.81	0.0272	0.0176 *
Mercury	-26073-09-03 21:35 J	-7801493.68	-7801493.60	-7801493.52	0.0269	0.0208
Mercury	-26073-12-01 08:23 J	-7801405.27	-7801405.15	-7801405.02	0.0269	0.0100
Mercury	-26072-02-27 19:26 J	-7801316.83	-7801316.69	-7801316.55	0.0268	0.0010
Mercury	-26072-05-27 06:28 J	-7801228.35	-7801228.23	-7801228.11	0.0268	0.0118
Mercury	-26072-08-23 17:45 J	-7801139.83	-7801139.76	-7801139.69	0.0267	0.0229
Mars	-26069-10-11 07:26 J	-7799995.42	-7799995.19	-7799994.93	0.0265	0.0138
Venus	-26064-09-25 20:09 J	-7798184.83	-7798184.66	-7798184.49	0.0273	0.0163
Venus	-26063-05-13 03:50 J	-7797955.55	-7797955.34	-7797955.13	0.0274	0.0038
Venus	-26063-12-28 13:40 J	-7797726.13	-7797725.93	-7797725.73	0.0276	0.0092
Venus	-26062-08-15 01:55 J	-7797496.54	-7797496.42	-7797496.29	0.0278	0.0225
Earth	-26059-11-17 12:14 J	-7796306.19	-7796305.99	-7796305.79	0.0288	0.0168
Moon	-26059-11-17 15:21 J	-7796306.05	-7796305.86	-7796305.66	0.0288	0.0174 *
Mercury	-26057-03-26 23:02 J	-7795810.68	-7795810.54	-7795810.39	0.0292	0.0160
Mercury	-26057-06-23 21:50 J	-7795721.76	-7795721.59	-7795721.41	0.0293	0.0028
Mercury	-26057-09-20 20:09 J	-7795632.77	-7795632.66	-7795632.54	0.0293	0.0212
Venus	-26050-08-03 01:26 J	-7793125.61	-7793125.44	-7793125.26	0.0288	0.0165
Venus	-26049-03-19 18:14 J	-7792895.95	-7792895.74	-7792895.53	0.0286	0.0020
Venus	-26049-11-04 08:38 J	-7792666.33	-7792666.14	-7792665.95	0.0284	0.0122
Venus	-26048-06-21 20:38 J	-7792436.73	-7792436.64	-7792436.56	0.0282	0.0255
Earth	-26045-05-11 21:21 J	-7791381.85	-7791381.61	-7791381.37	0.0273	0.0051
Moon	-26045-05-11 22:33 J	-7791381.80	-7791381.56	-7791381.31	0.0273	0.0051 *
Mercury	-26043-01-22 01:11 J	-7790761.52	-7790761.45	-7790761.37	0.0269	0.0226
Mercury	-26043-04-20 11:59 J	-7790673.12	-7790673.00	-7790672.87	0.0268	0.0119
Mercury	-26043-07-17 23:02 J	-7790584.68	-7790584.54	-7790584.40	0.0268	0.0010
Mercury	-26043-10-14 10:04 J	-7790496.21	-7790496.08	-7790495.95	0.0267	0.0100
Mercury	-26042-01-10 21:07 J	-7790407.70	-7790407.62	-7790407.53	0.0267	0.0210
Venus	-26035-08-21 20:38 J	-7787627.69	-7787627.64	-7787627.57	0.0271	0.0260

Venus	-26034-04-08 02:23 J	-7787398.57	-7787398.40	-7787398.21	0.0273	0.0141
Venus	-26034-11-23 10:19 J	-7787169.28	-7787169.07	-7787168.85	0.0275	0.0016
Venus	-26033-07-09 20:23 J	-7786939.84	-7786939.65	-7786939.45	0.0277	0.0116
Venus	-26032-02-24 08:38 J	-7786710.22	-7786710.14	-7786710.04	0.0279	0.0249
Moon	-26030-11-11 11:02 J	-7785720.25	-7785720.04	-7785719.80	0.0287	0.0127
Earth	-26030-11-11 14:52 J	-7785720.09	-7785719.88	-7785719.65	0.0287	0.0132 *
Mercury	-26028-08-13 22:04 J	-7785078.70	-7785078.58	-7785078.45	0.0292	0.0212
Mercury	-26028-11-10 21:07 J	-7784989.80	-7784989.62	-7784989.45	0.0292	0.0025
Mercury	-26027-02-07 19:26 J	-7784900.83	-7784900.69	-7784900.54	0.0293	0.0161
Mars	-26025-11-24 12:28 J	-7783880.17	-7783879.98	-7783879.76	0.0295	0.0219
Venus	-26020-02-12 06:14 J	-7782339.42	-7782339.24	-7782339.06	0.0287	0.0145
Venus	-26020-09-29 22:33 J	-7782109.77	-7782109.56	-7782109.35	0.0285	0.0005
Venus	-26019-05-17 12:28 J	-7781880.16	-7781879.98	-7781879.79	0.0283	0.0140
Venus	-26018-01-01 23:59 J	-7781650.54	-7781650.50	-7781650.44	0.0281	0.0272
Earth	-26015-05-18 20:52 J	-7780417.72	-7780417.63	-7780417.52	0.0271	0.0245
Moon	-26015-05-19 00:14 J	-7780417.57	-7780417.49	-7780417.41	0.0271	0.0255 *
Mercury	-26014-06-11 03:21 J	-7780029.38	-7780029.36	-7780029.32	0.0269	0.0260
Mercury	-26014-09-07 14:09 J	-7779941.02	-7779940.91	-7779940.80	0.0269	0.0153
Mercury	-26014-12-05 01:11 J	-7779852.59	-7779852.45	-7779852.32	0.0268	0.0045
Mercury	-26013-03-02 11:59 J	-7779764.13	-7779764.00	-7779763.86	0.0268	0.0065
Mercury	-26013-05-29 23:02 J	-7779675.64	-7779675.54	-7779675.43	0.0267	0.0175
Mars	-26010-01-19 09:21 J	-7778711.24	-7778711.11	-7778710.97	0.0265	0.0234
Venus	-26005-03-03 00:14 J	-7776841.58	-7776841.49	-7776841.40	0.0272	0.0244
Venus	-26005-10-18 06:28 J	-7776612.42	-7776612.23	-7776612.04	0.0273	0.0123
Venus	-26004-06-04 14:52 J	-7776383.10	-7776382.88	-7776382.67	0.0275	0.0005
Venus	-26003-01-20 01:11 J	-7776153.63	-7776153.45	-7776153.26	0.0277	0.0134
Venus	-26003-09-06 13:40 J	-7775923.97	-7775923.93	-7775923.85	0.0279	0.0268

# 26TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 26th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-26000-11-19 00:57 J		-7774754.58	-7774754.46	-7774754.33	0.0289	0.0249	
Moon	-26000-11-19 03:50 J		-7774754.45	-7774754.34	-7774754.21	0.0289	0.0252	*
Mercury	-25999-12-31 21:35 J		-7774346.67	-7774346.60	-7774346.51	0.0292	0.0258	
Mercury	-25998-03-30 20:38 J		-7774257.81	-7774257.64	-7774257.46	0.0292	0.0069	
Mercury	-25998-06-27 19:11 J		-7774168.85	-7774168.70	-7774168.53	0.0293	0.0118	
Venus	-25991-01-07 21:50 J		-7771782.67	-7771782.59	-7771782.50	0.0289	0.0263	
Venus	-25991-08-25 16:33 J		-7771553.00	-7771552.81	-7771552.62	0.0287	0.0116	
Venus	-25990-04-12 08:38 J		-7771323.35	-7771323.14	-7771322.93	0.0285	0.0029	
Venus	-25990-11-27 22:04 J		-7771093.74	-7771093.58	-7771093.40	0.0283	0.0168	
Moon	-25986-05-14 03:07 J		-7769830.62	-7769830.37	-7769830.13	0.0272	0.0020	
Earth	-25986-05-14 05:45 J		-7769830.50	-7769830.26	-7769830.02	0.0272	0.0017	*
Mercury	-25984-01-24 17:45 J		-7769208.86	-7769208.76	-7769208.65	0.0268	0.0173	
Mercury	-25984-04-23 04:47 J		-7769120.44	-7769120.30	-7769120.17	0.0268	0.0065	
Mercury	-25984-07-20 15:35 J		-7769031.98	-7769031.85	-7769031.71	0.0267	0.0044	
Mercury	-25984-10-17 02:38 J		-7768943.50	-7768943.39	-7768943.27	0.0267	0.0154	
Mercury	-25983-01-13 13:55 J		-7768854.94	-7768854.92	-7768854.90	0.0267	0.0264	
Mars	-25980-03-07 16:33 J		-7767705.97	-7767705.81	-7767705.62	0.0265	0.0208	
Venus	-25976-09-13 06:43 J		-7766055.34	-7766055.22	-7766055.10	0.0272	0.0222	
Venus	-25975-04-30 12:57 J		-7765826.16	-7765825.96	-7765825.76	0.0273	0.0101	
Venus	-25975-12-15 21:21 J		-7765596.83	-7765596.61	-7765596.40	0.0275	0.0027	
Venus	-25974-08-02 07:55 J		-7765367.34	-7765367.17	-7765366.99	0.0277	0.0158	
Moon	-25971-11-13 00:57 J		-7764168.69	-7764168.46	-7764168.22	0.0288	0.0051	

Earth	-25971-11-13 03:07 J	-7764168.61	-7764168.37	-7764168.12	0.0288	0.0054 *
Mercury	-25969-08-16 19:40 J	-7763525.84	-7763525.68	-7763525.52	0.0292	0.0121
Mercury	-25969-11-13 18:28 J	-7763436.90	-7763436.73	-7763436.56	0.0293	0.0066
Mercury	-25968-02-10 16:33 J	-7763347.89	-7763347.81	-7763347.72	0.0293	0.0250
Venus	-25962-07-21 02:23 J	-7760996.51	-7760996.40	-7760996.28	0.0288	0.0243
Venus	-25961-03-06 20:38 J	-7760766.84	-7760766.64	-7760766.44	0.0287	0.0097
Venus	-25961-10-22 12:14 J	-7760537.19	-7760536.99	-7760536.78	0.0285	0.0047
Venus	-25960-06-09 01:26 J	-7760307.59	-7760307.44	-7760307.27	0.0283	0.0185
Earth	-25957-05-08 03:21 J	-7759243.48	-7759243.36	-7759243.23	0.0274	0.0234
Moon	-25957-05-08 05:45 J	-7759243.37	-7759243.26	-7759243.14	0.0274	0.0238 *
Mercury	-25955-06-13 19:40 J	-7758476.76	-7758476.68	-7758476.59	0.0269	0.0209
Mercury	-25955-09-10 06:28 J	-7758388.35	-7758388.23	-7758388.10	0.0268	0.0102
Mercury	-25955-12-07 17:31 J	-7758299.91	-7758299.77	-7758299.63	0.0268	0.0008
Mercury	-25954-03-06 04:33 J	-7758211.43	-7758211.31	-7758211.19	0.0267	0.0117
Mercury	-25954-06-02 15:35 J	-7758122.92	-7758122.85	-7758122.77	0.0267	0.0227
Venus	-25946-03-26 08:23 J	-7755269.29	-7755269.15	-7755269.02	0.0272	0.0207
Venus	-25946-11-10 14:52 J	-7755040.08	-7755039.88	-7755039.67	0.0274	0.0085
Venus	-25945-06-26 23:45 J	-7754810.71	-7754810.51	-7754810.29	0.0275	0.0044
Venus	-25944-02-11 10:47 J	-7754581.21	-7754581.05	-7754580.88	0.0277	0.0174
Mercury	-25939-01-03 17:59 J	-7752793.88	-7752793.75	-7752793.60	0.0292	0.0176
Mercury	-25939-04-02 17:02 J	-7752704.97	-7752704.79	-7752704.61	0.0293	0.0013
Mercury	-25939-06-30 15:35 J	-7752615.98	-7752615.85	-7752615.73	0.0293	0.0198
Venus	-25932-01-30 11:31 J	-7750210.16	-7750210.02	-7750209.88	0.0289	0.0216
Venus	-25932-09-17 05:31 J	-7749980.47	-7749980.27	-7749980.06	0.0287	0.0069
Venus	-25931-05-04 21:07 J	-7749750.82	-7749750.62	-7749750.41	0.0285	0.0075
Venus	-25931-12-20 10:19 J	-7749521.21	-7749521.07	-7749520.93	0.0283	0.0211
Moon	-25927-05-15 09:07 J	-7748279.35	-7748279.12	-7748278.89	0.0272	0.0084
Earth	-25927-05-15 12:14 J	-7748279.22	-7748278.99	-7748278.76	0.0272	0.0081 *
Mercury	-25926-10-31 23:16 J	-7747744.59	-7747744.53	-7747744.46	0.0269	0.0229
Mercury	-25925-01-28 10:04 J	-7747656.20	-7747656.08	-7747655.96	0.0268	0.0122

Mercury	-25925-04-25 20:52 J	-7747567.76	-7747567.63	-7747567.49	0.0268	0.0016
Mercury	-25925-07-23 07:55 J	-7747479.30	-7747479.17	-7747479.04	0.0267	0.0096
Mercury	-25925-10-19 18:57 J	-7747390.79	-7747390.71	-7747390.62	0.0267	0.0205
Mars	-25922-06-15 14:38 J	-7746422.10	-7746421.89	-7746421.65	0.0264	0.0166
Venus	-25917-10-05 14:09 J	-7744483.05	-7744482.91	-7744482.74	0.0272	0.0186
Venus	-25916-05-22 21:07 J	-7744253.82	-7744253.62	-7744253.41	0.0274	0.0063
Venus	-25915-01-07 05:59 J	-7744024.46	-7744024.25	-7744024.04	0.0276	0.0066
Venus	-25915-08-24 17:02 J	-7743794.93	-7743794.79	-7743794.63	0.0278	0.0198
Earth	-25912-11-14 11:02 J	-7742617.29	-7742617.04	-7742616.80	0.0288	0.0017
Moon	-25912-11-14 13:26 J	-7742617.18	-7742616.94	-7742616.70	0.0288	0.0016 *
Mercury	-25910-05-23 16:47 J	-7742061.90	-7742061.80	-7742061.68	0.0292	0.0231
Mercury	-25910-08-20 15:50 J	-7741973.01	-7741972.84	-7741972.66	0.0293	0.0042
Mercury	-25910-11-17 14:23 J	-7741884.05	-7741883.90	-7741883.74	0.0293	0.0146
Venus	-25903-08-12 15:35 J	-7739424.00	-7739423.85	-7739423.69	0.0288	0.0197
Venus	-25902-03-30 09:21 J	-7739194.32	-7739194.11	-7739193.90	0.0286	0.0050
Venus	-25902-11-15 00:28 J	-7738964.68	-7738964.48	-7738964.28	0.0284	0.0092
Venus	-25901-07-01 13:11 J	-7738735.07	-7738734.95	-7738734.83	0.0282	0.0227
Earth	-25898-05-10 09:21 J	-7737692.29	-7737692.11	-7737691.91	0.0273	0.0171
Moon	-25898-05-10 12:57 J	-7737692.15	-7737691.96	-7737691.76	0.0273	0.0171 *
Mercury	-25896-03-20 01:11 J	-7737012.46	-7737012.45	-7737012.43	0.0269	0.0266
Mercury	-25896-06-16 11:45 J	-7736924.11	-7736924.01	-7736923.89	0.0268	0.0160
Mercury	-25896-09-12 22:47 J	-7736835.69	-7736835.55	-7736835.42	0.0268	0.0052
Mercury	-25896-12-10 09:35 J	-7736747.23	-7736747.10	-7736746.96	0.0267	0.0057
Mercury	-25895-03-08 20:38 J	-7736658.74	-7736658.64	-7736658.53	0.0267	0.0167
Mars	-25892-08-01 01:11 J	-7735417.55	-7735417.45	-7735417.32	0.0265	0.0243
Venus	-25887-04-17 14:52 J	-7733697.04	-7733696.88	-7733696.71	0.0272	0.0172
Venus	-25887-12-02 22:04 J	-7733467.79	-7733467.58	-7733467.37	0.0274	0.0048
Venus	-25886-07-20 07:26 J	-7733238.40	-7733238.19	-7733237.99	0.0276	0.0081
Venus	-25885-03-05 18:43 J	-7733008.85	-7733008.72	-7733008.58	0.0278	0.0213
Mercury	-25880-01-06 13:26 J	-7731241.10	-7731240.94	-7731240.77	0.0292	0.0103



Mercury	-25880-04-05 12:14 J	-7731152.15	-7731151.99	-7731151.82	0.0293	0.0086
Mercury	-25880-07-03 10:47 J	-7731063.12	-7731063.05	-7731062.99	0.0294	0.0271
Mars	-25878-07-24 04:04 J	-7730312.36	-7730312.33	-7730312.27	0.0296	0.0292
Venus	-25873-02-22 22:47 J	-7728637.71	-7728637.55	-7728637.37	0.0289	0.0171
Venus	-25873-10-09 16:33 J	-7728408.02	-7728407.81	-7728407.60	0.0287	0.0024
Venus	-25872-05-27 07:40 J	-7728178.37	-7728178.18	-7728177.99	0.0285	0.0118
Venus	-25871-01-11 20:09 J	-7727948.74	-7727948.66	-7727948.56	0.0283	0.0253
Earth	-25868-05-16 16:04 J	-7726728.03	-7726727.83	-7726727.61	0.0272	0.0140
Moon	-25868-05-16 17:02 J	-7726727.99	-7726727.79	-7726727.59	0.0272	0.0147 *
Mercury	-25867-11-03 15:07 J	-7726191.97	-7726191.87	-7726191.77	0.0268	0.0182
Mercury	-25866-01-31 01:55 J	-7726103.55	-7726103.42	-7726103.29	0.0268	0.0075
Mercury	-25866-04-29 12:57 J	-7726015.10	-7726014.96	-7726014.83	0.0267	0.0035
Mercury	-25866-07-26 23:45 J	-7725926.62	-7725926.51	-7725926.39	0.0267	0.0143
Mercury	-25866-10-23 11:02 J	-7725838.08	-7725838.04	-7725838.00	0.0267	0.0253
Venus	-25858-03-13 15:35 J	-7723139.87	-7723139.85	-7723139.82	0.0270	0.0268
Venus	-25858-10-28 20:38 J	-7722910.82	-7722910.64	-7722910.46	0.0272	0.0150
Venus	-25857-06-14 03:50 J	-7722681.55	-7722681.34	-7722681.13	0.0274	0.0026
Venus	-25856-01-29 12:57 J	-7722452.15	-7722451.96	-7722451.76	0.0276	0.0104
Venus	-25856-09-16 00:14 J	-7722222.59	-7722222.49	-7722222.37	0.0278	0.0236
Earth	-25853-11-15 14:38 J	-7721066.13	-7721065.89	-7721065.65	0.0288	0.0078
Moon	-25853-11-15 17:59 J	-7721065.99	-7721065.75	-7721065.51	0.0288	0.0076 *
Mercury	-25851-05-26 11:59 J	-7720509.15	-7720509.00	-7720508.85	0.0293	0.0159
Mercury	-25851-08-23 11:02 J	-7720420.22	-7720420.04	-7720419.87	0.0293	0.0030
Mercury	-25851-11-20 09:21 J	-7720331.22	-7720331.11	-7720330.99	0.0294	0.0216
Venus	-25844-09-04 02:38 J	-7717851.56	-7717851.39	-7717851.21	0.0288	0.0153
Venus	-25843-04-21 19:55 J	-7717621.88	-7717621.67	-7717621.46	0.0286	0.0008
Venus	-25843-12-07 10:33 J	-7717392.24	-7717392.06	-7717391.87	0.0284	0.0135
Venus	-25842-07-24 22:47 J	-7717162.60	-7717162.55	-7717162.48	0.0282	0.0268
Moon	-25839-05-11 12:28 J	-7716141.21	-7716140.98	-7716140.74	0.0273	0.0106
Earth	-25839-05-11 13:40 J	-7716141.15	-7716140.93	-7716140.71	0.0273	0.0111 *

Mercury	-25837-03-22 16:47 J	-7715459.87	-7715459.80	-7715459.72	0.0268	0.0220
Mercury	-25837-06-19 03:35 J	-7715371.47	-7715371.35	-7715371.22	0.0268	0.0113
Mercury	-25837-09-15 14:38 J	-7715283.03	-7715282.89	-7715282.76	0.0267	0.0010
Mercury	-25837-12-13 01:26 J	-7715194.56	-7715194.44	-7715194.31	0.0267	0.0104
Mercury	-25836-03-11 12:28 J	-7715106.06	-7715105.98	-7715105.90	0.0267	0.0214
Mars	-25834-11-08 19:26 J	-7714133.93	-7714133.69	-7714133.44	0.0264	0.0137
Venus	-25829-09-22 15:07 J	-7712353.94	-7712353.87	-7712353.80	0.0271	0.0255
Venus	-25828-05-09 20:09 J	-7712124.84	-7712124.66	-7712124.47	0.0272	0.0137
Venus	-25828-12-25 03:21 J	-7711895.57	-7711895.36	-7711895.14	0.0274	0.0013
Venus	-25827-08-11 12:57 J	-7711666.15	-7711665.96	-7711665.77	0.0276	0.0117
Venus	-25826-03-29 00:43 J	-7711436.56	-7711436.47	-7711436.37	0.0278	0.0249
Moon	-25824-11-09 05:02 J	-7710480.42	-7710480.29	-7710480.14	0.0287	0.0236
Earth	-25824-11-09 08:09 J	-7710480.30	-7710480.16	-7710480.01	0.0287	0.0234 *
Mercury	-25822-10-13 08:38 J	-7709777.25	-7709777.14	-7709777.03	0.0292	0.0228
Mercury	-25821-01-10 07:40 J	-7709688.35	-7709688.18	-7709688.00	0.0293	0.0039
Mercury	-25821-04-08 06:28 J	-7709599.38	-7709599.23	-7709599.08	0.0293	0.0149
Venus	-25815-07-30 12:28 J	-7707295.03	-7707294.98	-7707294.92	0.0290	0.0278
Venus	-25814-03-17 08:23 J	-7707065.34	-7707065.15	-7707064.96	0.0289	0.0128
Venus	-25814-11-02 01:40 J	-7706835.64	-7706835.43	-7706835.22	0.0287	0.0018
Venus	-25813-06-18 16:19 J	-7706605.99	-7706605.82	-7706605.64	0.0284	0.0159
Earth	-25809-05-17 18:14 J	-7705176.90	-7705176.74	-7705176.56	0.0272	0.0195
Moon	-25809-05-17 22:04 J	-7705176.73	-7705176.58	-7705176.42	0.0272	0.0205 *
Mercury	-25808-08-09 19:55 J	-7704727.72	-7704727.67	-7704727.61	0.0269	0.0246
Mercury	-25808-11-06 06:43 J	-7704639.33	-7704639.22	-7704639.10	0.0268	0.0138
Mercury	-25807-02-02 17:31 J	-7704550.90	-7704550.77	-7704550.63	0.0268	0.0031
Mercury	-25807-05-02 04:19 J	-7704462.45	-7704462.32	-7704462.18	0.0267	0.0079
Mercury	-25807-07-29 15:21 J	-7704373.95	-7704373.86	-7704373.76	0.0267	0.0188
Venus	-25799-04-04 20:09 J	-7701567.75	-7701567.66	-7701567.54	0.0270	0.0235
Venus	-25799-11-20 01:26 J	-7701338.62	-7701338.44	-7701338.24	0.0272	0.0116
Venus	-25798-07-07 09:07 J	-7701109.33	-7701109.12	-7701108.90	0.0274	0.0011

Venus	-25797-02-21 18:43 J	-7700879.90	-7700879.72	-7700879.54	0.0276	0.0140
Venus	-25797-10-08 06:28 J	-7700650.27	-7700650.23	-7700650.18	0.0278	0.0272
Moon	-25794-11-17 14:52 J	-7699515.10	-7699514.88	-7699514.64	0.0289	0.0129
Earth	-25794-11-17 15:35 J	-7699515.06	-7699514.85	-7699514.62	0.0289	0.0135 *
Mercury	-25792-03-01 07:11 J	-7699045.24	-7699045.20	-7699045.17	0.0292	0.0286
Mercury	-25792-05-29 06:14 J	-7698956.40	-7698956.24	-7698956.07	0.0293	0.0095
Mercury	-25792-08-26 05:02 J	-7698867.45	-7698867.29	-7698867.12	0.0293	0.0094
Mercury	-25792-11-23 03:21 J	-7698778.41	-7698778.36	-7698778.30	0.0294	0.0279
Mars	-25790-12-17 10:33 J	-7698024.21	-7698024.06	-7698023.91	0.0296	0.0255
Venus	-25785-02-09 16:04 J	-7696508.91	-7696508.83	-7696508.72	0.0290	0.0259
Venus	-25785-09-26 11:45 J	-7696279.20	-7696279.01	-7696278.81	0.0288	0.0110
Venus	-25784-05-14 04:47 J	-7696049.51	-7696049.30	-7696049.09	0.0286	0.0036
Venus	-25784-12-29 18:57 J	-7695819.86	-7695819.71	-7695819.53	0.0283	0.0176
Moon	-25780-05-12 11:45 J	-7694590.25	-7694590.01	-7694589.77	0.0273	0.0048
Earth	-25780-05-12 15:21 J	-7694590.09	-7694589.86	-7694589.62	0.0272	0.0057 *
Mercury	-25778-03-26 08:23 J	-7693907.25	-7693907.15	-7693907.05	0.0268	0.0177
Mercury	-25778-06-22 19:11 J	-7693818.83	-7693818.70	-7693818.57	0.0268	0.0069
Mercury	-25778-09-19 05:59 J	-7693730.38	-7693730.25	-7693730.11	0.0267	0.0039
Mercury	-25778-12-16 17:02 J	-7693641.91	-7693641.79	-7693641.68	0.0267	0.0148
Mercury	-25777-03-14 04:04 J	-7693553.36	-7693553.33	-7693553.30	0.0266	0.0258
Venus	-25770-10-15 18:57 J	-7690781.82	-7690781.71	-7690781.58	0.0271	0.0223
Venus	-25769-06-01 00:28 J	-7690552.67	-7690552.48	-7690552.28	0.0272	0.0102
Venus	-25768-01-16 07:55 J	-7690323.38	-7690323.17	-7690322.96	0.0274	0.0023
Venus	-25768-09-02 17:31 J	-7690093.94	-7690093.77	-7690093.59	0.0276	0.0153
Earth	-25765-11-10 06:14 J	-7688929.42	-7688929.24	-7688929.04	0.0287	0.0185
Moon	-25765-11-10 07:11 J	-7688929.37	-7688929.20	-7688929.01	0.0287	0.0190 *
Mercury	-25763-10-16 01:55 J	-7688224.56	-7688224.42	-7688224.27	0.0292	0.0171
Mercury	-25762-01-13 01:11 J	-7688135.63	-7688135.45	-7688135.28	0.0293	0.0020
Mercury	-25762-04-11 23:45 J	-7688046.64	-7688046.51	-7688046.39	0.0293	0.0206
Venus	-25756-08-21 20:09 J	-7685722.78	-7685722.66	-7685722.54	0.0290	0.0238

Venus	-25755-04-08 15:50 J	-7685493.04	-7685492.84	-7685492.64	0.0288	0.0088
Venus	-25755-11-24 08:52 J	-7685263.34	-7685263.13	-7685262.92	0.0286	0.0058
Venus	-25754-07-11 23:16 J	-7685033.67	-7685033.53	-7685033.38	0.0284	0.0198
Earth	-25750-05-19 18:28 J	-7683625.82	-7683625.73	-7683625.61	0.0272	0.0246
Moon	-25750-05-19 19:26 J	-7683625.76	-7683625.69	-7683625.61	0.0272	0.0258 *
Mercury	-25749-08-12 11:16 J	-7683175.11	-7683175.03	-7683174.94	0.0268	0.0205
Mercury	-25749-11-08 22:04 J	-7683086.71	-7683086.58	-7683086.45	0.0268	0.0097
Mercury	-25748-02-05 08:52 J	-7682998.27	-7682998.13	-7682997.99	0.0267	0.0012
Mercury	-25748-05-04 19:40 J	-7682909.80	-7682909.68	-7682909.55	0.0267	0.0121
Mercury	-25748-08-01 06:43 J	-7682821.28	-7682821.22	-7682821.15	0.0267	0.0231
Mars	-25745-04-03 12:43 J	-7681845.24	-7681844.97	-7681844.70	0.0264	0.0087
Venus	-25740-04-27 00:14 J	-7679995.62	-7679995.49	-7679995.34	0.0270	0.0202
Venus	-25740-12-12 05:45 J	-7679766.46	-7679766.26	-7679766.05	0.0272	0.0081
Venus	-25739-07-29 13:26 J	-7679537.15	-7679536.94	-7679536.73	0.0274	0.0045
Venus	-25738-03-15 23:02 J	-7679307.69	-7679307.54	-7679307.36	0.0276	0.0175
Moon	-25735-11-18 10:04 J	-7677964.27	-7677964.08	-7677963.87	0.0289	0.0176
Earth	-25735-11-18 13:55 J	-7677964.11	-7677963.92	-7677963.73	0.0289	0.0185 *
Mercury	-25733-03-04 00:28 J	-7677492.59	-7677492.48	-7677492.37	0.0292	0.0229
Mercury	-25733-05-31 23:31 J	-7677403.69	-7677403.52	-7677403.34	0.0293	0.0039
Mercury	-25733-08-28 22:19 J	-7677314.72	-7677314.57	-7677314.42	0.0294	0.0150
Venus	-25726-03-03 23:45 J	-7674936.64	-7674936.51	-7674936.36	0.0290	0.0219
Venus	-25726-10-19 19:11 J	-7674706.90	-7674706.70	-7674706.49	0.0288	0.0069
Venus	-25725-06-05 11:59 J	-7674477.20	-7674477.00	-7674476.80	0.0286	0.0076
Venus	-25724-01-21 01:55 J	-7674247.54	-7674247.42	-7674247.27	0.0283	0.0215
Moon	-25721-05-13 15:07 J	-7673039.10	-7673038.87	-7673038.63	0.0272	0.0007
Earth	-25721-05-13 15:50 J	-7673039.08	-7673038.84	-7673038.60	0.0272	0.0005 *
Mercury	-25720-12-30 12:57 J	-7672443.01	-7672442.96	-7672442.90	0.0268	0.0242
Mercury	-25719-03-28 23:31 J	-7672354.63	-7672354.52	-7672354.40	0.0268	0.0136
Mercury	-25719-06-25 10:33 J	-7672266.20	-7672266.06	-7672265.93	0.0267	0.0028
Mercury	-25719-09-21 21:21 J	-7672177.74	-7672177.61	-7672177.48	0.0267	0.0081

Mercury	-25719-12-19 08:23 J	-7672089.25	-7672089.15	-7672089.06	0.0266	0.0190
Venus	-25711-11-06 22:47 J	-7669209.70	-7669209.55	-7669209.39	0.0271	0.0189
Venus	-25710-06-24 04:19 J	-7668980.52	-7668980.32	-7668980.11	0.0272	0.0069
Venus	-25709-02-08 11:59 J	-7668751.21	-7668751.00	-7668750.79	0.0274	0.0058
Venus	-25709-09-24 21:35 J	-7668521.74	-7668521.60	-7668521.43	0.0276	0.0189
Earth	-25706-11-12 03:35 J	-7667378.56	-7667378.35	-7667378.13	0.0287	0.0138
Moon	-25706-11-12 07:26 J	-7667378.40	-7667378.19	-7667377.97	0.0287	0.0145 *
Mercury	-25704-10-18 19:11 J	-7666671.86	-7666671.70	-7666671.53	0.0292	0.0116
Mercury	-25703-01-15 17:59 J	-7666582.91	-7666582.75	-7666582.57	0.0293	0.0074
Mercury	-25703-04-14 16:33 J	-7666493.88	-7666493.81	-7666493.73	0.0294	0.0260
Mars	-25701-05-10 15:35 J	-7665737.01	-7665736.85	-7665736.68	0.0296	0.0246
Venus	-25697-09-13 02:38 J	-7664150.54	-7664150.39	-7664150.23	0.0290	0.0199
Venus	-25696-04-30 22:19 J	-7663920.78	-7663920.57	-7663920.37	0.0288	0.0049
Venus	-25696-12-16 15:07 J	-7663691.07	-7663690.87	-7663690.67	0.0286	0.0097
Venus	-25695-08-03 05:02 J	-7663461.39	-7663461.29	-7663461.16	0.0284	0.0236
Earth	-25692-05-08 16:04 J	-7662451.91	-7662451.83	-7662451.75	0.0275	0.0258
Moon	-25692-05-08 17:16 J	-7662451.87	-7662451.78	-7662451.68	0.0275	0.0254 *
Mercury	-25690-08-16 02:23 J	-7661622.51	-7661622.40	-7661622.29	0.0268	0.0165
Mercury	-25690-11-12 13:11 J	-7661534.09	-7661533.95	-7661533.82	0.0268	0.0057
Mercury	-25689-02-08 23:59 J	-7661445.63	-7661445.50	-7661445.37	0.0267	0.0052
Mercury	-25689-05-07 11:02 J	-7661357.15	-7661357.04	-7661356.93	0.0267	0.0161
Venus	-25681-05-19 04:19 J	-7658423.48	-7658423.32	-7658423.15	0.0271	0.0169
Venus	-25680-01-03 09:50 J	-7658194.29	-7658194.09	-7658193.87	0.0272	0.0048
Venus	-25680-08-20 17:31 J	-7657964.97	-7657964.77	-7657964.56	0.0274	0.0080
Venus	-25679-04-07 03:35 J	-7657735.48	-7657735.35	-7657735.21	0.0276	0.0210
Moon	-25676-11-19 09:50 J	-7656413.23	-7656413.09	-7656412.93	0.0289	0.0224
Earth	-25676-11-19 11:16 J	-7656413.16	-7656413.03	-7656412.87	0.0289	0.0234 *
Mercury	-25674-03-07 17:31 J	-7655939.91	-7655939.77	-7655939.62	0.0293	0.0174
Mercury	-25674-06-04 16:33 J	-7655850.98	-7655850.81	-7655850.63	0.0293	0.0017
Mercury	-25674-09-01 15:07 J	-7655761.99	-7655761.87	-7655761.74	0.0294	0.0204

Venus	-25667-03-26 06:14 J	-7653364.39	-7653364.24	-7653364.06	0.0290	0.0180
Venus	-25667-11-11 01:26 J	-7653134.64	-7653134.44	-7653134.22	0.0288	0.0031
Venus	-25666-06-28 17:59 J	-7652904.94	-7652904.75	-7652904.55	0.0285	0.0114
Venus	-25665-02-13 07:55 J	-7652675.26	-7652675.17	-7652675.07	0.0283	0.0251
Earth	-25662-05-15 15:07 J	-7651488.11	-7651487.87	-7651487.63	0.0272	0.0044
Moon	-25662-05-15 18:14 J	-7651487.97	-7651487.74	-7651487.51	0.0272	0.0056 *
Mercury	-25660-01-02 04:04 J	-7650890.41	-7650890.33	-7650890.24	0.0268	0.0203
Mercury	-25660-03-31 14:52 J	-7650802.01	-7650801.88	-7650801.75	0.0268	0.0095
Mercury	-25660-06-28 01:40 J	-7650713.57	-7650713.43	-7650713.29	0.0267	0.0013
Mercury	-25660-09-24 12:28 J	-7650625.10	-7650624.98	-7650624.85	0.0267	0.0123
Mercury	-25660-12-21 23:31 J	-7650536.58	-7650536.52	-7650536.45	0.0266	0.0232
Mars	-25657-08-27 10:33 J	-7649557.34	-7649557.06	-7649556.78	0.0264	0.0068
Venus	-25652-11-29 02:52 J	-7647637.55	-7647637.38	-7647637.20	0.0271	0.0156
Venus	-25651-07-16 08:38 J	-7647408.35	-7647408.14	-7647407.93	0.0273	0.0034
Venus	-25650-03-02 16:19 J	-7647179.02	-7647178.82	-7647178.62	0.0274	0.0093
Venus	-25650-10-18 02:09 J	-7646949.53	-7646949.41	-7646949.28	0.0276	0.0223
Earth	-25647-11-13 00:28 J	-7645827.71	-7645827.48	-7645827.24	0.0287	0.0092
Moon	-25647-11-13 01:11 J	-7645827.69	-7645827.45	-7645827.21	0.0287	0.0103 *
Mercury	-25645-07-24 12:43 J	-7645208.05	-7645207.97	-7645207.88	0.0292	0.0254
Mercury	-25645-10-21 11:59 J	-7645119.17	-7645119.00	-7645118.82	0.0293	0.0063
Mercury	-25644-01-18 10:47 J	-7645030.21	-7645030.05	-7645029.89	0.0293	0.0126
Venus	-25638-10-06 08:23 J	-7642578.32	-7642578.15	-7642577.97	0.0290	0.0160
Venus	-25637-05-23 03:35 J	-7642348.56	-7642348.35	-7642348.13	0.0288	0.0012
Venus	-25636-01-07 20:23 J	-7642118.83	-7642118.65	-7642118.46	0.0286	0.0135
Venus	-25636-08-25 10:19 J	-7641889.12	-7641889.07	-7641889.01	0.0284	0.0272
Moon	-25633-05-09 11:16 J	-7640901.19	-7640901.03	-7640900.86	0.0275	0.0203
Earth	-25633-05-09 14:09 J	-7640901.05	-7640900.91	-7640900.75	0.0275	0.0212 *
Mercury	-25631-05-22 06:43 J	-7640158.28	-7640158.22	-7640158.16	0.0269	0.0234
Mercury	-25631-08-18 17:31 J	-7640069.89	-7640069.77	-7640069.66	0.0268	0.0127
Mercury	-25631-11-15 04:19 J	-7639981.46	-7639981.32	-7639981.19	0.0268	0.0020

Mercury	-25630-02-11 15:07 J	-7639893.00	-7639892.87	-7639892.74	0.0267	0.0091
Mercury	-25630-05-11 02:09 J	-7639804.50	-7639804.41	-7639804.32	0.0267	0.0201
Venus	-25623-10-25 04:33 J	-7637080.37	-7637080.31	-7637080.23	0.0269	0.0252
Venus	-25622-06-11 08:23 J	-7636851.33	-7636851.15	-7636850.96	0.0271	0.0136
Venus	-25621-01-26 14:23 J	-7636622.11	-7636621.90	-7636621.69	0.0272	0.0013
Venus	-25621-09-11 22:19 J	-7636392.77	-7636392.57	-7636392.38	0.0274	0.0115
Venus	-25620-04-29 08:09 J	-7636163.24	-7636163.16	-7636163.05	0.0276	0.0246
Earth	-25617-11-20 09:35 J	-7634862.14	-7634862.10	-7634862.05	0.0289	0.0283
Moon	-25617-11-20 12:28 J	-7634862.06	-7634861.98	-7634861.89	0.0289	0.0270 *
Mercury	-25615-03-10 10:47 J	-7634387.21	-7634387.05	-7634386.88	0.0293	0.0118
Mercury	-25615-06-07 09:50 J	-7634298.26	-7634298.09	-7634297.92	0.0293	0.0072
Mercury	-25615-09-04 08:09 J	-7634209.23	-7634209.16	-7634209.07	0.0294	0.0259
Mars	-25613-10-03 12:57 J	-7633449.15	-7633448.96	-7633448.76	0.0297	0.0224
Venus	-25608-04-17 13:11 J	-7631792.13	-7631791.95	-7631791.76	0.0290	0.0140
Venus	-25608-12-03 08:09 J	-7631562.37	-7631562.16	-7631561.95	0.0288	0.0010
Venus	-25607-07-21 00:14 J	-7631332.66	-7631332.49	-7631332.31	0.0285	0.0153
Earth	-25603-05-16 14:23 J	-7629937.12	-7629936.90	-7629936.66	0.0272	0.0094
Moon	-25603-05-16 17:02 J	-7629937.01	-7629936.79	-7629936.56	0.0272	0.0105 *
Mercury	-25601-01-05 19:26 J	-7629337.80	-7629337.69	-7629337.59	0.0268	0.0163
Mercury	-25601-04-03 05:59 J	-7629249.38	-7629249.25	-7629249.11	0.0268	0.0055
Mercury	-25601-06-30 16:47 J	-7629160.93	-7629160.80	-7629160.66	0.0267	0.0055
Mercury	-25601-09-27 03:50 J	-7629072.45	-7629072.34	-7629072.23	0.0267	0.0164
Venus	-25593-05-06 03:50 J	-7626294.42	-7626294.34	-7626294.23	0.0269	0.0240
Venus	-25593-12-21 07:40 J	-7626065.36	-7626065.18	-7626064.99	0.0271	0.0122
Venus	-25592-08-07 13:40 J	-7625836.15	-7625835.93	-7625835.72	0.0273	0.0006
Venus	-25591-03-24 21:35 J	-7625606.79	-7625606.60	-7625606.42	0.0275	0.0129
Venus	-25591-11-09 07:40 J	-7625377.25	-7625377.18	-7625377.11	0.0277	0.0259
Moon	-25588-11-13 19:40 J	-7624276.93	-7624276.68	-7624276.44	0.0287	0.0058
Earth	-25588-11-13 23:16 J	-7624276.77	-7624276.53	-7624276.28	0.0287	0.0042 *
Mercury	-25586-07-28 06:14 J	-7623655.37	-7623655.24	-7623655.11	0.0292	0.0197

Mercury	-25586-10-25 05:16 J	-7623566.45	-7623566.28	-7623566.10	0.0293	0.0010
Mercury	-25585-01-22 04:04 J	-7623477.47	-7623477.33	-7623477.19	0.0293	0.0181
Venus	-25579-03-12 16:33 J	-7621235.87	-7621235.81	-7621235.73	0.0292	0.0275
Venus	-25579-10-28 14:09 J	-7621006.10	-7621005.91	-7621005.71	0.0290	0.0122
Venus	-25578-06-15 09:21 J	-7620776.32	-7620776.11	-7620775.90	0.0288	0.0028
Venus	-25577-01-31 01:40 J	-7620546.59	-7620546.43	-7620546.26	0.0286	0.0172
Moon	-25574-05-11 09:50 J	-7619350.28	-7619350.09	-7619349.89	0.0275	0.0155
Earth	-25574-05-11 12:28 J	-7619350.16	-7619349.98	-7619349.78	0.0275	0.0165 *
Mercury	-25572-05-24 21:35 J	-7618605.69	-7618605.60	-7618605.50	0.0269	0.0196
Mercury	-25572-08-21 08:23 J	-7618517.28	-7618517.15	-7618517.02	0.0268	0.0087
Mercury	-25572-11-17 19:11 J	-7618428.83	-7618428.70	-7618428.56	0.0268	0.0023
Mercury	-25571-02-14 06:14 J	-7618340.36	-7618340.24	-7618340.12	0.0267	0.0132
Mercury	-25571-05-13 17:16 J	-7618251.83	-7618251.78	-7618251.72	0.0267	0.0242
Mars	-25568-01-21 01:26 J	-7617268.73	-7617268.44	-7617268.15	0.0264	0.0027
Venus	-25564-11-16 09:35 J	-7615508.21	-7615508.10	-7615507.97	0.0269	0.0219
Venus	-25563-07-03 13:55 J	-7615279.12	-7615278.92	-7615278.72	0.0271	0.0101
Venus	-25562-02-17 19:55 J	-7615049.88	-7615049.67	-7615049.46	0.0273	0.0023
Venus	-25562-10-05 04:04 J	-7614820.51	-7614820.33	-7614820.15	0.0275	0.0151
Mercury	-25557-12-14 05:16 J	-7612923.37	-7612923.28	-7612923.18	0.0292	0.0249
Mercury	-25556-03-13 04:33 J	-7612834.48	-7612834.31	-7612834.13	0.0293	0.0058
Mercury	-25556-06-10 03:21 J	-7612745.52	-7612745.36	-7612745.20	0.0293	0.0131
Venus	-25550-09-22 22:47 J	-7610449.65	-7610449.55	-7610449.44	0.0291	0.0253
Venus	-25549-05-09 19:55 J	-7610219.86	-7610219.67	-7610219.47	0.0290	0.0101
Venus	-25549-12-25 14:38 J	-7609990.10	-7609989.89	-7609989.68	0.0287	0.0049
Venus	-25548-08-12 06:28 J	-7609760.38	-7609760.23	-7609760.07	0.0285	0.0191
Moon	-25544-05-17 12:28 J	-7608386.18	-7608385.98	-7608385.77	0.0272	0.0157
Earth	-25544-05-17 14:09 J	-7608386.10	-7608385.91	-7608385.69	0.0272	0.0143 *
Mercury	-25543-10-11 23:45 J	-7607873.57	-7607873.51	-7607873.44	0.0269	0.0229
Mercury	-25542-01-08 10:33 J	-7607785.18	-7607785.06	-7607784.94	0.0268	0.0121
Mercury	-25542-04-06 21:21 J	-7607696.74	-7607696.61	-7607696.47	0.0268	0.0013



Mercury	-25542-07-04 08:09 J	-7607608.28	-7607608.16	-7607608.03	0.0267	0.0097
Mercury	-25542-09-30 19:11 J	-7607519.78	-7607519.70	-7607519.61	0.0267	0.0207
Venus	-25534-05-29 09:50 J	-7604722.22	-7604722.09	-7604721.95	0.0269	0.0205
Venus	-25533-01-13 13:55 J	-7604493.13	-7604492.92	-7604492.72	0.0271	0.0086
Venus	-25533-08-29 19:40 J	-7604263.89	-7604263.68	-7604263.47	0.0273	0.0038
Venus	-25532-04-16 03:50 J	-7604034.51	-7604034.34	-7604034.17	0.0275	0.0166
Moon	-25529-11-14 22:33 J	-7602725.80	-7602725.56	-7602725.32	0.0287	0.0006
Earth	-25529-11-15 00:14 J	-7602725.74	-7602725.49	-7602725.24	0.0287	0.0013 *
Mercury	-25527-07-31 00:14 J	-7602102.64	-7602102.49	-7602102.33	0.0292	0.0135
Mercury	-25527-10-27 23:16 J	-7602013.70	-7602013.53	-7602013.36	0.0293	0.0055
Mercury	-25526-01-24 21:35 J	-7601924.69	-7601924.60	-7601924.49	0.0293	0.0242
Mars	-25524-02-25 17:31 J	-7601161.95	-7601161.77	-7601161.55	0.0296	0.0221
Venus	-25520-04-04 00:14 J	-7599663.61	-7599663.49	-7599663.37	0.0292	0.0236
Venus	-25520-11-19 21:21 J	-7599433.81	-7599433.61	-7599433.40	0.0290	0.0083
Venus	-25519-07-07 16:04 J	-7599204.03	-7599203.83	-7599203.62	0.0288	0.0067
Venus	-25518-02-22 08:09 J	-7598974.29	-7598974.16	-7598974.01	0.0286	0.0210
Earth	-25515-05-12 12:14 J	-7597799.20	-7597798.99	-7597798.76	0.0275	0.0115
Moon	-25515-05-12 14:09 J	-7597799.13	-7597798.91	-7597798.69	0.0275	0.0101 *
Mercury	-25513-02-29 02:23 J	-7597141.43	-7597141.40	-7597141.38	0.0270	0.0263
Mercury	-25513-05-27 12:57 J	-7597053.07	-7597052.96	-7597052.85	0.0269	0.0155
Mercury	-25513-08-23 23:45 J	-7596964.64	-7596964.51	-7596964.37	0.0268	0.0046
Mercury	-25513-11-20 10:33 J	-7596876.19	-7596876.06	-7596875.92	0.0268	0.0065
Mercury	-25512-02-16 21:35 J	-7596787.70	-7596787.60	-7596787.49	0.0267	0.0175
Venus	-25505-12-08 15:50 J	-7593935.98	-7593935.84	-7593935.68	0.0269	0.0185
Venus	-25504-07-25 20:23 J	-7593706.86	-7593706.65	-7593706.44	0.0271	0.0065
Venus	-25503-03-12 02:38 J	-7593477.59	-7593477.39	-7593477.18	0.0273	0.0060
Venus	-25503-10-27 11:16 J	-7593248.19	-7593248.03	-7593247.88	0.0275	0.0188
Earth	-25500-11-09 06:43 J	-7592139.27	-7592139.22	-7592139.17	0.0285	0.0279
Mercury	-25498-12-17 23:59 J	-7591370.64	-7591370.50	-7591370.36	0.0292	0.0182
Mercury	-25497-03-15 23:02 J	-7591281.71	-7591281.54	-7591281.36	0.0293	0.0011

Mercury	-25497-06-12 21:50 J	-7591192.72	-7591192.59	-7591192.46	0.0293	0.0197
Venus	-25491-10-15 07:11 J	-7588877.33	-7588877.20	-7588877.05	0.0291	0.0212
Venus	-25490-06-02 04:04 J	-7588647.53	-7588647.33	-7588647.12	0.0289	0.0060
Venus	-25489-01-17 22:19 J	-7588417.77	-7588417.57	-7588417.37	0.0287	0.0089
Venus	-25489-09-03 13:55 J	-7588188.04	-7588187.92	-7588187.79	0.0285	0.0230
Moon	-25485-05-18 11:59 J	-7586835.14	-7586835.00	-7586834.85	0.0272	0.0211
Earth	-25485-05-18 15:21 J	-7586835.01	-7586834.86	-7586834.68	0.0272	0.0196 *
Mercury	-25484-10-14 15:21 J	-7586320.95	-7586320.86	-7586320.76	0.0269	0.0186
Mercury	-25483-01-11 02:09 J	-7586232.54	-7586232.41	-7586232.28	0.0268	0.0077
Mercury	-25483-04-09 12:57 J	-7586144.09	-7586143.96	-7586143.82	0.0268	0.0032
Mercury	-25483-07-06 23:59 J	-7586055.62	-7586055.50	-7586055.39	0.0267	0.0142
Mercury	-25483-10-03 10:47 J	-7585967.08	-7585967.05	-7585967.00	0.0267	0.0253
Mars	-25480-06-16 10:47 J	-7584980.34	-7584980.05	-7584979.76	0.0264	0.0007
Venus	-25475-06-20 17:16 J	-7583149.94	-7583149.78	-7583149.61	0.0270	0.0170
Venus	-25474-02-04 21:35 J	-7582920.80	-7582920.60	-7582920.39	0.0271	0.0049
Venus	-25474-09-22 03:50 J	-7582691.54	-7582691.34	-7582691.13	0.0273	0.0077
Venus	-25473-05-08 12:14 J	-7582462.12	-7582461.99	-7582461.84	0.0275	0.0205
Earth	-25470-11-17 05:02 J	-7581174.53	-7581174.29	-7581174.05	0.0287	0.0075
Moon	-25470-11-17 07:40 J	-7581174.42	-7581174.18	-7581173.94	0.0287	0.0059 *
Mercury	-25468-05-05 20:09 J	-7580638.74	-7580638.66	-7580638.57	0.0291	0.0256
Mercury	-25468-08-02 19:26 J	-7580549.87	-7580549.69	-7580549.52	0.0292	0.0065
Mercury	-25468-10-30 17:59 J	-7580460.90	-7580460.75	-7580460.58	0.0293	0.0125
Venus	-25461-04-26 08:52 J	-7578091.28	-7578091.13	-7578090.97	0.0291	0.0195
Venus	-25461-12-12 05:45 J	-7577861.47	-7577861.26	-7577861.05	0.0289	0.0042
Venus	-25460-07-29 23:59 J	-7577631.69	-7577631.50	-7577631.30	0.0287	0.0107
Venus	-25459-03-16 15:35 J	-7577401.94	-7577401.85	-7577401.74	0.0285	0.0249
Earth	-25456-05-13 13:40 J	-7576248.17	-7576247.93	-7576247.69	0.0275	0.0061
Moon	-25456-05-13 17:16 J	-7576248.02	-7576247.78	-7576247.54	0.0275	0.0045 *
Mercury	-25454-03-03 17:45 J	-7575588.83	-7575588.76	-7575588.68	0.0270	0.0220
Mercury	-25454-05-31 04:33 J	-7575500.43	-7575500.31	-7575500.19	0.0269	0.0111

Mercury	-25454-08-27 15:21 J	-7575412.00	-7575411.86	-7575411.72	0.0269	0.0002
Mercury	-25454-11-24 02:09 J	-7575323.53	-7575323.41	-7575323.28	0.0268	0.0110
Mercury	-25453-02-20 13:11 J	-7575235.02	-7575234.95	-7575234.87	0.0268	0.0221
Venus	-25446-05-16 21:07 J	-7572592.65	-7572592.62	-7572592.58	0.0268	0.0265
Venus	-25446-12-31 23:59 J	-7572363.68	-7572363.50	-7572363.33	0.0270	0.0149
Venus	-25445-08-17 04:33 J	-7572134.52	-7572134.31	-7572134.10	0.0271	0.0027
Venus	-25444-04-03 11:16 J	-7571905.23	-7571905.03	-7571904.83	0.0273	0.0098
Venus	-25444-11-18 19:55 J	-7571675.78	-7571675.67	-7571675.54	0.0275	0.0227
Moon	-25441-11-10 09:50 J	-7570588.23	-7570588.09	-7570587.93	0.0286	0.0229
Earth	-25441-11-10 12:43 J	-7570588.13	-7570587.97	-7570587.80	0.0286	0.0214 *
Mercury	-25439-12-20 19:40 J	-7569817.85	-7569817.68	-7569817.51	0.0292	0.0107
Mercury	-25438-03-19 18:28 J	-7569728.89	-7569728.73	-7569728.56	0.0293	0.0083
Mercury	-25438-06-16 17:02 J	-7569639.85	-7569639.79	-7569639.72	0.0293	0.0270
Mars	-25436-07-22 16:33 J	-7568873.06	-7568872.81	-7568872.56	0.0297	0.0162
Venus	-25432-11-06 17:45 J	-7567304.93	-7567304.76	-7567304.58	0.0291	0.0169
Venus	-25431-06-24 14:09 J	-7567075.12	-7567074.91	-7567074.70	0.0289	0.0017
Venus	-25430-02-09 07:55 J	-7566845.35	-7566845.17	-7566844.98	0.0287	0.0131
Venus	-25430-09-26 23:02 J	-7566615.60	-7566615.54	-7566615.47	0.0285	0.0270
Earth	-25426-05-20 18:57 J	-7565283.78	-7565283.71	-7565283.61	0.0272	0.0254
Moon	-25426-05-20 19:26 J	-7565283.72	-7565283.69	-7565283.66	0.0272	0.0270 *
Mercury	-25425-07-20 20:38 J	-7564856.69	-7564856.64	-7564856.59	0.0269	0.0247
Mercury	-25425-10-17 07:11 J	-7564768.31	-7564768.20	-7564768.08	0.0269	0.0138
Mercury	-25424-01-13 17:59 J	-7564679.88	-7564679.75	-7564679.61	0.0268	0.0030
Mercury	-25424-04-12 05:02 J	-7564591.42	-7564591.29	-7564591.16	0.0268	0.0081
Mercury	-25424-07-09 16:04 J	-7564502.93	-7564502.83	-7564502.74	0.0267	0.0191
Venus	-25417-11-25 23:31 J	-7561806.59	-7561806.52	-7561806.43	0.0268	0.0249
Venus	-25416-07-13 02:23 J	-7561577.57	-7561577.40	-7561577.20	0.0270	0.0132
Venus	-25415-02-27 07:11 J	-7561348.41	-7561348.20	-7561347.98	0.0272	0.0011
Venus	-25415-10-14 13:55 J	-7561119.11	-7561118.92	-7561118.72	0.0273	0.0117
Venus	-25414-05-31 22:33 J	-7560889.64	-7560889.56	-7560889.45	0.0275	0.0247

Earth	-25411-11-18 13:40 J	-7559623.14	-7559622.93	-7559622.72	0.0287	0.0145
Moon	-25411-11-18 16:47 J	-7559623.02	-7559622.80	-7559622.57	0.0287	0.0130 *
Mercury	-25409-05-08 16:33 J	-7559085.95	-7559085.81	-7559085.67	0.0292	0.0175
Mercury	-25409-08-05 15:35 J	-7558997.03	-7558996.85	-7558996.67	0.0292	0.0016
Mercury	-25409-11-02 14:09 J	-7558908.03	-7558907.91	-7558907.78	0.0293	0.0203
Venus	-25402-05-19 20:09 J	-7556518.84	-7556518.66	-7556518.48	0.0291	0.0151
Venus	-25401-01-04 16:33 J	-7556289.03	-7556288.81	-7556288.60	0.0289	0.0006
Venus	-25401-08-21 10:04 J	-7556059.25	-7556059.08	-7556058.90	0.0287	0.0149
Moon	-25397-05-14 17:02 J	-7554697.04	-7554696.79	-7554696.54	0.0275	0.0014
Earth	-25397-05-14 17:31 J	-7554697.01	-7554696.77	-7554696.53	0.0275	0.0003 *
Mercury	-25395-03-06 09:35 J	-7554036.20	-7554036.10	-7554035.99	0.0270	0.0172
Mercury	-25395-06-02 20:23 J	-7553947.78	-7553947.65	-7553947.51	0.0269	0.0063
Mercury	-25395-08-30 07:26 J	-7553859.33	-7553859.19	-7553859.06	0.0269	0.0048
Mercury	-25395-11-26 18:14 J	-7553770.84	-7553770.74	-7553770.62	0.0268	0.0159
Mars	-25392-11-10 10:33 J	-7552691.34	-7552691.06	-7552690.77	0.0264	0.0057
Venus	-25387-06-08 06:14 J	-7551020.33	-7551020.24	-7551020.12	0.0269	0.0229
Venus	-25386-01-23 09:35 J	-7550791.29	-7550791.10	-7550790.90	0.0270	0.0111
Venus	-25386-09-09 14:52 J	-7550562.10	-7550561.88	-7550561.67	0.0272	0.0013
Venus	-25385-04-25 21:50 J	-7550332.77	-7550332.59	-7550332.40	0.0273	0.0139
Venus	-25385-12-11 07:11 J	-7550103.24	-7550103.20	-7550103.15	0.0275	0.0269
Moon	-25382-11-12 19:40 J	-7549036.88	-7549036.68	-7549036.47	0.0286	0.0155
Earth	-25382-11-12 23:02 J	-7549036.75	-7549036.54	-7549036.32	0.0286	0.0140 *
Mercury	-25380-09-25 17:16 J	-7548353.90	-7548353.78	-7548353.65	0.0292	0.0212
Mercury	-25380-12-23 16:33 J	-7548264.99	-7548264.81	-7548264.63	0.0292	0.0022
Mercury	-25379-03-22 15:07 J	-7548176.01	-7548175.87	-7548175.72	0.0293	0.0167
Venus	-25373-04-13 07:40 J	-7545962.23	-7545962.18	-7545962.10	0.0292	0.0279
Venus	-25373-11-29 05:59 J	-7545732.43	-7545732.25	-7545732.05	0.0291	0.0124
Venus	-25372-07-17 01:55 J	-7545502.63	-7545502.42	-7545502.21	0.0289	0.0028
Venus	-25371-03-03 18:57 J	-7545272.87	-7545272.71	-7545272.54	0.0287	0.0175
Moon	-25368-05-09 20:38 J	-7544109.76	-7544109.64	-7544109.51	0.0275	0.0232

Earth -25368-05-09 20:23 J -7544109.74 -7544109.65 -7544109.52 0.0275 0.0245 \*  
 Mercury -25366-07-24 12:43 J -7543304.06 -7543303.97 -7543303.87 0.0269 0.0196  
 Mercury -25366-10-20 23:31 J -7543215.65 -7543215.52 -7543215.39 0.0269 0.0087  
 Mercury -25365-01-17 10:19 J -7543127.20 -7543127.07 -7543126.93 0.0268 0.0025  
 Mercury -25365-04-14 21:21 J -7543038.73 -7543038.61 -7543038.49 0.0267 0.0133  
 Mercury -25365-07-12 08:23 J -7542950.20 -7542950.15 -7542950.09 0.0267 0.0244  
 Venus -25358-12-19 10:04 J -7540234.20 -7540234.08 -7540233.94 0.0269 0.0211  
 Venus -25357-08-04 13:26 J -7540005.13 -7540004.94 -7540004.73 0.0270 0.0092  
 Venus -25356-03-21 18:43 J -7539775.93 -7539775.72 -7539775.51 0.0272 0.0032  
 Venus -25356-11-06 01:55 J -7539546.59 -7539546.42 -7539546.25 0.0274 0.0159  
 Moon -25352-11-20 01:40 J -7538071.59 -7538071.43 -7538071.24 0.0287 0.0210  
 Earth -25352-11-20 02:09 J -7538071.56 -7538071.41 -7538071.26 0.0287 0.0225 \*  
 Mercury -25350-02-12 14:38 J -7537621.94 -7537621.89 -7537621.83 0.0291 0.0276  
 Mercury -25350-05-12 13:55 J -7537533.09 -7537532.92 -7537532.74 0.0292 0.0086  
 Mercury -25350-08-09 12:43 J -7537444.13 -7537443.97 -7537443.80 0.0292 0.0105  
 Mercury -25350-11-06 11:16 J -7537355.05 -7537355.03 -7537355.01 0.0293 0.0290  
 Mars -25348-12-16 07:11 J -7536584.47 -7536584.20 -7536583.92 0.0296 0.0110  
 Venus -25344-10-24 11:16 J -7535176.12 -7535176.03 -7535175.93 0.0292 0.0259  
 Venus -25343-06-11 09:21 J -7534946.30 -7534946.11 -7534945.91 0.0290 0.0105  
 Venus -25342-01-27 05:02 J -7534716.49 -7534716.29 -7534716.08 0.0288 0.0048  
 Venus -25342-09-13 22:19 J -7534486.73 -7534486.57 -7534486.42 0.0286 0.0193  
 Moon -25338-05-16 20:09 J -7533145.88 -7533145.66 -7533145.42 0.0274 0.0080  
 Earth -25338-05-16 23:59 J -7533145.74 -7533145.50 -7533145.26 0.0274 0.0064 \*  
 Mercury -25337-12-10 15:07 J -7532571.93 -7532571.87 -7532571.79 0.0270 0.0230  
 Mercury -25336-03-09 01:55 J -7532483.54 -7532483.42 -7532483.29 0.0269 0.0120  
 Mercury -25336-06-05 12:57 J -7532395.10 -7532394.96 -7532394.83 0.0269 0.0012  
 Mercury -25336-09-01 23:45 J -7532306.63 -7532306.51 -7532306.38 0.0268 0.0101  
 Mercury -25336-11-29 10:47 J -7532218.13 -7532218.05 -7532217.96 0.0268 0.0212  
 Venus -25328-06-30 17:16 J -7529447.93 -7529447.78 -7529447.63 0.0269 0.0190  
 Venus -25327-02-14 20:52 J -7529218.83 -7529218.63 -7529218.42 0.0270 0.0071

Venus	-25327-10-02 02:23 J	-7528989.60	-7528989.40	-7528989.19	0.0272	0.0054
Venus	-25326-05-19 09:50 J	-7528760.23	-7528760.09	-7528759.92	0.0274	0.0182
Earth	-25323-11-14 12:14 J	-7527485.23	-7527484.99	-7527484.74	0.0286	0.0059
Moon	-25323-11-14 12:28 J	-7527485.21	-7527484.98	-7527484.75	0.0286	0.0074 *
Mercury	-25321-09-28 15:07 J	-7526801.03	-7526800.87	-7526800.70	0.0292	0.0119
Mercury	-25321-12-26 14:09 J	-7526712.08	-7526711.91	-7526711.73	0.0293	0.0072
Mercury	-25320-03-25 12:57 J	-7526623.04	-7526622.96	-7526622.88	0.0293	0.0259
Venus	-25314-05-06 23:16 J	-7524389.66	-7524389.53	-7524389.40	0.0292	0.0229
Venus	-25314-12-22 20:52 J	-7524159.83	-7524159.63	-7524159.43	0.0290	0.0075
Venus	-25313-08-08 15:50 J	-7523930.04	-7523929.84	-7523929.63	0.0288	0.0076
Venus	-25312-03-26 08:09 J	-7523700.28	-7523700.16	-7523700.02	0.0286	0.0220
Earth	-25309-05-11 05:02 J	-7522558.47	-7522558.29	-7522558.10	0.0275	0.0175
Moon	-25309-05-11 08:09 J	-7522558.34	-7522558.16	-7522557.96	0.0275	0.0161 *
Mercury	-25307-04-29 18:43 J	-7521839.77	-7521839.72	-7521839.67	0.0270	0.0250
Mercury	-25307-07-27 05:16 J	-7521751.39	-7521751.28	-7521751.16	0.0269	0.0142
Mercury	-25307-10-23 16:19 J	-7521662.96	-7521662.82	-7521662.69	0.0268	0.0032
Mercury	-25306-01-20 03:07 J	-7521574.50	-7521574.37	-7521574.24	0.0268	0.0079
Mercury	-25306-04-18 14:09 J	-7521486.01	-7521485.91	-7521485.81	0.0267	0.0189
Mars	-25303-04-06 17:59 J	-7520402.00	-7520401.75	-7520401.48	0.0264	0.0122
Venus	-25298-01-10 22:19 J	-7518661.73	-7518661.57	-7518661.41	0.0269	0.0171
Venus	-25298-08-28 02:09 J	-7518432.62	-7518432.41	-7518432.20	0.0271	0.0050
Venus	-25297-04-13 07:40 J	-7518203.38	-7518203.18	-7518202.97	0.0273	0.0075
Venus	-25297-11-28 15:35 J	-7517973.99	-7517973.85	-7517973.71	0.0274	0.0204
Mercury	-25291-02-15 13:26 J	-7516069.08	-7516068.94	-7516068.79	0.0291	0.0177
Mercury	-25291-05-15 12:28 J	-7515980.15	-7515979.98	-7515979.80	0.0292	0.0015
Mercury	-25291-08-12 11:16 J	-7515891.16	-7515891.03	-7515890.90	0.0293	0.0202
Venus	-25285-11-16 03:21 J	-7513603.50	-7513603.36	-7513603.21	0.0291	0.0210
Venus	-25284-07-04 00:43 J	-7513373.67	-7513373.47	-7513373.26	0.0290	0.0056
Venus	-25283-02-18 19:40 J	-7513143.88	-7513143.68	-7513143.48	0.0288	0.0095
Venus	-25283-10-06 11:59 J	-7512914.11	-7512914.00	-7512913.88	0.0286	0.0238

Moon	-25279-05-18 06:43 J	-7511594.41	-7511594.22	-7511594.02	0.0274	0.0148
Earth	-25279-05-18 08:23 J	-7511594.35	-7511594.15	-7511593.93	0.0274	0.0134 *
Mercury	-25278-12-14 07:40 J	-7511019.27	-7511019.18	-7511019.07	0.0270	0.0175
Mercury	-25277-03-11 18:43 J	-7510930.85	-7510930.72	-7510930.59	0.0269	0.0065
Mercury	-25277-06-08 05:31 J	-7510842.40	-7510842.27	-7510842.13	0.0269	0.0046
Mercury	-25277-09-04 16:33 J	-7510753.92	-7510753.81	-7510753.70	0.0268	0.0157
Venus	-25270-12-07 02:09 J	-7508104.43	-7508104.41	-7508104.39	0.0268	0.0267
Venus	-25269-07-23 04:47 J	-7507875.47	-7507875.30	-7507875.12	0.0269	0.0151
Venus	-25268-03-09 09:07 J	-7507646.33	-7507646.12	-7507645.91	0.0271	0.0029
Venus	-25268-10-24 15:21 J	-7507417.06	-7507416.86	-7507416.66	0.0273	0.0097
Venus	-25267-06-10 23:31 J	-7507187.63	-7507187.52	-7507187.39	0.0275	0.0226
Earth	-25264-11-16 03:50 J	-7505933.59	-7505933.34	-7505933.09	0.0286	0.0028
Moon	-25264-11-16 07:26 J	-7505933.43	-7505933.19	-7505932.94	0.0286	0.0011 *
Mercury	-25262-07-05 14:38 J	-7505337.01	-7505336.89	-7505336.77	0.0291	0.0211
Mercury	-25262-10-02 13:40 J	-7505248.10	-7505247.93	-7505247.75	0.0292	0.0021
Mercury	-25262-12-30 12:28 J	-7505159.12	-7505158.98	-7505158.83	0.0293	0.0169
Mars	-25259-05-13 14:09 J	-7504294.21	-7504293.91	-7504293.61	0.0296	0.0001
Venus	-25255-05-29 15:50 J	-7502817.01	-7502816.84	-7502816.67	0.0292	0.0179
Venus	-25254-01-14 12:43 J	-7502587.18	-7502586.97	-7502586.75	0.0290	0.0025
Venus	-25254-09-01 07:11 J	-7502357.39	-7502357.20	-7502357.01	0.0288	0.0124
Venus	-25253-04-17 22:47 J	-7502127.61	-7502127.55	-7502127.47	0.0286	0.0266
Earth	-25250-05-13 15:21 J	-7501007.07	-7501006.86	-7501006.62	0.0275	0.0103
Moon	-25250-05-13 18:14 J	-7501006.97	-7501006.74	-7501006.50	0.0275	0.0087 *
Mercury	-25248-05-02 11:31 J	-7500287.11	-7500287.02	-7500286.92	0.0269	0.0193
Mercury	-25248-07-29 22:19 J	-7500198.70	-7500198.57	-7500198.44	0.0269	0.0084
Mercury	-25248-10-26 09:07 J	-7500110.25	-7500110.12	-7500109.98	0.0268	0.0028
Mercury	-25247-01-22 20:09 J	-7500021.78	-7500021.66	-7500021.54	0.0268	0.0137
Mercury	-25247-04-21 07:11 J	-7499933.24	-7499933.20	-7499933.15	0.0267	0.0249
Mars	-25245-07-14 20:09 J	-7499117.75	-7499117.66	-7499117.56	0.0264	0.0249
Venus	-25240-06-18 08:09 J	-7497318.23	-7497318.16	-7497318.07	0.0268	0.0247

Venus	-25239-02-02 10:47 J	-7497089.23	-7497089.05	-7497088.86	0.0270	0.0130
Venus	-25239-09-19 15:21 J	-7496860.08	-7496859.86	-7496859.65	0.0271	0.0008
Venus	-25238-05-06 21:35 J	-7496630.79	-7496630.60	-7496630.41	0.0273	0.0120
Venus	-25238-12-22 05:45 J	-7496401.34	-7496401.26	-7496401.16	0.0275	0.0249
Earth	-25235-11-10 08:38 J	-7495347.22	-7495347.14	-7495347.06	0.0285	0.0268
Mercury	-25233-11-21 13:26 J	-7494605.01	-7494604.94	-7494604.87	0.0291	0.0264
Mercury	-25232-02-18 12:43 J	-7494516.15	-7494515.97	-7494515.80	0.0292	0.0073
Mercury	-25232-05-18 11:31 J	-7494427.18	-7494427.02	-7494426.86	0.0292	0.0116
Venus	-25226-12-09 21:07 J	-7492030.80	-7492030.62	-7492030.44	0.0291	0.0158
Venus	-25225-07-26 17:31 J	-7491800.98	-7491800.77	-7491800.55	0.0289	0.0007
Venus	-25224-03-13 11:31 J	-7491571.19	-7491571.02	-7491570.83	0.0287	0.0144
Venus	-25224-10-29 03:07 J	-7491341.38	-7491341.37	-7491341.35	0.0285	0.0284
Earth	-25220-05-19 18:57 J	-7490042.86	-7490042.71	-7490042.55	0.0274	0.0208
Moon	-25220-05-19 20:52 J	-7490042.76	-7490042.63	-7490042.49	0.0274	0.0222 *
Mercury	-25219-09-19 13:55 J	-7489554.99	-7489554.92	-7489554.84	0.0270	0.0226
Mercury	-25219-12-17 00:43 J	-7489466.59	-7489466.47	-7489466.35	0.0270	0.0117
Mercury	-25218-03-15 11:31 J	-7489378.15	-7489378.02	-7489377.88	0.0269	0.0011
Mercury	-25218-06-11 22:33 J	-7489289.69	-7489289.56	-7489289.43	0.0268	0.0105
Mercury	-25218-09-08 09:35 J	-7489201.18	-7489201.10	-7489201.02	0.0268	0.0216
Mars	-25215-09-01 00:14 J	-7488112.69	-7488112.49	-7488112.27	0.0265	0.0184
Venus	-25211-12-29 13:40 J	-7486532.03	-7486531.93	-7486531.81	0.0269	0.0228
Venus	-25210-08-15 16:47 J	-7486302.99	-7486302.80	-7486302.60	0.0270	0.0110
Venus	-25209-03-31 21:50 J	-7486073.80	-7486073.59	-7486073.38	0.0272	0.0014
Venus	-25209-11-16 04:47 J	-7485844.49	-7485844.30	-7485844.12	0.0273	0.0141
Venus	-25208-07-03 13:40 J	-7485614.96	-7485614.93	-7485614.88	0.0275	0.0270
Earth	-25205-11-17 20:52 J	-7484381.85	-7484381.63	-7484381.40	0.0287	0.0118
Moon	-25205-11-17 23:16 J	-7484381.76	-7484381.53	-7484381.28	0.0287	0.0102 *
Mercury	-25203-07-08 13:40 J	-7483784.09	-7483783.93	-7483783.76	0.0292	0.0107
Mercury	-25203-10-05 12:43 J	-7483695.14	-7483694.97	-7483694.80	0.0292	0.0083
Mercury	-25202-01-02 11:16 J	-7483606.09	-7483606.03	-7483605.96	0.0293	0.0271



Venus	-25197-11-03 10:47 J	-7481474.10	-7481474.05	-7481473.99	0.0293	0.0282
Venus	-25196-06-21 09:35 J	-7481244.29	-7481244.10	-7481243.91	0.0291	0.0126
Venus	-25195-02-06 05:45 J	-7481014.47	-7481014.26	-7481014.05	0.0289	0.0027
Venus	-25195-09-23 23:16 J	-7480784.69	-7480784.53	-7480784.36	0.0287	0.0174
Moon	-25191-05-15 01:26 J	-7479455.69	-7479455.44	-7479455.19	0.0275	0.0011
Earth	-25191-05-15 02:52 J	-7479455.62	-7479455.38	-7479455.14	0.0275	0.0026 *
Mercury	-25189-02-06 17:45 J	-7478822.81	-7478822.76	-7478822.70	0.0270	0.0244
Mercury	-25189-05-05 04:33 J	-7478734.42	-7478734.31	-7478734.19	0.0269	0.0134
Mercury	-25189-08-01 15:21 J	-7478645.99	-7478645.86	-7478645.72	0.0269	0.0024
Mercury	-25189-10-29 02:09 J	-7478557.53	-7478557.41	-7478557.27	0.0268	0.0087
Mercury	-25188-01-25 13:11 J	-7478469.04	-7478468.95	-7478468.85	0.0268	0.0198
Venus	-25181-07-10 20:38 J	-7475745.78	-7475745.64	-7475745.51	0.0269	0.0206
Venus	-25180-02-24 23:45 J	-7475516.71	-7475516.51	-7475516.31	0.0270	0.0087
Venus	-25180-10-12 04:33 J	-7475287.52	-7475287.31	-7475287.10	0.0272	0.0037
Venus	-25179-05-29 11:16 J	-7475058.19	-7475058.03	-7475057.85	0.0274	0.0165
Moon	-25176-11-12 00:14 J	-7473795.66	-7473795.49	-7473795.31	0.0285	0.0196
Earth	-25176-11-12 01:55 J	-7473795.61	-7473795.42	-7473795.22	0.0285	0.0179 *
Mercury	-25174-11-25 12:43 J	-7473052.12	-7473051.97	-7473051.82	0.0291	0.0159
Mercury	-25173-02-22 11:45 J	-7472963.19	-7472963.01	-7472962.83	0.0292	0.0031
Mercury	-25173-05-21 10:19 J	-7472874.18	-7472874.07	-7472873.95	0.0293	0.0220
Mars	-25171-10-08 07:40 J	-7472004.46	-7472004.18	-7472003.89	0.0296	0.0092
Venus	-25167-05-16 16:33 J	-7470687.90	-7470687.81	-7470687.71	0.0292	0.0260
Venus	-25166-01-01 14:52 J	-7470458.08	-7470457.88	-7470457.68	0.0290	0.0105
Venus	-25166-08-19 10:33 J	-7470228.27	-7470228.06	-7470227.85	0.0288	0.0047
Venus	-25165-04-05 03:50 J	-7469998.49	-7469998.34	-7469998.18	0.0286	0.0193
Moon	-25162-05-10 02:09 J	-7468868.45	-7468868.41	-7468868.36	0.0276	0.0270
Mercury	-25160-09-22 06:57 J	-7468002.31	-7468002.21	-7468002.10	0.0270	0.0167
Mercury	-25160-12-19 17:45 J	-7467913.89	-7467913.76	-7467913.63	0.0269	0.0057
Mercury	-25159-03-18 04:33 J	-7467825.44	-7467825.31	-7467825.17	0.0269	0.0054
Mercury	-25159-06-14 15:35 J	-7467736.96	-7467736.85	-7467736.74	0.0268	0.0165

Mars	-25157-12-09 00:57 J	-7466828.65	-7466828.46	-7466828.24	0.0265	0.0189
Venus	-25151-01-21 01:11 J	-7464959.60	-7464959.45	-7464959.30	0.0269	0.0188
Venus	-25151-09-07 04:33 J	-7464730.51	-7464730.31	-7464730.10	0.0271	0.0069
Venus	-25150-04-24 10:04 J	-7464501.29	-7464501.08	-7464500.87	0.0272	0.0056
Venus	-25150-12-09 17:31 J	-7464271.92	-7464271.77	-7464271.61	0.0274	0.0184
Moon	-25146-11-20 10:47 J	-7462830.24	-7462830.05	-7462829.86	0.0287	0.0190
Earth	-25146-11-20 12:57 J	-7462830.13	-7462829.96	-7462829.78	0.0287	0.0206 *
Mercury	-25144-04-13 13:11 J	-7462320.08	-7462319.95	-7462319.82	0.0291	0.0198
Mercury	-25144-07-11 12:28 J	-7462231.16	-7462230.98	-7462230.80	0.0292	0.0007
Mercury	-25144-10-08 11:16 J	-7462142.17	-7462142.03	-7462141.89	0.0293	0.0183
Venus	-25138-11-27 04:47 J	-7459901.42	-7459901.30	-7459901.16	0.0292	0.0229
Venus	-25137-07-14 02:52 J	-7459671.58	-7459671.38	-7459671.17	0.0290	0.0074
Venus	-25136-02-28 22:19 J	-7459441.77	-7459441.57	-7459441.36	0.0289	0.0078
Venus	-25136-10-16 15:07 J	-7459211.99	-7459211.87	-7459211.73	0.0286	0.0223
Moon	-25132-05-16 10:33 J	-7457904.29	-7457904.06	-7457903.82	0.0274	0.0066
Earth	-25132-05-16 14:23 J	-7457904.14	-7457903.90	-7457903.66	0.0274	0.0049 *
Mercury	-25130-02-09 10:47 J	-7457270.15	-7457270.05	-7457269.95	0.0269	0.0185
Mercury	-25130-05-08 21:35 J	-7457181.73	-7457181.60	-7457181.47	0.0269	0.0075
Mercury	-25130-08-05 08:23 J	-7457093.29	-7457093.15	-7457093.01	0.0268	0.0035
Mercury	-25130-11-01 19:26 J	-7457004.81	-7457004.69	-7457004.58	0.0268	0.0146
Mercury	-25129-01-29 06:14 J	-7456916.27	-7456916.24	-7456916.20	0.0267	0.0257
Mars	-25126-01-26 16:19 J	-7455822.82	-7455822.82	-7455822.79	0.0264	0.0264
Venus	-25122-08-03 07:55 J	-7454173.33	-7454173.17	-7454173.00	0.0269	0.0166
Venus	-25121-03-19 11:31 J	-7453944.23	-7453944.02	-7453943.81	0.0271	0.0046
Venus	-25121-11-03 17:02 J	-7453714.99	-7453714.79	-7453714.58	0.0272	0.0080
Venus	-25120-06-21 00:43 J	-7453485.60	-7453485.47	-7453485.33	0.0274	0.0208
Earth	-25117-11-13 18:14 J	-7452243.97	-7452243.74	-7452243.50	0.0286	0.0092
Moon	-25117-11-13 20:38 J	-7452243.86	-7452243.64	-7452243.41	0.0286	0.0106 *
Mercury	-25115-08-31 12:14 J	-7451588.07	-7451587.99	-7451587.89	0.0291	0.0248
Mercury	-25115-11-28 11:45 J	-7451499.19	-7451499.01	-7451498.83	0.0292	0.0056

Mercury	-25114-02-25 10:33 J	-7451410.21	-7451410.06	-7451409.90	0.0293	0.0134
Venus	-25108-06-08 10:47 J	-7449115.19	-7449115.05	-7449114.89	0.0291	0.0207
Venus	-25107-01-24 08:38 J	-7448885.35	-7448885.14	-7448884.94	0.0290	0.0053
Venus	-25107-09-11 03:35 J	-7448655.55	-7448655.35	-7448655.15	0.0288	0.0098
Venus	-25106-04-28 19:55 J	-7448425.78	-7448425.67	-7448425.56	0.0286	0.0241
Earth	-25103-05-11 11:59 J	-7447317.15	-7447317.00	-7447316.84	0.0276	0.0208
Moon	-25103-05-11 15:35 J	-7447317.02	-7447316.85	-7447316.67	0.0276	0.0192 *
Mercury	-25101-06-28 13:11 J	-7446538.03	-7446537.95	-7446537.88	0.0270	0.0219
Mercury	-25101-09-24 23:45 J	-7446449.63	-7446449.51	-7446449.38	0.0269	0.0110
Mercury	-25101-12-22 10:33 J	-7446361.19	-7446361.06	-7446360.92	0.0269	0.0009
Mercury	-25100-03-20 21:35 J	-7446272.73	-7446272.60	-7446272.48	0.0268	0.0112
Mercury	-25100-06-17 08:38 J	-7446184.22	-7446184.14	-7446184.07	0.0268	0.0223
Venus	-25093-06-28 09:07 J	-7443616.14	-7443616.12	-7443616.08	0.0268	0.0265
Venus	-25092-02-12 11:31 J	-7443387.19	-7443387.02	-7443386.84	0.0269	0.0149
Venus	-25092-09-29 15:35 J	-7443158.06	-7443157.85	-7443157.64	0.0271	0.0027
Venus	-25091-05-16 21:21 J	-7442928.80	-7442928.61	-7442928.40	0.0273	0.0099
Venus	-25090-01-01 05:31 J	-7442699.38	-7442699.27	-7442699.15	0.0274	0.0227
Moon	-25087-11-21 23:16 J	-7441278.58	-7441278.53	-7441278.45	0.0287	0.0276
Mercury	-25085-04-16 11:16 J	-7440767.20	-7440767.03	-7440766.86	0.0292	0.0102
Mercury	-25085-07-14 10:19 J	-7440678.24	-7440678.07	-7440677.90	0.0292	0.0089
Mercury	-25085-10-11 08:52 J	-7440589.18	-7440589.13	-7440589.07	0.0293	0.0277
Mars	-25082-03-05 10:47 J	-7439714.26	-7439714.05	-7439713.83	0.0297	0.0205
Venus	-25079-12-19 21:35 J	-7438328.76	-7438328.60	-7438328.43	0.0292	0.0177
Venus	-25078-08-06 18:57 J	-7438098.92	-7438098.71	-7438098.50	0.0290	0.0022
Venus	-25077-03-23 13:40 J	-7437869.11	-7437868.93	-7437868.74	0.0288	0.0128
Venus	-25077-11-08 05:45 J	-7437639.32	-7437639.26	-7437639.18	0.0286	0.0270
Moon	-25073-05-17 23:45 J	-7436352.71	-7436352.51	-7436352.31	0.0274	0.0137
Earth	-25073-05-17 23:59 J	-7436352.71	-7436352.50	-7436352.27	0.0274	0.0122 *
Mercury	-25072-11-15 16:47 J	-7435805.86	-7435805.80	-7435805.74	0.0270	0.0238
Mercury	-25071-02-12 03:35 J	-7435717.47	-7435717.35	-7435717.23	0.0269	0.0129

Mercury	-25071-05-11 14:23 J	-7435629.04	-7435628.90	-7435628.77	0.0269	0.0019
Mercury	-25071-08-08 01:11 J	-7435540.58	-7435540.45	-7435540.32	0.0268	0.0092
Mercury	-25071-11-04 11:59 J	-7435452.08	-7435452.00	-7435451.90	0.0267	0.0204
Mars	-25068-05-05 15:50 J	-7434539.10	-7434538.84	-7434538.57	0.0264	0.0108
Venus	-25063-01-08 15:50 J	-7432829.92	-7432829.84	-7432829.75	0.0268	0.0243
Venus	-25063-08-25 17:59 J	-7432600.93	-7432600.75	-7432600.56	0.0269	0.0127
Venus	-25062-04-11 22:19 J	-7432371.79	-7432371.57	-7432371.36	0.0271	0.0007
Venus	-25062-11-27 04:04 J	-7432142.51	-7432142.33	-7432142.13	0.0273	0.0122
Venus	-25061-07-13 12:28 J	-7431913.06	-7431912.98	-7431912.89	0.0275	0.0251
Earth	-25058-11-16 07:26 J	-7430692.44	-7430692.19	-7430691.94	0.0286	0.0010
Moon	-25058-11-16 10:47 J	-7430692.30	-7430692.05	-7430691.80	0.0286	0.0026 *
Mercury	-25056-09-03 10:33 J	-7430035.21	-7430035.06	-7430034.91	0.0292	0.0153
Mercury	-25056-12-01 09:35 J	-7429946.28	-7429946.10	-7429945.92	0.0292	0.0038
Mercury	-25055-02-28 08:23 J	-7429857.26	-7429857.15	-7429857.04	0.0293	0.0227
Venus	-25049-07-01 03:07 J	-7427542.54	-7427542.37	-7427542.18	0.0291	0.0156
Venus	-25048-02-16 00:14 J	-7427312.70	-7427312.49	-7427312.27	0.0289	0.0005
Venus	-25048-10-03 18:28 J	-7427082.90	-7427082.73	-7427082.54	0.0287	0.0147
Earth	-25044-05-12 21:35 J	-7425765.80	-7425765.60	-7425765.38	0.0275	0.0135
Moon	-25044-05-12 22:04 J	-7425765.80	-7425765.58	-7425765.35	0.0275	0.0120 *
Mercury	-25042-07-02 05:45 J	-7424985.37	-7424985.26	-7424985.15	0.0269	0.0164
Mercury	-25042-09-28 16:33 J	-7424896.95	-7424896.81	-7424896.68	0.0269	0.0054
Mercury	-25042-12-26 03:21 J	-7424808.50	-7424808.36	-7424808.23	0.0268	0.0057
Mercury	-25041-03-23 14:09 J	-7424720.01	-7424719.91	-7424719.80	0.0268	0.0168
Venus	-25034-07-21 17:31 J	-7422043.87	-7422043.77	-7422043.65	0.0268	0.0228
Venus	-25033-03-06 20:09 J	-7421814.85	-7421814.66	-7421814.46	0.0270	0.0111
Venus	-25033-10-22 00:43 J	-7421585.68	-7421585.47	-7421585.26	0.0271	0.0012
Venus	-25032-06-08 06:57 J	-7421356.38	-7421356.21	-7421356.02	0.0273	0.0139
Venus	-25031-01-23 15:50 J	-7421126.89	-7421126.84	-7421126.80	0.0275	0.0267
Mercury	-25026-01-21 08:52 J	-7419303.25	-7419303.13	-7419302.99	0.0291	0.0207
Mercury	-25026-04-20 08:23 J	-7419214.33	-7419214.15	-7419213.97	0.0292	0.0014

Mercury	-25026-07-18 07:11 J	-7419125.33	-7419125.20	-7419125.05	0.0293	0.0177
Venus	-25020-05-26 13:26 J	-7416985.98	-7416985.94	-7416985.88	0.0293	0.0283
Venus	-25019-01-11 12:57 J	-7416756.15	-7416755.96	-7416755.77	0.0291	0.0126
Venus	-25019-08-29 09:35 J	-7416526.31	-7416526.10	-7416525.89	0.0290	0.0028
Venus	-25018-04-16 03:50 J	-7416296.51	-7416296.34	-7416296.17	0.0288	0.0176
Earth	-25014-05-20 08:09 J	-7414801.33	-7414801.16	-7414800.99	0.0273	0.0190
Moon	-25014-05-20 11:31 J	-7414801.17	-7414801.02	-7414800.86	0.0273	0.0204 *
Mercury	-25013-11-18 09:07 J	-7414253.21	-7414253.12	-7414253.02	0.0269	0.0185
Mercury	-25012-02-14 19:55 J	-7414164.80	-7414164.67	-7414164.54	0.0269	0.0075
Mercury	-25012-05-14 06:43 J	-7414076.35	-7414076.22	-7414076.08	0.0268	0.0035
Mercury	-25012-08-10 17:45 J	-7413987.88	-7413987.76	-7413987.65	0.0268	0.0146
Mercury	-25012-11-07 04:33 J	-7413899.34	-7413899.31	-7413899.27	0.0267	0.0257
Venus	-25004-01-30 23:59 J	-7411257.63	-7411257.50	-7411257.37	0.0268	0.0206
Venus	-25004-09-17 02:23 J	-7411028.59	-7411028.40	-7411028.19	0.0270	0.0089
Venus	-25003-05-04 06:57 J	-7410799.42	-7410799.21	-7410799.00	0.0271	0.0035
Venus	-25003-12-19 13:26 J	-7410570.10	-7410569.94	-7410569.76	0.0273	0.0162

# 25TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 25th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-24999-11-17 16:47 J	-7409141.04	-7409140.80	-7409140.55	0.0287	0.0064		
Moon	-24999-11-17 17:16 J	-7409141.03	-7409140.78	-7409140.52	0.0287	0.0050 *		
Mercury	-24997-06-09 07:55 J	-7408571.24	-7408571.17	-7408571.08	0.0291	0.0260		

Mercury -24997-09-06 07:26 J -7408482.36 -7408482.19 -7408482.02 0.0292 0.0067

Mercury -24997-12-04 06:28 J -7408393.39 -7408393.23 -7408393.07 0.0293 0.0124

Mars -24994-07-30 14:52 J -7407424.97 -7407424.88 -7407424.76 0.0297 0.0278

Venus -24991-12-06 18:43 J -7406199.80 -7406199.72 -7406199.62 0.0292 0.0262

Venus -24990-07-24 17:45 J -7405969.96 -7405969.76 -7405969.56 0.0291 0.0106

Venus -24989-03-10 13:55 J -7405740.12 -7405739.92 -7405739.71 0.0289 0.0048

Venus -24989-10-26 07:40 J -7405510.33 -7405510.18 -7405510.02 0.0287 0.0194

Moon -24985-05-14 01:40 J -7404214.67 -7404214.43 -7404214.19 0.0275 0.0054

Earth -24985-05-14 05:02 J -7404214.53 -7404214.29 -7404214.06 0.0275 0.0068 \*

Mercury -24983-04-07 11:16 J -7403521.11 -7403521.03 -7403520.96 0.0269 0.0221

Mercury -24983-07-04 21:50 J -7403432.71 -7403432.59 -7403432.46 0.0269 0.0112

Mercury -24983-10-01 08:38 J -7403344.27 -7403344.14 -7403344.00 0.0268 0.0004

Mercury -24983-12-28 19:26 J -7403255.81 -7403255.69 -7403255.56 0.0268 0.0109

Mercury -24982-03-27 06:28 J -7403167.31 -7403167.23 -7403167.15 0.0267 0.0219

Mars -24980-09-29 05:02 J -7402250.57 -7402250.29 -7402250.01 0.0264 0.0066

Venus -24975-08-13 00:14 J -7400471.62 -7400471.49 -7400471.33 0.0269 0.0193

Venus -24974-03-30 03:21 J -7400242.57 -7400242.36 -7400242.16 0.0270 0.0073

Venus -24974-11-14 07:55 J -7400013.37 -7400013.17 -7400012.95 0.0272 0.0051

Venus -24973-06-30 14:52 J -7399784.03 -7399783.88 -7399783.71 0.0273 0.0178

Earth -24970-11-11 15:07 J -7398554.99 -7398554.87 -7398554.73 0.0285 0.0241

Moon -24970-11-11 15:21 J -7398554.96 -7398554.86 -7398554.75 0.0285 0.0257 \*

Mercury -24967-01-24 05:02 J -7397750.45 -7397750.29 -7397750.13 0.0292 0.0129

Mercury -24967-04-23 04:04 J -7397661.50 -7397661.33 -7397661.15 0.0292 0.0064

Mercury -24967-07-21 02:52 J -7397572.46 -7397572.38 -7397572.29 0.0293 0.0253

Venus -24961-06-18 02:09 J -7395413.52 -7395413.41 -7395413.28 0.0293 0.0236

Venus -24960-02-03 01:11 J -7395183.65 -7395183.45 -7395183.24 0.0291 0.0079

Venus -24960-09-20 21:35 J -7394953.80 -7394953.60 -7394953.40 0.0289 0.0074

Venus -24959-05-08 15:21 J -7394723.99 -7394723.86 -7394723.73 0.0287 0.0220

Earth -24955-05-21 13:11 J -7393250.04 -7393249.95 -7393249.86 0.0273 0.0252

Moon -24955-05-21 15:07 J -7393249.92 -7393249.87 -7393249.79 0.0273 0.0264 \*

Mercury	-24954-08-25 14:23 J	-7392788.95	-7392788.90	-7392788.84	0.0270	0.0246
Mercury	-24954-11-22 01:11 J	-7392700.56	-7392700.45	-7392700.33	0.0269	0.0136
Mercury	-24953-02-18 11:59 J	-7392612.14	-7392612.00	-7392611.87	0.0268	0.0026
Mercury	-24953-05-16 22:47 J	-7392523.68	-7392523.55	-7392523.42	0.0268	0.0085
Mercury	-24953-08-13 09:35 J	-7392435.19	-7392435.10	-7392435.00	0.0267	0.0196
Venus	-24945-02-23 05:59 J	-7389685.41	-7389685.25	-7389685.08	0.0268	0.0171
Venus	-24945-10-09 08:52 J	-7389456.33	-7389456.13	-7389455.92	0.0270	0.0052
Venus	-24944-05-26 13:40 J	-7389227.13	-7389226.93	-7389226.72	0.0272	0.0073
Venus	-24943-01-10 20:38 J	-7388997.78	-7388997.64	-7388997.49	0.0274	0.0200
Moon	-24940-11-18 18:14 J	-7387589.97	-7387589.74	-7387589.51	0.0287	0.0113
Earth	-24940-11-18 21:35 J	-7387589.82	-7387589.60	-7387589.37	0.0287	0.0129 *
Mercury	-24938-06-13 03:35 J	-7387018.49	-7387018.35	-7387018.21	0.0292	0.0184
Mercury	-24938-09-10 02:52 J	-7386929.56	-7386929.38	-7386929.20	0.0292	0.0008
Mercury	-24938-12-08 01:40 J	-7386840.55	-7386840.43	-7386840.30	0.0293	0.0199
Venus	-24932-12-29 07:11 J	-7384627.33	-7384627.20	-7384627.05	0.0292	0.0215
Venus	-24931-08-16 05:45 J	-7384397.46	-7384397.26	-7384397.05	0.0290	0.0059
Venus	-24930-04-03 01:40 J	-7384167.63	-7384167.43	-7384167.23	0.0288	0.0093
Venus	-24930-11-18 18:57 J	-7383937.82	-7383937.71	-7383937.59	0.0286	0.0238
Moon	-24926-05-16 07:11 J	-7382663.43	-7382663.20	-7382662.96	0.0274	0.0009
Earth	-24926-05-16 09:50 J	-7382663.33	-7382663.09	-7382662.85	0.0274	0.0006 *
Mercury	-24924-04-10 03:07 J	-7381968.47	-7381968.37	-7381968.27	0.0269	0.0173
Mercury	-24924-07-07 13:40 J	-7381880.06	-7381879.93	-7381879.79	0.0268	0.0065
Mercury	-24924-10-04 00:28 J	-7381791.61	-7381791.48	-7381791.34	0.0268	0.0047
Mercury	-24924-12-31 11:16 J	-7381703.13	-7381703.03	-7381702.91	0.0267	0.0157
Venus	-24916-09-04 05:31 J	-7378899.43	-7378899.27	-7378899.09	0.0269	0.0158
Venus	-24915-04-21 08:38 J	-7378670.35	-7378670.14	-7378669.93	0.0270	0.0038
Venus	-24915-12-06 13:26 J	-7378441.13	-7378440.94	-7378440.73	0.0272	0.0087
Venus	-24914-07-23 20:52 J	-7378211.76	-7378211.63	-7378211.50	0.0274	0.0214
Earth	-24911-11-12 17:02 J	-7377003.97	-7377003.79	-7377003.59	0.0285	0.0184
Moon	-24911-11-12 21:07 J	-7377003.79	-7377003.62	-7377003.44	0.0285	0.0199 *

Mercury	-24909-10-30 00:14 J	-7376286.58	-7376286.49	-7376286.40	0.0291	0.0253
Mercury	-24908-01-26 23:45 J	-7376197.69	-7376197.51	-7376197.34	0.0292	0.0060
Mercury	-24908-04-25 22:33 J	-7376108.71	-7376108.56	-7376108.39	0.0293	0.0132
Venus	-24902-07-11 12:43 J	-7373841.12	-7373840.97	-7373840.80	0.0293	0.0191
Venus	-24901-02-26 11:16 J	-7373611.24	-7373611.03	-7373610.82	0.0291	0.0035
Venus	-24901-10-13 07:11 J	-7373381.39	-7373381.20	-7373381.00	0.0289	0.0118
Venus	-24900-05-31 00:28 J	-7373151.55	-7373151.48	-7373151.39	0.0287	0.0263
Earth	-24897-05-10 10:33 J	-7372076.12	-7372076.06	-7372075.97	0.0276	0.0263
Moon	-24897-05-10 13:55 J	-7372076.02	-7372075.92	-7372075.81	0.0276	0.0246 *
Mercury	-24895-08-28 05:59 J	-7371236.33	-7371236.25	-7371236.16	0.0269	0.0201
Mercury	-24895-11-24 16:47 J	-7371147.93	-7371147.80	-7371147.67	0.0269	0.0091
Mercury	-24894-02-21 03:35 J	-7371059.49	-7371059.35	-7371059.22	0.0268	0.0020
Mercury	-24894-05-20 14:23 J	-7370971.02	-7370970.90	-7370970.78	0.0268	0.0130
Mercury	-24894-08-17 01:11 J	-7370882.50	-7370882.45	-7370882.39	0.0267	0.0241
Mars	-24891-02-23 02:09 J	-7369961.70	-7369961.41	-7369961.12	0.0264	0.0010
Venus	-24887-07-31 09:21 J	-7368342.17	-7368342.11	-7368342.04	0.0267	0.0252
Venus	-24886-03-17 10:33 J	-7368113.23	-7368113.06	-7368112.87	0.0268	0.0138
Venus	-24886-11-01 13:55 J	-7367884.13	-7367883.92	-7367883.71	0.0270	0.0017
Venus	-24885-06-17 18:57 J	-7367654.90	-7367654.71	-7367654.51	0.0272	0.0109
Venus	-24884-02-02 02:09 J	-7367425.51	-7367425.41	-7367425.30	0.0274	0.0236
Moon	-24881-11-19 20:38 J	-7366038.83	-7366038.64	-7366038.45	0.0287	0.0173
Earth	-24881-11-19 22:33 J	-7366038.73	-7366038.56	-7366038.36	0.0287	0.0186 *
Mercury	-24879-06-15 22:04 J	-7365465.75	-7365465.58	-7365465.42	0.0292	0.0118
Mercury	-24879-09-12 21:07 J	-7365376.79	-7365376.62	-7365376.44	0.0293	0.0075
Mercury	-24879-12-10 19:55 J	-7365287.74	-7365287.67	-7365287.59	0.0293	0.0264
Venus	-24872-01-20 17:02 J	-7363054.95	-7363054.79	-7363054.61	0.0292	0.0171
Venus	-24872-09-07 15:21 J	-7362825.07	-7362824.86	-7362824.65	0.0290	0.0016
Venus	-24871-04-25 10:33 J	-7362595.23	-7362595.06	-7362594.86	0.0288	0.0137
Venus	-24871-12-11 03:35 J	-7362365.38	-7362365.35	-7362365.30	0.0286	0.0279
Earth	-24867-05-17 11:31 J	-7361112.25	-7361112.02	-7361111.78	0.0274	0.0050



Moon	-24867-05-17 12:57 J	-7361112.18	-7361111.96	-7361111.72	0.0274	0.0064 *
Mercury	-24865-01-15 07:55 J	-7360504.23	-7360504.17	-7360504.11	0.0269	0.0238
Mercury	-24865-04-12 18:28 J	-7360415.85	-7360415.73	-7360415.61	0.0269	0.0129
Mercury	-24865-07-10 05:16 J	-7360327.42	-7360327.28	-7360327.15	0.0268	0.0020
Mercury	-24865-10-06 16:04 J	-7360238.96	-7360238.83	-7360238.70	0.0268	0.0091
Mercury	-24864-01-03 02:52 J	-7360150.47	-7360150.38	-7360150.29	0.0267	0.0201
Venus	-24857-02-10 07:55 J	-7357556.25	-7357556.17	-7357556.07	0.0267	0.0241
Venus	-24857-09-26 09:21 J	-7357327.29	-7357327.11	-7357326.91	0.0269	0.0125
Venus	-24856-05-13 12:43 J	-7357098.19	-7357097.97	-7357097.76	0.0270	0.0005
Venus	-24856-12-28 17:31 J	-7356868.95	-7356868.77	-7356868.57	0.0272	0.0122
Venus	-24855-08-15 01:11 J	-7356639.53	-7356639.45	-7356639.36	0.0274	0.0249
Earth	-24852-11-13 15:35 J	-7355453.07	-7355452.85	-7355452.63	0.0285	0.0134
Moon	-24852-11-13 16:47 J	-7355453.02	-7355452.80	-7355452.57	0.0285	0.0146 *
Mercury	-24850-11-02 17:45 J	-7354733.89	-7354733.76	-7354733.62	0.0291	0.0194
Mercury	-24849-01-30 17:16 J	-7354644.96	-7354644.78	-7354644.60	0.0292	0.0004
Mercury	-24849-04-28 16:04 J	-7354555.96	-7354555.83	-7354555.69	0.0293	0.0190
Venus	-24843-08-02 21:07 J	-7352268.80	-7352268.62	-7352268.44	0.0293	0.0149
Venus	-24842-03-20 19:26 J	-7352038.90	-7352038.69	-7352038.48	0.0291	0.0008
Venus	-24842-11-05 14:52 J	-7351809.05	-7351808.88	-7351808.70	0.0289	0.0160
Moon	-24838-05-12 10:04 J	-7350525.25	-7350525.08	-7350524.90	0.0276	0.0193
Earth	-24838-05-12 11:31 J	-7350525.17	-7350525.02	-7350524.86	0.0276	0.0209 *
Mercury	-24836-06-03 10:47 J	-7349772.06	-7349772.05	-7349772.04	0.0270	0.0268
Mercury	-24836-08-30 21:07 J	-7349683.72	-7349683.62	-7349683.50	0.0269	0.0160
Mercury	-24836-11-27 07:55 J	-7349595.30	-7349595.17	-7349595.03	0.0269	0.0050
Mercury	-24835-02-23 18:43 J	-7349506.85	-7349506.72	-7349506.58	0.0268	0.0062
Mercury	-24835-05-23 05:31 J	-7349418.37	-7349418.27	-7349418.16	0.0267	0.0173
Venus	-24828-08-22 12:28 J	-7346770.08	-7346769.98	-7346769.85	0.0267	0.0221
Venus	-24827-04-08 14:09 J	-7346541.10	-7346540.91	-7346540.71	0.0268	0.0104
Venus	-24827-11-23 17:31 J	-7346311.98	-7346311.77	-7346311.56	0.0270	0.0017
Venus	-24826-07-10 22:47 J	-7346082.72	-7346082.55	-7346082.36	0.0272	0.0143

Venus	-24825-02-25 06:28 J	-7345853.26	-7345853.23	-7345853.20	0.0274	0.0270
Earth	-24822-11-21 20:52 J	-7344487.76	-7344487.63	-7344487.48	0.0287	0.0236
Moon	-24822-11-21 23:31 J	-7344487.66	-7344487.52	-7344487.36	0.0287	0.0228 *
Mercury	-24820-03-21 15:50 J	-7344001.92	-7344001.84	-7344001.74	0.0292	0.0254
Mercury	-24820-06-18 15:35 J	-7343913.03	-7343912.85	-7343912.68	0.0292	0.0060
Mercury	-24820-09-15 14:38 J	-7343824.05	-7343823.89	-7343823.73	0.0293	0.0133
Venus	-24814-06-28 00:43 J	-7341712.50	-7341712.47	-7341712.42	0.0294	0.0288
Venus	-24813-02-13 01:11 J	-7341482.64	-7341482.45	-7341482.26	0.0292	0.0129
Venus	-24813-09-29 23:02 J	-7341252.75	-7341252.54	-7341252.33	0.0290	0.0027
Venus	-24812-05-17 18:14 J	-7341022.90	-7341022.74	-7341022.57	0.0288	0.0177
Earth	-24808-05-18 11:31 J	-7339561.24	-7339561.02	-7339560.79	0.0274	0.0102
Moon	-24808-05-18 15:07 J	-7339561.08	-7339560.87	-7339560.64	0.0274	0.0116 *
Mercury	-24806-01-17 23:02 J	-7338951.63	-7338951.54	-7338951.45	0.0269	0.0197
Mercury	-24806-04-16 09:35 J	-7338863.22	-7338863.10	-7338862.97	0.0268	0.0088
Mercury	-24806-07-13 20:23 J	-7338774.79	-7338774.65	-7338774.51	0.0268	0.0022
Mercury	-24806-10-10 07:11 J	-7338686.32	-7338686.20	-7338686.08	0.0267	0.0132
Mercury	-24805-01-06 17:59 J	-7338597.80	-7338597.75	-7338597.69	0.0267	0.0243
Mars	-24803-07-18 23:02 J	-7337673.83	-7337673.54	-7337673.25	0.0264	0.0011
Venus	-24798-03-04 11:16 J	-7335984.16	-7335984.03	-7335983.90	0.0267	0.0209
Venus	-24798-10-19 12:43 J	-7335755.17	-7335754.97	-7335754.77	0.0269	0.0092
Venus	-24797-06-04 16:04 J	-7335526.04	-7335525.83	-7335525.62	0.0270	0.0030
Venus	-24796-01-19 21:07 J	-7335296.78	-7335296.62	-7335296.43	0.0272	0.0156
Moon	-24793-11-14 08:38 J	-7333902.37	-7333902.14	-7333901.89	0.0285	0.0096
Earth	-24793-11-14 12:14 J	-7333902.22	-7333901.99	-7333901.75	0.0285	0.0088 *
Mercury	-24791-11-05 10:47 J	-7333181.20	-7333181.05	-7333180.89	0.0292	0.0140
Mercury	-24790-02-02 10:04 J	-7333092.25	-7333092.08	-7333091.90	0.0292	0.0054
Mercury	-24790-05-02 08:52 J	-7333003.22	-7333003.13	-7333003.02	0.0293	0.0244
Venus	-24784-01-07 03:07 J	-7330926.45	-7330926.37	-7330926.28	0.0294	0.0269
Venus	-24784-08-25 03:35 J	-7330696.54	-7330696.35	-7330696.15	0.0293	0.0109
Venus	-24783-04-12 01:40 J	-7330466.64	-7330466.43	-7330466.22	0.0291	0.0048

Venus	-24783-11-27 20:52 J	-7330236.77	-7330236.63	-7330236.47	0.0289	0.0199
Moon	-24779-05-13 06:28 J	-7328974.43	-7328974.23	-7328974.03	0.0276	0.0146
Earth	-24779-05-13 09:50 J	-7328974.27	-7328974.09	-7328973.88	0.0276	0.0161 *
Mercury	-24777-06-06 01:40 J	-7328219.50	-7328219.43	-7328219.36	0.0270	0.0229
Mercury	-24777-09-02 12:14 J	-7328131.11	-7328130.99	-7328130.87	0.0269	0.0120
Mercury	-24777-11-29 23:02 J	-7328042.68	-7328042.54	-7328042.41	0.0268	0.0010
Mercury	-24776-02-26 09:50 J	-7327954.22	-7327954.09	-7327953.97	0.0268	0.0101
Mercury	-24776-05-25 20:38 J	-7327865.72	-7327865.64	-7327865.56	0.0267	0.0212
Venus	-24769-09-13 15:50 J	-7325197.99	-7325197.84	-7325197.69	0.0267	0.0189
Venus	-24768-04-30 17:16 J	-7324968.98	-7324968.78	-7324968.58	0.0268	0.0072
Venus	-24768-12-15 20:38 J	-7324739.85	-7324739.64	-7324739.43	0.0270	0.0050
Venus	-24767-08-02 02:09 J	-7324510.57	-7324510.41	-7324510.24	0.0272	0.0176
Earth	-24763-11-22 17:02 J	-7322936.81	-7322936.79	-7322936.73	0.0287	0.0284
Moon	-24763-11-22 20:23 J	-7322936.70	-7322936.65	-7322936.58	0.0287	0.0279
Mercury	-24761-03-24 08:52 J	-7322449.26	-7322449.13	-7322449.00	0.0292	0.0200
Mercury	-24761-06-21 08:23 J	-7322360.33	-7322360.15	-7322359.97	0.0293	0.0007
Mercury	-24761-09-18 07:26 J	-7322271.33	-7322271.19	-7322271.05	0.0293	0.0185
Mars	-24759-08-19 18:57 J	-7321570.79	-7321570.71	-7321570.61	0.0297	0.0283
Venus	-24755-07-20 07:40 J	-7320140.28	-7320140.18	-7320140.06	0.0294	0.0248
Venus	-24754-03-07 07:55 J	-7319910.37	-7319910.17	-7319909.97	0.0292	0.0089
Venus	-24754-10-23 05:31 J	-7319680.47	-7319680.27	-7319680.06	0.0290	0.0067
Venus	-24753-06-09 00:28 J	-7319450.61	-7319450.48	-7319450.33	0.0288	0.0216
Earth	-24749-05-19 10:33 J	-7318010.25	-7318010.06	-7318009.85	0.0274	0.0152
Moon	-24749-05-19 10:33 J	-7318010.25	-7318010.06	-7318009.85	0.0274	0.0160 *
Mercury	-24748-10-24 03:35 J	-7317487.37	-7317487.35	-7317487.34	0.0269	0.0267
Mercury	-24747-01-20 14:09 J	-7317399.02	-7317398.91	-7317398.80	0.0269	0.0158
Mercury	-24747-04-19 00:43 J	-7317310.60	-7317310.47	-7317310.33	0.0268	0.0048
Mercury	-24747-07-16 11:31 J	-7317222.15	-7317222.02	-7317221.89	0.0268	0.0062
Mercury	-24747-10-12 22:19 J	-7317133.67	-7317133.57	-7317133.47	0.0267	0.0173
Venus	-24739-03-26 14:09 J	-7314412.06	-7314411.91	-7314411.75	0.0267	0.0177

Venus	-24739-11-10 15:50 J	-7314183.05	-7314182.84	-7314182.64	0.0269	0.0059
Venus	-24738-06-27 19:11 J	-7313953.90	-7313953.70	-7313953.49	0.0270	0.0064
Venus	-24737-02-12 00:43 J	-7313724.62	-7313724.47	-7313724.32	0.0272	0.0189
Moon	-24734-11-16 05:45 J	-7312351.50	-7312351.26	-7312351.02	0.0285	0.0048
Earth	-24734-11-16 07:55 J	-7312351.41	-7312351.17	-7312350.92	0.0285	0.0044 *
Mercury	-24732-08-11 03:50 J	-7311717.37	-7311717.34	-7311717.29	0.0291	0.0282
Mercury	-24732-11-08 03:35 J	-7311628.52	-7311628.35	-7311628.18	0.0292	0.0088
Mercury	-24731-02-05 02:38 J	-7311539.55	-7311539.39	-7311539.22	0.0292	0.0106
Venus	-24725-01-30 09:07 J	-7309354.24	-7309354.12	-7309353.98	0.0294	0.0230
Venus	-24725-09-16 09:35 J	-7309124.31	-7309124.10	-7309123.90	0.0292	0.0070
Venus	-24724-05-04 07:26 J	-7308894.39	-7308894.19	-7308893.99	0.0291	0.0087
Venus	-24724-12-20 02:23 J	-7308664.51	-7308664.40	-7308664.27	0.0288	0.0237
Earth	-24720-05-14 07:55 J	-7307423.39	-7307423.17	-7307422.95	0.0276	0.0113
Moon	-24720-05-14 08:09 J	-7307423.37	-7307423.16	-7307422.94	0.0276	0.0102 *
Mercury	-24718-06-09 16:33 J	-7306666.90	-7306666.81	-7306666.72	0.0270	0.0191
Mercury	-24718-09-06 03:07 J	-7306578.50	-7306578.37	-7306578.24	0.0269	0.0081
Mercury	-24718-12-03 13:55 J	-7306490.05	-7306489.92	-7306489.78	0.0268	0.0029
Mercury	-24717-03-01 00:43 J	-7306401.58	-7306401.47	-7306401.35	0.0268	0.0140
Mercury	-24717-05-28 11:31 J	-7306313.06	-7306313.02	-7306312.97	0.0267	0.0252
Mars	-24715-12-12 10:04 J	-7305385.37	-7305385.08	-7305384.79	0.0263	0.0048
Venus	-24710-10-06 18:43 J	-7303625.88	-7303625.72	-7303625.54	0.0267	0.0158
Venus	-24709-05-22 20:38 J	-7303396.85	-7303396.64	-7303396.43	0.0269	0.0039
Venus	-24708-01-07 00:14 J	-7303167.69	-7303167.49	-7303167.28	0.0270	0.0084
Venus	-24708-08-24 05:45 J	-7302938.38	-7302938.26	-7302938.12	0.0272	0.0210
Mercury	-24702-03-28 01:55 J	-7300896.57	-7300896.42	-7300896.26	0.0292	0.0145
Mercury	-24702-06-25 01:26 J	-7300807.62	-7300807.44	-7300807.27	0.0293	0.0049
Mercury	-24702-09-22 00:14 J	-7300718.59	-7300718.49	-7300718.39	0.0293	0.0240
Venus	-24696-08-11 14:09 J	-7298568.05	-7298567.91	-7298567.75	0.0294	0.0209
Venus	-24695-03-29 14:09 J	-7298338.11	-7298337.91	-7298337.70	0.0292	0.0049
Venus	-24695-11-14 11:31 J	-7298108.21	-7298108.02	-7298107.82	0.0290	0.0107

Venus	-24694-07-02 06:28 J	-7297878.32	-7297878.23	-7297878.13	0.0288	0.0254
Moon	-24690-05-21 05:16 J	-7296459.43	-7296459.28	-7296459.11	0.0274	0.0205
Earth	-24690-05-21 09:07 J	-7296459.27	-7296459.12	-7296458.94	0.0274	0.0201 *
Mercury	-24689-10-26 18:28 J	-7295934.80	-7295934.73	-7295934.66	0.0269	0.0228
Mercury	-24688-01-23 05:02 J	-7295846.41	-7295846.29	-7295846.17	0.0269	0.0118
Mercury	-24688-04-21 15:50 J	-7295757.98	-7295757.84	-7295757.71	0.0268	0.0010
Mercury	-24688-07-19 02:38 J	-7295669.52	-7295669.39	-7295669.27	0.0268	0.0103
Mercury	-24688-10-15 13:11 J	-7295581.02	-7295580.95	-7295580.86	0.0267	0.0214
Venus	-24681-08-31 17:59 J	-7293068.79	-7293068.75	-7293068.70	0.0266	0.0258
Venus	-24680-04-17 17:59 J	-7292839.93	-7292839.75	-7292839.57	0.0267	0.0145
Venus	-24680-12-02 19:40 J	-7292610.90	-7292610.68	-7292610.47	0.0269	0.0026
Venus	-24679-07-19 23:16 J	-7292381.73	-7292381.53	-7292381.33	0.0270	0.0098
Venus	-24678-03-06 04:47 J	-7292152.42	-7292152.30	-7292152.18	0.0272	0.0223
Earth	-24675-11-17 04:47 J	-7290800.54	-7290800.30	-7290800.05	0.0285	0.0006
Moon	-24675-11-17 06:57 J	-7290800.45	-7290800.21	-7290799.97	0.0285	0.0005 *
Mercury	-24673-08-13 20:52 J	-7290164.74	-7290164.63	-7290164.51	0.0291	0.0228
Mercury	-24673-11-10 20:23 J	-7290075.83	-7290075.65	-7290075.47	0.0292	0.0035
Mercury	-24672-02-07 19:40 J	-7289986.83	-7289986.68	-7289986.53	0.0293	0.0158
Mars	-24670-01-11 17:02 J	-7289283.83	-7289283.79	-7289283.72	0.0297	0.0291
Venus	-24666-02-21 14:52 J	-7287782.03	-7287781.88	-7287781.71	0.0294	0.0192
Venus	-24666-10-09 15:21 J	-7287552.08	-7287551.86	-7287551.65	0.0292	0.0032
Venus	-24665-05-26 12:43 J	-7287322.15	-7287321.97	-7287321.77	0.0290	0.0126
Venus	-24664-01-11 07:55 J	-7287092.23	-7287092.17	-7287092.10	0.0288	0.0273
Earth	-24661-05-15 05:45 J	-7285872.49	-7285872.26	-7285872.02	0.0276	0.0066
Moon	-24661-05-15 09:21 J	-7285872.34	-7285872.11	-7285871.87	0.0276	0.0057 *
Mercury	-24659-03-15 20:52 J	-7285202.66	-7285202.63	-7285202.60	0.0270	0.0263
Mercury	-24659-06-12 07:26 J	-7285114.30	-7285114.19	-7285114.08	0.0270	0.0153
Mercury	-24659-09-08 18:14 J	-7285025.88	-7285025.74	-7285025.61	0.0269	0.0042
Mercury	-24659-12-06 05:02 J	-7284937.43	-7284937.29	-7284937.16	0.0268	0.0070
Mercury	-24658-03-04 15:50 J	-7284848.94	-7284848.84	-7284848.74	0.0268	0.0181

Venus	-24651-03-13 22:33 J	-7282282.64	-7282282.56	-7282282.46	0.0266	0.0240
Venus	-24651-10-28 23:02 J	-7282053.73	-7282053.54	-7282053.36	0.0267	0.0125
Venus	-24650-06-15 00:57 J	-7281824.67	-7281824.46	-7281824.25	0.0269	0.0006
Venus	-24649-01-30 04:33 J	-7281595.49	-7281595.31	-7281595.11	0.0270	0.0118
Venus	-24649-09-15 10:19 J	-7281366.15	-7281366.07	-7281365.97	0.0272	0.0244
Mercury	-24644-12-31 19:40 J	-7279432.72	-7279432.68	-7279432.64	0.0291	0.0283
Mercury	-24643-03-30 19:26 J	-7279343.87	-7279343.69	-7279343.52	0.0292	0.0088
Mercury	-24643-06-27 18:28 J	-7279254.89	-7279254.73	-7279254.56	0.0293	0.0105
Venus	-24637-09-02 21:21 J	-7276995.78	-7276995.61	-7276995.44	0.0294	0.0169
Venus	-24636-04-20 21:07 J	-7276765.83	-7276765.62	-7276765.41	0.0292	0.0010
Venus	-24636-12-06 18:14 J	-7276535.92	-7276535.74	-7276535.56	0.0290	0.0146
Moon	-24631-05-22 07:26 J	-7274908.26	-7274908.19	-7274908.09	0.0274	0.0253
Earth	-24631-05-22 08:52 J	-7274908.22	-7274908.13	-7274908.03	0.0274	0.0251 *
Mercury	-24630-10-30 09:35 J	-7274382.19	-7274382.10	-7274382.00	0.0269	0.0187
Mercury	-24629-01-26 20:09 J	-7274293.78	-7274293.66	-7274293.53	0.0269	0.0077
Mercury	-24629-04-24 06:57 J	-7274205.34	-7274205.21	-7274205.07	0.0268	0.0034
Mercury	-24629-07-21 17:45 J	-7274116.87	-7274116.76	-7274116.64	0.0268	0.0145
Mercury	-24629-10-18 04:47 J	-7274028.34	-7274028.30	-7274028.27	0.0267	0.0256
Mars	-24626-05-07 12:14 J	-7273097.26	-7273096.99	-7273096.70	0.0263	0.0074
Venus	-24622-09-23 22:47 J	-7271496.65	-7271496.55	-7271496.44	0.0266	0.0226
Venus	-24621-05-09 22:47 J	-7271267.73	-7271267.55	-7271267.35	0.0267	0.0111
Venus	-24621-12-25 00:43 J	-7271038.68	-7271038.47	-7271038.25	0.0269	0.0010
Venus	-24620-08-11 04:33 J	-7270809.49	-7270809.31	-7270809.12	0.0271	0.0133
Venus	-24619-03-28 10:04 J	-7270580.13	-7270580.08	-7270580.00	0.0272	0.0259
Earth	-24616-11-18 04:47 J	-7269249.54	-7269249.30	-7269249.05	0.0285	0.0056
Moon	-24616-11-18 08:23 J	-7269249.40	-7269249.15	-7269248.91	0.0285	0.0057 *
Mercury	-24614-08-17 14:52 J	-7268612.03	-7268611.88	-7268611.74	0.0291	0.0168
Mercury	-24614-11-14 14:09 J	-7268523.09	-7268522.91	-7268522.73	0.0292	0.0026
Mercury	-24613-02-11 13:11 J	-7268434.07	-7268433.95	-7268433.83	0.0293	0.0217
Venus	-24607-03-15 22:04 J	-7266209.75	-7266209.58	-7266209.39	0.0294	0.0152

Venus	-24607-10-31 22:04 J	-7265979.79	-7265979.58	-7265979.37	0.0292	0.0009
Venus	-24606-06-18 19:11 J	-7265749.86	-7265749.70	-7265749.52	0.0290	0.0164
Earth	-24602-05-17 04:47 J	-7264321.54	-7264321.30	-7264321.05	0.0276	0.0016
Moon	-24602-05-17 06:14 J	-7264321.49	-7264321.24	-7264320.99	0.0276	0.0009 *
Mercury	-24600-03-18 11:59 J	-7263650.08	-7263650.00	-7263649.93	0.0270	0.0222
Mercury	-24600-06-14 22:33 J	-7263561.68	-7263561.56	-7263561.44	0.0270	0.0112
Mercury	-24600-09-11 09:21 J	-7263473.25	-7263473.11	-7263472.98	0.0269	0.0001
Mercury	-24600-12-08 20:09 J	-7263384.78	-7263384.66	-7263384.54	0.0269	0.0111
Mercury	-24599-03-07 06:57 J	-7263296.28	-7263296.21	-7263296.13	0.0268	0.0223
Venus	-24592-04-05 04:04 J	-7260710.46	-7260710.33	-7260710.20	0.0266	0.0207
Venus	-24592-11-20 04:19 J	-7260481.51	-7260481.32	-7260481.12	0.0267	0.0091
Venus	-24591-07-07 06:43 J	-7260252.43	-7260252.22	-7260252.01	0.0269	0.0030
Venus	-24590-02-21 10:33 J	-7260023.23	-7260023.06	-7260022.88	0.0270	0.0154
Moon	-24587-11-12 07:55 J	-7258663.29	-7258663.17	-7258663.03	0.0284	0.0239
Earth	-24587-11-12 11:16 J	-7258663.15	-7258663.03	-7258662.88	0.0284	0.0237 *
Mercury	-24584-01-03 13:55 J	-7257880.03	-7257879.92	-7257879.80	0.0291	0.0218
Mercury	-24584-04-02 13:26 J	-7257791.12	-7257790.94	-7257790.76	0.0292	0.0024
Mercury	-24584-06-30 12:28 J	-7257702.12	-7257701.98	-7257701.83	0.0293	0.0168
Mars	-24582-06-06 23:16 J	-7256995.66	-7256995.53	-7256995.37	0.0297	0.0257
Venus	-24578-02-08 03:21 J	-7255653.39	-7255653.36	-7255653.31	0.0295	0.0290
Venus	-24578-09-26 05:16 J	-7255423.47	-7255423.28	-7255423.09	0.0294	0.0128
Venus	-24577-05-13 04:33 J	-7255193.51	-7255193.31	-7255193.09	0.0292	0.0033
Venus	-24577-12-29 01:40 J	-7254963.59	-7254963.43	-7254963.27	0.0290	0.0186
Moon	-24573-05-10 23:59 J	-7253734.54	-7253734.50	-7253734.42	0.0277	0.0267
Earth	-24573-05-11 02:09 J	-7253734.43	-7253734.41	-7253734.38	0.0277	0.0276 *
Mercury	-24571-08-05 14:23 J	-7252917.94	-7252917.90	-7252917.86	0.0270	0.0254
Mercury	-24571-11-02 00:57 J	-7252829.57	-7252829.46	-7252829.34	0.0269	0.0143
Mercury	-24570-01-29 11:45 J	-7252741.15	-7252741.01	-7252740.88	0.0269	0.0033
Mercury	-24570-04-27 22:33 J	-7252652.69	-7252652.56	-7252652.43	0.0268	0.0079
Mercury	-24570-07-25 09:21 J	-7252564.20	-7252564.11	-7252564.01	0.0268	0.0190

Venus	-24563-10-16 05:16 J	-7249924.42	-7249924.28	-7249924.13	0.0266	0.0192
Venus	-24562-06-02 05:45 J	-7249695.46	-7249695.26	-7249695.06	0.0268	0.0075
Venus	-24561-01-17 07:40 J	-7249466.39	-7249466.18	-7249465.97	0.0269	0.0046
Venus	-24561-09-02 11:31 J	-7249237.18	-7249237.02	-7249236.85	0.0271	0.0171
Earth	-24557-11-19 07:55 J	-7247698.40	-7247698.17	-7247697.94	0.0285	0.0116
Moon	-24557-11-19 07:55 J	-7247698.40	-7247698.17	-7247697.94	0.0285	0.0120 *
Mercury	-24555-08-20 09:35 J	-7247059.27	-7247059.10	-7247058.93	0.0291	0.0100
Mercury	-24555-11-17 08:52 J	-7246970.30	-7246970.13	-7246969.96	0.0292	0.0093
Mercury	-24554-02-14 07:26 J	-7246881.22	-7246881.19	-7246881.14	0.0293	0.0284
Venus	-24549-08-20 05:02 J	-7244867.37	-7244867.29	-7244867.21	0.0295	0.0273
Venus	-24548-04-07 06:43 J	-7244637.41	-7244637.22	-7244637.02	0.0294	0.0111
Venus	-24548-11-23 06:14 J	-7244407.45	-7244407.24	-7244407.03	0.0292	0.0050
Venus	-24547-07-11 03:07 J	-7244177.51	-7244177.37	-7244177.21	0.0290	0.0204
Moon	-24543-05-18 03:07 J	-7242770.61	-7242770.37	-7242770.13	0.0276	0.0042
Earth	-24543-05-18 05:59 J	-7242770.49	-7242770.25	-7242770.01	0.0276	0.0040 *
Mercury	-24541-03-21 03:21 J	-7242097.46	-7242097.36	-7242097.26	0.0270	0.0179
Mercury	-24541-06-17 13:55 J	-7242009.04	-7242008.92	-7242008.78	0.0270	0.0068
Mercury	-24541-09-14 00:43 J	-7241920.60	-7241920.47	-7241920.33	0.0269	0.0045
Mercury	-24541-12-11 11:45 J	-7241832.12	-7241832.01	-7241831.90	0.0269	0.0157
Mars	-24538-10-01 05:16 J	-7240808.53	-7240808.28	-7240808.01	0.0264	0.0118
Venus	-24533-04-27 10:47 J	-7239138.20	-7239138.05	-7239137.88	0.0266	0.0173
Venus	-24533-12-12 11:31 J	-7238909.22	-7238909.02	-7238908.81	0.0267	0.0056
Venus	-24532-07-29 14:09 J	-7238680.11	-7238679.91	-7238679.70	0.0269	0.0066
Venus	-24531-03-15 18:28 J	-7238450.88	-7238450.73	-7238450.58	0.0271	0.0191
Earth	-24528-11-13 16:47 J	-7237111.99	-7237111.80	-7237111.60	0.0284	0.0172
Moon	-24528-11-13 17:02 J	-7237111.98	-7237111.79	-7237111.59	0.0284	0.0171 *
Mercury	-24525-01-07 09:35 J	-7236327.26	-7236327.10	-7236326.94	0.0291	0.0143
Mercury	-24525-04-05 08:52 J	-7236238.31	-7236238.13	-7236237.95	0.0292	0.0050
Mercury	-24525-07-03 07:55 J	-7236149.27	-7236149.17	-7236149.07	0.0293	0.0241
Venus	-24519-03-02 14:09 J	-7234081.02	-7234080.91	-7234080.79	0.0295	0.0246



Venus	-24519-10-18 15:35 J	-7233851.05	-7233850.85	-7233850.65	0.0294	0.0084
Venus	-24518-06-05 14:38 J	-7233621.10	-7233620.89	-7233620.69	0.0292	0.0076
Venus	-24517-01-21 11:02 J	-7233391.16	-7233391.04	-7233390.91	0.0290	0.0228
Earth	-24514-05-13 04:47 J	-7232183.43	-7232183.30	-7232183.14	0.0277	0.0218
Moon	-24514-05-13 07:26 J	-7232183.34	-7232183.19	-7232183.03	0.0277	0.0208 *
Mercury	-24512-08-08 05:59 J	-7231365.33	-7231365.25	-7231365.16	0.0270	0.0207
Mercury	-24512-11-04 16:47 J	-7231276.93	-7231276.80	-7231276.67	0.0269	0.0096
Mercury	-24511-02-01 03:35 J	-7231188.49	-7231188.35	-7231188.22	0.0269	0.0016
Mercury	-24511-04-30 14:23 J	-7231100.02	-7231099.90	-7231099.78	0.0268	0.0127
Mercury	-24511-07-28 01:11 J	-7231011.50	-7231011.45	-7231011.39	0.0268	0.0239
Venus	-24504-11-07 13:11 J	-7228352.11	-7228351.95	-7228351.77	0.0266	0.0157
Venus	-24503-06-24 14:23 J	-7228123.11	-7228122.90	-7228122.69	0.0268	0.0038
Venus	-24502-02-08 16:47 J	-7227894.00	-7227893.80	-7227893.60	0.0269	0.0085
Venus	-24502-09-25 21:07 J	-7227664.75	-7227664.62	-7227664.49	0.0271	0.0210
Moon	-24498-11-21 11:59 J	-7226147.18	-7226147.00	-7226146.82	0.0286	0.0193
Earth	-24498-11-21 15:35 J	-7226147.04	-7226146.85	-7226146.66	0.0286	0.0186 *
Mercury	-24496-05-26 05:59 J	-7225595.37	-7225595.25	-7225595.12	0.0291	0.0214
Mercury	-24496-08-23 05:31 J	-7225506.45	-7225506.27	-7225506.09	0.0291	0.0021
Mercury	-24496-11-20 04:33 J	-7225417.45	-7225417.31	-7225417.16	0.0292	0.0171
Mars	-24494-10-30 23:02 J	-7224707.71	-7224707.54	-7224707.34	0.0296	0.0228
Jupiter	-24492-12-06 15:50 J	-7223940.00	-7223939.84	-7223939.63	0.0297	0.0271
Venus	-24490-09-12 15:50 J	-7223294.96	-7223294.84	-7223294.69	0.0295	0.0230
Venus	-24489-04-29 17:31 J	-7223064.98	-7223064.77	-7223064.57	0.0293	0.0067
Venus	-24489-12-15 16:19 J	-7222835.01	-7222834.82	-7222834.61	0.0291	0.0094
Venus	-24488-08-02 12:43 J	-7222605.07	-7222604.97	-7222604.85	0.0290	0.0246
Moon	-24484-05-19 05:59 J	-7221219.47	-7221219.25	-7221219.03	0.0276	0.0102
Earth	-24484-05-19 08:52 J	-7221219.35	-7221219.13	-7221218.90	0.0276	0.0100 *
Mercury	-24483-12-26 08:23 J	-7220633.20	-7220633.15	-7220633.09	0.0271	0.0243
Mercury	-24482-03-24 18:57 J	-7220544.82	-7220544.71	-7220544.59	0.0270	0.0132
Mercury	-24482-06-21 05:45 J	-7220456.39	-7220456.26	-7220456.12	0.0270	0.0021

Mercury	-24482-09-17 16:47 J	-7220367.93	-7220367.80	-7220367.68	0.0269	0.0093
Mercury	-24482-12-15 03:35 J	-7220279.43	-7220279.35	-7220279.26	0.0269	0.0206
Venus	-24475-10-03 19:55 J	-7217794.73	-7217794.67	-7217794.60	0.0265	0.0251
Venus	-24474-05-20 19:26 J	-7217565.86	-7217565.69	-7217565.50	0.0267	0.0137
Venus	-24473-01-04 20:38 J	-7217336.85	-7217336.64	-7217336.42	0.0268	0.0018
Venus	-24473-08-20 23:31 J	-7217107.71	-7217107.52	-7217107.32	0.0269	0.0106
Venus	-24472-04-07 04:19 J	-7216878.43	-7216878.32	-7216878.21	0.0271	0.0231
Earth	-24469-11-15 01:40 J	-7215560.66	-7215560.43	-7215560.19	0.0284	0.0100
Moon	-24469-11-15 05:45 J	-7215560.50	-7215560.26	-7215560.03	0.0284	0.0094 *
Mercury	-24467-10-13 06:28 J	-7214863.31	-7214863.23	-7214863.14	0.0291	0.0254
Mercury	-24466-01-10 05:59 J	-7214774.42	-7214774.25	-7214774.07	0.0291	0.0060
Mercury	-24466-04-09 05:16 J	-7214685.44	-7214685.28	-7214685.12	0.0292	0.0133
Venus	-24460-03-25 02:52 J	-7212508.54	-7212508.38	-7212508.23	0.0295	0.0200
Venus	-24460-11-10 03:35 J	-7212278.56	-7212278.35	-7212278.14	0.0293	0.0037
Venus	-24459-06-28 01:55 J	-7212048.60	-7212048.42	-7212048.22	0.0291	0.0122
Venus	-24458-02-12 22:04 J	-7211818.64	-7211818.58	-7211818.50	0.0289	0.0272
Earth	-24455-05-14 10:19 J	-7210632.27	-7210632.07	-7210631.87	0.0277	0.0153
Moon	-24455-05-14 13:40 J	-7210632.13	-7210631.93	-7210631.72	0.0277	0.0145 *
Mercury	-24453-05-14 11:31 J	-7209901.03	-7209901.02	-7209901.00	0.0271	0.0267
Mercury	-24453-08-10 22:19 J	-7209812.68	-7209812.57	-7209812.46	0.0270	0.0156
Mercury	-24453-11-07 08:52 J	-7209724.26	-7209724.13	-7209723.99	0.0269	0.0045
Mercury	-24452-02-03 19:40 J	-7209635.81	-7209635.68	-7209635.55	0.0269	0.0067
Mercury	-24452-05-03 06:43 J	-7209547.32	-7209547.22	-7209547.12	0.0268	0.0179
Mars	-24449-02-25 05:02 J	-7208519.51	-7208519.29	-7208519.07	0.0264	0.0173
Venus	-24445-04-14 23:45 J	-7207008.61	-7207008.51	-7207008.41	0.0266	0.0233
Venus	-24445-11-29 23:16 J	-7206779.72	-7206779.53	-7206779.34	0.0267	0.0118
Venus	-24444-07-17 00:28 J	-7206550.69	-7206550.48	-7206550.26	0.0268	0.0005
Venus	-24443-03-03 03:21 J	-7206321.54	-7206321.36	-7206321.17	0.0270	0.0125
Venus	-24443-10-18 08:09 J	-7206092.23	-7206092.16	-7206092.07	0.0272	0.0251
Moon	-24439-11-23 00:57 J	-7204595.51	-7204595.46	-7204595.39	0.0286	0.0275

Earth	-24439-11-23 03:07 J	-7204595.45	-7204595.37	-7204595.27	0.0286	0.0265 *
Mercury	-24437-05-29 03:35 J	-7204042.51	-7204042.35	-7204042.19	0.0291	0.0124
Mercury	-24437-08-26 02:52 J	-7203953.55	-7203953.38	-7203953.21	0.0292	0.0069
Mercury	-24437-11-23 01:40 J	-7203864.50	-7203864.43	-7203864.35	0.0292	0.0260
Venus	-24431-10-05 05:59 J	-7201722.40	-7201722.25	-7201722.07	0.0294	0.0182
Venus	-24430-05-23 06:57 J	-7201492.42	-7201492.21	-7201492.00	0.0293	0.0019
Venus	-24429-01-08 05:16 J	-7201262.46	-7201262.28	-7201262.09	0.0291	0.0140
Earth	-24425-05-20 14:52 J	-7199668.07	-7199667.88	-7199667.68	0.0276	0.0166
Moon	-24425-05-20 15:50 J	-7199668.03	-7199667.84	-7199667.66	0.0276	0.0165 *
Mercury	-24424-12-29 00:28 J	-7199080.57	-7199080.48	-7199080.38	0.0271	0.0191
Mercury	-24423-03-27 11:16 J	-7198992.16	-7198992.03	-7198991.90	0.0270	0.0079
Mercury	-24423-06-23 22:04 J	-7198903.71	-7198903.58	-7198903.44	0.0270	0.0034
Mercury	-24423-09-20 08:52 J	-7198815.24	-7198815.13	-7198815.01	0.0269	0.0146
Mercury	-24423-12-17 19:55 J	-7198726.70	-7198726.67	-7198726.64	0.0269	0.0259
Venus	-24416-10-26 05:31 J	-7196222.39	-7196222.27	-7196222.15	0.0266	0.0214
Venus	-24415-06-12 05:31 J	-7195993.46	-7195993.27	-7195993.06	0.0267	0.0098
Venus	-24414-01-27 07:26 J	-7195764.40	-7195764.19	-7195763.98	0.0268	0.0023
Venus	-24414-09-13 10:33 J	-7195535.23	-7195535.06	-7195534.88	0.0270	0.0147
Earth	-24410-11-17 14:38 J	-7194009.13	-7194008.89	-7194008.64	0.0284	0.0019
Moon	-24410-11-17 16:33 J	-7194009.07	-7194008.81	-7194008.55	0.0284	0.0010 *
Mercury	-24408-10-16 04:33 J	-7193310.46	-7193310.31	-7193310.16	0.0291	0.0159
Mercury	-24407-01-13 03:50 J	-7193221.51	-7193221.34	-7193221.16	0.0292	0.0035
Mercury	-24407-04-12 02:52 J	-7193132.49	-7193132.38	-7193132.26	0.0292	0.0226
Mars	-24405-03-26 17:31 J	-7192418.03	-7192417.77	-7192417.51	0.0297	0.0136
Venus	-24401-04-16 17:45 J	-7190935.94	-7190935.76	-7190935.58	0.0294	0.0151
Venus	-24401-12-02 17:59 J	-7190705.96	-7190705.75	-7190705.54	0.0293	0.0012
Venus	-24400-07-20 15:50 J	-7190476.01	-7190475.84	-7190475.67	0.0291	0.0169
Moon	-24396-05-15 17:16 J	-7189081.02	-7189080.78	-7189080.54	0.0277	0.0080
Earth	-24396-05-15 17:59 J	-7189080.98	-7189080.75	-7189080.52	0.0277	0.0083 *
Mercury	-24394-05-18 03:50 J	-7188348.42	-7188348.34	-7188348.25	0.0271	0.0214

Mercury	-24394-08-14 14:38 J	-7188260.01	-7188259.89	-7188259.76	0.0270	0.0102
Mercury	-24394-11-11 01:26 J	-7188171.58	-7188171.44	-7188171.30	0.0269	0.0010
Mercury	-24393-02-07 12:14 J	-7188083.11	-7188082.99	-7188082.87	0.0269	0.0123
Mercury	-24393-05-05 23:02 J	-7187994.60	-7187994.54	-7187994.47	0.0268	0.0236
Mars	-24391-06-03 20:38 J	-7187235.80	-7187235.64	-7187235.45	0.0264	0.0212
Venus	-24386-05-08 10:19 J	-7185436.20	-7185436.07	-7185435.92	0.0266	0.0195
Venus	-24386-12-23 10:33 J	-7185207.26	-7185207.06	-7185206.85	0.0267	0.0078
Venus	-24385-08-08 12:28 J	-7184978.19	-7184977.98	-7184977.77	0.0269	0.0044
Venus	-24384-03-25 15:35 J	-7184749.01	-7184748.85	-7184748.67	0.0270	0.0168
Mercury	-24378-03-05 02:38 J	-7182578.51	-7182578.39	-7182578.27	0.0290	0.0218
Mercury	-24378-06-02 02:09 J	-7182489.59	-7182489.41	-7182489.23	0.0291	0.0024
Mercury	-24378-08-30 01:11 J	-7182400.59	-7182400.45	-7182400.30	0.0292	0.0167
Venus	-24372-03-11 20:09 J	-7180379.68	-7180379.66	-7180379.64	0.0295	0.0293
Venus	-24372-10-27 22:19 J	-7180149.76	-7180149.57	-7180149.38	0.0294	0.0130
Venus	-24371-06-14 22:19 J	-7179919.78	-7179919.57	-7179919.36	0.0292	0.0032
Venus	-24370-01-30 19:55 J	-7179689.83	-7179689.67	-7179689.51	0.0290	0.0187
Earth	-24366-05-22 22:47 J	-7178116.66	-7178116.55	-7178116.42	0.0276	0.0237
Moon	-24366-05-23 02:23 J	-7178116.51	-7178116.40	-7178116.26	0.0276	0.0234 *
Mercury	-24365-10-04 06:28 J	-7177616.28	-7177616.23	-7177616.18	0.0271	0.0248
Mercury	-24365-12-31 17:02 J	-7177527.90	-7177527.79	-7177527.67	0.0271	0.0136
Mercury	-24364-03-30 03:50 J	-7177439.47	-7177439.34	-7177439.20	0.0270	0.0023
Mercury	-24364-06-26 14:38 J	-7177351.02	-7177350.89	-7177350.76	0.0270	0.0090
Mercury	-24364-09-23 01:26 J	-7177262.52	-7177262.44	-7177262.34	0.0269	0.0203
Mars	-24361-07-21 08:38 J	-7176230.27	-7176230.14	-7176230.00	0.0264	0.0233
Venus	-24357-11-17 16:04 J	-7174649.99	-7174649.83	-7174649.67	0.0266	0.0176
Venus	-24356-07-04 16:47 J	-7174421.01	-7174420.80	-7174420.59	0.0267	0.0058
Venus	-24355-02-18 18:57 J	-7174191.91	-7174191.71	-7174191.50	0.0269	0.0064
Venus	-24355-10-05 22:33 J	-7173962.70	-7173962.56	-7173962.39	0.0270	0.0190
Moon	-24351-11-19 03:21 J	-7172457.61	-7172457.36	-7172457.11	0.0284	0.0078
Earth	-24351-11-19 05:59 J	-7172457.49	-7172457.25	-7172457.01	0.0284	0.0069 *

Mercury	-24349-07-22 03:50 J	-7171846.43	-7171846.34	-7171846.25	0.0290	0.0252
Mercury	-24349-10-19 03:21 J	-7171757.54	-7171757.36	-7171757.19	0.0291	0.0058
Mercury	-24348-01-16 02:23 J	-7171668.55	-7171668.40	-7171668.24	0.0292	0.0135
Venus	-24343-09-22 08:52 J	-7169593.22	-7169593.13	-7169593.02	0.0295	0.0262
Venus	-24342-05-10 10:47 J	-7169363.24	-7169363.05	-7169362.84	0.0294	0.0098
Venus	-24342-12-26 10:33 J	-7169133.27	-7169133.06	-7169132.85	0.0292	0.0064
Venus	-24341-08-12 07:40 J	-7168903.32	-7168903.18	-7168903.04	0.0290	0.0218
Moon	-24337-05-17 00:28 J	-7167529.72	-7167529.48	-7167529.23	0.0277	0.0010
Earth	-24337-05-17 04:19 J	-7167529.56	-7167529.32	-7167529.08	0.0277	0.0008 *
Mercury	-24335-02-21 10:04 J	-7166884.10	-7166884.08	-7166884.06	0.0271	0.0267
Mercury	-24335-05-20 20:38 J	-7166795.74	-7166795.64	-7166795.53	0.0270	0.0156
Mercury	-24335-08-17 07:26 J	-7166707.32	-7166707.19	-7166707.05	0.0270	0.0044
Mercury	-24335-11-13 18:14 J	-7166618.87	-7166618.74	-7166618.61	0.0269	0.0069
Mercury	-24334-02-10 05:02 J	-7166530.38	-7166530.29	-7166530.18	0.0268	0.0182
Venus	-24327-05-30 22:04 J	-7163863.75	-7163863.58	-7163863.40	0.0266	0.0155
Venus	-24326-01-14 22:47 J	-7163634.76	-7163634.55	-7163634.34	0.0268	0.0036
Venus	-24326-09-01 00:57 J	-7163405.66	-7163405.46	-7163405.26	0.0269	0.0087
Venus	-24325-04-17 04:47 J	-7163176.42	-7163176.30	-7163176.16	0.0271	0.0212
Earth	-24322-11-13 12:57 J	-7161871.10	-7161870.96	-7161870.80	0.0283	0.0225
Moon	-24322-11-13 15:21 J	-7161871.00	-7161870.86	-7161870.70	0.0283	0.0220 *
Mercury	-24319-03-08 02:09 J	-7161025.58	-7161025.41	-7161025.24	0.0291	0.0111
Mercury	-24319-06-05 01:26 J	-7160936.61	-7160936.44	-7160936.27	0.0291	0.0082
Mercury	-24319-09-02 00:14 J	-7160847.55	-7160847.49	-7160847.42	0.0292	0.0272
Mars	-24317-08-21 06:28 J	-7160128.52	-7160128.23	-7160127.94	0.0296	0.0052
Venus	-24313-04-03 14:38 J	-7158807.00	-7158806.89	-7158806.75	0.0295	0.0240
Venus	-24313-11-19 16:19 J	-7158577.02	-7158576.82	-7158576.61	0.0293	0.0076
Venus	-24312-07-07 15:21 J	-7158347.05	-7158346.86	-7158346.65	0.0291	0.0085
Venus	-24311-02-22 12:14 J	-7158117.10	-7158116.99	-7158116.86	0.0290	0.0238
Earth	-24308-05-11 23:16 J	-7156942.53	-7156942.53	-7156942.51	0.0279	0.0278
Moon	-24308-05-12 02:52 J	-7156942.41	-7156942.38	-7156942.33	0.0279	0.0274

Mercury	-24306-10-07 23:16 J	-7156063.63	-7156063.53	-7156063.44	0.0271	0.0190
Mercury	-24305-01-04 09:50 J	-7155975.22	-7155975.09	-7155974.96	0.0270	0.0077
Mercury	-24305-04-01 20:38 J	-7155886.77	-7155886.64	-7155886.50	0.0270	0.0036
Mercury	-24305-06-29 07:40 J	-7155798.30	-7155798.18	-7155798.07	0.0269	0.0149
Mercury	-24305-09-25 18:28 J	-7155709.76	-7155709.73	-7155709.70	0.0269	0.0262
Mars	-24303-10-29 01:40 J	-7154946.67	-7154946.43	-7154946.18	0.0265	0.0150
Venus	-24298-04-26 03:35 J	-7153306.41	-7153306.35	-7153306.28	0.0266	0.0251
Venus	-24298-12-11 03:07 J	-7153077.55	-7153077.37	-7153077.18	0.0267	0.0136
Venus	-24297-07-27 04:19 J	-7152848.53	-7152848.32	-7152848.10	0.0268	0.0017
Venus	-24296-03-13 07:11 J	-7152619.39	-7152619.20	-7152619.01	0.0269	0.0107
Venus	-24296-10-28 11:45 J	-7152390.12	-7152390.01	-7152389.90	0.0271	0.0232
Moon	-24292-11-20 19:11 J	-7150905.89	-7150905.70	-7150905.49	0.0285	0.0169
Earth	-24292-11-20 22:33 J	-7150905.75	-7150905.56	-7150905.34	0.0285	0.0160 *
Mercury	-24290-07-26 02:52 J	-7150293.53	-7150293.38	-7150293.22	0.0291	0.0147
Mercury	-24290-10-23 02:23 J	-7150204.58	-7150204.40	-7150204.22	0.0291	0.0047
Mercury	-24289-01-20 01:26 J	-7150115.54	-7150115.44	-7150115.34	0.0292	0.0238
Venus	-24284-10-15 03:35 J	-7148020.49	-7148020.35	-7148020.19	0.0295	0.0207
Venus	-24283-06-02 04:47 J	-7147790.50	-7147790.30	-7147790.08	0.0293	0.0044
Venus	-24282-01-18 03:50 J	-7147560.53	-7147560.34	-7147560.14	0.0292	0.0117
Venus	-24282-09-04 23:59 J	-7147330.56	-7147330.50	-7147330.41	0.0290	0.0269
Moon	-24278-05-19 14:09 J	-7145978.13	-7145977.91	-7145977.68	0.0276	0.0068
Earth	-24278-05-19 15:21 J	-7145978.09	-7145977.86	-7145977.62	0.0276	0.0070 *
Mercury	-24276-02-24 02:52 J	-7145331.46	-7145331.38	-7145331.29	0.0271	0.0208
Mercury	-24276-05-23 13:40 J	-7145243.06	-7145242.93	-7145242.80	0.0270	0.0096
Mercury	-24276-08-20 00:28 J	-7145154.62	-7145154.48	-7145154.35	0.0269	0.0017
Mercury	-24276-11-16 11:16 J	-7145066.15	-7145066.03	-7145065.91	0.0269	0.0129
Mercury	-24275-02-12 22:04 J	-7144977.63	-7144977.58	-7144977.52	0.0268	0.0242
Venus	-24269-11-05 09:50 J	-7142520.18	-7142520.09	-7142519.98	0.0266	0.0230
Venus	-24268-06-22 09:50 J	-7142291.28	-7142291.09	-7142290.90	0.0267	0.0114
Venus	-24267-02-06 11:02 J	-7142062.25	-7142062.04	-7142061.83	0.0268	0.0007

Venus	-24267-09-23 13:40 J	-7141833.11	-7141832.93	-7141832.74	0.0270	0.0130
Venus	-24266-05-10 18:14 J	-7141603.80	-7141603.74	-7141603.66	0.0271	0.0256
Earth	-24263-11-15 06:14 J	-7140319.45	-7140319.24	-7140319.01	0.0283	0.0135
Moon	-24263-11-15 10:04 J	-7140319.30	-7140319.08	-7140318.86	0.0283	0.0131 *
Mercury	-24261-12-12 02:09 J	-7139561.54	-7139561.41	-7139561.27	0.0290	0.0197
Mercury	-24260-03-11 01:40 J	-7139472.61	-7139472.43	-7139472.25	0.0291	0.0004
Mercury	-24260-06-08 00:43 J	-7139383.60	-7139383.47	-7139383.33	0.0292	0.0188
Venus	-24254-04-27 10:33 J	-7137234.23	-7137234.06	-7137233.90	0.0294	0.0183
Venus	-24254-12-13 11:16 J	-7137004.24	-7137004.03	-7137003.82	0.0293	0.0021
Venus	-24253-07-30 09:35 J	-7136774.28	-7136774.10	-7136773.91	0.0291	0.0138
Venus	-24252-03-17 05:31 J	-7136544.27	-7136544.27	-7136544.25	0.0289	0.0288
Earth	-24249-05-13 11:59 J	-7135391.17	-7135391.00	-7135390.83	0.0278	0.0197
Moon	-24249-05-13 13:40 J	-7135391.10	-7135390.93	-7135390.75	0.0278	0.0192 *
Mercury	-24247-07-14 05:16 J	-7134599.33	-7134599.28	-7134599.21	0.0271	0.0242
Mercury	-24247-10-10 16:04 J	-7134510.95	-7134510.83	-7134510.71	0.0271	0.0129
Mercury	-24246-01-07 02:52 J	-7134422.52	-7134422.38	-7134422.25	0.0270	0.0017
Mercury	-24246-04-05 13:40 J	-7134334.06	-7134333.93	-7134333.80	0.0269	0.0096
Mercury	-24246-07-03 00:28 J	-7134245.56	-7134245.48	-7134245.39	0.0269	0.0209
Venus	-24239-05-18 14:09 J	-7131734.03	-7131733.91	-7131733.78	0.0266	0.0212
Venus	-24238-01-02 14:09 J	-7131505.10	-7131504.91	-7131504.71	0.0267	0.0095
Venus	-24238-08-19 15:50 J	-7131276.05	-7131275.84	-7131275.63	0.0268	0.0026
Venus	-24237-04-04 18:57 J	-7131046.88	-7131046.71	-7131046.53	0.0270	0.0150
Moon	-24233-11-22 14:38 J	-7129353.98	-7129353.89	-7129353.78	0.0285	0.0259
Earth	-24233-11-22 15:21 J	-7129353.98	-7129353.86	-7129353.74	0.0285	0.0250 *
Mercury	-24231-05-01 02:38 J	-7128829.49	-7128829.39	-7128829.28	0.0290	0.0236
Mercury	-24231-07-29 02:09 J	-7128740.59	-7128740.41	-7128740.23	0.0291	0.0042
Mercury	-24231-10-26 01:26 J	-7128651.59	-7128651.44	-7128651.29	0.0292	0.0151
Mars	-24228-01-16 16:33 J	-7127838.09	-7127837.81	-7127837.52	0.0297	0.0071
Venus	-24225-11-06 22:47 J	-7126447.72	-7126447.55	-7126447.36	0.0294	0.0151
Venus	-24224-06-24 23:31 J	-7126217.73	-7126217.52	-7126217.31	0.0293	0.0013

Venus	-24223-02-09 21:35 J	-7125987.76	-7125987.60	-7125987.42	0.0291	0.0170
Earth	-24219-05-21 03:07 J	-7124426.56	-7124426.37	-7124426.15	0.0276	0.0148
Moon	-24219-05-21 05:45 J	-7124426.45	-7124426.26	-7124426.05	0.0276	0.0144 *
Mercury	-24218-12-01 09:07 J	-7123867.15	-7123867.12	-7123867.08	0.0271	0.0260
Mercury	-24217-02-27 19:55 J	-7123778.78	-7123778.67	-7123778.56	0.0270	0.0148
Mercury	-24217-05-26 06:43 J	-7123690.36	-7123690.22	-7123690.09	0.0270	0.0036
Mercury	-24217-08-22 17:31 J	-7123601.90	-7123601.77	-7123601.64	0.0269	0.0077
Mercury	-24217-11-19 04:19 J	-7123513.42	-7123513.32	-7123513.23	0.0269	0.0190
Mars	-24214-03-25 19:40 J	-7122656.96	-7122656.68	-7122656.39	0.0264	0.0064
Venus	-24210-11-28 20:38 J	-7120947.78	-7120947.64	-7120947.48	0.0266	0.0190
Venus	-24209-07-14 20:52 J	-7120718.82	-7120718.63	-7120718.42	0.0267	0.0074
Venus	-24208-02-28 22:47 J	-7120489.76	-7120489.55	-7120489.34	0.0269	0.0049
Venus	-24208-10-16 01:55 J	-7120260.57	-7120260.42	-7120260.25	0.0270	0.0174
Earth	-24204-11-16 23:02 J	-7118767.78	-7118767.54	-7118767.29	0.0284	0.0046
Moon	-24204-11-16 23:31 J	-7118767.77	-7118767.52	-7118767.26	0.0284	0.0040 *
Mercury	-24202-09-18 01:55 J	-7118097.45	-7118097.42	-7118097.39	0.0290	0.0285
Mercury	-24202-12-16 01:40 J	-7118008.60	-7118008.43	-7118008.26	0.0291	0.0091
Mercury	-24201-03-14 00:57 J	-7117919.63	-7117919.46	-7117919.29	0.0292	0.0102
Venus	-24196-10-02 03:07 J	-7115891.39	-7115891.37	-7115891.32	0.0295	0.0291
Venus	-24195-05-20 05:31 J	-7115661.45	-7115661.27	-7115661.07	0.0294	0.0128
Venus	-24194-01-05 05:59 J	-7115431.46	-7115431.25	-7115431.04	0.0292	0.0035
Venus	-24194-08-23 03:21 J	-7115201.51	-7115201.36	-7115201.19	0.0290	0.0191
Moon	-24190-05-15 21:50 J	-7113839.81	-7113839.59	-7113839.36	0.0277	0.0115
Earth	-24190-05-16 00:14 J	-7113839.71	-7113839.49	-7113839.27	0.0277	0.0117 *
Mercury	-24188-07-16 22:19 J	-7113046.67	-7113046.57	-7113046.47	0.0271	0.0181
Mercury	-24188-10-13 09:07 J	-7112958.25	-7112958.12	-7112957.99	0.0270	0.0069
Mercury	-24187-01-09 19:40 J	-7112869.81	-7112869.68	-7112869.54	0.0269	0.0045
Mercury	-24187-04-08 06:43 J	-7112781.33	-7112781.22	-7112781.11	0.0269	0.0156
Venus	-24180-06-09 23:59 J	-7110161.66	-7110161.50	-7110161.34	0.0266	0.0173
Venus	-24179-01-25 00:28 J	-7109932.69	-7109932.48	-7109932.27	0.0268	0.0055



Venus	-24179-09-11 02:23 J	-7109703.61	-7109703.40	-7109703.20	0.0269	0.0067
Venus	-24178-04-28 05:59 J	-7109474.39	-7109474.25	-7109474.10	0.0270	0.0192
Mercury	-24172-05-04 00:57 J	-7107276.61	-7107276.46	-7107276.29	0.0291	0.0137
Mercury	-24172-08-01 00:28 J	-7107187.65	-7107187.48	-7107187.30	0.0291	0.0058
Mercury	-24172-10-28 23:45 J	-7107098.60	-7107098.51	-7107098.42	0.0292	0.0250
Venus	-24166-04-14 14:52 J	-7105104.97	-7105104.88	-7105104.78	0.0296	0.0260
Venus	-24166-11-30 17:16 J	-7104874.98	-7104874.78	-7104874.58	0.0294	0.0095
Venus	-24165-07-17 17:02 J	-7104644.99	-7104644.79	-7104644.58	0.0292	0.0068
Venus	-24164-03-04 14:38 J	-7104415.02	-7104414.89	-7104414.75	0.0291	0.0223
Earth	-24160-05-22 14:23 J	-7102875.02	-7102874.90	-7102874.74	0.0276	0.0225
Moon	-24160-05-22 17:45 J	-7102874.89	-7102874.76	-7102874.60	0.0276	0.0222 *
Mercury	-24159-12-04 02:09 J	-7102314.50	-7102314.41	-7102314.32	0.0271	0.0200
Mercury	-24158-03-02 12:43 J	-7102226.09	-7102225.97	-7102225.84	0.0270	0.0089
Mercury	-24158-05-29 23:31 J	-7102137.65	-7102137.52	-7102137.38	0.0269	0.0024
Mercury	-24158-08-26 10:19 J	-7102049.18	-7102049.07	-7102048.95	0.0269	0.0137
Mercury	-24158-11-22 21:07 J	-7101960.66	-7101960.62	-7101960.57	0.0268	0.0250
Venus	-24151-05-06 07:26 J	-7099604.19	-7099604.19	-7099604.18	0.0265	0.0265
Venus	-24151-12-21 06:28 J	-7099375.40	-7099375.23	-7099375.05	0.0266	0.0151
Venus	-24150-08-07 06:57 J	-7099146.42	-7099146.21	-7099146.00	0.0267	0.0033
Venus	-24149-03-23 09:07 J	-7098917.32	-7098917.12	-7098916.92	0.0269	0.0090
Venus	-24149-11-07 12:57 J	-7098688.09	-7098687.96	-7098687.83	0.0271	0.0215
Moon	-24145-11-18 09:07 J	-7097216.37	-7097216.12	-7097215.87	0.0284	0.0047
Earth	-24145-11-18 12:43 J	-7097216.22	-7097215.97	-7097215.72	0.0284	0.0038 *
Mercury	-24143-09-21 00:28 J	-7096544.61	-7096544.48	-7096544.34	0.0291	0.0186
Mercury	-24143-12-18 23:59 J	-7096455.68	-7096455.50	-7096455.32	0.0291	0.0010
Mercury	-24142-03-17 23:16 J	-7096366.66	-7096366.53	-7096366.40	0.0292	0.0201
Mars	-24140-06-13 08:52 J	-7095548.36	-7095548.13	-7095547.87	0.0297	0.0162
Venus	-24137-10-24 22:04 J	-7094318.70	-7094318.58	-7094318.45	0.0295	0.0236
Venus	-24136-06-11 23:45 J	-7094088.71	-7094088.51	-7094088.30	0.0293	0.0073
Venus	-24135-01-27 23:31 J	-7093858.72	-7093858.52	-7093858.32	0.0292	0.0089

Venus	-24135-09-14 20:23 J	-7093628.75	-7093628.65	-7093628.53	0.0290	0.0243
Moon	-24131-05-17 08:09 J	-7092288.40	-7092288.16	-7092287.92	0.0277	0.0038
Earth	-24131-05-17 11:31 J	-7092288.25	-7092288.02	-7092287.78	0.0277	0.0040 *
Mercury	-24129-04-22 04:19 J	-7091582.38	-7091582.32	-7091582.25	0.0271	0.0235
Mercury	-24129-07-19 15:07 J	-7091493.99	-7091493.87	-7091493.75	0.0270	0.0123
Mercury	-24129-10-16 01:55 J	-7091405.56	-7091405.42	-7091405.29	0.0270	0.0013
Mercury	-24128-01-12 12:28 J	-7091317.10	-7091316.98	-7091316.85	0.0269	0.0102
Mercury	-24128-04-10 23:31 J	-7091228.60	-7091228.52	-7091228.44	0.0268	0.0214
Mars	-24126-08-19 18:43 J	-7090368.02	-7090367.72	-7090367.43	0.0264	0.0008
Venus	-24122-11-16 09:07 J	-7088818.18	-7088818.12	-7088818.04	0.0266	0.0250
Venus	-24121-07-02 08:38 J	-7088589.32	-7088589.14	-7088588.95	0.0267	0.0135
Venus	-24120-02-16 09:21 J	-7088360.32	-7088360.11	-7088359.90	0.0268	0.0016
Venus	-24120-10-03 11:45 J	-7088131.20	-7088131.01	-7088130.82	0.0269	0.0107
Venus	-24119-05-20 15:35 J	-7087901.94	-7087901.85	-7087901.73	0.0271	0.0233
Earth	-24116-11-12 17:31 J	-7086629.87	-7086629.77	-7086629.67	0.0282	0.0256
Moon	-24116-11-12 20:52 J	-7086629.73	-7086629.63	-7086629.50	0.0282	0.0249 *
Mercury	-24113-02-07 23:16 J	-7085812.63	-7085812.53	-7085812.43	0.0290	0.0238
Mercury	-24113-05-06 22:47 J	-7085723.73	-7085723.55	-7085723.37	0.0291	0.0044
Mercury	-24113-08-03 22:04 J	-7085634.73	-7085634.58	-7085634.42	0.0292	0.0150
Venus	-24107-05-07 07:55 J	-7083532.32	-7083532.17	-7083532.01	0.0295	0.0206
Venus	-24107-12-23 09:50 J	-7083302.30	-7083302.09	-7083301.88	0.0294	0.0041
Venus	-24106-08-10 09:07 J	-7083072.31	-7083072.12	-7083071.92	0.0292	0.0120
Venus	-24105-03-27 05:59 J	-7082842.31	-7082842.25	-7082842.17	0.0290	0.0273
Mercury	-24100-09-09 08:09 J	-7080850.20	-7080850.16	-7080850.12	0.0271	0.0256
Mercury	-24100-12-06 18:43 J	-7080761.83	-7080761.72	-7080761.61	0.0270	0.0144
Mercury	-24099-03-05 05:16 J	-7080673.41	-7080673.28	-7080673.14	0.0270	0.0034
Mercury	-24099-06-01 16:04 J	-7080584.96	-7080584.83	-7080584.70	0.0269	0.0081
Mercury	-24099-08-29 02:52 J	-7080496.47	-7080496.38	-7080496.28	0.0268	0.0193
Venus	-24092-05-28 15:21 J	-7078031.95	-7078031.86	-7078031.74	0.0265	0.0229
Venus	-24091-01-12 14:38 J	-7077803.07	-7077802.89	-7077802.69	0.0266	0.0114

Venus	-24091-08-29 15:35 J	-7077574.06	-7077573.85	-7077573.64	0.0268	0.0007
Venus	-24090-04-15 17:45 J	-7077344.94	-7077344.76	-7077344.57	0.0269	0.0130
Venus	-24090-11-30 22:04 J	-7077115.64	-7077115.58	-7077115.50	0.0271	0.0255
Moon	-24086-11-20 19:55 J	-7075664.88	-7075664.67	-7075664.44	0.0285	0.0125
Earth	-24086-11-20 22:33 J	-7075664.79	-7075664.56	-7075664.33	0.0285	0.0113 *
Mercury	-24084-09-23 21:50 J	-7074991.76	-7074991.59	-7074991.42	0.0291	0.0096
Mercury	-24084-12-21 21:21 J	-7074902.78	-7074902.61	-7074902.45	0.0292	0.0098
Mercury	-24083-03-20 20:09 J	-7074813.67	-7074813.66	-7074813.63	0.0293	0.0290
Venus	-24078-11-17 14:09 J	-7072746.07	-7072745.91	-7072745.74	0.0295	0.0184
Venus	-24077-07-04 15:50 J	-7072516.05	-7072515.84	-7072515.63	0.0293	0.0020
Venus	-24076-02-19 14:52 J	-7072286.06	-7072285.88	-7072285.69	0.0291	0.0140
Earth	-24072-05-18 20:52 J	-7070736.87	-7070736.63	-7070736.39	0.0276	0.0034
Moon	-24072-05-18 20:52 J	-7070736.86	-7070736.63	-7070736.39	0.0276	0.0033 *
Mercury	-24070-04-25 20:52 J	-7070029.72	-7070029.63	-7070029.53	0.0270	0.0179
Mercury	-24070-07-23 07:40 J	-7069941.31	-7069941.18	-7069941.05	0.0270	0.0068
Mercury	-24070-10-19 18:14 J	-7069852.87	-7069852.74	-7069852.60	0.0269	0.0046
Mercury	-24069-01-16 05:02 J	-7069764.40	-7069764.29	-7069764.18	0.0268	0.0157
Venus	-24063-12-08 16:19 J	-7067245.94	-7067245.82	-7067245.69	0.0266	0.0214
Venus	-24062-07-25 15:50 J	-7067017.03	-7067016.84	-7067016.64	0.0267	0.0098
Venus	-24061-03-10 16:47 J	-7066788.01	-7066787.80	-7066787.59	0.0268	0.0023
Venus	-24061-10-25 19:11 J	-7066558.87	-7066558.70	-7066558.52	0.0270	0.0146
Earth	-24057-11-13 23:45 J	-7065078.69	-7065078.51	-7065078.32	0.0283	0.0189
Moon	-24057-11-14 01:40 J	-7065078.63	-7065078.43	-7065078.23	0.0283	0.0179 *
Mercury	-24054-02-10 19:26 J	-7064259.84	-7064259.69	-7064259.53	0.0291	0.0157
Mercury	-24054-05-10 19:11 J	-7064170.88	-7064170.70	-7064170.52	0.0291	0.0039
Mercury	-24054-08-07 18:14 J	-7064081.84	-7064081.74	-7064081.63	0.0292	0.0231
Mars	-24052-11-07 11:59 J	-7063259.16	-7063259.00	-7063258.82	0.0297	0.0239
Venus	-24048-05-29 22:19 J	-7061959.74	-7061959.57	-7061959.38	0.0295	0.0156
Venus	-24047-01-14 23:59 J	-7061729.71	-7061729.50	-7061729.29	0.0294	0.0011
Venus	-24047-09-01 22:47 J	-7061499.71	-7061499.55	-7061499.37	0.0292	0.0170

Moon	-24043-05-13 22:47 J	-7060149.70	-7060149.55	-7060149.41	0.0278	0.0224
Earth	-24043-05-13 22:47 J	-7060149.68	-7060149.55	-7060149.41	0.0278	0.0227 *
Mercury	-24041-09-12 00:14 J	-7059297.57	-7059297.49	-7059297.40	0.0271	0.0204
Mercury	-24041-12-09 11:02 J	-7059209.17	-7059209.04	-7059208.91	0.0270	0.0091
Mercury	-24040-03-07 21:35 J	-7059120.73	-7059120.60	-7059120.46	0.0269	0.0022
Mercury	-24040-06-04 08:23 J	-7059032.26	-7059032.15	-7059032.03	0.0269	0.0133
Mercury	-24040-08-31 19:11 J	-7058943.75	-7058943.70	-7058943.64	0.0268	0.0246
Mars	-24037-01-14 02:09 J	-7058078.69	-7058078.41	-7058078.12	0.0264	0.0064
Jupiter	-24035-03-23 17:02 J	-7057279.03	-7057278.79	-7057278.50	0.0263	0.0216
Venus	-24033-06-19 22:04 J	-7056459.72	-7056459.58	-7056459.43	0.0265	0.0193
Venus	-24032-02-03 21:35 J	-7056230.80	-7056230.60	-7056230.40	0.0266	0.0076
Venus	-24032-09-20 22:33 J	-7056001.77	-7056001.56	-7056001.35	0.0268	0.0045
Venus	-24031-05-08 00:57 J	-7055772.62	-7055772.46	-7055772.29	0.0269	0.0169
Earth	-24027-11-22 04:47 J	-7054113.49	-7054113.30	-7054113.11	0.0285	0.0181
Moon	-24027-11-22 06:57 J	-7054113.38	-7054113.21	-7054113.03	0.0285	0.0195 *
Mercury	-24025-06-29 18:14 J	-7053527.86	-7053527.74	-7053527.61	0.0291	0.0211
Mercury	-24025-09-26 17:59 J	-7053438.93	-7053438.75	-7053438.57	0.0292	0.0016
Mercury	-24025-12-24 17:16 J	-7053349.92	-7053349.78	-7053349.64	0.0292	0.0178
Venus	-24019-12-10 04:19 J	-7051173.51	-7051173.32	-7051173.13	0.0295	0.0133
Venus	-24018-07-28 05:31 J	-7050943.48	-7050943.27	-7050943.06	0.0293	0.0031
Venus	-24017-03-14 04:04 J	-7050713.49	-7050713.33	-7050713.17	0.0291	0.0189
Earth	-24013-05-20 03:21 J	-7049185.58	-7049185.36	-7049185.13	0.0276	0.0100
Moon	-24013-05-20 06:57 J	-7049185.43	-7049185.21	-7049184.98	0.0276	0.0096 *
Mercury	-24011-01-30 02:23 J	-7048565.46	-7048565.40	-7048565.34	0.0271	0.0239
Mercury	-24011-04-28 12:57 J	-7048477.07	-7048476.96	-7048476.84	0.0270	0.0128
Mercury	-24011-07-25 23:45 J	-7048388.65	-7048388.51	-7048388.38	0.0269	0.0016
Mercury	-24011-10-22 10:19 J	-7048300.19	-7048300.07	-7048299.94	0.0269	0.0097
Mercury	-24010-01-18 21:07 J	-7048211.70	-7048211.62	-7048211.53	0.0268	0.0209
Venus	-24004-12-30 22:04 J	-7045673.73	-7045673.58	-7045673.42	0.0266	0.0179
Venus	-24003-08-16 21:35 J	-7045444.81	-7045444.60	-7045444.40	0.0267	0.0062

Venus -24002-04-02 22:33 J -7045215.77 -7045215.56 -7045215.35 0.0268 0.0059

Venus -24002-11-18 01:26 J -7044986.60 -7044986.44 -7044986.29 0.0270 0.0183

# 24TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 24th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-23998-11-15 23:59 J		-7043527.73	-7043527.50	-7043527.27	0.0283	0.0117	
Earth	-23998-11-16 02:38 J		-7043527.61	-7043527.39	-7043527.17	0.0283	0.0130	*
Mercury	-23996-11-16 14:38 J		-7042795.92	-7042795.89	-7042795.84	0.0290	0.0281	
Mercury	-23995-02-13 14:38 J		-7042707.06	-7042706.89	-7042706.71	0.0291	0.0085	
Mercury	-23995-05-13 14:09 J		-7042618.08	-7042617.91	-7042617.74	0.0292	0.0110	
Venus	-23990-11-04 06:43 J		-7040617.30	-7040617.22	-7040617.15	0.0296	0.0275	
Venus	-23989-06-21 10:04 J		-7040387.28	-7040387.08	-7040386.88	0.0295	0.0108	
Venus	-23988-02-06 11:16 J		-7040157.24	-7040157.03	-7040156.82	0.0293	0.0057	
Venus	-23988-09-24 09:35 J		-7039927.23	-7039927.10	-7039926.94	0.0292	0.0216	
Moon	-23984-05-14 23:59 J		-7038598.70	-7038598.50	-7038598.31	0.0278	0.0167	
Earth	-23984-05-15 03:21 J		-7038598.55	-7038598.36	-7038598.16	0.0278	0.0164	*
Mercury	-23982-06-19 05:31 J		-7037833.29	-7037833.27	-7037833.25	0.0271	0.0267	
Mercury	-23982-09-15 16:04 J		-7037744.93	-7037744.83	-7037744.72	0.0270	0.0155	
Mercury	-23982-12-13 02:52 J		-7037656.52	-7037656.38	-7037656.25	0.0270	0.0043	
Mercury	-23981-03-10 13:26 J		-7037568.07	-7037567.94	-7037567.81	0.0269	0.0070	
Mercury	-23981-06-07 00:14 J		-7037479.59	-7037479.49	-7037479.39	0.0268	0.0182	
Venus	-23974-07-13 03:07 J		-7034887.53	-7034887.37	-7034887.20	0.0265	0.0158	

Venus	-23973-02-27 02:38 J	-7034658.60	-7034658.39	-7034658.18	0.0266	0.0041
Venus	-23973-10-13 03:50 J	-7034429.54	-7034429.34	-7034429.14	0.0268	0.0080
Venus	-23972-05-30 06:28 J	-7034200.36	-7034200.23	-7034200.08	0.0270	0.0205
Earth	-23968-11-23 06:14 J	-7032562.36	-7032562.24	-7032562.09	0.0285	0.0241
Moon	-23968-11-23 10:04 J	-7032562.19	-7032562.08	-7032561.97	0.0285	0.0255 *
Mercury	-23966-07-03 13:11 J	-7031975.11	-7031974.95	-7031974.80	0.0291	0.0143
Mercury	-23966-09-30 12:43 J	-7031886.15	-7031885.97	-7031885.80	0.0292	0.0053
Mercury	-23966-12-28 11:45 J	-7031797.10	-7031797.01	-7031796.91	0.0293	0.0246
Mars	-23963-04-02 23:31 J	-7030970.58	-7030970.52	-7030970.42	0.0297	0.0286
Venus	-23960-05-16 11:59 J	-7029831.10	-7029831.00	-7029830.88	0.0296	0.0253
Venus	-23959-01-01 15:21 J	-7029601.06	-7029600.86	-7029600.66	0.0295	0.0086
Venus	-23959-08-19 16:04 J	-7029371.03	-7029370.83	-7029370.62	0.0293	0.0078
Venus	-23958-04-06 14:23 J	-7029141.02	-7029140.90	-7029140.78	0.0291	0.0234
Earth	-23954-05-22 06:57 J	-7027634.40	-7027634.21	-7027634.01	0.0276	0.0161
Moon	-23954-05-22 08:23 J	-7027634.35	-7027634.15	-7027633.93	0.0276	0.0152 *
Mercury	-23952-02-01 17:59 J	-7027012.84	-7027012.75	-7027012.65	0.0270	0.0193
Mercury	-23952-05-01 04:47 J	-7026924.43	-7026924.30	-7026924.18	0.0269	0.0081
Mercury	-23952-07-28 15:21 J	-7026835.99	-7026835.86	-7026835.72	0.0269	0.0031
Mercury	-23952-10-25 02:09 J	-7026747.53	-7026747.41	-7026747.30	0.0268	0.0144
Mercury	-23951-01-21 12:57 J	-7026659.00	-7026658.96	-7026658.92	0.0268	0.0256
Mars	-23949-06-08 07:40 J	-7025790.44	-7025790.18	-7025789.89	0.0264	0.0097
Venus	-23945-06-07 04:04 J	-7024330.36	-7024330.33	-7024330.27	0.0264	0.0259
Venus	-23944-01-22 02:23 J	-7024101.57	-7024101.40	-7024101.22	0.0266	0.0145
Venus	-23944-09-08 01:55 J	-7023872.63	-7023872.42	-7023872.21	0.0267	0.0027
Venus	-23943-04-25 02:52 J	-7023643.57	-7023643.38	-7023643.18	0.0268	0.0095
Venus	-23943-12-10 05:45 J	-7023414.38	-7023414.26	-7023414.13	0.0270	0.0219
Moon	-23939-11-16 22:47 J	-7021976.78	-7021976.55	-7021976.31	0.0283	0.0065
Earth	-23939-11-17 02:09 J	-7021976.65	-7021976.41	-7021976.17	0.0283	0.0078 *
Mercury	-23937-11-19 08:52 J	-7021243.24	-7021243.13	-7021243.00	0.0290	0.0218
Mercury	-23936-02-16 08:38 J	-7021154.32	-7021154.14	-7021153.95	0.0291	0.0023

Mercury	-23936-05-16 07:55 J	-7021065.31	-7021065.17	-7021065.02	0.0292	0.0173
Venus	-23931-11-26 16:19 J	-7019044.95	-7019044.82	-7019044.69	0.0296	0.0231
Venus	-23930-07-14 19:26 J	-7018814.89	-7018814.69	-7018814.48	0.0295	0.0063
Venus	-23929-02-29 20:23 J	-7018584.85	-7018584.65	-7018584.45	0.0293	0.0102
Venus	-23929-10-16 18:43 J	-7018354.81	-7018354.72	-7018354.62	0.0291	0.0258
Moon	-23925-05-16 03:35 J	-7017047.56	-7017047.35	-7017047.13	0.0278	0.0111
Earth	-23925-05-16 05:16 J	-7017047.50	-7017047.28	-7017047.05	0.0278	0.0107 *
Mercury	-23923-06-21 20:52 J	-7016280.70	-7016280.63	-7016280.55	0.0271	0.0223
Mercury	-23923-09-18 07:26 J	-7016192.31	-7016192.19	-7016192.06	0.0270	0.0111
Mercury	-23923-12-15 18:14 J	-7016103.88	-7016103.74	-7016103.61	0.0269	0.0004
Mercury	-23922-03-14 04:47 J	-7016015.42	-7016015.30	-7016015.17	0.0269	0.0115
Mercury	-23922-06-10 15:35 J	-7015926.91	-7015926.85	-7015926.77	0.0268	0.0227
Venus	-23916-12-18 08:38 J	-7013544.22	-7013544.14	-7013544.05	0.0264	0.0239
Venus	-23915-08-04 06:57 J	-7013315.39	-7013315.21	-7013315.02	0.0265	0.0125
Venus	-23914-03-21 06:43 J	-7013086.44	-7013086.22	-7013086.01	0.0266	0.0009
Venus	-23914-11-05 07:40 J	-7012857.36	-7012857.18	-7012856.98	0.0268	0.0115
Venus	-23913-06-21 10:47 J	-7012628.13	-7012628.05	-7012627.94	0.0270	0.0239
Mercury	-23907-04-08 06:57 J	-7010511.25	-7010511.21	-7010511.15	0.0290	0.0278
Mercury	-23907-07-06 06:57 J	-7010422.39	-7010422.21	-7010422.04	0.0291	0.0082
Mercury	-23907-10-03 06:14 J	-7010333.40	-7010333.24	-7010333.07	0.0292	0.0114
Venus	-23901-06-07 20:38 J	-7008258.78	-7008258.64	-7008258.48	0.0296	0.0210
Venus	-23900-01-23 23:45 J	-7008028.72	-7008028.51	-7008028.30	0.0295	0.0043
Venus	-23900-09-11 00:14 J	-7007798.68	-7007798.49	-7007798.29	0.0293	0.0121
Venus	-23899-04-28 22:04 J	-7007568.63	-7007568.58	-7007568.50	0.0291	0.0276
Moon	-23895-05-23 04:33 J	-7006083.47	-7006083.31	-7006083.14	0.0275	0.0202
Earth	-23895-05-23 07:40 J	-7006083.33	-7006083.18	-7006083.03	0.0275	0.0215 *
Mercury	-23894-11-08 22:47 J	-7005548.58	-7005548.55	-7005548.52	0.0271	0.0261
Mercury	-23893-02-05 09:21 J	-7005460.22	-7005460.11	-7005460.00	0.0270	0.0150
Mercury	-23893-05-03 19:55 J	-7005371.80	-7005371.67	-7005371.53	0.0269	0.0038
Mercury	-23893-07-31 06:43 J	-7005283.35	-7005283.22	-7005283.09	0.0269	0.0075

Mercury	-23893-10-27 17:16 J	-7005194.87	-7005194.78	-7005194.68	0.0268	0.0187
Venus	-23886-06-30 07:40 J	-7002758.28	-7002758.18	-7002758.07	0.0264	0.0227
Venus	-23885-02-14 05:45 J	-7002529.44	-7002529.26	-7002529.06	0.0265	0.0113
Venus	-23885-09-30 05:31 J	-7002300.49	-7002300.27	-7002300.06	0.0267	0.0008
Venus	-23884-05-17 06:28 J	-7002071.41	-7002071.23	-7002071.04	0.0268	0.0128
Venus	-23883-01-01 09:35 J	-7001842.17	-7001842.10	-7001842.03	0.0270	0.0252
Earth	-23880-11-17 22:47 J	-7000425.79	-7000425.55	-7000425.30	0.0283	0.0031
Moon	-23880-11-17 23:45 J	-7000425.75	-7000425.51	-7000425.27	0.0283	0.0017 *
Mercury	-23878-11-23 02:09 J	-6999690.56	-6999690.41	-6999690.26	0.0291	0.0162
Mercury	-23877-02-20 01:40 J	-6999601.60	-6999601.43	-6999601.25	0.0291	0.0034
Mercury	-23877-05-19 00:57 J	-6999512.57	-6999512.46	-6999512.34	0.0292	0.0228
Mars	-23875-08-26 06:57 J	-6998683.25	-6998683.21	-6998683.14	0.0297	0.0292
Venus	-23872-12-18 23:02 J	-6997472.69	-6997472.54	-6997472.37	0.0296	0.0191
Venus	-23871-08-06 02:23 J	-6997242.61	-6997242.40	-6997242.19	0.0295	0.0022
Venus	-23870-03-24 03:07 J	-6997012.56	-6997012.37	-6997012.19	0.0293	0.0142
Earth	-23866-05-18 04:04 J	-6995496.56	-6995496.33	-6995496.09	0.0278	0.0057
Moon	-23866-05-18 06:43 J	-6995496.45	-6995496.22	-6995495.99	0.0278	0.0063 *
Mercury	-23864-06-24 11:59 J	-6994728.10	-6994728.00	-6994727.90	0.0271	0.0183
Mercury	-23864-09-20 22:33 J	-6994639.69	-6994639.56	-6994639.43	0.0270	0.0070
Mercury	-23864-12-18 09:07 J	-6994551.25	-6994551.12	-6994550.98	0.0269	0.0043
Mercury	-23863-03-16 19:55 J	-6994462.78	-6994462.67	-6994462.56	0.0269	0.0155
Mars	-23861-11-01 21:07 J	-6993501.87	-6993501.62	-6993501.37	0.0263	0.0139
Venus	-23856-01-09 11:45 J	-6991972.14	-6991972.01	-6991971.88	0.0264	0.0208
Venus	-23856-08-26 09:50 J	-6991743.28	-6991743.09	-6991742.89	0.0265	0.0093
Venus	-23855-04-12 09:35 J	-6991514.31	-6991514.10	-6991513.89	0.0266	0.0026
Venus	-23855-11-27 10:47 J	-6991285.22	-6991285.05	-6991284.87	0.0268	0.0148
Mercury	-23848-04-10 23:59 J	-6988958.61	-6988958.50	-6988958.38	0.0291	0.0223
Mercury	-23848-07-08 23:59 J	-6988869.68	-6988869.50	-6988869.32	0.0291	0.0027
Mercury	-23848-10-05 23:16 J	-6988780.67	-6988780.53	-6988780.38	0.0292	0.0169
Venus	-23842-07-01 04:19 J	-6986686.50	-6986686.32	-6986686.15	0.0296	0.0168



Venus	-23841-02-16 06:57 J	-6986456.42	-6986456.21	-6986456.00	0.0295	0.0003
Venus	-23841-10-03 07:11 J	-6986226.37	-6986226.20	-6986226.02	0.0293	0.0162
Moon	-23836-05-24 03:50 J	-6984532.42	-6984532.34	-6984532.24	0.0275	0.0253
Earth	-23836-05-24 06:43 J	-6984532.28	-6984532.22	-6984532.16	0.0275	0.0266 *
Mercury	-23835-11-11 13:40 J	-6983996.00	-6983995.93	-6983995.85	0.0270	0.0221
Mercury	-23834-02-08 00:14 J	-6983907.61	-6983907.49	-6983907.36	0.0270	0.0110
Mercury	-23834-05-07 11:02 J	-6983819.18	-6983819.04	-6983818.91	0.0269	0.0005
Mercury	-23834-08-03 21:35 J	-6983730.72	-6983730.60	-6983730.47	0.0268	0.0116
Mercury	-23834-10-31 08:23 J	-6983642.22	-6983642.15	-6983642.08	0.0268	0.0228
Venus	-23827-07-22 10:19 J	-6981186.20	-6981186.07	-6981185.92	0.0264	0.0196
Venus	-23826-03-08 08:38 J	-6980957.34	-6980957.14	-6980956.94	0.0265	0.0080
Venus	-23826-10-23 08:09 J	-6980728.36	-6980728.16	-6980727.94	0.0267	0.0040
Venus	-23825-06-08 09:35 J	-6980499.27	-6980499.10	-6980498.93	0.0268	0.0161
Earth	-23821-11-18 18:57 J	-6978874.96	-6978874.71	-6978874.47	0.0283	0.0016
Moon	-23821-11-18 22:33 J	-6978874.81	-6978874.56	-6978874.31	0.0283	0.0031 *
Mercury	-23819-11-25 18:57 J	-6978137.88	-6978137.71	-6978137.54	0.0291	0.0109
Mercury	-23818-02-22 18:28 J	-6978048.90	-6978048.73	-6978048.56	0.0291	0.0087
Mercury	-23818-05-22 17:31 J	-6977959.81	-6977959.77	-6977959.71	0.0292	0.0280
Venus	-23812-01-10 05:02 J	-6975900.47	-6975900.29	-6975900.10	0.0296	0.0151
Venus	-23812-08-28 07:55 J	-6975670.38	-6975670.17	-6975669.95	0.0295	0.0019
Venus	-23811-04-15 08:23 J	-6975440.31	-6975440.15	-6975439.98	0.0293	0.0181
Earth	-23807-05-19 01:11 J	-6973945.69	-6973945.45	-6973945.21	0.0278	0.0009
Moon	-23807-05-19 04:19 J	-6973945.56	-6973945.32	-6973945.07	0.0278	0.0017 *
Mercury	-23805-03-30 16:04 J	-6973263.87	-6973263.83	-6973263.79	0.0271	0.0257
Mercury	-23805-06-27 02:38 J	-6973175.50	-6973175.39	-6973175.28	0.0271	0.0145
Mercury	-23805-09-23 13:11 J	-6973087.08	-6973086.95	-6973086.81	0.0270	0.0033
Mercury	-23805-12-20 23:59 J	-6972998.63	-6972998.50	-6972998.37	0.0269	0.0081
Mercury	-23804-03-19 10:47 J	-6972910.14	-6972910.05	-6972909.96	0.0269	0.0194
Venus	-23797-02-01 14:23 J	-6970400.05	-6970399.90	-6970399.74	0.0264	0.0178
Venus	-23797-09-17 12:43 J	-6970171.17	-6970170.97	-6970170.76	0.0265	0.0062

Venus	-23796-05-04 12:28 J	-6969942.19	-6969941.98	-6969941.77	0.0266	0.0058
Venus	-23796-12-19 13:55 J	-6969713.07	-6969712.92	-6969712.76	0.0268	0.0180
Moon	-23792-11-12 20:38 J	-6968288.72	-6968288.64	-6968288.56	0.0281	0.0266
Mercury	-23789-04-13 16:47 J	-6967405.94	-6967405.80	-6967405.64	0.0291	0.0170
Mercury	-23789-07-11 16:33 J	-6967316.99	-6967316.81	-6967316.63	0.0292	0.0027
Mercury	-23789-10-08 15:50 J	-6967227.95	-6967227.84	-6967227.72	0.0292	0.0221
Venus	-23783-07-23 10:04 J	-6965114.26	-6965114.08	-6965113.88	0.0296	0.0129
Venus	-23782-03-10 12:43 J	-6964884.18	-6964883.97	-6964883.76	0.0295	0.0040
Venus	-23782-10-26 12:43 J	-6964654.12	-6964653.97	-6964653.81	0.0293	0.0201
Mercury	-23776-11-14 04:33 J	-6962443.41	-6962443.31	-6962443.21	0.0270	0.0183
Mercury	-23775-02-10 15:07 J	-6962355.00	-6962354.87	-6962354.74	0.0270	0.0071
Mercury	-23775-05-10 01:55 J	-6962266.56	-6962266.42	-6962266.29	0.0269	0.0043
Mercury	-23775-08-06 12:28 J	-6962178.09	-6962177.98	-6962177.87	0.0268	0.0155
Mercury	-23775-11-02 23:31 J	-6962089.52	-6962089.52	-6962089.52	0.0268	0.0268
Mars	-23772-03-27 17:31 J	-6961213.99	-6961213.77	-6961213.52	0.0263	0.0159
Venus	-23768-08-13 13:11 J	-6959614.11	-6959613.95	-6959613.78	0.0264	0.0165
Venus	-23767-03-30 11:31 J	-6959385.23	-6959385.02	-6959384.81	0.0265	0.0048
Venus	-23767-11-14 11:16 J	-6959156.24	-6959156.03	-6959155.83	0.0267	0.0072
Venus	-23766-07-01 12:43 J	-6958927.11	-6958926.97	-6958926.82	0.0268	0.0194
Earth	-23762-11-20 14:38 J	-6957324.13	-6957323.89	-6957323.65	0.0283	0.0060
Moon	-23762-11-20 15:21 J	-6957324.10	-6957323.86	-6957323.61	0.0283	0.0075 *
Mercury	-23760-08-31 11:45 J	-6956674.09	-6956674.01	-6956673.92	0.0290	0.0253
Mercury	-23760-11-28 11:31 J	-6956585.19	-6956585.02	-6956584.84	0.0291	0.0057
Mercury	-23759-02-25 11:02 J	-6956496.20	-6956496.04	-6956495.88	0.0292	0.0138
Venus	-23754-06-17 05:45 J	-6954558.32	-6954558.26	-6954558.19	0.0297	0.0282
Venus	-23753-02-02 10:33 J	-6954328.25	-6954328.06	-6954327.85	0.0296	0.0113
Venus	-23753-09-19 13:26 J	-6954098.15	-6954097.94	-6954097.73	0.0295	0.0057
Venus	-23752-05-07 13:40 J	-6953868.07	-6953867.93	-6953867.79	0.0293	0.0219
Moon	-23748-05-19 21:07 J	-6952394.87	-6952394.62	-6952394.37	0.0278	0.0026
Earth	-23748-05-19 22:04 J	-6952394.82	-6952394.58	-6952394.34	0.0278	0.0038 *

Mercury	-23746-04-03 06:43 J	-6951711.29	-6951711.22	-6951711.14	0.0272	0.0220
Mercury	-23746-06-30 17:16 J	-6951622.90	-6951622.78	-6951622.65	0.0271	0.0108
Mercury	-23746-09-27 04:04 J	-6951534.47	-6951534.33	-6951534.20	0.0270	0.0006
Mercury	-23746-12-24 14:52 J	-6951446.00	-6951445.88	-6951445.76	0.0269	0.0119
Mercury	-23745-03-22 01:40 J	-6951357.50	-6951357.43	-6951357.37	0.0269	0.0233
Venus	-23739-07-09 20:09 J	-6949056.69	-6949056.66	-6949056.63	0.0263	0.0260
Venus	-23738-02-23 17:16 J	-6948827.95	-6948827.78	-6948827.60	0.0264	0.0147
Venus	-23738-10-10 15:50 J	-6948599.05	-6948598.84	-6948598.63	0.0265	0.0030
Venus	-23737-05-26 15:35 J	-6948370.04	-6948369.85	-6948369.64	0.0267	0.0091
Venus	-23736-01-10 17:16 J	-6948140.90	-6948140.78	-6948140.65	0.0268	0.0213
Moon	-23733-11-13 21:07 J	-6946737.76	-6946737.62	-6946737.46	0.0281	0.0220
Earth	-23733-11-13 21:07 J	-6946737.74	-6946737.62	-6946737.47	0.0281	0.0235 *
Mercury	-23730-04-17 10:04 J	-6945853.25	-6945853.08	-6945852.91	0.0291	0.0114
Mercury	-23730-07-15 09:35 J	-6945764.27	-6945764.10	-6945763.92	0.0292	0.0082
Mercury	-23730-10-12 08:52 J	-6945675.19	-6945675.13	-6945675.07	0.0292	0.0276
Venus	-23725-12-27 11:59 J	-6943772.09	-6943772.00	-6943771.89	0.0297	0.0259
Venus	-23724-08-14 16:33 J	-6943542.01	-6943541.81	-6943541.61	0.0296	0.0089
Venus	-23723-04-01 18:43 J	-6943311.92	-6943311.72	-6943311.51	0.0294	0.0079
Venus	-23723-11-17 18:28 J	-6943081.84	-6943081.73	-6943081.60	0.0293	0.0240
Earth	-23719-05-14 14:52 J	-6941808.00	-6941807.88	-6941807.75	0.0279	0.0238
Moon	-23719-05-14 16:04 J	-6941807.92	-6941807.83	-6941807.72	0.0279	0.0249 *
Mercury	-23717-08-20 08:52 J	-6940979.17	-6940979.13	-6940979.09	0.0271	0.0256
Mercury	-23717-11-16 19:26 J	-6940890.80	-6940890.69	-6940890.58	0.0270	0.0144
Mercury	-23716-02-13 05:59 J	-6940802.38	-6940802.25	-6940802.11	0.0270	0.0031
Mercury	-23716-05-12 16:47 J	-6940713.93	-6940713.80	-6940713.67	0.0269	0.0082
Mercury	-23716-08-09 03:21 J	-6940625.45	-6940625.36	-6940625.26	0.0268	0.0195
Mars	-23714-07-04 08:09 J	-6939931.18	-6939931.16	-6939931.10	0.0264	0.0262
Venus	-23709-01-19 19:55 J	-6938270.74	-6938270.67	-6938270.59	0.0263	0.0247
Venus	-23709-09-04 17:02 J	-6938041.97	-6938041.79	-6938041.61	0.0264	0.0133
Venus	-23708-04-21 15:21 J	-6937813.07	-6937812.86	-6937812.65	0.0265	0.0016

Venus	-23708-12-06 15:07 J	-6937584.06	-6937583.87	-6937583.67	0.0267	0.0105
Venus	-23707-07-23 16:47 J	-6937354.90	-6937354.80	-6937354.68	0.0268	0.0228
Moon	-23703-11-21 08:52 J	-6935773.35	-6935773.13	-6935772.90	0.0283	0.0124
Earth	-23703-11-21 12:43 J	-6935773.20	-6935772.97	-6935772.74	0.0283	0.0110 *
Mercury	-23701-09-03 05:02 J	-6935121.42	-6935121.29	-6935121.15	0.0290	0.0196
Mercury	-23701-12-01 04:47 J	-6935032.48	-6935032.30	-6935032.12	0.0291	0.0005
Mercury	-23700-02-28 04:04 J	-6934943.46	-6934943.33	-6934943.19	0.0292	0.0195
Mars	-23698-06-12 23:02 J	-6934108.55	-6934108.54	-6934108.51	0.0297	0.0296
Venus	-23695-07-09 12:14 J	-6932986.11	-6932985.99	-6932985.87	0.0297	0.0244
Venus	-23694-02-24 16:47 J	-6932756.01	-6932755.80	-6932755.59	0.0296	0.0072
Venus	-23694-10-12 19:11 J	-6932525.90	-6932525.70	-6932525.50	0.0295	0.0096
Venus	-23693-05-29 19:11 J	-6932295.80	-6932295.70	-6932295.60	0.0293	0.0257
Moon	-23689-05-20 15:35 J	-6930844.09	-6930843.85	-6930843.62	0.0278	0.0071
Earth	-23689-05-20 19:11 J	-6930843.93	-6930843.70	-6930843.47	0.0278	0.0086 *
Mercury	-23687-04-05 21:35 J	-6930158.70	-6930158.60	-6930158.50	0.0272	0.0182
Mercury	-23687-07-03 08:09 J	-6930070.29	-6930070.16	-6930070.03	0.0271	0.0069
Mercury	-23687-09-29 18:57 J	-6929981.85	-6929981.71	-6929981.58	0.0270	0.0045
Mercury	-23687-12-27 05:31 J	-6929893.37	-6929893.27	-6929893.16	0.0269	0.0159
Mars	-23684-08-21 00:57 J	-6928925.66	-6928925.46	-6928925.25	0.0264	0.0190
Venus	-23680-07-31 23:31 J	-6927484.61	-6927484.52	-6927484.40	0.0263	0.0230
Venus	-23679-03-17 21:07 J	-6927255.81	-6927255.62	-6927255.43	0.0264	0.0115
Venus	-23679-11-01 19:55 J	-6927026.88	-6927026.67	-6927026.46	0.0265	0.0004
Venus	-23678-06-18 20:09 J	-6926797.85	-6926797.66	-6926797.47	0.0267	0.0124
Venus	-23677-02-02 22:04 J	-6926568.66	-6926568.58	-6926568.50	0.0268	0.0247
Earth	-23674-11-15 20:09 J	-6925186.84	-6925186.66	-6925186.46	0.0281	0.0182
Moon	-23674-11-15 23:59 J	-6925186.69	-6925186.50	-6925186.30	0.0281	0.0167 *
Mercury	-23671-01-21 03:50 J	-6924389.42	-6924389.34	-6924389.24	0.0290	0.0250
Mercury	-23671-04-20 03:50 J	-6924300.52	-6924300.34	-6924300.16	0.0291	0.0053
Mercury	-23671-07-18 03:07 J	-6924211.52	-6924211.37	-6924211.21	0.0292	0.0142
Venus	-23665-01-19 19:40 J	-6922199.82	-6922199.68	-6922199.53	0.0297	0.0219

Venus	-23665-09-05 23:45 J	-6921969.71	-6921969.51	-6921969.29	0.0296	0.0048
Venus	-23664-04-24 01:40 J	-6921739.62	-6921739.43	-6921739.23	0.0294	0.0120
Venus	-23664-12-10 01:26 J	-6921509.50	-6921509.44	-6921509.38	0.0292	0.0280
Earth	-23660-05-15 13:40 J	-6920257.10	-6920256.93	-6920256.74	0.0279	0.0187
Moon	-23660-05-15 17:31 J	-6920256.93	-6920256.77	-6920256.59	0.0279	0.0199 *
Mercury	-23658-08-23 23:45 J	-6919426.58	-6919426.51	-6919426.43	0.0271	0.0216
Mercury	-23658-11-20 10:33 J	-6919338.19	-6919338.06	-6919337.94	0.0270	0.0102
Mercury	-23657-02-16 21:07 J	-6919249.75	-6919249.62	-6919249.48	0.0270	0.0011
Mercury	-23657-05-15 07:55 J	-6919161.29	-6919161.17	-6919161.05	0.0269	0.0124
Mercury	-23657-08-11 18:43 J	-6919072.78	-6919072.72	-6919072.66	0.0268	0.0238
Venus	-23650-02-11 00:43 J	-6916698.59	-6916698.47	-6916698.35	0.0264	0.0215
Venus	-23650-09-27 21:50 J	-6916469.78	-6916469.59	-6916469.39	0.0264	0.0100
Venus	-23649-05-13 20:23 J	-6916240.86	-6916240.65	-6916240.43	0.0266	0.0019
Venus	-23649-12-28 20:23 J	-6916011.82	-6916011.65	-6916011.46	0.0267	0.0140
Venus	-23648-08-14 22:19 J	-6915782.60	-6915782.57	-6915782.52	0.0269	0.0263
Moon	-23644-11-22 11:31 J	-6914222.20	-6914222.02	-6914221.83	0.0283	0.0178
Earth	-23644-11-22 13:26 J	-6914222.13	-6914221.94	-6914221.73	0.0283	0.0167 *
Mercury	-23642-09-06 23:31 J	-6913568.69	-6913568.52	-6913568.36	0.0290	0.0131
Mercury	-23642-12-04 23:02 J	-6913479.72	-6913479.54	-6913479.36	0.0291	0.0064
Mercury	-23641-03-02 22:04 J	-6913390.65	-6913390.58	-6913390.49	0.0292	0.0258
Jupiter	-23638-10-20 07:11 J	-6912064.51	-6912064.20	-6912063.83	0.0298	0.0204
Venus	-23636-07-31 20:38 J	-6911413.79	-6911413.64	-6911413.48	0.0297	0.0202
Venus	-23635-03-19 00:43 J	-6911183.68	-6911183.47	-6911183.26	0.0296	0.0031
Venus	-23635-11-04 02:38 J	-6910953.57	-6910953.39	-6910953.20	0.0294	0.0137
Moon	-23630-05-22 17:59 J	-6909292.96	-6909292.75	-6909292.54	0.0278	0.0124
Earth	-23630-05-22 18:14 J	-6909292.95	-6909292.74	-6909292.53	0.0278	0.0139 *
Mercury	-23628-01-10 01:55 J	-6908694.46	-6908694.42	-6908694.37	0.0272	0.0254
Mercury	-23628-04-08 12:28 J	-6908606.09	-6908605.98	-6908605.86	0.0272	0.0141
Mercury	-23628-07-05 23:16 J	-6908517.66	-6908517.53	-6908517.40	0.0271	0.0027
Mercury	-23628-10-02 10:04 J	-6908429.21	-6908429.08	-6908428.95	0.0270	0.0088

Mercury	-23628-12-29 20:52 J	-6908340.72	-6908340.63	-6908340.54	0.0269	0.0202
Mars	-23626-11-27 17:45 J	-6907642.90	-6907642.76	-6907642.60	0.0265	0.0228
Venus	-23621-08-23 05:02 J	-6905912.43	-6905912.29	-6905912.15	0.0264	0.0197
Venus	-23620-04-09 02:23 J	-6905683.59	-6905683.40	-6905683.19	0.0264	0.0082
Venus	-23620-11-24 01:26 J	-6905454.65	-6905454.44	-6905454.23	0.0266	0.0038
Venus	-23619-07-11 02:09 J	-6905225.58	-6905225.41	-6905225.24	0.0267	0.0159
Earth	-23615-11-16 23:02 J	-6903635.76	-6903635.54	-6903635.31	0.0282	0.0122
Moon	-23615-11-17 00:28 J	-6903635.71	-6903635.48	-6903635.23	0.0282	0.0110 *
Mercury	-23612-01-23 22:47 J	-6902836.69	-6902836.55	-6902836.40	0.0290	0.0179
Mercury	-23612-04-22 22:33 J	-6902747.74	-6902747.56	-6902747.38	0.0291	0.0017
Mercury	-23612-07-20 21:50 J	-6902658.71	-6902658.59	-6902658.46	0.0292	0.0211
Venus	-23606-02-11 05:02 J	-6900627.45	-6900627.29	-6900627.11	0.0297	0.0175
Venus	-23606-09-29 08:52 J	-6900397.34	-6900397.13	-6900396.91	0.0296	0.0008
Venus	-23605-05-16 10:19 J	-6900167.23	-6900167.07	-6900166.88	0.0294	0.0164
Earth	-23601-05-16 14:38 J	-6898706.09	-6898705.89	-6898705.67	0.0279	0.0130
Moon	-23601-05-16 14:52 J	-6898706.09	-6898705.88	-6898705.66	0.0279	0.0144 *
Mercury	-23599-08-26 15:07 J	-6897873.97	-6897873.87	-6897873.76	0.0271	0.0171
Mercury	-23599-11-23 01:55 J	-6897785.55	-6897785.42	-6897785.29	0.0270	0.0057
Mercury	-23598-02-19 12:43 J	-6897697.11	-6897696.97	-6897696.84	0.0270	0.0057
Mercury	-23598-05-18 23:16 J	-6897608.63	-6897608.53	-6897608.42	0.0269	0.0170
Mars	-23595-01-14 11:31 J	-6896637.15	-6896637.02	-6896636.86	0.0264	0.0230
Venus	-23591-03-05 06:57 J	-6895126.36	-6895126.21	-6895126.06	0.0264	0.0181
Venus	-23591-10-20 04:33 J	-6894897.52	-6894897.31	-6894897.11	0.0265	0.0065
Venus	-23590-06-06 03:21 J	-6894668.56	-6894668.36	-6894668.15	0.0266	0.0055
Venus	-23589-01-21 03:50 J	-6894439.50	-6894439.34	-6894439.18	0.0267	0.0177
Earth	-23585-11-23 18:14 J	-6892670.87	-6892670.74	-6892670.59	0.0284	0.0232
Moon	-23585-11-23 21:07 J	-6892670.75	-6892670.62	-6892670.49	0.0284	0.0240 *
Mercury	-23583-06-12 18:57 J	-6892104.79	-6892104.71	-6892104.62	0.0289	0.0253
Mercury	-23583-09-09 18:43 J	-6892015.89	-6892015.72	-6892015.54	0.0290	0.0058
Mercury	-23583-12-07 18:14 J	-6891926.90	-6891926.74	-6891926.58	0.0291	0.0138

Venus	-23577-08-23 06:57 J	-6889841.38	-6889841.21	-6889841.02	0.0297	0.0158
Venus	-23576-04-10 10:47 J	-6889611.26	-6889611.05	-6889610.84	0.0295	0.0014
Venus	-23576-11-26 12:14 J	-6889381.15	-6889380.99	-6889380.82	0.0294	0.0180
Earth	-23571-05-23 19:55 J	-6887741.83	-6887741.67	-6887741.49	0.0278	0.0199
Moon	-23571-05-23 23:31 J	-6887741.69	-6887741.52	-6887741.33	0.0278	0.0183 *
Mercury	-23569-01-13 17:31 J	-6887141.86	-6887141.77	-6887141.69	0.0272	0.0208
Mercury	-23569-04-11 04:04 J	-6887053.45	-6887053.33	-6887053.20	0.0272	0.0094
Mercury	-23569-07-08 14:52 J	-6886965.02	-6886964.88	-6886964.75	0.0271	0.0020
Mercury	-23569-10-05 01:26 J	-6886876.55	-6886876.44	-6886876.32	0.0270	0.0136
Mercury	-23568-01-01 12:28 J	-6886788.03	-6886787.98	-6886787.93	0.0269	0.0249
Venus	-23562-09-15 11:31 J	-6884340.17	-6884340.02	-6884339.84	0.0264	0.0163
Venus	-23561-05-01 09:35 J	-6884111.31	-6884111.10	-6884110.89	0.0265	0.0046
Venus	-23561-12-16 08:52 J	-6883882.33	-6883882.13	-6883881.93	0.0266	0.0074
Venus	-23560-08-02 09:50 J	-6883653.23	-6883653.09	-6883652.95	0.0267	0.0196
Moon	-23556-11-18 03:07 J	-6882084.63	-6882084.37	-6882084.12	0.0282	0.0044
Earth	-23556-11-18 05:31 J	-6882084.51	-6882084.27	-6882084.02	0.0282	0.0054 *
Mercury	-23553-01-27 18:57 J	-6881283.88	-6881283.71	-6881283.54	0.0290	0.0099
Mercury	-23553-04-25 18:28 J	-6881194.90	-6881194.73	-6881194.56	0.0291	0.0096
Mercury	-23553-07-23 17:45 J	-6881105.78	-6881105.76	-6881105.74	0.0292	0.0289
Mars	-23551-02-08 19:11 J	-6880540.82	-6880540.70	-6880540.57	0.0296	0.0266
Venus	-23547-03-05 17:16 J	-6879054.97	-6879054.78	-6879054.58	0.0297	0.0128
Venus	-23547-10-21 20:38 J	-6878824.85	-6878824.64	-6878824.43	0.0296	0.0044
Venus	-23546-06-08 21:35 J	-6878594.74	-6878594.60	-6878594.44	0.0294	0.0209
Moon	-23542-05-18 15:35 J	-6877155.08	-6877154.85	-6877154.62	0.0279	0.0081
Earth	-23542-05-18 18:57 J	-6877154.94	-6877154.71	-6877154.47	0.0279	0.0066 *
Mercury	-23540-06-01 20:23 J	-6876409.71	-6876409.65	-6876409.58	0.0272	0.0235
Mercury	-23540-08-29 06:57 J	-6876321.32	-6876321.21	-6876321.09	0.0271	0.0122
Mercury	-23540-11-25 17:45 J	-6876232.89	-6876232.76	-6876232.63	0.0270	0.0007
Mercury	-23539-02-22 04:33 J	-6876144.43	-6876144.31	-6876144.19	0.0270	0.0107
Mercury	-23539-05-21 15:21 J	-6876055.93	-6876055.86	-6876055.78	0.0269	0.0221

Mars	-23537-04-22 13:40 J	-6875354.14	-6875353.93	-6875353.70	0.0265	0.0175
Venus	-23533-08-10 17:59 J	-6873782.77	-6873782.75	-6873782.70	0.0263	0.0259
Venus	-23532-03-27 14:52 J	-6873554.05	-6873553.88	-6873553.69	0.0264	0.0145
Venus	-23532-11-11 12:57 J	-6873325.17	-6873324.96	-6873324.75	0.0265	0.0028
Venus	-23531-06-28 12:28 J	-6873096.18	-6873095.98	-6873095.78	0.0266	0.0093
Venus	-23530-02-12 13:11 J	-6872867.07	-6872866.95	-6872866.82	0.0268	0.0216
Mercury	-23524-06-15 16:19 J	-6870551.97	-6870551.82	-6870551.67	0.0290	0.0165
Mercury	-23524-09-12 15:50 J	-6870463.02	-6870462.84	-6870462.66	0.0290	0.0030
Mercury	-23524-12-10 15:07 J	-6870373.98	-6870373.87	-6870373.75	0.0291	0.0224
Venus	-23518-01-28 15:21 J	-6868498.92	-6868498.86	-6868498.78	0.0297	0.0281
Venus	-23518-09-15 20:38 J	-6868268.84	-6868268.64	-6868268.44	0.0296	0.0109
Venus	-23517-05-02 23:45 J	-6868038.72	-6868038.51	-6868038.30	0.0295	0.0062
Venus	-23517-12-19 00:43 J	-6867808.60	-6867808.47	-6867808.33	0.0293	0.0226
Earth	-23512-05-25 00:43 J	-6866190.53	-6866190.47	-6866190.39	0.0278	0.0264
Moon	-23512-05-25 02:38 J	-6866190.49	-6866190.39	-6866190.27	0.0278	0.0249 *
Mercury	-23511-10-19 22:33 J	-6865677.56	-6865677.56	-6865677.55	0.0273	0.0272
Mercury	-23510-01-16 09:21 J	-6865589.22	-6865589.11	-6865589.00	0.0272	0.0158
Mercury	-23510-04-14 20:09 J	-6865500.80	-6865500.66	-6865500.53	0.0271	0.0044
Mercury	-23510-07-12 06:43 J	-6865412.35	-6865412.22	-6865412.09	0.0271	0.0072
Mercury	-23510-10-08 17:31 J	-6865323.86	-6865323.77	-6865323.67	0.0270	0.0187
Venus	-23503-02-20 22:47 J	-6862996.62	-6862996.55	-6862996.45	0.0263	0.0241
Venus	-23503-10-07 20:09 J	-6862767.84	-6862767.66	-6862767.47	0.0264	0.0126
Venus	-23502-05-24 18:28 J	-6862538.94	-6862538.73	-6862538.52	0.0265	0.0009
Venus	-23501-01-08 18:14 J	-6862309.93	-6862309.74	-6862309.55	0.0266	0.0113
Venus	-23501-08-24 19:26 J	-6862080.78	-6862080.69	-6862080.59	0.0268	0.0236
Moon	-23497-11-19 12:57 J	-6860533.20	-6860532.96	-6860532.71	0.0282	0.0035
Earth	-23497-11-19 16:19 J	-6860533.07	-6860532.82	-6860532.57	0.0282	0.0025 *
Mercury	-23495-11-02 16:47 J	-6859819.93	-6859819.80	-6859819.67	0.0289	0.0204
Mercury	-23494-01-30 16:19 J	-6859731.00	-6859730.82	-6859730.64	0.0290	0.0009
Mercury	-23494-04-29 15:35 J	-6859641.98	-6859641.85	-6859641.71	0.0291	0.0186



Venus	-23489-08-10 02:52 J	-6857712.48	-6857712.38	-6857712.25	0.0298	0.0250
Venus	-23488-03-28 07:55 J	-6857482.37	-6857482.17	-6857481.96	0.0297	0.0077
Venus	-23488-11-13 10:47 J	-6857252.25	-6857252.05	-6857251.85	0.0295	0.0093
Venus	-23487-07-01 11:16 J	-6857022.12	-6857022.03	-6857021.92	0.0294	0.0256
Moon	-23483-05-19 23:59 J	-6855603.73	-6855603.50	-6855603.26	0.0279	0.0011
Earth	-23483-05-20 02:09 J	-6855603.65	-6855603.41	-6855603.16	0.0279	0.0007 *
Mercury	-23481-06-04 12:43 J	-6854857.07	-6854856.97	-6854856.87	0.0272	0.0181
Mercury	-23481-08-31 23:16 J	-6854768.65	-6854768.53	-6854768.39	0.0271	0.0068
Mercury	-23481-11-28 10:04 J	-6854680.21	-6854680.08	-6854679.94	0.0270	0.0048
Mercury	-23480-02-24 20:52 J	-6854591.73	-6854591.63	-6854591.52	0.0270	0.0162
Venus	-23474-09-03 03:50 J	-6852210.45	-6852210.34	-6852210.22	0.0263	0.0221
Venus	-23473-04-19 00:57 J	-6851981.65	-6851981.46	-6851981.27	0.0264	0.0106
Venus	-23473-12-03 23:16 J	-6851752.74	-6851752.53	-6851752.32	0.0265	0.0013
Venus	-23472-07-20 23:02 J	-6851523.72	-6851523.54	-6851523.35	0.0267	0.0134
Venus	-23471-03-07 00:14 J	-6851294.54	-6851294.49	-6851294.42	0.0268	0.0257
Earth	-23468-11-13 23:16 J	-6849946.58	-6849946.53	-6849946.45	0.0280	0.0270
Moon	-23468-11-14 03:21 J	-6849946.47	-6849946.36	-6849946.26	0.0280	0.0255 *
Mercury	-23465-03-21 14:38 J	-6849087.96	-6849087.89	-6849087.81	0.0289	0.0263
Mercury	-23465-06-18 14:23 J	-6848999.07	-6848998.90	-6848998.72	0.0290	0.0068
Mercury	-23465-09-15 13:55 J	-6848910.08	-6848909.92	-6848909.76	0.0291	0.0127
Mars	-23463-07-05 17:16 J	-6848251.97	-6848251.78	-6848251.55	0.0296	0.0205
Venus	-23459-02-20 08:09 J	-6846926.29	-6846926.16	-6846926.01	0.0297	0.0228
Venus	-23459-10-08 12:57 J	-6846696.17	-6846695.96	-6846695.75	0.0296	0.0056
Venus	-23458-05-26 15:21 J	-6846466.05	-6846465.86	-6846465.66	0.0295	0.0113
Venus	-23457-01-11 15:50 J	-6846235.91	-6846235.84	-6846235.77	0.0293	0.0275
Earth	-23454-05-14 18:43 J	-6845016.76	-6845016.72	-6845016.69	0.0281	0.0278
Mercury	-23452-10-22 15:07 J	-6844124.95	-6844124.87	-6844124.79	0.0273	0.0216
Mercury	-23451-01-19 01:55 J	-6844036.55	-6844036.42	-6844036.30	0.0272	0.0101
Mercury	-23451-04-17 12:28 J	-6843948.11	-6843947.98	-6843947.84	0.0271	0.0016
Mercury	-23451-07-14 23:16 J	-6843859.64	-6843859.53	-6843859.41	0.0270	0.0129

Mercury	-23451-10-11 10:04 J	-6843771.13	-6843771.08	-6843771.02	0.0270	0.0244
Mars	-23449-09-16 14:52 J	-6843065.14	-6843064.88	-6843064.61	0.0265	0.0117
Venus	-23444-03-15 08:23 J	-6841424.27	-6841424.15	-6841424.01	0.0264	0.0203
Venus	-23444-10-30 06:14 J	-6841195.44	-6841195.24	-6841195.04	0.0265	0.0087
Venus	-23443-06-16 05:02 J	-6840966.50	-6840966.29	-6840966.08	0.0266	0.0033
Venus	-23442-01-31 05:02 J	-6840737.45	-6840737.29	-6840737.11	0.0267	0.0155
Moon	-23438-11-22 06:28 J	-6838981.44	-6838981.23	-6838981.00	0.0282	0.0122
Earth	-23438-11-22 06:43 J	-6838981.44	-6838981.22	-6838980.98	0.0282	0.0112 *
Mercury	-23436-11-05 15:21 J	-6838267.03	-6838266.86	-6838266.69	0.0290	0.0102
Mercury	-23435-02-02 14:52 J	-6838178.05	-6838177.88	-6838177.70	0.0291	0.0093
Mercury	-23435-05-02 13:55 J	-6838088.94	-6838088.92	-6838088.88	0.0291	0.0287
Venus	-23430-09-02 21:07 J	-6836139.78	-6836139.62	-6836139.46	0.0297	0.0195
Venus	-23429-04-20 01:11 J	-6835909.66	-6835909.45	-6835909.23	0.0296	0.0024
Venus	-23429-12-06 03:35 J	-6835679.53	-6835679.35	-6835679.17	0.0295	0.0147
Earth	-23424-05-21 12:28 J	-6834052.21	-6834051.98	-6834051.75	0.0279	0.0082
Moon	-23424-05-21 13:55 J	-6834052.14	-6834051.92	-6834051.69	0.0279	0.0068 *
Mercury	-23422-03-11 18:43 J	-6833392.78	-6833392.72	-6833392.65	0.0272	0.0237
Mercury	-23422-06-08 05:31 J	-6833304.39	-6833304.27	-6833304.15	0.0272	0.0122
Mercury	-23422-09-04 16:04 J	-6833215.96	-6833215.83	-6833215.69	0.0271	0.0010
Mercury	-23422-12-02 02:52 J	-6833127.50	-6833127.38	-6833127.25	0.0270	0.0107
Mercury	-23421-02-28 13:40 J	-6833039.00	-6833038.93	-6833038.85	0.0269	0.0222
Venus	-23415-09-25 14:38 J	-6830638.04	-6830637.89	-6830637.74	0.0264	0.0182
Venus	-23414-05-12 12:14 J	-6830409.20	-6830408.99	-6830408.79	0.0265	0.0065
Venus	-23414-12-27 11:02 J	-6830180.25	-6830180.04	-6830179.84	0.0266	0.0055
Venus	-23413-08-12 11:02 J	-6829951.19	-6829951.04	-6829950.87	0.0267	0.0177
Moon	-23409-11-15 16:04 J	-6828395.04	-6828394.83	-6828394.63	0.0281	0.0168
Earth	-23409-11-15 16:04 J	-6828395.01	-6828394.83	-6828394.63	0.0281	0.0180 *
Mercury	-23406-03-25 14:09 J	-6827535.06	-6827534.91	-6827534.76	0.0289	0.0157
Mercury	-23406-06-22 13:40 J	-6827446.11	-6827445.93	-6827445.75	0.0290	0.0039
Mercury	-23406-09-19 12:57 J	-6827357.06	-6827356.96	-6827356.85	0.0291	0.0232

Venus	-23400-03-15 03:07 J	-6825353.54	-6825353.37	-6825353.20	0.0297	0.0172
Venus	-23400-10-31 06:57 J	-6825123.42	-6825123.21	-6825122.99	0.0295	0.0006
Venus	-23399-06-18 08:52 J	-6824893.30	-6824893.13	-6824892.95	0.0294	0.0167
Moon	-23395-05-16 04:04 J	-6823465.48	-6823465.33	-6823465.16	0.0281	0.0212
Earth	-23395-05-16 05:45 J	-6823465.42	-6823465.26	-6823465.08	0.0281	0.0197 *
Mercury	-23393-07-28 21:07 J	-6822660.62	-6822660.62	-6822660.60	0.0273	0.0271
Mercury	-23393-10-25 07:55 J	-6822572.28	-6822572.17	-6822572.06	0.0272	0.0156
Mercury	-23392-01-21 18:43 J	-6822483.86	-6822483.72	-6822483.59	0.0272	0.0041
Mercury	-23392-04-20 05:16 J	-6822395.40	-6822395.28	-6822395.15	0.0271	0.0075
Mercury	-23392-07-17 16:04 J	-6822306.92	-6822306.83	-6822306.73	0.0270	0.0189
Venus	-23385-04-06 19:11 J	-6819851.86	-6819851.70	-6819851.53	0.0264	0.0163
Venus	-23385-11-21 17:02 J	-6819622.99	-6819622.79	-6819622.58	0.0265	0.0046
Venus	-23384-07-08 16:33 J	-6819394.01	-6819393.81	-6819393.61	0.0266	0.0075
Venus	-23383-02-22 17:02 J	-6819164.92	-6819164.79	-6819164.64	0.0267	0.0197
Earth	-23379-11-23 23:02 J	-6817429.70	-6817429.54	-6817429.35	0.0283	0.0202
Moon	-23379-11-24 02:38 J	-6817429.54	-6817429.39	-6817429.22	0.0283	0.0212 *
Mercury	-23377-08-11 14:52 J	-6816803.01	-6816802.88	-6816802.74	0.0289	0.0192
Mercury	-23377-11-08 14:38 J	-6816714.07	-6816713.89	-6816713.71	0.0290	0.0006
Mercury	-23376-02-05 13:55 J	-6816625.04	-6816624.92	-6816624.78	0.0291	0.0198
Mars	-23375-12-01 00:57 J	-6815961.73	-6815961.46	-6815961.18	0.0296	0.0087
Venus	-23371-09-25 16:19 J	-6814567.01	-6814566.82	-6814566.63	0.0297	0.0137
Venus	-23370-05-13 20:09 J	-6814336.87	-6814336.66	-6814336.45	0.0296	0.0035
Venus	-23370-12-29 21:50 J	-6814106.75	-6814106.59	-6814106.44	0.0294	0.0202
Earth	-23365-05-23 00:28 J	-6812500.68	-6812500.48	-6812500.29	0.0279	0.0163
Moon	-23365-05-23 03:50 J	-6812500.53	-6812500.34	-6812500.12	0.0279	0.0148 *
Mercury	-23363-03-14 11:45 J	-6811840.11	-6811840.01	-6811839.91	0.0272	0.0175
Mercury	-23363-06-10 22:19 J	-6811751.70	-6811751.57	-6811751.44	0.0271	0.0061
Mercury	-23363-09-07 09:07 J	-6811663.25	-6811663.12	-6811662.99	0.0271	0.0054
Mercury	-23363-12-04 19:55 J	-6811574.77	-6811574.67	-6811574.56	0.0270	0.0169
Mars	-23360-02-11 09:35 J	-6810775.39	-6810775.10	-6810774.80	0.0265	0.0029

Venus	-23356-03-03 04:47 J	-6809294.34	-6809294.30	-6809294.24	0.0263	0.0255
Venus	-23356-10-18 01:55 J	-6809065.60	-6809065.42	-6809065.24	0.0264	0.0141
Venus	-23355-06-03 23:45 J	-6808836.71	-6808836.51	-6808836.29	0.0265	0.0024
Venus	-23354-01-18 23:02 J	-6808607.73	-6808607.54	-6808607.34	0.0266	0.0098
Venus	-23354-09-04 23:45 J	-6808378.62	-6808378.51	-6808378.39	0.0267	0.0220
Moon	-23350-11-18 06:14 J	-6806843.48	-6806843.24	-6806842.99	0.0281	0.0079
Earth	-23350-11-18 10:04 J	-6806843.31	-6806843.08	-6806842.84	0.0281	0.0089 *
Mercury	-23348-12-29 14:09 J	-6806071.00	-6806070.91	-6806070.80	0.0289	0.0241
Mercury	-23347-03-28 14:09 J	-6805982.09	-6805981.91	-6805981.73	0.0290	0.0045
Mercury	-23347-06-25 13:26 J	-6805893.09	-6805892.94	-6805892.78	0.0291	0.0150
Venus	-23342-08-20 18:28 J	-6804010.78	-6804010.73	-6804010.67	0.0297	0.0285
Venus	-23341-04-06 23:45 J	-6803780.71	-6803780.51	-6803780.31	0.0296	0.0113
Venus	-23341-11-23 03:07 J	-6803550.58	-6803550.37	-6803550.16	0.0295	0.0058
Venus	-23340-07-11 04:04 J	-6803320.46	-6803320.33	-6803320.18	0.0293	0.0224
Moon	-23336-05-17 15:35 J	-6801914.06	-6801913.85	-6801913.63	0.0280	0.0129
Earth	-23336-05-17 19:26 J	-6801913.91	-6801913.69	-6801913.47	0.0280	0.0112 *
Mercury	-23334-08-01 14:09 J	-6801107.99	-6801107.91	-6801107.82	0.0273	0.0209
Mercury	-23334-10-29 00:57 J	-6801019.58	-6801019.46	-6801019.33	0.0272	0.0093
Mercury	-23333-01-25 11:45 J	-6800931.15	-6800931.01	-6800930.88	0.0271	0.0022
Mercury	-23333-04-22 22:33 J	-6800842.68	-6800842.56	-6800842.45	0.0270	0.0137
Mercury	-23333-07-20 09:21 J	-6800754.16	-6800754.11	-6800754.06	0.0270	0.0252
Venus	-23327-09-13 08:38 J	-6798508.21	-6798508.14	-6798508.04	0.0264	0.0238
Venus	-23326-04-30 05:59 J	-6798279.43	-6798279.25	-6798279.06	0.0264	0.0123
Venus	-23326-12-15 04:19 J	-6798050.53	-6798050.32	-6798050.11	0.0265	0.0004
Venus	-23325-07-31 04:04 J	-6797821.52	-6797821.33	-6797821.14	0.0266	0.0118
Venus	-23324-03-17 05:16 J	-6797592.37	-6797592.28	-6797592.19	0.0268	0.0240
Mercury	-23318-05-18 14:38 J	-6795338.93	-6795338.89	-6795338.84	0.0289	0.0279
Mercury	-23318-08-15 14:38 J	-6795250.06	-6795249.89	-6795249.72	0.0290	0.0083
Mercury	-23318-11-12 14:09 J	-6795161.08	-6795160.91	-6795160.74	0.0290	0.0112
Venus	-23312-03-02 06:57 J	-6793224.31	-6793224.21	-6793224.08	0.0298	0.0252

Venus	-23312-10-18 12:14 J	-6792994.19	-6792993.99	-6792993.78	0.0297	0.0078
Venus	-23311-06-05 15:21 J	-6792764.06	-6792763.86	-6792763.66	0.0295	0.0093
Venus	-23310-01-21 16:19 J	-6792533.91	-6792533.82	-6792533.71	0.0294	0.0257
Earth	-23306-05-25 12:57 J	-6790949.06	-6790948.96	-6790948.84	0.0278	0.0245
Moon	-23306-05-25 13:40 J	-6790949.06	-6790948.93	-6790948.78	0.0278	0.0229 *
Mercury	-23305-12-18 18:14 J	-6790375.81	-6790375.74	-6790375.67	0.0273	0.0228
Mercury	-23304-03-17 04:47 J	-6790287.42	-6790287.30	-6790287.18	0.0272	0.0113
Mercury	-23304-06-13 15:35 J	-6790198.99	-6790198.85	-6790198.72	0.0271	0.0006
Mercury	-23304-09-10 02:09 J	-6790110.53	-6790110.41	-6790110.28	0.0270	0.0118
Mercury	-23304-12-07 13:11 J	-6790022.02	-6790021.95	-6790021.89	0.0270	0.0232
Venus	-23297-03-25 15:21 J	-6787721.97	-6787721.86	-6787721.73	0.0264	0.0216
Venus	-23297-11-09 12:43 J	-6787493.16	-6787492.97	-6787492.77	0.0264	0.0100
Venus	-23296-06-26 11:16 J	-6787264.24	-6787264.03	-6787263.81	0.0265	0.0020
Venus	-23295-02-10 11:02 J	-6787035.21	-6787035.04	-6787034.86	0.0267	0.0141
Venus	-23295-09-27 12:14 J	-6786806.02	-6786805.99	-6786805.95	0.0268	0.0264
Moon	-23291-11-20 01:11 J	-6785291.69	-6785291.45	-6785291.21	0.0282	0.0011
Earth	-23291-11-20 03:21 J	-6785291.61	-6785291.36	-6785291.11	0.0282	0.0003 *
Mercury	-23288-01-01 14:09 J	-6784518.07	-6784517.91	-6784517.74	0.0290	0.0131
Mercury	-23288-03-31 13:40 J	-6784429.10	-6784428.93	-6784428.75	0.0290	0.0065
Mercury	-23288-06-28 12:57 J	-6784340.03	-6784339.96	-6784339.87	0.0291	0.0258
Mars	-23286-04-27 23:45 J	-6783671.80	-6783671.51	-6783671.22	0.0296	0.0013
Venus	-23283-09-12 15:07 J	-6782438.00	-6782437.87	-6782437.72	0.0297	0.0226
Venus	-23282-04-30 19:55 J	-6782207.88	-6782207.67	-6782207.46	0.0296	0.0054
Venus	-23282-12-16 22:47 J	-6781977.74	-6781977.55	-6781977.35	0.0295	0.0116
Venus	-23281-08-02 23:02 J	-6781747.59	-6781747.54	-6781747.47	0.0293	0.0279
Moon	-23277-05-19 08:23 J	-6780362.38	-6780362.15	-6780361.92	0.0280	0.0044
Earth	-23277-05-19 08:52 J	-6780362.37	-6780362.13	-6780361.89	0.0280	0.0028 *
Mercury	-23275-05-07 20:38 J	-6779643.67	-6779643.64	-6779643.60	0.0273	0.0260
Mercury	-23275-08-04 07:26 J	-6779555.30	-6779555.19	-6779555.08	0.0272	0.0146
Mercury	-23275-10-31 17:59 J	-6779466.88	-6779466.75	-6779466.61	0.0271	0.0031

Mercury	-23274-01-28 04:47 J	-6779378.43	-6779378.30	-6779378.17	0.0271	0.0084
Mercury	-23274-04-26 15:35 J	-6779289.94	-6779289.85	-6779289.76	0.0270	0.0199
Mars	-23272-07-08 15:50 J	-6778486.14	-6778485.84	-6778485.55	0.0265	0.0039
Venus	-23268-10-05 18:43 J	-6776935.85	-6776935.72	-6776935.58	0.0264	0.0198
Venus	-23267-05-22 16:19 J	-6776707.02	-6776706.82	-6776706.62	0.0265	0.0082
Venus	-23266-01-06 14:52 J	-6776478.09	-6776477.88	-6776477.67	0.0266	0.0038
Venus	-23266-08-23 14:52 J	-6776249.05	-6776248.88	-6776248.71	0.0267	0.0160
Earth	-23262-11-14 13:55 J	-6774704.92	-6774704.92	-6774704.88	0.0280	0.0279
Moon	-23262-11-14 16:19 J	-6774704.89	-6774704.82	-6774704.74	0.0280	0.0266 *
Mercury	-23259-05-21 13:55 J	-6773786.06	-6773785.92	-6773785.77	0.0289	0.0174
Mercury	-23259-08-18 13:40 J	-6773697.11	-6773696.93	-6773696.75	0.0290	0.0022
Mercury	-23259-11-15 13:11 J	-6773608.07	-6773607.95	-6773607.83	0.0291	0.0216
Venus	-23253-03-25 03:21 J	-6771651.52	-6771651.36	-6771651.20	0.0297	0.0192
Venus	-23253-11-10 07:55 J	-6771421.38	-6771421.17	-6771420.95	0.0296	0.0020
Venus	-23252-06-28 10:19 J	-6771191.24	-6771191.07	-6771190.88	0.0295	0.0151
Mercury	-23246-12-22 11:02 J	-6768823.14	-6768823.04	-6768822.93	0.0272	0.0166
Mercury	-23245-03-19 21:50 J	-6768734.72	-6768734.59	-6768734.46	0.0271	0.0051
Mercury	-23245-06-16 08:38 J	-6768646.27	-6768646.14	-6768646.01	0.0271	0.0065
Mercury	-23245-09-12 19:11 J	-6768557.79	-6768557.70	-6768557.59	0.0270	0.0180
Venus	-23238-04-18 01:26 J	-6766149.60	-6766149.44	-6766149.28	0.0264	0.0176
Venus	-23238-12-02 22:47 J	-6765920.75	-6765920.55	-6765920.34	0.0264	0.0059
Venus	-23237-07-18 21:50 J	-6765691.80	-6765691.59	-6765691.39	0.0266	0.0061
Venus	-23236-03-04 21:50 J	-6765462.74	-6765462.59	-6765462.43	0.0267	0.0183
Earth	-23232-11-21 18:14 J	-6763739.97	-6763739.74	-6763739.50	0.0282	0.0090
Moon	-23232-11-21 20:09 J	-6763739.88	-6763739.66	-6763739.43	0.0282	0.0097 *
Mercury	-23230-10-08 13:40 J	-6763054.05	-6763053.93	-6763053.81	0.0289	0.0222
Mercury	-23229-01-05 13:26 J	-6762965.12	-6762964.94	-6762964.76	0.0290	0.0025
Mercury	-23229-04-03 12:43 J	-6762876.11	-6762875.97	-6762875.82	0.0291	0.0170
Venus	-23224-10-05 11:16 J	-6760865.21	-6760865.03	-6760864.86	0.0297	0.0167
Venus	-23223-05-23 15:21 J	-6760635.07	-6760634.86	-6760634.64	0.0296	0.0006

Venus	-23222-01-08 17:45 J	-6760404.93	-6760404.76	-6760404.59	0.0294	0.0173
Earth	-23218-05-21 21:07 J	-6758810.85	-6758810.62	-6758810.38	0.0279	0.0054
Moon	-23218-05-22 00:28 J	-6758810.71	-6758810.48	-6758810.24	0.0279	0.0039 *
Mercury	-23216-05-10 13:40 J	-6758091.02	-6758090.93	-6758090.84	0.0272	0.0199
Mercury	-23216-08-07 00:14 J	-6758002.62	-6758002.49	-6758002.36	0.0271	0.0085
Mercury	-23216-11-03 10:47 J	-6757914.18	-6757914.05	-6757913.91	0.0271	0.0032
Mercury	-23215-01-30 21:35 J	-6757825.71	-6757825.60	-6757825.48	0.0270	0.0145
Mercury	-23215-04-29 08:23 J	-6757737.18	-6757737.15	-6757737.11	0.0269	0.0260
Venus	-23209-10-28 03:35 J	-6755363.51	-6755363.35	-6755363.18	0.0264	0.0159
Venus	-23208-06-14 01:26 J	-6755134.65	-6755134.44	-6755134.23	0.0265	0.0042
Venus	-23207-01-29 00:14 J	-6754905.69	-6754905.49	-6754905.28	0.0266	0.0079
Venus	-23207-09-15 00:28 J	-6754676.61	-6754676.48	-6754676.33	0.0267	0.0202
Moon	-23203-11-15 23:59 J	-6753153.68	-6753153.50	-6753153.31	0.0280	0.0191
Earth	-23203-11-16 02:09 J	-6753153.58	-6753153.41	-6753153.24	0.0280	0.0201 *
Mercury	-23200-02-24 12:14 J	-6752322.04	-6752321.99	-6752321.93	0.0289	0.0274
Mercury	-23200-05-24 12:14 J	-6752233.17	-6752232.99	-6752232.81	0.0290	0.0077
Mercury	-23200-08-21 11:45 J	-6752144.17	-6752144.01	-6752143.84	0.0290	0.0119
Mars	-23198-09-22 20:09 J	-6751381.91	-6751381.66	-6751381.38	0.0296	0.0118
Venus	-23194-04-17 21:35 J	-6750078.79	-6750078.60	-6750078.41	0.0297	0.0136
Venus	-23194-12-04 01:40 J	-6749848.64	-6749848.43	-6749848.21	0.0296	0.0038
Venus	-23193-07-21 03:50 J	-6749618.49	-6749618.34	-6749618.19	0.0295	0.0205
Moon	-23189-05-15 19:55 J	-6748223.81	-6748223.67	-6748223.52	0.0281	0.0228
Earth	-23189-05-15 23:02 J	-6748223.70	-6748223.54	-6748223.38	0.0281	0.0213 *
Mercury	-23187-09-27 17:16 J	-6747358.86	-6747358.78	-6747358.70	0.0272	0.0221
Mercury	-23187-12-25 03:50 J	-6747270.46	-6747270.34	-6747270.22	0.0272	0.0107
Mercury	-23186-03-23 14:38 J	-6747182.03	-6747181.89	-6747181.76	0.0271	0.0010
Mercury	-23186-06-20 01:11 J	-6747093.57	-6747093.45	-6747093.33	0.0270	0.0123
Mercury	-23186-09-16 11:59 J	-6747005.06	-6747005.00	-6747004.94	0.0269	0.0238
Mars	-23184-12-03 07:11 J	-6746196.46	-6746196.20	-6746195.94	0.0264	0.0123
Venus	-23180-09-23 12:57 J	-6744806.01	-6744805.96	-6744805.89	0.0263	0.0252

Venus	-23179-05-10 09:35 J	-6744577.27	-6744577.10	-6744576.91	0.0264	0.0138
Venus	-23179-12-25 07:26 J	-6744348.40	-6744348.19	-6744347.98	0.0265	0.0020
Venus	-23178-08-11 06:28 J	-6744119.42	-6744119.23	-6744119.03	0.0266	0.0101
Venus	-23177-03-27 06:57 J	-6743890.32	-6743890.21	-6743890.09	0.0267	0.0223
Earth	-23173-11-23 05:02 J	-6742188.48	-6742188.29	-6742188.08	0.0283	0.0169
Moon	-23173-11-23 08:52 J	-6742188.32	-6742188.13	-6742187.93	0.0283	0.0176 *
Mercury	-23171-10-11 11:31 J	-6741501.18	-6741501.02	-6741500.85	0.0290	0.0127
Mercury	-23170-01-08 11:16 J	-6741412.21	-6741412.03	-6741411.86	0.0291	0.0069
Mercury	-23170-04-07 10:33 J	-6741323.13	-6741323.06	-6741322.98	0.0291	0.0264
Venus	-23165-03-11 23:02 J	-6739522.59	-6739522.54	-6739522.47	0.0298	0.0285
Venus	-23165-10-28 05:02 J	-6739292.49	-6739292.29	-6739292.09	0.0297	0.0111
Venus	-23164-06-15 08:52 J	-6739062.34	-6739062.13	-6739061.92	0.0295	0.0062
Venus	-23163-01-31 10:33 J	-6738832.19	-6738832.06	-6738831.92	0.0294	0.0228
Earth	-23159-05-23 07:40 J	-6737259.38	-6737259.18	-6737258.96	0.0278	0.0131
Moon	-23159-05-23 10:19 J	-6737259.29	-6737259.07	-6737258.84	0.0278	0.0117 *
Mercury	-23157-02-14 19:40 J	-6736626.72	-6736626.68	-6736626.64	0.0272	0.0256
Mercury	-23157-05-13 06:14 J	-6736538.35	-6736538.24	-6736538.13	0.0272	0.0141
Mercury	-23157-08-09 16:47 J	-6736449.93	-6736449.80	-6736449.66	0.0271	0.0028
Mercury	-23157-11-06 03:35 J	-6736361.48	-6736361.35	-6736361.22	0.0270	0.0088
Mercury	-23156-02-02 14:23 J	-6736272.99	-6736272.90	-6736272.81	0.0269	0.0203
Venus	-23150-04-05 14:09 J	-6734019.99	-6734019.91	-6734019.81	0.0263	0.0237
Venus	-23150-11-20 10:48 J	-6733791.23	-6733791.05	-6733790.86	0.0264	0.0122
Venus	-23149-07-06 08:52 J	-6733562.34	-6733562.13	-6733561.92	0.0265	0.0004
Venus	-23148-02-20 07:55 J	-6733333.36	-6733333.17	-6733332.98	0.0266	0.0118
Venus	-23148-10-07 08:23 J	-6733104.23	-6733104.15	-6733104.05	0.0267	0.0241
Moon	-23144-11-17 06:00 J	-6731602.46	-6731602.25	-6731602.02	0.0281	0.0121
Earth	-23144-11-17 09:50 J	-6731602.31	-6731602.09	-6731601.87	0.0281	0.0131 *
Mercury	-23141-02-28 09:21 J	-6730769.25	-6730769.11	-6730768.97	0.0289	0.0186
Mercury	-23141-05-27 09:07 J	-6730680.30	-6730680.12	-6730679.93	0.0290	0.0012
Mercury	-23141-08-24 08:38 J	-6730591.26	-6730591.14	-6730591.01	0.0291	0.0206



Venus	-23136-09-22 07:26 J	-6728736.28	-6728736.19	-6728736.07	0.0298	0.0257
Venus	-23135-05-10 13:26 J	-6728506.14	-6728505.94	-6728505.73	0.0297	0.0081
Venus	-23135-12-26 17:16 J	-6728275.98	-6728275.78	-6728275.57	0.0296	0.0092
Venus	-23134-08-13 18:57 J	-6728045.81	-6728045.71	-6728045.61	0.0294	0.0258
Moon	-23130-05-18 05:02 J	-6726672.48	-6726672.29	-6726672.09	0.0281	0.0155
Earth	-23130-05-18 07:55 J	-6726672.37	-6726672.17	-6726671.95	0.0281	0.0140 *
Mercury	-23128-09-30 09:36 J	-6725806.20	-6725806.10	-6725805.99	0.0272	0.0166
Mercury	-23128-12-27 20:09 J	-6725717.79	-6725717.66	-6725717.52	0.0271	0.0052
Mercury	-23127-03-26 06:57 J	-6725629.34	-6725629.21	-6725629.08	0.0270	0.0063
Mercury	-23127-06-22 17:45 J	-6725540.86	-6725540.76	-6725540.66	0.0270	0.0178
Venus	-23121-10-15 19:40 J	-6723233.79	-6723233.68	-6723233.56	0.0263	0.0216
Venus	-23120-06-01 16:33 J	-6723005.00	-6723004.81	-6723004.61	0.0264	0.0101
Venus	-23119-01-16 14:23 J	-6722776.11	-6722775.90	-6722775.69	0.0265	0.0018
Venus	-23119-09-02 13:40 J	-6722547.11	-6722546.93	-6722546.75	0.0266	0.0139
Venus	-23118-04-19 14:09 J	-6722317.94	-6722317.91	-6722317.86	0.0267	0.0262
Earth	-23114-11-25 12:14 J	-6720637.12	-6720636.99	-6720636.85	0.0283	0.0238
Moon	-23114-11-25 12:57 J	-6720637.08	-6720636.96	-6720636.82	0.0283	0.0244 *
Mercury	-23112-07-17 08:09 J	-6720037.26	-6720037.16	-6720037.05	0.0289	0.0240
Mercury	-23112-10-14 08:09 J	-6719948.34	-6719948.16	-6719947.98	0.0290	0.0043
Mercury	-23111-01-11 07:40 J	-6719859.33	-6719859.18	-6719859.02	0.0291	0.0153
Mars	-23109-02-17 00:14 J	-6719092.71	-6719092.49	-6719092.26	0.0297	0.0187
Venus	-23106-04-04 14:23 J	-6717950.03	-6717949.90	-6717949.77	0.0298	0.0232
Venus	-23106-11-20 19:55 J	-6717719.88	-6717719.67	-6717719.46	0.0297	0.0058
Venus	-23105-07-07 23:16 J	-6717489.72	-6717489.53	-6717489.33	0.0295	0.0114
Venus	-23104-02-23 00:28 J	-6717259.53	-6717259.48	-6717259.40	0.0293	0.0279
Moon	-23100-05-24 13:40 J	-6715708.10	-6715707.93	-6715707.73	0.0278	0.0188
Earth	-23100-05-24 15:21 J	-6715708.02	-6715707.86	-6715707.69	0.0278	0.0201 *
Mercury	-23098-02-17 11:45 J	-6715074.09	-6715074.01	-6715073.92	0.0272	0.0202
Mercury	-23098-05-16 22:19 J	-6714985.69	-6714985.57	-6714985.44	0.0271	0.0088
Mercury	-23098-08-13 09:07 J	-6714897.26	-6714897.12	-6714896.99	0.0270	0.0027

Mercury	-23098-11-09 19:40 J	-6714808.79	-6714808.68	-6714808.56	0.0270	0.0141
Mercury	-23097-02-06 06:28 J	-6714720.27	-6714720.23	-6714720.19	0.0269	0.0256
Mars	-23095-04-28 21:21 J	-6713907.83	-6713907.61	-6713907.37	0.0264	0.0169
Venus	-23091-04-27 19:55 J	-6712447.80	-6712447.67	-6712447.53	0.0263	0.0202
Venus	-23091-12-12 16:33 J	-6712219.00	-6712218.81	-6712218.61	0.0264	0.0086
Venus	-23090-07-29 14:38 J	-6711990.10	-6711989.89	-6711989.68	0.0265	0.0033
Venus	-23089-03-14 13:55 J	-6711761.09	-6711760.92	-6711760.75	0.0266	0.0155
Earth	-23085-11-18 12:57 J	-6710051.20	-6710050.96	-6710050.72	0.0281	0.0070
Moon	-23085-11-18 12:43 J	-6710051.20	-6710050.97	-6710050.73	0.0281	0.0063 *
Mercury	-23082-03-03 04:48 J	-6709216.46	-6709216.30	-6709216.12	0.0290	0.0112
Mercury	-23082-05-31 04:33 J	-6709127.48	-6709127.31	-6709127.13	0.0290	0.0086
Mercury	-23082-08-28 04:04 J	-6709038.37	-6709038.33	-6709038.28	0.0291	0.0280
Venus	-23077-10-14 20:23 J	-6707163.79	-6707163.65	-6707163.48	0.0298	0.0207
Venus	-23076-06-02 02:23 J	-6706933.62	-6706933.40	-6706933.19	0.0297	0.0031
Venus	-23075-01-18 06:00 J	-6706703.43	-6706703.25	-6706703.06	0.0296	0.0142
Earth	-23071-05-19 13:55 J	-6705121.15	-6705120.92	-6705120.68	0.0280	0.0073
Moon	-23071-05-19 14:52 J	-6705121.10	-6705120.88	-6705120.66	0.0280	0.0088 *
Mercury	-23069-07-06 14:52 J	-6704341.95	-6704341.88	-6704341.81	0.0272	0.0230
Mercury	-23069-10-03 01:26 J	-6704253.56	-6704253.44	-6704253.32	0.0272	0.0116
Mercury	-23069-12-30 12:14 J	-6704165.13	-6704164.99	-6704164.86	0.0271	0.0005
Mercury	-23068-03-28 22:48 J	-6704076.67	-6704076.55	-6704076.43	0.0270	0.0114
Mercury	-23068-06-25 09:36 J	-6703988.17	-6703988.10	-6703988.03	0.0269	0.0229
Venus	-23062-11-08 00:28 J	-6701661.62	-6701661.48	-6701661.32	0.0263	0.0182
Venus	-23061-06-23 21:36 J	-6701432.80	-6701432.60	-6701432.39	0.0264	0.0066
Venus	-23060-02-07 19:26 J	-6701203.89	-6701203.69	-6701203.48	0.0265	0.0054
Venus	-23060-09-24 18:43 J	-6700974.87	-6700974.72	-6700974.56	0.0266	0.0175
Mercury	-23053-07-20 03:21 J	-6698484.51	-6698484.36	-6698484.21	0.0290	0.0168
Mercury	-23053-10-17 03:07 J	-6698395.55	-6698395.37	-6698395.18	0.0291	0.0030
Mercury	-23052-01-14 02:38 J	-6698306.50	-6698306.39	-6698306.27	0.0291	0.0225
Venus	-23047-04-27 02:52 J	-6696377.54	-6696377.38	-6696377.21	0.0298	0.0183

Venus	-23047-12-13 08:23 J	-6696147.37	-6696147.15	-6696146.94	0.0297	0.0009
Venus	-23046-07-31 11:31 J	-6695917.19	-6695917.02	-6695916.84	0.0295	0.0163
Moon	-23041-05-25 16:33 J	-6694156.90	-6694156.81	-6694156.70	0.0277	0.0251
Earth	-23041-05-25 19:55 J	-6694156.73	-6694156.67	-6694156.59	0.0277	0.0265 *
Mercury	-23040-11-23 17:02 J	-6693609.81	-6693609.79	-6693609.77	0.0272	0.0267
Mercury	-23039-02-20 03:36 J	-6693521.46	-6693521.35	-6693521.24	0.0271	0.0153
Mercury	-23039-05-19 14:09 J	-6693433.04	-6693432.91	-6693432.78	0.0271	0.0039
Mercury	-23039-08-16 00:43 J	-6693344.60	-6693344.47	-6693344.34	0.0270	0.0076
Mercury	-23039-11-12 11:31 J	-6693256.11	-6693256.02	-6693255.92	0.0269	0.0190
Mars	-23037-08-04 09:50 J	-6692625.16	-6692625.09	-6692624.99	0.0265	0.0254
Venus	-23032-05-20 00:14 J	-6690875.64	-6690875.49	-6690875.32	0.0263	0.0168
Venus	-23031-01-03 21:07 J	-6690646.83	-6690646.62	-6690646.41	0.0264	0.0052
Venus	-23031-08-20 18:57 J	-6690417.91	-6690417.71	-6690417.50	0.0265	0.0068
Venus	-23030-04-06 18:00 J	-6690188.88	-6690188.75	-6690188.59	0.0266	0.0190
Earth	-23026-11-20 12:57 J	-6688500.21	-6688499.96	-6688499.71	0.0281	0.0016
Moon	-23026-11-20 16:33 J	-6688500.05	-6688499.81	-6688499.56	0.0281	0.0014 *
Mercury	-23024-12-06 23:16 J	-6687752.62	-6687752.53	-6687752.43	0.0289	0.0243
Mercury	-23023-03-05 23:16 J	-6687663.71	-6687663.53	-6687663.35	0.0290	0.0045
Mercury	-23023-06-02 22:48 J	-6687574.70	-6687574.55	-6687574.39	0.0291	0.0152
Mars	-23021-07-11 22:48 J	-6686804.73	-6686804.55	-6686804.34	0.0297	0.0217
Venus	-23018-11-07 06:57 J	-6685591.39	-6685591.21	-6685591.03	0.0298	0.0161
Venus	-23017-06-24 12:28 J	-6685361.19	-6685360.98	-6685360.77	0.0297	0.0016
Venus	-23016-02-09 15:50 J	-6685131.00	-6685130.84	-6685130.67	0.0296	0.0188
Earth	-23012-05-20 16:19 J	-6683570.06	-6683569.82	-6683569.57	0.0280	0.0014
Moon	-23012-05-20 20:09 J	-6683569.90	-6683569.66	-6683569.42	0.0280	0.0029 *
Mercury	-23010-07-10 06:28 J	-6682789.33	-6682789.23	-6682789.14	0.0272	0.0185
Mercury	-23010-10-06 17:02 J	-6682700.92	-6682700.79	-6682700.66	0.0271	0.0070
Mercury	-23009-01-03 03:36 J	-6682612.48	-6682612.35	-6682612.22	0.0271	0.0045
Mercury	-23009-03-31 14:23 J	-6682524.01	-6682523.90	-6682523.79	0.0270	0.0160
Mars	-23007-09-22 16:19 J	-6681618.98	-6681618.82	-6681618.66	0.0264	0.0220

Venus	-23003-11-30 04:33 J	-6680089.49	-6680089.31	-6680089.14	0.0263	0.0149
Venus	-23002-07-17 01:26 J	-6679860.65	-6679860.44	-6679860.23	0.0264	0.0032
Venus	-23001-03-01 23:16 J	-6679631.73	-6679631.53	-6679631.33	0.0265	0.0087
Venus	-23001-10-16 22:33 J	-6679402.68	-6679402.56	-6679402.42	0.0266	0.0209

# 23RD MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 23rd millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-22994-07-23 21:21 J	-6676931.78	-6676931.61	-6676931.44	0.0290	0.0106		
Mercury	-22994-10-20 21:07 J	-6676842.80	-6676842.62	-6676842.45	0.0291	0.0091		
Mercury	-22993-01-17 20:23 J	-6676753.67	-6676753.65	-6676753.62	0.0292	0.0287		
Venus	-22988-05-19 12:28 J	-6674805.17	-6674804.98	-6674804.79	0.0298	0.0138		
Venus	-22987-01-04 17:45 J	-6674574.97	-6674574.76	-6674574.55	0.0297	0.0038		
Venus	-22987-08-22 20:52 J	-6674344.78	-6674344.63	-6674344.48	0.0295	0.0209		
Mercury	-22981-11-26 08:23 J	-6672057.22	-6672057.15	-6672057.08	0.0272	0.0222		
Mercury	-22980-02-22 18:57 J	-6671968.83	-6671968.71	-6671968.59	0.0271	0.0108		
Mercury	-22980-05-22 05:31 J	-6671880.40	-6671880.27	-6671880.13	0.0270	0.0008		
Mercury	-22980-08-18 16:04 J	-6671791.94	-6671791.83	-6671791.70	0.0270	0.0122		
Mercury	-22980-11-15 02:52 J	-6671703.44	-6671703.38	-6671703.31	0.0269	0.0236		
Venus	-22974-10-26 07:55 J	-6669532.23	-6669532.17	-6669532.11	0.0262	0.0250		
Venus	-22973-06-11 03:36 J	-6669303.52	-6669303.35	-6669303.16	0.0263	0.0136		
Venus	-22972-01-26 00:28 J	-6669074.69	-6669074.48	-6669074.27	0.0264	0.0019		

Venus	-22972-09-11 22:04 J	-6668845.77	-6668845.58	-6668845.38	0.0265	0.0102
Venus	-22971-04-28 21:21 J	-6668616.71	-6668616.61	-6668616.49	0.0266	0.0223
Earth	-22967-11-21 09:36 J	-6666949.34	-6666949.10	-6666948.85	0.0281	0.0031
Moon	-22967-11-21 11:16 J	-6666949.28	-6666949.03	-6666948.77	0.0281	0.0030 *
Mercury	-22965-12-09 16:33 J	-6666199.95	-6666199.81	-6666199.67	0.0289	0.0186
Mercury	-22964-03-08 16:33 J	-6666110.99	-6666110.81	-6666110.63	0.0290	0.0012
Mercury	-22964-06-05 16:04 J	-6666021.95	-6666021.83	-6666021.70	0.0291	0.0208
Venus	-22959-04-13 07:40 J	-6664249.20	-6664249.18	-6664249.14	0.0299	0.0295
Venus	-22959-11-29 15:07 J	-6664019.07	-6664018.87	-6664018.68	0.0298	0.0117
Venus	-22958-07-17 20:23 J	-6663788.86	-6663788.65	-6663788.44	0.0297	0.0059
Venus	-22957-03-03 23:31 J	-6663558.64	-6663558.52	-6663558.38	0.0296	0.0231
Earth	-22953-05-21 16:33 J	-6662019.05	-6662018.81	-6662018.57	0.0280	0.0042
Moon	-22953-05-21 17:16 J	-6662019.03	-6662018.78	-6662018.53	0.0280	0.0028 *
Mercury	-22951-04-15 10:48 J	-6661325.08	-6661325.05	-6661325.00	0.0273	0.0257
Mercury	-22951-07-12 21:36 J	-6661236.72	-6661236.60	-6661236.49	0.0272	0.0142
Mercury	-22951-10-09 08:09 J	-6661148.29	-6661148.16	-6661148.03	0.0271	0.0027
Mercury	-22950-01-05 18:43 J	-6661059.84	-6661059.72	-6661059.59	0.0270	0.0088
Mercury	-22950-04-04 05:31 J	-6660971.36	-6660971.27	-6660971.18	0.0270	0.0203
Mars	-22949-12-28 23:16 J	-6660336.69	-6660336.53	-6660336.33	0.0265	0.0211
Venus	-22944-05-07 11:45 J	-6658746.11	-6658746.01	-6658745.91	0.0262	0.0232
Venus	-22944-12-22 07:26 J	-6658517.38	-6658517.19	-6658517.00	0.0263	0.0117
Venus	-22943-08-08 04:19 J	-6658288.53	-6658288.32	-6658288.11	0.0263	0.0001
Venus	-22942-03-25 02:09 J	-6658059.59	-6658059.41	-6658059.22	0.0265	0.0120
Venus	-22942-11-09 01:26 J	-6657830.51	-6657830.44	-6657830.34	0.0266	0.0242
Moon	-22938-11-15 16:04 J	-6656362.89	-6656362.83	-6656362.74	0.0279	0.0264
Earth	-22938-11-15 17:16 J	-6656362.86	-6656362.78	-6656362.69	0.0279	0.0263 *
Mercury	-22935-04-28 14:23 J	-6655467.99	-6655467.90	-6655467.80	0.0289	0.0247
Mercury	-22935-07-26 14:23 J	-6655379.08	-6655378.90	-6655378.71	0.0290	0.0050
Mercury	-22935-10-23 14:09 J	-6655290.06	-6655289.91	-6655289.75	0.0291	0.0148
Mars	-22933-12-04 20:38 J	-6654516.80	-6654516.64	-6654516.46	0.0297	0.0238

Venus	-22930-10-24 13:26 J	-6653463.02	-6653462.94	-6653462.85	0.0299	0.0272
Venus	-22929-06-10 20:09 J	-6653232.86	-6653232.66	-6653232.45	0.0298	0.0095
Venus	-22928-01-27 01:26 J	-6653002.65	-6653002.44	-6653002.24	0.0297	0.0082
Venus	-22928-09-14 04:04 J	-6652772.43	-6652772.33	-6652772.21	0.0295	0.0251
Earth	-22924-05-16 06:43 J	-6651432.34	-6651432.22	-6651432.11	0.0281	0.0246
Moon	-22924-05-16 06:14 J	-6651432.31	-6651432.24	-6651432.15	0.0281	0.0261 *
Mercury	-22922-11-29 23:16 J	-6650504.62	-6650504.53	-6650504.43	0.0272	0.0181
Mercury	-22921-02-26 09:50 J	-6650416.21	-6650416.09	-6650415.95	0.0271	0.0067
Mercury	-22921-05-24 20:38 J	-6650327.77	-6650327.64	-6650327.51	0.0270	0.0049
Mercury	-22921-08-21 07:11 J	-6650239.30	-6650239.20	-6650239.09	0.0269	0.0164
Mars	-22918-02-15 15:07 J	-6649330.96	-6649330.87	-6649330.75	0.0264	0.0245
Venus	-22915-11-17 10:33 J	-6647960.16	-6647960.06	-6647959.94	0.0262	0.0219
Venus	-22914-07-04 06:28 J	-6647731.42	-6647731.23	-6647731.03	0.0263	0.0104
Venus	-22913-02-18 03:21 J	-6647502.58	-6647502.36	-6647502.15	0.0264	0.0015
Venus	-22913-10-04 01:11 J	-6647273.63	-6647273.45	-6647273.27	0.0265	0.0134
Venus	-22912-05-21 00:28 J	-6647044.54	-6647044.48	-6647044.42	0.0266	0.0256
Moon	-22908-11-22 01:55 J	-6645398.67	-6645398.42	-6645398.17	0.0281	0.0068
Earth	-22908-11-22 05:16 J	-6645398.52	-6645398.28	-6645398.04	0.0281	0.0076 *
Mercury	-22906-12-13 09:07 J	-6644647.27	-6644647.12	-6644646.95	0.0289	0.0134
Mercury	-22905-03-11 09:07 J	-6644558.30	-6644558.12	-6644557.94	0.0290	0.0064
Mercury	-22905-06-08 08:38 J	-6644469.22	-6644469.14	-6644469.06	0.0291	0.0260
Venus	-22900-05-05 13:40 J	-6642677.02	-6642676.93	-6642676.81	0.0299	0.0256
Venus	-22900-12-21 21:07 J	-6642446.82	-6642446.62	-6642446.41	0.0298	0.0077
Venus	-22899-08-09 02:23 J	-6642216.60	-6642216.40	-6642216.20	0.0297	0.0100
Venus	-22898-03-27 05:31 J	-6641986.35	-6641986.27	-6641986.18	0.0295	0.0270
Moon	-22894-05-23 10:48 J	-6640468.28	-6640468.05	-6640467.81	0.0280	0.0082
Earth	-22894-05-23 14:23 J	-6640468.12	-6640467.90	-6640467.67	0.0280	0.0093 *
Mercury	-22892-04-18 01:40 J	-6639772.50	-6639772.43	-6639772.35	0.0273	0.0218
Mercury	-22892-07-15 12:14 J	-6639684.11	-6639683.99	-6639683.86	0.0272	0.0103
Mercury	-22892-10-11 23:02 J	-6639595.68	-6639595.54	-6639595.41	0.0271	0.0014

Mercury	-22891-01-08 09:36 J	-6639507.21	-6639507.10	-6639506.98	0.0270	0.0129
Mercury	-22891-04-06 20:23 J	-6639418.70	-6639418.65	-6639418.59	0.0270	0.0244
Venus	-22885-05-29 14:23 J	-6637174.03	-6637173.90	-6637173.76	0.0262	0.0201
Venus	-22884-01-13 10:04 J	-6636945.27	-6636945.08	-6636944.88	0.0263	0.0086
Venus	-22884-08-30 06:57 J	-6636716.42	-6636716.21	-6636716.00	0.0263	0.0032
Venus	-22883-04-16 04:48 J	-6636487.46	-6636487.30	-6636487.12	0.0265	0.0153
Earth	-22879-11-16 12:28 J	-6634812.12	-6634811.98	-6634811.81	0.0279	0.0219
Moon	-22879-11-16 15:50 J	-6634811.97	-6634811.84	-6634811.68	0.0279	0.0222 *
Mercury	-22876-05-01 07:11 J	-6633915.33	-6633915.20	-6633915.06	0.0289	0.0194
Mercury	-22876-07-29 07:11 J	-6633826.38	-6633826.20	-6633826.02	0.0290	0.0004
Mercury	-22876-10-26 06:43 J	-6633737.35	-6633737.22	-6633737.09	0.0291	0.0200
Venus	-22871-11-15 19:55 J	-6631890.80	-6631890.67	-6631890.53	0.0299	0.0232
Venus	-22870-07-04 02:38 J	-6631660.60	-6631660.39	-6631660.18	0.0298	0.0054
Venus	-22869-02-19 07:40 J	-6631430.37	-6631430.18	-6631429.99	0.0297	0.0123
Venus	-22869-10-06 10:19 J	-6631200.10	-6631200.07	-6631200.03	0.0295	0.0291
Earth	-22865-05-17 04:48 J	-6629881.47	-6629881.30	-6629881.12	0.0281	0.0195
Moon	-22865-05-17 08:09 J	-6629881.31	-6629881.16	-6629880.99	0.0281	0.0208 *
Mercury	-22863-09-05 03:36 J	-6629040.39	-6629040.35	-6629040.30	0.0273	0.0256
Mercury	-22863-12-02 14:09 J	-6628952.02	-6628951.91	-6628951.79	0.0272	0.0141
Mercury	-22862-03-01 00:57 J	-6628863.59	-6628863.46	-6628863.33	0.0271	0.0026
Mercury	-22862-05-28 11:31 J	-6628775.14	-6628775.02	-6628774.89	0.0270	0.0090
Mercury	-22862-08-24 22:19 J	-6628686.66	-6628686.57	-6628686.48	0.0269	0.0204
Mars	-22860-05-23 20:38 J	-6628048.84	-6628048.64	-6628048.42	0.0265	0.0188
Venus	-22856-12-09 13:40 J	-6626388.08	-6626387.93	-6626387.79	0.0262	0.0188
Venus	-22855-07-26 09:21 J	-6626159.31	-6626159.11	-6626158.91	0.0263	0.0073
Venus	-22854-03-12 06:00 J	-6625930.45	-6625930.25	-6625930.04	0.0264	0.0046
Venus	-22854-10-27 03:50 J	-6625701.49	-6625701.34	-6625701.17	0.0265	0.0167
Moon	-22849-11-22 22:33 J	-6623847.77	-6623847.56	-6623847.33	0.0281	0.0112
Earth	-22849-11-23 01:11 J	-6623847.67	-6623847.45	-6623847.22	0.0281	0.0122 *
Mercury	-22847-09-18 01:55 J	-6623183.46	-6623183.42	-6623183.37	0.0289	0.0279

Mercury	-22847-12-16 02:09 J	-6623094.59	-6623094.41	-6623094.24	0.0289	0.0081
Mercury	-22846-03-15 01:55 J	-6623005.59	-6623005.42	-6623005.26	0.0290	0.0117
Mars	-22844-04-28 17:45 J	-6622229.94	-6622229.76	-6622229.56	0.0297	0.0223
Venus	-22841-05-27 20:09 J	-6621104.81	-6621104.66	-6621104.51	0.0299	0.0216
Venus	-22840-01-13 03:07 J	-6620874.58	-6620874.37	-6620874.16	0.0298	0.0037
Venus	-22840-08-31 08:09 J	-6620644.34	-6620644.16	-6620643.97	0.0297	0.0140
Moon	-22835-05-24 09:50 J	-6618917.29	-6618917.09	-6618916.88	0.0280	0.0135
Earth	-22835-05-24 11:16 J	-6618917.23	-6618917.03	-6618916.81	0.0280	0.0142 *
Mercury	-22833-04-20 16:33 J	-6618219.91	-6618219.81	-6618219.71	0.0273	0.0179
Mercury	-22833-07-18 03:07 J	-6618131.50	-6618131.37	-6618131.24	0.0272	0.0063
Mercury	-22833-10-14 13:40 J	-6618043.06	-6618042.93	-6618042.80	0.0271	0.0053
Mercury	-22832-01-11 00:28 J	-6617954.58	-6617954.48	-6617954.37	0.0270	0.0168
Venus	-22826-06-21 17:02 J	-6615601.94	-6615601.79	-6615601.62	0.0262	0.0171
Venus	-22825-02-05 13:11 J	-6615373.16	-6615372.95	-6615372.75	0.0263	0.0055
Venus	-22825-09-21 09:50 J	-6615144.29	-6615144.09	-6615143.88	0.0263	0.0064
Venus	-22824-05-08 07:55 J	-6614915.31	-6614915.17	-6614915.01	0.0265	0.0185
Earth	-22820-11-17 09:21 J	-6613261.30	-6613261.11	-6613260.91	0.0279	0.0170
Moon	-22820-11-17 11:45 J	-6613261.19	-6613261.01	-6613260.79	0.0279	0.0176 *
Mercury	-22817-05-04 00:14 J	-6612362.65	-6612362.49	-6612362.33	0.0289	0.0140
Mercury	-22817-08-01 00:00 J	-6612273.68	-6612273.50	-6612273.32	0.0290	0.0058
Mercury	-22817-10-28 23:16 J	-6612184.60	-6612184.53	-6612184.43	0.0291	0.0254
Venus	-22812-12-08 01:55 J	-6610318.57	-6610318.42	-6610318.25	0.0299	0.0193
Venus	-22811-07-26 08:38 J	-6610088.35	-6610088.14	-6610087.92	0.0298	0.0014
Venus	-22810-03-13 13:26 J	-6609858.12	-6609857.94	-6609857.76	0.0297	0.0163
Earth	-22806-05-19 02:09 J	-6608330.61	-6608330.41	-6608330.20	0.0282	0.0145
Moon	-22806-05-19 03:50 J	-6608330.53	-6608330.34	-6608330.12	0.0282	0.0156 *
Mercury	-22804-09-07 18:28 J	-6607487.81	-6607487.73	-6607487.65	0.0273	0.0216
Mercury	-22804-12-05 05:02 J	-6607399.41	-6607399.29	-6607399.16	0.0272	0.0101
Mercury	-22803-03-03 15:50 J	-6607310.98	-6607310.84	-6607310.71	0.0271	0.0015
Mercury	-22803-05-31 02:23 J	-6607222.51	-6607222.40	-6607222.28	0.0270	0.0130



Mercury	-22803-08-27 13:11 J	-6607134.00	-6607133.95	-6607133.90	0.0269	0.0245
Venus	-22797-12-31 17:02 J	-6604815.95	-6604815.79	-6604815.62	0.0262	0.0157
Venus	-22796-08-17 12:43 J	-6604587.17	-6604586.97	-6604586.76	0.0263	0.0041
Venus	-22795-04-03 09:36 J	-6604358.30	-6604358.10	-6604357.90	0.0264	0.0079
Venus	-22795-11-18 07:26 J	-6604129.32	-6604129.19	-6604129.04	0.0265	0.0200
Earth	-22790-11-24 22:04 J	-6602296.77	-6602296.58	-6602296.37	0.0281	0.0171
Moon	-22790-11-25 00:14 J	-6602296.69	-6602296.49	-6602296.29	0.0281	0.0159 *
Mercury	-22788-09-20 19:11 J	-6601630.81	-6601630.70	-6601630.58	0.0289	0.0223
Mercury	-22788-12-18 19:11 J	-6601541.88	-6601541.70	-6601541.52	0.0289	0.0026
Mercury	-22787-03-17 18:43 J	-6601452.86	-6601452.72	-6601452.57	0.0290	0.0171
Jupiter	-22784-09-06 03:07 J	-6600184.82	-6600184.37	-6600183.90	0.0299	0.0043
Venus	-22782-06-20 01:55 J	-6599532.58	-6599532.42	-6599532.24	0.0299	0.0177
Venus	-22781-02-05 08:52 J	-6599302.34	-6599302.13	-6599301.91	0.0298	0.0007
Venus	-22781-09-22 13:55 J	-6599072.09	-6599071.92	-6599071.75	0.0297	0.0179
Earth	-22776-05-25 08:23 J	-6597366.32	-6597366.15	-6597365.97	0.0280	0.0191
Moon	-22776-05-25 10:48 J	-6597366.21	-6597366.05	-6597365.86	0.0280	0.0191 *
Mercury	-22774-01-25 20:23 J	-6596755.68	-6596755.65	-6596755.60	0.0274	0.0257
Mercury	-22774-04-24 07:11 J	-6596667.31	-6596667.20	-6596667.09	0.0273	0.0140
Mercury	-22774-07-21 17:45 J	-6596578.89	-6596578.76	-6596578.62	0.0272	0.0025
Mercury	-22774-10-18 04:33 J	-6596490.44	-6596490.31	-6596490.18	0.0271	0.0092
Mercury	-22773-01-14 15:21 J	-6596401.95	-6596401.86	-6596401.78	0.0270	0.0208
Mars	-22772-10-17 01:26 J	-6595760.67	-6595760.44	-6595760.19	0.0266	0.0159
Venus	-22768-11-27 01:11 J	-6594258.49	-6594258.45	-6594258.39	0.0262	0.0254
Venus	-22767-07-13 20:23 J	-6594029.81	-6594029.65	-6594029.46	0.0262	0.0140
Venus	-22766-02-27 16:48 J	-6593801.01	-6593800.80	-6593800.59	0.0263	0.0023
Venus	-22766-10-14 13:40 J	-6593572.12	-6593571.93	-6593571.73	0.0264	0.0097
Venus	-22765-05-30 11:45 J	-6593343.12	-6593343.01	-6593342.88	0.0265	0.0218
Moon	-22761-11-18 06:00 J	-6591710.47	-6591710.25	-6591710.01	0.0279	0.0127
Earth	-22761-11-18 07:55 J	-6591710.39	-6591710.17	-6591709.93	0.0279	0.0118 *
Mercury	-22758-02-07 17:45 J	-6590898.80	-6590898.76	-6590898.71	0.0288	0.0277

Mercury	-22758-05-07 17:45 J	-6590809.93	-6590809.76	-6590809.58	0.0289	0.0080
Mercury	-22758-08-04 17:31 J	-6590720.93	-6590720.77	-6590720.60	0.0290	0.0117
Mars	-22756-09-21 15:36 J	-6589942.00	-6589941.85	-6589941.68	0.0297	0.0245
Venus	-22753-12-30 09:36 J	-6588746.28	-6588746.10	-6588745.92	0.0299	0.0150
Venus	-22752-08-17 15:50 J	-6588516.05	-6588515.84	-6588515.62	0.0298	0.0030
Venus	-22751-04-04 20:09 J	-6588285.80	-6588285.66	-6588285.50	0.0297	0.0205
Moon	-22747-05-19 22:04 J	-6586779.80	-6586779.58	-6586779.34	0.0282	0.0100
Earth	-22747-05-20 00:43 J	-6586779.70	-6586779.47	-6586779.24	0.0282	0.0093 *
Mercury	-22745-09-10 09:21 J	-6585935.21	-6585935.11	-6585935.00	0.0273	0.0175
Mercury	-22745-12-07 20:09 J	-6585846.79	-6585846.66	-6585846.53	0.0272	0.0059
Mercury	-22744-03-06 06:43 J	-6585758.35	-6585758.22	-6585758.09	0.0271	0.0057
Mercury	-22744-06-02 17:31 J	-6585669.87	-6585669.77	-6585669.67	0.0270	0.0172
Venus	-22738-06-09 02:23 J	-6583472.48	-6583472.40	-6583472.31	0.0262	0.0239
Venus	-22737-01-23 21:36 J	-6583243.79	-6583243.60	-6583243.42	0.0262	0.0124
Venus	-22737-09-08 17:31 J	-6583014.99	-6583014.77	-6583014.56	0.0263	0.0009
Venus	-22736-04-25 14:09 J	-6582786.09	-6582785.91	-6582785.71	0.0264	0.0113
Venus	-22736-12-10 12:14 J	-6582557.07	-6582556.99	-6582556.88	0.0265	0.0234
Earth	-22731-11-25 22:33 J	-6580745.70	-6580745.56	-6580745.41	0.0281	0.0227
Moon	-22731-11-26 01:55 J	-6580745.57	-6580745.42	-6580745.25	0.0281	0.0215 *
Mercury	-22729-09-23 13:11 J	-6580078.10	-6580077.95	-6580077.79	0.0289	0.0159
Mercury	-22729-12-21 13:11 J	-6579989.13	-6579988.95	-6579988.77	0.0289	0.0038
Mercury	-22728-03-20 12:43 J	-6579900.08	-6579899.97	-6579899.87	0.0290	0.0234
Venus	-22723-07-12 09:50 J	-6577960.28	-6577960.09	-6577959.90	0.0299	0.0135
Venus	-22722-02-27 16:19 J	-6577730.03	-6577729.82	-6577729.61	0.0298	0.0045
Venus	-22722-10-15 20:52 J	-6577499.77	-6577499.63	-6577499.49	0.0297	0.0220
Earth	-22717-05-26 06:14 J	-6575815.35	-6575815.24	-6575815.12	0.0280	0.0244
Moon	-22717-05-26 09:07 J	-6575815.23	-6575815.12	-6575814.99	0.0280	0.0243 *
Mercury	-22715-01-28 11:31 J	-6575203.10	-6575203.02	-6575202.94	0.0274	0.0216
Mercury	-22715-04-26 22:04 J	-6575114.70	-6575114.58	-6575114.46	0.0273	0.0099
Mercury	-22715-07-24 08:52 J	-6575026.27	-6575026.13	-6575026.00	0.0272	0.0019

Mercury	-22715-10-20 19:26 J	-6574937.80	-6574937.69	-6574937.57	0.0271	0.0134
Mercury	-22714-01-17 06:14 J	-6574849.28	-6574849.24	-6574849.19	0.0271	0.0251
Venus	-22709-12-19 05:45 J	-6572686.36	-6572686.26	-6572686.15	0.0262	0.0222
Venus	-22708-08-05 01:11 J	-6572457.64	-6572457.45	-6572457.26	0.0262	0.0107
Venus	-22707-03-21 21:21 J	-6572228.82	-6572228.61	-6572228.39	0.0263	0.0012
Venus	-22707-11-05 18:43 J	-6571999.90	-6571999.72	-6571999.53	0.0264	0.0131
Venus	-22706-06-22 17:16 J	-6571770.83	-6571770.78	-6571770.71	0.0265	0.0252
Moon	-22702-11-20 06:00 J	-6570159.49	-6570159.25	-6570159.01	0.0279	0.0071
Earth	-22702-11-20 09:36 J	-6570159.34	-6570159.10	-6570158.85	0.0279	0.0059 *
Mercury	-22699-02-10 12:28 J	-6569346.11	-6569345.98	-6569345.85	0.0288	0.0209
Mercury	-22699-05-10 12:14 J	-6569257.17	-6569256.99	-6569256.80	0.0289	0.0013
Mercury	-22699-08-07 11:45 J	-6569168.14	-6569168.01	-6569167.86	0.0290	0.0184
Venus	-22694-06-06 10:33 J	-6567404.12	-6567404.06	-6567404.00	0.0300	0.0287
Venus	-22693-01-22 18:14 J	-6567173.94	-6567173.74	-6567173.54	0.0299	0.0107
Venus	-22693-09-09 00:14 J	-6566943.69	-6566943.49	-6566943.28	0.0298	0.0073
Venus	-22692-04-27 04:19 J	-6566713.43	-6566713.32	-6566713.20	0.0297	0.0247
Moon	-22688-05-20 21:07 J	-6565228.85	-6565228.62	-6565228.38	0.0282	0.0043
Earth	-22688-05-21 00:28 J	-6565228.72	-6565228.48	-6565228.24	0.0282	0.0037 *
Mercury	-22686-06-17 13:55 J	-6564470.97	-6564470.92	-6564470.86	0.0274	0.0248
Mercury	-22686-09-14 00:43 J	-6564382.59	-6564382.47	-6564382.36	0.0273	0.0132
Mercury	-22686-12-11 11:16 J	-6564294.16	-6564294.03	-6564293.89	0.0272	0.0016
Mercury	-22685-03-08 22:04 J	-6564205.71	-6564205.58	-6564205.46	0.0271	0.0101
Mercury	-22685-06-05 08:38 J	-6564117.21	-6564117.14	-6564117.05	0.0270	0.0218
Mars	-22683-03-12 09:21 J	-6563472.37	-6563472.11	-6563471.83	0.0265	0.0120
Venus	-22679-07-01 07:40 J	-6561900.30	-6561900.18	-6561900.04	0.0262	0.0206
Venus	-22678-02-15 03:07 J	-6561671.57	-6561671.37	-6561671.17	0.0262	0.0090
Venus	-22678-10-01 23:16 J	-6561442.74	-6561442.53	-6561442.32	0.0263	0.0028
Venus	-22677-05-17 20:23 J	-6561213.82	-6561213.65	-6561213.47	0.0264	0.0148
Moon	-22672-11-27 02:38 J	-6559194.42	-6559194.39	-6559194.33	0.0281	0.0277
Mercury	-22670-06-30 08:23 J	-6558614.17	-6558614.15	-6558614.11	0.0288	0.0283

Mercury	-22670-09-27 08:38 J	-6558525.32	-6558525.14	-6558524.97	0.0289	0.0086
Mercury	-22670-12-25 08:09 J	-6558436.32	-6558436.16	-6558435.99	0.0290	0.0111
Mars	-22667-02-14 06:57 J	-6557654.35	-6557654.21	-6557654.06	0.0296	0.0258
Venus	-22665-12-16 12:28 J	-6556618.06	-6556617.98	-6556617.88	0.0299	0.0269
Venus	-22664-08-03 20:09 J	-6556387.86	-6556387.66	-6556387.46	0.0298	0.0089
Venus	-22663-03-22 01:55 J	-6556157.62	-6556157.42	-6556157.21	0.0298	0.0091
Venus	-22663-11-07 06:00 J	-6555927.34	-6555927.25	-6555927.15	0.0296	0.0263
Mercury	-22656-01-31 02:38 J	-6553650.49	-6553650.39	-6553650.28	0.0274	0.0171
Mercury	-22656-04-29 13:26 J	-6553562.07	-6553561.94	-6553561.81	0.0273	0.0054
Mercury	-22656-07-27 00:00 J	-6553473.63	-6553473.50	-6553473.37	0.0272	0.0064
Mercury	-22656-10-23 10:48 J	-6553385.15	-6553385.05	-6553384.95	0.0271	0.0180
Venus	-22649-01-11 11:31 J	-6551114.16	-6551114.02	-6551113.87	0.0262	0.0188
Venus	-22649-08-27 06:57 J	-6550885.40	-6550885.21	-6550885.00	0.0262	0.0073
Venus	-22648-04-13 03:36 J	-6550656.56	-6550656.35	-6550656.14	0.0263	0.0047
Venus	-22648-11-28 01:11 J	-6550427.61	-6550427.45	-6550427.29	0.0264	0.0167
Moon	-22643-11-21 14:52 J	-6548608.12	-6548607.88	-6548607.64	0.0279	0.0005
Earth	-22643-11-21 15:07 J	-6548608.12	-6548607.87	-6548607.62	0.0279	0.0009 *
Mercury	-22640-02-13 08:23 J	-6547793.31	-6547793.15	-6547792.99	0.0288	0.0130
Mercury	-22640-05-13 08:09 J	-6547704.34	-6547704.16	-6547703.98	0.0289	0.0067
Mercury	-22640-08-10 07:40 J	-6547615.26	-6547615.18	-6547615.11	0.0290	0.0262
Venus	-22635-06-28 22:04 J	-6545831.69	-6545831.58	-6545831.44	0.0299	0.0241
Venus	-22634-02-14 05:45 J	-6545601.47	-6545601.26	-6545601.05	0.0299	0.0059
Venus	-22634-10-02 11:16 J	-6545371.22	-6545371.03	-6545370.83	0.0298	0.0120
Venus	-22633-05-19 14:52 J	-6545140.90	-6545140.88	-6545140.84	0.0296	0.0292
Earth	-22629-05-22 02:38 J	-6543677.63	-6543677.39	-6543677.14	0.0282	0.0026
Moon	-22629-05-22 03:21 J	-6543677.59	-6543677.36	-6543677.12	0.0282	0.0024 *
Mercury	-22627-06-20 05:31 J	-6542918.36	-6542918.27	-6542918.18	0.0274	0.0201
Mercury	-22627-09-16 16:04 J	-6542829.95	-6542829.83	-6542829.70	0.0273	0.0084
Mercury	-22627-12-14 02:52 J	-6542741.51	-6542741.38	-6542741.25	0.0272	0.0033
Mercury	-22626-03-12 13:26 J	-6542653.04	-6542652.94	-6542652.82	0.0271	0.0150

Mercury	-22626-06-09 00:14 J	-6542564.50	-6542564.49	-6542564.46	0.0270	0.0267
Venus	-22620-07-23 14:38 J	-6540328.04	-6540327.89	-6540327.73	0.0262	0.0171
Venus	-22619-03-09 10:19 J	-6540099.28	-6540099.07	-6540098.86	0.0262	0.0054
Venus	-22619-10-24 06:43 J	-6539870.42	-6539870.22	-6539870.01	0.0263	0.0065
Venus	-22618-06-10 04:19 J	-6539641.47	-6539641.32	-6539641.17	0.0264	0.0186
Mercury	-22611-07-03 05:16 J	-6537061.41	-6537061.28	-6537061.14	0.0288	0.0198
Mercury	-22611-09-30 05:02 J	-6536972.47	-6536972.29	-6536972.10	0.0289	0.0007
Mercury	-22611-12-28 04:48 J	-6536883.44	-6536883.30	-6536883.17	0.0290	0.0194
Venus	-22605-01-09 01:26 J	-6535045.57	-6535045.44	-6535045.28	0.0299	0.0221
Venus	-22605-08-26 08:52 J	-6534815.35	-6534815.13	-6534814.92	0.0298	0.0040
Venus	-22604-04-13 14:09 J	-6534585.10	-6534584.91	-6534584.72	0.0297	0.0138
Moon	-22600-05-16 13:11 J	-6533090.99	-6533090.95	-6533090.90	0.0284	0.0278
Earth	-22600-05-16 14:38 J	-6533090.95	-6533090.89	-6533090.83	0.0284	0.0274 *
Mercury	-22598-11-07 07:40 J	-6532186.24	-6532186.18	-6532186.12	0.0274	0.0239
Mercury	-22597-02-03 18:14 J	-6532097.85	-6532097.74	-6532097.62	0.0274	0.0122
Mercury	-22597-05-02 05:02 J	-6532009.42	-6532009.29	-6532009.16	0.0273	0.0005
Mercury	-22597-07-29 15:50 J	-6531920.96	-6531920.84	-6531920.72	0.0272	0.0113
Mercury	-22597-10-26 02:38 J	-6531832.46	-6531832.39	-6531832.32	0.0271	0.0230
Mars	-22595-08-05 23:31 J	-6531183.81	-6531183.52	-6531183.23	0.0266	0.0074
Venus	-22590-02-02 18:28 J	-6529541.89	-6529541.73	-6529541.55	0.0262	0.0154
Venus	-22590-09-19 14:38 J	-6529313.10	-6529312.89	-6529312.68	0.0263	0.0035
Venus	-22589-05-05 11:16 J	-6529084.23	-6529084.03	-6529083.83	0.0263	0.0084
Venus	-22589-12-20 09:21 J	-6528855.24	-6528855.11	-6528854.98	0.0264	0.0205
Earth	-22584-11-23 00:00 J	-6527056.74	-6527056.50	-6527056.26	0.0280	0.0083
Moon	-22584-11-23 03:36 J	-6527056.58	-6527056.35	-6527056.10	0.0280	0.0069 *
Mercury	-22582-11-20 05:31 J	-6526329.37	-6526329.27	-6526329.17	0.0288	0.0238
Mercury	-22581-02-17 05:31 J	-6526240.46	-6526240.27	-6526240.09	0.0289	0.0042
Mercury	-22581-05-16 05:02 J	-6526151.44	-6526151.29	-6526151.13	0.0290	0.0154
Venus	-22576-07-21 12:57 J	-6524259.12	-6524258.96	-6524258.79	0.0299	0.0188
Venus	-22575-03-08 19:55 J	-6524028.88	-6524028.67	-6524028.46	0.0299	0.0007

Venus	-22575-10-25 01:11 J	-6523798.63	-6523798.45	-6523798.28	0.0297	0.0171
Earth	-22570-05-24 08:38 J	-6522126.36	-6522126.14	-6522125.91	0.0282	0.0095
Moon	-22570-05-24 12:28 J	-6522126.20	-6522125.98	-6522125.75	0.0282	0.0096 *
Mercury	-22568-03-26 10:48 J	-6521454.08	-6521454.05	-6521454.02	0.0274	0.0265
Mercury	-22568-06-22 21:36 J	-6521365.71	-6521365.60	-6521365.49	0.0273	0.0148
Mercury	-22568-09-19 08:09 J	-6521277.29	-6521277.16	-6521277.02	0.0273	0.0032
Mercury	-22568-12-16 18:57 J	-6521188.84	-6521188.71	-6521188.58	0.0272	0.0087
Mercury	-22567-03-15 05:45 J	-6521100.35	-6521100.26	-6521100.17	0.0271	0.0203
Venus	-22562-12-30 03:50 J	-6518984.40	-6518984.34	-6518984.27	0.0262	0.0248
Venus	-22561-08-14 23:02 J	-6518755.72	-6518755.54	-6518755.36	0.0262	0.0133
Venus	-22560-03-31 18:57 J	-6518526.92	-6518526.71	-6518526.50	0.0263	0.0016
Venus	-22560-11-15 15:36 J	-6518298.04	-6518297.85	-6518297.65	0.0264	0.0104
Venus	-22559-07-02 13:40 J	-6518069.03	-6518068.93	-6518068.81	0.0265	0.0226
Moon	-22555-11-17 05:45 J	-6516470.40	-6516470.26	-6516470.10	0.0278	0.0223
Earth	-22555-11-17 09:50 J	-6516470.25	-6516470.09	-6516469.92	0.0278	0.0207 *
Mercury	-22552-07-06 03:21 J	-6515508.53	-6515508.36	-6515508.19	0.0288	0.0102
Mercury	-22552-10-03 03:07 J	-6515419.54	-6515419.37	-6515419.20	0.0289	0.0094
Mercury	-22552-12-31 02:23 J	-6515330.41	-6515330.40	-6515330.38	0.0290	0.0289
Venus	-22546-01-31 18:00 J	-6513472.92	-6513472.75	-6513472.57	0.0299	0.0167
Venus	-22546-09-19 00:43 J	-6513242.68	-6513242.47	-6513242.26	0.0298	0.0014
Venus	-22545-05-06 05:31 J	-6513012.43	-6513012.27	-6513012.10	0.0297	0.0191
Moon	-22541-05-17 18:14 J	-6511539.90	-6511539.74	-6511539.57	0.0284	0.0201
Earth	-22541-05-17 22:04 J	-6511539.75	-6511539.58	-6511539.41	0.0284	0.0200 *
Mercury	-22539-11-09 23:45 J	-6510633.60	-6510633.51	-6510633.41	0.0274	0.0185
Mercury	-22538-02-06 10:33 J	-6510545.19	-6510545.06	-6510544.93	0.0273	0.0067
Mercury	-22538-05-05 21:21 J	-6510456.74	-6510456.61	-6510456.48	0.0273	0.0051
Mercury	-22538-08-02 08:09 J	-6510368.27	-6510368.16	-6510368.06	0.0272	0.0168
Venus	-22532-07-11 07:55 J	-6508198.27	-6508198.17	-6508198.07	0.0262	0.0231
Venus	-22531-02-25 03:21 J	-6507969.55	-6507969.36	-6507969.17	0.0263	0.0115
Venus	-22531-10-11 23:31 J	-6507740.73	-6507740.52	-6507740.31	0.0263	0.0004

Venus	-22530-05-28 20:38 J	-6507511.82	-6507511.64	-6507511.45	0.0264	0.0124
Venus	-22529-01-12 18:57 J	-6507282.78	-6507282.71	-6507282.62	0.0265	0.0245
Earth	-22525-11-24 12:57 J	-6505505.15	-6505504.96	-6505504.75	0.0280	0.0167
Moon	-22525-11-24 15:21 J	-6505505.08	-6505504.86	-6505504.65	0.0280	0.0151 *
Mercury	-22523-11-23 03:50 J	-6504776.49	-6504776.34	-6504776.17	0.0288	0.0139
Mercury	-22522-02-20 03:50 J	-6504687.52	-6504687.34	-6504687.16	0.0289	0.0057
Mercury	-22522-05-20 03:07 J	-6504598.45	-6504598.37	-6504598.28	0.0290	0.0253
Mars	-22521-10-15 05:16 J	-6504084.44	-6504084.28	-6504084.09	0.0295	0.0234
Venus	-22517-08-13 06:14 J	-6502686.43	-6502686.24	-6502686.05	0.0299	0.0132
Venus	-22516-03-31 12:43 J	-6502456.18	-6502455.97	-6502455.76	0.0298	0.0049
Venus	-22516-11-16 17:16 J	-6502225.92	-6502225.78	-6502225.64	0.0297	0.0225
Earth	-22511-05-25 17:31 J	-6500574.96	-6500574.77	-6500574.57	0.0281	0.0172
Moon	-22511-05-25 18:28 J	-6500574.91	-6500574.73	-6500574.52	0.0281	0.0176 *
Mercury	-22509-03-29 03:21 J	-6499901.45	-6499901.36	-6499901.28	0.0274	0.0208
Mercury	-22509-06-25 13:55 J	-6499813.04	-6499812.92	-6499812.79	0.0273	0.0091
Mercury	-22509-09-22 00:43 J	-6499724.60	-6499724.47	-6499724.34	0.0272	0.0027
Mercury	-22509-12-19 11:31 J	-6499636.13	-6499636.02	-6499635.91	0.0272	0.0144
Mercury	-22508-03-17 22:04 J	-6499547.60	-6499547.58	-6499547.54	0.0271	0.0262
Mars	-22507-12-31 08:23 J	-6498894.45	-6498894.15	-6498893.85	0.0266	0.0002
Venus	-22502-01-21 13:11 J	-6497412.07	-6497411.95	-6497411.82	0.0262	0.0210
Venus	-22502-09-07 08:38 J	-6497183.33	-6497183.14	-6497182.94	0.0262	0.0094
Venus	-22501-04-23 04:48 J	-6496954.51	-6496954.30	-6496954.09	0.0263	0.0025
Venus	-22501-12-08 02:09 J	-6496725.59	-6496725.41	-6496725.24	0.0264	0.0145
Moon	-22496-11-18 22:19 J	-6494918.77	-6494918.57	-6494918.35	0.0278	0.0137
Earth	-22496-11-19 00:28 J	-6494918.71	-6494918.48	-6494918.26	0.0278	0.0122 *
Mercury	-22493-04-11 02:23 J	-6494044.53	-6494044.40	-6494044.25	0.0288	0.0194
Mercury	-22493-07-09 02:23 J	-6493955.58	-6493955.40	-6493955.21	0.0289	0.0004
Mercury	-22493-10-06 01:55 J	-6493866.55	-6493866.42	-6493866.28	0.0290	0.0198
Venus	-22488-07-08 05:16 J	-6492130.32	-6492130.28	-6492130.22	0.0299	0.0289
Venus	-22487-02-23 12:57 J	-6491900.16	-6491899.96	-6491899.76	0.0298	0.0108

Venus	-22487-10-11 18:57 J	-6491669.91	-6491669.71	-6491669.50	0.0297	0.0072
Venus	-22486-05-29 23:16 J	-6491439.64	-6491439.53	-6491439.41	0.0296	0.0246
Moon	-22482-05-20 08:09 J	-6489988.37	-6489988.16	-6489987.94	0.0283	0.0118
Earth	-22482-05-20 08:52 J	-6489988.34	-6489988.13	-6489987.90	0.0283	0.0118 *
Mercury	-22480-08-16 05:45 J	-6489169.32	-6489169.26	-6489169.20	0.0275	0.0243
Mercury	-22480-11-12 16:33 J	-6489080.93	-6489080.81	-6489080.70	0.0274	0.0125
Mercury	-22479-02-09 03:07 J	-6488992.50	-6488992.37	-6488992.23	0.0273	0.0010
Mercury	-22479-05-08 13:55 J	-6488904.04	-6488903.92	-6488903.80	0.0272	0.0111
Mercury	-22479-08-05 00:43 J	-6488815.54	-6488815.47	-6488815.40	0.0271	0.0228
Venus	-22473-08-02 17:16 J	-6486625.92	-6486625.78	-6486625.64	0.0263	0.0192
Venus	-22472-03-19 12:57 J	-6486397.16	-6486396.96	-6486396.76	0.0263	0.0075
Venus	-22472-11-03 09:21 J	-6486168.31	-6486168.11	-6486167.90	0.0263	0.0045
Venus	-22471-06-20 07:11 J	-6485939.37	-6485939.20	-6485939.04	0.0264	0.0166
Moon	-22466-11-27 01:55 J	-6483953.54	-6483953.42	-6483953.28	0.0280	0.0240
Earth	-22466-11-27 04:19 J	-6483953.41	-6483953.32	-6483953.21	0.0280	0.0256 *
Mercury	-22464-08-29 03:21 J	-6483312.47	-6483312.36	-6483312.25	0.0287	0.0230
Mercury	-22464-11-26 03:07 J	-6483223.55	-6483223.37	-6483223.18	0.0288	0.0034
Mercury	-22463-02-23 02:52 J	-6483134.53	-6483134.38	-6483134.23	0.0289	0.0163
Venus	-22458-01-18 18:43 J	-6481343.84	-6481343.72	-6481343.61	0.0299	0.0254
Venus	-22458-09-06 01:55 J	-6481113.62	-6481113.42	-6481113.21	0.0299	0.0073
Venus	-22457-04-23 07:40 J	-6480883.37	-6480883.18	-6480882.97	0.0298	0.0108
Venus	-22457-12-09 11:45 J	-6480653.06	-6480653.01	-6480652.93	0.0297	0.0282
Moon	-22452-05-27 02:23 J	-6479023.48	-6479023.40	-6479023.30	0.0281	0.0261
Earth	-22452-05-27 05:31 J	-6479023.36	-6479023.27	-6479023.16	0.0281	0.0254 *
Mercury	-22450-01-03 09:36 J	-6478437.13	-6478437.10	-6478437.07	0.0275	0.0264
Mercury	-22450-04-01 20:09 J	-6478348.77	-6478348.66	-6478348.55	0.0274	0.0146
Mercury	-22450-06-29 06:57 J	-6478260.35	-6478260.21	-6478260.08	0.0273	0.0029
Mercury	-22450-09-25 17:31 J	-6478171.89	-6478171.77	-6478171.64	0.0272	0.0090
Mercury	-22450-12-23 04:19 J	-6478083.40	-6478083.32	-6478083.23	0.0271	0.0207
Venus	-22443-02-12 23:31 J	-6475839.68	-6475839.52	-6475839.36	0.0262	0.0170



Venus	-22443-09-29 19:11 J	-6475610.90	-6475610.70	-6475610.49	0.0263	0.0053
Venus	-22442-05-16 15:36 J	-6475382.05	-6475381.85	-6475381.64	0.0263	0.0068
Venus	-22442-12-31 13:11 J	-6475153.09	-6475152.95	-6475152.79	0.0264	0.0188
Earth	-22437-11-20 17:31 J	-6473367.02	-6473366.77	-6473366.53	0.0279	0.0031
Moon	-22437-11-20 19:26 J	-6473366.93	-6473366.69	-6473366.45	0.0279	0.0044 *
Mercury	-22434-01-16 02:38 J	-6472580.43	-6472580.39	-6472580.35	0.0287	0.0278
Mercury	-22434-04-15 02:38 J	-6472491.57	-6472491.39	-6472491.21	0.0288	0.0082
Mercury	-22434-07-13 02:09 J	-6472402.57	-6472402.41	-6472402.24	0.0289	0.0114
Mars	-22432-03-11 23:45 J	-6471794.75	-6471794.51	-6471794.25	0.0295	0.0141
Venus	-22429-07-31 02:38 J	-6470557.53	-6470557.39	-6470557.25	0.0299	0.0228
Venus	-22428-03-18 09:50 J	-6470327.30	-6470327.09	-6470326.88	0.0298	0.0047
Venus	-22428-11-03 15:07 J	-6470097.05	-6470096.87	-6470096.67	0.0297	0.0132
Earth	-22423-05-21 22:19 J	-6468436.81	-6468436.57	-6468436.33	0.0282	0.0032
Moon	-22423-05-22 01:11 J	-6468436.68	-6468436.45	-6468436.21	0.0282	0.0029 *
Mercury	-22421-08-18 22:48 J	-6467616.65	-6467616.55	-6467616.45	0.0274	0.0180
Mercury	-22421-11-15 09:21 J	-6467528.23	-6467528.11	-6467527.98	0.0273	0.0062
Mercury	-22420-02-11 20:09 J	-6467439.79	-6467439.66	-6467439.53	0.0272	0.0056
Mercury	-22420-05-11 06:57 J	-6467351.31	-6467351.21	-6467351.11	0.0272	0.0174
Mars	-22418-05-27 14:38 J	-6466605.17	-6466604.89	-6466604.59	0.0266	0.0072
Venus	-22414-08-26 03:07 J	-6465053.53	-6465053.37	-6465053.19	0.0263	0.0152
Venus	-22413-04-10 23:02 J	-6464824.74	-6464824.54	-6464824.33	0.0263	0.0034
Venus	-22413-11-25 19:55 J	-6464595.87	-6464595.67	-6464595.47	0.0264	0.0087
Venus	-22412-07-12 18:14 J	-6464366.87	-6464366.74	-6464366.61	0.0265	0.0208
Mercury	-22405-09-01 02:52 J	-6461759.55	-6461759.38	-6461759.21	0.0288	0.0121
Mercury	-22405-11-29 02:38 J	-6461670.56	-6461670.39	-6461670.21	0.0289	0.0075
Mercury	-22404-02-26 02:09 J	-6461581.47	-6461581.41	-6461581.34	0.0290	0.0270
Venus	-22399-02-10 15:36 J	-6459771.01	-6459770.85	-6459770.69	0.0299	0.0192
Venus	-22399-09-28 22:33 J	-6459540.77	-6459540.56	-6459540.34	0.0299	0.0011
Venus	-22398-05-17 03:50 J	-6459310.51	-6459310.34	-6459310.16	0.0298	0.0168
Mercury	-22391-01-06 02:38 J	-6456884.48	-6456884.39	-6456884.30	0.0274	0.0199

Mercury	-22391-04-04 13:11 J	-6456796.07	-6456795.95	-6456795.82	0.0273	0.0082
Mercury	-22391-07-02 00:00 J	-6456707.63	-6456707.50	-6456707.37	0.0272	0.0036
Mercury	-22391-09-28 10:48 J	-6456619.16	-6456619.05	-6456618.94	0.0272	0.0154
Venus	-22385-07-21 14:23 J	-6454495.96	-6454495.90	-6454495.82	0.0262	0.0245
Venus	-22384-03-07 09:50 J	-6454267.27	-6454267.09	-6454266.90	0.0262	0.0129
Venus	-22384-10-22 06:00 J	-6454038.46	-6454038.25	-6454038.04	0.0263	0.0011
Venus	-22383-06-08 02:52 J	-6453809.57	-6453809.38	-6453809.19	0.0264	0.0110
Venus	-22382-01-23 00:57 J	-6453580.56	-6453580.46	-6453580.36	0.0265	0.0231
Earth	-22378-11-23 10:04 J	-6451815.32	-6451815.08	-6451814.84	0.0279	0.0060
Moon	-22378-11-23 13:40 J	-6451815.17	-6451814.93	-6451814.68	0.0279	0.0046 *
Mercury	-22375-01-19 02:38 J	-6451027.54	-6451027.39	-6451027.24	0.0288	0.0167
Mercury	-22375-04-18 02:23 J	-6450938.58	-6450938.40	-6450938.21	0.0289	0.0030
Mercury	-22375-07-16 01:55 J	-6450849.53	-6450849.42	-6450849.30	0.0290	0.0225
Venus	-22370-08-24 00:14 J	-6448984.66	-6448984.49	-6448984.30	0.0299	0.0166
Venus	-22369-04-10 07:11 J	-6448754.41	-6448754.20	-6448753.99	0.0298	0.0016
Venus	-22369-11-26 12:14 J	-6448524.15	-6448523.99	-6448523.83	0.0297	0.0193
Earth	-22364-05-23 13:26 J	-6446885.17	-6446884.94	-6446884.70	0.0282	0.0058
Moon	-22364-05-23 16:33 J	-6446885.04	-6446884.81	-6446884.56	0.0282	0.0060 *
Mercury	-22362-05-26 05:16 J	-6446152.35	-6446152.28	-6446152.21	0.0274	0.0232
Mercury	-22362-08-22 15:50 J	-6446063.95	-6446063.84	-6446063.71	0.0273	0.0115
Mercury	-22362-11-19 02:38 J	-6445975.52	-6445975.39	-6445975.26	0.0273	0.0005
Mercury	-22361-02-15 13:26 J	-6445887.06	-6445886.94	-6445886.82	0.0272	0.0121
Mercury	-22361-05-14 00:00 J	-6445798.55	-6445798.50	-6445798.43	0.0271	0.0239
Venus	-22355-01-31 18:00 J	-6443709.85	-6443709.75	-6443709.65	0.0263	0.0227
Venus	-22355-09-17 13:11 J	-6443481.14	-6443480.95	-6443480.75	0.0263	0.0111
Venus	-22354-05-04 09:21 J	-6443252.32	-6443252.11	-6443251.90	0.0263	0.0009
Venus	-22354-12-19 06:28 J	-6443023.41	-6443023.23	-6443023.05	0.0264	0.0129
Venus	-22353-08-04 04:48 J	-6442794.36	-6442794.30	-6442794.23	0.0265	0.0251
Moon	-22349-11-16 19:55 J	-6441228.79	-6441228.67	-6441228.52	0.0277	0.0232
Earth	-22349-11-17 00:00 J	-6441228.65	-6441228.50	-6441228.35	0.0277	0.0218 *

Mercury	-22346-06-08 02:38 J	-6440295.52	-6440295.39	-6440295.27	0.0287	0.0210
Mercury	-22346-09-05 02:23 J	-6440206.58	-6440206.40	-6440206.21	0.0288	0.0015
Mercury	-22346-12-03 02:09 J	-6440117.55	-6440117.41	-6440117.27	0.0289	0.0183
Mars	-22344-08-07 05:45 J	-6439504.55	-6439504.26	-6439503.98	0.0295	0.0024
Venus	-22340-03-05 12:43 J	-6438198.16	-6438197.97	-6438197.77	0.0299	0.0130
Venus	-22340-10-21 19:26 J	-6437967.90	-6437967.69	-6437967.48	0.0298	0.0052
Venus	-22339-06-09 00:28 J	-6437737.62	-6437737.48	-6437737.35	0.0297	0.0229
Moon	-22335-05-18 10:33 J	-6436298.20	-6436298.06	-6436297.91	0.0284	0.0223
Earth	-22335-05-18 13:55 J	-6436298.06	-6436297.92	-6436297.76	0.0284	0.0218 *
Mercury	-22333-10-12 09:07 J	-6435420.17	-6435420.12	-6435420.07	0.0275	0.0252
Mercury	-22332-01-08 19:40 J	-6435331.79	-6435331.68	-6435331.56	0.0274	0.0135
Mercury	-22332-04-07 06:28 J	-6435243.36	-6435243.23	-6435243.10	0.0273	0.0017
Mercury	-22332-07-04 17:16 J	-6435154.91	-6435154.78	-6435154.66	0.0272	0.0101
Mercury	-22332-10-01 04:04 J	-6435066.41	-6435066.33	-6435066.26	0.0271	0.0219
Mars	-22330-10-22 13:11 J	-6434315.18	-6434314.95	-6434314.71	0.0266	0.0167
Venus	-22326-08-14 00:28 J	-6432923.61	-6432923.48	-6432923.35	0.0262	0.0205
Venus	-22325-03-29 19:40 J	-6432694.87	-6432694.68	-6432694.47	0.0262	0.0089
Venus	-22325-11-13 16:04 J	-6432466.04	-6432465.83	-6432465.62	0.0263	0.0031
Venus	-22324-06-30 13:26 J	-6432237.11	-6432236.94	-6432236.77	0.0264	0.0152
Earth	-22319-11-25 00:57 J	-6430263.66	-6430263.46	-6430263.23	0.0280	0.0148
Moon	-22319-11-25 02:09 J	-6430263.63	-6430263.41	-6430263.17	0.0280	0.0133 *
Mercury	-22317-10-25 01:55 J	-6429563.49	-6429563.42	-6429563.33	0.0288	0.0258
Mercury	-22316-01-22 02:09 J	-6429474.59	-6429474.41	-6429474.23	0.0288	0.0060
Mercury	-22316-04-21 01:55 J	-6429385.58	-6429385.42	-6429385.26	0.0289	0.0136
Venus	-22311-01-28 13:11 J	-6427642.00	-6427641.95	-6427641.87	0.0299	0.0285
Venus	-22311-09-15 21:07 J	-6427411.81	-6427411.62	-6427411.41	0.0299	0.0104
Venus	-22310-05-04 03:36 J	-6427181.55	-6427181.35	-6427181.14	0.0298	0.0078
Venus	-22310-12-20 08:23 J	-6426951.26	-6426951.15	-6426951.04	0.0296	0.0253
Moon	-22305-05-25 03:36 J	-6425333.55	-6425333.35	-6425333.13	0.0281	0.0148
Earth	-22305-05-25 03:50 J	-6425333.54	-6425333.34	-6425333.13	0.0281	0.0146 *

Mercury	-22303-05-28 22:19 J	-6424599.67	-6424599.57	-6424599.46	0.0274	0.0167
Mercury	-22303-08-25 09:07 J	-6424511.25	-6424511.12	-6424510.99	0.0273	0.0049
Mercury	-22303-11-21 19:40 J	-6424422.80	-6424422.68	-6424422.54	0.0272	0.0069
Mercury	-22302-02-18 06:28 J	-6424334.32	-6424334.23	-6424334.13	0.0271	0.0186
Venus	-22296-02-23 03:07 J	-6422137.51	-6422137.37	-6422137.22	0.0262	0.0188
Venus	-22296-10-09 22:48 J	-6421908.76	-6421908.55	-6421908.35	0.0263	0.0070
Venus	-22295-05-26 18:57 J	-6421679.92	-6421679.71	-6421679.50	0.0263	0.0050
Venus	-22294-01-10 16:04 J	-6421450.98	-6421450.83	-6421450.66	0.0264	0.0171
Moon	-22290-11-19 11:45 J	-6419677.21	-6419677.01	-6419676.81	0.0278	0.0153
Earth	-22290-11-19 12:14 J	-6419677.20	-6419676.99	-6419676.77	0.0278	0.0138 *
Mercury	-22287-06-11 01:11 J	-6418742.62	-6418742.45	-6418742.28	0.0288	0.0109
Mercury	-22287-09-08 00:57 J	-6418653.63	-6418653.46	-6418653.28	0.0289	0.0088
Mercury	-22287-12-06 00:28 J	-6418564.51	-6418564.48	-6418564.44	0.0290	0.0283
Venus	-22282-08-11 00:28 J	-6416855.59	-6416855.48	-6416855.36	0.0299	0.0252
Venus	-22281-03-28 08:23 J	-6416625.36	-6416625.15	-6416624.94	0.0299	0.0070
Venus	-22281-11-13 14:38 J	-6416395.08	-6416394.89	-6416394.69	0.0298	0.0112
Venus	-22280-07-01 19:11 J	-6416164.74	-6416164.70	-6416164.64	0.0297	0.0287
Earth	-22276-05-20 04:04 J	-6414746.54	-6414746.33	-6414746.11	0.0283	0.0131
Moon	-22276-05-20 04:04 J	-6414746.53	-6414746.33	-6414746.12	0.0283	0.0133 *
Mercury	-22274-10-16 02:09 J	-6413867.50	-6413867.41	-6413867.31	0.0274	0.0189
Mercury	-22273-01-12 12:57 J	-6413779.09	-6413778.96	-6413778.84	0.0273	0.0071
Mercury	-22273-04-09 23:31 J	-6413690.65	-6413690.52	-6413690.39	0.0272	0.0047
Mercury	-22273-07-07 10:19 J	-6413602.18	-6413602.07	-6413601.97	0.0271	0.0164
Mars	-22271-01-28 04:48 J	-6413032.38	-6413032.30	-6413032.19	0.0267	0.0254
Venus	-22267-09-05 09:21 J	-6411351.27	-6411351.11	-6411350.94	0.0262	0.0165
Venus	-22266-04-22 04:48 J	-6411122.50	-6411122.30	-6411122.09	0.0262	0.0048
Venus	-22266-12-07 01:11 J	-6410893.65	-6410893.45	-6410893.24	0.0263	0.0072
Venus	-22265-07-22 22:48 J	-6410664.69	-6410664.55	-6410664.40	0.0264	0.0193
Moon	-22260-11-26 10:19 J	-6408712.22	-6408712.07	-6408711.89	0.0280	0.0213
Earth	-22260-11-26 13:40 J	-6408712.06	-6408711.93	-6408711.78	0.0280	0.0230 *

Mercury	-22258-10-29 00:43 J	-6408010.62	-6408010.47	-6408010.31	0.0288	0.0157
Mercury	-22257-01-26 00:43 J	-6407921.65	-6407921.47	-6407921.29	0.0289	0.0041
Mercury	-22257-04-24 00:14 J	-6407832.59	-6407832.49	-6407832.38	0.0290	0.0237
Mars	-22255-01-02 00:00 J	-6407214.78	-6407214.50	-6407214.22	0.0295	0.0068
Venus	-22252-02-20 09:07 J	-6406069.25	-6406069.12	-6406068.97	0.0299	0.0225
Venus	-22252-10-08 16:48 J	-6405839.01	-6405838.80	-6405838.59	0.0299	0.0043
Venus	-22251-05-26 22:48 J	-6405608.73	-6405608.55	-6405608.36	0.0298	0.0138
Moon	-22246-05-27 12:57 J	-6403782.08	-6403781.96	-6403781.82	0.0281	0.0233
Earth	-22246-05-27 16:33 J	-6403781.94	-6403781.81	-6403781.66	0.0281	0.0229 *
Mercury	-22244-03-04 04:48 J	-6403135.38	-6403135.30	-6403135.23	0.0274	0.0222
Mercury	-22244-05-31 15:21 J	-6403046.98	-6403046.86	-6403046.74	0.0273	0.0105
Mercury	-22244-08-28 01:55 J	-6402958.55	-6402958.42	-6402958.28	0.0272	0.0016
Mercury	-22244-11-24 12:43 J	-6402870.09	-6402869.97	-6402869.85	0.0271	0.0130
Mercury	-22243-02-20 23:16 J	-6402781.57	-6402781.53	-6402781.47	0.0271	0.0248
Mars	-22241-03-17 16:33 J	-6402025.95	-6402025.81	-6402025.66	0.0265	0.0232
Venus	-22237-03-17 11:16 J	-6400565.20	-6400565.03	-6400564.85	0.0262	0.0149
Venus	-22237-11-01 06:43 J	-6400336.42	-6400336.22	-6400336.00	0.0263	0.0031
Venus	-22236-06-18 03:07 J	-6400107.56	-6400107.37	-6400107.16	0.0263	0.0091
Venus	-22235-02-02 00:43 J	-6399878.59	-6399878.47	-6399878.34	0.0264	0.0211
Earth	-22231-11-20 21:21 J	-6398125.85	-6398125.61	-6398125.36	0.0278	0.0065
Moon	-22231-11-21 00:57 J	-6398125.69	-6398125.46	-6398125.22	0.0278	0.0081 *
Mercury	-22228-03-16 22:48 J	-6397278.67	-6397278.55	-6397278.43	0.0287	0.0215
Mercury	-22228-06-13 22:48 J	-6397189.73	-6397189.55	-6397189.36	0.0288	0.0017
Mercury	-22228-09-10 22:33 J	-6397100.70	-6397100.56	-6397100.42	0.0289	0.0179
Venus	-22223-09-02 17:31 J	-6395282.92	-6395282.77	-6395282.60	0.0299	0.0197
Venus	-22222-04-21 01:26 J	-6395052.65	-6395052.44	-6395052.22	0.0299	0.0013
Venus	-22222-12-07 07:26 J	-6394822.35	-6394822.19	-6394822.01	0.0298	0.0169
Earth	-22217-05-21 14:52 J	-6393195.11	-6393194.88	-6393194.64	0.0283	0.0051
Moon	-22217-05-21 18:43 J	-6393194.96	-6393194.72	-6393194.49	0.0283	0.0050 *
Mercury	-22215-07-22 08:09 J	-6392403.21	-6392403.16	-6392403.10	0.0274	0.0247

Mercury	-22215-10-18 18:43 J	-6392314.83	-6392314.72	-6392314.60	0.0274	0.0130
Mercury	-22214-01-15 05:31 J	-6392226.41	-6392226.27	-6392226.14	0.0273	0.0013
Mercury	-22214-04-13 16:04 J	-6392137.95	-6392137.83	-6392137.70	0.0272	0.0106
Mercury	-22214-07-11 02:52 J	-6392049.45	-6392049.38	-6392049.31	0.0271	0.0223
Venus	-22208-02-10 22:04 J	-6390007.65	-6390007.58	-6390007.50	0.0262	0.0243
Venus	-22208-09-27 17:02 J	-6389778.97	-6389778.79	-6389778.60	0.0262	0.0127
Venus	-22207-05-14 12:28 J	-6389550.19	-6389549.98	-6389549.77	0.0262	0.0010
Venus	-22207-12-29 08:52 J	-6389321.32	-6389321.13	-6389320.93	0.0263	0.0111
Venus	-22206-08-15 06:28 J	-6389092.32	-6389092.23	-6389092.12	0.0264	0.0232
Mercury	-22199-08-03 21:50 J	-6386546.65	-6386546.59	-6386546.52	0.0288	0.0267
Mercury	-22199-10-31 21:50 J	-6386457.76	-6386457.59	-6386457.41	0.0289	0.0069
Mercury	-22198-01-28 21:50 J	-6386368.76	-6386368.59	-6386368.43	0.0289	0.0129
Venus	-22193-03-15 01:40 J	-6384496.60	-6384496.43	-6384496.25	0.0299	0.0169
Venus	-22193-10-31 09:07 J	-6384266.33	-6384266.12	-6384265.91	0.0299	0.0014
Venus	-22192-06-18 14:38 J	-6384036.04	-6384035.89	-6384035.72	0.0297	0.0194
Mercury	-22185-03-06 21:07 J	-6381582.72	-6381582.62	-6381582.51	0.0273	0.0165
Mercury	-22185-06-03 07:55 J	-6381494.31	-6381494.17	-6381494.04	0.0273	0.0048
Mercury	-22185-08-30 18:28 J	-6381405.86	-6381405.73	-6381405.60	0.0272	0.0070
Mercury	-22185-11-27 05:02 J	-6381317.38	-6381317.29	-6381317.19	0.0271	0.0188
Mars	-22183-06-24 01:40 J	-6380743.62	-6380743.43	-6380743.22	0.0267	0.0197
Venus	-22179-08-23 22:48 J	-6379221.64	-6379221.55	-6379221.44	0.0262	0.0228
Venus	-22178-04-09 17:45 J	-6378992.95	-6378992.76	-6378992.57	0.0262	0.0112
Venus	-22178-11-24 13:26 J	-6378764.15	-6378763.94	-6378763.73	0.0263	0.0009
Venus	-22177-07-10 09:50 J	-6378535.27	-6378535.09	-6378534.90	0.0263	0.0128
Venus	-22176-02-24 07:11 J	-6378306.25	-6378306.20	-6378306.12	0.0264	0.0250
Earth	-22172-11-22 02:23 J	-6376574.65	-6376574.40	-6376574.15	0.0279	0.0004
Moon	-22172-11-22 04:33 J	-6376574.56	-6376574.31	-6376574.05	0.0279	0.0016 *
Mercury	-22169-03-19 18:57 J	-6375725.87	-6375725.71	-6375725.54	0.0288	0.0134
Mercury	-22169-06-16 18:57 J	-6375636.89	-6375636.71	-6375636.53	0.0289	0.0064
Mercury	-22169-09-13 18:28 J	-6375547.80	-6375547.73	-6375547.64	0.0290	0.0261

Mars	-22167-05-28 18:00 J	-6374926.00	-6374925.75	-6374925.48	0.0295	0.0127
Venus	-22164-09-25 08:23 J	-6373710.33	-6373710.15	-6373709.96	0.0299	0.0143
Venus	-22163-05-13 16:04 J	-6373480.04	-6373479.83	-6373479.62	0.0299	0.0042
Venus	-22163-12-29 21:50 J	-6373249.72	-6373249.59	-6373249.44	0.0298	0.0222
Earth	-22158-05-23 22:48 J	-6371643.78	-6371643.55	-6371643.30	0.0283	0.0023
Moon	-22158-05-24 00:43 J	-6371643.72	-6371643.47	-6371643.22	0.0283	0.0026 *
Mercury	-22156-07-25 00:14 J	-6370850.58	-6370850.49	-6370850.39	0.0274	0.0193
Mercury	-22156-10-21 11:02 J	-6370762.17	-6370762.04	-6370761.91	0.0273	0.0075
Mercury	-22155-01-17 21:36 J	-6370673.73	-6370673.60	-6370673.47	0.0272	0.0043
Mercury	-22155-04-16 08:09 J	-6370585.26	-6370585.16	-6370585.04	0.0272	0.0161
Venus	-22149-03-05 03:50 J	-6368435.46	-6368435.34	-6368435.21	0.0261	0.0208
Venus	-22149-10-19 22:33 J	-6368206.75	-6368206.56	-6368206.35	0.0262	0.0092
Venus	-22148-06-05 18:28 J	-6367977.94	-6367977.73	-6367977.52	0.0262	0.0028
Venus	-22147-01-20 14:52 J	-6367749.05	-6367748.88	-6367748.70	0.0263	0.0148
Mercury	-22140-08-06 17:31 J	-6364993.90	-6364993.77	-6364993.63	0.0288	0.0190
Mercury	-22140-11-03 17:31 J	-6364904.95	-6364904.77	-6364904.58	0.0289	0.0011
Mercury	-22139-01-31 17:16 J	-6364815.90	-6364815.78	-6364815.65	0.0290	0.0206
Venus	-22134-04-07 15:07 J	-6362924.07	-6362923.87	-6362923.67	0.0299	0.0118
Venus	-22134-11-23 22:19 J	-6362693.77	-6362693.57	-6362693.36	0.0299	0.0066
Venus	-22133-07-11 03:50 J	-6362463.45	-6362463.34	-6362463.21	0.0297	0.0245
Moon	-22129-05-17 10:04 J	-6361057.12	-6361057.08	-6361057.02	0.0284	0.0276
Earth	-22129-05-17 11:45 J	-6361057.06	-6361057.01	-6361056.94	0.0284	0.0275 *
Mercury	-22127-12-12 02:23 J	-6360118.46	-6360118.40	-6360118.33	0.0274	0.0231
Mercury	-22126-03-10 13:11 J	-6360030.07	-6360029.95	-6360029.83	0.0273	0.0113
Mercury	-22126-06-06 23:45 J	-6359941.64	-6359941.51	-6359941.38	0.0272	0.0005
Mercury	-22126-09-03 10:19 J	-6359853.19	-6359853.07	-6359852.95	0.0271	0.0122
Mercury	-22126-11-30 21:07 J	-6359764.68	-6359764.62	-6359764.56	0.0271	0.0239
Venus	-22120-09-15 03:50 J	-6357649.47	-6357649.34	-6357649.19	0.0262	0.0194
Venus	-22119-05-01 22:48 J	-6357420.75	-6357420.55	-6357420.35	0.0262	0.0076
Venus	-22119-12-16 18:14 J	-6357191.95	-6357191.74	-6357191.53	0.0263	0.0043

Venus	-22118-08-02 14:52 J	-6356963.04	-6356962.88	-6356962.72	0.0263	0.0164
Moon	-22113-11-23 00:43 J	-6355023.72	-6355023.47	-6355023.21	0.0279	0.0042
Earth	-22113-11-23 03:07 J	-6355023.61	-6355023.37	-6355023.12	0.0279	0.0056 *
Mercury	-22111-12-24 13:40 J	-6354262.00	-6354261.93	-6354261.86	0.0287	0.0263
Mercury	-22110-03-23 13:55 J	-6354173.10	-6354172.92	-6354172.74	0.0288	0.0065
Mercury	-22110-06-20 13:40 J	-6354084.09	-6354083.93	-6354083.77	0.0289	0.0132
Venus	-22105-03-01 10:33 J	-6352368.13	-6352368.06	-6352367.98	0.0300	0.0279
Venus	-22105-10-17 19:26 J	-6352137.89	-6352137.69	-6352137.49	0.0300	0.0094
Venus	-22104-06-05 02:52 J	-6351907.58	-6351907.38	-6351907.18	0.0299	0.0090
Venus	-22103-01-21 08:38 J	-6351677.22	-6351677.14	-6351677.04	0.0298	0.0269
Moon	-22099-05-24 23:31 J	-6350092.75	-6350092.52	-6350092.28	0.0282	0.0093
Earth	-22099-05-25 02:23 J	-6350092.63	-6350092.40	-6350092.17	0.0282	0.0085 *
Mercury	-22097-04-30 05:16 J	-6349386.31	-6349386.28	-6349386.24	0.0275	0.0263
Mercury	-22097-07-27 15:50 J	-6349297.95	-6349297.84	-6349297.72	0.0274	0.0145
Mercury	-22097-10-24 02:38 J	-6349209.52	-6349209.39	-6349209.26	0.0273	0.0027
Mercury	-22096-01-20 13:11 J	-6349121.07	-6349120.95	-6349120.82	0.0272	0.0091
Mercury	-22096-04-19 00:00 J	-6349032.59	-6349032.50	-6349032.42	0.0271	0.0209
Mars	-22095-11-17 23:45 J	-6348454.76	-6348454.51	-6348454.24	0.0267	0.0141
Venus	-22090-03-28 07:55 J	-6346863.32	-6346863.17	-6346863.01	0.0261	0.0175
Venus	-22090-11-12 02:52 J	-6346634.59	-6346634.38	-6346634.18	0.0262	0.0057
Venus	-22089-06-27 22:33 J	-6346405.77	-6346405.56	-6346405.36	0.0262	0.0062
Venus	-22088-02-11 18:57 J	-6346176.86	-6346176.71	-6346176.56	0.0263	0.0182
Earth	-22084-11-17 13:40 J	-6344437.05	-6344436.93	-6344436.79	0.0277	0.0233
Moon	-22084-11-17 15:50 J	-6344436.94	-6344436.84	-6344436.73	0.0277	0.0248 *
Mercury	-22081-08-09 12:00 J	-6343441.17	-6343441.00	-6343440.84	0.0288	0.0124
Mercury	-22081-11-06 11:45 J	-6343352.18	-6343352.01	-6343351.83	0.0289	0.0074
Mercury	-22080-02-03 11:16 J	-6343263.08	-6343263.03	-6343262.96	0.0290	0.0271
Mars	-22079-10-22 02:52 J	-6342637.61	-6342637.38	-6342637.13	0.0296	0.0165
Venus	-22076-09-11 17:02 J	-6341581.90	-6341581.79	-6341581.67	0.0300	0.0255
Venus	-22075-04-30 01:40 J	-6341351.64	-6341351.43	-6341351.23	0.0299	0.0070



Venus	-22075-12-16 08:38 J	-6341121.33	-6341121.14	-6341120.93	0.0299	0.0115
Venus	-22074-08-03 14:09 J	-6340890.94	-6340890.91	-6340890.87	0.0297	0.0292
Earth	-22070-05-19 14:52 J	-6339506.03	-6339505.88	-6339505.72	0.0284	0.0213
Moon	-22070-05-19 17:16 J	-6339505.93	-6339505.78	-6339505.62	0.0284	0.0210 *
Mercury	-22068-12-14 18:00 J	-6338565.85	-6338565.75	-6338565.65	0.0274	0.0183
Mercury	-22067-03-13 04:33 J	-6338477.44	-6338477.31	-6338477.18	0.0273	0.0066
Mercury	-22067-06-09 15:07 J	-6338389.00	-6338388.87	-6338388.74	0.0272	0.0052
Mercury	-22067-09-06 01:40 J	-6338300.53	-6338300.43	-6338300.32	0.0271	0.0169
Venus	-22061-10-07 07:26 J	-6336077.35	-6336077.19	-6336077.02	0.0261	0.0161
Venus	-22060-05-24 02:09 J	-6335848.61	-6335848.41	-6335848.20	0.0262	0.0044
Venus	-22059-01-07 21:36 J	-6335619.79	-6335619.60	-6335619.39	0.0262	0.0077
Venus	-22059-08-24 18:00 J	-6335390.88	-6335390.75	-6335390.60	0.0263	0.0197
Moon	-22054-11-24 21:21 J	-6333472.83	-6333472.61	-6333472.37	0.0279	0.0091
Earth	-22054-11-25 00:43 J	-6333472.69	-6333472.47	-6333472.23	0.0279	0.0105 *
Mercury	-22052-12-27 07:11 J	-6332709.32	-6332709.20	-6332709.06	0.0287	0.0204
Mercury	-22051-03-26 07:26 J	-6332620.38	-6332620.19	-6332620.01	0.0288	0.0005
Mercury	-22051-06-23 07:11 J	-6332531.33	-6332531.20	-6332531.06	0.0289	0.0192
Venus	-22046-03-24 18:57 J	-6330795.83	-6330795.71	-6330795.57	0.0300	0.0236
Venus	-22046-11-10 03:50 J	-6330565.55	-6330565.34	-6330565.13	0.0300	0.0050
Venus	-22045-06-27 11:16 J	-6330335.22	-6330335.03	-6330334.84	0.0299	0.0135
Moon	-22040-05-25 23:16 J	-6328541.73	-6328541.53	-6328541.33	0.0282	0.0151
Earth	-22040-05-26 02:09 J	-6328541.61	-6328541.41	-6328541.19	0.0282	0.0142 *
Mercury	-22038-05-03 20:23 J	-6327833.73	-6327833.65	-6327833.57	0.0275	0.0220
Mercury	-22038-07-31 06:57 J	-6327745.33	-6327745.21	-6327745.09	0.0274	0.0102
Mercury	-22038-10-27 17:45 J	-6327656.90	-6327656.76	-6327656.63	0.0273	0.0019
Mercury	-22037-01-24 04:19 J	-6327568.44	-6327568.32	-6327568.20	0.0272	0.0134
Mercury	-22037-04-21 14:52 J	-6327479.92	-6327479.88	-6327479.83	0.0271	0.0252
Venus	-22032-09-02 16:33 J	-6325519.83	-6325519.81	-6325519.77	0.0261	0.0258
Venus	-22031-04-19 10:48 J	-6325291.22	-6325291.05	-6325290.87	0.0261	0.0143
Venus	-22031-12-04 05:45 J	-6325062.47	-6325062.26	-6325062.05	0.0261	0.0026

Venus	-22030-07-21 01:26 J	-6324833.64	-6324833.44	-6324833.25	0.0262	0.0095
Venus	-22029-03-05 21:36 J	-6324604.71	-6324604.60	-6324604.47	0.0263	0.0215
Earth	-22025-11-18 10:19 J	-6322886.24	-6322886.07	-6322885.88	0.0277	0.0186
Moon	-22025-11-18 13:55 J	-6322886.08	-6322885.92	-6322885.74	0.0277	0.0201 *
Mercury	-22022-05-16 05:02 J	-6321977.36	-6321977.29	-6321977.22	0.0287	0.0265
Mercury	-22022-08-13 05:16 J	-6321888.46	-6321888.28	-6321888.10	0.0288	0.0067
Mercury	-22022-11-10 05:02 J	-6321799.45	-6321799.29	-6321799.13	0.0289	0.0131
Venus	-22017-10-04 00:43 J	-6320009.61	-6320009.47	-6320009.31	0.0300	0.0212
Venus	-22016-05-22 09:21 J	-6319779.32	-6319779.11	-6319778.90	0.0300	0.0026
Venus	-22015-01-07 16:19 J	-6319548.99	-6319548.82	-6319548.63	0.0299	0.0159
Earth	-22011-05-20 14:09 J	-6317955.11	-6317954.91	-6317954.71	0.0284	0.0158
Moon	-22011-05-20 17:31 J	-6317954.98	-6317954.77	-6317954.57	0.0284	0.0154 *
Mercury	-22009-09-19 22:19 J	-6317101.61	-6317101.57	-6317101.53	0.0274	0.0259
Mercury	-22009-12-17 08:52 J	-6317013.24	-6317013.13	-6317013.02	0.0273	0.0142
Mercury	-22008-03-15 19:26 J	-6316924.82	-6316924.69	-6316924.55	0.0272	0.0025
Mercury	-22008-06-12 06:14 J	-6316836.37	-6316836.24	-6316836.12	0.0272	0.0094
Mercury	-22008-09-08 16:48 J	-6316747.88	-6316747.80	-6316747.71	0.0271	0.0211
Mars	-22006-04-12 22:19 J	-6316166.83	-6316166.57	-6316166.29	0.0266	0.0115
Venus	-22002-03-15 15:50 J	-6314733.90	-6314733.84	-6314733.77	0.0261	0.0245
Venus	-22002-10-30 09:50 J	-6314505.26	-6314505.09	-6314504.90	0.0261	0.0130
Venus	-22001-06-15 04:48 J	-6314276.51	-6314276.30	-6314276.09	0.0262	0.0011

## 22ND MILLENNIUM BCE

This is a list of transits visible from Saturn in the 22nd millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-22000-01-30 00:14 J		-6314047.68	-6314047.49	-6314047.30	0.0262	0.0108	
Venus	-22000-09-15 20:23 J		-6313818.74	-6313818.65	-6313818.54	0.0263	0.0229	
Earth	-21995-11-25 19:55 J		-6311921.88	-6311921.67	-6311921.46	0.0279	0.0149	
Moon	-21995-11-25 20:23 J		-6311921.86	-6311921.65	-6311921.44	0.0279	0.0138	*
Mercury	-21993-12-30 00:00 J		-6311156.66	-6311156.50	-6311156.34	0.0288	0.0151	
Mercury	-21992-03-29 00:00 J		-6311067.68	-6311067.50	-6311067.32	0.0289	0.0047	
Mercury	-21992-06-25 23:45 J		-6310978.61	-6310978.51	-6310978.41	0.0290	0.0244	
Mars	-21990-03-16 06:14 J		-6310350.48	-6310350.24	-6310350.00	0.0295	0.0157	
Venus	-21987-04-16 01:26 J		-6309223.59	-6309223.44	-6309223.27	0.0300	0.0195	
Venus	-21987-12-02 10:19 J		-6308993.28	-6308993.07	-6308992.85	0.0300	0.0008	
Venus	-21986-07-20 17:31 J		-6308762.93	-6308762.77	-6308762.59	0.0299	0.0177	
Earth	-21981-05-27 00:00 J		-6306990.67	-6306990.50	-6306990.32	0.0282	0.0193	
Moon	-21981-05-27 00:43 J		-6306990.62	-6306990.47	-6306990.30	0.0282	0.0204	*
Mercury	-21979-05-06 11:02 J		-6306281.13	-6306281.04	-6306280.94	0.0274	0.0180	
Mercury	-21979-08-02 21:50 J		-6306192.72	-6306192.59	-6306192.46	0.0274	0.0062	
Mercury	-21979-10-30 08:23 J		-6306104.28	-6306104.15	-6306104.02	0.0273	0.0057	
Mercury	-21978-01-26 19:11 J		-6306015.80	-6306015.70	-6306015.60	0.0272	0.0175	
Venus	-21973-09-24 18:28 J		-6303947.81	-6303947.73	-6303947.62	0.0261	0.0229	
Venus	-21972-05-11 12:57 J		-6303719.15	-6303718.96	-6303718.77	0.0261	0.0113	
Venus	-21972-12-26 07:40 J		-6303490.39	-6303490.18	-6303489.97	0.0261	0.0008	
Venus	-21971-08-12 03:07 J		-6303261.54	-6303261.37	-6303261.17	0.0262	0.0126	
Venus	-21970-03-28 23:45 J		-6303032.57	-6303032.51	-6303032.43	0.0263	0.0246	
Moon	-21966-11-20 04:33 J		-6301335.52	-6301335.31	-6301335.09	0.0277	0.0155	
Earth	-21966-11-20 05:16 J		-6301335.49	-6301335.28	-6301335.06	0.0277	0.0141	*
Mercury	-21963-05-18 21:36 J		-6300424.72	-6300424.60	-6300424.47	0.0287	0.0213	
Mercury	-21963-08-15 21:50 J		-6300335.78	-6300335.59	-6300335.41	0.0288	0.0015	
Mercury	-21963-11-12 21:36 J		-6300246.74	-6300246.60	-6300246.46	0.0289	0.0183	

Venus	-21958-10-27 06:57 J	-6298437.37	-6298437.21	-6298437.02	0.0300	0.0172
Venus	-21957-06-13 15:36 J	-6298207.06	-6298206.85	-6298206.63	0.0300	0.0017
Venus	-21956-01-29 22:48 J	-6297976.71	-6297976.55	-6297976.39	0.0299	0.0200
Moon	-21952-05-21 10:33 J	-6296404.29	-6296404.06	-6296403.82	0.0284	0.0098
Earth	-21952-05-21 11:31 J	-6296404.24	-6296404.02	-6296403.80	0.0284	0.0107 *
Mercury	-21950-09-23 12:57 J	-6295549.03	-6295548.96	-6295548.88	0.0274	0.0220
Mercury	-21950-12-20 23:31 J	-6295460.64	-6295460.52	-6295460.39	0.0273	0.0103
Mercury	-21949-03-18 10:19 J	-6295372.21	-6295372.07	-6295371.94	0.0272	0.0017
Mercury	-21949-06-14 20:52 J	-6295283.74	-6295283.63	-6295283.51	0.0272	0.0134
Mercury	-21949-09-11 07:40 J	-6295195.23	-6295195.18	-6295195.13	0.0271	0.0251
Venus	-21943-04-06 17:45 J	-6293161.86	-6293161.76	-6293161.63	0.0261	0.0216
Venus	-21943-11-21 12:00 J	-6292933.19	-6292933.00	-6292932.80	0.0261	0.0099
Venus	-21942-07-08 06:57 J	-6292704.42	-6292704.21	-6292704.00	0.0262	0.0020
Venus	-21941-02-22 02:23 J	-6292475.58	-6292475.40	-6292475.22	0.0262	0.0140
Venus	-21941-10-07 22:33 J	-6292246.58	-6292246.56	-6292246.52	0.0263	0.0260
Earth	-21936-11-26 14:23 J	-6290371.07	-6290370.90	-6290370.71	0.0279	0.0194
Moon	-21936-11-26 18:14 J	-6290370.92	-6290370.74	-6290370.55	0.0279	0.0183 *
Mercury	-21933-01-02 16:33 J	-6289603.98	-6289603.81	-6289603.64	0.0288	0.0101
Mercury	-21933-03-31 16:19 J	-6289514.99	-6289514.82	-6289514.64	0.0289	0.0098
Jupiter	-21930-07-26 14:38 J	-6288303.27	-6288302.89	-6288302.49	0.0299	0.0164
Venus	-21928-05-08 06:57 J	-6287651.39	-6287651.21	-6287651.03	0.0300	0.0155
Venus	-21928-12-24 15:36 J	-6287421.06	-6287420.85	-6287420.64	0.0300	0.0032
Venus	-21927-08-11 22:48 J	-6287190.69	-6287190.55	-6287190.40	0.0299	0.0216
Earth	-21922-05-28 19:40 J	-6285439.80	-6285439.68	-6285439.55	0.0282	0.0241
Moon	-21922-05-28 23:16 J	-6285439.63	-6285439.53	-6285439.42	0.0282	0.0254 *
Mercury	-21920-02-09 14:52 J	-6284816.91	-6284816.88	-6284816.84	0.0275	0.0262
Mercury	-21920-05-09 01:40 J	-6284728.54	-6284728.43	-6284728.32	0.0274	0.0143
Mercury	-21920-08-05 12:14 J	-6284640.12	-6284639.99	-6284639.86	0.0274	0.0025
Mercury	-21920-11-01 23:02 J	-6284551.67	-6284551.54	-6284551.42	0.0273	0.0095
Mercury	-21919-01-29 09:36 J	-6284463.18	-6284463.10	-6284463.01	0.0272	0.0213

Mars	-21918-09-05 22:33 J	-6283878.84	-6283878.56	-6283878.26	0.0267	0.0090
Venus	-21914-10-17 20:38 J	-6282375.77	-6282375.64	-6282375.50	0.0261	0.0199
Venus	-21913-06-02 14:52 J	-6282147.08	-6282146.88	-6282146.68	0.0261	0.0082
Venus	-21912-01-17 09:36 J	-6281918.30	-6281918.10	-6281917.89	0.0261	0.0037
Venus	-21912-09-03 05:02 J	-6281689.45	-6281689.29	-6281689.11	0.0262	0.0157
Moon	-21907-11-20 20:09 J	-6279784.88	-6279784.66	-6279784.43	0.0277	0.0109
Earth	-21907-11-21 00:00 J	-6279784.72	-6279784.50	-6279784.26	0.0277	0.0097 *
Mercury	-21904-05-21 14:09 J	-6278872.06	-6278871.91	-6278871.75	0.0287	0.0162
Mercury	-21904-08-18 14:09 J	-6278783.09	-6278782.91	-6278782.72	0.0288	0.0036
Mercury	-21904-11-15 13:40 J	-6278694.02	-6278693.93	-6278693.81	0.0289	0.0234
Mars	-21902-08-08 20:38 J	-6278062.87	-6278062.64	-6278062.40	0.0296	0.0166
Venus	-21899-11-18 12:43 J	-6276865.16	-6276864.97	-6276864.77	0.0300	0.0131
Venus	-21898-07-06 21:07 J	-6276634.82	-6276634.62	-6276634.40	0.0300	0.0058
Venus	-21897-02-22 04:04 J	-6276404.45	-6276404.33	-6276404.20	0.0299	0.0241
Moon	-21893-05-22 04:19 J	-6274853.56	-6274853.32	-6274853.08	0.0284	0.0045
Earth	-21893-05-22 07:55 J	-6274853.40	-6274853.17	-6274852.93	0.0284	0.0058 *
Mercury	-21891-09-26 03:36 J	-6273996.45	-6273996.35	-6273996.25	0.0274	0.0182
Mercury	-21891-12-23 14:09 J	-6273908.03	-6273907.91	-6273907.78	0.0273	0.0064
Mercury	-21890-03-22 00:57 J	-6273819.59	-6273819.46	-6273819.33	0.0272	0.0055
Mercury	-21890-06-18 11:31 J	-6273731.12	-6273731.02	-6273730.91	0.0271	0.0173
Venus	-21884-04-28 20:09 J	-6271589.79	-6271589.66	-6271589.50	0.0261	0.0186
Venus	-21884-12-13 14:38 J	-6271361.10	-6271360.89	-6271360.69	0.0261	0.0069
Venus	-21883-07-30 09:07 J	-6271132.32	-6271132.12	-6271131.91	0.0261	0.0051
Venus	-21882-03-16 04:33 J	-6270903.46	-6270903.31	-6270903.14	0.0262	0.0171
Earth	-21877-11-27 09:50 J	-6268820.20	-6268820.09	-6268819.95	0.0279	0.0240
Moon	-21877-11-27 11:02 J	-6268820.17	-6268820.04	-6268819.89	0.0279	0.0233 *
Mercury	-21875-10-08 09:07 J	-6268140.21	-6268140.12	-6268140.03	0.0287	0.0246
Mercury	-21874-01-05 09:07 J	-6268051.30	-6268051.12	-6268050.94	0.0288	0.0048
Mercury	-21874-04-04 08:52 J	-6267962.28	-6267962.13	-6267961.97	0.0289	0.0149
Venus	-21869-05-30 12:43 J	-6266079.17	-6266078.97	-6266078.77	0.0300	0.0115

Venus	-21868-01-15 21:07 J	-6265848.82	-6265848.62	-6265848.41	0.0300	0.0073
Venus	-21868-09-03 04:04 J	-6265618.43	-6265618.33	-6265618.22	0.0299	0.0256
Mercury	-21861-02-13 05:31 J	-6263264.34	-6263264.27	-6263264.20	0.0275	0.0225
Mercury	-21861-05-11 16:04 J	-6263175.95	-6263175.83	-6263175.70	0.0274	0.0105
Mercury	-21861-08-08 02:52 J	-6263087.51	-6263087.38	-6263087.25	0.0274	0.0014
Mercury	-21861-11-04 13:26 J	-6262999.05	-6262998.94	-6262998.82	0.0273	0.0133
Mercury	-21860-02-01 00:14 J	-6262910.53	-6262910.49	-6262910.44	0.0272	0.0251
Venus	-21855-11-08 22:48 J	-6260803.70	-6260803.55	-6260803.38	0.0261	0.0169
Venus	-21854-06-25 17:31 J	-6260574.98	-6260574.77	-6260574.57	0.0261	0.0052
Venus	-21853-02-09 12:14 J	-6260346.19	-6260345.99	-6260345.78	0.0261	0.0068
Venus	-21853-09-25 07:55 J	-6260117.31	-6260117.17	-6260117.02	0.0262	0.0188
Moon	-21848-11-21 20:23 J	-6258233.88	-6258233.65	-6258233.41	0.0277	0.0056
Earth	-21848-11-21 21:07 J	-6258233.87	-6258233.62	-6258233.37	0.0277	0.0047 *
Mercury	-21845-05-24 07:26 J	-6257319.36	-6257319.19	-6257319.02	0.0287	0.0105
Mercury	-21845-08-21 07:11 J	-6257230.37	-6257230.20	-6257230.02	0.0288	0.0092
Mercury	-21845-11-18 06:57 J	-6257141.22	-6257141.21	-6257141.20	0.0289	0.0289
Venus	-21840-04-24 09:50 J	-6255523.17	-6255523.09	-6255523.01	0.0301	0.0277
Venus	-21840-12-10 19:11 J	-6255292.90	-6255292.70	-6255292.49	0.0300	0.0089
Venus	-21839-07-29 03:36 J	-6255062.55	-6255062.35	-6255062.15	0.0300	0.0099
Venus	-21838-03-16 10:19 J	-6254832.14	-6254832.07	-6254832.00	0.0299	0.0281
Moon	-21834-05-24 04:33 J	-6253302.54	-6253302.31	-6253302.08	0.0284	0.0008
Earth	-21834-05-24 04:48 J	-6253302.54	-6253302.30	-6253302.06	0.0284	0.0008 *
Mercury	-21832-07-02 07:40 J	-6252532.22	-6252532.18	-6252532.14	0.0275	0.0262
Mercury	-21832-09-28 18:14 J	-6252443.85	-6252443.74	-6252443.62	0.0274	0.0143
Mercury	-21832-12-26 05:02 J	-6252355.42	-6252355.29	-6252355.16	0.0273	0.0024
Mercury	-21831-03-24 15:36 J	-6252266.97	-6252266.85	-6252266.72	0.0272	0.0095
Mercury	-21831-06-21 02:23 J	-6252178.48	-6252178.40	-6252178.32	0.0272	0.0213
Mars	-21829-01-29 20:38 J	-6251590.93	-6251590.64	-6251590.34	0.0266	0.0064
Venus	-21825-05-20 23:31 J	-6250017.68	-6250017.52	-6250017.35	0.0261	0.0154
Venus	-21824-01-04 17:45 J	-6249788.97	-6249788.76	-6249788.55	0.0261	0.0036

Venus	-21824-08-21 12:28 J	-6249560.18	-6249559.98	-6249559.78	0.0261	0.0083
Venus	-21823-04-07 08:09 J	-6249331.29	-6249331.16	-6249331.03	0.0262	0.0203
Mercury	-21816-10-11 02:23 J	-6246587.54	-6246587.40	-6246587.26	0.0287	0.0188
Mercury	-21815-01-08 02:23 J	-6246498.58	-6246498.40	-6246498.21	0.0288	0.0011
Mercury	-21815-04-07 02:09 J	-6246409.53	-6246409.41	-6246409.28	0.0289	0.0207
Mars	-21814-12-31 23:16 J	-6245775.77	-6245775.53	-6245775.28	0.0295	0.0155
Venus	-21811-11-04 10:04 J	-6244737.18	-6244737.08	-6244736.97	0.0300	0.0261
Venus	-21810-06-22 19:26 J	-6244506.90	-6244506.69	-6244506.48	0.0300	0.0074
Venus	-21809-02-08 03:36 J	-6244276.54	-6244276.35	-6244276.15	0.0300	0.0115
Venus	-21809-09-25 10:33 J	-6244046.09	-6244046.06	-6244046.04	0.0299	0.0296
Mercury	-21802-02-15 20:09 J	-6241711.75	-6241711.66	-6241711.56	0.0275	0.0185
Mercury	-21802-05-15 06:57 J	-6241623.34	-6241623.21	-6241623.08	0.0275	0.0065
Mercury	-21802-08-11 17:31 J	-6241534.90	-6241534.77	-6241534.64	0.0274	0.0055
Mercury	-21802-11-08 04:19 J	-6241446.42	-6241446.32	-6241446.22	0.0273	0.0174
Venus	-21796-04-16 08:23 J	-6239460.19	-6239460.15	-6239460.10	0.0261	0.0254
Venus	-21796-12-01 02:23 J	-6239231.58	-6239231.40	-6239231.22	0.0261	0.0137
Venus	-21795-07-17 20:52 J	-6239002.84	-6239002.63	-6239002.42	0.0261	0.0019
Venus	-21794-03-03 16:04 J	-6238774.03	-6238773.83	-6238773.64	0.0262	0.0101
Venus	-21794-10-18 11:31 J	-6238545.12	-6238545.02	-6238544.89	0.0262	0.0222
Earth	-21789-11-22 20:23 J	-6236682.90	-6236682.65	-6236682.40	0.0277	0.0008
Moon	-21789-11-23 00:00 J	-6236682.75	-6236682.50	-6236682.25	0.0277	0.0004 *
Mercury	-21786-02-28 01:11 J	-6235855.55	-6235855.45	-6235855.35	0.0286	0.0240
Mercury	-21786-05-28 01:11 J	-6235766.63	-6235766.45	-6235766.26	0.0287	0.0043
Mercury	-21786-08-25 00:57 J	-6235677.61	-6235677.46	-6235677.30	0.0289	0.0155
Venus	-21781-05-16 18:00 J	-6233950.88	-6233950.75	-6233950.61	0.0301	0.0234
Venus	-21780-01-02 03:21 J	-6233720.57	-6233720.36	-6233720.15	0.0300	0.0045
Venus	-21780-08-20 11:16 J	-6233490.21	-6233490.03	-6233489.84	0.0300	0.0143
Earth	-21775-05-25 03:36 J	-6231751.58	-6231751.35	-6231751.11	0.0284	0.0049
Moon	-21775-05-25 07:11 J	-6231751.42	-6231751.20	-6231750.96	0.0284	0.0066 *
Mercury	-21773-07-04 22:33 J	-6230979.63	-6230979.56	-6230979.48	0.0275	0.0220

Mercury	-21773-10-01 09:21 J	-6230891.24	-6230891.11	-6230890.99	0.0274	0.0100
Mercury	-21773-12-28 19:55 J	-6230802.80	-6230802.67	-6230802.53	0.0273	0.0021
Mercury	-21772-03-27 06:43 J	-6230714.33	-6230714.22	-6230714.10	0.0272	0.0139
Mercury	-21772-06-23 17:16 J	-6230625.81	-6230625.78	-6230625.73	0.0272	0.0258
Venus	-21767-10-27 10:04 J	-6228674.16	-6228674.08	-6228673.99	0.0261	0.0238
Venus	-21766-06-13 04:19 J	-6228445.51	-6228445.32	-6228445.14	0.0261	0.0121
Venus	-21765-01-27 22:33 J	-6228216.77	-6228216.56	-6228216.35	0.0261	0.0002
Venus	-21765-09-12 17:16 J	-6227987.96	-6227987.78	-6227987.59	0.0262	0.0118
Venus	-21764-04-29 13:11 J	-6227759.04	-6227758.95	-6227758.86	0.0262	0.0238
Mercury	-21757-10-13 21:21 J	-6225034.78	-6225034.61	-6225034.44	0.0287	0.0117
Mercury	-21756-01-10 21:07 J	-6224945.79	-6224945.62	-6224945.44	0.0288	0.0080
Mercury	-21756-04-09 20:38 J	-6224856.68	-6224856.64	-6224856.58	0.0289	0.0276
Venus	-21752-11-26 19:55 J	-6223164.82	-6223164.67	-6223164.52	0.0300	0.0216
Venus	-21751-07-15 05:02 J	-6222934.51	-6222934.29	-6222934.08	0.0300	0.0028
Venus	-21750-03-02 12:43 J	-6222704.14	-6222703.97	-6222703.78	0.0299	0.0160
Moon	-21746-05-19 07:11 J	-6221165.30	-6221165.20	-6221165.08	0.0287	0.0252
Earth	-21746-05-19 10:48 J	-6221165.12	-6221165.05	-6221164.96	0.0287	0.0268 *
Mercury	-21744-11-22 00:28 J	-6220247.52	-6220247.48	-6220247.44	0.0276	0.0262
Mercury	-21743-02-18 11:16 J	-6220159.14	-6220159.03	-6220158.92	0.0275	0.0141
Mercury	-21743-05-17 21:50 J	-6220070.72	-6220070.59	-6220070.45	0.0274	0.0023
Mercury	-21743-08-14 08:38 J	-6219982.26	-6219982.14	-6219982.01	0.0274	0.0099
Mercury	-21743-11-10 19:26 J	-6219893.77	-6219893.69	-6219893.61	0.0273	0.0218
Mars	-21741-06-24 01:55 J	-6219302.72	-6219302.42	-6219302.12	0.0268	0.0029
Venus	-21737-05-08 12:57 J	-6217888.06	-6217887.96	-6217887.84	0.0261	0.0221
Venus	-21737-12-23 07:26 J	-6217659.38	-6217659.19	-6217659.00	0.0261	0.0104
Venus	-21736-08-09 01:55 J	-6217430.63	-6217430.42	-6217430.21	0.0261	0.0016
Venus	-21735-03-25 21:07 J	-6217201.80	-6217201.62	-6217201.44	0.0262	0.0136
Venus	-21735-11-09 17:02 J	-6216972.82	-6216972.79	-6216972.73	0.0262	0.0256
Earth	-21730-11-24 23:31 J	-6215131.76	-6215131.52	-6215131.27	0.0277	0.0071
Moon	-21730-11-25 01:40 J	-6215131.68	-6215131.43	-6215131.18	0.0277	0.0070 *



Mercury	-21727-03-02 20:23 J	-6214302.79	-6214302.65	-6214302.49	0.0287	0.0166
Mercury	-21727-05-30 20:23 J	-6214213.83	-6214213.65	-6214213.46	0.0288	0.0032
Mercury	-21727-08-27 20:09 J	-6214124.77	-6214124.66	-6214124.55	0.0289	0.0228
Mars	-21725-05-26 10:48 J	-6213487.24	-6213487.05	-6213486.83	0.0295	0.0203
Venus	-21722-06-09 04:33 J	-6212378.47	-6212378.31	-6212378.14	0.0301	0.0187
Venus	-21721-01-25 13:40 J	-6212148.14	-6212147.93	-6212147.72	0.0300	0.0002
Venus	-21721-09-11 21:21 J	-6211917.77	-6211917.61	-6211917.44	0.0300	0.0190
Earth	-21716-05-26 05:02 J	-6210200.51	-6210200.29	-6210200.07	0.0284	0.0111
Moon	-21716-05-26 06:43 J	-6210200.44	-6210200.22	-6210199.99	0.0284	0.0126 *
Mercury	-21714-07-08 13:55 J	-6209427.02	-6209426.92	-6209426.82	0.0275	0.0173
Mercury	-21714-10-05 00:43 J	-6209338.60	-6209338.47	-6209338.34	0.0274	0.0052
Mercury	-21713-01-01 11:31 J	-6209250.15	-6209250.02	-6209249.89	0.0273	0.0068
Mercury	-21713-03-29 22:04 J	-6209161.67	-6209161.58	-6209161.48	0.0272	0.0187
Venus	-21708-11-18 16:04 J	-6207101.95	-6207101.83	-6207101.69	0.0261	0.0203
Venus	-21707-07-05 10:19 J	-6206873.26	-6206873.07	-6206872.86	0.0261	0.0086
Venus	-21706-02-19 05:02 J	-6206644.50	-6206644.29	-6206644.08	0.0261	0.0034
Venus	-21706-10-06 00:00 J	-6206415.66	-6206415.50	-6206415.32	0.0262	0.0154
Moon	-21701-11-18 06:57 J	-6204545.33	-6204545.21	-6204545.06	0.0275	0.0225
Earth	-21701-11-18 09:21 J	-6204545.26	-6204545.11	-6204544.96	0.0275	0.0219 *
Mercury	-21698-07-20 17:16 J	-6203570.88	-6203570.78	-6203570.67	0.0286	0.0234
Mercury	-21698-10-17 17:16 J	-6203481.96	-6203481.78	-6203481.59	0.0287	0.0038
Mercury	-21697-01-14 17:02 J	-6203392.94	-6203392.79	-6203392.63	0.0288	0.0159
Venus	-21693-12-19 08:09 J	-6201592.33	-6201592.16	-6201591.98	0.0300	0.0167
Venus	-21692-08-06 17:02 J	-6201362.01	-6201361.79	-6201361.58	0.0300	0.0022
Venus	-21691-03-25 00:28 J	-6201131.63	-6201131.48	-6201131.33	0.0299	0.0208
Moon	-21687-05-20 12:14 J	-6199614.16	-6199613.99	-6199613.81	0.0287	0.0187
Earth	-21687-05-20 13:40 J	-6199614.09	-6199613.93	-6199613.75	0.0287	0.0202 *
Mercury	-21685-11-24 16:04 J	-6198694.91	-6198694.83	-6198694.75	0.0276	0.0213
Mercury	-21684-02-21 02:52 J	-6198606.51	-6198606.38	-6198606.26	0.0275	0.0092
Mercury	-21684-05-20 13:26 J	-6198518.07	-6198517.94	-6198517.80	0.0274	0.0030

Mercury	-21684-08-17 00:14 J	-6198429.60	-6198429.49	-6198429.38	0.0273	0.0149
Mercury	-21684-11-13 11:02 J	-6198341.05	-6198341.04	-6198341.02	0.0273	0.0269
Venus	-21678-05-31 19:40 J	-6196315.82	-6196315.68	-6196315.53	0.0261	0.0185
Venus	-21677-01-15 13:55 J	-6196087.12	-6196086.92	-6196086.71	0.0261	0.0067
Venus	-21677-08-31 08:38 J	-6195858.34	-6195858.14	-6195857.93	0.0262	0.0053
Venus	-21676-04-17 04:19 J	-6195629.48	-6195629.32	-6195629.17	0.0262	0.0173
Moon	-21671-11-26 05:16 J	-6193580.50	-6193580.28	-6193580.06	0.0277	0.0146
Earth	-21671-11-26 07:11 J	-6193580.40	-6193580.20	-6193579.97	0.0277	0.0145 *
Mercury	-21669-12-06 17:16 J	-6192838.82	-6192838.78	-6192838.72	0.0286	0.0275
Mercury	-21668-03-05 17:31 J	-6192749.95	-6192749.77	-6192749.59	0.0287	0.0079
Mercury	-21668-06-02 17:16 J	-6192660.95	-6192660.78	-6192660.61	0.0288	0.0118
Venus	-21663-07-01 18:43 J	-6190805.90	-6190805.72	-6190805.52	0.0300	0.0134
Venus	-21662-02-17 03:36 J	-6190575.56	-6190575.35	-6190575.14	0.0300	0.0056
Venus	-21662-10-05 10:48 J	-6190345.17	-6190345.05	-6190344.92	0.0299	0.0241
Moon	-21657-05-27 07:40 J	-6188649.36	-6188649.18	-6188649.00	0.0284	0.0194
Earth	-21657-05-27 10:19 J	-6188649.25	-6188649.07	-6188648.88	0.0284	0.0181 *
Mercury	-21655-04-13 18:57 J	-6187962.76	-6187962.71	-6187962.64	0.0276	0.0241
Mercury	-21655-07-11 05:45 J	-6187874.37	-6187874.26	-6187874.14	0.0275	0.0120
Mercury	-21655-10-07 16:33 J	-6187785.94	-6187785.81	-6187785.68	0.0274	0.0004
Mercury	-21654-01-04 03:21 J	-6187697.48	-6187697.36	-6187697.24	0.0273	0.0121
Mercury	-21654-04-02 14:09 J	-6187608.97	-6187608.91	-6187608.85	0.0272	0.0240
Mars	-21653-11-18 00:14 J	-6187013.79	-6187013.49	-6187013.19	0.0267	0.0034
Venus	-21649-12-10 23:45 J	-6185529.66	-6185529.51	-6185529.34	0.0261	0.0166
Venus	-21648-07-27 18:14 J	-6185300.94	-6185300.74	-6185300.53	0.0261	0.0047
Venus	-21647-03-13 12:57 J	-6185072.16	-6185071.96	-6185071.75	0.0261	0.0073
Venus	-21647-10-28 08:23 J	-6184843.28	-6184843.15	-6184843.00	0.0262	0.0193
Earth	-21642-11-20 19:26 J	-6182993.89	-6182993.69	-6182993.46	0.0275	0.0143
Moon	-21642-11-20 21:36 J	-6182993.80	-6182993.60	-6182993.39	0.0275	0.0146 *
Mercury	-21639-07-23 15:07 J	-6182018.03	-6182017.87	-6182017.70	0.0286	0.0140
Mercury	-21639-10-20 15:07 J	-6181929.05	-6181928.87	-6181928.69	0.0287	0.0056

Mercury	-21638-01-17 14:38 J	-6181839.97	-6181839.89	-6181839.80	0.0288	0.0252
Mars	-21637-10-20 03:50 J	-6181198.47	-6181198.34	-6181198.18	0.0295	0.0255
Venus	-21634-05-26 14:09 J	-6180249.91	-6180249.91	-6180249.89	0.0300	0.0300
Venus	-21633-01-11 23:45 J	-6180019.71	-6180019.51	-6180019.31	0.0300	0.0112
Venus	-21633-08-29 08:09 J	-6179789.37	-6179789.16	-6179788.96	0.0299	0.0077
Venus	-21632-04-16 14:52 J	-6179558.97	-6179558.88	-6179558.77	0.0299	0.0261
Earth	-21628-05-21 20:23 J	-6178062.86	-6178062.65	-6178062.43	0.0286	0.0127
Moon	-21628-05-21 22:33 J	-6178062.77	-6178062.56	-6178062.33	0.0286	0.0112 *
Mercury	-21626-11-28 08:09 J	-6177142.27	-6177142.16	-6177142.06	0.0276	0.0158
Mercury	-21625-02-24 18:43 J	-6177053.85	-6177053.72	-6177053.58	0.0275	0.0038
Mercury	-21625-05-23 05:31 J	-6176965.39	-6176965.27	-6176965.14	0.0274	0.0084
Mercury	-21625-08-19 16:19 J	-6176876.90	-6176876.82	-6176876.73	0.0273	0.0204
Venus	-21619-06-23 03:36 J	-6174743.51	-6174743.35	-6174743.17	0.0262	0.0148
Venus	-21618-02-06 22:19 J	-6174514.78	-6174514.57	-6174514.36	0.0262	0.0028
Venus	-21618-09-23 17:16 J	-6174285.98	-6174285.78	-6174285.58	0.0262	0.0092
Venus	-21617-05-09 12:57 J	-6174057.08	-6174056.96	-6174056.83	0.0262	0.0213
Moon	-21612-11-27 15:36 J	-6172028.98	-6172028.85	-6172028.70	0.0277	0.0228
Earth	-21612-11-27 18:57 J	-6172028.84	-6172028.71	-6172028.55	0.0277	0.0227 *
Mercury	-21610-12-10 15:36 J	-6171285.99	-6171285.85	-6171285.70	0.0286	0.0178
Mercury	-21609-03-08 15:36 J	-6171197.04	-6171196.85	-6171196.67	0.0287	0.0018
Mercury	-21609-06-05 15:07 J	-6171107.99	-6171107.87	-6171107.74	0.0288	0.0214
Venus	-21605-12-06 02:23 J	-6169463.50	-6169463.40	-6169463.30	0.0300	0.0265
Venus	-21604-07-24 11:31 J	-6169233.22	-6169233.02	-6169232.81	0.0300	0.0077
Venus	-21603-03-11 19:55 J	-6169002.87	-6169002.67	-6169002.47	0.0300	0.0112
Venus	-21603-10-28 02:38 J	-6168772.41	-6168772.39	-6168772.35	0.0299	0.0296
Moon	-21598-05-29 15:21 J	-6167097.92	-6167097.86	-6167097.79	0.0284	0.0272
Earth	-21598-05-29 18:28 J	-6167097.82	-6167097.73	-6167097.62	0.0284	0.0258 *
Mercury	-21596-04-16 11:31 J	-6166410.12	-6166410.02	-6166409.92	0.0276	0.0183
Mercury	-21596-07-13 22:04 J	-6166321.70	-6166321.58	-6166321.45	0.0275	0.0063
Mercury	-21596-10-10 08:52 J	-6166233.26	-6166233.13	-6166233.00	0.0274	0.0059

Mercury	-21595-01-06 19:40 J	-6166144.78	-6166144.68	-6166144.58	0.0273	0.0179
Venus	-21590-05-19 14:23 J	-6164185.96	-6164185.90	-6164185.81	0.0261	0.0245
Venus	-21589-01-03 08:52 J	-6163957.31	-6163957.13	-6163956.94	0.0261	0.0127
Venus	-21589-08-19 03:21 J	-6163728.57	-6163728.36	-6163728.15	0.0261	0.0009
Venus	-21588-04-04 22:19 J	-6163499.75	-6163499.57	-6163499.37	0.0262	0.0114
Venus	-21588-11-19 18:14 J	-6163270.83	-6163270.74	-6163270.64	0.0262	0.0234
Earth	-21583-11-22 09:36 J	-6161442.34	-6161442.10	-6161441.85	0.0276	0.0057
Moon	-21583-11-22 13:26 J	-6161442.19	-6161441.94	-6161441.69	0.0276	0.0061 *
Mercury	-21580-04-28 14:09 J	-6160554.01	-6160553.91	-6160553.79	0.0286	0.0232
Mercury	-21580-07-26 14:23 J	-6160465.09	-6160464.90	-6160464.72	0.0287	0.0036
Mercury	-21580-10-23 13:55 J	-6160376.07	-6160375.92	-6160375.76	0.0288	0.0161
Mars	-21578-01-25 16:48 J	-6159916.81	-6159916.80	-6159916.78	0.0292	0.0292
Venus	-21575-06-18 09:21 J	-6158677.23	-6158677.11	-6158676.97	0.0300	0.0241
Venus	-21574-02-03 18:43 J	-6158446.93	-6158446.72	-6158446.51	0.0300	0.0052
Venus	-21574-09-22 02:38 J	-6158216.58	-6158216.39	-6158216.20	0.0299	0.0136
Earth	-21569-05-23 07:11 J	-6156511.43	-6156511.20	-6156510.95	0.0286	0.0044
Moon	-21569-05-23 10:48 J	-6156511.29	-6156511.05	-6156510.80	0.0286	0.0027 *
Mercury	-21567-09-03 13:55 J	-6155678.00	-6155677.92	-6155677.84	0.0277	0.0219
Mercury	-21567-12-01 00:43 J	-6155589.60	-6155589.47	-6155589.35	0.0276	0.0098
Mercury	-21566-02-27 11:31 J	-6155501.16	-6155501.02	-6155500.89	0.0275	0.0025
Mercury	-21566-05-26 22:04 J	-6155412.69	-6155412.58	-6155412.46	0.0274	0.0144
Mercury	-21566-08-23 08:52 J	-6155324.15	-6155324.13	-6155324.09	0.0273	0.0264
Mars	-21564-04-14 01:40 J	-6154724.71	-6154724.43	-6154724.15	0.0268	0.0099
Venus	-21561-11-28 18:14 J	-6153399.84	-6153399.74	-6153399.63	0.0262	0.0226
Venus	-21560-07-15 12:57 J	-6153171.15	-6153170.96	-6153170.77	0.0262	0.0107
Venus	-21559-03-01 07:40 J	-6152942.39	-6152942.18	-6152941.97	0.0262	0.0013
Venus	-21559-10-16 02:52 J	-6152713.56	-6152713.38	-6152713.19	0.0262	0.0134
Venus	-21558-06-01 23:02 J	-6152484.58	-6152484.54	-6152484.49	0.0263	0.0255
Mercury	-21551-09-15 14:38 J	-6149821.94	-6149821.89	-6149821.81	0.0285	0.0269
Mercury	-21551-12-13 14:52 J	-6149733.06	-6149732.88	-6149732.70	0.0286	0.0072

Mercury	-21550-03-12 14:38 J	-6149644.05	-6149643.89	-6149643.72	0.0287	0.0125
Venus	-21546-12-29 22:04 J	-6147890.73	-6147890.58	-6147890.41	0.0300	0.0205
Venus	-21545-08-16 07:11 J	-6147660.41	-6147660.20	-6147659.99	0.0300	0.0015
Venus	-21544-04-03 14:52 J	-6147430.05	-6147429.88	-6147429.70	0.0300	0.0173
Mercury	-21537-01-21 17:31 J	-6144945.83	-6144945.77	-6144945.71	0.0277	0.0242
Mercury	-21537-04-19 04:04 J	-6144857.44	-6144857.33	-6144857.20	0.0276	0.0122
Mercury	-21537-07-16 14:52 J	-6144769.01	-6144768.88	-6144768.74	0.0275	0.0010
Mercury	-21537-10-13 01:40 J	-6144680.55	-6144680.43	-6144680.31	0.0274	0.0121
Mercury	-21536-01-09 12:28 J	-6144592.04	-6144591.98	-6144591.92	0.0273	0.0241
Venus	-21531-06-11 00:28 J	-6142613.60	-6142613.48	-6142613.35	0.0261	0.0204
Venus	-21530-01-25 18:57 J	-6142384.91	-6142384.71	-6142384.51	0.0261	0.0085
Venus	-21530-09-11 13:40 J	-6142156.14	-6142155.93	-6142155.72	0.0262	0.0035
Venus	-21529-04-27 08:52 J	-6141927.29	-6141927.13	-6141926.95	0.0262	0.0156
Earth	-21524-11-24 01:55 J	-6139890.66	-6139890.42	-6139890.17	0.0276	0.0033
Moon	-21524-11-24 02:38 J	-6139890.65	-6139890.39	-6139890.13	0.0276	0.0032 *
Mercury	-21521-05-01 14:23 J	-6139001.07	-6139000.90	-6139000.73	0.0286	0.0120
Mercury	-21521-07-29 14:09 J	-6138912.09	-6138911.91	-6138911.73	0.0287	0.0076
Mercury	-21521-10-26 13:40 J	-6138822.98	-6138822.93	-6138822.87	0.0288	0.0271
Venus	-21516-07-11 06:43 J	-6137104.39	-6137104.22	-6137104.05	0.0300	0.0178
Venus	-21515-02-26 15:21 J	-6136874.07	-6136873.86	-6136873.65	0.0300	0.0011
Venus	-21515-10-14 22:48 J	-6136643.70	-6136643.55	-6136643.39	0.0299	0.0198
Moon	-21510-05-25 20:38 J	-6134959.88	-6134959.64	-6134959.39	0.0285	0.0061
Earth	-21510-05-25 20:52 J	-6134959.87	-6134959.63	-6134959.40	0.0285	0.0046 *
Mercury	-21508-06-09 20:09 J	-6134213.66	-6134213.66	-6134213.66	0.0277	0.0276
Mercury	-21508-09-06 06:57 J	-6134125.32	-6134125.21	-6134125.11	0.0276	0.0155
Mercury	-21508-12-03 17:31 J	-6134036.90	-6134036.77	-6134036.64	0.0275	0.0034
Mercury	-21507-03-02 04:19 J	-6133948.44	-6133948.32	-6133948.19	0.0274	0.0087
Mercury	-21507-05-29 15:07 J	-6133859.95	-6133859.87	-6133859.78	0.0273	0.0208
Venus	-21502-12-22 04:04 J	-6131827.47	-6131827.33	-6131827.18	0.0262	0.0185
Venus	-21501-08-06 22:33 J	-6131598.76	-6131598.56	-6131598.35	0.0262	0.0066

Venus	-21500-03-23 17:31 J	-6131369.97	-6131369.77	-6131369.56	0.0262	0.0056
Venus	-21500-11-07 13:11 J	-6131141.10	-6131140.95	-6131140.79	0.0262	0.0177
Moon	-21495-11-18 19:55 J	-6129303.77	-6129303.67	-6129303.54	0.0274	0.0239
Earth	-21495-11-18 20:23 J	-6129303.77	-6129303.65	-6129303.52	0.0274	0.0234 *
Mercury	-21492-09-18 14:38 J	-6128269.04	-6128268.89	-6128268.73	0.0286	0.0159
Mercury	-21492-12-16 14:38 J	-6128180.07	-6128179.89	-6128179.70	0.0287	0.0039
Mercury	-21491-03-15 14:23 J	-6128091.00	-6128090.90	-6128090.79	0.0288	0.0234
Mars	-21490-06-22 21:50 J	-6127626.81	-6127626.59	-6127626.36	0.0293	0.0176
Venus	-21486-01-21 19:40 J	-6126317.86	-6126317.68	-6126317.48	0.0300	0.0141
Venus	-21486-09-09 04:33 J	-6126087.52	-6126087.31	-6126087.10	0.0300	0.0049
Venus	-21485-04-26 11:45 J	-6125857.13	-6125857.01	-6125856.87	0.0299	0.0235
Moon	-21481-05-19 18:43 J	-6124372.86	-6124372.72	-6124372.58	0.0287	0.0228
Earth	-21481-05-19 18:14 J	-6124372.85	-6124372.74	-6124372.60	0.0287	0.0244 *
Mercury	-21478-01-24 10:33 J	-6123393.16	-6123393.06	-6123392.96	0.0276	0.0176
Mercury	-21478-04-22 21:21 J	-6123304.74	-6123304.61	-6123304.48	0.0275	0.0055
Mercury	-21478-07-20 08:09 J	-6123216.29	-6123216.16	-6123216.03	0.0274	0.0066
Mercury	-21478-10-16 18:57 J	-6123127.81	-6123127.71	-6123127.62	0.0273	0.0187
Mars	-21476-09-08 22:04 J	-6122434.78	-6122434.58	-6122434.37	0.0267	0.0194
Venus	-21472-07-03 10:33 J	-6121041.21	-6121041.06	-6121040.89	0.0261	0.0163
Venus	-21471-02-17 05:16 J	-6120812.49	-6120812.28	-6120812.07	0.0261	0.0043
Venus	-21471-10-04 00:14 J	-6120583.69	-6120583.49	-6120583.29	0.0262	0.0078
Venus	-21470-05-20 19:40 J	-6120354.80	-6120354.68	-6120354.53	0.0262	0.0200
Moon	-21465-11-25 15:21 J	-6118339.08	-6118338.86	-6118338.63	0.0277	0.0126
Earth	-21465-11-25 18:57 J	-6118338.93	-6118338.71	-6118338.49	0.0277	0.0124 *
Mercury	-21462-02-05 14:38 J	-6117537.02	-6117536.89	-6117536.76	0.0286	0.0203
Mercury	-21462-05-05 14:38 J	-6117448.07	-6117447.89	-6117447.70	0.0287	0.0007
Mercury	-21462-08-02 14:23 J	-6117359.04	-6117358.90	-6117358.76	0.0288	0.0190
Venus	-21457-08-03 05:02 J	-6115531.48	-6115531.29	-6115531.09	0.0300	0.0112
Venus	-21456-03-21 13:26 J	-6115301.14	-6115300.94	-6115300.73	0.0299	0.0077
Venus	-21456-11-06 20:23 J	-6115070.74	-6115070.65	-6115070.54	0.0299	0.0262

Moon	-21451-05-27 08:09 J	-6113408.35	-6113408.16	-6113407.94	0.0284	0.0152
Earth	-21451-05-27 12:00 J	-6113408.21	-6113408.00	-6113407.79	0.0284	0.0137 *
Mercury	-21449-06-12 13:11 J	-6112661.03	-6112660.95	-6112660.86	0.0276	0.0210
Mercury	-21449-09-09 00:00 J	-6112572.62	-6112572.50	-6112572.38	0.0275	0.0088
Mercury	-21449-12-06 10:48 J	-6112484.18	-6112484.05	-6112483.92	0.0274	0.0033
Mercury	-21448-03-04 21:21 J	-6112395.71	-6112395.61	-6112395.49	0.0274	0.0154
Venus	-21443-05-29 19:40 J	-6110483.68	-6110483.68	-6110483.67	0.0262	0.0262
Venus	-21442-01-13 14:09 J	-6110255.09	-6110254.91	-6110254.74	0.0262	0.0143
Venus	-21442-08-30 08:38 J	-6110026.35	-6110026.14	-6110025.93	0.0262	0.0023
Venus	-21441-04-15 03:36 J	-6109797.54	-6109797.35	-6109797.15	0.0262	0.0099
Venus	-21441-11-29 23:31 J	-6109568.63	-6109568.52	-6109568.40	0.0263	0.0220
Earth	-21436-11-20 11:31 J	-6107752.23	-6107752.02	-6107751.81	0.0275	0.0149
Moon	-21436-11-20 14:38 J	-6107752.08	-6107751.89	-6107751.67	0.0275	0.0151 *
Mercury	-21433-06-24 14:38 J	-6106804.98	-6106804.89	-6106804.80	0.0285	0.0245
Mercury	-21433-09-21 14:38 J	-6106716.07	-6106715.89	-6106715.71	0.0286	0.0048
Mercury	-21433-12-19 14:23 J	-6106627.05	-6106626.90	-6106626.74	0.0287	0.0148
Venus	-21428-06-28 08:09 J	-6104975.25	-6104975.16	-6104975.05	0.0300	0.0265
Venus	-21427-02-13 17:31 J	-6104744.97	-6104744.77	-6104744.56	0.0300	0.0076
Venus	-21427-10-02 01:55 J	-6104514.62	-6104514.42	-6104514.22	0.0300	0.0114
Venus	-21426-05-20 08:38 J	-6104284.14	-6104284.14	-6104284.11	0.0299	0.0298
Earth	-21422-05-22 10:04 J	-6102821.28	-6102821.08	-6102820.87	0.0287	0.0151
Moon	-21422-05-22 13:26 J	-6102821.14	-6102820.94	-6102820.72	0.0287	0.0135 *
Mercury	-21420-10-30 17:02 J	-6101928.86	-6101928.79	-6101928.72	0.0277	0.0231
Mercury	-21419-01-27 03:50 J	-6101840.46	-6101840.34	-6101840.22	0.0276	0.0110
Mercury	-21419-04-25 14:38 J	-6101752.03	-6101751.89	-6101751.76	0.0275	0.0013
Mercury	-21419-07-23 01:11 J	-6101663.56	-6101663.45	-6101663.33	0.0274	0.0132
Mercury	-21419-10-19 12:00 J	-6101575.04	-6101575.00	-6101574.95	0.0273	0.0252
Mars	-21418-12-16 02:23 J	-6101152.52	-6101152.40	-6101152.27	0.0269	0.0245
Venus	-21414-12-10 02:09 J	-6099697.49	-6099697.41	-6099697.33	0.0262	0.0239
Venus	-21413-07-25 20:38 J	-6099468.83	-6099468.64	-6099468.46	0.0261	0.0121

Venus	-21412-03-11 15:07 J	-6099240.08	-6099239.87	-6099239.66	0.0261	0.0005
Venus	-21412-10-26 10:19 J	-6099011.25	-6099011.07	-6099010.88	0.0262	0.0121
Venus	-21411-06-12 06:14 J	-6098782.31	-6098782.24	-6098782.15	0.0262	0.0242
Moon	-21406-11-28 07:40 J	-6096787.32	-6096787.18	-6096787.02	0.0277	0.0216
Earth	-21406-11-28 10:19 J	-6096787.22	-6096787.07	-6096786.90	0.0277	0.0213 *
Mercury	-21403-02-08 14:23 J	-6095984.07	-6095983.90	-6095983.72	0.0286	0.0093
Mercury	-21403-05-08 14:23 J	-6095895.07	-6095894.90	-6095894.73	0.0287	0.0104
Mars	-21402-11-17 23:31 J	-6095336.79	-6095336.52	-6095336.24	0.0293	0.0074
Venus	-21398-01-08 18:14 J	-6094188.87	-6094188.74	-6094188.61	0.0300	0.0236
Venus	-21398-08-27 03:07 J	-6093958.58	-6093958.37	-6093958.16	0.0300	0.0047
Venus	-21397-04-13 11:02 J	-6093728.22	-6093728.04	-6093727.85	0.0299	0.0142
Moon	-21392-05-29 01:40 J	-6091856.54	-6091856.43	-6091856.30	0.0284	0.0243
Earth	-21392-05-29 03:50 J	-6091856.48	-6091856.34	-6091856.20	0.0284	0.0229 *
Mercury	-21390-03-19 19:40 J	-6091196.71	-6091196.68	-6091196.63	0.0276	0.0264
Mercury	-21390-06-16 06:28 J	-6091108.34	-6091108.23	-6091108.11	0.0276	0.0142
Mercury	-21390-09-12 17:16 J	-6091019.91	-6091019.78	-6091019.65	0.0275	0.0021
Mercury	-21390-12-10 04:04 J	-6090931.46	-6090931.33	-6090931.21	0.0274	0.0100
Mercury	-21389-03-07 14:38 J	-6090842.96	-6090842.89	-6090842.81	0.0273	0.0220
Venus	-21384-06-21 05:16 J	-6088911.39	-6088911.28	-6088911.17	0.0262	0.0221
Venus	-21383-02-04 23:31 J	-6088682.71	-6088682.52	-6088682.33	0.0262	0.0102
Venus	-21383-09-21 18:14 J	-6088453.95	-6088453.74	-6088453.53	0.0262	0.0019
Venus	-21382-05-08 13:11 J	-6088225.12	-6088224.95	-6088224.77	0.0262	0.0140
Venus	-21382-12-23 09:07 J	-6087996.13	-6087996.12	-6087996.09	0.0263	0.0262
Earth	-21377-11-22 00:28 J	-6086200.72	-6086200.48	-6086200.24	0.0275	0.0069
Moon	-21377-11-22 02:52 J	-6086200.62	-6086200.38	-6086200.12	0.0275	0.0071 *
Mercury	-21374-06-28 13:40 J	-6085252.08	-6085251.93	-6085251.76	0.0286	0.0141
Mercury	-21374-09-25 13:40 J	-6085163.11	-6085162.93	-6085162.74	0.0287	0.0057
Mercury	-21374-12-23 13:26 J	-6085074.02	-6085073.94	-6085073.85	0.0288	0.0253
Venus	-21369-07-21 05:31 J	-6083402.43	-6083402.27	-6083402.11	0.0300	0.0202
Venus	-21368-03-08 14:38 J	-6083172.11	-6083171.89	-6083171.68	0.0300	0.0013



Venus	-21368-10-24 22:33 J	-6082941.73	-6082941.56	-6082941.39	0.0300	0.0177
Earth	-21363-05-24 01:26 J	-6081269.67	-6081269.44	-6081269.20	0.0286	0.0059
Moon	-21363-05-24 03:36 J	-6081269.59	-6081269.35	-6081269.10	0.0286	0.0044 *
Mercury	-21361-11-02 10:19 J	-6080376.18	-6080376.07	-6080375.97	0.0276	0.0165
Mercury	-21360-01-29 20:52 J	-6080287.76	-6080287.63	-6080287.50	0.0275	0.0044
Mercury	-21360-04-28 07:40 J	-6080199.31	-6080199.18	-6080199.05	0.0274	0.0077
Mercury	-21360-07-25 18:28 J	-6080110.82	-6080110.73	-6080110.64	0.0273	0.0198
Venus	-21354-01-01 11:02 J	-6078125.16	-6078125.04	-6078124.89	0.0261	0.0200
Venus	-21354-08-18 05:31 J	-6077896.46	-6077896.27	-6077896.07	0.0261	0.0080
Venus	-21353-04-03 00:14 J	-6077667.70	-6077667.49	-6077667.28	0.0261	0.0041
Venus	-21353-11-17 19:26 J	-6077438.85	-6077438.69	-6077438.52	0.0262	0.0162
Mercury	-21345-11-14 13:26 J	-6074520.07	-6074519.94	-6074519.79	0.0286	0.0187
Mercury	-21344-02-11 13:26 J	-6074431.12	-6074430.94	-6074430.75	0.0287	0.0013
Mercury	-21344-05-11 13:26 J	-6074342.07	-6074341.94	-6074341.82	0.0288	0.0207
Venus	-21339-01-31 14:38 J	-6072616.06	-6072615.89	-6072615.71	0.0300	0.0174
Venus	-21339-09-18 23:31 J	-6072385.73	-6072385.52	-6072385.30	0.0300	0.0018
Venus	-21338-05-07 07:26 J	-6072155.34	-6072155.19	-6072155.04	0.0299	0.0205
Mercury	-21331-03-22 12:57 J	-6069644.05	-6069643.96	-6069643.87	0.0276	0.0198
Mercury	-21331-06-18 23:31 J	-6069555.64	-6069555.52	-6069555.39	0.0275	0.0077
Mercury	-21331-09-15 10:19 J	-6069467.20	-6069467.07	-6069466.94	0.0274	0.0044
Mercury	-21331-12-12 20:52 J	-6069378.73	-6069378.63	-6069378.52	0.0273	0.0164
Mars	-21329-05-11 09:21 J	-6068863.34	-6068863.11	-6068862.87	0.0269	0.0172
Venus	-21325-07-13 13:26 J	-6067339.08	-6067338.94	-6067338.78	0.0262	0.0182
Venus	-21324-02-27 07:55 J	-6067110.38	-6067110.17	-6067109.97	0.0262	0.0062
Venus	-21324-10-14 02:23 J	-6066881.60	-6066881.40	-6066881.19	0.0262	0.0059
Venus	-21323-05-30 21:50 J	-6066652.74	-6066652.59	-6066652.44	0.0262	0.0181
Moon	-21318-11-24 08:38 J	-6064649.40	-6064649.14	-6064648.88	0.0276	0.0007
Earth	-21318-11-24 10:04 J	-6064649.33	-6064649.08	-6064648.83	0.0276	0.0006 *
Mercury	-21315-04-03 11:45 J	-6063788.11	-6063788.01	-6063787.91	0.0285	0.0243
Mercury	-21315-07-01 11:45 J	-6063699.19	-6063699.01	-6063698.82	0.0286	0.0046

Mercury	-21315-09-28 11:45 J	-6063610.17	-6063610.01	-6063609.86	0.0287	0.0151
Mars	-21313-04-13 11:16 J	-6063047.31	-6063047.03	-6063046.74	0.0293	0.0014
Venus	-21310-08-14 00:00 J	-6061829.68	-6061829.50	-6061829.31	0.0300	0.0143
Venus	-21309-03-31 09:07 J	-6061599.33	-6061599.12	-6061598.91	0.0300	0.0049
Venus	-21309-11-16 16:48 J	-6061368.92	-6061368.80	-6061368.66	0.0300	0.0238
Moon	-21304-05-25 12:57 J	-6059718.21	-6059717.96	-6059717.71	0.0286	0.0041
Earth	-21304-05-25 14:38 J	-6059718.13	-6059717.89	-6059717.65	0.0286	0.0028 *
Mercury	-21302-08-09 16:33 J	-6058911.89	-6058911.81	-6058911.74	0.0276	0.0223
Mercury	-21302-11-06 03:07 J	-6058823.49	-6058823.37	-6058823.25	0.0275	0.0102
Mercury	-21301-02-02 13:55 J	-6058735.06	-6058734.92	-6058734.79	0.0274	0.0021
Mercury	-21301-05-01 00:28 J	-6058646.59	-6058646.48	-6058646.36	0.0274	0.0140
Mercury	-21301-07-28 11:16 J	-6058558.07	-6058558.03	-6058557.99	0.0273	0.0260
Venus	-21295-01-23 19:11 J	-6056552.86	-6056552.70	-6056552.53	0.0261	0.0160
Venus	-21295-09-09 13:26 J	-6056324.14	-6056323.94	-6056323.73	0.0261	0.0041
Venus	-21294-04-26 08:09 J	-6056095.36	-6056095.16	-6056094.96	0.0261	0.0081
Venus	-21294-12-11 03:21 J	-6055866.49	-6055866.36	-6055866.22	0.0262	0.0202
Earth	-21289-11-18 02:23 J	-6054062.42	-6054062.40	-6054062.34	0.0274	0.0271
Mercury	-21286-11-18 11:02 J	-6052967.21	-6052967.04	-6052966.86	0.0287	0.0095
Mercury	-21285-02-15 11:02 J	-6052878.21	-6052878.04	-6052877.87	0.0288	0.0103
Venus	-21280-02-23 08:52 J	-6051043.33	-6051043.13	-6051042.93	0.0300	0.0114
Venus	-21280-10-11 17:31 J	-6050812.97	-6050812.77	-6050812.56	0.0300	0.0078
Venus	-21279-05-30 01:11 J	-6050582.54	-6050582.45	-6050582.35	0.0299	0.0264
Earth	-21275-05-20 03:21 J	-6049131.41	-6049131.36	-6049131.29	0.0287	0.0277
Moon	-21275-05-20 04:48 J	-6049131.38	-6049131.30	-6049131.19	0.0287	0.0262 *
Mercury	-21273-12-26 18:57 J	-6048179.75	-6048179.71	-6048179.66	0.0276	0.0257
Mercury	-21272-03-25 05:31 J	-6048091.38	-6048091.27	-6048091.15	0.0275	0.0137
Mercury	-21272-06-21 16:19 J	-6048002.95	-6048002.82	-6048002.69	0.0274	0.0016
Mercury	-21272-09-18 02:52 J	-6047914.50	-6047914.38	-6047914.25	0.0273	0.0105
Mercury	-21272-12-15 13:40 J	-6047826.00	-6047825.93	-6047825.85	0.0273	0.0225
Venus	-21266-08-05 20:38 J	-6045766.81	-6045766.64	-6045766.46	0.0261	0.0144

Venus	-21265-03-21 14:52 J	-6045538.09	-6045537.88	-6045537.67	0.0261	0.0024
Venus	-21265-11-05 09:21 J	-6045309.30	-6045309.11	-6045308.91	0.0262	0.0098
Venus	-21264-06-22 04:48 J	-6045080.41	-6045080.30	-6045080.18	0.0262	0.0219
Moon	-21259-11-25 12:14 J	-6043098.22	-6043097.99	-6043097.74	0.0276	0.0075
Earth	-21259-11-25 16:04 J	-6043098.07	-6043097.83	-6043097.59	0.0276	0.0073 *
Mercury	-21256-04-06 08:23 J	-6042235.30	-6042235.15	-6042234.99	0.0286	0.0158
Mercury	-21256-07-04 08:38 J	-6042146.33	-6042146.14	-6042145.96	0.0287	0.0040
Mercury	-21256-10-01 08:09 J	-6042057.25	-6042057.16	-6042057.05	0.0288	0.0237
Venus	-21251-01-18 06:14 J	-6040487.32	-6040487.24	-6040487.16	0.0300	0.0277
Venus	-21251-09-05 15:50 J	-6040257.04	-6040256.84	-6040256.63	0.0300	0.0087
Venus	-21250-04-24 00:57 J	-6040026.66	-6040026.46	-6040026.26	0.0300	0.0106
Venus	-21250-12-10 08:52 J	-6039796.17	-6039796.13	-6039796.09	0.0300	0.0293
Moon	-21245-05-26 20:38 J	-6038166.85	-6038166.64	-6038166.42	0.0285	0.0121
Earth	-21245-05-27 00:14 J	-6038166.71	-6038166.49	-6038166.26	0.0285	0.0106 *
Mercury	-21243-08-12 08:52 J	-6037359.23	-6037359.13	-6037359.03	0.0276	0.0165
Mercury	-21243-11-08 19:26 J	-6037270.82	-6037270.69	-6037270.56	0.0275	0.0045
Mercury	-21242-02-05 06:14 J	-6037182.37	-6037182.24	-6037182.11	0.0274	0.0077
Mercury	-21242-05-04 17:02 J	-6037093.88	-6037093.79	-6037093.70	0.0273	0.0197
Mars	-21241-10-05 20:38 J	-6036573.91	-6036573.64	-6036573.34	0.0268	0.0096
Venus	-21237-07-01 07:40 J	-6035209.25	-6035209.18	-6035209.10	0.0261	0.0242
Venus	-21236-02-15 01:40 J	-6034980.61	-6034980.43	-6034980.24	0.0261	0.0123
Venus	-21236-10-01 19:55 J	-6034751.88	-6034751.67	-6034751.46	0.0261	0.0004
Venus	-21235-05-18 14:23 J	-6034523.09	-6034522.90	-6034522.71	0.0261	0.0118
Venus	-21234-01-02 09:36 J	-6034294.18	-6034294.10	-6034294.01	0.0262	0.0239
Earth	-21230-11-20 06:43 J	-6032511.38	-6032511.22	-6032511.06	0.0274	0.0208
Moon	-21230-11-20 10:19 J	-6032511.21	-6032511.07	-6032510.89	0.0274	0.0211 *
Mercury	-21227-08-24 06:57 J	-6031503.33	-6031503.21	-6031503.08	0.0286	0.0213
Mercury	-21227-11-21 07:11 J	-6031414.39	-6031414.20	-6031414.02	0.0287	0.0015
Mercury	-21226-02-18 06:57 J	-6031325.35	-6031325.21	-6031325.06	0.0288	0.0182
Mars	-21225-09-07 12:00 J	-6030758.27	-6030758.00	-6030757.72	0.0294	0.0075

Venus	-21222-07-31 13:55 J	-6029701.03	-6029700.92	-6029700.80	0.0300	0.0251
Venus	-21221-03-17 23:31 J	-6029470.73	-6029470.52	-6029470.31	0.0300	0.0059
Venus	-21221-11-03 08:09 J	-6029240.35	-6029240.16	-6029239.96	0.0300	0.0133
Earth	-21216-05-21 12:14 J	-6027580.15	-6027579.99	-6027579.81	0.0287	0.0200
Moon	-21216-05-21 15:50 J	-6027580.01	-6027579.84	-6027579.64	0.0287	0.0183 *
Mercury	-21214-12-30 11:16 J	-6026627.12	-6026627.03	-6026626.94	0.0276	0.0201
Mercury	-21213-03-27 21:50 J	-6026538.71	-6026538.59	-6026538.46	0.0275	0.0080
Mercury	-21213-06-24 08:38 J	-6026450.27	-6026450.14	-6026450.01	0.0274	0.0041
Mercury	-21213-09-20 19:11 J	-6026361.80	-6026361.70	-6026361.59	0.0273	0.0161
Venus	-21207-01-11 08:38 J	-6024423.24	-6024423.14	-6024423.03	0.0261	0.0227
Venus	-21207-08-28 02:23 J	-6024194.59	-6024194.40	-6024194.21	0.0261	0.0108
Venus	-21206-04-13 20:23 J	-6023965.86	-6023965.65	-6023965.44	0.0261	0.0013
Venus	-21206-11-28 14:52 J	-6023737.06	-6023736.88	-6023736.70	0.0261	0.0134
Venus	-21205-07-14 10:19 J	-6023508.11	-6023508.07	-6023508.02	0.0262	0.0256
Moon	-21200-11-26 16:48 J	-6021547.00	-6021546.80	-6021546.58	0.0277	0.0136
Earth	-21200-11-26 17:45 J	-6021546.98	-6021546.76	-6021546.54	0.0277	0.0131 *
Mercury	-21197-01-11 03:36 J	-6020771.37	-6020771.35	-6020771.34	0.0285	0.0284
Mercury	-21197-04-09 03:36 J	-6020682.52	-6020682.35	-6020682.17	0.0286	0.0086
Mercury	-21197-07-07 03:36 J	-6020593.52	-6020593.35	-6020593.18	0.0287	0.0112
Venus	-21192-02-09 18:28 J	-6018914.86	-6018914.73	-6018914.58	0.0300	0.0228
Venus	-21192-09-28 04:33 J	-6018684.53	-6018684.31	-6018684.10	0.0301	0.0035
Venus	-21191-05-16 13:26 J	-6018454.12	-6018453.94	-6018453.75	0.0300	0.0158
Moon	-21186-05-29 05:16 J	-6016615.44	-6016615.28	-6016615.09	0.0285	0.0191
Earth	-21186-05-29 06:14 J	-6016615.42	-6016615.24	-6016615.05	0.0285	0.0177 *
Mercury	-21184-05-18 14:09 J	-6015894.98	-6015894.91	-6015894.84	0.0277	0.0233
Mercury	-21184-08-15 00:43 J	-6015806.59	-6015806.47	-6015806.35	0.0276	0.0112
Mercury	-21184-11-11 11:31 J	-6015718.15	-6015718.02	-6015717.89	0.0275	0.0011
Mercury	-21183-02-07 22:04 J	-6015629.69	-6015629.58	-6015629.46	0.0274	0.0130
Mercury	-21183-05-07 08:52 J	-6015541.18	-6015541.13	-6015541.08	0.0273	0.0250
Venus	-21178-07-24 12:28 J	-6013637.09	-6013636.98	-6013636.84	0.0261	0.0208

Venus	-21177-03-09 06:28 J	-6013408.42	-6013408.23	-6013408.03	0.0261	0.0089
Venus	-21177-10-24 00:43 J	-6013179.68	-6013179.47	-6013179.26	0.0261	0.0032
Venus	-21176-06-09 19:11 J	-6012950.86	-6012950.70	-6012950.53	0.0261	0.0153
Earth	-21171-11-21 07:40 J	-6010960.39	-6010960.18	-6010959.97	0.0275	0.0152
Moon	-21171-11-21 07:55 J	-6010960.38	-6010960.17	-6010959.95	0.0275	0.0149 *
Mercury	-21168-08-27 01:55 J	-6009950.58	-6009950.42	-6009950.26	0.0286	0.0143
Mercury	-21168-11-24 01:55 J	-6009861.60	-6009861.42	-6009861.23	0.0287	0.0055
Mercury	-21167-02-21 01:40 J	-6009772.51	-6009772.43	-6009772.34	0.0288	0.0253
Venus	-21163-08-23 01:26 J	-6008128.59	-6008128.44	-6008128.27	0.0301	0.0202
Venus	-21162-04-10 11:16 J	-6007898.24	-6007898.03	-6007897.81	0.0301	0.0009
Venus	-21162-11-26 20:09 J	-6007667.83	-6007667.66	-6007667.49	0.0300	0.0183
Earth	-21157-05-22 17:16 J	-6006028.99	-6006028.78	-6006028.56	0.0286	0.0131
Moon	-21157-05-22 17:31 J	-6006028.99	-6006028.77	-6006028.53	0.0286	0.0116 *
Mercury	-21155-10-05 16:19 J	-6005162.84	-6005162.82	-6005162.80	0.0276	0.0271
Mercury	-21154-01-02 02:52 J	-6005074.49	-6005074.38	-6005074.27	0.0275	0.0150
Mercury	-21154-03-31 13:40 J	-6004986.07	-6004985.93	-6004985.80	0.0274	0.0030
Mercury	-21154-06-28 00:14 J	-6004897.61	-6004897.49	-6004897.36	0.0273	0.0091
Mercury	-21154-09-24 10:48 J	-6004809.13	-6004809.05	-6004808.96	0.0273	0.0212
Mars	-21152-03-01 07:40 J	-6004285.47	-6004285.18	-6004284.87	0.0268	0.0051
Venus	-21148-02-02 12:57 J	-6002851.09	-6002850.96	-6002850.81	0.0261	0.0193
Venus	-21148-09-19 06:43 J	-6002622.42	-6002622.22	-6002622.01	0.0261	0.0073
Venus	-21147-05-06 00:43 J	-6002393.68	-6002393.47	-6002393.27	0.0261	0.0048
Venus	-21147-12-20 19:11 J	-6002164.86	-6002164.70	-6002164.54	0.0261	0.0169
Earth	-21141-11-27 16:19 J	-5999996.01	-5999995.82	-5999995.63	0.0277	0.0183
Moon	-21141-11-27 19:40 J	-5999995.85	-5999995.68	-5999995.50	0.0277	0.0193 *
Mercury	-21138-01-13 21:21 J	-5999218.72	-5999218.61	-5999218.49	0.0285	0.0222
Mercury	-21138-04-12 21:36 J	-5999129.78	-5999129.60	-5999129.41	0.0287	0.0024
Mercury	-21138-07-10 21:21 J	-5999040.75	-5999040.61	-5999040.46	0.0288	0.0175
Mars	-21136-01-31 06:43 J	-5998470.49	-5998470.22	-5998469.95	0.0294	0.0091
Venus	-21133-03-04 03:50 J	-5997342.51	-5997342.34	-5997342.17	0.0301	0.0182

Venus	-21133-10-20 13:40 J	-5997112.14	-5997111.93	-5997111.71	0.0301	0.0012
Venus	-21132-06-07 22:33 J	-5996881.71	-5996881.56	-5996881.39	0.0300	0.0205
Earth	-21127-05-30 07:55 J	-5995064.29	-5995064.17	-5995064.03	0.0285	0.0238
Moon	-21127-05-30 11:31 J	-5995064.13	-5995064.02	-5995063.91	0.0285	0.0251 *
Mercury	-21125-05-21 05:31 J	-5994342.37	-5994342.27	-5994342.18	0.0276	0.0186
Mercury	-21125-08-17 16:04 J	-5994253.96	-5994253.83	-5994253.70	0.0275	0.0065
Mercury	-21125-11-14 02:52 J	-5994165.51	-5994165.38	-5994165.25	0.0274	0.0057
Mercury	-21124-02-10 13:26 J	-5994077.04	-5994076.94	-5994076.84	0.0274	0.0178
Venus	-21119-08-15 16:19 J	-5992064.96	-5992064.82	-5992064.65	0.0261	0.0175
Venus	-21118-04-01 10:19 J	-5991836.28	-5991836.07	-5991835.87	0.0261	0.0055
Venus	-21118-11-16 04:19 J	-5991607.53	-5991607.32	-5991607.12	0.0261	0.0066
Venus	-21117-07-01 22:48 J	-5991378.69	-5991378.55	-5991378.40	0.0261	0.0187
Moon	-21112-11-22 01:11 J	-5989409.68	-5989409.45	-5989409.21	0.0275	0.0094
Earth	-21112-11-22 05:02 J	-5989409.52	-5989409.29	-5989409.06	0.0275	0.0102 *
Mercury	-21109-06-01 19:11 J	-5988486.72	-5988486.70	-5988486.67	0.0285	0.0282
Mercury	-21109-08-29 19:26 J	-5988397.87	-5988397.69	-5988397.51	0.0286	0.0084
Mercury	-21109-11-26 19:26 J	-5988308.86	-5988308.69	-5988308.52	0.0287	0.0114
Venus	-21104-09-14 09:50 J	-5986556.26	-5986556.09	-5986555.90	0.0301	0.0157
Venus	-21103-05-02 19:55 J	-5986325.89	-5986325.67	-5986325.46	0.0301	0.0038
Venus	-21103-12-19 04:33 J	-5986095.44	-5986095.31	-5986095.17	0.0300	0.0230
Moon	-21098-05-24 14:38 J	-5984478.13	-5984477.89	-5984477.65	0.0286	0.0058
Earth	-21098-05-24 18:14 J	-5984477.97	-5984477.74	-5984477.50	0.0286	0.0071 *
Mercury	-21096-10-08 07:26 J	-5983610.26	-5983610.19	-5983610.11	0.0276	0.0226
Mercury	-21095-01-04 18:14 J	-5983521.86	-5983521.74	-5983521.62	0.0275	0.0105
Mercury	-21095-04-03 04:48 J	-5983433.43	-5983433.30	-5983433.17	0.0274	0.0017
Mercury	-21095-06-30 15:36 J	-5983344.97	-5983344.85	-5983344.74	0.0273	0.0137
Mercury	-21095-09-27 02:09 J	-5983256.45	-5983256.41	-5983256.37	0.0272	0.0257
Venus	-21089-02-25 16:19 J	-5981278.97	-5981278.82	-5981278.65	0.0261	0.0161
Venus	-21089-10-11 10:04 J	-5981050.29	-5981050.08	-5981049.88	0.0261	0.0041
Venus	-21088-05-28 03:50 J	-5980821.54	-5980821.34	-5980821.14	0.0261	0.0080

Venus	-21087-01-11 22:04 J	-5980592.71	-5980592.58	-5980592.44	0.0261	0.0202
Earth	-21082-11-29 12:28 J	-5978445.11	-5978444.98	-5978444.84	0.0277	0.0231
Moon	-21082-11-29 14:38 J	-5978445.01	-5978444.89	-5978444.76	0.0277	0.0243 *
Mercury	-21079-01-16 14:23 J	-5977666.04	-5977665.90	-5977665.74	0.0286	0.0166
Mercury	-21079-04-15 14:38 J	-5977577.07	-5977576.89	-5977576.70	0.0287	0.0033
Mercury	-21079-07-13 14:38 J	-5977488.00	-5977487.89	-5977487.78	0.0288	0.0230
Venus	-21074-03-27 11:16 J	-5975770.22	-5975770.03	-5975769.84	0.0301	0.0139
Venus	-21074-11-12 21:07 J	-5975539.83	-5975539.62	-5975539.41	0.0301	0.0056
Venus	-21073-06-30 06:14 J	-5975309.36	-5975309.24	-5975309.12	0.0300	0.0248
Mercury	-21066-02-25 09:36 J	-5972878.13	-5972878.10	-5972878.06	0.0277	0.0266
Mercury	-21066-05-24 20:23 J	-5972789.76	-5972789.65	-5972789.54	0.0276	0.0144
Mercury	-21066-08-21 06:57 J	-5972701.34	-5972701.21	-5972701.07	0.0275	0.0024
Mercury	-21066-11-17 17:45 J	-5972612.88	-5972612.76	-5972612.64	0.0274	0.0099
Mercury	-21065-02-14 04:19 J	-5972524.39	-5972524.32	-5972524.23	0.0273	0.0221
Mars	-21064-07-25 15:21 J	-5971997.17	-5971996.86	-5971996.55	0.0268	0.0014
Venus	-21060-09-06 19:11 J	-5970492.87	-5970492.70	-5970492.52	0.0261	0.0143
Venus	-21059-04-23 12:57 J	-5970264.17	-5970263.96	-5970263.75	0.0260	0.0023
Venus	-21059-12-08 06:43 J	-5970035.41	-5970035.22	-5970035.02	0.0260	0.0098
Venus	-21058-07-25 01:11 J	-5969806.55	-5969806.45	-5969806.32	0.0261	0.0219
Moon	-21053-11-22 23:16 J	-5967858.77	-5967858.53	-5967858.29	0.0274	0.0045
Earth	-21053-11-23 00:43 J	-5967858.71	-5967858.47	-5967858.22	0.0274	0.0056 *
Mercury	-21050-06-05 12:00 J	-5966934.10	-5966934.00	-5966933.87	0.0285	0.0228
Mercury	-21050-09-02 12:28 J	-5966845.17	-5966844.98	-5966844.80	0.0286	0.0030
Mercury	-21050-11-30 12:14 J	-5966756.14	-5966755.99	-5966755.84	0.0288	0.0168
Mars	-21048-06-26 01:11 J	-5966182.71	-5966182.45	-5966182.18	0.0294	0.0106
Venus	-21045-10-06 16:33 J	-5964984.01	-5964983.81	-5964983.61	0.0301	0.0114
Venus	-21044-05-25 02:23 J	-5964753.61	-5964753.40	-5964753.20	0.0301	0.0081
Venus	-21043-01-10 11:02 J	-5964523.12	-5964523.04	-5964522.94	0.0301	0.0273
Moon	-21039-05-25 14:23 J	-5962927.13	-5962926.90	-5962926.67	0.0287	0.0009
Earth	-21039-05-25 15:50 J	-5962927.08	-5962926.84	-5962926.59	0.0287	0.0019 *

Mercury	-21037-10-10 22:19 J	-5962057.67	-5962057.57	-5962057.48	0.0276	0.0185
Mercury	-21036-01-07 08:52 J	-5961969.26	-5961969.13	-5961969.00	0.0275	0.0064
Mercury	-21036-04-05 19:40 J	-5961880.81	-5961880.68	-5961880.55	0.0274	0.0058
Mercury	-21036-07-03 06:14 J	-5961792.34	-5961792.24	-5961792.14	0.0273	0.0179
Venus	-21031-08-03 01:40 J	-5959935.49	-5959935.43	-5959935.37	0.0261	0.0248
Venus	-21030-03-19 18:57 J	-5959706.89	-5959706.71	-5959706.52	0.0260	0.0129
Venus	-21030-11-03 12:28 J	-5959478.19	-5959477.98	-5959477.77	0.0260	0.0009
Venus	-21029-06-19 06:14 J	-5959249.42	-5959249.24	-5959249.04	0.0261	0.0113
Venus	-21028-02-03 00:43 J	-5959020.56	-5959020.47	-5959020.37	0.0261	0.0233
Earth	-21023-11-30 07:40 J	-5956894.19	-5956894.18	-5956894.16	0.0277	0.0276
Mercury	-21020-01-19 07:11 J	-5956113.37	-5956113.20	-5956113.03	0.0286	0.0114
Mercury	-21020-04-18 07:11 J	-5956024.38	-5956024.20	-5956024.02	0.0287	0.0084
Mercury	-21020-07-16 06:57 J	-5955935.24	-5955935.21	-5955935.17	0.0288	0.0281
Venus	-21016-08-31 06:14 J	-5954428.28	-5954428.24	-5954428.18	0.0300	0.0291
Venus	-21015-04-18 16:33 J	-5954198.01	-5954197.81	-5954197.60	0.0301	0.0098
Venus	-21015-12-05 02:38 J	-5953967.59	-5953967.39	-5953967.19	0.0301	0.0097
Venus	-21014-07-23 11:16 J	-5953737.07	-5953737.03	-5953736.96	0.0300	0.0289
Mercury	-21007-02-28 00:14 J	-5951325.56	-5951325.49	-5951325.42	0.0277	0.0228
Mercury	-21007-05-27 10:48 J	-5951237.17	-5951237.05	-5951236.92	0.0276	0.0106
Mercury	-21007-08-23 21:36 J	-5951148.73	-5951148.60	-5951148.47	0.0275	0.0017
Mercury	-21007-11-20 08:23 J	-5951060.27	-5951060.15	-5951060.04	0.0274	0.0139
Mercury	-21006-02-16 18:57 J	-5950971.74	-5950971.71	-5950971.66	0.0273	0.0260
Venus	-21001-02-13 03:50 J	-5949149.43	-5949149.34	-5949149.24	0.0261	0.0232
Venus	-21001-09-28 21:21 J	-5948920.80	-5948920.61	-5948920.42	0.0260	0.0112

# 21ST MILLENNIUM BCE



**This is a list of transits visible from Saturn in the 21st millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-21000-05-15 14:52 J		-5948692.09	-5948691.88	-5948691.67	0.0260	0.0010	
Venus	-21000-12-30 08:38 J		-5948463.31	-5948463.14	-5948462.95	0.0260	0.0130	
Venus	-20999-08-16 03:21 J		-5948234.41	-5948234.36	-5948234.30	0.0261	0.0250	
Earth	-20994-11-24 19:40 J		-5946307.93	-5946307.68	-5946307.43	0.0274	0.0010	
Moon	-20994-11-24 22:33 J		-5946307.80	-5946307.56	-5946307.31	0.0274	0.0006	*
Mercury	-20991-06-08 04:48 J		-5945381.44	-5945381.30	-5945381.15	0.0285	0.0175	
Mercury	-20991-09-05 05:02 J		-5945292.48	-5945292.29	-5945292.11	0.0286	0.0023	
Mercury	-20991-12-03 04:48 J		-5945203.42	-5945203.30	-5945203.18	0.0288	0.0220	
Venus	-20986-03-13 12:00 J		-5943642.09	-5943642.00	-5943641.89	0.0301	0.0267	
Venus	-20986-10-29 22:33 J		-5943411.77	-5943411.56	-5943411.36	0.0301	0.0073	
Venus	-20985-06-16 08:09 J		-5943181.35	-5943181.16	-5943180.96	0.0301	0.0123	
Earth	-20980-05-26 12:28 J		-5941376.22	-5941375.98	-5941375.74	0.0287	0.0034	
Moon	-20980-05-26 15:07 J		-5941376.10	-5941375.87	-5941375.63	0.0287	0.0039	*
Mercury	-20978-07-18 02:09 J		-5940593.44	-5940593.41	-5940593.38	0.0277	0.0268	
Mercury	-20978-10-14 12:43 J		-5940505.07	-5940504.97	-5940504.85	0.0276	0.0146	
Mercury	-20977-01-10 23:31 J		-5940416.65	-5940416.52	-5940416.39	0.0275	0.0024	
Mercury	-20977-04-08 10:19 J		-5940328.20	-5940328.07	-5940327.95	0.0274	0.0098	
Mercury	-20977-07-05 21:07 J		-5940239.70	-5940239.62	-5940239.55	0.0273	0.0219	
Mars	-20976-12-18 10:04 J		-5939709.39	-5939709.08	-5939708.78	0.0268	0.0010	
Venus	-20972-08-25 03:50 J		-5938363.44	-5938363.34	-5938363.22	0.0261	0.0218	
Venus	-20971-04-10 21:07 J		-5938134.81	-5938134.62	-5938134.42	0.0260	0.0098	
Venus	-20971-11-25 14:38 J		-5937906.10	-5937905.89	-5937905.68	0.0260	0.0023	
Venus	-20970-07-12 08:38 J		-5937677.31	-5937677.14	-5937676.96	0.0260	0.0144	
Mercury	-20962-10-25 23:45 J		-5934649.59	-5934649.51	-5934649.43	0.0285	0.0258	
Mercury	-20961-01-22 23:45 J		-5934560.69	-5934560.51	-5934560.32	0.0286	0.0061	

Mercury	-20961-04-20 23:45 J	-5934471.67	-5934471.51	-5934471.35	0.0287	0.0136
Mars	-20960-11-18 01:11 J	-5933895.71	-5933895.45	-5933895.18	0.0293	0.0089
Venus	-20957-09-22 11:45 J	-5932856.12	-5932856.01	-5932855.89	0.0300	0.0252
Venus	-20956-05-10 22:04 J	-5932625.79	-5932625.58	-5932625.37	0.0301	0.0058
Venus	-20956-12-27 07:55 J	-5932395.36	-5932395.17	-5932394.98	0.0301	0.0138
Mercury	-20948-03-02 14:23 J	-5929772.99	-5929772.90	-5929772.80	0.0277	0.0192
Mercury	-20948-05-30 01:11 J	-5929684.57	-5929684.45	-5929684.32	0.0276	0.0069
Mercury	-20948-08-26 12:00 J	-5929596.13	-5929596.00	-5929595.87	0.0275	0.0055
Mercury	-20948-11-22 22:48 J	-5929507.65	-5929507.55	-5929507.45	0.0274	0.0176
Venus	-20942-03-07 05:45 J	-5927577.38	-5927577.26	-5927577.12	0.0261	0.0202
Venus	-20942-10-21 23:16 J	-5927348.72	-5927348.53	-5927348.33	0.0260	0.0082
Venus	-20941-06-06 17:02 J	-5927119.99	-5927119.79	-5927119.58	0.0260	0.0040
Venus	-20940-01-21 11:02 J	-5926891.20	-5926891.04	-5926890.87	0.0260	0.0161
Earth	-20935-11-25 15:50 J	-5924757.09	-5924756.84	-5924756.59	0.0274	0.0039
Moon	-20935-11-25 18:43 J	-5924756.97	-5924756.72	-5924756.46	0.0274	0.0053 *
Mercury	-20932-06-10 21:36 J	-5923828.76	-5923828.60	-5923828.42	0.0285	0.0121
Mercury	-20932-09-07 21:36 J	-5923739.77	-5923739.60	-5923739.41	0.0286	0.0078
Mercury	-20932-12-05 21:21 J	-5923650.66	-5923650.61	-5923650.55	0.0287	0.0274
Venus	-20927-04-04 17:45 J	-5922069.90	-5922069.76	-5922069.62	0.0301	0.0226
Venus	-20927-11-21 04:04 J	-5921839.54	-5921839.33	-5921839.12	0.0301	0.0031
Venus	-20926-07-09 13:40 J	-5921609.11	-5921608.93	-5921608.75	0.0301	0.0165
Earth	-20921-05-27 07:55 J	-5919825.40	-5919825.17	-5919824.94	0.0287	0.0083
Moon	-20921-05-27 10:33 J	-5919825.29	-5919825.06	-5919824.82	0.0287	0.0087 *
Mercury	-20919-07-20 16:33 J	-5919040.88	-5919040.81	-5919040.74	0.0277	0.0231
Mercury	-20919-10-17 03:21 J	-5918952.48	-5918952.36	-5918952.24	0.0276	0.0108
Mercury	-20918-01-13 14:09 J	-5918864.05	-5918863.91	-5918863.78	0.0275	0.0017
Mercury	-20918-04-12 00:43 J	-5918775.58	-5918775.47	-5918775.35	0.0274	0.0137
Mercury	-20918-07-09 11:31 J	-5918687.06	-5918687.02	-5918686.98	0.0273	0.0258
Venus	-20913-09-16 06:28 J	-5916791.37	-5916791.23	-5916791.08	0.0261	0.0187
Venus	-20912-05-02 23:45 J	-5916562.71	-5916562.51	-5916562.31	0.0260	0.0067

Venus	-20912-12-17 17:16 J	-5916333.99	-5916333.78	-5916333.57	0.0260	0.0054
Venus	-20911-08-03 11:16 J	-5916105.18	-5916105.03	-5916104.88	0.0260	0.0176
Moon	-20906-11-19 19:55 J	-5914170.76	-5914170.67	-5914170.55	0.0272	0.0245
Earth	-20906-11-19 22:48 J	-5914170.62	-5914170.55	-5914170.45	0.0272	0.0257 *
Mercury	-20903-10-28 16:48 J	-5913096.92	-5913096.80	-5913096.66	0.0285	0.0202
Mercury	-20902-01-25 17:02 J	-5913007.98	-5913007.79	-5913007.61	0.0286	0.0007
Mercury	-20902-04-24 16:48 J	-5912918.94	-5912918.80	-5912918.66	0.0287	0.0192
Venus	-20898-10-15 18:00 J	-5911283.89	-5911283.75	-5911283.59	0.0300	0.0211
Venus	-20897-06-02 04:19 J	-5911053.54	-5911053.32	-5911053.11	0.0301	0.0015
Venus	-20896-01-18 13:55 J	-5910823.09	-5910822.92	-5910822.75	0.0301	0.0180
Moon	-20892-05-21 07:55 J	-5909239.28	-5909239.17	-5909239.04	0.0289	0.0244
Earth	-20892-05-21 10:33 J	-5909239.16	-5909239.06	-5909238.93	0.0289	0.0251 *
Mercury	-20890-12-07 18:14 J	-5908308.75	-5908308.74	-5908308.73	0.0278	0.0277
Mercury	-20889-03-05 05:02 J	-5908220.40	-5908220.29	-5908220.18	0.0277	0.0153
Mercury	-20889-06-01 15:50 J	-5908131.97	-5908131.84	-5908131.71	0.0276	0.0030
Mercury	-20889-08-29 02:38 J	-5908043.52	-5908043.39	-5908043.27	0.0275	0.0094
Mercury	-20889-11-25 13:26 J	-5907955.02	-5907954.94	-5907954.86	0.0274	0.0216
Mars	-20887-05-13 04:48 J	-5907421.60	-5907421.30	-5907420.99	0.0269	0.0032
Venus	-20883-03-29 08:23 J	-5906005.31	-5906005.15	-5906004.99	0.0261	0.0170
Venus	-20883-11-13 01:55 J	-5905776.63	-5905776.42	-5905776.21	0.0261	0.0050
Venus	-20882-06-29 19:40 J	-5905547.88	-5905547.68	-5905547.47	0.0260	0.0072
Venus	-20881-02-13 13:55 J	-5905319.06	-5905318.92	-5905318.78	0.0261	0.0193
Moon	-20876-11-26 12:43 J	-5903206.21	-5903205.97	-5903205.73	0.0274	0.0106
Earth	-20876-11-26 13:55 J	-5903206.15	-5903205.92	-5903205.68	0.0274	0.0092 *
Mercury	-20873-03-16 15:21 J	-5902364.94	-5902364.86	-5902364.78	0.0284	0.0255
Mercury	-20873-06-13 15:21 J	-5902276.04	-5902275.86	-5902275.67	0.0285	0.0059
Mercury	-20873-09-10 15:07 J	-5902187.02	-5902186.87	-5902186.70	0.0286	0.0138
Mars	-20871-04-12 22:04 J	-5901607.83	-5901607.58	-5901607.31	0.0293	0.0112
Venus	-20868-04-27 00:57 J	-5900497.63	-5900497.46	-5900497.29	0.0301	0.0183
Venus	-20868-12-13 11:16 J	-5900267.24	-5900267.03	-5900266.82	0.0301	0.0013

Venus	-20867-07-31 20:38 J	-5900036.79	-5900036.64	-5900036.48	0.0301	0.0208
Moon	-20862-05-29 03:36 J	-5898274.57	-5898274.35	-5898274.13	0.0287	0.0134
Earth	-20862-05-29 05:02 J	-5898274.50	-5898274.29	-5898274.08	0.0287	0.0136 *
Mercury	-20860-07-23 07:11 J	-5897488.29	-5897488.20	-5897488.10	0.0277	0.0191
Mercury	-20860-10-19 18:00 J	-5897399.88	-5897399.75	-5897399.62	0.0276	0.0068
Mercury	-20859-01-16 04:48 J	-5897311.43	-5897311.30	-5897311.17	0.0275	0.0056
Mercury	-20859-04-14 15:21 J	-5897222.95	-5897222.86	-5897222.75	0.0274	0.0178
Venus	-20854-10-09 09:36 J	-5895219.26	-5895219.10	-5895218.93	0.0261	0.0155
Venus	-20853-05-25 03:07 J	-5894990.57	-5894990.37	-5894990.16	0.0260	0.0034
Venus	-20852-01-08 20:52 J	-5894761.83	-5894761.63	-5894761.43	0.0260	0.0088
Venus	-20852-08-25 14:52 J	-5894533.00	-5894532.88	-5894532.76	0.0261	0.0209
Earth	-20847-11-20 22:48 J	-5892619.71	-5892619.55	-5892619.37	0.0272	0.0200
Moon	-20847-11-21 00:14 J	-5892619.65	-5892619.49	-5892619.30	0.0272	0.0187 *
Mercury	-20844-10-31 11:16 J	-5891544.20	-5891544.03	-5891543.87	0.0285	0.0136
Mercury	-20843-01-28 11:02 J	-5891455.22	-5891455.04	-5891454.86	0.0286	0.0060
Mercury	-20843-04-27 10:48 J	-5891366.13	-5891366.05	-5891365.97	0.0287	0.0256
Venus	-20839-11-07 02:23 J	-5889711.58	-5889711.40	-5889711.22	0.0300	0.0166
Venus	-20838-06-25 12:14 J	-5889481.20	-5889480.99	-5889480.77	0.0301	0.0030
Venus	-20837-02-10 21:36 J	-5889250.73	-5889250.60	-5889250.45	0.0301	0.0224
Earth	-20833-05-22 08:09 J	-5887688.33	-5887688.16	-5887687.98	0.0289	0.0195
Moon	-20833-05-22 09:36 J	-5887688.27	-5887688.10	-5887687.92	0.0289	0.0193 *
Mercury	-20831-12-10 08:52 J	-5886756.19	-5886756.13	-5886756.06	0.0278	0.0236
Mercury	-20830-03-08 19:40 J	-5886667.80	-5886667.68	-5886667.56	0.0277	0.0112
Mercury	-20830-06-05 06:28 J	-5886579.36	-5886579.23	-5886579.10	0.0276	0.0012
Mercury	-20830-09-01 17:16 J	-5886490.89	-5886490.78	-5886490.66	0.0275	0.0135
Mercury	-20830-11-29 04:04 J	-5886402.37	-5886402.33	-5886402.28	0.0274	0.0257
Venus	-20825-09-03 18:14 J	-5884661.77	-5884661.74	-5884661.70	0.0262	0.0258
Venus	-20824-04-20 11:45 J	-5884433.18	-5884433.01	-5884432.82	0.0261	0.0138
Venus	-20824-12-05 05:31 J	-5884204.48	-5884204.27	-5884204.06	0.0261	0.0016
Venus	-20823-07-21 23:31 J	-5883975.71	-5883975.52	-5883975.33	0.0261	0.0106

Venus	-20822-03-07 17:31 J	-5883746.86	-5883746.77	-5883746.65	0.0261	0.0227
Moon	-20817-11-27 11:02 J	-5881655.23	-5881655.04	-5881654.83	0.0274	0.0167
Earth	-20817-11-27 14:52 J	-5881655.08	-5881654.88	-5881654.66	0.0274	0.0151 *
Mercury	-20814-03-20 10:04 J	-5880812.22	-5880812.08	-5880811.94	0.0284	0.0187
Mercury	-20814-06-17 10:04 J	-5880723.27	-5880723.08	-5880722.90	0.0285	0.0011
Mercury	-20814-09-14 09:36 J	-5880634.22	-5880634.10	-5880633.96	0.0286	0.0206
Venus	-20809-05-19 10:19 J	-5878925.25	-5878925.07	-5878924.87	0.0301	0.0136
Venus	-20808-01-04 20:38 J	-5878694.85	-5878694.64	-5878694.43	0.0301	0.0061
Venus	-20808-08-23 05:45 J	-5878464.37	-5878464.26	-5878464.14	0.0301	0.0255
Moon	-20803-05-30 00:57 J	-5876723.63	-5876723.46	-5876723.28	0.0287	0.0192
Earth	-20803-05-30 04:33 J	-5876723.48	-5876723.31	-5876723.13	0.0287	0.0196 *
Mercury	-20801-04-28 11:31 J	-5876024.05	-5876024.02	-5876023.99	0.0278	0.0270
Mercury	-20801-07-25 22:19 J	-5875935.68	-5875935.57	-5875935.46	0.0277	0.0146
Mercury	-20801-10-22 09:07 J	-5875847.25	-5875847.12	-5875846.99	0.0276	0.0024
Mercury	-20800-01-18 19:55 J	-5875758.80	-5875758.67	-5875758.55	0.0275	0.0101
Mercury	-20800-04-17 06:28 J	-5875670.30	-5875670.23	-5875670.15	0.0274	0.0223
Mars	-20799-10-06 09:21 J	-5875133.39	-5875133.11	-5875132.80	0.0269	0.0073
Venus	-20795-03-16 20:38 J	-5873875.71	-5873875.64	-5873875.55	0.0261	0.0240
Venus	-20795-10-31 14:23 J	-5873647.09	-5873646.90	-5873646.71	0.0261	0.0120
Venus	-20794-06-17 08:09 J	-5873418.37	-5873418.16	-5873417.95	0.0260	0.0004
Venus	-20793-02-01 01:40 J	-5873189.61	-5873189.43	-5873189.24	0.0260	0.0123
Venus	-20793-09-16 19:55 J	-5872960.73	-5872960.67	-5872960.59	0.0261	0.0244
Earth	-20788-11-22 02:23 J	-5871068.61	-5871068.40	-5871068.18	0.0273	0.0137
Moon	-20788-11-22 06:14 J	-5871068.46	-5871068.24	-5871068.01	0.0273	0.0121 *
Mercury	-20785-08-06 06:28 J	-5870080.30	-5870080.23	-5870080.14	0.0284	0.0256
Mercury	-20785-11-03 06:43 J	-5869991.40	-5869991.22	-5869991.04	0.0285	0.0060
Mercury	-20784-01-31 06:28 J	-5869902.39	-5869902.23	-5869902.07	0.0286	0.0136
Mars	-20783-09-05 20:09 J	-5869319.90	-5869319.66	-5869319.40	0.0293	0.0132
Venus	-20780-11-29 13:26 J	-5868139.13	-5868138.94	-5868138.74	0.0300	0.0117
Venus	-20779-07-17 23:31 J	-5867908.73	-5867908.52	-5867908.32	0.0301	0.0080

Venus	-20778-03-05 08:38 J	-5867678.23	-5867678.14	-5867678.06	0.0300	0.0273
Earth	-20774-05-24 09:07 J	-5866137.32	-5866137.12	-5866136.90	0.0289	0.0131
Moon	-20774-05-24 12:57 J	-5866137.17	-5866136.96	-5866136.74	0.0289	0.0131 *
Mercury	-20772-12-13 00:00 J	-5865203.59	-5865203.50	-5865203.40	0.0278	0.0190
Mercury	-20771-03-11 10:48 J	-5865115.17	-5865115.05	-5865114.92	0.0277	0.0066
Mercury	-20771-06-07 21:36 J	-5865026.72	-5865026.60	-5865026.47	0.0276	0.0060
Mercury	-20771-09-04 08:23 J	-5864938.24	-5864938.15	-5864938.05	0.0275	0.0182
Venus	-20766-09-26 23:02 J	-5863089.63	-5863089.54	-5863089.42	0.0262	0.0224
Venus	-20765-05-12 17:02 J	-5862860.98	-5862860.79	-5862860.60	0.0261	0.0102
Venus	-20765-12-27 10:48 J	-5862632.26	-5862632.05	-5862631.84	0.0261	0.0020
Venus	-20764-08-13 04:48 J	-5862403.47	-5862403.30	-5862403.12	0.0261	0.0142
Moon	-20758-11-29 19:26 J	-5860103.80	-5860103.69	-5860103.56	0.0274	0.0235
Earth	-20758-11-29 20:09 J	-5860103.80	-5860103.66	-5860103.50	0.0274	0.0220 *
Mercury	-20755-03-23 06:14 J	-5859259.41	-5859259.24	-5859259.07	0.0284	0.0105
Mercury	-20755-06-20 06:00 J	-5859170.42	-5859170.25	-5859170.07	0.0286	0.0091
Mercury	-20755-09-17 05:45 J	-5859081.27	-5859081.26	-5859081.25	0.0287	0.0286
Venus	-20751-10-24 12:57 J	-5857583.03	-5857582.96	-5857582.88	0.0300	0.0278
Venus	-20750-06-11 23:02 J	-5857352.74	-5857352.54	-5857352.33	0.0301	0.0084
Venus	-20749-01-28 08:52 J	-5857122.33	-5857122.13	-5857121.93	0.0301	0.0113
Moon	-20744-05-31 06:28 J	-5855172.31	-5855172.23	-5855172.11	0.0287	0.0257
Earth	-20744-05-31 07:11 J	-5855172.28	-5855172.20	-5855172.09	0.0287	0.0263 *
Mercury	-20742-05-02 02:52 J	-5854471.45	-5854471.38	-5854471.30	0.0278	0.0221
Mercury	-20742-07-29 13:40 J	-5854383.05	-5854382.93	-5854382.80	0.0277	0.0097
Mercury	-20742-10-26 00:28 J	-5854294.61	-5854294.48	-5854294.35	0.0276	0.0027
Mercury	-20741-01-22 11:16 J	-5854206.14	-5854206.03	-5854205.92	0.0275	0.0150
Mercury	-20741-04-19 22:04 J	-5854117.58	-5854117.58	-5854117.57	0.0274	0.0273
Venus	-20736-04-08 02:38 J	-5852303.51	-5852303.39	-5852303.25	0.0261	0.0205
Venus	-20736-11-22 20:38 J	-5852074.84	-5852074.64	-5852074.44	0.0261	0.0083
Venus	-20735-07-09 14:23 J	-5851846.10	-5851845.90	-5851845.69	0.0260	0.0039
Venus	-20734-02-23 08:23 J	-5851617.31	-5851617.15	-5851616.98	0.0261	0.0161

Earth	-20729-11-23 10:04 J	-5849517.32	-5849517.08	-5849516.84	0.0273	0.0065
Moon	-20729-11-23 10:19 J	-5849517.32	-5849517.07	-5849516.81	0.0273	0.0049 *
Mercury	-20726-08-10 03:36 J	-5848527.50	-5848527.35	-5848527.20	0.0284	0.0169
Mercury	-20726-11-07 03:36 J	-5848438.54	-5848438.35	-5848438.16	0.0285	0.0027
Mercury	-20725-02-04 03:21 J	-5848349.48	-5848349.36	-5848349.25	0.0286	0.0222
Venus	-20721-05-05 17:45 J	-5846796.87	-5846796.76	-5846796.65	0.0300	0.0256
Venus	-20721-12-22 03:50 J	-5846566.55	-5846566.34	-5846566.13	0.0300	0.0062
Venus	-20720-08-09 13:26 J	-5846336.12	-5846335.94	-5846335.74	0.0301	0.0134
Moon	-20715-05-25 14:52 J	-5844586.13	-5844585.88	-5844585.64	0.0289	0.0063
Earth	-20715-05-25 14:38 J	-5844586.12	-5844585.89	-5844585.65	0.0289	0.0058 *
Mercury	-20713-09-18 05:02 J	-5843739.33	-5843739.29	-5843739.25	0.0279	0.0262
Mercury	-20713-12-15 15:50 J	-5843650.95	-5843650.84	-5843650.72	0.0278	0.0137
Mercury	-20712-03-14 02:38 J	-5843562.52	-5843562.39	-5843562.26	0.0277	0.0013
Mercury	-20712-06-10 13:26 J	-5843474.06	-5843473.94	-5843473.82	0.0276	0.0112
Mercury	-20712-09-07 00:14 J	-5843385.55	-5843385.49	-5843385.42	0.0275	0.0235
Mars	-20710-03-01 21:21 J	-5842844.88	-5842844.61	-5842844.33	0.0270	0.0122
Venus	-20707-10-19 06:00 J	-5841517.40	-5841517.25	-5841517.11	0.0262	0.0186
Venus	-20706-06-04 23:45 J	-5841288.71	-5841288.51	-5841288.30	0.0261	0.0064
Venus	-20705-01-19 17:45 J	-5841059.96	-5841059.76	-5841059.55	0.0261	0.0058
Venus	-20705-09-04 12:00 J	-5840831.15	-5840831.00	-5840830.85	0.0261	0.0180
Mercury	-20697-12-27 03:50 J	-5837795.47	-5837795.34	-5837795.22	0.0284	0.0209
Mercury	-20696-03-26 03:36 J	-5837706.53	-5837706.35	-5837706.16	0.0285	0.0015
Mercury	-20696-06-23 03:21 J	-5837617.50	-5837617.36	-5837617.21	0.0286	0.0182
Mars	-20694-01-31 03:21 J	-5837030.54	-5837030.36	-5837030.16	0.0293	0.0214
Venus	-20692-11-16 05:02 J	-5836010.43	-5836010.29	-5836010.14	0.0300	0.0222
Venus	-20691-07-04 15:07 J	-5835780.08	-5835779.87	-5835779.66	0.0301	0.0026
Venus	-20690-02-20 00:28 J	-5835549.65	-5835549.48	-5835549.29	0.0301	0.0170
Mercury	-20683-05-04 18:57 J	-5832918.81	-5832918.71	-5832918.60	0.0278	0.0165
Mercury	-20683-08-01 05:45 J	-5832830.39	-5832830.26	-5832830.13	0.0277	0.0041
Mercury	-20683-10-28 16:33 J	-5832741.93	-5832741.81	-5832741.68	0.0276	0.0084

Mercury	-20682-01-25 03:36 J	-5832653.44	-5832653.35	-5832653.27	0.0275	0.0207
Venus	-20677-04-30 10:33 J	-5830731.22	-5830731.06	-5830730.89	0.0261	0.0166
Venus	-20677-12-15 04:33 J	-5830502.52	-5830502.31	-5830502.10	0.0261	0.0044
Venus	-20676-07-31 22:33 J	-5830273.76	-5830273.56	-5830273.36	0.0261	0.0079
Venus	-20675-03-17 16:33 J	-5830044.93	-5830044.81	-5830044.67	0.0261	0.0201
Moon	-20670-11-25 18:14 J	-5827965.99	-5827965.74	-5827965.48	0.0273	0.0031
Earth	-20670-11-25 22:04 J	-5827965.83	-5827965.58	-5827965.33	0.0273	0.0017 *
Mercury	-20667-05-16 02:09 J	-5827063.47	-5827063.41	-5827063.34	0.0283	0.0263
Mercury	-20667-08-13 02:09 J	-5826974.59	-5826974.41	-5826974.22	0.0285	0.0069
Mercury	-20667-11-10 01:55 J	-5826885.58	-5826885.42	-5826885.25	0.0286	0.0128
Venus	-20662-05-29 11:45 J	-5825224.16	-5825224.01	-5825223.84	0.0300	0.0197
Venus	-20661-01-14 21:50 J	-5824993.80	-5824993.59	-5824993.37	0.0300	0.0002
Venus	-20661-09-01 07:11 J	-5824763.36	-5824763.20	-5824763.04	0.0300	0.0194
Moon	-20656-05-26 20:52 J	-5823034.87	-5823034.63	-5823034.39	0.0288	0.0015
Earth	-20656-05-27 00:28 J	-5823034.72	-5823034.48	-5823034.24	0.0288	0.0025 *
Mercury	-20654-09-21 21:21 J	-5822186.69	-5822186.61	-5822186.52	0.0279	0.0202
Mercury	-20654-12-19 08:09 J	-5822098.28	-5822098.16	-5822098.03	0.0278	0.0078
Mercury	-20653-03-16 18:57 J	-5822009.84	-5822009.71	-5822009.58	0.0277	0.0048
Mercury	-20653-06-13 05:45 J	-5821921.36	-5821921.26	-5821921.15	0.0276	0.0171
Venus	-20648-11-10 14:09 J	-5819945.08	-5819944.91	-5819944.74	0.0262	0.0146
Venus	-20647-06-27 08:09 J	-5819716.36	-5819716.16	-5819715.95	0.0261	0.0024
Venus	-20646-02-11 02:23 J	-5819487.60	-5819487.40	-5819487.21	0.0261	0.0099
Venus	-20646-09-27 20:38 J	-5819258.75	-5819258.64	-5819258.53	0.0261	0.0221
Earth	-20641-11-19 18:57 J	-5817378.81	-5817378.71	-5817378.59	0.0271	0.0245
Moon	-20641-11-19 22:33 J	-5817378.69	-5817378.56	-5817378.43	0.0271	0.0230 *
Mercury	-20638-12-31 02:23 J	-5816242.57	-5816242.40	-5816242.22	0.0284	0.0108
Mercury	-20637-03-29 02:23 J	-5816153.58	-5816153.40	-5816153.22	0.0285	0.0088
Mercury	-20637-06-26 01:55 J	-5816064.44	-5816064.42	-5816064.39	0.0286	0.0283
Venus	-20633-12-09 00:00 J	-5814437.68	-5814437.50	-5814437.32	0.0300	0.0161
Venus	-20632-07-27 09:50 J	-5814207.30	-5814207.09	-5814206.88	0.0301	0.0036



Venus	-20631-03-14 18:57 J	-5813976.84	-5813976.71	-5813976.57	0.0301	0.0231
Earth	-20627-05-21 17:16 J	-5812447.84	-5812447.78	-5812447.73	0.0290	0.0282
Moon	-20627-05-21 20:38 J	-5812447.67	-5812447.64	-5812447.60	0.0290	0.0287
Mercury	-20624-02-08 00:57 J	-5811454.53	-5811454.46	-5811454.38	0.0279	0.0227
Mercury	-20624-05-07 11:45 J	-5811366.13	-5811366.01	-5811365.89	0.0278	0.0102
Mercury	-20624-08-03 22:33 J	-5811277.69	-5811277.56	-5811277.43	0.0277	0.0023
Mercury	-20624-10-31 09:21 J	-5811189.22	-5811189.11	-5811189.00	0.0276	0.0147
Mercury	-20623-01-27 20:09 J	-5811100.68	-5811100.66	-5811100.63	0.0275	0.0270
Mars	-20622-07-27 09:21 J	-5810555.29	-5810555.11	-5810554.90	0.0269	0.0208
Venus	-20619-10-07 01:40 J	-5809387.49	-5809387.43	-5809387.35	0.0262	0.0246
Venus	-20618-05-23 19:55 J	-5809158.85	-5809158.67	-5809158.48	0.0261	0.0124
Venus	-20617-01-07 13:55 J	-5808930.13	-5808929.92	-5808929.71	0.0261	0.0005
Venus	-20617-08-23 08:09 J	-5808701.35	-5808701.16	-5808700.98	0.0261	0.0121
Venus	-20616-04-09 02:23 J	-5808472.47	-5808472.40	-5808472.32	0.0261	0.0243
Moon	-20611-11-27 09:50 J	-5806414.30	-5806414.09	-5806413.86	0.0274	0.0117
Earth	-20611-11-27 12:28 J	-5806414.21	-5806413.98	-5806413.75	0.0274	0.0103 *
Mercury	-20608-05-19 01:55 J	-5805510.57	-5805510.42	-5805510.26	0.0284	0.0155
Mercury	-20608-08-16 01:55 J	-5805421.61	-5805421.42	-5805421.24	0.0285	0.0040
Mercury	-20608-11-13 01:26 J	-5805332.54	-5805332.44	-5805332.33	0.0286	0.0235
Venus	-20603-06-21 08:38 J	-5803651.33	-5803651.14	-5803650.95	0.0300	0.0133
Venus	-20602-02-06 18:28 J	-5803420.94	-5803420.73	-5803420.52	0.0300	0.0064
Venus	-20602-09-25 03:21 J	-5803190.46	-5803190.36	-5803190.25	0.0300	0.0257
Moon	-20597-05-28 12:14 J	-5801483.21	-5801482.99	-5801482.77	0.0288	0.0107
Earth	-20597-05-28 14:09 J	-5801483.13	-5801482.91	-5801482.69	0.0288	0.0117 *
Mercury	-20595-06-28 03:21 J	-5800722.39	-5800722.36	-5800722.31	0.0279	0.0263
Mercury	-20595-09-24 14:23 J	-5800634.01	-5800633.90	-5800633.79	0.0278	0.0137
Mercury	-20595-12-22 01:11 J	-5800545.58	-5800545.45	-5800545.32	0.0277	0.0012
Mercury	-20594-03-20 12:00 J	-5800457.12	-5800457.00	-5800456.88	0.0276	0.0112
Mercury	-20594-06-16 22:33 J	-5800368.62	-5800368.56	-5800368.48	0.0275	0.0237
Venus	-20589-04-18 05:31 J	-5798601.37	-5798601.27	-5798601.16	0.0262	0.0227

Venus	-20589-12-02 23:45 J	-5798372.70	-5798372.51	-5798372.32	0.0262	0.0104
Venus	-20588-07-19 17:45 J	-5798143.96	-5798143.76	-5798143.55	0.0261	0.0020
Venus	-20587-03-05 12:00 J	-5797915.17	-5797915.00	-5797914.82	0.0261	0.0142
Earth	-20582-11-22 09:36 J	-5795827.30	-5795827.10	-5795826.90	0.0272	0.0160
Moon	-20582-11-22 12:28 J	-5795827.19	-5795826.98	-5795826.76	0.0272	0.0145 *
Mercury	-20579-10-06 02:09 J	-5794778.54	-5794778.41	-5794778.26	0.0284	0.0194
Mercury	-20578-01-03 02:23 J	-5794689.59	-5794689.40	-5794689.21	0.0285	0.0003
Mercury	-20578-04-02 02:09 J	-5794600.54	-5794600.41	-5794600.28	0.0286	0.0198
Venus	-20574-05-16 11:45 J	-5793095.06	-5793095.01	-5793094.95	0.0300	0.0289
Venus	-20573-01-01 21:36 J	-5792864.80	-5792864.60	-5792864.39	0.0301	0.0095
Venus	-20573-08-19 07:26 J	-5792634.39	-5792634.19	-5792633.99	0.0301	0.0102
Venus	-20572-04-06 16:04 J	-5792403.85	-5792403.83	-5792403.78	0.0301	0.0296
Earth	-20568-05-23 08:52 J	-5790896.31	-5790896.13	-5790895.94	0.0290	0.0186
Moon	-20568-05-23 11:16 J	-5790896.21	-5790896.03	-5790895.84	0.0290	0.0189 *
Mercury	-20565-02-11 18:00 J	-5789901.85	-5789901.75	-5789901.64	0.0278	0.0159
Mercury	-20565-05-10 04:48 J	-5789813.43	-5789813.30	-5789813.17	0.0277	0.0035
Mercury	-20565-08-06 15:36 J	-5789724.97	-5789724.85	-5789724.72	0.0276	0.0090
Mercury	-20565-11-03 02:23 J	-5789636.48	-5789636.40	-5789636.31	0.0275	0.0214
Mars	-20564-10-31 22:19 J	-5789273.65	-5789273.57	-5789273.45	0.0272	0.0258
Venus	-20560-10-29 11:45 J	-5787815.13	-5787815.01	-5787814.87	0.0262	0.0204
Venus	-20559-06-15 06:14 J	-5787586.44	-5787586.24	-5787586.04	0.0261	0.0081
Venus	-20558-01-30 00:14 J	-5787357.69	-5787357.49	-5787357.28	0.0261	0.0042
Venus	-20558-09-15 18:28 J	-5787128.89	-5787128.73	-5787128.57	0.0261	0.0165
Earth	-20552-11-29 04:33 J	-5784862.48	-5784862.31	-5784862.13	0.0274	0.0194
Moon	-20552-11-29 06:00 J	-5784862.40	-5784862.25	-5784862.09	0.0274	0.0207 *
Mercury	-20549-02-23 02:09 J	-5784046.51	-5784046.41	-5784046.30	0.0284	0.0238
Mercury	-20549-05-22 02:09 J	-5783957.59	-5783957.41	-5783957.22	0.0285	0.0042
Mercury	-20549-08-19 01:55 J	-5783868.57	-5783868.42	-5783868.26	0.0286	0.0154
Mars	-20548-10-03 05:02 J	-5783458.47	-5783458.29	-5783458.11	0.0290	0.0220
Venus	-20545-11-25 21:07 J	-5782308.72	-5782308.62	-5782308.51	0.0300	0.0260

Venus	-20544-07-14 06:57 J	-5782078.42	-5782078.21	-5782078.00	0.0300	0.0066
Venus	-20543-03-01 16:33 J	-5781848.00	-5781847.81	-5781847.62	0.0300	0.0131
Earth	-20538-05-31 06:00 J	-5779931.40	-5779931.25	-5779931.08	0.0287	0.0212
Moon	-20538-05-31 07:55 J	-5779931.33	-5779931.17	-5779931.00	0.0287	0.0202 *
Mercury	-20536-06-30 20:52 J	-5779169.72	-5779169.63	-5779169.54	0.0278	0.0192
Mercury	-20536-09-27 07:40 J	-5779081.31	-5779081.18	-5779081.05	0.0277	0.0068
Mercury	-20536-12-24 18:28 J	-5778992.86	-5778992.73	-5778992.60	0.0276	0.0057
Mercury	-20535-03-23 05:16 J	-5778904.38	-5778904.28	-5778904.18	0.0276	0.0181
Venus	-20530-05-11 15:36 J	-5777028.98	-5777028.85	-5777028.69	0.0262	0.0185
Venus	-20530-12-26 10:04 J	-5776800.29	-5776800.08	-5776799.88	0.0262	0.0061
Venus	-20529-08-11 04:04 J	-5776571.53	-5776571.33	-5776571.12	0.0261	0.0063
Venus	-20528-03-27 22:19 J	-5776342.71	-5776342.57	-5776342.42	0.0261	0.0186
Moon	-20523-11-23 23:16 J	-5774275.78	-5774275.53	-5774275.27	0.0272	0.0061
Earth	-20523-11-24 00:14 J	-5774275.72	-5774275.49	-5774275.24	0.0272	0.0076 *
Mercury	-20520-07-12 02:09 J	-5773314.43	-5773314.41	-5773314.37	0.0283	0.0278
Mercury	-20520-10-09 02:23 J	-5773225.58	-5773225.40	-5773225.22	0.0284	0.0083
Mercury	-20519-01-06 02:09 J	-5773136.58	-5773136.41	-5773136.24	0.0285	0.0113
Venus	-20515-06-08 09:50 J	-5771522.23	-5771522.09	-5771521.94	0.0300	0.0224
Venus	-20514-01-24 19:55 J	-5771291.88	-5771291.67	-5771291.46	0.0301	0.0028
Venus	-20514-09-12 05:16 J	-5771061.45	-5771061.28	-5771061.10	0.0301	0.0169
Moon	-20509-05-25 00:43 J	-5769344.71	-5769344.47	-5769344.24	0.0289	0.0093
Earth	-20509-05-25 02:09 J	-5769344.64	-5769344.41	-5769344.18	0.0289	0.0088 *
Mercury	-20507-11-18 00:43 J	-5768437.55	-5768437.47	-5768437.39	0.0279	0.0214
Mercury	-20506-02-14 11:31 J	-5768349.15	-5768349.02	-5768348.90	0.0278	0.0089
Mercury	-20506-05-13 22:19 J	-5768260.70	-5768260.57	-5768260.44	0.0277	0.0036
Mercury	-20506-08-10 08:52 J	-5768172.23	-5768172.13	-5768172.01	0.0276	0.0160
Venus	-20501-11-20 22:19 J	-5766242.73	-5766242.57	-5766242.40	0.0262	0.0161
Venus	-20500-07-07 16:48 J	-5766014.01	-5766013.80	-5766013.59	0.0261	0.0037
Venus	-20499-02-21 10:48 J	-5765785.25	-5765785.05	-5765784.85	0.0261	0.0086
Venus	-20499-10-08 05:02 J	-5765556.41	-5765556.29	-5765556.16	0.0261	0.0208

Mercury	-20490-02-26 02:38 J	-5762493.56	-5762493.39	-5762493.22	0.0284	0.0125
Mercury	-20490-05-26 02:23 J	-5762404.58	-5762404.40	-5762404.22	0.0285	0.0072
Mercury	-20490-08-23 01:55 J	-5762315.47	-5762315.42	-5762315.34	0.0286	0.0268
Venus	-20486-12-19 20:23 J	-5760735.81	-5760735.65	-5760735.48	0.0300	0.0193
Venus	-20485-08-06 06:14 J	-5760505.45	-5760505.24	-5760505.03	0.0300	0.0003
Venus	-20484-03-24 15:21 J	-5760275.01	-5760274.86	-5760274.69	0.0301	0.0200
Mercury	-20477-04-06 03:21 J	-5757705.41	-5757705.36	-5757705.29	0.0279	0.0247
Mercury	-20477-07-03 14:09 J	-5757617.02	-5757616.91	-5757616.79	0.0278	0.0122
Mercury	-20477-09-30 00:57 J	-5757528.59	-5757528.46	-5757528.32	0.0277	0.0010
Mercury	-20477-12-27 11:45 J	-5757440.12	-5757440.01	-5757439.89	0.0276	0.0127
Mercury	-20476-03-25 22:33 J	-5757351.61	-5757351.56	-5757351.50	0.0275	0.0251
Mars	-20475-03-28 13:11 J	-5756984.18	-5756983.95	-5756983.70	0.0271	0.0170
Venus	-20471-06-03 01:55 J	-5755456.59	-5755456.42	-5755456.24	0.0262	0.0141
Venus	-20470-01-17 20:09 J	-5755227.87	-5755227.66	-5755227.45	0.0261	0.0017
Venus	-20470-09-03 14:09 J	-5754999.10	-5754998.91	-5754998.72	0.0261	0.0106
Venus	-20469-04-19 08:23 J	-5754770.24	-5754770.15	-5754770.04	0.0261	0.0229
Moon	-20464-11-25 10:33 J	-5752724.31	-5752724.06	-5752723.81	0.0273	0.0024
Earth	-20464-11-25 14:23 J	-5752724.15	-5752723.90	-5752723.65	0.0273	0.0009 *
Mercury	-20461-07-15 02:09 J	-5751761.56	-5751761.41	-5751761.26	0.0284	0.0170
Mercury	-20461-10-12 02:09 J	-5751672.60	-5751672.41	-5751672.23	0.0285	0.0026
Mercury	-20460-01-09 01:40 J	-5751583.54	-5751583.43	-5751583.31	0.0286	0.0222
Mars	-20459-02-28 05:45 J	-5751168.52	-5751168.26	-5751168.00	0.0290	0.0113
Venus	-20456-07-01 07:40 J	-5749949.36	-5749949.18	-5749949.00	0.0300	0.0159
Venus	-20455-02-16 17:31 J	-5749718.98	-5749718.77	-5749718.55	0.0301	0.0039
Venus	-20455-10-05 03:07 J	-5749488.51	-5749488.37	-5749488.24	0.0301	0.0235
Moon	-20450-05-27 15:07 J	-5747793.11	-5747792.87	-5747792.63	0.0289	0.0006
Earth	-20450-05-27 18:43 J	-5747792.96	-5747792.72	-5747792.48	0.0289	0.0009 *
Mercury	-20448-08-24 07:11 J	-5746973.23	-5746973.20	-5746973.17	0.0279	0.0270
Mercury	-20448-11-20 18:00 J	-5746884.86	-5746884.75	-5746884.64	0.0278	0.0145
Mercury	-20447-02-17 04:48 J	-5746796.43	-5746796.30	-5746796.17	0.0277	0.0020

Mercury	-20447-05-16 15:36 J	-5746707.97	-5746707.85	-5746707.73	0.0276	0.0104
Mercury	-20447-08-13 02:09 J	-5746619.47	-5746619.41	-5746619.33	0.0275	0.0228
Venus	-20442-04-29 14:23 J	-5744898.98	-5744898.90	-5744898.82	0.0262	0.0241
Venus	-20442-12-14 08:23 J	-5744670.33	-5744670.15	-5744669.96	0.0261	0.0118
Venus	-20441-07-30 02:38 J	-5744441.60	-5744441.39	-5744441.18	0.0261	0.0008
Venus	-20440-03-15 20:38 J	-5744212.82	-5744212.64	-5744212.46	0.0261	0.0129
Venus	-20440-10-30 14:52 J	-5743983.93	-5743983.88	-5743983.82	0.0261	0.0251
Earth	-20435-11-20 12:14 J	-5742137.07	-5742136.99	-5742136.91	0.0271	0.0257
Moon	-20435-11-20 15:50 J	-5742136.94	-5742136.84	-5742136.71	0.0271	0.0241 *
Mercury	-20432-12-02 01:55 J	-5741029.54	-5741029.42	-5741029.29	0.0284	0.0214
Mercury	-20431-03-01 02:09 J	-5740940.60	-5740940.41	-5740940.23	0.0285	0.0019
Mercury	-20431-05-29 01:40 J	-5740851.57	-5740851.43	-5740851.28	0.0286	0.0179
Venus	-20426-01-11 18:00 J	-5739162.95	-5739162.75	-5739162.56	0.0300	0.0127
Venus	-20426-08-30 03:36 J	-5738932.56	-5738932.35	-5738932.14	0.0301	0.0070
Venus	-20425-04-16 12:43 J	-5738702.06	-5738701.97	-5738701.87	0.0301	0.0265
Mercury	-20418-04-09 20:52 J	-5736152.73	-5736152.63	-5736152.53	0.0278	0.0177
Mercury	-20418-07-07 07:26 J	-5736064.31	-5736064.19	-5736064.06	0.0277	0.0053
Mercury	-20418-10-03 18:14 J	-5735975.87	-5735975.74	-5735975.61	0.0276	0.0072
Mercury	-20418-12-31 05:02 J	-5735887.38	-5735887.29	-5735887.20	0.0275	0.0195
Venus	-20413-11-08 17:02 J	-5734112.89	-5734112.79	-5734112.67	0.0262	0.0222
Venus	-20412-06-25 11:16 J	-5733884.22	-5733884.03	-5733883.83	0.0262	0.0099
Venus	-20411-02-09 05:16 J	-5733655.49	-5733655.28	-5733655.07	0.0261	0.0025
Venus	-20411-09-25 23:16 J	-5733426.70	-5733426.53	-5733426.36	0.0261	0.0148
Moon	-20405-11-27 00:00 J	-5731172.72	-5731172.50	-5731172.27	0.0273	0.0101
Earth	-20405-11-27 01:26 J	-5731172.68	-5731172.44	-5731172.20	0.0273	0.0086 *
Mercury	-20402-04-21 00:28 J	-5730297.53	-5730297.48	-5730297.41	0.0283	0.0266
Mercury	-20402-07-19 00:43 J	-5730208.65	-5730208.47	-5730208.29	0.0284	0.0070
Mercury	-20402-10-16 00:43 J	-5730119.64	-5730119.47	-5730119.30	0.0285	0.0126
Venus	-20398-12-06 17:45 J	-5728606.80	-5728606.76	-5728606.70	0.0299	0.0290
Venus	-20397-07-24 03:50 J	-5728376.54	-5728376.34	-5728376.13	0.0300	0.0095

Venus	-20396-03-11 13:40 J	-5728146.12	-5728145.93	-5728145.72	0.0301	0.0104
Venus	-20396-10-27 23:02 J	-5727915.56	-5727915.54	-5727915.51	0.0301	0.0299
Moon	-20391-05-29 08:52 J	-5726241.35	-5726241.13	-5726240.91	0.0288	0.0095
Earth	-20391-05-29 09:50 J	-5726241.31	-5726241.09	-5726240.86	0.0288	0.0103 *
Mercury	-20389-08-27 00:14 J	-5725420.57	-5725420.49	-5725420.40	0.0279	0.0203
Mercury	-20389-11-23 11:02 J	-5725332.16	-5725332.04	-5725331.91	0.0278	0.0078
Mercury	-20388-02-19 21:50 J	-5725243.72	-5725243.59	-5725243.46	0.0277	0.0047
Mercury	-20388-05-19 08:38 J	-5725155.24	-5725155.14	-5725155.04	0.0276	0.0171
Mars	-20387-08-23 12:43 J	-5724694.27	-5724693.97	-5724693.67	0.0271	0.0074
Venus	-20383-05-21 23:16 J	-5723326.66	-5723326.53	-5723326.40	0.0262	0.0200
Venus	-20382-01-05 17:02 J	-5723097.98	-5723097.79	-5723097.58	0.0261	0.0077
Venus	-20382-08-22 11:02 J	-5722869.25	-5722869.04	-5722868.83	0.0261	0.0047
Venus	-20381-04-07 05:02 J	-5722640.45	-5722640.29	-5722640.13	0.0261	0.0170
Earth	-20376-11-21 21:21 J	-5720585.78	-5720585.61	-5720585.41	0.0272	0.0184
Moon	-20376-11-21 22:48 J	-5720585.75	-5720585.55	-5720585.35	0.0272	0.0168 *
Mercury	-20373-12-05 00:14 J	-5719476.66	-5719476.49	-5719476.31	0.0284	0.0117
Mercury	-20372-03-04 00:14 J	-5719387.67	-5719387.49	-5719387.31	0.0285	0.0080
Mercury	-20372-06-01 00:00 J	-5719298.54	-5719298.50	-5719298.45	0.0286	0.0276
Mars	-20371-07-25 22:19 J	-5718878.85	-5718878.57	-5718878.29	0.0291	0.0026
Venus	-20368-06-18 03:07 J	-5717820.46	-5717820.37	-5717820.25	0.0300	0.0261
Venus	-20367-02-03 13:11 J	-5717590.16	-5717589.95	-5717589.74	0.0300	0.0065
Venus	-20367-09-21 22:48 J	-5717359.74	-5717359.55	-5717359.35	0.0301	0.0134
Earth	-20362-05-23 20:38 J	-5715654.79	-5715654.64	-5715654.47	0.0290	0.0213
Moon	-20362-05-23 21:21 J	-5715654.77	-5715654.61	-5715654.44	0.0290	0.0218 *
Mercury	-20359-01-14 02:52 J	-5714688.44	-5714688.38	-5714688.31	0.0278	0.0237
Mercury	-20359-04-12 13:40 J	-5714600.05	-5714599.93	-5714599.81	0.0277	0.0112
Mercury	-20359-07-10 00:28 J	-5714511.61	-5714511.48	-5714511.35	0.0276	0.0012
Mercury	-20359-10-06 11:16 J	-5714423.15	-5714423.03	-5714422.92	0.0275	0.0136
Mercury	-20358-01-02 21:50 J	-5714334.63	-5714334.59	-5714334.54	0.0274	0.0259
Venus	-20354-12-02 01:11 J	-5712540.59	-5712540.45	-5712540.30	0.0262	0.0183

Venus	-20353-07-17 19:11 J	-5712311.90	-5712311.70	-5712311.49	0.0261	0.0059
Venus	-20352-03-03 12:57 J	-5712083.16	-5712082.96	-5712082.75	0.0261	0.0065
Venus	-20352-10-18 06:57 J	-5711854.35	-5711854.21	-5711854.06	0.0261	0.0188
Earth	-20346-11-29 08:38 J	-5709621.34	-5709621.14	-5709620.93	0.0274	0.0156
Moon	-20346-11-29 11:45 J	-5709621.19	-5709621.01	-5709620.81	0.0274	0.0170 *
Mercury	-20343-04-23 21:50 J	-5708744.73	-5708744.59	-5708744.44	0.0284	0.0178
Mercury	-20343-07-21 22:04 J	-5708655.77	-5708655.58	-5708655.39	0.0285	0.0019
Mercury	-20343-10-18 21:50 J	-5708566.71	-5708566.59	-5708566.46	0.0286	0.0216
Venus	-20339-12-29 10:33 J	-5707034.19	-5707034.06	-5707033.92	0.0300	0.0234
Venus	-20338-08-16 20:52 J	-5706803.85	-5706803.63	-5706803.42	0.0301	0.0037
Venus	-20337-04-03 06:28 J	-5706573.40	-5706573.23	-5706573.04	0.0301	0.0163
Earth	-20332-05-30 21:07 J	-5704689.80	-5704689.62	-5704689.44	0.0288	0.0186
Moon	-20332-05-31 00:00 J	-5704689.68	-5704689.50	-5704689.31	0.0288	0.0176 *
Mercury	-20330-06-03 06:14 J	-5703956.28	-5703956.24	-5703956.20	0.0279	0.0266
Mercury	-20330-08-30 17:02 J	-5703867.90	-5703867.79	-5703867.68	0.0278	0.0141
Mercury	-20330-11-27 03:36 J	-5703779.48	-5703779.35	-5703779.21	0.0277	0.0019
Mercury	-20329-02-23 14:23 J	-5703691.02	-5703690.90	-5703690.78	0.0276	0.0108
Mercury	-20329-05-22 01:11 J	-5703602.52	-5703602.45	-5703602.38	0.0275	0.0231
Venus	-20324-06-13 06:28 J	-5701754.39	-5701754.23	-5701754.07	0.0261	0.0162
Venus	-20323-01-28 00:14 J	-5701525.70	-5701525.49	-5701525.28	0.0261	0.0038
Venus	-20323-09-13 18:00 J	-5701296.95	-5701296.75	-5701296.55	0.0260	0.0086
Venus	-20322-04-30 11:45 J	-5701068.13	-5701068.01	-5701067.88	0.0260	0.0208
Moon	-20317-11-22 23:31 J	-5699034.75	-5699034.52	-5699034.28	0.0272	0.0105
Earth	-20317-11-23 02:38 J	-5699034.60	-5699034.39	-5699034.15	0.0272	0.0119 *
Mercury	-20314-09-10 20:38 J	-5698012.74	-5698012.64	-5698012.52	0.0284	0.0230
Mercury	-20314-12-08 20:52 J	-5697923.81	-5697923.63	-5697923.44	0.0285	0.0034
Mercury	-20313-03-06 20:52 J	-5697834.78	-5697834.63	-5697834.48	0.0286	0.0164
Venus	-20309-07-10 18:57 J	-5696247.85	-5696247.71	-5696247.54	0.0300	0.0206
Venus	-20308-02-26 05:16 J	-5696017.49	-5696017.28	-5696017.07	0.0301	0.0006
Venus	-20308-10-14 14:52 J	-5695787.04	-5695786.88	-5695786.71	0.0301	0.0192

Moon	-20303-05-25 04:04 J	-5694103.54	-5694103.33	-5694103.11	0.0289	0.0140
Earth	-20303-05-25 07:26 J	-5694103.40	-5694103.19	-5694102.97	0.0289	0.0130 *
Mercury	-20300-01-16 19:26 J	-5693135.79	-5693135.69	-5693135.59	0.0278	0.0177
Mercury	-20300-04-15 06:14 J	-5693047.37	-5693047.24	-5693047.12	0.0277	0.0053
Mercury	-20300-07-12 16:48 J	-5692958.92	-5692958.80	-5692958.67	0.0276	0.0072
Mercury	-20300-10-09 03:36 J	-5692870.44	-5692870.35	-5692870.26	0.0275	0.0195
Mars	-20298-01-17 11:31 J	-5692405.33	-5692405.02	-5692404.71	0.0270	0.0012
Venus	-20295-12-24 07:40 J	-5690968.35	-5690968.18	-5690968.00	0.0261	0.0145
Venus	-20294-08-10 01:26 J	-5690739.65	-5690739.44	-5690739.23	0.0261	0.0021
Venus	-20293-03-25 18:57 J	-5690510.90	-5690510.71	-5690510.51	0.0261	0.0103
Venus	-20293-11-09 12:43 J	-5690282.06	-5690281.97	-5690281.86	0.0261	0.0226
Earth	-20287-11-30 11:45 J	-5688070.15	-5688070.01	-5688069.85	0.0274	0.0217
Moon	-20287-11-30 14:38 J	-5688070.02	-5688069.89	-5688069.75	0.0274	0.0228 *
Mercury	-20284-04-26 17:45 J	-5687191.93	-5687191.76	-5687191.58	0.0284	0.0101
Mercury	-20284-07-24 17:45 J	-5687102.93	-5687102.76	-5687102.58	0.0285	0.0096
Mars	-20283-12-19 12:00 J	-5686590.28	-5686590.00	-5686589.72	0.0291	0.0019
Venus	-20279-01-21 00:14 J	-5685461.66	-5685461.49	-5685461.32	0.0300	0.0181
Venus	-20279-09-08 10:33 J	-5685231.27	-5685231.06	-5685230.85	0.0301	0.0018
Venus	-20278-04-26 20:23 J	-5685000.79	-5685000.65	-5685000.50	0.0301	0.0217
Earth	-20273-06-01 04:19 J	-5683138.42	-5683138.32	-5683138.22	0.0288	0.0261
Moon	-20273-06-01 06:43 J	-5683138.33	-5683138.22	-5683138.08	0.0288	0.0249 *
Mercury	-20271-06-05 22:04 J	-5682403.66	-5682403.58	-5682403.49	0.0279	0.0211
Mercury	-20271-09-02 08:52 J	-5682315.25	-5682315.13	-5682315.00	0.0278	0.0086
Mercury	-20271-11-29 19:40 J	-5682226.81	-5682226.68	-5682226.55	0.0277	0.0040
Mercury	-20270-02-26 06:28 J	-5682138.34	-5682138.23	-5682138.12	0.0276	0.0163
Venus	-20266-11-19 17:45 J	-5680410.81	-5680410.76	-5680410.69	0.0262	0.0249
Venus	-20265-07-05 11:45 J	-5680182.18	-5680182.01	-5680181.82	0.0261	0.0126
Venus	-20264-02-19 05:31 J	-5679953.48	-5679953.27	-5679953.06	0.0261	0.0004
Venus	-20264-10-05 23:16 J	-5679724.72	-5679724.53	-5679724.35	0.0260	0.0122
Venus	-20263-05-22 16:48 J	-5679495.86	-5679495.80	-5679495.72	0.0260	0.0244



Moon	-20258-11-25 01:40 J	-5677483.67	-5677483.43	-5677483.19	0.0272	0.0048
Earth	-20258-11-25 04:19 J	-5677483.56	-5677483.32	-5677483.07	0.0272	0.0061 *
Mercury	-20255-09-13 16:04 J	-5676459.98	-5676459.83	-5676459.67	0.0284	0.0157
Mercury	-20255-12-11 16:04 J	-5676371.01	-5676370.83	-5676370.64	0.0285	0.0040
Mercury	-20254-03-10 16:04 J	-5676281.93	-5676281.83	-5676281.73	0.0286	0.0237
Venus	-20250-08-03 07:26 J	-5674675.37	-5674675.19	-5674675.00	0.0301	0.0154
Venus	-20249-03-20 17:45 J	-5674444.97	-5674444.76	-5674444.55	0.0301	0.0046
Venus	-20249-11-06 03:21 J	-5674214.47	-5674214.36	-5674214.23	0.0301	0.0245
Moon	-20244-05-26 10:33 J	-5672552.28	-5672552.06	-5672551.83	0.0289	0.0068
Earth	-20244-05-26 13:11 J	-5672552.19	-5672551.95	-5672551.71	0.0289	0.0058 *
Mercury	-20242-10-24 00:28 J	-5671671.53	-5671671.48	-5671671.42	0.0278	0.0249
Mercury	-20241-01-20 11:16 J	-5671583.15	-5671583.03	-5671582.92	0.0277	0.0124
Mercury	-20241-04-17 21:50 J	-5671494.72	-5671494.59	-5671494.45	0.0276	0.0008
Mercury	-20241-07-15 08:38 J	-5671406.26	-5671406.14	-5671406.02	0.0275	0.0124
Mercury	-20241-10-11 19:26 J	-5671317.74	-5671317.69	-5671317.63	0.0274	0.0247
Venus	-20236-05-31 18:43 J	-5669624.80	-5669624.72	-5669624.62	0.0262	0.0234
Venus	-20235-01-15 12:28 J	-5669396.16	-5669395.98	-5669395.78	0.0261	0.0110
Venus	-20235-09-01 06:00 J	-5669167.46	-5669167.25	-5669167.04	0.0261	0.0014
Venus	-20234-04-17 23:16 J	-5668938.70	-5668938.53	-5668938.35	0.0260	0.0138
Venus	-20234-12-02 17:02 J	-5668709.79	-5668709.79	-5668709.77	0.0260	0.0260
Earth	-20228-12-01 10:48 J	-5666519.08	-5666519.05	-5666519.00	0.0274	0.0271
Mercury	-20225-01-31 12:00 J	-5665728.11	-5665728.00	-5665727.90	0.0283	0.0233
Mercury	-20225-04-29 12:00 J	-5665639.19	-5665639.00	-5665638.81	0.0284	0.0036
Mercury	-20225-07-27 12:00 J	-5665550.15	-5665550.00	-5665549.85	0.0285	0.0161
Venus	-20220-02-12 10:19 J	-5663889.26	-5663889.07	-5663888.87	0.0300	0.0133
Venus	-20220-09-30 20:52 J	-5663658.84	-5663658.63	-5663658.42	0.0301	0.0067
Venus	-20219-05-19 06:43 J	-5663428.31	-5663428.22	-5663428.11	0.0301	0.0267
Mercury	-20212-06-08 13:40 J	-5660851.03	-5660850.93	-5660850.82	0.0279	0.0161
Mercury	-20212-09-05 00:28 J	-5660762.61	-5660762.48	-5660762.35	0.0277	0.0036
Mercury	-20212-12-02 11:16 J	-5660674.15	-5660674.03	-5660673.91	0.0276	0.0089

Mercury	-20211-02-28 22:04 J	-5660585.66	-5660585.58	-5660585.50	0.0275	0.0213
Mars	-20210-06-13 04:33 J	-5660116.61	-5660116.31	-5660116.00	0.0270	0.0041
Venus	-20207-12-11 21:50 J	-5658838.69	-5658838.59	-5658838.46	0.0262	0.0216
Venus	-20206-07-28 15:50 J	-5658610.04	-5658609.84	-5658609.64	0.0261	0.0091
Venus	-20205-03-13 09:21 J	-5658381.32	-5658381.11	-5658380.90	0.0260	0.0033
Venus	-20205-10-28 02:52 J	-5658152.55	-5658152.38	-5658152.22	0.0260	0.0155
Earth	-20199-11-26 02:09 J	-5655932.66	-5655932.41	-5655932.16	0.0272	0.0010
Moon	-20199-11-26 03:36 J	-5655932.59	-5655932.35	-5655932.11	0.0272	0.0003 *
Mercury	-20196-09-16 09:50 J	-5654907.26	-5654907.09	-5654906.91	0.0284	0.0096
Mercury	-20196-12-14 09:50 J	-5654818.26	-5654818.09	-5654817.91	0.0285	0.0102
Mars	-20194-05-14 15:50 J	-5654302.11	-5654301.84	-5654301.56	0.0291	0.0048
Venus	-20191-08-25 16:48 J	-5653103.00	-5653102.80	-5653102.59	0.0301	0.0107
Venus	-20190-04-13 03:07 J	-5652872.57	-5652872.37	-5652872.16	0.0301	0.0095
Venus	-20190-11-29 13:11 J	-5652642.00	-5652641.95	-5652641.90	0.0302	0.0293
Earth	-20185-05-27 15:07 J	-5651001.11	-5651000.87	-5651000.63	0.0289	0.0006
Moon	-20185-05-27 16:33 J	-5651001.04	-5651000.81	-5651000.58	0.0289	0.0005 *
Mercury	-20183-10-26 15:50 J	-5650118.93	-5650118.84	-5650118.75	0.0278	0.0202
Mercury	-20182-01-23 02:23 J	-5650030.52	-5650030.40	-5650030.27	0.0277	0.0077
Mercury	-20182-04-21 13:11 J	-5649942.08	-5649941.95	-5649941.82	0.0276	0.0048
Mercury	-20182-07-19 00:00 J	-5649853.60	-5649853.50	-5649853.40	0.0275	0.0172
Venus	-20177-06-22 22:33 J	-5648052.69	-5648052.56	-5648052.43	0.0261	0.0200
Venus	-20176-02-06 16:04 J	-5647824.03	-5647823.83	-5647823.63	0.0261	0.0077
Venus	-20176-09-23 09:07 J	-5647595.32	-5647595.12	-5647594.91	0.0260	0.0048
Venus	-20175-05-10 02:38 J	-5647366.55	-5647366.39	-5647366.24	0.0260	0.0171
Mercury	-20166-02-03 05:16 J	-5644175.43	-5644175.28	-5644175.14	0.0283	0.0176
Mercury	-20166-05-03 05:16 J	-5644086.47	-5644086.28	-5644086.09	0.0285	0.0021
Mercury	-20166-07-31 05:02 J	-5643997.40	-5643997.29	-5643997.17	0.0286	0.0218
Venus	-20162-07-20 07:26 J	-5642547.23	-5642547.19	-5642547.11	0.0300	0.0287
Venus	-20161-03-06 18:00 J	-5642316.95	-5642316.75	-5642316.54	0.0301	0.0089
Venus	-20161-10-23 04:33 J	-5642086.51	-5642086.31	-5642086.11	0.0301	0.0113

Mercury	-20153-03-14 17:45 J	-5639386.81	-5639386.76	-5639386.69	0.0279	0.0244
Mercury	-20153-06-11 04:33 J	-5639298.42	-5639298.31	-5639298.19	0.0278	0.0118
Mercury	-20153-09-07 15:21 J	-5639209.99	-5639209.86	-5639209.72	0.0277	0.0011
Mercury	-20153-12-05 02:09 J	-5639121.52	-5639121.41	-5639121.29	0.0276	0.0133
Mercury	-20152-03-03 12:57 J	-5639033.00	-5639032.96	-5639032.91	0.0275	0.0256
Venus	-20147-01-03 00:43 J	-5637266.60	-5637266.47	-5637266.31	0.0261	0.0184
Venus	-20147-08-19 18:28 J	-5637037.93	-5637037.73	-5637037.53	0.0261	0.0059
Venus	-20146-04-05 11:45 J	-5636809.21	-5636809.01	-5636808.81	0.0260	0.0065
Venus	-20146-11-20 05:02 J	-5636580.43	-5636580.29	-5636580.14	0.0260	0.0188
Earth	-20140-11-26 21:21 J	-5634381.85	-5634381.61	-5634381.36	0.0272	0.0037
Moon	-20140-11-27 00:57 J	-5634381.70	-5634381.46	-5634381.20	0.0272	0.0048 *
Mercury	-20137-06-22 02:23 J	-5633443.49	-5633443.40	-5633443.29	0.0283	0.0239
Mercury	-20137-09-19 02:38 J	-5633354.57	-5633354.39	-5633354.20	0.0284	0.0042
Mercury	-20137-12-17 02:38 J	-5633265.54	-5633265.39	-5633265.23	0.0285	0.0155
Venus	-20132-01-29 12:57 J	-5631761.05	-5631760.96	-5631760.85	0.0300	0.0262
Venus	-20132-09-16 23:31 J	-5631530.73	-5631530.52	-5631530.31	0.0301	0.0063
Venus	-20131-05-05 10:04 J	-5631300.27	-5631300.08	-5631299.89	0.0302	0.0139
Earth	-20126-05-29 13:26 J	-5629450.17	-5629449.94	-5629449.70	0.0289	0.0064
Moon	-20126-05-29 17:16 J	-5629450.02	-5629449.78	-5629449.55	0.0289	0.0050 *
Mercury	-20124-10-29 06:28 J	-5628566.33	-5628566.23	-5628566.12	0.0278	0.0159
Mercury	-20123-01-25 17:16 J	-5628477.91	-5628477.78	-5628477.65	0.0277	0.0035
Mercury	-20123-04-24 04:04 J	-5628389.45	-5628389.33	-5628389.20	0.0276	0.0091
Mercury	-20123-07-21 14:52 J	-5628300.96	-5628300.88	-5628300.80	0.0275	0.0215
Mars	-20122-11-06 03:07 J	-5627828.66	-5627828.37	-5627828.06	0.0270	0.0069
Venus	-20118-07-16 01:11 J	-5626480.61	-5626480.45	-5626480.29	0.0261	0.0168
Venus	-20117-02-29 18:28 J	-5626251.93	-5626251.73	-5626251.52	0.0260	0.0045
Venus	-20117-10-15 11:31 J	-5626023.21	-5626023.02	-5626022.81	0.0260	0.0080
Venus	-20116-06-01 04:48 J	-5625794.43	-5625794.30	-5625794.16	0.0260	0.0202
Moon	-20111-11-21 02:09 J	-5623795.50	-5623795.41	-5623795.29	0.0270	0.0244
Earth	-20111-11-21 06:00 J	-5623795.32	-5623795.25	-5623795.16	0.0270	0.0255 *

Mercury	-20107-02-05 21:36 J	-5622622.76	-5622622.60	-5622622.43	0.0284	0.0125
Mercury	-20107-05-05 21:36 J	-5622533.78	-5622533.60	-5622533.41	0.0285	0.0072
Mercury	-20107-08-02 21:21 J	-5622444.66	-5622444.61	-5622444.54	0.0286	0.0269
Mars	-20106-10-06 20:09 J	-5622014.93	-5622014.66	-5622014.38	0.0291	0.0036
Venus	-20103-08-11 13:26 J	-5620975.06	-5620974.94	-5620974.81	0.0300	0.0246
Venus	-20102-03-30 00:00 J	-5620744.72	-5620744.50	-5620744.29	0.0301	0.0047
Venus	-20102-11-15 10:19 J	-5620514.25	-5620514.07	-5620513.88	0.0301	0.0155
Earth	-20097-05-22 14:52 J	-5618863.94	-5618863.88	-5618863.81	0.0292	0.0281
Mercury	-20094-03-18 08:23 J	-5617834.23	-5617834.15	-5617834.06	0.0279	0.0203
Mercury	-20094-06-14 19:11 J	-5617745.82	-5617745.70	-5617745.57	0.0278	0.0077
Mercury	-20094-09-11 06:00 J	-5617657.38	-5617657.25	-5617657.12	0.0277	0.0049
Mercury	-20094-12-08 16:48 J	-5617568.90	-5617568.80	-5617568.70	0.0276	0.0174
Venus	-20088-01-25 03:21 J	-5615694.53	-5615694.36	-5615694.19	0.0261	0.0151
Venus	-20088-09-10 20:38 J	-5615465.85	-5615465.64	-5615465.44	0.0260	0.0028
Venus	-20087-04-27 13:40 J	-5615237.12	-5615236.93	-5615236.73	0.0260	0.0096
Venus	-20087-12-12 06:57 J	-5615008.31	-5615008.21	-5615008.09	0.0260	0.0219
Earth	-20081-11-27 16:19 J	-5612831.06	-5612830.82	-5612830.58	0.0272	0.0083
Moon	-20081-11-27 16:19 J	-5612831.06	-5612830.82	-5612830.57	0.0272	0.0089 *
Mercury	-20078-06-25 19:11 J	-5611890.84	-5611890.70	-5611890.55	0.0283	0.0186
Mercury	-20078-09-22 19:11 J	-5611801.88	-5611801.70	-5611801.51	0.0284	0.0013
Mercury	-20078-12-20 18:57 J	-5611712.83	-5611712.71	-5611712.57	0.0285	0.0208
Venus	-20073-02-21 18:43 J	-5610188.86	-5610188.72	-5610188.57	0.0301	0.0221
Venus	-20073-10-09 05:16 J	-5609958.49	-5609958.28	-5609958.07	0.0301	0.0020
Venus	-20072-05-27 15:50 J	-5609728.01	-5609727.84	-5609727.67	0.0302	0.0182
Earth	-20067-05-30 09:50 J	-5607899.31	-5607899.09	-5607898.87	0.0289	0.0115
Moon	-20067-05-30 10:04 J	-5607899.31	-5607899.08	-5607898.84	0.0289	0.0100 *
Mercury	-20065-08-04 10:19 J	-5607102.12	-5607102.07	-5607102.01	0.0279	0.0246
Mercury	-20065-10-31 21:07 J	-5607013.73	-5607013.62	-5607013.50	0.0278	0.0119
Mercury	-20064-01-28 07:55 J	-5606925.30	-5606925.17	-5606925.04	0.0277	0.0008
Mercury	-20064-04-26 18:43 J	-5606836.83	-5606836.72	-5606836.60	0.0276	0.0131

Mercury	-20064-07-24 05:31 J	-5606748.31	-5606748.27	-5606748.22	0.0275	0.0255
Venus	-20060-12-21 09:36 J	-5605137.11	-5605137.10	-5605137.07	0.0262	0.0261
Venus	-20059-08-07 03:21 J	-5604908.54	-5604908.36	-5604908.18	0.0261	0.0137
Venus	-20058-03-23 20:38 J	-5604679.85	-5604679.64	-5604679.43	0.0260	0.0013
Venus	-20058-11-07 13:40 J	-5604451.12	-5604450.93	-5604450.74	0.0260	0.0111
Venus	-20057-06-23 06:43 J	-5604222.30	-5604222.22	-5604222.12	0.0260	0.0234
Earth	-20052-11-22 01:11 J	-5602244.61	-5602244.45	-5602244.30	0.0270	0.0210
Moon	-20052-11-22 01:40 J	-5602244.59	-5602244.43	-5602244.27	0.0270	0.0203 *
Mercury	-20049-11-11 13:55 J	-5601158.97	-5601158.92	-5601158.86	0.0282	0.0269
Mercury	-20048-02-08 14:09 J	-5601070.09	-5601069.91	-5601069.73	0.0284	0.0074
Mercury	-20048-05-08 13:55 J	-5600981.08	-5600980.92	-5600980.75	0.0285	0.0122
Venus	-20044-09-02 18:14 J	-5599402.89	-5599402.74	-5599402.58	0.0300	0.0206
Venus	-20043-04-21 04:48 J	-5599172.51	-5599172.30	-5599172.08	0.0301	0.0006
Venus	-20043-12-07 15:21 J	-5598942.02	-5598941.86	-5598941.69	0.0302	0.0197
Earth	-20038-05-24 09:50 J	-5597313.23	-5597313.09	-5597312.94	0.0292	0.0231
Moon	-20038-05-24 10:04 J	-5597313.19	-5597313.08	-5597312.94	0.0292	0.0248 *
Mercury	-20035-03-20 22:48 J	-5596281.65	-5596281.55	-5596281.44	0.0280	0.0165
Mercury	-20035-06-17 09:36 J	-5596193.22	-5596193.10	-5596192.96	0.0278	0.0040
Mercury	-20035-09-13 20:23 J	-5596104.77	-5596104.65	-5596104.52	0.0277	0.0088
Mercury	-20035-12-11 07:26 J	-5596016.28	-5596016.19	-5596016.11	0.0276	0.0213
Mars	-20033-03-30 22:19 J	-5595540.85	-5595540.57	-5595540.27	0.0271	0.0093
Venus	-20030-07-03 11:31 J	-5594351.08	-5594351.02	-5594350.94	0.0262	0.0244
Venus	-20029-02-17 05:16 J	-5594122.46	-5594122.28	-5594122.09	0.0261	0.0120
Venus	-20029-10-02 22:33 J	-5593893.77	-5593893.56	-5593893.35	0.0260	0.0005
Venus	-20028-05-19 15:50 J	-5593665.02	-5593664.84	-5593664.66	0.0260	0.0128
Venus	-20027-01-03 09:07 J	-5593436.17	-5593436.12	-5593436.07	0.0260	0.0250
Moon	-20022-11-29 07:26 J	-5591280.40	-5591280.19	-5591279.96	0.0272	0.0131
Earth	-20022-11-29 11:31 J	-5591280.24	-5591280.02	-5591279.80	0.0272	0.0130 *
Mercury	-20019-06-28 11:45 J	-5590338.17	-5590338.01	-5590337.84	0.0283	0.0133
Mercury	-20019-09-25 11:45 J	-5590249.19	-5590249.01	-5590248.82	0.0284	0.0063

Mercury	-20019-12-23 11:31 J	-5590160.09	-5590160.02	-5590159.94	0.0285	0.0259
Mars	-20017-02-29 10:48 J	-5589727.32	-5589727.05	-5589726.77	0.0291	0.0047
Venus	-20014-03-16 00:00 J	-5588616.67	-5588616.50	-5588616.33	0.0301	0.0180
Venus	-20014-11-01 10:33 J	-5588386.27	-5588386.06	-5588385.84	0.0302	0.0022
Venus	-20013-06-18 21:07 J	-5588155.76	-5588155.62	-5588155.47	0.0302	0.0224
Moon	-20008-05-31 02:09 J	-5586348.62	-5586348.41	-5586348.21	0.0290	0.0150
Earth	-20008-05-31 05:31 J	-5586348.45	-5586348.27	-5586348.06	0.0290	0.0168 *
Mercury	-20006-08-08 00:43 J	-5585549.55	-5585549.47	-5585549.38	0.0279	0.0207
Mercury	-20006-11-04 11:45 J	-5585461.14	-5585461.01	-5585460.89	0.0278	0.0080
Mercury	-20005-01-31 22:33 J	-5585372.69	-5585372.56	-5585372.43	0.0277	0.0047
Mercury	-20005-04-29 09:21 J	-5585284.21	-5585284.11	-5585284.01	0.0276	0.0171

# 20TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 20th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-20000-01-12 12:14 J	-5583565.08	-5583564.99	-5583564.88	0.0262	0.0229		
Venus	-20000-08-29 05:45 J	-5583336.45	-5583336.26	-5583336.06	0.0261	0.0105		
Venus	-19999-04-14 23:02 J	-5583107.75	-5583107.54	-5583107.33	0.0260	0.0020		
Venus	-19999-11-29 15:50 J	-5582879.00	-5582878.84	-5582878.65	0.0260	0.0144		
Earth	-19993-11-22 21:21 J	-5580693.80	-5580693.61	-5580693.40	0.0270	0.0160		
Moon	-19993-11-23 01:11 J	-5580693.64	-5580693.45	-5580693.23	0.0270	0.0157 *		
Mercury	-19990-11-15 06:57 J	-5579606.32	-5579606.21	-5579606.08	0.0282	0.0213		
Mercury	-19989-02-12 07:11 J	-5579517.39	-5579517.20	-5579517.02	0.0284	0.0019		

Mercury	-19989-05-11 06:57 J	-5579428.35	-5579428.21	-5579428.06	0.0285	0.0178
Venus	-19985-09-25 00:14 J	-5577830.66	-5577830.49	-5577830.30	0.0300	0.0164
Venus	-19984-05-13 10:48 J	-5577600.26	-5577600.05	-5577599.83	0.0301	0.0038
Venus	-19984-12-29 21:21 J	-5577369.73	-5577369.61	-5577369.47	0.0302	0.0239
Earth	-19979-05-25 05:02 J	-5575762.47	-5575762.29	-5575762.09	0.0292	0.0179
Moon	-19979-05-25 08:52 J	-5575762.30	-5575762.13	-5575761.94	0.0292	0.0196 *
Mercury	-19977-12-25 02:23 J	-5574817.45	-5574817.40	-5574817.34	0.0281	0.0254
Mercury	-19976-03-23 13:11 J	-5574729.06	-5574728.95	-5574728.83	0.0280	0.0127
Mercury	-19976-06-20 00:14 J	-5574640.62	-5574640.49	-5574640.36	0.0278	0.0007
Mercury	-19976-09-16 11:02 J	-5574552.16	-5574552.04	-5574551.93	0.0277	0.0127
Mercury	-19976-12-13 21:50 J	-5574463.64	-5574463.59	-5574463.54	0.0276	0.0252
Venus	-19971-07-25 14:09 J	-5572779.03	-5572778.91	-5572778.79	0.0262	0.0212
Venus	-19970-03-11 07:40 J	-5572550.38	-5572550.18	-5572549.98	0.0261	0.0088
Venus	-19970-10-26 00:57 J	-5572321.66	-5572321.46	-5572321.25	0.0260	0.0037
Venus	-19969-06-10 18:14 J	-5572092.90	-5572092.74	-5572092.57	0.0260	0.0161
Moon	-19963-11-30 07:26 J	-5569729.37	-5569729.19	-5569729.01	0.0272	0.0179
Earth	-19963-11-30 08:38 J	-5569729.32	-5569729.14	-5569728.95	0.0272	0.0182 *
Mercury	-19960-04-03 05:02 J	-5568874.34	-5568874.29	-5568874.23	0.0282	0.0269
Mercury	-19960-07-01 05:02 J	-5568785.46	-5568785.29	-5568785.10	0.0283	0.0075
Mercury	-19960-09-28 05:02 J	-5568696.46	-5568696.29	-5568696.12	0.0284	0.0121
Venus	-19955-04-07 06:14 J	-5567044.43	-5567044.24	-5567044.05	0.0301	0.0137
Venus	-19955-11-23 16:48 J	-5566814.01	-5566813.80	-5566813.59	0.0302	0.0066
Venus	-19954-07-12 03:07 J	-5566583.46	-5566583.37	-5566583.26	0.0302	0.0267
Moon	-19949-06-01 00:14 J	-5564797.64	-5564797.49	-5564797.31	0.0290	0.0206
Earth	-19949-06-01 01:40 J	-5564797.58	-5564797.43	-5564797.27	0.0290	0.0221 *
Mercury	-19947-08-10 15:21 J	-5563996.96	-5563996.86	-5563996.75	0.0280	0.0167
Mercury	-19947-11-07 02:09 J	-5563908.53	-5563908.41	-5563908.28	0.0278	0.0040
Mercury	-19946-02-03 13:11 J	-5563820.08	-5563819.95	-5563819.83	0.0277	0.0087
Mercury	-19946-05-03 00:00 J	-5563731.59	-5563731.50	-5563731.42	0.0276	0.0212
Mars	-19945-08-23 17:45 J	-5563253.02	-5563252.76	-5563252.47	0.0271	0.0123

Venus	-19941-02-04 15:36 J	-5561992.99	-5561992.85	-5561992.71	0.0261	0.0196
Venus	-19941-09-20 08:52 J	-5561764.32	-5561764.13	-5561763.92	0.0261	0.0072
Venus	-19940-05-07 02:09 J	-5561535.61	-5561535.41	-5561535.20	0.0260	0.0054
Venus	-19940-12-21 19:11 J	-5561306.84	-5561306.70	-5561306.54	0.0260	0.0177
Earth	-19934-11-24 20:23 J	-5559142.87	-5559142.65	-5559142.41	0.0270	0.0106
Moon	-19934-11-24 21:21 J	-5559142.84	-5559142.61	-5559142.37	0.0270	0.0106 *
Mercury	-19931-11-18 00:57 J	-5558053.62	-5558053.46	-5558053.30	0.0282	0.0151
Mercury	-19930-02-15 00:57 J	-5557964.65	-5557964.46	-5557964.28	0.0284	0.0044
Mercury	-19930-05-15 00:28 J	-5557875.57	-5557875.48	-5557875.37	0.0285	0.0239
Mars	-19929-07-23 21:21 J	-5557439.88	-5557439.61	-5557439.33	0.0290	0.0046
Venus	-19926-10-18 07:40 J	-5556258.38	-5556258.18	-5556257.98	0.0300	0.0119
Venus	-19925-06-04 18:00 J	-5556027.95	-5556027.75	-5556027.54	0.0301	0.0083
Venus	-19924-01-21 04:33 J	-5555797.38	-5555797.31	-5555797.24	0.0302	0.0284
Earth	-19920-05-26 02:09 J	-5554211.63	-5554211.41	-5554211.19	0.0292	0.0123
Moon	-19920-05-26 02:38 J	-5554211.61	-5554211.39	-5554211.17	0.0292	0.0138 *
Mercury	-19918-12-28 17:02 J	-5553264.87	-5553264.79	-5553264.70	0.0281	0.0213
Mercury	-19917-03-26 03:50 J	-5553176.46	-5553176.34	-5553176.21	0.0280	0.0086
Mercury	-19917-06-22 14:52 J	-5553088.01	-5553087.88	-5553087.75	0.0278	0.0043
Mercury	-19917-09-19 01:40 J	-5552999.53	-5552999.43	-5552999.33	0.0277	0.0169
Venus	-19912-08-16 17:16 J	-5551206.93	-5551206.78	-5551206.62	0.0262	0.0179
Venus	-19911-04-02 11:02 J	-5550978.25	-5550978.04	-5550977.84	0.0261	0.0053
Venus	-19911-11-17 04:19 J	-5550749.52	-5550749.32	-5550749.11	0.0260	0.0072
Venus	-19910-07-03 21:50 J	-5550520.72	-5550520.59	-5550520.45	0.0260	0.0195
Earth	-19904-12-01 09:07 J	-5548178.23	-5548178.12	-5548178.01	0.0272	0.0240
Moon	-19904-12-01 12:14 J	-5548178.11	-5548177.99	-5548177.86	0.0272	0.0233 *
Mercury	-19901-04-05 23:45 J	-5547321.64	-5547321.51	-5547321.38	0.0282	0.0201
Mercury	-19901-07-03 23:45 J	-5547232.70	-5547232.51	-5547232.33	0.0283	0.0009
Mercury	-19901-09-30 23:16 J	-5547143.66	-5547143.53	-5547143.38	0.0284	0.0188
Venus	-19897-09-11 05:02 J	-5545702.34	-5545702.29	-5545702.23	0.0300	0.0288
Venus	-19896-04-29 15:07 J	-5545472.07	-5545471.87	-5545471.66	0.0301	0.0089



Venus	-19896-12-16 01:40 J	-5545241.62	-5545241.43	-5545241.23	0.0302	0.0114
Earth	-19890-06-03 00:43 J	-5543246.52	-5543246.47	-5543246.40	0.0290	0.0280
Moon	-19890-06-03 04:04 J	-5543246.42	-5543246.33	-5543246.24	0.0290	0.0267 *
Mercury	-19888-05-16 19:26 J	-5542532.74	-5542532.69	-5542532.63	0.0281	0.0251
Mercury	-19888-08-13 06:14 J	-5542444.35	-5542444.24	-5542444.12	0.0280	0.0123
Mercury	-19888-11-09 17:16 J	-5542355.91	-5542355.78	-5542355.65	0.0279	0.0009
Mercury	-19887-02-06 04:04 J	-5542267.45	-5542267.33	-5542267.22	0.0277	0.0132
Mercury	-19887-05-05 14:52 J	-5542178.92	-5542178.88	-5542178.83	0.0276	0.0257
Jupiter	-19885-12-20 07:55 J	-5541219.59	-5541219.17	-5541218.72	0.0266	0.0084
Venus	-19882-02-26 19:26 J	-5540420.84	-5540420.69	-5540420.51	0.0261	0.0162
Venus	-19882-10-13 13:11 J	-5540192.15	-5540191.95	-5540191.74	0.0261	0.0036
Venus	-19881-05-29 06:28 J	-5539963.42	-5539963.23	-5539963.02	0.0260	0.0089
Venus	-19880-01-13 00:00 J	-5539734.62	-5539734.50	-5539734.38	0.0260	0.0212
Moon	-19875-11-25 19:55 J	-5537591.92	-5537591.67	-5537591.41	0.0270	0.0048
Earth	-19875-11-25 23:16 J	-5537591.77	-5537591.53	-5537591.28	0.0270	0.0043 *
Mercury	-19872-08-23 20:09 J	-5536589.70	-5536589.66	-5536589.60	0.0281	0.0271
Mercury	-19872-11-20 20:09 J	-5536500.84	-5536500.66	-5536500.47	0.0283	0.0077
Mercury	-19871-02-17 19:55 J	-5536411.83	-5536411.67	-5536411.49	0.0284	0.0118
Venus	-19867-03-24 07:40 J	-5534916.27	-5534916.18	-5534916.08	0.0299	0.0269
Venus	-19867-11-09 17:45 J	-5534685.97	-5534685.76	-5534685.55	0.0300	0.0070
Venus	-19866-06-28 04:04 J	-5534455.52	-5534455.33	-5534455.13	0.0301	0.0132
Moon	-19861-05-26 22:04 J	-5532660.81	-5532660.58	-5532660.34	0.0292	0.0075
Earth	-19861-05-27 01:40 J	-5532660.66	-5532660.43	-5532660.19	0.0292	0.0061 *
Mercury	-19859-12-31 07:55 J	-5531712.27	-5531712.17	-5531712.06	0.0281	0.0168
Mercury	-19858-03-29 18:57 J	-5531623.84	-5531623.71	-5531623.58	0.0279	0.0040
Mercury	-19858-06-26 05:45 J	-5531535.38	-5531535.26	-5531535.13	0.0278	0.0088
Mercury	-19858-09-22 16:33 J	-5531446.89	-5531446.81	-5531446.72	0.0277	0.0214
Mars	-19856-01-16 17:45 J	-5530965.01	-5530964.76	-5530964.50	0.0272	0.0157
Venus	-19853-09-07 21:50 J	-5529634.76	-5529634.59	-5529634.41	0.0262	0.0143
Venus	-19852-04-24 15:36 J	-5529406.06	-5529405.85	-5529405.64	0.0261	0.0017

Venus	-19852-12-09 09:07 J	-5529177.31	-5529177.12	-5529176.93	0.0260	0.0108
Venus	-19851-07-26 02:38 J	-5528948.48	-5528948.39	-5528948.29	0.0260	0.0231
Mercury	-19842-04-09 19:26 J	-5525768.86	-5525768.69	-5525768.52	0.0282	0.0124
Mercury	-19842-07-07 19:26 J	-5525679.88	-5525679.69	-5525679.51	0.0283	0.0070
Mercury	-19842-10-04 18:57 J	-5525590.77	-5525590.71	-5525590.64	0.0284	0.0265
Mars	-19841-12-17 12:57 J	-5525151.21	-5525150.96	-5525150.69	0.0290	0.0101
Venus	-19838-10-04 16:19 J	-5524129.94	-5524129.82	-5524129.68	0.0300	0.0238
Venus	-19837-05-22 02:23 J	-5523899.61	-5523899.40	-5523899.18	0.0301	0.0038
Venus	-19836-01-07 12:57 J	-5523669.14	-5523668.96	-5523668.78	0.0302	0.0165
Mercury	-19829-05-19 10:33 J	-5520980.14	-5520980.06	-5520979.96	0.0281	0.0203
Mercury	-19829-08-15 21:36 J	-5520891.73	-5520891.60	-5520891.47	0.0280	0.0074
Mercury	-19829-11-12 08:23 J	-5520803.28	-5520803.15	-5520803.02	0.0278	0.0054
Mercury	-19828-02-08 19:11 J	-5520714.79	-5520714.70	-5520714.59	0.0277	0.0181
Venus	-19824-08-04 06:57 J	-5519077.27	-5519077.21	-5519077.14	0.0263	0.0250
Venus	-19823-03-21 01:11 J	-5518848.63	-5518848.45	-5518848.27	0.0261	0.0124
Venus	-19823-11-04 18:57 J	-5518619.92	-5518619.71	-5518619.50	0.0261	0.0002
Venus	-19822-06-21 12:28 J	-5518391.16	-5518390.98	-5518390.80	0.0260	0.0127
Venus	-19821-02-05 05:45 J	-5518162.30	-5518162.26	-5518162.19	0.0260	0.0250
Moon	-19816-11-27 02:52 J	-5516040.62	-5516040.38	-5516040.14	0.0270	0.0022
Earth	-19816-11-27 05:31 J	-5516040.52	-5516040.27	-5516040.02	0.0270	0.0028 *
Mercury	-19813-08-26 17:02 J	-5515036.93	-5515036.79	-5515036.65	0.0282	0.0186
Mercury	-19813-11-23 16:48 J	-5514947.99	-5514947.80	-5514947.61	0.0283	0.0009
Mercury	-19812-02-20 16:33 J	-5514858.94	-5514858.81	-5514858.68	0.0284	0.0202
Venus	-19808-04-15 21:07 J	-5513343.76	-5513343.62	-5513343.47	0.0299	0.0215
Venus	-19808-12-02 07:26 J	-5513113.41	-5513113.19	-5513112.98	0.0301	0.0016
Venus	-19807-07-20 17:31 J	-5512882.93	-5512882.77	-5512882.60	0.0301	0.0187
Moon	-19802-05-29 03:50 J	-5511109.58	-5511109.34	-5511109.11	0.0292	0.0004
Earth	-19802-05-29 06:00 J	-5511109.49	-5511109.25	-5511109.01	0.0292	0.0011 *
Mercury	-19800-10-06 12:43 J	-5510248.03	-5510247.97	-5510247.91	0.0281	0.0245
Mercury	-19799-01-02 23:31 J	-5510159.64	-5510159.52	-5510159.40	0.0280	0.0116

Mercury	-19799-04-01 10:33 J	-5510071.19	-5510071.06	-5510070.93	0.0279	0.0014
Mercury	-19799-06-28 21:21 J	-5509982.72	-5509982.61	-5509982.50	0.0278	0.0139
Mercury	-19799-09-25 08:09 J	-5509894.19	-5509894.16	-5509894.12	0.0277	0.0266
Venus	-19794-02-14 09:50 J	-5508291.19	-5508291.09	-5508291.00	0.0263	0.0232
Venus	-19794-10-01 03:50 J	-5508062.52	-5508062.34	-5508062.14	0.0262	0.0105
Venus	-19793-05-16 21:50 J	-5507833.80	-5507833.59	-5507833.38	0.0261	0.0021
Venus	-19793-12-31 15:21 J	-5507605.03	-5507604.86	-5507604.68	0.0261	0.0146
Earth	-19787-11-22 04:48 J	-5505453.43	-5505453.30	-5505453.17	0.0269	0.0229
Moon	-19787-11-22 07:55 J	-5505453.30	-5505453.17	-5505453.03	0.0269	0.0227 *
Mercury	-19783-01-13 16:33 J	-5504304.91	-5504304.81	-5504304.69	0.0281	0.0228
Mercury	-19783-04-12 16:48 J	-5504215.99	-5504215.80	-5504215.62	0.0282	0.0035
Mercury	-19783-07-10 16:33 J	-5504126.97	-5504126.81	-5504126.66	0.0283	0.0160
Venus	-19779-10-27 07:26 J	-5502557.35	-5502557.19	-5502557.01	0.0300	0.0181
Venus	-19778-06-14 17:31 J	-5502326.98	-5502326.77	-5502326.55	0.0301	0.0020
Venus	-19777-01-31 03:36 J	-5502096.48	-5502096.35	-5502096.20	0.0302	0.0223
Mercury	-19770-02-23 15:36 J	-5499515.87	-5499515.85	-5499515.83	0.0282	0.0277
Mercury	-19770-05-23 02:23 J	-5499427.50	-5499427.40	-5499427.28	0.0280	0.0149
Mercury	-19770-08-19 13:26 J	-5499339.07	-5499338.94	-5499338.81	0.0279	0.0019
Mercury	-19770-11-16 00:14 J	-5499250.61	-5499250.49	-5499250.37	0.0278	0.0108
Mercury	-19769-02-12 11:02 J	-5499162.10	-5499162.04	-5499161.96	0.0277	0.0235
Mars	-19768-06-12 14:09 J	-5498676.09	-5498675.91	-5498675.73	0.0272	0.0222
Venus	-19765-08-26 13:55 J	-5497505.04	-5497504.92	-5497504.79	0.0262	0.0211
Venus	-19764-04-12 08:09 J	-5497276.36	-5497276.16	-5497275.96	0.0261	0.0084
Venus	-19764-11-27 01:55 J	-5497047.62	-5497047.42	-5497047.21	0.0261	0.0042
Venus	-19763-07-13 19:40 J	-5496818.83	-5496818.68	-5496818.51	0.0260	0.0167
Earth	-19757-11-28 15:36 J	-5494489.07	-5494488.85	-5494488.61	0.0271	0.0106
Moon	-19757-11-28 16:48 J	-5494489.02	-5494488.80	-5494488.57	0.0271	0.0099 *
Mercury	-19754-08-30 15:07 J	-5493484.05	-5493483.87	-5493483.69	0.0282	0.0090
Mercury	-19754-11-27 14:52 J	-5493395.05	-5493394.88	-5493394.70	0.0283	0.0104
Mars	-19752-05-13 11:45 J	-5492862.23	-5492862.01	-5492861.77	0.0290	0.0162

Venus	-19749-05-08 13:55 J	-5491771.10	-5491770.92	-5491770.73	0.0300	0.0156
Venus	-19749-12-25 00:00 J	-5491540.71	-5491540.50	-5491540.28	0.0301	0.0046
Venus	-19748-08-12 10:04 J	-5491310.19	-5491310.08	-5491309.95	0.0301	0.0247
Earth	-19743-05-30 14:09 J	-5489558.14	-5489557.91	-5489557.68	0.0291	0.0092
Moon	-19743-05-30 15:50 J	-5489558.06	-5489557.84	-5489557.62	0.0291	0.0081 *
Mercury	-19741-10-09 04:48 J	-5488695.40	-5488695.30	-5488695.20	0.0281	0.0188
Mercury	-19740-01-05 15:36 J	-5488606.97	-5488606.85	-5488606.72	0.0280	0.0059
Mercury	-19740-04-04 02:38 J	-5488518.52	-5488518.39	-5488518.27	0.0279	0.0070
Mercury	-19740-07-01 13:26 J	-5488430.03	-5488429.94	-5488429.85	0.0278	0.0197
Venus	-19735-03-08 16:48 J	-5486718.93	-5486718.80	-5486718.64	0.0263	0.0192
Venus	-19735-10-23 11:16 J	-5486490.23	-5486490.03	-5486489.82	0.0262	0.0065
Venus	-19734-06-09 05:16 J	-5486261.48	-5486261.28	-5486261.07	0.0261	0.0063
Venus	-19733-01-23 22:48 J	-5486032.68	-5486032.55	-5486032.39	0.0261	0.0188
Moon	-19728-11-23 13:40 J	-5483902.13	-5483901.93	-5483901.70	0.0269	0.0155
Earth	-19728-11-23 14:52 J	-5483902.08	-5483901.88	-5483901.67	0.0269	0.0153 *
Mercury	-19724-01-16 15:21 J	-5482752.03	-5482751.86	-5482751.69	0.0282	0.0130
Mercury	-19724-04-15 15:07 J	-5482663.05	-5482662.87	-5482662.69	0.0283	0.0064
Mercury	-19724-07-13 14:52 J	-5482573.96	-5482573.88	-5482573.81	0.0284	0.0258
Venus	-19720-11-19 01:40 J	-5480984.63	-5480984.43	-5480984.23	0.0300	0.0119
Venus	-19719-07-07 11:45 J	-5480754.22	-5480754.01	-5480753.81	0.0301	0.0083
Venus	-19718-02-22 21:36 J	-5480523.66	-5480523.60	-5480523.52	0.0302	0.0285
Moon	-19714-05-25 01:26 J	-5478971.57	-5478971.44	-5478971.30	0.0293	0.0244
Earth	-19714-05-25 02:52 J	-5478971.51	-5478971.38	-5478971.22	0.0293	0.0231 *
Mercury	-19711-02-26 08:09 J	-5477963.24	-5477963.16	-5477963.08	0.0281	0.0215
Mercury	-19711-05-25 18:57 J	-5477874.83	-5477874.71	-5477874.58	0.0280	0.0086
Mercury	-19711-08-22 06:00 J	-5477786.38	-5477786.25	-5477786.12	0.0279	0.0043
Mercury	-19711-11-18 16:48 J	-5477697.90	-5477697.80	-5477697.70	0.0278	0.0170
Venus	-19706-09-18 22:19 J	-5475932.72	-5475932.57	-5475932.40	0.0262	0.0170
Venus	-19705-05-04 16:48 J	-5475704.01	-5475703.80	-5475703.60	0.0261	0.0043
Venus	-19705-12-19 10:33 J	-5475475.26	-5475475.06	-5475474.86	0.0261	0.0084

Venus	-19704-08-05 04:19 J	-5475246.44	-5475246.32	-5475246.19	0.0260	0.0208
Earth	-19698-12-01 04:33 J	-5472937.48	-5472937.31	-5472937.12	0.0271	0.0190
Moon	-19698-12-01 08:23 J	-5472937.32	-5472937.15	-5472936.96	0.0271	0.0183 *
Mercury	-19695-06-05 14:38 J	-5472020.03	-5472019.89	-5472019.74	0.0282	0.0177
Mercury	-19695-09-02 14:38 J	-5471931.08	-5471930.89	-5471930.71	0.0283	0.0017
Mercury	-19695-11-30 14:09 J	-5471842.03	-5471841.91	-5471841.78	0.0284	0.0210
Venus	-19691-10-14 00:43 J	-5470428.52	-5470428.47	-5470428.41	0.0298	0.0288
Venus	-19690-06-01 10:04 J	-5470198.28	-5470198.08	-5470197.87	0.0300	0.0091
Venus	-19689-01-17 19:55 J	-5469967.86	-5469967.67	-5469967.46	0.0301	0.0112
Earth	-19684-06-01 02:38 J	-5468006.56	-5468006.39	-5468006.19	0.0290	0.0183
Moon	-19684-06-01 06:28 J	-5468006.42	-5468006.23	-5468006.03	0.0290	0.0170 *
Mercury	-19682-07-16 10:33 J	-5467231.11	-5467231.06	-5467231.00	0.0281	0.0252
Mercury	-19682-10-12 21:21 J	-5467142.72	-5467142.61	-5467142.49	0.0280	0.0123
Mercury	-19681-01-09 08:23 J	-5467054.28	-5467054.15	-5467054.02	0.0279	0.0007
Mercury	-19681-04-06 19:11 J	-5466965.81	-5466965.70	-5466965.58	0.0278	0.0133
Mercury	-19681-07-04 06:00 J	-5466877.29	-5466877.25	-5466877.20	0.0277	0.0260
Venus	-19676-03-31 01:40 J	-5465146.59	-5465146.43	-5465146.25	0.0263	0.0150
Venus	-19676-11-14 20:09 J	-5464917.87	-5464917.66	-5464917.45	0.0262	0.0022
Venus	-19675-07-01 14:09 J	-5464689.10	-5464688.91	-5464688.71	0.0261	0.0105
Venus	-19674-02-15 07:55 J	-5464460.26	-5464460.17	-5464460.06	0.0261	0.0230
Moon	-19669-11-25 00:00 J	-5462350.74	-5462350.50	-5462350.26	0.0270	0.0077
Earth	-19669-11-25 03:50 J	-5462350.57	-5462350.34	-5462350.09	0.0270	0.0072 *
Mercury	-19666-10-23 14:52 J	-5461288.00	-5461287.88	-5461287.76	0.0281	0.0216
Mercury	-19665-01-20 14:52 J	-5461199.07	-5461198.88	-5461198.69	0.0282	0.0023
Mercury	-19665-04-18 14:23 J	-5461110.04	-5461109.90	-5461109.74	0.0283	0.0171
Mars	-19664-10-08 11:16 J	-5460572.12	-5460572.03	-5460571.92	0.0290	0.0269
Venus	-19661-04-25 12:28 J	-5459642.08	-5459641.98	-5459641.85	0.0299	0.0253
Venus	-19661-12-11 22:33 J	-5459411.77	-5459411.56	-5459411.35	0.0300	0.0053
Venus	-19660-07-30 08:23 J	-5459181.33	-5459181.15	-5459180.96	0.0301	0.0150
Moon	-19655-05-26 14:09 J	-5457420.11	-5457419.91	-5457419.70	0.0293	0.0150

Earth	-19655-05-26 18:00 J	-5457419.96	-5457419.75	-5457419.53	0.0293	0.0135 *
Mercury	-19653-12-02 14:09 J	-5456498.93	-5456498.91	-5456498.89	0.0282	0.0278
Mercury	-19652-03-01 00:57 J	-5456410.56	-5456410.46	-5456410.34	0.0281	0.0148
Mercury	-19652-05-28 12:00 J	-5456322.13	-5456322.00	-5456321.87	0.0280	0.0020
Mercury	-19652-08-24 22:48 J	-5456233.67	-5456233.55	-5456233.43	0.0279	0.0109
Mercury	-19652-11-21 09:36 J	-5456145.16	-5456145.10	-5456145.03	0.0278	0.0236
Venus	-19647-02-24 13:26 J	-5454588.99	-5454588.94	-5454588.89	0.0263	0.0254
Venus	-19647-10-11 07:55 J	-5454360.35	-5454360.17	-5454359.98	0.0262	0.0127
Venus	-19646-05-28 02:23 J	-5454131.61	-5454131.40	-5454131.19	0.0261	0.0005
Venus	-19645-01-11 20:09 J	-5453902.84	-5453902.66	-5453902.48	0.0261	0.0127
Venus	-19645-08-27 13:55 J	-5453673.96	-5453673.92	-5453673.86	0.0260	0.0252
Moon	-19639-12-02 21:07 J	-5451385.67	-5451385.62	-5451385.57	0.0272	0.0266
Mercury	-19636-03-11 14:38 J	-5450555.95	-5450555.89	-5450555.81	0.0281	0.0260
Mercury	-19636-06-08 14:38 J	-5450467.07	-5450466.89	-5450466.71	0.0282	0.0067
Mercury	-19636-09-05 14:23 J	-5450378.06	-5450377.90	-5450377.73	0.0283	0.0127
Venus	-19632-11-05 22:33 J	-5448855.70	-5448855.56	-5448855.41	0.0299	0.0222
Venus	-19631-06-24 08:09 J	-5448625.37	-5448625.16	-5448624.95	0.0300	0.0022
Venus	-19630-02-09 18:00 J	-5448394.92	-5448394.75	-5448394.57	0.0301	0.0180
Earth	-19625-06-02 19:11 J	-5446454.76	-5446454.70	-5446454.63	0.0290	0.0279
Moon	-19625-06-02 20:09 J	-5446454.74	-5446454.66	-5446454.56	0.0290	0.0269 *
Mercury	-19623-07-19 03:50 J	-5445678.44	-5445678.34	-5445678.24	0.0281	0.0182
Mercury	-19623-10-15 14:38 J	-5445590.02	-5445589.89	-5445589.76	0.0280	0.0053
Mercury	-19622-01-12 01:26 J	-5445501.56	-5445501.44	-5445501.31	0.0279	0.0076
Mercury	-19622-04-10 12:28 J	-5445413.07	-5445412.98	-5445412.89	0.0278	0.0202
Mars	-19621-02-11 12:14 J	-5445106.19	-5445105.99	-5445105.76	0.0274	0.0199
Venus	-19618-09-06 17:02 J	-5443802.88	-5443802.79	-5443802.69	0.0264	0.0234
Venus	-19617-04-22 11:45 J	-5443574.20	-5443574.01	-5443573.82	0.0263	0.0106
Venus	-19617-12-07 06:00 J	-5443345.46	-5443345.25	-5443345.04	0.0262	0.0022
Venus	-19616-07-23 23:45 J	-5443116.67	-5443116.51	-5443116.33	0.0261	0.0150
Moon	-19610-11-27 16:33 J	-5440799.05	-5440798.81	-5440798.56	0.0270	0.0006

Earth	-19610-11-27 17:45 J	-5440799.01	-5440798.76	-5440798.51	0.0270	0.0012 *
Mercury	-19607-10-26 14:52 J	-5439735.05	-5439734.88	-5439734.71	0.0282	0.0107
Mercury	-19606-01-23 14:38 J	-5439646.06	-5439645.89	-5439645.71	0.0283	0.0087
Mercury	-19606-04-22 14:09 J	-5439556.92	-5439556.91	-5439556.88	0.0284	0.0282
Mars	-19605-01-15 11:16 J	-5439289.18	-5439289.03	-5439288.87	0.0287	0.0236
Venus	-19602-05-19 11:02 J	-5438069.21	-5438069.04	-5438068.87	0.0299	0.0186
Venus	-19601-01-04 20:52 J	-5437838.84	-5437838.63	-5437838.41	0.0300	0.0016
Venus	-19601-08-22 06:57 J	-5437608.36	-5437608.21	-5437608.06	0.0301	0.0219
Moon	-19596-05-28 11:02 J	-5435868.26	-5435868.04	-5435867.80	0.0292	0.0046
Earth	-19596-05-28 11:45 J	-5435868.25	-5435868.01	-5435867.77	0.0292	0.0034 *
Mercury	-19594-12-06 07:26 J	-5434946.27	-5434946.19	-5434946.10	0.0281	0.0206
Mercury	-19593-03-03 18:28 J	-5434857.86	-5434857.73	-5434857.61	0.0280	0.0077
Mercury	-19593-05-31 05:16 J	-5434769.41	-5434769.28	-5434769.15	0.0279	0.0052
Mercury	-19593-08-27 16:04 J	-5434680.93	-5434680.83	-5434680.73	0.0278	0.0179
Venus	-19588-03-18 23:31 J	-5433016.64	-5433016.52	-5433016.39	0.0263	0.0210
Venus	-19588-11-02 18:14 J	-5432787.94	-5432787.74	-5432787.54	0.0262	0.0082
Venus	-19587-06-19 12:28 J	-5432559.19	-5432558.98	-5432558.77	0.0261	0.0045
Venus	-19586-02-03 06:14 J	-5432330.39	-5432330.24	-5432330.08	0.0261	0.0172
Earth	-19581-11-21 18:57 J	-5430211.81	-5430211.71	-5430211.61	0.0269	0.0246
Moon	-19581-11-21 20:09 J	-5430211.75	-5430211.66	-5430211.55	0.0269	0.0247 *
Mercury	-19577-03-14 15:07 J	-5429003.03	-5429002.87	-5429002.71	0.0282	0.0148
Mercury	-19577-06-11 14:52 J	-5428914.06	-5428913.88	-5428913.69	0.0283	0.0046
Mercury	-19577-09-08 14:23 J	-5428824.98	-5428824.90	-5428824.79	0.0284	0.0241
Venus	-19573-11-28 21:36 J	-5427282.78	-5427282.60	-5427282.41	0.0299	0.0154
Venus	-19572-07-17 07:11 J	-5427052.41	-5427052.20	-5427051.98	0.0300	0.0049
Venus	-19571-03-04 17:02 J	-5426821.90	-5426821.79	-5426821.66	0.0301	0.0250
Mercury	-19564-04-24 10:19 J	-5424214.13	-5424214.07	-5424214.00	0.0281	0.0238
Mercury	-19564-07-21 21:07 J	-5424125.73	-5424125.62	-5424125.49	0.0280	0.0110
Mercury	-19564-10-18 08:09 J	-5424037.29	-5424037.16	-5424037.03	0.0279	0.0019
Mercury	-19563-01-14 18:57 J	-5423948.82	-5423948.71	-5423948.60	0.0278	0.0146

Mercury	-19563-04-13 05:45 J	-5423860.28	-5423860.26	-5423860.24	0.0277	0.0273
Venus	-19559-09-29 03:21 J	-5422230.50	-5422230.36	-5422230.21	0.0263	0.0190
Venus	-19558-05-15 22:04 J	-5422001.79	-5422001.58	-5422001.38	0.0262	0.0062
Venus	-19558-12-30 16:04 J	-5421773.03	-5421772.83	-5421772.63	0.0262	0.0066
Venus	-19557-08-15 09:36 J	-5421544.23	-5421544.10	-5421543.94	0.0261	0.0193
Earth	-19551-11-29 06:57 J	-5419247.45	-5419247.21	-5419246.98	0.0271	0.0094
Moon	-19551-11-29 09:50 J	-5419247.32	-5419247.09	-5419246.85	0.0271	0.0086 *
Mercury	-19548-08-01 14:23 J	-5418271.02	-5418270.90	-5418270.75	0.0281	0.0194
Mercury	-19548-10-29 14:38 J	-5418182.08	-5418181.89	-5418181.70	0.0282	0.0004
Mercury	-19547-01-26 14:23 J	-5418093.04	-5418092.90	-5418092.77	0.0283	0.0195
Venus	-19543-06-11 09:07 J	-5416496.32	-5416496.12	-5416495.92	0.0300	0.0119
Venus	-19542-01-27 18:57 J	-5416265.91	-5416265.71	-5416265.50	0.0301	0.0085
Venus	-19542-09-15 05:02 J	-5416035.35	-5416035.29	-5416035.22	0.0301	0.0287
Earth	-19537-05-30 06:00 J	-5414316.48	-5414316.25	-5414316.02	0.0292	0.0069
Moon	-19537-05-30 09:07 J	-5414316.35	-5414316.12	-5414315.89	0.0292	0.0060 *
Mercury	-19535-09-11 14:09 J	-5413481.95	-5413481.91	-5413481.86	0.0282	0.0262
Mercury	-19535-12-09 00:57 J	-5413393.57	-5413393.46	-5413393.34	0.0281	0.0133
Mercury	-19534-03-07 12:00 J	-5413305.14	-5413305.00	-5413304.87	0.0279	0.0010
Mercury	-19534-06-03 22:48 J	-5413216.67	-5413216.55	-5413216.44	0.0278	0.0124
Mercury	-19534-08-31 09:36 J	-5413128.15	-5413128.10	-5413128.04	0.0277	0.0251
Mars	-19533-07-08 18:00 J	-5412816.03	-5412815.75	-5412815.45	0.0274	0.0091
Venus	-19529-04-10 10:04 J	-5411444.24	-5411444.08	-5411443.92	0.0263	0.0166
Venus	-19529-11-25 04:19 J	-5411215.52	-5411215.32	-5411215.11	0.0262	0.0039
Venus	-19528-07-11 22:33 J	-5410986.75	-5410986.56	-5410986.36	0.0261	0.0089
Venus	-19527-02-25 16:19 J	-5410757.93	-5410757.82	-5410757.70	0.0260	0.0215
Moon	-19522-11-24 04:48 J	-5408660.49	-5408660.30	-5408660.09	0.0269	0.0170
Earth	-19522-11-24 07:26 J	-5408660.38	-5408660.19	-5408659.99	0.0269	0.0166 *
Mercury	-19519-12-19 14:38 J	-5407538.99	-5407538.89	-5407538.78	0.0281	0.0235
Mercury	-19518-03-18 14:38 J	-5407450.07	-5407449.89	-5407449.70	0.0282	0.0041
Mercury	-19518-06-15 14:23 J	-5407361.05	-5407360.90	-5407360.74	0.0284	0.0154



Mars	-19517-06-11 10:48 J	-5406999.29	-5406999.05	-5406998.80	0.0288	0.0139
Venus	-19514-05-06 10:19 J	-5405940.12	-5405940.07	-5405939.99	0.0298	0.0285
Venus	-19514-12-22 19:55 J	-5405709.87	-5405709.67	-5405709.46	0.0300	0.0086
Venus	-19513-08-09 05:45 J	-5405479.45	-5405479.26	-5405479.06	0.0301	0.0118
Moon	-19508-05-24 12:57 J	-5403730.05	-5403729.96	-5403729.86	0.0293	0.0267
Earth	-19508-05-24 15:50 J	-5403729.94	-5403729.84	-5403729.71	0.0293	0.0256 *
Mercury	-19505-04-27 03:50 J	-5402661.44	-5402661.34	-5402661.23	0.0280	0.0165
Mercury	-19505-07-24 14:52 J	-5402573.01	-5402572.88	-5402572.75	0.0279	0.0037
Mercury	-19505-10-21 01:40 J	-5402484.56	-5402484.43	-5402484.31	0.0278	0.0092
Mercury	-19504-01-17 12:28 J	-5402396.06	-5402395.98	-5402395.90	0.0277	0.0218
Venus	-19500-10-21 13:26 J	-5400658.11	-5400657.94	-5400657.76	0.0263	0.0146
Venus	-19499-06-07 07:55 J	-5400429.38	-5400429.17	-5400428.96	0.0262	0.0018
Venus	-19498-01-22 01:40 J	-5400200.62	-5400200.43	-5400200.24	0.0261	0.0110
Venus	-19498-09-07 19:11 J	-5399971.77	-5399971.70	-5399971.60	0.0261	0.0236
Earth	-19492-11-30 18:28 J	-5397695.91	-5397695.73	-5397695.53	0.0271	0.0173
Moon	-19492-11-30 21:36 J	-5397695.79	-5397695.60	-5397695.39	0.0271	0.0165 *
Mercury	-19489-08-04 13:40 J	-5396718.10	-5396717.93	-5396717.75	0.0282	0.0090
Mercury	-19489-11-01 13:40 J	-5396629.10	-5396628.93	-5396628.76	0.0283	0.0105
Venus	-19485-11-15 20:38 J	-5395153.75	-5395153.64	-5395153.53	0.0299	0.0253
Venus	-19484-07-04 06:14 J	-5394923.45	-5394923.24	-5394923.03	0.0300	0.0053
Venus	-19483-02-19 16:04 J	-5394693.00	-5394692.83	-5394692.63	0.0301	0.0152
Earth	-19478-06-01 23:02 J	-5392764.73	-5392764.54	-5392764.34	0.0291	0.0169
Moon	-19478-06-02 02:09 J	-5392764.62	-5392764.41	-5392764.21	0.0291	0.0158 *
Mercury	-19476-09-14 07:40 J	-5391929.28	-5391929.18	-5391929.09	0.0281	0.0190
Mercury	-19476-12-11 18:28 J	-5391840.86	-5391840.73	-5391840.61	0.0280	0.0062
Mercury	-19475-03-10 05:16 J	-5391752.41	-5391752.28	-5391752.15	0.0279	0.0067
Mercury	-19475-06-06 16:04 J	-5391663.92	-5391663.83	-5391663.74	0.0278	0.0194
Venus	-19471-09-17 00:57 J	-5390100.51	-5390100.46	-5390100.40	0.0263	0.0252
Venus	-19470-05-03 19:40 J	-5389871.86	-5389871.68	-5389871.49	0.0262	0.0123
Venus	-19470-12-18 13:55 J	-5389643.13	-5389642.92	-5389642.71	0.0261	0.0005

Venus	-19469-08-03 07:40 J	-5389414.36	-5389414.18	-5389413.99	0.0261	0.0132
Venus	-19468-03-20 01:26 J	-5389185.47	-5389185.44	-5389185.41	0.0260	0.0257
Moon	-19463-11-25 14:09 J	-5387109.13	-5387108.91	-5387108.67	0.0269	0.0095
Earth	-19463-11-25 17:45 J	-5387108.99	-5387108.76	-5387108.52	0.0269	0.0091 *
Mercury	-19460-12-22 13:26 J	-5385986.11	-5385985.94	-5385985.78	0.0282	0.0136
Mercury	-19459-03-21 13:11 J	-5385897.13	-5385896.95	-5385896.76	0.0283	0.0059
Mercury	-19459-06-18 12:57 J	-5385808.03	-5385807.96	-5385807.87	0.0284	0.0254
Venus	-19455-05-29 06:14 J	-5384367.38	-5384367.24	-5384367.09	0.0299	0.0222
Venus	-19454-01-14 16:04 J	-5384137.05	-5384136.83	-5384136.62	0.0300	0.0021
Venus	-19454-09-02 02:09 J	-5383906.58	-5383906.41	-5383906.24	0.0301	0.0184
Moon	-19449-05-26 06:00 J	-5382178.44	-5382178.25	-5382178.06	0.0292	0.0170
Earth	-19449-05-26 08:38 J	-5382178.33	-5382178.14	-5382177.93	0.0292	0.0157 *
Mercury	-19446-02-01 10:19 J	-5381197.14	-5381197.07	-5381196.99	0.0281	0.0223
Mercury	-19446-04-30 21:07 J	-5381108.74	-5381108.62	-5381108.49	0.0280	0.0095
Mercury	-19446-07-28 08:09 J	-5381020.29	-5381020.16	-5381020.03	0.0279	0.0035
Mercury	-19446-10-24 18:57 J	-5380931.82	-5380931.71	-5380931.61	0.0278	0.0161
Mars	-19445-12-03 08:38 J	-5380526.45	-5380526.14	-5380525.82	0.0273	0.0005
Venus	-19441-03-29 04:04 J	-5379314.42	-5379314.33	-5379314.23	0.0263	0.0233
Venus	-19441-11-12 22:33 J	-5379085.74	-5379085.56	-5379085.36	0.0262	0.0104
Venus	-19440-06-29 16:48 J	-5378857.00	-5378856.80	-5378856.59	0.0261	0.0025
Venus	-19439-02-13 10:19 J	-5378628.23	-5378628.07	-5378627.89	0.0261	0.0152
Moon	-19433-12-02 02:09 J	-5376144.52	-5376144.41	-5376144.27	0.0271	0.0235
Earth	-19433-12-02 02:52 J	-5376144.47	-5376144.38	-5376144.27	0.0271	0.0246 *
Mercury	-19430-05-11 11:31 J	-5375254.15	-5375254.02	-5375253.88	0.0281	0.0193
Mercury	-19430-08-08 11:31 J	-5375165.21	-5375165.02	-5375164.83	0.0282	0.0002
Mercury	-19430-11-05 11:16 J	-5375076.16	-5375076.03	-5375075.89	0.0283	0.0197
Mars	-19429-11-05 18:28 J	-5374710.00	-5374709.73	-5374709.45	0.0288	0.0066
Venus	-19426-12-09 14:09 J	-5373581.06	-5373580.91	-5373580.73	0.0299	0.0194
Venus	-19425-07-27 00:28 J	-5373350.70	-5373350.48	-5373350.27	0.0300	0.0010
Venus	-19424-03-14 10:33 J	-5373120.20	-5373120.06	-5373119.90	0.0301	0.0215

Moon	-19419-06-03 12:28 J	-5371213.09	-5371212.98	-5371212.85	0.0291	0.0253
Earth	-19419-06-03 13:11 J	-5371213.04	-5371212.95	-5371212.84	0.0291	0.0262 *
Mercury	-19417-06-20 13:40 J	-5370464.98	-5370464.93	-5370464.87	0.0282	0.0252
Mercury	-19417-09-17 00:28 J	-5370376.59	-5370376.48	-5370376.36	0.0280	0.0123
Mercury	-19417-12-14 11:31 J	-5370288.16	-5370288.02	-5370287.89	0.0279	0.0012
Mercury	-19416-03-12 22:04 J	-5370199.69	-5370199.58	-5370199.46	0.0278	0.0134
Mercury	-19416-06-09 09:07 J	-5370111.16	-5370111.12	-5370111.08	0.0277	0.0260
Venus	-19412-10-09 09:36 J	-5368528.21	-5368528.10	-5368527.97	0.0263	0.0211
Venus	-19411-05-26 04:19 J	-5368299.52	-5368299.32	-5368299.12	0.0262	0.0082
Venus	-19410-01-09 22:04 J	-5368070.78	-5368070.58	-5368070.37	0.0261	0.0046
Venus	-19410-08-26 15:50 J	-5367842.00	-5367841.84	-5367841.69	0.0260	0.0173
Earth	-19404-11-27 00:43 J	-5365557.72	-5365557.47	-5365557.22	0.0270	0.0022
Moon	-19404-11-27 00:57 J	-5365557.70	-5365557.46	-5365557.22	0.0270	0.0027 *
Mercury	-19401-09-27 10:33 J	-5364522.14	-5364522.06	-5364521.95	0.0281	0.0241
Mercury	-19401-12-25 10:48 J	-5364433.23	-5364433.05	-5364432.86	0.0282	0.0046
Mercury	-19400-03-24 10:48 J	-5364344.21	-5364344.05	-5364343.89	0.0284	0.0149
Venus	-19396-06-20 23:45 J	-5362794.69	-5362794.51	-5362794.33	0.0300	0.0163
Venus	-19395-02-06 09:36 J	-5362564.31	-5362564.10	-5362563.88	0.0301	0.0042
Venus	-19395-09-24 19:55 J	-5362333.79	-5362333.67	-5362333.55	0.0302	0.0246
Earth	-19390-05-28 22:04 J	-5360626.81	-5360626.58	-5360626.34	0.0292	0.0065
Moon	-19390-05-28 22:48 J	-5360626.77	-5360626.55	-5360626.32	0.0292	0.0077 *
Mercury	-19387-02-04 03:07 J	-5359644.47	-5359644.37	-5359644.26	0.0280	0.0158
Mercury	-19387-05-03 13:55 J	-5359556.05	-5359555.92	-5359555.79	0.0279	0.0030
Mercury	-19387-07-31 00:43 J	-5359467.59	-5359467.47	-5359467.34	0.0278	0.0099
Mercury	-19387-10-27 11:31 J	-5359379.09	-5359379.02	-5359378.94	0.0277	0.0225
Venus	-19382-04-21 12:00 J	-5357742.13	-5357742.00	-5357741.85	0.0263	0.0193
Venus	-19382-12-06 06:28 J	-5357513.43	-5357513.23	-5357513.03	0.0262	0.0064
Venus	-19381-07-22 00:14 J	-5357284.69	-5357284.49	-5357284.28	0.0261	0.0065
Venus	-19380-03-07 17:45 J	-5357055.90	-5357055.76	-5357055.62	0.0260	0.0191
Mercury	-19371-05-14 07:55 J	-5353701.34	-5353701.17	-5353701.00	0.0282	0.0111

Mercury	-19371-08-11 07:55 J	-5353612.35	-5353612.17	-5353611.99	0.0283	0.0084
Mercury	-19371-11-08 07:40 J	-5353523.21	-5353523.18	-5353523.15	0.0284	0.0279
Venus	-19366-01-01 05:02 J	-5352008.48	-5352008.29	-5352008.10	0.0300	0.0139
Venus	-19366-08-19 15:21 J	-5351778.07	-5351777.86	-5351777.65	0.0301	0.0066
Venus	-19365-04-06 01:26 J	-5351547.51	-5351547.44	-5351547.33	0.0302	0.0272
Mercury	-19358-06-24 06:00 J	-5348912.34	-5348912.25	-5348912.15	0.0281	0.0191
Mercury	-19358-09-20 17:02 J	-5348823.92	-5348823.79	-5348823.67	0.0280	0.0062
Mercury	-19358-12-18 03:50 J	-5348735.47	-5348735.34	-5348735.21	0.0279	0.0067
Mercury	-19357-03-15 14:38 J	-5348646.98	-5348646.89	-5348646.80	0.0278	0.0194
Mars	-19356-04-29 19:55 J	-5348236.97	-5348236.67	-5348236.37	0.0273	0.0075
Venus	-19353-10-31 16:48 J	-5346955.95	-5346955.80	-5346955.64	0.0263	0.0172
Venus	-19352-06-17 11:16 J	-5346727.24	-5346727.03	-5346726.83	0.0261	0.0043
Venus	-19351-02-01 04:48 J	-5346498.50	-5346498.30	-5346498.10	0.0261	0.0085
Venus	-19351-09-17 22:04 J	-5346269.69	-5346269.58	-5346269.45	0.0260	0.0211
Earth	-19345-11-28 03:36 J	-5344006.60	-5344006.35	-5344006.10	0.0270	0.0040
Moon	-19345-11-28 07:26 J	-5344006.44	-5344006.19	-5344005.94	0.0270	0.0032 *
Mercury	-19342-10-01 06:28 J	-5342969.38	-5342969.23	-5342969.07	0.0282	0.0165
Mercury	-19342-12-29 06:28 J	-5342880.42	-5342880.23	-5342880.04	0.0283	0.0030
Mercury	-19341-03-27 06:14 J	-5342791.35	-5342791.24	-5342791.12	0.0284	0.0226
Mars	-19340-04-01 14:23 J	-5342421.17	-5342420.90	-5342420.62	0.0288	0.0012
Venus	-19337-07-13 12:57 J	-5341222.15	-5341221.96	-5341221.75	0.0300	0.0109
Venus	-19336-02-28 23:16 J	-5340991.73	-5340991.53	-5340991.32	0.0301	0.0097
Venus	-19336-10-17 09:50 J	-5340761.10	-5340761.09	-5340761.08	0.0302	0.0301
Earth	-19331-05-30 06:14 J	-5339075.48	-5339075.24	-5339075.00	0.0292	0.0015
Moon	-19331-05-30 10:04 J	-5339075.32	-5339075.08	-5339074.85	0.0292	0.0006 *
Mercury	-19329-11-10 08:23 J	-5338180.22	-5338180.15	-5338180.07	0.0281	0.0229
Mercury	-19328-02-06 19:26 J	-5338091.81	-5338091.69	-5338091.57	0.0280	0.0100
Mercury	-19328-05-06 06:14 J	-5338003.37	-5338003.24	-5338003.11	0.0279	0.0029
Mercury	-19328-08-02 17:02 J	-5337914.90	-5337914.79	-5337914.68	0.0278	0.0156
Venus	-19323-05-13 18:43 J	-5336169.89	-5336169.72	-5336169.55	0.0262	0.0155

Venus	-19323-12-28 12:28 J	-5335941.18	-5335940.98	-5335940.77	0.0261	0.0026
Venus	-19322-08-14 06:00 J	-5335712.44	-5335712.25	-5335712.05	0.0261	0.0102
Venus	-19321-03-29 23:02 J	-5335483.63	-5335483.54	-5335483.43	0.0260	0.0228
Moon	-19316-11-22 14:09 J	-5333420.00	-5333419.91	-5333419.82	0.0268	0.0249
Earth	-19316-11-22 18:00 J	-5333419.85	-5333419.75	-5333419.64	0.0268	0.0241 *
Mercury	-19312-02-17 02:38 J	-5332237.48	-5332237.39	-5332237.28	0.0281	0.0236
Mercury	-19312-05-17 02:52 J	-5332148.57	-5332148.38	-5332148.19	0.0282	0.0041
Mercury	-19312-08-14 02:52 J	-5332059.54	-5332059.38	-5332059.23	0.0283	0.0154
Venus	-19308-06-07 07:11 J	-5330666.25	-5330666.20	-5330666.15	0.0298	0.0288
Venus	-19307-01-23 16:48 J	-5330436.00	-5330435.80	-5330435.59	0.0300	0.0087
Venus	-19307-09-11 03:07 J	-5330205.56	-5330205.37	-5330205.17	0.0301	0.0119
Mercury	-19299-03-30 11:02 J	-5327448.08	-5327448.04	-5327448.00	0.0282	0.0267
Mercury	-19299-06-26 21:50 J	-5327359.70	-5327359.59	-5327359.47	0.0281	0.0137
Mercury	-19299-09-23 08:52 J	-5327271.26	-5327271.13	-5327271.00	0.0280	0.0011
Mercury	-19299-12-20 19:40 J	-5327182.80	-5327182.68	-5327182.56	0.0279	0.0121
Mercury	-19298-03-19 06:28 J	-5327094.29	-5327094.23	-5327094.17	0.0278	0.0248
Venus	-19294-11-23 22:04 J	-5325383.75	-5325383.58	-5325383.40	0.0262	0.0135
Venus	-19293-07-09 16:19 J	-5325155.03	-5325154.82	-5325154.61	0.0261	0.0008
Venus	-19292-02-23 09:36 J	-5324926.28	-5324926.10	-5324925.91	0.0260	0.0121
Venus	-19292-10-10 02:38 J	-5324697.44	-5324697.39	-5324697.31	0.0260	0.0246
Earth	-19286-11-30 03:07 J	-5322455.59	-5322455.37	-5322455.13	0.0270	0.0096
Moon	-19286-11-30 04:33 J	-5322455.55	-5322455.31	-5322455.06	0.0270	0.0084 *
Mercury	-19283-10-04 00:57 J	-5321416.63	-5321416.46	-5321416.28	0.0282	0.0098
Mercury	-19282-01-01 00:57 J	-5321327.64	-5321327.46	-5321327.28	0.0283	0.0097
Venus	-19279-12-18 13:40 J	-5319880.03	-5319879.93	-5319879.83	0.0299	0.0261
Venus	-19278-08-05 23:16 J	-5319649.74	-5319649.53	-5319649.32	0.0300	0.0059
Venus	-19277-03-23 09:36 J	-5319419.28	-5319419.10	-5319418.91	0.0302	0.0147
Earth	-19272-05-31 09:21 J	-5317524.34	-5317524.11	-5317523.88	0.0292	0.0083
Moon	-19272-05-31 10:19 J	-5317524.30	-5317524.07	-5317523.82	0.0292	0.0076 *
Mercury	-19270-11-14 00:00 J	-5316627.60	-5316627.50	-5316627.40	0.0281	0.0178

Mercury	-19269-02-10 10:48 J	-5316539.18	-5316539.05	-5316538.92	0.0280	0.0049
Mercury	-19269-05-08 21:36 J	-5316450.72	-5316450.60	-5316450.47	0.0278	0.0079
Mercury	-19269-08-05 08:23 J	-5316362.23	-5316362.15	-5316362.06	0.0277	0.0206
Mars	-19268-09-23 05:45 J	-5315948.53	-5315948.26	-5315947.98	0.0273	0.0122
Venus	-19265-10-19 04:33 J	-5314826.37	-5314826.31	-5314826.24	0.0263	0.0249
Venus	-19264-06-04 23:02 J	-5314597.72	-5314597.54	-5314597.35	0.0262	0.0119
Venus	-19263-01-19 16:48 J	-5314369.01	-5314368.80	-5314368.59	0.0261	0.0010
Venus	-19263-09-05 09:50 J	-5314140.26	-5314140.09	-5314139.90	0.0260	0.0138
Moon	-19257-11-23 14:52 J	-5311869.03	-5311868.88	-5311868.71	0.0268	0.0200
Earth	-19257-11-23 15:50 J	-5311869.01	-5311868.84	-5311868.66	0.0268	0.0190 *
Mercury	-19253-02-20 20:38 J	-5310684.79	-5310684.64	-5310684.50	0.0281	0.0176
Mercury	-19253-05-19 20:23 J	-5310595.83	-5310595.65	-5310595.46	0.0282	0.0021
Mercury	-19253-08-16 20:09 J	-5310506.77	-5310506.66	-5310506.53	0.0283	0.0215
Mars	-19252-08-25 08:23 J	-5310133.42	-5310133.15	-5310132.87	0.0288	0.0003
Venus	-19249-06-29 15:07 J	-5309093.99	-5309093.87	-5309093.74	0.0299	0.0244
Venus	-19248-02-15 00:57 J	-5308863.67	-5308863.46	-5308863.25	0.0300	0.0041
Venus	-19248-10-03 11:16 J	-5308633.20	-5308633.03	-5308632.84	0.0301	0.0166
Earth	-19243-05-25 09:50 J	-5306938.18	-5306938.09	-5306937.99	0.0295	0.0269
Moon	-19243-05-25 09:36 J	-5306938.17	-5306938.10	-5306938.02	0.0295	0.0278 *
Mercury	-19240-04-02 01:55 J	-5305895.49	-5305895.42	-5305895.33	0.0282	0.0221
Mercury	-19240-06-29 12:57 J	-5305807.08	-5305806.96	-5305806.84	0.0281	0.0090
Mercury	-19240-09-25 23:45 J	-5305718.63	-5305718.51	-5305718.38	0.0280	0.0040
Mercury	-19240-12-23 10:33 J	-5305630.16	-5305630.06	-5305629.95	0.0279	0.0168
Venus	-19235-05-01 07:11 J	-5304040.29	-5304040.20	-5304040.09	0.0263	0.0231
Venus	-19235-12-16 01:40 J	-5303811.62	-5303811.43	-5303811.24	0.0262	0.0101
Venus	-19234-08-01 19:26 J	-5303582.90	-5303582.69	-5303582.48	0.0261	0.0028
Venus	-19233-03-17 12:43 J	-5303354.14	-5303353.97	-5303353.80	0.0260	0.0155
Moon	-19227-11-30 20:23 J	-5300904.87	-5300904.65	-5300904.43	0.0270	0.0129
Earth	-19227-11-30 23:45 J	-5300904.72	-5300904.51	-5300904.29	0.0270	0.0144 *
Mercury	-19224-07-09 18:14 J	-5299952.84	-5299952.74	-5299952.64	0.0281	0.0235

Mercury	-19224-10-06 18:14 J	-5299863.93	-5299863.74	-5299863.55	0.0282	0.0041
Mercury	-19223-01-03 18:00 J	-5299774.90	-5299774.75	-5299774.59	0.0283	0.0154
Venus	-19219-01-09 20:38 J	-5298307.78	-5298307.64	-5298307.49	0.0299	0.0218
Venus	-19219-08-28 06:43 J	-5298077.44	-5298077.22	-5298077.01	0.0301	0.0014
Venus	-19218-04-15 17:02 J	-5297846.95	-5297846.79	-5297846.62	0.0302	0.0194
Moon	-19213-06-01 05:16 J	-5295973.49	-5295973.28	-5295973.06	0.0292	0.0142
Earth	-19213-06-01 08:38 J	-5295973.34	-5295973.14	-5295972.92	0.0292	0.0144 *
Mercury	-19211-08-20 04:04 J	-5295163.37	-5295163.33	-5295163.29	0.0282	0.0263
Mercury	-19211-11-16 14:52 J	-5295074.99	-5295074.88	-5295074.76	0.0281	0.0133
Mercury	-19210-02-13 01:55 J	-5294986.56	-5294986.42	-5294986.29	0.0279	0.0011
Mercury	-19210-05-12 12:43 J	-5294898.09	-5294897.97	-5294897.86	0.0278	0.0124
Mercury	-19210-08-08 23:31 J	-5294809.57	-5294809.52	-5294809.47	0.0277	0.0251
Venus	-19206-11-11 07:40 J	-5293254.29	-5293254.18	-5293254.05	0.0263	0.0215
Venus	-19205-06-27 02:09 J	-5293025.61	-5293025.41	-5293025.21	0.0262	0.0086
Venus	-19204-02-10 19:40 J	-5292796.89	-5292796.68	-5292796.47	0.0261	0.0043
Venus	-19204-09-27 12:28 J	-5292568.13	-5292567.98	-5292567.81	0.0260	0.0170
Earth	-19198-11-25 11:31 J	-5290318.23	-5290318.02	-5290317.80	0.0268	0.0142
Moon	-19198-11-25 14:52 J	-5290318.07	-5290317.88	-5290317.67	0.0268	0.0155 *
Mercury	-19194-02-23 13:11 J	-5289132.11	-5289131.95	-5289131.77	0.0281	0.0122
Mercury	-19194-05-23 13:11 J	-5289043.13	-5289042.95	-5289042.76	0.0282	0.0073
Mercury	-19194-08-20 12:57 J	-5288954.01	-5288953.96	-5288953.89	0.0283	0.0268
Venus	-19190-07-22 21:21 J	-5287521.77	-5287521.61	-5287521.45	0.0299	0.0201
Venus	-19189-03-09 07:11 J	-5287291.41	-5287291.20	-5287290.98	0.0300	0.0003
Venus	-19189-10-25 17:45 J	-5287060.91	-5287060.76	-5287060.61	0.0301	0.0210
Earth	-19184-05-26 06:28 J	-5285387.39	-5285387.23	-5285387.06	0.0295	0.0214
Moon	-19184-05-26 09:50 J	-5285387.24	-5285387.09	-5285386.92	0.0295	0.0217 *
Mercury	-19181-04-04 16:33 J	-5284342.90	-5284342.81	-5284342.71	0.0282	0.0180
Mercury	-19181-07-02 03:36 J	-5284254.48	-5284254.35	-5284254.22	0.0281	0.0050
Mercury	-19181-09-28 14:23 J	-5284166.02	-5284165.90	-5284165.77	0.0280	0.0080
Mercury	-19181-12-26 01:11 J	-5284077.53	-5284077.45	-5284077.36	0.0278	0.0208

Mars	-19179-02-16 04:19 J	-5283660.57	-5283660.32	-5283660.05	0.0274	0.0152
Venus	-19176-05-23 09:36 J	-5282468.23	-5282468.10	-5282467.96	0.0263	0.0198
Venus	-19175-01-07 03:50 J	-5282239.54	-5282239.34	-5282239.14	0.0262	0.0068
Venus	-19175-08-23 21:21 J	-5282010.81	-5282010.61	-5282010.41	0.0261	0.0060
Venus	-19174-04-09 14:23 J	-5281782.04	-5281781.90	-5281781.75	0.0260	0.0187
Moon	-19168-12-01 16:19 J	-5279354.00	-5279353.82	-5279353.63	0.0270	0.0176
Earth	-19168-12-01 18:28 J	-5279353.90	-5279353.73	-5279353.55	0.0270	0.0191 *
Mercury	-19165-07-12 10:33 J	-5278400.19	-5278400.06	-5278399.91	0.0281	0.0184
Mercury	-19165-10-09 10:48 J	-5278311.24	-5278311.05	-5278310.86	0.0282	0.0011
Mercury	-19164-01-06 10:33 J	-5278222.19	-5278222.06	-5278221.93	0.0283	0.0205
Mars	-19163-01-18 00:57 J	-5277845.74	-5277845.46	-5277845.18	0.0288	0.0011
Venus	-19160-02-01 01:40 J	-5276735.59	-5276735.43	-5276735.25	0.0300	0.0177
Venus	-19160-09-19 12:00 J	-5276505.22	-5276505.00	-5276504.79	0.0301	0.0029
Venus	-19159-05-07 22:33 J	-5276274.69	-5276274.56	-5276274.43	0.0302	0.0237
Moon	-19154-06-03 02:23 J	-5274422.57	-5274422.40	-5274422.23	0.0292	0.0199
Earth	-19154-06-03 04:33 J	-5274422.49	-5274422.31	-5274422.13	0.0292	0.0196 *
Mercury	-19152-08-22 18:28 J	-5273610.80	-5273610.73	-5273610.65	0.0282	0.0224
Mercury	-19152-11-19 05:16 J	-5273522.40	-5273522.28	-5273522.15	0.0281	0.0094
Mercury	-19151-02-15 16:19 J	-5273433.95	-5273433.82	-5273433.69	0.0280	0.0036
Mercury	-19151-05-15 03:07 J	-5273345.47	-5273345.37	-5273345.26	0.0278	0.0164
Venus	-19147-12-03 09:50 J	-5271682.24	-5271682.09	-5271681.94	0.0262	0.0183
Venus	-19146-07-20 04:04 J	-5271453.54	-5271453.33	-5271453.13	0.0261	0.0053
Venus	-19145-03-04 21:21 J	-5271224.81	-5271224.61	-5271224.41	0.0260	0.0075
Venus	-19145-10-19 14:09 J	-5270996.03	-5270995.91	-5270995.76	0.0260	0.0202
Earth	-19139-11-26 06:00 J	-5268767.48	-5268767.25	-5268767.01	0.0268	0.0097
Moon	-19139-11-26 08:23 J	-5268767.38	-5268767.15	-5268766.91	0.0268	0.0110 *
Mercury	-19136-11-29 05:31 J	-5267668.32	-5267668.27	-5267668.20	0.0280	0.0265
Mercury	-19135-02-26 05:45 J	-5267579.45	-5267579.26	-5267579.08	0.0281	0.0072
Mercury	-19135-05-26 05:31 J	-5267490.44	-5267490.27	-5267490.10	0.0282	0.0122
Venus	-19131-08-14 01:40 J	-5265949.60	-5265949.43	-5265949.24	0.0299	0.0161



Venus	-19130-04-01 12:00 J	-5265719.21	-5265719.00	-5265718.79	0.0301	0.0045
Venus	-19130-11-17 22:33 J	-5265488.67	-5265488.56	-5265488.44	0.0302	0.0252
Earth	-19125-05-27 00:57 J	-5263836.65	-5263836.46	-5263836.25	0.0295	0.0163
Moon	-19125-05-27 02:38 J	-5263836.59	-5263836.39	-5263836.18	0.0295	0.0163 *
Mercury	-19122-01-09 20:09 J	-5262878.69	-5262878.66	-5262878.63	0.0283	0.0273
Mercury	-19122-04-08 06:57 J	-5262790.32	-5262790.21	-5262790.10	0.0282	0.0142
Mercury	-19122-07-05 18:00 J	-5262701.89	-5262701.75	-5262701.62	0.0281	0.0015
Mercury	-19122-10-02 04:48 J	-5262613.42	-5262613.30	-5262613.18	0.0280	0.0118
Mercury	-19122-12-29 15:36 J	-5262524.91	-5262524.85	-5262524.79	0.0279	0.0247
Venus	-19117-06-14 11:16 J	-5260896.18	-5260896.03	-5260895.86	0.0263	0.0166
Venus	-19116-01-29 05:31 J	-5260667.48	-5260667.27	-5260667.06	0.0262	0.0036
Venus	-19116-09-14 22:48 J	-5260438.74	-5260438.55	-5260438.35	0.0261	0.0092
Venus	-19115-05-01 15:50 J	-5260209.95	-5260209.84	-5260209.72	0.0260	0.0218
Earth	-19109-12-02 12:28 J	-5257803.08	-5257802.98	-5257802.85	0.0269	0.0237
Moon	-19109-12-02 14:52 J	-5257803.00	-5257802.88	-5257802.73	0.0269	0.0224 *
Mercury	-19106-07-16 03:07 J	-5256847.53	-5256847.37	-5256847.20	0.0281	0.0132
Mercury	-19106-10-13 03:07 J	-5256758.55	-5256758.37	-5256758.19	0.0282	0.0061
Mercury	-19105-01-10 02:52 J	-5256669.46	-5256669.38	-5256669.30	0.0283	0.0255
Venus	-19101-02-24 06:43 J	-5255163.41	-5255163.22	-5255163.03	0.0300	0.0135
Venus	-19101-10-11 16:48 J	-5254933.01	-5254932.80	-5254932.59	0.0301	0.0072
Venus	-19100-05-30 03:21 J	-5254702.43	-5254702.36	-5254702.27	0.0302	0.0279
Earth	-19095-06-03 22:48 J	-5252871.67	-5252871.55	-5252871.41	0.0292	0.0247
Moon	-19095-06-04 01:26 J	-5252871.55	-5252871.44	-5252871.33	0.0292	0.0254 *
Mercury	-19093-08-25 08:38 J	-5252058.23	-5252058.14	-5252058.04	0.0282	0.0187
Mercury	-19093-11-21 19:40 J	-5251969.81	-5251969.68	-5251969.55	0.0281	0.0056
Mercury	-19092-02-18 06:28 J	-5251881.35	-5251881.23	-5251881.10	0.0280	0.0074
Mercury	-19092-05-17 17:16 J	-5251792.86	-5251792.78	-5251792.68	0.0278	0.0202
Mars	-19091-07-11 16:04 J	-5251373.07	-5251372.83	-5251372.58	0.0273	0.0172
Venus	-19088-12-25 11:31 J	-5250110.18	-5250110.02	-5250109.84	0.0262	0.0151
Venus	-19087-08-11 05:31 J	-5249881.47	-5249881.27	-5249881.06	0.0261	0.0022

Venus	-19086-03-27 22:48 J	-5249652.73	-5249652.55	-5249652.35	0.0260	0.0108
Venus	-19086-11-11 15:50 J	-5249423.92	-5249423.84	-5249423.74	0.0260	0.0233
Moon	-19080-11-26 23:02 J	-5247216.79	-5247216.54	-5247216.29	0.0268	0.0064
Earth	-19080-11-27 01:26 J	-5247216.69	-5247216.44	-5247216.20	0.0268	0.0050 *
Mercury	-19077-12-01 22:04 J	-5246115.69	-5246115.58	-5246115.45	0.0280	0.0213
Mercury	-19076-02-28 22:19 J	-5246026.76	-5246026.57	-5246026.38	0.0281	0.0020
Mercury	-19076-05-28 21:50 J	-5245937.73	-5245937.59	-5245937.44	0.0282	0.0174
Mars	-19075-06-12 04:19 J	-5245558.60	-5245558.32	-5245558.04	0.0287	0.0002
Venus	-19072-09-05 06:28 J	-5244377.42	-5244377.23	-5244377.03	0.0299	0.0120
Venus	-19071-04-23 16:33 J	-5244147.01	-5244146.81	-5244146.60	0.0301	0.0087
Venus	-19071-12-10 03:07 J	-5243916.40	-5243916.37	-5243916.31	0.0302	0.0294
Moon	-19066-05-28 16:04 J	-5242286.06	-5242285.83	-5242285.60	0.0295	0.0108
Earth	-19066-05-28 18:43 J	-5242285.94	-5242285.72	-5242285.50	0.0295	0.0114 *
Mercury	-19063-01-12 10:04 J	-5241326.15	-5241326.08	-5241326.01	0.0283	0.0237
Mercury	-19063-04-10 21:07 J	-5241237.74	-5241237.62	-5241237.50	0.0282	0.0106
Mercury	-19063-07-08 07:55 J	-5241149.30	-5241149.17	-5241149.03	0.0281	0.0027
Mercury	-19063-10-04 18:57 J	-5241060.82	-5241060.71	-5241060.60	0.0280	0.0155
Venus	-19058-07-07 12:57 J	-5239324.14	-5239323.96	-5239323.78	0.0263	0.0134
Venus	-19057-02-21 06:57 J	-5239095.42	-5239095.21	-5239095.00	0.0261	0.0004
Venus	-19057-10-07 00:14 J	-5238866.67	-5238866.49	-5238866.30	0.0260	0.0125
Venus	-19056-05-23 17:16 J	-5238637.83	-5238637.78	-5238637.72	0.0260	0.0250
Mercury	-19047-04-20 19:55 J	-5235383.71	-5235383.67	-5235383.62	0.0279	0.0271
Mercury	-19047-07-18 19:55 J	-5235294.85	-5235294.67	-5235294.49	0.0281	0.0079
Mercury	-19047-10-15 19:40 J	-5235205.85	-5235205.68	-5235205.51	0.0282	0.0114
Venus	-19043-07-31 02:23 J	-5233821.43	-5233821.40	-5233821.36	0.0298	0.0294
Venus	-19042-03-18 11:45 J	-5233591.22	-5233591.01	-5233590.81	0.0300	0.0093
Venus	-19042-11-03 21:50 J	-5233360.78	-5233360.59	-5233360.39	0.0301	0.0115
Mercury	-19034-06-01 12:00 J	-5230594.01	-5230594.00	-5230593.98	0.0283	0.0281
Mercury	-19034-08-28 23:02 J	-5230505.65	-5230505.54	-5230505.43	0.0282	0.0149
Mercury	-19034-11-25 10:04 J	-5230417.21	-5230417.08	-5230416.95	0.0281	0.0020

Mercury	-19033-02-21 20:52 J	-5230328.75	-5230328.63	-5230328.51	0.0280	0.0112
Mercury	-19033-05-20 07:55 J	-5230240.24	-5230240.17	-5230240.11	0.0279	0.0241
Venus	-19029-06-01 18:57 J	-5228766.77	-5228766.71	-5228766.63	0.0264	0.0248
Venus	-19028-01-16 13:40 J	-5228538.11	-5228537.93	-5228537.74	0.0262	0.0118
Venus	-19028-09-02 07:40 J	-5228309.39	-5228309.18	-5228308.97	0.0261	0.0012
Venus	-19027-04-19 00:57 J	-5228080.63	-5228080.46	-5228080.28	0.0260	0.0140
Moon	-19021-11-27 18:28 J	-5225665.97	-5225665.73	-5225665.48	0.0268	0.0015
Earth	-19021-11-27 22:04 J	-5225665.83	-5225665.58	-5225665.33	0.0268	0.0004 *
Mercury	-19018-12-05 15:36 J	-5224563.01	-5224562.85	-5224562.69	0.0280	0.0155
Mercury	-19017-03-03 15:21 J	-5224474.05	-5224473.86	-5224473.67	0.0281	0.0037
Mercury	-19017-05-31 15:07 J	-5224384.98	-5224384.87	-5224384.76	0.0282	0.0231
Venus	-19013-02-10 03:21 J	-5223035.43	-5223035.36	-5223035.28	0.0298	0.0277
Venus	-19013-09-27 12:43 J	-5222805.18	-5222804.97	-5222804.76	0.0300	0.0076
Venus	-19012-05-15 22:48 J	-5222574.74	-5222574.55	-5222574.35	0.0301	0.0132
Moon	-19007-05-29 11:16 J	-5220735.26	-5220735.03	-5220734.80	0.0295	0.0054
Earth	-19007-05-29 14:09 J	-5220735.15	-5220734.91	-5220734.68	0.0295	0.0061 *
Mercury	-19004-01-15 00:28 J	-5219773.57	-5219773.48	-5219773.39	0.0283	0.0199
Mercury	-19004-04-13 11:31 J	-5219685.15	-5219685.02	-5219684.90	0.0282	0.0067
Mercury	-19004-07-10 22:19 J	-5219596.69	-5219596.57	-5219596.44	0.0281	0.0065
Mercury	-19004-10-07 09:07 J	-5219508.20	-5219508.12	-5219508.02	0.0280	0.0195
Mars	-19003-12-04 03:21 J	-5219085.58	-5219085.36	-5219085.13	0.0275	0.0191

# 19TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 19th millennium BCE.

PLANET	MAX-	C	START	MAX	END	SUNRAD	DEPTH	S
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## TRANSIT

## TIME

Venus	-19000-12-12 19:55 J	-5217980.75	-5217980.67	-5217980.56	0.0264	0.0233
Venus	-18999-07-29 14:52 J	-5217752.06	-5217751.88	-5217751.68	0.0263	0.0101
Venus	-18998-03-15 09:07 J	-5217523.33	-5217523.12	-5217522.91	0.0261	0.0030
Venus	-18998-10-30 02:38 J	-5217294.56	-5217294.39	-5217294.23	0.0261	0.0158
Earth	-18992-11-22 19:55 J	-5215078.72	-5215078.67	-5215078.60	0.0266	0.0257
Mercury	-18988-04-23 13:40 J	-5213831.05	-5213830.93	-5213830.80	0.0279	0.0209
Mercury	-18988-07-21 13:40 J	-5213742.12	-5213741.93	-5213741.74	0.0281	0.0017
Mercury	-18988-10-18 13:11 J	-5213653.09	-5213652.95	-5213652.79	0.0282	0.0176
Mars	-18987-11-05 03:36 J	-5213270.62	-5213270.35	-5213270.07	0.0287	0.0025
Venus	-18984-08-22 09:21 J	-5212249.22	-5212249.11	-5212248.99	0.0298	0.0250
Venus	-18983-04-09 18:43 J	-5212018.93	-5212018.72	-5212018.51	0.0300	0.0047
Venus	-18983-11-26 04:48 J	-5211788.47	-5211788.30	-5211788.11	0.0302	0.0162
Mercury	-18975-06-04 02:38 J	-5209041.46	-5209041.39	-5209041.33	0.0283	0.0240
Mercury	-18975-08-31 13:26 J	-5208953.06	-5208952.94	-5208952.82	0.0282	0.0108
Mercury	-18975-11-28 00:28 J	-5208864.61	-5208864.48	-5208864.35	0.0281	0.0023
Mercury	-18974-02-24 11:16 J	-5208776.13	-5208776.03	-5208775.91	0.0280	0.0154
Venus	-18970-06-24 21:50 J	-5207194.69	-5207194.59	-5207194.46	0.0263	0.0215
Venus	-18969-02-08 16:48 J	-5206965.99	-5206965.80	-5206965.60	0.0262	0.0083
Venus	-18969-09-24 10:48 J	-5206737.26	-5206737.05	-5206736.85	0.0261	0.0047
Venus	-18968-05-11 04:04 J	-5206508.48	-5206508.33	-5206508.17	0.0260	0.0174
Earth	-18962-11-29 21:36 J	-5204114.84	-5204114.60	-5204114.35	0.0268	0.0058
Moon	-18962-11-29 22:19 J	-5204114.81	-5204114.57	-5204114.33	0.0268	0.0044 *
Mercury	-18959-12-08 09:50 J	-5203010.27	-5203010.09	-5203009.91	0.0280	0.0089
Mercury	-18958-03-07 09:36 J	-5202921.27	-5202921.10	-5202920.92	0.0281	0.0103
Venus	-18954-03-04 11:16 J	-5201463.15	-5201463.03	-5201462.88	0.0298	0.0231
Venus	-18954-10-20 20:52 J	-5201232.85	-5201232.63	-5201232.42	0.0300	0.0028
Venus	-18953-06-07 06:57 J	-5201002.37	-5201002.21	-5201002.03	0.0301	0.0180
Earth	-18948-05-30 12:00 J	-5199184.24	-5199184.00	-5199183.76	0.0295	0.0002

Moon	-18948-05-30 13:11 J	-5199184.18	-5199183.95	-5199183.72	0.0295	0.0009 *
Mercury	-18945-01-18 15:07 J	-5198220.98	-5198220.87	-5198220.76	0.0283	0.0156
Mercury	-18945-04-16 02:09 J	-5198132.54	-5198132.41	-5198132.28	0.0282	0.0023
Mercury	-18945-07-13 13:11 J	-5198044.07	-5198043.95	-5198043.83	0.0281	0.0108
Mercury	-18945-10-10 00:00 J	-5197955.56	-5197955.50	-5197955.43	0.0280	0.0238
Venus	-18940-01-03 23:45 J	-5196408.64	-5196408.51	-5196408.36	0.0264	0.0196
Venus	-18940-08-20 18:28 J	-5196179.92	-5196179.73	-5196179.52	0.0263	0.0065
Venus	-18939-04-06 12:28 J	-5195951.17	-5195950.98	-5195950.77	0.0261	0.0067
Venus	-18939-11-21 06:00 J	-5195722.38	-5195722.25	-5195722.10	0.0261	0.0194
Moon	-18933-11-23 20:09 J	-5193527.80	-5193527.66	-5193527.49	0.0266	0.0213
Earth	-18933-11-23 21:07 J	-5193527.78	-5193527.62	-5193527.45	0.0266	0.0198 *
Mercury	-18929-04-26 08:38 J	-5192278.30	-5192278.14	-5192277.97	0.0280	0.0139
Mercury	-18929-07-24 08:23 J	-5192189.33	-5192189.15	-5192188.96	0.0281	0.0054
Mercury	-18929-10-21 08:09 J	-5192100.25	-5192100.16	-5192100.07	0.0282	0.0246
Venus	-18925-09-13 19:11 J	-5190676.85	-5190676.70	-5190676.54	0.0299	0.0200
Venus	-18924-05-02 04:33 J	-5190446.52	-5190446.31	-5190446.09	0.0300	0.0007
Venus	-18924-12-18 14:52 J	-5190216.02	-5190215.88	-5190215.72	0.0302	0.0213
Mercury	-18916-06-06 17:31 J	-5187488.86	-5187488.77	-5187488.67	0.0283	0.0194
Mercury	-18916-09-03 04:33 J	-5187400.44	-5187400.31	-5187400.18	0.0282	0.0061
Mercury	-18916-11-30 15:36 J	-5187311.98	-5187311.85	-5187311.72	0.0281	0.0070
Mercury	-18915-02-27 02:23 J	-5187223.48	-5187223.40	-5187223.30	0.0280	0.0201
Mars	-18914-04-29 06:28 J	-5186797.38	-5186797.23	-5186797.06	0.0274	0.0234
Venus	-18911-07-17 02:38 J	-5185622.54	-5185622.39	-5185622.23	0.0263	0.0177
Venus	-18910-03-02 21:21 J	-5185393.81	-5185393.61	-5185393.40	0.0262	0.0046
Venus	-18910-10-17 15:21 J	-5185165.06	-5185164.86	-5185164.66	0.0261	0.0084
Venus	-18909-06-02 08:52 J	-5184936.25	-5184936.13	-5184936.01	0.0260	0.0212
Earth	-18903-12-01 01:26 J	-5182563.65	-5182563.44	-5182563.21	0.0268	0.0123
Moon	-18903-12-01 05:31 J	-5182563.50	-5182563.27	-5182563.04	0.0268	0.0110 *
Mercury	-18900-09-13 06:00 J	-5181546.37	-5181546.25	-5181546.11	0.0279	0.0201
Mercury	-18900-12-11 06:00 J	-5181457.44	-5181457.25	-5181457.06	0.0280	0.0011

Mercury	-18899-03-10 05:31 J	-5181368.41	-5181368.27	-5181368.13	0.0282	0.0182
Mars	-18898-03-31 07:40 J	-5180982.45	-5180982.18	-5180981.90	0.0286	0.0055
Venus	-18895-03-26 23:16 J	-5179890.69	-5179890.53	-5179890.35	0.0298	0.0178
Venus	-18895-11-12 08:52 J	-5179660.34	-5179660.13	-5179659.92	0.0300	0.0026
Venus	-18894-06-30 19:11 J	-5179429.83	-5179429.70	-5179429.57	0.0301	0.0234
Earth	-18889-05-31 14:09 J	-5177633.14	-5177632.91	-5177632.67	0.0294	0.0068
Moon	-18889-05-31 18:00 J	-5177632.98	-5177632.75	-5177632.51	0.0294	0.0082 *
Mercury	-18887-10-24 19:26 J	-5176756.76	-5176756.69	-5176756.62	0.0284	0.0239
Mercury	-18886-01-21 06:28 J	-5176668.35	-5176668.23	-5176668.11	0.0283	0.0106
Mercury	-18886-04-19 17:31 J	-5176579.90	-5176579.77	-5176579.64	0.0282	0.0027
Mercury	-18886-07-17 04:19 J	-5176491.42	-5176491.32	-5176491.21	0.0281	0.0157
Venus	-18881-01-27 05:02 J	-5174836.45	-5174836.29	-5174836.12	0.0264	0.0158
Venus	-18881-09-11 23:45 J	-5174607.71	-5174607.51	-5174607.30	0.0263	0.0026
Venus	-18880-04-28 17:45 J	-5174378.95	-5174378.76	-5174378.56	0.0261	0.0105
Venus	-18880-12-13 11:16 J	-5174150.11	-5174150.03	-5174149.93	0.0261	0.0232
Moon	-18874-11-25 21:50 J	-5171976.78	-5171976.59	-5171976.37	0.0266	0.0148
Earth	-18874-11-26 01:55 J	-5171976.63	-5171976.42	-5171976.19	0.0266	0.0133 *
Mercury	-18870-01-31 05:16 J	-5170814.36	-5170814.28	-5170814.19	0.0279	0.0247
Mercury	-18870-04-30 05:16 J	-5170725.47	-5170725.28	-5170725.10	0.0280	0.0056
Mercury	-18870-07-28 05:02 J	-5170636.46	-5170636.29	-5170636.13	0.0281	0.0136
Venus	-18866-10-07 08:23 J	-5169104.34	-5169104.15	-5169103.96	0.0299	0.0145
Venus	-18865-05-24 17:45 J	-5168873.97	-5168873.76	-5168873.55	0.0300	0.0061
Venus	-18864-01-10 04:04 J	-5168643.42	-5168643.33	-5168643.23	0.0302	0.0268
Moon	-18860-05-25 16:33 J	-5167046.91	-5167046.81	-5167046.70	0.0296	0.0265
Earth	-18860-05-25 20:09 J	-5167046.73	-5167046.66	-5167046.57	0.0296	0.0278 *
Mercury	-18857-03-12 22:04 J	-5166024.60	-5166024.58	-5166024.54	0.0284	0.0274
Mercury	-18857-06-09 09:07 J	-5165936.23	-5165936.12	-5165936.00	0.0283	0.0141
Mercury	-18857-09-05 20:09 J	-5165847.79	-5165847.66	-5165847.53	0.0282	0.0010
Mercury	-18857-12-03 07:11 J	-5165759.32	-5165759.20	-5165759.08	0.0281	0.0124
Mercury	-18856-03-01 18:14 J	-5165670.79	-5165670.74	-5165670.69	0.0280	0.0254

Venus	-18852-08-08 09:07 J	-5164050.29	-5164050.12	-5164049.94	0.0263	0.0137
Venus	-18851-03-25 03:50 J	-5163821.55	-5163821.34	-5163821.13	0.0262	0.0006
Venus	-18851-11-08 21:50 J	-5163592.77	-5163592.59	-5163592.40	0.0261	0.0124
Venus	-18850-06-25 15:21 J	-5163363.90	-5163363.86	-5163363.80	0.0260	0.0251
Earth	-18844-12-02 09:21 J	-5161012.27	-5161012.11	-5161011.93	0.0268	0.0196
Moon	-18844-12-02 10:33 J	-5161012.24	-5161012.06	-5161011.86	0.0268	0.0185 *
Mercury	-18841-09-16 03:36 J	-5159993.52	-5159993.35	-5159993.18	0.0280	0.0111
Mercury	-18841-12-14 03:07 J	-5159904.54	-5159904.37	-5159904.18	0.0281	0.0081
Mercury	-18840-03-13 02:38 J	-5159815.42	-5159815.39	-5159815.33	0.0282	0.0273
Venus	-18836-04-18 14:23 J	-5158318.09	-5158317.90	-5158317.70	0.0299	0.0120
Venus	-18836-12-05 00:00 J	-5158087.70	-5158087.50	-5158087.29	0.0300	0.0087
Venus	-18835-07-23 10:19 J	-5157857.11	-5157857.07	-5157857.02	0.0301	0.0293
Earth	-18830-06-02 21:50 J	-5156081.80	-5156081.59	-5156081.38	0.0294	0.0148
Moon	-18830-06-02 22:19 J	-5156081.77	-5156081.57	-5156081.36	0.0294	0.0163 *
Mercury	-18828-10-27 11:16 J	-5155204.12	-5155204.03	-5155203.93	0.0283	0.0182
Mercury	-18827-01-23 22:19 J	-5155115.70	-5155115.57	-5155115.44	0.0282	0.0049
Mercury	-18827-04-22 09:21 J	-5155027.24	-5155027.11	-5155026.99	0.0281	0.0083
Mercury	-18827-07-19 20:09 J	-5154938.73	-5154938.66	-5154938.57	0.0280	0.0215
Venus	-18823-07-04 16:33 J	-5153492.87	-5153492.81	-5153492.74	0.0265	0.0251
Venus	-18822-02-18 12:14 J	-5153264.18	-5153263.99	-5153263.80	0.0264	0.0117
Venus	-18822-10-05 06:57 J	-5153035.42	-5153035.21	-5153035.00	0.0263	0.0015
Venus	-18821-05-21 00:57 J	-5152806.63	-5152806.46	-5152806.28	0.0261	0.0146
Moon	-18815-11-27 09:36 J	-5150425.33	-5150425.10	-5150424.86	0.0267	0.0071
Earth	-18815-11-27 10:48 J	-5150425.29	-5150425.05	-5150424.80	0.0267	0.0059 *
Mercury	-18811-02-03 03:36 J	-5149261.51	-5149261.35	-5149261.19	0.0279	0.0151
Mercury	-18811-05-03 03:21 J	-5149172.55	-5149172.36	-5149172.17	0.0280	0.0040
Mercury	-18811-07-31 02:38 J	-5149083.48	-5149083.39	-5149083.27	0.0281	0.0233
Mars	-18810-08-25 16:48 J	-5148693.03	-5148692.80	-5148692.55	0.0286	0.0138
Venus	-18807-03-13 17:02 J	-5147761.84	-5147761.79	-5147761.72	0.0297	0.0284
Venus	-18807-10-30 01:26 J	-5147531.64	-5147531.44	-5147531.23	0.0299	0.0084

Venus	-18806-06-17 11:02 J	-5147301.23	-5147301.04	-5147300.84	0.0301	0.0123
Earth	-18801-05-27 06:28 J	-5145495.40	-5145495.23	-5145495.03	0.0296	0.0191
Moon	-18801-05-27 06:28 J	-5145495.40	-5145495.23	-5145495.03	0.0296	0.0177 *
Mercury	-18798-03-16 14:23 J	-5144471.98	-5144471.90	-5144471.81	0.0284	0.0213
Mercury	-18798-06-13 01:26 J	-5144383.56	-5144383.44	-5144383.31	0.0283	0.0080
Mercury	-18798-09-09 12:28 J	-5144295.11	-5144294.98	-5144294.85	0.0282	0.0053
Mercury	-18798-12-06 23:31 J	-5144206.62	-5144206.52	-5144206.42	0.0280	0.0184
Venus	-18793-01-14 21:50 J	-5142706.69	-5142706.59	-5142706.48	0.0265	0.0228
Venus	-18793-08-30 17:16 J	-5142477.97	-5142477.78	-5142477.58	0.0263	0.0095
Venus	-18792-04-16 12:00 J	-5142249.21	-5142249.00	-5142248.79	0.0262	0.0037
Venus	-18792-12-01 05:45 J	-5142020.41	-5142020.26	-5142020.09	0.0261	0.0167
Mercury	-18782-06-23 02:38 J	-5138529.51	-5138529.39	-5138529.25	0.0279	0.0200
Mercury	-18782-09-20 02:38 J	-5138440.58	-5138440.39	-5138440.20	0.0280	0.0010
Mercury	-18782-12-18 02:09 J	-5138351.55	-5138351.41	-5138351.27	0.0281	0.0183
Venus	-18778-09-24 00:43 J	-5136975.57	-5136975.47	-5136975.36	0.0297	0.0256
Venus	-18777-05-11 09:21 J	-5136745.33	-5136745.11	-5136744.90	0.0299	0.0055
Venus	-18777-12-27 18:57 J	-5136514.89	-5136514.71	-5136514.53	0.0300	0.0151
Moon	-18771-06-04 05:45 J	-5134530.36	-5134530.26	-5134530.12	0.0293	0.0255
Earth	-18771-06-04 09:36 J	-5134530.24	-5134530.10	-5134529.96	0.0293	0.0237 *
Mercury	-18769-08-02 16:48 J	-5133739.85	-5133739.80	-5133739.74	0.0284	0.0252
Mercury	-18769-10-30 03:50 J	-5133651.46	-5133651.34	-5133651.22	0.0283	0.0118
Mercury	-18768-01-26 14:52 J	-5133563.01	-5133562.88	-5133562.75	0.0282	0.0015
Mercury	-18768-04-25 01:55 J	-5133474.53	-5133474.42	-5133474.31	0.0281	0.0146
Mercury	-18768-07-22 12:43 J	-5133385.98	-5133385.97	-5133385.95	0.0280	0.0277
Mars	-18768-12-26 12:57 J	-5133229.10	-5133228.96	-5133228.81	0.0278	0.0246
Venus	-18764-07-27 01:11 J	-5131920.57	-5131920.45	-5131920.31	0.0265	0.0208
Venus	-18763-03-12 20:52 J	-5131691.83	-5131691.63	-5131691.43	0.0264	0.0073
Venus	-18763-10-27 15:36 J	-5131463.05	-5131462.85	-5131462.65	0.0262	0.0059
Venus	-18762-06-13 09:36 J	-5131234.24	-5131234.10	-5131233.95	0.0261	0.0189
Earth	-18756-11-28 22:48 J	-5128873.80	-5128873.55	-5128873.30	0.0267	0.0021



Moon	-18756-11-29 01:26 J	-5128873.68	-5128873.44	-5128873.19	0.0267	0.0011	*
Mercury	-18753-11-09 02:52 J	-5127797.47	-5127797.38	-5127797.28	0.0278	0.0239	
Mercury	-18752-02-06 02:52 J	-5127708.57	-5127708.38	-5127708.20	0.0279	0.0048	
Mercury	-18752-05-06 02:23 J	-5127619.56	-5127619.40	-5127619.23	0.0281	0.0144	
Venus	-18748-04-05 12:28 J	-5126189.12	-5126188.98	-5126188.83	0.0297	0.0221	
Venus	-18748-11-21 21:07 J	-5125958.83	-5125958.62	-5125958.40	0.0299	0.0019	
Venus	-18747-07-10 06:43 J	-5125728.38	-5125728.22	-5125728.04	0.0301	0.0190	
Earth	-18742-05-29 21:07 J	-5123943.85	-5123943.62	-5123943.39	0.0296	0.0094	
Moon	-18742-05-30 00:28 J	-5123943.71	-5123943.48	-5123943.25	0.0296	0.0078	*
Mercury	-18740-12-20 20:23 J	-5123007.67	-5123007.65	-5123007.63	0.0284	0.0279	
Mercury	-18739-03-19 07:26 J	-5122919.30	-5122919.19	-5122919.08	0.0283	0.0145	
Mercury	-18739-06-15 18:28 J	-5122830.86	-5122830.73	-5122830.60	0.0282	0.0013	
Mercury	-18739-09-12 05:16 J	-5122742.39	-5122742.28	-5122742.16	0.0281	0.0120	
Mercury	-18739-12-09 16:19 J	-5122653.87	-5122653.82	-5122653.76	0.0280	0.0251	
Venus	-18734-02-06 07:26 J	-5121134.33	-5121134.19	-5121134.04	0.0264	0.0184	
Venus	-18734-09-23 02:52 J	-5120905.58	-5120905.38	-5120905.17	0.0263	0.0050	
Venus	-18733-05-08 21:21 J	-5120676.81	-5120676.61	-5120676.41	0.0262	0.0082	
Venus	-18733-12-23 15:21 J	-5120447.98	-5120447.86	-5120447.73	0.0261	0.0211	
Moon	-18727-11-23 23:45 J	-5118286.59	-5118286.51	-5118286.40	0.0266	0.0245	
Earth	-18727-11-24 02:23 J	-5118286.52	-5118286.40	-5118286.28	0.0266	0.0231	*
Mercury	-18723-06-26 02:38 J	-5116976.56	-5116976.39	-5116976.20	0.0280	0.0091	
Mercury	-18723-09-23 02:23 J	-5116887.57	-5116887.40	-5116887.22	0.0281	0.0102	
Mars	-18721-01-20 12:00 J	-5116403.16	-5116403.00	-5116402.83	0.0287	0.0231	
Venus	-18719-10-16 22:04 J	-5115402.73	-5115402.58	-5115402.40	0.0298	0.0190	
Venus	-18718-06-04 06:57 J	-5115172.42	-5115172.21	-5115171.99	0.0299	0.0016	
Venus	-18717-01-20 16:48 J	-5114941.94	-5114941.80	-5114941.65	0.0301	0.0222	
Mercury	-18710-08-06 10:04 J	-5112187.18	-5112187.08	-5112186.98	0.0283	0.0180	
Mercury	-18710-11-02 21:07 J	-5112098.75	-5112098.62	-5112098.49	0.0282	0.0047	
Mercury	-18709-01-30 08:09 J	-5112010.29	-5112010.16	-5112010.04	0.0281	0.0086	
Mercury	-18709-04-27 18:57 J	-5111921.79	-5111921.71	-5111921.62	0.0280	0.0216	

Venus	-18705-08-18 11:31 J	-5110348.19	-5110348.02	-5110347.86	0.0265	0.0162
Venus	-18704-04-04 06:43 J	-5110119.43	-5110119.22	-5110119.01	0.0263	0.0028
Venus	-18704-11-19 01:11 J	-5109890.64	-5109890.45	-5109890.25	0.0262	0.0105
Venus	-18703-07-05 19:26 J	-5109661.78	-5109661.69	-5109661.59	0.0261	0.0234
Earth	-18697-11-30 12:28 J	-5107322.21	-5107321.98	-5107321.75	0.0268	0.0104
Moon	-18697-11-30 15:50 J	-5107322.07	-5107321.84	-5107321.60	0.0268	0.0092 *
Mercury	-18694-11-13 03:07 J	-5106244.54	-5106244.37	-5106244.20	0.0279	0.0129
Mercury	-18693-02-10 02:52 J	-5106155.56	-5106155.38	-5106155.20	0.0280	0.0062
Mercury	-18693-05-09 02:23 J	-5106066.47	-5106066.40	-5106066.32	0.0281	0.0254
Venus	-18689-04-28 10:19 J	-5104616.25	-5104616.07	-5104615.89	0.0298	0.0153
Venus	-18689-12-14 19:11 J	-5104385.90	-5104385.70	-5104385.48	0.0300	0.0053
Venus	-18688-08-02 05:02 J	-5104155.39	-5104155.29	-5104155.18	0.0301	0.0260
Earth	-18683-05-31 14:38 J	-5102392.13	-5102391.89	-5102391.65	0.0295	0.0011
Moon	-18683-05-31 17:16 J	-5102392.02	-5102391.78	-5102391.53	0.0295	0.0024 *
Mercury	-18681-12-23 13:40 J	-5101455.02	-5101454.93	-5101454.84	0.0284	0.0206
Mercury	-18680-03-22 00:43 J	-5101366.60	-5101366.47	-5101366.35	0.0283	0.0073
Mercury	-18680-06-18 11:31 J	-5101278.14	-5101278.02	-5101277.89	0.0282	0.0061
Mercury	-18680-09-14 22:33 J	-5101189.65	-5101189.56	-5101189.46	0.0281	0.0191
Mars	-18679-05-23 14:23 J	-5100939.16	-5100938.90	-5100938.62	0.0278	0.0141
Venus	-18675-02-28 17:45 J	-5099561.93	-5099561.76	-5099561.57	0.0264	0.0139
Venus	-18675-10-15 13:11 J	-5099333.16	-5099332.95	-5099332.74	0.0263	0.0004
Venus	-18674-06-01 07:40 J	-5099104.36	-5099104.18	-5099104.00	0.0262	0.0127
Venus	-18673-01-16 01:26 J	-5098875.46	-5098875.44	-5098875.39	0.0261	0.0256
Moon	-18668-11-25 12:28 J	-5096735.16	-5096734.98	-5096734.78	0.0266	0.0164
Earth	-18668-11-25 16:19 J	-5096735.03	-5096734.82	-5096734.61	0.0266	0.0149 *
Mercury	-18664-04-01 03:21 J	-5095512.51	-5095512.36	-5095512.21	0.0279	0.0169
Mercury	-18664-06-29 03:07 J	-5095423.56	-5095423.37	-5095423.18	0.0280	0.0022
Mercury	-18664-09-26 02:38 J	-5095334.50	-5095334.39	-5095334.26	0.0281	0.0214
Mars	-18663-04-29 03:21 J	-5095119.48	-5095119.36	-5095119.23	0.0284	0.0251
Venus	-18660-11-08 20:52 J	-5093829.82	-5093829.63	-5093829.43	0.0298	0.0120

Venus	-18659-06-27 06:00 J	-5093599.46	-5093599.25	-5093599.05	0.0300	0.0086
Venus	-18658-02-12 15:36 J	-5093368.89	-5093368.85	-5093368.79	0.0301	0.0293
Mercury	-18651-05-12 16:33 J	-5090722.88	-5090722.81	-5090722.74	0.0284	0.0239
Mercury	-18651-08-09 03:36 J	-5090634.47	-5090634.35	-5090634.23	0.0283	0.0106
Mercury	-18651-11-05 14:23 J	-5090546.02	-5090545.90	-5090545.77	0.0282	0.0029
Mercury	-18650-02-02 01:26 J	-5090457.54	-5090457.44	-5090457.33	0.0280	0.0158
Venus	-18646-01-25 01:55 J	-5089004.47	-5089004.42	-5089004.35	0.0266	0.0252
Venus	-18646-09-10 22:04 J	-5088775.76	-5088775.58	-5088775.39	0.0264	0.0116
Venus	-18645-04-26 17:16 J	-5088546.99	-5088546.78	-5088546.57	0.0263	0.0018
Venus	-18645-12-11 11:31 J	-5088318.19	-5088318.02	-5088317.84	0.0262	0.0150
Moon	-18638-12-03 02:09 J	-5085770.61	-5085770.41	-5085770.22	0.0268	0.0176
Earth	-18638-12-03 01:55 J	-5085770.59	-5085770.42	-5085770.23	0.0268	0.0187 *
Mercury	-18635-08-19 03:21 J	-5084780.48	-5084780.36	-5084780.24	0.0279	0.0211
Mercury	-18635-11-16 03:07 J	-5084691.56	-5084691.37	-5084691.18	0.0280	0.0020
Mercury	-18634-02-13 02:38 J	-5084602.53	-5084602.39	-5084602.23	0.0281	0.0173
Venus	-18631-10-04 00:43 J	-5083273.53	-5083273.47	-5083273.41	0.0296	0.0284
Venus	-18630-05-22 08:38 J	-5083043.34	-5083043.14	-5083042.93	0.0298	0.0084
Venus	-18629-01-07 18:00 J	-5082812.94	-5082812.75	-5082812.55	0.0300	0.0123
Moon	-18624-06-02 09:07 J	-5080840.34	-5080840.12	-5080839.89	0.0294	0.0131
Earth	-18624-06-02 10:19 J	-5080840.29	-5080840.07	-5080839.85	0.0294	0.0117 *
Mercury	-18622-09-29 20:09 J	-5079990.70	-5079990.66	-5079990.61	0.0284	0.0264
Mercury	-18622-12-27 07:11 J	-5079902.31	-5079902.20	-5079902.08	0.0283	0.0130
Mercury	-18621-03-24 18:14 J	-5079813.87	-5079813.74	-5079813.61	0.0282	0.0004
Mercury	-18621-06-21 05:16 J	-5079725.40	-5079725.28	-5079725.17	0.0281	0.0134
Mercury	-18621-09-17 16:04 J	-5079636.86	-5079636.83	-5079636.79	0.0280	0.0265
Venus	-18617-08-06 08:38 J	-5078218.24	-5078218.14	-5078218.03	0.0265	0.0227
Venus	-18616-03-23 04:48 J	-5077989.50	-5077989.30	-5077989.11	0.0264	0.0092
Venus	-18616-11-06 23:45 J	-5077760.72	-5077760.51	-5077760.31	0.0262	0.0042
Venus	-18615-06-23 18:00 J	-5077531.90	-5077531.75	-5077531.59	0.0261	0.0173
Moon	-18609-11-27 05:16 J	-5075183.51	-5075183.28	-5075183.05	0.0267	0.0082

Earth	-18609-11-27 05:16 J	-5075183.51	-5075183.28	-5075183.03	0.0267	0.0068 *
Mercury	-18605-01-06 03:36 J	-5074048.43	-5074048.35	-5074048.27	0.0279	0.0251
Mercury	-18605-04-04 03:21 J	-5073959.54	-5073959.36	-5073959.17	0.0280	0.0060
Mercury	-18605-07-02 03:07 J	-5073870.53	-5073870.37	-5073870.20	0.0281	0.0133
Venus	-18601-04-15 11:31 J	-5072487.12	-5072487.02	-5072486.90	0.0297	0.0252
Venus	-18601-12-01 19:55 J	-5072256.88	-5072256.67	-5072256.46	0.0299	0.0050
Venus	-18600-07-20 05:16 J	-5072026.46	-5072026.28	-5072026.10	0.0300	0.0158
Earth	-18595-05-27 17:31 J	-5070253.92	-5070253.77	-5070253.60	0.0295	0.0220
Moon	-18595-05-27 18:43 J	-5070253.88	-5070253.72	-5070253.55	0.0295	0.0207 *
Mercury	-18592-05-15 10:04 J	-5069170.18	-5069170.08	-5069169.97	0.0283	0.0163
Mercury	-18592-08-11 21:07 J	-5069081.75	-5069081.62	-5069081.49	0.0282	0.0030
Mercury	-18592-11-08 08:09 J	-5068993.28	-5068993.16	-5068993.04	0.0281	0.0101
Mercury	-18591-02-04 18:57 J	-5068904.78	-5068904.71	-5068904.63	0.0280	0.0232
Mars	-18591-10-18 10:48 J	-5068649.36	-5068649.05	-5068648.73	0.0277	0.0043
Venus	-18587-02-16 12:57 J	-5067432.09	-5067431.96	-5067431.83	0.0265	0.0206
Venus	-18587-10-03 08:38 J	-5067203.34	-5067203.14	-5067202.94	0.0264	0.0071
Venus	-18586-05-20 03:21 J	-5066974.56	-5066974.36	-5066974.15	0.0263	0.0063
Venus	-18585-01-03 21:36 J	-5066745.74	-5066745.60	-5066745.46	0.0262	0.0194
Moon	-18579-12-04 10:19 J	-5064219.12	-5064219.07	-5064218.98	0.0269	0.0257
Earth	-18579-12-04 14:09 J	-5064218.92	-5064218.91	-5064218.88	0.0269	0.0268
Mercury	-18576-08-22 02:38 J	-5063227.56	-5063227.39	-5063227.21	0.0279	0.0107
Mercury	-18576-11-19 02:38 J	-5063138.57	-5063138.39	-5063138.21	0.0280	0.0086
Mercury	-18575-02-16 01:55 J	-5063049.43	-5063049.42	-5063049.38	0.0281	0.0279
Mars	-18575-09-23 23:45 J	-5062829.73	-5062829.51	-5062829.28	0.0284	0.0158
Venus	-18572-10-26 21:36 J	-5061700.74	-5061700.60	-5061700.45	0.0297	0.0220
Venus	-18571-06-14 06:14 J	-5061470.46	-5061470.24	-5061470.03	0.0299	0.0017
Venus	-18570-01-30 15:50 J	-5061240.00	-5061239.84	-5061239.68	0.0300	0.0192
Moon	-18565-06-04 00:43 J	-5059288.60	-5059288.47	-5059288.32	0.0294	0.0237
Earth	-18565-06-04 04:33 J	-5059288.47	-5059288.31	-5059288.15	0.0294	0.0221 *
Mercury	-18563-10-02 13:40 J	-5058438.02	-5058437.93	-5058437.83	0.0284	0.0190

Mercury	-18563-12-30 00:43 J	-5058349.59	-5058349.47	-5058349.34	0.0283	0.0056
Mercury	-18562-03-28 11:45 J	-5058261.14	-5058261.01	-5058260.89	0.0281	0.0076
Mercury	-18562-06-24 22:33 J	-5058172.64	-5058172.56	-5058172.47	0.0280	0.0207
Venus	-18558-08-29 19:26 J	-5056645.84	-5056645.69	-5056645.54	0.0265	0.0182
Venus	-18557-04-14 14:52 J	-5056417.09	-5056416.88	-5056416.68	0.0263	0.0047
Venus	-18557-11-29 09:21 J	-5056188.30	-5056188.11	-5056187.91	0.0262	0.0086
Venus	-18556-07-16 03:36 J	-5055959.46	-5055959.35	-5055959.22	0.0261	0.0216
Earth	-18550-11-29 16:19 J	-5053632.07	-5053631.82	-5053631.57	0.0267	0.0010
Moon	-18550-11-29 19:55 J	-5053631.92	-5053631.67	-5053631.42	0.0267	0.0005 *
Mercury	-18546-01-09 02:38 J	-5052495.55	-5052495.39	-5052495.23	0.0279	0.0150
Mercury	-18546-04-08 02:23 J	-5052406.58	-5052406.40	-5052406.21	0.0280	0.0043
Mercury	-18546-07-06 02:09 J	-5052317.51	-5052317.41	-5052317.31	0.0282	0.0236
Venus	-18542-05-09 08:09 J	-5050914.32	-5050914.16	-5050913.99	0.0298	0.0187
Venus	-18542-12-25 17:02 J	-5050684.01	-5050683.79	-5050683.58	0.0299	0.0018
Venus	-18541-08-12 02:23 J	-5050453.53	-5050453.40	-5050453.25	0.0301	0.0227
Earth	-18536-05-29 12:28 J	-5048702.20	-5048701.98	-5048701.76	0.0295	0.0114
Moon	-18536-05-29 16:04 J	-5048702.05	-5048701.83	-5048701.59	0.0295	0.0100 *
Mercury	-18533-02-19 16:48 J	-5047705.88	-5047705.80	-5047705.72	0.0283	0.0222
Mercury	-18533-05-18 03:36 J	-5047617.47	-5047617.35	-5047617.22	0.0282	0.0089
Mercury	-18533-08-14 14:38 J	-5047529.02	-5047528.89	-5047528.76	0.0281	0.0043
Mercury	-18533-11-11 01:26 J	-5047440.54	-5047440.44	-5047440.33	0.0280	0.0174
Venus	-18528-03-10 23:02 J	-5045859.70	-5045859.54	-5045859.37	0.0265	0.0162
Venus	-18528-10-25 18:28 J	-5045630.94	-5045630.73	-5045630.52	0.0263	0.0027
Venus	-18527-06-11 12:57 J	-5045402.15	-5045401.96	-5045401.77	0.0262	0.0107
Venus	-18526-01-26 06:57 J	-5045173.30	-5045173.21	-5045173.12	0.0261	0.0237
Earth	-18521-11-23 14:09 J	-5043044.97	-5043044.91	-5043044.83	0.0266	0.0255
Mercury	-18517-05-28 01:11 J	-5041763.58	-5041763.45	-5041763.32	0.0279	0.0203
Mercury	-18517-08-25 00:57 J	-5041674.64	-5041674.46	-5041674.27	0.0280	0.0013
Mercury	-18517-11-22 00:43 J	-5041585.61	-5041585.47	-5041585.32	0.0281	0.0182
Venus	-18513-11-18 16:48 J	-5040127.98	-5040127.80	-5040127.62	0.0298	0.0158

Venus	-18512-07-07 01:40 J	-5039897.64	-5039897.43	-5039897.22	0.0299	0.0048
Venus	-18511-02-22 11:16 J	-5039667.12	-5039667.03	-5039666.91	0.0301	0.0258
Mercury	-18504-07-08 19:55 J	-5036973.72	-5036973.67	-5036973.61	0.0284	0.0252
Mercury	-18504-10-05 06:57 J	-5036885.33	-5036885.21	-5036885.09	0.0283	0.0118
Mercury	-18503-01-01 18:00 J	-5036796.88	-5036796.75	-5036796.62	0.0282	0.0015
Mercury	-18503-03-31 04:48 J	-5036708.41	-5036708.30	-5036708.18	0.0281	0.0147
Mercury	-18503-06-27 15:50 J	-5036619.86	-5036619.84	-5036619.82	0.0280	0.0276
Mars	-18502-03-15 12:43 J	-5036359.28	-5036358.97	-5036358.66	0.0277	0.0059
Venus	-18499-09-21 04:33 J	-5035073.48	-5035073.31	-5035073.12	0.0264	0.0139
Venus	-18498-05-08 00:00 J	-5034844.71	-5034844.50	-5034844.29	0.0263	0.0006
Venus	-18498-12-22 18:14 J	-5034615.92	-5034615.74	-5034615.56	0.0262	0.0128
Venus	-18497-08-07 12:00 J	-5034387.02	-5034387.00	-5034386.96	0.0261	0.0258
Earth	-18491-12-01 00:00 J	-5032080.73	-5032080.50	-5032080.26	0.0267	0.0081
Moon	-18491-12-01 02:09 J	-5032080.66	-5032080.41	-5032080.16	0.0267	0.0070 *
Mercury	-18488-10-15 00:28 J	-5031031.55	-5031031.48	-5031031.39	0.0279	0.0249
Mercury	-18487-01-12 00:28 J	-5030942.66	-5030942.48	-5030942.29	0.0280	0.0057
Mercury	-18487-04-11 00:14 J	-5030853.65	-5030853.49	-5030853.32	0.0281	0.0135
Mars	-18486-02-18 10:48 J	-5030540.31	-5030540.05	-5030539.79	0.0285	0.0081
Venus	-18483-06-01 02:09 J	-5029341.60	-5029341.41	-5029341.21	0.0298	0.0126
Venus	-18482-01-17 11:16 J	-5029111.24	-5029111.03	-5029110.82	0.0300	0.0082
Venus	-18482-09-04 21:07 J	-5028880.67	-5028880.62	-5028880.56	0.0301	0.0291
Earth	-18477-05-31 03:21 J	-5027150.60	-5027150.36	-5027150.12	0.0295	0.0017
Moon	-18477-05-31 04:33 J	-5027150.56	-5027150.31	-5027150.06	0.0295	0.0001 *
Mercury	-18474-02-22 09:36 J	-5026153.20	-5026153.10	-5026152.99	0.0283	0.0153
Mercury	-18474-05-21 20:38 J	-5026064.77	-5026064.64	-5026064.51	0.0282	0.0020
Mercury	-18474-08-18 07:40 J	-5025976.30	-5025976.18	-5025976.06	0.0281	0.0111
Mercury	-18474-11-14 18:28 J	-5025887.79	-5025887.73	-5025887.66	0.0279	0.0241
Venus	-18470-08-17 12:00 J	-5024516.05	-5024516.00	-5024515.95	0.0265	0.0255
Venus	-18469-04-02 07:40 J	-5024287.36	-5024287.18	-5024286.99	0.0264	0.0119
Venus	-18469-11-17 02:38 J	-5024058.59	-5024058.39	-5024058.18	0.0263	0.0017

Venus	-18468-07-03 21:07 J	-5023829.79	-5023829.62	-5023829.45	0.0261	0.0148
Moon	-18462-11-25 17:16 J	-5021493.92	-5021493.78	-5021493.61	0.0266	0.0203
Earth	-18462-11-25 19:26 J	-5021493.85	-5021493.69	-5021493.51	0.0266	0.0190 *
Mercury	-18458-05-31 21:50 J	-5020210.75	-5020210.59	-5020210.41	0.0279	0.0119
Mercury	-18458-08-28 21:50 J	-5020121.77	-5020121.59	-5020121.41	0.0280	0.0074
Mercury	-18458-11-25 21:36 J	-5020032.66	-5020032.60	-5020032.54	0.0281	0.0267
Venus	-18454-12-12 08:23 J	-5018555.35	-5018555.15	-5018554.94	0.0298	0.0100
Venus	-18453-07-29 17:45 J	-5018324.96	-5018324.76	-5018324.56	0.0300	0.0108
Mercury	-18445-07-11 12:43 J	-5015421.06	-5015420.97	-5015420.87	0.0284	0.0186
Mercury	-18445-10-07 23:45 J	-5015332.64	-5015332.51	-5015332.38	0.0283	0.0052
Mercury	-18444-01-04 10:48 J	-5015244.18	-5015244.05	-5015243.93	0.0281	0.0081
Mercury	-18444-04-02 21:36 J	-5015155.68	-5015155.60	-5015155.51	0.0280	0.0211
Venus	-18440-02-26 17:02 J	-5013729.88	-5013729.79	-5013729.69	0.0265	0.0233
Venus	-18440-10-13 12:43 J	-5013501.16	-5013500.97	-5013500.77	0.0264	0.0097
Venus	-18439-05-30 07:40 J	-5013272.39	-5013272.18	-5013271.98	0.0262	0.0037
Venus	-18438-01-14 01:40 J	-5013043.59	-5013043.43	-5013043.27	0.0261	0.0168
Moon	-18432-12-02 01:11 J	-5010529.67	-5010529.45	-5010529.23	0.0268	0.0137
Earth	-18432-12-02 03:36 J	-5010529.55	-5010529.35	-5010529.13	0.0268	0.0145 *
Mercury	-18429-10-17 20:52 J	-5009478.78	-5009478.63	-5009478.48	0.0279	0.0170
Mercury	-18428-01-14 20:38 J	-5009389.83	-5009389.64	-5009389.45	0.0280	0.0023
Mercury	-18428-04-13 20:23 J	-5009300.77	-5009300.65	-5009300.53	0.0281	0.0216
Venus	-18425-11-05 08:38 J	-5007999.22	-5007999.14	-5007999.05	0.0297	0.0272
Venus	-18424-06-23 16:48 J	-5007769.00	-5007768.80	-5007768.59	0.0299	0.0069
Venus	-18423-02-09 02:09 J	-5007538.59	-5007538.41	-5007538.21	0.0301	0.0141
Moon	-18418-06-02 11:02 J	-5005599.27	-5005599.04	-5005598.80	0.0295	0.0087
Earth	-18418-06-02 14:09 J	-5005599.14	-5005598.91	-5005598.67	0.0295	0.0071 *
Mercury	-18416-11-28 15:21 J	-5004688.94	-5004688.86	-5004688.79	0.0283	0.0223
Mercury	-18415-02-25 02:09 J	-5004600.53	-5004600.41	-5004600.28	0.0282	0.0090
Mercury	-18415-05-24 13:11 J	-5004512.08	-5004511.95	-5004511.82	0.0281	0.0043
Mercury	-18415-08-21 00:00 J	-5004423.60	-5004423.50	-5004423.39	0.0280	0.0174

Mars	-18414-08-09 15:36 J	-5004070.11	-5004069.85	-5004069.56	0.0276	0.0132
Venus	-18411-09-08 19:26 J	-5002943.80	-5002943.69	-5002943.56	0.0265	0.0215
Venus	-18410-04-25 14:52 J	-5002715.07	-5002714.88	-5002714.67	0.0263	0.0079
Venus	-18410-12-10 09:36 J	-5002486.31	-5002486.10	-5002485.90	0.0262	0.0055
Venus	-18409-07-26 03:36 J	-5002257.50	-5002257.35	-5002257.20	0.0261	0.0186
Earth	-18403-11-26 21:36 J	-4999942.81	-4999942.60	-4999942.38	0.0266	0.0130
Moon	-18403-11-26 23:45 J	-4999942.71	-4999942.51	-4999942.30	0.0266	0.0141 *
Mercury	-18399-03-06 17:31 J	-4998746.86	-4998746.77	-4998746.67	0.0279	0.0237
Mercury	-18399-06-03 17:31 J	-4998657.96	-4998657.77	-4998657.58	0.0280	0.0045
Mercury	-18399-08-31 17:16 J	-4998568.94	-4998568.78	-4998568.62	0.0281	0.0148
Mars	-18398-07-14 21:36 J	-4998251.87	-4998251.60	-4998251.32	0.0285	0.0045
Venus	-18395-05-18 12:28 J	-4997213.08	-4997212.98	-4997212.85	0.0297	0.0251
Venus	-18394-01-03 21:07 J	-4996982.83	-4996982.62	-4996982.40	0.0299	0.0047
Venus	-18394-08-22 06:43 J	-4996752.39	-4996752.22	-4996752.04	0.0300	0.0163
Earth	-18389-05-26 15:36 J	-4995012.91	-4995012.85	-4995012.79	0.0297	0.0286
Moon	-18389-05-26 18:28 J	-4995012.82	-4995012.73	-4995012.63	0.0297	0.0271 *
Mercury	-18386-04-17 17:45 J	-4993956.80	-4993956.76	-4993956.71	0.0285	0.0261
Mercury	-18386-07-15 04:48 J	-4993868.41	-4993868.30	-4993868.18	0.0283	0.0127
Mercury	-18386-10-11 15:50 J	-4993779.97	-4993779.84	-4993779.71	0.0282	0.0008
Mercury	-18385-01-08 02:38 J	-4993691.50	-4993691.39	-4993691.27	0.0281	0.0138
Mercury	-18385-04-05 13:40 J	-4993602.96	-4993602.93	-4993602.90	0.0280	0.0268
Venus	-18381-03-20 23:31 J	-4992157.66	-4992157.52	-4992157.38	0.0265	0.0194
Venus	-18381-11-04 18:57 J	-4991928.92	-4991928.71	-4991928.51	0.0263	0.0058
Venus	-18380-06-21 13:26 J	-4991700.14	-4991699.94	-4991699.74	0.0262	0.0075
Venus	-18379-02-05 07:11 J	-4991471.32	-4991471.20	-4991471.07	0.0261	0.0206
Moon	-18373-12-03 00:43 J	-4988978.63	-4988978.47	-4988978.29	0.0268	0.0196
Earth	-18373-12-03 03:50 J	-4988978.49	-4988978.34	-4988978.16	0.0268	0.0202 *
Mercury	-18370-10-21 15:36 J	-4987926.03	-4987925.85	-4987925.67	0.0279	0.0101
Mercury	-18369-01-18 15:21 J	-4987837.04	-4987836.86	-4987836.68	0.0280	0.0091
Venus	-18366-11-28 19:11 J	-4986426.83	-4986426.70	-4986426.55	0.0297	0.0223



Venus	-18365-07-16 03:50 J	-4986196.55	-4986196.34	-4986196.12	0.0299	0.0018
Venus	-18364-03-03 13:40 J	-4985966.09	-4985965.93	-4985965.77	0.0301	0.0193
Moon	-18359-06-03 16:48 J	-4984047.98	-4984047.80	-4984047.59	0.0295	0.0164
Earth	-18359-06-03 19:26 J	-4984047.88	-4984047.69	-4984047.47	0.0295	0.0148 *
Mercury	-18357-12-01 06:57 J	-4983136.31	-4983136.21	-4983136.10	0.0283	0.0167
Mercury	-18356-02-27 18:00 J	-4983047.88	-4983047.75	-4983047.62	0.0282	0.0034
Mercury	-18356-05-27 05:02 J	-4982959.41	-4982959.29	-4982959.17	0.0281	0.0098
Mercury	-18356-08-23 15:50 J	-4982870.91	-4982870.84	-4982870.76	0.0280	0.0229
Venus	-18352-10-01 01:26 J	-4981371.59	-4981371.44	-4981371.28	0.0264	0.0176
Venus	-18351-05-17 20:38 J	-4981142.85	-4981142.64	-4981142.43	0.0263	0.0041
Venus	-18350-01-01 14:52 J	-4980914.08	-4980913.88	-4980913.68	0.0262	0.0092
Venus	-18350-08-18 08:23 J	-4980685.25	-4980685.15	-4980685.04	0.0261	0.0223
Earth	-18344-11-27 20:09 J	-4978391.89	-4978391.66	-4978391.41	0.0266	0.0077
Moon	-18344-11-27 23:45 J	-4978391.74	-4978391.51	-4978391.26	0.0266	0.0088 *
Mercury	-18340-03-09 11:31 J	-4977194.16	-4977194.02	-4977193.87	0.0279	0.0174
Mercury	-18340-06-06 11:31 J	-4977105.21	-4977105.02	-4977104.83	0.0280	0.0018
Mercury	-18340-09-03 11:02 J	-4977016.16	-4977016.04	-4977015.91	0.0281	0.0211
Venus	-18336-06-09 21:36 J	-4975640.75	-4975640.60	-4975640.44	0.0297	0.0204
Venus	-18335-01-26 06:28 J	-4975410.44	-4975410.23	-4975410.01	0.0299	0.0003
Venus	-18335-09-13 16:19 J	-4975179.97	-4975179.82	-4975179.67	0.0301	0.0213
Earth	-18330-05-28 18:14 J	-4973461.90	-4973461.74	-4973461.57	0.0297	0.0215
Moon	-18330-05-28 21:07 J	-4973461.80	-4973461.62	-4973461.44	0.0297	0.0199 *
Mercury	-18327-04-20 09:21 J	-4972404.20	-4972404.11	-4972404.03	0.0284	0.0209
Mercury	-18327-07-17 20:23 J	-4972315.78	-4972315.65	-4972315.53	0.0283	0.0075
Mercury	-18327-10-14 07:11 J	-4972227.32	-4972227.20	-4972227.07	0.0282	0.0059
Mercury	-18326-01-10 18:14 J	-4972138.83	-4972138.74	-4972138.64	0.0281	0.0190
Mars	-18325-01-03 07:40 J	-4971781.41	-4971781.18	-4971780.95	0.0276	0.0187
Venus	-18322-04-13 04:33 J	-4970585.48	-4970585.31	-4970585.15	0.0264	0.0157
Venus	-18322-11-27 23:31 J	-4970356.73	-4970356.52	-4970356.31	0.0263	0.0021
Venus	-18321-07-13 17:45 J	-4970127.94	-4970127.76	-4970127.57	0.0261	0.0112

Venus	-18320-02-27 11:16 J	-4969899.10	-4969899.03	-4969898.95	0.0260	0.0241
Earth	-18314-12-05 01:55 J	-4967427.49	-4967427.42	-4967427.34	0.0267	0.0254
Moon	-18314-12-05 02:38 J	-4967427.47	-4967427.39	-4967427.31	0.0267	0.0252 *
Mercury	-18311-07-27 09:21 J	-4966462.21	-4966462.11	-4966462.00	0.0278	0.0232
Mercury	-18311-10-24 09:21 J	-4966373.30	-4966373.11	-4966372.92	0.0279	0.0040
Mercury	-18310-01-21 08:52 J	-4966284.28	-4966284.13	-4966283.96	0.0281	0.0153
Mars	-18310-12-08 00:43 J	-4965963.75	-4965963.47	-4965963.20	0.0285	0.0017
Venus	-18307-12-21 03:21 J	-4964854.53	-4964854.36	-4964854.18	0.0298	0.0177
Venus	-18306-08-08 12:14 J	-4964624.20	-4964623.99	-4964623.77	0.0300	0.0031
Venus	-18305-03-25 22:19 J	-4964393.69	-4964393.57	-4964393.44	0.0301	0.0242
Earth	-18300-06-04 20:38 J	-4962496.79	-4962496.64	-4962496.46	0.0295	0.0214
Moon	-18300-06-04 22:04 J	-4962496.72	-4962496.58	-4962496.43	0.0295	0.0229 *
Mercury	-18298-09-07 11:16 J	-4961672.09	-4961672.03	-4961671.97	0.0284	0.0252
Mercury	-18298-12-04 22:19 J	-4961583.69	-4961583.57	-4961583.45	0.0283	0.0118
Mercury	-18297-03-02 09:21 J	-4961495.24	-4961495.11	-4961494.98	0.0282	0.0016
Mercury	-18297-05-29 20:09 J	-4961406.77	-4961406.66	-4961406.55	0.0281	0.0147
Mercury	-18297-08-26 07:11 J	-4961318.21	-4961318.20	-4961318.19	0.0280	0.0277
Venus	-18293-10-23 05:31 J	-4959799.44	-4959799.27	-4959799.09	0.0264	0.0140
Venus	-18292-06-09 00:43 J	-4959570.68	-4959570.47	-4959570.26	0.0262	0.0007
Venus	-18291-01-23 18:28 J	-4959341.90	-4959341.73	-4959341.54	0.0261	0.0128
Venus	-18291-09-09 11:45 J	-4959113.03	-4959113.01	-4959112.97	0.0260	0.0257
Moon	-18285-11-28 16:33 J	-4956841.06	-4956840.81	-4956840.55	0.0266	0.0034
Earth	-18285-11-28 17:16 J	-4956841.03	-4956840.78	-4956840.53	0.0266	0.0027 *
Mercury	-18281-03-12 04:48 J	-4955641.47	-4955641.30	-4955641.13	0.0279	0.0118
Mercury	-18281-06-09 04:33 J	-4955552.49	-4955552.31	-4955552.13	0.0280	0.0074
Mercury	-18281-09-06 04:19 J	-4955463.38	-4955463.32	-4955463.26	0.0281	0.0266
Venus	-18277-07-02 04:04 J	-4954068.51	-4954068.33	-4954068.15	0.0298	0.0160
Venus	-18276-02-17 13:11 J	-4953838.17	-4953837.95	-4953837.74	0.0299	0.0048
Venus	-18276-10-05 23:16 J	-4953607.64	-4953607.53	-4953607.43	0.0301	0.0259
Moon	-18271-05-29 14:52 J	-4951911.10	-4951910.88	-4951910.66	0.0297	0.0138

Earth	-18271-05-29 16:33 J	-4951911.01	-4951910.81	-4951910.61	0.0297	0.0154 *
Mercury	-18268-04-23 00:14 J	-4950851.60	-4950851.49	-4950851.39	0.0284	0.0165
Mercury	-18268-07-20 11:02 J	-4950763.16	-4950763.04	-4950762.91	0.0283	0.0032
Mercury	-18268-10-16 22:04 J	-4950674.70	-4950674.58	-4950674.46	0.0282	0.0103
Mercury	-18267-01-13 09:07 J	-4950586.19	-4950586.12	-4950586.05	0.0281	0.0235
Venus	-18264-09-18 11:45 J	-4949242.04	-4949242.01	-4949241.95	0.0266	0.0259
Venus	-18263-05-05 07:55 J	-4949013.35	-4949013.17	-4949012.98	0.0264	0.0121
Venus	-18263-12-20 02:52 J	-4948784.59	-4948784.38	-4948784.17	0.0263	0.0014
Venus	-18262-08-05 20:52 J	-4948555.80	-4948555.63	-4948555.46	0.0261	0.0146
Mercury	-18252-07-30 02:23 J	-4944909.55	-4944909.40	-4944909.25	0.0278	0.0177
Mercury	-18252-10-27 02:09 J	-4944820.60	-4944820.41	-4944820.22	0.0279	0.0014
Mercury	-18251-01-24 01:55 J	-4944731.55	-4944731.42	-4944731.29	0.0281	0.0206
Venus	-18247-01-12 08:52 J	-4943282.32	-4943282.13	-4943281.94	0.0298	0.0135
Venus	-18247-08-30 18:00 J	-4943051.96	-4943051.75	-4943051.54	0.0300	0.0075
Venus	-18246-04-18 04:04 J	-4942821.39	-4942821.33	-4942821.26	0.0302	0.0287
Earth	-18241-06-05 18:14 J	-4940945.82	-4940945.74	-4940945.64	0.0295	0.0272
Moon	-18241-06-05 21:50 J	-4940945.63	-4940945.59	-4940945.54	0.0295	0.0288
Mercury	-18239-09-10 01:55 J	-4940119.50	-4940119.42	-4940119.33	0.0284	0.0209
Mercury	-18239-12-07 12:57 J	-4940031.08	-4940030.96	-4940030.83	0.0283	0.0075
Mercury	-18238-03-06 00:00 J	-4939942.63	-4939942.50	-4939942.37	0.0282	0.0059
Mercury	-18238-06-02 11:02 J	-4939854.14	-4939854.04	-4939853.95	0.0281	0.0191
Mars	-18237-05-28 03:21 J	-4939493.54	-4939493.36	-4939493.16	0.0276	0.0219
Jupiter	-18236-06-12 04:48 J	-4939113.41	-4939113.30	-4939113.14	0.0272	0.0259
Venus	-18234-03-31 12:28 J	-4938456.05	-4938455.98	-4938455.88	0.0265	0.0243
Venus	-18234-11-15 08:23 J	-4938227.33	-4938227.15	-4938226.95	0.0264	0.0106
Venus	-18233-07-01 03:36 J	-4937998.56	-4937998.35	-4937998.14	0.0262	0.0030
Venus	-18232-02-14 21:21 J	-4937769.77	-4937769.61	-4937769.44	0.0261	0.0162
Moon	-18226-11-30 08:52 J	-4935290.37	-4935290.13	-4935289.87	0.0266	0.0019
Earth	-18226-11-30 12:57 J	-4935290.21	-4935289.96	-4935289.71	0.0266	0.0022 *
Mercury	-18223-12-16 21:36 J	-4934177.67	-4934177.60	-4934177.52	0.0278	0.0255

Mercury	-18222-03-15 21:36 J	-4934088.79	-4934088.60	-4934088.42	0.0279	0.0065
Mercury	-18222-06-12 21:07 J	-4933999.78	-4933999.62	-4933999.45	0.0280	0.0127
Mars	-18221-05-01 08:52 J	-4933676.41	-4933676.13	-4933675.86	0.0284	0.0023
Venus	-18218-07-25 09:21 J	-4932496.30	-4932496.11	-4932495.91	0.0298	0.0118
Venus	-18217-03-11 18:28 J	-4932265.93	-4932265.73	-4932265.52	0.0300	0.0092
Moon	-18212-05-30 08:38 J	-4930360.36	-4930360.14	-4930359.90	0.0297	0.0083
Earth	-18212-05-30 12:14 J	-4930360.21	-4930359.99	-4930359.75	0.0297	0.0099 *
Mercury	-18209-01-28 03:21 J	-4929387.40	-4929387.36	-4929387.30	0.0285	0.0260
Mercury	-18209-04-25 14:38 J	-4929299.01	-4929298.89	-4929298.78	0.0284	0.0124
Mercury	-18209-07-23 01:40 J	-4929210.56	-4929210.43	-4929210.30	0.0283	0.0012
Mercury	-18209-10-19 12:43 J	-4929122.08	-4929121.97	-4929121.86	0.0282	0.0144
Mercury	-18208-01-15 23:31 J	-4929033.53	-4929033.52	-4929033.49	0.0281	0.0276
Venus	-18205-10-10 14:23 J	-4927670.00	-4927669.90	-4927669.78	0.0266	0.0225
Venus	-18204-05-27 10:19 J	-4927441.26	-4927441.07	-4927440.87	0.0264	0.0087
Venus	-18203-01-11 05:02 J	-4927212.49	-4927212.29	-4927212.08	0.0262	0.0049
Venus	-18203-08-27 22:48 J	-4926983.69	-4926983.55	-4926983.39	0.0261	0.0180
Earth	-18197-11-24 11:31 J	-4924703.12	-4924703.02	-4924702.90	0.0264	0.0234
Moon	-18197-11-24 15:21 J	-4924702.95	-4924702.86	-4924702.75	0.0264	0.0241 *
Mercury	-18193-08-01 18:57 J	-4923356.88	-4923356.71	-4923356.54	0.0278	0.0124
Mercury	-18193-10-29 18:43 J	-4923267.90	-4923267.72	-4923267.53	0.0279	0.0066
Mercury	-18192-01-26 18:28 J	-4923178.80	-4923178.73	-4923178.66	0.0280	0.0258
Venus	-18189-06-18 05:45 J	-4921940.27	-4921940.26	-4921940.24	0.0296	0.0295
Venus	-18188-02-03 13:26 J	-4921710.14	-4921709.94	-4921709.73	0.0298	0.0092
Venus	-18188-09-21 22:33 J	-4921479.75	-4921479.56	-4921479.35	0.0300	0.0119
Mercury	-18180-09-12 16:19 J	-4918566.92	-4918566.82	-4918566.72	0.0285	0.0171
Mercury	-18180-12-10 03:21 J	-4918478.49	-4918478.36	-4918478.23	0.0283	0.0036
Mercury	-18179-03-08 14:23 J	-4918390.02	-4918389.90	-4918389.78	0.0282	0.0098
Mercury	-18179-06-05 01:26 J	-4918301.52	-4918301.44	-4918301.37	0.0281	0.0230
Venus	-18175-04-22 15:07 J	-4916883.99	-4916883.87	-4916883.74	0.0265	0.0208
Venus	-18175-12-07 10:48 J	-4916655.24	-4916655.05	-4916654.84	0.0263	0.0071

Venus	-18174-07-24 05:45 J	-4916426.46	-4916426.26	-4916426.06	0.0262	0.0064
Venus	-18173-03-08 23:16 J	-4916197.66	-4916197.53	-4916197.38	0.0261	0.0196
Moon	-18167-12-01 07:40 J	-4913739.41	-4913739.18	-4913738.94	0.0266	0.0072
Earth	-18167-12-01 08:23 J	-4913739.39	-4913739.15	-4913738.90	0.0266	0.0070 *
Mercury	-18164-12-19 14:23 J	-4912625.03	-4912624.90	-4912624.77	0.0278	0.0202
Mercury	-18163-03-18 14:09 J	-4912536.10	-4912535.91	-4912535.72	0.0279	0.0012
Mercury	-18163-06-15 13:40 J	-4912447.07	-4912446.93	-4912446.78	0.0280	0.0179
Venus	-18160-12-29 05:45 J	-4911154.31	-4911154.26	-4911154.17	0.0296	0.0279
Venus	-18159-08-16 13:40 J	-4910924.13	-4910923.93	-4910923.71	0.0298	0.0077
Venus	-18158-04-03 23:02 J	-4910693.73	-4910693.54	-4910693.34	0.0300	0.0134
Earth	-18153-05-31 06:00 J	-4908809.49	-4908809.25	-4908809.01	0.0297	0.0048
Moon	-18153-05-31 06:28 J	-4908809.46	-4908809.23	-4908809.00	0.0297	0.0035 *
Mercury	-18150-01-30 17:45 J	-4907834.84	-4907834.76	-4907834.68	0.0286	0.0222
Mercury	-18150-04-29 04:48 J	-4907746.42	-4907746.30	-4907746.18	0.0284	0.0086
Mercury	-18150-07-26 15:50 J	-4907657.97	-4907657.84	-4907657.71	0.0283	0.0049
Mercury	-18150-10-23 02:52 J	-4907569.48	-4907569.38	-4907569.28	0.0282	0.0182
Mars	-18149-10-20 13:26 J	-4907206.09	-4907205.94	-4907205.77	0.0277	0.0238
Venus	-18146-11-02 16:19 J	-4906097.95	-4906097.82	-4906097.67	0.0266	0.0191
Venus	-18145-06-18 12:28 J	-4905869.19	-4905868.98	-4905868.78	0.0264	0.0053
Venus	-18144-02-02 06:57 J	-4905640.40	-4905640.21	-4905640.01	0.0262	0.0082
Venus	-18144-09-19 00:28 J	-4905411.58	-4905411.48	-4905411.35	0.0261	0.0214
Earth	-18138-11-26 07:11 J	-4903152.36	-4903152.20	-4903152.01	0.0264	0.0186
Moon	-18138-11-26 07:40 J	-4903152.35	-4903152.18	-4903151.98	0.0264	0.0188 *
Mercury	-18134-05-08 12:00 J	-4901893.06	-4901893.00	-4901892.93	0.0277	0.0259
Mercury	-18134-08-05 12:00 J	-4901804.19	-4901804.00	-4901803.82	0.0278	0.0070
Mercury	-18134-11-02 11:31 J	-4901715.19	-4901715.02	-4901714.85	0.0279	0.0120
Mars	-18133-09-24 03:07 J	-4901388.65	-4901388.37	-4901388.10	0.0284	0.0006
Venus	-18130-07-11 10:48 J	-4900368.16	-4900368.05	-4900367.94	0.0296	0.0253
Venus	-18129-02-26 18:43 J	-4900137.94	-4900137.72	-4900137.51	0.0299	0.0049
Venus	-18129-10-14 03:50 J	-4899907.51	-4899907.34	-4899907.15	0.0301	0.0163

Mercury	-18121-06-18 19:26 J	-4897102.73	-4897102.69	-4897102.65	0.0286	0.0268
Mercury	-18121-09-15 06:28 J	-4897014.34	-4897014.23	-4897014.11	0.0285	0.0132
Mercury	-18121-12-12 17:31 J	-4896925.89	-4896925.77	-4896925.64	0.0283	0.0011
Mercury	-18120-03-11 04:33 J	-4896837.42	-4896837.31	-4896837.19	0.0282	0.0137
Mercury	-18120-06-07 15:36 J	-4896748.88	-4896748.85	-4896748.81	0.0281	0.0270
Venus	-18116-05-14 17:16 J	-4895311.93	-4895311.78	-4895311.61	0.0265	0.0174
Venus	-18116-12-29 13:11 J	-4895083.16	-4895082.95	-4895082.74	0.0263	0.0036
Venus	-18115-08-15 07:40 J	-4894854.37	-4894854.18	-4894853.98	0.0262	0.0098
Venus	-18114-04-01 01:26 J	-4894625.53	-4894625.44	-4894625.34	0.0261	0.0229
Earth	-18108-12-02 05:02 J	-4892188.51	-4892188.29	-4892188.06	0.0266	0.0121
Moon	-18108-12-02 08:52 J	-4892188.35	-4892188.13	-4892187.91	0.0266	0.0128 *
Mercury	-18105-12-22 07:40 J	-4891072.34	-4891072.18	-4891072.02	0.0278	0.0145
Mercury	-18104-03-21 07:11 J	-4890983.38	-4890983.20	-4890983.01	0.0279	0.0046
Mercury	-18104-06-18 06:43 J	-4890894.31	-4890894.22	-4890894.11	0.0280	0.0236
Venus	-18100-01-20 11:16 J	-4889582.15	-4889582.03	-4889581.89	0.0296	0.0236
Venus	-18100-09-07 19:11 J	-4889351.91	-4889351.70	-4889351.48	0.0298	0.0033
Venus	-18099-04-26 04:33 J	-4889121.47	-4889121.31	-4889121.13	0.0300	0.0179
Earth	-18094-06-02 00:00 J	-4887258.74	-4887258.50	-4887258.26	0.0297	0.0004
Moon	-18094-06-02 03:50 J	-4887258.58	-4887258.34	-4887258.10	0.0297	0.0014 *
Mercury	-18091-02-02 07:55 J	-4886282.27	-4886282.17	-4886282.08	0.0286	0.0185
Mercury	-18091-05-01 18:57 J	-4886193.84	-4886193.71	-4886193.58	0.0284	0.0049
Mercury	-18091-07-29 06:00 J	-4886105.37	-4886105.25	-4886105.13	0.0283	0.0087
Mercury	-18091-10-25 17:02 J	-4886016.87	-4886016.79	-4886016.71	0.0282	0.0220
Venus	-18087-11-24 18:28 J	-4884525.90	-4884525.73	-4884525.56	0.0266	0.0156
Venus	-18086-07-11 14:23 J	-4884297.11	-4884296.90	-4884296.69	0.0264	0.0018
Venus	-18085-02-25 09:07 J	-4884068.31	-4884068.12	-4884067.94	0.0262	0.0117
Venus	-18085-10-11 02:38 J	-4883839.45	-4883839.39	-4883839.32	0.0261	0.0247
Moon	-18079-11-27 01:11 J	-4881601.66	-4881601.45	-4881601.22	0.0264	0.0132
Earth	-18079-11-27 04:48 J	-4881601.51	-4881601.30	-4881601.08	0.0264	0.0135 *
Mercury	-18075-05-11 05:31 J	-4880340.39	-4880340.27	-4880340.13	0.0277	0.0200

Mercury	-18075-08-08 05:16 J	-4880251.47	-4880251.28	-4880251.09	0.0278	0.0012
Mercury	-18075-11-05 04:48 J	-4880162.44	-4880162.30	-4880162.15	0.0279	0.0179
Venus	-18071-08-02 16:48 J	-4878795.95	-4878795.80	-4878795.65	0.0297	0.0209
Venus	-18070-03-21 00:43 J	-4878565.69	-4878565.47	-4878565.26	0.0299	0.0004
Venus	-18070-11-06 10:04 J	-4878335.23	-4878335.08	-4878334.93	0.0301	0.0208
Mercury	-18062-06-22 09:36 J	-4875550.17	-4875550.10	-4875550.02	0.0286	0.0230
Mercury	-18062-09-18 20:52 J	-4875461.75	-4875461.63	-4875461.51	0.0285	0.0093
Mercury	-18062-12-16 07:55 J	-4875373.30	-4875373.17	-4875373.04	0.0284	0.0043
Mercury	-18061-03-13 18:57 J	-4875284.81	-4875284.71	-4875284.61	0.0282	0.0177
Mars	-18060-03-15 02:09 J	-4874918.51	-4874918.41	-4874918.30	0.0278	0.0261
Venus	-18057-06-05 20:09 J	-4873739.84	-4873739.66	-4873739.49	0.0265	0.0138
Venus	-18056-01-20 15:36 J	-4873511.06	-4873510.85	-4873510.64	0.0263	0.0004
Venus	-18056-09-06 10:04 J	-4873282.25	-4873282.08	-4873281.90	0.0262	0.0133
Earth	-18049-12-03 03:36 J	-4870637.53	-4870637.35	-4870637.15	0.0266	0.0176
Moon	-18049-12-03 05:31 J	-4870637.44	-4870637.27	-4870637.08	0.0266	0.0185 *
Mercury	-18046-09-28 01:55 J	-4869608.45	-4869608.42	-4869608.37	0.0277	0.0269
Mercury	-18046-12-26 01:40 J	-4869519.61	-4869519.43	-4869519.25	0.0278	0.0081
Mercury	-18045-03-24 01:11 J	-4869430.62	-4869430.45	-4869430.27	0.0279	0.0108
Mars	-18044-02-16 19:11 J	-4869100.97	-4869100.70	-4869100.42	0.0283	0.0004
Venus	-18041-02-12 18:28 J	-4868009.89	-4868009.73	-4868009.56	0.0296	0.0190
Venus	-18041-09-30 02:38 J	-4867779.60	-4867779.39	-4867779.18	0.0299	0.0016
Venus	-18040-05-18 12:00 J	-4867549.13	-4867549.00	-4867548.86	0.0300	0.0227
Earth	-18035-06-02 20:52 J	-4865707.86	-4865707.63	-4865707.39	0.0297	0.0060
Moon	-18035-06-02 21:36 J	-4865707.85	-4865707.60	-4865707.36	0.0297	0.0065 *
Mercury	-18033-11-08 11:02 J	-4864818.06	-4864818.04	-4864818.01	0.0287	0.0281
Mercury	-18032-02-04 22:19 J	-4864729.68	-4864729.57	-4864729.46	0.0285	0.0143
Mercury	-18032-05-04 09:21 J	-4864641.24	-4864641.11	-4864640.98	0.0284	0.0009
Mercury	-18032-07-31 20:23 J	-4864552.76	-4864552.65	-4864552.53	0.0283	0.0128
Mercury	-18032-10-28 07:26 J	-4864464.23	-4864464.19	-4864464.14	0.0282	0.0262
Venus	-18028-05-02 00:28 J	-4863182.53	-4863182.48	-4863182.44	0.0267	0.0260

Venus	-18028-12-16 21:21 J	-4862953.80	-4862953.61	-4862953.42	0.0265	0.0120
Venus	-18027-08-02 17:02 J	-4862725.00	-4862724.79	-4862724.58	0.0264	0.0018
Venus	-18026-03-19 11:45 J	-4862496.18	-4862496.01	-4862495.84	0.0262	0.0152
Moon	-18020-11-28 02:23 J	-4860050.63	-4860050.40	-4860050.17	0.0264	0.0076
Earth	-18020-11-28 04:33 J	-4860050.55	-4860050.31	-4860050.07	0.0264	0.0079 *
Mercury	-18016-05-14 00:14 J	-4858787.66	-4858787.49	-4858787.32	0.0277	0.0132
Mercury	-18016-08-10 23:45 J	-4858698.69	-4858698.51	-4858698.32	0.0278	0.0057
Mercury	-18016-11-07 23:16 J	-4858609.61	-4858609.53	-4858609.44	0.0279	0.0246
Venus	-18012-08-25 01:11 J	-4857223.63	-4857223.45	-4857223.26	0.0297	0.0160
Venus	-18011-04-12 09:21 J	-4856993.32	-4856993.11	-4856992.90	0.0299	0.0047
Venus	-18011-11-28 18:43 J	-4856762.82	-4856762.72	-4856762.61	0.0301	0.0258
Mercury	-18003-06-25 00:28 J	-4853997.58	-4853997.48	-4853997.38	0.0286	0.0186
Mercury	-18003-09-21 11:31 J	-4853909.15	-4853909.02	-4853908.89	0.0285	0.0049
Mercury	-18003-12-18 22:33 J	-4853820.68	-4853820.56	-4853820.43	0.0283	0.0087
Mercury	-18002-03-17 09:36 J	-4853732.17	-4853732.10	-4853732.01	0.0282	0.0221

# 18TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 18th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-17999-11-12 02:38 J	-4852396.47	-4852396.39	-4852396.30	0.0267	0.0241		
Venus	-17998-06-28 23:45 J	-4852167.71	-4852167.51	-4852167.32	0.0265	0.0101		
Venus	-17997-02-12 19:11 J	-4851938.91	-4851938.70	-4851938.49	0.0263	0.0036		
Venus	-17997-09-28 13:40 J	-4851710.08	-4851709.93	-4851709.77	0.0262	0.0170		



Moon	-17990-12-05 02:52 J	-4849086.46	-4849086.38	-4849086.29	0.0266	0.0248
Earth	-17990-12-05 05:16 J	-4849086.37	-4849086.28	-4849086.15	0.0266	0.0237 *
Mercury	-17987-09-30 21:21 J	-4848055.74	-4848055.61	-4848055.47	0.0277	0.0196
Mercury	-17987-12-28 20:52 J	-4847966.82	-4847966.63	-4847966.43	0.0278	0.0011
Mercury	-17986-03-27 20:23 J	-4847877.79	-4847877.65	-4847877.50	0.0279	0.0182
Venus	-17982-03-07 04:33 J	-4846437.50	-4846437.31	-4846437.12	0.0297	0.0138
Venus	-17982-10-23 12:43 J	-4846207.18	-4846206.97	-4846206.76	0.0299	0.0069
Venus	-17981-06-09 22:04 J	-4845976.65	-4845976.58	-4845976.50	0.0300	0.0279
Moon	-17976-06-03 17:16 J	-4844157.00	-4844156.78	-4844156.56	0.0297	0.0123
Earth	-17976-06-03 20:38 J	-4844156.85	-4844156.64	-4844156.41	0.0297	0.0125 *
Mercury	-17974-11-12 01:55 J	-4843265.49	-4843265.42	-4843265.34	0.0286	0.0235
Mercury	-17973-02-08 13:11 J	-4843177.07	-4843176.95	-4843176.83	0.0285	0.0098
Mercury	-17973-05-07 00:14 J	-4843088.62	-4843088.49	-4843088.36	0.0284	0.0039
Mercury	-17973-08-03 11:16 J	-4843000.13	-4843000.03	-4842999.92	0.0283	0.0174
Venus	-17969-05-24 04:19 J	-4841610.42	-4841610.32	-4841610.20	0.0267	0.0222
Venus	-17968-01-08 01:26 J	-4841381.64	-4841381.44	-4841381.24	0.0265	0.0082
Venus	-17968-08-24 21:07 J	-4841152.83	-4841152.62	-4841152.42	0.0264	0.0056
Venus	-17967-04-10 15:36 J	-4840923.99	-4840923.85	-4840923.70	0.0262	0.0190
Earth	-17961-11-29 06:57 J	-4838499.46	-4838499.21	-4838498.96	0.0264	0.0019
Moon	-17961-11-29 09:07 J	-4838499.36	-4838499.12	-4838498.88	0.0264	0.0012 *
Mercury	-17957-02-17 20:23 J	-4837323.73	-4837323.65	-4837323.56	0.0276	0.0243
Mercury	-17957-05-16 19:55 J	-4837234.85	-4837234.67	-4837234.48	0.0277	0.0056
Mercury	-17957-08-13 19:26 J	-4837145.85	-4837145.69	-4837145.52	0.0278	0.0133
Mars	-17956-07-13 11:16 J	-4836812.30	-4836812.03	-4836811.76	0.0283	0.0057
Venus	-17953-09-16 12:43 J	-4835651.17	-4835650.97	-4835650.77	0.0297	0.0106
Venus	-17952-05-04 20:52 J	-4835420.83	-4835420.63	-4835420.43	0.0299	0.0102
Earth	-17947-05-28 22:19 J	-4833570.70	-4833570.57	-4833570.41	0.0299	0.0238
Moon	-17947-05-29 01:55 J	-4833570.56	-4833570.42	-4833570.27	0.0299	0.0234 *
Mercury	-17944-03-31 04:33 J	-4832533.34	-4832533.31	-4832533.27	0.0287	0.0273
Mercury	-17944-06-27 15:36 J	-4832444.96	-4832444.85	-4832444.73	0.0286	0.0136

Mercury	-17944-09-24 02:52 J	-4832356.51	-4832356.38	-4832356.25	0.0285	0.0005
Mercury	-17944-12-21 13:55 J	-4832268.03	-4832267.92	-4832267.81	0.0283	0.0136
Mercury	-17943-03-20 00:57 J	-4832179.49	-4832179.46	-4832179.42	0.0282	0.0270
Venus	-17940-12-04 07:55 J	-4830824.30	-4830824.17	-4830824.03	0.0267	0.0201
Venus	-17939-07-21 04:48 J	-4830595.50	-4830595.30	-4830595.09	0.0265	0.0062
Venus	-17938-03-07 00:28 J	-4830366.68	-4830366.48	-4830366.28	0.0263	0.0076
Venus	-17938-10-21 18:57 J	-4830137.83	-4830137.71	-4830137.58	0.0262	0.0209
Mercury	-17928-10-03 18:14 J	-4826502.92	-4826502.74	-4826502.57	0.0277	0.0112
Mercury	-17928-12-31 17:45 J	-4826413.94	-4826413.76	-4826413.58	0.0278	0.0077
Mercury	-17927-03-30 17:02 J	-4826324.84	-4826324.79	-4826324.73	0.0279	0.0266
Venus	-17924-08-11 11:31 J	-4825095.07	-4825095.02	-4825094.95	0.0295	0.0282
Venus	-17923-03-29 18:14 J	-4824864.95	-4824864.74	-4824864.53	0.0297	0.0081
Venus	-17923-11-15 02:23 J	-4824634.59	-4824634.40	-4824634.20	0.0299	0.0127
Moon	-17917-06-05 00:00 J	-4822605.67	-4822605.50	-4822605.33	0.0296	0.0200
Earth	-17917-06-05 01:55 J	-4822605.58	-4822605.42	-4822605.23	0.0296	0.0202 *
Mercury	-17915-11-14 17:31 J	-4821712.87	-4821712.77	-4821712.67	0.0286	0.0181
Mercury	-17914-02-11 04:48 J	-4821624.43	-4821624.30	-4821624.17	0.0285	0.0044
Mercury	-17914-05-10 15:50 J	-4821535.96	-4821535.84	-4821535.72	0.0284	0.0092
Mercury	-17914-08-07 02:52 J	-4821447.45	-4821447.38	-4821447.30	0.0283	0.0227
Venus	-17910-06-16 10:33 J	-4820038.21	-4820038.06	-4820037.91	0.0267	0.0181
Venus	-17909-01-31 07:11 J	-4819809.40	-4819809.20	-4819808.99	0.0265	0.0041
Venus	-17909-09-16 02:52 J	-4819580.57	-4819580.38	-4819580.19	0.0264	0.0097
Venus	-17908-05-02 21:21 J	-4819351.70	-4819351.61	-4819351.51	0.0262	0.0230
Earth	-17902-12-01 13:11 J	-4816948.19	-4816947.95	-4816947.70	0.0265	0.0051
Moon	-17902-12-01 16:48 J	-4816948.04	-4816947.80	-4816947.55	0.0265	0.0058 *
Mercury	-17898-02-20 17:45 J	-4815770.92	-4815770.76	-4815770.60	0.0276	0.0155
Mercury	-17898-05-20 17:16 J	-4815681.97	-4815681.78	-4815681.59	0.0277	0.0033
Mercury	-17898-08-17 16:48 J	-4815592.91	-4815592.80	-4815592.69	0.0279	0.0222
Venus	-17894-02-21 21:07 J	-4814308.73	-4814308.62	-4814308.50	0.0295	0.0249
Venus	-17894-10-10 03:50 J	-4814078.55	-4814078.34	-4814078.13	0.0297	0.0047

Venus	-17893-05-27 12:14 J	-4813848.17	-4813847.99	-4813847.81	0.0299	0.0163
Earth	-17888-05-30 06:28 J	-4812019.43	-4812019.23	-4812019.02	0.0298	0.0155
Moon	-17888-05-30 08:52 J	-4812019.34	-4812019.13	-4812018.91	0.0298	0.0150 *
Mercury	-17885-04-02 20:23 J	-4810980.73	-4810980.65	-4810980.56	0.0287	0.0216
Mercury	-17885-06-30 07:40 J	-4810892.31	-4810892.18	-4810892.06	0.0285	0.0078
Mercury	-17885-09-26 18:43 J	-4810803.85	-4810803.72	-4810803.59	0.0284	0.0058
Mercury	-17885-12-24 05:45 J	-4810715.35	-4810715.26	-4810715.16	0.0283	0.0194
Venus	-17881-12-26 15:07 J	-4809252.04	-4809251.87	-4809251.70	0.0266	0.0159
Venus	-17880-08-12 11:45 J	-4809023.22	-4809023.01	-4809022.80	0.0264	0.0019
Venus	-17879-03-29 07:11 J	-4808794.38	-4808794.20	-4808794.01	0.0263	0.0118
Venus	-17879-11-13 01:40 J	-4808565.48	-4808565.43	-4808565.37	0.0262	0.0250
Moon	-17873-11-25 12:28 J	-4806361.13	-4806360.98	-4806360.81	0.0264	0.0199
Earth	-17873-11-25 16:19 J	-4806360.97	-4806360.82	-4806360.65	0.0264	0.0203 *
Mercury	-17869-07-09 16:33 J	-4805038.93	-4805038.81	-4805038.68	0.0276	0.0206
Mercury	-17869-10-06 16:19 J	-4804950.01	-4804949.82	-4804949.63	0.0277	0.0018
Mercury	-17868-01-03 15:36 J	-4804860.99	-4804860.85	-4804860.70	0.0279	0.0172
Mars	-17868-12-07 14:09 J	-4804523.16	-4804522.91	-4804522.66	0.0283	0.0122
Venus	-17865-09-03 04:04 J	-4803522.46	-4803522.33	-4803522.18	0.0295	0.0222
Venus	-17864-04-21 11:02 J	-4803292.25	-4803292.04	-4803291.82	0.0297	0.0019
Venus	-17864-12-07 19:26 J	-4803061.85	-4803061.69	-4803061.52	0.0299	0.0191
Earth	-17858-06-07 12:28 J	-4801054.02	-4801053.98	-4801053.92	0.0296	0.0289
Moon	-17858-06-07 14:09 J	-4801053.96	-4801053.91	-4801053.85	0.0296	0.0287 *
Mercury	-17856-08-20 22:33 J	-4800248.61	-4800248.56	-4800248.50	0.0287	0.0257
Mercury	-17856-11-17 09:50 J	-4800160.20	-4800160.09	-4800159.97	0.0286	0.0119
Mercury	-17855-02-13 21:07 J	-4800071.75	-4800071.62	-4800071.49	0.0284	0.0019
Mercury	-17855-05-13 08:09 J	-4799983.27	-4799983.16	-4799983.05	0.0283	0.0154
Venus	-17851-07-08 18:28 J	-4798465.90	-4798465.73	-4798465.55	0.0267	0.0138
Venus	-17850-02-22 15:07 J	-4798237.08	-4798236.87	-4798236.66	0.0265	0.0003
Venus	-17850-10-09 10:19 J	-4798008.24	-4798008.07	-4798007.88	0.0263	0.0141
Earth	-17843-12-02 22:19 J	-4795396.78	-4795396.57	-4795396.34	0.0265	0.0125

Moon	-17843-12-02 22:33 J	-4795396.78	-4795396.56	-4795396.33	0.0265	0.0135 *
Mercury	-17840-11-26 16:48 J	-4794306.89	-4794306.80	-4794306.72	0.0276	0.0245
Mercury	-17839-02-23 16:19 J	-4794218.01	-4794217.82	-4794217.63	0.0277	0.0058
Mercury	-17839-05-23 15:36 J	-4794129.01	-4794128.85	-4794128.67	0.0278	0.0131
Venus	-17835-03-16 14:52 J	-4792736.03	-4792735.88	-4792735.70	0.0295	0.0188
Venus	-17835-11-01 22:04 J	-4792505.79	-4792505.58	-4792505.36	0.0298	0.0019
Venus	-17834-06-20 06:43 J	-4792275.35	-4792275.22	-4792275.08	0.0300	0.0228
Moon	-17829-05-31 18:14 J	-4790467.98	-4790467.74	-4790467.49	0.0298	0.0058
Earth	-17829-05-31 20:09 J	-4790467.90	-4790467.66	-4790467.42	0.0298	0.0058 *
Mercury	-17826-01-08 01:55 J	-4789516.42	-4789516.42	-4789516.41	0.0287	0.0287
Mercury	-17826-04-06 13:11 J	-4789428.06	-4789427.95	-4789427.84	0.0286	0.0149
Mercury	-17826-07-04 00:14 J	-4789339.62	-4789339.49	-4789339.36	0.0285	0.0013
Mercury	-17826-09-30 11:16 J	-4789251.14	-4789251.03	-4789250.91	0.0284	0.0125
Mercury	-17826-12-27 22:33 J	-4789162.61	-4789162.56	-4789162.51	0.0283	0.0259
Mars	-17825-04-05 15:50 J	-4789063.04	-4789062.84	-4789062.63	0.0281	0.0214
Venus	-17822-06-04 02:23 J	-4787908.46	-4787908.40	-4787908.34	0.0268	0.0257
Venus	-17821-01-19 00:00 J	-4787679.68	-4787679.50	-4787679.31	0.0266	0.0114
Venus	-17821-09-03 20:38 J	-4787450.85	-4787450.64	-4787450.44	0.0264	0.0026
Venus	-17820-04-20 15:50 J	-4787222.00	-4787221.84	-4787221.68	0.0263	0.0162
Earth	-17814-11-28 03:36 J	-4784809.57	-4784809.35	-4784809.13	0.0264	0.0125
Moon	-17814-11-28 03:21 J	-4784809.57	-4784809.36	-4784809.14	0.0264	0.0119 *
Mercury	-17810-07-13 16:04 J	-4783486.00	-4783485.83	-4783485.65	0.0277	0.0101
Mercury	-17810-10-10 15:36 J	-4783397.03	-4783396.85	-4783396.67	0.0278	0.0087
Mercury	-17809-01-07 14:52 J	-4783307.89	-4783307.88	-4783307.85	0.0279	0.0277
Venus	-17806-09-27 00:14 J	-4781949.67	-4781949.49	-4781949.31	0.0296	0.0156
Venus	-17805-05-14 07:26 J	-4781719.40	-4781719.19	-4781718.98	0.0298	0.0050
Venus	-17805-12-30 16:04 J	-4781488.93	-4781488.83	-4781488.72	0.0300	0.0261
Mercury	-17797-08-23 15:36 J	-4778695.94	-4778695.85	-4778695.75	0.0286	0.0186
Mercury	-17797-11-20 02:52 J	-4778607.51	-4778607.38	-4778607.25	0.0285	0.0049
Mercury	-17796-02-16 13:55 J	-4778519.04	-4778518.92	-4778518.79	0.0284	0.0088

Mercury	-17796-05-16 00:57 J	-4778430.53	-4778430.46	-4778430.38	0.0283	0.0222
Venus	-17793-12-14 06:14 J	-4777122.33	-4777122.24	-4777122.13	0.0268	0.0235
Venus	-17792-07-31 04:04 J	-4776893.52	-4776893.33	-4776893.13	0.0266	0.0092
Venus	-17791-03-17 00:28 J	-4776664.69	-4776664.48	-4776664.28	0.0264	0.0048
Venus	-17791-10-31 19:26 J	-4776435.82	-4776435.69	-4776435.53	0.0263	0.0185
Moon	-17784-12-04 06:28 J	-4773845.37	-4773845.23	-4773845.08	0.0266	0.0217
Earth	-17784-12-04 10:04 J	-4773845.23	-4773845.08	-4773844.91	0.0266	0.0205 *
Mercury	-17781-11-29 16:04 J	-4772753.99	-4772753.83	-4772753.66	0.0276	0.0142
Mercury	-17780-02-26 15:36 J	-4772665.03	-4772664.85	-4772664.66	0.0277	0.0048
Mercury	-17780-05-26 15:21 J	-4772575.96	-4772575.86	-4772575.77	0.0279	0.0236
Mars	-17779-05-04 08:52 J	-4772233.29	-4772233.13	-4772232.94	0.0283	0.0219
Venus	-17776-04-08 11:16 J	-4771163.22	-4771163.03	-4771162.83	0.0296	0.0121
Venus	-17776-11-24 18:43 J	-4770932.92	-4770932.72	-4770932.51	0.0298	0.0087
Venus	-17775-07-13 03:50 J	-4770702.36	-4770702.34	-4770702.31	0.0300	0.0298
Moon	-17770-06-03 09:50 J	-4768916.33	-4768916.09	-4768915.85	0.0298	0.0046
Earth	-17770-06-03 13:26 J	-4768916.17	-4768915.94	-4768915.70	0.0298	0.0047 *
Mercury	-17767-01-10 19:11 J	-4767963.78	-4767963.70	-4767963.61	0.0287	0.0213
Mercury	-17767-04-09 06:28 J	-4767875.36	-4767875.23	-4767875.11	0.0285	0.0076
Mercury	-17767-07-06 17:31 J	-4767786.90	-4767786.77	-4767786.64	0.0284	0.0061
Mercury	-17767-10-03 04:33 J	-4767698.40	-4767698.31	-4767698.21	0.0283	0.0196
Venus	-17763-06-26 12:57 J	-4766336.08	-4766335.96	-4766335.82	0.0268	0.0210
Venus	-17762-02-10 10:33 J	-4766107.26	-4766107.06	-4766106.85	0.0266	0.0067
Venus	-17762-09-27 06:43 J	-4765878.42	-4765878.22	-4765878.02	0.0264	0.0073
Venus	-17761-05-13 01:55 J	-4765649.55	-4765649.42	-4765649.29	0.0262	0.0208
Earth	-17755-11-29 16:04 J	-4763258.08	-4763257.83	-4763257.58	0.0264	0.0045
Moon	-17755-11-29 19:40 J	-4763257.92	-4763257.68	-4763257.43	0.0264	0.0035 *
Mercury	-17751-04-18 16:33 J	-4762021.95	-4762021.81	-4762021.67	0.0277	0.0181
Mercury	-17751-07-16 16:04 J	-4761933.02	-4761932.83	-4761932.64	0.0278	0.0007
Mercury	-17751-10-13 15:21 J	-4761843.98	-4761843.86	-4761843.72	0.0279	0.0197
Venus	-17747-03-03 16:04 J	-4760606.86	-4760606.83	-4760606.78	0.0294	0.0287

Venus	-17747-10-19 22:04 J	-4760376.79	-4760376.58	-4760376.38	0.0296	0.0087
Venus	-17746-06-07 05:31 J	-4760146.46	-4760146.27	-4760146.07	0.0299	0.0122
Mercury	-17738-05-30 22:04 J	-4757231.64	-4757231.58	-4757231.51	0.0286	0.0247
Mercury	-17738-08-27 09:21 J	-4757143.23	-4757143.11	-4757142.99	0.0285	0.0109
Mercury	-17738-11-23 20:23 J	-4757054.78	-4757054.65	-4757054.52	0.0284	0.0028
Mercury	-17737-02-20 07:26 J	-4756966.29	-4756966.19	-4756966.08	0.0283	0.0163
Mars	-17737-08-31 09:21 J	-4756773.39	-4756773.11	-4756772.81	0.0281	0.0116
Venus	-17733-01-06 17:45 J	-4755549.90	-4755549.76	-4755549.61	0.0267	0.0187
Venus	-17733-08-22 15:07 J	-4755321.08	-4755320.87	-4755320.67	0.0266	0.0044
Venus	-17732-04-08 11:02 J	-4755092.23	-4755092.04	-4755091.84	0.0264	0.0096
Venus	-17732-11-23 06:00 J	-4754863.34	-4754863.25	-4754863.15	0.0263	0.0231
Mercury	-17722-09-05 16:33 J	-4751289.92	-4751289.81	-4751289.69	0.0276	0.0221
Mercury	-17722-12-03 16:19 J	-4751201.01	-4751200.82	-4751200.63	0.0277	0.0033
Mercury	-17721-03-01 15:50 J	-4751112.00	-4751111.84	-4751111.69	0.0278	0.0156
Mars	-17721-08-11 12:14 J	-4750949.10	-4750948.99	-4750948.85	0.0280	0.0248
Venus	-17718-09-14 03:21 J	-4749820.47	-4749820.36	-4749820.25	0.0294	0.0253
Venus	-17717-05-01 09:36 J	-4749590.31	-4749590.10	-4749589.89	0.0297	0.0051
Venus	-17717-12-17 17:31 J	-4749359.94	-4749359.77	-4749359.58	0.0299	0.0159
Moon	-17711-06-05 08:52 J	-4747364.32	-4747364.13	-4747363.92	0.0297	0.0157
Earth	-17711-06-05 09:50 J	-4747364.29	-4747364.09	-4747363.88	0.0297	0.0158 *
Mercury	-17709-10-17 01:40 J	-4746499.46	-4746499.43	-4746499.39	0.0287	0.0274
Mercury	-17708-01-13 12:57 J	-4746411.07	-4746410.96	-4746410.84	0.0286	0.0135
Mercury	-17708-04-12 00:00 J	-4746322.62	-4746322.50	-4746322.37	0.0285	0.0011
Mercury	-17708-07-09 11:16 J	-4746234.15	-4746234.03	-4746233.92	0.0284	0.0138
Mercury	-17708-10-05 22:04 J	-4746145.60	-4746145.58	-4746145.54	0.0283	0.0273
Venus	-17704-07-19 00:43 J	-4744763.63	-4744763.47	-4744763.30	0.0267	0.0161
Venus	-17703-03-04 21:50 J	-4744534.80	-4744534.59	-4744534.38	0.0265	0.0019
Venus	-17703-10-19 17:45 J	-4744305.95	-4744305.76	-4744305.58	0.0263	0.0120
Venus	-17702-06-05 12:28 J	-4744077.02	-4744076.98	-4744076.92	0.0262	0.0254
Earth	-17696-12-01 05:02 J	-4741706.53	-4741706.29	-4741706.04	0.0265	0.0037

Moon	-17696-12-01 07:40 J	-4741706.44	-4741706.18	-4741705.93	0.0265	0.0046 *
Mercury	-17692-01-22 16:48 J	-4740557.85	-4740557.80	-4740557.73	0.0276	0.0260
Mercury	-17692-04-21 16:33 J	-4740468.99	-4740468.81	-4740468.62	0.0277	0.0072
Mercury	-17692-07-19 16:04 J	-4740380.00	-4740379.83	-4740379.66	0.0278	0.0117
Venus	-17688-03-26 13:55 J	-4739034.05	-4739033.92	-4739033.77	0.0295	0.0220
Venus	-17688-11-11 20:23 J	-4738803.86	-4738803.65	-4738803.43	0.0297	0.0016
Venus	-17687-06-30 04:19 J	-4738573.47	-4738573.32	-4738573.15	0.0299	0.0194
Earth	-17682-05-30 15:07 J	-4736778.05	-4736777.87	-4736777.68	0.0298	0.0190
Moon	-17682-05-30 15:07 J	-4736778.05	-4736777.87	-4736777.67	0.0298	0.0191 *
Mercury	-17679-06-02 16:04 J	-4735678.94	-4735678.83	-4735678.73	0.0286	0.0167
Mercury	-17679-08-30 03:07 J	-4735590.50	-4735590.37	-4735590.24	0.0285	0.0030
Mercury	-17679-11-26 14:09 J	-4735502.03	-4735501.91	-4735501.79	0.0283	0.0106
Mercury	-17678-02-23 01:11 J	-4735413.51	-4735413.45	-4735413.38	0.0282	0.0240
Venus	-17674-01-29 05:45 J	-4733977.44	-4733977.26	-4733977.08	0.0267	0.0138
Venus	-17674-09-15 02:38 J	-4733748.60	-4733748.39	-4733748.18	0.0265	0.0006
Venus	-17673-04-30 22:04 J	-4733519.75	-4733519.58	-4733519.40	0.0263	0.0143
Moon	-17667-11-26 05:45 J	-4731119.40	-4731119.26	-4731119.12	0.0264	0.0214
Earth	-17667-11-26 08:38 J	-4731119.28	-4731119.14	-4731119.00	0.0264	0.0216 *
Mercury	-17663-09-08 16:19 J	-4729737.00	-4729736.82	-4729736.65	0.0277	0.0116
Mercury	-17663-12-06 15:50 J	-4729648.02	-4729647.84	-4729647.65	0.0278	0.0073
Mercury	-17662-03-05 15:21 J	-4729558.92	-4729558.86	-4729558.80	0.0279	0.0263
Jupiter	-17661-10-23 04:19 J	-4728961.77	-4728961.32	-4728960.85	0.0286	0.0076
Venus	-17659-10-07 00:14 J	-4728247.65	-4728247.49	-4728247.32	0.0295	0.0188
Venus	-17658-05-25 07:11 J	-4728017.42	-4728017.20	-4728016.99	0.0297	0.0018
Venus	-17657-01-10 15:36 J	-4727786.98	-4727786.85	-4727786.71	0.0299	0.0229
Earth	-17652-06-07 06:00 J	-4725812.34	-4725812.25	-4725812.14	0.0297	0.0270
Moon	-17652-06-07 09:07 J	-4725812.21	-4725812.12	-4725812.01	0.0297	0.0266 *
Mercury	-17650-10-20 19:40 J	-4724946.78	-4724946.68	-4724946.59	0.0286	0.0193
Mercury	-17649-01-17 06:43 J	-4724858.34	-4724858.22	-4724858.09	0.0285	0.0056
Mercury	-17649-04-14 17:45 J	-4724769.88	-4724769.76	-4724769.63	0.0284	0.0081

Mercury	-17649-07-12 04:48 J	-4724681.38	-4724681.30	-4724681.21	0.0283	0.0216
Mars	-17648-01-26 21:21 J	-4724482.92	-4724482.61	-4724482.29	0.0280	0.0005
Venus	-17646-12-25 14:38 J	-4723419.95	-4723419.89	-4723419.83	0.0268	0.0257
Venus	-17645-08-10 12:28 J	-4723191.16	-4723190.98	-4723190.79	0.0266	0.0113
Venus	-17644-03-27 09:07 J	-4722962.33	-4722962.12	-4722961.91	0.0265	0.0029
Venus	-17644-11-11 04:33 J	-4722733.47	-4722733.31	-4722733.14	0.0263	0.0166
Moon	-17637-12-02 15:36 J	-4720155.08	-4720154.85	-4720154.62	0.0265	0.0127
Earth	-17637-12-02 17:02 J	-4720155.00	-4720154.79	-4720154.56	0.0265	0.0117 *
Mercury	-17633-01-26 16:19 J	-4719004.97	-4719004.82	-4719004.65	0.0277	0.0156
Mercury	-17633-04-24 16:04 J	-4718916.02	-4718915.83	-4718915.64	0.0278	0.0034
Mercury	-17633-07-22 15:36 J	-4718826.96	-4718826.85	-4718826.73	0.0279	0.0224
Mars	-17632-01-06 10:19 J	-4718659.30	-4718659.07	-4718658.84	0.0281	0.0154
Venus	-17629-04-18 11:16 J	-4717461.21	-4717461.03	-4717460.84	0.0296	0.0154
Venus	-17629-12-04 18:28 J	-4717230.94	-4717230.73	-4717230.52	0.0298	0.0054
Venus	-17628-07-23 02:52 J	-4717000.47	-4717000.38	-4717000.27	0.0300	0.0266
Moon	-17623-06-01 09:07 J	-4715226.35	-4715226.12	-4715225.88	0.0298	0.0079
Earth	-17623-06-01 12:28 J	-4715226.21	-4715225.98	-4715225.75	0.0298	0.0076 *
Mercury	-17620-03-08 22:33 J	-4714214.63	-4714214.56	-4714214.48	0.0286	0.0225
Mercury	-17620-06-05 09:50 J	-4714126.21	-4714126.09	-4714125.97	0.0285	0.0088
Mercury	-17620-09-01 20:52 J	-4714037.76	-4714037.63	-4714037.50	0.0284	0.0048
Mercury	-17620-11-29 07:55 J	-4713949.27	-4713949.17	-4713949.07	0.0283	0.0183
Venus	-17616-07-06 19:26 J	-4712633.78	-4712633.69	-4712633.58	0.0268	0.0234
Venus	-17615-02-20 17:16 J	-4712404.98	-4712404.78	-4712404.58	0.0266	0.0090
Venus	-17615-10-07 13:26 J	-4712176.14	-4712175.94	-4712175.73	0.0264	0.0051
Venus	-17614-05-24 08:52 J	-4711947.28	-4711947.13	-4711946.99	0.0263	0.0188
Earth	-17608-11-27 18:43 J	-4709567.93	-4709567.72	-4709567.50	0.0264	0.0141
Moon	-17608-11-27 19:40 J	-4709567.88	-4709567.68	-4709567.47	0.0264	0.0137 *
Mercury	-17604-06-14 15:21 J	-4708272.98	-4708272.86	-4708272.73	0.0276	0.0205
Mercury	-17604-09-11 15:07 J	-4708184.06	-4708183.87	-4708183.68	0.0277	0.0016
Mercury	-17604-12-09 14:38 J	-4708095.03	-4708094.89	-4708094.74	0.0278	0.0174



Venus	-17600-10-29 19:55 J	-4706674.86	-4706674.67	-4706674.47	0.0296	0.0124
Venus	-17599-06-17 03:21 J	-4706444.56	-4706444.36	-4706444.15	0.0298	0.0085
Venus	-17598-02-02 12:14 J	-4706214.01	-4706213.99	-4706213.96	0.0300	0.0297
Mercury	-17591-07-27 01:55 J	-4703482.47	-4703482.42	-4703482.36	0.0287	0.0255
Mercury	-17591-10-23 13:11 J	-4703394.07	-4703393.95	-4703393.83	0.0286	0.0117
Mercury	-17590-01-20 00:14 J	-4703305.62	-4703305.49	-4703305.36	0.0285	0.0020
Mercury	-17590-04-18 11:16 J	-4703217.14	-4703217.03	-4703216.92	0.0284	0.0155
Venus	-17586-01-17 01:40 J	-4701847.55	-4701847.43	-4701847.29	0.0268	0.0210
Venus	-17586-09-02 23:16 J	-4701618.73	-4701618.53	-4701618.33	0.0266	0.0066
Venus	-17585-04-18 19:26 J	-4701389.89	-4701389.69	-4701389.49	0.0264	0.0075
Venus	-17585-12-03 14:23 J	-4701161.01	-4701160.90	-4701160.77	0.0263	0.0211
Moon	-17578-12-04 23:02 J	-4698603.70	-4698603.54	-4698603.38	0.0265	0.0203
Earth	-17578-12-05 02:23 J	-4698603.56	-4698603.40	-4698603.21	0.0265	0.0192 *
Mercury	-17575-11-01 15:07 J	-4697540.94	-4697540.87	-4697540.78	0.0276	0.0248
Mercury	-17574-01-29 14:52 J	-4697452.06	-4697451.88	-4697451.69	0.0277	0.0060
Mercury	-17574-04-28 14:23 J	-4697363.06	-4697362.90	-4697362.73	0.0278	0.0130
Venus	-17571-09-24 00:14 J	-4696118.51	-4696118.49	-4696118.46	0.0294	0.0291
Venus	-17570-05-12 06:00 J	-4695888.45	-4695888.25	-4695888.04	0.0296	0.0090
Venus	-17570-12-28 13:40 J	-4695658.12	-4695657.93	-4695657.73	0.0299	0.0120
Moon	-17564-06-03 02:52 J	-4693674.61	-4693674.38	-4693674.15	0.0297	0.0028
Earth	-17564-06-03 05:45 J	-4693674.50	-4693674.26	-4693674.02	0.0297	0.0029 *
Mercury	-17561-03-11 16:04 J	-4692661.94	-4692661.83	-4692661.72	0.0285	0.0151
Mercury	-17561-06-08 03:07 J	-4692573.50	-4692573.37	-4692573.24	0.0284	0.0014
Mercury	-17561-09-04 14:09 J	-4692485.02	-4692484.91	-4692484.79	0.0283	0.0122
Mercury	-17561-12-02 01:11 J	-4692396.50	-4692396.45	-4692396.39	0.0282	0.0256
Mars	-17560-06-23 17:31 J	-4692193.06	-4692192.77	-4692192.47	0.0279	0.0104
Venus	-17557-07-29 06:14 J	-4691061.39	-4691061.24	-4691061.10	0.0267	0.0188
Venus	-17556-03-15 03:21 J	-4690832.57	-4690832.36	-4690832.16	0.0265	0.0044
Venus	-17556-10-29 23:02 J	-4690603.73	-4690603.54	-4690603.34	0.0264	0.0096
Venus	-17555-06-15 18:14 J	-4690374.84	-4690374.74	-4690374.65	0.0262	0.0232

Earth	-17549-11-29 01:55 J	-4688016.66	-4688016.42	-4688016.18	0.0264	0.0072
Moon	-17549-11-29 05:45 J	-4688016.50	-4688016.26	-4688016.02	0.0264	0.0065 *
Mercury	-17545-06-17 12:57 J	-4686720.13	-4686719.96	-4686719.78	0.0277	0.0116
Mercury	-17545-09-14 12:43 J	-4686631.15	-4686630.97	-4686630.79	0.0278	0.0074
Mercury	-17545-12-12 12:14 J	-4686542.04	-4686541.99	-4686541.93	0.0279	0.0264
Mars	-17544-06-02 14:52 J	-4686370.14	-4686369.88	-4686369.62	0.0281	0.0089
Venus	-17541-04-05 07:11 J	-4685332.29	-4685332.20	-4685332.11	0.0294	0.0265
Venus	-17541-11-21 13:11 J	-4685102.16	-4685101.95	-4685101.74	0.0296	0.0063
Venus	-17540-07-09 21:07 J	-4684871.81	-4684871.62	-4684871.43	0.0299	0.0148
Mercury	-17532-07-29 19:11 J	-4681929.80	-4681929.70	-4681929.60	0.0286	0.0184
Mercury	-17532-10-26 06:14 J	-4681841.37	-4681841.24	-4681841.11	0.0285	0.0046
Mercury	-17531-01-22 17:16 J	-4681752.90	-4681752.78	-4681752.65	0.0284	0.0091
Mercury	-17531-04-21 04:19 J	-4681664.39	-4681664.32	-4681664.24	0.0283	0.0225
Venus	-17527-02-08 11:45 J	-4680275.17	-4680275.01	-4680274.85	0.0267	0.0164
Venus	-17527-09-25 08:38 J	-4680046.35	-4680046.14	-4680045.93	0.0265	0.0021
Venus	-17526-05-12 04:04 J	-4679817.51	-4679817.33	-4679817.13	0.0263	0.0119
Venus	-17526-12-26 23:02 J	-4679588.59	-4679588.54	-4679588.49	0.0262	0.0253
Earth	-17519-12-06 08:38 J	-4677052.19	-4677052.14	-4677052.10	0.0265	0.0260
Mercury	-17516-11-04 12:14 J	-4675988.14	-4675987.99	-4675987.83	0.0277	0.0163
Mercury	-17515-02-01 12:00 J	-4675899.19	-4675899.00	-4675898.81	0.0278	0.0026
Mercury	-17515-05-01 11:31 J	-4675810.14	-4675810.02	-4675809.90	0.0279	0.0216
Venus	-17512-10-16 15:21 J	-4674545.98	-4674545.86	-4674545.72	0.0295	0.0236
Venus	-17511-06-03 21:50 J	-4674315.81	-4674315.59	-4674315.38	0.0297	0.0031
Venus	-17510-01-20 05:45 J	-4674085.42	-4674085.26	-4674085.08	0.0299	0.0182
Earth	-17505-06-04 18:14 J	-4672122.95	-4672122.74	-4672122.52	0.0297	0.0123
Moon	-17505-06-04 18:57 J	-4672122.92	-4672122.71	-4672122.49	0.0297	0.0122 *
Mercury	-17503-12-16 21:36 J	-4671197.68	-4671197.60	-4671197.52	0.0286	0.0221
Mercury	-17502-03-15 08:38 J	-4671109.26	-4671109.14	-4671109.01	0.0285	0.0085
Mercury	-17502-06-11 19:55 J	-4671020.80	-4671020.67	-4671020.55	0.0284	0.0053
Mercury	-17502-09-08 06:57 J	-4670932.31	-4670932.21	-4670932.12	0.0283	0.0188

Venus	-17498-08-21 14:52 J	-4669489.06	-4669488.88	-4669488.71	0.0267	0.0144
Venus	-17497-04-06 11:31 J	-4669260.23	-4669260.02	-4669259.81	0.0265	0.0002
Venus	-17497-11-21 06:57 J	-4669031.38	-4669031.21	-4669031.03	0.0263	0.0138
Earth	-17490-12-01 05:45 J	-4666465.51	-4666465.26	-4666465.01	0.0264	0.0008
Moon	-17490-12-01 06:28 J	-4666465.48	-4666465.23	-4666464.97	0.0264	0.0006 *
Mercury	-17486-03-24 09:21 J	-4665256.21	-4665256.11	-4665256.00	0.0276	0.0226
Mercury	-17486-06-21 09:07 J	-4665167.31	-4665167.12	-4665166.93	0.0277	0.0038
Mercury	-17486-09-18 08:38 J	-4665078.29	-4665078.14	-4665077.98	0.0278	0.0152
Venus	-17482-04-28 20:09 J	-4663759.80	-4663759.66	-4663759.51	0.0294	0.0212
Venus	-17482-12-15 02:52 J	-4663529.60	-4663529.38	-4663529.17	0.0297	0.0008
Venus	-17481-08-01 11:02 J	-4663299.19	-4663299.04	-4663298.88	0.0299	0.0205
Moon	-17476-05-29 16:19 J	-4661536.96	-4661536.82	-4661536.67	0.0299	0.0244
Earth	-17476-05-29 17:45 J	-4661536.90	-4661536.76	-4661536.62	0.0299	0.0244 *
Mercury	-17473-05-05 00:14 J	-4660465.54	-4660465.49	-4660465.44	0.0287	0.0260
Mercury	-17473-08-01 11:31 J	-4660377.14	-4660377.02	-4660376.91	0.0286	0.0121
Mercury	-17473-10-28 22:33 J	-4660288.69	-4660288.56	-4660288.43	0.0285	0.0016
Mercury	-17472-01-25 09:36 J	-4660200.21	-4660200.10	-4660199.99	0.0284	0.0152
Mars	-17472-11-18 02:38 J	-4659903.62	-4659903.39	-4659903.15	0.0280	0.0185
Venus	-17469-07-16 21:21 J	-4658931.63	-4658931.61	-4658931.59	0.0269	0.0267
Venus	-17468-03-02 19:11 J	-4658702.88	-4658702.70	-4658702.51	0.0267	0.0122
Venus	-17468-10-17 15:50 J	-4658474.05	-4658473.84	-4658473.63	0.0265	0.0020
Venus	-17467-06-03 11:02 J	-4658245.20	-4658245.04	-4658244.87	0.0263	0.0159
Moon	-17461-11-25 07:40 J	-4655878.24	-4655878.18	-4655878.10	0.0263	0.0251
Earth	-17461-11-25 08:23 J	-4655878.19	-4655878.15	-4655878.09	0.0263	0.0257 *
Mercury	-17457-11-07 07:26 J	-4654435.36	-4654435.19	-4654435.00	0.0277	0.0091
Mercury	-17456-02-04 07:11 J	-4654346.38	-4654346.20	-4654346.02	0.0278	0.0099
Mars	-17456-10-27 07:55 J	-4654081.44	-4654081.17	-4654080.90	0.0281	0.0040
Venus	-17453-11-08 02:52 J	-4652973.54	-4652973.38	-4652973.20	0.0295	0.0184
Venus	-17452-06-26 09:50 J	-4652743.30	-4652743.09	-4652742.87	0.0298	0.0024
Venus	-17451-02-11 18:14 J	-4652512.86	-4652512.74	-4652512.60	0.0300	0.0237

Earth	-17446-06-07 01:40 J	-4650571.59	-4650571.43	-4650571.25	0.0297	0.0207
Moon	-17446-06-07 05:31 J	-4650571.44	-4650571.27	-4650571.09	0.0297	0.0203 *
Mercury	-17444-12-19 13:40 J	-4649645.03	-4649644.93	-4649644.82	0.0286	0.0161
Mercury	-17443-03-18 00:57 J	-4649556.59	-4649556.46	-4649556.33	0.0285	0.0025
Mercury	-17443-06-14 12:00 J	-4649468.12	-4649468.00	-4649467.88	0.0284	0.0112
Mercury	-17443-09-10 23:02 J	-4649379.60	-4649379.54	-4649379.48	0.0282	0.0247
Venus	-17439-01-27 00:00 J	-4648145.58	-4648145.50	-4648145.42	0.0268	0.0247
Venus	-17439-09-12 21:36 J	-4647916.79	-4647916.60	-4647916.41	0.0266	0.0103
Venus	-17438-04-29 17:45 J	-4647687.96	-4647687.76	-4647687.55	0.0264	0.0039
Venus	-17438-12-14 12:57 J	-4647459.11	-4647458.96	-4647458.80	0.0263	0.0177
Moon	-17431-12-02 02:09 J	-4644914.65	-4644914.41	-4644914.16	0.0264	0.0062
Earth	-17431-12-02 05:45 J	-4644914.50	-4644914.26	-4644914.01	0.0264	0.0049 *
Mercury	-17427-03-27 04:04 J	-4643703.49	-4643703.33	-4643703.17	0.0276	0.0159
Mercury	-17427-06-24 03:36 J	-4643614.54	-4643614.35	-4643614.16	0.0277	0.0030
Mercury	-17427-09-21 03:07 J	-4643525.48	-4643525.37	-4643525.25	0.0278	0.0220
Venus	-17423-05-21 06:14 J	-4642187.42	-4642187.24	-4642187.06	0.0295	0.0163
Venus	-17422-01-06 13:11 J	-4641957.16	-4641956.95	-4641956.74	0.0297	0.0045
Venus	-17422-08-24 21:36 J	-4641726.70	-4641726.60	-4641726.48	0.0299	0.0258
Moon	-17417-05-30 18:14 J	-4639985.93	-4639985.74	-4639985.54	0.0299	0.0172
Earth	-17417-05-30 21:50 J	-4639985.78	-4639985.59	-4639985.38	0.0299	0.0168 *
Mercury	-17414-05-08 15:50 J	-4638912.93	-4638912.84	-4638912.75	0.0287	0.0205
Mercury	-17414-08-05 03:07 J	-4638824.50	-4638824.37	-4638824.25	0.0286	0.0067
Mercury	-17414-11-01 14:09 J	-4638736.03	-4638735.91	-4638735.78	0.0285	0.0071
Mercury	-17413-01-29 01:11 J	-4638647.53	-4638647.45	-4638647.36	0.0283	0.0206
Venus	-17410-08-09 03:07 J	-4637359.47	-4637359.37	-4637359.26	0.0268	0.0227
Venus	-17409-03-25 00:43 J	-4637130.67	-4637130.47	-4637130.27	0.0266	0.0082
Venus	-17409-11-08 20:52 J	-4636901.83	-4636901.63	-4636901.42	0.0264	0.0059
Venus	-17408-06-25 15:50 J	-4636672.97	-4636672.84	-4636672.69	0.0263	0.0197
Earth	-17402-11-27 07:11 J	-4634327.35	-4634327.20	-4634327.04	0.0263	0.0203
Moon	-17402-11-27 10:33 J	-4634327.22	-4634327.06	-4634326.89	0.0263	0.0193 *

Mercury	-17398-08-14 02:09 J	-4632971.53	-4632971.41	-4632971.30	0.0276	0.0215
Mercury	-17398-11-11 01:40 J	-4632882.62	-4632882.43	-4632882.24	0.0277	0.0027
Mercury	-17397-02-08 01:11 J	-4632793.60	-4632793.45	-4632793.29	0.0278	0.0162
Venus	-17394-12-01 11:16 J	-4631401.21	-4631401.03	-4631400.83	0.0296	0.0137
Venus	-17393-07-18 18:28 J	-4631170.93	-4631170.73	-4631170.51	0.0298	0.0074
Venus	-17392-03-06 03:21 J	-4630940.41	-4630940.36	-4630940.29	0.0300	0.0287
Earth	-17387-06-08 03:36 J	-4629020.43	-4629020.35	-4629020.25	0.0297	0.0276
Moon	-17387-06-08 05:02 J	-4629020.39	-4629020.29	-4629020.18	0.0297	0.0267 *
Mercury	-17385-09-24 18:00 J	-4628180.81	-4628180.75	-4628180.69	0.0287	0.0249
Mercury	-17385-12-22 05:02 J	-4628092.41	-4628092.29	-4628092.17	0.0286	0.0111
Mercury	-17384-03-20 16:04 J	-4628003.95	-4628003.83	-4628003.70	0.0285	0.0028
Mercury	-17384-06-17 03:21 J	-4627915.47	-4627915.36	-4627915.26	0.0283	0.0163
Mars	-17383-04-13 09:36 J	-4627615.26	-4627615.10	-4627614.92	0.0279	0.0233
Venus	-17380-02-18 04:33 J	-4626573.42	-4626573.31	-4626573.17	0.0267	0.0210
Venus	-17380-10-05 02:09 J	-4626344.61	-4626344.41	-4626344.20	0.0265	0.0065
Venus	-17379-05-21 22:04 J	-4626115.77	-4626115.58	-4626115.37	0.0264	0.0077
Venus	-17378-01-05 16:48 J	-4625886.91	-4625886.80	-4625886.67	0.0262	0.0213
Moon	-17372-12-03 00:43 J	-4623363.68	-4623363.47	-4623363.24	0.0264	0.0114
Earth	-17372-12-03 02:52 J	-4623363.61	-4623363.38	-4623363.15	0.0264	0.0100 *
Mercury	-17368-03-29 21:21 J	-4622150.79	-4622150.61	-4622150.43	0.0276	0.0102
Mercury	-17368-06-26 20:52 J	-4622061.81	-4622061.63	-4622061.44	0.0277	0.0087
Mercury	-17368-09-23 20:23 J	-4621972.66	-4621972.65	-4621972.62	0.0279	0.0276
Mars	-17367-03-22 01:40 J	-4621793.70	-4621793.43	-4621793.16	0.0281	0.0031
Venus	-17364-06-12 12:43 J	-4620615.16	-4620614.97	-4620614.77	0.0296	0.0119
Venus	-17363-01-28 20:09 J	-4620384.86	-4620384.66	-4620384.45	0.0298	0.0091
Moon	-17358-06-01 21:07 J	-4618434.83	-4618434.62	-4618434.40	0.0299	0.0111
Earth	-17358-06-01 21:21 J	-4618434.83	-4618434.61	-4618434.38	0.0299	0.0102 *
Mercury	-17355-05-11 06:43 J	-4617360.32	-4617360.22	-4617360.11	0.0287	0.0158
Mercury	-17355-08-07 18:00 J	-4617271.88	-4617271.75	-4617271.62	0.0286	0.0019
Mercury	-17355-11-04 05:02 J	-4617183.40	-4617183.29	-4617183.17	0.0285	0.0119

Mercury	-17354-01-31 16:19 J	-4617094.88	-4617094.82	-4617094.77	0.0283	0.0254
Venus	-17351-08-31 06:57 J	-4615787.34	-4615787.21	-4615787.05	0.0268	0.0190
Venus	-17350-04-17 04:33 J	-4615558.52	-4615558.31	-4615558.11	0.0266	0.0045
Venus	-17350-12-02 00:28 J	-4615329.68	-4615329.48	-4615329.29	0.0264	0.0096
Venus	-17349-07-17 19:11 J	-4615100.79	-4615100.70	-4615100.60	0.0262	0.0232
Earth	-17343-11-28 03:21 J	-4612776.56	-4612776.36	-4612776.15	0.0262	0.0154
Moon	-17343-11-28 05:45 J	-4612776.47	-4612776.26	-4612776.04	0.0262	0.0142 *
Mercury	-17339-08-16 18:57 J	-4611418.86	-4611418.71	-4611418.55	0.0276	0.0160
Mercury	-17339-11-13 18:28 J	-4611329.92	-4611329.73	-4611329.54	0.0277	0.0028
Mercury	-17338-02-10 18:00 J	-4611240.86	-4611240.75	-4611240.63	0.0278	0.0217
Venus	-17335-12-23 17:16 J	-4609828.98	-4609828.78	-4609828.57	0.0296	0.0092
Venus	-17334-08-11 00:43 J	-4609598.66	-4609598.47	-4609598.27	0.0299	0.0119
Mercury	-17326-09-28 08:38 J	-4606628.23	-4606628.14	-4606628.05	0.0287	0.0205
Mercury	-17326-12-25 19:40 J	-4606539.80	-4606539.68	-4606539.55	0.0286	0.0067
Mercury	-17325-03-23 06:57 J	-4606451.34	-4606451.21	-4606451.09	0.0285	0.0072
Mercury	-17325-06-19 18:00 J	-4606362.84	-4606362.75	-4606362.66	0.0283	0.0207
Venus	-17321-03-12 08:09 J	-4605001.32	-4605001.16	-4605001.00	0.0267	0.0172
Venus	-17321-10-27 05:16 J	-4604772.49	-4604772.28	-4604772.07	0.0265	0.0029
Venus	-17320-06-13 00:57 J	-4604543.64	-4604543.46	-4604543.26	0.0263	0.0112
Venus	-17319-01-27 19:26 J	-4604314.74	-4604314.69	-4604314.61	0.0262	0.0248
Earth	-17313-12-03 21:50 J	-4601812.79	-4601812.59	-4601812.37	0.0264	0.0148
Moon	-17313-12-04 00:43 J	-4601812.66	-4601812.47	-4601812.27	0.0264	0.0162 *
Mercury	-17309-01-03 14:23 J	-4600686.99	-4600686.90	-4600686.80	0.0275	0.0236
Mercury	-17309-04-01 14:09 J	-4600598.10	-4600597.91	-4600597.72	0.0276	0.0049
Mercury	-17309-06-29 13:26 J	-4600509.10	-4600508.94	-4600508.77	0.0277	0.0140
Venus	-17306-11-17 12:14 J	-4599273.06	-4599272.99	-4599272.92	0.0293	0.0278
Venus	-17305-07-04 17:45 J	-4599042.97	-4599042.76	-4599042.55	0.0296	0.0076
Venus	-17304-02-20 01:26 J	-4598812.63	-4598812.44	-4598812.25	0.0298	0.0136
Earth	-17299-06-02 16:48 J	-4596884.04	-4596883.80	-4596883.56	0.0299	0.0046
Moon	-17299-06-02 20:23 J	-4596883.88	-4596883.65	-4596883.41	0.0299	0.0060 *

Mercury	-17296-02-14 10:04 J	-4595896.14	-4595896.08	-4595896.02	0.0288	0.0257
Mercury	-17296-05-13 21:21 J	-4595807.73	-4595807.61	-4595807.49	0.0287	0.0117
Mercury	-17296-08-10 08:23 J	-4595719.28	-4595719.15	-4595719.02	0.0286	0.0023
Mercury	-17296-11-06 19:26 J	-4595630.79	-4595630.69	-4595630.58	0.0285	0.0160
Mars	-17295-09-05 23:45 J	-4595327.61	-4595327.51	-4595327.38	0.0281	0.0260
Venus	-17292-09-22 09:50 J	-4594215.26	-4594215.09	-4594214.92	0.0268	0.0154
Venus	-17291-05-09 06:43 J	-4593986.42	-4593986.22	-4593986.01	0.0265	0.0012
Venus	-17291-12-24 02:23 J	-4593757.57	-4593757.40	-4593757.21	0.0264	0.0131
Moon	-17284-11-28 19:55 J	-4591225.91	-4591225.67	-4591225.43	0.0262	0.0094
Earth	-17284-11-28 22:04 J	-4591225.80	-4591225.58	-4591225.34	0.0262	0.0108 *
Mercury	-17280-08-19 11:16 J	-4589866.20	-4589866.03	-4589865.85	0.0276	0.0110
Mercury	-17280-11-16 10:48 J	-4589777.23	-4589777.05	-4589776.86	0.0277	0.0078
Mercury	-17279-02-13 10:04 J	-4589688.12	-4589688.08	-4589688.01	0.0278	0.0267
Mars	-17279-08-14 19:11 J	-4589505.98	-4589505.70	-4589505.43	0.0280	0.0017
Venus	-17276-05-29 15:36 J	-4588486.95	-4588486.85	-4588486.74	0.0294	0.0254
Venus	-17275-01-14 21:21 J	-4588256.82	-4588256.61	-4588256.40	0.0297	0.0050
Venus	-17275-09-02 05:02 J	-4588026.47	-4588026.29	-4588026.11	0.0299	0.0162
Mercury	-17267-09-30 23:02 J	-4585075.65	-4585075.54	-4585075.44	0.0287	0.0165
Mercury	-17267-12-28 10:04 J	-4584987.21	-4584987.08	-4584986.95	0.0286	0.0027
Mercury	-17266-03-26 21:21 J	-4584898.73	-4584898.61	-4584898.49	0.0285	0.0112
Mercury	-17266-06-23 08:23 J	-4584810.21	-4584810.15	-4584810.09	0.0283	0.0248
Venus	-17262-04-04 10:19 J	-4583429.24	-4583429.07	-4583428.88	0.0267	0.0137
Venus	-17262-11-19 07:26 J	-4583200.40	-4583200.19	-4583199.98	0.0265	0.0007
Venus	-17261-07-05 03:07 J	-4582971.54	-4582971.37	-4582971.19	0.0263	0.0147
Earth	-17254-12-05 16:33 J	-4580261.97	-4580261.81	-4580261.64	0.0264	0.0194
Moon	-17254-12-05 19:26 J	-4580261.83	-4580261.69	-4580261.52	0.0264	0.0208 *
Mercury	-17250-01-06 06:57 J	-4579134.35	-4579134.21	-4579134.07	0.0275	0.0185
Mercury	-17250-04-05 06:28 J	-4579045.42	-4579045.23	-4579045.04	0.0276	0.0002
Mercury	-17250-07-03 05:45 J	-4578956.39	-4578956.26	-4578956.12	0.0277	0.0190
Venus	-17247-12-09 15:50 J	-4577700.96	-4577700.84	-4577700.71	0.0294	0.0238

Venus	-17246-07-27 21:50 J	-4577470.80	-4577470.59	-4577470.38	0.0296	0.0033
Venus	-17245-03-14 05:31 J	-4577240.44	-4577240.27	-4577240.09	0.0299	0.0179
Earth	-17240-06-03 10:48 J	-4575333.29	-4575333.05	-4575332.81	0.0299	0.0007
Moon	-17240-06-03 12:14 J	-4575333.24	-4575332.99	-4575332.74	0.0299	0.0008 *
Mercury	-17237-02-18 00:14 J	-4574343.57	-4574343.49	-4574343.41	0.0288	0.0218
Mercury	-17237-05-16 11:31 J	-4574255.15	-4574255.02	-4574254.90	0.0287	0.0078
Mercury	-17237-08-12 22:33 J	-4574166.68	-4574166.56	-4574166.43	0.0286	0.0061
Mercury	-17237-11-09 09:50 J	-4574078.18	-4574078.09	-4574078.00	0.0285	0.0198
Venus	-17233-02-28 12:57 J	-4572871.98	-4572871.96	-4572871.92	0.0270	0.0266
Venus	-17233-10-14 11:31 J	-4572643.20	-4572643.02	-4572642.83	0.0267	0.0119
Venus	-17232-05-31 08:38 J	-4572414.35	-4572414.14	-4572413.93	0.0265	0.0026
Venus	-17231-01-15 04:04 J	-4572185.48	-4572185.33	-4572185.16	0.0263	0.0166
Moon	-17225-11-29 13:40 J	-4569675.16	-4569674.93	-4569674.68	0.0262	0.0047
Earth	-17225-11-29 17:16 J	-4569675.03	-4569674.78	-4569674.54	0.0262	0.0061 *
Mercury	-17221-05-25 04:19 J	-4568402.40	-4568402.32	-4568402.22	0.0274	0.0244
Mercury	-17221-08-22 04:04 J	-4568313.52	-4568313.33	-4568313.14	0.0276	0.0058
Mercury	-17221-11-19 03:21 J	-4568224.52	-4568224.36	-4568224.19	0.0277	0.0130
Venus	-17217-06-20 19:26 J	-4566914.82	-4566914.69	-4566914.53	0.0294	0.0214
Venus	-17216-02-06 01:40 J	-4566684.64	-4566684.43	-4566684.21	0.0297	0.0007
Venus	-17216-09-24 09:21 J	-4566454.26	-4566454.11	-4566453.95	0.0299	0.0206
Mercury	-17208-07-07 01:40 J	-4563611.47	-4563611.43	-4563611.38	0.0288	0.0268
Mercury	-17208-10-03 13:11 J	-4563523.07	-4563522.95	-4563522.84	0.0287	0.0128
Mercury	-17208-12-31 00:14 J	-4563434.62	-4563434.49	-4563434.36	0.0286	0.0013
Mercury	-17207-03-29 11:31 J	-4563346.13	-4563346.02	-4563345.91	0.0285	0.0150
Mars	-17206-01-29 07:11 J	-4563040.23	-4563040.20	-4563040.13	0.0281	0.0277
Venus	-17204-09-09 13:55 J	-4562085.99	-4562085.92	-4562085.83	0.0269	0.0248
Venus	-17203-04-26 12:14 J	-4561857.17	-4561856.99	-4561856.79	0.0267	0.0102
Venus	-17203-12-11 09:07 J	-4561628.32	-4561628.12	-4561627.91	0.0265	0.0043
Venus	-17202-07-28 04:48 J	-4561399.44	-4561399.30	-4561399.14	0.0263	0.0181
Moon	-17195-12-06 10:33 J	-4558711.12	-4558711.06	-4558710.98	0.0264	0.0253



Earth	-17195-12-06 11:45 J	-4558711.09	-4558711.01	-4558710.90	0.0264	0.0243	*
Mercury	-17191-01-08 23:45 J	-4557581.68	-4557581.51	-4557581.35	0.0275	0.0133	
Mercury	-17191-04-07 23:02 J	-4557492.73	-4557492.54	-4557492.35	0.0276	0.0054	
Mercury	-17191-07-05 22:19 J	-4557403.65	-4557403.57	-4557403.47	0.0277	0.0242	
Mars	-17190-01-07 04:19 J	-4557218.59	-4557218.32	-4557218.04	0.0280	0.0019	
Venus	-17188-12-31 19:55 J	-4556128.83	-4556128.67	-4556128.51	0.0294	0.0196	
Venus	-17187-08-19 01:55 J	-4555898.63	-4555898.42	-4555898.20	0.0297	0.0011	
Venus	-17186-04-06 09:36 J	-4555668.23	-4555668.10	-4555667.94	0.0299	0.0223	
Moon	-17181-06-04 01:11 J	-4553782.69	-4553782.45	-4553782.21	0.0299	0.0040	
Earth	-17181-06-04 04:19 J	-4553782.56	-4553782.32	-4553782.09	0.0299	0.0057	*
Mercury	-17178-02-20 14:09 J	-4552791.00	-4552790.91	-4552790.80	0.0288	0.0182	
Mercury	-17178-05-20 01:26 J	-4552702.56	-4552702.44	-4552702.31	0.0287	0.0042	
Mercury	-17178-08-16 12:43 J	-4552614.09	-4552613.97	-4552613.85	0.0286	0.0098	
Mercury	-17178-11-13 00:00 J	-4552525.57	-4552525.50	-4552525.43	0.0285	0.0236	
Venus	-17174-03-22 15:07 J	-4551299.97	-4551299.87	-4551299.76	0.0269	0.0230	
Venus	-17174-11-06 13:40 J	-4551071.13	-4551070.93	-4551070.73	0.0267	0.0082	
Venus	-17173-06-22 10:33 J	-4550842.26	-4550842.06	-4550841.85	0.0265	0.0062	
Venus	-17172-02-06 06:00 J	-4550613.37	-4550613.25	-4550613.11	0.0263	0.0201	
Earth	-17166-12-01 13:11 J	-4548124.20	-4548123.95	-4548123.70	0.0262	0.0012	
Moon	-17166-12-01 13:55 J	-4548124.16	-4548123.92	-4548123.68	0.0262	0.0003	*
Mercury	-17162-05-28 21:21 J	-4546849.74	-4546849.61	-4546849.46	0.0274	0.0188	
Mercury	-17162-08-25 20:52 J	-4546760.82	-4546760.63	-4546760.44	0.0275	0.0006	
Mercury	-17162-11-22 20:09 J	-4546671.79	-4546671.66	-4546671.51	0.0277	0.0185	
Venus	-17158-07-14 00:28 J	-4545342.65	-4545342.48	-4545342.30	0.0294	0.0169	
Venus	-17157-02-29 06:43 J	-4545112.44	-4545112.22	-4545112.01	0.0297	0.0038	
Venus	-17157-10-16 14:23 J	-4544882.01	-4544881.90	-4544881.78	0.0299	0.0251	
Mercury	-17149-07-09 16:04 J	-4542058.91	-4542058.83	-4542058.75	0.0289	0.0229	
Mercury	-17149-10-06 03:21 J	-4541970.48	-4541970.36	-4541970.24	0.0287	0.0088	
Mercury	-17148-01-02 14:38 J	-4541882.02	-4541881.89	-4541881.76	0.0286	0.0052	
Mercury	-17148-04-01 01:40 J	-4541793.52	-4541793.43	-4541793.33	0.0285	0.0190	

Venus	-17145-10-01 16:33 J	-4540513.93	-4540513.81	-4540513.68	0.0269	0.0212
Venus	-17144-05-18 14:52 J	-4540285.08	-4540284.88	-4540284.67	0.0267	0.0065
Venus	-17143-01-02 11:45 J	-4540056.21	-4540056.01	-4540055.81	0.0264	0.0078
Venus	-17143-08-19 06:57 J	-4539827.32	-4539827.21	-4539827.08	0.0263	0.0217
Moon	-17137-11-25 11:31 J	-4537537.06	-4537537.02	-4537536.95	0.0261	0.0255
Mercury	-17133-10-14 18:00 J	-4536117.81	-4536117.75	-4536117.68	0.0274	0.0256
Mercury	-17132-01-11 17:16 J	-4536028.96	-4536028.78	-4536028.59	0.0275	0.0072
Mercury	-17132-04-10 16:48 J	-4535939.98	-4535939.80	-4535939.63	0.0276	0.0115
Venus	-17128-01-23 02:09 J	-4534556.59	-4534556.41	-4534556.22	0.0294	0.0150
Venus	-17128-09-10 08:09 J	-4534326.36	-4534326.16	-4534325.94	0.0297	0.0058
Venus	-17127-04-28 16:04 J	-4534095.91	-4534095.83	-4534095.73	0.0299	0.0270
Moon	-17122-06-05 21:21 J	-4532231.83	-4532231.61	-4532231.39	0.0299	0.0096
Earth	-17122-06-05 23:45 J	-4532231.72	-4532231.51	-4532231.28	0.0299	0.0113 *
Mercury	-17120-11-26 17:16 J	-4531326.80	-4531326.78	-4531326.75	0.0289	0.0283
Mercury	-17119-02-23 04:33 J	-4531238.42	-4531238.31	-4531238.19	0.0288	0.0141
Mercury	-17119-05-22 15:50 J	-4531149.97	-4531149.84	-4531149.71	0.0287	0.0005
Mercury	-17119-08-19 03:07 J	-4531061.48	-4531061.37	-4531061.26	0.0286	0.0138
Mercury	-17119-11-15 14:23 J	-4530972.93	-4530972.90	-4530972.87	0.0285	0.0276
Venus	-17115-04-13 17:31 J	-4529727.90	-4529727.77	-4529727.62	0.0269	0.0193
Venus	-17115-11-28 16:04 J	-4529499.03	-4529498.83	-4529498.62	0.0267	0.0045
Venus	-17114-07-15 13:11 J	-4529270.15	-4529269.95	-4529269.76	0.0265	0.0098
Venus	-17113-02-29 08:38 J	-4529041.23	-4529041.14	-4529041.05	0.0263	0.0237
Earth	-17107-12-02 11:31 J	-4526573.26	-4526573.02	-4526572.77	0.0262	0.0042
Moon	-17107-12-02 15:36 J	-4526573.10	-4526572.85	-4526572.61	0.0262	0.0057 *
Mercury	-17103-05-31 15:36 J	-4525297.02	-4525296.85	-4525296.68	0.0274	0.0125
Mercury	-17103-08-28 14:52 J	-4525208.06	-4525207.88	-4525207.69	0.0275	0.0061
Mercury	-17103-11-25 14:09 J	-4525118.98	-4525118.91	-4525118.82	0.0277	0.0247
Mars	-17102-06-02 07:11 J	-4524930.48	-4524930.20	-4524929.93	0.0279	0.0014
Venus	-17099-08-05 07:26 J	-4523770.38	-4523770.19	-4523769.99	0.0295	0.0122
Venus	-17098-03-23 13:40 J	-4523540.14	-4523539.93	-4523539.72	0.0297	0.0086

Venus	-17098-11-08 21:50 J	-4523309.59	-4523309.59	-4523309.59	0.0299	0.0299
Earth	-17093-05-29 18:28 J	-4521645.82	-4521645.73	-4521645.62	0.0301	0.0273
Moon	-17093-05-29 21:07 J	-4521645.69	-4521645.62	-4521645.55	0.0301	0.0288 *
Mercury	-17090-07-13 06:28 J	-4520506.32	-4520506.23	-4520506.13	0.0289	0.0187
Mercury	-17090-10-09 17:45 J	-4520417.88	-4520417.76	-4520417.63	0.0287	0.0047
Mercury	-17089-01-06 05:02 J	-4520329.41	-4520329.29	-4520329.17	0.0286	0.0094
Mercury	-17089-04-03 16:04 J	-4520240.90	-4520240.83	-4520240.75	0.0285	0.0232
Venus	-17086-10-24 19:55 J	-4518941.83	-4518941.67	-4518941.51	0.0269	0.0174
Venus	-17085-06-09 18:14 J	-4518712.94	-4518712.74	-4518712.53	0.0266	0.0027
Venus	-17084-01-24 14:52 J	-4518484.06	-4518483.88	-4518483.69	0.0264	0.0117
Venus	-17084-09-10 10:19 J	-4518255.11	-4518255.07	-4518255.01	0.0263	0.0254
Moon	-17078-11-27 08:52 J	-4515986.28	-4515986.13	-4515985.96	0.0261	0.0199
Earth	-17078-11-27 12:43 J	-4515986.10	-4515985.97	-4515985.82	0.0261	0.0214 *
Mercury	-17074-10-18 12:43 J	-4514565.10	-4514564.97	-4514564.83	0.0274	0.0188
Mercury	-17073-01-15 12:14 J	-4514476.19	-4514475.99	-4514475.80	0.0275	0.0006
Mercury	-17073-04-13 11:16 J	-4514387.16	-4514387.03	-4514386.88	0.0276	0.0184
Venus	-17069-02-15 10:19 J	-4512984.26	-4512984.07	-4512983.86	0.0295	0.0101
Venus	-17069-10-02 16:48 J	-4512754.00	-4512753.80	-4512753.60	0.0297	0.0108
Earth	-17063-06-06 22:48 J	-4510680.75	-4510680.55	-4510680.36	0.0299	0.0174
Moon	-17063-06-07 00:14 J	-4510680.68	-4510680.49	-4510680.29	0.0299	0.0160 *
Mercury	-17061-11-29 07:55 J	-4509774.24	-4509774.17	-4509774.09	0.0289	0.0238
Mercury	-17060-02-25 19:11 J	-4509685.82	-4509685.70	-4509685.57	0.0288	0.0097
Mercury	-17060-05-25 06:28 J	-4509597.35	-4509597.23	-4509597.10	0.0287	0.0046
Mercury	-17060-08-21 17:45 J	-4509508.85	-4509508.76	-4509508.66	0.0286	0.0184
Venus	-17056-05-05 21:36 J	-4508155.77	-4508155.60	-4508155.43	0.0269	0.0154
Venus	-17056-12-20 19:55 J	-4507926.88	-4507926.67	-4507926.46	0.0267	0.0007
Venus	-17055-08-06 16:48 J	-4507697.98	-4507697.80	-4507697.62	0.0265	0.0137
Earth	-17048-12-03 13:11 J	-4505022.18	-4505021.95	-4505021.72	0.0262	0.0101
Moon	-17048-12-03 13:55 J	-4505022.15	-4505021.92	-4505021.68	0.0262	0.0113 *
Mercury	-17044-03-06 11:31 J	-4503833.11	-4503833.02	-4503832.91	0.0273	0.0236

Mercury	-17044-06-03 11:02 J	-4503744.23	-4503744.04	-4503743.85	0.0275	0.0051
Mercury	-17044-08-31 10:19 J	-4503655.23	-4503655.07	-4503654.90	0.0276	0.0134
Venus	-17040-01-09 13:26 J	-4502428.01	-4502427.94	-4502427.85	0.0292	0.0270
Venus	-17040-08-27 17:45 J	-4502197.97	-4502197.76	-4502197.55	0.0295	0.0069
Venus	-17039-04-15 00:00 J	-4501967.68	-4501967.50	-4501967.30	0.0297	0.0141
Moon	-17034-05-31 18:14 J	-4500094.90	-4500094.74	-4500094.57	0.0301	0.0220
Earth	-17034-05-31 20:23 J	-4500094.82	-4500094.65	-4500094.47	0.0301	0.0203 *
Mercury	-17031-04-18 10:19 J	-4499042.10	-4499042.07	-4499042.04	0.0290	0.0280
Mercury	-17031-07-15 21:36 J	-4498953.71	-4498953.60	-4498953.48	0.0288	0.0138
Mercury	-17031-10-12 08:52 J	-4498865.26	-4498865.13	-4498865.00	0.0287	0.0006
Mercury	-17030-01-08 20:09 J	-4498776.77	-4498776.66	-4498776.55	0.0286	0.0143
Mercury	-17030-04-07 07:11 J	-4498688.21	-4498688.20	-4498688.17	0.0285	0.0281
Venus	-17027-11-16 00:43 J	-4497369.65	-4497369.47	-4497369.28	0.0269	0.0133
Venus	-17026-07-02 23:02 J	-4497140.74	-4497140.54	-4497140.33	0.0266	0.0015
Venus	-17025-02-16 19:40 J	-4496911.84	-4496911.68	-4496911.51	0.0264	0.0157
Moon	-17019-11-28 15:50 J	-4494435.05	-4494434.84	-4494434.64	0.0262	0.0139
Earth	-17019-11-28 16:19 J	-4494435.02	-4494434.82	-4494434.61	0.0262	0.0152 *
Mercury	-17015-10-21 09:07 J	-4493012.30	-4493012.12	-4493011.94	0.0274	0.0107
Mercury	-17014-01-18 08:23 J	-4492923.33	-4492923.15	-4492922.97	0.0276	0.0078
Mercury	-17014-04-17 07:40 J	-4492834.23	-4492834.18	-4492834.12	0.0277	0.0264
Mars	-17014-10-26 19:26 J	-4492641.96	-4492641.69	-4492641.42	0.0279	0.0055
Venus	-17011-07-22 18:00 J	-4491641.85	-4491641.75	-4491641.62	0.0292	0.0246
Venus	-17010-03-09 22:33 J	-4491411.78	-4491411.56	-4491411.35	0.0295	0.0045
Venus	-17010-10-26 04:48 J	-4491181.47	-4491181.30	-4491181.12	0.0297	0.0165
Earth	-17004-06-08 01:55 J	-4489129.55	-4489129.42	-4489129.28	0.0299	0.0247
Moon	-17004-06-08 05:31 J	-4489129.41	-4489129.27	-4489129.11	0.0299	0.0231 *
Mercury	-17002-12-02 23:16 J	-4488221.63	-4488221.53	-4488221.43	0.0289	0.0187
Mercury	-17001-02-29 10:33 J	-4488133.18	-4488133.06	-4488132.93	0.0288	0.0045
Mercury	-17001-05-27 21:50 J	-4488044.71	-4488044.59	-4488044.46	0.0287	0.0096
Mercury	-17001-08-24 09:07 J	-4487956.19	-4487956.12	-4487956.05	0.0285	0.0234

# 17TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 17th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-16998-10-12 03:07 J		-4486812.41	-4486812.37	-4486812.32	0.0271	0.0264	
Venus	-16997-05-28 03:07 J		-4486583.56	-4486583.37	-4486583.18	0.0269	0.0112	
Venus	-16996-01-12 01:26 J		-4486354.65	-4486354.44	-4486354.23	0.0267	0.0035	
Venus	-16996-08-28 22:04 J		-4486125.73	-4486125.58	-4486125.43	0.0265	0.0178	
Moon	-16989-12-04 14:38 J		-4483471.08	-4483470.89	-4483470.70	0.0263	0.0175	
Earth	-16989-12-04 18:14 J		-4483470.93	-4483470.74	-4483470.54	0.0263	0.0167	*
Mercury	-16985-03-09 08:23 J		-4482280.30	-4482280.15	-4482279.98	0.0274	0.0152	
Mercury	-16985-06-06 07:55 J		-4482191.36	-4482191.17	-4482190.98	0.0275	0.0033	
Mercury	-16985-09-03 07:11 J		-4482102.32	-4482102.20	-4482102.09	0.0276	0.0218	
Venus	-16981-02-02 02:38 J		-4480855.53	-4480855.39	-4480855.24	0.0292	0.0215	
Venus	-16981-09-19 07:11 J		-4480625.42	-4480625.20	-4480624.99	0.0295	0.0013	
Venus	-16980-05-07 13:26 J		-4480395.09	-4480394.94	-4480394.77	0.0298	0.0200	
Moon	-16975-06-01 22:48 J		-4478543.75	-4478543.55	-4478543.33	0.0301	0.0141	
Earth	-16975-06-02 02:23 J		-4478543.61	-4478543.40	-4478543.17	0.0301	0.0124	*
Mercury	-16972-04-21 01:55 J		-4477489.49	-4477489.42	-4477489.34	0.0289	0.0225	
Mercury	-16972-07-18 13:11 J		-4477401.07	-4477400.95	-4477400.82	0.0288	0.0083	
Mercury	-16972-10-15 00:28 J		-4477312.60	-4477312.48	-4477312.35	0.0287	0.0059	
Mercury	-16971-01-11 11:45 J		-4477224.10	-4477224.01	-4477223.91	0.0286	0.0198	
Venus	-16968-04-23 07:26 J		-4476026.27	-4476026.19	-4476026.09	0.0271	0.0241	

Venus	-16968-12-08 07:11 J	-4475797.39	-4475797.20	-4475796.99	0.0268	0.0091
Venus	-16967-07-25 05:31 J	-4475568.47	-4475568.27	-4475568.06	0.0266	0.0057
Venus	-16966-03-11 02:09 J	-4475339.55	-4475339.41	-4475339.27	0.0264	0.0199
Earth	-16960-11-29 23:02 J	-4472883.77	-4472883.54	-4472883.30	0.0262	0.0083
Moon	-16960-11-30 02:09 J	-4472883.64	-4472883.41	-4472883.17	0.0262	0.0072 *
Mercury	-16956-07-27 07:26 J	-4471548.32	-4471548.19	-4471548.06	0.0274	0.0201
Mercury	-16956-10-24 06:43 J	-4471459.41	-4471459.22	-4471459.02	0.0275	0.0018
Mercury	-16955-01-21 06:00 J	-4471370.40	-4471370.25	-4471370.10	0.0276	0.0169
Venus	-16952-08-14 09:21 J	-4470069.27	-4470069.11	-4470068.94	0.0293	0.0187
Venus	-16951-04-01 14:09 J	-4469839.13	-4469838.91	-4469838.70	0.0295	0.0017
Venus	-16951-11-17 20:52 J	-4469608.76	-4469608.63	-4469608.49	0.0298	0.0228
Mercury	-16943-09-08 04:04 J	-4466757.37	-4466757.33	-4466757.28	0.0289	0.0268
Mercury	-16943-12-05 15:21 J	-4466668.97	-4466668.86	-4466668.74	0.0288	0.0126
Mercury	-16942-03-04 02:38 J	-4466580.52	-4466580.39	-4466580.26	0.0287	0.0018
Mercury	-16942-05-31 13:55 J	-4466492.03	-4466491.92	-4466491.81	0.0286	0.0155
Venus	-16939-11-03 10:48 J	-4465240.16	-4465240.05	-4465239.92	0.0271	0.0219
Venus	-16938-06-20 10:48 J	-4465011.26	-4465011.05	-4465010.85	0.0269	0.0068
Venus	-16937-02-04 08:38 J	-4464782.34	-4464782.14	-4464781.94	0.0266	0.0079
Venus	-16937-09-20 05:02 J	-4464553.40	-4464553.29	-4464553.17	0.0265	0.0221
Moon	-16930-12-06 23:45 J	-4461919.58	-4461919.51	-4461919.41	0.0263	0.0246
Earth	-16930-12-07 02:09 J	-4461919.50	-4461919.41	-4461919.30	0.0263	0.0239 *
Mercury	-16927-12-14 07:26 J	-4460816.27	-4460816.19	-4460816.10	0.0273	0.0241
Mercury	-16926-03-13 06:43 J	-4460727.40	-4460727.22	-4460727.03	0.0274	0.0058
Mercury	-16926-06-10 06:00 J	-4460638.42	-4460638.25	-4460638.08	0.0275	0.0127
Mars	-16925-03-22 03:21 J	-4460352.60	-4460352.36	-4460352.12	0.0279	0.0133
Venus	-16922-02-24 19:11 J	-4459282.88	-4459282.70	-4459282.51	0.0293	0.0154
Venus	-16922-10-13 00:14 J	-4459052.70	-4459052.49	-4459052.28	0.0296	0.0052
Venus	-16921-05-30 06:57 J	-4458822.30	-4458822.21	-4458822.11	0.0298	0.0264
Earth	-16916-06-03 14:09 J	-4456992.15	-4456991.91	-4456991.67	0.0300	0.0031
Moon	-16916-06-03 14:38 J	-4456992.12	-4456991.89	-4456991.66	0.0300	0.0045 *

Mercury	-16913-04-23 18:28 J	-4455936.84	-4455936.73	-4455936.63	0.0289	0.0160
Mercury	-16913-07-21 05:45 J	-4455848.39	-4455848.26	-4455848.13	0.0288	0.0020
Mercury	-16913-10-17 16:48 J	-4455759.91	-4455759.80	-4455759.68	0.0287	0.0122
Mercury	-16912-01-14 04:04 J	-4455671.38	-4455671.33	-4455671.28	0.0285	0.0260
Venus	-16909-05-15 16:04 J	-4454453.96	-4454453.83	-4454453.68	0.0270	0.0196
Venus	-16909-12-30 15:36 J	-4454225.05	-4454224.85	-4454224.64	0.0268	0.0045
Venus	-16908-08-16 13:26 J	-4453996.13	-4453995.94	-4453995.74	0.0266	0.0102
Venus	-16907-04-02 09:50 J	-4453767.16	-4453767.09	-4453767.00	0.0264	0.0243
Earth	-16901-12-01 08:38 J	-4451332.39	-4451332.14	-4451331.89	0.0262	0.0009
Moon	-16901-12-01 11:31 J	-4451332.27	-4451332.02	-4451331.76	0.0262	0.0005 *
Mercury	-16897-07-30 06:28 J	-4449995.41	-4449995.23	-4449995.05	0.0274	0.0102
Mercury	-16897-10-27 05:45 J	-4449906.44	-4449906.26	-4449906.08	0.0275	0.0083
Mercury	-16896-01-24 04:48 J	-4449817.33	-4449817.30	-4449817.25	0.0276	0.0270
Venus	-16893-09-06 03:50 J	-4448496.54	-4448496.34	-4448496.15	0.0293	0.0123
Venus	-16892-04-24 08:52 J	-4448266.34	-4448266.13	-4448265.93	0.0296	0.0084
Venus	-16892-12-10 15:50 J	-4448035.85	-4448035.84	-4448035.81	0.0298	0.0296
Mercury	-16884-09-10 20:52 J	-4445204.72	-4445204.63	-4445204.54	0.0289	0.0199
Mercury	-16884-12-08 08:09 J	-4445116.29	-4445116.16	-4445116.03	0.0288	0.0057
Mercury	-16883-03-06 19:26 J	-4445027.81	-4445027.69	-4445027.57	0.0287	0.0083
Mercury	-16883-06-03 06:28 J	-4444939.30	-4444939.23	-4444939.14	0.0285	0.0223
Mars	-16883-07-14 06:28 J	-4444898.41	-4444898.23	-4444898.01	0.0285	0.0221
Venus	-16880-11-25 20:09 J	-4443667.81	-4443667.66	-4443667.49	0.0270	0.0173
Venus	-16879-07-12 19:55 J	-4443438.88	-4443438.67	-4443438.47	0.0268	0.0022
Venus	-16878-02-26 17:31 J	-4443209.95	-4443209.77	-4443209.59	0.0266	0.0125
Moon	-16872-11-26 11:31 J	-4440745.10	-4440745.02	-4440744.91	0.0261	0.0241
Earth	-16872-11-26 14:52 J	-4440744.92	-4440744.88	-4440744.81	0.0261	0.0255 *
Mercury	-16868-12-17 06:28 J	-4439263.39	-4439263.23	-4439263.06	0.0274	0.0141
Mercury	-16867-03-16 05:45 J	-4439174.44	-4439174.26	-4439174.07	0.0275	0.0044
Mercury	-16867-06-13 05:02 J	-4439085.39	-4439085.29	-4439085.18	0.0276	0.0229
Venus	-16864-08-01 11:16 J	-4437940.05	-4437940.03	-4437939.99	0.0291	0.0287

Venus	-16863-03-19 14:23 J	-4437710.10	-4437709.90	-4437709.69	0.0293	0.0089
Venus	-16863-11-04 19:55 J	-4437479.86	-4437479.67	-4437479.47	0.0296	0.0120
Earth	-16857-06-05 06:57 J	-4435440.44	-4435440.21	-4435439.98	0.0300	0.0074
Moon	-16857-06-05 10:33 J	-4435440.29	-4435440.06	-4435439.83	0.0300	0.0062 *
Mercury	-16854-01-29 00:14 J	-4434472.57	-4434472.49	-4434472.41	0.0289	0.0229
Mercury	-16854-04-27 11:31 J	-4434384.14	-4434384.02	-4434383.90	0.0288	0.0087
Mercury	-16854-07-24 22:48 J	-4434295.68	-4434295.55	-4434295.42	0.0287	0.0054
Mercury	-16854-10-21 10:04 J	-4434207.18	-4434207.08	-4434206.99	0.0286	0.0193
Venus	-16850-06-08 02:38 J	-4432881.56	-4432881.39	-4432881.21	0.0270	0.0147
Venus	-16849-01-23 01:55 J	-4432652.63	-4432652.42	-4432652.21	0.0268	0.0005
Venus	-16849-09-07 23:16 J	-4432423.70	-4432423.53	-4432423.36	0.0266	0.0149
Moon	-16842-12-03 18:57 J	-4429780.95	-4429780.71	-4429780.46	0.0263	0.0080
Earth	-16842-12-03 20:09 J	-4429780.90	-4429780.66	-4429780.42	0.0263	0.0070 *
Mercury	-16838-05-06 06:43 J	-4428531.36	-4428531.22	-4428531.07	0.0274	0.0181
Mercury	-16838-08-03 06:14 J	-4428442.44	-4428442.24	-4428442.05	0.0275	0.0007
Mercury	-16838-10-31 05:16 J	-4428353.41	-4428353.28	-4428353.14	0.0276	0.0190
Mars	-16837-08-16 22:19 J	-4428062.72	-4428062.57	-4428062.40	0.0280	0.0224
Venus	-16834-02-11 21:21 J	-4427153.71	-4427153.61	-4427153.50	0.0291	0.0254
Venus	-16834-09-30 00:43 J	-4426923.68	-4426923.47	-4426923.26	0.0294	0.0054
Venus	-16833-05-17 06:14 J	-4426693.42	-4426693.24	-4426693.06	0.0296	0.0155
Earth	-16828-05-30 08:23 J	-4424854.21	-4424854.15	-4424854.09	0.0300	0.0290
Mercury	-16825-06-17 02:52 J	-4423740.42	-4423740.38	-4423740.33	0.0289	0.0265
Mercury	-16825-09-13 14:23 J	-4423652.02	-4423651.90	-4423651.79	0.0288	0.0123
Mercury	-16825-12-11 01:26 J	-4423563.56	-4423563.44	-4423563.31	0.0287	0.0021
Mercury	-16824-03-09 12:43 J	-4423475.07	-4423474.97	-4423474.86	0.0286	0.0158
Venus	-16821-12-18 07:26 J	-4422095.38	-4422095.19	-4422095.01	0.0270	0.0123
Venus	-16820-08-04 06:14 J	-4421866.44	-4421866.24	-4421866.03	0.0267	0.0027
Venus	-16819-03-21 03:21 J	-4421637.50	-4421637.36	-4421637.19	0.0266	0.0173
Earth	-16813-11-28 02:09 J	-4419193.58	-4419193.41	-4419193.21	0.0262	0.0178
Moon	-16813-11-28 03:07 J	-4419193.56	-4419193.37	-4419193.18	0.0262	0.0164 *



Mercury	-16809-09-22 06:43 J	-4417799.32	-4417799.22	-4417799.10	0.0273	0.0221
Mercury	-16809-12-20 06:14 J	-4417710.43	-4417710.24	-4417710.05	0.0274	0.0036
Mercury	-16808-03-19 05:31 J	-4417621.42	-4417621.27	-4417621.11	0.0275	0.0150
Jupiter	-16807-08-15 19:26 J	-4417107.12	-4417106.69	-4417106.24	0.0282	0.0101
Venus	-16805-08-24 07:40 J	-4416367.31	-4416367.18	-4416367.03	0.0291	0.0222
Venus	-16804-04-11 11:31 J	-4416137.23	-4416137.02	-4416136.80	0.0294	0.0020
Venus	-16804-11-27 17:31 J	-4415906.93	-4415906.77	-4415906.60	0.0297	0.0191
Earth	-16798-06-08 02:38 J	-4413888.58	-4413888.39	-4413888.20	0.0299	0.0186
Moon	-16798-06-08 04:48 J	-4413888.49	-4413888.30	-4413888.09	0.0299	0.0174 *
Mercury	-16795-01-31 17:45 J	-4412919.87	-4412919.76	-4412919.65	0.0289	0.0151
Mercury	-16795-04-30 05:02 J	-4412831.42	-4412831.29	-4412831.16	0.0288	0.0010
Mercury	-16795-07-27 16:19 J	-4412742.94	-4412742.82	-4412742.71	0.0287	0.0130
Mercury	-16795-10-24 03:36 J	-4412654.39	-4412654.35	-4412654.31	0.0285	0.0269
Mars	-16795-12-09 12:14 J	-4412608.27	-4412607.99	-4412607.68	0.0285	0.0108
Venus	-16792-11-13 13:55 J	-4411538.00	-4411537.92	-4411537.84	0.0272	0.0250
Venus	-16791-06-30 14:09 J	-4411309.10	-4411308.91	-4411308.71	0.0269	0.0097
Venus	-16790-02-14 12:57 J	-4411080.17	-4411079.96	-4411079.76	0.0267	0.0052
Venus	-16790-10-01 10:04 J	-4410851.22	-4410851.08	-4410850.94	0.0265	0.0196
Moon	-16783-12-05 04:19 J	-4408229.51	-4408229.32	-4408229.11	0.0263	0.0160
Earth	-16783-12-05 08:09 J	-4408229.36	-4408229.16	-4408228.95	0.0263	0.0150 *
Mercury	-16779-02-09 07:11 J	-4407067.25	-4407067.20	-4407067.13	0.0274	0.0259
Mercury	-16779-05-09 06:43 J	-4406978.41	-4406978.22	-4406978.04	0.0275	0.0074
Mercury	-16779-08-06 06:00 J	-4406889.42	-4406889.25	-4406889.07	0.0276	0.0111
Mars	-16779-11-25 11:31 J	-4406778.17	-4406778.02	-4406777.85	0.0277	0.0226
Venus	-16775-03-06 18:14 J	-4405580.89	-4405580.74	-4405580.56	0.0292	0.0189
Venus	-16775-10-22 22:33 J	-4405350.78	-4405350.56	-4405350.35	0.0295	0.0017
Venus	-16774-06-10 04:33 J	-4405120.44	-4405120.31	-4405120.17	0.0297	0.0228
Moon	-16769-06-01 04:19 J	-4403302.50	-4403302.32	-4403302.14	0.0300	0.0187
Earth	-16769-06-01 06:14 J	-4403302.43	-4403302.24	-4403302.03	0.0300	0.0172 *
Mercury	-16766-06-20 20:52 J	-4402187.73	-4402187.63	-4402187.53	0.0288	0.0183

Mercury	-16766-09-17 08:09 J	-4402099.29	-4402099.16	-4402099.03	0.0287	0.0042
Mercury	-16766-12-14 19:11 J	-4402010.82	-4402010.70	-4402010.57	0.0286	0.0099
Mercury	-16765-03-12 06:28 J	-4401922.30	-4401922.23	-4401922.16	0.0285	0.0236
Venus	-16762-05-26 19:26 J	-4400751.80	-4400751.69	-4400751.57	0.0271	0.0226
Venus	-16761-01-10 19:26 J	-4400522.89	-4400522.69	-4400522.48	0.0269	0.0073
Venus	-16761-08-26 17:45 J	-4400293.96	-4400293.76	-4400293.56	0.0267	0.0077
Venus	-16760-04-12 14:38 J	-4400065.00	-4400064.89	-4400064.77	0.0265	0.0220
Earth	-16754-11-30 13:40 J	-4397642.16	-4397641.93	-4397641.70	0.0262	0.0101
Moon	-16754-11-30 17:31 J	-4397642.00	-4397641.77	-4397641.53	0.0262	0.0087 *
Mercury	-16750-09-26 06:28 J	-4396246.40	-4396246.23	-4396246.05	0.0274	0.0117
Mercury	-16750-12-24 05:45 J	-4396157.44	-4396157.26	-4396157.07	0.0275	0.0070
Mercury	-16749-03-22 05:16 J	-4396068.35	-4396068.28	-4396068.21	0.0276	0.0256
Venus	-16746-09-17 04:48 J	-4394794.48	-4394794.30	-4394794.12	0.0292	0.0156
Venus	-16745-05-04 09:07 J	-4394564.33	-4394564.12	-4394563.91	0.0295	0.0050
Venus	-16745-12-20 15:50 J	-4394333.93	-4394333.84	-4394333.74	0.0297	0.0262
Moon	-16739-06-09 22:33 J	-4392336.60	-4392336.56	-4392336.49	0.0299	0.0291
Mercury	-16737-11-07 00:28 J	-4391455.57	-4391455.48	-4391455.40	0.0289	0.0212
Mercury	-16736-02-03 11:45 J	-4391367.14	-4391367.01	-4391366.89	0.0288	0.0070
Mercury	-16736-05-02 22:48 J	-4391278.67	-4391278.55	-4391278.42	0.0287	0.0071
Mercury	-16736-07-30 10:04 J	-4391190.17	-4391190.08	-4391189.99	0.0286	0.0210
Venus	-16733-12-06 02:38 J	-4389965.53	-4389965.39	-4389965.25	0.0271	0.0199
Venus	-16732-07-23 02:23 J	-4389736.60	-4389736.40	-4389736.19	0.0268	0.0047
Venus	-16731-03-09 00:28 J	-4389507.67	-4389507.48	-4389507.29	0.0266	0.0101
Venus	-16731-10-23 21:07 J	-4389278.70	-4389278.62	-4389278.54	0.0264	0.0244
Moon	-16724-12-06 18:28 J	-4386677.83	-4386677.73	-4386677.63	0.0263	0.0239
Earth	-16724-12-06 19:55 J	-4386677.79	-4386677.67	-4386677.55	0.0263	0.0229 *
Mercury	-16720-02-12 06:43 J	-4385514.37	-4385514.22	-4385514.05	0.0274	0.0155
Mercury	-16720-05-12 06:14 J	-4385425.43	-4385425.24	-4385425.05	0.0275	0.0031
Mercury	-16720-08-09 05:31 J	-4385336.38	-4385336.27	-4385336.15	0.0276	0.0218
Venus	-16716-03-29 15:21 J	-4384008.05	-4384007.86	-4384007.66	0.0293	0.0121

Venus	-16716-11-14 20:09 J	-4383777.86	-4383777.66	-4383777.45	0.0296	0.0088
Earth	-16710-06-04 04:19 J	-4381750.56	-4381750.32	-4381750.08	0.0300	0.0054
Moon	-16710-06-04 05:45 J	-4381750.48	-4381750.26	-4381750.03	0.0300	0.0068 *
Mercury	-16707-03-27 03:21 J	-4380723.42	-4380723.36	-4380723.29	0.0289	0.0244
Mercury	-16707-06-23 14:38 J	-4380635.01	-4380634.89	-4380634.76	0.0288	0.0102
Mercury	-16707-09-20 01:55 J	-4380546.55	-4380546.42	-4380546.29	0.0287	0.0039
Mercury	-16707-12-17 13:11 J	-4380458.05	-4380457.95	-4380457.85	0.0285	0.0178
Mars	-16706-05-06 18:00 J	-4380318.07	-4380317.75	-4380317.44	0.0284	0.0010
Venus	-16703-06-18 08:09 J	-4379179.31	-4379179.16	-4379179.00	0.0270	0.0175
Venus	-16702-02-02 07:40 J	-4378950.39	-4378950.18	-4378949.98	0.0268	0.0023
Venus	-16702-09-19 05:16 J	-4378721.46	-4378721.28	-4378721.09	0.0266	0.0125
Earth	-16695-12-01 23:45 J	-4376090.75	-4376090.51	-4376090.26	0.0262	0.0025
Moon	-16695-12-02 01:11 J	-4376090.70	-4376090.45	-4376090.19	0.0262	0.0014 *
Mercury	-16691-07-02 05:45 J	-4374782.37	-4374782.26	-4374782.12	0.0274	0.0203
Mercury	-16691-09-29 05:31 J	-4374693.46	-4374693.27	-4374693.08	0.0275	0.0017
Mercury	-16691-12-27 04:48 J	-4374604.45	-4374604.30	-4374604.15	0.0276	0.0169
Mars	-16690-04-22 02:52 J	-4374488.61	-4374488.38	-4374488.14	0.0277	0.0145
Venus	-16687-02-21 21:36 J	-4373451.61	-4373451.60	-4373451.59	0.0290	0.0290
Venus	-16687-10-10 00:28 J	-4373221.69	-4373221.48	-4373221.28	0.0293	0.0091
Venus	-16686-05-28 05:31 J	-4372991.46	-4372991.27	-4372991.07	0.0296	0.0118
Mercury	-16678-08-14 06:57 J	-4369991.25	-4369991.21	-4369991.17	0.0290	0.0273
Mercury	-16678-11-10 18:14 J	-4369902.85	-4369902.74	-4369902.63	0.0289	0.0130
Mercury	-16677-02-07 05:31 J	-4369814.40	-4369814.27	-4369814.14	0.0287	0.0012
Mercury	-16677-05-05 16:33 J	-4369725.91	-4369725.81	-4369725.69	0.0286	0.0151
Venus	-16674-12-29 15:07 J	-4368393.04	-4368392.87	-4368392.69	0.0270	0.0148
Venus	-16673-08-14 14:09 J	-4368164.12	-4368163.91	-4368163.70	0.0268	0.0005
Venus	-16672-03-31 11:45 J	-4367935.18	-4367935.01	-4367934.84	0.0266	0.0150
Moon	-16666-11-27 06:14 J	-4365503.28	-4365503.24	-4365503.16	0.0261	0.0252
Mercury	-16662-11-19 06:00 J	-4364050.33	-4364050.25	-4364050.16	0.0274	0.0243
Mercury	-16661-02-16 05:31 J	-4363961.46	-4363961.27	-4363961.08	0.0275	0.0058

Mercury	-16661-05-15 04:48 J	-4363872.46	-4363872.30	-4363872.12	0.0276	0.0129
Venus	-16658-09-04 07:26 J	-4362665.29	-4362665.19	-4362665.09	0.0291	0.0258
Venus	-16657-04-21 10:33 J	-4362435.27	-4362435.06	-4362434.84	0.0294	0.0056
Venus	-16657-12-07 16:19 J	-4362205.00	-4362204.82	-4362204.64	0.0297	0.0155
Earth	-16651-06-06 00:14 J	-4360198.72	-4360198.49	-4360198.25	0.0300	0.0061
Moon	-16651-06-06 04:04 J	-4360198.56	-4360198.33	-4360198.09	0.0300	0.0045 *
Mercury	-16648-03-29 21:07 J	-4359170.72	-4359170.62	-4359170.51	0.0288	0.0163
Mercury	-16648-06-26 08:23 J	-4359082.27	-4359082.15	-4359082.02	0.0287	0.0023
Mercury	-16648-09-22 19:40 J	-4358993.80	-4358993.68	-4358993.56	0.0286	0.0118
Mercury	-16648-12-20 06:43 J	-4358905.27	-4358905.22	-4358905.16	0.0285	0.0256
Venus	-16644-07-10 20:09 J	-4357606.84	-4357606.66	-4357606.47	0.0269	0.0125
Venus	-16643-02-24 18:57 J	-4357377.92	-4357377.71	-4357377.50	0.0267	0.0026
Venus	-16643-10-11 16:04 J	-4357148.98	-4357148.83	-4357148.67	0.0265	0.0172
Moon	-16636-12-03 05:02 J	-4354539.54	-4354539.29	-4354539.04	0.0263	0.0057
Earth	-16636-12-03 08:09 J	-4354539.40	-4354539.16	-4354538.91	0.0263	0.0048 *
Mercury	-16632-07-05 04:04 J	-4353229.50	-4353229.33	-4353229.15	0.0274	0.0110
Mercury	-16632-10-02 03:36 J	-4353140.54	-4353140.35	-4353140.17	0.0275	0.0076
Mercury	-16632-12-30 02:52 J	-4353051.43	-4353051.38	-4353051.32	0.0276	0.0263
Venus	-16628-03-16 14:52 J	-4351879.01	-4351878.88	-4351878.75	0.0291	0.0230
Venus	-16628-11-01 18:28 J	-4351648.95	-4351648.73	-4351648.52	0.0294	0.0028
Venus	-16627-06-20 00:00 J	-4351418.66	-4351418.50	-4351418.32	0.0296	0.0184
Mercury	-16619-08-17 00:14 J	-4348438.58	-4348438.49	-4348438.39	0.0289	0.0196
Mercury	-16619-11-13 11:31 J	-4348350.14	-4348350.02	-4348349.89	0.0288	0.0055
Mercury	-16618-02-09 22:48 J	-4348261.67	-4348261.55	-4348261.42	0.0287	0.0087
Mercury	-16618-05-09 09:50 J	-4348173.16	-4348173.09	-4348173.00	0.0286	0.0226
Mars	-16618-10-02 00:00 J	-4348027.77	-4348027.50	-4348027.20	0.0284	0.0124
Venus	-16615-06-06 02:09 J	-4347049.48	-4347049.41	-4347049.34	0.0272	0.0253
Venus	-16614-01-21 02:09 J	-4346820.60	-4346820.41	-4346820.21	0.0269	0.0100
Venus	-16614-09-07 00:43 J	-4346591.67	-4346591.47	-4346591.26	0.0267	0.0051
Venus	-16613-04-22 21:36 J	-4346362.73	-4346362.60	-4346362.46	0.0265	0.0196

Earth	-16607-11-28 15:07 J	-4343952.04	-4343951.87	-4343951.70	0.0261	0.0193
Moon	-16607-11-28 17:16 J	-4343951.95	-4343951.78	-4343951.60	0.0261	0.0182 *
Mercury	-16603-11-22 03:21 J	-4342497.51	-4342497.36	-4342497.19	0.0274	0.0155
Mercury	-16602-02-19 02:52 J	-4342408.57	-4342408.38	-4342408.19	0.0275	0.0030
Mercury	-16602-05-19 02:09 J	-4342319.52	-4342319.41	-4342319.29	0.0276	0.0217
Mars	-16602-09-16 10:48 J	-4342199.31	-4342199.05	-4342198.78	0.0278	0.0072
Venus	-16599-09-26 22:48 J	-4341092.70	-4341092.55	-4341092.39	0.0292	0.0200
Venus	-16598-05-15 02:52 J	-4340862.60	-4340862.38	-4340862.17	0.0295	0.0005
Venus	-16598-12-31 09:07 J	-4340632.26	-4340632.12	-4340631.97	0.0297	0.0218
Earth	-16592-06-07 15:50 J	-4338647.03	-4338646.84	-4338646.63	0.0300	0.0164
Moon	-16592-06-07 16:48 J	-4338647.01	-4338646.80	-4338646.58	0.0300	0.0150 *
Mercury	-16589-01-04 03:07 J	-4337706.44	-4337706.37	-4337706.29	0.0289	0.0231
Mercury	-16589-04-01 14:23 J	-4337618.02	-4337617.90	-4337617.78	0.0288	0.0089
Mercury	-16589-06-29 01:40 J	-4337529.56	-4337529.43	-4337529.30	0.0287	0.0051
Mercury	-16589-09-25 12:43 J	-4337441.06	-4337440.97	-4337440.87	0.0285	0.0191
Venus	-16586-12-17 06:28 J	-4336263.33	-4336263.23	-4336263.11	0.0271	0.0230
Venus	-16585-08-02 06:43 J	-4336034.42	-4336034.22	-4336034.02	0.0269	0.0077
Venus	-16584-03-19 04:48 J	-4335805.50	-4335805.30	-4335805.10	0.0266	0.0073
Venus	-16584-11-03 01:26 J	-4335576.55	-4335576.44	-4335576.31	0.0265	0.0217
Moon	-16577-12-04 10:19 J	-4332988.28	-4332988.07	-4332987.84	0.0263	0.0124
Earth	-16577-12-04 13:26 J	-4332988.16	-4332987.94	-4332987.71	0.0263	0.0116 *
Mercury	-16573-04-10 01:11 J	-4331765.56	-4331765.45	-4331765.33	0.0274	0.0213
Mercury	-16573-07-08 00:43 J	-4331676.66	-4331676.47	-4331676.28	0.0275	0.0028
Mercury	-16573-10-05 00:00 J	-4331587.65	-4331587.50	-4331587.34	0.0276	0.0158
Venus	-16569-04-08 04:33 J	-4330306.48	-4330306.31	-4330306.13	0.0292	0.0175
Venus	-16569-11-24 08:52 J	-4330076.34	-4330076.13	-4330075.91	0.0295	0.0031
Venus	-16568-07-12 15:07 J	-4329845.98	-4329845.87	-4329845.74	0.0297	0.0244
Earth	-16563-06-01 14:09 J	-4328061.07	-4328060.91	-4328060.73	0.0301	0.0210
Moon	-16563-06-01 14:09 J	-4328061.06	-4328060.91	-4328060.75	0.0301	0.0224 *
Mercury	-16560-05-23 05:45 J	-4326974.30	-4326974.26	-4326974.21	0.0290	0.0269

Mercury	-16560-08-19 17:16 J	-4326885.90	-4326885.78	-4326885.67	0.0289	0.0126
Mercury	-16560-11-16 04:33 J	-4326797.44	-4326797.31	-4326797.18	0.0288	0.0017
Mercury	-16559-02-12 15:36 J	-4326708.95	-4326708.85	-4326708.74	0.0286	0.0156
Venus	-16556-06-28 12:00 J	-4325477.12	-4325477.00	-4325476.85	0.0271	0.0206
Venus	-16555-02-12 11:45 J	-4325248.21	-4325248.01	-4325247.80	0.0269	0.0053
Venus	-16555-09-29 09:50 J	-4325019.29	-4325019.09	-4325018.90	0.0266	0.0097
Venus	-16554-05-16 06:14 J	-4324790.32	-4324790.24	-4324790.15	0.0264	0.0239
Earth	-16548-11-29 18:57 J	-4322400.92	-4322400.71	-4322400.49	0.0261	0.0129
Moon	-16548-11-29 22:33 J	-4322400.79	-4322400.56	-4322400.33	0.0261	0.0115 *
Mercury	-16544-08-28 00:00 J	-4321033.54	-4321033.50	-4321033.43	0.0273	0.0261
Mercury	-16544-11-24 23:31 J	-4320944.70	-4320944.52	-4320944.33	0.0274	0.0077
Mercury	-16543-02-21 23:02 J	-4320855.72	-4320855.54	-4320855.36	0.0275	0.0109
Venus	-16540-10-19 11:45 J	-4319520.19	-4319520.01	-4319519.82	0.0293	0.0146
Venus	-16539-06-06 16:19 J	-4319290.03	-4319289.82	-4319289.61	0.0296	0.0063
Venus	-16538-01-22 23:02 J	-4319059.61	-4319059.54	-4319059.45	0.0298	0.0277
Moon	-16533-06-08 23:16 J	-4317095.66	-4317095.53	-4317095.38	0.0300	0.0245
Earth	-16533-06-09 02:38 J	-4317095.50	-4317095.39	-4317095.26	0.0300	0.0256 *
Mercury	-16530-01-06 19:40 J	-4316153.78	-4316153.68	-4316153.57	0.0289	0.0165
Mercury	-16530-04-05 06:57 J	-4316065.34	-4316065.21	-4316065.08	0.0288	0.0023
Mercury	-16530-07-02 18:14 J	-4315976.86	-4315976.74	-4315976.62	0.0286	0.0117
Mercury	-16530-09-29 05:16 J	-4315888.33	-4315888.28	-4315888.22	0.0285	0.0255
Mars	-16529-02-26 07:26 J	-4315738.39	-4315738.19	-4315737.96	0.0283	0.0209
Venus	-16526-01-08 15:36 J	-4314690.99	-4314690.85	-4314690.69	0.0270	0.0184
Venus	-16526-08-25 15:07 J	-4314462.08	-4314461.87	-4314461.66	0.0268	0.0031
Venus	-16525-04-10 12:43 J	-4314233.15	-4314232.97	-4314232.78	0.0266	0.0117
Venus	-16525-11-25 08:52 J	-4314004.16	-4314004.13	-4314004.08	0.0264	0.0259
Earth	-16518-12-06 15:36 J	-4311437.03	-4311436.85	-4311436.66	0.0263	0.0178
Moon	-16518-12-06 16:48 J	-4311436.97	-4311436.80	-4311436.63	0.0263	0.0183 *
Mercury	-16514-04-13 20:38 J	-4310212.80	-4310212.64	-4310212.48	0.0274	0.0141
Mercury	-16514-07-11 19:55 J	-4310123.86	-4310123.67	-4310123.48	0.0275	0.0044

Mercury -16514-10-08 19:11 J -4310034.79 -4310034.70 -4310034.59 0.0276 0.0231  
 Mars -16513-02-09 22:19 J -4309910.84 -4309910.57 -4309910.30 0.0277 0.0035  
 Venus -16510-05-01 15:21 J -4308734.06 -4308733.86 -4308733.67 0.0293 0.0124  
 Venus -16510-12-17 20:09 J -4308503.86 -4308503.66 -4308503.45 0.0295 0.0085  
 Earth -16504-06-02 20:52 J -4306509.84 -4306509.63 -4306509.40 0.0301 0.0127  
 Moon -16504-06-03 00:14 J -4306509.69 -4306509.49 -4306509.27 0.0301 0.0137 \*  
 Mercury -16501-05-25 21:50 J -4305421.67 -4305421.59 -4305421.50 0.0290 0.0208  
 Mercury -16501-08-22 09:21 J -4305333.24 -4305333.11 -4305332.99 0.0289 0.0066  
 Mercury -16501-11-18 20:23 J -4305244.77 -4305244.65 -4305244.52 0.0287 0.0077  
 Mercury -16500-02-15 07:40 J -4305156.26 -4305156.18 -4305156.09 0.0286 0.0216  
 Venus -16497-07-20 19:55 J -4303904.83 -4303904.67 -4303904.50 0.0270 0.0161  
 Venus -16496-03-06 19:11 J -4303675.91 -4303675.70 -4303675.49 0.0268 0.0009  
 Venus -16496-10-21 16:48 J -4303446.98 -4303446.80 -4303446.62 0.0266 0.0139  
 Moon -16489-11-30 19:26 J -4300849.94 -4300849.69 -4300849.44 0.0261 0.0059  
 Earth -16489-11-30 19:40 J -4300849.91 -4300849.68 -4300849.43 0.0261 0.0070 \*  
 Mercury -16485-08-30 18:57 J -4299480.84 -4299480.71 -4299480.57 0.0273 0.0194  
 Mercury -16485-11-27 18:14 J -4299391.93 -4299391.74 -4299391.54 0.0274 0.0011  
 Mercury -16484-02-24 17:31 J -4299302.91 -4299302.77 -4299302.62 0.0275 0.0177  
 Venus -16481-11-10 20:52 J -4297947.83 -4297947.63 -4297947.42 0.0293 0.0096  
 Venus -16480-06-29 01:55 J -4297717.61 -4297717.42 -4297717.22 0.0296 0.0115  
 Mercury -16472-10-13 00:00 J -4294689.56 -4294689.50 -4294689.44 0.0290 0.0252  
 Mercury -16471-01-09 11:16 J -4294601.14 -4294601.03 -4294600.91 0.0289 0.0109  
 Mercury -16471-04-07 22:33 J -4294512.68 -4294512.56 -4294512.43 0.0287 0.0034  
 Mercury -16471-07-05 09:50 J -4294424.19 -4294424.09 -4294423.99 0.0286 0.0173  
 Venus -16467-01-30 22:33 J -4293118.74 -4293118.56 -4293118.38 0.0270 0.0141  
 Venus -16467-09-16 21:21 J -4292889.81 -4292889.61 -4292889.40 0.0267 0.0012  
 Venus -16466-05-03 18:43 J -4292660.88 -4292660.72 -4292660.55 0.0265 0.0157  
 Earth -16459-12-07 14:38 J -4289885.99 -4289885.89 -4289885.77 0.0262 0.0233  
 Moon -16459-12-07 18:14 J -4289885.83 -4289885.74 -4289885.62 0.0262 0.0238 \*  
 Mercury -16455-01-17 15:21 J -4288748.91 -4288748.86 -4288748.80 0.0273 0.0261

Mercury	-16455-04-16 14:38 J	-4288660.07	-4288659.89	-4288659.70	0.0274	0.0078
Mercury	-16455-07-14 14:09 J	-4288571.09	-4288570.91	-4288570.74	0.0275	0.0107
Venus	-16452-10-05 20:23 J	-4287391.70	-4287391.65	-4287391.58	0.0290	0.0277
Venus	-16451-05-23 23:16 J	-4287161.73	-4287161.53	-4287161.32	0.0293	0.0076
Venus	-16450-01-09 04:33 J	-4286931.49	-4286931.31	-4286931.11	0.0296	0.0135
Earth	-16445-06-03 23:16 J	-4284958.77	-4284958.53	-4284958.30	0.0301	0.0053
Moon	-16445-06-04 01:26 J	-4284958.69	-4284958.44	-4284958.20	0.0301	0.0063 *
Mercury	-16442-05-29 13:11 J	-4283869.05	-4283868.95	-4283868.84	0.0290	0.0155
Mercury	-16442-08-26 00:28 J	-4283780.60	-4283780.48	-4283780.35	0.0288	0.0017
Mercury	-16442-11-22 11:45 J	-4283692.12	-4283692.01	-4283691.89	0.0287	0.0129
Mercury	-16441-02-18 23:02 J	-4283603.58	-4283603.54	-4283603.49	0.0286	0.0268
Mars	-16441-07-21 16:04 J	-4283449.93	-4283449.83	-4283449.70	0.0284	0.0264
Venus	-16438-08-13 01:26 J	-4282332.62	-4282332.44	-4282332.25	0.0270	0.0120
Venus	-16437-03-29 00:14 J	-4282103.69	-4282103.49	-4282103.28	0.0268	0.0033
Venus	-16437-11-12 21:36 J	-4281874.75	-4281874.60	-4281874.45	0.0265	0.0178
Moon	-16430-12-02 14:09 J	-4279299.16	-4279298.91	-4279298.66	0.0261	0.0009
Earth	-16430-12-02 18:00 J	-4279299.00	-4279298.75	-4279298.50	0.0261	0.0017 *
Mercury	-16426-09-03 12:28 J	-4277928.14	-4277927.98	-4277927.81	0.0273	0.0134
Mercury	-16426-12-01 12:00 J	-4277839.19	-4277839.00	-4277838.81	0.0274	0.0051
Mercury	-16425-02-28 11:02 J	-4277750.13	-4277750.04	-4277749.94	0.0275	0.0236
Mars	-16425-07-05 02:09 J	-4277622.68	-4277622.41	-4277622.14	0.0277	0.0005
Venus	-16422-04-18 00:28 J	-4276605.58	-4276605.48	-4276605.37	0.0291	0.0252
Venus	-16422-12-04 03:36 J	-4276375.56	-4276375.35	-4276375.13	0.0294	0.0050
Venus	-16421-07-21 08:52 J	-4276145.30	-4276145.13	-4276144.94	0.0296	0.0163
Mercury	-16413-10-15 15:07 J	-4273136.96	-4273136.87	-4273136.78	0.0290	0.0204
Mercury	-16412-01-12 02:23 J	-4273048.53	-4273048.40	-4273048.28	0.0289	0.0061
Mercury	-16412-04-10 13:40 J	-4272960.06	-4272959.93	-4272959.81	0.0287	0.0081
Mercury	-16412-07-08 00:43 J	-4272871.54	-4272871.47	-4272871.38	0.0286	0.0221
Venus	-16409-07-08 02:09 J	-4271775.46	-4271775.41	-4271775.33	0.0272	0.0257
Venus	-16408-02-22 02:52 J	-4271546.57	-4271546.38	-4271546.18	0.0269	0.0101



Venus	-16408-10-09 01:40 J	-4271317.64	-4271317.43	-4271317.23	0.0267	0.0050
Venus	-16407-05-25 22:48 J	-4271088.69	-4271088.55	-4271088.41	0.0265	0.0195
Mercury	-16396-01-20 08:38 J	-4267196.27	-4267196.14	-4267196.02	0.0273	0.0205
Mercury	-16396-04-19 07:55 J	-4267107.36	-4267107.17	-4267106.98	0.0274	0.0022
Mercury	-16396-07-17 06:57 J	-4267018.35	-4267018.21	-4267018.05	0.0275	0.0163
Venus	-16393-10-28 01:26 J	-4265819.56	-4265819.44	-4265819.31	0.0291	0.0234
Venus	-16392-06-15 04:48 J	-4265589.52	-4265589.30	-4265589.09	0.0294	0.0032
Venus	-16391-01-31 10:04 J	-4265359.24	-4265359.08	-4265358.90	0.0296	0.0181
Moon	-16386-06-05 17:31 J	-4263408.02	-4263407.77	-4263407.52	0.0301	0.0002
Earth	-16386-06-05 19:55 J	-4263407.91	-4263407.67	-4263407.43	0.0301	0.0008 *
Mercury	-16383-03-04 16:33 J	-4262404.87	-4262404.81	-4262404.75	0.0291	0.0256
Mercury	-16383-06-01 03:50 J	-4262316.46	-4262316.34	-4262316.22	0.0290	0.0112
Mercury	-16383-08-28 15:07 J	-4262227.99	-4262227.87	-4262227.74	0.0288	0.0033
Mercury	-16383-11-25 02:23 J	-4262139.50	-4262139.40	-4262139.29	0.0287	0.0173
Venus	-16379-01-18 04:19 J	-4260989.42	-4260989.32	-4260989.21	0.0272	0.0237
Venus	-16379-09-04 04:48 J	-4260760.50	-4260760.30	-4260760.10	0.0270	0.0081
Venus	-16378-04-21 03:36 J	-4260531.56	-4260531.35	-4260531.15	0.0267	0.0071
Venus	-16378-12-06 00:28 J	-4260302.60	-4260302.48	-4260302.36	0.0265	0.0216
Moon	-16371-12-03 12:57 J	-4257748.20	-4257747.96	-4257747.72	0.0261	0.0036
Earth	-16371-12-03 13:40 J	-4257748.17	-4257747.93	-4257747.68	0.0261	0.0033 *
Mercury	-16367-06-09 06:14 J	-4256464.29	-4256464.24	-4256464.19	0.0272	0.0262
Mercury	-16367-09-06 05:31 J	-4256375.46	-4256375.27	-4256375.09	0.0273	0.0081
Mercury	-16367-12-04 04:33 J	-4256286.48	-4256286.31	-4256286.13	0.0274	0.0104
Venus	-16363-05-10 05:02 J	-4255033.44	-4255033.29	-4255033.14	0.0291	0.0210
Venus	-16363-12-26 08:23 J	-4254803.37	-4254803.15	-4254802.94	0.0294	0.0006
Venus	-16362-08-13 13:55 J	-4254573.07	-4254572.92	-4254572.76	0.0297	0.0207
Mercury	-16354-10-19 05:31 J	-4251584.38	-4251584.27	-4251584.17	0.0290	0.0162
Mercury	-16353-01-15 16:48 J	-4251495.93	-4251495.80	-4251495.67	0.0289	0.0019
Mercury	-16353-04-13 04:04 J	-4251407.44	-4251407.33	-4251407.21	0.0287	0.0123
Mercury	-16353-07-10 15:21 J	-4251318.91	-4251318.86	-4251318.81	0.0286	0.0263

Venus	-16350-07-31 05:16 J	-4250203.39	-4250203.28	-4250203.15	0.0271	0.0219
Venus	-16349-03-16 05:45 J	-4249974.46	-4249974.26	-4249974.05	0.0269	0.0063
Venus	-16349-10-31 04:19 J	-4249745.52	-4249745.32	-4249745.12	0.0267	0.0087
Venus	-16348-06-17 01:11 J	-4249516.54	-4249516.45	-4249516.35	0.0265	0.0231
Earth	-16342-11-28 13:11 J	-4247161.06	-4247160.95	-4247160.83	0.0260	0.0227
Moon	-16342-11-28 14:09 J	-4247161.05	-4247160.91	-4247160.77	0.0260	0.0219 *
Mercury	-16337-01-24 01:11 J	-4245643.60	-4245643.45	-4245643.29	0.0273	0.0153
Mercury	-16337-04-22 00:28 J	-4245554.67	-4245554.48	-4245554.29	0.0274	0.0031
Mercury	-16337-07-19 23:45 J	-4245465.63	-4245465.51	-4245465.39	0.0275	0.0215
Mars	-16337-11-27 14:52 J	-4245335.15	-4245334.88	-4245334.61	0.0277	0.0003
Venus	-16334-11-20 05:16 J	-4244247.43	-4244247.28	-4244247.11	0.0291	0.0193
Venus	-16333-07-07 08:52 J	-4244017.35	-4244017.13	-4244016.92	0.0294	0.0013
Venus	-16332-02-22 14:23 J	-4243787.03	-4243786.90	-4243786.75	0.0297	0.0225
Moon	-16327-06-06 10:19 J	-4241857.30	-4241857.07	-4241856.84	0.0301	0.0056
Earth	-16327-06-06 13:26 J	-4241857.17	-4241856.94	-4241856.70	0.0301	0.0059 *
Mercury	-16324-03-07 06:28 J	-4240852.31	-4240852.23	-4240852.14	0.0291	0.0218
Mercury	-16324-06-03 18:00 J	-4240763.88	-4240763.75	-4240763.63	0.0290	0.0073
Mercury	-16324-08-31 05:16 J	-4240675.40	-4240675.28	-4240675.15	0.0288	0.0070
Mercury	-16324-11-27 16:33 J	-4240586.89	-4240586.81	-4240586.72	0.0287	0.0211
Venus	-16320-02-09 06:14 J	-4239417.37	-4239417.24	-4239417.09	0.0272	0.0200
Venus	-16320-09-26 06:43 J	-4239188.42	-4239188.22	-4239188.01	0.0269	0.0044
Venus	-16319-05-13 05:16 J	-4238959.47	-4238959.28	-4238959.09	0.0267	0.0107
Venus	-16319-12-28 02:09 J	-4238730.47	-4238730.41	-4238730.34	0.0265	0.0251
Earth	-16312-12-04 08:38 J	-4236197.37	-4236197.14	-4236196.90	0.0261	0.0079
Moon	-16312-12-04 12:14 J	-4236197.22	-4236196.99	-4236196.75	0.0261	0.0078 *
Mercury	-16308-06-11 22:33 J	-4234911.67	-4234911.56	-4234911.43	0.0272	0.0211
Mercury	-16308-09-08 21:50 J	-4234822.78	-4234822.59	-4234822.39	0.0273	0.0030
Mercury	-16308-12-06 20:52 J	-4234733.77	-4234733.63	-4234733.46	0.0274	0.0156
Venus	-16304-06-01 08:23 J	-4233461.32	-4233461.15	-4233460.97	0.0291	0.0168
Venus	-16303-01-17 12:00 J	-4233231.21	-4233231.00	-4233230.79	0.0294	0.0037

Venus	-16303-09-04 17:31 J	-4233000.87	-4233000.77	-4233000.64	0.0297	0.0251
Mercury	-16295-07-25 07:55 J	-4230120.21	-4230120.17	-4230120.12	0.0291	0.0271
Mercury	-16295-10-21 19:26 J	-4230031.81	-4230031.69	-4230031.57	0.0290	0.0125
Mercury	-16294-01-18 06:43 J	-4229943.34	-4229943.22	-4229943.09	0.0289	0.0020
Mercury	-16294-04-16 18:00 J	-4229854.85	-4229854.75	-4229854.64	0.0288	0.0161
Venus	-16291-08-22 07:11 J	-4228631.35	-4228631.20	-4228631.04	0.0271	0.0182
Venus	-16290-04-08 07:26 J	-4228402.40	-4228402.19	-4228401.98	0.0269	0.0027
Venus	-16290-11-23 05:45 J	-4228173.44	-4228173.26	-4228173.07	0.0266	0.0123
Moon	-16283-11-29 04:33 J	-4225610.48	-4225610.31	-4225610.12	0.0260	0.0179
Earth	-16283-11-29 07:55 J	-4225610.33	-4225610.17	-4225609.98	0.0260	0.0181 *
Mercury	-16278-01-26 17:45 J	-4224090.93	-4224090.76	-4224090.58	0.0273	0.0101
Mercury	-16278-04-25 17:02 J	-4224001.97	-4224001.79	-4224001.61	0.0274	0.0082
Mercury	-16278-07-23 16:04 J	-4223912.87	-4223912.83	-4223912.78	0.0275	0.0266
Venus	-16275-12-12 08:38 J	-4222675.31	-4222675.14	-4222674.95	0.0291	0.0151
Venus	-16274-07-30 12:28 J	-4222445.19	-4222444.98	-4222444.77	0.0294	0.0055
Venus	-16273-03-16 18:28 J	-4222214.82	-4222214.73	-4222214.64	0.0297	0.0268
Earth	-16268-06-07 06:14 J	-4220306.46	-4220306.24	-4220306.01	0.0301	0.0109
Moon	-16268-06-07 07:26 J	-4220306.40	-4220306.19	-4220305.97	0.0301	0.0112 *
Mercury	-16265-03-09 20:23 J	-4219299.74	-4219299.65	-4219299.54	0.0291	0.0182
Mercury	-16265-06-06 07:55 J	-4219211.30	-4219211.17	-4219211.04	0.0290	0.0037
Mercury	-16265-09-02 19:26 J	-4219122.81	-4219122.69	-4219122.57	0.0288	0.0107
Mercury	-16265-11-30 06:28 J	-4219034.29	-4219034.23	-4219034.16	0.0287	0.0248
Venus	-16261-03-03 08:09 J	-4217845.33	-4217845.16	-4217844.99	0.0272	0.0163
Venus	-16261-10-18 08:23 J	-4217616.36	-4217616.15	-4217615.94	0.0269	0.0008
Venus	-16260-06-04 06:43 J	-4217387.39	-4217387.22	-4217387.04	0.0267	0.0143
Earth	-16253-12-05 03:21 J	-4214646.57	-4214646.36	-4214646.13	0.0261	0.0126
Moon	-16253-12-05 05:31 J	-4214646.50	-4214646.27	-4214646.04	0.0261	0.0120 *
Mercury	-16249-06-14 15:36 J	-4213359.01	-4213358.85	-4213358.70	0.0272	0.0158
Mercury	-16249-09-11 14:38 J	-4213270.08	-4213269.89	-4213269.70	0.0273	0.0024
Mercury	-16249-12-09 13:40 J	-4213181.05	-4213180.93	-4213180.80	0.0274	0.0207

Mars	-16248-04-22 09:07 J	-4213047.40	-4213047.12	-4213046.85	0.0276	0.0015
Venus	-16245-06-23 12:28 J	-4211889.17	-4211888.98	-4211888.78	0.0292	0.0126
Venus	-16244-02-08 16:04 J	-4211659.03	-4211658.83	-4211658.62	0.0295	0.0082
Venus	-16244-09-26 21:50 J	-4211428.60	-4211428.59	-4211428.55	0.0297	0.0296
Moon	-16239-05-31 17:45 J	-4209720.82	-4209720.76	-4209720.68	0.0303	0.0289
Earth	-16239-05-31 20:09 J	-4209720.71	-4209720.66	-4209720.61	0.0303	0.0294 *
Mercury	-16236-07-27 21:50 J	-4208567.66	-4208567.59	-4208567.51	0.0291	0.0235
Mercury	-16236-10-24 09:21 J	-4208479.23	-4208479.11	-4208478.98	0.0290	0.0089
Mercury	-16235-01-20 20:52 J	-4208390.76	-4208390.63	-4208390.51	0.0289	0.0055
Mercury	-16235-04-19 08:09 J	-4208302.25	-4208302.16	-4208302.07	0.0288	0.0197
Venus	-16232-09-13 08:52 J	-4207059.30	-4207059.13	-4207058.95	0.0271	0.0145
Venus	-16231-04-30 09:07 J	-4206830.33	-4206830.12	-4206829.91	0.0269	0.0011
Venus	-16231-12-15 07:11 J	-4206601.36	-4206601.20	-4206601.03	0.0266	0.0159
Moon	-16224-11-30 01:55 J	-4204059.63	-4204059.42	-4204059.21	0.0260	0.0133
Earth	-16224-11-30 03:50 J	-4204059.55	-4204059.34	-4204059.12	0.0260	0.0133 *
Mercury	-16220-11-01 11:45 J	-4202627.11	-4202627.01	-4202626.90	0.0272	0.0227
Mercury	-16219-01-29 11:02 J	-4202538.23	-4202538.04	-4202537.85	0.0273	0.0046
Mercury	-16219-04-28 10:04 J	-4202449.25	-4202449.08	-4202448.91	0.0274	0.0137
Venus	-16215-01-03 13:26 J	-4201103.14	-4201102.94	-4201102.74	0.0292	0.0107
Venus	-16215-08-21 17:02 J	-4200872.98	-4200872.79	-4200872.58	0.0294	0.0101
Earth	-16209-06-07 23:45 J	-4198755.71	-4198755.51	-4198755.31	0.0301	0.0158
Moon	-16209-06-08 03:21 J	-4198755.55	-4198755.36	-4198755.15	0.0301	0.0167 *
Mercury	-16207-12-14 23:02 J	-4197835.54	-4197835.54	-4197835.53	0.0292	0.0291
Mercury	-16206-03-13 10:33 J	-4197747.17	-4197747.06	-4197746.95	0.0291	0.0145
Mercury	-16206-06-09 21:50 J	-4197658.72	-4197658.59	-4197658.46	0.0290	0.0008
Mercury	-16206-09-06 09:07 J	-4197570.22	-4197570.12	-4197570.00	0.0288	0.0144
Mercury	-16206-12-03 20:38 J	-4197481.65	-4197481.64	-4197481.63	0.0287	0.0284
Venus	-16202-03-26 09:36 J	-4196273.28	-4196273.10	-4196272.91	0.0272	0.0126
Venus	-16202-11-10 09:50 J	-4196044.30	-4196044.09	-4196043.88	0.0269	0.0030
Venus	-16201-06-26 08:09 J	-4195815.31	-4195815.16	-4195815.00	0.0267	0.0179

Moon	-16194-12-06 20:38 J	-4193095.83	-4193095.64	-4193095.43	0.0261	0.0164
Earth	-16194-12-06 23:31 J	-4193095.70	-4193095.52	-4193095.33	0.0261	0.0175 *
Mercury	-16190-06-18 08:52 J	-4191806.31	-4191806.13	-4191805.95	0.0272	0.0101
Mercury	-16190-09-15 07:55 J	-4191717.35	-4191717.17	-4191716.98	0.0273	0.0081
Mercury	-16190-12-13 06:43 J	-4191628.25	-4191628.22	-4191628.16	0.0274	0.0264
Venus	-16187-11-28 16:19 J	-4190546.86	-4190546.82	-4190546.76	0.0289	0.0279
Venus	-16186-07-16 17:45 J	-4190316.96	-4190316.76	-4190316.55	0.0292	0.0080
Venus	-16185-03-02 21:35 J	-4190086.79	-4190086.60	-4190086.41	0.0295	0.0128
Moon	-16180-06-01 11:31 J	-4188170.16	-4188170.02	-4188169.86	0.0303	0.0231
Earth	-16180-06-01 14:52 J	-4188170.01	-4188169.88	-4188169.72	0.0303	0.0241 *
Mercury	-16177-07-30 12:14 J	-4187015.08	-4187014.99	-4187014.90	0.0291	0.0195
Mercury	-16177-10-26 23:45 J	-4186926.64	-4186926.51	-4186926.39	0.0290	0.0050
Mercury	-16176-01-23 11:02 J	-4186838.16	-4186838.04	-4186837.92	0.0289	0.0095
Mercury	-16176-04-21 22:19 J	-4186749.64	-4186749.57	-4186749.50	0.0288	0.0237
Venus	-16173-02-19 09:07 J	-4185716.15	-4185716.12	-4185716.06	0.0274	0.0267
Venus	-16173-10-05 11:16 J	-4185487.22	-4185487.03	-4185486.83	0.0271	0.0107
Venus	-16172-05-22 11:16 J	-4185258.23	-4185258.03	-4185257.82	0.0268	0.0048
Venus	-16171-01-06 09:21 J	-4185029.24	-4185029.11	-4185028.96	0.0266	0.0197
Earth	-16165-12-01 01:40 J	-4182508.67	-4182508.43	-4182508.20	0.0260	0.0081
Moon	-16165-12-01 03:35 J	-4182508.57	-4182508.35	-4182508.11	0.0260	0.0085 *
Mercury	-16161-11-04 05:45 J	-4181074.41	-4181074.26	-4181074.10	0.0272	0.0165
Mercury	-16160-02-01 04:48 J	-4180985.49	-4180985.30	-4180985.10	0.0273	0.0018
Mercury	-16160-05-01 03:50 J	-4180896.46	-4180896.34	-4180896.20	0.0274	0.0199
Mars	-16160-09-15 05:45 J	-4180759.53	-4180759.26	-4180758.98	0.0276	0.0031
Venus	-16157-06-09 18:28 J	-4179760.82	-4179760.73	-4179760.63	0.0289	0.0258
Venus	-16156-01-25 19:55 J	-4179530.87	-4179530.67	-4179530.45	0.0292	0.0060
Venus	-16156-09-12 23:45 J	-4179300.68	-4179300.51	-4179300.32	0.0295	0.0150
Earth	-16150-06-09 20:38 J	-4177204.81	-4177204.64	-4177204.47	0.0301	0.0217
Moon	-16150-06-09 20:24 J	-4177204.80	-4177204.65	-4177204.48	0.0301	0.0229 *
Mercury	-16148-12-17 13:26 J	-4176283.00	-4176282.94	-4176282.88	0.0292	0.0250

Mercury	-16147-03-16 00:57 J	-4176194.58	-4176194.46	-4176194.34	0.0291	0.0104
Mercury	-16147-06-12 12:14 J	-4176106.12	-4176105.99	-4176105.86	0.0289	0.0041
Mercury	-16147-09-08 23:31 J	-4176017.61	-4176017.52	-4176017.42	0.0288	0.0185
Venus	-16144-08-31 10:19 J	-4174930.15	-4174930.07	-4174929.98	0.0274	0.0247
Venus	-16143-04-17 12:14 J	-4174701.18	-4174700.99	-4174700.79	0.0271	0.0088
Venus	-16143-12-02 12:28 J	-4174472.18	-4174471.98	-4174471.78	0.0269	0.0068
Venus	-16142-07-19 10:48 J	-4174243.17	-4174243.05	-4174242.93	0.0267	0.0217
Moon	-16135-12-07 19:26 J	-4171544.81	-4171544.69	-4171544.54	0.0261	0.0218
Earth	-16135-12-07 22:48 J	-4171544.67	-4171544.55	-4171544.43	0.0261	0.0228 *
Mercury	-16131-03-24 04:19 J	-4170342.43	-4170342.32	-4170342.20	0.0271	0.0215
Mercury	-16131-06-21 03:21 J	-4170253.55	-4170253.36	-4170253.17	0.0272	0.0035
Mercury	-16131-09-18 02:24 J	-4170164.56	-4170164.40	-4170164.24	0.0273	0.0147
Venus	-16128-12-21 00:14 J	-4168974.61	-4168974.49	-4168974.36	0.0289	0.0231
Venus	-16127-08-08 01:55 J	-4168744.64	-4168744.42	-4168744.21	0.0292	0.0031
Venus	-16126-03-26 05:45 J	-4168514.42	-4168514.26	-4168514.08	0.0295	0.0179
Earth	-16121-06-02 13:40 J	-4166619.12	-4166618.93	-4166618.73	0.0303	0.0178
Moon	-16121-06-02 14:38 J	-4166619.08	-4166618.89	-4166618.69	0.0303	0.0165 *
Mercury	-16118-08-03 02:52 J	-4165462.49	-4165462.38	-4165462.27	0.0291	0.0150
Mercury	-16118-10-30 14:24 J	-4165374.03	-4165373.90	-4165373.78	0.0290	0.0010
Mercury	-16117-01-27 01:40 J	-4165285.54	-4165285.43	-4165285.32	0.0289	0.0139
Mercury	-16117-04-24 12:57 J	-4165196.98	-4165196.96	-4165196.93	0.0288	0.0280
Venus	-16114-03-13 12:57 J	-4164144.07	-4164143.96	-4164143.84	0.0274	0.0227
Venus	-16114-10-28 14:52 J	-4163915.08	-4163914.88	-4163914.68	0.0271	0.0067
Venus	-16113-06-13 14:52 J	-4163686.08	-4163685.88	-4163685.68	0.0268	0.0087
Venus	-16112-01-28 12:43 J	-4163457.05	-4163456.97	-4163456.86	0.0266	0.0235
Earth	-16106-12-03 02:09 J	-4160957.66	-4160957.41	-4160957.16	0.0260	0.0025
Moon	-16106-12-03 05:31 J	-4160957.52	-4160957.27	-4160957.01	0.0260	0.0029 *
Mercury	-16102-11-08 00:57 J	-4159521.64	-4159521.46	-4159521.27	0.0272	0.0094
Mercury	-16101-02-05 00:00 J	-4159432.68	-4159432.50	-4159432.31	0.0273	0.0088
Mercury	-16101-05-03 22:48 J	-4159343.56	-4159343.55	-4159343.51	0.0274	0.0271

Venus	-16098-07-03 03:35 J	-4158188.49	-4158188.35	-4158188.19	0.0289	0.0208
Venus	-16097-02-18 05:31 J	-4157958.49	-4157958.27	-4157958.06	0.0292	0.0007
Venus	-16097-10-05 09:35 J	-4157728.25	-4157728.10	-4157727.94	0.0295	0.0203
Moon	-16091-06-10 18:00 J	-4155653.75	-4155653.75	-4155653.74	0.0301	0.0301
Earth	-16091-06-10 21:21 J	-4155653.67	-4155653.61	-4155653.52	0.0301	0.0285
Mercury	-16089-12-20 04:19 J	-4154730.41	-4154730.32	-4154730.22	0.0292	0.0201
Mercury	-16088-03-18 15:50 J	-4154641.96	-4154641.84	-4154641.71	0.0290	0.0055
Mercury	-16088-06-15 03:21 J	-4154553.49	-4154553.36	-4154553.24	0.0289	0.0089
Mercury	-16088-09-11 14:38 J	-4154464.96	-4154464.89	-4154464.81	0.0288	0.0232
Venus	-16085-09-22 14:52 J	-4153358.01	-4153357.88	-4153357.73	0.0274	0.0206
Venus	-16084-05-09 16:48 J	-4153129.00	-4153128.80	-4153128.59	0.0271	0.0046
Venus	-16084-12-24 16:48 J	-4152899.99	-4152899.80	-4152899.61	0.0269	0.0109
Venus	-16083-08-10 14:52 J	-4152670.92	-4152670.88	-4152670.82	0.0267	0.0257
Mercury	-16072-03-27 00:00 J	-4148789.66	-4148789.50	-4148789.33	0.0271	0.0140
Mercury	-16072-06-23 23:16 J	-4148700.72	-4148700.53	-4148700.34	0.0272	0.0041
Mercury	-16072-09-20 22:19 J	-4148611.68	-4148611.57	-4148611.46	0.0273	0.0223
Mars	-16071-02-08 21:07 J	-4148470.88	-4148470.62	-4148470.36	0.0275	0.0081
Venus	-16068-01-12 11:02 J	-4147402.20	-4147402.04	-4147401.87	0.0289	0.0178
Venus	-16068-08-30 12:57 J	-4147172.17	-4147171.96	-4147171.74	0.0292	0.0024
Venus	-16067-04-17 17:02 J	-4146941.91	-4146941.79	-4146941.65	0.0295	0.0236
Earth	-16062-06-04 17:45 J	-4145067.98	-4145067.76	-4145067.53	0.0303	0.0102
Moon	-16062-06-04 21:35 J	-4145067.83	-4145067.60	-4145067.37	0.0303	0.0086 *
Mercury	-16059-05-09 06:43 J	-4143998.29	-4143998.22	-4143998.15	0.0292	0.0244
Mercury	-16059-08-05 18:14 J	-4143909.86	-4143909.74	-4143909.62	0.0291	0.0097
Mercury	-16059-11-02 05:45 J	-4143821.39	-4143821.26	-4143821.14	0.0290	0.0049
Mercury	-16058-01-29 17:02 J	-4143732.89	-4143732.79	-4143732.69	0.0289	0.0191
Venus	-16055-04-04 18:43 J	-4142571.87	-4142571.72	-4142571.56	0.0273	0.0183
Venus	-16055-11-19 20:24 J	-4142342.85	-4142342.65	-4142342.44	0.0271	0.0024
Venus	-16054-07-06 20:09 J	-4142113.83	-4142113.66	-4142113.47	0.0268	0.0130
Moon	-16047-12-04 06:00 J	-4139406.51	-4139406.25	-4139405.99	0.0260	0.0031

Earth	-16047-12-04 06:14 J	-4139406.48	-4139406.24	-4139405.99	0.0260	0.0040 *
Mercury	-16043-08-13 22:48 J	-4138057.68	-4138057.55	-4138057.41	0.0271	0.0191
Mercury	-16043-11-10 21:50 J	-4137968.78	-4137968.59	-4137968.39	0.0272	0.0011
Mercury	-16042-02-07 20:52 J	-4137879.78	-4137879.63	-4137879.48	0.0273	0.0172
Venus	-16039-07-25 16:48 J	-4136615.97	-4136615.80	-4136615.61	0.0290	0.0152
Venus	-16038-03-12 18:57 J	-4136385.92	-4136385.71	-4136385.50	0.0293	0.0053
Venus	-16038-10-28 23:16 J	-4136155.62	-4136155.53	-4136155.43	0.0295	0.0264
Mercury	-16030-09-26 08:38 J	-4133266.15	-4133266.14	-4133266.13	0.0292	0.0291
Mercury	-16030-12-23 20:09 J	-4133177.77	-4133177.66	-4133177.55	0.0291	0.0144
Mercury	-16029-03-21 07:40 J	-4133089.31	-4133089.18	-4133089.06	0.0290	0.0010
Mercury	-16029-06-17 18:57 J	-4133000.82	-4133000.71	-4133000.60	0.0289	0.0146
Venus	-16026-10-15 21:50 J	-4131785.75	-4131785.59	-4131785.42	0.0273	0.0161
Venus	-16025-05-31 23:31 J	-4131556.73	-4131556.52	-4131556.31	0.0271	0.0002
Venus	-16024-01-15 23:02 J	-4131327.71	-4131327.54	-4131327.36	0.0268	0.0153
Earth	-16018-11-29 13:11 J	-4128819.09	-4128818.95	-4128818.79	0.0260	0.0205
Moon	-16018-11-29 13:26 J	-4128819.07	-4128818.94	-4128818.79	0.0260	0.0210 *
Mercury	-16014-12-31 22:19 J	-4127325.66	-4127325.57	-4127325.47	0.0271	0.0234
Mercury	-16013-03-29 21:21 J	-4127236.79	-4127236.61	-4127236.42	0.0272	0.0054
Mercury	-16013-06-26 20:24 J	-4127147.81	-4127147.65	-4127147.48	0.0273	0.0128
Venus	-16009-02-05 01:11 J	-4125829.64	-4125829.45	-4125829.25	0.0290	0.0120
Venus	-16009-09-22 03:21 J	-4125599.56	-4125599.36	-4125599.15	0.0293	0.0085
Earth	-16003-06-06 03:21 J	-4123516.60	-4123516.36	-4123516.12	0.0302	0.0013
Moon	-16003-06-06 04:48 J	-4123516.55	-4123516.30	-4123516.05	0.0302	0.0005 *

# 16TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 16th millennium BCE.



PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-16000-05-11 22:48 J	-4122445.65	-4122445.55	-4122445.45	0.0292	0.0182		
Mercury	-16000-08-08 10:19 J	-4122357.20	-4122357.07	-4122356.94	0.0291	0.0035		
Mercury	-16000-11-04 21:50 J	-4122268.71	-4122268.59	-4122268.47	0.0289	0.0110		
Mercury	-15999-02-01 09:07 J	-4122180.18	-4122180.12	-4122180.06	0.0288	0.0252		
Venus	-15996-04-27 02:52 J	-4120999.55	-4120999.38	-4120999.19	0.0273	0.0137		
Venus	-15996-12-12 04:19 J	-4120770.53	-4120770.32	-4120770.11	0.0270	0.0022		
Venus	-15995-07-29 03:50 J	-4120541.49	-4120541.34	-4120541.18	0.0268	0.0175		
Moon	-15988-12-05 09:50 J	-4117855.31	-4117855.09	-4117854.85	0.0261	0.0099		
Earth	-15988-12-05 13:55 J	-4117855.14	-4117854.92	-4117854.69	0.0261	0.0110	*	
Mercury	-15984-08-16 20:52 J	-4116504.80	-4116504.63	-4116504.45	0.0272	0.0099		
Mercury	-15984-11-13 19:55 J	-4116415.85	-4116415.67	-4116415.48	0.0273	0.0083		
Mercury	-15983-02-10 18:43 J	-4116326.75	-4116326.72	-4116326.66	0.0274	0.0266		
Mars	-15983-07-06 01:40 J	-4116181.64	-4116181.43	-4116181.18	0.0276	0.0149		
Venus	-15981-12-30 09:07 J	-4115273.13	-4115273.12	-4115273.09	0.0287	0.0286		
Venus	-15980-08-17 09:07 J	-4115043.32	-4115043.12	-4115042.91	0.0290	0.0090		
Venus	-15979-04-04 11:45 J	-4114813.21	-4114813.01	-4114812.81	0.0293	0.0117		
Mercury	-15971-09-29 01:11 J	-4111713.53	-4111713.45	-4111713.37	0.0292	0.0223		
Mercury	-15971-12-26 12:43 J	-4111625.09	-4111624.97	-4111624.85	0.0291	0.0076		
Mercury	-15970-03-25 00:00 J	-4111536.62	-4111536.50	-4111536.37	0.0289	0.0070		
Mercury	-15970-06-21 11:31 J	-4111448.11	-4111448.02	-4111447.93	0.0288	0.0212		
Venus	-15967-11-07 07:11 J	-4110213.39	-4110213.20	-4110213.01	0.0273	0.0113		
Venus	-15966-06-24 08:24 J	-4109984.35	-4109984.15	-4109983.94	0.0270	0.0047		
Venus	-15965-02-08 07:40 J	-4109755.31	-4109755.18	-4109755.03	0.0268	0.0199		
Earth	-15959-11-30 21:35 J	-4107267.81	-4107267.60	-4107267.38	0.0260	0.0134		
Moon	-15959-12-01 01:26 J	-4107267.65	-4107267.44	-4107267.23	0.0260	0.0141	*	
Mercury	-15954-01-03 21:07 J	-4105772.79	-4105772.62	-4105772.45	0.0271	0.0138		

Mercury	-15954-04-02 20:09 J	-4105683.85	-4105683.66	-4105683.47	0.0272	0.0043
Mercury	-15954-06-30 19:11 J	-4105594.81	-4105594.70	-4105594.59	0.0273	0.0225
Jupiter	-15953-06-13 07:40 J	-4105246.58	-4105246.18	-4105245.74	0.0277	0.0128
Venus	-15951-07-12 18:43 J	-4104486.81	-4104486.72	-4104486.61	0.0288	0.0254
Venus	-15950-02-27 19:11 J	-4104256.91	-4104256.70	-4104256.49	0.0291	0.0056
Venus	-15950-10-15 21:50 J	-4104026.77	-4104026.59	-4104026.40	0.0294	0.0152
Moon	-15944-06-07 16:33 J	-4101965.03	-4101964.81	-4101964.57	0.0302	0.0107
Earth	-15944-06-07 19:11 J	-4101964.93	-4101964.70	-4101964.47	0.0302	0.0092 *
Mercury	-15941-02-16 04:19 J	-4100981.38	-4100981.32	-4100981.26	0.0292	0.0256
Mercury	-15941-05-14 15:50 J	-4100892.96	-4100892.84	-4100892.72	0.0291	0.0109
Mercury	-15941-08-11 03:21 J	-4100804.49	-4100804.36	-4100804.23	0.0290	0.0036
Mars	-15941-10-20 09:07 J	-4100734.27	-4100734.12	-4100733.95	0.0289	0.0250
Mercury	-15941-11-07 14:38 J	-4100715.99	-4100715.89	-4100715.79	0.0289	0.0180
Venus	-15938-10-03 10:19 J	-4099656.15	-4099656.07	-4099655.98	0.0275	0.0250
Venus	-15937-05-19 13:11 J	-4099427.14	-4099426.95	-4099426.75	0.0272	0.0087
Venus	-15936-01-03 14:09 J	-4099198.11	-4099197.91	-4099197.70	0.0270	0.0071
Venus	-15936-08-20 13:11 J	-4098969.05	-4098968.95	-4098968.83	0.0267	0.0223
Moon	-15929-12-06 22:33 J	-4096303.73	-4096303.56	-4096303.37	0.0261	0.0175
Earth	-15929-12-07 00:14 J	-4096303.66	-4096303.49	-4096303.31	0.0261	0.0187 *
Mercury	-15925-05-22 21:07 J	-4095040.76	-4095040.62	-4095040.47	0.0271	0.0178
Mercury	-15925-08-19 20:24 J	-4094951.85	-4094951.65	-4094951.46	0.0272	0.0006
Mercury	-15925-11-16 19:11 J	-4094862.83	-4094862.70	-4094862.55	0.0273	0.0186
Venus	-15921-01-23 03:50 J	-4093700.47	-4093700.34	-4093700.20	0.0288	0.0223
Venus	-15921-09-09 04:19 J	-4093470.53	-4093470.32	-4093470.10	0.0291	0.0023
Venus	-15920-04-27 07:26 J	-4093240.35	-4093240.19	-4093240.02	0.0294	0.0186
Earth	-15915-06-01 17:31 J	-4091378.84	-4091378.77	-4091378.69	0.0302	0.0285
Moon	-15915-06-01 20:09 J	-4091378.75	-4091378.66	-4091378.55	0.0302	0.0270 *
Mercury	-15912-10-01 18:28 J	-4090160.84	-4090160.73	-4090160.62	0.0291	0.0147
Mercury	-15912-12-29 06:00 J	-4090072.38	-4090072.25	-4090072.12	0.0290	0.0003
Mercury	-15911-03-27 17:16 J	-4089983.89	-4089983.78	-4089983.66	0.0289	0.0143

Mercury	-15911-06-24 04:33 J	-4089895.32	-4089895.31	-4089895.29	0.0288	0.0285
Venus	-15908-04-14 15:35 J	-4088869.97	-4088869.85	-4088869.73	0.0275	0.0225
Venus	-15908-11-29 18:14 J	-4088640.94	-4088640.74	-4088640.53	0.0272	0.0062
Venus	-15907-07-16 19:11 J	-4088411.89	-4088411.70	-4088411.50	0.0270	0.0096
Venus	-15906-03-02 18:14 J	-4088182.82	-4088182.74	-4088182.66	0.0267	0.0247
Earth	-15900-12-02 08:24 J	-4085716.39	-4085716.15	-4085715.90	0.0261	0.0058
Moon	-15900-12-02 10:19 J	-4085716.32	-4085716.07	-4085715.82	0.0261	0.0066 *
Mercury	-15896-10-09 21:21 J	-4084308.72	-4084308.61	-4084308.49	0.0271	0.0216
Mercury	-15895-01-06 20:38 J	-4084219.83	-4084219.64	-4084219.45	0.0272	0.0036
Mercury	-15895-04-05 19:40 J	-4084130.84	-4084130.68	-4084130.52	0.0273	0.0146
Mars	-15895-11-30 21:35 J	-4083891.73	-4083891.60	-4083891.46	0.0276	0.0238
Venus	-15892-08-04 13:55 J	-4082914.08	-4082913.92	-4082913.75	0.0288	0.0190
Venus	-15891-03-22 14:52 J	-4082684.09	-4082683.88	-4082683.66	0.0291	0.0013
Venus	-15891-11-07 18:14 J	-4082453.87	-4082453.74	-4082453.59	0.0294	0.0221
Moon	-15885-06-09 11:02 J	-4080413.19	-4080413.04	-4080412.87	0.0302	0.0221
Earth	-15885-06-09 14:24 J	-4080413.06	-4080412.90	-4080412.71	0.0302	0.0206 *
Mercury	-15882-02-18 21:50 J	-4079428.69	-4079428.59	-4079428.48	0.0292	0.0177
Mercury	-15882-05-18 09:21 J	-4079340.24	-4079340.11	-4079339.98	0.0291	0.0031
Mercury	-15882-08-14 20:38 J	-4079251.75	-4079251.64	-4079251.52	0.0289	0.0115
Mercury	-15882-11-11 08:09 J	-4079163.22	-4079163.16	-4079163.10	0.0288	0.0257
Venus	-15879-10-25 22:48 J	-4078083.69	-4078083.55	-4078083.40	0.0274	0.0197
Venus	-15878-06-12 01:26 J	-4077854.65	-4077854.44	-4077854.24	0.0272	0.0035
Venus	-15877-01-27 01:40 J	-4077625.61	-4077625.43	-4077625.24	0.0269	0.0122
Moon	-15870-12-09 15:07 J	-4074751.92	-4074751.87	-4074751.81	0.0261	0.0254
Mercury	-15866-02-26 22:04 J	-4073576.65	-4073576.58	-4073576.51	0.0271	0.0252
Mercury	-15866-05-26 21:07 J	-4073487.81	-4073487.62	-4073487.44	0.0272	0.0072
Mercury	-15866-08-23 20:09 J	-4073398.83	-4073398.66	-4073398.48	0.0273	0.0110
Venus	-15862-02-15 00:14 J	-4072127.66	-4072127.49	-4072127.30	0.0289	0.0156
Venus	-15862-10-03 01:40 J	-4071897.64	-4071897.43	-4071897.22	0.0292	0.0048
Venus	-15861-05-20 05:16 J	-4071667.37	-4071667.28	-4071667.17	0.0295	0.0259

Earth	-15856-06-03 16:04 J	-4069827.02	-4069826.83	-4069826.62	0.0302	0.0164
Moon	-15856-06-03 19:26 J	-4069826.89	-4069826.69	-4069826.47	0.0302	0.0148 *
Mercury	-15853-07-08 00:57 J	-4068696.55	-4068696.46	-4068696.37	0.0291	0.0209
Mercury	-15853-10-04 12:28 J	-4068608.11	-4068607.98	-4068607.86	0.0290	0.0064
Mercury	-15853-12-31 23:45 J	-4068519.63	-4068519.51	-4068519.38	0.0289	0.0081
Mars	-15852-03-17 11:02 J	-4068444.31	-4068444.04	-4068443.75	0.0288	0.0134
Mercury	-15852-03-30 11:02 J	-4068431.11	-4068431.04	-4068430.95	0.0288	0.0224
Venus	-15849-05-07 04:48 J	-4067297.46	-4067297.30	-4067297.13	0.0274	0.0171
Venus	-15849-12-22 06:57 J	-4067068.42	-4067068.21	-4067068.00	0.0271	0.0009
Venus	-15848-08-08 07:11 J	-4066839.37	-4066839.20	-4066839.03	0.0269	0.0147
Moon	-15841-12-03 18:00 J	-4064165.01	-4064164.75	-4064164.49	0.0261	0.0011
Earth	-15841-12-03 20:24 J	-4064164.90	-4064164.65	-4064164.40	0.0261	0.0021 *
Mercury	-15837-10-12 21:07 J	-4062755.79	-4062755.62	-4062755.44	0.0272	0.0112
Mercury	-15836-01-09 20:24 J	-4062666.84	-4062666.65	-4062666.47	0.0273	0.0070
Mars	-15836-03-10 19:11 J	-4062606.88	-4062606.70	-4062606.50	0.0273	0.0196
Mercury	-15836-04-08 19:26 J	-4062577.76	-4062577.69	-4062577.62	0.0274	0.0253
Venus	-15833-08-27 10:19 J	-4061341.26	-4061341.07	-4061340.87	0.0289	0.0124
Venus	-15832-04-14 12:00 J	-4061111.20	-4061111.00	-4061110.79	0.0292	0.0081
Venus	-15832-11-30 16:04 J	-4060880.84	-4060880.83	-4060880.79	0.0295	0.0293
Mercury	-15824-11-25 04:19 J	-4057964.39	-4057964.32	-4057964.24	0.0292	0.0240
Mercury	-15823-02-21 15:50 J	-4057875.96	-4057875.84	-4057875.72	0.0291	0.0093
Mercury	-15823-05-21 03:21 J	-4057787.49	-4057787.36	-4057787.24	0.0290	0.0052
Mercury	-15823-08-17 14:38 J	-4057698.98	-4057698.89	-4057698.80	0.0289	0.0195
Venus	-15820-11-17 12:14 J	-4056511.17	-4056510.99	-4056510.81	0.0273	0.0143
Venus	-15819-07-04 14:09 J	-4056282.12	-4056281.91	-4056281.70	0.0271	0.0019
Venus	-15818-02-18 13:55 J	-4056053.08	-4056052.92	-4056052.76	0.0269	0.0173
Earth	-15812-11-29 06:57 J	-4053577.34	-4053577.21	-4053577.06	0.0260	0.0214
Moon	-15812-11-29 08:24 J	-4053577.27	-4053577.15	-4053577.01	0.0260	0.0217 *
Mercury	-15807-03-01 21:35 J	-4052023.75	-4052023.60	-4052023.43	0.0272	0.0149
Mercury	-15807-05-29 20:52 J	-4051934.82	-4051934.63	-4051934.44	0.0273	0.0033

Mercury	-15807-08-26 19:55 J	-4051845.78	-4051845.67	-4051845.55	0.0274	0.0216
Venus	-15804-07-22 21:21 J	-4050784.62	-4050784.61	-4050784.58	0.0287	0.0286
Venus	-15803-03-09 21:07 J	-4050554.82	-4050554.62	-4050554.42	0.0290	0.0088
Venus	-15803-10-25 23:02 J	-4050324.73	-4050324.54	-4050324.34	0.0293	0.0119
Moon	-15797-06-05 14:24 J	-4048275.15	-4048274.90	-4048274.65	0.0302	0.0026
Earth	-15797-06-05 14:52 J	-4048275.11	-4048274.88	-4048274.64	0.0302	0.0042 *
Mercury	-15794-04-14 07:40 J	-4047232.23	-4047232.18	-4047232.14	0.0292	0.0271
Mercury	-15794-07-11 18:57 J	-4047143.82	-4047143.71	-4047143.59	0.0291	0.0125
Mercury	-15794-10-08 06:28 J	-4047055.36	-4047055.23	-4047055.10	0.0290	0.0020
Mercury	-15793-01-04 17:45 J	-4046966.86	-4046966.76	-4046966.65	0.0288	0.0164
Venus	-15790-05-30 18:28 J	-4045724.92	-4045724.73	-4045724.54	0.0273	0.0117
Venus	-15789-01-14 19:55 J	-4045495.88	-4045495.67	-4045495.47	0.0270	0.0044
Venus	-15789-08-30 19:26 J	-4045266.83	-4045266.69	-4045266.55	0.0268	0.0198
Moon	-15782-12-06 03:50 J	-4042613.57	-4042613.34	-4042613.11	0.0261	0.0089
Earth	-15782-12-06 07:11 J	-4042613.42	-4042613.20	-4042612.96	0.0261	0.0099 *
Mercury	-15778-07-19 21:21 J	-4041291.74	-4041291.61	-4041291.47	0.0271	0.0192
Mercury	-15778-10-16 20:38 J	-4041202.84	-4041202.64	-4041202.45	0.0272	0.0011
Mercury	-15777-01-13 19:40 J	-4041113.83	-4041113.68	-4041113.53	0.0273	0.0172
Venus	-15774-02-02 06:43 J	-4039998.32	-4039998.22	-4039998.13	0.0287	0.0256
Venus	-15774-09-20 06:28 J	-4039768.44	-4039768.23	-4039768.02	0.0290	0.0057
Venus	-15773-05-07 08:52 J	-4039538.31	-4039538.13	-4039537.94	0.0293	0.0151
Mercury	-15765-11-27 22:33 J	-4036411.67	-4036411.56	-4036411.45	0.0291	0.0155
Mercury	-15764-02-24 09:50 J	-4036323.22	-4036323.09	-4036322.96	0.0290	0.0010
Mercury	-15764-05-23 21:07 J	-4036234.73	-4036234.62	-4036234.50	0.0289	0.0136
Mars	-15764-08-13 02:38 J	-4036153.71	-4036153.39	-4036153.07	0.0288	0.0003
Mercury	-15764-08-20 08:24 J	-4036146.17	-4036146.15	-4036146.11	0.0288	0.0278
Venus	-15761-04-24 22:33 J	-4035167.63	-4035167.56	-4035167.47	0.0275	0.0253
Venus	-15761-12-10 01:40 J	-4034938.62	-4034938.43	-4034938.23	0.0273	0.0089
Venus	-15760-07-27 02:52 J	-4034709.58	-4034709.38	-4034709.18	0.0270	0.0071
Venus	-15759-03-13 01:55 J	-4034480.53	-4034480.42	-4034480.30	0.0268	0.0223

Earth	-15753-11-30 17:31 J	-4032025.98	-4032025.77	-4032025.56	0.0260	0.0137
Moon	-15753-11-30 21:21 J	-4032025.82	-4032025.61	-4032025.40	0.0260	0.0140 *
Mercury	-15749-12-05 21:35 J	-4030559.69	-4030559.60	-4030559.49	0.0271	0.0229
Mercury	-15748-03-04 20:52 J	-4030470.82	-4030470.63	-4030470.44	0.0272	0.0048
Mercury	-15748-06-01 19:55 J	-4030381.83	-4030381.67	-4030381.50	0.0273	0.0135
Mars	-15748-08-05 13:40 J	-4030317.17	-4030316.93	-4030316.67	0.0274	0.0109
Venus	-15745-08-14 16:19 J	-4029211.95	-4029211.82	-4029211.68	0.0288	0.0223
Venus	-15744-04-01 16:48 J	-4028982.01	-4028981.80	-4028981.58	0.0291	0.0022
Venus	-15744-11-17 19:40 J	-4028751.84	-4028751.68	-4028751.51	0.0294	0.0188
Moon	-15738-06-08 08:52 J	-4026723.36	-4026723.13	-4026722.90	0.0302	0.0094
Earth	-15738-06-08 12:28 J	-4026723.21	-4026722.98	-4026722.74	0.0302	0.0078 *
Mercury	-15735-04-17 01:26 J	-4025679.53	-4025679.44	-4025679.34	0.0291	0.0188
Mercury	-15735-07-14 12:57 J	-4025591.09	-4025590.96	-4025590.83	0.0290	0.0042
Mercury	-15735-10-11 00:14 J	-4025502.61	-4025502.49	-4025502.37	0.0289	0.0102
Mercury	-15734-01-07 11:31 J	-4025414.08	-4025414.02	-4025413.95	0.0288	0.0245
Jupiter	-15734-09-10 03:07 J	-4025168.78	-4025168.37	-4025167.92	0.0284	0.0098
Venus	-15732-11-05 04:19 J	-4024381.42	-4024381.32	-4024381.19	0.0274	0.0228
Venus	-15731-06-22 07:26 J	-4024152.39	-4024152.19	-4024151.99	0.0272	0.0064
Venus	-15730-02-06 08:09 J	-4023923.36	-4023923.16	-4023922.97	0.0269	0.0095
Venus	-15730-09-23 06:57 J	-4023694.28	-4023694.21	-4023694.13	0.0267	0.0247
Moon	-15723-12-07 16:04 J	-4021062.01	-4021061.83	-4021061.64	0.0261	0.0165
Earth	-15723-12-07 16:19 J	-4021061.99	-4021061.82	-4021061.62	0.0261	0.0175 *
Mercury	-15719-07-22 19:55 J	-4019738.85	-4019738.67	-4019738.49	0.0272	0.0097
Mercury	-15719-10-19 18:57 J	-4019649.89	-4019649.71	-4019649.52	0.0273	0.0085
Mercury	-15718-01-16 18:00 J	-4019560.77	-4019560.75	-4019560.71	0.0274	0.0269
Venus	-15715-02-25 00:00 J	-4018425.65	-4018425.50	-4018425.33	0.0288	0.0195
Venus	-15715-10-13 00:43 J	-4018195.68	-4018195.47	-4018195.25	0.0291	0.0009
Venus	-15714-05-31 03:50 J	-4017965.47	-4017965.34	-4017965.19	0.0294	0.0218
Earth	-15709-06-01 11:45 J	-4016137.03	-4016137.01	-4016136.96	0.0303	0.0299
Moon	-15709-06-01 15:21 J	-4016136.93	-4016136.86	-4016136.77	0.0303	0.0283

Mercury	-15706-09-04 04:33 J	-4014947.39	-4014947.31	-4014947.22	0.0292	0.0220
Mercury	-15706-12-01 16:04 J	-4014858.95	-4014858.83	-4014858.70	0.0291	0.0074
Mercury	-15705-02-28 03:35 J	-4014770.48	-4014770.35	-4014770.23	0.0290	0.0072
Mercury	-15705-05-26 14:52 J	-4014681.97	-4014681.88	-4014681.80	0.0289	0.0214
Venus	-15702-05-18 11:45 J	-4013595.15	-4013595.01	-4013594.87	0.0274	0.0200
Venus	-15701-01-02 13:55 J	-4013366.12	-4013365.92	-4013365.71	0.0272	0.0037
Venus	-15701-08-18 14:24 J	-4013137.08	-4013136.90	-4013136.71	0.0269	0.0121
Earth	-15694-12-03 01:11 J	-4010474.68	-4010474.45	-4010474.20	0.0260	0.0065
Moon	-15694-12-03 02:09 J	-4010474.66	-4010474.41	-4010474.16	0.0260	0.0071 *
Mercury	-15690-12-09 19:40 J	-4009006.85	-4009006.68	-4009006.52	0.0272	0.0139
Mercury	-15689-03-07 18:43 J	-4008917.91	-4008917.72	-4008917.53	0.0273	0.0043
Mercury	-15689-06-04 17:45 J	-4008828.86	-4008828.76	-4008828.65	0.0274	0.0226
Venus	-15686-09-07 08:38 J	-4007639.32	-4007639.14	-4007638.96	0.0289	0.0163
Venus	-15685-04-24 09:50 J	-4007409.31	-4007409.09	-4007408.88	0.0292	0.0041
Venus	-15685-12-10 13:26 J	-4007179.04	-4007178.94	-4007178.83	0.0295	0.0253
Moon	-15679-06-10 04:33 J	-4005171.48	-4005171.31	-4005171.14	0.0302	0.0205
Earth	-15679-06-10 06:43 J	-4005171.40	-4005171.22	-4005171.03	0.0302	0.0189 *
Mercury	-15676-01-21 07:40 J	-4004215.24	-4004215.18	-4004215.12	0.0292	0.0255
Mercury	-15676-04-19 18:57 J	-4004126.83	-4004126.71	-4004126.59	0.0291	0.0109
Mercury	-15676-07-17 06:28 J	-4004038.36	-4004038.23	-4004038.10	0.0290	0.0037
Mercury	-15676-10-13 17:45 J	-4003949.86	-4003949.76	-4003949.66	0.0288	0.0180
Mars	-15675-01-08 04:04 J	-4003863.62	-4003863.33	-4003863.03	0.0287	0.0111
Venus	-15673-11-27 16:48 J	-4002808.95	-4002808.80	-4002808.63	0.0274	0.0175
Venus	-15672-07-14 19:11 J	-4002579.91	-4002579.70	-4002579.49	0.0271	0.0013
Venus	-15671-02-28 19:11 J	-4002350.87	-4002350.70	-4002350.52	0.0269	0.0144
Earth	-15664-12-08 22:33 J	-3999510.63	-3999510.56	-3999510.46	0.0261	0.0246
Moon	-15664-12-09 02:24 J	-3999510.50	-3999510.40	-3999510.28	0.0261	0.0232 *
Mercury	-15660-04-27 17:45 J	-3998274.89	-3998274.76	-3998274.62	0.0271	0.0193
Mercury	-15660-07-25 17:02 J	-3998185.98	-3998185.79	-3998185.60	0.0272	0.0011
Mercury	-15660-10-22 16:19 J	-3998096.97	-3998096.82	-3998096.67	0.0273	0.0172

Mars	-15660-12-30 17:02 J	-3998028.06	-3998027.79	-3998027.52	0.0274	0.0048
Venus	-15656-03-19 14:52 J	-3996853.06	-3996852.88	-3996852.69	0.0289	0.0138
Venus	-15656-11-04 16:19 J	-3996623.02	-3996622.82	-3996622.61	0.0292	0.0068
Venus	-15655-06-22 20:24 J	-3996392.71	-3996392.65	-3996392.59	0.0295	0.0280
Earth	-15650-06-04 03:21 J	-3994585.54	-3994585.36	-3994585.17	0.0303	0.0192
Moon	-15650-06-04 05:31 J	-3994585.47	-3994585.27	-3994585.07	0.0303	0.0178 *
Mercury	-15647-09-06 21:50 J	-3993394.70	-3993394.59	-3993394.48	0.0292	0.0146
Mercury	-15647-12-04 09:21 J	-3993306.24	-3993306.11	-3993305.99	0.0290	0.0010
Mercury	-15646-03-02 20:38 J	-3993217.75	-3993217.64	-3993217.53	0.0289	0.0145
Mercury	-15646-05-30 07:55 J	-3993129.18	-3993129.17	-3993129.16	0.0288	0.0287
Venus	-15643-06-09 22:48 J	-3992022.72	-3992022.55	-3992022.37	0.0274	0.0149
Venus	-15642-01-25 00:43 J	-3991793.68	-3991793.47	-3991793.26	0.0271	0.0014
Venus	-15642-09-11 00:14 J	-3991564.64	-3991564.49	-3991564.32	0.0269	0.0169
Moon	-15635-12-04 02:38 J	-3988923.64	-3988923.39	-3988923.13	0.0260	0.0010
Earth	-15635-12-04 06:28 J	-3988923.48	-3988923.23	-3988922.98	0.0260	0.0003 *
Mercury	-15631-09-14 17:02 J	-3987542.87	-3987542.79	-3987542.70	0.0271	0.0238
Mercury	-15631-12-12 16:19 J	-3987454.01	-3987453.82	-3987453.63	0.0272	0.0058
Mercury	-15630-03-11 15:21 J	-3987365.03	-3987364.86	-3987364.69	0.0273	0.0124
Venus	-15627-09-29 21:50 J	-3986066.79	-3986066.59	-3986066.39	0.0290	0.0107
Venus	-15626-05-17 23:45 J	-3985836.71	-3985836.51	-3985836.31	0.0293	0.0100
Earth	-15620-06-11 18:57 J	-3983619.76	-3983619.71	-3983619.62	0.0301	0.0288
Mercury	-15617-01-25 00:14 J	-3982662.58	-3982662.49	-3982662.39	0.0292	0.0185
Mercury	-15617-04-22 11:45 J	-3982574.14	-3982574.01	-3982573.88	0.0290	0.0039
Mercury	-15617-07-19 23:02 J	-3982485.65	-3982485.54	-3982485.41	0.0289	0.0107
Mercury	-15617-10-16 10:33 J	-3982397.12	-3982397.06	-3982397.00	0.0288	0.0248
Venus	-15614-12-21 02:52 J	-3981236.55	-3981236.38	-3981236.19	0.0273	0.0126
Venus	-15613-08-06 04:33 J	-3981007.51	-3981007.31	-3981007.10	0.0270	0.0036
Venus	-15612-03-23 04:04 J	-3980778.47	-3980778.33	-3980778.18	0.0268	0.0190
Earth	-15606-11-29 10:19 J	-3978336.12	-3978336.07	-3978335.98	0.0260	0.0249
Moon	-15606-11-29 13:55 J	-3978335.95	-3978335.92	-3978335.87	0.0260	0.0255



Mercury	-15601-04-30 13:40 J	-3976722.10	-3976721.93	-3976721.76	0.0271	0.0118
Mercury	-15601-07-28 12:43 J	-3976633.15	-3976632.97	-3976632.78	0.0272	0.0064
Mercury	-15601-10-25 11:45 J	-3976544.08	-3976544.01	-3976543.92	0.0274	0.0247
Venus	-15598-08-25 02:38 J	-3975510.42	-3975510.39	-3975510.35	0.0287	0.0282
Venus	-15597-04-11 02:09 J	-3975280.61	-3975280.41	-3975280.20	0.0290	0.0084
Venus	-15597-11-27 04:19 J	-3975050.51	-3975050.32	-3975050.12	0.0293	0.0124
Moon	-15591-06-05 11:02 J	-3973034.28	-3973034.04	-3973033.80	0.0303	0.0083
Earth	-15591-06-05 13:11 J	-3973034.18	-3973033.95	-3973033.72	0.0303	0.0099 *
Mercury	-15588-06-13 02:38 J	-3971930.46	-3971930.39	-3971930.31	0.0292	0.0227
Mercury	-15588-09-09 14:09 J	-3971842.03	-3971841.91	-3971841.78	0.0291	0.0080
Mercury	-15588-12-07 01:40 J	-3971753.56	-3971753.43	-3971753.31	0.0290	0.0066
Mercury	-15587-03-05 12:57 J	-3971665.04	-3971664.96	-3971664.87	0.0289	0.0210
Mars	-15587-06-04 10:33 J	-3971574.27	-3971574.06	-3971573.82	0.0288	0.0200
Venus	-15585-11-15 04:33 J	-3970679.36	-3970679.31	-3970679.25	0.0276	0.0266
Venus	-15584-07-02 08:09 J	-3970450.36	-3970450.16	-3970449.97	0.0273	0.0100
Venus	-15583-02-16 09:21 J	-3970221.32	-3970221.11	-3970220.91	0.0270	0.0061
Venus	-15583-10-03 08:24 J	-3969992.27	-3969992.15	-3969992.02	0.0268	0.0214
Moon	-15576-12-05 06:00 J	-3967372.49	-3967372.25	-3967372.01	0.0260	0.0051
Earth	-15576-12-05 07:55 J	-3967372.41	-3967372.17	-3967371.92	0.0260	0.0064 *
Mercury	-15572-09-17 12:14 J	-3965990.14	-3965989.99	-3965989.84	0.0271	0.0168
Mercury	-15572-12-15 11:16 J	-3965901.22	-3965901.03	-3965900.84	0.0272	0.0013
Mercury	-15571-03-14 10:19 J	-3965812.20	-3965812.07	-3965811.93	0.0273	0.0195
Mars	-15571-05-26 07:55 J	-3965739.44	-3965739.17	-3965738.89	0.0274	0.0004
Venus	-15568-03-06 08:09 J	-3964724.25	-3964724.16	-3964724.06	0.0287	0.0255
Venus	-15568-10-22 07:55 J	-3964494.38	-3964494.17	-3964493.96	0.0291	0.0056
Venus	-15567-06-09 10:19 J	-3964264.25	-3964264.07	-3964263.88	0.0293	0.0154
Mercury	-15559-10-31 04:48 J	-3961198.34	-3961198.30	-3961198.25	0.0292	0.0271
Mercury	-15558-01-27 16:19 J	-3961109.93	-3961109.82	-3961109.70	0.0291	0.0123
Mercury	-15558-04-26 03:50 J	-3961021.47	-3961021.34	-3961021.21	0.0290	0.0023
Mercury	-15558-07-23 15:07 J	-3960932.97	-3960932.87	-3960932.76	0.0289	0.0167

Venus	-15555-05-28 07:55 J	-3959893.26	-3959893.17	-3959893.07	0.0275	0.0244
Venus	-15554-01-12 11:02 J	-3959664.24	-3959664.04	-3959663.84	0.0272	0.0079
Venus	-15554-08-29 12:00 J	-3959435.20	-3959435.00	-3959434.80	0.0270	0.0081
Venus	-15553-04-14 11:02 J	-3959206.14	-3959206.04	-3959205.94	0.0267	0.0233
Earth	-15547-11-30 11:02 J	-3956785.21	-3956785.04	-3956784.87	0.0259	0.0190
Moon	-15547-11-30 13:26 J	-3956785.10	-3956784.94	-3956784.77	0.0259	0.0197 *
Mercury	-15542-02-04 08:52 J	-3955258.22	-3955258.13	-3955258.02	0.0271	0.0232
Mercury	-15542-05-04 08:09 J	-3955169.35	-3955169.16	-3955168.97	0.0272	0.0052
Mercury	-15542-08-01 07:11 J	-3955080.37	-3955080.20	-3955080.03	0.0273	0.0130
Venus	-15539-09-16 10:33 J	-3953938.17	-3953938.06	-3953937.93	0.0287	0.0235
Venus	-15538-05-04 10:48 J	-3953708.26	-3953708.05	-3953707.84	0.0290	0.0035
Venus	-15538-12-20 13:26 J	-3953478.11	-3953477.94	-3953477.76	0.0293	0.0175
Moon	-15532-06-06 13:40 J	-3951483.17	-3951482.93	-3951482.69	0.0303	0.0005
Earth	-15532-06-06 17:02 J	-3951483.03	-3951482.79	-3951482.55	0.0303	0.0022 *
Mercury	-15529-06-15 18:14 J	-3950377.84	-3950377.74	-3950377.63	0.0292	0.0170
Mercury	-15529-09-12 05:45 J	-3950289.39	-3950289.26	-3950289.13	0.0291	0.0024
Mercury	-15529-12-09 17:16 J	-3950200.90	-3950200.78	-3950200.66	0.0290	0.0122
Mercury	-15528-03-08 04:33 J	-3950112.35	-3950112.31	-3950112.26	0.0289	0.0266
Venus	-15526-12-08 11:31 J	-3949107.14	-3949107.02	-3949106.89	0.0275	0.0221
Venus	-15525-07-24 14:38 J	-3948878.09	-3948877.89	-3948877.68	0.0272	0.0055
Venus	-15524-03-10 15:21 J	-3948649.05	-3948648.86	-3948648.66	0.0270	0.0104
Venus	-15524-10-25 14:24 J	-3948419.96	-3948419.90	-3948419.84	0.0267	0.0256
Earth	-15517-12-06 06:28 J	-3945821.45	-3945821.23	-3945821.00	0.0260	0.0119
Moon	-15517-12-06 09:07 J	-3945821.34	-3945821.12	-3945820.90	0.0260	0.0106 *
Mercury	-15513-09-20 06:00 J	-3944437.42	-3944437.25	-3944437.07	0.0271	0.0107
Mercury	-15513-12-18 05:02 J	-3944348.47	-3944348.29	-3944348.10	0.0272	0.0074
Mercury	-15512-03-17 04:04 J	-3944259.39	-3944259.33	-3944259.26	0.0273	0.0256
Venus	-15509-03-28 14:24 J	-3943152.03	-3943151.90	-3943151.74	0.0288	0.0210
Venus	-15509-11-13 14:52 J	-3942922.10	-3942921.88	-3942921.66	0.0291	0.0008
Venus	-15508-07-01 17:31 J	-3942691.91	-3942691.77	-3942691.61	0.0294	0.0203

Mercury	-15500-11-02 20:09 J	-3939645.74	-3939645.66	-3939645.57	0.0292	0.0218
Mercury	-15499-01-30 07:40 J	-3939557.30	-3939557.18	-3939557.05	0.0291	0.0071
Mercury	-15499-04-28 19:11 J	-3939468.82	-3939468.70	-3939468.58	0.0290	0.0076
Mercury	-15499-07-26 06:28 J	-3939380.31	-3939380.23	-3939380.14	0.0289	0.0220
Mars	-15499-10-28 16:33 J	-3939285.94	-3939285.81	-3939285.63	0.0288	0.0251
Venus	-15496-06-19 14:09 J	-3938321.04	-3938320.91	-3938320.76	0.0274	0.0200
Venus	-15495-02-03 17:02 J	-3938092.00	-3938091.79	-3938091.59	0.0272	0.0035
Venus	-15495-09-20 17:16 J	-3937862.96	-3937862.78	-3937862.59	0.0269	0.0124
Moon	-15488-12-01 06:57 J	-3935234.42	-3935234.21	-3935234.00	0.0259	0.0147
Earth	-15488-12-01 08:52 J	-3935234.34	-3935234.13	-3935233.91	0.0259	0.0136 *
Mercury	-15483-02-07 02:38 J	-3933705.54	-3933705.39	-3933705.24	0.0271	0.0174
Mercury	-15483-05-07 01:40 J	-3933616.63	-3933616.43	-3933616.24	0.0272	0.0008
Mercury	-15483-08-04 00:28 J	-3933527.61	-3933527.48	-3933527.33	0.0273	0.0187
Mars	-15483-10-19 05:16 J	-3933451.55	-3933451.28	-3933451.00	0.0274	0.0018
Venus	-15480-10-08 15:50 J	-3932365.99	-3932365.84	-3932365.67	0.0288	0.0191
Venus	-15479-05-26 16:33 J	-3932136.02	-3932135.81	-3932135.59	0.0291	0.0012
Venus	-15478-01-11 19:40 J	-3931905.81	-3931905.68	-3931905.54	0.0294	0.0223
Earth	-15473-06-07 16:04 J	-3929932.07	-3929931.83	-3929931.59	0.0303	0.0045
Moon	-15473-06-07 16:48 J	-3929932.03	-3929931.80	-3929931.57	0.0303	0.0062 *
Mercury	-15470-03-22 21:50 J	-3928913.64	-3928913.59	-3928913.54	0.0293	0.0270
Mercury	-15470-06-19 09:21 J	-3928825.23	-3928825.11	-3928825.00	0.0292	0.0121
Mercury	-15470-09-15 20:52 J	-3928736.76	-3928736.63	-3928736.51	0.0291	0.0027
Mercury	-15470-12-13 08:09 J	-3928648.26	-3928648.16	-3928648.05	0.0290	0.0171
Venus	-15467-12-30 16:33 J	-3927534.96	-3927534.81	-3927534.64	0.0275	0.0178
Venus	-15466-08-16 19:26 J	-3927305.90	-3927305.69	-3927305.49	0.0272	0.0014
Venus	-15465-04-01 19:40 J	-3927076.85	-3927076.68	-3927076.50	0.0269	0.0145
Earth	-15458-12-08 03:35 J	-3924270.54	-3924270.35	-3924270.16	0.0259	0.0170
Moon	-15458-12-08 06:43 J	-3924270.42	-3924270.22	-3924270.01	0.0259	0.0156 *
Mercury	-15454-06-27 00:28 J	-3922973.58	-3922973.48	-3922973.38	0.0270	0.0229
Mercury	-15454-09-23 23:16 J	-3922884.72	-3922884.53	-3922884.34	0.0271	0.0051

Mercury	-15454-12-21 22:04 J	-3922795.74	-3922795.58	-3922795.40	0.0272	0.0130
Venus	-15450-04-20 19:26 J	-3921579.86	-3921579.69	-3921579.51	0.0288	0.0166
Venus	-15450-12-06 20:09 J	-3921349.87	-3921349.66	-3921349.45	0.0291	0.0038
Venus	-15449-07-23 23:16 J	-3921119.64	-3921119.53	-3921119.42	0.0294	0.0250
Mercury	-15441-11-05 10:48 J	-3918093.15	-3918093.05	-3918092.94	0.0293	0.0173
Mercury	-15440-02-01 22:19 J	-3918004.70	-3918004.57	-3918004.44	0.0291	0.0026
Mercury	-15440-05-01 09:50 J	-3917916.21	-3917916.09	-3917915.97	0.0290	0.0121
Mercury	-15440-07-28 21:07 J	-3917827.66	-3917827.62	-3917827.57	0.0289	0.0265
Venus	-15437-07-11 18:14 J	-3916748.90	-3916748.74	-3916748.56	0.0274	0.0159
Venus	-15436-02-25 20:52 J	-3916519.84	-3916519.63	-3916519.43	0.0271	0.0007
Venus	-15436-10-12 20:52 J	-3916290.79	-3916290.63	-3916290.46	0.0269	0.0163
Moon	-15429-12-02 01:40 J	-3913683.65	-3913683.43	-3913683.20	0.0259	0.0099
Earth	-15429-12-02 05:16 J	-3913683.52	-3913683.28	-3913683.05	0.0259	0.0086 *
Mercury	-15424-02-09 19:26 J	-3912152.86	-3912152.69	-3912152.52	0.0270	0.0120
Mercury	-15424-05-09 18:14 J	-3912063.92	-3912063.74	-3912063.55	0.0271	0.0060
Mercury	-15424-08-06 17:02 J	-3911974.86	-3911974.79	-3911974.69	0.0273	0.0241
Venus	-15421-10-30 19:40 J	-3910793.86	-3910793.68	-3910793.49	0.0288	0.0149
Venus	-15420-06-17 20:24 J	-3910563.86	-3910563.65	-3910563.43	0.0291	0.0056
Venus	-15419-02-02 23:45 J	-3910333.59	-3910333.51	-3910333.41	0.0294	0.0267
Earth	-15414-06-09 10:48 J	-3908381.27	-3908381.05	-3908380.82	0.0303	0.0101
Moon	-15414-06-09 14:38 J	-3908381.11	-3908380.89	-3908380.67	0.0303	0.0117 *
Mercury	-15411-03-25 12:00 J	-3907361.08	-3907361.00	-3907360.92	0.0293	0.0228
Mercury	-15411-06-21 23:31 J	-3907272.64	-3907272.52	-3907272.39	0.0292	0.0080
Mercury	-15411-09-18 11:02 J	-3907184.16	-3907184.04	-3907183.91	0.0291	0.0068
Mercury	-15411-12-15 22:33 J	-3907095.64	-3907095.56	-3907095.47	0.0290	0.0213
Mars	-15410-03-23 00:14 J	-3906998.59	-3906998.49	-3906998.39	0.0289	0.0273
Venus	-15407-01-21 19:55 J	-3905962.84	-3905962.67	-3905962.48	0.0275	0.0137
Venus	-15407-09-07 22:19 J	-3905733.77	-3905733.57	-3905733.36	0.0272	0.0028
Venus	-15406-04-24 22:33 J	-3905504.70	-3905504.56	-3905504.40	0.0269	0.0185
Moon	-15399-12-08 22:19 J	-3902719.73	-3902719.57	-3902719.41	0.0259	0.0205

Earth	-15399-12-08 23:02 J	-3902719.66	-3902719.54	-3902719.39	0.0259	0.0218 *
Mercury	-15395-06-29 17:02 J	-3901420.93	-3901420.79	-3901420.64	0.0270	0.0177
Mercury	-15395-09-26 16:04 J	-3901332.03	-3901331.83	-3901331.64	0.0271	0.0006
Mercury	-15395-12-24 14:38 J	-3901243.02	-3901242.89	-3901242.74	0.0272	0.0182
Mars	-15394-03-14 00:57 J	-3901163.73	-3901163.46	-3901163.19	0.0273	0.0037
Venus	-15391-05-12 22:48 J	-3900007.74	-3900007.55	-3900007.35	0.0288	0.0124
Venus	-15391-12-28 23:45 J	-3899777.72	-3899777.51	-3899777.30	0.0292	0.0081
Venus	-15390-08-16 03:07 J	-3899547.38	-3899547.37	-3899547.35	0.0295	0.0294
Moon	-15385-06-01 19:11 J	-3897795.74	-3897795.70	-3897795.64	0.0304	0.0297
Mercury	-15382-08-12 13:26 J	-3896628.97	-3896628.94	-3896628.90	0.0294	0.0282
Mercury	-15382-11-09 01:11 J	-3896540.57	-3896540.45	-3896540.34	0.0293	0.0133
Mercury	-15381-02-05 12:43 J	-3896452.10	-3896451.97	-3896451.84	0.0292	0.0016
Mercury	-15381-05-04 00:00 J	-3896363.60	-3896363.50	-3896363.39	0.0290	0.0162
Venus	-15378-08-03 21:07 J	-3895176.80	-3895176.62	-3895176.43	0.0274	0.0119
Venus	-15377-03-19 23:31 J	-3894947.73	-3894947.52	-3894947.32	0.0271	0.0045
Venus	-15377-11-03 23:16 J	-3894718.65	-3894718.53	-3894718.38	0.0269	0.0202
Earth	-15370-12-04 00:43 J	-3892132.71	-3892132.47	-3892132.22	0.0259	0.0039
Moon	-15370-12-04 01:11 J	-3892132.68	-3892132.45	-3892132.21	0.0259	0.0052 *
Mercury	-15366-11-16 13:11 J	-3890689.02	-3890688.95	-3890688.86	0.0269	0.0245
Mercury	-15365-02-13 12:14 J	-3890600.18	-3890599.99	-3890599.80	0.0270	0.0067
Mercury	-15365-05-12 11:02 J	-3890511.21	-3890511.04	-3890510.86	0.0271	0.0112
Venus	-15362-11-22 23:31 J	-3889221.72	-3889221.52	-3889221.32	0.0288	0.0106
Venus	-15361-07-10 00:28 J	-3888991.68	-3888991.48	-3888991.28	0.0292	0.0100
Earth	-15355-06-10 04:33 J	-3886830.51	-3886830.31	-3886830.10	0.0303	0.0153
Moon	-15355-06-10 04:48 J	-3886830.50	-3886830.30	-3886830.08	0.0303	0.0164 *
Mercury	-15352-03-28 02:09 J	-3885808.51	-3885808.41	-3885808.31	0.0293	0.0190
Mercury	-15352-06-24 13:40 J	-3885720.05	-3885719.93	-3885719.80	0.0292	0.0042
Mercury	-15352-09-21 01:11 J	-3885631.57	-3885631.45	-3885631.33	0.0291	0.0106
Mercury	-15352-12-18 12:43 J	-3885543.03	-3885542.97	-3885542.91	0.0290	0.0251
Venus	-15349-06-28 17:31 J	-3884619.81	-3884619.77	-3884619.71	0.0277	0.0268

Venus	-15348-02-12 22:19 J	-3884390.76	-3884390.57	-3884390.37	0.0274	0.0098
Venus	-15348-09-30 00:28 J	-3884161.68	-3884161.48	-3884161.27	0.0272	0.0066
Venus	-15347-05-17 00:28 J	-3883932.58	-3883932.48	-3883932.35	0.0269	0.0222
Moon	-15340-12-09 14:52 J	-3881168.92	-3881168.88	-3881168.81	0.0259	0.0253
Mercury	-15336-07-02 09:50 J	-3879868.26	-3879868.09	-3879867.91	0.0270	0.0124
Mercury	-15336-09-29 08:52 J	-3879779.32	-3879779.13	-3879778.94	0.0271	0.0054
Mercury	-15336-12-27 07:40 J	-3879690.27	-3879690.18	-3879690.08	0.0272	0.0234
Venus	-15333-10-17 04:04 J	-3878665.37	-3878665.33	-3878665.27	0.0285	0.0277
Venus	-15332-06-04 02:24 J	-3878435.60	-3878435.40	-3878435.19	0.0289	0.0081
Venus	-15331-01-20 03:21 J	-3878205.55	-3878205.36	-3878205.16	0.0292	0.0125
Earth	-15326-06-03 15:07 J	-3876244.98	-3876244.87	-3876244.74	0.0304	0.0262
Moon	-15326-06-03 15:50 J	-3876244.96	-3876244.84	-3876244.71	0.0304	0.0253 *
Mercury	-15323-08-15 03:21 J	-3875076.42	-3875076.36	-3875076.29	0.0294	0.0246
Mercury	-15323-11-11 15:07 J	-3874987.99	-3874987.87	-3874987.75	0.0293	0.0096
Mercury	-15322-02-08 02:38 J	-3874899.52	-3874899.39	-3874899.26	0.0292	0.0052
Mercury	-15322-05-07 14:09 J	-3874811.01	-3874810.91	-3874810.82	0.0290	0.0198
Mars	-15322-08-14 23:16 J	-3874711.60	-3874711.53	-3874711.43	0.0289	0.0278
Venus	-15319-01-08 18:43 J	-3873833.80	-3873833.72	-3873833.63	0.0277	0.0249
Venus	-15319-08-25 23:02 J	-3873604.73	-3873604.54	-3873604.33	0.0274	0.0080
Venus	-15318-04-12 01:26 J	-3873375.64	-3873375.44	-3873375.24	0.0271	0.0083
Venus	-15318-11-27 01:26 J	-3873146.53	-3873146.44	-3873146.34	0.0268	0.0239
Earth	-15311-12-04 20:52 J	-3870581.88	-3870581.63	-3870581.38	0.0259	0.0011
Moon	-15311-12-05 00:43 J	-3870581.72	-3870581.47	-3870581.22	0.0259	0.0006 *
Mercury	-15307-11-19 06:28 J	-3869136.36	-3869136.23	-3869136.09	0.0269	0.0190
Mercury	-15306-02-16 05:16 J	-3869047.47	-3869047.28	-3869047.08	0.0270	0.0013
Mercury	-15306-05-16 04:04 J	-3868958.48	-3868958.33	-3868958.17	0.0271	0.0167
Mars	-15306-08-06 17:31 J	-3868876.04	-3868875.77	-3868875.50	0.0272	0.0046
Venus	-15303-04-29 05:02 J	-3867879.38	-3867879.29	-3867879.20	0.0286	0.0258
Venus	-15303-12-15 03:21 J	-3867649.57	-3867649.36	-3867649.15	0.0289	0.0062
Venus	-15302-08-02 04:33 J	-3867419.50	-3867419.31	-3867419.12	0.0292	0.0145

Moon	-15296-06-10 18:00 J	-3865279.92	-3865279.75	-3865279.57	0.0303	0.0208
Earth	-15296-06-10 21:35 J	-3865279.77	-3865279.60	-3865279.41	0.0303	0.0203 *
Mercury	-15293-03-30 16:04 J	-3864255.94	-3864255.83	-3864255.72	0.0293	0.0153
Mercury	-15293-06-27 03:35 J	-3864167.47	-3864167.35	-3864167.22	0.0292	0.0010
Mercury	-15293-09-23 15:07 J	-3864078.98	-3864078.87	-3864078.75	0.0291	0.0143
Mercury	-15293-12-21 02:38 J	-3863990.40	-3863990.39	-3863990.38	0.0290	0.0288
Venus	-15290-07-21 19:40 J	-3863047.79	-3863047.68	-3863047.56	0.0277	0.0229
Venus	-15289-03-07 00:14 J	-3862818.69	-3862818.49	-3862818.28	0.0274	0.0059
Venus	-15289-10-22 02:24 J	-3862589.59	-3862589.40	-3862589.21	0.0271	0.0104
Venus	-15288-06-08 02:24 J	-3862360.44	-3862360.40	-3862360.34	0.0269	0.0260
Moon	-15282-11-29 22:19 J	-3859994.62	-3859994.57	-3859994.50	0.0258	0.0251
Earth	-15282-11-30 02:09 J	-3859994.50	-3859994.41	-3859994.30	0.0258	0.0236 *
Mercury	-15277-04-07 04:33 J	-3858404.39	-3858404.31	-3858404.23	0.0269	0.0243
Mercury	-15277-07-05 03:07 J	-3858315.55	-3858315.37	-3858315.17	0.0269	0.0068
Mercury	-15277-10-02 02:09 J	-3858226.59	-3858226.41	-3858226.24	0.0270	0.0111
Venus	-15274-11-09 08:52 J	-3857093.25	-3857093.13	-3857093.00	0.0286	0.0233
Venus	-15273-06-26 07:26 J	-3856863.41	-3856863.19	-3856862.98	0.0289	0.0036
Venus	-15272-02-11 08:24 J	-3856633.32	-3856633.15	-3856632.97	0.0292	0.0172
Earth	-15267-06-04 09:35 J	-3854694.26	-3854694.10	-3854693.91	0.0304	0.0209
Moon	-15267-06-04 13:11 J	-3854694.12	-3854693.95	-3854693.76	0.0304	0.0201 *
Mercury	-15264-08-17 17:31 J	-3853523.86	-3853523.77	-3853523.68	0.0294	0.0207
Mercury	-15264-11-14 05:16 J	-3853435.41	-3853435.28	-3853435.16	0.0293	0.0057
Mercury	-15263-02-10 16:48 J	-3853346.92	-3853346.80	-3853346.68	0.0292	0.0091
Mercury	-15263-05-10 04:19 J	-3853258.39	-3853258.32	-3853258.25	0.0291	0.0238
Venus	-15260-01-30 21:07 J	-3852261.74	-3852261.62	-3852261.48	0.0277	0.0210
Venus	-15260-09-17 01:40 J	-3852032.64	-3852032.43	-3852032.23	0.0274	0.0040
Venus	-15259-05-04 03:35 J	-3851803.53	-3851803.35	-3851803.16	0.0271	0.0122
Earth	-15252-12-05 18:28 J	-3849030.98	-3849030.73	-3849030.49	0.0259	0.0061
Moon	-15252-12-05 19:11 J	-3849030.95	-3849030.70	-3849030.44	0.0259	0.0047 *
Mercury	-15248-11-22 00:14 J	-3847583.65	-3847583.49	-3847583.31	0.0269	0.0129

Mercury	-15247-02-18 23:16 J	-3847494.72	-3847494.53	-3847494.34	0.0270	0.0049
Mercury	-15247-05-18 21:50 J	-3847405.69	-3847405.59	-3847405.48	0.0271	0.0227
Venus	-15244-05-21 10:33 J	-3846307.19	-3846307.06	-3846306.91	0.0286	0.0213
Venus	-15243-01-06 09:21 J	-3846077.33	-3846077.11	-3846076.90	0.0289	0.0015
Venus	-15243-08-24 10:19 J	-3845847.22	-3845847.07	-3845846.90	0.0292	0.0193
Moon	-15237-06-11 15:21 J	-3843728.97	-3843728.86	-3843728.74	0.0303	0.0261
Earth	-15237-06-11 16:48 J	-3843728.92	-3843728.80	-3843728.67	0.0303	0.0258 *
Mercury	-15234-01-04 18:28 J	-3842791.78	-3842791.73	-3842791.67	0.0294	0.0265
Mercury	-15234-04-03 06:14 J	-3842703.36	-3842703.24	-3842703.12	0.0293	0.0114
Mercury	-15234-06-30 17:45 J	-3842614.88	-3842614.76	-3842614.63	0.0292	0.0036
Mercury	-15234-09-27 05:16 J	-3842526.37	-3842526.28	-3842526.18	0.0291	0.0182
Mars	-15233-01-06 18:57 J	-3842424.77	-3842424.71	-3842424.63	0.0290	0.0282
Venus	-15231-08-12 22:19 J	-3841475.73	-3841475.57	-3841475.42	0.0277	0.0189
Venus	-15230-03-30 02:38 J	-3841246.60	-3841246.39	-3841246.19	0.0274	0.0020
Venus	-15230-11-14 04:33 J	-3841017.48	-3841017.31	-3841017.13	0.0271	0.0143
Moon	-15223-11-30 23:16 J	-3838443.67	-3838443.53	-3838443.37	0.0258	0.0200
Earth	-15223-12-01 00:00 J	-3838443.66	-3838443.50	-3838443.31	0.0258	0.0186 *
Mercury	-15218-04-10 22:33 J	-3836851.69	-3836851.56	-3836851.41	0.0269	0.0181
Mercury	-15218-07-08 21:35 J	-3836762.80	-3836762.60	-3836762.41	0.0270	0.0006
Mercury	-15218-10-05 20:24 J	-3836673.80	-3836673.65	-3836673.51	0.0271	0.0174
Mars	-15218-12-30 22:19 J	-3836587.83	-3836587.57	-3836587.30	0.0272	0.0079
Venus	-15215-12-01 15:35 J	-3835521.01	-3835520.85	-3835520.69	0.0286	0.0187
Venus	-15214-07-19 14:09 J	-3835291.13	-3835290.91	-3835290.70	0.0289	0.0012
Venus	-15213-03-05 15:07 J	-3835061.00	-3835060.87	-3835060.72	0.0292	0.0221
Earth	-15208-06-05 06:43 J	-3833143.43	-3833143.22	-3833143.01	0.0304	0.0149
Moon	-15208-06-05 07:55 J	-3833143.39	-3833143.17	-3833142.95	0.0304	0.0144 *
Mercury	-15205-08-20 07:55 J	-3831971.27	-3831971.17	-3831971.06	0.0294	0.0165
Mercury	-15205-11-16 19:40 J	-3831882.81	-3831882.68	-3831882.55	0.0293	0.0016
Mercury	-15204-02-13 07:11 J	-3831794.32	-3831794.20	-3831794.09	0.0292	0.0133
Mercury	-15204-05-12 18:28 J	-3831705.75	-3831705.73	-3831705.69	0.0290	0.0280



Venus	-15201-02-23 00:14 J	-3830689.64	-3830689.49	-3830689.31	0.0276	0.0170
Venus	-15201-10-09 04:33 J	-3830460.52	-3830460.31	-3830460.10	0.0274	0.0004
Venus	-15200-05-26 06:28 J	-3830231.39	-3830231.23	-3830231.06	0.0271	0.0162
Moon	-15193-12-06 14:09 J	-3827480.15	-3827479.91	-3827479.68	0.0259	0.0103
Earth	-15193-12-06 17:45 J	-3827479.98	-3827479.76	-3827479.54	0.0259	0.0115 *
Mercury	-15189-08-27 20:24 J	-3826119.73	-3826119.65	-3826119.56	0.0269	0.0238
Mercury	-15189-11-24 19:11 J	-3826030.89	-3826030.70	-3826030.51	0.0270	0.0062
Mercury	-15188-02-21 18:00 J	-3825941.93	-3825941.75	-3825941.58	0.0271	0.0116
Venus	-15185-06-12 18:28 J	-3824734.90	-3824734.73	-3824734.55	0.0286	0.0165
Venus	-15184-01-28 17:31 J	-3824504.99	-3824504.77	-3824504.56	0.0289	0.0036
Venus	-15184-09-15 18:57 J	-3824274.83	-3824274.71	-3824274.60	0.0292	0.0245
Mercury	-15175-01-07 09:21 J	-3821239.19	-3821239.11	-3821239.03	0.0294	0.0219
Mercury	-15175-04-05 20:52 J	-3821150.75	-3821150.63	-3821150.50	0.0293	0.0069
Mercury	-15175-07-03 08:38 J	-3821062.27	-3821062.14	-3821062.02	0.0292	0.0081
Mercury	-15175-09-29 20:09 J	-3820973.74	-3820973.66	-3820973.58	0.0291	0.0227
Venus	-15172-09-04 02:09 J	-3819903.58	-3819903.41	-3819903.23	0.0277	0.0147
Venus	-15171-04-21 06:14 J	-3819674.45	-3819674.24	-3819674.03	0.0274	0.0022
Venus	-15171-12-06 08:09 J	-3819445.31	-3819445.16	-3819445.00	0.0271	0.0184
Earth	-15164-12-02 00:14 J	-3816892.70	-3816892.49	-3816892.26	0.0259	0.0131
Moon	-15164-12-02 03:35 J	-3816892.55	-3816892.35	-3816892.14	0.0259	0.0144 *
Mercury	-15159-04-13 18:00 J	-3815298.92	-3815298.75	-3815298.57	0.0269	0.0110
Mercury	-15159-07-11 16:48 J	-3815209.98	-3815209.80	-3815209.61	0.0270	0.0068
Mercury	-15159-10-08 15:35 J	-3815120.92	-3815120.85	-3815120.77	0.0271	0.0246
Venus	-15156-12-24 00:57 J	-3813948.65	-3813948.46	-3813948.27	0.0286	0.0136
Venus	-15155-08-10 23:45 J	-3813718.71	-3813718.51	-3813718.29	0.0289	0.0066
Venus	-15154-03-29 01:26 J	-3813488.51	-3813488.44	-3813488.37	0.0292	0.0275
Moon	-15149-06-06 05:31 J	-3811592.50	-3811592.27	-3811592.03	0.0304	0.0078
Earth	-15149-06-06 08:24 J	-3811592.37	-3811592.15	-3811591.91	0.0304	0.0079 *
Mercury	-15146-05-27 11:16 J	-3810507.08	-3810507.03	-3810506.98	0.0295	0.0267
Mercury	-15146-08-23 23:02 J	-3810418.66	-3810418.54	-3810418.43	0.0294	0.0116

Mercury	-15146-11-20 10:33 J	-3810330.19	-3810330.06	-3810329.93	0.0293	0.0034
Mercury	-15145-02-16 22:04 J	-3810241.68	-3810241.58	-3810241.48	0.0291	0.0181
Venus	-15142-03-17 05:02 J	-3809117.47	-3809117.29	-3809117.10	0.0276	0.0126
Venus	-15142-11-01 09:07 J	-3808888.33	-3808888.12	-3808887.91	0.0273	0.0043
Venus	-15141-06-17 10:48 J	-3808659.18	-3808659.05	-3808658.91	0.0271	0.0204
Moon	-15134-12-08 17:45 J	-3805928.94	-3805928.76	-3805928.57	0.0259	0.0166
Earth	-15134-12-08 19:40 J	-3805928.86	-3805928.68	-3805928.49	0.0259	0.0175 *
Mercury	-15130-08-31 16:33 J	-3804566.96	-3804566.81	-3804566.65	0.0269	0.0161
Mercury	-15130-11-28 15:21 J	-3804478.05	-3804477.86	-3804477.67	0.0270	0.0015
Mercury	-15129-02-25 13:55 J	-3804389.05	-3804388.92	-3804388.78	0.0271	0.0194
Mars	-15129-05-25 11:16 J	-3804299.26	-3804299.03	-3804298.77	0.0272	0.0122
Venus	-15126-07-06 05:31 J	-3803162.46	-3803162.27	-3803162.06	0.0287	0.0111
Venus	-15125-02-21 04:48 J	-3802932.50	-3802932.30	-3802932.09	0.0290	0.0092
Mercury	-15116-01-10 00:43 J	-3799686.58	-3799686.47	-3799686.37	0.0294	0.0165
Mercury	-15116-04-08 12:14 J	-3799598.12	-3799597.99	-3799597.86	0.0293	0.0016
Mercury	-15116-07-05 23:45 J	-3799509.62	-3799509.51	-3799509.39	0.0292	0.0133
Mercury	-15116-10-02 11:16 J	-3799421.06	-3799421.03	-3799420.99	0.0290	0.0279
Venus	-15113-02-10 01:40 J	-3798560.44	-3798560.43	-3798560.40	0.0279	0.0278
Venus	-15113-09-26 07:55 J	-3798331.36	-3798331.17	-3798330.97	0.0276	0.0103
Venus	-15112-05-13 11:45 J	-3798102.21	-3798102.01	-3798101.81	0.0273	0.0065
Venus	-15112-12-28 13:11 J	-3797873.05	-3797872.95	-3797872.83	0.0271	0.0227
Earth	-15105-12-03 03:21 J	-3795341.60	-3795341.36	-3795341.12	0.0259	0.0070
Moon	-15105-12-03 05:45 J	-3795341.49	-3795341.26	-3795341.01	0.0259	0.0083 *
Mercury	-15100-01-17 15:50 J	-3793834.96	-3793834.84	-3793834.71	0.0268	0.0206
Mercury	-15100-04-16 14:38 J	-3793746.08	-3793745.89	-3793745.70	0.0269	0.0030
Mercury	-15100-07-14 13:11 J	-3793657.10	-3793656.95	-3793656.78	0.0270	0.0148
Jupiter	-15099-04-29 00:00 J	-3793368.86	-3793368.50	-3793368.12	0.0273	0.0170
Venus	-15097-05-30 16:19 J	-3792605.86	-3792605.82	-3792605.76	0.0284	0.0274
Venus	-15096-01-15 13:11 J	-3792376.16	-3792375.95	-3792375.74	0.0287	0.0081
Venus	-15096-09-02 12:28 J	-3792146.17	-3792145.98	-3792145.78	0.0290	0.0123

Moon	-15090-06-08 13:11 J	-3790041.19	-3790040.95	-3790040.71	0.0304	0.0005
Earth	-15090-06-08 16:04 J	-3790041.07	-3790040.83	-3790040.59	0.0304	0.0007 *
Mercury	-15087-05-30 03:07 J	-3788954.46	-3788954.37	-3788954.28	0.0295	0.0207
Mercury	-15087-08-26 14:52 J	-3788866.01	-3788865.88	-3788865.76	0.0293	0.0057
Mercury	-15087-11-23 02:24 J	-3788777.52	-3788777.40	-3788777.28	0.0292	0.0092
Mercury	-15086-02-19 13:55 J	-3788688.99	-3788688.92	-3788688.85	0.0291	0.0239
Venus	-15084-08-22 06:28 J	-3787774.31	-3787774.23	-3787774.14	0.0279	0.0253
Venus	-15083-04-08 12:14 J	-3787545.18	-3787544.99	-3787544.78	0.0276	0.0079
Venus	-15083-11-23 15:50 J	-3787316.03	-3787315.84	-3787315.64	0.0273	0.0089
Venus	-15082-07-10 17:16 J	-3787086.85	-3787086.78	-3787086.69	0.0270	0.0249
Earth	-15075-12-10 00:57 J	-3784377.55	-3784377.46	-3784377.37	0.0259	0.0241
Moon	-15075-12-10 02:52 J	-3784377.47	-3784377.38	-3784377.27	0.0259	0.0236 *
Mercury	-15071-06-06 15:07 J	-3783102.93	-3783102.87	-3783102.80	0.0268	0.0251
Mercury	-15071-09-03 13:55 J	-3783014.10	-3783013.92	-3783013.73	0.0269	0.0076
Mercury	-15071-12-01 12:28 J	-3782925.15	-3782924.98	-3782924.79	0.0270	0.0103
Venus	-15068-12-10 23:16 J	-3781819.63	-3781819.53	-3781819.42	0.0284	0.0246
Venus	-15067-07-28 20:09 J	-3781589.87	-3781589.66	-3781589.44	0.0287	0.0051
Venus	-15066-03-15 19:40 J	-3781359.85	-3781359.68	-3781359.49	0.0290	0.0155
Mercury	-15058-10-17 05:16 J	-3778222.34	-3778222.28	-3778222.22	0.0294	0.0252
Mercury	-15057-01-13 16:48 J	-3778133.91	-3778133.80	-3778133.67	0.0293	0.0102
Mercury	-15057-04-11 04:33 J	-3778045.44	-3778045.31	-3778045.19	0.0292	0.0048
Mercury	-15057-07-08 16:04 J	-3777956.93	-3777956.83	-3777956.74	0.0291	0.0195
Venus	-15054-03-04 10:19 J	-3776988.18	-3776988.07	-3776987.95	0.0278	0.0229
Venus	-15054-10-19 16:04 J	-3776759.03	-3776758.83	-3776758.62	0.0276	0.0056
Venus	-15053-06-04 19:40 J	-3776529.87	-3776529.68	-3776529.49	0.0273	0.0112
Moon	-15046-12-05 07:40 J	-3773790.44	-3773790.18	-3773789.92	0.0259	0.0015
Earth	-15046-12-05 09:21 J	-3773790.36	-3773790.11	-3773789.86	0.0259	0.0005 *
Mercury	-15041-01-21 13:40 J	-3772282.10	-3772281.93	-3772281.75	0.0269	0.0117
Mercury	-15041-04-19 12:28 J	-3772193.16	-3772192.98	-3772192.79	0.0270	0.0060
Mercury	-15041-07-17 11:02 J	-3772104.11	-3772104.04	-3772103.94	0.0271	0.0239

Mars	-15041-10-19 18:28 J	-3772009.91	-3772009.73	-3772009.53	0.0272	0.0191
Venus	-15038-06-23 07:26 J	-3771033.32	-3771033.19	-3771033.04	0.0284	0.0216
Venus	-15037-02-08 04:48 J	-3770803.51	-3770803.30	-3770803.08	0.0287	0.0020
Venus	-15037-09-25 04:33 J	-3770573.47	-3770573.31	-3770573.14	0.0290	0.0187
Earth	-15031-06-10 05:16 J	-3768489.51	-3768489.28	-3768489.06	0.0303	0.0106
Moon	-15031-06-10 06:28 J	-3768489.45	-3768489.23	-3768489.01	0.0303	0.0102 *
Mercury	-15028-03-05 07:55 J	-3767490.18	-3767490.17	-3767490.14	0.0295	0.0290
Mercury	-15028-06-01 19:40 J	-3767401.79	-3767401.68	-3767401.56	0.0294	0.0139
Mercury	-15028-08-29 07:26 J	-3767313.32	-3767313.19	-3767313.07	0.0293	0.0014
Mercury	-15028-11-25 18:57 J	-3767224.82	-3767224.71	-3767224.61	0.0292	0.0159
Venus	-15025-09-13 16:04 J	-3766201.96	-3766201.83	-3766201.67	0.0278	0.0203
Venus	-15024-04-30 21:35 J	-3765972.80	-3765972.60	-3765972.39	0.0275	0.0031
Venus	-15024-12-16 00:43 J	-3765743.64	-3765743.47	-3765743.28	0.0272	0.0137
Earth	-15017-11-29 19:40 J	-3763202.77	-3763202.68	-3763202.59	0.0259	0.0240
Moon	-15017-11-29 20:24 J	-3763202.68	-3763202.65	-3763202.61	0.0259	0.0255 *
Mercury	-15012-06-09 13:40 J	-3761550.09	-3761549.93	-3761549.77	0.0269	0.0158
Mercury	-15012-09-06 12:28 J	-3761461.18	-3761460.98	-3761460.79	0.0270	0.0019
Mercury	-15012-12-04 11:02 J	-3761372.16	-3761372.04	-3761371.90	0.0271	0.0197
Venus	-15008-01-02 15:50 J	-3760247.00	-3760246.84	-3760246.68	0.0285	0.0185
Venus	-15008-08-20 13:26 J	-3760017.16	-3760016.94	-3760016.73	0.0288	0.0014
Venus	-15007-04-07 13:26 J	-3759787.07	-3759786.94	-3759786.79	0.0291	0.0221
Moon	-15002-06-03 23:16 J	-3757903.60	-3757903.53	-3757903.43	0.0303	0.0285
Earth	-15002-06-04 01:40 J	-3757903.51	-3757903.43	-3757903.32	0.0303	0.0279 *

# 15TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 15th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-14999-10-19 22:19 J		-3756669.67	-3756669.57	-3756669.47	0.0294	0.0177	
Mercury	-14998-01-16 09:50 J		-3756581.21	-3756581.09	-3756580.96	0.0293	0.0029	
Mercury	-14998-04-14 21:35 J		-3756492.72	-3756492.60	-3756492.49	0.0292	0.0121	
Mercury	-14998-07-12 08:52 J		-3756404.17	-3756404.13	-3756404.08	0.0290	0.0267	
Venus	-14995-03-26 21:35 J		-3755415.75	-3755415.60	-3755415.43	0.0278	0.0177	
Venus	-14995-11-11 02:52 J		-3755186.59	-3755186.38	-3755186.17	0.0275	0.0004	
Venus	-14994-06-28 05:45 J		-3754957.42	-3754957.26	-3754957.09	0.0272	0.0162	
Moon	-14987-12-06 14:09 J		-3752239.15	-3752238.91	-3752238.67	0.0260	0.0057	
Earth	-14987-12-06 17:45 J		-3752238.99	-3752238.76	-3752238.51	0.0260	0.0070	*
Mercury	-14983-10-27 13:40 J		-3750818.06	-3750817.93	-3750817.80	0.0269	0.0197	
Mercury	-14982-01-24 12:28 J		-3750729.17	-3750728.98	-3750728.78	0.0269	0.0021	
Mars	-14982-01-28 20:24 J		-3750724.78	-3750724.65	-3750724.51	0.0269	0.0234	
Mercury	-14982-04-23 11:16 J		-3750640.18	-3750640.03	-3750639.87	0.0270	0.0157	
Venus	-14979-07-16 01:11 J		-3749460.63	-3749460.45	-3749460.27	0.0285	0.0154	
Venus	-14978-03-02 23:02 J		-3749230.75	-3749230.54	-3749230.32	0.0288	0.0046	
Venus	-14978-10-18 23:31 J		-3749000.61	-3749000.52	-3749000.41	0.0291	0.0254	
Earth	-14972-06-11 23:45 J		-3746937.66	-3746937.51	-3746937.33	0.0303	0.0219	
Moon	-14972-06-12 03:35 J		-3746937.51	-3746937.35	-3746937.17	0.0303	0.0213	*
Mercury	-14969-03-08 01:26 J		-3745937.52	-3745937.44	-3745937.35	0.0294	0.0211	
Mercury	-14969-06-04 13:11 J		-3745849.08	-3745848.95	-3745848.83	0.0293	0.0061	
Mercury	-14969-09-01 00:43 J		-3745760.59	-3745760.47	-3745760.35	0.0292	0.0088	
Mercury	-14969-11-28 12:14 J		-3745672.06	-3745671.99	-3745671.92	0.0291	0.0235	
Venus	-14966-10-07 04:33 J		-3744629.48	-3744629.31	-3744629.13	0.0277	0.0148	
Venus	-14965-05-23 09:21 J		-3744400.32	-3744400.11	-3744399.90	0.0274	0.0024	
Venus	-14964-01-07 12:00 J		-3744171.15	-3744171.00	-3744170.85	0.0272	0.0188	
Earth	-14958-12-02 05:02 J		-3741651.47	-3741651.29	-3741651.09	0.0259	0.0166	

Moon	-14958-12-02 08:52 J	-3741651.30	-3741651.13	-3741650.94	0.0259	0.0181 *
Mercury	-14953-03-15 14:09 J	-3740086.00	-3740085.91	-3740085.81	0.0269	0.0234
Mercury	-14953-06-12 12:57 J	-3739997.15	-3739996.96	-3739996.77	0.0270	0.0058
Mercury	-14953-09-09 11:45 J	-3739908.18	-3739908.01	-3739907.84	0.0270	0.0120
Venus	-14949-01-26 10:33 J	-3738674.25	-3738674.06	-3738673.86	0.0286	0.0121
Venus	-14949-09-12 08:52 J	-3738444.33	-3738444.13	-3738443.92	0.0289	0.0082
Venus	-14948-04-30 09:50 J	-3738214.10	-3738214.09	-3738214.07	0.0292	0.0291
Moon	-14943-06-05 19:40 J	-3736351.87	-3736351.68	-3736351.48	0.0303	0.0167
Earth	-14943-06-05 23:16 J	-3736351.73	-3736351.53	-3736351.32	0.0303	0.0160 *
Mercury	-14940-07-26 04:33 J	-3735205.38	-3735205.31	-3735205.24	0.0294	0.0245
Mercury	-14940-10-22 16:04 J	-3735116.95	-3735116.83	-3735116.71	0.0293	0.0095
Mercury	-14939-01-19 03:35 J	-3735028.47	-3735028.35	-3735028.22	0.0292	0.0054
Mercury	-14939-04-17 15:07 J	-3734939.96	-3734939.87	-3734939.78	0.0291	0.0200
Venus	-14936-04-18 10:48 J	-3733843.24	-3733843.05	-3733842.86	0.0277	0.0121
Venus	-14936-12-03 15:07 J	-3733614.07	-3733613.87	-3733613.66	0.0274	0.0051
Venus	-14935-07-20 17:45 J	-3733384.89	-3733384.76	-3733384.64	0.0271	0.0214
Moon	-14928-12-08 03:21 J	-3730687.56	-3730687.36	-3730687.15	0.0260	0.0137
Earth	-14928-12-08 04:04 J	-3730687.52	-3730687.33	-3730687.11	0.0260	0.0147 *
Mercury	-14924-10-30 12:57 J	-3729265.14	-3729264.96	-3729264.78	0.0269	0.0098
Mercury	-14923-01-27 11:45 J	-3729176.19	-3729176.01	-3729175.82	0.0270	0.0080
Mercury	-14923-04-26 10:33 J	-3729087.11	-3729087.06	-3729087.00	0.0271	0.0259
Venus	-14921-12-21 00:00 J	-3728117.51	-3728117.50	-3728117.47	0.0283	0.0282
Venus	-14920-08-07 20:09 J	-3727887.86	-3727887.66	-3727887.45	0.0286	0.0089
Venus	-14919-03-25 18:43 J	-3727657.91	-3727657.72	-3727657.51	0.0289	0.0115
Mercury	-14911-12-13 07:40 J	-3724473.21	-3724473.18	-3724473.13	0.0295	0.0277
Mercury	-14910-03-11 19:26 J	-3724384.80	-3724384.69	-3724384.57	0.0294	0.0126
Mercury	-14910-06-08 07:11 J	-3724296.33	-3724296.20	-3724296.08	0.0293	0.0026
Mars	-14910-06-23 18:57 J	-3724280.94	-3724280.71	-3724280.46	0.0293	0.0189
Mercury	-14910-09-04 18:28 J	-3724207.83	-3724207.73	-3724207.62	0.0292	0.0172
Venus	-14907-03-14 12:00 J	-3723286.04	-3723286.00	-3723285.93	0.0279	0.0268

Venus	-14907-10-29 18:28 J	-3723056.92	-3723056.73	-3723056.53	0.0276	0.0091
Venus	-14906-06-15 22:48 J	-3722827.75	-3722827.55	-3722827.35	0.0274	0.0079
Venus	-14905-01-31 00:28 J	-3722598.57	-3722598.48	-3722598.38	0.0271	0.0241
Earth	-14899-12-03 16:04 J	-3720100.06	-3720099.83	-3720099.59	0.0259	0.0088
Moon	-14899-12-03 17:02 J	-3720100.02	-3720099.79	-3720099.54	0.0259	0.0101 *
Mercury	-14894-03-19 13:40 J	-3718533.10	-3718532.93	-3718532.76	0.0269	0.0133
Mercury	-14894-06-16 12:28 J	-3718444.17	-3718443.98	-3718443.79	0.0270	0.0044
Mars	-14894-06-25 15:07 J	-3718435.10	-3718434.87	-3718434.64	0.0270	0.0146
Mercury	-14894-09-13 11:16 J	-3718355.13	-3718355.03	-3718354.92	0.0271	0.0223
Venus	-14891-07-03 09:50 J	-3717331.18	-3717331.09	-3717330.98	0.0284	0.0249
Venus	-14890-02-18 06:28 J	-3717101.44	-3717101.23	-3717101.02	0.0287	0.0054
Venus	-14890-10-06 05:16 J	-3716871.45	-3716871.28	-3716871.08	0.0290	0.0153
Moon	-14884-06-07 22:04 J	-3714799.81	-3714799.58	-3714799.34	0.0303	0.0038
Earth	-14884-06-07 23:02 J	-3714799.78	-3714799.54	-3714799.30	0.0303	0.0034 *
Mercury	-14881-07-28 22:33 J	-3713652.66	-3713652.56	-3713652.45	0.0293	0.0158
Mercury	-14881-10-25 10:19 J	-3713564.20	-3713564.07	-3713563.94	0.0292	0.0008
Mercury	-14880-01-21 21:50 J	-3713475.70	-3713475.59	-3713475.48	0.0291	0.0140
Mercury	-14880-04-20 09:21 J	-3713387.13	-3713387.11	-3713387.09	0.0290	0.0286
Jupiter	-14880-07-14 18:28 J	-3713302.10	-3713301.73	-3713301.32	0.0289	0.0147
Venus	-14878-09-24 19:11 J	-3712499.80	-3712499.70	-3712499.59	0.0278	0.0239
Venus	-14877-05-11 01:11 J	-3712270.65	-3712270.45	-3712270.24	0.0276	0.0064
Venus	-14877-12-26 04:48 J	-3712041.48	-3712041.30	-3712041.10	0.0273	0.0106
Venus	-14876-08-12 06:28 J	-3711812.25	-3711812.23	-3711812.19	0.0270	0.0267
Earth	-14869-12-09 15:21 J	-3709135.97	-3709135.86	-3709135.72	0.0260	0.0226
Moon	-14869-12-09 18:43 J	-3709135.84	-3709135.72	-3709135.57	0.0260	0.0218 *
Mercury	-14865-08-05 13:26 J	-3707801.08	-3707800.94	-3707800.78	0.0269	0.0174
Mercury	-14865-11-02 12:28 J	-3707712.17	-3707711.98	-3707711.79	0.0270	0.0004
Mercury	-14864-01-30 11:02 J	-3707623.17	-3707623.04	-3707622.89	0.0271	0.0183
Venus	-14861-01-13 18:57 J	-3706544.84	-3706544.71	-3706544.57	0.0284	0.0219
Venus	-14861-08-30 16:04 J	-3706315.05	-3706314.83	-3706314.62	0.0287	0.0023

Venus	-14860-04-17 15:21 J	-3706085.02	-3706084.86	-3706084.69	0.0290	0.0184
Mercury	-14852-12-16 02:09 J	-3702920.51	-3702920.41	-3702920.32	0.0294	0.0188
Mercury	-14851-03-14 13:40 J	-3702832.06	-3702831.93	-3702831.80	0.0293	0.0037
Mercury	-14851-06-11 01:11 J	-3702743.57	-3702743.45	-3702743.33	0.0292	0.0111
Mercury	-14851-09-07 12:43 J	-3702655.03	-3702654.97	-3702654.91	0.0291	0.0257
Venus	-14848-04-06 03:21 J	-3701713.49	-3701713.36	-3701713.21	0.0278	0.0208
Venus	-14848-11-21 09:07 J	-3701484.33	-3701484.12	-3701483.91	0.0275	0.0033
Venus	-14847-07-08 12:28 J	-3701255.16	-3701254.98	-3701254.80	0.0273	0.0134
Moon	-14840-12-04 23:45 J	-3698548.76	-3698548.51	-3698548.25	0.0259	0.0020
Earth	-14840-12-05 03:07 J	-3698548.62	-3698548.37	-3698548.12	0.0259	0.0009 *
Mercury	-14836-12-23 13:55 J	-3697069.03	-3697068.92	-3697068.79	0.0269	0.0210
Mercury	-14835-03-22 12:57 J	-3696980.15	-3696979.96	-3696979.77	0.0270	0.0033
Mercury	-14835-06-19 11:31 J	-3696891.17	-3696891.02	-3696890.85	0.0271	0.0146
Venus	-14832-07-26 04:04 J	-3695758.48	-3695758.33	-3695758.15	0.0285	0.0187
Venus	-14831-03-13 01:40 J	-3695528.64	-3695528.43	-3695528.21	0.0288	0.0013
Venus	-14831-10-29 01:40 J	-3695298.57	-3695298.43	-3695298.29	0.0291	0.0221
Earth	-14825-06-09 21:50 J	-3693247.81	-3693247.59	-3693247.35	0.0303	0.0091
Moon	-14825-06-10 00:14 J	-3693247.71	-3693247.49	-3693247.26	0.0303	0.0088 *
Mercury	-14822-05-05 05:16 J	-3692188.36	-3692188.28	-3692188.20	0.0294	0.0219
Mercury	-14822-08-01 16:48 J	-3692099.92	-3692099.80	-3692099.67	0.0293	0.0070
Mercury	-14822-10-29 04:19 J	-3692011.44	-3692011.32	-3692011.19	0.0292	0.0080
Mars	-14822-11-19 10:19 J	-3691990.38	-3691990.07	-3691989.75	0.0291	0.0050
Mercury	-14821-01-25 15:50 J	-3691922.92	-3691922.84	-3691922.76	0.0291	0.0226
Venus	-14819-10-17 10:33 J	-3690927.21	-3690927.06	-3690926.90	0.0277	0.0180
Venus	-14818-06-03 15:50 J	-3690698.05	-3690697.84	-3690697.63	0.0275	0.0007
Venus	-14817-01-18 18:43 J	-3690468.88	-3690468.72	-3690468.55	0.0272	0.0161
Earth	-14811-11-30 12:28 J	-3687961.02	-3687960.98	-3687960.90	0.0259	0.0251
Mercury	-14806-05-12 13:26 J	-3686336.99	-3686336.94	-3686336.87	0.0269	0.0253
Mercury	-14806-08-09 12:14 J	-3686248.17	-3686247.99	-3686247.80	0.0269	0.0078
Mercury	-14806-11-06 11:02 J	-3686159.21	-3686159.04	-3686158.85	0.0270	0.0102



Mars	-14806-11-20 06:28 J	-3686145.50	-3686145.23	-3686144.96	0.0271	0.0067
Venus	-14802-02-05 12:43 J	-3684972.15	-3684971.97	-3684971.79	0.0285	0.0157
Venus	-14802-09-23 10:19 J	-3684742.28	-3684742.07	-3684741.86	0.0288	0.0043
Venus	-14801-05-10 10:33 J	-3684512.16	-3684512.06	-3684511.95	0.0291	0.0252
Moon	-14796-06-03 18:00 J	-3682661.81	-3682661.75	-3682661.67	0.0304	0.0290
Earth	-14796-06-03 21:07 J	-3682661.69	-3682661.62	-3682661.54	0.0304	0.0288 *
Mercury	-14793-09-21 08:24 J	-3681456.21	-3681456.15	-3681456.08	0.0295	0.0252
Mercury	-14793-12-18 20:09 J	-3681367.78	-3681367.66	-3681367.54	0.0294	0.0100
Mercury	-14792-03-17 07:40 J	-3681279.30	-3681279.18	-3681279.05	0.0293	0.0049
Mercury	-14792-06-13 19:11 J	-3681190.79	-3681190.70	-3681190.60	0.0291	0.0196
Venus	-14789-04-28 18:28 J	-3680140.90	-3680140.73	-3680140.55	0.0277	0.0149
Venus	-14789-12-13 23:16 J	-3679911.74	-3679911.53	-3679911.32	0.0275	0.0024
Venus	-14788-07-31 01:55 J	-3679682.56	-3679682.42	-3679682.27	0.0272	0.0189
Moon	-14781-12-06 10:04 J	-3676997.32	-3676997.08	-3676996.84	0.0259	0.0058
Earth	-14781-12-06 12:43 J	-3676997.20	-3676996.97	-3676996.72	0.0259	0.0068 *
Mercury	-14777-12-26 12:28 J	-3675516.15	-3675515.98	-3675515.80	0.0269	0.0116
Mercury	-14776-03-25 11:31 J	-3675427.21	-3675427.02	-3675426.84	0.0270	0.0063
Mercury	-14776-06-22 10:19 J	-3675338.16	-3675338.07	-3675337.99	0.0271	0.0241
Venus	-14773-08-17 21:21 J	-3674185.80	-3674185.61	-3674185.41	0.0286	0.0125
Venus	-14772-04-04 19:40 J	-3673955.89	-3673955.68	-3673955.47	0.0289	0.0078
Venus	-14772-11-20 20:09 J	-3673725.67	-3673725.66	-3673725.62	0.0292	0.0289
Earth	-14766-06-12 18:43 J	-3671695.88	-3671695.72	-3671695.53	0.0303	0.0212
Moon	-14766-06-12 22:33 J	-3671695.73	-3671695.56	-3671695.38	0.0303	0.0210 *
Mercury	-14763-02-08 11:31 J	-3670724.05	-3670724.02	-3670723.99	0.0295	0.0285
Mercury	-14763-05-07 23:16 J	-3670635.65	-3670635.53	-3670635.42	0.0293	0.0134
Mercury	-14763-08-04 10:48 J	-3670547.18	-3670547.05	-3670546.92	0.0292	0.0015
Mercury	-14763-10-31 22:19 J	-3670458.68	-3670458.57	-3670458.46	0.0291	0.0163
Venus	-14760-11-09 00:57 J	-3669354.65	-3669354.46	-3669354.27	0.0277	0.0122
Venus	-14759-06-26 05:31 J	-3669125.48	-3669125.27	-3669125.07	0.0274	0.0050
Venus	-14758-02-10 07:26 J	-3668896.31	-3668896.19	-3668896.05	0.0271	0.0214

Earth	-14752-12-01 21:21 J	-3666409.79	-3666409.61	-3666409.43	0.0259	0.0175
Moon	-14752-12-02 00:28 J	-3666409.64	-3666409.48	-3666409.29	0.0259	0.0189 *
Mercury	-14747-05-15 11:16 J	-3664784.17	-3664784.03	-3664783.87	0.0269	0.0164
Mercury	-14747-08-12 10:19 J	-3664695.26	-3664695.07	-3664694.88	0.0270	0.0013
Mercury	-14747-11-09 09:07 J	-3664606.25	-3664606.12	-3664605.98	0.0271	0.0192
Venus	-14743-02-28 04:04 J	-3663399.53	-3663399.33	-3663399.12	0.0286	0.0098
Venus	-14743-10-16 02:38 J	-3663169.59	-3663169.39	-3663169.19	0.0289	0.0106
Moon	-14737-06-05 11:45 J	-3661110.20	-3661110.01	-3661109.82	0.0304	0.0179
Earth	-14737-06-05 14:52 J	-3661110.07	-3661109.88	-3661109.68	0.0304	0.0175 *
Mercury	-14734-09-25 02:09 J	-3659903.52	-3659903.41	-3659903.31	0.0294	0.0171
Mercury	-14734-12-22 13:40 J	-3659815.06	-3659814.93	-3659814.80	0.0293	0.0020
Mercury	-14733-03-20 01:11 J	-3659726.56	-3659726.45	-3659726.33	0.0292	0.0128
Mars	-14733-04-15 16:48 J	-3659700.11	-3659699.80	-3659699.50	0.0292	0.0077
Mercury	-14733-06-16 12:43 J	-3659638.01	-3659637.97	-3659637.93	0.0291	0.0274
Venus	-14731-10-05 01:11 J	-3658797.50	-3658797.45	-3658797.40	0.0280	0.0270
Venus	-14730-05-22 07:40 J	-3658568.37	-3658568.18	-3658567.98	0.0277	0.0093
Venus	-14729-01-06 11:45 J	-3658339.21	-3658339.01	-3658338.81	0.0274	0.0078
Venus	-14729-08-22 13:40 J	-3658110.02	-3658109.93	-3658109.83	0.0271	0.0241
Earth	-14722-12-08 19:55 J	-3655445.87	-3655445.67	-3655445.45	0.0259	0.0140
Moon	-14722-12-08 21:07 J	-3655445.83	-3655445.62	-3655445.41	0.0259	0.0132 *
Mercury	-14718-10-02 10:48 J	-3654052.16	-3654052.05	-3654051.92	0.0268	0.0207
Mercury	-14718-12-30 09:50 J	-3653963.28	-3653963.09	-3653962.90	0.0269	0.0030
Mercury	-14717-03-28 08:24 J	-3653874.30	-3653874.15	-3653873.98	0.0270	0.0149
Mars	-14717-04-15 12:43 J	-3653856.25	-3653855.97	-3653855.70	0.0271	0.0006
Venus	-14714-01-23 15:07 J	-3652842.94	-3652842.87	-3652842.78	0.0284	0.0262
Venus	-14714-09-10 11:16 J	-3652613.23	-3652613.03	-3652612.81	0.0287	0.0067
Venus	-14713-04-27 10:19 J	-3652383.26	-3652383.07	-3652382.88	0.0290	0.0139
Mercury	-14704-02-11 04:48 J	-3649171.39	-3649171.30	-3649171.21	0.0294	0.0208
Mercury	-14704-05-10 16:19 J	-3649082.94	-3649082.82	-3649082.69	0.0293	0.0059
Mercury	-14704-08-07 04:04 J	-3648994.46	-3648994.33	-3648994.21	0.0292	0.0091

Mercury	-14704-11-03 15:21 J	-3648905.93	-3648905.86	-3648905.78	0.0291	0.0238
Venus	-14701-04-16 06:57 J	-3648011.31	-3648011.21	-3648011.11	0.0279	0.0243
Venus	-14701-12-01 13:11 J	-3647782.16	-3647781.95	-3647781.75	0.0276	0.0067
Venus	-14700-07-18 16:48 J	-3647552.99	-3647552.80	-3647552.60	0.0273	0.0103
Venus	-14699-03-04 18:28 J	-3647323.77	-3647323.73	-3647323.68	0.0270	0.0264
Moon	-14693-12-03 02:38 J	-3644858.62	-3644858.39	-3644858.16	0.0259	0.0119
Earth	-14693-12-03 03:07 J	-3644858.60	-3644858.37	-3644858.15	0.0259	0.0106 *
Mercury	-14688-02-18 09:07 J	-3643320.16	-3643320.12	-3643320.07	0.0268	0.0259
Mercury	-14688-05-18 07:55 J	-3643231.35	-3643231.17	-3643230.98	0.0269	0.0084
Mercury	-14688-08-15 06:43 J	-3643142.40	-3643142.22	-3643142.04	0.0270	0.0094
Venus	-14685-08-04 20:09 J	-3642056.77	-3642056.66	-3642056.54	0.0284	0.0238
Venus	-14684-03-22 16:48 J	-3641827.01	-3641826.80	-3641826.59	0.0287	0.0041
Venus	-14684-11-07 15:50 J	-3641597.01	-3641596.84	-3641596.66	0.0290	0.0165
Earth	-14678-06-08 03:50 J	-3639558.57	-3639558.34	-3639558.10	0.0304	0.0073
Moon	-14678-06-08 04:48 J	-3639558.52	-3639558.30	-3639558.07	0.0304	0.0080 *
Mercury	-14675-07-01 07:11 J	-3638439.26	-3638439.20	-3638439.13	0.0295	0.0249
Mercury	-14675-09-27 18:57 J	-3638350.83	-3638350.71	-3638350.59	0.0294	0.0098
Mercury	-14675-12-25 06:28 J	-3638262.35	-3638262.23	-3638262.10	0.0293	0.0052
Mercury	-14674-03-23 18:00 J	-3638173.84	-3638173.75	-3638173.65	0.0292	0.0200
Venus	-14672-10-27 12:43 J	-3637225.10	-3637224.97	-3637224.83	0.0279	0.0216
Venus	-14671-06-13 18:43 J	-3636995.92	-3636995.72	-3636995.51	0.0276	0.0039
Venus	-14670-01-28 22:04 J	-3636766.76	-3636766.58	-3636766.39	0.0273	0.0130
Earth	-14663-12-09 23:45 J	-3633894.65	-3633894.51	-3633894.35	0.0259	0.0206
Moon	-14663-12-10 03:21 J	-3633894.51	-3633894.36	-3633894.19	0.0259	0.0198 *
Mercury	-14659-10-05 06:57 J	-3632499.38	-3632499.21	-3632499.04	0.0269	0.0131
Mercury	-14658-01-02 05:45 J	-3632410.45	-3632410.26	-3632410.07	0.0270	0.0046
Mercury	-14658-04-01 04:19 J	-3632321.42	-3632321.32	-3632321.20	0.0271	0.0225
Venus	-14655-02-15 01:40 J	-3631270.56	-3631270.43	-3631270.28	0.0284	0.0210
Venus	-14655-10-02 22:33 J	-3631040.78	-3631040.56	-3631040.35	0.0287	0.0012
Venus	-14654-05-20 21:50 J	-3630810.74	-3630810.59	-3630810.42	0.0290	0.0196

Mercury	-14646-11-18 09:21 J	-3627707.11	-3627707.11	-3627707.10	0.0295	0.0294
Mercury	-14645-02-14 21:07 J	-3627618.73	-3627618.62	-3627618.51	0.0294	0.0142
Mercury	-14645-05-13 08:52 J	-3627530.26	-3627530.13	-3627530.01	0.0293	0.0011
Mercury	-14645-08-09 20:24 J	-3627441.76	-3627441.65	-3627441.54	0.0292	0.0156
Mars	-14645-09-09 22:33 J	-3627410.82	-3627410.56	-3627410.30	0.0291	0.0165
Venus	-14642-05-09 16:48 J	-3626438.94	-3626438.80	-3626438.64	0.0278	0.0192
Venus	-14642-12-24 22:33 J	-3626209.77	-3626209.56	-3626209.35	0.0275	0.0017
Venus	-14641-08-10 01:40 J	-3625980.60	-3625980.43	-3625980.25	0.0272	0.0151
Moon	-14634-12-05 01:26 J	-3623307.68	-3623307.44	-3623307.19	0.0259	0.0057
Earth	-14634-12-05 05:31 J	-3623307.52	-3623307.27	-3623307.03	0.0259	0.0044 *
Mercury	-14629-02-22 04:19 J	-3621767.45	-3621767.32	-3621767.18	0.0268	0.0189
Mercury	-14629-05-21 03:07 J	-3621678.56	-3621678.37	-3621678.18	0.0269	0.0014
Mercury	-14629-08-18 01:55 J	-3621589.57	-3621589.42	-3621589.27	0.0270	0.0164
Mars	-14629-09-09 01:26 J	-3621567.71	-3621567.44	-3621567.17	0.0271	0.0046
Venus	-14626-08-28 05:02 J	-3620484.45	-3620484.29	-3620484.13	0.0284	0.0188
Venus	-14625-04-14 01:55 J	-3620254.63	-3620254.42	-3620254.20	0.0287	0.0011
Venus	-14625-11-30 01:40 J	-3620024.56	-3620024.43	-3620024.28	0.0290	0.0218
Earth	-14619-06-09 09:50 J	-3618007.34	-3618007.09	-3618006.85	0.0304	0.0012
Moon	-14619-06-09 13:26 J	-3618007.18	-3618006.94	-3618006.70	0.0304	0.0003 *
Mercury	-14616-07-03 23:16 J	-3616886.63	-3616886.53	-3616886.43	0.0295	0.0188
Mercury	-14616-09-30 10:48 J	-3616798.17	-3616798.05	-3616797.92	0.0294	0.0038
Mercury	-14616-12-27 22:33 J	-3616709.68	-3616709.56	-3616709.45	0.0293	0.0113
Mercury	-14615-03-26 10:04 J	-3616621.14	-3616621.08	-3616621.03	0.0291	0.0260
Venus	-14613-11-18 21:07 J	-3615652.78	-3615652.62	-3615652.45	0.0278	0.0166
Venus	-14612-07-06 02:52 J	-3615423.59	-3615423.38	-3615423.17	0.0275	0.0010
Venus	-14611-02-20 05:45 J	-3615194.41	-3615194.26	-3615194.10	0.0272	0.0177
Moon	-14604-12-11 01:26 J	-3612343.45	-3612343.44	-3612343.43	0.0259	0.0258
Mercury	-14600-07-11 02:24 J	-3611035.47	-3611035.40	-3611035.30	0.0268	0.0241
Mercury	-14600-10-08 01:26 J	-3610946.63	-3610946.44	-3610946.25	0.0269	0.0066
Mercury	-14599-01-05 00:00 J	-3610857.67	-3610857.50	-3610857.32	0.0270	0.0112

Venus	-14596-03-09 09:07 J	-3609698.29	-3609698.12	-3609697.94	0.0285	0.0163
Venus	-14596-10-25 06:28 J	-3609468.45	-3609468.23	-3609468.02	0.0288	0.0038
Venus	-14595-06-12 06:14 J	-3609238.35	-3609238.24	-3609238.12	0.0291	0.0247
Mercury	-14587-11-21 00:57 J	-3606154.53	-3606154.46	-3606154.38	0.0295	0.0237
Mercury	-14586-02-17 12:43 J	-3606066.09	-3606065.97	-3606065.84	0.0294	0.0085
Mercury	-14586-05-17 00:28 J	-3605977.61	-3605977.48	-3605977.36	0.0293	0.0065
Mercury	-14586-08-13 12:00 J	-3605889.09	-3605889.00	-3605888.92	0.0292	0.0213
Venus	-14583-06-01 00:14 J	-3604866.66	-3604866.49	-3604866.31	0.0277	0.0144
Venus	-14582-01-16 05:31 J	-3604637.48	-3604637.27	-3604637.06	0.0274	0.0030
Venus	-14582-09-02 07:55 J	-3604408.30	-3604408.17	-3604408.01	0.0272	0.0197
Moon	-14575-12-06 03:07 J	-3601756.61	-3601756.37	-3601756.13	0.0258	0.0004
Earth	-14575-12-06 04:19 J	-3601756.57	-3601756.32	-3601756.07	0.0258	0.0013 *
Mercury	-14570-02-24 22:19 J	-3600214.74	-3600214.57	-3600214.40	0.0268	0.0128
Mercury	-14570-05-24 21:07 J	-3600125.81	-3600125.62	-3600125.43	0.0269	0.0048
Mercury	-14570-08-21 19:40 J	-3600036.78	-3600036.68	-3600036.57	0.0270	0.0225
Venus	-14567-09-19 11:02 J	-3598912.22	-3598912.04	-3598911.85	0.0285	0.0142
Venus	-14566-05-07 08:24 J	-3598682.36	-3598682.15	-3598681.93	0.0288	0.0059
Venus	-14566-12-23 08:38 J	-3598452.21	-3598452.14	-3598452.05	0.0291	0.0268
Earth	-14560-06-10 10:19 J	-3596456.30	-3596456.07	-3596455.84	0.0304	0.0081
Moon	-14560-06-10 10:48 J	-3596456.28	-3596456.05	-3596455.80	0.0304	0.0070 *
Mercury	-14557-04-09 02:24 J	-3595422.41	-3595422.40	-3595422.37	0.0296	0.0290
Mercury	-14557-07-06 14:24 J	-3595334.02	-3595333.90	-3595333.79	0.0295	0.0137
Mercury	-14557-10-03 01:55 J	-3595245.55	-3595245.42	-3595245.29	0.0294	0.0014
Mercury	-14557-12-30 13:26 J	-3595157.04	-3595156.94	-3595156.83	0.0293	0.0164
Mars	-14556-02-02 22:33 J	-3595122.76	-3595122.56	-3595122.33	0.0292	0.0214
Venus	-14554-12-12 03:07 J	-3594080.56	-3594080.37	-3594080.19	0.0278	0.0120
Venus	-14553-07-28 08:09 J	-3593851.36	-3593851.16	-3593850.95	0.0275	0.0054
Venus	-14552-03-14 10:48 J	-3593622.17	-3593622.05	-3593621.92	0.0272	0.0219
Earth	-14546-12-01 10:48 J	-3591169.15	-3591169.05	-3591168.93	0.0258	0.0231
Moon	-14546-12-01 12:00 J	-3591169.07	-3591169.00	-3591168.90	0.0258	0.0242 *

Mercury	-14541-07-13 20:09 J	-3589482.80	-3589482.66	-3589482.52	0.0268	0.0183
Mercury	-14541-10-10 18:57 J	-3589393.91	-3589393.71	-3589393.52	0.0269	0.0010
Mercury	-14540-01-07 17:31 J	-3589304.92	-3589304.77	-3589304.62	0.0270	0.0168
Mars	-14540-02-02 04:04 J	-3589279.59	-3589279.33	-3589279.07	0.0270	0.0076
Venus	-14537-03-31 14:09 J	-3588126.11	-3588125.91	-3588125.72	0.0285	0.0118
Venus	-14537-11-16 11:31 J	-3587896.22	-3587896.02	-3587895.81	0.0288	0.0084
Mercury	-14528-11-23 15:50 J	-3584601.94	-3584601.84	-3584601.74	0.0295	0.0190
Mercury	-14527-02-20 03:35 J	-3584513.48	-3584513.35	-3584513.23	0.0294	0.0039
Mercury	-14527-05-19 15:07 J	-3584424.99	-3584424.87	-3584424.75	0.0293	0.0112
Mercury	-14527-08-16 02:38 J	-3584336.44	-3584336.39	-3584336.33	0.0292	0.0259
Venus	-14525-11-05 21:21 J	-3583523.61	-3583523.61	-3583523.59	0.0280	0.0280
Venus	-14524-06-23 04:48 J	-3583294.49	-3583294.30	-3583294.10	0.0277	0.0101
Venus	-14523-02-07 09:50 J	-3583065.29	-3583065.09	-3583064.89	0.0274	0.0073
Venus	-14523-09-24 12:14 J	-3582836.09	-3582835.99	-3582835.89	0.0271	0.0237
Earth	-14516-12-07 00:28 J	-3580205.72	-3580205.48	-3580205.23	0.0258	0.0062
Moon	-14516-12-07 04:04 J	-3580205.57	-3580205.33	-3580205.09	0.0258	0.0057 *
Mercury	-14512-11-30 16:33 J	-3578750.87	-3578750.81	-3578750.73	0.0267	0.0248
Mercury	-14511-02-27 15:21 J	-3578662.05	-3578661.86	-3578661.68	0.0268	0.0075
Mercury	-14511-05-27 13:55 J	-3578573.10	-3578572.92	-3578572.74	0.0269	0.0101
Venus	-14508-10-11 14:52 J	-3577340.08	-3577339.88	-3577339.68	0.0285	0.0100
Venus	-14507-05-29 12:28 J	-3577110.18	-3577109.98	-3577109.78	0.0288	0.0103
Moon	-14501-06-11 02:38 J	-3574905.60	-3574905.39	-3574905.16	0.0304	0.0124
Earth	-14501-06-11 06:00 J	-3574905.46	-3574905.25	-3574905.03	0.0304	0.0140 *
Mercury	-14498-04-12 17:02 J	-3573869.86	-3573869.79	-3573869.72	0.0296	0.0247
Mercury	-14498-07-10 04:48 J	-3573781.42	-3573781.30	-3573781.18	0.0295	0.0094
Mercury	-14498-10-06 16:19 J	-3573692.94	-3573692.82	-3573692.69	0.0294	0.0058
Mercury	-14497-01-03 04:04 J	-3573604.42	-3573604.33	-3573604.24	0.0293	0.0207
Venus	-14495-05-18 23:16 J	-3572737.60	-3572737.53	-3572737.44	0.0281	0.0258
Venus	-14494-01-03 06:43 J	-3572508.42	-3572508.22	-3572508.02	0.0277	0.0078
Venus	-14494-08-20 11:31 J	-3572279.21	-3572279.02	-3572278.82	0.0275	0.0096

Venus	-14493-04-05 13:55 J	-3572049.97	-3572049.92	-3572049.86	0.0272	0.0260
Moon	-14487-12-02 03:21 J	-3569618.53	-3569618.36	-3569618.19	0.0258	0.0191
Earth	-14487-12-02 06:14 J	-3569618.40	-3569618.24	-3569618.05	0.0258	0.0184 *
Mercury	-14482-07-17 12:43 J	-3567930.13	-3567929.97	-3567929.79	0.0267	0.0132
Mercury	-14482-10-14 11:31 J	-3567841.21	-3567841.02	-3567840.83	0.0268	0.0043
Mercury	-14481-01-11 10:04 J	-3567752.18	-3567752.08	-3567751.96	0.0269	0.0220
Venus	-14479-09-05 22:19 J	-3566783.63	-3566783.57	-3566783.50	0.0282	0.0268
Venus	-14478-04-23 17:16 J	-3566553.98	-3566553.78	-3566553.57	0.0285	0.0076
Venus	-14478-12-09 15:07 J	-3566324.06	-3566323.87	-3566323.67	0.0288	0.0128
Earth	-14472-06-04 15:21 J	-3564319.94	-3564319.86	-3564319.76	0.0305	0.0281
Moon	-14472-06-04 18:43 J	-3564319.77	-3564319.72	-3564319.65	0.0305	0.0295 *
Mercury	-14469-11-26 06:00 J	-3563049.36	-3563049.25	-3563049.14	0.0295	0.0150
Mercury	-14468-02-22 17:45 J	-3562960.89	-3562960.76	-3562960.63	0.0294	0.0002
Mercury	-14468-05-22 05:16 J	-3562872.39	-3562872.28	-3562872.17	0.0293	0.0152
Mars	-14468-06-28 01:55 J	-3562835.61	-3562835.42	-3562835.21	0.0292	0.0224
Venus	-14466-11-29 00:28 J	-3561951.59	-3561951.48	-3561951.37	0.0280	0.0238
Venus	-14465-07-15 07:40 J	-3561722.38	-3561722.18	-3561721.97	0.0277	0.0059
Venus	-14464-03-01 12:28 J	-3561493.17	-3561492.98	-3561492.79	0.0274	0.0113
Earth	-14457-12-07 19:26 J	-3558654.91	-3558654.69	-3558654.46	0.0258	0.0109
Moon	-14457-12-07 21:35 J	-3558654.82	-3558654.60	-3558654.36	0.0258	0.0108 *
Mercury	-14453-12-03 09:21 J	-3557198.24	-3557198.11	-3557197.98	0.0267	0.0197
Mercury	-14452-03-02 07:55 J	-3557109.36	-3557109.17	-3557108.98	0.0268	0.0024
Mercury	-14452-05-30 06:28 J	-3557020.38	-3557020.23	-3557020.07	0.0269	0.0152
Mars	-14452-06-27 19:26 J	-3556991.95	-3556991.69	-3556991.42	0.0270	0.0084
Venus	-14449-03-17 22:33 J	-3555997.65	-3555997.56	-3555997.46	0.0282	0.0251
Venus	-14449-11-02 17:45 J	-3555767.97	-3555767.76	-3555767.55	0.0285	0.0058
Venus	-14448-06-20 15:35 J	-3555538.03	-3555537.85	-3555537.66	0.0289	0.0146
Moon	-14442-06-12 20:38 J	-3553354.83	-3553354.64	-3553354.45	0.0304	0.0175
Earth	-14442-06-12 22:48 J	-3553354.73	-3553354.55	-3553354.36	0.0304	0.0190 *
Mercury	-14439-04-15 06:57 J	-3552317.30	-3552317.21	-3552317.12	0.0296	0.0210

Mercury	-14439-07-12 18:43 J	-3552228.85	-3552228.72	-3552228.60	0.0295	0.0057
Mercury	-14439-10-09 06:28 J	-3552140.36	-3552140.23	-3552140.11	0.0294	0.0095
Mercury	-14438-01-05 18:00 J	-3552051.82	-3552051.75	-3552051.68	0.0293	0.0244
Venus	-14436-06-10 01:26 J	-3551165.56	-3551165.44	-3551165.30	0.0280	0.0218
Venus	-14435-01-25 08:52 J	-3550936.34	-3550936.13	-3550935.93	0.0277	0.0038
Venus	-14435-09-11 13:11 J	-3550707.12	-3550706.95	-3550706.76	0.0274	0.0135
Moon	-14428-12-02 22:19 J	-3548067.76	-3548067.57	-3548067.36	0.0258	0.0145
Earth	-14428-12-03 00:43 J	-3548067.67	-3548067.47	-3548067.25	0.0258	0.0139 *
Mercury	-14423-04-22 06:57 J	-3546466.27	-3546466.21	-3546466.16	0.0266	0.0254
Mercury	-14423-07-20 05:16 J	-3546377.46	-3546377.28	-3546377.09	0.0267	0.0082
Mercury	-14423-10-17 03:50 J	-3546288.52	-3546288.34	-3546288.15	0.0268	0.0093
Mercury	-14422-01-14 02:24 J	-3546199.40	-3546199.40	-3546199.39	0.0269	0.0269
Venus	-14420-09-28 00:43 J	-3545211.59	-3545211.47	-3545211.34	0.0282	0.0228
Venus	-14419-05-15 19:55 J	-3544981.89	-3544981.67	-3544981.46	0.0285	0.0034
Venus	-14419-12-31 17:45 J	-3544751.92	-3544751.76	-3544751.58	0.0289	0.0171
Earth	-14413-06-05 07:26 J	-3542769.33	-3542769.19	-3542769.02	0.0305	0.0233
Moon	-14413-06-05 09:21 J	-3542769.25	-3542769.11	-3542768.96	0.0305	0.0247 *
Mercury	-14410-09-02 08:09 J	-3541585.21	-3541585.16	-3541585.11	0.0296	0.0267
Mercury	-14410-11-29 19:55 J	-3541496.79	-3541496.67	-3541496.55	0.0295	0.0113
Mercury	-14409-02-26 07:40 J	-3541408.31	-3541408.18	-3541408.05	0.0294	0.0039
Mercury	-14409-05-24 19:11 J	-3541319.79	-3541319.70	-3541319.60	0.0293	0.0189
Venus	-14407-12-21 02:38 J	-3540379.54	-3540379.39	-3540379.25	0.0280	0.0198
Venus	-14406-08-07 09:35 J	-3540150.31	-3540150.10	-3540149.89	0.0277	0.0019
Venus	-14405-03-23 13:55 J	-3539921.08	-3539920.92	-3539920.74	0.0274	0.0153
Moon	-14398-12-09 11:16 J	-3537104.22	-3537104.03	-3537103.82	0.0258	0.0159
Earth	-14398-12-09 13:55 J	-3537104.11	-3537103.92	-3537103.71	0.0258	0.0154 *
Mercury	-14394-12-07 01:55 J	-3535645.58	-3535645.42	-3535645.26	0.0267	0.0147
Mercury	-14393-03-05 00:28 J	-3535556.67	-3535556.48	-3535556.29	0.0268	0.0027
Mercury	-14393-06-01 23:02 J	-3535467.66	-3535467.54	-3535467.41	0.0269	0.0202
Venus	-14390-04-10 00:57 J	-3534425.59	-3534425.46	-3534425.31	0.0282	0.0211



Venus	-14390-11-25 20:38 J	-3534195.86	-3534195.64	-3534195.43	0.0286	0.0016
Venus	-14389-07-12 18:28 J	-3533965.88	-3533965.73	-3533965.56	0.0289	0.0190
Earth	-14383-06-13 15:21 J	-3531804.00	-3531803.86	-3531803.71	0.0304	0.0239
Moon	-14383-06-13 17:45 J	-3531803.92	-3531803.76	-3531803.60	0.0304	0.0223 *
Mercury	-14380-04-17 20:38 J	-3530764.74	-3530764.64	-3530764.53	0.0296	0.0174
Mercury	-14380-07-15 08:38 J	-3530676.27	-3530676.14	-3530676.02	0.0295	0.0022
Mercury	-14380-10-11 20:09 J	-3530587.77	-3530587.66	-3530587.54	0.0294	0.0131
Mars	-14380-11-19 15:21 J	-3530549.05	-3530548.86	-3530548.63	0.0293	0.0218
Mercury	-14379-01-08 07:55 J	-3530499.20	-3530499.17	-3530499.14	0.0293	0.0280
Venus	-14377-07-02 03:21 J	-3529593.51	-3529593.36	-3529593.19	0.0280	0.0178
Venus	-14376-02-16 10:33 J	-3529364.27	-3529364.06	-3529363.86	0.0277	0.0006
Venus	-14376-10-03 14:38 J	-3529135.04	-3529134.89	-3529134.72	0.0274	0.0174
Earth	-14369-12-03 19:26 J	-3526516.91	-3526516.69	-3526516.45	0.0258	0.0094
Moon	-14369-12-03 21:35 J	-3526516.83	-3526516.60	-3526516.38	0.0258	0.0096 *
Mercury	-14364-04-24 23:45 J	-3524913.63	-3524913.51	-3524913.38	0.0266	0.0202
Mercury	-14364-07-22 22:19 J	-3524824.77	-3524824.57	-3524824.38	0.0267	0.0030
Mercury	-14364-10-19 20:38 J	-3524735.80	-3524735.64	-3524735.47	0.0268	0.0145
Mars	-14364-11-20 15:35 J	-3524704.09	-3524703.85	-3524703.59	0.0269	0.0103
Venus	-14361-10-20 03:50 J	-3523639.49	-3523639.34	-3523639.17	0.0282	0.0187
Venus	-14360-06-06 23:16 J	-3523409.74	-3523409.53	-3523409.31	0.0286	0.0010
Venus	-14359-01-22 21:21 J	-3523179.74	-3523179.61	-3523179.45	0.0289	0.0215
Moon	-14354-06-06 21:21 J	-3521218.79	-3521218.61	-3521218.43	0.0305	0.0201
Earth	-14354-06-07 00:28 J	-3521218.67	-3521218.48	-3521218.29	0.0305	0.0183 *
Mercury	-14351-09-04 21:50 J	-3520032.66	-3520032.59	-3520032.50	0.0297	0.0232
Mercury	-14351-12-02 09:50 J	-3519944.21	-3519944.09	-3519943.97	0.0295	0.0077
Mercury	-14350-02-28 21:35 J	-3519855.73	-3519855.60	-3519855.48	0.0294	0.0075
Mercury	-14350-05-28 09:07 J	-3519767.20	-3519767.12	-3519767.04	0.0293	0.0225
Venus	-14347-01-12 04:19 J	-3518807.49	-3518807.32	-3518807.14	0.0280	0.0159
Venus	-14347-08-29 11:16 J	-3518578.24	-3518578.03	-3518577.82	0.0277	0.0021
Venus	-14346-04-15 15:21 J	-3518349.00	-3518348.86	-3518348.70	0.0274	0.0192

Moon	-14339-12-10 06:28 J	-3515553.36	-3515553.23	-3515553.08	0.0258	0.0208
Earth	-14339-12-10 09:35 J	-3515553.25	-3515553.10	-3515552.94	0.0258	0.0201 *
Mercury	-14335-09-11 20:24 J	-3514181.66	-3514181.65	-3514181.62	0.0266	0.0264
Mercury	-14335-12-09 18:57 J	-3514092.89	-3514092.71	-3514092.52	0.0267	0.0093
Mercury	-14334-03-08 17:31 J	-3514003.95	-3514003.77	-3514003.58	0.0268	0.0081
Mercury	-14334-06-05 15:50 J	-3513914.88	-3513914.84	-3513914.77	0.0269	0.0257
Venus	-14331-05-02 04:48 J	-3512853.47	-3512853.30	-3512853.12	0.0283	0.0168
Venus	-14331-12-18 00:28 J	-3512623.69	-3512623.48	-3512623.26	0.0286	0.0029
Venus	-14330-08-04 22:48 J	-3512393.67	-3512393.55	-3512393.42	0.0289	0.0235
Earth	-14324-06-14 08:38 J	-3510253.20	-3510253.14	-3510253.06	0.0304	0.0290
Moon	-14324-06-14 12:00 J	-3510253.09	-3510253.00	-3510252.88	0.0304	0.0273 *
Mercury	-14321-01-22 23:02 J	-3509300.56	-3509300.54	-3509300.52	0.0297	0.0291
Mercury	-14321-04-20 10:48 J	-3509212.16	-3509212.05	-3509211.94	0.0296	0.0137
Mercury	-14321-07-17 22:33 J	-3509123.69	-3509123.56	-3509123.43	0.0295	0.0016
Mercury	-14321-10-14 10:19 J	-3509035.18	-3509035.07	-3509034.97	0.0294	0.0168
Venus	-14318-07-25 05:31 J	-3508021.45	-3508021.27	-3508021.08	0.0280	0.0138
Venus	-14317-03-10 12:28 J	-3507792.19	-3507791.98	-3507791.78	0.0277	0.0042
Venus	-14317-10-25 16:33 J	-3507562.93	-3507562.81	-3507562.67	0.0274	0.0213
Earth	-14310-12-05 15:50 J	-3504966.09	-3504965.84	-3504965.59	0.0258	0.0046
Moon	-14310-12-05 19:26 J	-3504965.94	-3504965.69	-3504965.44	0.0258	0.0047 *
Mercury	-14305-04-27 17:16 J	-3503360.94	-3503360.78	-3503360.62	0.0266	0.0145
Mercury	-14305-07-25 15:50 J	-3503272.04	-3503271.84	-3503271.65	0.0267	0.0028
Mercury	-14305-10-22 14:09 J	-3503183.03	-3503182.91	-3503182.78	0.0268	0.0202
Venus	-14302-11-12 08:38 J	-3502067.32	-3502067.14	-3502066.95	0.0283	0.0144
Venus	-14301-06-29 04:19 J	-3501837.53	-3501837.32	-3501837.11	0.0286	0.0055
Venus	-14300-02-14 02:38 J	-3501607.47	-3501607.39	-3501607.29	0.0289	0.0261
Moon	-14295-06-07 17:02 J	-3499667.99	-3499667.79	-3499667.58	0.0305	0.0145
Earth	-14295-06-07 19:40 J	-3499667.90	-3499667.68	-3499667.46	0.0305	0.0128 *
Mercury	-14292-09-07 12:14 J	-3498480.09	-3498479.99	-3498479.89	0.0297	0.0191
Mercury	-14292-12-05 00:00 J	-3498391.63	-3498391.50	-3498391.37	0.0295	0.0037

Mercury	-14291-03-03 11:45 J	-3498303.13	-3498303.01	-3498302.89	0.0294	0.0115
Mars	-14291-04-13 14:24 J	-3498262.10	-3498261.90	-3498261.68	0.0294	0.0218
Mercury	-14291-05-30 23:16 J	-3498214.58	-3498214.53	-3498214.47	0.0293	0.0265
Venus	-14288-02-03 07:11 J	-3497235.38	-3497235.20	-3497235.00	0.0280	0.0117
Venus	-14288-09-20 13:55 J	-3497006.12	-3497005.92	-3497005.72	0.0276	0.0062
Venus	-14287-05-07 18:00 J	-3496776.85	-3496776.75	-3496776.64	0.0273	0.0231
Earth	-14280-12-11 07:26 J	-3494002.23	-3494002.19	-3494002.14	0.0258	0.0252
Mercury	-14276-09-14 14:38 J	-3492629.00	-3492628.89	-3492628.75	0.0266	0.0203
Mercury	-14276-12-12 13:26 J	-3492540.14	-3492539.94	-3492539.75	0.0267	0.0030
Mercury	-14275-03-11 11:45 J	-3492451.17	-3492451.01	-3492450.85	0.0268	0.0144
Mars	-14275-04-15 15:21 J	-3492416.09	-3492415.86	-3492415.60	0.0269	0.0125
Venus	-14272-05-24 11:16 J	-3491281.22	-3491281.03	-3491280.83	0.0283	0.0121
Venus	-14271-01-09 07:11 J	-3491051.41	-3491051.20	-3491050.99	0.0286	0.0078
Venus	-14271-08-27 05:45 J	-3490821.29	-3490821.26	-3490821.22	0.0289	0.0285
Mercury	-14262-01-25 13:11 J	-3487748.01	-3487747.95	-3487747.87	0.0297	0.0249
Mercury	-14262-04-24 01:11 J	-3487659.57	-3487659.45	-3487659.33	0.0296	0.0094
Mercury	-14262-07-21 12:57 J	-3487571.09	-3487570.96	-3487570.83	0.0295	0.0059
Mercury	-14262-10-18 00:43 J	-3487482.56	-3487482.47	-3487482.38	0.0293	0.0210
Venus	-14260-12-29 23:45 J	-3486678.53	-3486678.51	-3486678.50	0.0283	0.0281
Venus	-14259-08-16 08:52 J	-3486449.32	-3486449.13	-3486448.93	0.0280	0.0095
Venus	-14258-04-02 15:21 J	-3486220.05	-3486219.86	-3486219.65	0.0277	0.0084
Venus	-14258-11-17 19:26 J	-3485990.75	-3485990.69	-3485990.60	0.0274	0.0254
Moon	-14251-12-06 14:09 J	-3483415.17	-3483414.91	-3483414.65	0.0258	0.0010
Earth	-14251-12-06 14:24 J	-3483415.15	-3483414.90	-3483414.65	0.0258	0.0007 *
Mercury	-14246-02-01 13:26 J	-3481896.99	-3481896.94	-3481896.87	0.0266	0.0251
Mercury	-14246-05-01 12:00 J	-3481808.19	-3481808.00	-3481807.82	0.0267	0.0080
Mercury	-14246-07-29 10:19 J	-3481719.25	-3481719.07	-3481718.89	0.0267	0.0094
Mercury	-14246-10-26 08:52 J	-3481630.13	-3481630.13	-3481630.12	0.0268	0.0268
Venus	-14243-12-04 16:04 J	-3480495.03	-3480494.83	-3480494.62	0.0283	0.0095
Venus	-14242-07-22 12:00 J	-3480265.20	-3480265.00	-3480264.80	0.0286	0.0105

Earth	-14236-06-08 18:43 J	-3478116.95	-3478116.72	-3478116.48	0.0305	0.0063
Moon	-14236-06-08 21:07 J	-3478116.85	-3478116.62	-3478116.39	0.0305	0.0077 *
Mercury	-14233-09-10 02:52 J	-3476927.49	-3476927.38	-3476927.27	0.0296	0.0145
Mercury	-14233-12-07 14:38 J	-3476839.02	-3476838.89	-3476838.76	0.0295	0.0010
Mercury	-14232-03-06 02:24 J	-3476750.51	-3476750.40	-3476750.29	0.0294	0.0160
Venus	-14230-07-12 02:38 J	-3475892.47	-3475892.39	-3475892.31	0.0282	0.0259
Venus	-14229-02-26 11:45 J	-3475663.21	-3475663.01	-3475662.81	0.0279	0.0074
Venus	-14229-10-12 18:00 J	-3475433.94	-3475433.75	-3475433.55	0.0276	0.0105
Venus	-14228-05-29 22:04 J	-3475204.58	-3475204.58	-3475204.58	0.0273	0.0273
Earth	-14222-12-01 21:50 J	-3472827.67	-3472827.59	-3472827.49	0.0258	0.0238
Moon	-14222-12-01 21:50 J	-3472827.66	-3472827.59	-3472827.49	0.0258	0.0240 *
Mercury	-14217-09-17 10:19 J	-3471076.24	-3471076.07	-3471075.90	0.0267	0.0132
Mercury	-14217-12-15 08:38 J	-3470987.33	-3470987.14	-3470986.95	0.0268	0.0041
Mercury	-14216-03-14 06:57 J	-3470898.31	-3470898.21	-3470898.09	0.0268	0.0216
Venus	-14214-10-30 03:07 J	-3469938.44	-3469938.37	-3469938.29	0.0280	0.0259
Venus	-14213-06-15 20:24 J	-3469708.86	-3469708.65	-3469708.44	0.0283	0.0070
Venus	-14212-01-31 16:19 J	-3469479.01	-3469478.82	-3469478.62	0.0287	0.0131
Mercury	-14203-01-28 04:19 J	-3466195.41	-3466195.32	-3466195.22	0.0296	0.0198
Mercury	-14203-04-26 16:19 J	-3466106.95	-3466106.82	-3466106.69	0.0295	0.0043
Mercury	-14203-07-24 04:04 J	-3466018.45	-3466018.33	-3466018.21	0.0294	0.0109
Mars	-14203-09-06 00:57 J	-3465974.63	-3465974.46	-3465974.27	0.0294	0.0239
Mercury	-14203-10-20 15:50 J	-3465929.90	-3465929.84	-3465929.79	0.0293	0.0260
Venus	-14200-01-21 05:31 J	-3465106.38	-3465106.27	-3465106.16	0.0282	0.0236
Venus	-14200-09-07 14:24 J	-3464877.11	-3464876.90	-3464876.70	0.0279	0.0050
Venus	-14199-04-24 20:24 J	-3464647.82	-3464647.65	-3464647.46	0.0276	0.0129
Moon	-14192-12-07 12:28 J	-3461864.22	-3461863.98	-3461863.74	0.0258	0.0072
Earth	-14192-12-07 16:19 J	-3461864.06	-3461863.82	-3461863.58	0.0258	0.0064 *
Mercury	-14187-02-04 09:35 J	-3460344.24	-3460344.10	-3460343.96	0.0266	0.0176
Mercury	-14187-05-04 07:55 J	-3460255.36	-3460255.17	-3460254.97	0.0267	0.0006
Mercury	-14187-08-01 06:14 J	-3460166.38	-3460166.24	-3460166.08	0.0268	0.0170

Mars	-14187-09-09 10:04 J	-3460127.29	-3460127.08	-3460126.87	0.0268	0.0173
Venus	-14184-05-11 09:21 J	-3459152.22	-3459152.11	-3459151.99	0.0280	0.0233
Venus	-14184-12-27 03:07 J	-3458922.59	-3458922.37	-3458922.16	0.0283	0.0042
Venus	-14183-08-13 23:02 J	-3458692.71	-3458692.54	-3458692.35	0.0287	0.0161
Earth	-14177-06-10 00:28 J	-3456565.72	-3456565.48	-3456565.24	0.0305	0.0019
Moon	-14177-06-10 04:04 J	-3456565.58	-3456565.33	-3456565.09	0.0305	0.0008 *
Mercury	-14174-06-17 06:43 J	-3455463.29	-3455463.22	-3455463.15	0.0297	0.0243
Mercury	-14174-09-13 18:28 J	-3455374.85	-3455374.73	-3455374.61	0.0296	0.0089
Mercury	-14174-12-11 06:14 J	-3455286.37	-3455286.24	-3455286.12	0.0295	0.0064
Mercury	-14173-03-08 17:45 J	-3455197.84	-3455197.76	-3455197.67	0.0294	0.0216
Venus	-14171-08-03 09:35 J	-3454320.23	-3454320.10	-3454319.96	0.0282	0.0211
Venus	-14170-03-20 18:14 J	-3454090.95	-3454090.74	-3454090.53	0.0279	0.0026
Venus	-14170-11-05 00:14 J	-3453861.66	-3453861.49	-3453861.31	0.0276	0.0151
Earth	-14163-12-03 01:11 J	-3451276.63	-3451276.45	-3451276.27	0.0258	0.0176
Moon	-14163-12-03 04:48 J	-3451276.47	-3451276.30	-3451276.11	0.0258	0.0174 *
Mercury	-14158-06-24 08:38 J	-3449612.24	-3449612.14	-3449612.03	0.0266	0.0222
Mercury	-14158-09-21 07:11 J	-3449523.39	-3449523.20	-3449523.01	0.0267	0.0051
Mercury	-14158-12-19 05:31 J	-3449434.44	-3449434.27	-3449434.10	0.0268	0.0123
Venus	-14155-11-21 15:07 J	-3448366.01	-3448365.87	-3448365.72	0.0281	0.0206
Venus	-14154-07-09 08:52 J	-3448136.34	-3448136.13	-3448135.91	0.0284	0.0013
Venus	-14153-02-24 05:16 J	-3447906.43	-3447906.28	-3447906.11	0.0287	0.0190
Mercury	-14145-11-03 08:24 J	-3444731.16	-3444731.15	-3444731.12	0.0297	0.0292
Mercury	-14144-01-30 20:24 J	-3444642.76	-3444642.65	-3444642.54	0.0296	0.0137
Mercury	-14144-04-29 08:09 J	-3444554.29	-3444554.16	-3444554.03	0.0295	0.0017
Mercury	-14144-07-26 19:55 J	-3444465.78	-3444465.67	-3444465.57	0.0294	0.0168
Venus	-14141-02-13 13:26 J	-3443534.09	-3443533.94	-3443533.78	0.0282	0.0187
Venus	-14141-09-29 21:50 J	-3443304.80	-3443304.59	-3443304.38	0.0279	0.0005
Venus	-14140-05-17 03:35 J	-3443075.50	-3443075.35	-3443075.18	0.0276	0.0175
Moon	-14133-12-08 19:40 J	-3440312.88	-3440312.68	-3440312.47	0.0259	0.0140
Earth	-14133-12-08 20:52 J	-3440312.83	-3440312.63	-3440312.40	0.0259	0.0130 *

Mercury -14129-11-10 08:09 J -3438880.17 -3438880.16 -3438880.12 0.0266 0.0264

Mars -14129-12-18 12:00 J -3438842.08 -3438842.00 -3438841.89 0.0266 0.0248

Mercury -14128-02-07 06:43 J -3438791.40 -3438791.22 -3438791.03 0.0267 0.0093

Mercury -14128-05-07 05:16 J -3438702.46 -3438702.28 -3438702.09 0.0267 0.0081

Mercury -14128-08-04 03:35 J -3438613.40 -3438613.35 -3438613.28 0.0268 0.0255

Venus -14125-06-02 22:33 J -3437579.72 -3437579.56 -3437579.39 0.0281 0.0177

Venus -14124-01-18 16:48 J -3437350.02 -3437349.80 -3437349.59 0.0284 0.0017

Venus -14124-09-05 13:26 J -3437120.07 -3437119.94 -3437119.80 0.0287 0.0221

Moon -14118-06-12 11:02 J -3435014.27 -3435014.04 -3435013.80 0.0304 0.0104

Earth -14118-06-12 11:31 J -3435014.25 -3435014.02 -3435013.80 0.0304 0.0113 \*

Mercury -14115-06-19 22:48 J -3433910.65 -3433910.55 -3433910.44 0.0297 0.0178

Mercury -14115-09-16 10:48 J -3433822.18 -3433822.05 -3433821.92 0.0296 0.0024

Mercury -14115-12-13 22:33 J -3433733.68 -3433733.56 -3433733.45 0.0295 0.0129

Mercury -14114-03-12 10:04 J -3433645.11 -3433645.08 -3433645.04 0.0294 0.0279

Venus -14112-08-25 18:57 J -3432747.87 -3432747.71 -3432747.53 0.0281 0.0160

Venus -14111-04-12 03:07 J -3432518.58 -3432518.37 -3432518.16 0.0278 0.0025

Venus -14111-11-27 08:38 J -3432289.28 -3432289.14 -3432288.99 0.0275 0.0200

Earth -14104-12-04 07:11 J -3429725.42 -3429725.20 -3429724.96 0.0258 0.0109

Moon -14104-12-04 09:07 J -3429725.36 -3429725.12 -3429724.89 0.0258 0.0104 \*

Mercury -14099-06-27 06:28 J -3428059.39 -3428059.23 -3428059.05 0.0267 0.0134

Mercury -14099-09-24 05:02 J -3427970.48 -3427970.29 -3427970.10 0.0268 0.0039

Mercury -14099-12-22 03:35 J -3427881.46 -3427881.35 -3427881.23 0.0268 0.0214

Mars -14098-02-03 14:52 J -3427837.99 -3427837.88 -3427837.74 0.0269 0.0240

Venus -14096-12-14 06:14 J -3426793.42 -3426793.24 -3426793.05 0.0282 0.0147

Venus -14095-08-01 00:43 J -3426563.68 -3426563.47 -3426563.26 0.0285 0.0050

Venus -14094-03-18 21:50 J -3426333.69 -3426333.59 -3426333.49 0.0288 0.0254

Earth -14089-06-05 06:14 J -3424428.33 -3424428.24 -3424428.14 0.0304 0.0280

Moon -14089-06-05 06:57 J -3424428.27 -3424428.21 -3424428.14 0.0304 0.0290 \*

Mercury -14086-11-07 01:26 J -3423178.52 -3423178.44 -3423178.35 0.0296 0.0218

Mercury -14085-02-03 13:11 J -3423090.07 -3423089.95 -3423089.82 0.0295 0.0065

Mercury	-14085-05-02 00:57 J	-3423001.58	-3423001.46	-3423001.34	0.0294	0.0088
Mercury	-14085-07-29 12:28 J	-3422913.05	-3422912.98	-3422912.90	0.0293	0.0239
Venus	-14082-03-08 00:14 J	-3421961.67	-3421961.49	-3421961.30	0.0281	0.0133
Venus	-14082-10-23 08:09 J	-3421732.36	-3421732.16	-3421731.95	0.0278	0.0051
Venus	-14081-06-08 13:26 J	-3421503.05	-3421502.94	-3421502.81	0.0275	0.0225
Earth	-14074-12-11 04:19 J	-3418761.46	-3418761.32	-3418761.15	0.0259	0.0201
Moon	-14074-12-11 07:40 J	-3418761.31	-3418761.18	-3418761.04	0.0259	0.0213 *
Mercury	-14070-11-14 06:43 J	-3417327.36	-3417327.22	-3417327.07	0.0266	0.0172
Mercury	-14069-02-11 05:16 J	-3417238.48	-3417238.28	-3417238.09	0.0267	0.0002
Mercury	-14069-05-10 03:35 J	-3417149.49	-3417149.35	-3417149.20	0.0268	0.0174
Venus	-14066-06-26 14:52 J	-3416007.07	-3416006.88	-3416006.68	0.0282	0.0117
Venus	-14065-02-11 09:35 J	-3415777.30	-3415777.10	-3415776.89	0.0285	0.0081
Venus	-14065-09-28 06:57 J	-3415547.22	-3415547.21	-3415547.18	0.0288	0.0286
Moon	-14059-06-14 00:57 J	-3413462.63	-3413462.46	-3413462.29	0.0304	0.0215
Earth	-14059-06-14 04:19 J	-3413462.48	-3413462.32	-3413462.15	0.0304	0.0222 *
Mercury	-14056-03-26 04:19 J	-3412446.38	-3412446.32	-3412446.26	0.0297	0.0257
Mercury	-14056-06-22 16:04 J	-3412357.95	-3412357.83	-3412357.71	0.0296	0.0102
Mercury	-14056-09-19 03:50 J	-3412269.47	-3412269.34	-3412269.21	0.0295	0.0051
Mercury	-14056-12-16 15:21 J	-3412180.94	-3412180.86	-3412180.76	0.0294	0.0203
Venus	-14053-09-17 06:43 J	-3411175.41	-3411175.22	-3411175.02	0.0281	0.0105
Venus	-14052-05-04 14:09 J	-3410946.10	-3410945.91	-3410945.70	0.0278	0.0079
Venus	-14052-12-19 19:11 J	-3410716.77	-3410716.70	-3410716.61	0.0275	0.0251
Moon	-14045-12-05 13:26 J	-3408174.19	-3408173.94	-3408173.68	0.0258	0.0028
Earth	-14045-12-05 16:04 J	-3408174.07	-3408173.83	-3408173.58	0.0258	0.0036 *
Mercury	-14040-04-02 06:57 J	-3406595.32	-3406595.21	-3406595.08	0.0266	0.0210
Mars	-14040-05-15 00:14 J	-3406552.69	-3406552.49	-3406552.27	0.0267	0.0172
Mercury	-14040-06-30 05:31 J	-3406506.46	-3406506.27	-3406506.08	0.0267	0.0038
Mercury	-14040-09-27 04:04 J	-3406417.50	-3406417.33	-3406417.16	0.0268	0.0137
Venus	-14037-05-21 06:57 J	-3405450.24	-3405450.21	-3405450.15	0.0279	0.0274
Venus	-14036-01-05 23:31 J	-3405220.72	-3405220.52	-3405220.31	0.0283	0.0085

Venus	-14036-08-23 18:43 J	-3404990.91	-3404990.72	-3404990.52	0.0286	0.0116
Earth	-14030-06-08 01:40 J	-3402876.63	-3402876.43	-3402876.22	0.0304	0.0164
Moon	-14030-06-08 05:16 J	-3402876.47	-3402876.28	-3402876.09	0.0304	0.0175 *
Mercury	-14027-08-13 06:57 J	-3401714.22	-3401714.21	-3401714.18	0.0297	0.0293
Mercury	-14027-11-09 18:57 J	-3401625.82	-3401625.71	-3401625.60	0.0296	0.0138
Mercury	-14026-02-06 06:43 J	-3401537.35	-3401537.22	-3401537.09	0.0295	0.0015
Mercury	-14026-05-05 18:14 J	-3401448.84	-3401448.74	-3401448.63	0.0294	0.0167
Venus	-14024-08-13 03:21 J	-3400618.42	-3400618.36	-3400618.27	0.0283	0.0264
Venus	-14023-03-30 13:11 J	-3400389.15	-3400388.95	-3400388.75	0.0280	0.0076
Venus	-14023-11-14 20:24 J	-3400159.84	-3400159.65	-3400159.46	0.0277	0.0105
Mercury	-14011-08-20 07:11 J	-3395863.26	-3395863.20	-3395863.13	0.0266	0.0248
Mercury	-14011-11-17 05:45 J	-3395774.45	-3395774.26	-3395774.07	0.0267	0.0076
Mercury	-14010-02-14 04:19 J	-3395685.50	-3395685.32	-3395685.14	0.0268	0.0098
Venus	-14008-12-01 16:04 J	-3394663.93	-3394663.83	-3394663.72	0.0280	0.0243
Venus	-14007-07-19 08:52 J	-3394434.34	-3394434.13	-3394433.91	0.0283	0.0053
Venus	-14006-03-06 04:19 J	-3394204.50	-3394204.32	-3394204.13	0.0286	0.0148

# 14TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 14th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-13997-03-28 22:04 J	-3390893.68	-3390893.58	-3390893.47	0.0296	0.0171		
Mercury	-13997-06-25 09:50 J	-3390805.21	-3390805.09	-3390804.96	0.0295	0.0019		
Mercury	-13997-09-21 21:35 J	-3390716.71	-3390716.60	-3390716.48	0.0294	0.0135		



Mercury	-13997-12-19 09:21 J	-3390628.14	-3390628.11	-3390628.09	0.0293	0.0285
Venus	-13994-02-23 11:31 J	-3389832.12	-3389832.02	-3389831.89	0.0283	0.0233
Venus	-13994-10-10 20:52 J	-3389602.83	-3389602.63	-3389602.42	0.0280	0.0045
Venus	-13993-05-27 03:35 J	-3389373.53	-3389373.35	-3389373.17	0.0277	0.0135
Moon	-13986-12-07 23:02 J	-3386622.78	-3386622.54	-3386622.30	0.0259	0.0049
Earth	-13986-12-08 02:24 J	-3386622.65	-3386622.40	-3386622.16	0.0259	0.0042 *
Mercury	-13981-04-05 06:14 J	-3385042.41	-3385042.24	-3385042.06	0.0267	0.0111
Mercury	-13981-07-03 04:48 J	-3384953.48	-3384953.30	-3384953.11	0.0268	0.0063
Mercury	-13981-09-30 03:21 J	-3384864.44	-3384864.36	-3384864.27	0.0269	0.0238
Venus	-13978-06-14 01:11 J	-3383877.58	-3383877.45	-3383877.30	0.0280	0.0211
Venus	-13977-01-29 18:28 J	-3383647.94	-3383647.73	-3383647.51	0.0284	0.0019
Venus	-13977-09-15 14:24 J	-3383418.06	-3383417.90	-3383417.73	0.0287	0.0185
Earth	-13971-06-10 01:11 J	-3381324.69	-3381324.45	-3381324.21	0.0304	0.0038
Moon	-13971-06-10 03:50 J	-3381324.58	-3381324.34	-3381324.10	0.0304	0.0049 *
Mercury	-13968-08-16 01:11 J	-3380161.54	-3380161.45	-3380161.35	0.0296	0.0204
Mars	-13968-09-28 04:33 J	-3380118.38	-3380118.31	-3380118.20	0.0296	0.0283
Mercury	-13968-11-12 12:57 J	-3380073.08	-3380072.96	-3380072.83	0.0295	0.0051
Mercury	-13967-02-09 00:43 J	-3379984.59	-3379984.47	-3379984.35	0.0294	0.0101
Mercury	-13967-05-08 12:28 J	-3379896.05	-3379895.98	-3379895.92	0.0293	0.0251
Venus	-13965-09-04 18:43 J	-3379045.85	-3379045.72	-3379045.56	0.0282	0.0203
Venus	-13964-04-22 03:50 J	-3378816.55	-3378816.34	-3378816.13	0.0279	0.0017
Venus	-13964-12-07 10:04 J	-3378587.25	-3378587.08	-3378586.91	0.0276	0.0162
Earth	-13957-12-02 13:11 J	-3376035.10	-3376034.95	-3376034.78	0.0259	0.0198
Moon	-13957-12-02 16:48 J	-3376034.94	-3376034.80	-3376034.62	0.0259	0.0198 *
Mercury	-13952-08-23 06:28 J	-3374310.39	-3374310.23	-3374310.07	0.0267	0.0150
Mars	-13952-10-09 18:28 J	-3374262.99	-3374262.73	-3374262.47	0.0267	0.0089
Mercury	-13952-11-20 05:02 J	-3374221.48	-3374221.29	-3374221.10	0.0268	0.0024
Mercury	-13951-02-17 03:21 J	-3374132.48	-3374132.36	-3374132.22	0.0268	0.0199
Venus	-13949-12-24 10:04 J	-3373091.24	-3373091.08	-3373090.91	0.0281	0.0181
Venus	-13948-08-11 03:50 J	-3372861.56	-3372861.34	-3372861.13	0.0284	0.0013

Venus	-13947-03-29 00:00 J	-3372631.63	-3372631.50	-3372631.35	0.0287	0.0217
Mercury	-13938-01-03 04:33 J	-3369429.39	-3369429.31	-3369429.24	0.0297	0.0236
Mercury	-13938-04-01 16:19 J	-3369340.94	-3369340.82	-3369340.70	0.0296	0.0082
Mercury	-13938-06-29 04:04 J	-3369252.45	-3369252.33	-3369252.21	0.0295	0.0071
Mercury	-13938-09-25 15:35 J	-3369163.93	-3369163.85	-3369163.76	0.0294	0.0222
Venus	-13935-03-18 03:21 J	-3368259.52	-3368259.36	-3368259.19	0.0282	0.0171
Venus	-13935-11-02 11:45 J	-3368030.22	-3368030.01	-3368029.80	0.0279	0.0015
Venus	-13934-06-19 17:45 J	-3367800.91	-3367800.76	-3367800.61	0.0276	0.0192
Earth	-13927-12-09 12:43 J	-3365071.19	-3365070.97	-3365070.74	0.0259	0.0121
Moon	-13927-12-09 12:57 J	-3365071.17	-3365070.96	-3365070.76	0.0259	0.0129 *
Mercury	-13922-01-10 06:43 J	-3363578.34	-3363578.22	-3363578.07	0.0267	0.0186
Mercury	-13922-04-09 05:31 J	-3363489.46	-3363489.27	-3363489.07	0.0267	0.0012
Mercury	-13922-07-07 04:04 J	-3363400.48	-3363400.33	-3363400.18	0.0268	0.0162
Venus	-13919-07-06 18:57 J	-3362304.88	-3362304.71	-3362304.52	0.0282	0.0149
Venus	-13918-02-21 13:11 J	-3362075.16	-3362074.95	-3362074.74	0.0285	0.0049
Venus	-13918-10-09 10:04 J	-3361845.18	-3361845.08	-3361844.98	0.0288	0.0254
Moon	-13912-06-11 23:31 J	-3359772.75	-3359772.52	-3359772.27	0.0304	0.0081
Earth	-13912-06-12 01:26 J	-3359772.67	-3359772.44	-3359772.21	0.0304	0.0091 *
Mercury	-13909-05-22 07:40 J	-3358697.23	-3358697.18	-3358697.12	0.0297	0.0268
Mercury	-13909-08-18 19:40 J	-3358608.80	-3358608.68	-3358608.56	0.0296	0.0113
Mercury	-13909-11-15 07:26 J	-3358520.32	-3358520.19	-3358520.07	0.0294	0.0040
Mercury	-13908-02-11 18:57 J	-3358431.80	-3358431.71	-3358431.61	0.0293	0.0190
Venus	-13906-09-28 11:16 J	-3357473.21	-3357473.03	-3357472.85	0.0281	0.0140
Venus	-13905-05-14 18:57 J	-3357243.91	-3357243.71	-3357243.50	0.0278	0.0045
Venus	-13905-12-30 00:43 J	-3357014.60	-3357014.47	-3357014.35	0.0275	0.0219
Earth	-13898-12-04 23:45 J	-3354483.73	-3354483.51	-3354483.29	0.0259	0.0119
Moon	-13898-12-05 00:14 J	-3354483.72	-3354483.49	-3354483.25	0.0259	0.0116 *
Mercury	-13893-05-29 06:57 J	-3352846.31	-3352846.21	-3352846.11	0.0266	0.0226
Mercury	-13893-08-26 05:16 J	-3352757.47	-3352757.28	-3352757.09	0.0267	0.0054
Mercury	-13893-11-23 03:50 J	-3352668.51	-3352668.34	-3352668.16	0.0268	0.0121

Venus	-13889-01-17 03:21 J	-3351518.55	-3351518.36	-3351518.16	0.0282	0.0119
Venus	-13889-09-02 22:04 J	-3351288.79	-3351288.58	-3351288.37	0.0285	0.0079
Venus	-13888-04-20 19:11 J	-3351058.72	-3351058.70	-3351058.67	0.0288	0.0285
Earth	-13883-06-05 23:31 J	-3349186.57	-3349186.52	-3349186.44	0.0304	0.0291
Moon	-13883-06-06 02:09 J	-3349186.43	-3349186.41	-3349186.38	0.0304	0.0301
Mercury	-13879-01-05 22:48 J	-3347876.66	-3347876.55	-3347876.44	0.0296	0.0146
Mars	-13879-02-23 22:48 J	-3347827.82	-3347827.55	-3347827.26	0.0296	0.0136
Mercury	-13879-04-04 10:33 J	-3347788.19	-3347788.06	-3347787.93	0.0295	0.0009
Mercury	-13879-07-01 22:19 J	-3347699.68	-3347699.57	-3347699.46	0.0294	0.0159
Venus	-13876-04-09 19:11 J	-3346686.89	-3346686.70	-3346686.50	0.0281	0.0108
Venus	-13876-11-25 02:52 J	-3346457.58	-3346457.38	-3346457.18	0.0278	0.0076
Venus	-13875-07-12 07:55 J	-3346228.25	-3346228.17	-3346228.08	0.0275	0.0250
Earth	-13868-12-10 22:33 J	-3343519.71	-3343519.56	-3343519.39	0.0259	0.0199
Moon	-13868-12-11 02:24 J	-3343519.55	-3343519.40	-3343519.26	0.0259	0.0209 *
Mercury	-13864-10-16 07:11 J	-3342114.23	-3342114.20	-3342114.17	0.0266	0.0262
Mercury	-13863-01-13 05:31 J	-3342025.45	-3342025.27	-3342025.08	0.0267	0.0091
Mars	-13863-03-06 09:07 J	-3341973.39	-3341973.12	-3341972.84	0.0268	0.0005
Mercury	-13863-04-12 04:04 J	-3341936.51	-3341936.33	-3341936.14	0.0268	0.0084
Mercury	-13863-07-10 02:38 J	-3341847.43	-3341847.39	-3341847.33	0.0269	0.0259
Venus	-13861-12-11 19:40 J	-3340961.70	-3340961.68	-3340961.64	0.0279	0.0276
Venus	-13860-07-29 12:00 J	-3340732.20	-3340732.00	-3340731.79	0.0282	0.0086
Venus	-13859-03-16 06:57 J	-3340502.40	-3340502.21	-3340502.01	0.0286	0.0114
Moon	-13853-06-13 19:40 J	-3338220.85	-3338220.68	-3338220.50	0.0304	0.0207
Earth	-13853-06-13 23:31 J	-3338220.69	-3338220.52	-3338220.35	0.0304	0.0215 *
Mercury	-13850-05-26 01:55 J	-3337144.52	-3337144.42	-3337144.32	0.0296	0.0179
Mercury	-13850-08-22 13:40 J	-3337056.06	-3337055.93	-3337055.80	0.0295	0.0026
Mercury	-13850-11-19 01:26 J	-3336967.56	-3336967.44	-3336967.33	0.0294	0.0126
Mercury	-13849-02-15 12:57 J	-3336879.00	-3336878.96	-3336878.92	0.0293	0.0275
Venus	-13847-03-05 16:48 J	-3336129.86	-3336129.80	-3336129.72	0.0283	0.0267
Venus	-13847-10-21 02:38 J	-3335900.59	-3335900.39	-3335900.19	0.0280	0.0078

Venus	-13846-06-07 09:35 J	-3335671.29	-3335671.10	-3335670.90	0.0277	0.0104
Moon	-13839-12-06 05:02 J	-3332932.54	-3332932.29	-3332932.04	0.0259	0.0036
Earth	-13839-12-06 08:52 J	-3332932.38	-3332932.13	-3332931.89	0.0259	0.0043 *
Mercury	-13834-06-02 04:48 J	-3331293.46	-3331293.30	-3331293.13	0.0267	0.0136
Mercury	-13834-08-30 03:21 J	-3331204.55	-3331204.36	-3331204.17	0.0268	0.0038
Mercury	-13834-11-27 01:55 J	-3331115.53	-3331115.42	-3331115.30	0.0269	0.0213
Venus	-13831-06-24 02:09 J	-3330175.50	-3330175.41	-3330175.31	0.0280	0.0250
Venus	-13830-02-08 18:57 J	-3329945.92	-3329945.71	-3329945.50	0.0283	0.0058
Venus	-13830-09-26 14:24 J	-3329716.09	-3329715.90	-3329715.71	0.0286	0.0143
Earth	-13824-06-07 19:40 J	-3327634.87	-3327634.68	-3327634.47	0.0304	0.0171
Moon	-13824-06-07 23:16 J	-3327634.72	-3327634.53	-3327634.33	0.0304	0.0180 *
Mercury	-13821-10-12 04:48 J	-3326412.38	-3326412.30	-3326412.21	0.0297	0.0214
Mercury	-13820-01-08 16:48 J	-3326323.93	-3326323.80	-3326323.68	0.0296	0.0060
Mercury	-13820-04-07 04:33 J	-3326235.43	-3326235.31	-3326235.19	0.0295	0.0093
Mercury	-13820-07-04 16:04 J	-3326146.90	-3326146.83	-3326146.76	0.0294	0.0244
Venus	-13818-09-16 00:43 J	-3325343.57	-3325343.47	-3325343.34	0.0283	0.0235
Venus	-13817-05-02 10:19 J	-3325114.28	-3325114.07	-3325113.87	0.0280	0.0046
Venus	-13817-12-17 17:02 J	-3324884.97	-3324884.79	-3324884.61	0.0277	0.0134
Mercury	-13805-10-19 04:48 J	-3320561.45	-3320561.30	-3320561.16	0.0266	0.0176
Mercury	-13804-01-16 03:07 J	-3320472.56	-3320472.37	-3320472.17	0.0267	0.0007
Mercury	-13804-04-15 01:40 J	-3320383.57	-3320383.43	-3320383.28	0.0268	0.0171
Venus	-13801-01-04 09:21 J	-3319389.24	-3319389.11	-3319388.97	0.0280	0.0220
Venus	-13801-08-21 02:24 J	-3319159.61	-3319159.40	-3319159.18	0.0283	0.0027
Venus	-13800-04-07 22:04 J	-3318929.74	-3318929.58	-3318929.40	0.0287	0.0177
Mercury	-13791-03-01 07:40 J	-3315680.24	-3315680.18	-3315680.11	0.0297	0.0251
Mercury	-13791-05-28 19:40 J	-3315591.80	-3315591.68	-3315591.56	0.0296	0.0096
Mars	-13791-07-22 06:00 J	-3315537.57	-3315537.25	-3315536.94	0.0295	0.0007
Mercury	-13791-08-25 07:26 J	-3315503.32	-3315503.19	-3315503.07	0.0295	0.0057
Mercury	-13791-11-21 18:57 J	-3315414.80	-3315414.71	-3315414.62	0.0294	0.0208
Venus	-13788-03-28 07:40 J	-3314557.32	-3314557.18	-3314557.03	0.0282	0.0205

Venus	-13788-11-12 16:33 J	-3314328.02	-3314327.81	-3314327.60	0.0279	0.0019
Venus	-13787-06-29 22:48 J	-3314098.71	-3314098.55	-3314098.37	0.0276	0.0161
Moon	-13780-12-07 13:26 J	-3311381.17	-3311380.94	-3311380.70	0.0259	0.0039
Earth	-13780-12-07 15:35 J	-3311381.09	-3311380.85	-3311380.60	0.0259	0.0030 *
Mercury	-13775-03-08 03:21 J	-3309829.46	-3309829.36	-3309829.25	0.0266	0.0224
Mercury	-13775-06-05 01:55 J	-3309740.61	-3309740.42	-3309740.23	0.0267	0.0052
Mars	-13775-07-31 11:45 J	-3309684.27	-3309684.01	-3309683.74	0.0268	0.0058
Mercury	-13775-09-02 00:14 J	-3309651.65	-3309651.49	-3309651.31	0.0268	0.0122
Venus	-13772-07-16 14:52 J	-3308603.03	-3308602.88	-3308602.72	0.0280	0.0194
Venus	-13771-03-03 08:24 J	-3308373.37	-3308373.15	-3308372.94	0.0283	0.0004
Venus	-13771-10-19 04:19 J	-3308143.46	-3308143.32	-3308143.16	0.0287	0.0204
Earth	-13765-06-09 11:31 J	-3306083.26	-3306083.02	-3306082.78	0.0304	0.0062
Moon	-13765-06-09 11:45 J	-3306083.25	-3306083.01	-3306082.76	0.0304	0.0070 *
Mercury	-13762-07-19 10:19 J	-3304948.09	-3304948.07	-3304948.04	0.0297	0.0291
Mercury	-13762-10-15 22:19 J	-3304859.69	-3304859.57	-3304859.46	0.0296	0.0135
Mercury	-13761-01-12 10:04 J	-3304771.21	-3304771.08	-3304770.95	0.0295	0.0019
Mercury	-13761-04-09 21:50 J	-3304682.70	-3304682.59	-3304682.49	0.0294	0.0170
Venus	-13759-10-08 14:24 J	-3303771.06	-3303770.90	-3303770.74	0.0282	0.0175
Venus	-13758-05-25 23:02 J	-3303541.75	-3303541.54	-3303541.33	0.0279	0.0012
Venus	-13757-01-10 05:02 J	-3303312.44	-3303312.29	-3303312.14	0.0276	0.0190
Earth	-13751-12-03 01:55 J	-3300793.56	-3300793.42	-3300793.26	0.0258	0.0206
Moon	-13751-12-03 04:33 J	-3300793.46	-3300793.31	-3300793.15	0.0258	0.0204 *
Mercury	-13746-10-23 00:57 J	-3299008.64	-3299008.46	-3299008.27	0.0267	0.0098
Mercury	-13745-01-19 23:31 J	-3298919.70	-3298919.52	-3298919.33	0.0267	0.0075
Mercury	-13745-04-17 21:50 J	-3298830.64	-3298830.59	-3298830.51	0.0268	0.0251
Venus	-13742-01-26 20:09 J	-3297816.82	-3297816.66	-3297816.48	0.0281	0.0167
Venus	-13742-09-13 13:55 J	-3297587.13	-3297586.92	-3297586.70	0.0284	0.0029
Venus	-13741-04-30 10:19 J	-3297357.19	-3297357.07	-3297356.94	0.0287	0.0234
Mercury	-13732-03-04 00:43 J	-3294127.57	-3294127.47	-3294127.37	0.0297	0.0177
Mercury	-13732-05-31 12:28 J	-3294039.11	-3294038.98	-3294038.85	0.0296	0.0023

Mercury	-13732-08-28 00:14 J	-3293950.60	-3293950.49	-3293950.37	0.0294	0.0129
Mercury	-13732-11-24 11:45 J	-3293862.04	-3293862.01	-3293861.97	0.0293	0.0280
Venus	-13729-04-19 19:55 J	-3292984.84	-3292984.67	-3292984.49	0.0281	0.0148
Venus	-13729-12-05 04:19 J	-3292755.53	-3292755.32	-3292755.12	0.0278	0.0038
Venus	-13728-07-22 09:50 J	-3292526.21	-3292526.09	-3292525.95	0.0275	0.0215
Earth	-13721-12-08 19:55 J	-3289829.90	-3289829.67	-3289829.44	0.0258	0.0097
Moon	-13721-12-08 22:04 J	-3289829.79	-3289829.58	-3289829.35	0.0258	0.0109 *
Mercury	-13716-03-10 23:16 J	-3288276.69	-3288276.53	-3288276.37	0.0266	0.0151
Mercury	-13716-06-07 21:35 J	-3288187.79	-3288187.60	-3288187.40	0.0267	0.0022
Mercury	-13716-09-04 19:55 J	-3288098.79	-3288098.67	-3288098.53	0.0268	0.0196
Venus	-13713-08-08 00:14 J	-3287030.67	-3287030.49	-3287030.30	0.0281	0.0143
Venus	-13712-03-25 18:14 J	-3286800.95	-3286800.74	-3286800.52	0.0284	0.0054
Venus	-13712-11-10 14:52 J	-3286570.96	-3286570.88	-3286570.78	0.0287	0.0259
Moon	-13706-06-11 17:45 J	-3284532.00	-3284531.76	-3284531.51	0.0304	0.0026
Earth	-13706-06-11 21:07 J	-3284531.86	-3284531.62	-3284531.38	0.0304	0.0032 *
Mercury	-13703-07-22 02:52 J	-3283395.46	-3283395.38	-3283395.29	0.0297	0.0221
Mercury	-13703-10-18 14:52 J	-3283307.01	-3283306.88	-3283306.76	0.0296	0.0067
Mars	-13703-12-16 11:02 J	-3283248.33	-3283248.04	-3283247.73	0.0296	0.0091
Mercury	-13702-01-15 02:38 J	-3283218.52	-3283218.39	-3283218.27	0.0295	0.0088
Mercury	-13702-04-13 14:09 J	-3283129.98	-3283129.91	-3283129.83	0.0294	0.0239
Venus	-13700-10-31 01:11 J	-3282198.63	-3282198.45	-3282198.25	0.0281	0.0119
Venus	-13699-06-17 09:35 J	-3281969.31	-3281969.10	-3281968.90	0.0278	0.0066
Venus	-13698-02-01 15:07 J	-3281739.97	-3281739.87	-3281739.77	0.0275	0.0242
Moon	-13692-12-04 03:21 J	-3279242.57	-3279242.36	-3279242.14	0.0258	0.0137
Earth	-13692-12-04 05:02 J	-3279242.49	-3279242.29	-3279242.08	0.0258	0.0143 *
Mercury	-13687-07-28 21:50 J	-3277544.71	-3277544.59	-3277544.46	0.0266	0.0198
Mercury	-13687-10-25 20:24 J	-3277455.84	-3277455.65	-3277455.46	0.0267	0.0027
Mars	-13687-12-25 03:50 J	-3277395.58	-3277395.34	-3277395.08	0.0267	0.0109
Mercury	-13686-01-22 18:43 J	-3277366.88	-3277366.72	-3277366.55	0.0267	0.0146
Venus	-13683-02-18 04:48 J	-3276244.49	-3276244.30	-3276244.10	0.0281	0.0117

Venus	-13683-10-05 23:02 J	-3276014.74	-3276014.54	-3276014.33	0.0285	0.0082
Mercury	-13674-12-09 04:48 J	-3272663.35	-3272663.30	-3272663.24	0.0298	0.0269
Mercury	-13673-03-06 16:48 J	-3272574.92	-3272574.80	-3272574.68	0.0297	0.0114
Mercury	-13673-06-03 04:33 J	-3272486.44	-3272486.31	-3272486.18	0.0295	0.0040
Mercury	-13673-08-30 16:19 J	-3272397.92	-3272397.82	-3272397.72	0.0294	0.0192
Venus	-13670-05-13 05:16 J	-3271412.47	-3271412.28	-3271412.08	0.0281	0.0095
Venus	-13670-12-28 13:11 J	-3271183.15	-3271182.95	-3271182.75	0.0278	0.0089
Venus	-13669-08-13 18:14 J	-3270953.78	-3270953.74	-3270953.67	0.0275	0.0264
Earth	-13662-12-10 21:07 J	-3268278.81	-3268278.62	-3268278.41	0.0258	0.0157
Moon	-13662-12-11 00:28 J	-3268278.66	-3268278.48	-3268278.28	0.0258	0.0169 *
Mercury	-13658-12-15 19:40 J	-3266812.73	-3266812.68	-3266812.63	0.0266	0.0255
Mercury	-13657-03-13 18:00 J	-3266723.94	-3266723.75	-3266723.57	0.0266	0.0085
Mercury	-13657-06-10 16:19 J	-3266635.00	-3266634.82	-3266634.64	0.0267	0.0088
Mercury	-13657-09-07 14:52 J	-3266545.92	-3266545.88	-3266545.84	0.0268	0.0262
Venus	-13654-08-31 07:11 J	-3265458.40	-3265458.20	-3265457.99	0.0282	0.0095
Venus	-13653-04-17 01:40 J	-3265228.63	-3265228.43	-3265228.23	0.0285	0.0104
Moon	-13647-06-12 21:21 J	-3262980.83	-3262980.61	-3262980.39	0.0304	0.0103
Earth	-13647-06-12 23:45 J	-3262980.73	-3262980.51	-3262980.28	0.0304	0.0109 *
Mercury	-13644-07-24 18:28 J	-3261842.84	-3261842.73	-3261842.62	0.0297	0.0164
Mercury	-13644-10-21 06:14 J	-3261754.36	-3261754.24	-3261754.11	0.0296	0.0012
Mercury	-13643-01-17 18:00 J	-3261665.86	-3261665.75	-3261665.63	0.0295	0.0144
Venus	-13641-04-06 22:33 J	-3260855.63	-3260855.56	-3260855.47	0.0284	0.0260
Venus	-13641-11-22 09:07 J	-3260626.32	-3260626.12	-3260625.91	0.0281	0.0068
Venus	-13640-07-09 17:02 J	-3260396.98	-3260396.79	-3260396.60	0.0278	0.0116
Moon	-13633-12-05 01:40 J	-3257691.66	-3257691.43	-3257691.19	0.0258	0.0078
Earth	-13633-12-05 05:16 J	-3257691.51	-3257691.28	-3257691.04	0.0258	0.0085 *
Mercury	-13628-07-31 16:04 J	-3255991.99	-3255991.83	-3255991.66	0.0266	0.0136
Mercury	-13628-10-28 14:24 J	-3255903.09	-3255902.90	-3255902.71	0.0266	0.0035
Mercury	-13627-01-25 12:57 J	-3255814.08	-3255813.96	-3255813.84	0.0267	0.0208
Venus	-13625-07-25 18:43 J	-3254901.78	-3254901.72	-3254901.63	0.0279	0.0260

Venus	-13624-03-12 10:33 J	-3254672.26	-3254672.06	-3254671.85	0.0282	0.0070
Venus	-13624-10-28 05:02 J	-3254442.48	-3254442.29	-3254442.10	0.0285	0.0130
Mercury	-13615-12-11 20:09 J	-3251110.75	-3251110.66	-3251110.58	0.0298	0.0217
Mercury	-13614-03-10 07:55 J	-3251022.29	-3251022.17	-3251022.04	0.0297	0.0061
Mars	-13614-05-11 11:45 J	-3250960.27	-3250960.01	-3250959.71	0.0296	0.0135
Mercury	-13614-06-06 19:40 J	-3250933.80	-3250933.68	-3250933.55	0.0296	0.0093
Mercury	-13614-09-03 07:26 J	-3250845.26	-3250845.19	-3250845.12	0.0294	0.0245
Venus	-13612-10-18 01:40 J	-3250069.54	-3250069.43	-3250069.31	0.0284	0.0237
Venus	-13611-06-04 12:00 J	-3249840.20	-3249840.00	-3249839.79	0.0280	0.0046
Venus	-13610-01-19 19:26 J	-3249610.87	-3249610.69	-3249610.51	0.0277	0.0137
Moon	-13603-12-11 19:11 J	-3246727.82	-3246727.70	-3246727.57	0.0258	0.0223
Earth	-13603-12-11 19:40 J	-3246727.81	-3246727.68	-3246727.53	0.0258	0.0211 *
Mercury	-13599-12-18 13:11 J	-3245260.07	-3245259.95	-3245259.81	0.0265	0.0196
Mercury	-13598-03-17 11:31 J	-3245171.21	-3245171.02	-3245170.82	0.0266	0.0026
Mars	-13598-05-20 05:16 J	-3245107.51	-3245107.28	-3245107.04	0.0267	0.0135
Mercury	-13598-06-14 09:50 J	-3245082.25	-3245082.09	-3245081.92	0.0267	0.0147
Venus	-13595-02-04 20:09 J	-3244115.76	-3244115.66	-3244115.54	0.0279	0.0240
Venus	-13595-09-22 12:00 J	-3243886.20	-3243886.00	-3243885.78	0.0282	0.0050
Venus	-13594-05-10 06:43 J	-3243656.39	-3243656.22	-3243656.03	0.0285	0.0151
Earth	-13588-06-13 22:33 J	-3241429.76	-3241429.56	-3241429.36	0.0305	0.0174
Moon	-13588-06-14 00:28 J	-3241429.67	-3241429.48	-3241429.29	0.0305	0.0174 *
Mercury	-13585-04-29 21:21 J	-3240378.66	-3240378.61	-3240378.56	0.0298	0.0272
Mercury	-13585-07-27 09:21 J	-3240290.23	-3240290.11	-3240289.99	0.0297	0.0116
Mercury	-13585-10-23 21:07 J	-3240201.74	-3240201.62	-3240201.49	0.0296	0.0040
Mercury	-13584-01-20 08:52 J	-3240113.22	-3240113.13	-3240113.03	0.0295	0.0192
Venus	-13582-04-30 04:19 J	-3239283.45	-3239283.32	-3239283.18	0.0284	0.0213
Venus	-13582-12-15 14:38 J	-3239054.10	-3239053.89	-3239053.68	0.0281	0.0022
Venus	-13581-07-31 21:50 J	-3238824.75	-3238824.59	-3238824.41	0.0277	0.0162
Moon	-13574-12-07 02:38 J	-3236140.63	-3236140.39	-3236140.15	0.0257	0.0024
Earth	-13574-12-07 02:52 J	-3236140.63	-3236140.38	-3236140.13	0.0257	0.0034 *



Mercury	-13569-05-06 11:16 J	-3234528.09	-3234528.03	-3234527.97	0.0265	0.0249
Mercury	-13569-08-03 09:21 J	-3234439.29	-3234439.11	-3234438.92	0.0265	0.0081
Mercury	-13569-10-31 07:40 J	-3234350.36	-3234350.18	-3234349.99	0.0266	0.0091
Mercury	-13568-01-28 06:14 J	-3234261.27	-3234261.24	-3234261.21	0.0267	0.0263
Venus	-13566-08-17 22:48 J	-3233329.68	-3233329.55	-3233329.41	0.0279	0.0217
Venus	-13565-04-03 14:38 J	-3233100.10	-3233099.89	-3233099.67	0.0282	0.0027
Venus	-13565-11-19 09:21 J	-3232870.27	-3232870.11	-3232869.94	0.0285	0.0175
Moon	-13559-06-07 03:21 J	-3230844.49	-3230844.36	-3230844.21	0.0305	0.0250
Earth	-13559-06-07 06:28 J	-3230844.35	-3230844.23	-3230844.09	0.0305	0.0253 *
Mercury	-13556-12-14 10:33 J	-3229558.16	-3229558.06	-3229557.96	0.0298	0.0174
Mercury	-13555-03-12 22:19 J	-3229469.69	-3229469.57	-3229469.44	0.0297	0.0019
Mercury	-13555-06-09 10:04 J	-3229381.19	-3229381.08	-3229380.96	0.0296	0.0137
Mercury	-13555-09-05 21:50 J	-3229292.61	-3229292.59	-3229292.56	0.0294	0.0288
Venus	-13553-11-09 05:45 J	-3228497.40	-3228497.26	-3228497.10	0.0283	0.0192
Venus	-13552-06-26 16:04 J	-3228268.04	-3228267.83	-3228267.62	0.0280	0.0002
Venus	-13551-02-10 23:16 J	-3228038.69	-3228038.53	-3228038.37	0.0277	0.0180
Mercury	-13540-12-21 06:14 J	-3223707.39	-3223707.24	-3223707.07	0.0265	0.0143
Mercury	-13539-03-20 04:33 J	-3223618.50	-3223618.31	-3223618.11	0.0266	0.0029
Mercury	-13539-06-17 02:52 J	-3223529.50	-3223529.38	-3223529.25	0.0267	0.0200
Venus	-13536-02-26 23:16 J	-3222543.67	-3222543.53	-3222543.37	0.0279	0.0198
Venus	-13536-10-14 15:21 J	-3222314.07	-3222313.86	-3222313.64	0.0282	0.0006
Venus	-13535-06-01 10:04 J	-3222084.23	-3222084.08	-3222083.92	0.0285	0.0195
Earth	-13529-06-14 16:19 J	-3219878.97	-3219878.82	-3219878.65	0.0305	0.0226
Moon	-13529-06-14 19:55 J	-3219878.82	-3219878.67	-3219878.51	0.0305	0.0231 *
Mercury	-13526-05-03 11:31 J	-3218826.10	-3218826.02	-3218825.94	0.0298	0.0233
Mercury	-13526-07-30 23:31 J	-3218737.65	-3218737.52	-3218737.40	0.0297	0.0077
Mars	-13526-10-03 10:48 J	-3218673.33	-3218673.05	-3218672.78	0.0296	0.0142
Mercury	-13526-10-27 11:16 J	-3218649.15	-3218649.03	-3218648.91	0.0296	0.0079
Mercury	-13525-01-23 23:02 J	-3218560.62	-3218560.54	-3218560.46	0.0295	0.0232
Venus	-13523-05-22 07:26 J	-3217711.35	-3217711.19	-3217711.01	0.0284	0.0170

Venus	-13522-01-06 17:31 J	-3217481.97	-3217481.77	-3217481.56	0.0280	0.0022
Venus	-13522-08-24 00:43 J	-3217252.60	-3217252.47	-3217252.32	0.0277	0.0203
Earth	-13515-12-07 22:33 J	-3214589.81	-3214589.56	-3214589.31	0.0257	0.0014
Moon	-13515-12-08 02:09 J	-3214589.65	-3214589.41	-3214589.16	0.0257	0.0027 *
Mercury	-13510-05-10 03:50 J	-3212975.45	-3212975.34	-3212975.20	0.0264	0.0198
Mercury	-13510-08-07 02:24 J	-3212886.60	-3212886.40	-3212886.21	0.0265	0.0028
Mars	-13510-10-13 03:35 J	-3212819.57	-3212819.35	-3212819.12	0.0266	0.0156
Mercury	-13510-11-04 00:28 J	-3212797.64	-3212797.48	-3212797.31	0.0266	0.0143
Venus	-13507-09-09 01:26 J	-3211757.60	-3211757.44	-3211757.27	0.0279	0.0176
Venus	-13506-04-26 17:31 J	-3211527.98	-3211527.77	-3211527.55	0.0282	0.0017
Venus	-13506-12-12 12:43 J	-3211298.11	-3211297.97	-3211297.83	0.0285	0.0219
Moon	-13500-06-07 21:21 J	-3209293.79	-3209293.61	-3209293.42	0.0305	0.0194
Earth	-13500-06-08 00:00 J	-3209293.68	-3209293.50	-3209293.32	0.0305	0.0201 *
Mercury	-13497-09-19 12:28 J	-3208094.00	-3208093.98	-3208093.95	0.0299	0.0293
Mercury	-13497-12-17 00:28 J	-3208005.59	-3208005.48	-3208005.36	0.0298	0.0135
Mercury	-13496-03-15 12:28 J	-3207917.11	-3207916.98	-3207916.85	0.0297	0.0021
Mercury	-13496-06-12 00:14 J	-3207828.59	-3207828.49	-3207828.39	0.0296	0.0175
Venus	-13494-12-02 08:38 J	-3206925.32	-3206925.14	-3206924.96	0.0283	0.0150
Venus	-13493-07-18 18:28 J	-3206695.93	-3206695.73	-3206695.52	0.0280	0.0041
Venus	-13492-03-05 01:26 J	-3206466.56	-3206466.44	-3206466.31	0.0277	0.0221
Moon	-13486-12-02 23:16 J	-3204002.63	-3204002.53	-3204002.39	0.0257	0.0226
Earth	-13486-12-03 03:21 J	-3204002.45	-3204002.36	-3204002.26	0.0257	0.0237 *
Mercury	-13481-09-26 00:57 J	-3202243.49	-3202243.46	-3202243.42	0.0264	0.0259
Mercury	-13481-12-23 23:16 J	-3202154.71	-3202154.53	-3202154.35	0.0265	0.0090
Mercury	-13480-03-22 21:21 J	-3202065.79	-3202065.61	-3202065.42	0.0266	0.0080
Mercury	-13480-06-19 19:26 J	-3201976.74	-3201976.69	-3201976.61	0.0267	0.0252
Venus	-13477-03-21 02:09 J	-3200971.58	-3200971.41	-3200971.23	0.0279	0.0157
Venus	-13477-11-05 18:14 J	-3200741.95	-3200741.74	-3200741.52	0.0282	0.0037
Venus	-13476-06-23 13:11 J	-3200512.06	-3200511.95	-3200511.82	0.0286	0.0239
Moon	-13470-06-16 07:26 J	-3198328.26	-3198328.19	-3198328.09	0.0305	0.0286

Earth -13470-06-16 08:52 J -3198328.23 -3198328.13 -3198328.03 0.0305 0.0275 \*  
 Mercury -13467-05-06 01:11 J -3197273.54 -3197273.45 -3197273.35 0.0298 0.0198  
 Mercury -13467-08-02 13:11 J -3197185.07 -3197184.95 -3197184.82 0.0297 0.0041  
 Mercury -13467-10-30 01:11 J -3197096.57 -3197096.45 -3197096.34 0.0296 0.0114  
 Mercury -13466-01-26 12:43 J -3197008.01 -3197007.97 -3197007.91 0.0295 0.0268  
 Venus -13464-06-13 09:21 J -3196139.29 -3196139.11 -3196138.92 0.0283 0.0129  
 Venus -13463-01-28 19:11 J -3195909.90 -3195909.70 -3195909.49 0.0280 0.0062  
 Venus -13463-09-15 01:55 J -3195680.50 -3195680.42 -3195680.31 0.0277 0.0244  
 Earth -13456-12-08 17:16 J -3193039.02 -3193038.78 -3193038.53 0.0257 0.0059  
 Moon -13456-12-08 18:43 J -3193038.96 -3193038.72 -3193038.47 0.0257 0.0073 \*  
 Mercury -13451-05-12 20:52 J -3191422.79 -3191422.63 -3191422.46 0.0264 0.0146  
 Mercury -13451-08-09 19:11 J -3191333.89 -3191333.70 -3191333.51 0.0265 0.0023  
 Mercury -13451-11-06 17:16 J -3191244.91 -3191244.78 -3191244.64 0.0266 0.0194  
 Venus -13448-10-01 04:19 J -3190185.51 -3190185.32 -3190185.13 0.0279 0.0135  
 Venus -13447-05-18 20:24 J -3189955.86 -3189955.65 -3189955.43 0.0282 0.0059  
 Venus -13446-01-03 15:35 J -3189725.92 -3189725.85 -3189725.76 0.0286 0.0262  
 Earth -13441-06-08 15:50 J -3187743.05 -3187742.84 -3187742.63 0.0305 0.0154  
 Moon -13441-06-08 18:00 J -3187742.95 -3187742.75 -3187742.54 0.0305 0.0142 \*  
 Mercury -13438-09-23 02:24 J -3186541.46 -3186541.40 -3186541.34 0.0299 0.0258  
 Mercury -13438-12-20 14:24 J -3186453.02 -3186452.90 -3186452.78 0.0298 0.0101  
 Mars -13437-02-25 00:14 J -3186386.77 -3186386.49 -3186386.20 0.0297 0.0126  
 Mercury -13437-03-18 02:09 J -3186364.53 -3186364.41 -3186364.28 0.0297 0.0056  
 Mercury -13437-06-14 13:55 J -3186276.00 -3186275.92 -3186275.83 0.0296 0.0210  
 Venus -13435-12-24 10:19 J -3185353.26 -3185353.07 -3185352.88 0.0283 0.0109  
 Venus -13434-08-10 19:55 J -3185123.87 -3185123.67 -3185123.47 0.0280 0.0081  
 Venus -13433-03-27 02:52 J -3184894.45 -3184894.38 -3184894.31 0.0277 0.0260  
 Moon -13427-12-03 20:52 J -3182451.80 -3182451.63 -3182451.46 0.0257 0.0180  
 Earth -13427-12-03 21:50 J -3182451.74 -3182451.59 -3182451.41 0.0257 0.0193 \*  
 Mercury -13422-09-29 18:00 J -3180690.87 -3180690.75 -3180690.63 0.0264 0.0207  
 Mercury -13422-12-27 16:04 J -3180602.02 -3180601.83 -3180601.63 0.0265 0.0039

Mars	-13421-03-06 20:52 J	-3180531.83	-3180531.63	-3180531.41	0.0266	0.0169
Mercury	-13421-03-25 14:09 J	-3180513.07	-3180512.91	-3180512.73	0.0266	0.0132
Venus	-13418-04-13 05:02 J	-3179399.48	-3179399.29	-3179399.09	0.0279	0.0116
Venus	-13418-11-28 21:35 J	-3179169.80	-3179169.60	-3179169.39	0.0283	0.0080
Venus	-13417-07-15 16:48 J	-3178939.82	-3178939.80	-3178939.77	0.0286	0.0283
Mercury	-13408-05-08 15:07 J	-3175720.98	-3175720.87	-3175720.76	0.0298	0.0162
Mercury	-13408-08-05 03:07 J	-3175632.50	-3175632.37	-3175632.24	0.0297	0.0007
Mercury	-13408-11-01 14:52 J	-3175543.99	-3175543.88	-3175543.77	0.0296	0.0150
Venus	-13406-11-18 22:33 J	-3174796.56	-3174796.56	-3174796.54	0.0286	0.0286
Venus	-13405-07-05 11:16 J	-3174567.23	-3174567.03	-3174566.83	0.0283	0.0088
Venus	-13404-02-19 20:52 J	-3174337.82	-3174337.63	-3174337.43	0.0280	0.0102
Moon	-13397-12-09 08:38 J	-3171488.35	-3171488.14	-3171487.90	0.0258	0.0119
Earth	-13397-12-09 12:28 J	-3171488.21	-3171487.98	-3171487.75	0.0258	0.0104 *
Mercury	-13392-02-15 16:04 J	-3169958.86	-3169958.83	-3169958.80	0.0264	0.0259
Mercury	-13392-05-15 14:09 J	-3169870.09	-3169869.91	-3169869.73	0.0264	0.0092
Mercury	-13392-08-12 12:14 J	-3169781.17	-3169780.99	-3169780.80	0.0265	0.0077
Mercury	-13392-11-09 10:19 J	-3169692.13	-3169692.07	-3169691.99	0.0266	0.0248
Venus	-13389-10-23 08:09 J	-3168613.36	-3168613.16	-3168612.96	0.0279	0.0093
Venus	-13388-06-10 00:28 J	-3168383.68	-3168383.48	-3168383.27	0.0282	0.0103
Earth	-13382-06-10 09:35 J	-3166192.33	-3166192.10	-3166191.87	0.0305	0.0102
Moon	-13382-06-10 12:43 J	-3166192.20	-3166191.97	-3166191.73	0.0305	0.0087 *
Mercury	-13379-09-25 16:04 J	-3164988.91	-3164988.83	-3164988.74	0.0299	0.0222
Mercury	-13379-12-23 04:04 J	-3164900.45	-3164900.33	-3164900.20	0.0298	0.0065
Mercury	-13378-03-21 16:04 J	-3164811.95	-3164811.83	-3164811.71	0.0297	0.0092
Mercury	-13378-06-18 03:50 J	-3164723.41	-3164723.34	-3164723.27	0.0296	0.0246
Venus	-13376-05-31 00:00 J	-3164010.57	-3164010.50	-3164010.42	0.0286	0.0265
Venus	-13375-01-15 12:14 J	-3163781.19	-3163780.99	-3163780.79	0.0283	0.0068
Venus	-13375-09-01 21:35 J	-3163551.79	-3163551.60	-3163551.41	0.0280	0.0121
Earth	-13368-12-04 17:45 J	-3160900.96	-3160900.76	-3160900.55	0.0258	0.0146
Moon	-13368-12-04 20:52 J	-3160900.84	-3160900.63	-3160900.42	0.0258	0.0132 *

Mercury	-13363-10-02 11:31 J	-3159138.17	-3159138.02	-3159137.86	0.0265	0.0150
Mercury	-13363-12-30 09:50 J	-3159049.29	-3159049.09	-3159048.90	0.0265	0.0020
Mercury	-13362-03-29 07:40 J	-3158960.31	-3158960.18	-3158960.04	0.0266	0.0189
Venus	-13360-09-17 19:55 J	-3158056.73	-3158056.67	-3158056.58	0.0277	0.0257
Venus	-13359-05-05 09:50 J	-3157827.30	-3157827.09	-3157826.88	0.0280	0.0071
Venus	-13359-12-21 02:24 J	-3157597.58	-3157597.40	-3157597.20	0.0283	0.0126
Mercury	-13349-02-12 17:02 J	-3154256.82	-3154256.79	-3154256.74	0.0299	0.0282
Mercury	-13349-05-11 05:02 J	-3154168.40	-3154168.29	-3154168.17	0.0298	0.0124
Mars	-13349-07-18 13:40 J	-3154100.21	-3154099.93	-3154099.63	0.0297	0.0114
Mercury	-13349-08-07 17:02 J	-3154079.91	-3154079.79	-3154079.66	0.0297	0.0033
Mercury	-13349-11-04 05:02 J	-3153991.39	-3153991.29	-3153991.19	0.0296	0.0187
Venus	-13347-12-11 01:11 J	-3153224.55	-3153224.45	-3153224.34	0.0286	0.0244
Venus	-13346-07-28 13:40 J	-3152995.14	-3152994.93	-3152994.73	0.0283	0.0046
Venus	-13345-03-13 23:02 J	-3152765.72	-3152765.54	-3152765.36	0.0280	0.0143
Moon	-13338-12-11 06:28 J	-3149937.41	-3149937.23	-3149937.04	0.0258	0.0165
Earth	-13338-12-11 08:38 J	-3149937.34	-3149937.14	-3149936.93	0.0258	0.0152 *
Mercury	-13333-02-19 09:50 J	-3148406.21	-3148406.09	-3148405.96	0.0264	0.0201
Mercury	-13333-05-18 07:55 J	-3148317.36	-3148317.17	-3148316.97	0.0265	0.0034
Mars	-13333-07-31 01:40 J	-3148243.60	-3148243.43	-3148243.24	0.0265	0.0196
Mercury	-13333-08-15 06:00 J	-3148228.41	-3148228.25	-3148228.08	0.0265	0.0137
Venus	-13330-03-30 23:31 J	-3147270.62	-3147270.52	-3147270.39	0.0276	0.0235
Venus	-13330-11-15 13:40 J	-3147041.14	-3147040.93	-3147040.72	0.0280	0.0047
Venus	-13329-07-02 06:14 J	-3146811.41	-3146811.24	-3146811.05	0.0283	0.0150
Moon	-13323-06-11 05:31 J	-3144641.52	-3144641.27	-3144641.02	0.0305	0.0027
Earth	-13323-06-11 06:28 J	-3144641.46	-3144641.23	-3144640.98	0.0305	0.0043 *
Mercury	-13320-09-28 06:43 J	-3143436.32	-3143436.22	-3143436.12	0.0299	0.0179
Mercury	-13320-12-25 18:43 J	-3143347.85	-3143347.72	-3143347.60	0.0298	0.0024
Mercury	-13319-03-24 06:28 J	-3143259.34	-3143259.23	-3143259.12	0.0297	0.0134
Mercury	-13319-06-20 18:14 J	-3143170.76	-3143170.74	-3143170.71	0.0296	0.0287
Venus	-13317-06-22 03:35 J	-3142438.47	-3142438.35	-3142438.21	0.0286	0.0222

Venus	-13316-02-06 15:35 J	-3142209.06	-3142208.85	-3142208.64	0.0283	0.0025
Venus	-13316-09-24 00:43 J	-3141979.64	-3141979.47	-3141979.30	0.0279	0.0163
Earth	-13309-12-05 15:21 J	-3139350.09	-3139349.86	-3139349.63	0.0258	0.0095
Moon	-13309-12-05 17:45 J	-3139349.99	-3139349.76	-3139349.51	0.0258	0.0082 *
Mercury	-13304-07-08 07:55 J	-3137674.21	-3137674.17	-3137674.11	0.0264	0.0254
Mercury	-13304-10-05 06:00 J	-3137585.43	-3137585.25	-3137585.06	0.0265	0.0087
Mercury	-13303-01-02 04:04 J	-3137496.51	-3137496.33	-3137496.14	0.0266	0.0083
Mercury	-13303-04-01 02:24 J	-3137407.46	-3137407.40	-3137407.34	0.0266	0.0253
Venus	-13301-10-10 02:38 J	-3136484.52	-3136484.39	-3136484.24	0.0277	0.0211
Venus	-13300-05-27 17:02 J	-3136255.01	-3136254.79	-3136254.58	0.0280	0.0023
Venus	-13299-01-12 09:50 J	-3136025.25	-3136025.09	-3136024.92	0.0283	0.0176
Mercury	-13290-02-15 07:55 J	-3132704.25	-3132704.17	-3132704.09	0.0299	0.0235
Mercury	-13290-05-14 19:55 J	-3132615.79	-3132615.67	-3132615.55	0.0298	0.0077
Mercury	-13290-08-11 07:55 J	-3132527.30	-3132527.17	-3132527.05	0.0297	0.0079
Mercury	-13290-11-07 19:40 J	-3132438.76	-3132438.68	-3132438.60	0.0296	0.0233
Venus	-13287-01-02 05:45 J	-3131652.40	-3131652.26	-3131652.10	0.0285	0.0199
Venus	-13287-08-19 17:45 J	-3131422.97	-3131422.76	-3131422.55	0.0282	0.0002
Venus	-13286-04-06 02:38 J	-3131193.54	-3131193.39	-3131193.23	0.0279	0.0186
Earth	-13279-12-12 07:40 J	-3128386.33	-3128386.18	-3128386.03	0.0258	0.0205
Moon	-13279-12-12 09:50 J	-3128386.21	-3128386.09	-3128385.95	0.0258	0.0216 *
Mars	-13275-11-08 21:50 J	-3126958.70	-3126958.59	-3126958.44	0.0263	0.0232
Mercury	-13274-02-22 05:02 J	-3126853.46	-3126853.29	-3126853.12	0.0264	0.0134
Mercury	-13274-05-22 03:07 J	-3126764.56	-3126764.37	-3126764.18	0.0265	0.0034
Mercury	-13274-08-19 01:11 J	-3126675.57	-3126675.45	-3126675.32	0.0266	0.0204
Venus	-13271-04-22 07:40 J	-3125698.33	-3125698.18	-3125698.02	0.0277	0.0187
Venus	-13271-12-07 22:04 J	-3125468.79	-3125468.58	-3125468.36	0.0280	0.0007
Venus	-13270-07-25 15:21 J	-3125239.01	-3125238.86	-3125238.71	0.0283	0.0202
Moon	-13264-06-12 05:16 J	-3123090.52	-3123090.28	-3123090.04	0.0305	0.0047
Earth	-13264-06-12 08:52 J	-3123090.37	-3123090.13	-3123089.89	0.0305	0.0030 *
Mercury	-13261-07-04 09:35 J	-3121972.13	-3121972.10	-3121972.06	0.0299	0.0287

Mercury -13261-09-30 21:35 J -3121883.71 -3121883.60 -3121883.48 0.0299 0.0129  
 Mars -13261-12-11 03:35 J -3121812.62 -3121812.35 -3121812.06 0.0298 0.0134  
 Mercury -13261-12-28 09:35 J -3121795.23 -3121795.10 -3121794.97 0.0298 0.0028  
 Mercury -13260-03-26 21:21 J -3121706.71 -3121706.61 -3121706.51 0.0297 0.0184  
 Venus -13258-07-15 09:21 J -3120866.27 -3120866.11 -3120865.94 0.0285 0.0175  
 Venus -13257-02-29 20:52 J -3120636.84 -3120636.63 -3120636.42 0.0282 0.0021  
 Venus -13257-10-16 05:31 J -3120407.40 -3120407.27 -3120407.13 0.0279 0.0208  
 Moon -13250-12-07 13:55 J -3117799.17 -3117798.92 -3117798.66 0.0258 0.0027  
 Earth -13250-12-07 15:35 J -3117799.09 -3117798.85 -3117798.60 0.0258 0.0039 \*  
 Mercury -13245-07-11 03:35 J -3116121.48 -3116121.35 -3116121.21 0.0264 0.0183  
 Mercury -13245-10-08 01:40 J -3116032.62 -3116032.43 -3116032.23 0.0265 0.0016  
 Mars -13245-12-24 14:24 J -3115955.00 -3115954.90 -3115954.76 0.0266 0.0237  
 Mercury -13244-01-04 23:45 J -3115943.66 -3115943.51 -3115943.35 0.0266 0.0155  
 Venus -13242-11-02 12:14 J -3114912.16 -3114911.99 -3114911.81 0.0278 0.0161  
 Venus -13241-06-19 02:38 J -3114682.60 -3114682.39 -3114682.17 0.0281 0.0031  
 Venus -13240-02-03 20:09 J -3114452.78 -3114452.66 -3114452.53 0.0284 0.0230  
 Mercury -13231-02-17 23:31 J -3111151.62 -3111151.52 -3111151.42 0.0298 0.0178  
 Mercury -13231-05-17 11:31 J -3111063.15 -3111063.02 -3111062.90 0.0297 0.0023  
 Mercury -13231-08-13 23:16 J -3110974.64 -3110974.53 -3110974.42 0.0296 0.0134  
 Mercury -13231-11-10 11:02 J -3110886.06 -3110886.04 -3110886.01 0.0295 0.0287  
 Venus -13228-01-24 12:57 J -3110080.13 -3110079.96 -3110079.77 0.0285 0.0150  
 Venus -13228-09-11 00:28 J -3109850.69 -3109850.48 -3109850.27 0.0282 0.0046  
 Venus -13227-04-28 08:52 J -3109621.23 -3109621.13 -3109621.01 0.0279 0.0232  
 Mercury -13216-11-28 03:07 J -3105389.47 -3105389.37 -3105389.27 0.0264 0.0226  
 Mercury -13215-02-25 01:11 J -3105300.64 -3105300.45 -3105300.26 0.0265 0.0059  
 Mercury -13215-05-24 23:16 J -3105211.70 -3105211.53 -3105211.35 0.0265 0.0111  
 Venus -13212-05-14 18:28 J -3104125.91 -3104125.73 -3104125.54 0.0277 0.0134  
 Venus -13212-12-30 09:35 J -3103896.31 -3103896.10 -3103895.89 0.0281 0.0058  
 Venus -13211-08-17 02:52 J -3103666.45 -3103666.38 -3103666.28 0.0284 0.0259  
 Moon -13205-06-13 16:04 J -3101539.03 -3101538.83 -3101538.62 0.0305 0.0137

Earth	-13205-06-13 17:31 J	-3101538.99	-3101538.77	-3101538.55	0.0305	0.0120 *
Mercury	-13202-07-08 01:40 J	-3100419.51	-3100419.43	-3100419.35	0.0299	0.0224
Mercury	-13202-10-04 13:40 J	-3100331.06	-3100330.93	-3100330.81	0.0298	0.0066
Mercury	-13201-01-01 01:26 J	-3100242.56	-3100242.44	-3100242.31	0.0297	0.0091
Mercury	-13201-03-29 13:26 J	-3100154.01	-3100153.94	-3100153.87	0.0296	0.0244
Venus	-13199-08-06 18:00 J	-3099293.93	-3099293.75	-3099293.56	0.0285	0.0123
Venus	-13198-03-24 05:02 J	-3099064.49	-3099064.29	-3099064.09	0.0282	0.0072
Venus	-13198-11-08 13:11 J	-3098835.02	-3098834.95	-3098834.87	0.0278	0.0257
Moon	-13191-12-08 15:50 J	-3096248.08	-3096247.84	-3096247.59	0.0258	0.0038
Earth	-13191-12-08 19:26 J	-3096247.93	-3096247.69	-3096247.44	0.0258	0.0026 *
Mars	-13186-04-04 19:40 J	-3094669.88	-3094669.68	-3094669.47	0.0264	0.0177
Mercury	-13186-07-15 00:43 J	-3094568.65	-3094568.47	-3094568.29	0.0265	0.0102
Mercury	-13186-10-11 22:48 J	-3094479.73	-3094479.55	-3094479.36	0.0265	0.0068
Mercury	-13185-01-08 20:52 J	-3094390.70	-3094390.63	-3094390.54	0.0266	0.0239
Venus	-13183-11-25 00:57 J	-3093339.65	-3093339.46	-3093339.25	0.0278	0.0106
Venus	-13182-07-12 16:19 J	-3093110.02	-3093109.82	-3093109.62	0.0281	0.0089
Earth	-13176-06-07 10:19 J	-3090953.16	-3090953.07	-3090952.97	0.0304	0.0279
Moon	-13176-06-07 11:02 J	-3090953.16	-3090953.04	-3090952.90	0.0304	0.0261 *
Mercury	-13173-11-24 03:50 J	-3089687.39	-3089687.34	-3089687.28	0.0299	0.0268
Mercury	-13172-02-20 15:50 J	-3089598.95	-3089598.84	-3089598.72	0.0298	0.0111
Mars	-13172-05-06 20:09 J	-3089523.89	-3089523.66	-3089523.43	0.0297	0.0199
Mercury	-13172-05-20 03:50 J	-3089510.47	-3089510.34	-3089510.21	0.0297	0.0046
Mercury	-13172-08-16 15:35 J	-3089421.94	-3089421.85	-3089421.75	0.0296	0.0201
Venus	-13169-02-16 23:02 J	-3088507.73	-3088507.54	-3088507.34	0.0284	0.0096
Venus	-13169-10-03 09:50 J	-3088278.28	-3088278.09	-3088277.89	0.0281	0.0098
Earth	-13162-12-04 05:31 J	-3085660.39	-3085660.27	-3085660.13	0.0259	0.0218
Moon	-13162-12-04 09:21 J	-3085660.25	-3085660.11	-3085659.94	0.0259	0.0203 *
Mercury	-13157-12-01 00:28 J	-3083836.64	-3083836.48	-3083836.31	0.0264	0.0142
Mercury	-13156-02-27 22:48 J	-3083747.75	-3083747.55	-3083747.36	0.0265	0.0027
Mercury	-13156-05-27 20:52 J	-3083658.76	-3083658.63	-3083658.50	0.0266	0.0197



Venus	-13154-10-20 19:26 J	-3082782.74	-3082782.69	-3082782.62	0.0275	0.0262
Venus	-13153-06-06 08:24 J	-3082553.36	-3082553.15	-3082552.94	0.0278	0.0077
Venus	-13152-01-22 00:00 J	-3082323.69	-3082323.50	-3082323.30	0.0281	0.0118
Earth	-13146-06-16 07:55 J	-3079987.33	-3079987.17	-3079987.01	0.0304	0.0225
Moon	-13146-06-16 10:19 J	-3079987.20	-3079987.07	-3079986.92	0.0304	0.0243 *
Mercury	-13143-07-10 18:28 J	-3078866.84	-3078866.73	-3078866.62	0.0299	0.0151
Mercury	-13143-10-07 06:28 J	-3078778.36	-3078778.23	-3078778.10	0.0298	0.0007
Mercury	-13142-01-03 18:14 J	-3078689.84	-3078689.74	-3078689.63	0.0297	0.0162
Venus	-13140-01-11 16:33 J	-3077950.88	-3077950.81	-3077950.73	0.0287	0.0267
Venus	-13140-08-29 05:31 J	-3077721.47	-3077721.27	-3077721.06	0.0284	0.0066
Venus	-13139-04-15 15:50 J	-3077492.02	-3077491.84	-3077491.65	0.0281	0.0127
Moon	-13132-12-10 01:55 J	-3074696.63	-3074696.42	-3074696.20	0.0258	0.0108
Earth	-13132-12-10 02:38 J	-3074696.62	-3074696.39	-3074696.16	0.0258	0.0096 *
Mercury	-13127-04-20 00:43 J	-3073104.61	-3073104.47	-3073104.32	0.0264	0.0180
Mercury	-13127-07-17 22:48 J	-3073015.74	-3073015.55	-3073015.35	0.0265	0.0014
Mercury	-13127-10-14 20:52 J	-3072926.77	-3072926.63	-3072926.46	0.0266	0.0159
Venus	-13124-05-02 02:52 J	-3071996.48	-3071996.38	-3071996.26	0.0276	0.0232
Venus	-13124-12-17 16:19 J	-3071767.03	-3071766.82	-3071766.60	0.0279	0.0045
Venus	-13123-08-04 08:09 J	-3071537.33	-3071537.16	-3071536.97	0.0282	0.0152
Moon	-13117-06-09 01:11 J	-3069401.67	-3069401.45	-3069401.24	0.0304	0.0148
Earth	-13117-06-09 04:19 J	-3069401.51	-3069401.32	-3069401.11	0.0304	0.0166 *
Mercury	-13114-11-27 21:21 J	-3068134.71	-3068134.61	-3068134.51	0.0298	0.0188
Mercury	-13113-02-24 09:21 J	-3068046.24	-3068046.11	-3068045.98	0.0297	0.0031
Mercury	-13113-05-22 21:07 J	-3067957.73	-3067957.62	-3067957.50	0.0296	0.0124
Mercury	-13113-08-19 08:52 J	-3067869.17	-3067869.13	-3067869.08	0.0295	0.0277
Venus	-13111-07-24 23:31 J	-3067164.63	-3067164.52	-3067164.40	0.0286	0.0237
Venus	-13110-03-11 12:14 J	-3066935.20	-3066934.99	-3066934.78	0.0283	0.0037
Venus	-13110-10-26 22:04 J	-3066705.75	-3066705.58	-3066705.40	0.0280	0.0155
Earth	-13103-12-05 13:40 J	-3064109.12	-3064108.93	-3064108.71	0.0259	0.0145
Moon	-13103-12-05 14:38 J	-3064109.10	-3064108.89	-3064108.66	0.0259	0.0130 *

Mars	-13098-08-30 08:09 J	-3062380.41	-3062380.16	-3062379.90	0.0264	0.0103
Mercury	-13098-09-07 00:57 J	-3062372.56	-3062372.46	-3062372.35	0.0264	0.0217
Mercury	-13098-12-04 23:02 J	-3062283.72	-3062283.54	-3062283.34	0.0265	0.0050
Mercury	-13097-03-02 21:21 J	-3062194.78	-3062194.61	-3062194.44	0.0266	0.0121
Venus	-13095-11-12 11:16 J	-3061210.16	-3061210.03	-3061209.87	0.0276	0.0203
Venus	-13094-06-30 01:11 J	-3060980.67	-3060980.45	-3060980.24	0.0279	0.0015
Venus	-13093-02-14 17:16 J	-3060750.93	-3060750.78	-3060750.61	0.0282	0.0184
Mercury	-13084-04-16 00:14 J	-3057402.57	-3057402.49	-3057402.40	0.0299	0.0224
Mercury	-13084-07-13 12:14 J	-3057314.11	-3057313.99	-3057313.86	0.0298	0.0067
Mercury	-13084-10-10 00:14 J	-3057225.61	-3057225.49	-3057225.37	0.0297	0.0090
Mercury	-13083-01-06 12:00 J	-3057137.07	-3057137.00	-3057136.93	0.0296	0.0243
Venus	-13081-02-04 07:26 J	-3056378.33	-3056378.19	-3056378.04	0.0286	0.0204
Venus	-13081-09-20 19:40 J	-3056148.88	-3056148.68	-3056148.47	0.0283	0.0008
Venus	-13080-05-08 05:16 J	-3055919.43	-3055919.28	-3055919.12	0.0280	0.0185
Earth	-13073-12-11 12:00 J	-3053145.17	-3053145.00	-3053144.80	0.0258	0.0174
Moon	-13073-12-11 15:50 J	-3053145.01	-3053144.84	-3053144.67	0.0258	0.0185 *
Mercury	-13068-01-24 01:26 J	-3051640.49	-3051640.44	-3051640.38	0.0264	0.0252
Mercury	-13068-04-22 23:45 J	-3051551.69	-3051551.51	-3051551.33	0.0265	0.0084
Mercury	-13068-07-20 21:50 J	-3051462.77	-3051462.59	-3051462.40	0.0266	0.0086
Mercury	-13068-10-17 20:09 J	-3051373.71	-3051373.66	-3051373.61	0.0266	0.0257
Venus	-13065-05-24 19:40 J	-3050423.85	-3050423.68	-3050423.51	0.0277	0.0172
Venus	-13064-01-09 09:50 J	-3050194.30	-3050194.09	-3050193.88	0.0280	0.0019
Venus	-13064-08-27 02:24 J	-3049964.53	-3049964.40	-3049964.26	0.0283	0.0219
Moon	-13058-06-11 23:31 J	-3047849.75	-3047849.52	-3047849.28	0.0304	0.0026
Earth	-13058-06-12 02:24 J	-3047849.63	-3047849.40	-3047849.16	0.0304	0.0043 *
Mercury	-13055-09-03 03:21 J	-3046670.42	-3046670.36	-3046670.30	0.0299	0.0258
Mercury	-13055-11-30 15:21 J	-3046581.98	-3046581.86	-3046581.74	0.0298	0.0101
Mercury	-13054-02-27 03:21 J	-3046493.49	-3046493.36	-3046493.24	0.0297	0.0056
Mercury	-13054-05-26 15:07 J	-3046404.96	-3046404.87	-3046404.78	0.0296	0.0209
Venus	-13052-08-16 15:21 J	-3045592.02	-3045591.86	-3045591.69	0.0285	0.0172

Venus	-13051-04-03 03:07 J	-3045362.57	-3045362.37	-3045362.16	0.0282	0.0027
Venus	-13051-11-18 12:14 J	-3045133.11	-3045132.99	-3045132.85	0.0279	0.0214
Moon	-13044-12-06 20:52 J	-3042557.87	-3042557.63	-3042557.37	0.0259	0.0053
Earth	-13044-12-07 00:28 J	-3042557.72	-3042557.48	-3042557.24	0.0259	0.0066 *
Mercury	-13039-09-10 00:00 J	-3040819.67	-3040819.50	-3040819.32	0.0265	0.0121
Mercury	-13039-12-07 22:19 J	-3040730.76	-3040730.57	-3040730.38	0.0265	0.0048
Mercury	-13038-03-06 20:24 J	-3040641.75	-3040641.65	-3040641.54	0.0266	0.0220
Venus	-13036-12-05 04:19 J	-3039637.50	-3039637.32	-3039637.13	0.0277	0.0141
Venus	-13035-07-22 18:57 J	-3039407.92	-3039407.71	-3039407.50	0.0280	0.0051
Venus	-13034-03-09 11:45 J	-3039178.09	-3039178.01	-3039177.90	0.0283	0.0252
Mercury	-13025-01-21 06:28 J	-3035938.25	-3035938.23	-3035938.20	0.0299	0.0292
Mercury	-13025-04-18 18:28 J	-3035849.84	-3035849.73	-3035849.61	0.0298	0.0134
Mercury	-13025-07-16 06:28 J	-3035761.36	-3035761.23	-3035761.10	0.0297	0.0024
Mercury	-13025-10-12 18:14 J	-3035672.84	-3035672.74	-3035672.63	0.0296	0.0179
Venus	-13022-02-27 00:14 J	-3034805.67	-3034805.49	-3034805.30	0.0285	0.0138
Venus	-13022-10-14 11:31 J	-3034576.22	-3034576.02	-3034575.81	0.0282	0.0060
Venus	-13021-05-30 20:09 J	-3034346.75	-3034346.66	-3034346.55	0.0279	0.0246
Earth	-13014-12-13 23:02 J	-3031593.57	-3031593.54	-3031593.47	0.0258	0.0254
Mars	-13009-01-25 01:55 J	-3030090.69	-3030090.42	-3030090.14	0.0265	0.0017
Mercury	-13009-01-28 00:43 J	-3030087.62	-3030087.47	-3030087.31	0.0265	0.0155
Mercury	-13009-04-25 23:02 J	-3029998.74	-3029998.54	-3029998.35	0.0265	0.0014
Mercury	-13009-07-23 21:07 J	-3029909.75	-3029909.62	-3029909.48	0.0266	0.0185
Venus	-13006-06-17 13:11 J	-3028851.15	-3028850.95	-3028850.75	0.0278	0.0109
Venus	-13005-02-02 04:04 J	-3028621.53	-3028621.33	-3028621.12	0.0281	0.0086

# 13TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 13th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-12999-06-14 03:21 J		-3026297.59	-3026297.36	-3026297.12	0.0304	0.0090	
Moon	-12999-06-14 04:19 J		-3026297.54	-3026297.32	-3026297.10	0.0304	0.0106	*
Mercury	-12996-09-05 21:50 J		-3025117.69	-3025117.59	-3025117.48	0.0298	0.0165	
Mercury	-12996-12-03 09:50 J		-3025029.22	-3025029.09	-3025028.96	0.0297	0.0008	
Mercury	-12995-03-01 21:35 J		-3024940.71	-3024940.60	-3024940.49	0.0296	0.0147	
Venus	-12993-09-08 08:38 J		-3024019.33	-3024019.14	-3024018.94	0.0284	0.0105	
Venus	-12992-04-25 19:26 J		-3023789.88	-3023789.69	-3023789.49	0.0281	0.0090	
Venus	-12992-12-11 03:50 J		-3023560.37	-3023560.34	-3023560.31	0.0278	0.0275	
Moon	-12985-12-08 09:07 J		-3021006.36	-3021006.12	-3021005.88	0.0259	0.0028	
Earth	-12985-12-08 11:45 J		-3021006.26	-3021006.01	-3021005.76	0.0259	0.0016	*
Mercury	-12980-06-16 00:57 J		-3019355.59	-3019355.46	-3019355.32	0.0265	0.0192	
Mercury	-12980-09-12 23:16 J		-3019266.72	-3019266.53	-3019266.34	0.0265	0.0023	
Mercury	-12980-12-10 21:21 J		-3019177.76	-3019177.61	-3019177.44	0.0266	0.0147	
Venus	-12977-05-12 08:38 J		-3018294.19	-3018294.14	-3018294.07	0.0275	0.0264	
Venus	-12977-12-27 21:35 J		-3018064.80	-3018064.60	-3018064.39	0.0278	0.0078	
Venus	-12976-08-14 12:57 J		-3017835.15	-3017834.96	-3017834.76	0.0281	0.0118	
Moon	-12970-06-08 00:00 J		-3015711.59	-3015711.50	-3015711.39	0.0304	0.0278	
Earth	-12970-06-08 01:11 J		-3015711.50	-3015711.45	-3015711.38	0.0304	0.0294	*
Mercury	-12966-01-24 00:57 J		-3014385.55	-3014385.46	-3014385.36	0.0299	0.0198	
Mercury	-12966-04-22 12:57 J		-3014297.09	-3014296.96	-3014296.83	0.0298	0.0041	
Mercury	-12966-07-20 00:57 J		-3014208.58	-3014208.46	-3014208.35	0.0297	0.0115	
Mercury	-12966-10-16 12:43 J		-3014120.02	-3014119.97	-3014119.92	0.0296	0.0268	
Venus	-12964-08-04 03:50 J		-3013462.39	-3013462.34	-3013462.27	0.0287	0.0274	
Venus	-12963-03-21 17:16 J		-3013232.98	-3013232.78	-3013232.58	0.0284	0.0071	
Venus	-12963-11-06 03:35 J		-3013003.53	-3013003.35	-3013003.15	0.0281	0.0124	

Earth	-12956-12-04 00:00 J	-3010418.62	-3010418.50	-3010418.35	0.0259	0.0218
Moon	-12956-12-04 03:21 J	-3010418.50	-3010418.36	-3010418.20	0.0259	0.0204 *
Mercury	-12951-11-03 01:40 J	-3008623.53	-3008623.43	-3008623.34	0.0264	0.0227
Mercury	-12950-01-30 23:45 J	-3008534.70	-3008534.51	-3008534.32	0.0265	0.0059
Mercury	-12950-04-29 21:50 J	-3008445.76	-3008445.59	-3008445.41	0.0266	0.0112
Venus	-12948-11-22 16:48 J	-3007507.91	-3007507.80	-3007507.68	0.0276	0.0233
Venus	-12947-07-10 06:00 J	-3007278.46	-3007278.25	-3007278.04	0.0279	0.0046
Venus	-12946-02-24 21:35 J	-3007048.77	-3007048.60	-3007048.41	0.0282	0.0153
Earth	-12940-06-16 02:38 J	-3004745.55	-3004745.39	-3004745.22	0.0304	0.0218
Moon	-12940-06-16 06:00 J	-3004745.39	-3004745.25	-3004745.09	0.0304	0.0235 *
Mars	-12937-05-31 01:40 J	-3003665.59	-3003665.43	-3003665.25	0.0299	0.0249
Mercury	-12937-06-12 04:19 J	-3003653.40	-3003653.32	-3003653.24	0.0299	0.0231
Mercury	-12937-09-08 16:19 J	-3003564.95	-3003564.82	-3003564.70	0.0298	0.0074
Mercury	-12937-12-06 04:04 J	-3003476.45	-3003476.33	-3003476.21	0.0297	0.0083
Mercury	-12936-03-04 15:50 J	-3003387.91	-3003387.84	-3003387.76	0.0296	0.0236
Venus	-12934-02-14 12:57 J	-3002676.07	-3002675.96	-3002675.85	0.0286	0.0240
Venus	-12934-10-02 01:40 J	-3002446.64	-3002446.43	-3002446.23	0.0283	0.0039
Venus	-12933-05-18 11:31 J	-3002217.19	-3002217.02	-3002216.84	0.0280	0.0153
Earth	-12926-12-10 21:50 J	-2999454.81	-2999454.59	-2999454.35	0.0259	0.0096
Moon	-12926-12-10 23:16 J	-2999454.75	-2999454.53	-2999454.31	0.0259	0.0106 *
Mercury	-12921-06-18 23:31 J	-2997802.70	-2997802.52	-2997802.34	0.0265	0.0099
Mars	-12921-06-20 16:04 J	-2997801.10	-2997800.83	-2997800.56	0.0265	0.0065
Mercury	-12921-09-15 21:35 J	-2997713.78	-2997713.60	-2997713.41	0.0266	0.0071
Mercury	-12921-12-13 19:55 J	-2997624.74	-2997624.67	-2997624.59	0.0266	0.0242
Venus	-12918-06-04 23:45 J	-2996721.64	-2996721.51	-2996721.36	0.0276	0.0205
Venus	-12917-01-20 13:40 J	-2996492.14	-2996491.93	-2996491.71	0.0279	0.0016
Venus	-12917-09-06 05:45 J	-2996262.41	-2996262.26	-2996262.09	0.0282	0.0183
Moon	-12911-06-09 20:09 J	-2994159.86	-2994159.66	-2994159.43	0.0304	0.0151
Earth	-12911-06-10 00:00 J	-2994159.70	-2994159.50	-2994159.30	0.0304	0.0167 *
Mercury	-12908-10-30 07:26 J	-2992921.25	-2992921.19	-2992921.14	0.0299	0.0264

Mercury	-12907-01-26 19:11 J	-2992832.81	-2992832.70	-2992832.57	0.0298	0.0107
Mercury	-12907-04-25 07:11 J	-2992744.32	-2992744.20	-2992744.07	0.0297	0.0050
Mercury	-12907-07-22 18:57 J	-2992655.80	-2992655.71	-2992655.61	0.0296	0.0205
Venus	-12905-08-26 21:35 J	-2991889.75	-2991889.60	-2991889.46	0.0286	0.0205
Venus	-12904-04-13 09:50 J	-2991660.30	-2991660.09	-2991659.88	0.0283	0.0005
Venus	-12904-11-28 19:26 J	-2991430.84	-2991430.69	-2991430.53	0.0280	0.0186
Moon	-12897-12-05 09:35 J	-2988867.32	-2988867.10	-2988866.87	0.0259	0.0126
Earth	-12897-12-05 09:50 J	-2988867.29	-2988867.09	-2988866.87	0.0259	0.0140 *
Mercury	-12892-11-05 23:45 J	-2987070.68	-2987070.51	-2987070.35	0.0265	0.0137
Mercury	-12891-02-02 21:50 J	-2986981.78	-2986981.59	-2986981.40	0.0265	0.0032
Mercury	-12891-05-02 19:55 J	-2986892.78	-2986892.67	-2986892.54	0.0266	0.0203
Venus	-12889-12-15 07:11 J	-2985935.36	-2985935.20	-2985935.03	0.0277	0.0175
Venus	-12888-08-01 21:21 J	-2985705.83	-2985705.61	-2985705.40	0.0280	0.0017
Venus	-12887-03-19 13:40 J	-2985476.06	-2985475.93	-2985475.78	0.0283	0.0216
Mercury	-12878-06-15 22:19 J	-2982100.68	-2982100.57	-2982100.46	0.0298	0.0144
Mercury	-12878-09-12 10:04 J	-2982012.20	-2982012.08	-2982011.95	0.0297	0.0016
Mercury	-12878-12-09 21:50 J	-2981923.69	-2981923.59	-2981923.48	0.0296	0.0169
Venus	-12875-03-09 05:02 J	-2981103.45	-2981103.29	-2981103.12	0.0285	0.0174
Venus	-12875-10-24 17:02 J	-2980874.00	-2980873.79	-2980873.58	0.0282	0.0025
Venus	-12874-06-11 02:09 J	-2980644.54	-2980644.41	-2980644.27	0.0279	0.0214
Earth	-12867-12-12 06:14 J	-2977903.42	-2977903.24	-2977903.05	0.0258	0.0171
Moon	-12867-12-12 09:35 J	-2977903.26	-2977903.10	-2977902.91	0.0258	0.0183 *
Mercury	-12862-03-25 23:02 J	-2976338.68	-2976338.54	-2976338.40	0.0264	0.0181
Mercury	-12862-06-22 21:07 J	-2976249.81	-2976249.62	-2976249.43	0.0265	0.0012
Mercury	-12862-09-19 19:11 J	-2976160.85	-2976160.70	-2976160.54	0.0266	0.0158
Venus	-12859-06-27 13:11 J	-2975149.13	-2975148.95	-2975148.77	0.0277	0.0148
Venus	-12858-02-12 03:21 J	-2974919.57	-2974919.36	-2974919.14	0.0280	0.0044
Venus	-12858-09-29 20:09 J	-2974689.75	-2974689.66	-2974689.54	0.0283	0.0245
Moon	-12852-06-11 15:21 J	-2972608.09	-2972607.86	-2972607.62	0.0304	0.0037
Earth	-12852-06-11 17:16 J	-2972608.01	-2972607.78	-2972607.54	0.0304	0.0054 *

Mars	-12849-10-26 06:43 J	-2971375.50	-2971375.22	-2971374.93	0.0299	0.0115
Mercury	-12849-11-02 00:57 J	-2971368.56	-2971368.46	-2971368.36	0.0299	0.0181
Mercury	-12848-01-29 12:57 J	-2971280.09	-2971279.96	-2971279.83	0.0298	0.0024
Mercury	-12848-04-28 00:43 J	-2971191.58	-2971191.47	-2971191.35	0.0297	0.0132
Mercury	-12848-07-25 12:43 J	-2971103.00	-2971102.97	-2971102.94	0.0296	0.0285
Venus	-12846-09-19 12:28 J	-2970317.16	-2970316.98	-2970316.80	0.0286	0.0140
Venus	-12845-05-06 00:00 J	-2970087.70	-2970087.50	-2970087.29	0.0282	0.0059
Venus	-12845-12-21 09:07 J	-2969858.22	-2969858.12	-2969858.02	0.0279	0.0246
Moon	-12838-12-07 13:26 J	-2967316.18	-2967315.94	-2967315.69	0.0258	0.0052
Earth	-12838-12-07 17:16 J	-2967316.02	-2967315.78	-2967315.54	0.0258	0.0066 *
Mercury	-12833-08-11 22:19 J	-2965606.66	-2965606.57	-2965606.46	0.0264	0.0223
Mercury	-12833-11-08 20:38 J	-2965517.83	-2965517.64	-2965517.45	0.0265	0.0055
Mars	-12833-11-14 20:52 J	-2965511.87	-2965511.63	-2965511.40	0.0265	0.0135
Mercury	-12832-02-05 18:43 J	-2965428.89	-2965428.72	-2965428.54	0.0265	0.0114
Venus	-12829-01-07 18:57 J	-2964362.90	-2964362.71	-2964362.51	0.0278	0.0120
Venus	-12829-08-24 09:35 J	-2964133.31	-2964133.10	-2964132.89	0.0281	0.0074
Venus	-12828-04-11 02:38 J	-2963903.43	-2963903.39	-2963903.33	0.0284	0.0276
Mercury	-12819-03-22 03:35 J	-2960636.44	-2960636.35	-2960636.27	0.0299	0.0222
Mercury	-12819-06-18 15:35 J	-2960547.98	-2960547.85	-2960547.73	0.0298	0.0065
Mercury	-12819-09-15 03:21 J	-2960459.48	-2960459.36	-2960459.24	0.0297	0.0092
Mercury	-12819-12-12 15:07 J	-2960370.93	-2960370.87	-2960370.80	0.0296	0.0246
Venus	-12816-03-31 18:57 J	-2959530.90	-2959530.71	-2959530.52	0.0285	0.0111
Venus	-12816-11-16 06:14 J	-2959301.44	-2959301.24	-2959301.04	0.0281	0.0086
Venus	-12815-07-03 14:38 J	-2959071.92	-2959071.89	-2959071.84	0.0278	0.0272
Earth	-12808-12-13 11:31 J	-2956352.10	-2956352.02	-2956351.92	0.0258	0.0240
Moon	-12808-12-13 12:43 J	-2956352.02	-2956351.97	-2956351.89	0.0258	0.0249 *
Mercury	-12803-03-28 19:11 J	-2954785.88	-2954785.70	-2954785.52	0.0265	0.0104
Mercury	-12803-06-25 17:16 J	-2954696.96	-2954696.78	-2954696.59	0.0265	0.0065
Mercury	-12803-09-22 15:35 J	-2954607.94	-2954607.85	-2954607.76	0.0266	0.0236
Venus	-12800-07-19 23:31 J	-2953576.72	-2953576.52	-2953576.32	0.0278	0.0095

Venus	-12799-03-06 14:24 J	-2953347.10	-2953346.90	-2953346.70	0.0281	0.0100
Earth	-12793-06-13 05:31 J	-2951056.51	-2951056.27	-2951056.03	0.0304	0.0047
Moon	-12793-06-13 07:55 J	-2951056.40	-2951056.17	-2951055.94	0.0304	0.0065 *
Mercury	-12790-08-09 05:45 J	-2949904.31	-2949904.26	-2949904.20	0.0299	0.0266
Mercury	-12790-11-05 17:45 J	-2949815.88	-2949815.76	-2949815.64	0.0298	0.0108
Mercury	-12789-02-02 05:45 J	-2949727.39	-2949727.26	-2949727.13	0.0298	0.0049
Mercury	-12789-04-30 17:31 J	-2949638.86	-2949638.77	-2949638.67	0.0297	0.0204
Venus	-12787-02-24 11:02 J	-2948974.07	-2948974.04	-2948974.01	0.0288	0.0284
Venus	-12787-10-12 00:57 J	-2948744.66	-2948744.46	-2948744.26	0.0285	0.0080
Venus	-12786-05-29 12:00 J	-2948515.19	-2948515.00	-2948514.81	0.0282	0.0116
Moon	-12779-12-08 19:55 J	-2945764.91	-2945764.67	-2945764.43	0.0258	0.0013
Earth	-12779-12-08 21:21 J	-2945764.86	-2945764.61	-2945764.36	0.0258	0.0003 *
Mercury	-12774-08-15 18:14 J	-2944053.90	-2944053.74	-2944053.58	0.0264	0.0150
Mercury	-12774-11-12 16:19 J	-2943965.02	-2943964.82	-2943964.63	0.0265	0.0018
Mercury	-12773-02-09 14:09 J	-2943876.03	-2943875.91	-2943875.76	0.0265	0.0188
Venus	-12771-06-14 15:21 J	-2943019.93	-2943019.86	-2943019.77	0.0275	0.0254
Venus	-12770-01-30 04:04 J	-2942790.54	-2942790.33	-2942790.12	0.0278	0.0069
Venus	-12770-09-16 18:57 J	-2942560.90	-2942560.71	-2942560.51	0.0281	0.0127
Mars	-12760-03-22 09:07 J	-2939086.43	-2939086.12	-2939085.81	0.0299	0.0029
Mercury	-12760-03-24 19:55 J	-2939083.78	-2939083.67	-2939083.56	0.0299	0.0155
Mercury	-12760-06-21 07:55 J	-2938995.30	-2938995.17	-2938995.05	0.0298	0.0008
Mercury	-12760-09-17 19:40 J	-2938906.79	-2938906.68	-2938906.57	0.0297	0.0158
Venus	-12758-09-06 15:50 J	-2938187.92	-2938187.84	-2938187.74	0.0287	0.0258
Venus	-12757-04-23 05:31 J	-2937958.47	-2937958.27	-2937958.06	0.0284	0.0054
Venus	-12757-12-08 16:19 J	-2937729.00	-2937728.82	-2937728.64	0.0281	0.0141
Earth	-12750-12-04 05:16 J	-2935177.34	-2935177.28	-2935177.20	0.0258	0.0246
Moon	-12750-12-04 06:57 J	-2935177.31	-2935177.21	-2935177.09	0.0258	0.0231 *
Mercury	-12744-01-01 15:50 J	-2933321.95	-2933321.84	-2933321.70	0.0264	0.0204
Mercury	-12744-03-31 14:09 J	-2933233.10	-2933232.91	-2933232.72	0.0265	0.0036
Mars	-12744-04-10 09:21 J	-2933223.30	-2933223.11	-2933222.90	0.0265	0.0180



Mercury	-12744-06-28 12:14 J	-2933144.15	-2933143.99	-2933143.82	0.0265	0.0133
Venus	-12742-12-25 18:00 J	-2932233.85	-2932233.75	-2932233.62	0.0275	0.0233
Venus	-12741-08-11 06:57 J	-2932004.42	-2932004.21	-2932004.00	0.0278	0.0045
Venus	-12740-03-28 22:04 J	-2931774.75	-2931774.58	-2931774.39	0.0281	0.0151
Earth	-12734-06-15 10:48 J	-2929505.26	-2929505.05	-2929504.82	0.0304	0.0131
Moon	-12734-06-15 14:09 J	-2929505.11	-2929504.91	-2929504.68	0.0304	0.0148 *
Mercury	-12731-08-11 21:35 J	-2928351.69	-2928351.60	-2928351.50	0.0299	0.0204
Mercury	-12731-11-08 09:50 J	-2928263.22	-2928263.09	-2928262.97	0.0298	0.0046
Mercury	-12730-02-04 21:50 J	-2928174.71	-2928174.59	-2928174.48	0.0297	0.0112
Mercury	-12730-05-04 09:35 J	-2928086.15	-2928086.10	-2928086.05	0.0296	0.0266
Venus	-12728-03-18 20:38 J	-2927401.75	-2927401.64	-2927401.50	0.0287	0.0229
Venus	-12728-11-03 10:19 J	-2927172.28	-2927172.07	-2927171.86	0.0284	0.0025
Venus	-12727-06-20 20:38 J	-2926942.79	-2926942.64	-2926942.46	0.0281	0.0171
Earth	-12720-12-09 22:19 J	-2924213.81	-2924213.57	-2924213.33	0.0258	0.0059
Moon	-12720-12-10 01:26 J	-2924213.67	-2924213.44	-2924213.20	0.0258	0.0070 *
Mercury	-12715-05-21 14:38 J	-2922589.94	-2922589.89	-2922589.84	0.0263	0.0252
Mercury	-12715-08-18 12:28 J	-2922501.16	-2922500.98	-2922500.79	0.0264	0.0087
Mercury	-12715-11-15 10:33 J	-2922412.24	-2922412.06	-2922411.87	0.0265	0.0082
Mercury	-12714-02-12 08:52 J	-2922323.19	-2922323.13	-2922323.07	0.0265	0.0251
Venus	-12712-07-06 21:21 J	-2921447.74	-2921447.61	-2921447.46	0.0275	0.0209
Venus	-12711-02-21 10:04 J	-2921218.29	-2921218.08	-2921217.86	0.0278	0.0022
Venus	-12711-10-09 01:26 J	-2920988.60	-2920988.44	-2920988.26	0.0282	0.0177
Moon	-12705-06-07 19:40 J	-2918919.78	-2918919.68	-2918919.58	0.0304	0.0274
Earth	-12705-06-07 22:04 J	-2918919.65	-2918919.58	-2918919.50	0.0304	0.0288 *
Mercury	-12702-12-29 23:16 J	-2917619.59	-2917619.53	-2917619.46	0.0300	0.0257
Mercury	-12701-03-27 11:31 J	-2917531.15	-2917531.02	-2917530.90	0.0299	0.0098
Mercury	-12701-06-23 23:16 J	-2917442.65	-2917442.53	-2917442.40	0.0298	0.0060
Mercury	-12701-09-20 11:16 J	-2917354.12	-2917354.03	-2917353.94	0.0297	0.0215
Venus	-12699-09-29 00:14 J	-2916615.63	-2916615.49	-2916615.34	0.0287	0.0204
Venus	-12698-05-16 13:26 J	-2916386.15	-2916385.94	-2916385.73	0.0284	0.0004

Venus	-12698-12-31 23:45 J	-2916156.66	-2916156.51	-2916156.36	0.0280	0.0191
Moon	-12691-12-05 01:55 J	-2913626.59	-2913626.42	-2913626.22	0.0258	0.0177
Earth	-12691-12-05 05:02 J	-2913626.45	-2913626.29	-2913626.12	0.0258	0.0189 *
Mars	-12686-07-20 00:43 J	-2911938.55	-2911938.47	-2911938.38	0.0263	0.0249
Mercury	-12685-01-05 10:04 J	-2911769.24	-2911769.08	-2911768.91	0.0264	0.0143
Mercury	-12685-04-03 08:09 J	-2911680.35	-2911680.16	-2911679.96	0.0265	0.0024
Mercury	-12685-07-01 06:14 J	-2911591.37	-2911591.24	-2911591.10	0.0265	0.0193
Venus	-12682-01-16 23:02 J	-2910661.69	-2910661.54	-2910661.38	0.0276	0.0188
Venus	-12682-09-03 12:00 J	-2910432.21	-2910432.00	-2910431.78	0.0279	0.0004
Venus	-12681-04-20 03:35 J	-2910202.50	-2910202.35	-2910202.19	0.0282	0.0199
Moon	-12675-06-16 09:21 J	-2907954.28	-2907954.11	-2907953.92	0.0304	0.0211
Earth	-12675-06-16 10:48 J	-2907954.23	-2907954.05	-2907953.86	0.0304	0.0199 *
Mercury	-12672-08-14 12:43 J	-2906799.08	-2906798.97	-2906798.86	0.0299	0.0153
Mars	-12672-08-15 05:02 J	-2906798.60	-2906798.29	-2906797.97	0.0299	0.0013
Mercury	-12672-11-11 00:43 J	-2906710.60	-2906710.47	-2906710.34	0.0298	0.0009
Mercury	-12671-02-07 12:43 J	-2906622.08	-2906621.97	-2906621.86	0.0297	0.0162
Venus	-12669-04-10 03:21 J	-2905829.52	-2905829.36	-2905829.19	0.0287	0.0178
Venus	-12669-11-25 16:33 J	-2905600.02	-2905599.81	-2905599.60	0.0284	0.0025
Venus	-12668-07-13 02:52 J	-2905370.51	-2905370.38	-2905370.25	0.0281	0.0218
Earth	-12661-12-10 20:09 J	-2902662.87	-2902662.66	-2902662.43	0.0258	0.0113
Moon	-12661-12-10 22:48 J	-2902662.77	-2902662.55	-2902662.31	0.0258	0.0120 *
Mercury	-12656-05-24 07:55 J	-2901037.29	-2901037.17	-2901037.03	0.0263	0.0196
Mercury	-12656-08-21 06:00 J	-2900948.44	-2900948.25	-2900948.05	0.0264	0.0031
Mars	-12656-09-03 13:26 J	-2900935.09	-2900934.94	-2900934.76	0.0264	0.0211
Mercury	-12656-11-18 04:04 J	-2900859.49	-2900859.33	-2900859.16	0.0264	0.0138
Venus	-12653-07-29 01:11 J	-2899875.61	-2899875.45	-2899875.27	0.0276	0.0166
Venus	-12652-03-15 14:09 J	-2899646.12	-2899645.91	-2899645.69	0.0279	0.0024
Venus	-12652-10-31 05:45 J	-2899416.38	-2899416.26	-2899416.12	0.0282	0.0222
Earth	-12646-06-09 19:11 J	-2897368.86	-2897368.70	-2897368.54	0.0305	0.0227
Moon	-12646-06-09 21:07 J	-2897368.78	-2897368.62	-2897368.45	0.0305	0.0217 *

Mercury	-12642-01-01 13:55 J	-2896067.00	-2896066.92	-2896066.82	0.0300	0.0210
Mercury	-12642-03-31 02:09 J	-2895978.54	-2895978.41	-2895978.29	0.0299	0.0051
Mercury	-12642-06-27 13:55 J	-2895890.03	-2895889.92	-2895889.79	0.0298	0.0107
Mercury	-12642-09-24 01:55 J	-2895801.48	-2895801.42	-2895801.36	0.0297	0.0262
Venus	-12640-10-21 05:45 J	-2895043.43	-2895043.26	-2895043.08	0.0287	0.0155
Venus	-12639-06-07 18:43 J	-2894813.92	-2894813.72	-2894813.51	0.0283	0.0047
Venus	-12638-01-23 04:33 J	-2894584.41	-2894584.31	-2894584.19	0.0280	0.0238
Moon	-12632-12-05 23:16 J	-2892075.73	-2892075.53	-2892075.31	0.0258	0.0128
Earth	-12632-12-06 02:09 J	-2892075.61	-2892075.41	-2892075.19	0.0258	0.0138 *
Mercury	-12627-10-11 05:16 J	-2890305.32	-2890305.28	-2890305.22	0.0263	0.0254
Mercury	-12626-01-08 03:21 J	-2890216.54	-2890216.36	-2890216.18	0.0264	0.0089
Mercury	-12626-04-07 01:11 J	-2890127.63	-2890127.45	-2890127.26	0.0264	0.0078
Mercury	-12626-07-04 23:16 J	-2890038.59	-2890038.53	-2890038.46	0.0265	0.0247
Venus	-12623-02-08 02:09 J	-2889089.59	-2889089.41	-2889089.22	0.0276	0.0146
Venus	-12623-09-25 15:07 J	-2888860.08	-2888859.87	-2888859.65	0.0279	0.0045
Venus	-12622-05-13 06:57 J	-2888630.31	-2888630.21	-2888630.09	0.0282	0.0243
Moon	-12616-06-17 03:07 J	-2886403.49	-2886403.37	-2886403.25	0.0305	0.0264
Earth	-12616-06-17 06:28 J	-2886403.35	-2886403.23	-2886403.09	0.0305	0.0257 *
Mercury	-12613-05-20 15:07 J	-2885334.93	-2885334.87	-2885334.82	0.0300	0.0269
Mercury	-12613-08-17 03:07 J	-2885246.49	-2885246.37	-2885246.25	0.0299	0.0110
Mercury	-12613-11-13 15:07 J	-2885157.99	-2885157.87	-2885157.74	0.0298	0.0050
Mercury	-12612-02-10 03:07 J	-2885069.46	-2885069.37	-2885069.28	0.0297	0.0206
Venus	-12610-05-03 07:55 J	-2884257.35	-2884257.17	-2884256.98	0.0287	0.0131
Venus	-12610-12-18 20:52 J	-2884027.83	-2884027.63	-2884027.43	0.0284	0.0071
Venus	-12609-08-04 06:43 J	-2883798.28	-2883798.22	-2883798.14	0.0280	0.0263
Moon	-12602-12-12 14:38 J	-2881112.09	-2881111.89	-2881111.69	0.0258	0.0162
Earth	-12602-12-12 16:33 J	-2881111.99	-2881111.81	-2881111.61	0.0258	0.0161 *
Mars	-12598-12-13 01:26 J	-2879650.57	-2879650.44	-2879650.28	0.0262	0.0224
Mercury	-12597-05-27 01:11 J	-2879484.61	-2879484.45	-2879484.29	0.0263	0.0143
Mercury	-12597-08-23 23:02 J	-2879395.73	-2879395.54	-2879395.34	0.0264	0.0023

Mercury	-12597-11-20 20:52 J	-2879306.75	-2879306.63	-2879306.49	0.0264	0.0191
Venus	-12594-08-21 04:04 J	-2878303.52	-2878303.33	-2878303.13	0.0276	0.0124
Venus	-12593-04-06 17:16 J	-2878073.99	-2878073.78	-2878073.57	0.0279	0.0067
Venus	-12593-11-22 08:52 J	-2877844.18	-2877844.13	-2877844.04	0.0282	0.0267
Earth	-12587-06-10 13:11 J	-2875818.15	-2875817.95	-2875817.75	0.0305	0.0174
Moon	-12587-06-10 16:19 J	-2875818.01	-2875817.82	-2875817.60	0.0305	0.0165 *
Mercury	-12583-01-04 04:19 J	-2874514.43	-2874514.32	-2874514.22	0.0300	0.0170
Mars	-12583-01-07 04:04 J	-2874511.64	-2874511.33	-2874511.01	0.0300	0.0012
Mercury	-12583-04-02 16:19 J	-2874425.95	-2874425.82	-2874425.69	0.0299	0.0012
Mercury	-12583-06-30 04:04 J	-2874337.43	-2874337.33	-2874337.21	0.0298	0.0147
Venus	-12581-11-12 09:07 J	-2873471.31	-2873471.12	-2873470.92	0.0286	0.0110
Venus	-12580-06-29 21:50 J	-2873241.78	-2873241.59	-2873241.39	0.0283	0.0091
Earth	-12573-12-06 21:50 J	-2870524.82	-2870524.59	-2870524.36	0.0258	0.0091
Moon	-12573-12-06 23:16 J	-2870524.76	-2870524.53	-2870524.30	0.0258	0.0083 *
Mercury	-12568-10-13 22:19 J	-2868752.69	-2868752.57	-2868752.45	0.0263	0.0203
Mercury	-12567-01-10 20:09 J	-2868663.85	-2868663.66	-2868663.47	0.0264	0.0038
Mars	-12567-01-27 08:52 J	-2868647.27	-2868647.13	-2868646.99	0.0264	0.0226
Mercury	-12567-04-09 18:00 J	-2868574.91	-2868574.75	-2868574.58	0.0264	0.0129
Venus	-12564-03-02 04:19 J	-2867517.51	-2867517.32	-2867517.11	0.0276	0.0105
Venus	-12564-10-17 17:31 J	-2867287.97	-2867287.77	-2867287.56	0.0279	0.0087
Mercury	-12554-05-24 05:02 J	-2863782.37	-2863782.29	-2863782.21	0.0300	0.0232
Mercury	-12554-08-20 17:02 J	-2863693.91	-2863693.79	-2863693.66	0.0299	0.0073
Mercury	-12554-11-17 05:02 J	-2863605.41	-2863605.29	-2863605.16	0.0298	0.0087
Mercury	-12553-02-13 17:02 J	-2863516.86	-2863516.79	-2863516.71	0.0297	0.0243
Venus	-12551-05-25 10:48 J	-2862685.25	-2862685.05	-2862684.85	0.0287	0.0087
Venus	-12550-01-09 23:31 J	-2862455.71	-2862455.52	-2862455.33	0.0283	0.0114
Moon	-12543-12-13 08:38 J	-2859561.27	-2859561.14	-2859560.98	0.0257	0.0206
Earth	-12543-12-13 12:00 J	-2859561.14	-2859561.00	-2859560.84	0.0257	0.0207 *
Mercury	-12538-03-02 20:09 J	-2858020.69	-2858020.66	-2858020.62	0.0262	0.0256
Mercury	-12538-05-30 18:00 J	-2857931.93	-2857931.75	-2857931.57	0.0263	0.0092

Mercury	-12538-08-27 15:50 J	-2857843.02	-2857842.84	-2857842.65	0.0263	0.0074
Mercury	-12538-11-24 13:40 J	-2857754.00	-2857753.93	-2857753.84	0.0264	0.0241
Venus	-12535-01-25 19:55 J	-2856960.72	-2856960.67	-2856960.62	0.0273	0.0265
Venus	-12535-09-12 06:14 J	-2856731.44	-2856731.24	-2856731.03	0.0276	0.0084
Venus	-12534-04-29 19:40 J	-2856501.88	-2856501.68	-2856501.48	0.0279	0.0108
Moon	-12528-06-11 04:33 J	-2854267.53	-2854267.31	-2854267.07	0.0305	0.0123
Earth	-12528-06-11 05:31 J	-2854267.49	-2854267.27	-2854267.05	0.0305	0.0126 *
Mercury	-12525-10-10 05:45 J	-2853050.27	-2853050.26	-2853050.23	0.0301	0.0295
Mercury	-12524-01-06 18:00 J	-2852961.86	-2852961.75	-2852961.63	0.0300	0.0134
Mercury	-12524-04-05 06:14 J	-2852873.37	-2852873.24	-2852873.12	0.0299	0.0027
Mercury	-12524-07-02 18:00 J	-2852784.84	-2852784.75	-2852784.64	0.0298	0.0184
Venus	-12522-04-19 19:55 J	-2852128.71	-2852128.67	-2852128.60	0.0290	0.0277
Venus	-12522-12-05 11:31 J	-2851899.22	-2851899.02	-2851898.81	0.0286	0.0067
Venus	-12521-07-22 00:14 J	-2851669.67	-2851669.49	-2851669.30	0.0283	0.0134
Earth	-12514-12-08 17:02 J	-2848974.04	-2848973.79	-2848973.54	0.0258	0.0045
Moon	-12514-12-08 20:38 J	-2848973.89	-2848973.64	-2848973.39	0.0258	0.0037 *
Mars	-12509-05-06 20:52 J	-2847362.79	-2847362.63	-2847362.46	0.0262	0.0209
Mercury	-12509-10-16 15:21 J	-2847200.02	-2847199.86	-2847199.70	0.0263	0.0151
Mercury	-12508-01-13 13:11 J	-2847111.15	-2847110.95	-2847110.76	0.0264	0.0014
Mercury	-12508-04-12 10:48 J	-2847022.18	-2847022.05	-2847021.90	0.0264	0.0182
Venus	-12506-08-07 20:52 J	-2846174.72	-2846174.63	-2846174.54	0.0273	0.0246
Venus	-12505-03-24 07:26 J	-2845945.40	-2845945.19	-2845944.98	0.0276	0.0063
Venus	-12505-11-08 20:52 J	-2845715.82	-2845715.63	-2845715.44	0.0279	0.0130
Mercury	-12495-05-26 18:57 J	-2842229.81	-2842229.71	-2842229.62	0.0300	0.0196
Mars	-12495-05-31 14:52 J	-2842225.19	-2842224.88	-2842224.57	0.0300	0.0007
Mercury	-12495-08-23 06:57 J	-2842141.34	-2842141.21	-2842141.08	0.0299	0.0036
Mercury	-12495-11-19 18:57 J	-2842052.83	-2842052.71	-2842052.59	0.0298	0.0122
Mercury	-12494-02-16 06:57 J	-2841964.25	-2841964.21	-2841964.17	0.0297	0.0278
Venus	-12493-10-29 21:21 J	-2841342.70	-2841342.61	-2841342.51	0.0290	0.0254
Venus	-12492-06-16 12:57 J	-2841113.17	-2841112.96	-2841112.75	0.0286	0.0044

Venus	-12491-02-01 01:26 J	-2840883.61	-2840883.44	-2840883.27	0.0283	0.0156
Earth	-12484-12-14 07:11 J	-2838010.24	-2838010.20	-2838010.15	0.0258	0.0253
Moon	-12484-12-14 07:40 J	-2838010.23	-2838010.18	-2838010.12	0.0258	0.0250 *
Mercury	-12479-03-05 13:26 J	-2836468.06	-2836467.94	-2836467.82	0.0262	0.0203
Mercury	-12479-06-02 11:02 J	-2836379.23	-2836379.04	-2836378.84	0.0263	0.0040
Mars	-12479-06-22 09:07 J	-2836359.21	-2836359.12	-2836359.02	0.0263	0.0246
Mercury	-12479-08-30 08:52 J	-2836290.29	-2836290.13	-2836289.95	0.0263	0.0127
Venus	-12476-02-16 22:48 J	-2835388.66	-2835388.55	-2835388.42	0.0273	0.0225
Venus	-12476-10-04 09:35 J	-2835159.31	-2835159.10	-2835158.89	0.0276	0.0042
Venus	-12475-05-21 23:02 J	-2834929.72	-2834929.54	-2834929.36	0.0279	0.0151
Moon	-12469-06-11 18:28 J	-2832716.96	-2832716.73	-2832716.49	0.0305	0.0078
Earth	-12469-06-11 22:04 J	-2832716.81	-2832716.58	-2832716.34	0.0305	0.0077 *
Mercury	-12466-10-13 19:40 J	-2831497.74	-2831497.68	-2831497.61	0.0301	0.0259
Mercury	-12465-01-10 07:55 J	-2831409.29	-2831409.17	-2831409.05	0.0300	0.0098
Mercury	-12465-04-07 19:55 J	-2831320.79	-2831320.67	-2831320.54	0.0299	0.0061
Mercury	-12465-07-05 07:55 J	-2831232.25	-2831232.17	-2831232.08	0.0298	0.0219
Venus	-12463-05-11 22:19 J	-2830556.68	-2830556.57	-2830556.44	0.0289	0.0235
Venus	-12463-12-27 13:40 J	-2830327.13	-2830326.93	-2830326.72	0.0286	0.0025
Venus	-12462-08-14 02:09 J	-2830097.57	-2830097.41	-2830097.25	0.0283	0.0175
Earth	-12455-12-09 12:43 J	-2827423.22	-2827422.97	-2827422.72	0.0258	0.0003
Moon	-12455-12-09 12:57 J	-2827423.22	-2827422.96	-2827422.70	0.0258	0.0005 *
Mercury	-12450-07-23 11:02 J	-2825736.06	-2825736.04	-2825736.02	0.0262	0.0260
Mercury	-12450-10-20 08:38 J	-2825647.32	-2825647.14	-2825646.96	0.0263	0.0096
Mercury	-12449-01-17 06:28 J	-2825558.41	-2825558.23	-2825558.04	0.0264	0.0069
Mercury	-12449-04-15 04:19 J	-2825469.40	-2825469.32	-2825469.23	0.0264	0.0236
Venus	-12447-08-30 00:14 J	-2824602.62	-2824602.49	-2824602.34	0.0274	0.0205
Venus	-12446-04-16 11:16 J	-2824373.25	-2824373.03	-2824372.82	0.0277	0.0020
Venus	-12446-12-02 00:43 J	-2824143.63	-2824143.47	-2824143.30	0.0280	0.0174
Mercury	-12436-05-29 08:52 J	-2820677.24	-2820677.13	-2820677.02	0.0300	0.0159
Mercury	-12436-08-25 20:52 J	-2820588.75	-2820588.63	-2820588.50	0.0299	0.0007

Mercury	-12436-11-22 08:52 J	-2820500.23	-2820500.13	-2820500.02	0.0298	0.0159
Venus	-12434-11-22 00:00 J	-2819770.63	-2819770.50	-2819770.35	0.0289	0.0212
Venus	-12433-07-08 15:21 J	-2819541.06	-2819540.86	-2819540.65	0.0286	0.0006
Venus	-12432-02-23 03:35 J	-2819311.49	-2819311.35	-2819311.20	0.0283	0.0198
Moon	-12426-12-04 18:57 J	-2816835.78	-2816835.71	-2816835.62	0.0259	0.0243
Earth	-12426-12-04 19:11 J	-2816835.75	-2816835.70	-2816835.62	0.0259	0.0250 *
Mars	-12421-09-30 02:09 J	-2815074.61	-2815074.41	-2815074.21	0.0261	0.0183
Mercury	-12420-03-08 06:57 J	-2814915.36	-2814915.21	-2814915.04	0.0262	0.0147
Mercury	-12420-06-05 04:48 J	-2814826.49	-2814826.30	-2814826.10	0.0263	0.0019
Mercury	-12420-09-02 02:38 J	-2814737.52	-2814737.39	-2814737.25	0.0264	0.0184
Venus	-12417-03-11 03:35 J	-2813816.51	-2813816.35	-2813816.19	0.0273	0.0182
Venus	-12417-10-26 14:38 J	-2813587.11	-2813586.89	-2813586.68	0.0276	0.0006
Venus	-12416-06-13 04:04 J	-2813357.47	-2813357.33	-2813357.17	0.0279	0.0197
Moon	-12410-06-13 17:31 J	-2811166.00	-2811165.77	-2811165.54	0.0305	0.0023
Earth	-12410-06-13 18:28 J	-2811165.97	-2811165.73	-2811165.49	0.0305	0.0018 *
Mercury	-12407-10-16 10:04 J	-2809945.17	-2809945.08	-2809945.00	0.0301	0.0218
Mars	-12407-10-23 09:50 J	-2809938.40	-2809938.09	-2809937.78	0.0301	0.0019
Mercury	-12406-01-12 22:04 J	-2809856.70	-2809856.58	-2809856.45	0.0300	0.0058
Mercury	-12406-04-11 10:19 J	-2809768.19	-2809768.07	-2809767.95	0.0299	0.0102
Mercury	-12406-07-08 22:04 J	-2809679.64	-2809679.58	-2809679.51	0.0298	0.0259
Venus	-12404-06-03 02:09 J	-2808984.57	-2808984.41	-2808984.25	0.0289	0.0189
Venus	-12403-01-18 17:02 J	-2808755.00	-2808754.79	-2808754.58	0.0286	0.0020
Venus	-12403-09-05 04:48 J	-2808525.42	-2808525.30	-2808525.16	0.0283	0.0219
Moon	-12396-12-10 06:00 J	-2805872.49	-2805872.25	-2805872.00	0.0258	0.0050
Earth	-12396-12-10 09:50 J	-2805872.33	-2805872.09	-2805871.85	0.0258	0.0052 *
Mercury	-12391-07-26 05:02 J	-2804183.41	-2804183.29	-2804183.16	0.0262	0.0200
Mercury	-12391-10-23 02:52 J	-2804094.57	-2804094.38	-2804094.18	0.0263	0.0036
Mercury	-12390-01-20 00:43 J	-2804005.63	-2804005.47	-2804005.30	0.0264	0.0130
Venus	-12388-09-21 06:00 J	-2803030.42	-2803030.25	-2803030.07	0.0274	0.0160
Venus	-12387-05-08 17:16 J	-2802801.00	-2802800.78	-2802800.57	0.0277	0.0027

Venus	-12387-12-24 07:11 J	-2802571.33	-2802571.20	-2802571.07	0.0280	0.0222
Mercury	-12377-03-04 11:02 J	-2799213.08	-2799213.04	-2799212.99	0.0301	0.0277
Mercury	-12377-05-31 23:16 J	-2799124.65	-2799124.53	-2799124.41	0.0300	0.0116
Mercury	-12377-08-28 11:16 J	-2799036.15	-2799036.03	-2799035.90	0.0299	0.0044
Mercury	-12377-11-24 23:16 J	-2798947.62	-2798947.53	-2798947.43	0.0298	0.0201
Venus	-12375-12-14 04:04 J	-2798198.50	-2798198.33	-2798198.16	0.0289	0.0167
Venus	-12374-07-31 18:57 J	-2797968.91	-2797968.71	-2797968.50	0.0286	0.0042
Venus	-12373-03-17 06:43 J	-2797739.32	-2797739.22	-2797739.10	0.0282	0.0241
Earth	-12367-12-05 17:16 J	-2795284.94	-2795284.78	-2795284.62	0.0259	0.0198
Moon	-12367-12-05 20:52 J	-2795284.78	-2795284.63	-2795284.46	0.0259	0.0195 *
Mercury	-12362-12-13 03:50 J	-2793451.39	-2793451.34	-2793451.27	0.0262	0.0247
Mercury	-12361-03-11 01:40 J	-2793362.61	-2793362.43	-2793362.24	0.0262	0.0084
Mercury	-12361-06-07 23:31 J	-2793273.70	-2793273.52	-2793273.33	0.0263	0.0082
Mercury	-12361-09-04 21:35 J	-2793184.67	-2793184.60	-2793184.54	0.0264	0.0248
Venus	-12358-04-03 10:19 J	-2792244.25	-2792244.07	-2792243.88	0.0274	0.0137
Venus	-12358-11-18 21:35 J	-2792014.81	-2792014.60	-2792014.39	0.0277	0.0051
Venus	-12357-07-05 11:45 J	-2791785.11	-2791785.01	-2791784.91	0.0280	0.0246
Earth	-12351-06-14 18:14 J	-2789614.98	-2789614.74	-2789614.50	0.0304	0.0049
Moon	-12351-06-14 21:35 J	-2789614.84	-2789614.60	-2789614.36	0.0304	0.0041 *
Mercury	-12348-10-19 00:43 J	-2788392.57	-2788392.47	-2788392.36	0.0301	0.0171
Mercury	-12347-01-15 12:57 J	-2788304.09	-2788303.96	-2788303.84	0.0300	0.0014
Mercury	-12347-04-14 00:57 J	-2788215.57	-2788215.46	-2788215.35	0.0299	0.0148
Venus	-12345-06-25 06:57 J	-2787412.38	-2787412.21	-2787412.02	0.0289	0.0143
Venus	-12344-02-09 21:35 J	-2787182.80	-2787182.60	-2787182.39	0.0286	0.0066
Venus	-12344-09-27 09:21 J	-2786953.18	-2786953.11	-2786953.04	0.0282	0.0263
Moon	-12337-12-11 07:26 J	-2784321.41	-2784321.19	-2784320.97	0.0258	0.0101
Earth	-12337-12-11 08:52 J	-2784321.35	-2784321.13	-2784320.90	0.0258	0.0106 *
Mars	-12332-02-23 11:45 J	-2782786.23	-2782786.01	-2782785.77	0.0261	0.0148
Mercury	-12332-07-29 00:14 J	-2782630.65	-2782630.49	-2782630.32	0.0263	0.0133
Mercury	-12332-10-25 22:04 J	-2782541.77	-2782541.58	-2782541.38	0.0263	0.0033



Mercury	-12331-01-22 19:55 J	-2782452.79	-2782452.67	-2782452.54	0.0264	0.0199
Venus	-12329-10-13 14:09 J	-2781458.10	-2781457.91	-2781457.71	0.0274	0.0112
Venus	-12328-05-31 01:40 J	-2781228.63	-2781228.43	-2781228.22	0.0277	0.0078
Venus	-12327-01-15 15:50 J	-2780998.87	-2780998.84	-2780998.78	0.0281	0.0275
Mercury	-12318-03-08 02:24 J	-2777660.48	-2777660.40	-2777660.32	0.0300	0.0223
Mars	-12318-03-17 22:33 J	-2777650.87	-2777650.56	-2777650.24	0.0300	0.0003
Mercury	-12318-06-04 14:24 J	-2777572.02	-2777571.90	-2777571.77	0.0300	0.0064
Mercury	-12318-09-01 02:38 J	-2777483.51	-2777483.39	-2777483.27	0.0299	0.0096
Mercury	-12318-11-28 14:38 J	-2777394.96	-2777394.89	-2777394.83	0.0298	0.0253
Venus	-12315-01-05 10:33 J	-2776626.25	-2776626.06	-2776625.87	0.0288	0.0117
Venus	-12315-08-23 00:57 J	-2776396.66	-2776396.46	-2776396.26	0.0285	0.0090
Earth	-12308-12-06 17:16 J	-2773733.98	-2773733.78	-2773733.56	0.0259	0.0142
Moon	-12308-12-06 18:57 J	-2773733.91	-2773733.71	-2773733.49	0.0259	0.0142 *
Mercury	-12303-12-15 23:31 J	-2771898.65	-2771898.52	-2771898.37	0.0262	0.0177
Mercury	-12302-03-14 21:21 J	-2771809.80	-2771809.61	-2771809.41	0.0263	0.0014
Mercury	-12302-06-11 19:26 J	-2771720.85	-2771720.69	-2771720.54	0.0263	0.0154
Venus	-12300-09-08 10:33 J	-2770901.09	-2770901.06	-2770901.02	0.0271	0.0266
Venus	-12299-04-25 19:40 J	-2770671.88	-2770671.68	-2770671.47	0.0274	0.0086
Venus	-12299-12-11 07:40 J	-2770442.38	-2770442.18	-2770441.98	0.0277	0.0104
Earth	-12292-06-16 00:28 J	-2768063.70	-2768063.48	-2768063.26	0.0304	0.0133
Moon	-12292-06-16 02:52 J	-2768063.60	-2768063.38	-2768063.15	0.0304	0.0121 *
Mercury	-12289-07-25 04:04 J	-2766928.37	-2766928.33	-2766928.28	0.0301	0.0275
Mercury	-12289-10-21 16:19 J	-2766839.94	-2766839.82	-2766839.70	0.0300	0.0113
Mercury	-12288-01-18 04:19 J	-2766751.44	-2766751.32	-2766751.19	0.0299	0.0048
Mercury	-12288-04-16 16:19 J	-2766662.91	-2766662.82	-2766662.72	0.0299	0.0204
Venus	-12286-07-18 14:38 J	-2765840.08	-2765839.89	-2765839.68	0.0288	0.0091
Venus	-12285-03-04 04:33 J	-2765610.49	-2765610.31	-2765610.11	0.0285	0.0116
Earth	-12278-12-13 10:33 J	-2762770.24	-2762770.06	-2762769.86	0.0258	0.0167
Moon	-12278-12-13 13:40 J	-2762770.11	-2762769.93	-2762769.72	0.0258	0.0159 *
Mercury	-12273-05-03 22:48 J	-2761166.64	-2761166.55	-2761166.44	0.0262	0.0221

Mercury	-12273-07-31 20:38 J	-2761077.82	-2761077.64	-2761077.45	0.0263	0.0057
Mercury	-12273-10-28 18:28 J	-2760988.90	-2760988.73	-2760988.55	0.0264	0.0109
Venus	-12270-03-21 15:35 J	-2760114.94	-2760114.85	-2760114.75	0.0272	0.0240
Venus	-12270-11-06 01:11 J	-2759885.66	-2759885.45	-2759885.24	0.0275	0.0059
Venus	-12269-06-22 13:11 J	-2759656.14	-2759655.95	-2759655.76	0.0278	0.0133
Moon	-12263-06-09 14:52 J	-2757477.95	-2757477.88	-2757477.79	0.0303	0.0282
Earth	-12263-06-09 16:19 J	-2757477.92	-2757477.82	-2757477.70	0.0303	0.0269 *
Mercury	-12259-03-10 18:28 J	-2756107.84	-2756107.73	-2756107.62	0.0300	0.0160
Mercury	-12259-06-07 06:28 J	-2756019.36	-2756019.23	-2756019.10	0.0299	0.0006
Mercury	-12259-09-03 18:28 J	-2755930.83	-2755930.73	-2755930.62	0.0298	0.0158
Venus	-12257-06-12 02:52 J	-2755283.43	-2755283.38	-2755283.31	0.0291	0.0278
Venus	-12256-01-27 19:40 J	-2755053.88	-2755053.68	-2755053.48	0.0288	0.0063
Venus	-12256-09-14 09:21 J	-2754824.29	-2754824.11	-2754823.93	0.0284	0.0142
Moon	-12249-12-07 17:31 J	-2752183.00	-2752182.77	-2752182.52	0.0259	0.0084
Earth	-12249-12-07 20:24 J	-2752182.88	-2752182.65	-2752182.41	0.0259	0.0079 *
Mars	-12244-07-20 12:57 J	-2750497.21	-2750496.96	-2750496.69	0.0262	0.0092
Mercury	-12244-09-20 22:33 J	-2750434.56	-2750434.56	-2750434.54	0.0262	0.0262
Mercury	-12244-12-18 20:24 J	-2750345.83	-2750345.65	-2750345.47	0.0263	0.0098
Mercury	-12243-03-17 18:14 J	-2750256.92	-2750256.74	-2750256.55	0.0263	0.0067
Mercury	-12243-06-14 16:04 J	-2750167.91	-2750167.83	-2750167.74	0.0264	0.0234
Venus	-12241-09-30 21:50 J	-2749328.72	-2749328.59	-2749328.45	0.0272	0.0214
Venus	-12240-05-18 07:40 J	-2749099.39	-2749099.18	-2749098.96	0.0275	0.0032
Venus	-12239-01-02 20:09 J	-2748869.83	-2748869.66	-2748869.48	0.0278	0.0161
Moon	-12233-06-17 10:33 J	-2746512.22	-2746512.06	-2746511.88	0.0304	0.0218
Earth	-12233-06-17 12:57 J	-2746512.11	-2746511.96	-2746511.80	0.0304	0.0233 *
Mercury	-12230-07-28 20:52 J	-2745375.73	-2745375.63	-2745375.54	0.0301	0.0204
Mars	-12230-08-11 17:31 J	-2745362.07	-2745361.77	-2745361.46	0.0301	0.0070
Mercury	-12230-10-25 08:52 J	-2745287.26	-2745287.13	-2745287.00	0.0300	0.0043
Mercury	-12229-01-21 20:52 J	-2745198.75	-2745198.63	-2745198.51	0.0299	0.0115
Mercury	-12229-04-19 08:52 J	-2745110.18	-2745110.13	-2745110.08	0.0298	0.0272

Venus	-12228-12-23 09:07 J	-2744497.21	-2744497.12	-2744497.00	0.0291	0.0248
Venus	-12227-08-10 01:40 J	-2744267.64	-2744267.43	-2744267.22	0.0287	0.0034
Venus	-12226-03-27 14:52 J	-2744038.04	-2744037.88	-2744037.71	0.0284	0.0171
Earth	-12219-12-14 15:35 J	-2741218.94	-2741218.85	-2741218.74	0.0258	0.0235
Moon	-12219-12-14 18:14 J	-2741218.85	-2741218.74	-2741218.60	0.0258	0.0224 *
Mercury	-12214-05-07 20:09 J	-2739613.82	-2739613.66	-2739613.49	0.0263	0.0138
Mercury	-12214-08-04 18:14 J	-2739524.93	-2739524.74	-2739524.55	0.0263	0.0028
Mercury	-12214-11-01 16:04 J	-2739435.96	-2739435.83	-2739435.70	0.0264	0.0194
Venus	-12211-04-13 04:19 J	-2738542.47	-2738542.32	-2738542.16	0.0273	0.0186
Venus	-12211-11-28 14:38 J	-2738313.10	-2738312.89	-2738312.67	0.0276	0.0006
Venus	-12210-07-16 03:35 J	-2738083.50	-2738083.35	-2738083.20	0.0279	0.0193
Earth	-12204-06-11 07:55 J	-2735926.36	-2735926.17	-2735925.95	0.0303	0.0161
Moon	-12204-06-11 10:48 J	-2735926.24	-2735926.05	-2735925.86	0.0303	0.0174 *
Mercury	-12201-12-14 23:16 J	-2734643.60	-2734643.53	-2734643.46	0.0300	0.0244
Mercury	-12200-03-13 11:31 J	-2734555.15	-2734555.02	-2734554.90	0.0299	0.0084
Mercury	-12200-06-09 23:31 J	-2734466.64	-2734466.52	-2734466.40	0.0299	0.0074
Mercury	-12200-09-06 11:31 J	-2734378.10	-2734378.02	-2734377.94	0.0298	0.0231
Venus	-12198-07-05 15:50 J	-2733710.96	-2733710.84	-2733710.69	0.0290	0.0217
Venus	-12197-02-20 07:55 J	-2733481.38	-2733481.17	-2733480.96	0.0287	0.0005
Venus	-12197-10-06 20:38 J	-2733251.78	-2733251.64	-2733251.48	0.0284	0.0199
Moon	-12190-12-09 23:45 J	-2730631.76	-2730631.51	-2730631.27	0.0259	0.0014
Earth	-12190-12-10 02:38 J	-2730631.63	-2730631.39	-2730631.14	0.0259	0.0009 *
Mercury	-12185-09-23 20:24 J	-2728881.79	-2728881.65	-2728881.50	0.0263	0.0176
Mercury	-12185-12-21 18:14 J	-2728792.93	-2728792.74	-2728792.54	0.0263	0.0011
Mercury	-12184-03-20 16:04 J	-2728703.98	-2728703.83	-2728703.67	0.0264	0.0156
Venus	-12182-10-24 11:45 J	-2727756.18	-2727756.01	-2727755.83	0.0273	0.0158
Venus	-12181-06-09 22:33 J	-2727526.78	-2727526.56	-2727526.35	0.0276	0.0029
Venus	-12180-01-25 11:45 J	-2727297.14	-2727297.01	-2727296.88	0.0279	0.0223
Mercury	-12171-05-04 01:55 J	-2723911.45	-2723911.42	-2723911.38	0.0301	0.0284
Mercury	-12171-07-31 14:09 J	-2723823.03	-2723822.91	-2723822.79	0.0300	0.0123

Mercury	-12171-10-28 02:09 J	-2723734.53	-2723734.41	-2723734.28	0.0299	0.0037
Mercury	-12170-01-24 14:09 J	-2723646.00	-2723645.91	-2723645.81	0.0298	0.0193
Venus	-12168-01-14 23:31 J	-2722924.67	-2722924.52	-2722924.35	0.0290	0.0184
Venus	-12168-09-01 15:07 J	-2722695.08	-2722694.87	-2722694.67	0.0287	0.0029
Venus	-12167-04-19 03:21 J	-2722465.47	-2722465.36	-2722465.23	0.0283	0.0230
Earth	-12161-12-04 13:11 J	-2720044.01	-2720043.95	-2720043.87	0.0260	0.0248
Moon	-12161-12-04 16:48 J	-2720043.87	-2720043.80	-2720043.70	0.0260	0.0244 *
Mars	-12156-12-14 23:02 J	-2718207.81	-2718207.54	-2718207.26	0.0262	0.0019
Mercury	-12155-02-10 20:38 J	-2718149.75	-2718149.64	-2718149.52	0.0263	0.0212
Mercury	-12155-05-10 18:28 J	-2718060.92	-2718060.73	-2718060.54	0.0263	0.0048
Mercury	-12155-08-07 16:19 J	-2717971.99	-2717971.82	-2717971.64	0.0264	0.0119
Venus	-12152-05-05 19:11 J	-2716969.89	-2716969.70	-2716969.51	0.0274	0.0127
Venus	-12152-12-21 06:14 J	-2716740.45	-2716740.24	-2716740.03	0.0277	0.0061
Venus	-12151-08-07 19:40 J	-2716510.75	-2716510.68	-2716510.59	0.0280	0.0258
Earth	-12145-06-13 04:48 J	-2714374.54	-2714374.30	-2714374.06	0.0303	0.0041
Moon	-12145-06-13 08:09 J	-2714374.40	-2714374.16	-2714373.92	0.0303	0.0052 *
Mercury	-12142-12-18 17:02 J	-2713090.89	-2713090.79	-2713090.67	0.0300	0.0159
Mars	-12141-01-06 18:00 J	-2713071.98	-2713071.75	-2713071.50	0.0300	0.0191
Mercury	-12141-03-16 05:16 J	-2713002.41	-2713002.28	-2713002.15	0.0299	0.0003
Mercury	-12141-06-12 17:16 J	-2712913.89	-2712913.78	-2712913.67	0.0298	0.0158
Venus	-12139-07-28 07:55 J	-2712138.34	-2712138.17	-2712137.99	0.0289	0.0150
Venus	-12138-03-14 22:48 J	-2711908.75	-2711908.55	-2711908.34	0.0286	0.0060
Venus	-12138-10-30 10:48 J	-2711679.12	-2711679.05	-2711678.96	0.0283	0.0259
Earth	-12131-12-11 11:16 J	-2709080.26	-2709080.03	-2709079.78	0.0259	0.0070
Moon	-12131-12-11 11:45 J	-2709080.23	-2709080.01	-2709079.77	0.0259	0.0064 *
Mercury	-12126-06-30 20:52 J	-2707417.68	-2707417.63	-2707417.56	0.0263	0.0249
Mercury	-12126-09-27 18:57 J	-2707328.89	-2707328.71	-2707328.53	0.0263	0.0084
Mercury	-12126-12-25 16:48 J	-2707239.98	-2707239.80	-2707239.61	0.0264	0.0082
Mercury	-12125-03-23 14:38 J	-2707150.94	-2707150.89	-2707150.82	0.0264	0.0250
Venus	-12123-11-16 03:07 J	-2706183.56	-2706183.37	-2706183.16	0.0274	0.0098

Venus	-12122-07-03 14:52 J	-2705954.08	-2705953.88	-2705953.68	0.0277	0.0092
Mercury	-12112-05-06 20:09 J	-2702358.75	-2702358.66	-2702358.56	0.0300	0.0194
Mercury	-12112-08-03 08:24 J	-2702270.28	-2702270.15	-2702270.02	0.0300	0.0034
Mercury	-12112-10-30 20:24 J	-2702181.77	-2702181.65	-2702181.54	0.0299	0.0125
Mercury	-12111-01-27 08:09 J	-2702093.19	-2702093.16	-2702093.11	0.0298	0.0281
Venus	-12109-02-07 16:33 J	-2701352.00	-2701351.81	-2701351.62	0.0289	0.0115
Venus	-12109-09-24 06:57 J	-2701122.41	-2701122.21	-2701122.01	0.0286	0.0094
Earth	-12102-12-06 23:02 J	-2698492.72	-2698492.54	-2698492.34	0.0260	0.0169
Moon	-12102-12-06 23:31 J	-2698492.72	-2698492.52	-2698492.33	0.0260	0.0168 *
Mercury	-12096-02-13 19:26 J	-2696596.86	-2696596.69	-2696596.51	0.0263	0.0119
Mercury	-12096-05-13 17:16 J	-2696507.97	-2696507.78	-2696507.58	0.0264	0.0048
Mercury	-12096-08-10 15:21 J	-2696418.97	-2696418.86	-2696418.75	0.0264	0.0214
Venus	-12094-10-12 01:40 J	-2695626.50	-2695626.43	-2695626.33	0.0272	0.0248
Venus	-12093-05-28 11:16 J	-2695397.24	-2695397.03	-2695396.82	0.0275	0.0066
Venus	-12092-01-12 23:16 J	-2695167.72	-2695167.53	-2695167.33	0.0278	0.0126
Earth	-12086-06-16 04:33 J	-2692822.54	-2692822.31	-2692822.08	0.0304	0.0089
Moon	-12086-06-16 05:16 J	-2692822.52	-2692822.28	-2692822.03	0.0304	0.0078 *
Mercury	-12083-09-23 23:31 J	-2691626.61	-2691626.52	-2691626.44	0.0300	0.0226
Mercury	-12083-12-21 11:31 J	-2691538.14	-2691538.02	-2691537.89	0.0299	0.0066
Mercury	-12082-03-19 23:31 J	-2691449.64	-2691449.52	-2691449.40	0.0298	0.0092
Mercury	-12082-06-16 11:31 J	-2691361.09	-2691361.02	-2691360.95	0.0298	0.0248
Venus	-12080-08-20 01:26 J	-2690565.64	-2690565.44	-2690565.24	0.0288	0.0080
Venus	-12079-04-06 15:21 J	-2690336.05	-2690335.86	-2690335.67	0.0285	0.0127
Earth	-12072-12-12 21:50 J	-2687528.79	-2687528.59	-2687528.38	0.0259	0.0149
Moon	-12072-12-13 01:26 J	-2687528.64	-2687528.44	-2687528.23	0.0259	0.0142 *
Mars	-12067-05-11 14:09 J	-2685918.17	-2685917.91	-2685917.63	0.0263	0.0066
Mercury	-12067-07-03 19:40 J	-2685864.83	-2685864.68	-2685864.52	0.0263	0.0155
Mercury	-12067-09-30 17:45 J	-2685775.96	-2685775.76	-2685775.57	0.0264	0.0011
Mercury	-12067-12-28 15:35 J	-2685686.99	-2685686.85	-2685686.70	0.0264	0.0177
Venus	-12064-04-23 09:07 J	-2684840.23	-2684840.12	-2684839.98	0.0272	0.0220

Venus	-12064-12-08 19:11 J	-2684610.91	-2684610.70	-2684610.48	0.0275	0.0036
Venus	-12063-07-26 07:40 J	-2684381.35	-2684381.18	-2684381.00	0.0278	0.0157
Earth	-12057-06-09 03:07 J	-2682236.43	-2682236.37	-2682236.30	0.0303	0.0291
Moon	-12057-06-09 03:07 J	-2682236.37	-2682236.37	-2682236.37	0.0303	0.0302 *
Mercury	-12053-02-11 02:38 J	-2680894.45	-2680894.39	-2680894.33	0.0301	0.0259
Mercury	-12053-05-09 14:38 J	-2680806.01	-2680805.89	-2680805.76	0.0300	0.0099
Mercury	-12053-08-06 02:52 J	-2680717.51	-2680717.38	-2680717.26	0.0299	0.0061
Mercury	-12053-11-02 14:38 J	-2680628.97	-2680628.89	-2680628.80	0.0298	0.0218
Venus	-12051-07-15 18:14 J	-2680008.83	-2680008.74	-2680008.64	0.0291	0.0258
Venus	-12050-03-02 10:48 J	-2679779.26	-2679779.05	-2679778.85	0.0288	0.0043
Venus	-12050-10-18 00:00 J	-2679549.66	-2679549.50	-2679549.32	0.0285	0.0163
Moon	-12043-12-08 06:28 J	-2676941.46	-2676941.23	-2676940.99	0.0259	0.0090
Earth	-12043-12-08 10:19 J	-2676941.30	-2676941.07	-2676940.83	0.0259	0.0087 *
Mercury	-12038-11-20 20:24 J	-2675132.78	-2675132.65	-2675132.52	0.0263	0.0189
Mercury	-12037-02-17 18:14 J	-2675043.93	-2675043.74	-2675043.55	0.0263	0.0024
Mercury	-12037-05-16 16:04 J	-2674954.99	-2674954.83	-2674954.66	0.0264	0.0143
Venus	-12035-11-03 17:02 J	-2674053.94	-2674053.79	-2674053.63	0.0273	0.0189
Venus	-12034-06-21 03:21 J	-2673824.57	-2673824.36	-2673824.14	0.0276	0.0004
Venus	-12033-02-05 16:04 J	-2673594.98	-2673594.83	-2673594.67	0.0279	0.0192
Moon	-12027-06-18 01:55 J	-2671270.59	-2671270.42	-2671270.23	0.0304	0.0208
Earth	-12027-06-18 05:02 J	-2671270.45	-2671270.29	-2671270.12	0.0304	0.0221 *
Mercury	-12024-06-30 05:45 J	-2670162.28	-2670162.26	-2670162.23	0.0301	0.0291
Mercury	-12024-09-26 18:00 J	-2670073.86	-2670073.75	-2670073.63	0.0300	0.0131
Mercury	-12024-12-24 06:14 J	-2669985.37	-2669985.24	-2669985.12	0.0299	0.0030
Mercury	-12023-03-22 18:00 J	-2669896.84	-2669896.75	-2669896.65	0.0298	0.0186
Venus	-12021-01-26 03:50 J	-2669222.47	-2669222.34	-2669222.20	0.0290	0.0222
Venus	-12021-09-11 19:40 J	-2668992.88	-2668992.68	-2668992.47	0.0287	0.0010
Venus	-12020-04-29 08:38 J	-2668763.29	-2668763.14	-2668762.98	0.0284	0.0195
Earth	-12013-12-14 08:38 J	-2665977.24	-2665977.14	-2665977.02	0.0259	0.0231
Moon	-12013-12-14 10:48 J	-2665977.17	-2665977.05	-2665976.91	0.0259	0.0221 *

Mercury	-12008-04-08 20:24 J	-2664400.73	-2664400.65	-2664400.54	0.0263	0.0226
Mercury	-12008-07-06 18:28 J	-2664311.92	-2664311.73	-2664311.54	0.0263	0.0061
Mercury	-12008-10-03 16:19 J	-2664222.99	-2664222.82	-2664222.64	0.0264	0.0105
Venus	-12005-05-16 00:28 J	-2663267.65	-2663267.48	-2663267.31	0.0273	0.0159
Venus	-12005-12-31 11:16 J	-2663038.24	-2663038.03	-2663037.81	0.0276	0.0028
Venus	-12004-08-18 00:14 J	-2662808.60	-2662808.49	-2662808.35	0.0279	0.0223

# 12TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 12th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Earth	-11998-06-12 03:07 J	-2660684.57	-2660684.37	-2660684.17	0.0303	0.0161		
Moon	-11998-06-12 06:28 J	-2660684.42	-2660684.23	-2660684.03	0.0303	0.0174	*	
Mercury	-11994-02-13 21:07 J	-2659341.72	-2659341.62	-2659341.51	0.0300	0.0164		
Mercury	-11994-05-13 09:21 J	-2659253.24	-2659253.11	-2659252.98	0.0299	0.0007		
Mercury	-11994-08-09 21:21 J	-2659164.72	-2659164.61	-2659164.50	0.0299	0.0154		
Venus	-11992-08-07 12:57 J	-2658436.11	-2658435.96	-2658435.79	0.0290	0.0185		
Venus	-11991-03-25 04:33 J	-2658206.51	-2658206.31	-2658206.10	0.0287	0.0029		
Venus	-11991-11-09 17:16 J	-2657976.90	-2657976.78	-2657976.66	0.0284	0.0230		
Moon	-11984-12-09 19:11 J	-2655389.95	-2655389.70	-2655389.46	0.0259	0.0012		
Earth	-11984-12-09 21:07 J	-2655389.87	-2655389.62	-2655389.37	0.0259	0.0006	*	
Mercury	-11979-08-26 20:52 J	-2653668.64	-2653668.63	-2653668.62	0.0262	0.0262		
Mars	-11979-10-06 03:50 J	-2653628.55	-2653628.34	-2653628.10	0.0263	0.0150		
Mercury	-11979-11-23 18:43 J	-2653579.90	-2653579.72	-2653579.54	0.0263	0.0098		

Mercury	-11978-02-20 16:33 J	-2653490.99	-2653490.81	-2653490.62	0.0264	0.0068
Mercury	-11978-05-20 14:24 J	-2653401.98	-2653401.90	-2653401.80	0.0264	0.0235
Venus	-11976-11-26 07:26 J	-2652481.37	-2652481.19	-2652481.00	0.0274	0.0130
Venus	-11975-07-13 18:28 J	-2652251.94	-2652251.73	-2652251.52	0.0277	0.0059
Venus	-11974-02-28 07:55 J	-2652022.25	-2652022.17	-2652022.08	0.0280	0.0256
Mercury	-11965-07-03 00:14 J	-2648609.59	-2648609.49	-2648609.40	0.0300	0.0199
Mercury	-11965-09-29 12:14 J	-2648521.11	-2648520.99	-2648520.86	0.0299	0.0040
Mercury	-11965-12-27 00:14 J	-2648432.60	-2648432.49	-2648432.37	0.0299	0.0120
Mercury	-11964-03-25 12:14 J	-2648344.03	-2648343.99	-2648343.94	0.0298	0.0275
Venus	-11962-02-17 22:04 J	-2647649.75	-2647649.58	-2647649.40	0.0289	0.0150
Venus	-11962-10-05 13:11 J	-2647420.15	-2647419.95	-2647419.75	0.0286	0.0061
Venus	-11961-05-22 01:11 J	-2647190.52	-2647190.45	-2647190.36	0.0283	0.0261
Earth	-11955-12-05 08:52 J	-2644802.20	-2644802.13	-2644802.04	0.0260	0.0246
Moon	-11955-12-05 11:16 J	-2644802.10	-2644802.03	-2644801.93	0.0260	0.0244 *
Mercury	-11949-04-11 18:43 J	-2642847.89	-2642847.72	-2642847.56	0.0263	0.0137
Mercury	-11949-07-09 16:33 J	-2642759.01	-2642758.81	-2642758.62	0.0264	0.0028
Mercury	-11949-10-06 14:09 J	-2642670.03	-2642669.91	-2642669.77	0.0264	0.0196
Venus	-11946-06-08 13:55 J	-2641695.12	-2641694.92	-2641694.72	0.0274	0.0101
Venus	-11945-01-24 01:11 J	-2641465.65	-2641465.45	-2641465.24	0.0277	0.0089
Earth	-11939-06-13 23:02 J	-2639132.78	-2639132.54	-2639132.30	0.0303	0.0041
Moon	-11939-06-14 01:40 J	-2639132.67	-2639132.43	-2639132.18	0.0303	0.0055 *
Mercury	-11936-11-20 03:07 J	-2637877.45	-2637877.37	-2637877.29	0.0301	0.0235
Mercury	-11935-02-16 15:21 J	-2637788.99	-2637788.86	-2637788.74	0.0300	0.0074
Mercury	-11935-05-16 03:21 J	-2637700.48	-2637700.36	-2637700.24	0.0299	0.0085
Mercury	-11935-08-12 15:21 J	-2637611.93	-2637611.86	-2637611.79	0.0298	0.0241
Venus	-11933-08-30 06:43 J	-2636863.41	-2636863.22	-2636863.03	0.0289	0.0113
Venus	-11932-04-16 21:21 J	-2636633.80	-2636633.61	-2636633.41	0.0286	0.0097
Earth	-11925-12-11 06:28 J	-2633838.47	-2633838.23	-2633837.99	0.0259	0.0072
Moon	-11925-12-11 08:52 J	-2633838.36	-2633838.13	-2633837.89	0.0259	0.0065 *
Mars	-11920-01-14 12:43 J	-2632343.05	-2632342.97	-2632342.89	0.0261	0.0248



Mercury	-11920-08-29 18:28 J	-2632115.87	-2632115.73	-2632115.59	0.0262	0.0176
Mercury	-11920-11-26 16:19 J	-2632027.01	-2632026.82	-2632026.63	0.0263	0.0012
Mercury	-11919-02-23 14:09 J	-2631938.06	-2631937.91	-2631937.75	0.0264	0.0154
Venus	-11917-05-03 10:48 J	-2631138.12	-2631138.05	-2631137.97	0.0272	0.0254
Venus	-11917-12-18 20:09 J	-2630908.86	-2630908.66	-2630908.45	0.0274	0.0072
Venus	-11916-08-05 07:40 J	-2630679.37	-2630679.18	-2630678.98	0.0277	0.0120
Mars	-11906-01-31 07:26 J	-2627213.34	-2627213.19	-2627213.00	0.0301	0.0250
Mercury	-11906-04-09 05:45 J	-2627145.31	-2627145.26	-2627145.21	0.0301	0.0274
Mercury	-11906-07-06 18:00 J	-2627056.87	-2627056.75	-2627056.63	0.0300	0.0113
Mercury	-11906-10-03 06:00 J	-2626968.37	-2626968.25	-2626968.12	0.0299	0.0047
Mercury	-11906-12-30 18:00 J	-2626879.84	-2626879.75	-2626879.65	0.0298	0.0203
Venus	-11903-03-12 14:24 J	-2626077.10	-2626076.90	-2626076.70	0.0288	0.0081
Venus	-11903-10-28 04:33 J	-2625847.49	-2625847.31	-2625847.12	0.0285	0.0127
Moon	-11896-12-06 15:21 J	-2623251.04	-2623250.86	-2623250.65	0.0259	0.0172
Earth	-11896-12-06 17:16 J	-2623250.96	-2623250.78	-2623250.59	0.0259	0.0170 *
Mercury	-11890-01-16 17:45 J	-2621383.86	-2621383.76	-2621383.65	0.0262	0.0219
Mars	-11890-03-02 08:24 J	-2621339.28	-2621339.15	-2621338.98	0.0263	0.0220
Mercury	-11890-04-15 15:35 J	-2621295.04	-2621294.85	-2621294.66	0.0263	0.0055
Mercury	-11890-07-13 13:26 J	-2621206.11	-2621205.94	-2621205.76	0.0264	0.0111
Venus	-11888-11-13 15:50 J	-2620351.95	-2620351.84	-2620351.72	0.0272	0.0228
Venus	-11887-07-01 01:11 J	-2620122.66	-2620122.45	-2620122.24	0.0275	0.0045
Venus	-11886-02-15 12:57 J	-2619893.13	-2619892.96	-2619892.77	0.0278	0.0147
Moon	-11880-06-15 11:31 J	-2617581.26	-2617581.02	-2617580.77	0.0304	0.0050
Earth	-11880-06-15 13:26 J	-2617581.18	-2617580.94	-2617580.70	0.0304	0.0064 *
Mercury	-11877-11-22 20:24 J	-2616324.76	-2616324.65	-2616324.54	0.0300	0.0155
Mercury	-11876-02-19 08:38 J	-2616236.27	-2616236.14	-2616236.01	0.0300	0.0008
Mercury	-11876-05-18 20:38 J	-2616147.75	-2616147.64	-2616147.53	0.0299	0.0163
Venus	-11874-02-05 04:19 J	-2615520.40	-2615520.32	-2615520.23	0.0291	0.0264
Venus	-11874-09-22 21:21 J	-2615290.82	-2615290.61	-2615290.40	0.0288	0.0047
Venus	-11873-05-09 11:16 J	-2615061.20	-2615061.03	-2615060.85	0.0285	0.0161

Earth	-11866-12-13 13:11 J	-2612287.15	-2612286.95	-2612286.73	0.0259	0.0145
Moon	-11866-12-13 16:33 J	-2612287.01	-2612286.81	-2612286.59	0.0259	0.0136 *
Mercury	-11861-06-04 17:16 J	-2610651.79	-2610651.78	-2610651.77	0.0262	0.0261
Mercury	-11861-09-01 14:52 J	-2610563.06	-2610562.88	-2610562.70	0.0262	0.0099
Mercury	-11861-11-29 12:43 J	-2610474.16	-2610473.97	-2610473.78	0.0263	0.0066
Mercury	-11860-02-26 10:19 J	-2610385.14	-2610385.07	-2610384.96	0.0264	0.0233
Venus	-11858-05-26 20:24 J	-2609565.79	-2609565.65	-2609565.50	0.0272	0.0202
Venus	-11857-01-11 06:14 J	-2609336.46	-2609336.24	-2609336.03	0.0275	0.0019
Venus	-11857-08-27 18:00 J	-2609106.91	-2609106.75	-2609106.57	0.0278	0.0175
Mercury	-11847-04-11 22:33 J	-2605592.65	-2605592.56	-2605592.46	0.0301	0.0201
Mercury	-11847-07-09 10:48 J	-2605504.17	-2605504.05	-2605503.92	0.0300	0.0040
Mercury	-11847-10-05 22:48 J	-2605415.66	-2605415.55	-2605415.43	0.0299	0.0119
Mercury	-11846-01-02 10:48 J	-2605327.09	-2605327.05	-2605327.00	0.0298	0.0276
Venus	-11845-08-17 10:19 J	-2604734.18	-2604734.07	-2604733.93	0.0291	0.0234
Venus	-11844-04-04 03:21 J	-2604504.57	-2604504.36	-2604504.15	0.0288	0.0018
Venus	-11844-11-19 16:48 J	-2604274.94	-2604274.80	-2604274.63	0.0284	0.0188
Moon	-11837-12-07 18:57 J	-2601699.93	-2601699.71	-2601699.48	0.0259	0.0103
Earth	-11837-12-07 22:33 J	-2601699.78	-2601699.56	-2601699.33	0.0259	0.0101 *
Mars	-11832-06-10 09:07 J	-2600054.29	-2600054.12	-2600053.91	0.0261	0.0192
Mercury	-11831-01-19 13:40 J	-2599831.09	-2599830.93	-2599830.77	0.0262	0.0146
Mercury	-11831-04-18 11:31 J	-2599742.22	-2599742.02	-2599741.83	0.0263	0.0018
Mercury	-11831-07-16 09:07 J	-2599653.25	-2599653.12	-2599652.97	0.0264	0.0184
Venus	-11829-12-06 00:00 J	-2598779.65	-2598779.50	-2598779.33	0.0272	0.0179
Venus	-11828-07-23 10:04 J	-2598550.30	-2598550.08	-2598549.87	0.0275	0.0009
Venus	-11827-03-09 22:19 J	-2598320.72	-2598320.57	-2598320.42	0.0278	0.0201
Moon	-11821-06-16 18:57 J	-2596029.92	-2596029.71	-2596029.49	0.0304	0.0140
Earth	-11821-06-16 22:33 J	-2596029.77	-2596029.56	-2596029.35	0.0304	0.0156 *
Mars	-11818-06-27 08:38 J	-2594924.39	-2594924.14	-2594923.86	0.0302	0.0159
Mercury	-11818-08-30 00:43 J	-2594860.54	-2594860.47	-2594860.40	0.0301	0.0248
Mercury	-11818-11-26 12:57 J	-2594772.08	-2594771.96	-2594771.84	0.0300	0.0086

Mercury	-11817-02-23 00:57 J	-2594683.58	-2594683.46	-2594683.33	0.0300	0.0074
Mercury	-11817-05-21 12:57 J	-2594595.03	-2594594.96	-2594594.88	0.0299	0.0231
Venus	-11815-02-27 16:19 J	-2593947.96	-2593947.82	-2593947.66	0.0291	0.0202
Venus	-11815-10-15 08:52 J	-2593718.33	-2593718.13	-2593717.92	0.0288	0.0015
Venus	-11814-06-01 22:19 J	-2593488.69	-2593488.57	-2593488.43	0.0284	0.0219
Moon	-11807-12-14 16:19 J	-2590735.97	-2590735.82	-2590735.64	0.0258	0.0198
Earth	-11807-12-14 16:33 J	-2590735.94	-2590735.81	-2590735.65	0.0258	0.0209 *
Jupiter	-11802-02-12 10:04 J	-2589215.54	-2589215.08	-2589214.61	0.0261	0.0033
Mercury	-11802-06-08 12:28 J	-2589099.11	-2589098.98	-2589098.85	0.0262	0.0192
Mercury	-11802-09-05 10:19 J	-2589010.27	-2589010.07	-2589009.88	0.0262	0.0030
Mercury	-11802-12-03 07:55 J	-2588921.33	-2588921.17	-2588921.00	0.0263	0.0135
Venus	-11799-06-18 03:35 J	-2587993.52	-2587993.35	-2587993.17	0.0272	0.0154
Venus	-11798-02-02 13:26 J	-2587764.15	-2587763.94	-2587763.72	0.0275	0.0032
Venus	-11798-09-20 01:40 J	-2587534.54	-2587534.43	-2587534.29	0.0278	0.0227
Earth	-11792-06-10 10:04 J	-2585444.20	-2585444.08	-2585443.95	0.0303	0.0260
Moon	-11792-06-10 13:40 J	-2585444.04	-2585443.93	-2585443.83	0.0303	0.0273 *
Mercury	-11788-01-16 02:09 J	-2584128.41	-2584128.41	-2584128.40	0.0302	0.0302
Mercury	-11788-04-14 14:24 J	-2584040.01	-2584039.90	-2584039.78	0.0301	0.0140
Mercury	-11788-07-12 02:38 J	-2583951.52	-2583951.39	-2583951.26	0.0300	0.0022
Mercury	-11788-10-08 14:38 J	-2583862.99	-2583862.89	-2583862.78	0.0299	0.0180
Venus	-11786-09-09 20:24 J	-2583161.81	-2583161.65	-2583161.48	0.0290	0.0176
Venus	-11785-04-26 12:43 J	-2582932.18	-2582931.97	-2582931.76	0.0287	0.0039
Venus	-11785-12-12 01:55 J	-2582702.52	-2582702.42	-2582702.31	0.0284	0.0243
Moon	-11778-12-09 23:45 J	-2580148.74	-2580148.51	-2580148.27	0.0259	0.0045
Earth	-11778-12-10 00:14 J	-2580148.73	-2580148.49	-2580148.24	0.0259	0.0040 *
Mercury	-11773-10-25 10:33 J	-2578367.12	-2578367.06	-2578366.98	0.0262	0.0244
Mercury	-11772-01-22 08:24 J	-2578278.33	-2578278.15	-2578277.97	0.0262	0.0082
Mercury	-11772-04-21 06:00 J	-2578189.43	-2578189.25	-2578189.06	0.0263	0.0083
Mercury	-11772-07-19 03:50 J	-2578100.40	-2578100.34	-2578100.27	0.0264	0.0248
Venus	-11770-12-29 06:00 J	-2577207.44	-2577207.25	-2577207.06	0.0273	0.0132

Venus	-11769-08-14 16:04 J	-2576978.04	-2576977.83	-2576977.62	0.0276	0.0055
Venus	-11768-04-01 04:33 J	-2576748.40	-2576748.31	-2576748.21	0.0279	0.0250
Moon	-11762-06-18 23:45 J	-2574478.67	-2574478.51	-2574478.34	0.0304	0.0215
Earth	-11762-06-19 00:28 J	-2574478.64	-2574478.48	-2574478.32	0.0304	0.0229 *
Mercury	-11759-09-01 16:04 J	-2573307.93	-2573307.83	-2573307.73	0.0301	0.0192
Mercury	-11759-11-29 04:19 J	-2573219.45	-2573219.32	-2573219.19	0.0300	0.0031
Mercury	-11758-02-25 16:19 J	-2573130.93	-2573130.82	-2573130.70	0.0299	0.0129
Mercury	-11758-05-25 04:19 J	-2573042.35	-2573042.32	-2573042.28	0.0299	0.0286
Venus	-11756-03-22 00:43 J	-2572375.65	-2572375.47	-2572375.29	0.0290	0.0147
Venus	-11756-11-06 16:48 J	-2572146.00	-2572145.80	-2572145.59	0.0287	0.0068
Venus	-11755-06-24 06:00 J	-2571916.30	-2571916.25	-2571916.19	0.0284	0.0271
Moon	-11748-12-15 12:43 J	-2569185.00	-2569184.97	-2569184.90	0.0258	0.0252
Mars	-11744-11-03 19:40 J	-2567765.90	-2567765.68	-2567765.45	0.0260	0.0151
Mercury	-11743-06-11 06:28 J	-2567546.39	-2567546.23	-2567546.06	0.0262	0.0133
Mercury	-11743-09-08 04:19 J	-2567457.51	-2567457.32	-2567457.13	0.0262	0.0030
Mercury	-11743-12-06 01:55 J	-2567368.54	-2567368.42	-2567368.28	0.0263	0.0195
Venus	-11740-07-10 08:24 J	-2566421.35	-2566421.15	-2566420.96	0.0273	0.0110
Venus	-11739-02-24 18:28 J	-2566191.94	-2566191.73	-2566191.53	0.0276	0.0078
Venus	-11739-10-12 06:57 J	-2565962.24	-2565962.21	-2565962.16	0.0279	0.0273
Earth	-11733-06-11 09:21 J	-2563893.29	-2563893.11	-2563892.91	0.0304	0.0194
Moon	-11733-06-11 09:21 J	-2563893.29	-2563893.11	-2563892.92	0.0304	0.0208 *
Mars	-11730-11-20 02:24 J	-2562636.67	-2562636.40	-2562636.11	0.0302	0.0131
Mercury	-11729-01-19 17:16 J	-2562575.85	-2562575.78	-2562575.71	0.0302	0.0250
Mercury	-11729-04-17 05:31 J	-2562487.39	-2562487.27	-2562487.14	0.0301	0.0088
Mercury	-11729-07-14 17:45 J	-2562398.88	-2562398.76	-2562398.64	0.0300	0.0073
Mercury	-11729-10-11 05:45 J	-2562310.34	-2562310.26	-2562310.18	0.0299	0.0231
Venus	-11727-10-02 03:21 J	-2561589.55	-2561589.36	-2561589.17	0.0290	0.0123
Venus	-11726-05-19 19:11 J	-2561359.89	-2561359.70	-2561359.50	0.0287	0.0091
Earth	-11719-12-10 22:48 J	-2558597.80	-2558597.55	-2558597.30	0.0259	0.0014
Moon	-11719-12-11 02:24 J	-2558597.65	-2558597.40	-2558597.16	0.0259	0.0006 *

Mercury	-11714-10-29 04:04 J	-2556814.45	-2556814.33	-2556814.18	0.0262	0.0188
Mercury	-11713-01-26 01:55 J	-2556725.61	-2556725.42	-2556725.22	0.0262	0.0025
Mercury	-11713-04-23 23:31 J	-2556636.68	-2556636.52	-2556636.35	0.0263	0.0139
Venus	-11711-06-05 01:40 J	-2555864.44	-2555864.43	-2555864.39	0.0270	0.0268
Venus	-11710-01-20 09:35 J	-2555635.30	-2555635.10	-2555634.89	0.0273	0.0089
Venus	-11710-09-06 19:55 J	-2555405.87	-2555405.67	-2555405.47	0.0276	0.0100
Earth	-11703-06-19 21:21 J	-2552927.67	-2552927.61	-2552927.54	0.0304	0.0290
Moon	-11703-06-20 00:28 J	-2552927.57	-2552927.48	-2552927.37	0.0304	0.0274 *
Mercury	-11700-09-04 06:43 J	-2551755.33	-2551755.22	-2551755.11	0.0301	0.0147
Mercury	-11700-12-01 18:57 J	-2551666.84	-2551666.71	-2551666.59	0.0300	0.0017
Mercury	-11699-02-28 06:57 J	-2551578.31	-2551578.21	-2551578.11	0.0299	0.0174
Venus	-11697-04-13 06:00 J	-2550803.45	-2550803.25	-2550803.06	0.0290	0.0097
Venus	-11697-11-28 21:35 J	-2550573.78	-2550573.60	-2550573.40	0.0287	0.0117
Moon	-11690-12-06 01:26 J	-2548010.51	-2548010.44	-2548010.35	0.0259	0.0245
Earth	-11690-12-06 05:02 J	-2548010.37	-2548010.29	-2548010.18	0.0259	0.0239 *
Mercury	-11684-03-17 02:09 J	-2546082.47	-2546082.41	-2546082.33	0.0261	0.0240
Mercury	-11684-06-14 00:00 J	-2545993.69	-2545993.50	-2545993.32	0.0261	0.0079
Mercury	-11684-09-10 21:35 J	-2545904.78	-2545904.60	-2545904.42	0.0262	0.0084
Mercury	-11684-12-08 19:11 J	-2545815.75	-2545815.70	-2545815.63	0.0263	0.0249
Venus	-11682-12-16 03:35 J	-2545078.43	-2545078.35	-2545078.26	0.0270	0.0247
Venus	-11681-08-01 11:31 J	-2544849.23	-2544849.02	-2544848.82	0.0273	0.0068
Venus	-11680-03-18 21:35 J	-2544619.79	-2544619.60	-2544619.40	0.0276	0.0121
Moon	-11674-06-13 00:14 J	-2542342.69	-2542342.49	-2542342.28	0.0304	0.0158
Earth	-11674-06-13 03:50 J	-2542342.55	-2542342.34	-2542342.12	0.0304	0.0140 *
Mercury	-11670-01-22 07:40 J	-2541023.27	-2541023.18	-2541023.09	0.0302	0.0209
Mercury	-11670-04-20 19:55 J	-2540934.80	-2540934.67	-2540934.55	0.0301	0.0048
Mercury	-11670-07-18 07:55 J	-2540846.29	-2540846.17	-2540846.05	0.0300	0.0113
Mercury	-11670-10-14 19:55 J	-2540757.72	-2540757.67	-2540757.61	0.0299	0.0272
Venus	-11668-10-24 07:11 J	-2540017.40	-2540017.20	-2540016.99	0.0290	0.0076
Venus	-11667-06-10 23:02 J	-2539787.72	-2539787.54	-2539787.36	0.0287	0.0137

Earth	-11660-12-11 18:28 J	-2537046.97	-2537046.73	-2537046.49	0.0258	0.0062
Moon	-11660-12-11 20:24 J	-2537046.90	-2537046.65	-2537046.40	0.0258	0.0050 *
Mars	-11655-03-29 16:48 J	-2535478.03	-2535477.80	-2535477.55	0.0260	0.0132
Mercury	-11655-10-31 21:07 J	-2535261.78	-2535261.62	-2535261.45	0.0261	0.0137
Mercury	-11654-01-28 18:57 J	-2535172.91	-2535172.71	-2535172.52	0.0262	0.0027
Mercury	-11654-04-27 16:19 J	-2535083.94	-2535083.82	-2535083.68	0.0263	0.0190
Venus	-11652-06-27 03:50 J	-2534292.44	-2534292.34	-2534292.21	0.0270	0.0229
Venus	-11651-02-11 12:00 J	-2534063.21	-2534063.00	-2534062.79	0.0273	0.0048
Venus	-11651-09-28 22:04 J	-2533833.75	-2533833.58	-2533833.39	0.0276	0.0142
Mars	-11641-04-12 19:26 J	-2530349.95	-2530349.69	-2530349.41	0.0302	0.0140
Mercury	-11641-06-10 08:24 J	-2530291.20	-2530291.15	-2530291.10	0.0302	0.0271
Mercury	-11641-09-06 20:38 J	-2530202.76	-2530202.64	-2530202.52	0.0301	0.0109
Mercury	-11641-12-04 08:52 J	-2530114.26	-2530114.13	-2530114.00	0.0300	0.0053
Mercury	-11640-03-02 20:52 J	-2530025.71	-2530025.63	-2530025.54	0.0299	0.0212
Venus	-11639-09-18 14:24 J	-2529460.96	-2529460.90	-2529460.82	0.0293	0.0274
Venus	-11638-05-06 09:07 J	-2529231.32	-2529231.12	-2529230.91	0.0290	0.0052
Venus	-11638-12-22 00:43 J	-2529001.64	-2529001.47	-2529001.30	0.0287	0.0161
Moon	-11631-12-06 22:19 J	-2526459.71	-2526459.57	-2526459.41	0.0259	0.0203
Earth	-11631-12-07 00:14 J	-2526459.65	-2526459.49	-2526459.32	0.0259	0.0193 *
Mercury	-11625-03-19 18:57 J	-2524529.83	-2524529.71	-2524529.57	0.0261	0.0190
Mercury	-11625-06-16 16:33 J	-2524441.00	-2524440.81	-2524440.61	0.0261	0.0030
Mercury	-11625-09-13 14:09 J	-2524352.07	-2524351.91	-2524351.74	0.0262	0.0134
Venus	-11622-01-07 05:31 J	-2523506.40	-2523506.27	-2523506.13	0.0270	0.0208
Venus	-11622-08-24 13:26 J	-2523277.15	-2523276.94	-2523276.72	0.0273	0.0028
Venus	-11621-04-09 23:45 J	-2523047.68	-2523047.51	-2523047.33	0.0276	0.0162
Moon	-11615-06-13 19:11 J	-2520791.91	-2520791.70	-2520791.47	0.0304	0.0108
Earth	-11615-06-13 20:24 J	-2520791.88	-2520791.65	-2520791.42	0.0304	0.0091 *
Mercury	-11611-01-24 21:21 J	-2519470.71	-2519470.61	-2519470.50	0.0302	0.0173
Mercury	-11611-04-23 09:35 J	-2519382.23	-2519382.10	-2519381.97	0.0301	0.0011
Mercury	-11611-07-20 21:50 J	-2519293.70	-2519293.59	-2519293.48	0.0300	0.0149

Venus	-11609-03-30 15:07 J	-2518674.97	-2518674.87	-2518674.76	0.0293	0.0254
Venus	-11609-11-15 09:35 J	-2518445.31	-2518445.10	-2518444.89	0.0290	0.0032
Venus	-11608-07-03 00:57 J	-2518215.61	-2518215.46	-2518215.29	0.0286	0.0180
Moon	-11601-12-12 09:21 J	-2515496.34	-2515496.11	-2515495.87	0.0258	0.0091
Earth	-11601-12-12 12:28 J	-2515496.20	-2515495.98	-2515495.74	0.0258	0.0107 *
Mercury	-11596-08-06 16:19 J	-2513797.87	-2513797.82	-2513797.76	0.0261	0.0248
Mercury	-11596-11-03 13:55 J	-2513709.10	-2513708.92	-2513708.74	0.0261	0.0087
Mercury	-11595-01-31 11:31 J	-2513620.21	-2513620.02	-2513619.83	0.0262	0.0075
Mercury	-11595-04-30 09:07 J	-2513531.19	-2513531.12	-2513531.04	0.0263	0.0239
Venus	-11593-07-19 06:14 J	-2512720.40	-2512720.24	-2512720.09	0.0271	0.0189
Venus	-11592-03-05 13:55 J	-2512491.13	-2512490.92	-2512490.70	0.0273	0.0009
Venus	-11592-10-21 00:14 J	-2512261.64	-2512261.49	-2512261.32	0.0276	0.0184
Mercury	-11582-06-13 22:04 J	-2508738.66	-2508738.58	-2508738.50	0.0302	0.0237
Mercury	-11582-09-10 10:19 J	-2508650.19	-2508650.07	-2508649.94	0.0301	0.0075
Mercury	-11582-12-07 22:33 J	-2508561.68	-2508561.56	-2508561.44	0.0300	0.0086
Mercury	-11581-03-05 10:33 J	-2508473.13	-2508473.06	-2508472.98	0.0299	0.0246
Venus	-11580-10-10 16:19 J	-2507888.94	-2507888.82	-2507888.69	0.0293	0.0231
Venus	-11579-05-28 10:48 J	-2507659.25	-2507659.05	-2507658.84	0.0290	0.0011
Venus	-11578-01-13 02:09 J	-2507429.55	-2507429.41	-2507429.26	0.0286	0.0203
Earth	-11572-12-07 18:00 J	-2504908.94	-2504908.75	-2504908.54	0.0259	0.0149
Moon	-11572-12-07 20:52 J	-2504908.81	-2504908.63	-2504908.43	0.0259	0.0161 *
Mars	-11567-08-22 15:35 J	-2503190.10	-2503189.85	-2503189.60	0.0260	0.0115
Mercury	-11566-03-23 11:31 J	-2502977.17	-2502977.02	-2502976.85	0.0261	0.0142
Mercury	-11566-06-20 09:21 J	-2502888.31	-2502888.11	-2502887.92	0.0261	0.0020
Mercury	-11566-09-17 06:43 J	-2502799.35	-2502799.22	-2502799.07	0.0262	0.0183
Venus	-11563-01-29 07:11 J	-2501934.36	-2501934.20	-2501934.02	0.0270	0.0170
Venus	-11563-09-15 15:21 J	-2501705.07	-2501704.86	-2501704.64	0.0273	0.0013
Venus	-11562-05-03 01:40 J	-2501475.56	-2501475.43	-2501475.27	0.0276	0.0203
Earth	-11556-06-14 12:00 J	-2499241.24	-2499241.00	-2499240.76	0.0304	0.0044
Moon	-11556-06-14 15:35 J	-2499241.08	-2499240.85	-2499240.61	0.0304	0.0058 *

Mars	-11553-09-04 04:19 J	-2498063.57	-2498063.32	-2498063.06	0.0303	0.0170
Mercury	-11553-10-30 22:48 J	-2498006.55	-2498006.55	-2498006.55	0.0303	0.0302
Mercury	-11552-01-27 11:02 J	-2497918.15	-2497918.04	-2497917.92	0.0302	0.0139
Mercury	-11552-04-25 23:16 J	-2497829.65	-2497829.53	-2497829.40	0.0301	0.0025
Mercury	-11552-07-23 11:31 J	-2497741.12	-2497741.02	-2497740.92	0.0300	0.0183
Venus	-11550-04-22 17:02 J	-2497102.92	-2497102.79	-2497102.63	0.0293	0.0211
Venus	-11550-12-08 11:31 J	-2496873.23	-2496873.02	-2496872.81	0.0289	0.0011
Venus	-11549-07-25 02:38 J	-2496643.51	-2496643.39	-2496643.25	0.0286	0.0222
Moon	-11542-12-14 04:33 J	-2493945.52	-2493945.31	-2493945.11	0.0258	0.0136
Earth	-11542-12-14 06:43 J	-2493945.41	-2493945.22	-2493945.01	0.0258	0.0150 *
Mercury	-11537-08-09 09:07 J	-2492245.24	-2492245.12	-2492244.99	0.0261	0.0198
Mercury	-11537-11-06 06:43 J	-2492156.41	-2492156.22	-2492156.03	0.0261	0.0037
Mercury	-11536-02-03 04:19 J	-2492067.49	-2492067.32	-2492067.15	0.0262	0.0125
Venus	-11534-08-11 08:24 J	-2491148.32	-2491148.15	-2491147.97	0.0271	0.0150
Venus	-11533-03-27 16:33 J	-2490919.02	-2490918.81	-2490918.60	0.0274	0.0034
Venus	-11533-11-12 02:52 J	-2490689.49	-2490689.38	-2490689.24	0.0277	0.0226
Mercury	-11523-06-16 12:00 J	-2487186.10	-2487186.00	-2487185.91	0.0302	0.0202
Mercury	-11523-09-13 00:14 J	-2487097.62	-2487097.49	-2487097.37	0.0301	0.0040
Mercury	-11523-12-10 12:14 J	-2487009.10	-2487008.99	-2487008.87	0.0300	0.0122
Mercury	-11522-03-09 00:14 J	-2486920.52	-2486920.49	-2486920.44	0.0299	0.0281
Venus	-11521-11-01 18:28 J	-2486316.88	-2486316.73	-2486316.56	0.0292	0.0188
Venus	-11520-06-19 12:43 J	-2486087.17	-2486086.97	-2486086.76	0.0289	0.0035
Venus	-11519-02-04 03:50 J	-2485857.44	-2485857.34	-2485857.22	0.0286	0.0244
Earth	-11513-12-08 12:28 J	-2483358.20	-2483357.98	-2483357.75	0.0260	0.0105
Moon	-11513-12-08 15:07 J	-2483358.08	-2483357.87	-2483357.63	0.0260	0.0118 *
Mercury	-11508-12-27 07:11 J	-2481513.24	-2481513.20	-2481513.14	0.0260	0.0250
Mercury	-11507-03-26 04:48 J	-2481424.48	-2481424.30	-2481424.11	0.0261	0.0090
Mercury	-11507-06-23 02:24 J	-2481335.59	-2481335.40	-2481335.21	0.0261	0.0072
Mercury	-11507-09-20 00:00 J	-2481246.58	-2481246.50	-2481246.41	0.0262	0.0235
Venus	-11504-02-20 10:33 J	-2480362.24	-2480362.06	-2480361.87	0.0270	0.0129



Venus	-11504-10-07 18:43 J	-2480132.93	-2480132.72	-2480132.51	0.0273	0.0055
Venus	-11503-05-25 05:16 J	-2479903.36	-2479903.28	-2479903.17	0.0276	0.0247
Earth	-11497-06-15 06:00 J	-2477690.49	-2477690.25	-2477690.00	0.0304	0.0010
Moon	-11497-06-15 07:55 J	-2477690.42	-2477690.17	-2477689.92	0.0304	0.0004 *
Mercury	-11494-11-03 12:43 J	-2476454.03	-2476453.97	-2476453.91	0.0303	0.0266
Mercury	-11493-01-31 00:57 J	-2476365.58	-2476365.46	-2476365.34	0.0302	0.0102
Mercury	-11493-04-28 13:11 J	-2476277.07	-2476276.95	-2476276.82	0.0301	0.0060
Mercury	-11493-07-26 01:26 J	-2476188.53	-2476188.44	-2476188.36	0.0300	0.0220
Venus	-11491-05-14 19:40 J	-2475530.84	-2475530.68	-2475530.50	0.0292	0.0167
Venus	-11491-12-30 13:40 J	-2475301.13	-2475300.93	-2475300.72	0.0289	0.0054
Venus	-11490-08-17 04:33 J	-2475071.38	-2475071.31	-2475071.22	0.0286	0.0264
Earth	-11483-12-15 01:40 J	-2472394.57	-2472394.43	-2472394.25	0.0258	0.0197
Moon	-11483-12-15 04:04 J	-2472394.49	-2472394.33	-2472394.16	0.0258	0.0184 *
Mars	-11478-01-15 13:55 J	-2470902.17	-2470901.92	-2470901.65	0.0260	0.0097
Mercury	-11478-08-13 02:38 J	-2470692.55	-2470692.39	-2470692.23	0.0261	0.0144
Mercury	-11478-11-10 00:14 J	-2470603.69	-2470603.49	-2470603.30	0.0261	0.0018
Mercury	-11477-02-06 21:35 J	-2470514.73	-2470514.60	-2470514.45	0.0262	0.0180
Venus	-11475-09-02 12:00 J	-2469576.19	-2469576.00	-2469575.80	0.0271	0.0108
Venus	-11474-04-19 20:38 J	-2469346.85	-2469346.64	-2469346.44	0.0274	0.0077
Venus	-11474-12-05 07:11 J	-2469117.23	-2469117.20	-2469117.14	0.0277	0.0270
Mars	-11464-01-26 20:24 J	-2465776.88	-2465776.65	-2465776.39	0.0303	0.0186
Mercury	-11464-06-19 01:55 J	-2465633.52	-2465633.42	-2465633.31	0.0302	0.0163
Mercury	-11464-09-15 14:24 J	-2465545.03	-2465544.90	-2465544.78	0.0301	0.0008
Mercury	-11464-12-13 02:24 J	-2465456.50	-2465456.40	-2465456.29	0.0300	0.0161
Venus	-11462-11-24 21:50 J	-2464744.77	-2464744.59	-2464744.40	0.0292	0.0143
Venus	-11461-07-11 15:50 J	-2464515.04	-2464514.84	-2464514.63	0.0289	0.0078
Moon	-11454-12-10 06:57 J	-2461807.45	-2461807.21	-2461806.96	0.0260	0.0070
Earth	-11454-12-10 08:24 J	-2461807.38	-2461807.15	-2461806.90	0.0260	0.0057 *
Mercury	-11449-12-30 01:11 J	-2459960.58	-2459960.45	-2459960.32	0.0261	0.0193
Mercury	-11448-03-28 22:33 J	-2459871.75	-2459871.56	-2459871.36	0.0261	0.0033

Mercury	-11448-06-25 20:09 J	-2459782.82	-2459782.66	-2459782.49	0.0262	0.0130
Venus	-11446-07-29 09:07 J	-2459019.15	-2459019.12	-2459019.06	0.0268	0.0263
Venus	-11445-03-14 15:35 J	-2458790.05	-2458789.85	-2458789.65	0.0271	0.0086
Venus	-11445-10-30 00:00 J	-2458560.70	-2458560.50	-2458560.30	0.0274	0.0100
Moon	-11438-06-17 00:57 J	-2456139.70	-2456139.46	-2456139.21	0.0303	0.0069
Earth	-11438-06-17 04:04 J	-2456139.57	-2456139.33	-2456139.10	0.0303	0.0071 *
Mercury	-11435-11-06 03:07 J	-2454901.45	-2454901.37	-2454901.28	0.0302	0.0221
Mercury	-11434-02-02 15:35 J	-2454812.98	-2454812.85	-2454812.73	0.0302	0.0059
Mercury	-11434-05-02 03:35 J	-2454724.46	-2454724.35	-2454724.22	0.0301	0.0104
Mercury	-11434-07-29 15:50 J	-2454635.90	-2454635.84	-2454635.78	0.0300	0.0263
Venus	-11432-06-06 00:14 J	-2453958.67	-2453958.49	-2453958.29	0.0292	0.0119
Venus	-11431-01-21 18:00 J	-2453728.95	-2453728.75	-2453728.56	0.0289	0.0101
Earth	-11424-12-15 23:02 J	-2450843.59	-2450843.54	-2450843.45	0.0259	0.0248
Moon	-11424-12-16 02:38 J	-2450843.48	-2450843.39	-2450843.28	0.0259	0.0236 *
Mercury	-11419-05-18 23:31 J	-2449228.58	-2449228.52	-2449228.45	0.0261	0.0243
Mercury	-11419-08-15 21:07 J	-2449139.80	-2449139.62	-2449139.44	0.0261	0.0083
Mercury	-11419-11-12 18:43 J	-2449050.91	-2449050.72	-2449050.54	0.0262	0.0079
Mercury	-11418-02-09 16:04 J	-2448961.89	-2448961.83	-2448961.75	0.0262	0.0242
Venus	-11416-02-07 12:00 J	-2448233.09	-2448233.00	-2448232.90	0.0269	0.0240
Venus	-11416-09-24 18:28 J	-2448003.94	-2448003.73	-2448003.52	0.0272	0.0062
Venus	-11415-05-12 03:07 J	-2447774.56	-2447774.37	-2447774.18	0.0274	0.0125
Mercury	-11405-03-25 04:33 J	-2444169.35	-2444169.31	-2444169.25	0.0302	0.0276
Mercury	-11405-06-21 17:02 J	-2444080.91	-2444080.79	-2444080.67	0.0301	0.0113
Mercury	-11405-09-18 05:16 J	-2443992.41	-2443992.28	-2443992.16	0.0301	0.0049
Mercury	-11405-12-15 17:16 J	-2443903.87	-2443903.78	-2443903.69	0.0300	0.0208
Venus	-11403-12-17 03:35 J	-2443172.55	-2443172.35	-2443172.15	0.0291	0.0094
Venus	-11402-08-03 20:52 J	-2442942.81	-2442942.63	-2442942.43	0.0288	0.0126
Moon	-11395-12-11 03:35 J	-2440256.60	-2440256.35	-2440256.10	0.0260	0.0017
Earth	-11395-12-11 07:11 J	-2440256.45	-2440256.20	-2440255.95	0.0260	0.0003 *
Mars	-11390-06-11 02:09 J	-2438613.68	-2438613.41	-2438613.13	0.0260	0.0060

Mercury	-11389-01-02 19:55 J	-2438407.83	-2438407.67	-2438407.49	0.0261	0.0129
Mercury	-11389-03-31 17:31 J	-2438318.96	-2438318.77	-2438318.57	0.0261	0.0034
Mercury	-11389-06-28 15:07 J	-2438229.99	-2438229.87	-2438229.73	0.0262	0.0196
Venus	-11387-08-20 16:19 J	-2437446.94	-2437446.82	-2437446.69	0.0269	0.0217
Venus	-11386-04-06 23:02 J	-2437217.76	-2437217.54	-2437217.33	0.0271	0.0038
Venus	-11386-11-22 07:40 J	-2436988.35	-2436988.18	-2436987.99	0.0274	0.0149
Moon	-11379-06-18 03:50 J	-2434588.54	-2434588.34	-2434588.13	0.0303	0.0147
Earth	-11379-06-18 06:43 J	-2434588.43	-2434588.22	-2434588.00	0.0303	0.0147 *
Mars	-11376-06-21 09:50 J	-2433489.34	-2433489.09	-2433488.82	0.0303	0.0167
Mercury	-11376-11-08 18:28 J	-2433348.84	-2433348.73	-2433348.63	0.0302	0.0168
Mercury	-11375-02-05 06:43 J	-2433260.35	-2433260.22	-2433260.09	0.0301	0.0006
Mercury	-11375-05-04 18:43 J	-2433171.82	-2433171.72	-2433171.60	0.0301	0.0156
Venus	-11374-11-11 11:16 J	-2432616.03	-2432616.03	-2432616.03	0.0295	0.0295
Venus	-11373-06-28 07:11 J	-2432386.40	-2432386.20	-2432385.99	0.0292	0.0068
Venus	-11372-02-13 00:14 J	-2432156.66	-2432156.49	-2432156.31	0.0288	0.0152
Earth	-11366-12-06 13:11 J	-2429669.00	-2429668.95	-2429668.89	0.0260	0.0254
Mercury	-11360-05-21 19:11 J	-2427675.84	-2427675.70	-2427675.55	0.0261	0.0174
Mercury	-11360-08-18 16:48 J	-2427587.00	-2427586.80	-2427586.61	0.0261	0.0013
Mercury	-11360-11-15 14:09 J	-2427498.06	-2427497.91	-2427497.74	0.0262	0.0150
Venus	-11357-03-01 20:24 J	-2426660.79	-2426660.65	-2426660.49	0.0269	0.0192
Venus	-11357-10-17 03:21 J	-2426431.58	-2426431.36	-2426431.15	0.0272	0.0012
Venus	-11356-06-03 12:28 J	-2426202.14	-2426201.98	-2426201.81	0.0275	0.0177
Earth	-11350-06-11 22:33 J	-2424002.68	-2424002.56	-2424002.43	0.0302	0.0254
Moon	-11350-06-12 01:11 J	-2424002.57	-2424002.45	-2424002.31	0.0302	0.0257 *
Mercury	-11346-03-28 20:24 J	-2422616.74	-2422616.65	-2422616.56	0.0302	0.0216
Mercury	-11346-06-25 08:38 J	-2422528.26	-2422528.14	-2422528.01	0.0301	0.0054
Mercury	-11346-09-21 20:52 J	-2422439.75	-2422439.63	-2422439.51	0.0300	0.0107
Mercury	-11346-12-19 08:52 J	-2422351.18	-2422351.13	-2422351.07	0.0299	0.0266
Venus	-11344-05-23 16:19 J	-2421829.90	-2421829.82	-2421829.72	0.0294	0.0266
Venus	-11343-01-08 12:14 J	-2421600.20	-2421599.99	-2421599.79	0.0291	0.0040

Venus	-11343-08-26 04:48 J	-2421370.46	-2421370.30	-2421370.13	0.0288	0.0178
Moon	-11336-12-12 08:24 J	-2418705.38	-2418705.15	-2418704.91	0.0260	0.0046
Earth	-11336-12-12 08:52 J	-2418705.37	-2418705.13	-2418704.88	0.0260	0.0059 *
Mercury	-11331-10-08 18:43 J	-2416943.82	-2416943.72	-2416943.60	0.0261	0.0215
Mercury	-11330-01-05 16:19 J	-2416855.01	-2416854.82	-2416854.63	0.0261	0.0054
Mercury	-11330-04-04 13:55 J	-2416766.10	-2416765.92	-2416765.74	0.0262	0.0108
Venus	-11328-09-12 02:09 J	-2415874.57	-2415874.41	-2415874.24	0.0269	0.0167
Venus	-11327-04-29 09:21 J	-2415645.33	-2415645.11	-2415644.90	0.0272	0.0015
Venus	-11327-12-14 18:57 J	-2415415.85	-2415415.71	-2415415.57	0.0275	0.0204
Earth	-11320-06-19 16:48 J	-2413036.93	-2413036.80	-2413036.64	0.0303	0.0242
Moon	-11320-06-19 18:00 J	-2413036.89	-2413036.75	-2413036.61	0.0303	0.0244 *
Mercury	-11317-08-14 22:19 J	-2411884.63	-2411884.57	-2411884.51	0.0302	0.0265
Mercury	-11317-11-11 10:48 J	-2411796.17	-2411796.05	-2411795.93	0.0302	0.0102
Mercury	-11316-02-07 22:48 J	-2411707.67	-2411707.55	-2411707.42	0.0301	0.0061
Mercury	-11316-05-07 11:02 J	-2411619.13	-2411619.04	-2411618.95	0.0300	0.0220
Venus	-11315-12-03 21:50 J	-2411043.70	-2411043.59	-2411043.45	0.0294	0.0236
Venus	-11314-07-21 17:31 J	-2410813.98	-2410813.77	-2410813.56	0.0291	0.0010
Venus	-11313-03-07 09:50 J	-2410584.23	-2410584.09	-2410583.94	0.0288	0.0207
Earth	-11307-12-07 16:33 J	-2408117.97	-2408117.81	-2408117.63	0.0261	0.0189
Moon	-11307-12-07 17:16 J	-2408117.93	-2408117.78	-2408117.61	0.0261	0.0203 *
Mars	-11302-11-05 01:11 J	-2406324.73	-2406324.45	-2406324.17	0.0260	0.0004
Mercury	-11301-02-25 18:14 J	-2406211.76	-2406211.74	-2406211.69	0.0261	0.0256
Mercury	-11301-05-24 16:04 J	-2406123.01	-2406122.83	-2406122.65	0.0261	0.0095
Mercury	-11301-08-21 13:40 J	-2406034.12	-2406033.93	-2406033.74	0.0262	0.0067
Mercury	-11301-11-18 11:02 J	-2405945.12	-2405945.04	-2405944.94	0.0262	0.0230
Venus	-11298-03-25 07:40 J	-2405088.36	-2405088.18	-2405087.99	0.0270	0.0139
Venus	-11298-11-09 15:07 J	-2404859.08	-2404858.87	-2404858.66	0.0273	0.0044
Venus	-11297-06-26 00:43 J	-2404629.57	-2404629.47	-2404629.35	0.0276	0.0235
Moon	-11291-06-13 10:04 J	-2402451.30	-2402451.08	-2402450.86	0.0302	0.0154
Earth	-11291-06-13 11:16 J	-2402451.23	-2402451.03	-2402450.82	0.0302	0.0154 *

Mars	-11288-11-15 08:09 J	-2401200.45	-2401200.16	-2401199.86	0.0302	0.0091
Mercury	-11287-03-31 12:57 J	-2401064.07	-2401063.96	-2401063.84	0.0301	0.0146
Mercury	-11287-06-28 01:11 J	-2400975.57	-2400975.45	-2400975.32	0.0301	0.0018
Mercury	-11287-09-24 13:26 J	-2400887.04	-2400886.94	-2400886.84	0.0300	0.0176
Venus	-11285-06-15 04:48 J	-2400257.45	-2400257.30	-2400257.15	0.0293	0.0204
Venus	-11284-01-30 23:45 J	-2400027.72	-2400027.51	-2400027.30	0.0290	0.0021
Venus	-11284-09-17 15:35 J	-2399797.96	-2399797.85	-2399797.72	0.0287	0.0235
Earth	-11277-12-13 13:55 J	-2397154.13	-2397153.92	-2397153.70	0.0260	0.0128
Moon	-11277-12-13 17:31 J	-2397153.98	-2397153.77	-2397153.55	0.0260	0.0115 *
Mercury	-11272-10-11 16:04 J	-2395390.99	-2395390.83	-2395390.66	0.0261	0.0133
Mercury	-11271-01-08 13:40 J	-2395302.12	-2395301.93	-2395301.74	0.0262	0.0028
Mercury	-11271-04-07 11:16 J	-2395213.16	-2395213.03	-2395212.90	0.0262	0.0191
Venus	-11269-10-04 14:09 J	-2394302.09	-2394301.91	-2394301.70	0.0270	0.0113
Venus	-11268-05-21 22:04 J	-2394072.78	-2394072.58	-2394072.37	0.0273	0.0073
Venus	-11267-01-06 08:24 J	-2393843.20	-2393843.15	-2393843.08	0.0276	0.0264
Mercury	-11258-08-18 15:35 J	-2390331.95	-2390331.85	-2390331.75	0.0302	0.0187
Mercury	-11258-11-15 03:50 J	-2390243.47	-2390243.34	-2390243.21	0.0301	0.0025
Mercury	-11257-02-11 16:04 J	-2390154.95	-2390154.83	-2390154.72	0.0301	0.0136
Mercury	-11257-05-10 04:04 J	-2390066.35	-2390066.33	-2390066.31	0.0300	0.0294
Venus	-11256-12-26 12:00 J	-2389471.16	-2389471.00	-2389470.83	0.0293	0.0171
Venus	-11255-08-13 06:43 J	-2389241.43	-2389241.22	-2389241.02	0.0290	0.0054
Venus	-11254-03-30 22:19 J	-2389011.64	-2389011.57	-2389011.49	0.0287	0.0266
Moon	-11248-12-08 19:40 J	-2386566.89	-2386566.68	-2386566.45	0.0261	0.0131
Earth	-11248-12-08 23:16 J	-2386566.74	-2386566.53	-2386566.30	0.0261	0.0117 *
Mercury	-11242-02-28 16:19 J	-2384658.97	-2384658.82	-2384658.67	0.0261	0.0170
Mercury	-11242-05-28 13:55 J	-2384570.12	-2384569.92	-2384569.73	0.0262	0.0010
Mercury	-11242-08-25 11:16 J	-2384481.18	-2384481.03	-2384480.86	0.0262	0.0154
Venus	-11240-08-30 15:07 J	-2383744.91	-2383744.87	-2383744.81	0.0268	0.0260
Venus	-11239-04-16 21:07 J	-2383515.82	-2383515.62	-2383515.41	0.0271	0.0082
Venus	-11239-12-02 05:31 J	-2383286.47	-2383286.27	-2383286.08	0.0274	0.0104

Moon	-11232-06-15 02:38 J	-2380899.63	-2380899.39	-2380899.15	0.0302	0.0038
Earth	-11232-06-15 06:28 J	-2380899.47	-2380899.23	-2380898.99	0.0302	0.0038 *
Mercury	-11228-01-04 18:28 J	-2379599.81	-2379599.73	-2379599.65	0.0302	0.0224
Mercury	-11228-04-03 06:43 J	-2379511.35	-2379511.22	-2379511.10	0.0301	0.0062
Mercury	-11228-06-30 18:43 J	-2379422.83	-2379422.72	-2379422.59	0.0300	0.0100
Mercury	-11228-09-27 06:57 J	-2379334.27	-2379334.21	-2379334.15	0.0299	0.0257
Venus	-11226-07-08 20:24 J	-2378684.83	-2378684.65	-2378684.46	0.0292	0.0136
Venus	-11225-02-23 14:38 J	-2378455.09	-2378454.89	-2378454.69	0.0289	0.0086
Earth	-11218-12-15 21:50 J	-2375602.73	-2375602.59	-2375602.43	0.0260	0.0204
Moon	-11218-12-16 00:00 J	-2375602.66	-2375602.50	-2375602.32	0.0260	0.0192 *
Mars	-11213-03-31 11:45 J	-2374035.27	-2374035.01	-2374034.74	0.0261	0.0072
Mercury	-11213-07-17 16:48 J	-2373926.92	-2373926.80	-2373926.68	0.0261	0.0205
Mercury	-11213-10-14 14:24 J	-2373838.09	-2373837.90	-2373837.71	0.0262	0.0044
Mercury	-11212-01-11 12:00 J	-2373749.17	-2373749.00	-2373748.83	0.0262	0.0118
Venus	-11210-03-12 22:33 J	-2372958.66	-2372958.56	-2372958.45	0.0269	0.0231
Venus	-11210-10-28 04:48 J	-2372729.51	-2372729.30	-2372729.09	0.0271	0.0053
Venus	-11209-06-13 13:26 J	-2372500.13	-2372499.94	-2372499.75	0.0274	0.0134
Mars	-11199-04-12 08:52 J	-2368910.44	-2368910.13	-2368909.82	0.0302	0.0036
Mercury	-11199-05-24 21:07 J	-2368867.68	-2368867.62	-2368867.56	0.0302	0.0263
Mercury	-11199-08-21 09:21 J	-2368779.23	-2368779.11	-2368778.98	0.0301	0.0101
Mercury	-11199-11-17 21:35 J	-2368690.72	-2368690.60	-2368690.47	0.0301	0.0061
Mercury	-11198-02-14 09:50 J	-2368602.18	-2368602.09	-2368602.01	0.0300	0.0220
Venus	-11196-01-18 04:33 J	-2367898.50	-2367898.31	-2367898.11	0.0292	0.0100
Venus	-11196-09-04 22:19 J	-2367668.76	-2367668.57	-2367668.38	0.0289	0.0121
Moon	-11189-12-10 06:28 J	-2365015.47	-2365015.23	-2365015.00	0.0261	0.0052
Earth	-11189-12-10 08:38 J	-2365015.39	-2365015.14	-2365014.89	0.0261	0.0038 *
Mercury	-11184-12-04 17:02 J	-2363194.85	-2363194.79	-2363194.70	0.0261	0.0240
Mercury	-11183-03-03 14:38 J	-2363106.07	-2363105.89	-2363105.70	0.0261	0.0080
Mercury	-11183-05-31 12:28 J	-2363017.17	-2363016.98	-2363016.80	0.0262	0.0083
Mercury	-11183-08-28 10:04 J	-2362928.14	-2362928.08	-2362928.01	0.0263	0.0247

Venus	-11181-09-22 05:16 J	-2362172.41	-2362172.28	-2362172.13	0.0269	0.0202
Venus	-11180-05-09 12:14 J	-2361943.21	-2361942.99	-2361942.78	0.0272	0.0022
Venus	-11180-12-24 21:07 J	-2361713.78	-2361713.62	-2361713.44	0.0275	0.0168
Moon	-11173-06-17 03:07 J	-2359347.59	-2359347.37	-2359347.14	0.0302	0.0089
Earth	-11173-06-17 04:33 J	-2359347.54	-2359347.31	-2359347.07	0.0302	0.0089 *
Mercury	-11170-10-12 00:14 J	-2358135.51	-2358135.49	-2358135.47	0.0302	0.0297
Mercury	-11169-01-08 12:28 J	-2358047.09	-2358046.98	-2358046.86	0.0301	0.0134
Mercury	-11169-04-06 00:43 J	-2357958.59	-2357958.47	-2357958.34	0.0300	0.0029
Mercury	-11169-07-03 12:57 J	-2357870.06	-2357869.96	-2357869.86	0.0300	0.0187
Venus	-11168-12-13 17:45 J	-2357341.77	-2357341.76	-2357341.72	0.0294	0.0292
Venus	-11167-07-31 14:09 J	-2357112.12	-2357111.91	-2357111.71	0.0291	0.0064
Venus	-11166-03-18 07:11 J	-2356882.37	-2356882.20	-2356882.02	0.0288	0.0155
Mercury	-11154-07-21 15:21 J	-2352374.03	-2352373.86	-2352373.69	0.0262	0.0114
Mercury	-11154-10-18 12:57 J	-2352285.15	-2352284.96	-2352284.77	0.0262	0.0049
Mercury	-11153-01-15 10:19 J	-2352196.17	-2352196.07	-2352195.94	0.0263	0.0213
Venus	-11151-04-04 12:57 J	-2351386.12	-2351385.96	-2351385.79	0.0270	0.0173
Venus	-11151-11-19 20:09 J	-2351156.87	-2351156.66	-2351156.44	0.0272	0.0009
Venus	-11150-07-07 05:16 J	-2350927.41	-2350927.28	-2350927.12	0.0275	0.0199
Earth	-11144-06-11 04:19 J	-2348761.38	-2348761.32	-2348761.23	0.0301	0.0286
Moon	-11144-06-11 05:02 J	-2348761.35	-2348761.29	-2348761.20	0.0301	0.0285 *
Mercury	-11140-05-27 15:35 J	-2347314.95	-2347314.85	-2347314.74	0.0302	0.0168
Mercury	-11140-08-24 04:04 J	-2347226.46	-2347226.33	-2347226.21	0.0301	0.0009
Mercury	-11140-11-20 16:04 J	-2347137.94	-2347137.83	-2347137.72	0.0300	0.0154
Venus	-11138-06-26 03:35 J	-2346555.44	-2346555.35	-2346555.24	0.0294	0.0253
Venus	-11137-02-10 23:16 J	-2346325.74	-2346325.53	-2346325.32	0.0291	0.0026
Venus	-11137-09-27 15:50 J	-2346095.99	-2346095.84	-2346095.68	0.0288	0.0192
Earth	-11130-12-12 19:11 J	-2343463.94	-2343463.70	-2343463.45	0.0260	0.0044
Moon	-11130-12-12 21:07 J	-2343463.86	-2343463.62	-2343463.38	0.0260	0.0032 *
Mars	-11125-08-26 02:09 J	-2341745.62	-2341745.41	-2341745.18	0.0261	0.0157
Mercury	-11125-12-07 15:50 J	-2341642.00	-2341641.84	-2341641.68	0.0261	0.0148

Mercury	-11124-03-06 13:26 J	-2341553.13	-2341552.94	-2341552.74	0.0262	0.0014
Mercury	-11124-06-03 11:02 J	-2341464.17	-2341464.04	-2341463.89	0.0262	0.0178
Venus	-11122-10-15 20:24 J	-2340599.83	-2340599.65	-2340599.47	0.0270	0.0142
Venus	-11121-06-01 03:50 J	-2340370.55	-2340370.34	-2340370.13	0.0273	0.0041
Venus	-11120-01-16 13:26 J	-2340141.04	-2340140.94	-2340140.81	0.0275	0.0233
Earth	-11114-06-20 05:02 J	-2337795.45	-2337795.29	-2337795.12	0.0303	0.0220
Moon	-11114-06-20 07:26 J	-2337795.33	-2337795.19	-2337795.02	0.0303	0.0224 *
Mars	-11111-09-08 05:02 J	-2336619.53	-2336619.29	-2336619.05	0.0302	0.0192
Mercury	-11111-10-14 18:57 J	-2336582.80	-2336582.71	-2336582.62	0.0301	0.0201
Mercury	-11110-01-11 07:11 J	-2336494.33	-2336494.20	-2336494.07	0.0301	0.0039
Mercury	-11110-04-09 19:26 J	-2336405.81	-2336405.69	-2336405.58	0.0300	0.0122
Mercury	-11110-07-07 07:26 J	-2336317.23	-2336317.19	-2336317.15	0.0299	0.0279
Venus	-11108-01-05 13:40 J	-2335769.07	-2335768.93	-2335768.79	0.0293	0.0215
Venus	-11108-08-23 08:52 J	-2335539.34	-2335539.13	-2335538.93	0.0290	0.0012
Venus	-11107-04-10 00:57 J	-2335309.59	-2335309.46	-2335309.33	0.0287	0.0225
Moon	-11101-12-07 06:14 J	-2332876.38	-2332876.24	-2332876.09	0.0261	0.0211
Earth	-11101-12-07 07:11 J	-2332876.36	-2332876.20	-2332876.04	0.0261	0.0199 *
Mercury	-11095-04-26 16:19 J	-2330909.95	-2330909.82	-2330909.68	0.0261	0.0182
Mercury	-11095-07-24 13:55 J	-2330821.11	-2330820.92	-2330820.72	0.0262	0.0021
Mercury	-11095-10-21 11:31 J	-2330732.18	-2330732.02	-2330731.85	0.0263	0.0143
Venus	-11092-04-27 03:35 J	-2329813.55	-2329813.35	-2329813.16	0.0270	0.0113
Venus	-11092-12-12 11:31 J	-2329584.23	-2329584.02	-2329583.81	0.0273	0.0072
Venus	-11091-07-29 21:35 J	-2329354.65	-2329354.60	-2329354.53	0.0276	0.0264
Moon	-11085-06-13 01:11 J	-2327209.66	-2327209.45	-2327209.23	0.0301	0.0155
Earth	-11085-06-13 04:19 J	-2327209.52	-2327209.32	-2327209.11	0.0301	0.0158 *
Mercury	-11081-03-02 22:04 J	-2325850.66	-2325850.58	-2325850.50	0.0302	0.0234
Mercury	-11081-05-30 10:19 J	-2325762.19	-2325762.07	-2325761.94	0.0301	0.0072
Mercury	-11081-08-26 22:33 J	-2325673.68	-2325673.56	-2325673.44	0.0300	0.0089
Mercury	-11081-11-23 10:33 J	-2325585.13	-2325585.06	-2325584.99	0.0300	0.0248
Venus	-11079-07-18 23:16 J	-2324982.69	-2324982.53	-2324982.35	0.0293	0.0176



Venus	-11078-03-05 18:14 J	-2324752.95	-2324752.74	-2324752.54	0.0290	0.0049
Venus	-11078-10-21 09:35 J	-2324523.17	-2324523.10	-2324523.00	0.0287	0.0263
Earth	-11071-12-14 06:00 J	-2321912.46	-2321912.25	-2321912.02	0.0260	0.0126
Moon	-11071-12-14 09:50 J	-2321912.31	-2321912.09	-2321911.87	0.0260	0.0114 *
Mars	-11067-12-05 14:24 J	-2320460.01	-2320459.90	-2320459.77	0.0260	0.0233
Mercury	-11066-09-13 16:33 J	-2320177.91	-2320177.81	-2320177.70	0.0261	0.0218
Mercury	-11066-12-11 14:09 J	-2320089.09	-2320088.91	-2320088.72	0.0262	0.0058
Mercury	-11065-03-09 12:00 J	-2320000.18	-2320000.00	-2319999.83	0.0262	0.0106
Venus	-11063-03-23 04:19 J	-2319256.36	-2319256.32	-2319256.26	0.0268	0.0261
Venus	-11063-11-07 10:19 J	-2319027.27	-2319027.07	-2319026.86	0.0271	0.0083
Venus	-11062-06-24 18:28 J	-2318797.92	-2318797.73	-2318797.53	0.0274	0.0103
Mercury	-11052-07-21 01:11 J	-2315118.51	-2315118.45	-2315118.39	0.0302	0.0268
Mercury	-11052-10-17 13:26 J	-2315030.06	-2315029.94	-2315029.82	0.0301	0.0106
Mercury	-11051-01-14 01:40 J	-2314941.56	-2314941.43	-2314941.30	0.0300	0.0055
Mercury	-11051-04-12 13:40 J	-2314853.01	-2314852.93	-2314852.84	0.0300	0.0215
Venus	-11049-01-29 09:07 J	-2314196.30	-2314196.12	-2314195.93	0.0292	0.0139
Venus	-11049-09-15 03:21 J	-2313966.56	-2313966.36	-2313966.16	0.0289	0.0084
Moon	-11042-12-09 14:24 J	-2311325.11	-2311324.90	-2311324.68	0.0261	0.0131
Earth	-11042-12-09 18:14 J	-2311324.96	-2311324.74	-2311324.52	0.0261	0.0116 *
Mars	-11036-01-20 15:21 J	-2309455.96	-2309455.86	-2309455.74	0.0261	0.0240
Mercury	-11036-01-30 16:48 J	-2309445.83	-2309445.80	-2309445.75	0.0261	0.0254
Mercury	-11036-04-29 14:24 J	-2309357.08	-2309356.90	-2309356.71	0.0262	0.0094
Mercury	-11036-07-27 12:00 J	-2309268.18	-2309268.00	-2309267.81	0.0262	0.0069
Mercury	-11036-10-24 09:35 J	-2309179.18	-2309179.10	-2309179.00	0.0263	0.0233
Venus	-11034-10-03 10:33 J	-2308470.15	-2308470.06	-2308469.94	0.0269	0.0233
Venus	-11033-05-19 17:02 J	-2308241.00	-2308240.79	-2308240.58	0.0271	0.0054
Venus	-11032-01-04 01:40 J	-2308011.61	-2308011.43	-2308011.24	0.0274	0.0134
Moon	-11026-06-15 23:02 J	-2305657.78	-2305657.54	-2305657.30	0.0302	0.0033
Earth	-11026-06-16 02:09 J	-2305657.65	-2305657.41	-2305657.17	0.0302	0.0034 *
Mercury	-11022-03-06 16:33 J	-2304297.93	-2304297.81	-2304297.70	0.0301	0.0141

Mercury	-11022-06-03 04:48 J	-2304209.43	-2304209.30	-2304209.18	0.0301	0.0023
Mercury	-11022-08-30 16:48 J	-2304120.90	-2304120.80	-2304120.70	0.0300	0.0181
Venus	-11020-08-10 18:14 J	-2303409.93	-2303409.74	-2303409.54	0.0292	0.0100
Venus	-11019-03-28 12:00 J	-2303180.18	-2303180.00	-2303179.81	0.0289	0.0122
Earth	-11012-12-15 16:19 J	-2300360.97	-2300360.82	-2300360.67	0.0260	0.0205
Moon	-11012-12-15 17:02 J	-2300360.95	-2300360.79	-2300360.61	0.0260	0.0194 *
Mercury	-11007-09-16 14:24 J	-2298625.06	-2298624.90	-2298624.73	0.0261	0.0132
Mercury	-11007-12-14 12:00 J	-2298536.19	-2298536.00	-2298535.80	0.0262	0.0030
Mercury	-11006-03-13 09:35 J	-2298447.22	-2298447.10	-2298446.96	0.0262	0.0193
Venus	-11004-04-14 16:33 J	-2297683.94	-2297683.81	-2297683.67	0.0269	0.0205
Venus	-11004-11-29 23:16 J	-2297454.75	-2297454.53	-2297454.32	0.0271	0.0025
Venus	-11003-07-17 07:55 J	-2297225.34	-2297225.17	-2297224.99	0.0274	0.0164

# 11TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 11th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-10993-07-23 19:11 J	-2293565.80	-2293565.70	-2293565.60	0.0302	0.0179		
Mercury	-10993-10-20 07:26 J	-2293477.32	-2293477.19	-2293477.06	0.0301	0.0018		
Mercury	-10992-01-16 19:40 J	-2293388.79	-2293388.68	-2293388.57	0.0300	0.0143		
Venus	-10991-07-06 06:28 J	-2292853.23	-2292853.23	-2292853.23	0.0294	0.0294		
Venus	-10990-02-21 02:38 J	-2292623.59	-2292623.39	-2292623.18	0.0291	0.0066		
Venus	-10990-10-08 20:09 J	-2292393.83	-2292393.66	-2292393.48	0.0288	0.0155		
Moon	-10983-12-11 01:55 J	-2289773.65	-2289773.42	-2289773.18	0.0261	0.0052		

Earth	-10983-12-11 03:21 J	-2289773.61	-2289773.36	-2289773.11	0.0261	0.0037 *
Mars	-10978-05-01 21:50 J	-2288170.80	-2288170.59	-2288170.36	0.0260	0.0158
Mercury	-10977-02-03 14:09 J	-2287893.05	-2287892.91	-2287892.76	0.0261	0.0172
Mercury	-10977-05-02 11:45 J	-2287804.20	-2287804.01	-2287803.82	0.0262	0.0010
Mercury	-10977-07-30 09:21 J	-2287715.27	-2287715.11	-2287714.95	0.0262	0.0152
Venus	-10975-10-25 21:35 J	-2286897.75	-2286897.60	-2286897.43	0.0269	0.0178
Venus	-10974-06-12 04:33 J	-2286668.53	-2286668.31	-2286668.10	0.0272	0.0003
Venus	-10973-01-27 13:40 J	-2286439.08	-2286438.93	-2286438.77	0.0275	0.0192
Earth	-10967-06-17 18:43 J	-2284105.95	-2284105.72	-2284105.48	0.0302	0.0078
Moon	-10967-06-17 18:57 J	-2284105.94	-2284105.71	-2284105.48	0.0302	0.0078 *
Mercury	-10964-12-10 21:50 J	-2282833.67	-2282833.59	-2282833.50	0.0302	0.0218
Mercury	-10963-03-09 10:19 J	-2282745.20	-2282745.07	-2282744.95	0.0301	0.0056
Mercury	-10963-06-05 22:19 J	-2282656.69	-2282656.57	-2282656.45	0.0301	0.0106
Mercury	-10963-09-02 10:33 J	-2282568.12	-2282568.06	-2282568.00	0.0300	0.0264
Venus	-10961-01-16 14:52 J	-2282066.97	-2282066.88	-2282066.77	0.0294	0.0257
Venus	-10961-09-02 11:02 J	-2281837.25	-2281837.04	-2281836.83	0.0291	0.0027
Venus	-10960-04-20 04:04 J	-2281607.48	-2281607.33	-2281607.17	0.0288	0.0192
Mercury	-10948-06-22 13:40 J	-2277161.03	-2277160.93	-2277160.81	0.0261	0.0212
Mercury	-10948-09-19 11:16 J	-2277072.22	-2277072.03	-2277071.84	0.0261	0.0052
Mercury	-10948-12-17 08:52 J	-2276983.31	-2276983.13	-2276982.95	0.0262	0.0110
Venus	-10945-05-07 02:24 J	-2276111.57	-2276111.40	-2276111.22	0.0269	0.0152
Venus	-10945-12-22 09:35 J	-2275882.31	-2275882.10	-2275881.88	0.0272	0.0030
Venus	-10944-08-08 18:43 J	-2275652.83	-2275652.72	-2275652.58	0.0275	0.0221
Mercury	-10934-04-30 00:14 J	-2272101.55	-2272101.49	-2272101.43	0.0302	0.0262
Mercury	-10934-07-27 12:28 J	-2272013.10	-2272012.98	-2272012.85	0.0302	0.0100
Mercury	-10934-10-24 00:43 J	-2271924.59	-2271924.47	-2271924.34	0.0301	0.0063
Mercury	-10933-01-20 12:57 J	-2271836.04	-2271835.96	-2271835.88	0.0300	0.0222
Venus	-10932-07-28 22:04 J	-2271280.71	-2271280.58	-2271280.44	0.0294	0.0224
Venus	-10931-03-15 17:45 J	-2271050.97	-2271050.76	-2271050.55	0.0291	0.0007
Venus	-10931-10-31 10:33 J	-2270821.19	-2270821.06	-2270820.92	0.0288	0.0221

Earth	-10924-12-12 09:50 J	-2268222.33	-2268222.09	-2268221.84	0.0260	0.0035
Moon	-10924-12-12 13:11 J	-2268222.20	-2268221.95	-2268221.71	0.0260	0.0022 *
Mercury	-10919-11-09 13:11 J	-2266428.99	-2266428.95	-2266428.91	0.0261	0.0255
Mercury	-10918-02-06 10:33 J	-2266340.24	-2266340.06	-2266339.88	0.0261	0.0096
Mercury	-10918-05-06 08:09 J	-2266251.35	-2266251.16	-2266250.97	0.0262	0.0066
Mercury	-10918-08-03 05:31 J	-2266162.35	-2266162.27	-2266162.17	0.0262	0.0229
Venus	-10916-11-17 06:43 J	-2265325.41	-2265325.22	-2265325.03	0.0270	0.0127
Venus	-10915-07-04 13:55 J	-2265096.13	-2265095.92	-2265095.71	0.0272	0.0057
Venus	-10914-02-18 23:31 J	-2264866.61	-2264866.52	-2264866.43	0.0275	0.0248
Earth	-10908-06-19 06:00 J	-2262554.44	-2262554.25	-2262554.05	0.0302	0.0175
Moon	-10908-06-19 09:35 J	-2262554.29	-2262554.10	-2262553.91	0.0302	0.0177 *
Mercury	-10905-12-13 14:52 J	-2261281.00	-2261280.88	-2261280.77	0.0302	0.0144
Mercury	-10904-03-12 03:07 J	-2261192.50	-2261192.37	-2261192.24	0.0301	0.0019
Mercury	-10904-06-08 15:07 J	-2261103.97	-2261103.87	-2261103.76	0.0300	0.0179
Venus	-10902-02-08 05:02 J	-2260494.45	-2260494.29	-2260494.13	0.0294	0.0189
Venus	-10902-09-26 00:28 J	-2260264.69	-2260264.48	-2260264.27	0.0291	0.0038
Venus	-10901-05-12 17:02 J	-2260034.88	-2260034.79	-2260034.69	0.0288	0.0255
Moon	-10895-12-07 15:50 J	-2257634.95	-2257634.84	-2257634.71	0.0261	0.0228
Earth	-10895-12-07 18:57 J	-2257634.84	-2257634.71	-2257634.56	0.0261	0.0214 *
Mars	-10890-09-25 19:55 J	-2255881.93	-2255881.67	-2255881.41	0.0259	0.0099
Mercury	-10889-06-25 09:35 J	-2255608.26	-2255608.10	-2255607.94	0.0261	0.0141
Mercury	-10889-09-22 06:57 J	-2255519.40	-2255519.21	-2255519.01	0.0261	0.0020
Mercury	-10889-12-20 04:19 J	-2255430.45	-2255430.32	-2255430.17	0.0262	0.0182
Venus	-10886-05-30 10:04 J	-2254539.28	-2254539.08	-2254538.88	0.0270	0.0103
Venus	-10885-01-14 17:31 J	-2254309.97	-2254309.77	-2254309.56	0.0272	0.0081
Venus	-10885-08-31 03:21 J	-2254080.39	-2254080.36	-2254080.34	0.0275	0.0273
Moon	-10879-06-12 15:50 J	-2251968.99	-2251968.84	-2251968.68	0.0302	0.0231
Earth	-10879-06-12 19:40 J	-2251968.82	-2251968.68	-2251968.52	0.0302	0.0234 *
Mercury	-10875-05-02 16:33 J	-2250548.90	-2250548.81	-2250548.71	0.0302	0.0194
Mercury	-10875-07-30 04:48 J	-2250460.42	-2250460.30	-2250460.17	0.0302	0.0034

Mercury	-10875-10-26 17:02 J	-2250371.90	-2250371.79	-2250371.67	0.0301	0.0130
Mercury	-10874-01-23 05:02 J	-2250283.31	-2250283.29	-2250283.25	0.0300	0.0290
Venus	-10873-08-20 10:04 J	-2249708.24	-2249708.08	-2249707.89	0.0293	0.0161
Venus	-10872-04-07 05:31 J	-2249478.47	-2249478.27	-2249478.06	0.0290	0.0067
Venus	-10872-11-22 21:50 J	-2249248.62	-2249248.59	-2249248.55	0.0287	0.0281
Earth	-10865-12-13 13:55 J	-2246671.15	-2246670.92	-2246670.70	0.0260	0.0100
Moon	-10865-12-13 16:33 J	-2246671.05	-2246670.81	-2246670.57	0.0260	0.0089 *
Mercury	-10860-11-12 08:09 J	-2244876.29	-2244876.16	-2244876.02	0.0261	0.0188
Mercury	-10859-02-09 05:45 J	-2244787.46	-2244787.26	-2244787.07	0.0261	0.0028
Mercury	-10859-05-09 03:07 J	-2244698.53	-2244698.37	-2244698.20	0.0262	0.0133
Venus	-10857-04-24 07:55 J	-2243982.23	-2243982.17	-2243982.10	0.0268	0.0255
Venus	-10857-12-09 13:11 J	-2243753.15	-2243752.95	-2243752.74	0.0270	0.0079
Venus	-10856-07-26 20:38 J	-2243523.83	-2243523.64	-2243523.44	0.0273	0.0107
Earth	-10849-06-20 11:02 J	-2241003.16	-2241003.04	-2241002.90	0.0303	0.0256
Moon	-10849-06-20 13:26 J	-2241003.06	-2241002.94	-2241002.81	0.0303	0.0260 *
Mercury	-10846-09-19 18:28 J	-2239816.81	-2239816.73	-2239816.66	0.0302	0.0245
Mercury	-10846-12-17 06:43 J	-2239728.34	-2239728.22	-2239728.09	0.0302	0.0081
Mercury	-10845-03-14 18:57 J	-2239639.83	-2239639.71	-2239639.58	0.0301	0.0081
Mercury	-10845-06-11 07:11 J	-2239551.27	-2239551.20	-2239551.13	0.0300	0.0241
Venus	-10843-03-02 15:50 J	-2238922.03	-2238921.84	-2238921.65	0.0293	0.0128
Venus	-10843-10-18 10:48 J	-2238692.24	-2238692.05	-2238691.85	0.0290	0.0098
Moon	-10836-12-08 18:57 J	-2236083.90	-2236083.71	-2236083.53	0.0261	0.0165
Earth	-10836-12-08 21:35 J	-2236083.79	-2236083.60	-2236083.39	0.0261	0.0151 *
Mercury	-10830-04-01 06:43 J	-2234144.29	-2234144.22	-2234144.13	0.0260	0.0235
Mercury	-10830-06-29 04:19 J	-2234055.50	-2234055.32	-2234055.13	0.0260	0.0076
Mercury	-10830-09-26 01:40 J	-2233966.61	-2233966.43	-2233966.24	0.0261	0.0084
Mercury	-10830-12-23 23:16 J	-2233877.59	-2233877.53	-2233877.46	0.0262	0.0246
Venus	-10828-11-04 10:33 J	-2233196.16	-2233196.06	-2233195.95	0.0267	0.0233
Venus	-10827-06-21 15:50 J	-2232967.05	-2232966.84	-2232966.63	0.0270	0.0056
Venus	-10826-02-05 23:16 J	-2232737.71	-2232737.53	-2232737.33	0.0273	0.0130

Moon	-10820-06-13 20:52 J	-2230417.83	-2230417.63	-2230417.42	0.0302	0.0154
Earth	-10820-06-13 21:50 J	-2230417.79	-2230417.59	-2230417.38	0.0302	0.0161 *
Mercury	-10816-02-05 19:40 J	-2229084.69	-2229084.68	-2229084.67	0.0303	0.0302
Mercury	-10816-05-05 08:09 J	-2228996.27	-2228996.16	-2228996.05	0.0302	0.0137
Mercury	-10816-08-01 20:24 J	-2228907.78	-2228907.65	-2228907.52	0.0302	0.0026
Mercury	-10816-10-29 08:38 J	-2228819.24	-2228819.14	-2228819.04	0.0301	0.0186
Venus	-10814-09-12 19:11 J	-2228135.89	-2228135.70	-2228135.50	0.0293	0.0102
Venus	-10813-04-29 13:55 J	-2227906.10	-2227905.92	-2227905.72	0.0290	0.0123
Moon	-10806-12-15 12:14 J	-2225120.19	-2225119.99	-2225119.77	0.0259	0.0151
Earth	-10806-12-15 14:09 J	-2225120.09	-2225119.91	-2225119.70	0.0259	0.0159 *
Mars	-10801-02-19 04:48 J	-2223593.56	-2223593.30	-2223593.02	0.0259	0.0060
Mercury	-10801-11-15 02:24 J	-2223323.56	-2223323.40	-2223323.22	0.0261	0.0128
Mercury	-10800-02-12 00:00 J	-2223234.70	-2223234.50	-2223234.31	0.0261	0.0032
Mercury	-10800-05-11 21:21 J	-2223145.74	-2223145.61	-2223145.48	0.0262	0.0194
Venus	-10798-05-17 12:14 J	-2222410.11	-2222409.99	-2222409.85	0.0268	0.0212
Venus	-10797-01-01 17:45 J	-2222180.97	-2222180.76	-2222180.54	0.0270	0.0034
Venus	-10797-08-18 01:11 J	-2221951.61	-2221951.45	-2221951.26	0.0273	0.0154
Mars	-10787-02-23 18:28 J	-2218474.78	-2218474.73	-2218474.68	0.0304	0.0299
Mercury	-10787-09-22 09:21 J	-2218264.21	-2218264.11	-2218264.01	0.0303	0.0194
Mercury	-10787-12-19 21:50 J	-2218175.72	-2218175.59	-2218175.47	0.0302	0.0032
Mercury	-10786-03-18 10:04 J	-2218087.20	-2218087.08	-2218086.97	0.0301	0.0131
Mercury	-10786-06-14 22:04 J	-2217998.60	-2217998.58	-2217998.55	0.0300	0.0291
Venus	-10784-03-24 23:02 J	-2217349.74	-2217349.54	-2217349.34	0.0293	0.0074
Venus	-10784-11-09 17:45 J	-2217119.93	-2217119.76	-2217119.58	0.0290	0.0152
Earth	-10777-12-09 21:07 J	-2214532.84	-2214532.62	-2214532.38	0.0261	0.0096
Moon	-10777-12-09 22:33 J	-2214532.78	-2214532.56	-2214532.34	0.0261	0.0107 *
Mercury	-10771-04-04 00:57 J	-2212591.60	-2212591.46	-2212591.32	0.0260	0.0177
Mercury	-10771-07-01 22:19 J	-2212502.77	-2212502.57	-2212502.38	0.0260	0.0019
Mercury	-10771-09-28 19:26 J	-2212413.84	-2212413.69	-2212413.52	0.0261	0.0142
Venus	-10769-11-26 14:09 J	-2211624.05	-2211623.91	-2211623.75	0.0267	0.0192

Venus	-10768-07-13 19:40 J	-2211394.89	-2211394.68	-2211394.46	0.0270	0.0013
Venus	-10767-02-28 03:21 J	-2211165.52	-2211165.36	-2211165.19	0.0273	0.0174
Earth	-10761-06-14 18:28 J	-2208866.96	-2208866.73	-2208866.50	0.0302	0.0102
Moon	-10761-06-14 22:04 J	-2208866.81	-2208866.58	-2208866.36	0.0302	0.0090 *
Mercury	-10757-02-09 10:19 J	-2207532.13	-2207532.07	-2207532.00	0.0303	0.0256
Mercury	-10757-05-07 22:48 J	-2207443.67	-2207443.55	-2207443.43	0.0303	0.0091
Mercury	-10757-08-04 11:02 J	-2207355.16	-2207355.04	-2207354.91	0.0302	0.0072
Mercury	-10757-10-31 23:16 J	-2207266.61	-2207266.53	-2207266.45	0.0301	0.0232
Venus	-10755-02-17 03:35 J	-2206793.40	-2206793.35	-2206793.29	0.0296	0.0284
Venus	-10755-10-05 01:11 J	-2206563.66	-2206563.45	-2206563.24	0.0293	0.0050
Venus	-10754-05-22 19:40 J	-2206333.84	-2206333.68	-2206333.51	0.0290	0.0174
Moon	-10747-12-16 08:38 J	-2203569.27	-2203569.14	-2203568.98	0.0259	0.0206
Earth	-10747-12-16 12:00 J	-2203569.13	-2203569.00	-2203568.84	0.0259	0.0211 *
Mercury	-10742-08-21 22:33 J	-2201859.63	-2201859.56	-2201859.46	0.0260	0.0231
Mercury	-10742-11-18 20:09 J	-2201770.85	-2201770.66	-2201770.48	0.0260	0.0073
Mercury	-10741-02-15 17:31 J	-2201681.96	-2201681.77	-2201681.59	0.0261	0.0087
Mercury	-10741-05-14 14:38 J	-2201592.94	-2201592.89	-2201592.82	0.0261	0.0249
Venus	-10739-06-08 15:21 J	-2200838.01	-2200837.86	-2200837.69	0.0268	0.0171
Venus	-10738-01-23 21:07 J	-2200608.84	-2200608.62	-2200608.41	0.0271	0.0009
Venus	-10738-09-10 04:48 J	-2200379.44	-2200379.30	-2200379.15	0.0273	0.0196
Mercury	-10728-09-24 23:45 J	-2196711.62	-2196711.51	-2196711.40	0.0303	0.0151
Mercury	-10728-12-22 12:00 J	-2196623.12	-2196623.00	-2196622.87	0.0302	0.0016
Mercury	-10727-03-21 00:14 J	-2196534.59	-2196534.49	-2196534.38	0.0301	0.0174
Venus	-10726-08-30 06:00 J	-2196007.33	-2196007.25	-2196007.14	0.0296	0.0259
Venus	-10725-04-16 03:50 J	-2195777.55	-2195777.34	-2195777.13	0.0293	0.0024
Venus	-10725-12-01 22:19 J	-2195547.72	-2195547.57	-2195547.42	0.0290	0.0200
Earth	-10718-12-11 18:14 J	-2192981.98	-2192981.74	-2192981.50	0.0260	0.0045
Moon	-10718-12-11 21:50 J	-2192981.83	-2192981.59	-2192981.35	0.0260	0.0057 *
Mars	-10713-07-14 09:21 J	-2191305.38	-2191305.11	-2191304.82	0.0259	0.0034
Mercury	-10712-04-06 18:14 J	-2191038.91	-2191038.74	-2191038.57	0.0260	0.0124

Mercury	-10712-07-04 15:21 J	-2190950.05	-2190949.86	-2190949.66	0.0260	0.0036
Mercury	-10712-10-01 12:43 J	-2190861.09	-2190860.97	-2190860.83	0.0261	0.0195
Venus	-10710-12-19 17:16 J	-2190051.96	-2190051.78	-2190051.60	0.0268	0.0151
Venus	-10709-08-04 22:33 J	-2189822.77	-2189822.56	-2189822.34	0.0270	0.0029
Venus	-10708-03-22 06:14 J	-2189593.36	-2189593.24	-2189593.10	0.0273	0.0216
Earth	-10702-06-16 12:00 J	-2187316.24	-2187316.00	-2187315.76	0.0302	0.0052
Moon	-10702-06-16 13:55 J	-2187316.17	-2187315.92	-2187315.67	0.0302	0.0036 *
Mercury	-10698-02-12 00:28 J	-2185979.57	-2185979.48	-2185979.40	0.0303	0.0218
Mercury	-10698-05-11 12:43 J	-2185891.09	-2185890.97	-2185890.84	0.0303	0.0054
Mercury	-10698-08-08 00:57 J	-2185802.57	-2185802.46	-2185802.34	0.0302	0.0110
Mercury	-10698-11-04 13:11 J	-2185714.00	-2185713.95	-2185713.89	0.0301	0.0270
Venus	-10696-03-11 06:57 J	-2185221.32	-2185221.21	-2185221.08	0.0296	0.0238
Venus	-10696-10-27 04:33 J	-2184991.52	-2184991.31	-2184991.10	0.0293	0.0004
Venus	-10695-06-13 23:02 J	-2184761.67	-2184761.54	-2184761.41	0.0290	0.0220
Earth	-10688-12-17 07:55 J	-2182018.19	-2182018.17	-2182018.14	0.0259	0.0258
Moon	-10688-12-17 07:55 J	-2182018.19	-2182018.17	-2182018.12	0.0259	0.0257 *
Mercury	-10683-08-24 15:50 J	-2180306.98	-2180306.84	-2180306.70	0.0260	0.0179
Mercury	-10683-11-21 13:11 J	-2180218.15	-2180217.95	-2180217.76	0.0260	0.0021
Mercury	-10682-02-18 10:19 J	-2180129.23	-2180129.07	-2180128.90	0.0261	0.0139
Venus	-10680-06-30 17:45 J	-2179265.94	-2179265.76	-2179265.56	0.0268	0.0131
Venus	-10679-02-14 23:16 J	-2179036.73	-2179036.53	-2179036.31	0.0271	0.0051
Venus	-10679-10-02 06:57 J	-2178807.30	-2178807.21	-2178807.09	0.0273	0.0239
Mercury	-10669-07-01 01:11 J	-2175247.49	-2175247.45	-2175247.40	0.0303	0.0280
Mercury	-10669-09-27 13:40 J	-2175159.05	-2175158.93	-2175158.81	0.0303	0.0116
Mercury	-10669-12-25 01:55 J	-2175070.54	-2175070.42	-2175070.29	0.0302	0.0048
Mercury	-10668-03-23 14:09 J	-2174982.00	-2174981.91	-2174981.82	0.0301	0.0209
Venus	-10667-09-21 09:07 J	-2174435.26	-2174435.12	-2174434.97	0.0296	0.0213
Venus	-10666-05-09 06:28 J	-2174205.44	-2174205.23	-2174205.02	0.0293	0.0021
Venus	-10666-12-25 00:57 J	-2173975.57	-2173975.46	-2173975.35	0.0290	0.0244
Earth	-10659-12-12 13:26 J	-2171431.19	-2171430.94	-2171430.69	0.0261	0.0002



Moon	-10659-12-12 13:55 J	-2171431.17	-2171430.92	-2171430.66	0.0261	0.0008 *
Mercury	-10653-01-11 13:55 J	-2169575.00	-2169574.92	-2169574.83	0.0259	0.0231
Mercury	-10653-04-09 11:16 J	-2169486.22	-2169486.03	-2169485.85	0.0260	0.0074
Mercury	-10653-07-07 08:24 J	-2169397.33	-2169397.15	-2169396.96	0.0260	0.0085
Mercury	-10653-10-04 06:00 J	-2169308.32	-2169308.25	-2169308.19	0.0261	0.0245
Venus	-10650-01-10 19:26 J	-2168479.88	-2168479.69	-2168479.49	0.0268	0.0111
Venus	-10650-08-28 01:11 J	-2168250.66	-2168250.45	-2168250.25	0.0270	0.0070
Venus	-10649-04-13 08:52 J	-2168021.19	-2168021.13	-2168021.06	0.0273	0.0257
Moon	-10643-06-17 02:09 J	-2165765.66	-2165765.41	-2165765.16	0.0302	0.0015
Earth	-10643-06-17 04:48 J	-2165765.54	-2165765.30	-2165765.05	0.0302	0.0005 *
Mercury	-10639-02-14 14:09 J	-2164427.01	-2164426.91	-2164426.80	0.0303	0.0182
Mercury	-10639-05-14 02:38 J	-2164338.52	-2164338.39	-2164338.26	0.0303	0.0017
Mercury	-10639-08-10 14:52 J	-2164249.99	-2164249.88	-2164249.77	0.0302	0.0145
Venus	-10637-04-02 09:50 J	-2163649.24	-2163649.09	-2163648.93	0.0296	0.0192
Venus	-10637-11-18 06:57 J	-2163419.41	-2163419.21	-2163419.00	0.0293	0.0042
Venus	-10636-07-06 01:11 J	-2163189.52	-2163189.45	-2163189.36	0.0289	0.0264
Earth	-10630-12-07 15:21 J	-2160843.86	-2160843.86	-2160843.84	0.0261	0.0261
Mars	-10625-12-07 07:11 J	-2159017.48	-2159017.20	-2159016.91	0.0259	0.0017
Mercury	-10624-08-27 08:52 J	-2158754.30	-2158754.13	-2158753.96	0.0260	0.0129
Mercury	-10624-11-24 06:00 J	-2158665.44	-2158665.25	-2158665.05	0.0260	0.0030
Mercury	-10623-02-21 03:21 J	-2158576.49	-2158576.36	-2158576.22	0.0261	0.0189
Venus	-10622-12-06 17:02 J	-2157922.81	-2157922.79	-2157922.77	0.0266	0.0264
Venus	-10621-07-22 20:24 J	-2157693.85	-2157693.65	-2157693.44	0.0268	0.0091
Venus	-10620-03-09 02:09 J	-2157464.61	-2157464.41	-2157464.21	0.0271	0.0091
Mercury	-10610-07-04 14:52 J	-2153694.95	-2153694.88	-2153694.80	0.0303	0.0246
Mercury	-10610-10-01 03:21 J	-2153606.48	-2153606.36	-2153606.24	0.0302	0.0081
Mercury	-10610-12-28 15:35 J	-2153517.97	-2153517.85	-2153517.72	0.0302	0.0082
Mercury	-10609-03-26 03:50 J	-2153429.41	-2153429.34	-2153429.26	0.0301	0.0243
Venus	-10608-10-13 11:16 J	-2152863.20	-2152863.03	-2152862.86	0.0295	0.0169
Venus	-10607-05-31 08:24 J	-2152633.35	-2152633.15	-2152632.94	0.0292	0.0064

Venus	-10606-01-16 02:38 J	-2152403.42	-2152403.39	-2152403.36	0.0289	0.0286
Moon	-10600-12-13 04:04 J	-2149880.57	-2149880.33	-2149880.08	0.0261	0.0042
Earth	-10600-12-13 07:40 J	-2149880.42	-2149880.18	-2149879.93	0.0261	0.0047 *
Mercury	-10594-01-14 06:57 J	-2148022.34	-2148022.21	-2148022.07	0.0259	0.0180
Mercury	-10594-04-13 04:19 J	-2147933.52	-2147933.32	-2147933.13	0.0260	0.0023
Mercury	-10594-07-11 01:26 J	-2147844.60	-2147844.44	-2147844.27	0.0260	0.0137
Venus	-10592-06-17 18:43 J	-2147136.80	-2147136.72	-2147136.64	0.0266	0.0245
Venus	-10591-02-01 22:19 J	-2146907.78	-2146907.57	-2146907.36	0.0268	0.0071
Venus	-10591-09-19 03:50 J	-2146678.53	-2146678.34	-2146678.14	0.0270	0.0111
Moon	-10584-06-17 18:57 J	-2144214.94	-2144214.71	-2144214.47	0.0302	0.0065
Earth	-10584-06-17 21:50 J	-2144214.83	-2144214.59	-2144214.35	0.0302	0.0049 *
Mercury	-10580-02-17 04:04 J	-2142874.44	-2142874.33	-2142874.22	0.0303	0.0147
Mercury	-10580-05-16 16:19 J	-2142785.95	-2142785.82	-2142785.69	0.0303	0.0018
Mercury	-10580-08-13 04:33 J	-2142697.41	-2142697.31	-2142697.20	0.0302	0.0180
Venus	-10578-04-25 12:14 J	-2142077.17	-2142076.99	-2142076.81	0.0295	0.0147
Venus	-10578-12-11 09:07 J	-2141847.32	-2141847.12	-2141846.92	0.0292	0.0086
Earth	-10571-12-08 09:35 J	-2139293.23	-2139293.10	-2139292.95	0.0262	0.0216
Moon	-10571-12-08 13:11 J	-2139293.06	-2139292.95	-2139292.82	0.0262	0.0225 *
Mercury	-10565-06-02 04:48 J	-2137290.38	-2137290.30	-2137290.21	0.0259	0.0234
Mercury	-10565-08-30 01:55 J	-2137201.60	-2137201.42	-2137201.23	0.0260	0.0077
Mercury	-10565-11-26 23:16 J	-2137112.71	-2137112.53	-2137112.34	0.0260	0.0082
Mercury	-10564-02-23 20:24 J	-2137023.71	-2137023.65	-2137023.57	0.0261	0.0242
Venus	-10563-12-28 19:55 J	-2136350.78	-2136350.67	-2136350.56	0.0266	0.0225
Venus	-10562-08-14 23:31 J	-2136121.73	-2136121.52	-2136121.30	0.0268	0.0050
Venus	-10561-03-31 05:31 J	-2135892.46	-2135892.27	-2135892.08	0.0271	0.0133
Mercury	-10551-07-07 05:02 J	-2132142.38	-2132142.29	-2132142.20	0.0303	0.0207
Mercury	-10551-10-03 17:31 J	-2132053.90	-2132053.77	-2132053.65	0.0302	0.0044
Mercury	-10551-12-31 05:45 J	-2131965.38	-2131965.26	-2131965.14	0.0302	0.0120
Mercury	-10550-03-29 18:00 J	-2131876.80	-2131876.75	-2131876.71	0.0301	0.0280
Venus	-10549-11-04 14:24 J	-2131291.09	-2131290.90	-2131290.71	0.0295	0.0124

Venus	-10548-06-22 11:16 J	-2131061.22	-2131061.03	-2131060.84	0.0292	0.0109
Moon	-10541-12-14 00:57 J	-2128329.68	-2128329.46	-2128329.23	0.0261	0.0094
Earth	-10541-12-14 02:38 J	-2128329.62	-2128329.39	-2128329.16	0.0261	0.0093 *
Mars	-10536-05-02 09:50 J	-2126729.37	-2126729.09	-2126728.80	0.0259	0.0008
Mercury	-10535-01-17 00:28 J	-2126469.65	-2126469.48	-2126469.31	0.0259	0.0126
Mercury	-10535-04-15 21:50 J	-2126380.79	-2126380.59	-2126380.40	0.0260	0.0032
Mercury	-10535-07-13 18:57 J	-2126291.83	-2126291.71	-2126291.57	0.0260	0.0191
Venus	-10533-07-09 22:19 J	-2125564.69	-2125564.57	-2125564.42	0.0266	0.0205
Venus	-10532-02-24 02:24 J	-2125335.62	-2125335.40	-2125335.19	0.0268	0.0029
Venus	-10532-10-11 08:09 J	-2125106.33	-2125106.16	-2125105.98	0.0271	0.0155
Earth	-10525-06-18 18:14 J	-2122663.96	-2122663.74	-2122663.51	0.0302	0.0108
Moon	-10525-06-18 19:26 J	-2122663.90	-2122663.69	-2122663.47	0.0302	0.0123 *
Mercury	-10522-11-24 05:45 J	-2121410.31	-2121410.26	-2121410.20	0.0304	0.0271
Mercury	-10521-02-20 18:14 J	-2121321.86	-2121321.74	-2121321.62	0.0303	0.0106
Mercury	-10521-05-19 06:28 J	-2121233.35	-2121233.23	-2121233.10	0.0302	0.0058
Mercury	-10521-08-15 18:43 J	-2121144.80	-2121144.72	-2121144.63	0.0302	0.0219
Venus	-10519-05-17 15:50 J	-2120505.03	-2120504.84	-2120504.64	0.0295	0.0101
Venus	-10518-01-02 12:14 J	-2120275.17	-2120274.99	-2120274.80	0.0292	0.0131
Earth	-10512-12-09 05:02 J	-2117742.47	-2117742.29	-2117742.10	0.0262	0.0168
Moon	-10512-12-09 06:28 J	-2117742.41	-2117742.23	-2117742.03	0.0262	0.0172 *
Mercury	-10506-06-05 22:33 J	-2115737.69	-2115737.56	-2115737.41	0.0260	0.0178
Mercury	-10506-09-02 19:55 J	-2115648.86	-2115648.67	-2115648.48	0.0260	0.0020
Mercury	-10506-11-30 17:02 J	-2115559.94	-2115559.79	-2115559.62	0.0260	0.0140
Venus	-10503-01-20 00:28 J	-2114778.63	-2114778.48	-2114778.32	0.0266	0.0183
Venus	-10503-09-06 04:33 J	-2114549.53	-2114549.31	-2114549.10	0.0269	0.0006
Venus	-10502-04-23 10:33 J	-2114320.21	-2114320.06	-2114319.89	0.0271	0.0179
Moon	-10496-06-12 04:48 J	-2112078.38	-2112078.30	-2112078.21	0.0300	0.0281
Earth	-10496-06-12 06:57 J	-2112078.24	-2112078.21	-2112078.18	0.0300	0.0297 *
Mercury	-10492-07-09 19:26 J	-2110589.79	-2110589.69	-2110589.58	0.0303	0.0163
Mercury	-10492-10-06 07:55 J	-2110501.30	-2110501.17	-2110501.04	0.0302	0.0003

Mercury	-10491-01-02 20:09 J	-2110412.77	-2110412.66	-2110412.55	0.0301	0.0162
Venus	-10490-11-27 18:57 J	-2109718.91	-2109718.71	-2109718.51	0.0294	0.0075
Venus	-10489-07-14 15:21 J	-2109489.04	-2109488.86	-2109488.68	0.0292	0.0156
Earth	-10482-12-15 23:02 J	-2106778.74	-2106778.54	-2106778.33	0.0261	0.0144
Moon	-10482-12-16 01:55 J	-2106778.60	-2106778.42	-2106778.21	0.0261	0.0150 *
Mercury	-10477-10-22 21:21 J	-2105005.70	-2105005.61	-2105005.51	0.0259	0.0224
Mercury	-10476-01-19 18:43 J	-2104916.91	-2104916.72	-2104916.53	0.0260	0.0067
Mercury	-10476-04-18 16:04 J	-2104828.01	-2104827.83	-2104827.65	0.0260	0.0091
Mercury	-10476-07-16 13:11 J	-2104738.99	-2104738.95	-2104738.89	0.0261	0.0252
Venus	-10474-08-02 03:50 J	-2103992.50	-2103992.34	-2103992.16	0.0266	0.0161
Venus	-10473-03-18 08:09 J	-2103763.37	-2103763.16	-2103762.95	0.0269	0.0016
Venus	-10473-11-02 14:24 J	-2103534.04	-2103533.90	-2103533.75	0.0271	0.0201
Earth	-10466-06-20 19:11 J	-2101112.90	-2101112.70	-2101112.51	0.0302	0.0179
Moon	-10466-06-20 22:48 J	-2101112.73	-2101112.55	-2101112.36	0.0302	0.0195 *
Mercury	-10463-11-26 20:38 J	-2099857.72	-2099857.64	-2099857.55	0.0303	0.0221
Mercury	-10462-02-23 09:07 J	-2099769.25	-2099769.12	-2099768.99	0.0303	0.0057
Mercury	-10462-05-22 21:21 J	-2099680.73	-2099680.61	-2099680.49	0.0302	0.0106
Mercury	-10462-08-19 09:35 J	-2099592.15	-2099592.10	-2099592.04	0.0302	0.0267
Venus	-10461-10-21 23:02 J	-2099162.58	-2099162.54	-2099162.49	0.0297	0.0288
Venus	-10460-06-08 22:04 J	-2098932.79	-2098932.58	-2098932.38	0.0295	0.0049
Venus	-10459-01-24 17:45 J	-2098702.91	-2098702.76	-2098702.59	0.0292	0.0182
Moon	-10453-12-09 23:45 J	-2096191.73	-2096191.51	-2096191.28	0.0262	0.0113
Earth	-10453-12-10 02:52 J	-2096191.60	-2096191.38	-2096191.15	0.0262	0.0115 *
Mars	-10448-09-25 18:00 J	-2094441.02	-2094440.75	-2094440.47	0.0259	0.0040
Mercury	-10447-06-08 17:31 J	-2094184.95	-2094184.77	-2094184.60	0.0260	0.0115
Mercury	-10447-09-05 14:38 J	-2094096.08	-2094095.89	-2094095.70	0.0260	0.0044
Mercury	-10447-12-03 12:00 J	-2094007.12	-2094007.00	-2094006.88	0.0261	0.0203
Venus	-10444-02-11 06:57 J	-2093206.39	-2093206.21	-2093206.02	0.0267	0.0138
Venus	-10444-09-28 11:31 J	-2092977.23	-2092977.02	-2092976.81	0.0269	0.0041
Venus	-10443-05-15 17:45 J	-2092747.86	-2092747.76	-2092747.63	0.0272	0.0228

Moon	-10437-06-13 07:26 J	-2090527.36	-2090527.19	-2090527.01	0.0300	0.0204
Earth	-10437-06-13 11:02 J	-2090527.20	-2090527.04	-2090526.87	0.0300	0.0219 *
Mercury	-10433-04-14 22:19 J	-2089125.62	-2089125.57	-2089125.51	0.0303	0.0273
Mercury	-10433-07-12 10:47 J	-2089037.17	-2089037.05	-2089036.93	0.0302	0.0108
Mercury	-10433-10-08 23:16 J	-2088948.66	-2088948.53	-2088948.41	0.0302	0.0055
Mercury	-10432-01-05 11:16 J	-2088860.11	-2088860.03	-2088859.93	0.0301	0.0216
Venus	-10431-05-04 03:50 J	-2088376.44	-2088376.34	-2088376.24	0.0297	0.0260
Venus	-10431-12-20 02:24 J	-2088146.61	-2088146.40	-2088146.19	0.0294	0.0022
Venus	-10430-08-06 22:04 J	-2087916.72	-2087916.58	-2087916.43	0.0291	0.0207
Earth	-10423-12-16 22:19 J	-2085227.72	-2085227.57	-2085227.40	0.0261	0.0201
Moon	-10423-12-17 00:57 J	-2085227.60	-2085227.46	-2085227.30	0.0261	0.0210 *
Mercury	-10418-10-26 16:47 J	-2083452.95	-2083452.80	-2083452.65	0.0260	0.0158
Mercury	-10417-01-23 14:09 J	-2083364.11	-2083363.91	-2083363.72	0.0260	0.0006
Mercury	-10417-04-21 11:16 J	-2083275.18	-2083275.03	-2083274.87	0.0261	0.0160
Venus	-10415-08-24 11:45 J	-2082420.20	-2082420.01	-2082419.81	0.0267	0.0114
Venus	-10414-04-10 16:33 J	-2082191.02	-2082190.81	-2082190.60	0.0269	0.0066
Venus	-10414-11-25 23:02 J	-2081961.60	-2081961.54	-2081961.45	0.0272	0.0253
Earth	-10407-06-22 01:55 J	-2079561.53	-2079561.42	-2079561.31	0.0302	0.0265
Moon	-10407-06-22 02:24 J	-2079561.48	-2079561.40	-2079561.29	0.0302	0.0278 *
Mercury	-10404-11-29 12:28 J	-2078305.09	-2078304.98	-2078304.87	0.0303	0.0161
Mercury	-10403-02-26 00:57 J	-2078216.59	-2078216.46	-2078216.34	0.0302	0.0010
Mercury	-10403-05-25 13:12 J	-2078128.06	-2078127.95	-2078127.85	0.0302	0.0165
Venus	-10402-11-14 08:38 J	-2077590.27	-2077590.14	-2077590.01	0.0297	0.0230
Venus	-10401-07-01 06:57 J	-2077360.42	-2077360.21	-2077360.00	0.0294	0.0009
Venus	-10400-02-16 02:09 J	-2077130.52	-2077130.41	-2077130.28	0.0291	0.0236
Moon	-10394-12-12 00:57 J	-2074640.69	-2074640.46	-2074640.22	0.0262	0.0051
Earth	-10394-12-12 03:50 J	-2074640.58	-2074640.34	-2074640.10	0.0262	0.0054 *
Mercury	-10388-03-14 15:50 J	-2072720.95	-2072720.84	-2072720.71	0.0260	0.0202
Mercury	-10388-06-11 13:12 J	-2072632.14	-2072631.95	-2072631.76	0.0260	0.0044
Mercury	-10388-09-08 10:33 J	-2072543.23	-2072543.06	-2072542.88	0.0261	0.0115

Venus	-10386-07-20 12:57 J	-2071862.99	-2071862.96	-2071862.92	0.0265	0.0261
Venus	-10385-03-05 16:04 J	-2071634.03	-2071633.83	-2071633.63	0.0268	0.0088
Venus	-10385-10-20 20:52 J	-2071404.83	-2071404.63	-2071404.43	0.0270	0.0094
Earth	-10378-06-15 20:24 J	-2068975.86	-2068975.65	-2068975.42	0.0300	0.0128
Moon	-10378-06-15 20:38 J	-2068975.85	-2068975.64	-2068975.42	0.0300	0.0115 *
Mercury	-10374-04-18 14:52 J	-2067572.98	-2067572.88	-2067572.79	0.0303	0.0206
Mercury	-10374-07-16 03:07 J	-2067484.50	-2067484.37	-2067484.24	0.0302	0.0042
Mercury	-10374-10-12 15:21 J	-2067395.97	-2067395.86	-2067395.74	0.0301	0.0120
Mercury	-10373-01-09 03:35 J	-2067307.39	-2067307.35	-2067307.30	0.0301	0.0280
Venus	-10372-05-26 15:21 J	-2066804.01	-2066803.86	-2066803.70	0.0296	0.0198
Venus	-10371-01-11 13:12 J	-2066574.16	-2066573.95	-2066573.74	0.0293	0.0039
Venus	-10371-08-29 08:09 J	-2066344.24	-2066344.16	-2066344.07	0.0290	0.0264
Mars	-10359-02-19 16:19 J	-2062152.08	-2062151.82	-2062151.55	0.0259	0.0097
Mercury	-10359-08-01 15:50 J	-2061988.90	-2061988.84	-2061988.76	0.0260	0.0240
Mercury	-10359-10-29 13:12 J	-2061900.13	-2061899.95	-2061899.77	0.0260	0.0083
Mercury	-10358-01-26 10:19 J	-2061811.25	-2061811.07	-2061810.88	0.0261	0.0077
Mercury	-10358-04-25 07:55 J	-2061722.25	-2061722.17	-2061722.09	0.0261	0.0236
Venus	-10356-01-29 18:28 J	-2061076.82	-2061076.73	-2061076.63	0.0266	0.0236
Venus	-10356-09-15 21:50 J	-2060847.80	-2060847.59	-2060847.38	0.0268	0.0061
Venus	-10355-05-03 03:07 J	-2060618.56	-2060618.37	-2060618.17	0.0270	0.0121
Mars	-10345-02-20 09:50 J	-2057038.25	-2057038.09	-2057037.91	0.0304	0.0253
Mercury	-10345-09-04 16:47 J	-2056840.86	-2056840.80	-2056840.73	0.0303	0.0252
Mercury	-10345-12-02 05:16 J	-2056752.40	-2056752.28	-2056752.16	0.0303	0.0088
Mercury	-10344-02-28 17:31 J	-2056663.89	-2056663.77	-2056663.64	0.0302	0.0076
Mercury	-10344-05-28 05:45 J	-2056575.33	-2056575.26	-2056575.18	0.0301	0.0236
Venus	-10343-12-06 21:50 J	-2056017.76	-2056017.59	-2056017.42	0.0296	0.0164
Venus	-10342-07-24 19:26 J	-2055787.89	-2055787.69	-2055787.49	0.0293	0.0072
Earth	-10335-12-13 08:24 J	-2053089.40	-2053089.15	-2053088.90	0.0262	0.0016
Moon	-10335-12-13 09:35 J	-2053089.34	-2053089.10	-2053088.86	0.0262	0.0020 *
Mercury	-10329-03-17 12:57 J	-2051168.13	-2051167.96	-2051167.79	0.0260	0.0122

Mercury	-10329-06-14 10:19 J	-2051079.26	-2051079.07	-2051078.88	0.0260	0.0036
Mercury	-10329-09-11 07:26 J	-2050990.30	-2050990.19	-2050990.05	0.0261	0.0197
Venus	-10327-08-12 00:00 J	-2050290.63	-2050290.50	-2050290.36	0.0266	0.0209
Venus	-10326-03-29 03:35 J	-2050061.56	-2050061.35	-2050061.13	0.0268	0.0033
Venus	-10326-11-13 09:07 J	-2049832.29	-2049832.12	-2049831.93	0.0271	0.0151
Earth	-10319-06-17 12:28 J	-2047424.22	-2047423.98	-2047423.73	0.0300	0.0019
Moon	-10319-06-17 16:19 J	-2047424.06	-2047423.82	-2047423.58	0.0300	0.0006 *
Mercury	-10315-01-22 19:26 J	-2046108.72	-2046108.69	-2046108.65	0.0303	0.0291
Mercury	-10315-04-21 07:55 J	-2046020.28	-2046020.17	-2046020.05	0.0302	0.0127
Mercury	-10315-07-18 20:24 J	-2045931.78	-2045931.65	-2045931.53	0.0302	0.0036
Mercury	-10315-10-15 08:24 J	-2045843.24	-2045843.15	-2045843.05	0.0301	0.0197
Venus	-10313-06-18 06:14 J	-2045231.43	-2045231.24	-2045231.05	0.0295	0.0129
Venus	-10312-02-03 03:07 J	-2045001.56	-2045001.37	-2045001.17	0.0292	0.0105
Moon	-10306-12-08 16:47 J	-2042501.90	-2042501.80	-2042501.68	0.0263	0.0237
Earth	-10306-12-08 17:16 J	-2042501.88	-2042501.78	-2042501.67	0.0263	0.0235 *
Mercury	-10300-08-04 13:12 J	-2040436.10	-2040435.95	-2040435.79	0.0260	0.0158
Mercury	-10300-11-01 10:33 J	-2040347.25	-2040347.06	-2040346.86	0.0261	0.0003
Mercury	-10299-01-29 07:55 J	-2040258.32	-2040258.17	-2040258.01	0.0261	0.0160
Venus	-10297-02-22 06:14 J	-2039504.39	-2039504.24	-2039504.08	0.0266	0.0182
Venus	-10297-10-08 10:19 J	-2039275.29	-2039275.07	-2039274.86	0.0268	0.0005
Venus	-10296-05-25 16:04 J	-2039045.98	-2039045.83	-2039045.66	0.0271	0.0180
Mercury	-10286-09-08 10:33 J	-2035288.16	-2035288.06	-2035287.95	0.0303	0.0167
Mercury	-10286-12-05 23:02 J	-2035199.67	-2035199.54	-2035199.41	0.0302	0.0007
Mercury	-10285-03-03 11:16 J	-2035111.14	-2035111.03	-2035110.92	0.0302	0.0158
Venus	-10284-12-29 14:09 J	-2034445.10	-2034444.91	-2034444.71	0.0295	0.0092
Venus	-10283-08-16 10:47 J	-2034215.22	-2034215.05	-2034214.86	0.0292	0.0142
Earth	-10276-12-14 16:19 J	-2031538.04	-2031537.82	-2031537.58	0.0262	0.0093
Moon	-10276-12-14 20:09 J	-2031537.88	-2031537.66	-2031537.43	0.0262	0.0098 *
Mars	-10271-07-16 23:16 J	-2029862.73	-2029862.53	-2029862.30	0.0259	0.0170
Mercury	-10271-12-22 13:26 J	-2029704.06	-2029703.94	-2029703.81	0.0260	0.0194

Mercury	-10270-03-21 10:47 J	-2029615.24	-2029615.05	-2029614.85	0.0260	0.0036
Mercury	-10270-06-18 08:09 J	-2029526.33	-2029526.16	-2029525.99	0.0261	0.0124
Venus	-10268-09-03 12:28 J	-2028718.14	-2028717.98	-2028717.79	0.0267	0.0154
Venus	-10267-04-20 17:02 J	-2028489.01	-2028488.79	-2028488.58	0.0269	0.0026
Venus	-10267-12-05 23:16 J	-2028259.66	-2028259.53	-2028259.39	0.0272	0.0212
Earth	-10260-06-19 09:07 J	-2025872.34	-2025872.12	-2025871.88	0.0301	0.0104
Moon	-10260-06-19 11:31 J	-2025872.25	-2025872.02	-2025871.79	0.0301	0.0114 *
Mars	-10257-07-17 15:35 J	-2024748.12	-2024747.85	-2024747.56	0.0303	0.0121
Mercury	-10256-01-25 13:40 J	-2024556.02	-2024555.93	-2024555.83	0.0303	0.0201
Mercury	-10256-04-24 02:09 J	-2024467.54	-2024467.41	-2024467.29	0.0302	0.0039
Mercury	-10256-07-21 14:24 J	-2024379.02	-2024378.90	-2024378.78	0.0301	0.0124
Mercury	-10256-10-18 02:24 J	-2024290.43	-2024290.40	-2024290.35	0.0301	0.0284
Venus	-10255-11-24 00:57 J	-2023888.48	-2023888.46	-2023888.43	0.0297	0.0294
Venus	-10254-07-12 00:00 J	-2023658.70	-2023658.50	-2023658.29	0.0294	0.0055
Venus	-10253-02-26 20:09 J	-2023428.82	-2023428.66	-2023428.49	0.0291	0.0177
Moon	-10247-12-09 23:02 J	-2020950.73	-2020950.54	-2020950.33	0.0263	0.0154
Earth	-10247-12-10 03:07 J	-2020950.57	-2020950.37	-2020950.17	0.0263	0.0155 *
Mercury	-10241-05-10 14:09 J	-2018971.99	-2018971.91	-2018971.81	0.0260	0.0227
Mercury	-10241-08-07 11:31 J	-2018883.20	-2018883.02	-2018882.83	0.0261	0.0069
Mercury	-10241-11-04 08:52 J	-2018794.31	-2018794.13	-2018793.95	0.0261	0.0091
Mercury	-10240-02-01 06:14 J	-2018705.28	-2018705.24	-2018705.18	0.0261	0.0251
Venus	-10238-03-16 19:55 J	-2017931.86	-2017931.67	-2017931.48	0.0267	0.0124
Venus	-10238-11-01 00:28 J	-2017702.69	-2017702.48	-2017702.27	0.0269	0.0057
Venus	-10237-06-17 07:12 J	-2017473.28	-2017473.20	-2017473.10	0.0272	0.0243
Moon	-10231-06-13 08:24 J	-2015286.26	-2015286.15	-2015286.02	0.0299	0.0254
Earth	-10231-06-13 10:19 J	-2015286.17	-2015286.07	-2015285.95	0.0299	0.0265 *
Mercury	-10227-06-14 16:33 J	-2013823.88	-2013823.81	-2013823.73	0.0303	0.0237
Mercury	-10227-09-11 05:02 J	-2013735.41	-2013735.29	-2013735.16	0.0302	0.0073
Mercury	-10227-12-08 17:16 J	-2013646.90	-2013646.78	-2013646.65	0.0302	0.0090
Mercury	-10226-03-07 05:31 J	-2013558.34	-2013558.27	-2013558.20	0.0301	0.0249



Venus	-10225-06-05 10:33 J	-2013102.16	-2013102.06	-2013101.94	0.0297	0.0254
Venus	-10224-01-21 09:21 J	-2012872.32	-2012872.11	-2012871.90	0.0294	0.0015
Venus	-10224-09-08 05:02 J	-2012642.43	-2012642.29	-2012642.15	0.0291	0.0215
Earth	-10217-12-16 03:07 J	-2009986.55	-2009986.37	-2009986.18	0.0262	0.0174
Moon	-10217-12-16 04:19 J	-2009986.49	-2009986.32	-2009986.12	0.0262	0.0182 *
Mars	-10213-10-25 09:50 J	-2008577.22	-2008577.09	-2008576.93	0.0259	0.0220
Mercury	-10212-12-25 12:00 J	-2008151.17	-2008151.00	-2008150.82	0.0260	0.0104
Mercury	-10211-03-24 09:21 J	-2008062.30	-2008062.11	-2008061.92	0.0261	0.0055
Mercury	-10211-06-21 06:43 J	-2007973.32	-2007973.22	-2007973.11	0.0261	0.0216
Venus	-10209-09-26 02:24 J	-2007145.59	-2007145.40	-2007145.19	0.0267	0.0095
Venus	-10208-05-13 07:26 J	-2006916.39	-2006916.19	-2006915.98	0.0270	0.0088
Moon	-10201-06-21 06:43 J	-2004320.36	-2004320.22	-2004320.06	0.0301	0.0239
Earth	-10201-06-21 08:09 J	-2004320.30	-2004320.16	-2004319.99	0.0301	0.0232 *
Mercury	-10198-11-01 19:40 J	-2003091.73	-2003091.68	-2003091.62	0.0303	0.0271
Mercury	-10197-01-29 08:09 J	-2003003.28	-2003003.16	-2003003.04	0.0302	0.0107
Mercury	-10197-04-26 20:24 J	-2002914.77	-2002914.65	-2002914.52	0.0302	0.0057
Mercury	-10197-07-24 08:38 J	-2002826.22	-2002826.14	-2002826.05	0.0301	0.0216
Venus	-10196-12-16 21:07 J	-2002315.76	-2002315.62	-2002315.47	0.0296	0.0215
Venus	-10195-08-03 19:26 J	-2002085.90	-2002085.69	-2002085.48	0.0293	0.0023
Venus	-10194-03-21 14:38 J	-2001855.99	-2001855.89	-2001855.78	0.0290	0.0250
Moon	-10188-12-11 13:26 J	-1999399.17	-1999398.94	-1999398.71	0.0263	0.0066
Earth	-10188-12-11 14:52 J	-1999399.11	-1999398.88	-1999398.64	0.0263	0.0070 *
Mars	-10183-12-11 16:33 J	-1997572.81	-1997572.81	-1997572.78	0.0260	0.0260
Mercury	-10182-05-14 12:57 J	-1997419.13	-1997418.96	-1997418.80	0.0260	0.0136
Mercury	-10182-08-11 10:19 J	-1997330.27	-1997330.07	-1997329.88	0.0261	0.0024
Mercury	-10182-11-08 07:40 J	-1997241.32	-1997241.18	-1997241.04	0.0261	0.0184
Venus	-10180-08-22 06:28 J	-1996588.31	-1996588.23	-1996588.13	0.0266	0.0239
Venus	-10179-04-08 09:50 J	-1996359.29	-1996359.09	-1996358.87	0.0268	0.0064
Venus	-10179-11-23 15:07 J	-1996130.05	-1996129.87	-1996129.67	0.0270	0.0120
Earth	-10172-06-15 09:50 J	-1993734.30	-1993734.09	-1993733.87	0.0299	0.0138

Moon	-10172-06-15 11:16 J	-1993734.23	-1993734.03	-1993733.80	0.0299	0.0127 *
Mars	-10169-12-13 09:21 J	-1992457.41	-1992457.11	-1992456.80	0.0303	0.0042
Mercury	-10168-03-20 23:02 J	-1992359.54	-1992359.54	-1992359.54	0.0303	0.0303
Mercury	-10168-06-17 11:16 J	-1992271.14	-1992271.03	-1992270.91	0.0302	0.0140
Mercury	-10168-09-13 23:45 J	-1992182.64	-1992182.51	-1992182.38	0.0302	0.0024
Mercury	-10168-12-11 12:00 J	-1992094.10	-1992094.00	-1992093.90	0.0301	0.0185
Venus	-10166-06-29 07:40 J	-1991529.35	-1991529.18	-1991529.01	0.0296	0.0172
Venus	-10165-02-14 05:16 J	-1991299.48	-1991299.28	-1991299.07	0.0293	0.0065
Venus	-10165-10-01 00:00 J	-1991069.50	-1991069.50	-1991069.48	0.0290	0.0290
Earth	-10158-12-18 15:07 J	-1988434.89	-1988434.87	-1988434.83	0.0261	0.0259
Mercury	-10153-09-30 13:12 J	-1986687.09	-1986686.95	-1986686.80	0.0260	0.0170
Mercury	-10153-12-28 10:33 J	-1986598.25	-1986598.06	-1986597.86	0.0260	0.0013
Mercury	-10152-03-27 07:55 J	-1986509.32	-1986509.17	-1986509.00	0.0261	0.0148
Venus	-10150-03-04 12:57 J	-1985802.08	-1985801.96	-1985801.82	0.0266	0.0210
Venus	-10150-10-19 16:33 J	-1985573.02	-1985572.81	-1985572.59	0.0268	0.0034
Venus	-10149-06-04 22:19 J	-1985343.75	-1985343.57	-1985343.39	0.0271	0.0150
Mercury	-10139-11-04 14:38 J	-1981539.00	-1981538.89	-1981538.79	0.0303	0.0173
Mercury	-10138-02-01 02:52 J	-1981450.51	-1981450.38	-1981450.25	0.0302	0.0012
Mercury	-10138-04-30 15:07 J	-1981361.98	-1981361.87	-1981361.76	0.0301	0.0152
Venus	-10136-01-08 18:00 J	-1980742.93	-1980742.75	-1980742.56	0.0295	0.0133
Venus	-10136-08-26 15:21 J	-1980513.05	-1980512.86	-1980512.66	0.0292	0.0102
Earth	-10129-12-13 03:07 J	-1977847.62	-1977847.37	-1977847.12	0.0262	0.0016
Moon	-10129-12-13 06:00 J	-1977847.49	-1977847.25	-1977847.01	0.0262	0.0022 *
Mars	-10124-03-22 02:09 J	-1976287.64	-1976287.41	-1976287.15	0.0259	0.0131
Mercury	-10123-02-17 14:09 J	-1975955.03	-1975954.91	-1975954.79	0.0260	0.0203
Mercury	-10123-05-17 11:16 J	-1975866.22	-1975866.03	-1975865.84	0.0261	0.0045
Mercury	-10123-08-14 08:38 J	-1975777.31	-1975777.14	-1975776.96	0.0261	0.0115
Venus	-10121-09-13 19:40 J	-1975015.83	-1975015.68	-1975015.52	0.0266	0.0181
Venus	-10120-04-30 23:45 J	-1974786.73	-1974786.51	-1974786.30	0.0269	0.0005
Venus	-10120-12-16 05:31 J	-1974557.41	-1974557.27	-1974557.10	0.0271	0.0182

Earth	-10113-06-17 08:24 J	-1972182.40	-1972182.15	-1972181.91	0.0300	0.0014
Moon	-10113-06-17 12:00 J	-1972182.24	-1972182.00	-1972181.75	0.0300	0.0006 *
Mercury	-10109-03-23 17:31 J	-1970806.86	-1970806.77	-1970806.67	0.0303	0.0207
Mercury	-10109-06-20 06:00 J	-1970718.38	-1970718.25	-1970718.12	0.0302	0.0044
Mercury	-10109-09-16 18:14 J	-1970629.85	-1970629.74	-1970629.62	0.0302	0.0118
Mercury	-10109-12-14 06:28 J	-1970541.27	-1970541.23	-1970541.18	0.0301	0.0278
Venus	-10107-07-22 03:50 J	-1969956.53	-1969956.34	-1969956.14	0.0295	0.0092
Venus	-10106-03-09 00:43 J	-1969726.65	-1969726.47	-1969726.28	0.0292	0.0142
Moon	-10100-12-08 10:19 J	-1967260.18	-1967260.07	-1967259.94	0.0263	0.0232
Earth	-10100-12-08 12:43 J	-1967260.07	-1967259.97	-1967259.85	0.0263	0.0233 *
Mercury	-10094-07-07 14:09 J	-1965222.97	-1965222.91	-1965222.83	0.0260	0.0239
Mercury	-10094-10-04 11:31 J	-1965134.20	-1965134.02	-1965133.83	0.0260	0.0081
Mercury	-10093-01-01 08:52 J	-1965045.31	-1965045.13	-1965044.94	0.0261	0.0077
Mercury	-10093-03-30 06:00 J	-1964956.31	-1964956.25	-1964956.16	0.0261	0.0238
Venus	-10091-03-27 01:26 J	-1964229.61	-1964229.44	-1964229.26	0.0267	0.0154
Venus	-10091-11-11 05:45 J	-1964000.47	-1964000.26	-1964000.05	0.0269	0.0025
Venus	-10090-06-28 11:45 J	-1963771.13	-1963771.01	-1963770.86	0.0271	0.0212
Mars	-10080-05-11 00:43 J	-1960166.71	-1960166.47	-1960166.24	0.0303	0.0192
Mercury	-10080-08-10 20:24 J	-1960074.72	-1960074.65	-1960074.57	0.0303	0.0245
Mercury	-10080-11-07 08:52 J	-1959986.25	-1959986.13	-1959986.00	0.0302	0.0081
Mercury	-10079-02-03 21:07 J	-1959897.74	-1959897.62	-1959897.49	0.0302	0.0083
Mercury	-10079-05-03 09:21 J	-1959809.18	-1959809.11	-1959809.03	0.0301	0.0242
Venus	-10078-06-16 13:55 J	-1959399.93	-1959399.92	-1959399.89	0.0297	0.0296
Venus	-10077-02-01 13:26 J	-1959170.15	-1959169.94	-1959169.74	0.0295	0.0055
Venus	-10077-09-18 09:50 J	-1958940.25	-1958940.09	-1958939.92	0.0292	0.0178
Earth	-10070-12-15 14:09 J	-1956296.14	-1956295.91	-1956295.68	0.0262	0.0098
Moon	-10070-12-15 17:16 J	-1956296.01	-1956295.78	-1956295.55	0.0262	0.0105 *
Mercury	-10064-02-20 11:45 J	-1954402.18	-1954402.01	-1954401.83	0.0260	0.0117
Mercury	-10064-05-20 09:07 J	-1954313.31	-1954313.12	-1954312.93	0.0261	0.0042
Mercury	-10064-08-17 06:28 J	-1954224.35	-1954224.23	-1954224.10	0.0261	0.0202

Venus	-10062-10-07 07:12 J	-1953443.38	-1953443.20	-1953443.00	0.0267	0.0125
Venus	-10061-05-23 11:45 J	-1953214.22	-1953214.01	-1953213.80	0.0269	0.0056
Venus	-10060-01-07 18:28 J	-1952984.82	-1952984.73	-1952984.63	0.0272	0.0242
Earth	-10054-06-20 03:35 J	-1950630.58	-1950630.35	-1950630.12	0.0300	0.0102
Moon	-10054-06-20 04:33 J	-1950630.53	-1950630.31	-1950630.07	0.0300	0.0115 *
Mercury	-10051-12-28 23:16 J	-1949342.57	-1949342.53	-1949342.48	0.0303	0.0281
Mercury	-10050-03-27 11:45 J	-1949254.13	-1949254.01	-1949253.89	0.0303	0.0117
Mercury	-10050-06-24 00:14 J	-1949165.62	-1949165.49	-1949165.37	0.0302	0.0047
Mercury	-10050-09-20 12:28 J	-1949077.08	-1949076.98	-1949076.89	0.0301	0.0207
Venus	-10049-12-26 23:31 J	-1948613.62	-1948613.52	-1948613.41	0.0297	0.0255
Venus	-10048-08-13 22:33 J	-1948383.77	-1948383.56	-1948383.35	0.0295	0.0014
Venus	-10047-03-31 18:43 J	-1948153.86	-1948153.72	-1948153.58	0.0292	0.0217
Moon	-10041-12-09 20:09 J	-1945708.86	-1945708.66	-1945708.46	0.0263	0.0152
Earth	-10041-12-09 23:31 J	-1945708.72	-1945708.52	-1945708.31	0.0263	0.0152 *
Mars	-10036-08-16 11:45 J	-1943998.29	-1943998.01	-1943997.73	0.0259	0.0053
Mercury	-10035-07-10 11:45 J	-1943670.16	-1943670.01	-1943669.86	0.0260	0.0156
Mercury	-10035-10-07 08:52 J	-1943581.32	-1943581.13	-1943580.93	0.0260	0.0006
Mercury	-10034-01-04 06:14 J	-1943492.39	-1943492.24	-1943492.08	0.0261	0.0161
Venus	-10032-04-18 12:28 J	-1942657.18	-1942656.98	-1942656.78	0.0267	0.0099
Venus	-10032-12-03 17:02 J	-1942427.99	-1942427.79	-1942427.58	0.0269	0.0082
Venus	-10031-07-21 00:00 J	-1942198.53	-1942198.50	-1942198.48	0.0272	0.0269
Moon	-10025-06-12 23:02 J	-1940044.62	-1940044.54	-1940044.44	0.0299	0.0275
Earth	-10025-06-12 23:16 J	-1940044.60	-1940044.53	-1940044.46	0.0299	0.0286 *
Mercury	-10021-08-13 14:09 J	-1938522.02	-1938521.91	-1938521.80	0.0303	0.0161
Mercury	-10021-11-10 02:38 J	-1938433.52	-1938433.39	-1938433.27	0.0302	0.0011
Mercury	-10020-02-06 14:52 J	-1938344.99	-1938344.88	-1938344.78	0.0302	0.0164
Venus	-10019-07-09 07:12 J	-1937827.33	-1937827.20	-1937827.05	0.0297	0.0221
Venus	-10018-02-24 06:00 J	-1937597.46	-1937597.25	-1937597.04	0.0294	0.0019
Venus	-10018-10-12 01:40 J	-1937367.53	-1937367.43	-1937367.32	0.0291	0.0248
Moon	-10011-12-16 21:35 J	-1934744.77	-1934744.60	-1934744.41	0.0261	0.0182

Earth	-10011-12-16 22:19 J	-1934744.75	-1934744.57	-1934744.38	0.0261	0.0174	*
Mercury	-10006-11-27 11:31 J	-1932938.14	-1932938.02	-1932937.89	0.0260	0.0195	
Mercury	-10005-02-24 08:38 J	-1932849.33	-1932849.14	-1932848.95	0.0260	0.0038	
Mercury	-10005-05-23 06:00 J	-1932760.42	-1932760.25	-1932760.08	0.0261	0.0121	
Venus	-10003-03-14 14:24 J	-1932099.97	-1932099.90	-1932099.82	0.0265	0.0246	
Venus	-10003-10-29 17:16 J	-1931870.99	-1931870.78	-1931870.58	0.0267	0.0071	
Venus	-10002-06-15 21:50 J	-1931641.78	-1931641.59	-1931641.39	0.0270	0.0111	

# 10TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 10th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-9995-06-21 13:26 J	-1929079.11	-1929078.94	-1929078.76	0.0301	0.0213		
Earth	-9995-06-21 16:47 J	-1929078.97	-1929078.80	-1929078.62	0.0301	0.0203	*	
Mercury	-9992-12-31 16:33 J	-1927789.90	-1927789.81	-1927789.72	0.0303	0.0203		
Mercury	-9991-03-30 05:02 J	-1927701.42	-1927701.29	-1927701.16	0.0302	0.0039		
Mercury	-9991-06-26 17:16 J	-1927612.89	-1927612.78	-1927612.66	0.0302	0.0123		
Mercury	-9991-09-23 05:31 J	-1927524.31	-1927524.27	-1927524.23	0.0301	0.0284		
Venus	-9989-01-19 15:21 J	-1927041.02	-1927040.86	-1927040.69	0.0297	0.0183		
Venus	-9989-09-05 13:40 J	-1926811.13	-1926810.93	-1926810.72	0.0294	0.0057		
Venus	-9988-04-23 09:07 J	-1926581.15	-1926581.12	-1926581.07	0.0291	0.0285		
Moon	-9982-12-12 06:43 J	-1924157.44	-1924157.22	-1924156.99	0.0263	0.0077		
Earth	-9982-12-12 07:12 J	-1924157.44	-1924157.20	-1924156.97	0.0263	0.0078	*	
Mercury	-9976-04-15 10:47 J	-1922206.12	-1922206.05	-1922205.97	0.0259	0.0237		

Mercury	-9976-07-13 07:55 J	-1922117.35	-1922117.17	-1922116.98	0.0260	0.0081
Mercury	-9976-10-10 05:02 J	-1922028.47	-1922028.29	-1922028.10	0.0260	0.0077
Mercury	-9975-01-07 02:24 J	-1921939.47	-1921939.40	-1921939.31	0.0261	0.0236
Venus	-9974-09-24 17:45 J	-1921313.86	-1921313.76	-1921313.64	0.0265	0.0223
Venus	-9973-05-10 20:52 J	-1921084.84	-1921084.63	-1921084.42	0.0267	0.0047
Venus	-9973-12-26 01:55 J	-1920855.60	-1920855.42	-1920855.23	0.0270	0.0135
Earth	-9966-06-15 08:52 J	-1918493.30	-1918493.13	-1918492.94	0.0300	0.0195
Moon	-9966-06-15 12:28 J	-1918493.16	-1918492.98	-1918492.78	0.0300	0.0185 *
Mercury	-9962-05-20 18:28 J	-1917057.80	-1917057.73	-1917057.66	0.0303	0.0252
Mercury	-9962-08-17 06:57 J	-1916969.33	-1916969.21	-1916969.09	0.0303	0.0087
Mercury	-9962-11-13 19:12 J	-1916880.82	-1916880.70	-1916880.57	0.0302	0.0077
Mercury	-9961-02-10 07:26 J	-1916792.26	-1916792.19	-1916792.10	0.0302	0.0237
Venus	-9960-07-31 21:21 J	-1916254.78	-1916254.61	-1916254.43	0.0296	0.0152
Venus	-9959-03-18 19:40 J	-1916024.88	-1916024.68	-1916024.48	0.0294	0.0087
Moon	-9952-12-18 00:00 J	-1913193.55	-1913193.50	-1913193.43	0.0261	0.0252
Earth	-9952-12-18 03:35 J	-1913193.43	-1913193.35	-1913193.26	0.0261	0.0242 *
Mars	-9947-01-10 09:07 J	-1911709.40	-1911709.12	-1911708.83	0.0259	0.0008
Mercury	-9947-11-30 07:12 J	-1911385.37	-1911385.20	-1911385.03	0.0260	0.0125
Mercury	-9946-02-27 04:19 J	-1911296.51	-1911296.32	-1911296.13	0.0260	0.0032
Mercury	-9946-05-27 01:26 J	-1911207.56	-1911207.44	-1911207.30	0.0261	0.0192
Venus	-9944-04-05 21:35 J	-1910527.74	-1910527.60	-1910527.46	0.0266	0.0198
Venus	-9944-11-21 00:28 J	-1910298.69	-1910298.48	-1910298.26	0.0268	0.0022
Venus	-9943-07-08 05:31 J	-1910069.44	-1910069.27	-1910069.09	0.0270	0.0161
Moon	-9936-06-22 21:21 J	-1907527.63	-1907527.61	-1907527.56	0.0301	0.0297
Earth	-9936-06-23 00:00 J	-1907527.55	-1907527.50	-1907527.42	0.0301	0.0290
Mercury	-9933-10-06 20:24 J	-1906325.66	-1906325.65	-1906325.64	0.0303	0.0301
Mercury	-9932-01-03 08:52 J	-1906237.24	-1906237.13	-1906237.01	0.0303	0.0136
Mercury	-9932-04-01 21:21 J	-1906148.74	-1906148.61	-1906148.48	0.0302	0.0028
Mercury	-9932-06-29 09:35 J	-1906060.20	-1906060.10	-1906060.00	0.0302	0.0189
Venus	-9930-02-11 03:35 J	-1905468.54	-1905468.35	-1905468.16	0.0296	0.0118

Venus	-9930-09-29 01:26 J	-1905238.63	-1905238.44	-1905238.25	0.0293	0.0120
Earth	-9923-12-13 10:47 J	-1902606.29	-1902606.05	-1902605.80	0.0262	0.0013
Moon	-9923-12-13 14:24 J	-1902606.14	-1902605.90	-1902605.65	0.0262	0.0008 *
Mercury	-9917-04-18 06:00 J	-1900653.39	-1900653.25	-1900653.10	0.0259	0.0171
Mercury	-9917-07-16 03:07 J	-1900564.56	-1900564.37	-1900564.18	0.0260	0.0015
Mercury	-9917-10-13 00:14 J	-1900475.65	-1900475.49	-1900475.32	0.0260	0.0143
Venus	-9915-10-17 00:00 J	-1899741.66	-1899741.50	-1899741.34	0.0265	0.0176
Venus	-9914-06-03 03:07 J	-1899512.59	-1899512.37	-1899512.16	0.0267	0.0001
Venus	-9913-01-18 08:09 J	-1899283.30	-1899283.16	-1899282.99	0.0270	0.0184
Earth	-9907-06-16 12:28 J	-1896942.20	-1896941.98	-1896941.75	0.0300	0.0119
Moon	-9907-06-16 14:38 J	-1896942.12	-1896941.89	-1896941.65	0.0300	0.0111 *
Mercury	-9903-05-23 10:04 J	-1895505.17	-1895505.08	-1895504.97	0.0303	0.0193
Mercury	-9903-08-19 22:47 J	-1895416.68	-1895416.55	-1895416.43	0.0303	0.0029
Mercury	-9903-11-16 11:02 J	-1895328.15	-1895328.04	-1895327.93	0.0302	0.0135
Mercury	-9902-02-12 23:16 J	-1895239.55	-1895239.53	-1895239.51	0.0302	0.0295
Venus	-9901-08-23 07:40 J	-1894682.38	-1894682.18	-1894681.98	0.0296	0.0091
Venus	-9900-04-10 05:02 J	-1894452.46	-1894452.29	-1894452.10	0.0293	0.0148
Mercury	-9888-09-05 04:19 J	-1889921.41	-1889921.32	-1889921.21	0.0259	0.0220
Mercury	-9888-12-03 01:40 J	-1889832.62	-1889832.43	-1889832.24	0.0260	0.0064
Mercury	-9887-03-01 22:47 J	-1889743.73	-1889743.55	-1889743.37	0.0260	0.0094
Mercury	-9887-05-29 19:55 J	-1889654.70	-1889654.67	-1889654.62	0.0261	0.0253
Venus	-9885-04-28 02:09 J	-1888955.58	-1888955.41	-1888955.23	0.0266	0.0154
Venus	-9885-12-13 05:31 J	-1888726.48	-1888726.27	-1888726.06	0.0268	0.0024
Venus	-9884-07-30 10:33 J	-1888497.18	-1888497.06	-1888496.91	0.0270	0.0209
Mercury	-9874-10-10 11:45 J	-1884773.08	-1884773.01	-1884772.94	0.0303	0.0246
Mercury	-9873-01-07 00:14 J	-1884684.61	-1884684.49	-1884684.37	0.0303	0.0081
Mercury	-9873-04-04 12:28 J	-1884596.10	-1884595.98	-1884595.85	0.0302	0.0083
Mercury	-9873-07-02 00:43 J	-1884507.54	-1884507.47	-1884507.39	0.0302	0.0244
Venus	-9871-03-05 12:14 J	-1883896.19	-1883895.99	-1883895.78	0.0296	0.0060
Venus	-9871-10-21 09:50 J	-1883666.25	-1883666.09	-1883665.92	0.0293	0.0177

Earth	-9864-12-14 11:16 J	-1881055.27	-1881055.03	-1881054.78	0.0262	0.0047
Moon	-9864-12-14 13:12 J	-1881055.19	-1881054.95	-1881054.69	0.0262	0.0055 *
Mars	-9859-06-05 19:40 J	-1879420.96	-1879420.68	-1879420.40	0.0258	0.0044
Mercury	-9858-04-22 00:00 J	-1879100.67	-1879100.50	-1879100.32	0.0259	0.0113
Mercury	-9858-07-19 21:07 J	-1879011.81	-1879011.62	-1879011.42	0.0259	0.0044
Mercury	-9858-10-16 18:14 J	-1878922.85	-1878922.74	-1878922.61	0.0260	0.0202
Venus	-9856-11-08 04:04 J	-1878169.51	-1878169.33	-1878169.14	0.0265	0.0133
Venus	-9855-06-25 07:12 J	-1877940.41	-1877940.20	-1877939.98	0.0268	0.0044
Venus	-9854-02-09 12:43 J	-1877711.08	-1877710.97	-1877710.86	0.0270	0.0228
Moon	-9848-06-17 08:38 J	-1875391.38	-1875391.14	-1875390.89	0.0300	0.0053
Earth	-9848-06-17 11:02 J	-1875391.27	-1875391.04	-1875390.80	0.0300	0.0055 *
Mercury	-9844-05-26 01:12 J	-1873952.56	-1873952.45	-1873952.34	0.0304	0.0142
Mercury	-9844-08-22 13:40 J	-1873864.06	-1873863.93	-1873863.80	0.0303	0.0022
Mercury	-9844-11-19 01:55 J	-1873775.52	-1873775.42	-1873775.32	0.0302	0.0184
Venus	-9842-01-28 14:09 J	-1873339.97	-1873339.91	-1873339.83	0.0298	0.0281
Venus	-9842-09-15 14:38 J	-1873110.10	-1873109.89	-1873109.68	0.0296	0.0035
Venus	-9841-05-02 11:45 J	-1872880.15	-1872880.01	-1872879.85	0.0293	0.0201
Moon	-9835-12-09 12:00 J	-1870468.12	-1870468.00	-1870467.85	0.0263	0.0213
Earth	-9835-12-09 13:55 J	-1870468.05	-1870467.92	-1870467.77	0.0263	0.0217 *
Mercury	-9829-09-07 22:04 J	-1868368.72	-1868368.58	-1868368.43	0.0259	0.0164
Mercury	-9829-12-05 19:12 J	-1868279.89	-1868279.70	-1868279.50	0.0260	0.0009
Mercury	-9828-03-04 16:19 J	-1868190.97	-1868190.82	-1868190.66	0.0260	0.0149
Venus	-9826-05-21 05:16 J	-1867383.47	-1867383.28	-1867383.08	0.0266	0.0112
Venus	-9825-01-05 08:52 J	-1867154.34	-1867154.13	-1867153.92	0.0268	0.0067
Venus	-9825-08-21 14:09 J	-1866924.98	-1866924.91	-1866924.83	0.0271	0.0252
Mercury	-9815-10-13 02:09 J	-1863220.50	-1863220.41	-1863220.31	0.0303	0.0202
Mercury	-9814-01-09 14:38 J	-1863132.01	-1863131.89	-1863131.76	0.0303	0.0039
Mercury	-9814-04-08 03:07 J	-1863043.49	-1863043.37	-1863043.25	0.0302	0.0126
Mercury	-9814-07-05 15:21 J	-1862954.89	-1862954.86	-1862954.82	0.0302	0.0287
Venus	-9813-08-09 17:31 J	-1862553.87	-1862553.77	-1862553.65	0.0298	0.0253



Venus	-9812-03-27 17:45 J	-1862323.97	-1862323.76	-1862323.55	0.0296	0.0009
Venus	-9812-11-12 15:07 J	-1862094.00	-1862093.87	-1862093.74	0.0293	0.0228
Moon	-9805-12-15 05:31 J	-1859504.50	-1859504.27	-1859504.04	0.0262	0.0110
Earth	-9805-12-15 08:24 J	-1859504.37	-1859504.15	-1859503.91	0.0262	0.0098 *
Mercury	-9799-01-25 20:24 J	-1857636.76	-1857636.65	-1857636.54	0.0259	0.0215
Mercury	-9799-04-24 17:16 J	-1857547.96	-1857547.78	-1857547.59	0.0259	0.0060
Mercury	-9799-07-22 14:24 J	-1857459.08	-1857458.90	-1857458.72	0.0259	0.0096
Mercury	-9799-10-19 11:31 J	-1857370.05	-1857370.02	-1857369.97	0.0260	0.0254
Venus	-9797-11-30 06:28 J	-1856597.42	-1856597.23	-1856597.02	0.0265	0.0094
Venus	-9796-07-17 09:50 J	-1856368.29	-1856368.09	-1856367.88	0.0268	0.0086
Moon	-9789-06-18 02:09 J	-1853840.65	-1853840.41	-1853840.17	0.0300	0.0003
Earth	-9789-06-18 05:16 J	-1853840.52	-1853840.28	-1853840.03	0.0300	0.0005 *
Mercury	-9785-03-01 02:52 J	-1852488.44	-1852488.38	-1852488.32	0.0304	0.0268
Mercury	-9785-05-28 15:21 J	-1852399.98	-1852399.86	-1852399.74	0.0304	0.0102
Mercury	-9785-08-25 03:50 J	-1852311.46	-1852311.34	-1852311.21	0.0303	0.0062
Mercury	-9785-11-21 16:04 J	-1852222.91	-1852222.83	-1852222.74	0.0303	0.0225
Venus	-9783-02-19 18:57 J	-1851767.83	-1851767.71	-1851767.57	0.0298	0.0231
Venus	-9783-10-07 18:57 J	-1851537.91	-1851537.71	-1851537.50	0.0296	0.0016
Venus	-9782-05-25 16:04 J	-1851307.93	-1851307.83	-1851307.71	0.0293	0.0250
Earth	-9776-12-10 10:04 J	-1848917.26	-1848917.08	-1848916.89	0.0263	0.0168
Moon	-9776-12-10 12:43 J	-1848917.15	-1848916.97	-1848916.76	0.0263	0.0159 *
Mars	-9771-10-29 19:40 J	-1847132.96	-1847132.68	-1847132.41	0.0258	0.0066
Mercury	-9770-09-11 15:07 J	-1846816.04	-1846815.87	-1846815.69	0.0259	0.0114
Mercury	-9770-12-09 12:14 J	-1846727.18	-1846726.99	-1846726.80	0.0259	0.0042
Mercury	-9769-03-07 09:07 J	-1846638.23	-1846638.12	-1846637.98	0.0260	0.0200
Venus	-9768-10-26 05:45 J	-1846040.32	-1846040.26	-1846040.17	0.0264	0.0245
Venus	-9767-06-12 07:26 J	-1845811.40	-1845811.19	-1845810.98	0.0266	0.0073
Venus	-9766-01-27 10:47 J	-1845582.24	-1845582.05	-1845581.85	0.0268	0.0107
Mercury	-9756-10-15 16:19 J	-1841667.93	-1841667.82	-1841667.71	0.0303	0.0163
Mercury	-9755-01-12 04:47 J	-1841579.43	-1841579.30	-1841579.17	0.0303	0.0001

Mercury	-9755-04-10 17:02 J	-1841490.89	-1841490.79	-1841490.68	0.0302	0.0165
Venus	-9754-09-01 21:21 J	-1840981.75	-1840981.61	-1840981.45	0.0298	0.0205
Venus	-9753-04-18 21:21 J	-1840751.81	-1840751.61	-1840751.40	0.0295	0.0041
Venus	-9753-12-04 18:28 J	-1840521.79	-1840521.73	-1840521.65	0.0293	0.0274
Moon	-9746-12-17 01:12 J	-1837953.63	-1837953.45	-1837953.25	0.0262	0.0160
Earth	-9746-12-17 04:04 J	-1837953.54	-1837953.33	-1837953.12	0.0262	0.0145 *
Mercury	-9740-01-28 13:12 J	-1836084.09	-1836083.95	-1836083.80	0.0259	0.0165
Mercury	-9740-04-27 10:19 J	-1835995.26	-1835995.07	-1835994.88	0.0259	0.0010
Mercury	-9740-07-25 07:26 J	-1835906.35	-1835906.19	-1835906.03	0.0259	0.0146
Venus	-9738-05-08 06:57 J	-1835254.30	-1835254.21	-1835254.09	0.0263	0.0227
Venus	-9738-12-23 08:52 J	-1835025.34	-1835025.13	-1835024.92	0.0265	0.0053
Venus	-9737-08-08 12:14 J	-1834796.18	-1834795.99	-1834795.80	0.0268	0.0126
Earth	-9730-06-19 22:04 J	-1832289.82	-1832289.58	-1832289.34	0.0300	0.0047
Moon	-9730-06-19 23:02 J	-1832289.77	-1832289.54	-1832289.31	0.0300	0.0042 *
Mercury	-9726-03-04 16:47 J	-1830935.88	-1830935.80	-1830935.72	0.0304	0.0232
Mercury	-9726-06-01 05:16 J	-1830847.41	-1830847.28	-1830847.16	0.0304	0.0066
Mercury	-9726-08-28 17:45 J	-1830758.88	-1830758.76	-1830758.64	0.0303	0.0098
Mercury	-9726-11-25 06:00 J	-1830670.31	-1830670.25	-1830670.19	0.0303	0.0260
Venus	-9724-03-13 22:04 J	-1830195.74	-1830195.58	-1830195.41	0.0298	0.0184
Venus	-9724-10-29 21:50 J	-1829965.79	-1829965.59	-1829965.38	0.0296	0.0061
Earth	-9717-12-11 04:33 J	-1827366.53	-1827366.31	-1827366.09	0.0263	0.0122
Moon	-9717-12-11 07:12 J	-1827366.42	-1827366.20	-1827365.96	0.0263	0.0111 *
Mercury	-9711-06-17 10:47 J	-1825352.14	-1825352.05	-1825351.94	0.0259	0.0220
Mercury	-9711-09-14 07:55 J	-1825263.35	-1825263.17	-1825262.98	0.0259	0.0065
Mercury	-9711-12-12 05:02 J	-1825174.47	-1825174.29	-1825174.11	0.0259	0.0091
Mercury	-9710-03-11 01:55 J	-1825085.46	-1825085.42	-1825085.35	0.0260	0.0249
Venus	-9709-11-17 07:40 J	-1824468.30	-1824468.18	-1824468.04	0.0264	0.0207
Venus	-9708-07-04 09:21 J	-1824239.32	-1824239.11	-1824238.90	0.0266	0.0033
Venus	-9707-02-18 12:43 J	-1824010.14	-1824009.97	-1824009.78	0.0268	0.0147
Mercury	-9697-07-21 17:31 J	-1820203.80	-1820203.77	-1820203.74	0.0304	0.0294

Mercury	-9697-10-18 06:00 J	-1820115.36	-1820115.25	-1820115.13	0.0303	0.0129
Mercury	-9696-01-14 18:28 J	-1820026.86	-1820026.73	-1820026.60	0.0303	0.0036
Mercury	-9696-04-13 06:57 J	-1819938.31	-1819938.21	-1819938.12	0.0302	0.0198
Venus	-9695-09-24 00:00 J	-1819409.67	-1819409.50	-1819409.32	0.0298	0.0160
Venus	-9694-05-11 23:45 J	-1819179.71	-1819179.51	-1819179.31	0.0295	0.0085
Earth	-9687-12-17 22:19 J	-1816402.72	-1816402.57	-1816402.39	0.0262	0.0192
Moon	-9687-12-18 00:43 J	-1816402.61	-1816402.47	-1816402.32	0.0262	0.0206 *
Mars	-9682-03-24 18:43 J	-1814844.98	-1814844.72	-1814844.45	0.0258	0.0086
Mercury	-9681-02-01 06:14 J	-1814531.41	-1814531.24	-1814531.07	0.0259	0.0116
Mercury	-9681-04-30 03:07 J	-1814442.56	-1814442.37	-1814442.17	0.0259	0.0040
Mercury	-9681-07-28 00:14 J	-1814353.61	-1814353.49	-1814353.36	0.0259	0.0196
Venus	-9679-05-30 09:21 J	-1813682.26	-1813682.11	-1813681.96	0.0264	0.0188
Venus	-9678-01-14 11:02 J	-1813453.25	-1813453.04	-1813452.82	0.0266	0.0014
Venus	-9678-08-31 14:38 J	-1813224.06	-1813223.89	-1813223.72	0.0268	0.0166
Earth	-9671-06-20 14:52 J	-1810739.11	-1810738.88	-1810738.65	0.0300	0.0097
Moon	-9671-06-20 18:43 J	-1810738.95	-1810738.72	-1810738.49	0.0300	0.0088 *
Mercury	-9667-03-07 06:28 J	-1809383.32	-1809383.23	-1809383.13	0.0304	0.0196
Mercury	-9667-06-03 19:12 J	-1809294.83	-1809294.70	-1809294.58	0.0304	0.0032
Mercury	-9667-08-31 07:26 J	-1809206.30	-1809206.19	-1809206.07	0.0303	0.0133
Mercury	-9667-11-27 19:55 J	-1809117.70	-1809117.67	-1809117.65	0.0303	0.0295
Venus	-9665-04-05 00:43 J	-1808623.65	-1808623.47	-1808623.27	0.0298	0.0138
Venus	-9665-11-21 00:28 J	-1808393.67	-1808393.48	-1808393.28	0.0295	0.0107
Moon	-9658-12-12 21:21 J	-1805815.86	-1805815.61	-1805815.36	0.0263	0.0063
Earth	-9658-12-12 22:47 J	-1805815.78	-1805815.55	-1805815.30	0.0263	0.0077 *
Mercury	-9652-06-20 03:50 J	-1803799.47	-1803799.34	-1803799.18	0.0259	0.0170
Mercury	-9652-09-17 00:57 J	-1803710.65	-1803710.46	-1803710.26	0.0259	0.0016
Mercury	-9652-12-14 22:04 J	-1803621.74	-1803621.58	-1803621.42	0.0259	0.0142
Venus	-9650-12-10 10:19 J	-1802896.23	-1802896.07	-1802895.90	0.0264	0.0168
Venus	-9649-07-26 12:14 J	-1802667.21	-1802666.99	-1802666.78	0.0266	0.0008
Venus	-9648-03-12 15:50 J	-1802437.99	-1802437.84	-1802437.69	0.0269	0.0189

Mercury	-9638-07-25 07:26 J	-1798651.25	-1798651.19	-1798651.12	0.0304	0.0257
Mercury	-9638-10-21 19:55 J	-1798562.79	-1798562.67	-1798562.54	0.0303	0.0093
Mercury	-9637-01-18 08:24 J	-1798474.27	-1798474.15	-1798474.02	0.0303	0.0073
Mercury	-9637-04-15 20:52 J	-1798385.71	-1798385.63	-1798385.55	0.0302	0.0234
Venus	-9636-10-16 03:21 J	-1797837.56	-1797837.36	-1797837.17	0.0297	0.0113
Venus	-9635-06-03 02:38 J	-1797607.57	-1797607.39	-1797607.20	0.0295	0.0131
Earth	-9628-12-18 17:16 J	-1794851.88	-1794851.78	-1794851.68	0.0262	0.0238
Moon	-9628-12-18 20:24 J	-1794851.70	-1794851.65	-1794851.57	0.0262	0.0253 *
Mercury	-9623-11-07 02:38 J	-1793067.49	-1793067.39	-1793067.29	0.0258	0.0218
Mercury	-9622-02-03 23:31 J	-1792978.71	-1792978.52	-1792978.33	0.0259	0.0064
Mercury	-9622-05-03 20:24 J	-1792889.82	-1792889.65	-1792889.46	0.0259	0.0092
Mercury	-9622-07-31 17:45 J	-1792800.81	-1792800.76	-1792800.71	0.0259	0.0249
Venus	-9620-06-21 12:28 J	-1792110.16	-1792109.98	-1792109.80	0.0264	0.0148
Venus	-9619-02-05 14:24 J	-1791881.12	-1791880.90	-1791880.69	0.0266	0.0027
Venus	-9619-09-22 18:00 J	-1791651.88	-1791651.75	-1791651.61	0.0268	0.0208
Moon	-9612-06-21 09:50 J	-1789188.31	-1789188.09	-1789187.86	0.0300	0.0138
Earth	-9612-06-21 09:35 J	-1789188.30	-1789188.10	-1789187.88	0.0300	0.0152 *
Mercury	-9608-03-09 20:38 J	-1787830.75	-1787830.64	-1787830.53	0.0304	0.0158
Mercury	-9608-06-06 09:07 J	-1787742.25	-1787742.12	-1787741.99	0.0304	0.0008
Mercury	-9608-09-02 21:21 J	-1787653.71	-1787653.61	-1787653.50	0.0303	0.0171
Venus	-9606-04-28 04:04 J	-1787051.52	-1787051.33	-1787051.12	0.0298	0.0090
Venus	-9606-12-14 03:21 J	-1786821.53	-1786821.36	-1786821.17	0.0295	0.0154
Moon	-9599-12-13 14:52 J	-1784265.13	-1784264.88	-1784264.64	0.0263	0.0014
Earth	-9599-12-13 18:14 J	-1784264.98	-1784264.74	-1784264.49	0.0263	0.0028 *
Mars	-9594-08-17 18:57 J	-1782556.96	-1782556.71	-1782556.45	0.0258	0.0107
Mercury	-9593-06-22 21:50 J	-1782246.77	-1782246.59	-1782246.42	0.0259	0.0115
Mercury	-9593-09-19 18:43 J	-1782157.91	-1782157.72	-1782157.53	0.0259	0.0040
Mercury	-9593-12-17 15:50 J	-1782068.97	-1782068.84	-1782068.72	0.0259	0.0197
Venus	-9590-01-01 14:09 J	-1781324.10	-1781323.91	-1781323.72	0.0264	0.0127
Venus	-9590-08-18 16:04 J	-1781095.04	-1781094.83	-1781094.62	0.0266	0.0050

Venus	-9589-04-03 19:55 J	-1780865.77	-1780865.67	-1780865.56	0.0269	0.0232
Earth	-9583-06-15 00:00 J	-1778602.63	-1778602.50	-1778602.36	0.0298	0.0246
Moon	-9583-06-15 00:57 J	-1778602.57	-1778602.46	-1778602.35	0.0298	0.0261 *
Mercury	-9579-07-27 21:50 J	-1777098.68	-1777098.59	-1777098.50	0.0304	0.0215
Mercury	-9579-10-24 10:19 J	-1777010.19	-1777010.07	-1777009.94	0.0303	0.0050
Mercury	-9578-01-20 22:47 J	-1776921.67	-1776921.55	-1776921.43	0.0303	0.0113
Mercury	-9578-04-19 11:02 J	-1776833.09	-1776833.04	-1776832.99	0.0302	0.0275
Venus	-9577-11-07 07:26 J	-1776265.39	-1776265.19	-1776264.98	0.0297	0.0064
Venus	-9576-06-25 06:43 J	-1776035.38	-1776035.22	-1776035.05	0.0294	0.0179
Mercury	-9564-11-09 20:24 J	-1771514.79	-1771514.65	-1771514.49	0.0259	0.0162
Mercury	-9563-02-06 17:31 J	-1771425.96	-1771425.77	-1771425.58	0.0259	0.0007
Mercury	-9563-05-06 14:38 J	-1771337.05	-1771336.89	-1771336.73	0.0259	0.0150
Venus	-9561-07-13 17:02 J	-1770537.98	-1770537.79	-1770537.58	0.0264	0.0106
Venus	-9560-02-27 19:26 J	-1770308.90	-1770308.69	-1770308.49	0.0266	0.0072
Venus	-9560-10-14 23:16 J	-1770079.59	-1770079.53	-1770079.46	0.0269	0.0254
Moon	-9553-06-22 05:45 J	-1767637.44	-1767637.26	-1767637.08	0.0300	0.0202
Earth	-9553-06-22 09:21 J	-1767637.26	-1767637.11	-1767636.93	0.0300	0.0220 *
Mercury	-9550-12-14 22:47 J	-1766366.60	-1766366.55	-1766366.50	0.0304	0.0277
Mercury	-9549-03-12 11:16 J	-1766278.15	-1766278.03	-1766277.91	0.0304	0.0111
Mercury	-9549-06-08 23:45 J	-1766189.64	-1766189.51	-1766189.38	0.0303	0.0053
Mercury	-9549-09-05 12:14 J	-1766101.08	-1766100.99	-1766100.91	0.0303	0.0216
Venus	-9548-10-02 08:24 J	-1765709.20	-1765709.15	-1765709.09	0.0300	0.0288
Venus	-9547-05-20 09:50 J	-1765479.29	-1765479.09	-1765478.88	0.0297	0.0038
Venus	-9546-01-05 08:52 J	-1765249.28	-1765249.13	-1765248.98	0.0295	0.0204
Earth	-9540-12-14 15:21 J	-1762714.11	-1762713.86	-1762713.62	0.0263	0.0025
Moon	-9540-12-14 15:07 J	-1762714.10	-1762713.87	-1762713.63	0.0263	0.0039 *
Mercury	-9534-03-29 18:57 J	-1760782.81	-1760782.71	-1760782.59	0.0259	0.0210
Mercury	-9534-06-26 16:04 J	-1760694.02	-1760693.83	-1760693.64	0.0259	0.0055
Mercury	-9534-09-23 12:57 J	-1760605.13	-1760604.96	-1760604.77	0.0259	0.0102
Mercury	-9534-12-21 10:19 J	-1760516.09	-1760516.07	-1760516.05	0.0260	0.0258

Venus	-9532-06-08 18:57 J	-1759980.75	-1759980.71	-1759980.65	0.0263	0.0254
Venus	-9531-01-23 19:40 J	-1759751.88	-1759751.68	-1759751.47	0.0265	0.0083
Venus	-9531-09-09 22:04 J	-1759522.77	-1759522.58	-1759522.37	0.0267	0.0096
Earth	-9524-06-16 01:40 J	-1757051.62	-1757051.43	-1757051.23	0.0298	0.0174
Moon	-9524-06-16 05:31 J	-1757051.46	-1757051.27	-1757051.08	0.0298	0.0190 *
Mercury	-9520-07-30 12:43 J	-1755546.07	-1755545.97	-1755545.86	0.0303	0.0165
Mercury	-9520-10-27 01:26 J	-1755457.57	-1755457.44	-1755457.31	0.0303	0.0007
Mercury	-9519-01-23 13:40 J	-1755369.03	-1755368.93	-1755368.82	0.0302	0.0162
Venus	-9518-04-14 12:57 J	-1754923.06	-1754922.96	-1754922.86	0.0299	0.0259
Venus	-9518-11-30 14:09 J	-1754693.12	-1754692.91	-1754692.70	0.0297	0.0011
Venus	-9517-07-17 12:43 J	-1754463.09	-1754462.97	-1754462.84	0.0294	0.0230
Moon	-9511-12-09 18:57 J	-1752126.83	-1752126.71	-1752126.56	0.0265	0.0225
Earth	-9511-12-09 18:43 J	-1752126.81	-1752126.72	-1752126.60	0.0265	0.0240 *
Mars	-9505-01-11 07:26 J	-1750268.42	-1750268.19	-1750267.96	0.0258	0.0148
Mercury	-9505-08-15 18:28 J	-1750050.77	-1750050.73	-1750050.69	0.0259	0.0252
Mercury	-9505-11-12 15:21 J	-1749962.04	-1749961.86	-1749961.68	0.0259	0.0098
Mercury	-9504-02-09 12:28 J	-1749873.17	-1749872.98	-1749872.79	0.0259	0.0058
Mercury	-9504-05-09 09:21 J	-1749784.21	-1749784.11	-1749783.99	0.0260	0.0215
Venus	-9503-12-19 23:02 J	-1749194.63	-1749194.54	-1749194.43	0.0263	0.0230
Venus	-9502-08-06 00:00 J	-1748965.71	-1748965.50	-1748965.29	0.0265	0.0058
Venus	-9501-03-22 02:24 J	-1748736.58	-1748736.40	-1748736.20	0.0267	0.0120
Moon	-9494-06-24 12:14 J	-1746086.06	-1746085.99	-1746085.91	0.0300	0.0283
Earth	-9494-06-24 13:55 J	-1746085.93	-1746085.92	-1746085.91	0.0300	0.0299 *
Mercury	-9491-12-17 14:09 J	-1744813.99	-1744813.91	-1744813.82	0.0304	0.0221
Mercury	-9490-03-16 02:38 J	-1744725.51	-1744725.39	-1744725.26	0.0304	0.0057
Mercury	-9490-06-12 15:07 J	-1744636.99	-1744636.87	-1744636.75	0.0303	0.0108
Mercury	-9490-09-09 03:21 J	-1744548.41	-1744548.36	-1744548.30	0.0303	0.0270
Venus	-9489-10-24 17:02 J	-1744136.92	-1744136.79	-1744136.65	0.0299	0.0230
Venus	-9488-06-11 18:00 J	-1743906.95	-1743906.75	-1743906.54	0.0297	0.0020
Venus	-9487-01-27 16:19 J	-1743676.91	-1743676.82	-1743676.72	0.0294	0.0258

Earth	-9481-12-15 14:38 J	-1741163.12	-1741162.89	-1741162.65	0.0264	0.0085
Moon	-9481-12-15 18:14 J	-1741162.96	-1741162.74	-1741162.50	0.0264	0.0100 *
Mercury	-9475-04-01 14:24 J	-1739230.06	-1739229.90	-1739229.74	0.0259	0.0143
Mercury	-9475-06-29 11:31 J	-1739141.22	-1739141.02	-1739140.83	0.0259	0.0013
Mercury	-9475-09-26 08:38 J	-1739052.29	-1739052.14	-1739052.00	0.0260	0.0169
Venus	-9473-07-01 02:24 J	-1738408.52	-1738408.40	-1738408.26	0.0263	0.0207
Venus	-9472-02-15 03:35 J	-1738179.56	-1738179.35	-1738179.14	0.0265	0.0034
Venus	-9472-10-02 06:14 J	-1737950.41	-1737950.24	-1737950.05	0.0267	0.0146
Earth	-9465-06-17 09:21 J	-1735500.34	-1735500.11	-1735499.87	0.0298	0.0087
Moon	-9465-06-17 10:19 J	-1735500.30	-1735500.07	-1735499.83	0.0298	0.0102 *
Mercury	-9461-05-05 16:19 J	-1734081.88	-1734081.82	-1734081.76	0.0304	0.0267
Mercury	-9461-08-02 04:47 J	-1733993.42	-1733993.30	-1733993.18	0.0303	0.0103
Mercury	-9461-10-29 17:16 J	-1733904.90	-1733904.78	-1733904.65	0.0303	0.0061
Mercury	-9460-01-26 05:31 J	-1733816.35	-1733816.27	-1733816.18	0.0302	0.0223
Venus	-9459-05-06 23:45 J	-1733350.67	-1733350.51	-1733350.36	0.0298	0.0198
Venus	-9459-12-23 00:14 J	-1733120.70	-1733120.49	-1733120.29	0.0296	0.0050
Venus	-9458-08-09 21:50 J	-1732890.61	-1732890.59	-1732890.53	0.0293	0.0288
Moon	-9452-12-10 16:33 J	-1730576.00	-1730575.81	-1730575.61	0.0265	0.0161
Earth	-9452-12-10 20:09 J	-1730575.83	-1730575.66	-1730575.47	0.0265	0.0177 *
Mercury	-9446-08-19 14:09 J	-1728498.04	-1728497.91	-1728497.77	0.0259	0.0182
Mercury	-9446-11-16 11:16 J	-1728409.22	-1728409.03	-1728408.84	0.0259	0.0027
Mercury	-9445-02-13 08:24 J	-1728320.32	-1728320.15	-1728319.98	0.0260	0.0130
Venus	-9443-01-11 07:26 J	-1727622.34	-1727622.19	-1727622.03	0.0264	0.0182
Venus	-9443-08-28 08:52 J	-1727393.34	-1727393.13	-1727392.91	0.0265	0.0008
Venus	-9442-04-14 12:00 J	-1727164.16	-1727164.00	-1727163.83	0.0267	0.0172
Mercury	-9432-12-20 06:28 J	-1723261.33	-1723261.23	-1723261.11	0.0304	0.0153
Mercury	-9431-03-18 19:12 J	-1723172.83	-1723172.70	-1723172.58	0.0303	0.0015
Mercury	-9431-06-15 07:26 J	-1723084.29	-1723084.19	-1723084.08	0.0303	0.0174
Venus	-9430-11-17 05:02 J	-1722564.46	-1722564.29	-1722564.11	0.0299	0.0165
Venus	-9429-07-04 05:31 J	-1722334.47	-1722334.27	-1722334.07	0.0296	0.0082

Earth	-9422-12-17 17:31 J	-1719611.97	-1719611.77	-1719611.56	0.0264	0.0151
Moon	-9422-12-17 19:12 J	-1719611.89	-1719611.70	-1719611.50	0.0264	0.0163 *
Mars	-9417-06-06 01:40 J	-1717979.59	-1717979.43	-1717979.24	0.0259	0.0203
Mercury	-9416-01-05 13:40 J	-1717766.02	-1717765.93	-1717765.83	0.0259	0.0223
Mercury	-9416-04-04 10:47 J	-1717677.24	-1717677.05	-1717676.86	0.0259	0.0069
Mercury	-9416-07-02 07:55 J	-1717588.35	-1717588.17	-1717587.99	0.0260	0.0088
Mercury	-9416-09-29 05:02 J	-1717499.35	-1717499.29	-1717499.22	0.0260	0.0245
Venus	-9414-07-24 12:00 J	-1716836.17	-1716836.00	-1716835.82	0.0264	0.0156
Venus	-9413-03-09 13:40 J	-1716607.14	-1716606.93	-1716606.72	0.0266	0.0019
Venus	-9413-10-24 16:47 J	-1716377.93	-1716377.80	-1716377.65	0.0268	0.0201
Moon	-9406-06-19 19:40 J	-1713948.93	-1713948.68	-1713948.43	0.0298	0.0003
Earth	-9406-06-19 22:33 J	-1713948.80	-1713948.56	-1713948.32	0.0298	0.0015 *
Mercury	-9402-05-09 09:07 J	-1712529.22	-1712529.12	-1712529.02	0.0303	0.0194
Mercury	-9402-08-05 21:35 J	-1712440.73	-1712440.60	-1712440.47	0.0303	0.0030
Mercury	-9402-11-02 10:04 J	-1712352.20	-1712352.08	-1712351.97	0.0302	0.0133
Mercury	-9401-01-29 22:19 J	-1712263.59	-1712263.57	-1712263.54	0.0302	0.0294
Venus	-9400-05-29 13:12 J	-1711778.13	-1711777.95	-1711777.75	0.0298	0.0130
Venus	-9399-01-14 12:57 J	-1711548.14	-1711547.96	-1711547.76	0.0295	0.0117
Moon	-9393-12-11 23:16 J	-1709024.76	-1709024.53	-1709024.31	0.0265	0.0092
Earth	-9393-12-12 00:43 J	-1709024.69	-1709024.47	-1709024.24	0.0265	0.0106 *
Mercury	-9387-05-25 13:55 J	-1707033.92	-1707033.92	-1707033.91	0.0259	0.0259
Mercury	-9387-08-22 11:02 J	-1706945.22	-1706945.04	-1706944.86	0.0259	0.0104
Mercury	-9387-11-19 08:09 J	-1706856.35	-1706856.16	-1706855.97	0.0260	0.0052
Mercury	-9386-02-16 05:16 J	-1706767.39	-1706767.28	-1706767.16	0.0260	0.0209
Venus	-9384-02-02 17:45 J	-1706049.94	-1706049.76	-1706049.57	0.0264	0.0129
Venus	-9384-09-19 19:40 J	-1705820.89	-1705820.68	-1705820.46	0.0266	0.0048
Venus	-9383-05-06 23:16 J	-1705591.63	-1705591.53	-1705591.41	0.0268	0.0230
Mercury	-9373-09-25 11:31 J	-1701797.10	-1701797.02	-1701796.94	0.0303	0.0236
Mercury	-9373-12-23 00:00 J	-1701708.62	-1701708.50	-1701708.37	0.0303	0.0072
Mercury	-9372-03-21 12:28 J	-1701620.10	-1701619.98	-1701619.86	0.0303	0.0091



Mercury	-9372-06-18 00:43 J	-1701531.53	-1701531.47	-1701531.40	0.0302	0.0253
Venus	-9371-12-09 20:52 J	-1700991.83	-1700991.63	-1700991.43	0.0298	0.0092
Venus	-9370-07-27 20:24 J	-1700761.83	-1700761.65	-1700761.47	0.0295	0.0152
Moon	-9363-12-18 20:38 J	-1698060.74	-1698060.64	-1698060.51	0.0264	0.0234
Earth	-9363-12-18 23:45 J	-1698060.62	-1698060.51	-1698060.37	0.0264	0.0225 *
Mars	-9359-09-15 01:26 J	-1696694.61	-1696694.44	-1696694.25	0.0258	0.0201
Mercury	-9357-01-09 10:47 J	-1696213.20	-1696213.05	-1696212.88	0.0259	0.0143
Mercury	-9357-04-07 08:09 J	-1696124.36	-1696124.16	-1696123.97	0.0260	0.0014
Mercury	-9357-07-05 05:16 J	-1696035.43	-1696035.28	-1696035.14	0.0260	0.0170
Venus	-9355-08-15 23:16 J	-1695263.72	-1695263.53	-1695263.32	0.0265	0.0102
Venus	-9354-04-02 01:26 J	-1695034.64	-1695034.44	-1695034.22	0.0267	0.0077
Venus	-9354-11-17 05:45 J	-1694805.31	-1694805.26	-1694805.21	0.0269	0.0259
Moon	-9347-06-21 14:09 J	-1692397.13	-1692396.91	-1692396.69	0.0299	0.0114
Earth	-9347-06-21 17:02 J	-1692397.00	-1692396.79	-1692396.56	0.0299	0.0131 *
Mercury	-9343-02-12 14:24 J	-1691064.95	-1691064.90	-1691064.85	0.0303	0.0273
Mercury	-9343-05-12 02:52 J	-1690976.50	-1690976.38	-1690976.26	0.0303	0.0109
Mercury	-9343-08-08 15:21 J	-1690887.99	-1690887.86	-1690887.73	0.0303	0.0054
Mercury	-9343-11-05 03:35 J	-1690799.43	-1690799.35	-1690799.26	0.0302	0.0216
Venus	-9341-06-21 06:28 J	-1690205.44	-1690205.23	-1690205.02	0.0297	0.0055
Venus	-9340-02-06 05:31 J	-1689975.43	-1689975.27	-1689975.11	0.0294	0.0188
Earth	-9334-12-14 08:38 J	-1687473.39	-1687473.14	-1687472.90	0.0265	0.0028
Moon	-9334-12-14 11:16 J	-1687473.27	-1687473.03	-1687472.79	0.0265	0.0016 *
Mercury	-9328-05-28 11:31 J	-1685481.15	-1685481.02	-1685480.87	0.0260	0.0176
Mercury	-9328-08-25 08:38 J	-1685392.33	-1685392.14	-1685391.94	0.0260	0.0021
Mercury	-9328-11-22 05:45 J	-1685303.42	-1685303.26	-1685303.09	0.0260	0.0137
Venus	-9326-07-12 05:02 J	-1684706.36	-1684706.29	-1684706.20	0.0263	0.0244
Venus	-9325-02-26 06:00 J	-1684477.45	-1684477.25	-1684477.04	0.0265	0.0072
Venus	-9325-10-12 08:24 J	-1684248.34	-1684248.15	-1684247.95	0.0267	0.0107
Earth	-9318-06-15 19:12 J	-1681810.84	-1681810.70	-1681810.54	0.0296	0.0232
Moon	-9318-06-15 22:19 J	-1681810.69	-1681810.57	-1681810.42	0.0296	0.0248 *

Mars	-9315-10-23 04:47 J	-1680585.40	-1680585.30	-1680585.16	0.0304	0.0279
Mercury	-9314-09-29 05:45 J	-1680244.37	-1680244.26	-1680244.15	0.0303	0.0146
Mercury	-9314-12-26 18:14 J	-1680155.87	-1680155.74	-1680155.62	0.0303	0.0019
Mercury	-9313-03-24 06:28 J	-1680067.33	-1680067.23	-1680067.13	0.0302	0.0179
Venus	-9312-05-16 13:55 J	-1679649.01	-1679648.92	-1679648.82	0.0299	0.0265
Venus	-9311-01-01 15:07 J	-1679419.07	-1679418.87	-1679418.66	0.0297	0.0016
Venus	-9311-08-19 13:55 J	-1679189.05	-1679188.92	-1679188.79	0.0294	0.0227
Jupiter	-9300-05-22 16:04 J	-1675260.09	-1675259.83	-1675259.51	0.0259	0.0205
Mercury	-9299-10-15 11:45 J	-1674749.11	-1674749.01	-1674748.90	0.0259	0.0212
Mercury	-9298-01-12 08:52 J	-1674660.32	-1674660.13	-1674659.94	0.0260	0.0057
Mercury	-9298-04-11 06:00 J	-1674571.43	-1674571.25	-1674571.07	0.0260	0.0100
Mercury	-9298-07-09 03:07 J	-1674482.39	-1674482.37	-1674482.34	0.0260	0.0258
Venus	-9296-01-21 10:33 J	-1673920.17	-1673920.06	-1673919.93	0.0263	0.0218
Venus	-9296-09-07 12:00 J	-1673691.21	-1673691.00	-1673690.79	0.0265	0.0044
Venus	-9295-04-24 14:52 J	-1673462.07	-1673461.88	-1673461.70	0.0267	0.0136
Moon	-9288-06-23 14:52 J	-1670845.01	-1670844.88	-1670844.73	0.0299	0.0238
Earth	-9288-06-23 14:52 J	-1670845.00	-1670844.88	-1670844.75	0.0299	0.0253 *
Mercury	-9284-02-15 08:52 J	-1669512.23	-1669512.13	-1669512.03	0.0303	0.0180
Mercury	-9284-05-14 21:21 J	-1669423.74	-1669423.61	-1669423.48	0.0303	0.0017
Mercury	-9284-08-11 09:35 J	-1669335.21	-1669335.10	-1669334.98	0.0302	0.0146
Venus	-9283-11-27 00:43 J	-1668862.60	-1668862.47	-1668862.32	0.0299	0.0224
Venus	-9282-07-15 01:55 J	-1668632.63	-1668632.42	-1668632.21	0.0296	0.0025
Venus	-9281-03-01 00:14 J	-1668402.58	-1668402.49	-1668402.41	0.0294	0.0264
Earth	-9275-12-15 19:12 J	-1665921.94	-1665921.70	-1665921.45	0.0265	0.0056
Moon	-9275-12-15 22:33 J	-1665921.80	-1665921.56	-1665921.32	0.0265	0.0069 *
Mars	-9270-02-09 14:52 J	-1664405.13	-1664404.88	-1664404.62	0.0259	0.0114
Mercury	-9269-03-03 12:28 J	-1664017.03	-1664016.98	-1664016.90	0.0260	0.0244
Mercury	-9269-05-31 09:35 J	-1663928.27	-1663928.10	-1663927.91	0.0260	0.0089
Mercury	-9269-08-28 06:57 J	-1663839.40	-1663839.21	-1663839.03	0.0260	0.0068
Mercury	-9269-11-25 03:50 J	-1663750.42	-1663750.34	-1663750.23	0.0260	0.0227

Venus	-9267-08-03 17:31 J	-1663133.91	-1663133.77	-1663133.62	0.0264	0.0188
Venus	-9266-03-20 18:57 J	-1662904.92	-1662904.71	-1662904.49	0.0266	0.0014
Venus	-9266-11-04 22:04 J	-1662675.74	-1662675.58	-1662675.41	0.0268	0.0168
Moon	-9259-06-17 17:31 J	-1660259.00	-1660258.77	-1660258.54	0.0297	0.0124
Earth	-9259-06-17 18:14 J	-1660258.96	-1660258.74	-1660258.51	0.0297	0.0107 *
Mercury	-9255-07-05 12:00 J	-1658780.09	-1658780.00	-1658779.91	0.0303	0.0213
Mercury	-9255-10-02 00:28 J	-1658691.61	-1658691.48	-1658691.36	0.0303	0.0049
Mercury	-9255-12-29 12:43 J	-1658603.08	-1658602.97	-1658602.85	0.0302	0.0114
Mercury	-9254-03-28 00:57 J	-1658514.50	-1658514.46	-1658514.40	0.0302	0.0274
Venus	-9253-06-08 11:16 J	-1658076.19	-1658076.03	-1658075.86	0.0299	0.0180
Venus	-9252-01-24 11:31 J	-1657846.22	-1657846.02	-1657845.81	0.0296	0.0069
Moon	-9246-12-10 23:02 J	-1655334.71	-1655334.54	-1655334.36	0.0266	0.0187
Earth	-9246-12-11 02:24 J	-1655334.55	-1655334.40	-1655334.23	0.0266	0.0202 *
Mercury	-9240-10-18 09:50 J	-1653196.25	-1653196.09	-1653195.91	0.0259	0.0125
Mercury	-9239-01-15 07:12 J	-1653107.39	-1653107.20	-1653107.01	0.0260	0.0032
Mercury	-9239-04-14 04:19 J	-1653018.45	-1653018.32	-1653018.19	0.0260	0.0189
Venus	-9237-02-13 23:16 J	-1652347.69	-1652347.53	-1652347.35	0.0264	0.0160
Venus	-9237-09-30 01:12 J	-1652118.67	-1652118.45	-1652118.24	0.0266	0.0016
Venus	-9236-05-17 04:33 J	-1651889.45	-1651889.31	-1651889.16	0.0268	0.0198
Mars	-9226-03-20 23:16 J	-1648294.80	-1648294.53	-1648294.25	0.0304	0.0123
Mercury	-9226-11-22 15:07 J	-1648047.94	-1648047.87	-1648047.80	0.0303	0.0248
Mercury	-9225-02-19 03:35 J	-1647959.48	-1647959.35	-1647959.23	0.0303	0.0084
Mercury	-9225-05-17 15:50 J	-1647870.96	-1647870.84	-1647870.71	0.0302	0.0080
Mercury	-9225-08-14 04:19 J	-1647782.40	-1647782.32	-1647782.25	0.0302	0.0240
Venus	-9224-12-19 21:50 J	-1647289.77	-1647289.59	-1647289.40	0.0298	0.0140
Venus	-9223-08-06 22:04 J	-1647059.77	-1647059.58	-1647059.38	0.0295	0.0107
Earth	-9216-12-17 07:12 J	-1644370.40	-1644370.20	-1644369.98	0.0264	0.0141
Moon	-9216-12-17 06:57 J	-1644370.40	-1644370.21	-1644369.99	0.0264	0.0152 *
Mercury	-9210-03-07 10:47 J	-1642464.20	-1642464.05	-1642463.89	0.0260	0.0155
Mercury	-9210-06-04 07:55 J	-1642375.36	-1642375.17	-1642374.97	0.0260	0.0003

Mercury	-9210-09-01 05:02 J	-1642286.44	-1642286.29	-1642286.13	0.0260	0.0158
Venus	-9208-08-26 06:00 J	-1641561.43	-1641561.25	-1641561.06	0.0265	0.0130
Venus	-9207-04-12 07:55 J	-1641332.38	-1641332.17	-1641331.95	0.0266	0.0047
Venus	-9207-11-27 11:31 J	-1641103.12	-1641103.02	-1641102.90	0.0268	0.0230
Moon	-9200-06-19 12:43 J	-1638707.21	-1638706.97	-1638706.72	0.0297	0.0005
Earth	-9200-06-19 16:33 J	-1638707.05	-1638706.81	-1638706.56	0.0297	0.0016 *
Mercury	-9196-04-10 18:00 J	-1637315.79	-1637315.75	-1637315.69	0.0303	0.0281
Mercury	-9196-07-08 06:43 J	-1637227.34	-1637227.22	-1637227.10	0.0303	0.0116
Mercury	-9196-10-04 19:12 J	-1637138.83	-1637138.70	-1637138.58	0.0303	0.0047
Mercury	-9195-01-01 07:26 J	-1637050.28	-1637050.19	-1637050.10	0.0302	0.0209
Venus	-9194-07-02 08:38 J	-1636503.33	-1636503.14	-1636502.93	0.0298	0.0096
Venus	-9193-02-17 08:09 J	-1636273.33	-1636273.16	-1636272.97	0.0295	0.0151
Moon	-9187-12-12 15:07 J	-1633783.08	-1633782.87	-1633782.64	0.0265	0.0100
Earth	-9187-12-12 15:50 J	-1633783.06	-1633782.84	-1633782.62	0.0265	0.0114 *
Mars	-9182-07-07 04:19 J	-1632115.60	-1632115.32	-1632115.03	0.0259	0.0030
Mercury	-9181-07-24 11:02 J	-1631732.16	-1631732.04	-1631731.90	0.0259	0.0191
Mercury	-9181-10-21 08:09 J	-1631643.35	-1631643.16	-1631642.96	0.0260	0.0036
Mercury	-9180-01-18 05:16 J	-1631554.45	-1631554.28	-1631554.10	0.0260	0.0121
Venus	-9178-03-08 11:45 J	-1630775.21	-1630775.01	-1630774.81	0.0265	0.0103
Venus	-9178-10-23 13:40 J	-1630546.13	-1630545.93	-1630545.72	0.0267	0.0076
Venus	-9177-06-08 17:45 J	-1630316.81	-1630316.76	-1630316.70	0.0269	0.0259
Mercury	-9167-11-25 09:35 J	-1626495.21	-1626495.10	-1626494.99	0.0303	0.0152
Mercury	-9166-02-21 22:04 J	-1626406.71	-1626406.58	-1626406.45	0.0303	0.0013
Mercury	-9166-05-21 10:33 J	-1626318.17	-1626318.06	-1626317.96	0.0302	0.0173
Venus	-9164-01-11 18:57 J	-1625716.92	-1625716.71	-1625716.51	0.0297	0.0056
Venus	-9164-08-29 18:14 J	-1625486.90	-1625486.74	-1625486.58	0.0295	0.0188
Moon	-9157-12-18 15:50 J	-1622818.94	-1622818.84	-1622818.72	0.0264	0.0237
Earth	-9157-12-18 19:12 J	-1622818.81	-1622818.70	-1622818.56	0.0264	0.0226 *
Mercury	-9152-12-11 11:45 J	-1621000.10	-1621000.01	-1620999.90	0.0260	0.0224
Mercury	-9151-03-10 08:52 J	-1620911.31	-1620911.13	-1620910.94	0.0260	0.0069

Mercury	-9151-06-07 06:00 J	-1620822.43	-1620822.25	-1620822.07	0.0260	0.0088
Mercury	-9151-09-04 03:07 J	-1620733.43	-1620733.37	-1620733.30	0.0260	0.0246
Venus	-9149-02-01 17:02 J	-1620217.85	-1620217.79	-1620217.70	0.0263	0.0245
Venus	-9149-09-17 18:00 J	-1619988.96	-1619988.75	-1619988.54	0.0265	0.0073
Venus	-9148-05-04 20:24 J	-1619759.85	-1619759.65	-1619759.45	0.0267	0.0106
Moon	-9141-06-21 11:16 J	-1617155.24	-1617155.03	-1617154.81	0.0298	0.0117
Earth	-9141-06-21 13:12 J	-1617155.17	-1617154.95	-1617154.73	0.0298	0.0133 *
Mars	-9138-08-16 13:55 J	-1616004.22	-1616003.92	-1616003.62	0.0304	0.0033
Mercury	-9137-04-13 12:28 J	-1615763.07	-1615762.98	-1615762.87	0.0303	0.0187
Mercury	-9137-07-11 01:12 J	-1615674.58	-1615674.45	-1615674.32	0.0303	0.0024
Mercury	-9137-10-07 13:26 J	-1615586.05	-1615585.94	-1615585.82	0.0302	0.0140
Mercury	-9136-01-04 01:40 J	-1615497.43	-1615497.43	-1615497.41	0.0302	0.0300
Venus	-9136-12-07 03:21 J	-1615160.45	-1615160.36	-1615160.26	0.0299	0.0265
Venus	-9135-07-25 05:02 J	-1614930.50	-1614930.29	-1614930.08	0.0297	0.0014
Venus	-9134-03-12 03:35 J	-1614700.47	-1614700.35	-1614700.21	0.0295	0.0230
Earth	-9128-12-14 04:04 J	-1612231.58	-1612231.33	-1612231.09	0.0265	0.0028
Moon	-9128-12-14 07:26 J	-1612231.43	-1612231.19	-1612230.94	0.0265	0.0014 *
Mercury	-9122-07-28 08:52 J	-1610179.30	-1610179.13	-1610178.95	0.0259	0.0107
Mercury	-9122-10-25 06:00 J	-1610090.44	-1610090.25	-1610090.06	0.0259	0.0049
Mercury	-9121-01-22 02:52 J	-1610001.49	-1610001.38	-1610001.25	0.0260	0.0206
Venus	-9120-08-13 21:50 J	-1609431.70	-1609431.59	-1609431.46	0.0263	0.0220
Venus	-9119-03-30 22:47 J	-1609202.76	-1609202.55	-1609202.34	0.0265	0.0047
Venus	-9119-11-15 01:12 J	-1608973.63	-1608973.45	-1608973.25	0.0267	0.0133
Earth	-9112-06-15 11:02 J	-1606569.17	-1606569.04	-1606568.90	0.0297	0.0245
Moon	-9112-06-15 12:28 J	-1606569.09	-1606568.98	-1606568.85	0.0297	0.0259 *
Mercury	-9108-08-31 15:07 J	-1605030.95	-1605030.87	-1605030.78	0.0304	0.0228
Mercury	-9108-11-28 03:35 J	-1604942.47	-1604942.35	-1604942.22	0.0303	0.0065
Mercury	-9107-02-24 16:04 J	-1604853.95	-1604853.83	-1604853.71	0.0303	0.0099
Mercury	-9107-05-24 04:19 J	-1604765.38	-1604765.32	-1604765.25	0.0302	0.0260
Venus	-9106-06-19 12:14 J	-1604374.12	-1604373.99	-1604373.85	0.0299	0.0227

Venus	-9105-02-04 13:40 J	-1604144.14	-1604143.93	-1604143.72	0.0297	0.0024
Venus	-9105-09-21 12:14 J	-1603914.08	-1603913.99	-1603913.90	0.0294	0.0264
Mars	-9094-12-01 15:50 J	-1599826.11	-1599825.84	-1599825.55	0.0259	0.0052
Mercury	-9093-12-14 09:07 J	-1599447.28	-1599447.12	-1599446.95	0.0259	0.0142
Mercury	-9092-03-13 06:14 J	-1599358.43	-1599358.24	-1599358.05	0.0260	0.0013
Mercury	-9092-06-10 03:07 J	-1599269.51	-1599269.37	-1599269.21	0.0260	0.0170
Venus	-9090-02-24 03:21 J	-1598645.51	-1598645.36	-1598645.22	0.0264	0.0192
Venus	-9090-10-11 04:19 J	-1598416.54	-1598416.32	-1598416.11	0.0265	0.0018
Venus	-9089-05-27 06:57 J	-1598187.38	-1598187.21	-1598187.04	0.0267	0.0163
Earth	-9082-06-24 04:33 J	-1595603.45	-1595603.31	-1595603.16	0.0298	0.0239
Moon	-9082-06-24 06:43 J	-1595603.37	-1595603.22	-1595603.06	0.0298	0.0224 *
Mercury	-9078-01-18 17:45 J	-1594298.81	-1594298.76	-1594298.70	0.0303	0.0267
Mercury	-9078-04-17 06:28 J	-1594210.35	-1594210.23	-1594210.11	0.0303	0.0103
Mercury	-9078-07-14 18:57 J	-1594121.84	-1594121.71	-1594121.59	0.0303	0.0061
Mercury	-9078-10-11 07:12 J	-1594033.28	-1594033.20	-1594033.11	0.0302	0.0223
Venus	-9077-12-29 21:35 J	-1593587.76	-1593587.60	-1593587.43	0.0299	0.0187
Venus	-9076-08-16 22:47 J	-1593357.76	-1593357.55	-1593357.35	0.0297	0.0064
Earth	-9069-12-15 14:24 J	-1590680.14	-1590679.90	-1590679.66	0.0264	0.0052
Moon	-9069-12-15 16:47 J	-1590680.04	-1590679.80	-1590679.55	0.0264	0.0065 *
Mercury	-9063-05-03 08:52 J	-1588715.26	-1588715.13	-1588714.99	0.0259	0.0182
Mercury	-9063-07-31 05:45 J	-1588626.45	-1588626.26	-1588626.06	0.0259	0.0028
Mercury	-9063-10-28 02:52 J	-1588537.55	-1588537.38	-1588537.21	0.0259	0.0128
Venus	-9061-09-05 07:12 J	-1587859.36	-1587859.20	-1587859.03	0.0263	0.0168
Venus	-9060-04-22 08:24 J	-1587630.36	-1587630.15	-1587629.93	0.0265	0.0007
Venus	-9060-12-07 11:16 J	-1587401.18	-1587401.03	-1587400.87	0.0267	0.0187
Moon	-9053-06-16 21:07 J	-1585017.82	-1585017.62	-1585017.40	0.0297	0.0164
Earth	-9053-06-16 23:45 J	-1585017.72	-1585017.51	-1585017.30	0.0297	0.0147 *
Mars	-9049-01-11 04:19 J	-1583714.58	-1583714.32	-1583714.05	0.0304	0.0138
Mercury	-9049-09-03 08:24 J	-1583478.26	-1583478.15	-1583478.03	0.0304	0.0150
Mercury	-9049-11-30 21:07 J	-1583389.75	-1583389.62	-1583389.50	0.0303	0.0018

Mercury	-9048-02-27 09:21 J	-1583301.21	-1583301.11	-1583301.00	0.0303	0.0177
Venus	-9047-07-12 04:33 J	-1582801.48	-1582801.31	-1582801.12	0.0299	0.0153
Venus	-9046-02-27 05:31 J	-1582571.47	-1582571.27	-1582571.07	0.0296	0.0097
Moon	-9040-12-10 18:00 J	-1580092.90	-1580092.75	-1580092.58	0.0266	0.0194
Earth	-9040-12-10 20:38 J	-1580092.79	-1580092.64	-1580092.48	0.0266	0.0207 *
Mercury	-9034-09-20 08:38 J	-1577983.23	-1577983.14	-1577983.04	0.0259	0.0221
Mercury	-9034-12-18 05:31 J	-1577894.45	-1577894.27	-1577894.08	0.0259	0.0067
Mercury	-9033-03-16 02:38 J	-1577805.57	-1577805.39	-1577805.21	0.0260	0.0088
Mercury	-9033-06-12 23:31 J	-1577716.57	-1577716.52	-1577716.45	0.0260	0.0245
Venus	-9031-03-18 11:31 J	-1577073.20	-1577073.02	-1577072.84	0.0264	0.0142
Venus	-9031-11-02 12:43 J	-1576844.18	-1576843.97	-1576843.76	0.0266	0.0034
Venus	-9030-06-19 15:50 J	-1576614.97	-1576614.84	-1576614.72	0.0268	0.0215
Mercury	-9019-01-21 10:33 J	-1572746.15	-1572746.06	-1572745.96	0.0304	0.0195
Mercury	-9019-04-19 23:16 J	-1572657.66	-1572657.53	-1572657.41	0.0303	0.0033
Mercury	-9019-07-17 11:31 J	-1572569.13	-1572569.02	-1572568.90	0.0303	0.0132
Mercury	-9019-10-14 00:00 J	-1572480.53	-1572480.50	-1572480.47	0.0302	0.0293
Venus	-9017-01-22 12:14 J	-1572015.19	-1572014.99	-1572014.80	0.0299	0.0116
Venus	-9017-09-08 12:43 J	-1571785.16	-1571784.97	-1571784.78	0.0296	0.0133
Moon	-9010-12-17 18:57 J	-1569128.92	-1569128.71	-1569128.49	0.0264	0.0134
Earth	-9010-12-17 21:21 J	-1569128.82	-1569128.61	-1569128.39	0.0264	0.0125 *
Mars	-9005-04-26 15:50 J	-1567537.09	-1567536.84	-1567536.57	0.0258	0.0113
Mercury	-9004-05-06 04:47 J	-1567162.47	-1567162.30	-1567162.12	0.0259	0.0111
Mercury	-9004-08-03 01:55 J	-1567073.61	-1567073.42	-1567073.23	0.0259	0.0044
Mercury	-9004-10-30 22:47 J	-1566984.67	-1566984.55	-1566984.42	0.0259	0.0200
Venus	-9002-09-28 14:24 J	-1566287.08	-1566286.90	-1566286.70	0.0263	0.0120
Venus	-9001-05-14 15:50 J	-1566058.05	-1566057.84	-1566057.63	0.0265	0.0056
Venus	-9001-12-29 18:57 J	-1565828.80	-1565828.71	-1565828.61	0.0267	0.0238

# 9TH MILLENNIUM BCE

**This is a list of transits visible from Saturn in the 9th millennium BCE.**

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Moon	-8994-06-19 02:24 J		-1563466.63	-1563466.40	-1563466.17	0.0298	0.0084	
Earth	-8994-06-19 05:45 J		-1563466.50	-1563466.26	-1563466.02	0.0298	0.0066	*
Mercury	-8990-06-10 12:00 J		-1562014.06	-1562014.00	-1562013.92	0.0304	0.0249	
Mercury	-8990-09-07 00:43 J		-1561925.59	-1561925.47	-1561925.35	0.0304	0.0084	
Mercury	-8990-12-04 13:12 J		-1561837.07	-1561836.95	-1561836.83	0.0303	0.0080	
Mercury	-8989-03-02 01:40 J		-1561748.51	-1561748.43	-1561748.36	0.0303	0.0242	
Venus	-8988-08-03 17:16 J		-1561228.98	-1561228.78	-1561228.58	0.0299	0.0086	
Venus	-8987-03-21 17:31 J		-1560998.94	-1560998.77	-1560998.59	0.0296	0.0163	
Earth	-8981-12-12 01:26 J		-1558541.64	-1558541.44	-1558541.22	0.0265	0.0138	
Moon	-8981-12-12 03:07 J		-1558541.57	-1558541.37	-1558541.16	0.0265	0.0126	*
Mercury	-8975-09-23 04:04 J		-1556430.48	-1556430.33	-1556430.18	0.0259	0.0154	
Mercury	-8975-12-21 00:57 J		-1556341.65	-1556341.46	-1556341.27	0.0259	0.0001	
Mercury	-8974-03-19 21:50 J		-1556252.74	-1556252.59	-1556252.43	0.0259	0.0155	
Venus	-8972-04-09 17:45 J		-1555500.96	-1555500.76	-1555500.56	0.0264	0.0095	
Venus	-8972-11-24 18:57 J		-1555271.91	-1555271.71	-1555271.50	0.0266	0.0082	
Venus	-8971-07-11 22:04 J		-1555042.60	-1555042.58	-1555042.54	0.0268	0.0264	
Mars	-8961-06-05 17:16 J		-1551426.00	-1551425.78	-1551425.55	0.0304	0.0199	
Mercury	-8961-10-27 13:55 J		-1551281.94	-1551281.92	-1551281.90	0.0304	0.0299	
Mercury	-8960-01-24 02:24 J		-1551193.51	-1551193.40	-1551193.28	0.0304	0.0135	
Mercury	-8960-04-22 15:07 J		-1551105.00	-1551104.87	-1551104.75	0.0303	0.0031	
Mercury	-8960-07-20 03:21 J		-1551016.45	-1551016.36	-1551016.26	0.0303	0.0193	
Venus	-8958-02-13 23:16 J		-1550442.74	-1550442.53	-1550442.33	0.0298	0.0052	



Venus	-8958-10-01 23:16 J	-1550212.68	-1550212.53	-1550212.37	0.0296	0.0196
Moon	-8951-12-18 20:52 J	-1547577.78	-1547577.63	-1547577.46	0.0264	0.0197
Earth	-8951-12-19 00:14 J	-1547577.65	-1547577.49	-1547577.31	0.0264	0.0189 *
Mercury	-8945-02-10 02:38 J	-1545698.50	-1545698.39	-1545698.26	0.0258	0.0201
Mercury	-8945-05-08 23:45 J	-1545609.70	-1545609.51	-1545609.32	0.0259	0.0047
Mercury	-8945-08-05 20:38 J	-1545520.81	-1545520.64	-1545520.46	0.0259	0.0108
Venus	-8943-03-05 20:09 J	-1544943.72	-1544943.66	-1544943.58	0.0262	0.0245
Venus	-8943-10-20 19:55 J	-1544714.87	-1544714.67	-1544714.46	0.0263	0.0074
Venus	-8942-06-06 21:21 J	-1544485.81	-1544485.61	-1544485.42	0.0265	0.0103
Earth	-8935-06-20 06:28 J	-1541915.47	-1541915.23	-1541914.98	0.0298	0.0006
Moon	-8935-06-20 07:12 J	-1541915.43	-1541915.20	-1541914.96	0.0298	0.0014 *
Mercury	-8931-06-13 03:21 J	-1540461.45	-1540461.36	-1540461.26	0.0304	0.0195
Mercury	-8931-09-09 16:04 J	-1540372.96	-1540372.83	-1540372.70	0.0304	0.0030
Mercury	-8931-12-07 04:33 J	-1540284.43	-1540284.31	-1540284.20	0.0303	0.0134
Mercury	-8930-03-05 17:02 J	-1540195.82	-1540195.79	-1540195.77	0.0303	0.0295
Venus	-8929-01-08 23:16 J	-1539886.60	-1539886.53	-1539886.46	0.0301	0.0282
Venus	-8929-08-26 01:55 J	-1539656.63	-1539656.42	-1539656.21	0.0298	0.0026
Venus	-8928-04-13 01:55 J	-1539426.55	-1539426.42	-1539426.28	0.0296	0.0221
Earth	-8922-12-14 02:24 J	-1536990.63	-1536990.40	-1536990.16	0.0265	0.0078
Moon	-8922-12-14 06:00 J	-1536990.49	-1536990.25	-1536990.01	0.0265	0.0064 *
Mars	-8917-09-20 03:50 J	-1535248.57	-1535248.34	-1535248.11	0.0258	0.0153
Mercury	-8916-06-29 01:26 J	-1534966.48	-1534966.44	-1534966.38	0.0258	0.0248
Mercury	-8916-09-25 22:19 J	-1534877.75	-1534877.57	-1534877.39	0.0259	0.0095
Mercury	-8916-12-23 19:12 J	-1534788.89	-1534788.70	-1534788.51	0.0259	0.0059
Mercury	-8915-03-22 16:04 J	-1534699.93	-1534699.83	-1534699.72	0.0259	0.0215
Venus	-8914-09-15 22:04 J	-1534157.69	-1534157.58	-1534157.47	0.0262	0.0223
Venus	-8913-05-01 21:50 J	-1533928.80	-1533928.59	-1533928.38	0.0264	0.0052
Venus	-8913-12-16 23:31 J	-1533699.71	-1533699.52	-1533699.33	0.0266	0.0126
Mercury	-8902-10-31 04:47 J	-1529729.37	-1529729.30	-1529729.23	0.0304	0.0251
Mercury	-8901-01-27 17:16 J	-1529640.90	-1529640.78	-1529640.65	0.0304	0.0087

Mercury	-8901-04-25 06:00 J	-1529552.38	-1529552.25	-1529552.13	0.0303	0.0078
Mercury	-8901-07-22 18:14 J	-1529463.81	-1529463.74	-1529463.66	0.0303	0.0240
Venus	-8900-07-21 03:35 J	-1529100.45	-1529100.35	-1529100.23	0.0300	0.0253
Venus	-8899-03-08 06:14 J	-1528870.45	-1528870.24	-1528870.03	0.0298	0.0004
Venus	-8899-10-24 06:14 J	-1528640.35	-1528640.24	-1528640.13	0.0296	0.0250
Earth	-8892-12-19 23:31 J	-1526026.60	-1526026.52	-1526026.43	0.0264	0.0245
Moon	-8892-12-19 23:45 J	-1526026.57	-1526026.51	-1526026.43	0.0264	0.0251 *
Mercury	-8886-02-12 20:38 J	-1524145.79	-1524145.64	-1524145.47	0.0258	0.0144
Mercury	-8886-05-12 17:45 J	-1524056.96	-1524056.76	-1524056.57	0.0258	0.0011
Mercury	-8886-08-09 14:24 J	-1523968.04	-1523967.90	-1523967.74	0.0259	0.0164
Venus	-8884-03-27 23:45 J	-1523371.64	-1523371.51	-1523371.37	0.0262	0.0204
Venus	-8884-11-11 23:31 J	-1523142.73	-1523142.52	-1523142.31	0.0263	0.0032
Venus	-8883-06-29 00:43 J	-1522913.64	-1522913.47	-1522913.28	0.0265	0.0146
Earth	-8876-06-21 03:07 J	-1520364.61	-1520364.37	-1520364.13	0.0298	0.0061
Moon	-8876-06-21 06:57 J	-1520364.45	-1520364.21	-1520363.97	0.0298	0.0046 *
Mars	-8873-10-28 20:38 J	-1519138.85	-1519138.64	-1519138.39	0.0305	0.0199
Mercury	-8872-06-15 18:00 J	-1518908.86	-1518908.75	-1518908.64	0.0304	0.0150
Mercury	-8872-09-12 06:43 J	-1518820.35	-1518820.22	-1518820.10	0.0304	0.0017
Mercury	-8872-12-09 18:57 J	-1518731.81	-1518731.71	-1518731.60	0.0304	0.0178
Venus	-8870-01-31 05:16 J	-1518314.41	-1518314.28	-1518314.14	0.0301	0.0228
Venus	-8870-09-18 07:40 J	-1518084.38	-1518084.18	-1518083.97	0.0298	0.0029
Venus	-8869-05-05 07:40 J	-1517854.26	-1517854.18	-1517854.10	0.0296	0.0273
Earth	-8863-12-15 00:00 J	-1515439.75	-1515439.50	-1515439.26	0.0265	0.0025
Moon	-8863-12-15 00:14 J	-1515439.75	-1515439.49	-1515439.23	0.0265	0.0014 *
Mercury	-8857-07-01 18:57 J	-1513413.83	-1513413.71	-1513413.58	0.0258	0.0195
Mercury	-8857-09-28 15:50 J	-1513325.03	-1513324.84	-1513324.65	0.0259	0.0042
Mercury	-8857-12-26 12:43 J	-1513236.15	-1513235.97	-1513235.80	0.0259	0.0112
Venus	-8855-10-08 00:43 J	-1512585.62	-1512585.47	-1512585.31	0.0262	0.0184
Venus	-8854-05-25 00:43 J	-1512356.68	-1512356.47	-1512356.26	0.0264	0.0011
Venus	-8853-01-09 02:09 J	-1512127.56	-1512127.41	-1512127.23	0.0266	0.0168

Mercury	-8843-11-02 18:57 J	-1508176.80	-1508176.71	-1508176.62	0.0304	0.0211
Mercury	-8842-01-30 07:40 J	-1508088.31	-1508088.18	-1508088.06	0.0304	0.0046
Mercury	-8842-04-28 20:09 J	-1507999.78	-1507999.66	-1507999.54	0.0303	0.0118
Mercury	-8842-07-26 08:24 J	-1507911.19	-1507911.15	-1507911.10	0.0303	0.0280
Venus	-8841-08-12 08:09 J	-1507528.31	-1507528.16	-1507528.00	0.0300	0.0202
Venus	-8840-03-30 10:33 J	-1507298.26	-1507298.06	-1507297.85	0.0298	0.0053
Mars	-8828-02-13 06:28 J	-1502960.43	-1502960.23	-1502960.02	0.0258	0.0179
Mercury	-8828-11-18 17:16 J	-1502681.83	-1502681.78	-1502681.72	0.0258	0.0244
Mercury	-8827-02-15 13:55 J	-1502593.09	-1502592.92	-1502592.73	0.0258	0.0093
Mercury	-8827-05-15 10:47 J	-1502504.23	-1502504.05	-1502503.86	0.0258	0.0061
Mercury	-8827-08-12 07:40 J	-1502415.28	-1502415.18	-1502415.07	0.0259	0.0215
Venus	-8825-04-19 01:55 J	-1501799.58	-1501799.42	-1501799.24	0.0262	0.0165
Venus	-8825-12-04 02:09 J	-1501570.63	-1501570.41	-1501570.20	0.0264	0.0010
Venus	-8824-07-21 03:21 J	-1501341.50	-1501341.36	-1501341.20	0.0266	0.0186
Earth	-8817-06-21 20:24 J	-1498813.87	-1498813.65	-1498813.42	0.0298	0.0111
Moon	-8817-06-21 20:38 J	-1498813.87	-1498813.64	-1498813.40	0.0298	0.0101 *
Mercury	-8813-03-21 19:12 J	-1497444.74	-1497444.70	-1497444.65	0.0305	0.0280
Mercury	-8813-06-18 07:55 J	-1497356.29	-1497356.17	-1497356.05	0.0304	0.0114
Mercury	-8813-09-14 20:38 J	-1497267.77	-1497267.64	-1497267.52	0.0304	0.0052
Mercury	-8813-12-12 08:52 J	-1497179.21	-1497179.13	-1497179.04	0.0304	0.0214
Venus	-8811-02-22 08:52 J	-1496742.29	-1496742.13	-1496741.96	0.0300	0.0180
Venus	-8811-10-10 11:02 J	-1496512.24	-1496512.04	-1496511.83	0.0298	0.0076
Moon	-8804-12-15 14:52 J	-1493889.12	-1493888.88	-1493888.63	0.0265	0.0031
Earth	-8804-12-15 18:43 J	-1493888.97	-1493888.72	-1493888.48	0.0265	0.0023 *
Mercury	-8798-07-05 11:45 J	-1491861.16	-1491861.01	-1491860.85	0.0258	0.0146
Mercury	-8798-10-02 08:38 J	-1491772.33	-1491772.14	-1491771.95	0.0259	0.0007
Mercury	-8798-12-30 05:16 J	-1491683.42	-1491683.28	-1491683.12	0.0259	0.0161
Venus	-8796-10-30 02:38 J	-1491013.57	-1491013.39	-1491013.21	0.0262	0.0145
Venus	-8795-06-16 02:38 J	-1490784.61	-1490784.39	-1490784.18	0.0264	0.0029
Venus	-8794-01-31 04:19 J	-1490555.45	-1490555.32	-1490555.19	0.0266	0.0208

Earth	-8788-06-15 10:33 J	-1488228.12	-1488228.06	-1488227.98	0.0295	0.0282
Moon	-8788-06-15 11:16 J	-1488228.06	-1488228.03	-1488227.98	0.0295	0.0291 *
Mars	-8784-03-22 16:04 J	-1486852.07	-1486851.83	-1486851.58	0.0304	0.0180
Mercury	-8784-11-05 08:52 J	-1486624.23	-1486624.13	-1486624.02	0.0304	0.0175
Mercury	-8783-02-01 21:35 J	-1486535.73	-1486535.60	-1486535.48	0.0304	0.0013
Mercury	-8783-05-01 10:04 J	-1486447.19	-1486447.08	-1486446.97	0.0303	0.0154
Venus	-8782-09-04 11:31 J	-1485956.20	-1485956.02	-1485955.84	0.0300	0.0154
Venus	-8781-04-21 13:26 J	-1485726.13	-1485725.94	-1485725.74	0.0298	0.0101
Earth	-8775-12-10 18:57 J	-1483301.78	-1483301.71	-1483301.62	0.0267	0.0253
Moon	-8775-12-10 22:33 J	-1483301.65	-1483301.56	-1483301.44	0.0267	0.0241 *
Mercury	-8769-11-21 10:04 J	-1481129.20	-1481129.08	-1481128.96	0.0258	0.0196
Mercury	-8768-02-18 06:43 J	-1481040.41	-1481040.22	-1481040.03	0.0258	0.0045
Mercury	-8768-05-18 03:35 J	-1480951.52	-1480951.35	-1480951.17	0.0258	0.0109
Venus	-8766-05-12 03:35 J	-1480227.52	-1480227.35	-1480227.15	0.0262	0.0127
Venus	-8766-12-27 04:04 J	-1479998.54	-1479998.33	-1479998.12	0.0264	0.0047
Venus	-8765-08-12 05:31 J	-1479769.37	-1479769.27	-1479769.15	0.0266	0.0226
Moon	-8758-06-23 09:35 J	-1477263.30	-1477263.10	-1477262.89	0.0298	0.0158
Earth	-8758-06-23 13:26 J	-1477263.14	-1477262.94	-1477262.74	0.0298	0.0161 *
Mercury	-8754-03-25 09:07 J	-1475892.19	-1475892.12	-1475892.04	0.0305	0.0244
Mercury	-8754-06-21 21:50 J	-1475803.72	-1475803.59	-1475803.47	0.0304	0.0079
Mercury	-8754-09-18 10:19 J	-1475715.19	-1475715.07	-1475714.95	0.0304	0.0086
Mercury	-8754-12-15 22:33 J	-1475626.62	-1475626.56	-1475626.48	0.0304	0.0249
Venus	-8752-03-16 11:45 J	-1475170.20	-1475170.01	-1475169.82	0.0300	0.0133
Venus	-8752-11-01 13:40 J	-1474940.12	-1474939.93	-1474939.74	0.0298	0.0122
Moon	-8745-12-16 10:33 J	-1472338.29	-1472338.06	-1472337.83	0.0265	0.0071
Earth	-8745-12-16 12:00 J	-1472338.24	-1472338.00	-1472337.76	0.0265	0.0067 *
Mars	-8740-07-09 01:40 J	-1470672.61	-1470672.43	-1470672.23	0.0258	0.0194
Mercury	-8739-04-10 07:40 J	-1470397.21	-1470397.18	-1470397.13	0.0258	0.0250
Mercury	-8739-07-08 04:33 J	-1470308.49	-1470308.31	-1470308.13	0.0258	0.0098
Mercury	-8739-10-05 01:26 J	-1470219.63	-1470219.44	-1470219.25	0.0259	0.0055

Mercury	-8738-01-01 22:19 J	-1470130.68	-1470130.57	-1470130.46	0.0259	0.0209
Venus	-8737-11-21 04:19 J	-1469441.51	-1469441.32	-1469441.12	0.0262	0.0108
Venus	-8736-07-08 04:33 J	-1469212.51	-1469212.31	-1469212.10	0.0264	0.0068
Venus	-8735-02-22 06:14 J	-1468983.31	-1468983.24	-1468983.15	0.0266	0.0248
Earth	-8729-06-16 03:21 J	-1466677.50	-1466677.36	-1466677.20	0.0295	0.0232
Moon	-8729-06-16 06:57 J	-1466677.35	-1466677.21	-1466677.06	0.0295	0.0236 *
Mercury	-8725-11-07 22:33 J	-1465071.67	-1465071.56	-1465071.44	0.0304	0.0141
Mercury	-8724-02-04 11:16 J	-1464983.16	-1464983.03	-1464982.90	0.0303	0.0025
Mercury	-8724-05-03 23:45 J	-1464894.61	-1464894.51	-1464894.41	0.0303	0.0187
Venus	-8723-09-26 13:55 J	-1464384.11	-1464383.92	-1464383.72	0.0300	0.0108
Venus	-8722-05-14 15:50 J	-1464154.02	-1464153.84	-1464153.66	0.0297	0.0146
Earth	-8716-12-11 12:14 J	-1461751.14	-1461750.99	-1461750.83	0.0267	0.0207
Moon	-8716-12-11 13:26 J	-1461751.10	-1461750.94	-1461750.76	0.0267	0.0200 *
Mercury	-8710-11-25 02:52 J	-1459576.53	-1459576.38	-1459576.22	0.0258	0.0148
Mercury	-8709-02-21 23:45 J	-1459487.71	-1459487.51	-1459487.32	0.0258	0.0006
Mercury	-8709-05-20 20:24 J	-1459398.80	-1459398.65	-1459398.49	0.0259	0.0158
Venus	-8708-10-17 06:57 J	-1458884.23	-1458884.21	-1458884.16	0.0261	0.0257
Venus	-8707-06-03 06:00 J	-1458655.45	-1458655.25	-1458655.05	0.0262	0.0088
Venus	-8706-01-18 06:14 J	-1458426.44	-1458426.24	-1458426.04	0.0264	0.0087
Moon	-8699-06-24 06:00 J	-1455712.41	-1455712.25	-1455712.09	0.0297	0.0215
Earth	-8699-06-24 07:12 J	-1455712.37	-1455712.20	-1455712.03	0.0297	0.0213 *
Mars	-8696-08-14 01:26 J	-1454565.69	-1454565.44	-1454565.17	0.0305	0.0149
Mercury	-8695-03-27 23:02 J	-1454339.63	-1454339.54	-1454339.45	0.0304	0.0208
Mercury	-8695-06-24 11:45 J	-1454251.14	-1454251.01	-1454250.89	0.0304	0.0044
Mercury	-8695-09-21 00:14 J	-1454162.61	-1454162.49	-1454162.38	0.0304	0.0121
Mercury	-8695-12-18 12:28 J	-1454074.02	-1454073.98	-1454073.93	0.0303	0.0284
Venus	-8693-04-07 14:38 J	-1453598.09	-1453597.89	-1453597.68	0.0300	0.0085
Venus	-8693-11-23 16:19 J	-1453367.99	-1453367.82	-1453367.64	0.0298	0.0169
Earth	-8686-12-18 05:45 J	-1450787.49	-1450787.26	-1450787.04	0.0265	0.0114
Moon	-8686-12-18 08:52 J	-1450787.34	-1450787.13	-1450786.91	0.0265	0.0113 *

Mars	-8682-10-17 00:00 J	-1449388.56	-1449388.50	-1449388.41	0.0258	0.0249
Mercury	-8680-04-13 00:43 J	-1448844.58	-1448844.47	-1448844.35	0.0258	0.0201
Mercury	-8680-07-10 21:35 J	-1448755.79	-1448755.60	-1448755.41	0.0258	0.0049
Mercury	-8680-10-07 18:14 J	-1448666.91	-1448666.74	-1448666.56	0.0259	0.0105
Venus	-8678-04-29 08:09 J	-1448098.25	-1448098.16	-1448098.07	0.0261	0.0238
Venus	-8678-12-14 06:57 J	-1447869.41	-1447869.21	-1447869.00	0.0263	0.0068
Venus	-8677-07-30 07:12 J	-1447640.39	-1447640.20	-1447640.00	0.0265	0.0109
Earth	-8670-06-17 22:47 J	-1445126.74	-1445126.55	-1445126.35	0.0295	0.0177
Moon	-8670-06-17 23:45 J	-1445126.71	-1445126.51	-1445126.31	0.0295	0.0177 *
Mercury	-8666-08-15 00:14 J	-1443607.55	-1443607.49	-1443607.43	0.0304	0.0266
Mercury	-8666-11-11 12:43 J	-1443519.09	-1443518.97	-1443518.84	0.0304	0.0101
Mercury	-8665-02-08 01:26 J	-1443430.57	-1443430.44	-1443430.32	0.0303	0.0063
Mercury	-8665-05-06 13:55 J	-1443342.01	-1443341.92	-1443341.84	0.0303	0.0225
Venus	-8664-10-18 17:45 J	-1442811.96	-1442811.76	-1442811.55	0.0299	0.0059
Venus	-8663-06-05 19:12 J	-1442581.85	-1442581.70	-1442581.54	0.0297	0.0194
Moon	-8657-12-12 02:52 J	-1440200.58	-1440200.38	-1440200.18	0.0267	0.0159
Earth	-8657-12-12 06:00 J	-1440200.43	-1440200.25	-1440200.04	0.0267	0.0161 *
Mars	-8652-12-02 03:50 J	-1438384.48	-1438384.34	-1438384.18	0.0258	0.0220
Mercury	-8651-08-30 23:31 J	-1438112.57	-1438112.52	-1438112.47	0.0258	0.0248
Mercury	-8651-11-27 20:09 J	-1438023.84	-1438023.66	-1438023.48	0.0258	0.0096
Mercury	-8650-02-24 17:02 J	-1437934.98	-1437934.79	-1437934.60	0.0259	0.0057
Mercury	-8650-05-24 13:55 J	-1437846.03	-1437845.92	-1437845.81	0.0259	0.0211
Venus	-8649-11-08 10:04 J	-1437312.18	-1437312.08	-1437311.95	0.0261	0.0217
Venus	-8648-06-25 09:21 J	-1437083.32	-1437083.11	-1437082.90	0.0263	0.0047
Venus	-8647-02-09 09:50 J	-1436854.27	-1436854.09	-1436853.90	0.0264	0.0129
Earth	-8640-06-25 04:33 J	-1434161.40	-1434161.31	-1434161.22	0.0297	0.0275
Moon	-8640-06-25 07:12 J	-1434161.26	-1434161.20	-1434161.11	0.0297	0.0281 *
Mercury	-8636-03-30 13:26 J	-1432787.05	-1432786.94	-1432786.83	0.0304	0.0166
Mercury	-8636-06-27 01:55 J	-1432698.54	-1432698.42	-1432698.29	0.0304	0.0009
Mercury	-8636-09-23 14:24 J	-1432610.00	-1432609.90	-1432609.79	0.0304	0.0162

Venus	-8635-09-12 15:35 J	-1432255.89	-1432255.85	-1432255.80	0.0302	0.0294
Venus	-8634-04-30 19:12 J	-1432025.91	-1432025.70	-1432025.49	0.0300	0.0034
Venus	-8634-12-16 20:24 J	-1431795.78	-1431795.65	-1431795.50	0.0297	0.0218
Earth	-8627-12-19 00:28 J	-1429236.66	-1429236.48	-1429236.27	0.0265	0.0164
Moon	-8627-12-19 03:07 J	-1429236.58	-1429236.37	-1429236.17	0.0265	0.0157 *
Mercury	-8621-04-15 18:14 J	-1427291.89	-1427291.74	-1427291.58	0.0258	0.0147
Mercury	-8621-07-13 15:07 J	-1427203.06	-1427202.87	-1427202.68	0.0259	0.0006
Mercury	-8621-10-10 11:45 J	-1427114.15	-1427114.01	-1427113.85	0.0259	0.0160
Venus	-8619-05-21 11:31 J	-1426526.15	-1426526.02	-1426525.87	0.0261	0.0197
Venus	-8618-01-05 11:02 J	-1426297.25	-1426297.04	-1426296.83	0.0263	0.0025
Venus	-8618-08-22 11:31 J	-1426068.19	-1426068.02	-1426067.84	0.0265	0.0152
Moon	-8611-06-18 18:28 J	-1423575.96	-1423575.73	-1423575.49	0.0295	0.0108
Earth	-8611-06-18 21:50 J	-1423575.82	-1423575.59	-1423575.36	0.0295	0.0112 *
Mars	-8607-01-06 10:19 J	-1422278.33	-1422278.07	-1422277.81	0.0304	0.0156
Mercury	-8607-08-17 14:52 J	-1422054.97	-1422054.88	-1422054.79	0.0304	0.0220
Mercury	-8607-11-14 03:21 J	-1421966.48	-1421966.36	-1421966.23	0.0304	0.0057
Mercury	-8606-02-10 16:04 J	-1421877.95	-1421877.83	-1421877.71	0.0303	0.0108
Mercury	-8606-05-10 04:19 J	-1421789.37	-1421789.32	-1421789.26	0.0303	0.0270
Venus	-8605-03-24 20:24 J	-1421469.75	-1421469.65	-1421469.55	0.0301	0.0264
Venus	-8605-11-09 23:45 J	-1421239.72	-1421239.51	-1421239.30	0.0299	0.0007
Venus	-8604-06-28 00:43 J	-1421009.58	-1421009.47	-1421009.35	0.0297	0.0245
Moon	-8598-12-14 00:14 J	-1418649.70	-1418649.49	-1418649.27	0.0267	0.0109
Earth	-8598-12-14 02:38 J	-1418649.62	-1418649.39	-1418649.16	0.0267	0.0107 *
Mars	-8593-03-11 05:31 J	-1417100.41	-1417100.27	-1417100.09	0.0259	0.0215
Mercury	-8592-09-02 17:31 J	-1416559.90	-1416559.77	-1416559.64	0.0258	0.0191
Mercury	-8592-11-30 14:24 J	-1416471.09	-1416470.90	-1416470.71	0.0259	0.0039
Mercury	-8591-02-27 11:02 J	-1416382.21	-1416382.04	-1416381.86	0.0259	0.0116
Venus	-8590-12-01 15:07 J	-1415740.03	-1415739.87	-1415739.71	0.0261	0.0174
Venus	-8589-07-17 14:24 J	-1415511.11	-1415510.90	-1415510.69	0.0263	0.0002
Venus	-8588-03-03 15:07 J	-1415282.03	-1415281.87	-1415281.71	0.0265	0.0175

Mercury	-8577-01-04 15:50 J	-1411322.88	-1411322.84	-1411322.79	0.0304	0.0279
Mercury	-8577-04-02 04:33 J	-1411234.43	-1411234.31	-1411234.19	0.0304	0.0114
Mercury	-8577-06-29 17:02 J	-1411145.91	-1411145.79	-1411145.66	0.0304	0.0051
Mercury	-8577-09-26 05:31 J	-1411057.36	-1411057.27	-1411057.18	0.0303	0.0213
Venus	-8576-10-04 23:16 J	-1410683.65	-1410683.53	-1410683.39	0.0301	0.0236
Venus	-8575-05-23 02:38 J	-1410453.60	-1410453.39	-1410453.18	0.0299	0.0023
Venus	-8574-01-08 03:21 J	-1410223.43	-1410223.36	-1410223.27	0.0297	0.0273
Moon	-8568-12-19 20:09 J	-1407685.82	-1407685.66	-1407685.50	0.0265	0.0208
Earth	-8568-12-19 22:33 J	-1407685.69	-1407685.56	-1407685.41	0.0265	0.0219 *
Mars	-8563-04-27 08:09 J	-1406096.19	-1406096.16	-1406096.09	0.0258	0.0254
Mercury	-8562-01-20 16:04 J	-1405827.89	-1405827.83	-1405827.75	0.0258	0.0238
Mercury	-8562-04-19 12:57 J	-1405739.14	-1405738.96	-1405738.78	0.0259	0.0086
Mercury	-8562-07-17 09:50 J	-1405650.28	-1405650.09	-1405649.90	0.0259	0.0067
Mercury	-8562-10-14 06:43 J	-1405561.31	-1405561.22	-1405561.12	0.0259	0.0222
Venus	-8560-06-12 17:31 J	-1404953.94	-1404953.77	-1404953.59	0.0262	0.0152
Venus	-8559-01-27 17:16 J	-1404725.00	-1404724.78	-1404724.57	0.0263	0.0022
Venus	-8559-09-13 18:14 J	-1404495.88	-1404495.74	-1404495.60	0.0265	0.0199
Moon	-8552-06-20 00:00 J	-1402024.73	-1402024.50	-1402024.26	0.0295	0.0028
Earth	-8552-06-20 02:38 J	-1402024.63	-1402024.39	-1402024.14	0.0295	0.0032 *
Mercury	-8548-08-20 06:28 J	-1400502.34	-1400502.23	-1400502.12	0.0304	0.0163
Mercury	-8548-11-16 18:57 J	-1400413.84	-1400413.71	-1400413.58	0.0303	0.0005
Mercury	-8547-02-13 07:26 J	-1400325.29	-1400325.19	-1400325.08	0.0303	0.0164
Venus	-8546-04-17 05:45 J	-1399897.41	-1399897.26	-1399897.11	0.0300	0.0204
Venus	-8546-12-03 08:24 J	-1399667.35	-1399667.15	-1399666.94	0.0298	0.0054
Earth	-8539-12-15 01:55 J	-1397098.66	-1397098.42	-1397098.18	0.0267	0.0047
Moon	-8539-12-15 03:50 J	-1397098.57	-1397098.34	-1397098.10	0.0267	0.0051 *
Mercury	-8533-09-05 12:28 J	-1395007.14	-1395006.98	-1395006.80	0.0259	0.0126
Mercury	-8533-12-03 09:21 J	-1394918.30	-1394918.11	-1394917.91	0.0259	0.0028
Mercury	-8532-03-02 06:14 J	-1394829.37	-1394829.24	-1394829.10	0.0259	0.0182
Venus	-8531-12-23 21:50 J	-1394167.77	-1394167.59	-1394167.40	0.0262	0.0127



Venus	-8530-08-09 21:35 J	-1393938.81	-1393938.60	-1393938.39	0.0263	0.0047
Venus	-8529-03-25 22:33 J	-1393709.66	-1393709.56	-1393709.43	0.0265	0.0226
Mars	-8519-06-01 12:43 J	-1389990.19	-1389989.97	-1389989.74	0.0304	0.0202
Mercury	-8518-01-07 07:55 J	-1389770.26	-1389770.17	-1389770.08	0.0304	0.0216
Mercury	-8518-04-05 20:38 J	-1389681.77	-1389681.64	-1389681.52	0.0304	0.0052
Mercury	-8518-07-03 09:07 J	-1389593.24	-1389593.12	-1389593.00	0.0303	0.0112
Mercury	-8518-09-29 21:21 J	-1389504.66	-1389504.61	-1389504.55	0.0303	0.0274
Venus	-8517-10-27 10:19 J	-1389111.23	-1389111.07	-1389110.89	0.0301	0.0172
Venus	-8516-06-14 13:12 J	-1388881.15	-1388880.95	-1388880.75	0.0299	0.0086
Mars	-8505-08-04 18:14 J	-1384811.95	-1384811.74	-1384811.51	0.0259	0.0169
Mercury	-8503-01-23 11:45 J	-1384275.15	-1384275.01	-1384274.86	0.0259	0.0170
Mercury	-8503-04-22 08:38 J	-1384186.33	-1384186.14	-1384185.95	0.0259	0.0017
Mercury	-8503-07-20 05:31 J	-1384097.43	-1384097.27	-1384097.10	0.0259	0.0138
Venus	-8501-07-05 01:26 J	-1383381.63	-1383381.44	-1383381.24	0.0262	0.0103
Venus	-8500-02-19 01:26 J	-1383152.64	-1383152.44	-1383152.23	0.0264	0.0072
Venus	-8500-10-06 02:38 J	-1382923.44	-1382923.39	-1382923.31	0.0266	0.0252
Earth	-8493-06-21 12:43 J	-1380473.20	-1380472.97	-1380472.73	0.0296	0.0062
Moon	-8493-06-21 14:24 J	-1380473.13	-1380472.90	-1380472.67	0.0296	0.0070 *
Mercury	-8489-05-26 10:19 J	-1379038.13	-1379038.07	-1379038.00	0.0304	0.0259
Mercury	-8489-08-22 23:02 J	-1378949.67	-1378949.54	-1378949.42	0.0303	0.0095
Mercury	-8489-11-19 11:31 J	-1378861.15	-1378861.02	-1378860.90	0.0303	0.0069
Mercury	-8488-02-15 23:45 J	-1378772.58	-1378772.51	-1378772.42	0.0303	0.0231
Venus	-8487-05-09 18:28 J	-1378324.91	-1378324.73	-1378324.53	0.0300	0.0136
Venus	-8487-12-25 20:52 J	-1378094.82	-1378094.63	-1378094.44	0.0298	0.0120
Earth	-8480-12-16 05:16 J	-1375547.52	-1375547.28	-1375547.03	0.0267	0.0022
Moon	-8480-12-16 08:52 J	-1375547.38	-1375547.13	-1375546.88	0.0267	0.0017 *
Mercury	-8474-06-12 12:00 J	-1373543.11	-1373543.00	-1373542.88	0.0259	0.0205
Mercury	-8474-09-09 08:52 J	-1373454.32	-1373454.13	-1373453.94	0.0259	0.0052
Mercury	-8474-12-07 05:45 J	-1373365.44	-1373365.26	-1373365.08	0.0259	0.0102
Mercury	-8473-03-05 02:38 J	-1373276.41	-1373276.39	-1373276.36	0.0259	0.0257

Venus	-8472-05-31 07:55 J	-1372824.23	-1372824.17	-1372824.09	0.0261	0.0245
Venus	-8471-01-15 06:57 J	-1372595.41	-1372595.21	-1372595.00	0.0263	0.0075
Venus	-8471-09-01 07:12 J	-1372366.39	-1372366.20	-1372366.00	0.0264	0.0100
Moon	-8464-06-15 12:14 J	-1369887.04	-1369886.99	-1369886.93	0.0293	0.0285
Mercury	-8460-10-13 12:28 J	-1368305.98	-1368305.98	-1368305.98	0.0304	0.0303
Mercury	-8459-01-10 01:12 J	-1368217.57	-1368217.45	-1368217.34	0.0304	0.0139
Mercury	-8459-04-08 13:40 J	-1368129.06	-1368128.93	-1368128.80	0.0303	0.0025
Mercury	-8459-07-06 01:55 J	-1368040.51	-1368040.42	-1368040.31	0.0303	0.0187
Venus	-8458-11-20 01:26 J	-1367538.63	-1367538.44	-1367538.24	0.0300	0.0099
Venus	-8457-07-07 03:21 J	-1367308.53	-1367308.36	-1367308.17	0.0298	0.0157
Moon	-8451-12-11 02:52 J	-1364960.46	-1364960.38	-1364960.30	0.0269	0.0252
Earth	-8451-12-11 06:28 J	-1364960.31	-1364960.23	-1364960.14	0.0269	0.0251 *
Mercury	-8445-10-29 11:45 J	-1362811.07	-1362811.01	-1362810.95	0.0259	0.0245
Mercury	-8444-01-26 08:24 J	-1362722.32	-1362722.15	-1362721.96	0.0259	0.0093
Mercury	-8444-04-25 05:31 J	-1362633.46	-1362633.27	-1362633.08	0.0259	0.0061
Mercury	-8444-07-23 02:09 J	-1362544.50	-1362544.41	-1362544.29	0.0259	0.0217
Venus	-8443-12-11 12:28 J	-1362038.08	-1362037.98	-1362037.86	0.0261	0.0221
Venus	-8442-07-28 11:45 J	-1361809.22	-1361809.01	-1361808.80	0.0263	0.0049
Venus	-8441-03-13 12:00 J	-1361580.18	-1361580.00	-1361579.80	0.0265	0.0128
Earth	-8434-06-24 04:33 J	-1358921.51	-1358921.31	-1358921.11	0.0296	0.0168
Moon	-8434-06-24 08:09 J	-1358921.34	-1358921.16	-1358920.95	0.0296	0.0179 *
Mercury	-8430-05-30 03:35 J	-1357485.45	-1357485.35	-1357485.24	0.0303	0.0180
Mercury	-8430-08-26 16:19 J	-1357396.95	-1357396.82	-1357396.69	0.0303	0.0015
Mercury	-8430-11-23 04:47 J	-1357308.41	-1357308.30	-1357308.19	0.0303	0.0147
Venus	-8428-06-01 10:47 J	-1356752.25	-1356752.05	-1356751.84	0.0299	0.0061
Venus	-8427-01-17 12:28 J	-1356522.14	-1356521.98	-1356521.82	0.0297	0.0192
Earth	-8421-12-17 12:28 J	-1353996.21	-1353995.98	-1353995.75	0.0267	0.0098
Moon	-8421-12-17 12:43 J	-1353996.21	-1353995.97	-1353995.73	0.0267	0.0091 *
Mars	-8417-12-30 00:57 J	-1352522.72	-1352522.46	-1352522.18	0.0259	0.0092
Mercury	-8415-06-15 09:07 J	-1351990.28	-1351990.12	-1351989.94	0.0259	0.0125

Mercury	-8415-09-12 06:14 J	-1351901.44	-1351901.24	-1351901.05	0.0259	0.0029
Mercury	-8415-12-10 03:07 J	-1351812.50	-1351812.37	-1351812.23	0.0260	0.0184
Venus	-8413-06-22 18:28 J	-1351251.86	-1351251.73	-1351251.58	0.0262	0.0192
Venus	-8412-02-06 18:00 J	-1351022.96	-1351022.75	-1351022.53	0.0263	0.0020
Venus	-8412-09-23 18:28 J	-1350793.89	-1350793.73	-1350793.54	0.0265	0.0158
Moon	-8405-06-17 05:02 J	-1348335.48	-1348335.29	-1348335.09	0.0294	0.0174
Earth	-8405-06-17 08:38 J	-1348335.32	-1348335.14	-1348334.94	0.0294	0.0184 *
Mercury	-8401-10-16 06:14 J	-1346753.32	-1346753.24	-1346753.14	0.0303	0.0218
Mercury	-8400-01-12 18:57 J	-1346664.84	-1346664.71	-1346664.58	0.0303	0.0053
Mercury	-8400-04-11 07:26 J	-1346576.31	-1346576.19	-1346576.07	0.0303	0.0109
Mercury	-8400-07-08 19:55 J	-1346487.73	-1346487.67	-1346487.62	0.0303	0.0270
Venus	-8399-04-26 15:50 J	-1346195.91	-1346195.84	-1346195.76	0.0301	0.0280
Venus	-8399-12-12 19:26 J	-1345965.90	-1345965.69	-1345965.48	0.0299	0.0020
Venus	-8398-07-30 20:38 J	-1345735.76	-1345735.64	-1345735.50	0.0297	0.0232
Moon	-8392-12-12 15:07 J	-1343409.04	-1343408.87	-1343408.68	0.0269	0.0175
Earth	-8392-12-12 15:50 J	-1343409.03	-1343408.84	-1343408.65	0.0269	0.0170 *
Mercury	-8386-11-02 09:07 J	-1341258.26	-1341258.12	-1341257.96	0.0259	0.0163
Mercury	-8385-01-30 06:14 J	-1341169.44	-1341169.24	-1341169.05	0.0259	0.0010
Mercury	-8385-04-28 02:52 J	-1341080.53	-1341080.38	-1341080.21	0.0259	0.0146
Venus	-8383-01-02 23:45 J	-1340465.67	-1340465.51	-1340465.34	0.0262	0.0166
Venus	-8383-08-19 23:31 J	-1340236.73	-1340236.52	-1340236.31	0.0263	0.0008
Venus	-8382-04-06 00:14 J	-1340007.63	-1340007.49	-1340007.32	0.0265	0.0187
Earth	-8375-06-26 00:43 J	-1337369.51	-1337369.47	-1337369.40	0.0296	0.0288
Mercury	-8371-03-05 09:21 J	-1336021.18	-1336021.11	-1336021.04	0.0303	0.0252
Mercury	-8371-06-01 22:04 J	-1335932.71	-1335932.58	-1335932.46	0.0303	0.0089
Mercury	-8371-08-29 10:33 J	-1335844.19	-1335844.06	-1335843.94	0.0303	0.0074
Mercury	-8371-11-25 22:47 J	-1335755.62	-1335755.55	-1335755.47	0.0303	0.0236
Venus	-8370-11-07 02:52 J	-1335409.51	-1335409.38	-1335409.25	0.0301	0.0238
Venus	-8369-06-24 06:00 J	-1335179.45	-1335179.25	-1335179.04	0.0299	0.0022
Venus	-8368-02-09 06:43 J	-1334949.29	-1334949.22	-1334949.13	0.0296	0.0271

Moon	-8362-12-19 18:43 J	-1332444.90	-1332444.72	-1332444.52	0.0267	0.0170
Earth	-8362-12-19 22:19 J	-1332444.74	-1332444.57	-1332444.38	0.0267	0.0181 *
Mercury	-8356-03-21 10:19 J	-1330526.19	-1330526.07	-1330525.94	0.0259	0.0193
Mercury	-8356-06-18 07:12 J	-1330437.39	-1330437.20	-1330437.01	0.0260	0.0039
Mercury	-8356-09-15 04:04 J	-1330348.50	-1330348.33	-1330348.16	0.0260	0.0115
Venus	-8354-07-16 06:28 J	-1329679.41	-1329679.23	-1329679.04	0.0262	0.0136
Venus	-8353-03-01 06:28 J	-1329450.44	-1329450.23	-1329450.02	0.0264	0.0039
Venus	-8353-10-16 07:40 J	-1329221.30	-1329221.18	-1329221.06	0.0266	0.0218
Moon	-8346-06-20 06:00 J	-1326783.48	-1326783.25	-1326783.02	0.0294	0.0056
Earth	-8346-06-20 06:00 J	-1326783.48	-1326783.25	-1326783.00	0.0294	0.0065 *
Mercury	-8342-07-23 12:14 J	-1325289.02	-1325288.99	-1325288.95	0.0303	0.0287
Mercury	-8342-10-20 00:57 J	-1325200.58	-1325200.46	-1325200.34	0.0303	0.0123
Mercury	-8341-01-16 13:26 J	-1325112.07	-1325111.94	-1325111.81	0.0303	0.0040
Mercury	-8341-04-14 01:55 J	-1325023.52	-1325023.42	-1325023.33	0.0303	0.0201
Venus	-8340-05-19 12:43 J	-1324623.12	-1324622.97	-1324622.80	0.0301	0.0195
Venus	-8339-01-04 15:35 J	-1324393.05	-1324392.85	-1324392.64	0.0299	0.0063
Earth	-8333-12-14 03:35 J	-1321857.58	-1321857.35	-1321857.12	0.0268	0.0083
Moon	-8333-12-14 07:12 J	-1321857.43	-1321857.20	-1321856.97	0.0268	0.0090 *
Mars	-8328-05-26 12:00 J	-1320233.28	-1320233.00	-1320232.71	0.0259	0.0011
Mercury	-8327-08-08 10:33 J	-1319794.15	-1319794.06	-1319793.97	0.0259	0.0228
Mercury	-8327-11-05 07:26 J	-1319705.38	-1319705.19	-1319705.01	0.0259	0.0076
Mercury	-8326-02-02 04:19 J	-1319616.50	-1319616.32	-1319616.14	0.0259	0.0078
Mercury	-8326-05-02 01:12 J	-1319527.52	-1319527.45	-1319527.36	0.0260	0.0234
Venus	-8324-01-25 12:00 J	-1318893.19	-1318893.00	-1318892.80	0.0262	0.0109
Venus	-8324-09-11 12:00 J	-1318664.20	-1318664.00	-1318663.79	0.0264	0.0067
Venus	-8323-04-28 13:26 J	-1318435.00	-1318434.94	-1318434.85	0.0266	0.0247
Mercury	-8312-03-08 04:04 J	-1314468.44	-1314468.33	-1314468.22	0.0303	0.0158
Mercury	-8312-06-04 16:33 J	-1314379.94	-1314379.81	-1314379.68	0.0303	0.0006
Mercury	-8312-09-01 05:02 J	-1314291.40	-1314291.29	-1314291.18	0.0303	0.0167
Venus	-8311-11-29 23:45 J	-1313836.68	-1313836.51	-1313836.32	0.0300	0.0153

Venus	-8310-07-18 02:24 J	-1313606.59	-1313606.40	-1313606.20	0.0298	0.0104
Moon	-8303-12-21 08:09 J	-1310893.22	-1310893.16	-1310893.09	0.0266	0.0255
Mercury	-8298-12-26 11:31 J	-1309062.03	-1309062.02	-1309061.99	0.0259	0.0258
Mercury	-8297-03-24 08:24 J	-1308973.32	-1308973.15	-1308972.97	0.0259	0.0106
Mercury	-8297-06-21 05:16 J	-1308884.47	-1308884.28	-1308884.09	0.0260	0.0049
Mercury	-8297-09-18 02:09 J	-1308795.52	-1308795.41	-1308795.28	0.0260	0.0204
Venus	-8296-12-21 19:55 J	-1308335.73	-1308335.67	-1308335.60	0.0262	0.0248
Venus	-8295-08-07 18:57 J	-1308106.92	-1308106.71	-1308106.51	0.0263	0.0077
Venus	-8294-03-24 19:12 J	-1307877.90	-1307877.70	-1307877.50	0.0264	0.0099
Earth	-8287-06-22 04:33 J	-1305231.55	-1305231.31	-1305231.07	0.0295	0.0057
Moon	-8287-06-22 07:26 J	-1305231.42	-1305231.19	-1305230.95	0.0295	0.0067 *
Mars	-8284-06-26 12:14 J	-1304131.11	-1304130.99	-1304130.84	0.0303	0.0266
Mercury	-8283-07-26 07:12 J	-1303736.30	-1303736.20	-1303736.10	0.0303	0.0189
Mercury	-8283-10-22 19:40 J	-1303647.80	-1303647.68	-1303647.55	0.0303	0.0028
Mercury	-8282-01-19 08:09 J	-1303559.27	-1303559.16	-1303559.04	0.0303	0.0136
Mercury	-8282-04-17 20:24 J	-1303470.66	-1303470.65	-1303470.62	0.0302	0.0297
Venus	-8281-06-11 11:02 J	-1303050.23	-1303050.04	-1303049.84	0.0300	0.0107
Venus	-8280-01-27 12:57 J	-1302820.13	-1302819.96	-1302819.77	0.0298	0.0149
Earth	-8274-12-16 16:47 J	-1300306.04	-1300305.80	-1300305.55	0.0268	0.0007
Moon	-8274-12-16 19:12 J	-1300305.95	-1300305.70	-1300305.44	0.0268	0.0004 *
Mercury	-8268-08-11 08:38 J	-1298241.29	-1298241.14	-1298240.97	0.0259	0.0142
Mercury	-8268-11-08 05:31 J	-1298152.46	-1298152.27	-1298152.07	0.0259	0.0013
Mercury	-8267-02-05 02:24 J	-1298063.54	-1298063.40	-1298063.24	0.0259	0.0167
Venus	-8266-07-04 00:57 J	-1297549.56	-1297549.46	-1297549.34	0.0261	0.0222
Venus	-8265-02-18 00:14 J	-1297320.70	-1297320.49	-1297320.28	0.0263	0.0051
Venus	-8265-10-04 00:43 J	-1297091.66	-1297091.47	-1297091.28	0.0265	0.0126
Mercury	-8254-12-13 10:04 J	-1293004.16	-1293004.08	-1293003.99	0.0303	0.0226
Mercury	-8253-03-10 22:33 J	-1292915.68	-1292915.56	-1292915.43	0.0303	0.0064
Mercury	-8253-06-07 11:16 J	-1292827.16	-1292827.03	-1292826.91	0.0303	0.0100
Mercury	-8253-09-03 23:31 J	-1292738.58	-1292738.52	-1292738.45	0.0303	0.0261

Venus	-8252-12-22 21:07 J	-1292263.82	-1292263.62	-1292263.41	0.0300	0.0067
Venus	-8251-08-09 23:02 J	-1292033.70	-1292033.54	-1292033.37	0.0297	0.0188
Moon	-8245-12-10 21:21 J	-1289718.67	-1289718.61	-1289718.54	0.0269	0.0257
Earth	-8245-12-10 23:45 J	-1289718.57	-1289718.51	-1289718.42	0.0269	0.0255 *
Mars	-8240-10-21 05:31 J	-1287943.54	-1287943.27	-1287943.00	0.0259	0.0082
Mercury	-8239-12-29 09:35 J	-1287509.24	-1287509.10	-1287508.95	0.0259	0.0172
Mercury	-8238-03-28 06:28 J	-1287420.42	-1287420.23	-1287420.04	0.0260	0.0019
Mercury	-8238-06-25 03:21 J	-1287331.52	-1287331.36	-1287331.19	0.0260	0.0136
Venus	-8236-01-13 07:26 J	-1286763.33	-1286763.19	-1286763.04	0.0262	0.0192
Venus	-8236-08-30 06:43 J	-1286534.43	-1286534.22	-1286534.00	0.0263	0.0021
Venus	-8235-04-16 07:26 J	-1286305.36	-1286305.19	-1286305.01	0.0265	0.0158
Earth	-8228-06-24 00:57 J	-1283679.65	-1283679.46	-1283679.25	0.0295	0.0174
Moon	-8228-06-24 04:19 J	-1283679.51	-1283679.32	-1283679.12	0.0295	0.0180 *
Mercury	-8224-05-01 13:12 J	-1282272.02	-1282271.95	-1282271.89	0.0303	0.0260
Mercury	-8224-07-29 01:40 J	-1282183.55	-1282183.43	-1282183.30	0.0303	0.0096
Mercury	-8224-10-25 14:09 J	-1282095.03	-1282094.91	-1282094.78	0.0303	0.0068
Mercury	-8223-01-22 02:38 J	-1282006.47	-1282006.39	-1282006.30	0.0303	0.0228
Venus	-8223-11-17 04:19 J	-1281707.39	-1281707.32	-1281707.25	0.0301	0.0282
Venus	-8222-07-05 08:09 J	-1281477.37	-1281477.16	-1281476.96	0.0299	0.0023
Venus	-8221-02-20 09:21 J	-1281247.24	-1281247.11	-1281246.98	0.0297	0.0231
Moon	-8215-12-18 03:50 J	-1278754.58	-1278754.34	-1278754.09	0.0267	0.0083
Earth	-8215-12-18 05:45 J	-1278754.48	-1278754.26	-1278754.02	0.0267	0.0093 *
Mercury	-8209-05-17 09:50 J	-1276777.20	-1276777.09	-1276776.98	0.0259	0.0209
Mercury	-8209-08-14 06:28 J	-1276688.41	-1276688.23	-1276688.04	0.0259	0.0057
Mercury	-8209-11-11 03:21 J	-1276599.53	-1276599.36	-1276599.18	0.0259	0.0097
Mercury	-8208-02-08 00:28 J	-1276510.52	-1276510.48	-1276510.44	0.0259	0.0252
Venus	-8207-07-26 12:14 J	-1275977.16	-1275976.99	-1275976.83	0.0262	0.0167
Venus	-8206-03-12 11:31 J	-1275748.23	-1275748.02	-1275747.80	0.0263	0.0007
Venus	-8206-10-27 12:28 J	-1275519.14	-1275518.98	-1275518.83	0.0265	0.0184
Moon	-8199-06-17 23:31 J	-1273093.70	-1273093.52	-1273093.33	0.0294	0.0185

Earth	-8199-06-18 02:24 J	-1273093.58	-1273093.40	-1273093.21	0.0294	0.0191 *
Mars	-8196-11-21 19:55 J	-1271840.92	-1271840.67	-1271840.39	0.0304	0.0131
Mercury	-8195-09-18 15:35 J	-1271539.86	-1271539.85	-1271539.82	0.0304	0.0300
Mercury	-8195-12-16 04:19 J	-1271451.43	-1271451.32	-1271451.20	0.0304	0.0136
Mercury	-8194-03-14 17:02 J	-1271362.92	-1271362.79	-1271362.66	0.0303	0.0028
Mercury	-8194-06-11 05:31 J	-1271274.37	-1271274.27	-1271274.17	0.0303	0.0190
Venus	-8193-05-29 13:40 J	-1270921.04	-1270920.93	-1270920.79	0.0301	0.0243
Venus	-8192-01-14 17:31 J	-1270690.98	-1270690.77	-1270690.57	0.0299	0.0019
Venus	-8192-09-01 18:28 J	-1270460.81	-1270460.73	-1270460.64	0.0297	0.0269
Earth	-8186-12-13 12:14 J	-1268167.17	-1268166.99	-1268166.79	0.0268	0.0169
Moon	-8186-12-13 13:26 J	-1268167.12	-1268166.94	-1268166.75	0.0268	0.0172 *
Mercury	-8180-10-04 10:19 J	-1266045.13	-1266045.07	-1266045.00	0.0259	0.0242
Mercury	-8179-01-01 06:57 J	-1265956.38	-1265956.21	-1265956.02	0.0259	0.0091
Mercury	-8179-03-31 04:04 J	-1265867.52	-1265867.33	-1265867.15	0.0259	0.0064
Mercury	-8179-06-28 00:43 J	-1265778.56	-1265778.47	-1265778.36	0.0260	0.0219
Venus	-8177-02-05 17:45 J	-1265190.94	-1265190.76	-1265190.57	0.0262	0.0138
Venus	-8177-09-21 17:16 J	-1264961.99	-1264961.78	-1264961.56	0.0264	0.0037
Venus	-8176-05-08 18:14 J	-1264732.85	-1264732.74	-1264732.61	0.0265	0.0215
Moon	-8169-06-25 17:45 J	-1262127.80	-1262127.76	-1262127.70	0.0296	0.0290
Earth	-8169-06-25 18:14 J	-1262127.80	-1262127.74	-1262127.66	0.0296	0.0282 *
Mercury	-8165-05-04 07:12 J	-1260719.30	-1260719.20	-1260719.09	0.0303	0.0172
Mercury	-8165-07-31 19:55 J	-1260630.80	-1260630.67	-1260630.54	0.0303	0.0012
Mercury	-8165-10-28 08:09 J	-1260542.26	-1260542.16	-1260542.04	0.0303	0.0154
Venus	-8164-12-09 23:45 J	-1260134.66	-1260134.51	-1260134.35	0.0301	0.0201
Venus	-8163-07-28 03:07 J	-1259904.57	-1259904.37	-1259904.16	0.0299	0.0060
Moon	-8156-12-19 13:40 J	-1257203.12	-1257202.93	-1257202.74	0.0267	0.0165
Earth	-8156-12-19 17:02 J	-1257202.97	-1257202.79	-1257202.60	0.0267	0.0176 *
Mars	-8151-03-17 13:55 J	-1255654.15	-1255653.92	-1255653.69	0.0259	0.0157
Mercury	-8150-05-21 06:43 J	-1255224.38	-1255224.22	-1255224.04	0.0259	0.0130
Mercury	-8150-08-18 03:50 J	-1255135.54	-1255135.34	-1255135.15	0.0259	0.0024

Mercury	-8150-11-15 00:43 J	-1255046.61	-1255046.47	-1255046.33	0.0259	0.0177
Venus	-8148-08-17 21:50 J	-1254404.78	-1254404.59	-1254404.39	0.0262	0.0114
Venus	-8147-04-03 21:35 J	-1254175.81	-1254175.60	-1254175.39	0.0263	0.0061
Venus	-8147-11-18 22:33 J	-1253946.64	-1253946.56	-1253946.46	0.0265	0.0240
Earth	-8140-06-19 16:04 J	-1251542.06	-1251541.83	-1251541.60	0.0294	0.0092
Moon	-8140-06-19 17:16 J	-1251542.00	-1251541.78	-1251541.55	0.0294	0.0084 *
Mercury	-8136-09-21 09:21 J	-1249987.20	-1249987.11	-1249987.02	0.0304	0.0218
Mercury	-8136-12-18 22:04 J	-1249898.71	-1249898.58	-1249898.46	0.0304	0.0054
Mercury	-8135-03-17 10:33 J	-1249810.18	-1249810.06	-1249809.94	0.0303	0.0109
Mercury	-8135-06-13 22:47 J	-1249721.60	-1249721.55	-1249721.49	0.0303	0.0270
Venus	-8134-06-22 07:26 J	-1249348.36	-1249348.19	-1249348.01	0.0301	0.0165
Venus	-8133-02-07 10:33 J	-1249118.26	-1249118.06	-1249117.86	0.0299	0.0095
Earth	-8127-12-14 22:04 J	-1246615.81	-1246615.58	-1246615.34	0.0268	0.0088
Moon	-8127-12-15 01:55 J	-1246615.65	-1246615.42	-1246615.19	0.0268	0.0091 *
Mercury	-8121-10-07 06:57 J	-1244492.35	-1244492.21	-1244492.06	0.0259	0.0167
Mercury	-8120-01-04 03:50 J	-1244403.53	-1244403.34	-1244403.15	0.0259	0.0014
Mercury	-8120-04-03 00:43 J	-1244314.63	-1244314.47	-1244314.31	0.0259	0.0140
Venus	-8119-07-14 03:50 J	-1243847.37	-1243847.34	-1243847.30	0.0261	0.0257
Venus	-8118-02-28 02:24 J	-1243618.60	-1243618.40	-1243618.20	0.0262	0.0087
Venus	-8118-10-15 01:55 J	-1243389.61	-1243389.42	-1243389.21	0.0264	0.0089
Mars	-8107-04-18 11:16 J	-1239551.32	-1239551.03	-1239550.73	0.0303	0.0023
Mercury	-8106-02-08 11:45 J	-1239255.07	-1239255.01	-1239254.94	0.0304	0.0259
Mercury	-8106-05-08 00:28 J	-1239166.60	-1239166.48	-1239166.36	0.0303	0.0095
Mercury	-8106-08-04 12:57 J	-1239078.08	-1239077.96	-1239077.83	0.0303	0.0068
Mercury	-8106-11-01 01:26 J	-1238989.52	-1238989.44	-1238989.36	0.0303	0.0229
Venus	-8104-01-01 16:19 J	-1238562.00	-1238561.82	-1238561.62	0.0300	0.0125
Venus	-8104-08-19 19:12 J	-1238331.88	-1238331.70	-1238331.51	0.0298	0.0134
Moon	-8097-12-21 00:57 J	-1235651.55	-1235651.46	-1235651.36	0.0266	0.0242
Earth	-8097-12-21 01:40 J	-1235651.50	-1235651.43	-1235651.35	0.0266	0.0252 *
Mercury	-8091-02-24 06:28 J	-1233760.34	-1233760.23	-1233760.11	0.0258	0.0208



Mercury	-8091-05-24 03:07 J	-1233671.55	-1233671.37	-1233671.18	0.0259	0.0057
Mercury	-8091-08-21 00:00 J	-1233582.68	-1233582.50	-1233582.32	0.0259	0.0096
Mercury	-8091-11-17 20:52 J	-1233493.67	-1233493.63	-1233493.58	0.0259	0.0250
Venus	-8089-01-24 06:57 J	-1233061.29	-1233061.21	-1233061.11	0.0261	0.0235
Venus	-8089-09-09 05:45 J	-1232832.47	-1232832.26	-1232832.06	0.0262	0.0064
Venus	-8088-04-26 05:16 J	-1232603.47	-1232603.28	-1232603.08	0.0264	0.0112
Earth	-8081-06-21 00:28 J	-1229990.73	-1229990.48	-1229990.24	0.0295	0.0008
Moon	-8081-06-21 04:19 J	-1229990.57	-1229990.32	-1229990.08	0.0295	0.0007 *
Mercury	-8077-09-24 02:09 J	-1228434.52	-1228434.41	-1228434.30	0.0304	0.0147
Mercury	-8077-12-21 14:38 J	-1228346.01	-1228345.89	-1228345.76	0.0304	0.0019
Mercury	-8076-03-20 03:07 J	-1228257.47	-1228257.37	-1228257.26	0.0303	0.0180
Venus	-8075-07-14 22:04 J	-1227775.78	-1227775.58	-1227775.38	0.0300	0.0092
Venus	-8074-03-02 00:43 J	-1227545.64	-1227545.47	-1227545.30	0.0298	0.0166
Earth	-8068-12-16 04:47 J	-1225064.55	-1225064.30	-1225064.06	0.0268	0.0015
Moon	-8068-12-16 06:00 J	-1225064.50	-1225064.25	-1225064.00	0.0268	0.0021 *
Mars	-8063-08-11 14:09 J	-1223365.06	-1223364.91	-1223364.76	0.0259	0.0219
Mercury	-8062-07-14 06:00 J	-1223028.29	-1223028.25	-1223028.20	0.0259	0.0249
Mercury	-8062-10-11 02:38 J	-1222939.56	-1222939.39	-1222939.21	0.0259	0.0098
Mercury	-8061-01-07 23:31 J	-1222850.71	-1222850.52	-1222850.33	0.0259	0.0055
Mercury	-8061-04-05 20:09 J	-1222761.76	-1222761.66	-1222761.54	0.0259	0.0209
Venus	-8060-08-05 10:33 J	-1222275.17	-1222275.06	-1222274.92	0.0261	0.0210
Venus	-8059-03-22 09:21 J	-1222046.33	-1222046.11	-1222045.90	0.0263	0.0039
Venus	-8059-11-06 08:52 J	-1221817.30	-1221817.13	-1221816.94	0.0264	0.0139
Mercury	-8047-02-11 04:04 J	-1217702.43	-1217702.33	-1217702.23	0.0304	0.0195
Mercury	-8047-05-10 16:47 J	-1217613.93	-1217613.80	-1217613.68	0.0303	0.0031
Mercury	-8047-08-07 05:16 J	-1217525.40	-1217525.28	-1217525.17	0.0303	0.0132
Mercury	-8047-11-03 17:45 J	-1217436.79	-1217436.76	-1217436.73	0.0303	0.0293
Venus	-8045-01-25 05:02 J	-1216989.50	-1216989.29	-1216989.08	0.0300	0.0057
Venus	-8045-09-11 07:26 J	-1216759.34	-1216759.19	-1216759.03	0.0298	0.0200
Mercury	-8032-02-27 01:40 J	-1212207.59	-1212207.43	-1212207.27	0.0258	0.0142

Mercury	-8032-05-26 22:33 J	-1212118.76	-1212118.56	-1212118.37	0.0258	0.0011
Mercury	-8032-08-23 18:57 J	-1212029.85	-1212029.71	-1212029.55	0.0259	0.0163
Venus	-8030-02-15 12:57 J	-1211489.10	-1211488.96	-1211488.81	0.0261	0.0189
Venus	-8030-10-02 11:31 J	-1211260.23	-1211260.02	-1211259.81	0.0262	0.0018
Venus	-8029-05-18 11:16 J	-1211031.20	-1211031.03	-1211030.86	0.0264	0.0159
Earth	-8022-06-23 03:07 J	-1208439.61	-1208439.37	-1208439.13	0.0295	0.0066
Moon	-8022-06-23 03:21 J	-1208439.60	-1208439.36	-1208439.11	0.0295	0.0079 *
Mars	-8019-09-11 16:33 J	-1207263.10	-1207262.81	-1207262.51	0.0304	0.0021
Mercury	-8018-07-01 05:02 J	-1206970.35	-1206970.29	-1206970.21	0.0304	0.0254
Mercury	-8018-09-27 17:45 J	-1206881.88	-1206881.76	-1206881.63	0.0304	0.0089
Mercury	-8018-12-25 06:28 J	-1206793.35	-1206793.23	-1206793.11	0.0304	0.0075
Mercury	-8017-03-22 18:57 J	-1206704.79	-1206704.71	-1206704.63	0.0304	0.0237
Venus	-8017-12-19 04:04 J	-1206433.37	-1206433.33	-1206433.27	0.0302	0.0292
Venus	-8016-08-06 08:52 J	-1206203.34	-1206203.13	-1206202.92	0.0300	0.0028
Venus	-8015-03-24 11:02 J	-1205973.17	-1205973.04	-1205972.90	0.0298	0.0229
Moon	-8009-12-17 04:33 J	-1203513.56	-1203513.31	-1203513.06	0.0267	0.0039
Earth	-8009-12-17 07:55 J	-1203513.41	-1203513.17	-1203512.93	0.0267	0.0051 *
Mars	-8005-11-18 15:50 J	-1202080.98	-1202080.84	-1202080.67	0.0259	0.0218
Mercury	-8003-07-17 00:28 J	-1201475.60	-1201475.48	-1201475.33	0.0258	0.0188
Mercury	-8003-10-13 21:21 J	-1201386.80	-1201386.61	-1201386.42	0.0259	0.0036
Mercury	-8002-01-10 18:00 J	-1201297.91	-1201297.75	-1201297.57	0.0259	0.0117
Venus	-8001-08-27 15:35 J	-1200703.01	-1200702.85	-1200702.69	0.0261	0.0166

# 8TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 8th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-8000-04-13 14:09 J	-1200474.13	-1200473.91	-1200473.70	0.0263	0.0006		
Venus	-8000-11-28 13:55 J	-1200245.07	-1200244.92	-1200244.76	0.0264	0.0184		
Mercury	-7988-02-13 19:26 J	-1196149.80	-1196149.69	-1196149.57	0.0304	0.0140		
Mercury	-7988-05-13 08:09 J	-1196061.29	-1196061.16	-1196061.03	0.0304	0.0024		
Mercury	-7988-08-09 20:38 J	-1195972.74	-1195972.64	-1195972.54	0.0303	0.0186		
Venus	-7987-07-01 09:35 J	-1195647.19	-1195647.10	-1195646.98	0.0302	0.0261		
Venus	-7986-02-16 14:24 J	-1195417.11	-1195416.90	-1195416.69	0.0300	0.0004		
Venus	-7986-10-04 16:19 J	-1195186.91	-1195186.82	-1195186.71	0.0298	0.0260		
Earth	-7980-12-12 09:35 J	-1192926.23	-1192926.10	-1192925.97	0.0269	0.0225		
Moon	-7980-12-12 12:43 J	-1192926.08	-1192925.97	-1192925.84	0.0269	0.0233	*	
Mercury	-7974-12-03 23:31 J	-1190743.59	-1190743.52	-1190743.43	0.0258	0.0233		
Mercury	-7973-03-01 20:09 J	-1190654.84	-1190654.66	-1190654.48	0.0258	0.0083		
Mercury	-7973-05-29 16:47 J	-1190565.98	-1190565.80	-1190565.61	0.0258	0.0069		
Mercury	-7973-08-26 13:40 J	-1190477.02	-1190476.93	-1190476.83	0.0258	0.0222		
Venus	-7971-03-09 17:31 J	-1189916.95	-1189916.77	-1189916.59	0.0261	0.0146		
Venus	-7971-10-24 15:50 J	-1189688.05	-1189687.84	-1189687.62	0.0262	0.0027		
Venus	-7970-06-10 15:50 J	-1189458.97	-1189458.84	-1189458.70	0.0264	0.0203		
Moon	-7963-06-23 22:04 J	-1186888.78	-1186888.58	-1186888.35	0.0295	0.0145		
Earth	-7963-06-24 01:55 J	-1186888.64	-1186888.42	-1186888.20	0.0295	0.0129	*	
Mercury	-7959-07-03 20:09 J	-1185417.75	-1185417.66	-1185417.56	0.0304	0.0204		
Mercury	-7959-09-30 08:52 J	-1185329.26	-1185329.13	-1185329.00	0.0304	0.0040		
Mercury	-7959-12-27 21:21 J	-1185240.73	-1185240.61	-1185240.49	0.0304	0.0124		
Mercury	-7958-03-26 09:50 J	-1185152.13	-1185152.09	-1185152.05	0.0304	0.0286		
Venus	-7957-01-11 11:45 J	-1184861.13	-1184861.01	-1184860.87	0.0302	0.0235		
Venus	-7957-08-28 16:19 J	-1184631.03	-1184630.82	-1184630.61	0.0300	0.0030		
Venus	-7956-04-15 18:14 J	-1184400.79	-1184400.74	-1184400.67	0.0298	0.0285		
Moon	-7950-12-19 05:02 J	-1181962.51	-1181962.29	-1181962.07	0.0267	0.0095		

Earth	-7950-12-19 07:12 J	-1181962.42	-1181962.20	-1181961.97	0.0267	0.0108 *
Mercury	-7944-07-19 18:43 J	-1179922.89	-1179922.72	-1179922.56	0.0258	0.0131
Mercury	-7944-10-16 15:21 J	-1179834.05	-1179833.86	-1179833.67	0.0258	0.0020
Mercury	-7943-01-13 12:00 J	-1179745.14	-1179745.00	-1179744.85	0.0259	0.0172
Venus	-7942-09-19 18:43 J	-1179130.90	-1179130.72	-1179130.52	0.0261	0.0125
Venus	-7941-05-05 17:31 J	-1178901.98	-1178901.77	-1178901.56	0.0263	0.0048
Venus	-7941-12-20 17:16 J	-1178672.87	-1178672.78	-1178672.65	0.0264	0.0227
Earth	-7934-06-17 19:40 J	-1176302.80	-1176302.68	-1176302.55	0.0293	0.0250
Moon	-7934-06-17 23:02 J	-1176302.67	-1176302.54	-1176302.39	0.0293	0.0235 *
Mars	-7930-02-04 05:45 J	-1174975.55	-1174975.26	-1174974.96	0.0304	0.0034
Mercury	-7930-11-20 21:21 J	-1174685.67	-1174685.61	-1174685.55	0.0304	0.0261
Mercury	-7929-02-17 10:04 J	-1174597.20	-1174597.08	-1174596.96	0.0304	0.0097
Mercury	-7929-05-15 22:33 J	-1174508.68	-1174508.56	-1174508.43	0.0304	0.0068
Mercury	-7929-08-12 11:02 J	-1174420.12	-1174420.04	-1174419.95	0.0303	0.0229
Venus	-7928-07-23 15:50 J	-1174074.98	-1174074.84	-1174074.68	0.0302	0.0207
Venus	-7927-03-10 20:24 J	-1173844.86	-1173844.65	-1173844.45	0.0300	0.0058
Earth	-7921-12-13 07:55 J	-1171375.36	-1171375.17	-1171374.98	0.0269	0.0168
Moon	-7921-12-13 10:19 J	-1171375.25	-1171375.07	-1171374.87	0.0269	0.0178 *
Mars	-7916-04-13 23:16 J	-1169792.73	-1169792.53	-1169792.32	0.0259	0.0183
Mercury	-7915-12-06 17:16 J	-1169190.91	-1169190.78	-1169190.64	0.0258	0.0179
Mercury	-7914-03-05 13:55 J	-1169102.11	-1169101.92	-1169101.73	0.0258	0.0028
Mercury	-7914-06-02 10:33 J	-1169013.23	-1169013.06	-1169012.89	0.0258	0.0123
Venus	-7912-03-31 20:24 J	-1168344.84	-1168344.65	-1168344.45	0.0261	0.0106
Venus	-7912-11-15 19:12 J	-1168115.91	-1168115.70	-1168115.50	0.0262	0.0068
Venus	-7911-07-02 19:12 J	-1167886.78	-1167886.70	-1167886.62	0.0264	0.0244
Moon	-7904-06-24 18:57 J	-1165337.88	-1165337.71	-1165337.53	0.0295	0.0198
Earth	-7904-06-24 20:38 J	-1165337.82	-1165337.64	-1165337.44	0.0295	0.0183 *
Mercury	-7900-07-06 10:33 J	-1163865.17	-1163865.06	-1163864.96	0.0304	0.0163
Mercury	-7900-10-02 23:02 J	-1163776.66	-1163776.54	-1163776.41	0.0304	0.0009
Mercury	-7900-12-30 11:31 J	-1163688.12	-1163688.02	-1163687.91	0.0304	0.0165

Venus	-7898-02-02 17:16 J	-1163288.95	-1163288.78	-1163288.61	0.0302	0.0182
Venus	-7898-09-20 21:21 J	-1163058.81	-1163058.61	-1163058.41	0.0300	0.0082
Earth	-7891-12-20 04:04 J	-1160411.53	-1160411.33	-1160411.14	0.0267	0.0160
Moon	-7891-12-20 06:28 J	-1160411.43	-1160411.23	-1160411.03	0.0267	0.0146 *
Mercury	-7885-04-24 15:21 J	-1158458.94	-1158458.86	-1158458.77	0.0258	0.0230
Mercury	-7885-07-22 12:00 J	-1158370.18	-1158370.00	-1158369.82	0.0258	0.0080
Mercury	-7885-10-19 08:38 J	-1158281.32	-1158281.14	-1158280.95	0.0258	0.0072
Mercury	-7884-01-16 05:16 J	-1158192.37	-1158192.28	-1158192.18	0.0259	0.0224
Venus	-7883-02-25 00:00 J	-1157787.54	-1157787.50	-1157787.45	0.0260	0.0254
Venus	-7883-10-11 21:21 J	-1157558.81	-1157558.61	-1157558.40	0.0261	0.0085
Venus	-7882-05-28 20:09 J	-1157329.86	-1157329.66	-1157329.46	0.0263	0.0089
Earth	-7875-06-18 14:24 J	-1154752.08	-1154751.90	-1154751.72	0.0293	0.0197
Moon	-7875-06-18 15:50 J	-1154752.03	-1154751.84	-1154751.63	0.0293	0.0182 *
Mercury	-7871-11-23 11:31 J	-1153133.10	-1153133.02	-1153132.93	0.0304	0.0222
Mercury	-7870-02-20 00:14 J	-1153044.62	-1153044.49	-1153044.36	0.0304	0.0057
Mercury	-7870-05-19 12:43 J	-1152956.09	-1152955.97	-1152955.85	0.0304	0.0106
Mercury	-7870-08-16 01:12 J	-1152867.50	-1152867.45	-1152867.39	0.0303	0.0268
Venus	-7869-08-14 20:38 J	-1152502.82	-1152502.64	-1152502.46	0.0301	0.0155
Venus	-7868-04-02 00:28 J	-1152272.67	-1152272.48	-1152272.28	0.0300	0.0109
Moon	-7862-12-15 01:12 J	-1149824.66	-1149824.45	-1149824.22	0.0269	0.0131
Earth	-7862-12-15 03:35 J	-1149824.57	-1149824.35	-1149824.13	0.0269	0.0118 *
Mercury	-7856-12-09 10:33 J	-1147638.23	-1147638.06	-1147637.89	0.0258	0.0128
Mercury	-7855-03-08 07:12 J	-1147549.39	-1147549.20	-1147549.01	0.0258	0.0023
Mercury	-7855-06-05 03:50 J	-1147460.48	-1147460.34	-1147460.20	0.0258	0.0175
Venus	-7854-09-07 01:26 J	-1147001.52	-1147001.44	-1147001.34	0.0260	0.0235
Venus	-7853-04-22 23:02 J	-1146772.75	-1146772.54	-1146772.33	0.0261	0.0066
Venus	-7853-12-07 21:35 J	-1146543.79	-1146543.60	-1146543.40	0.0262	0.0108
Earth	-7845-06-25 14:09 J	-1143787.05	-1143786.91	-1143786.75	0.0295	0.0234
Moon	-7845-06-25 16:47 J	-1143786.92	-1143786.80	-1143786.67	0.0295	0.0250 *
Mars	-7842-06-28 19:12 J	-1142688.99	-1142688.70	-1142688.40	0.0304	0.0007

Mercury	-7841-04-11 11:31 J	-1142401.05	-1142401.02	-1142400.98	0.0304	0.0293
Mercury	-7841-07-09 00:28 J	-1142312.60	-1142312.48	-1142312.37	0.0304	0.0128
Mercury	-7841-10-05 12:57 J	-1142224.09	-1142223.96	-1142223.83	0.0304	0.0037
Mercury	-7840-01-02 01:26 J	-1142135.53	-1142135.44	-1142135.34	0.0304	0.0200
Venus	-7839-02-24 20:38 J	-1141716.83	-1141716.64	-1141716.45	0.0302	0.0133
Venus	-7839-10-13 00:28 J	-1141486.66	-1141486.48	-1141486.29	0.0300	0.0131
Earth	-7832-12-20 22:19 J	-1138860.71	-1138860.57	-1138860.41	0.0267	0.0209
Moon	-7832-12-21 01:40 J	-1138860.60	-1138860.43	-1138860.25	0.0267	0.0194 *
Mars	-7828-09-06 19:40 J	-1137504.90	-1137504.68	-1137504.45	0.0259	0.0164
Mercury	-7826-04-28 08:24 J	-1136906.28	-1136906.15	-1136906.01	0.0258	0.0180
Mercury	-7826-07-26 05:02 J	-1136817.48	-1136817.29	-1136817.10	0.0258	0.0030
Mercury	-7826-10-23 01:40 J	-1136728.60	-1136728.43	-1136728.26	0.0258	0.0122
Venus	-7824-03-19 01:55 J	-1136215.52	-1136215.42	-1136215.29	0.0260	0.0216
Venus	-7824-11-02 23:45 J	-1135986.72	-1135986.51	-1135986.30	0.0261	0.0046
Venus	-7823-06-19 22:19 J	-1135757.75	-1135757.57	-1135757.38	0.0263	0.0129
Moon	-7816-06-19 04:47 J	-1133201.52	-1133201.30	-1133201.07	0.0293	0.0130
Earth	-7816-06-19 07:55 J	-1133201.38	-1133201.17	-1133200.96	0.0293	0.0146 *
Mercury	-7812-11-26 01:26 J	-1131580.54	-1131580.44	-1131580.34	0.0304	0.0186
Mercury	-7811-02-22 14:09 J	-1131492.04	-1131491.91	-1131491.78	0.0304	0.0023
Mercury	-7811-05-22 02:38 J	-1131403.50	-1131403.39	-1131403.28	0.0304	0.0141
Mercury	-7811-08-18 15:07 J	-1131314.87	-1131314.87	-1131314.86	0.0303	0.0302
Venus	-7810-09-07 00:00 J	-1130930.70	-1130930.50	-1130930.31	0.0301	0.0107
Venus	-7809-04-24 03:35 J	-1130700.52	-1130700.35	-1130700.17	0.0299	0.0156
Moon	-7803-12-15 18:28 J	-1128273.96	-1128273.73	-1128273.50	0.0270	0.0083
Earth	-7803-12-15 21:35 J	-1128273.83	-1128273.60	-1128273.35	0.0270	0.0070 *
Mercury	-7797-09-14 06:57 J	-1126174.29	-1126174.21	-1126174.11	0.0258	0.0228
Mercury	-7797-12-12 03:35 J	-1126085.53	-1126085.35	-1126085.17	0.0258	0.0078
Mercury	-7796-03-11 00:14 J	-1125996.67	-1125996.49	-1125996.30	0.0258	0.0073
Mercury	-7796-06-07 20:52 J	-1125907.72	-1125907.63	-1125907.53	0.0258	0.0225
Venus	-7795-09-29 03:35 J	-1125429.48	-1125429.35	-1125429.20	0.0260	0.0196

Venus	-7794-05-16 01:26 J	-1125200.65	-1125200.44	-1125200.23	0.0261	0.0026
Venus	-7794-12-31 00:14 J	-1124971.66	-1124971.49	-1124971.31	0.0262	0.0149
Earth	-7786-06-27 08:52 J	-1122236.17	-1122236.13	-1122236.07	0.0295	0.0289
Mercury	-7782-04-15 01:40 J	-1120848.50	-1120848.43	-1120848.36	0.0304	0.0255
Mercury	-7782-07-12 14:24 J	-1120760.02	-1120759.90	-1120759.78	0.0304	0.0090
Mercury	-7782-10-09 03:07 J	-1120671.50	-1120671.37	-1120671.25	0.0304	0.0075
Mercury	-7781-01-05 15:35 J	-1120582.93	-1120582.85	-1120582.77	0.0304	0.0236
Venus	-7780-03-19 00:14 J	-1120144.69	-1120144.49	-1120144.28	0.0302	0.0084
Venus	-7780-11-04 03:50 J	-1119914.50	-1119914.34	-1119914.16	0.0300	0.0180
Moon	-7773-12-21 15:07 J	-1117309.96	-1117309.87	-1117309.75	0.0267	0.0244
Earth	-7773-12-21 16:19 J	-1117309.87	-1117309.82	-1117309.74	0.0267	0.0257 *
Mercury	-7767-05-01 01:26 J	-1115353.60	-1115353.44	-1115353.27	0.0258	0.0131
Mercury	-7767-07-28 22:04 J	-1115264.77	-1115264.58	-1115264.38	0.0258	0.0021
Mercury	-7767-10-25 18:43 J	-1115175.86	-1115175.72	-1115175.57	0.0258	0.0172
Venus	-7765-04-10 04:33 J	-1114643.46	-1114643.31	-1114643.15	0.0260	0.0177
Venus	-7765-11-25 02:24 J	-1114414.61	-1114414.40	-1114414.19	0.0261	0.0006
Venus	-7764-07-12 01:12 J	-1114185.61	-1114185.45	-1114185.28	0.0263	0.0170
Moon	-7757-06-20 00:28 J	-1111650.72	-1111650.48	-1111650.25	0.0293	0.0076
Earth	-7757-06-20 02:52 J	-1111650.61	-1111650.38	-1111650.14	0.0293	0.0091 *
Mars	-7754-11-20 19:40 J	-1110401.97	-1110401.68	-1110401.38	0.0303	0.0005
Mercury	-7753-11-28 15:21 J	-1110027.97	-1110027.86	-1110027.74	0.0304	0.0149
Mercury	-7752-02-25 04:04 J	-1109939.46	-1109939.33	-1109939.20	0.0304	0.0016
Mercury	-7752-05-24 16:33 J	-1109850.91	-1109850.81	-1109850.70	0.0303	0.0178
Venus	-7751-09-29 03:21 J	-1109358.56	-1109358.36	-1109358.15	0.0301	0.0058
Venus	-7750-05-17 06:43 J	-1109128.36	-1109128.22	-1109128.06	0.0299	0.0204
Earth	-7744-12-16 15:35 J	-1106723.10	-1106722.85	-1106722.61	0.0270	0.0021
Moon	-7744-12-16 16:04 J	-1106723.06	-1106722.83	-1106722.59	0.0270	0.0035 *
Mars	-7739-01-30 19:55 J	-1105216.91	-1105216.67	-1105216.42	0.0259	0.0136
Mercury	-7738-09-18 00:14 J	-1104621.62	-1104621.49	-1104621.35	0.0258	0.0177
Mercury	-7738-12-15 20:52 J	-1104532.82	-1104532.63	-1104532.44	0.0258	0.0026

Mercury	-7737-03-13 17:31 J	-1104443.94	-1104443.77	-1104443.60	0.0258	0.0125
Venus	-7736-10-21 06:28 J	-1103857.39	-1103857.23	-1103857.05	0.0260	0.0156
Venus	-7735-06-07 04:33 J	-1103628.53	-1103628.31	-1103628.10	0.0261	0.0016
Venus	-7734-01-22 03:21 J	-1103399.49	-1103399.36	-1103399.20	0.0263	0.0191
Mercury	-7723-04-17 15:50 J	-1099295.93	-1099295.84	-1099295.75	0.0304	0.0215
Mercury	-7723-07-15 04:33 J	-1099207.44	-1099207.31	-1099207.18	0.0304	0.0050
Mercury	-7723-10-11 17:16 J	-1099118.90	-1099118.78	-1099118.66	0.0304	0.0113
Mercury	-7722-01-08 05:31 J	-1099030.32	-1099030.27	-1099030.21	0.0304	0.0275
Venus	-7722-08-23 23:02 J	-1098802.56	-1098802.54	-1098802.51	0.0303	0.0300
Venus	-7721-04-10 04:33 J	-1098572.52	-1098572.31	-1098572.10	0.0301	0.0032
Venus	-7721-11-26 07:40 J	-1098342.30	-1098342.18	-1098342.04	0.0299	0.0229
Mercury	-7708-02-03 22:19 J	-1093889.65	-1093889.57	-1093889.48	0.0258	0.0228
Mercury	-7708-05-03 18:57 J	-1093800.89	-1093800.71	-1093800.53	0.0258	0.0078
Mercury	-7708-07-31 15:35 J	-1093712.04	-1093711.85	-1093711.67	0.0258	0.0073
Mercury	-7708-10-28 12:14 J	-1093623.08	-1093622.99	-1093622.89	0.0258	0.0225
Venus	-7706-05-03 07:40 J	-1093071.36	-1093071.18	-1093070.99	0.0260	0.0136
Venus	-7706-12-18 05:45 J	-1092842.47	-1092842.26	-1092842.04	0.0262	0.0037
Venus	-7705-08-03 05:02 J	-1092613.41	-1092613.29	-1092613.16	0.0263	0.0212
Earth	-7698-06-22 01:12 J	-1090099.70	-1090099.45	-1090099.21	0.0293	0.0028
Moon	-7698-06-22 03:21 J	-1090099.60	-1090099.36	-1090099.12	0.0293	0.0015 *
Mercury	-7694-09-04 17:16 J	-1088563.84	-1088563.78	-1088563.72	0.0304	0.0269
Mercury	-7694-12-02 06:00 J	-1088475.37	-1088475.25	-1088475.13	0.0304	0.0105
Mercury	-7693-02-28 18:43 J	-1088386.85	-1088386.72	-1088386.60	0.0304	0.0059
Mercury	-7693-05-27 07:12 J	-1088298.29	-1088298.20	-1088298.11	0.0303	0.0221
Venus	-7692-03-05 03:50 J	-1088016.42	-1088016.34	-1088016.24	0.0302	0.0270
Venus	-7692-10-21 09:07 J	-1087786.33	-1087786.12	-1087785.91	0.0301	0.0007
Venus	-7691-06-08 12:00 J	-1087556.10	-1087556.00	-1087555.89	0.0299	0.0256
Earth	-7685-12-17 10:47 J	-1085172.30	-1085172.05	-1085171.81	0.0270	0.0031
Moon	-7685-12-17 14:24 J	-1085172.14	-1085171.90	-1085171.65	0.0270	0.0016 *
Mercury	-7679-09-20 18:00 J	-1083068.92	-1083068.75	-1083068.58	0.0258	0.0122



Mercury	-7679-12-18 14:38 J	-1082980.08	-1082979.89	-1082979.70	0.0259	0.0029
Mercury	-7678-03-17 11:16 J	-1082891.16	-1082891.03	-1082890.89	0.0259	0.0181
Venus	-7677-11-12 10:33 J	-1082285.25	-1082285.06	-1082284.86	0.0260	0.0114
Venus	-7676-06-29 08:52 J	-1082056.34	-1082056.13	-1082055.92	0.0262	0.0059
Venus	-7675-02-13 07:55 J	-1081827.25	-1081827.17	-1081827.06	0.0263	0.0235
Mars	-7665-04-14 00:57 J	-1078114.75	-1078114.46	-1078114.16	0.0303	0.0004
Mercury	-7664-04-20 06:43 J	-1077743.32	-1077743.22	-1077743.11	0.0304	0.0166
Mercury	-7664-07-17 19:26 J	-1077654.82	-1077654.69	-1077654.56	0.0304	0.0002
Mercury	-7664-10-14 07:55 J	-1077566.28	-1077566.17	-1077566.06	0.0304	0.0160
Venus	-7663-09-15 05:45 J	-1077230.37	-1077230.26	-1077230.12	0.0302	0.0244
Venus	-7662-05-03 11:02 J	-1077000.25	-1077000.04	-1076999.83	0.0301	0.0024
Venus	-7662-12-19 13:40 J	-1076769.99	-1076769.93	-1076769.86	0.0299	0.0283
Earth	-7656-12-12 04:19 J	-1074585.38	-1074585.32	-1074585.25	0.0272	0.0262
Jupiter	-7652-10-01 06:28 J	-1073196.70	-1073196.23	-1073195.75	0.0260	0.0029
Mars	-7651-06-25 18:57 J	-1072928.97	-1072928.71	-1072928.44	0.0259	0.0110
Mercury	-7649-02-07 16:19 J	-1072336.96	-1072336.82	-1072336.67	0.0258	0.0172
Mercury	-7649-05-06 12:57 J	-1072248.15	-1072247.96	-1072247.77	0.0258	0.0021
Mercury	-7649-08-03 09:35 J	-1072159.26	-1072159.10	-1072158.93	0.0259	0.0131
Venus	-7647-05-25 12:28 J	-1071499.18	-1071498.98	-1071498.78	0.0261	0.0092
Venus	-7646-01-09 11:02 J	-1071270.25	-1071270.04	-1071269.84	0.0262	0.0081
Venus	-7646-08-26 10:33 J	-1071041.10	-1071041.06	-1071041.02	0.0264	0.0258
Earth	-7639-06-23 03:35 J	-1068548.59	-1068548.35	-1068548.11	0.0293	0.0046
Moon	-7639-06-23 07:12 J	-1068548.44	-1068548.20	-1068547.96	0.0293	0.0056 *
Mercury	-7635-09-07 08:24 J	-1067011.23	-1067011.15	-1067011.06	0.0304	0.0217
Mercury	-7635-12-04 21:07 J	-1066922.74	-1066922.62	-1066922.49	0.0303	0.0053
Mercury	-7634-03-03 09:50 J	-1066834.21	-1066834.09	-1066833.97	0.0303	0.0110
Mercury	-7634-05-30 22:19 J	-1066745.63	-1066745.57	-1066745.52	0.0303	0.0271
Venus	-7633-03-27 12:00 J	-1066444.14	-1066444.00	-1066443.85	0.0302	0.0211
Venus	-7633-11-12 16:33 J	-1066214.01	-1066213.81	-1066213.60	0.0300	0.0055
Earth	-7626-12-19 08:09 J	-1063621.39	-1063621.16	-1063620.92	0.0270	0.0088

Moon	-7626-12-19 09:07 J	-1063621.36	-1063621.12	-1063620.88	0.0270	0.0074 *
Mercury	-7620-06-26 15:50 J	-1061604.94	-1061604.84	-1061604.73	0.0259	0.0212
Mercury	-7620-09-23 12:28 J	-1061516.17	-1061515.98	-1061515.79	0.0259	0.0062
Mercury	-7620-12-21 09:07 J	-1061427.30	-1061427.12	-1061426.94	0.0259	0.0090
Mercury	-7619-03-20 05:45 J	-1061338.31	-1061338.26	-1061338.18	0.0259	0.0243
Venus	-7618-04-20 18:28 J	-1060941.80	-1060941.73	-1060941.63	0.0260	0.0237
Venus	-7618-12-05 16:04 J	-1060713.03	-1060712.83	-1060712.61	0.0261	0.0068
Venus	-7617-07-21 14:38 J	-1060484.08	-1060483.89	-1060483.69	0.0262	0.0106
Mercury	-7605-01-25 09:50 J	-1056279.14	-1056279.09	-1056279.03	0.0304	0.0270
Mercury	-7605-04-22 22:33 J	-1056190.68	-1056190.56	-1056190.44	0.0304	0.0107
Mercury	-7605-07-20 11:16 J	-1056102.16	-1056102.03	-1056101.91	0.0304	0.0057
Mercury	-7605-10-16 23:31 J	-1056013.60	-1056013.52	-1056013.43	0.0303	0.0218
Venus	-7604-10-07 16:19 J	-1055657.99	-1055657.82	-1055657.65	0.0302	0.0179
Venus	-7603-05-25 20:38 J	-1055427.84	-1055427.64	-1055427.44	0.0300	0.0086
Moon	-7597-12-13 03:21 J	-1053034.50	-1053034.36	-1053034.21	0.0272	0.0216
Earth	-7597-12-13 03:50 J	-1053034.50	-1053034.34	-1053034.17	0.0272	0.0201 *
Mercury	-7590-02-10 11:16 J	-1050784.20	-1050784.03	-1050783.86	0.0259	0.0109
Mercury	-7590-05-10 07:55 J	-1050695.36	-1050695.17	-1050694.98	0.0259	0.0043
Mercury	-7590-08-07 04:33 J	-1050606.43	-1050606.31	-1050606.18	0.0259	0.0196
Venus	-7589-10-30 21:07 J	-1050155.73	-1050155.62	-1050155.49	0.0260	0.0215
Venus	-7588-06-16 18:57 J	-1049926.92	-1049926.71	-1049926.50	0.0261	0.0045
Venus	-7587-01-31 17:45 J	-1049697.94	-1049697.76	-1049697.57	0.0262	0.0130
Moon	-7580-06-24 11:02 J	-1046997.26	-1046997.04	-1046996.82	0.0293	0.0138
Earth	-7580-06-24 11:45 J	-1046997.23	-1046997.01	-1046996.79	0.0293	0.0133 *
Mars	-7577-09-07 13:55 J	-1045826.20	-1045825.92	-1045825.63	0.0303	0.0064
Mercury	-7576-09-10 00:43 J	-1045458.58	-1045458.47	-1045458.36	0.0303	0.0153
Mercury	-7576-12-07 13:12 J	-1045370.07	-1045369.95	-1045369.82	0.0303	0.0014
Mercury	-7575-03-06 01:40 J	-1045281.53	-1045281.43	-1045281.32	0.0303	0.0172
Venus	-7574-04-19 23:31 J	-1044871.69	-1044871.52	-1044871.33	0.0301	0.0145
Venus	-7574-12-06 03:50 J	-1044641.53	-1044641.34	-1044641.15	0.0300	0.0120

Moon	-7567-12-20 05:45 J	-1042070.47	-1042070.26	-1042070.05	0.0270	0.0141
Earth	-7567-12-20 09:21 J	-1042070.31	-1042070.11	-1042069.90	0.0270	0.0152 *
Mars	-7563-11-19 12:00 J	-1040640.28	-1040640.00	-1040639.71	0.0260	0.0053
Mercury	-7561-06-29 11:16 J	-1040052.18	-1040052.03	-1040051.87	0.0259	0.0145
Mercury	-7561-09-26 07:55 J	-1039963.36	-1039963.17	-1039962.97	0.0259	0.0008
Mercury	-7561-12-24 04:33 J	-1039874.45	-1039874.31	-1039874.15	0.0259	0.0159
Venus	-7559-05-13 01:55 J	-1039369.56	-1039369.42	-1039369.27	0.0260	0.0188
Venus	-7559-12-28 00:00 J	-1039140.72	-1039140.50	-1039140.29	0.0261	0.0018
Venus	-7558-08-13 22:47 J	-1038911.72	-1038911.55	-1038911.38	0.0263	0.0157
Earth	-7551-06-18 14:38 J	-1036411.05	-1036410.89	-1036410.72	0.0290	0.0215
Moon	-7551-06-18 15:36 J	-1036411.01	-1036410.85	-1036410.68	0.0290	0.0208 *
Mercury	-7546-01-28 02:23 J	-1034726.49	-1034726.40	-1034726.30	0.0303	0.0201
Mercury	-7546-04-26 15:07 J	-1034638.00	-1034637.87	-1034637.74	0.0303	0.0038
Mercury	-7546-07-24 03:36 J	-1034549.46	-1034549.35	-1034549.23	0.0303	0.0125
Mercury	-7546-10-20 16:04 J	-1034460.87	-1034460.83	-1034460.79	0.0303	0.0285
Venus	-7545-10-30 05:31 J	-1034085.46	-1034085.27	-1034085.07	0.0301	0.0109
Venus	-7544-06-17 09:21 J	-1033855.28	-1033855.11	-1033854.92	0.0300	0.0156
Earth	-7538-12-15 06:57 J	-1031483.42	-1031483.21	-1031482.99	0.0271	0.0132
Moon	-7538-12-15 10:19 J	-1031483.26	-1031483.07	-1031482.85	0.0271	0.0145 *
Mercury	-7532-11-16 10:19 J	-1029320.19	-1029320.07	-1029319.93	0.0259	0.0189
Mercury	-7531-02-13 07:12 J	-1029231.39	-1029231.20	-1029231.01	0.0259	0.0038
Mercury	-7531-05-13 03:50 J	-1029142.51	-1029142.34	-1029142.16	0.0259	0.0115
Venus	-7530-11-23 05:16 J	-1028583.44	-1028583.28	-1028583.11	0.0260	0.0165
Venus	-7529-07-09 03:21 J	-1028354.57	-1028354.36	-1028354.14	0.0262	0.0008
Venus	-7528-02-23 02:23 J	-1028125.54	-1028125.40	-1028125.24	0.0263	0.0183
Moon	-7521-06-25 20:38 J	-1025445.77	-1025445.64	-1025445.48	0.0293	0.0234
Earth	-7521-06-26 00:14 J	-1025445.62	-1025445.49	-1025445.33	0.0293	0.0232 *
Mercury	-7517-06-16 05:02 J	-1023994.37	-1023994.29	-1023994.21	0.0303	0.0241
Mercury	-7517-09-12 17:45 J	-1023905.89	-1023905.76	-1023905.64	0.0303	0.0078
Mercury	-7517-12-10 06:14 J	-1023817.36	-1023817.24	-1023817.11	0.0303	0.0084

Mercury	-7516-03-08 18:43 J	-1023728.79	-1023728.72	-1023728.64	0.0303	0.0245
Venus	-7515-05-12 14:52 J	-1023299.08	-1023298.88	-1023298.67	0.0301	0.0070
Venus	-7515-12-28 18:28 J	-1023068.89	-1023068.73	-1023068.57	0.0299	0.0192
Moon	-7508-12-21 12:28 J	-1020519.11	-1020518.98	-1020518.83	0.0269	0.0217
Earth	-7508-12-21 14:38 J	-1020519.02	-1020518.89	-1020518.75	0.0269	0.0224 *
Mercury	-7502-04-05 11:16 J	-1018588.13	-1018588.03	-1018587.94	0.0259	0.0222
Mercury	-7502-07-03 07:40 J	-1018499.36	-1018499.18	-1018498.99	0.0259	0.0071
Mercury	-7502-09-30 04:33 J	-1018410.50	-1018410.31	-1018410.13	0.0259	0.0082
Mercury	-7502-12-28 01:12 J	-1018321.52	-1018321.45	-1018321.36	0.0259	0.0235
Venus	-7500-06-04 10:47 J	-1017797.22	-1017797.05	-1017796.86	0.0261	0.0137
Venus	-7499-01-19 09:21 J	-1017568.32	-1017568.11	-1017567.90	0.0262	0.0036
Venus	-7499-09-05 08:38 J	-1017339.26	-1017339.14	-1017339.01	0.0263	0.0212
Earth	-7492-06-20 06:14 J	-1014859.46	-1014859.24	-1014859.00	0.0291	0.0112
Moon	-7492-06-20 09:50 J	-1014859.31	-1014859.09	-1014858.86	0.0291	0.0103 *
Mars	-7488-02-02 00:14 J	-1013536.72	-1013536.49	-1013536.23	0.0302	0.0172
Mercury	-7488-11-03 07:26 J	-1013262.23	-1013262.19	-1013262.14	0.0303	0.0281
Mercury	-7487-01-30 20:09 J	-1013173.78	-1013173.66	-1013173.54	0.0303	0.0118
Mercury	-7487-04-29 08:52 J	-1013085.26	-1013085.13	-1013085.01	0.0303	0.0045
Mercury	-7487-07-26 21:07 J	-1012996.71	-1012996.62	-1012996.52	0.0303	0.0205
Venus	-7486-04-06 18:00 J	-1012742.79	-1012742.75	-1012742.71	0.0302	0.0295
Venus	-7486-11-22 23:02 J	-1012512.75	-1012512.54	-1012512.33	0.0301	0.0029
Venus	-7485-07-10 02:09 J	-1012282.53	-1012282.41	-1012282.27	0.0299	0.0232
Earth	-7479-12-16 14:38 J	-1009932.13	-1009931.89	-1009931.65	0.0271	0.0053
Moon	-7479-12-16 17:02 J	-1009932.04	-1009931.79	-1009931.55	0.0271	0.0064 *
Mars	-7474-04-15 10:33 J	-1008351.35	-1008351.06	-1008350.76	0.0260	0.0012
Mercury	-7473-11-19 07:26 J	-1007767.36	-1007767.19	-1007767.02	0.0259	0.0111
Mercury	-7472-02-16 04:04 J	-1007678.52	-1007678.33	-1007678.14	0.0259	0.0041
Mercury	-7472-05-16 00:57 J	-1007589.59	-1007589.46	-1007589.33	0.0259	0.0193
Venus	-7471-12-15 15:07 J	-1007011.05	-1007010.87	-1007010.66	0.0261	0.0112
Venus	-7470-08-01 13:55 J	-1006782.13	-1006781.92	-1006781.71	0.0262	0.0062

Venus	-7469-03-17 13:12 J	-1006553.02	-1006552.95	-1006552.85	0.0264	0.0240
Mercury	-7458-06-19 23:02 J	-1002441.65	-1002441.54	-1002441.43	0.0303	0.0155
Mercury	-7458-09-16 11:31 J	-1002353.14	-1002353.02	-1002352.89	0.0303	0.0013
Mercury	-7458-12-14 00:14 J	-1002264.60	-1002264.49	-1002264.39	0.0303	0.0168
Venus	-7457-10-17 04:19 J	-1001956.43	-1001956.32	-1001956.21	0.0302	0.0255
Venus	-7456-06-04 09:07 J	-1001726.33	-1001726.12	-1001725.91	0.0300	0.0013
Venus	-7455-01-20 12:00 J	-1001496.08	-1001496.00	-1001495.90	0.0299	0.0271
Mercury	-7443-04-08 08:23 J	-997035.31	-997035.15	-997034.99	0.0259	0.0142
Mercury	-7443-07-06 05:02 J	-996946.48	-996946.29	-996946.10	0.0259	0.0010
Mercury	-7443-10-03 01:40 J	-996857.57	-996857.43	-996857.27	0.0260	0.0164
Venus	-7442-11-10 23:45 J	-996453.55	-996453.51	-996453.44	0.0260	0.0251
Venus	-7441-06-26 21:36 J	-996224.80	-996224.60	-996224.40	0.0261	0.0081
Venus	-7440-02-10 20:09 J	-995995.85	-995995.66	-995995.45	0.0262	0.0094
Earth	-7433-06-22 01:26 J	-993307.69	-993307.44	-993307.20	0.0291	0.0003
Moon	-7433-06-22 03:36 J	-993307.60	-993307.35	-993307.10	0.0291	0.0009 *
Mercury	-7429-11-06 01:55 J	-991709.52	-991709.42	-991709.32	0.0303	0.0190
Mercury	-7428-02-02 14:23 J	-991621.02	-991620.90	-991620.77	0.0303	0.0030
Mercury	-7428-05-02 03:07 J	-991532.49	-991532.37	-991532.26	0.0303	0.0133
Mercury	-7428-07-29 15:21 J	-991443.88	-991443.86	-991443.83	0.0303	0.0293
Venus	-7427-04-29 14:23 J	-991170.05	-991169.90	-991169.75	0.0302	0.0211
Venus	-7427-12-15 18:57 J	-990939.92	-990939.71	-990939.51	0.0300	0.0055
Moon	-7420-12-18 00:28 J	-988380.74	-988380.48	-988380.23	0.0271	0.0024
Earth	-7420-12-18 02:09 J	-988380.65	-988380.41	-988380.16	0.0271	0.0033 *
Mercury	-7414-08-26 08:23 J	-986303.29	-986303.15	-986303.01	0.0259	0.0179
Mercury	-7414-11-23 05:02 J	-986214.48	-986214.29	-986214.10	0.0259	0.0028
Mercury	-7413-02-20 01:40 J	-986125.59	-986125.43	-986125.25	0.0259	0.0125
Venus	-7412-05-23 04:33 J	-985667.41	-985667.31	-985667.20	0.0260	0.0226
Venus	-7411-01-07 02:38 J	-985438.60	-985438.39	-985438.18	0.0261	0.0055
Venus	-7411-08-24 01:26 J	-985209.63	-985209.44	-985209.25	0.0263	0.0120
Mercury	-7399-03-26 04:47 J	-980977.38	-980977.30	-980977.21	0.0303	0.0225

Mercury	-7399-06-22 17:31 J	-980888.90	-980888.77	-980888.64	0.0303	0.0063
Mercury	-7399-09-19 06:00 J	-980800.37	-980800.25	-980800.12	0.0303	0.0099
Mercury	-7399-12-16 18:28 J	-980711.79	-980711.73	-980711.66	0.0303	0.0259
Venus	-7398-11-10 01:26 J	-980383.61	-980383.44	-980383.26	0.0301	0.0168
Venus	-7397-06-27 06:00 J	-980153.45	-980153.25	-980153.05	0.0300	0.0097
Earth	-7391-12-13 06:57 J	-977793.33	-977793.21	-977793.09	0.0272	0.0236
Moon	-7391-12-13 07:55 J	-977793.25	-977793.17	-977793.07	0.0272	0.0250 *
Mars	-7386-09-10 02:23 J	-976061.66	-976061.40	-976061.12	0.0260	0.0105
Mercury	-7384-01-12 09:36 J	-975571.21	-975571.10	-975570.98	0.0260	0.0208
Mercury	-7384-04-11 06:14 J	-975482.43	-975482.24	-975482.05	0.0260	0.0056
Mercury	-7384-07-09 02:52 J	-975393.55	-975393.38	-975393.19	0.0260	0.0097
Mercury	-7384-10-05 23:45 J	-975304.55	-975304.51	-975304.45	0.0260	0.0250
Venus	-7383-12-03 11:31 J	-974881.16	-974881.02	-974880.88	0.0261	0.0195
Venus	-7382-07-20 09:21 J	-974652.32	-974652.11	-974651.89	0.0262	0.0024
Venus	-7381-03-05 08:23 J	-974423.32	-974423.15	-974422.97	0.0263	0.0153
Moon	-7374-06-24 21:07 J	-971755.84	-971755.62	-971755.39	0.0292	0.0124
Earth	-7374-06-24 23:02 J	-971755.76	-971755.54	-971755.31	0.0292	0.0117 *
Mercury	-7370-08-13 07:55 J	-970245.23	-970245.17	-970245.10	0.0303	0.0257
Mercury	-7370-11-09 20:38 J	-970156.76	-970156.64	-970156.52	0.0303	0.0095
Mercury	-7369-02-06 09:07 J	-970068.24	-970068.12	-970067.99	0.0303	0.0068
Mercury	-7369-05-04 21:36 J	-969979.68	-969979.60	-969979.51	0.0303	0.0228
Venus	-7368-05-22 12:43 J	-969597.16	-969596.97	-969596.78	0.0301	0.0122
Venus	-7367-01-07 16:33 J	-969366.99	-969366.81	-969366.62	0.0300	0.0142
Moon	-7361-12-19 12:14 J	-966829.21	-966828.99	-966828.76	0.0270	0.0112
Earth	-7361-12-19 15:50 J	-966829.06	-966828.84	-966828.62	0.0270	0.0122 *
Mercury	-7355-06-01 09:50 J	-964839.15	-964839.09	-964839.02	0.0259	0.0244
Mercury	-7355-08-29 06:28 J	-964750.41	-964750.23	-964750.05	0.0259	0.0093
Mercury	-7355-11-26 03:07 J	-964661.55	-964661.37	-964661.18	0.0259	0.0059
Mercury	-7354-02-22 23:45 J	-964572.60	-964572.51	-964572.39	0.0259	0.0213
Venus	-7353-06-14 16:04 J	-964094.98	-964094.83	-964094.66	0.0261	0.0170

Venus	-7352-01-29 14:23 J	-963866.11	-963865.90	-963865.68	0.0262	0.0006
Venus	-7352-09-15 13:40 J	-963637.08	-963636.93	-963636.77	0.0263	0.0179
Earth	-7345-06-18 04:33 J	-961169.45	-961169.31	-961169.15	0.0290	0.0230
Moon	-7345-06-18 06:57 J	-961169.35	-961169.21	-961169.05	0.0290	0.0222 *
Mercury	-7341-12-30 10:47 J	-959513.08	-959513.05	-959513.02	0.0303	0.0294
Mercury	-7340-03-28 23:31 J	-959424.63	-959424.52	-959424.40	0.0303	0.0131
Mercury	-7340-06-25 12:14 J	-959336.12	-959335.99	-959335.86	0.0303	0.0032
Mercury	-7340-09-22 00:43 J	-959247.57	-959247.47	-959247.37	0.0303	0.0192
Venus	-7339-12-02 23:16 J	-958810.73	-958810.53	-958810.33	0.0301	0.0080
Venus	-7338-07-21 03:07 J	-958580.53	-958580.37	-958580.20	0.0299	0.0183
Earth	-7332-12-14 21:36 J	-956241.81	-956241.60	-956241.39	0.0272	0.0143
Moon	-7332-12-15 01:12 J	-956241.64	-956241.45	-956241.25	0.0272	0.0158 *
Mercury	-7325-01-16 07:40 J	-954018.35	-954018.18	-954018.01	0.0259	0.0121
Mercury	-7325-04-14 04:19 J	-953929.51	-953929.32	-953929.12	0.0260	0.0031
Mercury	-7325-07-12 01:12 J	-953840.58	-953840.45	-953840.31	0.0260	0.0183
Venus	-7324-12-25 23:16 J	-953308.71	-953308.53	-953308.35	0.0261	0.0138
Venus	-7323-08-11 21:21 J	-953079.82	-953079.61	-953079.40	0.0262	0.0035
Venus	-7322-03-28 20:38 J	-952850.76	-952850.64	-952850.51	0.0263	0.0212
Moon	-7315-06-26 15:50 J	-950203.98	-950203.84	-950203.70	0.0292	0.0237
Earth	-7315-06-26 19:26 J	-950203.82	-950203.69	-950203.53	0.0292	0.0233 *
Mercury	-7311-08-16 02:52 J	-948692.49	-948692.38	-948692.27	0.0303	0.0162
Mercury	-7311-11-12 15:21 J	-948603.99	-948603.86	-948603.73	0.0303	0.0008
Mercury	-7310-02-09 03:50 J	-948515.44	-948515.34	-948515.23	0.0303	0.0161
Venus	-7310-10-28 05:45 J	-948254.28	-948254.26	-948254.25	0.0302	0.0300
Venus	-7309-06-14 10:47 J	-948024.25	-948024.05	-948023.84	0.0301	0.0034
Venus	-7308-01-30 14:09 J	-947794.04	-947793.91	-947793.77	0.0299	0.0229
Moon	-7302-12-22 05:16 J	-945277.43	-945277.28	-945277.12	0.0270	0.0205
Earth	-7302-12-22 06:14 J	-945277.38	-945277.24	-945277.08	0.0270	0.0213 *
Mars	-7297-02-04 17:02 J	-943771.98	-943771.79	-943771.59	0.0260	0.0190
Mercury	-7296-06-04 07:55 J	-943286.32	-943286.17	-943286.02	0.0259	0.0158

Mercury	-7296-09-01 04:33 J	-943197.50	-943197.31	-943197.12	0.0259	0.0007
Mercury	-7296-11-29 01:26 J	-943108.60	-943108.44	-943108.28	0.0259	0.0146
Venus	-7294-07-08 03:50 J	-942522.53	-942522.34	-942522.15	0.0261	0.0113
Venus	-7293-02-22 02:09 J	-942293.62	-942293.41	-942293.20	0.0262	0.0061
Venus	-7293-10-08 01:40 J	-942064.52	-942064.43	-942064.34	0.0263	0.0238
Earth	-7286-06-20 23:45 J	-939617.73	-939617.51	-939617.28	0.0291	0.0120
Moon	-7286-06-21 03:21 J	-939617.59	-939617.36	-939617.13	0.0291	0.0112 *
Mercury	-7281-01-03 05:31 J	-937960.37	-937960.27	-937960.17	0.0303	0.0200
Mercury	-7281-03-31 18:14 J	-937871.87	-937871.74	-937871.61	0.0303	0.0038
Mercury	-7281-06-28 06:43 J	-937783.34	-937783.22	-937783.10	0.0303	0.0124
Mercury	-7281-09-24 19:12 J	-937694.74	-937694.70	-937694.66	0.0303	0.0283
Venus	-7280-05-09 15:36 J	-937467.95	-937467.85	-937467.74	0.0302	0.0260
Venus	-7280-12-25 20:38 J	-937237.85	-937237.64	-937237.43	0.0301	0.0009
Venus	-7279-08-13 00:00 J	-937007.59	-937007.50	-937007.41	0.0299	0.0268
Earth	-7273-12-16 11:45 J	-934690.25	-934690.01	-934689.77	0.0271	0.0052
Moon	-7273-12-16 12:57 J	-934690.21	-934689.96	-934689.71	0.0271	0.0065 *
Mercury	-7267-10-22 08:52 J	-932554.25	-932554.13	-932553.99	0.0259	0.0188
Mercury	-7266-01-19 05:31 J	-932465.46	-932465.27	-932465.08	0.0259	0.0037
Mercury	-7266-04-18 02:09 J	-932376.57	-932376.41	-932376.23	0.0259	0.0116
Venus	-7265-06-02 12:28 J	-931965.02	-931964.98	-931964.92	0.0260	0.0253
Venus	-7264-01-17 10:04 J	-931736.28	-931736.08	-931735.87	0.0261	0.0083
Venus	-7264-09-03 08:38 J	-931507.34	-931507.14	-931506.94	0.0262	0.0092
Mars	-7253-02-29 10:19 J	-927676.22	-927676.07	-927675.91	0.0302	0.0252
Mercury	-7252-05-22 08:23 J	-927228.23	-927228.15	-927228.07	0.0303	0.0236
Mercury	-7252-08-18 21:07 J	-927139.75	-927139.62	-927139.50	0.0303	0.0073
Mercury	-7252-11-15 09:36 J	-927051.22	-927051.10	-927050.97	0.0303	0.0089
Mercury	-7251-02-11 22:04 J	-926962.65	-926962.58	-926962.51	0.0303	0.0249
Venus	-7251-11-20 02:09 J	-926681.55	-926681.41	-926681.26	0.0302	0.0216
Venus	-7250-07-08 07:12 J	-926451.40	-926451.20	-926450.99	0.0300	0.0052
Mars	-7239-05-15 00:43 J	-922487.57	-922487.47	-922487.33	0.0260	0.0235



Mercury	-7237-03-10 09:07 J	-921822.21	-921822.12	-921822.03	0.0259	0.0225
Mercury	-7237-06-07 05:45 J	-921733.45	-921733.26	-921733.08	0.0259	0.0075
Mercury	-7237-09-04 02:23 J	-921644.59	-921644.40	-921644.22	0.0259	0.0076
Mercury	-7237-12-01 23:02 J	-921555.62	-921555.54	-921555.45	0.0259	0.0229
Venus	-7236-12-13 16:47 J	-921178.89	-921178.80	-921178.69	0.0260	0.0229
Venus	-7235-07-30 14:23 J	-920950.10	-920949.90	-920949.69	0.0261	0.0058
Venus	-7234-03-16 12:57 J	-920721.15	-920720.96	-920720.77	0.0262	0.0116
Moon	-7227-06-22 14:38 J	-918066.14	-918065.89	-918065.64	0.0292	0.0015
Earth	-7227-06-22 14:38 J	-918066.13	-918065.89	-918065.64	0.0292	0.0020 *
Mercury	-7223-10-09 10:33 J	-916496.10	-916496.06	-916496.01	0.0303	0.0280
Mercury	-7222-01-05 23:16 J	-916407.64	-916407.53	-916407.41	0.0304	0.0117
Mercury	-7222-04-04 12:00 J	-916319.13	-916319.00	-916318.87	0.0303	0.0046
Mercury	-7222-07-02 00:28 J	-916230.57	-916230.48	-916230.38	0.0303	0.0207
Venus	-7221-06-01 10:47 J	-915895.22	-915895.05	-915894.88	0.0302	0.0178
Venus	-7220-01-17 15:36 J	-915665.05	-915664.85	-915664.65	0.0300	0.0090
Moon	-7214-12-18 20:38 J	-913138.89	-913138.64	-913138.39	0.0270	0.0024
Earth	-7214-12-18 23:45 J	-913138.75	-913138.51	-913138.26	0.0270	0.0034 *
Mercury	-7208-07-28 09:36 J	-911090.10	-911090.10	-911090.09	0.0259	0.0259
Mercury	-7208-10-25 06:00 J	-911001.42	-911001.25	-911001.07	0.0259	0.0109
Mercury	-7207-01-22 02:52 J	-910912.57	-910912.38	-910912.19	0.0259	0.0042
Mercury	-7207-04-20 23:31 J	-910823.64	-910823.52	-910823.39	0.0259	0.0195
Venus	-7206-06-25 21:50 J	-910392.71	-910392.59	-910392.44	0.0260	0.0202
Venus	-7205-02-09 19:40 J	-910163.89	-910163.68	-910163.46	0.0261	0.0030
Venus	-7205-09-25 18:14 J	-909934.91	-909934.74	-909934.56	0.0263	0.0146
Mercury	-7193-05-25 02:09 J	-905675.52	-905675.41	-905675.30	0.0303	0.0154
Mercury	-7193-08-21 14:38 J	-905587.01	-905586.89	-905586.76	0.0303	0.0013
Mercury	-7193-11-18 03:21 J	-905498.47	-905498.36	-905498.26	0.0303	0.0169
Venus	-7192-12-12 20:38 J	-905108.83	-905108.64	-905108.45	0.0302	0.0136
Venus	-7191-07-31 01:12 J	-904878.63	-904878.45	-904878.26	0.0300	0.0131
Earth	-7185-12-13 02:23 J	-902551.49	-902551.40	-902551.27	0.0273	0.0243

Moon	-7185-12-13 05:16 J	-902551.34	-902551.28	-902551.18	0.0273	0.0256 *
Mercury	-7178-03-14 05:45 J	-900269.41	-900269.26	-900269.10	0.0259	0.0149
Mercury	-7178-06-11 02:23 J	-900180.59	-900180.40	-900180.20	0.0259	0.0006
Mercury	-7178-09-07 23:16 J	-900091.69	-900091.53	-900091.38	0.0259	0.0153
Venus	-7176-01-05 01:40 J	-899606.57	-899606.43	-899606.26	0.0260	0.0178
Venus	-7176-08-21 23:31 J	-899377.74	-899377.52	-899377.31	0.0261	0.0007
Venus	-7175-04-07 21:50 J	-899148.74	-899148.59	-899148.42	0.0262	0.0169
Moon	-7168-06-23 21:36 J	-896514.84	-896514.60	-896514.35	0.0292	0.0073
Earth	-7168-06-24 00:57 J	-896514.69	-896514.46	-896514.21	0.0292	0.0071 *
Mars	-7165-07-25 16:47 J	-895387.03	-895386.80	-895386.55	0.0302	0.0166
Mercury	-7164-10-12 03:50 J	-894943.44	-894943.34	-894943.25	0.0304	0.0205
Mercury	-7163-01-08 16:33 J	-894854.94	-894854.81	-894854.68	0.0304	0.0042
Mercury	-7163-04-07 05:02 J	-894766.41	-894766.29	-894766.17	0.0304	0.0120
Mercury	-7163-07-04 17:31 J	-894677.81	-894677.77	-894677.72	0.0303	0.0280
Venus	-7162-06-25 02:38 J	-894322.58	-894322.39	-894322.19	0.0302	0.0102
Venus	-7161-02-10 06:57 J	-894092.38	-894092.21	-894092.03	0.0300	0.0165
Moon	-7155-12-20 05:31 J	-891587.49	-891587.27	-891587.04	0.0270	0.0104
Earth	-7155-12-20 08:09 J	-891587.38	-891587.16	-891586.93	0.0270	0.0112 *
Mars	-7151-10-09 07:12 J	-890198.41	-890198.20	-890197.95	0.0260	0.0163
Mercury	-7149-07-31 05:45 J	-889537.38	-889537.26	-889537.12	0.0259	0.0187
Mercury	-7149-10-28 02:23 J	-889448.59	-889448.40	-889448.21	0.0259	0.0037
Mercury	-7148-01-24 23:02 J	-889359.71	-889359.54	-889359.37	0.0259	0.0115
Venus	-7147-07-18 06:00 J	-888820.42	-888820.25	-888820.08	0.0260	0.0152
Venus	-7146-03-04 03:36 J	-888591.57	-888591.35	-888591.14	0.0261	0.0021
Venus	-7146-10-19 02:09 J	-888362.55	-888362.41	-888362.27	0.0263	0.0197
Earth	-7139-06-18 04:19 J	-885928.38	-885928.32	-885928.25	0.0290	0.0279
Moon	-7139-06-18 07:55 J	-885928.25	-885928.17	-885928.09	0.0290	0.0271 *
Mercury	-7134-03-01 06:00 J	-884211.32	-884211.25	-884211.18	0.0303	0.0249
Mercury	-7134-05-28 18:43 J	-884122.84	-884122.72	-884122.60	0.0303	0.0086
Mercury	-7134-08-25 07:26 J	-884034.32	-884034.19	-884034.07	0.0303	0.0076

Mercury	-7134-11-21 19:40 J	-883945.75	-883945.68	-883945.59	0.0303	0.0237
Venus	-7132-01-04 10:47 J	-883536.25	-883536.05	-883535.84	0.0301	0.0065
Venus	-7132-08-22 15:07 J	-883306.02	-883305.87	-883305.71	0.0300	0.0201
Earth	-7126-12-15 10:19 J	-881000.26	-881000.07	-880999.87	0.0272	0.0165
Moon	-7126-12-15 13:12 J	-881000.13	-880999.95	-880999.75	0.0272	0.0178 *
Mercury	-7120-12-18 05:16 J	-878805.37	-878805.28	-878805.19	0.0259	0.0229
Mercury	-7119-03-17 01:40 J	-878716.61	-878716.43	-878716.25	0.0259	0.0080
Mercury	-7119-06-13 22:19 J	-878627.76	-878627.57	-878627.39	0.0259	0.0071
Mercury	-7119-09-10 18:43 J	-878538.80	-878538.72	-878538.61	0.0259	0.0223
Venus	-7117-01-28 08:38 J	-878034.32	-878034.14	-878033.95	0.0260	0.0130
Venus	-7117-09-13 06:14 J	-877805.45	-877805.24	-877805.03	0.0261	0.0042
Venus	-7116-04-30 04:47 J	-877576.41	-877576.30	-877576.17	0.0262	0.0218
Moon	-7109-06-25 03:36 J	-874963.54	-874963.35	-874963.14	0.0292	0.0150
Earth	-7109-06-25 06:00 J	-874963.46	-874963.25	-874963.03	0.0292	0.0148 *
Mercury	-7105-10-14 19:55 J	-873390.78	-873390.67	-873390.55	0.0304	0.0142
Mercury	-7104-01-11 08:38 J	-873302.27	-873302.14	-873302.01	0.0304	0.0021
Mercury	-7104-04-09 21:07 J	-873213.72	-873213.62	-873213.51	0.0304	0.0183
Venus	-7103-07-17 15:21 J	-872750.07	-872749.86	-872749.65	0.0302	0.0033
Venus	-7102-03-04 19:12 J	-872519.82	-872519.70	-872519.56	0.0300	0.0232
Earth	-7096-12-21 12:43 J	-870036.14	-870035.97	-870035.77	0.0270	0.0182
Moon	-7096-12-21 14:23 J	-870036.07	-870035.90	-870035.72	0.0270	0.0177 *
Mercury	-7090-08-04 00:57 J	-867984.62	-867984.46	-867984.29	0.0259	0.0122
Mercury	-7090-10-31 21:36 J	-867895.79	-867895.60	-867895.41	0.0259	0.0028
Mercury	-7089-01-28 18:14 J	-867806.88	-867806.74	-867806.60	0.0259	0.0179
Venus	-7088-08-09 11:31 J	-867248.21	-867248.02	-867247.82	0.0260	0.0107
Venus	-7087-03-26 09:07 J	-867019.32	-867019.12	-867018.90	0.0261	0.0068
Venus	-7087-11-10 08:09 J	-866790.24	-866790.16	-866790.08	0.0263	0.0243
Earth	-7080-06-19 06:43 J	-864377.39	-864377.22	-864377.05	0.0290	0.0209
Moon	-7080-06-19 08:38 J	-864377.31	-864377.14	-864376.95	0.0290	0.0204 *
Mars	-7077-12-19 05:31 J	-863098.53	-863098.27	-863097.99	0.0302	0.0110

Mercury	-7075-03-03 21:50 J	-862658.69	-862658.59	-862658.49	0.0303	0.0192
Mercury	-7075-05-31 10:19 J	-862570.19	-862570.07	-862569.94	0.0303	0.0030
Mercury	-7075-08-27 23:02 J	-862481.66	-862481.54	-862481.43	0.0303	0.0133
Mercury	-7075-11-24 11:31 J	-862393.05	-862393.02	-862392.99	0.0303	0.0293
Venus	-7074-06-11 15:36 J	-862193.94	-862193.85	-862193.75	0.0302	0.0271
Venus	-7073-01-27 21:21 J	-861963.82	-861963.61	-861963.40	0.0301	0.0006
Venus	-7073-09-14 01:26 J	-861733.54	-861733.44	-861733.34	0.0300	0.0264
Moon	-7067-12-16 12:28 J	-859449.21	-859448.98	-859448.75	0.0272	0.0108
Earth	-7067-12-16 13:12 J	-859449.17	-859448.95	-859448.72	0.0272	0.0098 *
Mars	-7062-03-05 00:14 J	-857909.75	-857909.49	-857909.22	0.0260	0.0111
Mercury	-7061-12-21 00:00 J	-857252.64	-857252.50	-857252.35	0.0258	0.0167
Mercury	-7060-03-19 20:38 J	-857163.84	-857163.64	-857163.45	0.0258	0.0019
Mercury	-7060-06-16 17:02 J	-857074.95	-857074.79	-857074.62	0.0258	0.0133
Venus	-7059-07-05 17:02 J	-856690.82	-856690.79	-856690.75	0.0259	0.0255
Venus	-7058-02-19 13:40 J	-856462.13	-856461.93	-856461.73	0.0260	0.0086
Venus	-7058-10-06 11:16 J	-856233.23	-856233.03	-856232.83	0.0261	0.0087
Earth	-7050-06-27 06:00 J	-853412.41	-853412.25	-853412.08	0.0292	0.0213
Moon	-7050-06-27 07:55 J	-853412.32	-853412.17	-853412.00	0.0292	0.0212 *
Mercury	-7046-07-21 22:19 J	-851926.63	-851926.57	-851926.50	0.0304	0.0254
Mercury	-7046-10-18 11:16 J	-851838.16	-851838.03	-851837.91	0.0304	0.0091
Mercury	-7045-01-14 23:45 J	-851749.63	-851749.51	-851749.38	0.0304	0.0072
Mercury	-7045-04-12 12:14 J	-851661.06	-851660.99	-851660.90	0.0304	0.0234
Venus	-7045-12-21 18:00 J	-851407.87	-851407.75	-851407.62	0.0303	0.0244
Venus	-7044-08-08 23:45 J	-851177.72	-851177.51	-851177.30	0.0302	0.0027
Venus	-7043-03-27 03:36 J	-850947.39	-850947.35	-850947.30	0.0300	0.0291
Earth	-7037-12-22 13:26 J	-848485.04	-848484.94	-848484.83	0.0270	0.0242
Moon	-7037-12-22 17:02 J	-848484.90	-848484.79	-848484.67	0.0270	0.0238 *
Mercury	-7031-05-09 22:33 J	-846520.66	-846520.56	-846520.45	0.0259	0.0215
Mercury	-7031-08-06 19:12 J	-846431.89	-846431.70	-846431.52	0.0259	0.0065
Mercury	-7031-11-03 15:36 J	-846343.03	-846342.85	-846342.66	0.0259	0.0085

Mercury	-7030-01-31 12:28 J	-846254.06	-846253.98	-846253.91	0.0259	0.0236
Venus	-7029-01-15 18:43 J	-845904.80	-845904.72	-845904.62	0.0259	0.0234
Venus	-7029-08-31 15:21 J	-845676.06	-845675.86	-845675.64	0.0260	0.0065
Venus	-7028-04-17 13:12 J	-845447.14	-845446.95	-845446.76	0.0261	0.0110
Moon	-7021-06-20 01:26 J	-842826.65	-842826.44	-842826.22	0.0290	0.0151
Earth	-7021-06-20 04:04 J	-842826.53	-842826.33	-842826.11	0.0290	0.0150 *
Mercury	-7016-03-06 12:43 J	-841106.09	-841105.97	-841105.86	0.0303	0.0144
Mercury	-7016-06-03 01:26 J	-841017.57	-841017.44	-841017.31	0.0303	0.0020
Mercury	-7016-08-30 13:55 J	-840929.02	-840928.92	-840928.82	0.0303	0.0180
Venus	-7015-07-03 23:02 J	-840621.68	-840621.54	-840621.38	0.0302	0.0214
Venus	-7014-02-19 04:47 J	-840391.50	-840391.30	-840391.09	0.0301	0.0058
Moon	-7008-12-17 08:52 J	-837898.37	-837898.13	-837897.89	0.0272	0.0049
Earth	-7008-12-17 12:28 J	-837898.22	-837897.98	-837897.73	0.0272	0.0039 *
Mercury	-7002-12-24 17:45 J	-835699.93	-835699.76	-835699.58	0.0258	0.0112
Mercury	-7001-03-22 14:23 J	-835611.09	-835610.90	-835610.71	0.0258	0.0037
Mercury	-7001-06-19 11:02 J	-835522.17	-835522.04	-835521.91	0.0258	0.0188

# 7TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 7th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Venus	-7000-07-27 20:09 J	-835118.76	-835118.66	-835118.53	0.0259	0.0214		
Venus	-6999-03-13 17:02 J	-834890.00	-834889.79	-834889.58	0.0260	0.0044		
Venus	-6999-10-28 14:38 J	-834661.07	-834660.89	-834660.70	0.0261	0.0129		

Earth	-6991-06-28 02:23 J	-831861.48	-831861.40	-831861.30	0.0292	0.0271
Moon	-6991-06-28 05:45 J	-831861.34	-831861.26	-831861.14	0.0292	0.0267 *
Mars	-6988-05-13 08:23 J	-830811.41	-830811.15	-830810.87	0.0302	0.0115
Mercury	-6987-07-24 12:57 J	-830374.05	-830373.96	-830373.87	0.0304	0.0211
Mercury	-6987-10-21 01:40 J	-830285.56	-830285.43	-830285.30	0.0304	0.0048
Mercury	-6986-01-17 14:23 J	-830197.02	-830196.90	-830196.78	0.0304	0.0115
Mercury	-6986-04-16 02:52 J	-830108.43	-830108.38	-830108.33	0.0304	0.0276
Venus	-6985-01-14 00:14 J	-829835.65	-829835.49	-829835.33	0.0303	0.0189
Venus	-6985-08-31 05:45 J	-829605.46	-829605.26	-829605.06	0.0302	0.0082
Mars	-6974-07-29 01:12 J	-825621.72	-825621.45	-825621.16	0.0260	0.0084
Mercury	-6972-05-12 16:04 J	-824967.98	-824967.83	-824967.68	0.0258	0.0163
Mercury	-6972-08-09 12:28 J	-824879.17	-824878.98	-824878.79	0.0258	0.0014
Mercury	-6972-11-06 09:07 J	-824790.28	-824790.12	-824789.96	0.0258	0.0137
Venus	-6970-02-06 21:07 J	-824332.75	-824332.62	-824332.47	0.0259	0.0195
Venus	-6970-09-23 18:00 J	-824103.96	-824103.75	-824103.53	0.0260	0.0024
Venus	-6969-05-09 15:36 J	-823875.01	-823874.85	-823874.67	0.0261	0.0151
Moon	-6962-06-21 20:09 J	-821275.88	-821275.66	-821275.43	0.0290	0.0104
Earth	-6962-06-21 23:16 J	-821275.76	-821275.53	-821275.30	0.0290	0.0096 *
Mercury	-6958-12-11 14:09 J	-819641.97	-819641.91	-819641.85	0.0303	0.0267
Mercury	-6957-03-09 02:52 J	-819553.50	-819553.38	-819553.26	0.0303	0.0104
Mercury	-6957-06-05 15:36 J	-819464.98	-819464.85	-819464.72	0.0303	0.0058
Mercury	-6957-09-02 04:04 J	-819376.41	-819376.33	-819376.24	0.0303	0.0219
Venus	-6956-07-26 04:04 J	-819049.50	-819049.33	-819049.15	0.0302	0.0161
Venus	-6955-03-13 09:36 J	-818819.30	-818819.10	-818818.90	0.0301	0.0109
Moon	-6949-12-18 07:40 J	-816347.42	-816347.18	-816346.94	0.0272	0.0008
Earth	-6949-12-18 08:23 J	-816347.40	-816347.15	-816346.91	0.0272	0.0014 *
Mercury	-6943-09-29 14:38 J	-814235.99	-814235.89	-814235.78	0.0258	0.0210
Mercury	-6943-12-27 11:02 J	-814147.22	-814147.04	-814146.85	0.0258	0.0062
Mercury	-6942-03-26 07:26 J	-814058.36	-814058.19	-814058.00	0.0258	0.0088
Mercury	-6942-06-23 04:04 J	-813969.40	-813969.33	-813969.25	0.0258	0.0238

Venus	-6941-08-18 22:47 J	-813546.71	-813546.55	-813546.39	0.0259	0.0174
Venus	-6940-04-04 19:26 J	-813317.90	-813317.69	-813317.48	0.0260	0.0004
Venus	-6940-11-19 17:02 J	-813088.95	-813088.79	-813088.63	0.0261	0.0169
Mercury	-6928-07-27 03:07 J	-808821.48	-808821.37	-808821.27	0.0304	0.0173
Mercury	-6928-10-23 15:50 J	-808732.97	-808732.84	-808732.71	0.0304	0.0013
Mercury	-6927-01-20 04:19 J	-808644.43	-808644.32	-808644.21	0.0304	0.0152
Venus	-6926-02-05 04:19 J	-808263.50	-808263.32	-808263.13	0.0303	0.0138
Venus	-6926-09-23 09:36 J	-808033.28	-808033.10	-808032.90	0.0301	0.0134
Mercury	-6913-05-15 08:52 J	-803415.30	-803415.13	-803414.95	0.0258	0.0115
Mercury	-6913-08-12 05:31 J	-803326.46	-803326.27	-803326.08	0.0258	0.0035
Mercury	-6913-11-09 01:55 J	-803237.55	-803237.42	-803237.28	0.0258	0.0185
Venus	-6911-02-28 23:02 J	-802760.70	-802760.54	-802760.36	0.0259	0.0156
Venus	-6911-10-15 19:55 J	-802531.88	-802531.67	-802531.45	0.0260	0.0016
Venus	-6910-06-01 17:45 J	-802302.91	-802302.76	-802302.61	0.0262	0.0190
Earth	-6903-06-22 16:47 J	-799725.04	-799724.80	-799724.55	0.0290	0.0046
Moon	-6903-06-22 18:43 J	-799724.95	-799724.72	-799724.48	0.0290	0.0057 *
Mars	-6900-10-05 11:45 J	-798524.27	-798524.01	-798523.73	0.0302	0.0122
Mercury	-6899-12-14 04:04 J	-798089.41	-798089.33	-798089.24	0.0303	0.0231
Mercury	-6898-03-12 16:47 J	-798000.92	-798000.80	-798000.67	0.0303	0.0069
Mercury	-6898-06-09 05:31 J	-797912.39	-797912.27	-797912.15	0.0303	0.0095
Mercury	-6898-09-05 18:00 J	-797823.81	-797823.75	-797823.68	0.0303	0.0255
Venus	-6897-08-17 08:09 J	-797477.36	-797477.16	-797476.97	0.0302	0.0110
Venus	-6896-04-04 13:12 J	-797247.13	-797246.95	-797246.77	0.0301	0.0159
Earth	-6890-12-20 02:23 J	-794796.63	-794796.40	-794796.16	0.0272	0.0062
Moon	-6890-12-20 06:00 J	-794796.48	-794796.25	-794796.01	0.0272	0.0062 *
Mars	-6886-12-22 00:57 J	-793333.74	-793333.46	-793333.17	0.0260	0.0056
Mercury	-6884-10-02 07:40 J	-792683.33	-792683.18	-792683.03	0.0258	0.0162
Mercury	-6884-12-30 04:04 J	-792594.52	-792594.33	-792594.14	0.0258	0.0013
Mercury	-6883-03-29 00:28 J	-792505.64	-792505.48	-792505.31	0.0258	0.0137
Venus	-6882-09-11 00:43 J	-791974.65	-791974.47	-791974.29	0.0259	0.0135

Venus	-6881-04-26 21:21 J	-791745.82	-791745.61	-791745.39	0.0260	0.0036
Venus	-6881-12-11 19:12 J	-791516.82	-791516.70	-791516.56	0.0261	0.0210
Mercury	-6869-05-02 04:19 J	-787357.34	-787357.32	-787357.31	0.0304	0.0300
Mercury	-6869-07-29 17:02 J	-787268.91	-787268.79	-787268.68	0.0304	0.0137
Mercury	-6869-10-26 05:45 J	-787180.39	-787180.26	-787180.13	0.0304	0.0026
Mercury	-6868-01-22 18:14 J	-787091.84	-787091.74	-787091.64	0.0304	0.0187
Venus	-6867-02-27 07:55 J	-786691.37	-786691.17	-786690.97	0.0303	0.0088
Venus	-6867-10-15 12:57 J	-786461.12	-786460.96	-786460.79	0.0301	0.0182
Moon	-6861-12-13 12:00 J	-784210.10	-784210.00	-784209.87	0.0274	0.0243
Earth	-6861-12-13 16:04 J	-784209.94	-784209.83	-784209.71	0.0274	0.0241 *
Mercury	-6854-02-19 05:16 J	-781951.38	-781951.28	-781951.17	0.0258	0.0215
Mercury	-6854-05-19 01:40 J	-781862.61	-781862.43	-781862.24	0.0258	0.0067
Mercury	-6854-08-15 22:19 J	-781773.75	-781773.57	-781773.39	0.0258	0.0083
Mercury	-6854-11-12 18:43 J	-781684.79	-781684.72	-781684.63	0.0258	0.0234
Venus	-6852-03-23 00:57 J	-781188.65	-781188.46	-781188.27	0.0259	0.0117
Venus	-6852-11-06 21:50 J	-780959.80	-780959.59	-780959.38	0.0260	0.0055
Venus	-6851-06-23 19:40 J	-780730.77	-780730.68	-780730.57	0.0262	0.0230
Earth	-6844-06-23 10:47 J	-778174.29	-778174.05	-778173.80	0.0290	0.0007
Moon	-6844-06-23 14:23 J	-778174.15	-778173.90	-778173.66	0.0290	0.0009 *
Mercury	-6840-12-16 18:00 J	-776536.84	-776536.75	-776536.65	0.0303	0.0195
Mercury	-6839-03-15 06:57 J	-776448.34	-776448.21	-776448.09	0.0303	0.0033
Mercury	-6839-06-11 19:26 J	-776359.80	-776359.69	-776359.57	0.0303	0.0130
Mercury	-6839-09-08 07:55 J	-776271.20	-776271.17	-776271.13	0.0303	0.0290
Venus	-6838-09-09 11:31 J	-775905.22	-775905.02	-775904.81	0.0302	0.0060
Venus	-6837-04-26 16:33 J	-775674.96	-775674.81	-775674.66	0.0301	0.0209
Earth	-6831-12-20 20:09 J	-773245.88	-773245.66	-773245.43	0.0272	0.0111
Moon	-6831-12-20 21:50 J	-773245.81	-773245.59	-773245.35	0.0272	0.0116 *
Mercury	-6825-10-05 00:28 J	-771130.65	-771130.48	-771130.30	0.0259	0.0113
Mercury	-6824-01-01 21:07 J	-771041.81	-771041.62	-771041.43	0.0258	0.0037
Mercury	-6824-03-31 17:31 J	-770952.90	-770952.77	-770952.63	0.0258	0.0187



Venus	-6823-10-03 02:52 J	-770402.58	-770402.38	-770402.18	0.0259	0.0096
Venus	-6822-05-19 23:45 J	-770173.71	-770173.51	-770173.30	0.0260	0.0076
Venus	-6821-01-03 21:50 J	-769944.64	-769944.59	-769944.52	0.0261	0.0250
Mars	-6811-02-27 05:31 J	-766237.52	-766237.27	-766237.01	0.0302	0.0139
Mercury	-6810-05-05 18:14 J	-765804.80	-765804.74	-765804.67	0.0304	0.0261
Mercury	-6810-08-02 07:12 J	-765716.32	-765716.20	-765716.08	0.0304	0.0098
Mercury	-6810-10-29 19:55 J	-765627.80	-765627.67	-765627.55	0.0304	0.0065
Mercury	-6809-01-26 08:23 J	-765539.23	-765539.15	-765539.06	0.0304	0.0225
Venus	-6808-03-21 12:14 J	-765119.20	-765118.99	-765118.78	0.0302	0.0035
Venus	-6808-11-06 17:02 J	-764888.92	-764888.79	-764888.66	0.0301	0.0233
Moon	-6802-12-15 08:52 J	-762659.30	-762659.13	-762658.96	0.0274	0.0191
Earth	-6802-12-15 10:04 J	-762659.25	-762659.08	-762658.91	0.0274	0.0192 *
Mars	-6797-05-15 16:47 J	-761046.09	-761045.80	-761045.50	0.0260	0.0040
Mercury	-6795-02-21 22:19 J	-760398.71	-760398.57	-760398.42	0.0259	0.0166
Mercury	-6795-05-21 18:57 J	-760309.90	-760309.71	-760309.52	0.0258	0.0017
Mercury	-6795-08-18 15:21 J	-760221.02	-760220.86	-760220.69	0.0258	0.0134
Venus	-6794-08-29 06:57 J	-759845.26	-759845.21	-759845.13	0.0259	0.0246
Venus	-6793-04-14 03:36 J	-759616.55	-759616.35	-759616.14	0.0260	0.0077
Venus	-6793-11-29 00:43 J	-759387.66	-759387.47	-759387.27	0.0261	0.0096
Moon	-6785-06-24 07:12 J	-756623.45	-756623.20	-756622.95	0.0290	0.0052
Earth	-6785-06-24 07:55 J	-756623.40	-756623.17	-756622.93	0.0290	0.0067 *
Mercury	-6781-12-19 08:23 J	-754984.26	-754984.15	-754984.03	0.0303	0.0153
Mercury	-6780-03-17 21:07 J	-754895.75	-754895.62	-754895.49	0.0303	0.0013
Mercury	-6780-06-14 09:50 J	-754807.20	-754807.09	-754806.99	0.0303	0.0171
Venus	-6779-02-13 10:19 J	-754563.14	-754563.07	-754562.98	0.0303	0.0279
Venus	-6779-10-01 16:47 J	-754333.01	-754332.80	-754332.59	0.0302	0.0009
Venus	-6778-05-19 21:07 J	-754102.71	-754102.62	-754102.51	0.0300	0.0261
Moon	-6772-12-21 11:31 J	-751695.21	-751695.02	-751694.82	0.0272	0.0172
Earth	-6772-12-21 14:38 J	-751695.08	-751694.89	-751694.69	0.0272	0.0161 *
Mercury	-6766-07-11 21:21 J	-749666.71	-749666.61	-749666.49	0.0259	0.0209

Mercury	-6766-10-08 18:00 J	-749577.93	-749577.75	-749577.56	0.0259	0.0060
Mercury	-6765-01-05 14:23 J	-749489.07	-749488.90	-749488.71	0.0259	0.0090
Mercury	-6765-04-03 11:02 J	-749400.10	-749400.04	-749399.97	0.0259	0.0241
Venus	-6764-03-10 09:36 J	-749059.19	-749059.10	-749058.98	0.0259	0.0223
Venus	-6764-10-25 06:14 J	-748830.45	-748830.24	-748830.03	0.0260	0.0053
Venus	-6763-06-11 03:21 J	-748601.55	-748601.36	-748601.17	0.0261	0.0119
Earth	-6756-06-18 06:57 J	-746037.24	-746037.21	-746037.17	0.0287	0.0283
Mercury	-6751-05-08 09:07 J	-744252.21	-744252.12	-744252.03	0.0303	0.0216
Mercury	-6751-08-04 21:50 J	-744163.72	-744163.59	-744163.47	0.0304	0.0054
Mercury	-6751-11-01 10:19 J	-744075.19	-744075.07	-744074.95	0.0304	0.0108
Mercury	-6750-01-28 22:47 J	-743986.60	-743986.55	-743986.49	0.0304	0.0268
Venus	-6750-08-26 11:31 J	-743777.12	-743777.02	-743776.89	0.0303	0.0254
Venus	-6749-04-12 18:00 J	-743546.96	-743546.75	-743546.54	0.0302	0.0020
Venus	-6749-11-28 22:19 J	-743316.62	-743316.57	-743316.50	0.0301	0.0287
Earth	-6743-12-16 05:31 J	-741108.48	-741108.27	-741108.06	0.0274	0.0140
Moon	-6743-12-16 08:23 J	-741108.35	-741108.15	-741107.93	0.0274	0.0133 *
Mercury	-6736-02-24 16:04 J	-738846.00	-738845.83	-738845.65	0.0259	0.0111
Mercury	-6736-05-24 12:43 J	-738757.16	-738756.97	-738756.78	0.0259	0.0039
Mercury	-6736-08-21 09:07 J	-738668.24	-738668.12	-738667.98	0.0259	0.0189
Venus	-6735-09-20 11:02 J	-738273.17	-738273.04	-738272.91	0.0259	0.0203
Venus	-6734-05-07 07:26 J	-738044.40	-738044.19	-738043.97	0.0260	0.0034
Venus	-6734-12-22 05:02 J	-737815.47	-737815.29	-737815.11	0.0261	0.0140
Moon	-6726-06-26 04:47 J	-735072.52	-735072.30	-735072.07	0.0290	0.0119
Earth	-6726-06-26 08:23 J	-735072.36	-735072.15	-735071.93	0.0290	0.0135 *
Mars	-6723-07-22 23:45 J	-733949.78	-733949.51	-733949.24	0.0301	0.0117
Mercury	-6722-09-25 10:33 J	-733520.11	-733520.06	-733519.99	0.0303	0.0267
Mercury	-6722-12-22 23:31 J	-733431.64	-733431.52	-733431.40	0.0303	0.0104
Mercury	-6721-03-20 12:00 J	-733343.12	-733343.00	-733342.87	0.0303	0.0059
Mercury	-6721-06-17 00:43 J	-733254.56	-733254.47	-733254.38	0.0303	0.0218
Venus	-6720-03-07 17:45 J	-732990.90	-732990.76	-732990.61	0.0303	0.0221

Venus	-6720-10-23 23:45 J	-732760.72	-732760.51	-732760.30	0.0302	0.0051
Moon	-6713-12-22 09:07 J	-730144.24	-730144.12	-730143.99	0.0272	0.0230
Earth	-6713-12-22 11:16 J	-730144.16	-730144.03	-730143.87	0.0272	0.0218 *
Mars	-6709-10-09 00:14 J	-728757.78	-728757.49	-728757.19	0.0261	0.0005
Mercury	-6707-07-14 15:36 J	-728114.00	-728113.85	-728113.69	0.0259	0.0151
Mercury	-6707-10-11 12:14 J	-728025.18	-728024.99	-728024.80	0.0259	0.0004
Mercury	-6706-01-08 08:38 J	-727936.29	-727936.14	-727935.98	0.0259	0.0149
Venus	-6705-04-01 14:23 J	-727487.05	-727486.90	-727486.74	0.0259	0.0179
Venus	-6705-11-16 11:02 J	-727258.25	-727258.04	-727257.82	0.0260	0.0009
Venus	-6704-07-03 08:23 J	-727029.31	-727029.15	-727028.98	0.0261	0.0165
Earth	-6697-06-19 10:47 J	-724486.21	-724486.05	-724485.88	0.0287	0.0208
Moon	-6697-06-19 14:23 J	-724486.05	-724485.90	-724485.74	0.0287	0.0223 *
Mercury	-6692-05-11 00:28 J	-722699.58	-722699.48	-722699.37	0.0303	0.0160
Mercury	-6692-08-07 13:12 J	-722611.08	-722610.95	-722610.82	0.0303	0.0007
Mercury	-6692-11-04 01:55 J	-722522.53	-722522.42	-722522.31	0.0303	0.0162
Venus	-6691-09-17 21:07 J	-722204.78	-722204.62	-722204.45	0.0303	0.0190
Venus	-6690-05-06 02:52 J	-721974.58	-721974.38	-721974.18	0.0302	0.0082
Earth	-6684-12-17 03:50 J	-719557.57	-719557.34	-719557.10	0.0274	0.0081
Moon	-6684-12-17 06:28 J	-719557.46	-719557.23	-719556.98	0.0274	0.0073 *
Mercury	-6678-12-01 14:09 J	-717382.03	-717381.91	-717381.79	0.0259	0.0200
Mercury	-6677-02-28 10:33 J	-717293.24	-717293.06	-717292.87	0.0259	0.0051
Mercury	-6677-05-27 07:12 J	-717204.37	-717204.20	-717204.02	0.0259	0.0099
Mercury	-6677-08-24 03:36 J	-717115.38	-717115.35	-717115.29	0.0259	0.0251
Venus	-6676-10-12 16:04 J	-716700.99	-716700.83	-716700.65	0.0259	0.0158
Venus	-6675-05-29 13:12 J	-716472.17	-716471.95	-716471.74	0.0260	0.0013
Venus	-6674-01-13 11:02 J	-716243.18	-716243.04	-716242.89	0.0261	0.0188
Moon	-6667-06-27 12:28 J	-713521.14	-713520.98	-713520.81	0.0290	0.0201
Earth	-6667-06-27 13:55 J	-713521.08	-713520.92	-713520.75	0.0290	0.0215 *
Mercury	-6663-09-28 02:23 J	-711967.49	-711967.40	-711967.30	0.0303	0.0208
Mercury	-6663-12-25 15:07 J	-711879.00	-711878.87	-711878.74	0.0303	0.0047

Mercury	-6662-03-24 03:50 J	-711790.46	-711790.34	-711790.22	0.0303	0.0114
Mercury	-6662-06-20 16:19 J	-711701.87	-711701.82	-711701.77	0.0303	0.0274
Venus	-6661-03-30 04:04 J	-711418.51	-711418.33	-711418.15	0.0302	0.0156
Venus	-6661-11-15 09:36 J	-711188.29	-711188.10	-711187.90	0.0301	0.0115
Mercury	-6648-04-19 14:09 J	-706649.98	-706649.91	-706649.83	0.0259	0.0236
Mercury	-6648-07-17 10:33 J	-706561.23	-706561.06	-706560.87	0.0259	0.0088
Mercury	-6648-10-14 07:12 J	-706472.38	-706472.20	-706472.01	0.0259	0.0063
Mercury	-6647-01-11 03:50 J	-706383.44	-706383.34	-706383.23	0.0259	0.0214
Venus	-6646-04-24 20:38 J	-705914.82	-705914.64	-705914.45	0.0260	0.0131
Venus	-6646-12-09 17:45 J	-705685.97	-705685.76	-705685.55	0.0260	0.0041
Venus	-6645-07-25 15:36 J	-705456.97	-705456.85	-705456.73	0.0261	0.0215
Earth	-6638-06-21 18:57 J	-702934.93	-702934.71	-702934.48	0.0287	0.0123
Moon	-6638-06-21 20:23 J	-702934.87	-702934.65	-702934.42	0.0287	0.0138 *
Mars	-6635-12-16 09:21 J	-701661.39	-701661.11	-701660.82	0.0301	0.0056
Mercury	-6633-02-15 04:04 J	-701235.39	-701235.33	-701235.26	0.0303	0.0257
Mercury	-6633-05-13 16:47 J	-701146.92	-701146.80	-701146.67	0.0303	0.0096
Mercury	-6633-08-10 05:31 J	-701058.40	-701058.27	-701058.14	0.0303	0.0066
Mercury	-6633-11-06 18:00 J	-700969.83	-700969.75	-700969.66	0.0303	0.0225
Venus	-6632-10-10 09:36 J	-700632.29	-700632.10	-700631.91	0.0302	0.0120
Venus	-6631-05-28 14:52 J	-700402.06	-700401.88	-700401.70	0.0301	0.0150
Moon	-6625-12-18 04:33 J	-698006.57	-698006.31	-698006.06	0.0274	0.0005
Earth	-6625-12-18 06:00 J	-698006.49	-698006.25	-698006.01	0.0274	0.0013 *
Mars	-6620-03-04 09:36 J	-696469.39	-696469.10	-696468.81	0.0261	0.0048
Mercury	-6619-12-04 09:36 J	-695829.26	-695829.10	-695828.94	0.0259	0.0133
Mercury	-6618-03-03 06:00 J	-695740.44	-695740.25	-695740.05	0.0259	0.0018
Mercury	-6618-05-31 02:52 J	-695651.53	-695651.38	-695651.24	0.0259	0.0167
Venus	-6617-11-03 23:16 J	-695128.72	-695128.53	-695128.33	0.0260	0.0109
Venus	-6616-06-20 20:38 J	-694899.85	-694899.64	-694899.43	0.0261	0.0064
Venus	-6615-02-04 18:43 J	-694670.80	-694670.72	-694670.63	0.0262	0.0239
Mercury	-6604-07-04 06:28 J	-690503.24	-690503.23	-690503.21	0.0303	0.0299

Mercury	-6604-09-30 19:12 J	-690414.81	-690414.70	-690414.58	0.0303	0.0138
Mercury	-6604-12-28 07:55 J	-690326.30	-690326.17	-690326.04	0.0303	0.0023
Mercury	-6603-03-26 20:23 J	-690237.75	-690237.65	-690237.55	0.0303	0.0183
Venus	-6602-04-22 18:14 J	-689845.94	-689845.74	-689845.54	0.0302	0.0082
Venus	-6602-12-08 23:16 J	-689615.69	-689615.53	-689615.36	0.0301	0.0187
Mercury	-6589-04-22 10:04 J	-685097.22	-685097.08	-685096.93	0.0260	0.0167
Mercury	-6589-07-20 06:43 J	-685008.42	-685008.22	-685008.03	0.0260	0.0018
Mercury	-6589-10-17 03:07 J	-684919.53	-684919.37	-684919.20	0.0260	0.0135
Venus	-6588-09-30 08:09 J	-684571.21	-684571.16	-684571.11	0.0260	0.0250
Venus	-6587-05-17 04:47 J	-684342.50	-684342.30	-684342.10	0.0260	0.0080
Venus	-6586-01-01 02:23 J	-684113.60	-684113.40	-684113.20	0.0261	0.0093
Moon	-6579-06-23 05:31 J	-681383.52	-681383.27	-681383.02	0.0287	0.0043
Earth	-6579-06-23 08:38 J	-681383.39	-681383.14	-681382.90	0.0287	0.0026 *
Mercury	-6574-02-17 21:21 J	-679682.71	-679682.61	-679682.50	0.0303	0.0180
Mercury	-6574-05-17 10:04 J	-679594.21	-679594.08	-679593.95	0.0303	0.0020
Mercury	-6574-08-13 22:33 J	-679505.67	-679505.56	-679505.44	0.0303	0.0141
Mercury	-6574-11-10 11:02 J	-679417.05	-679417.04	-679417.02	0.0303	0.0299
Venus	-6573-11-02 01:26 J	-679059.65	-679059.44	-679059.23	0.0302	0.0043
Venus	-6572-06-20 06:14 J	-678829.38	-678829.24	-678829.10	0.0301	0.0225
Moon	-6566-12-20 08:09 J	-676455.39	-676455.16	-676454.92	0.0274	0.0074
Earth	-6566-12-20 11:45 J	-676455.24	-676455.01	-676454.77	0.0274	0.0062 *
Mercury	-6560-09-09 09:21 J	-674365.22	-674365.11	-674364.99	0.0259	0.0209
Mercury	-6560-12-07 06:00 J	-674276.44	-674276.25	-674276.07	0.0259	0.0060
Mercury	-6559-03-06 02:23 J	-674187.57	-674187.40	-674187.21	0.0259	0.0092
Mercury	-6559-06-02 23:16 J	-674098.59	-674098.53	-674098.46	0.0259	0.0243
Venus	-6558-04-12 11:31 J	-673785.12	-673785.02	-673784.92	0.0260	0.0227
Venus	-6558-11-27 08:23 J	-673556.36	-673556.15	-673555.94	0.0260	0.0056
Venus	-6557-07-13 06:00 J	-673327.44	-673327.25	-673327.06	0.0261	0.0117
Mars	-6546-05-13 00:28 J	-669371.77	-669371.48	-669371.19	0.0301	0.0049
Mercury	-6545-07-07 00:00 J	-668950.58	-668950.50	-668950.41	0.0303	0.0219

Mercury	-6545-10-03 12:43 J	-668862.09	-668861.97	-668861.84	0.0303	0.0058
Mercury	-6545-12-31 01:26 J	-668773.56	-668773.44	-668773.32	0.0303	0.0102
Mercury	-6544-03-29 13:55 J	-668684.98	-668684.92	-668684.86	0.0303	0.0261
Venus	-6544-09-27 05:02 J	-668503.37	-668503.29	-668503.19	0.0302	0.0275
Venus	-6543-05-15 11:16 J	-668273.24	-668273.03	-668272.82	0.0302	0.0003
Venus	-6543-12-31 15:36 J	-668042.94	-668042.85	-668042.74	0.0300	0.0264
Earth	-6537-12-14 12:14 J	-665868.13	-665867.99	-665867.83	0.0276	0.0219
Moon	-6537-12-14 16:04 J	-665867.98	-665867.83	-665867.66	0.0276	0.0209 *
Mars	-6532-07-29 15:50 J	-664180.09	-664179.84	-664179.58	0.0262	0.0129
Mercury	-6530-01-27 10:04 J	-663633.14	-663633.08	-663633.00	0.0260	0.0240
Mercury	-6530-04-26 06:43 J	-663544.39	-663544.22	-663544.04	0.0260	0.0091
Mercury	-6530-07-24 03:21 J	-663455.54	-663455.36	-663455.17	0.0260	0.0061
Mercury	-6530-10-21 00:14 J	-663366.60	-663366.49	-663366.38	0.0260	0.0212
Venus	-6529-10-22 17:16 J	-662998.91	-662998.78	-662998.63	0.0260	0.0197
Venus	-6528-06-08 14:23 J	-662770.11	-662769.90	-662769.69	0.0261	0.0026
Venus	-6527-01-23 12:14 J	-662541.16	-662540.99	-662540.81	0.0261	0.0149
Moon	-6520-06-24 22:33 J	-659831.79	-659831.56	-659831.32	0.0288	0.0063
Earth	-6520-06-25 01:55 J	-659831.66	-659831.42	-659831.19	0.0288	0.0079 *
Mercury	-6516-11-24 02:52 J	-658218.45	-658218.38	-658218.31	0.0302	0.0255
Mercury	-6515-02-20 15:36 J	-658129.97	-658129.85	-658129.73	0.0302	0.0094
Mercury	-6515-05-20 04:04 J	-658041.45	-658041.33	-658041.20	0.0303	0.0067
Mercury	-6515-08-16 16:33 J	-657952.89	-657952.81	-657952.72	0.0303	0.0225
Venus	-6514-04-09 14:52 J	-657717.00	-657716.88	-657716.73	0.0302	0.0231
Venus	-6514-11-25 20:38 J	-657486.85	-657486.64	-657486.43	0.0301	0.0041
Moon	-6507-12-21 21:07 J	-654903.81	-654903.62	-654903.42	0.0273	0.0159
Earth	-6507-12-21 21:36 J	-654903.80	-654903.60	-654903.38	0.0273	0.0146 *
Mercury	-6501-09-12 06:28 J	-652812.39	-652812.23	-652812.06	0.0260	0.0131
Mercury	-6501-12-10 03:07 J	-652723.56	-652723.37	-652723.18	0.0259	0.0020
Mercury	-6500-03-08 23:45 J	-652634.65	-652634.51	-652634.36	0.0259	0.0171
Venus	-6499-05-04 21:21 J	-652212.76	-652212.61	-652212.45	0.0260	0.0173

Venus	-6499-12-19 18:43 J	-651983.93	-651983.72	-651983.51	0.0261	0.0001
Venus	-6498-08-05 16:33 J	-651754.96	-651754.81	-651754.64	0.0261	0.0174
Earth	-6491-06-19 10:19 J	-649245.17	-649245.07	-649244.94	0.0287	0.0253
Moon	-6491-06-19 13:12 J	-649245.02	-649244.95	-649244.85	0.0287	0.0268 *
Mercury	-6486-04-13 05:31 J	-647486.30	-647486.27	-647486.23	0.0302	0.0292
Mercury	-6486-07-10 18:14 J	-647397.85	-647397.74	-647397.62	0.0303	0.0131
Mercury	-6486-10-07 06:57 J	-647309.34	-647309.21	-647309.08	0.0303	0.0030
Mercury	-6485-01-03 19:26 J	-647220.78	-647220.69	-647220.59	0.0303	0.0189
Venus	-6485-10-20 01:26 J	-646930.60	-646930.44	-646930.27	0.0302	0.0189
Venus	-6484-06-07 06:57 J	-646700.41	-646700.21	-646700.00	0.0301	0.0083
Earth	-6478-12-16 23:31 J	-644316.72	-644316.52	-644316.29	0.0275	0.0132
Moon	-6478-12-17 00:14 J	-644316.71	-644316.49	-644316.26	0.0275	0.0119 *
Mercury	-6471-01-30 07:40 J	-642080.33	-642080.18	-642080.03	0.0260	0.0159
Mercury	-6471-04-29 04:19 J	-641991.51	-641991.32	-641991.13	0.0260	0.0009
Mercury	-6471-07-27 00:43 J	-641902.62	-641902.47	-641902.30	0.0260	0.0143
Venus	-6470-11-15 03:50 J	-641426.51	-641426.34	-641426.15	0.0260	0.0142
Venus	-6469-07-01 01:26 J	-641197.66	-641197.44	-641197.23	0.0261	0.0031
Venus	-6468-02-14 23:16 J	-640968.65	-640968.53	-640968.39	0.0262	0.0207
Earth	-6461-06-26 21:21 J	-638279.79	-638279.61	-638279.42	0.0289	0.0190
Moon	-6461-06-26 22:19 J	-638279.76	-638279.57	-638279.38	0.0289	0.0176 *
Mars	-6458-10-08 08:09 J	-637081.38	-637081.16	-637080.93	0.0301	0.0190
Mercury	-6457-11-26 21:21 J	-636665.71	-636665.61	-636665.50	0.0302	0.0163
Mercury	-6456-02-23 10:04 J	-636577.21	-636577.08	-636576.95	0.0302	0.0004
Mercury	-6456-05-22 22:33 J	-636488.67	-636488.56	-636488.45	0.0302	0.0157
Venus	-6455-05-02 12:28 J	-636144.16	-636143.98	-636143.79	0.0302	0.0142
Venus	-6455-12-18 17:31 J	-635913.95	-635913.77	-635913.57	0.0301	0.0128
Earth	-6448-12-23 10:19 J	-633352.18	-633352.07	-633351.93	0.0273	0.0234
Moon	-6448-12-23 13:40 J	-633352.01	-633351.93	-633351.82	0.0273	0.0250 *
Mars	-6444-12-24 00:43 J	-631890.64	-631890.47	-631890.28	0.0261	0.0208
Mercury	-6442-06-19 07:26 J	-631348.30	-631348.19	-631348.06	0.0260	0.0198

Mercury	-6442-09-16 04:19 J	-631259.51	-631259.32	-631259.14	0.0260	0.0048
Mercury	-6442-12-14 00:43 J	-631170.64	-631170.47	-631170.29	0.0259	0.0103
Mercury	-6441-03-11 21:36 J	-631081.63	-631081.60	-631081.57	0.0259	0.0255
Venus	-6440-05-27 08:09 J	-630640.34	-630640.16	-630639.96	0.0260	0.0117
Venus	-6439-01-11 05:45 J	-630411.46	-630411.26	-630411.05	0.0261	0.0057
Venus	-6439-08-28 04:04 J	-630182.42	-630182.33	-630182.23	0.0262	0.0232
Moon	-6432-06-21 04:19 J	-627693.53	-627693.32	-627693.11	0.0287	0.0159
Earth	-6432-06-21 05:16 J	-627693.48	-627693.28	-627693.06	0.0287	0.0145 *
Mercury	-6427-04-16 00:14 J	-625933.58	-625933.49	-625933.39	0.0303	0.0199
Mercury	-6427-07-13 12:57 J	-625845.09	-625844.96	-625844.83	0.0303	0.0038
Mercury	-6427-10-10 01:40 J	-625756.55	-625756.43	-625756.32	0.0303	0.0122
Mercury	-6426-01-06 14:09 J	-625667.96	-625667.91	-625667.87	0.0303	0.0280
Venus	-6426-11-12 23:16 J	-625357.73	-625357.53	-625357.33	0.0302	0.0099
Venus	-6425-06-30 04:19 J	-625127.49	-625127.32	-625127.14	0.0301	0.0171
Moon	-6419-12-18 10:33 J	-622765.31	-622765.06	-622764.81	0.0274	0.0026
Earth	-6419-12-18 13:55 J	-622765.16	-622764.92	-622764.68	0.0274	0.0039 *
Mercury	-6413-11-05 09:07 J	-620616.22	-620616.12	-620616.03	0.0260	0.0225
Mercury	-6412-02-02 05:31 J	-620527.45	-620527.27	-620527.09	0.0260	0.0076
Mercury	-6412-05-02 02:09 J	-620438.60	-620438.41	-620438.23	0.0260	0.0075
Mercury	-6412-07-29 22:47 J	-620349.64	-620349.55	-620349.46	0.0260	0.0227
Venus	-6411-04-22 18:00 J	-620082.77	-620082.75	-620082.71	0.0260	0.0257
Venus	-6411-12-07 15:07 J	-619854.07	-619853.87	-619853.67	0.0261	0.0086
Venus	-6410-07-24 12:43 J	-619625.17	-619624.97	-619624.77	0.0261	0.0089
Moon	-6402-06-29 20:52 J	-616727.64	-616727.63	-616727.59	0.0289	0.0288
Mercury	-6398-09-03 03:36 J	-615201.43	-615201.35	-615201.27	0.0302	0.0229
Mercury	-6398-11-30 16:19 J	-615112.95	-615112.82	-615112.70	0.0302	0.0069
Mercury	-6397-02-27 04:47 J	-615024.42	-615024.30	-615024.18	0.0302	0.0091
Mercury	-6397-05-25 17:16 J	-614935.85	-614935.78	-614935.71	0.0302	0.0249
Venus	-6396-05-25 10:47 J	-614571.25	-614571.05	-614570.84	0.0302	0.0053
Venus	-6395-01-10 15:36 J	-614340.99	-614340.85	-614340.70	0.0300	0.0216



Mars	-6385-04-01 20:52 J	-610606.75	-610606.63	-610606.48	0.0262	0.0234
Mercury	-6383-06-22 05:31 J	-609795.44	-609795.27	-609795.10	0.0260	0.0113
Mercury	-6383-09-19 02:09 J	-609706.60	-609706.41	-609706.22	0.0259	0.0037
Mercury	-6383-12-16 22:33 J	-609617.68	-609617.56	-609617.42	0.0259	0.0189
Venus	-6382-11-02 22:33 J	-609296.65	-609296.56	-609296.46	0.0260	0.0232
Venus	-6381-06-18 19:26 J	-609067.89	-609067.69	-609067.48	0.0260	0.0061
Venus	-6380-02-02 17:02 J	-608838.97	-608838.79	-608838.59	0.0261	0.0114
Moon	-6373-06-22 20:23 J	-606141.89	-606141.65	-606141.40	0.0288	0.0054
Earth	-6373-06-23 00:00 J	-606141.74	-606141.50	-606141.25	0.0288	0.0038 *
Mercury	-6368-01-20 06:14 J	-604469.30	-604469.24	-604469.18	0.0303	0.0268
Mercury	-6368-04-18 18:57 J	-604380.83	-604380.71	-604380.59	0.0303	0.0107
Mercury	-6368-07-16 07:26 J	-604292.31	-604292.19	-604292.06	0.0303	0.0054
Mercury	-6368-10-12 20:09 J	-604203.75	-604203.66	-604203.57	0.0303	0.0212
Venus	-6367-04-19 14:52 J	-604014.95	-604014.88	-604014.81	0.0302	0.0283
Venus	-6367-12-05 20:52 J	-603784.84	-603784.63	-603784.42	0.0302	0.0012
Venus	-6366-07-24 01:12 J	-603554.54	-603554.45	-603554.33	0.0300	0.0258
Moon	-6360-12-20 01:40 J	-601213.66	-601213.43	-601213.20	0.0274	0.0066
Earth	-6360-12-20 04:19 J	-601213.56	-601213.32	-601213.08	0.0274	0.0053 *
Mercury	-6354-11-09 06:43 J	-599063.38	-599063.22	-599063.06	0.0260	0.0143
Mercury	-6353-02-06 03:21 J	-598974.56	-598974.36	-598974.17	0.0260	0.0009
Mercury	-6353-05-04 23:45 J	-598885.65	-598885.51	-598885.35	0.0260	0.0159
Venus	-6352-05-15 04:47 J	-598510.43	-598510.30	-598510.16	0.0260	0.0202
Venus	-6352-12-30 01:55 J	-598281.63	-598281.42	-598281.20	0.0261	0.0030
Venus	-6351-08-15 23:31 J	-598052.69	-598052.52	-598052.33	0.0262	0.0146
Mercury	-6339-06-09 09:07 J	-593737.12	-593737.12	-593737.10	0.0302	0.0300
Mercury	-6339-09-05 22:04 J	-593648.70	-593648.58	-593648.47	0.0302	0.0139
Mercury	-6339-12-03 10:47 J	-593560.18	-593560.05	-593559.92	0.0302	0.0022
Mercury	-6338-03-01 23:16 J	-593471.63	-593471.53	-593471.43	0.0302	0.0180
Venus	-6338-10-31 02:23 J	-593228.52	-593228.40	-593228.27	0.0302	0.0237
Venus	-6337-06-17 08:23 J	-592998.36	-592998.15	-592997.94	0.0301	0.0035

Earth	-6331-12-15 05:45 J	-590626.38	-590626.26	-590626.11	0.0276	0.0230
Moon	-6331-12-15 08:52 J	-590626.26	-590626.13	-590625.97	0.0276	0.0222 *
Mercury	-6324-03-28 06:57 J	-588331.35	-588331.21	-588331.08	0.0259	0.0180
Mercury	-6324-06-25 03:21 J	-588242.55	-588242.36	-588242.17	0.0259	0.0031
Mercury	-6324-09-21 23:45 J	-588153.67	-588153.51	-588153.33	0.0259	0.0120
Venus	-6323-11-25 09:07 J	-587724.27	-587724.12	-587723.96	0.0260	0.0178
Venus	-6322-07-12 06:14 J	-587495.45	-587495.24	-587495.03	0.0260	0.0005
Venus	-6321-02-26 03:50 J	-587266.50	-587266.34	-587266.17	0.0261	0.0170
Moon	-6314-06-25 13:55 J	-584590.16	-584589.92	-584589.69	0.0289	0.0047
Earth	-6314-06-25 15:50 J	-584590.08	-584589.84	-584589.60	0.0289	0.0063 *
Mercury	-6309-01-24 00:28 J	-582916.58	-582916.48	-582916.38	0.0303	0.0180
Mercury	-6309-04-21 13:12 J	-582828.08	-582827.95	-582827.82	0.0303	0.0020
Mercury	-6309-07-19 01:40 J	-582739.54	-582739.43	-582739.31	0.0303	0.0140
Mercury	-6309-10-15 14:09 J	-582650.92	-582650.91	-582650.89	0.0303	0.0298
Venus	-6308-05-12 11:16 J	-582442.18	-582442.03	-582441.87	0.0302	0.0198
Venus	-6308-12-28 17:02 J	-582211.99	-582211.79	-582211.58	0.0302	0.0075
Earth	-6301-12-21 18:00 J	-579661.96	-579661.75	-579661.54	0.0273	0.0142
Moon	-6301-12-21 18:57 J	-579661.90	-579661.71	-579661.52	0.0273	0.0155 *
Mars	-6297-08-27 14:52 J	-578317.13	-578316.88	-578316.63	0.0262	0.0141
Mercury	-6295-08-15 07:26 J	-577599.29	-577599.19	-577599.07	0.0260	0.0212
Mercury	-6295-11-12 04:04 J	-577510.51	-577510.33	-577510.14	0.0260	0.0063
Mercury	-6294-02-09 00:43 J	-577421.65	-577421.47	-577421.29	0.0260	0.0088
Mercury	-6294-05-08 21:21 J	-577332.68	-577332.61	-577332.54	0.0260	0.0239
Venus	-6293-06-06 14:52 J	-576938.05	-576937.88	-576937.70	0.0260	0.0148
Venus	-6292-01-21 12:00 J	-576709.21	-576709.00	-576708.78	0.0261	0.0025
Venus	-6292-09-07 09:50 J	-576480.22	-576480.09	-576479.95	0.0262	0.0201
Earth	-6285-06-19 02:09 J	-574003.50	-574003.41	-574003.32	0.0286	0.0264
Moon	-6285-06-19 03:50 J	-574003.38	-574003.34	-574003.28	0.0286	0.0279 *
Mercury	-6280-06-12 03:21 J	-572184.45	-572184.36	-572184.27	0.0302	0.0216
Mercury	-6280-09-08 16:04 J	-572095.96	-572095.83	-572095.70	0.0302	0.0056

Mercury	-6280-12-06 04:33 J	-572007.43	-572007.31	-572007.18	0.0303	0.0105
Mercury	-6279-03-04 17:02 J	-571918.85	-571918.79	-571918.72	0.0303	0.0263
Venus	-6279-11-22 22:04 J	-571655.76	-571655.58	-571655.40	0.0302	0.0154
Venus	-6278-07-11 03:36 J	-571425.54	-571425.35	-571425.15	0.0301	0.0118
Moon	-6272-12-16 18:57 J	-569074.93	-569074.71	-569074.48	0.0275	0.0128
Earth	-6272-12-16 19:26 J	-569074.89	-569074.69	-569074.47	0.0275	0.0139 *
Mercury	-6265-01-02 07:26 J	-566867.23	-566867.19	-566867.13	0.0259	0.0250
Mercury	-6265-03-31 04:04 J	-566778.51	-566778.33	-566778.16	0.0259	0.0101
Mercury	-6265-06-28 00:28 J	-566689.67	-566689.48	-566689.29	0.0259	0.0048
Mercury	-6265-09-24 20:52 J	-566600.74	-566600.63	-566600.50	0.0259	0.0199
Venus	-6264-12-17 18:43 J	-566151.90	-566151.72	-566151.53	0.0260	0.0125
Venus	-6263-08-03 15:50 J	-565923.05	-565922.84	-565922.63	0.0260	0.0048
Venus	-6262-03-20 13:26 J	-565694.04	-565693.94	-565693.82	0.0261	0.0224
Earth	-6255-06-27 03:07 J	-563038.57	-563038.37	-563038.16	0.0289	0.0154
Moon	-6255-06-27 05:31 J	-563038.48	-563038.27	-563038.06	0.0289	0.0138 *
Mercury	-6251-10-30 05:02 J	-561452.35	-561452.29	-561452.22	0.0303	0.0265
Mercury	-6250-01-26 17:45 J	-561363.88	-561363.76	-561363.63	0.0303	0.0104
Mercury	-6250-04-25 06:28 J	-561275.35	-561275.23	-561275.10	0.0303	0.0058
Mercury	-6250-07-22 19:12 J	-561186.79	-561186.70	-561186.61	0.0303	0.0217
Venus	-6249-06-04 04:47 J	-560869.49	-560869.30	-560869.10	0.0303	0.0118
Venus	-6248-01-20 10:19 J	-560639.24	-560639.07	-560638.88	0.0301	0.0155
Earth	-6242-12-24 04:47 J	-558110.42	-558110.30	-558110.15	0.0273	0.0227
Moon	-6242-12-24 08:38 J	-558110.25	-558110.14	-558110.02	0.0273	0.0241 *
Mercury	-6236-08-18 04:19 J	-556046.48	-556046.32	-556046.15	0.0259	0.0136
Mercury	-6236-11-15 00:57 J	-555957.65	-555957.46	-555957.27	0.0259	0.0013
Mercury	-6235-02-11 21:21 J	-555868.75	-555868.61	-555868.46	0.0259	0.0163
Venus	-6234-06-29 23:31 J	-555365.71	-555365.52	-555365.32	0.0260	0.0098
Venus	-6233-02-13 20:38 J	-555136.84	-555136.64	-555136.43	0.0261	0.0077
Venus	-6233-09-29 18:28 J	-554907.78	-554907.73	-554907.67	0.0262	0.0252
Moon	-6226-06-21 08:09 J	-552452.34	-552452.16	-552451.97	0.0287	0.0197

Earth	-6226-06-21 10:47 J	-552452.22	-552452.05	-552451.84	0.0287	0.0181 *
Mars	-6223-11-03 08:52 J	-551221.25	-551221.13	-551220.99	0.0300	0.0268
Mercury	-6221-06-14 20:23 J	-550631.76	-550631.65	-550631.53	0.0302	0.0143
Mercury	-6221-09-11 09:07 J	-550543.25	-550543.12	-550542.99	0.0303	0.0018
Mercury	-6221-12-08 21:36 J	-550454.70	-550454.60	-550454.49	0.0303	0.0178
Venus	-6220-12-15 14:23 J	-550083.10	-550082.90	-550082.70	0.0302	0.0078
Venus	-6219-08-02 19:40 J	-549852.83	-549852.68	-549852.51	0.0301	0.0194
Moon	-6213-12-18 02:09 J	-547523.65	-547523.41	-547523.16	0.0275	0.0042
Earth	-6213-12-18 06:00 J	-547523.49	-547523.25	-547523.01	0.0275	0.0054 *
Mars	-6208-01-21 22:19 J	-546027.86	-546027.57	-546027.28	0.0262	0.0067
Mercury	-6206-01-05 04:04 J	-545314.46	-545314.33	-545314.19	0.0259	0.0176
Mercury	-6206-04-04 00:28 J	-545225.67	-545225.48	-545225.29	0.0259	0.0028
Mercury	-6206-07-01 20:52 J	-545136.79	-545136.63	-545136.45	0.0259	0.0122
Venus	-6205-05-25 06:14 J	-544808.29	-544808.24	-544808.16	0.0259	0.0246
Venus	-6204-01-09 02:52 J	-544579.58	-544579.38	-544579.17	0.0260	0.0075
Venus	-6204-08-26 00:00 J	-544350.70	-544350.50	-544350.30	0.0260	0.0099
Earth	-6196-06-28 10:33 J	-541487.19	-541487.06	-541486.91	0.0289	0.0236
Moon	-6196-06-28 14:09 J	-541487.06	-541486.91	-541486.74	0.0289	0.0221 *
Mercury	-6192-11-01 21:50 J	-539899.69	-539899.59	-539899.49	0.0303	0.0196
Mercury	-6191-01-29 10:33 J	-539811.19	-539811.06	-539810.93	0.0303	0.0035
Mercury	-6191-04-27 23:16 J	-539722.65	-539722.53	-539722.42	0.0303	0.0125
Mercury	-6191-07-25 11:31 J	-539634.05	-539634.02	-539633.97	0.0303	0.0285
Venus	-6190-06-27 19:26 J	-539296.90	-539296.69	-539296.48	0.0302	0.0045
Venus	-6189-02-13 00:43 J	-539066.60	-539066.47	-539066.33	0.0301	0.0227
Mercury	-6177-05-24 03:50 J	-534582.44	-534582.34	-534582.23	0.0259	0.0216
Mercury	-6177-08-21 00:14 J	-534493.67	-534493.49	-534493.30	0.0259	0.0068
Mercury	-6177-11-17 20:38 J	-534404.82	-534404.64	-534404.45	0.0259	0.0082
Mercury	-6176-02-14 17:02 J	-534315.86	-534315.79	-534315.69	0.0259	0.0233
Venus	-6176-12-05 10:19 J	-534022.18	-534022.07	-534021.96	0.0259	0.0221
Venus	-6175-07-22 06:43 J	-533793.43	-533793.22	-533793.01	0.0260	0.0049

Venus	-6174-03-08 03:36 J	-533564.53	-533564.35	-533564.16	0.0261	0.0125
Moon	-6167-06-22 12:14 J	-530901.20	-530900.99	-530900.77	0.0287	0.0122
Earth	-6167-06-22 15:21 J	-530901.09	-530900.86	-530900.63	0.0287	0.0107 *
Mercury	-6162-03-21 23:45 J	-529167.58	-529167.51	-529167.43	0.0302	0.0242
Mercury	-6162-06-18 12:43 J	-529079.10	-529078.97	-529078.85	0.0303	0.0082
Mercury	-6162-09-15 01:12 J	-528990.57	-528990.45	-528990.32	0.0303	0.0079
Mercury	-6162-12-12 13:55 J	-528902.00	-528901.92	-528901.84	0.0303	0.0238
Venus	-6161-05-21 20:09 J	-528740.72	-528740.66	-528740.59	0.0303	0.0285
Venus	-6160-01-07 02:52 J	-528510.59	-528510.38	-528510.17	0.0302	0.0011
Venus	-6160-08-25 08:09 J	-528280.26	-528280.16	-528280.06	0.0301	0.0261
Moon	-6154-12-20 11:02 J	-525972.28	-525972.04	-525971.81	0.0275	0.0035
Earth	-6154-12-20 12:14 J	-525972.23	-525971.99	-525971.75	0.0275	0.0021 *
Mercury	-6148-10-11 03:36 J	-523850.38	-523850.35	-523850.33	0.0259	0.0256
Mercury	-6147-01-07 23:45 J	-523761.68	-523761.51	-523761.34	0.0259	0.0109
Mercury	-6147-04-06 20:09 J	-523672.85	-523672.66	-523672.47	0.0259	0.0039
Mercury	-6147-07-04 16:33 J	-523583.94	-523583.81	-523583.68	0.0259	0.0189
Venus	-6146-06-17 12:43 J	-523236.09	-523235.97	-523235.82	0.0259	0.0199
Venus	-6145-02-01 09:21 J	-523007.32	-523007.11	-523006.90	0.0259	0.0028
Venus	-6145-09-17 06:00 J	-522778.41	-522778.25	-522778.06	0.0260	0.0147
Mars	-6134-03-29 10:04 J	-518933.25	-518933.08	-518932.90	0.0300	0.0235
Mercury	-6133-08-08 00:28 J	-518435.48	-518435.48	-518435.46	0.0303	0.0302
Mercury	-6133-11-04 13:26 J	-518347.05	-518346.94	-518346.82	0.0303	0.0140
Mercury	-6132-02-01 02:09 J	-518258.53	-518258.41	-518258.28	0.0303	0.0023
Mercury	-6132-04-30 14:52 J	-518169.98	-518169.88	-518169.78	0.0303	0.0181
Venus	-6132-12-01 23:31 J	-517954.63	-517954.52	-517954.41	0.0303	0.0256
Venus	-6131-07-20 06:14 J	-517724.45	-517724.24	-517724.03	0.0303	0.0021
Venus	-6130-03-07 11:16 J	-517494.08	-517494.03	-517493.97	0.0301	0.0291
Moon	-6125-12-14 05:45 J	-515385.33	-515385.26	-515385.19	0.0277	0.0266
Mars	-6120-06-17 15:07 J	-513739.17	-513738.87	-513738.57	0.0261	0.0014
Mercury	-6118-05-27 22:33 J	-513029.70	-513029.56	-513029.40	0.0259	0.0155

Mercury	-6118-08-24 19:11 J	-512940.89	-512940.70	-512940.51	0.0259	0.0006
Mercury	-6118-11-21 15:36 J	-512852.01	-512851.85	-512851.69	0.0259	0.0144
Venus	-6117-12-27 15:21 J	-512450.00	-512449.86	-512449.69	0.0259	0.0177
Venus	-6116-08-13 12:00 J	-512221.22	-512221.00	-512220.79	0.0260	0.0006
Venus	-6115-03-30 08:52 J	-511992.29	-511992.13	-511991.97	0.0261	0.0170
Earth	-6108-06-23 15:50 J	-509350.09	-509349.84	-509349.60	0.0287	0.0042
Moon	-6108-06-23 17:16 J	-509350.02	-509349.78	-509349.55	0.0287	0.0053 *
Mercury	-6103-03-24 15:07 J	-507614.96	-507614.87	-507614.76	0.0303	0.0190
Mercury	-6103-06-21 04:04 J	-507526.46	-507526.33	-507526.20	0.0303	0.0029
Mercury	-6103-09-17 16:33 J	-507437.92	-507437.81	-507437.69	0.0303	0.0132
Mercury	-6103-12-15 05:16 J	-507349.32	-507349.28	-507349.25	0.0303	0.0290
Venus	-6102-06-14 05:45 J	-507168.40	-507168.26	-507168.11	0.0303	0.0223
Venus	-6101-01-30 12:14 J	-506938.19	-506937.99	-506937.78	0.0302	0.0053
Earth	-6095-12-21 13:55 J	-504421.15	-504420.92	-504420.69	0.0274	0.0086
Moon	-6095-12-21 17:02 J	-504421.01	-504420.79	-504420.56	0.0274	0.0103 *
Mercury	-6089-10-13 21:50 J	-502297.70	-502297.59	-502297.46	0.0259	0.0197
Mercury	-6088-01-10 18:14 J	-502208.92	-502208.74	-502208.55	0.0259	0.0050
Mercury	-6088-04-09 14:38 J	-502120.06	-502119.89	-502119.71	0.0259	0.0099
Mercury	-6088-07-07 11:02 J	-502031.08	-502031.04	-502030.98	0.0259	0.0249
Venus	-6087-07-09 17:45 J	-501663.93	-501663.76	-501663.59	0.0259	0.0155
Venus	-6086-02-23 14:09 J	-501435.13	-501434.91	-501434.70	0.0259	0.0017
Venus	-6086-10-10 10:48 J	-501206.19	-501206.05	-501205.90	0.0260	0.0190
Mercury	-6074-08-11 15:36 J	-496882.92	-496882.85	-496882.78	0.0303	0.0255
Mercury	-6074-11-08 04:19 J	-496794.44	-496794.32	-496794.19	0.0303	0.0094
Mercury	-6073-02-04 17:02 J	-496705.91	-496705.79	-496705.66	0.0303	0.0067
Mercury	-6073-05-03 05:45 J	-496617.35	-496617.26	-496617.18	0.0303	0.0227
Venus	-6073-12-24 06:43 J	-496382.37	-496382.22	-496382.05	0.0303	0.0198
Venus	-6072-08-11 13:26 J	-496152.14	-496151.94	-496151.74	0.0302	0.0078
Moon	-6066-12-16 00:43 J	-493834.64	-493834.47	-493834.31	0.0277	0.0204
Earth	-6066-12-16 03:50 J	-493834.48	-493834.34	-493834.19	0.0277	0.0219 *

Mercury	-6059-03-02 20:23 J	-491565.70	-491565.65	-491565.58	0.0259	0.0245
Mercury	-6059-05-30 16:48 J	-491476.97	-491476.80	-491476.62	0.0259	0.0098
Mercury	-6059-08-27 13:11 J	-491388.14	-491387.95	-491387.76	0.0259	0.0050
Mercury	-6059-11-24 09:36 J	-491299.22	-491299.10	-491298.97	0.0259	0.0200
Venus	-6057-01-19 19:11 J	-490877.88	-490877.70	-490877.51	0.0259	0.0134
Venus	-6057-09-04 15:36 J	-490649.06	-490648.85	-490648.64	0.0260	0.0038
Venus	-6056-04-21 12:28 J	-490420.09	-490419.98	-490419.85	0.0261	0.0213
Earth	-6049-06-24 12:14 J	-487799.23	-487798.99	-487798.74	0.0287	0.0017
Moon	-6049-06-24 15:50 J	-487799.08	-487798.84	-487798.59	0.0287	0.0008 *
Mars	-6046-08-22 04:48 J	-486645.50	-486645.30	-486645.10	0.0300	0.0215
Mercury	-6044-03-27 05:45 J	-486062.37	-486062.26	-486062.14	0.0303	0.0146
Mercury	-6044-06-23 18:28 J	-485973.86	-485973.73	-485973.60	0.0303	0.0017
Mercury	-6044-09-20 07:11 J	-485885.30	-485885.20	-485885.09	0.0303	0.0174
Venus	-6043-07-06 12:00 J	-485596.17	-485596.00	-485595.82	0.0303	0.0167
Venus	-6042-02-21 18:28 J	-485365.93	-485365.73	-485365.54	0.0302	0.0108
Earth	-6036-12-22 11:31 J	-482870.22	-482870.02	-482869.80	0.0274	0.0144
Moon	-6036-12-22 13:55 J	-482870.11	-482869.92	-482869.70	0.0274	0.0160 *
Mars	-6032-11-10 23:31 J	-481450.81	-481450.52	-481450.22	0.0262	0.0028
Mercury	-6030-10-17 15:36 J	-480745.00	-480744.85	-480744.69	0.0259	0.0143
Mercury	-6029-01-14 12:00 J	-480656.19	-480656.00	-480655.81	0.0259	0.0006
Mercury	-6029-04-12 08:23 J	-480567.30	-480567.15	-480566.99	0.0259	0.0153
Venus	-6028-07-31 21:07 J	-480091.81	-480091.62	-480091.43	0.0259	0.0113
Venus	-6027-03-17 17:16 J	-479862.98	-479862.78	-479862.57	0.0259	0.0059
Venus	-6027-11-01 14:09 J	-479634.00	-479633.91	-479633.81	0.0260	0.0232
Mercury	-6015-08-14 06:00 J	-475330.34	-475330.25	-475330.16	0.0303	0.0213
Mercury	-6015-11-10 18:43 J	-475241.84	-475241.72	-475241.59	0.0303	0.0053
Mercury	-6014-02-07 07:26 J	-475153.31	-475153.19	-475153.07	0.0303	0.0108
Mercury	-6014-05-06 19:55 J	-475064.72	-475064.67	-475064.60	0.0303	0.0267
Venus	-6013-01-16 12:28 J	-474810.16	-474809.98	-474809.79	0.0303	0.0143
Venus	-6013-09-02 18:43 J	-474579.90	-474579.72	-474579.53	0.0302	0.0133

Moon	-6007-12-16 21:21 J	-472283.80	-472283.61	-472283.40	0.0277	0.0152
Earth	-6007-12-17 00:00 J	-472283.70	-472283.50	-472283.31	0.0277	0.0165 *
Jupiter	-6003-03-13 20:09 J	-471100.70	-471100.66	-471100.61	0.0264	0.0263

# 6TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 6th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-6000-03-05 13:40 J	-470013.05	-470012.93	-470012.80	0.0259	0.0195		
Mercury	-6000-06-02 10:04 J	-469924.27	-469924.08	-469923.89	0.0259	0.0047		
Mercury	-6000-08-30 06:28 J	-469835.41	-469835.23	-469835.05	0.0259	0.0101		
Mercury	-6000-11-27 02:52 J	-469746.42	-469746.38	-469746.33	0.0259	0.0251		
Venus	-5998-02-10 21:50 J	-469305.79	-469305.59	-469305.39	0.0259	0.0094		
Venus	-5998-09-27 18:14 J	-469076.94	-469076.74	-469076.54	0.0260	0.0079		
Venus	-5997-05-13 15:07 J	-468847.91	-468847.87	-468847.81	0.0261	0.0253		
Earth	-5990-06-26 07:26 J	-466248.43	-466248.19	-466247.95	0.0287	0.0070		
Moon	-5990-06-26 07:40 J	-466248.43	-466248.18	-466247.93	0.0287	0.0064 *		
Mercury	-5985-01-01 07:11 J	-464598.26	-464598.20	-464598.14	0.0302	0.0269		
Mercury	-5985-03-29 19:55 J	-464509.79	-464509.67	-464509.54	0.0303	0.0109		
Mercury	-5985-06-26 08:38 J	-464421.26	-464421.14	-464421.01	0.0303	0.0053		
Mercury	-5985-09-22 21:21 J	-464332.70	-464332.61	-464332.52	0.0303	0.0211		
Venus	-5984-07-28 16:33 J	-464024.00	-464023.81	-464023.61	0.0303	0.0115		
Venus	-5983-03-15 22:33 J	-463793.73	-463793.56	-463793.38	0.0302	0.0160		
Moon	-5977-12-23 04:04 J	-461319.48	-461319.33	-461319.16	0.0275	0.0208		



Earth	-5977-12-23 06:28 J	-461319.39	-461319.23	-461319.05	0.0275	0.0196 *
Mercury	-5971-07-23 12:28 J	-459281.04	-459280.98	-459280.90	0.0259	0.0240
Mercury	-5971-10-20 08:52 J	-459192.31	-459192.13	-459191.95	0.0259	0.0093
Mercury	-5970-01-17 05:16 J	-459103.47	-459103.28	-459103.09	0.0259	0.0055
Mercury	-5970-04-16 01:40 J	-459014.54	-459014.43	-459014.31	0.0259	0.0204
Venus	-5969-01-07 03:36 J	-458748.41	-458748.35	-458748.27	0.0259	0.0243
Venus	-5969-08-22 23:31 J	-458519.72	-458519.52	-458519.31	0.0259	0.0073
Venus	-5968-04-08 19:55 J	-458290.87	-458290.67	-458290.47	0.0260	0.0099
Earth	-5961-06-19 05:45 J	-455662.31	-455662.26	-455662.20	0.0284	0.0276
Mars	-5957-01-13 23:16 J	-454358.69	-454358.53	-454358.33	0.0300	0.0232
Mercury	-5956-08-16 19:55 J	-453777.77	-453777.67	-453777.56	0.0303	0.0177
Mercury	-5956-11-13 08:52 J	-453689.26	-453689.13	-453689.00	0.0303	0.0017
Mercury	-5955-02-09 21:21 J	-453600.72	-453600.61	-453600.49	0.0303	0.0144
Mercury	-5955-05-09 09:50 J	-453512.09	-453512.09	-453512.08	0.0303	0.0303
Venus	-5954-02-07 16:19 J	-453238.02	-453237.82	-453237.62	0.0303	0.0092
Venus	-5954-09-25 22:19 J	-453007.73	-453007.57	-453007.40	0.0302	0.0184
Earth	-5948-12-17 17:31 J	-450732.99	-450732.77	-450732.55	0.0277	0.0116
Moon	-5948-12-17 19:26 J	-450732.91	-450732.69	-450732.47	0.0277	0.0102 *
Mars	-5943-04-05 13:55 J	-449163.21	-449162.92	-449162.62	0.0262	0.0044
Mercury	-5941-03-08 06:28 J	-448460.38	-448460.23	-448460.07	0.0259	0.0147
Mercury	-5941-06-05 02:52 J	-448371.57	-448371.38	-448371.19	0.0259	0.0003
Mercury	-5941-09-01 23:16 J	-448282.68	-448282.53	-448282.37	0.0259	0.0149
Venus	-5940-07-19 03:36 J	-447962.44	-447962.35	-447962.23	0.0259	0.0225
Venus	-5939-03-04 23:45 J	-447733.72	-447733.51	-447733.30	0.0259	0.0054
Venus	-5939-10-19 20:09 J	-447504.85	-447504.66	-447504.47	0.0260	0.0119
Moon	-5931-06-26 22:19 J	-444697.78	-444697.57	-444697.33	0.0287	0.0121
Earth	-5931-06-27 01:55 J	-444697.63	-444697.42	-444697.19	0.0287	0.0124 *
Mercury	-5926-01-03 21:21 J	-443045.70	-443045.61	-443045.53	0.0302	0.0232
Mercury	-5926-04-02 10:04 J	-442957.21	-442957.08	-442956.95	0.0303	0.0071
Mercury	-5926-06-29 22:48 J	-442868.68	-442868.55	-442868.43	0.0303	0.0089

Mercury	-5926-09-26 11:16 J	-442780.10	-442780.03	-442779.95	0.0303	0.0247
Venus	-5925-08-19 20:38 J	-442451.85	-442451.64	-442451.43	0.0302	0.0063
Venus	-5924-04-07 02:23 J	-442221.54	-442221.40	-442221.24	0.0302	0.0211
Moon	-5918-12-24 20:52 J	-439768.70	-439768.63	-439768.53	0.0275	0.0257
Earth	-5918-12-25 00:00 J	-439768.59	-439768.50	-439768.37	0.0275	0.0245 *
Mercury	-5912-07-26 05:31 J	-437728.39	-437728.27	-437728.14	0.0259	0.0192
Mercury	-5912-10-23 01:40 J	-437639.61	-437639.43	-437639.24	0.0259	0.0045
Mercury	-5911-01-19 22:04 J	-437550.75	-437550.58	-437550.40	0.0259	0.0104
Mercury	-5911-04-18 18:43 J	-437461.76	-437461.72	-437461.68	0.0259	0.0253
Venus	-5910-01-29 05:31 J	-437176.39	-437176.27	-437176.13	0.0259	0.0203
Venus	-5910-09-15 01:40 J	-436947.64	-436947.43	-436947.22	0.0259	0.0032
Venus	-5909-04-30 22:04 J	-436718.76	-436718.58	-436718.40	0.0260	0.0140
Earth	-5902-06-21 01:40 J	-434111.58	-434111.43	-434111.27	0.0284	0.0220
Moon	-5902-06-21 05:16 J	-434111.42	-434111.28	-434111.12	0.0284	0.0226 *
Mercury	-5897-05-22 21:21 J	-432313.62	-432313.61	-432313.59	0.0302	0.0299
Mercury	-5897-08-19 10:04 J	-432225.19	-432225.08	-432224.96	0.0303	0.0139
Mercury	-5897-11-15 22:48 J	-432136.67	-432136.55	-432136.42	0.0303	0.0025
Mercury	-5896-02-12 11:31 J	-432048.12	-432048.02	-432047.92	0.0303	0.0181
Venus	-5895-03-01 20:23 J	-431665.86	-431665.65	-431665.44	0.0303	0.0039
Venus	-5895-10-18 01:55 J	-431435.54	-431435.42	-431435.27	0.0302	0.0235
Earth	-5889-12-18 10:19 J	-429182.30	-429182.07	-429181.83	0.0277	0.0069
Moon	-5889-12-18 13:55 J	-429182.16	-429181.92	-429181.68	0.0277	0.0053 *
Mercury	-5883-12-13 03:07 J	-426996.42	-426996.37	-426996.31	0.0259	0.0246
Mercury	-5882-03-11 23:31 J	-426907.70	-426907.52	-426907.35	0.0259	0.0100
Mercury	-5882-06-08 19:40 J	-426818.86	-426818.68	-426818.49	0.0259	0.0049
Mercury	-5882-09-05 16:04 J	-426729.94	-426729.83	-426729.70	0.0259	0.0198
Venus	-5881-08-10 05:45 J	-426390.40	-426390.26	-426390.11	0.0259	0.0185
Venus	-5880-03-27 01:55 J	-426161.63	-426161.42	-426161.21	0.0259	0.0014
Venus	-5880-11-10 22:33 J	-425932.73	-425932.56	-425932.39	0.0260	0.0159
Moon	-5872-06-27 20:09 J	-423146.84	-423146.66	-423146.47	0.0287	0.0181

Earth	-5872-06-27 22:04 J	-423146.77	-423146.58	-423146.39	0.0287	0.0180 *
Mars	-5869-06-07 08:38 J	-422071.31	-422071.14	-422070.94	0.0299	0.0226
Mercury	-5867-01-06 11:16 J	-421493.12	-421493.03	-421492.92	0.0302	0.0194
Mercury	-5867-04-05 00:14 J	-421404.62	-421404.49	-421404.36	0.0303	0.0033
Mercury	-5867-07-02 12:57 J	-421316.08	-421315.96	-421315.85	0.0303	0.0126
Mercury	-5867-09-29 01:26 J	-421227.48	-421227.44	-421227.40	0.0303	0.0284
Venus	-5866-01-24 18:00 J	-421109.81	-421109.75	-421109.68	0.0303	0.0286
Venus	-5866-09-12 00:57 J	-420879.67	-420879.46	-420879.25	0.0302	0.0010
Venus	-5865-04-29 06:28 J	-420649.33	-420649.23	-420649.12	0.0301	0.0262
Mars	-5855-08-29 12:28 J	-416875.26	-416874.98	-416874.69	0.0262	0.0077
Mercury	-5853-07-28 22:33 J	-416175.72	-416175.56	-416175.40	0.0260	0.0143
Mercury	-5853-10-25 18:43 J	-416086.91	-416086.72	-416086.53	0.0259	0.0007
Mercury	-5852-01-22 15:07 J	-415998.02	-415997.87	-415997.71	0.0259	0.0154
Venus	-5851-02-20 07:55 J	-415604.33	-415604.17	-415604.00	0.0259	0.0162
Venus	-5851-10-07 04:04 J	-415375.54	-415375.33	-415375.11	0.0259	0.0009
Venus	-5850-05-24 00:43 J	-415146.62	-415146.47	-415146.31	0.0260	0.0182
Earth	-5843-06-21 23:31 J	-412560.72	-412560.52	-412560.31	0.0284	0.0160
Moon	-5843-06-22 00:43 J	-412560.67	-412560.47	-412560.25	0.0284	0.0160 *
Mercury	-5838-05-26 12:00 J	-410761.07	-410761.00	-410760.93	0.0302	0.0255
Mercury	-5838-08-23 00:43 J	-410672.59	-410672.47	-410672.35	0.0303	0.0096
Mercury	-5838-11-19 13:26 J	-410584.07	-410583.94	-410583.81	0.0303	0.0064
Mercury	-5837-02-16 01:55 J	-410495.50	-410495.42	-410495.33	0.0303	0.0222
Venus	-5837-08-05 19:11 J	-410323.80	-410323.70	-410323.59	0.0303	0.0260
Venus	-5836-03-24 01:55 J	-410093.63	-410093.42	-410093.21	0.0303	0.0016
Venus	-5836-11-09 07:11 J	-409863.25	-409863.20	-409863.13	0.0302	0.0289
Moon	-5830-12-20 04:19 J	-407631.58	-407631.32	-407631.07	0.0277	0.0007
Earth	-5830-12-20 05:02 J	-407631.53	-407631.29	-407631.05	0.0277	0.0017 *
Mercury	-5824-12-15 20:09 J	-405443.78	-405443.66	-405443.53	0.0259	0.0197
Mercury	-5823-03-14 16:33 J	-405355.00	-405354.81	-405354.62	0.0259	0.0049
Mercury	-5823-06-11 12:57 J	-405266.13	-405265.96	-405265.78	0.0259	0.0100

Mercury	-5823-09-08 09:36 J	-405177.15	-405177.10	-405177.05	0.0259	0.0249
Venus	-5822-09-02 08:23 J	-404818.32	-404818.15	-404817.97	0.0259	0.0144
Venus	-5821-04-18 04:48 J	-404589.51	-404589.30	-404589.09	0.0260	0.0028
Venus	-5821-12-03 01:26 J	-404360.56	-404360.44	-404360.30	0.0260	0.0202
Earth	-5813-06-28 21:07 J	-401595.74	-401595.62	-401595.49	0.0287	0.0244
Moon	-5813-06-28 23:45 J	-401595.62	-401595.51	-401595.38	0.0287	0.0250 *
Mercury	-5808-01-09 02:09 J	-399940.52	-399940.41	-399940.29	0.0302	0.0148
Mercury	-5808-04-07 14:52 J	-399852.01	-399851.88	-399851.75	0.0302	0.0015
Mercury	-5808-07-05 03:36 J	-399763.46	-399763.35	-399763.25	0.0303	0.0171
Venus	-5807-02-16 00:28 J	-399537.60	-399537.48	-399537.33	0.0303	0.0229
Venus	-5807-10-04 07:11 J	-399307.40	-399307.20	-399306.99	0.0302	0.0048
Mercury	-5794-05-04 19:40 J	-394711.75	-394711.68	-394711.60	0.0260	0.0237
Mercury	-5794-08-01 16:04 J	-394623.01	-394622.83	-394622.66	0.0260	0.0090
Mercury	-5794-10-29 12:28 J	-394534.17	-394533.98	-394533.80	0.0260	0.0059
Mercury	-5793-01-26 08:38 J	-394445.24	-394445.14	-394445.02	0.0259	0.0209
Venus	-5792-03-14 11:16 J	-394032.21	-394032.03	-394031.83	0.0259	0.0120
Venus	-5792-10-29 07:40 J	-393803.38	-393803.18	-393802.96	0.0260	0.0054
Venus	-5791-06-15 04:33 J	-393574.40	-393574.31	-393574.20	0.0260	0.0227
Moon	-5784-06-22 21:50 J	-391009.83	-391009.59	-391009.35	0.0284	0.0086
Earth	-5784-06-23 01:11 J	-391009.68	-391009.45	-391009.21	0.0284	0.0091 *
Mars	-5781-10-30 22:19 J	-389783.77	-389783.57	-389783.36	0.0298	0.0204
Mercury	-5779-05-29 03:07 J	-389208.46	-389208.37	-389208.28	0.0302	0.0205
Mercury	-5779-08-25 15:50 J	-389119.97	-389119.84	-389119.71	0.0302	0.0046
Mercury	-5779-11-22 04:19 J	-389031.43	-389031.32	-389031.19	0.0303	0.0114
Mercury	-5778-02-18 16:48 J	-388942.85	-388942.80	-388942.74	0.0303	0.0271
Venus	-5778-08-29 03:07 J	-388751.52	-388751.37	-388751.21	0.0303	0.0199
Venus	-5777-04-15 09:36 J	-388521.31	-388521.10	-388520.90	0.0302	0.0077
Moon	-5771-12-20 21:50 J	-386080.83	-386080.59	-386080.35	0.0277	0.0047
Earth	-5771-12-21 01:40 J	-386080.67	-386080.43	-386080.19	0.0277	0.0038 *
Mars	-5766-01-22 06:43 J	-384587.50	-384587.22	-384586.95	0.0263	0.0100

Mercury	-5765-12-18 13:55 J	-383891.07	-383890.92	-383890.76	0.0260	0.0142
Mercury	-5764-03-17 10:19 J	-383802.26	-383802.07	-383801.88	0.0259	0.0008
Mercury	-5764-06-14 06:57 J	-383713.36	-383713.21	-383713.06	0.0259	0.0156
Venus	-5763-09-24 12:14 J	-383246.18	-383245.99	-383245.78	0.0259	0.0100
Venus	-5762-05-11 08:52 J	-383017.33	-383017.13	-383016.92	0.0260	0.0073
Venus	-5762-12-26 06:00 J	-382788.30	-382788.25	-382788.17	0.0260	0.0247
Mercury	-5750-10-16 04:48 J	-378476.37	-378476.30	-378476.23	0.0302	0.0254
Mercury	-5749-01-12 17:45 J	-378387.89	-378387.76	-378387.64	0.0302	0.0095
Mercury	-5749-04-10 06:14 J	-378299.36	-378299.24	-378299.11	0.0302	0.0065
Mercury	-5749-07-07 18:57 J	-378210.80	-378210.71	-378210.63	0.0303	0.0223
Venus	-5748-03-10 09:50 J	-377965.26	-377965.09	-377964.91	0.0302	0.0165
Venus	-5748-10-26 16:04 J	-377735.02	-377734.83	-377734.63	0.0302	0.0110
Earth	-5742-12-15 18:57 J	-375493.78	-375493.71	-375493.61	0.0279	0.0261
Moon	-5742-12-15 23:02 J	-375493.65	-375493.54	-375493.43	0.0279	0.0248 *
Mercury	-5735-05-07 13:55 J	-373159.05	-373158.92	-373158.78	0.0260	0.0179
Mercury	-5735-08-04 10:19 J	-373070.26	-373070.07	-373069.88	0.0260	0.0031
Mercury	-5735-11-01 06:43 J	-372981.39	-372981.22	-372981.05	0.0260	0.0118
Venus	-5734-08-20 20:23 J	-372688.72	-372688.65	-372688.58	0.0260	0.0244
Venus	-5733-04-05 16:33 J	-372460.01	-372459.81	-372459.60	0.0260	0.0073
Venus	-5733-11-20 13:11 J	-372231.15	-372230.95	-372230.76	0.0260	0.0100
Moon	-5725-06-24 04:33 J	-369458.55	-369458.31	-369458.07	0.0284	0.0005
Earth	-5725-06-24 06:57 J	-369458.45	-369458.21	-369457.96	0.0284	0.0014 *
Mercury	-5720-05-31 19:11 J	-367655.82	-367655.70	-367655.59	0.0302	0.0144
Mercury	-5720-08-28 07:55 J	-367567.30	-367567.17	-367567.04	0.0302	0.0016
Mercury	-5720-11-24 20:23 J	-367478.75	-367478.65	-367478.54	0.0302	0.0172
Venus	-5719-09-20 14:38 J	-367179.08	-367178.89	-367178.70	0.0302	0.0131
Venus	-5718-05-08 20:23 J	-366948.83	-366948.65	-366948.46	0.0302	0.0144
Moon	-5712-12-22 01:26 J	-364529.65	-364529.44	-364529.21	0.0277	0.0107
Earth	-5712-12-22 01:55 J	-364529.64	-364529.42	-364529.19	0.0277	0.0102 *
Mercury	-5706-09-24 12:14 J	-362427.07	-362426.99	-362426.89	0.0260	0.0228

Mercury	-5706-12-22 08:38 J	-362338.32	-362338.14	-362337.95	0.0260	0.0080
Mercury	-5705-03-20 05:16 J	-362249.47	-362249.28	-362249.10	0.0260	0.0069
Mercury	-5705-06-17 01:55 J	-362160.52	-362160.42	-362160.32	0.0260	0.0219
Venus	-5704-03-01 21:50 J	-361902.69	-361902.59	-361902.48	0.0259	0.0224
Venus	-5704-10-16 18:14 J	-361673.95	-361673.74	-361673.53	0.0260	0.0052
Venus	-5703-06-02 14:52 J	-361445.06	-361444.88	-361444.68	0.0260	0.0122
Mars	-5692-03-26 16:04 J	-357495.08	-357494.83	-357494.57	0.0298	0.0139
Mercury	-5691-10-18 21:07 J	-356923.71	-356923.62	-356923.51	0.0302	0.0189
Mercury	-5690-01-15 10:04 J	-356835.21	-356835.08	-356834.95	0.0302	0.0030
Mercury	-5690-04-13 22:33 J	-356746.67	-356746.56	-356746.44	0.0302	0.0129
Mercury	-5690-07-11 11:02 J	-356658.07	-356658.04	-356658.00	0.0302	0.0285
Venus	-5689-04-01 22:33 J	-356392.76	-356392.56	-356392.36	0.0302	0.0094
Venus	-5689-11-18 04:19 J	-356162.48	-356162.32	-356162.15	0.0302	0.0180
Earth	-5683-12-16 21:21 J	-353942.77	-353942.61	-353942.42	0.0279	0.0193
Moon	-5683-12-16 21:50 J	-353942.77	-353942.59	-353942.39	0.0279	0.0184 *
Mars	-5678-06-17 23:45 J	-352298.75	-352298.51	-352298.28	0.0263	0.0163
Mercury	-5676-05-10 09:07 J	-351606.29	-351606.12	-351605.95	0.0260	0.0114
Mercury	-5676-08-07 05:31 J	-351517.46	-351517.27	-351517.08	0.0260	0.0035
Mercury	-5676-11-04 01:55 J	-351428.54	-351428.42	-351428.28	0.0260	0.0185
Venus	-5675-09-12 02:52 J	-351116.51	-351116.38	-351116.24	0.0260	0.0196
Venus	-5674-04-28 23:16 J	-350887.74	-350887.53	-350887.31	0.0260	0.0024
Venus	-5674-12-13 20:23 J	-350658.83	-350658.65	-350658.48	0.0260	0.0151
Earth	-5666-06-26 17:16 J	-347907.02	-347906.78	-347906.54	0.0285	0.0075
Moon	-5666-06-26 18:57 J	-347906.93	-347906.71	-347906.48	0.0285	0.0085 *
Mercury	-5661-03-06 23:16 J	-346191.61	-346191.53	-346191.45	0.0301	0.0233
Mercury	-5661-06-03 12:00 J	-346103.13	-346103.00	-346102.87	0.0302	0.0074
Mercury	-5661-08-31 00:43 J	-346014.60	-346014.47	-346014.35	0.0302	0.0084
Mercury	-5661-11-27 13:11 J	-345926.03	-345925.95	-345925.87	0.0302	0.0241
Venus	-5660-10-13 05:16 J	-345606.49	-345606.28	-345606.08	0.0302	0.0056
Venus	-5659-05-31 10:33 J	-345376.19	-345376.06	-345375.90	0.0302	0.0218

Earth	-5653-12-23 06:57 J	-342978.40	-342978.21	-342978.02	0.0276	0.0175
Moon	-5653-12-23 10:19 J	-342978.25	-342978.07	-342977.88	0.0276	0.0176 *
Mercury	-5647-09-27 08:09 J	-340874.31	-340874.16	-340874.01	0.0260	0.0159
Mercury	-5647-12-25 04:33 J	-340785.50	-340785.31	-340785.12	0.0260	0.0011
Mercury	-5646-03-24 01:11 J	-340696.61	-340696.45	-340696.29	0.0260	0.0139
Venus	-5645-03-24 05:31 J	-340330.42	-340330.27	-340330.11	0.0260	0.0173
Venus	-5645-11-08 02:09 J	-340101.62	-340101.41	-340101.20	0.0260	0.0001
Venus	-5644-06-24 23:16 J	-339872.69	-339872.53	-339872.37	0.0260	0.0174
Moon	-5637-06-20 01:11 J	-337320.58	-337320.45	-337320.31	0.0283	0.0240
Earth	-5637-06-20 02:52 J	-337320.48	-337320.38	-337320.25	0.0283	0.0248 *
Mercury	-5632-07-25 01:40 J	-335459.48	-335459.43	-335459.37	0.0302	0.0272
Mercury	-5632-10-21 14:23 J	-335371.01	-335370.90	-335370.77	0.0302	0.0114
Mercury	-5631-01-18 03:07 J	-335282.50	-335282.37	-335282.24	0.0302	0.0045
Mercury	-5631-04-16 15:36 J	-335193.94	-335193.85	-335193.75	0.0302	0.0202
Venus	-5631-09-07 07:55 J	-335050.21	-335050.17	-335050.10	0.0302	0.0291
Venus	-5630-04-25 14:38 J	-334820.10	-334819.89	-334819.68	0.0302	0.0016
Venus	-5630-12-11 20:09 J	-334589.77	-334589.66	-334589.55	0.0301	0.0256
Moon	-5624-12-18 01:26 J	-332391.67	-332391.44	-332391.21	0.0278	0.0110
Earth	-5624-12-18 04:48 J	-332391.52	-332391.30	-332391.07	0.0278	0.0114 *
Mercury	-5617-02-14 08:52 J	-330142.25	-330142.13	-330141.99	0.0261	0.0190
Mercury	-5617-05-13 05:31 J	-330053.46	-330053.27	-330053.09	0.0260	0.0042
Mercury	-5617-08-10 01:55 J	-329964.59	-329964.42	-329964.25	0.0260	0.0108
Mercury	-5617-11-06 22:19 J	-329875.57	-329875.57	-329875.54	0.0260	0.0259
Venus	-5616-10-04 11:16 J	-329544.20	-329544.03	-329543.85	0.0260	0.0144
Venus	-5615-05-21 08:09 J	-329315.37	-329315.16	-329314.95	0.0260	0.0030
Venus	-5614-01-05 05:31 J	-329086.40	-329086.27	-329086.14	0.0261	0.0205
Earth	-5607-06-28 08:23 J	-326355.34	-326355.15	-326354.95	0.0285	0.0174
Moon	-5607-06-28 12:00 J	-326355.18	-326355.00	-326354.81	0.0285	0.0185 *
Mars	-5604-08-21 06:14 J	-325205.52	-325205.24	-325204.95	0.0298	0.0032
Mercury	-5602-03-10 17:02 J	-324638.90	-324638.79	-324638.67	0.0301	0.0151

Mercury	-5602-06-07 05:45 J	-324550.39	-324550.26	-324550.13	0.0302	0.0009
Mercury	-5602-09-03 18:14 J	-324461.84	-324461.74	-324461.63	0.0302	0.0165
Venus	-5601-03-19 17:16 J	-324263.89	-324263.78	-324263.65	0.0302	0.0248
Venus	-5601-11-04 23:31 J	-324033.73	-324033.52	-324033.31	0.0302	0.0027
Venus	-5600-06-23 04:33 J	-323803.33	-323803.31	-323803.27	0.0301	0.0298
Earth	-5594-12-25 15:50 J	-321426.92	-321426.84	-321426.74	0.0276	0.0256
Moon	-5594-12-25 18:14 J	-321426.84	-321426.74	-321426.65	0.0276	0.0254 *
Mars	-5590-11-11 22:04 J	-320009.71	-320009.58	-320009.41	0.0263	0.0227
Mercury	-5588-07-03 08:23 J	-319410.23	-319410.15	-319410.06	0.0260	0.0232
Mercury	-5588-09-30 04:48 J	-319321.47	-319321.30	-319321.12	0.0260	0.0084
Mercury	-5588-12-28 01:26 J	-319232.63	-319232.44	-319232.26	0.0260	0.0066
Mercury	-5587-03-26 22:04 J	-319143.69	-319143.58	-319143.48	0.0260	0.0216
Venus	-5586-04-16 14:52 J	-318758.06	-318757.88	-318757.69	0.0260	0.0120
Venus	-5586-12-01 11:45 J	-318529.22	-318529.01	-318528.80	0.0260	0.0054
Venus	-5585-07-17 09:07 J	-318300.22	-318300.12	-318300.02	0.0261	0.0229
Moon	-5578-06-22 15:07 J	-315769.08	-315768.87	-315768.66	0.0284	0.0143
Earth	-5578-06-22 18:28 J	-315768.93	-315768.73	-315768.51	0.0284	0.0150 *
Mercury	-5573-07-27 19:40 J	-313906.78	-313906.68	-313906.58	0.0302	0.0189
Mercury	-5573-10-24 08:23 J	-313818.28	-313818.15	-313818.02	0.0302	0.0031
Mercury	-5572-01-20 21:07 J	-313729.74	-313729.62	-313729.51	0.0302	0.0127
Mercury	-5572-04-19 09:36 J	-313641.14	-313641.10	-313641.06	0.0302	0.0283
Venus	-5572-09-30 02:52 J	-313477.52	-313477.38	-313477.21	0.0302	0.0208
Venus	-5571-05-18 09:21 J	-313247.32	-313247.11	-313246.91	0.0302	0.0068
Moon	-5565-12-19 13:11 J	-310840.18	-310839.95	-310839.71	0.0278	0.0023
Earth	-5565-12-19 15:36 J	-310840.09	-310839.85	-310839.60	0.0278	0.0028 *
Mercury	-5559-11-20 09:36 J	-308678.10	-308678.10	-308678.08	0.0261	0.0260
Mercury	-5558-02-17 06:00 J	-308589.41	-308589.25	-308589.07	0.0261	0.0112
Mercury	-5558-05-17 02:38 J	-308500.58	-308500.39	-308500.20	0.0261	0.0038
Mercury	-5558-08-13 23:02 J	-308411.66	-308411.54	-308411.40	0.0260	0.0188
Venus	-5557-10-26 21:21 J	-307971.80	-307971.61	-307971.40	0.0260	0.0089



Venus	-5556-06-12 18:14 J	-307742.93	-307742.74	-307742.53	0.0261	0.0087
Earth	-5548-06-30 01:55 J	-304803.45	-304803.42	-304803.35	0.0286	0.0279
Mercury	-5544-12-14 22:48 J	-303174.64	-303174.55	-303174.46	0.0301	0.0221
Mercury	-5543-03-13 11:31 J	-303086.15	-303086.02	-303085.89	0.0301	0.0063
Mercury	-5543-06-10 00:14 J	-302997.62	-302997.49	-302997.37	0.0302	0.0094
Mercury	-5543-09-06 12:28 J	-302909.04	-302908.98	-302908.90	0.0302	0.0251
Venus	-5542-04-12 14:09 J	-302691.08	-302690.91	-302690.73	0.0302	0.0161
Venus	-5542-11-28 20:09 J	-302460.86	-302460.66	-302460.47	0.0302	0.0114
Mars	-5531-02-18 00:43 J	-298726.58	-298726.47	-298726.34	0.0265	0.0240
Mercury	-5529-07-06 05:45 J	-297857.40	-297857.26	-297857.10	0.0260	0.0152
Mercury	-5529-10-03 02:23 J	-297768.59	-297768.40	-297768.21	0.0260	0.0002
Mercury	-5529-12-30 22:48 J	-297679.70	-297679.55	-297679.39	0.0260	0.0148
Venus	-5528-09-22 04:48 J	-297414.38	-297414.30	-297414.21	0.0260	0.0237
Venus	-5527-05-09 01:26 J	-297185.64	-297185.44	-297185.23	0.0260	0.0064
Venus	-5527-12-23 22:48 J	-296956.75	-296956.55	-296956.36	0.0260	0.0111
Moon	-5519-06-24 11:31 J	-294217.26	-294217.02	-294216.79	0.0284	0.0039
Earth	-5519-06-24 12:43 J	-294217.22	-294216.97	-294216.73	0.0284	0.0045 *
Mars	-5515-01-16 08:52 J	-292915.39	-292915.13	-292914.85	0.0299	0.0095
Mercury	-5514-05-04 01:26 J	-292442.50	-292442.44	-292442.37	0.0301	0.0258
Mercury	-5514-07-31 14:23 J	-292354.02	-292353.90	-292353.78	0.0302	0.0099
Mercury	-5514-10-28 02:52 J	-292265.50	-292265.38	-292265.25	0.0302	0.0060
Mercury	-5513-01-24 15:36 J	-292176.94	-292176.85	-292176.76	0.0302	0.0216
Venus	-5513-10-23 00:43 J	-291904.66	-291904.47	-291904.28	0.0302	0.0118
Venus	-5512-06-10 06:28 J	-291674.41	-291674.23	-291674.05	0.0302	0.0156
Earth	-5506-12-22 05:31 J	-289288.51	-289288.27	-289288.03	0.0277	0.0065
Moon	-5506-12-22 06:43 J	-289288.44	-289288.22	-289287.99	0.0277	0.0069 *
Mercury	-5500-11-23 07:11 J	-287125.33	-287125.20	-287125.05	0.0261	0.0179
Mercury	-5499-02-20 03:50 J	-287036.53	-287036.34	-287036.15	0.0261	0.0030
Mercury	-5499-05-20 00:14 J	-286947.65	-286947.49	-286947.32	0.0260	0.0120
Venus	-5498-04-04 11:45 J	-286628.13	-286628.01	-286627.88	0.0260	0.0205

Venus	-5498-11-19 08:23 J	-286399.36	-286399.15	-286398.93	0.0260	0.0032
Venus	-5497-07-05 05:31 J	-286170.44	-286170.27	-286170.09	0.0261	0.0144
Mercury	-5485-09-20 04:48 J	-281710.34	-281710.30	-281710.27	0.0301	0.0288
Mercury	-5485-12-17 17:31 J	-281621.89	-281621.77	-281621.65	0.0301	0.0130
Mercury	-5484-03-16 06:14 J	-281533.37	-281533.24	-281533.11	0.0301	0.0028
Mercury	-5484-06-12 18:43 J	-281444.82	-281444.72	-281444.62	0.0302	0.0184
Venus	-5483-05-05 12:14 J	-281118.20	-281117.99	-281117.79	0.0302	0.0071
Venus	-5483-12-21 17:31 J	-280887.91	-280887.77	-280887.61	0.0301	0.0202
Moon	-5477-12-16 02:09 J	-278701.55	-278701.41	-278701.24	0.0279	0.0220
Earth	-5477-12-16 03:36 J	-278701.48	-278701.35	-278701.21	0.0279	0.0229 *
Mercury	-5470-04-12 07:26 J	-276393.29	-276393.19	-276393.08	0.0261	0.0216
Mercury	-5470-07-10 03:50 J	-276304.52	-276304.34	-276304.16	0.0260	0.0068
Mercury	-5470-10-07 00:14 J	-276215.67	-276215.49	-276215.30	0.0260	0.0082
Mercury	-5469-01-03 20:52 J	-276126.71	-276126.63	-276126.54	0.0260	0.0232
Venus	-5469-10-14 15:50 J	-275841.98	-275841.84	-275841.68	0.0260	0.0181
Venus	-5468-05-31 12:43 J	-275613.18	-275612.97	-275612.75	0.0260	0.0008
Venus	-5467-01-15 09:50 J	-275384.24	-275384.09	-275383.91	0.0261	0.0169
Earth	-5460-06-26 06:14 J	-272665.47	-272665.24	-272664.99	0.0285	0.0059
Moon	-5460-06-26 09:21 J	-272665.34	-272665.11	-272664.88	0.0285	0.0068 *
Mercury	-5455-05-06 20:09 J	-270889.77	-270889.66	-270889.55	0.0302	0.0167
Mercury	-5455-08-03 08:52 J	-270801.26	-270801.13	-270801.00	0.0302	0.0009
Mercury	-5455-10-30 21:21 J	-270712.72	-270712.61	-270712.49	0.0302	0.0148
Venus	-5454-11-15 22:19 J	-270331.78	-270331.57	-270331.36	0.0302	0.0029
Venus	-5453-07-03 03:36 J	-270101.46	-270101.35	-270101.22	0.0301	0.0245
Earth	-5447-12-23 20:23 J	-267736.84	-267736.65	-267736.45	0.0276	0.0159
Moon	-5447-12-24 00:00 J	-267736.68	-267736.50	-267736.29	0.0276	0.0164 *
Mars	-5443-07-15 22:19 J	-266436.81	-266436.57	-266436.30	0.0264	0.0138
Mercury	-5441-08-29 08:52 J	-265661.19	-265661.13	-265661.07	0.0261	0.0244
Mercury	-5441-11-26 05:02 J	-265572.46	-265572.29	-265572.11	0.0261	0.0096
Mercury	-5440-02-23 01:40 J	-265483.62	-265483.43	-265483.25	0.0260	0.0053

Mercury	-5440-05-22 22:19 J	-265394.69	-265394.57	-265394.46	0.0260	0.0204
Venus	-5439-04-26 22:48 J	-265055.72	-265055.55	-265055.38	0.0260	0.0150
Venus	-5439-12-11 19:26 J	-264826.90	-264826.69	-264826.47	0.0261	0.0026
Venus	-5438-07-28 16:33 J	-264597.93	-264597.81	-264597.66	0.0261	0.0201
Moon	-5431-06-20 18:43 J	-262078.84	-262078.72	-262078.57	0.0283	0.0241
Earth	-5431-06-20 22:04 J	-262078.68	-262078.58	-262078.45	0.0283	0.0249 *
Mars	-5427-06-13 20:09 J	-260624.82	-260624.66	-260624.47	0.0298	0.0235
Mercury	-5426-09-23 23:31 J	-260157.62	-260157.52	-260157.42	0.0301	0.0197
Mercury	-5426-12-21 12:14 J	-260069.12	-260068.99	-260068.86	0.0301	0.0040
Mercury	-5425-03-19 00:43 J	-259980.58	-259980.47	-259980.35	0.0302	0.0118
Mercury	-5425-06-15 13:11 J	-259892.00	-259891.95	-259891.89	0.0302	0.0274
Venus	-5425-10-10 04:04 J	-259775.44	-259775.33	-259775.22	0.0302	0.0257
Venus	-5424-05-28 10:19 J	-259545.28	-259545.07	-259544.86	0.0302	0.0018
Venus	-5423-01-13 15:21 J	-259314.90	-259314.86	-259314.80	0.0301	0.0290
Moon	-5418-12-18 16:04 J	-257150.04	-257149.83	-257149.60	0.0279	0.0124
Earth	-5418-12-18 20:09 J	-257149.88	-257149.66	-257149.45	0.0279	0.0130 *
Mercury	-5411-04-15 05:16 J	-254840.44	-254840.28	-254840.12	0.0260	0.0133
Mercury	-5411-07-13 01:40 J	-254751.62	-254751.43	-254751.24	0.0260	0.0015
Mercury	-5411-10-09 22:04 J	-254662.72	-254662.58	-254662.43	0.0260	0.0165
Venus	-5410-11-07 02:52 J	-254269.56	-254269.38	-254269.19	0.0260	0.0125
Venus	-5409-06-22 23:45 J	-254040.72	-254040.51	-254040.30	0.0260	0.0049
Venus	-5408-02-06 21:07 J	-253811.72	-253811.62	-253811.51	0.0261	0.0225
Earth	-5401-06-27 22:48 J	-251113.74	-251113.55	-251113.34	0.0285	0.0160
Moon	-5401-06-28 02:09 J	-251113.60	-251113.41	-251113.20	0.0285	0.0171 *
Mercury	-5396-02-10 01:40 J	-249425.50	-249425.43	-249425.35	0.0302	0.0239
Mercury	-5396-05-09 14:38 J	-249337.02	-249336.89	-249336.77	0.0302	0.0080
Mercury	-5396-08-06 03:07 J	-249248.49	-249248.37	-249248.24	0.0302	0.0078
Mercury	-5396-11-02 15:35 J	-249159.92	-249159.85	-249159.76	0.0302	0.0235
Venus	-5395-04-22 12:43 J	-248989.11	-248988.97	-248988.82	0.0302	0.0217
Venus	-5395-12-08 18:57 J	-248758.92	-248758.71	-248758.50	0.0302	0.0058

Earth	-5388-12-25 10:33 J	-246185.15	-246185.06	-246184.95	0.0276	0.0251
Moon	-5388-12-25 11:45 J	-246185.10	-246185.01	-246184.90	0.0276	0.0251 *
Mercury	-5382-09-02 06:14 J	-244108.38	-244108.24	-244108.09	0.0261	0.0164
Mercury	-5382-11-30 02:38 J	-244019.58	-244019.39	-244019.20	0.0260	0.0016
Mercury	-5381-02-26 23:16 J	-243930.70	-243930.53	-243930.37	0.0260	0.0135
Venus	-5380-05-19 08:52 J	-243483.32	-243483.13	-243482.92	0.0260	0.0096
Venus	-5379-01-03 06:00 J	-243254.45	-243254.25	-243254.04	0.0261	0.0081
Venus	-5379-08-20 03:21 J	-243025.39	-243025.36	-243025.32	0.0261	0.0256
Moon	-5372-06-22 09:35 J	-240527.29	-240527.10	-240526.88	0.0283	0.0147
Earth	-5372-06-22 12:43 J	-240527.17	-240526.97	-240526.76	0.0283	0.0154 *
Mercury	-5367-06-30 04:48 J	-238693.35	-238693.30	-238693.24	0.0301	0.0271
Mercury	-5367-09-26 17:31 J	-238604.89	-238604.77	-238604.64	0.0301	0.0114
Mercury	-5367-12-24 06:14 J	-238516.37	-238516.24	-238516.11	0.0302	0.0045
Mercury	-5366-03-22 18:43 J	-238427.81	-238427.72	-238427.62	0.0302	0.0201
Venus	-5366-11-03 00:00 J	-238202.67	-238202.50	-238202.32	0.0302	0.0173
Venus	-5365-06-20 06:14 J	-237972.44	-237972.24	-237972.04	0.0302	0.0102
Moon	-5359-12-20 09:35 J	-235598.33	-235598.10	-235597.86	0.0278	0.0032
Earth	-5359-12-20 10:48 J	-235598.30	-235598.05	-235597.81	0.0278	0.0035 *
Mars	-5355-12-10 13:55 J	-234147.21	-234146.92	-234146.62	0.0264	0.0050
Mercury	-5352-01-19 06:14 J	-233376.35	-233376.24	-233376.11	0.0260	0.0201
Mercury	-5352-04-18 02:38 J	-233287.57	-233287.39	-233287.20	0.0260	0.0054
Mercury	-5352-07-15 23:02 J	-233198.71	-233198.54	-233198.36	0.0260	0.0096
Mercury	-5352-10-12 19:40 J	-233109.74	-233109.68	-233109.62	0.0260	0.0245
Venus	-5351-04-14 16:33 J	-232925.87	-232925.81	-232925.73	0.0260	0.0244
Venus	-5351-11-29 13:11 J	-232697.16	-232696.95	-232696.75	0.0260	0.0071
Venus	-5350-07-16 09:50 J	-232468.28	-232468.09	-232467.89	0.0260	0.0104
Moon	-5342-06-30 10:33 J	-229562.15	-229562.06	-229561.96	0.0286	0.0264
Earth	-5342-06-30 11:45 J	-229562.12	-229562.01	-229561.89	0.0286	0.0252 *
Mercury	-5337-02-13 19:26 J	-227872.79	-227872.69	-227872.57	0.0302	0.0159
Mercury	-5337-05-12 08:24 J	-227784.28	-227784.15	-227784.02	0.0302	0.0008

Mercury	-5337-08-08 20:52 J	-227695.74	-227695.63	-227695.52	0.0302	0.0157
Venus	-5336-05-15 07:26 J	-227416.37	-227416.19	-227416.00	0.0302	0.0136
Venus	-5336-12-31 13:26 J	-227186.12	-227185.94	-227185.75	0.0302	0.0141
Mercury	-5323-06-08 06:57 J	-222644.28	-222644.21	-222644.13	0.0261	0.0235
Mercury	-5323-09-05 03:21 J	-222555.54	-222555.36	-222555.19	0.0260	0.0088
Mercury	-5323-12-02 23:45 J	-222466.70	-222466.51	-222466.33	0.0260	0.0061
Mercury	-5322-03-01 19:55 J	-222377.77	-222377.67	-222377.55	0.0260	0.0211
Venus	-5322-10-25 21:35 J	-222139.71	-222139.60	-222139.47	0.0260	0.0216
Venus	-5321-06-10 18:14 J	-221910.95	-221910.74	-221910.53	0.0260	0.0042
Venus	-5320-01-25 15:07 J	-221682.05	-221681.87	-221681.68	0.0261	0.0133
Earth	-5313-06-23 23:16 J	-218975.77	-218975.53	-218975.29	0.0284	0.0068
Moon	-5313-06-24 00:14 J	-218975.72	-218975.49	-218975.25	0.0284	0.0059 *
Mercury	-5308-07-02 22:19 J	-217140.67	-217140.57	-217140.47	0.0301	0.0195
Mercury	-5308-09-29 11:02 J	-217052.17	-217052.04	-217051.91	0.0302	0.0037
Mercury	-5308-12-26 23:45 J	-216963.63	-216963.51	-216963.39	0.0302	0.0120
Mercury	-5307-03-25 12:14 J	-216875.04	-216874.99	-216874.94	0.0302	0.0276
Venus	-5307-11-25 17:31 J	-216629.97	-216629.77	-216629.57	0.0302	0.0094
Venus	-5306-07-13 23:31 J	-216399.68	-216399.52	-216399.35	0.0301	0.0182
Earth	-5300-12-21 22:04 J	-214046.81	-214046.58	-214046.34	0.0278	0.0053
Moon	-5300-12-22 01:11 J	-214046.68	-214046.45	-214046.21	0.0278	0.0054 *
Mercury	-5293-01-23 03:07 J	-211823.53	-211823.37	-211823.20	0.0260	0.0127
Mercury	-5293-04-20 23:31 J	-211734.71	-211734.52	-211734.33	0.0260	0.0022
Mercury	-5293-07-18 19:55 J	-211645.81	-211645.67	-211645.53	0.0260	0.0170
Venus	-5292-05-07 01:11 J	-211353.58	-211353.45	-211353.30	0.0259	0.0193
Venus	-5292-12-21 21:50 J	-211124.80	-211124.59	-211124.37	0.0260	0.0019
Venus	-5291-08-07 18:43 J	-210895.89	-210895.72	-210895.55	0.0260	0.0155
Mercury	-5279-11-19 23:31 J	-206408.58	-206408.52	-206408.44	0.0302	0.0248
Mercury	-5278-02-16 12:28 J	-206320.10	-206319.98	-206319.85	0.0302	0.0089
Mercury	-5278-05-16 01:11 J	-206231.58	-206231.45	-206231.32	0.0302	0.0069
Mercury	-5278-08-12 13:40 J	-206143.01	-206142.93	-206142.84	0.0302	0.0226

Venus	-5277-06-06 22:48 J	-205843.75	-205843.55	-205843.34	0.0303	0.0061
Venus	-5276-01-23 04:48 J	-205613.44	-205613.30	-205613.15	0.0302	0.0215
Moon	-5271-12-16 12:14 J	-203460.10	-203459.99	-203459.86	0.0280	0.0244
Earth	-5271-12-16 15:21 J	-203459.97	-203459.86	-203459.75	0.0280	0.0249 *
Mars	-5266-05-06 19:26 J	-201857.99	-201857.69	-201857.39	0.0264	0.0025
Mercury	-5264-06-11 02:52 J	-201091.52	-201091.38	-201091.23	0.0260	0.0165
Mercury	-5264-09-07 23:16 J	-201002.72	-201002.53	-201002.34	0.0260	0.0018
Mercury	-5264-12-05 19:40 J	-200913.84	-200913.68	-200913.51	0.0260	0.0131
Venus	-5263-11-17 05:31 J	-200567.43	-200567.27	-200567.11	0.0260	0.0167
Venus	-5262-07-04 01:40 J	-200338.64	-200338.43	-200338.21	0.0260	0.0008
Venus	-5261-02-17 22:19 J	-200109.71	-200109.57	-200109.41	0.0260	0.0183
Earth	-5254-06-26 04:48 J	-197424.54	-197424.30	-197424.05	0.0284	0.0010
Moon	-5254-06-26 08:24 J	-197424.39	-197424.15	-197423.90	0.0284	0.0020 *
Mercury	-5249-04-08 01:55 J	-195676.45	-195676.42	-195676.38	0.0301	0.0289
Mercury	-5249-07-05 14:52 J	-195587.99	-195587.88	-195587.76	0.0301	0.0130
Mercury	-5249-10-02 03:35 J	-195499.48	-195499.35	-195499.22	0.0302	0.0028
Mercury	-5249-12-29 16:04 J	-195410.92	-195410.83	-195410.72	0.0302	0.0185
Venus	-5248-05-02 00:57 J	-195287.49	-195287.46	-195287.43	0.0302	0.0298
Venus	-5248-12-18 07:40 J	-195057.39	-195057.18	-195056.97	0.0302	0.0022
Venus	-5247-08-05 13:26 J	-194827.05	-194826.94	-194826.82	0.0301	0.0253
Earth	-5241-12-23 06:00 J	-192495.46	-192495.25	-192495.03	0.0277	0.0132
Moon	-5241-12-23 08:52 J	-192495.34	-192495.13	-192494.91	0.0277	0.0133 *
Mercury	-5235-10-29 02:38 J	-190359.50	-190359.39	-190359.27	0.0260	0.0205
Mercury	-5234-01-25 23:02 J	-190270.73	-190270.54	-190270.36	0.0260	0.0058
Mercury	-5234-04-24 19:11 J	-190181.87	-190181.70	-190181.52	0.0260	0.0090
Mercury	-5234-07-22 15:35 J	-190092.91	-190092.85	-190092.77	0.0259	0.0239
Venus	-5233-05-29 08:24 J	-189781.32	-189781.15	-189780.97	0.0259	0.0144
Venus	-5232-01-13 04:48 J	-189552.51	-189552.30	-189552.09	0.0259	0.0030
Venus	-5232-08-30 01:11 J	-189323.57	-189323.45	-189323.30	0.0260	0.0204
Mercury	-5220-11-22 15:50 J	-184855.94	-184855.84	-184855.74	0.0302	0.0187

Mercury	-5219-02-19 04:33 J	-184767.44	-184767.31	-184767.18	0.0302	0.0029
Mercury	-5219-05-18 17:16 J	-184678.90	-184678.78	-184678.66	0.0302	0.0129
Mercury	-5219-08-15 05:45 J	-184590.30	-184590.26	-184590.22	0.0303	0.0285
Venus	-5219-11-12 04:19 J	-184501.41	-184501.32	-184501.22	0.0303	0.0269
Venus	-5218-06-30 11:16 J	-184271.24	-184271.03	-184270.82	0.0303	0.0010
Venus	-5217-02-15 16:48 J	-184040.86	-184040.80	-184040.72	0.0302	0.0284
Moon	-5212-12-17 17:16 J	-181908.96	-181908.78	-181908.58	0.0279	0.0170
Earth	-5212-12-17 20:09 J	-181908.84	-181908.66	-181908.46	0.0279	0.0176 *
Mercury	-5205-03-17 01:55 J	-179627.47	-179627.42	-179627.36	0.0260	0.0248
Mercury	-5205-06-13 22:04 J	-179538.75	-179538.58	-179538.40	0.0260	0.0102
Mercury	-5205-09-10 18:28 J	-179449.92	-179449.73	-179449.54	0.0260	0.0046
Mercury	-5205-12-08 14:52 J	-179361.00	-179360.88	-179360.75	0.0260	0.0195
Venus	-5204-12-09 11:16 J	-178995.21	-178995.03	-178994.84	0.0260	0.0121
Venus	-5203-07-26 07:40 J	-178766.39	-178766.18	-178765.97	0.0260	0.0053
Venus	-5202-03-12 04:19 J	-178537.42	-178537.32	-178537.22	0.0260	0.0228
Earth	-5195-06-27 06:43 J	-175873.46	-175873.22	-175872.98	0.0284	0.0076
Moon	-5195-06-27 07:55 J	-175873.41	-175873.17	-175872.92	0.0284	0.0087 *
Mercury	-5190-04-11 17:45 J	-174123.84	-174123.76	-174123.68	0.0301	0.0233
Mercury	-5190-07-09 06:28 J	-174035.35	-174035.23	-174035.10	0.0302	0.0075
Mercury	-5190-10-05 19:11 J	-173946.82	-173946.70	-173946.57	0.0302	0.0083
Mercury	-5189-01-02 07:55 J	-173858.25	-173858.17	-173858.10	0.0302	0.0239
Venus	-5189-05-24 11:31 J	-173715.15	-173715.02	-173714.89	0.0302	0.0234
Venus	-5188-01-09 18:14 J	-173484.95	-173484.74	-173484.54	0.0302	0.0043
Moon	-5182-12-25 08:09 J	-170944.33	-170944.16	-170943.98	0.0277	0.0198
Earth	-5182-12-25 09:21 J	-170944.27	-170944.11	-170943.94	0.0277	0.0202 *
Mars	-5178-09-30 15:07 J	-169569.14	-169568.87	-169568.57	0.0264	0.0086
Mercury	-5176-10-31 21:35 J	-168806.76	-168806.60	-168806.44	0.0260	0.0143
Mercury	-5175-01-28 17:45 J	-168717.95	-168717.76	-168717.57	0.0260	0.0005
Mercury	-5175-04-27 14:09 J	-168629.06	-168628.91	-168628.75	0.0259	0.0152
Venus	-5174-06-21 13:55 J	-168209.12	-168208.92	-168208.73	0.0259	0.0099

Venus	-5173-02-05 10:04 J	-167980.29	-167980.08	-167979.88	0.0259	0.0075
Venus	-5173-09-21 06:28 J	-167751.28	-167751.23	-167751.16	0.0260	0.0249
Moon	-5166-06-21 07:40 J	-165287.28	-165287.18	-165287.06	0.0282	0.0248
Earth	-5166-06-21 08:24 J	-165287.23	-165287.15	-165287.04	0.0282	0.0259 *
Mercury	-5161-08-28 18:14 J	-163391.76	-163391.74	-163391.72	0.0302	0.0296
Mercury	-5161-11-25 06:57 J	-163303.32	-163303.21	-163303.09	0.0302	0.0137
Mercury	-5160-02-21 19:55 J	-163214.80	-163214.67	-163214.54	0.0302	0.0023
Mercury	-5160-05-21 08:24 J	-163126.25	-163126.15	-163126.04	0.0303	0.0179
Venus	-5160-12-04 13:11 J	-162929.10	-162928.95	-162928.80	0.0303	0.0208
Venus	-5159-07-22 19:55 J	-162698.87	-162698.67	-162698.46	0.0303	0.0070
Earth	-5153-12-18 21:35 J	-160357.82	-160357.60	-160357.37	0.0279	0.0109
Moon	-5153-12-18 22:48 J	-160357.77	-160357.55	-160357.33	0.0279	0.0108 *
Mercury	-5146-03-20 20:09 J	-158074.78	-158074.66	-158074.53	0.0260	0.0191
Mercury	-5146-06-17 16:33 J	-157986.00	-157985.81	-157985.63	0.0260	0.0044
Mercury	-5146-09-14 12:43 J	-157897.14	-157896.97	-157896.79	0.0260	0.0104
Mercury	-5146-12-12 09:07 J	-157808.15	-157808.12	-157808.07	0.0259	0.0253
Venus	-5145-05-16 19:26 J	-157651.74	-157651.69	-157651.62	0.0259	0.0250
Venus	-5145-12-31 15:35 J	-157423.05	-157422.85	-157422.64	0.0259	0.0077
Venus	-5144-08-17 12:00 J	-157194.20	-157194.00	-157193.80	0.0260	0.0097
Moon	-5136-06-28 01:26 J	-154322.65	-154322.44	-154322.22	0.0284	0.0151
Earth	-5136-06-28 04:48 J	-154322.52	-154322.30	-154322.08	0.0284	0.0135 *
Mercury	-5131-04-14 08:38 J	-152571.23	-152571.14	-152571.03	0.0301	0.0187
Mercury	-5131-07-11 21:35 J	-152482.73	-152482.60	-152482.47	0.0302	0.0028
Mercury	-5131-10-08 10:19 J	-152394.19	-152394.07	-152393.96	0.0302	0.0129
Mercury	-5130-01-04 22:48 J	-152305.59	-152305.55	-152305.51	0.0302	0.0285
Venus	-5130-06-16 19:11 J	-152142.86	-152142.70	-152142.52	0.0302	0.0176
Venus	-5129-02-02 01:55 J	-151912.62	-151912.42	-151912.22	0.0302	0.0102
Moon	-5123-12-26 05:31 J	-149393.35	-149393.27	-149393.18	0.0277	0.0258
Earth	-5123-12-26 09:07 J	-149393.18	-149393.12	-149393.04	0.0277	0.0264 *
Mercury	-5117-08-06 19:26 J	-147342.76	-147342.69	-147342.60	0.0260	0.0233



Mercury	-5117-11-03 15:35 J	-147254.02	-147253.85	-147253.67	0.0260	0.0087
Mercury	-5116-01-31 11:45 J	-147165.19	-147165.01	-147164.82	0.0260	0.0061
Mercury	-5116-04-30 08:09 J	-147076.26	-147076.16	-147076.04	0.0259	0.0208
Venus	-5116-11-26 21:50 J	-146865.68	-146865.59	-146865.48	0.0259	0.0227
Venus	-5115-07-13 17:45 J	-146636.96	-146636.76	-146636.55	0.0259	0.0056
Venus	-5114-02-27 13:55 J	-146408.10	-146407.92	-146407.73	0.0259	0.0119
Earth	-5107-06-22 06:14 J	-143736.41	-143736.24	-143736.06	0.0281	0.0199
Moon	-5107-06-22 09:35 J	-143736.27	-143736.10	-143735.90	0.0282	0.0185 *
Mercury	-5102-09-01 08:52 J	-141839.20	-141839.13	-141839.06	0.0302	0.0252
Mercury	-5102-11-28 21:50 J	-141750.72	-141750.59	-141750.47	0.0302	0.0094
Mercury	-5101-02-25 10:33 J	-141662.19	-141662.06	-141661.94	0.0302	0.0065
Mercury	-5101-05-23 23:02 J	-141573.62	-141573.54	-141573.45	0.0303	0.0221
Venus	-5101-12-26 19:40 J	-141356.86	-141356.68	-141356.50	0.0303	0.0151
Venus	-5100-08-14 02:09 J	-141126.59	-141126.41	-141126.21	0.0303	0.0128
Earth	-5094-12-20 19:11 J	-138806.94	-138806.70	-138806.46	0.0279	0.0051
Moon	-5094-12-20 22:48 J	-138806.78	-138806.55	-138806.30	0.0279	0.0053 *
Mars	-5089-02-23 14:09 J	-137281.17	-137280.91	-137280.62	0.0264	0.0116
Mercury	-5087-03-23 13:55 J	-136522.08	-136521.92	-136521.76	0.0260	0.0138
Mercury	-5087-06-20 10:04 J	-136433.27	-136433.08	-136432.89	0.0260	0.0009
Mercury	-5087-09-17 06:28 J	-136344.38	-136344.23	-136344.08	0.0259	0.0157
Venus	-5086-06-08 22:33 J	-136079.67	-136079.56	-136079.42	0.0259	0.0208
Venus	-5085-01-23 18:57 J	-135850.92	-135850.71	-135850.50	0.0259	0.0035
Venus	-5085-09-08 15:07 J	-135622.05	-135621.87	-135621.69	0.0260	0.0139
Moon	-5077-06-28 21:35 J	-132771.75	-132771.60	-132771.42	0.0284	0.0208
Earth	-5077-06-29 00:14 J	-132771.66	-132771.49	-132771.30	0.0284	0.0191 *
Mercury	-5072-04-16 23:02 J	-131018.65	-131018.54	-131018.42	0.0302	0.0147
Mercury	-5072-07-14 12:00 J	-130930.13	-130930.00	-130929.87	0.0302	0.0015
Mercury	-5072-10-11 00:28 J	-130841.58	-130841.48	-130841.37	0.0302	0.0169
Venus	-5071-07-09 00:43 J	-130570.66	-130570.47	-130570.28	0.0302	0.0121
Venus	-5070-02-24 07:12 J	-130340.38	-130340.20	-130340.02	0.0302	0.0157

Mercury	-5058-08-10 12:57 J	-125790.09	-125789.96	-125789.82	0.0260	0.0181
Mercury	-5058-11-07 09:07 J	-125701.30	-125701.12	-125700.93	0.0260	0.0035
Mercury	-5057-02-04 05:31 J	-125612.44	-125612.27	-125612.10	0.0260	0.0113
Venus	-5057-12-19 01:12 J	-125293.59	-125293.45	-125293.30	0.0259	0.0185
Venus	-5056-08-04 21:07 J	-125064.84	-125064.62	-125064.41	0.0259	0.0013
Venus	-5055-03-21 17:02 J	-124835.95	-124835.79	-124835.62	0.0259	0.0161
Earth	-5048-06-23 01:55 J	-122185.62	-122185.42	-122185.20	0.0281	0.0145
Moon	-5048-06-23 03:50 J	-122185.56	-122185.34	-122185.11	0.0281	0.0128 *
Mercury	-5043-09-03 23:16 J	-120286.62	-120286.53	-120286.44	0.0302	0.0213
Mercury	-5043-12-01 12:00 J	-120198.13	-120198.00	-120197.87	0.0302	0.0055
Mercury	-5042-02-28 00:43 J	-120109.59	-120109.47	-120109.35	0.0302	0.0103
Mercury	-5042-05-27 13:12 J	-120021.01	-120020.95	-120020.88	0.0303	0.0259
Venus	-5041-01-19 00:43 J	-119784.67	-119784.47	-119784.27	0.0303	0.0097
Venus	-5041-09-05 06:57 J	-119554.37	-119554.21	-119554.03	0.0303	0.0182
Moon	-5035-12-21 14:38 J	-117256.15	-117255.89	-117255.64	0.0279	0.0007
Earth	-5035-12-21 14:24 J	-117256.14	-117255.90	-117255.65	0.0279	0.0005 *
Mercury	-5029-12-27 10:47 J	-115058.12	-115058.05	-115057.97	0.0260	0.0234
Mercury	-5028-03-26 06:57 J	-114969.39	-114969.21	-114969.03	0.0260	0.0088
Mercury	-5028-06-23 03:21 J	-114880.55	-114880.36	-114880.18	0.0260	0.0059
Mercury	-5028-09-19 23:45 J	-114791.63	-114791.51	-114791.40	0.0259	0.0207
Venus	-5027-07-01 01:12 J	-114507.60	-114507.45	-114507.28	0.0259	0.0167
Venus	-5026-02-14 21:21 J	-114278.82	-114278.61	-114278.40	0.0259	0.0006
Venus	-5026-10-01 17:31 J	-114049.92	-114049.77	-114049.61	0.0260	0.0180
Earth	-5018-06-30 19:55 J	-111220.79	-111220.67	-111220.54	0.0284	0.0246
Moon	-5018-06-30 22:19 J	-111220.65	-111220.57	-111220.47	0.0284	0.0262 *
Mars	-5015-04-25 01:55 J	-110191.45	-110191.42	-110191.36	0.0296	0.0293
Mercury	-5013-01-22 00:28 J	-109554.54	-109554.48	-109554.42	0.0301	0.0266
Mercury	-5013-04-19 13:26 J	-109466.06	-109465.94	-109465.82	0.0302	0.0108
Mercury	-5013-07-17 02:09 J	-109377.54	-109377.41	-109377.28	0.0302	0.0050
Mercury	-5013-10-13 14:38 J	-109288.98	-109288.89	-109288.79	0.0302	0.0206

Venus	-5012-07-31 05:31 J	-108998.47	-108998.27	-108998.06	0.0302	0.0067
Venus	-5011-03-18 11:45 J	-108768.16	-108768.01	-108767.86	0.0302	0.0210
Mars	-5001-07-18 16:04 J	-104993.07	-104992.83	-104992.58	0.0264	0.0153

# 5TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 5th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-4999-08-13 06:00 J	-104237.40	-104237.25	-104237.08	0.0260	0.0132		
Mercury	-4999-11-10 02:24 J	-104148.59	-104148.40	-104148.21	0.0260	0.0016		
Mercury	-4998-02-06 22:33 J	-104059.70	-104059.56	-104059.40	0.0260	0.0164		
Venus	-4997-01-11 03:35 J	-103721.52	-103721.35	-103721.16	0.0259	0.0144		
Venus	-4997-08-26 23:45 J	-103492.72	-103492.51	-103492.30	0.0259	0.0029		
Venus	-4996-04-12 19:40 J	-103263.80	-103263.68	-103263.54	0.0260	0.0202		
Moon	-4989-06-23 19:12 J	-100634.94	-100634.70	-100634.45	0.0281	0.0072		
Earth	-4989-06-23 22:19 J	-100634.80	-100634.57	-100634.33	0.0281	0.0087	*	
Mercury	-4984-09-06 13:26 J	-98734.04	-98733.94	-98733.83	0.0302	0.0174		
Mercury	-4984-12-04 02:09 J	-98645.54	-98645.41	-98645.28	0.0302	0.0018		
Mercury	-4983-03-02 14:52 J	-98556.99	-98556.88	-98556.77	0.0302	0.0140		
Mercury	-4983-05-30 03:21 J	-98468.38	-98468.36	-98468.33	0.0302	0.0296		
Venus	-4982-02-10 05:02 J	-98212.50	-98212.29	-98212.08	0.0303	0.0044		
Venus	-4982-09-28 11:02 J	-97982.16	-97982.04	-97981.90	0.0302	0.0234		
Moon	-4976-12-22 04:33 J	-95705.55	-95705.31	-95705.07	0.0280	0.0039		
Earth	-4976-12-22 08:09 J	-95705.39	-95705.16	-95704.91	0.0280	0.0053	*	

Mercury	-4970-12-31 03:35 J	-93505.47	-93505.35	-93505.21	0.0260	0.0186
Mercury	-4969-03-29 00:00 J	-93416.69	-93416.50	-93416.31	0.0260	0.0039
Mercury	-4969-06-25 20:09 J	-93327.83	-93327.66	-93327.48	0.0260	0.0109
Mercury	-4969-09-22 16:33 J	-93238.82	-93238.81	-93238.77	0.0260	0.0257
Venus	-4968-07-23 03:35 J	-92935.53	-92935.35	-92935.16	0.0259	0.0127
Venus	-4967-03-08 23:45 J	-92706.72	-92706.51	-92706.30	0.0259	0.0047
Venus	-4967-10-23 20:09 J	-92477.77	-92477.66	-92477.55	0.0260	0.0221
Mercury	-4954-01-24 14:38 J	-88001.97	-88001.89	-88001.80	0.0301	0.0228
Mercury	-4954-04-23 03:35 J	-87913.48	-87913.35	-87913.22	0.0302	0.0070
Mercury	-4954-07-20 16:19 J	-87824.94	-87824.82	-87824.70	0.0302	0.0087
Mercury	-4954-10-17 04:47 J	-87736.37	-87736.30	-87736.22	0.0302	0.0243
Venus	-4953-01-05 02:52 J	-87656.42	-87656.38	-87656.32	0.0302	0.0291
Venus	-4953-08-22 10:04 J	-87426.29	-87426.08	-87425.87	0.0302	0.0015
Venus	-4952-04-09 16:19 J	-87195.93	-87195.82	-87195.72	0.0302	0.0262
Earth	-4947-12-16 21:21 J	-85118.69	-85118.61	-85118.50	0.0282	0.0259
Moon	-4947-12-17 01:12 J	-85118.51	-85118.45	-85118.38	0.0282	0.0269 *
Mercury	-4940-05-19 02:52 J	-82773.46	-82773.38	-82773.28	0.0261	0.0228
Mercury	-4940-08-15 23:16 J	-82684.71	-82684.53	-82684.35	0.0260	0.0081
Mercury	-4940-11-12 19:26 J	-82595.87	-82595.69	-82595.50	0.0260	0.0066
Mercury	-4939-02-09 15:50 J	-82506.94	-82506.84	-82506.73	0.0260	0.0214
Venus	-4938-02-02 06:14 J	-82149.43	-82149.24	-82149.04	0.0259	0.0102
Venus	-4938-09-19 02:24 J	-81920.61	-81920.40	-81920.20	0.0259	0.0071
Venus	-4937-05-04 22:33 J	-81691.62	-81691.56	-81691.48	0.0260	0.0245
Moon	-4930-06-25 17:45 J	-79084.00	-79083.76	-79083.51	0.0281	0.0015
Earth	-4930-06-25 20:38 J	-79083.89	-79083.64	-79083.40	0.0281	0.0028 *
Mars	-4927-09-17 06:57 J	-77904.25	-77904.21	-77904.14	0.0296	0.0289
Mercury	-4925-06-12 15:07 J	-77269.90	-77269.87	-77269.83	0.0301	0.0289
Mercury	-4925-09-09 03:50 J	-77181.45	-77181.34	-77181.22	0.0301	0.0133
Mercury	-4925-12-06 16:47 J	-77092.93	-77092.80	-77092.67	0.0302	0.0026
Mercury	-4924-03-05 05:16 J	-77004.38	-77004.28	-77004.17	0.0302	0.0181

Venus	-4924-07-17 03:50 J	-76870.43	-76870.34	-76870.24	0.0302	0.0265
Venus	-4923-03-04 10:33 J	-76640.27	-76640.06	-76639.85	0.0303	0.0012
Venus	-4923-10-20 16:19 J	-76409.87	-76409.82	-76409.75	0.0302	0.0288
Moon	-4917-12-23 01:40 J	-74154.65	-74154.43	-74154.20	0.0280	0.0089
Earth	-4917-12-23 02:24 J	-74154.61	-74154.40	-74154.16	0.0280	0.0104 *
Mars	-4913-12-11 04:04 J	-72705.54	-72705.33	-72705.08	0.0264	0.0169
Mercury	-4910-01-02 20:52 J	-71952.79	-71952.63	-71952.47	0.0260	0.0136
Mercury	-4910-04-01 17:02 J	-71863.97	-71863.79	-71863.60	0.0260	0.0013
Mercury	-4910-06-29 13:26 J	-71775.08	-71774.94	-71774.78	0.0260	0.0159
Venus	-4910-12-29 10:19 J	-71592.09	-71592.07	-71592.04	0.0260	0.0257
Venus	-4909-08-14 06:28 J	-71363.43	-71363.23	-71363.03	0.0259	0.0084
Venus	-4908-03-31 02:38 J	-71134.59	-71134.39	-71134.19	0.0259	0.0090
Mercury	-4895-01-27 05:16 J	-66449.38	-66449.28	-66449.17	0.0301	0.0184
Mercury	-4895-04-25 18:14 J	-66360.87	-66360.74	-66360.61	0.0301	0.0029
Mercury	-4895-07-23 06:43 J	-66272.33	-66272.22	-66272.10	0.0302	0.0129
Mercury	-4895-10-19 19:26 J	-66183.73	-66183.69	-66183.65	0.0302	0.0284
Venus	-4894-01-27 09:07 J	-66084.25	-66084.12	-66083.99	0.0302	0.0235
Venus	-4894-09-14 15:35 J	-65854.06	-65853.85	-65853.64	0.0302	0.0043
Earth	-4888-12-17 16:04 J	-63567.99	-63567.83	-63567.67	0.0282	0.0207
Moon	-4888-12-17 16:47 J	-63567.95	-63567.80	-63567.63	0.0282	0.0218 *
Mercury	-4881-05-21 20:23 J	-61220.79	-61220.65	-61220.51	0.0261	0.0176
Mercury	-4881-08-18 16:33 J	-61131.99	-61131.81	-61131.62	0.0261	0.0030
Mercury	-4881-11-15 12:57 J	-61043.13	-61042.96	-61042.79	0.0260	0.0119
Venus	-4880-07-10 13:12 J	-60806.03	-60805.95	-60805.84	0.0260	0.0232
Venus	-4879-02-24 09:36 J	-60577.31	-60577.10	-60576.89	0.0260	0.0059
Venus	-4879-10-11 05:45 J	-60348.45	-60348.26	-60348.07	0.0260	0.0115
Earth	-4871-06-26 20:52 J	-57532.87	-57532.63	-57532.38	0.0281	0.0039
Moon	-4871-06-26 22:33 J	-57532.79	-57532.56	-57532.32	0.0281	0.0049 *
Mercury	-4866-06-16 06:00 J	-55717.32	-55717.25	-55717.17	0.0301	0.0242
Mercury	-4866-09-12 18:57 J	-55628.84	-55628.71	-55628.59	0.0301	0.0085

Mercury	-4866-12-10 07:40 J	-55540.31	-55540.18	-55540.06	0.0302	0.0072
Mercury	-4865-03-07 20:09 J	-55451.74	-55451.66	-55451.57	0.0302	0.0227
Venus	-4865-08-08 11:02 J	-55298.19	-55298.04	-55297.88	0.0302	0.0206
Venus	-4864-03-26 17:31 J	-55067.97	-55067.77	-55067.56	0.0302	0.0072
Earth	-4858-12-24 22:33 J	-52603.76	-52603.56	-52603.36	0.0280	0.0158
Moon	-4858-12-25 01:40 J	-52603.63	-52603.43	-52603.22	0.0280	0.0143 *
Mercury	-4852-10-08 18:14 J	-50488.83	-50488.74	-50488.65	0.0261	0.0230
Mercury	-4851-01-05 14:23 J	-50400.08	-50399.90	-50399.72	0.0261	0.0083
Mercury	-4851-04-04 10:47 J	-50311.24	-50311.05	-50310.87	0.0260	0.0065
Mercury	-4851-07-02 07:12 J	-50222.31	-50222.20	-50222.09	0.0260	0.0213
Venus	-4850-01-20 13:40 J	-50020.04	-50019.93	-50019.80	0.0260	0.0214
Venus	-4850-09-06 10:04 J	-49791.29	-49791.08	-49790.87	0.0260	0.0040
Venus	-4849-04-22 06:28 J	-49562.41	-49562.23	-49562.05	0.0260	0.0134
Moon	-4842-06-21 03:36 J	-46946.41	-46946.35	-46946.26	0.0280	0.0267
Mars	-4838-02-10 09:07 J	-45616.25	-45616.12	-45615.97	0.0296	0.0254
Mercury	-4837-11-02 07:55 J	-44985.20	-44985.17	-44985.14	0.0301	0.0290
Mercury	-4836-01-29 20:38 J	-44896.76	-44896.64	-44896.52	0.0301	0.0133
Mercury	-4836-04-28 09:21 J	-44808.24	-44808.11	-44807.98	0.0301	0.0024
Mercury	-4836-07-25 22:04 J	-44719.69	-44719.58	-44719.48	0.0302	0.0179
Venus	-4835-02-18 17:31 J	-44511.94	-44511.77	-44511.60	0.0302	0.0172
Venus	-4835-10-07 00:00 J	-44281.70	-44281.50	-44281.31	0.0302	0.0105
Moon	-4829-12-18 10:04 J	-42017.27	-42017.08	-42016.87	0.0282	0.0164
Earth	-4829-12-18 13:26 J	-42017.15	-42016.94	-42016.73	0.0282	0.0149 *
Mars	-4824-05-06 09:36 J	-40417.27	-40417.10	-40416.92	0.0265	0.0216
Mercury	-4822-05-25 14:09 J	-39668.07	-39667.91	-39667.74	0.0261	0.0121
Mercury	-4822-08-22 10:33 J	-39579.25	-39579.06	-39578.87	0.0261	0.0027
Mercury	-4822-11-19 06:43 J	-39490.35	-39490.22	-39490.07	0.0261	0.0176
Venus	-4821-08-01 17:31 J	-39233.91	-39233.77	-39233.61	0.0260	0.0187
Venus	-4820-03-18 13:55 J	-39005.13	-39004.92	-39004.70	0.0260	0.0013
Venus	-4820-11-02 10:04 J	-38776.23	-38776.08	-38775.90	0.0260	0.0162

Earth	-4812-06-28 01:26 J	-35981.66	-35981.44	-35981.21	0.0281	0.0113
Moon	-4812-06-28 05:02 J	-35981.51	-35981.29	-35981.07	0.0281	0.0124 *
Mercury	-4807-06-18 22:04 J	-34164.69	-34164.58	-34164.48	0.0300	0.0185
Mercury	-4807-09-15 10:47 J	-34076.18	-34076.05	-34075.92	0.0301	0.0030
Mercury	-4807-12-12 23:16 J	-33987.65	-33987.53	-33987.41	0.0301	0.0127
Mercury	-4806-03-11 11:45 J	-33899.05	-33899.01	-33898.96	0.0302	0.0281
Venus	-4806-08-31 21:21 J	-33725.79	-33725.61	-33725.42	0.0302	0.0139
Venus	-4805-04-18 03:36 J	-33495.54	-33495.35	-33495.17	0.0302	0.0137
Earth	-4799-12-25 21:21 J	-31052.76	-31052.61	-31052.45	0.0279	0.0218
Moon	-4799-12-25 23:45 J	-31052.68	-31052.51	-31052.34	0.0279	0.0203 *
Mercury	-4793-10-11 12:14 J	-28936.12	-28935.99	-28935.84	0.0261	0.0173
Mercury	-4792-01-08 08:38 J	-28847.33	-28847.14	-28846.95	0.0261	0.0025
Mercury	-4792-04-07 05:02 J	-28758.45	-28758.29	-28758.12	0.0260	0.0123
Venus	-4791-02-11 18:28 J	-28447.89	-28447.73	-28447.56	0.0260	0.0168
Venus	-4791-09-28 15:07 J	-28219.08	-28218.87	-28218.66	0.0260	0.0007
Venus	-4790-05-15 11:45 J	-27990.16	-27990.01	-27989.86	0.0260	0.0181
Moon	-4783-06-22 07:11 J	-25395.37	-25395.20	-25395.01	0.0280	0.0192
Earth	-4783-06-22 10:48 J	-25395.20	-25395.05	-25394.87	0.0280	0.0205 *
Mercury	-4778-11-05 23:45 J	-23432.59	-23432.51	-23432.42	0.0300	0.0230
Mercury	-4777-02-02 12:43 J	-23344.10	-23343.97	-23343.85	0.0301	0.0074
Mercury	-4777-05-01 01:11 J	-23255.57	-23255.45	-23255.32	0.0301	0.0082
Mercury	-4777-07-28 13:40 J	-23167.00	-23166.93	-23166.84	0.0301	0.0237
Venus	-4776-03-13 04:33 J	-22939.50	-22939.31	-22939.11	0.0302	0.0104
Venus	-4776-10-29 10:33 J	-22709.22	-22709.06	-22708.88	0.0302	0.0173
Moon	-4770-12-20 11:16 J	-20466.24	-20466.03	-20465.80	0.0281	0.0099
Earth	-4770-12-20 13:55 J	-20466.15	-20465.92	-20465.68	0.0281	0.0084 *
Mercury	-4763-02-28 12:28 J	-18204.08	-18203.98	-18203.86	0.0262	0.0208
Mercury	-4763-05-28 08:52 J	-18115.31	-18115.13	-18114.95	0.0261	0.0060
Mercury	-4763-08-25 05:16 J	-18026.46	-18026.28	-18026.10	0.0261	0.0088
Mercury	-4763-11-22 01:40 J	-17937.50	-17937.43	-17937.35	0.0261	0.0238

Venus	-4762-08-24 23:16 J	-17661.70	-17661.53	-17661.35	0.0260	0.0139
Venus	-4761-04-09 19:55 J	-17432.88	-17432.67	-17432.46	0.0260	0.0036
Venus	-4761-11-24 16:33 J	-17203.93	-17203.81	-17203.69	0.0260	0.0211
Earth	-4753-06-29 09:35 J	-14430.26	-14430.10	-14429.91	0.0282	0.0195
Moon	-4753-06-29 10:33 J	-14430.23	-14430.06	-14429.87	0.0282	0.0203 *
Mars	-4750-07-07 03:07 J	-13327.58	-13327.37	-13327.14	0.0295	0.0185
Mercury	-4748-03-25 01:40 J	-12700.47	-12700.43	-12700.37	0.0300	0.0274
Mercury	-4748-06-21 14:38 J	-12612.01	-12611.89	-12611.77	0.0300	0.0118
Mercury	-4748-09-18 03:07 J	-12523.49	-12523.37	-12523.24	0.0301	0.0038
Mercury	-4748-12-15 15:50 J	-12434.94	-12434.84	-12434.74	0.0301	0.0191
Venus	-4747-09-23 11:02 J	-12153.25	-12153.04	-12152.83	0.0302	0.0066
Venus	-4746-05-11 16:33 J	-11922.95	-11922.81	-11922.65	0.0302	0.0210
Moon	-4740-12-26 22:19 J	-9501.60	-9501.57	-9501.50	0.0279	0.0273
Mars	-4736-09-29 15:07 J	-8128.94	-8128.87	-8128.79	0.0265	0.0256
Mercury	-4734-07-18 11:16 J	-7472.06	-7472.03	-7471.99	0.0261	0.0256
Mercury	-4734-10-15 07:26 J	-7383.36	-7383.19	-7383.02	0.0261	0.0109
Mercury	-4733-01-12 03:50 J	-7294.53	-7294.34	-7294.15	0.0261	0.0040
Mercury	-4733-04-10 00:14 J	-7205.61	-7205.49	-7205.35	0.0261	0.0189
Venus	-4732-03-06 01:12 J	-6875.64	-6875.45	-6875.26	0.0260	0.0118
Venus	-4732-10-20 21:35 J	-6646.80	-6646.60	-6646.39	0.0260	0.0057
Venus	-4731-06-06 18:28 J	-6417.82	-6417.73	-6417.63	0.0260	0.0232
Moon	-4724-06-23 20:23 J	-3843.87	-3843.65	-3843.43	0.0280	0.0109
Earth	-4724-06-23 20:52 J	-3843.85	-3843.63	-3843.40	0.0280	0.0120 *
Mercury	-4719-11-08 16:48 J	-1879.91	-1879.80	-1879.69	0.0300	0.0160
Mercury	-4718-02-05 05:31 J	-1791.40	-1791.27	-1791.14	0.0301	0.0006
Mercury	-4718-05-04 18:14 J	-1702.85	-1702.74	-1702.63	0.0301	0.0150
Venus	-4717-04-04 19:26 J	-1366.90	-1366.69	-1366.48	0.0302	0.0028
Venus	-4717-11-21 00:57 J	-1136.57	-1136.46	-1136.33	0.0301	0.0248
Earth	-4711-12-21 18:57 J	1085.05	1085.29	1085.54	0.0281	0.0011
Moon	-4711-12-21 20:38 J	1085.12	1085.36	1085.59	0.0281	0.0026 *



Mercury	-4704-03-03 08:09 J	3348.68	3348.84	3349.00	0.0262	0.0141
Mercury	-4704-05-31 04:33 J	3437.50	3437.69	3437.88	0.0261	0.0009
Mercury	-4704-08-28 00:57 J	3526.39	3526.54	3526.69	0.0261	0.0157
Venus	-4703-09-16 06:28 J	3910.58	3910.77	3910.98	0.0261	0.0089
Venus	-4702-05-03 03:21 J	4139.44	4139.64	4139.84	0.0260	0.0087
Mercury	-4689-03-27 19:11 J	8852.21	8852.30	8852.40	0.0300	0.0199
Mercury	-4689-06-24 07:55 J	8940.70	8940.83	8940.96	0.0300	0.0044
Mercury	-4689-09-20 20:38 J	9029.24	9029.36	9029.48	0.0301	0.0111
Mercury	-4689-12-18 09:07 J	9117.82	9117.88	9117.94	0.0301	0.0264
Venus	-4688-02-27 21:35 J	9189.31	9189.40	9189.51	0.0301	0.0262
Venus	-4688-10-16 03:35 J	9419.44	9419.65	9419.86	0.0301	0.0014
Venus	-4687-06-03 08:52 J	9649.82	9649.87	9649.94	0.0301	0.0288
Mars	-4677-01-05 16:04 J	13153.07	13153.17	13153.28	0.0267	0.0250
Mercury	-4675-07-21 07:11 J	14080.67	14080.80	14080.93	0.0262	0.0186
Mercury	-4675-10-18 03:35 J	14169.46	14169.65	14169.83	0.0261	0.0039
Mercury	-4674-01-14 23:45 J	14258.33	14258.49	14258.67	0.0261	0.0111
Mercury	-4674-04-13 20:24 J	14347.35	14347.35	14347.36	0.0261	0.0260
Venus	-4674-08-12 12:14 J	14467.95	14468.01	14468.10	0.0260	0.0242
Venus	-4673-03-28 09:07 J	14696.68	14696.88	14697.09	0.0260	0.0067
Venus	-4673-11-12 06:00 J	14925.56	14925.75	14925.95	0.0260	0.0110
Earth	-4665-06-25 09:50 J	17707.67	17707.91	17708.16	0.0281	0.0029
Moon	-4665-06-25 13:26 J	17707.82	17708.06	17708.30	0.0281	0.0019 *
Mars	-4662-12-01 15:21 J	18961.87	18962.14	18962.41	0.0295	0.0088
Mercury	-4660-08-14 21:50 J	19584.33	19584.41	19584.49	0.0300	0.0237
Mercury	-4660-11-11 10:33 J	19672.81	19672.94	19673.07	0.0301	0.0082
Mercury	-4659-02-07 23:16 J	19761.34	19761.47	19761.59	0.0301	0.0074
Mercury	-4659-05-07 11:45 J	19849.91	19849.99	19850.07	0.0301	0.0227
Venus	-4659-09-10 06:57 J	19975.66	19975.79	19975.94	0.0301	0.0222
Venus	-4658-04-28 13:11 J	20205.84	20206.05	20206.26	0.0302	0.0055
Earth	-4652-12-23 04:33 J	22636.46	22636.69	22636.93	0.0280	0.0073

Moon	-4652-12-23 08:23 J	22636.61	22636.85	22637.09	0.0280	0.0057 *
Mercury	-4646-12-08 08:09 J	24812.74	24812.84	24812.95	0.0262	0.0216
Mercury	-4645-03-06 04:33 J	24901.51	24901.69	24901.87	0.0262	0.0068
Mercury	-4645-06-03 00:57 J	24990.36	24990.54	24990.72	0.0261	0.0081
Mercury	-4645-08-30 21:21 J	25079.31	25079.39	25079.49	0.0261	0.0232
Venus	-4644-02-21 18:43 J	25254.16	25254.28	25254.41	0.0261	0.0210
Venus	-4644-10-08 15:36 J	25482.94	25483.15	25483.36	0.0261	0.0035
Venus	-4643-05-25 12:28 J	25711.84	25712.02	25712.20	0.0261	0.0142
Mercury	-4630-01-02 00:43 J	30316.48	30316.53	30316.59	0.0300	0.0270
Mercury	-4630-03-31 13:26 J	30404.94	30405.06	30405.18	0.0300	0.0115
Mercury	-4630-06-28 02:09 J	30493.46	30493.59	30493.72	0.0300	0.0040
Mercury	-4630-09-24 14:38 J	30582.01	30582.11	30582.21	0.0301	0.0194
Venus	-4629-03-22 17:31 J	30762.07	30762.23	30762.41	0.0301	0.0177
Venus	-4629-11-07 23:16 J	30992.28	30992.47	30992.68	0.0301	0.0099
Moon	-4623-12-17 17:45 J	33223.14	33223.24	33223.35	0.0283	0.0253
Earth	-4623-12-17 21:21 J	33223.26	33223.39	33223.53	0.0283	0.0236 *
Mercury	-4616-04-26 07:40 J	35544.80	35544.82	35544.86	0.0262	0.0257
Mercury	-4616-07-24 04:04 J	35633.50	35633.67	35633.84	0.0261	0.0110
Mercury	-4616-10-21 00:28 J	35722.33	35722.52	35722.71	0.0261	0.0039
Mercury	-4615-01-17 21:07 J	35811.25	35811.38	35811.51	0.0261	0.0188
Venus	-4615-09-03 22:04 J	36040.28	36040.42	36040.57	0.0260	0.0187
Venus	-4614-04-20 18:57 J	36269.08	36269.29	36269.51	0.0260	0.0012
Venus	-4614-12-05 15:50 J	36498.01	36498.16	36498.33	0.0260	0.0165
Earth	-4606-06-28 01:40 J	39259.34	39259.57	39259.82	0.0281	0.0070
Moon	-4606-06-28 04:19 J	39259.44	39259.68	39259.93	0.0281	0.0077 *
Mercury	-4601-08-17 16:04 J	41137.06	41137.17	41137.28	0.0300	0.0152
Mercury	-4601-11-14 04:47 J	41225.57	41225.70	41225.83	0.0301	0.0003
Mercury	-4600-02-10 17:16 J	41314.11	41314.22	41314.33	0.0301	0.0158
Venus	-4600-10-03 03:21 J	41548.46	41548.64	41548.83	0.0301	0.0135
Venus	-4599-05-21 09:07 J	41778.70	41778.88	41779.07	0.0301	0.0141

Earth	-4593-12-24 17:31 J	44188.03	44188.23	44188.43	0.0280	0.0163
Moon	-4593-12-24 17:31 J	44188.03	44188.23	44188.46	0.0280	0.0148 *
Mars	-4589-06-01 07:55 J	45442.59	45442.83	45443.09	0.0267	0.0155
Mercury	-4587-12-11 05:16 J	46365.57	46365.72	46365.89	0.0262	0.0138
Mercury	-4586-03-10 01:55 J	46454.39	46454.58	46454.76	0.0262	0.0013
Mercury	-4586-06-06 22:19 J	46543.28	46543.43	46543.58	0.0261	0.0160
Venus	-4585-03-16 04:47 J	46826.53	46826.70	46826.88	0.0261	0.0155
Venus	-4585-10-31 01:40 J	47055.36	47055.57	47055.79	0.0261	0.0021
Venus	-4584-06-16 22:33 J	47284.31	47284.44	47284.59	0.0261	0.0198
Moon	-4577-06-21 18:14 J	49846.11	49846.26	49846.41	0.0279	0.0216
Earth	-4577-06-21 20:23 J	49846.22	49846.35	49846.51	0.0279	0.0226 *
Mars	-4573-04-27 21:21 J	51252.12	51252.39	51252.68	0.0295	0.0041
Mercury	-4571-01-04 19:26 J	51869.20	51869.31	51869.41	0.0300	0.0182
Mercury	-4571-04-03 07:55 J	51957.70	51957.83	51957.96	0.0300	0.0029
Mercury	-4571-06-30 20:38 J	52046.24	52046.36	52046.48	0.0301	0.0127
Mercury	-4571-09-27 09:07 J	52134.84	52134.88	52134.93	0.0301	0.0280
Venus	-4570-04-15 15:07 J	52334.93	52335.13	52335.33	0.0301	0.0089
Venus	-4570-12-01 20:38 J	52565.20	52565.36	52565.53	0.0301	0.0187
Earth	-4564-12-19 13:12 J	54774.84	54775.05	54775.27	0.0282	0.0137
Moon	-4564-12-19 12:57 J	54774.85	54775.04	54775.25	0.0282	0.0153 *
Mercury	-4557-04-29 05:16 J	57097.59	57097.72	57097.86	0.0262	0.0176
Mercury	-4557-07-27 01:40 J	57186.38	57186.57	57186.76	0.0261	0.0028
Mercury	-4557-10-23 22:04 J	57275.26	57275.42	57275.59	0.0261	0.0121
Venus	-4556-09-26 08:52 J	57612.69	57612.87	57613.06	0.0260	0.0131
Venus	-4555-05-13 05:45 J	57841.53	57841.74	57841.95	0.0260	0.0045
Venus	-4555-12-28 02:52 J	58070.52	58070.62	58070.74	0.0260	0.0222
Moon	-4547-06-29 16:33 J	60811.00	60811.19	60811.40	0.0282	0.0172
Earth	-4547-06-29 18:28 J	60811.08	60811.27	60811.47	0.0282	0.0168 *
Mercury	-4542-05-24 21:50 J	62601.33	62601.41	62601.51	0.0300	0.0219
Mercury	-4542-08-21 10:47 J	62689.82	62689.95	62690.07	0.0301	0.0064

Mercury	-4542-11-17 23:16 J	62778.35	62778.47	62778.60	0.0301	0.0091
Mercury	-4541-02-14 12:00 J	62866.92	62867.00	62867.07	0.0301	0.0245
Venus	-4541-10-26 00:57 J	63121.33	63121.54	63121.75	0.0302	0.0046
Venus	-4540-06-13 06:43 J	63351.65	63351.78	63351.91	0.0301	0.0230
Moon	-4534-12-27 05:02 J	65739.61	65739.71	65739.84	0.0279	0.0245
Earth	-4534-12-27 08:52 J	65739.79	65739.87	65739.96	0.0279	0.0258 *
Mercury	-4528-09-16 06:43 J	67829.67	67829.78	67829.90	0.0262	0.0204
Mercury	-4528-12-14 03:07 J	67918.45	67918.63	67918.81	0.0262	0.0056
Mercury	-4527-03-12 23:31 J	68007.30	68007.48	68007.66	0.0261	0.0093
Mercury	-4527-06-09 19:55 J	68096.27	68096.33	68096.41	0.0261	0.0243
Venus	-4526-04-08 15:50 J	68398.96	68399.16	68399.36	0.0261	0.0099
Venus	-4526-11-23 12:43 J	68627.83	68628.03	68628.23	0.0261	0.0078
Venus	-4525-07-09 09:50 J	68856.87	68856.91	68856.96	0.0261	0.0254
Earth	-4518-06-24 13:12 J	71397.84	71398.05	71398.28	0.0280	0.0128
Moon	-4518-06-24 14:38 J	71397.90	71398.11	71398.33	0.0280	0.0119 *
Mercury	-4513-10-11 01:12 J	73333.48	73333.55	73333.63	0.0299	0.0248
Mercury	-4512-01-07 14:09 J	73421.96	73422.09	73422.21	0.0300	0.0093
Mercury	-4512-04-06 02:38 J	73510.49	73510.61	73510.74	0.0300	0.0062
Mercury	-4512-07-03 15:21 J	73599.05	73599.14	73599.23	0.0301	0.0215
Venus	-4512-09-20 07:12 J	73677.72	73677.80	73677.89	0.0301	0.0275
Venus	-4511-05-08 13:12 J	73907.84	73908.05	73908.26	0.0301	0.0001
Venus	-4511-12-24 18:43 J	74138.20	74138.28	74138.36	0.0301	0.0275
Earth	-4505-12-21 06:14 J	76326.52	76326.76	76327.00	0.0281	0.0037
Moon	-4505-12-21 09:21 J	76326.66	76326.89	76327.13	0.0281	0.0052 *
Mars	-4501-10-27 02:38 J	77732.31	77732.61	77732.91	0.0267	0.0061
Mercury	-4498-02-03 06:57 J	78561.72	78561.79	78561.87	0.0262	0.0240
Mercury	-4498-05-03 03:07 J	78650.46	78650.63	78650.81	0.0261	0.0094
Mercury	-4498-07-30 23:31 J	78739.30	78739.48	78739.67	0.0261	0.0055
Mercury	-4498-10-27 19:55 J	78828.22	78828.33	78828.46	0.0261	0.0204
Venus	-4497-03-03 23:16 J	78956.42	78956.47	78956.53	0.0261	0.0250

Venus	-4497-10-18 20:09 J	79185.13	79185.34	79185.54	0.0260	0.0074
Venus	-4496-06-04 16:47 J	79414.01	79414.20	79414.40	0.0260	0.0103
Moon	-4488-07-01 06:43 J	82362.72	82362.78	82362.86	0.0283	0.0271
Earth	-4488-07-01 10:19 J	82362.86	82362.93	82363.02	0.0283	0.0267 *
Mars	-4485-09-22 19:55 J	83542.09	83542.33	83542.57	0.0296	0.0157
Mercury	-4483-02-28 03:35 J	84065.62	84065.65	84065.68	0.0300	0.0288
Mercury	-4483-05-27 16:19 J	84154.07	84154.18	84154.30	0.0300	0.0133
Mercury	-4483-08-24 05:02 J	84242.58	84242.71	84242.84	0.0301	0.0023
Mercury	-4483-11-20 17:45 J	84331.13	84331.24	84331.34	0.0301	0.0176
Venus	-4482-04-02 15:50 J	84464.04	84464.16	84464.30	0.0302	0.0235
Venus	-4482-11-18 21:50 J	84694.21	84694.41	84694.62	0.0302	0.0043
Mercury	-4469-09-19 04:33 J	89382.53	89382.69	89382.86	0.0262	0.0122
Mercury	-4469-12-17 00:57 J	89471.35	89471.54	89471.73	0.0261	0.0026
Mercury	-4468-03-15 21:21 J	89560.25	89560.39	89560.53	0.0261	0.0175
Venus	-4468-09-14 05:45 J	89742.64	89742.74	89742.86	0.0261	0.0220
Venus	-4467-05-01 02:38 J	89971.41	89971.61	89971.83	0.0261	0.0044
Venus	-4467-12-15 23:45 J	90200.31	90200.49	90200.67	0.0261	0.0134
Earth	-4459-06-26 03:50 J	92949.41	92949.66	92949.90	0.0281	0.0035
Moon	-4459-06-26 07:26 J	92949.56	92949.81	92950.06	0.0281	0.0023 *
Mercury	-4454-10-14 19:40 J	94886.21	94886.32	94886.43	0.0300	0.0163
Mercury	-4453-01-11 08:24 J	94974.72	94974.85	94974.98	0.0300	0.0008
Mercury	-4453-04-08 20:52 J	95063.26	95063.37	95063.49	0.0301	0.0147
Mercury	-4453-07-06 09:21 J	95151.89	95151.89	95151.91	0.0301	0.0299
Venus	-4453-10-13 04:04 J	95250.51	95250.67	95250.84	0.0301	0.0189
Venus	-4452-05-31 10:04 J	95480.72	95480.92	95481.12	0.0301	0.0087
Earth	-4446-12-23 23:02 J	97878.22	97878.46	97878.70	0.0281	0.0064
Moon	-4446-12-24 01:55 J	97878.33	97878.58	97878.82	0.0281	0.0049 *
Mercury	-4439-02-06 04:47 J	100114.55	100114.70	100114.85	0.0261	0.0158
Mercury	-4439-05-06 01:12 J	100203.36	100203.55	100203.73	0.0261	0.0012
Mercury	-4439-08-02 21:35 J	100292.24	100292.40	100292.56	0.0261	0.0137

Venus	-4438-03-27 10:19 J	100528.79	100528.93	100529.08	0.0260	0.0194
Venus	-4438-11-11 06:57 J	100757.58	100757.79	100758.01	0.0260	0.0019
Venus	-4437-06-27 03:35 J	100986.49	100986.65	100986.83	0.0260	0.0158
Mercury	-4424-03-02 21:35 J	105618.31	105618.40	105618.50	0.0300	0.0206
Mercury	-4424-05-30 10:33 J	105706.81	105706.94	105707.07	0.0301	0.0051
Mercury	-4424-08-26 23:02 J	105795.34	105795.46	105795.59	0.0301	0.0104
Mercury	-4424-11-23 11:31 J	105883.92	105883.98	105884.05	0.0301	0.0258
Venus	-4423-04-25 11:45 J	106036.81	106036.99	106037.17	0.0302	0.0151
Venus	-4423-12-11 17:45 J	106267.05	106267.24	106267.43	0.0302	0.0127
Moon	-4417-12-17 13:26 J	108464.98	108465.06	108465.17	0.0283	0.0256
Earth	-4417-12-17 16:33 J	108465.07	108465.19	108465.33	0.0283	0.0240 *
Mars	-4412-03-23 22:04 J	110022.12	110022.42	110022.73	0.0266	0.0038
Mercury	-4410-06-26 05:31 J	110846.61	110846.73	110846.87	0.0262	0.0191
Mercury	-4410-09-23 01:55 J	110935.40	110935.58	110935.77	0.0261	0.0043
Mercury	-4410-12-20 22:19 J	111024.26	111024.43	111024.60	0.0261	0.0105
Mercury	-4409-03-18 18:43 J	111113.25	111113.28	111113.33	0.0261	0.0254
Venus	-4409-10-06 16:04 J	111315.01	111315.17	111315.34	0.0261	0.0165
Venus	-4408-05-23 12:57 J	111543.82	111544.04	111544.25	0.0260	0.0012
Venus	-4407-01-07 09:35 J	111772.77	111772.90	111773.06	0.0261	0.0189
Earth	-4400-06-27 15:21 J	114500.90	114501.14	114501.39	0.0281	0.0054
Moon	-4400-06-27 16:47 J	114500.96	114501.20	114501.46	0.0281	0.0063 *
Mars	-4396-02-17 18:28 J	115832.18	115832.27	115832.40	0.0296	0.0270
Mercury	-4395-07-21 00:43 J	116350.45	116350.53	116350.60	0.0300	0.0240
Mercury	-4395-10-17 13:26 J	116438.93	116439.06	116439.19	0.0300	0.0085
Mercury	-4394-01-14 02:09 J	116527.46	116527.59	116527.72	0.0300	0.0069
Mercury	-4394-04-12 14:38 J	116616.03	116616.11	116616.20	0.0301	0.0223
Venus	-4394-11-05 22:33 J	116823.24	116823.44	116823.63	0.0301	0.0109
Venus	-4393-06-23 04:33 J	117053.51	117053.69	117053.86	0.0301	0.0169
Moon	-4387-12-25 11:45 J	119429.78	119429.99	119430.21	0.0280	0.0143
Earth	-4387-12-25 12:43 J	119429.84	119430.03	119430.24	0.0280	0.0158 *

Mercury	-4381-11-12 05:45 J	121578.66	121578.74	121578.84	0.0262	0.0227
Mercury	-4380-02-09 02:09 J	121667.41	121667.59	121667.77	0.0261	0.0080
Mercury	-4380-05-08 22:19 J	121756.25	121756.43	121756.62	0.0261	0.0068
Mercury	-4380-08-05 18:43 J	121845.18	121845.28	121845.39	0.0261	0.0216
Venus	-4379-04-18 20:24 J	122101.17	122101.35	122101.53	0.0260	0.0140
Venus	-4379-12-03 16:47 J	122330.00	122330.20	122330.42	0.0260	0.0036
Venus	-4378-07-20 13:40 J	122558.95	122559.07	122559.19	0.0260	0.0211
Moon	-4371-06-21 23:45 J	125087.39	125087.49	125087.60	0.0279	0.0250
Earth	-4371-06-22 00:43 J	125087.44	125087.53	125087.62	0.0279	0.0259 *
Mercury	-4366-12-08 02:09 J	127082.56	127082.59	127082.62	0.0300	0.0289
Mercury	-4365-03-05 15:07 J	127171.01	127171.13	127171.24	0.0301	0.0134
Mercury	-4365-06-02 03:50 J	127259.53	127259.66	127259.79	0.0301	0.0023
Mercury	-4365-08-29 16:19 J	127348.08	127348.18	127348.29	0.0301	0.0176
Venus	-4364-05-18 04:19 J	127609.48	127609.68	127609.89	0.0302	0.0073
Venus	-4363-01-03 10:19 J	127839.78	127839.93	127840.09	0.0302	0.0205
Earth	-4358-12-20 04:19 J	130016.48	130016.68	130016.89	0.0282	0.0149
Moon	-4358-12-20 05:16 J	130016.54	130016.72	130016.92	0.0282	0.0166 *
Jupiter	-4355-07-08 02:09 J	130947.27	130947.59	130947.95	0.0271	0.0194
Mercury	-4351-06-29 02:24 J	132399.43	132399.60	132399.77	0.0261	0.0117
Mercury	-4351-09-25 22:33 J	132488.25	132488.44	132488.63	0.0261	0.0031
Mercury	-4351-12-23 18:57 J	132577.16	132577.29	132577.43	0.0261	0.0179
Venus	-4350-10-30 00:57 J	132887.35	132887.54	132887.73	0.0260	0.0114
Venus	-4349-06-14 21:21 J	133116.19	133116.39	133116.60	0.0260	0.0064
Venus	-4348-01-29 18:14 J	133345.19	133345.26	133345.35	0.0260	0.0240
Moon	-4341-06-28 20:09 J	136052.13	136052.34	136052.57	0.0281	0.0140
Earth	-4341-06-28 23:31 J	136052.27	136052.48	136052.70	0.0281	0.0134 *
Mercury	-4336-07-23 17:45 J	137903.13	137903.24	137903.35	0.0300	0.0170
Mercury	-4336-10-20 06:28 J	137991.64	137991.77	137991.90	0.0300	0.0016
Mercury	-4335-01-16 18:57 J	138080.18	138080.29	138080.41	0.0301	0.0139
Mercury	-4335-04-15 07:40 J	138168.79	138168.82	138168.85	0.0301	0.0291

Venus	-4335-11-28 14:09 J	138395.88	138396.09	138396.30	0.0301	0.0033
Venus	-4334-07-16 19:55 J	138626.22	138626.33	138626.46	0.0301	0.0245
Moon	-4328-12-26 19:11 J	140981.17	140981.30	140981.45	0.0280	0.0227
Earth	-4328-12-26 22:48 J	140981.35	140981.45	140981.58	0.0280	0.0243 *
Mars	-4324-08-18 08:52 J	142311.61	142311.87	142312.15	0.0266	0.0123
Mercury	-4322-11-16 02:24 J	143131.45	143131.60	143131.75	0.0261	0.0154
Mercury	-4321-02-12 22:33 J	143220.25	143220.44	143220.63	0.0261	0.0008
Mercury	-4321-05-11 18:57 J	143309.13	143309.29	143309.45	0.0261	0.0140
Venus	-4320-05-11 04:48 J	143673.50	143673.70	143673.90	0.0260	0.0089
Venus	-4320-12-26 01:11 J	143902.35	143902.55	143902.75	0.0260	0.0087
Earth	-4312-06-23 06:28 J	146638.59	146638.77	146638.96	0.0279	0.0183
Moon	-4312-06-23 09:50 J	146638.73	146638.91	146639.11	0.0279	0.0177 *
Mercury	-4307-12-10 18:28 J	148635.19	148635.27	148635.36	0.0300	0.0227
Mercury	-4306-03-09 07:26 J	148723.68	148723.81	148723.94	0.0301	0.0071
Mercury	-4306-06-05 20:09 J	148812.21	148812.34	148812.46	0.0301	0.0084
Mercury	-4306-09-02 08:38 J	148900.79	148900.86	148900.94	0.0302	0.0238
Venus	-4306-10-23 11:16 J	148951.90	148951.97	148952.05	0.0302	0.0279
Venus	-4305-06-09 17:45 J	149182.03	149182.24	149182.45	0.0302	0.0003
Venus	-4304-01-25 23:31 J	149412.41	149412.48	149412.57	0.0302	0.0276
Earth	-4299-12-21 11:31 J	151567.74	151567.98	151568.22	0.0282	0.0069
Moon	-4299-12-21 15:07 J	151567.91	151568.13	151568.37	0.0282	0.0086 *
Mercury	-4292-04-04 01:55 J	153863.46	153863.58	153863.71	0.0261	0.0196
Mercury	-4292-07-01 22:04 J	153952.24	153952.42	153952.61	0.0261	0.0049
Mercury	-4292-09-28 18:28 J	154041.09	154041.27	154041.44	0.0261	0.0098
Mercury	-4292-12-26 14:38 J	154130.06	154130.11	154130.18	0.0261	0.0247
Venus	-4291-04-06 11:31 J	154230.91	154230.98	154231.07	0.0260	0.0240
Venus	-4291-11-21 07:55 J	154459.63	154459.83	154460.05	0.0260	0.0066
Venus	-4290-07-08 04:19 J	154688.50	154688.68	154688.88	0.0260	0.0113
Moon	-4282-07-01 00:14 J	157603.35	157603.51	157603.68	0.0282	0.0207
Earth	-4282-07-01 02:52 J	157603.46	157603.62	157603.80	0.0282	0.0206 *



Mercury	-4277-04-28 20:52 J	159367.31	159367.37	159367.43	0.0300	0.0268
Mercury	-4277-07-26 09:35 J	159455.78	159455.90	159456.03	0.0300	0.0113
Mercury	-4277-10-22 22:19 J	159544.31	159544.43	159544.56	0.0301	0.0044
Mercury	-4276-01-19 11:02 J	159632.86	159632.96	159633.06	0.0301	0.0196
Venus	-4276-05-04 19:40 J	159738.20	159738.32	159738.44	0.0301	0.0242
Venus	-4276-12-21 01:55 J	159968.37	159968.58	159968.79	0.0302	0.0035
Mercury	-4263-08-22 01:40 J	164595.50	164595.57	164595.66	0.0261	0.0234
Mercury	-4263-11-18 21:50 J	164684.23	164684.41	164684.59	0.0261	0.0089
Mercury	-4262-02-15 18:00 J	164773.07	164773.25	164773.44	0.0261	0.0058
Mercury	-4262-05-15 14:09 J	164861.98	164862.09	164862.21	0.0260	0.0206
Venus	-4262-10-17 14:38 J	165017.01	165017.11	165017.24	0.0260	0.0216
Venus	-4261-06-02 11:16 J	165245.76	165245.97	165246.18	0.0260	0.0041
Venus	-4260-01-17 07:26 J	165474.64	165474.81	165475.00	0.0260	0.0135
Earth	-4253-06-24 08:24 J	168189.64	168189.85	168190.09	0.0279	0.0116
Moon	-4253-06-24 11:02 J	168189.73	168189.96	168190.20	0.0279	0.0112 *
Mercury	-4248-12-13 10:19 J	170187.82	170187.93	170188.04	0.0301	0.0172
Mercury	-4247-03-11 23:02 J	170276.33	170276.46	170276.59	0.0301	0.0018
Mercury	-4247-06-08 11:45 J	170364.88	170364.99	170365.11	0.0301	0.0137
Mercury	-4247-09-05 00:14 J	170453.48	170453.51	170453.55	0.0302	0.0291
Venus	-4247-11-14 21:35 J	170524.26	170524.40	170524.55	0.0302	0.0215
Venus	-4246-07-03 04:04 J	170754.47	170754.67	170754.88	0.0302	0.0064
Earth	-4240-12-22 14:24 J	173118.86	173119.10	173119.35	0.0282	0.0006
Moon	-4240-12-22 14:52 J	173118.87	173119.12	173119.38	0.0282	0.0014 *
Mars	-4235-01-11 21:07 J	174600.15	174600.38	174600.61	0.0266	0.0174
Mercury	-4233-04-06 20:38 J	175416.20	175416.36	175416.52	0.0261	0.0136
Mercury	-4233-07-04 16:48 J	175505.01	175505.20	175505.39	0.0261	0.0011
Mercury	-4233-10-01 12:57 J	175593.90	175594.04	175594.20	0.0261	0.0159
Venus	-4232-04-28 17:02 J	175803.07	175803.21	175803.35	0.0260	0.0194
Venus	-4232-12-13 13:26 J	176031.85	176032.06	176032.27	0.0260	0.0019
Venus	-4231-07-30 09:50 J	176260.74	176260.91	176261.08	0.0260	0.0157

Earth	-4223-07-02 02:52 J	179154.56	179154.62	179154.70	0.0282	0.0270
Moon	-4223-07-02 04:48 J	179154.64	179154.70	179154.79	0.0282	0.0267 *
Mercury	-4218-05-02 12:14 J	180919.92	180920.01	180920.10	0.0300	0.0218
Mercury	-4218-07-30 00:57 J	181008.41	181008.54	181008.67	0.0300	0.0063
Mercury	-4218-10-26 13:40 J	181096.95	181097.07	181097.20	0.0301	0.0091
Mercury	-4217-01-23 02:24 J	181185.52	181185.60	181185.67	0.0301	0.0244
Venus	-4217-05-27 04:19 J	181310.52	181310.68	181310.85	0.0301	0.0181
Venus	-4216-01-12 10:48 J	181540.75	181540.95	181541.15	0.0302	0.0097
Mercury	-4204-08-24 19:55 J	186148.20	186148.33	186148.48	0.0261	0.0177
Mercury	-4204-11-21 16:04 J	186236.99	186237.17	186237.36	0.0261	0.0031
Mercury	-4203-02-18 12:28 J	186325.85	186326.02	186326.19	0.0261	0.0117
Venus	-4203-11-08 19:26 J	186589.17	186589.31	186589.49	0.0260	0.0171
Venus	-4202-06-25 16:04 J	186817.95	186818.17	186818.38	0.0260	0.0007
Venus	-4201-02-09 12:14 J	187046.86	187047.01	187047.17	0.0260	0.0180
Moon	-4194-06-26 05:16 J	189740.47	189740.72	189740.97	0.0279	0.0056
Earth	-4194-06-26 07:40 J	189740.58	189740.82	189741.07	0.0279	0.0054 *
Mercury	-4189-09-18 12:14 J	191651.97	191652.01	191652.06	0.0300	0.0282
Mercury	-4189-12-16 01:11 J	191740.43	191740.55	191740.67	0.0301	0.0127
Mercury	-4188-03-14 13:55 J	191828.95	191829.08	191829.21	0.0301	0.0028
Mercury	-4188-06-11 02:38 J	191917.51	191917.61	191917.71	0.0301	0.0182
Venus	-4188-12-07 04:48 J	192096.52	192096.70	192096.88	0.0302	0.0156
Venus	-4187-07-25 11:16 J	192326.78	192326.97	192327.16	0.0302	0.0122
Moon	-4181-12-23 09:35 J	194669.66	194669.90	194670.14	0.0282	0.0051
Earth	-4181-12-23 12:57 J	194669.81	194670.04	194670.28	0.0282	0.0062 *
Mercury	-4174-01-11 18:14 J	196880.17	196880.26	196880.35	0.0261	0.0227
Mercury	-4174-04-10 14:24 J	196968.92	196969.10	196969.28	0.0261	0.0082
Mercury	-4174-07-08 10:33 J	197057.76	197057.94	197058.12	0.0261	0.0065
Mercury	-4174-10-05 06:57 J	197146.68	197146.79	197146.90	0.0260	0.0212
Venus	-4173-05-20 20:38 J	197375.19	197375.36	197375.53	0.0260	0.0151
Venus	-4172-01-04 17:02 J	197604.00	197604.21	197604.42	0.0260	0.0025

Venus	-4172-08-21 13:26 J	197832.93	197833.06	197833.20	0.0260	0.0200
Mercury	-4159-05-05 02:52 J	202472.51	202472.62	202472.72	0.0300	0.0176
Mercury	-4159-08-01 15:35 J	202561.02	202561.15	202561.28	0.0300	0.0021
Mercury	-4159-10-29 04:19 J	202649.56	202649.68	202649.80	0.0301	0.0133
Mercury	-4158-01-25 16:48 J	202738.17	202738.20	202738.24	0.0301	0.0286
Venus	-4158-06-19 10:48 J	202882.76	202882.95	202883.15	0.0302	0.0124
Venus	-4157-02-04 17:02 J	203113.03	203113.21	203113.40	0.0302	0.0154
Earth	-4152-12-18 01:40 J	205256.46	205256.57	205256.68	0.0284	0.0253
Moon	-4152-12-18 04:48 J	205256.63	205256.70	205256.79	0.0284	0.0266 *
Mars	-4147-06-07 04:04 J	206888.51	206888.67	206888.84	0.0266	0.0223
Mercury	-4145-08-27 13:40 J	207700.91	207701.07	207701.24	0.0261	0.0123
Mercury	-4145-11-24 09:50 J	207789.72	207789.91	207790.10	0.0261	0.0023
Mercury	-4144-02-21 06:00 J	207878.61	207878.75	207878.90	0.0261	0.0170
Venus	-4144-11-30 23:16 J	208161.28	208161.47	208161.65	0.0260	0.0127
Venus	-4143-07-17 19:26 J	208390.10	208390.31	208390.52	0.0260	0.0048
Venus	-4142-03-03 15:35 J	208619.05	208619.15	208619.26	0.0260	0.0223
Moon	-4135-06-27 01:26 J	211291.32	211291.56	211291.80	0.0279	0.0001
Earth	-4135-06-27 04:48 J	211291.45	211291.70	211291.94	0.0279	0.0005 *
Mercury	-4130-09-22 02:52 J	213204.54	213204.62	213204.70	0.0300	0.0241
Mercury	-4130-12-19 15:35 J	213293.03	213293.15	213293.28	0.0300	0.0087
Mercury	-4129-03-17 04:19 J	213381.56	213381.68	213381.81	0.0301	0.0069
Mercury	-4129-06-13 17:02 J	213470.12	213470.21	213470.30	0.0301	0.0221
Venus	-4129-12-29 10:19 J	213668.74	213668.93	213669.14	0.0302	0.0101
Venus	-4128-08-16 16:33 J	213899.03	213899.19	213899.37	0.0302	0.0178
Moon	-4122-12-25 06:57 J	216220.57	216220.79	216221.01	0.0282	0.0108
Earth	-4122-12-25 08:24 J	216220.64	216220.85	216221.08	0.0282	0.0116 *
Mercury	-4115-01-14 11:16 J	218432.84	218432.97	218433.11	0.0261	0.0178
Mercury	-4115-04-13 07:26 J	218521.63	218521.81	218522.00	0.0261	0.0032
Mercury	-4115-07-11 03:50 J	218610.49	218610.66	218610.83	0.0261	0.0115
Venus	-4114-06-12 23:02 J	218947.27	218947.46	218947.66	0.0260	0.0110

Venus	-4113-01-27 19:40 J	219176.11	219176.32	219176.53	0.0260	0.0066
Venus	-4113-09-12 15:50 J	219405.10	219405.16	219405.25	0.0260	0.0242
Mercury	-4100-02-08 04:04 J	223936.65	223936.67	223936.70	0.0300	0.0293
Mercury	-4100-05-07 17:02 J	224025.10	224025.21	224025.33	0.0300	0.0138
Mercury	-4100-08-04 05:45 J	224113.61	224113.74	224113.87	0.0300	0.0018
Mercury	-4100-10-31 18:28 J	224202.16	224202.27	224202.38	0.0301	0.0170
Venus	-4099-07-11 15:21 J	224454.94	224455.14	224455.35	0.0302	0.0071
Venus	-4098-02-26 21:35 J	224685.25	224685.40	224685.56	0.0302	0.0208
Earth	-4093-12-18 19:40 J	226807.16	226807.32	226807.50	0.0284	0.0201
Moon	-4093-12-18 21:35 J	226807.25	226807.40	226807.58	0.0284	0.0213 *
Mercury	-4086-06-03 10:33 J	229164.85	229164.94	229165.05	0.0262	0.0220
Mercury	-4086-08-31 06:43 J	229253.60	229253.78	229253.96	0.0261	0.0074
Mercury	-4086-11-28 02:52 J	229342.44	229342.62	229342.80	0.0261	0.0072
Mercury	-4085-02-24 23:02 J	229431.37	229431.46	229431.57	0.0261	0.0220
Venus	-4085-05-08 05:16 J	229504.72	229504.72	229504.73	0.0261	0.0260
Venus	-4085-12-23 01:40 J	229733.37	229733.57	229733.77	0.0260	0.0085
Venus	-4084-08-08 21:50 J	229962.21	229962.41	229962.61	0.0260	0.0090
Earth	-4076-06-28 00:43 J	232842.29	232842.53	232842.77	0.0279	0.0058
Moon	-4076-06-28 01:11 J	232842.32	232842.55	232842.79	0.0279	0.0051 *
Mercury	-4071-09-24 17:16 J	234757.12	234757.22	234757.31	0.0300	0.0202
Mercury	-4071-12-22 06:00 J	234845.62	234845.75	234845.88	0.0300	0.0048
Mercury	-4070-03-20 18:43 J	234934.16	234934.28	234934.40	0.0301	0.0106
Mercury	-4070-06-17 07:11 J	235022.74	235022.80	235022.87	0.0301	0.0258
Venus	-4069-01-21 15:07 J	235240.92	235241.13	235241.34	0.0302	0.0047
Venus	-4069-09-07 21:07 J	235471.25	235471.38	235471.52	0.0302	0.0232
Earth	-4063-12-26 02:38 J	237771.42	237771.61	237771.81	0.0282	0.0166
Moon	-4063-12-26 05:16 J	237771.53	237771.72	237771.92	0.0282	0.0163 *
Mars	-4059-10-30 13:40 J	239175.94	239176.07	239176.23	0.0267	0.0235
Mercury	-4056-01-17 04:04 J	239985.51	239985.67	239985.84	0.0261	0.0131
Mercury	-4056-04-16 00:14 J	240074.33	240074.51	240074.70	0.0261	0.0016

Mercury	-4056-07-13 20:38 J	240163.21	240163.36	240163.51	0.0261	0.0163
Venus	-4056-11-18 04:48 J	240290.63	240290.70	240290.77	0.0260	0.0244
Venus	-4055-07-05 01:11 J	240519.35	240519.55	240519.76	0.0260	0.0068
Venus	-4054-02-18 21:35 J	240748.21	240748.40	240748.60	0.0260	0.0108
Moon	-4047-06-22 08:38 J	243428.78	243428.86	243428.96	0.0277	0.0258
Earth	-4047-06-22 09:35 J	243428.80	243428.90	243428.99	0.0277	0.0254 *
Mercury	-4041-02-11 18:28 J	245489.20	245489.27	245489.34	0.0299	0.0254
Mercury	-4041-05-10 07:26 J	245577.68	245577.81	245577.93	0.0300	0.0100
Mercury	-4041-08-06 19:55 J	245666.21	245666.33	245666.46	0.0300	0.0055
Mercury	-4041-11-03 08:38 J	245754.77	245754.86	245754.95	0.0301	0.0207
Venus	-4041-12-15 13:26 J	245797.03	245797.06	245797.12	0.0301	0.0293
Venus	-4040-08-02 20:09 J	246027.13	246027.34	246027.55	0.0302	0.0016
Venus	-4039-03-21 02:09 J	246257.49	246257.59	246257.70	0.0302	0.0261
Moon	-4034-12-20 11:02 J	248357.75	248357.96	248358.16	0.0284	0.0159
Earth	-4034-12-20 13:26 J	248357.86	248358.06	248358.27	0.0284	0.0151 *
Mercury	-4027-06-06 03:21 J	250717.51	250717.64	250717.78	0.0262	0.0173
Mercury	-4027-09-02 23:31 J	250806.30	250806.48	250806.67	0.0262	0.0027
Mercury	-4027-11-30 19:55 J	250895.16	250895.33	250895.49	0.0261	0.0121
Venus	-4026-05-31 07:26 J	251076.70	251076.81	251076.92	0.0261	0.0219
Venus	-4025-01-15 03:50 J	251305.46	251305.66	251305.88	0.0260	0.0044
Venus	-4025-08-31 00:14 J	251534.33	251534.51	251534.70	0.0260	0.0132
Earth	-4017-06-28 21:50 J	254393.19	254393.41	254393.64	0.0279	0.0115
Moon	-4017-06-29 01:40 J	254393.34	254393.57	254393.80	0.0279	0.0106 *
Mercury	-4012-09-27 07:40 J	256309.71	256309.82	256309.93	0.0300	0.0162
Mercury	-4012-12-24 20:24 J	256398.22	256398.35	256398.48	0.0300	0.0009
Mercury	-4011-03-23 08:52 J	256486.76	256486.87	256486.99	0.0301	0.0145
Mercury	-4011-06-19 21:21 J	256575.38	256575.39	256575.42	0.0301	0.0297
Venus	-4011-06-27 13:55 J	256583.00	256583.08	256583.19	0.0301	0.0268
Venus	-4010-02-12 20:09 J	256813.13	256813.34	256813.55	0.0302	0.0009
Venus	-4010-10-01 01:55 J	257043.52	257043.58	257043.65	0.0302	0.0286

Earth	-4004-12-26 20:24 J	259322.19	259322.35	259322.50	0.0282	0.0216
Moon	-4004-12-26 23:16 J	259322.31	259322.47	259322.64	0.0282	0.0213 *

# 4TH MILLENNIUM BCE

This is a list of transits visible from Saturn in the 4th millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-3998-10-24 00:57 J		261449.45	261449.54	261449.62	0.0262	0.0229	
Mercury	-3997-01-20 20:52 J		261538.20	261538.37	261538.55	0.0262	0.0084	
Mercury	-3997-04-18 17:16 J		261627.03	261627.22	261627.40	0.0261	0.0064	
Mercury	-3997-07-16 13:26 J		261715.96	261716.06	261716.18	0.0261	0.0211	
Venus	-3997-12-10 06:43 J		261862.66	261862.78	261862.92	0.0260	0.0203	
Venus	-3996-07-27 03:21 J		262091.43	262091.64	262091.86	0.0260	0.0027	
Venus	-3995-03-12 23:45 J		262320.32	262320.49	262320.67	0.0260	0.0150	
Moon	-3988-06-23 02:38 J		264979.46	264979.61	264979.78	0.0277	0.0207	
Earth	-3988-06-23 06:28 J		264979.61	264979.77	264979.95	0.0277	0.0198 *	
Mercury	-3982-02-14 08:52 J		267041.78	267041.87	267041.96	0.0299	0.0214	
Mercury	-3982-05-13 21:36 J		267130.28	267130.40	267130.53	0.0300	0.0061	
Mercury	-3982-08-10 10:19 J		267218.81	267218.93	267219.06	0.0300	0.0094	
Mercury	-3982-11-06 23:02 J		267307.39	267307.46	267307.53	0.0301	0.0246	
Venus	-3981-01-07 18:43 J		267369.16	267369.28	267369.42	0.0301	0.0238	
Venus	-3981-08-25 01:11 J		267599.34	267599.55	267599.76	0.0302	0.0040	
Moon	-3975-12-21 04:48 J		269908.48	269908.70	269908.93	0.0284	0.0105	
Earth	-3975-12-21 07:55 J		269908.60	269908.83	269909.06	0.0284	0.0100 *	

Mercury	-3968-06-08 20:23 J	272270.19	272270.35	272270.52	0.0262	0.0124
Mercury	-3968-09-05 16:33 J	272359.01	272359.19	272359.38	0.0262	0.0024
Mercury	-3968-12-03 12:57 J	272447.90	272448.04	272448.18	0.0261	0.0171
Venus	-3967-06-22 09:50 J	272648.76	272648.91	272649.07	0.0261	0.0177
Venus	-3966-02-06 06:43 J	272877.56	272877.78	272877.99	0.0260	0.0003
Venus	-3966-09-23 03:07 J	273106.47	273106.63	273106.79	0.0260	0.0175
Earth	-3958-06-30 20:52 J	275944.18	275944.37	275944.57	0.0279	0.0176
Moon	-3958-06-30 22:04 J	275944.22	275944.42	275944.63	0.0279	0.0163 *
Mercury	-3953-07-03 09:36 J	277773.85	277773.90	277773.96	0.0299	0.0270
Mercury	-3953-09-29 22:33 J	277862.32	277862.44	277862.56	0.0300	0.0117
Mercury	-3953-12-27 11:16 J	277950.84	277950.97	277951.10	0.0300	0.0037
Mercury	-3952-03-25 23:45 J	278039.39	278039.49	278039.59	0.0300	0.0188
Venus	-3952-07-19 20:52 J	278155.22	278155.37	278155.52	0.0301	0.0209
Venus	-3951-03-07 02:52 J	278385.41	278385.62	278385.82	0.0302	0.0068
Moon	-3945-12-27 14:09 J	280873.04	280873.09	280873.17	0.0282	0.0272
Earth	-3945-12-27 15:36 J	280873.09	280873.15	280873.23	0.0282	0.0269 *
Mercury	-3939-10-26 18:00 J	283002.11	283002.25	283002.38	0.0262	0.0180
Mercury	-3938-01-23 14:09 J	283090.90	283091.09	283091.28	0.0262	0.0033
Mercury	-3938-04-22 10:19 J	283179.77	283179.93	283180.11	0.0261	0.0115
Venus	-3937-01-02 09:50 J	283434.75	283434.91	283435.08	0.0261	0.0160
Venus	-3937-08-18 06:28 J	283663.56	283663.77	283663.99	0.0260	0.0018
Venus	-3936-04-04 03:07 J	283892.49	283892.63	283892.77	0.0260	0.0193
Moon	-3929-06-24 06:28 J	286530.57	286530.77	286530.98	0.0277	0.0147
Earth	-3929-06-24 06:57 J	286530.58	286530.79	286531.01	0.0277	0.0134 *
Mercury	-3923-02-17 00:00 J	288594.39	288594.50	288594.61	0.0299	0.0166
Mercury	-3923-05-16 12:43 J	288682.90	288683.03	288683.16	0.0300	0.0014
Mercury	-3923-08-13 01:26 J	288771.44	288771.56	288771.67	0.0300	0.0140
Mercury	-3923-11-09 13:55 J	288860.05	288860.08	288860.11	0.0301	0.0291
Venus	-3922-01-30 02:23 J	288941.44	288941.60	288941.78	0.0301	0.0177
Venus	-3922-09-17 08:23 J	289171.66	289171.85	289172.05	0.0301	0.0100

Earth	-3916-12-22 03:50 J	291459.43	291459.66	291459.91	0.0284	0.0045
Moon	-3916-12-22 05:31 J	291459.50	291459.73	291459.97	0.0284	0.0045 *
Mercury	-3909-03-14 17:45 J	293734.14	293734.24	293734.35	0.0263	0.0218
Mercury	-3909-06-11 13:55 J	293822.90	293823.08	293823.26	0.0262	0.0071
Mercury	-3909-09-08 10:04 J	293911.75	293911.92	293912.11	0.0262	0.0077
Mercury	-3909-12-06 06:28 J	294000.68	294000.77	294000.87	0.0262	0.0225
Venus	-3908-07-14 13:26 J	294220.89	294221.06	294221.25	0.0261	0.0133
Venus	-3907-02-28 10:19 J	294449.72	294449.93	294450.14	0.0260	0.0045
Venus	-3907-10-15 06:57 J	294678.68	294678.79	294678.90	0.0260	0.0221
Moon	-3899-07-01 19:40 J	297495.19	297495.32	297495.48	0.0279	0.0228
Earth	-3899-07-01 23:16 J	297495.36	297495.47	297495.60	0.0279	0.0244 *
Mars	-3896-05-23 17:02 J	298552.14	298552.21	298552.30	0.0292	0.0278
Mercury	-3894-07-07 00:57 J	299326.46	299326.54	299326.64	0.0299	0.0219
Mercury	-3894-10-03 13:55 J	299414.95	299415.08	299415.21	0.0299	0.0066
Mercury	-3894-12-31 02:38 J	299503.48	299503.61	299503.73	0.0300	0.0087
Mercury	-3893-03-28 14:52 J	299592.05	299592.12	299592.21	0.0300	0.0239
Venus	-3893-08-11 05:45 J	299727.56	299727.74	299727.93	0.0301	0.0146
Venus	-3892-03-29 11:31 J	299957.79	299957.98	299958.17	0.0301	0.0131
Mercury	-3880-10-29 11:45 J	304554.83	304554.99	304555.16	0.0262	0.0125
Mercury	-3879-01-26 08:09 J	304643.65	304643.84	304644.02	0.0262	0.0023
Mercury	-3879-04-25 04:19 J	304732.54	304732.68	304732.83	0.0261	0.0171
Venus	-3878-01-24 14:09 J	305006.90	305007.09	305007.28	0.0261	0.0114
Venus	-3878-09-10 11:02 J	305235.75	305235.96	305236.17	0.0260	0.0063
Venus	-3877-04-26 07:40 J	305464.75	305464.82	305464.91	0.0260	0.0239
Earth	-3870-06-26 10:33 J	308081.70	308081.94	308082.18	0.0277	0.0065
Moon	-3870-06-26 13:55 J	308081.85	308082.08	308082.32	0.0277	0.0080 *
Mercury	-3865-11-23 02:52 J	310058.56	310058.62	310058.68	0.0299	0.0264
Mercury	-3864-02-19 15:50 J	310147.03	310147.16	310147.28	0.0299	0.0112
Mercury	-3864-05-19 04:19 J	310235.56	310235.68	310235.81	0.0300	0.0043
Mercury	-3864-08-15 17:02 J	310324.11	310324.21	310324.31	0.0300	0.0193



Venus	-3863-02-21 12:43 J	310513.83	310514.03	310514.22	0.0301	0.0111
Venus	-3863-10-09 18:28 J	310744.09	310744.27	310744.44	0.0301	0.0166
Earth	-3857-12-23 03:50 J	313010.41	313010.66	313010.90	0.0284	0.0019
Moon	-3857-12-23 07:26 J	313010.57	313010.81	313011.06	0.0284	0.0023 *
Mercury	-3850-03-18 11:45 J	315286.85	315286.99	315287.15	0.0263	0.0161
Mercury	-3850-06-15 08:09 J	315375.65	315375.84	315376.03	0.0262	0.0014
Mercury	-3850-09-12 04:33 J	315464.53	315464.69	315464.85	0.0262	0.0135
Venus	-3849-08-05 18:43 J	315793.08	315793.28	315793.48	0.0261	0.0085
Venus	-3848-03-22 15:21 J	316021.95	316022.14	316022.35	0.0261	0.0093
Mercury	-3835-07-09 17:31 J	320879.12	320879.23	320879.34	0.0299	0.0156
Mercury	-3835-10-06 06:14 J	320967.63	320967.76	320967.89	0.0299	0.0004
Mercury	-3834-01-02 18:43 J	321056.17	321056.28	321056.40	0.0300	0.0148
Mercury	-3834-04-01 07:11 J	321144.79	321144.80	321144.82	0.0300	0.0298
Venus	-3834-09-03 18:14 J	321300.06	321300.26	321300.47	0.0301	0.0076
Venus	-3833-04-20 23:45 J	321530.34	321530.49	321530.65	0.0301	0.0201
Mars	-3824-11-22 00:14 J	325032.43	325032.51	325032.62	0.0270	0.0256
Mercury	-3821-08-04 10:19 J	326018.82	326018.93	326019.04	0.0263	0.0211
Mercury	-3821-11-01 06:28 J	326107.59	326107.77	326107.95	0.0262	0.0064
Mercury	-3820-01-29 02:52 J	326196.44	326196.62	326196.80	0.0262	0.0084
Mercury	-3820-04-27 23:02 J	326285.39	326285.46	326285.56	0.0262	0.0233
Venus	-3820-07-01 22:33 J	326350.37	326350.44	326350.52	0.0261	0.0244
Venus	-3819-02-15 19:55 J	326579.13	326579.33	326579.54	0.0261	0.0066
Venus	-3819-10-02 16:48 J	326808.01	326808.20	326808.40	0.0260	0.0112
Earth	-3811-06-27 18:00 J	329633.01	329633.25	329633.50	0.0278	0.0015
Moon	-3811-06-27 20:23 J	329633.09	329633.35	329633.60	0.0278	0.0004 *
Mars	-3808-10-17 12:14 J	330840.82	330841.01	330841.21	0.0292	0.0212
Mercury	-3806-11-26 19:26 J	331611.22	331611.31	331611.41	0.0299	0.0200
Mercury	-3805-02-23 08:09 J	331699.72	331699.84	331699.97	0.0299	0.0049
Mercury	-3805-05-21 20:52 J	331788.25	331788.37	331788.49	0.0300	0.0104
Mercury	-3805-08-18 09:21 J	331876.83	331876.89	331876.96	0.0300	0.0255

Venus	-3804-03-16 01:40 J	332086.36	332086.57	332086.78	0.0301	0.0039
Venus	-3804-11-01 07:11 J	332316.68	332316.80	332316.93	0.0301	0.0237
Moon	-3798-12-25 07:11 J	334561.56	334561.80	334562.04	0.0283	0.0098
Earth	-3798-12-25 07:26 J	334561.58	334561.81	334562.04	0.0283	0.0089 *
Mercury	-3792-12-22 11:02 J	336750.89	336750.96	336751.02	0.0263	0.0244
Mercury	-3791-03-21 06:57 J	336839.62	336839.79	336839.97	0.0263	0.0097
Mercury	-3791-06-18 03:21 J	336928.46	336928.64	336928.83	0.0263	0.0051
Mercury	-3791-09-14 23:45 J	337017.38	337017.49	337017.62	0.0262	0.0200
Venus	-3790-01-12 04:04 J	337136.56	337136.67	337136.80	0.0262	0.0214
Venus	-3790-08-29 01:26 J	337365.35	337365.56	337365.78	0.0261	0.0035
Venus	-3789-04-13 22:33 J	337594.26	337594.44	337594.62	0.0261	0.0143
Earth	-3782-06-22 13:11 J	340220.02	340220.05	340220.10	0.0275	0.0271
Mercury	-3776-04-14 21:50 J	342343.34	342343.41	342343.49	0.0298	0.0238
Mercury	-3776-07-12 10:33 J	342431.82	342431.94	342432.07	0.0299	0.0087
Mercury	-3776-10-08 23:16 J	342520.34	342520.47	342520.60	0.0299	0.0065
Mercury	-3775-01-05 11:45 J	342608.90	342608.99	342609.08	0.0300	0.0215
Venus	-3775-02-08 04:19 J	342642.60	342642.68	342642.77	0.0300	0.0273
Venus	-3775-09-26 09:36 J	342872.69	342872.90	342873.11	0.0301	0.0005
Venus	-3774-05-14 14:38 J	343103.04	343103.11	343103.20	0.0301	0.0277
Earth	-3769-12-18 18:00 J	345148.12	345148.25	345148.39	0.0286	0.0236
Moon	-3769-12-18 18:28 J	345148.14	345148.27	345148.41	0.0286	0.0231 *
Mercury	-3762-08-08 05:45 J	347571.59	347571.74	347571.90	0.0263	0.0144
Mercury	-3762-11-05 02:09 J	347660.40	347660.59	347660.78	0.0262	0.0004
Mercury	-3761-02-01 22:33 J	347749.29	347749.44	347749.59	0.0262	0.0152
Venus	-3761-07-24 06:14 J	347922.62	347922.76	347922.91	0.0261	0.0192
Venus	-3760-03-10 03:36 J	348151.43	348151.65	348151.86	0.0261	0.0014
Venus	-3760-10-25 00:43 J	348380.36	348380.53	348380.69	0.0261	0.0164
Moon	-3752-06-29 03:36 J	351184.40	351184.65	351184.89	0.0278	0.0086
Earth	-3752-06-29 05:31 J	351184.50	351184.73	351184.97	0.0278	0.0100 *
Mercury	-3747-09-02 00:14 J	353075.46	353075.51	353075.56	0.0298	0.0278

Mercury	-3747-11-29 12:57 J	353163.92	353164.04	353164.16	0.0299	0.0126
Mercury	-3746-02-26 01:40 J	353252.44	353252.57	353252.70	0.0299	0.0026
Mercury	-3746-05-25 14:09 J	353340.99	353341.09	353341.20	0.0300	0.0177
Venus	-3746-08-21 12:57 J	353428.91	353429.04	353429.18	0.0300	0.0234
Venus	-3745-04-07 18:14 J	353659.06	353659.26	353659.48	0.0301	0.0042
Moon	-3739-12-26 12:00 J	356112.82	356113.00	356113.20	0.0283	0.0182
Earth	-3739-12-26 15:36 J	356112.97	356113.15	356113.36	0.0283	0.0170 *
Mars	-3735-04-18 03:21 J	357321.41	357321.64	357321.88	0.0270	0.0176
Mercury	-3733-12-25 06:43 J	358303.65	358303.78	358303.93	0.0263	0.0175
Mercury	-3732-03-24 03:07 J	358392.44	358392.63	358392.82	0.0263	0.0027
Mercury	-3732-06-20 23:31 J	358481.31	358481.48	358481.65	0.0263	0.0122
Venus	-3731-02-03 12:14 J	358708.85	358709.01	358709.19	0.0262	0.0162
Venus	-3731-09-20 09:50 J	358937.69	358937.91	358938.12	0.0261	0.0018
Venus	-3730-05-07 06:43 J	359166.65	359166.78	359166.93	0.0261	0.0197
Earth	-3723-06-24 01:55 J	361771.41	361771.58	361771.77	0.0276	0.0184
Moon	-3723-06-24 03:21 J	361771.49	361771.64	361771.82	0.0276	0.0197 *
Mars	-3719-03-14 05:02 J	363130.45	363130.71	363130.97	0.0291	0.0109
Mercury	-3717-04-17 15:50 J	363896.05	363896.16	363896.27	0.0298	0.0160
Mercury	-3717-07-15 04:33 J	363984.55	363984.69	363984.82	0.0299	0.0012
Mercury	-3717-10-11 17:02 J	364073.10	364073.21	364073.32	0.0299	0.0142
Mercury	-3716-01-08 05:31 J	364161.70	364161.73	364161.76	0.0300	0.0292
Venus	-3716-03-02 22:48 J	364215.29	364215.45	364215.61	0.0300	0.0191
Venus	-3716-10-19 03:50 J	364445.46	364445.66	364445.87	0.0301	0.0084
Earth	-3710-12-21 05:02 J	366699.51	366699.71	366699.92	0.0285	0.0148
Moon	-3710-12-21 08:23 J	366699.65	366699.85	366700.06	0.0285	0.0140 *
Mercury	-3703-05-14 06:00 J	369035.66	369035.75	369035.86	0.0263	0.0218
Mercury	-3703-08-11 02:23 J	369124.42	369124.60	369124.78	0.0263	0.0071
Mercury	-3703-11-07 22:33 J	369213.27	369213.44	369213.63	0.0262	0.0078
Mercury	-3702-02-04 19:11 J	369302.21	369302.30	369302.40	0.0262	0.0226
Venus	-3702-08-16 15:21 J	369494.96	369495.14	369495.32	0.0261	0.0139

Venus	-3701-04-01 12:43 J	369723.82	369724.03	369724.24	0.0261	0.0040
Venus	-3701-11-16 09:36 J	369952.80	369952.90	369953.03	0.0261	0.0219
Moon	-3693-06-30 15:50 J	372735.99	372736.16	372736.36	0.0279	0.0178
Earth	-3693-06-30 19:26 J	372736.14	372736.31	372736.50	0.0279	0.0193 *
Mercury	-3688-09-04 18:14 J	374628.16	374628.26	374628.36	0.0299	0.0198
Mercury	-3688-12-02 06:57 J	374716.66	374716.79	374716.92	0.0299	0.0046
Mercury	-3687-02-28 19:40 J	374805.20	374805.32	374805.44	0.0300	0.0105
Mercury	-3687-05-28 08:09 J	374893.77	374893.84	374893.90	0.0300	0.0255
Venus	-3687-09-13 07:55 J	375001.65	375001.83	375002.01	0.0300	0.0150
Venus	-3686-05-01 12:57 J	375231.86	375232.04	375232.24	0.0301	0.0126
Moon	-3680-12-28 01:40 J	377664.51	377664.57	377664.65	0.0282	0.0269
Earth	-3680-12-28 03:50 J	377664.56	377664.66	377664.75	0.0282	0.0258 *
Mercury	-3674-10-01 07:26 J	379767.75	379767.81	379767.87	0.0264	0.0247
Mercury	-3674-12-29 03:36 J	379856.48	379856.65	379856.82	0.0263	0.0100
Mercury	-3673-03-27 00:00 J	379945.31	379945.50	379945.68	0.0263	0.0049
Mercury	-3673-06-23 20:23 J	380034.23	380034.35	380034.47	0.0262	0.0198
Venus	-3672-02-25 21:50 J	380281.22	380281.41	380281.61	0.0262	0.0107
Venus	-3672-10-12 19:11 J	380510.10	380510.30	380510.51	0.0261	0.0073
Venus	-3671-05-29 16:33 J	380739.14	380739.19	380739.25	0.0261	0.0251
Earth	-3664-06-25 16:48 J	383322.97	383323.20	383323.44	0.0277	0.0092
Moon	-3664-06-25 20:38 J	383323.13	383323.36	383323.59	0.0277	0.0106 *
Mercury	-3658-01-22 21:36 J	385360.31	385360.40	385360.48	0.0298	0.0227
Mercury	-3658-04-21 10:19 J	385448.80	385448.93	385449.05	0.0298	0.0076
Mercury	-3658-07-18 22:48 J	385537.33	385537.45	385537.58	0.0299	0.0075
Mercury	-3658-10-15 11:16 J	385625.89	385625.97	385626.06	0.0299	0.0225
Venus	-3657-03-25 19:26 J	385788.12	385788.31	385788.51	0.0300	0.0105
Venus	-3657-11-11 00:28 J	386018.35	386018.52	386018.70	0.0300	0.0171
Earth	-3651-12-22 20:09 J	388251.11	388251.34	388251.58	0.0285	0.0051
Moon	-3651-12-22 22:33 J	388251.20	388251.44	388251.69	0.0285	0.0044 *
Mars	-3647-09-12 11:31 J	389610.70	389610.98	389611.28	0.0270	0.0095

Mercury	-3644-05-17 03:21 J	390588.48	390588.64	390588.80	0.0263	0.0140
Mercury	-3644-08-13 23:31 J	390677.29	390677.48	390677.67	0.0263	0.0008
Mercury	-3644-11-10 19:55 J	390766.18	390766.33	390766.49	0.0262	0.0156
Venus	-3643-01-22 04:19 J	390838.68	390838.68	390838.68	0.0262	0.0262
Venus	-3643-09-08 01:40 J	391067.37	391067.57	391067.78	0.0261	0.0083
Venus	-3642-04-24 23:02 J	391296.26	391296.46	391296.66	0.0261	0.0096
Moon	-3634-07-03 10:19 J	394287.90	394287.93	394287.98	0.0279	0.0275
Mars	-3631-08-09 01:11 J	395420.27	395420.55	395420.83	0.0292	0.0004
Mercury	-3629-06-11 00:00 J	396092.44	396092.50	396092.56	0.0298	0.0265
Mercury	-3629-09-07 12:43 J	396180.91	396181.03	396181.15	0.0299	0.0113
Mercury	-3629-12-05 01:26 J	396269.43	396269.56	396269.69	0.0299	0.0038
Mercury	-3628-03-03 13:55 J	396357.98	396358.08	396358.18	0.0300	0.0189
Venus	-3628-10-06 04:33 J	396574.49	396574.69	396574.90	0.0300	0.0063
Venus	-3627-05-24 09:36 J	396804.76	396804.90	396805.06	0.0301	0.0213
Mercury	-3615-10-04 04:33 J	401320.55	401320.69	401320.84	0.0263	0.0169
Mercury	-3614-01-01 00:57 J	401409.35	401409.54	401409.73	0.0263	0.0021
Mercury	-3614-03-30 21:21 J	401498.23	401498.39	401498.55	0.0263	0.0128
Venus	-3614-08-04 11:02 J	401624.86	401624.96	401625.06	0.0262	0.0231
Venus	-3613-03-20 08:38 J	401853.65	401853.86	401854.07	0.0262	0.0051
Venus	-3613-11-04 05:45 J	402082.56	402082.74	402082.93	0.0261	0.0129
Earth	-3605-06-27 08:23 J	404874.60	404874.85	404875.10	0.0277	0.0002
Moon	-3605-06-27 09:21 J	404874.64	404874.89	404875.15	0.0277	0.0013 *
Mercury	-3600-10-29 03:21 J	406824.62	406824.64	406824.66	0.0298	0.0292
Mercury	-3599-01-25 16:04 J	406913.06	406913.17	406913.29	0.0298	0.0141
Mercury	-3599-04-24 04:48 J	407001.57	407001.70	407001.83	0.0299	0.0010
Mercury	-3599-07-21 17:16 J	407090.11	407090.22	407090.33	0.0299	0.0160
Venus	-3599-08-31 11:45 J	407130.95	407130.99	407131.04	0.0299	0.0290
Venus	-3598-04-18 16:48 J	407360.99	407361.20	407361.41	0.0300	0.0017
Venus	-3598-12-04 21:36 J	407591.31	407591.40	407591.52	0.0300	0.0258
Moon	-3592-12-24 11:02 J	409802.72	409802.96	409803.21	0.0284	0.0059

Earth	-3592-12-24 12:57 J	409802.80	409803.04	409803.28	0.0284	0.0050	*
Mercury	-3585-02-21 04:33 J	412052.59	412052.69	412052.81	0.0263	0.0207	
Mercury	-3585-05-20 00:57 J	412141.36	412141.54	412141.72	0.0263	0.0059	
Mercury	-3585-08-16 21:21 J	412230.21	412230.39	412230.56	0.0262	0.0089	
Mercury	-3585-11-13 17:45 J	412319.16	412319.24	412319.32	0.0262	0.0237	
Venus	-3584-02-13 14:52 J	412411.01	412411.12	412411.27	0.0262	0.0206	
Venus	-3584-09-30 12:43 J	412639.82	412640.03	412640.24	0.0261	0.0026	
Venus	-3583-05-17 09:50 J	412868.74	412868.91	412869.09	0.0261	0.0153	
Mercury	-3570-06-14 18:28 J	417645.17	417645.27	417645.37	0.0299	0.0180	
Mercury	-3570-09-11 07:11 J	417733.67	417733.80	417733.93	0.0299	0.0028	
Mercury	-3570-12-08 19:40 J	417822.21	417822.32	417822.44	0.0300	0.0123	
Mercury	-3569-03-06 08:23 J	417910.80	417910.85	417910.90	0.0300	0.0272	
Venus	-3569-03-12 20:38 J	417917.24	417917.36	417917.47	0.0300	0.0251	
Venus	-3569-10-29 01:40 J	418147.36	418147.57	418147.78	0.0301	0.0025	
Venus	-3568-06-16 06:43 J	418377.77	418377.78	418377.80	0.0301	0.0300	
Earth	-3563-12-19 05:45 J	420389.64	420389.74	420389.84	0.0286	0.0257	
Moon	-3563-12-19 07:26 J	420389.71	420389.81	420389.93	0.0286	0.0252	*
Mars	-3558-02-07 10:04 J	421900.61	421900.92	421901.23	0.0269	0.0011	
Mercury	-3556-07-10 06:00 J	422784.67	422784.75	422784.84	0.0263	0.0235	
Mercury	-3556-10-07 02:09 J	422873.42	422873.59	422873.77	0.0263	0.0089	
Mercury	-3555-01-03 22:33 J	422962.26	422962.44	422962.62	0.0263	0.0059	
Mercury	-3555-04-02 18:43 J	423051.18	423051.28	423051.41	0.0262	0.0209	
Venus	-3555-08-26 21:50 J	423197.26	423197.41	423197.57	0.0262	0.0175	
Venus	-3554-04-12 19:26 J	423426.09	423426.31	423426.52	0.0261	0.0006	
Venus	-3554-11-27 16:33 J	423655.05	423655.19	423655.34	0.0261	0.0185	
Moon	-3546-06-29 19:26 J	426426.07	426426.31	426426.56	0.0278	0.0078	
Earth	-3546-06-29 23:02 J	426426.22	426426.46	426426.69	0.0278	0.0094	*
Mars	-3542-01-04 06:43 J	427710.53	427710.78	427711.04	0.0292	0.0125	
Mercury	-3541-10-31 21:50 J	428377.32	428377.41	428377.50	0.0298	0.0208	
Mercury	-3540-01-28 10:33 J	428465.81	428465.94	428466.07	0.0298	0.0057	

Mercury	-3540-04-26 23:16 J	428554.34	428554.47	428554.59	0.0299	0.0094
Mercury	-3540-07-24 11:45 J	428642.92	428642.99	428643.06	0.0299	0.0243
Venus	-3540-09-23 08:52 J	428703.72	428703.87	428704.02	0.0300	0.0205
Venus	-3539-05-11 13:55 J	428933.87	428934.08	428934.28	0.0300	0.0070
Moon	-3533-12-26 01:55 J	431354.39	431354.58	431354.79	0.0283	0.0162
Earth	-3533-12-26 05:45 J	431354.54	431354.74	431354.95	0.0283	0.0151 *
Mercury	-3526-02-24 02:23 J	433605.44	433605.60	433605.77	0.0263	0.0125
Mercury	-3526-05-23 22:33 J	433694.26	433694.44	433694.63	0.0263	0.0023
Mercury	-3526-08-20 18:57 J	433783.15	433783.29	433783.44	0.0262	0.0170
Venus	-3525-03-08 02:09 J	433983.42	433983.59	433983.77	0.0261	0.0149
Venus	-3525-10-22 23:31 J	434212.27	434212.48	434212.70	0.0261	0.0031
Venus	-3524-06-08 20:52 J	434441.24	434441.37	434441.49	0.0261	0.0209
Earth	-3517-06-23 12:14 J	437012.85	437013.01	437013.19	0.0276	0.0205
Moon	-3517-06-23 15:36 J	437013.01	437013.15	437013.31	0.0276	0.0219 *
Mercury	-3511-03-21 00:00 J	439109.43	439109.50	439109.56	0.0298	0.0251
Mercury	-3511-06-17 12:43 J	439197.90	439198.03	439198.15	0.0299	0.0099
Mercury	-3511-09-14 01:26 J	439286.43	439286.56	439286.68	0.0299	0.0053
Mercury	-3511-12-11 13:55 J	439374.98	439375.08	439375.17	0.0300	0.0202
Venus	-3510-04-05 16:04 J	439490.00	439490.17	439490.35	0.0300	0.0167
Venus	-3510-11-21 21:21 J	439720.20	439720.39	439720.59	0.0301	0.0110
Earth	-3504-12-20 21:07 J	441941.19	441941.38	441941.59	0.0285	0.0159
Moon	-3504-12-21 00:57 J	441941.34	441941.54	441941.75	0.0285	0.0150 *
Jupiter	-3501-05-19 00:14 J	442821.08	442821.51	442821.98	0.0275	0.0100
Mercury	-3497-07-13 03:21 J	444337.49	444337.64	444337.79	0.0263	0.0157
Mercury	-3497-10-09 23:31 J	444426.30	444426.48	444426.67	0.0263	0.0011
Mercury	-3496-01-06 19:55 J	444515.17	444515.33	444515.49	0.0262	0.0138
Venus	-3496-09-18 08:09 J	444769.66	444769.84	444770.04	0.0262	0.0120
Venus	-3495-05-05 05:31 J	444998.53	444998.73	444998.94	0.0261	0.0061
Venus	-3495-12-20 02:52 J	445227.54	445227.62	445227.71	0.0261	0.0240
Moon	-3487-07-01 07:55 J	447977.64	447977.83	447978.03	0.0279	0.0166

Earth	-3487-07-01 10:33 J	447977.76	447977.94	447978.14	0.0279	0.0182	*
Mercury	-3482-08-08 02:52 J	449841.59	449841.62	449841.67	0.0298	0.0281	
Mercury	-3482-11-04 15:50 J	449930.04	449930.16	449930.28	0.0298	0.0129	
Mercury	-3481-02-01 04:33 J	450018.56	450018.69	450018.82	0.0299	0.0022	
Mercury	-3481-04-29 17:02 J	450107.11	450107.21	450107.32	0.0299	0.0172	
Venus	-3481-10-16 03:50 J	450276.47	450276.66	450276.85	0.0300	0.0123	
Venus	-3480-06-03 08:52 J	450506.70	450506.87	450507.06	0.0300	0.0154	
Earth	-3474-12-28 21:21 J	452906.28	452906.39	452906.51	0.0283	0.0249	
Moon	-3474-12-28 20:38 J	452906.29	452906.36	452906.46	0.0283	0.0262	*
Mars	-3470-07-05 06:28 J	454190.49	454190.77	454191.05	0.0269	0.0112	
Mercury	-3468-11-30 03:36 J	455069.53	455069.65	455069.79	0.0263	0.0192	
Mercury	-3467-02-27 00:00 J	455158.31	455158.50	455158.68	0.0263	0.0046	
Mercury	-3467-05-26 20:09 J	455247.17	455247.34	455247.51	0.0262	0.0101	
Mercury	-3467-08-23 16:33 J	455336.14	455336.19	455336.25	0.0262	0.0249	
Venus	-3466-03-31 12:43 J	455555.84	455556.03	455556.24	0.0261	0.0093	
Venus	-3466-11-15 09:50 J	455784.71	455784.91	455785.11	0.0261	0.0086	
Earth	-3458-06-25 22:48 J	458564.23	458564.45	458564.68	0.0276	0.0121	
Moon	-3458-06-26 01:26 J	458564.34	458564.56	458564.79	0.0276	0.0134	*
Mars	-3454-05-31 11:45 J	459999.80	459999.99	460000.19	0.0293	0.0208	
Mercury	-3452-03-23 17:31 J	460662.12	460662.23	460662.34	0.0299	0.0176	
Mercury	-3452-06-20 06:14 J	460750.63	460750.76	460750.89	0.0299	0.0025	
Mercury	-3452-09-16 18:43 J	460839.17	460839.28	460839.40	0.0300	0.0127	
Mercury	-3452-12-14 07:26 J	460927.76	460927.81	460927.86	0.0300	0.0276	
Venus	-3451-04-28 09:50 J	461062.71	461062.91	461063.11	0.0301	0.0087	
Venus	-3451-12-14 15:07 J	461292.97	461293.13	461293.30	0.0301	0.0190	
Moon	-3445-12-22 11:02 J	463492.71	463492.96	463493.21	0.0285	0.0054	
Earth	-3445-12-22 10:48 J	463492.72	463492.95	463493.19	0.0285	0.0064	*
Mercury	-3438-04-19 04:19 J	465801.59	465801.68	465801.77	0.0263	0.0228	
Mercury	-3438-07-17 00:14 J	465890.34	465890.51	465890.69	0.0263	0.0082	
Mercury	-3438-10-13 20:38 J	465979.17	465979.36	465979.54	0.0262	0.0066	



Mercury	-3437-01-10 16:48 J	466068.10	466068.20	466068.31	0.0262	0.0214
Venus	-3437-02-24 20:23 J	466113.28	466113.35	466113.43	0.0262	0.0245
Venus	-3437-10-10 17:45 J	466342.04	466342.24	466342.45	0.0261	0.0066
Venus	-3436-05-27 14:52 J	466570.93	466571.12	466571.32	0.0261	0.0114
Earth	-3428-07-02 19:55 J	469529.25	469529.33	469529.41	0.0279	0.0263
Moon	-3428-07-02 21:07 J	469529.29	469529.38	469529.50	0.0279	0.0250 *
Mercury	-3423-08-10 20:23 J	471394.26	471394.35	471394.44	0.0298	0.0210
Mercury	-3423-11-07 09:07 J	471482.75	471482.88	471483.01	0.0299	0.0059
Mercury	-3422-02-03 21:50 J	471571.28	471571.41	471571.53	0.0299	0.0092
Mercury	-3422-05-03 10:19 J	471659.86	471659.93	471660.01	0.0300	0.0242
Venus	-3422-11-08 20:23 J	471849.14	471849.35	471849.56	0.0300	0.0046
Venus	-3421-06-26 01:40 J	472079.44	472079.57	472079.71	0.0301	0.0231
Mercury	-3409-09-05 04:33 J	476533.69	476533.69	476533.70	0.0263	0.0263
Mercury	-3409-12-03 00:28 J	476622.36	476622.52	476622.69	0.0263	0.0118
Mercury	-3408-03-01 20:38 J	476711.18	476711.36	476711.55	0.0262	0.0030
Mercury	-3408-05-29 17:02 J	476800.07	476800.21	476800.35	0.0262	0.0176
Venus	-3408-09-06 00:57 J	476899.43	476899.54	476899.66	0.0262	0.0219
Venus	-3407-04-22 22:04 J	477128.21	477128.42	477128.63	0.0261	0.0040
Venus	-3407-12-07 18:57 J	477357.11	477357.29	477357.47	0.0261	0.0139
Moon	-3399-06-27 04:19 J	480115.43	480115.68	480115.93	0.0277	0.0058
Earth	-3399-06-27 05:45 J	480115.50	480115.74	480115.99	0.0277	0.0044 *
Mercury	-3394-12-28 21:21 J	482126.33	482126.39	482126.45	0.0298	0.0263
Mercury	-3393-03-26 10:19 J	482214.81	482214.93	482215.05	0.0299	0.0111
Mercury	-3393-06-22 23:02 J	482303.33	482303.46	482303.59	0.0300	0.0041
Mercury	-3393-09-19 11:31 J	482391.88	482391.98	482392.08	0.0300	0.0191
Venus	-3393-10-02 18:43 J	482405.24	482405.28	482405.35	0.0300	0.0290
Venus	-3392-05-21 00:28 J	482635.31	482635.52	482635.73	0.0301	0.0014
Venus	-3391-01-06 05:45 J	482865.65	482865.74	482865.85	0.0301	0.0264
Moon	-3386-12-24 17:16 J	485043.98	485044.22	485044.47	0.0285	0.0035
Earth	-3386-12-24 20:38 J	485044.12	485044.36	485044.60	0.0285	0.0023 *

Mars	-3382-11-29 12:14 J	486479.80	486480.01	486480.23	0.0269	0.0191
Mercury	-3379-04-22 00:14 J	487354.37	487354.51	487354.67	0.0263	0.0158
Mercury	-3379-07-19 20:23 J	487443.17	487443.35	487443.54	0.0262	0.0013
Mercury	-3379-10-16 16:48 J	487532.04	487532.20	487532.36	0.0262	0.0136
Venus	-3378-03-19 04:48 J	487685.56	487685.70	487685.85	0.0261	0.0194
Venus	-3378-11-03 01:55 J	487914.37	487914.58	487914.80	0.0261	0.0015
Venus	-3377-06-18 22:48 J	488143.29	488143.45	488143.62	0.0261	0.0165
Mars	-3366-10-25 14:38 J	492289.06	492289.11	492289.19	0.0293	0.0284
Mercury	-3364-08-13 12:43 J	492946.92	492947.03	492947.15	0.0298	0.0149
Mercury	-3364-11-10 01:40 J	493035.44	493035.57	493035.70	0.0299	0.0006
Mercury	-3363-02-06 14:09 J	493123.98	493124.09	493124.21	0.0299	0.0154
Venus	-3363-04-15 04:19 J	493191.57	493191.68	493191.80	0.0300	0.0250
Venus	-3363-12-01 09:50 J	493421.70	493421.91	493422.12	0.0300	0.0026
Moon	-3357-12-18 14:38 J	495631.08	495631.11	495631.16	0.0287	0.0283
Mercury	-3350-09-09 00:28 J	498086.40	498086.52	498086.65	0.0263	0.0194
Mercury	-3350-12-06 20:38 J	498175.17	498175.36	498175.54	0.0262	0.0048
Mercury	-3349-03-04 16:48 J	498264.02	498264.20	498264.37	0.0262	0.0098
Mercury	-3349-06-01 12:57 J	498352.98	498353.04	498353.11	0.0262	0.0245
Venus	-3349-09-28 08:52 J	498471.71	498471.87	498472.04	0.0261	0.0167
Venus	-3348-05-15 05:45 J	498700.53	498700.74	498700.96	0.0261	0.0012
Venus	-3348-12-30 02:38 J	498929.47	498929.61	498929.76	0.0260	0.0189
Moon	-3340-06-28 06:14 J	501666.52	501666.76	501667.01	0.0277	0.0012
Earth	-3340-06-28 09:50 J	501666.67	501666.91	501667.16	0.0277	0.0028 *
Mercury	-3335-12-31 13:40 J	503678.97	503679.07	503679.16	0.0299	0.0205
Mercury	-3334-03-30 02:23 J	503767.47	503767.60	503767.73	0.0299	0.0053
Mercury	-3334-06-26 15:07 J	503856.00	503856.13	503856.25	0.0300	0.0098
Mercury	-3334-09-23 03:36 J	503944.58	503944.65	503944.72	0.0300	0.0248
Venus	-3334-10-26 06:28 J	503977.64	503977.77	503977.92	0.0300	0.0222
Venus	-3333-06-12 12:14 J	504207.80	504208.01	504208.22	0.0301	0.0055
Moon	-3327-12-25 23:31 J	506595.27	506595.48	506595.70	0.0284	0.0110

Earth	-3327-12-26 01:55 J	506595.35	506595.58	506595.81	0.0284	0.0099 *
Mercury	-3320-01-25 23:31 J	508818.41	508818.48	508818.56	0.0263	0.0239
Mercury	-3320-04-24 19:40 J	508907.14	508907.32	508907.49	0.0263	0.0093
Mercury	-3320-07-22 15:50 J	508995.97	508996.16	508996.34	0.0262	0.0053
Mercury	-3320-10-19 12:00 J	509084.89	509085.00	509085.13	0.0262	0.0200
Venus	-3319-04-10 11:16 J	509257.80	509257.97	509258.16	0.0261	0.0145
Venus	-3319-11-25 08:23 J	509486.64	509486.85	509487.07	0.0261	0.0035
Venus	-3318-07-12 05:16 J	509715.60	509715.72	509715.85	0.0260	0.0212
Earth	-3311-06-23 00:00 J	512253.46	512253.50	512253.57	0.0275	0.0267
Mercury	-3305-05-19 15:36 J	514411.08	514411.15	514411.22	0.0298	0.0248
Mercury	-3305-08-16 04:19 J	514499.56	514499.68	514499.81	0.0299	0.0097
Mercury	-3305-11-12 17:16 J	514588.09	514588.22	514588.34	0.0299	0.0055
Mercury	-3304-02-09 05:45 J	514676.65	514676.74	514676.84	0.0300	0.0205
Venus	-3304-05-07 13:55 J	514763.93	514764.08	514764.26	0.0300	0.0188
Venus	-3304-12-23 19:40 J	514994.12	514994.32	514994.52	0.0301	0.0090
Earth	-3298-12-20 15:21 J	517181.98	517182.14	517182.30	0.0287	0.0215
Moon	-3298-12-20 17:45 J	517182.08	517182.24	517182.42	0.0287	0.0207 *
Mars	-3293-04-24 11:02 J	518768.92	518768.96	518769.02	0.0269	0.0265
Mercury	-3291-09-11 19:40 J	519639.16	519639.32	519639.48	0.0263	0.0131
Mercury	-3291-12-09 15:36 J	519727.97	519728.15	519728.34	0.0262	0.0016
Mercury	-3290-03-08 11:45 J	519816.85	519816.99	519817.15	0.0262	0.0162
Venus	-3290-10-21 15:07 J	520043.94	520044.13	520044.32	0.0261	0.0119
Venus	-3289-06-06 12:00 J	520272.79	520273.00	520273.21	0.0261	0.0060
Venus	-3288-01-21 08:52 J	520501.78	520501.87	520501.95	0.0260	0.0237
Moon	-3281-06-29 10:04 J	523217.69	523217.92	523218.15	0.0277	0.0078
Earth	-3281-06-29 10:33 J	523217.71	523217.94	523218.17	0.0277	0.0092 *
Mercury	-3275-01-03 04:47 J	525231.59	525231.70	525231.81	0.0299	0.0156
Mercury	-3275-04-01 17:31 J	525320.10	525320.23	525320.37	0.0299	0.0010
Mercury	-3275-06-29 06:14 J	525408.65	525408.76	525408.87	0.0300	0.0145
Mercury	-3275-09-25 18:43 J	525497.27	525497.28	525497.31	0.0300	0.0295

Venus	-3275-11-17 15:07 J	525549.96	525550.13	525550.31	0.0301	0.0161
Venus	-3274-07-05 20:52 J	525780.18	525780.37	525780.57	0.0301	0.0117
Earth	-3268-12-27 02:52 J	528146.43	528146.62	528146.83	0.0284	0.0167
Moon	-3268-12-27 04:47 J	528146.53	528146.70	528146.89	0.0284	0.0180 *
Mercury	-3261-01-29 18:00 J	530371.12	530371.25	530371.38	0.0263	0.0181
Mercury	-3261-04-27 13:55 J	530459.90	530460.08	530460.27	0.0262	0.0036
Mercury	-3261-07-25 10:19 J	530548.76	530548.93	530549.10	0.0262	0.0111
Mercury	-3261-10-22 06:28 J	530637.75	530637.77	530637.80	0.0262	0.0258
Venus	-3260-05-02 16:19 J	530829.99	530830.18	530830.38	0.0261	0.0099
Venus	-3260-12-17 13:26 J	531058.86	531059.06	531059.26	0.0261	0.0080
Venus	-3259-08-03 10:04 J	531287.90	531287.92	531287.96	0.0260	0.0258
Earth	-3252-06-23 23:31 J	533804.33	533804.48	533804.65	0.0275	0.0206
Moon	-3252-06-23 23:31 J	533804.34	533804.48	533804.65	0.0275	0.0221 *
Mercury	-3246-05-23 06:43 J	535963.68	535963.78	535963.88	0.0298	0.0202
Mercury	-3246-08-19 19:26 J	536052.18	536052.31	536052.44	0.0299	0.0051
Mercury	-3246-11-16 08:09 J	536140.72	536140.84	536140.96	0.0299	0.0100
Mercury	-3245-02-12 20:38 J	536229.30	536229.36	536229.44	0.0300	0.0250
Venus	-3245-05-29 21:50 J	536336.22	536336.41	536336.61	0.0300	0.0127
Venus	-3244-01-15 03:21 J	536566.47	536566.64	536566.83	0.0301	0.0151
Moon	-3239-12-21 12:28 J	538732.80	538733.02	538733.24	0.0287	0.0138
Earth	-3239-12-21 14:38 J	538732.91	538733.11	538733.32	0.0287	0.0151 *
Mercury	-3232-06-17 17:45 J	541103.14	541103.24	541103.34	0.0263	0.0219
Mercury	-3232-09-14 13:40 J	541191.89	541192.07	541192.25	0.0263	0.0075
Mercury	-3232-12-12 09:50 J	541280.73	541280.91	541281.09	0.0262	0.0072
Mercury	-3231-03-11 06:14 J	541369.66	541369.76	541369.86	0.0262	0.0218
Venus	-3231-03-28 22:33 J	541387.39	541387.44	541387.51	0.0262	0.0252
Venus	-3231-11-12 19:40 J	541616.12	541616.32	541616.53	0.0261	0.0073
Venus	-3230-06-29 16:33 J	541844.99	541845.19	541845.38	0.0260	0.0105
Earth	-3222-07-01 09:07 J	544768.68	544768.88	544769.10	0.0276	0.0153
Moon	-3222-07-01 12:57 J	544768.83	544769.04	544769.25	0.0276	0.0138 *

Mercury	-3217-10-09 06:43 J	546695.73	546695.78	546695.84	0.0298	0.0265
Mercury	-3216-01-05 19:40 J	546784.20	546784.32	546784.44	0.0299	0.0114
Mercury	-3216-04-04 08:23 J	546872.72	546872.85	546872.98	0.0299	0.0037
Mercury	-3216-07-01 20:52 J	546961.27	546961.37	546961.47	0.0300	0.0187
Venus	-3216-12-09 21:36 J	547122.20	547122.40	547122.60	0.0301	0.0103
Venus	-3215-07-28 03:07 J	547352.46	547352.63	547352.81	0.0301	0.0175
Earth	-3209-12-28 00:14 J	549697.37	549697.51	549697.66	0.0285	0.0225
Moon	-3209-12-28 03:36 J	549697.54	549697.65	549697.79	0.0285	0.0241 *
Mercury	-3202-02-01 11:31 J	551923.82	551923.98	551924.15	0.0263	0.0128
Mercury	-3202-05-01 07:40 J	552012.63	552012.82	552013.01	0.0262	0.0018
Mercury	-3202-07-29 03:50 J	552101.52	552101.66	552101.81	0.0262	0.0165
Venus	-3202-10-08 22:33 J	552173.36	552173.44	552173.55	0.0262	0.0234
Venus	-3201-05-24 20:09 J	552402.13	552402.34	552402.55	0.0261	0.0054
Venus	-3200-01-08 17:02 J	552631.03	552631.21	552631.40	0.0260	0.0125
Moon	-3193-06-24 17:02 J	555355.02	555355.21	555355.42	0.0275	0.0164
Earth	-3193-06-24 21:07 J	555355.17	555355.38	555355.59	0.0275	0.0149 *
Mercury	-3187-05-25 21:07 J	557516.27	557516.38	557516.49	0.0298	0.0162
Mercury	-3187-08-22 10:04 J	557604.78	557604.92	557605.05	0.0299	0.0014
Mercury	-3187-11-18 22:33 J	557693.33	557693.44	557693.56	0.0299	0.0139
Mercury	-3186-02-15 11:02 J	557781.93	557781.96	557782.00	0.0300	0.0289
Venus	-3186-06-22 03:21 J	557908.44	557908.64	557908.85	0.0300	0.0071
Venus	-3185-02-07 08:52 J	558138.73	558138.87	558139.03	0.0301	0.0206
Moon	-3180-12-22 07:12 J	560283.58	560283.80	560284.04	0.0287	0.0080
Earth	-3180-12-22 10:47 J	560283.72	560283.95	560284.18	0.0287	0.0095 *
Mercury	-3173-06-20 11:02 J	562655.82	562655.96	562656.11	0.0263	0.0168
Mercury	-3173-09-17 07:12 J	562744.61	562744.80	562744.99	0.0263	0.0023
Mercury	-3173-12-15 03:21 J	562833.48	562833.64	562833.81	0.0262	0.0124
Venus	-3172-04-20 01:55 J	562959.46	562959.58	562959.72	0.0262	0.0208
Venus	-3172-12-04 23:16 J	563188.26	563188.47	563188.68	0.0261	0.0029
Venus	-3171-07-21 19:55 J	563417.16	563417.33	563417.51	0.0260	0.0149

Earth	-3163-07-02 06:43 J	566319.63	566319.78	566319.95	0.0276	0.0210
Moon	-3163-07-02 08:38 J	566319.69	566319.86	566320.05	0.0276	0.0199 *
Mercury	-3158-10-12 21:21 J	568248.31	568248.39	568248.48	0.0298	0.0223
Mercury	-3157-01-09 10:04 J	568336.80	568336.92	568337.05	0.0299	0.0073
Mercury	-3157-04-06 22:47 J	568425.33	568425.45	568425.58	0.0299	0.0078
Mercury	-3157-07-04 11:31 J	568513.89	568513.98	568514.06	0.0300	0.0227
Venus	-3156-01-01 03:07 J	568694.43	568694.63	568694.85	0.0301	0.0048
Venus	-3156-08-19 08:38 J	568924.73	568924.86	568925.00	0.0301	0.0230
Earth	-3150-12-29 19:26 J	571248.28	571248.31	571248.37	0.0285	0.0279
Mercury	-3144-11-07 08:38 J	573387.77	573387.86	573387.95	0.0263	0.0224
Mercury	-3143-02-04 04:33 J	573476.52	573476.69	573476.87	0.0263	0.0079
Mercury	-3143-05-04 00:43 J	573565.35	573565.53	573565.71	0.0262	0.0067
Mercury	-3143-07-31 20:52 J	573654.27	573654.37	573654.49	0.0262	0.0214
Venus	-3143-10-31 01:26 J	573745.42	573745.56	573745.71	0.0262	0.0191
Venus	-3142-06-16 22:47 J	573974.24	573974.45	573974.66	0.0261	0.0011
Venus	-3141-01-31 19:40 J	574203.17	574203.32	574203.49	0.0260	0.0167
Moon	-3134-06-26 17:02 J	576905.98	576906.21	576906.43	0.0275	0.0104
Earth	-3134-06-26 18:00 J	576906.02	576906.25	576906.49	0.0275	0.0093 *
Mercury	-3128-02-28 22:33 J	578980.40	578980.44	578980.50	0.0298	0.0274
Mercury	-3128-05-28 11:31 J	579068.86	579068.98	579069.10	0.0298	0.0123
Mercury	-3128-08-25 00:14 J	579157.38	579157.51	579157.64	0.0299	0.0027
Mercury	-3128-11-21 12:57 J	579245.93	579246.04	579246.14	0.0299	0.0177
Venus	-3128-11-26 02:38 J	579250.57	579250.61	579250.67	0.0299	0.0291
Venus	-3127-07-14 08:09 J	579480.63	579480.84	579481.05	0.0300	0.0017
Venus	-3126-03-01 13:40 J	579710.97	579711.07	579711.18	0.0301	0.0260
Earth	-3121-12-23 04:33 J	581834.45	581834.69	581834.93	0.0287	0.0044
Moon	-3121-12-23 05:45 J	581834.51	581834.74	581834.98	0.0287	0.0028 *
Mercury	-3114-06-24 04:04 J	584208.51	584208.67	584208.84	0.0263	0.0120
Mercury	-3114-09-21 00:14 J	584297.32	584297.51	584297.70	0.0263	0.0026
Mercury	-3114-12-18 20:23 J	584386.21	584386.35	584386.50	0.0262	0.0174

Venus	-3113-05-12 04:33 J	584531.53	584531.69	584531.86	0.0262	0.0165
Venus	-3113-12-27 01:55 J	584760.37	584760.58	584760.80	0.0261	0.0016
Venus	-3112-08-12 22:47 J	584989.31	584989.45	584989.60	0.0261	0.0193
Moon	-3104-07-03 01:26 J	587870.48	587870.56	587870.64	0.0276	0.0261
Earth	-3104-07-03 04:19 J	587870.63	587870.68	587870.76	0.0276	0.0266 *
Mercury	-3099-10-15 11:45 J	589800.89	589800.99	589801.10	0.0298	0.0184
Mercury	-3098-01-12 00:28 J	589889.39	589889.52	589889.66	0.0298	0.0035
Mercury	-3098-04-10 13:12 J	589977.93	589978.05	589978.17	0.0299	0.0116
Venus	-3098-06-08 03:21 J	590036.55	590036.64	590036.74	0.0299	0.0266
Mercury	-3098-07-08 01:40 J	590066.52	590066.57	590066.63	0.0299	0.0265
Venus	-3097-01-24 08:23 J	590266.64	590266.85	590267.06	0.0300	0.0010
Venus	-3097-09-10 13:26 J	590497.00	590497.06	590497.13	0.0301	0.0285
Mercury	-3085-11-10 01:26 J	594940.42	594940.56	594940.69	0.0263	0.0178
Mercury	-3084-02-06 21:21 J	595029.21	595029.39	595029.58	0.0263	0.0032
Mercury	-3084-05-06 17:31 J	595118.07	595118.23	595118.40	0.0262	0.0115
Venus	-3084-11-22 03:50 J	595317.49	595317.66	595317.84	0.0262	0.0148
Venus	-3083-07-09 01:12 J	595546.34	595546.55	595546.76	0.0261	0.0031
Venus	-3082-02-22 22:04 J	595775.30	595775.42	595775.55	0.0260	0.0210
Earth	-3075-06-27 15:36 J	598456.90	598457.15	598457.39	0.0275	0.0037
Moon	-3075-06-27 18:43 J	598457.04	598457.28	598457.52	0.0275	0.0044 *
Mercury	-3069-03-03 13:12 J	600532.97	600533.05	600533.13	0.0298	0.0233
Mercury	-3069-05-31 02:09 J	600621.46	600621.59	600621.71	0.0298	0.0083
Mercury	-3069-08-27 14:38 J	600709.99	600710.11	600710.24	0.0299	0.0067
Mercury	-3069-11-24 03:21 J	600798.55	600798.64	600798.73	0.0299	0.0216
Venus	-3069-12-18 07:55 J	600822.72	600822.83	600822.97	0.0299	0.0236
Venus	-3068-08-05 13:26 J	601052.85	601053.06	601053.27	0.0300	0.0040
Earth	-3062-12-24 22:47 J	603385.21	603385.45	603385.69	0.0287	0.0008
Moon	-3062-12-25 02:23 J	603385.36	603385.60	603385.84	0.0287	0.0024 *
Mars	-3058-05-16 22:04 J	604624.35	604624.42	604624.54	0.0273	0.0260
Mercury	-3055-03-30 00:43 J	605672.44	605672.53	605672.64	0.0264	0.0218

Mercury	-3055-06-26 20:52 J	605761.19	605761.37	605761.55	0.0264	0.0072
Mercury	-3055-09-23 17:02 J	605850.03	605850.21	605850.39	0.0263	0.0075
Mercury	-3055-12-21 13:12 J	605938.96	605939.05	605939.16	0.0263	0.0223
Venus	-3054-06-04 06:57 J	606103.61	606103.79	606103.99	0.0262	0.0122
Venus	-3053-01-19 04:33 J	606332.48	606332.69	606332.90	0.0261	0.0058
Venus	-3053-09-04 01:26 J	606561.48	606561.56	606561.65	0.0261	0.0236
Mercury	-3040-07-21 13:55 J	611265.05	611265.08	611265.11	0.0297	0.0289
Mercury	-3040-10-18 02:38 J	611353.50	611353.61	611353.73	0.0298	0.0140
Mercury	-3039-01-14 15:21 J	611442.01	611442.14	611442.27	0.0298	0.0010
Mercury	-3039-04-13 04:04 J	611530.56	611530.67	611530.78	0.0299	0.0158
Venus	-3039-06-30 09:36 J	611608.76	611608.90	611609.06	0.0299	0.0208
Venus	-3038-02-15 14:38 J	611838.90	611839.11	611839.31	0.0300	0.0067
Mercury	-3026-11-13 18:00 J	616493.10	616493.25	616493.42	0.0264	0.0131
Mercury	-3025-02-10 14:23 J	616581.91	616582.10	616582.28	0.0263	0.0017
Mercury	-3025-05-09 10:33 J	616670.80	616670.94	616671.09	0.0263	0.0164
Venus	-3025-12-14 06:14 J	616889.58	616889.76	616889.97	0.0262	0.0106
Venus	-3024-07-31 03:50 J	617118.46	617118.66	617118.87	0.0261	0.0075
Venus	-3023-03-17 00:57 J	617347.50	617347.54	617347.59	0.0261	0.0253
Earth	-3016-06-28 14:52 J	620007.87	620008.12	620008.37	0.0275	0.0023
Moon	-3016-06-28 17:31 J	620007.98	620008.23	620008.49	0.0275	0.0018 *
Mercury	-3010-03-07 04:04 J	622085.57	622085.67	622085.77	0.0297	0.0189
Mercury	-3010-06-03 16:47 J	622174.07	622174.20	622174.33	0.0298	0.0040
Mercury	-3010-08-31 05:31 J	622262.61	622262.73	622262.85	0.0299	0.0110
Mercury	-3010-11-27 18:00 J	622351.19	622351.25	622351.32	0.0299	0.0258
Venus	-3009-01-10 14:52 J	622394.95	622395.12	622395.29	0.0299	0.0177
Venus	-3009-08-27 19:55 J	622625.13	622625.33	622625.53	0.0300	0.0099
Moon	-3003-12-25 17:45 J	624936.00	624936.24	624936.49	0.0286	0.0072
Earth	-3003-12-25 18:00 J	624936.01	624936.25	624936.49	0.0286	0.0060 *



# 3RD MILLENNIUM BCE

This is a list of transits visible from Saturn in the 3rd millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-2996-04-01 17:45 J		627225.11	627225.24	627225.39	0.0264	0.0169	
Mercury	-2996-06-29 13:55 J		627313.90	627314.08	627314.27	0.0264	0.0024	
Mercury	-2996-09-26 10:19 J		627402.77	627402.93	627403.10	0.0263	0.0125	
Venus	-2996-11-09 12:00 J		627446.98	627447.00	627447.05	0.0263	0.0259	
Venus	-2995-06-26 10:04 J		627675.72	627675.92	627676.13	0.0262	0.0078	
Venus	-2994-02-10 07:40 J		627904.62	627904.82	627905.01	0.0261	0.0103	
Moon	-2987-06-23 04:33 J		630594.69	630594.69	630594.70	0.0272	0.0272	
Earth	-2987-06-23 07:12 J		630594.75	630594.80	630594.88	0.0272	0.0262	
Mercury	-2981-07-24 05:16 J		632817.64	632817.72	632817.80	0.0297	0.0240	
Mercury	-2981-10-20 18:00 J		632906.12	632906.25	632906.38	0.0297	0.0091	
Mercury	-2980-01-17 06:43 J		632994.65	632994.78	632994.91	0.0298	0.0058	
Mercury	-2980-04-15 19:12 J		633083.21	633083.30	633083.39	0.0299	0.0206	
Venus	-2980-07-22 18:00 J		633181.07	633181.25	633181.44	0.0299	0.0146	
Venus	-2979-03-09 22:47 J		633411.26	633411.45	633411.64	0.0300	0.0129	
Moon	-2974-12-19 19:26 J		635522.26	635522.31	635522.39	0.0289	0.0277	
Earth	-2974-12-19 19:26 J		635522.31	635522.31	635522.31	0.0289	0.0289	*
Mars	-2970-10-09 05:02 J		636911.59	636911.71	636911.83	0.0273	0.0252	
Mercury	-2967-08-19 15:21 J		637957.05	637957.14	637957.24	0.0264	0.0225	
Mercury	-2967-11-16 11:31 J		638045.80	638045.98	638046.16	0.0264	0.0079	
Mercury	-2966-02-13 07:40 J		638134.64	638134.82	638135.01	0.0263	0.0068	

Mercury	-2966-05-13 04:04 J	638223.57	638223.67	638223.78	0.0263	0.0216
Venus	-2966-05-22 11:45 J	638232.92	638232.99	638233.08	0.0263	0.0242
Venus	-2965-01-06 09:50 J	638461.71	638461.91	638462.13	0.0262	0.0061
Venus	-2965-08-22 07:26 J	638690.63	638690.81	638691.00	0.0261	0.0120
Moon	-2957-06-29 15:21 J	641558.90	641559.14	641559.38	0.0275	0.0086
Earth	-2957-06-29 16:47 J	641558.97	641559.20	641559.44	0.0275	0.0089 *
Mars	-2954-09-05 06:43 J	642721.70	642721.78	642721.90	0.0289	0.0269
Mercury	-2952-12-11 06:57 J	643549.76	643549.79	643549.82	0.0297	0.0286
Mercury	-2951-03-09 19:40 J	643638.20	643638.32	643638.44	0.0297	0.0137
Mercury	-2951-06-06 08:23 J	643726.72	643726.85	643726.98	0.0298	0.0012
Mercury	-2951-09-02 20:52 J	643815.26	643815.37	643815.48	0.0299	0.0160
Venus	-2950-02-02 00:00 J	643967.31	643967.50	643967.70	0.0299	0.0113
Venus	-2950-09-20 04:47 J	644197.53	644197.70	644197.88	0.0300	0.0163
Moon	-2944-12-26 12:43 J	646486.81	646487.03	646487.25	0.0286	0.0127
Earth	-2944-12-26 16:04 J	646486.96	646487.17	646487.40	0.0286	0.0119 *
Mercury	-2937-01-06 15:21 J	648689.12	648689.14	648689.17	0.0265	0.0262
Mercury	-2937-04-04 11:31 J	648777.81	648777.98	648778.15	0.0264	0.0116
Mercury	-2937-07-02 07:40 J	648866.64	648866.82	648867.01	0.0264	0.0032
Mercury	-2937-09-29 04:04 J	648955.54	648955.67	648955.81	0.0263	0.0179
Venus	-2937-12-01 16:04 J	649019.06	649019.17	649019.31	0.0263	0.0214
Venus	-2936-07-18 14:23 J	649247.89	649248.10	649248.31	0.0262	0.0032
Venus	-2935-03-04 11:45 J	649476.82	649476.99	649477.17	0.0262	0.0149
Earth	-2928-06-24 11:16 J	652145.81	652145.97	652146.16	0.0273	0.0194
Moon	-2928-06-24 12:43 J	652145.88	652146.03	652146.20	0.0273	0.0202 *
Mercury	-2922-07-27 21:21 J	654370.29	654370.39	654370.49	0.0297	0.0183
Mercury	-2922-10-24 10:04 J	654458.79	654458.92	654459.05	0.0297	0.0035
Mercury	-2921-01-20 22:33 J	654547.32	654547.44	654547.56	0.0298	0.0113
Mercury	-2921-04-18 11:02 J	654635.90	654635.96	654636.02	0.0298	0.0260
Venus	-2921-08-14 05:02 J	654753.51	654753.71	654753.92	0.0299	0.0079
Venus	-2920-04-01 09:21 J	654983.74	654983.89	654984.06	0.0300	0.0196

Earth	-2915-12-20 19:55 J	657073.19	657073.33	657073.49	0.0289	0.0224
Moon	-2915-12-20 23:16 J	657073.32	657073.47	657073.65	0.0289	0.0211 *
Mercury	-2908-08-22 09:21 J	659509.75	659509.89	659510.03	0.0264	0.0170
Mercury	-2908-11-19 05:31 J	659598.55	659598.73	659598.92	0.0264	0.0023
Mercury	-2907-02-16 01:55 J	659687.42	659687.58	659687.75	0.0263	0.0125
Venus	-2907-06-13 16:33 J	659805.06	659805.19	659805.34	0.0263	0.0195
Venus	-2906-01-28 14:52 J	660033.91	660034.12	660034.33	0.0262	0.0013
Venus	-2906-09-14 12:28 J	660262.86	660263.02	660263.19	0.0261	0.0167
Moon	-2898-07-01 18:14 J	663110.07	663110.26	663110.47	0.0275	0.0159
Earth	-2898-07-01 21:50 J	663110.22	663110.41	663110.62	0.0275	0.0160 *
Mercury	-2893-12-13 23:02 J	665102.38	665102.46	665102.55	0.0297	0.0227
Mercury	-2892-03-12 12:00 J	665190.87	665191.00	665191.12	0.0297	0.0078
Mercury	-2892-06-09 00:28 J	665279.40	665279.52	665279.65	0.0298	0.0070
Mercury	-2892-09-05 12:57 J	665367.96	665368.04	665368.13	0.0299	0.0218
Venus	-2891-02-24 11:45 J	665539.79	665539.99	665540.21	0.0299	0.0044
Venus	-2891-10-12 16:19 J	665770.06	665770.18	665770.32	0.0300	0.0232
Moon	-2885-12-27 16:47 J	668038.04	668038.20	668038.38	0.0286	0.0195
Earth	-2885-12-27 18:28 J	668038.10	668038.27	668038.46	0.0286	0.0187 *
Mars	-2881-03-03 15:50 J	669199.95	669200.16	669200.38	0.0273	0.0196
Mercury	-2878-01-09 09:50 J	670241.80	670241.91	670242.03	0.0265	0.0204
Mercury	-2878-04-08 06:00 J	670330.57	670330.75	670330.93	0.0264	0.0057
Mercury	-2878-07-06 02:23 J	670419.42	670419.60	670419.77	0.0264	0.0091
Mercury	-2878-10-02 22:47 J	670508.38	670508.45	670508.53	0.0263	0.0240
Venus	-2878-12-24 22:04 J	670591.26	670591.42	670591.59	0.0263	0.0165
Venus	-2877-08-09 20:09 J	670820.13	670820.34	670820.55	0.0262	0.0017
Venus	-2876-03-26 17:45 J	671049.10	671049.24	671049.38	0.0262	0.0198
Earth	-2869-06-25 18:28 J	673697.05	673697.27	673697.50	0.0273	0.0119
Moon	-2869-06-25 22:33 J	673697.22	673697.44	673697.66	0.0273	0.0125 *
Mars	-2865-01-30 06:28 J	675010.58	675010.77	675010.97	0.0288	0.0198
Mercury	-2863-05-03 01:26 J	675834.50	675834.56	675834.62	0.0296	0.0265

Mercury	-2863-07-30 14:09 J	675922.97	675923.09	675923.21	0.0297	0.0117
Mercury	-2863-10-27 02:52 J	676011.49	676011.62	676011.75	0.0297	0.0031
Venus	-2862-01-19 15:07 J	676096.06	676096.13	676096.22	0.0298	0.0276
Mercury	-2862-01-23 15:21 J	676100.04	676100.14	676100.24	0.0298	0.0177
Venus	-2862-09-06 19:26 J	676326.09	676326.31	676326.52	0.0299	0.0008
Venus	-2861-04-23 23:45 J	676556.40	676556.49	676556.58	0.0300	0.0269
Earth	-2856-12-22 01:40 J	678624.37	678624.57	678624.79	0.0288	0.0147
Moon	-2856-12-22 03:36 J	678624.43	678624.65	678624.88	0.0288	0.0135 *
Mercury	-2849-05-28 08:09 J	680973.80	680973.84	680973.90	0.0265	0.0254
Mercury	-2849-08-25 04:19 J	681062.52	681062.68	681062.85	0.0264	0.0107
Mercury	-2849-11-22 00:43 J	681151.34	681151.53	681151.71	0.0264	0.0040
Mercury	-2848-02-18 21:07 J	681240.25	681240.38	681240.51	0.0263	0.0189
Venus	-2848-07-05 23:16 J	681377.30	681377.47	681377.65	0.0263	0.0146
Venus	-2847-02-19 21:36 J	681606.19	681606.40	681606.61	0.0262	0.0037
Venus	-2847-10-06 19:12 J	681835.19	681835.30	681835.42	0.0261	0.0218
Moon	-2839-07-03 06:14 J	684661.66	684661.76	684661.89	0.0276	0.0243
Earth	-2839-07-03 07:12 J	684661.68	684661.80	684661.92	0.0276	0.0240 *
Mercury	-2834-12-17 16:19 J	686655.07	686655.18	686655.29	0.0297	0.0158
Mercury	-2833-03-15 05:02 J	686743.58	686743.71	686743.84	0.0298	0.0012
Mercury	-2833-06-11 17:31 J	686832.12	686832.23	686832.35	0.0298	0.0137
Venus	-2833-07-31 22:33 J	686882.33	686882.44	686882.58	0.0298	0.0239
Mercury	-2833-09-08 06:00 J	686920.72	686920.75	686920.79	0.0299	0.0284
Venus	-2832-03-19 02:52 J	687112.41	687112.62	687112.83	0.0299	0.0034
Earth	-2826-12-30 01:12 J	689589.47	689589.55	689589.65	0.0285	0.0264
Moon	-2826-12-30 03:21 J	689589.58	689589.64	689589.72	0.0285	0.0271 *
Mercury	-2819-01-12 05:16 J	691794.56	691794.72	691794.88	0.0265	0.0139
Mercury	-2819-04-11 01:26 J	691883.38	691883.56	691883.75	0.0264	0.0011
Mercury	-2819-07-08 21:50 J	691972.26	691972.41	691972.56	0.0264	0.0158
Venus	-2818-01-16 05:31 J	692163.54	692163.73	692163.92	0.0263	0.0114
Venus	-2818-09-02 03:36 J	692392.45	692392.65	692392.86	0.0262	0.0069

Venus	-2817-04-18 01:26 J	692621.50	692621.56	692621.62	0.0262	0.0249
Earth	-2810-06-28 04:47 J	695248.46	695248.70	695248.95	0.0274	0.0038
Moon	-2810-06-28 05:16 J	695248.47	695248.72	695248.98	0.0274	0.0040 *
Mercury	-2804-05-05 18:57 J	697387.19	697387.29	697387.39	0.0296	0.0193
Mercury	-2804-08-02 07:40 J	697475.69	697475.82	697475.95	0.0297	0.0045
Mercury	-2804-10-29 20:09 J	697564.22	697564.34	697564.47	0.0297	0.0103
Mercury	-2803-01-26 08:38 J	697652.80	697652.86	697652.94	0.0298	0.0249
Venus	-2803-02-11 08:09 J	697668.68	697668.84	697669.00	0.0298	0.0198
Venus	-2803-09-29 12:14 J	697898.80	697899.01	697899.21	0.0299	0.0074
Moon	-2797-12-23 09:36 J	700175.66	700175.90	700176.14	0.0288	0.0051
Earth	-2797-12-23 12:14 J	700175.77	700176.01	700176.25	0.0288	0.0060 *
Mars	-2793-07-28 08:52 J	701488.60	701488.87	701489.14	0.0273	0.0136
Mercury	-2790-06-01 04:19 J	702526.55	702526.68	702526.81	0.0265	0.0184
Mercury	-2790-08-29 00:28 J	702615.34	702615.52	702615.71	0.0264	0.0037
Mercury	-2790-11-25 20:52 J	702704.20	702704.37	702704.54	0.0264	0.0111
Mercury	-2789-02-22 17:16 J	702793.20	702793.22	702793.25	0.0263	0.0260
Venus	-2789-07-28 07:55 J	702949.64	702949.83	702950.03	0.0263	0.0092
Venus	-2788-03-14 06:00 J	703178.55	703178.75	703178.95	0.0262	0.0091
Mars	-2777-06-25 15:36 J	707299.90	707300.15	707300.41	0.0289	0.0112
Mercury	-2775-09-22 21:21 J	708119.31	708119.39	708119.47	0.0297	0.0231
Mercury	-2775-12-20 10:04 J	708207.79	708207.92	708208.05	0.0297	0.0083
Mercury	-2774-03-18 22:47 J	708296.32	708296.45	708296.57	0.0298	0.0065
Mercury	-2774-06-15 11:16 J	708384.88	708384.97	708385.06	0.0298	0.0212
Venus	-2774-08-24 16:33 J	708455.01	708455.19	708455.37	0.0299	0.0159
Venus	-2773-04-10 20:52 J	708685.17	708685.37	708685.56	0.0300	0.0115
Mercury	-2761-10-18 05:16 J	713258.63	713258.72	713258.84	0.0265	0.0214
Mercury	-2760-01-15 01:40 J	713347.39	713347.57	713347.75	0.0265	0.0067
Mercury	-2760-04-13 22:04 J	713436.24	713436.42	713436.59	0.0264	0.0082
Venus	-2760-06-23 16:04 J	713507.09	713507.17	713507.24	0.0264	0.0244
Mercury	-2760-07-11 18:28 J	713525.18	713525.27	713525.36	0.0264	0.0230

Venus	-2759-02-07 14:38 J	713735.90	713736.11	713736.32	0.0263	0.0060
Venus	-2759-09-24 12:43 J	713964.85	713965.03	713965.22	0.0262	0.0123
Moon	-2751-06-29 14:38 J	716799.87	716800.11	716800.36	0.0275	0.0052
Earth	-2751-06-29 18:14 J	716800.02	716800.26	716800.51	0.0275	0.0050 *
Mercury	-2745-02-10 00:28 J	718851.46	718851.52	718851.58	0.0296	0.0260
Mercury	-2745-05-08 13:12 J	718939.93	718940.05	718940.18	0.0296	0.0113
Mercury	-2745-08-05 01:55 J	719028.45	719028.58	719028.71	0.0297	0.0035
Mercury	-2745-11-01 14:23 J	719117.00	719117.10	719117.20	0.0298	0.0181
Venus	-2744-03-06 03:50 J	719241.46	719241.66	719241.85	0.0298	0.0115
Venus	-2744-10-22 07:55 J	719471.65	719471.83	719472.01	0.0299	0.0159
Moon	-2738-12-25 23:02 J	721727.23	721727.46	721727.70	0.0287	0.0043
Earth	-2738-12-26 02:23 J	721727.36	721727.60	721727.85	0.0287	0.0036 *
Mercury	-2731-03-07 05:02 J	723990.67	723990.71	723990.76	0.0265	0.0255
Mercury	-2731-06-04 01:12 J	724079.38	724079.55	724079.72	0.0265	0.0109
Mercury	-2731-08-31 21:36 J	724168.21	724168.40	724168.58	0.0264	0.0039
Mercury	-2731-11-28 17:45 J	724257.12	724257.24	724257.38	0.0264	0.0188
Venus	-2730-01-03 19:40 J	724293.21	724293.32	724293.43	0.0263	0.0220
Venus	-2730-08-20 18:00 J	724522.05	724522.25	724522.47	0.0263	0.0037
Venus	-2729-04-05 16:04 J	724751.00	724751.17	724751.35	0.0262	0.0146
Earth	-2722-06-24 11:16 J	727386.85	727386.97	727387.10	0.0273	0.0235
Moon	-2722-06-24 14:23 J	727387.00	727387.10	727387.23	0.0273	0.0238 *
Mercury	-2716-09-25 15:36 J	729672.04	729672.15	729672.26	0.0297	0.0151
Mercury	-2716-12-23 04:19 J	729760.55	729760.68	729760.81	0.0297	0.0006
Mercury	-2715-03-21 16:47 J	729849.09	729849.20	729849.32	0.0298	0.0144
Mercury	-2715-06-18 05:16 J	729937.69	729937.72	729937.75	0.0299	0.0290
Venus	-2715-09-16 12:00 J	730027.80	730028.00	730028.21	0.0299	0.0075
Venus	-2714-05-04 16:19 J	730258.03	730258.18	730258.34	0.0300	0.0200
Earth	-2709-12-19 16:47 J	732314.14	732314.20	732314.26	0.0289	0.0279
Moon	-2709-12-19 19:40 J	732314.25	732314.32	732314.42	0.0289	0.0269 *
Mars	-2705-12-23 03:36 J	733778.34	733778.65	733778.96	0.0273	0.0034

Mercury	-2702-10-22 02:38 J	734811.45	734811.61	734811.77	0.0265	0.0137
Mercury	-2701-01-18 22:47 J	734900.27	734900.45	734900.64	0.0264	0.0013
Mercury	-2701-04-16 19:12 J	734989.16	734989.30	734989.45	0.0264	0.0159
Venus	-2701-07-16 02:38 J	735079.47	735079.61	735079.76	0.0264	0.0188
Venus	-2700-03-02 01:12 J	735308.34	735308.55	735308.76	0.0263	0.0004
Venus	-2700-10-16 23:02 J	735537.31	735537.46	735537.62	0.0262	0.0179
Moon	-2692-07-01 06:00 J	738351.55	738351.75	738351.96	0.0275	0.0143
Earth	-2692-07-01 08:23 J	738351.65	738351.85	738352.07	0.0275	0.0140 *
Mars	-2689-11-20 18:43 J	739590.00	739590.28	739590.55	0.0289	0.0007
Mercury	-2686-02-12 18:57 J	740404.19	740404.29	740404.40	0.0296	0.0177
Mercury	-2686-05-12 07:40 J	740492.69	740492.82	740492.95	0.0297	0.0031
Mercury	-2686-08-08 20:09 J	740581.23	740581.34	740581.47	0.0297	0.0118
Mercury	-2686-11-05 08:38 J	740669.81	740669.86	740669.93	0.0298	0.0263
Venus	-2685-03-29 00:28 J	740814.31	740814.52	740814.73	0.0299	0.0029
Venus	-2685-11-14 04:19 J	741044.57	741044.68	741044.81	0.0299	0.0246
Earth	-2679-12-27 19:26 J	743279.10	743279.31	743279.53	0.0286	0.0138
Moon	-2679-12-27 19:55 J	743279.14	743279.33	743279.55	0.0286	0.0144 *
Mercury	-2672-03-10 02:38 J	745543.48	745543.61	745543.75	0.0265	0.0175
Mercury	-2672-06-06 22:47 J	745632.27	745632.45	745632.64	0.0264	0.0029
Mercury	-2672-09-03 19:12 J	745721.13	745721.30	745721.47	0.0264	0.0120
Venus	-2671-01-26 06:57 J	745865.63	745865.79	745865.96	0.0263	0.0162
Venus	-2671-09-12 05:16 J	746094.51	746094.72	746094.93	0.0262	0.0021
Venus	-2670-04-29 03:07 J	746323.50	746323.63	746323.77	0.0262	0.0203
Earth	-2663-06-26 01:12 J	748938.35	748938.55	748938.77	0.0273	0.0147
Moon	-2663-06-26 04:04 J	748938.47	748938.67	748938.89	0.0273	0.0150 *
Mercury	-2657-07-01 21:21 J	751136.30	751136.39	751136.48	0.0297	0.0215
Mercury	-2657-09-28 10:04 J	751224.79	751224.92	751225.05	0.0297	0.0068
Mercury	-2657-12-25 22:47 J	751313.32	751313.45	751313.57	0.0298	0.0080
Venus	-2656-02-21 05:02 J	751370.61	751370.71	751370.82	0.0298	0.0260
Mercury	-2656-03-24 11:16 J	751401.89	751401.97	751402.05	0.0298	0.0226

Venus	-2656-10-09 08:52 J	751600.66	751600.87	751601.08	0.0299	0.0013
Venus	-2655-05-27 12:57 J	751830.99	751831.04	751831.11	0.0300	0.0287
Moon	-2650-12-22 09:07 J	753865.68	753865.88	753866.09	0.0288	0.0168
Earth	-2650-12-22 09:50 J	753865.73	753865.91	753866.11	0.0288	0.0176 *
Jupiter	-2647-03-23 01:40 J	754687.37	754687.57	754687.79	0.0279	0.0251
Mercury	-2643-07-28 03:50 J	756275.56	756275.66	756275.79	0.0265	0.0204
Mercury	-2643-10-25 00:14 J	756364.33	756364.51	756364.69	0.0265	0.0057
Mercury	-2642-01-21 20:23 J	756453.18	756453.35	756453.53	0.0264	0.0091
Mercury	-2642-04-20 17:02 J	756542.13	756542.21	756542.28	0.0264	0.0239
Venus	-2642-08-08 13:55 J	756651.90	756652.08	756652.27	0.0263	0.0131
Venus	-2641-03-24 12:14 J	756880.80	756881.01	756881.22	0.0263	0.0053
Venus	-2641-11-08 10:04 J	757109.83	757109.92	757110.02	0.0262	0.0235
Earth	-2633-07-02 22:33 J	759903.32	759903.44	759903.59	0.0276	0.0232
Moon	-2633-07-03 00:14 J	759903.39	759903.51	759903.64	0.0276	0.0236 *
Mercury	-2628-11-19 00:43 J	761868.46	761868.53	761868.61	0.0296	0.0242
Mercury	-2627-02-15 13:26 J	761956.94	761957.06	761957.19	0.0296	0.0096
Mercury	-2627-05-15 02:09 J	762045.46	762045.59	762045.72	0.0297	0.0052
Mercury	-2627-08-11 14:38 J	762134.02	762134.11	762134.21	0.0298	0.0198
Venus	-2627-09-03 17:02 J	762157.08	762157.21	762157.37	0.0298	0.0215
Venus	-2626-04-21 21:07 J	762387.17	762387.38	762387.59	0.0299	0.0057
Earth	-2620-12-29 12:57 J	764830.92	764831.04	764831.17	0.0286	0.0241
Moon	-2620-12-29 16:33 J	764831.07	764831.19	764831.32	0.0286	0.0244 *
Mars	-2616-05-20 02:52 J	766068.32	766068.62	766068.92	0.0272	0.0074
Mercury	-2614-12-15 04:19 J	767007.61	767007.68	767007.77	0.0265	0.0239
Mercury	-2613-03-13 00:28 J	767096.35	767096.52	767096.70	0.0264	0.0093
Mercury	-2613-06-09 20:52 J	767185.18	767185.37	767185.55	0.0264	0.0054
Mercury	-2613-09-06 17:02 J	767274.10	767274.21	767274.33	0.0264	0.0202
Venus	-2612-02-17 18:43 J	767438.08	767438.28	767438.47	0.0263	0.0104
Venus	-2612-10-04 16:47 J	767667.00	767667.20	767667.40	0.0262	0.0079
Venus	-2611-05-21 14:38 J	767896.09	767896.11	767896.13	0.0262	0.0260



Moon	-2604-06-27 13:26 J	770489.81	770490.06	770490.32	0.0274	0.0059
Earth	-2604-06-27 14:38 J	770489.87	770490.11	770490.36	0.0274	0.0058 *
Mars	-2600-04-17 08:09 J	771879.58	771879.84	771880.10	0.0289	0.0103
Mercury	-2598-04-08 02:52 J	772600.58	772600.62	772600.65	0.0296	0.0284
Mercury	-2598-07-05 15:36 J	772689.03	772689.15	772689.27	0.0297	0.0136
Mercury	-2598-10-02 04:19 J	772777.55	772777.68	772777.81	0.0298	0.0012
Mercury	-2598-12-29 16:47 J	772866.09	772866.20	772866.31	0.0298	0.0159
Venus	-2597-03-16 00:28 J	772943.36	772943.52	772943.70	0.0299	0.0177
Venus	-2597-11-01 04:33 J	773173.50	773173.69	773173.90	0.0300	0.0097
Moon	-2591-12-23 23:16 J	775417.23	775417.47	775417.71	0.0288	0.0067
Earth	-2591-12-24 02:38 J	775417.38	775417.61	775417.85	0.0288	0.0073 *
Mercury	-2584-07-31 01:26 J	777828.40	777828.56	777828.73	0.0265	0.0125
Mercury	-2584-10-27 21:50 J	777917.22	777917.41	777917.59	0.0264	0.0023
Venus	-2583-01-14 02:23 J	777995.57	777995.60	777995.65	0.0264	0.0258
Mercury	-2583-01-24 18:00 J	778006.11	778006.25	778006.40	0.0264	0.0171
Venus	-2583-08-31 00:57 J	778224.34	778224.54	778224.75	0.0263	0.0074
Venus	-2582-04-16 23:02 J	778453.27	778453.46	778453.66	0.0262	0.0110
Mercury	-2569-11-21 18:57 J	783421.18	783421.29	783421.40	0.0296	0.0163
Mercury	-2568-02-18 07:40 J	783509.69	783509.82	783509.95	0.0297	0.0017
Mercury	-2568-05-17 20:23 J	783598.23	783598.35	783598.46	0.0297	0.0131
Mercury	-2568-08-14 08:52 J	783686.82	783686.87	783686.91	0.0298	0.0276
Venus	-2568-09-26 12:57 J	783729.85	783730.04	783730.23	0.0298	0.0132
Venus	-2567-05-14 16:47 J	783960.02	783960.20	783960.39	0.0299	0.0142
Mercury	-2555-12-18 02:09 J	788560.44	788560.59	788560.74	0.0265	0.0158
Mercury	-2554-03-16 22:19 J	788649.24	788649.43	788649.61	0.0264	0.0013
Mercury	-2554-06-13 18:28 J	788738.11	788738.27	788738.43	0.0264	0.0135
Venus	-2554-07-27 07:26 J	788781.72	788781.81	788781.92	0.0263	0.0230
Venus	-2553-03-12 05:45 J	789010.54	789010.74	789010.95	0.0263	0.0046
Venus	-2553-10-27 03:36 J	789239.47	789239.65	789239.84	0.0262	0.0136
Moon	-2545-06-28 22:33 J	792041.19	792041.44	792041.69	0.0274	0.0028

Earth	-2545-06-29 02:23 J	792041.35	792041.60	792041.85	0.0274	0.0028	*
Mercury	-2539-04-10 20:38 J	794153.27	794153.36	794153.45	0.0297	0.0209	
Mercury	-2539-07-08 09:21 J	794241.76	794241.89	794242.02	0.0297	0.0061	
Mercury	-2539-10-04 22:04 J	794330.29	794330.42	794330.54	0.0298	0.0086	
Mercury	-2538-01-01 10:33 J	794418.86	794418.94	794419.02	0.0298	0.0233	
Venus	-2538-04-08 18:28 J	794516.08	794516.27	794516.47	0.0299	0.0097	
Venus	-2538-11-24 22:33 J	794746.28	794746.44	794746.62	0.0300	0.0179	
Moon	-2532-12-25 14:52 J	796968.89	796969.12	796969.36	0.0287	0.0031	
Earth	-2532-12-25 17:02 J	796968.97	796969.21	796969.46	0.0287	0.0024	*
Mars	-2528-10-14 21:36 J	798358.16	798358.40	798358.64	0.0272	0.0174	
Mercury	-2525-05-06 02:23 J	799292.49	799292.60	799292.74	0.0265	0.0194	
Mercury	-2525-08-02 22:47 J	799381.26	799381.45	799381.63	0.0264	0.0048	
Mercury	-2525-10-30 18:57 J	799470.12	799470.29	799470.46	0.0264	0.0100	
Mercury	-2524-01-27 15:07 J	799559.08	799559.13	799559.20	0.0263	0.0248	
Venus	-2524-02-05 12:57 J	799567.91	799568.04	799568.18	0.0263	0.0202	
Venus	-2524-09-22 11:16 J	799796.76	799796.97	799797.18	0.0263	0.0018	
Venus	-2523-05-09 09:07 J	800025.72	800025.88	800026.05	0.0262	0.0165	
Earth	-2516-06-23 23:45 J	802628.40	802628.49	802628.60	0.0273	0.0247	
Moon	-2516-06-24 03:50 J	802628.57	802628.66	802628.76	0.0273	0.0250	*
Mars	-2512-09-12 02:23 J	804169.41	804169.60	804169.80	0.0290	0.0205	
Mercury	-2510-08-28 23:45 J	804885.41	804885.49	804885.57	0.0296	0.0239	
Mercury	-2510-11-25 12:28 J	804973.90	804974.02	804974.15	0.0297	0.0092	
Mercury	-2509-02-22 01:12 J	805062.42	805062.55	805062.68	0.0297	0.0055	
Mercury	-2509-05-20 13:40 J	805150.98	805151.07	805151.17	0.0298	0.0202	
Venus	-2509-10-19 05:45 J	805302.53	805302.74	805302.95	0.0299	0.0054	
Venus	-2508-06-06 10:04 J	805532.78	805532.92	805533.06	0.0299	0.0221	
Earth	-2503-12-20 08:23 J	807555.84	807555.85	807555.86	0.0289	0.0288	
Moon	-2503-12-20 10:33 J	807555.88	807555.94	807556.02	0.0289	0.0276	
Mercury	-2496-09-23 03:07 J	810024.54	810024.63	810024.73	0.0265	0.0227	
Mercury	-2496-12-20 23:02 J	810113.29	810113.46	810113.64	0.0264	0.0083	

Mercury	-2495-03-19 19:12 J	810202.13	810202.30	810202.49	0.0264	0.0065
Mercury	-2495-06-16 15:36 J	810291.04	810291.15	810291.26	0.0263	0.0211
Venus	-2495-08-18 18:00 J	810354.09	810354.25	810354.41	0.0263	0.0173
Venus	-2494-04-04 16:04 J	810582.95	810583.17	810583.38	0.0262	0.0011
Venus	-2494-11-19 13:26 J	810811.92	810812.06	810812.21	0.0262	0.0191
Moon	-2486-07-01 09:36 J	813592.68	813592.90	813593.12	0.0274	0.0110
Earth	-2486-07-01 10:33 J	813592.71	813592.94	813593.17	0.0274	0.0107 *
Mercury	-2480-01-15 00:57 J	815617.52	815617.54	815617.57	0.0296	0.0289
Mercury	-2480-04-13 13:40 J	815705.96	815706.07	815706.19	0.0297	0.0142
Mercury	-2480-07-11 02:38 J	815794.47	815794.61	815794.74	0.0298	0.0011
Venus	-2480-09-13 06:14 J	815858.72	815858.76	815858.80	0.0298	0.0292
Mercury	-2480-10-07 15:07 J	815883.02	815883.13	815883.24	0.0298	0.0153
Venus	-2479-05-01 10:04 J	816088.71	816088.92	816089.13	0.0299	0.0021
Venus	-2479-12-17 14:23 J	816319.00	816319.10	816319.22	0.0300	0.0255
Earth	-2473-12-27 04:19 J	818520.46	818520.68	818520.91	0.0287	0.0114
Moon	-2473-12-27 06:14 J	818520.55	818520.76	818520.98	0.0287	0.0120 *
Mercury	-2466-05-09 23:02 J	820845.30	820845.46	820845.62	0.0264	0.0122
Mercury	-2466-08-06 19:12 J	820934.11	820934.30	820934.48	0.0264	0.0025
Mercury	-2466-11-03 15:21 J	821023.00	821023.14	821023.29	0.0263	0.0172
Venus	-2465-02-28 21:50 J	821140.24	821140.41	821140.59	0.0263	0.0148
Venus	-2465-10-14 20:09 J	821369.13	821369.34	821369.55	0.0262	0.0036
Venus	-2464-05-31 17:45 J	821598.13	821598.24	821598.36	0.0262	0.0217
Earth	-2457-06-25 06:14 J	824179.57	824179.76	824179.95	0.0273	0.0172
Moon	-2457-06-25 06:43 J	824179.59	824179.78	824179.99	0.0273	0.0172 *
Mercury	-2451-08-31 16:33 J	826438.08	826438.19	826438.30	0.0296	0.0176
Mercury	-2451-11-28 05:16 J	826526.59	826526.72	826526.85	0.0297	0.0028
Mercury	-2450-02-24 18:00 J	826615.13	826615.25	826615.37	0.0298	0.0119
Venus	-2450-03-26 15:50 J	826645.06	826645.16	826645.28	0.0298	0.0253
Mercury	-2450-05-24 06:28 J	826703.71	826703.77	826703.83	0.0298	0.0264
Venus	-2450-11-11 19:55 J	826875.12	826875.33	826875.54	0.0299	0.0020

Venus	-2449-06-29 00:14 J	827105.48	827105.51	827105.56	0.0300	0.0294
Moon	-2444-12-21 15:21 J	829106.97	829107.14	829107.34	0.0289	0.0193
Earth	-2444-12-21 18:00 J	829107.08	829107.25	829107.43	0.0289	0.0201 *
Mars	-2439-03-11 09:21 J	830647.87	830647.89	830647.93	0.0272	0.0270
Mercury	-2437-09-25 23:16 J	831577.33	831577.47	831577.63	0.0265	0.0157
Mercury	-2437-12-23 19:26 J	831666.13	831666.31	831666.50	0.0264	0.0011
Mercury	-2436-03-22 15:36 J	831754.99	831755.15	831755.31	0.0264	0.0135
Venus	-2436-09-10 02:38 J	831926.42	831926.61	831926.80	0.0263	0.0120
Venus	-2435-04-27 00:28 J	832155.32	832155.52	832155.73	0.0262	0.0063
Venus	-2435-12-11 22:04 J	832384.34	832384.42	832384.49	0.0261	0.0243
Earth	-2427-07-02 15:21 J	835143.97	835144.14	835144.34	0.0274	0.0180
Moon	-2427-07-02 18:57 J	835144.12	835144.29	835144.48	0.0274	0.0187 *
Mars	-2423-02-05 12:00 J	836457.87	836458.00	836458.14	0.0290	0.0254
Mercury	-2421-01-18 17:16 J	837170.14	837170.22	837170.30	0.0297	0.0230
Mercury	-2421-04-16 06:00 J	837258.63	837258.75	837258.88	0.0297	0.0083
Mercury	-2421-07-13 18:43 J	837347.15	837347.28	837347.41	0.0298	0.0065
Venus	-2421-10-05 18:14 J	837431.13	837431.26	837431.40	0.0298	0.0225
Mercury	-2421-10-10 07:12 J	837435.72	837435.80	837435.90	0.0298	0.0211
Venus	-2420-05-23 22:19 J	837661.23	837661.43	837661.64	0.0300	0.0050
Earth	-2414-12-29 10:47 J	840071.78	840071.95	840072.13	0.0287	0.0194
Moon	-2414-12-29 14:38 J	840071.93	840072.11	840072.29	0.0287	0.0197 *
Mercury	-2407-02-12 22:19 J	842309.32	842309.43	842309.56	0.0265	0.0202
Mercury	-2407-05-12 18:28 J	842398.09	842398.27	842398.45	0.0264	0.0056
Mercury	-2407-08-09 14:38 J	842486.94	842487.11	842487.29	0.0264	0.0090
Mercury	-2407-11-06 10:47 J	842575.88	842575.95	842576.04	0.0263	0.0237
Venus	-2406-03-23 05:16 J	842712.53	842712.72	842712.92	0.0263	0.0097
Venus	-2406-11-07 03:07 J	842941.43	842941.63	842941.84	0.0262	0.0086
Moon	-2398-06-27 05:16 J	845730.50	845730.72	845730.97	0.0273	0.0101
Earth	-2398-06-27 08:52 J	845730.65	845730.87	845731.11	0.0273	0.0106 *
Mercury	-2392-06-06 19:26 J	847902.27	847902.31	847902.37	0.0296	0.0269

Mercury	-2392-09-03 08:23 J	847990.73	847990.85	847990.97	0.0297	0.0121
Mercury	-2392-11-30 21:07 J	848079.25	848079.38	848079.51	0.0297	0.0027
Mercury	-2391-02-27 09:50 J	848167.80	848167.91	848168.01	0.0298	0.0172
Venus	-2391-04-18 02:52 J	848217.46	848217.62	848217.78	0.0298	0.0187
Venus	-2391-12-04 06:57 J	848447.59	848447.79	848448.00	0.0299	0.0087
Moon	-2385-12-22 20:09 J	850658.13	850658.34	850658.56	0.0289	0.0119
Earth	-2385-12-22 23:31 J	850658.26	850658.48	850658.70	0.0289	0.0123 *
Mercury	-2378-07-02 22:47 J	853041.37	853041.45	853041.53	0.0265	0.0237
Mercury	-2378-09-29 18:43 J	853130.11	853130.28	853130.45	0.0264	0.0092
Mercury	-2378-12-27 14:38 J	853218.93	853219.11	853219.30	0.0264	0.0054
Venus	-2377-02-16 11:16 J	853269.92	853269.97	853270.03	0.0264	0.0253
Mercury	-2377-03-25 11:02 J	853307.84	853307.96	853308.08	0.0263	0.0200
Venus	-2377-10-02 09:36 J	853498.69	853498.90	853499.10	0.0263	0.0069
Venus	-2376-05-19 07:12 J	853727.61	853727.80	853727.99	0.0262	0.0113
Earth	-2368-07-03 17:45 J	856695.13	856695.24	856695.35	0.0274	0.0245
Moon	-2368-07-03 20:09 J	856695.25	856695.34	856695.43	0.0274	0.0255 *
Mercury	-2362-01-21 08:52 J	858722.77	858722.87	858722.98	0.0297	0.0179
Mercury	-2362-04-19 21:50 J	858811.27	858811.41	858811.54	0.0297	0.0033
Mercury	-2362-07-17 10:19 J	858899.81	858899.93	858900.05	0.0298	0.0115
Mercury	-2362-10-13 22:47 J	858988.39	858988.45	858988.52	0.0298	0.0261
Venus	-2362-10-29 03:50 J	859003.49	859003.66	859003.84	0.0299	0.0161
Venus	-2361-06-15 08:09 J	859233.65	859233.84	859234.04	0.0300	0.0113
Moon	-2355-12-30 12:28 J	861622.94	861623.02	861623.14	0.0287	0.0261
Earth	-2355-12-30 13:12 J	861622.97	861623.05	861623.15	0.0287	0.0264 *
Mercury	-2348-02-15 17:02 J	863862.06	863862.21	863862.37	0.0264	0.0143
Mercury	-2348-05-15 13:12 J	863950.86	863951.05	863951.23	0.0264	0.0004
Mercury	-2348-08-12 09:21 J	864039.74	864039.89	864040.04	0.0263	0.0149
Venus	-2348-08-28 12:28 J	864055.93	864056.02	864056.13	0.0263	0.0233
Venus	-2347-04-14 10:47 J	864284.75	864284.95	864285.17	0.0262	0.0050
Venus	-2347-11-29 08:38 J	864513.68	864513.86	864514.05	0.0262	0.0133

Moon	-2339-06-28 06:57 J	867281.55	867281.79	867282.03	0.0273	0.0037
Earth	-2339-06-28 09:21 J	867281.64	867281.89	867282.13	0.0273	0.0043 *
Mercury	-2333-06-09 10:47 J	869454.87	869454.95	869455.04	0.0296	0.0222
Mercury	-2333-09-05 23:45 J	869543.36	869543.49	869543.62	0.0297	0.0075
Mercury	-2333-12-03 12:28 J	869631.89	869632.02	869632.14	0.0297	0.0073
Mercury	-2332-03-02 00:57 J	869720.45	869720.54	869720.63	0.0298	0.0218
Venus	-2332-05-10 11:02 J	869789.77	869789.96	869790.15	0.0298	0.0127
Venus	-2332-12-26 15:21 J	870019.95	870020.14	870020.32	0.0299	0.0148
Earth	-2326-12-25 00:00 J	872209.26	872209.50	872209.74	0.0289	0.0056
Moon	-2326-12-25 00:57 J	872209.31	872209.54	872209.77	0.0289	0.0056 *
Mercury	-2319-07-05 17:02 J	874594.08	874594.21	874594.35	0.0265	0.0180
Mercury	-2319-10-02 12:57 J	874682.86	874683.04	874683.23	0.0264	0.0035
Mercury	-2319-12-30 09:07 J	874771.71	874771.88	874772.05	0.0264	0.0111
Venus	-2318-03-10 16:33 J	874842.06	874842.19	874842.32	0.0263	0.0205
Mercury	-2318-03-29 05:16 J	874860.70	874860.72	874860.76	0.0263	0.0258
Venus	-2318-10-25 14:38 J	875070.90	875071.11	875071.32	0.0262	0.0022
Venus	-2317-06-10 12:14 J	875299.84	875300.01	875300.18	0.0262	0.0160
Mercury	-2304-10-27 11:02 J	880186.93	880186.96	880187.00	0.0296	0.0281
Mercury	-2303-01-24 00:00 J	880275.38	880275.50	880275.62	0.0297	0.0134
Mercury	-2303-04-22 12:43 J	880363.90	880364.03	880364.16	0.0297	0.0013
Mercury	-2303-07-20 01:12 J	880452.44	880452.55	880452.66	0.0298	0.0159
Venus	-2303-11-20 11:02 J	880575.76	880575.96	880576.16	0.0299	0.0102
Venus	-2302-07-08 15:21 J	880805.97	880806.14	880806.32	0.0300	0.0173
Mercury	-2290-11-22 14:52 J	885326.04	885326.12	885326.21	0.0265	0.0233
Mercury	-2289-02-19 10:47 J	885414.78	885414.95	885415.13	0.0264	0.0089
Mercury	-2289-05-18 06:57 J	885503.61	885503.79	885503.97	0.0264	0.0057
Mercury	-2289-08-15 03:21 J	885592.52	885592.64	885592.75	0.0263	0.0204
Venus	-2289-09-19 16:33 J	885628.06	885628.19	885628.35	0.0263	0.0187
Venus	-2288-05-06 15:07 J	885856.92	885857.13	885857.34	0.0262	0.0003
Venus	-2288-12-21 12:43 J	886085.88	886086.03	886086.19	0.0261	0.0179

Earth	-2280-06-29 07:12 J	888832.55	888832.80	888833.05	0.0273	0.0014
Moon	-2280-06-29 09:07 J	888832.64	888832.88	888833.13	0.0273	0.0024 *
Mercury	-2274-06-13 01:40 J	891007.46	891007.57	891007.67	0.0296	0.0180
Mercury	-2274-09-09 14:23 J	891095.97	891096.10	891096.23	0.0297	0.0033
Mercury	-2274-12-07 03:07 J	891184.51	891184.63	891184.75	0.0298	0.0113
Mercury	-2273-03-04 15:36 J	891273.09	891273.15	891273.21	0.0298	0.0259
Venus	-2273-06-01 17:02 J	891362.01	891362.21	891362.42	0.0299	0.0070
Venus	-2272-01-17 21:36 J	891592.25	891592.40	891592.55	0.0300	0.0205
Earth	-2267-12-25 21:21 J	893760.15	893760.39	893760.63	0.0289	0.0003
Moon	-2267-12-26 00:57 J	893760.30	893760.54	893760.78	0.0289	0.0001 *
Mercury	-2260-07-08 10:33 J	896146.78	896146.94	896147.11	0.0265	0.0128
Mercury	-2260-10-05 06:43 J	896235.59	896235.78	896235.96	0.0264	0.0018
Mercury	-2259-01-02 02:38 J	896324.48	896324.61	896324.77	0.0264	0.0165
Venus	-2259-04-01 20:23 J	896414.19	896414.35	896414.52	0.0263	0.0159
Venus	-2259-11-16 18:28 J	896643.06	896643.27	896643.49	0.0262	0.0024
Venus	-2258-07-03 16:04 J	896872.04	896872.17	896872.30	0.0262	0.0205
Moon	-2251-06-23 19:55 J	899419.28	899419.33	899419.39	0.0270	0.0263
Earth	-2251-06-23 22:04 J	899419.40	899419.42	899419.44	0.0270	0.0269
Mercury	-2245-10-30 01:40 J	901739.50	901739.57	901739.66	0.0296	0.0240
Mercury	-2244-01-26 14:38 J	901827.99	901828.11	901828.24	0.0297	0.0093
Mercury	-2244-04-25 03:21 J	901916.51	901916.64	901916.77	0.0297	0.0053
Mercury	-2244-07-22 15:50 J	902005.07	902005.16	902005.26	0.0298	0.0199
Venus	-2244-12-12 17:02 J	902148.00	902148.21	902148.42	0.0299	0.0046
Venus	-2243-07-30 21:21 J	902378.26	902378.39	902378.52	0.0300	0.0229
Mercury	-2231-11-25 08:09 J	906878.71	906878.84	906878.97	0.0265	0.0184
Mercury	-2230-02-22 04:04 J	906967.49	906967.67	906967.85	0.0264	0.0039
Mercury	-2230-05-22 00:14 J	907056.34	907056.51	907056.68	0.0264	0.0107
Mercury	-2230-08-18 20:23 J	907145.31	907145.35	907145.40	0.0263	0.0254
Venus	-2230-10-12 19:55 J	907200.15	907200.33	907200.51	0.0263	0.0143
Venus	-2229-05-28 18:14 J	907429.05	907429.26	907429.47	0.0262	0.0041

Venus	-2228-01-12 15:50 J	907658.06	907658.16	907658.28	0.0261	0.0222
Earth	-2221-06-30 04:04 J	910383.43	910383.67	910383.91	0.0273	0.0068
Moon	-2221-06-30 07:26 J	910383.58	910383.81	910384.06	0.0273	0.0080 *
Mercury	-2215-03-19 03:07 J	912471.61	912471.63	912471.66	0.0296	0.0288
Mercury	-2215-06-15 16:04 J	912560.05	912560.17	912560.29	0.0296	0.0142
Mercury	-2215-09-12 04:47 J	912648.57	912648.70	912648.83	0.0297	0.0005
Venus	-2215-11-06 18:00 J	912704.20	912704.25	912704.31	0.0297	0.0285
Mercury	-2215-12-09 17:31 J	912737.11	912737.23	912737.34	0.0298	0.0151
Mercury	-2214-03-08 06:00 J	912825.74	912825.75	912825.76	0.0298	0.0296
Venus	-2214-06-24 22:04 J	912934.21	912934.42	912934.63	0.0299	0.0015
Venus	-2213-02-10 02:23 J	913164.50	913164.60	913164.71	0.0300	0.0260
Earth	-2208-12-26 16:33 J	915310.95	915311.19	915311.43	0.0289	0.0057
Moon	-2208-12-26 17:02 J	915310.97	915311.21	915311.47	0.0289	0.0051 *
Mars	-2204-04-02 01:12 J	916503.43	916503.55	916503.71	0.0275	0.0247
Mercury	-2201-04-13 07:40 J	917610.73	917610.82	917610.92	0.0265	0.0223
Mercury	-2201-07-11 03:50 J	917699.48	917699.66	917699.83	0.0265	0.0078
Mercury	-2201-10-07 23:45 J	917788.32	917788.49	917788.67	0.0264	0.0068
Mercury	-2200-01-04 19:55 J	917877.23	917877.33	917877.45	0.0264	0.0215
Venus	-2200-04-23 23:31 J	917986.30	917986.48	917986.68	0.0263	0.0115
Venus	-2200-12-08 21:50 J	918215.20	918215.41	918215.61	0.0262	0.0068
Venus	-2199-07-25 19:12 J	918444.25	918444.30	918444.37	0.0262	0.0249
Moon	-2192-06-24 16:19 J	920970.02	920970.18	920970.34	0.0270	0.0205
Earth	-2192-06-24 19:40 J	920970.18	920970.32	920970.48	0.0270	0.0214 *
Mercury	-2186-11-02 16:33 J	923292.09	923292.19	923292.29	0.0296	0.0199
Mercury	-2185-01-30 05:16 J	923380.59	923380.72	923380.85	0.0296	0.0053
Mercury	-2185-04-27 17:45 J	923469.12	923469.24	923469.37	0.0297	0.0093
Venus	-2185-05-18 18:43 J	923490.19	923490.28	923490.39	0.0297	0.0260
Mercury	-2185-07-25 06:28 J	923557.69	923557.77	923557.85	0.0298	0.0237
Venus	-2184-01-03 22:19 J	923720.22	923720.43	923720.65	0.0299	0.0012
Venus	-2184-08-22 02:23 J	923950.55	923950.60	923950.68	0.0300	0.0285



Mercury	-2172-11-28 00:43 J	928431.38	928431.53	928431.70	0.0265	0.0137
Mercury	-2171-02-24 20:52 J	928520.19	928520.37	928520.56	0.0264	0.0011
Mercury	-2171-05-24 17:02 J	928609.07	928609.21	928609.37	0.0264	0.0156
Venus	-2171-11-03 22:33 J	928772.25	928772.44	928772.64	0.0263	0.0099
Venus	-2170-06-20 20:52 J	929001.17	929001.37	929001.57	0.0262	0.0084
Moon	-2162-07-02 01:12 J	931934.33	931934.55	931934.78	0.0273	0.0137
Earth	-2162-07-02 01:40 J	931934.36	931934.57	931934.80	0.0273	0.0124 *
Mercury	-2156-03-21 17:45 J	934024.17	934024.24	934024.32	0.0296	0.0248
Mercury	-2156-06-18 06:43 J	934112.65	934112.78	934112.90	0.0296	0.0102
Mercury	-2156-09-14 19:26 J	934201.18	934201.31	934201.44	0.0297	0.0045
Venus	-2156-11-28 23:31 J	934276.35	934276.48	934276.62	0.0297	0.0230
Mercury	-2156-12-12 07:55 J	934289.73	934289.83	934289.93	0.0298	0.0189
Venus	-2155-07-17 03:21 J	934506.43	934506.64	934506.85	0.0299	0.0042
Moon	-2149-12-27 07:26 J	936861.59	936861.81	936862.05	0.0289	0.0097
Earth	-2149-12-27 10:47 J	936861.73	936861.95	936862.18	0.0289	0.0108 *
Mercury	-2142-04-17 00:28 J	939163.39	939163.52	939163.66	0.0266	0.0176
Mercury	-2142-07-14 20:38 J	939252.18	939252.36	939252.54	0.0265	0.0030
Venus	-2142-09-30 03:21 J	939329.60	939329.64	939329.69	0.0265	0.0257
Mercury	-2142-10-11 16:47 J	939341.04	939341.20	939341.37	0.0265	0.0116
Mercury	-2141-01-08 12:57 J	939430.04	939430.04	939430.06	0.0264	0.0264
Venus	-2141-05-16 02:23 J	939558.39	939558.60	939558.80	0.0263	0.0071
Venus	-2141-12-31 00:28 J	939787.33	939787.52	939787.72	0.0262	0.0113
Earth	-2133-06-25 18:14 J	942521.07	942521.26	942521.47	0.0271	0.0157
Moon	-2133-06-25 18:57 J	942521.10	942521.29	942521.50	0.0271	0.0145 *
Mercury	-2127-11-05 07:12 J	944844.69	944844.80	944844.91	0.0296	0.0158
Mercury	-2126-02-01 19:55 J	944933.20	944933.33	944933.46	0.0296	0.0012
Mercury	-2126-05-01 08:23 J	945021.74	945021.85	945021.97	0.0297	0.0133
Venus	-2126-06-11 00:43 J	945062.38	945062.53	945062.69	0.0297	0.0204
Mercury	-2126-07-28 20:52 J	945110.33	945110.37	945110.42	0.0298	0.0277
Venus	-2125-01-27 04:19 J	945292.47	945292.68	945292.88	0.0299	0.0067

Earth	-2120-12-21 07:40 J	947447.71	947447.82	947447.95	0.0291	0.0251
Moon	-2120-12-21 11:16 J	947447.87	947447.97	947448.08	0.0291	0.0260 *
Mars	-2116-08-25 00:14 J	948790.39	948790.51	948790.65	0.0276	0.0250
Mercury	-2113-09-02 21:36 J	949895.33	949895.40	949895.49	0.0266	0.0235
Mercury	-2113-11-30 17:45 J	949984.07	949984.24	949984.42	0.0265	0.0089
Mercury	-2112-02-27 13:55 J	950072.90	950073.08	950073.26	0.0265	0.0057
Venus	-2112-04-11 02:38 J	950115.52	950115.61	950115.69	0.0264	0.0241
Mercury	-2112-05-27 10:19 J	950161.81	950161.93	950162.05	0.0264	0.0204
Venus	-2112-11-26 01:26 J	950344.35	950344.56	950344.77	0.0263	0.0055
Venus	-2111-07-12 23:45 J	950573.31	950573.49	950573.68	0.0262	0.0128
Moon	-2103-07-02 20:52 J	953485.20	953485.37	953485.54	0.0273	0.0197
Earth	-2103-07-03 00:28 J	953485.35	953485.52	953485.71	0.0273	0.0182 *
Mars	-2100-07-25 07:40 J	954603.80	954603.82	954603.85	0.0285	0.0284
Mercury	-2097-03-24 08:38 J	955576.77	955576.86	955576.96	0.0295	0.0205
Mercury	-2097-06-20 21:21 J	955665.26	955665.39	955665.52	0.0296	0.0060
Mercury	-2097-09-17 10:04 J	955753.79	955753.92	955754.04	0.0297	0.0085
Mercury	-2097-12-14 22:33 J	955842.36	955842.44	955842.52	0.0297	0.0230
Venus	-2097-12-21 05:45 J	955848.57	955848.74	955848.91	0.0297	0.0173
Venus	-2096-08-08 09:21 J	956078.69	956078.89	956079.09	0.0299	0.0099
Moon	-2090-12-29 03:50 J	958412.47	958412.66	958412.87	0.0288	0.0149
Earth	-2090-12-29 06:00 J	958412.56	958412.75	958412.96	0.0288	0.0161 *
Mercury	-2083-04-19 17:31 J	960716.07	960716.23	960716.39	0.0266	0.0128
Mercury	-2083-07-17 13:40 J	960804.89	960805.07	960805.26	0.0265	0.0019
Mercury	-2083-10-14 09:50 J	960893.77	960893.91	960894.06	0.0265	0.0166
Venus	-2083-10-22 06:14 J	960901.64	960901.76	960901.89	0.0265	0.0213
Venus	-2082-06-08 05:16 J	961130.51	961130.72	961130.93	0.0263	0.0027
Venus	-2081-01-23 03:50 J	961359.49	961359.66	961359.83	0.0263	0.0157
Earth	-2074-06-27 18:57 J	964072.06	964072.29	964072.53	0.0271	0.0097
Moon	-2074-06-27 23:02 J	964072.22	964072.46	964072.69	0.0271	0.0081 *
Mercury	-2068-08-11 09:50 J	966308.84	966308.91	966308.97	0.0295	0.0255

Mercury	-2068-11-07 22:33 J	966397.32	966397.44	966397.56	0.0295	0.0110
Mercury	-2067-02-04 11:02 J	966485.83	966485.96	966486.10	0.0296	0.0036
Mercury	-2067-05-03 23:31 J	966574.38	966574.48	966574.59	0.0297	0.0179
Venus	-2067-07-03 08:52 J	966634.68	966634.87	966635.05	0.0297	0.0143
Venus	-2066-02-18 12:00 J	966864.82	966865.00	966865.20	0.0299	0.0128
Earth	-2061-12-22 04:47 J	968998.53	968998.70	968998.88	0.0291	0.0194
Moon	-2061-12-22 06:43 J	968998.60	968998.78	968998.95	0.0291	0.0206 *
Mercury	-2054-09-06 14:52 J	971447.99	971448.12	971448.25	0.0266	0.0186
Mercury	-2054-12-04 11:02 J	971536.77	971536.96	971537.14	0.0265	0.0040
Mercury	-2053-03-02 07:12 J	971625.63	971625.80	971625.97	0.0265	0.0107
Venus	-2053-05-03 05:31 J	971687.60	971687.73	971687.88	0.0264	0.0197
Mercury	-2053-05-30 03:21 J	971714.61	971714.64	971714.70	0.0264	0.0255
Venus	-2053-12-18 04:47 J	971916.49	971916.70	971916.91	0.0263	0.0010
Venus	-2052-08-04 03:07 J	972145.48	972145.63	972145.79	0.0262	0.0173
Moon	-2044-07-04 00:57 J	975036.48	975036.54	975036.62	0.0273	0.0260
Earth	-2044-07-04 01:55 J	975036.48	975036.58	975036.69	0.0273	0.0244 *
Mercury	-2038-03-28 00:00 J	977129.39	977129.50	977129.61	0.0295	0.0157
Mercury	-2038-06-24 12:43 J	977217.90	977218.03	977218.16	0.0296	0.0012
Mercury	-2038-09-21 01:12 J	977306.44	977306.55	977306.67	0.0297	0.0132
Mercury	-2038-12-18 13:40 J	977395.03	977395.07	977395.12	0.0297	0.0276
Venus	-2037-01-13 13:40 J	977420.88	977421.07	977421.27	0.0297	0.0112
Venus	-2037-08-30 17:16 J	977651.05	977651.22	977651.40	0.0299	0.0161
Earth	-2031-12-30 03:21 J	979963.49	979963.64	979963.80	0.0288	0.0218
Moon	-2031-12-30 05:31 J	979963.58	979963.73	979963.91	0.0288	0.0204 *
Mars	-2027-01-17 23:02 J	981078.26	981078.46	981078.67	0.0276	0.0209
Mercury	-2024-01-23 14:38 J	982180.03	982180.11	982180.22	0.0266	0.0224
Mercury	-2024-04-22 11:02 J	982268.78	982268.96	982269.13	0.0266	0.0077
Mercury	-2024-07-20 07:12 J	982357.62	982357.80	982357.98	0.0265	0.0070
Mercury	-2024-10-17 03:36 J	982446.55	982446.65	982446.75	0.0265	0.0218
Venus	-2024-11-13 10:04 J	982473.76	982473.92	982474.09	0.0265	0.0167

Venus	-2023-06-30 09:21 J	982702.67	982702.89	982703.10	0.0264	0.0020
Venus	-2022-02-14 07:40 J	982931.69	982931.82	982931.96	0.0263	0.0203
Earth	-2015-06-28 22:04 J	985623.17	985623.42	985623.67	0.0271	0.0032
Moon	-2015-06-28 22:47 J	985623.19	985623.45	985623.70	0.0271	0.0017 *
Mars	-2012-12-18 17:16 J	986892.08	986892.22	986892.37	0.0284	0.0238
Mercury	-2009-08-14 01:26 J	987861.47	987861.56	987861.66	0.0295	0.0203
Mercury	-2009-11-10 14:23 J	987949.97	987950.10	987950.23	0.0295	0.0059
Mercury	-2008-02-07 02:52 J	988038.49	988038.62	988038.75	0.0296	0.0086
Mercury	-2008-05-06 15:21 J	988127.06	988127.14	988127.22	0.0297	0.0229
Venus	-2008-07-25 18:43 J	988207.07	988207.28	988207.48	0.0297	0.0079
Venus	-2007-03-12 21:50 J	988437.25	988437.41	988437.57	0.0298	0.0193
Moon	-2002-12-24 01:40 J	990549.36	990549.57	990549.79	0.0291	0.0147
Earth	-2002-12-24 04:47 J	990549.49	990549.70	990549.92	0.0291	0.0130 *

## 2ND MILLENNIUM BCE

This is a list of transits visible from Saturn in the 2nd millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
Mercury	-1995-09-09 08:23 J		993000.70	993000.85	993001.02	0.0266	0.0133	
Mercury	-1995-12-07 04:47 J		993089.51	993089.70	993089.88	0.0265	0.0014	
Mercury	-1994-03-06 00:57 J		993178.40	993178.54	993178.69	0.0265	0.0162	
Venus	-1994-05-26 10:04 J		993259.75	993259.92	993260.09	0.0264	0.0150	
Venus	-1993-01-10 09:21 J		993488.68	993488.89	993489.10	0.0263	0.0037	
Venus	-1993-08-26 07:40 J		993717.72	993717.82	993717.94	0.0262	0.0220	

Mercury	-1979-01-01 03:21 J	998593.57	998593.64	998593.71	0.0295	0.0246
Mercury	-1979-03-30 16:04 J	998682.05	998682.17	998682.30	0.0295	0.0101
Mercury	-1979-06-27 04:47 J	998770.57	998770.70	998770.83	0.0296	0.0044
Mercury	-1979-09-23 17:16 J	998859.12	998859.22	998859.32	0.0297	0.0187
Venus	-1978-02-05 00:43 J	998993.32	998993.53	998993.74	0.0298	0.0044
Venus	-1978-09-23 04:04 J	999223.54	999223.67	999223.81	0.0299	0.0228
Earth	-1972-12-31 04:47 J	1001514.66	1001514.70	1001514.74	0.0288	0.0282
Moon	-1972-12-31 08:09 J	1001514.75	1001514.84	1001514.93	0.0288	0.0265
Mercury	-1965-01-27 08:52 J	1003732.73	1003732.87	1003733.01	0.0267	0.0168
Mercury	-1965-04-25 05:02 J	1003821.53	1003821.71	1003821.90	0.0266	0.0021
Mercury	-1965-07-23 01:26 J	1003910.39	1003910.56	1003910.72	0.0265	0.0127
Venus	-1965-12-05 15:21 J	1004045.95	1004046.14	1004046.33	0.0265	0.0120
Venus	-1964-07-22 14:23 J	1004274.90	1004275.10	1004275.31	0.0264	0.0067
Venus	-1963-03-08 12:43 J	1004503.98	1004504.03	1004504.10	0.0263	0.0251
Moon	-1956-06-30 00:28 J	1007174.28	1007174.52	1007174.77	0.0271	0.0054
Earth	-1956-06-30 04:04 J	1007174.42	1007174.67	1007174.91	0.0271	0.0039 *
Mercury	-1950-05-21 05:31 J	1009325.70	1009325.73	1009325.76	0.0294	0.0285
Mercury	-1950-08-17 18:14 J	1009414.14	1009414.26	1009414.37	0.0295	0.0141
Mercury	-1950-11-14 06:43 J	1009502.65	1009502.78	1009502.92	0.0295	0.0010
Venus	-1950-12-31 05:02 J	1009549.64	1009549.71	1009549.79	0.0296	0.0275
Mercury	-1949-02-10 19:12 J	1009591.19	1009591.30	1009591.42	0.0296	0.0146
Mercury	-1949-05-09 07:55 J	1009679.80	1009679.83	1009679.85	0.0297	0.0288
Venus	-1949-08-17 07:26 J	1009779.60	1009779.81	1009780.02	0.0297	0.0009
Venus	-1948-04-04 10:33 J	1010009.85	1010009.94	1010010.04	0.0298	0.0263
Moon	-1943-12-25 06:00 J	1012100.52	1012100.75	1012100.98	0.0290	0.0075
Earth	-1943-12-25 08:38 J	1012100.63	1012100.86	1012101.10	0.0290	0.0058 *
Mars	-1939-06-12 18:57 J	1013366.06	1013366.29	1013366.54	0.0276	0.0180
Mercury	-1936-06-15 06:57 J	1014464.69	1014464.79	1014464.90	0.0267	0.0220
Mercury	-1936-09-12 03:07 J	1014553.45	1014553.63	1014553.81	0.0266	0.0074
Mercury	-1936-12-09 23:16 J	1014642.30	1014642.47	1014642.65	0.0265	0.0074

Mercury	-1935-03-08 19:40 J	1014731.23	1014731.32	1014731.43	0.0265	0.0222
Venus	-1935-06-17 16:04 J	1014831.97	1014832.17	1014832.37	0.0264	0.0100
Venus	-1934-02-01 15:21 J	1015060.94	1015061.14	1015061.34	0.0263	0.0086
Earth	-1927-06-24 20:52 J	1017761.27	1017761.37	1017761.49	0.0270	0.0241
Moon	-1927-06-25 00:00 J	1017761.37	1017761.50	1017761.64	0.0270	0.0227 *
Mars	-1923-05-14 13:12 J	1019180.84	1019181.05	1019181.27	0.0285	0.0176
Mercury	-1920-01-03 20:09 J	1020146.24	1020146.34	1020146.44	0.0295	0.0183
Mercury	-1920-04-02 08:52 J	1020234.74	1020234.87	1020235.00	0.0296	0.0039
Mercury	-1920-06-29 21:21 J	1020323.27	1020323.39	1020323.51	0.0296	0.0105
Venus	-1920-07-12 11:45 J	1020335.87	1020335.99	1020336.11	0.0296	0.0240
Mercury	-1920-09-26 09:50 J	1020411.84	1020411.91	1020411.98	0.0297	0.0248
Venus	-1919-02-27 14:23 J	1020565.89	1020566.10	1020566.31	0.0298	0.0029
Mercury	-1907-11-02 07:40 J	1025196.77	1025196.82	1025196.88	0.0267	0.0253
Mercury	-1906-01-30 03:36 J	1025285.49	1025285.65	1025285.83	0.0266	0.0108
Mercury	-1906-04-29 00:00 J	1025374.32	1025374.50	1025374.68	0.0266	0.0041
Venus	-1906-05-13 21:50 J	1025389.37	1025389.41	1025389.47	0.0266	0.0259
Mercury	-1906-07-26 20:09 J	1025463.22	1025463.34	1025463.48	0.0265	0.0190
Venus	-1906-12-28 22:04 J	1025618.21	1025618.42	1025618.62	0.0265	0.0069
Venus	-1905-08-13 21:07 J	1025847.19	1025847.38	1025847.57	0.0264	0.0118
Moon	-1897-07-01 09:50 J	1028725.70	1028725.91	1028726.13	0.0272	0.0130
Earth	-1897-07-01 12:28 J	1028725.80	1028726.02	1028726.25	0.0272	0.0116 *
Mercury	-1891-05-23 22:47 J	1030878.36	1030878.45	1030878.54	0.0294	0.0216
Mercury	-1891-08-20 11:31 J	1030966.85	1030966.98	1030967.11	0.0295	0.0073
Mercury	-1891-11-17 00:14 J	1031055.38	1031055.51	1031055.63	0.0295	0.0071
Venus	-1890-01-22 20:52 J	1031122.21	1031122.37	1031122.52	0.0296	0.0200
Mercury	-1890-02-13 12:28 J	1031143.94	1031144.02	1031144.12	0.0296	0.0213
Venus	-1890-09-09 23:16 J	1031352.27	1031352.47	1031352.68	0.0297	0.0068
Earth	-1884-12-26 17:45 J	1033652.00	1033652.24	1033652.48	0.0290	0.0026
Moon	-1884-12-26 19:26 J	1033652.07	1033652.31	1033652.54	0.0290	0.0012 *
Mercury	-1877-06-18 02:23 J	1036017.46	1036017.60	1036017.75	0.0266	0.0155

Mercury	-1877-09-14 22:33 J	1036106.26	1036106.44	1036106.63	0.0266	0.0009
Venus	-1877-11-23 00:00 J	1036175.41	1036175.50	1036175.60	0.0265	0.0237
Mercury	-1877-12-12 18:57 J	1036195.13	1036195.29	1036195.45	0.0265	0.0140
Venus	-1876-07-09 23:45 J	1036404.29	1036404.49	1036404.70	0.0264	0.0049
Venus	-1875-02-23 23:02 J	1036633.28	1036633.46	1036633.64	0.0263	0.0138
Earth	-1868-06-26 06:28 J	1039312.58	1039312.77	1039312.97	0.0271	0.0163
Moon	-1868-06-26 09:36 J	1039312.69	1039312.90	1039313.11	0.0271	0.0148 *
Mercury	-1862-10-11 00:57 J	1041610.48	1041610.54	1041610.61	0.0294	0.0256
Mercury	-1861-01-07 13:40 J	1041698.95	1041699.07	1041699.19	0.0295	0.0112
Mercury	-1861-04-05 02:23 J	1041787.47	1041787.60	1041787.73	0.0296	0.0032
Mercury	-1861-07-02 14:52 J	1041876.01	1041876.12	1041876.22	0.0296	0.0175
Venus	-1861-08-04 04:04 J	1041908.50	1041908.67	1041908.85	0.0297	0.0163
Venus	-1860-03-22 06:43 J	1042138.59	1042138.78	1042138.98	0.0298	0.0107
Mars	-1851-11-06 23:16 J	1045655.18	1045655.47	1045655.77	0.0276	0.0098
Mercury	-1848-11-05 03:21 J	1046749.52	1046749.64	1046749.77	0.0267	0.0187
Mercury	-1847-02-01 23:31 J	1046838.30	1046838.48	1046838.67	0.0266	0.0040
Mercury	-1847-05-01 19:55 J	1046927.16	1046927.33	1046927.50	0.0266	0.0109
Venus	-1847-06-05 06:14 J	1046961.64	1046961.76	1046961.90	0.0266	0.0206
Mercury	-1847-07-29 16:19 J	1047016.14	1047016.18	1047016.23	0.0265	0.0257
Venus	-1846-01-20 06:28 J	1047190.56	1047190.77	1047190.98	0.0264	0.0016
Venus	-1846-09-06 05:31 J	1047419.57	1047419.73	1047419.89	0.0264	0.0170
Earth	-1838-07-03 23:45 J	1050277.33	1050277.49	1050277.67	0.0273	0.0199
Moon	-1838-07-04 00:57 J	1050277.40	1050277.54	1050277.70	0.0273	0.0213 *
Mars	-1835-10-09 06:00 J	1051470.48	1051470.75	1051471.01	0.0285	0.0078
Mercury	-1832-02-27 04:04 J	1052342.64	1052342.67	1052342.70	0.0293	0.0285
Mercury	-1832-05-26 16:47 J	1052431.08	1052431.20	1052431.32	0.0294	0.0142
Mercury	-1832-08-23 05:31 J	1052519.59	1052519.73	1052519.86	0.0295	0.0008
Mercury	-1832-11-19 18:00 J	1052608.13	1052608.25	1052608.36	0.0296	0.0144
Venus	-1831-02-14 14:52 J	1052694.93	1052695.12	1052695.31	0.0296	0.0121
Mercury	-1831-02-16 06:14 J	1052696.73	1052696.76	1052696.80	0.0296	0.0286

Venus	-1831-10-02 17:16 J	1052925.04	1052925.22	1052925.41	0.0297	0.0149
Earth	-1825-12-28 06:14 J	1055203.55	1055203.76	1055203.99	0.0289	0.0119
Moon	-1825-12-28 09:50 J	1055203.69	1055203.91	1055204.14	0.0289	0.0103 *
Mercury	-1818-03-25 02:38 J	1057481.53	1057481.61	1057481.71	0.0267	0.0230
Mercury	-1818-06-21 22:47 J	1057570.28	1057570.45	1057570.63	0.0266	0.0084
Mercury	-1818-09-18 19:12 J	1057659.12	1057659.30	1057659.48	0.0266	0.0064
Venus	-1818-12-16 09:35 J	1057747.75	1057747.90	1057748.06	0.0265	0.0182
Mercury	-1818-12-16 15:21 J	1057748.04	1057748.14	1057748.26	0.0265	0.0212 *
Venus	-1817-08-01 09:21 J	1057976.68	1057976.89	1057977.10	0.0264	0.0007
Venus	-1816-03-18 08:09 J	1058205.70	1058205.84	1058205.99	0.0263	0.0193
Moon	-1809-06-27 16:33 J	1060863.95	1060864.19	1060864.45	0.0271	0.0066
Earth	-1809-06-27 17:45 J	1060864.01	1060864.24	1060864.49	0.0271	0.0082 *
Mercury	-1803-10-13 18:57 J	1063163.19	1063163.29	1063163.40	0.0295	0.0180
Mercury	-1802-01-10 07:40 J	1063251.69	1063251.82	1063251.95	0.0295	0.0036
Mercury	-1802-04-08 20:09 J	1063340.22	1063340.34	1063340.47	0.0296	0.0107
Mercury	-1802-07-06 08:38 J	1063428.80	1063428.86	1063428.93	0.0297	0.0250
Venus	-1802-08-27 22:33 J	1063481.24	1063481.44	1063481.65	0.0297	0.0081
Venus	-1801-04-14 01:26 J	1063711.40	1063711.56	1063711.72	0.0298	0.0189
Moon	-1796-12-22 14:52 J	1065789.97	1065790.12	1065790.29	0.0291	0.0219
Earth	-1796-12-22 18:28 J	1065790.11	1065790.27	1065790.45	0.0291	0.0203 *
Jupiter	-1793-01-17 03:50 J	1066545.40	1066545.66	1066545.95	0.0282	0.0231
Mercury	-1789-08-11 04:04 J	1068213.63	1068213.67	1068213.71	0.0267	0.0259
Mercury	-1789-11-08 00:00 J	1068302.34	1068302.50	1068302.67	0.0267	0.0114
Mercury	-1788-02-04 20:24 J	1068391.16	1068391.35	1068391.53	0.0266	0.0034
Mercury	-1788-05-04 16:33 J	1068480.06	1068480.19	1068480.33	0.0266	0.0183
Venus	-1788-06-27 16:33 J	1068534.01	1068534.19	1068534.36	0.0265	0.0150
Venus	-1787-02-11 16:19 J	1068762.97	1068763.18	1068763.39	0.0264	0.0039
Venus	-1787-09-28 15:07 J	1068992.03	1068992.13	1068992.25	0.0263	0.0226
Mercury	-1773-03-01 22:19 J	1073895.34	1073895.43	1073895.53	0.0294	0.0206
Mercury	-1773-05-29 11:16 J	1073983.84	1073983.97	1073984.10	0.0295	0.0063



Mercury	-1773-08-25 23:45 J	1074072.36	1074072.49	1074072.62	0.0295	0.0080
Mercury	-1773-11-22 12:14 J	1074160.93	1074161.01	1074161.10	0.0296	0.0222
Venus	-1772-03-09 10:33 J	1074267.74	1074267.94	1074268.16	0.0296	0.0038
Venus	-1772-10-25 13:12 J	1074497.93	1074498.05	1074498.19	0.0298	0.0234
Earth	-1766-12-30 22:19 J	1076755.29	1076755.43	1076755.60	0.0289	0.0219
Moon	-1766-12-30 23:45 J	1076755.32	1076755.49	1076755.68	0.0289	0.0204 *
Mars	-1762-04-03 12:57 J	1077944.73	1077945.04	1077945.36	0.0276	0.0004
Mercury	-1759-03-28 00:00 J	1079034.35	1079034.50	1079034.65	0.0267	0.0153
Mercury	-1759-06-24 20:09 J	1079123.15	1079123.34	1079123.52	0.0266	0.0007
Mercury	-1759-09-21 16:19 J	1079212.03	1079212.18	1079212.34	0.0266	0.0142
Venus	-1758-01-07 20:38 J	1079320.17	1079320.36	1079320.55	0.0265	0.0124
Venus	-1758-08-24 20:09 J	1079549.13	1079549.34	1079549.55	0.0264	0.0064
Venus	-1757-04-09 18:57 J	1079778.23	1079778.29	1079778.36	0.0263	0.0249
Moon	-1750-06-30 02:52 J	1082415.38	1082415.62	1082415.87	0.0272	0.0021
Earth	-1750-06-30 06:57 J	1082415.54	1082415.79	1082416.04	0.0272	0.0006 *
Mars	-1746-03-05 18:14 J	1083759.98	1083760.26	1083760.53	0.0286	0.0014
Mercury	-1744-07-20 00:43 J	1084627.46	1084627.53	1084627.60	0.0294	0.0244
Mercury	-1744-10-16 13:26 J	1084715.93	1084716.06	1084716.18	0.0295	0.0101
Mercury	-1743-01-13 01:55 J	1084804.45	1084804.58	1084804.72	0.0296	0.0044
Venus	-1743-02-01 16:04 J	1084824.08	1084824.17	1084824.27	0.0296	0.0265
Mercury	-1743-04-11 14:24 J	1084893.00	1084893.10	1084893.21	0.0296	0.0186
Venus	-1743-09-19 18:28 J	1085054.06	1085054.27	1085054.48	0.0297	0.0005
Venus	-1742-05-07 21:07 J	1085284.31	1085284.38	1085284.47	0.0298	0.0274
Moon	-1737-12-24 09:21 J	1087341.69	1087341.89	1087342.12	0.0290	0.0118
Earth	-1737-12-24 10:47 J	1087341.73	1087341.95	1087342.18	0.0290	0.0101 *
Mercury	-1730-08-15 01:12 J	1089766.42	1089766.55	1089766.69	0.0267	0.0183
Mercury	-1730-11-11 21:21 J	1089855.21	1089855.39	1089855.57	0.0266	0.0036
Mercury	-1729-02-08 17:31 J	1089944.07	1089944.23	1089944.40	0.0266	0.0112
Mercury	-1729-05-07 13:55 J	1090033.06	1090033.08	1090033.12	0.0265	0.0260
Venus	-1729-07-20 03:35 J	1090106.45	1090106.65	1090106.85	0.0265	0.0092

Venus	-1728-03-06 03:07 J	1090335.43	1090335.63	1090335.83	0.0264	0.0096
Earth	-1721-06-24 09:07 J	1093002.81	1093002.88	1093002.97	0.0270	0.0255
Moon	-1721-06-24 12:57 J	1093002.93	1093003.04	1093003.16	0.0270	0.0239 *
Mercury	-1715-12-07 04:04 J	1095359.63	1095359.67	1095359.73	0.0294	0.0269
Mercury	-1714-03-05 17:02 J	1095448.09	1095448.21	1095448.33	0.0294	0.0126
Mercury	-1714-06-02 05:31 J	1095536.60	1095536.73	1095536.87	0.0295	0.0019
Venus	-1714-08-15 04:33 J	1095610.55	1095610.69	1095610.83	0.0295	0.0220
Mercury	-1714-08-29 18:00 J	1095625.15	1095625.25	1095625.37	0.0296	0.0160
Venus	-1713-04-01 06:43 J	1095840.58	1095840.78	1095840.99	0.0297	0.0048
Mercury	-1700-01-01 01:40 J	1100498.47	1100498.57	1100498.68	0.0267	0.0218
Mercury	-1700-03-30 21:35 J	1100587.23	1100587.40	1100587.58	0.0266	0.0072
Venus	-1700-06-15 08:24 J	1100663.80	1100663.85	1100663.92	0.0266	0.0254
Mercury	-1700-06-27 17:45 J	1100676.07	1100676.24	1100676.42	0.0266	0.0076
Mercury	-1700-09-24 14:09 J	1100765.00	1100765.09	1100765.20	0.0265	0.0223
Venus	-1699-01-30 08:38 J	1100892.65	1100892.86	1100893.06	0.0265	0.0064
Venus	-1699-09-16 07:40 J	1101121.64	1101121.82	1101122.01	0.0264	0.0123
Moon	-1691-07-01 18:28 J	1103967.06	1103967.27	1103967.50	0.0272	0.0106
Earth	-1691-07-01 19:26 J	1103967.08	1103967.31	1103967.55	0.0272	0.0091 *
Mercury	-1685-07-22 18:57 J	1106180.18	1106180.29	1106180.40	0.0295	0.0166
Mercury	-1685-10-19 07:40 J	1106268.69	1106268.82	1106268.95	0.0295	0.0023
Mercury	-1684-01-15 20:09 J	1106357.22	1106357.34	1106357.46	0.0296	0.0121
Venus	-1684-02-24 11:45 J	1106396.82	1106396.99	1106397.16	0.0296	0.0183
Mercury	-1684-04-14 08:38 J	1106445.81	1106445.86	1106445.92	0.0297	0.0263
Venus	-1684-10-12 14:09 J	1106626.89	1106627.09	1106627.30	0.0298	0.0087
Earth	-1678-12-27 04:19 J	1108893.44	1108893.68	1108893.92	0.0290	0.0004
Moon	-1678-12-27 06:57 J	1108893.56	1108893.79	1108894.03	0.0290	0.0014 *
Mars	-1674-08-29 14:38 J	1110234.83	1110235.11	1110235.40	0.0275	0.0110
Mercury	-1671-05-21 02:38 J	1111230.56	1111230.61	1111230.68	0.0267	0.0249
Mercury	-1671-08-17 22:47 J	1111319.28	1111319.45	1111319.62	0.0266	0.0103
Mercury	-1671-11-14 18:57 J	1111408.11	1111408.29	1111408.47	0.0266	0.0044

Venus	-1671-12-26 15:21 J	1111450.02	1111450.14	1111450.25	0.0266	0.0223
Mercury	-1670-02-11 15:07 J	1111497.01	1111497.13	1111497.27	0.0265	0.0191
Venus	-1670-08-12 15:07 J	1111678.92	1111679.13	1111679.34	0.0264	0.0034
Venus	-1669-03-28 14:09 J	1111907.93	1111908.09	1111908.27	0.0264	0.0154
Earth	-1662-06-26 21:21 J	1114554.20	1114554.39	1114554.59	0.0271	0.0170
Moon	-1662-06-26 22:04 J	1114554.23	1114554.42	1114554.65	0.0271	0.0156 *
Mars	-1658-07-31 19:55 J	1116050.09	1116050.33	1116050.59	0.0286	0.0127
Mercury	-1656-12-09 22:33 J	1116912.34	1116912.44	1116912.54	0.0294	0.0191
Mercury	-1655-03-08 11:16 J	1117000.84	1117000.97	1117001.10	0.0295	0.0048
Mercury	-1655-06-04 23:45 J	1117089.37	1117089.49	1117089.62	0.0295	0.0095
Mercury	-1655-09-01 12:14 J	1117177.94	1117178.01	1117178.09	0.0296	0.0237
Venus	-1655-09-07 00:00 J	1117183.32	1117183.50	1117183.69	0.0296	0.0138
Venus	-1654-04-25 02:24 J	1117413.42	1117413.60	1117413.80	0.0297	0.0133
Mercury	-1641-01-04 23:31 J	1122051.32	1122051.48	1122051.64	0.0266	0.0136
Mercury	-1641-04-02 19:40 J	1122140.13	1122140.32	1122140.50	0.0266	0.0011
Mercury	-1641-06-30 15:50 J	1122229.01	1122229.16	1122229.31	0.0265	0.0157
Venus	-1641-07-07 20:52 J	1122236.23	1122236.37	1122236.51	0.0265	0.0193
Venus	-1640-02-21 20:24 J	1122465.14	1122465.35	1122465.56	0.0264	0.0005
Venus	-1640-10-08 19:12 J	1122694.15	1122694.30	1122694.46	0.0263	0.0181
Earth	-1632-07-03 06:43 J	1125518.61	1125518.78	1125518.98	0.0272	0.0177
Moon	-1632-07-03 10:04 J	1125518.76	1125518.92	1125519.11	0.0272	0.0190 *
Mercury	-1626-04-29 00:14 J	1127644.43	1127644.51	1127644.59	0.0294	0.0236
Mercury	-1626-07-26 12:57 J	1127732.91	1127733.04	1127733.16	0.0295	0.0092
Mercury	-1626-10-23 01:40 J	1127821.44	1127821.57	1127821.70	0.0296	0.0052
Mercury	-1625-01-19 14:09 J	1127909.99	1127910.09	1127910.19	0.0296	0.0194
Venus	-1625-03-19 05:45 J	1127969.54	1127969.74	1127969.94	0.0297	0.0103
Venus	-1625-11-04 08:24 J	1128199.68	1128199.85	1128200.03	0.0298	0.0168
Earth	-1619-12-28 20:09 J	1130445.13	1130445.34	1130445.58	0.0289	0.0106
Moon	-1619-12-28 23:31 J	1130445.26	1130445.48	1130445.72	0.0289	0.0089 *
Mercury	-1612-05-24 00:00 J	1132783.37	1132783.50	1132783.65	0.0266	0.0171

Mercury	-1612-08-20 20:09 J	1132872.16	1132872.34	1132872.53	0.0266	0.0025
Mercury	-1612-11-17 16:19 J	1132961.02	1132961.18	1132961.35	0.0265	0.0123
Venus	-1611-01-18 02:52 J	1133022.45	1133022.62	1133022.78	0.0265	0.0164
Venus	-1611-09-04 02:24 J	1133251.39	1133251.60	1133251.81	0.0264	0.0024
Venus	-1610-04-21 01:12 J	1133480.43	1133480.55	1133480.68	0.0263	0.0210
Moon	-1603-06-28 04:19 J	1136105.44	1136105.68	1136105.93	0.0271	0.0075
Earth	-1603-06-28 07:26 J	1136105.58	1136105.81	1136106.05	0.0271	0.0089 *
Mercury	-1597-09-15 03:21 J	1138376.59	1138376.64	1138376.71	0.0294	0.0263
Mercury	-1597-12-12 16:19 J	1138465.06	1138465.18	1138465.30	0.0295	0.0119
Mercury	-1596-03-11 05:02 J	1138553.58	1138553.71	1138553.84	0.0295	0.0024
Mercury	-1596-06-07 17:31 J	1138642.12	1138642.23	1138642.34	0.0296	0.0166
Venus	-1596-09-29 17:45 J	1138756.03	1138756.24	1138756.44	0.0297	0.0059
Venus	-1595-05-17 20:24 J	1138986.21	1138986.35	1138986.50	0.0298	0.0212
Moon	-1590-12-23 08:09 J	1141031.70	1141031.84	1141032.00	0.0291	0.0225
Earth	-1590-12-23 11:02 J	1141031.80	1141031.96	1141032.14	0.0291	0.0208 *
Mars	-1585-01-24 16:19 J	1142525.03	1142525.18	1142525.37	0.0275	0.0231
Mercury	-1583-10-11 00:57 J	1143515.43	1143515.54	1143515.66	0.0267	0.0202
Mercury	-1582-01-07 20:52 J	1143604.19	1143604.37	1143604.55	0.0266	0.0057
Mercury	-1582-04-06 17:02 J	1143693.04	1143693.21	1143693.39	0.0265	0.0089
Mercury	-1582-07-04 13:12 J	1143781.98	1143782.05	1143782.14	0.0265	0.0236
Venus	-1582-07-31 08:24 J	1143808.67	1143808.85	1143809.03	0.0265	0.0134
Venus	-1581-03-16 07:40 J	1144037.61	1144037.82	1144038.03	0.0264	0.0054
Venus	-1581-10-31 06:00 J	1144266.67	1144266.75	1144266.85	0.0263	0.0238
Earth	-1573-07-04 16:33 J	1147070.13	1147070.19	1147070.29	0.0272	0.0258
Moon	-1573-07-04 19:40 J	1147070.29	1147070.32	1147070.36	0.0272	0.0269 *
Mars	-1570-12-25 18:57 J	1148339.10	1148339.29	1148339.50	0.0286	0.0199
Mercury	-1567-05-01 17:31 J	1149197.13	1149197.23	1149197.35	0.0295	0.0167
Mercury	-1567-07-29 06:28 J	1149285.63	1149285.77	1149285.90	0.0296	0.0025
Venus	-1567-08-24 19:40 J	1149312.30	1149312.32	1149312.36	0.0296	0.0293
Mercury	-1567-10-25 18:57 J	1149374.17	1149374.29	1149374.41	0.0296	0.0120

Mercury	-1566-01-22 07:26 J	1149462.75	1149462.81	1149462.87	0.0297	0.0262
Venus	-1566-04-11 22:04 J	1149542.21	1149542.42	1149542.63	0.0297	0.0026
Venus	-1566-11-28 00:57 J	1149772.43	1149772.54	1149772.66	0.0298	0.0246
Moon	-1560-12-30 08:38 J	1151996.67	1151996.86	1151997.06	0.0289	0.0184
Earth	-1560-12-30 09:35 J	1151996.73	1151996.90	1151997.08	0.0289	0.0200 *
Mercury	-1553-02-28 00:57 J	1154247.47	1154247.54	1154247.62	0.0267	0.0241
Mercury	-1553-05-26 20:52 J	1154336.21	1154336.37	1154336.55	0.0266	0.0096
Mercury	-1553-08-23 17:02 J	1154425.03	1154425.21	1154425.40	0.0266	0.0051
Mercury	-1553-11-20 13:26 J	1154513.94	1154514.06	1154514.18	0.0265	0.0197
Venus	-1552-02-09 12:57 J	1154594.85	1154595.04	1154595.24	0.0265	0.0108
Venus	-1552-09-26 12:14 J	1154823.81	1154824.01	1154824.22	0.0264	0.0080
Moon	-1544-06-29 12:14 J	1157656.76	1157657.01	1157657.25	0.0271	0.0005
Earth	-1544-06-29 15:07 J	1157656.88	1157657.13	1157657.38	0.0271	0.0012 *
Mercury	-1538-09-18 20:24 J	1159929.26	1159929.35	1159929.46	0.0294	0.0198
Mercury	-1538-12-16 09:21 J	1160017.76	1160017.89	1160018.02	0.0295	0.0055
Venus	-1537-03-06 06:00 J	1160098.65	1160098.75	1160098.86	0.0296	0.0252
Mercury	-1537-03-13 21:50 J	1160106.29	1160106.41	1160106.54	0.0296	0.0089
Mercury	-1537-06-10 10:19 J	1160194.86	1160194.93	1160195.02	0.0296	0.0231
Venus	-1537-10-22 08:24 J	1160328.64	1160328.85	1160329.06	0.0297	0.0015
Venus	-1536-06-09 11:31 J	1160558.93	1160558.98	1160559.04	0.0298	0.0286
Earth	-1531-12-24 23:02 J	1162583.24	1162583.46	1162583.68	0.0291	0.0115
Moon	-1531-12-25 00:00 J	1162583.29	1162583.50	1162583.71	0.0291	0.0130 *
Mercury	-1524-10-13 21:50 J	1165068.25	1165068.41	1165068.57	0.0266	0.0128
Venus	-1523-01-05 18:57 J	1165152.29	1165152.29	1165152.29	0.0266	0.0266
Mercury	-1523-01-10 17:45 J	1165157.06	1165157.24	1165157.43	0.0266	0.0018
Mercury	-1523-04-09 13:55 J	1165245.94	1165246.08	1165246.23	0.0265	0.0164
Venus	-1523-08-22 18:28 J	1165381.08	1165381.27	1165381.48	0.0264	0.0078
Venus	-1522-04-08 17:31 J	1165610.04	1165610.23	1165610.43	0.0263	0.0110
Moon	-1515-06-24 12:14 J	1168244.00	1168244.01	1168244.03	0.0269	0.0269
Mercury	-1508-02-04 21:21 J	1170661.33	1170661.39	1170661.47	0.0294	0.0249

Mercury	-1508-05-04 10:19 J	1170749.80	1170749.93	1170750.05	0.0295	0.0106
Mercury	-1508-07-31 23:02 J	1170838.33	1170838.46	1170838.59	0.0296	0.0038
Venus	-1508-09-16 08:52 J	1170884.74	1170884.87	1170885.01	0.0296	0.0223
Mercury	-1508-10-28 11:31 J	1170926.88	1170926.98	1170927.09	0.0296	0.0180
Venus	-1507-05-04 11:31 J	1171114.77	1171114.98	1171115.18	0.0298	0.0046
Moon	-1501-12-31 14:52 J	1173548.06	1173548.12	1173548.22	0.0289	0.0272
Earth	-1501-12-31 18:43 J	1173548.25	1173548.28	1173548.32	0.0289	0.0285
Mercury	-1494-03-02 21:07 J	1175800.24	1175800.38	1175800.52	0.0266	0.0171
Mercury	-1494-05-30 17:02 J	1175889.03	1175889.21	1175889.40	0.0266	0.0027
Venus	-1494-07-18 21:50 J	1175938.33	1175938.41	1175938.50	0.0265	0.0242
Mercury	-1494-08-27 13:12 J	1175977.89	1175978.05	1175978.22	0.0265	0.0120
Venus	-1493-03-03 21:50 J	1176167.20	1176167.41	1176167.61	0.0264	0.0053
Venus	-1493-10-18 20:38 J	1176396.18	1176396.36	1176396.55	0.0263	0.0134
Earth	-1485-06-30 19:55 J	1179208.09	1179208.33	1179208.57	0.0271	0.0059
Moon	-1485-06-30 20:38 J	1179208.14	1179208.36	1179208.60	0.0271	0.0072 *
Mars	-1481-05-20 20:52 J	1180628.30	1180628.37	1180628.47	0.0286	0.0272
Mercury	-1479-06-25 00:00 J	1181393.47	1181393.50	1181393.54	0.0294	0.0284
Mercury	-1479-09-21 12:57 J	1181481.92	1181482.04	1181482.16	0.0295	0.0140
Mercury	-1479-12-19 01:40 J	1181570.44	1181570.57	1181570.70	0.0295	0.0004
Mercury	-1478-03-17 14:09 J	1181658.98	1181659.09	1181659.21	0.0296	0.0145
Venus	-1478-03-29 18:00 J	1181671.09	1181671.25	1181671.42	0.0296	0.0185
Mercury	-1478-06-14 02:38 J	1181747.59	1181747.61	1181747.64	0.0297	0.0287
Venus	-1478-11-14 20:38 J	1181901.16	1181901.36	1181901.57	0.0297	0.0085
Earth	-1472-12-26 06:43 J	1184134.54	1184134.78	1184135.02	0.0291	0.0031
Moon	-1472-12-26 10:04 J	1184134.69	1184134.92	1184135.16	0.0291	0.0047 *
Mercury	-1465-07-19 21:35 J	1186532.29	1186532.40	1186532.52	0.0267	0.0205
Mercury	-1465-10-16 17:31 J	1186621.06	1186621.23	1186621.41	0.0266	0.0060
Mercury	-1464-01-13 13:40 J	1186709.90	1186710.07	1186710.25	0.0266	0.0086
Venus	-1464-01-28 03:21 J	1186724.52	1186724.64	1186724.77	0.0265	0.0212
Mercury	-1464-04-12 09:50 J	1186798.83	1186798.91	1186799.00	0.0265	0.0232

Venus	-1464-09-14 02:52 J	1186953.41	1186953.62	1186953.83	0.0264	0.0024
Venus	-1463-05-01 01:40 J	1187182.40	1187182.57	1187182.74	0.0263	0.0162
Moon	-1456-06-25 11:45 J	1189794.83	1189794.99	1189795.17	0.0269	0.0200
Earth	-1456-06-25 12:57 J	1189794.90	1189795.04	1189795.20	0.0269	0.0216 *
Mercury	-1449-02-08 13:26 J	1192213.96	1192214.06	1192214.16	0.0294	0.0195
Mercury	-1449-05-07 02:09 J	1192302.46	1192302.59	1192302.72	0.0295	0.0053
Mercury	-1449-08-03 14:52 J	1192391.00	1192391.12	1192391.25	0.0296	0.0090
Venus	-1449-10-08 19:12 J	1192457.13	1192457.30	1192457.49	0.0296	0.0159
Mercury	-1449-10-31 03:21 J	1192479.56	1192479.64	1192479.72	0.0296	0.0232
Venus	-1448-05-26 21:50 J	1192687.22	1192687.41	1192687.61	0.0298	0.0112
Mercury	-1436-12-06 20:24 J	1197264.30	1197264.35	1197264.40	0.0267	0.0253
Mercury	-1435-03-05 16:04 J	1197353.01	1197353.17	1197353.34	0.0266	0.0109
Mercury	-1435-06-02 12:14 J	1197441.83	1197442.01	1197442.19	0.0266	0.0037
Venus	-1435-08-10 05:02 J	1197510.57	1197510.71	1197510.86	0.0265	0.0191
Mercury	-1435-08-30 08:24 J	1197530.72	1197530.85	1197530.99	0.0265	0.0183
Venus	-1434-03-27 04:33 J	1197739.48	1197739.69	1197739.91	0.0264	0.0006
Venus	-1434-11-11 03:21 J	1197968.50	1197968.64	1197968.80	0.0263	0.0184
Earth	-1426-07-02 21:35 J	1200759.19	1200759.40	1200759.63	0.0271	0.0123
Moon	-1426-07-03 01:40 J	1200759.35	1200759.57	1200759.78	0.0271	0.0137 *
Mercury	-1420-06-27 15:35 J	1202946.07	1202946.15	1202946.23	0.0294	0.0235
Mercury	-1420-09-24 04:33 J	1203034.56	1203034.69	1203034.81	0.0295	0.0092
Mercury	-1420-12-21 17:02 J	1203123.08	1203123.21	1203123.34	0.0295	0.0052
Mercury	-1419-03-20 05:45 J	1203211.64	1203211.74	1203211.84	0.0296	0.0193
Venus	-1419-04-21 02:52 J	1203243.43	1203243.62	1203243.82	0.0296	0.0123
Venus	-1419-12-07 05:45 J	1203473.56	1203473.74	1203473.92	0.0298	0.0148
Earth	-1413-12-27 09:07 J	1205685.64	1205685.88	1205686.12	0.0291	0.0040
Moon	-1413-12-27 10:33 J	1205685.69	1205685.94	1205686.19	0.0291	0.0026 *
Mercury	-1406-07-23 16:19 J	1208085.03	1208085.18	1208085.34	0.0267	0.0145
Mercury	-1406-10-20 12:28 J	1208173.83	1208174.02	1208174.20	0.0266	0.0002
Mercury	-1405-01-17 08:24 J	1208262.70	1208262.85	1208263.01	0.0265	0.0147

Venus	-1405-02-20 09:35 J	1208296.74	1208296.90	1208297.08	0.0265	0.0161
Venus	-1405-10-06 09:07 J	1208525.67	1208525.88	1208526.10	0.0264	0.0028
Venus	-1404-05-23 07:40 J	1208754.70	1208754.82	1208754.95	0.0263	0.0212
Moon	-1397-06-26 10:33 J	1211345.74	1211345.94	1211346.16	0.0269	0.0139
Earth	-1397-06-26 14:24 J	1211345.90	1211346.10	1211346.31	0.0269	0.0153 *
Mercury	-1391-11-14 16:04 J	1213678.15	1213678.17	1213678.19	0.0294	0.0290
Mercury	-1390-02-11 04:47 J	1213766.59	1213766.70	1213766.82	0.0294	0.0148
Mercury	-1390-05-10 17:31 J	1213855.10	1213855.23	1213855.37	0.0295	0.0008
Mercury	-1390-08-07 06:14 J	1213943.64	1213943.76	1213943.87	0.0296	0.0137
Venus	-1390-11-01 03:35 J	1214029.45	1214029.65	1214029.85	0.0296	0.0097
Mercury	-1390-11-03 18:28 J	1214032.24	1214032.27	1214032.32	0.0297	0.0279
Venus	-1389-06-18 06:28 J	1214259.60	1214259.77	1214259.94	0.0298	0.0173
Mercury	-1377-12-09 14:24 J	1218816.98	1218817.10	1218817.22	0.0267	0.0198
Mercury	-1376-03-08 10:19 J	1218905.75	1218905.93	1218906.11	0.0266	0.0053
Mercury	-1376-06-05 06:28 J	1218994.60	1218994.77	1218994.94	0.0265	0.0093
Venus	-1376-09-01 10:19 J	1219082.75	1219082.93	1219083.11	0.0265	0.0142
Mercury	-1376-09-02 02:38 J	1219083.54	1219083.61	1219083.69	0.0265	0.0239
Venus	-1375-04-18 09:50 J	1219311.70	1219311.91	1219312.12	0.0264	0.0046
Venus	-1375-12-03 08:24 J	1219540.76	1219540.85	1219540.95	0.0263	0.0231
Earth	-1367-07-03 21:21 J	1222310.21	1222310.39	1222310.57	0.0271	0.0183
Moon	-1367-07-03 21:35 J	1222310.23	1222310.40	1222310.59	0.0271	0.0192 *
Mercury	-1361-06-30 06:28 J	1224498.68	1224498.77	1224498.88	0.0294	0.0192
Mercury	-1361-09-26 19:26 J	1224587.18	1224587.31	1224587.44	0.0295	0.0048
Mercury	-1361-12-24 07:55 J	1224675.71	1224675.83	1224675.96	0.0296	0.0095
Mercury	-1360-03-22 20:38 J	1224764.28	1224764.36	1224764.44	0.0296	0.0235
Venus	-1360-05-13 09:35 J	1224815.70	1224815.90	1224816.11	0.0297	0.0065
Venus	-1360-12-29 12:28 J	1225045.88	1225046.02	1225046.18	0.0298	0.0207
Moon	-1354-12-29 04:33 J	1227236.45	1227236.69	1227236.92	0.0290	0.0088
Earth	-1354-12-29 07:26 J	1227236.59	1227236.81	1227237.04	0.0290	0.0101 *
Mars	-1350-02-16 06:28 J	1228381.65	1228381.77	1228381.89	0.0278	0.0255



Mercury	-1347-04-28 14:09 J	1229549.02	1229549.09	1229549.19	0.0267	0.0236
Mercury	-1347-07-26 10:19 J	1229637.76	1229637.93	1229638.10	0.0267	0.0090
Mercury	-1347-10-23 06:14 J	1229726.58	1229726.76	1229726.95	0.0266	0.0056
Mercury	-1346-01-20 02:38 J	1229815.49	1229815.61	1229815.73	0.0265	0.0202
Venus	-1346-03-14 14:24 J	1229868.91	1229869.10	1229869.30	0.0265	0.0113
Venus	-1346-10-29 13:40 J	1230097.87	1230098.07	1230098.28	0.0264	0.0075
Venus	-1345-06-14 12:14 J	1230326.98	1230327.01	1230327.05	0.0263	0.0259
Earth	-1338-06-28 13:55 J	1232896.85	1232897.08	1232897.32	0.0269	0.0094
Moon	-1338-06-28 13:55 J	1232896.85	1232897.08	1232897.31	0.0269	0.0084 *
Mercury	-1332-11-17 06:57 J	1235230.72	1235230.79	1235230.86	0.0294	0.0248
Mercury	-1331-02-13 19:40 J	1235319.20	1235319.32	1235319.45	0.0294	0.0106
Mercury	-1331-05-13 08:24 J	1235407.72	1235407.85	1235407.98	0.0295	0.0036
Mercury	-1331-08-09 20:52 J	1235496.27	1235496.37	1235496.48	0.0296	0.0178
Venus	-1331-11-23 09:50 J	1235601.70	1235601.91	1235602.12	0.0297	0.0040
Venus	-1330-07-11 12:28 J	1235831.90	1235832.02	1235832.16	0.0298	0.0231
Earth	-1325-12-22 02:24 J	1237822.51	1237822.60	1237822.72	0.0293	0.0263
Moon	-1325-12-22 06:00 J	1237822.68	1237822.75	1237822.83	0.0293	0.0277 *
Mercury	-1318-12-13 07:40 J	1240369.67	1240369.82	1240369.97	0.0267	0.0148
Mercury	-1317-03-11 03:35 J	1240458.47	1240458.65	1240458.84	0.0266	0.0004
Mercury	-1317-06-07 23:45 J	1240547.34	1240547.49	1240547.65	0.0265	0.0144
Venus	-1317-09-23 13:55 J	1240654.88	1240655.08	1240655.28	0.0265	0.0096
Venus	-1316-05-10 13:12 J	1240883.86	1240884.05	1240884.26	0.0264	0.0092
Moon	-1308-07-04 14:52 J	1243861.02	1243861.12	1243861.25	0.0271	0.0241
Earth	-1308-07-04 18:57 J	1243861.18	1243861.29	1243861.41	0.0271	0.0238 *
Mercury	-1302-07-03 21:21 J	1246051.27	1246051.39	1246051.50	0.0294	0.0151
Mercury	-1302-09-30 10:04 J	1246139.79	1246139.92	1246140.05	0.0295	0.0010
Venus	-1302-10-18 12:57 J	1246157.98	1246158.04	1246158.13	0.0295	0.0274
Mercury	-1302-12-27 22:33 J	1246228.33	1246228.44	1246228.56	0.0296	0.0133
Mercury	-1301-03-25 11:02 J	1246316.92	1246316.96	1246317.01	0.0296	0.0274
Venus	-1301-06-04 15:07 J	1246387.92	1246388.13	1246388.35	0.0297	0.0011

Venus	-1300-01-20 18:14 J	1246618.16	1246618.26	1246618.36	0.0298	0.0262
Moon	-1295-12-30 00:43 J	1248787.33	1248787.53	1248787.74	0.0290	0.0146
Earth	-1295-12-30 03:21 J	1248787.44	1248787.64	1248787.85	0.0290	0.0156 *
Mercury	-1288-05-01 07:26 J	1251101.68	1251101.81	1251101.94	0.0267	0.0186
Mercury	-1288-07-29 03:21 J	1251190.46	1251190.64	1251190.82	0.0267	0.0041
Venus	-1288-08-19 17:45 J	1251212.19	1251212.24	1251212.29	0.0267	0.0258
Mercury	-1288-10-25 23:31 J	1251279.31	1251279.48	1251279.65	0.0266	0.0105
Mercury	-1287-01-22 19:55 J	1251368.27	1251368.33	1251368.38	0.0266	0.0252
Venus	-1287-04-05 17:45 J	1251441.04	1251441.24	1251441.45	0.0265	0.0068
Venus	-1287-11-20 17:02 J	1251670.03	1251670.21	1251670.40	0.0264	0.0120
Earth	-1279-06-29 12:28 J	1254447.77	1254448.02	1254448.27	0.0269	0.0038
Moon	-1279-06-29 16:04 J	1254447.92	1254448.17	1254448.41	0.0269	0.0031 *
Mercury	-1273-11-19 21:35 J	1256783.31	1256783.40	1256783.50	0.0293	0.0208
Mercury	-1272-02-16 10:33 J	1256871.81	1256871.94	1256872.07	0.0294	0.0066
Venus	-1272-04-29 13:55 J	1256943.97	1256944.08	1256944.19	0.0295	0.0249
Mercury	-1272-05-15 23:02 J	1256960.33	1256960.46	1256960.59	0.0295	0.0076
Mercury	-1272-08-12 11:31 J	1257048.90	1257048.98	1257049.07	0.0296	0.0217
Venus	-1272-12-15 15:35 J	1257173.94	1257174.15	1257174.36	0.0297	0.0016
Venus	-1271-08-02 18:00 J	1257404.21	1257404.25	1257404.32	0.0298	0.0287
Earth	-1266-12-23 21:35 J	1259373.24	1259373.40	1259373.57	0.0293	0.0210
Moon	-1266-12-23 23:31 J	1259373.32	1259373.48	1259373.65	0.0293	0.0219 *
Mars	-1262-07-11 04:33 J	1260668.58	1260668.69	1260668.81	0.0279	0.0259
Mercury	-1259-09-18 04:19 J	1261833.62	1261833.68	1261833.76	0.0267	0.0247
Mercury	-1259-12-16 00:14 J	1261922.35	1261922.51	1261922.69	0.0267	0.0102
Venus	-1258-03-01 16:19 J	1261998.10	1261998.18	1261998.27	0.0266	0.0242
Mercury	-1258-03-14 20:24 J	1262011.17	1262011.35	1262011.54	0.0266	0.0045
Mercury	-1258-06-11 16:33 J	1262100.07	1262100.19	1262100.33	0.0266	0.0192
Venus	-1258-10-16 16:33 J	1262226.98	1262227.19	1262227.40	0.0265	0.0052
Venus	-1257-06-01 15:50 J	1262455.99	1262456.16	1262456.35	0.0264	0.0136
Mars	-1246-06-15 10:19 J	1266486.84	1266486.93	1266487.03	0.0283	0.0263

Mercury	-1243-04-08 23:02 J	1267515.40	1267515.46	1267515.53	0.0293	0.0254
Mercury	-1243-07-06 11:45 J	1267603.87	1267603.99	1267604.12	0.0294	0.0113
Mercury	-1243-10-03 00:28 J	1267692.39	1267692.52	1267692.65	0.0295	0.0029
Venus	-1243-11-09 18:14 J	1267730.12	1267730.26	1267730.40	0.0295	0.0220
Mercury	-1243-12-30 12:57 J	1267780.94	1267781.04	1267781.15	0.0295	0.0170
Venus	-1242-06-27 20:09 J	1267960.14	1267960.34	1267960.55	0.0297	0.0047
Earth	-1236-12-30 21:35 J	1270338.23	1270338.40	1270338.57	0.0290	0.0206
Moon	-1236-12-30 23:31 J	1270338.33	1270338.48	1270338.66	0.0290	0.0203 *
Mercury	-1229-05-04 00:14 J	1272654.35	1272654.51	1272654.66	0.0267	0.0141
Mercury	-1229-07-31 20:09 J	1272743.16	1272743.34	1272743.52	0.0267	0.0005
Venus	-1229-09-10 20:09 J	1272784.22	1272784.34	1272784.47	0.0267	0.0215
Mercury	-1229-10-28 16:19 J	1272832.03	1272832.18	1272832.33	0.0266	0.0152
Venus	-1228-04-27 20:24 J	1273013.14	1273013.35	1273013.57	0.0265	0.0024
Venus	-1228-12-12 19:40 J	1273242.16	1273242.32	1273242.49	0.0264	0.0164
Earth	-1220-06-30 10:33 J	1275998.69	1275998.94	1275999.19	0.0269	0.0016
Moon	-1220-06-30 12:14 J	1275998.76	1275999.01	1275999.27	0.0269	0.0021 *
Mercury	-1214-11-23 12:28 J	1278335.91	1278336.02	1278336.13	0.0293	0.0166
Mercury	-1213-02-20 01:12 J	1278424.42	1278424.55	1278424.68	0.0294	0.0025
Mercury	-1213-05-18 13:40 J	1278512.95	1278513.07	1278513.19	0.0295	0.0116
Venus	-1213-05-21 19:40 J	1278516.16	1278516.32	1278516.48	0.0295	0.0194
Mercury	-1213-08-15 02:09 J	1278601.53	1278601.59	1278601.66	0.0295	0.0256
Venus	-1212-01-06 21:21 J	1278746.18	1278746.39	1278746.59	0.0297	0.0072
Moon	-1207-12-24 13:40 J	1280923.87	1280924.07	1280924.28	0.0293	0.0160
Earth	-1207-12-24 16:47 J	1280924.00	1280924.20	1280924.41	0.0293	0.0157 *
Mercury	-1200-09-20 20:52 J	1283386.26	1283386.37	1283386.50	0.0268	0.0202
Mercury	-1200-12-18 17:02 J	1283475.03	1283475.21	1283475.39	0.0267	0.0056
Mercury	-1199-03-17 13:12 J	1283563.88	1283564.05	1283564.23	0.0266	0.0091
Venus	-1199-03-23 18:43 J	1283570.15	1283570.28	1283570.42	0.0266	0.0199
Mercury	-1199-06-14 09:35 J	1283652.82	1283652.90	1283652.98	0.0266	0.0238
Venus	-1199-11-07 19:12 J	1283799.08	1283799.30	1283799.51	0.0265	0.0009

Venus	-1198-06-24 18:28 J	1284028.12	1284028.27	1284028.43	0.0264	0.0179
Moon	-1191-06-25 00:57 J	1286585.46	1286585.54	1286585.61	0.0268	0.0253
Earth	-1191-06-25 02:24 J	1286585.56	1286585.60	1286585.67	0.0268	0.0261 *
Mercury	-1184-04-11 13:55 J	1289067.99	1289068.08	1289068.17	0.0293	0.0213
Mercury	-1184-07-09 02:38 J	1289156.48	1289156.61	1289156.74	0.0294	0.0072
Mercury	-1184-10-05 15:07 J	1289245.01	1289245.13	1289245.26	0.0295	0.0070
Venus	-1184-12-02 00:00 J	1289302.33	1289302.50	1289302.68	0.0295	0.0163
Mercury	-1183-01-02 03:50 J	1289333.57	1289333.66	1289333.75	0.0295	0.0210
Venus	-1183-07-20 02:09 J	1289532.39	1289532.59	1289532.79	0.0297	0.0104
Earth	-1177-12-31 16:19 J	1291889.07	1291889.18	1291889.30	0.0290	0.0257
Moon	-1177-12-31 19:40 J	1291889.21	1291889.32	1291889.44	0.0290	0.0258 *
Mars	-1174-12-03 20:38 J	1292956.20	1292956.36	1292956.56	0.0279	0.0228
Mercury	-1170-02-07 20:52 J	1294118.29	1294118.37	1294118.45	0.0268	0.0241
Mercury	-1170-05-07 16:47 J	1294207.03	1294207.20	1294207.37	0.0268	0.0095
Mercury	-1170-08-04 12:57 J	1294295.86	1294296.04	1294296.22	0.0267	0.0052
Venus	-1170-10-03 22:47 J	1294356.29	1294356.45	1294356.61	0.0267	0.0171
Mercury	-1170-11-01 08:52 J	1294384.76	1294384.87	1294385.01	0.0266	0.0200
Venus	-1169-05-19 23:02 J	1294585.25	1294585.46	1294585.68	0.0265	0.0021
Venus	-1168-01-03 22:33 J	1294814.32	1294814.44	1294814.58	0.0264	0.0208
Moon	-1161-07-01 07:12 J	1297549.56	1297549.80	1297550.06	0.0269	0.0074
Earth	-1161-07-01 10:04 J	1297549.68	1297549.92	1297550.16	0.0269	0.0073 *
Mars	-1158-11-08 10:33 J	1298774.81	1298774.94	1298775.10	0.0281	0.0236
Mercury	-1155-08-29 14:52 J	1299800.07	1299800.12	1299800.18	0.0292	0.0263
Mercury	-1155-11-26 03:35 J	1299888.53	1299888.65	1299888.77	0.0293	0.0122
Mercury	-1154-02-22 16:19 J	1299977.05	1299977.18	1299977.31	0.0294	0.0019
Mercury	-1154-05-22 04:47 J	1300065.59	1300065.70	1300065.81	0.0295	0.0158
Venus	-1154-06-14 02:38 J	1300088.43	1300088.61	1300088.80	0.0295	0.0136
Venus	-1153-01-30 04:19 J	1300318.49	1300318.68	1300318.87	0.0296	0.0131
Moon	-1148-12-25 10:19 J	1302474.71	1302474.93	1302475.15	0.0292	0.0101
Earth	-1148-12-25 12:43 J	1302474.81	1302475.03	1302475.26	0.0292	0.0103 *

Mercury	-1141-09-23 13:55 J	1304938.93	1304939.08	1304939.22	0.0268	0.0155
Mercury	-1141-12-21 09:50 J	1305027.73	1305027.91	1305028.10	0.0267	0.0010
Mercury	-1140-03-20 06:00 J	1305116.60	1305116.75	1305116.91	0.0266	0.0139
Venus	-1140-04-14 21:35 J	1305142.23	1305142.40	1305142.58	0.0266	0.0155
Venus	-1140-11-29 22:04 J	1305371.21	1305371.42	1305371.63	0.0265	0.0036
Venus	-1139-07-16 21:35 J	1305600.29	1305600.40	1305600.51	0.0264	0.0223
Earth	-1132-06-26 01:55 J	1308136.43	1308136.58	1308136.75	0.0268	0.0205
Moon	-1132-06-26 04:19 J	1308136.53	1308136.68	1308136.86	0.0268	0.0199 *
Mercury	-1125-04-14 05:02 J	1310620.60	1310620.71	1310620.82	0.0293	0.0169
Mercury	-1125-07-11 17:45 J	1310709.11	1310709.24	1310709.37	0.0294	0.0028
Mercury	-1125-10-08 06:14 J	1310797.64	1310797.76	1310797.88	0.0295	0.0113
Venus	-1125-12-24 06:57 J	1310874.60	1310874.79	1310875.00	0.0295	0.0105
Mercury	-1124-01-04 18:43 J	1310886.22	1310886.28	1310886.35	0.0295	0.0252
Venus	-1124-08-11 09:07 J	1311104.70	1311104.88	1311105.06	0.0297	0.0163
Mercury	-1111-02-10 13:55 J	1315670.95	1315671.08	1315671.20	0.0268	0.0193
Mercury	-1111-05-10 09:50 J	1315759.73	1315759.91	1315760.09	0.0268	0.0047
Mercury	-1111-08-07 06:00 J	1315848.58	1315848.75	1315848.93	0.0267	0.0101
Venus	-1111-10-26 02:09 J	1315928.40	1315928.59	1315928.78	0.0267	0.0126
Mercury	-1111-11-04 02:24 J	1315937.54	1315937.60	1315937.67	0.0266	0.0249
Venus	-1110-06-12 02:24 J	1316157.40	1316157.60	1316157.81	0.0265	0.0066
Venus	-1109-01-27 01:55 J	1316386.54	1316386.58	1316386.65	0.0264	0.0254
Moon	-1102-07-03 07:55 J	1319100.63	1319100.83	1319101.06	0.0270	0.0134
Earth	-1102-07-03 11:16 J	1319100.76	1319100.97	1319101.19	0.0270	0.0134 *
Mercury	-1096-09-01 06:28 J	1321352.69	1321352.77	1321352.87	0.0292	0.0213
Mercury	-1096-11-28 19:12 J	1321441.17	1321441.30	1321441.43	0.0293	0.0073
Mercury	-1095-02-25 07:55 J	1321529.70	1321529.83	1321529.96	0.0294	0.0067
Mercury	-1095-05-24 20:09 J	1321618.25	1321618.34	1321618.44	0.0295	0.0207
Venus	-1095-07-06 11:45 J	1321660.79	1321660.99	1321661.20	0.0295	0.0074
Venus	-1094-02-21 13:12 J	1321890.90	1321891.05	1321891.22	0.0296	0.0194
Earth	-1089-12-26 12:14 J	1324025.77	1324026.01	1324026.25	0.0292	0.0040

Moon	-1089-12-26 13:55 J	1324025.85	1324026.08	1324026.31	0.0292	0.0035 *
Mars	-1085-04-27 00:57 J	1325243.36	1325243.54	1325243.74	0.0279	0.0224
Mercury	-1082-06-30 11:02 J	1326402.91	1326402.96	1326403.03	0.0268	0.0251
Mercury	-1082-09-27 07:12 J	1326491.63	1326491.80	1326491.97	0.0268	0.0105
Mercury	-1082-12-25 03:21 J	1326580.46	1326580.64	1326580.82	0.0267	0.0042
Mercury	-1081-03-22 23:31 J	1326669.36	1326669.48	1326669.62	0.0267	0.0190
Venus	-1081-05-07 01:26 J	1326714.37	1326714.56	1326714.76	0.0266	0.0110
Venus	-1081-12-22 02:09 J	1326943.39	1326943.59	1326943.79	0.0265	0.0082
Earth	-1073-06-27 04:04 J	1329687.47	1329687.67	1329687.89	0.0269	0.0143
Moon	-1073-06-27 07:26 J	1329687.61	1329687.81	1329688.04	0.0269	0.0139 *
Mars	-1069-04-02 19:26 J	1331063.12	1331063.31	1331063.51	0.0282	0.0196
Mercury	-1066-01-19 07:55 J	1332084.78	1332084.83	1332084.90	0.0292	0.0258
Mercury	-1066-04-17 20:52 J	1332173.25	1332173.37	1332173.49	0.0293	0.0117
Mercury	-1066-07-15 09:35 J	1332261.76	1332261.90	1332262.03	0.0294	0.0025
Mercury	-1066-10-11 22:04 J	1332350.31	1332350.42	1332350.53	0.0295	0.0163
Venus	-1065-01-16 16:47 J	1332447.00	1332447.20	1332447.42	0.0295	0.0042
Venus	-1065-09-02 18:43 J	1332677.15	1332677.28	1332677.42	0.0297	0.0227
Mercury	-1052-02-13 07:26 J	1337223.66	1337223.81	1337223.97	0.0268	0.0141
Mercury	-1052-05-13 03:35 J	1337312.47	1337312.65	1337312.83	0.0268	0.0006
Mercury	-1052-08-09 23:45 J	1337401.35	1337401.49	1337401.65	0.0267	0.0154
Venus	-1052-11-17 06:43 J	1337500.58	1337500.78	1337500.98	0.0266	0.0079
Venus	-1051-07-04 07:12 J	1337729.61	1337729.80	1337729.99	0.0265	0.0112
Earth	-1043-07-04 15:21 J	1340651.98	1340652.14	1340652.31	0.0270	0.0200
Moon	-1043-07-04 16:04 J	1340652.02	1340652.17	1340652.35	0.0270	0.0197 *
Mercury	-1037-09-03 22:47 J	1342905.34	1342905.45	1342905.57	0.0292	0.0157
Mercury	-1037-12-01 11:31 J	1342993.85	1342993.98	1342994.11	0.0293	0.0018
Venus	-1037-12-10 22:19 J	1343003.36	1343003.43	1343003.52	0.0293	0.0269
Mercury	-1036-02-28 00:00 J	1343082.38	1343082.50	1343082.62	0.0294	0.0122
Mercury	-1036-05-27 12:14 J	1343170.96	1343171.01	1343171.08	0.0295	0.0261
Venus	-1036-07-28 23:16 J	1343233.25	1343233.47	1343233.68	0.0295	0.0009

Venus	-1035-03-16 00:28 J	1343463.43	1343463.52	1343463.63	0.0296	0.0261
Earth	-1030-12-28 15:07 J	1345576.89	1345577.13	1345577.37	0.0292	0.0030
Moon	-1030-12-28 18:43 J	1345577.04	1345577.28	1345577.52	0.0292	0.0037 *
Mercury	-1023-07-03 05:16 J	1347955.60	1347955.72	1347955.85	0.0268	0.0195
Mercury	-1023-09-30 01:26 J	1348044.38	1348044.56	1348044.74	0.0268	0.0048
Venus	-1023-10-13 05:45 J	1348057.68	1348057.74	1348057.81	0.0268	0.0254
Mercury	-1023-12-27 21:35 J	1348133.23	1348133.40	1348133.57	0.0267	0.0099
Mercury	-1022-03-26 18:00 J	1348222.19	1348222.25	1348222.32	0.0267	0.0247
Venus	-1022-05-30 07:12 J	1348286.60	1348286.80	1348287.01	0.0266	0.0060
Venus	-1021-01-14 07:40 J	1348515.64	1348515.82	1348516.01	0.0265	0.0131
Moon	-1014-06-29 07:55 J	1351238.58	1351238.83	1351239.08	0.0269	0.0076
Earth	-1014-06-29 09:07 J	1351238.64	1351238.88	1351239.12	0.0269	0.0075 *
Mercury	-1007-01-22 00:43 J	1353637.43	1353637.53	1353637.63	0.0293	0.0199
Mercury	-1007-04-20 13:26 J	1353725.93	1353726.06	1353726.19	0.0293	0.0059
Venus	-1007-06-23 04:19 J	1353789.56	1353789.68	1353789.81	0.0294	0.0235
Mercury	-1007-07-18 01:55 J	1353814.45	1353814.58	1353814.71	0.0294	0.0081
Mercury	-1007-10-14 14:24 J	1353903.01	1353903.10	1353903.19	0.0295	0.0220
Venus	-1006-02-08 05:16 J	1354019.51	1354019.72	1354019.93	0.0296	0.0028
Venus	-1006-09-26 06:57 J	1354249.79	1354249.79	1354249.81	0.0297	0.0296

# 1ST MILLENNIUM BCE

This is a list of transits visible from Saturn in the 1st millennium BCE.

PLANET	MAX- TRANSIT TIME	C	START	MAX	END	SUNRAD	DEPTH	S
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Mars	-997-09-20 14:52 J	1357531.87	1357532.12	1357532.39	0.0279	0.0163
Mercury	-994-11-20 06:00 J	1358687.66	1358687.75	1358687.84	0.0269	0.0229
Mercury	-993-02-17 01:55 J	1358776.41	1358776.58	1358776.76	0.0268	0.0083
Venus	-993-04-24 11:31 J	1358843.88	1358843.98	1358844.11	0.0268	0.0224
Mercury	-993-05-15 22:04 J	1358865.25	1358865.42	1358865.60	0.0268	0.0065
Mercury	-993-08-12 18:28 J	1358954.17	1358954.27	1358954.38	0.0267	0.0213
Venus	-993-12-09 13:12 J	1359072.83	1359073.05	1359073.26	0.0266	0.0030
Venus	-992-07-26 13:12 J	1359301.90	1359302.05	1359302.23	0.0265	0.0163
Moon	-984-07-06 02:24 J	1362203.57	1362203.60	1362203.65	0.0270	0.0267
Mars	-981-08-27 23:31 J	1363352.24	1363352.48	1363352.73	0.0281	0.0123
Mercury	-978-06-11 03:21 J	1364369.56	1364369.64	1364369.72	0.0292	0.0232
Mercury	-978-09-07 16:04 J	1364458.04	1364458.17	1364458.29	0.0292	0.0093
Mercury	-978-12-05 04:33 J	1364546.56	1364546.69	1364546.82	0.0293	0.0046
Venus	-977-01-03 12:57 J	1364575.89	1364576.04	1364576.20	0.0293	0.0197
Mercury	-977-03-02 17:02 J	1364635.11	1364635.21	1364635.31	0.0294	0.0185
Venus	-977-08-20 13:40 J	1364805.87	1364806.07	1364806.28	0.0295	0.0066
Earth	-971-12-29 22:47 J	1367128.23	1367128.45	1367128.68	0.0291	0.0111
Moon	-971-12-29 23:16 J	1367128.25	1367128.47	1367128.71	0.0291	0.0119 *
Mercury	-964-07-06 00:28 J	1369508.36	1369508.52	1369508.68	0.0268	0.0132
Mercury	-964-10-02 20:38 J	1369597.17	1369597.36	1369597.54	0.0268	0.0015
Venus	-964-11-04 13:26 J	1369629.92	1369630.06	1369630.20	0.0267	0.0202
Mercury	-964-12-30 16:47 J	1369686.06	1369686.20	1369686.35	0.0267	0.0162
Venus	-963-06-21 14:38 J	1369858.90	1369859.11	1369859.32	0.0266	0.0008
Venus	-962-02-05 15:07 J	1370087.98	1370088.13	1370088.28	0.0265	0.0182
Moon	-955-06-30 13:12 J	1372789.80	1372790.05	1372790.30	0.0269	0.0007
Earth	-955-06-30 17:02 J	1372789.96	1372790.21	1372790.46	0.0269	0.0004 *
Mercury	-949-10-28 05:02 J	1375101.67	1375101.71	1375101.76	0.0292	0.0273
Mercury	-948-01-24 17:45 J	1375190.13	1375190.24	1375190.37	0.0293	0.0134
Mercury	-948-04-23 06:28 J	1375278.64	1375278.77	1375278.91	0.0294	0.0008
Venus	-948-07-15 19:12 J	1375362.13	1375362.30	1375362.48	0.0294	0.0162



Mercury	-948-07-20 18:57 J	1375367.18	1375367.29	1375367.41	0.0294	0.0145
Mercury	-948-10-17 07:26 J	1375455.78	1375455.81	1375455.84	0.0295	0.0283
Venus	-947-03-02 20:09 J	1375592.15	1375592.34	1375592.54	0.0296	0.0103
Moon	-942-12-24 06:28 J	1377714.62	1377714.77	1377714.94	0.0293	0.0214
Earth	-942-12-24 06:57 J	1377714.63	1377714.79	1377714.95	0.0293	0.0219 *
Jupiter	-940-11-13 14:52 J	1378404.81	1378405.12	1378405.49	0.0286	0.0204
Mercury	-935-11-23 01:12 J	1380240.42	1380240.55	1380240.70	0.0269	0.0165
Mercury	-934-02-19 21:21 J	1380329.21	1380329.39	1380329.58	0.0268	0.0020
Venus	-934-05-17 19:40 J	1380416.17	1380416.32	1380416.49	0.0268	0.0171
Mercury	-934-05-19 17:45 J	1380418.08	1380418.24	1380418.40	0.0268	0.0130
Venus	-933-01-01 21:07 J	1380645.17	1380645.38	1380645.60	0.0266	0.0025
Venus	-933-08-17 21:35 J	1380874.28	1380874.40	1380874.52	0.0265	0.0214
Earth	-926-06-25 20:24 J	1383377.28	1383377.35	1383377.43	0.0268	0.0254
Moon	-926-06-26 00:00 J	1383377.43	1383377.50	1383377.59	0.0268	0.0253 *
Mercury	-919-06-13 20:52 J	1385922.27	1385922.37	1385922.49	0.0292	0.0163
Mercury	-919-09-10 09:35 J	1386010.77	1386010.90	1386011.03	0.0293	0.0024
Mercury	-919-12-07 22:04 J	1386099.30	1386099.42	1386099.55	0.0293	0.0115
Venus	-918-01-26 05:31 J	1386148.55	1386148.73	1386148.93	0.0294	0.0122
Mercury	-918-03-06 10:33 J	1386187.88	1386187.94	1386188.01	0.0294	0.0253
Venus	-918-09-13 06:28 J	1386378.59	1386378.77	1386378.96	0.0295	0.0144
Moon	-912-12-31 07:26 J	1388679.65	1388679.81	1388679.98	0.0291	0.0212
Earth	-912-12-31 10:47 J	1388679.78	1388679.95	1388680.13	0.0291	0.0201 *
Mars	-908-02-14 12:14 J	1389820.71	1389821.01	1389821.31	0.0279	0.0091
Mercury	-905-04-11 00:28 J	1390972.41	1390972.52	1390972.64	0.0269	0.0209
Mercury	-905-07-08 20:38 J	1391061.18	1391061.36	1391061.54	0.0268	0.0063
Mercury	-905-10-05 16:47 J	1391150.02	1391150.20	1391150.37	0.0268	0.0084
Venus	-905-11-26 22:47 J	1391202.27	1391202.45	1391202.63	0.0267	0.0147
Mercury	-904-01-02 13:12 J	1391238.96	1391239.05	1391239.14	0.0267	0.0232
Venus	-904-07-13 23:45 J	1391431.28	1391431.49	1391431.70	0.0266	0.0047
Venus	-903-02-27 23:45 J	1391660.41	1391660.49	1391660.60	0.0265	0.0237

Moon	-896-07-02 02:38 J	1394341.38	1394341.61	1394341.85	0.0270	0.0072
Earth	-896-07-02 03:21 J	1394341.41	1394341.64	1394341.88	0.0270	0.0079 *
Mars	-892-01-22 04:19 J	1395641.41	1395641.68	1395641.95	0.0282	0.0047
Mercury	-890-10-31 23:02 J	1396654.37	1396654.46	1396654.56	0.0292	0.0201
Mercury	-889-01-28 11:45 J	1396742.86	1396742.99	1396743.12	0.0293	0.0061
Mercury	-889-04-26 00:14 J	1396831.39	1396831.51	1396831.64	0.0294	0.0079
Mercury	-889-07-23 12:43 J	1396919.95	1396920.03	1396920.12	0.0295	0.0217
Venus	-889-08-07 12:43 J	1396934.83	1396935.03	1396935.24	0.0295	0.0084
Venus	-888-03-25 13:55 J	1397164.91	1397165.08	1397165.24	0.0296	0.0182
Earth	-883-12-25 20:09 J	1399266.13	1399266.34	1399266.56	0.0292	0.0124
Moon	-883-12-25 23:45 J	1399266.27	1399266.49	1399266.71	0.0292	0.0115 *
Mercury	-876-08-29 01:40 J	1401704.49	1401704.57	1401704.65	0.0269	0.0240
Mercury	-876-11-25 21:35 J	1401793.23	1401793.40	1401793.57	0.0268	0.0094
Mercury	-875-02-22 17:45 J	1401882.06	1401882.24	1401882.42	0.0268	0.0053
Mercury	-875-05-22 14:09 J	1401970.97	1401971.09	1401971.21	0.0267	0.0201
Venus	-875-06-09 05:31 J	1401988.54	1401988.73	1401988.93	0.0267	0.0115
Venus	-874-01-24 06:43 J	1402217.58	1402217.78	1402217.99	0.0266	0.0079
Earth	-867-06-27 07:12 J	1404928.63	1404928.80	1404929.00	0.0269	0.0174
Moon	-867-06-27 08:52 J	1404928.68	1404928.87	1404929.07	0.0269	0.0173 *
Mercury	-860-03-20 02:24 J	1407386.52	1407386.60	1407386.69	0.0292	0.0227
Mercury	-860-06-16 15:07 J	1407475.01	1407475.13	1407475.26	0.0292	0.0088
Mercury	-860-09-13 03:50 J	1407563.53	1407563.66	1407563.79	0.0293	0.0051
Mercury	-860-12-10 16:04 J	1407652.08	1407652.17	1407652.28	0.0294	0.0190
Venus	-859-02-18 00:14 J	1407721.30	1407721.51	1407721.72	0.0294	0.0041
Venus	-859-10-06 01:12 J	1407951.42	1407951.55	1407951.69	0.0296	0.0225
Mercury	-846-04-14 21:21 J	1412525.24	1412525.39	1412525.55	0.0268	0.0135
Mercury	-846-07-12 17:31 J	1412614.05	1412614.23	1412614.41	0.0268	0.0012
Mercury	-846-10-09 13:55 J	1412702.93	1412703.08	1412703.22	0.0267	0.0160
Venus	-846-12-20 09:35 J	1412774.70	1412774.90	1412775.11	0.0267	0.0088
Venus	-845-08-05 10:19 J	1413003.74	1413003.93	1413004.13	0.0266	0.0105

Earth	-837-07-03 15:07 J	1415892.94	1415893.13	1415893.34	0.0270	0.0162
Moon	-837-07-03 18:28 J	1415893.07	1415893.27	1415893.47	0.0270	0.0154 *
Mercury	-831-08-07 04:33 J	1418118.64	1418118.69	1418118.75	0.0292	0.0265
Mercury	-831-11-03 17:16 J	1418207.10	1418207.22	1418207.34	0.0293	0.0126
Venus	-830-01-13 06:57 J	1418277.70	1418277.79	1418277.88	0.0293	0.0264
Mercury	-830-01-31 06:00 J	1418295.61	1418295.75	1418295.88	0.0293	0.0014
Mercury	-830-04-29 18:28 J	1418384.16	1418384.27	1418384.38	0.0294	0.0152
Mercury	-830-07-27 06:43 J	1418472.77	1418472.78	1418472.81	0.0295	0.0290
Venus	-830-08-31 07:26 J	1418507.59	1418507.81	1418508.02	0.0295	0.0007
Venus	-829-04-17 08:24 J	1418737.77	1418737.85	1418737.95	0.0296	0.0265
Earth	-824-12-27 12:00 J	1420817.76	1420818.00	1420818.24	0.0292	0.0024
Moon	-824-12-27 14:24 J	1420817.85	1420818.10	1420818.35	0.0292	0.0013 *
Mars	-820-07-12 09:07 J	1422110.56	1422110.88	1422111.19	0.0279	0.0017
Mercury	-817-08-31 22:33 J	1423257.30	1423257.44	1423257.58	0.0269	0.0165
Venus	-817-11-14 14:38 J	1423332.05	1423332.11	1423332.19	0.0268	0.0252
Mercury	-817-11-28 18:43 J	1423346.10	1423346.28	1423346.46	0.0268	0.0019
Mercury	-816-02-25 14:52 J	1423434.96	1423435.12	1423435.28	0.0267	0.0129
Venus	-816-07-01 16:33 J	1423560.98	1423561.19	1423561.40	0.0267	0.0056
Venus	-815-02-15 17:16 J	1423790.05	1423790.22	1423790.41	0.0266	0.0137
Moon	-808-06-28 16:47 J	1426479.96	1426480.20	1426480.44	0.0269	0.0093
Earth	-808-06-28 19:26 J	1426480.08	1426480.31	1426480.55	0.0269	0.0091 *
Mars	-804-06-19 05:31 J	1427931.46	1427931.73	1427932.00	0.0282	0.0064
Mercury	-802-12-25 08:09 J	1428850.83	1428850.84	1428850.86	0.0291	0.0288
Mercury	-801-03-22 20:52 J	1428939.26	1428939.37	1428939.49	0.0292	0.0149
Mercury	-801-06-19 09:35 J	1429027.77	1429027.90	1429028.03	0.0293	0.0010
Venus	-801-07-25 19:26 J	1429064.18	1429064.31	1429064.46	0.0293	0.0220
Mercury	-801-09-15 22:04 J	1429116.30	1429116.42	1429116.54	0.0293	0.0128
Mercury	-801-12-13 10:33 J	1429204.89	1429204.94	1429204.99	0.0294	0.0265
Venus	-800-03-12 19:55 J	1429294.12	1429294.33	1429294.54	0.0295	0.0042
Mercury	-787-01-18 23:02 J	1433989.34	1433989.46	1433989.58	0.0269	0.0201

Mercury	-787-04-17 18:57 J	1434078.11	1434078.29	1434078.47	0.0268	0.0055
Venus	-787-05-27 19:55 J	1434118.23	1434118.33	1434118.46	0.0268	0.0223
Mercury	-787-07-15 15:07 J	1434166.96	1434167.13	1434167.30	0.0268	0.0091
Mercury	-787-10-12 11:16 J	1434255.90	1434255.97	1434256.06	0.0267	0.0239
Venus	-786-01-11 21:35 J	1434347.19	1434347.40	1434347.61	0.0266	0.0028
Venus	-786-08-28 22:04 J	1434576.26	1434576.42	1434576.59	0.0265	0.0163
Earth	-778-07-06 03:50 J	1437444.56	1437444.66	1437444.76	0.0270	0.0247
Moon	-778-07-06 06:57 J	1437444.67	1437444.79	1437444.91	0.0270	0.0239 *
Mercury	-772-08-09 22:47 J	1439671.35	1439671.45	1439671.56	0.0292	0.0189
Mercury	-772-11-06 11:31 J	1439759.85	1439759.98	1439760.12	0.0293	0.0050
Mercury	-771-02-03 00:00 J	1439848.38	1439848.50	1439848.63	0.0294	0.0090
Venus	-771-02-05 01:55 J	1439850.42	1439850.58	1439850.75	0.0294	0.0184
Mercury	-771-05-02 12:28 J	1439936.94	1439937.02	1439937.11	0.0295	0.0228
Venus	-771-09-23 02:24 J	1440080.40	1440080.60	1440080.81	0.0296	0.0080
Moon	-765-12-29 02:38 J	1442369.38	1442369.61	1442369.85	0.0291	0.0091
Earth	-765-12-29 04:47 J	1442369.47	1442369.70	1442369.93	0.0291	0.0079 *
Mercury	-758-06-08 00:00 J	1444721.41	1444721.50	1444721.59	0.0269	0.0233
Mercury	-758-09-04 19:55 J	1444810.16	1444810.33	1444810.50	0.0268	0.0088
Mercury	-758-12-02 16:04 J	1444898.99	1444899.17	1444899.35	0.0268	0.0059
Venus	-758-12-08 02:38 J	1444904.47	1444904.61	1444904.77	0.0268	0.0192
Mercury	-757-02-29 12:14 J	1444987.90	1444988.01	1444988.13	0.0267	0.0207
Venus	-757-07-24 04:04 J	1445133.46	1445133.67	1445133.89	0.0266	0.0007
Venus	-756-03-10 04:33 J	1445362.56	1445362.69	1445362.84	0.0265	0.0195
Moon	-749-06-30 03:50 J	1448031.42	1448031.66	1448031.91	0.0270	0.0011
Earth	-749-06-30 07:12 J	1448031.55	1448031.80	1448032.05	0.0270	0.0009 *
Mercury	-743-12-28 02:24 J	1450403.52	1450403.60	1450403.70	0.0292	0.0213
Mercury	-742-03-26 15:07 J	1450492.01	1450492.13	1450492.26	0.0292	0.0074
Mercury	-742-06-23 03:50 J	1450580.53	1450580.66	1450580.79	0.0293	0.0065
Venus	-742-08-18 14:24 J	1450636.91	1450637.10	1450637.29	0.0294	0.0140
Mercury	-742-09-19 16:19 J	1450669.09	1450669.18	1450669.27	0.0294	0.0203

Venus	-741-04-04 14:52 J	1450866.94	1450867.12	1450867.32	0.0295	0.0125
Earth	-736-12-23 18:14 J	1452956.13	1452956.26	1452956.41	0.0293	0.0237
Moon	-736-12-23 20:09 J	1452956.20	1452956.34	1452956.49	0.0293	0.0229 *
Mars	-732-12-07 12:28 J	1454400.75	1454401.02	1454401.30	0.0278	0.0141
Mercury	-729-10-25 00:43 J	1455453.51	1455453.53	1455453.56	0.0269	0.0265
Mercury	-728-01-21 20:38 J	1455542.20	1455542.36	1455542.52	0.0268	0.0121
Mercury	-728-04-20 16:33 J	1455631.01	1455631.19	1455631.38	0.0268	0.0026
Venus	-728-06-19 08:38 J	1455690.69	1455690.86	1455691.03	0.0267	0.0161
Mercury	-728-07-18 12:43 J	1455719.90	1455720.03	1455720.18	0.0267	0.0172
Venus	-727-02-03 09:50 J	1455919.70	1455919.91	1455920.12	0.0266	0.0033
Venus	-727-09-20 09:35 J	1456148.80	1456148.90	1456149.03	0.0265	0.0223
Mars	-716-11-13 11:02 J	1460220.74	1460220.96	1460221.21	0.0283	0.0146
Mercury	-713-05-16 04:04 J	1461135.61	1461135.67	1461135.74	0.0292	0.0255
Mercury	-713-08-12 17:02 J	1461224.09	1461224.21	1461224.33	0.0293	0.0115
Mercury	-713-11-09 05:31 J	1461312.60	1461312.73	1461312.87	0.0294	0.0026
Mercury	-712-02-05 18:00 J	1461401.15	1461401.25	1461401.37	0.0294	0.0163
Venus	-712-02-27 19:55 J	1461423.14	1461423.33	1461423.53	0.0294	0.0105
Venus	-712-10-15 20:52 J	1461653.20	1461653.37	1461653.55	0.0296	0.0161
Moon	-706-12-31 17:45 J	1463921.07	1463921.24	1463921.43	0.0291	0.0194
Earth	-706-12-31 21:21 J	1463921.21	1463921.39	1463921.58	0.0291	0.0181 *
Mercury	-699-06-10 21:07 J	1466274.24	1466274.38	1466274.53	0.0268	0.0156
Mercury	-699-09-07 17:16 J	1466363.04	1466363.22	1466363.40	0.0268	0.0010
Mercury	-699-12-05 13:26 J	1466451.90	1466452.06	1466452.22	0.0267	0.0137
Venus	-699-12-30 14:38 J	1466476.93	1466477.11	1466477.30	0.0267	0.0131
Venus	-698-08-16 15:35 J	1466705.95	1466706.15	1466706.36	0.0266	0.0062
Venus	-697-04-01 15:35 J	1466935.10	1466935.15	1466935.22	0.0265	0.0252
Earth	-690-07-02 17:31 J	1469582.99	1469583.23	1469583.47	0.0270	0.0073
Moon	-690-07-02 18:00 J	1469583.02	1469583.25	1469583.48	0.0270	0.0068 *
Mercury	-684-10-03 07:40 J	1471867.79	1471867.82	1471867.86	0.0292	0.0280
Mercury	-684-12-30 20:24 J	1471956.24	1471956.35	1471956.47	0.0292	0.0141

Mercury	-683-03-29 09:07 J	1472044.75	1472044.88	1472045.01	0.0293	0.0003
Mercury	-683-06-25 21:35 J	1472133.29	1472133.40	1472133.52	0.0294	0.0137
Venus	-683-09-10 07:55 J	1472209.63	1472209.83	1472210.04	0.0294	0.0061
Mercury	-683-09-22 10:04 J	1472221.88	1472221.92	1472221.97	0.0294	0.0274
Venus	-682-04-28 09:07 J	1472439.73	1472439.88	1472440.03	0.0296	0.0205
Earth	-677-12-25 11:02 J	1474507.75	1474507.96	1474508.18	0.0292	0.0133
Moon	-677-12-25 14:38 J	1474507.89	1474508.11	1474508.33	0.0292	0.0125 *
Mercury	-670-10-28 22:04 J	1477006.30	1477006.42	1477006.56	0.0269	0.0187
Mercury	-669-01-25 18:00 J	1477095.07	1477095.25	1477095.44	0.0268	0.0042
Mercury	-669-04-23 14:09 J	1477183.92	1477184.09	1477184.26	0.0267	0.0105
Venus	-669-07-11 20:38 J	1477263.17	1477263.36	1477263.56	0.0267	0.0100
Mercury	-669-07-21 10:33 J	1477272.88	1477272.94	1477273.00	0.0267	0.0251
Venus	-668-02-25 21:21 J	1477492.19	1477492.39	1477492.59	0.0266	0.0092
Moon	-661-06-26 12:28 J	1480169.86	1480170.02	1480170.21	0.0268	0.0195
Earth	-661-06-26 13:26 J	1480169.90	1480170.06	1480170.24	0.0268	0.0192 *
Mercury	-654-05-19 21:50 J	1482688.31	1482688.41	1482688.51	0.0292	0.0186
Venus	-654-08-05 12:00 J	1482765.97	1482766.00	1482766.03	0.0293	0.0289
Mercury	-654-08-16 10:33 J	1482776.81	1482776.94	1482777.07	0.0293	0.0047
Mercury	-654-11-12 23:02 J	1482865.34	1482865.46	1482865.59	0.0294	0.0092
Mercury	-653-02-09 11:31 J	1482953.90	1482953.98	1482954.06	0.0295	0.0230
Venus	-653-03-22 12:14 J	1482995.80	1482996.01	1482996.22	0.0295	0.0028
Venus	-653-11-07 13:26 J	1483225.94	1483226.06	1483226.19	0.0296	0.0238
Earth	-646-01-02 11:16 J	1485472.91	1485472.97	1485473.05	0.0291	0.0277
Moon	-646-01-02 10:33 J	1485472.92	1485472.94	1485472.96	0.0291	0.0289 *
Mars	-643-05-04 04:33 J	1486690.55	1486690.69	1486690.86	0.0278	0.0242
Mercury	-640-03-16 22:19 J	1487738.34	1487738.43	1487738.53	0.0269	0.0225
Venus	-640-06-06 23:45 J	1487820.49	1487820.49	1487820.50	0.0268	0.0268
Mercury	-640-06-13 18:14 J	1487827.09	1487827.26	1487827.43	0.0268	0.0080
Mercury	-640-09-10 14:09 J	1487915.92	1487916.09	1487916.27	0.0267	0.0066
Mercury	-640-12-08 10:19 J	1488004.83	1488004.93	1488005.05	0.0267	0.0213

Venus	-639-01-22 01:40 J	1488049.36	1488049.57	1488049.77	0.0267	0.0073
Venus	-639-09-08 02:09 J	1488278.41	1488278.59	1488278.78	0.0265	0.0120
Earth	-631-07-04 01:26 J	1491134.35	1491134.56	1491134.77	0.0270	0.0149
Moon	-631-07-04 05:02 J	1491134.51	1491134.71	1491134.93	0.0270	0.0141 *
Mars	-627-04-10 00:57 J	1492510.41	1492510.54	1492510.70	0.0283	0.0239
Mercury	-625-10-06 00:57 J	1493420.45	1493420.54	1493420.63	0.0292	0.0215
Mercury	-624-01-02 13:40 J	1493508.94	1493509.07	1493509.20	0.0293	0.0076
Venus	-624-02-14 22:47 J	1493552.34	1493552.45	1493552.56	0.0293	0.0248
Mercury	-624-04-01 02:24 J	1493597.47	1493597.60	1493597.73	0.0293	0.0063
Mercury	-624-06-28 14:52 J	1493686.02	1493686.12	1493686.21	0.0294	0.0201
Venus	-624-10-02 23:16 J	1493782.26	1493782.47	1493782.68	0.0295	0.0014
Venus	-623-05-21 00:43 J	1494012.47	1494012.53	1494012.60	0.0296	0.0281
Earth	-618-12-28 00:43 J	1496059.29	1496059.53	1496059.77	0.0292	0.0036
Moon	-618-12-28 01:55 J	1496059.33	1496059.58	1496059.83	0.0292	0.0027 *
Mercury	-611-08-03 23:16 J	1498470.42	1498470.47	1498470.53	0.0269	0.0255
Mercury	-611-10-31 19:12 J	1498559.13	1498559.30	1498559.46	0.0268	0.0111
Venus	-611-12-18 06:14 J	1498606.67	1498606.76	1498606.87	0.0268	0.0235
Mercury	-610-01-28 15:07 J	1498647.95	1498648.13	1498648.31	0.0268	0.0034
Mercury	-610-04-27 11:16 J	1498736.84	1498736.97	1498737.11	0.0267	0.0181
Venus	-610-08-04 07:40 J	1498835.61	1498835.82	1498836.03	0.0266	0.0041
Venus	-609-03-20 07:55 J	1499064.66	1499064.83	1499065.01	0.0265	0.0150
Moon	-602-06-28 17:16 J	1501721.01	1501721.22	1501721.45	0.0268	0.0125
Earth	-602-06-28 21:07 J	1501721.16	1501721.38	1501721.61	0.0268	0.0117 *
Mercury	-595-02-23 01:55 J	1504152.53	1504152.58	1504152.64	0.0292	0.0263
Mercury	-595-05-22 14:52 J	1504241.00	1504241.12	1504241.24	0.0293	0.0124
Mercury	-595-08-19 03:21 J	1504329.51	1504329.64	1504329.78	0.0293	0.0018
Venus	-595-08-28 01:55 J	1504338.44	1504338.58	1504338.72	0.0294	0.0219
Mercury	-595-11-15 16:04 J	1504418.06	1504418.17	1504418.28	0.0294	0.0153
Mercury	-594-02-12 04:19 J	1504506.67	1504506.68	1504506.71	0.0295	0.0291
Venus	-594-04-15 02:24 J	1504568.39	1504568.60	1504568.81	0.0295	0.0044

Mercury	-581-03-19 18:28 J	1509291.13	1509291.27	1509291.42	0.0268	0.0155
Mercury	-581-06-16 14:24 J	1509379.92	1509380.10	1509380.29	0.0268	0.0011
Venus	-581-06-29 09:35 J	1509392.77	1509392.90	1509393.03	0.0268	0.0211
Mercury	-581-09-13 10:33 J	1509468.79	1509468.94	1509469.10	0.0267	0.0136
Venus	-580-02-13 11:02 J	1509621.75	1509621.96	1509622.17	0.0266	0.0017
Venus	-580-09-30 11:31 J	1509850.82	1509850.98	1509851.14	0.0265	0.0174
Earth	-572-07-05 07:12 J	1512685.66	1512685.80	1512685.95	0.0270	0.0221
Moon	-572-07-05 08:24 J	1512685.69	1512685.85	1512686.02	0.0270	0.0209 *
Mercury	-566-10-09 17:31 J	1514973.12	1514973.23	1514973.34	0.0292	0.0156
Mercury	-565-01-06 06:14 J	1515061.63	1515061.76	1515061.90	0.0293	0.0018
Venus	-565-03-09 11:16 J	1515124.80	1515124.97	1515125.14	0.0294	0.0180
Mercury	-565-04-03 18:57 J	1515150.17	1515150.29	1515150.41	0.0294	0.0121
Mercury	-565-07-01 07:12 J	1515238.75	1515238.80	1515238.87	0.0294	0.0259
Venus	-565-10-25 12:00 J	1515354.80	1515355.00	1515355.20	0.0295	0.0084
Moon	-559-12-29 06:28 J	1517610.53	1517610.77	1517611.01	0.0292	0.0063
Earth	-559-12-29 09:50 J	1517610.67	1517610.91	1517611.15	0.0292	0.0050 *
Mercury	-552-08-06 19:26 J	1520023.18	1520023.31	1520023.44	0.0269	0.0186
Mercury	-552-11-03 15:21 J	1520111.96	1520112.14	1520112.32	0.0268	0.0042
Venus	-551-01-09 15:50 J	1520179.01	1520179.16	1520179.32	0.0268	0.0178
Mercury	-551-01-31 11:16 J	1520200.80	1520200.97	1520201.14	0.0267	0.0104
Mercury	-551-04-30 07:26 J	1520289.76	1520289.81	1520289.88	0.0267	0.0251
Venus	-551-08-26 17:02 J	1520407.99	1520408.21	1520408.42	0.0266	0.0016
Venus	-550-04-12 16:47 J	1520637.07	1520637.20	1520637.34	0.0265	0.0205
Moon	-543-06-30 00:57 J	1523272.31	1523272.54	1523272.78	0.0268	0.0056
Earth	-543-06-30 02:09 J	1523272.34	1523272.59	1523272.84	0.0268	0.0048 *
Mercury	-536-02-25 18:14 J	1525705.17	1525705.26	1525705.36	0.0292	0.0208
Mercury	-536-05-25 06:57 J	1525793.66	1525793.79	1525793.92	0.0293	0.0070
Mercury	-536-08-21 19:40 J	1525882.19	1525882.32	1525882.45	0.0294	0.0069
Venus	-536-09-19 12:57 J	1525910.86	1525911.04	1525911.22	0.0294	0.0153
Mercury	-536-11-18 08:09 J	1525970.75	1525970.84	1525970.93	0.0294	0.0207



Venus	-535-05-07 13:26 J	1526140.87	1526141.06	1526141.26	0.0296	0.0112
Moon	-530-12-23 11:31 J	1528196.96	1528196.98	1528197.00	0.0294	0.0292
Mercury	-523-12-24 18:00 J	1530755.17	1530755.25	1530755.35	0.0269	0.0234
Mercury	-522-03-23 13:55 J	1530843.91	1530844.08	1530844.26	0.0268	0.0090
Mercury	-522-06-20 10:04 J	1530932.74	1530932.92	1530933.10	0.0267	0.0056
Venus	-522-07-22 18:00 J	1530965.08	1530965.25	1530965.42	0.0267	0.0156
Mercury	-522-09-17 06:14 J	1531021.64	1531021.76	1531021.88	0.0267	0.0202
Venus	-521-03-07 18:57 J	1531194.08	1531194.29	1531194.50	0.0266	0.0038
Venus	-521-10-22 19:12 J	1531423.19	1531423.30	1531423.41	0.0265	0.0227
Mercury	-507-07-15 20:24 J	1536437.29	1536437.35	1536437.43	0.0292	0.0245
Mercury	-507-10-12 09:21 J	1536525.77	1536525.89	1536526.02	0.0293	0.0106
Mercury	-506-01-08 22:04 J	1536614.29	1536614.42	1536614.55	0.0293	0.0033
Venus	-506-04-01 20:52 J	1536697.18	1536697.37	1536697.57	0.0294	0.0117
Mercury	-506-04-07 10:33 J	1536702.84	1536702.94	1536703.05	0.0294	0.0171
Venus	-506-11-17 21:50 J	1536927.24	1536927.41	1536927.60	0.0296	0.0149
Moon	-500-12-30 12:00 J	1539161.80	1539162.00	1539162.21	0.0292	0.0142
Earth	-500-12-30 14:38 J	1539161.90	1539162.11	1539162.33	0.0292	0.0126 *
Mercury	-493-05-12 18:43 J	1541487.27	1541487.28	1541487.31	0.0269	0.0267
Mercury	-493-08-09 14:38 J	1541575.95	1541576.11	1541576.27	0.0268	0.0123
Mercury	-493-11-06 10:33 J	1541664.76	1541664.94	1541665.12	0.0268	0.0022
Venus	-492-01-31 23:45 J	1541751.30	1541751.49	1541751.67	0.0267	0.0125
Mercury	-492-02-03 06:28 J	1541753.64	1541753.77	1541753.92	0.0267	0.0169
Venus	-492-09-18 00:14 J	1541980.31	1541980.51	1541980.72	0.0266	0.0069
Venus	-491-05-05 00:14 J	1542209.47	1542209.51	1542209.56	0.0265	0.0257
Earth	-484-07-01 05:02 J	1544823.46	1544823.71	1544823.96	0.0268	0.0018
Moon	-484-07-01 07:55 J	1544823.58	1544823.83	1544824.07	0.0268	0.0008 *
Mars	-481-12-10 20:52 J	1546082.31	1546082.37	1546082.46	0.0280	0.0267
Mercury	-477-02-29 09:50 J	1547257.80	1547257.91	1547258.03	0.0292	0.0159
Mercury	-477-05-27 22:33 J	1547346.31	1547346.44	1547346.58	0.0293	0.0022
Mercury	-477-08-24 11:16 J	1547434.85	1547434.97	1547435.09	0.0294	0.0118

Venus	-477-10-11 22:04 J	1547483.22	1547483.42	1547483.62	0.0294	0.0091
Mercury	-477-11-20 23:45 J	1547523.43	1547523.49	1547523.55	0.0294	0.0255
Venus	-476-05-29 22:47 J	1547713.28	1547713.45	1547713.62	0.0296	0.0174
Earth	-471-12-24 10:19 J	1549747.79	1549747.93	1549748.08	0.0294	0.0234
Moon	-471-12-24 12:14 J	1549747.85	1549748.01	1549748.17	0.0294	0.0219 *
Mercury	-464-12-27 12:43 J	1552307.89	1552308.03	1552308.16	0.0269	0.0176
Mercury	-463-03-26 08:38 J	1552396.68	1552396.86	1552397.04	0.0268	0.0031
Mercury	-463-06-23 04:33 J	1552485.53	1552485.69	1552485.86	0.0267	0.0115
Venus	-463-08-14 00:28 J	1552537.32	1552537.52	1552537.71	0.0267	0.0105
Mercury	-463-09-20 00:57 J	1552574.51	1552574.54	1552574.57	0.0267	0.0261
Venus	-462-03-31 01:12 J	1552766.35	1552766.55	1552766.75	0.0266	0.0088
Moon	-455-06-25 22:04 J	1555410.35	1555410.42	1555410.51	0.0267	0.0253
Earth	-455-06-26 00:57 J	1555410.46	1555410.54	1555410.64	0.0267	0.0248 *
Mercury	-448-07-18 11:45 J	1557989.90	1557989.99	1557990.09	0.0292	0.0200
Mercury	-448-10-15 00:28 J	1558078.39	1558078.52	1558078.66	0.0293	0.0062
Mercury	-447-01-11 13:12 J	1558166.92	1558167.05	1558167.18	0.0293	0.0077
Mercury	-447-04-10 01:40 J	1558255.48	1558255.57	1558255.66	0.0294	0.0215
Venus	-447-04-24 04:19 J	1558269.47	1558269.68	1558269.89	0.0294	0.0057
Venus	-447-12-10 05:31 J	1558499.58	1558499.73	1558499.88	0.0296	0.0208
Earth	-441-12-31 14:52 J	1560712.95	1560713.12	1560713.31	0.0292	0.0192
Moon	-441-12-31 17:02 J	1560713.05	1560713.21	1560713.38	0.0292	0.0209 *
Mercury	-434-05-16 12:57 J	1563039.94	1563040.04	1563040.16	0.0269	0.0210
Mercury	-434-08-13 08:52 J	1563128.69	1563128.87	1563129.05	0.0268	0.0066
Mercury	-434-11-10 04:47 J	1563217.53	1563217.70	1563217.88	0.0268	0.0080
Mercury	-433-02-07 00:57 J	1563306.45	1563306.54	1563306.65	0.0267	0.0226
Venus	-433-02-24 05:31 J	1563323.53	1563323.73	1563323.94	0.0267	0.0074
Venus	-433-10-10 06:00 J	1563552.57	1563552.75	1563552.95	0.0266	0.0119
Earth	-425-07-02 05:31 J	1566374.50	1566374.73	1566374.97	0.0268	0.0077
Moon	-425-07-02 08:38 J	1566374.61	1566374.86	1566375.11	0.0268	0.0067 *
Jupiter	-424-12-01 03:07 J	1566891.53	1566891.63	1566891.74	0.0272	0.0264

Mercury	-419-12-05 12:14 J	1568721.95	1568722.01	1568722.08	0.0291	0.0253
Mercury	-418-03-04 01:12 J	1568810.42	1568810.55	1568810.67	0.0292	0.0115
Venus	-418-03-19 05:16 J	1568825.72	1568825.72	1568825.73	0.0292	0.0292
Mercury	-418-05-31 13:40 J	1568898.94	1568899.07	1568899.21	0.0293	0.0025
Mercury	-418-08-28 02:09 J	1568987.49	1568987.59	1568987.71	0.0294	0.0161
Venus	-418-11-04 05:02 J	1569055.50	1569055.71	1569055.92	0.0294	0.0033
Venus	-417-06-21 06:00 J	1569285.63	1569285.75	1569285.88	0.0296	0.0233
Moon	-412-12-25 06:43 J	1571298.57	1571298.78	1571298.99	0.0294	0.0155
Earth	-412-12-25 09:21 J	1571298.70	1571298.89	1571299.09	0.0294	0.0172 *
Mercury	-405-10-02 10:19 J	1573771.92	1573771.93	1573771.96	0.0269	0.0268
Mercury	-405-12-30 06:14 J	1573860.60	1573860.76	1573860.93	0.0269	0.0123
Venus	-404-01-19 03:07 J	1573880.57	1573880.63	1573880.71	0.0268	0.0253
Mercury	-404-03-29 02:24 J	1573949.41	1573949.60	1573949.78	0.0268	0.0023
Mercury	-404-06-25 22:19 J	1574038.30	1574038.43	1574038.58	0.0267	0.0169
Venus	-404-09-05 05:16 J	1574109.51	1574109.72	1574109.92	0.0267	0.0057
Venus	-403-04-22 06:00 J	1574338.57	1574338.75	1574338.93	0.0265	0.0136
Moon	-396-06-26 21:21 J	1576961.23	1576961.39	1576961.55	0.0267	0.0199
Earth	-396-06-27 00:14 J	1576961.35	1576961.51	1576961.70	0.0267	0.0191 *
Mars	-392-05-06 02:38 J	1578370.46	1578370.61	1578370.77	0.0280	0.0230
Mercury	-389-07-21 02:52 J	1579542.51	1579542.62	1579542.73	0.0292	0.0158
Venus	-389-09-28 10:19 J	1579611.85	1579611.93	1579612.04	0.0293	0.0261
Mercury	-389-10-17 15:35 J	1579631.01	1579631.15	1579631.28	0.0293	0.0021
Mercury	-388-01-14 04:04 J	1579719.55	1579719.67	1579719.79	0.0294	0.0118
Mercury	-388-04-12 16:33 J	1579808.13	1579808.19	1579808.26	0.0294	0.0255
Venus	-388-05-16 10:33 J	1579841.73	1579841.94	1579842.15	0.0294	0.0004
Venus	-387-01-01 11:31 J	1580071.90	1580071.98	1580072.09	0.0296	0.0266
Earth	-381-01-02 12:28 J	1582263.90	1582264.02	1582264.14	0.0292	0.0249
Moon	-381-01-02 15:35 J	1582264.06	1582264.15	1582264.26	0.0292	0.0266 *
Mercury	-375-05-19 06:14 J	1584592.62	1584592.76	1584592.91	0.0269	0.0160
Venus	-375-08-01 07:55 J	1584666.72	1584666.83	1584666.96	0.0269	0.0223

Mercury	-375-08-16 02:24 J	1584681.42	1584681.60	1584681.78	0.0268	0.0015
Mercury	-375-11-12 22:19 J	1584770.28	1584770.43	1584770.60	0.0268	0.0132
Venus	-374-03-18 09:50 J	1584895.70	1584895.91	1584896.12	0.0267	0.0026
Venus	-374-11-02 10:19 J	1585124.77	1585124.93	1585125.10	0.0266	0.0166
Moon	-366-07-04 03:35 J	1587925.43	1587925.65	1587925.89	0.0268	0.0121
Earth	-366-07-04 05:02 J	1587925.51	1587925.71	1587925.94	0.0268	0.0135 *
Mercury	-360-12-08 03:07 J	1590274.55	1590274.63	1590274.73	0.0291	0.0212
Mercury	-359-03-06 16:04 J	1590363.04	1590363.17	1590363.30	0.0292	0.0074
Venus	-359-04-10 11:16 J	1590397.85	1590397.97	1590398.10	0.0292	0.0236
Mercury	-359-06-03 04:33 J	1590451.56	1590451.69	1590451.82	0.0293	0.0063
Mercury	-359-08-30 17:02 J	1590540.12	1590540.21	1590540.31	0.0294	0.0200
Venus	-359-11-26 11:02 J	1590627.75	1590627.96	1590628.17	0.0294	0.0024
Venus	-358-07-14 12:00 J	1590857.96	1590858.00	1590858.05	0.0296	0.0289
Moon	-353-12-26 02:52 J	1592849.40	1592849.62	1592849.85	0.0294	0.0101
Earth	-353-12-26 05:45 J	1592849.52	1592849.74	1592849.97	0.0294	0.0116 *
Mercury	-346-10-06 03:21 J	1595324.55	1595324.64	1595324.75	0.0269	0.0220
Mercury	-345-01-02 23:31 J	1595413.30	1595413.48	1595413.65	0.0269	0.0075
Venus	-345-02-11 06:43 J	1595452.66	1595452.78	1595452.93	0.0268	0.0207
Mercury	-345-03-31 19:26 J	1595502.14	1595502.31	1595502.49	0.0268	0.0072
Mercury	-345-06-28 15:35 J	1595591.05	1595591.15	1595591.26	0.0267	0.0218
Venus	-345-09-27 08:52 J	1595681.65	1595681.87	1595682.08	0.0267	0.0011
Venus	-344-05-14 09:35 J	1595910.75	1595910.90	1595911.05	0.0265	0.0181
Earth	-337-06-27 22:33 J	1598512.24	1598512.44	1598512.67	0.0267	0.0137
Moon	-337-06-28 00:28 J	1598512.32	1598512.52	1598512.72	0.0267	0.0148 *
Mercury	-330-04-27 04:47 J	1601006.64	1601006.70	1601006.76	0.0291	0.0257
Mercury	-330-07-24 17:31 J	1601095.11	1601095.23	1601095.35	0.0292	0.0119
Mercury	-330-10-21 06:14 J	1601183.62	1601183.76	1601183.89	0.0293	0.0021
Venus	-330-10-21 15:50 J	1601184.01	1601184.16	1601184.31	0.0293	0.0206
Mercury	-329-01-17 18:43 J	1601272.17	1601272.28	1601272.39	0.0293	0.0156
Mercury	-329-04-15 06:57 J	1601360.79	1601360.79	1601360.81	0.0294	0.0292

Venus	-329-06-07 15:50 J	1601413.95	1601414.16	1601414.37	0.0295	0.0055
Mars	-320-10-18 09:50 J	1604833.77	1604833.91	1604834.05	0.0282	0.0252
Mercury	-316-02-22 03:35 J	1606056.60	1606056.65	1606056.70	0.0270	0.0257
Mercury	-316-05-21 23:16 J	1606145.31	1606145.47	1606145.64	0.0269	0.0113
Mercury	-316-08-18 19:26 J	1606234.13	1606234.31	1606234.49	0.0269	0.0033
Venus	-316-08-23 11:16 J	1606238.82	1606238.97	1606239.14	0.0269	0.0177
Mercury	-316-11-15 15:35 J	1606323.02	1606323.15	1606323.29	0.0268	0.0180
Venus	-315-04-09 13:12 J	1606467.84	1606468.05	1606468.26	0.0267	0.0019
Venus	-315-11-24 13:55 J	1606696.95	1606697.08	1606697.21	0.0266	0.0211
Moon	-307-07-05 00:28 J	1609476.34	1609476.52	1609476.72	0.0268	0.0175
Earth	-307-07-05 04:19 J	1609476.51	1609476.68	1609476.86	0.0268	0.0190 *
Mars	-304-09-29 01:26 J	1610658.39	1610658.56	1610658.75	0.0279	0.0206
Mercury	-301-12-10 18:14 J	1611827.15	1611827.26	1611827.37	0.0291	0.0170
Mercury	-300-03-09 06:57 J	1611915.66	1611915.79	1611915.92	0.0292	0.0033
Venus	-300-05-02 17:31 J	1611970.07	1611970.23	1611970.40	0.0292	0.0181
Mercury	-300-06-05 19:26 J	1612004.19	1612004.31	1612004.44	0.0293	0.0104
Mercury	-300-09-02 07:55 J	1612092.76	1612092.83	1612092.91	0.0293	0.0239
Venus	-300-12-18 17:16 J	1612200.02	1612200.22	1612200.42	0.0294	0.0080
Earth	-294-12-28 01:40 J	1614400.33	1614400.57	1614400.80	0.0294	0.0062
Moon	-294-12-28 02:52 J	1614400.39	1614400.62	1614400.85	0.0294	0.0047 *
Mercury	-287-10-08 20:09 J	1616877.21	1616877.34	1616877.48	0.0269	0.0174
Mercury	-286-01-05 16:04 J	1616965.99	1616966.17	1616966.36	0.0269	0.0029
Venus	-286-03-05 09:50 J	1617024.74	1617024.91	1617025.08	0.0268	0.0162
Mercury	-286-04-04 12:14 J	1617054.85	1617055.01	1617055.18	0.0268	0.0118
Mercury	-286-07-02 08:24 J	1617143.84	1617143.85	1617143.88	0.0267	0.0266
Venus	-286-10-20 11:45 J	1617253.78	1617253.99	1617254.20	0.0267	0.0035
Venus	-285-06-05 12:14 J	1617482.91	1617483.01	1617483.13	0.0265	0.0227
Earth	-278-06-29 21:21 J	1620063.15	1620063.39	1620063.63	0.0267	0.0081
Moon	-278-06-30 00:57 J	1620063.31	1620063.54	1620063.78	0.0267	0.0096 *
Mercury	-271-04-29 19:26 J	1622559.23	1622559.31	1622559.41	0.0291	0.0216

Mercury	-271-07-27 08:24 J	1622647.72	1622647.85	1622647.98	0.0292	0.0079
Mercury	-271-10-23 20:52 J	1622736.24	1622736.37	1622736.50	0.0293	0.0058
Venus	-271-11-12 21:21 J	1622756.21	1622756.39	1622756.58	0.0293	0.0151
Mercury	-270-01-20 09:21 J	1622824.79	1622824.89	1622824.99	0.0293	0.0194
Venus	-270-06-30 21:35 J	1622986.20	1622986.40	1622986.59	0.0295	0.0111
Mercury	-257-02-25 19:55 J	1627609.23	1627609.33	1627609.45	0.0270	0.0213
Mercury	-257-05-24 16:04 J	1627697.99	1627698.17	1627698.34	0.0269	0.0067
Mercury	-257-08-21 12:00 J	1627786.83	1627787.00	1627787.18	0.0269	0.0080
Venus	-257-09-14 14:09 J	1627810.92	1627811.09	1627811.28	0.0269	0.0133
Mercury	-257-11-18 08:09 J	1627875.76	1627875.84	1627875.95	0.0268	0.0228
Venus	-256-05-01 16:04 J	1628039.97	1628040.17	1628040.38	0.0267	0.0064
Venus	-256-12-16 16:47 J	1628269.15	1628269.20	1628269.26	0.0266	0.0256
Moon	-248-07-06 03:50 J	1631027.55	1631027.66	1631027.79	0.0268	0.0232
Earth	-248-07-06 03:50 J	1631027.57	1631027.66	1631027.76	0.0268	0.0246 *
Mercury	-242-09-16 20:38 J	1633291.31	1633291.36	1633291.42	0.0290	0.0263
Mercury	-242-12-14 09:21 J	1633379.77	1633379.89	1633380.01	0.0291	0.0127
Mercury	-241-03-11 22:04 J	1633468.28	1633468.42	1633468.55	0.0292	0.0011
Venus	-241-05-25 00:00 J	1633542.32	1633542.50	1633542.70	0.0292	0.0125
Mercury	-241-06-08 10:33 J	1633556.82	1633556.94	1633557.05	0.0292	0.0145
Mercury	-241-09-04 22:47 J	1633645.42	1633645.45	1633645.49	0.0293	0.0280
Venus	-240-01-10 00:00 J	1633772.31	1633772.50	1633772.68	0.0294	0.0137
Earth	-235-12-28 21:35 J	1635951.16	1635951.40	1635951.64	0.0294	0.0007
Moon	-235-12-29 01:12 J	1635951.31	1635951.55	1635951.79	0.0294	0.0008 *
Mars	-231-03-12 02:38 J	1637120.51	1637120.61	1637120.73	0.0282	0.0263
Mercury	-228-10-11 12:57 J	1638429.88	1638430.04	1638430.20	0.0270	0.0129
Mercury	-227-01-08 08:52 J	1638518.69	1638518.87	1638519.06	0.0269	0.0018
Venus	-227-03-27 12:43 J	1638596.85	1638597.03	1638597.23	0.0268	0.0117
Mercury	-227-04-07 05:16 J	1638607.57	1638607.72	1638607.86	0.0268	0.0165
Venus	-227-11-11 14:38 J	1638825.91	1638826.11	1638826.31	0.0267	0.0079
Moon	-219-06-30 20:09 J	1641614.09	1641614.34	1641614.60	0.0267	0.0041

Earth	-219-06-30 20:38 J	1641614.12	1641614.36	1641614.61	0.0267	0.0026 *
Mars	-215-02-22 04:04 J	1642946.47	1642946.67	1642946.88	0.0279	0.0177
Mercury	-212-05-02 10:47 J	1644111.84	1644111.95	1644112.06	0.0291	0.0172
Mercury	-212-07-29 23:31 J	1644200.34	1644200.48	1644200.61	0.0292	0.0036
Mercury	-212-10-26 12:00 J	1644288.87	1644289.00	1644289.12	0.0293	0.0101
Venus	-212-12-05 04:19 J	1644328.48	1644328.68	1644328.89	0.0293	0.0093
Mercury	-211-01-23 00:14 J	1644377.44	1644377.51	1644377.59	0.0293	0.0237
Venus	-211-07-23 04:19 J	1644558.52	1644558.68	1644558.86	0.0295	0.0170
Mercury	-198-02-28 12:43 J	1649161.90	1649162.03	1649162.18	0.0270	0.0167
Mercury	-198-05-28 08:52 J	1649250.69	1649250.87	1649251.05	0.0269	0.0021
Mercury	-198-08-25 05:02 J	1649339.55	1649339.71	1649339.87	0.0269	0.0127
Venus	-198-10-07 17:16 J	1649383.03	1649383.22	1649383.43	0.0269	0.0088
Venus	-197-05-23 19:12 J	1649612.11	1649612.30	1649612.50	0.0267	0.0109
Mercury	-183-09-19 12:14 J	1654843.92	1654844.01	1654844.10	0.0290	0.0216
Mercury	-183-12-17 00:57 J	1654932.41	1654932.54	1654932.67	0.0291	0.0080
Mercury	-182-03-15 13:26 J	1655020.93	1655021.06	1655021.19	0.0292	0.0056
Mercury	-182-06-12 01:55 J	1655109.48	1655109.58	1655109.68	0.0292	0.0191
Venus	-182-06-17 08:38 J	1655114.66	1655114.86	1655115.07	0.0292	0.0064
Venus	-181-02-02 08:09 J	1655344.70	1655344.84	1655345.01	0.0294	0.0198
Earth	-176-12-29 19:55 J	1657502.09	1657502.33	1657502.57	0.0293	0.0052
Moon	-176-12-29 20:09 J	1657502.10	1657502.34	1657502.59	0.0293	0.0064 *
Mercury	-169-07-17 09:50 J	1659893.82	1659893.91	1659894.01	0.0270	0.0227
Mercury	-169-10-14 06:00 J	1659982.58	1659982.75	1659982.92	0.0270	0.0081
Mercury	-168-01-11 02:09 J	1660071.41	1660071.59	1660071.76	0.0269	0.0066
Mercury	-168-04-09 22:19 J	1660160.33	1660160.43	1660160.55	0.0268	0.0214
Venus	-168-04-18 16:19 J	1660168.98	1660169.18	1660169.39	0.0268	0.0072
Venus	-168-12-03 18:14 J	1660398.08	1660398.26	1660398.45	0.0267	0.0125
Moon	-160-07-01 18:14 J	1663165.01	1663165.26	1663165.51	0.0268	0.0019
Earth	-160-07-01 22:04 J	1663165.17	1663165.42	1663165.67	0.0268	0.0033 *
Mercury	-153-02-06 13:40 J	1665576.01	1665576.07	1665576.13	0.0290	0.0260

Mercury	-153-05-05 02:24 J	1665664.48	1665664.60	1665664.72	0.0291	0.0124
Venus	-153-05-11 14:09 J	1665671.07	1665671.09	1665671.13	0.0291	0.0288
Mercury	-153-08-01 15:07 J	1665752.99	1665753.13	1665753.26	0.0292	0.0014
Mercury	-153-10-29 03:35 J	1665841.53	1665841.65	1665841.76	0.0293	0.0147
Venus	-153-12-27 12:57 J	1665900.83	1665901.04	1665901.25	0.0293	0.0032
Mercury	-152-01-25 15:50 J	1665930.13	1665930.16	1665930.20	0.0293	0.0282
Venus	-152-08-14 12:57 J	1666130.92	1666131.04	1666131.18	0.0295	0.0231
Moon	-147-12-23 23:45 J	1668088.42	1668088.49	1668088.57	0.0294	0.0276
Earth	-147-12-23 23:16 J	1668088.44	1668088.47	1668088.53	0.0294	0.0288 *
Mars	-143-08-05 00:57 J	1669408.36	1669408.54	1669408.75	0.0282	0.0225
Mercury	-140-12-04 10:04 J	1670625.89	1670625.92	1670625.96	0.0271	0.0264
Mercury	-139-03-03 06:00 J	1670714.59	1670714.75	1670714.92	0.0270	0.0118
Venus	-139-03-14 18:14 J	1670726.18	1670726.26	1670726.37	0.0270	0.0241
Mercury	-139-05-31 02:09 J	1670803.41	1670803.59	1670803.77	0.0270	0.0029
Mercury	-139-08-27 22:19 J	1670892.30	1670892.43	1670892.58	0.0269	0.0177
Venus	-139-10-29 21:21 J	1670955.19	1670955.39	1670955.61	0.0268	0.0042
Venus	-138-06-15 23:16 J	1671184.30	1671184.47	1671184.65	0.0267	0.0155
Earth	-131-06-26 23:16 J	1673752.34	1673752.47	1673752.62	0.0266	0.0220
Moon	-131-06-27 02:52 J	1673752.51	1673752.62	1673752.74	0.0266	0.0234 *
Mars	-127-07-18 20:52 J	1675235.13	1675235.37	1675235.62	0.0278	0.0125
Mercury	-124-09-22 04:33 J	1676396.58	1676396.69	1676396.80	0.0290	0.0163
Venus	-124-11-21 20:24 J	1676457.26	1676457.35	1676457.46	0.0291	0.0256
Mercury	-124-12-19 17:02 J	1676485.08	1676485.21	1676485.35	0.0291	0.0028
Mercury	-123-03-18 05:31 J	1676573.61	1676573.73	1676573.86	0.0292	0.0108
Mercury	-123-06-14 18:00 J	1676662.18	1676662.25	1676662.32	0.0292	0.0242
Venus	-123-07-09 19:12 J	1676687.09	1676687.30	1676687.52	0.0293	0.0006
Venus	-122-02-24 18:57 J	1676917.20	1676917.29	1676917.39	0.0294	0.0263
Moon	-117-12-30 18:28 J	1679053.05	1679053.27	1679053.49	0.0293	0.0129
Earth	-117-12-30 22:04 J	1679053.20	1679053.42	1679053.64	0.0293	0.0120 *
Mercury	-110-07-21 03:35 J	1681446.52	1681446.65	1681446.79	0.0270	0.0174



Venus	-110-09-24 18:14 J	1681512.16	1681512.26	1681512.39	0.0270	0.0223
Mercury	-110-10-17 23:45 J	1681535.31	1681535.49	1681535.67	0.0270	0.0028
Mercury	-109-01-14 19:55 J	1681624.17	1681624.33	1681624.50	0.0269	0.0119
Mercury	-109-04-12 16:04 J	1681713.17	1681713.17	1681713.20	0.0268	0.0268
Venus	-109-05-10 21:35 J	1681741.18	1681741.40	1681741.61	0.0268	0.0024
Venus	-109-12-25 23:16 J	1681970.31	1681970.47	1681970.64	0.0267	0.0173
Moon	-101-07-03 00:00 J	1684716.27	1684716.50	1684716.73	0.0268	0.0084
Earth	-101-07-03 01:12 J	1684716.33	1684716.55	1684716.79	0.0268	0.0097 *
Mercury	-94-02-09 06:00 J	1687128.66	1687128.75	1687128.85	0.0290	0.0205
Mercury	-94-05-08 18:43 J	1687217.15	1687217.28	1687217.41	0.0291	0.0069
Venus	-94-06-04 01:26 J	1687243.44	1687243.56	1687243.71	0.0291	0.0224
Mercury	-94-08-05 07:12 J	1687305.67	1687305.80	1687305.93	0.0292	0.0067
Mercury	-94-11-01 19:40 J	1687394.23	1687394.32	1687394.42	0.0293	0.0201
Venus	-93-01-20 00:28 J	1687473.31	1687473.52	1687473.73	0.0293	0.0034
Earth	-88-12-25 02:38 J	1689639.46	1689639.61	1689639.78	0.0294	0.0217
Moon	-88-12-25 06:28 J	1689639.61	1689639.77	1689639.95	0.0294	0.0206 *
Jupiter	-86-09-16 18:14 J	1690270.03	1690270.26	1690270.52	0.0289	0.0247
Mercury	-81-12-07 03:50 J	1692178.56	1692178.66	1692178.78	0.0271	0.0211
Mercury	-80-03-06 00:00 J	1692267.33	1692267.50	1692267.68	0.0270	0.0064
Venus	-80-04-06 00:14 J	1692298.36	1692298.51	1692298.66	0.0270	0.0192
Mercury	-80-06-02 20:09 J	1692356.17	1692356.34	1692356.52	0.0269	0.0084
Mercury	-80-08-30 16:33 J	1692445.10	1692445.19	1692445.29	0.0269	0.0232
Venus	-80-11-21 03:07 J	1692527.41	1692527.63	1692527.84	0.0268	0.0009
Venus	-79-07-08 04:47 J	1692756.57	1692756.70	1692756.84	0.0267	0.0203
Earth	-72-06-28 04:04 J	1695303.48	1695303.67	1695303.89	0.0267	0.0154
Moon	-72-06-28 06:28 J	1695303.57	1695303.77	1695303.97	0.0267	0.0167 *
Mercury	-65-06-28 08:38 J	1697860.79	1697860.86	1697860.93	0.0289	0.0238
Mercury	-65-09-24 21:21 J	1697949.26	1697949.39	1697949.51	0.0290	0.0104
Venus	-65-12-14 09:21 J	1698029.74	1698029.89	1698030.06	0.0291	0.0188
Mercury	-65-12-22 09:50 J	1698037.78	1698037.91	1698038.04	0.0291	0.0031

Mercury	-64-03-20 22:19 J	1698126.32	1698126.43	1698126.54	0.0292	0.0166
Venus	-64-08-01 08:24 J	1698259.64	1698259.85	1698260.05	0.0293	0.0070
Moon	-57-01-02 02:09 J	1700604.42	1700604.59	1700604.76	0.0293	0.0202
Earth	-57-01-02 03:50 J	1700604.49	1700604.66	1700604.85	0.0293	0.0197 *
Mars	-55-12-29 00:43 J	1701696.30	1701696.53	1701696.77	0.0282	0.0188
Mercury	-51-04-26 02:24 J	1702910.56	1702910.60	1702910.65	0.0271	0.0261
Mercury	-51-07-23 22:19 J	1702999.27	1702999.43	1702999.59	0.0270	0.0116
Venus	-51-10-17 01:26 J	1703084.40	1703084.56	1703084.72	0.0270	0.0171
Mercury	-51-10-20 18:28 J	1703088.09	1703088.27	1703088.45	0.0270	0.0031
Mercury	-50-01-17 14:38 J	1703176.98	1703177.11	1703177.25	0.0269	0.0179
Venus	-50-06-03 04:04 J	1703313.46	1703313.67	1703313.88	0.0268	0.0028
Venus	-49-01-18 06:00 J	1703542.64	1703542.75	1703542.87	0.0267	0.0223
Earth	-42-07-05 06:57 J	1706267.61	1706267.79	1706268.00	0.0268	0.0166
Moon	-42-07-05 09:50 J	1706267.71	1706267.91	1706268.11	0.0268	0.0154 *
Mars	-39-12-12 13:55 J	1707523.82	1707524.08	1707524.34	0.0279	0.0070
Mercury	-36-11-15 10:19 J	1708592.90	1708592.93	1708592.96	0.0290	0.0279
Mercury	-35-02-11 23:02 J	1708681.35	1708681.46	1708681.58	0.0291	0.0144
Mercury	-35-05-11 11:45 J	1708769.85	1708769.99	1708770.12	0.0291	0.0010
Venus	-35-06-26 15:07 J	1708815.96	1708816.13	1708816.31	0.0292	0.0154
Mercury	-35-08-08 00:14 J	1708858.39	1708858.51	1708858.63	0.0292	0.0126
Mercury	-35-11-04 12:28 J	1708946.97	1708947.02	1708947.08	0.0293	0.0260
Venus	-34-02-11 14:09 J	1709045.89	1709046.09	1709046.29	0.0294	0.0105
Earth	-29-12-26 10:33 J	1711190.73	1711190.94	1711191.16	0.0294	0.0136
Moon	-29-12-26 12:00 J	1711190.78	1711191.00	1711191.23	0.0294	0.0128 *
Mercury	-22-12-10 23:02 J	1713731.31	1713731.46	1713731.61	0.0271	0.0150
Mercury	-21-03-08 19:12 J	1713820.11	1713820.30	1713820.48	0.0270	0.0006
Venus	-21-04-28 07:40 J	1713870.64	1713870.82	1713871.00	0.0270	0.0140
Mercury	-21-06-05 15:07 J	1713908.99	1713909.13	1713909.30	0.0269	0.0146
Venus	-21-12-13 10:19 J	1714099.73	1714099.93	1714100.15	0.0268	0.0060
Venus	-20-07-30 12:14 J	1714328.95	1714329.01	1714329.07	0.0267	0.0254

Moon	-13-06-29 08:52 J	1716854.64	1716854.87	1716855.12	0.0267	0.0098
Earth	-13-06-29 11:31 J	1716854.74	1716854.98	1716855.21	0.0267	0.0083 *
Mercury	-6-07-02 02:09 J	1719413.48	1719413.59	1719413.70	0.0290	0.0173
Mercury	-6-09-28 14:38 J	1719501.98	1719502.11	1719502.25	0.0290	0.0040
Mercury	-6-12-26 03:07 J	1719590.51	1719590.63	1719590.76	0.0291	0.0097
Venus	-5-01-07 00:57 J	1719602.35	1719602.54	1719602.74	0.0291	0.0115
Mercury	-5-03-23 15:35 J	1719679.07	1719679.15	1719679.23	0.0292	0.0230
Venus	-5-08-24 00:00 J	1719832.32	1719832.50	1719832.69	0.0293	0.0144